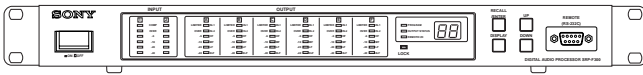


Digital Audio Processor

SRP-F300

Operating Instructions



Thank you for purchasing a Sony Digital Audio Processor.
 Before operating, please read this manual carefully.
 Be sure to keep it properly for future reference.

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In most set-ups, connect the RS-232C terminal to an external computer. For external control see the attached floppy disk, "Control Software Manual" and "Communication Protocol Guide". These instructions detail operation of the unit and its signal processing.

WARNING

Notice for the Customers in the United Kingdom

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral

Brown: Live

As the colors of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

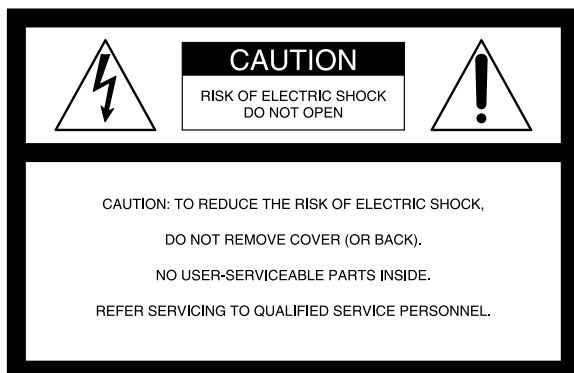
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red. Do not connect either wire to the earth terminal in the plug which is marked by the letter E or by the safety earth symbol \perp or coloured green or green-and-yellow.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.



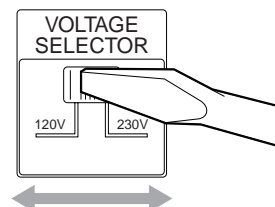
This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Setting the voltage selector (voltage selector equipped models only)

Check that the voltage selector on the rear panel is set to the local power line voltage. If not, set the selector to the correct position using a screwdriver before connecting the AC power cord to a wall outlet.



INFORMATION (For the customers in the United States)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

For the customers in Europe

This product with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60065 : Product Safety
- EN55103-1 : Electromagnetic interference (Emission)
- EN55103-2 : Electromagnetic Susceptibility (Immunity)

This product is intended for use in the following Electromagnetic Environment(s):

E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors) and E4 (controlled EMC environment ex. TV studio).

Peak inrush current

- (1) Power ON, current probe method: 2A (240V)
- (2) Hot switching inrush current, measured in accordance with European standard EN55103-1: 2A (230V)

Pour les clients européens

Ce produit portant la marque CE est conforme à la fois à la Directive sur la compatibilité électromagnétique (EMC) (89/336/CEE) et à la Directive sur les basses tensions (73/23/CEE) émises par la Commission de la Communauté européenne.

La conformité à ces directives implique la conformité aux normes européennes suivantes:

- EN60065 : Sécurité des produits
- EN55103-1 : Interférences électromagnétiques (émission)
- EN55103-2 : Sensibilité électromagnétique (immunité)

Ce produit est prévu pour être utilisé dans les environnements électromagnétiques suivants:

E1 (résidentiel), E2 (commercial et industrie légère), E3 (urbain extérieur) et E4 (environnement EMC contrôlé ex. studio de télévision).

Appel de courant de crête

- (1) Mise sous tension (ON), méthode de sondage du courant: 2A (240V)
- (2) Mesuré conformément à ta norme européenne EN55103-1: 2A (230V)

Für Kunden in Europa

Dieses Produkt besitzt die CE-Kennzeichnung und erfüllt sowohl die EMV-Direktive (89/336/EEC) als auch die Directive Niederspannung (73/23/EEC) der EG-Kommission.

Die Erfüllung dieser Direktiven bedeutet Konformität für die folgenden Europäischen Normen:

- EN60065 : Produktsicherheit
- EN55103-1 : Elektromagnetische Interferenz (Emission)
- EN55103-2 : Elektromagnetische Empfindlichkeit (Immunität)

Dieses Produkt ist für den Einsatz unter folgenden elektromagnetischen Bedingungen ausgelegt:

E1 (Wohnbereich), E2 (kommerzieller und in beschränktem Maße industrieller Bereich), E3 (Stadtbereich im Freien) und E4 (kontrollierter EMV-Bereich, z.B. Fernsehstudio).

Spitzenstrom

- (1) Einschaltstrom, Stromsonde: 2A (240V)
- (2) Gemessen in EN55103-1: 2A (230V)

PRECAUTIONS

On safety

- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

On installation

- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- When mounting the unit on the EIA 19-inch standard rack, allow enough space of 1U or more above this unit for good ventilation.

On operation

- Before making program source connections, be sure to turn the power switch off and unplug the unit.
- When the unit is not used, turn the power off to conserve energy and to extend the useful life of your unit.

On cleaning the cabinet

Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

On repacking

Do not throw away the carton and the packing material. It makes an ideal container for transporting the unit. When shipping the unit for repair work or to another location, repack it as it was.

