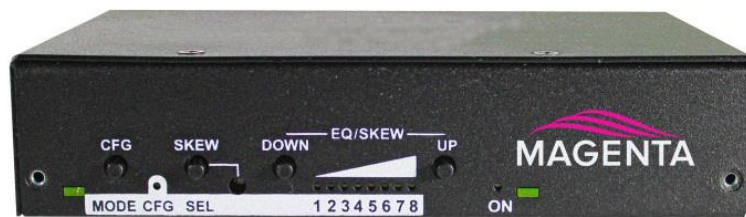


MultiView™ II *DVI-Rx-1K*

Receiver



Installation and User Guide

Version 2.00



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PDF-UG-MVII-DVI-RX

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Regulatory Compliance Statements

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada (ICES-003) notice:

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EUROPEAN UNION DECLARATION OF CONFORMITY

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

TV One (Erlanger KY USA) declares under our sole responsibility that the product *MultiView™*
// DVI-Rx-1K to which this declaration relates is in conformity with the following standard(s) or other normative documents:

EN 55032:2012 Class A ITE emissions requirements.
EN61000-3-2:2006 Limits for harmonic current emissions (equipment input current \leq 16A per phase).
EN 61000-3-3:2013 Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current \leq 16 A per phase and not subject to conditional connection.
EN60950-1:2006 Safety for Information Technology Equipment
EN55103-2 Immunity for ITE:
BS EN61000-4-2 All Environments E1-E5 Electrostatic discharge
BS EN61000-4-3 All Environments E1-E4 NOT Environment E5 Radiated RF Immunity
BS EN61000-4-4 All Environments E1-E4 NOT Environment E5 Fast transient Immunity (EFT)
BS EN61000-4-5 All Environments E1-E4 NOT Environment E5 Surges
BS EN61000-4-6 Environments E1-E4 NOT Environment E5 Conducted RF Immunity
BS EN61000-4-11 All Environments E1-E5 Voltage Dips and Interruptions

WARNING: An AC adapter with a ferrite core must be used for RF interference suppression.

To assure continued FCC Class A emission limit compliance, the user must only use shielded video cables with two ferrite cores to avoid potential harmful interference when connecting to external units and F/UTP[‡] type Category cable must be used.

This equipment has more than one interface connector, do not leave cables connected to unused interfaces. Any unauthorized changes or modifications to this equipment could void the user's authority to operate it.

Direct all inquiries regarding FCC compliance to:
tvONE 2791 Circleport Drive, Erlanger, KY 41018, USA
Phone: 859-282-7303 Fax: 859-282-8225 Email: tech.usa@tvone.com

[‡] F/UTP cable is constructed of 4 unshielded twisted pairs, with a foil screen around all 4 pairs

Precautions

Safety Instructions • English



This symbol calls attention to important information.



This symbol alerts the user of important maintenance (or servicing) and operating information.



This symbol alerts the user to the presence of un-insulated dangerous voltages or other conditions in, or around, the product enclosure. These conditions can present a risk of electric shock or damage to equipment or facilities.

Connection • Not for direct connection to Telecommunication Network Circuitry (TNV)

Power sources • This equipment should be operated only from the power source indicated on the product. Disconnect all power sources before servicing.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Caution:

Read Instructions: Read and understand all operating, installation, and safety instructions before using this equipment.

Avoid Attachments: Only use accessories, attachments, tools, and materials that are recommended by the equipment manufacturer. Doing otherwise can compromise operating performance, create an unsafe condition, damage equipment, or violate the terms of usage or warranty.

Follow Warnings: Always follow all instructions and warnings marked on the equipment or as detailed in related users' guides.

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Chapter 1 Specifications

The following table lists the general specifications of the MVII-DVI-Rx-1K.

Table 1: MVII-DVI-Rx-1K General Specifications

Item	Description
Compatible transmitter	The MVII-DVI-Rx-1K receiver MUST be used with a MVII-DVI-Tx transmitter. Use of any other MultiView transmitter will result in no displayed image at the receiver.
Link Cable Required	4 twisted-pair "F/UTP" [‡] type cable is recommended for performance and EMC compliance. Regular or minimized-skew type is acceptable.
Supported Video Formats	VESA and CEA video formats, output on a digital DVI-D connector. Supported video formats include 1080p/60/24. Refer to Appendix-A for a full list of supported resolutions.
Audio Signals	(A) mode: Analog audio outputs: Capable of driving a 10K ohm load (unbalanced). (S/PDIF mode): For S/PDIF digital-audio, 75 Ohm (typical impedance). Note: The DVI-Tx (transmitter) can also de-embed 2CH-PCM digital audio, which can be output as a S/PDIF digital audio stream by the receiver. (Re-embed mode) The DVI-Tx can de-embed 2CH-PCM digital audio from the incoming DVI-D signal (4 th pair = Internal S/PDIF). This can be re-embedded by the receiver into the outgoing DVI-D signal for cables up to 1000ft. Note, if your DVI-Tx has it's 4 th pair configured as 'External S/PDIF' it may be possible this audio up to a max cable length of 500ft depending on your S/PDIF source Re-embed mode is only supported on your unit IF listed on the rear label of the unit.
Serial Characteristics	(S) mode: Protocol: Asynchronous; transparent to data format; transparent to data rates up to 115 kbps; simplex. (SAP) model: Protocol: Asynchronous; 9 fixed baud rates are supported, refer to SAP-II Programming Manual for additional details
Connectors	(1) 4 pin phoenix (2) RJ-45 (1 input, 1 active loopthrough) (1) DVI-D (F) (1) DB9M (only if the SAP option module is installed) (1) DC Power jack
Temperature/Humidity Tolerance	Operating: 32 to 104°F (0 to 40°C), 10% to 80% RH non-condensing. Storage: -4 to +140°F (-20 to +60°C), 10% to 80% RH non-condensing.
Enclosure	Steel, black powder-coat finish.
Power	Input voltage: +5 VDC @ 1.2 Amps max. Consumption: 6 watts maximum
Size	1.2"H x 5.5"W x 3.6"D (3.0 x 14.0 x 9.2 cm)
Weight	1 lb. (0.45 kg)

[‡] F/UTP cable is constructed of 4 unshielded twisted pairs, with a foil screen around all 4 pairs

Chapter 2 About this Manual

This manual describes the Magenta MultiView™ II DVI-Rx-1K receiver, and contains the following information:

- Specifications(Chapter 1)
- Product Overview (Chapter 3)
- Twisted-pair Cable Compatibility (Chapter 4)
- Installation (Chapter 5)
- Troubleshooting (Chapter 6)
- Connector Pin-outs (Chapter 7)
- Additional information (Appendices)

The Magenta MultiView™ II family (MVII) of products introduces greater compatibility for handling HD video standards, as well as making nearly all user-configurable options “jumperless” via a digital front-panel user-interface.

