



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.

### COMPLIANCE INFORMATION STATEMENT (DECLARATION OF CONFORMITY PROCEDURE)

Responsible Party : Yamaha Corporation of America  
Address : 6600 Orangethorpe Ave., Buena Park, Calif. 90620  
Telephone : 714-522-9011  
Type of Equipment : DSP Unit  
Model Name : DSP1D/DSP1D-EX

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- 1) this device may not cause harmful interference, and
- 2) this device must accept any interference received including interference that may cause undesired operation.

See user manual instructions if interference to radio reception is suspected.

### ADVARSEL!

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

### WARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparatillverkaren. 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.

\* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA. (FCC DoC)

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.

### NEDERLAND / THE NETHERLANDS

- Dit apparaat bevat een lithium batterij voor geheugen back-up.
- This apparatus contains a lithium battery for memory back-up.
- Raadpleeg uw leverancier over de verwijdering van de batterij op het moment dat u het apparaat aan het einde van de levensduur of gelieve dan contact op te nemen met de vertegenwoordiging van Yamaha in uw land.
- For the removal of the battery at the moment of the disposal at the end of life please consult your retailer or Yamaha representative office in your country.
- Gooi de batterij niet weg, maar lever hem in als KCA.
- Do not throw away the battery. Instead, hand it in as small chemical waste.

(lithium disposal)

This product contains a battery that contains perchlorate material. Perchlorate Material—special handling may apply, See [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate).

\* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA. (Perchlorate)

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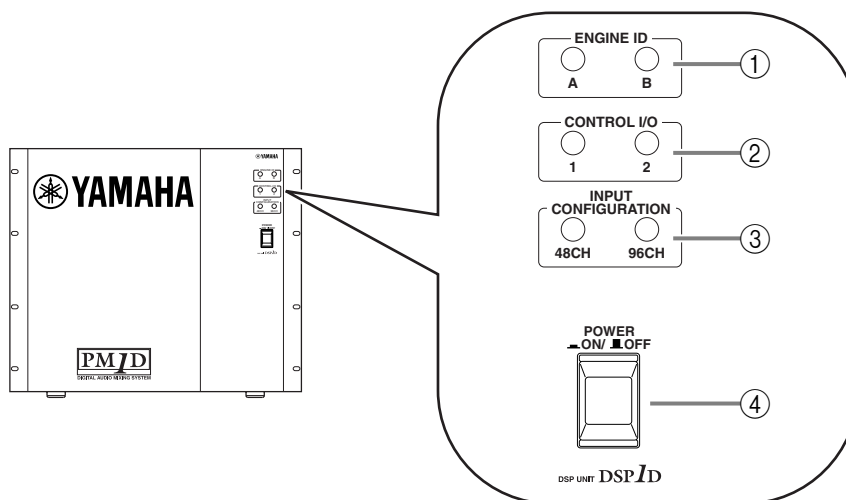
Thank you for choosing the DSP unit “DSP1D/DSP1D-EX”, specifically designed for the Yamaha PM1D digital audio mixing system. The DSP1D/DSP1D-EX is an engine controlled by the CS1D control surface.

**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.**

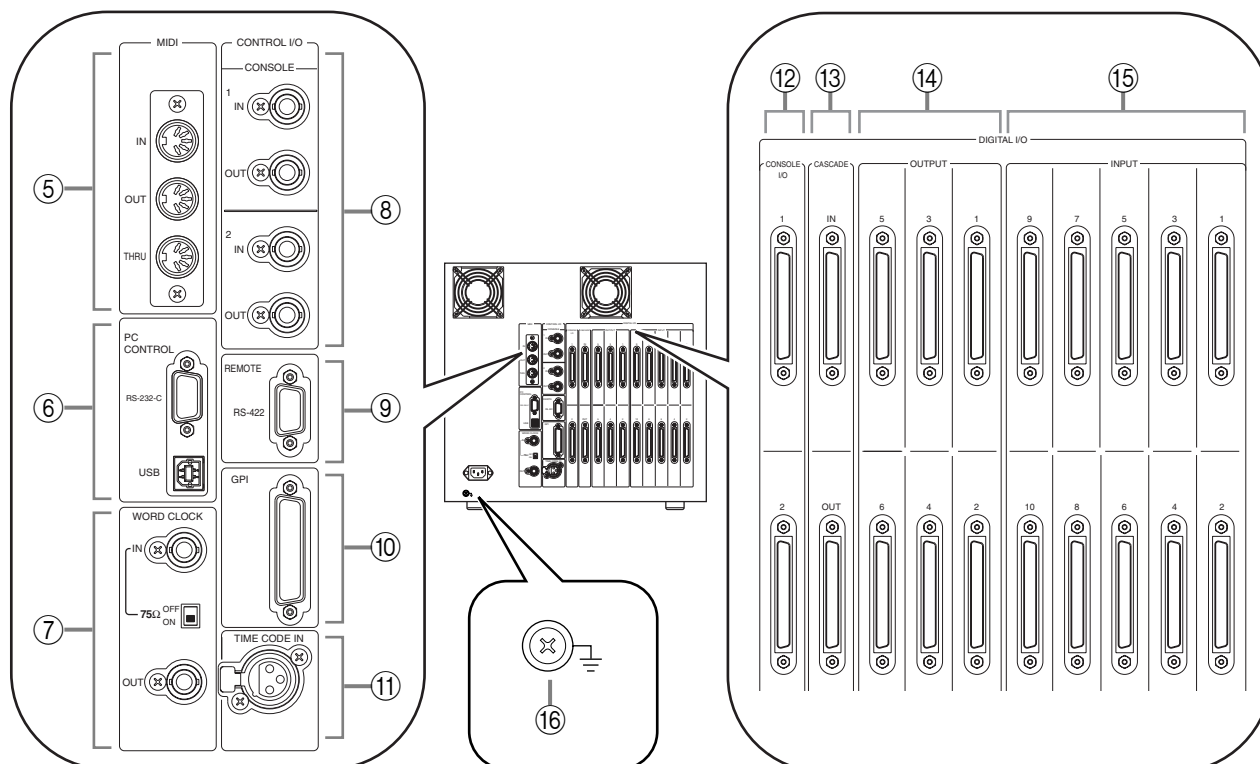
The following optional boards can be installed in the DSP1D.

