
Service Manual

Model

MN-12

MN-04

Mini Mixer

FOSTEX®



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION:

TO PREVENT ELECTRIC SHOCK, MATCH
WIDE BLADE OF PLUG TO WIDE SLOT,
FULLY INSERT.

ATTENTION:

POUR ÉVITER LES CHOCS ÉLECTRIQUES,
INTRODUIRE LA LAME LA PLUS LARGE DE
LA FICHE DANS LA BORNE CORRE-
SPONDANTE DE LA PRISE ET POUSSER
JUSQU' AU FOND.



The lightning flash with arrowhead symbol, within an equilateral triangle, 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.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

“WARNING”

“TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOIS-
TURE.”

SAFETY INSTRUCTIONS

1. Read instructions - All the safety and operating instructions should be read before the appliance is operated.
2. Retain instructions - The safety and operating instructions should be retained for future reference.
3. Heed warnings - All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow instructions - All operating and use instructions should be followed.
5. Water and Moisture - The appliance should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer.
7. Wall or Ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization - The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
14. Nonuse Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. Damage requiring Service - The appliance should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
17. Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.



An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

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NOTES

* Parts List and circuit diagrams are given in this manual to assist the service technician in maintaining the Model MN-12/04.

* The following accessories are supplied with MN-12/04 as the standard accessories.

MN-12

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|---------------------|---------------------------------|
| Owner's manual | : 8288399000 (for export model) |
| | : 8288400000 (for JPN) |
| △ AC adaptor AD-12A | : 8270727003 (for USA/CND) |
| | : 8270727006 (for EUR) |
| | : 8270727007 (for UK) |
| | : 8270727010 (for JPN) |

MN-04

- | | |
|--------------------|---------------------------------|
| Owner's manual | : 8288397000 (for export model) |
| | : 8288398000 (for JPN) |
| △ AC adaptor AD-9A | : 8270728003 (for USA/CND) |
| | : 8270728006 (for EUR) |
| | : 8270728007 (for UK) |
| | : 8270728010 (for JPN) |

* Following is the packing material for the Model MN-12/04.

MN-12

- | | |
|-----------------------|--------------|
| PACKING, TOP, MN12 | : 8228402000 |
| PACKING, BOTTOM, MN12 | : 8228403000 |
| INNER, CARTON, MN12 | : 8228725000 |

MN-04

- | | |
|------------------------|--------------|
| PACKING, TOP, MN-04 | : 8288724000 |
| PACKING, BOTTOM, MN-04 | : 8228404000 |
| CARTON, BOX, MN-04 | : 8288724000 |

CAUTION

△ Parts marked with this sign are safety critical components. They must always be replaced with identical components. Refer to the Fostex Parts List and ensure exact replacement.

1. SPECIFICATIONS

MN-12

DEFINITION (Specification Unit : 0 dBV = 1 Vrms)

Normal Fader Position

Master fader Condition	At 7~8 position AUX RTN : -20 dBV / 1 kHz, AUX RTN VR : Max Adjust Master fader for -10 dBV at STEREO OUT.
Input fader Condition	At 7~8 position INPUT: -10 dBV / 1 kHz, PAN : L(R), TRIM : LINE, EQ GAIN : 0 Adjust Input fader for -10 dBV at STEREO OUT.

INPUT SECTION

INPUT 1~4

Input level	-60dBV (MIC) ~ -10dBV (LINE)
Impedance	20 k Ω or more
EQ HI	$\pm 13\text{dB} \pm 3\text{dB}$ (-10dBV / 10 kHz)
EQ LOW	$\pm 13\text{dB} \pm 3\text{dB}$ (-10dBV / 100 Hz)

INPUT 5-6, 7-8, 9-10, 11-12

Input level	-10dBV
Impedance	8 k Ω or more

AUX RTN

Input level	-10dBV
Impedance	8 k Ω or more

OUTPUT SECTION

STEREO OUT

Level	-10dBV
Load Impedance	1k Ω
Frequency Response	20 ~ 20kHz $\pm 1.5\text{dB}$ (INPUT 1~4 : -60dBV) 20 ~ 20kHz $\pm 1\text{dB}$ (INPUT 1~8 : -10dBV)
S/N	80 dB or more (DIN AUDIO, INPUT 1~4 : -10dBV) 81 dB or more (IHF-A, INPUT 1~4 : -10dBV) 63 dB or more (DIN AUDIO, INPUT 1~8 : -60dBV) 64 dB or more (IHF-A, INPUT 1~8 : -60dBV)
Distortion	0.01 % or less (INPUT 1~8 : 1kHz / 0dBV , OUTPUT : 0dBV) 0.05 % or less (INPUT 1~4 : 1kHz/-50dBV , OUTPUT : 0dBV)
Crosstalk	60dB or more at 1kHz
Click Noise (Power on / off)	-20 dBV _{p-p} or less (OUTPUT VR : MIN)
Peak LED Indication	0 dBV $\pm 3\text{dB}$

AUX SEND

Level	-10dBV
Load Impedance	1k Ω
Frequency Response	20 ~ 20kHz +1dB (INPUT : -10dBV)
S/N	86 dB or more (DIN AUDIO, INPUT : -10dBV) 88 dB or more (IHF-A, INPUT : -10dBV)
Distortion	0.01 % or less (INPUT : 1kHz / 0dBV , OUTPUT : 0dBV)
Crosstalk	60dB or more at 1kHz
Click Noise (Power on / off)	-20 dBV _{p-p} or less (OUTPUT VR : MIN)

PHONES

Connector	Stereo phone
Level	40mW or more (Normal fader position)
Load Impedance	32 Ω
Frequency Response	20 ~ 20 kHz $\pm 1.5\text{dB}$ (32 Ω load, INPUT : -10dBV, OUTPUT : 40mW) 20 ~ 20 kHz $\pm 3\text{dB}$ (32 Ω load, INPUT : -10dBV, OUTPUT : 40mW)
Distortion	0.2 % or less (32 Ω load, 1kHz, OUTPUT : 40mW)

GENERAL

Dimensions	356 (W) \times 198 (D) \times 45 (H) mm
Weight	1.3 kg
Power supply	
USA/CND	120VAC, 60Hz
EUR/UK	230VAC, 50/60Hz
JPN	100VAC, 50/60Hz

MN-04**DEFINITION** (Specification Unit : 0 dBV = 1 Vrms)**Normal Fader Position**

Master fader Condition	At 7~8 position INPUT 4 : -10 dBV / 1 kHz, PAN 4 : L(R) First, set MASTER fader at max. and adjust INPUT 4 fader for -4dBV at STEREO OUT L(R). Then, adjust MASTER fader for -10dBV at STEREO OUT L (R). At 7~8 position
Input fader Condition	INPUT: -10 dBV / 1 kHz, PAN : L(R), TRIM : LINE Adjust Input fader for -10 dBV at STEREO OUT.

INPUT SECTION**INPUT 1**

Input level	-60dBV(MIC) / -50~-20dBV(ALC ON) / -10dBV(LINE)
Impedance	20 kΩ or more

INPUT 2~4

Input level	-10dBV
Impedance	8 kΩ or more

OUTPUT SECTION**STEREO OUT**

Level	-10dBV
Load Impedance	1kΩ
Frequency Response	20 ~ 20kHz ± 1.5dB (INPUT : -60dBV) 20 ~ 20kHz +1dB (INPUT : -10dBV)
S/N	82 dB or more (DIN AUDIO, INPUT : -10dBV) 84 dB or more (IHF-A, ,INPUT : -10dBV) 56 dB or more (DIN AUDIO, INPUT : -60dBV) 58 dB or more (IHF-A, ,INPUT : -60dBV)
Distortion	0.25 % or less (INPUT : 1kHz/-50dBV/MIC , OUTPUT : 0dBV) 3.0 % or less (INPUT : 1kHz/-40dBV/ALC , OUTPUT : 0dBV) 0.05 % or less (INPUT : 1kHz/-10dBV/LINE , OUTPUT : 0dBV)
Crosstalk	55dB or more at 1kHz
Click Noise (Power on / off)	-20 dBV _{p-p} or less (OUTPUT VR : MIN)
Peak LED Indication	0 dBV ± 3dB

PHONES

Level	1mW or more (Normal fader position)
Load Impedance	32Ω
Frequency Response	80 ~ 20 kHz +1-3dB (32 Ω load, INPUT : -60dBV) 80 ~ 20 kHz +1-3dB (32 Ω load, INPUT : -10dBV)
Distortion	0.2 % or less (32 Ω load, 1kHz, 200 mW)

