YAMAHA

MIXING CONSOLE
CONSOLE DE MIXAGE
MISCHPULT

M2000

OPERATING MANUAL
MANUEL D'UTILISATION
BEDIENUNGSANLEITUNG

English..... 1
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Organization of this manual

Thank you for purchasing a YAMAHA M2000 series mixing console. Whether you have purchased the 16-, 24-, 32- or 40-channel model, the principles of operation are exactly the same. The only difference between the models is the number of input channels.
The Introduction, Installation, Connections and Front Panel Operations sections will introduce you to the basic principles and operations using your mixing console.
Operating Tips, and System Examples give advice on practical applications.
The remaining sections, (Jumpers, Level Diagram, Input/Output Specifications and General Specifications) provide full technical information on your mixing console, which you may find useful when planning signal routing, and using the full capabilities of this unit.

This manual assumes that you have a basic familiarity with the operation of mixing consoles, and with some of the terminology used in sound reinforcement and recording studio environments.
We suggest that you read through this manual in order to make the most of your mixing console and to understand it fully.

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 co-axial 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.

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Pariston saa vaihtaa anioastaan aian ammattimies.

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Introduction

M2000 mixing console has been designed primarily for sound reinforcement applications, but its versatility makes it suitable for other applications, including sophisticated broadcast and recording systems. Features include:

- Eight output groups with insert facilities.
- On/off switches (with illuminated indicators for an instant visual check) for each input channel, AUX return and group, and for the mono and stereo masters, making for easy, silent muting of inputs and final output.
- A sophisticated flexible scene memory system, allowing 128 independent combinations of input channels, groups, AUX returns and mono and stereo outputs to be chosen for muting. This is MIDI controllable, as well as having 8 "direct recall" buttons for lightning-fast setups.
- A revolutionary "matrix" system which allows any combination and level of groups, the ST mix, the MONO mix and a pair of SUBs to be combined. This system allows you extraordinary flexibility in the production of auxiliary mixes, which can be used for lobby feeds, OB feeds, individual speaker/amplifier stack mixes, foldback, and so on.
- A flexible CUE/SOLO facility, giving complete control over monitoring of signals.
- Highly durable 100mm faders, giving smooth, easy dynamic control over the mix.
- Talkback that can be routed to any combination of the groups, the stereo mix, the mono mix, and the AUX outputs. A 1 kHz line-up oscillator (with the same routing options) is also provided.
- XLR type connectors, providing balanced inputs and outputs, wired in accordance with IEC standards, with shield (earth) to pin 1, "hot" to pin 2 and "cold" to pin 3. SUB inputs use 1/4-inch phone connectors, and INSERTs are 1/4-inch TRS phone connectors.
- Two different types of input channel in the same mixing console — single-input for microphone inputs and mono line sources, and two-input for stereo sound sources.
- Single-input channels that can have two inputs connected (A and B), switched on the front panel. The A input has a balanced XLR--type connector, and the B input has a balanced 1/4-inch phone connector.
- Stereo input channels which can also have two sets of inputs connected (A and B), switched on the front panel. The A inputs have mono unbalanced 1/4-inch phone connectors, and the B inputs have unbalanced RCA connectors, ideal for domestic audio-type sources.
- A pad and rotary gain control on each input channel.
- +48 V phantom powering, individually switchable on each input channel.
- Single-input channel insert I/O points, allowing connection of external units for post-EQ compression, gating, etc.
- Peak and signal indicators on each channel.
- 4 AUX SENDs (1-4) which may be selected from the front panel as pre- or post-fader, 1 dedicated post-fader AUX send (5) and a jumper-selectable pre/post fader send (6) that can also be sent directly out of each channel.
- Four stereo AUX returns, each with 2-band EQ and a full range of routing options.
- Four-band EQ with sweepable HI-MID frequency (400 Hz-8 kHz) and LO-MID frequency (80 Hz-1.6 kHz) on single-input channels, and three-band EQ with sweepable HI-MID frequency (300 Hz-6 kHz) on stereo input channels. Single-input channels feature a switchable 80 Hz high-pass filter.
- Full SUB IN facilities, allowing two M2000 consoles to be linked together so that operating one will control the other.

Installation

The following points should be borne in mind when installing your Yamaha M2000 mixing console (either in a permanent installation, or when temporarily installing it for sound reinforcement).

Avoid excessive heat, humidity, dust and vibration

Keep the mixing console away from locations where it is likely to be exposed to high temperatures or humidity. Avoid excessively dusty locations, or locations subject to strong vibration, as these can cause mechanical damage.

Avoid physical shocks to the mixing console

Dropping the mixing console or otherwise subjecting it to mechanical shock can damage it. Handle it with care. We recommend that if the M2000 is to be taken on the road, a suitable hard case or flight case is used for transportation.

Do not open the unit or attempt repairs or modifications yourself, other than those outlined in this manual

The M2000 mixing console contains no user-serviceable parts. All maintenance should be carried out by qualified Yamaha service personnel. See the "Jumpers" section for details of how your mixing console can be reconfigured to your needs.

Turn off power before making or breaking connections

Always turn the power to the M2000 OFF before connecting or disconnecting cables. This will help to prevent damage to the mixing console itself, as well as to other connected equipment.

Handle cables carefully

Always plug and unplug any cables (including the AC power cable) by gripping the connector, not the cord itself.

Clean with a soft dry cloth

Do not use solvents (benzine, thinner, etc.) to clean the mixing console. Wipe it clean with a soft dry cloth.

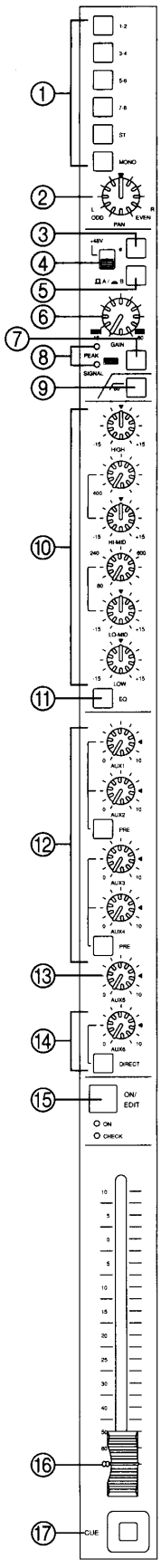
If your mixing console is fitted with a grounding connection, use it

All mixing consoles provided with a 3-wire power cable should be grounded, both for safety, and for optimum shielding against noise. If a 3-pin AC outlet is not available, or you suspect that the AC outlet is not grounded, a separate ground connection must be made from the chassis of the console to an earth ground. Cold water pipes are generally a good ground, provided they are not insulated by PVC plastic, or fitted with a water meter. Avoid using hot water or gas pipes. If a convenient confirmed ground is not available, you can create one by driving a length of copper pipe to a depth of at least 1.5 meters (5 feet) into moist earth, or by using a chemical type grounding rod.

Always use the correct power source

Make sure that the power requirements as printed on the rear panel of the Power Supply Unit match your local AC mains supply:
US and Canadian models 120 VAC, 60 Hz
British Model 240 VAC, 50 Hz
General Model 230 VAC, 50 Hz
See the power supply manual for more details.

Front panel Operations



The front panel may be conveniently divided into three sections: the single-input modules, the stereo modules, and the master section (which includes the AUX master controls, the group blocks, the matrix, the Stereo master block and a number of other functions). Accordingly, each will be described separately.

Single-input modules

Working from top to bottom (roughly in signal order, except for the channel assign section), the features of these modules are:

① Channel assign switches (1-2, 3-4, 5-6, 7-8, ST, MONO)

These switches assign the final (post-fader and post-pan) signal from the input channel to the required pair of groups, or ST or MONO output. From the six alternatives, you can select any combination, or none at all. To send an input channel to a single group, these switches must be used in combination with the PAN control ②.

② PAN control

Pans between pairs of groups, and/or the stereo buss. The pairs of groups (or ST) assigned with ① are treated as stereo pairs, and the position of the PAN control determines the proportion of signal sent to the left (odd numbered) or right (even numbered) group of the pair. The "▼" setting (center) sends the signal of this channel equally to both odd- and even-numbered groups or to the L and R busses of the stereo mix. The position of this knob has no effect on any output sent to the MONO buss.

③ Phase (polarity) reverse switch (Ø)

This switch reverses the phase of the XLR-type connectors. In the normal position (switch up), pin 2 is positive (hot), and pin 3 is negative (cold), and input and output signals are the same. Reverse phase by depressing this button, making pin 2 negative (cold) and pin 3 positive (hot).

This switch also affects the phone jack input (input B). With the switch in its normal position, the jack tip is positive (hot), and the ring is negative (cold). With the switch depressed, the tip is negative (cold), and the ring is positive (hot).

Out-of-phase signals are often caused by differing wiring configurations in microphone or mixing console cables, especially due to differing national standards.

④ +48V phantom power switch

This switches the +48V phantom powering for condenser microphones (input A, balanced XLR-type connector) on or off for this input channel (when the switch is in the upper position, phantom powering is on).

IMPORTANT: Phantom powering should be on only for balanced condenser microphones requiring an external power source. Unbalanced sources (line and microphone), self-powered condenser microphones and transformers with earthed center taps are liable to damage if phantom powering is applied.

⑤ A/B input selector switch

When this switch is up, signals will enter the channel from the A input (balanced XLR-type connector). When it is down, signals will enter from the B input (balanced phone jack connector)

⑥ GAIN control

This rotary control matches the level of the input source to the optimum level expected by the mixer circuitry. Set the gain control to the level of the input source, from –16dB (high gain source, so little extra gain necessary) to –60dB (low gain source, so much extra gain necessary).

This should be used in conjunction with the 26dB pad switch ⑦.

⑦ 26dB pad switch

This switch (ON when down) attenuates the input signal by 26dB (in addition to any attenuation/gain provided by the GAIN control ⑥).

⑧ PEAK and SIGNAL LED indicators

These two LED indicators allow a useful check of the signal to the input channel. The SIGNAL indicator illuminates when a signal of 10 dB below the nominal level is received, and the PEAK indicator illuminates when the signal reaches 3 dB below the clipping point of the input channel circuit. If the PEAK indicator lights more than briefly on high-level transients, the GAIN control and/or the 26dB pad should be used to attenuate the input signal.

Both of these indicators operate post- EQ and pre-fader.

⑨ High-pass filter switch (/80)

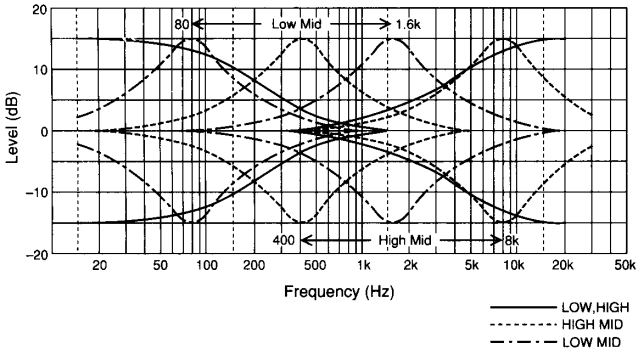
When ON (down), this switch provides a 12 dB/octave roll-off starting at 80 Hz. This may be used to eliminate wind noise, microphone "popping", or AC hum. This filter is not part of the EQ section — any facilities described as "pre-EQ" will still be post-high-pass filter.

⑩ HIGH, HI-MID, LO-MID and LOW controls

These low-noise, low-distortion equalizers offer four bands of EQ, with ±15 dB of gain, in the following ranges:

HIGH: 12 kHz shelving type.
HI-MID: 400 Hz – 8 kHz peaking type.
LO-MID: 80 Hz – 1.6 kHz peaking type.
LOW: 80 Hz shelving type.

Response is flat in the center "▼" position.



⑪ EQ switch

This switch turns the equalization on (routes the signal through the equalization) or off (the signal bypasses the equalization).

⑫ Channel AUX controls (1-4) and switches (1-2, 3-4)

These rotary controls control the level of the signal fed from the input channel to the AUX busses. Nominal send level of 0dB is at the "◀" mark on each control.

The two switches allow the assignment of the AUX SENDs to be either pre- (switch depressed) or post-fader (switch up) in two groups (1-2, and 3-4). When AUX SENDs are post-fader, the level of the signal sent to the AUX busses is affected by the channel fader position. In the pre-fader position, the AUX SENDs will also be post- EQ (but this can be altered to pre- EQ by having internal jumpers changed).

Pre-fader AUX SENDs are especially useful for foldback mixes, and post-fader AUX SENDs for effects, but there is no hard and fast rule governing this.

⑬ Channel AUX control (5)

This AUX control is hard-wired as post-fader.

⑭ Channel AUX control (6) and DIRECT switch

AUX6, like AUX5, is set as post-fader, but moving an internal jumper will change it to pre-fader. In addition to the normal function of AUX send to the AUX6 buss, the signal is also sent to the DIRECT OUT jack on the rear panel.

When the DIRECT switch is up, post AUX6 control signals will be sent to the AUX6 buss, and pre AUX6 control signals will be sent to DIRECT OUT.

When the DIRECT switch is depressed, signals will not be sent to the AUX6 buss, and post AUX6 fader signals will be sent to DIRECT OUT.

