

PROTECH®

3CH FIELD MIXER

FS-305/300

Operating Instructions

Before operating the unit, please read this manual thoroughly and retain it for future reference.



Attention on safety

Please guard.

The case where it is used by professional Tec commodity common optional AC is contained.

It explains the guard without fail to prevent the damage to harm and the property to the person and other people who use it beforehand as follows.

- It divides in the following table, and it explains the level of harm and the damage caused when a usage wrong as the content of the display is disregarded is done.

	Warning	The column of this display is "The possibility of owing the death or the serious injury, etc. is assumed" content.
	Attention	The column of this display is "The possibility that only the possibility or the physical loss or damage in which the trouble is owed occurs is assumed" content.

- It divides by the following picture display, and it explains the kind of the guarded content. (The following are one picture display example.)

	Such a picture display is an attentive "Attention rousing" content that wants to hold.
	Such a picture display is "Prohibition" content that cannot be done.
	Such a picture display is "Compulsion" content executed without fail.

About the installation








Warning

	It doesn't put it on an unstable place.		A heavy thing is not put on the power supply code.		It doesn't set it up in the water place.
Prohibition		Prohibition		Water place use prohibition	

About the processing in abnormal circumstances



Warning

	When this machine is dropped or is damaged, the power on/off switch is cut.		When water etc. enter in this machine, the power on/off switch is cut.		When the foreign body enters in this machine, the power on/off switch is cut.
The power supply is pulled out.	The power supply is pulled out.	The power supply is pulled out.	The power supply is pulled out.	The power supply is pulled out.	The power supply is pulled out.
	Smoke has risen, and when it is abnormal of hearing a strange smell and the sound etc. the power on/off switch is cut.		When the power supply code hurts, it exchanges it.		
The power supply is pulled out.	Compulsion				

About use

Warning

<p>Neither a container where water entered on this machine nor a small metallic thing are put.</p>  <p>Prohibition</p>	<p>The foreign body is not inserted, and not dropped from the opening of the equipment.</p>  <p>Prohibition</p>	<p>This machine is not remodeled.</p>  <p>Resolution prohibition</p>
<p>It doesn't use it in the water place.</p>  <p>Water place use prohibition</p>	<p>Neither the back cap, the cabinet nor the cover, etc. of this machine are removed.</p>  <p>Resolution prohibition</p>	<p>It is done to wet the equipment and watertight.</p>  <p>Prohibition</p>

About use

Attention

About maintenance

<p>A heavy thing is not put on this machine.</p>  <p>Prohibition</p>	<p>It doesn't take this machine.</p>  <p>Prohibition</p>	<p>When maintaining it, the switch is turned off for safety.</p>  <p>The power supply is pulled out.</p>
<p>When not using it, the power supply is pulled out for safety.</p>  <p>The power supply is pulled out.</p>	<p>The power supply is pulled out, and an external code is removed when moving.</p>  <p>The power supply is pulled out.</p>	<p>The consultation of an internal cleaning is : to the shop about once a year.</p>  <p>Compulsion</p>

About after-sales service

Our product is a free repair guarantee of one year.
(I hope the carriage etc. in the customer's share.)

It does to a repair for a fee for the commodity that passes a free guaranteed term.

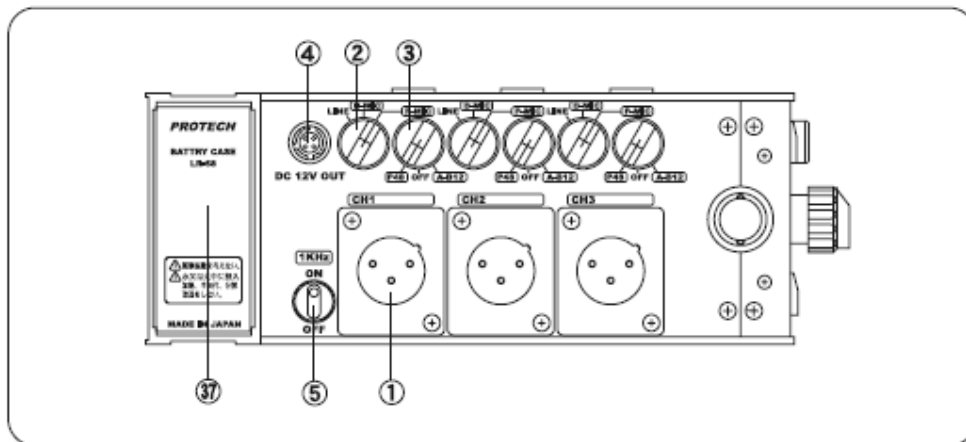
Please request the repair to the shop or our support center of purchase.

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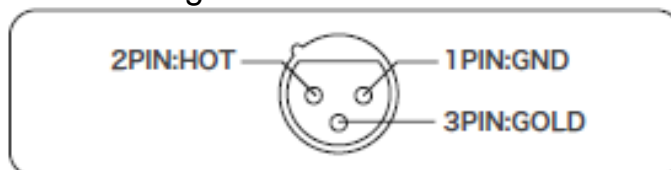
Name and operation of each part

Input panel (Left side panel)



- (1) Input connector Canon XLR 3pin
FS-305A type: Female
FS-305B type: Male

Pin assignment Canon 3P female



- (2) Input select switch

P-MIC : Set to this position when phantom microphone is used. Choose the kind of power of the microphone with P-MIC power select switch (3).

D-MIC : Set to this position when dynamic microphone is used.

LINE : Set to this position for the input of line level

Note) P-MIC of FS-300 is only for P48.

Input panel (Left side panel)

(3) P-MIC power select switch

P48 : Set to this position when phantom 48V microphone (Sony C-48, etc) is used.

A-B12 : Set to this position when A-B12 microphone (Sennheiser MKH416T, etc) is used.

OFF : Power is not supplied at this position.

This select switch is effective when Input select switch (2) is set to P-MIC.

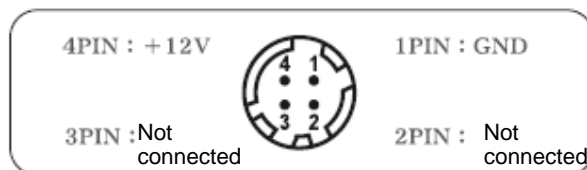
Note) This is only for FS-305.

(4) DC12V OUTPUT connector

Mini 4pin output connector to supply DC12V to wireless receiver, etc.

Note) This is only for FS-305.

