

NECA 340-414-000 ISSUE 2 DOI-E09003 STOCK # 0293922

# MCU 5000A MULTIPOINT CONTROL UNIT EQUIPMENT MANUAL

SEPTEMBER, 1998 NEC America, Inc.

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# **Manual Contents**

NECA 340-414-100	General Description
	Contains physical description, features, equipment, applications, equipment description, and customer information.
NECA 340-414-210	Installation
	Describes shelf installation, unit installation, external cabling connections, equipment power-up, and initial settings. Also provides information on switch/ strap setting with LED functions.
NECA 340-414-220	System Parameters
	Contain system parameters and parameter setting procedures.
NEAC 340-414-300	Console Operation
	Describes the control commands for the equipment using external console such as personal computer.
NECA 340-414-500	Maintenance
	Contains troubleshooting, unit replacement, and preventive/corrective maintenance procedures.

This page is for your notes.



NECA 340-414-100 ISSUE 2 DOI-E09003 PART OF STOCK # 0293922

# MCU 5000A MULTIPOINT CONTROL UNIT

# **GENERAL DESCRIPTION MANUAL**

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# **Table of Contents**

1:	GENERAL	. 1	
	Overview	. 1	
2:	SYSTEM CONFIGURATION	. 3	
	Basic Configuration	. 3	
	Option	3	
	Line Growth	3	
	Simultaneously Connecting Teleconference	3	
	Connecting Cable	. 4	
	Accessories	. 4	
3:	SYSTEM FEATURES	5	
•	Basic Connection	5	
	Usable Teleconference Terminal	5	
	Start-up of Equipment	. 0	
	Start-un	. 0	
	System Parameter Setting		
	Teleconference Type	6	
	Point-to-Point Teleconference	6	
	Broadcast Teleconference		
	Multipoint Teleconference (RCON)	7	
	Multipoint Teleconference (MCON)		
	Multipoint Lecture Connection	. 9	
	Teleconference Start and Completion	11	
	Line and Teleconference Terminal Number	12	
	Physical Line Number	12	
	Logical Line Number	12	
	Logical Line Number Assignment on ISDN Interface Unit Installation	14	
	Teleconference Port Number	17	
	Teleconference Terminal Number	17	
	Line Interface	18	
	1.5M LIF Unit	18	
	RS-422/HSD IF Unit	19	
	H0-INF Unit	19	
	Common Item for Each LIF Unit	20	
	Cascade-Connection	20	
	Console Through-Pass	21	
	Supplementary Functions	22	
	Automatic Start Setting Function	22	
	Memory Card Copy Function	22	
	Loopback Function	22	
<b>4</b> :	HARDWARE CONFIGURATION	23	
	1.5M LIF Unit	24	
	Genera	24	
	Functions	24	
	Functional Block Diagram	25	
	1.5M LIF Unit Interface	25	
	Line Management	27	
	RS-422 LIF Unit	28	
	General	28	
	Functions	28	

	Interface Specification	28
	H0-INF Unit	31
	General	31
	Functions	31
	EC H211 MUX Unit	34
	General	34
	Functions	34
	V SW/LSD IF Unit	36
	General	. 36
	Functions	36
	A CODEC Unit	39
	Functions	39
	A SUM Unit	42
	General	42
	Function	42
	PG/SIO Unit	45
	Genera	145
	Functions	45
	M CONT Unit	47
	General	47
	Functions	47
	VDSW Unit	49
	General	49
	Functions	49
5.	SOETWARE	51
Э.		
5.	Task Description	51
5.	Task Description	51 51
5.	Task Description Loader (LO) Timer (TM)	51 51 51
J.	Task Description Loader (LO) Timer (TM) Memory Card Driver (MD)	51 51 51 51 51
Э.	Task Description Loader (LO) Timer (TM) Memory Card Driver (MD) Conference Management (CM)	51 51 51 51 51 51
5.	Task Description Loader (LO) Timer (TM) Memory Card Driver (MD) Conference Management (CM) Console Control (CC)	51 51 51 51 51 51 51 52
5.	Task Description Loader (LO) Timer (TM) Memory Card Driver (MD) Conference Management (CM) Console Control (CC) Console Driver (CD1 to CD3)	51 51 51 51 51 51 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator	51 51 51 51 51 51 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)	51 51 51 51 51 51 52 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)	51 51 51 51 51 52 52 52 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)	51 51 51 51 51 51 52 52 52 52 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)	51 51 51 51 51 51 52 52 52 52 52 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCI)	51 51 51 51 51 52 52 52 52 52 52 52 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCI)         FIFO Driver (FH)	51 51 51 51 51 52 52 52 52 52 52 52 52 52 52 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCI)         FIFO Driver (FH)         Line Exchange (LX)	51 51 51 51 51 51 52 52 52 52 52 52 52 52 52 52 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCR)         ISDN Line Control (LCR)         IsDN Line Control (LCI)         FIFO Driver (FH)         Line Exchange (LX)         Picture Switching (PS)	51 51 51 51 51 52 52 52 52 52 52 52 52 52 52 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCR)         ISDN Line Control (LCR)         FIFO Driver (FH)         Line Exchange (LX)         Picture Switching (PS)         Voice Input/Output Control (VC)	51 51 51 51 51 52 52 52 52 52 52 52 52 52 52 52 52 52
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCR)         ISDN Line Control (LCI)         FIFO Driver (FH)         Line Exchange (LX)         Picture Switching (PS)         Voice Input/Output Control (VC)         Multipoint Control (TCA, TCB)	51           51           51           51           51           51           51           51           51           51           51           51           51           52           52           52           52           52           52           52           52           52           52           52           52           52           52           52           52           52           52           52           53           53
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCR)         ISDN Line Control (LCI)         FIFO Driver (FH)         Line Exchange (LX)         Picture Switching (PS)         Voice Input/Output Control (VC)         Multipoint Control (TCA, TCB)         Electrical Whiteboard Control for MCU	51           51           51           51           51           51           51           51           51           51           51           51           51           51           51           51           52           52           52           52           52           52           52           52           52           52           52           52           52           52           52           52           53           53           53
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCR)         ISDN Line Control (LCI)         FIFO Driver (FH)         Line Exchange (LX)         Picture Switching (PS)         Voice Input/Output Control (VC)         Multipoint Control (TCA, TCB)         Electrical Whiteboard Control for MCU         LAP-B Drive (LD1 to LD8)	51         51         51         51         51         51         51         51         51         51         51         51         51         51         51         51         51         51         51         52         52         52         52         52         52         52         52         52         52         52         52         52         52         52         52         52         53         53         53         53         53         53
5.	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCR)         FIFO Driver (FH)         Line Exchange (LX)         Picture Switching (PS)         Voice Input/Output Control (VC)         Multipoint Control (TCA, TCB)         Electrical Whiteboard Control for MCU         LAP-B Drive (BD1 to BD8)	51         52         52         52         52         52         52         52         52         52         52         52         52         52         52         52         52         52         53         53         53         53         53         53         53         53         53         53         53         53         53         53         53         53         53         53
6:	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCR)         ISDN Line Control (LCR)         Picture Switching (PS)         Voice Input/Output Control (VC)         Multipoint Control (TCA, TCB)         Electrical Whiteboard Control for MCU         LAP-B Drive (BD1 to BD8)	51 51 51 51 52 52 52 52 52 52 52 52 52 52 52 52 52
6:	Task Description         Loader (LO)         Timer (TM)         Memory Card Driver (MD)         Conference Management (CM)         Console Control (CC)         Console Driver (CD1 to CD3)         Command Generator         Real-Time Clock Management (RM)         Line Management (LM)         AMI Line Control (LCA)         RS-422 Line Control (LCR)         ISDN Line Control (LCR)         ISDN Line Control (LCR)         FIFO Driver (FH)         Line Exchange (LX)         Picture Switching (PS)         Voice Input/Output Control (VC)         Multipoint Control (TCA, TCB)         Electrical Whiteboard Control for MCU         LAP-B Drive (BD1 to BD8)         SPECIFICATIONS         Physical Specification	51         51         51         51         51         51         51         51         51         51         51         51         51         51         51         51         51         52         53         53         53         53         53         53         53         53         53         53         53         53         53         53         53         53         53         53

7:	SYSTEM CONTROL AND VARIOUS APPLICATIONS	61
	Line Switching Control	61
	Data Highway	. 61
	Multipoint Connection	. 62
	Voice Signal	. 62
	Picture Signal	. 63
	Low-speed Data	. 64
	Point-to-Point Connection	. 65
	Broadcast Connection	. 66
	Picture Switching Control	67
	Automatic Switching Mode	. 67
	Manual Switching Mode	. 67
	Voice Detection Control	68
	Teleconference Terminal Interface	69
	Command Details	. 70
	Interface Format	. 73
	Sequence Example	. 74
	Loopback Test	77
	MCU 5000A Loopback	78
	Self Diagnostic Function	80
8:	MCU CONSOLE	81
	Console	81
	Console Command	81
9:	SYSTEM PARAMETER	85
	Application.	85
	System Parameter	85
	· · · · · · · · · · · · · · · · · · ·	

# List of Figures

Figure 3-1:	Typical Connecting Diagram	. 5
Figure 3-2:	Logical Line Number Assignment	13
Figure 3-3:	Logical Line Number Assignment (line Rate 64 kbps)	14
Figure 3-4:	Logical Line Number Assignment (Line Rate 2×64 kbps)	15
Figure 3-5:	Logical Line Number Assignment (Line Rate 384 kbps)	16
Figure 3-6:	Casade-Connection of Two MCU 5000A	21
Figure 3-7:	Two Groups Casade-Connection	21
Figure 3-8:	Example of Console Through-Pass Connection	22
Figure 4-1:	Block Diagram of MCU 5000A	23
Figure 4-2:	Block Diagram of 1.5M LIF Unit	<b>25</b>
Figure 4-3:	1.5M LIF (CH1 to CH16) Connector Pin Assignment	<b>26</b>
Figure 4-4:	RS-422 LIF (CH1 to CH16) Connector Pin Assignment	29
Figure 4-5:	Block Diagram of RS-422 LIF Unit	30
Figure 4-6:	Block Diagram of H0-INF Unit	32
Figure 4-7:	H0-INF (CH1 to CH16) Connector Pin Assignment	33
Figure 4-8:	Block Diagram of EC H221 MUX Unit	35
Figure 4-9:	Block Diagram of V SW/LSD IF Unit (1of 2)	37
Figure 4-9:	Block Diagram of V SW/LSD IF Unit (2 of 2)	38
Figure 4-10:	Block Diagram of A CODEC Unit	41
Figure 4-11:	Block Diagram of Voice Signal Process 1	<b>43</b>
Figure 4-12:	Block Diagram of Voice Signal Process 2	44
Figure 4-13:	Block Diagram of PG/SIO Unit	<b>46</b>
Figure 4-14:	Block Diagram of M CONT Unit	<b>48</b>
Figure 4-15:	Block Diagram of VDSW Unit	<b>50</b>
Figure 5-1:	MCU 5000A Task Diagram	54
Figure 5-2:	MCU 5000A Memory Mapping	55
Figure 6-1:	MCU 5000A Outline	57
Figure 6-2:	Detailed Rear View of MCU 5000A	<b>58</b>
Figure 6-3:	MCU 5000A Unit Installation Layout	<b>59</b>
Figure 7-1:	Block Diagram of Basic Signal Flow	61
Figure 7-2:	Signal Flow of Voice Signals	<b>63</b>
Figure 7-3:	Signal Flow of Picture Signals	<b>63</b>
Figure 7-4:	Low-speed Data Flow	<b>64</b>
Figure 7-5:	Data Flow on Point-to-Point Connection	65
Figure 7-6:	Data Flow on Broadcast Connection	66
Figure 7-7:	Command/Response Format	73
Figure 7-8:	Sequence Example (1 of 4)	74
Figure 7-8:	Sequence Example (2 of 4)	75
Figure 7-8:	Sequence Example (3 of 4)	76
Figure 7-8:	Sequence Example (4 of 4)	77
Figure 7-9:	Loopback Points	79

# **List of Tables**

Table 2-1:	MCU 5000A Unit Component	. 3
Table 2-2:	MCU 5000A Cable Component	. 4
Table 3-1:	Line Rate	12
Table 3-2:	Number of Logical Lines	12
Table 4-1:	Electrical Specification	25
Table 4-2:	1.5M LIF (CH1 to CH16) Signal Assignment	<b>26</b>
Table 4-3:	User Side Primary Tributary Rate Layer 1 Status Transition	27
Table 4-4:	Electrical Specification	<b>28</b>
Table 4-5:	RS-422 LIF (CH1 to CH16) Signal Assignment	29
Table 4-6:	Electrical Specification	33
Table 4-7:	H0-INF (CH1 to CH6) Signal Assignment	33
Table 4-8:	Voice Signal Level Setting Value	<b>40</b>
Table 4-9:	RS-232C Parameter	45
Table 6-1:	MCU 5000A Electrical Specification	60
Table 7-1:	Detail Command/Response (1 of 3)	70
Table 7-1:	Detail Command/Response (2 of 3)	71
Table 7-1:	Detail Command/Response (3 of 3	72
Table 8-1:	Console Command List	81
Table 9-1:	System Parameter Setting	85
	· · ·	

This page is for your notes.

### 1: GENERAL

A: Overview 1.01 The MCU 5000A is a network control equipment which interconnects the plural remote teleconference terminals in multimedia conference system. The MCU 5000A transmits audio, motion/still picture image, etc. via transmission line. The MCU 5000A located at the center in the network as the radical topology, performs the line connection, video signal switching, and audio sum process.

**1.02** The MCU 5000A is able to control maximum 16 lines. Maximum eight lines in 16 lines are available to the multipoint teleconference, and the rest lines are available to point-to-point or broadcasting teleconference. When two MCU 5000As are connecting by cascade-connection, maximum 14 lines are available to the multipoint teleconference. The number of point-to-point or broadcasting connecting terminals is flexible according to the transmission rate. In the H.243 mode, the maximum is 20 sites, with 3 cascaded MCUs.

**1.03** During multipoint teleconference performance, received picture image is automatically switched current talker according to the talker voice detection or level decision. The MCU 5000A mixes audio signals whenever it receives then from all terminals and returns the mixed signals back to all terminal. Each terminal receives the audio signals of all other terminals constantly except its own signal.

**1.04** The MCU 5000A with the teleconference terminal (VisuaLink AD series) provides the following features.

- Broadcasting: To broadcast the picture image of any teleconference terminal to all the other participating teleconference terminals.
- Selective receiving: To select receiving picture image of any terminal out of those of all the participating teleconference terminal. Does not apply to cascaded terminals.
- Operator switching: To control the switching of the broadcasting picture image collectively.
- Still picture signal transmitting: To transmit still picture image to all the other participating teleconference terminal.
- Camera remote control: To control the camera of the terminal from which signal is received. In proprietary mode.

**1.05** The tele-education connection can be performed using the optional software. The terminals are divided to one instructor site and plural classroom in this connection state. The instructor site broadcasts own video and voice data to classroom, and control the system. All cameras are controlled instructor site. The instructor and privilege listener are able to send their data (video, voice, and electrical whiteboard) to other terminals.

This page is for your notes.

#### **2: SYSTEM CONFIGURATION**

A: Basic<br/>Configuration2.01The combination of units as shown in the Table 2-1 is required depending<br/>on the line type or number of lines.

#### B: Option Line Growth

**2.02** To expand any teleconference terminal into MCU system, the line interface increasing is required only. In conformity with the line interface, one of the following units is added in the MCU 5000A.

- 1.5M LIF unit: 4 lines per unit
- RS-422 LIF unit: 4 or 2 lines per unit (In case of 2×B, 2 lines per unit)
- H0-INF unit: 2 lines per unit

#### Simultaneously Connecting Teleconference

**2.03** To expand the teleconference terminals due to the multipoint connection, the following 2 units must be added in the MCU 5000A with line expanding action in paragraph 2.02.

- EC H221 MUX Unit: 1 terminal per unit (Maximum 8 units per subrack)
- A CODEC unit: 4 terminals per unit (Maximum 2 units per subrack)

Table 2-1: MCU SUUA Unit Componen	Table	2-1:	MCU	5000A	Unit	Com	ponen
-----------------------------------	-------	------	-----	-------	------	-----	-------

UNIT ITEM	DESCRIPTION	CODE
Common	MCU 5000A SUBRACK (F1341G)         1 pc           V53 M CONT         (Y2573A)         1 pc           PG SIO         (Y1441A)         1 pc           A SUM         (Y1439A)         1 pc           V SW/LSD IF         (Y1440A)         1 pc           MEMORY CARD         (Y32-MC0003-07+F1341-0606)         1 pc	
PWR	A AC117V POWER	E32-014-Y1573-0B00
(1 unit per subrack)	B DC -48V (UL) POWER	E32-014-Y3757-0A00
A CODEC (Maximum 2 units per subrack)	A CODEC (4CH/UNIT)	E32-441-Y1438-0A00
EC H221 MUX (Maximum 8 units per subrack)	EC H221 MUX (1CH/UNIT)	E32-482-Y3118-0B00
	A 1.5M LIF (4CH/UNIT)	E32-484-Y1442-0A00
(Maximum 4 units per subrack)	B RS-422/HSD IF (4CH/UNIT)	E32-484-Y1443-0A00
(······)	C H0-INF (2CH/UNIT)	E32-484-Y2761-0A00
Data Switch (for Data Distribute)	VDSW	E32-465-Y4775-0A00

#### **Connecting Cable**

**2.04** The connection between MCU 5000A and teleconference terminals is performed by the connecting cable required for user specification. Table 2-2 shows the cable components of MCU 5000A.

#### Accessories

**2.05** The accessories for MCU 5000A are as follows.

- Mounting Screws on subrack (Special screw): 8 pcs.
- Connector for LIF interface (D-sub 15-pin) : 16 pcs.
- Power connection cable
  Memory Card
  1 pc.
- Memory Card : 1 pc.
- User's Manual : 1 copy

# Table 2-2: MCU 5000A CABLE COMPONENT

UNIT ITEM	DESCRIPTION
T1 Cable	A 15Pin-15Pin Conversion (Straight)10 meter (for T1 DCE Interface Device Connection)
	B 15Pin-15Pin Conversion (Cross)10 meter (for T1 DTE Interface Device Connection)
Conversion Cable for RS-422/HSD IF Unit	A 15Pin-37Pin Conversion (Straight)10 meter (for RS-449 DCE Interface Device Connection)
(When a given cable (1 meter) is shortage.)	B 15Pin-37Pin Conversion (Cross)10 meter (for RS-449 DTE Interface Device Connection)
RS-449 Cable	37Pin-37Pin Conversion (Straight)10 meter
	A 15 Pin Modular jack Conversion Cable 3 meter (for ISDN Connection)
Conversion Cable for H0 INTF Unit	B 15 Pin Modular jack Conversion Cable 5 meter (for ISDN Connection)
	C 15 Pin Modular jack Conversion Cable 10 meter (for ISDN Connection)
X21 Connection Cable	A 15Pin-15Pin Conversion (Straight) 2 meter
A21 Connection Cable	B 15Pin-15Pin Conversion (Cross) 2 meter
	A 25Pin-25Pin Conversion (Straight) 2 meter
PS 232C Cable	B1 25Pin-25Pin Conversion (Cross) 2 meter
NS-232C Cable	B2 25Pin-25Pin Conversion (Cross) 5 meter
	B3 25Pin-25Pin Conversion (Cross) 10 meter

### **3: SYSTEM FEATURES**

A: Basic Connection
 3.01 The MCU 5000A rearplate contains sixteen line connection ports, eight HSD data ports, and four RS-232C interface ports. These ports are located on as shown in Fig. 3-1. Refer to the NECA 340-414-210.

**3.02** The line connection ports (LIF: CH 1 to CH 16) access to the line of the teleconference terminal. The MCU 5000A cascade-connection is required to connect between two MCU 5000A line connectors using the suitable cable (reverse) as LIF unit.

**3.03** The console connection connectors (RS-232C: CH 1 to CH 4) access to the MCU 5000A Control Console or plural MCU 5000A Control Console with the through-pass cable\* (CH 2 or CH 3 only). The RS-232C CH4 port is used to connect debug station, therefore CH4 can not be used for normal operation.

\* Through-pass Cable for serial connection

This cable is used for connecting between plural MCU 5000As (Maximum eight). Refer to Section K in this manual.

B: Usable 3.04 The MCU 500 Teleconference ITU-TS Recommendate Terminal performed to operate for guarantee for connectin

**3.04** The MCU 5000A can be connected to the CODEC which conforms with ITU-TS Recommendation H.221/H.242. The remote control function can be performed to operate from NEC's CODEC or terminal only. NEC does not guarantee for connecting to the CODEC or terminal which is provided by other manufacture.



Figure 3-1: Typical Connecting Diagram

#### C: Start-up of Equipment Start-up 3.05 Turn ON the power switch inside of the MCU 5000A front cover after confirm the memory card is installed. The memory card is of SRAM or ROM type and backed up by a lithium battery. The operation program for the MCU 5000A is registered in the memory card and downloaded at system starting. The system start-up has completed normally following message is displayed in MCU

****	Multipoint Teleconference control unit MCU 5000A Ver XX.XX	X ****
****	Copyright (C) NEC Corporation 1990, 1993	****

#### **System Parameter Setting**

console.

**3.06** On installation, line rate and interface parameters setting are required according to the user installation environmental and performing condition. System parameters are stored in the backup inside memory (backup by lithium battery). When system parameters is set once, parameter setting is not required since then. Refer to the NECA 340-414-220.

D: Teleconference<br/>Type3.07The MCU 5000A provides the following type of teleconference. These<br/>plural teleconferences can be performed simultaneously.

#### **Point-to-Point Teleconference**

**3.08** The line is connected with point-to-point regarding the video and audio without MCU 5000A. Possible connecting number of lines is flexible for line rate that line capacity of point-to-point (Line rate×2×number of point-to-point) and line capacity of broadcasting connection are added. It is possible to line-connect up to total 16 Mb/s (2 Mb/s×8).

#### **Broadcast Teleconference**

**3.09** This type broadcasts the video and audio signal of one originating source to the plural points. For the video and audio signal, the MCU 5000A does not control as same as Point-to-Point teleconference. This connecting condition is the unidirection (one way). The teleconference terminal operation is required without H.242 capacity conversion mode. Local loopback connection is also available. The possible connecting number is the same to point-to-point teleconference.

*Note:* XX.XX indicates the version number of the memory card in the MCU 5000A

#### **Multipoint Teleconference (RCON)**

**3.10** Multipoint teleconference is the teleconference system as the terminals of more than three points with the console or wireless remote controller of terminal is connected.

**3.11** The video, audio, and control data are extracted from H.221 frame signal, and MCU 5000A processes and controls such as video switching and audio sum with their data. Their data is multiplexed again, then transmit to the teleconference terminals. The following features are provided in multipoint teleconference.

- One MCU 5000A has the ability to connect eight (8) terminals, and three (3) MCU 5000As cascade-connection can be connected to maximum twenty (20) terminals in one multipoint teleconference simultaneously.
- One MCU 5000A has the ability to perform two (2) multipoint teleconference groups within maximum eight (8) terminals per one group (enable different line rate). Two MCU 5000As cascade-connection can provide the maximum three (3)groups.
- The video signal of terminal joined at first is broadcasted.
- Through the broadcasting source is switched to the originating image automatically by the talker detecting function, that switching operation can be changed forcibly with the [LOCAL SEND] key on remote controller.
- One of the teleconference terminals can be specified as chairman. The terminal as chairman forcibly operates to switch the video image ([OPR] key on remote controller). In this case, talker detection does not function spontaneously.
- The specific receiving video signal can be selected by the [SLCT RCV] key on remote controller prior to the video signal switching function.
- The incoming audio signals from all the terminal are mixed, and then distributed to all of the terminals. The mixed audio signal sent to each terminal is cut the audio signal of its own terminal off.
- The teleconference terminal name can be indicated on the screen of terminal with the superimpose using by [SITE LIST] key on remote controller.
- The teleconference terminal is identified by beginning "1" number (teleconference number) assigned by MCU 5000A.
- H.242 capacity conversion function can adjust the line rate between the different line rate terminals on the MCU 5000A side.
- Any still picture signal can be sent to all of the terminals. ([STILL SEND] key on remote controller)
- Message tone can be sent to all of the terminals.
- H.243 Data Distribution function is available. (Needs VDSW unit)

#### Multipoint Teleconference (MCON)

**3.12** Multipoint teleconference is the teleconference system as the terminals of more than three points with the console or wireless remote controller of terminal is connected.

**3.13** The video, audio, and control data are extracted from H.221 frame signal, and MCU 5000A processes and controls such as video switching and audio sum with their data. Their data is multiplexed again, then transmit to the teleconference terminals. The following features are provided in multipoint teleconference.

- One MCU 5000A has the ability to connect eight (8) terminals, and two (2) MCU 5000As cascade-connection can be connected to maximum fourteen (14) terminals in one multipoint teleconference simultaneously.
- One MCU 5000A has the ability to perform two (2) multipoint teleconference groups within maximum eight (8) terminals per one group (enable different line rate). Two (2) MCU 5000As cascade-connection can provide the maximum three (3)groups.
- The video signal of terminal joined at last is broadcasted (last terminal indicates the video image of the prior terminal).
- Through the broadcasting source is switched to the originating image automatically by the talker detecting function, that switching operation can be changed forcibly with the [LOCAL SEND] key on remote controller. Also talker detection can be inhibited with [VOICE ACTIVATE] key on the remote controller.
- One of the teleconference terminals can be specified as chairman. The terminal as chairman forcibly operates to switch the video image ([OPR] key on remote controller). In this case, talker detection does not function spontaneously.
- The specific receiving video signal can be selected by the [SLCT RCV] key on remote controller prior to the video signal switching function. The console command, switching the current video image to the specific terminal image, is provided without use of the specified receiving function for the broadcasting source.
- The incoming audio signals from all the terminal are mixed, and then distributed to all of the terminals. The mixed audio signal sent to each terminal is cut the audio signal of its own terminal off.
- The teleconference terminal name can be indicated on the screen of terminal with the superimpose using by [SITE LIST] key on remote controller. When setting the system parameter, the teleconference terminal name registered is transferred to all of the terminals on connecting. Using the console command, the terminal name can be changed temporarily.
- The teleconference terminal is identified by beginning "1" number (teleconference number) assigned by MCU 5000A.
- H.242 capacity conversion function can adjust the line rate between the different line rate terminals on the MCU 5000A side.

- Any still picture signal can be sent to all of the terminals. ([STILL SEND] key on remote controller)
- The camera sending the signals can be controlled remotely from receiving terminal. ([LC/RT] key on remote controller.)
- Message tone can be sent to all of the terminals.
- Message can be sent optionally to the any terminal.
- Remote control operation can be inhibited by console.
- The control function between terminals can be performed via MCU 5000A.

#### **Multipoint Lecture Connection**

**3.14** Tele-education connecting conception is basically the same as the multipoint conference. All of the teleconference terminals are identified the instructor site and classroom. The instructor site has an management privilege. This system is available using the optional software for tele-education connection. The following features is provided.

- As well as the multipoint conference, one MCU 5000A has the ability to connect to eight terminals, and two MCU 5000A cascade-connection has maximum 14 terminals in this one tele-education connecting system. One MCU 5000A has the ability to contain the two groups of the tele-education and multipoint teleconferences within maximum eight terminals per one group. (Possible to contain the different line rate.)
- The instructor site is specified when beginning lesson. (one instructor site per one group.)
- In normal state, the audio signal of the instructor site is sent to the classroom in one way direction, and the audio signals from the classroom to the instructor site is in off state. The command of the instructor site allows to mix the audio signal of the classroom.
- The instructor site optionally allows to originate from classroom. The classroom to be permitted to originate is selected by [TK ALW]+[SITE SELECTION] keys. Continuous depressing [SITE SELECTION] key permits to keep originating only one teleconference terminal. The plural classroom are able to originate simultaneously by the depressing repetition of [TK ALW]+[SITE SELECTION] keys. The console flexibly permits/ inhibits to originate from each classrooms. (includes the instructor site originating).
- The picture on screen for the instructor site is the last classroom or originating classroom. Though the picture of the instructor site is continuously sent to the classroom in operation, the picture from instructor site to classroom can be switched to the originating classroom picture by the command from the instructor site. ([INS/TK] key on remote controller in case that the originating classroom exists.) Using the console, the broadcasting from the specific teleconference terminal can be performed.
- The tele-education connecting mode inhibits [OPR] and [LOCAL SEND] keys. [SLCT RCV], [VOICE ACTIVATE], and [SITE SELECTION] keys are available to the instructor site only.

- When the classroom permitted to originate does not exist, the instructor site has the application to switch receiving video signal temporally by [SITE SELECTION] key. When its existence, [SITE SELECTION] key is not prohibited.
- [SLCT RCV] key operation of the instructor site can select the receiving picture to the instructor site. In receive selecting mode, the other function keys ([TK ALW] key etc.) is prohibited. This application is not available to the classroom.
- When the classroom permitted to originate exists, the talker picture can be automatically switched between the instructor site and classroom by the voice (talker) detection. The voice (talker) detecting operation ON/OFF is performed by [VOICE ACTIVATE] key at the instructor site. This application is not available to the classroom.
- The classroom can request to originate for the instructor site ([TALKER RQT] key on remote controller). If requesting to originate, the teleconference terminal number on the display of each terminal changes from blue indication to red flashing. When canceling the request ([TALKER CANCEL] key), the teleconference terminal number returns to blue indication. The instructor originating command turn to the red indication.
- The instructor site has the ability to cancel forcibly the originating request from the classrooms ([TK CNL] key on remote controller).
- The instructor site inhibits the originating request from the classroom, and then can switch to the picture of the instructor site using [START] and [TK CNL] keys. The [START] key holds the originating request, and [TK CNL] key forcibly cancels the originating request.
- Any still picture transmission is available to the instructor site and classrooms permitted to originate.
- The camera (sending the signals) control operation is available to the instructor site only.

E:	Teleconference Start and Completion	3.15 console	The teleconfe command. R Point-to-Poin	erence start and completing operation is performed by the efer to NECA 340-414-300. t teleconference
			Start:	BCON command (Point-to-point connection)
			Completion:	BDSC command (Point-to-point connection release)
		•	Broadcasting	teleconference
			Start:	UCON command (One way direction connection) LCON command (One way direction monitor connection)
			Completion: LDSC comm	UDSC command (One way direction connection release) and (One way direction monitor connection release)
		•	Multipoint te	leconference
			Start:	MCON command (Multipoint connection) MCNR command (Cascade-connection)
			Completion:	MDSC command (Multipoint connection release) MDCR command (Cascade-connection release)
		•	Tele-educatio	n
			Start:	ECON command (Tele-education connection) MCNR command (Cascade-connection)
			Completion:	EDSC command (Tele-education connection release) MDCR command (Cascade-connection release)
		•	Multipoint Te	eleconference (RCON: H.243 mode)
			Start:	RCON command (Multipoint connection)
			Completion:	RDSC command (Multipoint connection release)

- F: Line and<br/>Teleconference<br/>Terminal Number3.16The MCU 5000A accommodates the plural lines. To simultaneously<br/>perform the plural terminals, the line and teleconference terminal numbers is<br/>assigned. The line and teleconference terminal numbers are as follows.
  - Physical line number (1 to 16)
  - Logical line number (1 to 254, or 0)
  - Teleconference port number (1 to 8)
  - Teleconference terminal number (1 to 14, or 0)

#### **Physical Line Number**

**3.17** The MCU 5000A rearplate contains sixteen connectors for line connection. The private line, TA, and Multiplexer (MMM) etc. can be connected to the rearplate. The usable physical line number (value of 1 to 16) determines according to the LIF unit type and mounting condition. Accordingly each LIF unit is assigned physical line number (LIF1 to LIF4) respectively. The usable physical number with LIF unit type is required as shown in the following Table 3-1.

#### **Logical Line Number**

**3.18** Each LIF unit line capacity is T1=1536 kbps: 24 time slots, RS-422=1920 kbps: 30 time slots, ISDN=1472 kbps: 23 time slots respectively. The number of time slot per line is different in accordance with the line rate. The number is assigned according to this time slot is the logical number. This number, which is specified the LIF1 through LIF4 unit (maximum 48 per unit), is the value of 0 through 254. (Value 0 is available to the multipoint connecting command (MCON/ECON) operation only.) The line rate in the system parameters is defined to each LIF unit, and the relation of one physical line and logical line numbers (Usable logical line number per physical line) is shown in the Table 3-2. (The mixture of ISDN, T1, and RS-422 is available.)

	UNINSTALLED	T1 (1.5M-LIF)	RS-422/HSD	ISDN (B, 2B, H0)
LIF1	Not applicable	01, 02, 03, 04	01, 02, 03, 04	01, 02
LIF2	Not applicable	05, 06, 07, 08	05, 06, 07, 08	05,06
LIF3	Not applicable	09, 10, 11, 12	09, 10, 11, 12	09, 10
LIF4	Not applicable	13, 14, 15, 16	13, 14, 15, 16	13, 14

Line Rate (kbps)		64	128	192	256	384	512	768	1152	1536	1920
Number of Logical	T1	24	12	8	6	4	3	2	1	1	
Lines	RS-422	1	1	1	1	1	1	1	1	1	1
	ISDN	23				3					

# Table 3-2: Number of Logical Lines

3.19 The logical line number is assigned 1 through 254 from LIF1 to LIF4 in sequence within the logical line number range of system parameter. The assigning requirement of more than two logical line number per physical line is available for the multiplexer (MMM) usage.

When the line rate is 1536 kbps (T1×2 unit installation) and the logical line number is six, to MCON-connect the physical line number 1 to 3, assign MCON 1, 2, 3 as the following Fig. 3-2 (a).



#### **(a)** Line Rate 1536kbps

When the line rate is 384 kbps (T1 $\times$ 2 unit installation) and the logical line number is ten, to MCON-connect the physical line number 1 to 3, assign MCON 1, 5, 9 as the following Fig. 3-2 (b).

	0	Logical Line N	lumber	24	Physical Line Number
(Time Slot)					
	1	2	3	4	1
	5	6	7	8	2
	9	10	Not Used	Not Used	3
	Not Used	Not Used	Not Used	Not Used	4 Not Used
LIF2	11	12	13	14	7
			*		
* When these time slots are used multiplexer (MMM) is required					

When these time slots are used, multiplexer (MMM) is required.

#### **(b)** Line Rate 384 kbps

Figure 3-2: Logical Line Number Assignment

G: Logical Line Number Assignment on ISDN Interface Unit Installation **3.20** This requires the different procedure with minimum line rate (system parameter) setting. The logical line number is assigned according to the relation of minimum line rate and communication rate as shown in the Fig. 3-3, 3-4, and 3-5.



(a) Communicating by 64 kbps



(b) Communicating by 2×64 kbps

	0	Logical Line	Number	24	
(Time Slot)					
ſ	1	7	13		
LIF1	25	31	37		
LIF2	49	55	61		
	1				

(c) Communicating by 384 kbps

#### Figure 3-3: Logical Line Number Assignment (line Rate 64 kbps)



(a) Communicating by 64 kbps



(b) Communicating by 2×64 kbps



(c) Communicating by 384 kbps

Figure 3-4: Logical Line Number Assignment (Line Rate 2×64 kbps)



(a) Communicating by 64 kbps



(b) Communicating by 2×64 kbps



(c) Communicating by 384 kbps

*Note:* The assignment of logical line number by the number of lines conforms to T1 interface.

Figure 3-5: Logical Line Number Assignment (Line Rate 384 kbps)

#### **Teleconference Port Number**

**3.21** The MCU 5000A provides maximum eight points in multipoint teleconference. MUX unit port number in that multipoint teleconference is called the teleconference port number that is the value of 1 through 8. Eight-point teleconference contains the value of 1 through 8, and 4-point teleconference contains the value of 1 through 4 in the valid teleconference port number. When multipoint connecting mode, one teleconference port number per logical line number is assigned continuously beginning minimum number. The teleconference port number of the cascade-connecting mode is assigned continuously beginning mode.

#### **Teleconference Terminal Number**

**3.22** The teleconference terminal number is assigned from beginning "1" to both A and B groups respectively using the multipoint connection command issue. One MCU 5000A contains the number 1 through 8. (Amount of two groups is less than 8.) The cascade-connection mode contains number 1 through 14. When multipoint connection, one teleconference terminal number has one logical line number except cascade port. The teleconference terminal number "0" assignment has the simultaneous activity for all of the teleconferences in the group.

H: Line Interface
 3.23 The MCU 5000A provides the following 3 types of LIF unit for the line interface. The MCU 5000A accommodates maximum four individual LIF units. Mixed LIF unit combination is also available. The individual interfaces are identified automatically by software. Any item of the line rate and line number etc. In the system parameter is required as following per each unit.

#### 1.5M LIF Unit

**3.24** Four number of channels are accommodated in one 1.5M LIF unit. When not using the multiplexer, the number of usable lines is four lines which use the head of time slot for individual line rate. However, the multiplexer usage increases the more number of usable line owing to multiplex the plural lines for one channel. As for the following items, the system parameter setting is required to every 1.5M LIF unit.

Line rate and logical line number (+30H to +37H):

- 64 kbps/56 kbps: 0 to 96 lines
- 64 kbps x 2/56 kbps x 2 0 to 48 lines
- 128 kbps/112 kbps: 0 to 48lines
- 192 kbps/168 kbps: 0 to 32 lines
- 256 kbps/224 kbps: 0 to 24 lines
- 384 kbps/336 kbps: 0 to 16 lines
- 384 kbps x 2/336 kbps x 2 0 to 8 lines
- 512 kbps/448 kbps: 0 to 12 lines
- 768 kbps/672 kbps: 0 to 8 lines
- 1152 kbps/1008 kbps: 0 to 4 lines
- 1472 kbps/1288 kbps 0 to 4 lines
- 1536 kbps/1344 kbps: 0 to 4 lines

Frame format (+38H):

- ESF (24MF)
- F4
- F12
- F72

Line code (+39H):

- B8ZS
- AMI
- AMI (ZCS)

RAI type (+3AH):

- T1
- ISDN

#### RS-422/HSD IF Unit

**3.25** Four number of channels are accommodated in one RS-422/HSD IF unit which is normally used as LIF. The HSD interface is available with strap setting. (Refer to NECA 340-414-210.) The RS-422 IF unit, which does not support multiplexed signal as 1.5M LIF unit, accommodates only four channels. The system parameter setting is as follows:

Line rate and logical line number (+30H to +37H):

•	64 kbps/56 kbps:	0 to 4 lines
•	64 kbps×2/56 kbps×2:	0 to 2 lines
•	128 kbps/112 kbps:	0 to 4lines
•	192 kbps:	0 to 4 lines
•	256 kbps:	0 to 4 lines
•	384 kbps/336 kbps:	0 to 4 lines
•	384 kbps x 2/336 kbps x 2	0 to 2 lines
•	512 kbps:	0 to 4 lines (Internal clock no activity)
•	768 kbps:	0 to 4 lines
•	1152 kbps:	0 to 4 lines (Internal clock no activity)
•	1536 kbps:	0 to 4 lines
•	1920 kbps:	0 to 4 lines (Internal clock no activity)

#### **H0-INF** Unit

**3.26** Two number of channels are accommodated in one H0-LIF unit which is normally as ISDN LIF unit. The private interface can be used with strap setting. H0-INF unit accepts optional time slot by reason that ISDN network provides the multiplex function. The system parameter setting is as follows.

Line rate and logical line number (+30H to +37H):

•	64 kbps/56 kbps:	0 to 48 lines
•	64 kbps×2/56 kbps×2:	0 to 24 lines
•	384 kbps/336 kbps:	0 to 8 lines
•	384 kbps x 2/336 kbps x 2	0 to 4 lines

#### **Common Item for Each LIF Unit**

**3.27** The common setting items for each LIF unit are as follows.

Clock source (+3BH):

The clock source is specified in the following clock mode.

- Automatically
- External clock of physical line number (1 to 16)
- Internal clock

Clock source mask:

The physical line required to mask can be specified by bit in automatic mode of clock source.

I: Cascade-<br/>Connection3.28When two MCU 5000As are cascade-connected, the number of the<br/>terminal in multipoint teleconference become 14 terminals. Fig. 3-6 shows the<br/>cascade-connection of two MCU 5000As. One (Master) of two MCU 5000As<br/>has the initiative controls to the other equipment (Slave).

**3.29** The lines between the master and slave in near access is directly connected with through-pass, and if require, also the console is connected with through-pass. When two MCU 5000A are installed in far access (long distance), they are connected using the existing line (Private or ISDN). In this case, the console is connected via the modem.

**3.30** In case of the multipoint or Tele-education connection, the slave terminal stands by after issuing the cascade line connecting reservation command (MCNR). Then the slave receives the connecting data after issuing the connecting command (MCON or ECON) from the master, and the line connection in the slave side is completed. The reverse command issue order between the master and slave is also accepted. In this case, the teleconference terminals in the master is first accepted. The terminals in the slave is just accepted at the time of the command issue of the slave.

**3.31** After connecting, all of the teleconference control commands within the group is entered from the master terminal. (not execute from the slave terminal.) The command indication is displayed on the master side. The request from the terminal (remote controller) is accepted at both of the master and slave the MCU 5000A.

**3.32** One teleconference group is assigned to the slave MCU 5000A with the connecting command entering. One MCU 5000A provides two teleconference groups so that it can simultaneously contain both two groups of the slave and master with another cascade-connection or multipoint teleconference. Refer to Fig. 3-7. In this case, the teleconference group in the master side is used. (The teleconference in the slave side is ignored.)



Figure 3-6: Casade-Connection of Two MCU 5000A



Figure 3-7: Two Groups Casade-Connection

 J: Console Through-Pass
 3.33 The MCU 5000A, which provides the three console ports, is simultaneously controlled from the three consoles connected using the console through-pass with CH2/CH3 of the MCU 5000A. The plural MCU 5000As (maximum 9) can be controlled by one console. Fig. 3-8 shows for through-pass connection. Set individual identification code for system parameter to each MCU 5000A. The plural MCU 5000A are connected from smaller identification code of the MCU 5000A in sequence between CH3 and CH2. (In this case, the system parameter of CH2/CH3 must be set "Console through-pass set".) The operating console connects to CH1 in the MCU 5000A with smallest identification code.

**3.34** When issuing the command from local console connected to CH1, to identify the individual MCU 5000A enter the command with the identification code in the head of the command. The command without the identification code is performed in local MCU 5000A connected to the console. The command with the identification code is transported until the identification codes of command and MCU 5000A match. The response for the command with identification code return to the originating MCU 5000A connected to the local console, and then is displayed on the console. The response to all of the MCU 5000A can be executed by system parameter setting. For that parameter refer to NECA 340-414-220.

#### K: Supplementary Functions

**3.35** The following supplementary functions are provided.

#### **Automatic Start Setting Function**

**3.36** The teleconference opening is normally performed by the command entering from the console, MCU simple control terminal, or the teleconference reservation system. The opening system with multipoint connection is particularly provided. Automatic Start Setting function is that the multipoint connection is automatically set by power on. This setting method is that the connecting command for automatic starting is registered in the memory card using CGPR command from the console. Refer to NECA 340-414-300.

#### **Memory Card Copy Function**

**3.37** Using the console command (CPMC), the data in the memory card can be copied another memory card. Refer to NECA 340-414-300.

#### **Loopback Function**

**3.38** The MCU 5000A provides the local/remote loopback function for line, video, audio, and data. Refer to NECA 340-414-500.



Figure 3-8: Example of Console Through-Pass Connection

## 4: HARDWARE CONFIGURATION



**4.01** The MCU 5000A consists of the units in the Table 2-1 in paragraph 2.01. Fig 4-1 shows the MCU 5000A block diagram.

Figure 4-1: Block Diagram of MCU 5000A

#### A: 1.5M LIF Unit

#### General

**4.02** 1.5M LIF unit receives AMI (B8ZS) signal from 1.544 Mbps transmission line, extracts the clock pulse with IPAT (PEB2235), converts bipolar signal to unipolar, and sends it to ACFA (PEB2035). ACFA detects frame synchronization and transmission line failure. ACFA converts incoming signal to standard signal (Octet pulse 8 kHz, 4 MHz clock) within the equipment by the elastic memory in LSI, and outputs to MTSC (PEB2045). MTSC arranges the outgoing line (minimum 64 kbps: per 1 time slot) to out the signals from the four transmission lines to the multipoint teleconference data bus with CPU control.

**4.03** Contrariwise, MTSC arranges the outgoing line to send each signal from the data bus to the corresponding ACFA, and send it. ACFA adds frame signal, converts bit rate from 2.04 Mbps to 1.544 Mbps, and sends the converted signal to IPAT. IPAT converts the signal from unipolar to 1.544 Mbps AMI (B8ZS), and sends it to the transmission line. If a transmission line failure occurs the unit sends RAI with CPU control. Furthermore, the loopback for line side and within the equipment can be executed independently, and also the LED lights for line failure.

#### Functions

**4.04** This unit provides the following functions.

- (1) Primary Tributary Access
  - Four output/input ports for 1.544 Mbps interface (B8ZS) is accommodated.
  - Clock extraction and frame synchronizing detection is executed in every line.
- (2) Line Loopback
  - The loopback for line side and within the equipment can be executed independently with CPU control.
- (3) Alarm Indication
  - The line alarm per channel is indicated.
- (4) Selection of Receive Clock for synchronization
  - The one clock source in line 1 through 4 is selected with CPU control, and the received clock signal for synchronization is sent to PG unit.
- (5) Data Multiplex
  - When the data signal of the plural teleconferences is multiplexed by Multiplexer (MMM), the data multiplexing/demultiplexing per 64 kbps time slot is performed.
#### **Functional Block Diagram**

4.05 Fig. 4-2 shows 1.5M LIF unit block diagram.



Figure 4-2: Block Diagram of 1.5M LIF Unit

# **1.5M LIF Unit Interface**

(1) Table 4-1 shows the electrical specification. This interface conforms to ITU-TS G.703, I.431.

#### **Table 4-1: Electrical Specification**

ITEM	SPECIFICATION			
Transmission Rate	1.544 Mbps ±50 ppm (Data rate: 64 to 1536 kbps, 64k step)			
Line code	AMI (B8ZS)			
Frame	12/24 Multiframe format			
Pulse amplitude	$3.0\pm0.7~\mathrm{V}$			
Spectrum half width	$324 \pm 38$ nsec			
Impedance	100 _ balanced			
Equalizing distance	0 to 210 m 7 steps programmable setting			
Connector	D-sub 15 pin female			

(2) Table 4-2 and Fig. 4-3 shows 1.5M LIF Connector Pin Assignment

PIN NO.	SIGNAL NAME	I /O	REMARKS	PIN NO.	SIGNAL NAME	I/O	REMARKS
1	SHIELD		Cable shield	9	T (B)+	OUT	Transmitting Data (B)
2	T (A)-	OUT	Transmitting Data (A)	10	-		
3	-			11	R (B)+	IN	Receiving Data (B)
4	R (A)-	IN	Receiving Data (A)	12	-		
5	-			13	-		
6	-			14	-		
7	-			15	-		
8	SG		Signal ground				

# Table 4-2: 1.5M LIF (CH1 to CH16) Signal Assignment

-: Not Used



Figure 4-3: 1.5M LIF (CH1 to CH16) Connector Pin Assignment

# Line Management

The MCU 5000A manages for line state according to the following Table 4.06 4-3.

	Table 4-3: User	Side Primary	Tributary I	Rate Layer 1	<b>Status Transition</b>	(Pick-up)
--	-----------------	--------------	-------------	--------------	--------------------------	-----------

	INITIAL STATE	FO	F1	F2	F3	F4	F5
STATE	Operation or Failure	Power OFF	Active	FC1	FC2	FC3	FC4
DEFINITION	state	(user side)					
STATE	Signaling	No Data	Normal	Normal	Frame with	Frame with	Normal
DEFINITION	for Interface		Active Frame	Active Frame	RAY	RAY	Active Frame
NEW RECEIVE EVENT	Power OFF	/	F0	F0	F0	F0	F0
NEW RECEIVE EVENT	Power ON	F5	/	/	/	/	/
NEW RECEIVE	Normal Active Frame	/	_	F1	F1	F1	F1
EVENT	from Network						
NEW RECEIVE EVENT	RAI Receive	/	F2	-	F2	F2	F2
NEW RECEIVE	Out of Frame or Loss of	/	F3	F3	_	F3	F3
EVENT	Signal						
NEW RECEIVE EVENT	AIS Receive	/	F4	F4	F4	_	F4

Not transit

\_: /: Not existed

Fz: Transit to Fz state TABLE 4-3

#### B: RS-422 LIF Unit

## General

**4.07** The RS-422 Line Interface unit receives a signal with RS-422 level (corresponds to X.21) from a transmission line. After extracting the clock pulse, TTL level and bit rate within the equipment conversion is performed. The processed signal is detected H.221 frame synchronization, and then output to MTSC (PEB2045).

**4.08** The MTSC arranges the outgoing lines (minimum 56 kbps per 1 time slot) to output the signals from the four transmission lines to the multipoint teleconference data bus with CPU control.

**4.09** Contrary, the RS-422 LIF unit arranges the outgoing lines to send each signal from the data bus to the corresponding line on MTSC, converts the bit rate from 2.048 Mbps to that of the transmission line sends it to the transmission line. The loopback for line side and within the equipment can be executed independently, and also the LED lights for line failure. This unit provides DTE interface.

#### Functions

- (1) Line Interface
  - Four RS-422 (corresponds to X.21) interface is accommodated.
  - Clock extraction and frame synchronizing detection are executed in every line.
  - In 56 kbps $\times$ 2 or 64 kbps $\times$ 2, the phase compensation is performed.

#### (2) Loopback

- The near-end/far-end remote loopback can be executed independently with CPU control.
- (3) Alarm Indication
  - The line alarm per channel is indicated with CPU control.
- (4) Selection of Receive Clock for synchronization
  - The one clock source in line 1 through 4 (sending/receiving 4) is selected with CPU control, and the received clock signal for synchronization is sent to PG unit.

#### **Interface Specification**

(1) Table 4-4 shows electrical specification

#### Table 4-4: Electrical Specification

ITEM	SPECIFICATION
Transmission Rate	56/56×2/64/64×2/128/192/256/384/768 kbps/1.5/1.92 Mbps
Electrical Interface	ITU-TS X.21 equivalent (X.27, V.11)
Connector	D-sub 15Pin Female

(2) Table 4-5 and Fig. 4-4 show RS-422 LIF Connector pin assignment.

PIN NO.	SIGNAL NAME	I/O	REMARKS	PIN NO.	SIGNAL NAME	I/O	REMARKS
1	SHIELD		Cable shield	9	T (B)+	OUT	Transmitting (B)
2	T (A)_	OUT	Transmitting Data (A)	10	C (B)+	OUT	Control (B)
3	C (A)_	OUT	Control (A)	11	R (B)+	IN	Receiving (B)
4	R (A)_	IN	Receiving Data (A)	12	I (B)+	IN	Indication (B)
5	I (A)_	IN	Indication (A)	13	S (B)+	IN	Timing (B IN)
6	S (A)_	IN	Timing (A IN)	14	S (B)+	OUT	Timing (B OUT)
7	S (A)_	OUT	Timing (A OUT)	15	FG		Frame Ground
8	SG		Signal ground				

# Table 4-5: RS-422 LIF (CH1 to CH16) Signal Assignment



Figure 4-4: RS-422 LIF (CH1 to CH16) Connector Pin Assignment



(3) Fig. 4-5 shows the Block diagram of RS-422 LIF unit.

Figure 4-5: Block Diagram of RS-422 LIF Unit

#### C: H0-INF Unit

#### General

**4.10** The H0-INF unit receives 1.5 Mbps data signal from ISDN line. After extracting the clock pulse in IPAT, bipolar to unipolar conversion is executed, and sends it to ACFA. ACFA performs frame synchronization, internal data high-way bit rate conversion, and detection of transmission line failure for the data signal, and sends it to MTSC. MTSC performs the line setting with time slot (1 time slot per 64 kbps) to output the data signal of two ports to the multipoint teleconference data bus (LMB) and point-to-point teleconference data bus (LB).

**4.11** This unit sends the receive data signal for D ch control to PIIFC from the receive data bus between ACFA and MTSC. PIIFC protocol-converts the receive data signal of the D ch (time slot 24) specified at HSCX.

**4.12** The port to which the data signal from individual teleconference data bus is sent is specified by MTSC, and sends the data signal to ACFA. ACFA performs the bit rate conversion from internal data high-way (2 Mbps) to line rate (1.5 Mbps) and frame addition, and sends it to IPAT. IPAT sends the data signal, which is converted unipolar to bipolar, to ISDN transmission line.

**4.13** The data signal of time slot 24 only from HSCX of PIIFC in D ch is multiplexed, and sends the multiplexed signal to the transmission data path from MTSC to ACFA. Furthermore, the loopback for line side and within the equipment can be executed independently, and also the LED lights for line failure. This unit provides DTE interface.

- (1) ISDN line Access
  - 2 ports of the primary tributary bit rate interface per panel are provided.
  - One port accommodates three channels.
  - D ch protocol conversion is executed in PIIFC.
  - T1 (private line) interface is available with the parameter setting.
- (2) Line Setting
  - The line setting per channel unit is possible.
  - Teleconference type can be selected with multipoint connection or pointto-point connection path.
- (3) Selection of Receive Clock
  - The receive clock from any connection port is selected with CPU control. The extracted clock signal is sent to PG/SIO unit.
- (4) Line Alarm Indication
  - The line alarm per channel is indicated.
- (5) Remote/Local loopback
  - Remote/Local loopback per port is performed with CPU control.





Figure 4-6: Block Diagram of H0-INF Unit

## **H0-INF Unit Interface**

(1) Table 4-6 shows the electrical specification. This interface conforms to ITU-TS G.703, I.431.

#### **Table 4-6: Electrical Specification**

ITEM	SPECIFICATION
Transmission Rate	1.544 Mbps ±50 ppm (Data rate: 64 to 1536 kbps, 64k step)
Line code	AMI (B8ZS)
Frame	12/24 Multiframe format
Pulse amplitude	$3.0 \pm 0.7 \text{ V}$
Spectrum half width	$324 \pm 38$ nsec
Impedance	100 _ balanced
Equalizing distance	0 to 210 m 7 steps programmable setting
Connector	D-sub 15 pins female

(2) Table 4-7 and Fig. 4-7 shows H0-INF Connector Pin Assignment.

PIN NO.	SIGNAL	I/O	REMARKS	PIN NO.	SIGNAL NAME	I/O	REMARKS
	NAME						
1	SHIELD		Cable shield	9	T (B)+	OUT	Transmitting Data (B)
2	T (A)-	OUT	Transmitting Data (A)	10	-		
3	-			11	R (B)+	IN	Receiving Data (B)
4	R (A)-	IN	Receiving Data (A)	12	-		
5	-			13	-		
6	-			14	-		
7	-			15	-		
8	SG		Signal ground				

#### Table 4-7: H0-INF (CH1 to CH6) Signal Assignment



Figure 4-7: H0-INF (CH1 to CH16) Connector Pin Assignment

#### D: EC H211 MUX Unit

General

**4.15** In EC H211 MUX unit, the received data signal from terminal CODEC via LIF unit is synchronized with H.221 or multiframe. This unit also demultiplexes the synchronized data signal to the audio coding data, video coding data, and MCU Control Data. This unit also multiplexes the sum-processed audio coding signal in A CODEC and A SUM units, converted video coding signal in V SW/LSD IF unit, and LSD, and sends the multiplexed data signal to LIF unit. In this time, The control data, alarm and bit error rate data are transferred between MCU 5000As via service channel with H.221 frame.

**4.16** This unit is assigned one unit per one teleconference terminal in multipoint teleconference. Maximum 8 units can be mounted in a subrack.

- H.221 synchronizing detection or synchronizing phase adjustment.
- Multiplexing and demultiplexing for the data signal in service channel.
- Conversion to H.221 synchronous signal.
- Alarm detection
- Loopback test and Self-diagnosis



4.17 Fig. 4-8 shows block diagram of EC H221 MUX unit.

Figure 4-8: Block Diagram of EC H221 MUX Unit

# E: V SW/LSD IF Unit Ger

# General

**4.18** The V SW/LSD IF unit switches the video signal between RD IN and SD OUT from EC H221 MUX unit. This unit receives the low-speed data demultiplexed from service channel in EC H221 MUX unit, and the proceed low-speed data is sent back to the EC H221 MUX unit.

# Functions

(1) V SW

This unit sends the video signal of the transmitting teleconference terminal received from the EC H221 MUX bus (MD-R) to EC H221 MUX bus (MD-S) of the receiving terminal. The video signal of maximum 8 points can be switched.

(2) LSD IF

Receiving/sending low-speed data within the data from service data. The monitoring function is provided. low-speed data with frame format of HDLC frame is sent/received from HDLC controller (HSCX). The data of the electrical whiteboard (option) and MCU control is sent/received through LSD between the terminal and MCU 5000A.

(3) LED LEDs indicate the teleconference, originating, and operator terminal are provided.

# (4) PN Pattern Generator/Checker The test functions for this unit and other unit in the MCU 5000A are provided.



**4.19** Fig. 4-9 shows the block diagram of V SW/LSD IF unit.

Figure 4-9: Block Diagram of V SW/LSD IF Unit (1of 2)



Figure 4-9: Block Diagram of V SW/LSD IF Unit (2 of 2)

- **F: A CODEC Unit 4.20** The A CODEC unit, which accommodates four audio channels per unit. Two A CODEC units can be installed in a MCU 5000A subrack (Total eight channels per subrack).
  - (1) The received audio coding signal (64/56/48 kbps, μ-law PCM or SB-ADPCM) from multiplexing/demultiplexing part (EC H221 MUX unit) is decoded to PCM signal (8 kHz×14 bit or 16 kHz×16 bit). The output level is adjusted with attenuator, and is sent to the audio summing (A SUM) unit as the received audio decoding signal.
  - (2) The received audio decoding signal is subtracted from the added PCM signal from the audio summing part (A SUM unit), and the summed signal is compress-coded with 64/56/48 kbps or μ-law PCM/SB-ADPCM. The compress-coded signal is sent to the multiplexing/ demultiplexing part (EC H221 MUX unit).

- Audio Signal Decoding The received audio coding signal (64/56/48 kbps, μ-law PCM or SB-ADPCM) from multiplexing/demultiplexing part (EC H221 MUX unit) is decoded to PCM signal (8 kHz×14 bit or 16 kHz×16 bit).
- (2) Audio Level Detection The decoded PCM signal is smoothed for a time (called "frame"), and the mean power as the result of the smoothing is sent to the audio sum part (A SUM unit) and control part (M CONT unit) as audio level. (1 frame: 20.0 msec, frame position free)
- (3) Voice Detection This unit verifies with audio level whether the incoming audio signal is in voice or non-voice frame, and sends it to the audio sum part (A SUM unit) and control part (M CONT unit). The threshold level can be set between -36 and -12 dBm by the M CONT unit and dip switch.
- (4) Talker Detection The unit send talker detection signal, which is made voice detection signal with forward/backward guard time. Forward guard time can be set the 10 to 630 ms, and backward guard time can be set the 10 to 310 ms by dip switch and M CONT unit.
- (5) Load Insertion As the talker information from A SUM unit. The unit inserts load to the coded PCM signal.
- (6) Audio Signal Substructing The received audio decoding signal is subtracted from the summing PCM signal in the audio sum part (A SUM unit).

- Audio Signal Coding The subtracted PCM signal is compress-coded with 64/56/48 kbps, μ-law PCM or SB-ADPCM. This signal is sent to the multiplexing/ demultiplexing part (EC H221 MUX unit) as send audio coding signal.
- Muting
   When receiving the muting signal from the control part (M CONT unit), the receive audio decoding signal (MUTE 1) or substructed summing PCM signal (MUTE 2) is muted.
- (9) Test Tone Output The test tone is inserted to the receive audio decoding signal (TONE 1) or substructed summing PCM signal (TONE 2) by specifying the level signal (4 stages) and frequency number (4 stages) from the control part (M CONT unit).
- Loopback The remote and local loopback are simultaneously performed by setting loopback from the control part (M CONT unit).
- *Note:* These functions above are independent in every channel. The different function can be set per each channel. Table 4-8 shows the voice signal level setting value, and Fig. 4-10 shows the block diagram of A CODEC unit.

Table 4-8:	Voice	Signal	Level	Setting	Value
Iuble I U.	, orec	Dignai		Second	, and c

		µ-law PCM	SB-ADPCM
Standard Level	4WS	0 dBr	0 dBr
	4WR	0 dBr	0 dBr
Level Range	4WS	+ 7.5 to -8 dBr	+4 to -11.5 dBr
Level Kange	4WR	+4 to -11.5 dBr	+2 to -13.5 dBr
Standard Level		-9 dBrm	-9 dBrm
(Maximum Average)		(4.5 VU)	(Voice Signal Level)
Peak Factor		9 dB (3 σ)	15 dB
Overload Allowance		3 dB	3 dB
Overload Level		+3 dBm	+9 dBm
Overload Point		+3 dBm 0 (G.711)	+9 dBm 0 (G.722)



Figure 4-10: Block Diagram of A CODEC Unit

# G: A SUM Unit

# General

**4.21** This unit provides the audio sum function for maximum 8 channels per unit.

#### Function

(2)

- Audio Sum Distributing
   The decoding PCM signal from the audio codec part (A CODEC unit) is
   added with maximum 8 channels. The decoding PCM signal which is
   processed with the sum is sent to the audio codec part (A CODEC unit).
   The number of the summing channels is instructed from the control
   processing part (M CONT unit).
  - Load Control The load value of each channel is determined with the comparison of the audio signal and the audio level (maximum 8 channels per two teleconferences). The processed signal is sent to the audio codec part (A CODEC unit).
- (3) Talker Identifying The main talker is verified with the comparison for the talker and nontalker signal from the audio codec part (A CODEC unit). The talker change is notified to the control part (M CONT unit). The main talker forced switching request does not affect the method. The identifying method is as follows:
  - When the talker is single, talker channel number is identified.
  - When the talker is multiple, the channel number with the most of the past continuous talker frame is identified.
  - When no talker, the channel number of the former talker is identified.
  - The initial value of channel number is "1".

# (4) Message Tone Insertion

The message tone (1200 Hz -10 dBm0 or + 1225 Hz -10 dBm0) is added to PCM signal, and distribute to all of the teleconference channels.

- (5) Monitor Output The summing PCM signal (one of teleconference A or B) is converted to analog signal and output to the front connector on the unit. (600  $\Omega$ unbalanced). This function is used for test purpose.
- *Note:* This unit contains independent two systems for the functions above. These functions is available to the individual two teleconferences. Fig. 4-11 and 4-12 show the block diagram of A SUM unit and voice signal process unit respectively.



Figure 4-11: Block Diagram of Voice Signal Process 1



Figure 4-12: Block Diagram of Voice Signal Process 2

#### H: PG/SIO Unit

#### General

**4.22** This unit generates the clock which is locked the phases of the internal clock within MCU 5000A and external clock extracted from the line by LIF unit. The four RS-232C interface ports are provided. Fig. 4-13 shows the Block Diagram of PG/SIO unit.

## Functions

- (1) Clock Phase Locking (PLO: Phase Locked Oscillator) Each internal clock phase (1.544 MHz, 4.096 MHz, or 10.752 MHz) generated in this unit is locked for the external clock from the line in LIF unit. The locked clock signal is sent to the other units. (Internal clock duty is 50%.) When the loss of external clock or internal clock phase slip etc. occur, this unit requests the troubleclearing to the master CPU in M CONT unit. The system clock is generated with 4.0966 MHz above, and sent it to the other units.
- (2) Console Communication Four RS-232C interfaces are provided for M CONT unit I/O interface for console communication. The communication condition for the RS-232C interface is determined in accordance with the parameters in the serial controller (MB89371A) of this unit set by master CPU on the M CONT unit. Table 4-9 shows the parameter for RS-232C interface.
- (3) Interrupting Control

The interruption (RS-232C sending/receiving interruption) in this unit and the interruption (main talker change) in the A SUM unit are collected to the interrupting controller, and the interruption is performed to the M CONT unit.

PARAMETER	FUNCTION
Synchronization mode	Start-stop Synchronization Mode
Baud Rate	1200/2400/4800/9600 bps
Character Bit Length	8 bit
Stop Bit Length	1 bit
Parity Check	Null
Loopback Function	from SD to RD Loopback in IC inside

Table	4-9:	<b>RS-232C</b>	Parameter
14010	• • •		I al allievel



Figure 4-13: Block Diagram of PG/SIO Unit

#### I: M CONT Unit

## General

**4.23** The M CONT unit consists of V53CPU (UPD70236), 256 kbytes ROM (UPD27C1001×2), 3.6 Mbytes RAM (UPD424400×8), (UPD431000×2),1 Mbytes Memory Card, and Real-time Clock (RTC-62421) etc., and which controls the MCU 5000A. The interruption and serial communication control operation are performed with the V53 ICU or SCU. Fig. 4-14 shows the Block Diagram of M CONT unit.

(1)	MPU :	V53 (UPD70236R-8, 8 MHz)	
(2)	Memory :	ROM256 kbytes (UPD27C1001AD×2)DRAM3.5 Mbytes (UPD424400×8)SRAM128 kbytes (UPD431000×2)Memory Card1 Mbytes	
(3)	Oscillator :	Crystal oscillator (31.9488 MHz)	
(4)	Real-time Clock :	RTC-62421	
(5)	RS-232C Controller:	V53 internal peripheral (UPD71051 sub set) (Program test usage)	
(6)	Timer/Counter :	V53 internal peripheral (UPD71054 sub set)	
(7)	Interruption Detector:	V53 internal peripheral (UPD71059 sub set)	
(8)	DMA :	V53 internal peripheral (UPD71071 sub set)	



Figure 4-14: Block Diagram of M CONT Unit

#### J: VDSW Unit

#### General

4.24 The VDSW unit switches the video signal between RD IN and SD OUT from EC H221 MUX unit. This unit receives the LSD/HSD/MLP demultiplexed from service channel in EC H221 MUX unit, and the proceed LSD/HSD/MLP is sent back to the EC H221 MUX unit.

## **Functions**

- (1)V SW This unit sends the video signal of the transmitting teleconference terminal received from the EC H221 MUX bus (MD-R) to EC H221 MUX bus (MD-S) of the receiving terminal. The video signal of maximum 8 points can be switched.
- (2)MLP IF Receiving/sending MLP data within the data from service data. The

monitoring function is provided. MLP data with frame format of HDLC frame is sent/received from HDLC controller (HSCX).

(3) LED

LEDs indicate the teleconference, originating, HSD/LSD data source and operator terminal are provided.

PN Pattern Generator/Checker (4) The test functions for this unit and other unit in the MCU 5000A are provided.

#### (5) HSD/LSD IF This unit sends the HSD/LSD data of the transmitting teleconference terminal received from the EC H221 MUX unit to EC H221 MUX unit.

- *Note:* This unit requires H.243 data distribution function.
- 4.25 Fig. 4-15 shows the block diagram of the VDSW unit.



Figure 4-15: Block Diagram of VDSW Unit

# **5: SOFTWARE**

**5.01** The RX136 operating system of the control real-time/multitask OS is used in the MCU 5000A. The RX136 OS conforms to the ITRON specifications.

**5.02** The multitask operation is established that each control task is executed per each function, and also each driver task is executed per each hardware. The individual task is independently separated under that OS. Each task operation switching is caused by trigger of the transported messages with priority. The program is stored in the memory card. For software version up for the function upgrade, the new memory card replacement is required only.

# A: Task Description 5.03 Fig. 5-1 shows the task diagram for the MCU 5000A, and Fig. 5-2 shows the MCU 5000A Memory Mapping. The following task functions are available.

# Loader (LO)

- The code data in the memory card is loaded to the equipment memory
- Every task is started up according to the start table file
- Transference of task processing to CM

#### Timer (TM)

• Time-out mail issue for task request

## Memory Card Driver (MD)

- File read-out/write-in from memory card
- Data read-out/write-in from memory card
- File system management

#### **Conference Management (CM)**

- Initialization of every task
- Line exchange setting
- Multipoint connection setting
- Teleconference group management
- Command analyses from CC
- Pass-through of teleconference control indication
- Pass-through of teleconference control command from CC
- Site name management
- Encryption key management
- Loop test management
- Slave console control

# **Console Control (CC)**

- Internal formal conversion of console command/indication
- Exclusive control of CD1 to CD3
- Teleconference control indication ON/OFF (each console)
- Execution of command terminated within CC
- Command send/receive in cascade-connection mode
- Slave console control
- Console through-pass control
- Overlay of program file in CPMC

#### Console Driver (CD1 to CD3)

• RS-232C port input/output [per one line including carriage return (CR)]

# **Command Generator**

• Automatic execution command transference

# **Real-Time Clock Management (RM)**

• Real-time clock setting/read-out

# Line Management (LM)

- Line state management
- Line exchange setting management
- Conversion of line setting (disconnection) parameter

#### AMI Line Control (LCA)

## **RS-422 Line Control (LCR)**

# ISDN Line Control (LCI)

#### **FIFO Driver (FH)**

- Parameter data transportation to PIIFC
- PIIFC task start-up
- Call control

#### Line Exchange (LX)

- Line Exchange setting (MTSC)
- Line switching management

## Picture Switching (PS)

- Picture Switching of conference room
- HSD switching

## Voice Input/Output Control (VC)

- Audible (voice) teleconference group setting
- Voice detection
- Audible alert sending

# Multipoint Control (TCA, TCB)

- Teleconference management
- Video signal switching control by voice (talker) signal
- Video signal switching control from terminal request
- Operator management
- Voice detection ON/OFF
- Site name data transporting
- BAS command control
- Still picture transporting control
- Cascade-connection control

#### **Electrical Whiteboard Control for MCU**

- Distribution of electrical whiteboard data
- Management of electrical whiteboard data sending privilege
- Distribution of camera data

# LAP-B Drive (LD1 to LD8)

- Low-speed data sending/receiving
- link connection management
- Error re-sending
- Distribution of MCU control data/electrical board/cascade control data

#### **BAS Driver (BD1 to BD8)**

- MUX unit control
- H.221state management
- H.242 control



Figure 5-1: MCU 5000A Task Diagram



Figure 5-2: MCU 5000A Memory Mapping

This page is for your notes.