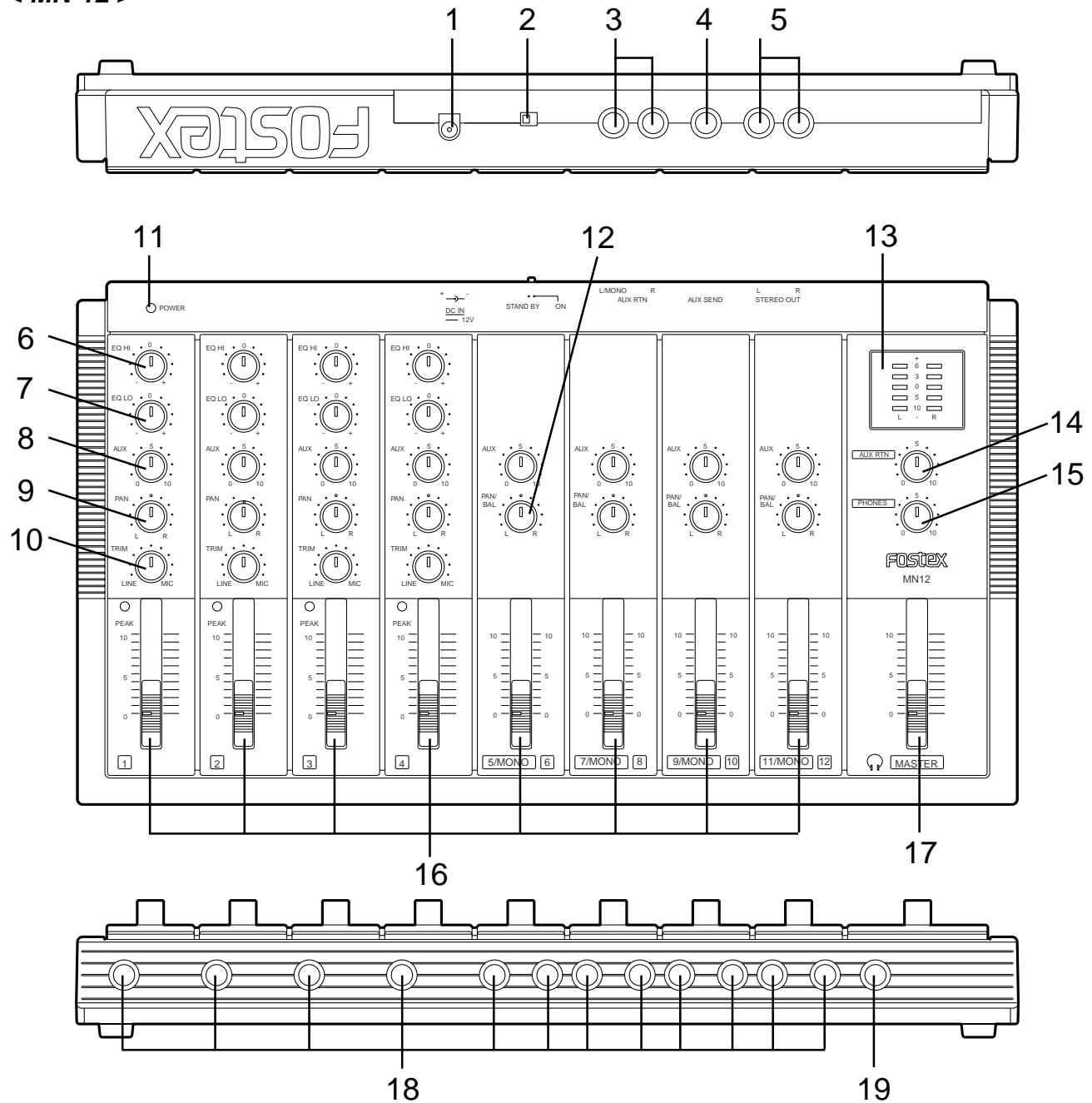
GENERAL

Dimensions	193 (W) × 130 (D) × 45 (H) mm
Weight	0.5 kg
Power supply	
USA/CND	120VAC, 60Hz
EUR/UK	230VAC, 50/60Hz
JPN	100VAC, 50/60Hz

* Specifications and appearance are subject to change without notice for product improvement.

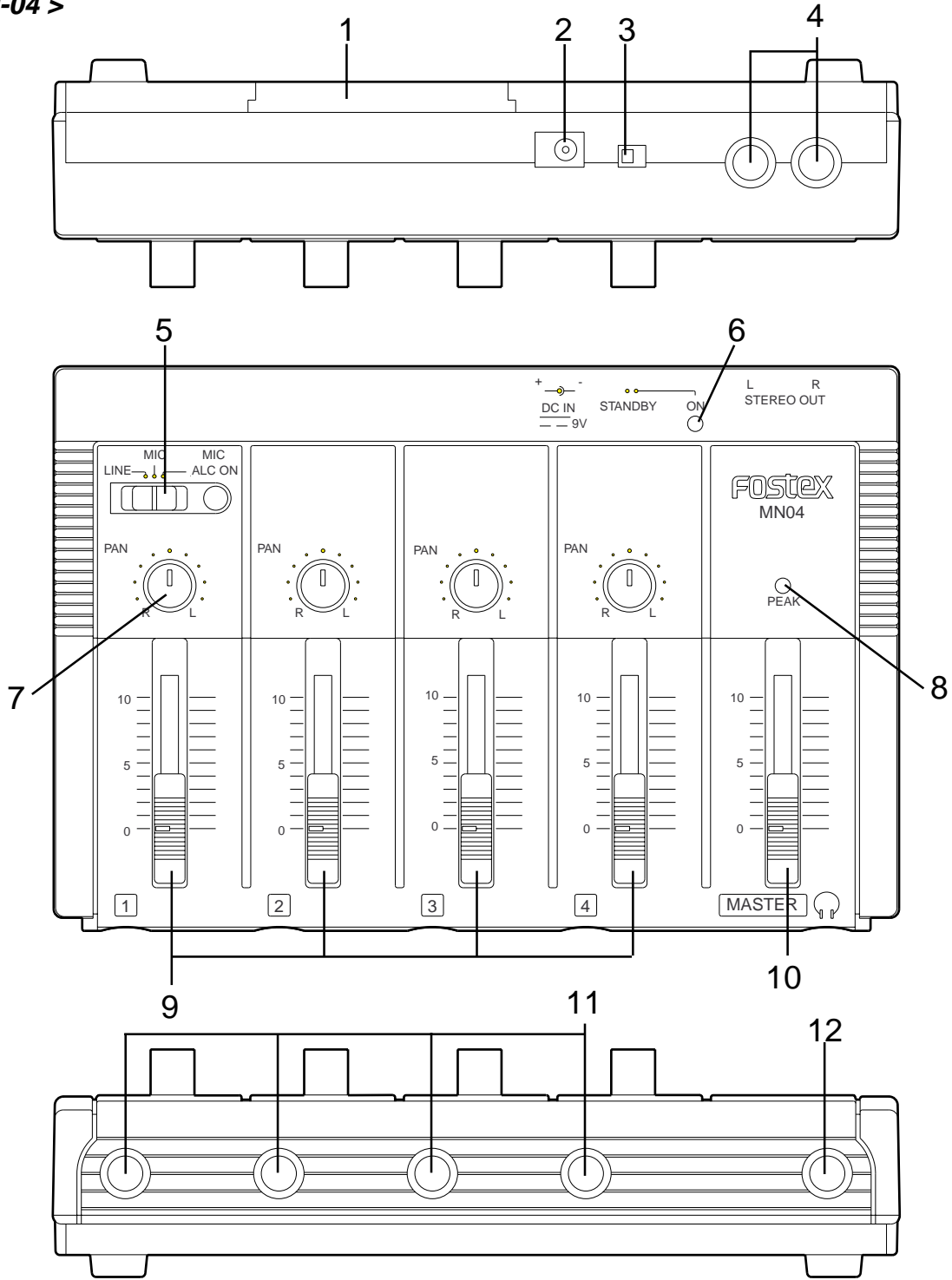
2. CONTROLS, INDICATORS & CONNECTORS

< MN-12 >



- | | |
|-------------------------------------|--|
| 1. DC IN jack [DC IN] | 11. Power LED [POWER] |
| 2. Power switch [STANDBY] | 12. Panpot / Balance knobs 5~8 [PAN/BAL] |
| 3. Aux return jacks [AUX RTN] | 13. LED level meter |
| 4. Aux send jack [AUX SEND] | 14. Aux return knob [AUX RTN] |
| 5. Stereo out jacks [STEREO OUT] | 15. Phones knob [PHONES] |
| 6. High equalizer knobs 1~4 [EQ HI] | 16. Input fader 1~12 [1~12] |
| 7. Low equalizer knobs 1~4 [EQ LO] | 17. Master fader [MASTER] |
| 8. Aux level knob 1~8 [AUX] | 18. Input jacks 1~12 |
| 9. Panpot Knobs 1~4 [PAN] | 19. Headphone jack |
| 10. Input trim knobs 1~4 [TRIM] | |

