NVT PHYBRIDGE CLEER24 DATASHEET

Fast Ethernet and PoE+ over Coax with up to 6,000ft (1,830m) Reach

CLEER24 Managed Switch

The CLEER24 (Coax Leveraged Ethernet Extended Reach) managed switch makes the modernization to IP devices (IoT) simple, secure and cost-effective. When paired with the EC Adapters, this powerful enterprise-grade switch delivers fast Ethernet and PoE+ over coax cable with up to 6,000ft (1,830m) reach - **that's 18Xs the reach of standard Ethernet switches.** The CLEER24 comes standard with robust power management capabilities and an industry leading, simple to use GUI interface.

With the CLEER24, customers are taking full advantage of Modern LAN principles, protecting existing infrastructure assets, and eliminating any need to rip and replace the established Coax cabling. The CLEER24 managed switch optimizes network design with advanced interoperability and easy integration into the overall LAN creating a secure, robust and easy to manage path for IP endpoints.

- Accelerate your return on investment by reducing infrastructure costs.
- Simplify your IP modernization, collapsing planning and deployment time.
- Eliminate infrastructure barriers, risks, disruption and costs.
- Create a robust plug-and-play IP platform that is easy to deploy and manage.
- Be environmentally responsible during your IP upgrades.

Speed, Reach and Power

CLEER24 delivers 10/100Mbps symmetrical (full duplex) and PoE+ (30W) over coax cable with up to 6,000ft (1,830m) reach. It is designed to support the most demanding IP endpoints with plenty of bandwidth to spare. No speed degradation with longer distance or latency allowing for real time applications.

Industry Leading PowerWISE® Technology

Power sharing for redundancy, load balancing, AC/DC options, hot swappable power supply and auto-sensing 100-240 VAC delivering 500 to 1,000 watts of power. CLEER24 is one of the most energy efficient switches on the market, consuming less than 17 Watts of power to operate.

Managed Switch with Plug-and-Play Option

CLEER24 can either operate in a transparent mode functioning as a bridge, allowing for plug-and-play deployment, or as a fully managed switch with high value features specifically designed for security, including:

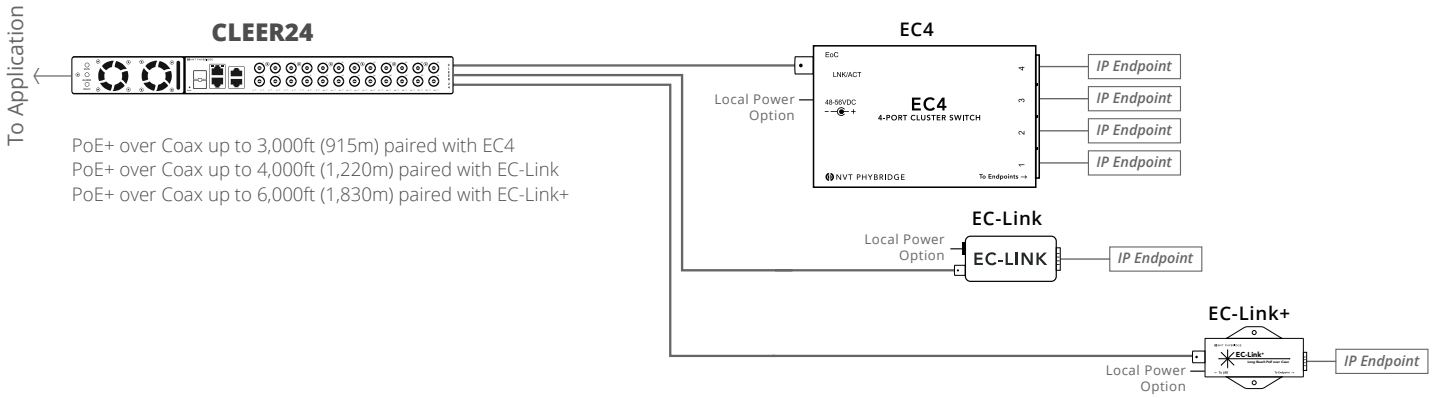
- Power management by port for easy reset of ports.
- Port MAC locking for higher security and peace of mind.
- Simple Network Manager, an intuitive Web GUI that makes managing the switch a breeze.