If you have any questions or problems concerning your unit, consult your nearest Sony dealer.

1.OUTLINE

Compact but flexible

This digital audio processor accommodates 2 channels for analog and digital input and 6 channels for analog output in 1U size. It is available to use for various usage such as a digital channel divider and an audio signal distributor.

Excellent sound quality

Its frequency characteristic extends to more than 40kHz and dynamic range (A-weight) is more than 110dB. The excellent sound quality is a result of sophisticated design from circuit board to components.

Extremely precise data processing

The digital signal processor (DSP) is operates at 96kHz sampling frequency as well as A/D and D/A. In addition, processed data is transferred at 48bit so that it can achieve a massive internal digital headroom margin and obtain highly accurate calculations.

Plenty of signal processing

The SRP-F300 is capable of providing a 31-band graphic equalizers, an 11-band parametric equalizer, a compressor and a level control for 2-channels of input signals. For each of the 6-channel outputs, it accommodates low-and high-cut filtering up to 6th order for crossover, a 3-band parametric equalizer, a peak limiter, a delay, a phase switcher and a level control. A test signal generator is provided which has a pink noise and 20Hz -20kHz sine wave oscillator.

Effective adjustment

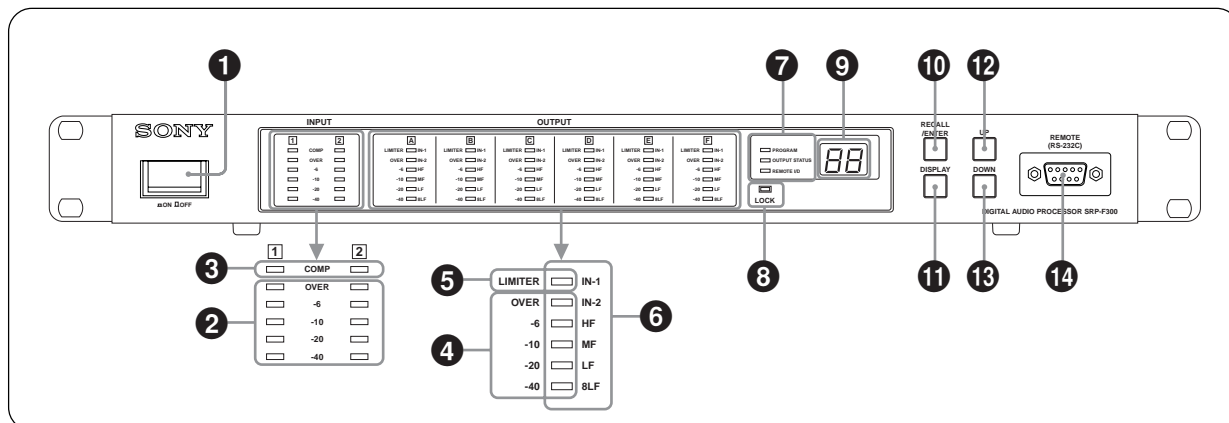
Signal processing is adjusted by an external computer via REMOTE terminal (RS-232C) interface. (See "Control Software Manual"). A Windows® 95/98 Graphic User Interface (GUI) enables quick and simple adjustment.

Storage of up to 50 programs

Once you set up, it is possible to recall the stored programs in the unit without connecting a computer.

2. PARTS NAMES AND FUNCTIONS

2-1. Front panel



1 Power Switch

To turn the power on/off. When the unit is turned on, the previous signal setting is recalled.

2 Input channel indicator (Refer to **NOTE**)

Indicates the peak input signal level. The selected signal level is indicated. The indication is updated every 100 msec and the indicated level is the peak level in the previous 100 msec. When generating a test signal, the level of the test signal is indicated. (Use an external computer for choosing input signal source).

3 Compressor indicator

Illuminates when gain reduction takes place in the compressor of the input channel. The indicator is updated every 100 msec. It does not light up when compressor is not selected. (Use an external computer to select and adjust the compressor).

4 Output channel indicator (Refer to **NOTE**)

Indicates signal levels after processing all signals of each output. The indications correspond to the level scale printed at the left side of the indicators. The indication is updated every 100 msec and the indicated level is the peak level in the previous 100 msec. As it indicates the final output signal level, it will not light up when the output channel is muted.

5 Output channel peak limiter indicator

Illuminates when signal wave's peak reaches the limiter setting level and clip has occurred at each output channel. The indication changes at every 100 msec. If it lights up often, adjust the output level as signal distortion is possible. (Use an external computer to adjust).

6 Output channel assignment indicator

Indicates the current assignment of output channel. The indications corresponds to the print at the right side of the indicators. (Refer to page 9).

7 DISPLAY mode indicator

Indicates the unit's display mode. (Refer to page 9).

8 LOCK indicator

When lit, it is impossible to use the buttons on the front panel.

This case means the audio processor is controlled by an external computer or it is locked by external control.

9 Number Display

Displays the current program number or REMOTE ID number. (Refer to page 9).