Compatibility with MultiView transmitters: The MultiView-II DVI-Rx-1K receiver will only function correctly with a MVII-DVI-Tx transmitter as the source device.

Compatibility with MultiView switching and distribution: The MultiView-II DVI-Rx-1K receiver is generally compatible with previous MultiView distribution and switching products. Contact Technical Support for specific system configuration and compatibility issues.

The following table shows the factory-configured versions of the MVII-DVI-Rx-1K.

Table 2: Available MVII-DVI-Rx-1K Versions

Version	Description
MVII-DVI-Rx-1K-A	Base model, factory-configured as “-A” which supports L+R summed audio.
MVII-DVI-Rx-1K –SAP	Contains the SAP option module. This supports 3-wire RS-232 serial (simplex or duplex), and true stereo audio. The serial feature is POLLABLE, so that multiple receivers on a daisy-chained link can be addressed individually for display control or status-query.

Note:

1. The MVII-DVI-Rx-1K-A receiver comes equipped with the AkuComp-II skew-compensation module installed. This is a factory requirement. This receiver is not available without the AkuComp-II module.
2. The base model “-A” version is easily field-configurable for “-S” simplex-serial, “S/PDIF” digital audio, or direct pass-through of signals on the 4th-pair. Refer to section 5.7.2 for more detailed information.



This equipment is not intended for, nor does it support, distribution through an Ethernet network. Do not connect these devices to any sort of networking or telecommunications equipment.



Use only approved MultiView™ power adapters. Failure to do so may damage this device and will void the warranty.

Chapter 3 Product Overview

The MVII-DVI-Rx-1K is a video receiver that is compatible with the MVII-DVI-Tx transmitter, and many legacy MultiView products – contact Technical Support with compatibility questions. It extends an analog video signal over standard twisted-pair “F/UTP” type cable. There are user-configurable settings for video, audio, and serial options which can be controlled from the front panel.

The MVII-DVI-Rx-1K features automatically adjusted EQ and Skew compensation, greatly simplifying the initial installation and setup. These adjustments can also be fine-tuned manually. The skew compensation can be varied in 2 ns increments to 65 ns total per color-channel to cancel the effects of skew in Category cables. This feature allows you to use a variety of F/UTP cables (both “normal” and “minimized-skew” types) to lengths up to 1000ft (305m).

The MVII-DVI-Rx-1K supports a wide range of video refresh rates and resolutions (refer to Appendix-A).

3.1 Front Panel Interfaces

The front panel of the MVII-DVI-Rx-1K has the following controls and indicators:

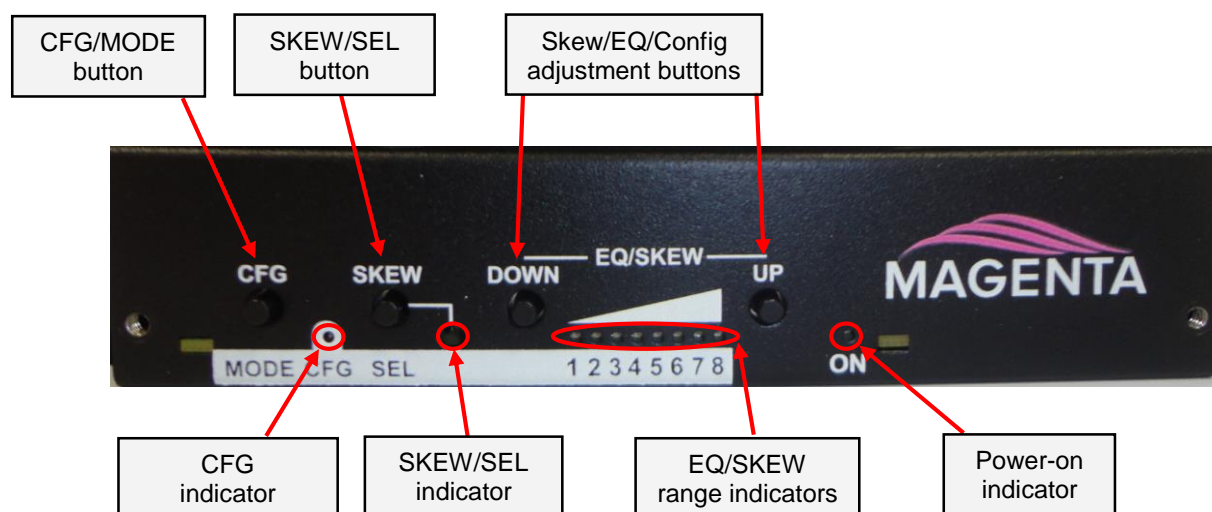


Figure 1: MVII-DVI-Rx-1K Front Panel Interfaces

There are four buttons (**CFG/MODE**, **SKEW/SEL**, **DOWN**, and **UP**) and several LED status indicators. All are used to display and control the operating modes of the receiver, with the LEDs having multiple functions. The **CFG** indicator shows these modes:

- In normal mode, the **CFG** indicator is off.
- In configuration mode, the **CFG** indicator will be on.

3.2 Rear Panel Interfaces

The rear panel of the MVII-DVI-Rx-1K has the following ports:

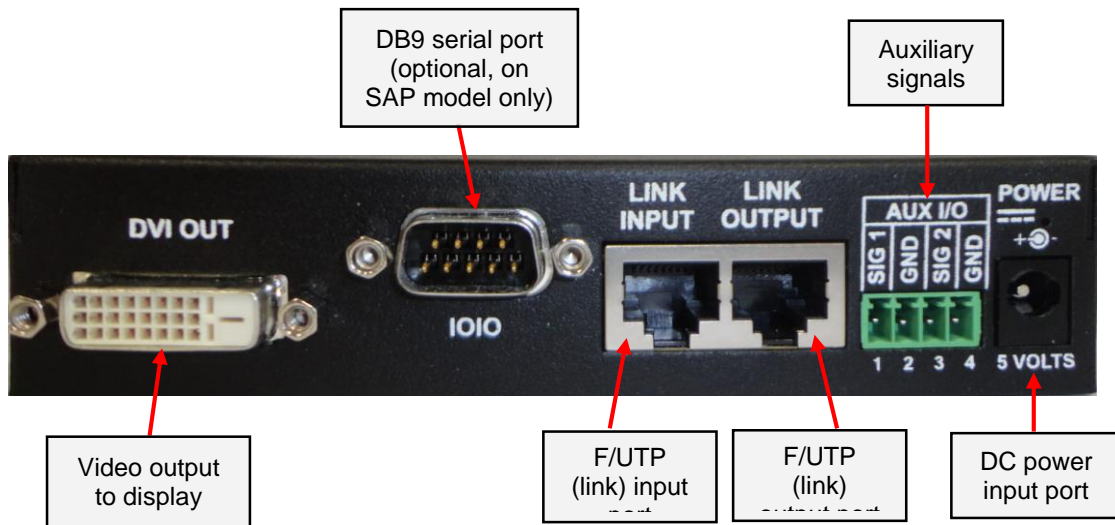


Figure 2: MVII-DVI-Rx-1K Rear Panel Interfaces

Chapter 4 Twisted-pair Cable Compatibility

The DVI-Rx-1K receiver is compatible with twisted-pair “F/UTP” type cable. This type of cable ensures best possible product performance, and maintains EMC compliance for emissions and susceptibility. However, in applications that must use cable other than “F/UTP”, it is up to the end-user to ensure product performance at the intended resolution and distance, and that additional steps are taken to mitigate any RF interference.

