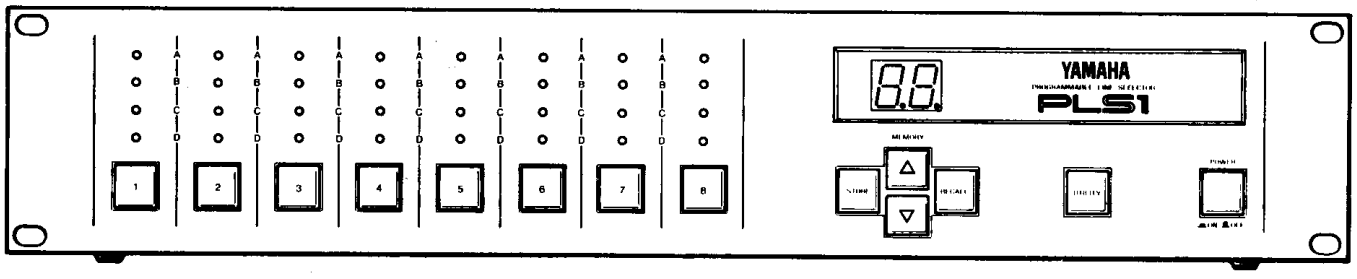
YAMAHA

PROGRAMMABLE LINE SELECTOR
SÉLECTEUR DE LIGNE PROGRAMMABLE
PROGRAMMIERBAREN LEITUNGSWÄHLERS

PLS1

OPERATION MANUAL
MANUEL DE FONCTIONNEMENT
BEDIENUNGSANLEITUNG



Thank you for purchasing the YAMAHA PLS1 Programmable Line Selector. The PLS1 is a line selector with 8 selector units, each of which can select one of 4 inputs. The PLS1 is MIDI compatible, allowing it to be controlled from other MIDI-compatible equipment.
To obtain maximum performance from the PLS1, we recommend that you read this operation manual thoroughly before use.

CONTENTS

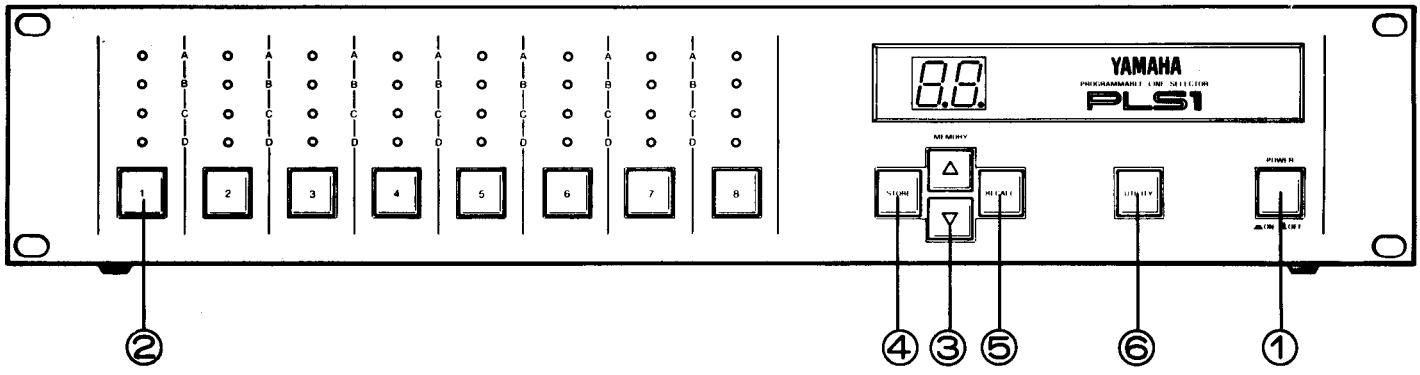
FEATURES

- Each of the 8 channels incorporated in the PLS1 allows you to choose one output out of 4 different inputs, making it possible to reproduce complicated patchings.
- Up to 99 patch patterns, from No. 1 to 99, can be stored in memory.
- The patch information can be stored or recalled by simple panel operations.
- The stored patch information can be switched by applying MIDI program change signals.
- Several PLS1 units can be connected through the MIDI interface for transfer of the memory contents.
- The memory contents can also be stored externally by connecting MIDI equipment with MDF or MDR features.

