

STUDIO ADAPTER
SA-1000

SERVICE MANUAL

Hitachi Kokusai Electric Inc.

SA-1000 STUDIO ADAPTER SERVICE MANUAL

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Hitachi Kokusai Electric Inc.

1. SPECIFICATIONS

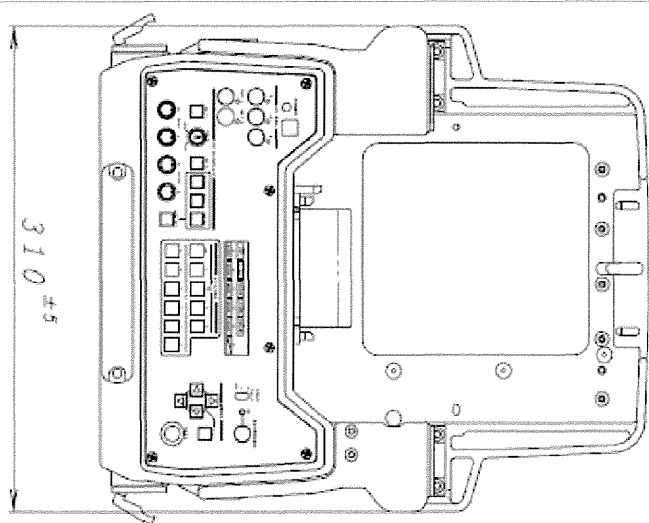
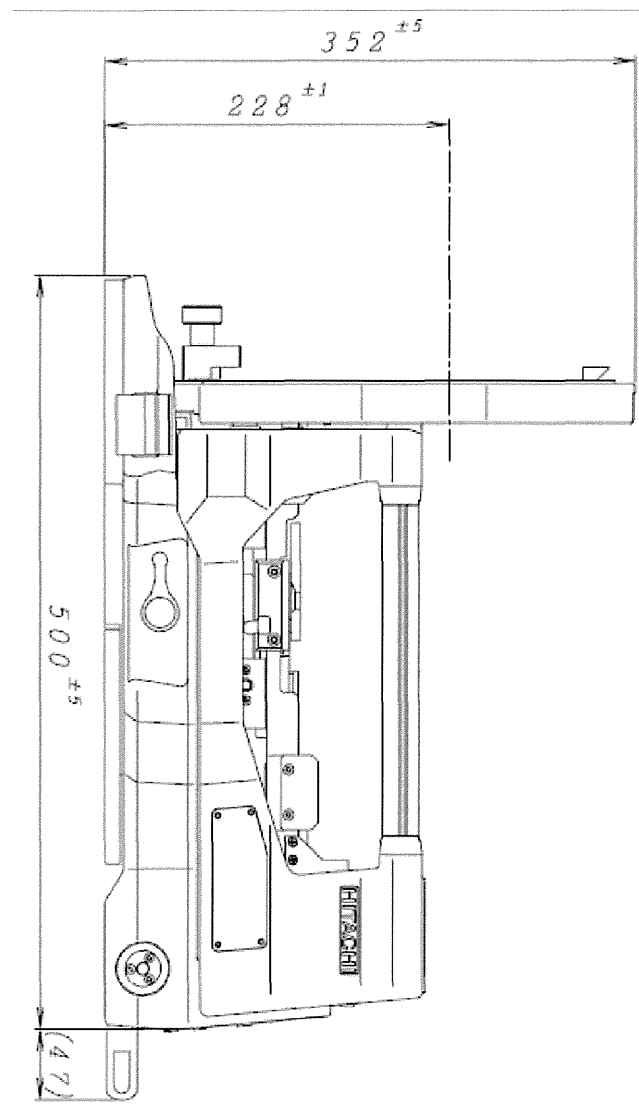
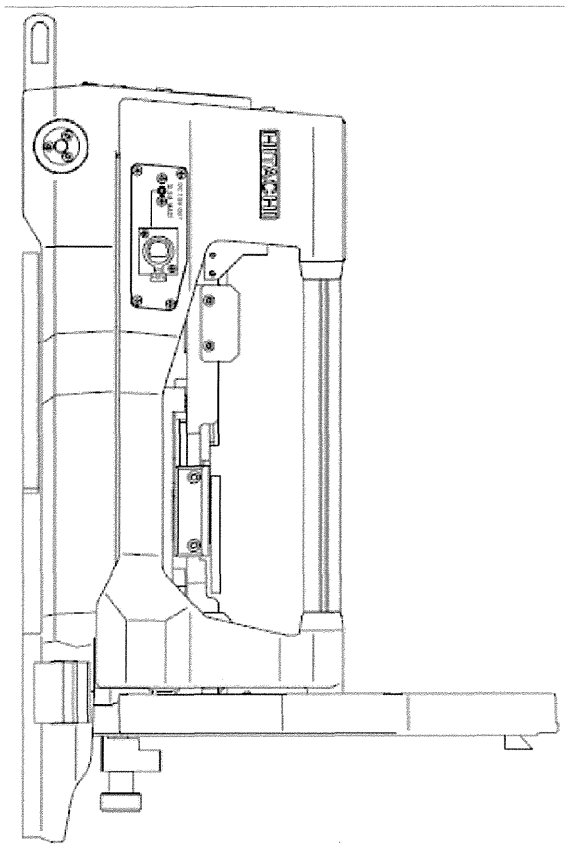
Specifications

STUDIO ADAPTER SA-1000		
1	Viewfinder video signal select	R, G, B, Y, Color
2	Viewfinder RET signal select	RET1, RET2
3	Viewfinder Display Menu control	Enable menu to set by cursor key.
4	Viewfinder Display Marker control	Center, Safety, Side, Cross, Box1, Box2
5	Adjust Marker position	Enable to adjust Horizontal position & size and Vertical position & size.
6	Viewfinder display level control	Enable to adjust the display level.
7	ND filter select	CAP, 1, 2, 3, 4
8	CC(ECC) filter select	A, B, C, D, E
9	Waveform monitor control	R, G, B, Super impose, Sequence
10	Front Tally control	Front Tally select switch
11	Extender	Extender button
12	Call	Call button
13	DC output	DC+12V±10% (MAX 2.5A)
14	Dimensions	310(W) x 352(H) x 500(D) mm approx
15	Power Consumption	1.5W approx (excluding Lens, Viewfinder, AC output)
16	MASS	18kg approx (excluding Lens, Viewfinder and Camera)
17	Ambient temperature	-10 to +45 degree

Specifications

Dimensions

Unit:mm



2. OPERATING INSTRUCTIONS

Outline and features

1. General

The SA-1000 is a heavy-duty studio adapter designed for use with the Hitachi SK-HD1000 portable HDTV television camera. The configuration offers a choice of the VF-L9HD (9-inch LCD viewfinder) for demanding.

With the use of the SA-1000, the SK-HD1000 portable HDTV television camera can be used in a studio or field configuration. The SK-HD1000 portable HDTV television camera can be easily installed and removed from the SA-1000 chassis as required by the user to meet television program production requirements in studio and field.

2. Features

- Provide full studio camera facilities with the use of a single interface cable.
- Enable full studio camera system operation to use monitor select, filter disk selection, viewfinder display and etc. on the back panel.
- Improve viewfinder position and optical cable route to operate.
- Enable to use with the CU-HD1000.

* Always set the VF-L9HD power switch turn on.

Warnings and cautions when using

CAUTION

■ Do not disassemble or modify

The camera contains precision internal components. Do not open the cover or disturb switches and controls other than designated. There is risk of impaired performance and damage.

■ Keep foreign object out of interior

Entry of water, metallic or other foreign materials can cause failure and damage.

■ Select use and storage locations carefully

Avoid using or storing the equipment in the following types of locations. Impaired performance and damage can be caused.

- Extremely hot or cold locations (exceeding 0 to 40°C), such as in enclosed vehicles.
- Subject to strong vibration.
- Humid or dusty locations.

- Salt spray or corrosive gases.

- Strong electromagnetic fields (e.g., near TV or radio transmitters).

- Where exposed to rain.

- When connecting and disconnecting cables, grasp the connector by the body, not the attached cable. Cables can be damaged by pulling on them.

■ Fuse replacement

Important: Although spare fuses are provided, the fuse must be replaced only by a qualified service technician.

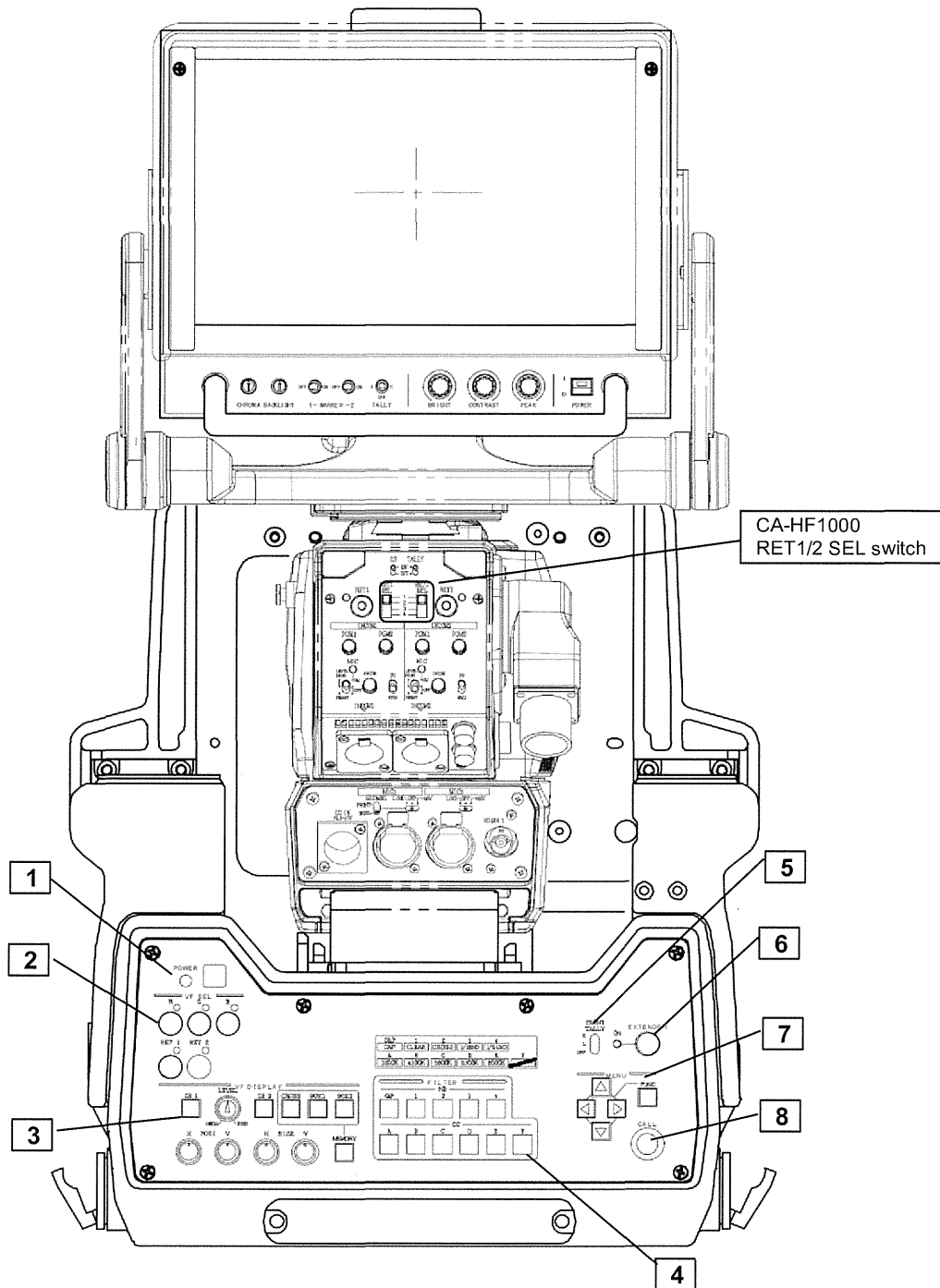
■ In event of difficulty

Disconnect from power and contact the nearest Hitachi Kokusai Electric service agency.

Facility names and functions

3. Facility names and functions

3.1 REAR VIEW



Facility names and functions

1 POWER LED

Lights when camera head power is supplied.

2 Viewfinder select panel

3 Viewfinder display panel

4 Filter panel

5 Front tally switch

This has three modes.

H : High mode for Red Tally

L : Low mode for Red Tally

OFF: No red Tally

(Optional tally in the studio type lens has only ON or OFF mode. The tally light at H & L mode.)

6 Lens Extender switch

THE X2 extender can be changed with the EXTENDER selection switch. (This Extender switch can not control the x2 extender for the portable lens.)

The LED light when the x2 extender "ON"

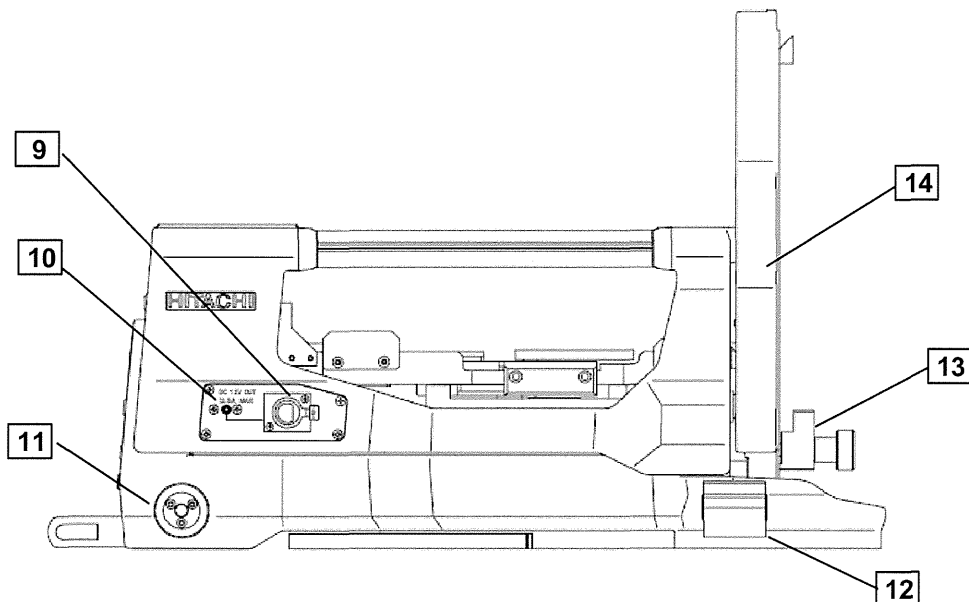
7 Camera menu panel

8 CALL button

Press the CALL switch, the HEAD, VF, CCU, RU and the SU RED TALLY LED turn on.

Facility names and functions

3.2 RIGHT VIEW



9 DC OUT connector

Supply power (12V,max 2.5A)

10 NO FUSE BREAKER(NFB)

11 Accessory bracket

Used to secure optional accessories.

12 Cable clamp

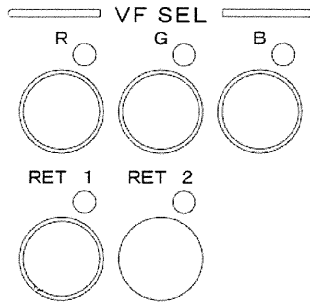
Used to secure the camera cable.

13 Lens holding knob

14 Lens mount

Facility names and functions

2 Viewfinder select panel



-Viewfinder video select switch

R,G,B:

R/G/B view finder video can be selected by R,G and B switches in the rear panel.

