



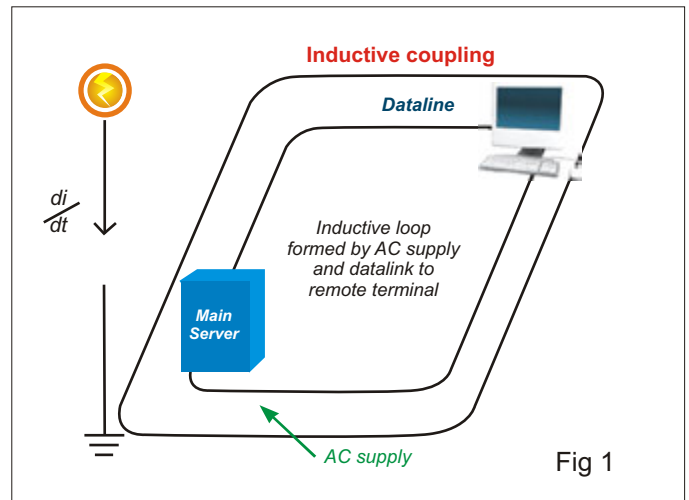
DATA
COMMUNICATIONS
CATALOGUE

LIGHTNING AND SURGE PROTECTION

PROTECTION FOR DATA LINES - INTRODUCTION

The growth in office automation increasingly connects computers and associated equipment to each other via communication links. The rate at which miniaturisation is taking place also makes this type of equipment very susceptible to interference from outside sources such as induced lightning, load switching and electrostatic discharge. Figure 1 shows how inductive coupling of surge currents takes place.

In local or wide area networks, the server and terminals are interconnected by copper cables for power and data requirements. It is seldom that both of these conductors run in the same cable ducting, with the result that numerous 'inductive loops' are formed by the power cable on the one hand and the data cable on the other. Surge currents flowing in metallic conductors produce a change in magnetic field, which will induce a voltage into the loop formed as described above.



The greater the rate of change of the surge current, the higher the voltage that will be induced in a given loop.



100 Base T 24 port unit



100 Base T Single port unit
Example of network protection products

Clearline's extensive range of Data Protectors fall into three categories:

Short circuit protection

These surge protection devices operate in short circuit mode and divert the harmful interfering energy to a path away from the equipment. This range includes a combination of coarse and fine protection circuitry, which results in large current handling capabilities with extremely fast response times. These devices are engineered to have low insertion loss to maintain system performance

Isolation protection

This is an improved form of protection as the protection device physically isolates the equipment from the communication line. It provides isolation, yet is totally transparent to data flow. Short circuit protection has been provided to prevent harmful surges from exceeding the isolation barrier. Use of opto-couplers is made for devices up to 5MHz and radio frequency technology transformers for devices up to 200MHz.

Fibre optic protection

This is the best form of protection as non-conductive cable is used, which has high bandwidth capabilities. Clearline's new fibre models include devices for RS485 and CCTV applications.

RS232 PROTECTORS

Uses avalanche diode technology and allows high data rates with minimal signal loss. Suitable for the protection of short haul modems, concentrators and other communications devices.

Features:

- Easy installation
- In-line connection
- Compact design
- Failsafe protection



Order code: 12-00768



Order code: 12-00676

Specifications		
Order codes	12-00768	12-00676
Max. operating voltage	15VDC	15VDC
Max. discharge current 8/20 differential mode	500A	500A
Max. discharge current 8/20 common mode	500A	500A
Residual voltage at 8/20 differential mode	Approx. 25V	Approx. 25V
Residual voltage at 8/20 common mode	90V	90V
Response time	1nS	1nS
Pins protected	1-9	1-25
Series resistance/line	None	None
Temperature range	-20°C to +70°C	-20°C to +70°C
Connectors	D9 subminiature	D25 subminiature

SERIES 130

This unit is designed for the protection of multiple signal lines for data, alarm panels, process control, audio and access control panels. Easy to use, these devices have small footprints and connections are made by means of screw connectors.

