



DSP UNIT **DSP/***D*

DSP UNIT **DSP/***D* -EX

Owner's Manual



FCC INFORMATION (U.S.A.)

1. **IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!** This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.
2. **IMPORTANT:** When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.
3. **NOTE:** This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures: Relocate either this product or the device that is being affected by the interference. Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s. In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable. If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave, Buena Park, CA 90620

The above statements apply **ONLY** to those products distributed by Yamaha Corporation of America or its subsidiaries.

WARNING: THIS APPARATUS MUST BE EARTHED

IMPORTANT

THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

GREEN-AND-YELLOW : EARTH
BLUE : NEUTRAL
BROWN : LIVE

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

The wire which is coloured GREEN and YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol \perp or coloured GREEN and YELLOW.

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

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

* This applies only to products distributed by YAMAHA KEMBLE MUSIC (U.K.) LTD.

ADVARSEL!

Lithiumbatteri—Eksplodingsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandoren.

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.

NEDERLAND

- Dit apparaat bevat een lithium batterij voor geheugen back-up.
- Raadpleeg uw leverancier over de verwijdering van de batterij op het moment dat u het apparaat aan het einde van de levensduur afdankt of de volgende Yamaha Service Afdeling:
Yamaha Music Nederland Service Afdeling
Kanaalweg 18-G, 3526 KL UTRECHT
Tel. 030-2828425
- Gooi de batterij niet weg, maar lever hem in als KCA.

THE NETHERLANDS

- This apparatus contains a lithium battery for memory back-up.
- For the removal of the battery at the moment of the disposal at the end of the service life please consult your retailer or Yamaha Service Center as follows:
Yamaha Music Nederland Service Center
Address: Kanaalweg 18-G, 3526 KL
UTRECHT
Tel: 030-2828425
- Do not throw away the battery. Instead, hand it in as small chemical waste.

Windows 95/98® is a registered trademark of Microsoft in the U.S.A. and other countries.

■ Precautions

- Do not allow water to enter this unit or allow the unit to become wet. Fire or electrical shock may result.
- Connect this unit's power cord only to an AC outlet of the type stated in this Owner's Manual or as marked on the unit. Failure to do so is a fire and electrical shock hazard.
- Do not scratch, bend, twist, pull, or heat the power cord. A damaged power cord is a fire and electrical shock hazard.
- Do not place heavy objects, including this unit, on top of the power cord. A damaged power cord is a fire and electrical shock hazard. In particular, be careful not to place heavy objects on a power cord covered by a carpet.
- Be sure to ground the unit to avoid the risk of electrical shock
- If you notice any abnormality, such as smoke, odor, or noise, or if a foreign object or liquid gets inside the unit, turn it off immediately. Remove the power cord from the AC outlet. Consult your dealer for repair. Using the unit in this condition is a fire and electrical shock hazard.
- Should this unit/AC adapter/power supply be dropped or the cabinet be damaged, turn the power switch off, remove the power plug from the AC outlet, and contact your dealer. If you continue using the unit without heeding this instruction, fire or electrical shock may result.
- If the power cord is damaged (i.e., cut or a bare wire is exposed), ask your dealer for a replacement. Using the unit with a damaged power cord is a fire and electrical shock hazard.
- Do not remove the unit's cover. You could receive an electrical shock. If you think internal inspection, maintenance, or repair is necessary, contact your dealer.
- Do not modify the unit. Doing so is a fire and electrical shock hazard.
- When rack-mounting the unit, allow enough free space around the unit for normal ventilation. This should be: 10 cm behind, and 20 cm above.
- For normal ventilation during use, remove the rear of the rack or open a ventilation hole.
- If the airflow is not adequate, the unit will heat up inside and may cause a fire.
- This unit has ventilation holes at the rear and bottom to prevent the internal temperature rising too high. Do not block them. Blocked ventilation holes are a fire hazard.
- Hold the power cord plug when disconnecting it from an AC outlet. Never pull the cord. A damaged power cord is a potential fire and electrical shock hazard.
- Do not touch the power plug with wet hands. Doing so is a potential electrical shock hazard.
- The digital circuits of this unit may induce a slight noise into nearby radios and TVs. If noise occurs, relocate the affected equipment.
- If the message "WARNING LOW BATTERY!" appears when you turn on this unit, contact your dealer as soon as possible about replacing the internal data backup battery. The unit will still operate correctly, but data other than the presets will be lost. Before you replace the battery, store your data to an ATA-compliant PC flash storage card via the CS1D, or store the data to the personal computer by connecting the computer to the PC CONTROL "RS-232-C" connector on the DSP1D/DSP1D-EX.
- The unit is equipped with the ground connector to avoid the risk of electrical shock. Be sure to ground the unit before you insert the power plug into an AC outlet. If the power cord has three pins and the ground connector on the AC outlet is grounded, the unit will be grounded effectively.

