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# VMI

## E-SERIES VIRTUAL MIXER INTERFACE

TECHNICAL  
DOCUMENTATION

Wheatstone Corporation  
August 2010



**E-Series Virtual Mixer Interface**

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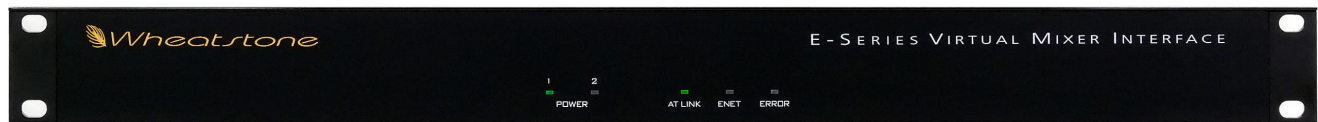
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# Virtual Mixer Interface

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# Virtual Mixer Interface



## Introduction

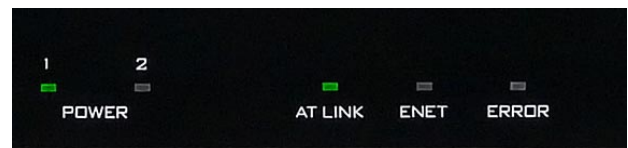
The Wheatstone VMI Virtual Mixer Interface is a 1RU rack mountable unit that emulates a Wheatstone E-Series Digital Control Surface. It can be used in a Wheatstone Bridge system (TDM-based), a Wheatstone Wheatnet system (also TDM-based), or a Wheatstone WheatNet-IP system (IP-based). The unit is pre-configured at the factory for the type of system it is used in and the particular E-Series model that it emulates. Total number of faders emulated is also set at the factory.

In an IP (WheatNet-IP) system the VMI needs only an Ethernet connection to the system. In a TDM system (Bridge or Wheatnet) an AT LINK connection is needed in addition to the Ethernet connection. The AT LINK needs to connect either to the DSP port on an E-SAT, or to the MIXER port on an M-DSP (Micro Digital Signal Processor). In either case it is important that the connection is made to the correct port in the system.

There are two ways to obtain a visual display of the VMI control surface functions. You can connect a mouse and VGA monitor directly to the VMI, in which case the combination works the same as if connected to an actual E-Series surface. You can also use the optional GlassE software running on a PC.

Refer to the E-Series surface manual for the surface being emulated for operational information.

LED indicators at the center of the front panel display power, Ethernet and AT connections, and external clock functions. In the unlikely event of a VMI CPU failure the “ERROR” LED will light up. Note that if the VMI is being used in a WheatNet-IP system no connection is made to the rear panel AT LINK connector, so the front panel AT LINK indicator will not light.



## Rack Mounting

The VMI is designed to fit into an industry standard 19” equipment rack, and requires one rack unit (1.75 inches) of vertical space. Vertical slots positioned in the side panels allow air flow to and from the VMI, and an internal fan directs the air to cool components as required. When installing it is important to avoid restricting air flow to the side vents.

The VMI may be mounted between other devices in the equipment rack and in accordance with good engineering practice should not be mounted directly above devices that generate significant amounts of heat. If such a location is unavoidable then it is advisable to utilize an extra 1RU blank rack panel between the VMI and devices immediately above and/or below it.

**WARNING! Under no circumstances should the VMI unit be opened! The unit has no user-serviceable parts inside! If you have a problem the unit must be returned to Wheatstone Corporation for repair.**

## Power Supply

The VMI is powered by a factory supplied power adapter with 100-240V/50-60Hz input, 90W maximum output power, and a 4 foot long output cable. Input AC current to the power supply is less than 3.75A. The output cable can be plugged into either the POWER A or the POWER B connector on the VMI rear.

A second, redundant, power adapter is available. When using two supplies one output cable is plugged into the POWER A connector and the other output cable is plugged into the POWER B connector.

When required, the VMI may be powered up or down by utilizing the AC connection to the power supply (or supplies). **DO NOT** plug or unplug the DC connection(s) while AC power is applied.

The power supply adapter is supplied with a 3-wire grounded AC cord that should be plugged into a “clean” AC power source, that is, an AC source that feeds only the control room audio gear. This source should be a separate feed from those powering lighting, air-conditioning, or any other non-audio machinery.



The power feed recommended in the text is often installed and referred to in studios as an “isolated AC ground” outlet. It is usually orange in color.

