

**SONY®**

FLAT WIDE DISPLAY MONITOR

**FWD-40LX2F**

**FWD-40LX2X**

**FWD-32LX2F**

**FWD-32LX2X**

**KLH-W32**

**KLH-W26**

PROTOCOL MANUAL

1st Edition



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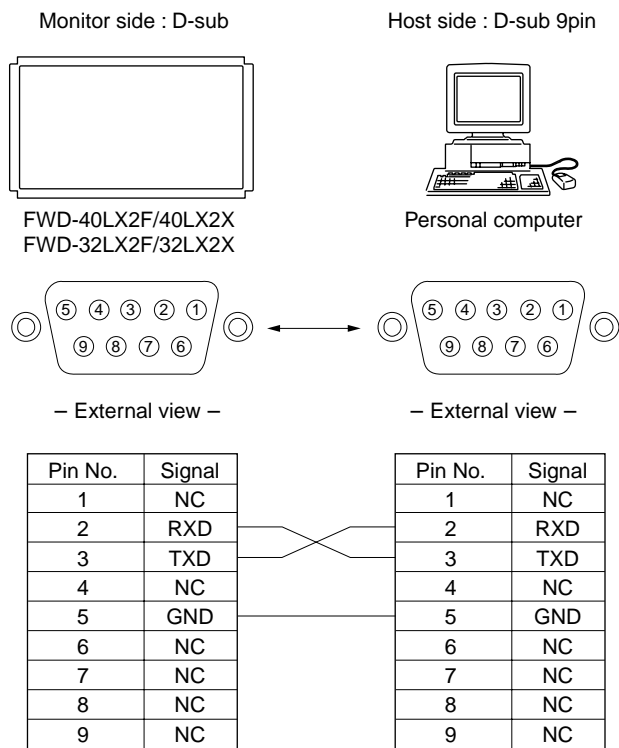
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## 1. Communication Parameters

Communication Method	RS-232C
Synchronous Method	Asynchronous
Baud Rate	9600 bps
Character Length	8bit
Parity	None
Start Bit Length	1bit
Stop Bit Length	1bit
Flow Control	None

## 2. Pin Assignment



The control command is not acceptable for 3 seconds after the power is turned on from the standby state and for 5 seconds after the power is turned on when AC is set to ON from OFF state. Send the command after waiting each required time. In the case when the power is turned on from the standby state, the starting up by using the timer (KLH-W26/W32 does not have this function), the power key of main unit or the remote commander is included as well as the command from RS-232C.

## 3. Communication Data Format

### (a) Control message

No.	Item	Value
1	Header	0x8C:Control
2	Category	0xXX
3	Function	0xXX
4	Data1 (Length)	0xXX
5	Data2 (Data1)	0xXX
:	:	0xXX
:	:	0xXX
X	Data (X-3)	0xXX
X+1	Check Sum	0xXX

- \* Check Sum: Sum total of 1 to X. Lower one-byte data is validated when a value exceeds 255 (1byte).
- \* Set the command interval to 500 ms or more when transmitting the Control command continuously.
- \* Set the command interval to 500 ms or more when transmitting the same command (Enquiry) after the Control command.

### (b) Enquiry message

No.	Item	Value
1	Header	0x83:Enquiry
2	Category	0xXX
3	Function	0xXX
4	Data1	0xFF
5	Data2	0xFF
6	Check Sum	0xXX

- \* Check Sum: Sum total of 1 to 5. Lower one-byte data is validated when a value exceeds 255 (1byte).

### (c) Answer message

#### ① Control answer

No.	Item	Value
1	Header	0x70:Answer
2	Answer*	0x00:Completed 0x01:Limit Over 0x02:Limit Under 0x03:Command Canceled
3	Check Sum	0xXX
* 0x00:Completed		Packet is correctly received and process is also correctly completed.
0x01:Limit Over		Packet is correctly received, but the data value is over the upper limit.
0x02:Limit Under		Packet is correctly received, but the data value under the lower limit.
0x03:Command Canceled		Packet is correctly received, but the data value is not correct or the request cannot be accepted in the current host state.
* Check Sum:		Sum total of 1 to 2. Lower one-byte data is validated when a value exceeds 255 (1byte).