Features:

- Compact size
- Easy installation
- Screw terminations
- High surge capability

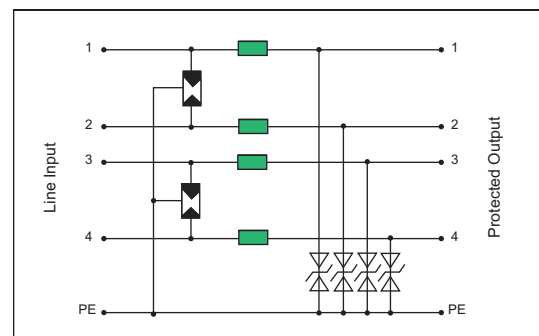


Order code: 12-00012

Specifications	
Max. discharge current 8/20	10kA
Max. continuous current	0.3A
Response time	<10nS
Number of protected lines	4

Order codes	
Model	Voltage
12-00011	+/-6VDC
12-00012	+/-15VDC
12-00087	+/-25VDC

Circuit Diagram



SERIES 701

This heavy duty unit is designed for the protection of multiple signal lines for data, alarm panels, process control, audio panels, intercom and access control panels. Easy to use, these devices have small footprints and connections are made by means of screw connectors.

Features:

- Compact size
- Easy installation
- Screw terminations
- High surge capability

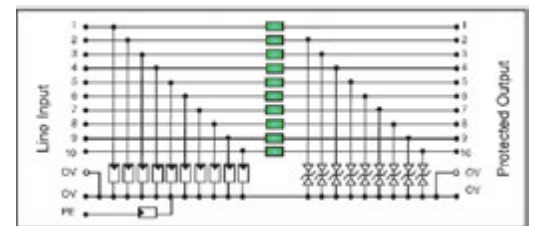
Specifications	
Max. discharge current 8/20	5kA
Max. continuous current	1.0A
Response time	<10nS
Number of protected lines	6 or 10

Order codes		
6 Way	10 Way	Voltage
12-00353	12-00335	+/-15VDC
12-00204	12-00218	+/-25VDC



Order code: 12-00335

Circuit Diagram (10 way unit)



MULTIPLE SIGNAL LINE PROTECTORS

This unit is designed for the protection of multiple signal lines for data, alarm panels, process control, audio panels, intercom and access control panels. Easy to use, these devices have small footprints and connections are made by means of screw connectors.

Features:

- Compact size
- Easy installation
- Screw terminations
- High surge capability

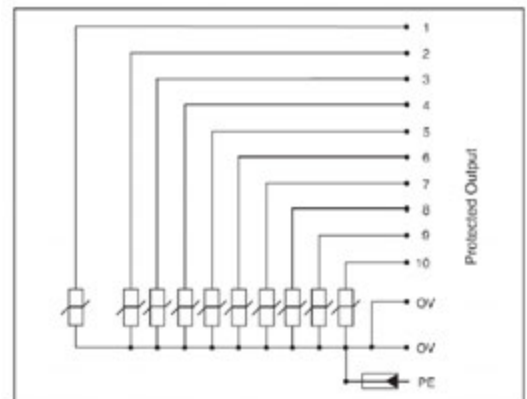
Specifications	
Max. discharge current 8/20	2500A / 2.5kA
Max. continuous current	5A
Response time	<25nS
Number of protected lines	10

Order codes	
Model	Voltage
12-00185	+/-15VDC
12-00187	+/-36VDC



Circuit Diagram

Order code: 12-00185



DIN-RAIL PROTECTORS

These Din-rail mount devices offer high surge protection in a compact design. Suitable for: RS232, RS422 and general signal line circuits. These units have a small footprint, allowing many units to be used side by side in single cabinets.

Features:

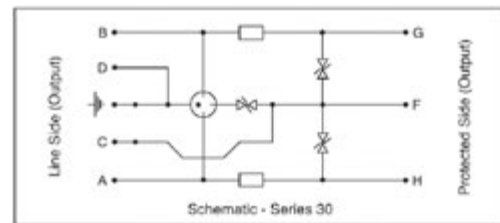
- Din-rail mount
- Compact design
- Low residual voltage
- High surge capability
- High density protection



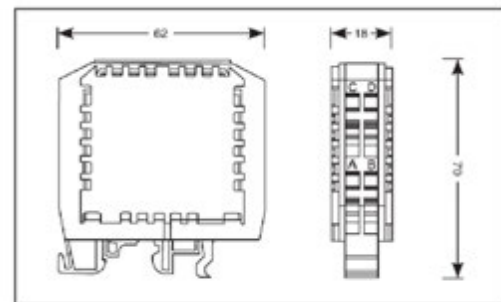
Order code: 12-00439

Specifications	
Max. operating voltage	See table above
Max. continuous current	0.3A
Max. discharge current 8/20 differential mode	10kA
Max. discharge current 8/20 common mode	10kA
Residual voltage at 8/20 differential mode	Approx. 3 X Vmax
Residual voltage at 8/20 common mode	Approx. 3 X Vmax
Series resistance	22Ω
Temperature range	0 to +70°C

Circuit Diagram



Dimensions



Order codes		
Operating VDC	Operating VAC	Series 30
+/-6V	N/A	12-00439
+/-12V	8.5V	12-00446
+/-24V	17V	12-00447
+/-36V	25V	12-00448

* Other voltages available on request.