10 **RECALL/ENTER button**

It is used for RECALL of stored programs in the unit. (Refer to page 11)

11 **DISPLAY button**

Press the button to switch the display mode of the unit. (Refer to page 9)

12 **UP button**

13 **DOWN button**

Use these buttons when you make the number +/- to operate RECALL or change REMOTE ID (For RECALL and changing REMOTE ID, refer to page 11 and page 12, respectively.).

14 **REMOTE terminal**

For controlling the unit with an external computer. It has D-Sub 9 pin male type connector and RS-232C format. It is equal and has same function with that in the rear panel. See “Communication Protocol Guide” for more detail on communication.

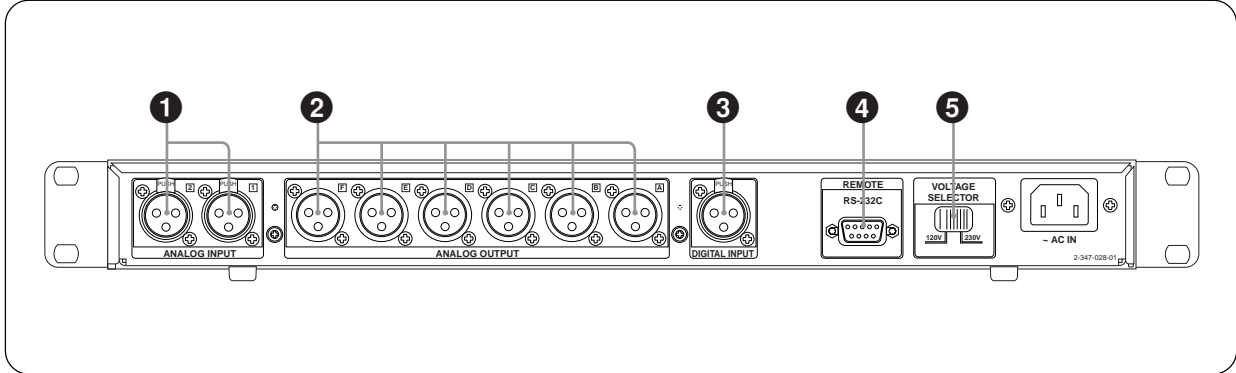
NOTE

Unit of level indicator

OVER: Lights up when the wave reaches digital's full scale (the clipping level). You need to lower the level when it lights up often.

-6, -10, -20, -40: Indicates the level in decibels (dBFS) based on digital full scale.

2-2. REAR PANEL



1 ANALOG INPUT terminals (IN-1, IN-2)

For analog audio signals.

Connector: Equivalent to XLR-3-31

1: GND, 2: HOT, 3: COLD



1: GND

2: HOT

3: COLD

Circuit: Electronic balanced circuit

Maximum input level: +24dBu

2 ANALOG OUTPUT terminals (OUT-A, OUT-B, OUT-C, OUT-D, OUT-E, OUT-F)

Outputs analog audio signals.

Connector: Equivalent to XLR-3-32

1: GND, 2: HOT, 3: COLD



1: GND

2: HOT

3: COLD

Circuit: Electronic balanced circuit

Maximum output level: +24dBu

3 DIGITAL INPUT terminal

Inputs digital audio signals.

(XLR-3-31 equivalent connector, compliant with AES/EBU format)

You can input signals with 32kHz ~ 96kHz sampling frequency.

Input signals are converted to the internal 96kHz sampling by sampling rate converter and fed to the signal processing block.

4 REMOTE terminal

Uses for controlling the unit with an external computer. It has D-Sub 9 pin male type connector and RS-232C format. It is equal and has same function as that on the front panel. See "Communication Protocol Guide" for more detail on communication.

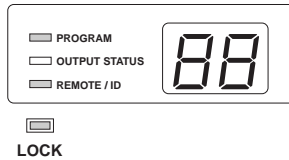
5 VOLTAGE SELECTOR (Except for the US models.)

Select 120V or 230V according to the local power line voltage. (Refer to page 2).

3. DISPLAY AND OPERATION

3-1. Switching DISPLAY MODE

You can change the display mode by pressing the DISPLAY button in turn. The DISPLAY mode indicator shows the current display. (Not available during external control)



When PROGRAM is lit:

The number display indicates the program number and each output channel indicator indicates the level at that output.

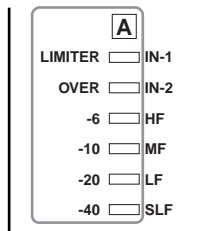
When OUTPUT STATUS is lit:

The number display indicates the program number and each output channel indicator indicates output assignment status. It returns to PROGRAM automatically after 4 seconds.

When REMOTE/ID is lit:

The number display indicates REMOTE ID number and each output channel indicator indicates the level. It returns to PROGRAM automatically after 4 seconds.

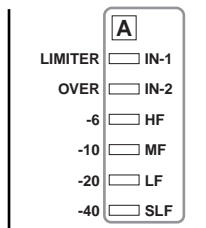
On Output level indications



Indicates signal levels of each output after all signal processing.

