VMI

E-SERIES VIRTUAL MIXER INTERFACE

TECHNICAL DOCUMENTATION

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DOCUMENTATION

Wheatstone Corporation
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E-Series Virtual Mixer Interface Revised

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Contents

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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 Gibraltar system (TDM-based), a Wheatstone Wheatnet system (also TDM-based), or a Wheatstone WheatNet-IP system (IP-based). The VMI unit is pre-configured at the factory for the type of system it will be used with, and in particular E-Series Model that it will emulates. The total number of faders emulated is also set at the factory.

In an IP based system, the VMI needs only an Ethernet connection to the system. In a TDM based system, the VMI will need an AT LINK connection, in addition to an Ethernet connection. The AT LINK connection needs to be connected to either a 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.
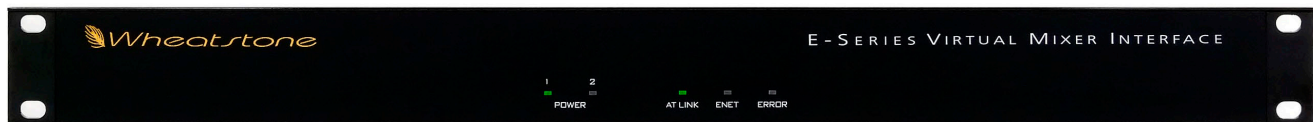
WARNING! **The VMI unit should NOT be opened for any reasons! The unit has no user-serviceable parts inside! If you have an issue with the unit contact Wheatstone Support to arrange an RA for repair service.**

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 (emulated as IDE drive), and an Ethernet port. There is no traditional Hard Disk Drive. A Video port is supplied to the DB-15 connector on the rear of the VMI.

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 via a standard Ethernet switch connection to a switch. Additionally, it communicates with the TDM system via the AT LINK 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 upon 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/IP Address

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. Additionally the VMI ships with the host controller IP address set. Stand–alone systems NOT interfaced to an existing network require no IP address changes.

Installation and Rack Mounting

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

The VMI may be mounted between other devices in an equipment rack, and in accordance with good engineering practices, should not be mounted above devices that generate significant amount of heat. If such a location is unavoidable, it is recommended that at least 1 RU of space is available between the heat generating device and the VMI. An 1RU rack panel blank can be used cover the open space in the front of the rack.

Power Supply

The VMI is powered by a factory supplied power adapter rated at the following:

100-240V/50-60Hz input

90W Maximum output power

Input AC current to the Supply is less than 3.75Amps.

Power is supplied via the 4ft. long output cable, and can be plugged into either of the POWER A or POWER B ports on the rear of the VMI.

A second redundant power adapter can be optionally purchased. When using two power supplies to the VMI, one is plugged into the POWER A port and the second to the POWER B port.

When necessary, the VMI may be powered down by disconnecting the AC connection to the power supply(s). DO NOT disconnect power using the DC cable connection to the VMI, unless the AC inputs are already disconnected.

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.

The power supply adapter is supplied with a 3-wire grounded AC cord that should be plugged into a "clean" AC power source. It is recommended that the same AC source that supplies power to your other Studio gear is used, rather than the same supply that supplies power for lighting, HVAC systems, or other non-broadcast gear.

I/O Connections

All user wiring to and from the VMI is made via connectors located on the rear panel. The two jacks on the right are for power supply connections. There are two RJ-45 connectors; one, labeled ENET, which connects to a standard Ethernet network switch and the other, labeled AT LINK, which connects to a specific DSP card in an E-Series SAT cage or to an M-DSP unit. In the case of using a WheatNet-IP system the AT LINK port on the VMI would not be connected at all.

Additional connectors include a DB-15 connector for a VGA Monitor connection, and PS/2 Mouse and Keyboard ports. Pinouts for the RJ-45 connections appear later in this document.

Audio Network Wiring

The AT LINK RJ-45 connector provides the control link between the VMI and the Gibraltar Router or Wheatnet system, and for those types of systems, all settings and commands generated on the VMI pass through this link via a special CAT5/6 cable wired in "crossover" fashion. This special cable connects the RJ-45 jack on the rear of the VMI to a RJ-45 jack on the Gibraltar Router or Wheatnet system. There are many possible RJ-45 jacks in the Gibraltar Router or Wheatnet system, and for proper termination the VMI must be connected to the RJ-45 connector defined for it in the Gibraltar Router or Wheatnet configuration. Crossover cable pinouts follow later in this document.