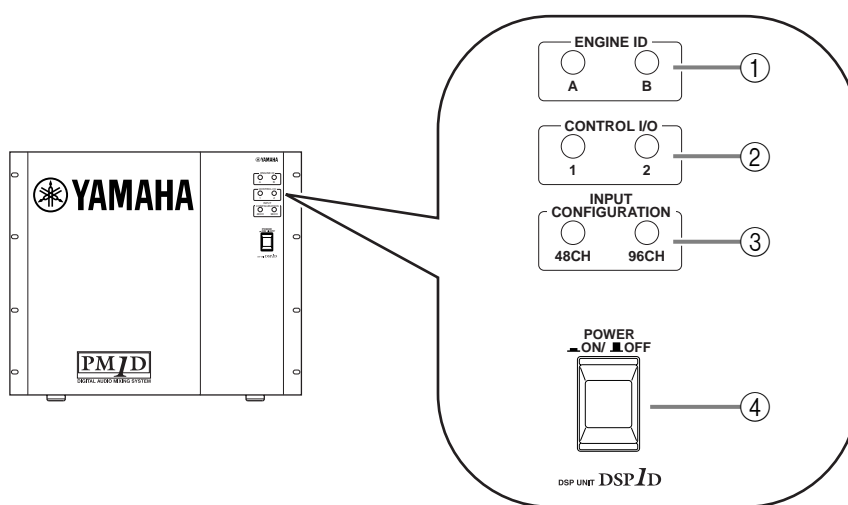
Thank you for choosing the DSP unit “DSP1D/DSP1D-EX”, specifically designed for the Yamaha PM1D digital audio mixing system. The DSP1D/DSP1D-EX is an engine controlled by the CS1D control surface.

Be sure to ask an authorized Yamaha service engineer to install the boards and set up the unit. Never perform installation and setup by yourself.

