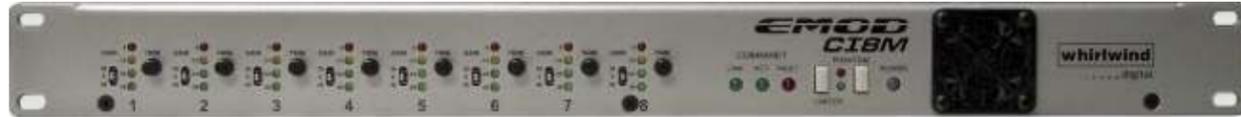


EMOD CI8M

8 ch. Microphone
Preamp Module



The CI8M is Whirlwind's premium, standalone, 8-channel CobraNet microphone preamp module. Use this sonically superior preamp to convert microphone or line level analog audio to professional quality digital audio, for distribution over CobraNet digital networks. The inputs utilize one of the finest Analog Devices preamps, the AD2019. With star grounding and distributed power, the specifications of this design speak for themselves: EIN of -129 dBV, channel separation of 115 dB, and THD of .004%. The CI8M can be temporarily or permanently connected to a CobraNet network, anywhere network access and AC power are available. Connect any analog audio source, balanced or unbalanced, through the XLR or 1/4" TRS input jacks and instantly send them throughout the CobraNet digital audio network. The CI8M requires no computer for operation. Level controls and metering are conveniently located on the front panel along with peak limiter and phantom power switching.

Setup and operation are simple and easy. Just set the rear panel Bundle Select encoder wheels to the desired transmit bundle number, and set the Bitwidth:Latency selector to match the bitwidth and latency of the receiving device. Then apply the eight channels of audio and adjust the input level with the gain switches and rotary level controls as necessary, ensuring that the level is below the 0 dBfs clipping level on the 4 segment LED meters.

FEATURES

- Uses CobraNet networking protocol compatible with all other CobraNet devices from over 40 manufacturers.
- Transmits 20 or 24 bit word length.
- Transmits 5.33 ms, 2.66 ms or 1.33 ms latencies.
- Multiple transmitters may be accessed through CobraNet Discovery.
- Premium quality microphone preamplifiers provide up to 70 dB of gain or 30 dB of attenuation to accommodate any analog input signal with extremely low noise and low distortion.
- 48 Volt phantom power supplied to the XLR inputs and blocked from the 1/4" TRS input jacks.
- Peak limiters on each channel protect the digital converters from overload distortion.
- All audio controls and LED analog signal level meters are conveniently located on the front panel.
- No computer is required to operate the CI8M.
- Integrated universal power supply for 100-250 VAC, 50/60 Hz operation
- The CI8M is 1 RU high and mounts in standard 19" racks.

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Specifications for Whirlwind CI8M

Frequency Response	Line input at 0 dBV gain: ± 1 dBV 20-20 kHz Mic input at 40 dBV gain: ± 25 dBV 20-20 kHz						
Total Harmonic Distortion +noise	Line input: Less than .0047% 20- to 20 kHz Mic input: Less than .0071% 20- to 20 kHz						
Equivalent Input Noise	-129 dBV						
Total Gain	75 dBV						
Gain of Microphone Preamp	20 or 40 dBV switchable						
Gain of Channel Volume	35 dBV						
Range of level pot	70 dBV						
Common Mode Rejection of Input	85 dBV at 60 Hz						
	All measurements in dBV						
Gain setting	0	20	40				
Maximum Input level	+20	0	-20				
Dynamic Range	107	102	102				
Noise	-107	-102	-102				
Noise w/limiter on, unity	-96	-97	-98				
Channel Isolation @ 20 Hz	130	129	118				
Channel Isolation @ 1 kHz	110	115	97				
Channel Isolation @ 20 kHz	103	100	77				
Input Impedance	10 K Ohms balanced						
Headroom LEDs (dBfs)	Headroom label = -dBfs threshold level						
Phantom Power	48 Volts DC. Capable of supplying 15 mA per channel						
THD in limiting	<table border="1"> <tr> <td>6 dBV limiting</td> <td>.18% at 1 kHz</td> </tr> <tr> <td>10 dBV limiting</td> <td>.38% at 1 kHz</td> </tr> </table>			6 dBV limiting	.18% at 1 kHz	10 dBV limiting	.38% at 1 kHz
6 dBV limiting	.18% at 1 kHz						
10 dBV limiting	.38% at 1 kHz						
Sample rate of CobraNet output	48 kHz						
Bit width	20 or 24 bit selectable						
Latency in CobraNet	1.33, 2.66, or 5.33 ms selectable						
Impulse noise switching 0 to +40 gain on trim	Less than -65 dBV						
Turn on or off impulse noise	Less than -99 dBV						
Emissions for RFI	Complies with EN 55022						
Immunity to ESD	Complies with EN 61000						
Safety	Complies with EN 60950						
Power consumption	33 Watts idle, 51 Watts max						
Power requirements	80-265 VAC 50 or 60 Hz						
Size	1RU (19 X 1.75 inches) depth 10 inches						
Unit Weight	8.8 pounds						
Internal Mains fuse	2.5 Amp						
AC dropout voltage	80 VAC 50/60 Hz.						