In the F/UTP cable category, there is regular-skew (or IT-grade) cable, and in some areas, “minimized skew” (video-grade) cable may be available. The DVI-Rx-1K receiver is compatible with both types. Follow these tips to ensure proper usage of your Category cabling:

- Some “low-skew” cable is specific to a particular vendor and is incompatible with our products. Ensure that any “low-skew” cable is non-proprietary before purchase and installation.
- CAT6 cable, due to the manufacture method, can exhibit much greater skew than standard CAT5/5e. Please contact tech-support for assistance.
- Cabling for the Magenta MultiView™ Series must be pinned to the TIA-EIA T568B wiring specification.
- We also highly recommend that all cables be pre-terminated and tested. Cables terminated on-site or in an existing infrastructure should be tested before use to ensure compliance with the TIA-EIA T568B specification. Using incorrectly terminated cables can damage the Magenta MultiView™ Series.
- The cable should be suitably rated Listed cable (DUZX) communication cables, TYPE CMP, CMR, CMG or CM as designated in the NEC.
- Cables are to be installed in accordance with the NEC and local building and electrical codes. This is the responsibility of the end user/installer of this product.

The following figure shows the T568B Wiring specification.

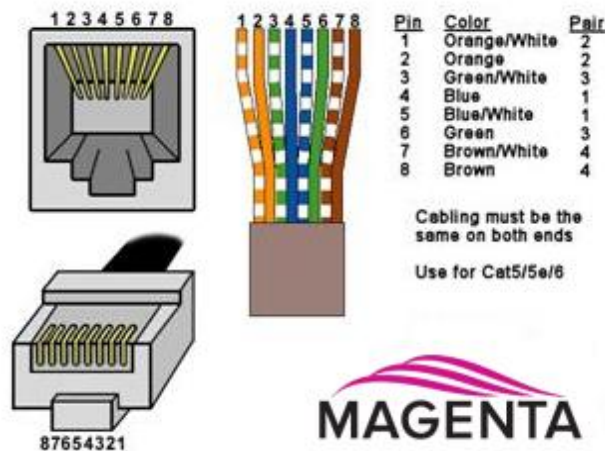


Figure 3: T568B pinout for RJ45 connectors and twisted-pair cables

Chapter 5 Installation

This section describes the following installation topics:

- Data mode configuration
- Prerequisites to installation
- Installation procedure
- Post-installation adjustments
- Post-installation configuration settings



This equipment is not intended for, nor does it support, distribution through an Ethernet network. Do not connect these devices to any sort of networking or telecommunications equipment!



Do not connect DC power until instructed to do so.

5.1 Option-Module Configuration

If you are installing a MVII-DVI-Rx-1K-**SAP** version receiver (this is equipped with the SAP hardware option module), then the following information will be important to review BEFORE installing the receiver:

The **MVII-DVI-Rx-1K-SAP** version offers pollable RS232 duplex serial in addition to true stereo audio. The serial interface is a 3-wire (TX, RX, GND) interface. The factory-default serial baud rate is 9600 baud, but this is a user-configurable option using “SAP-II” serial commands. Simplex modes are supported without jumper or other changes by simply using the TX signal only. The serial-polling capability allows interaction with specific receivers. This will require that each receiver have a unique SAP-address setting. Please refer to Appendix-B for (SAP) module configuration information, and Appendix-C for SAP-address settings.

5.2 Prerequisites

Depending on the specific installation requirements, some common tools (screwdrivers, nut-drivers) and related hardware (mounting screws) might be required. These are not provided with Magenta products.

The following items might be necessary, which are available from Magenta Research:

- Audio cable: Phoenix 4-pin to RCA.
- Video cable: DVI (or HDMI with an appropriate DVI/HDMI adapter)
- Serial cable: Phoenix 4-pin to DB9, or one of several DB9-M/F, M/M or F/F extension cables.

Note: You will need appropriate twisted-pair cable as previously described, to connect the MVII-DVI-Rx-1K to other MultiView™ II devices. tvONE does not supply this cable.

5.3 Installation Procedure



Ensure that all connectors are clean and free of contaminants prior to making the connections. Appropriate connector locking hardware (screws/latches) should be used to prevent cables from disconnecting or causing intermittent operation.



All units must be the same type for 4th-pair supported features to function correctly. For example, a “MVII-DVI-Tx-A” must be paired with a MVII-DVI-Rx-1K-A, as both must be identical to work properly. Similarly, an “MVII-DVI-Tx-SAP” can only be used with an MVII-DVI-Rx-1K-SAP”. Video modes may function normally, but 4th pair options will not.

To install a MultiView-II DVI-Tx transmitter:

1. Connect the source video to the Magenta MultiView™ DVI-Tx transmitter's video input port, which is a DVI-D connector labeled DVI-IN.
2. If desired, attach a local monitor to the DVI-D connector labeled LOCAL OUT (if available).
3. Make your audio or serial connections via the AUX-I/O (Phoenix) connector or DB9 connector as appropriate.
4. Connect the twisted-pair cable to the transmitter.
5. Apply power to the transmitter.
 - a. The power-on LED should light up.
 - b. If there is a local monitor attached, a video image should appear on the monitor.

To install the MVII-DVI-Rx-1K receiver:

1. Connect the DVI OUT connector to the display.
2. Connect any audio and/or serial cables to the (AUX I/O) and (IOIO) connectors, depending on the specific model of receiver you are installing. Please refer to the –A, -S or –SAP option descriptions for more information.
3. Connect the twisted-pair cable from a MultiView-II™ DVI-Tx transmitter to the LINK INPUT connector on the receiver.
4. If you are daisy-chaining multiple receivers, also connect the downstream twisted-pair cable to the LINK OUTPUT port on the receiver.
5. Connect the DC power cable to the POWER port, and check for the following indicators:
 - The power-on LED should light up (Green).
 - The CFG indicator is off.
 - The SKEW/RGB indicator is off.
 - The EQ/SKEW indicators display the current EQ settings (0 to 100%).
6. **IMPORTANT:** The MVII-DVI-Rx-1K will auto-adjust the EQ and Skew settings. This is the factory-default behavior. However, in some applications it will be necessary to manually fine-tune these adjustments, or leave it in manual-adjust mode after the initial setup.
7. When the EQ and SKEW settings are properly adjusted, the video should appear on the display (make sure display is powered ON).
8. Make any other required configuration changes via the LED/button user-interface.



