DSP UNIT

DSP1D

SERVICE MANUAL

CONTENTS

PA 011509

YAMAHA
HAMAMATSU, JAPAN
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REVISED PAGE LIST

<PARTS LIST>

<CIRCUIT DIAGRAM>

IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: This presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principal-agent relationship of any form.

The data provided is belived to be accurate and applicable to the unit(s) indicated on the cover. The research engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground bus in the unit (heavy gauge black wires connect to this bus).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

LITHIUM BATTERY HANDLING

This product uses a lithium battery for memory back-up.

WARNING: Lithium batteries are dangerous because they can be exploded by improper handling. Observe the following precautions when handling or replacing lithium batteries.

- Leave lithium battery replacement to qualified service personnel.
- Always replace with batteries of the same type.
- When installing on the PC board by soldering, solder using the connection terminals provided on the battery cells.
- Never solder directly to the cells. Perform the soldering as quickly as possible.
- Never reverse the battery polarities when installing.
- Do not short the batteries.
- Do not attempt to recharge these batteries.
- Do not disassemble the batteries.
- Never heat batteries or throw them into fire.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

The following information complies with Dutch Official Gazette 1995. 45; ESSENTIALS OF ORDER ON THE COLLECTION OF BATTERIES.

- Please refer to the diassembly procedure for the removal of Back-up Battery.
- Leest u voor het verwijderen van de backup batterij deze beschrijving.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ WARNING

Components having special characteristics are marked ⚠ and must be replaced with parts having specification equal to those originally installed.

SPECIFICATIONS

Sampling frequency	<External sync> 39.69 kHz – 50.88 kHz
	<Internal sync> 44.1 kHz, 48 kHz
Power supply	USA and Canada: 120 V, 60 Hz
	Others: 230 V, 50 Hz
Power consumption	170 W
Dimensions (W x H x D)	480 mm x 408.7 mm x 460.8 mm
Weight	33 kg
Operating temperature	10 – 35˚C
Fan circuit	always fixed
Accessories	power cable 2.5 m x 1

Digital I/Os

I/O connectors	Level	Type
DIGITAL I/O INPUT 1 –10	RS-422	D-sub, half-pitch, 68-pin connector (female) x 10
DIGITAL I/O OUTPUT 1 – 6	RS-422	D-sub, half-pitch, 68-pin connector (female) x 6
DIGITAL I/O CASCADE IN, OUT	RS-422	D-sub, half-pitch, 68-pin connector (female) x 2
DIGITAL I/O CONSOLE I/O 1, 2	RS-422	D-sub, half-pitch, 68-pin connector (female) x 2
CONTROL I/O CONSOLE 1 IN, OUT	–0.225V — –1.825V/50 Ω	BNC connector x 2
CONTROL I/O CONSOLE 2 IN, OUT	–0.225V — –1.825V/50 Ω	BNC connector x 2
REMOTE RS-422	RS-422	D-sub, 9-pin connector (female)
GPI	C-MOS IN, Open collector OUT 1 pin: 150mA, 8pin total: 500mA	D-sub, 25-pin connector (female)
TIME CODE IN	SMPTE format, Nominal –10 dB/10 kΩ	XLR-3-31 type connector
MIDI IN, OUT, THRU	MIDI format	5-pin DIN connector x 3
PC CONTROL RS-232-C	RS-232-C	D-sub, 9-pin connector (male)
PC CONTROL USB	0V — 3.3V	B type USB connector
WORD CLOCK IN	TTL/75 Ω (ON/OFF)	BNC connector
WORD CLOCK OUT	TTL/75 Ω	BNC connector

Slots (for IDB1D board)

Unit	Input channel
DPS1D	INPUT 1-48 & ST IN 1-4 *
DPS1D-EX	INPUT 1-96 & ST IN 1-8 (DSP1D + IDB1D for expansion)

* The DSP1D has an empty slot available for the IDB1D board.

IMPORTANT NOTICE FOR THE UNITED KINGDOM

Connecting the Plug and Cord

IMPORTANT. The wires in this main lead are coloured in accordance with the following code:

BLUE: NEUTRAL
BROWN: LIVE

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

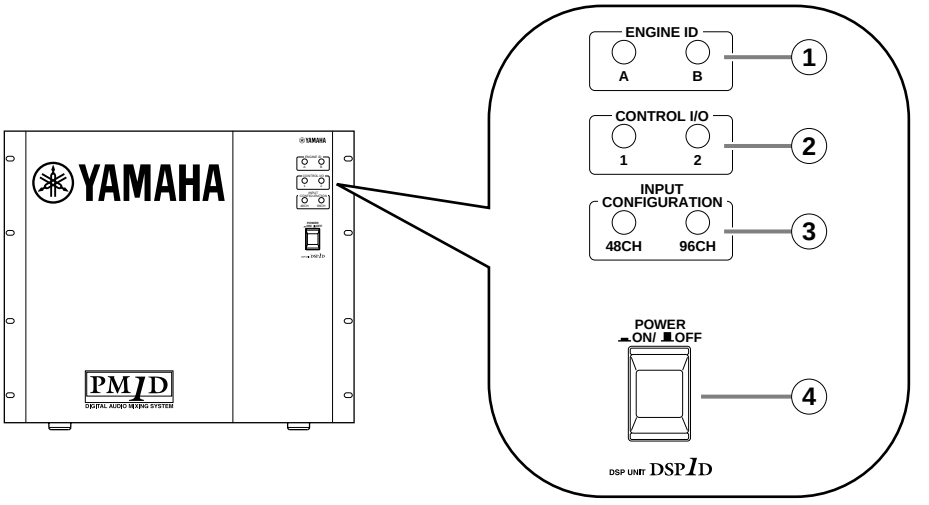
The BLUE wire must be connected to the terminal that is marked with the letter N (or coloured BLACK).

The BROWN wire must be connected to the terminal that is marked with the letter L (or coloured RED).

Be certain that neither core is connected to the earth terminal of the three pin plug.

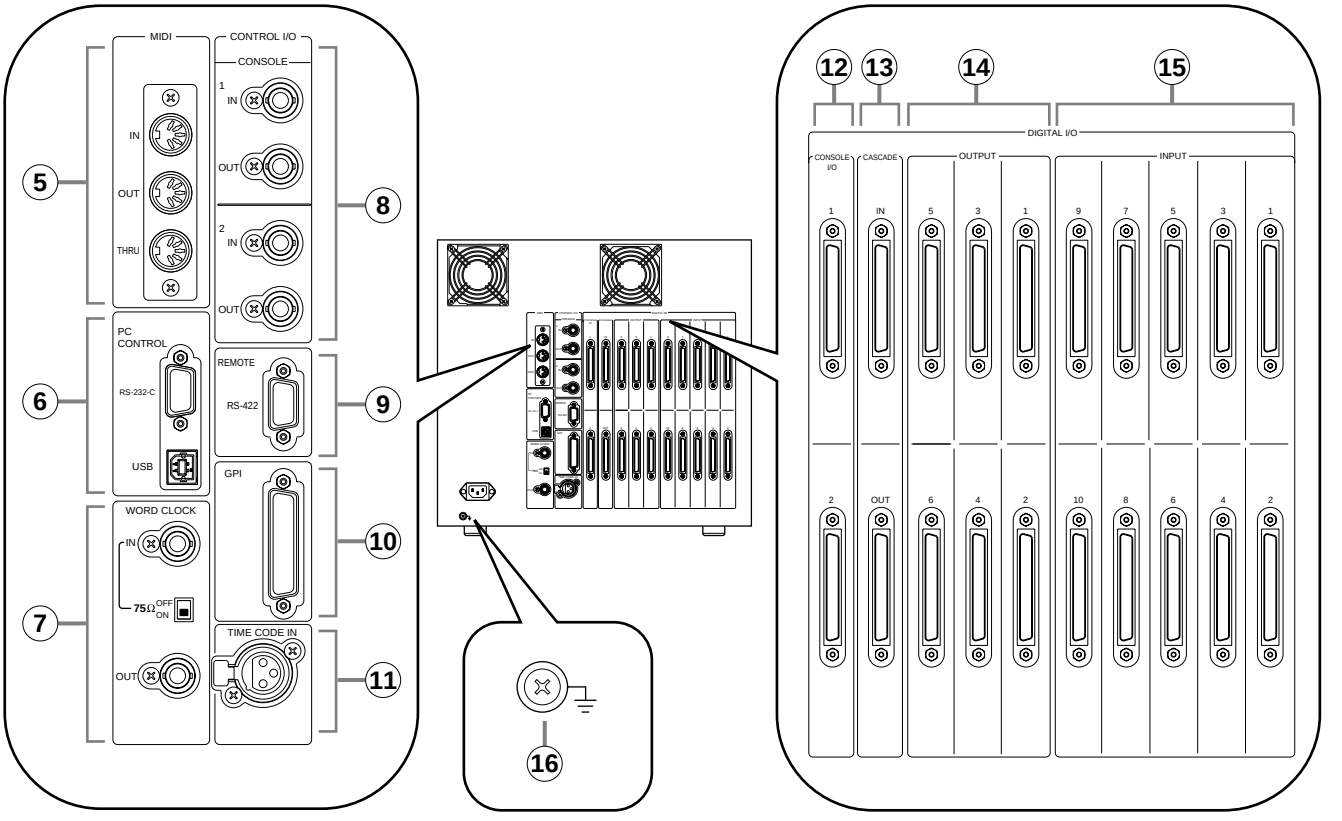
PANEL LAYOUT

● Front Panel



1. ENGINE ID A/B indicators
2. CONTROL I/O 1/2 indicators
3. INPUT CONFIGURATION 48CH/96CH indicators
4. POWER ON/OFF switch