⑮ ON/EDIT switch, and ON and CHECK indicators

The ON/EDIT switch is a momentary (non-latching) type that controls output from the channel. Pressing it turns the ON indicator on and off alternately. While the ON indicator is illuminated, signals from this channel are sent to the specified busses. When the indicator is off, signals from the channel are removed from the mix, so the control may be used for minimizing noise in quiet passages, for channels which are not needed at the time. Signals sent from the channel to the cue buss, however, are not affected by the ON/EDIT switch.

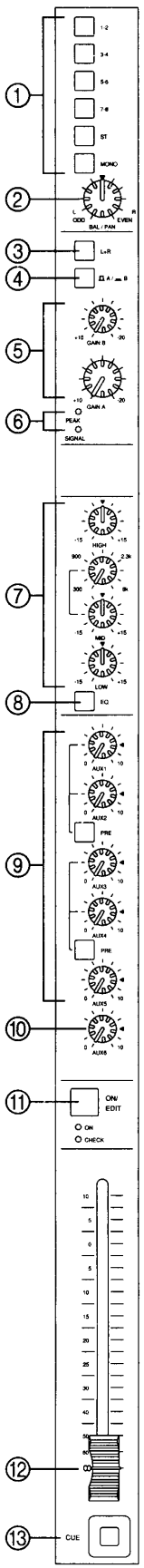
The CHECK indicator is for use with the scene memories (see "SCENE MEMORY block" on page 8), and allows the user to see beforehand what the condition of the channel will be after a new scene is recalled. In critical performance situations, this feature is likely to avert many potential disasters.

⑯ Channel fader

The long-travel, smooth-action conductive plastic linear fader permits precise adjustment of the final level of the signal from this channel to the assigned buss(es).

⑰ CUE switch

When depressed, this switch adds the signal of the channel to the INPUT CUE buss (which can be monitored over headphones). To listen to one channel only, make sure that all other CUE switches on the single-input and stereo-input channels are turned OFF. Note: The CUE switches on the groups, AUX outs, and MONO and STEREO master controls go to the MASTER CUE busses, not the INPUT CUE buss.



Stereo-input modules

Two of these modules are provided. As explained earlier, they allow the connection of a piece of equipment providing a stereo output (synthesizer, drum machine with internal level/pan mixer to a stereo output, effects unit, etc.) in a single module. The facilities are much the same as on the single-input modules, with a few differences, as described below:

① Channel assign switches (1-2, 3-4, 5-6, 7-8, ST, MONO)

As for single-input modules, except that where a pair of groups or the STEREO buss are specified, the channel's L output goes only to the L STEREO channel or odd-numbered group, and the channel's R output goes only to the R STEREO channel or even-numbered group. Signals do not lose their stereo positioning, unless they are summed using the L+R button.

② Balance control (BAL/PAN)

When the L+R button is depressed (thus making the signal mono), this functions the same as the PAN control on the single-input modules.

When the L+R button is up, BAL/PAN selectively fades the left or right outputs from the channel, thus preserving the stereo image.

③ L+R switch

When depressed, the L and R signals entering the channel are summed, and appear in both outputs.

④ A/B switch

This selects which of the two sets of inputs for the stereo input channel will be used. Input A has 1/4 inch jacks, and input B has RCA connectors.

⑤ GAIN A and GAIN B controls

These rotary controls match the levels of input sources A and B to the optimum levels expected by the mixer circuitry. Set the gain controls to the levels of the input sources, from 10dB (high gain source) to –20dB (low gain source).

⑥ PEAK and SIGNAL LED indicators

As for single-input modules.

⑦ HIGH, MID and LOW controls

These low-noise, low-distortion equalizers offer four bands of EQ, with ±15 dB of gain, in the following ranges:

HIGH: 12 kHz shelving type.
MID: 300 Hz – 6 kHz peaking type.
LOW: 80 Hz shelving type.

Relative level is flat in the center "▼" position.

⑧ EQ switch

This switch turns the equalization on (routes the signals through the equalization) or off (the signals bypasses the equalization).

⑨ Channel AUX controls (1-5) and switches (1-2, 3-4)

As for single-input modules, except that as the AUX busses are mono, the L & R signals are summed before being sent.

⑩ Channel AUX control (6)

As for single-input modules, except that there is no DIRECT OUT facility for the stereo input channel (therefore no DIRECT switch), and no jumper facility for converting AUX 6 to pre-fader.

⑪ ON/EDIT switch, and ON and CHECK indicators

As for single-input modules.

⑫ Channel fader

As for single-input modules, except the fader is stereo.

⑬ CUE switch

As for single-input modules, except the stereo image is preserved when sent to the CUE buss.

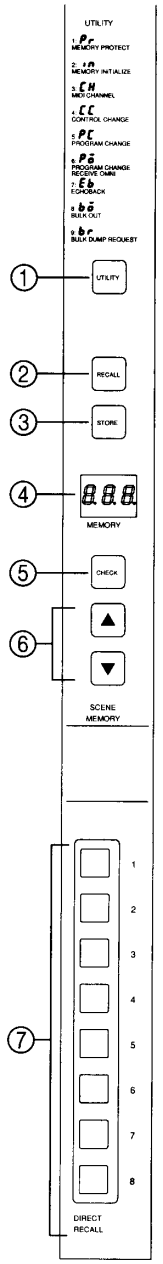
SCENE MEMORY block

About the scene memories

The scene memories allow automated control over which channels, groups, effects returns, and stereo/mono outs are turned on or off. Besides the individual control you have over each channel by turning it on or off, the condition of every one of these controls on the console can be memorized as a "scene", and 128 of these can be stored for later recall.

As well as the convenience of scene recall, the scene memories also allow you to check (using the CHECK indicators) what the status of each channel will be after the scene change is carried out. Additionally, while in CHECK mode, changes can be made to the new scene before it is recalled, without affecting the current setup. This allows the operator to think ahead, prepare the console for a certain performance cue, then change the entire setup with the press of a button.

Both scene changes and changes of individual channel status can be performed via MIDI. The entire 128 scene memories can also be dumped via MIDI with the BULK OUT function, to an external sequencer, MIDI data filer, or another M2000.



Brief description of the controls

As shown on the left, the scene memory controls are:

① UTILITY button

Used to access the 9 utilities. The button lights when UTILITY mode is in effect.

② RECALL button

Used to recall scenes stored in the scene memory, from 1 to 128.

③ STORE button

Used to store scenes into the scene memory. This operation is only possible when the memory protect (utility 1) is OFF.

④ MEMORY display

3-digit LED display. When in UTILITY mode, this shows either the current utility or a parameter associated with that utility.

- When in normal mode or CHECK mode, this shows the current scene memory number (1–128).
- If there are no scenes stored in any of the memories, either because no scenes have been stored yet, or the memory has been initialized, the display will remain blank except for the first decimal point, which will light.
- If the currently selected memory has no scene stored in it, the first decimal point will light, as well as the scene number being displayed.
- As soon as any ON/EDIT switches are used in normal mode to chang the current setup, the third decimal point will start to flash. This indicates that the current setup no longer corresponds to the currently selected scene memory. It will continue to flash even if you return the switches to their previous settings, and only turn off when you recall a new scene or store the altered one.

⑤ CHECK button

Used to enter/exit CHECK mode. The button lights when CHECK mode is in effect.

⑥ ▲/▼ buttons

Used in conjunction with STORE and RECALL for selecting scene memories, or in UTILITY mode for selecting parameters. If either button is held down for more than about 1 second, the values will change at double speed.

⑦ DIRECT RECALL buttons (1–8)

Scene memories 1 to 8 can be recalled directly by pressing these buttons. The appropriate button lights, and the MEMORY display shows the appropriate number when one of these 8 scene memories is selected.

Factory Settings of the Scene Memories

The initial scene memory settings for the M2000 are as follows:

Memory-1	All ON
Memory-2	All OFF
Memory-3	All ON
Memory-4	All OFF
Memory-5	All ON
Memory-6	All OFF
Memory-7	All ON
Memory-8	All OFF
Memory-9 – 128	No Data

"1"(All ON) is shown on the scene memory display when the M2000 is first turned on after being purchased.

Operation

There are three scene memory modes — normal, CHECK, and UTILITY.

Normal mode

In normal mode, the ON/EDIT switches on any of the input/output channels act as ON/OFF switches. Stored scenes can be recalled using either the eight DIRECT RECALL buttons, or the ▲/▼ and RECALL buttons.

Retrieving scenes in normal mode

With the DIRECT RECALL buttons:

- Press one of the 8 DIRECT RECALL buttons.
- The selected scene (1-8) will be immediately recalled (the DIRECT RECALL button will light and the number will be shown in the display), and each ON indicator on the console will change to show the new status of its corresponding channel.
- If there was no scene stored in the memory you tried to recall, nōd (no data) will appear on the display for about 2 seconds.
- If the console was previously in CHECK mode (CHECK button lit), the console will exit CHECK mode and go into normal mode.
- If you press the ▲/▼ buttons while one of the DIRECT RECALL buttons is lit, the previously selected scene number will flash on the display. To recall it, press the RECALL button.

With the RECALL button:

- Use the ▲/▼ buttons to change the scene number shown on the display to the scene you wish to recall.
- Press the RECALL button.
- The selected scene will be immediately recalled, and each ON indicator on the console will change to show the new status of its corresponding channel.
- If there was no scene stored in the memory you tried to recall, nōd (no data) will appear on the display for about 2 seconds.

Via MIDI

- Ensure there is a MIDI cable connecting the MIDI OUT connector of the sending device to the MIDI IN connector of the M2000.
- Ensure the M2000 is set to receive on the same MIDI channel as the transmitting channels of the sending device (this is done in UTILITY mode).
- Transmit MIDI Program Change commands from the sending device (refer to the manual for the device for instructions on how to do this).
- MIDI Program Changes 0–127 select scenes 1–128 on the M2000.

Storing scenes in normal mode

- Use the ON/EDIT switches to make any desired alterations to the current scene.
- Use the ▲/▼ buttons to change the scene number shown on the display to the one into which you wish to store the settings.
- Press the STORE button. The memory number on the display will start to flash at double speed. To go ahead with the store operation, press the STORE button again. To cancel the store, press any other button.

  NOTE: If the memory is write protected (see UTILITY mode), the setting will not be stored, and Prō will appear on the display.

Controlling individual channels via MIDI

Using MIDI Control Change messages, any channels with ON/EDIT switches can be individually turned on and off from any external MIDI device. In conjunction with a sequencing setup, this provides maximum muting flexibility and leaves your hands free for other tasks. This operation is enabled/disabled with utility 4 (CC).

If CC is ON, using the ON/EDIT switches will send MIDI Control Change messages (see the chart on page 12 for the relationship between MIDI control change messages and console channels).

CHECK mode

In CHECK mode, you can preview scenes before they are actually recalled. The green CHECK indicator below each ON indicator on the console shows the potential condition of the ON indicator, if that scene is recalled.

Retrieving scenes in CHECK mode

- If the CHECK button is not lit, press it.
- Use the ▲/▼ buttons to change the scene number shown on the display to the one you wish to recall. As you go through the different SCENE memories, the green CHECK LEDs below each ON/EDIT button will indicate what the channel would change to, if you recalled that scene. This gives you advance warning of what the condition of each channel will be, before you actually recall the scene.
- Press the RECALL button to recall the selected scene, or press the CHECK button again (so that its indicator turns off) to exit CHECK mode without changing the current scene.

  NOTES: CHECK mode cannot be used in conjunction with the DIRECT RECALL buttons. Pressing any of the DIRECT RECALL buttons will select that scene immediately, and exit CHECK mode.

  If you wish to use CHECK mode with scenes 1–8, you must select them in the same manner as scenes 9–128 — that is, with the ▲/▼ and RECALL buttons.

Pre-setting scenes in CHECK mode

While in CHECK mode, pressing an ON/EDIT switch does not turn the corresponding channel on or off immediately — instead, it toggles the channel's CHECK indicator on and off.

This allows you to alter settings for future use, without altering the current settings. To be able to use the new settings made in CHECK mode, they must first be stored.

- If the CHECK button is not lit, press it.
- Use the ▲/▼ buttons to change the scene number shown on the display to the one into which you wish to store the settings. As you go through the different SCENE memories, the green CHECK LEDs below each ON/EDIT switch will indicate what the channel would change to, if you recalled that scene. This gives you advance warning of what the condition of each channel would be, if you were to actually recall the scene.
- Alter any of the CHECK settings, using the ON/EDIT switches. Here, these switches are acting as EDIT switches.
- Press the STORE button. If the memory is write protected (see UTILITY mode), Prō will appear on the display and the setting will not be stored. Otherwise, the memory number on the display will start to flash at double speed. To go ahead with the store operation, press the STORE button again. To cancel the store, press any other button.
- If you wish to recall the altered setting immediately, press the RECALL button. The new scene will be recalled (made into the current scene), the CHECK button will stop being illuminated, and CHECK mode will be exited. All the green CHECK LEDs will go out, and the corresponding yellow ON LEDs will light.

UTILITY mode

UTILITY mode offers a number of MIDI-based, and miscellaneous functions related to the scene memories.

