



NVT Phybridge enables our customers to transform their existing infrastructure and migrate to IP with confidence. NVT Phybridge products offer technologically advanced features including power over long reach Ethernet over single-pair UTP, multi-pair UTP or Coax, robust power, and power management, PowerWISE power sharing and quick and easy migration to IP end points and IoT. Complete switch solutions include PoLRE LPC, PoLRE24/48, EC10, CLEER24, CLEER24-10G, FLEX8, FLEX24 and FLEX24-10G products. Complete adapter solutions include Phylink, EC-Base, EC-Link, EC-Link+, EC4, FLEX-Base, FLEX-C, FLEX-Link and FLEX4 media converters and cable extenders.

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COAX LEVERAGED ETHERNET EXTENDED REACH NETWORK ADAPTER

DIVISION 27 – COMMUNICATIONS

- 27 20 00** **Data Communications**
- 27 21 00** **Data Communications Network Equipment**
- 27 21 29** **Switches & Hubs**

COAX LEVERAGED ETHERNET EXTENDED REACH NETWORK ADAPTER

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes a Single port 10/100Mbps Ethernet-over-Coax adapter with power capability.
- B. Product – The EC Link Ethernet Adapter delivers Ethernet and Power over Coax cable with multiple times the reach of traditional data switches.
- C. Related Requirements
 - (1) 27 10 00 Structured Cabling
 - (2) 27 16 00 Communications Connecting Cords, Device, and Adapters
 - (3) 27 16 16 Communications Media Converters, Adapters, and Transceivers
 - (4) 27 30 00 Voice Communications
 - (5) 27 31 23 IP Voice Switch

1.02 REFERENCES

- A. Abbreviations
 - (1) DVR – Digital Video Recorder
 - (2) GbE – Gigabit Ethernet
 - (3) GBIC – Gigabit Interface Converter
 - (4) GUI – Graphical User Interface
 - (5) IoT – Internet of Things
 - (6) IP – Internet Protocol
 - (7) LAN – Local Area Network
 - (8) LLDP – Link Layer Discovery Protocol
 - (9) LLDP-MED – Link Layer Discovery Protocol Media Endpoint Discovery
 - (10) Mbps – Megabits per second
 - (11) NTP – Network Time Protocol
 - (12) NVR – Network Video Recorder
 - (13) PoE – Power over Ethernet
 - (14) PoLRE – Power over Long Reach Ethernet
 - (15) SFP – Small Form-factor Pluggable Transceiver
 - (16) SNMP – Simple Network Management Protocol
 - (17) STP – Spanning Tree Protocol
 - (18)UTP – Unshielded Twisted Pair wiring
 - (19) VLAN – Virtual Local Area Network

- B. Reference Standards
 - (1) Network
 - (a) IEEE – 802.3 Ethernet Standards
 - (2) EMC
 - (a) Emissions
 - (i) FCC Part 15, Class B
 - (ii) ICES-003
 - (iii) EN 55032:2012
 - (iv) EN 50121-4:2015
 - (b) Immunity
 - (i) EN 55024:2010
 - (ii) EN 50121-4:2015
 - (3) Safety
 - (a) UL 60950-1 2nd Ed 2014-10-14
 - (b) CAN/CSA C22.2 No. 60950-1-07 2nd Ed 2014-10
 - (c) IEC 62368-1:2014
 - (d) EN 62368-1:2014
 - (e) AS/NZS 62368.1:2018
 - (4) Environment
 - (a) RoHS Directives 2011/65 and 2015/863

1.03 SUBMITTALS

- A. Product data
 - (1) Datasheets
 - (2) Installation and operation manuals
 - (3) DoC (Declaration of Conformity)
 - (4) Warranty documentation

1.04 QUALIFICATIONS

- A. The manufacturer shall have a minimum of five years experience in producing Ethernet switch equipment.
- B. Installers shall be trained and authorized by the manufacturer to install, integrate, test and commission the system.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver the device in the manufacturer's original, unopened, undamaged container with identification labels intact.
- B. Store the device in a temperature environment of -40°C to 85°C (-104°F to 185°F), protected from mechanical and environmental conditions as designated by the manufacturer.

1.06 WARRANTY AND SUPPORT

- A. The manufacturer shall provide a limited 5-year warranty for the product to be free of defects in material and workmanship.

END OF SECTION

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. Manufacturer: NVT Phybridge, Inc.
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Oakville, ON, Canada L6L 0C4
Phone: +1 905 901-3633
Web: www.nvtphybridge.com
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- B. Model: EC-Link+
- C. Part Code: NV-ECLK-PLS
- D. Alternates: None

2.02 GENERAL DESCRIPTION

- A. The EC-Link+ shall provide Ethernet and PoE over Coax cable with up to eighteen times the reach of traditional data switches.
- B. The EC-Link+ shall possess the following characteristics:
- (1) capable of delivering up to 50W of PoE to the IP endpoint
 - (2) pairs with a CLEER24 switch, EC10 switch or EC-Base unit to operate in long-reach mode as an Ethernet over Coax Extender.
 - (3) converts conventional Ethernet to a signal that can be carried by various types of Coax cable.
 - (4) uses previously installed Coax cable to connect IP network endpoints such as IP cameras, IP phones, network switches, DVR/NVRs, PCs, and printers.
 - (5) capable of being powered via the CLEER24 switch, EC10 switch, EC- Base unit or local external power supply