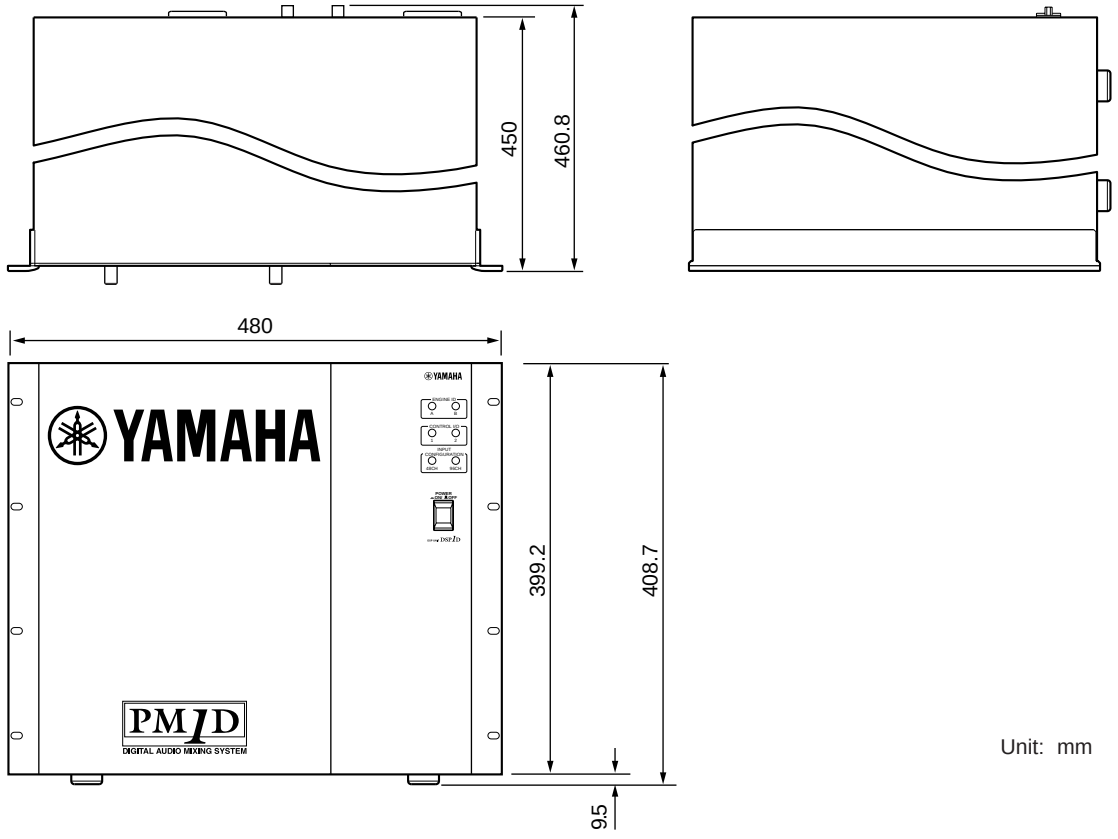
● Rear Panel



5. MIDI IN/OUT/THRU connectors
6. PC CONTROL RS-232-C/USB ports
7. WORD CLOCK IN jack, 75 Ω ON/OFF switch, and WORD CLOCK OUT jack

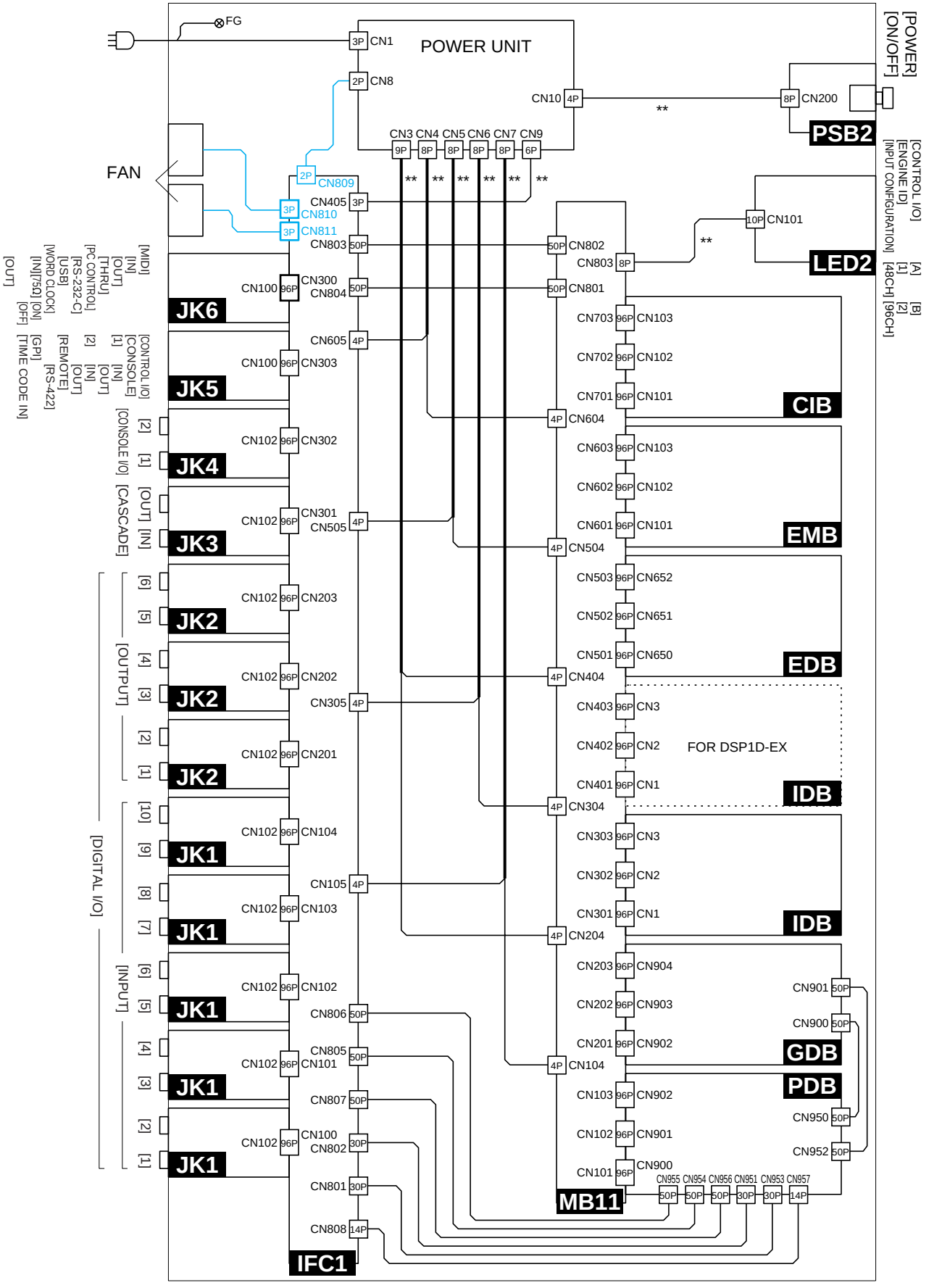
⑧ CONSOLE 1, 2 IN/OUT jacks
⑨ REMOTE RS-422 connector
⑩ GPI connector
⑪ TIME CODE IN connector
⑫ CONSOLE I/O 1, 2 slots
⑬ CASCADE IN, OUT slots
⑭ OUTPUT 1–6 slot
⑮ INPUT 1–10 slot
⑯ Ground connector

DIMENSIONS



Unit: mm

CONNECTOR CIRCUIT DIAGRAM



KEC-92539-2 ⚠

Circuit Board	CN No.	Pin No.
POWER UNIT	CN3	1
		2
		3
		4
		6
		7
		8
		9

Circuit Board	CN No.	Pin No.
MB11	CN204	1
		2
	CN404	1
		2
	CN204	4
		5
	CN404	4
		5

POWER UNIT	CN4	1
		2
		3
		4
		5
		6
		7
		8

MB11	CN604	1
		2
IFC1	CN605	1
		2
MB11	CN604	3
		4
IFC1	CN605	3
		4

POWER UNIT	CN5	1
		2
		3
		4
		5
		6
		7
		8

MB11	CN504	1
		2
IFC1	CN505	1
		2
MB11	CN504	3
		4
IFC1	CN505	3
		4

POWER UNIT	CN6	1
		2
		3
		4
		5
		6
		7
		8

MB11	CN304	1
		2
IFC1	CN305	1
		2
MB11	CN304	3
		4
IFC1	CN305	3
		4

POWER UNIT	CN7	1
		2
		3
		4
		5
		6
		7
		8

MB11	CN104	1
		2
IFC1	CN105	1
		2
MB11	CN104	3
		4
IFC1	CN105	3
		4

POWER UNIT	CN9	1
		5
		6

IFC1	CN405	1
		2
		3

POWER UNIT	CN10	1
		4

PSB2	CN200	1
		3

LED2	CN101	1
		2
		3
		4
		5
		6
		7
		8

MB11	CN803	1
		2
		3
		4
		5
		6
		7
		8

■ DISASSEMBLY PROCEDURE

1. GDB, IDB, EDB, EMB and CIB Circuit Boards

1-1 Remove the ten (10) screws marked [905]. The front cover can then be removed. (Fig. 1)

1-2 Remove the two (2) screws marked [850]. The reinforcement angle-A can then be removed. (Fig. 2)

1-3 Remove the GDB, IDB, EDB, EMB and CIB circuit boards by sliding forward. (Fig. 2)

2. PDB Circuit Board

2-1 Remove the front cover. (See procedure 1-1.)

2-2 Remove the reinforcement angle. (See procedure 1-2.)