AT A GLANCE

(NV-CLR-024)

- 24-port managed long reach EoC PoE switch
- 100Mbps symmetrical (full duplex) and PoE+ (30W) over Coax with 6,000ft (1,830m) reach
- 2 x 1GB uplink ports, 2 x 1GB fiber uplink ports and dedicated management and console ports
- Intuitive, simple management GUI; remote access
- 500W (110v) or 1,000W (220v) auto sensing hotswappable power supply
- Power redundancy available
- Power management by port and MAC locking
- EN 50121-4 Standard for Railway/ Subway environments

CHARIOT by NVT Phybridge



The Most Robust PoE Capabilities on the Market

Four switches can be stacked together for power sharing and power redundancy. The CLEER24 switch comes standard with PowerWISE technology.

CLEER24 Technical Specifications

Model	CLEER24
Part Number	NV-CLR-024
Dimensions	19 inches x 1U without rack ears: • 1.75" x 17.13" x 9.92" (HxWxD) • 4.45cm x 43.5cm x 25.2cm (HxWxD)
Weight	7.94 lbs (3.6 kg)
Mounting	Standalone, rack or shelf-mountable; 2 brackets included for installation
Processor	Broadcom BCM56018 switch processor, 266MHz
Memory	32MB FLASH, 64MB DDR SDRAM
Interface: Ethernet Uplink (Trunk IP)	Maximum 2 uplinks, each 1Gb/s (full duplex), either: • 2 mini-GBIC ports: 1000 Base-TX/SX/LX/EX/ZX/LHX (determined by SFP, transceiver module installed), Ethernet IEEE 802.3z, fiber optic cable; or • 2 RJ45 ports: 10/100/1000 Base-T auto-sensing, independent speed selection, Ethernet IEEE 802.3, CAT5e/6 copper cable
Mean Time Before Failure (MTBF)	20+ Years

Interface: Downlink (PoE and IP to Adapter)	24 x BNC Jacks Speed: 10/100Mbps (full duplex) PoE Power: 30 Watts Maximum Maximum Distance: • 3,500ft (1,067m) over RG59 Coax Cable • 6,000ft (1,830m) over RG6 and RG59 Coax Cable 24 x Status LEDs: • Configuration Options: Link Activity / Link / Off
Management	1 LAN port (MGMT): RJ45, 10/100 Base-T auto-sensing, IEEE 802.3 1 UART console port: RJ45 (RJ45 to DB9 cable included)
Power Supply	Hot-Swappable Power Supply Unit Auto-sensing 100-240VAC, 50/60 Hz Power Output: 500W max at 110VAC, 1000W max at 220VAC
Power Consumption	16.5W
Power Injection (PoE)	DC voltage: 48VDC to 56VDC Endpoint devices must be compliant with IEEE 802.3af/at
PowerWISE® Power Sharing	2 male connectors (rear) DC IN and DC OUT: 48VDC to 56VDC
Operating temperature	14°F to 122°F (-10°C to 50°C)
Humidity	10% to 95% (non-condensing) at 95°F (35°C)

CLEER24 Compliance and Agency Approval

EMC	Emissions: FCC Part 15, ICES-003, EN 55032:2012, EN 50121-4:2015 Class A Immunity: EN 55024:2010, EN 50121-4:2015
Safety	UL 60950-1 2nd Ed 2014-10-14, CAN/CSA C22.2 No. 60950-1-07 2nd Ed 2014-10 IEC 62368-1:2014, EN 62368-1:2014, AS/NZS 62368.1:2018
Environment	RoHS Directives 2011/65 and 2015/863