#### ② Enquiry answer (Complete)

No.	Item	Value
1	Header	0x70:Answer
2	Answer	0x00:Completed
3	Return Data Size	0xXX
4	Return Data1	0xXX
:	:	0xXX
:	:	0xXX
X	Return Data (X-3)	0xXX
X+1	Check Sum	0xXX
* 0x00:Completed		Packet is correctly received and process is also correctly completed.
* Return Data:		Returns the read value.
* Check Sum:		Sum total of 1 to X. Lower one-byte data is validated when a value exceeds 255 (1byte).

#### ③ Enquiry answer (Command cancel)

No.	Item	Value
1	Header	0x70:Answer
2	Answer	0x03:Command Canceled
3	Check Sum	0x73
0x03:Command Canceled		Packet is correctly received, but the data value is not correct of the request cannot be accepted in the current host state.

#### ④ Error answer

No.	Item	Value
1	Header	0xE0:Answer
2	Answer*	0x00:No Function Error 0x01:Check Sum Error 0x02:Data Length Error
3	Check Sum	0xXX
* 0x00:No Function Error		Packet header, category of function code are not included in this protocol.
0x01:Check Sum Error		Check sum value of received packet is not correct.
0x02:Data Length Error		Packet is correctly received, but the data size is over the upper limit.
* Check Sum:		Sum total of 1 to 2. Lower one-byte data is validated when a value exceeds 255 (1byte).

## 4. General Function

### (a) Mode Control

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x00	Code Table (1-a)[a]	0x02	Code Table (1-a)[b]	0xXX
Enquiry	0x83			0xFF	0xFF	0xXX

Answer	Header	Answer	Check Sum	
Control	0x70	0x00	0x70	Completed
	0x70	0x01	0x71	Limit Over
	0x70	0x02	0x72	Limit Under
	0x70	0x03	0x73	Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum	
Enquiry	0x70	0x00	0x02	Code Table(1-a)[b]	0xXX	Completed

#### Code Table (1-a)

[a]Function	[b]Range/Switch Code	Command Control	Enquiry	Standby	Power On
0x00 Power* <sup>1</sup>	0x00 OFF	Yes	Yes	Enable	Enable
	0x01 ON				
0x01 Input Select* <sup>3</sup>	0x08 INPUT1 RGB (Analog)	Yes	Yes	Disable	Enable
	0x09 INPUT1 YUV (Analog)				
	0x0C OPTION1 VIDEO				
	0x0D OPTION1 S-VIDEO				
	0x0E OPTION1 RGB				
	0x0F OPTION1 COMPONENT				
	0x10 OPTION2 VIDEO* <sup>2</sup>				
	0x11 OPTION2 S-VIDEO* <sup>2</sup>				
	0x12 OPTION2 RGB* <sup>2</sup>				
	0x13 OPTION2 COMPONENT* <sup>2</sup>				
	0x44 INPUT2 RGB (Digital)				
	0x45 INPUT2 DTV (Digital)				
0x02 Force Status Display	0x54 INPUT3 RGB (Digital)	Yes	Yes	Disable	Enable
	0x55 INPUT3 DTV (Digital)				
	0x00 ON				
0x03 Audio Mute	0x01 OFF	Yes	Yes	Disable	Enable
	0x01 ON				
0x04 Auto Status Display	0x00 ON	Yes	Yes	Enable	Enable
	0x01 OFF				
0x10 Index Number	0x01-0xFF	Yes	Yes	Disable	Enable
0x14 Speaker Out	0x00 ON	Yes	Yes	Disable	Enable
	0x01 OFF				

Code Table (1-a)

