



CCTV Product Installation Manual

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 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.
- 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.

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

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.

⚠ WARNING - Do not install the unit in an environment where the operating ambient temperature exceeds 122°F (50° C). 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.

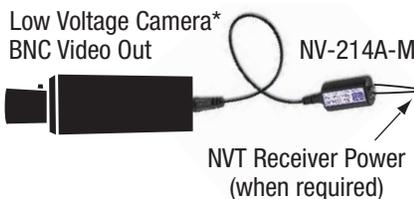
⚠ WARNING - Use only a Certified power cord and plug (coupler / mains) assemblies for location installed.

⚠ WARNING - Power cord is regarded as main disconnect.

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

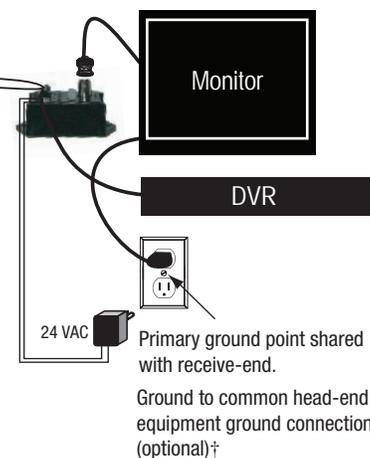
⚠ WARNING - For safety, never put NVT signals in the same conduit as high-voltage wiring.

⚠ WARNING - Do not restrict airflow around any active powered NVT products.



* Unless prohibited by Electrical Code, the camera and NVT should float, relative to earth ground. This will reduce sensitivity to lightning strikes.

† Be sure that ground rod is not shared with other equipment that may dump large currents, such as telephone company entry protection devices, lightning rods, metal-skinned buildings, or radio towers.



Wiring Tech Notes

1. Use point-to-point Unshielded Twisted Pair wire, 24-16 AWG (0,5-1,5mm), stranded or solid, Category rated wire.
2. 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 video signals in or near electromagnetic fields (in accordance with National Electrical Code, local, or other local safety requirements).
3. Measure the wire distance.
4. DO NOT USE individually shielded twisted pair. Overall shielded, multi-pair (6pr +) or foiled Cat5 is OK.
5. DO NOT USE UN-TWISTED WIRE.
6. Due to near-end crosstalk, don't send a transmit and a receive signal in the same wire bundle over 1000ft (300m). Exceptions: Category 5 or better cable, up to 2,000 ft (600m) are OK.
7. Don't send "Up-the-Coax" Pan/Tilt/Zoom signals through active (amplified) NVT transceivers. Passive NVT transceivers will transmit "up the coax" P/T/Z control signals up to 750ft (225m)

Measure Your Wire Distance

Note: All NVT quoted distance specifications include any coax in the run. It is recommended that the wire distance be measured to ensure that the capability of the NVT product is correct.

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.

Table 1 Resistance per 1,000ft (300m)

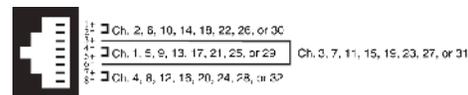
24 AWG	(0,53 mm)	=	52 ohms
23 AWG	(0,57 mm)	=	42 ohms
22 AWG	(0,64 mm)	=	33 ohms
20 AWG	(0,81 mm)	=	21 ohms
19 AWG	(0,91 mm)	=	16 ohms
18 AWG	(1,02 mm)	=	13 ohms

Connecting the Camera End

1. If the transmitter is a model NV-653T, connect power, as specified in the "Power Supply Requirements." The blue "Power" LED should light.
2. If the transceiver is a NV-215J-M or a NV-217J-M with RJ45 connector the UTP wire is as shown in the wiring diagram below:



3. Connect the baseband video signal from the camera to the BNC on the transmitter using a 75Ω coax cable with BNC connector. The NV-208A-M, NV-213A-M, NV-214A-M, NV-215J-M and NV-217J-M can be connected directly to the camera.
4. If the transmitter is a model NV-653T, the green "Active" LED should have a steady light, indicating that video signal is present. Set the three-position distance switch to the correct distance for your wire run.
5. Connect the UTP output of the transmitter to existing or new unshielded twisted pair wiring by attaching each conductor of a twisted pair of wires to each screw or screwless terminal. Screw terminal connections should be torqued to 5 in-lbs (200 or 600 series) or 2 in-lbs (400 series or hubs). RJ45 connections should use factory crimped patchcords. For reliability, never use field-crimped male RJ45s. Note wire colors so that polarity may be observed at the receiving end.
6. If the passive video transceiver or hub is a model NV-813(S), NV-1613(S) or NV-3213(S) connect the UTP wire using the 8-pin RJ45 connector as shown in the wiring diagram below.
7. Optional: When using the model NV-413A, either connect UTP wire to terminal block as described in #4 above, or connect UTP wire using 8-pin RJ45 connector as shown in wiring diagram. Do not do both.



8. If the transmitter is a model NV-813, NV-1613 or the NV-3213 connect the ground screw to a solid earth ground. If the transmitter is a model NV-653T, connect the NVT ground screw to the camera's ground, but do not connect either to earth ground. An electrically floating camera will maintain protection from damaging transients while making it less of a target to lightning strikes. See recommended grounding diagram. For safety, always follow National Electrical Code, Local Codes, or the camera manufacturer's grounding requirements; they take precedence.
9. If you are using a camera which has an NVT qualified built-in unshielded twisted pair module, you will be able to connect the camera's output directly to your UTP wiring. If you have any questions on this connection, please refer to your camera installation manual, or contact the camera manufacturer or NVT.