It is critical that the EQ and SKEW settings be adjusted to compensate for the length of the twisted-pair cable leading back to the transmitter.

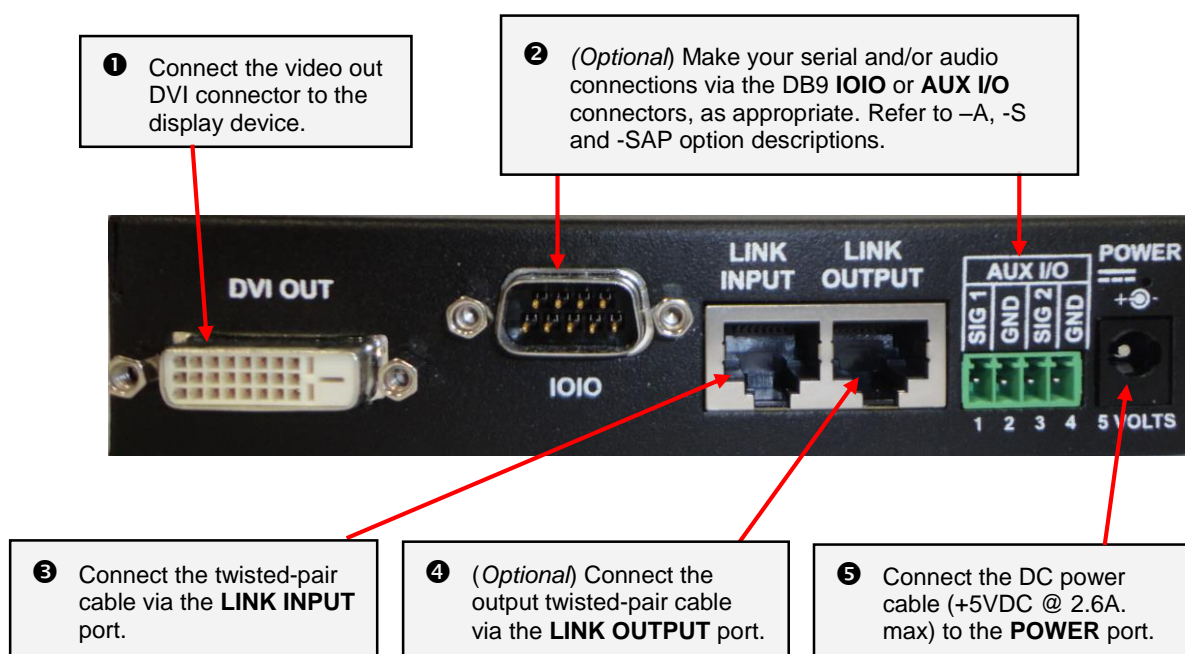


Figure 4: MVII-DVI-Rx-1K Receiver Installation Procedure

5.4 Adjustments

This section describes how to make the following adjustments:

- Cable distance (EQ) compensation
- Skew compensation

Note that the factory-default behavior of the MVII-DVI-Rx-1K is “auto-adjust mode enabled” for the EQ and Skew Compensation settings. To **exit auto-adjust mode**, simply attempt to make a manual adjustment to either.



To **re-enable auto-adjust mode**, ensure you are in normal-operation mode and simply push both UP and DOWN buttons simultaneously and hold for 2 seconds.

5.5 Cable Distance (EQ) Compensation Settings

When the MVII-DVI-Rx-1K is operating in normal mode (CFG indicator is off), it is possible to quickly adjust the EQ. The EQ/SKEW indicators 1-8 will change accordingly to show (in “bar-graph” form) 0 to 100% of the available EQ adjustment range.



For best results, use the Magenta EQ/Skew test pattern image if possible. A test pattern image and video instructions is available at <http://www.magenta-research.com/test>.

The following figure shows the test image you can use to make the EQ adjustment.

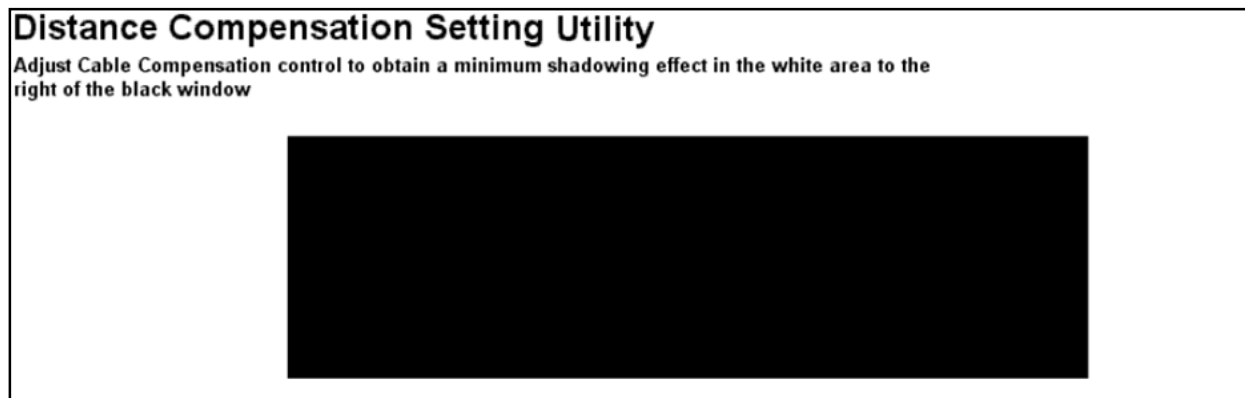


Figure 5: EQ-adjustment test image

To adjust EQ:

1. From normal-mode, press and hold the UP or DOWN button until the SKEW/RGB indicator turns on (VIOLET). Release the UP or DOWN button.
2. Press the UP or DOWN buttons repeatedly to adjust the EQ setting, either one step at a time or hold for auto-repeat.
3. To exit EQ-ADJUST mode, leave the buttons untouched for 10 seconds, or press the CFG button once.



Auto-Adjust EQ should always provide you with a picture out of your receiver. However it may be possible to get a better quality picture manually. We strongly recommend that all MVII DVI-Rx units are EQ'd manually once the Auto-Adjust EQ has completed to ensure you get the best picture possible. This also reduces the time taken for a picture to appear when changing sources as the AutoEQ algorithm is disabled.

5.6 Skew Compensation Settings

The AkuComp-II skew module is already included inside the standard MVII-DVI-Rx-1K receiver. It is possible to quickly adjust the RGB skew-compensation values when the receiver is operating in normal mode. The EQ/SKEW indicators 1-8 will change accordingly to show (in “bar-graph” form) 0 to 100% of the available SKEW adjustment range (0 to 65nSec).