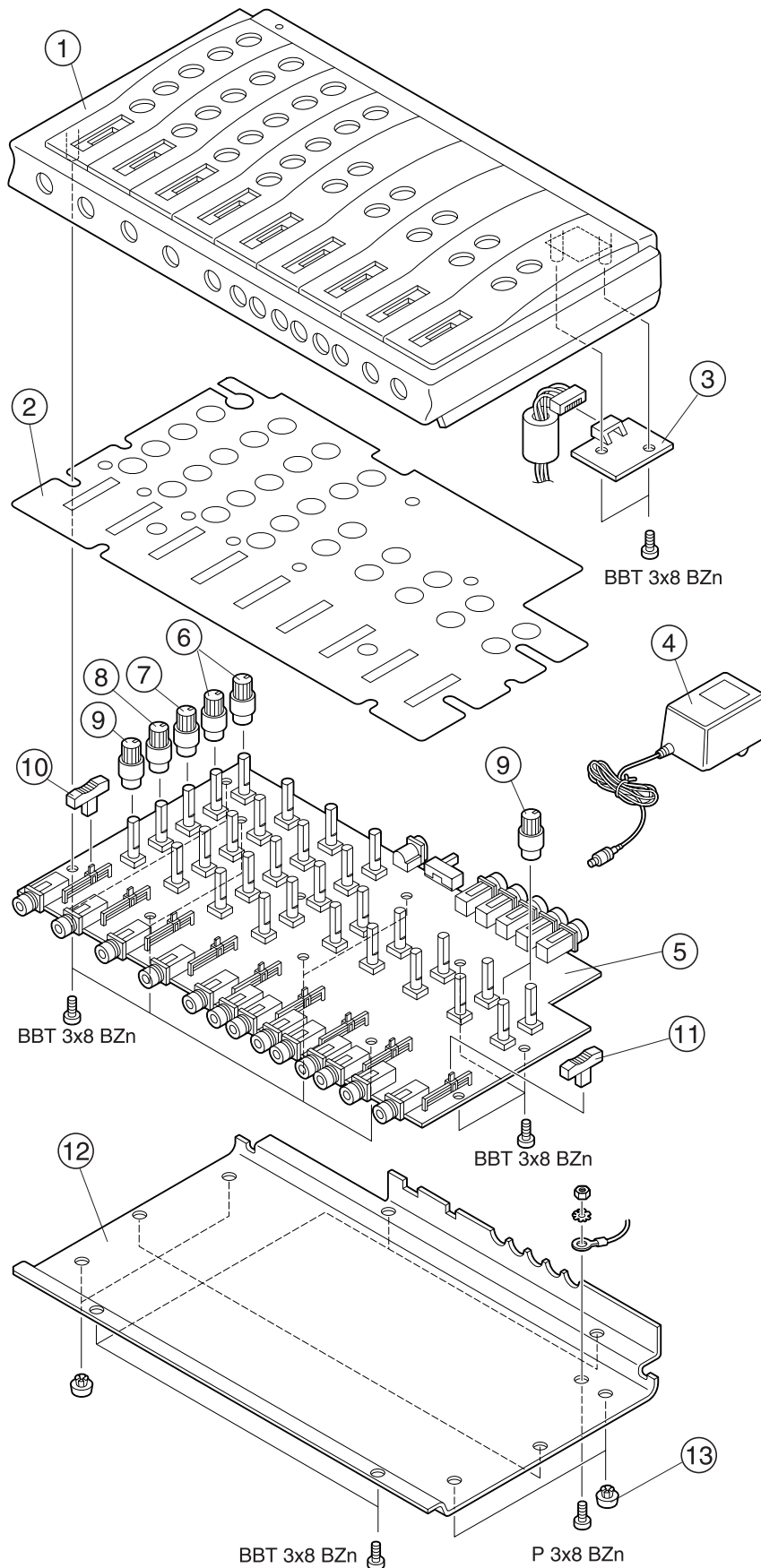
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- | | |
|----------------------------------|---------------------------|
| 1. Battery compartment | 7. Panpot knob 1~4 [PAN] |
| 2. DC IN jack [DC IN] | 8. Peak LED [PEAK] |
| 3. Power switch [STANDBY] | 9. Input fader 1~4 [1~4] |
| 4. Stereo out jacks [STEREO OUT] | 10. Master fader [MASTER] |
| 5. Level selector switch | 11. Input jacks 1~4 |
| 6. Power LED | 12. Headphone jack |

3. EXPLODED VIEW, PCB ASSEMBLY AND PARTS LIST

● MN-12 OVERALL EXPLODED VIEW & PARTS LIST

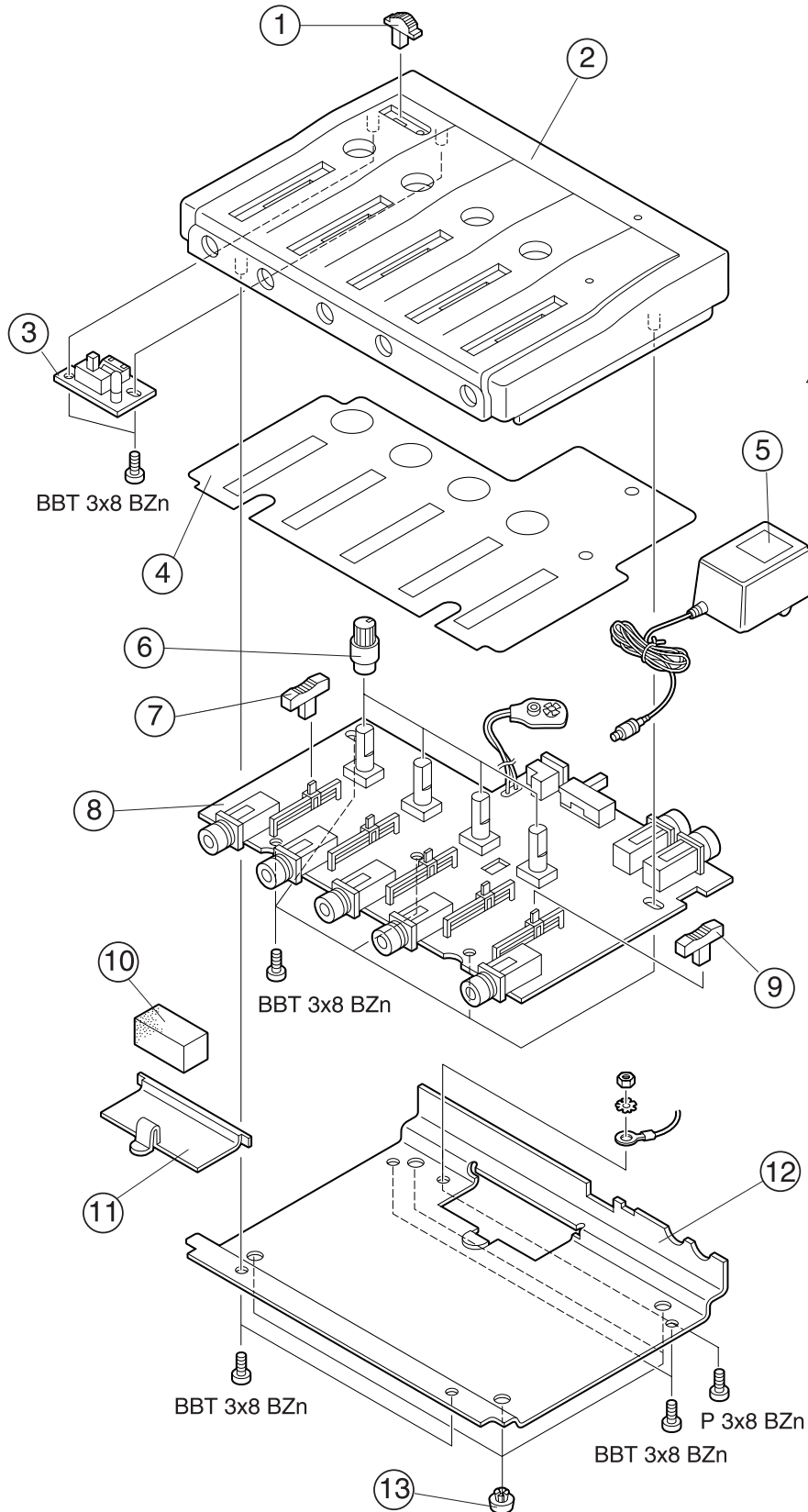


No. PartsNo.

