

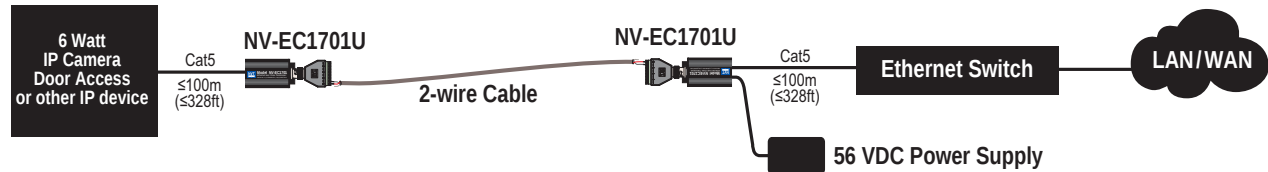
Eo2™ Ethernet over 2-wire Transceiver with PoE+ Model NV-EC1701U



Data Sheet



Application Example:



Features:

- 100 BaseT transmission; Network speeds up to 93 Mbps*; Up to 1,000ft (305m)*
- One NV-EC1701U transceiver at the network-end can support multiple* remote transceivers/IP cameras
- 56 VDC is distributed over the coax to all connected equipment.
- Powers PoE, PoE+, or High Power PoE cameras (or other PoE devices), up to 50 watts*
- Easy configuration, no PC required
- Transparently supports all networking protocols (UDP, TCP/IP, HTTP, Multicast*, etc.)
- 128-bit AES encrypted transmission
- Built-in transient protection; Industrial temperature range
- Available in 1-4 Camera System Kits
- Limited lifetime warranty

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. 56 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's award winning customer support and limited lifetime warranty.

* Distance and number of devices supported may be lower due to power supply capacity and wire voltage-drop. See Wire Distance Charts on page 5. 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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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-negotiation auto MDI/MDIX cross-over
Latency:	3mS
Data throughput:	85Mbps $\pm$ 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, 56 VDC appears on all eight RJ45 pins, and are current-protected and transient-protected.

2-WIRE BUILDING WIRING INTERFACE

Connectivity:	Screw terminals using the NV-BNCA adaptor
Impedance:	25 to 100 Ω
Distance:	See pages 5 & 6
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-bit AES encryption

*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 5.



WARNING: For safety, never use more than two power supplies. Never exceed 120 watts.

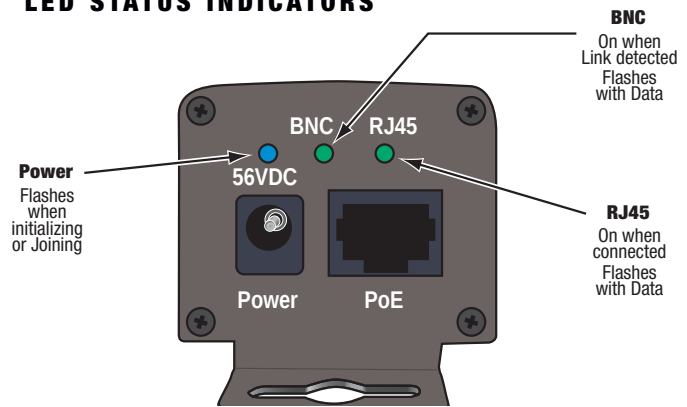
LED STATUS INDICATORS

Power:	Blue "Power On"
BNC/2-wire interface:	Green "Link"
RJ45 Interface:	Green "Link"

POWER CONSUMPTION

Consumption per transceiver:	$\leq 3.0 \text{ W @ } 10 \text{ to } 56 \text{ VDC}$
Generated heat:	10 BTU/hour
Total system consumption:	= total consumption of transceivers + total consumption of PDs (IP cameras) + total power dissipated in the wire

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:	5x20 μ S 3000A, 6000V ESD 20KV, 200pF

POWER SUPPLY

Power supplies are external inline, with an IEC380-C14 power inlet and a 6 ft (1.8 m) 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:

Model NV-PS56-60W	56V 60W 4.90 in (125 mm) long x 2.00 in (50 mm) wide x 1.25 in (32 mm) high 0.67 lb (0.30 Kg) shipping weight
Model NV-PS56-90W	56V 90W 5.77 in (147 mm) long x 2.86 in (60 mm) wide x 1.27 in (32 mm) high 0.94 lb (0.43 Kg) shipping weight

Operating / storage temperature:	-40°F to +185°F (-40°C to +85°C) 20 to 5% relative humidity non-condensing
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Transient immunity:	5 x 20 μ S 3,000A, 6,000V ESD 20KV, 200pF
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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.

REGULATORY



UL Listed to IEC/UL 60950-1
Complies with FCC part 15A limits

WARRANTY

Limited Lifetime

Specifications subject to change without notice.

