



# DigitalEQ™ Receiver Hub Product Installation Manual Models NV-872, NV-1672 and NV-3272

CCTV Application Figure 1



PVD Application Figure 2



## 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) Do not block any ventilation openings.
- 8) Install in accordance with the manufacturer's instructions.
- 9) Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including DVRs) that produce heat.
- 10) Do not defeat the safety purpose of the polarised or grounding-type plug. A polarised 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.
- 11) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 12) Only use attachments/accessories specified by the manufacturer.
- 13) Use only with cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tipover.
- 14) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 15) 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.

**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.**

**⚠ 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 50° C (120° F). The ventilation should not be impeded by covering the ventilation openings 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 outputs.**
- ⚠ 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.**
- ⚠ WARNING - Do not restrict airflow around any active powered NVT products.**

The Digital EQ™ Receiver Hub is an active (amplified) hub that allows the transmission of real-time monochrome or colour video for distances up to 1,6km (1 mile) using Category-rated Unshielded Twisted-Pair (UTP) wire. Note: PAL video does require the use of Category-5 or better at 1,6km (1 mile). The receiver hub continuously and automatically compensates for cable attenuation, ground-loops, and wiring polarity, independent of the video signal image. The 1U high hub is equipped with multi-stage transient protection.

The NV-872 is an 8-port receiver with four DA outputs per channel. The NV-1672 is a 16-port receiver with two DA outputs per channel. The NV-3272 is a 32-port receiver with one output per channel.

### Wire Type

The DigitalEQ™ UTP Receiver Hub operates best with category-rated Unshielded twisted-pair (UTP) wire. It may also be used with category-rated foiled twisted-pair (FTP) wire, or with multi-pair wire with an overall shield (6 or more pairs). Wire gauges of 0,5 to 1,3mm (24 to 16 AWG) are supported.

Shielded twisted-pair (STP) wire may also be used, up to a maximum distance of 300m (1,000ft).

The video signal may co-exist in the same wire bundle as other video, telephone, data, control signals, or low-voltage power. It is also OK to run NVT signals near electromagnetic fields (in accordance with National Electrical Code, and other local safety requirements).

Do NOT use shielded twisted-pair wire unless it is Category rated. Multi-pair wire with an overall shield (6 or more pairs) is OK.

Do NOT use un-twisted wire.

Due to near-end crosstalk, do not send a transmit and a receive signal in the same wire bundle. Exception: Up to 300m (1,000ft); or 600m (2,000ft) Category 5 or better.

Up-the-Coax Pan/Tilt/Zoom telemetry signals are NOT supported. Use a second wire-pair for RS-422 or RS-485 signals instead.

### Wire Distance

It is recommended that the wire distance be measured to ensure that it does not exceed 1km (3,000ft), or 1,6km (1 mile) if the transmitter is an NV-653T.

All measured distances include any coax in the path. Wire resistance may be measured with an ohm-meter by shorting the two conductors together at the far end, and measuring the loop-resistance out and back.

Loop Resistance per 300m (1,000ft)

0,53 mm (24 AWG)	=	52 ohms
0,57 mm (23 AWG)	=	42 ohms
0,64 mm (22 AWG)	=	33 ohms
0,81 mm (20 AWG)	=	21 ohms
0,91 mm (19 AWG)	=	16 ohms
1,02 mm (18 AWG)	=	13 ohms

Wire in underground conduit or wet locations must be polyethylene-jacketed, gel-filled. Wire in plenum environments must be plenum-rated, per local codes.

### Connecting the Camera End

Use any NVT passive transceiver, (such as the NV-214A-M) or qualified OEM camera with built-in UTP output, or the NV-653T Active Transmitter. Install per the instructions that come with the transmitting device.

### Connecting the Monitor End

The DigitalEQ™ Receiver Hub has RJ45 jack input connections for the video signals, with four signals grouped onto each RJ45 jack.

## UTP Pinouts



- Ch. 2, 6, 10, 14, 18, 22, 26, or 30
- Ch. 1, 5, 9, 13, 17, 21, 25, or 29
- Ch. 4, 8, 12, 16, 20, 24, 28, or 32

Ch. 3, 7, 11, 15, 19, 23, 27, or 31

The NV-872 supports channels 1 through 8. The NV-1672 supports channels 1 through 16. The NV-3272 supports channels 1 through 32. If screw-terminal connections are desired, use the supplied NV-RJ45A-to-screw-terminal adaptor accessory. Torque screws to 0,2Nm (2in-lb).

For RJ45 connectivity, bring all UTP-based video signals into a punch-block or RJ45 patch panel near the Hub. NVT recommends the use of factory-crimped RJ45 patch cables rather than unreliable field-crimped RJ45s to connect between the block or panel and the Hub.

Inputs are not polarity sensitive, and no adjustments are required.

Connect the Hub's outputs to DVRs, Monitors, Matrix switches, Encoders, etc. as required, using the supplied 60cm (2ft) BNC patch cords.