The indications correspond to the level scale printed at the left side of the indicator .

On Output Status indications



Indicates simply which output channel is fed by which input channel and the output frequency range based on the setting of filter cut-off frequencies.

This function helps prevent speakers from being damaged as you can make sure of each output's status when you operate RECALL or connect an amplifiers and loudspeakers. The print at the right side of the indicator shows each indication's meaning as follows:

• IN-1, IN-2

Indicates which input's channel's signal is the sound source. When both indicators light up, it indicates monomixed signal is the sound source. When the both lights are off, it means a test signal is used instead of input signal.

• HF, MF, LF, SLF

Indicates the frequency band of each output channel.

HF : High Frequency. Lights up when frequencies of 1kHz or over are included.

MF : Middle Frequency. Lights up when frequencies of 500Hz-1kHz are included.

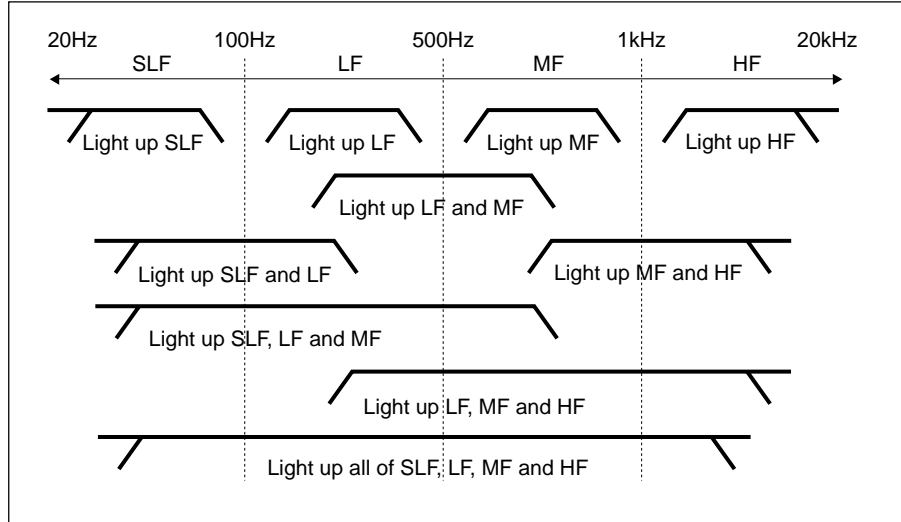
LF : Low Frequency. Lights up when frequencies of 100Hz-500Hz are included.

SLF : Super Low Frequency. Lights up when frequencies of 100Hz or less are included.

When none of the indicators are lit, it means that output channel is muted.

NOTE

This frequency band indication is determined based on the cut-off frequency status of crossover filter of each channel. The relation of indication of the front panel and cut-off frequency status is as shown:



The relation between cut-off frequency and indications of frequency band on the front panel

3-2. Indications and operation at LOCK

By using an external computer, you can disable RECALL and REMOTE/ID operation with the unit, and then LOCK indicator lights up. However, you can still check output status and REMOTE/ID with DISPLAY button on the unit.

You can operate without using an external computer.

To LOCK and release LOCK of the unit

To LOCK

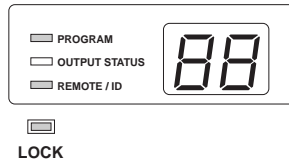
- ① Turn off the power.
- ② Turn on the power with keeping pressing UP button. (Sound is not output)
- ③ Move your hand away from UP button and “LO” (meaning lock) is displayed. (It will not start until you turn off the power again.)
- ④ Turn off the power.
- ⑤ Turn on the power again and it starts with LOCK mode.

To release LOCK

- ① Turn off the power.
- ② Turn on the power with pressing DOWN button. (Sound is not output)
- ③ Move your hand away from DOWN button and “UL” (meaning unlock) is displayed. (It will not start until you turn off the power again.)
- ④ Turn off the power.
- ⑤ Turn on the power again and it starts with UNLOCK mode.

3-3. Display and operation during external control

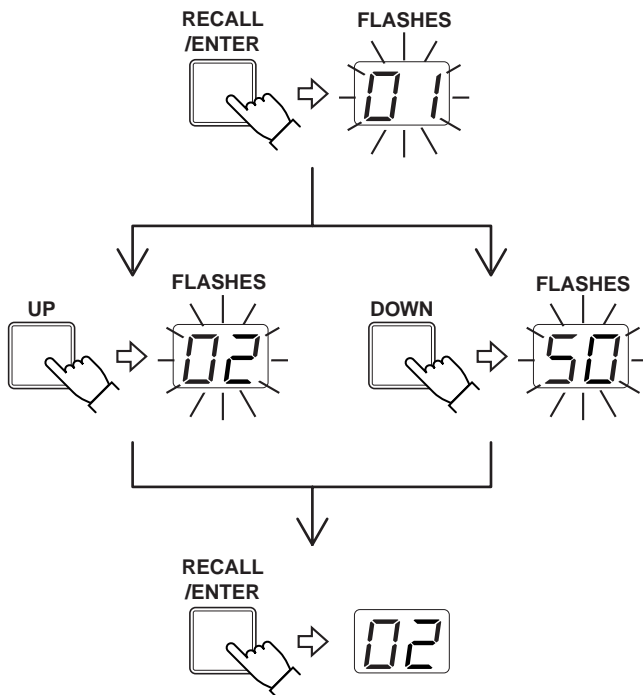
You cannot use buttons on the front panel while you control with an external computer. In this case, three indicators of PROGRAM, REMOTE/ID and LOCK at DISPLAY mode indicator light up.