Performing UTILITY functions, or changing UTILITY parameters

- If the UTILITY button is not lit, press it.
- The 3-digit LED display shows the current utility (see chart below). To step through the different utilities, keep pressing the UTILITY button. From utility 9 (Bulk Dump Request), pressing the UTILITY button once again returns the unit to normal mode.
- Use the ▲/▼ buttons to select any parameters for the operation, where applicable (utilities 2–6).
- Press the STORE button to perform the utility operation, or to confirm the change if you have changed a parameter. Once the utility operation is completed, the console will exit UTILITY mode and the UTILITY button will no longer be lit.
- To exit UTILITY mode without performing an operation, hold down the UTILITY button for 1 second, or press the UTILITY button once while utility 9 is selected. The console will exit UTILITY mode and the UTILITY button will no longer be lit.

Utility	Display	Description	Parameter selection
1	Pr Memory Protect	Allows/prevents the saving of scene data, and the reception of MIDI Bulk Dumps. When ON, the memory is protected, and attempting to write scenes to the memory or receive Bulk Dumps will result in "Pr o" (protected) being shown on the display.	ON OFF
2	in Memory Initialize	Completely clears one scene memory or all scene memories. This action is irreversible, so use it with care.	ALL 1–128
3	CH MIDI Channel	Sets the MIDI channel on which outgoing MIDI data will be sent, and incoming MIDI data will be received.	C1–C16
4	CC MIDI Control Change	Selects whether MIDI Control Changes will be sent when ON/EDIT switches are used, and whether incoming MIDI Control Changes will turn channels on and off. For a description of which controller messages affect which channels, refer to the chart on page 12.	ON OFF
5	PC MIDI Program Change	Selects whether MIDI Program Changes will be sent when scenes on the M2000 are changed, and whether incoming MIDI Program Changes will change the current scene.	ON OFF
6	Po Program Change OMNI	Selects whether incoming MIDI Program Changes will be recognized from only one channel (OMNI OFF), or from all channels (OMNI ON).	ON OFF
7	Eb MIDI Echo-back	When turned ON, MIDI THRU signals are added to MIDI OUT.	ON OFF
8	bo MIDI Bulk Out	Sends the contents of one or all scene memories as a MIDI bulk dump to a MIDI Data Filer or sequencing device with Bulk Data capabilities. "---" is shown on the display while the data is being sent.	ALL 1–128
9	br MIDI Bulk Dump Request	Sends a "BULK DUMP REQUEST" signal out via MIDI. If another M2000 is connected, this will initiate a bulk dump of its scene memories. Requires connection of MIDI IN and MIDI OUT connectors between the two devices.	ALL 1–128

Control Change chart

No	ON/EDIT switch	No	ON/EDIT switch	No	ON/EDIT switch	No	ON/EDIT switch
0	*	32	MONO INPUT 32	64	GROUP OUT 4	96	*
1	MONO INPUT 1	33	MONO INPUT 33	65	GROUP OUT 5	97	*
2	MONO INPUT 2	34	MONO INPUT 34	66	GROUP OUT 6	98	*
3	MONO INPUT 3	35	MONO INPUT 35	67	GROUP OUT 7	99	*
4	MONO INPUT 4	36	MONO INPUT 36	68	GROUP OUT 8	100	*
5	MONO INPUT 5	37	MONO INPUT 37	69	STEREO OUT	101	*
6	MONO INPUT 6	38	MONO INPUT 38	70	MONO OUT	102	*
7	MONO INPUT 7	39	MONO INPUT 39	71	*	103	*
8	MONO INPUT 8	40	MONO INPUT 40	72	*	104	*
9	MONO INPUT 9	41	*	73	*	105	*
10	MONO INPUT 10	42	*	74	*	106	*
11	MONO INPUT 11	43	*	75	*	107	*
12	MONO INPUT 12	44	*	76	*	108	*
13	MONO INPUT 13	45	*	77	*	109	*
14	MONO INPUT 14	46	*	78	*	110	*
15	MONO INPUT 15	47	*	79	*	111	*
16	MONO INPUT 16	48	*	80	*	112	*
17	MONO INPUT 17	49	STEREO INPUT 1	81	*	113	*
18	MONO INPUT 18	50	STEREO INPUT 2	82	*	114	*
19	MONO INPUT 19	51	*	83	*	115	*
20	MONO INPUT 20	52	*	84	*	116	*
21	MONO INPUT 21	53	*	85	*	117	*
22	MONO INPUT 22	54	*	86	*	118	*
23	MONO INPUT 23	55	AUX RETURN 1	87	*	119	*
24	MONO INPUT 24	56	AUX RETURN 2	88	*	120	*
25	MONO INPUT 25	57	AUX RETURN 3	89	*	121	*
26	MONO INPUT 26	58	AUX RETURN 4	90	*	122	*
27	MONO INPUT 27	59	*	91	*	123	*
28	MONO INPUT 28	60	*	92	*	124	*
29	MONO INPUT 29	61	GROUP OUT 1	93	*	125	*
30	MONO INPUT 30	62	GROUP OUT 2	94	*	126	*
31	MONO INPUT 31	63	GROUP OUT 3	95	*	127	*

NOTE 1. * Does not correspond to any control on the console. Ignored if received.

NOTE 2. If blocks of 4 mono channels are replaced by stereo channels on the console, the stereo channels take the same controller numbers as the mono channels they replace.

Error messages

There are two kinds of error messages that can appear on the 3-digit memory display, "normal" error messages and "system" error messages. If a normal error message appears, this indicates a user error or low battery power. A system error will require a visit to your Yamaha dealer.

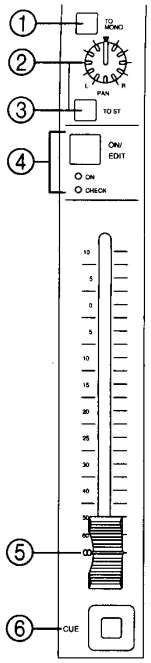
Normal error messages

Message	Description
Lo Battery low	Appears briefly whenever UTILITY button is pressed. The voltage of the internal battery that retains the scene memories has dropped below 2.5V.
Pro Memory protected	Appears after STORE button is pressed, or when a MIDI Bulk Dump is sent from another device. After 2 seconds, previous display returns. Indicates that the memory has been protected with utility 1. The store or Bulk Dump will not have any effect.
nod No data	Appears after RECALL button is pressed. After 2 seconds, previous display returns. Indicates that there is no scene stored in the memory you tried to recall from. Also appears for 5 seconds after the power is turned on if there are no scenes stored in memory.
E3	Appears after STORE button is pressed. After 2 seconds, previous display returns. Indicates that you did not select a memory with the ▲/▼ buttons into which to store the current scene.

System error messages

When you switch on the M2000, a hardware check is performed. If any of the following errors occur, all channels will be turned on, the error numbers will be displayed as shown, and operations such as MIDI and changing scene memories will be impossible. Please see your Yamaha dealer.

Message	Description
E0	An internal computer error has occurred.
E1	A problem has occurred in the hardware.
E2	The RAM holding the scene memories has lost its data. This happens when the internal battery has become exhausted. See your Yamaha dealer to have it replaced.



GROUP block

As explained earlier in the sections on input channels, signals from the input channels may be assigned to pairs of groups. This grouping facility has many uses, for instance multi-track recording, or the ability to adjust the levels of whole groups of instruments (e.g. a drum kit) simultaneously without using twelve fingers on the input channel faders.

The groups form the lower part of each "group" module — above the groups is the matrix, and the AUX SENDs and returns.

① Group to mono switch (TO MONO)

When depressed, this switch routes the output of the appropriate group (post-fader) to the mono buss. As shipped, the routing is pre-on•off switch, but an internal jumper can be changed to make it post-on•off.

② Group PAN control

When a group is routed to the stereo buss, this control alters the levels of the appropriate post-group fader signal sent to the L and R stereo busses. Turning it fully counterclockwise will send the group entirely to the L buss, and turning it fully clockwise will send it to the R buss. The "▼" position sends the signal equally to the L and R busses.

③ Group to stereo assign switch (TO ST)

When depressed, this switch will route the output of the appropriate group (post-fader) to the stereo buss. The same internal jumper as used for the TO MONO switch affects TO ST, making it pre- or post-on•off switch.

④ ON/EDIT switch, and ON and CHECK indicators

The ON/EDIT switch is a momentary (non-latching) type that controls output from the group. Pressing it turns the ON indicator on and off alternately. While the ON indicator is illuminated, signals from this group are sent to the specified group output, and meter. When the indicator is off, signals from the group are completely muted, so the control may be used for minimizing noise in quiet passages, for groups which are not needed at the time.

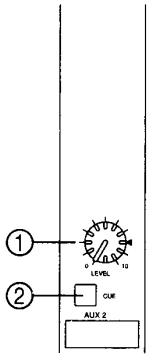
The CHECK indicator is for use with the scene memories, and allows the user to see beforehand what the condition of the group will be after a new scene is recalled. In critical performance situations, this feature is likely to avert many potential disasters.

⑤ Group fader

This fader (of the same specification and calibration as the input channel faders) controls the level of sound sent to from the groups to the GROUP OUT connectors, and to the stereo and/or mono buss (if these have been assigned with the TO ST or TO MONO switches). Nominal level is 0dB.

⑥ Group CUE switch

This switch will add the signal of the group to the MASTER CUE busses. The pre-fader signal is sent to the MASTER PFL buss, and the post-fader signal is sent to the MASTER AFL buss. These busses are not the same as the INPUT CUE buss used by the input channels.



AUX SEND block

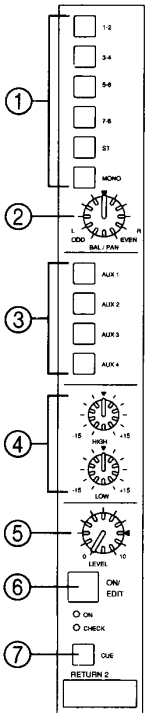
This block is found directly above groups 1-6.

① LEVEL controls (master AUX SEND controls)

These rotary controls control the overall level of the signal sent to the appropriate AUX SEND connector. They may be used for overall foldback level, or for adjusting the input level to a signal processor. Nominal send level of 0dB is at the "◀" mark on each control.

② AUX CUE switches

These switches add the signal of the appropriate AUX SEND to the MASTER CUE busses. The pre-fader signal is sent to the MASTER PFL buss, and the post-fader signal is sent to the MASTER AFL buss. These busses are not the same as the INPUT CUE buss used by the input channels.



AUX RETURN block

The AUX RETURN block is found directly above AUX SENDs 1-4 (above groups 1-4).

① RETURN assign switches (1-2, 3-4, 5-6, 7-8, ST, MONO)

As for single-input modules, except that where a pair of groups or the STEREO buss are specified, the AUX RETURN's L output goes only to the L STEREO channel or odd-numbered group, and the AUX RETURN's R output goes only to the R STEREO channel or even-numbered group.

② Balance control (BAL/PAN)

Pans between pairs of groups, and/or the stereo buss. The pairs of groups (or ST) assigned with ① are treated as stereo pairs, and the position of the BAL/PAN control determines the proportion of signal sent to the left (odd numbered) or right (even numbered) group of the pair. The "▼" setting (center) sends the signal of this channel equally to both odd- and even-numbered groups or to the L and R busses of the stereo mix.

The position of this knob has no effect on any output sent to the MONO buss, or the AUX busses (see ③).

③ RETURN to AUX assign switches (AUX 1, AUX 2, AUX 3, AUX 4)

These controls allow AUX returns to be re-routed directly into AUX SENDs. This may be useful for cascading effects units, for example.

They work in exactly the same way as the RETURN assign switches ① except that AUX SENDs are mono. Therefore they are not affected by the BAL/PAN control ②.

④ HIGH and LOW equalization controls

The low-noise, low-distortion equalizer offers two bands of EQ, with ±15 dB of gain, in the following ranges:

HIGH: 12 kHz shelving type.

LOW: 80 Hz shelving type.

Response is flat in the center "▼" position.

⑤ AUX RETURN LEVEL control

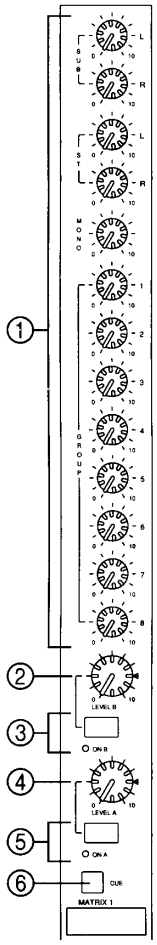
This control adjusts the level of the appropriate AUX RETURN signal which is fed to the selected buss(es). Nominal send level of 0dB is at the "◀" mark on the control.

⑥ ON/EDIT switch, and ON and CHECK indicators

As for single-input modules

⑦ AUX RETURN CUE switch

As for the AUX SEND CUE switch.



MATRIX block

The MATRIX block is found above groups 5-8.

Its purpose is to provide extraordinary flexibility in the production of auxiliary mixes, which can be used for lobby feeds, OB feeds, individual speaker/amplifier stack mixes, foldback, and so on.

The matrix consists of four sets of input and output controls, allowing four separate mixes to be created.

The 13 signals which can be added to each matrix mix are: the eight output groups, the ST L and R outputs, the MONO output, and the MATRIX SUB IN L and R signals.

Each of the four matrix mixes has two separate outputs — each will have the same mix content, but the level of each is independently variable. For each matrix mix, output A is a balanced signal sent from an XLR-type terminal, output B is an unbalanced signal, sent from an unbalanced phone terminal.