PRECAUTIONS IN OPERATION

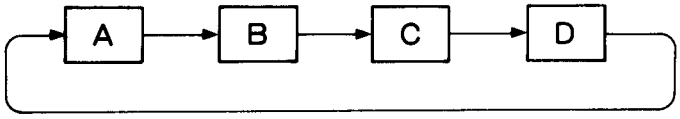
- **Installation location**
  Do not use this unit in the following locations, or a malfunction could result.
  - In direct sunlight, e.g. near a window.
  - In a place where the temperature is extremely high, e.g. near a heater.
  - In a place where the humidity is extremely high.
  - In a dusty place.
  - In a place subject to strong vibrations.
- **Cautions on the power supply**
  - Never supply power to this unit from a source other than your local main voltage.
  - When this unit is not to be used for a long period of time, disconnect the power cord from the power outlet.
  - When there is danger of lightning, disconnect the power cord from the power outlet.
- **Handling and transport**
  - Avoid applying a strong force to the keys, switches, and input and output jacks.
  - To prevent wire breakage or short-circuiting, be sure to grasp the plug when disconnecting the power cord or other connection cords.
  - When this unit is to be transported, remove the power cords and all connection cords beforehand.
- **Cleaning**
  - When this unit gets dirty, wipe it with a soft, dry cloth.
  - Never use a volatile agent, such as benzine or thinner, to clean the exterior, and avoid spraying aerosols before it.
- **Influence on other electrical equipment**
  As this unit incorporates digital circuitry extensively, noise from it might interfere with a TV or radio near it. In such a case, place this unit sufficiently away from the interfered device.
- **Modification of the unit**
  Never attempt to open or modify this unit, as this could cause a malfunction or accident. This unit will be exempt from our warranty once it has been modified.
- **Caution on connections**
  To prevent damage to the equipment connected to this unit, be sure to turn off the power to this unit and its' connected equipment before connecting or disconnecting any cable.
- **Cautions on MIDI cable**
  - Use a MIDI cable that complies with the MIDI standard.
  - The maximum specified length of a MIDI cable is 15 meters. Do not use a cable longer than this, otherwise trouble may result.

1. CONTROLS, CONNECTORS AND INDICATORS



① **POWER switch**
This switch is used to turn the power to the PLS1 ON and OFF. When the POWER switch is OFF, the patching selection is always [D] for every channel.

② **Select keys (CH1 to CH8)**
These keys are used to select one of the four inputs to be output from the corresponding channel. Every time the key is pressed, the selected input changes as follows.