[a]Function	[b]Range/Switch Code	Command Control	Enquiry	Standby	Power On
0x18 Sync Mode	0x00 H/Comp	Yes	Yes	Disable	Enable
	0x01 Video				
0x1B Clock Display	0x00 OFF	Yes	Yes	Disable	Enable
	0x01 ON				
0x24 Input Detect (Option1)	0x00 FW12 (HD15)	No	Yes	Disable	Enable
	0x01 FW10 (VIDEO, S-VIDEO) BNC				
	0x02 FW11 (BNC)				
	0x03 Reserved				
	0x04 FW31/32				
	0x05 FW50 (RGB)				
	0x06 FW20 (UART + CTRL-S)				
	0x07 Reserved				
	0x08 Reserved				
	0x09 Reserved				
	0x0A Reserved				
	0x0B Reserved				
	0x0C Reserved				
	0x0D Reserved				
	0x0E Reserved				
0x0F Not Connect					
0x25 Input Detect (Option2)*2	0x00 FW12 (HD15)	No	Yes	Disable	Enable
	0x01 FW10 (VIDEO, S-VIDEO) BNC				
	0x02 FW11 (BNC)				
	0x03 Reserved				
	0x04 Reserved				
	0x05 Reserved				
	0x06 FW20 (UART + CTRL-S)				
	0x07 Reserved				
	0x08 Reserved				
	0x09 Reserved				
	0x0A Reserved				
	0x0B Reserved				
	0x0C Reserved				
	0x0D Reserved				
	0x0E Reserved				
0x0F Not Connect					
0x30 PAP*2	0x00 OFF	Yes	Yes	Disable	Enable
	0x01 P&P				
0x31 Active Picture*2	0x00 Left	Yes	No	Disable	Enable
	0x01 Right				
	0x02 Swap				



Code Table (1-a)

[a]Function		[b]Range/Switch Code		Command Control	Enquiry	Standby	Power On
0x32	Picture Size (P&P)*2	0x00	Large Left	Yes	Yes	Disable	Enable
		0x01	Even				
		0x02	Large Right				
0x35	PAP Input Detect (Left)*2	0x08	INPUT1 RGB (Analog)	No	Yes	Disable	Enable
		0x09	INPUT1 YUV (Analog)				
		0x0C	OPTION1 VIDEO				
		0x0D	OPTION1 S-VIDEO				
		0x0E	OPTION1 RGB				
		0x0F	OPTION1 COMPONENT				
		0x10	OPTION2 VIDEO				
		0x11	OPTION2 S-VIDEO				
		0x12	OPTION2 RGB				
		0x13	OPTION2 COMPONENT				
		0x44	INPUT2 RGB (Digital)				
		0x45	INPUT2 DTV (Digital)				
		0x36	PAP Input Detect (Right)*2				
0x09	INPUT1 YUV (Analog)						
0x0C	OPTION1 VIDEO						
0x0D	OPTION1 S-VIDEO						
0x0E	OPTION1 RGB						
0x0F	OPTION1 COMPONENT						
0x10	OPTION2 VIDEO						
0x11	OPTION2 S-VIDEO						
0x12	OPTION2 RGB						
0x13	OPTION2 COMPONENT						
0x44	INPUT2 RGB (Digital)						
0x45	INPUT2 DTV (Digital)						
0x45	Control Mode			0x00	Main + Remocon	Yes	Yes
		0x01	Main				
		0x02	Remocon				
		0x03	All Off				
		0x04	Limited*4				
0x46	On Off Timer Mode*2	0x00	Every Day (Repeat)	Yes	Yes	Enable	Enable
		0x01	Day Of Week				

Code Table (1-a)