CLEER24 Extended Technical Specifications

Layer 2 Features	• High performance Store and Forward architecture, runt/CRC filtering that eliminates erroneous packets to optimize the network bandwidth • Supports VLANs - IEEE 802.1Q tagged VLAN - 512 concurrent per port • Supports Spanning Tree Protocol - STP (Spanning Tree Protocol) - RSTP (Rapid Spanning Tree Protocol) • Supports Link Aggregation - Ether-channel (static trunk) • Jumbo Frame - Max 4k size • Automatic Media-Dependent Interface Crossover (MDIX) • IPV4/IPv6 Transport
Multicast	Supports IGMP snooping v2 and v3
Security	• Authentication - Built-in RADIUS client to co-operate with the RADIUS servers, when installed. - RADIUS / TACACS+ login user access authentication, when installed. • Access Control List when TACACS is used • MAC Security - Static MAC locking per port • SSH / SSL, when installed
Management	• Switch management interface - Web GUI switch management - Command line interface - SNMP v1, v2c, v3 - SSH / SSL secure access, when installed. • User privilege levels control, with TACACS only. • Built-in Trivial File Transfer Protocol (TFTP) client to backup configuration files • System maintenance - Firmware upload via FTP - Configuration upload/download through Web interface - Hardware reset button for system reboot or reset to factory default • NTP Network Time Protocol • Link Layer Discovery Protocol (LLDP) • Link Layer Discovery Protocol - Media Endpoint Discovery (LLDP-MED) • SNMP trap for interface linkup and linkdown notification • Event message logging to remote Syslog server

Power & Distance Table

	300ft (92m)	600ft (183m)	900ft (275m)	1,200ft (365m)	1,500ft (457m)	2,000ft (610m)	2,500ft (762m)	3,000ft (915m)	3,500ft (1,067m)	4,000ft (1,220m)	5,000ft (1,524m)	6,000ft (1,830m)
CLEER24 used with EC-Link+												
RG11 14AWG	30W	30	30	30	30	29	29	28	27	27	25	24
RG6 18AWG	30W	30	28	27	26	24	22	20	14	16	12	8
RG59 20AWG	30W	27	24	22	19	15	10	6	2	0		
CLEER24 used with EC-Link												
RG11 14AWG	30W	30	30	30	30	29	29	28	27	27		
RG6 18AWG	30W	30	28	27	26	24	22	20	14	16		
RG59 20AWG	30W	27	24	22	19	15	10	6	2	0		
CLEER24 used with EC4												
RG11 14AWG	30W	30	30	30	30	29	29	28				
RG6 18AWG	30W	30	28	27	26	24						
RG59 20AWG	30W	27	24	22	19							

100Mbit **10Mbit**

Power & Distances are based on the following cable specs:

Cable Spec	Core Type	AWG	Diameter	Wire Resistance (m)	Wire Resistance (ft)
RG-11	Solid Copper	14 AWG	1.63 mm	1.21 Ω/100m	0.37 Ω/100ft
RG-6	Solid Copper	18 AWG	1.01 mm	3.60 Ω/100m	1.10 Ω/100ft
RG-59U	Solid Copper	22 AWG	0.64 mm	7.87 Ω/100m	2.40 Ω/100ft

CLEER FAMILY ADAPTER OPTIONS

EC Adapter Options

There are three media converter options available to pair with the CLEER family of switches to extend PoE over Coax. The EC-Link and EC Link+ are single endpoint solutions and the EC4 enables 4 IP endpoints from a single long run Coax cable.

EC-Link

EC-Link+

EC4

	EC-Link	EC-Link+	EC4
Power	• Maximum 30W, delivered on 2-pairs (spare pairs) • Local power option • Does not negotiate power requirements with IP device • Device must be IEEE 802.3 af/at compliant	• Maximum 50W (If locally powered and 30W if power provided from switch) delivered on 4 pairs • Local power option • Adapter is IEEE 802.3af/at compliant and will negotiate power requirements with IP device	• Maximum 50W, delivered on 4 pairs (local power required) • Local power option to support greater power delivery to IP devices • Does not negotiate power requirements with IP device • Devices must be IEEE 802.3 af/at compliant
Casing	Plastic	Metal	Plastic
EN 50121-4 Standard	Yes – approved to operate in a railway/subway environment		