The number of the display indicates the current program number and each output channel indicator indicates the output level.

3-4. To RECALL

RECALL of stored programs with the unit is as follows.



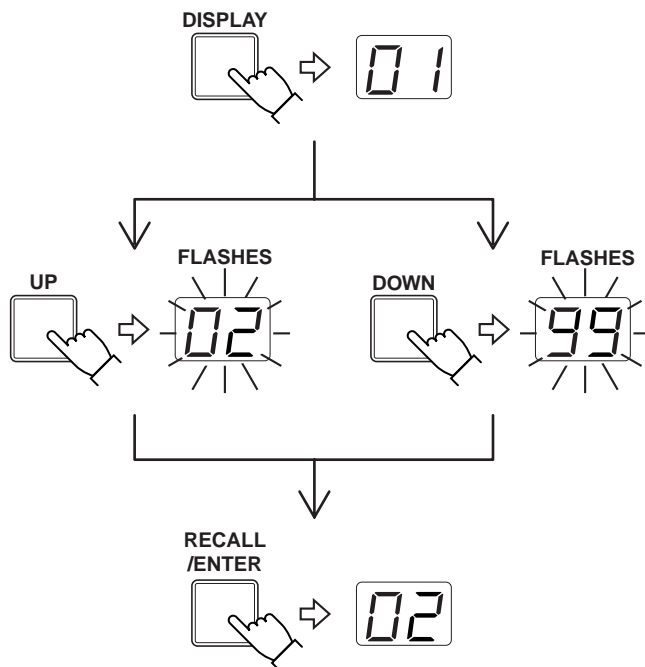
- ① Press RECALL/ENTER button while PROGRAM indicator lights up. Then the currently set program number flashes and each output channel indicator turns to flash simultaneously, meaning that it is ready for setting output status. (Program will not be changed until step ③.)
- ② Select program number you want to RECALL with UP or DOWN button. Then program numbers which are possible to RECALL flash in turn and each output channel indicator flashes and indicates output status of the selected program as well.
- ③ Press RECALL/ENTER button. The program number will stop flashing and each channel indicator switches to output level indication.

NOTE

- If 8 seconds pass after pressing a button, operation is canceled and the mode will be back to the situation before starting RECALL.
- The numbers not to be stored are not displayed.
- RECALL operation is impossible if you press RECALL/ENTER when there is no RECALL-capable program. Also, any stored programs which are set RECALL LOCK are never displayed. (Use an external computer to set and release RECALL LOCK.)
- When the LOCK indicator is lit, RECALL operation is impossible.

3-5. Changing REMOTE ID

REMOTE ID is preset at factory to 01. It can only be changed on the SRP-F300 itself.



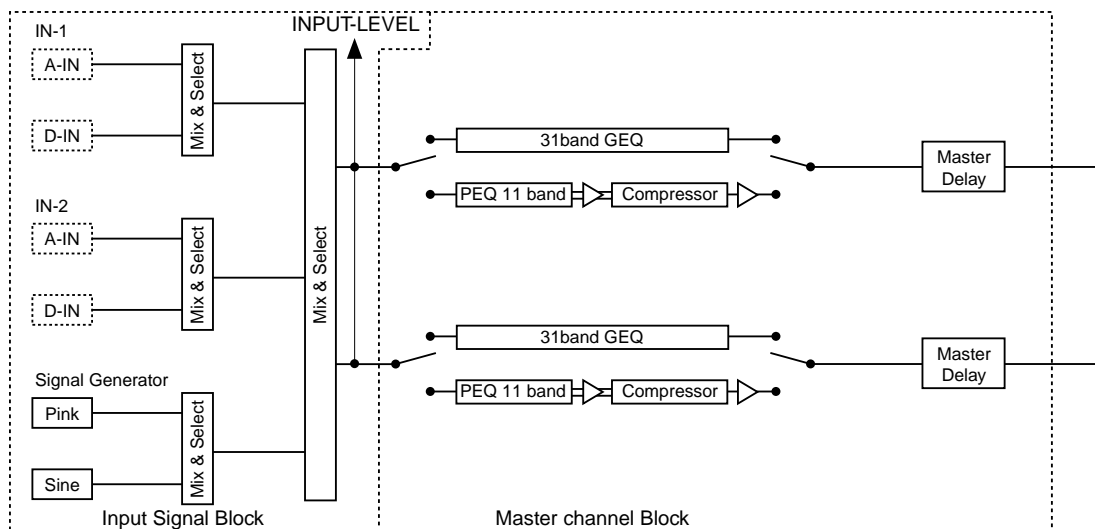
- ① Press DISPLAY button. Then REMOTE/ID indicator lights up and currently selected number displays set number displays.
- ② Press UP or DOWN button repeatedly until the number you want appears. When you keep pressing them, the number gains or loses continuously.
- ③ Press RECALL/ENTER button when the number you want appears. The number display changes to light-up mode from flash mode.

