

Multi-Channel AVC Active Receiver Hubs Installation Sheet

Introduction

GE Security Multi-Channel AVC Active Receiver Hubs are advanced devices that feature Automatic Video Compensation (AVC) technology. AVC incorporates a sophisticated microprocessor controlled analog circuit that continuously analyzes incoming video signals and compensates for cable attenuation independent of video signal content. It provides high-resolution color or black and white video over unshielded twisted pair wires of category 2-7, at distances up to 6,000 feet (1,830 m) when used with any GE Active Transmitter. It can be used with any GE Passive Transceiver for distances up to 3,500 feet (1,067 m). The 8 channel models provide 1 to 4 distribution amplifiers while the 16 channel models include 1 to 2 distribution amplifiers.

These receiver hubs are 1U in height and can be wall, desk or rack mounted. Their integrated ground loop isolation prevents disturbing "hum-bars" common with long distance installations. Their excellent crosstalk and noise immunity provides quality video up to the maximum distance. Each UTP channel is equipped with a video presence LED indicator and has built-in surge suppression.

The included RJ-45 adapters provide an easy way to connect active hubs to other GE VPD products via Cat-5 cables and RJ-45 connectors.

The Active receivers are unidirectional and do not support Up-the-Coax Pan/Tilt/Zoom telemetry signals. Any unused pair of UTP cable can be used for transporting telemetry signals.



The following model numbers are covered in this document:

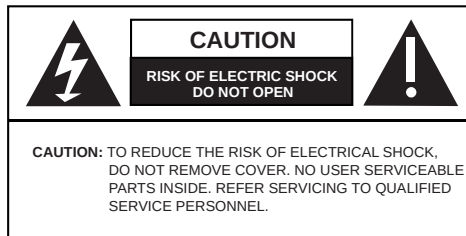
- **GEC-4VARHUB-4**
- **GEC-8VARHUB-4**
- **GEC-16VARHUB-4**
- **GEC-32VARHUB-4**
- **GEC-8VARHUB-6.5**
- **GEC-16VARHUB-6.5**
- **GEC-32VARHUB-6.5**

Important Safety Warnings

- Installation should be made by a qualified service person and should conform to all local codes.
- DO NOT bundle UTP signals in the same conduit as high-voltage wiring.
- To reduce the risk of fire or electrical shock, do not expose these products to rain, moisture, dripping or splashing.
- No objects filled with liquids, such as vases, shall be placed on GE equipment.
- DO NOT block ventilation openings to let sufficient airflow to the UTP devices.
- The Main fuse for models with built-in AC power supply is 5 A at 110 VAC or at 3 A 220 VAC. Each camera power fuse is 2 A and can be accessed by removing the front panel. Fuses may be replaced by a qualified service person only when the unit is off and AC power cord is unplugged.
- Use only the power cord and plug supplied with the unit for connecting to AC outlets.
- Only unplugging the power cord is considered as a main power disconnect.
- DO NOT connect multiple outputs together.
- Make sure that the mains Voltage input is set to the proper local voltage.

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) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) 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.



 **WARNING!** - To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. This 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!** - This apparatus is a Class I product. This product must be connected to a mains socket outlet with a protective earthing connection.

 **WARNING!** - The mains plug is used as the disconnect device and shall remain readily operable.

 The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

 The exclamation point within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the appliance.

Wiring Technical Notes

These technical notes should all be considered prior to installing these devices.