# **6: SPECIFICATIONS**

- A: Physical Specification
   6.01 The MCU 5000A is installed in the 19-inch subrack. Fig. 6-1 shows the outline of the MCU 5000A. The rear view of MCU 5000A is shown in Fig. 6-2. The installing units layout in the subrack is illustrated in Fig. 6-3. The MCU 5000A unit component is listed in Table 2-1 in paragraph 2.01.
- B: Electrical 6.02 The electrical specifications of MCU 5000A are shown in Table 6-1. Specification



Figure 6-1: MCU 5000A Outline



Figure 6-2: Detailed Rear View of MCU 5000A



Figure 6-3: MCU 5000A Unit Installation Layout

UNIT ITEM		DESCRIPTION		
	Terminal	Teleconference: CODEC:	VisuaLink AD series VisuaLink 5000	
	Accommodating Transmission rate	Same line rate terminal.		
Connected Terminal and Line	Line Rate	AMI (B8ZS)	64/2x64/128/192/256/384/2x384/512/768/1152/ 1472/1536 kbps.	
		RS-422	56/56×2/64/64×2/128/192/256/384/2x384/512/ 768/1152/1536/1920 kbps.	
		ISDN (H0)	64/2x64/384/2x384 kbps.	
	Audio Signal Control Option	Selection	μ-Law PCM (ITU-TS G.711 3.4 kHz) SB-ADPCM (ITU-TS G.722 7 kHz)	
	Visual Switching Control Option	Automatic Switching	Performs the comparison of audio level of each teleconference terminal, and the identification of talker. (Talker's terminal displays the image of primary talker.)	
		Teleconference Transmitting Control (option)	Broadcasts the video signal of the required teleconference terminal to all of the remote terminal.	
Teleconference		Operator Control (option)	Operator terminal, which has been preliminarily get, determined and switches the broadcasting video signal.	
control		Receiving Select Control (option)	Each teleconference terminal determines and receives the individual terminal image.	
	Line Exchange Control	Point-to-Point	Sets the terminals on point-to-point in bidirectional.	
		One Way	The terminals are connected in unidirectional. Broadcasting to the plural terminal specified is available.	
		One Way Monitor	Sends the video signal of a terminal to the plural terminals specified. The sending terminal monitors the video image of the specified terminal in video receive mode.	
		Multipoint	Multipoint teleconference is provided.	
		Tele-education	Tele-education system is established.	
	Loopback Test	Local/Remote Independent Loopback Control.		
Other	Test Tone	Generation/Output of System test tone.		
	Video Switching Time	Average time from teleconference request to requested video signal output: about 3 seconds (VisuaLink 5000 and line rate 384 kbps case.)		
	Input Voltage	AC 117V, DC -48V		
Condition	Power Consumption	approx. 150 VA.		
	Environment Condition	Temperature: 32° to 104° F (0 to 40° C) Humidity: 45 to 85%		
	Dimension	19 in (W) × 15.7 in (D) × 14 in (H) 48.26 cm (W) x 39.88 cm (D) x 35.56 cm (H)		
	Weight	approx. 77.16 pounds (28.78 kilograms)		
## 7: SYSTEM CONTROL AND VARIOUS APPLICATIONS

### A: Line Switching Control

**7.01** The outline of line switching control which is carried out within MCU 5000A inside is explained in the following paragraphs.

### Data Highway

**7.02** The block diagram of basic signal flow for video and audio signals is shown in Fig. 7-1. The transmission rate of incoming line data is converted into the rate of internal data highway (2Mbps) in LIF unit and the data is transmitted to each unit. The internal data highway is composed of LB bus applied to point-to-point connection, LD bus (S and R) applied to multipoint connection, MD bus (S and R), and LSD (S and R).



Figure 7-1: Block Diagram of Basic Signal Flow

### **Multipoint Connection**

**7.03** Multipoint teleconference is controlled with the Conference Management (CM) and multipoint Teleconference Control (TC) tasks. The conference is controlled with two Teleconference Control (TCA/TCB) tasks individually, therefore multipoint teleconferences of two groups can be held at the same time.

**7.04** When Conference Management (CM) task receives request message for multipoint connection from Console Control (CC) task, it activates the relating tasks to lines (LM, LC, LX) first, and makes multipoint line connection with the specified line rate. After that, it transfers the request message for multipoint connection to multipoint Teleconference Control (TCA/TCB) task and transfers the control to the task. Multipoint Teleconference Control (TCA/TCB) task transfers the received request message for multipoint connection to Picture Switch (PS) task and Voice Control (VC) task. At the same time Picture Switch (PS) task and Voice Control (VC) task is controlled to broadcast the picture and voice of the terminal which receives the information message of CODEC alignment recovery from BAS Driver (BD) task.

**7.05** When these tasks, multipoint teleconference control task determines the transmission rate and voice coding mode to exchange the capacity with CODEC via BAS Driver (BD) task. Teleconference operating status is transferred to the teleconference terminals when receiving the request message for connecting to the teleconference terminal from LAP-B driver. The following controls of multipoint teleconference with four terminals (example) are provided.

### **Voice Signal**

**7.06** Among the line data of four terminals, the voice signal is received on A CODEC unit via LIF unit and EC H221 MUX unit. A CODEC unit decodes the coded voice signal and sends it to A SUM unit. A SUM unit sums voice signal received from each terminal, and sends it back to each terminal. At that time, the mixed voice signal (summed up voice signal of the terminals from the second to the fourth) except the voice signal of the originating terminal (the first terminal) is sent back to the originating terminal.

**7.07** Namely, each terminal receives the sum-processed voice signal of all terminals by MCU 5000A except its own voice signal. The voice signal level except that of picture broadcasting terminal is limited to lower level than that of broadcasting terminal. The signal flow of voice signals are as shown in Fig. 7-2.



Figure 7-2: Signal Flow of Voice Signals

### **Picture Signal**

7.08 Among the line data of 4 terminals, the picture signal is received on V SW/LSD IF unit via LIF unit and EC H221 MUX unit. V SW/LSD IF unit distributes the coded video signal of the broadcasting terminal to the other terminals by the control of CPU. The signal flow of video signals are as shown in Fig. 7-3.



Figure 7-3: Signal Flow of Picture Signals

### Low-speed Data

**7.09** The control data for the multipoint teleconference is transmitted/received to/from the terminals through the LSD bus, the EC H221 MUX unit, and the LIF unit under control of the CPU. The electrical whiteboard data received from the LDS bus is distributed again to the LSD buses. Fig. 7-4 shows an example of the distribution of the electrical whiteboard data is received by the CPU and then transmitted from the CPU.



Figure 7-4: Low-speed Data Flow

### **Point-to-Point Connection**

**7.10** Different from multipoint connection, point-to-point connection sets up face-to-face video-teleconference. This connection is controlled with Conference Management (CM) task. When Conference Management (CM) task receives request-to-connect from Console Control (CC) task, it activates the relating tasks to lines (LM, LC, LX) and exchanges lines with the specified bit rate. In this case, the two conference terminals are connected with both ways.

**7.11** When two points are connected, LIF unit outputs line data to the specified channel of LB bus with CPU control. Line data is output to the line from LIF unit of the specified channel through LB bus. Both two points receive the picture and the voice each other. Fig 7-5 shows examples of point-to-point connections of two groups.



Figure 7-5: Data Flow on Point-to-Point Connection

### **Broadcast Connection**

**7.12** Different from Multipoint connection, Broadcast connection provides a video teleconference which is similar to television transmission, namely a broadcasting TV station. In this case, the line data of the specified terminal is transmitted and distributed to all the other terminals through LB bus. Fig 7-6 shows an example of broadcast connection, point 3 as broadcasting terminal.



Figure 7-6: Data Flow on Broadcast Connection

#### B: Picture Switching Control

**7.13** Switching Control of Picture display includes two modes, one is automatic switching and the other is manual switching.

### Automatic Switching Mode

**7.14** The role of this mode is to recognize a terminal as a talker when voice level of the terminal exceeds a definite value, and to broadcast the picture of the terminal to each conference room automatically.

**7.15** When the Voice Control (VC) task recognizes a talker by the interruption caused by A SUM unit, talker detection message is transferred to a multipoint Teleconference Control (TCA/TCB) task.

**7.16** When the multipoint Teleconference Control (TCA/TCB) task receives the talker detection message, it sends necessary message to each related task in order to broadcast the picture of the conference room where a talker is detected to all the participating conference rooms.

**7.17** First, in order to still the picture on screen momentarily, the teleconference control task sends a picture freeze command from EC H221 MUX unit to picture codec of the terminals via BAS Driver (BD) task, and then Picture Switch (PS) task switches picture broadcasting terminal with controlling V SW/LSD unit. Successively, Picture Switch (PS) task sends picture refresh command to the broadcasting terminal via BD task. Voice control task mixes the voice signals of all the participant terminals, however the voice signal of broadcasting terminal is the highest level.

### **Manual Switching Mode**

**7.18** The role of this mode is to switch a picture on screen with the command sent from a MCU console of each conference room. Picture switching request message from the terminals of each conference room is transferred to multipoint teleconference control task through V SW/LSD unit and via LAP-B Driver (LD) task.

**7.19** When a picture switching command is entered from a console, it is converted to picture switching request message with console control (CC) task and moreover it is transferred to multipoint Teleconference Control (TCA/TCB) task via Conference Management (CM) task.

**7.20** According to those messages, multipoint Teleconference Control (TCA/TCB) task controls picture switching similar to automatic switching mode, so as to broadcast the picture of the specified conference room.

C: Voice Detection<br/>Control7.21Voice Detection Control is carried out with the occurrence of interrupting<br/>Voice Control (VC) task when a talker is detected on A CODEC unit. This<br/>control is available to broadcast the picture of a primary talker on the above<br/>mentioned automatic switching mode.

 D: Teleconference Terminal
 Interface
 7.22 The control command is multiplexed in the picture data (called MLP) and transmitted from each conference terminal. At a receive terminal, this control command is extracted from the picture data and taken into the LAP-B Driver (LD) task, where it is analyzed. Analyzed control command is transferred to the electrical Whiteboard Control (BCA/B) task or the multipoint Teleconference Control (TCA/B) task to processing the each task.

**7.23** When the teleconference condition has changed, such as the number of participating rooms and broadcasting location, the current teleconference condition is informed by the multipoint Teleconference Control (TCA/B) task, via the LAP-B Driver (LD) task, to all the participating terminals. This information is superimposed on the monitor display in the respective rooms.

### **Command Details**

**7.24** Table 7-1 shows the detail command/response in this interface.

TYPE	DESCRIPTION	COMMAND	DIRECTION	FUNCTION
	Operator privilege request	OPR	Terminal → MCU	Provide operator privilege to request terminal.
	Operator privilege indication	ОРІ	Terminal ← MCU	Operator privilege indication is sent to every entry terminal by broadcasting style.
	Broadcasting request	SPR	Terminal → MCU	A terminal is allowed to broadcast the picture to all the terminals participating in the teleconference, when it has requested so.
	Broadcasting indicates	SPI	Terminal ← MCU	The notice of broadcasting terminal is send to all the terminals, participating in the teleconference.
	Authorized picture receive request	RPR	Terminal → MCU	A terminal is allowed to receive the picture of a specific terminal, when it has requested so.
	Authorized picture receive indicate	RPI	Terminal ← MCU	The notice of receiving of the specific picture is broadcasted to all the terminals participating in the teleconference.
Multipoint	Talker detect control request	VCR	Terminal → MCU	A terminal is allowed to turn ON/OFF its talker detection function, when it has requested so.
control	Talker detect control indicate	VCI	Terminal ← MCU	The notice of talker detection control is broadcasted to all the terminals participating in the teleconference.
	Still picture transmission request	SSR	Terminal → MCU	A terminal is allowed to broadcast its stationary picture to all the terminals participating in the teleconference, when it has requested so.
	Still picture transmission permission	SSC	Terminal ← MCU	The notice of permission of transmitting the stationary picture is sent to only the requesting terminal.
	Still picture transmission complete	SSE	Terminal → MCU	After the MCU has received the completion notice of transmitting the stationary picture, it restores the previous teleconference conditions.
	Teleconference terminal connection request	JNR	Terminal → MCU	A terminal is allowed to participate the designated group of the multipoint teleconference, when it has requested so.
	Teleconference terminal connection indicates	JNI	Terminal ← MCU	The notice of the teleconference terminal connections broadcasted to all the terminals participating in the teleconference.

### Table 7-1: Detail Command/Response (1 of 3)

ТҮРЕ	DESCRIPTION	COMMAND	DIRECTION	FUNCTION
	Status read of teleconference terminal request	SRR	Terminal → MCU	A terminal is allowed to receive the current condition of the designated teleconference group.
Multipoint control	Status read of teleconference terminal response	SRC	Terminal ← MCU	The notice of receiving information on the designated teleconference condition is sent to only the requesting terminal.
	Asking request	EQR	Terminal → MCU	In the Tele-education mode, a receiving terminal requests a transmitting terminal to speak. The receiving terminal can send a message with the speaking request.
	Asking request indicates	EQI	Terminal ← MCU	The notice of speaking request is broadcasted to all the terminals participating in the teleconference.
	Asking request cancel	ERC	Terminal → MCU	In the Tele-education connection mode, a receiving terminal requests a transmitting terminal to cancel the speaking request. The receiving terminal can send a message with the speaking request cancel.
	Asking request cancel indicates	ECI	Terminal ← MCU	The notice of the speaking request cancel is broadcasted to all the terminals participating in the teleconference.
	Talking permission	ETK	Terminal $\rightarrow$ MCU	A terminal is allowed/inhibited to speak and turns ON/OFF the voice signal input.
	Talking permission indicates	ETI	Terminal ← MCU	The notice of speaking permission is broadcasted to all the terminal participating in the teleconference.
	Switching monitor picture request	MPR	Terminal → MCU	The broadcasting terminal is allowed to monitor a room other than currently monitored one.
	Switching monitor picture indicates	MPI	Terminal ← MCU	The notice of object monitoring change is broadcasted to all the terminal participating.
	Status of teleconference terminal indicates	STI	Terminal ← MCU	A terminal is allowed to expel from the designated group of the teleconference, when it has requested so. The notice of the current teleconference connection is sent to all the terminals participating in the teleconference.

Table 7-1: Deta	il Command/Resp	onse (2 of 3)
-----------------	-----------------	---------------

ТҮРЕ	DESCRIPTION	COMMAND	DIRECTION	FUNCTION
Multipoint control	Read site name indicates	PDI	Terminal → MCU	The MCU sends the terminal locations names to each terminals participating in the teleconference.
	Message indicates	MSD	Terminal → MCU	The MCU requests each terminal participating in the teleconference to display the message.
Electrical whiteboard	Electrical whiteboard data receive	BRCV	Terminal → MCU	A terminal transmits and receives the electrical whiteboard data.
	Electrical whiteboard data transmission	BSND	Terminal ← MCU	A terminal transmits and receives the electrical whiteboard data.
	Move camera request	CAMS	Terminal $\rightarrow$ MCU $\rightarrow$ Terminal	A local terminal requests the movement of camera in the conference room of remote station.
	Camera status indicates	CAMI	Terminal $\leftarrow$ MCU $\leftarrow$ Terminal	The notice of the camera state is sent to only the requesting terminal.
Remote station	Remote station data receive	RRCV	Terminal $\rightarrow$ MCU $\rightarrow$ Terminal	A terminal is allowed to transmit and
control	Remote station data transmission	RSND	$Terminal \leftarrow MCU \leftarrow Terminal$	terminal.
	Talker name indicates	CPNI	Terminal ← MCU ← Terminal	The name of a speaker, who is going to speak in the conference room where the camera is pre-set, is sent to all the terminals participating in the teleconference.

Table 7-1:	Detail	<b>Command/Response</b>	(3 of	3)
		o o minuna, ritos ponse	(0 0-	-,

### **Interface Format**

**7.25** Fig. 7-7 shows the format of this interface. Format of line are HDLC frame format.



Figure 7-7: Command/Response Format

### Sequence Example





Figure 7-8: Sequence Example (1 of 4)



Figure 7-8: Sequence Example (2 of 4)





Figure 7-8: Sequence Example (4 of 4)

E: Loopback Test 7.27 Loopback tests are conducted to sectionalize the faulty units when a failure has occurred in the MCU 5000A. Some of the loopback tests are carried out from the MCU console by inputting commands, and others are conducted by the switches mounted on the units.

**7.28** The MCU 5000A has loopback points in each unit. The MCU 5000A can loop a signal (internal or external) back on remote or local side. The MCU 5000A can also generate pseudo noise pattern and carry out self-diagnostic test by checking the returned noise pattern.

 F: MCU 5000A Loopback
 7.29 The MCU loopback has two functions; one is to generate the test signal and check the signal looped back inside of the equipment (Local Loopback) is called the local side loop hereafter, the other is to loopback the external signal outside of the equipment (Remote Loopback) is called remote side loopback hereafter. The local side and remote side loops are set at points A to H as shown in Fig. 7-9. Moreover, following functions to generate the test signal and check

the looped back signal (loopback test) are available:

- Video signal loopback test
- Audio signal loopback test
- LSD loopback test
- Console loopback test

**7.30** *Video signal loop test:* The video signal loop test is carried out using the PN pattern generator/checker in the V SW/LSD IP unit. The PN pattern from the PN pattern generator is looped back at the preset loopback point and inputted into the PN pattern checker, which checks the transmitted pattern with the received one. When a line rate of 1.536 Mbps is selected for the loop test, the MUX strap in the EC H221 MUX unit must be set to OFF position. The MCU software, the Video Switch I/O (PS) task, controls the video signal loop test

**7.31** *Video signal loop test:* The voice signal loop test is performed by using the test tone generation mode function of the A CODEC unit. The output level (0, -12, -24, -36 dBm0) and frequency (500, 800, 1000 and 1600 Hz) of test tone are selected. The continuous output level of the test tone is measured, while the level of looped-back test tone is checked. When the level measurement is selected as the test, the measured level value is indicated on the console display. The MCU software, Voice Control I/O (VC) task, controls the voice signal loop test.

**7.32** LSD loop test (four 00H to 7FH data flames): The LSD loop test is done by the HSCX in the V SW/LSD IF unit. The LSD from the HSCX is looped back at the preset loopback point and received by the HSCX. The received LSD is checked with the transmitted LSD. The MCU software, LAP-B Driver (LD) task controls the LSD loop test.

**7.33** *Console loop test:* The console loop test is carried out by the Serial Controller in the PG/SIO unit. The test loop is set automatically. Two loopback points is selected: one for the Serial Controller, the other for the control signal test, which is located at the outside of RC-232C connector, When the loopback point for control signal test is specified, a loop connector must be connected. The MCU software, Console Drivers 1 and 2 (CD1 and CD2) control the console loop test.



Figure 7-9: Loopback Points

**7.44** The loopback point setting, the loopback test and loopback release mentioned above are conducted by the execution of the MCU console commands. To conduct loopback test, it is necessary to set. However, the console loopback test does not require the loopback point setting because it automatically sets loopback points.

# G: Self Diagnostic<br/>Function7.45When power switch is turn-on, the self-diagnostic for the following<br/>hardware is performed.

- RAM test: Read/write test of RAM area is executed. If any error is detected, the program activity is stopped.
- ROM test: The matching of the check sum and programed value is verified. If any error detected, the program activity is stopped.
- Hardware initializing test: When initializing the hardware with program, the normal initializing operation is verified. If any error is detected, the critical error cause to stop the program activity, the minor error indicates the alarm on the console.
- Unit installation test: Unit installation state is verified. When any necessary unit is not installed, the alarm is indicated on the console.
- System parameter back-up test: CRC in the system parameter area is verified. When any error is recognized, and then the program activity is stopped.

# 8: MCU CONSOLE

	<b>8.01</b> The MCU console provides the functions of the system parameter and teleconference setting, the memory card control, and the maintenance with MCU console as equipment controller. The MCU console provides operator management/video switch control which is operated by teleconference terminal TC5000 with optional software. Refer to NECA 340-414-300.
A: Console	<b>8.02</b> The MCU console consists personal computer, which is connectable to the RS-232C serial interface. The MCU console provides various functions by entering console command.

### **B: Console Command** 8.03 Table 8-1 lists all of the console commands provided.

COMMAND CATEGORY	COMMAND	FUNCTION
	CGPR	Creates auto start command generator program.
	LCKS	Displays synchronization clock source for line.
	LCNQ	Displays type of LIF unit mounted and its bit rate.
System Setting Monitor	LECR	Resets error counter for physical line.
	LERQ	Displays number of error occurrence on physical line.
	LSTQ	Displays each physical line status.
	RCGP	Retrieves (reads) and displays auto start command generator program.
	BCON	Makes both direction connections between two terminals.
	BDSC	Disconnects both direction connections between two terminals.
	LCON	Connects one transmit terminal to specified receive terminals and simultaneously causes transmit terminal to monitor (receive) picture sent from one specified terminal.
Switching Control	LDSC	Disconnects multiple connections.
	SDSC	Disconnects all connections in the system.
	RCNN	Retrieves and displays connection status on all transmission lines in use.
	UCON	Broadcasts one picture for all specified terminals.
	UDSC	Disconnects broadcast connection.
	ECON	Makes multipoint connections for education mode.
	EDSC	Disconnects multipoint connections for education mode.
	MCNR	Sets local terminal to waiting status for cascade connection by master MCU.
Multipoint/Lecture Connection	MCON	Makes multipoint connections.
Control	MDCR	Releases cascade connection status or cascade connection waiting status.
	MDSC	Disconnects multipoint connections.
	RATT	Displays current status of multi-connected terminals in the system.
	RRNM	Retrieves and displays logic line numbers, logic room numbers, and port numbers for multi-connected terminals.

### Table 8-1: Console Command List (1 of 4)

COMMAND CATEGORY	COMMAND	FUNCTION
	ALRM	Sends or stops alarm tone to all teleconference terminals (rooms).
	COPR	Assigns or cancels operator privilege of specified teleconference room (terminal).
	CSPR	Broadcasts picture of specified terminal.
	CRPR	Connects or disconnects between transmit and receive terminals.
	CVCR	Controls voice (talker) detect function of specified terminal.
	CMPR	Changes monitor picture on display from broadcasting terminal to the picture from specified terminal.
	CSRR	Displays status concerning specified terminal.
Multipoint Teleconference	CMSG	Displays message into the terminal taking part in multipoint conference.
Control	GRRC	Sends global indication to all MCU consoles.
	EQUR	Requests question/speech from specified lectured terminal to instructor terminal.
	EQRC	Cancels request of question/speech from specified lectured terminal to instructor terminal.
	ETLK	Limits talk to one (specified) terminal with in a multipoint teleconference session.
	RCAP	Retrieves and displays capability parameter values of specified multi-connected terminal.
	RMOD	Retrieves and displays transmit modes of specified terminal.
	STPR	Broadcasts still pictures of specified terminal.
Multipoint Teleconference	SNAM	Registers or deletes area name of multi-connected terminal.
Terminal Control	RNAM	Retrieves and displays area name of multi-connected terminal.
	CPMC	Copies data from source memory card to target memory card.
Memory Card Control	RDIR	Retrieves and displays file directory in memory card.
Wembry Card Condor	RMCS	Displays status and type of memory card.
	RMCV	Displays software version of memory card.
	RCON	Makes multipoint connections (H.243 mode)
	RDSC	Disconnects multipoint connections. (H.243 mode)
	RADD	Adds multipoint connections to RCON conference.
H.243 Multipoint Connection	RDRP	Drops multipoint connections from RCON conference.
Control	RASN	Indicates relation between conference room number and terminal number assigned by RCON.
	RRAT	Acquire conference participation of terminal for specific conference room group RCON.
	RCNQ	Indicate connection situation of multipoint conference, setup by RCON.

 Table 8-1: Console Command List (2 of 4)

	NCRN	Send a call of ISDN line. In case of 2xB, two lines are connected at one time for the call. In case of 2xB and multipoint (when H.242 on) second call will be processed after the first H.242 negotiation sequence.
	NDSC	Disconnect ISDN line. In case of 2xB, disconnect twice.
	NCIC	When reception report is manual reception received by NINC indication, specify whether to accept this reception.
	NIWT	Set up to wait for reception to receive wait for ISDN line.
	NIWQ	Indicate the logical line in ready receive status line numbers (none a, s, c).
	NIWR	Release reception wait.
	INET	ON/OFF indication report related to ISDN.
ISDN Control	NSTQ	Display transmission status of ISDN line (complete the digit).
	NLGC	Delete communicate history.
	NPDS	Register speed dial.
	NPDR	Display register contents of speed dial (complete the digit. When parameter was omitted, display all registered contents.
	NDSS	Register local address.
	NDSR	Display the registered local number (complete the digit). When omitted, display all registered lines.
	NLGQ	Display the maximum of 100 transmission history (complete the digit). When omitted, indicate all history. When the specified number exceeds the number of accumulate, display all history.
	ISPR	Initialize system parameter
	RCLK	Read system clock
	RLCS	Remote loop command send
	RROM	Read ROM version
	RRST	Request system reset
System Setting and Maintonance	RSPR	Read system parameter
System Setting and Maintenance	RTLP	Release loopback test
	SSPR	Set system parameter
	STLP	Set for test of loopback
	SVSP	Save system parameter
	TLOP	Test of loopback
	WCLK	Write system clock

 Table 8-1: Console Command List (3 of 4)

COMMAND CATEGORY	COMMAND	FUNCTION
	CJNI	Indicates notifies that teleconference terminal is connected to the control terminal unit
	CMPI	Indicates notifies that the picture of the broadcasting terminal has been changed
	COPI	Indicates modifies the assignment or cancellation of the operator privilege
	CRPI	Indicates notifies one transmitting terminal and one receive terminal
	CSPI	Indicates notifies that a terminal is broadcasting
	CSTI	Indicates notifies that the status of a terminal is changed
	CVCI	Indicates notifies that a terminal is detecting a voice
Global Indication	EQCI	Indicates notifies that the question request
	EQRI	Indicates notifies that a lectured terminal is asking
	ERRI	Indicates notifies that the status
	ETKI	Indicates notifies that the talk the specified terminal is permitted
	MCNI	Indicates notifies that cascade connection is established
	MDCI	Indicates notifies that cascade connection is disconnected
	RLCI	Indicates notifies that a terminal requests
	STEI	Indicates notifies that the still picture of the terminal is broadcasting

 Table 8-1: Console Command List (4 of 4)

## **9: SYSTEM PARAMETER**

A: Application 9.01 The MCU 5000A provides the system parameters in accordance with various operation of the teleconference system. The system can be customized with user requirement condition. Refer to NECA 340-414-220.

**B:** System Parameter 9.02 The main system parameter and the descriptions are shown in Table 9-1.

NO.	SYSTEM PARAMETER	FUNCTION
1	Line rate	Sets the connecting line bit rate.
2	Frame Format	Sets the Frame Format used in the connecting line. (T1 only)
3	Line Code	Sets the Line Code used in the connecting line. (T1 only)
4	RAI type	Sets the receiving RAI type. (T1 only)
5	Clock Source	Sets the Clock Source (line/internal)
6	Line Equalizer	Sets the Line Equalizer with port unit. (T1 only)
7	Video signal switching timer	Sets the standard level as the communication rate.
8	Transfer Rate Capability	Sets the transfer rate as the communication rate.
9	Network Classification Capability	Sets the network controlled or not controlled
10	Audio Mode	Sets the connected terminal voice capability.
11	Network Classification Mode	Sets the network controlled or not controlled

 Table 9-1: System Parameter Setting

This page is for your notes.



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# MCU 5000A MULTIPOINT CONTROL UNIT INSTALLATION MANUAL

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# **Table of Contents**

INTRODUCTION	INT-001
MOUNT MCU 5000A TO 19-INCH RACK	INP-001
REMOVE MCU 5000A FROM 19-INCH RACK	INP-002
OPEN/REMOVE FRONT COVER	INP-003
INSTALL/CLOSE FRONT COVER	INP-004
TURN ON/OFF POWER SWITCH	INP-005
MOUNT UNIT TO SHELF	INP-006
REMOVE UNIT FROM SHELF	INP-007
INTERNAL CONNECTION	INP-008
LIF (CH1 to CH16) CABLE CONNECTION	INP-009
POWER CORD CONNECTION	INP-011
START-UP OF MCU CONSOLE	INP-012
SETTING FOR CODEC	INP-013
1.5M LIF UNIT	GSD-001
RS-422 LIF UNIT	GSD-002
H0-INF UNIT	GSD-003
EC H221 MUX UNIT	GSD-004
V SW/LSD IF UNIT	GSD-005
A CODEC UNIT	GSD-006
A SUM UNIT	GSD-007
PG/SIO UNIT	GSD-008
M CONT UNIT	GSD-009
VDSW UNIT	GSD-010

This page is for your notes.

# **INTRODUCTION**

### 1: GENERAL

A: Introduction

**1.01** This practice provides installation and turn-up of Multipoint Control Unit 5000A (MCU 5000A).

**1.02** This equipment appearance is shown Fig. 1-1. The equipment is installed in 19-inch wide racks, and is installed from the front of the rack.



### B: Scope of Installation

**1.03** Fig. 1-2 shows the system configuration of MCU 5000A with MCU console. This manual is only described about the scope of the installation for MCU 5000A.



Figure 1-2: System Configuration With MCU Console

### C: Installation Procedure

**1.04** Fig. 1-3 shows an installation procedure to assure a smooth installation for MCU 5000A.



Figure 1-3: Installation Procedure for MCU 5000A

### **2: PREPARATION**

# A: Pre-installation 2.01 Before starting MCU 5000A installation, consult with user and clarify the scope of work to prepare beforehand various works for the purpose of doing the work smoothly. Table 2-1 shows the items according to the installation procedure.

Table 2-1: Scope of Work for MCU

WORK ITEMS	SUPPLIER	CUSTOMER
Confirmation of the location for MCU 5000A and related equipment		
Preparation for power supply		
Checking cables, other installation materials		
Arrangement and preparation of tools		
Protection of other equipment from being harmed by the installation process		
Equipment unpacking		
Equipment installation		
Cable wiring		
Switching ON		
Turn-up test		
System test		

B:	Unpacking	2.02 prepare	Preparation for unpacking: Before unpacking, the following should be red first.		
		•	• Invoice, packing lists, and other required documents		
		•	• Tools required for unpacking (scissors, cutter, cotton gloves, etc.)		
		•	Personnel necessary for unpacking		
		<b>2.03</b> during sketche	3 Unpacking: Remove materials which are used to protect equipment ing shipment. The procedures are as follows: Fig. 2-1 shows unpacking tches.		
		•	<ul><li>Remove the packing mat.</li><li>Open the cardboard box and take MCU 5000A with protector box.</li></ul>		
		•			
		•	Remove sid	le pads and rear pad.	
		• Remove polyethylene		lyethylene sheet and desiccant (packet of drying material).	
C:	Inventory Check	<b>2.04</b> the nan list. Th	After unpacking, carry MCU 5000A to the installation site. And check mes and quantities of the received equipment and accessories with packing 'he procedure is as follows:		
			<u>Step</u>	Procedure	
			1	Prepare the packing lists which are annexed to the equipment.	
			2	Verify names and quantities of equipment and accessories while referring to the packing list.	
			3	Record the date, the name of the person in charge and the result of inventory in blanks on the packing list.	

**2.05** If any problems including omission, shortage, or breakage are found as a result of comparison with the packing list, inform dealer, delivery carrier, or NEC Sales Office immediately.



Figure 2-1: Unpacking Procedure
## **3: INSTALLATION**

A: Ra 19-	ick Mounting to -Inch Rack	3.01	MCU 5000A is practicable to install 19-inch rack, and the mounting and removing to/from the rack are easy. About installation procedure, refer to <b>INP-001</b> and <b>INP-002</b> .
B: Un	nit Constitution	3.02	Table 3-1 shows units installed MCU 5000A and Fig. 3-1 shows the unit

layout.

UNIT NAME		ABBREVIATED NAME	CODE	
			E32-484-Y1442-0A00	
LINE INTERFACE UNIT		RS-422 LIF	E32-484-Y1443-0A00	
		H0-INF LIF	E32-484-Y2761-0A00	
EC H221 MUX UNIT		EC H221 MUX	E32-482-Y3118-0B00	
V SW/LSD IF UNIT		V SW/LSD	E32-465-Y1440-0A00	
A CODEC UNIT		A CODEC	E32-441-Y1438-0A00	
A SUM UNIT		A SUM	E32-470-Y1439-0A00	
PG/SIO UNIT		PG/SIO	E32-483-Y1441-0A00	
M CONT UNIT		M CONT	E32-001-Y2573-0A00	
POWER LINIT	117 VAC	PW/P	E32-014-Y1573-0B00	
	-48 VDC		E32-014-Y3757-0A00	
VDSW UNIT		VDSW	E32-465-Y4775-0A00	

### Table 3-1: Unit Component



Figure 3-1: Unit Layout of MCU 5000A

C: Unit Mounting and Removing

**3.03** Unit are made from printed wiring board of plug-in type, and MCU 5000A is composed these units. Refer to the procedure for mounting and removing the units (**INP-006** and **INP-007**).

D: Equipment<br/>Handling3.04The handlings for MCU 5000A are shown as below. The details are<br/>described each procedures.

Detailed Procedure	Reference Procedure No
Mount MCU 5000A to 19 inch rack	INP-001
Remove MCU 5000A from 19 inch rack	INP-002
Open/Remove Front Cover	INP-003
Install/Close Front Cover	INP-004
Turn ON/OFF power switch	INP-005
Mount Unit to shelf	INP-006
Remove Unit From shelf	INP-007
Internal connection	INP-008
LIF (CH1 to CH16) cable connection	INP-009
Power cord connection	INP-011
Start-up of MCU console	INP-012
Setting for CODEC	INP-013

### 4: CABLE CONNECTIONS

A: General

- **4.01** The following should be examined for cable installation of MCU 5000A.
  - The customer is required to prepare all cables which are connected MCU 5000A and external terminal devices before starting the installation.
  - Decide the proper lengths of the cables while taking into account the distance between MCU 5000A and external terminal devices.
  - Design cable wiring routes for the MCU 5000A and the external terminal devices.
- **4.02** MCU 5000A has two kind of connections, i.e. internal and external connections.
- **4.03** Fig. 4-1 shows the cable wiring procedure for connecting MCU 5000A and the external devices.



#### B: Connectors and Connections

- 4.04 *Internal connections:* This equipment is required internal connections. Refer to **INP-008** for details.
- 4.05 *External connections:* All the cables which connect between MCU 5000A and other external device are connected on the rear connectors of MCU 5000A shelf. Fig. 4-2 shows the typical cable connections, and Table 4-1 shows details for cables connectors and connecting procedures.



Figure 4-2: Typical Cable Connection

CABLE NAME	CONNECTORS FOR EQUIPMENT SIDE	CONNECTORS FOR CABLE SIDE	QUANTITY OF PIN	REFERENCE NO.
LIF Cable (CH1 to 16)	DA-15S Socket	DA-15P Plug	15	INP-009
RS-232C Cable (CH1 to 4)	DB-25S Socket	DB-25P Plug or Equivalent	25	Needless for option
AC Power Cord	-	-	3	INP-011

### Table 4-1: EXTERNAL CABLE CONNECTIONS

## MOUNT MCU 5000A TO 19-INCH RACK

**GENERAL:** This procedure describes the steps required to mount the MCU 5000A in 19-inch rack.

APPARATUS: Phillips type Screwdriver

SUPPORT DATA: None

STEP	PROCEDURE
1	Prepare eight screws which are annexed to equipment.
2	Install MCU 5000A shelf on the appointed location of 19-inch rack as shown in Fig. 1.
3	Tighten the eight screws and fix firmly MCU 5000A to the rack.
4	Are more MCU 5000A to be mounted?
	If <b>YES</b> , go to <b>Step 1</b> .
	If NO, go to Step 5.

5 End of procedure.



Figure 1: Mounting MCU 5000A to 19-inch Rack

## **REMOVE MCU 5000A FROM 19-INCH RACK**

GENERAL:	This procedure describes the steps required to remove the MCU 5000A from the 19-inch rack.
APPARATUS:	Phillips type Screwdriver

SUPPORT DATA: INP-005

STEP	PROCEDURES
1	If power switch is already OFF, go to Step 2.
	Otherwise turn OFF power switch. Refer to <b>INP-005</b> .
2	Are the cables connected?
	If Yes, go to Step 3.
	If No, go to Step 5.
3	Record which cables are connected which connectors.
4	Disconnect the cables from backboard.
5	Support MCU 5000A by assistant not to fall. In that condition remove the eight screws which are
	fixed MCU 5000A.
6	After unscrewing all, pull out MCU 5000A as shown in Fig. 1.
7	End of procedure.



Figure 1: How to Remove MCU 5000A out of 19-Inch Rack

## **OPEN/REMOVE FRONT COVER**

GENERAL:	This procedure describes how to open and remove front cover of the MCU 5000A.
APPARATUS:	Phillips Type Screwdriver
SUPPORT DATA:	None

STEP	PROCEDURES
1	If cover is already open, go to <b>Step 4.</b>
2	Using index fingers, slide the locking knobs of front cover to inside. (See Fig. 1 (a), (b))
3	WARNING: FRONT COVER SHOULD BE LOWERED (180°) WITH BOTH HANDS. ALLOWING COVER TO DROP FREELY MAY DAMAGE COVER OR EQUIPMENT BELOW.
	Using both hands, carefully lower front cover $(180^\circ)$ . (See Fig. 1(c))
4	Is front cover removed?
	If YES, go to Step 5. If NO, go to Step 9.
5	Remove the earth wire by Phillips type screwdriver. (See Fig. 2)
6	Using both hands, lift front cover approximately 30°. (See Fig. 3)
7	While holding front cover with both hands, slide the front cover to left, and the right hinge comes off.

- 8 Lift front cover upward, and remove it from shelf. (See Fig. 4)
- 9 End of procedure.



Figure 1: Opening Front Cover



Figure 2: How to Remove Earth Wire



Figure 3: How to Remove Cover out of Right Hinge (1)



Figure 4: How to Remove Cover out of Right Hinge (2)

# **INSTALL/CLOSE FRONT COVER**

**GENERAL:** This procedure describes how to install and close front cover of the MCU 5000A.

APPARATUS: Phillips type Screwdriver

SUPPORT DATA: None

STEP	PROCEDURES
1	If cover is installed but open, go to <b>Step 8</b> .
2	Grasp cover's right and left sides with both hands.
3	Insert the hinge pin under the left side of front cover to holder of shelf. (See Fig. 1.)
4	Lift front cover approximately 30°.
5	While holding front cover with both hands, insert the hinge pin under the right side of front cover to holder of shelf. (See Fig. 2.)
6	WARNING: ALLOWING FRONT COVER TO DROP FREELY MAY DAMAGE COVER OR EQUIPMENT BELOW.
	Using both hands, carefully lower front cover (180°).
7	Connect an earth wire to front cover by screw. (See Fig. 3.)
8	Is front cover closed?
	If YES, go to Step 9. If NO, go to Step 10.
9	Raise cover using index fingers, slide the locking knobs to outside of front cover. (See Fig. 4.)

10 End of procedures.



Figure 1: Inserting the Left Side Hinge Pin of Front Cover



Figure 2: Inserting the Right Side Hinge Pin of Front Cover



Figure 3: Connecting the Earth Wire



Figure 4: Locking the Knobs of Front Cover

# **TURN ON/OFF POWER SWITCH**

**GENERAL:** This procedure describes instruction for turning ON/OFF Power Switch.

APPARATUS: None

SUPPORT DATA: INP-003, INP-004

STEP	PROCEDURES
1	Open front cover of MCU 5000A.
2	Is the power switch turned ON or OFF?
	If ON, go to Step 3. If OFF, go to Step 4.

- 3 Turn power switch to ON position. Verify that power lamp (green, marked PWR) lights.
- 4 Turn power switch to OFF position. Verify that power lamp goes out.
- 5 End of procedure.



Figure 1: Turn ON/OFF Power Switch

## MOUNT UNIT TO SHELF

GENERAL:	This procedure describes instruction for mounting unit to MCU 5000A shelf.
APPARATUS:	2224 Charge-Guard Adjustable Wrist Strap (3M) or equivalent.
SUPPORT DATA:	None

# STEP PROCEDURES

#### 1 WARNING: TO PREVENT DAMAGE TO THE ELECTROSTATICS SENSITIVE DEVICES USED IN THE MCU 5000A, ALWAYS WEAR A WRIST STRAP WHEN INSTALLING UNITS.

Attach the 2224 adjustable wrist strap or equivalent to the wrist and connect to the ESD connector on the MCU 5000A.

- 2 Open front cover, if necessary.
- 3 Turn off power switch.
- 4 Are the setting or changing of SW and strap necessary?

If Yes, go to Step 5. If No, go to Step 7.

5 See the corresponding GSD of appendix and verify the setting of switch and strap corresponding unit as below.

UNIT	Reference Drawing No.
1.5M LIF 1 to 4	GSD-001
RS-422 LIF 1 to 4	GSD-002
H0-INF LIF 1 to 4	<b>GSD-003</b>
EC H221 MUX 1 to 8	<b>GSD-004</b>
V SW/LSD	GSD-005
A CODEC 1 to 2	<b>GSD-006</b>
A SUM	<b>GSD-007</b>
PG/SIO	<b>GSD-008</b>
M CONT	<b>GSD-009</b>
VDSW	<b>GSD-010</b>

- 6 If the setting are not correct, make any necessary changes while referring to figures.
- 7 Verify the unit abbreviation (see Fig. 1 (a)) and mounting position of unit (see Fig. 1 (b)).

*Note:* On the rear of front cover, there is attached unit label showing unit abbreviation and unit mounting position.

8 Is the unit applicable to any of 1.5M LIF, RS-422 LIF, H0-INF LIF, EC H221 MUX, or A CODEC?

If, Yes, go to Step 9. If No, go to Step 10. STEP

#### PROCEDURES

- 9 Prepare the same kind unit in numerical order.
- 10 Install the unit in the appropriate slot of the shelf (See Fig. 2).
- 11 Remove the 2224 adjustable wrist strap and disconnect from ESD connector on the MCU 5000A.
- 12 End of procedure.



Figure 1: How to Insert Unit



Figure 2: How to Install Unit

## **REMOVE UNIT FROM SHELF**

GENERAL:	This procedure describes instruction for removing unit out of MCU 5000A shelf.
APPARATUS:	2224 Charge-Guard Adjustable Wrist Strap (3M) or equivalent.
SUPPORT DATA:	None

## STEP PROCEDURES

#### 1 WARNING: TO PREVENT DAMAGE TO THE ELECTROSTATIC SENSITIVE DEVICES USED IN THE MCU 5000A, ALWAYS WEAR A WRIST STRAP WHEN REMOVING UNITS.

Attach the 2224 adjustable wrist strap or equivalent to the wrist and connect to the ESD connector on the MCU 5000A.

- 2 Open front cover, if necessary.
- 3 Turn off power switch.
- 4 *Note:* The mounting location of the units is shown on the rear of front cover.

Verify the location of the unit to be removed.

- 5 Pull down on the bottom ejector and push up on the top ejector. (See Fig. 1)
- 6 Hold the top and bottom ejectors of the unit and gently slide the unit out of shelf. (See Fig. 2)
- 7 Place the removed unit in an antielectrostatics tray or bag and store it in an antistatic environment to prevent damage to the unit.
- 8 Remove the 2224 adjustable wrist strap and disconnect from the ESD connector on the MCU 5000A.
- 9 Turn ON power switch, if necessary.
- 10 Close the front cover, if necessary.
- 11 End of procedure.



Figure 1: Release the Unit



Figure 2: How to Remove Unit

# **INTERNAL CONNECTION**

**GENERAL:** This procedure describes the instruction for internal connection after installed the units of MCU 5000A.

APPARATUS: None

SUPPORT DATA: None

STEP	PROCEDURES
	Notes:
	1. Three units are required for internal connection such as LIF1, LIF2, and PG/SIO units.
	2. There is symbol (▲) at the pin number "1" of each connector. This point is the top of connector so that verify it when connecting.
1	Connect the LIF 1 H connector to the upper position "1" of LIF #1 unit. (See Fig. 1.)
2	Connect the LIF 1 L connector to the lower position "2" of LIF #1 unit. (See Fig. 1.)
3	Are LIF 2H and LIF 2L connectors connected?
	If YES, go to Step 4.
	If <b>NO</b> , go to <b>Step 6</b> .
4	Connect the LIF 2 H connector to the upper position "3" of LIF #2 unit.
5	Connect the LIF 2 L connector to the lower position "4" of LIF #2 unit.
6	Connect the PG/SIO H connector to the upper position "5" of PG/SIO unit.
7	Connect the PG/SIO L connector to the lower position "6" of PG/SIO unit.

8 End of procedure.



Figure 1: Internal Connection in Shelf

CONNECTION NO.	UNIT	NAME	CONNECTOR LABEL NAME
1	1.5M LIF UNIT #1: RS-422 LIF UNIT #1: H0-INF	TOP TOP	LIF1 H
2	1.5M LIF UNIT #1: RS-422 LIF UNIT #1:	BOTTOM BOTTOM	LIF1 L
3	1.5M LIF UNIT #2: RS-422 LIF UNIT #2: H0-INF	TOP TOP	LIF2 H
4	1.5M LIF UNIT #2: RS-422 LIF UNIT #2:	BOTTOM BOTTOM	LIF2 L
5	PG/SIO UNIT:	ТОР	PG/SIO H
6	PG/SIO UNIT:	BOTTOM	PG/SIO L

# LIF (CH1 to CH16) CABLE CONNECTION

GENERAL:	This cable connects MCU 5000A to 1.544M transmission line and to transmit AMI (B8ZS) signal. This interface uses as 1.5M LIF, RS-422 LIF, and H0-INF LIF, so there are difference of signals and pin assignment between both of them.
<b>APPARATUS:</b>	None
SUPPORT DATA:	None

STEP	PROCEDURES
1	Using AWG 24 shielded cable or equivalent, route cable between transmission line interface of DOCED (VL 5000) and MCU 5000A shelf terminals.
2	Strip specified length of plastic sheath from one end of cable for assemble of D-sub 15 pin connector.
3	Assemble D-sub 15-pin connector at the end of cable according to Table 1, 2, or 3 depend on line transmission rate.
4	Connect the D-sub 15-pin connector to the appropriate position (CH1 to CH16) on backboard of MCU 5000A.
5	Are the other D-sub 15-pin connector connected?
	If YES, go to Step 1. If NO, go to Step 6.
6	Affix AWG 24 shielded cable to the specified position with cable strap or equivalent.
7	End of procedure.



#### Figure 1: LIF Cable Connection

PIN NO.	SIGNAL NAME	I/O	REMARKS	PIN NO.	SIGNAL NAME	I/O	REMARKS
1	SHIELD		Cable shield	9	T (B)+	OUT	Transmit (B)
2	T (A)-	OUT	Transmit (A)	10	-		
3	_			11	R (B)+	IN	Receive (B)
4	R (A)-	IN	Receive (A)	12	-		
5	_			13	_		
6	_			14	-		
7	_			15	_		
8	SG	_	Signal ground	-			

Tabla	1.	1 5 T	IF (	CU1	to	CU16)	Signal	Accionn	ont
Table	1.	1.3 L	лг (	UIII	ω	CIIIO)	Signai	Assigni	lent

## Table 2: RS-422 (CH1 to CH16) Signal Assignment

PIN NO.	SIGNAL NAME	I/O	REMARKS	PIN NO.	SIGNAL NAME	I/O	REMARKS
1	SHIELD	_	Cable shield	9	T (B)+	OUT	
2	T (A)-	OUT		10	C (B)+	OUT	
3	C (A)-	OUT		11	R (B)+	IN	
4	R (A)-	IN		12	I (B)+	IN	
5	I (A)-	IN		13	S (B)+	IN	
6	S (A)-	IN		14	S (B)+	OUT	
7	S (A)-	OUT		15	FG	_	Frame ground
8	SG	_	Signal ground	-			

Table 3: H0-INF (CH1 to CH16) Signal Assignment

PIN NO.	SIGNAL NAME	I/O	REMARKS	PIN NO.	SIGNAL NAME	I/O	REMARKS
1	SHIELD	-	Cable shield	9	T (B)+	OUT	
2	T (A)-	OUT		10	-		
3	-			11	R (B)+	IN	
4	R (A)-	IN		12	-		
5	-			13	-		
6	-			14	-		
7	-			15	-		
8	SG	-	Signal ground	-			



Figure 2: LIF (CH1 to CH16) Connector Pin Assignment



Figure 3: LIF (CH1 to CH16) Cable Connections

# **POWER CORD CONNECTION**

**GENERAL:** This cord is used to supply power to MCU. This procedure provides the instruction.

APPARATUS: None

SUPPORT DATA: None

STEP	PROCEDURES
1	Set power switch of MCU 5000A to the OFF position.
2	Connect the power cord to the power terminal at rear side of MCU 5000A. (See Fig. 1 and Table 1.)

3 End of procedure.



Figure 1: Power Cord Connection

PIN NO.	SIGNAL NAME	I/O	REMARKS
1	AC IN	IN	AC 117 V input
2	AC IN	IN	AC 117 V input
3	FG	-	Frame ground

Table 1: AC IN Connector Pin Assignment



Figure 2: AC IN SIGNAL ASSIGNMENT
## START-UP OF MCU CONSOLE

GENERAL:	This procedure provides instruction for turn-up of MCU 5000A.
APPARATUS:	None
SUPPORT DATA:	INP-003, INP-004, INP-005, Chapter 3 (Console Operation Manual), Chapter 4 (System Parameter Manual)

*Note:* MCU console is required the specifications as following.

- A. Physical Interface
  - RS-232C interface port (serial interface port) of both the MCU 5000A and the MCU console are equipped with the D-sub 25-pin connector conforming to EIA RS-232C.
  - Up to 3 MCU consoles can be connected to the MCU 5000A.
  - Use to CH1 to CH3 for RS-232C port of MCU 5000A. The CH4 does not support RS-232C interface.
- B. Electrical Interface
  - The pin assignments of the connector are given in Table 1.
  - Pin Assignments for RS-232C Port Connector

The reverse (twisted) cable is used to connect the MCU console with the MCU 5000A, as both of them are DTE (Data Terminal Equipment). The straight cable is used to connect DCE (Data Communication Equipment) such as the modem.

#### C. Reverse Cable Connection The communication condition for the RS-232C Port is set as follows:

- Mode of synchronization: Start-stop synchronous
- Band rate: 9600 bps
- Character bit length: 8 bits
- Stop bit length: 1 bit
- Parity check: none
- X control: none

STEP		PROCEDURES			
1	Connect between RS-232C t console by using RS-232C c	erminal at rear side of MCU 5000A and RS-232C terminal of MCU able. (Fig. 2)			
2	Set console driver as below.				
	• Synchronous mode:	Start Stop mode			
	• Baud rate:	9600 bps			
	• Character bit length:	8 bits			
	• Stop bit length:	1 bit			
	• Parity Check:	none			
	• X control:	none			
3	Turn on power switch of MC	CU console.			
4	Turn on power switch of MC	CU 5000A.			
5	<i>Note:</i> Opening message is n starts up.	ot displayed, in case that MCU 5000A starts up before MCU console			
	Is the opening message displ	layed? (See Fig. 2.)			
	If YES, go to Step 8. If NO, go to Step 6.				
6	Turn OFF power switch of MCU console and MCU 5000A.				
7	Check the connection of cab	le. Then go to Step 2.			
8	Using the <b>RCLK</b> command,	check if the console connection is correct or not.			
	RCLK				
9	Verify that the correct date a	nd time are displayed on the screen.			
	If correct, go to <b>Step 11</b> . If not correct, go to <b>Step 10</b> .				
10	To change the date and time	setting, enter as follows using the WCLK command.			
	WCLK yyyy - mm - dd	hh : ff : ss ب			
	yyyy: year	(4 digits)			
	mm: month	(2 digits)			
	dd: day	(2 digits)			
	hh: hour ff: minute	(2 digits) (2 digits)			
	ss: second	(2 digits)			
11	End of procedure	~			
11	Life of procedure.				



#### Figure 1: Connection of MCU Console to MCU 5000A

\*\*\* Multi point Teleconference control unit MCU 5000A Ver x.xx \*\*\* \*\*\* Copyright (C) NEC Corporation 1991, 1993 \*\*\*

*Note:* x.xx indicates version No. of memory card.

Figure 2: Opening Message

PIN NO.	SIGNAL NAME	I/O	REMARKS	PIN NO.	SIGNAL NAME	I/O	REMARKS
1	FG	-	Frame Ground	14	-		
2	SD	OUT	Send Data	15	ST2	IN	Send Signal Element Timing
3	RD	IN	Receive Data	16	-		
4	RS	OUT	Request Send	17	RT	OUT	Receive Signal Element Timing
5	CS	IN	Capacity Send	18	-		
6	DR	IN	Data Set Ready	19	-		
7	SG	-	Signal ground	20	ER	OUT	Data Transmit Ready
8	CD	IN	Data channel	21	-		
9	-			22	-		
10	-			23	-		
11	-			24	ST1	OUT	Send Signal Element Timing
12	-			25	-		
13	-						

Table 1: RS-232C (CH1 TO CH4) SIGNAL ASSIGNMENT



Figure 3: RS-232C (CH1 to CH4) Connector Pin Assignment

# **SETTING FOR CODEC**

GENERAL:	This procedure provides instruction for parameter setting about CODEC (VisuaLink 5000) using for TV conference terminal.
APPARATUS:	None

SUPPORT DATA: VL 5000 Manual

STEP	PROCEDURE
1	The functional parameter required for VL 5000 are registered in the non-volatile memory.
	At system starting, functional parameters which are registered in the non-volatile memory are automatically loaded, and each functional settings are practiced.
	CODEC is shipped on initializing conditions which made general functional parameters to standard value.
	If these parameter values are different from the value required for actual use, it is necessary to change them.
	The change is possible by using keypad on the operation panel of VL 5000 or command from console connected VL 5000.
2	There are two non-volatile memory in the CODEC. One of them always has an area of easy access to change, at system starting, the data of this area are loaded. Other is for backup.
	After modifying parameter, it is better to take backup.
	If it is necessary to save to backup area or to load from it, change the parameter value by using keypad on the operation panel of VL 5000 or command from VL 5000 Console.
3	Refer to VL 5000 Manual for details.
4	End of procedure.

This page is for your notes.



# 1.5M LIF Unit

Figure 1: 1.5M LIF Unit

Table 1. Switch and Strap Setting for 1.5M LTP Unit
---

Component	Setting	Function	Shipping Condition
S1	TEST side	Access to CPU irrespective of slot address for mounting position of unit.	NOR side
	NOR side	Normal condition.	S1
S2	NOR side	Normal condition.	NOR side
	TEST side	Access to CPU irrespective of slot address for mounting position of unit.	NOR • • S2 TEST
SW1	-	Set the following loop:1.CH1F pointLocal Loop2.CH1F pointRemote Loop3.CH2F pointLocal Loop4.CH2F pointRemote Loop5.CH3F pointLocal Loop6.CH3F pointRemote Loop7.CH4F pointLocal Loop	ALL OFF OFF ↔ ON

COMPONENT	INF NO.	ALARM	FUNCTION	Remarks
PC1		REC	NOS (input loss), LOS (out of sync)	RC 1 2 3 4 5 6 7 8
KC1	CH 1 (CH 5)	AIS	AIS (network side fault)	RC 1 2 3 4 5 6 7 8
BC2	(CH 9) (CH 13)	RAI	RAI (remote alarm)	RC 1 2 3 4 5 6 7 8
KC2		NORMAL	Other than the above alarms or normal.	RC 1 2 3 4 5 6 7 8
RC3		REC	NOS (input loss), LOS (out of sync)	RC 1 2 3 4 5 6 7 8
KC3	CH 2 (CH 6)	AIS	AIS (network side fault)	RC 1 2 3 4 5 6 7 8
RC4	(CH 10) (CH 14)	RAI	RAI (remote alarm)	RC 1 2 3 4 5 6 7 8
KC4		NORMAL	Other than the above alarms or normal.	RC 1 2 3 4 5 6 7 8
RC5		REC	NOS (input loss), LOS (out of sync)	RC 1 2 3 4 5 6 7 8
	CH 3 (CH 7)	AIS	AIS (network side fault)	RC 1 2 3 4 5 6 7 8
RC6	(CH 11) (CH 15)	RAI	RAI (remote alarm)	RC 1 2 3 4 5 6 7 8
Reo		NORMAL	Other than the above alarms or normal.	RC 1 2 3 4 5 6 7 8
RC7	CH 4 (CH 8) (CH 12) (CH 16)	REC	NOS (input loss), LOS (out of sync)	RC 1 2 3 4 5 6 7 8
		AIS	AIS (network side fault)	RC 1 2 3 4 5 6 7 8
RC8		RAI	RAI (remote alarm)	RC 1 2 3 4 5 6 7 8
		NORMAL	Other than the above alarms or normal.	RC 1 2 3 4 5 6 7 8
<i>Note:</i> All LED colors are amber. •: Lighted, O: unlighted, () indicates the channel number for LIF2, LIF3 and LIF4 units respectively.				

Table 2: LED Functions for	1.5M LIF Unit
----------------------------	---------------





Figure 1: RS-422 LIF Unit

Strap S11 ~ S22 according to Table 1.

NO.	NAME	FUNCTION	STANDARD
S1	RC1	Set of receive clock of CH 1         IN       Input receive clock from port         OUT       Output receive clock to port	<ol> <li>"IN" side</li> <li>"OUT" side</li> <li>"IN" side</li> </ol>
S2	TC1	Set of transmit clock of CH 1INInput transmit clock from port (ST2 mode)OUTOutput transmit clock to port (ST1 mode)	<ol> <li>"IN" side</li> <li>"OUT" side</li> <li>"OUT" side</li> </ol>
S3	RC2	Set of receive clock of CH 2         IN       Input receive clock from port         OUT       Output receive clock to port	<ol> <li>"IN" side</li> <li>"OUT" side</li> <li>"IN" side</li> </ol>
S4	TC2	Set of transmit clock of CH 2INInput transmit clock from port (ST2 mode)OUTOutput transmit clock to port (ST1 mode)	<ol> <li>"IN" side</li> <li>"OUT" side</li> <li>"OUT" side</li> </ol>
S5	RC3	Set of receive clock of CH 3         IN       Input receive clock from port         OUT       Output receive clock to port	<ol> <li>"IN" side</li> <li>"OUT" side</li> <li>"IN" side</li> </ol>
S6	TC3	Set of transmit clock of CH 3INInput transmit clock from port (ST2 mode)OUTOutput transmit clock to port (ST1 mode)	<ol> <li>"IN" side</li> <li>"OUT" side</li> <li>"OUT" side</li> </ol>
S7	RC4	Set of receive clock of CH 4         IN       Input receive clock from port         OUT       Output receive clock to port	<ol> <li>"IN" side</li> <li>"OUT" side</li> <li>"IN" side</li> </ol>
S8	TC4	Set of transmit clock of CH 4INInput transmit clock from port (ST2 mode)OUTOutput transmit clock to port (ST1 mode)	<ol> <li>"IN" side</li> <li>"OUT" side</li> <li>"OUT" side</li> </ol>
S9	CSEL 1	Set of transmit/receive clock source for CH 1MASTransmit/receive the data by MCU internal clockSLVTransmit/receive the data by line clock	<ol> <li>"SLV" side</li> <li>"MAS" side</li> <li>"SLV" side</li> </ol>
S10	CSEL 2	Set of transmit/receive clock source for CH 2MASTransmit/receive the data by MCU internal clockSLVTransmit/receive the data by line clock	<ol> <li>"SLV" side</li> <li>"MAS" side</li> <li>"SLV" side</li> </ol>
S11	CSEL 3	Set of transmit/receive clock source for CH 3MASTransmit/receive the data by MCU internal clockSLVTransmit/receive the data by line clock	<ol> <li>"SLV" side</li> <li>"MAS" side</li> <li>"SLV" side</li> </ol>
S12	CSEL 4	Set of transmit/receive clock source for CH 4 MAS Transmit/receive the data by MCU internal clock SLV Transmit/receive the data by line clock	<ol> <li>① "SLV" side</li> <li>② "MAS" side</li> <li>③ "SLV" side</li> </ol>

\* Standard Setting

① Indicate the connection between MCU and DCE with I/F device.

(Straight conversion cable usage.)

② Indicate the connection between MCU and DTE with I/F device. (Cross conversion cable usage.)

③ Indicate the connection between MCU and X.21 (DCE) with I/F device. (Straight conversion cable usage.)

When shipping, Switches and Straps are get  ${\rm \textcircled{1}}$  position.

NO.	NAME	FUNCTION	STANDARD
S13	S1	Set of terminating S signal for CH 1 OPEN Receive clock output (by setting ST1) TERM Receive clock input (by setting ST1)	<ol> <li>"TERM" side</li> <li>"OPEN" side</li> <li>"TERN" side</li> </ol>
S14	X1	Set of terminating X signal for CH 1 OPEN Transmit clock output (by setting ST2) TERM Transmit clock input (by setting ST2)	<ol> <li>"TERM" side</li> <li>"OPEN" side</li> <li>"OPEN" side</li> </ol>
S15	S2	Set of terminating S signal for CH 2 OPEN Receive clock output (by setting ST3) TERM Receive clock input (by setting ST3)	<ol> <li>"TERM" side</li> <li>"OPEN" side</li> <li>"TERN" side</li> </ol>
S16	X2	Set of terminating X signal for CH 2 OPEN Transmit clock output (by setting ST4) TERM Transmit clock input (by setting ST4)	<ol> <li>"TERM" side</li> <li>"OPEN" side</li> <li>"OPEN" side</li> </ol>
S17	S3	Set of terminating S signal for CH 3 OPEN Receive clock output (by setting ST5) TERM Receive clock input (by setting ST5)	<ol> <li>"TERM" side</li> <li>"OPEN" side</li> <li>"TERN" side</li> </ol>
S18	X3	Set of terminating X signal for CH 3 OPEN Transmit clock output (by setting ST6) TERM Transmit clock input (by setting ST6)	<ol> <li>"TERM" side</li> <li>"OPEN" side</li> <li>"OPEN" side</li> </ol>
S19	S4	Set of terminating S signal for CH 4 OPEN Receive clock output (by setting ST7) TERM Receive clock input (by setting ST7)	<ol> <li>"TERM" side</li> <li>"OPEN" side</li> <li>"TERN" side</li> </ol>
S20	X4	Set of terminating X signal for CH 4 OPEN Transmit clock output (by setting ST8) TERM Transmit clock input (by setting ST8)	<ol> <li>"TERM" side</li> <li>"OPEN" side</li> <li>"OPEN" side</li> </ol>
S21	SA	NOR         Normal Condition           TEST         Access to CPU without the relation of the slot address for the installing until location	"NOR" side
S22	PSEL	LIFThis equipment is used with RS-422 LIFHSDThis equipment is used with HSD IF	"LIF" side

Standard Setting ① Indicate the connection between MCU and DCE with I/F device.

(Straight conversion cable usage.)

② Indicate the connection between MCU and DTE with I/F device. (Cross conversion cable usage.)

③ Indicate the connection between MCU and X.21 (DCE) with I/F device. (Straight conversion cable usage.)

When shipping, Switches and Straps are get <sup>①</sup> position.

\*

COMPONENT	SETTING		FU.	NCTION	SHIPPING CONDITION
SW1	-	Set the following	loop:		ALL OFF
			_		OFF <> ON
		1. CH1 F	point	Local Loop	8
		2. CH1 F	point	Remote Loop	
		3. CH2 F	point	Local Loop	
		4. CH2 F	point	Remote Loop	
		5. CH3 F	point	Local Loop	
		6. CH3 F	point	Remote Loop	
		7. CH4 F	point	Local Loop	
		8. CH4 F	point	Remote Loop	

Table 2:	Switch	Setting for	· RS-422	LIF
----------	--------	-------------	----------	-----

Table 3: LED Function for RS-422 LIF

LED NO.	LED NAME	FUNCTION	LED COLOR
RC1	CH 1	Port 1 Indicates SLIP condition.	
RC2	(CH 5/9/13)	Port 1 Indicates synchronous condition of H221	
RC3	CH 2	Port 2 Indicates SLIP condition.	
RC4	(CH 6/10/14)	Port 2 Indicates synchronous condition of H221	Ambar
RC5	CH 3	Port 3 Indicates SLIP condition.	Amber
RC6	(CH 7/11/15)	Port 3 Indicates synchronous condition of H221	
RC7	CH 4	Port 4 Indicates SLIP condition.	
RC8	(CH 8/12/16)	Port 4 Indicates synchronous condition of H221	

Note: ( ) indicates the channel number for LIF2/3/4 unit, respectively.



H0-INF Unit

Figure 1: H0-INF Unit

Component	Setting	Function	Shipping Condition
S1	TEST side	Access to CPU irrespective of slot address for mounting position of unit.	NOR side
	NOR side	Normal condition	S1
S2	-	Line Switch (CH1)	INS side
	T1 side	Private Line (~1.5M)	
	INS side	INS NET 1500	
S3	-	Line Switch (CH2)	
	T1 side	Private Line (~1.5M)	INS
	INS side	INS NET 1500	
S4	NOR side	Normal condition	NOR side
	TEST side	Access to CPU irrespective of slot address for mounting position of unit.	NOR • S2 TEST
SW1	-	Set the following loop:1.CH1F pointLocal Loop2.CH1F pointRemote Loop3.CH2F pointLocal Loop4.CH2F pointRemote Loop5.CH3F pointLocal Loop6.CH3F pointRemote Loop7.CH4F pointLocal Loop8.CH4F pointRemote Loop	ALL OFF <sup>8</sup> 1
SW2 SW3	-	Factory Debug Use Set All OFF SW2 : CH1 SW3 : CH2	ALL OFF off⇔on

Table 1: Switch and Strap Setting for H0-INF Unit

LED NO.	STATE			FUNCTION	LED COLOR
RC 1	•			V40 F/W alarm for CH1	RED
RC 2		•		Layer 2 Normal Operation for CH1	
		О		Layer 2 Not Normal for CH1	
RC 3		•		Layer 1 Normal Operation for CH1	GREEN
		О		Layer 1 Not Normal for CH1	
RC 4	RC 4	RC 5	RC 6	Physical state indication for CH1	
RC 5	О	О	О	Normal Operation	
KC 0	•	О	О	RAI receive	
	•	•	О	Loss of signal, Out of frame	VELLOW
	О	•	О	AIS receive	TELLOW
	О	О	•	RAI or Continuous CRC error receive	
	•	•	•	Immediately lit after Power ON	
RC 7		•		V40 F/W alarm for CH2	RED
RC 8	●			Layer 2 Normal Operation for CH2	
RC 9	О			Layer 2 Not Normal for CH2	GREEN
	•			Layer 1 Normal Operation for CH2	GREEK
		О		Layer 1 Not Normal for CH2	
RC 10	RC 10	RC 11	RC 12	Physical state indication for CH1	
RC 11 RC 12	О	О	0	Normal Operation	
	•	О	0	RAI receive	
	•	•	О	Loss of signal, Out of frame	YELLOW
	О	•	0	AIS receive	
	0	О	•	RAI or Continuous CRC error receive	
	•	•	•	Immediately lit after Power ON	

	Table 2:	LED	<b>Functions</b>	for	H0-INF	Unit
--	----------	-----	------------------	-----	--------	------

This page is for your notes.



EC H221 MUX Unit

Figure 1: EC H221 MUX Unit

COMPONENTS SETTING		ГING	FUNCTION	SHIPPING CONDITION	
DSW1	3	bit 3	bit 4	MUX function test setting.	ALL OFF
	4	OFF	OFF	Normal mode (MUX function test OFF)	(open)
		ON	OFF	TEST 1	
		OFF	ON	TEST 2	
		ON	ON	TEST 3	
	2	bi	t 2	For future use	
	1	bi	t 1	Memory test inhibit	
		0	FF	Executes the memory test at the time of start-up.	
		С	N	Not execute the memory test at the time of start-up.	
SW1	(RST)	-	_	CPU RESET switch (Press when DSW1 setting is changed	· _
S	51	C	LK	Sets CPU operation clock	14M side
		7M	side.	CPU operate with 7MHz	
		14M	side.	CPU operate with 14MHz	
S	52	D	LY	Sets Receiving Data delay	OFF side
		ON side.		One sub-multiframe delay	
		OFF	side.	Not delay	
S	33	M	UX	Sets multiplexer ON/OFF.	ON side
		ON	side.	Operate the multiplexer.	
		OFF	side.	Not operate the multiplexer.	
S	S4 CTS		TS	Sets Protection Mode for multiframe number	DEC side
		DEC	side.	Sets Addition counter	
INC		INC	side.	Sets Subtraction counter	

Table 1: Switch and Strap Setting for EC H221 MUX Unit

COMPONENTS	SETTING	FUNCTION	SHIPPING CONDITION
S5	232	Sets RS-232C driver/receiver, to ON/OFF	NOP side
	DBG side.	Makes possible the use of the RS-232C driver receiver of the debug terminal.	
	NOR side.	Places the RS-232C driver receiver of the debug terminal in a stand-by state.	
S6	WDT	Sets the watchdog timer ON/OFF.	NOD
	DBG side.	Inhibits the watchdog timer when debugging the software.	
	NOR side.	Resets the CPU when the source voltage has dropped or in the event of an alarm.	
S7	PROM	Set the type of program able ROM.	1M side
	256 side.	27C256 is used in the program able ROM (Z114).	PROM
	512 side.	27C512 is used in the program able ROM (Z114).	1M • • 512
S8	SA	Detects slot address. Sets ON/OFF.	NOR side
	DBG side.	Ignores the package ID of higher 4 bits (SA4 ~ 7) of slot address.	
	NOR side.	Detects the package ID of higher 4 bits (SA4 ~ 7) of slot address.	
S9	MLB	Sets MUX loopback ON/OFF.	NOP side
	NOR side.	Turns MUX loopback OFF (normal).	MLB
	ON side.	Loops back demultiplexed audio, video, and low speed data to the multiplexer in the unit.	

Table 2: Switch and Strap Setting for EC H221 MUX Unit

LED NO.	LED NAME	FUNCTION	LED COLOR	
RC 16	REC	Lights when H221 is in out-of-sync condition		
RC 15	REM ALM	Lights when H221 A bit (REM ALM) is received.		
RC 14	LOOP 1	Lights during the local loopback mode of operation. (point B and point C)		
RC 13	LOOP 0	Lights when point C is in the loopback mode (local, remote).	Amber	
RC 12	H PATH	Lights at time of H221 MUX pass through.	Amber	
RC 11	TEST	Lights when making memory test and testing the MUX function.		
RC 10	FUN ERR	Lights when an error occurred in the MUX function test.		
RC 9	MEM ERR	Lights when an error occurred in the memory test.		
RC 8	CH2 REC	Lights when CH2 H221 is in out-of-sync condition.		
RC 7	FEC REC	Lights when video FEC is in out-of-sync condition.		
RC 6	_	Spare		
RC 5	_	Spare	Green	
RC 4	FPR Rx	Lights when receiving the Video Command Freeze (VCF)	Oleeli	
RC 3	FUR Rx	Lights when receiving the Video Command Update (VCU)		
RC 2	FPR Tx	Lights when sending the Video Command Freeze (VCF)		
RC 1	FUR Tx	Lights when sending the Video Command Update (VCU)		

|--|

S

# V SW/LSD IF Unit



Figure 1: V SW/LSD IF Unit

COMPONENTS	SETTING	FUNCTION	SHIPPING CONDITION
CONF A/B	Ø	Selects the status indication of conference A. (Toggle SW is in up state.)	
(Toggle S w, SW1)	¢	Selects the status indication of conference B. (Toggle SW is in down state.)	CONF B CONF A SIDE
RST (Push- button SW, SW3)	_	For resetting the PN pattern alarm.	PUSH: RESET
MON SEL (Thumb wheel SW, SW2)	_	Selects the output (CH1-CH8) for monitor.Select ChannelNo. Displayed (SW No.)CH10CH21CH32CH43CH54CH65CH76CH87	SW No. is 0
	ch L side	Sets TS0 to TS15 on LSD for use.	ch H side
S1	ch H side	Normal condition. (TS16 to TS31)	1 2 3 ChL ••• ChH
	NOR side	Normal condition.	NOR side
S2	DBG side	Access to CPU irrespective of slot address for mounting position of unit.	

