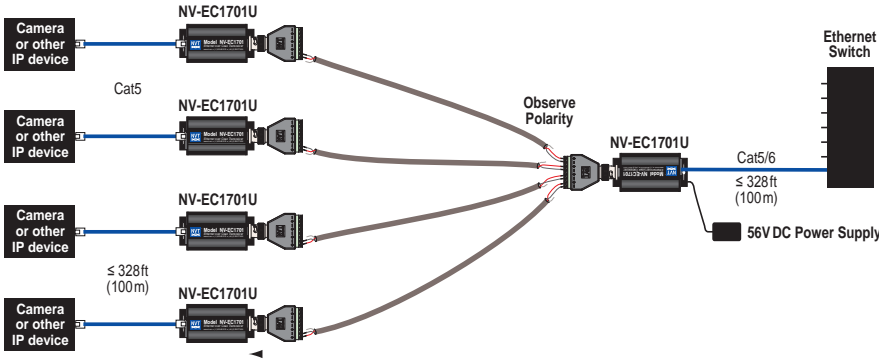




Ethernet over 2-Wire Transceiver Model NV-EC1701U

Condensed Installation Guide

View the [complete guide](http://www.nvt.com) at www.nvt.com



FCC USER INFORMATION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

PRODUCT DESCRIPTION

The NVT Model NV-EC1701U Ethernet over 2-wire Transceiver is a compact media converter that allows 10/100 BaseT Ethernet and PoE, PoE+, or high-power PoE to be transmitted using 2-wire cable. These devices are typically used in legacy installations where existing cable is redeployed as part of an upgrade to IP cameras. 48-56VDC class 2 power is delivered to one transceiver, which distributes it to multiple remote transceivers, and their PoE cameras (or other IP devices).

These transceivers are extremely simple to use, with no IP or MAC address configuration required. Status LEDs indicate power and link connectivity/activity for RJ45 and BNC ports.

The NV-EC1701U is backed by NVT's award winning customer support and limited lifetime warranty.

INSTALLATION INSTRUCTIONS

Before installing, NVT recommends downloading and reading the complete installation manual from www.nvt.com.

Transceivers must be configured prior to use. See page 2.

Use one NV-EC1701U transceiver at each end of the cable. Multiple remote transceivers and cable runs may be connected to a transceiver at the control room. Torque all screw connections to 2 in-lbs (0.2 Nm).

Connect a 56VDC power supply into one of the transceivers to provide power to the entire system, including the cameras (or other remote IP devices).

Data signals over the coax are capable of extended distances, however voltage-drop in the 56V power distribution will often reduce this maximum, depending on the camera's current draw and wire resistance.

Note: Within one network, up to two power supplies may be deployed to support extended wire distances or higher camera loads.

IMPORTANT SAFETY INSTRUCTIONS

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with a dry cloth.
- 7) Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including DVRs) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as a power supply cord or plug is damaged, liquid has been spilled, or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped. This installation should be made by a qualified service person and should conform to all local codes.
- 13) BNC Connection: the installation shall be in accordance with the applicable provisions of the National Electrical Code ANSI/NFPA 70, Article 800.90 and Canadian Electrical Code Part 1, Section 60-504.
- 14) RJ45 PoE connection: to be connected only to networks or circuits that are not routed to outside plant or building.

⚠ This installation should be made by a qualified service person and should conform to all local codes.

⚠ **WARNING** - Do not install the unit in an environment where the operating ambient temperature exceeds 185° F (85° C). The ventilation should not be impeded by covering the unit with items, such as newspapers, table-cloths, curtains, etc. No naked flame sources, such as lighted candles should be placed on the apparatus.

⚠ **WARNING** - Do not interconnect multiple power supply outputs. **Never use more than two power supplies within a network system.** Do not connect additional loads which would exceed the marked output current rating of the power supply.

⚠ **WARNING** - The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

⚠ **WARNING** - Use only a Certified power cord and plug (coupler / mains) assemblies for location installed.

⚠ **WARNING** - Power cord is regarded as main disconnect.

⚠ **WARNING** - The appliance coupler (power cord/ mains) shall remain readily operable.

⚠ **WARNING** - For safety, never put NVT signals in the same conduit as high-voltage wiring.

This product is intended to be supplied by a certified power source marked "Class 2" or "LPS" and rated 48-56 VDC, 30mA minimum, 1,600mA maximum, which may or may not be provided with the product.

Power supplies, when provided, are external inline, with an IEC380-C14 power inlet and 6 ft (1.8 m) line-cord. Input Voltage is 100 ~240 VAC 50-60 Hz. A molded P1J 5.5 mm barrel connector provides a Class 2 (SELV) 48-56 VDC regulated output. Line cord UL approved type SPT-2, SVT, or SJT, 18/3 AWG Min. 300VAC, 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 country.

