

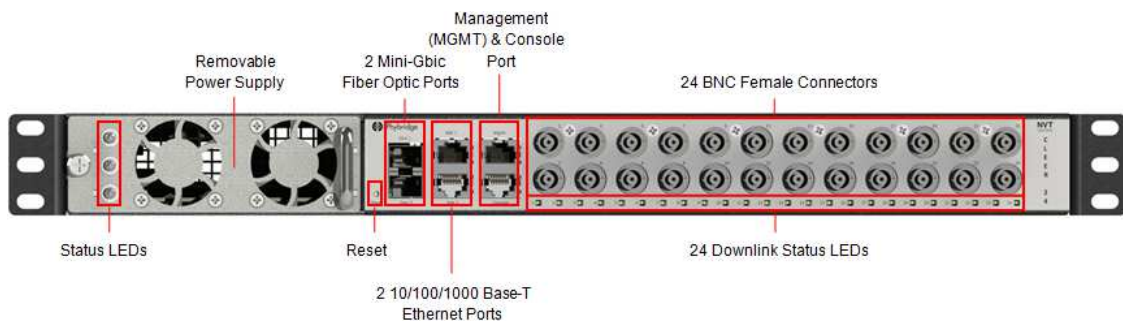
Quick Install Guide

CLEER Managed Switches

Beyond PoE: Delivering Power over Long Reach Ethernet

The CLEER (Coax Leveraged Ethernet Extended Reach) family of data switches delivers Ethernet and Power over Ethernet over Coax cable with multiple times the reach of traditional data switches. With the CLEER24 switch customers can transform their existing Coax infrastructure for IP camera deployment. For complete details refer to the Hardware Installation Guide at www.phybridge.com

CLEER24 Switch



EC-Link

CLEER Package Includes:

1. 1 x CLEER24 Unit
2. 1 x rackmount bracket kit
3. 1 x console cable
4. 1 x power cable
5. Quick Install Guide



EC-Link Package Includes:

1. 2 x EC-Links

Installation Considerations



The ground symbol within a circle identifies the terminal to be connected to an external protective conductor. Connect this terminal to earth ground before you make any other connections to the equipment.

Location and Regional Specifications

The CLEER24 can be installed in any indoor location in all countries except in Finland, Norway and Sweden, where, in these 3 Nordic countries, it must be installed in a restricted access location.

CLEER24 kan installeras på valfri plats inomhus i samtliga länder utom Finland, Norge och Sverige; i dessa nordiska länder måste den installeras på en plats med begränsad åtkomst.

CLEER24 kan installeres overalt indendørs undtagen i Finland, Norge og Sverige, hvor i disse tre nordiske lande den skal installeres på et sted med begrænset adgang.

CLEER24 kan installeres innendørs i alle land unntatt Finland, Norge og Sverige. I disse tre nordiske landene må den installeres på et sted med begrenset tilgang.

Space Requirements

1. Select a standard 19" equipment rack or, for a standalone installation, a flat, stable surface capable of supporting the size and weight of the CLEER24, its installable components and cabling.
2. Ensure that you have enough rack space for all equipment. Shelves and rear supporting brackets are not mandatory.

Location Requirements

Power - The CLEER24 switch must be placed within 6 feet of an available power source. Do not use an extension cord to connect the equipment to a power outlet.

