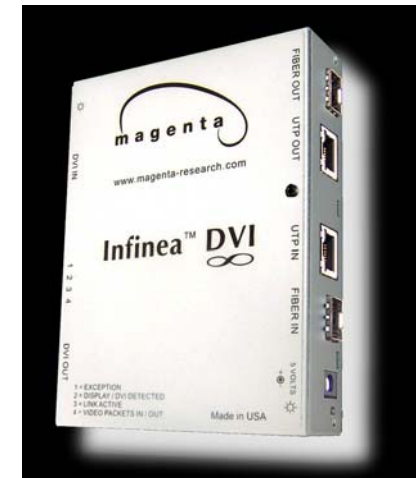




Infinea ***DVI*** **Over Cat5/6 & Fiber** Quick Reference & Setup Guide



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PN: 5310176-01, Rev 02, 08/07

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TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

1. Specifications

Cable Required:	CAT5/5e/6, Single mode fiber optic, Multimode Fiber Optic (model dependent)
Compliance:	CE; FCC Class A, IC Class A
Video Support:	DVI Single Link
Resolution:	1600x1200 , 1080P (if graphics card supports reduced clock rate)
Bandwidth:	1.65 Gbps
Audio Characteristics:	Channels: Stereo Audio (SA or SAP models)
Serial Characteristics:	Protocol: Asynchronous; transparent to data format; (SA or SAP models)
Maximum Distance:	Total end to end over fiber optic cable: 32,808 ft (10,000m). Total end to end over UTP cable: 600 ft (183m).
Connectors:	UTP Transmitter: (1) RJ-45, (2) DVI F Fiber Transmitter: (1) single or dual LC fiber, (1) RJ-45, (2) DVI F UTP Receiver: (1) RJ-45, (1) DVI F Fiber Receiver: (1) single or dual LC fiber, (1) RJ-45, (1) DVI F Daisy chain Receivers UTP/UTP DP Receiver: (2) RJ-45, (1) DVI F UTP/Fiber DP Receiver: (1) single or dual LC fiber, (2) RJ-45, (1) DVI F Fiber/Fiber DP Receiver: (2) single or dual LC fiber, (2) RJ-45, (1) DVI F Audio/Serial Models (SA, SAP) Additional audio/serial connectors: (1) 4 phoenix, (1) 5 phoenix All: (1) power inlet
Temperature Tolerance:	Operating: 32 to 104°F (0 to 40°C); Storage: -4 to +140°F (-20 to +60°C)
Humidity Tolerance:	Up to 80% noncondensing
Enclosure:	Steel
Power:	+5 VDC; Consumption: 5 watts maximum
Size:	1.2"H x 4.1"W x 5.5"D (3.1 x 10.4 x 14.0 cm)
Weight:	1.0 lb. (0.45 kg), all units

2. Introduction

2.1 Overview

The Infinea DVI System extends DVI video signals over fiber optic (single or multimode) cable or Cat5 cable. All models support single link DVI video modes. Fiber models support either Fiber **OR** CAT5 inputs and outputs, however only one combination is active at a time. The units will autosense which port is in use. Note distance limitations of fiber or Cat5.

This manual covers Infinea DVI System units for video, Infinea DVI units for video, stereo audio, and RS232 serial (SA) and Infinea DVI units for video, stereo audio, and pollable RS232 (SAP).

Infinea DVI System receivers are available with single or dual daisychainable connections. The dual daisychainable receiver is used when the same signal is distributed to multiple display devices across a single cable in a daisychain or loop-through fashion. Setup and cabling are the same as the single-port receiver. There is no limit to the number of daisy chain receivers in a single chain and you can daisy chain to the maximum cable distance between receivers since the DVI signal is re-timed through each receiver.

Serial and audio versions provide stereo audio and full RS232 signals. When used in a daisychainable mode, the RS232 is unidirectional transmit only. The pollable serial versions (SAP) allow a bi-directional RS 232 session to be made between the Infinea DVI transmitter and a single receiver in a daisy chain setup. Each receiver must be addressed with a unique address. See Appendix D for details.