2-3 Remove the eight (8) screws marked [960A]. The left frame can then be removed. (Fig. 3)

2-4 Remove the twelve (12) screws marked [920]. The side panel-L can then be removed. (Fig. 3)

2-5 Remove the PDB circuit board by sliding forward. (Fig. 2)

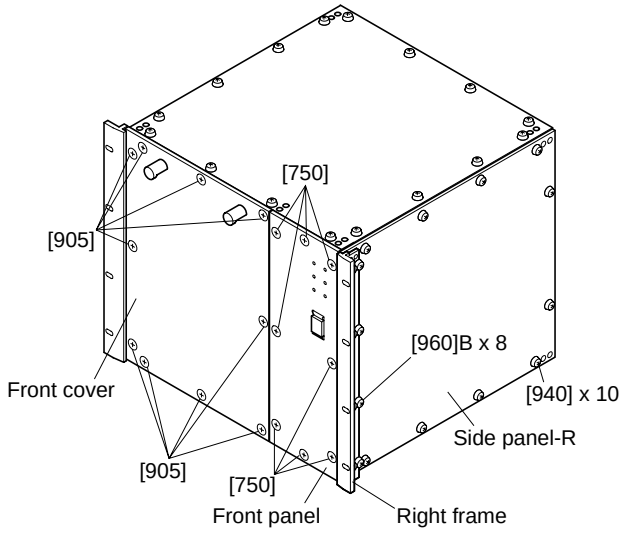
3. LED2 and PSB2 Circuit Boards

3-1 Remove the eight (8) screws marked [960B]. The right frame can then be removed. (Fig. 1)

3-2 Remove the eight (8) screws marked [750]. The front panel can then be removed. (Fig. 1)

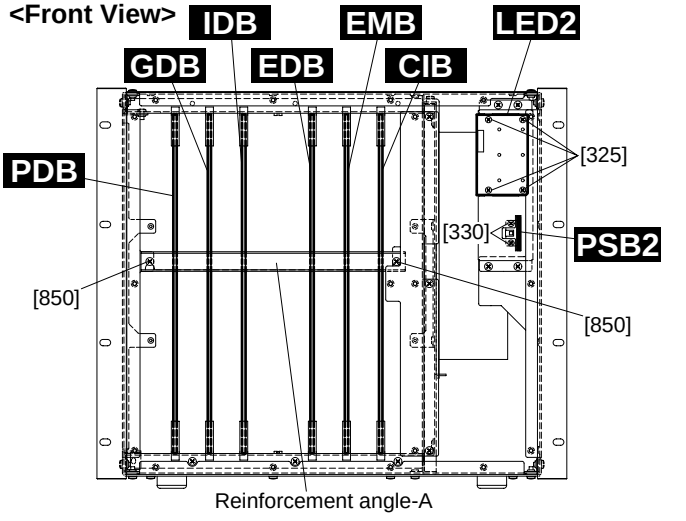
3-3 Remove the four (4) screws marked [325]. The LED2 circuit board can then be removed. (Fig. 2)

3-4 Remove the two (2) screws marked [330]. The PSB2 circuit board can then be removed. (Fig. 2)



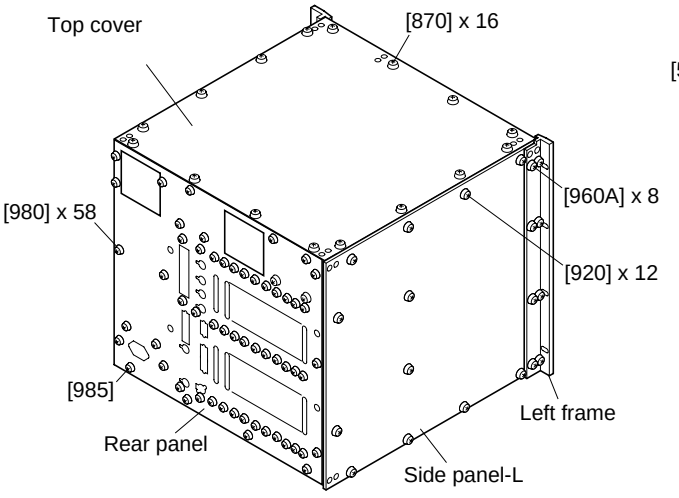
[750]: Oval Head Screw 3.0x6 MFZN2BL (VS153600)
[905]: Oval Head Screw 3.0x6 MFZN2BL (VS153600)
[940]: Bind Head Tapping Screw-B A4.0x8 MFZN2BL (VC688800)
[960B]: Oval Head Screw 3.0x6 MFZN2BL (VS153600)

Fig. 1



[325]: Bind Head Tapping Screw-B 3.0x6 MFZN2BL (EP600230)
[330]: Bind Head Screw 3.0x8 MFZN2BL (VB659000)
[850]: Bind Head Screw A4.0x8 MFZN2BL (VP156800)

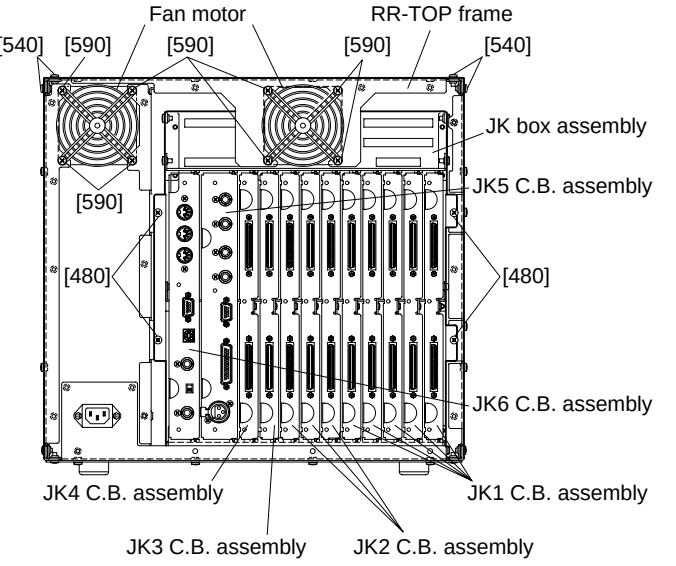
Fig. 2



[870]: Bind Head Tapping Screw-B A4.0x8 MFZN2BL (VC688800)
[920]: Bind Head Tapping Screw-B A4.0x8 MFZN2BL (VC688800)
[960A]: Oval Head Screw 3.0x6 MFZN2BL (VS153600)
[980]: Bind Head Tapping Screw-B A4.0x8 MFZN2BL (VC688800)
[985]: Bind Head Screw A4.0x8 MFZN2BL (VP156800)

Fig. 3

<Rear View>



[480]: Bind Head Tapping Screw-B A4.0x8 MFZN2BL (VC688800)
[540]: Bind Head Tapping Screw-B A4.0x8 MFZN2BL (VC688800)
[590]: Bind Head Screw 4.0x35 MFZN2BL (VG605800)

Fig. 4

4. Fan Motor

4-1 Remove the six-teen (16) screws marked [870]. The top cover can then be removed. (Fig. 3)

4-2 Remove the four (4) screws each marked [590]. The fan motor A or B can then be removed. (Fig. 4)

5. Power Supply Unit

5-1 Remove the top cover. (See procedure 4-1.)

5-2 Remove the right frame. (See procedure 3-1.)

5-3 Remove the ten (10) screws marked [940]. The side panel-R can then be removed. (Fig. 1)

5-4 Remove the fifty-eight (58) screws marked [980] and the screw marked [985]. The rear panel can then be removed. (Fig. 3)

5-5 Remove the eight (8) screws marked [540]. The RR-TOP frame can then be removed. (Fig. 4)

5-6 Remove the fan motor B. (See procedure 4.)

5-7 Remove the three (3) screws marked [560]. The power supply unit can then be removed by lifting up. (Fig. 5)

6. JK1-JK6 Circuit Board Assemblies

6-1 Remove the rear panel. (See procedure 5-4.)

6-2 Remove the JK1-JK6 circuit board assemblies by sliding forward. (Fig. 4)

7. IFC Circuit Board

7-1 Remove the top cover. (See procedure 4-1.)

7-2 Remove the left frame and the side panel-L. (See procedure 2-2, 2-3.)

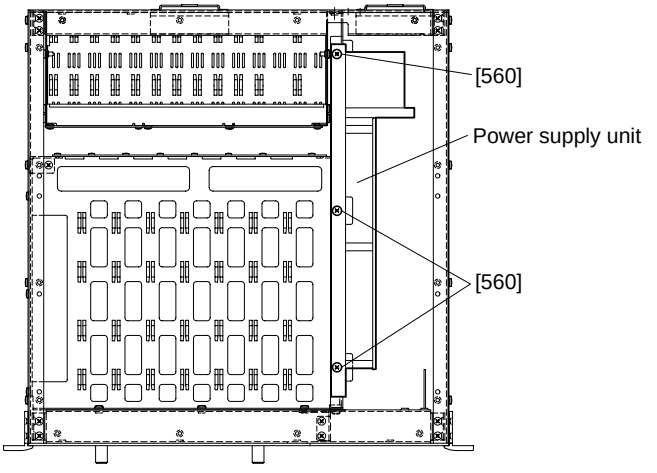
7-3 Remove the rear panel. (See procedure 5-4.)

7-4 Remove the RR-TOP frame. (See procedure 5-5.)

7-5 Remove the four (4) screws marked [480]. The JK box assembly can then be removed. (Fig. 4)

7-6 Remove the six-teen (16) screws marked [110]. The IFC1 circuit board can then be removed. (Fig. 6)

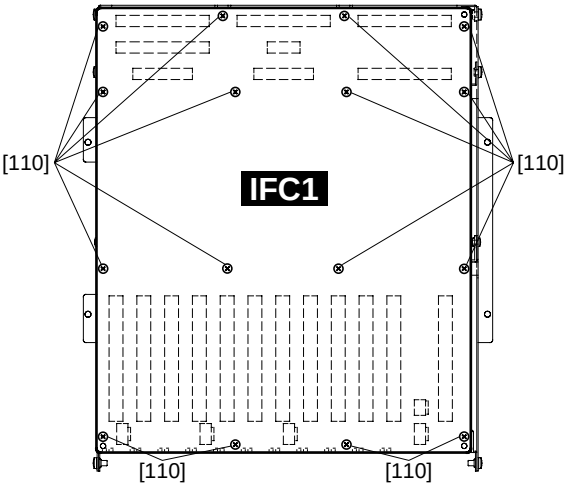
<Top View>



[560]: Bind Head Tapping Screw-B A4.0x12 MFZN2BL (VD831800)

Fig. 5

• JK Box Assembly



[110]: Bind Head Tapping Screw-B 3.0x6 MFZN2BL (EP600230)

Fig. 6

8. MB11 Circuit Board

8-1 Remove the top cover. (See procedure 4-1.)

8-2 Remove the left frame and the side panel-L. (See procedure 2-2, 2-3.)