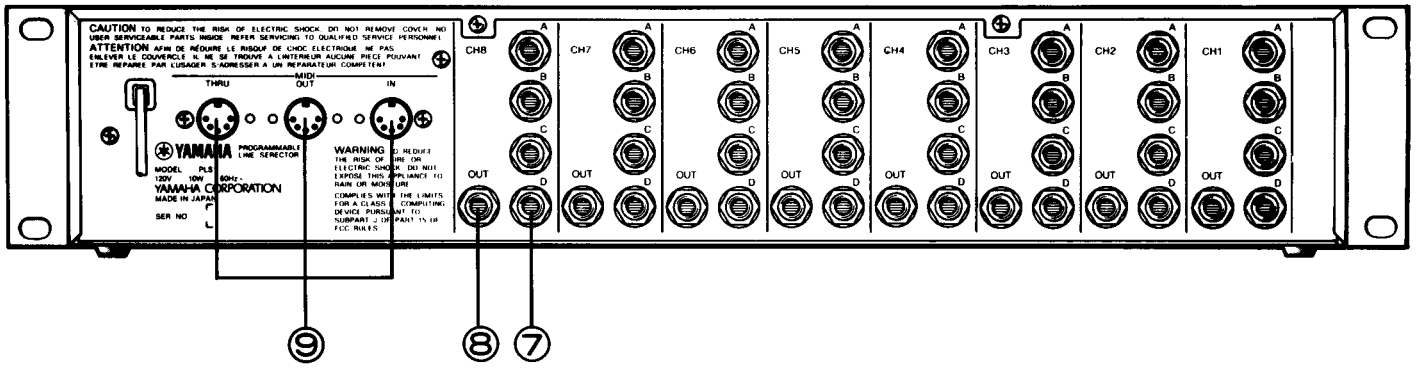


③ **[△]UP, [▽]Down keys**
These keys are used to store memory, assign the program No. to be recalled, or to set a parameter on/off or parameter value in the Utility mode.

④ **STORE key**
This key is used to store the current patching pattern in memory.

⑤ **RECALL key**
Normally, this key is used to recall the patching pattern stored under the program No. being displayed.

⑥ **UTILITY key**
Press this key to enter the Utility mode.



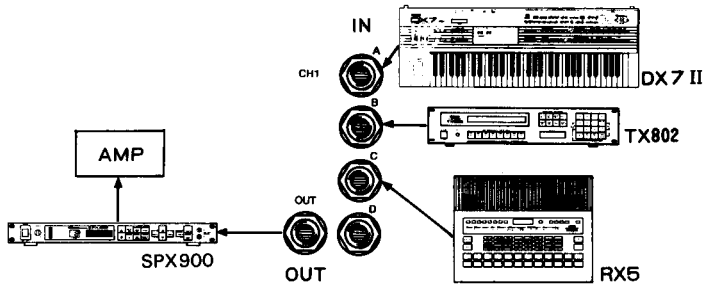
⑦ **Line IN jacks (A to D)**
These are the signal input terminals for each channel.

⑧ **Line OUT jack**
This terminal outputs the signal selected on the panel.

⑨ **MIDI IN, OUT, THRU**
IN: Inputs a MIDI signal.
OUT: Outputs a MIDI signal.
THRU: Directly outputs the MIDI signal input from the IN jack.

2. CONCEPT OF PATCHING AND A CONNECTION EXAMPLE

The PLS1 allows each of the channels to select one of the 4 inputs. Therefore, always connect the inputs in consideration of this fact. By inter-connecting several channels, it will be possible to achieve very complicated patchings.
Here is an example of a simple connection. Suppose that your signal sources are the DX7II (Digital Synthesizer), the TX802 (FM Tone Generator) and the RX5 (Digital Rhythm Programmer), and that you want to input one of them to the SPX900. You connect the three musical instruments to three IN jacks of a channel, and connect its OUT jack to the SPX900.



With these connections, pressing the SELECT key on the PLS1 panel allows you to select the signals to be input to the SPX900 in sequence.
The PLS1 is capable of providing various patchings according to user needs. The possibilities are left to your own devices and creativity.

3. CONCEPT OF MEMORY

The PLS1 can store up to 99 different panel patching condition setups. This is performed as follows.

First, store a patching pattern in memory.

1 : First, make sure that the unit is not set to the Utility mode, and then operate the keys for panel patching. Edit a patching pattern on the panel, by pressing the SELECT key of each channel to select a signal from the A to D inputs.
A dot indicator should be blinking on the bottom right of the display; the dot is the patching editing indicator.
2 : Using the [△] Up and [▽] Down keys, specify the program No. (1 to 99) to be assigned to the stored patching pattern. (The No. on the display blinks at this time. At this time, the patching pattern is not yet stored in memory.)
3 : Press the [STORE] key. The patching pattern will be stored under the program No. being displayed. (If the display shows [P-] when the [STORE] key is pressed, the memory protect function is on. In this case, the patching pattern cannot be stored. To cancel this protection, enter the Utility mode and turn memory protect off (P.5).) The blinking No. on the display lights steadily and the dot indicator goes off.

Caution: Program No. 0 is dedicated to the recall operation only, and no pattern can be stored under it.
The patching pattern is overwritten in memory, and the previous content which was stored under the program No. is cleared.
Also in the Utility mode, it will be possible to achieve patching (the dot indicator will light). However, the patching pattern cannot be stored under the program No.