Pin assignment Canon 3P female



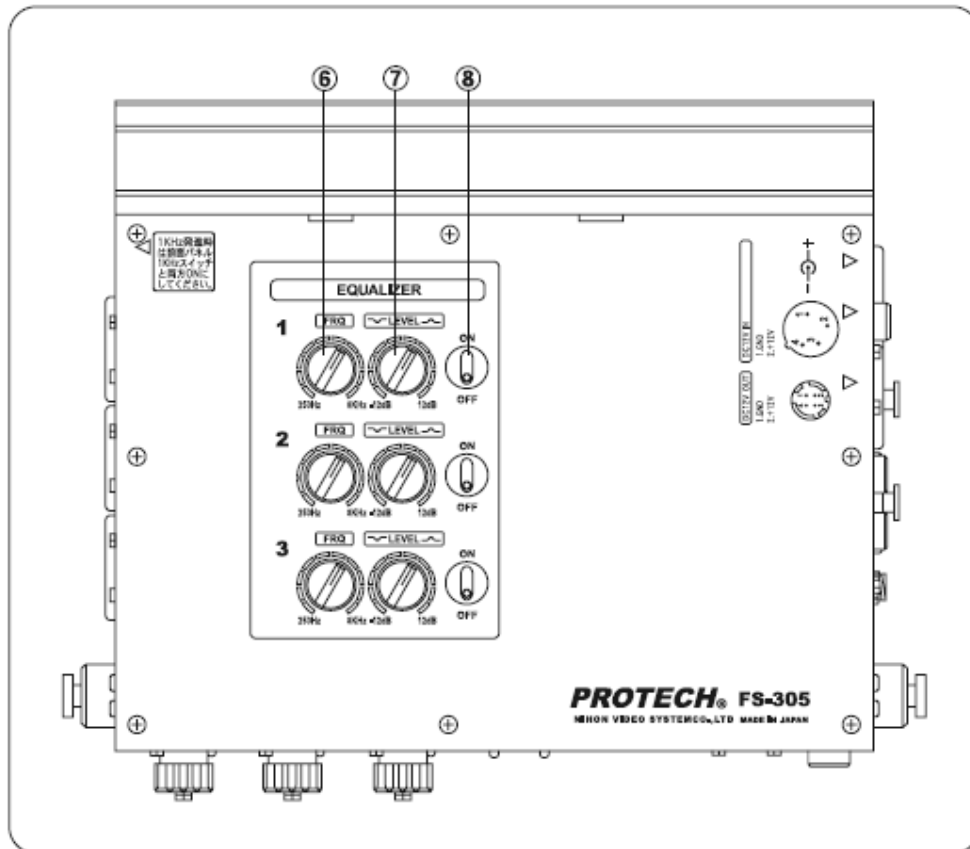
(5) 1kHz OSC switch2

Turn ON his switch and set 1kHz/Battery check switch(16) to  side.

Then, 1kHz reference signal is output to master output connector (30) and sub output connector (31).

Note) This is only for FS-305.

Equalizer adjustment panel (Top panel)



(6) Equalizer frequency volume

Volume to adjust equalizer frequency at each channel. It has 250Hz - 8kHz variable range and it can be optionally adjusted.

(7) Equalizer level volume

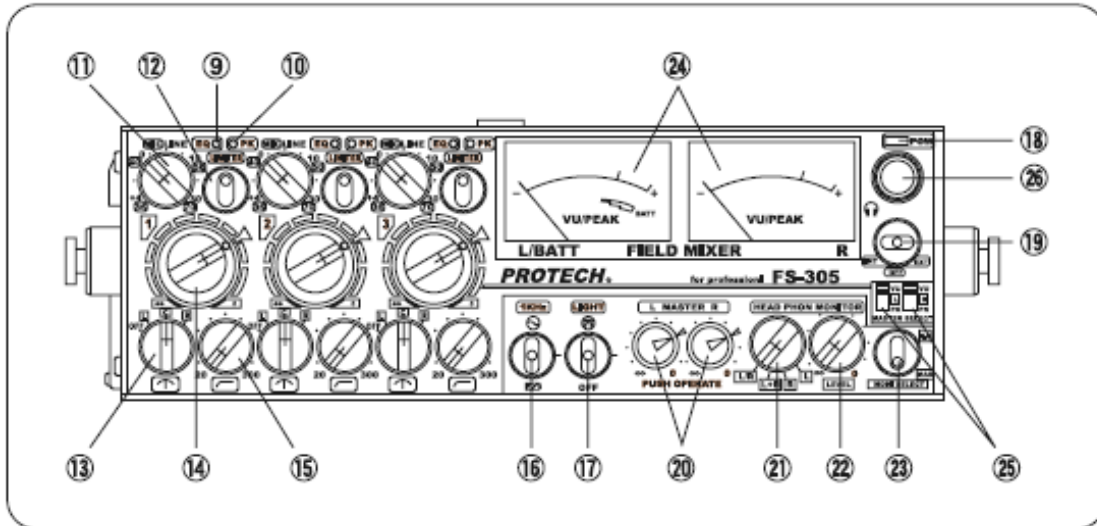
Volume to adjust the level of equalizer. It can adjust the frequency set by equalizer frequency volume (6) in the range from -12dB to $+12\text{dB}$.

(8) Equalizer ON/OFF switch

Switch to turn ON/OFF the equalizer effect adjusted by equalizer frequency volume (6) and equalizer level volume (7). Operator can confirm the effect with this switch and turn OFF the equalizer with keeping the adjusted setting.

Note) This is only for FS-305.

Main panel (Front panel)



(9) Equalizer LED

LED to indicate ON status of the equalizer on the top panel. Operator can confirm the ON/OFF status of the equalizer on the front panel.

(10) Overload (PK) LED

It lights up every channel when the level becomes over load status in the moment. It shows that the input level or the set value of master volume is high.

Note) This is only for FS-305.

(11) MIC/LINE Trim volume

It is the adjustment volume to take the input by the right level. It can adjust the audio level input by the microphone from minimum -70dBm to maximum -36dBm . By this, microphones with different sensitivity and the audio signal from different source level can be adjusted to the same level.

It is variable from -30dBm to $+4\text{dBm}$ for LINE input.

(12) Hyper limiter switch

ON/OFF switch of the hyper limiter equipped to each channel independently.

(Note) Switch off the hyper limiter and adjust trim volume and master volume.

Switch on it after the level adjustment finished.

Main panel (Front panel)

(13) CH select switch

Switch to select how to make mixing the adjusted signals of each channel to L/R.

OFF : Mixing OFF

L : Mixing to L only

C : Mixing to L and R

R : Mixing to R only

(14) CH master volume (with LED indicator)

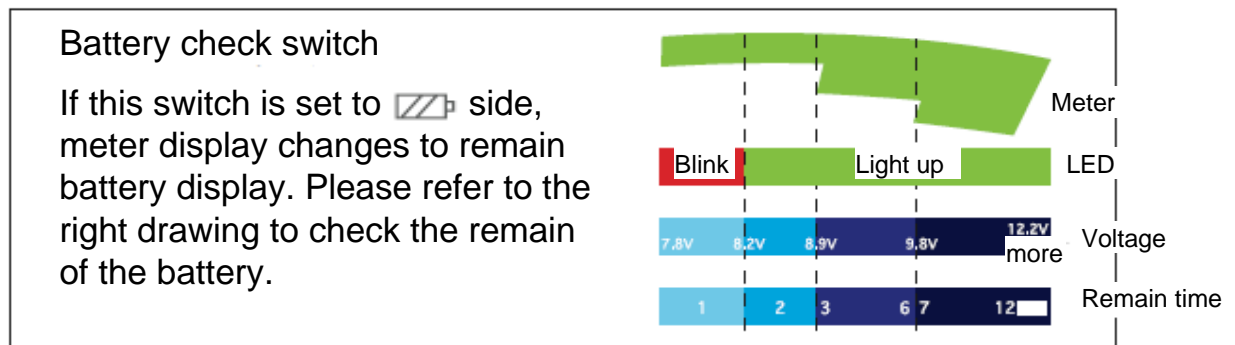
It is the volume which adjusts a mixing level every each channel. If the light switch (17) is ON, top of the volume lights on and adjustment can be done in the darkness.

(15) LOW CUT adjustment volume

It is the volume which adjusts the cut-off frequency to cut the low band of the wind noise and so on. By monitoring with the headphone and so on, adjust it between 20 - 300 Hz.

(16) 1kHz/Battery check switch


Set this switch to ☹ side. 1 kHz reference signal is output to main and sub output.



Main panel (Front panel)

(17) Light switch

If this switch is set to the center position, overload function operates and overload LED (10) indicates the overload status.

If this switch is set to  position, LED and back light of each channel light up, and the operation becomes easy in the darkness.

(18) POW display LED

It lights up when POW switch (19) is set to INT (internal power) or EXT (external power) and power is on. This display has the voltage check function and it starts blinking if the power voltage becomes lower than 8.2V to warn of the battery capacity lack.