Description

- | | | |
|-----|------------|--------------------------|
| 1 | 8212600000 | PANEL, FRONT, MN-12 |
| 2 | 8216598000 | SHIELD, PLATE, MN12 |
| 3 | 8274180000 | PCB Assy, METER, MN-12 |
| ⚠ 4 | 8270727003 | ADAPTOR, AD-12A, USA/CND |
| | 8270727006 | ADAPTOR, AD-12A, EUR |
| | 8270727007 | ADAPTOR, AD-12A, UK |
| | 8270727010 | ADAPTOR, AD-12A, JPN |
| 5 | 8274179000 | PCB Assy, MAIN, MN-12 |
| 6 | 8226198004 | ROTARY, KNOB, (D), GRY |
| 7 | 8226198003 | ROTARY, KNOB(C), GRN |
| 8 | 8226198002 | ROTARY, KNOB(B), YEL |
| 9 | 8226198001 | ROTARY, KNOB(A), RED |
| 10 | 8226159001 | KNOB, FADER, WHT |
| 11 | 8226159002 | KNOB, FADER, RED |
| 12 | 8221269000 | PLATE, BOTTOM, MN12 |
| 13 | 8207010700 | RUBBER, FOOT |

● MN-04 OVERALL EXPLODED VIEW & PARTS LIST



No.	PartsNo.	Description
1	8221262000	KNOB, SW, WHT
2	8212599000	PANEL, FRONT, MN-04
3	8274182000	PCB Assy, SELECTOR, MN-04
4	8216599000	SHIELD, PLATE, MN-04
△ 5	8270728003	ADAPTOR, AD-9A, USA/CND
	8270728006	ADAPTOR, AD-9A, EUR
	8270728007	ADAPTOR, AD-9A, UK
	8270728010	ADAPTOR, AD-9A, JPN
6	8226198002	ROTARY, KNOB(B), Y
7	8226159001	KNOB, FADER, WHT
8	8274181000	PCB Assy, MAIN, MN-04
9	8226159002	KNOB, FADER, RED
10	8216513000	SPONG, MN06
11	8212115001	BATTERY, COVER, MN06
12	8221268000	PLATE, BOTTOM, MN-04
13	8207010700	RUBBER, FOOT

● MN-12 PartsList

• MAIN / SELECTOR PCBs

ICs

Ref.No.	PartNo.	Description
U101~701	8236037200	IC, ANALOG, μ PC4570H
U102, 302	8236037200	IC, ANALOG, μ PC4570H
U151~351	8236037200	IC, ANALOG, μ PC4570H
U451	8236041300	IC, ANALOG, NJM4556L
U551	8236038900	IC, DIP, LEDDRIVER, IR2E27A
U602	8236032005	IC, REGULATOR, NJM78M12FA

TRANSISTORS

Ref.No.	PartNo.	Description
Q101~401	8236408900	TR, 2SD1858, QR, T
Q102~402	8234108800	TR, 2SB1237, PQR, T
Q151, 251	8236408900	TR, 2SD1858, QR, T
Q351	8236408900	TR, 2SD1858, QR, T
Q651	8234108800	TR, 2SB1237, PQR, T

DIODEs

Ref.No.	PartNo.	Description
D101~401	8234104000	OPT, V, LED, RED, RJ3-2034ADS
D551, 561	8234109301	OPT, LED, SEL1124R
D552, 562	8234109301	OPT, LED, SEL1124R
D553, 563	8234109302	OPT, LED, SEL1324G
D554, 564	8234109302	OPT, LED, SEL1324G
D555, 565	8234109302	OPT, LED, SEL1324G
D652	8234017601	DIODE, 1SS133
D653	8234103900	OPT, V, LED, GRN, RT3-5034YGS
D654	8234017601	DIODE, 1SS133
D655	8234000700	DIODE, 1N4002

RESISTORS

Ref. No.	Part No.	Description
R101~401	8230138101	HT, CARBON, 1/4W, 100, 5%
R102~402	8230138104	HT, CARBON, 1/4W, 100K, 5%
R103~403	8230138224	HT, CARBON, 1/4W, 220K, 5%
R104~404	8230138470	HT, CARBON, 1/4W, 47, 5%
R105~405	8230138512	HT, CARBON, 1/4W, 5.1K, 5%
R106~406	8230138512	HT, CARBON, 1/4W, 5.1K, 5%
R107~407	8230138153	HT, CARBON, 1/4W, 15K, 5%
R108~408	8230138153	HT, CARBON, 1/4W, 15K, 5%
R109~409	8230138103	HT, CARBON, 1/4W, 10K, 5%
R110~410	8230138243	HT, CARBON, 1/4W, 24K, 5%
R111~411	8230138303	HT, CARBON, 1/4W, 30K, 5%
R112~412	8230138243	HT, CARBON, 1/4W, 24K, 5%
R113~413	8230138303	HT, CARBON, 1/4W, 30K, 5%

Ref. No.	Part No.	Description
R114~414	8230138203	HT, CARBON, 1/4W, 20K, 5%
R115~415	8230138103	HT, CARBON, 1/4W, 10K, 5%
R116~416	8230138242	HT, CARBON, 1/4W, 2.4K, 5%
R117~417	8230138223	HT, CARBON, 1/4W, 22K, 5%
R118~418	8230138223	HT, CARBON, 1/4W, 22K, 5%
R119~419	8230138474	HT, CARBON, 1/4W, 470K, 5%
R120~420	8230138102	HT, CARBON, 1/4W, 1K, 5%
R121~421	8230138101	HT, CARBON, 1/4W, 100, 5%
R122~422	8230138104	HT, CARBON, 1/4W, 100K, 5%
R123~423	8230138273	HT, CARBON, 1/4W, 27K, 5%
R124~424	8230138563	HT, CARBON, 1/4W, 56K, 5%
R151, 251	8230138683	HT, CARBON, 1/4W, 68K, 5%
R152, 252	8230138273	HT, CARBON, 1/4W, 27K, 5%
R153, 253	8230138563	HT, CARBON, 1/4W, 56K, 5%
R154, 254	8230138102	HT, CARBON, 1/4W, 1K, 5%
R155, 255	8230138303	HT, CARBON, 1/4W, 30K, 5%
R156, 256	8230138332	HT, CARBON, 1/4W, 3.3K, 5%
R351	8230138203	HT, CARBON, 1/4W, 20K, 5%
R352	8230138203	HT, CARBON, 1/4W, 20K, 5%
R353	8230138203	HT, CARBON, 1/4W, 20K, 5%
R354	8230138223	HT, CARBON, 1/4W, 22K, 5%
R355	8230138102	HT, CARBON, 1/4W, 1K, 5%
R356	8230138332	HT, CARBON, 1/4W, 3.3K, 5%
R451, 452	8230138332	HT, CARBON, 1/4W, 3.3K, 5%
R453, 454	8230138273	HT, CARBON, 1/4W, 27K, 5%
R455, 456	8230138332	HT, CARBON, 1/4W, 3.3K, 5%
R457, 458	8230138103	HT, CARBON, 1/4W, 10K, 5%
R459, 460	8230138220	HT, CARBON, 1/4W, 22, 5%
R501~801	8230138103	HT, CARBON, 1/4W, 10K, 5%
R502~802	8230138203	HT, CARBON, 1/4W, 20K, 5%
R503~803	8230138103	HT, CARBON, 1/4W, 10K, 5%
R504~804	8230138203	HT, CARBON, 1/4W, 20K, 5%
R505~805	8230138473	HT, CARBON, 1/4W, 47K, 5%
R506~806	8230138473	HT, CARBON, 1/4W, 47K, 5%
R507~807	8230138473	HT, CARBON, 1/4W, 47K, 5%
R508~808	8230138473	HT, CARBON, 1/4W, 47K, 5%
R509~809	8230138203	HT, CARBON, 1/4W, 20K, 5%
R551, 552	8230138153	HT, CARBON, 1/4W, 15K, 5%
R553	8230138470	HT, CARBON, 1/4W, 47, 5%
R651	8230138332	HT, CARBON, 1/4W, 3.3K, 5%
R652, 653	8230138103	HT, CARBON, 1/4W, 10K, 5%
R654, 655	8230138470	HT, CARBON, 1/4W, 47, 5%
R656	8230138474	HT, CARBON, 1/4W, 470K, 5%
R657	8230138473	HT, CARBON, 1/4W, 47K, 5%
R658	8230138473	HT, CARBON, 1/4W, 47K, 5%
R901, 902	8230138203	HT, CARBON, 1/4W, 20K, 5%