For best results, use the Magenta EQ/Skew test pattern image if possible. A test pattern image and video instructions is available at <http://www.magenta-research.com/test>.

The following figure shows the test image you can use to make the SKEW adjustment.

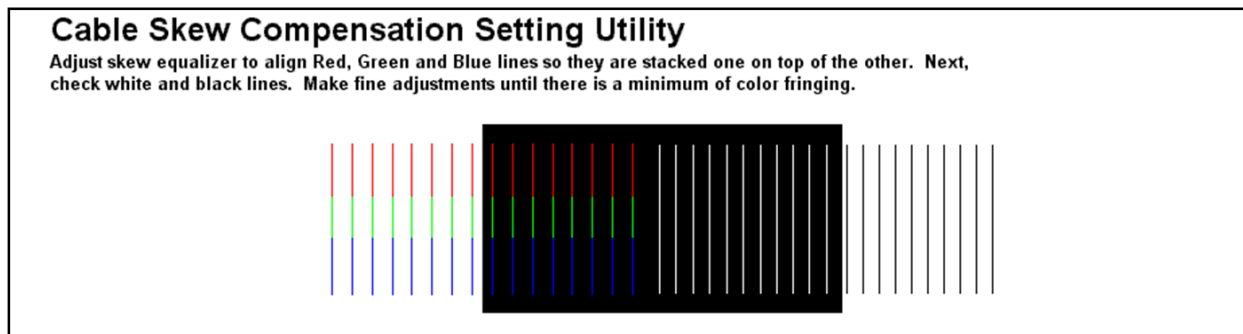


Figure 6: Image Adjustment Utility Skew

To adjust skew:

1. From normal mode, press and hold the SKEW/SEL button until the SKEW/RGB indicator turns on RED. Release the SKEW button.
2. Press the UP or DOWN button repeatedly to adjust the RED skew value.
3. Press and release the SKEW/SEL button. The SKEW/RGB indicator will turn GREEN.
4. Press the UP or DOWN button repeatedly to adjust the GREEN value.
5. Press and release the SKEW/SEL button. The SKEW/RGB indicator will turn BLUE.
6. Press the UP or DOWN button to adjust the BLUE value.
7. Pressing the SKEW/SEL button again will return you to step-2, allowing adjustment of the RED skew again.
8. To exit SKEW-ADJUST mode, leave the buttons untouched for 10 seconds or press the CFG button.

5.7 Configuration Settings

There are a number of configurable operating parameters, and the factory-default settings should work for most applications. However, some applications might require slight configuration changes.

This section describes how to configure the following settings:

- **Config-mode, LEDs 1-3:** 4th pair settings
- **Config-mode, LED 4:** 4th pair termination settings

All settings are available from the front-panel buttons/LEDs. The enclosure does not need to be opened **unless** the SAP option module is being installed or removed, or settings specific to the option module need to be changed.

5.7.1 Configuration Mode

For changing configuration settings, the receiver must be in configuration mode (CFG indicator is on). Once in configuration mode, any changes are effective immediately and are saved in non-volatile memory.

To enter configuration mode:

- Press and hold the **CFG button** until the **CFG indicator** is **ON**.
 - Once in this mode, the LED indicators 1-8 will display the current settings as described in the tables below.

To exit configuration-mode:

- Leave the buttons untouched for 10 seconds. The **CFG indicator** will turn off (normal-mode).

To quickly reset all user-configurable options back to factory-default settings:

1. Disconnect the DC power cable (or AC power).
2. Press and hold the **CFG** button.
3. Connect the DC power cable (or AC power). All LEDs blink 3 times, indicating all settings are now changed back to factory-defaults.
4. Release the **CFG** button.

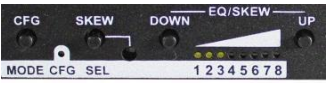


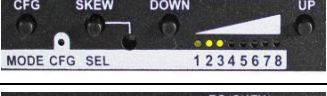


5.7.2 4th Pair Settings (LED1-3)

The MVII-DVI-Rx 1K provides several options for using the 4th-pair signals (pairs 1-3 are generally used for video). The factory-default settings support analog audio (L+R summed) on the 4th-pair. Note that the connected MultiView transmitter and any daisy-chained receivers must be configured with a matching 4th-pair operating mode. Otherwise, the desired 4th-pair signal will not work as expected – but the video will not be affected. **Note:** If the optional SAP daughterboard is installed then the **4th-pair options are fixed and unchangeable**.

Perform the following procedure while the receiver is in the normal operating state (**CFG** indicator is off):

- ❶ Press & hold the **CFG** button until the **CFG** indicator is **ON**. Release the **CFG** button.
 - LEDs 1-8 will show the current value for all configuration settings as bright/off.
- ❷ Press & release the **SKEW/SEL** button.
- ❸ **LED indicators 1-3** should be illuminated (either DIM or ON); all others (indicators 4-8) should be off.
- ❹ Press the **UP** or **DOWN** buttons to step through the available 4th-pair settings as shown below.
- ❺ To leave configuration-mode, leave the buttons untouched for 10 seconds or press the **CFG** button.

Table 3: 4th-Pair Settings

LED1	LED2	LED3	Front Panel View	4 th -pair Operating Mode
dim	dim	dim		If option-module is installed: 4 th -pair operating mode is defined by the presence of the option-module (SAP) and this setting cannot be changed. If the option-module is not installed: 4 th -pair signals are disabled. This “mutes” anything being sent on the 4 th pair. This can be useful for diagnostic purposes.
dim	dim	ON		Direct pass-through of 4 th -pair wires (custom applications).
<u>dim</u>	<u>ON</u>	<u>dim</u>		External analog (L+R summed) audio (“-A” mode). This is the <u>factory-default</u> mode if no daughterboard option is installed. (Remember to also check 4 th -pair termination setting)
dim	ON	ON		External S/PDIF digital audio. Output-impedance = 75-ohms. (Remember to also check 4 th -pair termination setting)
ON	dim	dim		Simplex-serial (“-S” mode) (Remember to also check 4 th -pair termination setting)
ON	dim	ON		Re-embeds DVI-D audio from the MVII-DVI-Tx into the output video stream (Remember to also check 4 th -pair termination setting) If DVI-Tx 4 th pair = External S/PDIF, max length = 500ft If DVI-Tx 4 th pair = Internal S/PDIF, max length = 1000ft Re-embed mode is only supported on your unit IF listed on the rear label of the unit.

5.7.3 4th Pair Termination Settings (LED4)

The MVII-DVI-Rx-1K receiver provides settings for 4th pair termination: **ON** or **OFF**. This setting has an effect only for all operating modes except Pass-Through of non-SAP variants.

Note: It is not possible to access the 4th-pair setting if an option board is installed – since this setting is ignored.

- Set to **ON** for all **single-receiver** applications, and for the **last receiver** in a daisy-chained configuration. **This is the factory-default.**
- Set to **OFF** only for **mid-span** receivers in a daisy-chain configuration.