- Use point to point unshielded twisted pair wire 24-16 AWG (0, 5-1, 3 mm) stranded or solid, Category 2 or better.
- The video signal may coexist in the same wire bundle as other video, telephone, data, control signals, or low-voltage power. You can run GE video signals in or near electromagnetic fields (in accordance with National Electrical Code, local or other local safety requirements).
- DO NOT USE SHIELDED TWISTED PAIR WIRE. Multi-pair (8 pair or more) wires with an overall shield are fine.
- DO NOT USE UN-TWISTED WIRE.
- DO NOT place a transmit and a receive signal in the same wire bundle. It may cause interference.
- DO NOT send **Up-the-Coax** Pan/Tilt/Zoom signals through active (amplified) GE transmitters or receivers. Passive GE transceivers can transmit video and **Up-the-Coax** P/T/Z control signals up to 750 ft. (228 m).
- We recommend using short 18 AWG solid wires for ground connections.
- GE VPD products follow the EIA/TIA 568 standard. There are two wire color-code standards: EIA/TIA 568A and EIA/TIA 568B. Either standard can be used for making connections as long as the RJ-45 jacks at both ends of each cable follow the same standard.
- Measure wire distance by:
 1. Shorting the two conductors together at the far end, and measuring the loop-resistance by an Ohmmeter.
 2. Use the **Loop Resistance** table to calculate the distance.
- DO NOT connect coax cables longer than 100 ft. (30 M) to the BNC connectors of any GE UTP equipment.
- All measured distances should include any coax cables in the path.
- Verify camera current requirements and wire resistance limits for the maximum distance that power can travel. Use the **Power Distance Chart** to verify the wire distance.
- GE VPD products require Unshielded Twisted-Pair (UTP) wires Category 2 or better, 24 AWG (0,5 mm) or thicker.

Table 1: Loop Resistance per 1000 feet

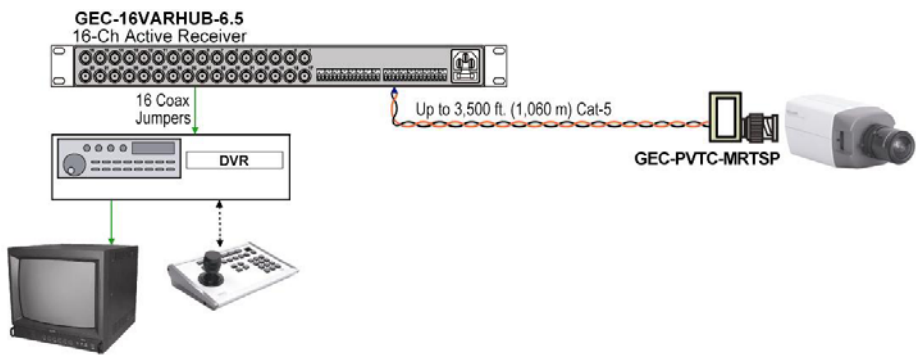
Wire Type	Resistance
24 AWG /0,53 mm	52 ohms
23 AWG /0,57 mm	42 ohms
22 AWG /0,64 mm	33 ohms

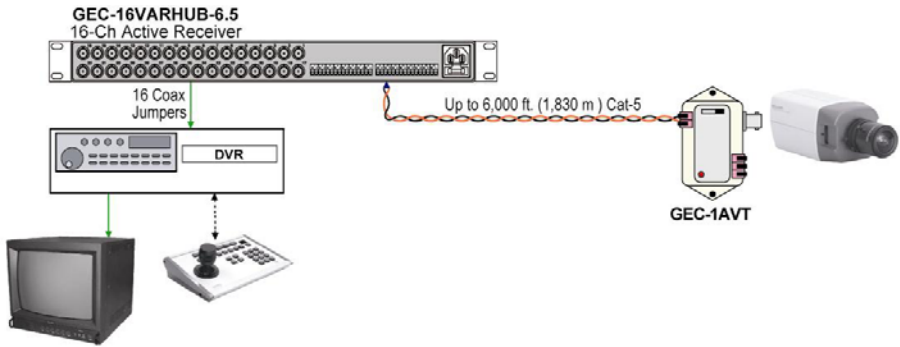
Table 2: Power Distance Chart

Power Supply Voltage		12 VDC	24 VAC	28 VAC
Voltage at the Camera		10.8 VDC	21.6 VAC	21.6 VAC
100 mA Camera	Dual 24 AWG	448 ft. / 137 m	896 ft. / 273 m	2,388 ft. / 728 m
	Dual 23 AWG	564 ft. / 172 m	1,130 ft. / 345 m	3,012 ft. / 918 m
300 mA Camera	Dual 24 AWG	150 ft. / 46 m	300 ft. / 92 m	796 ft. / 243 m
	Dual 23 AWG	190 ft. / 58 m	378 ft. / 115 m	1,004 ft. / 306 m
1 AMP Camera	Dual 24 AWG	46 ft. / 14 m	90 ft. / 28 m	240 ft. / 73 m
	Dual 23 AWG	58 ft. / 18 m	114 ft. / 35 m	300 ft. / 92 m