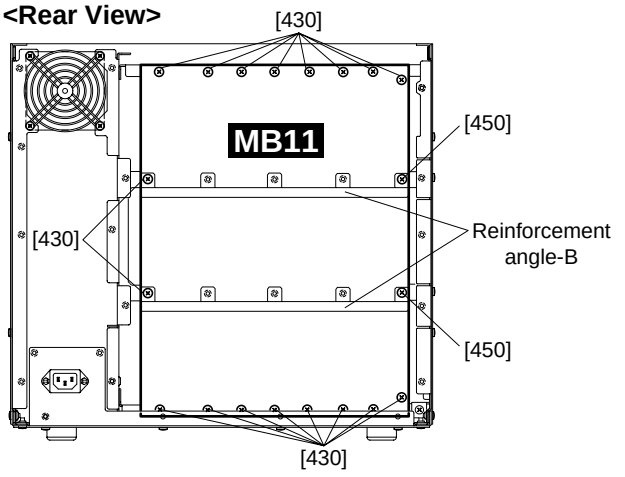
8-3 Remove the rear panel. (See procedure 5-4.)

8-4 Remove the RR-TOP frame. (See procedure 5-5.)

8-5 Remove the JK box assembly. (See procedure 7-5.)

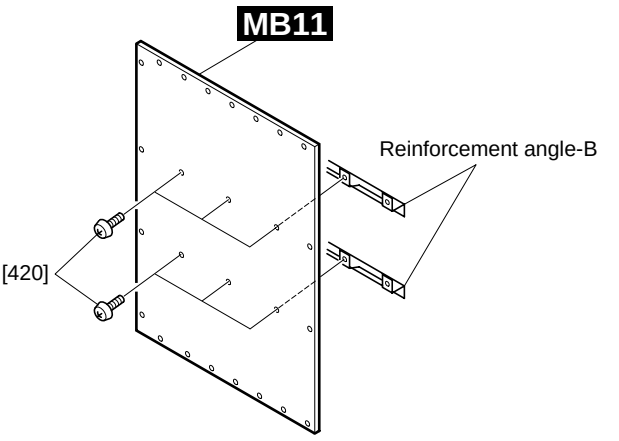
8-6 Remove the eight-teen (18) screws marked [430] and the two (2) screws marked [450]. The MB11 circuit board can then be removed with the reinforcement angle-B. (Fig. 7)

8-7 Remove the six (6) screws marked [420]. The reinforcement angle-B can then be removed from the MB11 circuit board. (Fig. 8)



[430]: Bind Head Tapping Screw-B 3.0x6 MFZN2BL (EP600230)
[450]: Bind Head Tapping Screw-B 3.0x6 MFZN2BL (EP600230)

Fig. 7



[420]: Bind Head Tapping Screw-B 3.0x6 MFZN2BL (EP600230)

Fig. 8

9. Replacement of the Lithium Battery

9-1 Remove the EMB circuit board. (See procedure 1.)

9-2 The lithium battery can be replacement on the EMB circuit board. (Fig. 9)

* The lithium battery is not a part of the EMB circuit board. When you replace the EMB circuit board, remove the lithium battery and install it in the new circuit board.

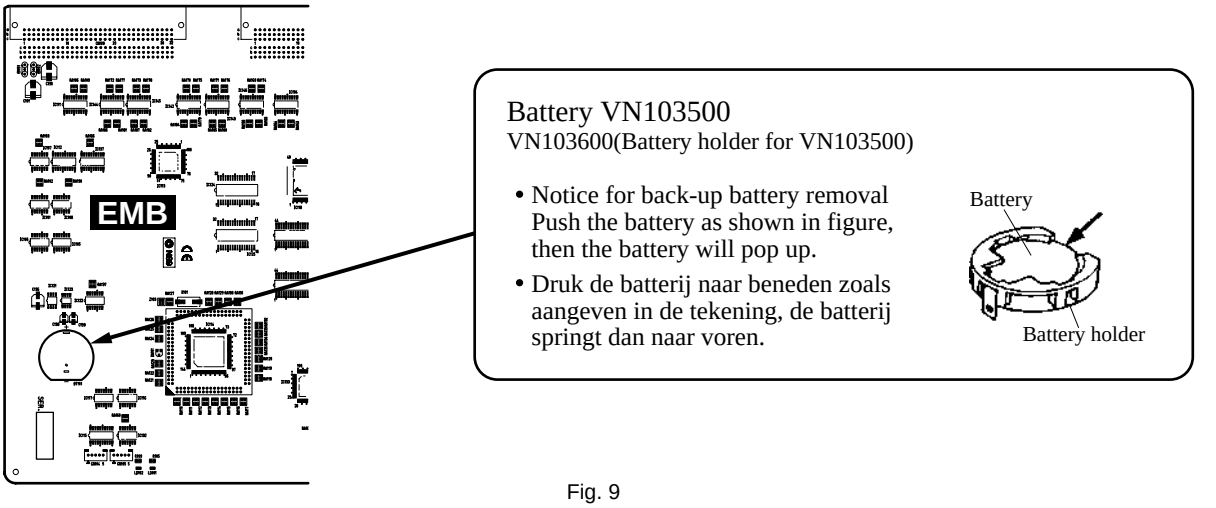


Fig. 9

■ LSI PIN DESCRIPTION

● **HD6477042AF28** (XY715A00) **CPU**

CIB: IC129,139 EDB: IC100 EMB: IC127
GDB: IC100 IDB: IC100 PDB: IC101

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	PE14	O	Port E	57	D11	I/O	Data bus
2	PE15	O	Port E	58	D10	I/O	
3	VSS	I	Ground	59	D9	I/O	
4	A0	O	Address bus	60	D8	I/O	
5	A1	O		61	VSS	I	Ground
6	A2	O		62	D7	I/O	Data bus
7	A3	O		63	D6	I/O	
8	A4	O		64	D5	I/O	
9	A5	O		65	VCC	I	Power supply
10	A6	O		66	D4	I/O	Data bus
11	A7	O		67	D3	I/O	
12	A8	O		68	D2	I/O	
13	A9	O		69	D1	I/O	
14	A10	O		70	D0	I/O	
15	A11	O		71	VSS	I	Ground
16	A12	O		72	XTAL	I	Crystal oscillator
17	A13	O		73	MD3	I	Mode control
18	A14	O		74	EXTAL	I	Crystal oscillator
19	A15	O		75	MD2	I	Mode control
20	A16	O		76	NMI	I	Non-maskable interrupt request
21	VCC	I	Power supply	77	VCC	I	Power supply
22	A17	O	Address bus	78	MD1	I	Mode control
23	VSS	I	Ground	79	MD0	I	Mode control
24	/RAS	O	Row address strobe	80	PLLVCC	I	PLL Power supply
25	/CASL	O	Column address strobe (low)	81	PLLCAP	I	PLL capacitor
26	/CASH	O	Column address strobe (high)	82	PLLVSS	I	PLL Ground
27	VSS	O	Ground	83	PA15 / CK	O	Port A / Clock
28	RDWR / PB5	O	DRAM read/write / Port B	84	/RES	I	Reset
29	A18	O	Address bus	85	PE0	I	Port E
30	A19	O		86	PE1	I	
31	A20	O		87	PE2	I	
32	PB9 /A21	O	Port B / Address bus	88	PE3	I	
33	VSS	I	Ground	89	PE4	I	
34	/RD	O	Read	90	VSS	I	Ground
35	/WDTOVF	O	Watch dog timer overflow	91	AN0 / PF0	I	Analog input / Port F
36	/WRH	O	High write	92	AN1 / PF1	I	
37	VCC	I	Power supply	93	AN2 / PF2	I	
38	/WRL	O	Low write	94	AN3 / PF3	I	
39	VSS	I	Ground	95	AN4 / PF4	I	
40	/CS1	O	Chip select	96	AN5 / PF5	I	
41	/CS0	O	Chip select	97	AVSS	I	Analog ground
42	PA9 / TCLKD	O	Port A / Timer clock	98	AN6 / PF6	I	Analog input / Port F
43	/IRQ2 / TCLKC	I	Interrupt request / Timer clock	99	AN7 / PF7	I	Analog input / Port F
44	/CS3	O	Chip select	100	AVCC	I	Power supply
45	/CS2	O	Chip select	101	VSS	I	Ground
46	/IRQ1	I	Interrupt request	102	PE5	O	Port E
47	TXD	O	Data transmission	103	VCC	I	Power supply
48	RXD	I	Data reception	104	PE6	O	Port E
49	/IRQ0	I	Interrupt request	105	PE7	O	
50	PA1 / TXD0	O	Port A / Data transmission	106	PE8	O	
51	PA0 / RXD0	I	Port A / Data reception	107	PE9	O	
52	D15	I/O	Data bus	108	PE10	O	
53	D14	I/O		109	VSS	I	Ground
54	D13	I/O		110	PE11	O	Port E
55	VSS	I	Ground	111	PE12	O	
56	D12	I/O	Data bus	112	PE13	O	