Perform the following procedure while the receiver is in the normal operating state (*CFG indicator is off*):

- ➊ Press & hold the **CFG** button until the **CFG** indicator is **ON**. Release the **CFG** button.
 - LEDs 1-8 will show the current value for all configuration settings as bright/off.
- ➋ Press and release the **SKEW/SEL** button twice.
- ➌ **LED indicator 4** should be illuminated (either DIM or ON); all others (indicators 1-3 and 5-8) should be off.
- ➍ Press the **UP** or **DOWN** buttons to turn 4th-pair termination ON (bright) or OFF (dim).
- ➎ To leave configuration-mode, leave the buttons untouched for 10 seconds or press the **CFG** button.

Chapter 6 Troubleshooting

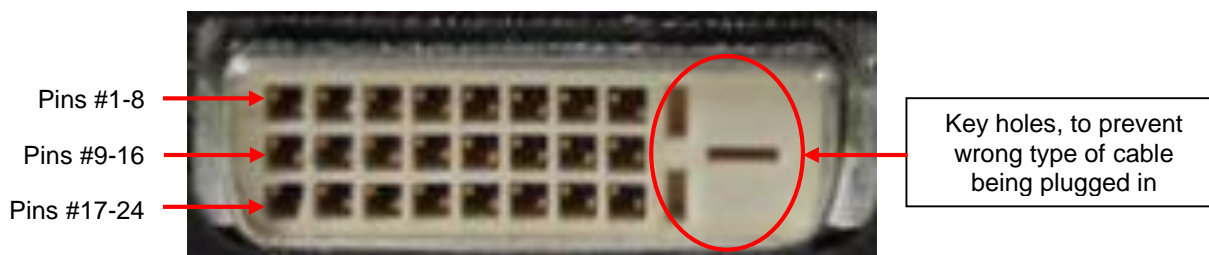
In most cases, nearly every issue with the MultiView™ video system can be resolved by checking the twisted-pair cable termination and making sure that it's pinned to the TIA/EIA 568B wiring specification. However, there may be other problems that cause the system to not perform as it's designed. The following table lists the most common installation errors and their solutions.

Table 4: Troubleshooting Problems and Solutions

Problem	Solution
No video signal at the receiver	<ul style="list-style-type: none"> • Check that the transmitter is a MultiView-II DVI-Tx type, with the proper option configured (-A, -S, or -SAP) to match the receiver. • Check that both units are powered and all necessary cables are firmly connected. • Ensure receiver EQ and SKEW adjustments are set correctly. Use the Auto-adjust mode (push up + down buttons simultaneously). If a manual adjustment is necessary, change EQ settings slowly to avoid losing the picture completely. • During initial installation of a MVII-DVI-Rx-1K receiver, it is best to start by using Auto-Adjust mode. Once you have a video image, it's much easier to fine-tune the EQ setting to get the best possible image on your display. • Make sure the twisted-pair cable is terminated correctly per the TIA/EIA 568B wiring specification. • Check that the display device is powered on and functioning. • Check to ensure your chosen display is compatible with the format of the input signal at the transmitter.
Poor video quality at receiver	<ul style="list-style-type: none"> • Ensure receiver EQ and SKEW adjustments are set correctly. Change EQ settings slowly while making manual adjustments. • Check all cable connections. • There may be a video-skew delay issue – your cable may have more than 65nSec of skew at its current length. If possible, use a shorter cable (or cut off some excess “service-loop”). • Check the twisted-pair pinout and also the connectors on the transmitter and receiver for any bent pins or foreign objects wedged between contact pins.
Poor audio quality	<ul style="list-style-type: none"> • The audio output at the receiver is line-level only. An amplifier, or powered speakers, are required. Make sure amplifier or speaker power is ON. • Check input source levels from the source device. Ensure the audio source level does not exceed the audio-input ratings for the transmitter (DVI-Tx). Clipping or distortion can result. • Audio is summed left and right for “A” versions. If using a single channel, both audio inputs must be connected at the transmitter end to obtain proper audio gain through the link (approximately 1:1, input to output).
Serial communication doesn't work correctly	<ul style="list-style-type: none"> • Are the serial devices connected properly? Are the serial parameters correct for source/destination devices? • Are the serial cables terminated correctly? Is a null-modem cable required at the TX or RX end? • When using serial-capable receivers with video switches, distribution amps, or multi-output transmitters, the serial data is sent transmit-only. Please take this into account when trying to control displays or other devices. <i>For assistance, contact Technical Support.</i> • SAP units have a factory default baud rate of 9600 bps and use 3 wire (TX, RX, GND) signals only. If necessary, use SAP-II serial commands to change the baud rate to match your connected device.

Chapter 7 Connector Pinouts

DVI-D connector pinout:



DVI (Digital Visual Interface) is a robust and popular video interface standard that can include digital and analog options in the same connector (the “DVI-I” version). However, as the DVI-Rx-1K is a digital-video only device, it supports the “DVI-D” subset of the DVI standard interface. The table below provides the pin-out for all 24 pins, which are used in the DVI-Rx-1K unit.

Pin #	Signal Name
1	TMDS Data 2-
2	TMDS Data 2+
3	TMDS Data 2/4 Shield
4	TMDS Data 4-
5	TMDS Data 4+
6	DDC Clock (SCL)
7	DDC Data (SDA)
8	N/C

Pin #	Signal Name
9	TMDS Data 1-
10	TMDS Data 1+
11	TMDS Data 1/3 Shield
12	TMDS Data 3-
13	TMDS Data 3+
14	+5V Power
15	Ground (for +5V)
16	Hot Plug Detect

Pin #	Signal Name
17	TMDS Data 0-
18	TMDS Data 0+
19	TMDS Data 0/5 Shield
20	TMDS Data 5-
21	TMDS Data 5+
22	TMDS Clock Shield
23	TMDS Clock +
24	TMDS Clock -

Auxiliary I/O (AUX-I/O) Connector Pinout

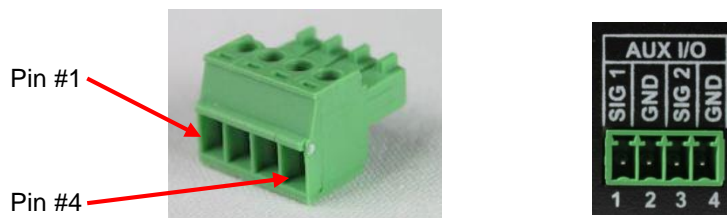


Figure 7: 4-pin Phoenix Connector Pinout

Table 5: Auxiliary I/O (4-pin Phoenix) Pin Usage

PIN#	(A) Audio	(SAP) Audio	(S) Simplex Serial	SPDIF Audio
1 (SIG1)	Left Channel	Left Channel	Tx	Signal +
2 (GND)	Ground	Ground	ground	Signal -
3 (SIG2)	Right Channel	Right Channel	-	-
4 (GND)	-	-	Shell	-

Serial port (IOIO) Connector Pinout

If the receiver is an -SAP version, then the serial interface will be provided on the “IOIO” connector. This is a DB9-M type serial connector, configured to look like a standard 9-pin “DTE” serial port.