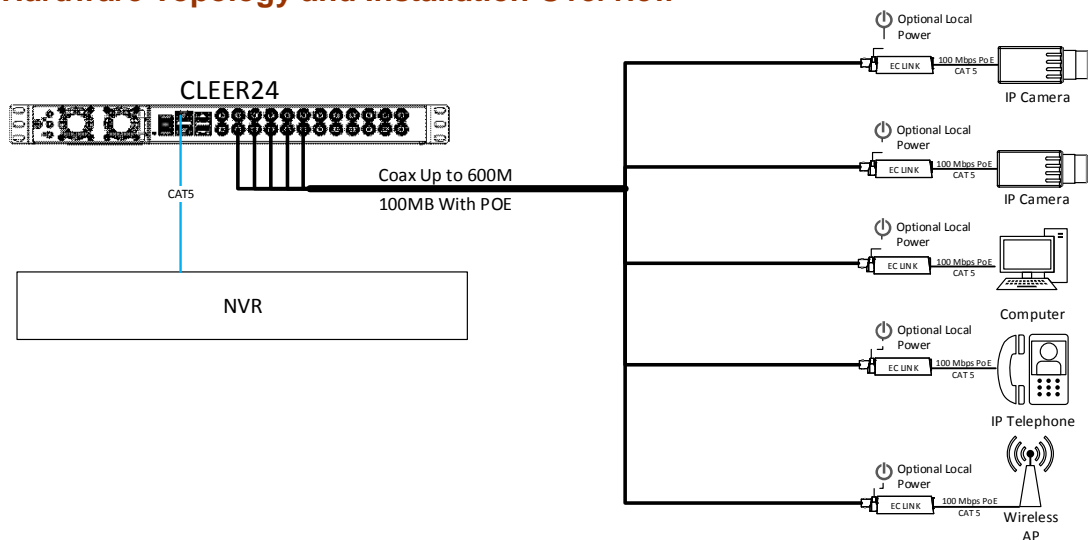
Ventilation - To ensure proper ventilation of the CLEER24, leave at least 2 inches of unobstructed space on all sides of the unit. If the fans are blocked, the unit could overheat.

Downlink – The EC-Link adapters should be installed a minimum of 6 feet away from the CLEER24 switch.

Installation procedures will be trouble-free if you ensure that the following items are available before you begin:

- The CLEER24 switch, and all cables and accessories you received in the CLEER package.
- All EC-Links required for connecting the IP endpoint devices, provided with the product package according to the quantity ordered.
- SFP transceiver modules for the **Gbic** uplink trunks available if connecting over fiber.
- Fiber optic LAN cables for the **Gbic** uplink trunks (user-supplied) if connecting over fiber.
- Standard CAT5e copper LAN cables for the **GbE** uplink trunks (user-supplied).
- Coax cable for the downlink ports (user-supplied).
- Serial console cable for the **CONSOLE** port, provided with the product package.
- Coax cable for the **MGMT** port. Optional, only if out-of band management is required (user-supplied).
- Protective Ground cable (user-supplied).

Hardware Topology and Installation Overview



1. Remove the CLEER24 switch and all accompanying accessories.
2. Install the rackmount brackets for rack mounting. Unit fits in standard 19" racks
3. Install the protective grounding conductor (please refer to the System Grounding section of this guide).
4. Remove all legacy cameras from the Coax cable.

Note: It is extremely important that non-IP, non-PoE cameras are not connected when you power on the CLEER24.
5. Connect an EC-Link to the Network jack on the IP endpoint and connect the BNC Jack on the EC-Link to the Coax cable.
6. Connect the Coax cable to BNC connectors on the CLEER24 switch.
7. Connect the uplink cable from a Gigabit port to the IP PBX or network switch.

Note: This connection also permits inband management over Ethernet.
8. For power share, daisy chain CLEER24 switches using DC cables (see below).
9. Power up the CLEER24.
10. For troubleshooting, please refer to the Hardware Installation Guide located at www.phybridge.com.
11. To revert back to factory defaults, hold the reset button for at least 10 seconds.

Power Capabilities and Considerations

CLEER24 switches come standard with hot swappable PowerWise power supply, for power/load sharing. The switch will support either AC or DC power source.

The switches are amongst the lowest power consuming switches in the industry.

For a redundant power configuration, daisy-chain multiple CLEER24 switches:

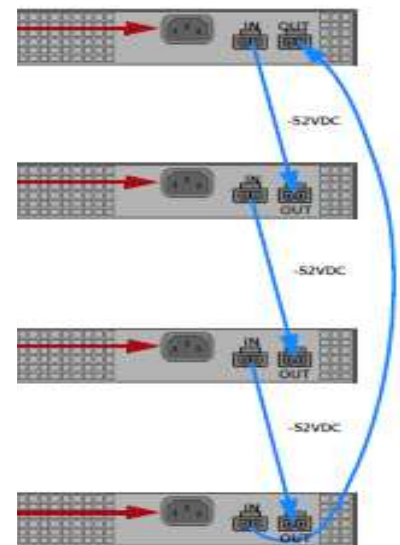
You can connect up to a max. of 4 units for power/load sharing.