[a]Function	[b]Range/Switch Code	Command Control	Enquiry	Standby	Power On
0x47 On Timer Enable*2	bit0 Sunday 1:Enable, 0:Disable	Yes	Yes	Enable	Enable
	bit1 Monday 1:Enable, 0:Disable				
	bit2 Tuesday 1:Enable, 0:Disable				
	bit3 Wednesday 1:Enable, 0:Disable				
	bit4 Thursday 1:Enable, 0:Disable				
	bit5 Friday 1:Enable, 0:Disable				
	bit6 Saturday 1:Enable, 0:Disable				
	bit7 Every day 1:Enable, 0:Disable				
0x48 Off Timer Enable*2	bit0 Sunday 1:Enable, 0:Disable	Yes	Yes	Enable	Enable
	bit1 Monday 1:Enable, 0:Disable				
	bit2 Tuesday 1:Enable, 0:Disable				
	bit3 Wednesday 1:Enable, 0:Disable				
	bit4 Thursday 1:Enable, 0:Disable				
	bit5 Friday 1:Enable, 0:Disable				
	bit6 Saturday 1:Enable, 0:Disable				
	bit7 Every day 1:Enable, 0:Disable				
0x65 IP Setting Mode	0x00 DHCP	Yes	Yes	Enable	Enable
	0x01 Manual				
	0x02 Speed				
0x66 IP Setting Execute	0x00 No	No	Yes	Enable	Enable
	0x01 Yes				
0x67 IP Setting Result	0x00 Done	Yes	No	Enable	Enable
	0x01 Error 1 (UART Commu.)				
	0x02 Error 2 (Duplication)				
	0x03 Error 3 (IP Add Setting)				
	0x04 Error 4 (GW Add setting)				
	0x05 Error 5 (DNS1 Setting)				
	0x06 Error 6 (DNS2 Setting)				
	0x07 Error 7 (Sbnt Msk Setting)				
0x68 Speed Setting	0x00 100 Mbps/Full Duplex	Yes	Yes	Enable	Enable
	0x01 100 Mbps/Half Duplex				
	0x02 10 Mbps/Full Duplex				
	0x03 10 Mbps/Half Duplex				
	0x04 Auto				
0x70 Input Skip	bit0 HD15	Yes	Yes	Disable	Enable
	bit1 HDMI1				
	bit2 HDMI2				
	bit3 Reserved				
	bit4 Reserved				
	bit5 Reserved				
	bit6 Reserved				
	bit7 Reserved				

Code Table (1-a)

[a]Function	[b]Range/Switch Code	Command Control	Enquiry	Standby	Power On
0x71 Default Input	0x00 Last Memory	Yes	Yes	Enable	Enable
	0x01 Option1				
0x73 Auto Signal Detect	0x00 Off	Yes	Yes	Enable	Enable
	0x01 On				
0x74 HDMI Signal Detect *5	0x00 VIDEO	No	Yes	Disable	Enable
	0x01 PC				
0x75 Signal Status *6	0x00 Stable	No	Yes	Disable	Enable
	0x01 Unstable/No Signal				
0x76 VIDEO Signal Detect	0x00 NTSC	No	Yes	Disable	Enable
	0x01 PAL/SECAM				

\*1: Transmit the next command 3 seconds Power On and Power Off commands are transmitted. If not, correct data may not be able to be acquired.

\*2: KLH-W26/W32 does not have this function.

\*3: This unit automatically detects the input signal. Therefore changing in automatically if not setting a kind of signal. (RGB and Component, PC and VIDEO in HDMI etc)

\*4: Restricts the following key operations.

[Remote Commander]

Menu, Picture, Sound, ECO (Power Saving), Sleep, Contrast+/-, Brightness, Chroma, H Shift, V Shift, V size, PAP

[Main]

Menu

\*5: HDMI Signal Detect is Enable only when the signal is in Stable.

\*6: In the case of two windows, returns Signal Status of Active Window.

**(b) Time Control**

Clock Set (Hour, Minute)

Syntax	Header	Category	Function	Data1	Data2	Data3	Check Sum
Control	0x8C	0x00	0x22	0x03	Hour: 0x00-0x17	Minute: 0x00-0x3B	0xXX

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x00	0x22	0xFF	0xFF	0xA3

Answer	Header	Answer	Check Sum	
Control	0x70	0x00	0x70	Completed
	0x70	0x01	0x71	Limit Over
	0x70	0x02	0x72	Limit Under
	0x70	0x03	0x73	Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Check Sum	
Enquiry	0x70	0x00	0x03	Hour: 0x00-0x17	Minute: 0x00-0x3B	0xXX	Completed

Clock Set (Week)

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x00	0x23	0x02	Week: Code Table (1-e)	0xXX

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x00	0x23	0xFF	0xFF	0xA4

Answer	Header	Answer	Check Sum	
Control	0x70	0x00	0x70	Completed
	0x70	0x01	0x71	Limit Over
	0x70	0x02	0x72	Limit Under
	0x70	0x03	0x73	Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum	
Enquiry	0x70	0x00	0x02	Week:Code Table (1-e)	0xXX	Completed

Code Table (1-e)

Week Select	
0x00	Sunday
0x01	Monday
0x02	Tuesday
0x03	Wednesday
0x04	Thursday
0x05	Friday
0x06	Saturday

