PRO-DVI-CAT

DVI over Single CAT5 Extender

User Manual

Full HD 1080 | WUXGA 1920×1200 | dvi digital visual interface

CE FC RoHS Compliance

Made in Taiwan **rev.1008**

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Safety and Notice

The **PRO-DVI-CAT DVI over Single CAT5 Extender** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the PRO-DVI-CAT should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

Warranty Information

PESA Switching Systems, Inc., (PESA) warrants this equipment against defective workmanship or materials for a period of one (1) year from date of shipment. The sole warranty responsibility of PESA, shall be to replace or repair product proved to be defective. During the warranty period, defective parts will be replaced at no charge. Labor to repair or replace defective parts covered under the warranty will be performed at no charge at PESA. This warranty covers only products manufactured by PESA, and the components used in their manufacture. The warranty on assembled products sold by PESA., but manufactured by others shall be that of the original manufacturer. This warranty does not include shipping damage or damage caused by abuse, neglect, tampering by unauthorized personnel, damage inadvertently caused by the user, preventative maintenance, or any equipment or part thereof whose serial number has been removed or defaced. Neither the seller nor the manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the inability to use the product. Before using, user shall determine the suitability of the product for the intended use, and user assumes all risk and liability whatsoever in connection therewith. This warranty is effective only at the PESA factory in Huntsville, Alabama, USA. If possible, retain the original packing material for use in the unlikely event that your equipment must be returned to the PESA factory. When shipping your equipment, the shipping charges must be prepaid. The repaired unit will be returned to you, freight prepaid. This warranty is exclusive and in lieu of all other warranties, whether expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose.

INTRODUCTION

The **PRO-DVI-CAT DVI over Single CAT5 Extender** extends your PC DVI transmission distance up to 100ft (30m) at WUXGA (1920x1200@60Hz) and 200ft (60m) at 1024x768@60Hz. With PRO-DVI-CAT, users can transmit high quality digital video of PC applications through one cost effective Cat-5/5e/6 cable to the remote monitor or projector, instead of using short and expensive DVI cable. With embedded EDID inside the extender, your PC will continue to send the digital video even when the monitor is not connected. The user can then disconnects the monitor, place it in a remote location and reconnect it without rebooting the operating system.

The PRO-DVI-CAT includes two units: transmitting and receiving units. The transmitting unit is connected to your PC DVI output and the receiving unit is connected to the monitor. While successfully connected, the two LED lights on the RJ45 connector will blink. The transmission distance between the sending and receiving units can be up to 200ft (60m) at XGA (1024x768@60Hz) and 100ft (30m) at WUXGA (1920x1200@60Hz). With compact size, PRO-DVI-CAT is the most cost effective choice for bringing your impressive digital video to the remote display.

Features

- DVI 1.1 compliant
- Extends DVI signals to 100ft (30m) over CAT5e at WUXGA (1920x1200@60Hz) and likely longer with better DVI source device, better grade DVI display, and better quality solid CAT6/7 cable
- Extends DVI signals to 200ft (60m) over CAT5e at XGA (1024x768@60Hz) and likely longer with better DVI source device, better grade DVI display, and better quality solid CAT6/7 cable
- Allows cascading
- Minimizes the cable skew by adjustable 8-level equalization control
- Easy installation with direct plug-in at transmitter and wall mounting design at receiver
- Supports 1080i/1080p HDTV resolutions & VESA standards
- EDID learning ability at receiver to support all kinds of DVI displays
- Perfectly integrated with other DVI over CAT5 series products

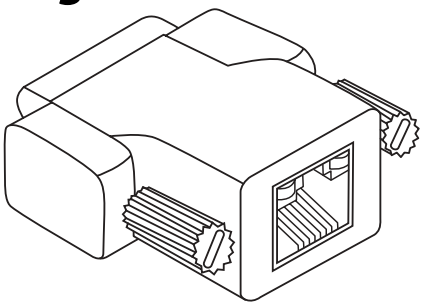
The length depends on the characteristics and quality of the cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/100m) for best performance. Unshielded CAT6 with metal RJ45 connectors is recommended