Writing panel patching setup in memory is referred to as storage.

Now, recall a patching pattern from memory.

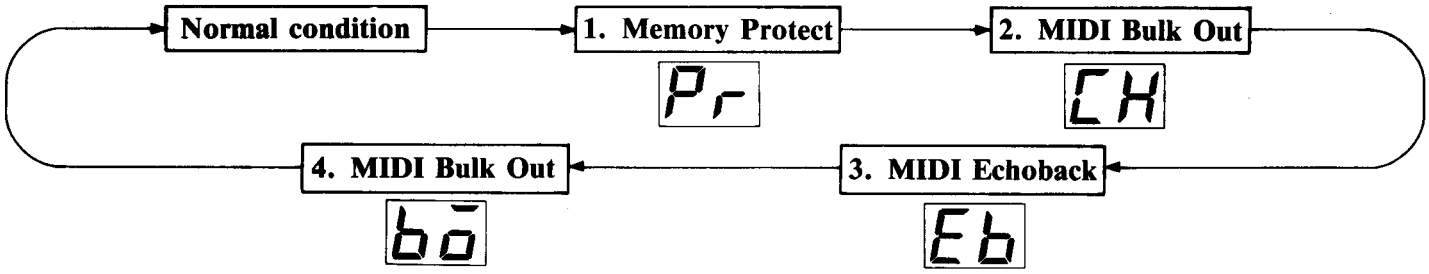
1 : Make sure that the unit is not set to the Utility mode. Using the [△] Up and [▽] Down keys, specify the program No. (0 to 99) to be recalled from memory. The No. on the display blinks. While the No. is blinking, it has not yet been recalled from memory.
2 : Press the [RECALL] key. The patching pattern of the program No. being displayed is recalled. The program change which corresponds to the program No. is output from MIDI OUT. The blinking display No. changes to a steadily lit display, and the dot on the bottom right disappears. (If program No. 0 is recalled, the initial status is set.)

Reading patching patterns from memory is referred to as recall.

To recall the patching memory by operating MIDI.
Refer to "MIDI OPERATION" on page 6.

4. UTILITY MODE

When the [UTILITY] key is pressed, the set enters the Utility mode.



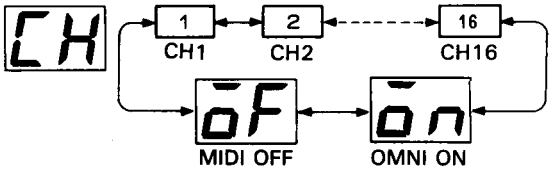
In Utility mode, the LED on the [UTILITY] key lights to indicate it is in use.
In this condition, patching patterns cannot be stored or recalled.

The parameters are set using the [△] Up and [▽] Down keys.
For a description on MIDI, refer to "5. MIDI Operation" (p. 6).

1. Memory Protect

This function allow you to apply memory protection, to prevent erroneous clearing of stored patching patterns. Storage is not possible when Memory Protect is ON.

2. MIDI Channel



1 — 16

MIDI channels Selects the receiving/transmitting channel.

MIDI OFF
Ignores any MIDI signal received.
Also, it is not possible to transmit the signal.

OMNI ON
Receives signals received from all MIDI channels.
Transmits signals from channel 1.

3. MIDI Echoback

The echoback function outputs the program change signal received via MIDI IN to MIDI OUT as it is. Echoback occurs when this function is set to ON.

Note: This unit must be set to the same MIDI channel as the transmitting equipment.

4. MIDI Bulk Out

Patching data [1 to 99] which have been stored in this unit are transmitted as a bulk dump. The data can be output by pressing the [△] Up or [▽] Down keys while [bo] is displayed. [- -] is displayed during the transmission. When the [STORE] or [RECALL] key is pressed while [bo] is displayed, one of the following bulk dump requests can be transmitted via MIDI.
When this unit has received the bulk data normally, [bY] and [oK] are displayed.