- Mount all CLEER24 switches in the same equipment rack, with no more than 1U space between any two units.

Note: You can daisy-chain the units together while they are up and running or power them up afterward.
- Facing the rear of the units, install the DC cables (available through Phybridge) as follows:

Note: To fit properly, the DC cable must be inserted into the DC input/output connector with its hairpin clip on top.
- For the top unit, insert the first cable into the DC input connector on the left until it clicks into place. Bring the other end of the cable down to the next unit, and connect to the DC output connector on the right.
- Continue in the same way for each pair of units, connecting the DC input (left) connector on the upper unit to the DC output (right) connector on the lower unit.

Important: For the bottom unit, the last cable from the DC input (left) connector goes up to the DC output (right) connector on the top unit. **This is required to create a fully redundant ring.**



Note: If you need to move a cable to a different DC connector on the CLEER24, press the hairpin clip at the top of the DC cable and pull the cable out.

Configuring the CLEER24 (2 methods)

Connecting to the Admin GUI

Accessibility:

- In band management via the gigabit uplink ports

Default IP address:

- GBE1 & GBE2 = 192.168.100.1

Default User Name & Password:

- User Name: admin
- Password: admin

Connecting to CLEER24:

1. Change the IP address of your PC or Laptop to 192.168.100.2
2. Connect your Ethernet port on the PC or Laptop to the GBE1 port on the CLEER24.
3. Open a web browser (Chrome only) and type in/go to http://192.168.100.1
4. Login is "admin" password is "admin" (without quotes)
5. You are now in the Admin GUI.

NOTE: Change IP addresses to avoid conflict. (Ethernet/Uplink Ports)

Steps to Change the IP Address:

1. Click on Ethernet menu option on the top bar.
2. Once Ethernet page is displayed select UPLINK PORTS.
3. Type in new IP address in the IP Address section for in-band IP configuration.
4. Type in new Net Mask in the Net Mask section (e.g. 255.255.255.0).
5. Type in new IP address of the system default gateway in the Default Gateway section.
6. Click Save Changes button to apply the modifications.
7. Refer to admin guide for more software details.

Connecting to the Command Line Interface (CLI)

Accessibility:

- Console cable connected directly to the console port

Console Port Serial Settings:

- 115200/8/N/1

Default User Name & Password:

- User Name: admin
- Password: admin

Connect to the console port:

1. Connect the RJ45 end of the serial cable to the console port of the CLEER24. Connect the serial end of the serial cable to the serial port of your PC.
2. Configure your serial port to 115200/8/N/1
3. Login is "admin", password is "admin" (without quotes)
4. You are now connected to the CLI via the console port.

Steps to Change the IP Address:

1. Type in "pal-set-sys-ip GbE 192.168.9.1 255.255.255.0 192.168.9.255" Substitute the provided example IP information for your own.
 - a. The usage is: pal-set-sys-ip GbE <IPADDRESS> <NETMASK> <BROADCAST>
2. You will be prompted to confirm this information
3. Refer to the CLI section of the administration guide for more information.

Changing Management port default IP address

The Mgmt IP default address of 192.168.1.1 may conflict with other CLEER24. To avoid this from happening, you must change the IP address of the Mgmt Port to an IP which will never be used on the network. For example, if your network belongs to "192.168.X.X" subnet, change the Mgmt Port IP to "10.10.1.1".

Steps to Change the Management Port IP Address:

1. Log into the unit via the serial console port (115200,8,N,1,None).
2. Type in "pal-set-sys-ip mgmt 10.10.1.1 255.255.255.0 10.10.1.255" Substitute the provided example IP information for your own.
 - a. The usage is: pal-set-sys-ip mgmt <IPADDRESS> <NETMASK> <BROADCAST>
3. You will be prompted to confirm this information.
4. Refer to the CLI section of the administration guide for more information.