Table	1۰	Switch	and	Stran	Setting	for	v	SW/LSD	<b>U</b> nit
Table	1.	Switch	anu	Suap	Setting	101	v	SW/LSD	Umt

## Table 2: LED Functions for V SW/LSD IF Unit

LED NAME	COMPONENTS	FUNCTION	LED COLOR
RC 1	ARM	Indicates the alarm of the PN pattern.When LED is lit:Error detection.When LED is unlit:No error	RED
RC 2 to 3	CONF A/B	Indicates the status indication for conference A or conference B.	AMBER
RC 4 to 11	JOIN (CH1 to CH8)	Indicates participants' conference room.	GREEN
RC 12 to 19	OPE (CH1 to CH8)	Indicates the operator.	GREEN
RC 20 to 27	TX (CH1 to CH8)	Indicates the broadcast sending terminal.	GREEN





Figure 1: A CODEC Unit

COMPONENTS	SETTING	FUNCTION	SHIPPING CONDITION
610	-	ROM type setting	
S10 S11	512 side	27C512	
	256 side	27C256	256 9
	-	Slot address inhibit	
<b>S</b> 9	INH side	INHIBIT	
	NOR side	NORMAL	NOR 13
S1 (CH 1) S3 (CH 2) S5 (CH 3) S7 (CH 4)	-	Sets SB-ADPCM DECODER mode.1-2:CCITT ALGORITHM2-3:NEC ALGORITHM4-5:NORMAL5-6:TONE OUT (0 dB, 1 kHz)7-8:NORMAL8-9:TONE OUT (0 dB, 1 kHz)	<b>•••</b> 123 <b>•••</b> 456 <b>•••</b> 789
S2 (CH 1) S4 (CH 2) S6 (CH 3) S8 (CH 4)	-	Sets SB-ADPCM CODER mode.1-2:CCITT ALGORITHM2-3:NEC ALGORITHM4-5:NORMAL5-6:TONE OUT (0 dB, 1 kHz)7-8:NORMAL8-9:TONE OUT (0 dB, 1 kHz)	<b>•••</b> 123 <b>•••</b> 456 <b>•••</b> 789

Table 1: Switch and Strap	• Settings for A	<b>CODEC</b> Unit
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## Table 2: LED Functions for A CODEC Unit

LED NO.	LED NAME		LED COLOR		
RC4 RC3 RC2 RC1	Talker Talker Talker Talker	Lights when con RC4 (SD4) RC3 (SD3) RC2 (SD2) RC1 (SD1)	rresponding chan COD #1 CH4 CH3 CH2 CH2 CH1	nel is occupied by talker. COD#2 CH8 CH7 CH6 CH5	GREEN

# A SUM Unit



Figure 1: A SUM Unit

Table 1: Switch and	Strap Settings for	a SUM Unit
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COMPONENTS	SETTING	FUNCTION	SHIPPING CONDITION
S2	-	ROM type setting.	256 side.
\$3	256 side	27C256	
	512 side	27C512	● <sup>3</sup>
S1	-	Slot address inhibit.	NOR side.
	NOR side	Normal	
	IUH side	Inhibit	• <sup>3</sup>
CN3	-	Audio monitor output (600 _ UNBAL).	
SW1	-	Switching for summing audio monitor output.	Side A.
	A side	Conference A (upper case)	
	B side	Conference B (lowe case)	
RV1	-	Variable resister for summing audio monitor output.	
	Clockwise	Volume increase	(Fully counter-clockwise).
	Counter clockwise	Volume decrease	(

LED NO.	LED NAME	FUNCTION	LED COLOR
RC1	SB-ADPCM	Lights when conference A operates in SB-ADPCM.	Green
RC2	µ-Law PCM	Lights when conference A operates in µ-law PCM.	Green
RC3 to RC10	MS-A	Lights only when main talker at CONF A is talking. (All light up when initializing.) RC3: CH8 RC10: CH1	Green
RC11	SB-ADPCM	Lights when conference B go to SB-ADPCM.	Green
RC12	µ-Law PCM	Lights when conference B go to µ-law PCM.	Green
RC13 to RC20	MS-B	Lights only when main talker at CONF B is talking. (All light up when initializing.) RC13: CH8	Green

## Table 2: LED Functions for a SUM Unit

# **PG/SIO Unit**



Figure 1: PG/SIO Unit

COMPONENTS	FUNCTION						SHIPPING CONDITION	
SW1	Set the baud rate of RS-232C interface (CH1 to CH4).							
	SW1	Setti	ng		I	Function		SW1 Setting
	8	D	l	RS-23	2C CH4	ļ		8 OFF
	7	D	)	Baud	rate sett	ing		7 OFF
	6	D	l	RS-23	2C CH3	3		6 OFF
	5	D	)	Baud	rate sett	ing		5 OFF
	4	D	l	RS-23	2C CH2	2		4 OFF
	3	D	)	Baud	rate sett	ing		3 OFF
	2	D	l	RS-23	2C CH			2 OFF
	1	D	)	Baud	rate sett	ing		1 OFF
	DI	D0		Ba	ud rate			OFF ON
	1	1		96	00 bps			
	1	0		48	00 bps			
	0	1		24	00 bps			
	0	0		12	00 bps			1
	0. SW ON	state						9600 bps Setting
	1: SW OF	F state						
	*: Setting a	at the tin	ne of sh	ipment.				
SW2	Set the exte	rnal clo	ck frequ	ency to	extract	from the network.		
								SW2 Setting
			SV	V2		Input clock (Hz)		4 OFF
		4	3	2	1	1		3 ON
		OFF	OFF	OFF	OFF	OFF		2 ON
		OFF	OFF	OFF	ON	OFF		1 ON
		OFF	OFF	ON	OFF	448 k		
		OFF	OFF	ON	ON	112 k		
		OFF	ON	OFF	OFF	56 k		
		OFF	ON	OFF	OFF	2,048 K		
		OFF	ON	ON	OFF	1,920 K		
		OFF	OFF	OFF	OFF	1,344 K *		1 4 ON
		ON	OFF	OFF	OFF	1,330 K		
		ON	OFF	OFF	OFF	768 lz		OFF
		ON	OFF	ON	OFF	700 K 384 b		1 544Hz Setting
		ON	ON	OFF	OFF	256 k		1,07712 Octuriy
		ON	ON	OFF	ON	192 k		
		ON	ON	ON	OFF	122 K		
		ON	ON	ON	ON	64 k		
	* : Setting a	t the tim	e of shi	pment				

#### Table 1: Switch and Strap Setting for PG/SIO Unit (1 of 3)

COMPONENTS			SH	IPPING CONDITION		
S1	Strap for deb	ugging		NOR	side.	
	Part No. Setting Function					
		DBG	Disregard slot address on mounted			DBG • • • NOR
	S1		location			
		NOR	Normal	state		
\$2	With regard	to the control	l signals (C	TS DR CD ST2 clocks RT clock	) Side t	o be stranned is indicated
\$2 \$3	of the RS-23	2C interface	(CH1 to 4)	these select either the normal	below	/:
<b>S</b> 4	operation (a s	signal from th	e remote co	ommunication side is fetched) or the	e S2	EXT1 side
S5	fixed level.	0			<b>S</b> 3	IN side
<b>S</b> 6	. <u> </u>				S4	IN side
<b>S</b> 7	RS-232C	Part No.	Setting	Function	S5	EXT2 side
		S2	INT1	CS, DR, CD fixed at "L" (ON)	<b>S</b> 6	IN side
			EXT1	CS, DR, CD normal operation	S7	IN side
	Ch1	S3	IN	ST2 fixed at "H".		
	CIII		_	ST2 normal operation		
		S4	IN	RT fixed at "H".		
			-	RT normal operation		
		S5	INT2	CS, DR, CD fixed at "L" (ON).		
			EXT2	CS, DR, CD normal operation		
	СН2	S6	IN	ST2 fixed at "H".		
			_	ST2 normal operation	]	
		S7	IN	RT fixed at "H".	]	
			_	RT normal operation		

#### Table 1: Switch and Strap Setting for PG/SIO Unit (2 of 3)

COMPONENTS			SHI	SHIPPING CONDITION			
S8						S8	EXT3 side
<b>S</b> 9						S9	IN side
S10	RS-232C	Part No.	Setting	F	unction	S10	IN side
S11		<b>S</b> 8	INT3	CS, DR, CD	fixed at "L" (ON)	S11	EXT4 side
S12			EXT3	CS, DR, CD	normal operation	S12	IN side
\$13	Ch3	<b>S</b> 9	IN	ST2 fixed at	t "H".	\$13	IN side
	CIIS		_	ST2 normal	operation		
		S10	IN	RT fixed at	"Н".		
			_	RT normal of	operation		
		S11	INT4	CS, DR, CD	fixed at "L" (ON).		
			EXT4	CS, DR, CD	normal operation		
	CII4	S12	IN	ST2 fixed at	: "H".		
	Сп4		_	ST2 normal	operation		
		S13	S13 IN RT fixed at "H".		"Н".		
			_	RT normal of	operation		
S14	Set interruption	ng detect trigger	r (Edge trigge	er mode or Lo	evel trigger mode)	S14	E side
S15	which is caus	ed by external c	clock OFF or	internal cloc	k phase slip in the unit	S15	E side
S16	to initializatio	on of µPD71059	by strapping	<u>.</u>		S16	E side
S17						S17	E side
	Strap	Fun	ctions		Trigger mode		
	S14	1.544 MHz	clock Phase	e E	Edge		
	514	5	Slip	L	Level		
	\$15	4.096 MHz	clock Phase	e E	Edge		
	515	5	Slip		Level		
	\$16	10.752 MHz	z clock Phas	e E	Edge		
	510	5	Slip	L	Level		
	\$17	Line Cl	ock Loss	Е	Edge		
	517			L	Level		

## Table 1: Switch and Strap Setting for PG/SIO Unit (3 of 3)

#### Table 2: LED FUNCTIONS FOR PG/SIO UNIT

LED NO.	LED NAME	FUNCTION	LED COLOR
RC1	CLOS	Lights when the line clock input lost.	Red
RC2	SLP3	Lights when a phase slip between the circuit clock and 10.752 MHz clock has occurred.	Amber
RC3	SLP2	Lights when a phase slip between the line clock and 4.096 MHz clock has occurred.	Amber
RC4	SLP1	Lights when phase slip between the line clock and 1.544 MHz clock has occurred.	Amber



# M CONT Unit

Figure 1: M CONT Unit

Components	Function	Shipping Condition
SW1 (NMI)	Re-start switch Requests the CPU for NMI (Non-Maskable Interrupt) (Push On)	_
SW2 (RST)	Reset switch Requests for CPU reset (Push On)	_
SW3 (D IN)	DIP switch for debugging Board for input of data of 8 bit length	
	SW# #8 #7 #6 #5 #4 #3 #2 #1	
	bit D7 D6 D5 D4 D3 D2 D1 D0	,
	DB SE LM PS VC TCB TCA CM	1
		ALL OFF
	Not Used	
	Operates in the Operates in the Operates in the Operates after initialization 1: Stop processing Operates in the Operates in the Oper	
	Set Open (OFF) $\rightarrow$ "1" Close (ON) $\rightarrow$ "0"	
SW4 (LMT)	LED check switch (on-latch)Lighting check of all units in the MCUSet Up $\rightarrow$ NormalDownLED $\rightarrow$ check	Up (Normal)

Table 1: Switch and Strip Setting for M CONT Unit (1 of 2)

	Shipping Condition
BATT Backup power control (ON/OFF)	OFF side
	OFF ON
Setting Function	
ON Backup power ON	
OFF Backup power OFF	
when installed, should be set to ON side.	0.1
DBS External unit data bus selection (8 bits/16 bits)	8 side
	8 • • 16
Setting Function	
16     Data bus is 16 bits       8     Data bus is 8 bits	
CN3 (MON) RS-232C port	
RS-232C port for debugging	
Pin # Signal name Contents	
1 _ NC	
2 RxD Receive data	
4 SG Ground	
	-
Communications system: Full duplex	
Communication rate: 9600 bps	
Data type: Start bit 1	
Data bit 8	
Stop bit 1	
CN14 Connector for moment and	
CI K External output aloak calaction	DCK side
CLK External output clock selection	PCK side
	PLK • CPU
Setting Function	
PCK P clock of CPU is outputted	
i clock of ci o is outputted.	
WDT Watchdog time control (ON/OFF)	ON side
	ON • OFF
Setting Function	
ON CPU is reset by watchdog timer.	
OFF CPU is not reset by watchdog timer.	

Table 1: Switch an	l Strip Sett	ing for M CO	ONT Unit (2 of 2)
--------------------	--------------	--------------	-------------------

Components	Function							Shipping Condition		
RC7 thru 14 ST 1~8)	CPU status When normal									
	LED# 14 13 12 11 10 9 8 7									
	bit	D7	D6	D5	D4	D3	D2	D1	D0	D7, D6: RED
			   		Except D7, D6: YELLOW					
	Task No. display									
		memory card battery voltage detection       0:       Voltage abnormal         1:       Voltage normal								
	LED#	14	13	12	11	10	9	8	7	
	bit	D7	D6	D5	D4	D3	D2	D1	D0	
<ul> <li>Abnormal generated task number display</li> <li>Initial RAM/ROM error</li> <li>RAM error : 7F : D0~D6 ON ROM error : 7E : D1~D6 ON MCU H/W initialize error : 7D : D0, D2~D6 ON Backup RAM error : 7C : D2~D6 ON Program load error : 7B : D0, D1, D3~D6 ON Loader abnormal operating : 7A : D1, D3~D6 ON</li> <li>Voltage abnormal</li> <li>Voltage normal</li> </ul>									ON ON ON ON ON ON N nal	
RC6 (MC)	Memory card access								RED	
	Lights when accessing the memory card									

Table 2: LED Function for M	M CONT Unit
-----------------------------	-------------





Figure 1: VDSW Unit

COMPONENTS	SETTING	FUNCTION	SHIPPING CONDITION		
CONF A/B		Selects the status indication of conference A. (Toggle SW is in up state.)			
SW1)	¢	Selects the status indication of conference B. (Toggle SW is in down state.)	CONF B		
MON SEL (Thumb wheel SW, SW2)	_	Selects the output (CH1-CH8) for monitor.Select ChannelNo. Displayed (SW No.)CH10CH21CH32CH43CH54CH65CH76CH87	SW No. is 0		
S3	ch L side	Sets TS0 to TS15 on LSD for use.	ch H side		
	NOR side	Normal condition. (1516 to 1531)			
S1	DBG side	Access to CPU irrespective of slot address for mounting position of unit.			
	ch L side	Set HSCX Point-to-Point mode.	ch H side		
S2	ch H side	Normal condition (Bus connection).	1 2 3 ChL ••• ChH		

Table 1.	Switch	and	Stron	Sotting	for	VDGW	Unit
Table 1:	Switch	anu	Strap	Setting	101	<b>V D 5 V</b>	Umi
LED NAME	COMPONENTS	FUNCTION	LED COLOR				
--	-----------------------	---	-----------				
LED1	CONF A		AMBER				
LED2	CONF B		AMBER				
LED3-1 ~ LED3-4 LED4-1 ~ LED4-4	JOIN RC1~RC8	Indicates participants' conference room.	GREEN				
LED5-1 ~ LED5-4	OPE (RC1 ~ RC8)	Indicates the operator.	GREEN				
LED6-1 ~ LED6-4	VIDEO (RC1 ~ RC4)	Indicates the broadcast sending terminal.	GREEN				
LED7-1 ~ LED7-4	LSD1 RC1 ~ RC4	Indicates the LSD broadcast sending terminal.	GREEN				
LED8-1 ~ LED8-4	MPL/LSD2 RC1 ~ RC4	Not used	GREEN				
LED9-1 ~ LED9-4	HSD RC1 ~ RC4	Indicates the HSD broadcast sending terminal.	GREEN				
LED11	PN ERR	Indicates the alarm of the PN pattern.	RED				
LED10	PN RCV	Indicates no error in PN pattern.	GREEN				

Table 2:	LED	<b>Functions</b>	for	<b>VDSW</b>	Unit

# Table 3: LED5 ~ 9 Display CH

СН	RC4	RC3	RC2	RC1
1	0	0	0	•
2	0	0	•	0
3	0	0	•	•
4	0	•	0	0
5	0	•	0	•
6	0	•	•	0
7	0	•	•	•
8	•	0	0	0
•: lit				

**O**: unlit



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# MCU 5000A MULTIPOINT CONTROL UNIT

# SYSTEM PARAMETERS MANUAL

SEPTEMBER, 1998 NEC America, Inc.

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# **Table of Contents**

INTRODUCTION	INT-001
CONSOLE RELATED	
CONSOLE INITIAL MESSAGE SETTING	SPR-001
CONSOLE COMMAND GENERATION SETTING	SPR-002
CONSOLE COMMUNICATION PARAMETER SETTING	SPR-003
CONSOLE CODE INDICATION SETTING	SPR-004
IDENTIFICATION CODE SETTING	SPR-005
CONSOLE PORT SETTING	SPR-006
LINE RELATED	
1.5M LIF LINE RATE SETTING	SPR-007
1.5M LIF FRAME FORMAT SETTING	SPR-008
1.5M LIF LINE CODE SETTING	SPR-009
1.5M LIF RAI SETTING	SPR-010
1.5M LIF CLOCK SOURCE SETTING	SPR-011
1.5M LIF LINE EQUALIZER SETTING	SPR-012
RS 422 LIF LINE RATE SETTING	SPR-013
RS 422 LIF CLOCK SOURCE SETTING	SPR-014
H0-INF LIF LINE RATE SETTING	SPR-015
H0-INF LIF CLOCK SOURCE SETTING	SPR-016
VOICE RELATED	
TALKER DETECTION BACKWARD PROTECTION TIME SETTING	SPR-017
TALKER DETECTION FORWARD PROTECTION TIME SETTING	SPR-018
TALKER DETECTION VOICE LEVEL SETTING	SPR-019
MAXIMUM TALKER SETTING	SPR-020
MULTIPOINT TELECONFERENCE RELATED	
TALKER DETECTION (MCON) SETTING	SPR-021
AREA NAME DELETION SETTING	SPR-022
H.242 CAPABILITY SWITCHING ACTION SETTING	SPR-023
TALKER DETECTION (ECON) SETTING	SPR-024
TC5000 OPERATION MODE SETTING	SPR-025
PICTURE RELATED	
PICTURE SWITCHING TIMERS 1 TO 4 SETTING	SPR-026

# **TERMINAL CAPABILITY RELATED**

AUDIO CAPABILITY SETTING	SPR-027
TRANSFER RATE CAPABILITY SETTING	<b>SPR-028</b>
VIDEO CAPABILITY SETTING	SPR-029
LOW SPEED DATA (LSD) CAPABILITY SETTING	SPR-030
HIGH SPEED DATA (HSD) CAPABILITY SETTING	SPR-031
MLP CAPABILITY SETTING	SPR-032
NETWORK CLASSIFICATION CAPABILITY SETTING	SPR-033
MBE CAPABILITY SETTING	SPR-035
MBE MESSAGE (AUDIO) CAPABILITY SETTING	<b>SPR-036</b>
MBE MESSAGE (LSD2) CAPABILITY SETTING	SPR-037
MBE MESSAGE (VIDEO) CAPABILITY SETTING	<b>SPR-038</b>
AUDIO CAPABILITY	SPR-101
TRANSFER RATE CAPABILITY	SPR-102
VIDEO CAPABILITY SETTING	SPR-103
LSD CAPABILITY SETTING	SPR-104
HSD CAPABILITY SETTING	SPR-105
MLP CAPABILITY SETTING	SPR-106
NETWORK CLASSIFICATION CAPABILITY SETTING	SPR-107
MBE CAPABILITY SETTING	SPR-108
MBE MESSAGE 1 (AUDIO) CAPABILITY SETTING	SPR-109
MBE MESSAGE 2 (PROPRIETARY) CAPABILITY SETTING	SPR-110
MBE MESSAGE 3 (LSD2) CAPABILITY SETTING	SPR-111
MBE MESSAGE 4 (VIDEO) CAPABILITY SETTING	SPR-112
MBE MESSAGE CAPABILITY SETTING	SPR-113
TIC CAPABILITY SETTING	SPR-114
CIC CAPABILITY SETTING	SPR-115
AUDIO MODE CAPABILITY SETTING	SPR-116
TRANSFER RATE CAPABILITY SETTING	SPR-117

# **TERMINAL MODE RELATED**

AUDIO MODE SE ITING S	SPR-039
TRANSFER RATE MODE SETTING S	SPR-040
VIDEO MODE SETTING	SPR-041
LOW SPEED DATA (LSD) MODE SETTING S	SPR-042
HIGH SPEED DATA (HSD) MODE SETTING S	SPR-043
MLP MODE SETTING S	SPR-044
NETWORK CLASSIFICATION MODE SETTING S	SPR-045
MBE MODE SETTING S	SPR-047
MBE MESSAGE (AUDIO) MODE SETTING S	SPR-048
MBE MESSAGE (LSD2) MODE SETTING S	SPR-049
MBE MESSAGE (VIDEO) MODE SETTING S	SPR-050
VIDEO MODE SETTING S	SPR-118
LSD MODE SETTING S	SPR-119
HSD CAPABILITY SETTING S	SPR-120
MLP MODE SETTING S	SPR-121
NETWORK CLASSIFICATION MODE SETTING S	SPR-122
MBE MODE SETTING S	SPR-123
MBE MESSAGE 1 (AUDIO) SETTING S	SPR-124
MBE MESSAGE 3 (LSD2) MODE SETTING S	SPR-125
MBE MESSAGE 4 (VIDEO) MODE SETTING S	PR-126
RCON ACTION MODE SETTING S	SPR-127

# INTRODUCTION

1. GENERAL1.01This document describes the information of system parameters for setting<br/>the Multipoint Control Unit 5000A (MCU 5000A).

# 2. OVERVIEW2.01 The MCU 5000A system parameters are for use in setting the operating environment for the MCU 5000A. After installing the MCU 5000A, the system parameters must be set conforming to user's system operations by this manual.

**2.02** The system parameters are stored in the equipment's backup memory and the contents of system parameters will be retained even if power is turned off.

# **3.** SYSTEM PARAMETER SETTING **3.01** The system parameters can be set and verified by entering commands from the MCU console. The following provides a description of how to set and verify the system parameters. For further details, refer to the console operations section.

- *Note 1:* As to the system parameter values having 16-bit values, set the parameters in the numerical order of addresses sequentially starting with the lower-half 8 bits and then with the upper-half 8 bits.
- *Note 2:* When the equipment is powered up, the CRC values (3FE to 3FF) for checking the correctness of the system parameter contents are automatically updated simultaneously with the system parameter setting.
- *Note 3:* After setting the system parameters, be sure to restart the program with the MCONT unit reset switch. For some parameters are referred to only when initializing the system.

#### How to set system parameters

When setting system parameter values, the setting values for SSPR commands and system parameter addresses are entered from the console.

 $SSPR\__*** = xx[return]$ 

\*\*\* : system parameter address (hexadecimal values 00 to 3FF)

xx : system parameter setting values (hexadecimal values 00 to FF)

When the normal system parameters are set, the console will display OK. If abnormal, an error code will be displayed. Verify the error code before repeating the procedure.

#### How to verify system parameters

After setting system parameters, verification of their correctness or details can be performed by entering RSPR commands from the console.

```
RSPR *** [return]
```

\*\*\* : system parameter address (hexadecimal values 0 to 3FF). If omitted, all the parameters will be displayed. If L is entered, the parameters for addresses 000 to 0FF will be displayed. If H is entered, the parameters for addresses 100 to 1FF will be displayed. If XL is entered, the parameters for addresses 200 to 2FF will be displayed. If XL is entered, the parameters for addresses 300 to 3FF will be displayed.

In case of a normal response, the system parameter values that have been set will be displayed in the manner as follows.

```
*** = xx_OK
```

\*\*\* : system parameter address

xx : system parameter setting values

If abnormal, an error code will be displayed. Verify the error code before repeating the procedure.

#### System parameter initialization

When initializing the system parameter values already set, enter an RRST command from the console.

ISPR [return]

Once the command is executed, the console will display OK. If abnormal, an error code will be displayed. Verify the error code before repeating the procedure. The factory shipment value for the system parameter is stored in the memory card.

#### 4. SYSTEM PARAMETER DESCRIPTION

**4.01** System parameters are grouped by kinds with reference to setting procedures as shown in the following table. Be sure to set the system parameters correctly in accordance with the procedure reference number in the table.

KIND	INTERFACE	SYSTEM PARAMETER (ADDRESS)	SYSTEM PARAMETER SETTING PROCEDURE REF. NO.
		Console Initial Message (00H)	SPR-001
		Console Command Generation (01H)	SPR-002
Console Related		Console Communication Parameter (02H)	SPR-003
Collisole Related	-	Console Code Indication (08H)	SPR-004
		Identification Code (09H)	SPR-005
		Console Port (0AH)	SPR-006
		Line Rate (30H to 37H)	SPR-007
		Frame Format (38H)	SPR-008
	1 5M I IE	Line Code (39H)	SPR-009
	1.5M LIF	RAI Type (3AH)	SPR-010
		Clock Source (3BH to 3DH)	SPR-011
Line Related		Line Equalizer (40H to 4FH)	SPR-012
	RS422 LIF	Line Rate (30H to 37H)	SPR-013
		Clock Source (+3BH) Clock Source Masking (3CH to 3DH)	SPR-014
	HO-INF LIF	Line Rate (30H_37H)	SPR-015
		Clock Source (+3BH) Clock Source Masking (3CH to 3DH)	SPR-016
	_	Talker Detection Backward Protection Time (50H)	SPR-017
Voice Polated		Talker Detection Forward Protection Time (51H)	SPR-018
voice Kelateu		Talker Detection Voice Level (60H to 67H)	SPR-019
		Maximum Talker (53H)	SPR-020
Multipoint		Talker Detection (MCON) (70H)	SPR-021
		Area Name Detection (MCON) (73H)	SPR-022
Teleconference	-	H.242 Capability Switching Action (77H)	SPR-023
Related		Talker Detection (ECON) (88H)	SPR-024
	-	TC5000 Operation Mode (8EH to 8FH)	SPR-025
Picture Related	_	Picture Switching Timer 1 to 4 (180H to 1AF)	SPR-026

#### Table 1: System Parameters List (1 of 4)

KIND	INTERFACE	SYSTEM PARAMETER (ADDRESS)	SYSTEM PARAMETER SETTING PROCEDURE REF. NO.
		Audio Capability (100H to 101H)	SPR-027
		Transfer Rate Capability (104H to 107H)	SPR-028
		Video Capability (108H to 109H)	SPR-029
		LSD (Low Speed Data) Capability (10AH to 10BH)	SPR-030
		HSD (High Speed Data) Capability (10CH to 10FH)	SPR-031
Terminal		MLP Capability (110H to 111H)	SPR-032
Capability	_	Network Classification Capability (112H to 113H)	SPR-033
		MBE Capability (116H to 117H)	SPR-035
		MBE Message (Audio) Capability (118H to 119H)	SPR-036
		MBE Message (LSD2) Capability (11AH to 11BH)	SPR-037
		MBE Message (Video) Capability (11CH to 11DH)	SPR-038
	_	Audio Mode (120H to 123H)	SPR-039
		Transfer Rate Mode (124H to 127H)	SPR-040
		Video Mode (128H to 129H)	SPR-041
		LSD (Low Speed Data) Mode (12AH to 12BH)	SPR-042
		HSD (High Speed Data) Mode (12CH to 12FH)	SPR-043
Terminal		MLP Mode (130H to 131H)	SPR-044
Mode		Network Classification Mode (132H to 133H)	SPR-045
		MBE Mode (136H to 137H)	SPR-047
		MBE Message (Audio) Mode (138H to 139H)	SPR-048
		MBE Message (I SD2) Mode (13AH to 13BH)	SPR-049
		MBE Message (Video) Mode (13CH to 13DH)	SPR-050

KIND	INTERFACE	SYSTEM PARAMETER (ADDRESS)	SYSTEM PARAMETER SETTING PROCEDURE REF. NO.
		Audio Mode (230H to 233H)	SPR-116
		Transfer Rate Mode (234H to 237H)	SPR-117
		Video Mode (238H to 239H)	SPR-118
		LSD (Low Speed Data) Mode (23AH to 23BH)	SPR-119
Terminal		HSD (High Speed Data) Mode (23CH to 23FH)	SPR-120
Mode RCON mode	_	MLP Mode (240H to 241H)	SPR-121
(Group A)		Network Classification Mode (242H to 243H)	SPR-122
		MBE Mode (246H to 247H)	SPR-123
		MBE Message (Audio) Mode (248H to 249H)	SPR-124
		MBE Message (LSD2) Mode (24AH to 24BH)	SPR-125
		MBE Message (Video) Mode (24CH to 24DH)	SPR-126
	_	Audio Mode (290H to 293H)	SPR-116
		Transfer Rate Mode (294H to 297H)	SPR-117
		Video Mode (298H to 299H)	SPR-118
		LSD (Low Speed Data) Mode (29AH to 29BH)	SPR-119
Terminal		HSD (High Speed Data) Mode (29CH to 29FH)	SPR-120
Mode RCON mode		MLP Mode (2A0H to 2A1H)	SPR-121
(Group B)		Network Classification Mode (2A2H to 2A3H)	SPR-122
		MBE Mode (2A6H to 2A7H)	SPR-123
		MBE Message (Audio) Mode (2A8H to 2A9H)	SPR-124
		MBE Message (LSD2) Mode (2AAH to 2ABH)	SPR-125
		MBE Message (Video) Mode (2ACH to 2ADH)	SPR-126

Table 1: System Parameters List (3 of 4)

KIND	INTERFACE	SYSTEM PARAMETER (ADDRESS)	SYSTEM PARAMETER SETTING PROCEDURE REF. NO.
		Audio Capability (200H to 203H)	SPR-101
		Transfer Rate Capability (204H to 207H)	SPR-102
		Video Capability(208H to 209H)	SPR-103
		LSD (Low Speed Data) Capability (20AH to 20BH)	SPR-104
		HSD (High Speed Data) Capability (20CH to 20FH)	SPR-105
		MLP Capability (210H to 211H)	SPR-106
Terminal		Network Classification Mode (212H to 213H)	SPR-107
Capability		MBE Capability (216H to 217H)	SPR-108
RCON mode	-	MBE Message (Audio) Capability (218H)	SPR-109
(Gloup A)		MBE Message (Proprietary) Capability (219H)	SPR-110
		MBE Message (LSD2) Capability (21AH to 21BH)	SPR-111
		MBE Message (Video) Capability (21CH to 21DH)	SPR-112
		MBE Message (Data Application BAS) Capability (21EH to 221H)	SPR-113
		TIC Capability (222H)	SPR-114
		CIC Capability (223H)	SPR-115
	_	Audio Capability (260H to 263H)	SPR-101
		Transfer Rate Capability (264H to 267H)	SPR-102
		Video Capability (268H to 269H)	SPR-103
		LSD (Low Speed Data) Capability (26AH to 26BH)	SPR-104
		HSD (High Speed Data) Capability (26CH to 26FH)	SPR-105
		MLP Capability (270H to 271H)	SPR-106
Terminal		Network Classification Capability (272H to 273H)	SPR-107
Capability		MBE Capability (276H to 277H)	SPR-108
RCON mode		MBE Message (Audio) Capability (278H)	SPR-109
(Gloup D)		MBE Message (proprietary) Capability (279H)	SPR-110
		MBE Message (LSD2) Capability(27AH to 27BH)	SPR-111
		MBE Message (Video) Capability (27CH to 27DH)	SPR-112
		MBE Message (Data Application BAS) Capability (27EH to 281H)	SPR-113
		TIC Capability (282H)	SPR-114
		CIC Capability (283H)	SPR-115
DCONL		CCR Timer	SPR-127
KCON Action Mode	_	CCA (Operator) mode	SPR-127
Mode		Master/Slave Classification	SPR-127

## Table 1: System Parameters List (4 of 4)

#### 5. SYSTEM PARAMETER BACKUP ERROR PROCESSING

**5.01** The system parameters are retained in the battery-powered memory even when the commercial electricity fails, but the system-parameter contents may be destroyed by causes like the following:

- (1) When power outage continued for many hours with the battery in the dead state.
- (2) The memory contents were caused to change due to replacement of a unit (chiefly an MCONT unit).

If the system parameter contents are destroyed, MCU 5000A programs will be disabled to start and then the CPU status indication LEDs on the MCONT unit will give out the following indication. Refer to Fig. 1.



Figure 1: CPU Status Indication by LEDs on MCONT Unit

When the above-mentioned fault occurs, follow the steps by referring to Table 2.

Table 2:	System	Parameter	Error	Processing
----------	--------	-----------	-------	------------

SYSTEM PARAMETER ERROR	PROCESSING PROCEDURE REF. NO.
Battery is run down with a drop in voltage	TCP-019 (Maintenance Practice)
The system parameter contents are destroyed and the CPU status indication LEDs on the M CONT unit are lighted.	SPR-051 (System Parameter Reset)

#### 6. FUNCTION OF DBG SWITCH ON MCONT UNIT 6.01 The function of the DBG Switch on MCONT unit is shown below. Debug Initialization

#8	#7	#6	#5	#4	#3	#2	#1
DEBUG	Initialization	OFF	OFF	OFF	OFF	OFF	OFF

**#7**: System parameter initialization switch

When starting the programs, the system parameter contents are tested and, on detecting an error, one of the following actions must be performed. As a general rule, set the initialization switch to OFF.

OFF = not initializing, and halting program start

ON = automatically initializing on detecting a system parameter CRC error.

#### #8: Debug switch

The switch is used in testing at the time of equipment shipment. As a general rule, be sure to set it to OFF.

OFF = normal use (no debug)

ON = debug command usable

# CONSOLE INITIAL MESSAGE SETTING CONSOLE RELATED

**SUMMARY:** Set an initial message indication on console screen to ON or OFF when MCU is powered on.

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

**n**<sub>i</sub>: System parameter address **00H** 

**x<sub>i</sub>:** System parameter values See below:

System parameter values on setting the initial message indication for each console. The factory shipment value is **01H**.

SYSTEM PARAMETER	INDICATION			SYSTEM PARAMETER		INDICATION	I
SYSTEM PARAMETER	CONSOLE 1	CONSOLE 2	CONSOLE 3	SYSTEM PARAMETER	CONSOLE 1	CONSOLE 2	CONSOLE 3
00H	OFF	OFF	OFF	04H	OFF	OFF	ON
01H	ON	OFF	OFF	05H	ON	OFF	ON
02H	OFF	ON	OFF	06H	OFF	ON	ON
03H	ON	ON	OFF	07H	ON	ON	ON
ON: Initial me OFF: Initial me	essage is display essage is not disp	ed. played.					

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# CONSOLE COMMAND GENERATION SETTING CONSOLE RELATED

**SUMMARY:** Set an automatic execution of console command to ON or OFF when MCU is powered on.

#### STEP PROCEDURE

1 Enter the following command.

SSPR\_  $n_1 = x_1 _n_2 = x_2 _... _n_i = x_i ... \downarrow$ 

n<sub>i</sub>: System parameter address 01H

**x<sub>i</sub>:** System parameter values See below:

System parameter values on setting the automatic execution. The factory shipment value is **00H**.

SYSTEM PARAMETER	MEANING
00H	Console command is automatically executed.
01H	Console command is not automatically executed.

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# CONSOLE COMMUNICATION PARAMETER SETTING CONSOLE RELATED

**SUMMARY:** Set a parity of communication parameters for consoles 2 and 3.

*Note:* Communication parameters for MCU console are as follows:

Line rate:	9600 b/s, 4800 b/s, 2400 b/s, or 1200 b/s
	(This is set on DIP switch of PG/SIO unit.)
Start bit:	8 bits
Stop bit:	1 bit
Parity:	None or even parity
	(Even parity can be set in consoles 2 and 3 only.)

#### STEP

2

PROCEDURE

1 Set DIP switch (SW1) on PG/SIO unit for MCU console communication rate, if required.



L	Н	LINE RATE
OFF	OFF	9600 b/s
ON	OFF	4800 b/s
OFF	ON	2400 b/s
ON	ON	1200 b/s

Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots\_n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 02H

**x<sub>i</sub>:** System parameter values See below:

System parameter values on setting the parity. The factory shipment value is **00H**.

# CONSOLE COMMUNICATION PARAMETER SETTING CONSOLE RELATED

#### STEP

PROCEDURE

SYSTEM PARAMETER	PARITY	SYSTEM PARAMETER	SYSTEM PARAMETER	PARITY		
	CONSOLE 2	CONSOLE 3	TARAMETER	CONSOLE 2	CONSOLE 3	
00H	0	0	04H	0	1	
02H	1	0	06H	1	1	
0: No parity (MCU mode) 1: Even parity (VL/TC mode)						

3 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 4. If NO, go to Step 2.

# CONSOLE CODE INDICATION SETTING CONSOLE RELATED

**SUMMARY:** Set an addition of local MCU console code to console response or indication to ON or OFF in console through-pass control.

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots\_n_i = x_i \dots \downarrow$ 

- **n**<sub>i</sub>: System parameter address **08H**
- **x<sub>i</sub>:** System parameter values See below:

System parameter values on setting the code indication. The factory shipment value is **00H**.

SYSTEM PARAMETER	MEANING
00H	Console code (local ID) is not added.
01H	Console code (local ID) is added.

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# IDENTIFICATION CODE SETTING CONSOLE RELATED

**SUMMARY:** Set the identification code for each console for console-through-path.

*Note:* In console-through-path, one console can control up to nine consoles. In the same path, two or more same identification codes cannot be set (identification code is different from each other).

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- **n**<sub>i</sub>: System parameter address **09H**
- x<sub>i</sub>: System parameter values See below:

System parameter values on setting the identification code. The factory shipment value is **00H**.

SYSTEM PARAMETER	IDENTIFICATION CODE	SYSTEM PARAMETER	IDENTIFICATION CODE
00H	0	05H	5
01H	1	06H	6
02H	2	07H	7
03H	3	08H	8
04H	4		

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# CONSOLE PORT SETTING CONSOLE RELATED

**SUMMARY:** Set a port to normal console use or console-through-pass use. This command also sets whether indication is displayed for each port or not.

#### STEP PROCEDURE

1 Enter the following command.

**SSPR\_** $n_1 = x_1 \_ n_2 = x_2 \_ \dots \_ n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address **0AH**
- **x<sub>i</sub>:** System parameter values See below:

System parameter values on setting the port type and indication for each console. The factory shipment value is **00H**.

[1] Port Type

SYSTEM	PORT TYPE			
PARAMETER	PORT 2	PORT 3		
X0H	Normal console port	Normal console port		
X2H	Through-pass port	Normal console port		
X4H	Normal console port	Through-pass port		
X6H	Through-pass port	Through-pass port		
X: Any hexadeci	mal numeral			

# CONSOLE PORT SETTING CONSOLE RELATED

## STEP

PROCEDURE

#### [2] Indication

SYSTEM PARAMETER	SYSTEM INDICATION PARAMETER		SYSTEM PARAMETER	I	NDICATIO	N	
	PORT 1	PORT 2	PORT 3		PORT 1	PORT 2	PORT 3
0XH	YES	YES	YES	4XH	YES	YES	NO
1XH	NO	YES	YES	5XH	NO	YES	NO
2XH	YES	NO	YES	6XH	YES	NO	NO
3XH	NO	NO	YES	7XH	NO	NO	NO
YES:Indication is displayed according to GRRC command or INET command.NO:Indication is not displayed.X:Any hexadecimal numeral							

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

**SUMMARY:** Set a per-channel communication rate for the communication channels multiplexed to 1536kbps lines to and from multiple conference terminals. Also set the number of conference terminals (in terms of ports) to be accommodated.

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address **30H** to **37H** 

[1] Address (hexadecimal values) in setting 1.5M LIF line rates.

ADDRESS	MEANING
30H	The line rate of LIF1
32H	The line rate of LIF2
34H	The line rate of LIF3
36H	The line rate of LIF4
31H	The number of ports for LIF1
33H	The number of ports for LIF2
35H	The number of ports for LIF3
37H	The number of ports for LIF4

#### STEP PROCEDURE

**x<sub>i</sub>:** System parameter values See below:

[1] System parameter values on setting the line rate for each address (30H, 32H, 34H, 36H). The factory shipment value for the system parameter is **05H**.

SYSTEM PARAMETER	LINE RATE	SYSTEM PARAMETER	LINE RATE
00H	64kbps	20H	56kbps
01H	128kbps	21H	112kbps
02H	192kbps	22H	168kbps
03H	256kbps	23H	224kbps
05H	384kbps	25H	336kbps
04H	512kbps	24H	448kbps
06H	768kbps	26H	672kbps
09H	1152kbps	29Н	1008kbps
07H	1536kbps	27H	1344kbps
08H	1920kbps	2AH	1288kbps
0AH	1472kbps	30H	56kbps x 2
10H	64kbps x 2	35H	336kbps x 2
15H	384kbps x 2		

[2] System parameter values on setting the line rate for each address (31H, 33H, 35H, 37H). The factory shipment value for the system parameter is **10H**. Refer to Tables 1 and 2.

SYSTEM	NUMBER OF	SYSTEM	NUMBER OF	SYSTEM	NUMBER OF
PARAMETER	PORTS	PARAMETER	PORTS	PARAMETER	PORTS
01H	1	21H	33	41H	65
02H	2	22H	34	42H	66
03H	3	23H	35	43H	67
04H	4	24H	36	44H	68
05H	5	25H	37	45H	69
06H	6	26H	38	46H	70
07H	7	27H	39	47H	71
08H	8	28H	40	48H	72
09H	9	29H	41	49H	73
0AH	10	2AH	42	4AH	74
0BH	11	2BH	43	4BH	75
0CH	12	2CH	44	4CH	76
0DH	13	2DH	45	4DH	77
0EH	14	2EH	46	4EH	78
0FH	15	2FH	47	4FH	79
10H	16	30H	48	50H	80
11H	17	31H	49	51H	81
12H	18	32H	50	52H	82
13H	19	33H	51	53H	83
14H	20	34H	52	54H	84
15H	21	35H	53	55H	85
16H	22	36H	54	56H	86
17H	23	37H	55	57H	87
18H	24	38H	56	58H	88
19H	25	39Н	57	59H	89
1AH	26	3AH	58	5AH	90
1BH	27	3BH	59	5BH	91
1CH	28	3CH	60	5CH	92
1DH	29	3DH	61	5DH	93
1EH	30	3EH	62	5EH	94
1FH	31	3FH	63	5FH	95
20H	32	40H	64	60H	96

## Table 1: Number of Ports for System Parameter

## STEP PROCEDURE

LINE RATE	NUMBER OF PORTS (SYSTEM PARAMETER)	LINE RATE	NUMBER OF PORTS (SYSTEM PARAMETER)	LINE RATE	NUMBER OF PORTS (SYSTEM PARAMETER)	
T1(64kbps)	96 (60H)	T1 (1152kbps)	4 (04H)	T1 (448kbps)	12 (0CH)	
T1 (128kbps)	48 (30H)	T1 (1536kbps)	4 (04H)	T1 (672kbps)	8 (08H)	
T1 (192kbps)	32 (20H)	T1 (56kbps)	96 (60H)	T1 (1008kbps)	4 (04H)	
T1 (256kbps)	24 (18H)	T1 (112kbps)	48 (30H)	T1 (1344kbps)	4 (04H)	
T1 (384kbps)	16 (10H)	T1 (168kbps)	32 (20H)	RS422	4 (04H)	
T1 (512kbps)	12 (0CH)	T1 (224kbps)	24 (18H)	RS422 (2 x B)	2 (02H)	
T1 (768kbps)	8 (08H)	T1 (336kbps)	16 (10H)	INS	48 (30H)	
Valid range of values for system parameter are 00H to FFH.						

#### Table 2: Maximum Number of Available Ports for Line Rate

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

# **SOFEWARE SETUP** The following are addresses that need to be set in the MCU 5000A. Set the following addresses to the appropriate values and RESET the MCU when complete.

(1) Line Speed (+30H, +32H, +34H, +36H)

		LINES	SPEED	MINIMUM LINE	
ADDRESS				SPEED	DEFAULT
		T1	RS422	INS-H0	
LIF1	+30H	00H = 64kbps 01H = 128kbps 02H = 192kbps 03H = 256kbps 04H = 512kbps	00H = 64kbps 01H = 128kbps 02H = 192kbps 03H = 256kbps #04H = 512kbps	00H = B	
LIF2	+32H	05H = 384kbps 06H = 768kbps 07H = 1536kbps 09H = 1152kbps 0AH = 1472kbps	05H = 384kbps 06H = 768kbps 07H = 1536kbps #08H = 1920kbps #09H = 1152kbps	05H = H0	
LIF3	+34H	10H = 64kbps x 2 15H = 384kbps x 2	10H = 64kbps x 2 15H = 384kbps x 2	10H = 2B 15H = 384kbps x 2 (2 x H0)	05H
		20H = 56kbps 21H = 112kbps 22H = 168kbps 23H = 224kbps 24H = 448kbps 25H = 336kbps	20H = 56kbps 21H = 112kbps 25H = 336kbps	20H = B	
LIF4	+36H	26H = 672kbps 27H = 1344kbps 29H = 1008kbps 2AH = 1288kbps	2511 - 5568605		
		30H = 56kbps x 2 35H = 336kbps x 2	30H = 56kbps x 2 35H = 336kbps x 2	30H = 2B 35H = 336kbps x 2 (2 x H0)	

*Note 1:* If the value other than the ones listed above is set, it will not function. *Note 2:* # can not specify the internal clock.

## (2) Number of Logical Line Speed (+31H, +33H, +35H, +37H)

ADDRESS		NUMBER OF VALID LOGICAL LINE				
			T1	RS422	INS-64	DEFAULT
LIF1	+31H	64kbps : 128kbps : 192kbps : 256kbps : 384kbps :	00H ~ 60H (96) 00H ~ 30H (48) 00H ~ 20H (32) 00H ~ 18H (24) 00H ~ 10H (16)			
LIF2	+32H	512kbps : 768kbps : 1152kbps : 1472kbps :	$00H \sim 00H (12)$ $00H \sim 08H (8)$ $00H \sim 04H (4)$ $00H \sim 04H (4)$	0011 0411		
LIF3	+35H	1536kbps : 56kbps : 112kbps : 168kbps : 224kbps : 336kbps :	$\begin{array}{c} 00H \sim 04H (4) \\ 00H \sim 04H (4) \\ \hline 00H \sim 60H (96) \\ 00H \sim 30H (48) \\ 00H \sim 20H (32) \\ 00H \sim 18H (24) \\ 00H \sim 10H (16) \end{array}$	(When 2 x B: 00H ~ 02H)	00H ~ 30H (48)	10H
LIF4	+37H	448kbps : 672kbps : 1008kbps : 1288kbps : 1344kbps :	00H ~ 00H (12) 00H ~ 08H (8) 00H ~ 04H (4) 00H ~ 04H (4) 00H ~ 04H (4)			

# 1.5M LIF FRAME FORMAT SETTING LINE RELATED

**SUMMARY:** Set the line frame format.

## STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \downarrow$ 

- n<sub>i</sub>: System parameter address **38H**
- **x<sub>i</sub>:** System parameter values See below:
- [1] System parameter values on setting the frame format for the address **38H**. The factory shipment value for the system parameter is **00H**.
- (1) Frame Format (+38H)



2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.
### 1.5M LIF LINE CODE SETTING LINE RELATED

**SUMMARY:** Set the line code form. The line code can be set to each unit. When the code form is in AMI as in the North American lines, it is necessary to set the network class to the constrained network (P×56 kbps) in order to prevent the appearance in string of eight consecutive 0s (zeroes).

### STEP PROCEDURE

- *Note:* When setting the AMI code, simultaneously set the network classification capability (112H and 113H) as well as the network classification mode (132H and 133H) to "56 kbps" (constrained)". Also set the CODEC (VL5000) on the terminal side to "56 kbps"
- 1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address **39H**
- **x<sub>i</sub>:** System parameter values See below:
- [1] System parameter values on setting the line rate for the address 39H. The factory shipment value for the system parameter is **00H**.
- (1) Line Code (+39H)



2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

This page is for your notes.

### 1.5M LIF RAI SETTING LINE RELATED

**SUMMARY:** Set the alarm signal types. The alarm signal types can be set to each unit.

#### STEP PROCEDURE

1

*Note:* When the frame format is "D4 (12MF)", the RAI (alarm signal) form in T1 (USA) is different from that in NTT (Japan). Only when connecting to NTT lines with "F12", set the mode to "NTT."

Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address **3AH** 

x<sub>i</sub>: System parameter values See below:

[1] System parameter values on setting the line rate for the address 3AH. The factory shipment value for the system parameter is **00H**.

(1) RAI Type (+3AH)



2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

This page is for your notes.

**SUMMARY:** Specifies the line from which to extract the line clock to be used inside the MCU 5000A. When set to "auto", the line whose line signal is the first to turn normal will be specified as the clock source, but it will be replaced by the lowest-numbered line currently in normal operation once the line acting as the clock source then ceases being normal. When all the terminals are connected via network, use the MCU 5000A on this setting.

### STEP PROCEDURE

- *Note:* If the physical line number is set with any value from "01H" to "10H", the line will be fixed as the clock source. In this case, care must be taken because an abnormal state of the line would lose the clock source and also cause the other lines to lose synchronization. If the MCU 5000A is connected to some terminals directly and to others via network, be sure to use the line connected via network as the clock source. When set to "internal", the intra-MCU crystal oscillator clock will supply the line clock. If MCU 5000A must be connected directly to all the terminals without going through network, use the MCU 5000A with this "internal" setting on.
- 1 Enter the following command.

**SSPR\_** $n_1 = x_1 \_ n_2 = x_2 \_ ... n_i = x_i ... \downarrow$ 

**n**<sub>i</sub>: System parameter address **3BH** to **3DH** 

The addresses for setting the clock source and clock mask are as shown in the following table.

ADDRESS	MEANING	
3BH	Clock source setting	
3CH	Clock source masking for lines 1 through 8	
3DH	Clock source masking for lines 9 through 16	

- **x<sub>i</sub>:** System parameter valuesSee below:
  - [1] System parameter values on setting the clock source for the address 3BH. The factory shipment value for the system parameter is **00H**.

STEP

PROCEDURE

SYSTEM PARAMETER	CLOCK SOURCE (CH)	SYSTEM PARAMETER	CLOCK SOURCE (CH)
00H	Automatic (automatic	09H	9
	selection of line in its		
	numerical order)		
01H	1	0AH	10
02H	2	0BH	11
03H	3	0CH	12
04H	4	0DH	13
05H	5	0EH	14
06H	6	0FH	15
07H	7	10H	16
08H	8	80H	Internal

[2] System parameter values on setting the clock source mask for the addresses 3CH and 3DH. The factory shipment value is **0000H**. Valid only when setting the clock source, with the masked lines being so controlled as not to function as the clock source.

See tables on the following pages.

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

1.5M LIF CLOCK SOURCE SETTING
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0000H	No lines masked	0201H	Lines 1&10 are masked
0001H	Line 1 is masked	0401H	Lines 1&11 are masked
0002H	Line 2 is masked	0801H	Lines 1&12 are masked
0004H	Line 3 is masked	1001H	Lines 1&13 are masked
0008H	Line 4 is masked	2001H	Lines 1&14 are masked
0010H	Line 5 is masked	4001H	Lines 1&15 are masked
0020H	Line 6 is masked	8001H	Lines 1&16 are masked
0040H	Line 7 is masked	0006H	Lines 2&3 are masked
0080H	Line 8 is masked	000AH	Lines 2&4 are masked
0100H	Line 9 is masked	0012H	Lines 2&5 are masked
0200H	Line 10 is masked	0022H	Lines 2&6 are masked
0400H	Line 11 is masked	0042H	Lines 2&7 are masked
0800H	Line 12 is masked	0082H	Lines 2&8 are masked
1000H	Line 13 is masked	0102H	Lines 2&9 are masked
2000H	Line 14 is masked	0202H	Lines 2&10 are masked
4000H	Line 15 is masked	0402H	Lines 2&11 are masked
8000H	Line 16 is masked	0802H	Lines 2&12 are masked
0003H	Lines 1&2 are masked	1002H	Lines 2&13 are masked
0005H	Lines 1&3 are masked	2002H	Lines 2&14 are masked
0009H	Lines 1&4 are masked	4002H	Lines 2&15 are masked
0011H	Lines 1&5 are masked	8002H	Lines 2&16 are masked
0021H	Lines 1&6 are masked	000CH	Lines 3&4 are masked
0041H	Lines 1&7 are masked	0014H	Lines 3&5 are masked
0081H	Lines 1&8 are masked	0024H	Lines 3&6 are masked
0101H	Lines 1&9 are masked	0044H	Lines 3&7 are masked

*Note:* Marking a line as masked omits it from automatic selection if 3B = 00

1.5M LIF CLOCK SOURCE SETTING
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0084H	Lines 3&8 are masked	0210H	Lines 5&10 are masked
0104H	Lines 3&9 are masked	0410H	Lines 5&11 are masked
0204H	Lines 3&10 are masked	0810H	Lines 5&12 are masked
0404H	Lines 3&11 are masked	1010H	Lines 5&13 are masked
0804H	Lines 3&12 are masked	2010H	Lines 5&14 are masked
1004H	Lines 3&13 are masked	4010H	Lines 5&15 are masked
2004H	Lines 3&14 are masked	8010H	Lines 5&16 are masked
4004H	Lines 3&15 are masked	0060H	Lines 6&7 are masked
8004H	Lines 3&16 are masked	00A0H	Lines 6&8 are masked
0018H	Lines 4&5 are masked	0120H	Lines 6&9 are masked
0028H	Lines 4&6 are masked	0220H	Lines 6&10 are masked
0048H	Lines 4&7 are masked	0420H	Lines 6&11 are masked
0088H	Lines 4&8 are masked	0820H	Lines 6&12 are masked
0108H	Lines 4&9 are masked	1020H	Lines 6&13 are masked
0208H	Lines 4&10 are masked	2020H	Lines 6&14 are masked
0408H	Lines 4&11 are masked	4020H	Lines 6&15 are masked
0808H	Lines 4&12 are masked	8020H	Lines 6&16 are masked
1008H	Lines 4&13 are masked	00C0H	Lines 7&8 are masked
2008H	Lines 4&14 are masked	0140H	Lines 7&9 are masked
4008H	Lines 4&15 are masked	0240H	Lines 7&10 are masked
8008H	Lines 4&16 are masked	0440H	Lines 7&11 are masked
0030H	Lines 5&6 are masked	0840H	Lines 7&12 are masked
0050H	Lines 5&7 are masked	1040H	Lines 7&13 are masked
0090H	Lines 5&8 are masked	2040H	Lines 7&14 are masked
0110H	Lines 5&9 are masked	4040H	Lines 7&15 are masked

Page 4 of 18

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
8040H	Lines 7&16 are masked	4400H	Lines 11&15 are masked
0180H	Lines 8&9 are masked	8400H	Lines 11&16 are masked
1280H	Lines 8&10 are masked	1800H	Lines 12&13 are masked
0480H	Lines 8&11 are masked	2800H	Lines 12&14 are masked
0880H	Lines 8&12 are masked	4800H	Lines 12&15 are masked
1080H	Lines 8&13 are masked	8800H	Lines 12&16 are masked
2080H	Lines 8&14 are masked	3000H	Lines 13&14 are masked
4080H	Lines 8&15 are masked	5000H	Lines 13&15 are masked
8080H	Lines 8&16 are masked	9000H	Lines 13&16 are masked
0300H	Lines 9&10 are masked	6000H	Lines 14&15 are masked
0500H	Lines 9&11 are masked	A000H	Lines 14&16 are masked
0900H	Lines 9&12 are masked	С000Н	Lines 15&16 are masked
1100H	Lines 9&13 are masked	0070H	Lines 1,2&3 are masked
2100H	Lines 9&14 are masked	00B0H	Lines 1,2&4 are masked
4100H	Lines 9&15 are masked	0013H	Lines 1,2&5 are masked
8100H	Lines 9&16 are masked	0023H	Lines 1,2&6 are masked
0600H	Lines 10&11 are masked	0043H	Lines 1,2&7 are masked
0A00H	Lines 10&12 are masked	0083H	Lines 1,2&8 are masked
1200H	Lines 10&13 are masked	0103H	Lines 1,2&9 are masked
2200H	Lines 10&14 are masked	0203H	Lines 1,2&10 are masked
4200H	Lines 10&15 are masked	0403H	Lines 1,2&11 are masked
8200H	Lines 10&16 are masked	0803H	Lines 1,2&12 are masked
0C00H	Lines 11&12 are masked	1003H	Lines 1,2&13 are masked
1400H	Lines 11&13 are masked	2003H	Lines 1,2&14 are masked
2400H	Lines 11&14 are masked	4003H	Lines 1,2&15 are masked

1.5M LIF CLOCK SOURCE SETTING	
LINE RELATED	

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
8003H	Lines 1,2&16 are masked	8009H	Lines 1,4&16 are masked
00D0H	Lines 1,3&4 are masked	0031H	Lines 1,5&6 are masked
0015H	Lines 1,3&5 are masked	0051H	Lines 1,5&7 are masked
0025H	Lines 1,3&6 are masked	0091H	Lines 1,5&8 are masked
0045H	Lines 1,3&7 are masked	0111H	Lines 1,5&9 are masked
0085H	Lines 1,3&8 are masked	0211H	Lines 1,5&10 are masked
0105H	Lines 1,3&9 are masked	0411H	Lines 1,5&11 are masked
0205H	Lines 1,3&10 are masked	0811H	Lines 1,5&12 are masked
0405H	Lines 1,3&11 are masked	1011H	Lines 1,5&13 are masked
0805H	Lines 1,3&12 are masked	2011H	Lines 1,5&14 are masked
1005H	Lines 1,3&13 are masked	4011H	Lines 1,5&15 are masked
2005H	Lines 1,3&14 are masked	8011H	Lines 1,5&16 are masked
4005H	Lines 1,3&15 are masked	0061H	Lines 1,6&7 are masked
8005H	Lines 1,3&16 are masked	00E1H	Lines 1,6&8 are masked
0019H	Lines 1,4&5 are masked	0121H	Lines 1,6&9 are masked
0029H	Lines 1,4&6 are masked	0221H	Lines 1,6&10 are masked
0049H	Lines 1,4&7 are masked	0421H	Lines 1,6&11 are masked
0089H	Lines 1,4&8 are masked	0821H	Lines 1,6&12 are masked
0109H	Lines 1,4&9 are masked	1021H	Lines 1,6&13 are masked
0209H	Lines 1,4&10 are masked	2021H	Lines 1,6&14 are masked
0409H	Lines 1,4&11 are masked	4021H	Lines 1,6&15 are masked
0809H	Lines 1,4&12 are masked	8021H	Lines 1,6&16 are masked
1009H	Lines 1,4&13 are masked	00C1H	Lines 1,7&8 are masked
2009H	Lines 1,4&14 are masked	0141H	Lines 1,7&9 are masked
4009H	Lines 1,4&15 are masked	0241H	Lines 1,7&10 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0441H	Lines 1,7&11 are masked	4201H	Lines 1,10&15 are masked
0841H	Lines 1,7&12 are masked	8201H	Lines 1,10&16 are masked
1041H	Lines 1,7&13 are masked	0C01H	Lines 1,11&12 are masked
2041H	Lines 1,7&14 are masked	1401H	Lines 1,11&13 are masked
4041H	Lines 1,7&15 are masked	2401H	Lines 1,11&14 are masked
8041H	Lines 1,7&16 are masked	4401H	Lines 1,11&15 are masked
0181H	Lines 1,8&9 are masked	8401H	Lines 1,11&16 are masked
0281H	Lines 1,8&10 are masked	1801H	Lines 1,12&13 are masked
0481H	Lines 1,8&11 are masked	2801H	Lines 1,12&14 are masked
0881H	Lines 1,8&12 are masked	4801H	Lines 1,12&15 are masked
1081H	Lines 1,8&13 are masked	8801H	Lines 1,12&16 are masked
2081H	Lines 1,8&14 are masked	3001H	Lines 1,13&14 are masked
4081H	Lines 1,8&15 are masked	5001H	Lines 1,13&15 are masked
8081H	Lines 1,8&16 are masked	9001H	Lines 1,13&16 are masked
0301H	Lines 1,9&10 are masked	6001H	Lines 1,14&15 are masked
0501H	Lines 1,9&11 are masked	A001H	Lines 1,14&16 are masked
0901H	Lines 1,9&12 are masked	C001H	Lines 1,15&16 are masked
1101H	Lines 1,9&13 are masked	000FH	Lines 1,2,3&4 are masked
2101H	Lines 1,9&14 are masked	0017H	Lines 1,2,3&5 are masked
4101H	Lines 1,9&15 are masked	0027H	Lines 1,2,3&6 are masked
8101H	Lines 1,9&16 are masked	0047H	Lines 1,2,3&7 are masked
0601H	Lines 1,10&11 are masked	0087H	Lines 1,2,3&8 are masked
0A01H	Lines 1,10&12 are masked	0107H	Lines 1,2,3&9 are masked
1201H	Lines 1,10&13 are masked	0207H	Lines 1,2,3&10 are masked
2201H	Lines 1,10&14 are masked	0407H	Lines 1,2,3&11 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0807H	Lines 1,2,3&12 are masked	2013H	Lines 1,2,5&14 are masked
1007H	Lines 1,2,3&13 are masked	4013H	Lines 1,2,5&15 are masked
2007H	Lines 1,2,3&14 are masked	8013H	Lines 1,2,5&16 are masked
4007H	Lines 1,2,3&15 are masked	0063H	Lines 1,2,6&7 are masked
8007H	Lines 1,2,3&16 are masked	00A3H	Lines 1,2,6&8 are masked
001BH	Lines 1,2,4&5 are masked	0123H	Lines 1,2,6&9 are masked
002BH	Lines 1,2,4&6 are masked	0223H	Lines 1,2,6&10 are masked
004BH	Lines 1,2,4&7 are masked	0423H	Lines 1,2,6&11 are masked
008BH	Lines 1,2,4&8 are masked	0823H	Lines 1,2,6&12 are masked
010BH	Lines 1,2,4&9 are masked	1023H	Lines 1,2,6&13 are masked
020BH	Lines 1,2,4&10 are masked	2023H	Lines 1,2,6&14 are masked
040BH	Lines 1,2,4&11 are masked	4023H	Lines 1,2,6&15 are masked
080BH	Lines 1,2,4&12 are masked	8023H	Lines 1,2,6&16 are masked
100BH	Lines 1,2,4&13 are masked	00C3H	Lines 1,2,7&8 are masked
200BH	Lines 1,2,4&14 are masked	0143H	Lines 1,2,7&9 are masked
400BH	Lines 1,2,4&15 are masked	0243H	Lines 1,2,7&10 are masked
800BH	Lines 1,2,4&16 are masked	0183H	Lines 1,2,8&9 are masked
0033H	Lines 1,2,5&6 are masked	0283H	Lines 1,2,8&10 are masked
0053H	Lines 1,2,5&7 are masked	0483H	Lines 1,2,8&11 are masked
0093H	Lines 1,2,5&8 are masked	0883H	Lines 1,2,8&12 are masked
0113H	Lines 1,2,5&9 are masked	1083H	Lines 1,2,8&13 are masked
0213H	Lines 1,2,5&10 are masked	2083H	Lines 1,2,8&14 are masked
0413H	Lines 1,2,5&11 are masked	4083H	Lines 1,2,8&15 are masked
0813H	Lines 1,2,5&12 are masked	8083H	Lines 1,2,8&16 are masked
1013H	Lines 1,2,5&13 are masked	0303H	Lines 1,2,9&10 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0503H	Lines 1,2,9&11 are masked	A003H	Lines 1,2,14&16 are masked
0903H	Lines 1,2,9&12 are masked	C003H	Lines 1,2,15&16 are masked
1103H	Lines 1,2,9&13 are masked	001FH	Lines 1,2,3,4&5 are masked
2103H	Lines 1,2,9&14 are masked	002FH	Lines 1,2,3,4&6 are masked
4103H	Lines 1,2,9&15 are masked	004FH	Lines 1,2,3,4&7 are masked
8103H	Lines 1,2,9&16 are masked	008FH	Lines 1,2,3,4&8 are masked
0603H	Lines 1,2,10&11 are masked	010FH	Lines 1,2,3,4&9 are masked
0A03H	Lines 1,2,10&12 are masked	020FH	Lines 1,2,3,4&10 are masked
1203H	Lines 1,2,10&13 are masked	040FH	Lines 1,2,3,4&11 are masked
2203H	Lines 1,2,10&14 are masked	080FH	Lines 1,2,3,4&12 are masked
4203H	Lines 1,2,10&15 are masked	100FH	Lines 1,2,3,4&13 are masked
8203H	Lines 1,2,10&16 are masked	200FH	Lines 1,2,3,4&14 are masked
0C03H	Lines 1,2,11&12 are masked	400FH	Lines 1,2,3,4&15 are masked
1403H	Lines 1,2,11&13 are masked	800FH	Lines 1,2,3,4&16 are masked
2403H	Lines 1,2,11&14 are masked	0037H	Lines 1,2,3,5&6 are masked
4403H	Lines 1,2,11&15 are masked	0057H	Lines 1,2,3,5&7 are masked
8403H	Lines 1,2,11&16 are masked	0097H	Lines 1,2,3,5&8 are masked
1803H	Lines 1,2,12&13 are masked	0117H	Lines 1,2,3,5&9 are masked
2803H	Lines 1,2,12&14 are masked	0217H	Lines 1,2,3,5&10 are masked
4803H	Lines 1,2,12&15 are masked	0417H	Lines 1,2,3,5&11 are masked
8803H	Lines 1,2,12&16 are masked	0817H	Lines 1,2,3,5&12 are masked
3003H	Lines 1,2,13&14 are masked	1017H	Lines 1,2,3,5&13 are masked
5003H	Lines 1,2,13&15 are masked	2017H	Lines 1,2,3,5&14 are masked
9003H	Lines 1,2,13&16 are masked	4017H	Lines 1,2,3,5&15 are masked
6003H	Lines 1,2,14&15 are masked	8017H	Lines 1,2,3,5&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0067H	Lines 1,2,3,6&7 are masked	4087H	Lines 1,2,3,8&15 are masked
00A7H	Lines 1,2,3,6&8 are masked	8087H	Lines 1,2,3,8&16 are masked
0127H	Lines 1,2,3,6&9 are masked	0307H	Lines 1,2,3,9&10 are masked
0227H	Lines 1,2,3,6&10 are masked	0507H	Lines 1,2,3,9&11 are masked
0427H	Lines 1,2,3,6&11 are masked	0907H	Lines 1,2,3,9&12 are masked
0827H	Lines 1,2,3,6&12 are masked	1107H	Lines 1,2,3,9&13 are masked
1027H	Lines 1,2,3,6&13 are masked	2107H	Lines 1,2,3,9&14 are masked
2027H	Lines 1,2,3,6&14 are masked	4107H	Lines 1,2,3,9&15 are masked
4027H	Lines 1,2,3,6&15 are masked	8107H	Lines 1,2,3,9&16 are masked
8027H	Lines 1,2,3,6&16 are masked	0607H	Lines 1,2,3,10&11 are masked
00C7H	Lines 1,2,3,7&8 are masked	0A07H	Lines 1,2,3,10&12 are masked
0147H	Lines 1,2,3,7&9 are masked	1207H	Lines 1,2,3,10&13 are masked
0247H	Lines 1,2,3,7&10 are masked	2207H	Lines 1,2,3,10&14 are masked
0447H	Lines 1,2,3,7&11 are masked	4207H	Lines 1,2,3,10&15 are masked
0847H	Lines 1,2,3,7&12 are masked	8207H	Lines 1,2,3,10&16 are masked
1047H	Lines 1,2,3,7&13 are masked	0C07H	Lines 1,2,3,11&12 are masked
2047H	Lines 1,2,3,7&14 are masked	1407H	Lines 1,2,3,11&13 are masked
4047H	Lines 1,2,3,7&15 are masked	2407H	Lines 1,2,3,11&14 are masked
8047H	Lines 1,2,3,7&16 are masked	4407H	Lines 1,2,3,11&15 are masked
0187H	Lines 1,2,3,8&9 are masked	8407H	Lines 1,2,3,11&16 are masked
0287H	Lines 1,2,3,8&10 are masked	1807H	Lines 1,2,3,12&13 are masked
0487H	Lines 1,2,3,8&11 are masked	2807H	Lines 1,2,3,12&14 are masked
0887H	Lines 1,2,3,8&12 are masked	4807H	Lines 1,2,3,12&15 are masked
1087H	Lines 1,2,3,8&13 are masked	8807H	Lines 1,2,3,12&16 are masked
2087H	Lines 1,2,3,8&14 are masked	3007H	Lines 1,2,3,13&14 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
5007H	Lines 1,2,3,13&15 are masked	802FH	Lines 1,2,3,4,6&16 are masked
9007H	Lines 1,2,3,13&16 are masked	00CFH	Lines 1,2,3,4,7&8 are masked
6007H	Lines 1,2,3,14&15 are masked	014FH	Lines 1,2,3,4,7&9 are masked
A007H	Lines 1,2,3,14&16 are masked	024FH	Lines 1,2,3,4,7&10 are masked
C007H	Lines 1,2,3,15&16 are masked	044FH	Lines 1,2,3,4,7&11 are masked
003FH	Lines 1,2,3,4,5&6 are masked	084FH	Lines 1,2,3,4,7&12 are masked
005FH	Lines 1,2,3,4,5&7 are masked	104FH	Lines 1,2,3,4,7&13 are masked
009FH	Lines 1,2,3,4,5&8 are masked	204FH	Lines 1,2,3,4,7&14 are masked
011FH	Lines 1,2,3,4,5&9 are masked	404FH	Lines 1,2,3,4,7&15 are masked
021FH	Lines 1,2,3,4,5&10 are masked	804FH	Lines 1,2,3,4,7&16 are masked
041FH	Lines 1,2,3,4,5&11 are masked	018FH	Lines 1,2,3,4,8&9 are masked
081FH	Lines 1,2,3,4,5&12 are masked	028FH	Lines 1,2,3,4,8&10 are masked
101FH	Lines 1,2,3,4,5&13 are masked	048FH	Lines 1,2,3,4,8&11 are masked
201FH	Lines 1,2,3,4,5&14 are masked	088FH	Lines 1,2,3,4,8&12 are masked
401FH	Lines 1,2,3,4,5&15 are masked	108FH	Lines 1,2,3,4,8&13 are masked
801FH	Lines 1,2,3,4,5&16 are masked	208FH	Lines 1,2,3,4,8&14 are masked
006FH	Lines 1,2,3,4,6&7 are masked	408FH	Lines 1,2,3,4,8&15 are masked
00AFH	Lines 1,2,3,4,6&8 are masked	808FH	Lines 1,2,3,4,8&16 are masked
012FH	Lines 1,2,3,4,6&9 are masked	030FH	Lines 1,2,3,4,9&10 are masked
022FH	Lines 1,2,3,4,6&10 are masked	050FH	Lines 1,2,3,4,9&11 are masked
042FH	Lines 1,2,3,4,6&11 are masked	090FH	Lines 1,2,3,4,9&12 are masked
082FH	Lines 1,2,3,4,6&12 are masked	110FH	Lines 1,2,3,4,9&13 are masked
102FH	Lines 1,2,3,4,6&13 are masked	210FH	Lines 1,2,3,4,9&14 are masked
202FH	Lines 1,2,3,4,6&14 are masked	410FH	Lines 1,2,3,4,9&15 are masked
402FH	Lines 1,2,3,4,6&15 are masked	810FH	Lines 1,2,3,4,9&16 are masked

