

Service Manual

RECORDING MIXING CONSOLE
WR-8816

7569

SPECIFICATIONS

Frequency Response:	MIC INPUT — ± 1.0 dB 20Hz to 20kHz 64dB Gain at trim control max +4dB at Group Output
	LINE INPUT — ± 0.5 dB 20Hz to 20kHz 24dB Gain at trim control max +4dB at Group Output
THD:	MIC INPUT Less than 0.03% at 20Hz Typical 0.02% Less than 0.03% at 1kHz Typical 0.02% Less than 0.07% at 20kHz Typical 0.05% (74dB Gain, +20dB at Group Output)
	LINE INPUT Less than 0.07% 20Hz to 20kHz Typical 0.05% (34dB Gain, +20dB at Group Output)
SMPTE IM Distortion:	Less than 0.03% Typical 0.02% (Mic or Line Inputs +20dB at Group Output)
Equivalent Input Noise:	-128dB Maximum -132dB Typical IHF A WTD (74dB Gain 150 ohm Source)
Maximum Input Level:	MIC: +10dB at MIC PAD position LINE: +30dB
Maximum Gain:	MIC: 74dB ± 1.5 dB LINE: 34dB ± 1.5 dB
Cross Talk:	60dB at 1kHz
CMRR:	70dB Minimum at 1kHz 80dB Typical
Phantom Power:	+48 DC Regulated 100mA Maximum Current
Input Channel Equalizer:	High 4k/8k/12kHz ± 12 dB (Shelving) Mid 400 to 6.3kHz ± 12 dB (Peaking) Low 60/120/240Hz ± 12 dB (Shelving)
Inputs:	MIC IN 16 MIC -60dB to -40dB 5k Ω PAD -40dB to -20dB 5k Ω LINE IN 16 -20dB to 0dB 10k Ω ECHO RETURN IN 2 -20dB 20k Ω RETURN IN 4 -10dB 100k Ω AUX IN 2 -10dB 5k Ω
Mixing Busses:	Group 4 Master 2 Send 2 Echo 2 Solo 1
Outputs:	Group 4 +4dB 600 Ω -10dB 10k Ω Master 2 +4dB 600 Ω -10dB 10k Ω Send 2 +4dB 600 Ω Echo 2 +4dB 600 Ω Monitor 4 +4dB 3k Ω Headphone 2 Watts/8 Ω

RAMSA



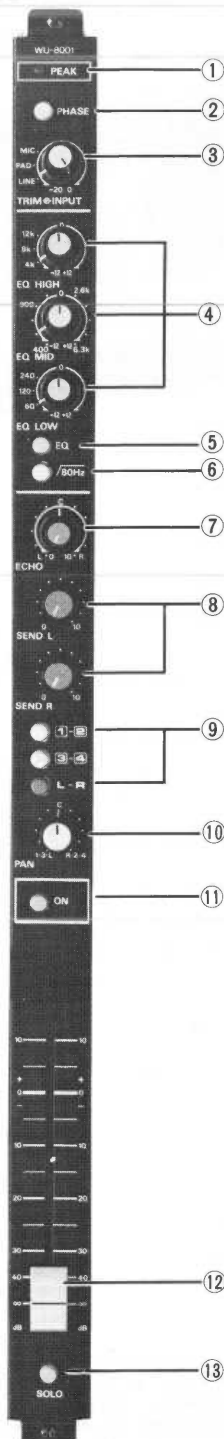
Maximum Output:	+22dB
Meters:	4 x 14 point LED Peak Meter
Fader:	100mm stroke Professional Straight Line Fader
Peak Factor:	Head Room 32dB Program 18dB
Power Consumption:	120V AC 60Hz, 140W
Accessory:	Micky Knob x 1
Dimensions:	35-53/64" (W) x 10-7/16" (H) x 29-23/32" (D) (910mm) (265mm) (755mm)
Weight:	Approx. 102 lbs (46kg)

*0dB is referenced to 0.775V rms.
Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

LOCATION OF CONTROLS

INPUT MODULE WU-8001

In addition to 16 microphone inputs, the input modules on the WR-8816 can also accommodate 16 line inputs — a total of 32 inputs — plus 16 direct line outputs. This means that multi-track recording or overdubbing may be performed without time consuming changes in patch connections. The additional Left, Right channel assignment capability permits input signals to bypass the Group modules for direct 2-track mixdown or monitoring. Each module is equipped with its own equalizer, echo, and volume controls for flexible adjustments at the input stage.