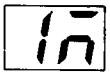
Note: The signals are not transmitted while the MIDI channel is OFF.

[STORE] key:

All-memory request
This operation transmits the all-memory dump request. It is the data for requesting the bulk output of all memory contents to another PLS1 connected via MIDI.

Caution: When the all-memory bulk data is received, all previous data is replaced by the newly-received data.

[RECALL] key



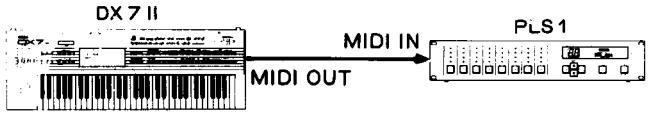
1-memory request (Before this operation, recall a memory No. in normal mode. The display can either be blinking or lit steadily.) This operation transmits the dump request for the memory No. selected in the normal mode (also when the memory No. is blinking). It is the data for requesting the bulk output of only one memory to another PLS1.

Caution:

When this unit is put in the Utility mode by pressing the [UTILITY] key, or when the POWER switch is turned ON, the display could show . This warns you that the voltage of the memory backup battery has dropped below 2.5 V. As the memory contents cannot normally be backed up with a low voltage, please consult your musical instrument dealer or nearest YAMAHA service agent. (The memory backup battery will last for about 5 years.)

5. MIDI OPERATION

- **MIDI channel**
  This is the basis of all MIDI operations, that which anyone who wants to handle MIDI should know. If a MIDI channel is not adjusted properly, no feature is available, even when the equipment is connected. If you are a beginner in MIDI, be sure to read this section carefully.
  A single MIDI cable allows you to supply many signals (data) for controlling several musical instruments (MIDI-compatible equipment). With MIDI, different types of data are allocated to different MIDI channels, from CH1 to CH16.
  First, connect a MIDI-compatible unit to the PLS1.



  MIDI OUT is connected to MIDI IN with a MIDI cable. This connection allows data to be sent data from the DX7II to the PLS1.
  The next required operation is the adjustment of the MIDI channel. If, for example, the DX7II is set to transmit data on CH2 while the PLS1 is set to receive data on CH6, the PLS1 cannot respond, even when a program change message is sent from the DX7II. To establish communication, it is necessary that the two connected units use the same MIDI channel.
  (When OMNI ON is set, the PLS1 can receive information from all MIDI channels.)

- **MIDI program change**
  Among the various types of information that can be transmitted via MIDI, the PLS1 can receive program change messages. These are instructions to "switch the program No. as specified".
  For example, when the voice is switched on the DX7II, a program change message is sent to the PLS1. Upon receipt of this instruction, the PLS1 can switch the patching pattern automatically.
  Example: When program change No. 1 is received Memory No. 1 is recalled.
  Note: Program change No. 100 or more cannot be received.

- **MIDI bulk out**
  Memory contents can be transferred to another or several PLS1 units connected via MIDI.
  When the unit is connected to the YAMAHA MDF1 MIDI Data Filer or other MIDI equipment equipped with the MDR feature, the memory contents can also be saved in external equipment.

Refer to "Utility mode" on page 5.

6. ERROR MESSAGES

E0 E1 E2	These messages indicate system errors. Consult your musical instrument dealer or nearest YAMAHA service agent.
Or	MIDI reception error. There may be a fault in the transmitting MIDI equipment or in the MIDI cable.
bF	MIDI receive buffer is full. This occurs when an excessive amount of data is sent at one time.
Pr	This indicates that Memory Protect is ON and a bulk dump message was received.
r0	This indicates receiption of a bulk dump message for memory No. 0, which is not accepted by the PLS1.
	This indicates that there was an attempt to store in memory No. 0, which is not possible.
CE	This indicates a bulk dump check sum error.
L0	Battery alarm. The battery voltage may be low.

7. ALTERNATIVE APPLICATION OF THE PLS1

Although the PLS1 is used as an input selector in normal operations, it can also be used as an output selector, which outputs the signal input to the OUT jack of each channel to the OUT jack selected by the SELECT key (one of A to D). However, when the PLS1 is used as an output controller, be sure to insert plugs or shielding plugs into all A to D jacks. This is necessary because, due to the hardware design, the input signal will be short-circuited internally if no plug is connected to the IN jack.