<b>1.5M LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
060FH	Lines 1,2,3,4,10&11 are masked	043FH	Lines 1,2,3,4,5,6&11 are masked
0A0FH	Lines 1,2,3,4,10&12 are masked	083FH	Lines 1,2,3,4,5,6&12 are masked
120FH	Lines 1,2,3,4,10&13 are masked	103FH	Lines 1,2,3,4,5,6&13 are masked
220FH	Lines 1,2,3,4,10&14 are masked	203FH	Lines 1,2,3,4,5,6&14 are masked
420FH	Lines 1,2,3,4,10&15 are masked	403FH	Lines 1,2,3,4,5,6&15 are masked
820FH	Lines 1,2,3,4,10&16 are masked	803FH	Lines 1,2,3,4,5,6&16 are masked
0C0FH	Lines 1,2,3,4,11&12 are masked	00DFH	Lines 1,2,3,4,5,7&8 are masked
140FH	Lines 1,2,3,4,11&13 are masked	015FH	Lines 1,2,3,4,5,7&9 are masked
240FH	Lines 1,2,3,4,11&14 are masked	025FH	Lines 1,2,3,4,5,7&10 are masked
440FH	Lines 1,2,3,4,11&15 are masked	045FH	Lines 1,2,3,4,5,7&11 are masked
840FH	Lines 1,2,3,4,11&16 are masked	085FH	Lines 1,2,3,4,5,7&12 are masked
180FH	Lines 1,2,3,4,12&13 are masked	105FH	Lines 1,2,3,4,5,7&13 are masked
280FH	Lines 1,2,3,4,12&14 are masked	205FH	Lines 1,2,3,4,5,7&14 are masked
480FH	Lines 1,2,3,4,12&15 are masked	405FH	Lines 1,2,3,4,5,7&15 are masked
880FH	Lines 1,2,3,4,12&16 are masked	805FH	Lines 1,2,3,4,5,7&16 are masked
300FH	Lines 1,2,3,4,13&14 are masked	019FH	Lines 1,2,3,4,5,8&9 are masked
500FH	Lines 1,2,3,4,13&15 are masked	029FH	Lines 1,2,3,4,5,8&10 are masked
900FH	Lines 1,2,3,4,13&16 are masked	049FH	Lines 1,2,3,4,5,8&11 are masked
600FH	Lines 1,2,3,4,14&15 are masked	089FH	Lines 1,2,3,4,5,8&12 are masked
A00FH	Lines 1,2,3,4,14&16 are masked	109FH	Lines 1,2,3,4,5,8&13 are masked
C00FH	Lines 1,2,3,4,15&16 are masked	209FH	Lines 1,2,3,4,5,8&14 are masked
007FH	Lines 1,2,3,4,5,6&7 are masked	409FH	Lines 1,2,3,4,5,8&15 are masked
00BFH	Lines 1,2,3,4,5,6&8 are masked	809FH	Lines 1,2,3,4,5,8&16 are masked
013FH	Lines 1,2,3,4,5,6&9 are masked	031FH	Lines 1,2,3,4,5,9&10 are masked
023FH	Lines 1,2,3,4,5,6&10 are masked	051FH	Lines 1,2,3,4,5,9&11 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
091FH	Lines 1,2,3,4,5,9&12 are masked	C01FH	Lines 1,2,3,4,5,15&16 are masked
111FH	Lines 1,2,3,4,5,9&13 are masked	00FFH	Lines 1,2,3,4,5,6,7&8 are masked
211FH	Lines 1,2,3,4,5,9&14 are masked	017FH	Lines 1,2,3,4,5,6,7&9 are masked
411FH	Lines 1,2,3,4,5,9&15 are masked	027FH	Lines 1,2,3,4,5,6,7&10 are masked
811FH	Lines 1,2,3,4,5,9&16 are masked	047FH	Lines 1,2,3,4,5,6,7&11 are masked
061FH	Lines 1,2,3,4,5,10&11 are masked	087FH	Lines 1,2,3,4,5,6,7&12 are masked
0A1FH	Lines 1,2,3,4,5,10&12 are masked	107FH	Lines 1,2,3,4,5,6,7&13 are masked
121FH	Lines 1,2,3,4,5,10&13 are masked	207FH	Lines 1,2,3,4,5,6,7&14 are masked
221FH	Lines 1,2,3,4,5,10&14 are masked	407FH	Lines 1,2,3,4,5,6,7&15 are masked
421FH	Lines 1,2,3,4,5,10&15 are masked	807FH	Lines 1,2,3,4,5,6,7&16 are masked
821FH	Lines 1,2,3,4,5,10&16 are masked	01BFH	Lines 1,2,3,4,5,6,8&9 are masked
0C1FH	Lines 1,2,3,4,5,11&12 are masked	02BFH	Lines 1,2,3,4,5,6,8&10 are masked
141FH	Lines 1,2,3,4,5,11&13 are masked	04BFH	Lines 1,2,3,4,5,6,8&11 are masked
241FH	Lines 1,2,3,4,5,11&14 are masked	08BFH	Lines 1,2,3,4,5,6,8&12 are masked
441FH	Lines 1,2,3,4,5,11&15 are masked	10BFH	Lines 1,2,3,4,5,6,8&13 are masked
841FH	Lines 1,2,3,4,5,11&16 are masked	20BFH	Lines 1,2,3,4,5,6,8&14 are masked
181FH	Lines 1,2,3,4,5,12&13 are masked	40BFH	Lines 1,2,3,4,5,6,8&15 are masked
281FH	Lines 1,2,3,4,5,12&14 are masked	80BFH	Lines 1,2,3,4,5,6,8&16 are masked
481FH	Lines 1,2,3,4,5,12&15 are masked	033FH	Lines 1,2,3,4,5,6,9&10 are masked
881FH	Lines 1,2,3,4,5,12&16 are masked	053FH	Lines 1,2,3,4,5,6,9&11 are masked
301FH	Lines 1,2,3,4,5,13&14 are masked	093FH	Lines 1,2,3,4,5,6,9&12 are masked
501FH	Lines 1,2,3,4,5,13&15 are masked	113FH	Lines 1,2,3,4,5,6,9&13 are masked
901FH	Lines 1,2,3,4,5,13&16 are masked	213FH	Lines 1,2,3,4,5,6,9&14 are masked
601FH	Lines 1,2,3,4,5,14&15 are masked	413FH	Lines 1,2,3,4,5,6,9&15 are masked
A01FH	Lines 1,2,3,4,5,14&16 are masked	813FH	Lines 1,2,3,4,5,6,9&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
063FH	Lines 1,2,3,4,5,6,10&11 are masked	10FFH	Lines 1,2,3,4,5,6,7,8&13 are masked
0A3FH	Lines 1,2,3,4,5,6,10&12 are masked	20FFH	Lines 1,2,3,4,5,6,7,8&14 are masked
123FH	Lines 1,2,3,4,5,6,10&13 are masked	40FFH	Lines 1,2,3,4,5,6,7,8&15 are masked
223FH	Lines 1,2,3,4,5,6,10&14 are masked	80FFH	Lines 1,2,3,4,5,6,7,8&16 are masked
423FH	Lines 1,2,3,4,5,6,10&15 are masked	037FH	Lines 1,2,3,4,5,6,7,9&10 are masked
823FH	Lines 1,2,3,4,5,6,10&16 are masked	057FH	Lines 1,2,3,4,5,6,7,9&11 are masked
0C3FH	Lines 1,2,3,4,5,6,11&12 are masked	097FH	Lines 1,2,3,4,5,6,7,9&12 are masked
143FH	Lines 1,2,3,4,5,6,11&13 are masked	117FH	Lines 1,2,3,4,5,6,7,9&13 are masked
243FH	Lines 1,2,3,4,5,6,11&14 are masked	067FH	Lines 1,2,3,4,5,6,7,10&11 are masked
443FH	Lines 1,2,3,4,5,6,11&15 are masked	0A7FH	Lines 1,2,3,4,5,6,7,10&12 are masked
843FH	Lines 1,2,3,4,5,6,11&16 are masked	127FH	Lines 1,2,3,4,5,6,7,10&13 are masked
183FH	Lines 1,2,3,4,5,6,12&13 are masked	227FH	Lines 1,2,3,4,5,6,7,10&14 are masked
283FH	Lines 1,2,3,4,5,6,12&14 are masked	427FH	Lines 1,2,3,4,5,6,7,10&15 are masked
483FH	Lines 1,2,3,4,5,6,12&15 are masked	827FH	Lines 1,2,3,4,5,6,7,10&16 are masked
883FH	Lines 1,2,3,4,5,6,12&16 are masked	0C7FH	Lines 1,2,3,4,5,6,7,11&12 are masked
303FH	Lines 1,2,3,4,5,6,13&14 are masked	147FH	Lines 1,2,3,4,5,6,7,11&13 are masked
503FH	Lines 1,2,3,4,5,6,13&15 are masked	247FH	Lines 1,2,3,4,5,6,7,11&14 are masked
903FH	Lines 1,2,3,4,5,6,13&16 are masked	447FH	Lines 1,2,3,4,5,6,7,11&15 are masked
603FH	Lines 1,2,3,4,5,6,14&15 are masked	847FH	Lines 1,2,3,4,5,6,7,11&16 are masked

<b>1.5M LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
187FH	Lines 1,2,3,4,5,6,7,12&13 are masked	81FFH	Lines 1,2,3,4,5,6,7,8,9&16 are masked
287FH	Lines 1,2,3,4,5,6,7,12&14 are masked	06FFH	Lines 1,2,3,4,5,6,7,8,10&11 are masked
487FH	Lines 1,2,3,4,5,6,7,12&15 are masked	0CFFH	Lines 1,2,3,4,5,6,7,8,10&12 are masked
887FH	Lines 1,2,3,4,5,6,7,12&16 are masked	12FFH	Lines 1,2,3,4,5,6,7,8,10&13 are masked
307FH	Lines 1,2,3,4,5,6,7,13&14 are masked	22FFH	Lines 1,2,3,4,5,6,7,8,10&14 are masked
507FH	Lines 1,2,3,4,5,6,7,13&15 are masked	42FFH	Lines 1,2,3,4,5,6,7,8,10&15 are masked
907FH	Lines 1,2,3,4,5,6,7,13&16 are masked	82FFH	Lines 1,2,3,4,5,6,7,8,10&16 are masked
607FH	Lines 1,2,3,4,5,6,7,14&15 are masked	0CFFH	Lines 1,2,3,4,5,6,7,8,11&12 are masked
A07FH	Lines 1,2,3,4,5,6,7,14&16 are masked	14FFH	Lines 1,2,3,4,5,6,7,8,11&13 are masked
C07FH	Lines 1,2,3,4,5,6,7,15&16 are masked	24FFH	Lines 1,2,3,4,5,6,7,8,11&14 are masked
03FFH	Lines 1,2,3,4,5,6,7,8,9&10 are masked	44FFH	Lines 1,2,3,4,5,6,7,8,11&15 are masked
05FFH	Lines 1,2,3,4,5,6,7,8,9&11 are masked	84FFH	Lines 1,2,3,4,5,6,7,8,11&16 are masked
09FFH	Lines 1,2,3,4,5,6,7,8,9&12 are masked	18FFH	Lines 1,2,3,4,5,6,7,8,12&13 are masked
11FFH	Lines 1,2,3,4,5,6,7,8,9&13 are masked	28FFH	Lines 1,2,3,4,5,6,7,8,12&14 are masked
21FFH	Lines 1,2,3,4,5,6,7,8,9&14 are masked	48FFH	Lines 1,2,3,4,5,6,7,8,12&15 are masked
41FFH	Lines 1,2,3,4,5,6,7,8,9&15 are masked	88FFH	Lines 1,2,3,4,5,6,7,8,12&16 are masked

SYSTEM PARAMETE R	LINE NUMBER TO BE MASKED	SYSTEM PARAMETE R	LINE NUMBER TO BE MASKED
30FFH	Lines 1,2,3,4,5,6,7,8,13&14 are masked	85FFH	Lines 1,2,3,4,5,6,7,8,9,11&16 are masked
50FFH	Lines 1,2,3,4,5,6,7,8,13&15 are masked	19FFH	Lines 1,2,3,4,5,6,7,8,9,12&13 are masked
90FFH	Lines 1,2,3,4,5,6,7,8,13&16 are masked	29FFH	Lines 1,2,3,4,5,6,7,8,9,12&14 are masked
60FFH	Lines 1,2,3,4,5,6,7,8,14&15 are masked	49FFH	Lines 1,2,3,4,5,6,7,8,9,12&15 are masked
A0FFH	Lines 1,2,3,4,5,6,7,8,14&16 are masked	89FFH	Lines 1,2,3,4,5,6,7,8,9,12&16 are masked
C0FFH	Lines 1,2,3,4,5,6,7,8,15&16 are masked	31FFH	Lines 1,2,3,4,5,6,7,8,9,13&14 are masked
07FFH	Lines 1,2,3,4,5,6,7,8,9,10&11 are masked	51FFH	Lines 1,2,3,4,5,6,7,8,9,13&15 are masked
0BFFH	Lines 1,2,3,4,5,6,7,8,9,10&12 are masked	91FFH	Lines 1,2,3,4,5,6,7,8,9,13&16 are masked
13FFH	Lines 1,2,3,4,5,6,7,8,9,10&13 are masked	61FFH	Lines 1,2,3,4,5,6,7,8,9,14&15 are masked
23FFH	Lines 1,2,3,4,5,6,7,8,9,10&14 are masked	A1FFH	Lines 1,2,3,4,5,6,7,8,9,14&16 are masked
43FFH	Lines 1,2,3,4,5,6,7,8,9,10&15 are masked	C1FFH	Lines 1,2,3,4,5,6,7,8,9,15&16 are masked
83FFH	Lines 1,2,3,4,5,6,7,8,9,10&16 are masked	0FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11&12 are masked
0DFFH	Lines 1,2,3,4,5,6,7,8,9,11&12 are masked	17FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&13 are masked
15FFH	Lines 1,2,3,4,5,6,7,8,9,11&13 are masked	27FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&14 are masked
25FFH	Lines 1,2,3,4,5,6,7,8,9,11&14 are masked	47FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&15 are masked
45FFH	Lines 1,2,3,4,5,6,7,8,9,11&15 are masked	87FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
1BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&13 are masked	57FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,13&15 are masked
2BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&14 are masked	97FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,13&16 are masked
4BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&15 are masked	67FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,14&15 are masked
8BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&16 are masked	A7FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,14&16 are masked
33FFH	Lines 1,2,3,4,5,6,7,8,9,10,13&14 are masked	C7FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,15&16 are masked
53FFH	Lines 1,2,3,4,5,6,7,8,9,10,13&15 are masked	3FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13&14 are masked
93FFH	Lines 1,2,3,4,5,6,7,8,9,10,13&16 are masked	5FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13&15 are masked
63FFH	Lines 1,2,3,4,5,6,7,8,9,10,14&15 are masked	9FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13&16 are masked
A3FFH	Lines 1,2,3,4,5,6,7,8,9,10,14&16 are masked	6FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 14&15 are masked
C3FFH	Lines 1,2,3,4,5,6,7,8,9,10,15&16 are masked	AFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 14&16 are masked
1FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&13 are masked	CFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 15&16 are masked
2FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&14 are masked	7FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13, 14&15 are masked
4FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&15 are masked	BFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12,13, 14&16 are masked
8FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&16 are masked	DFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12,13, 15&16 are masked
37FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,13&14 are masked	FFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12,13, 14,15&16 are masked

This page is for your notes.

### 1.5M LIF LINE EQUALIZER SETTING LINE RELATED

**SUMMARY:** Set the physical properties of line.

### STEP PROCEDURE

- *Note:* When connecting to a T1 line, set the equalizer value according to the cable distance. In the case of an NTT line, however, fix the value to "EQL-A" before use. The line equalizer can be set independently for each line.
- 1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n: System parameter address 40H to 4FH

[1] Line numbers corresponding to the addresses (hexadecimal values) on setting the line equalizer.

ADDRESS	PHYSICAL LINE NUMBER	ADDRESS	PHYSICAL LINE NUMBER
40H	1	48H	9
41H	2	49H	10
42H	3	4AH	11
43H	4	4BH	12
44H	5	4CH	13
45H	6	4DH	14
46H	7	4EH	15
47H	8	4FH	16

# 1.5M LIF LINE EQUALIZER SETTING LINE RELATED

### STEP PROCEDURE

- **x<sub>i</sub>:** System parameter values See below:
- [2] System parameter values on setting the line equalizer for the addresses 40H to 4FH. The factory shipment value for the system parameter applicable to all the lines is **00H**.

SYSTEM PARAMETER	LINE EQUALIZER
00H	EQL-A (0 to 133 feet)
01H	EQL-B (133 to 267 feet)
02H	EQL-C (267 to 400 feet)
03H	EQL-D (400 to 533 feet)
04H	EQL-E (533 to 655 feet)

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

SUMMARY: Set the rate of communication to and from the connecting conference terminals. The rate can be set independently for each package of RS 422 LIF (LIF 1 to 4). However, it must be noted that conference terminals having different rates cannot be connected to each other, nor can be permitted to participle in the same conference.

### STEP PROCEDURE

*Note:* The number of ports is set as the number of lines to be accommodated in a piece of RS 422 LIF interface.

Enter the following command.

1

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address **30H** to **37H** 
  - [1] Line interface numbers (LIF1 to 4) of RS 422 LIF corresponding to the addresses (hexadecimal values) on setting the rate of communication or the number of ports.

ADDRESS	MEANING
30H	The line rate of LIF1.
32H	The line rate of LIF2.
34H	The line rate of LIF3.
36H	The line rate of LIF4.
31H	The number of ports for LIF1.
33H	The number of ports for LIF2.
35H	The number of ports for LIF3.
37H	The number of ports for LIF4.

### STEP PROCEDURE

- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the line rate for each address (30H, 32H, 34H, 36H). The factory shipment value for the system parameter is **05H**.

SYSTEM PARAMETER	LINE RATE	SYSTEM PARAMETER	LINE RATE
20H	56 kb/s	25H	336 kb/s
30H	56 kb/s $\times$ 2	05H	384 kb/s
00H	64 kb/s	04H	512 kb/s
10H	64 kb/s $\times$ 2	06H	768 kb/s
21H	112 kb/s	09H	1152 kb/s
01H	128 kb/s	07H	1536 kb/s
02H	192 kb/s	08H	1920 kb/s
03H	256 kb/s		
15H	384kb/s x 2		
35H	336 kb/s x 2		

[2] System parameter values on setting the number of ports for each address (31H, 33H, 35H, 37H). The factory shipment value for the system parameter applicable to the address is **04H**. Refer to Tables 1 and 2.

### Table 1: Number of Ports for System Parameter

SYSTEM PARAMETER	NUMBER OF PORTS	SYSTEM PARAMETER	NUMBER OF PORTS	SYSTEM PARAMETER	NUMBER OF PORTS
01H	1	21H	33	41H	65
02H	2	22H	34	42H	66
03H	3	23H	35	43H	67
04H	4	24H	36	44H	68
05H	5	25H	37	45H	69
06H	6	26H	38	46H	70
07H	7	27H	39	47H	71
08H	8	28H	40	48H	72
09H	9	29H	41	49H	73
0AH	10	2AH	42	4AH	74
0BH	11	2BH	43	4BH	75
0CH	12	2CH	44	4CH	76
0DH	13	2DH	45	4DH	77
0EH	14	2EH	46	4EH	78
0FH	15	2FH	47	4FH	79
10H	16	30H	48	50H	80
11H	17	31H	49	51H	81
12H	18	32H	50	52H	82
13H	19	33H	51	53H	83
14H	20	34H	52	54H	84
15H	21	35H	53	55H	85
16H	22	36H	54	56H	86
17H	23	37H	55	57H	87
18H	24	38H	56	58H	88
19H	25	39H	57	59H	89
1AH	26	3AH	58	5AH	90
1BH	27	3BH	59	5BH	91
1CH	28	3CH	60	5CH	92
1DH	29	3DH	61	5DH	93
1EH	30	3EH	62	5EH	94
1FH	31	3FH	63	5FH	95
20H	32	40H	64	60H	96

#### STEP

LINE RATE	NUMBER OF PORT (SYSTEM PARAMETER)	LINE RATE	NUMBER OF PORT (SYSTEM PARAMETER)	LINE RATE	NUMBER OF PORT (SYSTEM PARAMETER)
T1 (64 kb/s)	96 (60H)	T1 (1152 kb/s)	4 (04H)	T1 (448 kb/s)	12 (0CH)
T1 (128 kb/s)	48 (30H)	T1 (1536 kb/s)	4 (04H)	T1 (672 kb/s)	8 (08H)
T1 (192 kb/s)	32 (20H)	T1 (56 kb/s)	96 (60H)	T1 (1008 kb/s)	4 (04H)
T1 (256 kb/s)	24 (18H)	T1 (112 kb/s)	48 (30H)	T1 (1344 kb/s)	4 (04H)
T1 (384 kb/s)	16 (10H)	T1 (168 kb/s)	32 (20H)	RS422	4 (04H)
T1 (512 kb/s)	12 (0CH)	T1 (224 kb/s)	24 (18H)	RS422 (2×B)	2 (02H)
T1 (768 kb/s)	8 (08H)	T1 (336 kb/s)	16 (10H)	INS	48 (30H)
Valid range of values for system parameter are 00H to FFH.					

#### Table 2: Maximum Number of Available Ports for Line Rate

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

PROCEDURE

### RS 422 LIF CLOCK SOURCE SETTING LINE RELATED

**SUMMARY:** Specify the line from which to extract the line clock to be used inside the MCU 5000A. When set to "auto", the line whose line signal is the first to turn normal will be specified as the clock source, but it will be replaced by the lowest-numbered line currently in normal operation once the line acting as the clock source then ceases being normal. When all the terminals are connected via network, use the MCU 5000A on this setting.

### STEP PROCEDURE

*Note:* If the physical line number is set with any value from "01H" to "10H", the line will be fixed as the clock source. In this case, care must be taken because an abnormal state of the line would lose the clock source and also cause the other lines to lose synchronization. If the MCU 5000A is connected to some terminals directly and to others via network, be sure to use the line connected via network as the clock source. When set to "internal", the intra-MCU crystal oscillator clock will supply the line clock. If MCU 5000A must be connected directly to all the terminals without going through network, use the MCU 5000A with this "internal" setting on.

#### 1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n;: System parameter address 3BH to 3DH
  - [1] The addresses for setting the clock source and clock mask are as shown in the following table.

ADDRESS	MEANING
3BH	Clock source setting
3CH	Clock source masking for lines 1 through 8
3DH	Clock source masking for lines 9 through 16

# RS 422 LIF CLOCK SOURCE SETTING LINE RELATED

### STEP PROCEDURE

**x<sub>i</sub>:** System parameter values See below:

[1] System parameter values on setting the clock source for the address 3BH. The factory shipment value for the system parameter is **00H**.

SYSTEM PARAMETER	LINE NUMBER	SYSTEM PARAMETER	LINE NUMBER
00H	Automatic (Automatic selection of line in its numerical order)	09H	9
01H	1	0AH	10
02H	2	0BH	11
03H	3	0CH	12
04H	4	0DH	13
05H	5	0EH	14
06H	6	0FH	15
07H	7	10H	16
08H	8	80H	Internal

[2] System parameter values on setting the clock source mask for the addresses 3CH and 3DH. The factory shipment value is **0000H**.

Valid only when setting the clock source, with the masked lines being so controlled as not to function as the clock source.

See tables on the following pages.

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

<b>RS 422 LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0000H	No lines masked	0201H	Lines 1&10 are masked
0001H	Line 1 is masked	0401H	Lines 1&11 are masked
0002H	Line 2 is masked	0801H	Lines 1&12 are masked
0004H	Line 3 is masked	1001H	Lines 1&13 are masked
0008H	Line 4 is masked	2001H	Lines 1&14 are masked
0010H	Line 5 is masked	4001H	Lines 1&15 are masked
0020H	Line 6 is masked	8001H	Lines 1&16 are masked
0040H	Line 7 is masked	0006H	Lines 2&3 are masked
0080H	Line 8 is masked	000AH	Lines 2&4 are masked
0100H	Line 9 is masked	0012H	Lines 2&5 are masked
0200H	Line 10 is masked	0022H	Lines 2&6 are masked
0400H	Line 11 is masked	0042H	Lines 2&7 are masked
0800H	Line 12 is masked	0082H	Lines 2&8 are masked
1000H	Line 13 is masked	0102H	Lines 2&9 are masked
2000H	Line 14 is masked	0202H	Lines 2&10 are masked
4000H	Line 15 is masked	0402H	Lines 2&11 are masked
8000H	Line 16 is masked	0802H	Lines 2&12 are masked
0003H	Lines 1&2 are masked	1002H	Lines 2&13 are masked
0005H	Lines 1&3 are masked	2002H	Lines 2&14 are masked
0009H	Lines 1&4 are masked	4002H	Lines 2&15 are masked
0011H	Lines 1&5 are masked	8002H	Lines 2&16 are masked
0021H	Lines 1&6 are masked	000CH	Lines 3&4 are masked
0041H	Lines 1&7 are masked	0014H	Lines 3&5 are masked
0081H	Lines 1&8 are masked	0024H	Lines 3&6 are masked
0101H	Lines 1&9 are masked	0044H	Lines 3&7 are masked

*Note:* Marking a line as masked omits it from automatic selection if 3B = 00.

<b>RS 422 LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0084H	Lines 3&8 are masked	0210H	Lines 5&10 are masked
0104H	Lines 3&9 are masked	0410H	Lines 5&11 are masked
0204H	Lines 3&10 are masked	0810H	Lines 5&12 are masked
0404H	Lines 3&11 are masked	1010H	Lines 5&13 are masked
0804H	Lines 3&12 are masked	2010H	Lines 5&14 are masked
1004H	Lines 3&13 are masked	4010H	Lines 5&15 are masked
2004H	Lines 3&14 are masked	8010H	Lines 5&16 are masked
4004H	Lines 3&15 are masked	0060H	Lines 6&7 are masked
8004H	Lines 3&16 are masked	00A0H	Lines 6&8 are masked
0018H	Lines 4&5 are masked	0120H	Lines 6&9 are masked
0028H	Lines 4&6 are masked	0220H	Lines 6&10 are masked
0048H	Lines 4&7 are masked	0420H	Lines 6&11 are masked
0088H	Lines 4&8 are masked	0820H	Lines 6&12 are masked
0108H	Lines 4&9 are masked	1020H	Lines 6&13 are masked
0208H	Lines 4&10 are masked	2020H	Lines 6&14 are masked
0408H	Lines 4&11 are masked	4020H	Lines 6&15 are masked
0808H	Lines 4&12 are masked	8020H	Lines 6&16 are masked
1008H	Lines 4&13 are masked	00C0H	Lines 7&8 are masked
2008H	Lines 4&14 are masked	0140H	Lines 7&9 are masked
4008H	Lines 4&15 are masked	0240H	Lines 7&10 are masked
8008H	Lines 4&16 are masked	0440H	Lines 7&11 are masked
0030H	Lines 5&6 are masked	0840H	Lines 7&12 are masked
0050H	Lines 5&7 are masked	1040H	Lines 7&13 are masked
0090H	Lines 5&8 are masked	2040H	Lines 7&14 are masked
0110H	Lines 5&9 are masked	4040H	Lines 7&15 are masked

# RS 422 LIF CLOCK SOURCE SETTING LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
8040H	Lines 7&16 are masked	4400H	Lines 11&15 are masked
0180H	Lines 8&9 are masked	8400H	Lines 11&16 are masked
1280H	Lines 8&10 are masked	1800H	Lines 12&13 are masked
0480H	Lines 8&11 are masked	2800H	Lines 12&14 are masked
0880H	Lines 8&12 are masked	4800H	Lines 12&15 are masked
1080H	Lines 8&13 are masked	8800H	Lines 12&16 are masked
2080H	Lines 8&14 are masked	3000H	Lines 13&14 are masked
4080H	Lines 8&15 are masked	5000H	Lines 13&15 are masked
8080H	Lines 8&16 are masked	9000H	Lines 13&16 are masked
0300H	Lines 9&10 are masked	6000H	Lines 14&15 are masked
0500H	Lines 9&11 are masked	A000H	Lines 14&16 are masked
0900H	Lines 9&12 are masked	С000Н	Lines 15&16 are masked
1100H	Lines 9&13 are masked	0070H	Lines 1,2&3 are masked
2100H	Lines 9&14 are masked	00B0H	Lines 1,2&4 are masked
4100H	Lines 9&15 are masked	0013H	Lines 1,2&5 are masked
8100H	Lines 9&16 are masked	0023H	Lines 1,2&6 are masked
0600H	Lines 10&11 are masked	0043H	Lines 1,2&7 are masked
0A00H	Lines 10&12 are masked	0083H	Lines 1,2&8 are masked
1200H	Lines 10&13 are masked	0103H	Lines 1,2&9 are masked
2200H	Lines 10&14 are masked	0203H	Lines 1,2&10 are masked
4200H	Lines 10&15 are masked	0403H	Lines 1,2&11 are masked
8200H	Lines 10&16 are masked	0803H	Lines 1,2&12 are masked
0C00H	Lines 11&12 are masked	1003H	Lines 1,2&13 are masked
1400H	Lines 11&13 are masked	2003H	Lines 1,2&14 are masked
2400H	Lines 11&14 are masked	4003H	Lines 1,2&15 are masked

<b>RS 422 LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
8003H	Lines 1,2&16 are masked	8009H	Lines 1,4&16 are masked
00D0H	Lines 1,3&4 are masked	0031H	Lines 1,5&6 are masked
0015H	Lines 1,3&5 are masked	0051H	Lines 1,5&7 are masked
0025H	Lines 1,3&6 are masked	0091H	Lines 1,5&8 are masked
0045H	Lines 1,3&7 are masked	0111H	Lines 1,5&9 are masked
0085H	Lines 1,3&8 are masked	0211H	Lines 1,5&10 are masked
0105H	Lines 1,3&9 are masked	0411H	Lines 1,5&11 are masked
0205H	Lines 1,3&10 are masked	0811H	Lines 1,5&12 are masked
0405H	Lines 1,3&11 are masked	1011H	Lines 1,5&13 are masked
0805H	Lines 1,3&12 are masked	2011H	Lines 1,5&14 are masked
1005H	Lines 1,3&13 are masked	4011H	Lines 1,5&15 are masked
2005H	Lines 1,3&14 are masked	8011H	Lines 1,5&16 are masked
4005H	Lines 1,3&15 are masked	0061H	Lines 1,6&7 are masked
8005H	Lines 1,3&16 are masked	00E1H	Lines 1,6&8 are masked
0019H	Lines 1,4&5 are masked	0121H	Lines 1,6&9 are masked
0029H	Lines 1,4&6 are masked	0221H	Lines 1,6&10 are masked
0049H	Lines 1,4&7 are masked	0421H	Lines 1,6&11 are masked
0089H	Lines 1,4&8 are masked	0821H	Lines 1,6&12 are masked
0109H	Lines 1,4&9 are masked	1021H	Lines 1,6&13 are masked
0209H	Lines 1,4&10 are masked	2021H	Lines 1,6&14 are masked
0409H	Lines 1,4&11 are masked	4021H	Lines 1,6&15 are masked
0809H	Lines 1,4&12 are masked	8021H	Lines 1,6&16 are masked
1009H	Lines 1,4&13 are masked	00C1H	Lines 1,7&8 are masked
2009H	Lines 1,4&14 are masked	0141H	Lines 1,7&9 are masked
4009H	Lines 1,4&15 are masked	0241H	Lines 1,7&10 are masked

# RS 422 LIF CLOCK SOURCE SETTING LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0441H	Lines 1,7&11 are masked	4201H	Lines 1,10&15 are masked
0841H	Lines 1,7&12 are masked	8201H	Lines 1,10&16 are masked
1041H	Lines 1,7&13 are masked	0C01H	Lines 1,11&12 are masked
2041H	Lines 1,7&14 are masked	1401H	Lines 1,11&13 are masked
4041H	Lines 1,7&15 are masked	2401H	Lines 1,11&14 are masked
8041H	Lines 1,7&16 are masked	4401H	Lines 1,11&15 are masked
0181H	Lines 1,8&9 are masked	8401H	Lines 1,11&16 are masked
0281H	Lines 1,8&10 are masked	1801H	Lines 1,12&13 are masked
0481H	Lines 1,8&11 are masked	2801H	Lines 1,12&14 are masked
0881H	Lines 1,8&12 are masked	4801H	Lines 1,12&15 are masked
1081H	Lines 1,8&13 are masked	8801H	Lines 1,12&16 are masked
2081H	Lines 1,8&14 are masked	3001H	Lines 1,13&14 are masked
4081H	Lines 1,8&15 are masked	5001H	Lines 1,13&15 are masked
8081H	Lines 1,8&16 are masked	9001H	Lines 1,13&16 are masked
0301H	Lines 1,9&10 are masked	6001H	Lines 1,14&15 are masked
0501H	Lines 1,9&11 are masked	A001H	Lines 1,14&16 are masked
0901H	Lines 1,9&12 are masked	C001H	Lines 1,15&16 are masked
1101H	Lines 1,9&13 are masked	000FH	Lines 1,2,3&4 are masked
2101H	Lines 1,9&14 are masked	0017H	Lines 1,2,3&5 are masked
4101H	Lines 1,9&15 are masked	0027H	Lines 1,2,3&6 are masked
8101H	Lines 1,9&16 are masked	0047H	Lines 1,2,3&7 are masked
0601H	Lines 1,10&11 are masked	0087H	Lines 1,2,3&8 are masked
0A01H	Lines 1,10&12 are masked	0107H	Lines 1,2,3&9 are masked
1201H	Lines 1,10&13 are masked	0207H	Lines 1,2,3&10 are masked
2201H	Lines 1,10&14 are masked	0407H	Lines 1,2,3&11 are masked

<b>RS 422 LIF CLOCK SOURCE SETTING</b>				
LINE RELATED				

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0807H	Lines 1,2,3&12 are masked	2013H	Lines 1,2,5&14 are masked
1007H	Lines 1,2,3&13 are masked	4013H	Lines 1,2,5&15 are masked
2007H	Lines 1,2,3&14 are masked	8013H	Lines 1,2,5&16 are masked
4007H	Lines 1,2,3&15 are masked	0063H	Lines 1,2,6&7 are masked
8007H	Lines 1,2,3&16 are masked	00A3H	Lines 1,2,6&8 are masked
001BH	Lines 1,2,4&5 are masked	0123H	Lines 1,2,6&9 are masked
002BH	Lines 1,2,4&6 are masked	0223H	Lines 1,2,6&10 are masked
004BH	Lines 1,2,4&7 are masked	0423H	Lines 1,2,6&11 are masked
008BH	Lines 1,2,4&8 are masked	0823H	Lines 1,2,6&12 are masked
010BH	Lines 1,2,4&9 are masked	1023H	Lines 1,2,6&13 are masked
020BH	Lines 1,2,4&10 are masked	2023H	Lines 1,2,6&14 are masked
040BH	Lines 1,2,4&11 are masked	4023H	Lines 1,2,6&15 are masked
080BH	Lines 1,2,4&12 are masked	8023H	Lines 1,2,6&16 are masked
100BH	Lines 1,2,4&13 are masked	00C3H	Lines 1,2,7&8 are masked
200BH	Lines 1,2,4&14 are masked	0143H	Lines 1,2,7&9 are masked
400BH	Lines 1,2,4&15 are masked	0243H	Lines 1,2,7&10 are masked
800BH	Lines 1,2,4&16 are masked	0183H	Lines 1,2,8&9 are masked
0033H	Lines 1,2,5&6 are masked	0283H	Lines 1,2,8&10 are masked
0053H	Lines 1,2,5&7 are masked	0483H	Lines 1,2,8&11 are masked
0093H	Lines 1,2,5&8 are masked	0883H	Lines 1,2,8&12 are masked
0113H	Lines 1,2,5&9 are masked	1083H	Lines 1,2,8&13 are masked
0213H	Lines 1,2,5&10 are masked	2083H	Lines 1,2,8&14 are masked
0413H	Lines 1,2,5&11 are masked	4083H	Lines 1,2,8&15 are masked
0813H	Lines 1,2,5&12 are masked	8083H	Lines 1,2,8&16 are masked
1013H	Lines 1,2,5&13 are masked	0303H	Lines 1,2,9&10 are masked
SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
----------------------------------	----------------------------------	---------------------	-----------------------------
0503H	Lines 1,2,9&11 are masked	A003H	Lines 1,2,14&16 are masked
0903H	Lines 1,2,9&12 are masked	C003H	Lines 1,2,15&16 are masked
1103H	Lines 1,2,9&13 are masked	001FH	Lines 1,2,3,4&5 are masked
2103H	Lines 1,2,9&14 are masked	002FH	Lines 1,2,3,4&6 are masked
4103H	Lines 1,2,9&15 are masked	004FH	Lines 1,2,3,4&7 are masked
8103H	Lines 1,2,9&16 are masked	008FH	Lines 1,2,3,4&8 are masked
0603H	Lines 1,2,10&11 are masked	010FH	Lines 1,2,3,4&9 are masked
0A03H	Lines 1,2,10&12 are masked	020FH	Lines 1,2,3,4&10 are masked
1203H	Lines 1,2,10&13 are masked	040FH	Lines 1,2,3,4&11 are masked
2203H Lines 1,2,10&14 are masked		080FH	Lines 1,2,3,4&12 are masked
4203H	Lines 1,2,10&15 are masked	100FH	Lines 1,2,3,4&13 are masked
8203H	Lines 1,2,10&16 are masked	200FH	Lines 1,2,3,4&14 are masked
0C03H	Lines 1,2,11&12 are masked	400FH	Lines 1,2,3,4&15 are masked
1403H Lines 1,2,11&13 are masked		800FH	Lines 1,2,3,4&16 are masked
2403H Lines 1,2,11&14 are masked		0037H	Lines 1,2,3,5&6 are masked
4403H	4403H Lines 1,2,11&15 are masked		Lines 1,2,3,5&7 are masked
8403H	Lines 1,2,11&16 are masked	0097H	Lines 1,2,3,5&8 are masked
1803H	Lines 1,2,12&13 are masked	0117H	Lines 1,2,3,5&9 are masked
2803H	Lines 1,2,12&14 are masked	0217H	Lines 1,2,3,5&10 are masked
4803H	Lines 1,2,12&15 are masked	0417H	Lines 1,2,3,5&11 are masked
8803H	Lines 1,2,12&16 are masked	0817H	Lines 1,2,3,5&12 are masked
3003H	Lines 1,2,13&14 are masked	1017H	Lines 1,2,3,5&13 are masked
5003H	Lines 1,2,13&15 are masked	2017H	Lines 1,2,3,5&14 are masked
9003H	Lines 1,2,13&16 are masked	4017H	Lines 1,2,3,5&15 are masked
6003H	Lines 1,2,14&15 are masked	8017H	Lines 1,2,3,5&16 are masked

<b>RS 422 LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0067H	Lines 1,2,3,6&7 are masked	4087H	Lines 1,2,3,8&15 are masked
00A7H	Lines 1,2,3,6&8 are masked	8087H	Lines 1,2,3,8&16 are masked
0127H	Lines 1,2,3,6&9 are masked	0307H	Lines 1,2,3,9&10 are masked
0227H	Lines 1,2,3,6&10 are masked	0507H	Lines 1,2,3,9&11 are masked
0427H	Lines 1,2,3,6&11 are masked	0907H	Lines 1,2,3,9&12 are masked
0827H	Lines 1,2,3,6&12 are masked	1107H	Lines 1,2,3,9&13 are masked
1027H	Lines 1,2,3,6&13 are masked	2107H	Lines 1,2,3,9&14 are masked
2027H	Lines 1,2,3,6&14 are masked	4107H	Lines 1,2,3,9&15 are masked
4027H Lines 1,2,3,6&15 are masked 8107H Lines 1,2,3,9&16		Lines 1,2,3,9&16 are masked	
8027H	Lines 1,2,3,6&16 are masked	0607H	Lines 1,2,3,10&11 are masked
00C7H	Lines 1,2,3,7&8 are masked	0A07H	Lines 1,2,3,10&12 are masked
0147H	Lines 1,2,3,7&9 are masked	1207H	Lines 1,2,3,10&13 are masked
0247H	Lines 1,2,3,7&10 are masked	2207H	Lines 1,2,3,10&14 are masked
0447H	Lines 1,2,3,7&11 are masked	4207H	Lines 1,2,3,10&15 are masked
0847H Lines 1,2,3,7&12 are masked		8207H	Lines 1,2,3,10&16 are masked
1047H Lines 1,2,3,7&13 are masked 0C07H Lines 1,2,3,11&1		Lines 1,2,3,11&12 are masked	
2047H	Lines 1,2,3,7&14 are masked	1407H	Lines 1,2,3,11&13 are masked
4047H	Lines 1,2,3,7&15 are masked	2407H	Lines 1,2,3,11&14 are masked
8047H	Lines 1,2,3,7&16 are masked	4407H	Lines 1,2,3,11&15 are masked
0187H	Lines 1,2,3,8&9 are masked	8407H	Lines 1,2,3,11&16 are masked
0287H	Lines 1,2,3,8&10 are masked	1807H	Lines 1,2,3,12&13 are masked
0487H	Lines 1,2,3,8&11 are masked	2807H	Lines 1,2,3,12&14 are masked
0887H	Lines 1,2,3,8&12 are masked	4807H	Lines 1,2,3,12&15 are masked
1087H	Lines 1,2,3,8&13 are masked	8807H	Lines 1,2,3,12&16 are masked
2087H	Lines 1,2,3,8&14 are masked	3007H	Lines 1,2,3,13&14 are masked

SYSTEM PARAMETER	YSTEM RAMETER LINE NUMBER TO BE MASKED		LINE NUMBER TO BE MASKED
5007H	Lines 1,2,3,13&15 are masked	802FH	Lines 1,2,3,4,6&16 are masked
9007H	Lines 1,2,3,13&16 are masked	00CFH	Lines 1,2,3,4,7&8 are masked
6007H	Lines 1,2,3,14&15 are masked	014FH	Lines 1,2,3,4,7&9 are masked
A007H	Lines 1,2,3,14&16 are masked	024FH	Lines 1,2,3,4,7&10 are masked
C007H	Lines 1,2,3,15&16 are masked	044FH	Lines 1,2,3,4,7&11 are masked
003FH	Lines 1,2,3,4,5&6 are masked	084FH	Lines 1,2,3,4,7&12 are masked
005FH	Lines 1,2,3,4,5&7 are masked	104FH	Lines 1,2,3,4,7&13 are masked
009FH	Lines 1,2,3,4,5&8 are masked	204FH	Lines 1,2,3,4,7&14 are masked
011FH	Lines 1,2,3,4,5&9 are masked	404FH	Lines 1,2,3,4,7&15 are masked
021FH	Lines 1,2,3,4,5&10 are masked	804FH	Lines 1,2,3,4,7&16 are masked
041FH	Lines 1,2,3,4,5&11 are masked	018FH	Lines 1,2,3,4,8&9 are masked
081FH	Lines 1,2,3,4,5&12 are masked	028FH	Lines 1,2,3,4,8&10 are masked
101FH	Lines 1,2,3,4,5&13 are masked	048FH	Lines 1,2,3,4,8&11 are masked
201FH	Lines 1,2,3,4,5&14 are masked	088FH	Lines 1,2,3,4,8&12 are masked
401FH	Lines 1,2,3,4,5&15 are masked	108FH	Lines 1,2,3,4,8&13 are masked
801FH	Lines 1,2,3,4,5&16 are masked	208FH	Lines 1,2,3,4,8&14 are masked
006FH	Lines 1,2,3,4,6&7 are masked	408FH	Lines 1,2,3,4,8&15 are masked
00AFH	Lines 1,2,3,4,6&8 are masked	808FH	Lines 1,2,3,4,8&16 are masked
012FH	Lines 1,2,3,4,6&9 are masked	030FH	Lines 1,2,3,4,9&10 are masked
022FH	Lines 1,2,3,4,6&10 are masked	050FH	Lines 1,2,3,4,9&11 are masked
042FH	Lines 1,2,3,4,6&11 are masked	090FH	Lines 1,2,3,4,9&12 are masked
082FH	Lines 1,2,3,4,6&12 are masked	110FH	Lines 1,2,3,4,9&13 are masked
102FH	Lines 1,2,3,4,6&13 are masked	210FH	Lines 1,2,3,4,9&14 are masked
202FH	Lines 1,2,3,4,6&14 are masked	410FH	Lines 1,2,3,4,9&15 are masked
402FH	Lines 1,2,3,4,6&15 are masked	810FH	Lines 1,2,3,4,9&16 are masked

<b>RS 422 LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	STEM AMETER LINE NUMBER TO BE MASKED		LINE NUMBER TO BE MASKED
060FH	Lines 1,2,3,4,10&11 are masked	043FH	Lines 1,2,3,4,5,6&11 are masked
0A0FH	Lines 1,2,3,4,10&12 are masked	083FH	Lines 1,2,3,4,5,6&12 are masked
120FH	Lines 1,2,3,4,10&13 are masked	103FH	Lines 1,2,3,4,5,6&13 are masked
220FH	Lines 1,2,3,4,10&14 are masked	203FH	Lines 1,2,3,4,5,6&14 are masked
420FH	Lines 1,2,3,4,10&15 are masked	403FH	Lines 1,2,3,4,5,6&15 are masked
820FH	Lines 1,2,3,4,10&16 are masked	803FH	Lines 1,2,3,4,5,6&16 are masked
0C0FH	Lines 1,2,3,4,11&12 are masked	00DFH	Lines 1,2,3,4,5,7&8 are masked
140FH	Lines 1,2,3,4,11&13 are masked	015FH	Lines 1,2,3,4,5,7&9 are masked
240FH Lines 1,2,3,4,11&14 are masked 025FH Lines 1,2,3,4,5,7&10 a		Lines 1,2,3,4,5,7&10 are masked	
440FH	Lines 1,2,3,4,11&15 are masked	045FH	Lines 1,2,3,4,5,7&11 are masked
840FH	Lines 1,2,3,4,11&16 are masked	085FH	Lines 1,2,3,4,5,7&12 are masked
180FH	Lines 1,2,3,4,12&13 are masked	105FH	Lines 1,2,3,4,5,7&13 are masked
280FH	Lines 1,2,3,4,12&14 are masked	205FH	Lines 1,2,3,4,5,7&14 are masked
480FH	Lines 1,2,3,4,12&15 are masked	405FH	Lines 1,2,3,4,5,7&15 are masked
880FH Lines 1,2,3,4,12&16 are masked 805FH		805FH	Lines 1,2,3,4,5,7&16 are masked
300FH Lines 1,2,3,4,13&14 are masked 019FH Lines 1,2,3,4,		Lines 1,2,3,4,5,8&9 are masked	
500FH	Lines 1,2,3,4,13&15 are masked	029FH	Lines 1,2,3,4,5,8&10 are masked
900FH	Lines 1,2,3,4,13&16 are masked	049FH	Lines 1,2,3,4,5,8&11 are masked
600FH	Lines 1,2,3,4,14&15 are masked	089FH	Lines 1,2,3,4,5,8&12 are masked
A00FH	Lines 1,2,3,4,14&16 are masked	109FH	Lines 1,2,3,4,5,8&13 are masked
C00FH	Lines 1,2,3,4,15&16 are masked	209FH	Lines 1,2,3,4,5,8&14 are masked
007FH	Lines 1,2,3,4,5,6&7 are masked	409FH	Lines 1,2,3,4,5,8&15 are masked
00BFH	Lines 1,2,3,4,5,6&8 are masked	809FH	Lines 1,2,3,4,5,8&16 are masked
013FH	Lines 1,2,3,4,5,6&9 are masked	031FH	Lines 1,2,3,4,5,9&10 are masked
023FH	Lines 1,2,3,4,5,6&10 are masked	051FH	Lines 1,2,3,4,5,9&11 are masked

SYSTEM PARAMETER	SYSTEM RAMETER LINE NUMBER TO BE MASKED		LINE NUMBER TO BE MASKED
091FH	Lines 1,2,3,4,5,9&12 are masked	C01FH	Lines 1,2,3,4,5,15&16 are masked
111FH	Lines 1,2,3,4,5,9&13 are masked	00FFH	Lines 1,2,3,4,5,6,7&8 are masked
211FH	Lines 1,2,3,4,5,9&14 are masked	017FH	Lines 1,2,3,4,5,6,7&9 are masked
411FH	Lines 1,2,3,4,5,9&15 are masked	027FH	Lines 1,2,3,4,5,6,7&10 are masked
811FH	Lines 1,2,3,4,5,9&16 are masked	047FH	Lines 1,2,3,4,5,6,7&11 are masked
061FH	Lines 1,2,3,4,5,10&11 are masked	087FH	Lines 1,2,3,4,5,6,7&12 are masked
0A1FH	Lines 1,2,3,4,5,10&12 are masked	107FH	Lines 1,2,3,4,5,6,7&13 are masked
121FH	Lines 1,2,3,4,5,10&13 are masked	207FH	Lines 1,2,3,4,5,6,7&14 are masked
221FH	Lines 1,2,3,4,5,10&14 are masked	407FH	Lines 1,2,3,4,5,6,7&15 are masked
421FH	Lines 1,2,3,4,5,10&15 are masked	807FH	Lines 1,2,3,4,5,6,7&16 are masked
821FH	Lines 1,2,3,4,5,10&16 are masked	01BFH	Lines 1,2,3,4,5,6,8&9 are masked
0C1FH	Lines 1,2,3,4,5,11&12 are masked	02BFH	Lines 1,2,3,4,5,6,8&10 are masked
141FH	Lines 1,2,3,4,5,11&13 are masked	04BFH	Lines 1,2,3,4,5,6,8&11 are masked
241FH	Lines 1,2,3,4,5,11&14 are masked	08BFH	Lines 1,2,3,4,5,6,8&12 are masked
441FH	Lines 1,2,3,4,5,11&15 are masked	10BFH	Lines 1,2,3,4,5,6,8&13 are masked
841FH	Lines 1,2,3,4,5,11&16 are masked	20BFH	Lines 1,2,3,4,5,6,8&14 are masked
181FH	Lines 1,2,3,4,5,12&13 are masked	40BFH	Lines 1,2,3,4,5,6,8&15 are masked
281FH	Lines 1,2,3,4,5,12&14 are masked	80BFH	Lines 1,2,3,4,5,6,8&16 are masked
481FH	Lines 1,2,3,4,5,12&15 are masked	033FH	Lines 1,2,3,4,5,6,9&10 are masked
881FH	Lines 1,2,3,4,5,12&16 are masked	053FH	Lines 1,2,3,4,5,6,9&11 are masked
301FH	Lines 1,2,3,4,5,13&14 are masked	093FH	Lines 1,2,3,4,5,6,9&12 are masked
501FH	Lines 1,2,3,4,5,13&15 are masked	113FH	Lines 1,2,3,4,5,6,9&13 are masked
901FH	Lines 1,2,3,4,5,13&16 are masked	213FH	Lines 1,2,3,4,5,6,9&14 are masked
601FH	Lines 1,2,3,4,5,14&15 are masked	413FH	Lines 1,2,3,4,5,6,9&15 are masked
A01FH	Lines 1,2,3,4,5,14&16 are masked	813FH	Lines 1,2,3,4,5,6,9&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
063FH	Lines 1,2,3,4,5,6,10&11 are masked	10FFH	Lines 1,2,3,4,5,6,7,8&13 are masked
0A3FH	Lines 1,2,3,4,5,6,10&12 are masked	20FFH	Lines 1,2,3,4,5,6,7,8&14 are masked
123FH	Lines 1,2,3,4,5,6,10&13 are masked	40FFH	Lines 1,2,3,4,5,6,7,8&15 are masked
223FH	Lines 1,2,3,4,5,6,10&14 are masked	80FFH	Lines 1,2,3,4,5,6,7,8&16 are masked
423FH	Lines 1,2,3,4,5,6,10&15 are masked	037FH	Lines 1,2,3,4,5,6,7,9&10 are masked
823FH	Lines 1,2,3,4,5,6,10&16 are masked	057FH	Lines 1,2,3,4,5,6,7,9&11 are masked
0C3FH	Lines 1,2,3,4,5,6,11&12 are masked	097FH	Lines 1,2,3,4,5,6,7,9&12 are masked
143FH	Lines 1,2,3,4,5,6,11&13 are masked	117FH	Lines 1,2,3,4,5,6,7,9&13 are masked
243FH	Lines 1,2,3,4,5,6,11&14 are masked	067FH	Lines 1,2,3,4,5,6,7,10&11 are masked
443FH	Lines 1,2,3,4,5,6,11&15 are masked	0A7FH	Lines 1,2,3,4,5,6,7,10&12 are masked
843FH	Lines 1,2,3,4,5,6,11&16 are masked	127FH	Lines 1,2,3,4,5,6,7,10&13 are masked
183FH	Lines 1,2,3,4,5,6,12&13 are masked	227FH	Lines 1,2,3,4,5,6,7,10&14 are masked
283FH	Lines 1,2,3,4,5,6,12&14 are masked	427FH	Lines 1,2,3,4,5,6,7,10&15 are masked
483FH	Lines 1,2,3,4,5,6,12&15 are masked	827FH	Lines 1,2,3,4,5,6,7,10&16 are masked
883FH	Lines 1,2,3,4,5,6,12&16 are masked	0C7FH	Lines 1,2,3,4,5,6,7,11&12 are masked
303FH	Lines 1,2,3,4,5,6,13&14 are masked	147FH	Lines 1,2,3,4,5,6,7,11&13 are masked
503FH	Lines 1,2,3,4,5,6,13&15 are masked	247FH	Lines 1,2,3,4,5,6,7,11&14 are masked
903FH	Lines 1,2,3,4,5,6,13&16 are masked	447FH	Lines 1,2,3,4,5,6,7,11&15 are masked
603FH	Lines 1,2,3,4,5,6,14&15 are masked	847FH	Lines 1,2,3,4,5,6,7,11&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
187FH	Lines 1,2,3,4,5,6,7,12&13 are masked	81FFH	Lines 1,2,3,4,5,6,7,8,9&16 are masked
287FH	Lines 1,2,3,4,5,6,7,12&14 are masked	06FFH	Lines 1,2,3,4,5,6,7,8,10&11 are masked
487FH	Lines 1,2,3,4,5,6,7,12&15 are masked	0CFFH	Lines 1,2,3,4,5,6,7,8,10&12 are masked
887FH	Lines 1,2,3,4,5,6,7,12&16 are masked	12FFH	Lines 1,2,3,4,5,6,7,8,10&13 are masked
307FH	Lines 1,2,3,4,5,6,7,13&14 are masked	22FFH	Lines 1,2,3,4,5,6,7,8,10&14 are masked
507FH	Lines 1,2,3,4,5,6,7,13&15 are masked	42FFH	Lines 1,2,3,4,5,6,7,8,10&15 are masked
907FH	Lines 1,2,3,4,5,6,7,13&16 are masked	82FFH	Lines 1,2,3,4,5,6,7,8,10&16 are masked
607FH	Lines 1,2,3,4,5,6,7,14&15 are masked	0CFFH	Lines 1,2,3,4,5,6,7,8,11&12 are masked
A07FH	Lines 1,2,3,4,5,6,7,14&16 are masked	14FFH	Lines 1,2,3,4,5,6,7,8,11&13 are masked
C07FH	Lines 1,2,3,4,5,6,7,15&16 are masked	24FFH	Lines 1,2,3,4,5,6,7,8,11&14 are masked
03FFH	Lines 1,2,3,4,5,6,7,8,9&10 are masked	44FFH	Lines 1,2,3,4,5,6,7,8,11&15 are masked
05FFH	Lines 1,2,3,4,5,6,7,8,9&11 are masked	84FFH	Lines 1,2,3,4,5,6,7,8,11&16 are masked
09FFH	Lines 1,2,3,4,5,6,7,8,9&12 are masked	18FFH	Lines 1,2,3,4,5,6,7,8,12&13 are masked
11FFH	Lines 1,2,3,4,5,6,7,8,9&13 are masked	28FFH	Lines 1,2,3,4,5,6,7,8,12&14 are masked
21FFH	Lines 1,2,3,4,5,6,7,8,9&14 are masked	48FFH	Lines 1,2,3,4,5,6,7,8,12&15 are masked
41FFH	Lines 1,2,3,4,5,6,7,8,9&15 are masked	88FFH	Lines 1,2,3,4,5,6,7,8,12&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
30FFH	Lines 1,2,3,4,5,6,7,8,13&14 are masked	85FFH	Lines 1,2,3,4,5,6,7,8,9,11&16 are masked
50FFH	Lines 1,2,3,4,5,6,7,8,13&15 are masked	19FFH	Lines 1,2,3,4,5,6,7,8,9,12&13 are masked
90FFH	Lines 1,2,3,4,5,6,7,8,13&16 are masked	29FFH	Lines 1,2,3,4,5,6,7,8,9,12&14 are masked
60FFH	Lines 1,2,3,4,5,6,7,8,14&15 are masked	49FFH	Lines 1,2,3,4,5,6,7,8,9,12&15 are masked
A0FFH	Lines 1,2,3,4,5,6,7,8,14&16 are masked	89FFH	Lines 1,2,3,4,5,6,7,8,9,12&16 are masked
C0FFH	Lines 1,2,3,4,5,6,7,8,15&16 are masked	31FFH	Lines 1,2,3,4,5,6,7,8,9,13&14 are masked
07FFH	Lines 1,2,3,4,5,6,7,8,9,10&11 are masked	51FFH	Lines 1,2,3,4,5,6,7,8,9,13&15 are masked
OBFFH	Lines 1,2,3,4,5,6,7,8,9,10&12 are masked	91FFH	Lines 1,2,3,4,5,6,7,8,9,13&16 are masked
13FFH	Lines 1,2,3,4,5,6,7,8,9,10&13 are masked	61FFH	Lines 1,2,3,4,5,6,7,8,9,14&15 are masked
23FFH	Lines 1,2,3,4,5,6,7,8,9,10&14 are masked	A1FFH	Lines 1,2,3,4,5,6,7,8,9,14&16 are masked
43FFH	Lines 1,2,3,4,5,6,7,8,9,10&15 are masked	C1FFH	Lines 1,2,3,4,5,6,7,8,9,15&16 are masked
83FFH	Lines 1,2,3,4,5,6,7,8,9,10&16 are masked	0FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11&12 are masked
0DFFH	Lines 1,2,3,4,5,6,7,8,9,11&12 are masked	17FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&13 are masked
15FFH	Lines 1,2,3,4,5,6,7,8,9,11&13 are masked	27FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&14 are masked
25FFH	Lines 1,2,3,4,5,6,7,8,9,11&14 are masked	47FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&15 are masked
45FFH	Lines 1,2,3,4,5,6,7,8,9,11&15 are masked	87FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
1BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&13 are masked	57FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,13&15 are masked
2BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&14 are masked	97FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,13&16 are masked
4BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&15 are masked	67FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,14&15 are masked
8BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&16 are masked	A7FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,14&16 are masked
33FFH	Lines 1,2,3,4,5,6,7,8,9,10,13&14 are masked	C7FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,15&16 are masked
53FFH	Lines 1,2,3,4,5,6,7,8,9,10,13&15 are masked	3FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13&14 are masked
93FFH	Lines 1,2,3,4,5,6,7,8,9,10,13&16 are masked	5FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13&15 are masked
63FFH	Lines 1,2,3,4,5,6,7,8,9,10,14&15 are masked	9FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13&16 are masked
A3FFH	Lines 1,2,3,4,5,6,7,8,9,10,14&16 are masked	6FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 14&15 are masked
C3FFH	Lines 1,2,3,4,5,6,7,8,9,10,15&16 are masked	AFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 14&16 are masked
1FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&13 are masked	CFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 15&16 are masked
2FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&14 are masked	7FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13, 14&15 are masked
4FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&15 are masked	BFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12,13, 14&16 are masked
8FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&16 are masked	DFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12,13, 15&16 are masked
37FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,13&14 are masked	FFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12,13, 14,15&16 are masked

This page is for your notes.

**SUMMARY:** Set a per-channel communication rate for the communication channels for the H0 lines to and from the connecting conference terminals. Also set the number of conference terminals (in terms of ports) to be accommodated.

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address **30H** to **37H**
- [1] Addresses (hexadecimal values) on setting H0-INF LIF line rate.

ADDRESS	MEANING
30H	The line rate of LIF1
32H	The line rate of LIF2
34H	The line rate of LIF3
36H	The line rate of LIF4
31H	The number of ports for LIF1
33H	The number of ports for LIF2
35H	The number of ports for LIF3
37H	The number of ports for LIF4

#### STEP PROCEDURE

- **x<sub>i</sub>:** System parameter value See below:
  - [1] System parameter values on setting the line rate for each address (30H, 32H, 34H, 36H). The factory shipment value is **05H**.

SYSTEM PARAMETER	LINE RATE
20H	56 kb/s
30H	56 kb/s×2
00H	64 kb/s
10H	64 kb/s×2
25H	336 kb/s
05H	384 kb/s
15H	384 kb/s x 2
35H	336 kb/s x 2

[2] System parameter values on setting the number of ports for each address (31H, 33H, 35H, 37H). The factory shipment value is **10H**. Refer to Tables 1 and 2.

#### **Table 1: Number of Ports For System Parameter**

SYSTEM PARAMETER	NUMBER OF PORTS	SYSTEM PARAMETER	NUMBER OF PORTS	SYSTEM PARAMETER	NUMBER OF PORTS
01H	1	21H	33	41H	65
02H	2	22H	34	42H	66
03H	3	23H	35	43H	67
04H	4	24H	36	44H	68
05H	5	25H	37	45H	69
06H	6	26H	38	46H	70
07H	7	27H	39	47H	71
08H	8	28H	40	48H	72
09H	9	29H	41	49H	73
0AH	10	2AH	42	4AH	74
0BH	11	2BH	43	4BH	75
0CH	12	2CH	44	4CH	76
0DH	13	2DH	45	4DH	77
0EH	14	2EH	46	4EH	78
0FH	15	2FH	47	4FH	79
10H	16	30H	48	50H	80
11H	17	31H	49	51H	81
12H	18	32H	50	52H	82
13H	19	33H	51	53H	83
14H	20	34H	52	54H	84
15H	21	35H	53	55H	85
16H	22	36H	54	56H	86
17H	23	37H	55	57H	87
18H	24	38H	56	58H	88
19H	25	39H	57	59H	89
1AH	26	3AH	58	5AH	90
1BH	27	3BH	59	5BH	91
1CH	28	3CH	60	5CH	92
1DH	29	3DH	61	5DH	93
1EH	30	3EH	62	5EH	94
1FH	31	3FH	63	5FH	95
20H	32	40H	64	60H	96

STEP

#### PROCEDURE

LINE RATE	NUMBER OF PORT (SYSTEM PARAMETER)	LINE RATE	NUMBER OF PORT (SYSTEM PARAMETER)	LINE RATE	NUMBER OF PORT (SYSTEM PARAMETER)
T1 (64 kb/s)	96 (60H)	T1 (1152 kb/s)	4 (04H)	T1 (448 kb/s)	12 (0CH)
T1 (128 kb/s)	48 (30H)	T1 (1536 kb/s)	4 (04H)	T1 (672 kb/s)	8 (08H)
T1 (192 kb/s)	32 (20H)	T1 (56 kb/s)	96 (60H)	T1 (1008 kb/s)	4 (04H)
T1 (256 kb/s)	24 (18H)	T1 (112 kb/s)	48 (30H)	T1 (1344 kb/s)	4 (04H)
T1 (384 kb/s)	16 (10H)	T1 (168 kb/s)	32 (20H)	RS422	4 (04H)
T1 (512 kb/s)	12 (0CH)	T1 (224 kb/s)	24 (18H)	RS422 (2×B)	2 (02H)
T1 (768 kb/s)	8 (08H)	T1 (336 kb/s)	16 (10H)	INS	48 (30H)
Valid range of values for system parameter are 00H to FFH.					

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

3 End of procedure.

**SUMMARY:** Specifies the line from which to extract the line clock to be used inside the MCU 5000A. When set to "auto", the line whose line signal is the first to turn normal will be specified as the clock source, but it will be replaced by the lowest-numbered line currently in normal operation once the line acting as the clock source then ceases being normal. When all the terminals are connected via network, use the MCU 5000A on this setting.

#### STEP PROCEDURE

*Note:* If the physical line number is set with any value from "01H" to "10H", the line will be fixed as the clock source. In this case, care must be taken because an abnormal state of the line would lose the clock source and also cause the other lines to lose synchronization. If the MCU 5000A is connected to some terminals directly and to others via network, be sure to use the line connected via network as the clock source. When set to "internal", the intra-MCU crystal oscillator clock will supply the line clock. If MCU 5000A must be connected directly to all the terminals without going through network, use the MCU 5000A with this "internal" setting on.

#### 1 Enter the following command.

SSPR\_  $n_1 = x_1 _n_2 = x_2 _... n_i = x_i ... +$ 

n: System parameter address **3BH** to **3DH** 

The addresses for setting the clock source and clock mask are as shown in the following table.

ADDRESS	MEANING
3BH	Clock source setting
3CH	Clock source masking for lines 1 through 8
3DH	Clock source masking for lines 9 through 16

**x<sub>i</sub>:** System parameter values See below:

[1] System parameter values on setting the clock source for the address 3BH. The factory shipment value for the system parameter is **00H**.

STEP

PROCEDURE

SYSTEM PARAMETER	CLOCK SOURCE (CH)	SYSTEM PARAMETER	CLOCK SOURCE (CH)
00H	Automatic (automatic selection of line in its numerical order)	09H	9
01H	1	0AH	10
02H	2	0BH	11
03H	3	0CH	12
04H	4	0DH	13
05H	5	0EH	14
06H	6	0FH	15
07H	7	10H	16
08H	8	80H	N/A

[2] System parameter values on setting the clock source mask for the addresses 3CH and 3DH. The factory shipment value is **0000H**.
Valid only when setting the clock source, with the masked lines being so controlled as not to function as the clock source.

See tables on the following pages.