Specifications & Package Contents

Model Name		PRO-DVI-CAT	
Technical			
Role of usage		Transmitter [TX]	Receiver [RX]
DVI compliance		DVI 1.1	
HDCP compliance		No	
Video bandwidth		Single-link 165MHz (4.95Gbps)	
Video support		Up to WUXGA 1920x1200@60Hz and UXGA 1600x1200@60Hz	
Audio support		No audio for DVI signal	
DVI over UTP transmission		WUXGA (1920x1200@60Hz) – 100ft / 30m / CAT5e/6 XGA (1024x768@60Hz) – 200ft / 60m CAT5e/6	
Signal equalization		N/A	8-level digital rotary control
Input TMDS signal		1.2 Volts (peak-to-peak)	
Input DDC signal		5 Volts (peak-to-peak, TTL)	
ESD protection		Human body – ±19kV air-gap discharge & ±12kV contact discharge Core chipset – ±8kV	
PCB stack-up		4-layer board (impedance control – differential 100Ω; single 50Ω)	
Input		1x DVI	1x RJ45
Output		1x RJ45	1x DVI
DVI connector		DVI-I (29-pin male digital only)	DVI-I (29-pin female digital only)
RJ45 connector		WE/SS 8P8C with 2 LED	
Rotary control		None	8-level signal equalization
Mechanical			
Housing		Plastic molding	Metal enclosure
Dimensions LxWxH	Model	1.6”x2”x0.8” / 40x50x20mm	3.6”x3.6”x1.1” / 91x91x27mm
	Package	6.9”x10.4”x3” / 174x264x77mm	
Weight	Model	1.8 oz / 50g	6.4 oz / 182g
	Package	1.2 lbs / 550g	
Fixedness		Direct plug-in	Wall mounting Latch-locking power jack
Power supply		None	5V 2A DC
Power consumption		1 Watt (max)	
Operation temperature		32-104°F / 0-40°C	
Storage temperature		-4-140°F / -20-60°C	
Relative humidity		20-90% RH (no condensation)	
Package Contents		**1x PRO-DVI-CAT** **1x 5V power supply unit** **1x User manual**	

PANEL DESCRIPTION

Transmitting unit ▸ PRO-DVI-CAT-TX

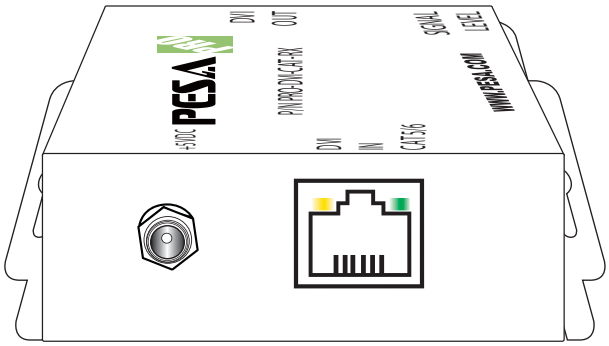


DVI: Connect to a DVI source device with a DVI male-male cable.

RJ45: Plug in a Cat-5/5e/6 cable and link it to the RJ45 port **DVI IN CAT 5/6** on the receiving unit PRO-DVI-CAT-RX.

Receiving unit ▸ PRO-HDMI-CAT-RX

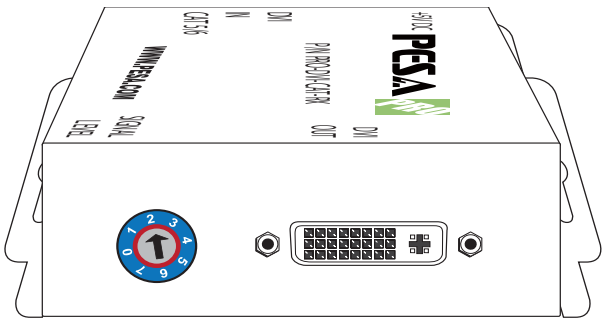
Input Panel



+5V DC: Connect to a 5V DC latch-locking power supply unit.

DVI IN CAT 5/6: Plug in a Cat-5/5e/6 cable and link it to the RJ45 port on the transmitting unit PRO-DVI-CAT-TX.