WARNING

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

2.2 Package Contents

You should have received the following when ordering a Infinea DVI System receiver:

- The transmitter or receiver unit (requires power supply sold separately)

2.3 Equipment You May Also Need

- Rackmount Brackets:
- Stereo Audio cable.
- DVI Video cable.
- Serial cable.
- Cat5/6 or Fiber Optic cable.

2.4 Compatible Cabling

Cabling for the Infinea DVI System must be a single mode or a dual multimode fiber optic cable terminated into type LC fiber optic connectors, or a Cat5/6 cable pinned to the EIA T568B specification (see Appendix A).

3. Setup and Installation

3.1 Data Mode Configuration

For pollable serial versions only: Each receiver unit must have a unique address assigned to it before installation. This is accomplished by setting a dipswitch inside the receiver units. See **Appendix D** for instructions.

3.2 Cabling Considerations

- We recommend mounting and connecting all cabling to the Infinea DVI System components before applying power. **Please note recommended power sequence below.**

3.3 Making the Connections

3.3.1 Connections and Setup in General

This section contains figures showing connections with the specific Infinea DVI System models. In general, however, the connection and setup procedure at both transmitter and receiver ends is as follows:

At the transmitter end:

1. Connect the source video to the Infinea DVI System transmitter video input port, which is a DVI connector labeled DVI IN.
2. If desired, attach a local monitor via the local monitor port to DVI OUT.
3. Depending upon model, make your audio and/or serial connections.
For audio: Connect the audio input to the AUDIO connector
For RS-232: Connect the serial input to the RS-232 COMM connector port 1.
(Port 2 is reserved for internal console use)
4. Connect the fiber optic or CAT5 cable to the transmitter.
5. Do not apply power to the transmitter at this time.

At the receiver end:

1. Connect the DVI OUT connector to the display unit, and attach any audio or serial connections depending on the model of Infinea DVI System. If pollable serial mode is in use, the receiver must have a unique address. Please see Appendix D.
2. Make sure that the fiber optic or Cat5 cable connection from the transmitter or receiver are secure.
3. Apply power to the display, then to the receiver.
4. Next, the transmitter should be powered on and finally the video source signal. Reference Appendix B for Link status and LED indicator explanations.

If there are any problems at either end, see **Chapter 4**.

3.3.2 CONNECTIONS ON THE SINGLE-PORT INFINEA TRANSMITTER

The following details specific connections and settings of the Infinea transmitter. Infinea FIBER transmitters also support CAT5 outputs, however only one combination is active at a time. The units will autosense which port is in use at power on. Infinea UTP transmitters only support Cat5/6 cable

Figure 3-1 shows the Infinea DVI System Transmitter connections.

NOTE: All Connections are shown. Depending on model purchased not all connectors will be available.

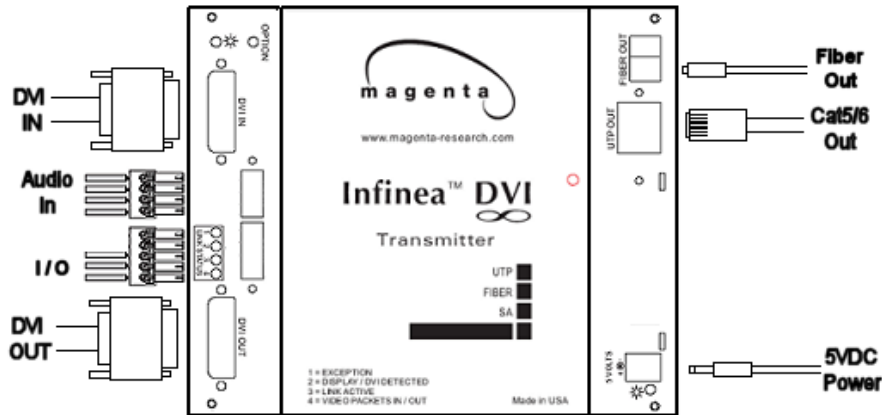


Figure 3-1. Infinea Transmitter connections.