1. Peak LED

The peak LED indicates that 6dB of headroom remains in the pre-amp section. By adjusting the input/trim control as high as it can go before the LED flashes during peaks, you can obtain the optimum S/N ratio, while retaining low distortion. The LED's indication applies to pre-EQ, pre-fader signals.

2. Phase Switch

This switch allows instant phase reversal of the microphone connected at each input. If an out-of-phase condition exists (a possibility if two microphones are mixing the same instrument, or if the cables are connected in reverse), this convenient switch can return the mic to normal phase. This is an enormous time-saver, especially when compared to re-soldering the mic cables (required by some mixers to reverse the phase).

3. Input/Trim

To keep input signals below the clipping level of the pre-amp, input sensitivity level can be set as high as -60dB, in three increments of -20dB each. Since the trim takes effect before the insertion jack, it allows adjustment to the optimum level for connection of external equipment.

4. Equalizer

These controls offer the engineer maximum flexibility in tonal adjustment — a sophisticated 3-band variable frequency equalizer section is included. The center knob controls the level adjustment and includes a 0dB center detent. The outer knob adjusts the frequency.

These rotary pots provide the input signals with three bands of EQ adjustment.

HIGH	4kHz, 8kHz, 12kHz	±12dB
MID	400Hz — 6.3kHz	±12dB
LOW	60Hz, 120Hz, 240Hz	±12dB

For the midrange control, a continuously variable rotary knob permits precise frequency adjustment, covering about one octave around the center frequency. The Low and High EQ settings are 3-position shelving-type controls.

5. Equalizer ON Switch

Using this switch, you can turn the equalizer on or off without resetting the level adjustment positions.

6. High Pass Filter Switch

In comparison with the lowest EQ setting (a maximum attenuation of -12dB at 60Hz), this filter provides a sharper -18dB/octave cutoff at 80Hz. This is useful for eliminating low frequency vibrations (which may occur when using hand held mics) or to provide greater microphone isolation.

7. Echo Control

The echo controls utilize a novel, highly practical approach. Rather than a cumbersome system involving two separate echo level controls, a single level control with a concentric pan pot is provided. This arrangement makes it simple to position the echo signal, so that it precisely follows the position of the instruments or vocalists, when using a stereo echo or effects unit. If mono effects devices are used instead, the pan pot may be rotated either left or right, which assigns it to one of the two Master Echo Send controls. The echo signal is derived post-EQ, post-fader, so the echo level will ride up or down with the input fader, while still maintaining the same chosen percentage of Echo signal.

8. Send L, R Control

This control adjusts the amount of pre-fader, pre-EQ signal sent to the musician's headphones, via the Master Cue Send controls. Either one stereo or two mono cue signals may be sent to the headphones.

9. Program Buss Assign Switch

This section assigns the input signal to any of the four Group outputs, or directly to the L, R output section.

10. Pan Control

The Pan control, used in conjunction with the program buss assign switch, adjusts the amount of input signal sent to any of the assigned channels. Turning the pan control to the left assigns channels 1, 3, L and turning to the right assigns channels 2, 4, R. In the center position the input signal will be sent to all assigned channels. During the mixdown, the pan is an effective tool for creating a stereo sound field.

11. Channel On Switch

When this switch is engaged, the input signal is sent to any of the assigned output channels. When it is switched out, the signal to the Group and output busses is muted, the direct out signal is disconnected as well. Mic leakage or noise caused by a mic not in use will thus be eliminated.

12. Input Fader

These conductive plastic, professional input fader controls permit independent adjustment of the volume level for each Input module. The extra-long 100 mm stroke assures precise level settings. Reference dB levels are also indicated.