Ref. No.	Part No.	Description
VR101~401	8240241000	POT, PI, RT09, 20KC, RK09K113
VR102~402	8240245000	POT, PI, SL030, 20KAA, RS30H11
VR103~403	8240243000	POT, PI, RT09, 50KB, RK09K113
VR104~404	8240243000	POT, PI, RT09, 50KB, RK09K113
VR105~405	8240243000	POT, PI, RT09, 50KB, RK09K113
VR106~406	8240244000	POT, PI, RT09, 50KA, RK09K113
VR151	8240274004	POT, PI, SL30, 20KAA, RS30H121
VR451	8240286010	VR, RK09K12C-L25, 20KAA
VR501~801	8240274004	POT, PI, SL30, 20KAA, RS30H121
VR502~802	8240243000	POT, PI, RT09, 50KB, RK09K113
VR503~803	8240244000	POT, PI, RT09, 50KA, RK09K113
VR901	8240286010	VR, RK09K12C-L25, 20KAA

Ref. No.	Part No.	Description
C501~801	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C502~802	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C503~803	8232050101	CER, 50V, 100PF, 5%, SL
C551	8232143107	ALU, 16V, 100µF, 20%, SME-VB
C552, 553	8232144475	ALU, 25V, 4.7µF, 20%, SME-VB
C554, 555	8232144475	ALU, 25V, 4.7µF, 20%, SME-VB
C651	8232143477	ALU, 16V, 470µF, 20%, SME-VB
C652, 657	8232143477	ALU, 16V, 470µF, 20%, SME-VB
C653, 658	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C654, 659	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C655, 660	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C662	8232144475	ALU, 25V, 4.7µF, 20%, SME-VB
C663	8232143477	ALU, 16V, 470µF, 20%, SME-VB
C901, 902	8232144226	ALU, 25V, 22µF, 20%, SME-VB

CAPACITORS

ALU = Electrolytic
 CER = Ceramic type
 PES = Mylar type

Ref. No.	Part No.	Description
C101~401	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C102~402	8232050100	CER, 50V, 10PF, +/-5PF, SL
C104~403	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C105~405	8232050220	CER, 50V, 22PF, 5%, SL
C106~406	8232901332	PES, 50V, .0033µF, 5%, AMZV
C107~407	8232050100	CER, 50V, 10PF, +/-5PF, SL
C108~408	8232901103	PES, 50V, 0.01µF, 5%, AMZV
C109~409	8232901103	PES, 50V, 0.01µF, 5%, AMZV
C110~410	8232146105	ALU, 50V, 1µF, 20%, SME-VB
C111~411	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C112~412	8232050101	CER, 50V, 100PF, 5%, SL
C113~413	8232050101	CER, 50V, 100PF, 5%, SL
C114~414	8232143476	ALU, 16V, 47µF, 20%, SME-VB
C115~415	8232050100	CER, 50V, 10PF, +/-5PF, SL
C116~416	8232050101	CER, 50V, 100PF, 5%, SL
C151, 251	8232050100	CER, 50V, 10PF, +/-5PF, SL
C152, 252	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C153, 253	8232050101	CER, 50V, 100PF, 5%, SL
C154, 254	8232050101	CER, 50V, 100PF, 5%, SL
C351	8232050100	CER, 50V, 10PF, +/-5PF, SL
C352	8232144226	ALU, 25V, 22µF, 20%, SME-VB
C353, 354	8232050101	CER, 50V, 100PF, 5%, SL
C451, 452	8232143477	ALU, 16V, 470µF, 20%, SME-VB
C453, 454	8232050101	CER, 50V, 100PF, 5%, SL
C455, 456	8232050220	CER, 50V, 22PF, 5%, SL

MISCELLANEOUS

Ref.No.	PartNo.	Description
CN501	8745503006	CONN, XH, 6P
J101~401	8245330003	CONN, PHONE, YKB21-5011
J151~451	8245339013	CONN, PHONES, YKB21-5009
J501~801	8245330003	CONN, PHONE, YKB21-5011
J502~802	8245330003	CONN, PHONE, YKB21-5011
J603	8245258000	CONN, PLJACK, DC-INLET
J901, 902	8245330003	CONN, PHONE, YKB21-5011
S651	8253467000	SW, SS010-P022MAM-PA9

● MN-04 Parts List

• MAIN / SELECTOR PCBs

ICs

Ref.No.	PartNo.	Description
U101	8236046100	IC, μ PC4570C
U501	8236046100	IC, μ PC4570C
U502	8236046200	IC, NJM4556AD
U801	8236046100	IC, μ PC4570C

TRANSISTORS

Ref.No.	PartNo.	Description
Q101, 102	8236408900	TR, 2SD1858, QR, T
Q103	8234108800	TR, 2SB1237, PQR, T
Q501, 601	8236408900	TR, 2SD1858, QR, T
Q701	8236408900	TR, 2SD1858, QR, T
Q702	8234108800	TR, 2SB1237, PQR, T
Q801	8236408900	TR, 2SD1858, QR, T
Q802	8234108800	TR, 2SB1237, PQR, T
Q803	8236408900	TR, 2SD1858, QR, T

DIODES

Ref.No.	PartNo.	Description
D101, 102	8234500700	D, HT, 1SS136
D103	8234109200	LED, SML1216W
D104	8234500700	D, HT, 1SS136
D701, 702	8234500700	D, HT, 1SS136
D703	8234104000	OPT, V, LED, RED, RJ3-2034ADS
D802	8234103900	OPT, V, LED, GRN, RT3-5034YGS
D803, 804	8234500700	D, HT, 1SS136

RESISTORS

Ref. No.	Part No.	Description
R101	8230138222	HT, CARBON, 1/4W, 2.2K, 5%
R102	8230138473	HT, CARBON, 1/4W, 47K, 5%
R103	8230138102	HT, CARBON, 1/4W, 1K, 5%
R105	8230138334	HT, CARBON, 1/4W, 330K, 5%
R107~407	8230138103	HT, CARBON, 1/4W, 10K, 5%
R108~408	8230138203	HT, CARBON, 1/4W, 20K, 5%
R109~409	8230138103	HT, CARBON, 1/4W, 10K, 5%
R110~410	8230138203	HT, CARBON, 1/4W, 20K, 5%
R111	8230138222	HT, CARBON, 1/4W, 2.2K, 5%
R112	8230138103	HT, CARBON, 1/4W, 10K, 5%
R113	8230138102	HT, CARBON, 1/4W, 1K, 5%
R114	8230138222	HT, CARBON, 1/4W, 2.2K, 5%
R115	8230138103	HT, CARBON, 1/4W, 10K, 5%
R116	8230138222	HT, CARBON, 1/4W, 2.2K, 5%
R117	8230138473	HT, CARBON, 1/4W, 47K, 5%
R118	8230138104	HT, CARBON, 1/4W, 100K, 5%
R119	8230138222	HT, CARBON, 1/4W, 2.2K, 5%
R120	8230138473	HT, CARBON, 1/4W, 47K, 5%
R121	8230138153	HT, CARBON, 1/4W, 15K, 5%
R122	8230138222	HT, CARBON, 1/4W, 2.2K, 5%
R123	8230138104	HT, CARBON, 1/4W, 100K, 5%
R501, 601	8230138683	HT, CARBON, 1/4W, 68K, 5%
R502, 602	8230138273	HT, CARBON, 1/4W, 27K, 5%
R503, 603	8230138563	HT, CARBON, 1/4W, 56K, 5%
R504, 604	8230138203	HT, CARBON, 1/4W, 20K, 5%
R505, 605	8230138102	HT, CARBON, 1/4W, 1K, 5%

Ref.No.	PartNo.	Description
R506, 606	8230138102	HT, CARBON, 1/4W, 1K, 5%
R507, 607	8230138220	HT, CARBON, 1/4W, 22, 5%
R508, 608	8230138203	HT, CARBON, 1/4W, 20K, 5%
R701	8230138153	HT, CARBON, 1/4W, 15K, 5%
R702	8230138473	HT, CARBON, 1/4W, 47K, 5%
R703, 704	8230138473	HT, CARBON, 1/4W, 47K, 5%
R705	8230138105	HT, CARBON, 1/4W, 1M, 5%
R706	8230138222	HT, CARBON, 1/4W, 2.2K, 5%
R801	8230138222	HT, CARBON, 1/4W, 2.2K, 5%
R802	8230138203	HT, CARBON, 1/4W, 20K, 5%
R803, 804	8230138222	HT, CARBON, 1/4W, 2.2K, 5%
R805, 806	8230138203	HT, CARBON, 1/4W, 20K, 5%
R807, 808	8230138680	HT, CARBON, 1/4W, 68, 5%
R809	8230138105	HT, CARBON, 1/4W, 1M, 5%
R810, 811	8230138473	HT, CARBON, 1/4W, 47K, 5%
R812	8230138271	HT, CARBON, 1/4W, 270, 5%
VR101~501	8240274003	POT, PI, SL30, 20KA, RS30H111
VR102~401	8240243000	POT, PI, RT09, 50KB, RK09K113