EC Adapters Technical Specifications

Model Number	EC-Link	EC-Link+	EC4
Part Number	NV-ECLK	NV-ECLK-PLS	NV-EC-04
Dimensions	8.8cm x 3.2cm x 2.1cm (LxWxH); 3.46" x 1.23" x 0.83" (LxWxH)	10.09cm x 5.03cm x 2.57cm (LxWxH); 3.97" x 1.98" x 1.01" (LxWxH)	11cm x 7cm x 2.5cm (LxWxH); 4.3" x 2.75" x 0.98" (LxWxH)
Weight	42g (1.48oz.)	108g (3.81oz.)	96g (3.38oz.)
Interface: Network Infrastructure side (CLEER)	1 BNC port: Coax cable (RG59, RG6, RG11)	1 BNC port: Coax cable (RG59, RG6, RG11)	1 BNC port: Coax cable (RG59, RG6, RG11)
Line Speed	10/100Mbps full duplex	10/100Mbps full duplex	100Mbps full duplex
Interface: IEEE Side (IP Device)	1 RJ45 port; device must be IEEE 802.3 af/at compliant	1 RJ45 port; adapter is IEEE 802.3af/at compliant and will negotiate power requirements with IP end device.	4 RJ45 ports: devices must be IEEE 802.3 af/at compliant
Power Supply	PoE from the CLEER / EC switch or from EC-Base, maximum 30W (over 2-pairs)	Maximum 50W from CLEER / EC switch (If locally powered and 30W if power provided from switch) delivered on 4 pairs.	PoE from the CLEER / EC switch or external power supply; maximum 50W (over 4-pairs) each port
DC IN	Optional (sold separately) 48V – 56VDC via an external AC/DC Power Adapter with phoenix connector (IEC Class II isolated only) NOTE 1: Local power supply used must have its output isolated from Earth potential. NOTE 2: If voltage of local power supply is lower than the power voltage provided from the PoE switch, then power on the PoE switch should be turned off.	Optional (sold separately) 48V – 56VDC via an external AC/DC Power Adapter (IEC Class II isolated only) with barrel connector NOTE 1: Local power supply used must have its output isolated from Earth potential. NOTE 2: If voltage of local power supply is lower than the power voltage provided from the PoE switch, then power on the PoE switch should be turned off.	Optional (sold separately) 48V – 56VDC via an external AC/DC Power Adapter (IEC Class II isolated only) with barrel connector NOTE 1: Local power supply used must have its output isolated from Earth potential. NOTE 2: If voltage of local power supply is lower than the power voltage provided from the PoE switch, then power on the PoE switch should be turned off.
Power Consumption	0.9W	1.1W	1W
Operating Temperature	-58°F to +158°F (-50°C to +70°C) *Tests conducted against international safety standard at maximum ambient temperatures of 50°C*	-58°F to +158°F (-50°C to +70°C) *Tests conducted against international safety standard at maximum ambient temperatures of 60°C at 30W and 55°C at 50W*	-58°F to +158°F (-50°C to +70°C) *Tests conducted against international safety standard at maximum ambient temperatures of 50°C*
Mean Time Before Failure (MTBF)	20+ years	20+ years	20+ years
Humidity	10% to 95% (non-condensing) at 35° C	10% to 95% (non-condensing) at 35° C	10% to 95% (non-condensing) at 35° C

EC Adapters Compliance and Agency Approval

EMC	Emissions: FCC Part 15, ICES-003, EN 55032:2012, EN 50121-4:2015 Class A (EC4) Class B (EC-Link and EC-Link+) Immunity: EN 55024:2010, EN 50121-4:2015
Safety	UL 60950-1 2nd Ed 2014-10-14, CAN/CSA C22.2 No. 60950-1-07 2nd Ed 2014-10 IEC 62368-1:2014, EN 62368-1:2014, AS/NZS 62368.1:2018
Environment	RoHS Directives 2011/65 and 2015/863