13. Solo Switch

This switch is used to monitor the post-fader signal at each Input module individually. Since it can be locked in the "on" position, simultaneous monitoring with other modules can be performed. Activation of the solo button is indicated by the solo-on LED.

The solo setting has priority over other monitoring modes, so even if the L and R Master volume must be attenuated, the input levels may still be monitored. In addition to headphone monitoring, the L and R control room outputs connected to separate monitor speakers will also provide a mono solo signal. This is especially useful for conducting final checks prior to actual takes.

GROUP MODULE WU-8002



The signals can be monitored at 16 points and grouping adjustments made to set the optimum balance. Then the mixed signals are routed to the Master module's L and R busses. If certain input signals require no grouping, they may be assigned directly to the Master module. This permits the 4 Group modules to be used for grouping applications, exclusively.

1. Meter Select Switch

These lock-release type switches determine which of the 4 tape signals will be displayed on each of the 4 peak level meters (Group output may be monitored at the Tape A position). This arrangement allows you to monitor up to 16 channels. By using the tape recorder's tape/source switch, the meter will read either the live or the tape signal level.

2. Tape Monitor

The line output from a multi-track recorder may be connected to the LINE IN jacks at the input modules. These, in turn, are connected to the tape monitor section of the Group modules. Each tape monitor incorporates separate Monitor and Cue Send level controls. With 4 monitor on each Group module, the 4 Group modules are equipped to monitor line inputs from channels 1 to 16, respectively.

* The outer knob of the monitor control adjusts the left and right positioning of the tape signal to the Master module. The inner knob adjusts this output's level. This gives the control room and the studio full monitoring capability of all 16 channels during multi-track recording. Also, the outer knob of the Send control adjusts the left and right positioning of the tape signal to the master cue send controls. The inner knob adjusts the level. This gives the musician full monitoring capability, independent of the control room's mix.

* The recording engineer can mix down any of the tape tracks onto a stereo master tape, without passing through the input modules. This is useful when EQ or effects send are not required, and will eliminate unnecessary electronics.

* The Monitor section of inputs 1-4 can also be switched to monitor the program signals routed through the Group modules. This permits monitoring during mixing of previously recorded tape tracks with live program signals.

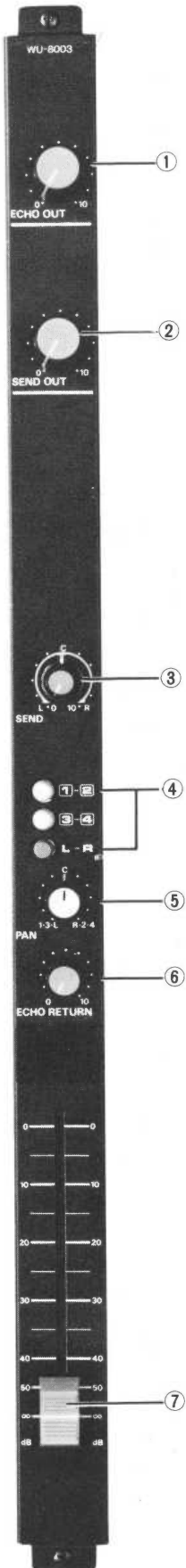
3. Return

This controls the level of the signals returned to the Group modules.

4. Group Fader

These control the level for the respective group program signals.

MASTER MODULE WU-8003



These modules provide total control facilities for the various signals from the Input and Group modules, echo units, and other sound processors. Because the Master module can fade out all signals, the settings made on the Input and Group faders may be retained.

1. Master Echo Controls

These control the Master level of the signals sent to the echo unit.

2. Master Send Controls

These provide Master level control of the headphone cue signals, which are sent from the input module or tape monitor section. This feature can be used for headphone monitoring by the performers in the studio.

3. Send Control

This assigns the echo return signals to the left and right Send mixing busses where the echo can be added to the musician's Send signals. The outer knob is a pan control, while the inner knob is for level adjustments.