CAPACITORS

ALU = Electrolytic

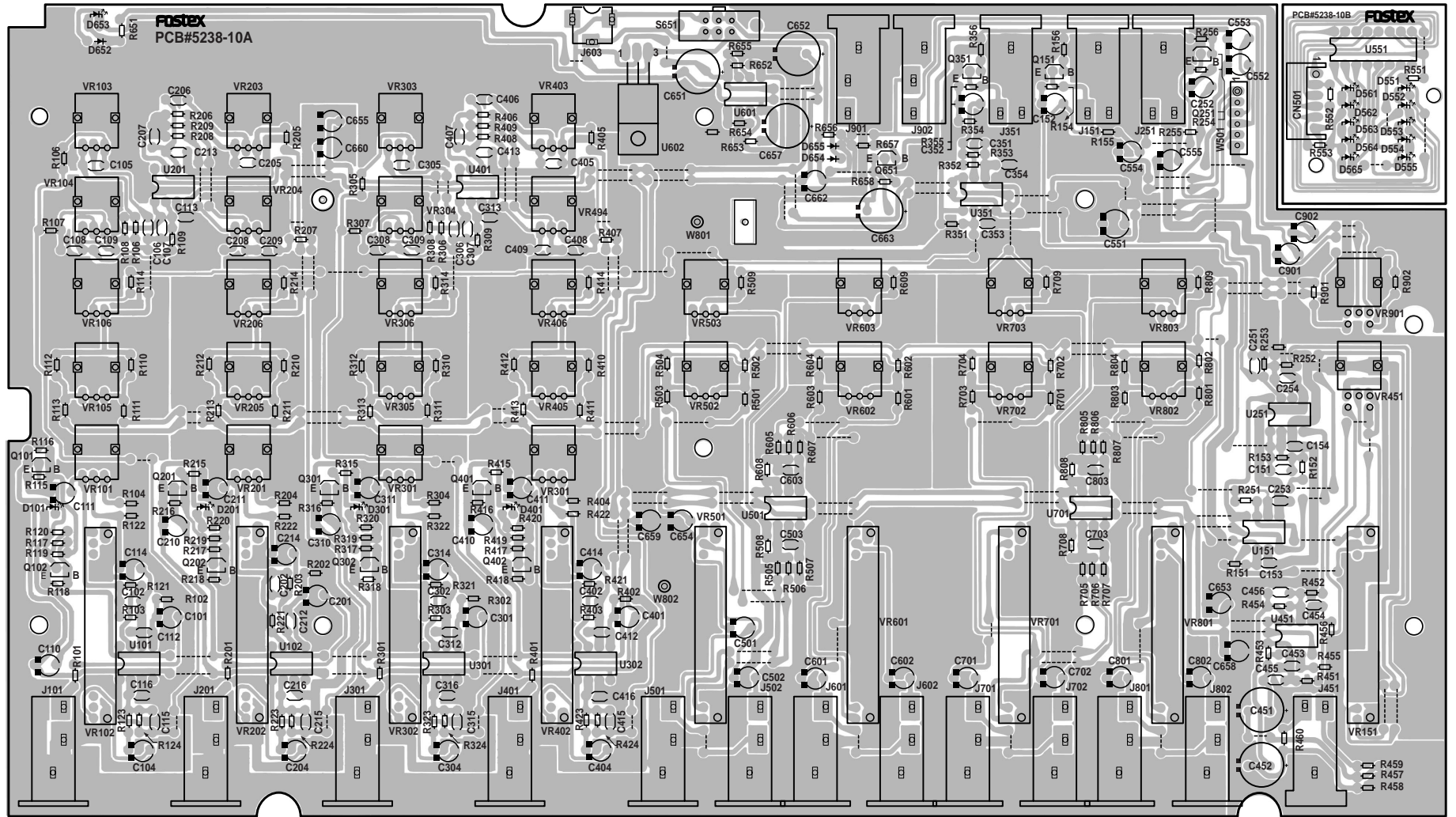
CER = Ceramic type

Ref. No.	Part No.	Description
C101~401	8232144226	ALU, 25V, 22 μ F, 20%, SME-VB
C102	8232143107	ALU, 16V, 100 μ F, 20%, SME-VB
C104	8232144226	ALU, 25V, 22 μ F, 20%, SME-VB
C105	8232146474	ALU, 50V, 0.47 μ F, 20%, SME-VB
C106	8232050101	CER, 50V, 100PF, 5%, SL
C107	8232146474	ALU, 50V, 0.47 μ F, 20%, SME-VB
C501, 601	8232144226	ALU, 25V, 22 μ F, 20%, SME-VB
C502, 602	8232050100	CER, 50V, 10PF, \pm .5PF, SL
C503, 603	8232050100	CER, 50V, 10PF, \pm .5PF, SL
C504, 604	8232144226	ALU, 25V, 22 μ F, 20%, SME-VB
C505, 605	8232143107	ALU, 16V, 100 μ F, 20%, SME-VB
C506, 606	8232050101	CER, 50V, 100PF, 5%, SL
C507, 607	8232050101	CER, 50V, 100PF, 5%, SL
C701	8232146474	ALU, 50V, 0.47 μ F, 20%, SME-VB
C801	8232143477	ALU, 16V, 470 μ F, 20%, SME-VB
C802, 803	8232143477	ALU, 16V, 470 μ F, 20%, SME-VB
C804	8232144226	ALU, 25V, 22 μ F, 20%, SME-VB
C805	8232143477	ALU, 16V, 470 μ F, 20%, SME-VB
C806	8232143477	ALU, 16V, 470 μ F, 20%, SME-VB