(19) POW switch

If It is set to INT, power is supplied from inside (battery box of the back side). If it is set to EXT, power is supplied from Canon 4pin DC12V input connector (33) or DC12V input connector for BP-90 (34). POW display LED lights up when the power is ON for both of INT/EXT.

(20) Master volume

This is the master volume to adjust output level, and L, R are independent. It is push-lock type not to be turned carelessly. When adjustment is necessary, the volume rushes out by pushing, and adjustment can be done easily. After adjustment, please push it again.

(21) Headphone select switch

It is the switch to select the monitor signal output to standard headphone jack (26) and mini headphone jack (27). It becomes stereo in L/R mode, MIX of L and R in L+R mode and monaural in L mode or R mode.

(22) Headphone monitor level volume


It is the volume to adjust monitor level selected by the headphone select switch (21).

(23) Monitor change switch

This is the switch to change the audio signal monitored by the meter and a headphone to master (MAS) output or playback (P.B) input. At the MAS side, audio signal outputs to the meter and a headphone from the mixer. At the P.B side, input signal from a recorder, etc to the playback input connector (29) can be monitored with adjusting by playback level volume (28).

Main panel (Front panel)

(24) VU/PEAK meter

L/R stereo can be monitored at the same time with 2 meters. VU and PEAK are changeable by VU/PEAK switch (25). When VU/PEAK switch (25) is set to VU, the meter becomes VU and scale is upper side $-20\sim+3\text{dB}$. When it is changed to PK side, it becomes PEAK PROGRAM meter and scale is lower side $-60\text{dB}\sim 0\text{dB}$. When 1kHz/Battery check switch (16) is set to , L side meter displays battery level.

(Note) Reference level is 0dB in VU and $+4/0/-20/-60\text{dB}$ in PEAK set by Master output select switch (32) at -20dB .

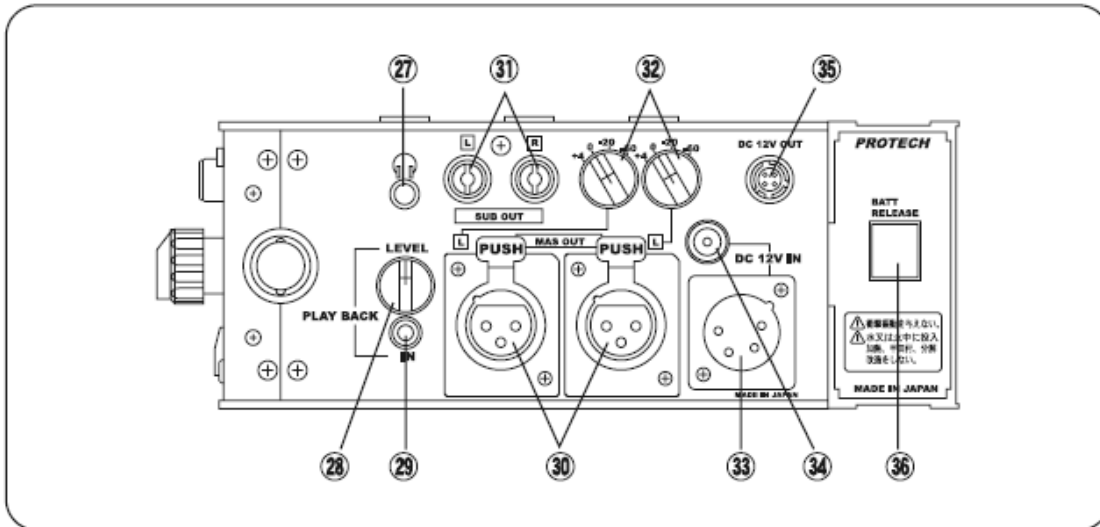
(25) Meter change switch

This is the switch to change VU/PEAK meter (24) to VU meter or PEAK meter. L and R can be set independently.

(26) Standard headphone jack

This is the headphone for standard plug (6.3ϕ). It can monitor the audio signal set by (21), (22), (23).

Input / Output panel (Right side panel)



(27) Mini headphone jack

This is the headphone for mini plug (3.5 ϕ). It can monitor the audio signal together with the standard headphone jack (26) at the same time.

(28) Playback level volume

This is the level volume to adjust the external signal input from playback input connector (29). Turn ON the 1kHz reference signal of the main unit, then input it to a recorder and make recording level adjustment of recorder side. Input a monitor output of a recorder to playback input connector (29), set meter change switch (25) to P.B side, and set monitor change switch (23) to VU side. At this time, adjust the level so that the needle of the meter can indicate 0 dB.

(29) Playback input connector

This is stereo mini jack input connector (ϕ 3.5). Please use it from a headphone output or RCA output of a recorder.

Note) This is only for FS-305.

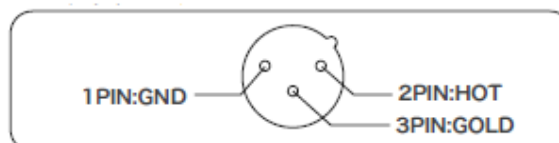
(30) Master output connector Canon XLR 3pin

Standard type (B type): Female

Special order type (A type): Male

Reference output level of each channel can be changed from +4/0/-20/-60dB by master output change switch (32).

Pin assignment Canon 3P Male



Input / Output panel (Right side panel)

(31) Sub output connector (RCA)

L/R are output by RCA connector. Output level is fixed to -10dBV to fit in with the consumer type recorder.

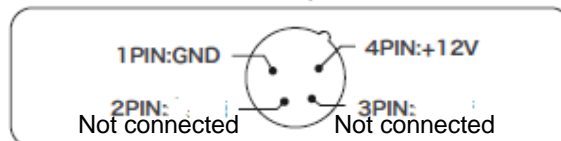
(32) Master output change switch

This is the switch to change the master output level from $+4/0/-20/-60\text{dB}$. As it can be set L/R independently, please set it according to the connected recorder.

(33) Canon 4pin DC12V input connector

This is external power input connector, Canon 4pin. When power is supplied from this connector, change POW switch (15) to EXT side. Input voltage is $\text{DC}9\sim 16\text{V}$.

Pin assignment Canon 4P Male



(34) DC12V connector for BP-90

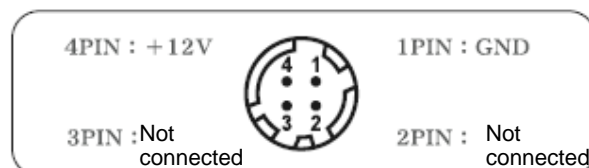
This is the input connector to supply the power from BP-90 type battery. When power is supplied from this connector, change POW switch (19) to EXT side. Input voltage is $\text{DC}9\sim 16\text{V}$.

(35) DC12V OUTPUT connector

Mini 4pin output connector to supply $\text{DC}12\text{V}$ to wireless receiver, etc.

Note) This is only for FS-305.

Pin assignment



Battery Holder

(29) Battery case release button

By pushing this button, the battery case (37) can be taken out.

(30) Battery case (LR-68)

It is a battery case to use by putting 8 double A (UM3) batteries.