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

3 End of procedure.

<b>H0-INF LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0000H	No lines masked	0201H	Lines 1&10 are masked
0001H	Line 1 is masked	0401H	Lines 1&11 are masked
0002H	Line 2 is masked	0801H	Lines 1&12 are masked
0004H	Line 3 is masked	1001H	Lines 1&13 are masked
0008H	Line 4 is masked	2001H	Lines 1&14 are masked
0010H	Line 5 is masked	4001H	Lines 1&15 are masked
0020H	Line 6 is masked	8001H	Lines 1&16 are masked
0040H	Line 7 is masked	0006H	Lines 2&3 are masked
0080H	Line 8 is masked	000AH	Lines 2&4 are masked
0100H	Line 9 is masked	0012H	Lines 2&5 are masked
0200H	Line 10 is masked	0022H	Lines 2&6 are masked
0400H	Line 11 is masked	0042H	Lines 2&7 are masked
0800H	Line 12 is masked	0082H	Lines 2&8 are masked
1000H	Line 13 is masked	0102H	Lines 2&9 are masked
2000H	Line 14 is masked	0202H	Lines 2&10 are masked
4000H	Line 15 is masked	0402H	Lines 2&11 are masked
8000H	Line 16 is masked	0802H	Lines 2&12 are masked
0003H	Lines 1&2 are masked	1002H	Lines 2&13 are masked
0005H	Lines 1&3 are masked	2002H	Lines 2&14 are masked
0009H	Lines 1&4 are masked	4002H	Lines 2&15 are masked
0011H	Lines 1&5 are masked	8002H	Lines 2&16 are masked
0021H	Lines 1&6 are masked	000CH	Lines 3&4 are masked
0041H	Lines 1&7 are masked	0014H	Lines 3&5 are masked
0081H	Lines 1&8 are masked	0024H	Lines 3&6 are masked
0101H	Lines 1&9 are masked	0044H	Lines 3&7 are masked

*Note:* Marking a line as masked omits it from automatic selection if 3B = 00

<b>H0-INF LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0084H	Lines 3&8 are masked	0210H	Lines 5&10 are masked
0104H	Lines 3&9 are masked	0410H	Lines 5&11 are masked
0204H	Lines 3&10 are masked	0810H	Lines 5&12 are masked
0404H	Lines 3&11 are masked	1010H	Lines 5&13 are masked
0804H	Lines 3&12 are masked	2010H	Lines 5&14 are masked
1004H	Lines 3&13 are masked	4010H	Lines 5&15 are masked
2004H	Lines 3&14 are masked	8010H	Lines 5&16 are masked
4004H	Lines 3&15 are masked	0060H	Lines 6&7 are masked
8004H	Lines 3&16 are masked	00A0H	Lines 6&8 are masked
0018H	Lines 4&5 are masked	0120H	Lines 6&9 are masked
0028H	Lines 4&6 are masked	0220H	Lines 6&10 are masked
0048H	Lines 4&7 are masked	0420H	Lines 6&11 are masked
0088H	Lines 4&8 are masked	0820H	Lines 6&12 are masked
0108H	Lines 4&9 are masked	1020H	Lines 6&13 are masked
0208H	Lines 4&10 are masked	2020H	Lines 6&14 are masked
0408H	Lines 4&11 are masked	4020H	Lines 6&15 are masked
0808H	Lines 4&12 are masked	8020H	Lines 6&16 are masked
1008H	Lines 4&13 are masked	00C0H	Lines 7&8 are masked
2008H	Lines 4&14 are masked	0140H	Lines 7&9 are masked
4008H	Lines 4&15 are masked	0240H	Lines 7&10 are masked
8008H	Lines 4&16 are masked	0440H	Lines 7&11 are masked
0030H	Lines 5&6 are masked	0840H	Lines 7&12 are masked
0050H	Lines 5&7 are masked	1040H	Lines 7&13 are masked
0090H	Lines 5&8 are masked	2040H	Lines 7&14 are masked
0110H	Lines 5&9 are masked	4040H	Lines 7&15 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
8040H	Lines 7&16 are masked	4400H	Lines 11&15 are masked
0180H	Lines 8&9 are masked	8400H	Lines 11&16 are masked
1280H	Lines 8&10 are masked	1800H	Lines 12&13 are masked
0480H	Lines 8&11 are masked	2800H	Lines 12&14 are masked
0880H	Lines 8&12 are masked	4800H	Lines 12&15 are masked
1080H	Lines 8&13 are masked	8800H	Lines 12&16 are masked
2080H	Lines 8&14 are masked	3000H	Lines 13&14 are masked
4080H	Lines 8&15 are masked	5000H	Lines 13&15 are masked
8080H	Lines 8&16 are masked	9000H	Lines 13&16 are masked
0300H	Lines 9&10 are masked	6000H	Lines 14&15 are masked
0500H	Lines 9&11 are masked	A000H	Lines 14&16 are masked
0900H	Lines 9&12 are masked	С000Н	Lines 15&16 are masked
1100H	Lines 9&13 are masked	0070H	Lines 1,2&3 are masked
2100H	Lines 9&14 are masked	00B0H	Lines 1,2&4 are masked
4100H	Lines 9&15 are masked	0013H	Lines 1,2&5 are masked
8100H	Lines 9&16 are masked	0023H	Lines 1,2&6 are masked
0600H	Lines 10&11 are masked	0043H	Lines 1,2&7 are masked
0A00H	Lines 10&12 are masked	0083H	Lines 1,2&8 are masked
1200H	Lines 10&13 are masked	0103H	Lines 1,2&9 are masked
2200H	Lines 10&14 are masked	0203H	Lines 1,2&10 are masked
4200H	Lines 10&15 are masked	0403H	Lines 1,2&11 are masked
8200H	Lines 10&16 are masked	0803H	Lines 1,2&12 are masked
0C00H	Lines 11&12 are masked	1003H	Lines 1,2&13 are masked
1400H	Lines 11&13 are masked	2003H	Lines 1,2&14 are masked
2400H	Lines 11&14 are masked	4003H	Lines 1,2&15 are masked

<b>H0-INF LIF CLOCK SOURCE SETTING</b>
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
8003H	Lines 1,2&16 are masked	8009H	Lines 1,4&16 are masked
00D0H	Lines 1,3&4 are masked	0031H	Lines 1,5&6 are masked
0015H	Lines 1,3&5 are masked	0051H	Lines 1,5&7 are masked
0025H	Lines 1,3&6 are masked	0091H	Lines 1,5&8 are masked
0045H	Lines 1,3&7 are masked	0111H	Lines 1,5&9 are masked
0085H	Lines 1,3&8 are masked	0211H	Lines 1,5&10 are masked
0105H	Lines 1,3&9 are masked	0411H	Lines 1,5&11 are masked
0205H	Lines 1,3&10 are masked	0811H	Lines 1,5&12 are masked
0405H	Lines 1,3&11 are masked	1011H	Lines 1,5&13 are masked
0805H	Lines 1,3&12 are masked	2011H	Lines 1,5&14 are masked
1005H	Lines 1,3&13 are masked	4011H	Lines 1,5&15 are masked
2005H	Lines 1,3&14 are masked	8011H	Lines 1,5&16 are masked
4005H	Lines 1,3&15 are masked	0061H	Lines 1,6&7 are masked
8005H	Lines 1,3&16 are masked	00E1H	Lines 1,6&8 are masked
0019H	Lines 1,4&5 are masked	0121H	Lines 1,6&9 are masked
0029H	Lines 1,4&6 are masked	0221H	Lines 1,6&10 are masked
0049H	Lines 1,4&7 are masked	0421H	Lines 1,6&11 are masked
0089H	Lines 1,4&8 are masked	0821H	Lines 1,6&12 are masked
0109H	Lines 1,4&9 are masked	1021H	Lines 1,6&13 are masked
0209H	Lines 1,4&10 are masked	2021H	Lines 1,6&14 are masked
0409H	Lines 1,4&11 are masked	4021H	Lines 1,6&15 are masked
0809H	Lines 1,4&12 are masked	8021H	Lines 1,6&16 are masked
1009H	Lines 1,4&13 are masked	00C1H	Lines 1,7&8 are masked
2009H	Lines 1,4&14 are masked	0141H	Lines 1,7&9 are masked
4009H	Lines 1,4&15 are masked	0241H	Lines 1,7&10 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0441H	Lines 1,7&11 are masked	4201H	Lines 1,10&15 are masked
0841H	Lines 1,7&12 are masked	8201H	Lines 1,10&16 are masked
1041H	Lines 1,7&13 are masked	0C01H	Lines 1,11&12 are masked
2041H	Lines 1,7&14 are masked	1401H	Lines 1,11&13 are masked
4041H	Lines 1,7&15 are masked	2401H	Lines 1,11&14 are masked
8041H	Lines 1,7&16 are masked	4401H	Lines 1,11&15 are masked
0181H	Lines 1,8&9 are masked	8401H	Lines 1,11&16 are masked
0281H	Lines 1,8&10 are masked	1801H	Lines 1,12&13 are masked
0481H	Lines 1,8&11 are masked	2801H	Lines 1,12&14 are masked
0881H	Lines 1,8&12 are masked	4801H	Lines 1,12&15 are masked
1081H	Lines 1,8&13 are masked	8801H	Lines 1,12&16 are masked
2081H	Lines 1,8&14 are masked	3001H	Lines 1,13&14 are masked
4081H	Lines 1,8&15 are masked	5001H	Lines 1,13&15 are masked
8081H	Lines 1,8&16 are masked	9001H	Lines 1,13&16 are masked
0301H	Lines 1,9&10 are masked	6001H	Lines 1,14&15 are masked
0501H	Lines 1,9&11 are masked	A001H	Lines 1,14&16 are masked
0901H	Lines 1,9&12 are masked	C001H	Lines 1,15&16 are masked
1101H	Lines 1,9&13 are masked	000FH	Lines 1,2,3&4 are masked
2101H	Lines 1,9&14 are masked	0017H	Lines 1,2,3&5 are masked
4101H	Lines 1,9&15 are masked	0027H	Lines 1,2,3&6 are masked
8101H	Lines 1,9&16 are masked	0047H	Lines 1,2,3&7 are masked
0601H	Lines 1,10&11 are masked	0087H	Lines 1,2,3&8 are masked
0A01H	Lines 1,10&12 are masked	0107H	Lines 1,2,3&9 are masked
1201H	Lines 1,10&13 are masked	0207H	Lines 1,2,3&10 are masked
2201H	Lines 1,10&14 are masked	0407H	Lines 1,2,3&11 are masked

H0-INF LIF CLOCK SOURCE SETTING
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0807H	Lines 1,2,3&12 are masked	2013H	Lines 1,2,5&14 are masked
1007H	Lines 1,2,3&13 are masked	4013H	Lines 1,2,5&15 are masked
2007H	Lines 1,2,3&14 are masked	8013H	Lines 1,2,5&16 are masked
4007H	Lines 1,2,3&15 are masked	0063H	Lines 1,2,6&7 are masked
8007H	Lines 1,2,3&16 are masked	00A3H	Lines 1,2,6&8 are masked
001BH	Lines 1,2,4&5 are masked	0123H	Lines 1,2,6&9 are masked
002BH	Lines 1,2,4&6 are masked	0223H	Lines 1,2,6&10 are masked
004BH	Lines 1,2,4&7 are masked	0423H	Lines 1,2,6&11 are masked
008BH	Lines 1,2,4&8 are masked	0823H	Lines 1,2,6&12 are masked
010BH	Lines 1,2,4&9 are masked	1023H	Lines 1,2,6&13 are masked
020BH	Lines 1,2,4&10 are masked	2023H	Lines 1,2,6&14 are masked
040BH	Lines 1,2,4&11 are masked	4023H	Lines 1,2,6&15 are masked
080BH	Lines 1,2,4&12 are masked	8023H	Lines 1,2,6&16 are masked
100BH	Lines 1,2,4&13 are masked	00C3H	Lines 1,2,7&8 are masked
200BH	Lines 1,2,4&14 are masked	0143H	Lines 1,2,7&9 are masked
400BH	Lines 1,2,4&15 are masked	0243H	Lines 1,2,7&10 are masked
800BH	Lines 1,2,4&16 are masked	0183H	Lines 1,2,8&9 are masked
0033H	Lines 1,2,5&6 are masked	0283H	Lines 1,2,8&10 are masked
0053H	Lines 1,2,5&7 are masked	0483H	Lines 1,2,8&11 are masked
0093H	Lines 1,2,5&8 are masked	0883H	Lines 1,2,8&12 are masked
0113H	Lines 1,2,5&9 are masked	1083H	Lines 1,2,8&13 are masked
0213H	Lines 1,2,5&10 are masked	2083H	Lines 1,2,8&14 are masked
0413H	Lines 1,2,5&11 are masked	4083H	Lines 1,2,8&15 are masked
0813H	Lines 1,2,5&12 are masked	8083H	Lines 1,2,8&16 are masked
1013H	Lines 1,2,5&13 are masked	0303H	Lines 1,2,9&10 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0503H	Lines 1,2,9&11 are masked	A003H	Lines 1,2,14&16 are masked
0903H	Lines 1,2,9&12 are masked	C003H	Lines 1,2,15&16 are masked
1103H	Lines 1,2,9&13 are masked	001FH	Lines 1,2,3,4&5 are masked
2103H	Lines 1,2,9&14 are masked	002FH	Lines 1,2,3,4&6 are masked
4103H	Lines 1,2,9&15 are masked	004FH	Lines 1,2,3,4&7 are masked
8103H	Lines 1,2,9&16 are masked	008FH	Lines 1,2,3,4&8 are masked
0603H	Lines 1,2,10&11 are masked	010FH	Lines 1,2,3,4&9 are masked
0A03H	Lines 1,2,10&12 are masked	020FH	Lines 1,2,3,4&10 are masked
1203H	Lines 1,2,10&13 are masked	040FH	Lines 1,2,3,4&11 are masked
2203H	Lines 1,2,10&14 are masked	080FH	Lines 1,2,3,4&12 are masked
4203H	Lines 1,2,10&15 are masked	100FH	Lines 1,2,3,4&13 are masked
8203H	Lines 1,2,10&16 are masked	200FH	Lines 1,2,3,4&14 are masked
0C03H	Lines 1,2,11&12 are masked	400FH	Lines 1,2,3,4&15 are masked
1403H	Lines 1,2,11&13 are masked	800FH	Lines 1,2,3,4&16 are masked
2403H	Lines 1,2,11&14 are masked	0037H	Lines 1,2,3,5&6 are masked
4403H	Lines 1,2,11&15 are masked	0057H	Lines 1,2,3,5&7 are masked
8403H	Lines 1,2,11&16 are masked	0097H	Lines 1,2,3,5&8 are masked
1803H	Lines 1,2,12&13 are masked	0117H	Lines 1,2,3,5&9 are masked
2803H	Lines 1,2,12&14 are masked	0217H	Lines 1,2,3,5&10 are masked
4803H	Lines 1,2,12&15 are masked	0417H	Lines 1,2,3,5&11 are masked
8803H	Lines 1,2,12&16 are masked	0817H	Lines 1,2,3,5&12 are masked
3003H	Lines 1,2,13&14 are masked	1017H	Lines 1,2,3,5&13 are masked
5003H	Lines 1,2,13&15 are masked	2017H	Lines 1,2,3,5&14 are masked
9003H	Lines 1,2,13&16 are masked	4017H	Lines 1,2,3,5&15 are masked
6003H	Lines 1,2,14&15 are masked	8017H	Lines 1,2,3,5&16 are masked

H0-INF LIF CLOCK SOURCE SETTING
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
0067H	Lines 1,2,3,6&7 are masked	4087H	Lines 1,2,3,8&15 are masked
00A7H	Lines 1,2,3,6&8 are masked	8087H	Lines 1,2,3,8&16 are masked
0127H	Lines 1,2,3,6&9 are masked	0307H	Lines 1,2,3,9&10 are masked
0227H	Lines 1,2,3,6&10 are masked	0507H	Lines 1,2,3,9&11 are masked
0427H	Lines 1,2,3,6&11 are masked	0907H	Lines 1,2,3,9&12 are masked
0827H	Lines 1,2,3,6&12 are masked	1107H	Lines 1,2,3,9&13 are masked
1027H	Lines 1,2,3,6&13 are masked	2107H	Lines 1,2,3,9&14 are masked
2027H	Lines 1,2,3,6&14 are masked	4107H	Lines 1,2,3,9&15 are masked
4027H	Lines 1,2,3,6&15 are masked	8107H	Lines 1,2,3,9&16 are masked
8027H	Lines 1,2,3,6&16 are masked	0607H	Lines 1,2,3,10&11 are masked
00C7H	Lines 1,2,3,7&8 are masked	0A07H	Lines 1,2,3,10&12 are masked
0147H	Lines 1,2,3,7&9 are masked	1207H	Lines 1,2,3,10&13 are masked
0247H	Lines 1,2,3,7&10 are masked	2207H	Lines 1,2,3,10&14 are masked
0447H	Lines 1,2,3,7&11 are masked	4207H	Lines 1,2,3,10&15 are masked
0847H	Lines 1,2,3,7&12 are masked	8207H	Lines 1,2,3,10&16 are masked
1047H	Lines 1,2,3,7&13 are masked	0C07H	Lines 1,2,3,11&12 are masked
2047H	Lines 1,2,3,7&14 are masked	1407H	Lines 1,2,3,11&13 are masked
4047H	Lines 1,2,3,7&15 are masked	2407H	Lines 1,2,3,11&14 are masked
8047H	Lines 1,2,3,7&16 are masked	4407H	Lines 1,2,3,11&15 are masked
0187H	Lines 1,2,3,8&9 are masked	8407H	Lines 1,2,3,11&16 are masked
0287H	Lines 1,2,3,8&10 are masked	1807H	Lines 1,2,3,12&13 are masked
0487H	Lines 1,2,3,8&11 are masked	2807H	Lines 1,2,3,12&14 are masked
0887H	Lines 1,2,3,8&12 are masked	4807H	Lines 1,2,3,12&15 are masked
1087H	Lines 1,2,3,8&13 are masked	8807H	Lines 1,2,3,12&16 are masked
2087H	Lines 1,2,3,8&14 are masked	3007H	Lines 1,2,3,13&14 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
5007H	Lines 1,2,3,13&15 are masked	802FH	Lines 1,2,3,4,6&16 are masked
9007H	Lines 1,2,3,13&16 are masked	00CFH	Lines 1,2,3,4,7&8 are masked
6007H	Lines 1,2,3,14&15 are masked	014FH	Lines 1,2,3,4,7&9 are masked
A007H	Lines 1,2,3,14&16 are masked	024FH	Lines 1,2,3,4,7&10 are masked
C007H	Lines 1,2,3,15&16 are masked	044FH	Lines 1,2,3,4,7&11 are masked
003FH	Lines 1,2,3,4,5&6 are masked	084FH	Lines 1,2,3,4,7&12 are masked
005FH	Lines 1,2,3,4,5&7 are masked	104FH	Lines 1,2,3,4,7&13 are masked
009FH	Lines 1,2,3,4,5&8 are masked	204FH	Lines 1,2,3,4,7&14 are masked
011FH	Lines 1,2,3,4,5&9 are masked	404FH	Lines 1,2,3,4,7&15 are masked
021FH	Lines 1,2,3,4,5&10 are masked	804FH	Lines 1,2,3,4,7&16 are masked
041FH	Lines 1,2,3,4,5&11 are masked	018FH	Lines 1,2,3,4,8&9 are masked
081FH	Lines 1,2,3,4,5&12 are masked	028FH	Lines 1,2,3,4,8&10 are masked
101FH	Lines 1,2,3,4,5&13 are masked	048FH	Lines 1,2,3,4,8&11 are masked
201FH	Lines 1,2,3,4,5&14 are masked	088FH	Lines 1,2,3,4,8&12 are masked
401FH	Lines 1,2,3,4,5&15 are masked	108FH	Lines 1,2,3,4,8&13 are masked
801FH	Lines 1,2,3,4,5&16 are masked	208FH	Lines 1,2,3,4,8&14 are masked
006FH	Lines 1,2,3,4,6&7 are masked	408FH	Lines 1,2,3,4,8&15 are masked
00AFH	Lines 1,2,3,4,6&8 are masked	808FH	Lines 1,2,3,4,8&16 are masked
012FH	Lines 1,2,3,4,6&9 are masked	030FH	Lines 1,2,3,4,9&10 are masked
022FH	Lines 1,2,3,4,6&10 are masked	050FH	Lines 1,2,3,4,9&11 are masked
042FH	Lines 1,2,3,4,6&11 are masked	090FH	Lines 1,2,3,4,9&12 are masked
082FH	Lines 1,2,3,4,6&12 are masked	110FH	Lines 1,2,3,4,9&13 are masked
102FH	Lines 1,2,3,4,6&13 are masked	210FH	Lines 1,2,3,4,9&14 are masked
202FH	Lines 1,2,3,4,6&14 are masked	410FH	Lines 1,2,3,4,9&15 are masked
402FH	Lines 1,2,3,4,6&15 are masked	810FH	Lines 1,2,3,4,9&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
060FH	Lines 1,2,3,4,10&11 are masked	043FH	Lines 1,2,3,4,5,6&11 are masked
0A0FH	Lines 1,2,3,4,10&12 are masked	083FH	Lines 1,2,3,4,5,6&12 are masked
120FH	Lines 1,2,3,4,10&13 are masked	103FH	Lines 1,2,3,4,5,6&13 are masked
220FH	Lines 1,2,3,4,10&14 are masked	203FH	Lines 1,2,3,4,5,6&14 are masked
420FH	Lines 1,2,3,4,10&15 are masked	403FH	Lines 1,2,3,4,5,6&15 are masked
820FH	Lines 1,2,3,4,10&16 are masked	803FH	Lines 1,2,3,4,5,6&16 are masked
0C0FH	Lines 1,2,3,4,11&12 are masked	00DFH	Lines 1,2,3,4,5,7&8 are masked
140FH	Lines 1,2,3,4,11&13 are masked	015FH	Lines 1,2,3,4,5,7&9 are masked
240FH	Lines 1,2,3,4,11&14 are masked	025FH	Lines 1,2,3,4,5,7&10 are masked
440FH	Lines 1,2,3,4,11&15 are masked	045FH	Lines 1,2,3,4,5,7&11 are masked
840FH	Lines 1,2,3,4,11&16 are masked	085FH	Lines 1,2,3,4,5,7&12 are masked
180FH	Lines 1,2,3,4,12&13 are masked	105FH	Lines 1,2,3,4,5,7&13 are masked
280FH	Lines 1,2,3,4,12&14 are masked	205FH	Lines 1,2,3,4,5,7&14 are masked
480FH	Lines 1,2,3,4,12&15 are masked	405FH	Lines 1,2,3,4,5,7&15 are masked
880FH	Lines 1,2,3,4,12&16 are masked	805FH	Lines 1,2,3,4,5,7&16 are masked
300FH	Lines 1,2,3,4,13&14 are masked	019FH	Lines 1,2,3,4,5,8&9 are masked
500FH	Lines 1,2,3,4,13&15 are masked	029FH	Lines 1,2,3,4,5,8&10 are masked
900FH	Lines 1,2,3,4,13&16 are masked	049FH	Lines 1,2,3,4,5,8&11 are masked
600FH	Lines 1,2,3,4,14&15 are masked	089FH	Lines 1,2,3,4,5,8&12 are masked
A00FH	Lines 1,2,3,4,14&16 are masked	109FH	Lines 1,2,3,4,5,8&13 are masked
C00FH	Lines 1,2,3,4,15&16 are masked	209FH	Lines 1,2,3,4,5,8&14 are masked
007FH	Lines 1,2,3,4,5,6&7 are masked	409FH	Lines 1,2,3,4,5,8&15 are masked
00BFH	Lines 1,2,3,4,5,6&8 are masked	809FH	Lines 1,2,3,4,5,8&16 are masked
013FH	Lines 1,2,3,4,5,6&9 are masked	031FH	Lines 1,2,3,4,5,9&10 are masked
023FH	Lines 1,2,3,4,5,6&10 are masked	051FH	Lines 1,2,3,4,5,9&11 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
091FH	Lines 1,2,3,4,5,9&12 are masked	C01FH	Lines 1,2,3,4,5,15&16 are masked
111FH	Lines 1,2,3,4,5,9&13 are masked	00FFH	Lines 1,2,3,4,5,6,7&8 are masked
211FH	Lines 1,2,3,4,5,9&14 are masked	017FH	Lines 1,2,3,4,5,6,7&9 are masked
411FH	Lines 1,2,3,4,5,9&15 are masked	027FH	Lines 1,2,3,4,5,6,7&10 are masked
811FH	Lines 1,2,3,4,5,9&16 are masked	047FH	Lines 1,2,3,4,5,6,7&11 are masked
061FH	Lines 1,2,3,4,5,10&11 are masked	087FH	Lines 1,2,3,4,5,6,7&12 are masked
0A1FH	Lines 1,2,3,4,5,10&12 are masked	107FH	Lines 1,2,3,4,5,6,7&13 are masked
121FH	Lines 1,2,3,4,5,10&13 are masked	207FH	Lines 1,2,3,4,5,6,7&14 are masked
221FH	Lines 1,2,3,4,5,10&14 are masked	407FH	Lines 1,2,3,4,5,6,7&15 are masked
421FH	Lines 1,2,3,4,5,10&15 are masked	807FH	Lines 1,2,3,4,5,6,7&16 are masked
821FH	Lines 1,2,3,4,5,10&16 are masked	01BFH	Lines 1,2,3,4,5,6,8&9 are masked
0C1FH	Lines 1,2,3,4,5,11&12 are masked	02BFH	Lines 1,2,3,4,5,6,8&10 are masked
141FH	Lines 1,2,3,4,5,11&13 are masked	04BFH	Lines 1,2,3,4,5,6,8&11 are masked
241FH	Lines 1,2,3,4,5,11&14 are masked	08BFH	Lines 1,2,3,4,5,6,8&12 are masked
441FH	Lines 1,2,3,4,5,11&15 are masked	10BFH	Lines 1,2,3,4,5,6,8&13 are masked
841FH	Lines 1,2,3,4,5,11&16 are masked	20BFH	Lines 1,2,3,4,5,6,8&14 are masked
181FH	Lines 1,2,3,4,5,12&13 are masked	40BFH	Lines 1,2,3,4,5,6,8&15 are masked
281FH	Lines 1,2,3,4,5,12&14 are masked	80BFH	Lines 1,2,3,4,5,6,8&16 are masked
481FH	Lines 1,2,3,4,5,12&15 are masked	033FH	Lines 1,2,3,4,5,6,9&10 are masked
881FH	Lines 1,2,3,4,5,12&16 are masked	053FH	Lines 1,2,3,4,5,6,9&11 are masked
301FH	Lines 1,2,3,4,5,13&14 are masked	093FH	Lines 1,2,3,4,5,6,9&12 are masked
501FH	Lines 1,2,3,4,5,13&15 are masked	113FH	Lines 1,2,3,4,5,6,9&13 are masked
901FH	Lines 1,2,3,4,5,13&16 are masked	213FH	Lines 1,2,3,4,5,6,9&14 are masked
601FH	Lines 1,2,3,4,5,14&15 are masked	413FH	Lines 1,2,3,4,5,6,9&15 are masked
A01FH	Lines 1,2,3,4,5,14&16 are masked	813FH	Lines 1,2,3,4,5,6,9&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
063FH	Lines 1,2,3,4,5,6,10&11 are masked	10FFH	Lines 1,2,3,4,5,6,7,8&13 are masked
0A3FH	Lines 1,2,3,4,5,6,10&12 are masked	20FFH	Lines 1,2,3,4,5,6,7,8&14 are masked
123FH	Lines 1,2,3,4,5,6,10&13 are masked	40FFH	Lines 1,2,3,4,5,6,7,8&15 are masked
223FH	Lines 1,2,3,4,5,6,10&14 are masked	80FFH	Lines 1,2,3,4,5,6,7,8&16 are masked
423FH	Lines 1,2,3,4,5,6,10&15 are masked	037FH	Lines 1,2,3,4,5,6,7,9&10 are masked
823FH	Lines 1,2,3,4,5,6,10&16 are masked	057FH	Lines 1,2,3,4,5,6,7,9&11 are masked
0C3FH	Lines 1,2,3,4,5,6,11&12 are masked	097FH	Lines 1,2,3,4,5,6,7,9&12 are masked
143FH	Lines 1,2,3,4,5,6,11&13 are masked	117FH	Lines 1,2,3,4,5,6,7,9&13 are masked
243FH	Lines 1,2,3,4,5,6,11&14 are masked	067FH	Lines 1,2,3,4,5,6,7,10&11 are masked
443FH	Lines 1,2,3,4,5,6,11&15 are masked	0A7FH	Lines 1,2,3,4,5,6,7,10&12 are masked
843FH	Lines 1,2,3,4,5,6,11&16 are masked	127FH	Lines 1,2,3,4,5,6,7,10&13 are masked
183FH	Lines 1,2,3,4,5,6,12&13 are masked	227FH	Lines 1,2,3,4,5,6,7,10&14 are masked
283FH	Lines 1,2,3,4,5,6,12&14 are masked	427FH	Lines 1,2,3,4,5,6,7,10&15 are masked
483FH	Lines 1,2,3,4,5,6,12&15 are masked	827FH	Lines 1,2,3,4,5,6,7,10&16 are masked
883FH	Lines 1,2,3,4,5,6,12&16 are masked	0C7FH	Lines 1,2,3,4,5,6,7,11&12 are masked
303FH	Lines 1,2,3,4,5,6,13&14 are masked	147FH	Lines 1,2,3,4,5,6,7,11&13 are masked
503FH	Lines 1,2,3,4,5,6,13&15 are masked	247FH	Lines 1,2,3,4,5,6,7,11&14 are masked
903FH	Lines 1,2,3,4,5,6,13&16 are masked	447FH	Lines 1,2,3,4,5,6,7,11&15 are masked
603FH	Lines 1,2,3,4,5,6,14&15 are masked	847FH	Lines 1,2,3,4,5,6,7,11&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
187FH	Lines 1,2,3,4,5,6,7,12&13 are masked	81FFH	Lines 1,2,3,4,5,6,7,8,9&16 are masked
287FH	Lines 1,2,3,4,5,6,7,12&14 are masked	06FFH	Lines 1,2,3,4,5,6,7,8,10&11 are masked
487FH	Lines 1,2,3,4,5,6,7,12&15 are masked	0CFFH	Lines 1,2,3,4,5,6,7,8,10&12 are masked
887FH	Lines 1,2,3,4,5,6,7,12&16 are masked	12FFH	Lines 1,2,3,4,5,6,7,8,10&13 are masked
307FH	Lines 1,2,3,4,5,6,7,13&14 are masked	22FFH	Lines 1,2,3,4,5,6,7,8,10&14 are masked
507FH	Lines 1,2,3,4,5,6,7,13&15 are masked	42FFH	Lines 1,2,3,4,5,6,7,8,10&15 are masked
907FH	Lines 1,2,3,4,5,6,7,13&16 are masked	82FFH	Lines 1,2,3,4,5,6,7,8,10&16 are masked
607FH	Lines 1,2,3,4,5,6,7,14&15 are masked	0CFFH	Lines 1,2,3,4,5,6,7,8,11&12 are masked
A07FH	Lines 1,2,3,4,5,6,7,14&16 are masked	14FFH	Lines 1,2,3,4,5,6,7,8,11&13 are masked
C07FH	Lines 1,2,3,4,5,6,7,15&16 are masked	24FFH	Lines 1,2,3,4,5,6,7,8,11&14 are masked
03FFH	Lines 1,2,3,4,5,6,7,8,9&10 are masked	44FFH	Lines 1,2,3,4,5,6,7,8,11&15 are masked
05FFH	Lines 1,2,3,4,5,6,7,8,9&11 are masked	84FFH	Lines 1,2,3,4,5,6,7,8,11&16 are masked
09FFH	Lines 1,2,3,4,5,6,7,8,9&12 are masked	18FFH	Lines 1,2,3,4,5,6,7,8,12&13 are masked
11FFH	Lines 1,2,3,4,5,6,7,8,9&13 are masked	28FFH	Lines 1,2,3,4,5,6,7,8,12&14 are masked
21FFH	Lines 1,2,3,4,5,6,7,8,9&14 are masked	48FFH	Lines 1,2,3,4,5,6,7,8,12&15 are masked
41FFH	Lines 1,2,3,4,5,6,7,8,9&15 are masked	88FFH	Lines 1,2,3,4,5,6,7,8,12&16 are masked

H0-INF LIF CLOCK SOURCE SETTING
LINE RELATED

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
30FFH	Lines 1,2,3,4,5,6,7,8,13&14 are masked	85FFH	Lines 1,2,3,4,5,6,7,8,9,11&16 are masked
50FFH	Lines 1,2,3,4,5,6,7,8,13&15 are masked	19FFH	Lines 1,2,3,4,5,6,7,8,9,12&13 are masked
90FFH	Lines 1,2,3,4,5,6,7,8,13&16 are masked	29FFH	Lines 1,2,3,4,5,6,7,8,9,12&14 are masked
60FFH	Lines 1,2,3,4,5,6,7,8,14&15 are masked	49FFH	Lines 1,2,3,4,5,6,7,8,9,12&15 are masked
A0FFH	Lines 1,2,3,4,5,6,7,8,14&16 are masked	89FFH	Lines 1,2,3,4,5,6,7,8,9,12&16 are masked
C0FFH	Lines 1,2,3,4,5,6,7,8,15&16 are masked	31FFH	Lines 1,2,3,4,5,6,7,8,9,13&14 are masked
07FFH	Lines 1,2,3,4,5,6,7,8,9,10&11 are masked	51FFH	Lines 1,2,3,4,5,6,7,8,9,13&15 are masked
0BFFH	Lines 1,2,3,4,5,6,7,8,9,10&12 are masked	91FFH	Lines 1,2,3,4,5,6,7,8,9,13&16 are masked
13FFH	Lines 1,2,3,4,5,6,7,8,9,10&13 are masked	61FFH	Lines 1,2,3,4,5,6,7,8,9,14&15 are masked
23FFH	Lines 1,2,3,4,5,6,7,8,9,10&14 are masked	A1FFH	Lines 1,2,3,4,5,6,7,8,9,14&16 are masked
43FFH	Lines 1,2,3,4,5,6,7,8,9,10&15 are masked	C1FFH	Lines 1,2,3,4,5,6,7,8,9,15&16 are masked
83FFH	Lines 1,2,3,4,5,6,7,8,9,10&16 are masked	0FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11&12 are masked
0DFFH	Lines 1,2,3,4,5,6,7,8,9,11&12 are masked	17FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&13 are masked
15FFH	Lines 1,2,3,4,5,6,7,8,9,11&13 are masked	27FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&14 are masked
25FFH	Lines 1,2,3,4,5,6,7,8,9,11&14 are masked	47FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&15 are masked
45FFH	Lines 1,2,3,4,5,6,7,8,9,11&15 are masked	87FFH	Lines 1,2,3,4,5,6,7,8,9,10,11&16 are masked

SYSTEM PARAMETER	LINE NUMBER TO BE MASKED	SYSTEM PARAMETER	LINE NUMBER TO BE MASKED
1BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&13 are masked	57FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,13&15 are masked
2BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&14 are masked	97FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,13&16 are masked
4BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&15 are masked	67FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,14&15 are masked
8BFFH	Lines 1,2,3,4,5,6,7,8,9,10,12&16 are masked	A7FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,14&16 are masked
33FFH	Lines 1,2,3,4,5,6,7,8,9,10,13&14 are masked	C7FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,15&16 are masked
53FFH	Lines 1,2,3,4,5,6,7,8,9,10,13&15 are masked	3FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13&14 are masked
93FFH	Lines 1,2,3,4,5,6,7,8,9,10,13&16 are masked	5FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13&15 are masked
63FFH	Lines 1,2,3,4,5,6,7,8,9,10,14&15 are masked	9FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13&16 are masked
A3FFH	Lines 1,2,3,4,5,6,7,8,9,10,14&16 are masked	6FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 14&15 are masked
C3FFH	Lines 1,2,3,4,5,6,7,8,9,10,15&16 are masked	AFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 14&16 are masked
1FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&13 are masked	CFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 15&16 are masked
2FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&14 are masked	7FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12, 13, 14&15 are masked
4FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&15 are masked	BFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12,13, 14&16 are masked
8FFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12&16 are masked	DFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12,13, 15&16 are masked
37FFH	Lines 1,2,3,4,5,6,7,8,9,10,11,13&14 are masked	FFFFH	Lines 1,2,3,4,5,6,7,8,9,10,11,12,13, 14,15&16 are masked

This page is for your notes.

#### TALKER DETECTION BACKWARD PROTECTION TIME SETTING VOICE RELATED

**SUMMARY:** When automatically switching on detection of voice, protection time is set until the start of switching, after detection of voice, by recognizing that conference room in which the voice was detected.

#### STEP PROCEDURE

- *Note:* Set talker detection backward protection time with the factory shipment value (**0BH**) as a general rule. If change is necessary for any reason, be sure to follow the steps described below.
- 1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots +$ 

- **n**<sub>i</sub>: System parameter address **50H**
- **x<sub>i</sub>:** System parameter values See below:
  - System parameter values on setting the talker detection backward protection time for the address 50H.
    The factory shipment value for the system parameter is **0BH**.

# TALKER DETECTION BACKWARD PROTECTION TIME SETTING VOICE RELATED

STEP

#### PROCEDURE

SYSTEM PARAMETER	TALKER DETECTION BACKWARD PROTECTION TIME	SYSTEM PARAMETER	TALKER DETECTION BACKWARD PROTECTION TIME
00H	310 ms	08H	230 ms
01H	300 ms	09H	220 ms
02H	290 ms	0AH	210 ms
03H	280 ms	0BH	200 ms
04H	270 ms	0CH	190 ms
05H	260 ms	0DH	180 ms
06H	250 ms	0EH	170 ms
07H	240 ms	0FH	160 ms
10H	150 ms	18H	70 ms
11H	140 ms	19H	60 ms
12H	130 ms	1AH	50 ms
13H	120 ms	1BH	40 ms
14H	110 ms	1CH	30 ms
15H	100 ms	1DH	20 ms
16H	90 ms	1EH	10 ms
17H	80 ms		

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

3 End of procedure.

#### TALKER DETECTION FORWARD PROTECTION TIME SETTING VOICE RELATED

**SUMMARY:** When automatically switching on detection of voice, protection time is set until the start of detecting the voice of another talker after disappearance of the current voice signal.

#### STEP PROCEDURE

- *Note:* Set talker detection forward protection time with the factory shipment value (**0DH**) as a general rule. If change is necessary for any reason, be sure to follow the steps described below.
- 1 Enter the following command.

**SSPR\_**  $n_1 = x_1 _n_2 = x_2 _... n_i = x_i ... \downarrow$ 

- **n**<sub>i</sub>: System parameter address **3BH** to **3DH**
- **x<sub>i</sub>:** System parameter values See below:
- [1] System parameter values on setting the protection time for the address 51H. The factory shipment value for the system parameter is **0DH**.

SYSTEM PARAMETER	TALKER DETECTION FORWARD PROTECTION TIME	SYSTEM PARAMETER	TALKER DETECTION FORWARD PROTECTION TIME
00H	630 ms	0BH	520 ms
01H	620 ms	0CH	510 ms
02H	610 ms	0DH	500 ms
03H	600 ms	0EH	490 ms
04H	590 ms	0FH	480 ms
05H	580 ms	10H	470 ms
06H	570 ms	11H	460 ms
07H	560 ms	12H	450 ms
08H	550 ms	13H	440 ms
09H	540 ms	14H	430 ms
0AH	530 ms	15H	420 ms

# TALKER DETECTION FORWARD PROTECTION TIME SETTING VOICE RELATED

STEP

#### PROCEDURE

SYSTEM PARAMETER	TALKER DETECTION FORWARD PROTECTION TIME	SYSTEM PARAMETER	TALKER DETECTION FORWARD PROTECTION TIME
16H	410 ms	2BH	200 ms
17H	400 ms	2CH	190 ms
18H	390 ms	2DH	180 ms
19H	380 ms	2EH	170 ms
1AH	370 ms	2FH	160 ms
1BH	360 ms	30H	150 ms
1CH	350 ms	31H	140 ms
1DH	340 ms	32H	130 ms
1EH	330 ms	33H	120 ms
1FH	320 ms	34H	110 ms
20H	310 ms	35H	100 ms
21H	300 ms	36H	90 ms
22H	290 ms	37H	80 ms
23H	280 ms	38H	70 ms
24H	270 ms	39H	60 ms
25H	260 ms	3AH	50 ms
26H	250 ms	3BH	40 ms
27H	240 ms	3CH	30 ms
28H	230 ms	3DH	20 ms
29H	220 ms	3EH	10 ms
2AH	210 ms	-	-

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

3 End of procedure.
### TALKER DETECTION VOICE LEVEL SETTING VOICE RELATED

**SUMMARY:** Set the threshold level for voice prominence decision when automatically switching on detection of voice.

#### STEP PROCEDURE

- *Note:* Use as a general rule the factory shipment value (**06H**) for the talker detection voice level. Adjust the detection level higher if required (if the conference room is noisy, etc.). The parameter can be set for every connecting conference room. When a change is necessary for any reason, follow the steps described below.
- 1 Enter the following command.

SSPR\_ $n_1 = x_1 \_ n_2 = x_2 \_ ... n_i = x_i ... \downarrow$ 

- n<sub>i</sub>: System parameter address 60H to 67H
  - [1] Conference room numbers corresponding to the addresses (hexadecimal values) on setting talker detection voice level.

ADDRESS	MEANING
60H	Conference room number 1
61H	Conference room number 2
62H	Conference room number 3
63H	Conference room number 4
64H	Conference room number 5
65H	Conference room number 6
66H	Conference room number 7
67H	Conference room number 8

# TALKER DETECTION VOICE LEVEL SETTING VOICE RELATED

STEP PROCEDURE

**x<sub>i</sub>:** System parameter values See below:

[2] System parameter values to be used when setting talker detection levels for the addresses 60H to 67H.

The factory shipment value of the system parameter for setting talker detection level is **06H**.

SYSTEM PARAMETER	TALKER DETECTION VOICE LEVEL	SYSTEM PARAMETER	TALKER DETECTION VOICE LEVEL
00H	No talker detected	07H	-24 dBm0
01H	-30 dBm0	08H	-23 dBm0
02H	-29 dBm0	09H	-22 dBm0
03H	-28 dBm0	0AH	-21 dBm0
04H	-27 dBm0	0BH	-20 dBm0
05H	-26 dBm0	0CH	-19 dBm0
06H	-25 dBm0	0DH	-18 dBm0

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# MAXIMUM TALKER SETTING VOICE RELATED

**SUMMARY:** Restrict the number of the talkers who are allowed to talk simultaneously on a voice channel.

#### STEP PROCEDURE

1 Enter the following command.

**SSPR\_**  $n_1 = x_1 _ n_2 = x_2 _ ... n_i = x_i ... ø$ 

- n<sub>i</sub>: System parameter address **53H**
- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the number of talkers. The factory shipment value is **00H**.

SYSTEM PARAMETER	NUMBER OF TALKERS
00H	Unlimited
01H	Only the last 3 talkers before this setting is enabled are allowed to talk.

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

This page is for your notes.

### TALKER DETECTION (MCON) SETTING MULTIPOINT TELECONFERENCE RELATED

**SUMMARY:** Set the talker detection to ON or OFF when MCON is executed.

### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address 70H
- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting for talker detection. The factory shipment value is **00H**.

SYSTEM PARAMETER	TALKER DETECTION		
00H	Detected (automatic detection)		
80H	Not Detected (manual detection)		

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

This page is for your notes.

### AREA NAME DELETION SETTING MULTIPOINT TELECONFERENCE RELATED

**SUMMARY:** Set the deletion of area name to ON or OFF when MDSC is executed.

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address 73H
- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the deletion of area name. The factory shipment value is **00H**.

SYSTEM PARAMETER	AREA NAME
00H	Not deleted
01H	Deleted

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

This page is for your notes.

### H.242 CAPABILITY SWITCHING ACTION SETTING MULTIPOINT TELECONFERENCE RELATED

**SUMMARY:** Set whether or not to perform ITU-T Recommendation H.242 defined capability switching to and from connecting terminal (VL 5000). When the capability switching is performed, it is necessary to confirm all the participating terminals have the same capability. Terminals having different capabilities cannot participate in the multipoint video teleconference.

#### STEP PROCEDURE

*Note:* When capability switching is not performed, any terminals irrespective of capability can participate in the conference. However, difference in terminal capability is conducive to occurrence of phenomena such as non-display of picture. Be sure, therefore, to set all the terminal-side CODECs to capability non switching mode in case capability switching is not required. Also see that all the terminal-side CODECs have the same capability setting as in MCU 5000A. Moreover, if broadcast switching (UCON and LCON commands) is intended, never fail to use all the terminals in capability non switching mode because the CODECs on the terminal side cannot perform capability switching among themselves by both-way communication at the time of broadcast switching.

#### 1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- **n**<sub>i</sub>: System parameter address **77H**
- x<sub>i</sub>: System parameter values See below:
  - [1] System parameter values on setting the H.242 capability switching action for the address 77H.

The factory shipment value for the system parameter is 80H.

SYSTEM PARAMETER	H.242 CAPABILITY SWITCHING SETTING		
00H	Not performed		
80H	Performed		

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

This page is for your notes.

### TALKER DETECTION (ECON) SETTING MULTIPOINT TELECONFERENCE RELATED

**SUMMARY:** Set the talker detection to ON or OFF when ECON is executed.

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address 88H
- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the talker detection. The factory shipment value is **00H**.

SYSTEM PARAMETER	TALKER DETECTION	
00H Detected (automatic detection)		
01H	Not detected (manual detection)	

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

This page is for your notes.

### TC5000 OPERATION MODE SETTING MULTIPOINT TELECONFERENCE RELATED

#### SUMMARY:

Set the following parameters of teleconference terminal (TC5000).

- Simultaneous multi-way conversation
- Picture switching

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address 8EH and 8FH
  - [1] Addresses (hexadecimal values) on setting the TC5000 operation mode. The operation mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 0 and bit 1 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "**00H**", set only the lower-half 8 bits (address 8EH).

ADDRESS	TC5000 OPERATION MODE
8EH	Lower-half 8 bits setting address (b0 to b7)
8FH	Upper-half 8 bits setting address (b8 to b15)

#### SPR-025

# TC5000 OPERATION MODE SETTING MULTIPOINT TELECONFERENCE RELATED

### STEP PROCEDURE

- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the TC5000 operation mode for the addresses 8EH and 8FH.

The factory shipment value for the system parameter is **0000H**.

SYSTEM PARAMETER				
ADDRESS 8FH	ADDRESS 8EH	PICTURE SWITCHING	SIMULTANEOUS TALK	
00H	00H	Picture broadcasting of the specified terminal which is	Permitted	
00H	01H	permitted to talk	Not permitted	
00H	02H	Automatic switching by talker detection	Permitted	
00H	03H	Automate switching by taker detection	Not permitted	

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

**SUMMARY:** Set the timing in picture switching.

#### STEP PROCEDURE

*Note:* Set the standard value for every communication rate. A communication rate using a shorter timer is more likely to cause picture disturbances. The standard value is a value capable of reducing picture disturbances to a level compatible with practical utility, with only a very few picture disturbances. The standard value corresponding to communication rates are shown in the table on next page. If the line bit rate is higher than the transfer rate, set the timer value according to the transfer rate.

The following four timers are available:

- Timer 1: Time required from the sending of a Video Command to Freeze (VCF) for CODEC to the switching-end of picture.
- Timer 2: Time required from the switching-end of picture to the detecting of a Video Command to Update (VCU) for CODEC.
- Timer 3: Guard time from the detecting of a Video Command to Update (VCU) to the sending of a Video Command to Freeze (VCF) of the next picture.
- Timer 4: Time-out time (waiting period) for the reception of a Still picture Sending End (SSE) after the sending of a Still picture Sending Command (SSC) at the transmitting terminal of still picture. If the SSE is not received after time-out, MCU transmits a Video Command to Freeze (VCF) to the transmitting CODEC (terminal) of still picture in order to switch to motion picture.
- 1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address 180H and 1AFH
  - [1] The timer contents corresponding to the addresses (hexadecimal values) on setting the picture switching timers 1 to 4.

STEP

#### PROCEDURE

I INF DIT DATE	ADDRESS					
LINE DII KATE	TIMER 1	TIMER 2	TIMER 3	TIMER 4		
64 kb/s×2 (56 kb/s×2)	180H	181H	182H	183H		
128 kb/s (112 kb/s)	184H	185H	186H	187H		
192 kb/s (168 kb/s)	188H	189H	18AH	18BH		
256 kb/s (224 kb/s)	18CH	18DH	18EH	18FH		
384 kb/s (336 kb/s)	194H	195H	196H	197H		
512 kb/s (448 kb/s)	190H	191H	192H	193H		
768 kb/s (672 kb/s)	198H	199H	19AH	19BH		
1152 kb/s (1008 kb/s)	1A4H	1A5H	1A6H	1A7H		
1536 kb/s (1344 kb/s)	19CH	19DH	19EH	19FH		
1920 kb/s (1680 kb/s)	1A0H	1A1H	1A2H	1A3H		
1472 kb/s (1288 kb/s)	1A8H	1A9H	1AAH	1ABH		
384 kb/s x 2 (336 kb/s x 2)	1ACH	1ADH	1AEH	1AFH		

**x<sub>i</sub>:** System parameter values See below:

[1] System parameter values on setting the picture switching timers 1 to 4.

TIMERS 1	1 AND 2	TIMERS 3 AND 4			
SYSTEM PARAMETER TIME		SYSTEM PARAMETER	TIME		
00H	0 ms	00H	0 ms		
01H	10 ms	01H	100 ms		
:	:	:	:		
FEH	2.54 s	FEH	25.4 s		
FFH	2.55 s	FFH	25.5 s		
Time=nnH×10 ms		Time=nnH×100 ms			

### STEP

#### PROCEDURE

TDANGEED	TIMER 1		TIMER 2		TIMER 3		TIMER 4	
RATE	ADDRESS	SET UP VALUE						
64 kbps x 2 56 kbps x 2	+180H	400ms (28H)	+181H	1.25s (7DH)	+182H	2.4s (18H)	+183H	10s (64H)
128 kbps 112 kbps	+184H	400ms (28H)	+185H	1.25s (7DH)	+186H	2.4s (18H)	+187H	10s (64H)
192 kbps 168 kbps	+188H	400ms (28H)	+189H	630ms (3FH)	+18AH	1.8s (12H)	+18BH	10s (64H)
256 kbps 224 kbps	+18CH	400ms (28H)	+18DH	420ms (2AH)	+18EH	1.8s (12H)	+18FH	7s (46H)
512 kbps 448 kbps	+190H	400ms (28H)	+191H	240ms (18H)	+192H	1.4s (0EH)	+193H	5s (32H)
384 kbps 336 kbps	+194H	400ms (28H)	+195H	300ms (1EH)	+196H	1.8s (12H)	+197H	7s (46H)
768 kbps 672 kbps	+198H	400ms (28H)	+199H	200ms (14H)	+19AH	1.4s (0EH)	+19BH	5s (32H)
1536 kbps 1344 kbps	+19CH	400ms (28H)	+19DH	60ms (06H)	+19EH	1.0s (0AH)	+19FH	3s (1EH)
1920 kbps 1680 kbps	+1A0H	400ms (28H)	+1A1H	60ms (06H)	+1A2H	1.0s (0AH)	+1A3H	3s (1EH)
1152 kbps 1008 kbps	+1A4H	400ms (28H)	+1A5H	100ms (0AH)	+1A6H	1.0s (0AH)	+1A7H	3s (1EH)
1472 kbps 1288 kbps	+1A8H	400ms (28H)	+1A9H	60s (06H)	+1AAH	1.0s (0AH)	+1ABH	3s (1EH)
384 x 2 kbps 336 x 2 kbps	+1ACH	400ms (28H)	+1ADH	200ms (14H)	+1AEH	1.4s (0EH)	+1AFH	5s (32H)

[2]	Picture Switch Timer $1 \sim 4$ (= 180H ~ 1A7H: Byte	e)
[4]	= 10011 + 17711. By	-

### STEP

PROCEDURE

The standard timer values corresponding to communication rates.

I INF BIT DATE	TIME (PARAMETER VALUE)			
LINE DIT KATE	TIMER 1	TIMER 2	TIMER 3	TIMER 4
64 kb/s×2	400 ms (28H)	1.25 s (7DH)	2.4 s (18H)	10 s (64H)
128 kb/s	400 ms (28H)	1.25 s (7DH)	2.4 s (18H)	10 s (64H)
192 kb/s	400 ms (28H)	630 ms (3FH)	1.8 s (12H)	10 s (64H)
256 kb/s	400 ms (28H)	420 ms (2AH)	1.8 s (12H)	7 s (46H)
384 kb/s	400 ms (28H)	300 ms (1EH)	1.8 s (12H)	7 s (46H)
512 kb/s	400 ms (28H)	240 ms (18 H)	1.4 s (0EH)	5 s (32H)
768 kb/s	400 ms (28H)	200 ms (14H)	1.4 s (0EH)	5 s (32H)
1152 kb/s	400 ms (28H)	100 ms (0AH)	1.0 s (0AH)	3 s (1EH)
1536 kb/s	400 ms (28H)	60 ms (06H)	1.0 s (0AH)	3 s (1EH)
1920 kb/s	400 ms (28H)	60 ms (06H)	1.0 s (0AH)	3 s (1EH)
1472 kb/s	400 ms (28H)	60 ms (06H)	1.0 s (0AH)	3 s (1EH)
384 kb/s x 2	400 ms (28H)	100 ms (14H)	1.4 s (0EH)	5 s (32H)

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# AUDIO CAPABILITY SETTING TERMINAL CAPABILITY RELATED

**SUMMARY:** Set the audio capability supported by MCU 5000A. MCU 5000A corresponds to "G.725 type 0" (but, without A-Law)

#### STEP PROCEDURE

- *Note:* Set the audio capability with the factory shipment value (**0AH 00H 00H 00H**) as a general rule. If change is necessary for any reason, follow the steps described below.
- 1 Enter the following command.

SSPR\_  $n_1 = x_1 _n_2 = x_2 _... n_i = x_i ... \downarrow$ 

- n<sub>i</sub>: System parameter address 100H to 103H
  - [1] Addresses (hexadecimal values) on setting the audio capability. The audio capability is set in hexadecimal values by dividing the 32 bits (b0 to b31) into four-quarter 8 bits.

ADDRESS	AUDIO CAPABILITY
100H	Fourth-quarter 8 bits setting address (b0 to b7)
101H	Third-quarter 8 bits setting address (b8 to b15)
102H	Second-quarter 8 bits setting address (b16 to b23)
103H	First-quarter 8 bits setting address (b24 to b31)

# AUDIO CAPABILITY SETTING TERMINAL CAPABILITY RELATED

#### STEP PROCEDURE

- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the audio capability for the addresses 100H to 103H. The factory shipment value for the system parameter is **0AH 00H 00H**.

SYSTEM PARAMETER				AUDIO CAPABILITY		
ADDRESS 103H	ADDRESS 102H	ADDRESS 101H	ADDRESS 100H	μ-law (G.725 TYPE 0)	G.722-64	G.722-48
00H	00H	00H	00H	OFF	OFF	OFF
00H	00H	00H	02H	ON	OFF	OFF
00H	00H	00H	04H	OFF	ON	OFF
00H	00H	00H	06H	ON	ON	OFF
00H	00H	00H	08H	OFF	OFF	ON
00H	00H	00H	0AH	ON	OFF	ON
00H	00H	00H	0CH	OFF	ON	ON
00H	00H	00H	0EH	ON	ON	ON
ON: This capability is available. OFF: This capability is not available.						

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

**SUMMARY:** Set the transfer rates to be used.

#### STEP PROCEDURE

- *Note:* When operating at the several transfer rates, set the several transfer rate capabilities to ON. The transfer rates usable, however, may not go beyond the line rates set for the addresses between 30H and 37H.
- 1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 104H to 107H

[1] The transfer rates corresponding to the addresses (hexadecimal values) on setting the transfer rate capability setting.

ADDRESS	TRANSFER RATE
104H	For 64 kb/s, 64 kb/s×2, 128 kb/s, or 192 kb/s
105H	For 256 kb/s, 384 kb/s, 512 kb/s, 768 kb/s, or 384 kb/s x 2
106H	For 1152 kb/s, 1536 kb/s, 1920 kb/s, or 1472 kb/s
107H	Not used

LINE INTERFACE	AVAILABLE TRANSFER RATE
T1	64 kb/s, 128 kb/s, 192 kb/s, 256 kb/s, 384 kb/s, 512 kb/s, 768 kb/s, 1152 kb/s, 1536 kb/s, 64 kb/s x 2, 384 kb/s x 2, and 1472 kb/s
RS 422	64 kb/s, 64 kb/s×2, 128 kb/s, 192 kb/s, 256 kb/s, 384 kb/s, 512 kb/s, 768 kb/s, 1152 kb/s, 1536 kb/s, 1920 kb/s, and 384 kb/s x 2
INS	64 kb/s, 64 kb/s×2, 384 kb/s, and 384 kb/s x 2

### STEP PROCEDURE

- **x<sub>i</sub>:** System parameter values See below:
  - [2] System parameter values on setting the transfer rate capability for the address 104H. The factory shipment value for the system parameter is **C2H**.

SYSTEM PARAMETER	USABLE TRANSFER RATE
00H	None
01H	64 kb/s
02H	64 kb/s×2
03H	64 kb/s and 64 kb/s×2
40H	128 kb/s
41H	64 kb/s and 128 kb/s
42H	64 kb/s×2 and 128 kb/s
43H	64 kb/s, 64 kb/s×2, and 128 kb/s
80H	192 kb/s
81H	64 kb/s and 192 kb/s
82H	64 kb/s×2 and 192 kb/s
83H	64 kb/s, 64 kb/s×2, and 192 kb/s
СОН	128 kb/s and 192 kb/s
C1H	64 kb/s, 128 kb/s, and 192 kb/s
C2H	64 kb/s×2, 128 kb/s, and 192 kb/s
СЗН	64 kb/s, 64 kb/s×2, 128 kb/s, and 192 kb/s

### STEP PROCEDURE

[3] System parameter values on setting the transfer rate capability for the address 105H. The factory shipment value for the system parameter is **C3H**.

SYSTEM PARAMETER	USABLE TRANSFER RATE
00H	None
01H	256 kb/s
02H	384kb/s
03H	256 kb/s and 384 kb/s
40H	512 kb/s
41H	256 kb/s and 512 kb/s
42H	384 kb/s and 512 kb/s
43H	256 kb/s, 384 kb/s, and 512 kb/s
80H	768 kb/s
81H	256 kb/s and 768 kb/s
82H	384 kb/s and 768 kb/s
83H	256 kb/s, 384 kb/s, and 768 kb/s
СОН	512 kb/s and 768 kb/s
C1H	256kb/s, 512 kb/s, and 768 kb/s
C2H	384 kb/s, 512 kb/s, and 768 kb/s
СЗН	256 kb/s, 384 kb/s, 512 kb/s, and 768 kb/s

SYSTEM PARAMETER	USABLE TRANSFER RATE
04H	384 kb/s x 2
05H	256 kb/s and 384 kb/s x 2
06H	384 kb/s and 384 kb/s x 2
07H	256 kb/s, 384 kb/s and 384 kb/s x 2
44H	512 kb/s and 384 kb/s x 2
45H	256 kb/s, 512 kb/s, and 384 kb/s x 2
46H	384 kb/s, 512 kb/s, and 384 kb/s x 2
47H	256 kb/s, 384 kb/s, 512 kb/s, and 384 kb/s x 2
84H	768 kb/s and 384 kb/s x 2
85H	256 kb/s, 768 kb/s, and 384 kb/s x 2
86H	384 kb/s, 768 kb/s, and 384 kb/s x 2
87H	256 kb/s, 384 kb/s, 768 kb/s, and 384 kb/s x 2
C4H	512 kb/s, 768 kb/s, and 384 kb/s x 2
C5H	256 kb/s, 512 kb/s, 768 kb/s, and 384 kb/s x 2
С6Н	384 kb/s, 512 kb/s, 768 kb/s, and 384 kb/s x 2
C7H	256 kb/s, 384 kb/s, 512 kb/s, 768 kb/s, and 384 kb/s x 2

### STEP PROCEDURE

[4] System parameter values and hexadecimal numbers on setting the transfer rate capability for the address 106H.

The factory shipment value for the system parameter is **0FH**.

SYSTEM PARAMETER	USABLE TRANSFER RATE
00H	None
01H	1152 kb/s
02H	1472 kb/s
03H	1152 kb/s and 1472 kb/s
04H	1536 kb/s
05H	1152 kb/s and 1536 kb/s
06H	1536 and 1472 kb/s
07H	1152 kb/s, 1536 kb/s, and 1472 kb/s
08H	1920 kb/s
09H	1152 kb/s and 1920 kb/s
0AH	1920 kb/s and 1472 kb/s
0BH	1152 kb/s, 1920 kb/s, and 1472 kb/s
0CH	1536 kb/s and 1920 kb/s
0DH	1152 kb/s, 1536 kb/s, and 1920 kb/s
0EH	1536 kb/s, 1920 kb/s, and 1472 kb/s
0FH	1152 kb/s, 1536 kb/s, 1920 kb/s, and 1472 kb/s

[5] Since the address 107H is unused, the parameter value is "**00**".

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

STEP PROCEDURE

#### b7 b6 b5 b4 b3 b2 b1 b0 0 fixed 0 fixed 0 fixed 0 fixed 1 0 +104H 1 Default = C2 1 b0 : 64 kbps (T1/RS422/INF-H0) b1 : 64 x 2 kbps (T1/RS422/INS-H0) b6 : 128 kbps (T1/RS422) b7 : 192 kbps (T1/RS422) b7 b5 b6 b4 b3 b2 b1 b0 +105H 1 1 0 fixed 0 fixed 0 fixed 1 0 1 Default = C5H (T1/RS422) (T1/RS422/INS-H0) b0 : 256 kbps b1 : 384 kbps (T1/RS422/INF-H0) b2:384 x 2 kbps b6 : 512 kbps (T1/RS422) b7 : 768 kbps (T1/RS422) b7 b6 b5 b4 b3 b2 b1 b0 1 +106H 1 1 1 Default = 0FH b0 : 1152 kbps (T1/RS422) (T1) (T1/RS422) b1:1472 kbps b2:1536 kbps b3 : 1920 kbps (RS422) b7 b6 b5 b4 b3 b2 b1 b0 +107H Default = 00H

Transfer Rate Capability (+104H ~ 107H)

# VIDEO CAPABILITY SETTING TERMINAL CAPABILITY RELATED

**SUMMARY:** Set the H.261 defined video capability.

#### STEP PROCEDURE

*Note:* Set the video capability with the factory shipment value (**22H 02H**). If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 108H and 109H

[1] Video capability corresponding to the addresses (hexadecimal values) in setting the video capability.

The video capability is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits.

ADDRESS	VIDEO CAPABILITY SETTING (1: ON, 0: OFF)		REMARKS
	BIT		
108H	0	QCIF	Set either one of the two bits to 1.
	1	QCIF and QCIF	(NOTE)
	2	QCIF: 4/29.97	Only one of these four bits should be set to
	3	QCIF: 3/29.97	1.
	4	QCIF: 2/29.97	
	5	QCIF: 1/29.97	(NOTE)
	6	CIF: 4/29.97	Only one of these four bits should be set to
	7	CIF: 3/29.97	1.
109H	0	CIF: 2/29.97	
	1	CIF: 1/29.97	(NOTE)
	2 ~ 7	Not used, fixed to 0	_

*Note:* If none of the bits or more than one of the bits are set to 1, video capability is not guaranteed.

# VIDEO CAPABILITY SETTING TERMINAL CAPABILITY RELATED

### STEP PROCEDURE

- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the video capability for the addresses 108H and 109H.

The factory shipment value for the system parameter is 22H 02H.

SYSTEM PA	RAMETER	
ADDRESS 109H	ADDRESS 108H	VIDEO CAPABILITY
00H	05H	QCIF: 4/29.79 is ON
00H	09H	QCIF: 3/29.79 is ON
00H	11H	QCIF: 2/29.79 is ON
00H	21H	QCIF: 1/29.79 is ON
00H	46H	QCIF: 4/29.79 and CIF: 4/29.97 are ON.
00H	86H	QCIF: 4/29.79 and CIF: 3/29.97 are ON.
01H	06H	QCIF: 4/29.79 and CIF: 2/29.97 are ON.
02H	06H	QCIF: 4/29.79 and CIF: 1/29.97 are ON.
00H	4AH	QCIF: 3/29.79 and CIF: 4/29.97 are ON.
00H	8AH	QCIF: 3/29.79 and CIF: 3/29.97 are ON.
01H	0AH	QCIF: 3/29.79 and CIF: 2/29.97 are ON.
02H	0AH	QCIF: 3/29.79 and CIF: 1/29.97 are ON.
00H	52H	QCIF: 2/29.79 and CIF: 4/29.97 are ON.
00H	92H	QCIF: 2/29.79 and CIF: 3/29.97 are ON.
01H	12H	QCIF: 2/29.79 and CIF: 2/29.97 are ON.
02H	12H	QCIF: 2/29.79 and CIF: 1/29.97 are ON.
00H	62H	QCIF: 1/29.79 and CIF: 4/29.97 are ON.
00H	A2H	QCIF: 1/29.79 and CIF: 3/29.97 are ON.
01H	22H	QCIF: 1/29.79 and CIF: 2/29.97 are ON.
02H	22H	QCIF: 1/29.79 and CIF: 1/29.97 are ON.

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

### LOW SPEED DATA (LSD) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

**SUMMARY:** Set the transmission capability of MCU 5000A for Low Speed Data (LSD).

#### STEP PROCEDURE

*Note:* MCU 5000A does not support LSD. Be sure, therefore, to use all the system parameters in OFF (0000H). If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

**SSPR\_**  $n_1 = x_1 _ n_2 = x_2 _ ... n_i = x_i ... +$ 

- n<sub>i</sub>: System parameter address **10AH** and **10BH** 
  - [1] Addresses (hexadecimal values) on setting the LSD (Low Speed Data) capability. The LSD (Low Speed Data) capability is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits.

ADDRESS	LSD (LOW SPEED DATA) CAPABILITY	
10AH	Lower-half 8 bits setting address (b0 to b7)	
10BH	Upper-half 8 bits setting address (b8 to b15)	

- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values in setting the LSD (Low Speed Data) capability for the addresses 10AH and 10BH.

The factory shipment value for the system parameter is **00H 00H**.

SYSTEM PARAMETER		
ADDRESS 10BH	ADDRESS 10AH	LSD (LOW SPEED DATA) CAPABILITY
00H	00H	OFF

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

This page is for your notes.

### HIGH SPEED DATA (HSD) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

**SUMMARY:** Set the transmission capability of MCU 5000A for the High Speed Data (HSD).

#### STEP PROCEDURE

- *Note:* MCU 5000A does not support HSD in MCON mode. Be sure, therefore, to set all the system parameters to **OFF** (**00H 00H**). If change is necessary, follow the steps described below.
- 1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n;: System parameter address 10CH and 10FH
- Addresses (hexadecimal values) on setting the HSD (High Speed Data) capability. The HSD (High Speed Data) capability is set in hexadecimal values by dividing the 32 bits (b0 to b31) into four quarter 8 bits.

ADDRESS	HSD (HIGH SPEED DATA) CAPABILITY
10CH	Fourth-quarter 8 bits setting address (b0 to b7)
10DH	Third-quarter 8 bits setting address (b8 to b15)
10EH	Second-quarter 8 bits setting address (b16 to b23)
10FH	First-quarter 8 bits setting address (b24 to b31)

- x<sub>i</sub>: System parameter values See below:
  - [1] System parameter values on setting the HSD (High Speed Data) capability for the addresses 10CH to 10FH.

The factory shipment value for the system parameter is **00H 00H 00H 00H.** 

# HIGH SPEED DATA (HSD) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

STEP

#### PROCEDURE

SYSTEM PARAMETER				HSD (HICH SPEED DATA)
ADDRESS 10FH	ADDRESSADDRESSADDRESS10EH10DH10CH			CAPABILITY
00H	00H	00H	00H	OFF

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

### MLP CAPABILITY SETTING TERMINAL CAPABILITY RELATED

**SUMMARY:** MCU 5000A communicates with terminals (VisuaLink ADs) via MLP channels.

#### STEP PROCEDURE

*Note:* Set the MLP capability with the factory shipment value (**06H 00H**). If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 110H and 111H

[1] Addresses (hexadecimal values) on setting the MLP capability. The MLP capability is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 1 and bit 2 in the lower-half 8 bit to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 110H).

ADDRESS	MLP CAPABILITY	
110H	Lower-half 8 bits setting address (b0 to b7)	
111H	Upper-half 8 bits setting address (b8 to b15)	

- **x<sub>i</sub>:** System parameter valuesSee below:
- [1] System parameter values on setting the MLP capability for the addresses. The factory shipment value for the system parameter is **06H 00H**.

# MLP CAPABILITY SETTING TERMINAL CAPABILITY RELATED

STEP

#### PROCEDURE

SYSTEM PARAMETER		
ADDRESS 111H	ADDRESS 110H	MLP CAPABILITY
00H	00H	OFF
00H	02H	MLP-4K: ON
00H	04H	MLP-6.4 K: ON
00H	06H	MLP-4 K and MLP-6.4 K: ON

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

### NETWORK CLASSIFICATION CAPABILITY SETTING TERMINAL CAPABILITY RELATED

**SUMMARY:** When communicating with a network having its basic line capacity restricted to 56 kb/s such as ACCUNET in North America, set "56 kb/s (restricted)" to ON. If all the networks are in 64 kb/s, set it to OFF.

#### STEP PROCEDURE

1 Enter the following command.

#### $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$

- n<sub>i</sub>: System parameter address 112H and 113H
  - [1] Addresses (Hexadecimal values) in setting the network classification capability. The network classification capability is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 1 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", be sure to set only the lower-half 8 bits (address 112H).

ADDRESS	NETWORK CLASSIFICATION	
112H	Lower-half 8 bits setting address (b0 to b7)	
113H	Upper-half 8 bits setting address (b8 to b15)	

**x<sub>i</sub>:** System parameter valuesSee below:

[1] System parameter values on setting the network classification capability for the addresses.

The factory shipment value for the system parameter is **00H 00H**.

SYSTEM PARAMETER		
ADDRESS 113H	ADDRESS 112H	NETWORK CLASSIFICATION CAPABILITY
00H	00H	OFF (64 kb/s)
00H	02H	ON [56 kb/s (restricted)]

# NETWORK CLASSIFICATION CAPABILITY SETTING TERMINAL CAPABILITY RELATED

### STEP PROCEDURE

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.
#### MBE CAPABILITY SETTING TERMINAL CAPABILITY RELATED

SUMMARY: MCU 5000A uses MBE to expand NEC original function.

#### STEP PROCEDURE

*Note:* Use the MBE capability with the factory shipment value (**01H 00H**) as a general rule. If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 116H and 117H

[1] Addresses (hexadecimal values) on setting the MBE capability. The MBE capability is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 0 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 116H).

ADDRESS	MBE CAPABILITY
116H	Lower-half 8 bits setting address (b0 to b7)
117H	Upper-half 8 bits setting address (b8 to b15)

- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the MBE capability for the addresses 116H and 117H.

The factory shipment value for the system parameter is **01H 00H**.

SYSTEM PARAMETER		
ADDRESS 117H	ADDRESS 116H	MBE CAPABILITY
00H	00H	OFF
00H	01H	ON

# MBE CAPABILITY SETTING TERMINAL CAPABILITY RELATED

#### STEP PROCEDURE

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

### MBE MESSAGE (AUDIO) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

SUMMARY: Set the expansion audio capability of connecting CODEC (VL 5000).

#### STEP PROCEDURE

*Note:* Use the MBE message (audio) capability with the factory shipment value (**00H 00H**). If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 118H and 119H

[1] Addresses (hexadecimal values) on setting the MBE message (audio) capability. The MBE message (audio) capability is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits.

ADDRESS	MBE MESSAGE (AUDIO)
118H	Lower-half 8 bits setting address (b0 to b7)
119H	Upper-half 8 bits setting address (b8 to b15)

**x<sub>i</sub>:** System parameter values See below:

[1] System parameter values on setting the MBE message (audio) capability for the addresses 118H and 119H.

The factory shipment value for the system parameter is **00H 00H**.

SYSTEM PARAMETER		
ADDRESS 119H	ADDRESS 118H	MBE MESSAGE (AUDIO) CAPABILITY
00H	00H	OFF

# MBE MESSAGE (AUDIO) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

#### STEP PROCEDURE

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

#### MBE MESSAGE (LSD2) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

SUMMARY: Set the expansion LSD2 capability of connecting CODEC (VL 5000).

#### STEP PROCEDURE

*Note: MCU 5000A does not support LSD2.* Use the MBE message (LSD2) capability with the factory shipment value (**00H 00H**). If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \downarrow$ 

- ni: System parameter address 11AH and 11BH
  - [1] Addresses (hexadecimal values) in setting the MBE message (LSD2) capability. The MBE message (LSD2) capability is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 0, bit 2, and bit 3 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 11AH).

ADDRESS	MBE MESSAGE (LSD2)
11AH	Lower-half 8 bits setting address (b0 to b7)
11BH	Upper-half 8 bits setting address (b8 to b15)

- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the MBE message (LSD2) capability for the addresses 11AH and 11BH.The factory shipment value for the system parameter is **00H 00H**.

NECA 340-414-220 Revision 2.0

# MBE MESSAGE (LSD2) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

STEP

#### PROCEDURE

SYSTEM PARAMETER		
ADDRESS 11BH	ADDRESS 11AH	MBE MESSAGE (LSD2)
00H	00H	NONE
00H	01H	1200 b/s
00H	04H	4800 b/s
00H	05H	1200 b/s and 4800 b/s
00H	08H	9600 b/s
00H	09H	1200 b/s and 9600 b/s
00H	0CH	4800 b/s and 9600 b/s
00H	0DH	1200 b/s, 4800 b/s, and 9600 b/s

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

#### MBE MESSAGE (VIDEO) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

**SUMMARY:** Set the expansion video capability of connecting CODEC (VL 5000).

#### STEP PROCEDURE

*Note:* Use the MBE message (video) capability with the factory shipment value (**04H 00H**). If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 11CH and 11DH

[1] Addresses (hexadecimal values) on setting the MBE message (video) capability. The MBE message (video) capability is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 0 to bit 2 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 11CH).

ADDRESS	MBE MESSAGE (VIDEO)
11CH	Lower-half 8 bits setting address (b0 to b7)
11DH	Upper-half 8 bits setting address (b8 to b15)

**x<sub>i</sub>:** System parameter values See below:

 System parameter values on setting the MBE message (video) capability for the addresses 11CH and 11DH.
The factory shipment value for the system parameter is 04H 00H.

# MBE MESSAGE (VIDEO) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

STEP

#### PROCEDURE

SYSTEM PARAMETER		
ADDRESS 11DH	ADDRESS 11CH	MBE MESSAGE (VIDEO) CAPABILITY
00H	00H	OFF
00H	01H	PTY is ON.
00H	02H	PTY + FULL are ON.
00H	04H	PTY + FULL + VSP are ON.

*Note:* PTY detects a parity error and performs Demand Refresh on its occurrence. FULL: NTSC full resolution mode VSP: dual screen multiplex mode

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# AUDIO MODE SETTING TERMINAL MODE RELATED

SUMMARY: Set audio mode. If all the terminal CODECs (VL 5000s) are equipped with SB-ADPCM audio CODEC (7 kHz band) features, set the audio mode to "G.722 mode 2 (P×64k network)" or "G.722 mode 3 (p×56k network)". If not, set it to "µ-LAW and OF" and refrain from setting other values.

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address 120H and 123H
  - [1] Addresses (hexadecimal values) on setting the audio mode.The audio mode capability is set in hexadecimal values by dividing the 32 bits (b0 to b31) into four-quarter 8 bits.

ADDRESS	AUDIO MODE CAPABILITY
120H	Fourth-quarter 8 bits setting address (b0 to b7)
121H	Third-quarter 8 bits setting address (b8 to b15)
122H	Second-quarter 8 bits setting address (b16 to b23)
123H	First-quarter 8 bits setting address (b24 to b31)

- **x<sub>i</sub>:** System parameter valuesSee below:
  - [1] System parameter values on setting the audio mode capability for the addresses 120H to 123H.

The factory shipment value for the system parameter is **20H 00H 00H**.

# AUDIO MODE SETTING TERMINAL MODE RELATED

STEP

#### PROCEDURE

SYSTEM PARAMETER				
ADDRESS 123H	ADDRESS 122H	ADDRESS 121H	ADDRESS 120H	AUDIO MODE CAPABILITY
00H	00H	00H	04H	μ-law, OU is ON.
00H	00H	00H	08H	μ-law, OF (u7) is ON.
00H	00H	00H	10H	G.722 mode 1 is ON.
00H	00H	00H	20H	G.722 mode 2 is ON.
00H	00H	00H	40H	G.722 mode 3 is ON.
00H	04H	00H	00H	μ-law, OF (u6) is ON.
40H	00H	00H	00H	Audio OFF, U is ON.
80H	00H	00H	00H	Audio OFF, F is ON.

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

### TRANSFER RATE MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** Set the transfer rate for terminal.

#### STEP PROCEDURE

*Note:* If rate is specified when setting up the multipoint teleconference by MCON or ECON command, the MCON or ECON command specified rate is set.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n;: System parameter address 124H and 127H
  - [1] Addresses (hexadecimal values) on setting the transfer rate modes. The transfer rate mode is set in hexadecimal values by dividing the 32 bits (b0 to b31) into fourquarter 8 bits.