① Matrix input level controls (SUB L,R, ST L,R, MONO, GROUP 1-8)

These control the levels of each input to the matrix, via the TO MATRIX busses. Nominal level is fully clockwise (10). The TO MATRIX busses are fed from their various sources via internal jumpers, which are initially set as pre-ON switch, and post-fader. Thus groups (or any of the other matrix feeds) which are not contributing to the main mix (i.e. turned off) can still feed the matrix mixes. It is possible to have these jumpers changed to post-ON switch, and/or pre-fader, if desired.

② LEVEL B control

This controls the level from the matrix to the B output (unbalanced phone terminal). Nominal send level of 0dB is at the "◀" mark.

③ Output B ON switch and indicator

When ON (down), this switch enables the B output, and the ON indicator is illuminated.

④ LEVEL A control

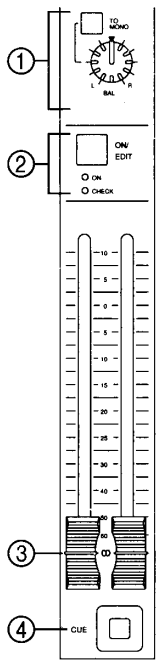
This controls the level from the matrix to the A output (balanced XLR-type terminal). Nominal send level of 0dB is at the "◀" mark.

⑤ Output A ON switch and indicator

As for the B output.

⑥ MATRIX CUE switch

This switch adds the signal from output A of the appropriate matrix to the MASTER CUE busses. The pre-fader signal is sent to the MASTER PFL buss, and the post-fader, post-ON switch signal is sent to the MASTER AFL buss. These busses are not the same as the INPUT CUE buss used by the input channels.



STEREO MASTER block (ST)

This block is found to the right of the group outputs.

① TO MONO switch and balance control (BAL)

This combination of switch and balance control allows output from the STEREO buss to be fed directly into the MONO buss. With the TO MONO switch depressed, output from the stereo buss is sent to the mono buss with L/R feed balance determined by the BAL control. Note that this determines the balance of the origin of the signal, not the destination, as the mono bus is, of course, mono.

The feed is always post-fader, and is shipped as pre-ON switch. An internal jumper can be changed to make it post-ON switch.

② ON/EDIT switch, and ON and CHECK indicators

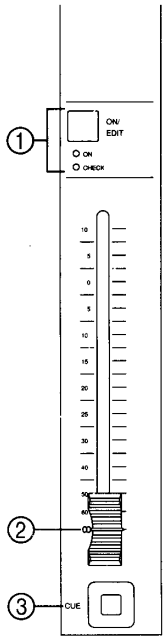
As for groups.

③ Master faders

This pair of linear faders controls the summed output of groups and individual input channels, regulating the level of the signal which is fed to the STEREO connectors. The configuration and calibration of these faders is the same as for input channel and group channel faders. Nominal level is 0dB.

④ Master CUE switch

As for group CUE switch.



MONO block

This block is found at the far right of the console.

As you can see, the MONO block is essentially another group, apart from its association with the STEREO MASTER section via the TO MONO control.

① ON/EDIT switch, and ON and CHECK indicators

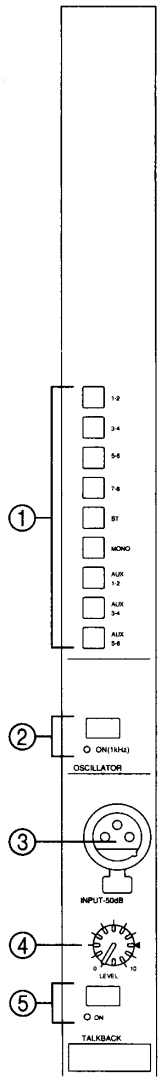
As for groups.

② MONO fader

As for groups.

③ MONO CUE switch

As for groups.



TALKBACK and OSCILLATOR block

This block is found above the STEREO MASTER block.

① Talkback assign switches (1-2, 3-4, 5-6, 7-8, ST, MONO, AUX 1-2, AUX 3-4, AUX 5-6)

When depressed, these switches will send the talkback/oscillator signal to the appropriate buss(es). Any combination of these may be chosen, allowing flexibility when using the talkback facility.

② OSCILLATOR ON switch and indicator

When depressed, and the TALKBACK switch is OFF, this switch sends a 1 kHz sine wave to the selected talkback buss(es). The level of this sine wave can be adjusted using the talkback LEVEL control. The sine wave is of high quality (<1% THD @ +4 dB) and can thus be used for signal tracing, and also to provide a reference test tone at the beginning of a recording.

③ Talkback INPUT connector

This unbalanced XLR-type connector is provided for use with a talkback microphone (impedance 50-600 Ω). A gooseneck or headset type of microphone is suggested for easy hands-off operation. The wiring of this connector is as follows:

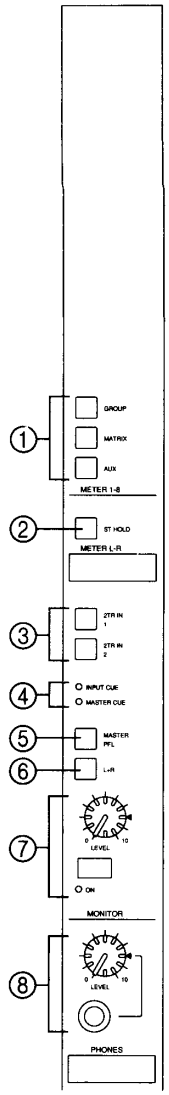
Pin	Signal
1	Ground
2	Signal
3	Ground

④ Talkback LEVEL control

This control adjusts the level of the talkback/oscillator signal sent to the selected buss(es). Nominal send level of 0dB is at the "◀" mark.

⑤ Talkback ON switch and indicator

When this latching on•off switch is ON (depressed), signals from the talkback INPUT connector will be routed to the selected buss(es). This will override the oscillator, if it is turned on.



MONITOR and METER section

This section is found above the MONO section.

About monitoring

The monitor section allows the operator to monitor any part of the mix, through headphones or the MIX OUT jacks. The CUE switches, found within each section, route the signals from that section to the cue busses — to the INPUT CUE buss for mono and stereo input channels and AUX RETURNs, or the MASTER PFL and AFL busses for everything else.

Cue signals from the stereo input channels, the AUX RETURN section and the STEREO MASTER section keep their stereo positioning in the monitor mix. Cue signals from all of the other CUE controls (single-input channels, MONO OUT, GROUP OUT etc.) are always centered in the monitor mix.

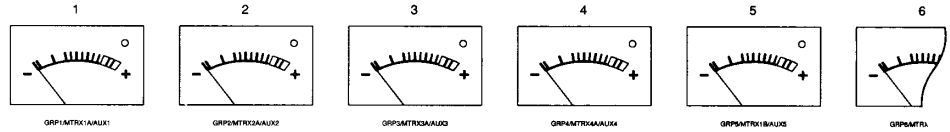
If no CUE switches are on, signals from one of the 2-track inputs are sent to the monitor mix. As soon as at least one CUE switch is on, the 2-track inputs are cut off, and the appropriate INPUT CUE and/or MASTER CUE LED will light.

When MASTER CUE is used, the position of the MASTER PFL switch determines whether the pre- or post-fader (PFL/AFL) signals will be sent to the monitor mix. When INPUT CUE is used, the signals are sent directly to the monitor mix, overriding the MASTER CUE (if it is being used). You cannot therefore listen to both INPUT and MASTER CUE at the same time.

The total monitor mix can be summed to mono with the L+R switch.

① METER 1-8 selector switches (GROUP, MATRIX, AUX)

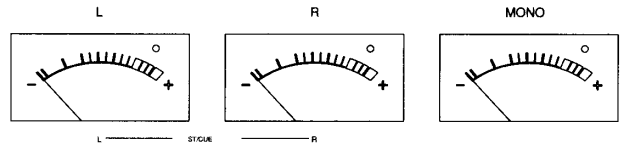
Only one of these switches, which select which signals will appear on meters 1-8, can be depressed at a time. The large, illuminated VU meters will display as follows:



Meter / Switch	1	2	3	4	5	6	7	8
GROUP	1	2	3	4	5	6	7	8
MATRIX	1A	2A	3A	4A	5A	6A	7A	8A
AUX	1	2	3	4	5	6	-	-

② METER L-R ST HOLD switch

Normally, whenever any CUE switch is operated, the L and R meters switch from indicating the main stereo output to indicating the monitor output. When the ST HOLD switch is depressed, however, the L and R meters will always indicate the main stereo output.



NOTE: The PEAK indicators light when the signal level reaches 3dB below clipping.

③ 2-track input switches (2TR IN 1 and 2)

Only one of these two switches can be pressed at a time. They determine which of the two 2TR inputs will be connected to the monitor section.

④ INPUT CUE and MASTER CUE indicators

These indicators indicate the use of CUE switches on the console. If any of the input channel or AUX RETURN CUE switches are in use, the INPUT CUE indicator lights. If any of the other CUE switches are in use, the MASTER CUE indicator lights.

⑤ MASTER PFL switch

With this switch up, any MASTER CUEs will be sent to the monitor section as post-fader (AFL). When this switch is depressed, MASTER CUEs will all be pre-fader (PFL).

⑥ Monitor mono switch (L+R)

With this switch depressed, the L and R channels of the monitor mix are summed and sent to both channels.

⑦ MONITOR LEVEL control, and ON switch and indicator

These controls affect only the monitor signals sent to the MONITOR jacks, not to the headphones. Nominal output level of 0dB is at the "◀" mark on the level control.

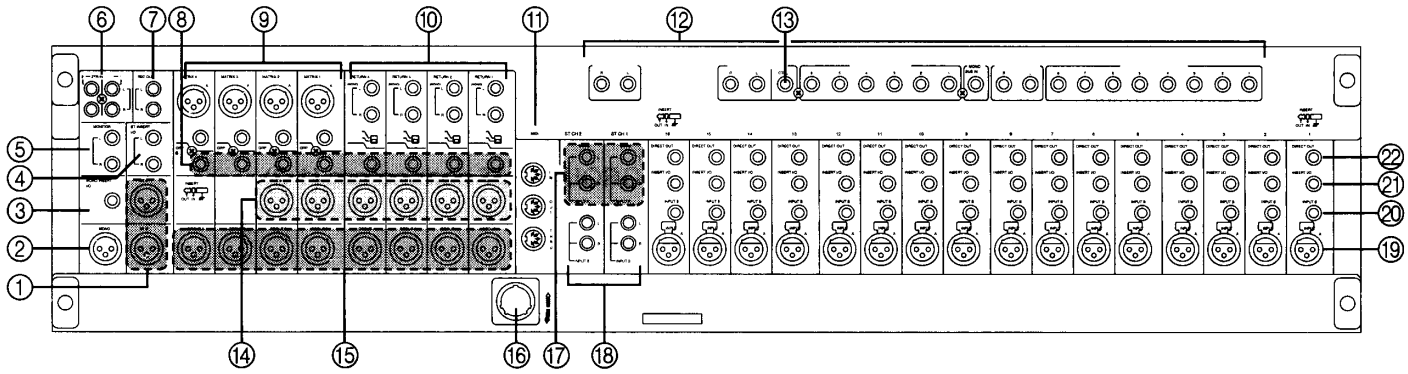
⑧ PHONES jack, and LEVEL control

This stereo headphone socket (standard 1/4 inch) is for use with headphones having a nominal impedance of 8 Ω. The nominal output power is 1 mW, and the maximum output power before clipping is 26 mW. The output from the CUE buss is output through this connector. There is no on•off switch for the phones output. Nominal output level of 0dB is at the "◀" mark on the level control.

Lamp connectors (not pictured)

These BNC connectors (2 on the 16- and 24-channel models, 3 on the 32- and 40-channel models) allow you to connect any of a number of commercially available 12V lamps to help you when working in dimly lit environments.

Connections



① STEREO outputs

Balanced, low-impedance, XLR-type male connectors. +4dB output

Post-STEREO fader stereo output.

② MONO output

Balanced, low-impedance, XLR-type male connector. +4dB output

Post-MONO fader output.

③ MONO INSERT connector

Unbalanced 1/4 inch TRS (tip-ring-sleeve) phone jack. Nominal 0dB

As for STEREO INSERT.

④ STEREO INSERT connectors

Unbalanced 1/4 inch TRS (tip-ring-sleeve) phone jacks. Nominal 0dB

Two insert points are provided (L and R) to allow pre-fader signal processing to be carried out on the two STEREO outputs. Wiring and operation of these TRS connectors is the same as that for input channel, group and AUX insert points.

⑤ MONITOR outputs (L, R)

Unbalanced 1/4 inch phone jacks. +4dB output

This pair of connectors provides a stereo output for the MONITOR section (see the "Front panel operations" section for full details of this facility).

⑥ 2-track in connectors (2TR IN 1&2)

Unbalanced RCA connectors. –10dB

See the description of the 2-track input switches (page 20) for details on the use of 2TR IN.

⑦ REC outputs

Unbalanced RCA connectors. –10dB

These outputs are taken from the main stereo buss, but are pre-ST INSERT, pre-ST fader, and pre-ST on•off switch.