Therefore, in most applications a straight through serial cable or adapter-plug (DB9-Female-to-Male) is used to connect an external serial device (for example, a display’s serial control port) to the receiver.

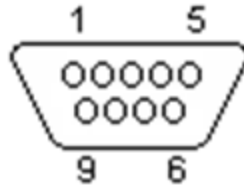


Figure 8: DB9-M Serial Port Connector

Table 6: Serial Port Pins

Pin#	Signal Name	3 wire (SAP)
1	DCD	-
2	RX	RX
3	TX	TX
4	DTR	-
5	Ground	Ground
6	DSR	-
7	RTS	-
8	CTS	-
9	RI	-

RJ45 (MultiView Link) Wiring Standard

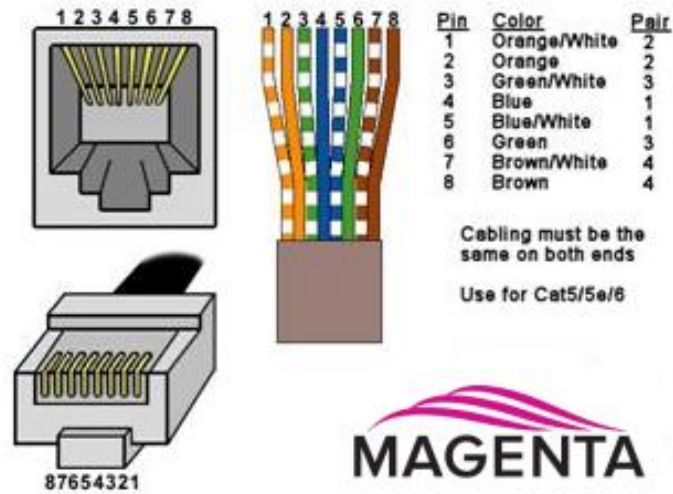
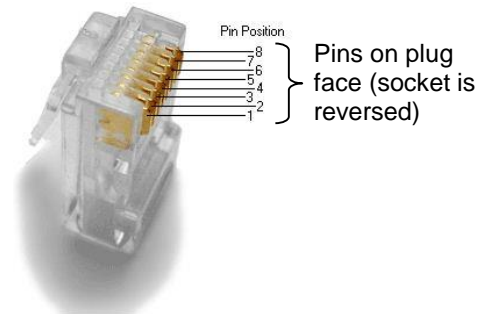


Figure 9: T568B Category Cable Wiring Standard

Table 7: T568B wiring for RJ-45 plug

PIN #	COLOR	PAIR
1	White / Orange Stripe	2
2	Orange Solid	2
3	White / Green Stripe	3
4	Blue Solid	1
5	White / Blue Stripe	1
6	Green Solid	3
7	White / Brown Stripe	4
8	Brown Solid	4

Figure 10: Typical RJ-45 Plug



DC Power Connector

Magenta provides ready-to-use power supplies for MultiView™ II products. However, if there is a reason a substitute power supply must be used, then the following information is important for maintaining product reliability and performance:

Magenta AC/DC Power supply output rating: Regulated +5VDC @ 2.6Amps.

Power-input rating for MVII-DVI-Rx-1K: 5VDC, 1.2Amps max.

The DC power input connector accepts an industry-standard coaxial-DC plug with the following specifications:

- Coaxial power connector
- OD = 5.5mm
- ID = 2.5mm (accepted center-pin diameter)
- Length = 11mm (overall length of insertable plug end)
- Inner contact (pin-socket) = +5VDC
- Outer contact (sleeve) = Ground

It is highly recommended that the inner contact (center-pin contact) of any mating DC plug utilize a “tuning-fork” shaped design, rather than a plain barrel shape. The tuning-fork design greatly increases the reliability of the power connection. The plain barrel style connector can cause intermittent operation, often resulting in “mysterious” system problems that are difficult to identify.

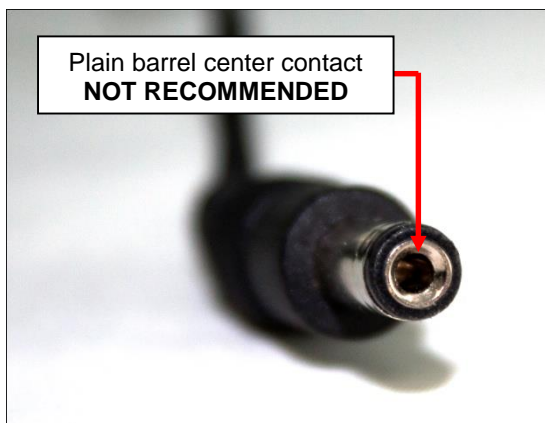


Figure 11: Plain Barrel Connector

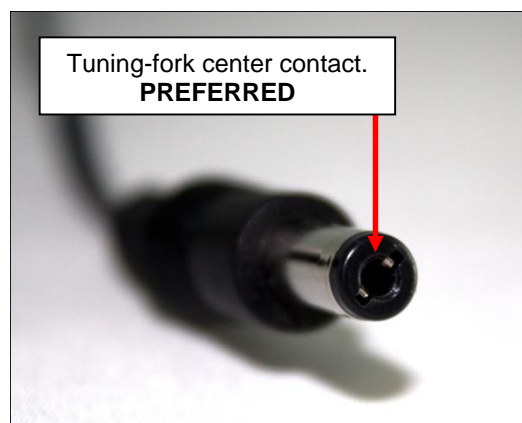


Figure 12: Tuning-fork Connector



The Magenta-provided power supply already comes with the correct output ratings and DC-plug configuration

Appendix A Supported Video Formats and Features

The following video formats are supported by the MVII-DVI-Tx and MVII-DVI-Rx-1K (combined) link. This table represents the contents of the EDID information stored in the transmitter.