ADDRESS	TRANSFER RATE MODE SETTING
124H	For 64 kb/s, 64 kb/s×2, 128 kb/s or 192 kb/s
125H	For 256 kb/s, 384 kb/s, 512 kb/s, 768 kb/s, or 384 kb/s x 2
126H	For 1152 kb/s, 1536 kb/s, 1920 kb/s, or 1472 kb/s
127H	Not used

LINE INTERFACE	AVAILABLE TRANSFER RATE
T1	64 kb/s, 128 kb/s, 192 kb/s, 256 kb/s, 384 kb/s, 512 kb/s, 768 kb/s, 1152 kb/s, 1536 kb/s, 64 kb/s x 2, 384 kb/s x 2, and 1472 kb/s
RS 422	64 kb/s, 64 kb/s×2, 128 kb/s, 192 kb/s, 256 kb/s, 384 kb/s, 512 kb/s, 768 kb/s, 1152 kb/s, 1536 kb/s, 1920 kb/s, and 384 kb/s x 2
INS	64 kb/s, 64 kb/s×2, 384 kb/s, and 384 kb/s x 2

# TRANSFER RATE MODE SETTING TERMINAL MODE RELATED

#### STEP PROCEDURE

- x<sub>i</sub>: System parameter values See below:
  - [1] System parameter values on setting the transfer rate mode for the addresses 124H to 127H.

The factory shipment value for the system parameter is **00H 02H 00H 00H**.

	SYSTEM PA			
ADDRESS 127H	ADDRESS 126H	ADDRESS 125H	ADDRESS 124H	Transfer rate mode
00H	00H	00H	01H	64 kb/s is ON.
00H	00H	00H	02H	64 kb/s x 2 is ON.
00H	00H	00H	04H	128 kb/s is ON.
00H	00H	00H	08H	192 kb/s is ON.
00H	00H	01H	00H	256 kb/s is ON.
00H	00H	02H	00H	384 kb/s is ON.
00H	00H	40H	00H	512 kb/s is ON.
00H	00H	80H	00H	768 kb/s is ON.
00H	01H	00H	00H	1152 kb/s is ON.
00H	04H	00H	00H	1536 kb/s is ON.
00H	08H	00H	00H	1920 kb/s is ON.

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

### **TRANSFER RATE MODE SETTING TERMINAL MODE RELATED**

#### STEP **PROCEDURE**

Transfer Rate Mode (+124H ~ 127H) b7 b6 b5 b4 b3 b2 b1 b0 0 0 fixed 0 fixed 0 fixed 0 fixed 0 0 +124H Default = 00H 0 b0 : 64 kbps (T1/RS422/INF-H0) b1 : 64 x 2 kbps (T1/RS422/INS-H0) (T1/RS422) b6 : 128 kbps b7 : 192 kbps (T1/RS422) b7 b5 b0 b6 b4 b3 b2 b1 0 +125H 0 0 0 fixed 0 fixed 0 fixed 1 0 Default = 02H (T1/RS422) (T1/RS422/INS-H0) b0 : 256 kbps b1 : 384 kbps (T1/RS422/INF-H0) b2:384 x 2 kbps b6 : 512 kbps (T1/RS422) b7:768 kbps (T1/RS422) b7 b6 b5 b4 b3 b2 b1 b0 0 0 +126H 0 0 Default = 00H b0 : 1152 kbps (T1/RS422) b1:1472 kbps (T1) (T1/RS422) b2 : 1536 kbps b3 : 1920 kbps (RS422) b7 b6 b5 b4 b3 b2 b1 b0 +127H Default = 00H

This page is for your notes.

#### VIDEO MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** Specify whether video mode is set or not.

#### STEP PROCEDURE

*Note:* Use the factory shipment value (**08H 00H**) in setting the video mode as a general rule. If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n;: System parameter address 128H and 129H
  - [1] Addresses (hexadecimal values) in setting the video mode. The video mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 3 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 128H).

ADDRESS	VIDEO MODE
128H	Lower-half 8 bits setting address (b0 to b7)
129H	Upper-half 8 bits setting address (b8 to b15)

- $\mathbf{x_i}$ : System parameter values See below:
  - [1] System parameter values on setting the video mode for the addresses. The factory shipment value for the system parameter is **08H 00H**.

SYSTEM PA	ARAMETER		
ADDRESS 129H	ADDRESS 128H	VIDEO MODE	
00H	00H	OFF	
00H	08H	ON (H.261 video)	

# VIDEO MODE SETTING TERMINAL MODE RELATED

#### STEP PROCEDURE

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

### LOW SPEED DATA (LSD) MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** Set the Low Speed Data (LSD) mode.

#### STEP PROCEDURE

1 *Note:* MCU 5000A does not support LSD mode. Be sure, therefore, to set all LSD mode settings to **OFF (0000H)**. If change is necessary for any reason, follow the steps described below.

Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

ni: System parameter address 12AH and 12BH

[1] Addresses (hexadecimal values) on setting the LSD mode.The LSD mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits.

ADDRESS	LSD MODE
12AH	Lower-half 8 bits setting address (b0 to b7)
12BH	Upper-half 8 bits setting address (b8 to b15)

**x<sub>i</sub>:** System parameter values See below:

[1] System parameter values on setting the LSD mode for the addresses. The factory shipment value for the system parameter is **00H 00H**.

# LOW SPEED DATA (LSD) MODE SETTING TERMINAL MODE RELATED

#### STEP

#### PROCEDURE

SYSTEM PA	ARAMETER	LSD MODE SETTING
ADDRESS 12BH	ADDRESS 12AH	
00H	00H	OFF

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

### HIGH SPEED DATA (HSD) MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** Set the High Speed Data (HSD) mode.

#### STEP PROCEDURE

Note: MCU 5000A does not support HSD in MCON mode.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 12CH and 12DH

[1] Addresses (hexadecimal values) on setting the HSD mode.The HSD mode is set in hexadecimal values by dividing the 32 bits (b0 to b31) into the four-quarter 8 bits.

ADDRESS	HSD (HIGH SPEED DATA) MODE
12CH	Fourth-quarter 8 bits setting address (b0 to b7)
12DH	Third-quarter 8 bits setting address (b8 to b15)
12EH	Second-quarter 8 bits setting address (b16 to b23)
12FH	First-quarter 8 bits setting address (b24 to b31)

- x<sub>i</sub>: System parameter values See below:
  - [1] System parameter values on setting the HSD mode for the addresses. The factory shipment value for the system parameter is **00H 00H 00H**.

# HIGH SPEED DATA (HSD) MODE SETTING TERMINAL MODE RELATED

STEP

PROCEDURE

	SYSTEM PA			
ADDRESS 12FH	ADDRESS 12EH	ADDRESS 12DH	ADDRESS 12CH	HSD MODE SETTING
00H	00H	00H	00H	OFF
00H	00H	02H	00H	64 kb/s is ON.
00H	00H	04H	00H	128 kb/s is ON.
00H	00H	08H	00H	192 kb/s is ON.
00H	00H	10H	00H	256 kb/s is ON.
00H	00H	20H	00H	320 kb/s is ON
00H	00H	40H	00H	384 kb/s is ON.
00H	00H	80H	00H	512 kb/s (R) is ON.
00H	01H	00H	00H	768 kb/s (R) is ON.
00H	02H	00H	00H	1152 kb/s (R) is ON.
00H	04H	00H	00H	1536 kb/s (r) is ON.
In all cases, all H-MLPs are OFF.				

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# MLP MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** MCU 5000A communicates with terminals (VisuaLink ADs) via MLP channels. This mode should be set to the same setting as "MLP Capability Setting, Terminal Capability Related" in **SPR-032**.

#### STEP PROCEDURE

*Note:* When MCU 5000A communicates with VisuaLink AD terminal, this mode should be set to "MLP-6.4K". If MCU 5000A does not communicate with a terminal, set to "OFF".

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 130H and 131H

[1] Addresses (hexadecimal values) on setting the MLP mode.

The MLP mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 2 or bit 3 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 130H).

ADDRESS	MLP MODE
130H	Lower-half 8 bits setting address (b0 to b7)
131H	Upper-half 8 bits setting address (b8 to b15)

**x<sub>i</sub>:** System parameter values See below:

[1] System parameter values on setting the MLP mode for the addresses. The factory shipment value for the system parameter is **04H 00H**.

# MLP MODE SETTING TERMINAL MODE RELATED

STEP

#### PROCEDURE

SYSTEM PARAMETER		
ADDRESS 131H	ADDRESS 130H	MLP MODE SETTING
00H	00H	OFF
00H	02H	MLP-4K is ON.
00H	04H	MLP-6.4K is ON.

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

## NETWORK CLASSIFICATION MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** When communicating with a network having its basic line capacity restricted to 56 kb/s like Accunet in North America, set the mode to 56 kb/s. If all the networks are unrestricted digital networks (64 kb/s), make the setting to 64 kb/s. This mode should be set to the same setting as "Network Classification Capability Setting, Terminal Capability Related" in **SPR-033**.

#### STEP PROCEDURE

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 132H and 133H

[1] Addresses (hexadecimal values) on setting the network classification mode. The network classification mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 0 or bit 1 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 132H).

ADDRESS	NETWORK CLASSIFICATION MODE
132H	Lower-half 8 bits setting address (b0 to b7)
133H	Upper-half 8 bits setting address (b8 to b15)

**x<sub>i</sub>:** System parameter values See below:

[1] System parameter values on setting the network classification mode for the addresses. The factory shipment value for the system parameter is **01H 00H**.

SYSTEM PARAMETER			
ADDRESS 133H	ADDRESS 132H	NETWORK CLASSIFICATION MODE SETTIN	
00H	01H	64 kb/s is ON. (unrestricted network)	
00H	02H	56 kb/s is ON. (restricted network)	

# NETWORK CLASSIFICATION MODE SETTING TERMINAL MODE RELATED

#### STEP PROCEDURE

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

#### MBE MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** MCU 5000A uses MBE command to utilize NEC's original expansion devices.

#### STEP PROCEDURE

*Note:* Set the MBE mode to **ON** (**01H 00H**) as a general rule. If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address 136H and 137H

[1] Addresses (hexadecimal values) in setting the MBE mode. The MBE mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 0 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 136H).

ADDRESS	MBE MODE
136H	Lower-half 8 bits setting address (b0 to b7)
137H	Upper-half 8 bits setting address (b8 to b15)

- x<sub>i</sub>: System parameter values See below:
  - [1] System parameter values on setting the MBE mode for the addresses. The factory shipment value for the system parameter is **01H 00H**.

SYSTEM PA	ARAMETER			
ADDRESS 137H	ADDRESS 136H	MBE MODE SETTING		
00H	00H	OFF		
00H	01H	ON		

# MBE MODE SETTING TERMINAL MODE RELATED

#### STEP PROCEDURE

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

### MBE MESSAGE (AUDIO) MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** Set expansion audio devices to be used in communication with the connecting CODECs (VL 5000s).

#### STEP PROCEDURE

*Note:* MCU 500A does not support MBE message (audio) mode. Be sure, therefore, to set all the system parameters to **OFF** (**00H 00H**). If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address 138H and 139H
- [1] Addresses (hexadecimal values) on setting the MBE message (audio) mode. The MBE message (audio) mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits.

ADDRESS	MBE MESSAGE (AUDIO) MODE				
138H	Lower-half 8 bits setting address (b0 to b7)				
139H	Upper-half 8 bits setting address (b8 to b15)				

- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the MBE message (audio) mode for the addresses 138H and 139H.

The factory shipment value for the system parameter is **00H 00H**.

SYSTEM PARAMETER		
ADDRESS 139H	ADDRESS 138H	MBE MESSAGE (AUDIO) MODE SETTING
00H	00H	OFF

# MBE MESSAGE (AUDIO) MODE SETTING TERMINAL MODE RELATED

#### STEP PROCEDURE

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

### MBE MESSAGE (LSD2) MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** Set expansion LSD (Low Speed Data) devices to be used in communication with the connecting CODECs (VL 5000s)

#### STEP PROCEDURE

*Note:* MCU 5000A does not support LSD2.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address 13AH and 13BH
- Addresses (hexadecimal values) on setting the MBE message (LSD2) mode. The MBE message (LSD2) mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specially by setting any of bit 0, bit 2, or bit 3 in the lower-half 8 bits to "1" or "0". Accordingly, since the upperhalf 8 bits are always **00H**, set only the lower-half 8 bits (address 13AH).

ADDRESS	MBE MESSAGE (LSD2) MODE			
13AH	Lower-half 8 bits setting address (b0 to b7)			
13BH	Upper-half 8 bits setting address (b8 to b15)			

- x<sub>i</sub>: System parameter values See below:
  - System parameter values on setting the MBE message (LSD2) mode for the addresses 13AH and 13BH.
    The factory shipment value for the system parameter is **00H 00H**.

# MBE MESSAGE (LSD2) MODE SETTING TERMINAL MODE RELATED

STEP

#### PROCEDURE

SYSTEM PARAMETER		
ADDRESS 13BH	ADDRESS 13AH	MBE MESSAGE (LSD2) MODE SETTING
00H	00H	OFF
00H	01H	1200 b/s is ON.
00H	04H	4800 b/s is ON.
00H	08H	9600 b/s is ON.

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# MBE MESSAGE (VIDEO) MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** Set expansion video devices to be used in communication with the connecting CODECs (VL 5000s).

#### STEP PROCEDURE

<i>Note:</i> Set " <b>PTY</b> " and " <b>FULL</b> " to <b>OFF</b> as a general rule. Set " <b>VSP</b> " to <b>ON</b> when the dual screen
multiplex function is used at the connecting terminals, and OFF when it is not used.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- ni: System parameter address 13CH and 13DH
- [1] Addresses (hexadecimal values) on setting the MBE message (video) mode. The MBE message (video) mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting any of bit 1 through bit 3 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 13CH).

ADDRESS	MBE MESSAGE (VIDEO) MODE				
13CH	Lower-half 8 bits setting address (b0 to b7)				
13DH	Upper-half 8 bits setting address (b8 to b15)				

#### SPR-050

# MBE MESSAGE (VIDEO) MODE SETTING TERMINAL MODE RELATED

#### STEP PROCEDURE

**x<sub>i</sub>:** System parameter values See below:

[1] System parameter values on setting the MBE message (video) mode for the address 13CH and 13DH.

The factory shipment value for the system parameter is **06H 00H**.

SYSTEM PARAMETER		MRE MESSAGE (VIDEO) MODE SETTING			
ADDRESS 13DH	ADDRESS 13CH				
00H	00H	OFF			
00H	01H	PTY is ON.			
00H	02H	FULL is ON.			
00H	03H	PTY and FULL are ON.			
00H	04H	VSP is ON.			
00H	05H	PTY and VSP are ON.			
00H	06H	FULL and VSP are ON.			
00H	07H	PTY, FULL and VSP are ON.			

- *Note:* PTY detects a parity error and performs Demand Refresh on its occurrence. FULL: NTSC full resolution mode VSP: dual screen multiplex mode
- 2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

# AUDIO CAPABILITY TERMINAL CAPABILITY RELATED

**RCON (H.243 mode)** "A:" means Group A and "B:" means Group B. Group A and Group B:

Audio Capability (A: +200H ~ +203H) (B: +260H ~ +263H)

	b7	b6	b5	b4	b3	b2	b1	b0	_
A: +200H B: +260H	0 fixed	0 fixed	0 fixed	0 fixed	1	0	1	0 fixed	Default = 0AH
	b1 : m -L b6 : G.72 b7 : G.72	.aw, OF (l 2-64k 2-48k	F6)						
	b7	b6	b5	b4	b3	b2	b1	b0	
A: +201H B: +261H	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	Default = 00H
									-
	b7	b6	b5	b4	b3	b2	b1	b0	
A: +202H B: +262H	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	Default = 00H
	b7	b6	b5	b4	b3	b2	b1	b0	
A: +203H B: +263H	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	Default = 00H

This page is for your notes.

### TRANSFER RATE CAPABILITY TERMINAL CAPABILITY RELATED





This page is for your notes.
## VIDEO CAPABILITY SETTING TERMINAL CAPABILITY RELATED

**SUMMARY:** Set the H.261 defined video capability.

#### STEP PROCEDURE

*Note:* Set the video capability with the factory shipment value (**22H 02H**). If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

n<sub>i</sub>: System parameter address A: 208H and 209H B: 268H and 269H

[1] Video capability corresponding to the addresses (hexadecimal values) in setting the video capability.

The video capability is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits.

ADDRESS		VIDEO CAPABILITY SETTING (1: ON, 0: OFF)	REMARKS			
	BIT					
A: 208H	0	QCIF	Set either one of the two bits to 1.			
B: 268H	1	QCIF and QCIF	(NOTE)			
	2	QCIF: 4/29.97	Only one of these four bits should be set to			
	3	QCIF: 3/29.97	1.			
	4	QCIF: 2/29.97				
	5	QCIF: 1/29.97	(NOTE)			
	6	CIF: 4/29.97	Only one of these four bits should be set to			
	7	CIF: 3/29.97	1.			
A: 209H	0	CIF: 2/29.97				
B: 269H	1	CIF: 1/29.97	(NOTE)			
	2 ~ 7	Not used, fixed to 0	_			

*Note:* If none of the bits or more than one of the bits are set to 1, video capability is not guaranteed.

# VIDEO CAPABILITY SETTING TERMINAL CAPABILITY RELATED

### STEP PROCEDURE

- **x<sub>i</sub>:** System parameter values See below:
  - [1] System parameter values on setting the video capability for the addresses 108H and 109H.

The factory shipment value for the system parameter is **22H 02H**.

SYSTEM PA	RAMETER	
ADDRESS	ADDRESS	VIDEO CAPABILITY
A: 209H B: 269H	A: 208H B: 268H	
00H	05H	QCIF: 4/29.79 is ON
00H	09H	QCIF: 3/29.79 is ON
00H	11H	QCIF: 2/29.79 is ON
00H	21H	QCIF: 1/29.79 is ON
00H	46H	QCIF: 4/29.79 and CIF: 4/29.97 are ON.
00H	86H	QCIF: 4/29.79 and CIF: 3/29.97 are ON.
01H	06H	QCIF: 4/29.79 and CIF: 2/29.97 are ON.
02H	06H	QCIF: 4/29.79 and CIF: 1/29.97 are ON.
00H	4AH	QCIF: 3/29.79 and CIF: 4/29.97 are ON.
00H	8AH	QCIF: 3/29.79 and CIF: 3/29.97 are ON.
01H	0AH	QCIF: 3/29.79 and CIF: 2/29.97 are ON.
02H	0AH	QCIF: 3/29.79 and CIF: 1/29.97 are ON.
00H	52H	QCIF: 2/29.79 and CIF: 4/29.97 are ON.
00H	92H	QCIF: 2/29.79 and CIF: 3/29.97 are ON.
01H	12H	QCIF: 2/29.79 and CIF: 2/29.97 are ON.
02H	12H	QCIF: 2/29.79 and CIF: 1/29.97 are ON.
00H	62H	QCIF: 1/29.79 and CIF: 4/29.97 are ON.
00H	A2H	QCIF: 1/29.79 and CIF: 3/29.97 are ON.
01H	22H	QCIF: 1/29.79 and CIF: 2/29.97 are ON.
02H	22H	QCIF: 1/29.79 and CIF: 1/29.97 are ON.

2 Verify that the normal response is displayed with "**OK**".

If **YES**, go to **Step 3**. If **NO**, go to **Step 1**.

3 End of procedure.

### LSD CAPABILITY SETTING TERMINAL CAPABILITY RELATED

LSD Capability (A: +20AH ~ 20BH) (B: +26AH ~ +26BH)



## HSD CAPABILITY SETTING TERMINAL CAPABILITY RELATED

HSD Capability (A: +20CH ~ 20FH) (B: +26CH ~ +26FH)

	b7	b6	b5	b4	b3	b2	b1	b0				
A: +20CH B: +26CH	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	Default = 00H			
	b7	b6	b5	b4	b3	b2	b1	b0				
A: +20DH B: +26DH	0 fixed	0	0 fixed	0	0	0	0	0 fixed	Default = 00H			
	b1 : 64 kbps b2 : 128 kbps b3 : 192 kbps b4 : 256 kbps b6 : 384 kbps <i>Note:</i> When distributing HSD date, bit will be "1".											
	b7	b6	b5	b4	b3	b2	b1	b0				
A: +20EH B: +26EH	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0	0 fixed	0	Default = 00H			
	b0 : 768 kbps (R) b2 : 1536 kbps (R)											
	<i>Note:</i> When distributing HSD date, bit will be "1".											
	b7	b6	b5	b4	b3	b2	b1	b0	_			

		50	20	51	50	52	51	50	
A: +20FH B: +26FH	0 fixed	Default = 00H							

## MLP CAPABILITY SETTING TERMINAL CAPABILITY RELATED

MLP Capability (A: +210H ~ 211H) (B: +270H ~ +271H)



## NETWORK CLASSIFICATION CAPABILITY SETTING TERMINAL CAPABILITY RELATED

Network Classification Capability (A: +212H ~ 213H) (B: +272H ~ +273H)



## MBE CAPABILITY SETTING TERMINAL CAPABILITY RELATED

MBE Capability (A: +216H ~ 216H) (B: +277H ~ +277H)



## MBE MESSAGE 1 (AUDIO) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

MBE Message 1 (Audio) Capability (A: +218H) (B: +278H)

	b7	b6	b5	b4	b3	b2	b1	b0	
A: +218H B: +278H	0 fixed	Default = 00H							

### **MBE MESSAGE 2 (PROPRIETARY) CAPABILITY SETTING TERMINAL CAPABILITY RELATED**

MBE Message 2 (Proprietary) Capability (A: +219H) (B: +279H)



b6 : H.243 proprietary site name b7 : CMI capability

### MBE MESSAGE 3 (LSD2) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

MBE Message 3 (LSD2) Capability (A: +21AH ~ 21BH) (B: +27AH ~ +27BH)



### MBE MESSAGE 4 (VIDEO) CAPABILITY SETTING TERMINAL CAPABILITY RELATED

MBE Message 4 (Video) Capability (A: +21CH ~ 21DH) (B: +27CH ~ +27DH)



## MBE MESSAGE CAPABILITY SETTING TERMINAL CAPABILITY RELATED

(1) MBE Message 6 (Data Application BAS) Capability (A: +21EH) (B: +27EH)

	b7	b6	b5	b4	b3	b2	b1	b0	
A: +21EH B: +27EH	0 fixed	Default = 00H							

(2) MBE Message 7 (Data Application BAS) Capability (A: +21FH) (B: +27FH)



#### (3) MBE Message 8 (Data Application BAS) Capability (A: +220H) (B: +280H)

	b7	b6	b5	b4	b3	b2	b1	b0	
A: +220H B: +280H	0 fixed	Default = 00H							

#### (4) MBE Message 9 Capability (A: +221H) (B: +281H)

	b7	b6	b5	b4	b3	b2	b1	b0	
A: +221H B: +281H	0 fixed	Default = 00H							

### TIC CAPABILITY SETTING TERMINAL CAPABILITY RELATED

TIC Capability (A: +222H) (B: +282H)



### CIC CAPABILITY SETTING TERMINAL CAPABILITY RELATED

CIC Capability (A: +223H) (B: +283H)



### AUDIO MODE CAPABILITY SETTING TERMINAL CAPABILITY RELATED



b6 : Audio OFF, U b7 : Audio OFF, F

NECA 340-414-220 Revision 2.0

## TRANSFER RATE CAPABILITY SETTING TERMINAL CAPABILITY RELATED

,	Transfe	r Rate	Mode	(A: +2	34H ~	+237H	H) (B: -	+294H	~ +297H)		
A: +234H B: +294H	b7 0	b6 0	b5 0 fixed	b4 0 fixed	b3 0 fixed	b2 0 fixed	b1 0	b0 0	Default = 20H		
	b0 : 64 kt b1 : 64 x b6 : 128 k b7 : 192 k	ops 2 kbps kbps kbps	(T1/RS42 (RS422/II (T1/RS42 (T1/RS42	2/INS) NS) 22) 22)		L		<u>.</u>	]		
	b7	b6	b5	b4	b3	b2	b1	b0			
A: +235H B: +295H	0	0	0 fixed	0 fixed	0 fixed	0	1	0	Default = 02H		
	b0 : 256 kbps (T1/RS422/INS) b1 : 384 kbps (T1/RS422/INS-H0) b2 : 384 x 2 kbps (RS422/INS-H0) b6 : 512 kbps (T1/RS422) b7 : 768 kbps (T1/RS422) <b>Note:</b> For 2H0, b2 will be "1".										
	b7	b6	b5	b4	b3	b2	b1	b0			
A: +236H B: +296H	0 fixed	0 fixed	0 fixed	0 fixed	0	0	0	0	Default = 00H		
	b0 : 1152 b1 : 1472 b2 : 1536 b3 : 1920										
	b7	b6	b5	b4	b3	b2	b1	b0			
A: +237H B: +297H	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	Default = 00H		

### VIDEO MODE SETTING TERMINAL MODE RELATED

**SUMMARY:** Specify whether video mode is set or not.

#### STEP PROCEDURE

*Note:* Use the factory shipment value (**08H 00H**) in setting the video mode as a general rule. If change is necessary for any reason, follow the steps described below.

1 Enter the following command.

 $SSPR\_n_1 = x_1\_n_2 = x_2\_\dots n_i = x_i \dots \dashv$ 

- n<sub>i</sub>: System parameter address A: 238H and 239H B: 298H and 299H
  - [1] Addresses (hexadecimal values) in setting the video mode. The video mode is set in hexadecimal values by dividing the 16 bits (b0 to b15) into the upper-half and lower-half 8 bits, or specifically by setting bit 3 in the lower-half 8 bits to "1" or "0". Accordingly, since the upper-half 8 bits are always "00H", set only the lower-half 8 bits (address 128H).

ADDRESS	VIDEO MODE
A: 238H, B: 298H	Lower-half 8 bits setting address (b0 to b7)
A: 239H, B: 299H	Upper-half 8 bits setting address (b8 to b15)

- **x<sub>i</sub>**: System parameter values See below:
  - [1] System parameter values on setting the video mode for the addresses. The factory shipment value for the system parameter is **08H 00H**.

SYSTEM PA	ARAMETER	
ADDRESS A: 239H B: 299H	ADDRESS A: 238H B: 298H	VIDEO MODE
00H	00H	OFF
00H	08H	ON (H.261 video)

# VIDEO MODE SETTING TERMINAL MODE RELATED

### STEP PROCEDURE

2 Verify that the normal response is displayed with "**OK**".

If YES, go to Step 3. If NO, go to Step 1.

3 End of procedure.

## LSD MODE SETTING TERMINAL MODE RELATED

LSD Mode (A: +23AH ~ 23BH) (B: +29AH ~ +29BH)



## HSD CAPABILITY SETTING TERMINAL MODE RELATED

HSD Capability (A: +23CH ~ 23FH) (B: +29CH ~ +29FH)

	b7	b6	b5	b4	b3	b2	b1	b0				
A: +23CH B: +29CH	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	Default = 00H			
	b7	b6	b5	b4	b3	b2	b1	b0				
A: +23DH B: +29DH	0 fixed	0	0 fixed	0	0	0	0	   	Default = 00H			
	b1 : 64 kbps b2 : 128 kbps b3 : 192 kbps b4 : 256 kbps b6 : 384 kbps											
	Note: \	Nhen dist	ributing H	ISD date,	bit will be	e "1".						
	b7	b6	b5	b4	b3	b2	b1	b0				
A: +23EH B: +29EH	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0	0 fixed	0	Default = 00H			
	b0 : 768 kbps (R) b2 : 1536 kbps (R) <i>Note:</i> When distributing HSD date, bit will be "1".											
	b7	b6	b5	b4	b3	b2	b1	b0				
A: +23FH B: +29FH	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	Default = 00H			
## MLP MODE SETTING TERMINAL MODE RELATED

MLP Mode (A: +240H ~ 241H) (B: +2A0H ~ +2A1H) *Note:* MCU 5000A does not support MLP, when RCON mode.

	b7	b6	b5	b4	b3	b2	b1	b0	
A: +240H B: +2A0H	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0	0	0 fixed	Default = 00H
	b1 : ML b2 : ML	P-4k P-6.4k							
	b7	b6	b5	b4	b3	b2	b1	b0	
A: +241H B: +2A1H	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	0 fixed	Default = 00H

## NETWORK CLASSIFICATION MODE SETTING TERMINAL MODE RELATED

Network Classification Mode (A: +242H ~ 243H) (B: +2A2H ~ +2A3H)



## MBE MODE SETTING TERMINAL MODE RELATED

MBE Mode (A: +246H ~ 246H) (B: +2A7H ~ +2A7H)



## MBE MESSAGE 1 (AUDIO) SETTING TERMINAL MODE RELATED

MBE Message 1 (Audio) Capability (A: +248H ~ +249H) (B: +278H ~ +279H)

	b7	b6	b5	b4	b3	b2	b1	b0	
A: +248H B: +298H	0 fixed	Default = 00H							
	b7	b6	b5	b4	b3	b2	b1	b0	
A: +249H B: +299H	0 fixed	Default = 00H							

## MBE MESSAGE 3 (LSD2) MODE SETTING TERMINAL MODE RELATED

MBE Message 3 (LSD2) Mode (A: +24AH ~ 24BH) (B: +29AH ~ +29BH)



### MBE MESSAGE 4 (VIDEO) MODE SETTING TERMINAL MODE RELATED

MBE Message 4 (Video) Mode (A: +24CH) (B: +29CH)



Note: PTY detects a parity error and performs Demand Refresh on its occurrence. FULL: NTSC full resolution mode VSP: dual screen multiplex mode

## RCON ACTION MODE SETTING TERMINAL MODE RELATED

RCON Action Mode

(1) CCR (Request of Chairman Control Release) Timer (+380H)

 $00H \sim FFH(x1s)$  default = 14H

(2) CCA (Request of Chairman Control Acquisition) Mode (+381H)



(3) Master/Slave Classification (+382H)





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# MCU 5000A MULTIPOINT CONTROL UNIT

## **CONSOLE OPERATION MANUAL**

SEPTEMBER, 1998 NEC America, Inc.

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## **Table of Contents**

INTRODUCTION	INT-001
SYSTEM SETTING	
CGPR	COP-110
RCGP	COP-111
LCNQ	COP-112
LSTQ	COP-113
LCKS	COP-114
LERQ	COP-115
LECR	COP-116
SWITCHING CONTROL	
BCON	COP-131
BDSC	COP-132
UCON	COP-133
UDSC	COP-134
LCON	COP-135
LDSC	COP-136
SDSC	COP-137
RCNN	COP-138
MULTIPOINT/LECTURE CONNECTION CONTRO	L
MCON	COP-139
MDSC	COP-140
ECON	COP-141
EDSC	COP-142
MCNR	COP-145
MDCR	COP-146
RRNM	COP-147
RATT	COP-148

## MULTIPOINT TELECONFERENCE/LECTURE CONTROL

	COPR	COP-149
	CSPR	COP-150
	CRPR	COP-151
	CVCR	COP152
	STPR	COP-153
	ALRM	COP-154
	EQUR	COP-155
	EQRC	COP-156
	ETLK	COP-157
	CMPR	COP-158
	CSRR	COP-160
	CMSG	COP-161
	GRRC	COP-182
	RCAP	COP-183
	RMOD	COP-184
ΜL	ILTIPOINT TELECONFERENCE CONTROL	
	SNAM	COP-162
	RNAM	COP-163
ME	MORY CARD CONTROL	
	RDIR	COP-166
	RMCV	COP-167
	RMCS	COP-168
	CPMC	COP-169
SY	STEM SETTING AND MAINTENANCE	
	SSPR	COP-170
	RSPR	COP-171
	ISPR	COP-172
	SVSP	COP-173
	RRST	COP-174
	RCLK	COP-175
	WCLK	COP-176
	RLCS	COP-177
	STLP	COP-178
	TLOP	COP-179
	RTLP	COP-180
MA	INTENANCE AND TEST	
	RROM	COP-181

## MULTIPOINT TELECONFERENCE INDICATION

	COPI	COP-210
	CSPI	COP-211
	CRPI	COP-212
	CVCI	COP-213
	STEI	COP-214
	EQRI	COP-215
	EQCI	COP-216
	ЕТКІ	COP-217
	CMPI	COP-218
	CJNI	COP-220
	MCNI	COP-221
	MDCI	COP-222
	RLCI	COP-223
	ERRI	COP-224
	CSTI	COP-225
	CSTI <rcon></rcon>	COP-226
	CDTI	COP-227
	NALT	COP-228
	NONL	COP-229
	NDCI	COP-230
	NINC	COP-231
ISE	ON CONTROL	
	NCRN	COP-300
	NDSC	COP-301
	NCIC	COP-302
	NIWT	COP-303
	NIWR	COP-304
	NIWQ	COP-305
	INET	COP-306
	NSTQ	COP-307
	NLGQ	COP-308
	NLGC	COP-309
	NPDS	COP-310
	NPDR	COP-311
	NDSS	COP-312
	NDSR	COP-313

## **MULTIPOINT CONNECTION CONTROL**

INS Net Error Reasons	Appendix
RCNQ	COP-N07
H.243 MULTIPOINT CONNECTION CONTROL	
RRAT	COP-N06
RASN	COP-N05
RDRP	COP-N04
RADD	COP-N03
RDSC	COP-N02
RCON	COP-N01

## **INTRODUCTION**

#### 1: GENERAL 1.01

**1.01** This introduction describes the interface between the **Multipoint Control Unit 5000A** (**MCU 5000A**) and the MCU console, the starting-up of the MCU 5000A and the MCU console, and data transmit format.

**1.02** The MCU 5000A has four serial interface ports, and three of which are used to connect the MCU consoles. The MCU console is used for the initial setting and maintenance of the MCU 5000A, as well as a control terminal for the multipoint teleconference and/or the NEC's VIDEO CODEC of VisuaLink 5000A terminal. The MCU console can also be connected to the MCU 5000A via modems for remote control.

**1.03** The reference practices are listed below:

- 1) NECA 340-414-100 ..... General Description
- 2) NECA 340-414-210 ..... Installation
- 3) NECA 340-414-220 ..... System Parameter
- 4) NECA 340-414-300 ..... Console Operation
- 5) NECA 340-414-500 ..... Maintenance

#### 2: INTERFACE A. Physical Interface

**2.01** The serial interface ports on the MCU 5000A and the MCU console are RS-232C D-sub 25-pin connectors. The MCU 5000A can accept three consoles, MCU ports.

#### **B.** Electrical Interface

**2.02** The pin assignment for an RS-232C D-sub 25-pin connector on the MCU 5000A and the MCU console is shown in the Table 1, and the pin arrangement is shown in Fig. 1.

PIN NO.	DESIGNATION	I/O	DESCRIPTION	PIN NO.	DESIGNATION	I/O	DESCRIPTION
1	FG		Frame Ground	14			
2	SD	OUT	Send Data	15			
3	RD	IN	Receive Data	16			
4	RS	OUT	Request to Send	17			
5	CS	IN	Clear to Send	18			
6	DR	IN	Data Set Ready	19			
7	SG		Signal Ground	20	ER	OUT	Data Terminal Ready
8	CD	IN	Receive Carrier Detection	21			
9				22			
10				23			
11				24			
12				25			
13							

Table 1: Pin Assignment for D-Sub Connector



Figure 1: Pin Arrangement for RS-232C D-Sub Connector

**2.03** The MCU console is connected to the MCU 5000A via a reverse cable connection (null modem). A modem can connect via a straight cable connection. The reverse cable connection is shown in Fig. 2.



Figure 2: Reverse Cable Connection

**2.04** The communications requirements for the RS-232C interface of the MCU console are as follows:

•	Synchronization	:	Start/Stop
•	Baud Rate	:	1200, 2400, 4800, 9600 b/s
•	Character Bits	:	8 bits
•	Stop Bit	:	1 bit
•	Parity Check Bit	:	None
•	X Control Bit	:	None

**2.05** The channel 1 (CH1) to channel 3 (CH3) on the RS-232C interface port support the connection with the MCU console. The connection between the MCU console and the MCU 5000A is shown in Fig. 3.



Figure 3: Connection Between MCU Console and MCU 5000A

#### **3: STARTING-UP**

#### A. Starting-up of MCU Console

**3.01** Confirm that MCU console is connected to the MCU 5000A, then, turn on the power switch on MCU console.

#### **B. Starting-up of MCU 5000A**

**3.02** Turn on the MCU 5000A, or reset it by the reset switch. The following Wake-Up message is displayed on the MCU console screen when it full powers on:

```
****Multi point Teleconference control unit MCU-5000A Ver X.XX********Copyright (C) NEC Corporation 1991, 1993****
```

*Note:* X.XX indicates the version of the memory card in the MCU 5000A.

#### C. Verification of Connection between MCU Console and MCU 5000A

**3.03** To verify whether or not the MCU console is correctly connected to the MCU 5000A, use **RCLK** command (see **COP-175**).

#### A. Command Transmit Format

**4.02** A command is sent from the MCU console to the MCU 5000A in the following format:

COMMAND	SPACE	PA	ARAMETER (PARAMETER)	CR+LF
	COMMAND fie	ld:	Contains an input command (4 letters).	
	SPACE field	:	A command and parameter(s) should be s space.	eparated with
	PARAMETER f	ield :	Contains input parameter(s). Multiple particle be separated with a space .	ameters shou
	CR+LF field	:	Contains the signal which is generated where the RETURN key on the keyboard is depress	ien the ed.
	B. Response Tr	ansmi	it Format	
	<b>4.03</b> The MC	U 500	0A returns a response to an input command	from the MC

**4.03** The MCU 5000A returns a response to an input command from the MCU console. There are two types of responses: a normal response and an error response.

#### Normal Response

A normal response format is as follows:

PARAMETER (PARAMETER CR + LF)	ОК	CR+LF
RESPONSE : Contains a response message (PARAMETER signal). CR+LF) field	(parameter(	s) and CR+LF
<i>Note:</i> The parameter(s) and CR+LF signal contained command.	depend up	on the input
OK field : Contains OK which indicates of an input command.	the success	ful completion

#### **Error Response**

An error response format is as follows:

ERROR CODE CR+LF

ERROR CODE field: Contains error code(s) which indicates that the MCU 5000A cannot execute the command and gives a reason for error.

#### C. Global Response Indication Transmit Format

**4.04** When any event occurs or the status changes in a system, the MCU 5000A sends global indication to all MCU consoles and terminals in the following format:

INDICATION NAME	SPACE		PARAMETER (PARAMETER)	CR+LF
INDICA NAME	TION field	:	Contains an indication name (4 letters).	
SPACE	SPACE field :		An indication name and a parameter field are separate with a space.	
PARAM	PARAMETER field:		Contains parameter(s).	

## CGPR System Setting

COMMAND NAME	auto start Command Generator PRogram				
PURPOSE	This command is used to create the auto start command generator program, which is stored in the memory card as the command generator file. When the MCU 5000A is powered, the command(s) registered in this file is automatically executed (the command generator file is similar to the MS-DOS batch file).				
	Note 1:	The write protect switch located on the memory card should be set to "OFF" position before entering this command.			
	Note 2:	If the incorrect command is registered by this <b>CGPR</b> command, the MCU 5000A cannot possibly start up.			
	Note 3:	The command generator file is stored only on the memory card.			
INPUT FORMAT	CGPR_ (OK) (Se $A_1$ $A_2$ $\vdots$ $A_i$ CGPE $\downarrow$ (OK) (Se	لــــــــــــــــــــــــــــــــــــ			
EXPLANATION OF INPUT PARAMETERS	vv.vv= ( Specifies identified	0-9) (0-9).(0-9) (0-9) the version number for which the Auto Start generator program will be . Valid values for v are: 0 through 9			
	A <sub>1</sub> -A <sub>i</sub> : S	pecifies the command registered in the command generator file.			
	Note 1:	OK within parentheses is not entered, but indicated.			
	Note 2:	CGPE command must be entered at end of command input string.			
	Note 3:	The input data must be less than 4 k-byte. If input data exceeds 4k- byte, overflow occurs.			

## CGPR System Setting

(continued)

RESPONSE FORMATS	NORMAL RESPONSE:	OK
	ERROR RESPONSE:	ERR01 ERR80 ERR81 ERR82
EXAMPLE	CGPR $\_01.00 \leftarrow 1$ OK MCON 1 2 3 4 5 CGPE $\leftarrow 1$ OK	_678

## RCGP System Setting

COMMAND NAME	Read Command Generator Program		
PURPOSE	This command is used to retrieve (read) and display the auto start command generator program registered in the memory card by the <b>CGPR</b> command.		
INPUT FORMAT	RCGP ₊ J		
RESPONSE FORMAT	NORMAL RESPONSE: EXPLANATION OF RESP $A_1 - A_i$ : Indicates an a vv.vv : Indicates the Each v in a d ERROR RESPONSE:	A <sub>1</sub> A <sub>2</sub> · · · · · · · · · · · · · · · · · · ·	
EXAMPLE	RCGP J MCON_1_2_3_4_5_6_ 01.12_OK	7_8	

## LCNQ System Setting

COMMAND NAME	Line CoNnection reQuirement		
PURPOSE	This command is used to display the mounted LIF unit type and its bit rate. The bit rate of each line can be set per line interface unit using the <b>SSPR</b> command.		
INPUT FORMAT	LCNQ		
RESPONSE FORMAT	NORMAL RESPONSE:	1-T1 2-T1 3-RS422 4-NONE OK	: l <sub>1</sub> -l <sub>n</sub> =xxx kbps : : l <sub>n+1</sub> =xxx kbps
	EXPLANATION OF RESPONSE PARAMETER		
	$l_1, \dots l_n, l_{n+1}$ : log	ic line numb	er (L1 ~ L254)
	xxx: bit	rate (xxxk m	eans xxx kbps.)
	ERROR RESPONSE: ER	<b>R</b> 01	
EXAMPLE	LCNQ	98	

## LSTQ System Setting

COMMAND NAME	Line STatus reQuirement		
PURPOSE	This command is used to display each physical line status. The status are indicated as follows:		
	(1)	1.5M-LIF (CH1 to CH4:)	
	Line Status	<ol> <li>LIF card is not mounted.</li> <li>Normal</li> <li>RAI signal is received.</li> <li>Data clock is out-of -synchronization.</li> <li>AIS signal is received.</li> </ol>	
	(2)	RS-422 (CH1 to CH4)	
	Line Status	<ol> <li>LIF card is not mounted.</li> <li>Normal</li> <li>I signal is not received.</li> <li>Data clock is out-of-synchronization.</li> </ol>	
	(3)	H0-LIF (CH1 to CH2)	
	<u>Line Status</u>	<ul> <li>0: PKG unmount</li> <li>1: Normal</li> <li>2: Receive RAI</li> <li>3: Synchronous failure</li> <li>4: Receive AIS</li> <li>D: Disconnect</li> <li>L: Establish</li> </ul>	
INPUT FORMAT	LSTQ 🗸		

## LSTQ System Setting

(continued)

 RESPONSE
 NORMAL RESPONSE: xxxx\_xxxx\_xxxx\_xxxx\_OK

 FORMAT
 EXPLANATION OF RESPONSE PARAMETER

- Each 4-digit group corresponds with physical line number.
- x= 0\_4

Indicates the line status or link layer status as follows: For  $0_4$ , refer to PURPOSE.

Digit (x) Unit	1	2	3	4
1.5M-LIF	Channel 1	Channel 2	Channel 3	Channel 4
	line status	line status	line status	line status
RS-422	Channel 1	Channel 2	Channel 3	Channel 4
	line status	line status	line status	line status
H0-LIF	Channel 1 line status	Channel 2 link layer status	Channel 2 line status	Channel 2 link layer status

ERROR RESPONSE: ERR01

EXAMPLE

## LCKS System Setting

COMMAND NAME	Line ClocK Source requirement.		
PURPOSE	This command is	used to display the clock source for MCU 5000A.	
INPUT FORMAT	LCKS		
RESPONSE	NORMAL RESPO	NSE: n_OK	
FORMAT	EXPLANATION OF RESPONSE PARAMETERS		
	n=	00 or 01_16 Indicates the clock source for MCU 5000A:	
	00:	internal clock or out-of-synchronization status	
	01_16:	physical line number for external source	
	ERROR RESPON	NSE: ERR01	
EXAMPLE	LCKS ↓ 00_0K		
#### LERQ System Setting

COMMAND NAME	Line ERror reQuirement	
PURPOSE	This command is used to display the number of errors on the physical line.	
	Note 1:	When the line number is not entered, the number of error for all lines are displayed.
	Note 2:	The number of error for the line, on which LIF unit is not mounted, are not displayed.
	Note 3:	When reset, memory (the number of error) is cleared.
INPUT FORMAT	LERQ [	_n] –[ _
	EXPI	LANATION OF INPUT PARAMETER
	n	<ul> <li>01 ~ 16</li> <li>Specifies the required physical line number. If the number of error for all physical lines is required, this is not entered.</li> </ul>
RESPONSE FORMAT	NORMA	L RESPONSE: 01 : EI1=x EI2=x EI3=x i : EI1=x EI2=x EI3=x OK
	<ul> <li>EXPLANATION OF RESPONSE PARAMETERS</li> <li>i= 01 ~ 16 Indicates the physical line number</li> <li>EI1, EI2, EI3</li> </ul>	

Indicates the error code. See table below.

Line	EI1	EI2	EI3
T1	RAI reception	Out-of-synchronization	AIS reception
RS-422	I signal off	Out-of-synchronization	AIS reception
ISDN (H0)	RAI reception	Out-of-synchronization	Unused

• x= 00000 ~ 65535

Indicates the occurrence number of the corresponding error.

#### ERROR RESPONSE: ERR01 ERR02

NECA 340-414-300 Revision 2.0

## LERQ System Setting

(continued)

EXAMPLE LERQ ↓ 01: EI1=00000 EI2=00000 E13=00000 02: EI1=00000 EI2=00000 E13=00000 OK

# LECR System Setting

COMMAND NAME	Line Error Counter Reset			
PURPOSE	This command is used to r	eset the error counter for the physical line.		
	<i>Note:</i> When the line nun lines are cleaved.	ber is not entered, the error counter for all physical		
INPUT FORMAT	لـم [n]			
	EXPLANATION OF INPUT PARAMETERS			
	n= 01_16 Specifies the r physical lines	equired line number. If the error counter for all are required to reset, this is not entered.		
RESPONSE	NORMAL RESPONSE:	ОК		
FORMAI	ERROR RESPONSE:	ERR01 ERR02		
EXAMPLE	لے LECR			

## BCON Switching Control

COMMAND NAME	BiDirectional video CoNnection		
PURPOSE	This command is used to m	ake point-to-point connection between two terminals.	
INPUT FORMAT	BCON $n_1 n_2 [S] \downarrow$		
	EXPLANATION OF IN	NPUT PARAMETER	
	$n_1, n_2 = 1 \sim 254$ Specifies th If the speci code is indi	ne logic line number of the terminal to be connected. fied line is busy, this command is denied and the error icated.	
	S = B, 2B, H0, or 2 Specifies th	H0 ne line speed.	
RESPONSE FORMAT	NORMAL RESPONSE:	ОК	
FORMAT	ERROR RESPONSE:	ERR01 ERR02 ERR04 ERR07 ERR08 ERR10 ERR53	
EXAMPLE	BCON_3_4		

## BDSC Switching Control

COMMAND NAME	BiDirectional video disConnect		
PURPOSE	This command is used to c terminals.	lisconnect a point-to-point connection between two	
INPUT FORMAT	BDSC_n ←		
	EXPLANATION OI	F INPUT PARAMETER	
	n= 1 ~ 254 Specifies the l disconnected.	ogic line number of either of two terminals to be	
RESPONSE FORMAT	NORMAL RESPONSE:	ОК	
	ERROR RESPONSE:	ERR01 ERR04 ERR09	
EXAMPLE	BDSC_3 ↔ OK		

## UCON Switching Control

COMMAND NAME	Unilateral CONnect		
PURPOSE	This command is used to be one transmit terminal is con command (broadcast conne connections; Loopback con connection with BCON/LC conference, aUCON function	oadcast one picture to a number of terminals. That is, inected to the multiple receive terminals by this ction). This command can establish the following nection ( $n1 = n2$ ), Additional Connection, and Mixed ON/MCON/ECON. (When mixed with a BCON on like a LCON.)	
INPUT FORMAT	UCON $n_1 n_2 [ n_3 \dots$	_n <sub>i</sub> ] [_S] 🗸	
	EXPLANATION OF IN	NPUT PARAMETERS	
	$n_1 = 1 \sim 254$ Specifies the	logic line number of a transmit terminal.	
	$n_2, n_3 \dots n_i = 1 \sim$	254	
	Specifies the line logic number of respective		
	S = B, 2B, H0, or 2	H0 line speed	
	Specifies the	ine speed.	
RESPONSE FORMAT	NORMAL RESPONSE:	ОК	
	ERROR RESPONSE:	ERR01	
		ERR02	
		ERR04	
		ERR08	
		ERR10	
		ERR53	
EXAMPLE	لى UCON 5 2 3 6		
	ОК		

## UDSC Switching Control

COMMAND NAME	Unilateral DiSConnect	
PURPOSE	This command is used to disco UCON command.	nnect a broadcast connection which was established by the
INPUT FORMAT	UDSC $n_1 [ n_2 \dots n_i ] \downarrow$	
	EXPLANATION OF IN	IPUT PARAMETER
	$n_1,, n_i = 1 \sim 254$ Specifies the lo be disconnected entered, all rece terminal.	gic line number of the respective receive terminal to I. If the logic line number for the transmit terminal is give terminals are disconnected from the transmit
RESPONSE FORMAT	NORMAL RESPONSE:	ОК
	ERROR RESPONSE:	ERR01 ERR04 ERR09
EXAMPLE	UDSC_5	

# LCON Switching Control

COMMAND NAME	Lecture monitor CONnect			
PURPOSE	This command is used to co terminals and simultaneous picture sent from one specif	onnect one transmit terminal to the specified receive ly causes the transmit terminal to monitor (receive) a fied terminal.		
INPUT FORMAT	$LCON\_n_1\_n_2\_n_3[\_n_4\_n_i] [\_S] \leftarrow 1$			
	EXPLANATION OF INPUT PARAMETER			
	$n_1 = 1 \sim 254$ Specifies the	logic line number of the transmit terminal.		
	<ul> <li>n<sub>2</sub>= 1 ~ 254</li> <li>Specifies the logic line number of the terminal which terminal monitors.</li> <li>n<sub>3</sub>, n<sub>i</sub>=1_254</li> <li>Specifies the logic line number of respective receive to the logic line number of the specifies the specifies the logic line number of the specifies the logic line number of the specifies the specifies the logic line number of the specifies the logic line number of the specifies the specif</li></ul>			
	S = B, 2B, H0, or 2 Specifies the	H0 line speed.		
RESPONSE	NORMAL RESPONSE:	ОК		
ΓΟΚΙΛΙΑΙ	ERROR RESPONSE:	ERR01 ERR02 ERR04 ERR07 ERR08 ERR10 ERR53		
EXAMPLE	LCON_5_2_3_6			

## LDSC Switching Control

COMMAND NAME	Lecture monitor DiSConnect		
PURPOSE	This command is used to disco LCON command.	nnect the multiple connections which are made by the	
INPUT FORMAT	$LDSC_n_1 [\_n_2\_n_3\_ \dots \_n_p]$	لے [	
	EXPLANATION OF IN	IPUT PARAMETERS	
	$n_1, \dots n_i = 1 \sim 254$ Specifies the log be disconnected entered, all rece terminal. If the terminal monitor	gic line number of the respective receive terminal to I. If the logic line number of transmit terminal is vive terminals are disconnected from the transmit logic line number of a terminal which the transmit ors is entered, error is responded.	
<b>RESPONSE</b> FORMAT	NORMAL RESPONSE:	ОК	
	ERROR RESPONSE:	ERR01 ERR04 ERR09	
EXAMPLE	LDSC_5_2_3_6		

OK

## SDSC Switching Control

COMMAND NAME	System all DiSConnect		
PURPOSE	This command is used to disconnect all video conference connections in the system.		
	Note 1:	When two or mor by this command	e connections have been made, they are disconnected
	Note 2:	When cascade co place:	nnection have been made, the following actions take
	<ul> <li>Command from master te multipoint connection and connection waiting state.</li> <li>Command from slave terr multipoint connection is n terminals, which are conr</li> </ul>		om master terminal: Slave terminal is disconnected in nnection and the slave terminal becomes cascade aiting state.
			om slave terminal: Cascade connection waiting state in nnection is released and all connections for slave ich are connected in multipoint, are released.
INPUT FORMAT	لہ SDSC		
RESPONSE	NORMA	L RESPONSE:	ОК
FORMAI	ERROR	RESPONSE:	ERR01
EXAMPLE	لہ SDSC OK		

## RCNN Switching Control

COMMAND NAME	Read CoNNection			
PURPOSE	This command is used to retrieve and display the video conference connection status on all the transmission lines. Connection status are displayed per video connection mode used.			
INPUT FORMAT	RCNN ↓			
RESPONSE FORMAT	NORMAL RESPONSE: n_BCON_n n_UCON_n [_n ] n_LCON_n [_n ] g_MCON_n [Mn_Ss ] g_MCNR_n_Rx OK			
	EXPLANATION OF RESPONSE PARAMETER			
	n= 1 ~ 254 Indicates logic line number.			
	g: Indicates teleconference group name.			
	s: Slave number.			
	Mn: Suffix n indicates logic line number for master terminal.			
	Ss: Suffix s indicates logic line number for slave terminal.			
	Rx: Suffix x indicates transfer rate.			
	ERROR RESPONSE: ERR01			
EXAMPLE	RCNN $\downarrow$ 4_BCON_7 1_UCON_3_5_6 A_MCON_8_10_11_12 OK			

#### MCON Mutlipoint/Lecture Connection Control

COMMAND NAME	Multi point CONnect		
PURPOSE	This command terminal (room) number is set to number is skipp	is used to establish H.320 multipoint connections. The specified ) can participate in the multipoint teleconference. When the line 0, line connection is not established and the teleconference room bed. In the cascade connection, the MCU acts as a master-side.	
INPUT FORMAT	$MCON\_n_{m1}\_n_{m2}\_n_{m3} \dots [Mn_c\_Sn_x\_n_{s1}\_n_{s2} \dots ][\_Rr][\_S] \downarrow$		
	EXPLANA	TION OF INPUT PARAMETERS	
	$n_i =$	1 ~ 254 Specifies the logic line number of the terminal to be multi- connected.	
	$i = m_j$	Specifies the terminal logic line number to be connected in the Master MCU.	
	i = x	Specifies the slave number.	
	$i = s_j$	Specifies the terminal logic line number to be connected to Slave-side MCU.	
	i = c	Specifies the logic line number of cascade port.	
	r =	Specifies a bit rate (kb/s). Note that a bit rate corresponds to the type of line interface. If this parameter is no value (not entered), the default bit rate (system parameter value) is used. Valid values for r are: 56, 56X2, 64, 64X2, 112, 128, 168, 192, 224, 256, 336, 384, 448, 512, 672, 768, 1008, 1152, 1344, 1536, 1920, 1472, 1288, 384x2, 336x2	
	S = B, 2	2B, H0, or 2H0	

Specifies the line speed.

#### MCON Mutlipoint/Lecture Connection Control

(continued)

**RESPONSE** NORMAL RESPONSE:  $g m_1 m_2 \dots m_i$  xkbps OK **FORMAT** EXPLANATION OF RESPONSE PARAMETERS teleconference group name (A or B) g : indicates the teleconference room number  $(1_14)$ mi : · indicates the line bit rate Х *Note:* The two groups of multipoint teleconferences can be made. The first multipoint group established is called group A and second, group B. The total of terminals in groups A and B cannot exceed 8 (when in cascade, the sites increase to 14). ERROR RESPONSE: **ERR01** 

```
ERR02
ERR04
ERR06
ERR08
ERR10
ERR14
ERR16
ERR30
ERR53
```

MCON 2 3 4 5 4 A 01 02 03 04 384kbps OK

## MDSC Mutlipoint/Lecture Connection Control

COMMAND NAME	Multi point DiSConnect	
PURPOSE	This command is used to di teleconference group. This teleconference group from t has been established, this co MCU.	sconnect the H.320 multipoint connections of one command cannot disconnect some of terminals in the he multipoint connections. If a cascade connection ommand disconnects the connection on the slave
INPUT FORMAT	MDSC [g] جا	
	EXPLANATION OF IN	NPUT PARAMETER
	g= A, B, or no valu Specifies the na this parameter i	the ame of teleconference group to be disconnected. If s no value (not entered), A is defaulted.
RESPONSE	NORMAL RESPONSE:	ОК
FORMAT	ERROR RESPONSE:	ERR01 ERR05 ERR31
EXAMPLE	MDSC_A لم OK	

#### ECON Mutlipoint/Lecture Connection Control

COMMAND NAME	*Education mode multi point CONnection	
PURPOSE	This command is used to establish a multipoint connection in an education mode. In this connection, voice activated switching is deactivated.	
INPUT FORMAT	$ECON_{[I]}\mathbf{n}_{m1}_{[I]}\mathbf{n}_{m2}_{[I]}\mathbf{n}_{m3} \dots [Mn_{c}_{Sn_{x}}[I]\mathbf{n}_{s1}_{[I]}\mathbf{n}_{s2} \dots ][\_Rr][\_s] \checkmark$	
	EXPLANATION OF INPUT PARAMETERS	
	$n_i =$	1 ~ 254 Specifies the logic line number of the terminal to be multi- connected.
	i=m <sub>j</sub>	Specifies the logic line number of the terminal to be connected to Master-side MCU.
	i=x Specifies the slave number.	
	i=s <sub>j</sub>	Specifies the logic line number of the terminal to be connected to Slave-side MCU.
	i=c Specifies the logic line number of the cascade port.	
	I: Specifies an instructor terminal. I should be entered for an instructor terminal.	
	<i>Note:</i> Each group can provide only one instructor terminal. The instructor terminal is not set to voice terminal.	
	r=	Specifies the bit rate (kbps). Note that the bit rate corresponds to the type of line interface. If this parameter is no value (not entered), the default bit rate (system parameter value) is used. Valid values for r are:56, 56X2, 64, 64X2, 112, 128, 168, 192, 224, 256, 336, 384, 448, 512, 672, 768, 1008, 1152, 1344, 1536, 1920, 1288, 1472, 384X2, 336X2
	S:	B, 2B, H0, or 2H0 Specifies the line speed

#### \*Future Release

## ECON Mutlipoint/Lecture Connection Control

(continued)

RESPONSE FORMAT	NORMAL RESPONSE: EXPLANATION OF RESPONS	g_[I]m <sub>1</sub> _[I]m <sub>2</sub> [I]m <sub>i</sub> _xkbps_OK SE PARAMETERS	
	g : teleconference group I : indicates the instructor m <sub>i</sub> : indicates the teleconfer x : indicates the line bit r	teleconference group name (A or B) indicates the instructor terminal. indicates the teleconference room number (1 ~ 14). indicates the line bit rate.	
	ERROR RESPONSE:	ERR01 ERR02 ERR04 ERR06 ERR08 ERR10 ERR14 ERR16 ERR30 ERR53	
EXAMPLE	ECON <u>2</u> I3 <u>4</u> 5 <del>4</del> A 02 I03 04 05 384kbj	ps_OK	

#### EDSC Mutlipoint/Lecture Connection Control

COMMAND NAME	*Education mode multipoint DiSConnection	
PURPOSE	This command is used to disconnect the multipoint connection for education mode of one teleconference group. In the cascade connection, this command disconnects the connection to cascade-end terminal (cascade-end terminal is in master connection waiting state).	
INPUT FORMAT	EDSC[g] ←	
	EXPLANATION OF INPUT PARAMETER	
	g= A, B, or no v Specifies the multi point co A is specified	alue name of teleconference group to be disconnected the onnections. If this parameter is no value (not entered), l.
RESPONSE	NORMAL RESPONSE:	ОК
FORMAT	ERROR RESPONSE:	ERR01 ERR05 ERR31

EXAMPLE EDSC\_A

\*Future Release

#### MCNR Mutlipoint/Lecture Connection Control

COMMAND NAME	Multi point CoNnection for slave		
PURPOSE	This command is used to set the local terminal to waiting status for cascade connection by the master MCU. When this command is completed, one teleconference group is occupied.		
INPUT FORMAT	$MCNR_n_c[_Rx][_S] \leftarrow I$		
	EXPLAN	ATION OF I	NPUT PARAMETERS
	n <sub>c</sub> :	1 ~ 254 Specifies the	logic line number for cascade connection.
	x:	Specifies the corresponds to value (not en used. Valid v 192, 224, 256 1536, 1920, 1	transfer bit rate (kb/s). Note that the bit rate to the type of line interface. If this parameter is no tered), the default bit rate (system parameter value) is values for x are: 56, 56X2, 64, 64X2, 112, 128, 168, 5, 336, 384, 448, 512, 672, 768, 1008, 1152, 1344, 1288, 1472, 384X2, 336X2
	S:	B, 2B, H0, or Specifies the	2H0 line speed.
RESPONSE FORMAT	NORMAL RI	ESPONSE:	g_xkbps_OK
	EXPLAN	ATION OF R	ESPONSE PARAMETERS
	g :	teleconferenc	e group name (A or B)
	x :	indicates the	bit rate.
	ERROR RES	PONSE:	ERR01 ERR02 ERR04 ERR06 ERR08 ERR14 ERR30 ERR53
EXAMPLE	MCNR_3		

A 384kbps OK

## MDCR Mutlipoint/Lecture Connection Control

COMMAND NAME	Multi point DisConnection	for slave
PURPOSE	This command is used to reaconnection waiting status.	lease the cascade connection status or cascade
INPUT FORMAT	$MDCR[\_g] \leftarrow J$	
	EXPLANATION OF IN	IPUT PARAMETERS
	g= A, B, or no va Specifies the parameter is r	alue name of teleconference group to be released. If this no value (not entered), A is specified.
RESPONSE	NORMAL RESPONSE:	ОК
FORMAI	ERROR RESPONSE:	ERR01 ERR05
EXAMPLE	MDCR_A	

## RRNM Mutlipoint/Lecture Connection Control

COMMAND NAME	Read Room NuMber	
PURPOSE	This command is used to retrieve and display the logic line numbers, logic room numbers, and port numbers of the terminals which are multi-connected.	
INPUT FORMAT	RRNM ←	
RESPONSE FORMAT	NORMAL RESPONSE: $A_{m1}[I](p)=n_1 \dots [Ss(p)=n_{i-1} Rm_i[I](p)=n_i \dots ]$ $[B_{m1}[I](p)=n_1 \dots [Ss(p)=n_{i-1} Rm_i[I](p)=n_i \dots ]$	
	EXPLANATION OF RESPONSE PARAMETER	
	R : means the teleconference room identifier	
	$m_i$ : indicates the teleconference room number (1 ~ 14) (RCON mode : 001 ~ 252)	
	I : means instructor terminal identifier	
	p : indicates the teleconference port number $(1 \sim 8)$	
	S : means the cascade port identifier	
	s : indicates slave number (0 or 1) (RCON mode : 002 ~ 191)	
	$n_i$ : indicates a logic line number (1 ~ 254)	
EXAMPLE	RRNM $\downarrow$ A_R01(01)=001_R01I(02)=003_R03(03)=007 OK	

#### RATT Mutlipoint/Lecture Connection Control

COMMAND NAME	Read the ATTendance	
PURPOSE	This command is used to display the current status of multi-connected terminals in the system. In master-connection waiting state for <b>MCNR</b> command, the teleconference group name (A or B) is only displayed.	
INPUT FORMAT	RATT	
RESPONSE	NORMAL RESPONSE: A_Rm <sub>1</sub> =xyzv_Rm <sub>2</sub> =xyzv Rm <sub>i</sub> =xyzv B_Rm <sub>3</sub> =xyzv_Rm <sub>4</sub> =xyzv Rm <sub>i</sub> =xyzv OK	
FORMAI		
	EXPLANATION OF RESPONSE PARAMETERS	
	$m_i$ : indicates a teleconference room number (1 ~ 14)	
	<ul> <li>x: indicates the status of H-221 frame synchronization</li> <li>0: out of synchronization</li> <li>1: synchronized</li> </ul>	
	<ul> <li>y: indicates whether or not a terminal (teleconference room) is participating in the teleconference.</li> <li>0: the indicated terminal is not participating in the teleconference.</li> <li>1: the indicated terminal is participating in the teleconference.</li> </ul>	
	<ul> <li>z: indicates whether or not a terminal is multi-connected.</li> <li>0: the indicated terminal is not multi-connected.</li> <li>1: the indicated terminal is multi-connected.</li> </ul>	
	<ul><li>v: indicates the type of terminal.</li><li>0: TV teleconference terminal</li></ul>	
	ERROR RESPONSE: ERR01	
EXAMPLE	RATT A_R1=1110_R2=0000_R3=1110_R4=1110 OK	
	<i>Note:</i> Invalid in RCON mode.	
COMMAND NAME	Control of Operator Privilege Request	
--------------	---	--
PURPOSE	This command is used to assign or cancel the operator privilege of the specified teleconference room (terminal). Only one teleconference terminal is allowed to have the operator privilege in one teleconference group. If the operator privilege is already assigned to any terminal, previous assignment is canceled when it is assigned to the other terminal. When the operator privilege is assigned to any terminal, voice detection is automatically inhibited in all terminals. This command is available for the multi point teleconference mode, but in the multi point teleconference education mode.	
INPUT FORMAT	$COPR[\_g]_r_x \leftarrow$	
	EXPLANATION OF INPUT PARAMETERS	
	g= A, B, or no value Specifies the teleconference group number. If this parameter is no value (not entered), A is used.	
	r= 1 ~ 8 or 1 ~ 14 Specifies the teleconference room number which is assigned or canceled. Valid values for r are: Master connection only: 1 ~ 8 Slave connection: 1 ~ 14	
	<ul> <li>x= ON or OFF</li> <li>Specifies the operator privilege status. Valid value for x is:</li> <li>ON: The operator privilege is assigned</li> <li>OFF: The operator privilege is canceled</li> </ul>	
RESPONSE	NORMAL RESPONSE: OK	
FORMAI	ERROR RESPONSE: ERR01 ERR05 ERR13 ERR31	
EXAMPLE	COPR_1_ON L OK COPI_A_01_ON (See Note.)	
	<i>Note 1:</i> This line is displayed on MCU console as a response for command. Refer to <b>COP-210</b> .	
	<i>Note 2:</i> Cannot use in RCON mode.	

COMMAND NAME	Control of Send Picture Re-	quest
PURPOSE	This command is used to be specified broadcasting term command and can continue	roadcast the picture of the specified terminal. The ninal is not interrupted receiving by entering this to receive the picture as before.
INPUT FORMAT	$CSPR[\_g]_r \leftarrow$	
	EXPLANATION OF II	NPUT PARAMETERS
	g= A, B, or no v Specifies the value (not en	value. teleconference group name. If this parameter is no tered), A is used.
	r= 1 ~ 8 or 1 ~ 1 Specifies the terminal. Va Master connec Slave connec	14teleconference room number of a broadcastinglid values for r are:ection only: $1 \sim 8$ ction: $1 \sim 14$
<b>RESPONSE</b> FORMAT	NORMAL RESPONSE:	ОК
FORMAI	ERROR RESPONSE:	ERR01 ERR05 ERR13 ERR31
EXAMPLE	$CSPR_2 \leftarrow J$ OK $CSPI_A_2 \text{ (See Note.)}$	
	<i>Note 1:</i> This line displaye to <b>COP-211</b> .	ed on MCU console as a response for command. Refer
	<i>Note 2:</i> Can not use in R	CON mode.

COMMAND NAME	Control of Receive Picture Request	
PURPOSE	This command is used to connect one transmit terminal to one receive terminal or disconnect one receive terminal from one transmit terminal.	
INPUT FORMAT	$CRPR[\_g]\_r_1\_r_2\_x \leftarrow I$	
	EXPLANATION OF INPUT PARAMETERS	
	g= A, B, or no value Specifies the teleconference group name. If this parameter is no value (not entered), A is used.	
	$r_1 = 1 \sim 8 \text{ or } 1 \sim 14$ Specifies the teleconference room number of a receive terminal. Valid values for $r_1$ are:	
Master connection only: $1 \sim 8$		
	Slave connection: $1 \sim 14$	
$r_{2}= 1_{8} \text{ or } 1_{14}$ Specifies the teleconference room number of the transin x=ON. Also, specifies the teleconference room n broadcast terminal in x=OFF. Valid values for r <sub>2</sub> are Master connection only: $1 \sim 8$ Slave connection: $1 \sim 14$		
	<ul> <li>x= ON or OFF</li> <li>Specifies the connection or disconnection between the transmit and receive terminals. Valid values for x are:</li> <li>ON: the specified receive terminal is connected to the specified transmit terminal.</li> <li>OFF: the specified receive terminal is disconnected from the transmit terminal.</li> </ul>	
RESPONSE FORMAT	NORMAL RESPONSE: OK	
	ERROR RESPONSE: ERR01 ERR05 ERR13 ERR31 ERR34	

(continued)

EXAMPLE	CRPR OK CRPIA	$2\_4\_ON \leftarrow 1$ (Note 1) $A\_02\_04\_ON (Note 2)$
	Note 1:	This line indicates that a receive terminal of room number 2 displays the picture from a transmit terminal of room number 4.
	Note 2:	This line is displayed on MCU console as a response for command. Refer to <b>COP-212</b> .
	Note 3:	Cannot use in RCON mode.

COMMAND NAME	Control of Voice detect Control Request	
PURPOSE	This command is used to control the voice (talker) detect function of a specified terminal. If any terminal is assigned to the operator in same multi point teleconference group, this command cannot be performed to ON. In that case, however, this command can be set to ON. When the operator terminal is not exist in that group, this command can be performed to ON.	
INPUT FORMAT	$CVCR[\_g]\_r\_x                                   $	
	EXPLANATION OF INPUT PARAMETERS	
	g= A, B, or no value Specifies the teleconference group name. If this parameter is no value (not entered), A is used.	
	<ul> <li>r= 0, 1 ~ 8, or 1 ~ 14</li> <li>Specifies the teleconference room number of the terminal which controls the voice detect. If this parameter is 0, all terminals are specified. Valid values for r are:</li> </ul>	
	Master connection only: $0 \sim 8$	
	Slave connection: $0 \sim 14$	
	<ul> <li>x= ON or OFF</li> <li>Specifies the voice detect control function of the specified terminal.</li> <li>Valid values for x are:</li> <li>ON: the specified terminal detects a voice (talker)</li> <li>OFF: the specified terminal does not detect a voice.</li> </ul>	
RESPONSE FORMAT	NORMAL RESPONSE: OK	
	ERROR RESPONSE: ERR01 ERR05 ERR13 ERR31	
EXAMPLE	CVCR_4_OFF ↓ OK CVCI_A_04_OFF (Note) <i>Note 1:</i> This line is displayed on MCU console as the response for command.	
	Note 2: Invalid in RCON mode.	

COMMAND NAME	control of Send sTill Picture	e Request
PURPOSE	This command is used to br the terminal only in VisuaL Note that this command car equipment.	oadcast the still pictures of a specified terminal. For inks AD series equipment, this command is available. not be performed normally except for above
INPUT FORMAT	لم STPR[_g]_r	
	EXPLANATION OF IN	NPUT PARAMETERS
	g= A, B, or no v Specifies the value (not en	alue teleconference group name. If this parameter is no tered), A is used.
	r= 1 ~ 8 of 1 ~ 1 Specifies the still picture. Master connec Slave connec	4 teleconference room number to be broadcasted the Valid values for r are: ction only: $1 \sim 8$ tion: $1 \sim 14$
RESPONSE	NORMAL RESPONSE:	ОК
FORMAT	ERROR RESPONSE:	ERR01 ERR05 ERR13 ERR31
EXAMPLE	STPR_B_5 $\downarrow$ OK	
	<i>Note 1:</i> This line is displa Refer to COP-21	yed on MCU console as the response for command. 4.
	<i>Note 2:</i> Invalid in RCON	mode.