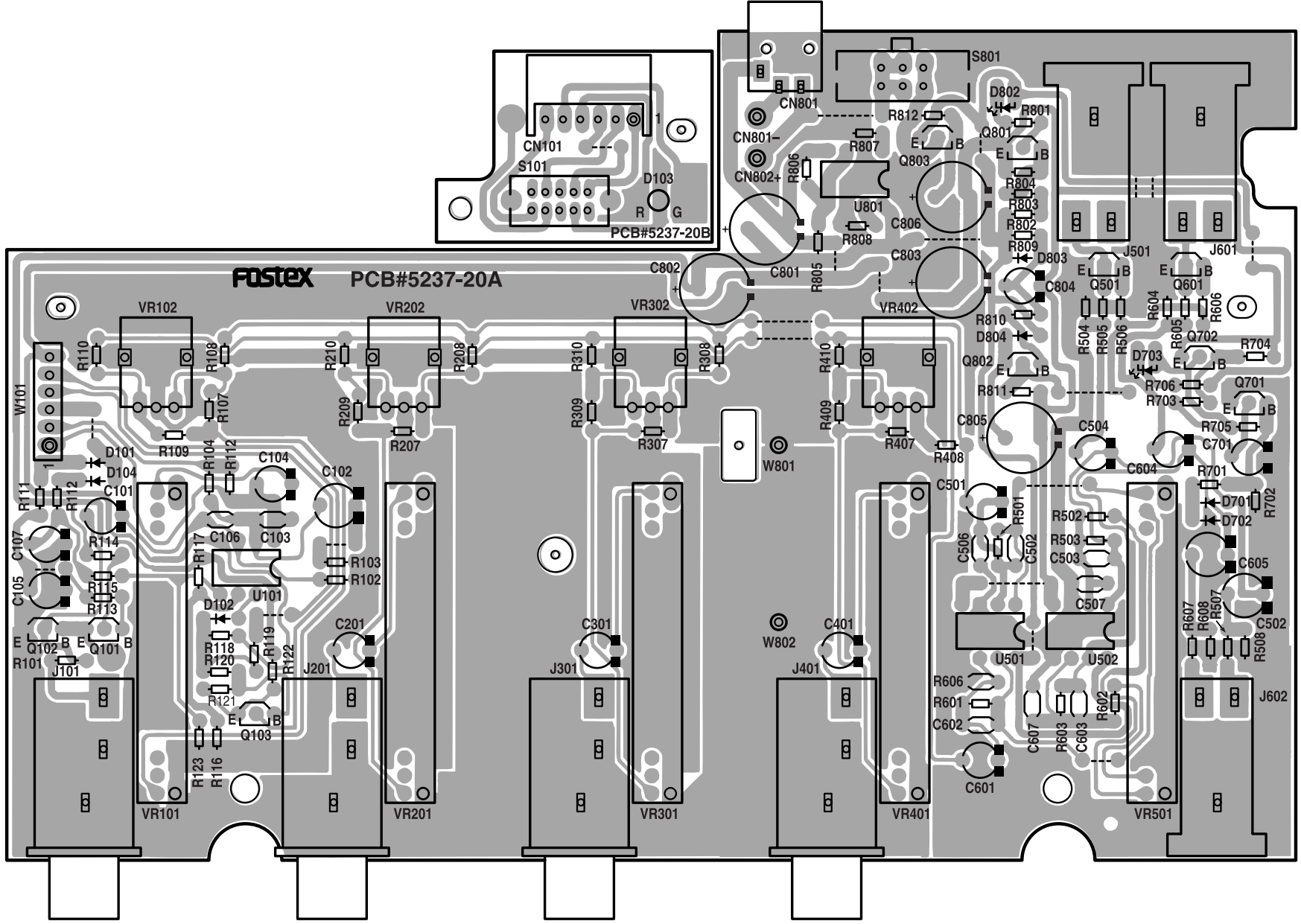
MISCELLANEOUS

Ref.No.	PartNo.	Description
CN101	8745503006	CONN, XH, 6P
CN801	8245258000	CONN, PLJACK, DC-INLET
J101~401	8245339012	CONN, PHONE, YKB21-5011
J501, 601	8245339013	CONN, PHONES, YKB21-5009
J602	8245339013	CONN, PHONES, YKB21-5009
S101	8253464000	SW, SLIDE, SSSF3-2
S801	8253467000	SW, SS010-P022MAM-PA9
W101	8277475013	CORDASSY, SCN-XH, 6P, 130
W801	8277476020	CORD, M3-SIN*200, BLK
W802	8277476015	CORD, 1P*150, BLK