Verify the proper voltage selector switch setting for the mains voltage, and connect the power cord to a grounded outlet.

Upon power-up, the Hub will momentarily display its revision, and then display its blue Power LED and status for each channel:

Channel Status LEDs (each channel)

OFF: No signal

GREEN: Valid video received

AMBER: Poor video signal too weak or too strong due to:

- 1) wire too long
- 2) shielded wire
- 3) water in the wire
- 4) camera's output level too high

RED: Signal received but video characteristics not identifiable. Check for ground loops or 24VAC problems.

## Rack / Wall / Table Mounting

Ambient temperature must be below 50°C (122°F). Airflow must be at least 4 ft<sup>3</sup>/S of un-restricted airflow. Many DVRs produce enough heat to exceed this temperature without external airflow.

For rack mounting, attach the supplied mounting brackets to the Hub chassis using the supplied screws: Note that the brackets allow installation with the front or rear facing out.



For wall-mount installations, they may be attached to the corners of the chassis.



For table-mount installations, attach the four rubber feet (supplied) to the bottom of the chassis



## Technical Specifications

**Video** NTSC or PAL

Frequency Response DC to 5MHz  
Equalization Automatic (no adjustment)  
0 to 1km (3,000ft)

Common Mode / Differential Mode Rejection  
DC to 5 MHz 60 dB typ

Connectors and Impedance

UTP input RJ45 100 ± 20 ohms  
Coax output BNC 75 ohms

**LEDs**

Power Blue  
Channel Status

**Environmental**

Temperature 0 to 50°C (32 to 122°F)  
Humidity 0 to 95% non-condensing  
Transient Immunity per ANSI / IEEE687 C62.41

**Power**

IEC380 Inlet and Voltage selector switch

NV-872  
115/230 VAC  
50/60 Hz 160 mA

NV-1672  
115/230 VAC  
50/60 Hz 160 mA

NV-3272  
1115/230 VAC  
50/60 Hz 315 mA

Fuse  
5 x 20 mm Type T  
NV-872 315 mA  
NV-1672 315 mA  
NV-3272 800 mA

A spare fuse is located inside the fuse holder.

**Mechanical**

(Excluding brackets and connectors)

**Weight**

NV-872 2,2kg (4.8 lbs)  
NV-1672 2,5kg (5.5 lbs)  
NV-3272 3,6kg (8.0 lbs)

**Dimensions**

43 cm wide x 4,5 cm high x 20 cm deep  
17 in wide x 1.7 in high x 8.125 in deep

**Accessories**

Mounting Rackmount "L" brackets for front, rear, or wall installations; rubber feet for desk applications

Adaptors

NV-RJ45A RJ45-to-screw terminals

Power cable

IEC power cord 7 ft (215 cm)

BNC patch cords

2 ft (215 cm)  
NV-872 eight  
NV-1672 sixteen  
NV-3272 thirty-two

## Agency

These NVT products are listed and/or conform to the following certifications and directives:



UL Listed to UL2044 or UL/IEC60065 cUL  
Listed to CAN/CSA22.2 No.1 for Canada CE Mark under EMC and low voltage directives for the European Union.

## Customer Support

If you are experiencing problems, attempt to simplify your setup. Test each cable segment separately. For example, test the camera and monitor together without the other equipment. Then add in the NVT transceivers back-to-back. Test each segment of a long cable run independently. Attempt to isolate the problem.

NVT customer support can be reached 8:00 AM to 5:30 PM Monday through Friday.

US office: (800) 959-9870 or (+1) 650.462.8100  
US FAX: (650) 326-1940  
info@nvt.com

UK office: (+44) 0208 977 6614  
UK FAX: (+44) 0208 973 1855  
info@nvt.com • nvt.com

## Returns

Please call before returning units to NVT. Returned materials must have a "Returned Materials Authorization" (RMA) number from NVT marked on the outside of the shipping carton.

## Limited Lifetime Warranty

NVT warrants that the product conforms to NVT's applicable published specifications and is free of defects for the life of the product. There shall be no other warranties, express, statutory, or otherwise, including any implied warranty of merchantability, of fitness, or any other obligation on the part of NVT with respect to any of the products.

In the event that any of the products is damaged, altered, or modified without the express written consent of NVT, any warranty for those products will cease and NVT will have no further liability as it pertains to those products.

NVT assumes no responsibility for damages or penalties incurred resulting from the use of this product in a manner or location other than for which it is intended.

NVT's liability under any warranties shall be discharged by replacing or repairing any part or parts which do not conform to the applicable warranty under normal and proper use. NVT's liability with respect to any product shall not exceed a refund of the price received by NVT for that product, and in no event shall NVT have any liability for any incidental, consequential, special, or indirect damages.

Some states do not allow the exclusion or limitation of special, incidental, or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Specifications subject to change without notice