NOTE

- If 8 seconds pass after pressing a button, operation is canceled and the mode will be back to the situation before starting changing REMOTE ID.
- While the LOCK indicators is lit, you cannot change the REMOTE ID.

4. BUILT-IN SIGNAL PROCESSING

Signal Processing Block Chart



Refer to “Control Software Manual” and “Communication Protocol Guide” for details of the D. S. P set-up.

4-1. Input Signal Selecting Block

Select the combination of 2 analog channels and 2 digital channels from following patterns.

- ① 2-channel analog inputs.
- ② 2-channel digital inputs.
- ③ Mono-mix (2-channel analog inputs).
- ④ Mono-mix (2-channel digital inputs).
- ⑤ Mixed (analog/digital input).

You can also select a test signal. The test signal offers sine wave and pink noise and allows adjustment of the signal level and sine wave frequency.

4-2. Master Channel Processing Block

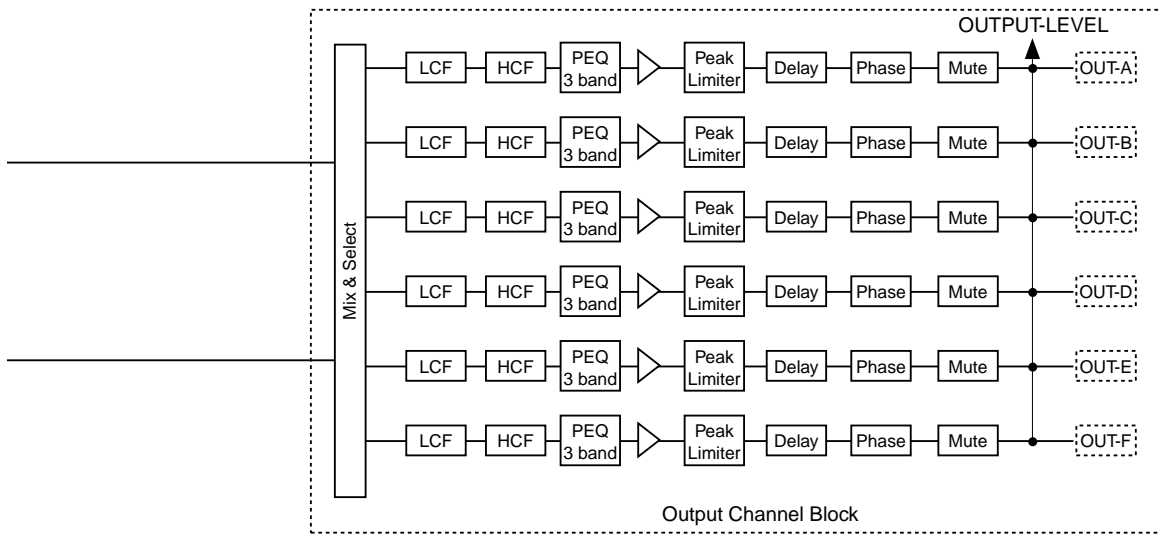
You can select Stereo 31-band graphic equalizer (GEQ) or a combination of stereo 11-band parametric equalizer (PEQ) and a compressor.

• 31-band GEQ

Each band is adjustable at 0.5dB steps in a range of $\pm 12.0\text{dB}$. $Q=4.3$ (for each band).

Gain make-up level is adjustable at 0.5dB steps in a range from $-\infty$ to $+12.0\text{dB}$.

Capable of setting and releasing CH LINK allows IN-1 and IN-2 to be adjusted simultaneously.



• 11-band PEQ

- EQ Type : Selectable from 6 types of peaking, treble shelving, bass shelving, bandpass and notch.
- Frequency : Adjustable in a range of 20Hz~20kHz, at 1/12 oct steps and from 121 points.
- Level : As for peaking and shelving, adjustable in a range of ± 12.0 dB and at 0.5dB steps.
- Q : As for peaking, bandpass and notch, adjustable in 73 levels in a range of $Q=0.31\sim 19.4$.
Adjustable overall level at 0.5dB steps in a range of $-\infty\sim +12.0$ dB.
Capable of setting and releasing CH LINK which allows IN-1 and IN-2 to link.