All specifications subject to change without notice

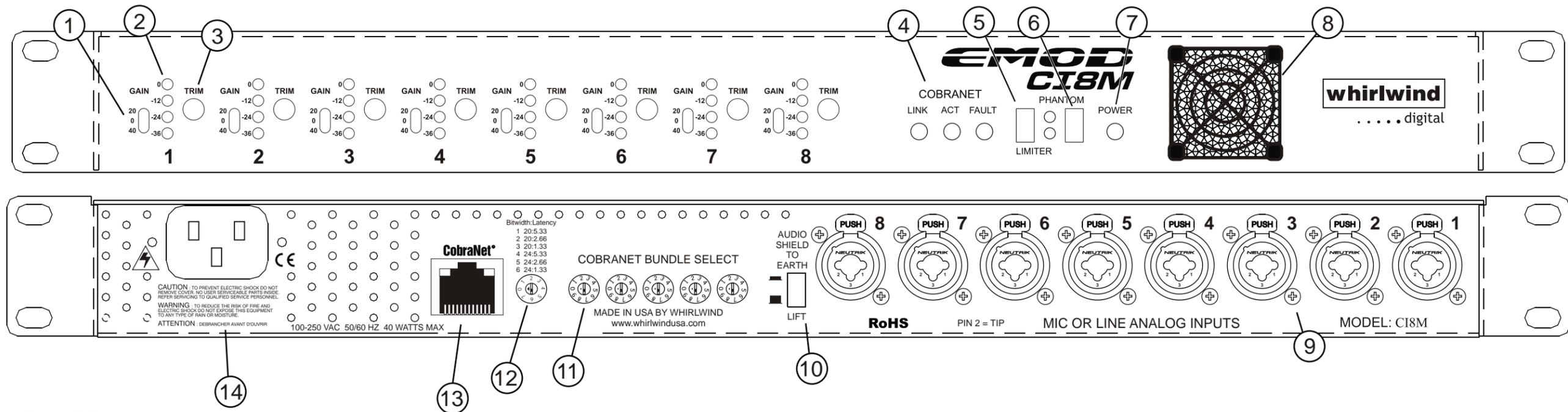
WARRANTY

This product is guaranteed to be free from defects in materials and workmanship to the original purchaser for a period of 5 years from the date of purchase. Should service be required, return the unit postage prepaid along with the original sales receipt to:

Whirlwind
Attention - Repair
99 Ling Road
Rochester, New York 14612

The warranty on this product shall not apply to defects or damage resulting from abuse, abnormal use or from repairs or modifications performed by anyone other than Whirlwind. If it is determined a manufacturing defect has occurred, Whirlwind will repair or replace the unit at our option and pay the postage back to you.

99 Ling Road - Rochester, NY 14612
800-733-9473 / 585-663-8820 Fax: 585-865-8930
Website: <http://www.whirlwindusa.com>
Email: sales@whirlwindusa.com



Controls and Connections

- Input gain switches apply fixed amounts of amplification to the microphone preamplifiers. The top position applies 20 dB of analog gain, appropriate for most microphones, the center position is unity gain and is the normal setting for line input signals. The bottom position adds 40 dB of gain for use with microphones with low output levels.
- Four position LED headroom meters provide a quick and accurate visual indication of audio level relative to clipping. The signal is monitored at the inputs of the analog to digital converters after the input level controls. The bottom green LED illuminates at -36 dBfs, the second green LED lights at -24 dBfs, the yellow at -12 dBfs and the red at the clipping point of the analog to digital converter.
- Trim controls provide fine adjustment for the level of the analog input signal being applied to the analog to digital converters. A range of ± 35 dB of gain or attenuation allows optimization of the analog signal to minimize noise at the converters. Adjust the signal so that peaks do not light the red 0 dBfs LED. In general, compressed audio signals can be set to 12 dB of headroom and open microphones should be set with 24 dB of headroom. When using the limiter, the 0 headroom LED will not light.
- CobraNet LINK, ACT, and FAULT LEDs indicate the status of the CobraNet network connection; LINK LED illuminates only when the Ethernet cable is connected to a network with other CobraNet devices. ACT (activity) LED is on only when there is a match between the bitwidth:latency and bundle settings of the CI8M and those of the receiving device. FAULT LED is used to blink a numeric code to the user with a series of blinks followed by a pause. The number of blinks indicate the following:
 - Mismatched format or bundle settings
 - Not used on CI8M
 - Invalid bundle number selected (greater than bundle # 65279) or multicast/unicast boundary straddled (bundles 255/256)
 - Ethernet cable disconnected or no other CobraNet devices on network.
 - CobraNet cannot communicate with DSP in the CI8M. This code blinks once on power up and whenever an encoder setting change is detected, to warn the user that persistence is enabled through CobraNet Discovery v3.4.5 (v4.0.1 for Vista) and that changing the encoders from 00000 will defeat Disco control at the next power cycle. Persistence enabled means that the unit will remember its last settings through power cycling.
- The Limiter switch turns the peak limiters on or off. There are individual peak limiters on each audio channel, which prevent the analog audio from clipping the A/D converters. The limiter has a fixed threshold of -10 dBfs with a 4 to 1 slope between -8 to 0 dBfs. Attack and release times are fixed. With the limiters on, the 0 dBfs headroom LED will not light, as the signal level is limited to 5 dB below this threshold. A green LED illuminates when the limiters are active.
- The Phantom Power switch turns on 48 VDC power to the microphone inputs. Phantom power is only applied to the female XLR inputs, not to the 1/4" TRS inputs. A red LED illuminates when the phantom power is on.
- The Power LED illuminates when AC power is applied to the unit and the unit is operating.
- The 3-stage fan provides cooling to the internal components of the CI8M. There is a foam filter on the front, which should be cleaned periodically to maintain good airflow. The front plastic fan guard snaps out to expose the filter.