● **HD6477043AF33** (XY716A00) **CPU**

EMB: IC114

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	/WRHH	O	HH write	73	D15	I/O	
2	/DACK0/PE14	O	DAM transfer strobe/Port E	74	D14	I/O	
3	/WRHL	O	HL write	75	D13	I/O	Data bus
4	CASHH/PA21	I/O	HH Column address strobe/Port A	76	D12	I/O	
5	DACK1/PE15	O	DMA transfer strobe/Port E	77	VCC	I	Power supply
6	VSS	I	Ground	78	D11	I/O	Data bus
7	A0	O		79	VSS	I	Ground
8	A1	O		80	D10	I/O	
9	A2	O	Address bus	81	D9	I/O	
10	A3	O		82	D8	I/O	Data bus
11	A4	O		83	D7	I/O	
12	VCC	I	Power supply	84	D6	I/O	
13	A5	O	Address bus	85	VCC	I	Power supply
14	VSS	I	Ground	86	D5	I/O	Data bus
15	A6	O		87	VSS	I	Ground
16	A7	O		88	D4	I/O	
17	A8	O		89	D3	I/O	
18	A9	O		90	D2	I/O	Data bus
19	A10	O		91	D1	I/O	
20	A11	O	Address bus	92	D0	I/O	
21	A12	O		93	VSS	I	Ground
22	A13	O		94	XTAL	I	Crystal oscillator
23	A14	O		95	MD3	I	Mode select
24	A15	O		96	EXTAL	I	Crystal oscillator
25	A16	O		97	MD2	I	Mode select
26	VCC	I	Power supply	98	NMI	-	Non-maskable interrupt
27	A17	O	Address bus	99	VCC	I	Power supply
28	VSS	I	Ground	100	PA16	I/O	Port A
29	/CASHL/PA20	I/O	HL Column address strobe/Port A	101	PA17	I/O	Port A
30	PA19	I/O	Port A	102	MD1	I	Mode select
31	/RAS/PB2	O	Row address strobe/Port B	103	MD0	I	Mode select
32	/CASL/PB3	O	Column address strobe (low) /Port B	104	PLLVCC	I	PLL Power supply
33	PA18	I/O	Port A	105	PLLCAP	I	PLL capacitor
34	/CASH/PB4	O	Column address strobe (high) /Port B	106	PLLVSS	I	PLL Ground
35	VSS	I	Ground	107	CK/PA15	I/O	Clock/Port A
36	RDWR/PB5	O	DRAM read/write /Port B	108	/RES	I	Reset
37	A18	O		109	/DREQ0/TIOC0A/PE0	I/O	DMA transfer request/MTU input capture/output compare (ch 0)/Port E
38	A19	O	Address bus	110	PE1	I/O	Port E
39	A20	O		111	/DREQ1/PE2	I/O	DMA transfer request/Port E
40	VCC	I	Power supply	112	VCC	I	Power supply
41	A21	O	Address bus	113	PE3	I/O	
42	VSS	I	Ground	114	PE4	I/O	Port E
43	/RD	O	Read	115	PE5	I/O	
44	/WDTOVF	O	Watch dog timer overflow	116	PE6	I/O	
45	D31	I/O	Data bus	117	VSS	I	Ground
46	D30	I/O	Data bus	118	AN0 /PF0	I	
47	/WRH	O	High write	119	AN1/ PF1	I	
48	/WRL	O	Low write	120	AN2 /PF2	I	Analog input/Port F
49	/CS1	O	Chip select	121	AN3 /PF3	I	
50	/CS0	O	Chip select	122	AN4 /PF4	I	
51	/IRQ3/PA9	I/O	Interrupt request/Port A	123	AN5/PF5	I	
52	/IRQ2/PA8	I/O	Interrupt request/Port A	124	AVSS	I	Analog ground
53	/CS3	O	Chip select	125	AN6/PF6	I	Analog input/ Port F
54	/CS2	O	Chip select	126	AN7/PF7	I	Analog input /Port F
55	VSS	I	Ground	127	AVREF	I	Analog reference voltage
56	D29	I/O		128	AVCC	I	Analog power supply
57	D28	I/O		129	VSS	I	Ground
58	D27	I/O	Data bus	130	RxDO	I	Receive data
59	D26	I/O		131	TxDO	O	Transmit data
60	D25	I/O		132	/IRQ0/SCK0	I	Interrupt request/Serial clock
61	VSS	I	Ground	133	RxD1	I	Receive data
62	D24	I/O	Data bus	134	TxD1	I/O	SCI
63	VCC	I	Power supply	135	VCC	I	Power supply
64	D23	I/O		136	/IRQ1/SCK1	I	Interrupt request/Serial clock
65	D22	I/O		137	PE7	I/O	
66	D21	I/O		138	PE8	I/O	Port E
67	D20	I/O	Data bus	139	PE9	I/O	
68	D19	I/O		140	PE10	I/O	
69	D18	I/O		141	VSS	I	Ground
70	D17	I/O		142	TIOC3D/PE11	I/O	MTU input capture/output compare (ch 3)/Port E
71	VSS	I	Ground	143	PE12	I/O	Port E
72	D16	I/O	Data bus	144	PE13	I/O	Port E

EDB: IC300,304,350,354,400,404,450,454,500,503,550,553
GDB: IC300,305,350,351,400,403,450,451,500,503,550,551,600
IDB: IC250,255,300,301,350,351,400,401,450,453,500,501,550,551,600,601
PDB: IC500,505,550,551,600,603,650,700,701

● **YSS910-S** (XV988A00) **DSP6** (Digital Signal Processor)

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	Vdd		Power supply (3.3 V)	89	Vss		Ground
2	Vss		Ground	90	DB13	I/O	Parallel data bus
3	XI	I	System master clock input (60 MHz or 30 MHz)	91	DB14	I/O	
4	XO	O	System master clock output (High or 30 MHz)	92	DB15	I/O	
5	Vdd		Power supply (5 V)	93	DB16	I/O	
6	/SYNCI	I	Sync. signal input	94	DB17	I/O	
7	/SYNCO	O	Sync. signal output	95	DB18	I/O	
8	Vdd		Power supply (5 V)	96	DB19	I/O	
9	CKI	I	System clock input (30 MHz)	97	DB20	I/O	
10	CKO	O	System clock output (30 MHz)	98	DB21	I/O	
11	CKSEL	I	System master clock select (0: 60 MHz, 1: 30 MHz)	99	DB22	I/O	
12	Vss		Ground	100	Vss		Ground
13	MCKS	I	Serial I/O master clock input (128 x Fs)	101	Vdd		Power supply (3.3 V)
14	/SSYNC	I	Serial I/O Sync. signal output	102	DB23	I/O	Parallel data bus
15	/IC	I	Initial clear	103	DB24	I/O	
16	/TEST	I	Test mode setting (0: Test, 1: Normal)	104	DB25	I/O	
17	BTYP	I	Data bus type select (0: 8 bit, 1: 16 bit)	105	DB26	I/O	
18	/IRQ	O	IRQ output	106	DB27	I/O	
19	TRIG	I/O	Trigger signal input/output	107	DB28	I/O	
20	Vdd		Power supply (5 V)	108	DB29	I/O	
21	Vss		Ground	109	DB30	I/O	
22	/CS	I	chip select signal input	110	DB31	I/O	
23	/WR	I	Write signal input	111	TIMO/DBOB	I/O	Timing signal output/ Parallel data bus output/ input
24	/RD	I	Read signal input	112	Vss		Ground
25	CA7	I/O	Address bus of internal register	113	Vdd		Power supply (5 V)
26	CA6	I/O		114	DA00	I/O	Memory data bus
27	CA5	I/O		115	DA01	I/O	
28	CA4	I/O		116	DA02	I/O	
29	CA3	I/O		117	DA03	I/O	
30	CA2	I/O		118	DA04	I/O	
31	CA1	I/O		119	DA05	I/O	
32	Vss		Ground	120	DA06	I/O	
33	Vdd		Power supply (3.3 V)	121	DA07	I/O	
34	CD15	I/O	Data bus of internal register	122	Vss		Ground
35	CD14	I/O		123	DA08	I/O	Memory data bus
36	CD13	I/O		124	DA09	I/O	
37	CD12	I/O		125	DA10	I/O	
38	CD11	I/O		126	DA11	I/O	
39	CD10	I/O		127	DA12	I/O	
40	CD09	I/O		128	DA13	I/O	
41	CD08	I/O		129	DA14	I/O	
42	CD07	I/O		130	DA15	I/O	
43	CD06	I/O		131	Vss		Ground
44	Vss		Ground	132	Vdd		Power supply (3.3 V)
45	Vdd		Power supply (3.3 V)	133	(n.c)		Not used
46	Vdd		Power supply (5 V)	134	Vdd		Power supply (5 V)
47	CD05	I/O	Data bus of internal register	135	DA16	I/O	Memory data bus
48	CD04	I/O		136	DA17	I/O	
49	CD03	I/O		137	DA18	I/O	
50	CD02	I/O		138	DA19	I/O	
51	CD01	I/O		139	DA20	I/O	
52	CD00	I/O		140	DA21	I/O	
53	/WAIT	O	WAIT output	141	DA22	I/O	
54	Vss		Ground	142	DA23	I/O	
55	SI0	I	Serial data input	143	Vss		Ground
56	SI1	I		144	DA24	I/O	Memory data bus
57	SI2	I		145	DA25	I/O	
58	SI3	I		146	DA26	I/O	
59	SI4	I		147	DA27	I/O	
60	SI5	I		148	DA28	I/O	
61	SI6	I		149	DA29	I/O	
62	SI7	I		150	DA30	I/O	
63	Vss		Ground	151	DA31	I/O	
64	Vdd		Power supply (5 V)	152	Vdd		Power supply (5 V)
65	SO0	O	Serial data output	153	Vss		Ground
66	SO1	O		154	A00	O	Memory address (SRAM, PSRAM, DRAM)
67	SO2	O		155	A01	O	
68	SO3	O		156	A02	O	
69	SO4	O		157	A03	O	
70	SO5	O		158	A04	O	
71	SO6	O		159	A05	O	
72	SO7	O		160	A06	O	
73	Vss		Ground	161	A07	O	
74	DB00	I/O	Parallel data bus	162	A08	O	
75	DB01	I/O		163	A09	O	
76	DB02	I/O		164	Vss		Ground
77	DB03	I/O		165	Vdd		Power supply (3.3 V)
78	DB04	I/O		166	A10	O	Memory address (SRAM, PSRAM, DRAM)
79	DB05	I/O		167	A11	O	
80	DB06	I/O		168	A12	O	Memory address (SRAM, PSRAM)
81	DB07	I/O		169	A13	O	
82	DB08	I/O		170	A14	O	
83	DB09	I/O		171	A15/RAS	O	Memory address (SRAM, PSRAM), /RAS (DRAM)
84	DB10	I/O		172	A16/CAS	O	Memory address (SRAM, PSRAM), /CAS (DRAM)
85	DB11	I/O		173	A17/CE	O	Memory address (SRAM), /CE (PSRAM)
86	DB12	I/O		174	/WE	O	Memory write enable signal
87	Vdd		Power supply (5 V)	175	/OE	O	Memory output enable signal
88	Vdd		Power supply (3.3 V)	176	Vdd		Power supply (5 V)

GDB: IC250,251,650,651,750,751,800
IDB: IC650,651,700,701,750,751,800,801
PDB: IC250,251,300,301,350,351,400,401,450,750,751