⑧ GROUP INSERT connectors (1-8)

Unbalanced 1/4 inch TRS (tip-ring-sleeve) phone jacks. Nominal 0dB

In the same way that each single-input module is provided with a TRS insert point, each group is also provided with a similar insert point (eight in all), wired and operating in the same way as individual channel insert points. This allows a signal processor (compression, gating, EQ, etc.) to be inserted before the group fader.

⑨ MATRIX outputs (A,B)

A: Balanced, low-impedance, XLR-type male connectors. +4dB output

B: Unbalanced 1/4 inch phone jack. +4dB output

⑩ AUX RETURN connectors and level switches

Unbalanced 1/4 inch phone connectors, +4/-10dB

Four pairs of returns are provided to return stereo signals from the AUX effect/return loops. The level of these returned signals into the console is controlled by the AUX RTN controls on the front panel. Inserting only a plug into the L jack will send signals to both L and R.

Set the input level switch for each return to the appropriate level for the equipment connected, either –10dB (domestic audio standard) or +4dB (professional).

⑪ MIDI jacks (IN, OUT, THRU)

Standard 5-pin DIN jacks

These jacks allow the connection of MIDI devices such as sequencers, personal computers or another M2000 mixer, to automate scene memory utilization, or to back up scene memory data.

The IN jack should be connected to the OUT or THRU jack of another MIDI device, with a standard MIDI cable. Connection of the IN jack is only necessary for the reception of scene changes (from a sequencer or another M2000) or for receiving bulk dumped data (from a sequencer, data filer or another M2000).

The OUT jack should be connected to the IN jack of the another MIDI device. Connection is only necessary when scene changes or bulk data will be sent from the M2000.

The THRU jack echoes anything entering the IN jack. No data originating from the M2000 is transmitted from this jack.

⑫ SUB IN connectors (GROUP 1-8, STEREO L, R, MONO, AUX 1-6, CUE, MATRIX)

Unbalanced 1/4 inch phone connectors, +4dB

These allow the connection of a sub-mixer to expand the basic capability of the M2000 ("cascading"). For instance, modern keyboard players will often use a small sub-mixer whose outputs can be fed into two group SUB INs or the STEREO SUBINs to be summed with the M2000's own group or stereo output signals. Any AUX SENDs from the sub-mixer can also be added to the M2000's AUX send signals by connecting the sub-mixer's AUX OUTs to the M2000's appropriate AUX SUB INs. The CUE signals of two mixing consoles can also be summed by connecting one M2000's MONITOR jacks to another M2000's CUE SUB IN jacks.

The MATRIX SUB IN jacks allow an additional external stereo (or two mono) source(s) to be connected to the matrix.

All SUB INs are pre-insert points (where applicable), and pre-faders/level controls.

⑬ CUE CTRL

Mono-type 1/4 inch phone jack

This connector is for use when another M2000 mixing console is being used in cascade (either as a master or a slave). It does not carry audio signals, but carries control information for the INPUT CUE facility. Whenever any AUX RETURN, or single- or stereo-input module CUEs are used on either console, the INPUT CUE indicator will light, enabling the CUE functions, on both. In this case, there is no need to assign either M2000 as "Master" or "Slave". When making this connection, ensure (as always) that the two phone connector are "in phase" (tip-tip, sleeve-sleeve).

⑭ AUX SEND connectors (1-6)

Balanced, low-impedance, XLR-type male connectors. +4dB output

Six post-AUX SEND control outputs. Wiring for these connectors is the same as for input channel connectors. The AUX OUTS can be used for effects send/return loops or for foldback.

⑮ GROUP OUT connectors (1-8)

Balanced, low-impedance, XLR-type male connectors. +4dB output

Eight post-GROUP fader outputs.

⑯ DC power input connector

This connector is used to connect the locking umbilical cable to the PW2000M power supply.

CAUTION: Always make sure that the power to the PW2000M is turned OFF before connecting or disconnecting this connector.

Stereo channel connections

⑰ INPUT A

Unbalanced 1/4 inch phone jacks. –20~+10dB

If only one phone plug is inserted, into the L jack, the signal will be routed to both input channels.

Only one pair of inputs, INPUT A or INPUT B will be operational at a time, determined by the position of the A/B selector switch for the channel.

⑱ INPUT B

Unbalanced RCA connectors. –20~+10dB

Inserting an RCA connector in only the L connector does not route signals to both channels.

Channel connections

⑲ INPUT A

Balanced, low-impedance, XLR-type female connector.
–60~+10dB
The wiring for all of these XLR-type connectors is as follows (DIN specification):

Pin	Signal
1	Ground
2	Hot (+)
3	Cold (–)

Phantom power for condenser microphones (at +48V) may be supplied from each channel, and this may be selected individually for each channel by using the +48 V control on the front panel. See the sections on Input Channels for further details on phantom power.
Using the 26dB pad and the GAIN control on each input channel, the gain of virtually any source — microphone or line — can be correctly matched.

⑳ INPUT B

Balanced, low-impedance, 1/4 inch phone jack. –60~+10dB
The wiring for all INPUT B connectors is as follows:

	Signal
Tip	Hot (+)
Ring	Cold (–)
Sleeve	Ground

Phantom power is not supplied to INPUT B.

㉑ INSERT I/O

Unbalanced 1/4 inch TRS (tip-ring-sleeve) phone jack. Nominal 0dB
This jack allows access to each single-input channel between the equalization section and the channel fader. Stereo input channels are not fitted with these INSERT connectors. Possible uses for these connectors include compression and/or gating of signals prior to other effects being introduced, or equalization using a graphic equalizer, rather than the mixing console's own equalization. The wiring of these connectors is as follows:

	Signal
Tip	out (send)
Ring	in (return)
Sleeve	ground

If no connector is inserted, the insert circuit is closed automatically, hence no jumpers are needed when the insert circuit is not being used.

㉒ DIRECT OUT

Unbalanced 1/4 inch phone jack. Nominal level 0dB
This works in conjunction with the AUX6 control and DIRECT switch (see "CHANNEL AUX control (6) and DIRECT switch" on page 5) to provide a direct output from each channel. Without internal jumper adjustment, it is post-EQ and post-fader. Internal jumper adjustment can change it to post-EQ, pre-fader, or to pre-EQ, pre-fader.
DIRECT OUT may be particularly useful for sending output from each channel via a snake cable to a specialized monitor mixer.

Installation

IMPORTANT!

* This unit is designed to operate within ±10% of rated voltage. However, the power supply voltage can drop by up to 30% without an increase in hum and noise, but the maximum output level will be reduced.
* Ideally, this unit should be used in a dust-free environment, with low humidity. Do not install it near heaters, or near equipment that causes noise or hum.

Hook-up cables and hum avoidance

The M2000 mixing console's primary inputs and outputs feature electronically balanced circuits and connectors. When these connectors are used with the appropriate 2-conductor shielded cables (e.g. standard microphone cables) these circuits provide optimum protection against hum and noise pickup. The XLR type connectors are wired with pin 2 as "audio high" and pin 3 as "audio low", in accordance with DIN and IEC standards. In the balanced TRS connectors, the tip is audio high and the ring is audio low. Pin 1 in the XLR type connectors, and the sleeve in the TRS connectors are ground.

Some microphones and professional audio equipment are wired with pins 2 and 3 (XLR) reversed. Generally, this will cause no problem other than a polarity reversal. However, if such a piece of equipment uses a balanced-type connector for an unbalanced input, or an adaptor is used to match an unbalanced connector to a balanced input, the high side of the audio circuit could be grounded. In this case, reverse the audio high and audio low wiring at one end of the connecting cable, or use a suitable polarity-reversal adaptor. Regardless of connector polarity, if hum is encountered try cutting the shield connection at one end of the cable.

All unbalanced phone jacks are intended for use with standard tip-sleeve 1/4" phone plugs and single-conductor shielded cable. Do not attempt to reduce hum by cutting the shield connection on these cables. Rather, restrict unbalanced cables to about 3 meters (10 feet), and try to set up the system so that the equipment involved is all connected to the same AC circuit.

IMPORTANT: Breaking the ground path can create a SHOCK HAZARD. When routing cables, especially unbalanced cables, avoid strong sources of electro-magnetic interference or radio frequency interference generated by electric motors, fluorescent lights, dimmer panels, etc. To avoid crosstalk-induced feedback, never bundle microphone cables with mixing console output cables; these cables should cross at right angles where practical.

Grounding

Careful grounding procedures are essential for proper operation, not only of the mixing console, but of the entire audio system. Many grounding techniques exist, and a number of books have been written on the subject. The following are good sources of information on grounding and related subjects.

THE AUDIO CYCLOPEDIA by Howard M. Tremaine
(Pub. Howard W. Sams)

SOUND SYSTEM ENGINEERING by Don and Carolyn Davis
(Pub. Howard W. Sams)

GROUNDING AND SHIELDING IN INSTRUMENTATION
by Ralph Morrison
(Pub. John Wiley & Sons)

SOUND REINFORCEMENT HANDBOOK by Gary Davis and Ralph Jones
(Pub. Hal Leonard Pub.)

"Ground loops" are often caused by multiple paths from the equipment grounds to the AC mains ground (or earth ground). Ground loops are a major cause of hum and noise in an audio system. In severe cases, ground loops can even cause the equipment involved to break into oscillation. This can cause distortion and even damage to amplifiers and speakers. One way to avoid ground loops is to make sure that there is only one path to the AC ground of the entire audio system. A popular method is to cut the shield ground of balanced cables at the input end of the cable. Another technique is to ground all shields at one piece of equipment, typically the console, and cut the shields at the other ends of the cables.

(Note: this is NOT possible with unbalanced cables).

Check mains voltages

Connect the power supply unit to the AC mains only after confirming that the line voltage and frequency are correct. A simple check with a voltmeter can save your equipment — and the show. It is also a good idea to check for proper polarity at the AC outlet. The power switch on the power supply unit should be OFF before connection to the mains. As a further precaution, disconnect the power supply unit from the mains while audio cables are being installed.

Matching input channel sensitivity to the source

The pad switch and gain control on each input channel permit adjustment of the input sensitivity between –60dB and +10dB. With the pad out, the gain control has a sensitivity range of –60dB to –16dB. With the pad in, this range is –34dB to +10dB. This makes it possible to match the input sensitivity to a broad range of input sources.

The following settings will generally apply:

Low output dynamic microphones: –50dB.

Medium output condenser microphones: –40dB.

Preamplified electric instruments and low level (creative audio or hi-fi) line sources: –20dB.

High level (professional) line sources: +4dB

IMPORTANT: The console, and all signal processing devices connected to it, MUST be turned on BEFORE the power amplifiers are turned on. If this procedure is not followed, the console turn-on transient could easily cause damage to your loudspeakers. This procedure should be reversed when the system is turned off.

Tips on making the best of your M2000

As with every complex piece of equipment, care and practice are needed in order to obtain the best results. The following tips may serve as guidelines to help you get the best from your system:

Use the GAIN and attenuation pads as sparingly as you can without inducing clipping. Overuse of these attenuators can result in a poor signal-to-noise ratio, as the mixing console's amplification must be used to compensate for the attenuation. Even a quality mixing console such as the M2000 can introduce noise into the system.

Remember that VU meters are "average" meters, not indicators of peak signal. Their sluggish response (by comparison with peak meters) means that simply "watching the needles" to guard against clipping is not a recommended practice. Watch the peak level LEDs on the meters and SIGNAL and PEAK indicators of individual input channels, and more importantly, use your ears, which, after all, are the ultimate test.

The 1 kHz oscillator can be used as a test signal when tracing signals. For instance, if an effects loop is not returning, use of the oscillator, the M2000's meters, and the meters on the signal processor can tell you how far the signal has reached in the chain, without the necessity for a test tape or program.

The matrix system

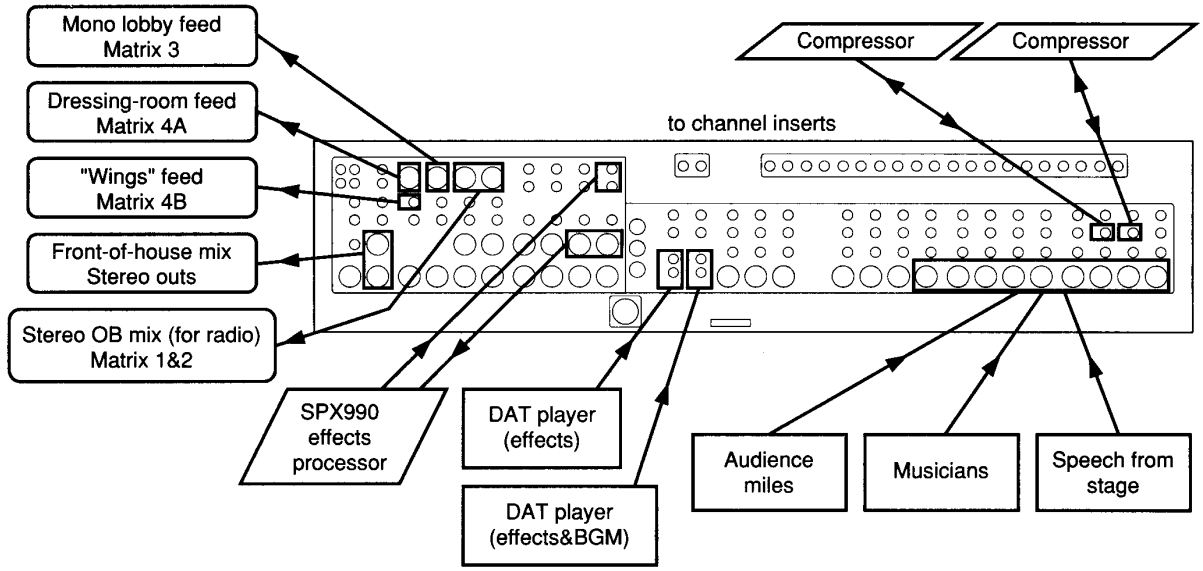
The M2000's matrix system allows you extraordinary flexibility in the production of auxiliary mixes, which can be used for lobby feeds, OB feeds, individual speaker/amplifier stack mixes, foldback, and so on. The matrix section (located at the top of the group 5 through 8 fader modules) consists of four sets of input and output controls, allowing four separate mixes to be created from the matrix.