The selected switch's LED light and display video in the view finder.

Also Y view finder video can be selected by R,G and B switches simultaneously. R,G and B LED light at the same time.

-Return Select switch

RET1,RET2:

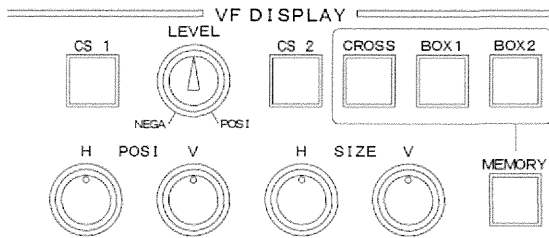
Return video signal can be selected by the Return Box, the rear panel of the Buildup Adapter and the lens return switch.

From the Rear panel of the buildup Adapter

Return signal	Operational description
RET CH1	CA-HF1000 RET1 The RET SEL switch is set to CH1 and the RET1 switch of Buildup adapter is pushed.
	CA-HF1000 RET2 The RET SEL switch is set to CH1 and the RET2 switch of Buildup adapter is pushed.
RET CH2	CA-HF1000 RET1 The RET SEL switch is set to CH2 and the RET1 switch of Buildup adapter is pushed.
	CA-HF1000 RET2 The RET SEL switch is set to CH2 and the RET2 switch of Buildup adapter is pushed.
RET CH3	CA-HF1000 RET1 The RET SEL switch is set to CH3 and the RET1 switch of Buildup adapter is pushed.
	CA-HF1000 RET2 The RET SEL switch is set to CH3 and the RET2 switch of Buildup adapter is pushed.
RET CH4	CA-HF1000 RET1 The RET SEL switch is set to CH4 and the RET1 switch of Buildup adapter is pushed.
	CA-HF1000 RET2 The RET SEL switch is set to CH4 and the RET2 switch of Buildup adapter is pushed.

Facility names and functions

3 View finder display panel



-CS1/2 switch

Press the CS-1/CS-2 switch and VF marker1/2 can be changed.

The CS-1/CS-2 LED lights when the CS-1/CS-2 is ON.

-CROSS/BOX1/BOX2 switch

Press the Cross, BOX1 or BOX2 individual switches, then previous position & size memory data are displayed in the view finder. Selected switch LED lights.

-Position H/Position V/Size H/Size V volume

Individual POS1 and SIZE for H/V can be adjusted by the rotary ENC. Adjustable display is last selected data in the CROSS, BOX1 or BOX2.

-LEVEL volume

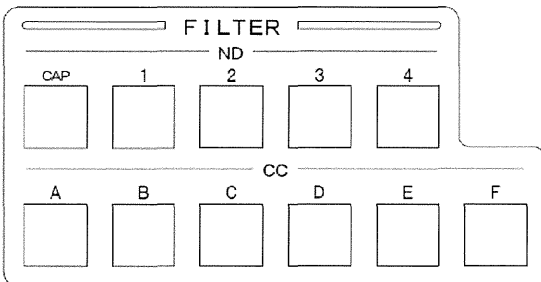
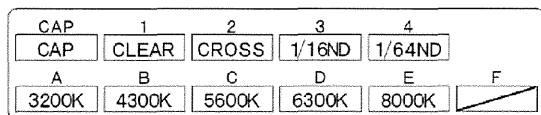
VF maker level can be adjusted NEGA to POS1 by the LEVEL variable register (VR).

-Memory switch

Displayed marker position & size can be stored to the memory by pressing the Memory switch. The Memory switch LED blinking lights during storing data.

Facility names and functions

4 Filter panel



-ND/CC select switch

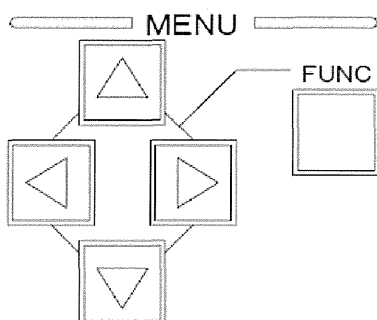
The camera head has ND and CC filters. The selected switch's LED light. The ND and CC filter in the rear panel of the Buildup Adapter normally does not work unless given control from the RCU or SCU(CTLHEAD or FILTER HEAD).

* CAP of ND filter cannot be operated.

< HD CAMERA SK-HD1000 >

N D Filter position	CAP	1	2	3	4	—
Filter display	CAP	CLEAR	CROSS	1/16ND	1/64ND	
C C Filter position	A	B	C	D	E	F
Filter display	3200K	4300K	5600K	6300K	8000K	—

6 Camera menu panel



-Camera menu switch

FUNC:

Press the FUNC switch then menu display in the viewfinder.

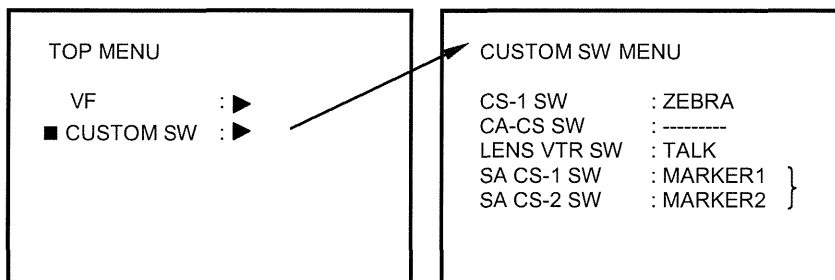
UP/DOWN/RIGHT/LEFT:

Function in the menu can be selected with the UP/DOWN/RIGHT/LEFT switch.

* The camera head menu in addition to the viewfinder menu can be opened when CTL HEAD and it is self-controlled.

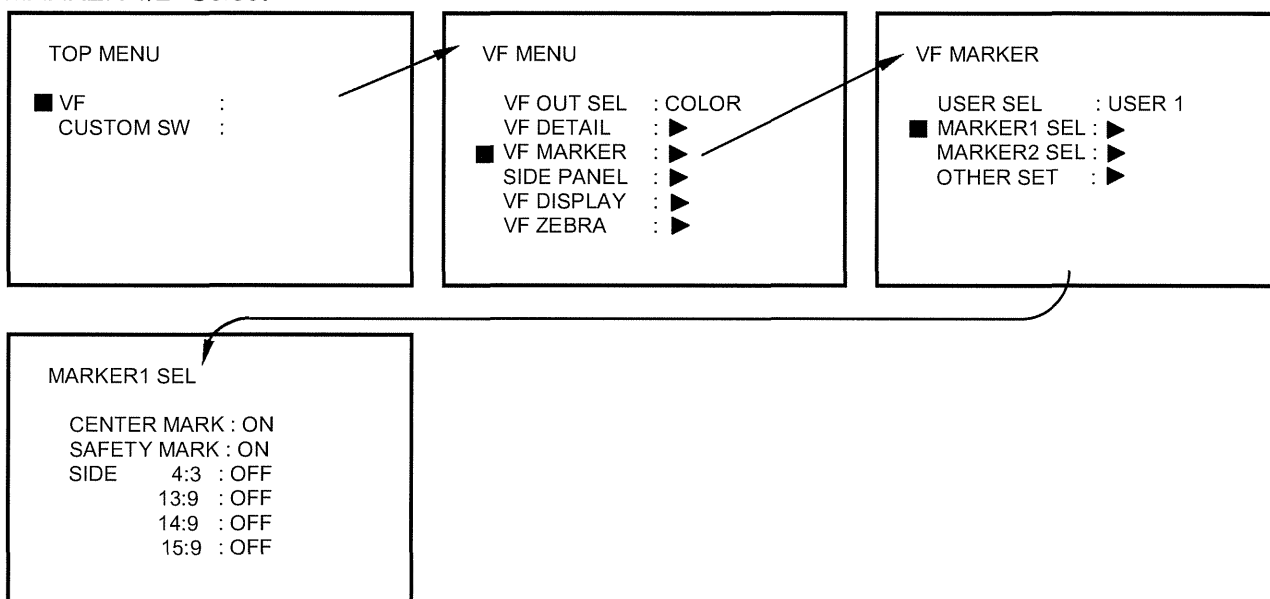
Function menu

•SA Custom Select



Item	Setting	Factory setting	Description
SA CS-1 SW	MARKER1/2	MARKER1	Set CS-1 switch in the SA.
SA CS-2 SW	MARKER1/2	MARKER2	Set CS-2 switch in the SA.

•MARKER 1/2 Select

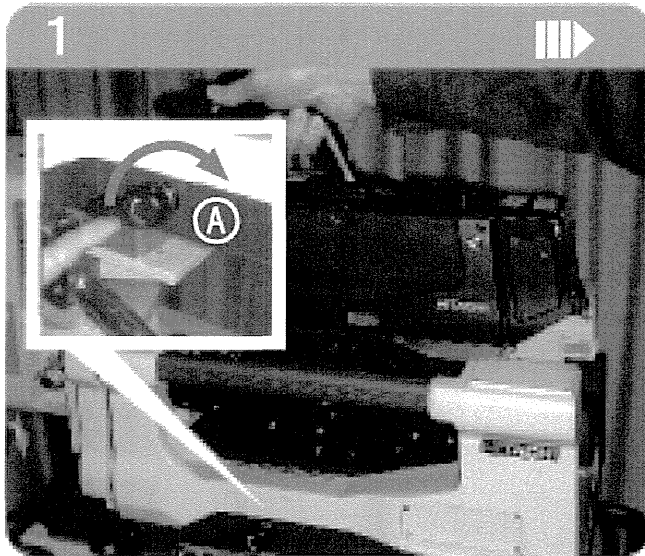


Item	Setting	Factory setting	Description
CENTER MARK	ON,OFF	ON	Center marker ON and OFF
SAFETY MARK	ON,OFF	ON	Safety Marker ON and OFF*1
SIDE	4:3	ON,OFF	Side 4:3 marker ON and OFF
	13:9	ON,OFF	Side 13:9 marker ON and OFF
	14:9	ON,OFF	Side 14:9 marker ON and OFF
	15:9	ON,OFF	Side 15:9 marker ON and OFF

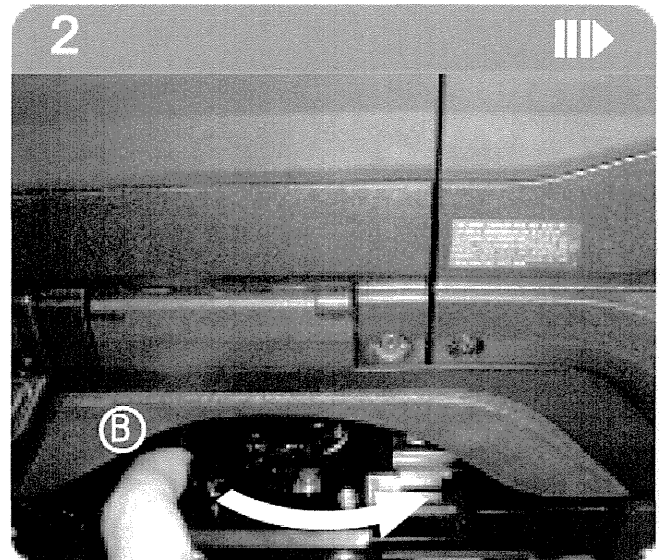
*1: This safety marker is synchronized with aspect ratio(4:3, 13:9, 14:9, 15:9, OFF(16:9)) of the Side panel.

Connection and attachment

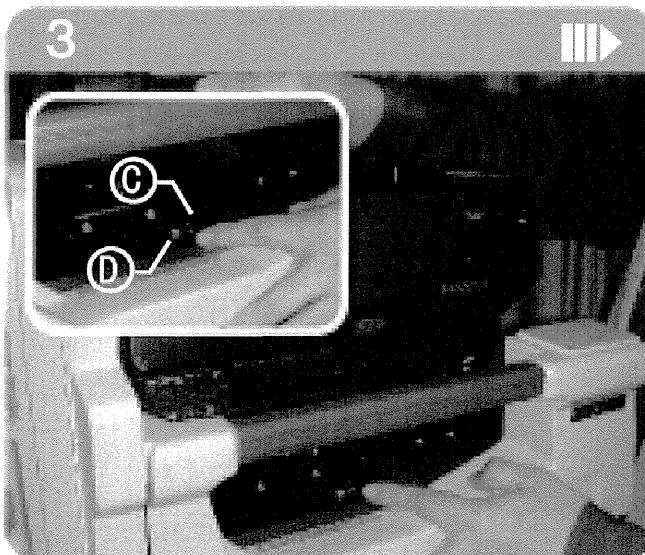
Camera attachment



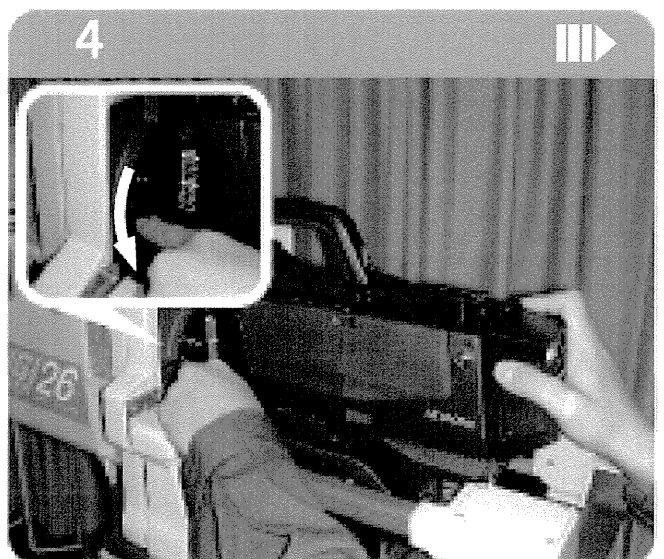
Move the lever (A) to the Lock position and place the camera on the mount base.



Move the lever to rock the mount base (B).

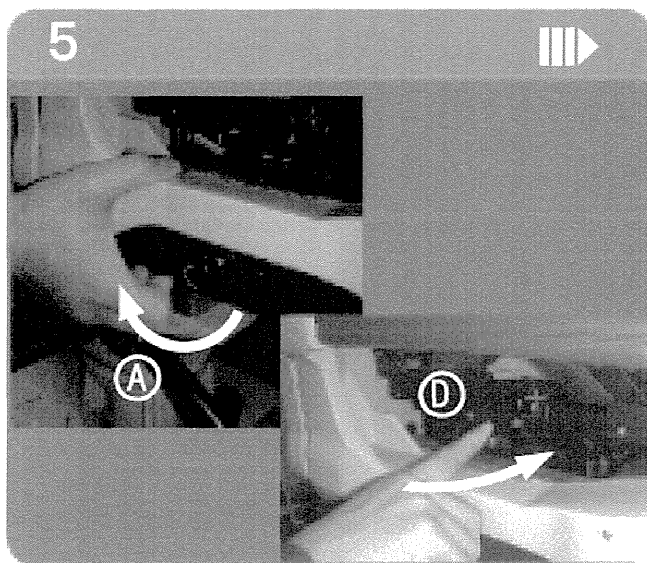


Move each of the levers (A) and (D) to the Unlock position.
While pushing the slide release pin (C), slide the camera into the bayonet mount.