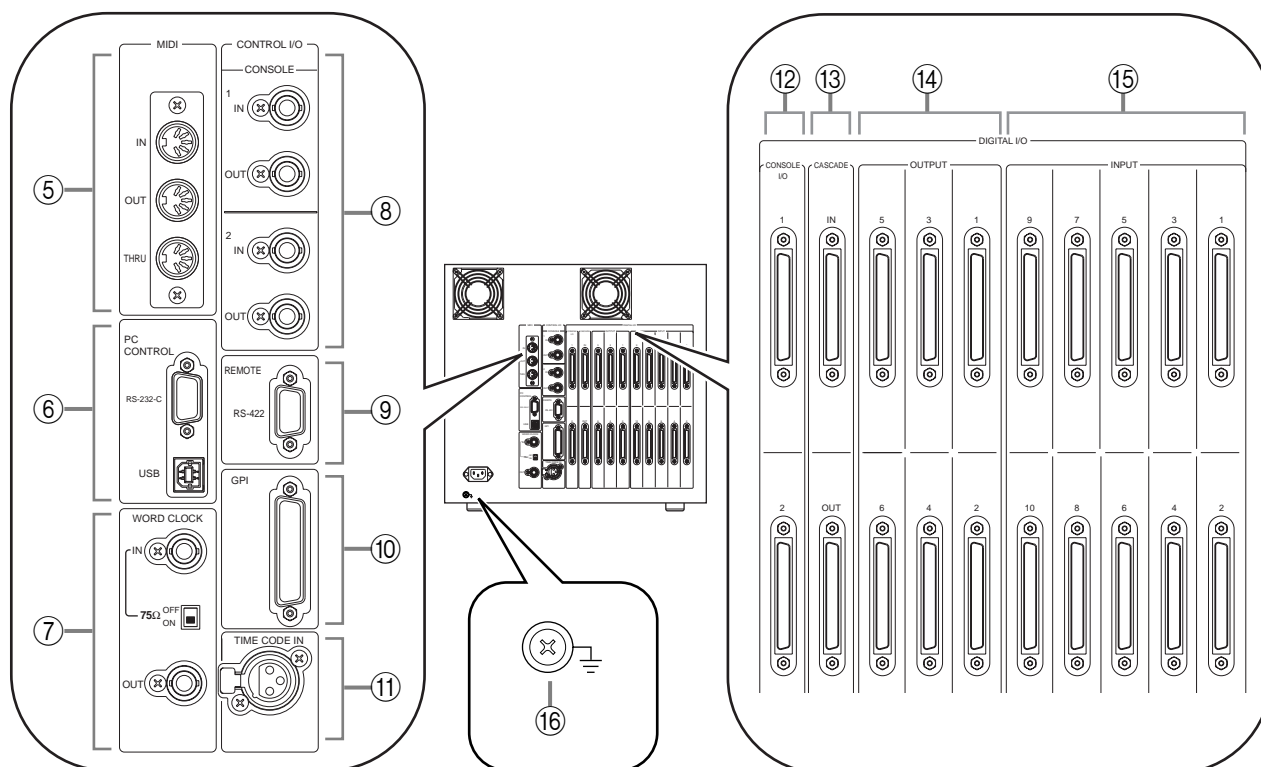
The following optional boards can be installed in the DSP1D.

- **CIB1D** : Console interface board
- **EMB1D** : Engine management board
- **PDB1D** : Patch DSP board
- **GDB1D** : Group DSP board
- **EDB1D** : Effect DSP board
- **IDB1D** : Input DSP board

■ Front panel



■ Rear panel



① ENGINE ID A/B indicators

These indicators indicate whether the DSP1D/DSP1D-EX is connected to the engine A or engine B channel.

Indicator A lights up if the DSP1D/DSP1D-EX is connected to the engine A channel jacks of the CS1D control surface (DIGITAL I/O jack A and CONTROL I/O jack A). Indicator B lights up if the DSP1D/DSP1D-EX is connected to the engine B channel jacks of the CS1D control surface (DIGITAL I/O jack B and CONTROL I/O jack B).

Error indication

- **If both ENGINE ID A and B indicators are flashing:**

→ There is a malfunction in the internal board (PDB, GDB, IDB1/2, EDB, EMB, or CIB). Or the necessary board does not exist.

- **If either ENGINE ID A or B indicator is flashing:**

→ During the Mirror mode operation, the ENGINE ID indicator for the unused DSP1D/DSP1D-EX flashes, indicating that the unit is in standby mode.

→ If Indicator A is flashing, unit A is in standby mode. If Indicator B is flashing, unit B is in standby mode.

② CONTROL I/O 1/2 indicators

These indicators indicate which one of two CONSOLE 1, 2 IN/OUT jacks (⑧) on the rear panel is currently effective.

Note:

When you turn on the power to the DSP1D/DSP1D-EX and the CS1D, and communication between the DSP1D/DSP1D-EX and the CS1D is established, one of these two indicators lights up. If neither one lights up, check the connection of the CONSOLE 1, 2 IN OUT jacks on the rear panel.

Error indication

- **If the CONTROL I/O 1 indicator is flashing:**

→ Communication between the CS1D control surface and the DSP1D is not established. The CONSOLE 1, 2 IN OUT jacks or the PC CONTROL port is not connected correctly.

③ INPUT CONFIGURATION 48CH/96CH indicators

These indicators indicate how many input channels are currently available. On the DSP1D, the 48CH indicator lights up. On the DSP1D-EX, the 96CH indicator lights up.