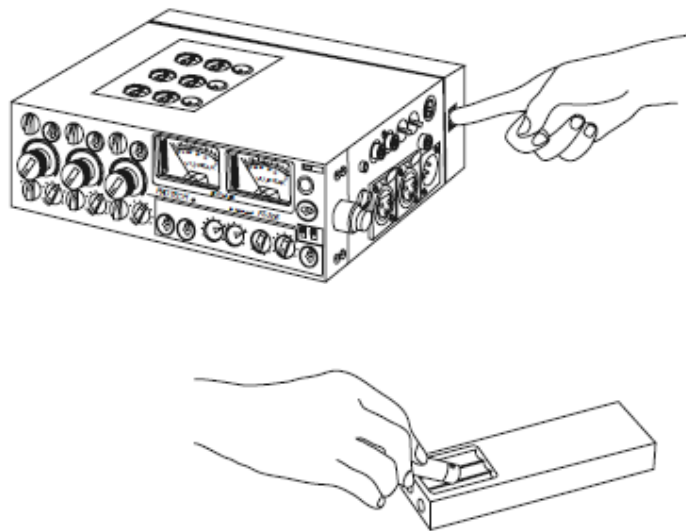
Main operation instructions

Removal and attachment of the battery case

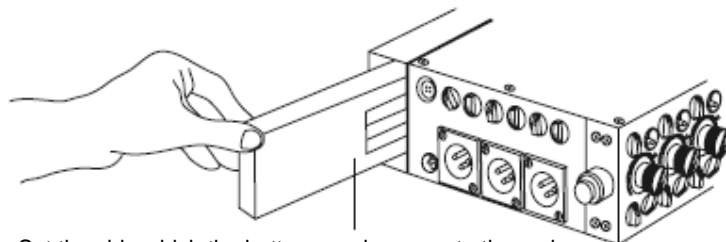
1. Push BATT RELEASE button and take out a battery case.

Put 8 double A (unit 3) batteries in the right direction to the battery case

(note) When external power is used, input power to Canon 4pin input connector.



2. Insert a battery case into the main unit careful of the direction and push it until there is a sound with a click.



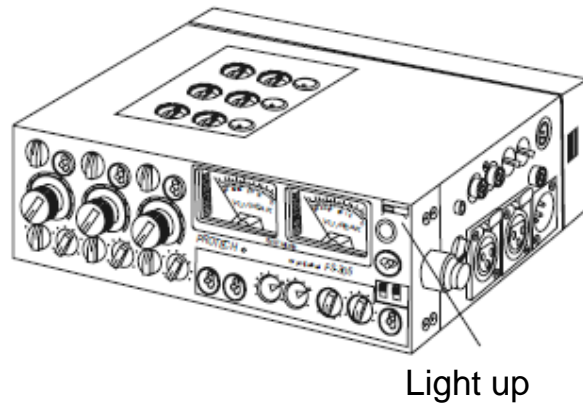
Set the side which the battery can be seen to the main unit side and insert it.

3. Confirm that a battery case is locked at this time.

Power ON/OFF and confirmation of remain capacity of battery

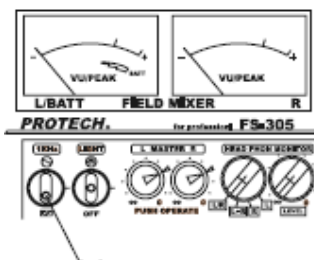
1. Set POW SW in the right side of the front panel to INT(left side) and confirm that POW LED lights up.

When the external power is used, set POW SW to EXT (right side).

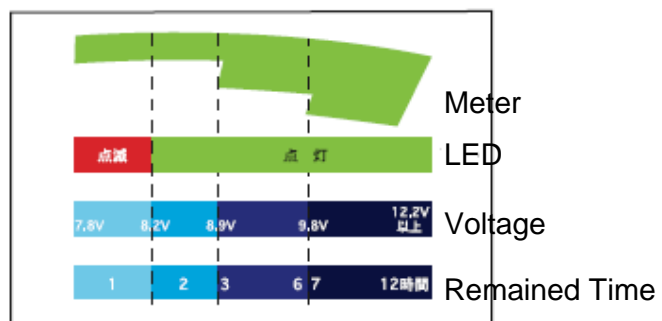


2. The meter of L/BATT displays BAT remaining amount when BAT CHECK SW is set to battery side.

Equal to or more than 7 hours are usable if the green rightmost bar has a needle.



Set the switch to low position

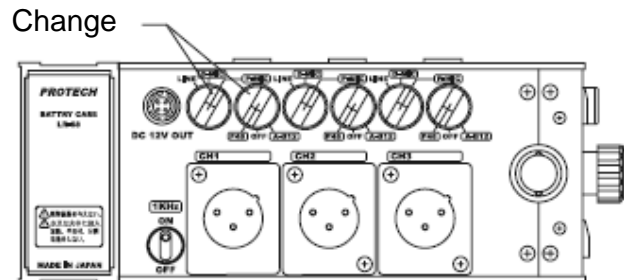


Select the kind of input audio signal

1. When use P48 phantom power type condenser microphone, set the input change control to P48 in the left side.

When A-B12 type condenser microphone (Sennheiser 426, etc), set the input change control to AB12.

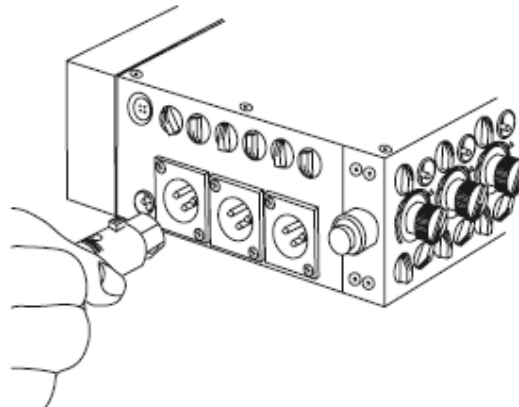
Note) When input LINE level audio, set the input change control to LINE.



2. When use dynamic microphone which doesn't need a power, set the change control to D-MIC.

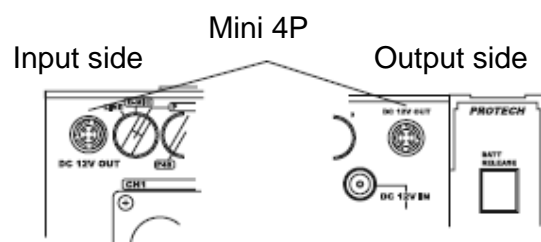
Connect with the Cannon 3 pin cable if the input choice finished.

Note) P-MIC of FS-300 is fixed to P48 or A-B12 at the order.



3. When wireless microphone is used, power can be supplied from 2 mini 4P connectors.

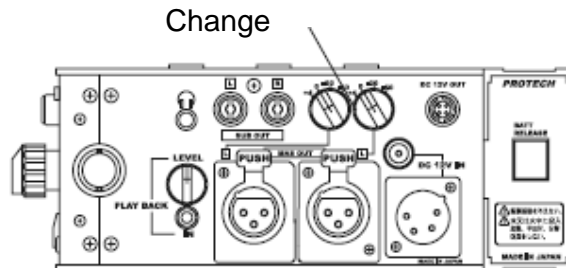
Note) This is only for FS-305.



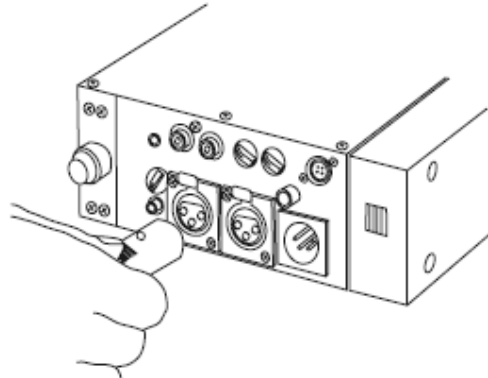
Connect audio output to recorder

1. To connect an audio output with the recorder, connect it with the recorder with the Cannon 3 pin cable from MAS OUT (L,R) in the right. Adjust MAS OUT output setting to the input setting of a recorder.

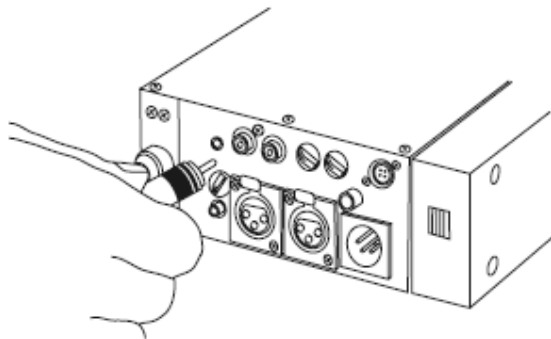
Ex.: When the recorder of LINE input is +4dB, set MAS OUT to +4dB.