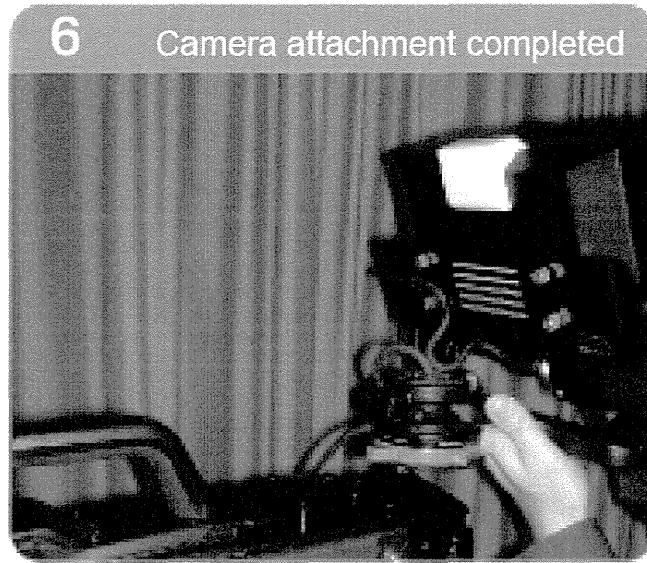


Adjust and fit of the camera in the bayonet mount with holding the rear side of the camera, and then press down the lock lever.

Connection and attachment



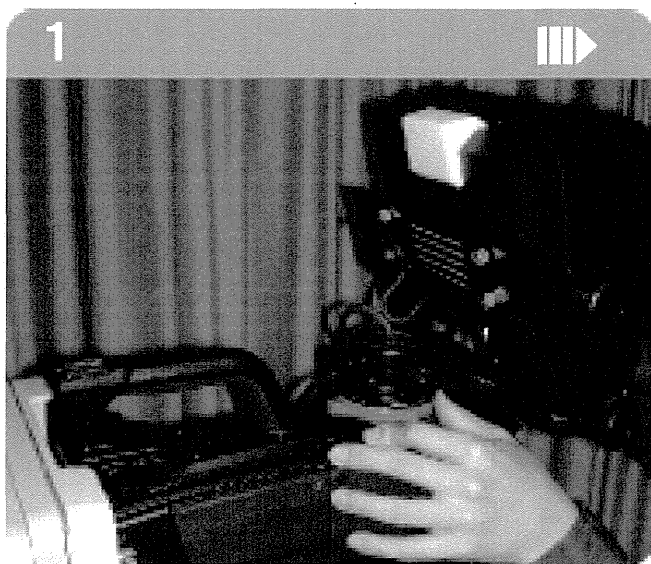
Place the levers (A) and (D) in the Lock position to stop the vertical and horizontal movements of the camera, respectively.



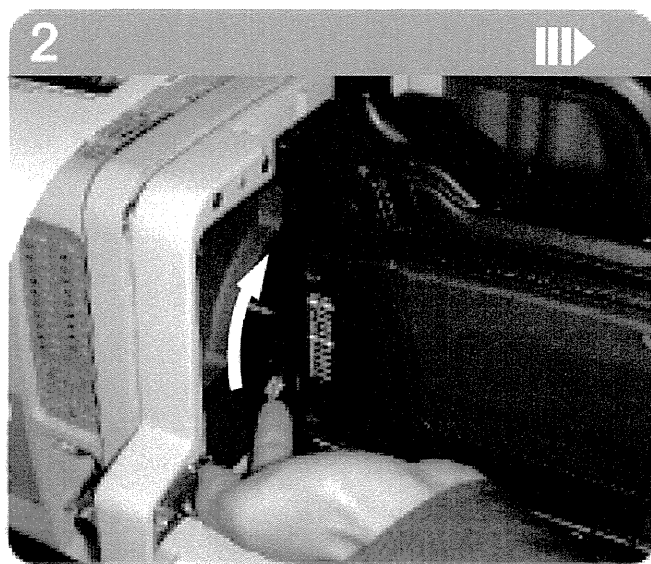
Connect the viewfinder to camera.

Connection and attachment

Camera removal



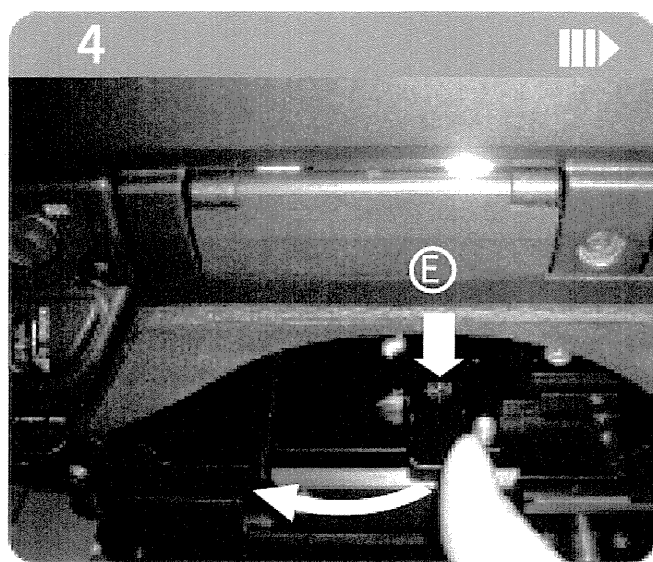
Remove the view finder from the camera.



Push the bayonet mount lever upward to unlock the camera.



Pull the camera rearward to remove it from the bayonet mount.



Pushing the release button (E).
Move the lever to unlock the mount base.

Connection and attachment

5

Camera removal completed

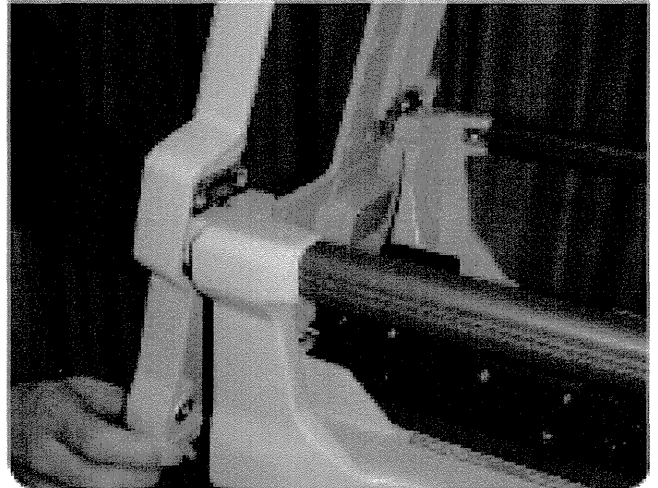
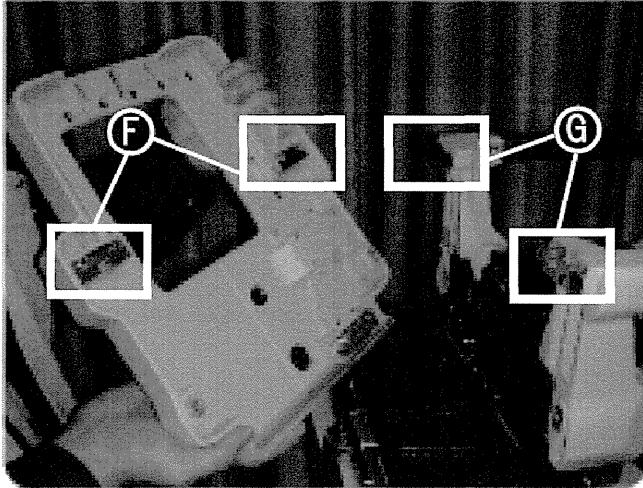


Remove the camera from the mount base.

Connection and attachment

Lens Mounting Plate Attachment

1



Align the lugs **(G)** of the build-up adapter with the lugs **(F)** of the handy plate.
Push the lower part of the handy plate.

2

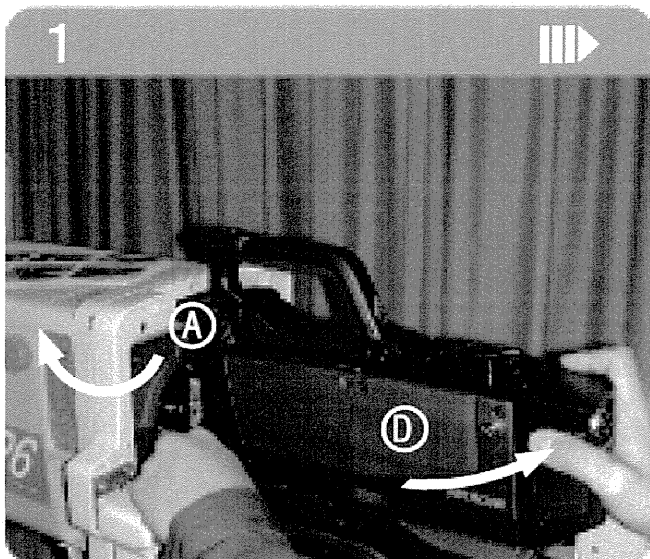
Attachment completed



Secure the plate by locking the rock screw.
(M5 Hexagon wrench)

Connection and attachment

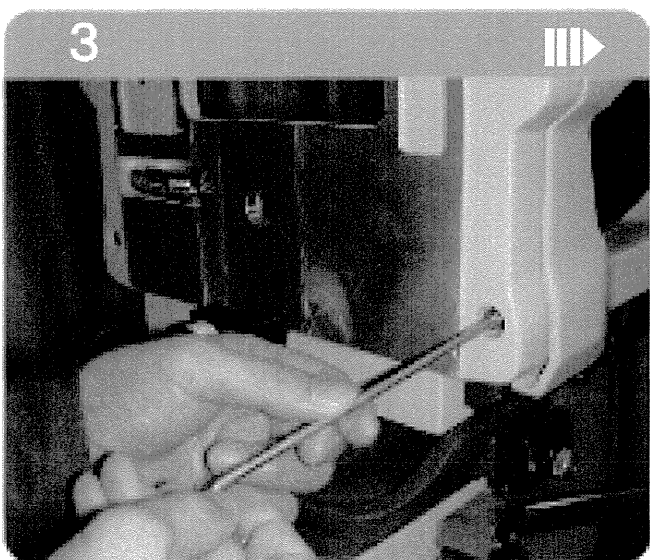
Lens Mounting Plate Removal



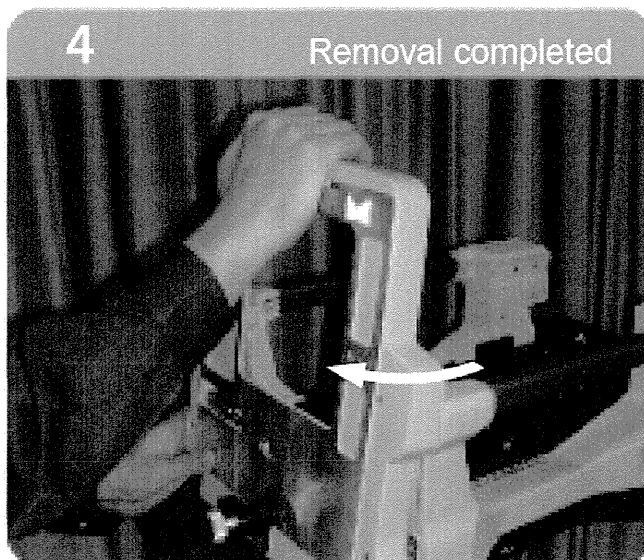
Remove the camera lens, and then move the camera body rearward.



Remove the camera from the mount base.



Loose the rock screw.



Lightly tap the upper part of the mounting plate to disconnect the connector at the over part. Then, remove the mounting plate.

Specifications

■ Rating

- Shape See attached drawing
- Dimensions 310(W) x 352(H) x 500(D) mm approx
- Mass 18kg approx. (SA-1000 with LM-B1000)
(excluding Lens, Viewfinder and Camera)
- Power consumption 1.5W approx.

(excluding Lens, Viewfinder , DC output)

■ Output Signals

- DC output DC12V±10% (MAX 2.5A)

■ Temperature stability

- Operating temperature -10 to +45°C
- Operating humidity 30 to 90 %RH

■ Filter Disk Selection

- ND Filter CAP, 1, 2, 3, 4
- CC(ECC) Filter A, B, C, D, E

< SK-HD1000 >

ND Filter	CAP	1	2	3	4	
	CAP	CLEAR	CROSS	1/16ND	1/64ND	
CC(ECC) Filter	A	B	C	D	E	F
	3200K	4300K	5600K	6300K	8000K	-

■ Viewfinder Video Channel Selection

- Video signal R, G, B, Y, Color
- RET signal RET 1, 2

Specifications

■ Viewfinder Display

- Menu Enable menu to set by cursor key
- Marker Center, Safety, Side, Cross, Box1, Box2
- Adjust Cross, Box1, Box2 position Enable to adjust Horizontal position & size and Vertical position & size.
- Display level Enable to adjust the display level

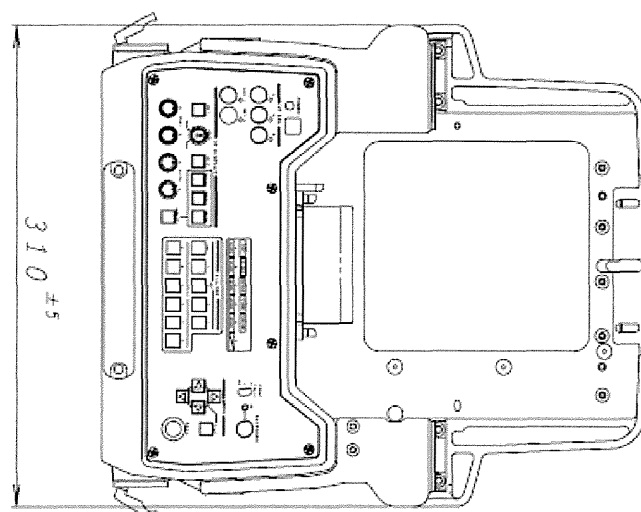
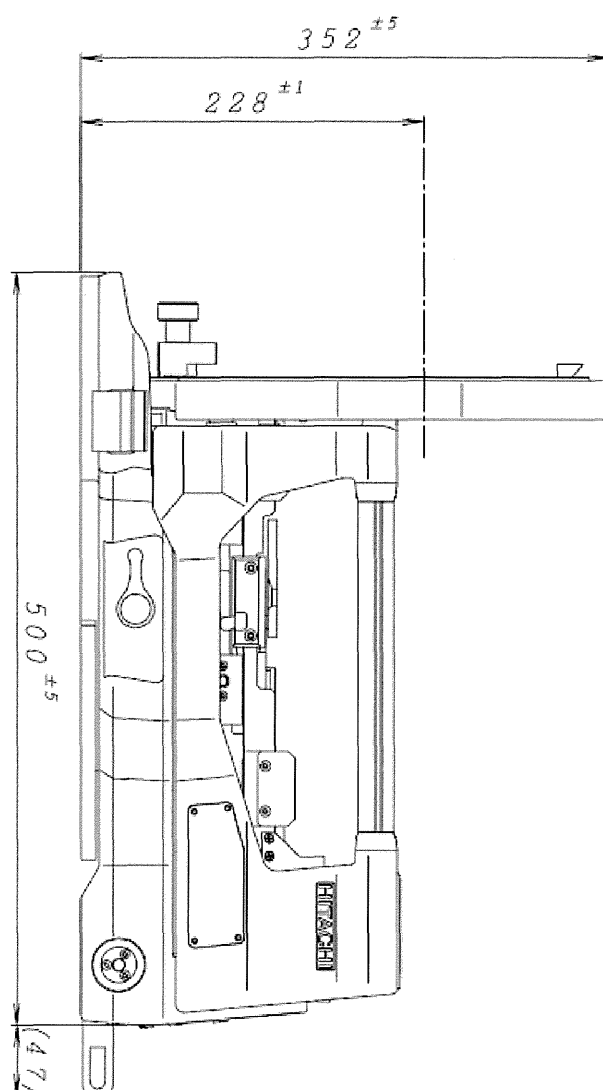
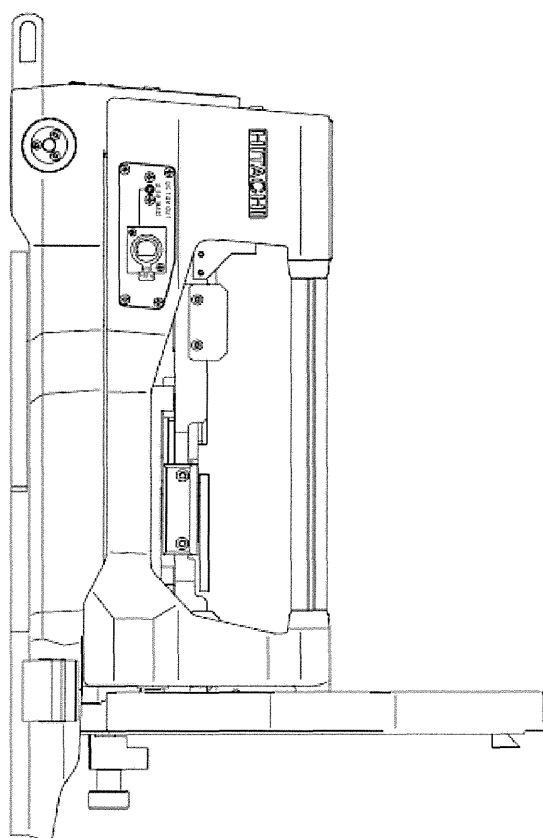
■ LED color