4. Echo Return Assign Switch

This switch assigns the signals returned from the echo unit to the program buss which you select.

5. Pan Pot

This pan-pot assigns the echo return signals to your selected program for mixing.

6. Echo Return

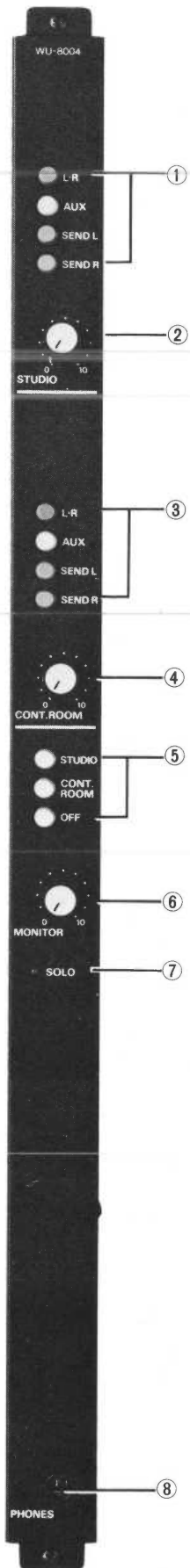
This control adjusts the level of the echo return inputs.

7. Master Fader

This controls the volume of the left and right Master outputs.

Use the attached Micky Knob for the gang control of L and R channels.

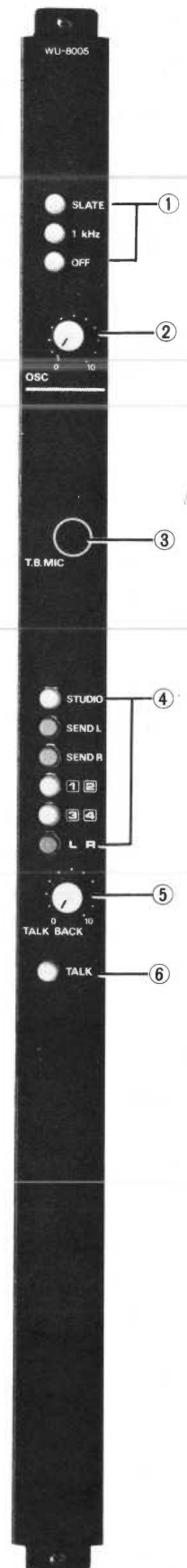
MONITOR MODULE WU-8004



In response to demands for truly flexible monitoring capability, Ramsa has included facilities in the WR-8816 which allow checks at all stages of the mixer output, both in the studio and the control room.

- 1. Studio Select Switch**
This switch selects one of the 4 modes available for studio output monitoring. The L, R position allows the performers to monitor the stereo mixdown signals. AUX permits stereo monitoring of the signal from the tape deck connected to the AUX input terminals. The Send output L and R switches allow mono monitoring of the separate left and right signals.
- 2. Studio Control**
This controls the output level for the studio select switch settings listed above.
- 3. Control Room Select Switches**
The various outputs may be selected for monitoring in the control room by means of these switches. Listening mode is indicated in parentheses.
L, R: Master L, R (stereo)
AUX: AUX input (stereo)
Send L: Send L (mono)
Send R: Send R (mono)
- 4. Control Room Volume Control**
This sets the output level for control room listening.
- 5. Phones Select Switches**
You can select headphone monitoring for either the studio or the control room with these switches. When neither headphone monitor is in use, this control should be switched off.
- 6. Monitor Control**
This control adjusts the listening levels for stereo headphone monitoring.
- 7. Solo Indicator**
This readout indicates that the input solo switch is in the ON position.
- 8. Headphone Jack**
Standard 1/4" (6.3 mm) jack for stereo headphone.

TB/OSC MODULE WU-8005



For close communication between the mixing operator and the studio musicians, the TB/OSC module features a convenient provision for two-way talkback.

Built-in oscillator facilities make it easy to confirm that the controls are set properly prior to actual recording of the program.