Note the following:

All of the above instructions provide basic installation information, necessary for the proper and safe functioning of this equipment. Persons installing or maintaining this product must read all of the safety instructions and the parts of system grounding which are applicable to the system being maintained. Only trained, qualified service personnel shall install or maintain this product.



WARNING: FAILURE TO FOLLOW ALL INSTRUCTIONS MAY RESULT IN IMPROPER EQUIPMENT OPERATION AND/OR RISK OF ELECTRICAL SHOCK.



ANY CONNECTION TO AN OUTSIDE PLANT LEAD, AN OFF-PREMISE APPLICATION, OR ANY OTHER EXPOSED PLANT APPLICATION MAY RESULT IN A FIRE OR SHOCK HAZARD, AND/OR DEFECTIVE OPERATION, AND/OR EQUIPMENT DAMAGE.

- Keep these instructions with the equipment.
- Do not attempt to install or service this equipment unless you are skilled in the installation and maintenance of electronic telecommunications equipment and have successfully completed specific training for this equipment.

Safety Warnings and Precautions			
Access to the interior of this unit shall be made only by a qualified technician.	Der Zugang ins Innere des Gerätes ist nur einem fachlich qualifizierten Techniker gestattet.	Seul un spécialiste doit avoir accès l'appareil.	El servicio de antenimiento y reparación de esta unidad solo puede ser realizado por técnicos autorizados por el fabricante.
This unit may have more than one power input. To reduce the risk of energy or shock hazard, disconnect all power inputs before servicing the unit.	Dieses Gerät kann mehr als eine Leistungsaufnahme. Um das Risiko von Energie oder Gefahr eines elektrischen Schlags zu reduzieren, trennen Sie alle Macht Eingaben, bevor Wartungsarbeiten an der Einheit.	Cette unité peut avoir plus d'une entrée d'alimentation. Pour réduire le risque de danger de l'énergie ou de choc, débranchez toutes les entrées d'alimentation avant de réparer l'unité.	Esta unidad puede tener más de una entrada de energía. Para reducir el riesgo de peligro de descargas eléctricas o descargas eléctricas, desconecte todas las entradas de alimentación antes de reparar la unidad.
To ensure adequate cooling of the equipment, a 2inch unobstructed space must be provided around all sides of the unit.	Um die Kühlung des Gerätes nicht zu beeinträchtigen, ist es notwendig, an allen Seiten des Gerätes ca 5 cm Raum zu lassen.	Afin de ne pas nuire au processus de refroidissement, il est nécessaire de laisser un espace d'environ 5 cm de chaque côté de l'appareil.	No bloquee las ranuras de ventilación del equipo, ya que los componentes podrían sobrecalentarse y sufrir daños.
The Power Socket shall be installed near the equipment and shall be easily accessible.	Stellen Sie das Gerät in der Nähe eines geerdeten Schutzkontaktsteckers so auf, dass der Stecker leicht erreichbar und zugänglich ist.	Placez l'appareil près d'une prise de courant facilement accessible.	Para evitar el riesgo de choque eléctrico o de incendio, reemplace el fusible con otro del mismo tipo y capacidad nominal.
To prevent the risk of shock or fire hazard, replace fuse with same type and rating.	Zur Vermeidung der Stromschlag - und Feuergefahr beim Auswechseln Sicherungen des gleichen Typs und der gleichen Nennleistung einsetzen.	Afin d'éviter tout risque d'incendie ou d'électrocution, remplacez les fusibles par des fusibles de même type et de même ampérage.	Para su propia protección, cerciórese de que todas las conexiones eléctricas de los servicios públicos, incluyendo la puesta a tierra, las líneas telefónicas y el sistema de tuberías de agua metálicas internas, si las hubiera, estén conectadas entre sí.
CAUTION: The ground lug is a main earth terminal that must be permanently connected to earth.	VORSICHT: Die Erdungsöse ist einer der wichtigsten Erdungsklemme, die dauerhaft auf die Erde angeschlossen werden muss.	ATTENTION: La cosse de terre est une borne de terre principale qui doit être connectée en permanence à la terre.	PRECAUCIÓN: El terminal de tierra es un terminal de tierra principal que debe estar permanentemente conectada a la tierra.