• Compressor

- LINK : Selectable from following 4 modes:
 ① CH independent
 ② LINK (work by monomixed signal)
 ③ LINK (work by IN-1 signal)
 ④ LINK (work by IN-2 signal)
- Side EQ : Equips PEQ processing function to the trigger signal and allows compression and limiting which react to frequency.
- Attack : Adjustable from 61 levels in a range of 0.01 msec~1000 msec.
- Release : Adjustable from 49 levels in a range of 1 msec~1000 msec.
- Ratio : Adjustable from 101 levels in a range of 1.0:1.0~ ∞ :1.0
- Threshold : Possible to adjust from 97 levels in a range of 0.0 dBFS~ -48.0 dBFS.
- Gain make : Adjustable from 242 levels in a range of $-\infty\sim +30.0$ dB at 0.5dB steps.
Compressor indicator lights up when gain reduction takes place.

• Master delay

- Capable of setting delay with 10.4 μ sec steps to each channel up to approximately 1.36 sec.
(10.4 μ sec is equivalent to approximately 3.6mm at the speed of sound.)

4-3. Output channel processing block

Each output channel is identical and can be set independently.

•Selecting the input signal

You can select the input source from master 2 channels from following 3 patterns.

- ① Master IN-1 channel signal
- ② Master IN-2 channel signal
- ③ Mono-mix signal of master 2 channels.

•Crossover filter (LCF, HCF)

(Selectable OFF for both LCF and HCF. Also it allows to be used for signal distribution.)

Frequency : Adjustable in a range of 20Hz~20kHz, at 1/12 oct steps and from 121 points.

Filter type :

- 1) 2nd order Butterworth (-12dB/oct slope)
- 2) 3rd order Butterworth (-18dB/oct slope)
- 3) 4th order Butterworth (-24dB/oct slope)
- 4) 5th order Butterworth (-30dB/oct slope)
- 5) 6th order Butterworth (-36dB/oct slope)
- 6) 2nd order Bessel (-12dB/oct slope)
- 7) 3rd order Bessel (-18dB/oct slope)
- 8) 4th order Bessel (-24dB/oct slope)
- 9) 5th order Bessel (-30dB/oct slope)
- 10) 10th order Bessel (-36dB/oct slope)
- 11) 2nd order Linkwitz-Riley (-12dB/oct slope)
- 12) 4th order Linkwitz-Riley (-24dB/oct slope)

•3-band PEQ

It offers 3-band PEQ for each output channel .

Each parameter of 3-band PEQ is same as the PEQ of master channel processing block.

•Channel level

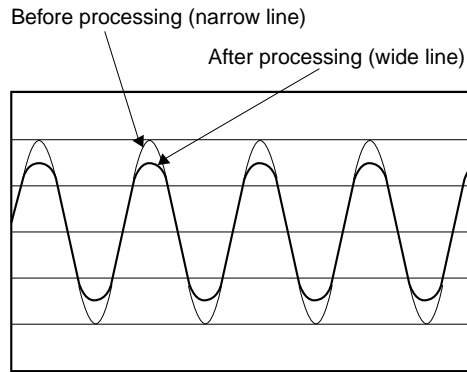
Adjustable in 0.5dB steps over a range of $-\infty$ ~+12.0dB.

- **Peak limiter**

Instantaneous waveform transformation type peak limiter.

It can be set over a range of -20.0dBs~+6.0dBFs at 0.5dB steps.

When signal reaches the limiting level, the limiter indicator is lit.



Example of waveform of Peak Limiter Processing

- **Delay**

Capable of setting delay with 10.4 μ sec steps for each channel up to approximately 1.36 sec.

(10.4 μ sec is equivalent to approximately 3.6mm in the speed of sound.)

NOTE

The minimum delay time between input and output while using an analog input/output is about 880 μ sec when delay time is set at 0. This delay is caused by signal's passing through A/D, D/A converter and the signal processor.

- **Phase**

Capable of switching normal or inverse (180°).

- **Muting**

Capable of setting for each channel.

5. SPECIFICATIONS

Analog input

Terminal	: XLR-3-31 pin female × 2
Circuit	: Electronic balanced (1: GND, 2: HOT, 3: COLD)
Input impedance	: 10kΩ
Maximum input level	: +24dBu
A/D conversion	: Sampling frequency 96kHz, 24bits linear

Analog output

Terminal	: XLR-3-32 pin male × 6
Circuit	: Electronic balanced (1: GND, 2: HOT, 3: COLD)
Output impedance	: 47Ω
Adaptive load impedance	: 600Ω or more
Maximum output level	: +24dBu
D/A converter	: Sampling frequency 96kHz, 24 bits linear

Digital input

Terminal	: XLR-3-31 pin female
Circuit	: AES/EBU compliant
Sampling frequency lock range	: 32kHz~96kHz
All input signals are converted to 96kHz sampling by internal sampling rate converter.	
(Not response to de-emphasis function)	

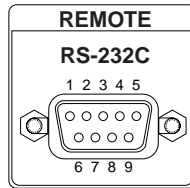
Audio characteristics at analog input/output

Frequency characteristic	: 20Hz~20kHz (0/-1dB) 20Hz~40kHz (0/-3.0dB)
Dynamic range	: 110 dB or more (A-Weighted)
Minimum signal delay time	: approximately 880 μsec (signal delay between analog input and output when delay parameter is set at 0 μsec)

REMOTE terminal

Terminal

: D-sub 9 pin x 2



1	NC
2	RxD (input)
3	TxD (output)
4	Connect to pin 6 inside
5	GND
6	Connect to pin 4 inside
7	RTS (output)
8	CTS (input)
9	NC

Format

: RS-232C

Use 9 pin cross-connection type cable to connect a computer.