AT LINK CONNECTOR PIN DETAIL

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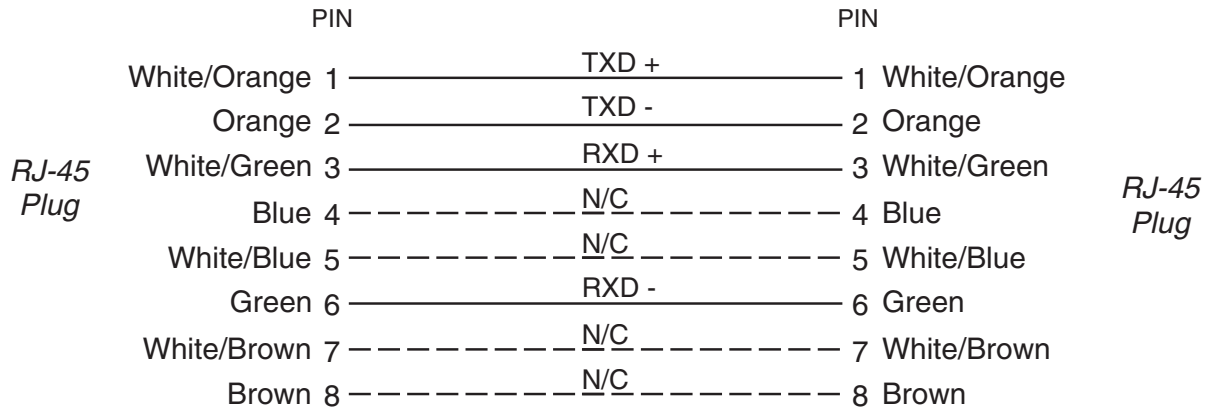Pin 8 – N/C

Ethernet Interface Wiring

The ENET RJ-45 connects the VMI to your Ethernet LAN via straight (pin to pin) CAT5/6 cable. The LAN (Local Area Network) 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 on the AT LINK connection in TDM systems. If you are connecting directly between a PC and the VMI using this link, with no network switch or hub in between, use a CAT5/6 crossover cable. Typical CAT5/6 straight and crossover cable pinouts are found later in this document.

ETH CONNECTOR PIN DETAIL

PIN 1 – TXD +
PIN 2 – TXD -
PIN 3 – RXD +

PIN 4 – N/C
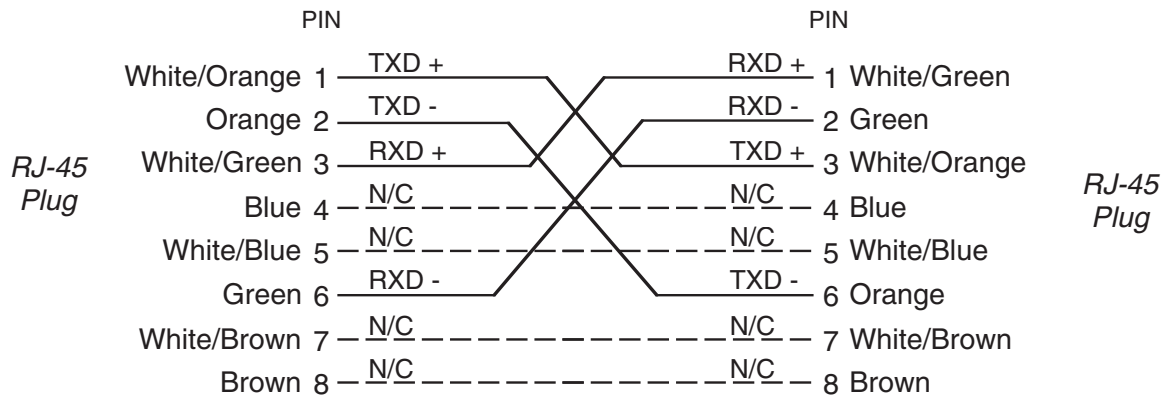PIN 5 – N/C
PIN 6 – RXD -

PIN 7 – LN LED
PIN 8 – LK LED

Typical CAT5/6 Cabling

Typical Ethernet Cable

PIN			PIN
White/Orange 1	—— TXD + ——	1	White/Orange
Orange 2	—— TXD - ——	2	Orange
White/Green 3	—— RXD + ——	3	White/Green
Blue 4	- - - N/C - - -	4	Blue
White/Blue 5	- - - N/C - - -	5	White/Blue
Green 6	—— RXD - ——	6	Green
White/Brown 7	- - - N/C - - -	7	White/Brown
Brown 8	- - - N/C - - -	8	Brown

RJ-45 Plug (left) — *RJ-45 Plug* (right)

Used for connecting the host controller to your network hub.