System Grounding (Earthing)

General Grounding



WARNING: GROUND ALL SYSTEMS ACCORDING TO THESE INSTRUCTIONS BEFORE YOU CONNECT POWER LEADS. FOLLOW GROUNDING INSTRUCTIONS EXPLICITLY TO ENSURE THE SAFETY OF PERSONNEL.

Cabinets always require redundant and independent equipment grounding conductors between the cabinet and the wiring system ground: an insulated grounding conductor and a supplementary (protective) ground.

Grounding Conductor

The grounding conductor is provided as part of the three-wire, 15-Amp, AC-power cord set included with the equipment. If the power cord must be replaced, use a power cord of the same gauge that has the same insulation, number of conductors, and usage ratings.

Protective Grounding Conductor

Install the protective grounding conductor to the system.



The ground symbol within a circle identifies the terminal to be connected to an external protective conductor. Connect this terminal to earth ground before you make any other connections to the equipment.

The protective grounding conductor must be:

- An Insulated wire, #5 (13mm²) to #14 (2mm²) AWG, with green and yellow stripes
- Connected to the grounding stud on the back of the cabinet.

Compliance and Environmental information

All the compliance and environmental information is available on our website www.phybridge.com

Technical Support

The **Phybridge Technical Support Group** is available to assist you with product installation, configuration, monitoring and troubleshooting procedures. Should you experience trouble with this equipment or for repair or warranty information, please contact Phybridge Inc. at **+1 905.901.3633** or support@phybridge.com.

Technical Specifications

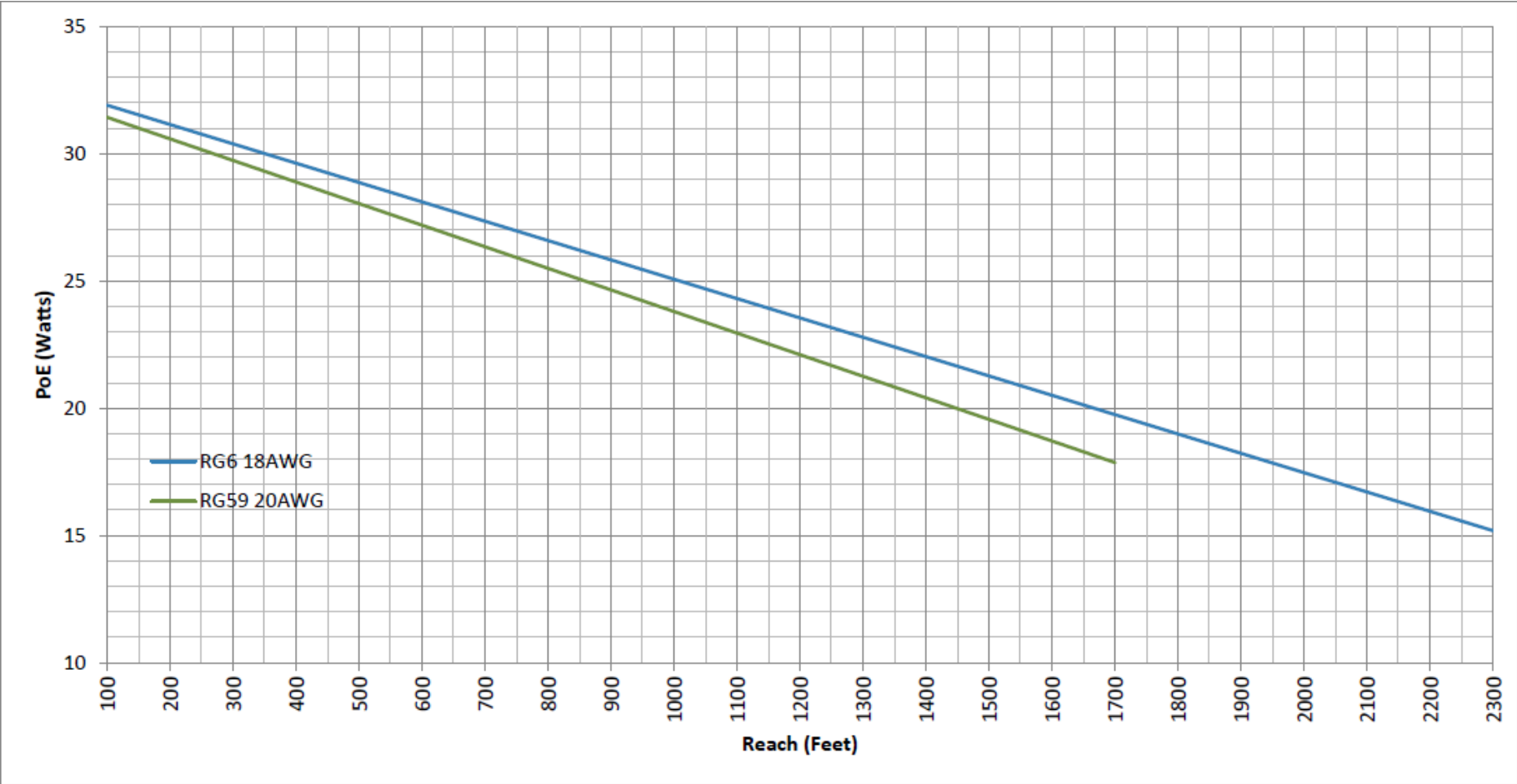
CLEER24	
Dimensions	19 inches x 1U Without rack ears: 4.45cm x 43.5cm x 25.2cm (HxWxD), 1.75" x 17.13" x 9.92" (HxWxD)
Weight	3.6 kg (7.94 lb.)
Mounting	Standalone or rack or shelf-mountable 2 brackets included for installation
Processor	Broadcom BCM56018 switch processor, 266MHz
Memory	32MB FLASH, 64MB DDR SDRAM