HIGH SPEED RS485

A protection device for high speed RS485 data lines. Speeds in excess of 5Mbits/s may be utilised with low clamping voltage. Ideal for access control and CCTV - PTZ applications. Small footprint with Din-rail mounting.

Features:

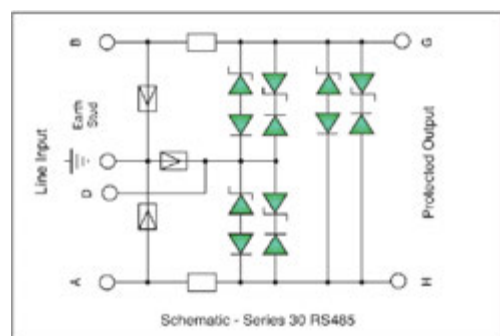
- Din-rail mount
- Low residual voltage
- High density protection
- Compact design
- High surge capability



Order code: 12-00347

Specifications	
Max. operating voltage	5V
Max. continuous current	0.3A
Max. discharge current 8/20 differential mode	10kA
Max. discharge current 8/20 common mode	10kA
Residual voltage at 8/20 differential mode	Approx. 3 X Vmax
Residual voltage at 8/20 common mode	Approx. 3 X Vmax
Series resistance	3.3Ω
Temperature range	0 to +70°C

Circuit Diagram



ISOPAC OPTO-ISOLATOR FOR RS485

This Din-rail mount protector provides high galvanic isolation and induced lightning protection between two communication devices in a RS485 environment.

Features:

- Very high isolation
- Eliminates ground loops
- High data rates supported
- Effective lightning protection
- Signal regeneration and line driver capability

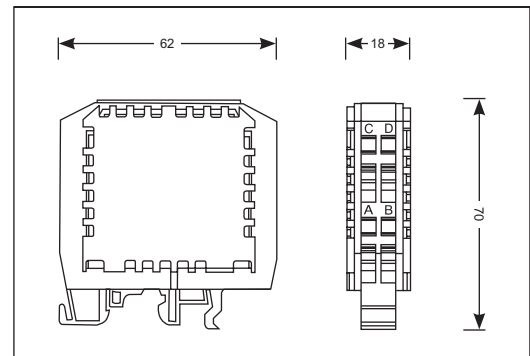


Order code: 12-00872

Specifications	
Order code	12-00872 RS485-RS485
Max. operating voltage	+/-5VDC
Max. discharge current 8/20 differential mode	100A
Residual voltage at 1kV 1.2/50 differential mode	<22V
Transmission mode	Half Duplex
Transmission distance	>100m
Data speed	>1Mbits/s
Signal lines (copper)	Rx/Tx
Number of wires (copper)	2 to 2
Input-Output isolation	>4kVDC
External power requirements	5VDC

*Optional power supply 12-00923

Dimensions



Din Rail Power Supply

This din rail power supply, supplies 2 x 5V isolated outputs at 0.5A each for use with the RS422 or RS485 fibre optic converters. Easy to install, these units clip onto a standard 35mm din rail. Connections are via screw terminals and power indicators have been provided.



Order code: 12-00923

USB ISOLATION PROTECTION

Features

- **Galvanic Isolation** of USB connections between a PC and USB device up to min. 2500 V
 - **Transparent:** Can be integrated into USB connections without any changes in software. No drivers required
 - Data transmission with **low-speed and full-speed protocol**
 - IP40 protected, class 2, optional EN 60601-1-2
 - Size (mm LxWxD) 92 x 55 x 28mm
 - Suitable for: All types of interfaces using USB-A to USB-B.
- Galvanic isolation prevents damage to host computer and interfaces.