● MN-12 MAIN/METER PCBs PATTERN DRAWING

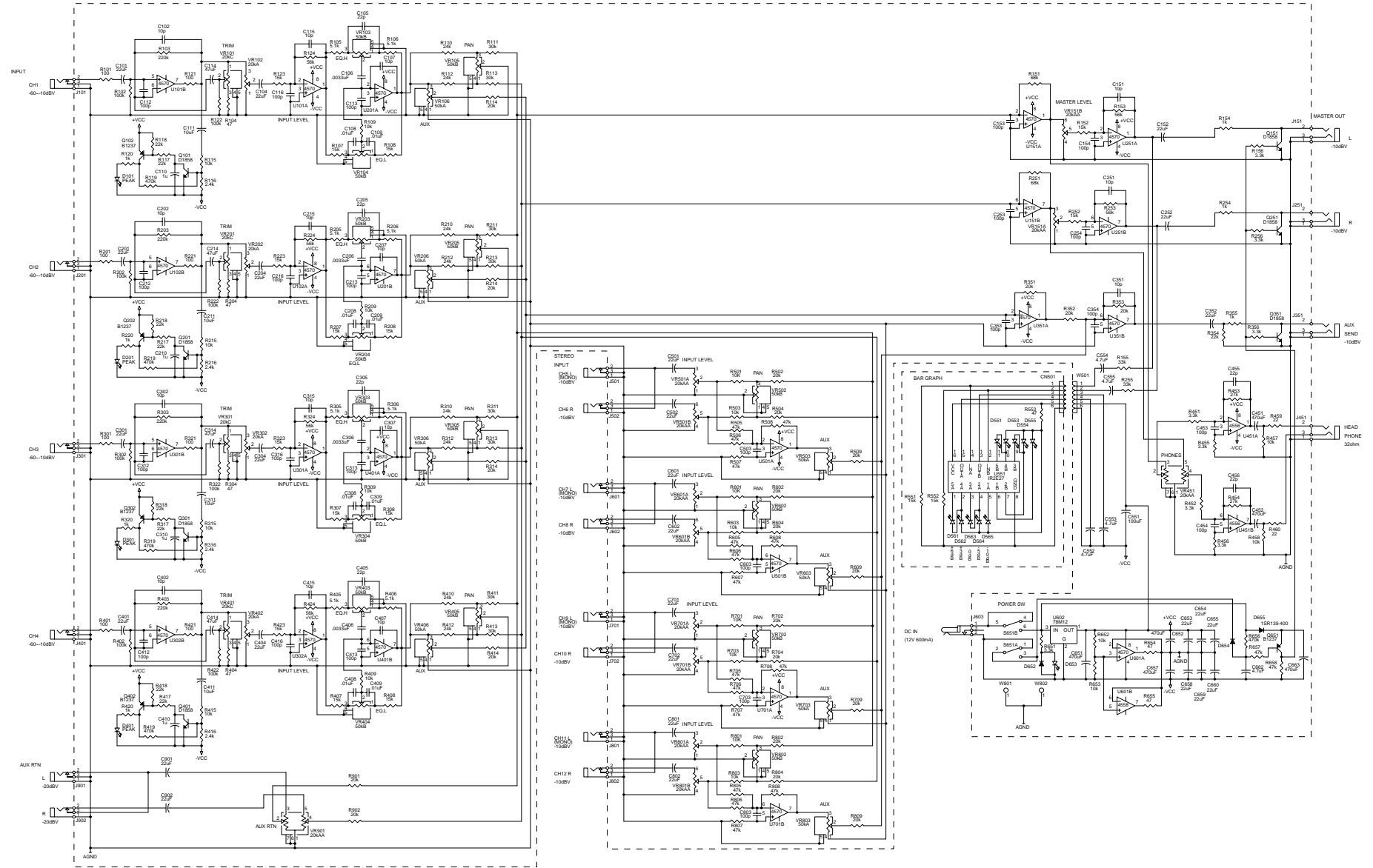


● MN-04 MAIN/SELECTOR PCBs PATTERN DRAWING

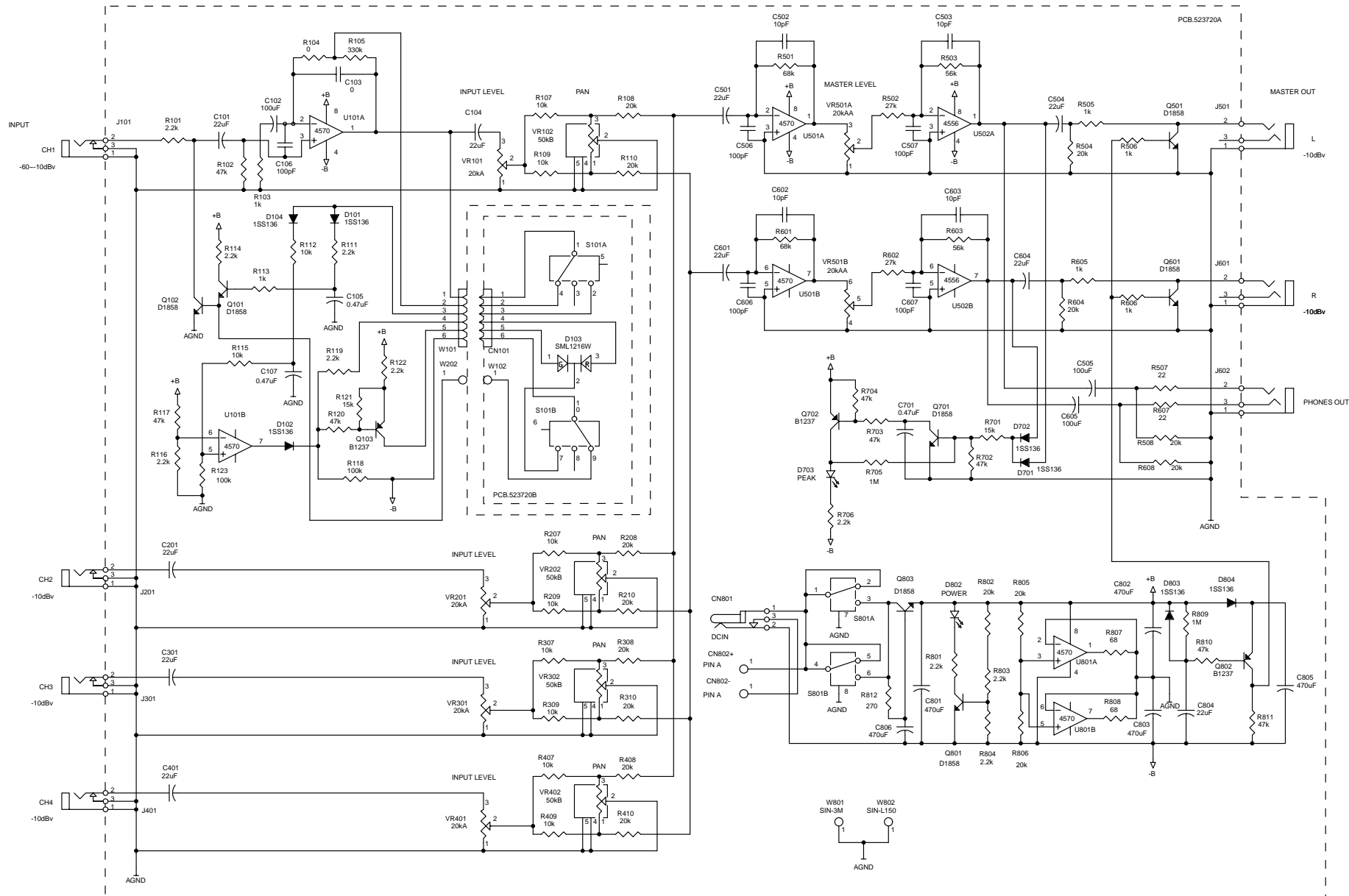


4. CIRCUIT & BLOCK DIAGRAMS

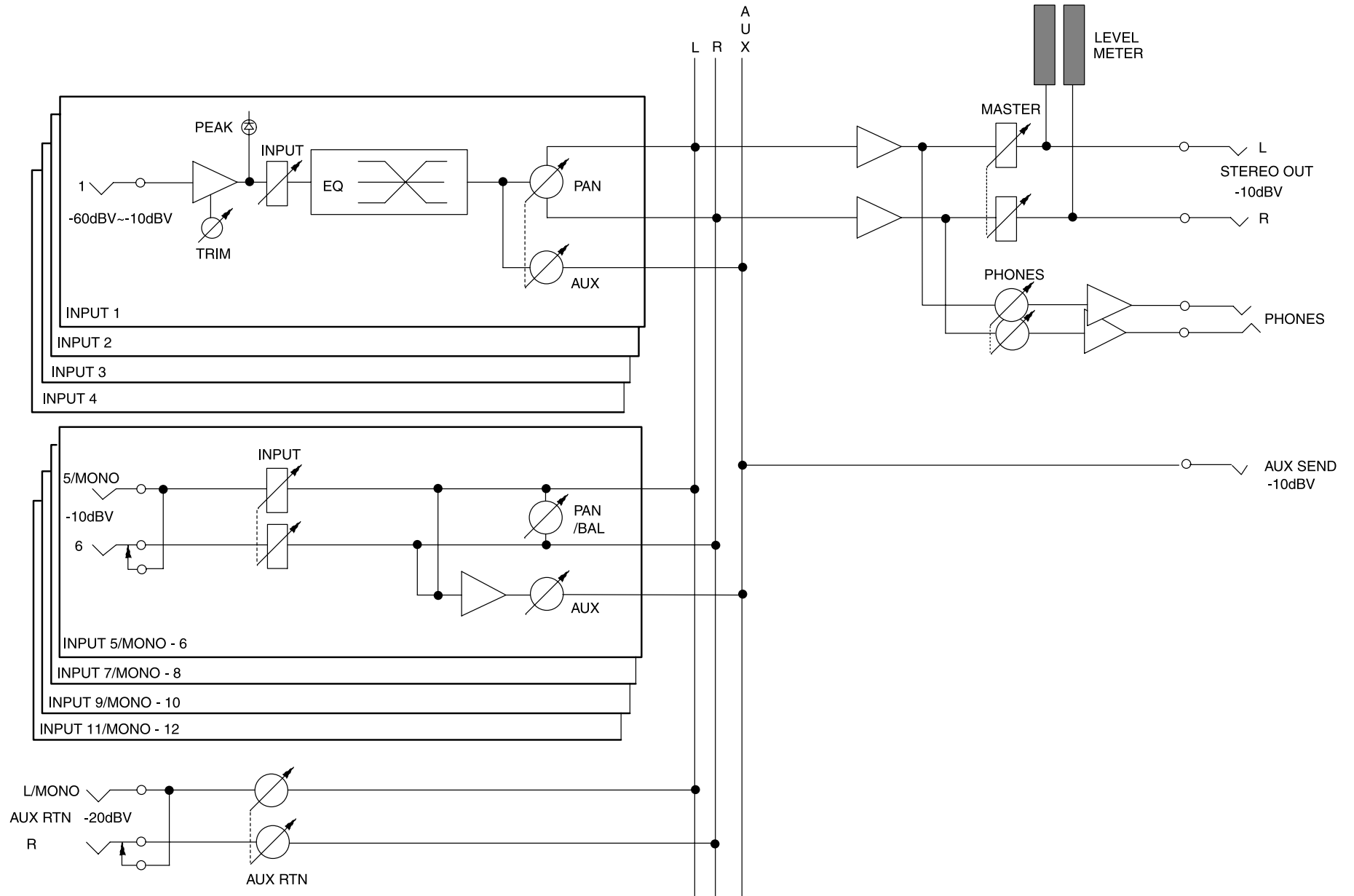
● MN-12 CIRCUIT DIAGRAM



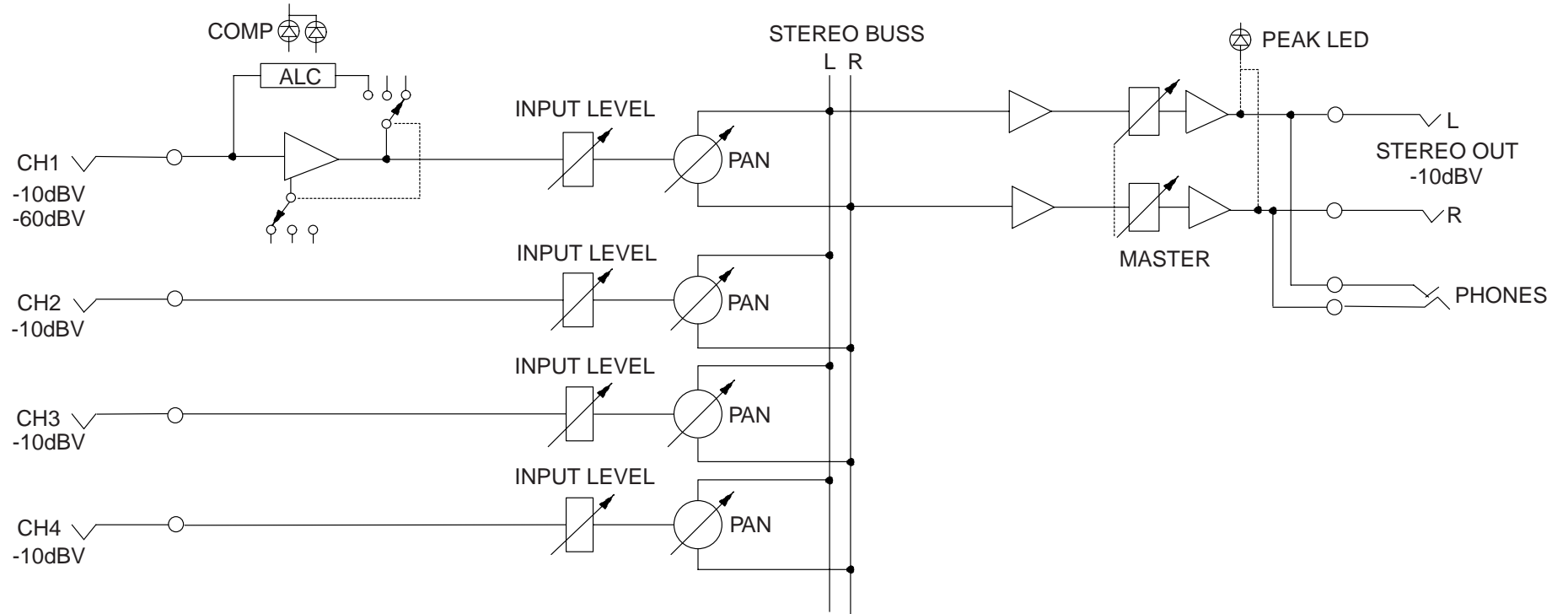
MN-04 CIRCUIT DIAGRAM



● MN-12 BLOCK DIAGRAM



● MN-04 BLOCK DIAGRAM



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