2. Connect Cannon cable with MAS OUT (L,R).

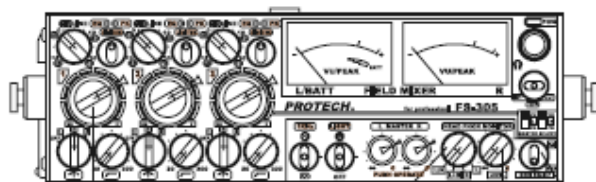


3. When use DECK of the RCA input, connect with SUBOUT A, B.
At this time, output level is -10dBV .



Adjust output level

1. Turn the master volume of all the channels to the full on the left and set it to ∞ . Set MONITOR SELECT to MAS (lower position) and set HEAD PHONE MONITOR in the right of the front panel to L/R, and adjust a little to the right from ∞ LEVEL.



Full on the left (∞)

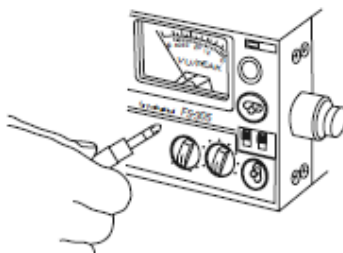
Stereo recording=L/R

Lower position

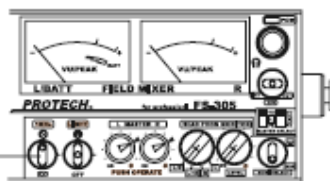
A little to the right from ∞

Monaural recording=L+R,L,R

2. Insert a headphone into the headset jack.

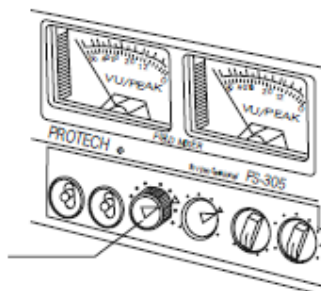


3. Turn the 1 kHz switch of the front panel on. Change METER SELECT to VU or PEAK.



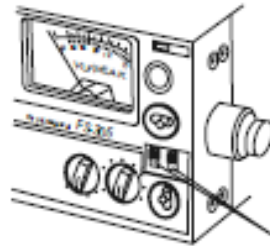
Set a switch to upper position

4. Adjust MASTER L,R to OVU if it is VU and to -20 dB if it is PEAK.



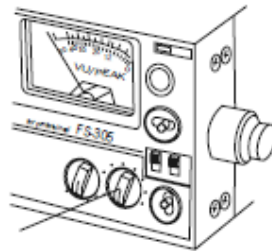
Volume is Pop-up by pressing, and it becomes adjustable.

5. The level can be more correctly adjusted by choosing the meter which the connecting recorder adopts.



Choose VU/PK

6. Adjust a headphone level to become moderate volume.



Adjust headphone

7. Adjust the input level of the connected recorder to the right level.

Note) If the meter is PEAK meter, set the level to -20dB .

FS-305P meter



Recorder side meter (Digital)

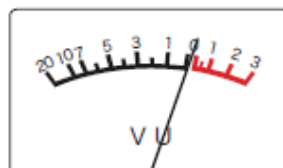


Note) If the meter is VU, set the level to 0VU.

FS-305P meter



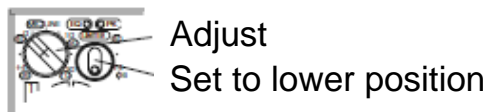
Recorder side meter (VU)



8. Turn OFF 1KHz after adjustment.

Adjust input level

1. Set the master volume to red mark, input audio signal and confirm if the meter moves or not.
Turn OFF the LIMITER switch, then adjust MIC/LINE trim so that the meter moves in correct level.

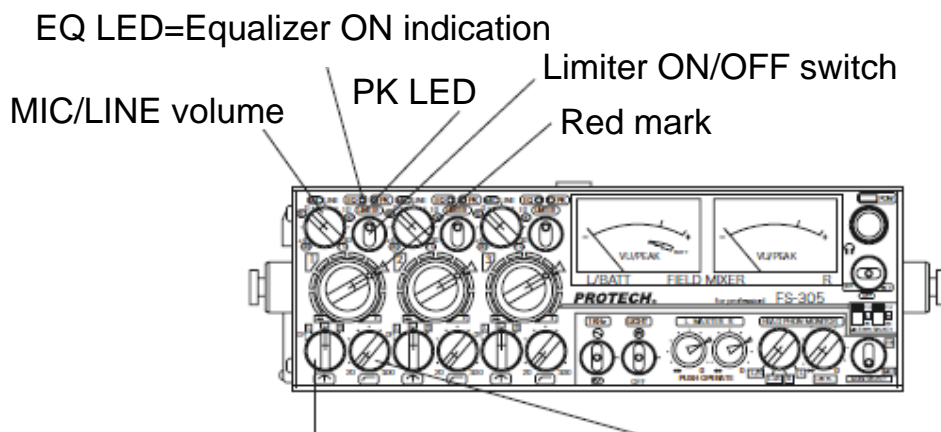


2. Set CH select switch to optional position and adjust the master volume the level becomes correct level.



Note) Please turn OFF (lower position) the limiter switch to adjust the master volume. Otherwise, actual level becomes higher in spite of the meter indication in correct level.

3. Set the limiter switch to LMT after adjustment. The limiter operates for sudden over input and it can prevent the audio distortion.



CH select switch

L= output to left CH

C= output to left and right CH

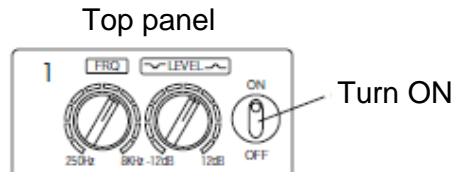
R= output to right CH

Low cut filter adjust volume

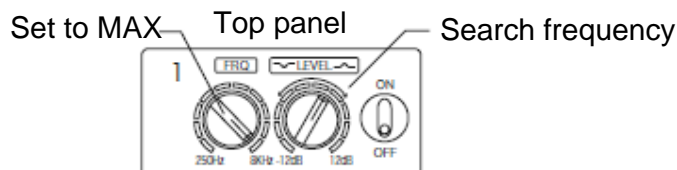
Adjust it from 20 to 300Hz to cut low band when wind is strong.

Equalize input audio signal

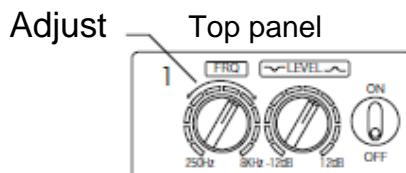
1. Adjust the equalizer of the top panel to emphasize or suppress a specific input range of the input audio signal. Turn ON the EQUALIZER switch of the channel to be adjusted.



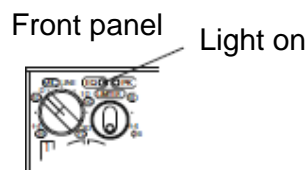
2. Turn LEVEL volume to the full on the right. (+12dB). Change FRQ volume in the range of 250Hz and 8kHz. While confirming with the headphone, search the frequency that the audio sound to be emphasized is heard best.



3. Adjust LEVEL optionally after the frequency was decided.

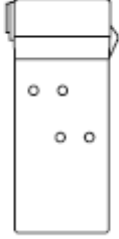
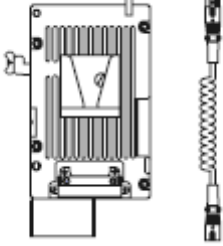


4. Effect can be confirmed by turning ON/OFF the EQUALIZE switch. When EQUALIZER is turned ON, EQ LED (Yellow) on the front panel lights on. ON/OFF of EQUALIZER can be confirmed by this LED.