## Energizing

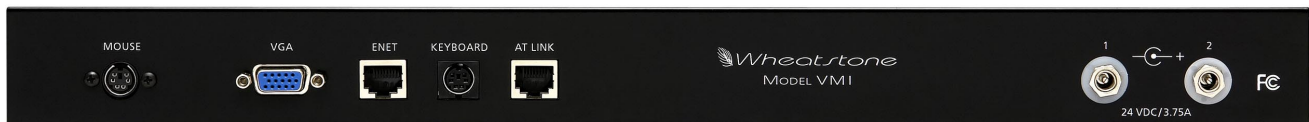
Assuming the VMI is correctly rackmounted, you may now energize it. There is no power switch.

Aggressive AC input filtering is utilized at the AC input of the VMI; however, it is always advisable to use external surge protection and/or an uninterruptible power supply (UPS), especially where AC power quality is questionable, such as at a remote transmitter site.

Power conditioning, surge suppression, and even power backup devices are wise investments when using sensitive modern electronic devices that use an internal computer.

Use of a UPS (uninterruptible power supply) is a good idea and will protect the VMI from short duration power interruptions which may cause it to reboot. During boot up, audio control is interrupted for approximately 40 seconds.

## I/O Connections



All user wiring to and from the VMI is made via connectors located on the rear panel. Two jacks on right are for power supply connections. There are two RJ-45 connectors; the one labeled ENET connects to a standard Ethernet network switch and the other labeled AT LINK connects to a specific DSP card in an E-Series SAT cage, to an M-DSP unit, or, in the case of a WheatNet-IP system, is left unconnected. A DB-15 VGA monitor connector and two PS-2 connectors for keyboard and mouse round out the rear panel. The pinout drawing on page 7 shows all wiring connections at a glance.

## Host Controller (HC-3)

The host controller card used in the VMI incorporates a PC/104 computer mounted on the HC-3 PCB. The host computer utilizes RAM, a flash disk (which emulates a standard IDE hard drive), and an Ethernet port. There is no hard disk drive. A video port is provided for the user-provided VGA monitor, and a keyboard port is for factory use only.

The purpose of the host controller is to provide control of the VMI. The HC-3 communicates to the XPoint Configuration PC via TCP/IP over Ethernet through a standard ethernet hub or switch. It also communicates to the Bridge Router or Wheatnet via a special mixer link (AT) connection.

Hardware and software configuration, as well as real time crosspoint information, is saved in non-volatile storage on the HC-3 card and is restored at power up or reset. This configuration information provides details to the host application running on the HC-3, such as the specific audio hardware available.

## HC-3 BIOS Settings/Format

BIOS Setup and formatting of the Host CPU is completed prior to the testing of your VMI at the Wheatstone factory. There are no user adjustable settings.

## Ethernet IP Addressing

The Wheatstone VMI unit ships with the host controller IP address set. Stand-alone systems (not interfaced to a station's existing network require no IP address changes.

## Audio Network Wiring

This “AT LINK” RJ-45 connector provides the control link between the VMI and the Bridge Router or Wheatnet system, and for these types of systems all settings and commands generated on the VMI pass through this link via a special CAT5 cable wired in “crossover” fashion. This special cable connects the RJ-45 jack on the VMI to the matching RJ-45 jack on the Bridge Router or Wheatnet system. Please note that, in a typical system, there will be many RJ-45 jacks in the Bridge Router or Wheatnet system, and for proper operation the VMI must be connected to the specific RJ-45 jack defined for it in the system configuration. For crossover CAT5 cable pinouts see page 6.

### “AT LINK” CONNECTOR

Pin 1 – TXD +  
Pin 2 – TXD -  
Pin 3 – RXD +  
Pin 4 – N/C  
Pin 5 – N/C  
Pin 6 – RXD -  
Pin 7 – N/C  
Pin 8 – N/C