● **YSS904-F** (XV989A00) **DSP5** (Digital Signal Processor)

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	NC			105	NC		
2	NC			106	NC		
3	NC		Not used	107	NC		Not used
4	NC			108	NC		
5	Vdd		Ground	109	SIO28	I/O	
6	Vss	I	Power supply	110	SIO29	I/O	
7	XI	O	System master clock input (60 MHz or 30 MHz)	111	SIO30	I/O	Serial data bus
8	XO	O	System master clock output (High or 30 MHz)	112	SIO31	I/O	
9	Vdd		Ground	113	Vss		Power supply
10	/SYNCI	I	Sync. signal input	114	Vdd		Ground
11	/SYNCO	O	Sync. signal output	115	SIO32	I/O	
12	Vdd		Ground	116	SIO33	I/O	
13	CKI	I	System clock input (30 MHz)	117	SIO34	I/O	
14	CKO	O	System clock output (30 MHz)	118	SIO35	I/O	
15	CKSEL	I	System master clock select	119	SIO36	I/O	Serial data bus
16	Vss		Power supply	120	SIO37	I/O	
17	MCKD	I	Serial clock input (256 fs)	121	SIO38	I/O	
18	/SSYNC	I	Serial. signal input	122	SIO39	I/O	
19	/IC	I	Initial clear	123	Vss		Power supply
20	/TEST	I	Test mode setting (0: TEST, 1: Normal)	124	Vdd		Ground
21	NC			125	SIO40	I/O	
22	NC		Not used	126	SIO41	I/O	
23	NC			127	SIO42	I/O	
24	Vdd		Ground	128	SIO43	I/O	Serial data bus
25	Vss		Power supply	129	SIO44	I/O	
26	/CS	I	Chip select	130	SIO45	I/O	
27	/WR	I	Write enable input	131	SIO46	I/O	
28	/RD	I	Read enable input	132	SIO47	I/O	
29	CA7	I		133	Vss		Power supply
30	CA6	I		134	SIO48	I/O	
31	CA5	I		135	SIO49	I/O	
32	CA4	I	CPU address bus	136	SIO50	I/O	
33	CA3	I		137	SIO51	I/O	Serial data bus
34	CA2	I		138	SIO52	I/O	
35	CA1	I		139	SIO53	I/O	
36	Vss		Power supply	140	SIO54	I/O	
37	Vdd		Ground	141	SIO55	I/O	
38	CD15	I/O		142	Vss		Power supply
39	CD14	I/O		143	Vdd		
40	CD13	I/O		144	Vdd		Ground
41	CD12	I/O		145	SIO56	I/O	
42	CD11	I/O		146	SIO57	I/O	
43	CD10	I/O	CPU data bus	147	SIO58	I/O	
44	CD09	I/O		148	SIO59	I/O	
45	CD08	I/O		149	SIO60	I/O	Serial data bus
46	CD07	I/O		150	SIO61	I/O	
47	CD06	I/O		151	SIO62	I/O	
48	Vss		Power supply	152	SIO63	I/O	
49	NC			153	NC		
50	NC			154	NC		
51	NC			155	NC		
52	NC			156	NC		
53	NC		Not used	157	NC		Not used
54	NC			158	NC		
55	NC			159	NC		
56	NC			160	NC		
57	Vdd			161	Vss		Power supply
58	Vdd		Ground	162	/POE	I	Parallel data bus controll signal
59	CD05	I/O		163	Vss		Power supply
60	CD04	I/O		164	PIO00	I/O	
61	CD03	I/O		165	PIO01	I/O	
62	CD02	I/O	CPU data bus	166	PIO02	I/O	
63	CD01	I/O		167	PIO03	I/O	
64	CD00	I/O		168	PIO04	I/O	Parallel data bus
65	/WAIT	O	Wait output	169	PIO05	I/O	
66	Vss		Power supply	170	PIO06	I/O	
67	SIO00	I/O		171	PIO07	I/O	
68	SIO01	I/O		172	Vss		Power supply
69	SIO02	I/O		173	Vdd		
70	SIO03	I/O		174	Vdd		Ground
71	SIO04	I/O	Serial data bus	175	PIO08	I/O	
72	SIO05	I/O		176	PIO09	I/O	
73	SIO06	I/O		177	PIO10	I/O	
74	SIO07	I/O		178	PIO11	I/O	
75	Vss		Power supply	179	PIO12	I/O	Parallel data bus
76	Vdd		Ground	180	PIO13	I/O	
77	SIO08	I/O		181	PIO14	I/O	
78	SIO09	I/O		182	PIO15	I/O	
79	SIO10	I/O		183	Vss		Power supply
80	SIO11	I/O		184	NC		Not used
81	SIO12	I/O	Serial data bus	185	PIO16	I/O	
82	SIO13	I/O		186	PIO17	I/O	
83	SIO14	I/O		187	PIO18	I/O	
84	SIO15	I/O		188	PIO19	I/O	
85	Vss		Power supply	189	PIO20	I/O	Parallel data bus
86	Vdd		Ground	190	PIO21	I/O	
87	SIO16	I/O		191	PIO22	I/O	
88	SIO17	I/O		192	PIO23	I/O	
89	SIO18	I/O		193	Vss		Power supply
90	SIO19	I/O		194	Vdd		
91	SIO20	I/O	Serial data bus	195	Vdd		Ground
92	SIO21	I/O		196	PIO24	I/O	
93	SIO22	I/O		197	PIO25	I/O	
94	SIO23	I/O		198	PIO26	I/O	
95	Vss		Power supply	199	PIO27	I/O	
96	Vdd		Ground	200	PIO28	I/O	Parallel data bus
97	SIO24	I/O		201	PIO29	I/O	
98	SIO25	I/O		202	PIO30	I/O	
99	SIO26	I/O	Serial data bus	203	PIO31	I/O	
100	SIO27	I/O		204	Vss		Power supply
101	NC			205	NC		
102	NC			206	NC		
103	NC		Not used	207	NC		Not used
104	NC			208	NC		

● SGH609080F-47F (XU235A00) ATSC

JK1: IC109,110,119,120 JK2: IC100,101,113,114
JK3: IC111-114 JK4: IC109,110,118,119

PIN NO.	NAME	I/O	FUNCTION
1	syncati	I	Synch. word input terminal for ati, siat3-0 input
2	mccti	I	64 fs clock input terminal for ati, siat3-0 input
3	mcbti	I	128 fs clock input terminal for ati, siat3-0 input
4	VCC		Power supply (+5 V)
5	GND		Ground
6	mcati	I	256 fs clock input terminal for ati, siat3-0 input
7	GND		Ground
8	siat0	I	Serial data input terminal
9	siat1	I	
10	siat2	I	
11	siat3	I	
12	ati	I	Optical input terminal
13	GND		Ground
14	ato	O	Optical output terminal
15	soat3	O	Serial data output terminal
16	soat2	O	
17	soat1	O	
18	soat0	O	
19	VCC		Power supply (+5 V)
20	GND		Ground
21	mcato	I	256 fs clock input terminal for ato, soat3-0 output
22	GND		Ground
23	mcbto	I	128 fs clock input terminal for ato, soat3-0 output
24	mccto	I	64 fs clock input terminal for ato, soat3-0 output
25	syncato	I	Synch. word input terminal for ato, soat3-0 output
26	clksel	I	Clock select terminal for ato, soat 3-0 output 0: mcato,mcbto,mccto,syncato 1: mcai,mcbi,mcci,synci
27	ato-sel0	I	Format select terminal for ato, soat3-0 output
28	ato-sel1	I	Format select terminal for ato, soat3-0 output
29	bitsel2		Bit shift select terminal for the ato output
30	bitsel1		
31	bitsel0		
32	VCC		Power supply (+5 V)
33	GND		Ground
34	ext-sync2		Synch. detect output terminal 2
35	ui0		U-bit input terminal for optical output
36	ui1		
37	ui2		
38	ui3		
39	si-sel0		input format select terminal for si3-0
40	si-sel1		input format select terminal for si3-0i

0: mcato,mcbto,mccto,syncato
1: mcai,mcbi,mcci,synci

ato sel1	ato sel0	output format	
1	1	ato	
1	0	soat0	(8ch/line)
0	1	soat2, 0	(4ch/line)
0	0	soat3-0	(2ch/line)

si sel1	si sel0	input format	
1	1	not enable to set	
1	0	si0	(8ch/line)
0	1	si2, 0	(4ch/line)
0	0	si3-0	(2ch/line)

PIN NO.	NAME	I/O	FUNCTION
41	synci	I	Synch. word input terminal for si3-0 input
42	mcci	I	64 fs clock input terminal for si3-0 input
43	mcbi	I	128 fs clock input terminal for si3-0 input
44	VCC		Power supply (+5 V)
45	GND		Ground
46	mcai	I	256 fs clock input terminal for si3-0 input
47	GND		Ground
48	si0	I	Serial data input terminal
49	si1	I	
50	si2	I	
51	si3	I	
52	GND		Ground
53	so3	O	Serial data output terminal
54	so2	O	
55	so1	O	
56	so0	O	
57	VCC		Power supply (+5 V)
58	GND		Ground
59	mcao	I	256 fs clock input terminal for so3-0 output
60	GND		Ground
61	mcbo	I	128 fs clock input terminal for so3-0 output
62	mcco	I	64 fs clock input terminal for so3-0 output
63	synco	I	Synch. word input terminal for so3-0 output
64	so-sel1	I	Format select terminal for soat3-0 output
65	so-sel0	I	Format select terminal for soat3-0 output
66	uo3	O	U-bit output terminal for optical output
67	uo2	O	
68	uo1	O	
69	uo0	O	
70	ext-sync1	O	Synch. detect output terminal 1
71	VCC		Power supply (+5 V)
72	GND		Ground
73	clk	I	Clock input terminal for word clock extract
74	GND		Ground
75	/res	I	System reset input terminal
76	GND		Ground
77	wc-at	O	Word clock output terminal
78	mute	I	Data mute input terminal
79	ati-sel1	I	Input format select terminal for ati, siat3-0.
80	ati-sel0	I	input format select terminal for ati, siat3-0.