The 13 signals which can be added to each matrix mix are: the eight output groups, the ST L and R outputs, the MONO output, and the MATRIX SUB IN L and R signals.

Each of the four matrix mixes has two separate outputs — each will have the same mix content, but the level of each is independently variable. For each matrix mix, output A is a balanced signal sent from an XLR-type terminal, output B is an unbalanced signal sent from an unbalanced phone terminal.

Example 1: Using the matrix in a live theater performance

System example: Sound reinforcement for live theatre



- Here, we assume a stage production which also includes live musicians in the pit. All speech from the stage is sent to groups 1 and 2. The musicians' performance is routed to groups 3 and 4. Stereo mikes are placed to catch ambient audience response and are routed to groups 5 and 6 (but these are, naturally, not routed to the front-of-house speakers). Prerecorded effects are cued from a pair of DAT players routed to groups 7 and 8.
- We need, in addition to the stereo front-of-house mix: a stereo OB mix for the local radio station, a mono lobby feed for latecomers to the performance, and a dressing-room feed to cue performers off-stage.
- For the OB mix, we need to add the audience response (groups 5 and 6) to all the other groups. Matrix 1 becomes the L channel of the OB, and Matrix 2 becomes the R channel. All odd groups are therefore sent to Matrix 1, and all even groups to Matrix 2.
- The lobby feed will need a boost to the "live" inputs (the performers and musicians) compared to the front-of-house mix. Some audience response is also useful here. Since this is a mono feed, all groups are now sent to Matrix 3.
- The performers waiting to come on stage will need the "live" inputs as the most important elements of their dressing-room mix, to cue them for entrances. The FX and audience response can be added to taste. Matrix 4 now contains all these groups. Output A is sent to the dressing-rooms, and output B is sent (at a lower level) to a system in the stage wings.
- Without sacrificing any grouping facilities or AUX SENDs, the M2000 has therefore provided an additional four mixes which meet a wide variety of needs. The location of the matrix controls means no separate sub-mixer operator is necessary — one operator can control all of these mixes, as well as the front-of-house mix.

Example 2: Using the matrix to drive different speaker/amplifier stacks

- Another use for the matrix might be to drive different stacks distributed throughout an auditorium. The relative volumes of different groups of signals can be adjusted here to compensate for system characteristics, as well as the acoustic characteristics of the venue.

Example 3: Using the matrix for foldback

- On stage, four different foldback mixes can be provided for the performers, based on the group mixes. Of course, this does not give the full monitoring flexibility provided by the YAMAHA series of monitor mixing consoles, but for smaller situations, this can often be a useful feature, especially when the all AUX SENDs are routed to effect units.
- Even though the M2000 is not primarily a recording console, the matrix can be used to set up four different foldback mixes for performers in the studio.

Jumpers and Optional Modules

Jumpers

As mentioned earlier, a number of internal jumpers are provided so that the M2000 can be customized according to your needs.
DO NOT ATTEMPT TO CHANGE THESE JUMPERS YOURSELF. Contact your nearest Yamaha service center and arrange for this to be done by trained service personnel. A charge will be required for this service.
The jumpers which may be changed are shown below:

Location	Function	Status when shipped
In each single-input module	AUX 1-4, 6 & DIRECT OUT pre-/post- EQ	Post-EQ
In each single-input module	AUX 6 and DIRECT OUT pre-/post-fader	Post-fader
In each stereo module	AUX 1-4 pre-/post-EQ	Post-EQ
In each group	Group sends to ST, MONO, & MATRIX pre-/ post-on•off switch	Pre-on•off switch
In each group	Send to MATRIX pre-/post-group fader	Post-group fader
In the stereo block (ST)	Send to MONO & MATRIX pre-/post-on•off switch	Pre-on•off switch
In the stereo block (ST)	Send to MATRIX pre-/post-faders	Post-faders
In the MONO block	Send to MATRIX pre-/post-on•off switch	Pre-on•off switch
In the MONO block	Send to MATRIX pre-/post-fader	Post-fader

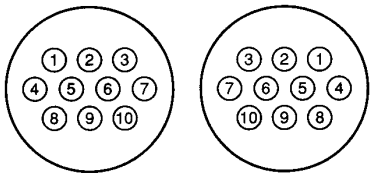
Optional Modules

Two types of optional modules can be installed in the M2000; Monaural input modules (MN2000M) and Stereo input modules (ST2000M).
DO NOT ATTEMPT TO INSTALL THESE YOURSELF. Contact your nearest Yamaha service center and arrange for this to be done by trained service personnel. A charge will be required for this service.
Each type of module comes in a block of four channels. If you want to, you can replace modules of four Monaural input channels on your M2000 with modules of four Stereo ones, or vice versa.
When a module is replaced by one of the opposite type, each of the new channels takes the MIDI Control Change number that the previous channel in that position had (see page 12 for these control changes).

General specifications

Total Harmonic Distortion (Master output)	Less than 0.1% (THD+N) 20 Hz–20 kHz @ +14 dB output into 600 Ω
Frequency Response (Master output)	+1/–3 dB 20 Hz–20 kHz @ +4 dB output into 600 Ω
Hum & Noise*1 (40 ch)	–128 dB Equivalent Input Noise. –97 dB Residual Output Noise. –80 dB (84 dB S/N) GROUP OUT Master fader at nominal level and all Ch assign SW's off. –64 dB (68 dB S/N) GROUP OUT Master fader and one Ch fader at nominal level. –79 dB (83 dB S/N) STEREO OUT MASTER fader at nominal level and all Ch assign SW's off and all Group to ST SW's off. –79 dB (83 dB S/N) MONO OUT Master fader at nominal level and all Ch assigh SW's off and all Group to MONO SW's off. –77 dB (81 dB S/N) AUX OUT Master level control at nominal level and all Ch AUX Mix controls at minimum level. –92 dB (96 S/N) MATRIX OUT Master level control at nominal level and all Matrix Mix controls at minimum level.
Crosstalk	–80 dB @1 kHz adjacent inputs. –70 dB @1 kHz input to output. (Ch input) –50 dB @1 kHz input to output. (Stereo input)
Maximum Voltage Gain	84 dB CH IN to GROUP OUT/ STEREO OUT (CH to ST) /MONO OUT (CH to MONO) 94 dB CH IN to STEREO OUT (Group to ST)/MONO OUT (Group to MONO) 104 dB CH IN to MONO OUT (Group to ST & ST TO MONO) 90 dB CH IN to MATRIX OUT (Group to MATRIX) 76 dB CH IN to AUX OUT (Pre Fader) 86 dB CH IN to AUX OUT (Post Fader) 70 dB CH IN to MONITOR OUT (CH IN CUE) 76 dB CH IN to DIRECT OUT 60 dB CH IN to CH INSERT OUT 44 dB ST IN to GROUP OUT/STEREO OUT (CH to ST)/MONO OUT (CH to MONO) 33 dB ST IN to AUX OUT (Pre Fader) 43 dB ST IN to AUX OUT (Post Fader) 30 dB ST IN to MONITOR OUT (ST IN CUE) 30 dB RETURN to GROUP OUT/STEREO OUT/MONO OUT 23 dB RETURN to AUX OUT 70 dB TALKBACK IN to GROUP OUT/STEREO OUT/ MONO OUT 10 dB SUB IN to GROUP OUT/STEREO OUT/MONO OUT 6 dB SUB IN to AUX OUT/MONITOR OUT 20 dB 2TR IN to MONITOR OUT
Ch Input PAD SW	26 dB
Ch Input Gain control	44 dB variable
Stereo Input Gain control	30 dB variable
Ch Input High Pass Filter	12 dB/octave roll-off 80 Hz at –3 dB point.
Ch Input Equalization	±15 dB maximum HIGH 12 kHz (shelving) HIGH-MID 400 Hz – 8 kHz (peaking) LOW-MID 80 Hz – 1.6 kHz(peaking) LOW 80 Hz (shelving)
Stereo Input Equalizaion	±15 dB maximum HIGH 12 kHz (shelving) MID 300 Hz – 6 kHz (peaking) LOW 80 Hz (shelving)
Return Equalization	±15 dB maximum HIGH 12 kHz (shelving) LOW 80 Hz (shelving)
Channel Peak Indicator	Peak LED (red) turns on when post-EQ signal is above the level 3 dB lower than clipping level.
Channel Signal Indicator	Signal LED (green) turns on when post-EQ signal is above the level 10 dB lower than nominal level.
Scene Memory (with MIDI control)	Direct Scene recall switches (#1 – #8) Switchable Scene recall (#1 – #128)
VU Meters	(0 VU=+4 dB output @ 600 Ω load) 3 large, illuminated meters; 2 meters are switchable. L; STEREO L/CUE L R; STEREO R/CUE R MONO; MONO 8 smaller, illuminated meters; all switchable. #1; GROUP 1/MATRIX 1 A/AUX 1 #2; GROUP 2/MATRIX 2 A/AUX 2 #3; GROUP 3/MATRIX 3 A/AUX 3 #4; GROUP 4/MATRIX 4 A/AUX 4 #5; GROUP 5/MATRIX 1 B/AUX 5 #6; GROUP 6/MATRIX 2 B/AUX 6 #7; GROUP 7/MATRIX 3 B #8; GROUP 8/MATRIX 4 B
VU Meter Peak Indicator	Peak LED (red) built into each VU meter turns on when output signal is above the level 3 dB lower than clipping level.
Phantom Power	+48 VDC is applied to balanced inputs for powering condenser microphones.
Dimensions	Height 223 mm Depth 785 mm Width 16 ch 970 mm 24 ch 1202 mm 32 ch 1434 mm 40 ch 1696 mm
Weight	16 ch 44 kg 24 ch 54 kg 32 ch 64 kg 40 ch 76 kg
Power consumption	300W

Accessory	**Umbilical cable** Multi-conductor cable with locking connectors to supply power to the M2000 console. Approx. 3m (10 ') long. * Specifications subject to change without notice.



Umbilical Connector Pin Assignments

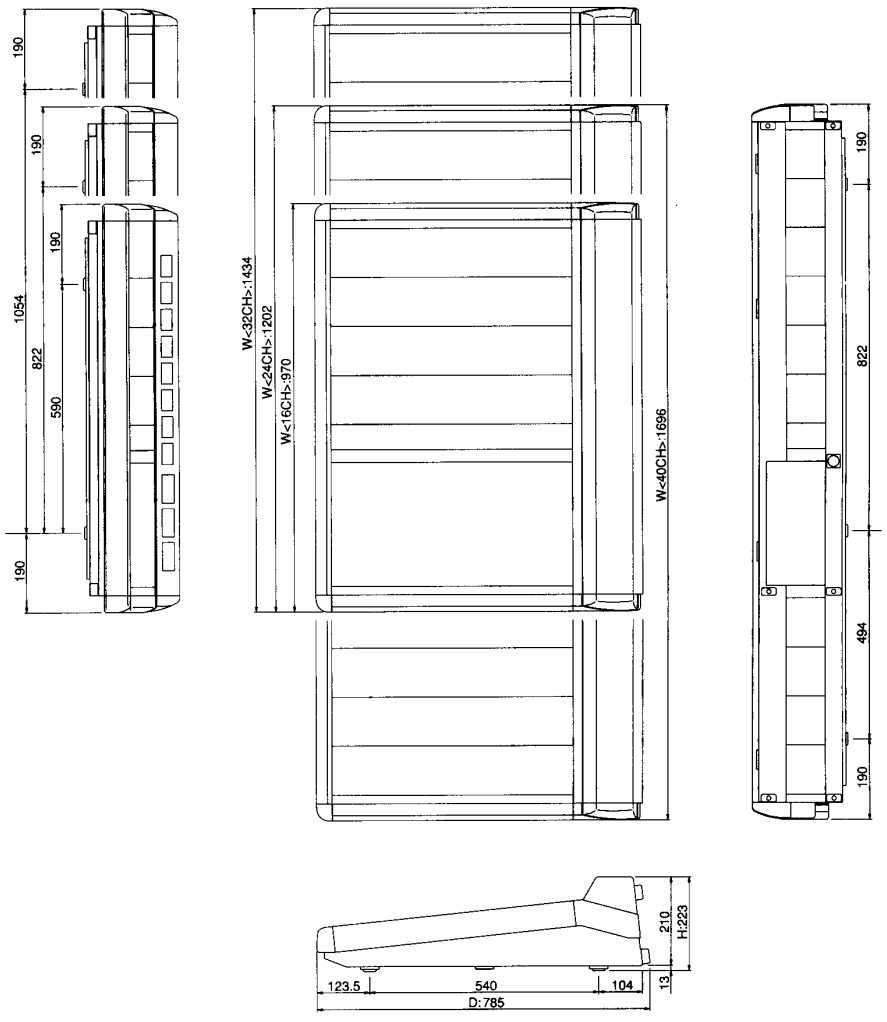
Power Supply (PW2000M)

Options	Monaural Input Module (MN2000M) Stereo Input Module (ST2000M) Output Transformer (Rack Mount Type) Power Supply (PW2000M)

● 0 dB=0.775 Vrms.