Order code: 12-00034

Specifications	
Power Supply	Via USB-B female from host (+5V, ~ 350mA). Secondary power via internal DC/DC converter. Current of 350mA. A version of the device with external power supply/battery is available on request.
LED Display	LED green - Power available
Data transmission	Bidirectional, half duplex, master~slave. Low speed 1.5Mbit/s , full speed: 12Mbit/s
Signal	Throughput time ~50ns, distortion ~5ns, Versatz ca. 1 ...3ns
Isolation voltage	Min. 2500V
Response time	Host: USB-B Device/Secondary: USB-A
Size (mm)	92 x 55 x 28mm
Case	IP40, class 2

USB Connectors

The most popular connector types for USB:



USB Type A Connector

Normally on PC/Hub side



USB Type B Connector

Normally on USB device side

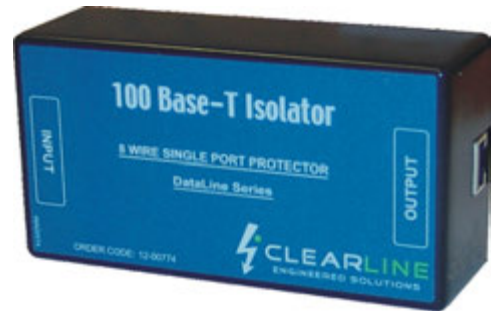
100 BASE T ISOLATION RANGE

Protects Fast Ethernet LAN equipment, such as hubs, switches and network interface cards from induced lightning and ground potential differences, by galvanically isolating the connected equipment.

Supports 8 wire 100 Base T isolation. 100 Base T configurations and provides complete isolation. Available as a stand alone unit.

Features:

- Each pair supports 100Mbps/s
- Very low insertion loss and crosstalk
- Galvanic isolation, eliminates ground potential differences

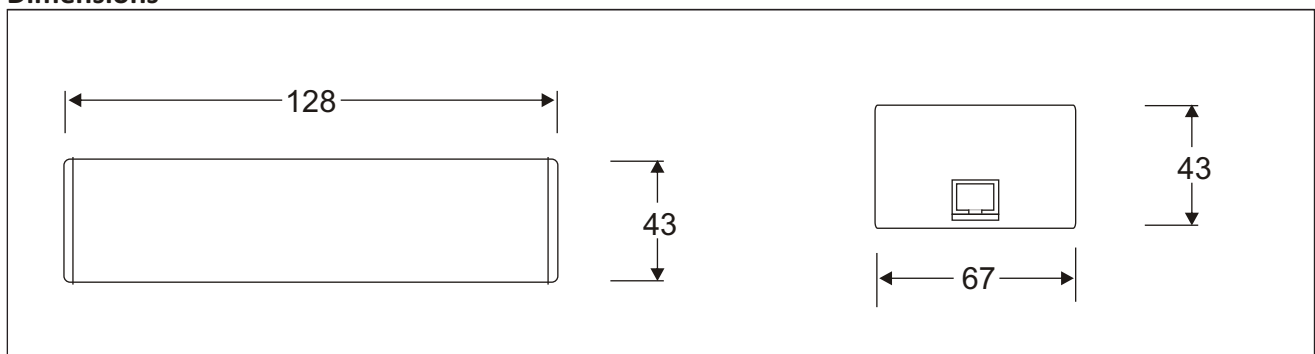


Order code: 12-00774

Specifications			
Single port			
Max. discharge current 8/20 differential mode	2.5kA (8/20)		
Isolation	14kV		
Pairs isolated (8-wire)	1-2 & 3-6 & 4-5 & 7-8		
Data rate	>100Mbps/s		
Standards compliance	Fast Ethernet 802.3U, IEC 11801 and IEEE 802.3		
Test frequencies in MHz	20	62.5	100
Insertion loss in dB (with RJ45 sockets)	-0.6	-0.8	-1.1
Next (limits as per IEC 11801)	-5.3 (35)	-51.8 (27)	-46.3 (24)
Return loss (limits as per IEC 11801)	-25.3 (15)	-21.9 (10)	-16 (10)

Order codes	
Model	
12-00774	100 Base T single

Dimensions



100 BASE T POWER OVER ETHERNET

Protects Fast Ethernet LAN equipment, such as hubs, switches and network interface cards from induced lightning and Base VG. EIA/TIA 568B category 5 patch leads included.