so sel1	so sel0	input format	
1	1	not enable to set	
1	0	so0	(8ch/line)
0	1	so2, 0	(4ch/line)
0	0	so3-0	(2ch/line)

ati sel1	ati sel0	input format	
1	1	ati	
1	0	ati0	(8ch/line)
0	1	ati2, 0	(4ch/line)
0	0	ati3-0	(2ch/line)

IFC1: IC604-606 JK1: IC112,121
JK2: IC112,121 JK3: IC110,126
JK4: IC112,120 JK6 IC202

● **YM3436DK** (XG948E0) **DIR2** (Digital Format Interface Receiver)

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	DAUX	I	Auxiliary input for audio data	23	RSTN	I	System reset input
2	HDLT	O	Asynchronous buffer operation flag	24	Vdda		VCO section power (+5 V)
3	DOUT	O	Audio data output	25	CTLN	I	VCO control input N
4	VFL	O	Parity flag output	26	PCO	O	PLL phase comparison output
5	OPT	O	Fs x 1 Synchronous output signal for DAC	27	(NC)		
6	SYNC	O	Fs x 1 Synchronous output signal for DSP	28	CTLP	I	VCO control input P
7	MCC	O	Fs x 64 Bit clock output	29	Vssa		VCO section power (GND)
8	WC	O	Fs x 1 Word clock output	30	TSTN	I	Test terminal. Open for normal use
9	MCB	O	Fs x 128 Bit clock output	31	KM2	I	Clock mode switching input 2
10	MCA	O	Fs x 256 Bit clock output	32	KM0	I	Clock mode switching input 0
11	SKSY	I	Clock synchronization control input	33	FS1	O	Channel status sampling frequency display output 1
12	XI	I	Crystal oscillator connection or external clock input	34	FS0	O	Channel status sampling frequency display output 0
13	XO	O	Crystal oscillator connection	35	CSM	I	Channel status output method selection
14	P256	O	VCO oscillating clock connection	36	EXTW	I	External synchronous auxiliary input word clock
15	LOCK	O	PLL lock flag	37	DDIN	I	EIAJ (AES/EBU) data input
16	Vss		Logic section power (GND)	38	LR	O	PLL word clock output
17	TC	O	PLL time constant switching output	39	Vdd		Logic section power (+5 V)
18	DIM1	I	Data input mode selection	40	ERR	O	Data error flag output
19	DIM0	I	Data input mode selection	41	EMP	O	Channel status emphasis control code output
20	DOM1	I	Data output mode selection	42	CD0	O	3-wire type microcomputer interface data output
21	DOM0	I	Data output mode selection	43	CCK	I	3-wire type microcomputer interface clock input
22	KM1	I	Clock mode switching input 1	44	CLD	I	3-wire type microcomputer interface load input

● **AM7992BPC** (XW277A00) **SIA** (Serial Interface Adapter)

CIB: IC112-115

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	CLSN	O	Collision (Output, TTL Active HIGH)	13	Collision+	I	Collision
2	RX	O	Receive Data	14	Collision-	I	Collision
3	RENA	O	Receive Enable (Output, TTL Acvtive HIGH)	15	Receive+	I	Receiver
4	RCLK	O	Receive Clock	16	Receive-	I	Receiver
5	TSEL	I/O	Transmit Mode Select (Output, Open Collector; Input, Sense Amplifier)	17	/TEST	I	Test Control
				18	Vcc1	-	High Current and Logic Supply
6	GND1	-	High Current Ground	19	Vcc2	-	Voltage-Controlled Oscillator Supply
7	GND2	-	Logic Ground	20	PF	I	Receive Path Vco Phase-Locked Loop Filter
8	X1	I	Biased Crystal Oscillator	21	RF	O	Frequency Setting Voltage-Controlled
9	X2	I	Biased Crystal Oscillator				Oscillator (Vco) Loop Filter (Output)
10	TX	I	Transmit	22	GND3	-	Voltage-Controlled Oscillator Ground
11	TCLK	O	Transmit Clock	23	Transmit+	O	Transmit
12	TENA	I	Transmit Enable	24	Transmit-	O	Transmit

● ICS2008A (XV619A00) T.C. Reader/Generator

CIB: IC136

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	INTR	O	Interrupt request	23	CTS	I	Clear to send
2	RESET	I	Master reset	24	TXD	O	UART transmit data
3	FRAME	I	Color frame A / B input	25	RTS	O	Ready to send
4	CLICK	I	LTC SYNC input	26	LRCLK	O	SMPTE LTC receive clock
5	LTCIN-	I	SMPTE LTC input -	27	VITCGATE	O	VITE cord is for video overlay
6	LTCIN+	I	SMPTE LTC input +	28	VITCOUT	O	SMPTE VITE output
7	LTCOUT	O	SMPTE LTC output	29	A0	I	Address bus
8	LFC	I	External RC circuit	30	A1	I	Address bus
9	XTAL2	O	14.318 MHz crystal oscillator	31	/SMPTECS	I	SMPTE port chip select
10	XTAL1	I	14.318 MHz crystal oscillator	32	/UARTSC	I	UART chip select
11	AVDD	-	Analog power supply	33	/IOR	I	Read enable
12	AVSS	-	Analog ground	34	VSS	-	Digital ground
13	COUT	O	C(Chroma) output	35	VDD	-	Digital power supply
14	YOUT	O	Y(Luma) output	36	/IOW	I	Write enable
15	C2	I	C(Chroma) input	37	D0	I/O	Data bus
16	Y2	I	Y(Luma) input	38	D1	I/O	
17	C1	I	C(Chroma) input	39	D2	I/O	
18	Y1	I	Y(Luma) input	40	D3	I/O	
19	STHRESH	I	SYNC threshold bypass input	41	D4	I/O	
20	CTHRESH	I	Clamp threshold bypass input	42	D5	I/O	
21	DTHRESH	I	Data threshold bypass input	43	D6	I/O	
22	RXD	I	UART receive data	44	D7	I/O	

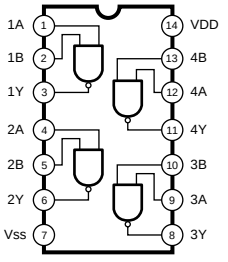
● PDIUSBD12PW (XW583A00) USB Interface

JK6: IC105

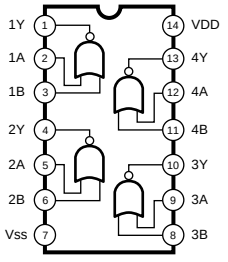
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	DATA0	I/O	Bit 0 of bi-directional data.	15	RD_N	I	Read Strobe (Active Low)
2	DATA1	I/O	Bit 1 of bi-directional data.	16	WR_N	I	Write Strobe (Active Low)
3	DATA2	I/O	Bit 2 of bi-directional data.	17	DMREQ	O	DMA Request.
4	DATA3	I/O	Bit 3 of bi-directional data.	18	DMACK_N	I	DMA Acknowledge (Active Low).
5	GND	-	Ground	19	EOT_N	I	End of DMA Transfer (Active Low).
6	DATA4	I/O	Bit 4 of bi-directional data.	20	RESET_N	I	Reset (Active Low and asynchronous).
7	DATA5	I/O	Bit 5 of bi-directional data.				Built-in Power-On-Reset circuit
8	DATA6	I/O	Bit 6 of bi-directional data.	21	GL_N	O	GoodLink LED indicator (Active Low)
9	DATA7	I/O	Bit 7 of bi-directional data.	22	XTAL1	I	Crystal Connection 1 (6 MHz)
10	ALE	I	Address Latch Enable.	23	XTAL2	O	Crystal Connection 2 (6 MHz)
11	CS_N	I	Chip Select (Active Low).	24	Vcc	-	Voltage supply (4.0-5.5 V)
12	SUSPEND	I/O	Device is in Suspend state.	25	D-	-	USB D-data line
13	CLKOUT	O	Programmable Output Clock (slew-rate controlled)	26	D+	-	USB D+data line
14	INT_N	O	interrupt (Active Low)	27	Vout3.3	-	3.3 V regulated output.
				28	A0	I	Address bit. A0=1 selects command instruction; A0=0 selects the data phase.

■ IC BLOCK DIAGRAM

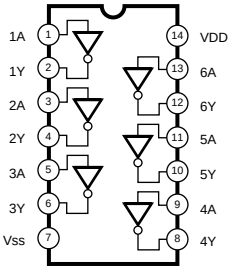
● **HD74LV00AFPEL** (IS000000)
Quad 2 Input NAND
EMB: IC101,105



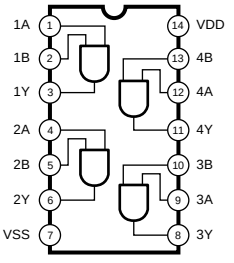
● **HD74LV02AFPEL** (IS00020)
Quad 2 Input NOR
CIB: IC104 JK1: IC100
JK3: IC108 JK4: IC100



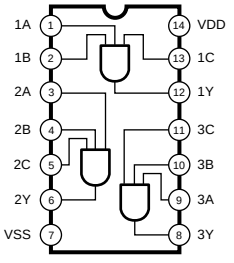
● **HD74LV04AFPEL** (IS000400)
HD74LV05AFPEL (IS000500)
SN74LS06NSR (XP985A00)
Hex Inverter
CIB: IC103,117,128,151 EDB: IC109,IC110
EMB: IC107,108,151 GDB: IC109,IC110
IDB: IC111,116 IFC1: IC601
JK1: IC102,141 JK2: IC109,141
JK3: IC100,141 JK4: IC102,121,141
JK5: IC108 JK6: IC100,IC108
PDB: IC109,IC115



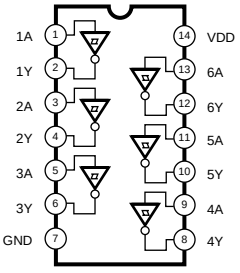
● **HD74LV08AFPEL** (IS000800)
Quad 2 Input AND
CIB: IC131,141 EDB: IC106,107
EMB: IC116,117,129 GDB: IC106,107
IDB: IC114,115 IFC1: IC602
JK1: IC140 JK2: IC140 JK3: IC140
JK4: IC140 JK6: IC207 PDB: IC102,103