Typical Crossover Cable

PIN			PIN
White/Orange 1	TXD + / RXD +	1	White/Green
Orange 2	TXD - / RXD -	2	Green
White/Green 3	RXD + / TXD +	3	White/Orange
Blue 4	N/C - - - N/C	4	Blue
White/Blue 5	N/C - - - N/C	5	White/Blue
Green 6	RXD - / TXD -	6	Orange
White/Brown 7	N/C - - - N/C	7	White/Brown
Brown 8	N/C - - - N/C	8	Brown

RJ-45 Plug (left) — *RJ-45 Plug* (right)

Used for mixer (AT) link connector.

RJ-45 Connections

*Ethernet Connector
(RJ-45)*

1	TXD +
2	TXD -
3	RXD +
4	N/C
5	N/C
6	RXD -
7	LN LED
8	LK LED
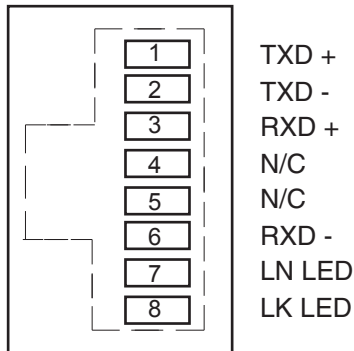
*Mixer (AT) Link CAT5
Connector (RJ-45)*

| 1 | TXD + |
2	TXD -
3	RXD +
4	N/C	(crossover)
5	N/C
6	RXD -
7	N/C
8	N/C
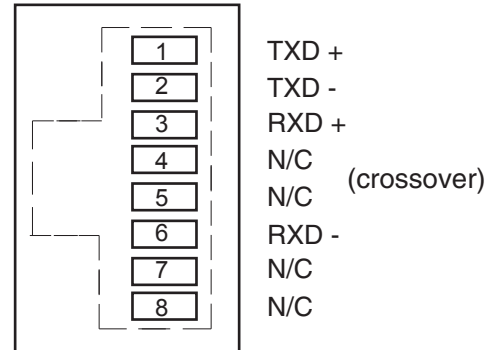
Energizing

Once the VMI unit is mounted into its location, you can now energize it. There is no power switch on the VMI unit itself.

Aggressive AC input filtering is utilized at the AC input of the VMI; however, it is recommended to always to use a surge protection/suppression and/or an un-interruptible power supply (UPS), especially when AC power quality could be questionable.

Use of a UPS 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 up to 40 seconds

LED indicators at the center of the front panel display power, Ethernet, AT LINK, and external clock functions. In the unlikely event of a VMI CPU failure, the ERROR led will illuminate.
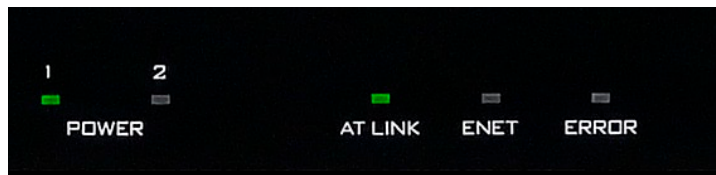
Using the VMI

Local Video/Mouse

You can connect a VGA Monitor to the DB-15 VGA port, and a PS/2 mouse to the PS/2 mouse port on the rear of the VMI. Remember that the E-Series Surface will be pre-defined at the factory. When connected in this way, control of the Virtual Mixer is the same as if it were an E-Series console surface. Refer to E-Series Surface manual that matches your VMI version for more details on operational information.

GLASS E Software

You can configure the VMI to accept GLASS E connections on a specified port. Once setup, you can configure GLASS E software to connect to the VMI as if it were an E-Series Surface. Refer to the E-Series Surface manual that you are emulating in your VMI for operational details.