The top cover of the assembly indicates the unit's capabilities:

- Units designated **UTP** utilize the Cat5/6 output to extend signals.
- Units designated **FIBER** utilize the fiber output to extend signals.
- Fiber units are further designated with fiber type:
 - **SMF** is a single fiber optic single mode cable
 - **MMF** is a dual fiber optic multi mode cable
- Units designated **SA** support Stereo Audio and RS 232 signals with the video
- Units designated **SAP** support Stereo Audio and Addressable RS232 with video (see Appendix D).

Video compression modes (see Appendix C) are indicated as:

- C** for computer (static) mode
- M** for movie (moving video) mode

NOTE: All transmitters and receivers must be of the same type and mode for proper operation.

3.3.3 CONNECTIONS ON THE SINGLE-PORT INFINEA RECEIVER

The following details specific connections and settings of the Infinea receiver. Infinea FIBER receivers also support CAT5 inputs, however only one combination is active at a time. The units will autosense which port is in use at power on. Infinea UTP receivers only support Cat5/6 cable

Figure 3-2 shows the Infinea DVI System Receiver connections.

NOTE: All Connections are shown. Depending on model purchased not all connectors will be available.

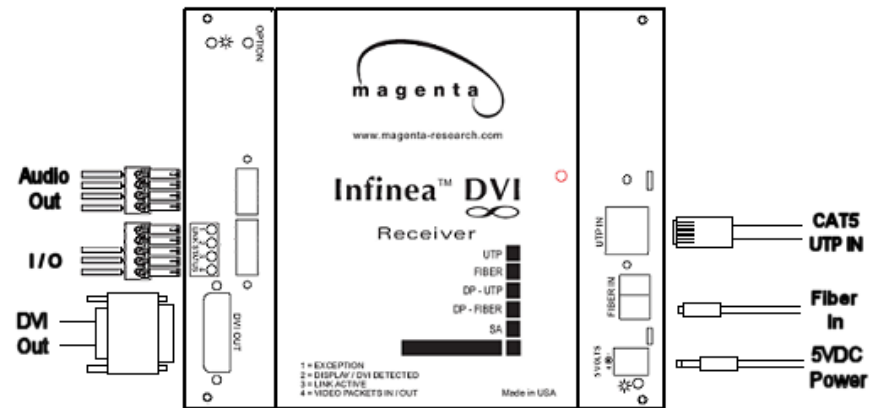


Figure 3-2. Infinea Receiver connections.

The top cover of the assembly indicates the unit's capabilities:

- Units designated **UTP** utilize the Cat5/6 input to extend signals.
- Units designated **FIBER** utilize the fiber input to extend signals.
- Fiber units are further designated with fiber type:
 - **SMF** is a single fiber optic single mode cable
 - **MMF** is a dual fiber optic multi mode cable
- Units designated **SA** support Stereo Audio and RS 232 signals with the video
- Units designated **SAP** support Stereo Audio and Addressable RS232 with video (see Appendix D).

Video compression modes (see Appendix C) are indicated as:

- C** for computer (static) mode
- M** for movie (moving video) mode

NOTE: All transmitters and receivers must be of the same type and mode for proper operation.

3.3.4 CONNECTIONS ON THE DUAL DAISYCHAINABLE RECEIVERS

The dual daisychainable receiver is used when the same signal is distributed to multiple display devices on a single cable in a daisychain or loop-through fashion. Do not exceed rated cabling distances between units.

Setup and cabling are the same as the single-port receiver, but the dual daisy chainable model has an additional FIBER OUT or UTP OUT connector for linking to another dual daisychainable receiver or single-port receiver.

Infinia FIBER daisy chain receivers support UTP or FIBER in and UTP or FIBER out mixed combinations. However only one combination is active at a time. The units will autosense which port is in use at power on.

Figure 3-3 shows the Infinia DVI System Receiver connections.

NOTE: All Connections are shown. Depending on model purchased not all connectors will be available.