- Inputs 1 through 8 are combination female XLR and 1/4" TRS jacks, which accept balanced or unbalanced analog audio. Either connection can be used for mic or line level inputs. Phantom power is present only on the XLR connector. For unbalanced inputs, connect pin 3 to pin 1 in the input XLR plug or just use a tip-sleeve plug in the 1/4" jack.
- The AUDIO SHIELD TO EARTH switch breaks the connection from AC Earth to the audio common to reduce hum when necessary.
- CobraNet Bundle Select switches are used to select the bundle number to be transmitted by the CI8M. All 65,279 CobraNet bundles are directly accessible from the encoders. Bundles 1-255 are Multicast bundles and 256-65,279 are Unicast. The leftmost encoder also has 3 special functions. With the encoder in the 70000 position, the front three status LEDs (LINK, ACT, FAULT) will flash a code for the software version in the CI8M. The LEDs will blink the number of the software version with a long pause between the series of blinks; e.g., four flashes followed by a long pause equals version four. Should the CI8M ever need to be rebooted, the 80000 position of the encoder will cycle a reset of the unit every two seconds. Unplugging and reconnecting the power cord will also reset the CI8M. The 90000 position of the encoder is a self test for all the LEDs except the power LED. Setting the switches to 00000 allows remote setting of bundle parameters through the network with CobraNet Discovery software v3.4.5. (v4.0.1 for Vista)
- Bitwidth:Latency Selector matches the audio bitwidth and latency transmitted by the CI8M to that of the receiving CobraNet device. Individual CobraNet devices must have the same bitwidth and latency to communicate with each other properly. The transmit setting must be acceptable to the device set to receive that bundle. Many receive devices have an autodetect feature that will match the bitwidth and latency to that of the transmitter. The CI8M uses an 8 position selector for choosing 20 or 24 bit word length and 5.33 ms, 2.66 ms or 1.33 ms latencies.

In 24 bit word length and 5.33 ms latency, a special case exists; there are a maximum of 7 audio channels that can be packaged into a single bundle at this setting. Whirlwind uses pairs of bundles where seven audio channels are contained in one bundle and one audio channel in the next higher bundle. Channel 8 is automatically pushed up into the channel 1 slot of the next higher bundle number.
- The CobraNet jack connects the CI8M to the Ethernet switch carrying the CobraNet network. A green LED indicates network link and a yellow LED indicates data activity. These are duplicated by two green LEDs on the front panel along with a red FAULT LED indicator.
- The Power inlet is a standard IEC connection. The power supply is internationally universal with a voltage range of 80 to 265 VAC at 50 or 60 Hz.

CobraNet Parameter Control through Discovery v3.4.5 (v4.0.1 for Vista).

Setting all the Bundle Select Switches to 00000 allows remote setting of CobraNet parameters through the network with CobraNet Discovery software, v3.4.5 (version 4.0.1 for Vista) available at www.cirrus.com/cobranetsoftware. Some of the parameters that can be controlled on the CI8M include bundle numbers, number of channels in the bundles, digital word length, latency and persistence.

These parameters are unlike the selections made with the encoders. Bundle numbers and bitwidth:latency selections made with the switches are hard coded and remembered when the power to the CI8M is cycled. Settings made through Disco are volatile and forgotten on a power cycle, unless persistence is turned on and Bundle Select Switches are set to 00000. There are also four transmitters available through Disco instead of just the one through the encoders.

Disco will temporarily override encoder settings other than 00000 on a CI8M. These settings will not be remembered on power cycling regardless of the persistence setting in Disco.