On Timer, Off Timer\*1

Syntax	Header	Category	Function	Data1	Data2	Data3	Check Sum
Control	0x8C	0x00	Code Table (1-f)[a]	0x03	Hour: 0x00-0x17	Minute: 0x00-0x3B	0xXX

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x00	Code Table (1-f)[a]	0xFF	0xFF	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70 Completed
	0x70	0x01	0x71 Limit Over
	0x70	0x02	0x72 Limit Under
	0x70	0x03	0x73 Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Check Sum
Enquiry	0x70	0x00	0x03	Hour: 0x00-0x17	Minute: 0x00-0x3B	0xXX Completed

Code Table(1-f)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
Clock Set					
0x22	Hour, Minute	Yes	Yes	Disable	Enable
0x23	Week				
On Timer					
0x50	Sunday	Yes	Yes	Disable	Enable
0x51	Monday				
0x52	Tuesday				
0x53	Wednesday				
0x54	Thursday				
0x55	Friday				
0x56	Saturday				
0x57	Every day				
Off Timer					
0x58	Sunday	Yes	Yes	Disable	Enable
0x59	Monday				
0x5A	Tuesday				
0x5B	Wednesday				
0x5C	Thursday				
0x5D	Friday				
0x5E	Saturday				
0x5F	Every day				

\*1: KLH-W26/W32 does not have this function.

**(c) IP Address Setting**

IP Address

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x42	0x05	Address 0 0x00-0xFF	Address 1 0x00-0xFF	Address 2 0x00-0xFF	Address 3 0x00-0xFF	0xXX

Subnet Mask

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x61	0x05	Address 0 0x00-0xFF	Address 1 0x00-0xFF	Address 2 0x00-0xFF	Address 3 0x00-0xFF	0xXX

Gateway Address

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x62	0x05	Address 0 0x00-0xFF	Address 1 0x00-0xFF	Address 2 0x00-0xFF	Address 3 0x00-0xFF	0xXX

## DNS Primary

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x63	0x05	Address 0 0x00-0xFF	Address 1 0x00-0xFF	Address 2 0x00-0xFF	Address 3 0x00-0xFF	0xXX

## DNS Secondary

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x64	0x05	Address 0 0x00-0xFF	Address 1 0x00-0xFF	Address 2 0x00-0xFF	Address 3 0x00-0xFF	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70
	0x70	0x03	0x73
			Completed
			Command Canceled

IP Address ex)

192.128.14.1 → 192(0xC0)...Address 0  
128(0x80)...Address 1  
14(0x0E)...Address 2  
1(0x01)...Address 3

\* IP address command can be carried out even in the standby state.

## Code Table(1-a)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
0x42 IP Address		Yes	Yes	Enable	Enable
0x61 Subnet Mask					
0x62 Gateway Address					
0x63 DNS Primary					
0x64 DNS Secondary					

## 5. Picture/Sound

### (a) Picture/Sound

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x10	Code Table (2-a)[a]	0x02	Code Table (2-a)[b]	0xXX
Enquiry	0x83			0xFF	0xFF	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70
	0x70	0x01	0x71
	0x70	0x02	0x72
	0x70	0x03	0x73
			Completed
			Limit Over
			Limit Under
			Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Code Table (2-a)[b]	0xXX
					Completed

Code Table (2-a)

[a]Function		[b]Range/Switch code		Command Control	Enquiry	Standby	Power On
0x00	Contrast	0x00-0x64		Yes	Yes	Disable	Enable
0x01	Brightness	0x00-0x64		Yes	Yes	Disable	Enable
0x02	Chroma	0x00-0x64		Yes	Yes	Disable	Enable
0x03	Phase	0x00-0x64		Yes	Yes	Disable	Enable
0x04	Color Temp	0x00	Cool	Yes	Yes	Disable	Enable
		0x01	Neutral				
		0x02	Warm				
0x10	Picture Mode	0x00	Standard	Yes	Yes	Disable	Enable
		0x01	Vivid				
		0x02	Custom				
		0x05	TC Control				
0x30	Volume	0x00-0x64		Yes	Yes	Enable	Enable
0x31	Treble* <sup>1</sup>	0x00-0x0C		Yes	Yes	Disable	Enable
0x32	Bass* <sup>1</sup>	0x00-0x0C		Yes	Yes	Disable	Enable
0x33	Balance	0x00-0x1E		Yes	Yes	Disable	Enable
0x35	Sound Mode	0x00	Dynamic	Yes	Yes	Disable	Enable
		0x01	Standard				
		0x02	SRS				
		0x03	Custom				
0x36	Default Volume Set	0x00-0x64		Yes	Yes	Enable	Enable
0x37	Volume Select	0x00	Last Memory	Yes	Yes	Enable	Enable
		0x01	Default Setting				
0x38	Max Volume Set	0x00	100	Yes	Yes	Enable	Enable
		0x01	70				
		0x02	50				
0x39	Common Audio Select	0x00	HD15	Yes	Yes	Disable	Enable
		0x01	HDMI1				
		0x02	HDMI2				

