



**Model M•AD-824**  
**Analog-to-Digital Converter**  
**and M•SYNC-1**

**Preliminary Fast-Install Notes**

**GET UP AND RUNNING NOW!** Take the unit out of its box and plug in the power cable. It's easier to use these instructions while working with the unit in front of you.

### **Installation of the M•AD-824 and M•SYNC-1**

The M•AD-824 is a two-channel module that converts analog audio to digital audio with wordlengths of 16, 20 or 24 bits at sample rates of 44.1, 48, 88.2 or 96kHz.

The modular flexibility of the 4496 power chassis allows modules to be in different slots within the frame. If the unit has an M•AD-824 A-to-D module, an M•SYNC-1 module is required and must be in the leftmost slot. It replaces the logo position on the front panel. The M•AD-824 (1 or more) must be in the adjacent slot(s) to the immediate right of the M•SYNC-1 module.

The M•SYNC-1 module provides either internal or external sample rate (clock) options, and can read or generate a clock source at standard frequencies (44.1, 48, 88.2 or 96kHz). When reading an external clock, the module can accommodate vari-speed frequencies in the ranges of 40-54kHz and 80-100kHz.

Install the modules in the 4496 power chassis. Your dealer can provide assistance.

#### **1. PLUG-IN THE ANALOG-INPUT CABLES to the M•AD-824.**

<b>Analog Input Mode</b>	<b>J1</b>	<b>J2</b>	<b>J3</b>	<b>J4</b>
<b>1. Balanced Input</b>	Left	Left	Left	Left
<b>2. Unbalanced Input – Pin 2 active, Pin 3 to ground</b>	Right	Left	Right	Left
<b>3. Unbalanced Input – Pin 3 active, Pin 2 to ground</b>	Left	Right	Left	Right

You have three choices of operation: Balanced, Unbalanced Pin 2 or Pin 3 Active.

**You will need to set the analog input mode** by positioning the user-selectable jumpers J1, J2, J3 and J4, which are located next to each analog XLR input connector. Jumper positions (left or right) are viewed from the front panel side of the board. There are 3 pins on each jumper block. (See pg. 13 of the Manual for jumper location.)

Pin 2 and/or pin 3 of the XLRs may be connected to analog ground. Alternatively, pin 2 or pin 3 (or both) can be fed into the converter's front end. The jumpers allow connecting both pin 2 and pin 3 to the converter for balanced input operation, or connecting one pin to ground for unbalanced operation.

•FOR EXAMPLE: setting J1 to "P3 – IN" and J2 to "P2 – GND" makes for unbalanced operation with Pin 2 active and pin 3 grounded.

## 2. SET THE CLOCK SOURCE ON THE M•SYNC-1.

You have three choices:

For **Internal clock** operation, set the far right switch on the M•SYNC-1 to INT.

Select **WRD CLK** to lock the M•SYNC-1 module to an incoming **external** word clock signal. The lock condition is indicated when the lock lamp is on.

Select **AES** to lock the M•SYNC-1 module to an incoming **external** AES signal. The lock condition is indicated when the lock lamp is on.

Connect a cable with a 75 OHM BNC terminator connector (use a BNC "T") to the rear of the chassis labeled SYNC IN to supply the external clock source to the module. The lock condition is indicated when the lock lamp is on. Use only one (1) 75ohm terminator for the entire clocking system.

Select ON for the rear panel switch labeled **2x** to enable the unit to receive standard sync rates (38-52kHz rate) while facilitating **conversion at double speed (76-102kHz)**.

•FOR EXAMPLE: if you have 48kHz external clock source, the **M•SYNC-1** module can generate a clock at 96kHz to clock the A-to-D converter(s). This feature is usable in both wide and narrow lock. The front **panel lamps indicate the output rate**. This feature allows high-speed sampling in facilities without high-speed sync capability. **The OFF position requires sync and sample rate to match.**

### 3. SELECT THE DESIRED SAMPLE/CLOCK RATE ON THE M•SYNC-1.

Use the left front panel **LOW/HIGH** switch to select the sample frequency range - either 44.1/48 or 88.2/96kHz. Set the **LOW/HIGH** switch to LOW for 44.1 or 88kHz, and to HIGH for 88.2 or 96kHz conversion.

Use the **WIDE/NARROW** switch to choose which type of clock is best suited to accommodate the clock source:

Choose **WIDE** for applications including most normal vari-speed operations. It allows the sampling rate to run automatically between 38-51kHz or, for double speed operation, 76-102kHz.