Error indication

- **If the INPUT CONFIGURATION 48CH is flashing:**

→ The signal is not locking to the word clock.

④ POWER ON/OFF switch

Use this switch to turn the power to the DSP1D/DSP1D-EX on or off. When the power is turned on, the indicators ① - ③ light up.

⑤ MIDI IN/OUT/THRU connectors

These connectors are used to transmit and receive Program change messages, MMC, and other MIDI messages among external MIDI devices.

⑥ PC CONTROL RS-232-C/USB ports

Connect these ports to a PC that runs Windows 95 or Windows 98 to control the PM1D system from the PC. Use a D-sub, 9-pin cross cable (female to female) to connect the RS-232-C port to the serial (COM) port on the PC. The USB port is provided for future system expansion, but it is not operative in the current software version.

⑦ WORD CLOCK IN jack, 75 Ω ON/OFF switch, and WORD CLOCK OUT jack

The WORD CLOCK IN jack is used to provide word clock to the PM1D system from the connected external device, such as a clock generator. Use the WORD CLOCK OUT jack to provide the word clock to the connected external device from the PM1D. Use a BNC cable with an impedance of 75 Ω for the WORD CLOCK IN/OUT jacks.

The WORD CLOCK ON/OFF switch is used to terminate the word clock connection. Basically, if the DSP1D/DSP1D-EX is the last device of the word clock chain, or if nothing is connected to the WORD CLOCK IN/OUT jacks, set this switch to ON.

⑧ CONSOLE 1, 2 IN/OUT jacks

These jacks are connected to the CONTROL I/O CONSOLE jacks of the CS1D control surface to transmit or receive control signals. For connection, use a genuine Yamaha cable or a BNC cable with an impedance of 50 Ω.

⑨ REMOTE RS-422 connector

This D-sub 9-pin connector is used to control a connected tape recorder or a hard disk recorder. Serial commands can be transmitted through this connector to play or stop such a recorder.

This connector is provided for future system expansion, but it is not operative in the current software version.

⑩ GPI connector

This connector is used to connect an external device that supports GPI (General Purpose Interface), such as a video editor to control the external device from the PM1D system or to perform certain functions of the PM1D system while controlling from the external device. You can connect a custom-made external switch here.

This connector is provided for future system expansion, but it is not operative in the current software version.

11 TIME CODE IN connector

This balanced XLR3-31 connector receives SMPTE time code (LTC) for analog input from the external device. The rated input level is -10 dB, and the pin assignment is as follows.

1=ground, 2=hot, 3=cold

12 CONSOLE I/O 1, 2 slots

Connect these slots to the DIGITAL I/O CONSOLE jacks of the CS1D control surface to transmit multi-channel digital audio signals. Use a genuine Yamaha half-pitch 68-pin cable for connection.

13 CASCADE IN, OUT slots

Use one of these connectors to cascade two DSP1D/DSP1D-EX units to transmit multi-channel digital audio signals. Use a genuine Yamaha half-pitch 68-pin cable to connect the CASCADE IN (or OUT) to the CASCADE OUT (or IN) of another DSP1D/DSP1D-EX.

These connectors are provided for future system expansion, but they are not operative in the current software version.

14 OUTPUT 1–6 slot

Use these slots to connect the INPUT connectors of an analog output unit AO8 series or DIO8 digital I/O unit to output multi-channel digital audio signals from the DSP1D/DSP1D-EX. Use a genuine Yamaha half-pitch 68-pin cable for connection.

15 INPUT 1–10 slot

Use these slots to connect the OUTPUT connectors of an analog input unit AI8 series or DIO8 digital I/O unit series to input multi-channel digital audio signals to the DSP1D/DSP1D-EX. Use a genuine Yamaha half-pitch 68-pin cable for connection.

16 Ground connector

Be sure to ground the unit to avoid the risk of electrical shock before you insert the power plug into an AC outlet. This product comes with a 3-pin power cord. If the ground connector of the AC outlet has already been grounded, the unit will be grounded effectively by using the 3-pin power cord.

Grounding the unit is also effective for preventing hum and other noise.