Connecting the Monitor End

1. If the receiver is a model NV-442, NV-452R, NV-652R, NV-842, NV-1642, NV-3242, NV-872, NV-1672 or NV-3272, connect power, as specified in the "Power Supply Requirements." The blue "Power" LED should light.
2. If the transceiver is a NV-215J-M or a NV-217J-M with RJ45 connector the UTP wire is as shown in the wiring diagram below:



3. If the receiver is a model NV-452R, NV-652R, NV-813, NV-1613, or the NV-3213, connect the ground screw to the same earth ground as the rest of receive-end equipment.

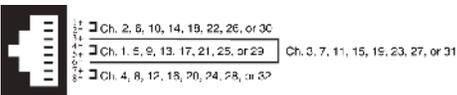
4. Connect the UTP input of the receiver to existing or new UTP wiring by attaching each conductor of a twisted pair of wires to each screw or screwless terminal. Torque to 5 in-lbs (200 or 600 series) or 2 in-lbs (400 series or hubs).

If the receiver is a model NV-452R, NV-652R, NV-442, NV-842, NV-1642, NV-3242, NV-872, NV-1672, or NV-3272, the green "Active" LED should have a steady light, indicating that video is present. A flickering light typically means that there is something wrong with the cabling.

5. When using the model NV-452R, either connect UTP wire to terminal block as described in #4 above, or connect UTP wire using 8-pin RJ45 connector as shown in wiring diagram below. Do not do both.

6. If using a receiver model NV-413A, NV-442, NV-813(S), NV-842, NV-872, NV-1613(S), NV-1642, NV-1672, NV-3213(S), NV-3242 or NV-3272, connect UTP wire using 8-pin RJ45 connectors as shown in wiring diagram. RJ45 connections should be factory-crimped patch-cords. Never use field crimped male RJ45s.

7. Connect the baseband video signal from the receiver to the DVR, video monitor, or other video equipment using a 75Ω coax cable with a BNC connector, or directly to video equipment if using the NV-208A-M, NV-213A, NV-214A-M, NV-215J-M or NV-217J-M.



8. Confirm that your monitor or other receiving equipment is correctly terminated with a single 75Ω terminator.
9. For best pictures using the NV-452R or NV-652R, adjust the distance equalization controls. Turn both controls to their minimum counter-clockwise position. Next, turn brightness/LF control clockwise until desired degree of brightness is achieved. Then turn sharpness/HF control until picture is crisp and clear, but not "grainy."

Rack Mounting

Up to ten NV-652Rs or two NV-413As or NV-452Rs or one NV-442 may be rack mounted on the NV-RM8/10. The Hub models NV-813(S), NV-842, NV-1613(S), NV-1642, NV-3213(S), NV-3242, NV-872, NV-1672, or NV-3272 are rack mountable and come complete with mounting brackets and screws.

Rack Mounting NVT Hubs

Do not restrict airflow around any active powered NVT product. Follow these instructions to mount the NV-813(S), NV-842, NV-872, NV-1613(S), NV-1642, NV-1672, NV-3213(S), NV-3242, or NV-3272 Hub models in a rack or cabinet.

1. Attach the mounting brackets to the Hub chassis with supplied screws. Note that the Hub's mounting brackets allow you to rack mount or wall mount each Hub with either the top front or rear facing out.



Position the Hub in the rack or cabinet and slide it up or down until the rack holes line up with the bracket holes. Then attach the Hub to the rack with the supplied screws.



Table Mounting the Hubs

Attach the self-adhesive rubber feet to the bottom of the Hub.

Agency

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



UL Listed to UL2044 or UL/IEC 60065.

cUL Listed to CAN/CSA22.2 No. 1 for Canada.

CE Mark under EMC and low voltage Directives for the European Union.

Complies with FCC part 15B limits

Power Supply Requirements

NVT transceivers require the following power:

NV-208A-M	no power required
NV-213A, NV-213A-M and NV-214A-M	no power required
NV-215J-M / NV-217J-M	no power required
NV-413A	no power required
NV-452R	24 VAC or DC, 250mA not included
NV-652R	12 to 24 VAC or DC, 100mA not included
NV-653T	24 VAC or DC, 250mA not included
NV-813, NV-813S, NV-1613 & NV-1613S	no power required
NV-3213 and NV-3213S	no power required
NV-442 / NV-842	12VDC Ext. Sup. included, 50/60Hz, 350 / 425mA*
NV-1642 / NV-3242	12VDC Ext. Sup. included, 50/60Hz, 700mA / 1A*
NV-872 / NV-1672	115/230V, included, 50/60Hz, 160mA*
NV-3272	115/230V, included, 50/60Hz, 315mA*

*An extra fuse is located in the fuse holder to the right of the EIA plug socket. The NV-452R, NV-652R and the NV-653T are intended to be powered by a safety extra low voltage (SELV) power source that delivers less than 60VAC or DC under single fault conditions. Additionally, a limited power source with less than 5A total available current should be used, such as a pre-approved wall-mount or desktop power supply that has been evaluated by a product safety agency such as UL or TUV Rheinland, in the country of end-use.

Note: The NV-452R, NV-652R and NV-653T, all require floating power supplies.

Limited Warranty

NVT warrants that the product conforms to NVT's applicable published specifications and is free of defects and workmanship, 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 product is damaged or 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 limitation or exclusion 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.

Troubleshooting

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.

Customer Support

NVT customer support is available for consultation from 8:00 AM to 5:30 PM PST Monday through Friday. In addition, emergency after-hours callback support is available.

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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.

Specifications subject to change without notice.