2.03 INTERFACES

- A. Ethernet (Downlink)
- (1) One Ethernet RJ45 connector. This connection supports a standard Ethernet cable: patch or crossover Cat5e/Cat6.
 - (2) The RJ45 shall support 10/100 BaseT full or half duplex and auto-negotiation of the transmission rate.
- B. Coax (Long Reach)
- (1) The EC-Link+ shall have a single female BNC connector for the long reach ethernet over coax port. It will support and coax cable with a nominal characteristic impedance of 75Ω.
 - (2) Maximum cable distances are specified as (based on a 75Ω impedance coax cable):
 - (a) RG59 – 100Mbps to 457m (1500ft)
 - (b) RG59 – 10Mbps from 457m to 1220m (4000ft)
 - (c) RG6 – 100Mbps to 610m (2000ft)
 - (d) RG6 – 10Mbps from 610m to 1830m (6000ft)
 - (e) RG11 – 100Mbps to 915m (3000ft)

- (f) RG11 – 10Mbps from 95m to 1830m (6000ft)
- (3) The maximum data through-put shall be 200Mbps (total up plus down) and shall auto adapt to the cable conditions. This will support 100Mbps communication in both directions.
- (4) There shall be no signal degradation from 0m to the maximum supported distances.
- C. Power Input
 - (1) The EC-Link+ shall have a single DC in barrel connector capable of supporting a power barrel plug with the dimensions 2.1mm ID and 5.5mm OD.

2.04 INDICATORS

- A. Ethernet Downlink
 - (1) The Ethernet downlink RJ45 port shall have two LEDs to indicate network connection status: Link status (LEFT - green) and activity status (RIGHT - amber).
 - (2) The link status LED indicates the following: Off – no connection. On – link good.
 - (3) The activity status LED indicates the following: Off – no activity. Flashing – network activity.
- B. Long Reach BNC
 - (1) The long reach Ethernet over Coax BNC port shall have one LED to indicate connection status: Link/speed status (green or amber).
 - (2) The link/speed LED indicates the following status: Off – no link. Green – link good with network speed of 100Mbps. Amber – link good with network speed of 10Mbps.

2.05 POE

- A. The EC-Link+ shall be capable of providing up to 50 watts of power over the UTP connection to the endpoint device when powered via a local power supply or the EC-Base (with local power supply) and 30W PoE when powered via the CLEER24 switch, EC10 switch or EC-Base (powered from a standard PoE switch).
- B. The EC-Link+ shall be capable of being powered via PoE from the CLEER24 switch, EC10 switch or EC-Base unit.
- C. The EC-Link+ Ethernet port shall follow standard PoE power negotiation.
- D. The end-point device must be IEEE 802.3af or 802.3at compliant in order to be powered using PoE.

2.06 ELECTRICAL

- A. Power
 - (1) Sources
 - (a) CLEER24 Switch
 - (b) EC10 Switch
 - (c) EC-Base unit
 - (d) Local External DC PSU, Class II, Efficiency VI, Input voltage 100-240VAC, 50-60Hz, Output voltage 55VDC / 1A or 2A, Output connector: power barrel plug, (2.1mm ID and 5.5mm OD)
 - (2) Power consumption
 - (a) 1.1W (not including PoE endpoints)

- (3) Power injection (PoE)
 - (a) -54VDC, 50W – end-point devices must be IEEE 802.3af/at compliant to use the power injection

- B. Immunity
 - (1) Electrostatic Discharge
 - (a) IEC 61000-4-2
EN 61000-4-2
 - (i) +- 6kV Contact Discharge (Direct and indirect)
 - (ii) +- 8kV Air Discharge
 - (2) Electrical Fast Transient
 - (a) IEC 61000-4-4
 - (b) EN 61000-4-4
 - (i) +- 2kV on AC ports
 - (ii) +- 2kV on I/O ports

- C. Connectors
 - (1) Ethernet
 - (a) RJ45 (1) - Ethernet downlink port
 - (b) Female BNC (1) - Long reach Ethernet over Coax + power connection
 - (2) External power
 - (a) DC power: 1 DC barrel connector

2.07 MECHANICAL AND ENVIRONMENTAL

- A. Housing material: Powder coated steel
- B. Mounting: Desk or Wall Mountable
- C. Dimensions (L x W x H): 3.97in x 1.98in x 1.01in (100.9mm x 50.3mm x 25.7mm)
- D. Weight: 108g
- E. Thermal: Air cooled
- F. Temperature
 - (1) Operating: -50°C to 70°C (-58°F to 158°F)
 - (2) Storage: -40°C to 85°C (-104°F to 185°F)
- G. Humidity: 10 – 95%, non-condensing @ 35°C
- H. MTBF (Mean Time Between Failure): 20+ Years (175,200+ Hours)

END OF SECTION

PART 3 EXECUTION

3.01 INSTALLERS

- A. Contractor personnel

3.02 PREPARATION

- A. The network design and configuration shall be verified for compatibility and performance with the camera(s)
- B. Network configuration shall be tested and qualified by the contractor prior to camera installation.

3.03 INSTALLATION

- A. Before permanent installation of the system, the system shall be factory tested in conditions simulating the final installed environment
(1) A report indicating successful test results shall be produced.

3.04 STORAGE

- A. The product shall be stored in an environment where temperature and humidity are in the range specified by the manufacturer.

END OF SECTION