8. SPECIFICATIONS

Type of Input selector	Mechanical RELAY
Crosstalk (Rg = 150Ω)	80dB @20—20kHz, adjacent input
INPUT (A,B,C,D) (Ch1—8)	
Connectors	PHONE JACKs (unbalanced)
Maximum input level	+24dB
OUTPUT (COM) (Ch1—8)	
Connector	PHONE JACK (unbalanced)
MIDI	Program change, Bulk dump.
Connectors	IN/OUT/THRU (3 × DIN 5P CONNECTOR)

0dB = 0.775Vrms.

CONTROLS

Ch input selector (CH1 to CH8)	A,B,C,D w/LEDs (Initial setting....All ch "D") (When "POWER OFF"...All ch "D")
Internal Program Memory	#1—#99 Memory NO.UP, DOWN, STORE & RECALL
Memory No. Display	2 DIGITS 7 SEGMENT LED.
Utility (w/LED)	Memory Protect On/Off MIDI CH Select (CH1 – 16, OMNI, OFF) MIDI Echoback On/Off Bulk out

POWER REQUIREMENTS	120V (105—130V) 50/60Hz U,C
POWER CONSUMPTION	10W U,C
DIMENSIONS (W × H × D)	480 × 89.9 × 209.5mm (18-7/8" × 3-1/2" × 8-1/4")
WEIGHT	3.8kg (8.4 lbs)

FCC CERTIFICATION (USA)

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to rado or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.

Relocate the computer with respect to the receiver.

Move the computer away from the receiver.

Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful;

"How to identify and Resolve Radio-TV interfernce problem". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

This information on safety is provided to comply with U.S.A. laws, but should be observed by users in all countries.

CANADA

THIS APPARATUS COMPLIES WITH THE 'CLASS B' LIMITS FOR RADIO NOISE EMISSIONS SET OUT IN RADIO INTERFERENCE REGULATIONS.

CET APPAREIL EST CONFORME AUX NORMES 'CLASSE B', POUR BRUITS RADIOELECTRIQUES. TEL QUE SPECIFIER DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE.

IMPORTANT NOTICE FOR THE UNITED KINGDOM

Connecting the Plug and Cord

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 symbole ⏚ or coloured GREEN or 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.

MIDI BULK DATA FORMAT

1. 1-Memory bulk data

<Hex>

F0	SYSTEM EXCLISIVE
43	YAMAHA ID
0n	n = channel No.
7E	Format No.
00	Byte Count
0E	Byte Count (14 bytes)
4C	'L'
4D	'M'
20	' '
20	' '
38	'8'
36	'6'
30	'0'
31	'1'
4D	'M'
??	Memory No. (1 ~ 63H)
??	┐
.	data = 00 ~ 7FH ┐ data block size
.	┘ = 4 bytes.
??	┘ (see note.)
??	check sum
F7	Eox

2. All-memory bulk data

<Hex>

F0	SYSTEM EXCLISIVE	
43	YAMAHA ID	
0n	n = channel No.	
7E	Format No.	
00	Byte Count	┐
		┘ Memory 1
??	check sum	
00	Byte Count	┐
		┘ Memory 2
??	check sum	
	.	
	.	
	.	
00	Byte Count	┐
		┘ Memory 99
??	check sum	
E7	Eox	

Note) From Byte Count to check sum, refer to 1)

3. Memory bulk dump request

1) Memory bulk request

<Hex>

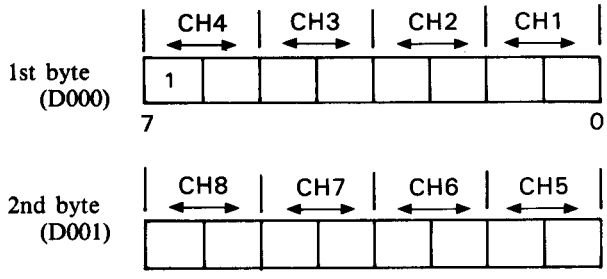
F0	SYSTEM EXCLISIVE
43	YAMAHA ID
2n	n = channel No.
7E	Format No.
4C	'L'
4D	'M'
20	' '
20	' '
38	'8'
36	'6'
30	'0'
31	'1'
4D	'M'
??	Memory No. (1 ~ 63H)
F7	Eox