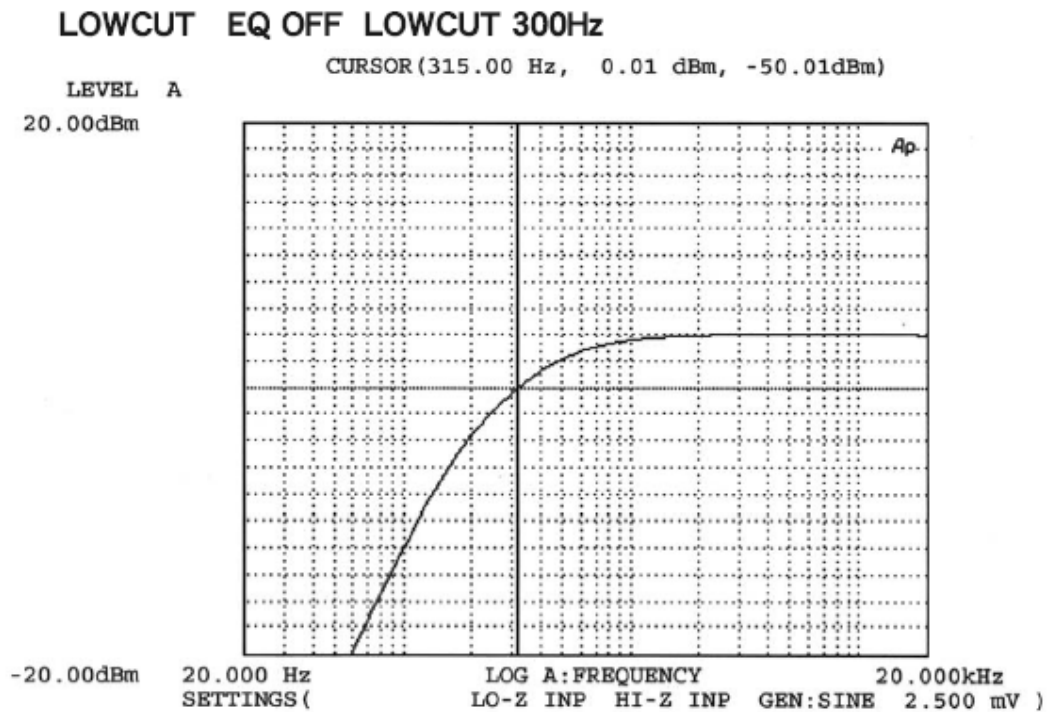
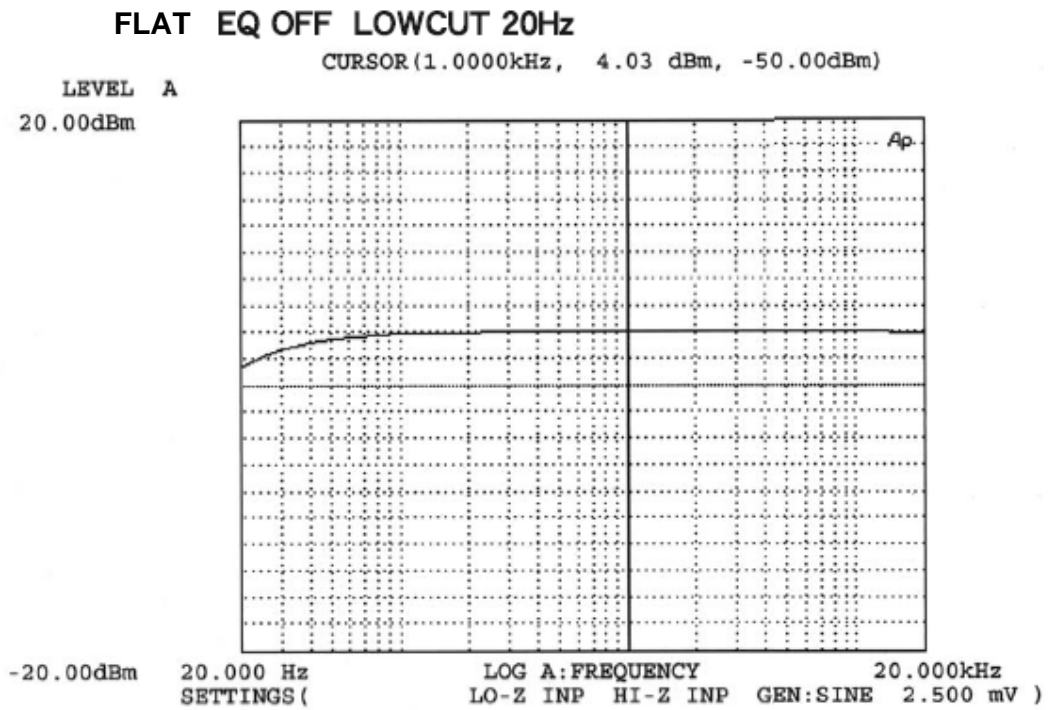


5. Adjust 3 channels by same method.

Option

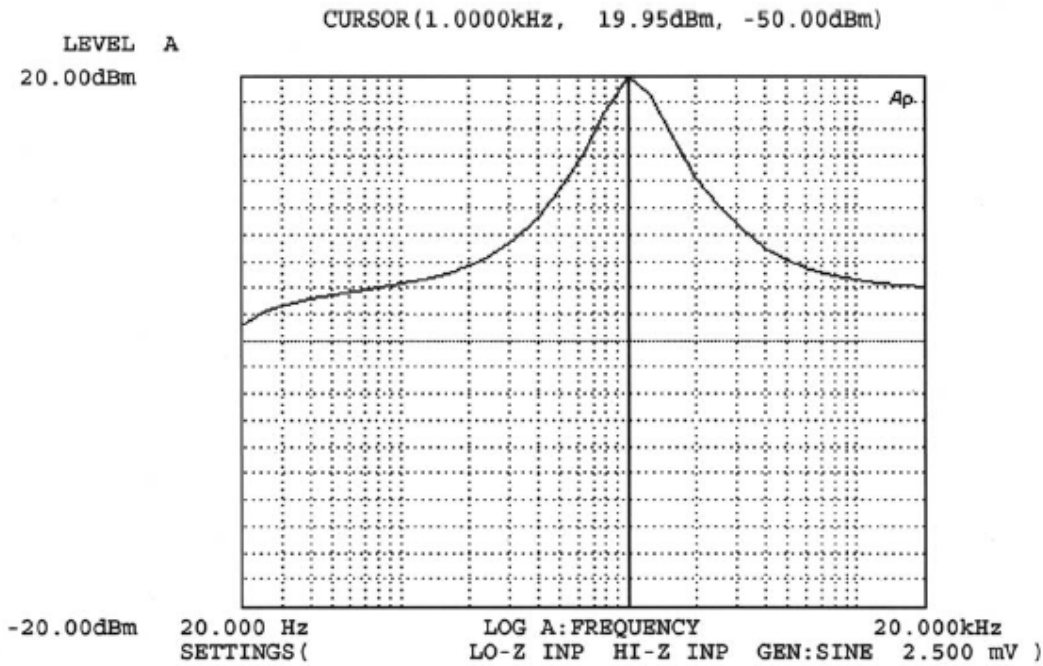
	
<p>FS-N01 NP-1 type battery box</p>	<p>PBU-L301+CAR-150 Lithium-ion battery adaptor + curled code</p>