- POWER ON Green
- EXT ON Red

Specifications

Dimensions

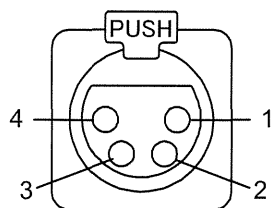
Unit:mm



Service information

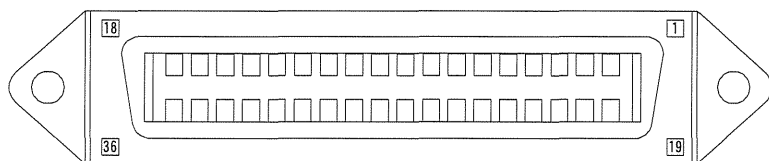
Connector pin diagrams

SCRIPT(4pin female: HA16PRH-4S)



Pin	Signal
1	GND
2	NC
3	NC
4	SCRIPT +12V

LENS (36pin female:57-20360)

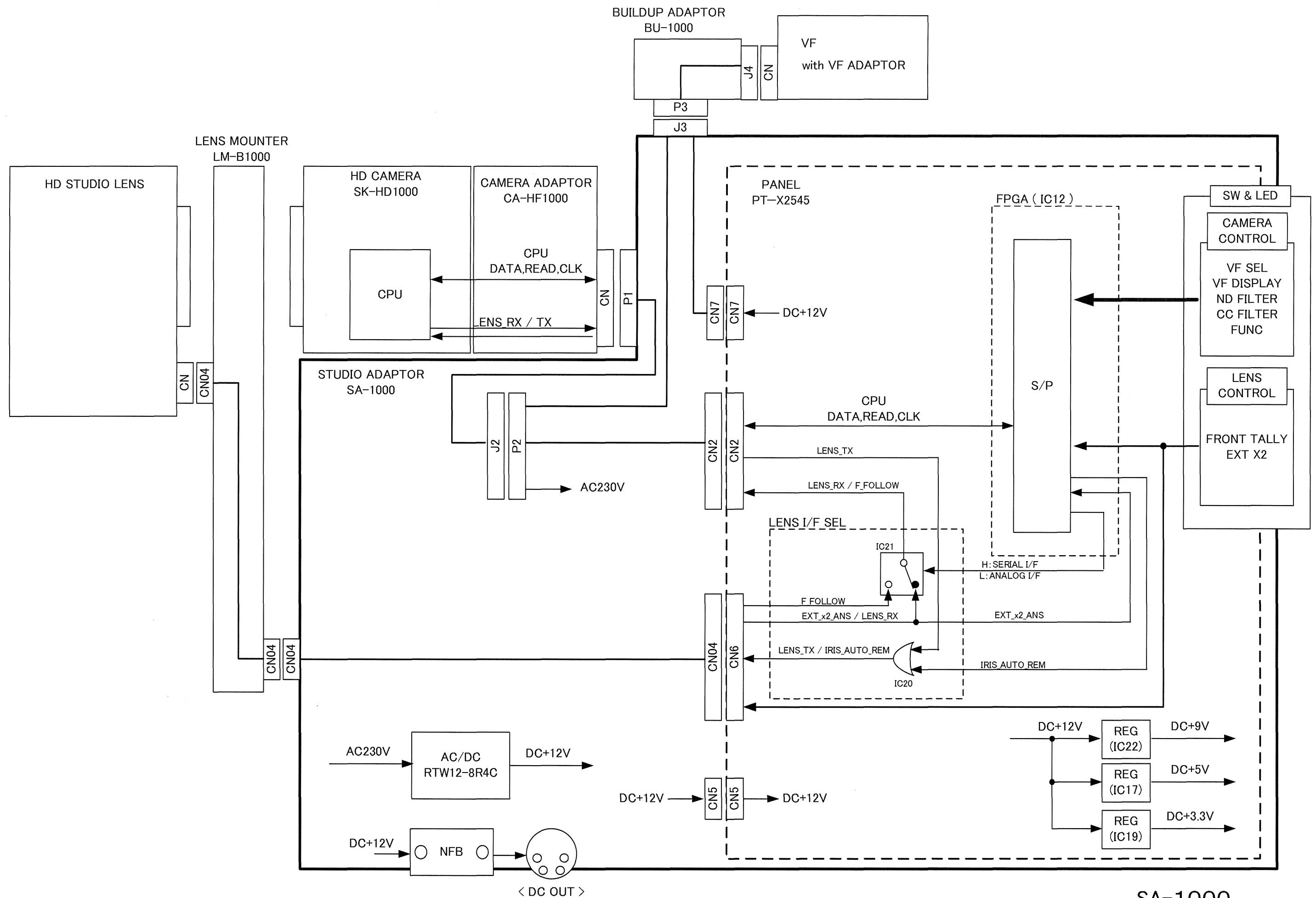


PIN	SIGNAL
1	NC
2	NC
3	NC
4	DC+12V
5	POWER GND
6	SIGNAL GND
7	BODY GND
8	EXTx2 ANS
9	EXTx1.5 ANS
10	W/N ANS
11	W/N CONT
12	IRIS FOLLOW

PIN	SIGNAL
13	ZOOM FOLLOW
14	RET1
15	RET2
16	FOCUS FOLLOW
17	IRIS CONT
18	IRIS AUTO/REM
19	PJ_CONT
20	PJ_ANS
21	TALLY CONT
22	ZOOM FOLLOW(NC)
23	RET_3
24	LENS CODE A(NC)

PIN	SIGNAL
25	LENS CODE B(NC)
26	LENS CODE C(NC)
27	LENS CODE D(NC)
28	EXT x1.5 CONT(NC)
29	EXT x2 CONT
30	COM+V(NC)
31	CAM TH COM(NC)
32	ZOOM CONT(NC)
33	ENG CONT
34	PD CONT
35	FOCUS CONT(NC)
36	COM-V(NC)