COMMAND NAME	ALaRM control	
PURPOSE	This command is used to send or stop the alarm tone to the all teleconference terminals (rooms) in multipoint teleconference group. The alarm tone may be used for such as an alert to tell the end of the conference.	
	<i>Note:</i> The alarm tone cor CODEC.	nes out from speaker connected to VisuaLink 5000 TV
INPUT FORMAT	ALRM_g_x حا	
	EXPLANATION OF I	NPUT PARAMETERS
	g= A or B Specifies the sent.	e teleconference group name to which the alarm tone is
	x= ON, OFF, A Specifies the OFF: the ala ON: the alan A: one shot B: one shot C: continuo	, B, or C e following: arm tone is stopped (not sent). rm tone is sent (activated). alarm tone (pi) is once sent. alarm tone (pi—) is once sent. us one shot alarm tone (pi — pi · pi · pi) is once sent.
RESPONSE FORMAT	NORMAL RESPONSE:	ОК
	ERROR RESPONSE:	ERR01 ERR05 ERR31
EXAMPLE	ALRM_A_C → OK	

COMMAND NAME	Education QUestion Request	
PURPOSE	This command is used to req terminal to the instructor term performed in case that the in error in multi point connection	uest the question/speech from the specified lectured ninal in lecture connection. This command cannot be structor terminal is specified. This command causes on status.
INPUT FORMAT	$EQRC[\_g]_r[\_m] \leftarrow I$	
	EXPLANATION OF IN	PUT PARAMETERS
	g= A, B or no val Specifies the t teleconference entered), A is	ue eleconference group name to which the specified room is belong. If this parameter is no value (not used.
	r= 1 ~ 8 or 1 ~ 14 Specifies the terminal. Vali Master connect Slave connect	eleconference room number for the specified lectured d values for r are: tion only: $1 \sim 8$ on: $1 \sim 14$
	m: Specifies the r	nessage to be sent. (up to 40 byte).
<b>RESPONSE</b> FORMAT	NORMAL RESPONSE:	ОК
TORUM	ERROR RESPONSE:	ERR01 ERR05 ERR13 ERR31
EXAMPLE	EQUR_B_3_QUESTION	<b>ب</b>
	OK EQRI_B_03_QUESTION	(Note)
	<i>Note 1:</i> This line is display Refer to COP-215	red on MCU console as the response for command.
	<i>Note 2:</i> Available in ECO	M mode.

COMMAND NAME	Education Question Request Cancel	
PURPOSE	This command is used to callectured terminal to the inst cannot be performed in case command causes error in m	nncel the request of question/speech from a specified ructor terminal in lecture connection. This command e that the instructor terminal is specified. This ulti point connection status.
INPUT FORMAT	$EQRC[\_g]_r[\_m] \downarrow$	
	EXPLANATION OF IN	NPUT PARAMETERS
	g= A, B or no va Specifies the teleconference entered), A is	lue teleconference group name to which the specified er room is belong. If this parameter is no value (not s used.
	r= 0, 1 ~ 8, or 1 Specifies the terminal. If t Valid values Master connec Slave connec	~ 14 teleconference room number for the specified lectured his parameter is 0, all lectured terminals are specified. for r are: ection only: $1 \sim 8$ tion: $1 \sim 14$
	m: Specifies the	message to be sent. (up to 40 byte).
RESPONSE	NORMAL RESPONSE:	ОК
FORMAI	ERROR RESPONSE:	ERR01 ERR05 ERR13 ERR31
EXAMPLE	EQRC_B_3_END  OK EQCI_B_03_END (Note	)
	<i>Note 1:</i> This line is displa command. Refer	ayed on MCU console as the response for the to <b>COP-216</b> .
	<i>Note 2:</i> Available only in	ECON mode.

COMMAND NAME	Education permission of TaLK
PURPOSE	This command limits the talk to one (specified) terminal within a multipoint teleconference session. If the teleconference room number has no value, talk for all terminals will be inhibited.
INPUT FORMAT	$ETLK[\_g][\_r_1\_r_2\dots\_r_i] \checkmark$
	EXPLANATION OF INPUT PARAMETERS
	<ul> <li>g= A or B</li> <li>Specifies the group name to which the specified teleconference room(s) will belong. A is used as default if this parameter is left blank.</li> </ul>
	$r_i = 1 \sim 8 \text{ or } 1 \sim 14$
	Specifies the teleconference room number for a specific terminal. Varied values for $r_i$ are:
	Master connection only: $1 \sim 8$
	Slave connection: $1 \sim 14$
RESPONSE FORMAT	NORMAL RESPONSE: OK
	ERROR RESPONSE: ERR01 ERR05 ERR13 ERR31
EXAMPLE	ETLK_A_2 I

*Note:* Can not use in RCON mode.

COMMAND NAME	Control of Monitor Picture Request	
PURPOSE	This command is used to change the monitor picture on display from a broadcasting terminal to the picture from a specified terminal.	
INPUT FORMAT	$CMPR[\_g]\_r \leftarrow J$	
	EXPLANATION OF INPUT PARAMETERS	
	g= A or B Specifies the group name to which the specified teleconference room(s) will belong. A is used as default if this parameters is left blank.	
	<ul> <li>r= 1 ~ 8 or 1 ~ 14</li> <li>Specifies the teleconference room number for the specified lectured terminal. The broadcasting terminal can be specified. Valid values to r are:</li> <li>Master connection only: 1 ~ 8</li> <li>Slave connection: 1 ~ 14</li> </ul>	
<b>RESPONSE</b> FORMAT	NORMAL RESPONSE: OK	
	ERROR RESPONSE: ERR01 ERR05 ERR13 ERR31	
EXAMPLE	CMPR_2 , J OK CMPI_A_1_2 (Note)	
	<i>Note 1:</i> This line is displayed on MCU console as a response for command. Refer to <b>COP-218</b> .	
	<i>Note 2:</i> Can not use in RCON mode.	

COMMAND NAME	Control of Status Read Request	
PURPOSE	This command is used to display the following status concerning a specified terminal that is participating in the teleconference.	
	• H.221 frame is synchronized or out of synchronization.	
	• Conference room participating status. (participating or not participating).	
	• The control terminal (TC 5000) is connected to specified terminal or not (not supported).	
	• The specified terminal detects a voice (a speaker) or not.	
	• The switch on a microphone is set to ON or OFF.	
	• The specified terminal requests speech or not.	
	• Operator privilege is assigned or not.	
	• The room number of a broadcasting terminal.	
	• The room number of a terminal of which the picture is received at a broadcasting terminal.	
	• The room number of a transmit terminal when the specified terminal receives the picture from a transmit terminal.	
	• Instructor terminal.	
INPUT FORMAT	$CSRR[\_g]\_r \leftarrow I$	
	EXPLANATION OF INPUT PARAMETER	
	g= A, B, or no value Specifies the teleconference group name for the terminal to be displayed the current status. If this parameter is no value (not entered), A is used.	
	r= 1 ~ 8 or 1 ~ 14 (MCON mode) or 1 ~ 252 (RCON mode)	

1 ~ 8 or 1 ~ 14 (MCON mode) or 1 ~ 252 (RCON mode)
 Specifies a teleconference room number of a terminal to be displayed the current status. Valid value for r is:
 Master connection only: 1 ~ 8
 Slave connection: 1 ~ 14

(continued)

RESPONSE FORMAT	NORMAL RE	$ g_a b_c d_e f_h i_j k_l OK $
	EXPLANA	ATION OF RESPONSE PARAMETERS
	g=	A or B Indicates the teleconference group name.
	a=	<ol> <li>1 or 0</li> <li>Indicates the status of H.221 frame synchronization.</li> <li>1: synchronized</li> <li>0: out of synchronization</li> </ol>
	b=	<ol> <li>1 or 0</li> <li>Indicates whether the terminal is participating in teleconference or not.</li> <li>1: participating</li> <li>0: not participating</li> </ol>
	c=	1 or 0 Indicates whether the terminal is multi-connected or not. 1: multi-connected 0: not multi-connected
	d=	1 or 0 Indicates whether the terminal detects the voice or not. 1: detecting 0: not detecting
	e=	1 or 0 Indicates whether speech is permitted or not 1: permitted 0: not permitted
	f=	1 or 0 Indicates whether speech is requested or not 1: requested 0: not requested
	h=	00 ~ 14 Indicates the room number for teleconference room which is assigned operator privilege. 00 means that operator privilege is not assigned.

(continued)

	i= 01 ~ 14 Indicates the teleconference room number of the broadcasting terminal.
	<ul> <li>j= 01 ~ 14</li> <li>Indicates the teleconference room number of terminal of which the picture is received at the broadcasting terminal.</li> </ul>
	<ul> <li>k= 00 ~ 14</li> <li>Indicates the teleconference room number of the transmit terminal when the specified terminal receives the picture from the transmit terminal. 00 means that the specified terminal does not receive the picture currently.</li> </ul>
	<ul> <li>l= 00 ~ 14</li> <li>Indicates the teleconference room number of the instructor terminal in ECON status. 00 means that the connection is in MCON status.</li> </ul>
	<i>Note 1:</i> Indicators a through f express the operation status of each teleconference room. See Table.
	<i>Note 2:</i> Indicators h though l express the information of a specified teleconference room.
	ERROR RESPONSE: ERR01 ERR05 ERR13 ERR31
EXAMPLE	CSRR_B_2 -J B_000F_000E_000E_000E_0004 00 02 04 00 01 OK

NECA 340-414-300 Revision 2.0

(continued)

STATUS	TEI	LECON	FERE	NCE
	R	OOM N	JUMBE	ER
RESPONCE	1	2	3	4
FORM				
XXX0	0	0	0	0
XXX1	1	0	0	0
XXX2	0	1	0	0
XXX3	1	1	0	0
XXX4	0	0	1	0
XXX5	1	0	1	0
XXX6	0	1	1	0
XXX7	1	1	1	0
XXX8	0	0	0	1
XXX9	1	0	0	1
XXXA	0	1	0	1
XXXB	1	1	0	1
XXXC	0	0	1	1
XXXD	1	0	1	1
XXXE	0	1	1	1
XXXF	1	1	1	1
X=0 or 1				
<i>Note:</i> These room number	rs are av	ailable	in mast	er
connection only or	slave co	nnectio	n.	

(continued)

STATUS	TEI R	LECON OOM N	IFEREN NUMBE	NCE ER
RESPONCE FORM	5	6	7	8
XX0X	0	0	0	0
XX1X	1	0	0	0
XX2X	0	1	0	0
XX3X	1	1	0	0
XX4X	0	0	1	0
XX5X	1	0	1	0
XX6X	0	1	1	0
XX7X	1	1	1	0
XX8X	0	0	0	1
XX9X	1	0	0	1
XXAX	0	1	0	1
XXBX	1	1	0	1
XXCX	0	0	1	1
XXDX	1	0	1	1
XXEX	0	1	1	1
XXFX	1	1	1	1
X=0 or 1				

*Note:* These room numbers are available in master connection only or slave connection.

(continued)

	STATUS	TEI	LECON	FERE	NCE
	$\leq$	К	OOM I	NUMBI	SK .
RESPON	CE	9	10	11	12
FORM					
	X0XX	0	0	0	0
	X1XX	1	0	0	0
	X2XX	0	1	0	0
	X3XX	1	1	0	0
	X4XX	0	0	1	0
	X5XX	1	0	1	0
	X6XX	0	1	1	0
	X7XX	1	1	1	0
	X8XX	0	0	0	1
	X9XX	1	0	0	1
	XAXX	0	1	0	1
	XBXX	1	1	0	1
	XCXX	0	0	1	1
	XDXX	1	0	1	1
	XEXX	0	1	1	1
	XFXX	1	1	1	1
X=0 or 1	X=0 or 1				
Note:	These room number	rs are av	ailable	in mast	er
	connection only or s	slave co	nnectio	n.	

STATUS	TELECON ROOM N	FERENCE JUMBER
RESPONCE	13	14
FORM		
OXXX	0	0
1XXX	1	0
2XXX	0	1
3XXX	1	1
X=0 or 1		
<i>Note:</i> These room number connection.	rs are availab	le in slave

(continued)

RESPONSE FORMAT	RCON mode					
	g r abcde fff hhh jjj kkk ll mmm nnn oo ppp qqq rrr OK					
	EXPLANAT	ON OF INPUT PARA	ME	TER		
	a ~ e indi	cate operator status of	spe	cific conferenc	e ro	om
	a = Partic	cipation status	1:	Participation	0:	No participation
	b = Confe	erence terminal	1:	Connection	0:	No connection
	c = Voice	detection function	1:	Valid	0:	Invalid
	d = Perm	ission or speech status	1:	Permit	0:	Prohibit
	e = Reque	est for speech status	1:	Request	0:	No request
	In fff ~ ri indicated	r, information which co	onc	ern specific co	nfer	ence room will be
	fff =	Conference room num	ıbeı	: (00 ~ 252) wi	th o	perating authority.
		When 00, there is no o	oper	rator.		
	$hhh = \dots$	Conference room num	ibei	$(01 \sim 252)$ of $(01 \sim 252) = 1$	tran	smission source.
	$\mathfrak{M} =$	conference room num		$(01 \sim 252)$ wr	nicn	is received by the
	kkk –	Conformed room num	on s	(01 - 252) of	orio	inal broadcasting
	<u>ккк</u> —	source	IUCI	$(01 \sim 232) 01$	ong	inal broadcasting
	111 =	Conference room num terminal of original br	nbei oad	(01 ~ 252) wh casting source	nich	is received by the
	mmm =	Conference room num	ıbeı	$(01 \sim 252)$ of	send	d picture of its own.
	nnn =	Conference room num terminal when receiving	nbei ng s	(01 ~ 252) rec specific picture	ceive	ed by sending
	000 =	Conference room num terminal when receivi	nbei ng s	$(01 \sim 252)$ of specific picture	orig	inal received by
	ppp =	Conference room num broadcast terminal.	ıbeı	(01 ~ 252) of	orig	inal specific
	qqq =	Conference room num transmission.	nbei	(01 ~ 252) of	orig	inal LSD
	rrr =	Conference room num	ıbeı	(01 ~ 252) of	orig	ginal HSD

transmission.

COMMAND NAME	Command MesS	aGe request	
PURPOSE	This command is multipoint confe location is specif	s used to dis prence by me fied, @ iden	play the message into the terminal taking part in the ans of superimposing method. If the message tifier is used.
	<i>Note:</i> This con equipme	nmand is suj ent.	oported when installing the TC 5000 control
INPUT FORMAT	CMSG[_g]_r[_	_@x:y]_ms	g جا
	EXPLANAT	TION OF IN	PUT PARAMETERS
	g = A Sp tel en	, B, or no va becifies the te leconference itered), A is	lue eleconference group name to which the specified room is belong. If this parameter is no value (not used.
	r = 0 - Sp Ma Sla	~ 8 or $0 ~ 14$ becifies the to aster connection ave connection	eleconference room number of designated terminal etion only : $0 \sim 8$ ton : $0 \sim 14$
	@: Di	isplay location	on identifier
	x= 0 - Sp	~ 23 becifies the h	norizontal display location of the message.
	y= 0 - Sp	~ 5 becifies the v	vertical display location of the message.
	msg: Sp ter 12	becifies the r rminal of des 28 figures)	nessage which is displayed in the screen of the signated conference room number. (The maximum of
RESPONSE	NORMAL RESP	PONSE:	OK
FORMAT	ERROR RESPO	NSE:	ERR01 ERR05 ERR13 ERR31
EXAMPLE	CMSG_2_@1 OK <i>Note:</i> Can not u	0:3_GOOD se in <mark>RCON</mark>	MORNING -

#### SNAM **Mutlipoint Teleconference Control**

COMMAND NAME	Sataraa NAMa
COMMAND NAME	Set area NAME

PURPOSE This command is used to register or delete the area name of a multi-connected terminal in the MCU 5000A memory. The area name of a transmit terminal is displayed on the TV screen at a receive terminal (VisuaLink 5000AD only). The area name is erased from the MCU 5000A memory when the MCU 5000A is turned off. The area name of a terminal can also be registered in a VisuaLink 5000 terminal. In this case, the area name registered in VisuaLink 5000AD is displayed at a receive terminal instead of the area name registered in the MCU 5000A.

**INPUT FORMAT** SNAM[g]  $r_1 = x_1[, r_2 = x_2..., r_i = x_i] \downarrow$ 

#### EXPLANATION OF INPUT PARAMETER

g=	A, B, or no value	
	Specifies the teleconference room number.	If this parameter is no
	value (not entered), A is used.	

1 ~ 8 or 1 ~ 14  $r_i =$ Specifies the room number of a terminal of which the area name is registered. Valid values for r<sub>i</sub> are: Master connection only: 1~8 1~14 Slave connection:

- $x_i = 1 \sim 40$  characters or no value Specifies the area name of a terminal. If this parameter is no value (not entered), the area name already registered is deleted.
- Note: The area name is displayed at a terminal with maximum of 16 characters.

8 9

RESPONSE	NORMAL RESPONSE:	OK
FORMAT		
	ERROR RESPONSE:	ERR01
		ERR18
		ERR19
		ERR31

#### EXAMPLE

SNAM 01=New York 1 ↓ OK *Note:* Invalid in RCON mode.

Note: This command is supported when installing the TC 5000 control equipment.

### RNAM Mutlipoint Teleconference Control

COMMAND NAME	Read area NAMe
PURPOSE	This command is used to retrieve and display the area names of the multi-connected terminals that have been registered in the MCU memory by the <b>SNAM</b> command. The area names are displayed in room number order (01 ~ 14). If an area name of a terminal is not registered, its room number is only displayed.
	<i>Note:</i> This command is supported when installing the TC 5000 control equipment.
INPUT FORMAT	RNAM[_g] ↓
	EXPLANATION OF INPUT PARAMETER
	g= A, B, or no value Specifies the teleconference room number. If this parameter is no value (not entered), A is used.
RESPONSE FORMAT	NORMAL RESPONSE: g $r_1=x_1$ $r_2=x_2$
	ОК
	EXPLANATION OF RESPONSE PARAMETERS
	g= A or B Indicates the teleconference group name.
	$r_i = 01 \sim 08 \text{ or } 01 \sim 14$ Indicates the teleconference room number.
	$x_i = 0 \sim 16$ characters Indicates the area name of the terminal.
	ERROR RESPONSE: ERR01 ERR31

# RNAM Mutlipoint Teleconference Control

(continued)

EXAMPLE	RNAM 🖵
	А
	01=New York 1
	08=
	ОК

*Note:* Invalid in RCON mode.

### RDIR Memory Card Control

COMMAND NAME	Read memory card file DIRectory	
PURPOSE	This command is used to retrieve and display the file directory in the memory card.	
INPUT FORMAT	RDIR L	
RESPONSE FORMAT	NORMAL RESPONSE: n_l_yyyy-mm-dd_hh:mm:ss_ab_vv.vv_x_OK EXPLANATION OF RESPONSE PARAMETERS	
	n=	1 ~ 7E Indicates a file number
	1=	000000 ~ FFFFFF Indicates the data length in a file.
	yyyy-mm-dd=	(0000 ~ 9999)-(01 ~ 12)-(01 ~ 31) Indicates the last update date. yyyy=0000 ~ 9999 (year) mm=01 ~ 12 (month) dd=01 ~ 31 (day)
	hh:mm:ss=	$(00 \sim 23):(00 \sim 59):(00 \sim 59)$ Indicates the last update time hh=00 ~ 23 (hour) mm=00 ~ 59 (minute) ss=00 ~ 59 (second)
	a=	0 or 8 Indicates the file attribute: 0: standard address 8: extended address
	b=	<ul> <li>0, 1, or 3</li> <li>Indicates the file attribute:</li> <li>0: data file</li> <li>1: program file</li> <li>3: start program file</li> </ul>
	vv.vv=	(0-9) (0-9).(0-9) (0-9) Indicates the version of file. Each v is a digit (0 to 9).

# RDIR Memory Card Control

#### (continued)

#### EXPLANATION OF RESPONSE PARAMETERS

x=  $(0 \sim F):(0 \sim F) \text{ or } (0 \sim 1FFF)/(1 \sim 24)$ Indicates the load start address:

Standard address : Segment offset Extended address : Segment/Bank number  $(0 \sim 1FFF)/(1 \sim 24)$ 

ERROR RESPONSE: ERR01 ERR80 ERR81
## RMCV Memory Card Control

COMMAND NAME	Read Memory Card software Version		
PURPOSE	This command is used to display the software version of the memory card, which has been registered for administration of MCU 5000A control program at shipping.		
INPUT FORMAT	RMCV		
RESPONSE FORMAT	NORMAL RESPONSE:	VERvv.vv_OK	
	EXPLANATION OF RESPONSE PARAMETERS vv.vv= (0-9) (0-9).(0-9) (0-9)		
	Indicates the software version of the memory card. Ea digit (0 to 9).		
	ERROR RESPONSE:	ERR01	
		ERR80	
		ERR81	
EXAMPLE	RMCV -		

VER02.20\_OK

## RMCS Memory Card Control

COMMAND NAME	Read Memory Card Signature		
PURPOSE	This command is used to display the following:		
	The status of the memory card:		
	<ul> <li>The memory card is write-protected or not.</li> <li>The voltage of the battery in the memory card is low or not.</li> <li>The memory card is mounted in the MCU 5000A or not.</li> </ul>		
	The type of the memory card:		
	• The type of memory device in the memory card.		
INPUT FORMAT	RMCS		
<b>RESPONSE</b> FORMAT	NORMAL RESPONSE: i b p_k_OK		
	EXPLANATION OF RESPONSE PARAMETERS		
	The status of the memory card:		
	<ul> <li>i= 0 or 1 Indicates whether the memory card is mounded in the MCU 5000A or not.</li> <li>0: not mounted</li> <li>1: mounted</li> </ul>		
	<ul> <li>b= 0 or 1 Indicates whether the voltage of the battery in the memory card is normal or not.</li> <li>0: low battery</li> <li>1: normal</li> </ul>		
	<ul> <li>p= 0 or 1</li> <li>Indicates whether the memory is write-protected or not.</li> <li>0: not write-protected</li> <li>1: write-protected</li> </ul>		

# RMCS Memory Card Control

### (continued)

### EXPLANATION OF RESPONSE PARAMETERS

The type of memory device:

- k= 0, 1, 2, or 3
  - Indicates the type of memory device in the memory card as follows:
    - 0: RAM
    - 1: MASK ROM
    - 2: One Time PROM
    - 3: EEPROM

ERROR RESPONSE: ERR01

#### EXAMPLE

## CPMC Memory Card Control

COMMAND NAME	device CoPy Memory Card		
PURPOSE	This command is used to copy the data from a source memory card (FROM memory card) to target memory card (TO memory card). If the types of SOURCE and TARGET memory cards differ, this command cannot copy the data. After entering this command, the MCU 5000A provides the instructions of copying the memory card.		
	<i>Note:</i> Copying is completed by once or twice inserting of alternate source and target memory cards.		
INPUT FORMAT	CPMC		
RESPONSE FORMAT	NORMAL RESPONSE:		
	CPMC_		
	Insert SOURCE memory card and strike RETURN when ready		
	Insert TARGET memory card and strike RETURN when ready		
	MORE? (Y/N) completed OK		
	ERROR RESPONSE: ERR01 ERR23 ERR80 ERR88		

## SSPR System Setting and Maintenance

COMMAND NAME	Set System PaRameter		
PURPOSE	This command is used to set (or change) the system parameters to the MCU 5000A. The system parameters are stored in the backup memory in the M CONT unit. For the detailed information of the system parameters, refer to System Parameters Manual, NECA 340-414-220.		
INPUT FORMAT	SSPR_ $n_1=x_1[\_n_2=x_2\_\dots\_x_i=x_i] \downarrow$ EXPLANATION OF INPUT PARAMETERS		
	n <sub>i</sub> = 000H ~ 3FFH Specifies the address of system parameter to be set. Valid value for n <sub>i</sub> are: 000H through 3FFH (hexadecimal)		
	<ul> <li>x<sub>i</sub>= 00H ~ FFH</li> <li>Specifies the system parameter value. Valid value for x<sub>i</sub> are:</li> <li>00H through FFH (hexadecimal)</li> </ul>		
RESPONSE	NORMAL RESPONSE: OK		
FURVIAI	ERROR RESPONSE: ERR01		
EXAMPLE	SSPR_3B=01 L OK		

## RSPR System Setting and Maintenance

COMMAND NAME	Read System PaRameter		
PURPOSE	This command is used to retrieve (read) and display the current system parameter stored in the M CONT unit.		
INPUT FORMAT	$RSPR[\_n] \leftarrow I$		
	EXPLANATION OF INPUT PARAMETER		
	<ul> <li>n= 000H ~ 3FFH</li> <li>Specifies the address of system parameter to be retrieved. If this parameter is no value (not entered), all addresses of system parameters are specified. Valid values for n are:</li> </ul>		
	000H through 3FFH (hexadecimal)(L: 000H ~ 0FFH/H:100H ~ 1FFH) (XL: 200H ~ 2FFH/XH: 300H ~ 3FFH)		
RESPONSE FORMAT	NORMAL RESPONSE: n=x_OK (Address is specified)		
	$n_1 = x_1 x_2 x_3 \dots x_7 x_8 \dots$ (addresses are not specified.) $n_2 = x_1 x_2 x_3 \dots x_7 x_8 \dots$		
	· · · · · · · · · · · · · · · · · · ·		
	$n_i = x_1 n_2 = x_2 \dots n_i = x_i \dots$		
	ОК		
	EXPLANATION OF RESPONSE PARAMETERS		
	n, ni: The address of system parameter specified in command input (000H ~ 3FF)		
	x, xi: The system parameter value (00H ~ FFH)		
	ERROR RESPONSE: ERR01		
EXAMPLE	RSPR_3B 3B=01_OK		

## ISPR System Setting and Maintenance

COMMAND NAME	Initialize System PaRamet	er
PURPOSE	This command is used to initialize the system parameters. The initial system parameter values, which have been stored in the memory card at shipping, are stored in the backup memory.	
INPUT FORMAT	ISPR ↓	
RESPONSE	NORMAL RESPONSE:	ОК
FORMAT	ERROR RESPONSE:	ERR01 ERR80
EXAMPLE	ISPR ↓ OK	

## SVSP System Setting and Maintenance

COMMAND NAME	SaVe System Parameter		
PURPOSE	This command is used to save (store) the system parameters which have been stored in the backup memory to the memory card.		
INPUT FORMAT	لم SVSP_vv.vv		
	EXPLANATION OF I	NPUT PARAMETER	
	vv.vv= (0-9) (0-9) Specifies th stored. East	. (0-9) (0-9) he software version of the system parameters to be ch v is a digit (0 to 9).	
RESPONSE FORMAT	NORMAL RESPONSE:	ОК	
	ERROR RESPONSE:	ERR01 ERR80 ERR81 ERR82	
EXAMPLE	لہ SVSP_01.23 ل OK		
	<i>Note:</i> MCONT dip switch	8 - ON.	

## RRST System Setting and Maintenance

COMMAND NAME	Request system ReSeT	
PURPOSE	This command is used to reset the MCU 5000A. The MCU 5000A re-loads the initial data in the memory card to each package and returns to POWER ON status.	
INPUT FORMAT	RRST 🖵	
RESPONSE	NORMAL RESPONSE:	ОК
FORMAI	ERROR RESPONSE:	ERR01
EXAMPLE	RRST ↓ OK **** Multi point Teleconf	erence control unit MCU5000A Ver x.xx ****
	Copyright © NEC C	orporation 1991, 1995

# RCLK System Setting and Maintenance

COMMAND NAME	Read system CLocK		
PURPOSE	This command is used to display the system clock (date and time). If the system clock is not correct, set the correct system clock using the <b>WCLK</b> command.		
INPUT FORMAT	RCLK +		
RESPONSE FORMAT	NORMAL RESPONSE: yyyy-mm-dd_hh:mm:ss_OK		
	EXPLANATION OF RESPONSE PARAMETERS		
	yyyy-mm-dd=	(0000 ~ 9999)-(01 ~ 12)-(01 ~ 31) Indicates the current date: yyyy=0000 ~ 9999 (year) mm=01 ~ 12 (month) dd=01 ~ 31 (day)	
	hh:mm:ss=	(00 ~ 23):(00 ~ 59):(00 ~ 59) Indicates the current time: hh=00 ~ 23 (hour) mm=00 ~ 59 (minute) ss=00 ~ 59 (second)	
	ERROR RESPONSE:	ERR01	
EXAMPLE	RCLK لم 1993-07-12_12:00:00_	OK	

# WCLK System Setting and Maintenance

COMMAND NAME	Write system CLocK	
PURPOSE	This command is used to see	et the system clock (date and time) in the MCU 5000A.
INPUT FORMAT	WCLK_yyyy-mm-dd_hh	:mm:ss ها
	EXPLANATION OF I	NPUT PARAMETERS
	yyyy-mm-dd=	(0000 ~ 9999)-(01 ~ 12)-(01 ~ 31) Specifies the current date. Valid values for yyyy, mm, and dd are : yyyy =0000 ~ 9999 (year) mm =01 ~ 12 (month) dd =01 ~ 31 (day)
	hh:mm:ss=	$(00 \sim 23)$ : $(00 \sim 59)$ : $(00 \sim 59)$ Specifies the current time. Valid values for hh, mm, and ss are : hh=00 ~ 23 (hour) mm=00 ~ 59 (minute) ss =00 ~ 59 (second)
RESPONSE FORMAT	NORMAL RESPONSE:	ОК
-	ERROR RESPONSE:	ERR01
EXAMPLE	WCLK_1993-07-12_12:0 OK	لم 00:00

## RLCS System Setting and Control

COMMAND NAME	Remote Loop Command Send		
PURPOSE	This command is used to request a specified terminal (VL 5000) to perform or reset C & I (Control & Indication) remote loopback. When receiving this command, the VL 5000 terminal loops a input signal back to the MCU 5000A and gets into loopback test state.		
INPUT FORMAT	RLCS_g_r_x		
	EXPLANATION OF INPUT PARAMETERS		
	g= A or B Specifies the teleconference group name.		
	r= 1 though 8 or 1 though 14 Specifies a teleconference room number of a terminal to be requested the C & I remote loopback. Valid values for r are:		
	Master connection only: $1 \sim 8$		
	Slave connection: $1 \sim 14$		
	<ul> <li>x= V, D, A, or 0</li> <li>Specifies the kink of loopback test. If 0 is specified, the C &amp; I remote loopback is removed. Valid values for x are:</li> </ul>		
	<ul> <li>V: loopback test for video signal</li> <li>D: loopback test for digital signal</li> <li>A: loopback test for audio signal</li> <li>0 : removal of loopback test (Loopback reset)</li> </ul>		
RESPONSE	NORMAL RESPONSE: OK		
FORMAI	ERROR RESPONSE: ERR01 ERR13		
EXAMPLE	RLCS_A_5_D I		

### STLP System Setting and Maintenance

**COMMAND NAME** Set for Test of LooPback

**PURPOSE**This command is used to make or remove a loop for the local or remote loopback<br/>test in the MCU 5000A. The loopback test is performed by the **TLOP** command.<br/>After loopback test, the loop should be removed by **RTLP** (reset loopback test)<br/>command.

*Note:* The MCU 5000A has the following loopback function to check the its internal signal paths:

• Local-side loopback: The MCU loops back a test signal at one point (A, B, ... etc., see Fig. 1 and 2) within the MCU 5000A. This test signal is send from the Pattern Generator in the V SW/LSD package, and received and checked by the Pattern Checker in the V SW/LSD package.

The MCU 5000A can perform the following local loopback test:

- Loopback test for video signal
- Loopback test for audio signal
- Loopback test for low-speed data (LSD) signal
- Loopback test for console
- Remote-side loopback: The MCU 5000A loops the input signal back to the output at one point (A, B, ... etc., see Fig. 1 and 2) within the MCU 5000A. The input signal is send back to the associated remote terminal through the MCU 5000A.

In addition to the loopback stated above, the MCU 5000A can do the loopback test for the console. The point at which signal is looped back is set by the **STLP** command. For the loopback test for console, the loopback point setting is not necessary because it is automatically set.



Figure 1: Loopback Point for 1.5M LIF INTERFACE



Figure 2: Loopback Point for RS 422 LIF INTERFACE

# STLP System Setting and Maintenance (continued)

INPUT FORMAT	$STLP_xy_p_1[_p_2] \leftarrow$	
	EXPLANATION OF INPUT PARAMETERS	
	<ul><li>x= A, B, C, D, E, F, G, H, or P</li><li>Specifies the point at which the test or input signal is looped bac</li><li>If P is specified, the test loop is removed. Valid values for x are</li></ul>	: :
	A, B, C, D, E, F, G, H, or P	
	<ul> <li>y= L or R</li> <li>Specifies the type of loopback. Valid values for y are:</li> <li>L: local-side loopback</li> <li>R: remote-side loopback</li> </ul>	
	$p_1$ = 1-8 for teleconference port number or 1-16 for physical line num Specifies the number of the teleconference port to be tested or the number of the physical line to be tested. This parameter is specifi- depending upon the parameters x and y. Valid values for $p_1$ are:	ıber 1e ied
	Teleconference port number: $1 \sim 8$	
	Physical line number: $1 \sim 16$	
	<ul> <li>p<sub>2</sub>= 0 or 9</li> <li>Specifies the bit rate. This parameter is specified depending upor the parameters x and y. Valid values for p<sub>2</sub> are:</li> <li>0: bit rate used for teleconference video</li> <li>9: 1.536 Mb/s</li> </ul>	on

# STLP System Setting and Maintenance

(continued)

The combinations of the parameters x, y,  $p_1$ , and  $p_2$  are shown below.

<u>х</u> у	p_1_p_2	LOOPBACK
A L	<ul> <li>p<sub>1</sub>=1 to 8: teleconference port number</li> <li>p<sub>2</sub>=0: bit rate used for teleconference video</li> <li>9: 1.536Mb/s</li> </ul>	Local-side loopback at A
ΒL	$p_1=1$ to 8: teleconferences port number $p_2=$ not used	Local-side loopback at B
C L	$p_1=1$ to 8: teleconferences port number $p_2=$ not used	Local-side loopback at C
D L	$p_1=1$ to 8: teleconferences port number $p_2=$ not used	Local-side loopback at D
ΕL	$p_1=1$ to 16: physical line number $p_2=$ not used	Local-side loopback at E
ΓL	$p_1=1$ to 16: physical line number $p_2=$ not used	Local-side loopback at F
ΗL	$p_1=1$ to 8: teleconferences port number $p_2=$ not used	Local-side loopback at H
A R	<ul> <li>p<sub>1</sub>=1 to 8: teleconferences port number</li> <li>p<sub>2</sub>=0: bit rate used for teleconference video</li> <li>9: 1.536Mb/s</li> </ul>	Remote-side loopback at A
C R	$p_1=1$ to 8: teleconferences port number $p_2=$ not used	Remote-side loopback at C
D R	$p_1=1$ to 254: logical line number $p_2=$ not used	Remote-side loopback at D
ER	$p_1=1$ to 16: physical line number $p_2=$ not used	Remote-side loopback at E
FR	$p_1=1$ to 16: physical line number $p_2=$ not used	Remote-side loopback at F

	STLP System Setting and Maintenanc (continued)	e
	<u>x</u> <u>y</u> p <sub>1</sub> ,p <sub>2</sub>	LOOPBACK
	G $p_1=1$ to 8: physical line number $p_2=$ not used	Local-side loopback at G
	P $p_1$ = not used $p_2$ = not used	The test loop is removed.
RESPONSE	NORMAL RESPONSE: OK	
FORMAI	ERROR RESPONSE: ERR01	
EXAMPLE	$STLP_FL_1 \leftarrow OK$	

## TLOP System Setting and Maintenance

COMMAND NAME	Test of LOoPback		
PURPOSE	This command is used to perform a loopback test for the loop made by the <b>STLP</b> command.		
INPUT FORMAT	$TLOP\_x\_p_1\_p_2\_p_3\_p_4 \leftarrow I$		
	EXPLANATION OF INPUT PARAMETERS		
	x= V, I Spe V: L: A: C:	L, A, or C ecifies the king of loopback test. Valid values for x are: loopback test for video signal loopback test for low-speed data signal loopback test for audio signal loopback test for console	
	p <sub>1</sub> , p <sub>2</sub> , p <sub>3</sub> , p <sub>4</sub> : changes depending upon the value of parameter x as follows:		
	(1) For $x = V$		
	p <sub>1</sub> =	<ul> <li>1 ~ 8</li> <li>Specifies the teleconference port number to be tested. Valid values for p<sub>1</sub> are:</li> <li>1 through 8</li> </ul>	
	p <sub>2</sub> =	<ul> <li>0 or 9</li> <li>Specifies the bit rate. Valid values for p<sub>2</sub> are:</li> <li>0: bit rate used for teleconference video</li> <li>9: 1.536 Mb/s</li> </ul>	
	p <sub>3</sub> =	<ul> <li>1_255</li> <li>Specifies the duration time (second) of loopback test. If this parameter is no value (not entered), 1 (second) is specified. Valid values for p<sub>3</sub> are:</li> <li>1 through 255 (second)</li> </ul>	
	p <sub>4</sub> :	not used	

### TLOP System Setting and Maintenance

(continued)

- (2) For x=L
  - $p_1 = 1 \sim 8$

Specifies a teleconference port number to be tested. Valid values for  $p_1$  are: 1 through 8

- p<sub>2</sub>: not used
- p<sub>3</sub>: not used
- p<sub>4</sub>: not used
- (3) For X = A
  - $p_1 = 1 \sim 8$

Specifies a teleconference port number to be tested. Valid values for  $p_1$  are: 1 through 8

#### $p_2 = L, R, C, I, or S$

Specifies the audio test signal condition. Valid values for p<sub>2</sub> are:

L: The returned audio test signal level is measured when test signal is outputted to the specified port for 500ms.

- R: The audio signal level is measured.
- C: The continuous audio test signal is outputted (TONE 1).
- I: The continuous audio test signal is outputted (TONE 2).
- S: The audio test signal is stopped outputting.

### $p_3 = 0, 1, 2, \text{ or } 3$

Specifies the output level of test signal generated by the Pattern Generator. Valid values for  $p_3$  are:

- 0: 0 dBm0
- 1: -12 dBm0
- 2: -24 dBm0
- 3: -36 dBm0
- $p_4 = 0, 1, 2, \text{ or } 3$

Specifies a frequency of test signal. Valid values for  $p_4$  are:

- 0: 500 Hz
- 1: 800 Hz 2: 1000 Hz
- 2. 1000 HZ
- 3: 1600 Hz

			TLOP
	System	Setti	ing and Maintenance (continued)
	(4)	For X	=C
		p <sub>1</sub> =	1, 2, or 3 Specifies the number of a console directly connected to the MCU. Valid values for $p_1$ are: 1 through 3
		p <sub>2</sub> =	<ul> <li>0 or 1</li> <li>Specifies the type of loopback test. Valid values for p<sub>2</sub> are:</li> <li>0: Internal (Serial I/O) loopback (automatically)</li> <li>1: External loopback (control signal is tested.)</li> </ul>
		p <sub>3</sub> :	not used
		p <sub>4</sub> :	not used
RESPONSE FORMAT	NORMAL R	ESPON	USE: OK (except below) $p_2$ _OK (See Note)
	<i>Note:</i> This	norma	l response is the example of $x=A$ , $p_2=L$ or R.
	EXPLAN	NATION	N OF RESPONSE PARAMETERS
	p <sub>2</sub> =	0, -12, Indica comm	, -24, or -36 tes the output level (dBm 0) of test signal specified in the and input.
	ERROR RES	SPONSI	E: ERR01 ERR90 ERR91
EXAMPLE			
	TLOP_V_1 OK	_9_2	<u>جا</u>

## RTLP System Setting and Maintenance

COMMAND NAME	ReseT LooPback test			
PURPOSE	This command is used to reset (remove) all loopback tests.			
INPUT FORMAT	RTLP →			
RESPONSE	NORMAL RESPONSE:	ОК		
FORMAI	ERROR RESPONSE:	ERR01		
EXAMPLE	RTLP ↓ OK			

### RROM Maintenance and Test

COMMAND NAME	Read ROM version		
PURPOSE	This command is used to display the version of the ROM mounted in the MCONT unit.		
INPUT FORMAT	RROM ←		
RESPONSE FORMAT	NORMAL RESPONSE: VER vv.vv_OK		
	EXPLANATION OF RESPONSE PARAMETER		
	vv.vv= (0-9) (0-9).(0-9) (0-9) Indicates the version of the ROM. Each v is a digit (0 to 9).		
	ERROR RESPONSE: ERR01		
EXAMPLE	RROM L VER 01.10_OK		
#### GRRC Multipoint Teleconference/Lecture Control

COMMAND NAME	Global Response Receive Control
PURPOSE	This command is used to send the global indication to all MCU consoles in one teleconference group. This command is stored in the backup memory.
	<i>Note:</i> The global indication is to be the result of a command execution that is sent to all MCU consoles in one teleconference group through the MCU 5000A. For the global indication, refer to Section 4 in INT-001 of this practice.
INPUT FORMAT	GRRC_x ←
	EXPLANATION OF INPUT PARAMETERS
	<ul><li>x= ON or OFF</li><li>Specifies the following:</li><li>ON: the global indication is sent (ON mode).</li><li>OFF: the global indication is not sent (OFF mode).</li></ul>
EXAMPLE	GRRC_ON لم OK

#### RCAP Multipoint Teleconference/Lecture Control

COMMAND NAME	Read terminal CAPability
PURPOSE	This command is used to retrieve and display the capability parameter values of the specified terminal that is multi-connected. These parameters are displayed only when the H242 capability exchange parameter (system parameter) is set to ON.
	<i>Note:</i> The H242 capability is set in system parameter of <b>NECA 340-414-220</b> .
INPUT FORMAT	RCAP_r →
	EXPLANATION OF INPUT PARAMETER
	<ul> <li>r= 1 ~ 8</li> <li>Specifies the teleconference room number of the terminal of which the capability parameters are displayed. Valid values for r are: 1 through 8</li> </ul>
RESPONSE	NORMAL RESPONSE:
FORMAT	x <sub>1</sub> _x <sub>2</sub> _x <sub>3</sub> _x <sub>4</sub> _x <sub>5</sub> _x <sub>6</sub> _x <sub>7</sub> _x <sub>7</sub> _x <sub>8</sub> _x <sub>9</sub> _x <sub>10</sub> _x <sub>11</sub> _x <sub>12</sub> _x <sub>13</sub> _x <sub>14</sub> _x <sub>15</sub> _OK
	EXPLANATION OF RESPONSE PARAMETERS
	$x_1$ : indicates the audio capability
	$x_2$ : indicates the transmit bit rate capability
	$x_3$ : indicates the video capability
	$x_4$ : indicates the low-speed data (LSD) capability
	$x_5$ : indicates the high-speed data (HSD) capability
	$x_6$ : indicates the MLP capability
	$x_7$ : indicates the network type capability
	$x_8$ : indicates the encryption capability
	$x_9$ : indicates the MBE capability
	$x_{10}$ : indicates the MBE message 1 (audio)
	$x_{11}$ : indicates the MBE message 2 (LSB2)
	$x_{12}$ : indicates the MBE message 3 (audio)
	$x_{13}$ : application BAS capability
	$x_{14}$ : H.243 capability #1 (TIC)
	$x_{15}$ : H.243 capability #2 (CIC)

*Note:* For the parameters  $x_1$  through  $x_{12}$ , refer to **NECA 340-414-220**.

## RCAP Multipoint Teleconference/Lecture Control

(continued)

ERROR RESPONSE: ERR01 ERR13

EXAMPLE RCAP\_1 →

## RMOD Multipoint Teleconference/Lecture Control

COMMAND NAME	Read terminal send MODe
PURPOSE	This command is used to retrieve and display the transmit modes of the specified terminal that is connected to the MCU 5000A.
INPUT FORMAT	RMOD_r ←
	EXPLANATION OF INPUT PARAMETER
	<ul> <li>r= 1 ~ 8</li> <li>Specifies the room number of the terminal of which the transmit modes are displayed. Valid values for r are:</li> <li>1 through 8</li> </ul>
RESPONSE FORMAT	NORMAL RESPONSE: $x_1_x_2_x_3_x_4_x_5_x_6_x_7_x_7_x_8_x_9_x_{10}_x_{11}_x_{12}_OK$
	$x_1$ :indicates the audio mode $x_2$ :indicates the transmit bit rate mode $x_3$ :indicates the video mode $x_4$ :indicates the low-speed data (LSD) mode $x_5$ :indicates the high-speed data (HSD) mode $x_6$ :indicates the MLP mode $x_7$ :indicates the network type mode $x_8$ :indicates the encryption mode $x_9$ :indicates the MBE mode $x_{10}$ :indicates the MBE message 1 (audio) $x_{11}$ :indicates the MBE message 3 (video)
	<i>Note:</i> For the parameters $x_1$ through $x_{12}$ , refer to <b>NECA 340-414-220</b> . ERROR RESPONSE: ERRO1
	ERR13
EXAMPLE	RMOD_1 →

# COPI Multipoint Teleconference Indication

EXPLANATION	This indication notifies the assignment or cancellation of the operator privilege for the specified teleconference terminal. The indication appears after the execution of [ <b>COPR</b> command of the MCU console] or also, the assignment/cancellation of the operator privilege from TC5000 terminal.
RELATED COMMAND	COPR
FORMAT	COPI_g_r_x
	EXPLANATION OF PARAMETERS
	g= A or B Indicates the teleconference group name.
	r= 01 ~ 14 (1 ~ 252: RCON mode) Indicates the teleconference room number which is assigned or canceled the operator privilege.
	<ul> <li>x= ON or OFF</li> <li>Indicates the operator privilege status. Valid values for x are:</li> <li>ON: The operator privilege is assigned.</li> <li>OFF: The operator privilege is canceled.</li> </ul>
EXAMPLE	COPR_1_ON لم OK COPI_A_01_ON

# CSPI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that a terminal is broadcasting. This is indicated after <b>CSPR</b> command of MCU console is executed, and also, the request of broadcasting from TC5000 terminal or the broadcasting by voice detection is executed.
RELATED COMMAND	CSPR
FORMAT	CSPI_g_r[_xxx] EXPLANATION OF PARAMETER g= A or B Indicates the teleconference group name. r= 01 ~ 14 (1 ~ 252: RCON mode) Indicates the teleconference room number of a broadcasting
EXAMPLE	terminal. xxx = ON  or OFF (only RCON mode) $CSPR_5 \downarrow$ OK CSPI A 05

# CRPI Multipoint Teleconference Indication

EXPLANATION	This indication notifies one transmitting terminal and one receive terminal which is receiving the picture from the transmitting terminal. This is indicated after <b>CRPR</b> command of MCU console is executed, and also, the request of receive picture from TC5000 terminal is executed.
RELATED COMMAND	CRPR
FORMAT	$CRPI\_g\_r_1\_r_2\_x$
	EXPLANATION OF PARAMETERS
	g= A or B Indicates the teleconference group name.
	$r_1 = 01 \sim 14 (1 \sim 252: \text{ RCON mode})$ Indicates the teleconference room number of a receiving terminal.
	r <sub>2</sub> = 01 ~ 14 (1 ~ 252: RCON mode) Indicates the teleconference room number of a transmitting terminal.
	<ul> <li>x= On or OFF Indicates whether transmit and receive terminals are connected or not.</li> <li>ON: transmit and receive terminals are connected by the CRPR command.</li> <li>OFF: transmitting and receiving terminals are disconnected by the CRPR command.</li> </ul>
EXAMPLE	CRPR_2_3_ON OK

CRPI A 02 03 ON

# CVCI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that a terminal is detecting a voice (a speaker). This is indicated after the <b>CVCR</b> command of MCU console is executed, and also, the request of voice detection of TC5000 terminal is executed.
RELATED COMMAND	CVCR
FORMAT	CVCI_g_r_x
	EXPLANATION OF PARAMETERS
	g= A or B Indicates the teleconference group name.
	r= 00 ~ 14 Indicates the teleconference room number of a voice detecting terminal.
	<ul> <li>x= ON or OFF</li> <li>Indicates whether a terminal detects a voice or not.</li> <li>ON: detecting</li> <li>OFF: not detecting</li> </ul>
EXAMPLE	CVCR_2_OFF ↓ OK CVCI_A_02_OFF

## STEI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that the still picture of the terminal is broadcasting. This is indicated after the <b>STPR</b> command of MCU console is executed, and also, the request from TC5000 terminal is executed.
RELATED COMMAND	STPR
FORMAT	STEI_g_r
	EXPLANATION OF PARAMETERS
	g= A or B Indicates the teleconference group name.
	r= 01 to 14 Indicates the teleconference room number which broadcasts the still picture.
EXAMPLE	STPR_3 L OK STEI_A_03

# EQRI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that a lectured terminal is asking. This is indicated after the <b>EQUR</b> command of MCU console is executed, and also, the request from TC5000 terminal is executed.
RELATED COMMAND	EQUR
FORMAT	EQRI_g_r[_m]
	EXPLANATION OF PARAMETERS
	g= A or B Indicates the teleconference group name
	r= 01 to 14 Indicates the teleconference room number of the lectured terminal which requests a question or speech.
	m: Indicates the message.
EXAMPLE	EQUR_B_3_QUESTION ↓ OK EQRI_B_03_QUESTION

# EQCI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that the question request, which is performed from the specified lectured terminal to the instructor terminal, is canceled. This is indicated after the <b>EQRC</b> command of MCU console is executed, and also, the cancel request from TC5000 is executed.
RELATED COMMAND	EQRC
FORMAT	EQCI_g_r[_m] EXPLANATION OF PARAMETERS g= A or B Indicates the teleconference group name. r= 01 to 14 Indicates the teleconference room number of the lectured terminal which is canceled. m: Indicates the message.
EXAMPLE	$EQRC\_B\_3\_END \leftarrow I$ $OK$ $EQCI\_B\_03\_END$

## ETKI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that the talk on the specified terminal is permitted. This is indicated after the <b>ETLK</b> command of MCU console is executed, and the permission from TC5000 terminal is executed.
RELATED COMMAND	ETLK
FORMAT	ETKI_g[_ $r_1$ _ $r_2$ $r_i$ ] EXPLANATION OF PARAMETERS
	<ul> <li>g= A of B Indicates the teleconference group name.</li> <li>r<sub>i</sub>= 01 to 14 Indicates the teleconference room number of the terminal which is permitted to talk.</li> </ul>
EXAMPLE	$ETLK\_B\_3\_5 \leftarrow J$ $OK$ $ETKI\_B\_03\_05$

# CMPI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that the picture of the broadcasting terminal has been changed. This is indicated after the <b>CMPR</b> command of MCU console is executed, and the request from TC5000 terminal is executed.
RELATED COMMAND	CMPR
FORMAT	$CMPI\_g\_r_1\_r_2$
	EXPLANATION OF PARAMETERS
	g= A or B Indicates the teleconference group name.
	$r_1 = 01 \sim 14$ Indicates the teleconference room number of the broadcasting terminal.
	$r_2=$ 01 ~ 14 Indicates the teleconference room number which is monitored by the broadcasting terminal.
EXAMPLE	CMPR_2 ↓ OK CMPI_A_01_02

# CJNI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that teleconference terminal is connected to the control terminal unit (TC5000). The teleconference terminal indicated CJNI indication has the control function for multi point teleconference.		
RELATED COMMAND	None		
FORMAT	CJNI_g_r		
	EXPLANATION OF PARAMETERS		
	g= A or B Indicates the teleconference group name.		
	$r_i$ = 01 ~ 14 Indicates the teleconference room number at which the terminal connected to the control terminal unit is located.		
EXAMPLE	CJNI_B_06		
	<i>Note:</i> This means that Power of TC5000, which is located at the teleconference room 6 in teleconference group B, turns on.		

# MCNI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that cascade connection is established. This is indicated after the <b>MCNR</b> command of MCU console is executed.		
RELATED COMMAND	MCNR		
FORMAT	$MCNI\_g\_r_1\_r_2\_\dots\_r_i$		
	EXPLANATION OF PARAMETERS		
	g= A or B Indicates the teleconference group name.		
	$\label{eq:ries} \begin{array}{ll} r_i = & 01 \sim 14 \\ & \mbox{Indicates the teleconference room number at which all terminals are cascade-connected.} \end{array}$		
EXAMPLE	MCNR 3 R384 J A 384kbps OK MCNI A 01 02 03 04		

# MDCI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that cascade connection is disconnected. This is indicated after the <b>MDCR</b> command of MCU console is executed.		
RELATED COMMAND	MDCR		
FORMAT	$MDCI\_g\_r_1\_r_2\_\dots\_ri[ERRx]$		
	EXPLANATION OF PARAMETERS		
	g= A or B Indicates the teleconference group name		
	$r_i = 01 \sim 14$ Indicates the remaining teleconference room number by disconnection of cascade-connection.		
	x: Indicates error code. Refer to the error code list in <b>INT-001</b> .		
EXAMPLE	MDCR_B OK MDCI_B_01_02_03		

# RLCI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that a terminal requests the MCU 5000A to perform or release a remote loopback.		
RELATED COMMAND	None		
FORMAT	RLCI_g_r_x		
	EXPLANATION OF PARAMETERS		
	g= A or B Indicates the teleconference group name.		
	r= 01 ~ 14 Indicates the teleconference room number of a terminal which requests a remote loopback.		
	<ul> <li>x= V, A, D, or 0</li> <li>Indicates the type of signal to be looped back. If 0 is displayed, a remote loopback is removed.</li> <li>V: loop for video signal</li> <li>A: loop for audio signal</li> <li>D: loop for digital signal</li> <li>0: remote loopback is removed</li> </ul>		
EXAMPLE	RLCI_A_03_V (Note)		
	<i>Note:</i> This means that loop setting for video signal is requested from the terminal (VL5000). In this case, video signal for line-side of the teleconference room 3 in the teleconference group A is looped back.		

## ERRI Multipoint Teleconference Indication

EXPLANATION	This indication notifies the following status.	
	<ul> <li>Unmounted units <ul> <li>LIF</li> <li>PG/SIO</li> <li>MUX</li> <li>VSW/LSD</li> <li>A-CODEC</li> <li>A-SUM</li> </ul> </li> <li>Hardware initialization error</li> </ul>	
RELATED COMMAND	None	
FORMAT	ERRI HARDWARE INITIAL ERROR tttt uu ee EXPLANATION OF PARAMETERS e= FE or FF Indicates the type of error. Valid values for e are: FE: Hardware initializing error (hexadecimal) FF: Unit mounting error (hexadecimal) t: Indicates a task.	
	u=Indicates the unit generated error. Valid values for u are: $11 \sim 14$ : $11 \sim 14$ : $20$ : $9G/SIO$ $41 \sim 48$ : $80$ : $81$ : $81$ : $81 \sim A2$ : $A CODEC #1 \sim #2$ $B0$ : $A SUM$	
EXAMPLE	ERRI_FE_1520_10_01 ERRI HARDWARE INITIAL ERROR 1490 B0 FE	

# CSTI Multipoint Teleconference Indication

EXPLANATION	This indication notifies that the status of a terminal is changed in multi point connection.			
RELATED COMMAND	None			
FORMAT	CSTI_g_r_a_b_c_d_e_f_h_i_j_k			
	EXPLANATION OF PARAMETERS			
	g= A or B Indicates the teleconference group name.			
	r= 1 ~ 14 Indicate the teleconference room number of a terminal of which the status is changed.			
	<ul> <li>a= 1 or 0</li> <li>Indicates whether a terminal is participating in the teleconference of not.</li> <li>1: participating</li> <li>0: not participating</li> </ul>			
	<ul> <li>b= 1 or 0</li> <li>Indicates whether a terminal unit is connecting or not</li> <li>1: connecting</li> <li>0: not connecting</li> </ul>			
	<ul> <li>c= 1 or 0</li> <li>Indicates that a terminal detects a voice or not:</li> <li>1: detecting</li> <li>0: not detecting</li> </ul>			
	<ul> <li>d= 1 or 0</li> <li>Indicates that the position of a microphone switch.</li> <li>1: ON</li> <li>0: OFF</li> </ul>			
	<ul> <li>e= 1 or 0</li> <li>Indicates whether a speech is requesting or not:</li> <li>1: requesting</li> <li>0: not requesting</li> </ul>			

#### CSTI Multipoint Teleconference Indication

(continued)

#### EXPLANATION OF PARAMETERS

	f=	$00 \sim 14$ Indicates the teleconference room number assigned the operator privilege. If 00 is displayed, the operator privilege is not assigned to any terminal.
	h=	01 ~ 14 Indicates the teleconference room number of broadcasting terminal.
	i=	$00 \sim 14$ Indicates the teleconference room number of terminal from which the picture is received by a broadcasting terminal.
	j=	00 ~ 14 Indicates the teleconference room number of a transmit terminal from which the picture is received. If 00 is displayed, the picture from a transmit terminal is not received.
	k=	00 ~ 14 Indicates the teleconference room number of a instructor terminal in ECON mode. If 00 is displayed, MCON mode is established.
	<i>Note 1:</i> Indic room	ators a through e express the operation status for each teleconference a. See table.
	<i>Note 2:</i> Indic teleco	ators f through k express the information of a specified onference room. See table.
EXAMPLE	CSTI_A_05_0007_0007_0007_0000_00_02 03_00	
# CSTI Multipoint Teleconference Indication

(continued)

STATUS	TELECONFERENCE ROOM NUMBER		NCE ER	
RESPONCE FORM	1	2	3	4
XXX0	0	0	0	0
XXX1	1	0	0	0
XXX2	0	1	0	0
XXX3	1	1	0	0
XXX4	0	0	1	0
XXX5	1	0	1	0
XXX6	0	1	1	0
XXX7	1	1	1	0
XXX8	0	0	0	1
XXX9	1	0	0	1
XXXA	0	1	0	1
XXXB	1	1	0	1
XXXC	0	0	1	1
XXXD	1	0	1	1
XXXE	0	1	1	1
XXXF	1	1	1	1
X=0 or 1				

STATUS	TEI R	TELECONFERENCE ROOM NUMBER			
RESPONCE FORM	5	6	7	8	
XX0X	0	0	0	0	
XX1X	1	0	0	0	
XX2X	0	1	0	0	
XX3X	1	1	0	0	
XX4X	0	0	1	0	
XX5X	1	0	1	0	
XX6X	0	1	1	0	
XX7X	1	1	1	0	
XX8X	0	0	0	1	
XX9X	1	0	0	1	
XXAX	0	1	0	1	
XXBX	1	1	0	1	
XXCX	0	0	1	1	
XXDX	1	0	1	1	
XXEX	0	1	1	1	
XXFX	1	1	1	1	
X=0 or 1					

# CSTI Multipoint Teleconference Indication

(continued)

	STATUS	TE	LECON	FEREN	ICE
		R	OOM N	IUMBE	R
RESPONCE		9	10	11	12
I OIUI			-	0	0
X0	XX	0	0	0	0
X1	XX	1	0	0	0
X2	XX	0	1	0	0
X3	XX	1	1	0	0
X4	XX	0	0	1	0
X5	XX	1	0	1	0
X6	δXX	0	1	1	0
X7	YXX	1	1	1	0
X8	X8XX		0	0	1
X9	XX	1	0	0	1
XA	XX	0	1	0	1
XB	BXX	1	1	0	1
XC	CXX	0	0	1	1
XD	DXX	1	0	1	1
XE	EXX	0	1	1	1
XF	FXX	1	1	1	1
X=0 or 1		•	•	•	•

STATUS	TELECONFERENCE ROOM NUMBER			
RESPONCE FORM	13	14		
OXXX	0	0		
1XXX	1	0		
2XXX	0	1		
3XXX	1	1		
X=0 or 1				

# CSTI <RCON> Multipoint Teleconference Indication

RESPOSE FORMAT	g r abcde fff hh	ıh jjj kkk ll mmm nr	nn o	o ppp qqq ri	r O	К
	EXPLANAT	ION OF RESPONSE P	AR	AMETER		
	a ~ e indi	cate operator status of	spe	cific conferenc	e ro	om
	a = Partic b = Conf c = Voice d = Perm	cipation status erence terminal detection function ission or speech status	1: 1: 1: 1:	Participation Connection Valid Permit	0: 0: 0: 0:	No participation No connection Invalid Prohibit
	e = Reque	est for speech status	1:	Request	0:	No request
	In fff ~ rr indicated	r, information which co	once	ern specific co	nfer	ence room will be
	fff =	Conference room num When 00, there is no o	nber oper	(00 ~ 252) wi rator.	th o	perating authority.
	hhh =	Conference room num	iber	$(01 \sim 252)$ of	tran	smission source.
	jjj =	Conference room num terminal of transmissi	nber on s	$(01 \sim 252)$ whource.	nich	is received by the
	kkk =	Conference room num source.	nber	(01 ~ 252) of	orig	inal broadcasting
	111 =	Conference room num terminal of original br	nber oad	$(01 \sim 252)$ wh casting source	nich	is received by the
	mmm = nnn =	Conference room num Conference room num terminal when receivi	iber iber	$(01 \sim 252)$ of (01 ~ 252) rec specific picture	senc ceive	d picture of its own. ed by sending
	000 =	Conference room num terminal when receivi	iber	$(01 \sim 252)$ of	orig	inal received by
	ppp =	Conference room num broadcast terminal.	iber	$(01 \sim 252)$ of	orig	inal specific
	qqq =	Conference room num transmission.	ıber	(01 ~ 252) of	orig	inal LSD
	rrr =	Conference room num transmission.	nber	(01 ~ 252) of	orig	ginal HSD

# CDTI Multipoint Teleconference Indication

EXPLANATION	Indication of acquisition/release of data taken. (RCON mode)		
RELATED COMMAND	None		
FORMAT	CDTI_g_r_m	mm_sss_xxx	
	EXPLANA	TION OF PARAMETERS	
	g=	A or B Indicates the teleconference group name.	
	r=	Conference room number of terminal which is acquired or released data taken	
	mmm=	Mode LSD/HSD	
	sss=	Data Speed	
	xxx=	ON or OFF	

# NALT Multipoint Teleconference Indication

EXPLANATION	Display ringing status. (After the call requested, indicate the originator received ringing status report at termination point.)
RELATED COMMAND	None
FORMAT	NALT_n
	EXPLANATION OF PARAMETERS
	n= Logical line number

# NONL Multipoint Teleconference Indication

EXPLANATION	Display communication status. (After requested call and message, report was received, indicate it is available to communicate.)
RELATED COMMAND	None
FORMAT	NONL_n_s_c
	EXPLANATION OF PARAMETERS
	n= Logical line number
	s= B, 2B, H0, 2H0 Line speed
	c= R: 56k, N: 64k Terminal ability

# NDCI Multipoint Teleconference Indication

EXPLANATION	Report of disconnect. (Report the line was disconnected)
RELATED COMMAND	None
FORMAT	NDCI_n_i_s_k_t_c_b_a
	EXPLANATION OF PARAMETERS
	n= Logical line number
	i= c: Transmitting call, I: Receiving call Display receiving message
	s= B, 2B, H0, 2H0 Line speed
	k= R: 56k, N: 64k Terminal attribute
	t= hh:mm:ss (time of B1) Transmission time
	c= #001 ~ #999 - 00 ~ 10 (c = B1, C"=B2 [only when 2B]) Display the reason
	b= /0 ~ /9999990 (receiving call side is /0 Price (Value of B1 + B2)
	a= Terminating address (display only when it was already set up

# NINC Multipoint Teleconference Indication

EXPLANATION	Report receiv message.)	ing message (Report line in ready status has a reception of the
RELATED COMMAND	None	
FORMAT	NINC_n_o_	s_c_a
	EXPLAN	VATION OF PARAMETERS
	n=	Logical line number
	0=	A: Auto, M: Manual Action
	s=	B, 2B, H0, 2H0 Line speed
	c=	R: 56k, N: 64k Terminal attribute

a= Terminating address (display only when it was already set up)

## NCRN ISDN Control

#### **COMMAND NAME**

PURPOSE	Send a call of ISDN line. In case of $2 \times B$ , two lines are connected at one time for the call. In case of $2 \times B$ and multipoint (when H.242 ON) second call will be processed after the first H.242 ability change sequence.			
INPUT FORMAT	NCRNn	a_[s]_[c]		
	EXPLAI	NATION OF I	NPUT PARAMETER	
	n=	1 ~ 254 Logical line r	umber	
	a=	Dial number. #01 ~ #99: 0 ~ 9: *,**: ()-:	Valid values for x are: Speed number Dial number (~ 20 digit) Subaddress (~ 4 digit) Pause code (subaddress, 2B address) Decorative Character	
	s=	Line Speed (I line speed and B: 64kbps 2B: 2 x 64k H0: 384kbp 2H0: 2 x 384	SDN only). When omitted, it will be the minimum d line number. Valid values for x are: (56kbps) bps (2 x 56kbps) s (336kbpd) kbps (2 x 336kbps)	
	c=	Network class 64k digital. V R: 56k res N: 64k dig	sification capability. When omitted, it is regarded as <i>l</i> alid values are: tricted jtal	

## NCRN ISDN Control

(continued)

RESPONSE FORMAT	NORMAL RESPONSE:	ОК
	ERROR RESPONSE:	ERR01
		ERR02
		ERR04
		ERR08
		ERR46
		ERR47
		ERR48
		ERR50
		ERR51
		ERR53
		ERR54
		ERR55
		ERR56
		ERR59
		ERR61
EXAMPLE	NCRN_1_044-435-1000* OK	لم 10**044-435-1001*01_2B_ل

## NDSC ISDN Control

#### **COMMAND NAME**

PURPOSE	Disconnect ISDN line. In case of 2 x B, disconnect twice.	
INPUT FORMAT	NDSC_n ↓	
	EXPLAINATION OF	INPUT PARAMETER
	n= 1 ~ 254	
	Logical line	number
RESPONSE	NORMAL RESPONSE:	ОК
FORMAI	ERROR RESPONSE:	ERR01
		ERR02
		ERR04
		ERR09
		ERR50
		ERR51
		ERR61
EXAMPLE	NDSC 1	
	OK	

## NCIC ISDN Control

#### COMMAND NAME

PURPOSE	When reception report is manual reception received by NINC indication, specify whether to accept this reception.	
INPUT FORMAT	NCIC $n[o] \leftarrow$	
	EXPLAINATION OF INPUT PARAMETER	
	n= 1 ~ 254 Logical line number	
	0= Action. Valid values are: YES: Permit incoming call (when omitted) NO: Reject incoming call	
RESPONSE	NORMAL RESPONSE: OK	
ΓΟΚΝΑΙ	ERROR RESPONSE: ERR01 ERR02 ERR50 ERR51 ERR61	
EXAMPLE	NCIC_1_NO↓ OK	

#### NIWT ISDN Control

# COMMAND NAMEPURPOSESet u

Set up to wait for reception to receive wait for ISDN line.