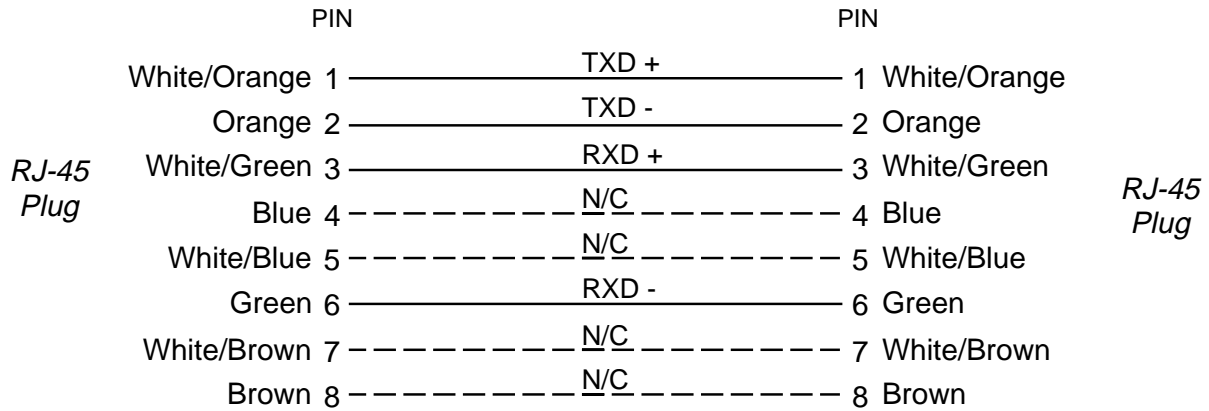
## Ethernet Interface Wiring

The “ENET” RJ-45 connects the VMI to your Ethernet LAN via straight (pin to pin) CAT5 cable. The LAN connection is for communicating with computers running Wheatstone software such as XPoint, PC-XYC, and Event Computer. In the case of a WheatNet-IP system, this link also carries the settings and commands normally carried by the AT LINK in Bridge Router and Wheatnet systems. If you are connecting directly between the computer and the VMI with no network in between, use a crossover cable. For typical CAT5 and crossover CAT5 cable pinouts see page 6.

### “ETH” CONNECTOR

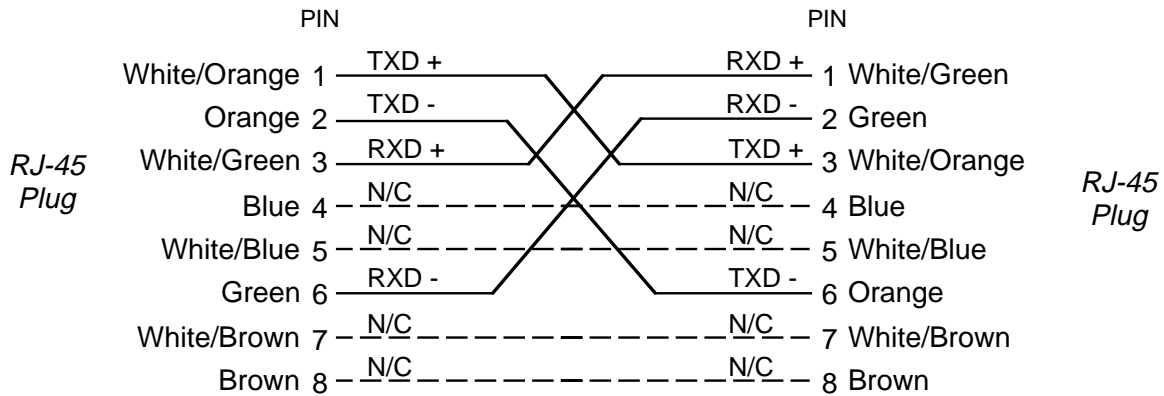
PIN 1 – TXD +  
PIN 2 – TXD -  
PIN 3 – RXD +  
PIN 4 – N/C  
PIN 5 – N/C  
PIN 6 – RXD -  
PIN 7 – LN LED  
PIN 8 – LK LED

### Typical Ethernet Cable



USED FOR CONNECTING THE HOST CONTROLLER TO YOUR NETWORK HUB.

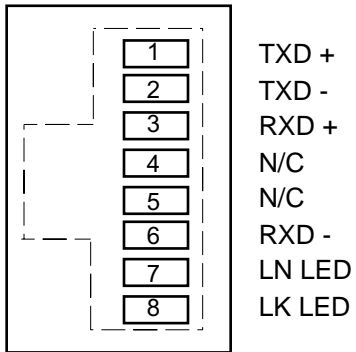
### Typical Crossover Cable



USED FOR MIXER (AT) LINK CONNECTOR.

## RJ-45 Connections

*Ethernet Connector  
(RJ-45)*



*Mixer (AT) Link CAT5  
Connector (RJ-45)*