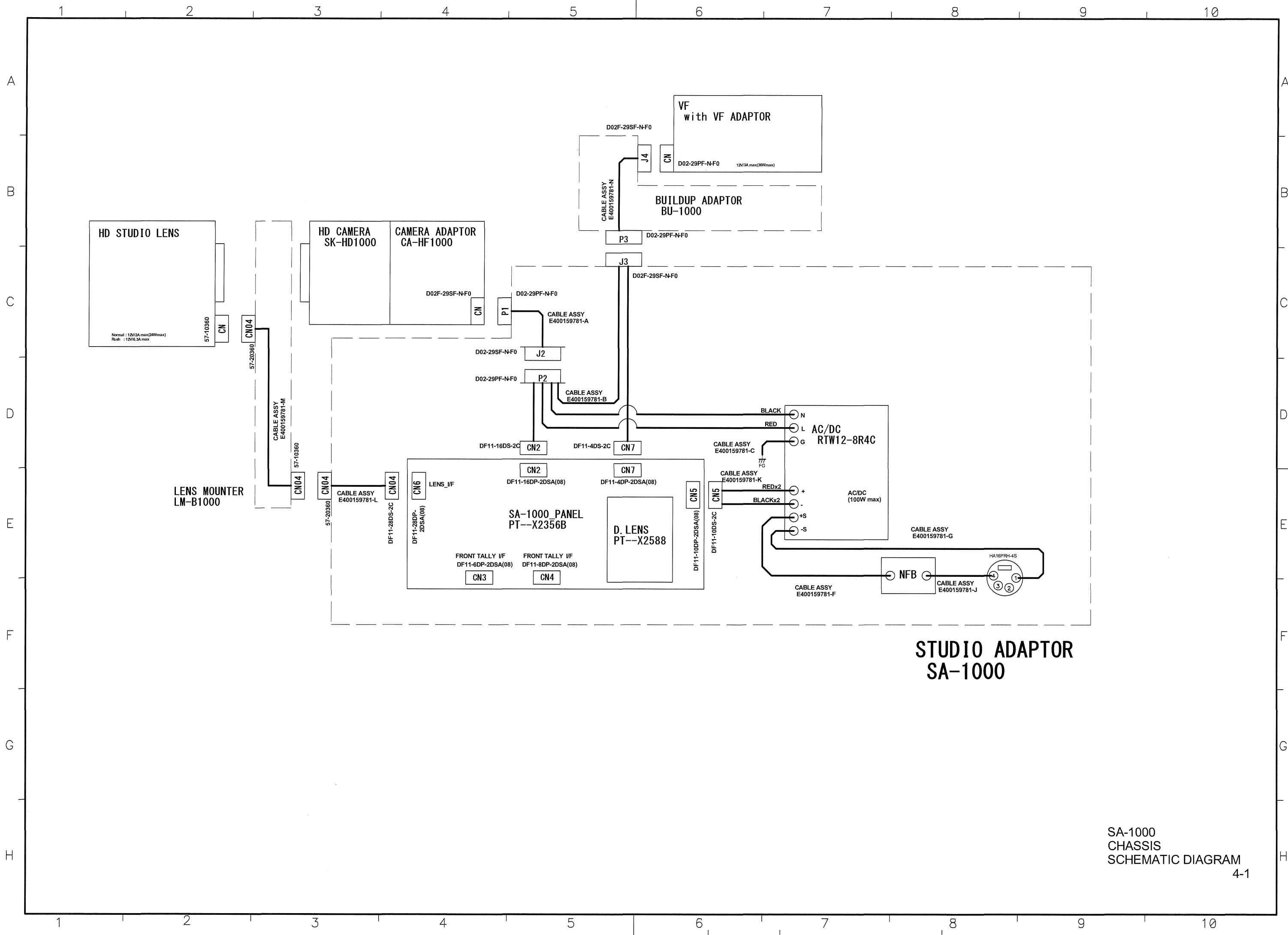
3. BLOCK DIAGRAM



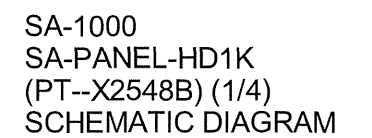
SA-1000
BLOCKDIAGRAM

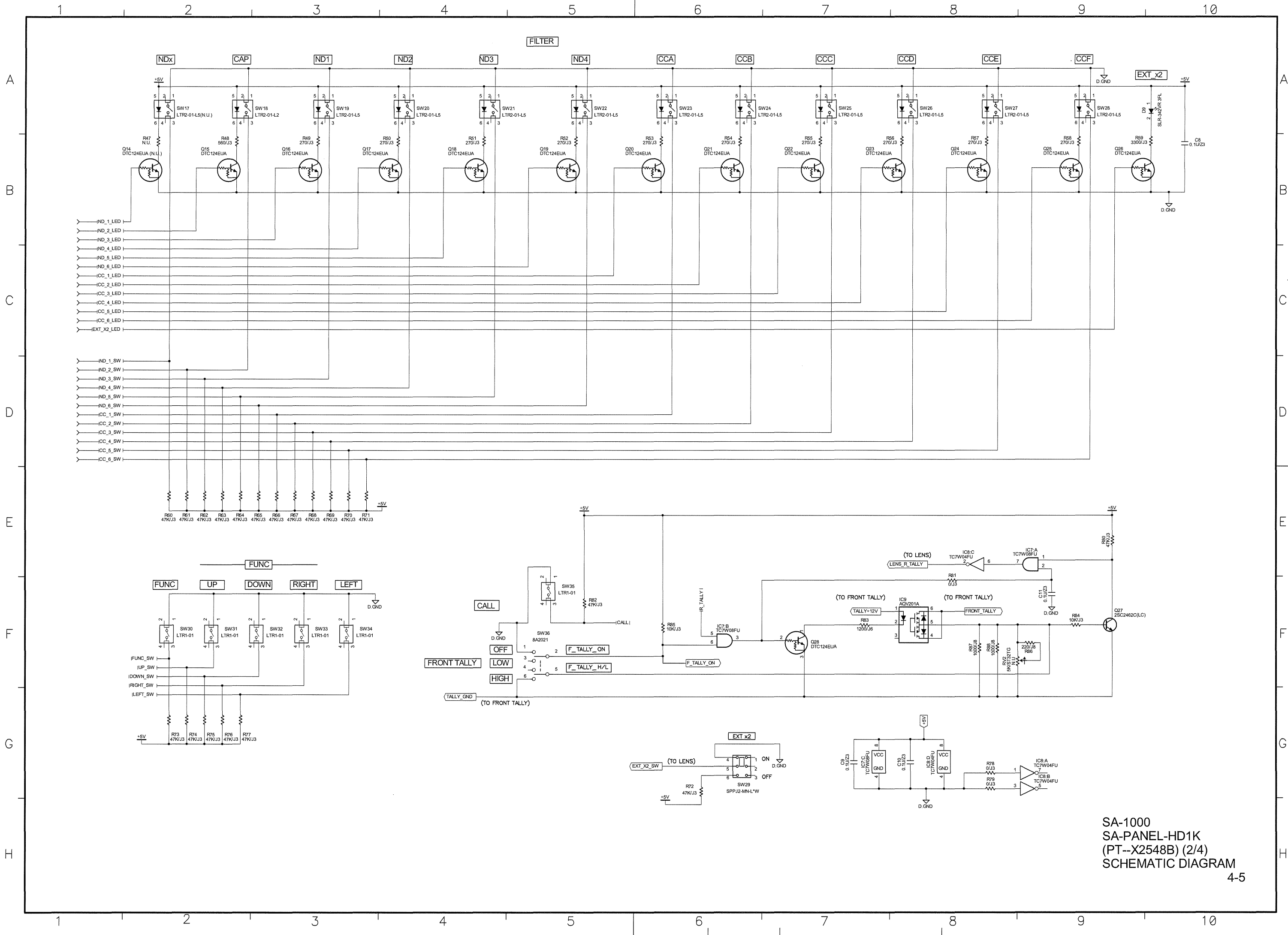
4. SCHEMATIC DIAGRAM

CHASSIS	4-1
SA-PANEL-HD1K.....	4-3



SA-1000
CHASSIS
SCHEMATIC DIAGRAM
4-1





SA-1000
SA-PANEL-HD1K
(PT--X2548B) (2/4)
SCHEMATIC DIAGRAM
4-5

1 2 3 4 5 6 7 8 9 10

A

B

C

D

E

F

G

H

A

B

C

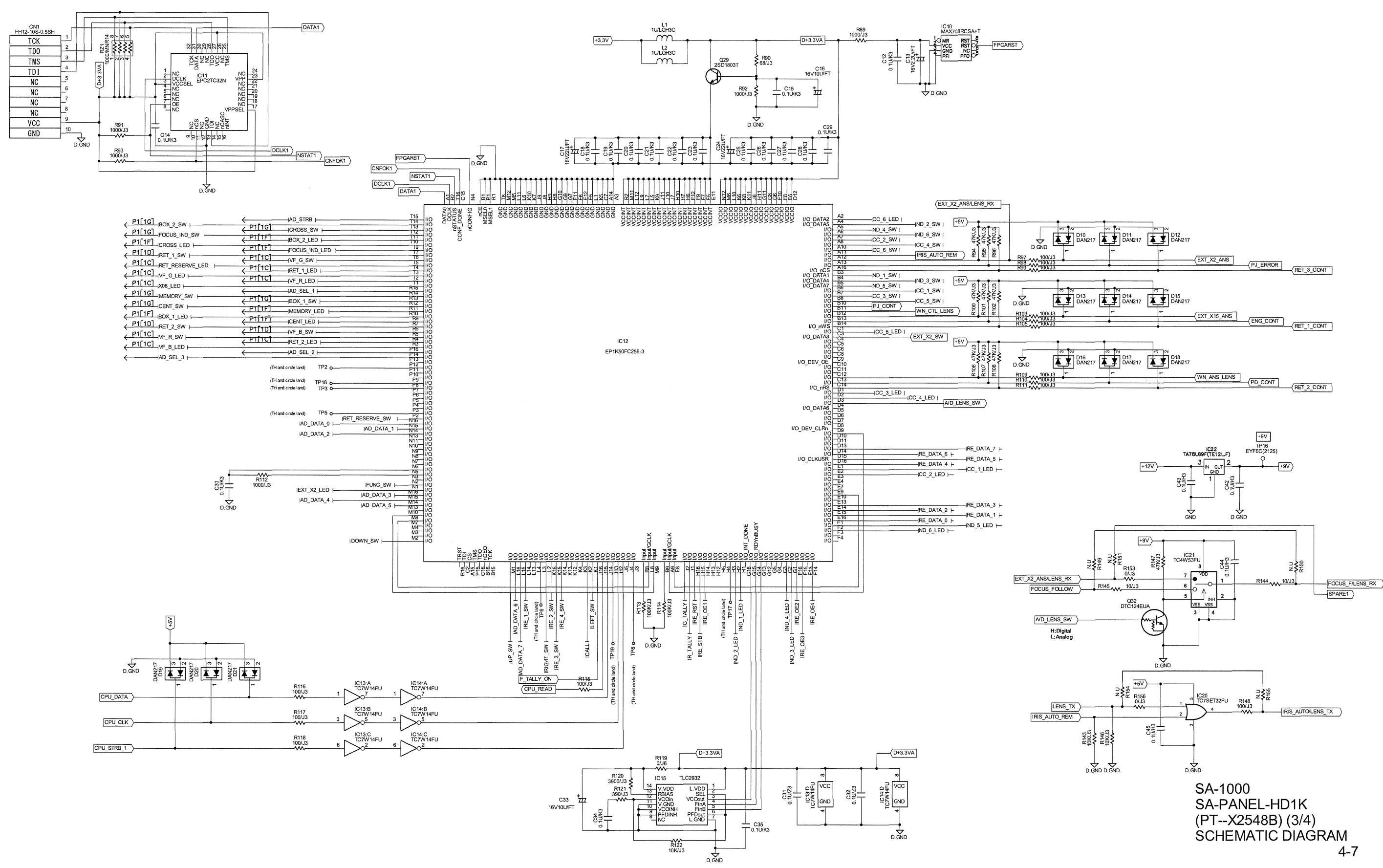
D

E

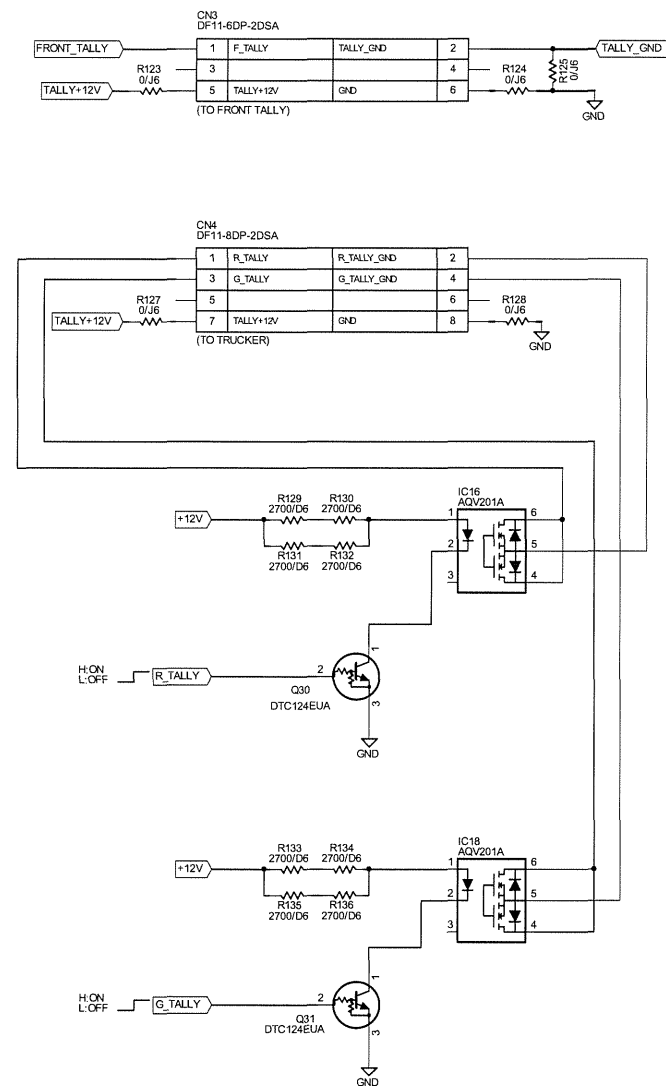
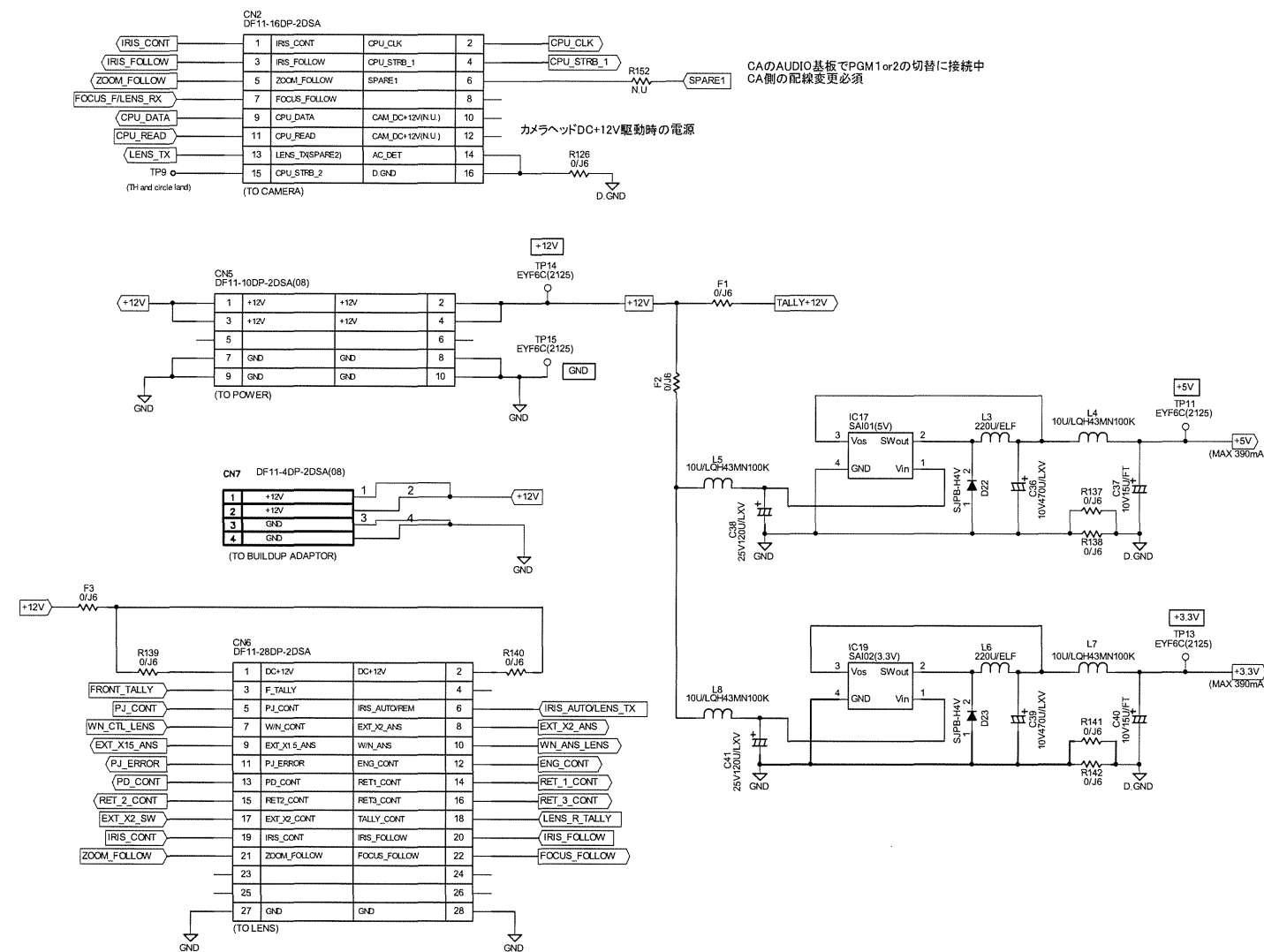
F

G

H



SA-1000
SA-PANEL-HD1K
(PT--X2548B) (3/4)
SCHEMATIC DIAGRAM
4-7



5. ELECTRICAL PARTS LIST

CHASSIS	5-1
CABLE ASSY	5-1
SA-PANEL-HD1K	5-2

SA-1000

CHASSIS

SYMBOL	PART CODE	DESCRIPTION		
AC/DC101	GBB0898	UNIT. PWR	RTW12-8R4C	
BK101	8AAJ000200	BREAKER	TBC5031-0110740 (2. 0A)	
CN101	JMH0206	CONNECTOR	HA16PRH-4S	

CABLE ASSY

SYMBOL	PART CODE	DESCRIPTION		
J1	E400159781A	CABLE ASSY	E400159781A	
J2	E400159781B	CABLE ASSY	E400159781B	
J3	E400159781C	CABLE ASSY	E400159781C	
J4	E400159781D	CABLE ASSY	E400159781D	
J5	E400159781E	CABLE ASSY	E400159781E	
J6	E400159781F	CABLE ASSY	E400159781F	
J7	E400159781G	CABLE ASSY	E400159781G	
J8	E400159781H	CABLE ASSY	E400159781H	
J9	E400159781J	CABLE ASSY	E400159781J	
J10	E400159781K	CABLE ASSY	E400159781K	
J11	E400159781L	CABLE ASSY	E400159781L	
J12	E400159781M	CABLE ASSY	E400159781M	

PANEL(1/5)

SYMBOL	PART CODE	DESCRIPTION	
C1	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C2	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C3	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C4	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C5	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C6	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C7	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C8	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C9	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C10	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C11	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C12	CCG0749CA	C. CERAMIC	16 V 0.1 UF+10%
C13	CSX0168CZ	C. TA ELYC	16 V 2.2 UF+-20%
C14	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C15	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C16	CSX0166CY	C. TA ELYC	16 V 10 UF+-20%
C17	CSX0164CY	C. TA ELYC	16 V 22 UF+-20%
C18	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C19	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C20	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C21	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C22	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C23	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C24	CSX0164CY	C. TA ELYC	16 V 22 UF+-20%
C25	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C26	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C27	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C28	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C29	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C30	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C31	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C32	CCG0678CA	C. CERAMIC	16 V 0.1 UF+80-20%
C33	CSX0166CY	C. TA ELYC	16 V 10 UF+-20%
C34	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C35	CCG0749CA	C. CERAMIC	16 V 0.1 UF+-10%
C36	CEL0171	C. AL ELYC	10 V 470 UF+-20%
C37	CSX0162CY	C. TA ELYC	10 V 15 UF+-20%
C38	CEL0179	C. AL ELYC	25 V 120 UF+-20%
C39	CEL0171	C. AL ELYC	10 V 470 UF+-20%
C40	CSX0162CY	C. TA ELYC	10 V 15 UF+-20%
C41	CEL0179	C. AL ELYC	25 V 120 UF+-20%
C42	CCG0961CA	C. CERAMIC	50 V 0.1 UF+80-20%
C43	CCG0961CA	C. CERAMIC	50 V 0.1 UF+80-20%
C44	CCG0961CA	C. CERAMIC	50 V 0.1 UF+80-20%
C45	CCG0961CA	C. CERAMIC	50 V 0.1 UF+80-20%
CN1	8AAE000030	CONNECTOR	FH12-10S-0.5SH (55) TAPE
CN2	8AAE001088	CONNECTOR	DF11-16DP-2DSA (08)
CN3	JBD0041	CONNECTOR	DF11-6DP-2DSA (08)
CN4	8AAE000657	CONNECTOR	DF11-8DP-2DSA (08)
CN5	8AAE001089	CONNECTOR	DF11-10DP-2DSA (08)
CN6	8AAE001090	CONNECTOR	DF11-28DP-2DSA (08)
CN7	8AAE001026	CN	DF11-4DP-2DSA (08)
D1	HLS0021	LED	SML1216W
D1-SP	8580137	G LED SPACER	LED SPACER LM-4
D2	HLS0054	LED	SLR-342MG 3F
D2-SP	8580137	N SPACER	LM-7
D3	HLS0054	LED	SLR-342MG 3F
D3-SP	8580137	N SPACER	LM-7
D4	HLS0054	LED	SLR-342MG 3F
D4-SP	8580137	N SPACER	LM-7
D5	HLS0054	LED	SLR-342MG 3F
D5-SP	8580137	N SPACER	LM-7
D6	HLS0054	LED	SLR-342MG 3F
D6-SP	8580137	N SPACER	LM-7
D7	HLS0054	LED	SLR-342MG 3F
D7-SP	8580137	N SPACER	LM-7
D8	HLS0021	LED	SML1216W
D8-SP	8580137	G LED SPACER	LED SPACER LM-4
D9	HLS0055	LED	SLR-342VR 3F
D9-SP	8580137	N SPACER	LM-7
D10	HDD0209CZ	D1ODE	DAN217
D11	HDD0209CZ	D1ODE	DAN217
D12	HDD0209CZ	D1ODE	DAN217
D13	HDD0209CZ	D1ODE	DAN217
D14	HDD0209CZ	D1ODE	DAN217
D15	HDD0209CZ	D1ODE	DAN217
D16	HDD0209CZ	D1ODE	DAN217
D17	HDD0209CZ	D1ODE	DAN217
D18	HDD0209CZ	D1ODE	DAN217
D19	HDD0209CZ	D1ODE	DAN217
D20	HDD0209CZ	D1ODE	DAN217
D21	HDD0209CZ	D1ODE	DAN217
D22	8ABT000131	D1ODE	SJPB-H4V
D23	8ABT000131	D1ODE	SJPB-H4V