General

Power requirements

Where purchased	Power requirements
United States	120V AC 60Hz
Other countries	120V or 230V AC 50/60Hz

Power consumption

25W

Dimensions (approx.) (w/h/d)

482 × 44 × 360mm
(19 × 1 3/4 × 14 1/4 in.)

Mass (approx.)

5.2 kg (11 lbs 8 oz)

Operating temperature

0~+40°C

Storage temperature

-5~+60°C

Accessory

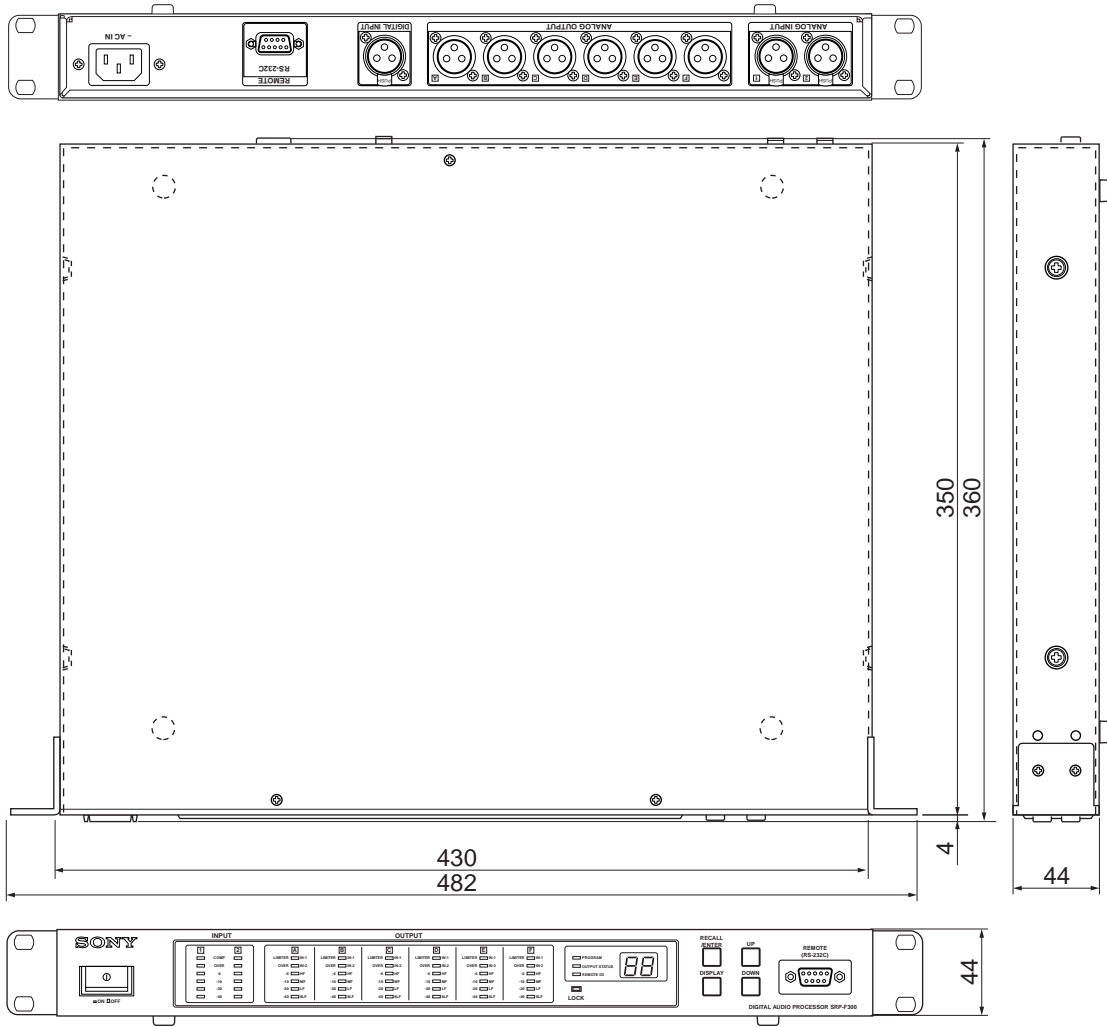
Power cord (1)

Floppy disk

- Control software (Windows® 95/98)
- Control software manual
- Communication protocol guide
- Signal processing parameter guide

Specifications and external appearance are subject to change without notice.

6. DIMENSIONS



unit : mm