2) All-memory bulk request

<Hex>

F0	SYSTEM EXCLISIVE
43	YAMAHA ID
2n	n = channel No.
7E	Format No.
4C	'L'
4D	'M'
20	' '
20	' '
38	'8'
36	'6'
30	'0'
31	'1'
41	'A'
20	' '
F7	Eox

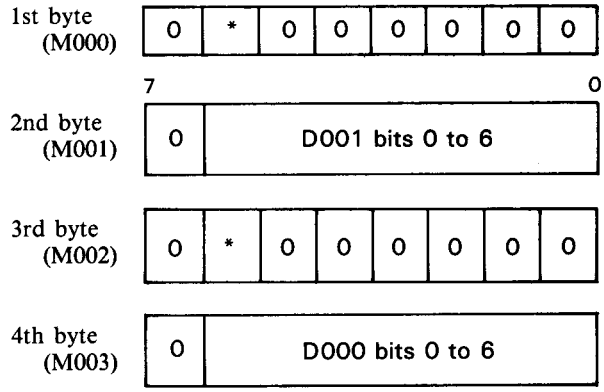
To indicate the setting of each memory unit in the memory, the PLS1 uses 2 bytes as shown below.



The input terminal for each channel is specified by the values of the bits as follows.

0	0 ..... D
0	1 C
1	0 ..... A
1	1 ..... B

If the input terminal for CH4 or CH8 is set to A or B, the MSB of D000 or D001 above should become "1", which may be regarded as the status byte by the MIDI. To prevent the confusion, these 2 bytes are transferred in MIDI bulk dump as follows.



*: = 0 (when MSB of D000 is 0)
= 1 (when MSB of D000 is 1)

(Note)

PLS1's 1 Memory (2 bytes)		Mempry Bulk (4 bytes)
D000	◄——►	M000 , M001
D001	◄——►	M002 , M003

D000-D001 ——► M000-M003

M000 = (D000/2) and 40H
M001 = D000 and 7FH

YAMAHA [Programmable Line Selector] Date : 4/1, 1988
Model PLS1 MIDI Implementation Chart Version : 1.0

Function ...		Transmitted	Recognized	Remarks
Basic	Default	1 - 16	1 - 16	memorized
Channel	Changed	1 - 16	1 - 16	
Mode	Default	x	OMNIoff/OMNIon	memorized
	Messages	x	x	
	Altered	**********	x	
Note Number		x	x	
	True voice	**********	x	
Velocity	Note ON	x	x	
	Note OFF	x	x	
After Touch	Key's	x	x	
	Ch's	x	x	
Pitch Bender		x	x	
Control Change	0 - 127	x	x	
Prog Change		o 0 - 98	o 0 - 98	*1
	True #	**********	0 - 98	
System Exclusive		o	o	Bulk dump
System Common	Song Pos	x	x	
	Song Sel	x	x	
	Tune	x	x	
System Real Time	Clock	x	x	
	Commands	x	x	
Aux Mes- sages	Local ON/OFF	x	x	
	All Notes OFF	x	x	
	Active Sense	x	x	
	Reset	x	x	

Notes: *1 Each number of program(1-99) corresponds to the number of memory(#1-#99).

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

YAMAHA

Litiumbatteri!
Bör endast bytas av servicepersonal.
Explosionsfara vid felaktig hantering.

VAROITUS!
Lithiumparisto, Räjähdysvaara.
Pariston saa vaihtaa ainoastaan alan ammattimies.

ADVARSEL!
Lithiumbatteri!
Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig, – og som beskrevet i servicemanualen.

VF50390

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