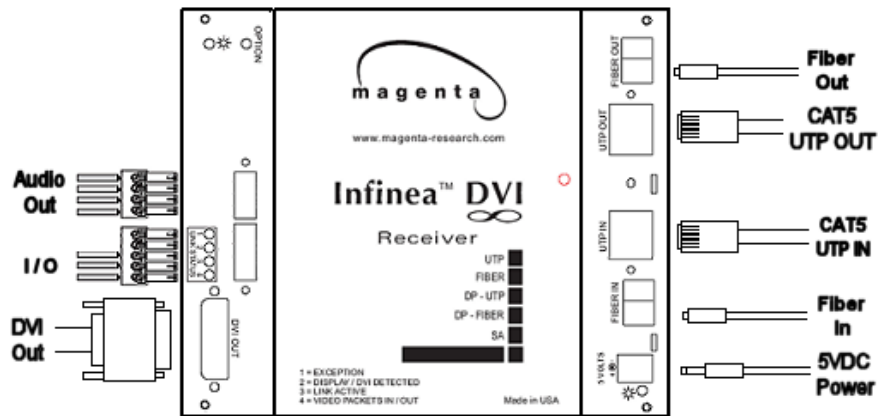


Figure 3-3. Infinia Daisy Chain Receiver connections.

The top cover of the assembly indicates the unit's capabilities:

- Units designated **DP-UTP** utilize the Cat5/6 input to extend signals.
- Units designated **DP-FIBER** utilize the fiber input to extend signals.
- Fiber units are further designated with fiber type:
 - **SMF** is a single fiber optic single mode cable
 - **MMF** is a dual fiber optic multi mode cable
- Units designated **SA** support Stereo Audio and RS 232 signals with the video
- Units designated **SAP** support Stereo Audio and Addressable RS232 with video (see Appendix D).

Video compression modes (see Appendix C) are indicated as:

- C** for computer (static) mode
- M** for movie (moving video) mode

NOTE: All transmitters and receivers must be of the same type and mode for proper operation.

4. Troubleshooting

4.1. Common Problems

In most cases, nearly every issue with the Infinia DVI System can be resolved by checking the Fiber optic or CAT5 cable and making sure that it's properly terminated and in the case of CAT5 cable, 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. Below are solutions to the most common installation errors.

Problem:

No video signal at the transmitter local port or at the receiver.

Solution:

- Check that both units are powered.
- Make sure the cable is terminated correctly.
- Is the display device powered on and functioning?
- Power on units in sequence (display, receiver, transmitter, video source).
- Display may not be correctly identified by source device. See Appendix E for DDC communication issues.

Problem:

Video signal is poor.

Solution:

- See Appendix C for changing compression mode.
- Check all cable connections.
- The video signal's refresh rate may be set too high. Reset to a lower refresh rate in your monitor-configuration menu.
- In 1080P mode, the PC graphics card needs to be set to reduced clock rate mode. Contact the graphics card manufacturer.

Problem:

Audio is poor.

Solution:

- Powered speakers are required. Make sure speaker power is ON.
- Check input source levels from the source device. Make sure the audio source is not overdriven or underdriven.

Problem:

Serial communication doesn't work correctly.

Solution:

- Are the serial devices connected properly? Are the serial parameters correct for source/destination devices?
- Are the serial cables terminated correctly? If a null-modem cable is used, it must be placed at the receiver end.
- When using daisychain receivers, the serial signal is a unidirectionally broadcast mode.
- If using pollable RS232, ensure each receiver has a unique address. The transmitter is always address 0. See Appendix D.