\*1: Sound mode = Custom and Speaker = On is enable

\*2: KLH-W26/W32 does not have this function.

**(b) Color Temp**

Syntax	Header	Category	Function	Data1	Data2	Data3	Check Sum
Control	0x8C	0x10	Code Table (2-b)[a]	0x03	Code Table (2-c)	Code Table (2-b)[b]	0xXX
Syntax	Header	Category	Function	Data1	Data2	Check Sum	
Enquiry	0x83	0x10	Code Table (2-b)[a]	Code Table (2-c)	0xFF	0xXX	



Answer	Header	Answer	Check Sum	
Control	0x70	0x00	0x70	Completed
	0x70	0x03	0x73	Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Check Sum	
Enquiry	0x70	0x00	0x03	Code Table (2-c)	Code Table (2-b)[b]	0xXX	Completed

#### Code Table (2-b)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On	
0x05	Red Gain	0x00-0xFF	Yes	Yes	Disable	Enable
0x06	Green Gain	0x00-0xFF				
0x07	Blue Gain	0x00-0xFF				

#### Code Table (2-c)

Format Select	
0x00	Cool
0x01	Neutral
0x02	Warm

## 6. Size/Shift

### (a) 8Bits Register

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x20	Code Table (3-b)[a]	0x02	Code Table (3-b)[b]	0xXX
Enquiry	0x83			0xFF	0xFF	0xXX

Answer	Header	Answer	Check Sum	
Control	0x70	0x00	0x70	Completed
	0x70	0x01	0x71	Limit Over
	0x70	0x02	0x72	Limit Under
	0x70	0x03	0x73	Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum	
Enquiry	0x70	0x00	0x02	Code Table (3-b)[b]	0xXX	Completed

Code Table (3-b)

[a]Function		[b]Range/Switch code		Command Control	Enquiry	Standby	Power On
0x01	H Shift	(PC) 0x00-0x3C, (Video) 0x00-0x0A		Yes	Yes	Disable	Enable
0x02	V Size* <sup>2</sup>	(Video) 0x00-0x0A		Yes	Yes	Disable	Enable
0x03	V Shift	(PC) 0x00-0x28, (Video) 0x00-0x0A		Yes	Yes	Disable	Enable
0x04	Aspect	0x00	Wide Zoom (VIDEO Only)	Yes	Yes	Disable	Enable
		0x01	Zoom (VIDEO Only)				
		0x02	Full (VIDEO Only)				
		0x04	Normal (PC, VIDEO)				
		0x05	Full 1 (PC Only)				
		0x06	Full 2 (PC Only)				
0x05	Multi Display* <sup>3</sup>	0x00	OFF	Yes	Yes	Disable	Enable
		0x01	×2				
		0x02	×3				
		0x03	×4				
0x06	Auto Pixel Adjust	0xFF	Execute	Yes	No	Disable	Enable
0x0B	Multi Position (×2)* <sup>1*3</sup>	0x00	Position1	Yes	Yes	Disable	Enable
		0x01	Position2				
		0x02	Position3				
		0x03	Position4				
0x0C	Multi Position (×3)* <sup>1*3</sup>	0x00	Position1	Yes	Yes	Disable	Enable
		0x01	Position2				
		0x02	Position3				
		0x03	Position4				
		0x04	Position5				
		0x05	Position6				
		0x06	Position7				
		0x07	Position8				
		0x08	Position9				