Features:

- All 8 lines protected
- Very low insertion loss
- Each pair supports 100Mbps/s



Order code: 12-00369

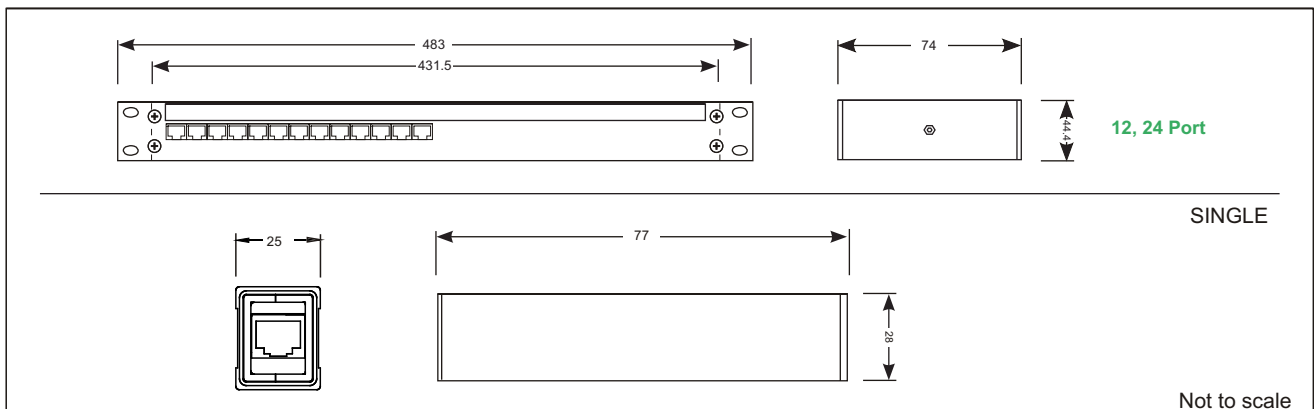
Order codes	
Model	
12-00354	Single protectors
12-00371	12 Port 19" rack mount
12-00369	24 Port 19" rack mount



Order code: 12-00354

Specifications			
Max. discharge current 8/20 coarse protection	4.5kA		
Max. discharge current 8/20 fine protection	300A		
Max. clamping voltage	<70V (1.2/50)		
Pairs protected	1-2, 3-6, 4-5, 7-8		
Data rate	>200Mbps/s		
Bandwidth (3dB) per pair	>350MHz		
Standards compliance	Fast Ethernet 802.3u, IEC 11801 and IEEE 802.3		
Test frequencies in MHz	20	62.5	100
Insertion loss in dB (with RJ45 sockets)	<0.10	<0.10	<0.30
Next (limits as per IEC 11801)	>43 (35)	>32.4 (27)	>33.6 (24)
Return loss (limits as per IEC 11801)	>27.8 (15)	>31.4 (10)	22.8 (10)

Dimensions



CAT 6 FAST ETHERNET PROTECTED PATCH CORD

Suitable for speeds up to 350MHz, these fast Ethernet protectors comply with the requirement of IEEE 802.3 to protect switches and communication cards from induced surges and lightning. Protects Fast Ethernet LAN equipment, such as hubs, switches and network interface cards from induced lightning and electrostatic discharge.

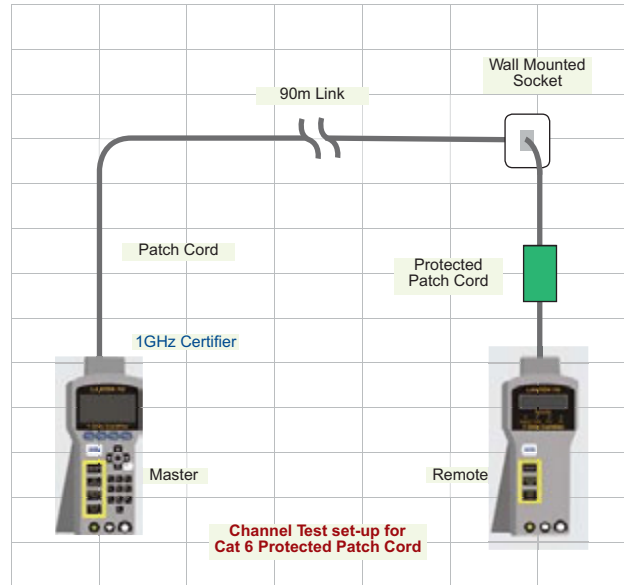
Supports category 6 configurations: Compatible to 100 Base T and 1000 Base T. Cord connects via RJ45 sockets between wall connection point and local PC.