Appendix A. Cabling Pinouts

Table A-1. AUDIO connector (SA or SAP units)

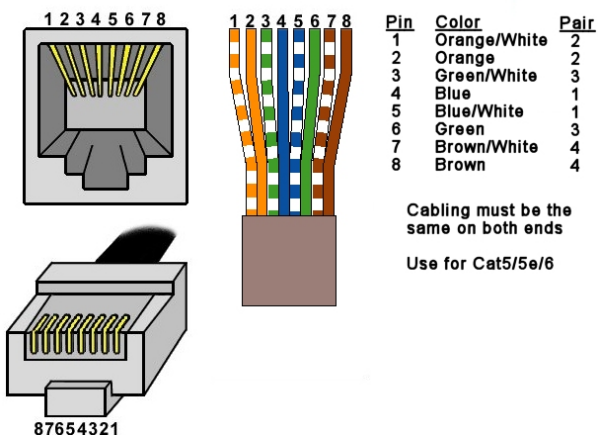
<u>PIN</u>	<u>Audio</u>
Pin 1	Ground
Pin 2	Right Channel
Pin 3	Ground
Pin 4	Left Channel

Table A-2. COMM serial connector (SA or SAP units)

<u>PIN</u>	<u>Audio</u>
Pin 1	Rx 2 (console)
Pin 2	Tx 2 (console)
Pin 3	Ground
Pin 4	Rx 1
Pin 4	Tx 1

Table A-3. T568B CAT5 pinout

T568B CAT5 Specification



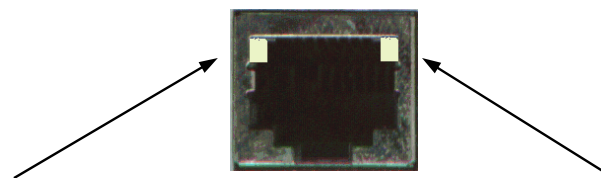
Appendix B. Status LED's

The Infinea DVI System feature "status-at-a-glance" LED's to ensure the units are functioning properly and to isolate problems with input signals, units, and/or cabling thus saving time during installation and troubleshooting. Reference the following tables for information on these indicators. The UTP connector also contains LED indicators on either side to provide visual cues on connection and traffic status.



<u>Link Status LED's</u>	
LED	Meaning
1	Normal Operation == OFF ON == EXCEPTION—a serious problem has occurred with the unit. Contact Technical Support.
2	Normal Operation == ON ON == Active DVI signal detected from source for transmitter side OR Active DVI display detected if receiver side
3	Normal Operation == ON Indicates active link between transmitter and receiver
4	Normal Operation == ON Indicates video packet transmission between transmitter and receiver

Infinea DVI RJ45 UTP status Indicators:



Left Side LED should blink when data is sent between transmitter and receiver. If no blinking occurs, check DVI signal input from the video source.

Right Side LED should be ON when communication is established between a transmitter and receiver. If it is off, check cabling between the units.

Appendix C. Compression Mode

The Infinea DVI System features two video compression modes to enable high resolution video extension over long distances. Compression modes may be changed with a simple jumper setting accessible through the front cover. **All units must be set to the same compression mode for proper operation.**

The two modes are:

Computer or Pixel Compression mode.

Suitable for static non motion content. **(DEFAULT)**
Jumper J10 IN

Movie or Color Compression mode.

Suitable for moving content such as DVD movies.
Jumper J10 OUT

To change the compression mode, remove the compression mode jumper access cover on the front of the Infinea DVI unit and remove or install a jumper on J10 underneath it.

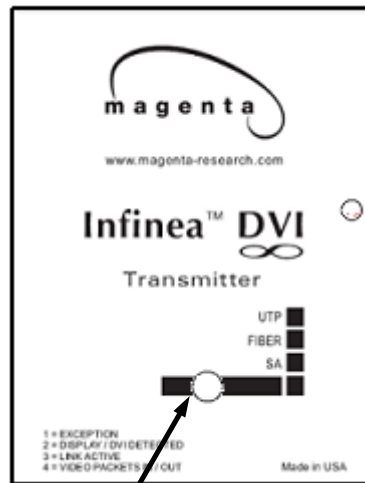


Figure C-1. Compression Mode Jumper Access

APPENDIX D. Pollable Serial Mode

The SAP pollable serial daisychainable receivers with video, audio and RS232 serial feature the ability to open a bi-directional session between a pollable transmitter and a single pollable receiver in a daisychain installation.