Frequency characteristic

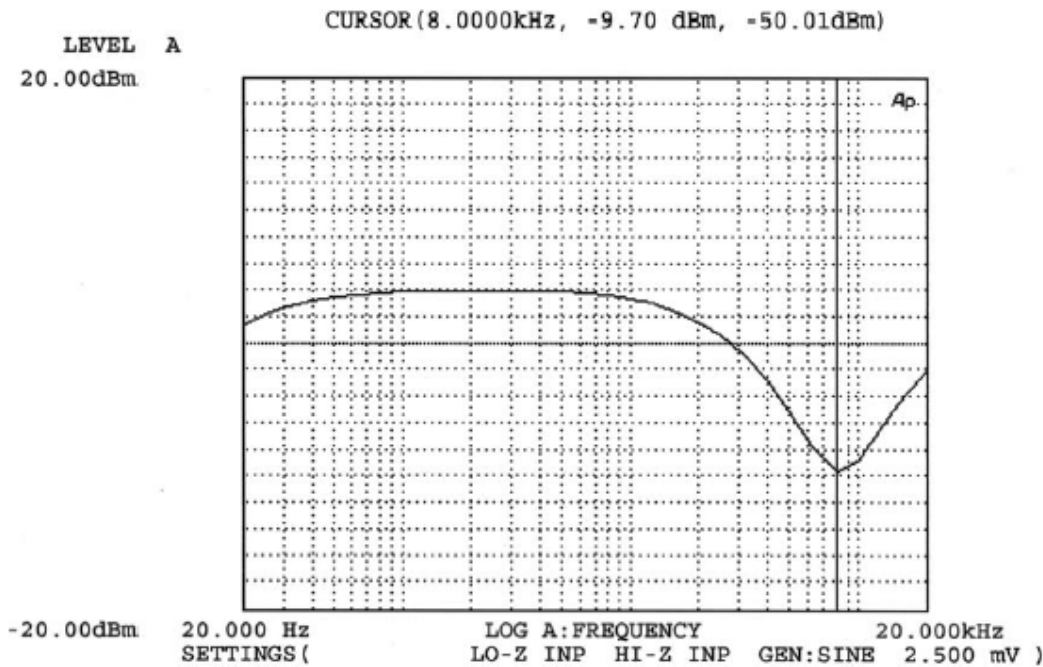


Frequency characteristic

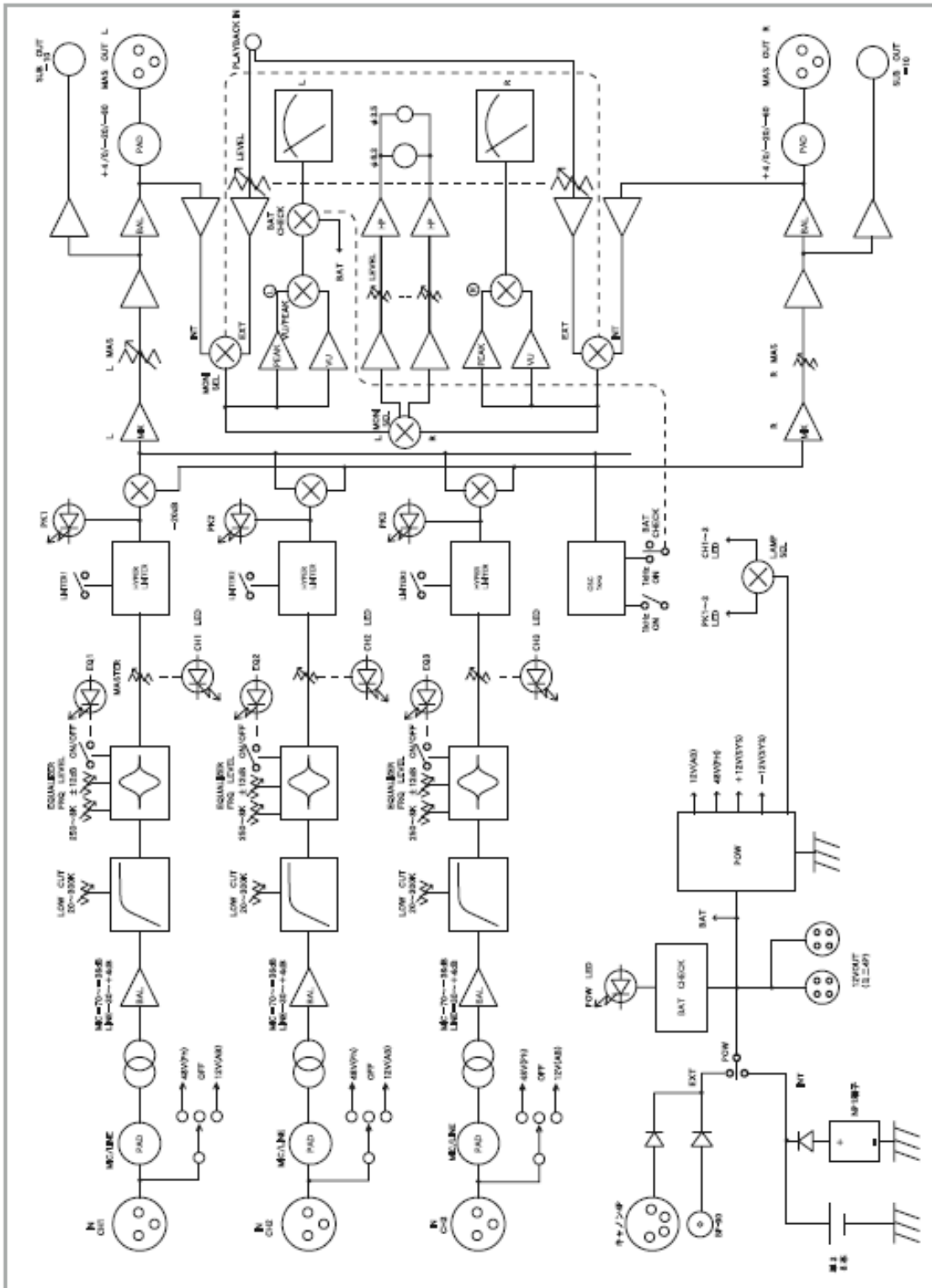
EQ ON UP EQ ON FRQ Approx. 1KHz LEVEL +12dB