Select **WIDE** and **LOW** to accommodate a clock range of 38-51kHz. The top two frequency lamps will light.

Select **WIDE** and **HIGH** to accommodate a clock range of 76-102kHz. The top two frequency lamps will light.

Choose **NARROW** to reduce the sampling frequency input range to lock to signals within +/-150ppm (parts per million) around a fixed rate (44.1, 48, 88 or 96kHz). Narrow lock operation provides improved jitter rejection when operating with a known fixed frequency. This can sound better.

•When in **NARROW** lock, the appropriate frequency indicator lamp shows the selected output rate.

### USING THE “SET/SELECT” SWITCH ON THE M•AD-824

The SET/SELECT switch is intuitive and far easier to actually use than to describe! Use it to enter (or exit) the **Program Mode** by holding the switch either up or down for 3 seconds.

**SELECT** moves from function to function and "SELECT"s each parameter to be enabled as indicated by the lamps.

**SET** changes the values of the parameters within a function, or turns individual parameters ON or OFF.

To move through all groups of parameters, continue toggling **SELECT**. The lamps for each parameter group will light as you toggle to each group.

To **exit the program mode** toggle either UP or DOWN again for 3 seconds, or walk away for 10 seconds. When you return, the unit will have automatically exited the program mode [except Reference Mode, which will remain active until you toggle down (SELECT)].

#### 4. **SELECT THE DESIRED WORD LENGTH (16, 20, 24 bit).**

Enter program mode and toggle to Word Length (the first function in the list). To set the Word Length, Toggle up (SET). The Word Length can now be SET at 16, 20, or 24 bits by switching DOWN.

Toggle down (SELECT) and now decide if **Analog Saturation** is desired. SET ON or OFF. Toggle SELECT to switch down to the next function

#### 5. **SELECT THE DITHER AND OPTIONAL NOISE SHAPING.**

Enter program mode and toggle to Dither.

Dither, ABC-1 and ABC-2 are grouped together (similar to word length). All 3 lamps blinking indicate no dither and no ABC. Otherwise, there is one solidly lit lamp (indicating the selection), and 2 blinking lamps.

- **Acoustic Bit Correction®** is dither plus psycho-acoustic enhancement of the converter's dynamic range for word length reduction to 20 or 16 bits. Some describe this as getting more than 16 bits performance with a 16 bit wordlength.

ABC-1 provides a gentler enhancement curve. ABC-2 provides a more aggressive enhancement curve.

- NOTE: Select position 3 of the DIP switch "on" to replace ABC-1 and ABC-2 with less aggressive curves.

#### 6. **SELECT OPTIONAL SOFT SATURATION.**

##### **Analog Soft Saturation**

This is an analog peak limiter to protect against overloads. A 3-position jumper, J6, enables the threshold to be lowered or raised for the analog soft-saturation feature.

Default setting (jumper closer to the front panel) - HIGH threshold (which means the signal has to reach -3dBfs to start limiting).

Optional setting - LOW threshold (which means the signal has to reach -6dBfs to start limiting).

##### **Digital Soft Saturation**

Select this option to provide 6dB more output level, and to emulate an overdrive condition of magnetic tape. This is very useful for making LOUD recordings.

## 7. SET THE REFERENCE GAIN LEVEL

Enter Reference Level Mode. A pair of solidly lit lamps (L and R) indicates the reference level. Toggle the switch (SET) to set the desired level (-10, -12, -14, -16, -18 or -20dBFS).

Use a small screwdriver to adjust the front panel 20-turn pots to bring the second pair of solidly lit lamps to coincide with the selected reference level.

## YOU NEED TO KNOW . . .

### ABOUT MASTER-SLAVE MODES –

A chassis and/or module may operate in either master or slave mode. All the slaves copy parameters set on the master.

**A master\* module must be located in the leftmost chassis position and set to “master”** via the on-board DIP switch (position 1 set to ON). All the other modules can be set to slave (DIP switch position 1 set to OFF). If another module is set to “master,” the module(s) to the right of it will “listen” to that master. **See page 13 of the manual for DIP switch location.**

\*When the power is turned on, the -9dB lamps will remain steady on slave modules. The -9dB lamps will flash for a few seconds on any master modules.

**Slave module parameters may be programmed independently** via the slave module’s own front panel switch. However, the master-slave relationship will override such settings; the next time the master module parameters are programmed, the settings will change immediately on all the slaves as well. When the frame is powered, the slaves will always emulate the nearest master module.