- **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 2000 or Windows XP 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. Alternatively use a USB cable to connect the USB port to the USB port on the PC.

### 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.

### 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.

### 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.

### 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

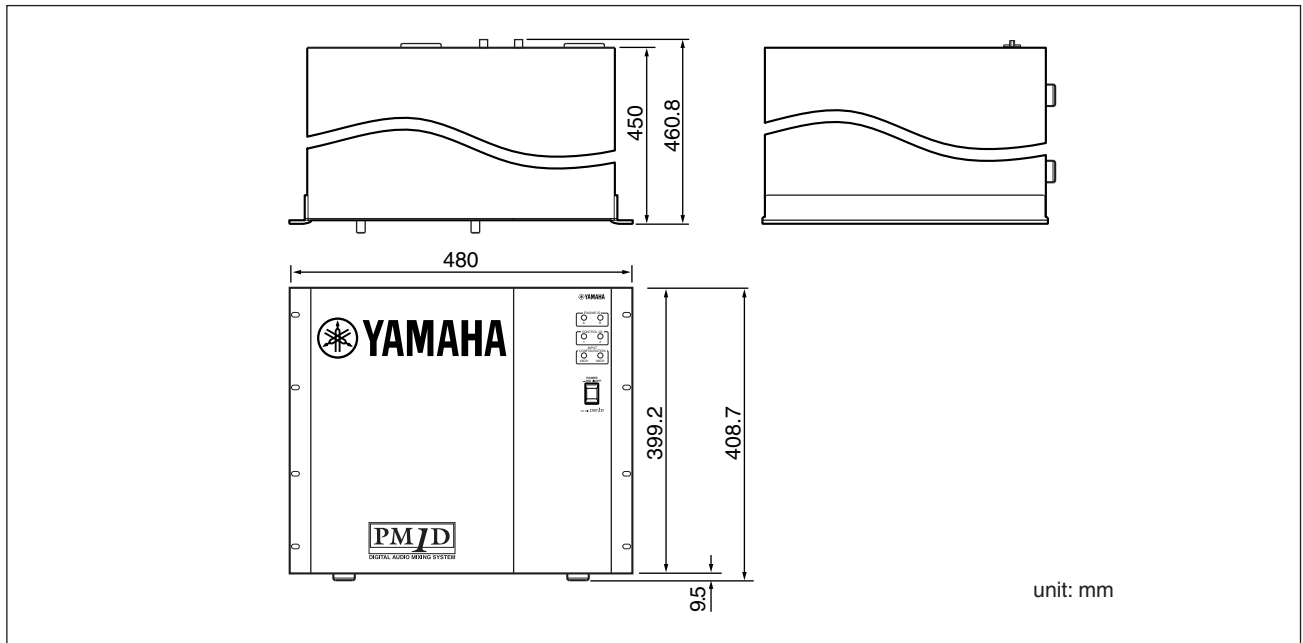
I/O connectors	Level	Type
DIGITAL I/O INPUT 1 –10	RS-422	D-sub, half-pitch, 68-pin connector (female) × 10
DIGITAL I/O OUTPUT 1 – 6	RS-422	D-sub, half-pitch, 68-pin connector (female) × 6
DIGITAL I/O CASCADE IN, OUT	RS-422	D-sub, half-pitch, 68-pin connector (female) × 2
DIGITAL I/O CONSOLE I/O 1, 2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

For details of products, please contact your nearest Yamaha representative or the authorized distributor listed below.

Pour plus de détails sur les produits, veuillez-vous adresser à Yamaha ou au distributeur le plus proche de vous figurant dans la liste suivante.

Die Einzelheiten zu Produkten sind bei Ihrer unten aufgeführten Niederlassung und bei Yamaha Vertragshändlern in den jeweiligen Bestimmungsländern erhältlich.

Para detalles sobre productos, contacte su tienda Yamaha más cercana o el distribuidor autorizado que se lista debajo.

## NORTH AMERICA

### CANADA

**Yamaha Canada Music Ltd.**  
135 Milner Avenue, Scarborough, Ontario,  
M1S 3R1, Canada  
Tel: 416-298-1311

### U.S.A.

**Yamaha Corporation of America**  
6600 Orangethorpe Ave., Buena Park, Calif. 90620,  
U.S.A.  
Tel: 714-522-9011

## CENTRAL & SOUTH AMERICA

### MEXICO

**Yamaha de México S.A. de C.V.**  
Calz. Javier Rojo Gómez #1149,  
Col. Guadalupe del Moral  
C.P. 09300, México, D.F., México  
Tel: 55-5804-0600

### BRAZIL

**Yamaha Musical do Brasil Ltda.**  
Rua Joaquim Floriano, 913 - 4º andar, Itaim Bibi,  
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**Sucursal de Argentina**  
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### INDONESIA

**PT. Yamaha Music Indonesia (Distributor)**  
**PT. Nusantara**  
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