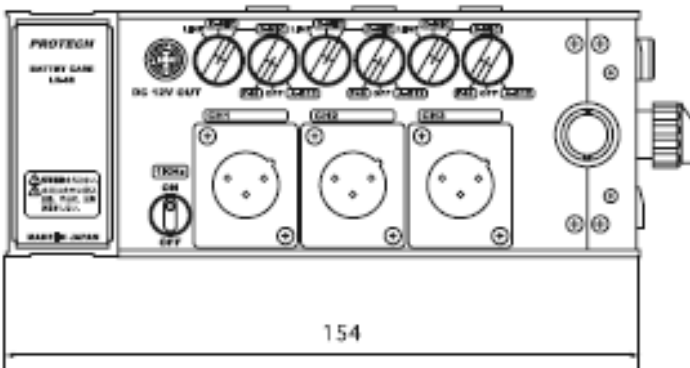
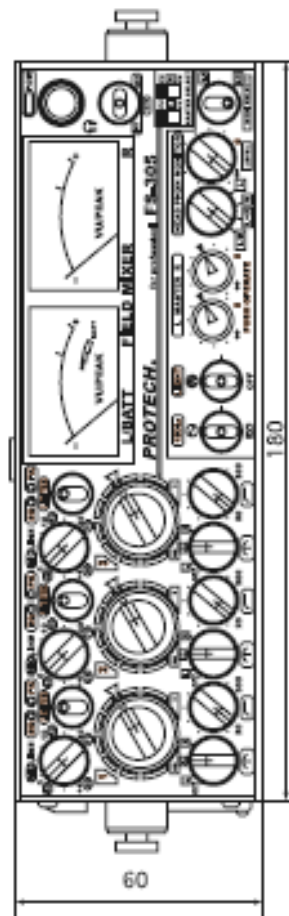
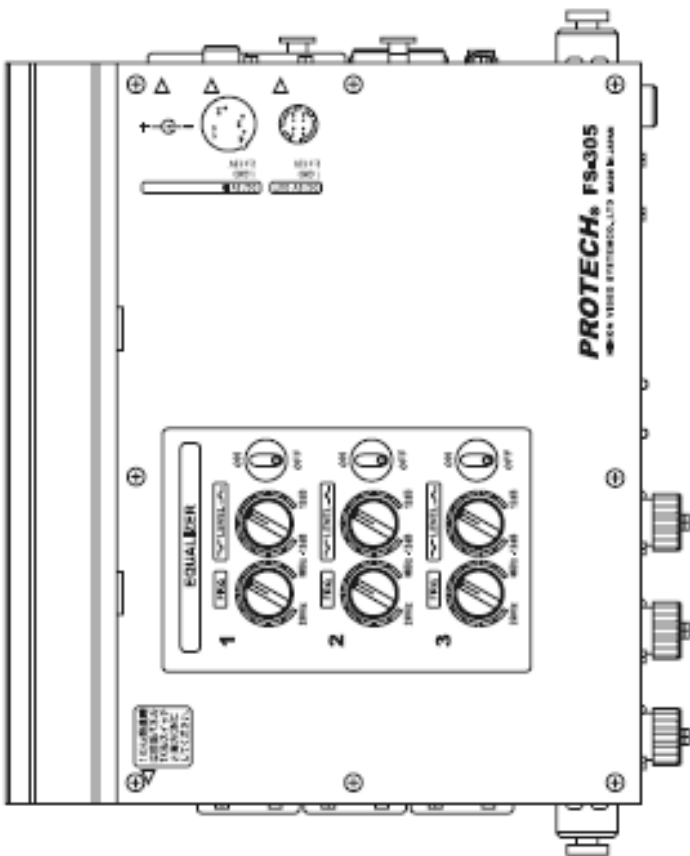
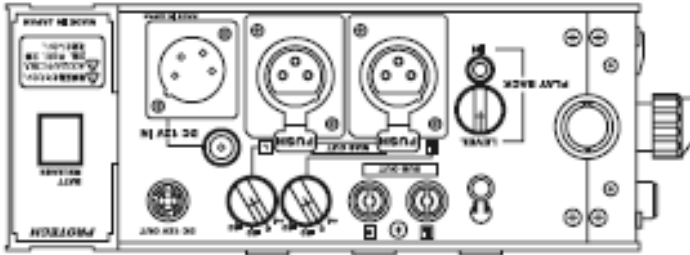
EQ ON DOWN EQ ON FRQ Approx. 8KHz LEVEL -12dB



Block Diagram



Dimension



Main Specifications

FS-300 Specifications

Input part	Audio	XLR 3pin (male) x3 (B type)
	Input level	Microphone: -70dBm to -36dBm variable continuously Line: -30dBm to +4dBm variable continuously
	Impedance	600 ohm \pm 10%
	DC	XLR 4pin (male) x1 BP-90 type connector x1
Output part	Master audio output	XLR 3pin (female) x each1
	Sub audio output	RCA L/R x each1
	Headphone monitor	3.5 ϕ stereo mini jack x1
		6.3 ϕ stereo standard jack x1
	Maximum output	L/R +24dBm
	Audio output level	L OUT +4,0,-20,-60dBm
		R OUT +4,0,-20,-60dBm
		Electronic balanced output which fits in with the 600 ohm load
Unbalanced output		
RCA OUT (L/R) -10dBs MONI OUT -6dBs Unbalanced output which fits in with the equal to or more than 8 ohm load		
General characteristic	Frequency characteristic	Line 50Hz - 15KHz \pm 1.0dB
		MONI 50Hz - 15 \pm 3.0dB
	S/N	Equal to or more than 54dB (at -70dBm input)
		Equal to or more than 64dB (at +4dBm input)
MONI equal to or more than 60dB (30kHz L, P, F use, input 600 ohm branch)		
Distortion percentage	Microphone and line: Equal to or less than 0.2 %	
	MONI : Equal to or less than 2% (50Hz - 60Hz)	
Built-in circuit	Phantom power supply	P-48V(+48V) and A-B12V are equipped in each channel
		Total 30mA of maximum supply current for 3ch
	H.P.F.	20 - 300Hz, -12dB/oct Frequency variable continuously
	Oscillator	1kHz
	Audio level meter	VU/Peak meter switchable type It is possible to select VU/Peak meter for each channel.
	Limiter	Each input-side independent 3 systems Independent ON/OFF possible
Power	Battery	Unit 3 dry battery slide case (LR6 x8)
		BP-90 battery
		NP-1 battery (When using battery holder FS-N01 available separately)
		Lithium-ion battery which is made by Sony (When using battery holder BKW-L601 available separately)
External DC input	DC9V - 18V Max. 0.5A	
Power consumption	approx. 0.3A	
General	Temperature	Operation From 0 degree C to 40 degree C
		Storage From -20 degree C to 50 degree C
	Weight	approx. 1.5kg
	Dimension	180x60x154mm (WxHxD) (including battery holder)

Main Specifications

FS-305 Specifications

Input part	Audio	XLR 3pin (male) x3
	Input level	Microphone: -70dBm to -36dBm variable continuously Line: -30dBm to +4dBm variable continuously
	Impeadance	600 ohm \pm 10%
	DC	XLR 4pin (male) x1 BP-90 type connector x1
Output part	Master audio output	XLR 3pin (female) x each1
	Sub audio output	RCA L/R x each1
	Headphone monitor	3.5 ϕ stereo mini jack x1
		6.3 ϕ stereo standard jack x1
	Maximum output	L/R +24dBm
	Audio output level	L OUT +4,0,-20,-60dBm
		R OUT +4,0,-20,-60dBm
		Electronic balanced output which fits in with the 600 ohm load
Unbalanced output		
RCA OUT (L/R) -10dBs		
MONI OUT -6dBs		
	Unbalanced output which fits in with the equal to or more than 8 ohm load	
General characteristic	Frequency characteristic	Line 50Hz - 15KHz \pm 1.0dB
		MONI 50Hz - 15 \pm 3.0dB
	S/N	Equal to or more than 54dB (at -70dBm input)
		Equal to or more than 64dB (at +4dBm input)
Distortion percentage	Microphone and line: Equal to or less than 0.2 %	
	MONI : Equal to or less than 2% (50Hz - 60Hz)	
Built-in circuit	Voice control	FRQ 250 - 8KHz
		LEVEL -12dB - +12dB
		Independent adjustment and 0N/OFF can be done at each channel.
	Phantom power supply	P-48V(+48V) and A-B12V are equipped in each channel
		Total 30mA of maximum supply current for 3ch
	H.P.F.	20 - 300Hz, -12dB/oct
	Oscillater	1kHz
Audio level meter	VU/Peak meter switchable type	
	It is possible to select VU/Peak meter for each channel.	
Limiter	Each input-side independent 3 systems	
	Independent ON/OFF possible	
Power	Battery	Unit 3 dry battery slide case (LR6 x8)
		BP-90 battery
		NP-1 battery
		(When using battery holder FS-N01 available separately)
		Lithium-ion battery which is made by Sony
	(When using battery holder BKW-L601 available separately)	
	External DC input	DC9V - 18V Max. 0.5A
	Power consumption	approx. 0.3A
General	Temparature	
	Operation	From 0 degree C to 40 degree C
	Storage	From -20 degree C to 50 degree C
	Weight	approx. 1.5kg
Dimension		180x60x154mm (WxHxD)
		(including battery holder)