■ 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 × H × D)	480 mm × 408.7 mm × 460.8 mm
Weight	33 kg
Operating temperature	10 – 35°C
Fan circuit	always fixed
Accessories	power cable 2.5 m × 1

Digital I/Os

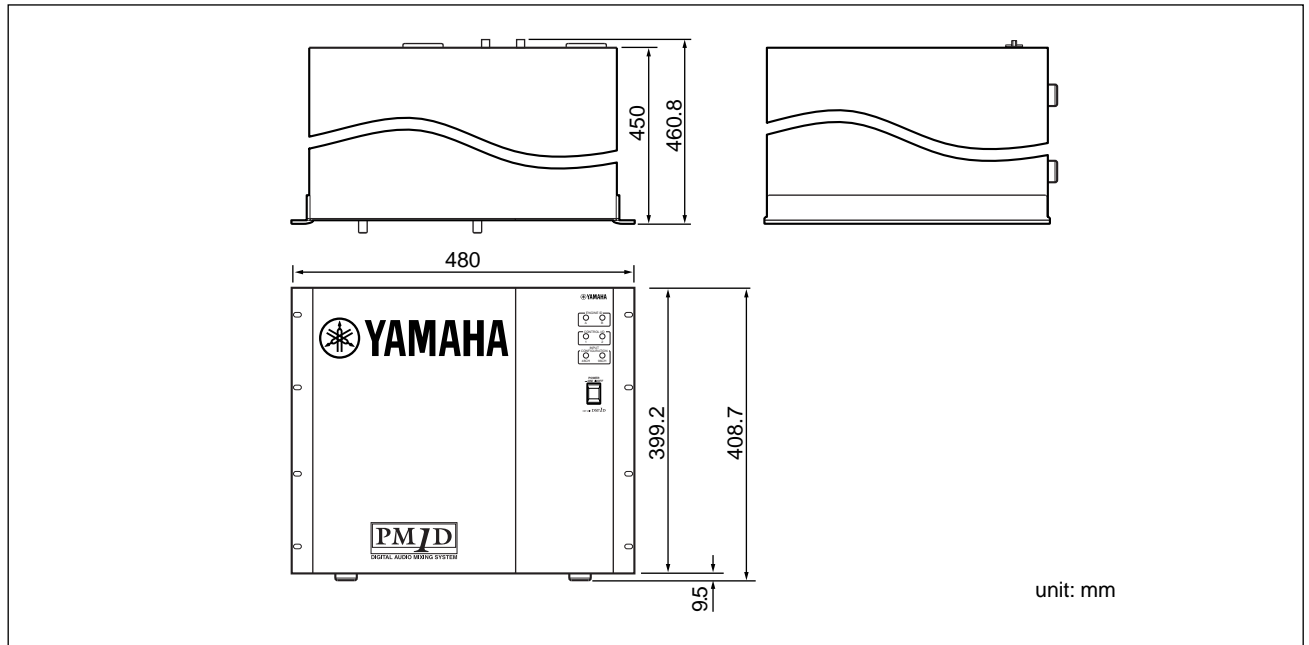
I/O connectors	Level	Type
DIGITAL I/O INPUT 1 –10	RS-422	D-sub, half-pitch, 68-pin connector (female) × 10
DIGITAL I/O OUTPUT 1 – 6	RS-422	D-sub, half-pitch, 68-pin connector (female) × 6
DIGITAL I/O CASCADE IN, OUT	RS-422	D-sub, half-pitch, 68-pin connector (female) × 2
DIGITAL I/O CONSOLE I/O 1, 2	RS-422	D-sub, half-pitch, 68-pin connector (female) × 2
CONTROL I/O CONSOLE 1 IN, OUT	-0.225V — -1.825V/50 Ω	BNC connector × 2
CONTROL I/O CONSOLE 2 IN, OUT	-0.225V — -1.825V/50 Ω	BNC connector × 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 × 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.

■ Dimensions



- Specifications and appearance are subject to change without notice for improvement.
- For European Model
Purchaser/User information specified in EN55103-1 and EN55103-2.
Inrush Current: 31A
Conformed Environment: E1, E2, E3 and E4.