- 1. OSC Select Switch**
With this switch, the operator can choose either a 40 Hz/slate tone or 1 kHz sine wave. When the OSC select switch is in the OFF position, the talkback facility may be activated.
- 2. Oscillator Output Level Control**
- 3. Talkback Microphone**
Built-in condenser microphone.
- 4. TB/OSC Assign Switch**
 - Studio
 - Send L
 - Send R
 - Group 1-2
 - Group 3-4
 - Master L-R
- 5. TB Mic Level Control**
- 6. Talk Switch**
With the OSC switch in the OFF position, this is held in while speaking to the musicians. The volume can be adjusted with the TB level control.

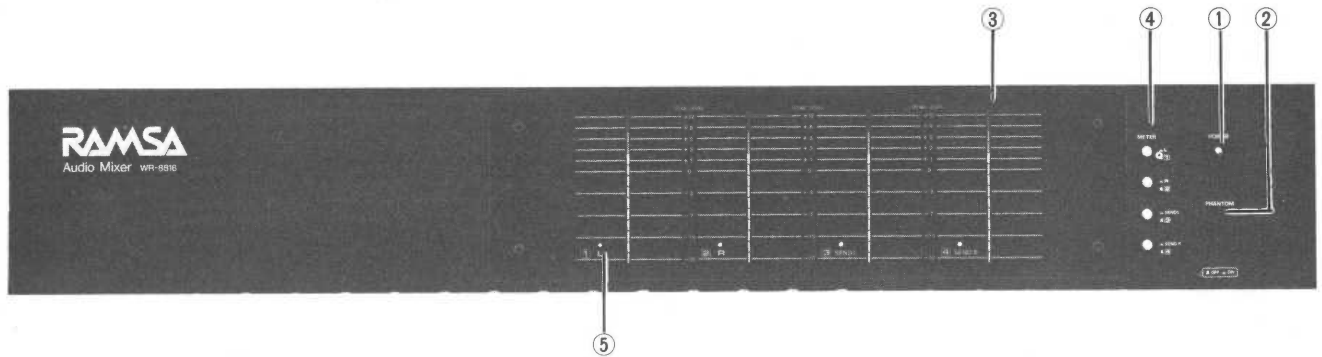
REAR PANEL



- 1) Input - XLR type connector for Mic and pin jack for Line
Mic & Pad — Balanced
Line — Unbalanced
- 2) Input Insertion Jacks
-10dB level
- 3) Direct Out - pin jack
-10dB level
- 4) Echo Return - pin jack
-20dB level
- 5) Phantom Power On/Off Switch
Supplies power (48V DC) to condenser microphones
- 6) Aux In - pin jack
-10dB level
- 7) Return In - pin jack
-10dB level
- 8) Group Output - pin jack +4dB and -10dB levels, post group fader
- 9) Master L & R Output - pin L and R mixing buss output, post master L & R fader +4dB and -10dB levels
- 10) Send Out - pin jack
Send mixing buss output, post send out level control
Dual +4dB level outputs
- 11) Studio Out - pin jack
For studio feed, post studio select and level control
+4dB level
- 12) Control Room - pin jack
Control room monitor output, post control room select switch and level control
+4dB level
- 13) Echo Output-pin jack
+4dB level
- 14) OSC Out - pin jack
Output for Oscillator or Talkback signal through OSC/T.B. level control
-10dB level
- 15) Power Source
DC power supply input connector which is connected between the power supply unit with the supplied power supply cable
(Connection should be made only with the supplied cable.)
- 16) Spare Jack - no connection
- 17) GND
Terminal for grounding

Note:
0dB is referenced to 0.775V rms.

METER PANEL



- 1) Power Indicator Lamp
Indicates that the power supply unit is turned on and the mixing board is supplied with $\pm 20V$ DC power.
- 2) Phantom Power Indicator Lamp
Indicates 48V DC is supplied.
- 3) Meter - 14 point LED peak meter
- 4) Meter Select Switch
Normal for Group 1, 2, 3, 4 outputs.
Push for Master L, R, Send L, R outputs.
- 5) Indicator Light for Meter Selection