Features:

- All 4 pairs protected
- Negligible insertion loss
- Each pair supports 250Mbits/s

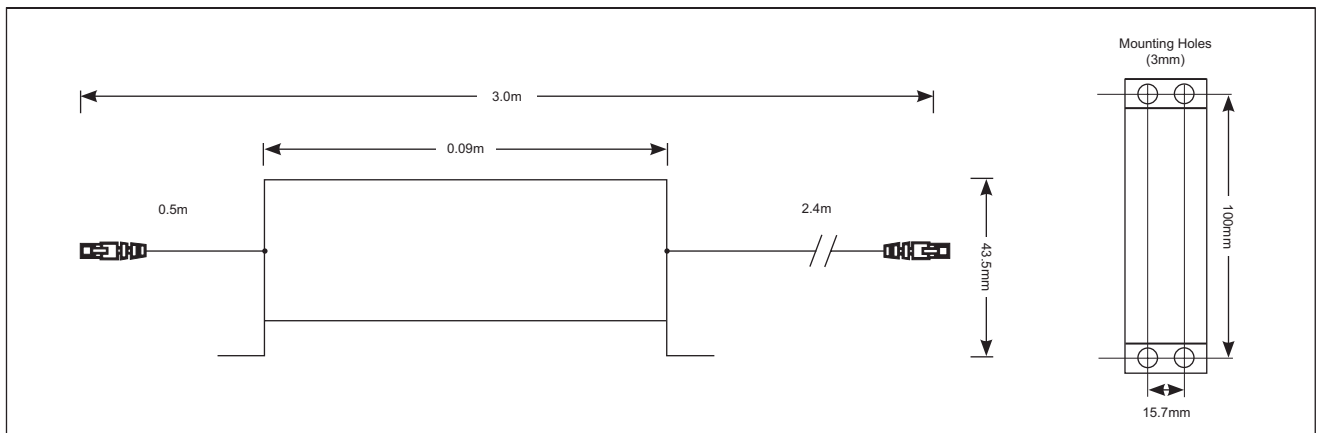


Order code: 12-00484



Specifications		POE Specifications
Max. discharge current 8/20 coarse protection	10kA	10kA (8/20)
Max. discharge current 8/20 fine protection	300A	300A (8/20)
Max. clamping voltage	<10V 1.2/50	<60V (1.2/50)
Pairs protected	1-2, 3-6, 5-4, 7-8	1-2, 3-6, 5-4, 7-8
Data rate	>250Mbits/s	Up to at least 250 Mbits/s
Bandwidth (3dB) per pair	>350MHz	>350MHz
Standards compliance	Fast Ethernet 802.3u and IEEE 802.3	
Test frequencies in MHz	100	250
Attenuation (limits as per IEC 802.3)	<20.8 (21.8)	<33.8 (35.9)
Next (limits as per IEC 11801)	<39.9 (40.0)	<33.1 (33.1)
Return loss (limits as per IEC 802.3)	<10.2 (12.0)	<8.0 (8.0)

Dimensions



This data sheet is subject to change without notice, in line with Clearline's policy of continued development.

DATA

CAT 6 FAST ETHERNET PROTECTED PATCH PANEL

Protects Fast Ethernet LAN equipment, such as hubs, switches and network interface cards from induced lightning and electrostatic discharge. Supports category 6 configurations: 100 Base T and 1000 Base T. Available as a 24 port 19" 1U rack mount unit. **Complies?**

Cords from floor points are connected via IDC connectors and RJ45 sockets are provided for pairing to switch/hub equipment.



Features:

- All 8 lines protected
- Negligible insertion loss
- Each pair supports 250Mbits/s