Output Panel



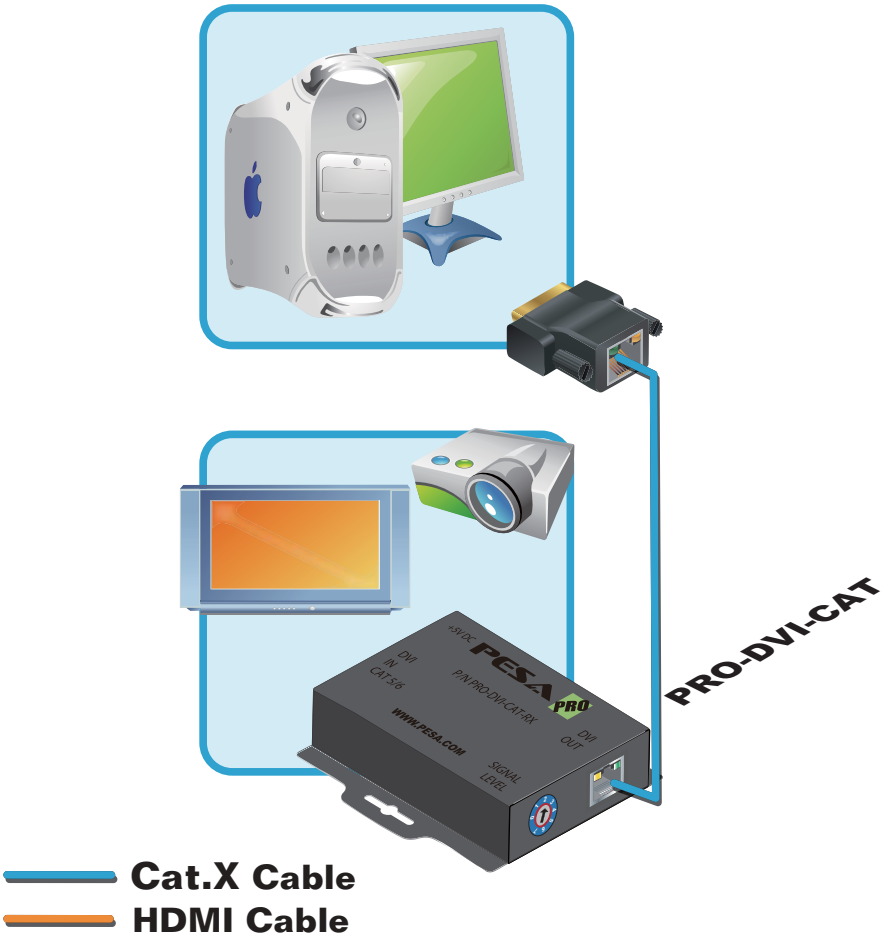
SIGNAL LEVEL: Adjust the 8-level signal equalization control to the received DVI signals. The DVI signal level varies from 0 (strongest) to 7 (weakest) for respective transmission length from longest possible range to short distance. Adjust the signal level may cause overpowering issue that would shorten the product life significantly!

DVI OUT: Connect to a DVI display or projector with a DVI male-male cable.

INSTALLATION

1. Plug the transmitting unit PRO-HDMI-CAT-TX to a DVI source device.
2. Connect a DVI monitor or projector to the receiving unit PRO-HDMI-CAT-RX.
3. Connect a Cat-5/5e/6 cable between the transmitting and receiving units.
4. Make sure this Cat-5/5e/6 cable is tightly connected and not loose.
5. Plug in 5V DC power supply unit to the latch-locking power jack on the receiving unit PRO-DVI-CAT-RX.
6. If you see flickering or blinking image on the display, please adjust the rotary control switch to improve the cable skew. 0 stands for the strongest DVI signal level for longest possible transmission length while 7 stands for the weakest DVI signal level for short transmission length. Please adjust the **SIGNAL LEVEL** from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue that would shorten the product life significantly!

Connection Diagram



EDID LEARNING

For learning EDID from the DVI display, please follow the instructions below:

Step 1 – Finish the installation.