Interface: Ethernet uplink (Trunk IP)	Maximum 2 uplinks, each 1Gb/s (full duplex), either: <ul style="list-style-type: none"> • 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 autosensing, independent speed selection, Ethernet IEEE 802.3, CAT5e copper cable
Interface: Downlink (PoE and IP to adapter)	24 x BNC Jacks Speed: 100Mb/s (full duplex) PoE power: 30 Watts Maximum (see Appendix) Maximum distance: 1500' (457M) over RG59 COAX Cable 1600' (487M) over RG6 COAX Cable 2000' (609M) over RG11 COAX Cable 24 x Status LEDs: Configuration options: Link Activity / Link / Off
Management	1 LAN port (MGMT): RJ45, 10/100 Base-T autosensing, IEEE 802.3 1 UART console port: RJ45 (RJ45 to DB9 cable included)
Power supply	Hot-Swappable Power Supply Unit Autosensing 100-240VAC, 50/60 Hz Power output: 500W max at 100VAC, 1000W max at 240VAC
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: 48VDV to 56VDC
Operating temperature	-10° C to 50° C
Humidity	10% to 95% (non-condensing) at 35° C

EC-Link

Dimensions	2.1cm x 3.2cm x 8.8cm (HxWxD); 0.83" x 1.23" x 3.46" (HxWxD)
Weight	42 g (1.48 oz.)
Mounting	Inline between the CAT5 cable (to IP endpoint) and the COAX cable (to CLEER/EC Switch) Inline between the CAT5 cable (to IP endpoint) and the COAX cable (to a second EC-Link when used as an Extender)
COAX Interface	1 BNC port: COAX cable – RG59, RG11, RG6.
Ethernet Interface	1 RJ45 port: 100 Base-T, IEEE 802.3af/at
Power injection (PoE)	DC voltage on RJ45 port: <ul style="list-style-type: none"> • 37V – 56V Endpoint devices must be compliant with IEEE 802.3af/at
DC IN (Screw Terminal)	Optional <ul style="list-style-type: none"> • 48V – 56VDC via an external AC/DC Power Adapter (IEC Class II isolated only)
Power consumption	0.9W
Operating temperature	-50° C to +70° C
Humidity	10% to 95% (non-condensing) at 35° C

Appendix A: Power vs. Reach



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