Application Drawings

Multi-channel Passive to Active (Mid-Range) Application





Camera End Installation

Video:

Passive Transceiver

- Connect the baseband Video signal output of the camera to the BNC of the GE single-channel passive transceiver.
- Connect the ground screw connector to a qualified earth ground using a short thick wire (GEC-PVTC-FCSP, GEC-PVTC-MSP).
- Connect the UTP to the terminal block of the GE transceiver.

Active Transmitter

- Connect the baseband video output of the camera to the BNC input of the GE active transmitter.
- Connect the UTP to the terminal block of transmitter.
- Connect the ground screw connector to a qualified earth ground using a short thick wire.
- Set the distance switch to the appropriate position based on the measured camera distance.

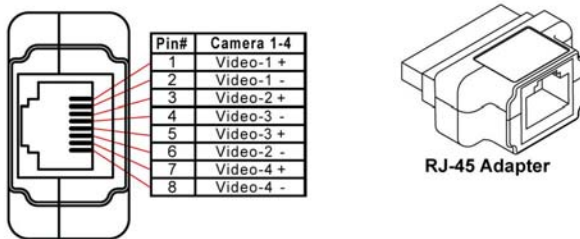
Power:

- Connect a qualified 12 VDC or 24 VAC power supply cable to the transmitter's input power terminal block.

Control Room Installation

UTP:

- Connect the UTP wires carrying video signals to the terminal block input of the receiver hub. If the UTP is terminated with a RJ-45 connector, then use either the RJ-45 connector or provided RJ-45 adapter to connect to the transceiver hub.
- Make sure that the same UTP pair and polarity are used on both transmit and receive sides.



Video:

- Use provided 2-foot (60 cm) coax patch cords to connect the BNC video inputs of video receiving devices such as DVRs or matrix switches.

Power:

GEC-4VARHUB-4

- Connect the ground screw connector to a qualified earth ground using a short thick wire.
- Connect the external power supply cable to the power input connector of the **GEC-4VARHUB-4**.

Note: This product is intended to be supplied by a UL Listed Direct Plug-In Power Unit marked "Class 2" or "LPS" and output rated 12 VDC, 1 Amp minimum.

All other models

- Connect the AC power cord to a grounded AC power outlet.
- The receiver hubs do not require any adjustments. They are equipped with Automatic Video Compensation (AVC) circuit that automatically adjusts the video quality regardless of video content.

- If the picture is scrambled change the polarity of the twisted pair wires to the corresponding terminal block.

Technical Specifications*

Electrical

Video Format	NTSC, PAL, SECAM
Frequency	20 Hz to 6 MHz
Adjustment	Automatically controlled by internal microprocessor
Coax	75 Ohm
Twisted Pair	100 Ohms +/- 20%, 24 AWG min., unshielded Category 2-7 up to 750 ft. (228m)
CMRR	70 dB
Video Present	Green LED's, one per channel
Power indicator	Red LED
Connectors	UTP inputs: Detachable terminal blocks, RJ-45 or Optional RJ-45 Adapter (Included) Video Outputs: BNC Power: IEC380 AC power inlet (excluding GEC-4VARHUB-4) Standard P1J DC inlet receptacle 2.1 x 5.5 mm, center positive (GEC-4VARHUB-4)
Main AC Fuse	1 A at 115 VAC/3 A at 220 VAC, 5x20 mm, 8 channel models 1.5 A at 115 VAC/5 A at 220 VAC, 5x20 mm, 16 channel models 2 A at 115 VAC/5 A at 220 VAC, 5x20 mm, 32 channel models A spare fuse is located inside the fuse holder.