PANEL(2/5)

SYMBOL	PART CODE	DESCRIPTION	
F1	RME0912CA	R. METAL	1/8W 0 OHM
F2	RME0912CA	R. METAL	1/8W 0 OHM
F3	RME0912CA	R. METAL	1/8W 0 OHM
IC1	ILM0580	I.C. ANALOG	UPD4702G-A
IC2	ILM0580	I.C. ANALOG	UPD4702G-A
IC3	IDH1213CX	I.C. LOGIC	MC14051BFELG
IC4	IDA0048	I.C. DIGITAL	ADC0820CCWM/NOPB
IC5	ILM0580	I.C. ANALOG	UPD4702G-A
IC6	ILM0580	I.C. ANALOG	UPD4702G-A
IC7	IDT0399CD	I.C. LOGIC	TC7W08FU
IC8	IDT0381CD	I.C. LOGIC	TC7W04FU (TE12L. F)
IC9	8ABR000203	IC	AQV201AX
IC10	8ABM000952	IC	MAX708RCSA+T
IC11	INE0148TA	IC	EPC2TC32N
IC12	INE0215TA	IC	EP1K50FC256-3N
IC13	IDT0469CD	I.C. LOGIC	TC7W14FU (TE12L. F)
IC14	IDT0469CD	I.C. LOGIC	TC7W14FU (TE12L. F)
IC15	ILT0178CY	I.C. ANALOG	TLC2932IPWR
IC16	8ABR000203	IC	AQV201AX
IC17	IPS0017CG	IC	SAI01
IC18	8ABR000203	IC	AQV201AX
IC19	IPS0018CG	IC	SAI02
IC20	IDT0504CA	IC	TC7SET32FU (TE85L. F)
IC21	IDT0402CD	I.C. LOGIC	TC4W53FU (TE12L. F)
IC22	8ABM001377	IC	TA78L09F (TE12L. F)
L1	TLL0358CA	COIL	LQH32CN1ROM23L (1UH)
L2	TLL0358CA	COIL	LQH32CN1ROM23L (1UH)
L3	TLE0253	COIL	390 MA 220 UH+-10%
L4	TLL0340CD	COIL	400 MA 10 UH+-10%
L5	TLL0340CD	COIL	400 MA 10 UH+-10%
L6	TLE0253	COIL	390 MA 220 UH+-10%
L7	TLL0340CD	COIL	400 MA 10 UH+-10%
L8	TLL0340CD	COIL	400 MA 10 UH+-10%
Q1	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q2	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q3	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q4	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q5	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q6	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q7	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q8	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q9	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q10	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q11	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q12	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q13	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q14	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q15	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q16	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q17	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q18	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q19	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q20	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q21	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q22	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q23	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q24	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q25	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q26	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q27	HTC0686CA	TRANSISTOR	2SC2462LCTR-E
Q28	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q29	HTD0243CX	TRANSISTOR	2SD1803T
Q30	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q31	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
Q32	HTD0247CZ	TRANSISTOR	DTC124EUA (25)
R1	RME1815CA	R. METAL	1/16W 3.3 KOHM +-5%
R2	RME1811CA	R. METAL	1/16W 1.5 KOHM +-5%
R3	RME1815CA	R. METAL	1/16W 3.3 KOHM +-5%
R4	RME1811CA	R. METAL	1/16W 1.5 KOHM +-5%
R5	RME1815CA	R. METAL	1/16W 3.3 KOHM +-5%
R6	RME1811CA	R. METAL	1/16W 1.5 KOHM +-5%
R7	RME1815CA	R. METAL	1/16W 3.3 KOHM +-5%
R8	RME1811CA	R. METAL	1/16W 1.5 KOHM +-5%
R9	RME1815CA	R. METAL	1/16W 3.3 KOHM +-5%
R10	RME1811CA	R. METAL	1/16W 1.5 KOHM +-5%
R11	RME1811CA	R. METAL	1/16W 1.5 KOHM +-5%
R12	RME1811CA	R. METAL	1/16W 1.5 KOHM +-5%
R13	RME1811CA	R. METAL	1/16W 1.5 KOHM +-5%
R14	RME1829CA	R. METAL	1/32W 47 KOHM +-5%
R15	RME1829CA	R. METAL	1/32W 47 KOHM +-5%
R16	RME1829CA	R. METAL	1/32W 47 KOHM +-5%
R17	RME1829CA	R. METAL	1/32W 47 KOHM +-5%
R18	RME1829CA	R. METAL	1/32W 47 KOHM +-5%
R19	RME1829CA	R. METAL	1/32W 47 KOHM +-5%

PANEL(3/5)

SYMBOL	PART CODE	DESCRIPTION	
R20	RME1811CA	R. METAL 1/16W 1.5 KOHM +-5%	
R21	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R22	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R23	RME1804CA	R. METAL 1/32W 390 OHM +-5%	
R24	RME1804CA	R. METAL 1/32W 390 OHM +-5%	
R25	RME1804CA	R. METAL 1/32W 390 OHM +-5%	
R26	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R27	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R28	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R29	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R30	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R31	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R32	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R33	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R34	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R35	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R36	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R37	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R38	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R39	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R40	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R41	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R42	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R43	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R44	RME1812CA	R. METAL 1/16W 1.8 KOHM +-5%	
R45	RMR4935CA	R. METAL 1/16W 100 OHM +-0.5%	
R46	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R47	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R48	RME1811CA	R. METAL 1/16W 1.5 KOHM +-5%	
R49	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R50	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R51	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R52	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R53	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R54	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R55	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R56	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R57	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R58	RME1802CA	R. METAL 1/32W 270 OHM +-5%	
R59	RME1815CA	R. METAL 1/16W 3.3 KOHM +-5%	
R60	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R61	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R62	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R63	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R64	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R65	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R66	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R67	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R68	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R69	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R70	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R71	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R72	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R73	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R74	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R75	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R76	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R77	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R78	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R79	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R80	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R81	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R82	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R83	RME1439CA	R. METAL 1/10W 1.2 KOHM +-5%	
R84	RME1821CA	R. METAL 1/16W 10 KOHM +-5%	
R85	RME1821CA	R. METAL 1/16W 10 KOHM +-5%	
R86	RME0868CA	R. METAL 1/8W 220 OHM +-5%	
R87	RME0876CA	R. METAL 1/8W 1 KOHM +-5%	
R88	RME0876CA	R. METAL 1/8W 1 KOHM +-5%	
R89	RME1809CA	R. METAL 1/16W 1 KOHM +-5%	
R90	RME1795CA	R. METAL 1/32W 68 OHM +-5%	
R91	RME1809CA	R. METAL 1/16W 1 KOHM +-5%	
R92	RME1809CA	R. METAL 1/16W 1 KOHM +-5%	
R93	RME1809CA	R. METAL 1/16W 1 KOHM +-5%	
R94	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R95	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R96	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R97	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R98	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R99	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R100	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R101	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R102	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R103	RME1797CA	R. METAL 1/16W 100 OHM +-5%	

PANEL(4/5)

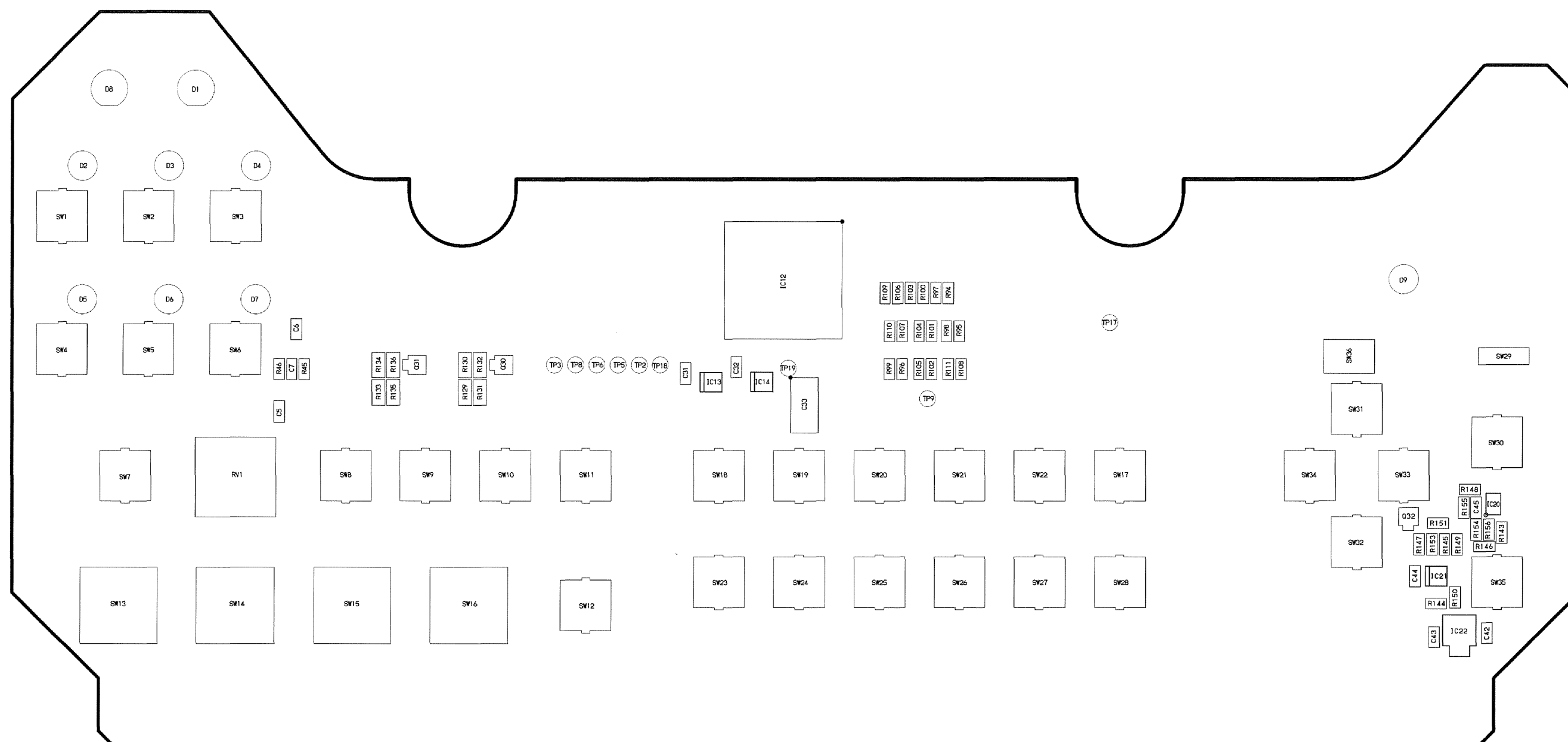
SYMBOL	PART CODE	DESCRIPTION	
R104	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R105	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R106	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R107	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R108	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R109	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R110	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R111	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R112	RME1809CA	R. METAL 1/16W 1 KOHM +-5%	
R113	RME1833CA	R. METAL 1/16W 100 KOHM +-5%	
R114	RME1833CA	R. METAL 1/16W 100 KOHM +-5%	
R115	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R116	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R117	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R118	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R119	RME1413CA	R. METAL 1/10W 0 OHM	
R120	RME1816CA	R. METAL 1/16W 3.9 KOHM +-5%	
R121	RME1804CA	R. METAL 1/32W 390 OHM +-5%	
R122	RME1821CA	R. METAL 1/16W 10 KOHM +-5%	
R123	RME1413CA	R. METAL 1/10W 0 OHM	
R124	RME1413CA	R. METAL 1/10W 0 OHM	
R125	RME1413CA	R. METAL 1/10W 0 OHM	
R126	RME1413CA	R. METAL 1/10W 0 OHM	
R127	RME1413CA	R. METAL 1/10W 0 OHM	
R128	RME1413CA	R. METAL 1/10W 0 OHM	
R129	RMR4117CA	R. METAL 1/16W 2.7 KOHM +-0.5%	
R130	RMR4117CA	R. METAL 1/16W 2.7 KOHM +-0.5%	
R131	RMR4117CA	R. METAL 1/16W 2.7 KOHM +-0.5%	
R132	RMR4117CA	R. METAL 1/16W 2.7 KOHM +-0.5%	
R133	RMR4117CA	R. METAL 1/16W 2.7 KOHM +-0.5%	
R134	RMR4117CA	R. METAL 1/16W 2.7 KOHM +-0.5%	
R135	RMR4117CA	R. METAL 1/16W 2.7 KOHM +-0.5%	
R136	RMR4117CA	R. METAL 1/16W 2.7 KOHM +-0.5%	
R137	RME1413CA	R. METAL 1/10W 0 OHM	
R138	RME1413CA	R. METAL 1/10W 0 OHM	
R139	RME1413CA	R. METAL 1/10W 0 OHM	
R140	RME1413CA	R. METAL 1/10W 0 OHM	
R141	RME1413CA	R. METAL 1/10W 0 OHM	
R142	RME1413CA	R. METAL 1/10W 0 OHM	
R143	RME1821CA	R. METAL 1/16W 10 KOHM +-5%	
R144	RME1785CA	R. METAL 1/16W 10 OHM +-5%	
R145	RME1785CA	R. METAL 1/16W 10 OHM +-5%	
R146	RME1821CA	R. METAL 1/16W 10 KOHM +-5%	
R147	RME1829CA	R. METAL 1/32W 47 KOHM +-5%	
R148	RME1797CA	R. METAL 1/16W 100 OHM +-5%	
R149	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R150	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R151	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R152	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R153	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R154	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R155	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
R156	RME1784CA	R. METAL 1/16W 0 OHM +-5%	
RV1	RNG0140	VR. METAL GF12P10S 20 KOHM	
RV2	RNS0057CY	VR. METAL ST-32ETG 5 KOHM (502)	
RZ1	RZA0394CA	R. BLOCK MNR14-E0AB-J-102	
SW1	SSP0642	SW. PB LTR2-01-L5	
SW1-1	8AAD000189	BUTTON	140007480201
SW2	SSP0642	SW. PB LTR2-01-L5	
SW2-1	8AAD000189	BUTTON	140007480201
SW3	SSP0642	SW. PB LTR2-01-L5	
SW3-1	8AAD000189	BUTTON	140007480201
SW4	SSP0642	SW. PB LTR2-01-L5	
SW4-1	8AAD000189	BUTTON	140007480201
SW5	SSP0642	SW. PB LTR2-01-L5	
SW5-1	8AAD000189	BUTTON	140007480201
SW6	SSP0642	SW. PB LTR2-01-L5	
SW6-1	8AAD000189	BUTTON	140007480201
SW7	SSP0642	SW. PB LTR2-01-L5	
SW7-1	8AAD000188	BUTTON	140007480206
SW8	SSP0642	SW. PB LTR2-01-L5	
SW8-1	8AAD000188	BUTTON	140007480206
SW9	SSP0643	SW. PB LTR2-01-L8	
SW9-1	8AAD000191	BUTTON	140007480207
SW10	SSP0643	SW. PB LTR2-01-L8	
SW10-1	8AAD000191	BUTTON	140007480207
SW11	SSP0643	SW. PB LTR2-01-L8	
SW11-1	8AAD000191	BUTTON	140007480207
SW12	SSP0642	SW. PB LTR2-01-L5	
SW12-1	8AAD000188	BUTTON	140007480206
SW13	EMY0051	ENCODER EVQBAB10115B	
SW14	EMY0051	ENCODER EVQBAB10115B	
SW15	EMY0051	ENCODER EVQBAB10115B	
SW16	EMY0051	ENCODER EVQBAB10115B	