**INPUT FORMAT** NIWT n\_o\_a\_[s]\_[c]

#### EXPLAINATION OF INPUT PARAMETER

- n= 1 ~ 254 Logical line number
- o= Reception action. Valid values are: A: Automatic (when omitted) M: Manual

a=	Dial number.	Valid values for x are:
	#01 ~ #99:	Speed number
	0 ~ 9:	Dial number (~ 20 digit)
		Subaddress (~ 4 digit)
	*,**:	Pause code (subaddress, 2B address)
	()-:	Decorative Character

- s= Line Speed (ISDN only). When omitted, it will be the minimum line speed and line number. Valid values for x are:
  - B: 64kbps (56kbps)
  - 2B: 2 x 64kbps (2 x 56kbps)
  - H0: 384kbps (336kbpd)
  - 2H0: 2 x 384kbps (2 x 336kbps)
- c= Network classification capability. When omitted, it is regarded as 64k digital. Valid values are:
  - R: 56k restricted
  - N: 64k digital

<b>RESPONSE</b> FORMAT	NORMAL RESPONSE:	OK
	ERROR RESPONSE:	ERR01 ERR02 ERR04 ERR51
		ERR54 ERR55 ERR56 ERR59
EXAMPLE	NIWT_5_A_044-435-	لم 1001

OK

NECA 340-414-300 Revision 2.0

## NIWR ISDN Control

PURPOSE	Release reception wait
---------	------------------------

**INPUT FORMAT** NIWR\_n ↓

#### EXPLAINATION OF INPUT PARAMETER

n= 1 ~ 254, ALL Logical line number

RESPONSE FORMAT	NORMAL RESPONSE:	ОК
	ERROR RESPONSE:	ERR01 ERR02 ERR04 ERR09 ERR51

EXAMPLE	NIWR	ALL
	OK	

## NIWQ ISDN Control

COMMAND NAME	
PURPOSE	Indicate the logical line in ready receive status (complete the digit)
INPUT FORMAT	NIWQ[n] →
	EXPLAINATION OF INPUT PARAMETER
	n= 1 ~ 254 Logical line number
RESPONSE FORMAT	NORMAL RESPONSE: n1 o1 [s1] [c1] [a1] n2 o2 [s2] [c2] [a2] : : OK
	EXPLAINATION OF RESPONSE PARAMETER
	o: Action (Automatic/Manual)
	s: Line Speed
	c: Terminal ability R: 56k N: 64k
	a: Address
	ERROR RESPONSE: ERR01 ERR02 ERR04 ERR09 ERR51 ERR61
EXAMPLE	NIWQ_5 005_A_2B OK

## INET ISDN Control

#### **COMMAND NAME**

PURPOSE	ON/OFF indication report related to ISDN.
INPUT FORMAT	$INET[\_n]\_x \leftarrow J$
	EXPLAINATION OF INPUT PARAMETER
	n 1 2

n= 1 ~ 3 Number of console ports

x= ON/OFF Switch

RESPONSE	NORMAL RESPONSE:	OK
FORMAI	ERROR RESPONSE:	ERR01

EXAMPLE INET 1\_ON J OK

## NSTQ ISDN Control

#### **COMMAND NAME**

PURPOSE	Display transmission status of ISDN line (complete the digit).
INPUT FORMAT	NSTQ_n L
	EXPLAINATION OF INPUT PARAMETER
	n= 1 ~ 254 Logical line number
RESPONSE FORMAT	NORMAL RESPONSE: $n\_I\_x[/x]\_=\_s\_c\_a$ OK
	EXPLAINATION OF RESPONSE PARAMETER
	n: 1 ~ 254 Logical line number
	<ul> <li>I: Reception display. Valid vales are:</li> <li>c: Outgoing call</li> <li>I: Incoming call</li> <li>x[/x']:Layer 3 status. Valid values are:</li> <li>x: B1</li> <li>x': B2</li> <li>0: Empty</li> <li>1: Transmit call</li> <li>3: Accept transmit call</li> <li>4: Report the call</li> <li>7: Calling</li> <li>8: Response</li> <li>10: During transmission</li> <li>11: Request cut off</li> <li>12: Accept release</li> </ul>
	s: Line Speed
	c: Network classification
	a: Address

# NSTQ ISDN Control

(continued)

ERROR RESPONSE: ERR01 ERR02 ERR04 ERR51

#### EXAMPLE

NSTQ\_100 ↓ 100\_I\_10/10=2B\_N OK

## NLGQ ISDN Control

COMMAND NAME	
PURPOSE	Display the maximum of 100 transmission history. When omitted, indicate all history. When specified number exceeds the number of accumulated, display all history.
INPUT FORMAT	NLGQ_n +
	EXPLAINATION OF INPUT PARAMETER
	n= 1 ~ 100 Number of history
RESPONSE FORMAT	NORMAL RESPONSE: YY-MM-DD HH:MM:SS n i k t c/[c'] b [a]
	: OK
	EXPLAINATION OF RESPONSE PARAMETER
	YY: Transmission Year
	MM: Transmission Month
	DD: Transmission Day
	HH: Transmission Hour
	MM: Transmission Minutes
	SS: Transmission Seconds
	n: 1 ~ 254 Logical line number
	<ul><li>i: Reception display. Valid vales are:</li><li>c: Outgoing call</li><li>I: Incoming call</li></ul>
	s: Line Speed B, 2B, H0, 2H0
	k: Terminal attribute

t:Transmission time

# NLGQ ISDN Control

(continued)

#### EXPLAINATION OF RESPONSE PARAMETER

hh:mm:ss

- c: Display the reason #001 ~ #999-00 ~ 10 [c=B1, c'=B2 (only when 2B)]
- b: Price  $\langle 0 \sim 9999990$  (Call receive side is  $\langle 0 \rangle$ )
- a: Terminating Address (display only when it was already set up)

ERROR RESPONSE: ERR01 ERR09

# NLGC ISDN Control

#### COMMAND NAME

PURPOSE	Delete communication history	
INPUT FORMAT	NLGC -	
RESPONSE	NORMAL RESPONSE:	OK
FORMAI	ERROR RESPONSE:	ERR01 ERR04
EXAMPLE	NLGC ₊↓ OK	

## NPDS ISDN Control

#### **COMMAND NAME**

PURPOSE	Register speed dial. A maximum of 99 terminating number can be register. Registration of already used speed dial numbers will be regarded as renewal.
INPUT FORMAT	NPDS n a [s] $[c]$ $[p] \leftarrow$
	EXPLAINATION OF INPUT PARAMETER
	n= 01 ~ 99 Speed dial number
	a= Dial number. Valid values for x are: #01 ~ #99: Speed number 0 ~ 9: Dial number (~ 20 digit) Subaddress (~ 4 digit) *,**: Pause code (subaddress, 2B address) ()-: Decorative Character
	<ul> <li>s= Line Speed (ISDN only). When omitted, it will be the minimum line speed and line number. Valid values for x are:</li> <li>B: 64kbps (56kbps)</li> <li>2B: 2 x 64kbps (2 x 56kbps)</li> <li>H0: 384kbps (336kbpd)</li> <li>2H0: 2 x 384kbps (2 x 336kbps)</li> </ul>
	<ul> <li>Network classification capability. When omitted, it is regarded as 64k digital. Valid values are:</li> <li>R: 56k restricted</li> <li>N: 64k digital</li> </ul>
	p= Name of terminating point (~ 20 characters)
RESPONSE FORMAT	NORMAL RESPONSE: OK
	ERROR RESPONSE: ERR01 ERR54 ERR55 ERR56 ERR57 ERR59
EXAMPLE	NPDS_#05_044-435-1001 ↓ OK
## NPDR ISDN Control

COMMAND NAME			
PURPOSE	Display regis was omitted,	stered contents display all reg	of speed dial (complete the digit). When parameter istered contents.
INPUT FORMAT	NPDR_n ↓		
	EXPLAI	NATION OF 1	NPUT PARAMETER
	n=	#01 ~ #99 Speed dial nu	ımber
RESPONSE FORMAT	NORMAL R	ESPONSE:	n <u>s</u> _c_a_p OK
	EXPLAI	NATION OF I	RESPONSE PARAMETER
	n=	#01 ~ #99 Speed dial m	ımber
	a=	Dial number. 01 ~ 99: 0 ~ 9: *,**: ()-:	Valid values for x are: Speed number Dial number (~ 20 digit) Subaddress (~ 4 digit) Pause code (subaddress, 2B address) Decorative Character
	s=	Line Speed ( line speed an B: 64kbps 2B: 2 x 64l H0: 384kbp 2H0: 2 x 384	ISDN only). When omitted, it will be the minimum d line number. Valid values for x are: s (56kbps) kbps (2 x 56kbps) os (336kbpd) 4kbps (2 x 336kbps)
	c=	Network clas 64k digital. R: 56k res N: 64k dig	sification capability. When omitted, it is regarded as Valid values are: stricted gital
	p=	Name of term	ninating point (~ 20 characters)
	ERROR RES	SPONSE:	ERR01 ERR59

## NPDR ISDN Control

(continued)

EXAMPLE

NPDR\_#65 ↓ #65\_044-435-1000 OK

## NDSS ISDN Control

#### COMMAND NAME

PURPOSE	Register loca Registration	l address. It ca to already regi	an be registered per each logical line number. ster logical line number will be registered as renewal.		
INPUT FORMAT	NDSS $n_a \leftarrow 1$				
	EXPLAINATION OF INPUT PARAMETER				
	n=	1 ~ 254			
		Logical line	number		
	a= Local addre		s. (n=when clear, it can be omitted). Valid values for a		
		OFF:	Clear registration contents		
		0 ~ 9:	Dial number (~ 20 digit)		
			Subaddress (~ 4 digit)		
		*,**:	Pause code (subaddress, 2B address)		
		()-:	Decorative Character		
RESPONSE FORMAT	NORMAL R	ESPONSE:	ОК		
	ERROR RES	SPONSE:	ERR01		
			ERR02		
			ERR04		
			ERR51		
			ERR54		
			ERR55		
			ERR56		
EXAMPLE	NDSS 5 (	044-435-1001			
	ОК				

## NDSR ISDN Control

COMMAND NAME			
PURPOSE	Display the registered local number (complete the digit). When omitted, display all registered lines.		
INPUT FORMAT	NDSR_n +		
	EXPLAINATION OF	INPUT PARAMETER	
	n= 1 ~ 254 Clear: Logical line	Delete all contents ("a" is omitted) number	
RESPONSE FORMAT	NORMAL RESPONSE:	nxxxxx*yyy**xxxxx*yyy OK	
EXPLAINATION OF RESPONSE PARAMETER xxx: Dial number			
	*,**: Pause symbo	1	
	In MCU, treat ISDN chann xxxxxxxxxx*yyy ① ②	el number as follows: y**xxxxxxxxx*yyyy ③ ④	
	① is necessary, but ('*", '**' is pause sy	<ul><li>2 ~ ④ can be omitted.</li><li>ymbol)</li></ul>	
The first channel	additional channel		
<ol> <li>The first channel</li> <li>The first channel</li> <li>Additional channel</li> <li>Additional channel</li> </ol>	Dial number Sub address Dial number Sub address	<ul> <li>(20 character max.)</li> <li>(4 characters max.)</li> <li>(20 character max.)</li> <li>(4 characters max.)</li> </ul>	

*Note:* Each channel can have the decorative character such as (","), "-" (counted as one character).

ERROR RESPONSE: ERR01 ERR02 ERR04 ERR09 ERR51

## NDSR ISDN Control

(continued)

EXAMPLE

NDSR\_5↓ 5\_044-435-1001 OK

## RCON Multipoint Connection Control

COMMAND NAME					
PURPOSE	Makes multipoint connections (H.243 mode)				
INPUT FORMAT	$RCON[\_n_1\_n_2\][\_Rxxx][\_s] \downarrow$	$RCON[\_n_1\_n_2\][\_Rxxx][\_s] \downarrow$			
	EXPLAINATION OF INPUT PARAMETER				
	n= Logical line number				
	<ul> <li>xxx= Transfer rate. When omitted, it will be the value of system. Values for x are:</li> <li>64, 64X2, 128, 192, 256, 384, 512, 768, 1152, 1536, 1920, 1472</li> <li>56, 56 x 2, 112, 168, 224, 336, 448, 672, 1008, 1344, 1280, 3842</li> <li>336X2</li> </ul>	lid 2, X2,			
	<ul> <li>s= B, 2B-, H0, 2H0</li> <li>Line Speed (ISDN only). When omitted, it will be the minimum line speed and line number. Valid values for x are:</li> <li>B: 64kbps (56kbps)</li> <li>2B: 2 x 64kbps (2 x 56kbps)</li> <li>H0: 384kbps (336kbpd)</li> <li>2H0: 2 x 384kbps (2 x 336kbps)</li> </ul>	n			
RESPONSE	NORMAL RESPONSE: g_xxxkbps_OK				
FORMAI	EXPLANATION OF RESPONSE PARAMETERS				
	g= A or B Conference group				
	xxx: Transfer rate				
	ERROR RESPONSE: ERR01 ERR02 ERR04 ERR06 ERR08 ERR10 ERR14 ERR53				
EXAMPLE	$\begin{array}{c} \text{RCON} 1 2 3 \\ \text{A} 128 \text{ OK} \end{array}$				

## RDSC Multipoint Connection Control

#### COMMAND NAME

PURPOSE	Release conference group (H.243 mode)	set up by RCON. Disconnects multipoint connections.
INPUT FORMAT	RDSCg	
	EXPLAINATION OF	INPUT PARAMETER
	g= A or B Conference	group
<b>RESPONSE</b> FORMAT	NORMAL RESPONSE:	ОК
	ERROR RESPONSE:	ERR01 ERR05
EXAMPLE	RDSC_A ↓ OK	

## RADD Multipoint Connection Control

## COMMAND NAME

PURPOSE	Add multipoint connection to group which is set up by RCON		
INPUT FORMAT	$RADD\_g\_n \leftarrow$		
	EXPLAINATION OF INPUT PARAMETER		
	g= A or B Conference group		
	n= 1 ~ 254 Logical line number		
	<i>Note:</i> "n" can be specified at the 24 line at the same time.		
RESPONSE FORMAT	NORMAL RESPONSE: OK		
	ERROR RESPONSE: ERR01		
	ERR02		
	ERR04		
	ERR05		
	ERR08		
	ERR14		
	ERR53		
EXAMPLE	RADD_A_10		

## RDRP Multipoint Connection Control

#### COMMAND NAME

PURPOSE	Release the multipoint connection of the line specific from the group set up be RCON.		
INPUT FORMAT	لـ RDRP_g_n		
	EXPLAINATION OF I	NPUT PARAMETER	
	g= A or B Conference g	roup	
	n= 1 ~ 254 Logical line r	umber	
	<i>Note:</i> "n" can be specified a	at the 24 line at the same time.	
RESPONSE FORMAT	NORMAL RESPONSE:	ОК	
	ERROR RESPONSE:	ERR01	
		ERR02	
		ERR04	
		ERR05	
EXAMPLE	RDRP_A_10		

## RASN Multipoint Connection Control

#### COMMAND NAME

PURPOSE	Indicate the relation between conference room number and terminal number assigned by RCON.		
INPUT FORMAT	RASN_g_r ⊷		
	EXPLAINATION OF	INPUT PARAMETER	
	g= A or B Conference	group	
	<i>Note:</i> When parameter is o	omitted, indicate all terminals for Group A.	
	r= 1 ~ 252 Conference	room number	
RESPONSE FORMAT	NORMAL RESPONSE:	A Rm= <m1>;<t1> B Rm=<m1>;<t1> OK</t1></m1></t1></m1>	
	EXPLAINATION OF	RESPONSE PARAMETER	
	m: 001 ~ 252 Conference	room number	
	M: 1 ~ 191 MCU numbe	er	
	T: 1 ~ 191 Terminal nu	mber	
	ERROR RESPONSE:	ERR01 ERR05	
EXAMPLE	RASN_A_100 J A_ R100=<001>;<020> OK		

## RRAT Multipoint Connection Control

#### **COMMAND NAME**

PURPOSE	Indicates status of multiconnected terminals in the conference set up by RCON.

**INPUT FORMAT** RRAT\_g

#### EXPLAINATION OF INPUT PARAMETER

g= A or B Conference group

*Note:* When parameter is omitted, indicate all terminals for Group A.

RESPONSE FORMAT NORMAL RESPONSE:  $g_M_R_{r1} + WXYZ_R_{r2} = WXYZ...$ OK

#### EXPLAINATION OF RESPONSE PARAMETER

- g: A or B Conference group
- M: N or S Mode. Values are: N= Normal mode S= H.43 mode

#### r: 001 ~ 252 Conference room number

- W: 0 or 1
  Participation status. Values are:
  0: No participation
  1: During participation
- X: Conference terminal connection (valid only in normal mode)

## Y: 0 or 1

- Terminal type. Values are:
- 0: Video conference terminal
- 1: Voice terminal

#### Z: 0 or 1

H.243 terminal. Values are:

- 0: Former terminal
- 1: H.243 terminal

## RRAT Multipoint Connection Control

(continued)

ERROR RESPONSE:	ERR01
	ERR05

EXAMPLE	RRAT_A		A –	Ļ	
	A	S	R001=1101	R002=1101	
	OK				

## RCNQ H.243 Multipoint Connection Control

#### **COMMAND NAME**

PURPOSE	Indicate connection situation of multipoint conference, set up by RCON.		
INPUT FORMAT	RCNQ_g		
	EXPLAINATION OF INPUT PARAMETER		
	g= A or B Conference group		
RESPONSE FORMAT	NORMAL RESPONSE: g_n1_n2 OK		
FORMAT	EXPLAINATION OF RESPONSE PARAMETER		
	g= A or B Conference group		
	n= 001 ~ 254 Logical line number		
	ERROR RESPONSE: ERR01 ERR05 ERR08		
EXAMPLE	RCNQ_A↓ A_001_002_OK		

## **INS Net Error Reasons**

Number	Display the Reasons (ERROR from Net)	Corresp	ondence
1	Unused number		
2	No route to specific relay net		
3	No route to terminating		
6	Cannot use channel		
7	Caller arrives to channel which already setup		
16	Normal disconnect		
17	Arriving user is busy		
18	Arriving user no resource		Normal,
19	Arriving user calling/no response		Semi-normal
21	Reject the transmission		Class
22	Modified terminal number that is terminating member		
26	Restore disconnect user who was not selected		
27	Terminating terminal is broken		
28	Invalid number format (Incorrect number)		
29	Reject the facility (no applicable service)		
30	Response to status injury		
31	Other normal classes		
34	No possible use line/channel		
35	Net problem		
41	Temporary problem		Class of
42			unavailable
43	Access information missing		resource
44	Requested line/channel not available		
47	Class of other resource which is not available		
49	OOS not available		
50	Requested facility has not been contracted yet		Class of
57	Transmission ability not accented		unavailable
58	Transmission donity not accepted		service
63	Class of other service or option which are not offered		service
65	Specified transmission shility which is not offered		
66	Specified tune of channel which is not offered		
60 60	Bequested facility which is not offered		Class of unoffered
70	Limited digital information		service
70	Class of other service or option which are not offered		
79			
81	Invalid calling number in use		
82	Invalid channel in use		
83	Specify the interruption calling discernment number is unused		
85	No interruption calling		Invalid message
86	Restored the specific interruption calling		class
88	Terminal attribute is mismatched		
91	Selected invalid relay net		
95	Other invalid message class		
96 07	Insufficient necessary information request		
9/	Type of message has not been defined or not been offered		
98	Calling status and message is mismatched. Type of message has not been defined.		<b>.</b> .
100	invalid request contents of information		Incorrect
101	Calling status and message is mismatched		Process
102	Kestored by full timer		
111	Class of other incorrect order		
127	Other interworking class		

Number	Display the Reasons (ERROR from Net)	Correspondence		
900				
901	No response from terminating, even after 50 seconds of calling			
903	At calling, line (Layer 1) is abnormal			
904	At calling, line (Layer 2) is abnormal			
905	TEI is mismatched			
906	At calling, line (Layer 3) is abnormal			
908	When receiving the request of initialization, set up is received from NET, it will be			
	reported to the upper level			
909	Time out occurs when standing by for restart response			
910	When call or disconnect during standby for restart response			
912	Receiving the message which was unsuitable for local status			
913	When call or disconnect during standby for restart response			



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# MCU 5000A MULTIPOINT CONTROL UNIT

**MAINTENANCE MANUAL** 

SEPTEMBER, 1998 NEC America, Inc.

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## **Table of Contents**

INTRODUCTION	INT-001
CHECK ON POWER SYSTEM	TCP-001
IMPLEMENTATION OF C&I LOOPBACK FUNCTION	. TCP-002
SETTING OF MCU 5000A LOOPBACK POINTS	. TCP-003
EXECUTION OF MCU 5000A LOOP TEST	TCP-004
TROUBLESHOOTING OF M CONT UNIT	. TCP-005
TROUBLESHOOTING OF 1.5M LIF UNIT	. TCP-006
TROUBLESHOOTING OF RS-422 LIF UNIT	. TCP-007
TROUBLESHOOTING OF H0-INF LIF UNIT	. TCP-008
TROUBLESHOOTING OF EC H221 MUX UNIT	. TCP-009
TROUBLESHOOTING OF PG/SIO UNIT	TCP-010
TROUBLESHOOTING OF V SW/LSD IF UNIT	. TCP-011
TROUBLESHOOTING OF A CODEC UNIT	. TCP-012
TROUBLESHOOTING OF A SUM UNIT	. TCP-013
TROUBLESHOOTING OF VIDEO RELATED FAILURE	. TCP-014
TROUBLESHOOTING OF AUDIO SYSTEM	TCP-015
START-UP OF MCU CONSOLE	TCP-016
REPLACEMENT OF UNIT	. TCP-017
REPLACEMENT OF MEMORY CARD BATTERY	. TCP-018
CHECK ON STATE AND KIND OF MEMORY CARD	. TCP-019
COPYING CONTENTS OF MEMORY CARD	. TCP-020
REPLACEMENT OF BACKUP MEMORY BATTERY	. TCP-021
TROUBLESHOOTING OF VDSW UNIT	TCP-022

## INTRODUCTION

#### 1. GENERAL

**1.01** This practice provides maintenance and trouble clearing of **Multipoint Control Unit 5000A (MCU 5000A).** 

#### 2. OVERVIEW

**2.01** This equipment does not require periodical maintenance under normal operating conditions. However, users are recommended the periodical check described in Section 3, and in case of failure perform troubleshooting in accordance with the descriptions given in this practice.

**2.02** In case of failure, inform NEC America, Inc. of the following items before starting the troubleshooting (see Section 10, CONTACT FOR FAILURE in this practice).

- Operating conditions of the system at the time of failure
- Failure conditions
- Front panel LED status of each unit
- Alarm status displayed on MCU Console
- Transmission conditions of video and audio signals

2.03 WARNING: BE SURE TO TURN THE POWER SWITCH OFF BEFORE STARTING SUCH MAINTENANCE AND ADJUSTMENT OPERATIONS AS THE EXTERNAL CONNECTIONS AND UNIT INSERTION PULLOUT FOR STRAP CHANGE INSIDE THE UNIT. MAINTENANCE AND ADJUSTMENT OPERATIONS UNDER THE POWER-UP CONDITION MIGHT CAUSE THE FAILURE AND DEGRADATION OF COMPONENTS INSIDE THE EQUIPMENT, SO OBSERVE THE RULE OF POWER-OFF.

The memory card mounted on the M CONT unit can be inserted/pulled out under the power-up condition except when the memory card access lamp (RC6) is lit.

## **3. PERIODICAL CHECK**

**3.01** As described in paragraph 2.01, periodical maintenance job is not required under normal operating conditions. However, users are recommended to conduct the following check and maintenance operations to avoid the failure in service.

Power Supply Voltage

- Power supply voltage measured at the ac power supply terminal must be within 100 V/200 V ac (85 VAC to 132 VAC for nominal 170 ~ 264 VAC).
- Direct current output voltages of the power supply unit (PWR) must be within  $+5 V \pm 5\%$  and  $+12 V \pm 5\%$ . Measurements must be taken at the monitor terminals on the front of the PWR unit.

Lamp (LED) Check

When the LMT (SW4) on the M CONT unit is set at the lower position, all the LEDs on the front of unit must be lit (see **GSD-009**).

## 4. CONTROLS AND ALARM INDICATIONS

**4.01** The MCU 5000A consists of the units given in Table 1 and the mounting position of each unit is shown in Fig.1. LEDs of each unit and position of each element on DIP switch are shown in attached Drawings (**GSD-001 to 010**).

UNIT NAME		ABBREVIATED NAME	CODE
LINE INTERFACE UNIT		1.5M LIF	E32-484-Y1442-0A00
		RS-422 LIF	E32-484-Y1443-0A00
		H0-INF LIF	E32-484-Y2761-0A00
EC H221 MUX UNIT		EC H221 MUX	E32-482-Y3118-0B00
V SW/LSD IF UNIT		V SW/LSD	E32-465-Y1440-0A00
A CODEC UNIT		A CODEC	E32-441-Y1438-0A00
A SUM UNIT		A SUM	E32-470-Y1439-0A00
PG/SIO UNIT		PG/SIO	E32-483-Y1441-0A00
M CONT UNIT		M CONT	E32-001-Y2573-0A00
POWER UNIT	100/200 VAC	PWR	E32-014-Y1573-0B00
	-48 VDC		E32-014-Y3757-0A00

Table 1:	Constituent	Units of	MCU	5000A
----------	-------------	----------	-----	-------



Figure 1: Unit Layout of MCU 5000A

#### 5. LOOPBACK TEST

**5.01** Loopback tests are conducted to sectionalize the faulty units when a failure has occurred in the MCU 5000A. Some of the loopback tests are carried out from the MCU console by inputting commands, and others are conducted by the switches mounted on the units.

**5.02** MCU 5000A has loopback points in each unit. MCU 5000A can loop a signal (internal or external) back on remote side or local side. MCU 5000A can also generate pseudo noise pattern and carry out self diagnostic test by checking the returned noise pattern.

**5.03** Loopback test function is divided into two categories; one is the C&I loopback function as the additional information necessary for a video teleconference based on **CCITT Recommendation H230**, and the other is MCU 5000A loopback function for maintenance and self diagnostic.

## A. C&I Loopback5.04 In the C&I defined by H230, the following four kinds of loopbacks are defined for maintenance purpose:

- LCV (Video Loopback Request): Loopback request of video signal
- LCD (Digital Loopback Request): Loopback request of digital signal
- LCA (Audio Loopback Request): Loopback request of audio signal
- LCO (Loopback Command Off): Release of loopback

## B. MCU 5000A Loopback 5.05 The MCU loopback has two functions; one is a local loopback to generate the test signal and check the signal looped back inside of the equipment (called the local side loop hereafter), the other is a remote loopback to loopback the external signal outside of the equipment (called remote side loopback hereafter). The local side and remote side loops are set at points A to H as shown in Fig. 2. Moreover, following functions to generate the test signal and check the looped back signal (loopback test) are available:

- Video signal loopback test
- Audio signal loopback test
- LSD loopback test
- Console loopback test

**5.06** The loopback point setting, loopback test and loopback release mentioned above are conducted by the execution of the MCU console commands. To conduct loopback test, it is necessary to set. However, the console loopback test does not require the loopback point setting because it automatically sets loopback points. Refer to **TCP-003** and **TCP-004** for the execution of the MCU loopback.



Figure 2: MCU Loopback Points

#### Video Signal Loopback Test

**5.07** The video signal Loopback test is performed through the use of the PN Pattern Generator/Checker function of the V SW/LSD IF unit. The PN Pattern signal sent from the PN Pattern Generator returns from the loopback point set to make the local side Loopback and input to the PN Pattern Checker. The PN Pattern Checker compares and judges the sent pattern with the input one. When the line rate of 1.536 Mb/s is selected, it is necessary to set the MUX switch to OFF on the EC H.221 MUX unit. For software, a video switch I/O (PC) task controls this test.

#### Audio Signal Loopback Test

**5.08** The audio signal Loopback test is performed by the test tone generation mode function of the A CODEC unit. After the setting of levels (0 dBm0, -12 dBm0, -24 dBm0, -36 dBm0) and frequencies (500 Hz,800 Hz, 1000 Hz, 1600 Hz) of the test tone, measurement is taken for the levels of continuous output and loopback tone. Moreover, when the level measurement is selected as the operation, the measured level is displayed on the console screen. For software, an audio controls I/O (VC) task controls this test.

### LSD Loopback Test

**5.09** The LSD (Low Speed Data) Loopback test is performed at the HSCX of the V SW/LSD IF unit. The LSD (four frames of 00H to 7FH data) sent from the HSCX returns through the loopback point set to make the local side Loopback and is input to the HSCX. It compares and judges the sent LSD with the input one. For software, a LAP-B driver (LD) task controls this test.

#### **Console Loopback Test**

**5.10** The console Loopback test is performed at the serial controller of the PG/ SIO unit. The loop setting is done automatically in the console Loopback test. Two kinds of loop points can be set. One makes the loop in the serial controller and the other makes the loop outside the RS-232C connector and allows the control signal test. When the outside loop is selected, it is necessary to set the loop connector. The transmitted data is set to be four frames of 00H to 7FH data. For software, a console drive 1, 2 (CD 1, 2) tasks control this test.

#### Diagnosis

**5.11** The M CONT unit conducts the diagnosis of the hardware during the initial processing after power-up, and the result is indicated by the LED. When a failure has occurred during the operation, the failure condition is also indicated by the LED.

- ST8:lights when the battery voltage of the memory card drops or the memory card is not mounted. When the memory card is not mounted, reset and restart after mounting it. If the LED still lights up after the restart, replace the battery of the memory card.
- ST7 to ST1: steadily indicate.

**5.12** In normal operation, some LEDs are blinking to give HEX indication of the number of the task under execution by the CPU. However, when an abnormality has occurred, LEDs stop blinking indicating the number of the task where the abnormality has occurred. The Table 2 shows abnormal indication of LED status (LEDs 1 to 6 and LED 7) on M CONT unit.

ITEM NO.	LED INDICATION	TYPE OF FAILURE	SIGNIFICANCE	ACTION TO BE TAKEN
1		RAM test error	RAM test error occurred during the initial processing	Replace M CONT unit
2		ROM test error	ROM test error occurred during the initial processing	Replace M CONT unit
3		CPU H/W initialize error	Initializing error occurred in the peripheral circuit of CPU	Replace M CONT unit
4		System parameter backup error	Contents of system parameter was destroyed.	Reset system parameter referring to "System Parameter Practice". Replace battery of M CONT unit if failure occurs again.
5		Program load error	Failure in loading programs from the memory card	Replace memory card. Replace M CONT unit if failure reappears.
6		Abnormal loader operation	Abnormality was detected in the program load processing	Replace memory card. Replace M CONT unit if failure reappears.
7	All the other indications	Program abnormality	Abnormality was detected in executing programs. Task number is indicated.	Replace memory card. Replace M CONT unit if failure reappears.
Note: •: Lighted •: Unlighted				

## 6. TROUBLESHOOTING

**6.01** There are two methods for troubleshooting. One sectionalizes the failure according to the failure conditions (output state of the video and audio) and the other does it in accordance with the LED indication of each unit. The following describes the procedure of sectionalizing failures of the MCU 5000A through the combined use of above two methods.

A. Sectionalization in accordance with Failure Conditions
 6.02 Check points are given in Table 3 in cases where failures of video and audio signals occur separately or simultaneously. Carry out the failure sectionalization according to Table 4.

FAILURE CONDITION	POINT OF FAILURE	CHECK POINT	REFERENCE NO.
	Failure of power system	_ AC power supply _ Power cord _ DC output of PWR unit	TCP-001
	Foilure of line	_ Lines between conference rooms	TCP-002
		_ Lines between conference rooms	TCP-002
Failure of both		M CONT unit	TCP-005
video and audio		1.5M LIF unit	TCP-006
	Unit failure of MCU 5000A	RS-422 LIF unit	TCP-007
		H0-INF LIF unit	TCP-008
		EC H221 MUX unit	TCP-009
		PG/SIO unit	TCP-010
	Failure of video	Video signal (V SW/LSD IF unit)	TCP-014 TCP-022 (VDSW)
	Failure of audio system	Audio signal (A CODEC unit / A SUM unit)	TCP-015
Foilure of video only	Unit failure of MCU 5000A	M CONT unit	TCP-005
Failure of video only	Failure of video	EC H221 MUX unit	TCP-008
		V SW/LSD IF unit	TCP-011
	Unit failure of MCU 5000A	M CONT unit	TCP-005
Failure of audio only	Unit failure of MCU 5000A	A CODEC unit	TCP-012
	Unit failure of MCU 5000A	A SUM unit	TCP-013

**Table 3: Troubleshooting in Accordance with Failure Conditions** 

B. Sectionalization by Front Panel Lamp (LED) Indication of Each Unit **6.03** The failure sectionalization is carried out in accordance with the LED indication of each unit.

6.04 Refer to GSD-001 to GSD-010 of attached drawings for the purpose of LEDs on each unit.

**6.05** The sectionalization is carried out checking the lighting conditions of LEDs, unit by unit, through the combined use of the MCU console. Refer to **TCP-020** for the connection and start-up of the MCU console. Alarms indicated by LEDs of each unit, conditions of failure and Reference numbers for troubleshooting procedure are given in Table 4. Call NECAM when the normal operation is not obtained. (See Section 10: CONTACT FOR FAILURE in this practice.)

UNIT	LED	ALARM	FAILURE	REFERENCE NO.	
	RC1 RC2	REC	NOS of CHI (CH5) (input off) LOS (out of synch)		
		AIS	AIS of CHI (CH5) (network side fault)		
		RAI	RAI of CHI (CH5) (remote alarm)		
		Normal	CHI (CH5) other than the above alarms or normal		
		REC	NOS of CH2 (CH6) (input off) LOS (out of synch)		
	RC3	AIS	AIS of CH2 (CH6) (network side fault)		
1.5M	RC4	RAI	RAI of CH2 (CH6) (remote alarm)		
LIF unit/		Normal	CH2 (CH6) other than the above alarms or normal		
H0-INF LIF	RC5 RC6 RC6 RC1 Normal RC7 RC8 RC1 RC8 RC1 RC1 RC1 RC1 RC1 RC1 RC1 RC1 RC1 RC1	REC	NOS of CH3 (CH7) (input off) LOS (out of synch)	TCP-006/TCP-008	
unit		AIS	AIS of CH2 (CH7) (network side fault)		
		RAI	RAI of CH3 (CH7) (remote alarm)		
		Normal	CH3 (CH7) other than the above alarms or normal		
		REC	NOS of CH4 (CH8) (input off) LOS (out of synch)		
		AIS	AIS of CH4 (CH8) (network side fault)		
		RAI	RAI of CH4 (CH8) (remote alarm)		
		CH4 (CH8) other than the above alarms or normal			
	RC1	CH1	Slip in port 1 of CH1		
	RC2	CITI	H221 in synch		
	RC3	CH2	Slip in port 2 of CH2		
RS-422	RC4	H221 in synch	TCP-007		
LIF unit	RC5	CH3	Slip in port 3 of CH3		
	RC6	0110	H221 in synch		
		RC7	CH4	Slip in port 4 of CH4	
	RC8		H221 in sync		

Table 4: Troubleshooting by LED Indication of Each Unit (1 of 2)
UNIT	LED	ALARM	FAILURE	REFERENCE NO.
	RE16	REC	H221 out of synch	
EC H.221	RC15	REM ALM	H221 receives A bit (REALM)	
unit	RC10	FUN ERR	Function test error of MUX	TCF-009
unit	RC9	MEN ERR	Memory test error	
	RC1	CLOS	Loss of line clock input	
BG/SIO	RC2	SLP 3	Phase slip between line clock and 10.752 MHz clock	
unit	RC3	SLP 2	Phase slip between line clock and 4.096 MHz clock	TCP-010
	RC4	SLP1	Phase slip between line clock and 1.544 MHz clock	
	RC18	ST8	Low battery voltage of memory card	
	RC13	ST7	ABEND or RAM/ROM error	
M CONT unit	RC12~7	ST6~1	During normal operation: Task number indication In case of ABEND: ABEND task number indication	Refer to GSD-009
	RC6	MC	Lights during memory card access	
V SW/LSD IF unit	RRM	ARM	ARM of PN Pattern	TCP-011
A CODEC unit	-	-	-	TCP-012
A SUM unit	-	-	-	TCP-013

Table 4: Troubleshooting	by Led	Indication	of Each	Unit (2 of 2)
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#### 7. REPLACEMENT OF UNIT

**7.01** When the replacement of unit is required as a result of troubleshooting, mount the unit correctly referring to the unit layout in Fig. 1.

7.02 Refer to **TCP-017** for the replacement of the unit.

#### 8. HANDLING OF MEMORY CARD

**8.01** This section describes the handling of memory card mounted on the M CONT unit. This memory card is of SRAM type and backed up by a lithium battery.

A. Replacement of<br/>Battery8.02WARNING: IN REPLACING THE BATTERY DUE TO CAUSES SUCH<br/>AS VOLTAGE DROP, MOUNT THE MEMORY CARD ON THE M CONT<br/>UNIT AND KEEP THE POWER OF MCU EQUIPMENT ON (THUS POWER<br/>IS FED TO THE MEMORY CARD). THE CONTENTS OF MEMORY CARD<br/>DISAPPEAR IF THE BATTERY IS REMOVED FROM THE MEMORY CARD<br/>BEING PULLED OUT OF THE EQUIPMENT.

**8.03** Periodical replacement of the battery in accordance with the following.

OPERATING CONDITION	24-HOUR DISCHARGE	8 HOUR/EACH TIME DISCHARGE
Replacement Interval	5 years	One year

**8.04** Refer to **TCP-018** for the battery replacement procedure. (For the mounting of memory card, refer to **TCP-021**.)

 B. Checking and Copying of Memory Card
 8.05 Checking the insertion condition of the memory card in use, detection of low battery voltage and write-protect and checking the kind of memory are conducted by executing the RMCS command. Refer to TCP-016 for execution procedure.

**8.06** System parameters written on the memory card can be copied down on another memory card. Refer to **TCP-020** for execution procedure.

- C. Care in Handling Memory Card
- 8.07 In handling memory card, following precautions should be observed.
  - There is a write-protect switch at the front end of the card. The switch is set at write-protect ON position. Do not change this setting.
  - Do not give a strong shock to the card by dropping or bending by hand.
  - Keep the memory card in the PVC case so that the dust may not enter the connector part.
  - Store it keeping off high temperature and humidity.
  - Do not touch the connector part.

#### 9. HANDLING OF BACKUP MEMORY BATTERY IN M CONT UNIT

**9.01** The backup memory of the M CONT unit is backed up by the lithium battery mounted on it. This battery requires the periodical replacement. Replace it when the voltage drops below 2.5 V.

**9.02 WARNING:** BE SURE TO REPLACE THE BATTERY PERIODICALLY AS SPECIFIED, BECAUSE THE DATA OF THE MEMORY DISAPPEARS DUE TO THE VOLTAGE DROP OF THE BACKUP BATTERY.

A. Mounting Position of Backup Memory Battery on M CONT Unit **9.03** Mounting position of the backup memory battery of the M CONT unit is shown in Fig. 3.



Figure 3: Mounting Position of Backup Battery

B. Periodical 9.04 The battery will be replaced at the following intervals.Replacement of the Battery

OPERATING CONDITION	24-HOUR DISCHARGE	8 HOUR/EACH TIME DISCHARGE
Replacement Interval	5 years	3 years

#### C. Measurement of Battery Voltage 9.05 Measure the battery terminal voltage with a circuit tester after taking out the M CONT unit and setting the backup power supply switch (SI) to OFF. Be sure to set the backup power supply switch to ON after the voltage measurement.

 

 D. Replacement of Battery
 9.06 Contact NEC America, Inc. in case of the replacement (see Section 10, CONTACT FOR FAILURE). The procedure of replacement is described in TCP-017 for reference.

### **10. CONTACT FOR FAILURE**

**10.01** If failure occurs, the failure condition should be informed after being confirmed to help the recovery from failure.

# A. Failure 10.02 To make contact at the occurrence of failure, the following should be informed. Reported Reported

- 1. Operating condition of the system at the time of failure
- 2. Failure condition
- 3. LED state of each unit of the equipment
- 4. Alarm status displayed on MCU console
- 5. Communication condition of video and audio

# B. Contact Address 10.03 Experienced and qualified staff are available to discuss technical inquiries pertaining to NEC America, Inc., (hereinafter called NECAM) furnished equipment. This staff may be called upon by NECAM customers at no cost to provide routine or emergency technical advice or recommendations. The NECAM telephone number for technical assistance is shown below.

Technical Assistance

1-800-367-6231 1-800-367-6322

#### **CHECK ON POWER SYSTEM**

**GENERAL:** Check on AC power supply and output voltages of PWR Unit is conducted.

APPARATUS: Digital Multimeter (DDM)

STEP	PROCEDURE	REFERENCE NO.
1	Turn ON the power switch of the MCU 5000A.	
2	Is POWER LED of PWR Unit lit?	
	If YES, go to Step 10. If NO, go to Step 3.	
3	Set Digital Multimeter (DDM) range to measure 300 VAC.	
4	Turn DDM power switch to ON.	
5	Connect DDM test cord between DDM and power terminal of plug of power cord. (See Fig. 1)	
6	Read DDM measurement.	
7	Does AC line voltage meet specified figure of 85 VAC through 132 VAC?	
	If YES, go to Step 10. If NO, go to Step 8.	
8	Is power cord normal?	
	If <b>YES</b> , go to <b>Step 10</b> . If <b>NO</b> , go to <b>Step 9</b> .	
9	Replace the power cord, then go to <b>Step 6</b> .	
10	Check DC output voltage of PWR unit.	
11	Set the range of the Digital Multimeter (DDM) to measure 20 VDC.	
12	CAUTION: BE CAREFUL OF THE POLARITY OF THE VOLTAGE CHECK TERMINALS.	
	Connect one end of the test cord to the DDM and other end to the power terminal of PWR unit. (See Fig.2)	
13	Confirm that the measured output power voltage is between $+4.75$ VDC and $+5.25$ VDC.	

Page 2 of 4

#### **CHECK ON POWER SYSTEM**

PROCEDURE	REFERENCE NO.
Does output voltage meet specified figure of +4.75 V through + 5.25 VDC?	
If YES, go to Step 15. If NO, go to Step 18.	
CAUTION: BE CAREFUL OF THE POLARITY OF THE VOLTAGE CHECK TERMINAL.	
Connect one end of the test cord to the DDM and other end to the power terminal of PWR unit. (See Fig. 2)	
Confirm that the measured output power voltage is between +11.4 VDC and +12.6 VDC.	
Does output voltage meet specified figure of +11.4VDC to +12.6 VDC?	
If <b>YES</b> , go to <b>Step 19</b> . If <b>NO</b> , go to <b>Step 18</b> .	
Replace the PWR unit.	
End of procedure.	
	PROCEDURE         Does output voltage meet specified figure of +4.75 V through + 5.25 VDC?         If YES, go to Step 15.         If NO, go to Step 18.         CAUTION: BE CAREFUL OF THE POLARITY OF THE VOLTAGE CHECK TERMINAL.         Connect one end of the test cord to the DDM and other end to the power terminal of PWR unit. (See Fig. 2)         Confirm that the measured output power voltage is between +11.4 VDC and +12.6 VDC.         Does output voltage meet specified figure of +11.4VDC to +12.6 VDC?         If YES, go to Step 19.         If NO, go to Step 18.         Replace the PWR unit.         End of procedure.



Figure 1: Checking AC Line Voltage

TCP-001



#### **CHECK ON POWER SYSTEM**

Figure 2: Checking DC Output Voltage of PWR Unit

#### IMPLEMENTATION OF C&I LOOPBACK FUNCTION

GENERAL: Operate a C&I remote loopback on specified terminals of VL 5000 using RLCS command referring to NECA 340-414-300.

APPARATUS: MCU console

STEP	PROCEDURE	REFERENCE NO.
1	Has the MCU console been started up?	TCP-016
	If YES, go to Step 3. If NO, go to Step 2.	
2	Start up the MCU console and put it into communication state.	TCP-016
3	Decide the number (1 to 8) of conference room where the loop point is to be set and the kind of loop by using <b>RLCS</b> command. (video signal loop=V, digital signal loop=D, audio signal loop=A)	COP-177
4	Enter the <b>RLCS</b> command and above parameters of <b>Step 3</b> and press the <b>RETURN</b> key.	COP-177
5	Verify that the normal response is displayed with <b>OK</b> .	
	If <b>YES</b> , go to <b>Step 6</b> . If <b>NO</b> , repeat <b>Step 4</b> using error code.	
6	After executing the loopback, be sure to release the loop using the <b>RLCS</b> command.	COP-177
	Input: <b>RLCS</b> parameter (number of the conference room where the loop point is set.)	
	Loop releasing parameter=0 ↓	
7	End of procedure	

#### SETTING OF MCU 5000A LOOPBACK POINTS

**GENERAL:** Set MCU loopback on specified point of MCU 5000A using STLP command, referring to NECA 340-414-300.

**APPARATUS:** MCU console

STEP	PROCEDURE	REFERENCE NO.
1	Has the MCU console been started up?	
	If <b>YES</b> , go to <b>Step 3</b> . If <b>NO</b> , go to <b>Step 2</b> .	
2	Start the MCU console up and put it into communication state.	TCP-016
3	Decide test loopback points A to H shown in Fig.1.	
4	Enter the <b>STLP</b> command and necessary parameters for loop setting and press <b>RETURN</b> key.	COP-178
5	Verify that the normal response is displayed with <b>OK</b> .	COP-180
	If <b>YES</b> , go to <b>Step 6</b> . If <b>NO</b> , repeat <b>Step 4</b> using error code.	
6	After the end of loop test (See TCP-004), be sure to release the loop using the <b>RTLP</b> command.	
7	End of procedure.	



Figure 1: MCU 5000A Loopback Point

#### **EXECUTION OF MCU 5000A LOOP TEST**

**GENERAL:** Perform a MCU 5000A loopback test at an arbitrary loop point using TLOP command, referring to NECA 340-414-300.

**APPARATUS:** MCU console

STEP	PROCEDURE	REFERENCE NO.
1	Has the MCU console been started up?	
	If YES, go to Step 3. If NO, go to Step 2.	
2	Start the MCU console up and put it into communication state.	TCP-016
3	Before the execution of loop test, the loopback point must be set beforehand by the <b>STLP</b> command.	TCP-003
4	Decide the kind of loop test.	COP-179
5	Enter the <b>TLOP</b> command and parameters for the selected kind of loop test and press the <b>RETURN</b> key.	COP-179
6	Verify that the normal response is displayed with <b>OK</b> .	
	If <b>YES</b> , go to <b>Step 6</b> . If <b>NO</b> , repeat <b>Step 5</b> using error code.	
7	End of procedure.	

#### **TROUBLESHOOTING OF M CONT UNIT**

**GENERAL:** Sectionalization of the failure is performed by the front lamp (LED) indication of M CONT unit.

APPARATUS: None

STEP	PROCEDURE	REFERENCE NO.
	Note: Location of SWs, Straps, LEDs, and list of LED function are shown in	
	GSD-009.	
1	Verify the LED condition.	
	If ST1 to ST6 are indicated steadily, go to Step 2.	
	If ST7 is lit, go to <b>Step 3</b> .	
	If ST8 is lit, go to <b>Step 4</b> .	
2	When ST1 to ST6 indicate steadily.	
	Some LEDs are blinking to give HEX indication of the number of the task	
	under execution by the CPU when operating normally.	
	However, when an abnormality has occurred, LEDs stop blinking indicating	
	the number of the task where the abnormality has occurred.	
	Act according to <b>Table 1</b> in <b>INT-001</b> .	
3	When ST7 is lit.	
	ST7 lights when an abnormality of the program occurs.	
	Act according to <b>Table 1</b> in <b>INT-001</b> .	
4	When ST8 is lit.	
	Is the memory card mounted?	
	If YES, go to Step 6.	
	If NO, go to Step 5.	
5	Mount the memory card and push the reset switch.	
6	Verify the indication of ST8.	
	If still lit, go to <b>Step 7</b> .	
	If went off, go to Step 8.	

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# **TROUBLESHOOTING OF M CONT UNIT**

STEP	PROCEDURE	REFERENCE NO.
7	Verify the state of Memory Card using RMCS command.	TCP-019
	If response is displayed with <b>LOW BATTERY VOLTAGE</b> , replace the battery with a new one.	
	If response is displayed with <b>ERR81</b> , replace the Memory Card with a new one.	
8	End of procedure.	

# **TROUBLESHOOTING OF 1.5M LIF UNIT**

GENERAL:		Sectionalization of the failure is performed by the LED indic LIF unit.	ation of 1.5M
APPARA	TUS:	MCU console	
STEP		PROCEDURE	REFERENCE NO.
	Note 1:	Mounting positions of LEDs and SW and the list of LED functions are shown in <b>GSD-001</b> .	
	Note 2:	When the LED of the CH (channel) in use is lit, there is a failure in the line. However, LEDs in the unused channels are always lit.	
	The char from the	nnel where the LED is lit, is sectionalized by entering the command MCU console as described in the following.	
1	Start up	the MCU console.	TCP-016
2	Set No. necessar	8 element of the SW3 on the M CONT unit to <b>ON</b> (CLOSE). It is not by to turn the power <b>OFF</b> .	
3	Set the r	emote (line) side loopback at point C from the console and execute.	TCP-003/TCP-004
	If the vio If they d	leo and audio signals of local station return at each point, go to <b>Step 4</b> . Io not return, go to <b>Step 6</b> .	TCP-017
4	Set the l execute.	ocal (MCU 5000A) side loopback at point F from the console and	TCP-003/TCP-004
	If the LE 1.5M LI If it does Then, go	ED of the CH that signal is loopback at the 1.5M LIF unit goes out, the F unit operates normally. s not go out, the 1.5M LIF unit is faulty. Replace it. to 5 to Step 7.	
5	Failure l Then, go	has occurred in the M CONT unit, perform troubleshooting.	TCP-005
6	The line	is faulty, perform troubleshooting.	
7	After the the M C <b>RESTA</b>	e end of failure sectionalization, return No. 8 element of the SW3 on ONT unit to <b>OFF</b> (OPEN). Press the <b>RESET SWITCH</b> and <b>RT</b> .	
8	End of p	procedure.	

# **TROUBLESHOOTING OF RS-422 LIF UNIT**

- **GENERAL:** Sectionalization of the failure is performed by the front lamp (LED) indication of RS-422 LIF unit.
- **APPARATUS:** MCU console

STEP		PROCEDURE	REFERENCE NO.
	Note 1:	Location of SWs, Straps, LEDs, and list of LED function are shown in <b>GSD-002</b> .	
	Note 2:	In the case where the LED of the CH (channel) in use is lit, there is a failure in the line. However, LEDs in the unused channels are always lit. The channel where the LED is lit is sectionalized by the command from the console as described in the following:	
1	Start up th	e console.	
2	Set No. 8 ( (CLOSE).	element of the switch pack SW3 on the M CONT unit to <b>ON</b> It is not necessary to turn the power <b>OFF</b> .	
3	Set the ren	note (line) side loopback at point F from the console and execute.	TCP-003/TCP-004
	If the video If they do	o and audio signals of local station return at each point, go to <b>Step 4</b> . not return, go to <b>Step 5</b> .	TCP-017
4	Failure has Then, go t	s occurred in the M CONT unit, perform troubleshooting. o <b>Step 6</b> .	TCP-005
5	The line is	faulty, perform troubleshooting.	
6	After the e the M CO <b>RESTAR</b>	nd of failure sectionalization, return No.8 element of the SW3 on NT unit to <b>OFF</b> (OPEN). Press the <b>RESET SWITCH</b> and <b>Γ</b> .	

End of procedure. 7

#### **TROUBLESHOOTING OF H0-INF LIF UNIT**

- **GENERAL:** Sectionalization of the failure is conducted by the front lamp (LED) indication of H0-INF LIF unit.
- APPARATUS: MCU console

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STEP		PROCEDURE	<b>REFERENCE NO.</b>
	Note 1:	Location of SWs, Straps, LEDs, and list of LED function are shown in <b>GSD-003</b> .	
	Note 2:	In the case where the LED of the CH (channel) in use is lit, there is a failure in the line. However, LEDs in the unused channels are always lit. The channel where the LED is lit is sectionalized by the command from the console as described in the following:	
1	Start up t	he console.	
2	Set No. 8 (CLOSE)	element of the switch pack SW3 on the M CONT unit to <b>ON</b> . It is not necessary to turn the power <b>OFF</b> .	
3	Set the re	mote (line) side loopback at point C from the console and execute.	TCP-003/ TCP-004
	If the vide If they do	eo and audio signals of local station return at each point, go to <b>Step 4</b> . o not return, go to <b>Step 6</b> .	
4	Set the lo execute.	cal (MCU 5000A) side loopback at point F from the console and	TCP-003/ TCP-004
	If the LE	D of the CH that signal is looped back at the H0-INF LIF unit goes I0-INF LIF unit operates normally.	
	If it does	not go out, the H0-INF LIF unit is faulty. Replace it.	TCP-017
5	Failure ha Then, go	as occurred in the M CONT unit, perform troubleshooting. to <b>Step 7</b> .	TCP-005
6	The line i	s faulty, perform troubleshooting.	
7	After the the M CC <b>RESTAR</b>	end of failure sectionalization, return No.8 element of the SW3 on ONT unit to <b>OFF</b> (OPEN). Press the <b>RESET SWITCH</b> and <b>CT</b> .	
8	End of pr	ocedure.	

#### **TROUBLESHOOTING OF EC H221 MUX UNIT**

**GENERAL:** Sectionalization of failure is conducted by the front lamp (LED) indication of EC H221 MUX unit.

APPARATUS: None

STEP	PROCEDURE	REFERENCE NO.
	<i>Note:</i> Location of SWs, Straps, LEDs, and list of LED function are shown in <b>GSD-004</b> .	
1	Is FUN ER (RC10) or MEM ER (RC 9)LED lit?	TCP-017
	If <b>YES</b> , the EC H221 MUX unit is faulty. Replace it. If <b>NO</b> , go to <b>Step 2</b> .	
2	Is REC (RC16) LED or REM ALM (RC15) LED lit?	
	If <b>YES</b> , go to <b>Step 3</b> . If <b>NO</b> , the EC H221 MUX unit is normal.	
3	Verify that the power of VL5000 is in on.	
	If <b>YES</b> , go to <b>Step 4</b> . If <b>NO</b> , turn on the power. Then, go to <b>Step 4</b> .	
4	Verify that parameter setting of VL5000 is correct.	
	If <b>YES</b> , go to <b>Step 5</b> . If <b>NO</b> , set the correct parameters. Then, go to <b>Step 5</b> .	
5	Set the MUX strap terminal of this unit to <b>OFF</b> .	
6	Set the MLB strap terminal of this unit to <b>ON</b> . (Loopback is set on the EC H 221 MUX unit)	
	<i>Note:</i> Performing <b>Steps 5</b> and <b>6</b> , it becomes possible to loopback video and audio signals and Low Speed Data to the line side without substituting the H 221 synchronizing signal.	
7	Verify that low speed data, video, and audio signals of its local station can be received at each conference room by requesting the remote loop using the <b>RLCS</b> command (refer to <b>NECA 340-414-300</b> ).	TCP-002 COP-177
	If <b>YES</b> , go to <b>Step 8</b> . If <b>NO</b> , the EC H221 MUX unit is faulty. Replace it.	TCP-017

#### **TROUBLESHOOTING OF EC H221 MUX UNIT**

STEP	PROCEDURE	REFERENCE NO.
8	Set the MUX strap terminal of this unit to <b>ON</b> .	
	<i>Note:</i> By doing this, it becomes possible that the H221 synchronizing signal is substituted and Low Speed Data, video and audio signals are looped back to the line side.	
9	Verify that low speed data, video, and audio signals of local station can be	TCP-002
	received at each conference room by requesting the remote loop using the <b>RLCS</b> command.	COP-146
	If <b>YES</b> , perform the troubleshooting of the V SW/LSD IF unit.	TCP-010
	If NO, the EC H221 MUX unit is faulty. Replace it.	TCP-017
10	Verify that switch and strap settings of this unit are correct.	
	If <b>YES</b> , go to <b>Step 11</b> . If <b>NO</b> , set the correct position. Then, go to <b>Step 5</b> .	
11	End of an order	

End of procedure. 11

#### **TROUBLESHOOTING OF PG/SIO UNIT**

**GENERAL:** Sectionalization of failure is performed by the LED indication of PG/SIO unit.

APPARATUS: MCU console

STEP	PROCEDURE	REFERENCE NO.
	<i>Note:</i> Location of SWs, Straps, LEDs, and list of LED function are shown in <b>GSD-008</b> .	
1	Verify the state of LED. If C LOS LED (RC1) is lit, go to <b>Step 2</b> . If SLP3 LED to SLP1 LEP (RC2 to RC4) is lit, go to <b>Step 7</b> . When C LOS LED (RC1) is lit. It lights when there is no line clock input from the line.	
2	Check the LED state of the CH which is in use on the LIF unit. If the LED of 1.5M LIF, RS-422 LIF, or H0-INF LIF is lit, perform the troubleshooting of the LIF unit. If the LED of 1.5M LIF, RS 422 LIF, or H0-INF LIF is not lit, go to <b>Step 4</b> .	TCP-006/TCP-007
3	Start up the MCU console.	TCP-016
4	Set No. 8 of SW3 to <b>ON</b> (CLOSE) on the M CONT unit. It is not necessary to turn the power switch <b>OFF</b> .	
5	Enter the following command from the MCU console.	
	RMIO 1002	
6	<ul><li>Present clock source CH is indicated as a response.</li><li>For example, when four CHs, i.e. CH1 to CH 4 are used, one of 00H to 03H is indicated.</li><li>When response is indicated, either the PG/SIO unit or the LIF unit is faulty.</li><li>Replace it.</li><li>If there is no response nor recovery from that state of no response, call</li></ul>	
	NECAM (refer to <b>paragraph 10.03 in this practice INT-001</b> ).	
	When RC 2 to RC 4 are lit.	
7	Check the LED state of the line side and the LIF unit. If it is lit, perform the troubleshooting of the line side and the LIF unit. (1.5M LIF, RS-422 IF, or H0-INF) If not, replace the PG/SIO unit.	TCP-002/ TCP-006/ TCP-007 TCP-017
8	End of procedure.	

### **TROUBLESHOOTING OF V SW/LSD IF UNIT**

GENERAL: Sectionalization of failure is performed by the LED indication of V SW/ LSD IF unit.

#### APPARATUS: None

STEP		PROCEDURE	REFERENCE NO.
	Note 1:	Location of SWs, Straps, LEDs, and list of LED function are shown in <b>GSD-005</b> .	
	Note 2:	These do not indicate failure conditions directly but may be an aid to failure sectionalization.	
	Note 3:	When a failure has happened to the visual communication, perform the troubleshooting checking LEDs of this unit.	
1	Verify that	t the ARM LED of V SW/LSD IF unit is lit.	
	If <b>YES</b> , g If <b>NO</b> , go	o to <b>Step 2</b> . to <b>Step 3</b> .	
2	When the	ARM LED of this unit is lit.	TCP-004
	It lights up pattern co Then, go	p when the judgment of abnormality is given as a result of loopback mparison at the time of MCU loop test. to <b>Step 12</b> .	
3	Check the	lighting condition of LEDs on the V SW/LSD IF unit.	
4	Does CO (Does CC	NF A LED light when group A communication is performed? NF B LED light when group B communication is performed?)	
	If <b>YES</b> , g If <b>NO</b> , go	o to <b>Step 6</b> . to <b>Step 5</b> .	
5	Turn the t B), and th	oggle switch to CONF A =Conference A (CONF B = conference en verify the state of LED.	
	If it is lit, If not, go	go to <mark>Step 7</mark> . to <b>Step 6</b> .	
6	Check the rooms.	power-up and setup of VL 5000s in the participating conference	

#### TROUBLESHOOTING OF V SW/LSD IF UNIT

STEP	PROCEDURE	<b>REFERENCE NO.</b>
7	Are broadcast sending station LEDs (TX1 to 8) lit?	
	If YES, go to Step 11. If NO, go to Step 8.	
8	Request the system operator to send the voice signal from the conference room (send his own voice).	
9	Are broadcast sending station LEDs (TX 1to 8) lit?	
	If <b>YES</b> , go to <b>Step 11</b> . If <b>NO</b> , go to <b>Step 12</b> .	
10	This unit operates normally. Then, go to Step 12.	
11	The V SW/LSD IF unit is faulty. Replace it.	TCP-017
12	End of procedure.	

#### **TROUBLESHOOTING OF A CODEC UNIT**

**GENERAL:** Sectionalization of failure is performed by the LED indication of A CODEC unit.

#### APPARATUS: None

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STEP	PROCEDURE	REFERENCE NO.
	<i>Note: 1:</i> Location of SWs, Straps, LEDs, and list of LED function are shown in <b>GSD-006</b> .	
	<i>Note 2:</i> These do not indicate failure conditions directly but may be an aid to failure sectionalization.	
	<i>Note 3:</i> When a failure has happened to the audio system, perform the troubleshooting checking LEDs of this unit.	
1	Start up the system and request each conference room to talk into the microphone more loudly than usual.	
2	Are LEDs (RC 1 to 4) of the A CODEC unit corresponding to the conference rooms lit?	
	If YES, go to Step 3. If No, go to Step 4.	
3	Perform the troubleshooting of the A SUM unit. Then, go to Step 5.	TCP-013
4	The A CODEC unit is faulty. Replace it.	TCP-017
5	End of procedure.	

#### **TROUBLESHOOTING OF A SUM UNIT**

GENERAL: Sectionalization of failure is performed on the A SUN	l unit.
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APPARATUS: Level Meter or Speaker with amplifier

STEP		PROCEDURE	REFERENCE NO.
	Note 1:	Location of SWs, Straps, LEDs, and list of LED function are shown in <b>GSD-007</b> .	
	Note 2:	These do not indicate failure conditions directly but may be an aid to failure sectionalization.	
	Note 3:	This troubleshooting is performed when a failure has happened to the audio system. Request each conference room to talk into the microphone and start the procedure after checking to see that the LEDs of the A CODEC unit corresponding to the conference rooms are lit.	
1	Connect a unit (see F	level meter or speaker with amplifier to the monitor terminal on the Fig. 1).	
2	Monitor w is monitor	with level meter or speaker with amplifier, and verify that the signal ed.	
	If <b>YES</b> , go If <b>NO</b> , go	to Step 3. to Step 4.	
3	The A CO	DEC unit is faulty. Replace it. Then, go to Step 5.	
4	The A SU	M unit is faulty. Replace it.	
5	Disconnecterminal.	t the level meter or speaker with amplifier from the monitor	
6	End of pro	ocedure.	



Figure 1: Monitoring of Audio Signal

### **TROUBLESHOOTING OF VIDEO RELATED FAILURE**

**GENERAL:** When the video signal is not output, troubleshooting is performed through the use of line from each conference room.

APPARATUS: None

STEP	PROCEDURE	REFERENCE NO.
1	Is the CONF A LED (CONF B LED) of the V SW/LSD IF unit lit?	GSD-005
	If <b>YES</b> , go to <b>Step 3</b> . If <b>NO</b> , go to <b>Step 2</b> .	
2	Turn the toggle switch on the V SW/LSD IF unit to CONF A (CONF B). Then, verify that CONF A LED (CONF B LED) lights.	GSD-005
3	Are JOIN CH1 to CH8 LEDs (participating conference room) lit?	GSD-005
	If YES, go to Step 5. If NO, go to Step 4.	
4	Perform the power-up and setup of the VL 5000 at each participating conference room. Then, verify that JOIN CH1 to CH8 LED lights.	
5	Are broadcast sending station LEDs (TX 1 to 8) lit?	
	If YES, go to Step 7. If NO, go to Step 6.	
6	Request the system operator to speak loudly.	TCP-017
	If the TX () LED lights up, the operation is normal. If not, the V SW/LSD IF unit is faulty. Replace it.	
7		

7 End of procedure.

### **TROUBLESHOOTING OF AUDIO SYSTEM**

**GENERAL:** Troubleshooting of the audio system is performed through the use of line from each conference room.

**APPARATUS:** Level Meter or Speaker with amplifier

STEP	PROCEDURE	REFERENCE NO.
1	Start up the whole system.	
2	Request each conference room to speak loudly for a test.	
3	Are the appropriate LEDs (RC 1 to 4) of the A CODEC unit lit?	TCP-017
	If YES, go to Step 4.	
	in NO, replace the A CODEC unit. Then, go to Step 5.	
4	Perform the troubleshooting of the A SUM unit.	TCP-013
	Connect a level meter or speaker with amplifier to the monitor terminal on the front panel of a A SUM unit and monitor.	
5	Is the signal monitored?	
	If <b>YES</b> , go to <b>Step 6</b> . If <b>NO</b> , go to <b>Step 7</b> .	
6	The A CODEC unit is faulty. Replace it. Then, go to Step 8.	TCP-017
7	The A SUM unit is faulty. Replace it.	TCP-017
8	End of procedure.	
# START-UP OF MCU CONSOLE

**GENERAL:** This procedure provides instruction for turn-up of MCU.

APPARATUS: None

SIEP
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#### PROCEDURE

**REFERENCE NO.** 

Note: MCU console is required the specifications as following.

- A. Physical Interface
  - RS-232 interface port (serial interface port) of both the MCU 5000A and the MCU console are equipped with the D-sub 25-pin connector conforming to EIA RS-232C.
  - Up to 3 consoles can be connected to the MCU 5000A using CH1 to CH3 terminals.
- B. Electrical Interface
  - The pin assignments of the connector are given in the following table.
  - Pin Assignments for RS-232C Port Connector

The reverse (twisted) cable is used to connect the MCU console with the MCU 5000A, as both of them are DTE (Data Terminal Equipment). The straight cable is used to connect DCE (Data Communication Equipment) such as the modem.

C. Reverse Cable Connection

The communication condition for the RS-232C Port is set as follows:

- Synchronous mode: Start-stop mode
- Baud rate: 9600 bps
- Character bit length: 8 bits
- Stop bit length: 1 bit
- Parity check: none
- X control: none

## **START-UP OF MCU CONSOLE**

STEP			PROCEDURE	REFERENCE NO.
1	Connect r	eversed cab	e between RS-232C terminal at rear side of	
	MCU 500 cable. ( <mark>Se</mark>	0A and RS- ee Fig. 2)	232C terminal of MCU console by using RS-232C	
2	Set MCU	console as l	pelow.	
	• Sync	hronous mo	de: Start Stop mode	
	• Baud	rate:	9600 bps	
	• Char	acter bit len	gth: 8 bit	
	• Stop	bit length:	1 bit	
	• Parity	y Check:	none	
	• X co	ntrol:	none	
3	Turn on p	ower switch	of MCU console.	
4	Turn on p	ower switch	of MCU 5000A.	
5	Is the oper	ning messag	e displayed? (See Fig. 1)	
	<b>If YES</b> , g If <b>NO</b> , go	o to <b>Step 8</b> . to <b>Step 6</b> .		
6	Turn OFF	power swit	ch of MCU console and MCU 5000A.	
7	Check the	connection	of cable.	
8	Using the	RCLK com	mand, check if the console connection is correct or no	t.
	RCLK			
9	Verify tha	t the correct	date and time are displayed on the screen.	
	If correct, If not corr	go to <b>Step</b> rect, go to <b>S</b>	11. tep 10.	
10	To change command	the date an	d time setting, enter as follows using the WCLK	
	WCLK	yyyy - mr	h - dd $hh : ff : ss$	
	уууу:	year	(4 digits)	
	mm:	month	(2 digits)	
	dd:	day	(2 digits)	
	hh:	hour	(2  digits)	
	11:	second	(2  digits)	
11	oo. End of an	andura	(2 uigno)	
11	End of pro	Jedure.		



### START-UP OF MCU CONSOLE

Figure 1: Connection of MCU Console to MCU 5000A

\*\*\* Multi point Teleconference control unit MCU 5000A Ver x.xx \*\*\*
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Figure 2: Opening Message

# **REPLACEMENT OF UNIT**

**GENERAL:** This procedure describes the step of unit replacement.

APPARATUS: None

Table 1:

STEP	PROCEDURE	REFERENCE NO.
1	Turn OFF the power switch of the MCU 5000A.	
2	If front cover is already open, go to Step 4.	INP-003
3	WARNING: FRONT COVER SHOULD BE LOWERED (180°) WITH	
	BOTH HANDS ALLOWING COVER TO DROP FREELY MAY DAMAGE	
	COVER OR EQUIPMENT BELOW.	



Figure 1: Open Front Cover

-

### **REPLACEMENT OF UNIT**

STEP	PROCEDURE	REFERENCE NO.
4	Using index fingers, slide the locking knob to inside of the front cover.	
	WARNING:	
	1. TO PREVENT DAMAGE TO THE ELECTROSTATICS SENSITIVE	
	DEVICE USED IN THE MCU 5000A, ALWAYS WEAR A WRIST	
	STRAP WHEN REPLACING A UNIT.	
	2. ATTACH THE 2224 ADJUSTABLE WRIST STRAP OR	
	EQUIVALENT TO THE WRIST AND CONNECT TO THE ESD	
	CONNECTOR ON THE MCU 5000A.	
5	Check to see the unit to be pulled out. The unit abbreviation marked	
	on the inside of front cover shows the mounting position.	
6	Pull down on the bottom ejector and push up on the top ejector.	
7	Hold the top and bottom edges of the unit and gently slide the unit out of MCU	
	5000A.	



Figure 2: Remove Unit

### **REPLACEMENT OF UNIT**

STEP	PROCEDURE	REFERENCE NO.
8	Verify that the switch and strap settings of the new unit coincide with that of the removed unit.	
	If YES, go to Step 9. If NO, set the correct settings of switch and strap. Then, go to Step 9.	
9	Insert the new unit into the appropriate slot.	
10	Make sure that the connector on the rear of the unit is correctly inserted into the slot.	
11	Push up on the bottom ejector and pull down on the bottom ejector.	
12	Raise front cover and using index fingers, slide to locking knobs to outside of front cover.	INP-004
13	Turn <b>ON</b> the power switch, if necessary.	
14	End of procedure.	

## **REPLACEMENT OF MEMORY CARD BATTERY**

GENERAL:	This procedure describes how to replace the battery for memory card
	which is of SRAM type and backed up by a lithium battery used in the
	MCU 5000A.

APPARATUS:	Small Phillps-head	screwdriver
$\mathbf{A}$	Sman i mips-neau	serewurrver

STEP	PROCEDURE	REFERENCE NO.
WARNING:		

- 1: In replacing the battery due to such causes as voltage drop, mount the memory card on the M CONT unit and keep the power of the MCU 5000A on (power is fed to the memory card).
- 2: The contents of memory card disappear if the battery is removed from the memory card being pulled out of the equipment.

**CAUTION:** There is a **WRITE-PROTECT SWITCH** on the front edge of the card. the switch is set to **WRITE - PROTECT ON** position. do not change the setting (state of **NO WRITE - IN**).

- 1 Loosen the screw on the front edge with a small screwdriver until it comes out 4 to 5 mm. (See Fig. 1.)
- 2 Pull out the battery holder. Secure the card so that it may not come out. (See Fig. 2.)
- 3 Turn the  $\oplus$  face of the new battery to the left and set it into the battery holder. (See Fig. 3.)
- 4 Insert the battery holder until it seats in the correct position. (See Fig. 4.)
- 5 Tighten the screw and fix the holder. (See Fig. 5.)
- 6 End of procedure.



## **REPLACEMENT OF MEMORY CARD BATTERY**

# CHECK ON STATE AND KIND OF MEMORY CARD

**GENERAL:** Condition of memory card insertion, battery voltage, write - protect setting, and kind of memory card are checked in accordance with the following.

#### APPARATUS: MCU console

STEP		PROCEDURE	REFERENCE NO.
1	Start up the console.	TCP-016	
2	Enter the RMCS command a	as shown below.	COP-168
	RMCS →		
3	If the response is normal, follo Check the state and kind of th		
	Response parameter: ibp k	ОК	
	i: state of insertion	0: not inserted 1: inserted	
	b: battery condition	<ul><li>0: low battery voltage</li><li>1: normal</li></ul>	
	p: write - protect	0: yes 1: no	
	k: kind of memory card	0: RAM 1: MASK ROM 2: One Time ROM	

If the response is abnormal, check the error code and retry from Step 2.

4 End of procedure.

# **COPYING CONTENTS OF MEMORY CARD**

**GENERAL:** To copy the contents of the memory card onto another memory card, insert the original memory card and the new one alternately following the directions from the MCU 5000A. Depending on the amount of information to be copied, it may take one to several times of copying.

#### APPARATUS: MCU console

STEP	PROCEDURE	REFERENCE NO.
1	<i>Note:</i> Error might occur when you try to copy onto the different kind of the card.	
2	Start up the console.	
3	Turn on the power of the MCU 5000A.	TCP-016
4	Enter the <b>CPMC</b> command (refer to Chapter 3).	COP-169
	CPMC -	
5	When the response is normal, directive message is displayed. Then, go to <b>Step 5</b> .	
	When the error code is indicated, retry from <b>Step 3</b> referring to the error code table.	
6	Insert the original memory card into the slot and press the <b>RETURN</b> key.	
7	Pull out the original memory card from the slot, insert the new one and press the <b>RETURN</b> key.	
8	When the copying is over, the message <b>MORE?</b> $(Y / N)$ appears.	
	The number of copying times is different depending on the amount of information to be copied. Repeat the copying as required pressing <b>Y</b> .	
	When the conving is completed, the message <b>completed OK</b> appears. The	

When the copying is completed, the message **completed OK** appears. The completion of copying is verified by that message.

9 End of procedure.

# **REPLACEMENT OF BACKUP MEMORY BATTERY**

**GENERAL:** This procedure describes the steps for replacing the lithium battery type: (R2032-P5-1 or equivalent) battery for the back up memory of the M CONT unit.

APPARATUS: Soldering Iron

STEP	PROCEDURE	REFERENCE NO.
1	Turn power switch <b>OFF</b> .	
2	Open the front cover of the MCU 5000A.	
3	Remove the M CONT unit.	
4	The battery is soldered to the PWB. Remove it using a soldering iron. The position and condition of mounting are shown in Fig. 1.	
5	After replacing the battery, re-install the M CONT unit into the slot and close the cover.	
6	End of measure	

6 End of procedure.



Figure 1: Mounting Position of Battery

# TROUBLESHOOTING OF VDSW UNIT

- **GENERAL:** Sectionalization of failure is performed by the LED indication of VDSW unit.
- APPARATUS: None

STEP		PROCEDURE	REFERENCE NO.
	Note 1:	Location of SWs, Straps, LEDs, and list of LED function are shown in <b>GSD-010</b> .	
	Note 2:	These do not indicate failure conditions directly but may be an aid to failure sectionalization.	
	Note 3:	When a failure has happened to the visual communication, perform the troubleshooting checking LEDs of this unit.	
1	Verify that	t the PN ERR of VDSW unit is lit.	
	If <b>YES</b> , g If <b>NO</b> , go	o to <b>Step 2</b> . to <b>Step 3</b> .	
2	When the	PN ERR of this unit is lit.	<b>TCP-004</b>
	It lights up pattern co Then, go	p when the judgment of abnormality is given as a result of loopback imparison at the time of MCU loop test. to <b>Step 12</b> .	
3	Check the	e lighting condition of LEDs on the VDSW unit.	
4	Does CO (Does CC	NF A LED light when group A communication is performed? NF B LED light when group B communication is performed?)	
	If <b>YES</b> , g If <b>NO</b> , go	o to <b>Step 6</b> . to <b>Step 5</b> .	
5	Turn the t B), and th	oggle switch to CONF A =Conference A (CONF B = conference en verify the state of LED.	
	If it is lit, If not, go	go to <b>Step 7</b> . to <b>Step 6</b> .	
6	Check the rooms.	e power-up and setup of VL 5000s in the participating conference	

## TROUBLESHOOTING OF VDSW UNIT

STEP	PROCEDURE	<b>REFERENCE NO.</b>
7	Are broadcast sending station LEDs (VIDEO RC1 to 4) lit?	
	If YES, go to Step 11. If NO, go to Step 8.	
8	Request the system operator to send the voice signal from the conference room (send his own voice).	
9	Are broadcast sending station LEDs (VIDEO RC1 to 4) lit?	
	If <b>YES</b> , go to <b>Step 11</b> . If <b>NO</b> , go to <b>Step 12</b> .	
10	This unit operates normally. Then, go to Step 12.	
11	The VDSW unit is faulty. Replace it.	
12	End of procedure.	