Environmental

Humidity	0 to 95%, noncondensing
Temperature	Operating: -10° to +50° C Storage: -30° to +70° C

Model	Number of Channels	Max. Range w/Passive TX	Max. Range with Active TX	Power Supply Voltage	Power Supply Current (max.)
GEC-4VARHUB-4	4	2,000 feet	4,000 feet	12 VDC/24 VAC	400 mA
GEC-8VARHUB-4	8	2,000 feet	4,000 feet	80-240 VAC	125 mA
GEC-16VARHUB-4	16	2,000 feet	4,000 feet	80-240 VAC	200 mA
GEC-32VARHUB-4	32	2,000 feet	4,000 feet	80-240 VAC	250 mA
GEC-8VARHUB-6.5	8	3,500 feet	6,000 feet	80-240 VAC	125 mA
GEC-16VARHUB-6.5	16	3,500 feet	6,000 feet	80-240 VAC	200 mA
GEC-32VARHUB-6.5	32	3,500 feet	6,000 feet	80-240 VAC	250 mA

Model GEC-4VARHUB-4:

This product is intended to be supplied by a UL Listed Direct Plug-In Power Unit marked “Class 2” or “LPS” and output rated 12 VDC, 1 Amp minimum.

Mechanical

Material	GEC-4VARHUB-4: ABS plastic, UL rating of 94V-0 All other models: Extruded Aluminum and sheet metal
Dimensions (W x H x D)	GEC-4VARHUB-4: 4.97 x 1.74 x 1.77 in. (12.6 x 4.2 x 4.5 cm) GEC-8VARHUB-4: 17 x 1.74 x 8 in. (43 x 4.2 x 203 cm) GEC-16VARHUB-4: 17 x 1.74 x 8 in. (43 x 4.2 x 203 cm) GEC-32VARHUB-4: 17 x 1.74 x 8 in. (43 x 4.2 x 203 cm) GEC-8VARHUB-6.5: 17 x 1.74 x 8 in. (43 x 4.2 x 203 cm) GEC-16VARHUB-6.5: 17 x 1.74 x 8 in. (43 x 4.2 x 203 cm) GEC-32VARHUB-6.5: 17 x 1.74 x 8 in. (43 x 4.2 x 203 cm)
Weight	GEC-4VARHUB-4: 0.31 lb. (142 g) GEC-8VARHUB-4: 4.5 lb. (2.04 kg) GEC-16VARHUB-4: 4.6 lb. (2.09 kg) GEC-32VARHUB-4: 5.6 lb. (2.54 kg) GEC-8VARHUB-6.5: 4.5 lb. (2.04 kg) GEC-16VARHUB-6.5: 4.6 lb. (2.09 kg) GEC-32VARHUB-6.5: 5.6 lb. (2.54 kg)

*Specifications are subject to change without notice.

Included Accessories

(Excluding the GEC-4VARHUB-4)

- Mounting brackets for front, rear or wall installations
- Rubber feet for desk applications
- (8, 16, or 32) 2 ft. (60 cm) coax jumper cables
- RJ-45 Adapter
- Molded IEC power inlet cord 7 ft. (200 cm)

EIA/TIA 568A, B Color Codes



Regulatory information

Manufacturer	GE Security, Inc. HQ and regulatory responsibility: GE Security, Inc., 8985 Town Center Parkway, Bradenton, FL 34202, USA EU authorized manufacturing representative: GE Security B.V., Kelvinstraat 7, 6003 DH Weert, The Netherlands
Regulatory information	 N4131 Note: C-Tick mark applies to model GEC-4VARHUB-4 only.
North American standards	UL 60065
FCC Compliance	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 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.
 	2002/96/EC (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.

Contact information

For contact information see our Web site: www.gesecurity.com.

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