IP MIGRATION MADE SIMPLE

NVT PHYBRIDGE

NV-EC-1701U

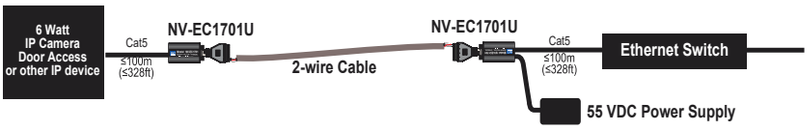
DATA SHEET

Eo2™ Ethernetover 2-wire Transceiver with PoE+ Model NV-EC1701U

The NVT Model NV-EC1701U Ethernet over 2-wire Transceiver is a compact media converter that allows 10/100 BaseT Ethernet and PoE+ power to be transmitted using ordinary 2-wire cable. These devices are often used in legacy installations where existing cable is re-deployed as part of an upgrade to IP cameras. 55 VDC class 2 power is delivered to one transceiver, which distributes it to multiple* remote transmitters, and their PoE, PoE+, or High Power PoE cameras*.

These transceivers are extremely simple to use, with no IP or MAC addressing required. Status LEDs indicate power and link connectivity/activity for each port. They are backed by NVT Phybridge's award winning customer support and limited lifetime warranty.

Application Example:



Features

- 100 BaseT transmission; Network speeds up to 93 Mbps*; Up to 1,000ft (305m)*
- 55 VDC is distributed over the coax to all connected equipment
- One NVT Eo2™ transceiver at the network-end can support multiple* remote Eo2™ transceivers and connected devices
- Up to four Eo2™ transceivers can be rack mounted on an NV-RMEC16U Eo2™ Rack Mount Tray Kit, connecting up to 16 entry stations or other devices
- Transparently supports all networking protocols (UDP, TCP/IP, HTTP, Multicast*, etc.)
- 128-bit AES encrypted transmission
- Available in 1-4 device Eo2™ System Kits
- Limited lifetime warranty

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NV-EC1701U

Advantages

- Transmit 10/100 BaseT Ethernet up to 1,000ft (305m)* over 4-pair cat5; 750ft (228m) over 18/2 (or similar 2-wire cable); 500ft (150m) over Shielded Twisted-Pair
- Easy configuration, no PC required
- Powers PoE, PoE+, or High Power PoE cameras (or other PoE devices), up to 50 watts*
- Built-in transient protection; Industrial temperature range

*Distance and number of devices supported may be lower due to power supply capacity and wire voltage-drop. See Wire Distance Charts on page 4. Bandwidth is dynamically allocated. Multicast requires an IGMP Querier within your network switch. High bandwidth streaming devices (>15Mbps) that employ unusually "chatty" protocols (TCP/IP, TFTP, etc.) are not recommended. Use RTP/UDP instead.

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by NVT Phybridge

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EC-1701U Technical Specifications

RJ45 Ethernet Interface	
Connectivity	RJ45, auto-crossover
Wire Type	Cat5 or better
Distance	Up to 328ft (100m)
Speed	10/100 Base T, half/full duplex, auto-neogitation auto MDI/MDIX cross-over
Latency	3mS
Data Throughput	85Mbps ±10% useable bandwidth per network Example: Four megapixel cameras, all sharing one coax network, each sending 20Mbps video stream(s).
Power Output	This Power Sourcing Equipment (PSE) supports Powered Devices (PDs) that are compatible with IEEE 802.3af/at or PDs that draw up to 50 watts*. For maximum power/distance, 55 VDC appears on all eight RJ45 pins, and are current-protected and transient-protected.

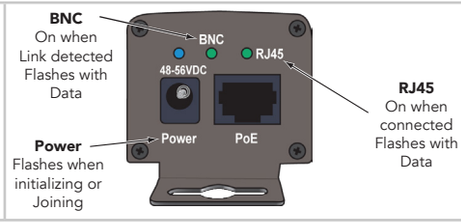
2-Wire Building Wiring Interface	
Connectivity	16.5W
Impedance	25 to 100Ω
Distance	See page 4
Topology	Bus architecture supports star, daisy-chain, or any combination. One control-room NV-EC1701U may support multiple remote NV-EC1701Us.
Transmission Technology	IEEE 1901, 128-bitAES encryption

LED Status Indicators	
Power	Blue "Power On"
BNC/2-wire Interface	Green "Link
RJ45 Interface	Green "Link"

Power Consumption	
Consumption Per Transceiver	≤ 3.0 W @ 10 to 55 VDC
Generated Heat	10 BTU/Hour

Regulatory	
cULus CE RoHS	UL Listed to IEC/UL 60950-1 Complies with FCC part 15A limits
Warranty	
Limited Lifetime	

*Important Note: Distance will often be shorter due to power supply capacity and wire voltage-drop. See Maximum Per-Camera Wire Distance Chart on Page 4.
WARNING: For safety, never use more than two power supplies. Never exceed 120 watts.