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NV-PS56-60W: 56VDC power supply, 60 watts with IEC line cord



NV-PS56-90W: 56VDC power supply, 90 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 90W power supplies.
Includes NV-DPSC4 Power Cord Splitter
(Transceivers and power supplies not included)



Single 60 Watt Eo2 Transmission System

- NV-EC1701U-KIT1: 2 NV-EC1701U Transceivers
1 NV-PS56-60W Power Supply with IEC line cord
2 NV-PC4PR patch-cord



Single 90 Watt Eo2 Transmission System

- NV-EC1701U-K1H: 2 NV-EC1701U Transceivers
1 NV-PS56-90W 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-PS56-60W Power Supply with IEC line cord
3 NV-PC4PR patch-cord



Dual 90 Watt Eo2 Transmission System

- NV-EC1701U-K2H: 3 NV-EC1701U Transceivers
1 NV-PS56-90W 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-PS56-60W Power Supply with IEC line cord
4 NV-PC4PR patch-cord



Triple 90 Watt Eo2 Transmission System

- NV-EC1701U-K3H: 4 NV-EC1701U Transceivers
1 NV-PS56-90W 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-PS56-60W Power Supply with IEC line cord
5 NV-PC4PR patch-cord



Quadruple 90 Watt Eo2 Transmission System

- NV-EC1701U-K4H: 5 NV-EC1701U Transceivers
1 NV-PS56-90W Power Supply with IEC line cord
5 NV-PC4PR patch-cord

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.

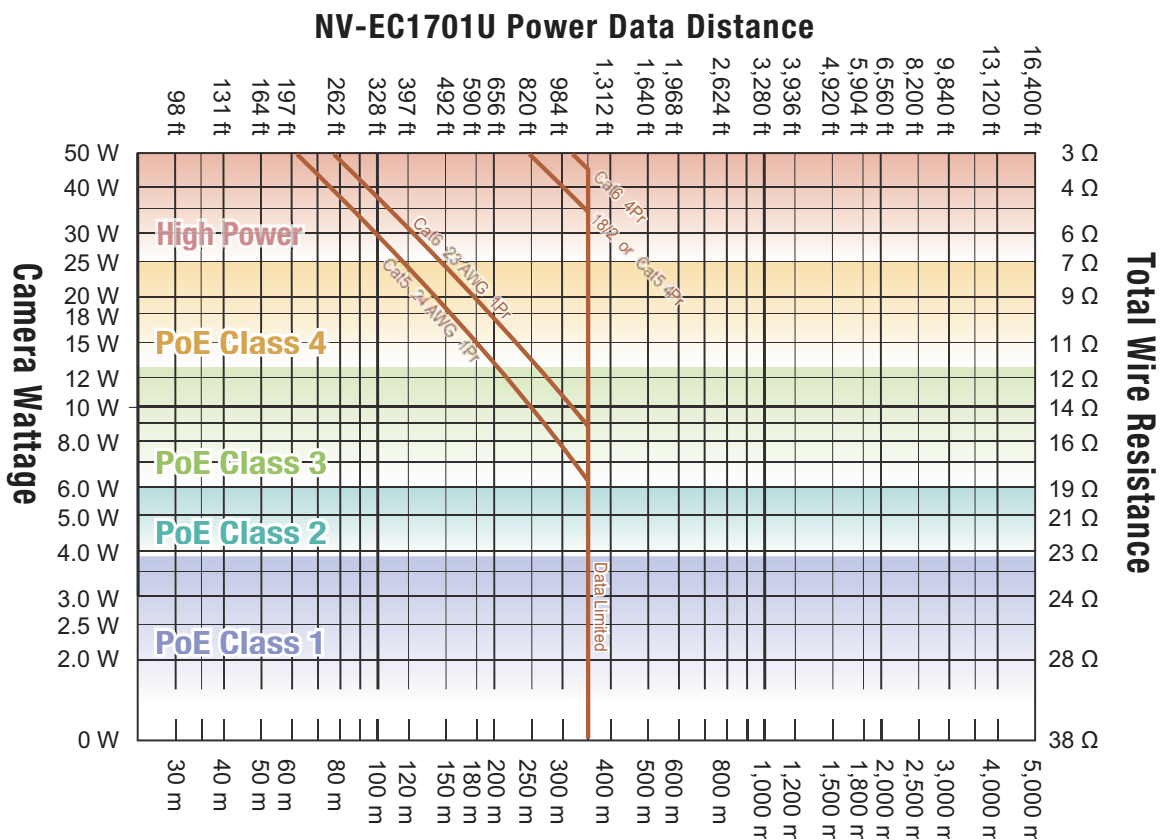
The graph below shows maximum power delivery when using a 56V power supply. If you are locally powering your camera (or other remote device), then this graph does not apply. The graph on the next page shows the maximum data delivery rate.

A Distance Calculator can be found at www.nvt.com.

PoE devices require a minimum of 43V to operate. With a 56V 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.



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