*1 20 Hz–20 kHz, Rs=150 Ω, Input Gain=Max, Input Pad=OFF, Input sensitivity = –60 dB

DIMENSIONS



UNIT = mm

Input/output specifications

INPUT CHARACTERISTICS

Connection	PAD	Gain Trim	Actual Load Impedance	For Use with Nominal	Input Level*2			Connector in Mixer
					Sensitivity*5	Nominal	Max. before Clip	
CH IN (1-*ch*1) INPUT A, B	0	–60	A; 5 kΩ	50-600 Ω Mics & 600 Ω Lines	–80 dB (0.078 mV)	–60 dB (0.775 mV)	–40 dB (7.75 mV)	A; XLR-3-31 type (Balanced)
	26				–54 dB (1.55 mV)	–34 dB (15.5 mV)	–14 dB (155 mV)	
	0	–16	B; 10 kΩ		–36 dB (12.3 mV)	–16 dB (123 mV)	+4 dB (1.23 V)	B; Phone Jack [TRS] (Balanced)*4
	26				–10 dB (245 mV)	+10 dB (2.45 V)	+30 dB (24.5 V)	
ST IN (1, 2) [L, R] INPUT A, B		–20	10 kΩ	600 Ω Lines	–40 dB (7.75 mV)	–20 dB (77.5 mV)	0 dB (0.775 V)	A; Phone Jack (Unbalanced)
		+10			–10 dB (245 mV)	+10 dB (2.45 V)	+30 dB (24.5 V)	B; RCA Pin Jack (Unbalanced)
RETURN (1-4) [L, R]		–10	10 kΩ	600 Ω Lines	–26 dB (38.8 mV)	–10 dB (245 mV)	+10 dB (2.45 V)	Phone Jack (Unbalanced)
		+4			–12 dB (195 mV)	+4 dB (1.23 V)	+24 dB (12.3 V)	
TALKBACK IN			10 kΩ	50-600 Ω Mics	–66 dB (0.388 mV)	–50 dB (2.45 mV)	–24 dB (48.9 mV)	XLR-3-31 type (Unbalanced)
2TR IN (1, 2) [L, R]			10 kΩ	600 Ω Lines	–16 dB (123 mV)	–10 dB (245 mV)	+10 dB (2.45 V)	RCA Pin Jack (Unbalanced)
GROUP (1-8) SUB IN STEREO [L, R] SUB IN MONO SUB IN			10 kΩ	600 Ω Lines	–6 dB (388 mV)	+4 dB (1.23 V)	+24 dB (12.3 V)	Phone Jack (Unbalanced)
AUX (1-6) SUB IN MATRIX [L, R] SUB IN CUE [L, R] SUB IN			10 kΩ	600 Ω Lines	–2 dB (0.616 V)	+4 dB (1.23 V)	+24 dB (12.3 V)	Phone Jack (Unbalanced)
CH (1-*ch*1) INSERT IN			10 kΩ	600 Ω Lines	–20 dB (77.5 mV)	0 dB (0.775 V)	+20 dB (7.75 V)	Phone Jack [TRS] (Unbalanced)*3
GROUP (1-8) INSERT IN STEREO [L, R] INSERT IN MONO INSERT IN			10 kΩ	600 Ω Lines	–6 dB (388 mV)	0 dB (0.775 V)	+20 dB (7.75 V)	Phone Jack [TRS] (Unbalanced)*3

*1) M2000 –16; 16ch, –24; 24ch, –32; 32ch, –40C; 40ch
*2) 0 dB is referenced to 0.775 Vrms.
*3) Insert Phone Jacks; T=OUT, R=IN, S=GND
*4) CH INPUT B Jacks; T=HOT, R=COLD, S=GND
*5) Sensitivity is the lowest level that will produce an output of +4 dB (1.23 V), or the nominal output level when the unit is set to maximum level.

OUTPUT CHARACTERISTICS

Connection	Actual Source Impedance	For Use with Nominal	Output Level*2		Connector in Mixer
			Nominal	Max. before clip	
GROUP OUT (1-8) STEREO OUT [L, R] MONO OUT AUX OUT (1-6) MATRIX A OUT (1-4)	150 Ω	600 Ω Lines	+4 dB (1.23 V)	+24 dB (12.3 V)	XLR-3-32 type (Balanced)
MATRIX B OUT (1-4) MONITOR OUT [L, R]	75 Ω	600 Ω Lines	+4 dB (1.23 V)	+20 dB (7.75 V)	Phone Jack (Unbalanced)
REC OUT [L, R]	600 Ω	10 kΩ Lines	–10 dB (245 mV)	+10 dB (2.45 V)	RCA Pin Jack (Unbalanced)
CH DIRECT OUT (1-*ch*1)	600 Ω	10 kΩ Lines	0 dB (0.775 V)	+20 dB (7.75 V)	Phone Jack (Unbalanced)
CH INSERT OUT (1-*ch*1) GROUP INSERT OUT (1-8) STEREO INSERT OUT [L, R] MONO INSERT OUT	600 Ω	10 kΩ Lines	0 dB (0.775 V)	+20 dB (7.75 V)	Phone Jack [TRS] (Unbalanced)*3
PHONES OUT [L, R]	100 Ω	8 Ω Phones	1 mW	20 mW	Stereo Phone Jack (Unbalanced)
		40 Ω Phones	3 mW	75 mW	

*1) M2000 –16; 16ch, –24; 24ch, –32; 32ch, –40C; 40ch
*2) 0 dB is referenced to 0.775 Vrms.
*3) Insert Phone Jacks; T=OUT, R=IN, S=GND

YAMAHA [Mixing Console] date:1994.02.14

Model M2000 MIDI Implementation Chart Version : 1.0

Function ...		Transmitted	Recognized	Remarks
Basic	Default	1 - 16, off	1 - 16, off	memorized
Channel	Changed	1 - 16, off	1 - 16, off	
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	1 - 70	o	o	*1
	True #	0/127		
Prog Change		o	o	*2
	True #	1 - 40		
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	Local ON/OFF	x	x	
	All Notes OFF	x	x	
Mes- sages	Active Sense	x	x	
	Reset	x	x	

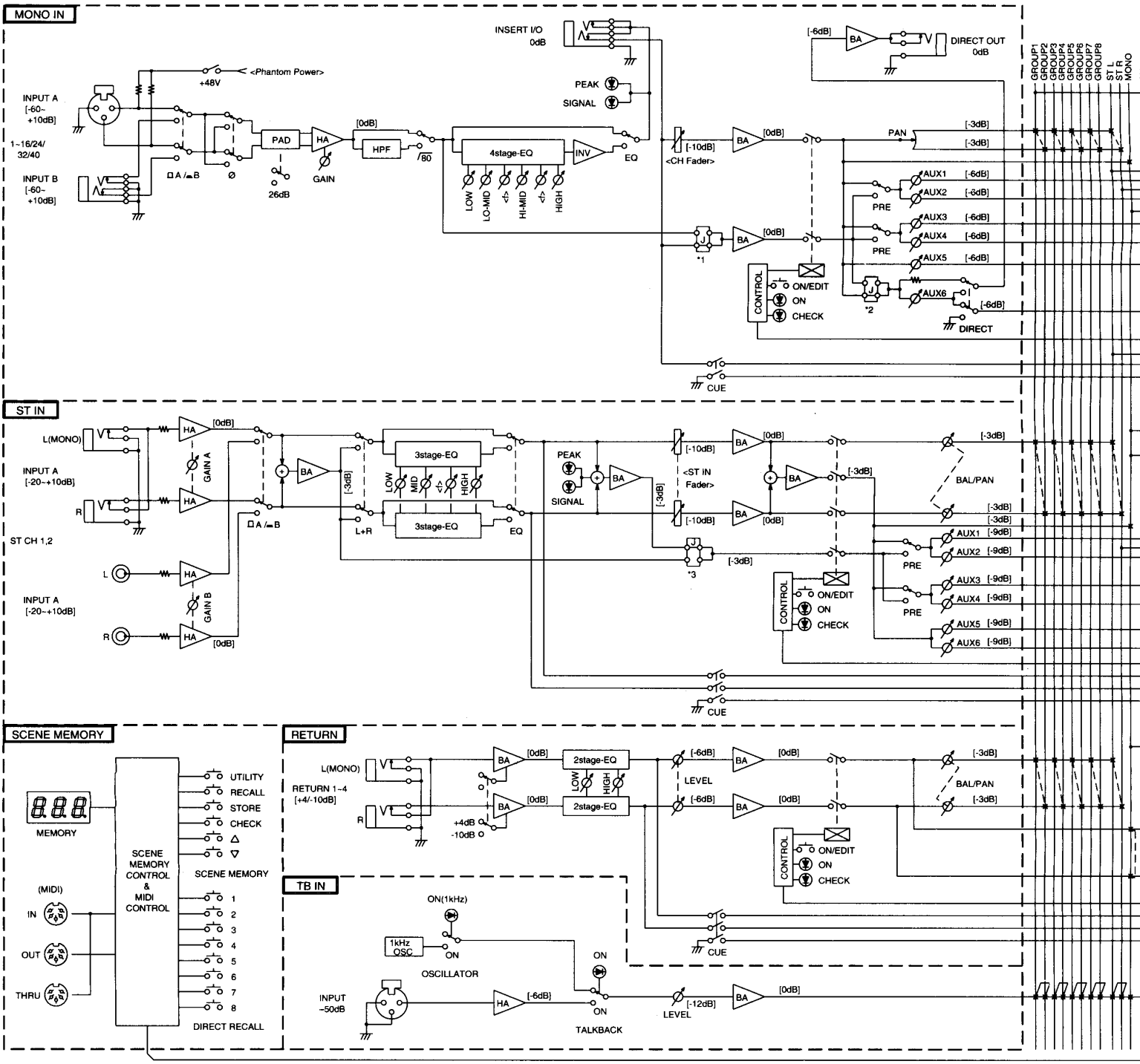
Notes: *1 See Control Change chart.

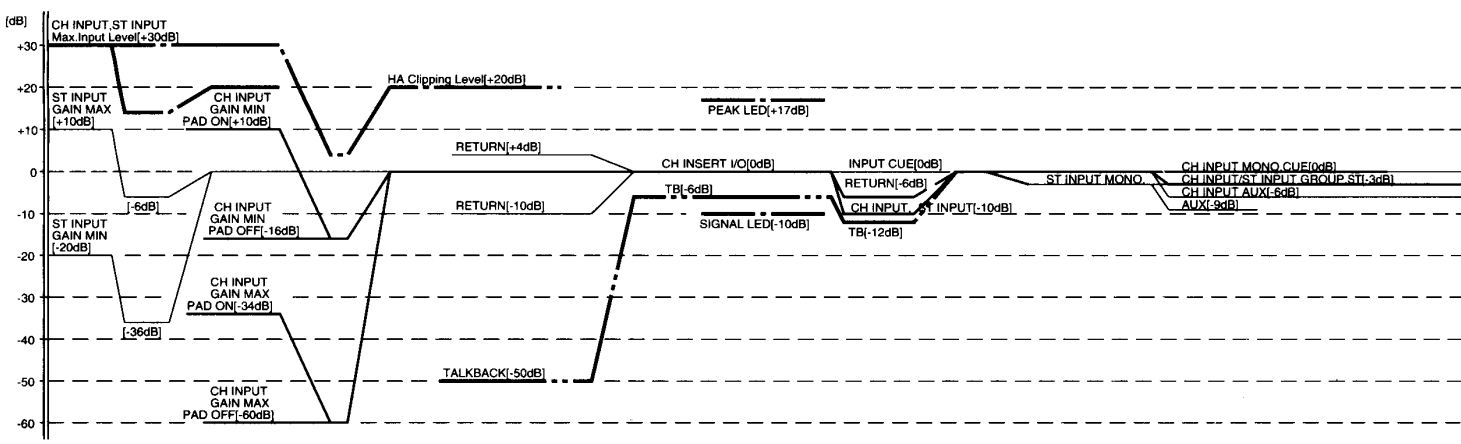
*2 Fof program 1 - 128, memory 1 - 128 is selected.