Table 8: MultiView™ II DVI-Tx + DVI-Rx-1K Supported Video Formats and Features

Format/Feature	Description
640x480p/59.94&60Hz/24	640x480, progressive scan, 59.94 or 60 Hz, 24 bit color.
720x480p/59.94&60Hz/24	720x480, progressive scan, 59.94 or 60 Hz, 24 bit color
720x576p/50Hz/24	720x576, progressive scan, 50 Hz, 24 bit color
720p/59.94&60Hz/24	1280x720, progressive scan, 59.95 or 60 Hz, 24 bit color.
720p/50Hz/24	1280x720, progressive scan, 50 Hz, 24 bit color.
1080p/60Hz/24	1920x1080, progressive scan, 60 Hz, 24 bit color.
1080p/59.94Hz/24	1920x1080, progressive scan, 59.94 Hz, 24 bit color.
1080p/50Hz/24	1920x1080, progressive scan, 50 Hz, 24 bit color.
1080p/29.97&30Hz/24	1920x1080, progressive scan, 29.97 or 30 Hz, 24 bit color.
1080p/25Hz/24	1920x1080, progressive scan, 25 Hz, 24 bit color.
1080p/23.98&24Hz/24	1920x1080, progressive scan, 23.98 or 24 Hz, 24 bit color.
1080i/59.94&60Hz/24	1920x1080, interlaced scan, 59.94 or 60 Hz, 24 bit color.
1080i/50Hz/24	1920x1080, interlaced scan, 50 Hz, 24 bit color.
Basic Audio	Digital audio (2-Channel PCM) de-embedding is supported at the DVI-Tx end. On the DVI-Rx-1K end, digital audio can either be output as a S/PDIF (copper interface) stream on the Aux-I/O connector, or re-embedded into the output signal.

Appendix B (SAP) Option Module Settings

The SAP option module allows a bi-directional session to be established between a SAP-equipped transmitter (MVII-DVI-Tx-SAP), and a specific SAP-equipped receiver even in a multiple-receiver daisy chain installation.

The SAP transmitter devices (MVII-DVI-Tx-SAP for example) do not have address DIP-switches. The factory-default address of the transmitter is “0”.

The SAP receiver devices (MVII-DVI-Rx-1K-SAP for example) have address DIP-switches.

Each SAP-equipped receiver must have a unique address set first, via DIP-switch settings or by a serial command entered directly at the receiver.

Once this has been done, a special “set destination address” command is sent into the transmitter to specify which receiver to open a session with.

If the transmitter is commanded to use destination address 0 (zero), serial data will be broadcast to all receivers. This is the factory-default behavior.

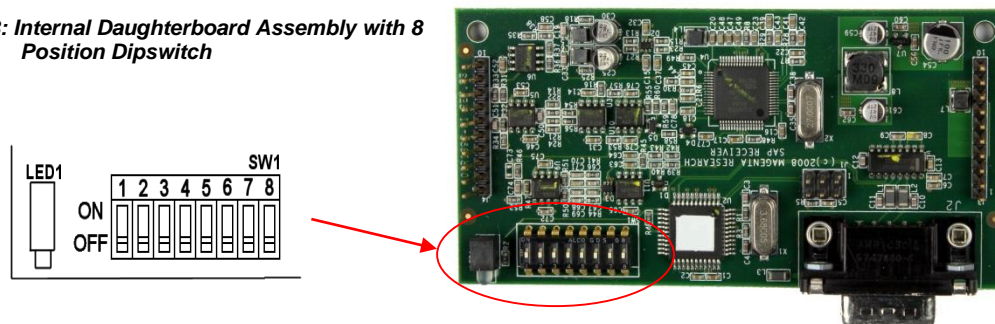
To set the SAP receiver’s address switches, you will need to open the **receiver** enclosure and set the DIP-switches directly on the SAP module. The DIP-switch has 8 switches, one for each address bit position. Use the SAP addressing chart provided on the next page to determine the proper switch addresses.

All receivers must have a unique address. *It is recommended to write the address on each receiver once this step has been completed.* It is also recommended to keep a list of receiver addresses and locations to make it easier to determine which receiver/display is desired to communicate with.

To set SAP address DIP-switches (at SAP-receiver units):

1. Remove the top cover assembly of the receiver.
2. Locate the 8 position dipswitch on the internal daughterboard assembly and using the SAP-addressing chart, set the receiver address as needed.

Figure 13: Internal Daughterboard Assembly with 8 Position Dipswitch



3. Replace cover assembly and install unit.




Note: It is also possible to set a SAP receiver’s address by a **serial-command** entered at the receiver itself. In this case, simply ensure all DIP switches are set to address 0 (zero).

Please also refer to the *SAP II Programmer’s Guide* for additional information on SAP related settings and operation.

Appendix D **Mounting Kits**

The following table shows several kits available for mounting the MultiView™ II DVI-Rx-1K receiver.

Table 9: MVII-DVI-Rx-1K Mounting Kits

Mounting Kit #	Description	
2211054-01	Rigid-mount bracket. This mounts a single device to a surface (wall/desk/etc.). Comes with 4 self-tapping screws.	
8310203-02	1U Rack-mount Plate for standard 19" rack. Mounts 3 devices in a 1U space. Comes with (6) device-mounting screws, (4) rack-mounting screws.	
8310204-02	2U Rack-mount Plate for standard 19" rack. Mounts 6 devices in a 2U space. Comes with (12) device-mounting screws, (4) rack-mounting screws.	

Note: When installing MVII-DVI-Rx-1K receivers in an area susceptible to elevated operating temperatures (near the maximum specified operating temperature), it is important to give careful consideration to maintaining adequate air flow. Within a rack assembly, cable bundles and other equipment in the same rack can impede proper cooling. In some rack-mount applications you may even need to leave a 1U gap (using a blank filler plate) between receiver groups. For surface-mount applications, ensure the device will have adequate air circulation and that air-vents on the enclosure are not blocked.



Figure 14: MVII-DVI-Rx-1K with Rigid Mount Bracket



Figure 15: MVII-DVI-Rx-1K with 1U Rack-mount Plate



Figure 16: MVII-DVI-Rx-1K with 2U Rack-mount Plate

Appendix E **Magenta Equipment Compatibility**



The “SAP bidirectional serial data” becomes unidirectional (source → display) if the link is run through Mondo-III, MultiView-8x8 (and 16x16) switches, or through the MultiView 9D distribution amplifier.



Using a Magenta Switch to change sources will cause the picture to drop out for ~10 seconds if the MultiView II DVI Rx is in Auto EQ mode. To avoid this issue, ensure the MultiView II DVI Rx is configured for Manual EQ once a good picture has been established during installation.

MONDOIII Switch

The input cable length to the unit can be any length. Note that while the input cables can be any length, the Mondo-III system configuration guidelines for “normalizing input cable lengths” still apply.

The output cable length from the unit can be any length.

The total (input + output cable) length must not exceed the 1000ft range of the MultiView II DVI units.

MultiView Matrix 8x8 and 16x16 Switches

The input cable length to the unit must not exceed 400ft.

The output cable length from the unit can be any length.

Note, using a MultiView Matrix has a small impact on the total cable length possible, the total (input + output cable) length must not exceed the 900ft.

MultiView 9D Distribution Amplifier

The input cable length to the unit can be any length.

The output cable length from the unit can be any length.

The total (input + output cable) length must not exceed the 1000ft range of the MultiView II DVI units.

Note, the MultiView II DVI units have a maximum range of 1000ft, using a MultiView 9D will not increase the range to the 1400ft as quoted in the MultiView 9D manual.

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