Complies with these regulatory agency certifications and directives.



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

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TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER OR BACK. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

CONFIGURATION INSTRUCTIONS

NV-EC1701U Eo2™ transceivers transmit high bandwidth encrypted Ethernet signals over conventional 2-wire cables. To provide utmost signal integrity and security, the NV-EC1701U transceivers **must be configured** to communicate exclusively with other transceivers within their **Network Group**. This group typically consists of one NV-EC1701U located at the control room (usually connected to an ethernet switch or router), and up to four remote NV-EC1701U transceivers (usually connected to IP cameras or other remote IP devices).

Before connecting to the network, **each NV-EC1701U must learn which other NV-EC1701U transceivers are to be part of that group**. This simple process is called **Joining**. It is recommended that transceivers in each Network Group be configured **prior to deployment** using these instructions:

Step One: Gather Materials

- NV-EC1701U transceivers
- 56VDC power supply & line-cord (NV-PS56-60W)
- Hook-up wire or BNC cable (not supplied)
- Small paper-clip, partially straightened:
- Device labels
- IP Network Documentation Log



Step One: Gather Materials

Step Two: Connect Hardware

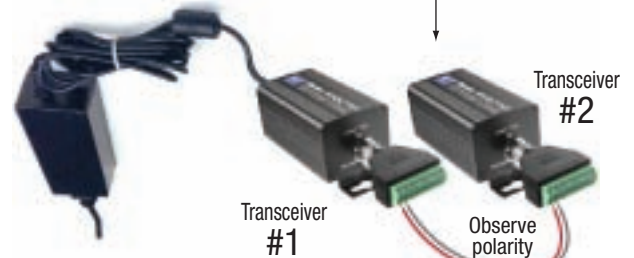
- Remove and discard the "Configure Before Use" labels.
- Connect two NV-EC1701U transceivers using hook-up wire or a BNC cable. Observe polarity. Units will not power-up if the polarity is reversed. Do not connect anything to the RJ45 connector.
- Connect a 56VDC power supply to transceiver #1; Apply power.
- Verify that the blue POWER LED on each transceiver illuminates.
- After 20 seconds, verify that the green BNC LED on each transceiver is off. If a BNC LED is on, the transceiver has been previously joined. Perform the un-joining process below before proceeding.



Step Two: Remove Label; Connect Hardware

Step Three: Joining

- On transceiver #1, using the straightened paper-clip to access the small push-button located behind and slightly above the RJ45 LED. Press this button for two seconds. The blue power LED will begin blinking.
- Then depress the same push-button on the transceiver #2, also for two seconds.
- Both transceivers have now entered **Join Mode**. They will find each other and establish encrypted communication. In about 10 seconds, the BNC LEDs on both transceivers will return to a steady condition, indicating a successful **Join**.



Step Four: Adding Transceivers (if required)

- Disconnect transceiver #2 and replace it with a new un-joined transceiver.
- Repeat steps two and three to add additional transceivers to the same Network Group.

Step Five: Documentation

- Label the configured transceivers with a unique Network Group ID of your choice. This will help you identify them after they have been deployed.
- Record this Network Group information in your IP Network Documentation Log. This log may include essential documentation which will help you identify all system devices during and after deployment:
 - Camera (or other device) Number
 - Camera Position/Location
 - Camera Make & Model
 - Camera MAC & IP Address
 - Camera Login & Password
 - Camera-end NVT Transceiver MAC Address
 - NVT Transceiver Network Group Name
 - Control Room NVT Transceiver MAC Address
 - Control Room Router Port Number

Un-Joining a Transceiver

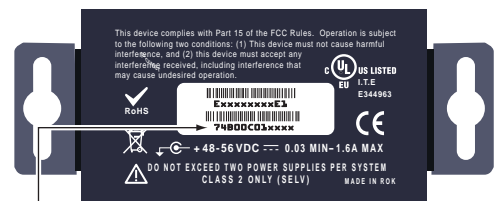
If you need to move a transceiver from one Network Group to another, it must first un-learn its previous Network Group and be returned to an un-joined state. Do this by performing these steps:

- Disconnect the transceiver from the old network.
- Connect a 56VDC power supply to the transceiver.
- Using the straightened paper-clip to access the small push-button located behind and slightly above the RJ45 LED. Press this button for eight seconds, until the blue LED goes off.
- Release the paperclip.
- Observe that the green BNC and RJ45 LEDs flash and then turn off.
- Observe that the green BNC LED goes on for ten seconds and then goes off.

Un-joining is now complete. If you are not sure that un-joining has been successful, remove and then re-apply power, and repeat.



Step Three: transparent view of push-button location



Step Five: Transceiver MAC Address