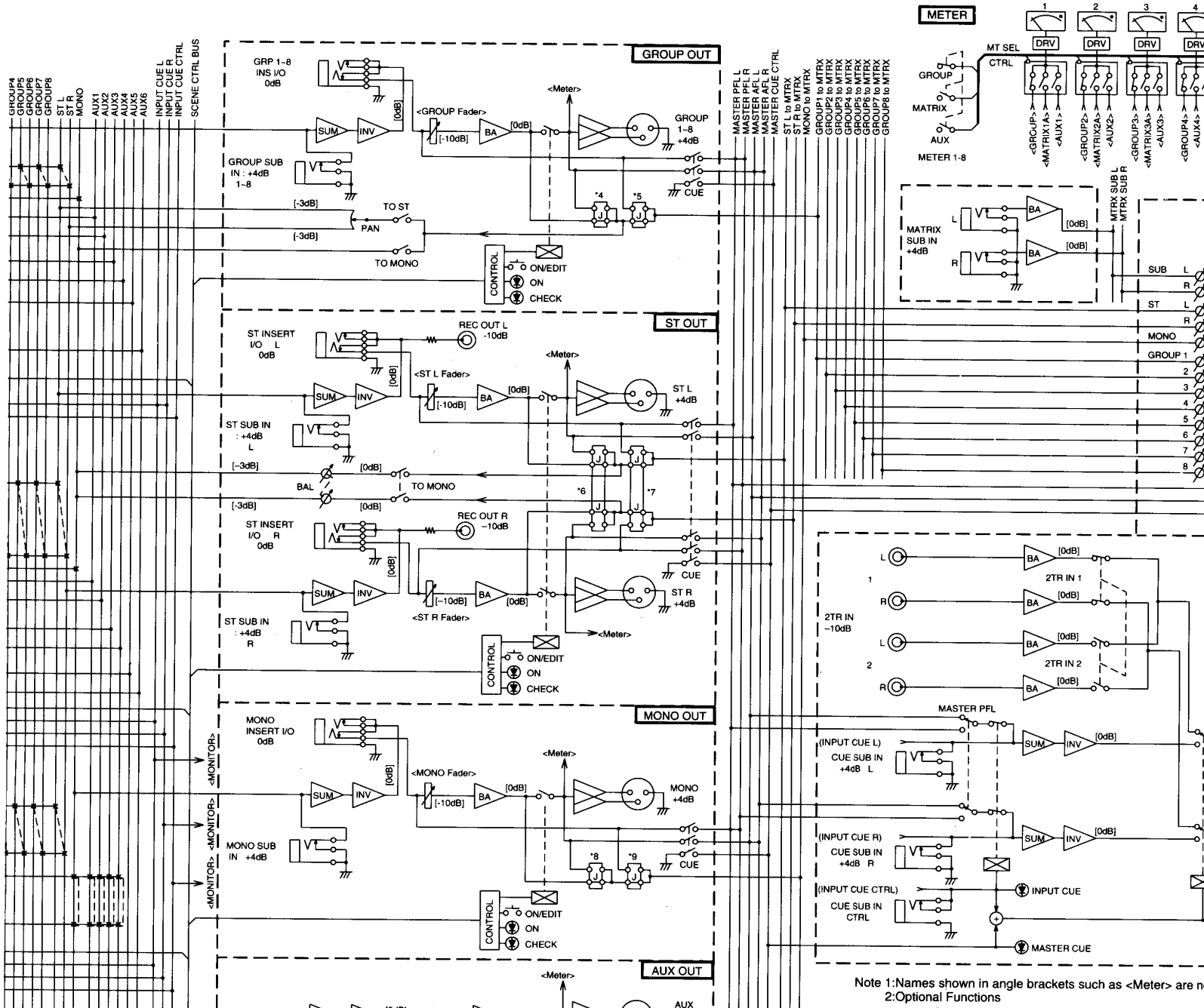
Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes

Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

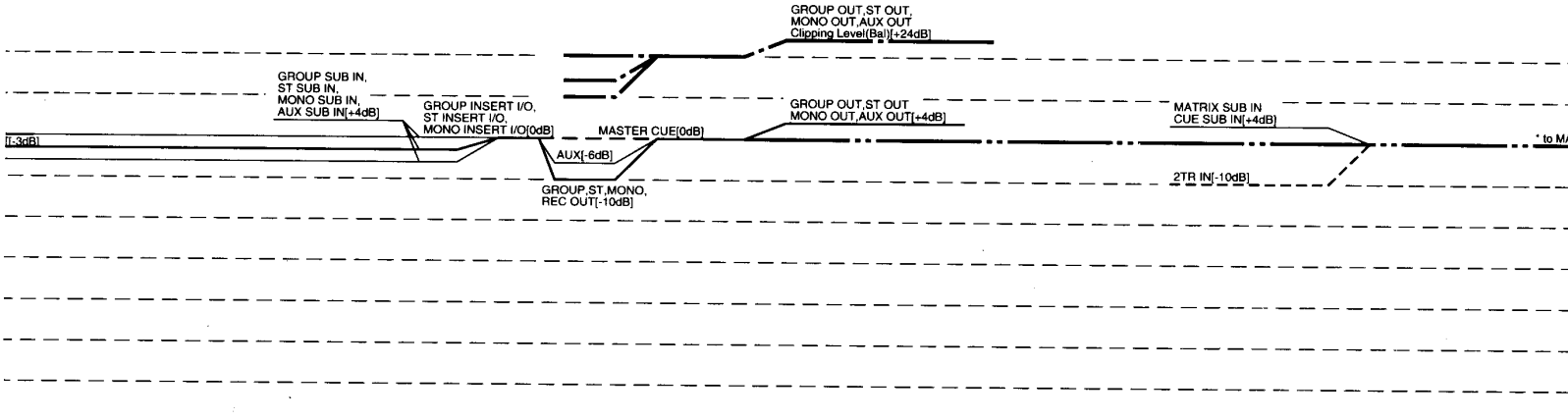
Block & level diagram (Schémas de principe, Block- u. Pegeldiagramme)

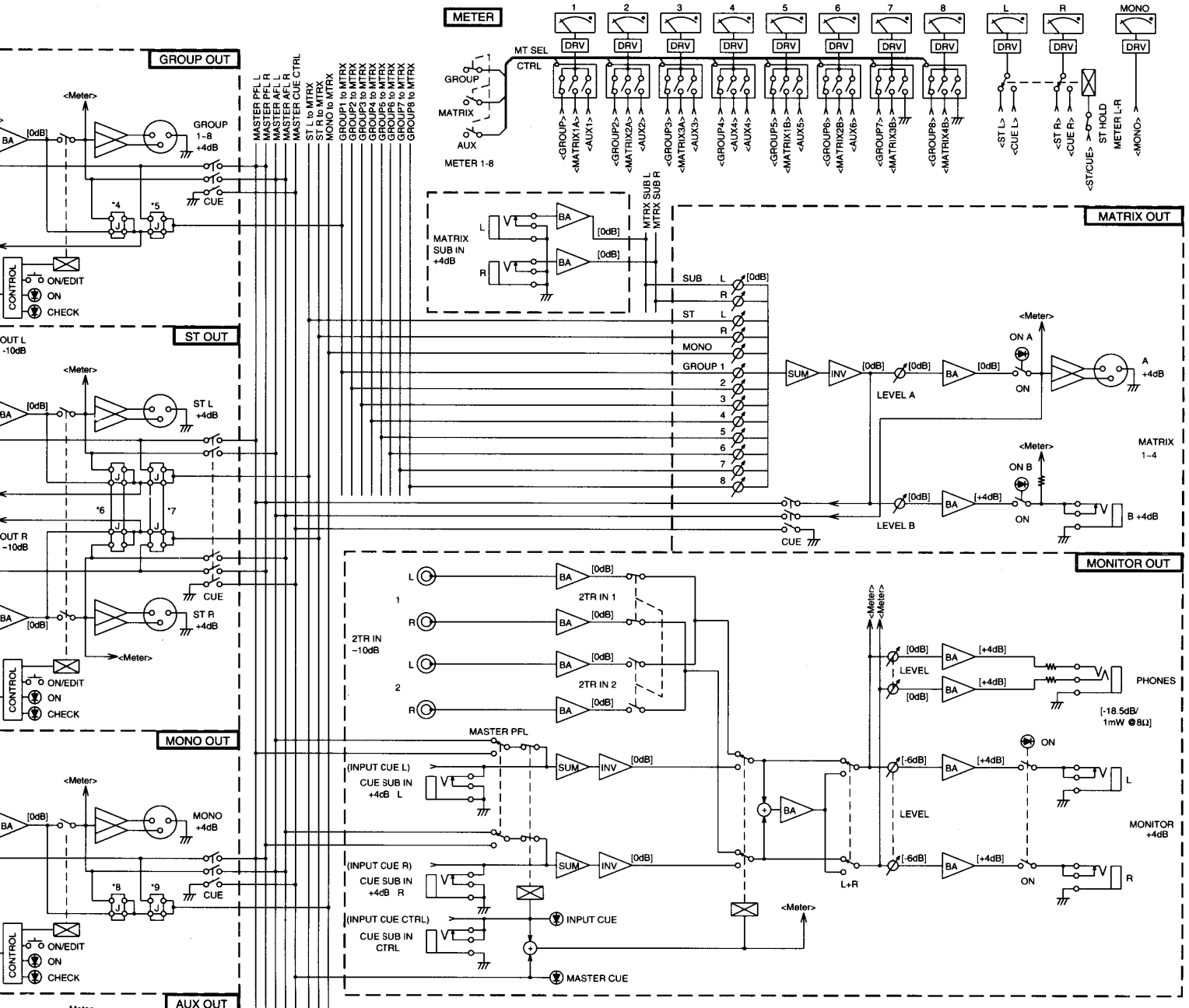






Note 1:Names shown in angle brackets such as <Meter> are n
2:Optional Functions
*1 CH INPUT AUX(1~4,6) & DIRECT .. [pre EQ / p
*2 CH INPUT AUX6 & DIRECT OUT ... [pre Fader /
*3 ST INPUT AUX(1~4) ..... [pre EQ / p
*4 GROUP to ST/MONO/MATRIX ..... [pre ON SW
*5 GROUP to MATRIX ..... [pre GROU
*6 ST to MONO/MATRIX ..... [pre ON SW
*7 ST to MATRIX ..... [pre ST L/R
*8 MONO to MATRIX ..... [pre ON SW
*9 MONO to MATRIX ..... [pre MONO

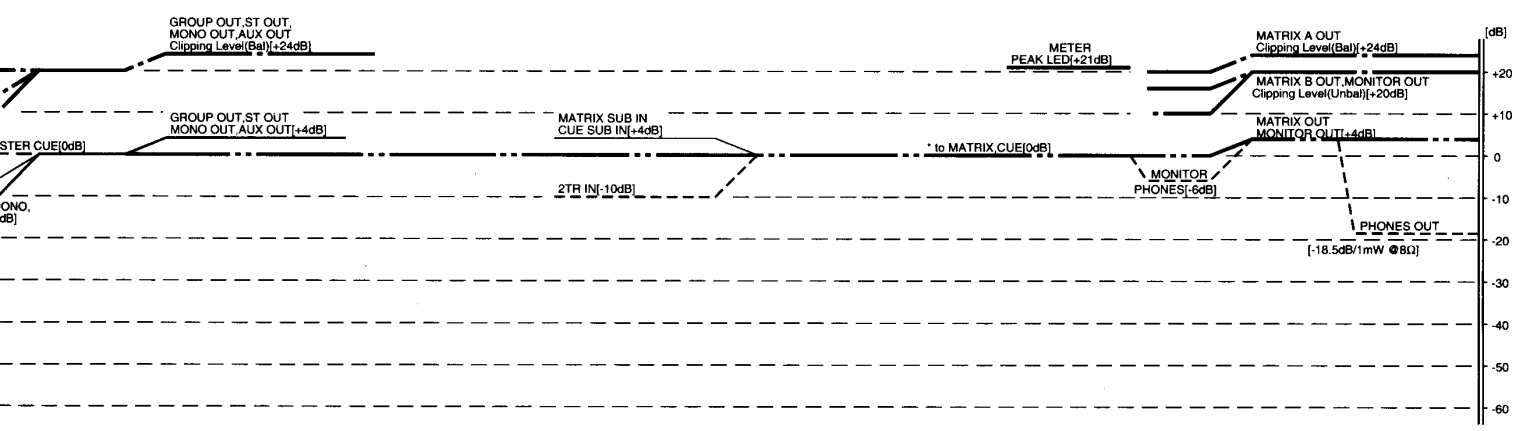




Note 1:Names shown in angle brackets such as <Meter> are not printed on the consoles.

2:Optional Functions

*1 CH INPUT AUX(1~4,6) & DIRECT .. [pre EQ / post EQ] ..... Jumper : factory set = post EQ.
*2 CH INPUT AUX6 & DIRECT OUT ... [pre Fader / post Fader] ..... Jumper : factory set = post Fader
*3 ST INPUT AUX(1~4) ..... [pre EQ / post EQ] ..... Jumper : factory set = post EQ
*4 GROUP to ST/MONO/MATRIX ..... [pre ON SW / post ON SW] ..... Jumper : factory set = pre ON SW
*5 GROUP to MATRIX ..... [pre GROUP Fader / post GROUP Fader] ... Jumper : factory set = post GROUP Fader
*6 ST to MONO/MATRIX ..... [pre ON SW / post ON SW] ..... Jumper : factory set = pre ON SW
*7 ST to MATRIX ..... [pre ST L/R Fader / post ST L/R Fader] ..... Jumper : factory set = post ST L/R Fader
*8 MONO to MATRIX ..... [pre ON SW / post ON SW] ..... Jumper : factory set = pre ON SW
*9 MONO to MATRIX ..... [pre MONO Fader / post MONO Fader] ..... Jumper : factory set = post MONO Fader



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