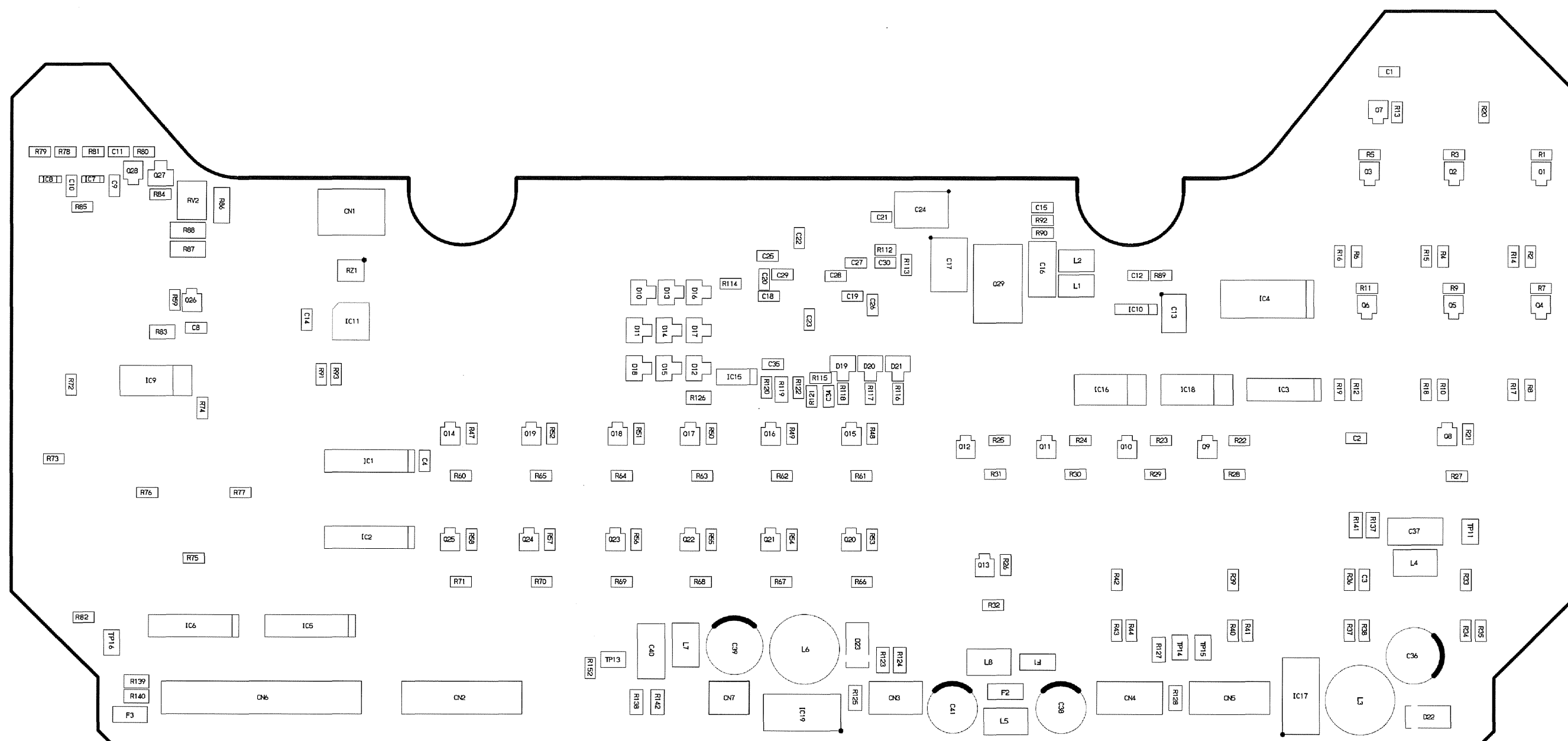
PANEL(5/5)

SYMBOL	PART CODE	DESCRIPTION	
SW17	SSP0642	SW. PB	LTR2-01-L5
SW17-1	8AAD000188	BUTTON	140007480206
SW18	SSP0641	SW. PB	LTR2-01-L2
SW18-1	8AAD000187	BUTTON	140007480205
SW19	SSP0642	SW. PB	LTR2-01-L5
SW19-1	8AAD000188	BUTTON	140007480206
SW20	SSP0642	SW. PB	LTR2-01-L5
SW20-1	8AAD000188	BUTTON	140007480206
SW21	SSP0642	SW. PB	LTR2-01-L5
SW21-1	8AAD000188	BUTTON	140007480206
SW22	SSP0642	SW. PB	LTR2-01-L5
SW22-1	8AAD000188	BUTTON	140007480206
SW23	SSP0642	SW. PB	LTR2-01-L5
SW23-1	8AAD000188	BUTTON	140007480206
SW24	SSP0642	SW. PB	LTR2-01-L5
SW24-1	8AAD000188	BUTTON	140007480206
SW25	SSP0642	SW. PB	LTR2-01-L5
SW25-1	8AAD000188	BUTTON	140007480206
SW26	SSP0642	SW. PB	LTR2-01-L5
SW26-1	8AAD000188	BUTTON	140007480206
SW27	SSP0642	SW. PB	LTR2-01-L5
SW27-1	8AAD000188	BUTTON	140007480206
SW28	SSP0642	SW. PB	LTR2-01-L5
SW28-1	8AAD000188	BUTTON	140007480206
SW29	SSP1110	SW. PB	SPPJ2-MN-L*W
SW29-1	SSY0841	BUTTON	UE200013
SW29-2	BBE0103	WIRE	UL1571LF AWG26 7/0. 16 WHT
SW29-3	ERE0101	TUBE	SUM1-TUBE F(Z) 2.5 BLK (U
SW30	SSP0909	SW. PB	LTR1-01
SW30-1	8AAD000185	BUTTON	140007480171
SW31	SSP0909	SW. PB	LTR1-01
SW32	SSP0909	SW. PB	LTR1-01
SW33	SSP0909	SW. PB	LTR1-01
SW34	SSP0909	SW. PB	LTR1-01
SW35	SSP0909	SW. PB	LTR1-01
SW35-1	8AAD000186	BUTTON	140007480181
SW36	SST0054	SW. TOGGLE	8A2021-Z

6. ELECTRICAL PARTS ARRANGEMENT

SA-PANEL-HD1K.....	6-1
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SA-HD1K-PANEL (PT-X2545B) SIDE B

7. MECHANICAL PARTS LIST AND EXPLODED VIEW

SA-1000 MECHANICAL PARTS LIST

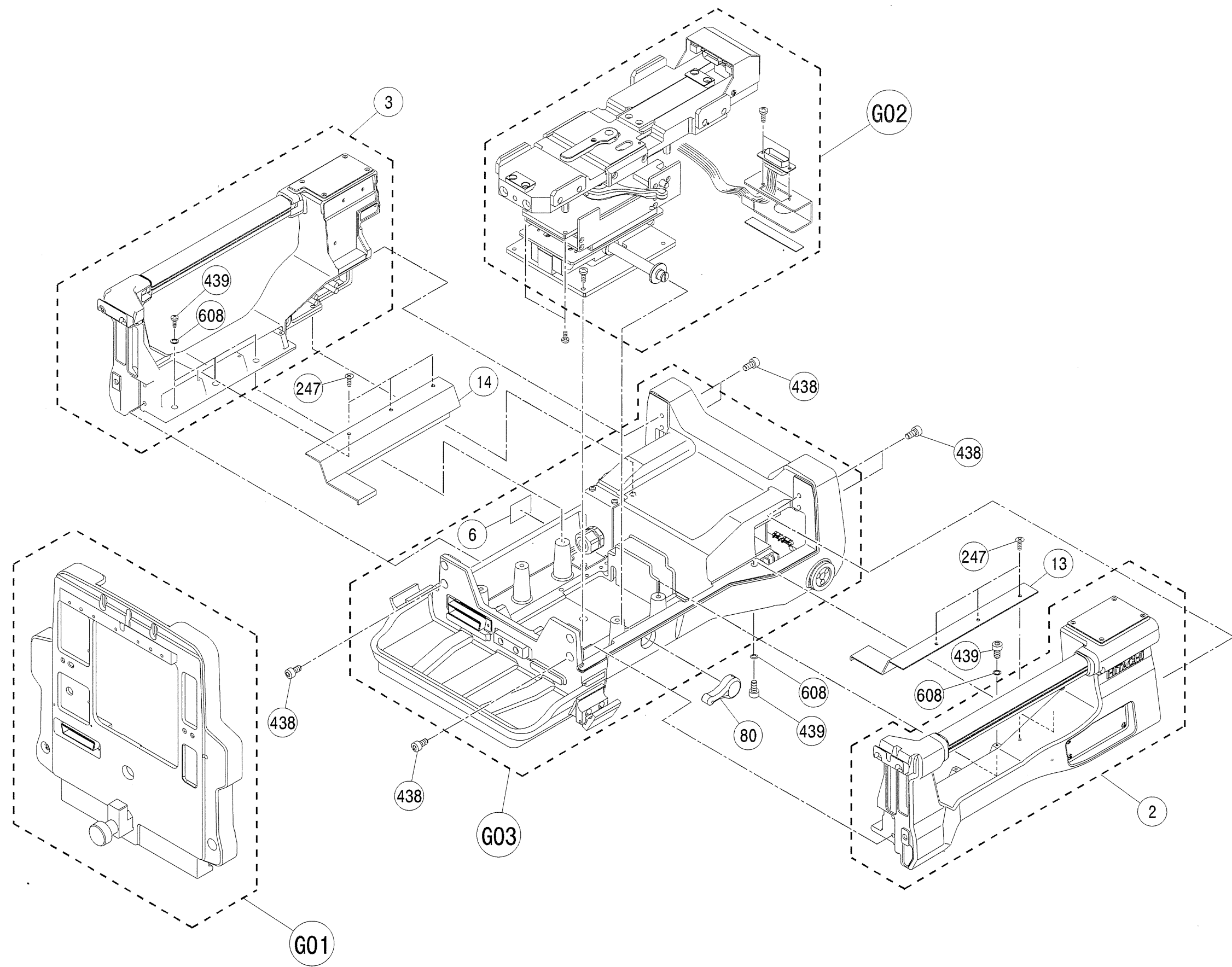
Symbol	Part Code	Description	Q'ty
2	FMY0000147	SIDE L ASSY	1
3	FMY0000148	SIDE R ASSY	1
6	M400195060A	LABEL	1
13	M300161345A	BOTTOM COVER_L	1
14	M300161323A	BOTTOM COVER_R	1
17	M100154961A	BOTTOM FRAME	1
18	M400054106A	BRACKET	1
19	8BEB000264	CABLE CLAMP	2
20	M400154979A	SCL PANEL	1
21	8606124 D	SC LOCK	1
22	8636328 A	BRACKET	1
23	8BDB000413	HANDLE	1
24	M300161324A	CB PLATE	1
25	M300161325A	BOTTOM PLATE	1
26	M300172411A	TRANS PLATE	1
28	M400243809A	PS PLATE	1
29	FMY0000149	REAR PANEL ASSY	1
30	8703733 A	KNOB	1
31	8703734 A	KNOB	1
32	8703741 A	RING	5
33	8703730 A	BRACKET	1
35	8525306 A	RING	1
40	M400161354A	D-SUB PLATE	1
42	M100159745A	SIDE FRAME_L	1
43	M400161359A	SUPPORT BRACKET_L	1
44	M400161339A	HANDLE BOSS	4
45	M400161348A	SIDE COVER_L	1
46	M400161349A	BU COVER_L	1
47	M400161350A	SIDE PANEL_L	1
48	M400161351A	SF_L	1
49	8649674 A	LABEL	1
50	M400227670A	HANDLE	1
52	M100154969A	SIDE FRAME_R	1
53	M400161338A	SUPPORT BRACKET_R	1
55	M400161341A	SIDE COVER_R	1
56	M400161342A	BU COVER_R	1
57	M400180542A	SIDE PANEL_R	1
58	M400161344A	SF_R	1
59	M400161346A	CN BEACKER	1
60	8649674 A	LABEL	1