Step 2 – Dial "**SIGNAL LEVEL**" on the receiving unit PRO-DVI-CAT-RX counterclockwise (↺) to **7.** The LED of the RJ45 connector on PRO-DVI-CAT-RX will dim and light again in a few seconds, which indicates the EDID profile of the DVI display is recorded to PRO-DVI-CAT-RX.

Step 3 – Turn off PRO-DVI-CAT-RX. Plug the DVI connector on PRO-DVI-CAT-TX to the DVI port of PRO-DVI-CAT-RX. Turn on PRO-DVI-CAT-RX and the LED of the RJ45 connector on PRO-DVI-CAT-TX will dim and light again in a few seconds, which indicates the EDID profile of the DVI display is successfully saved to the transmitting unit PRO-DVI-CAT-TX.

Step 4 – Resume normal installation.

For restoring the default EDID to the extender, please follow the instructions below:

Step 1 – Turn off PRO-DVI-CAT-RX. Plug the DVI connector on PRO-DVI-CAT-TX to the DVI port of PRO-DVI-CAT-RX. Turn on PRO-DVI-CAT-RX.

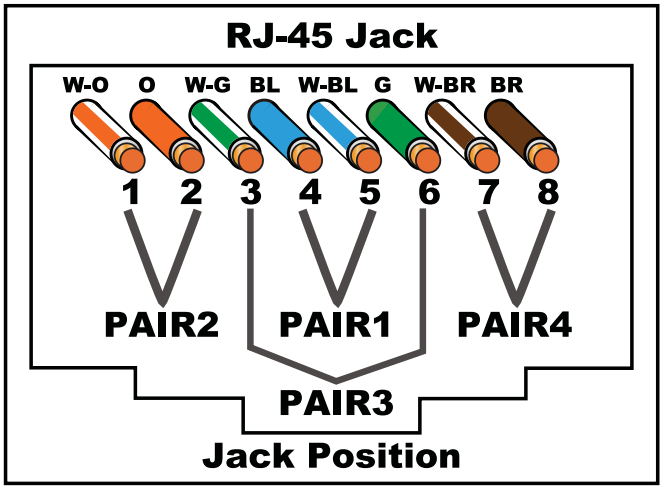
Step 2 – Dial "**SIGNAL LEVEL**" on PRO-DVI-CAT-RX clockwise (↻) from anywhere to 6. The LED of the RJ45 connector on PRO-DVI-CAT-TX will dim and light again in a few seconds, which indicates the EDID profile is restored to default value on PRO-DVI-CAT-TX.

Step 3 – Resume normal installation.

PIN DEFINITION

CAT5 / RJ45

Data Link TIA/EIA-568-B		
PIN	Color	Function
1	W-O	TX0-
2	O	TX0+
3	W-G	TX1-
4	BL	TX2-
5	W-BL	TX2+
6	G	TX1+
7	W-BR	TXC-
8	BR	TXC+



NOTICE

1. When adjusting the signal level on the receiver unit, please dial the rotary control switch from 7 to 0 and stop turning the rotary switch whenever the video is playing normally. Inappropriate signal level setting may cause overpowering issues that would shorten the product's life significantly!
2. All DVI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C.
3. The transmission length is largely affected by the type of Category cables, the type of DVI sources, and the type of DVI display. The testing result shows solid UTP cables (usually in the form of 1000ft bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP Cat-5e cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, solid UTP/STP cables are the only viable choice.
4. EIA/TIA-568-B termination (T568B) for category cables is recommended.
5. To reduce the interference among the unshielded twisted pairs of wires in category cable, one can use double shielded STP cables to improve EMI problems, which is worse in long transmission.
6. Because the quality of the category cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of Cat-5/5e/6 cables. For desired resolutions greater than 1080i or 1280x1024, a Cat-6 cable is recommended.

Performance Guide for DVI over Category Cable Transmission

Performance rating		**Type of category cable**		
Wiring	**Shielding**	**CAT5**	**CAT5e**	**CAT6**
Solid	Unshielded (UTP)	★★★	★★★★	★★★★★
	Shielded (STP)	★★★	★★★	★★★★
Stranded	Unshielded (UTP)	★	★★	★★
	Shielded (STP)	★	★	★★
Termination		Please use **EIA/TIA-568-B** termination (**T568B**) at any time		