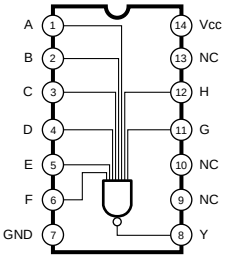
● **HD74LV11AFPEL** (IS001100)
Triple 3 Input AND
CIB: IC1102
EMB: IC132



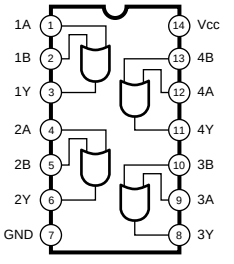
● **HD74LV14AFPEL** (IS001400)
Hex Inverter
JK6: IC107



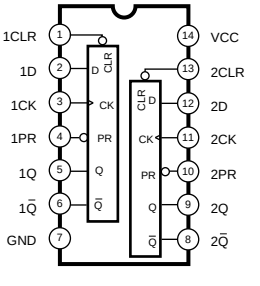
● **HD74HC30FPTL** (XQ970A00)
8 Input NAND
EMB: IC106



● **HD74LV32AFPEL** (IS003200)
Quad 2 Input OR
CIB: IC134 EDB: IC105 EMB: IC122
GDB: IC108 GDB: IC108
IDB: IC112,113 JK1: IC126
JK2: IC126 JK3: IC130
JK4: IC125 PDB: IC100,108

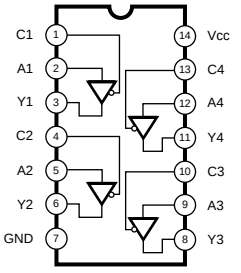


● **HD74LV74AFPEL** (IS007400)
Dual D-Type Flip-Flop
CIB: IC111

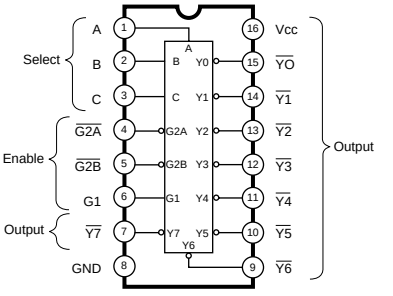


INPUTS				OUTPUTS	
PR	CLR	CLK	D	Q	Q
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H	H
H	H	f	H	H	L
H	H	f	L	L	H
H	H	L	X	Q₀	Q₀

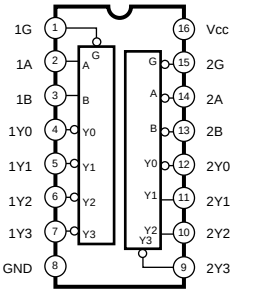
- **SN74HC125N** (IR012550)
  HD74LV125AFPEL (IS012500)
  Quad 3-State Bus Buffer
  CIB: IC148,150 EMB: IC149
  JK: IC107



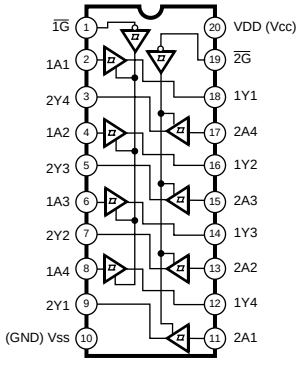
- **SN74LV138ANSR** (IS013810)
  3 to 8 Demultiplexer
  CIB: IC152



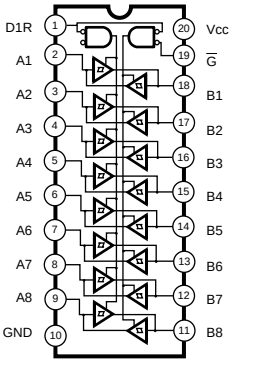
- **SN74LV139ANSR** (IS013910)
  Dual 2 to 4 Demultiplexer
  JK1: IC125 JK2: IC125
  JK3: IC131 JK4: IC124



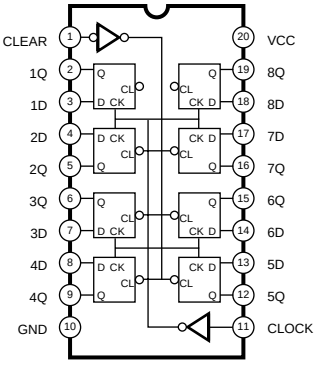
- **HD74LV244AFPEL** (IS024400)
  Octal 3-State Bus Buffer
  IDB: IC855



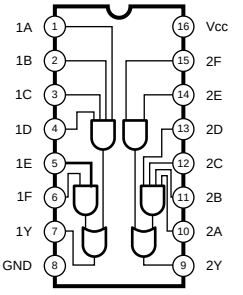
- **HD74LV245AFPEL** (IS024500)
  TC74VHC245F (XT487A00)
  TC74VHCT245AF (XV242A00)
  TC74HC245AP (IR024500)
  Octal 3-State Bus Transceiver
  CIB: IC105-110,120,121,130,135,137,140,145,146
  EDB: IC101,250-253,255-260,306,307,600-606
  EMB: IC120-104,109,112,115,128,134,137-147
  GDB: IC102,220-229,303,304,850-871
  IDB: IC220-232,253,254,850-854,856-863,900-913,IC102
  IFC1: IC504-507,509,608-610,701-717
  JK1: IC122-124,128-133
  JK2: IC122-124,128-134
  JK3: IC115,116,127-129,132,134-138
  JK5: IC103,104,105
  JK4: IC122,123,127-134
  JK6: IC103,104,103,204
  PDB: IC105,103,110-112,200-202,204-206,503,504,
  800-822,850-872,900-904



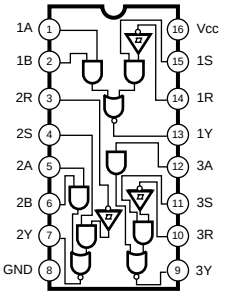
- **HD74LV273AFPEL** (IS027300)
  SN74HC273N (IR027350)
  Octal D-Type Flir Flop
  CIB: IC124 EMB: IC136 JK1: IC127
  JK2: IC127 JK3: IC117-119,133
  JK4: IC126 JK5: IC102



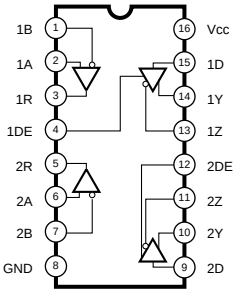
- **SN75121NSR** (XU816A00)
  Dual Line Driver
  JK6: IC200



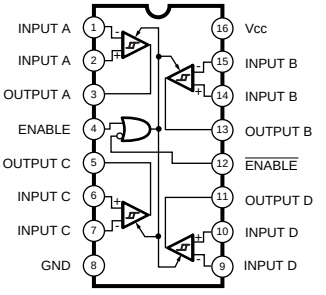
- **SN75124NSR** (XV930A00)
  Triple Line Receiver
  JK6: IC201



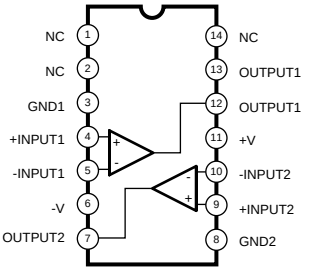
- **SN75C1168N** (XU463A00)
  Line Driver / Receiver
  JK5: IC101



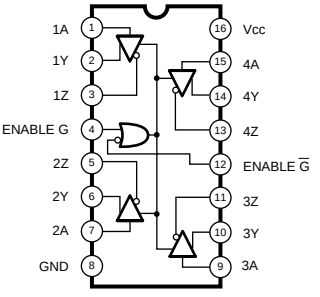
- **DS26C32ATMX** (XU815A00)
  Quad Differential Line Receiver
  JK1: IC103-107,113-117
  JK2: IC104,116
  JK3: IC101,102,104-106,125
  JK4: IC103-105,113-115



- **µPC319C** (IG086700)
  Voltage Comparator
  JK5: IC100



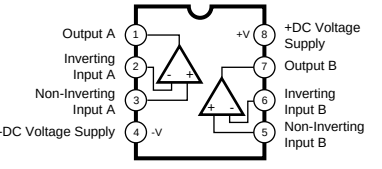
- **AM26LS31CNSR** (XU996A00)
  Quad Line Driver
  JK1: IC108,118
  JK2: IC103,105-108,115,117-120
  JK3: IC107,120-124
  JK4: IC106-108,116,117



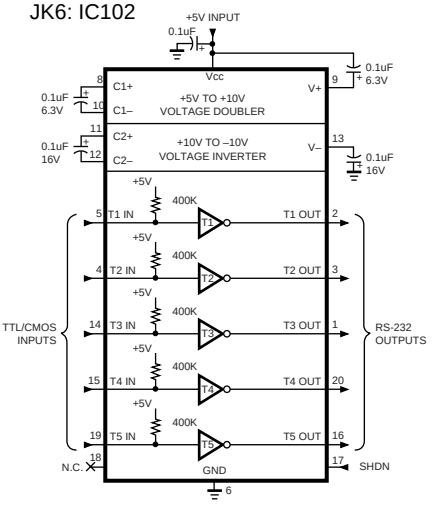
INPUT	ENABLES		OUTPUTS	
A	G	$\overline{G}$	Y	Z
H	H	X	H	L
L	H	X	L	H
H	X	L	H	L
L	X	L	L	H
X	L	H	Z	Z

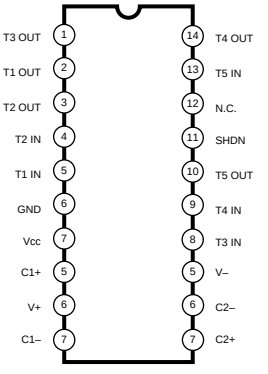
H= high level X= irrelevant
L= low level Z= high impedance (off)

- **NJM2082M (T1)** (XN797A00)
  NJM4560D (IG040000)
  Dual Operational Amplifier
  EMB: IC121
  JK5: IC106



- **MAX202CSE** (XP113A00)
  RS-232C Transceiver
  JK6: IC102





- **DP8392CN** (XW278A00)
  CTI
  JK5: IC201,301,401,501