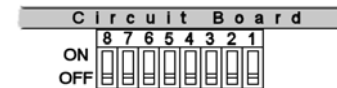
Each pollable receiver must have a unique address set first. Once this has been done, a special command (discussed below) is sent to the transmitter to specify the receiver to open a session with. Once this has been done, serial communication can occur between the RS232 source and display.

If an address of 0 is sent, the RS232 commands will be broadcast to all receivers.

The following details the installation and setup procedure.

To set the receiver address requires that each internal serial audio daughterboard in the receiver have a unique address set. This is done via an 8 position dipswitch. Use the following chart 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.

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



- 3) Replace cover assembly and install unit.
- 4) See below on using pollable serial mode.

In order to utilize the pollable serial mode in normal operation and connect to individual receivers, a special command needs to be sent to the transmitter in order to establish a session between transmitter and receiver.

Follow the steps below to do this (must be done from serial control application in use on port 1).

- 1) To establish a bi-directional RS232 session with a specific receiver, the transmitter needs the receivers address set. To do this send a CTRL-D <ID> carriage return, where <ID> is the receiver address (between 1-254)
- 2) To broadcast serial commands to all receivers, set <ID> to 0.
- 3) To disable serial communication to all receivers, set <ID> to 255 (to enable serial communication again, simply set <ID> to a receiver address).

Once a transmitter has the correct ID set, normal bi-directional communication can occur between transmitter and receiver.

APPENDIX E. DDC/EDID Modes

The Infinea DVI System features the ability to send DDC/EDID display identifiers to the video source in order to determine display capabilities. The DDC is a data communication channel used in plug and play devices to accurately report a displays capabilities and identify the manufacturer. If this data is not available, the video source may revert to a low resolution or not display at all.

Infinea features the ability to report a Universal Display (MRI Magic Display) that supports most popular VESA standards in standard or widescreen formats as well as the ability to clone an actual displays DDC information that is attached to either the local DVI output of the transmitter or the receiver DVI output.

The various modes are detailed below:

Mode 1: Universal Display (MRI Magic Display) (DEFAULT)

This mode reports a generic display supporting popular screen formats and is suitable for most if not all display types.

Mode 2: Clone DDC from DVI Output of transmitter

This mode copies the DDC from a display attached to the local output of the transmitter.

Mode 3: Clone DDC from receiver (first one if using daisychain options)

This mode copies the DDC data from a display attached to the receiver (first receiver if a daisychain mode is in use).

To change modes requires internal jumpers to be changed. See Figure E-1 for jumper locations:

Mode 1: To restore, install jumper J20 while transmitter is powered on. No other cable connections need to be made.

Mode 2: To clone DDC from a display connected to the local DVI output of the transmitter, Install a jumper on J9 and J20 while transmitter is powered off, then connect the display to the transmitter and power it on. Remove J20 while transmitter is powered on and leave J9 in. The video source does not need to be connected.

Mode 3: To clone DDC from a display connected to the DVI output of the receiver, remove jumper on J9 , ensure J20 is in while transmitter is powered off, then connect the display to the receiver and the receiver to the transmitter and power everything on. Remove J20 while transmitter is powered on and leave J9 off. The video source does not need to be connected.

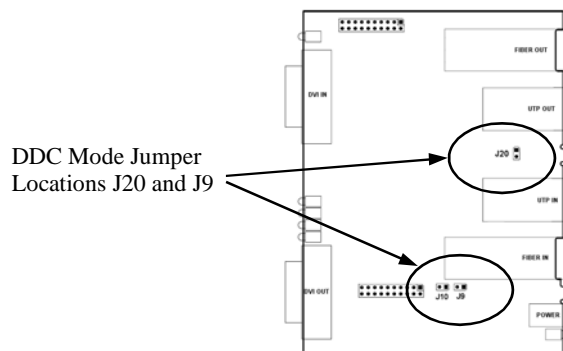


Figure E-1. Jumper locations to change DDC Mode.

NOTES