[a]Function		[b]Range/Switch code		Command Control	Enquiry	Standby	Power On
0x0D	Multi Position (x4)*1*3	0x00	Position1	Yes	Yes	Disable	Enable
		0x01	Position2				
		0x02	Position3				
		0x03	Position4				
		0x04	Position5				
		0x05	Position6				
		0x06	Position7				
		0x07	Position8				
		0x08	Position9				
		0x09	Position10				
		0x0A	Position11				
		0x0B	Position12				
		0x0C	Position13				
		0x0D	Position14				
		0x0E	Position15				
		0x0F	Position16				
0x0F	Multi Display Output Format*3	0x00	Tiles	Yes	Yes	Disable	Enable
		0x01	Window				
0x10	Display Area*3	0x00	Normal	Yes	Yes	Disable	Enable
		0x01	-1				
		0x02	-2				

\*1: Arrangement of Multi Position.

Multi Position (x2)

1	2
3	4

Multi Position (x3)

1	2	3
4	5	6
7	8	9

Multi Position (x4)

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

\*2: VIDEO Mode Only is Enabled.

\*3: KLH-W26/W32 does not have this function.

## 7. Status Enquiry

### (a) Model Name

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x00	0xFF	0xFF	0xB1

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Code Table (4-a)	0xFF Completed

Code Table(4-a)

Format Select	
0x0C	FWD-40LX2X
0x0D	FWD-32LX2X
0x0E	FWD-40LX2F
0x0F	FWD-32LX2F
0x60	KLH-W26
0x61	KLH-W32

### (b) Serial Number

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x01	0xFF	0xFF	0xB2

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Return Data3	Return Data4	Check Sum
Enquiry	0x70	0x00	0x05	Upper 8bit Data	Middle Upper Data	Middle Lower Data	Lower 8bit Data	0xFF Completed

Return Data1-Data4: 0x00000000-0x0098967F (0,000,000-9,999,999)

### (c) Operation Time

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x02	0xFF	0xFF	0xB3

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Return Data3	Return Data4	Check Sum
Enquiry	0x70	0x00	0x05	Upper 8bit Data	Middle Upper Data	Middle Lower Data	Lower 8bit Data	0xFF Completed

Return Data1-Data4: 0x00000000-0x15751BF0 (0sec.-359,996,400 sec.)

#### (d) Soft Version (Main CPU)

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x03	0xFF	0xFF	0xB4

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Check Sum
Enquiry	0x70	0x00	0x03	Upper 8bit Data	Lower 8bit Data	0xFF Completed

Return Data1-Data2: 0x0000-0x9999 (BCD Format)  
ex) In Version0.100, it is set to 01 and 00.

#### (e) 8bits Register

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	Code Table (4-b)	0xFF	0xFF	0xFF

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Code Table (4-b)	0xFF Completed

Code Table(4-b)

Function	Return Data	Unit
0x0A Temp1	0x00-0xFF	
0x0D Temp (P/S)	0x00-0xFF	
0x10 Analog 5 V	0x00-0xFF	
0x16 Analog 13 V	0x00-0xFF	

#### (f) Shutdown Log

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x11	0xFF	0xFF	0xC2

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Shutdown Log Code	0xFF Completed

Return Data1: 0x00-0xFF

Code Table (4-c)

Shutdown	Information
bit0	Reserved
bit1	Reserved
bit2	1: Panel communication Abnormal, 0: Normal
bit3	1: Temperature Sensor Abnormal, 0: Normal
bit4	Reserved
bit5	Reserved
bit6	1: Analog Power Abnormal (13 V, 5 V) 0: Normal
bit7	Reserved

**(g) Auto Input Detect**

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x30	0xFF	0xFF	0xE1

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Return Data3	Return Data4	Return Data5
Enquiry	0x70	0x00	0x0C	Input1 Input Type Code Table (4-e)	Input2 Input Type Code Table (4-e)	Input3 Input Type Code Table (4-e)	Input4 Input Type Code Table (4-e)	Input5 Input Type Code Table (4-e)

Return Data6	Return Data7	Return Data8	Return Data9	Return Data10	Return Data11	Check Sum
Option1 Option Type Code Table (4-e)	Option1 Input Type Code Table (4-e)	Option2 Option Type Code Table (4-e)	Option2 Input Type Code Table (4-e)	Option3 Option Type Code Table (4-e)	Option3 Input Type Code Table (4-e)	0xFF Completed