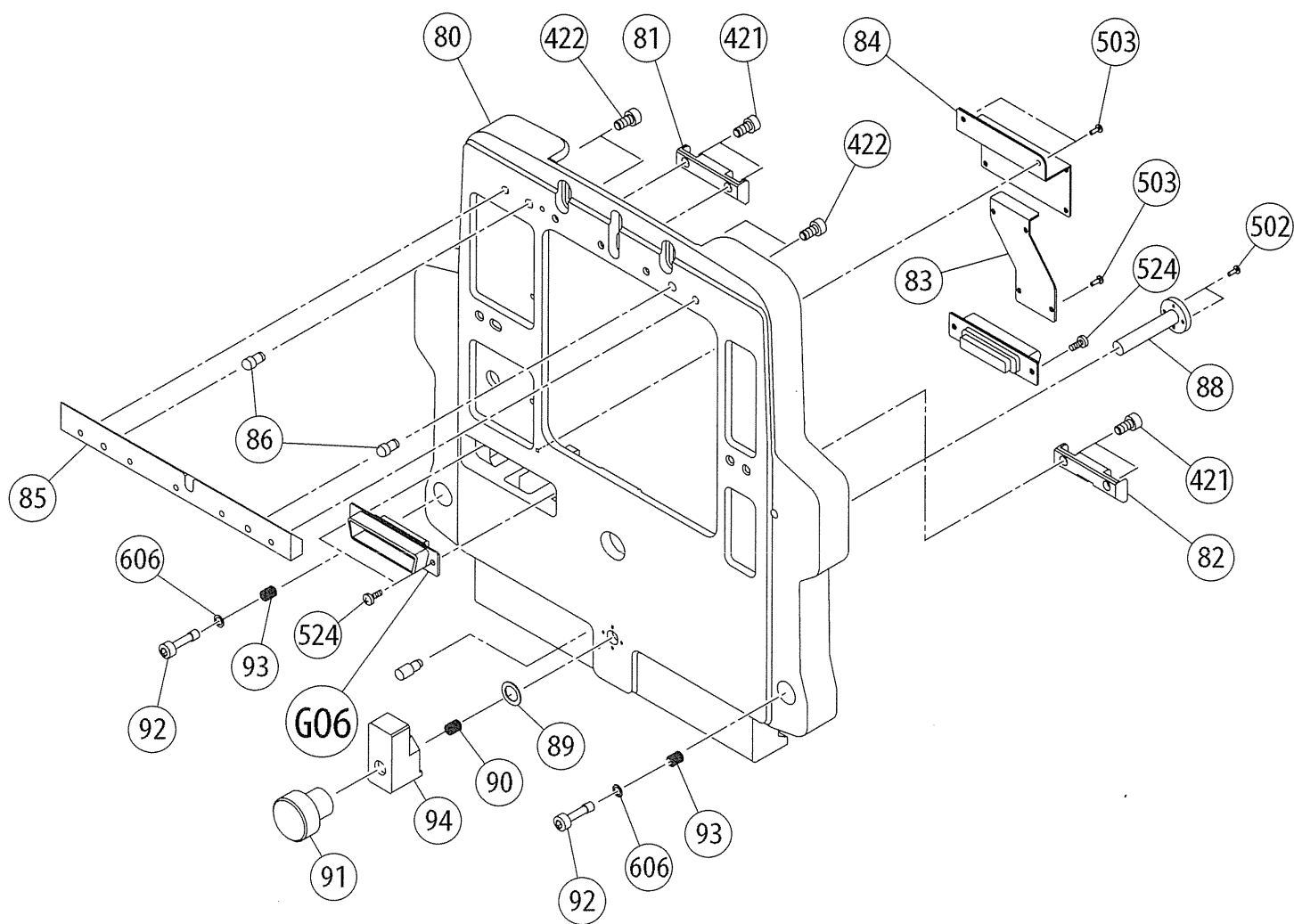
SA-1000 MECHANICAL PARTS LIST

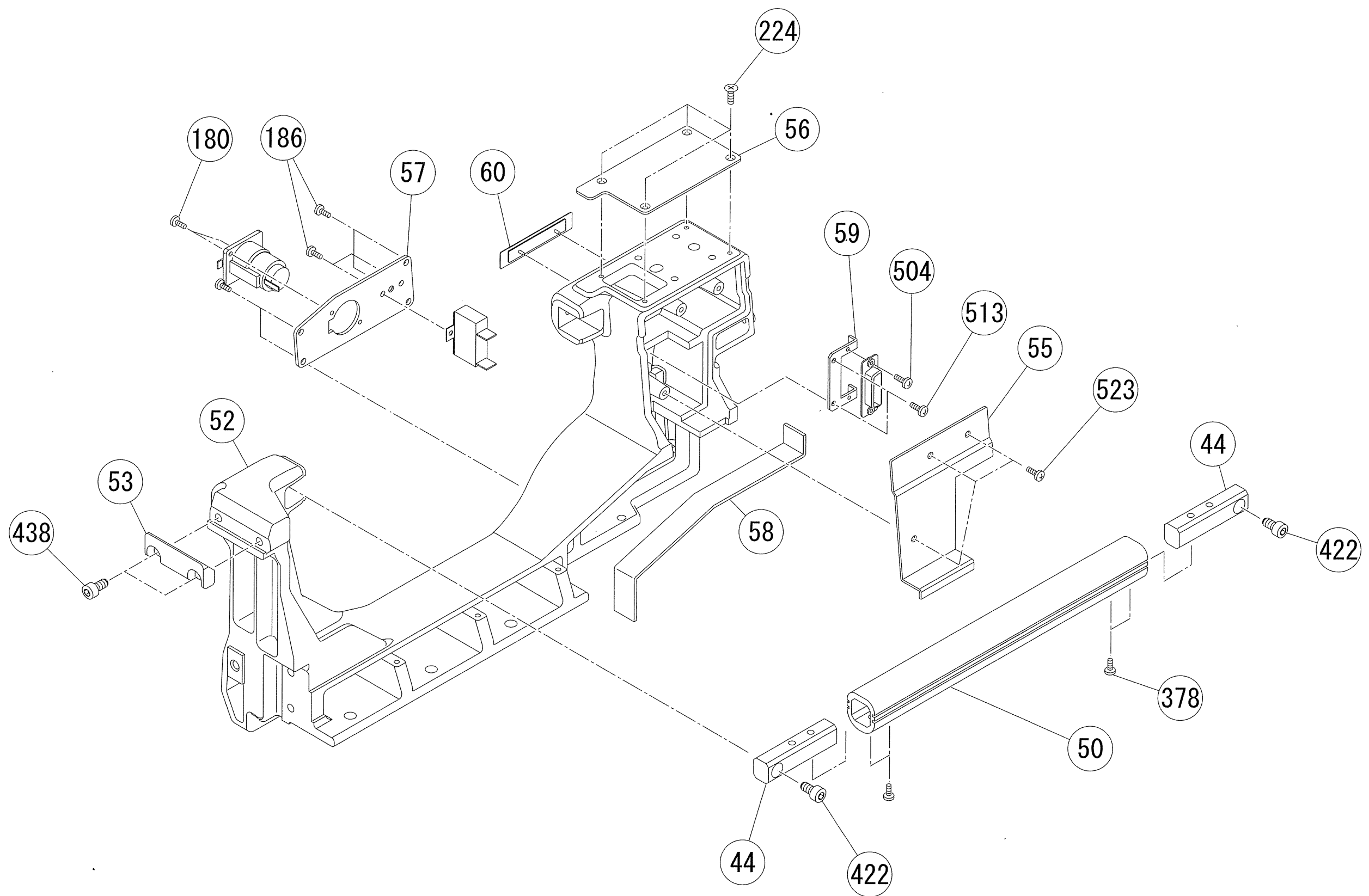
Synbol	Part Code	Description	Q' ty
77	FMY0000150	LOCK LEVER ASSY	
80	M100156687A	FRONT FRAME HD	1
81	M400161338A	SUPPORT BRACKET_R	1
82	M400161352A	BRACKET_FL	1
83	M400161333A	CN COVER 1	1
84	M400161334A	CN COVER 2	1
85	8BEB000255	BLACKET	
86	8BEB000262	PIN	
88	8BEB000261	PIN	
89	8BEB000259	KNOB	
90	8BEA000796	SPRING	
91	8548439 A	KNOB	
92	M400161335A	SCREW	
93	8BDH000530	SPRING	
94	8651934 A	PLATE	
101	8BDF000860	SCREW BIND HD M3X6 NIP	
102	8BDF000789	SCREW BIND HD M2X6 NIP	
180	8BDF000559	SCREW W/W,SW SEMS M4X8	
186	8BDF000564	SCREW BIND HD M3X6 NIP	5
224	8BDF000872	SCREW FLAT HD M2.6X6 NIP	8
247	8BDF000877	SCREW FLAT HD M3X6 NIP	6
337	8BDF000916	SCREW BIND HD M3X8 NIP	2
378	8BDF000936	SCREW BIND HD M4X10 NIP	8
415	3NBC021032	BOLT HEX,SOCKET HD M3X6	6
421	8BDF000964	SCREW BIND HD M2X5 NIP	4
422	8BDF000965	BOLT HEX,SOCKET HD M4X10	6
425	8BDF000665	BOLT HEX,SOCKET HD M4X8	4
438	8BDF000968	BOLT HEX,SOCKET HD M5X10	16
439	8BDF000969	BOLT HEX,SOCKET HD M5X12	2
447	8BDF000675	BOLT HEX,SOCKET HD M5X20	2
502	8BDF000896	SCREW BIND HD M2X5 NIP	4
503	8BDF000894	SCREW BIND HD M2X4 NIP	10
504	8BDF000899	SCREW BIND HD M2X8 NIP	2
513	8BDF000902	SCREW BIND HD M2.6X6 NIP	4
523	8BDF000914	SCREW BIND HD M3X6 NIP	14
524	8BDF000916	SCREW BIND HD M3X8 NIP	4
534	8BDF000932	SCREW BIND HD M4X8 NIP	8
553	8BDF000866	SCREW FLAT HD M2X6 NIP	2
583	8BDF000930	SCREW BIND HD M4X6 NIP	2
606	8BDF000962	WASHER M5 NI	2
608	8BDF000758	WASHER NIP	8
634	8BDF000820	SCREW BIND HD M3X3 NIP	9

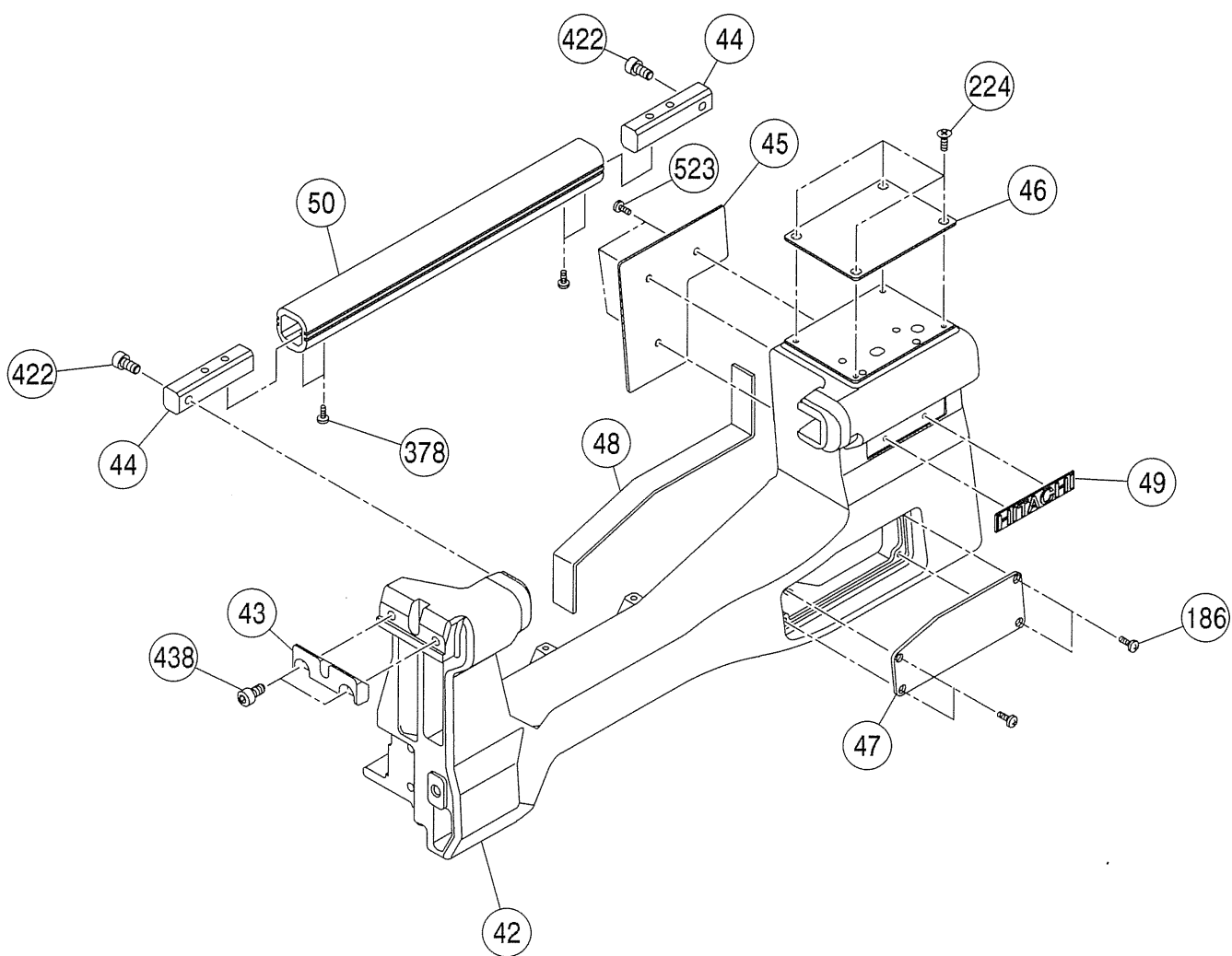
SA-1000 MECHANICAL PARTS LIST

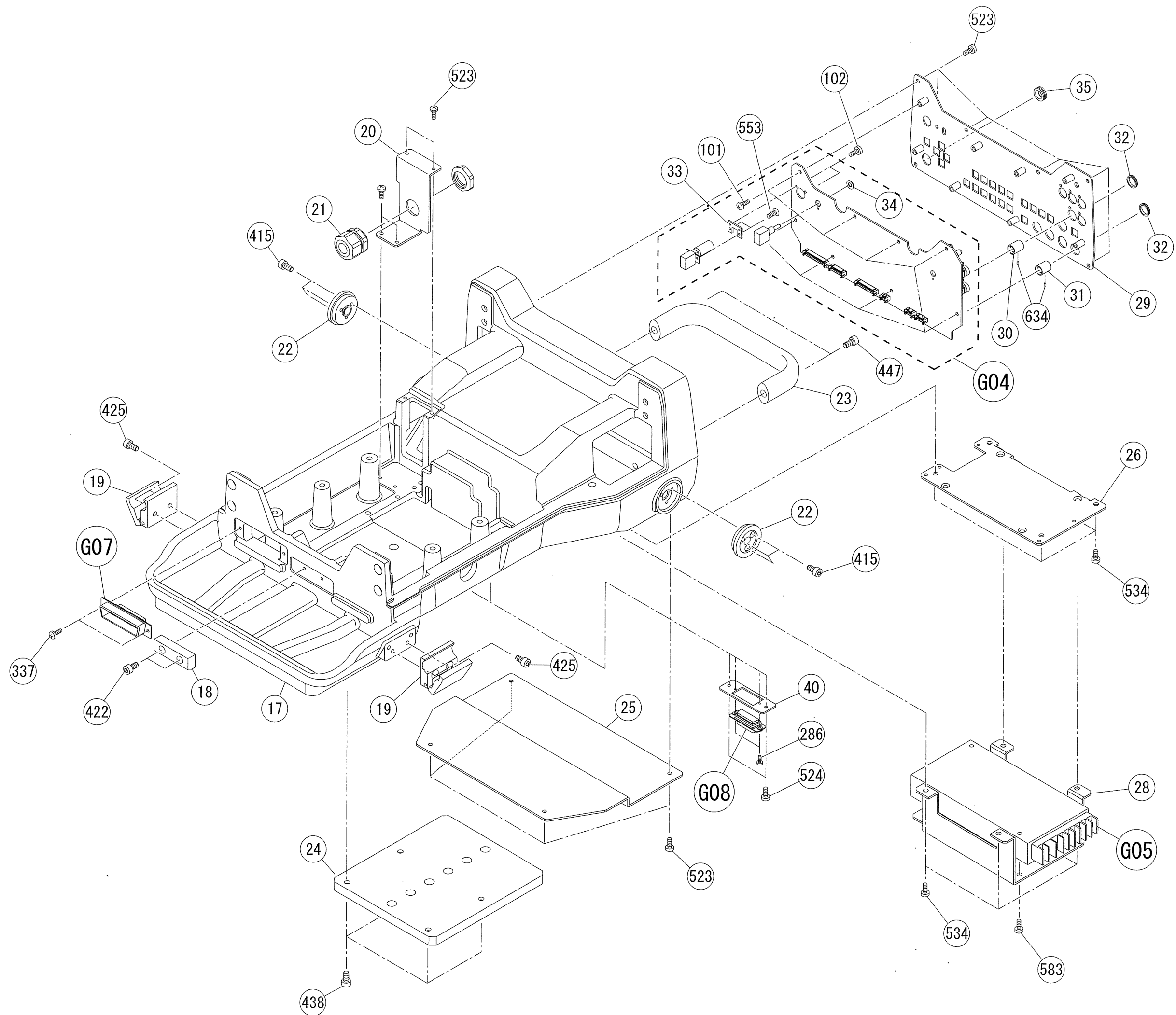
Symbol	Part Code	Description	Q'ty
G01	FMY0000151	FRONT ASSY	1
G02	FMY0000151	CAM MOUNT ASSY	1
G03	FMY0000153	BOTTOM ASSY	1
G04	FMY0000154	REAR PCB ASSY	1
G05	GBB0898	RTW12-8R4C	1
G06	E400159781M	E400159781M	1
G07	E400159781L	E400159781L	1
G08	E400159781B	E400159781B	1











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