LED Status Indicators	
	

Mechanical/Environmental	
Transceiver Body Dimensions	5.1 in (131mm) long x 1.3 in (33mm) high x 1.5 in (38mm) wide (excluding connectors and NV-BNCA adaptor)
Transceiver Weight	0.32lb (145g)
Operating and Storage Temperature	40°F to 185°F (-40°C to +85°C) 20 to 85% RH non-condensing
Transient Immunity	5x20µS 3000A, 6000V ESD 20KV, 200pF

Power Supply		
Power supplies are external inline, with an IEC380-C14 power inlet and a 6ft (1.18m) line cord. Input voltage is 100~240VAC 50/60Hz. A molded P1J 5.5mm barrel connector provides a class 2 (SELV) regulated output with one of these ratings:		+55VDC
Model NV-PS55-60W	55V 60W 5.2 in (132 mm) long x 2.3 in (58 mm) wide x 1.2 in (30 mm) high 0.68 lb (0.31 Kg) shipping weight	
Model NV-PS55-110W	55V 110W 5.9 in (150 mm) long x 2.3 in (58 mm) wide x 1.4 in (36 mm) high 0.90 lb (0.41 Kg) shipping weight	
Operating/Storage Temperature	-40°F to +185°F (-40°C to +85°C 20 to 5% relative humidity non-condensing)	
Transient Immunity	5 x 20µS 3,000A, 6,000V ESD 20KV, 200pF	
Use only the power cord provided with the unit or equivalent UL approved type SPT-2, SVT, or SJT 18/3 AWG 100~240 VAC, 1 Amp 60°C max 15 ft (4.5 m) long. One end with IEC380-C13 appliance coupler and the other end with NEMA 1015P or equivalent for your country.		
Power Output	This Power Sourcing Equipment (PSE) supports Powered Devices (PDs) that are compatible with IEEE 802.3af/at or PDs that draw up to 50 watts*. For maximum power/distance, 55 VDC appears on all eight RJ45 pins, and are current-protected and transient-protected.	

Specifications subject to change without notice

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NV-EC1701U Transceiver Kits	
Single 60 Watt Eo2 Transmission System NV-EC1701U-KIT1: • 2: NV-EC1701U Transceivers • 1: NV-PS55-60W Power Supply with IEC line cord • 2: NV-PC4PR patch-cord Single 110 Watt Eo2 Transmission System NV-EC1701U-K1H: • 2: NV-EC1701U Transceivers • 1: NV-PS55-110W Power Supply with IEC line cord • 2: NV-PC4PR patch-cord	
Dual 60 Watt Eo2 Transmission System NV-EC1701U-KIT2: • 3: NV-EC1701U Transceivers • 1: NV-PS55-60W Power Supply with IEC line cord • 3: NV-PC4PR patch-cord Dual 110 Watt Eo2 Transmission System NV-EC1701U-K2H: • 3: NV-EC1701U Transceivers • 1: NV-PS55-110W Power Supply with IEC line cord • 3: NV-PC4PR patch-cord	
Triple 60 Watt Eo2 Transmission System NV-EC1701U-KIT3: • 4: NV-EC1701U Transceivers • 1: NV-PS55-60W Power Supply with IEC line cord • 4: NV-PC4PR patch-cord Dual 110 Watt Eo2 Transmission System NV-EC1701U-K2H: • 4: NV-EC1701U Transceivers • 1: NV-PS55-110W Power Supply with IEC line cord • 4: NV-PC4PR patch-cord	
Quadruple 60 Watt Eo2 Transmission System NV-EC1701U-KIT4: • 5: NV-EC1701U Transceivers • 1: NV-PS55-60W Power Supply with IEC line cord • 5: NV-PC4PR patch-cord Quadruple 110 Watt Eo2 Transmission System NV-EC1701U-K4H: • 5: NV-EC1701U Transceivers • 1: NV-PS55-110W Power Supply with IEC line cord • 5: NV-PC4PR patch-cord	

NV-EC1701U Accessories		
NV-PS55-60W	55VDC power supply, 60 watts with IEC line cord	
NV-PS55-110W	55VDC power supply, 110 watts with IEC line cord	
NV-BNCA	BNC Screw terminal adaptor	
NV-PC4PR	RJ45 Patch Cord, 4-pair 3' (1m) Grey	
NV-DPSC4	Detachable Power Supply Cord Splitter 1:4 2ft	
NV-RMEC16U	Rack mounting chassis, 19" x 1U Holds up to 4 NV-EC1701U transceivers plus 60W or 110W power supplies. Includes NV-DPSC4 Power Cord Splitter (Transceivers and power supplies not included)	

NV-EC1701U Power Data Distance Chart

The distance capability of wire is dependant on its ability to deliver DC power, and separately, to deliver high-frequency data signals.

The graph below shows maximum power delivery when using a 55V power supply. If you are locally powering your camera (or other remote device), then this graph does not apply.

PoE devices require a minimum of 43V to operate. With a 55V supply, we have up to 13V of allowable voltage drop on the wire.

The voltage will dip in proportion to the remote (camera) load. The graph below shows what PoE power distances are supported for various loads and wire types.

- Start with the camera wattage at the left. Sometimes IP cameras are listed as to their PoE Class rather than wattage.
- Now read over to the right until you find your kind of wire. Then look up (feet) or down (meters) to find your maximum distance.
- If your wire is not among the examples, simply measure its total resistance and find the value on the right side of the graph. The maximum supported wattage is on the left.
- There are a wide variety of wire qualities. The graph below will help you determine your data throughput as a function of wire type and distance.