**FWD-40LX2F/40LX2X/32LX2F/32LX2X**

Input	Input Type (Basic)	Option Type	Input Type (Option)
INPUT1	0x06 RGB/YUV (Analog)		
INPUT2	0x08 HDMI		
INPUT3	0x08 HDMI		
INPUT4	0x00 No Input		
INPUT5	0x00 No Input		
OPTION1		0x00 Analog Only	0x00 No Input
		0x00 Analog Only	0x03 Video/S-Video
		0x00 Analog Only	0x06 RGB/YUV (Analog)
		0x00 Analog Only	0x07 Video/S-Video/RGB/YUV (Analog)
		0x03 Com Only	0x00 No Input
OPTION2		0x00 Analog Only	0x00 No Input
		0x00 Analog Only	0x03 Video/S-Video
		0x00 Analog Only	0x06 RGB/YUV (Analog)
		0x00 Analog Only	0x07 Video/S-Video/RGB/YUV (Analog)
		0x03 Com Only	0x00 No Input
OPTION3		0x00 Analog Only	0x00 No Input

## KLH-W26/W32

Input	Input Type (Basic)	Option Type	Input Type (Option)
INPUT1	0x06 RGB/YUV (Analog)		
INPUT2	0x08 HDMI		
INPUT3	0x08 HDMI		
INPUT4	0x00 No Input		
INPUT5	0x00 No Input		
OPTION1		0x00 Analog Only	0x00 No Input
		0x00 Analog Only	0x03 Video/S-Video
		0x00 Analog Only	0x06 RGB/YUV (Analog)
		0x00 Analog Only	0x07 Video/S-Video/RGB/YUV (Analog)
		0x03 Com Only	0x00 No Input
OPTION2		0x00 Analog Only	0x00 No Input
OPTION3		0x00 Analog Only	0x00 No Input

### (h) Auto Panel Type Detect

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x31	0xFF	0xFF	0xE2

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Code Table (4-h)	0x72 Completed

Code Table (4-h)

Panel Type
0x00 LCD

Code Table (4-d)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
0x00 Model Name	0x0C-0x11, 0x40-0x41, 0x60	No	Yes	Enable	Enable
0x01 Serial Number	0x00000000-0x0098967F				
0x02 Operation Time	0x00000000-0x15751BF0				
0x03 Soft Version (Main)	0x0000-0x9999				
0x0A Temp1	0x00-0xFF				
0x0D Temp(P/S)	0x00-0xFF				
0x10 Analog5V	0x00-0xFF				
0x11 Shutdown Log	0x00-0xFF				
0x16 Analog13V	0x00-0xFF				
0x30 Auto Input Detect					
0x31 Auto Panel Type Detect					

## 8. User Reset

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x50	Code Table (5)	0x02	0xFF	0XX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70 Completed
	0x70	0x03	0x73 Command Canceled

Code Table (5)

Function	Range/Switch code	Command Control	Enquiry	Standby	Power On
0x00	Picture Reset	Yes	No	Disable	Enable
0x01	Audio Reset				
0x02	Size Reset	Size, Shift, Dot Clock, Phase			
0x03	Picture Reset2 (FW50)	Contrast, Brightness, Chroma, Phase			
0x04	All Reset				

## 9. Service

### (a) Mode

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0xF0	Code Table (6)	0x02	0xFF	0XX

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0xF0	0x00	0xFF	0xFF	0x71

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70 Completed
	0x70	0x03	0x73 Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Code Table (7)	0XX Completed



Code Table (6)

Function		Range/Switch code	Command Control	Enquiry	Normal Mode	Service Mode
0x00	Service Mode IN		Yes	Yes	Disable	Enable
0x01	Service Mode Exit					

Code Table (7)

Function		Range/Switch code	Command Control	Enquiry	Normal Mode	Service Mode
0x00	User Mode		Yes	Yes	Disable	Enable
0x01	Service Mode					

**(b) Factory Reset**

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x40	Code Table (8)	0x02	0xFF	0xFF

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70 Completed

Code Table (8)

Function		Range/Switch code	Command Control	Enquiry	Normal Mode	Service Mode
0x88	Factory Reset		Yes	No	Disable	Enable



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