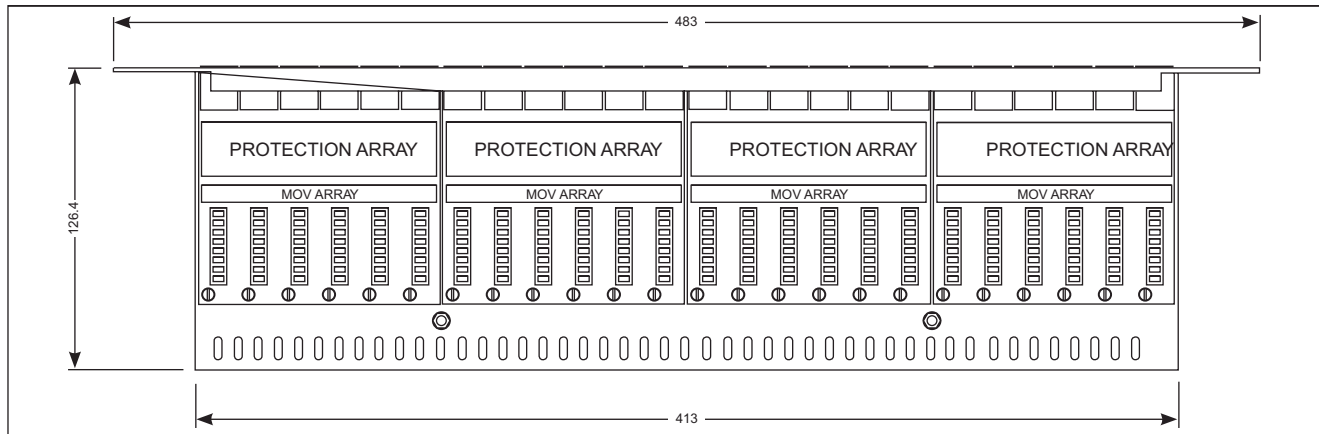
Order code: 12-00486

Order codes		
Model		POE
12-00486	24 Port 19" rack mount	
12-00456	12 Port 19" rack mount	



Specifications		POE Specifications
Max. discharge current 8/20 coarse protection	10kA	10kA (8/20)
Max. discharge current 8/20 fine protection	300A	300A (8/20)
Max. clamping voltage	<10V 1.2/50	<60V (1.2/50)
Pairs protected	1-2, 3-6, 5-4, 7-8	1-2, 3-6, 5-4, 7-8
Data rate	>250Mbits/s	Up to at least 250 Mbits/s
Bandwidth (3dB) per pair	>350MHz	>350MHz
Standards compliance	Fast Ethernet 802.3u and IEEE 802.3	
Test frequencies in MHz	100	250
Attenuation (limits as per IEC 802.3)	<20.8 (21.8)	<33.8 (35.9)
Next (limits as per IEC 11801)	<39.9 (40.0)	<33.1 (33.1)
Return loss (limits as per IEC 802.3)	<10.2 (12.0)	<8.0 (8.0)

Dimensions



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DATA

CCTV PROTECTION

A range of protection devices for the protection of CCTV, security and video systems. Offering high surge capability and low insertion loss, these units provide excellent immunity to surges emanating from lightning and switching interference.

Features:

- Easy installation
- Low insertion loss
- Failsafe protection



Order code: 12-00199



Order code: 12-00299

Specifications		
Order codes	12-00199	12-00299
Max. operating voltage	1V p-p	1V p-p
Max. discharge current 8/20 differential mode	2kA	2kA
Insertion loss at 10MHz	0.08dB	0.08dB
Connectors BNC	M/F	F/F

COMBINED PROTECTION

A combination protector that protects both power and data on CCTV and video systems. This device, when correctly installed, will provide excellent protection even in the presence of poor earthing systems. A combined video and power surge arrester, based on the surge platform concept to fully protect a camera system even where no connection to earth is available.

Features:

- Easy installation
- Low insertion loss
- Failsafe protection



Order code: 12-00027



Order code: 12-00499

Specifications		
	12-00027	12-00499
Max. Operating voltage	1V p-p	1V p-p
Max. Operating current	0.3A	0.3A
Max. Operating current (Differential mode)	2kA	2kA
Max. discharge current (Common mode)	2kA	2kA
Residual voltage (Differential mode at 5kA (8/20))	<2.5V	<2.5V
Insertion loss at 10MHz	0.08dB	0.08dB
Connectors	BNC F-F	BNC F-F
Temperature range	-10°C to 70°C	-10°C to 70°C
Application	CCTV Composite	CCTV Composite

VIDEO PROTECTED PATCH PANEL

This 12-00321 is a 483mm (19inch) 1U rack mountable patch panel that allows up to 16 coaxial protectors to be fitted. This unit offers cable management. This unit is ideal for protecting video inputs to DVR's.

Features

- Easy installation
- Low insertion loss
- Failsafe protection



Order code: 12-00321

Specifications	12-00614	12-00321	12-00503
Panel loaded with:	16 x 12-00199	16 x 12-00299	Panel Only

Note

It is crucial to ensure that the power and video inputs are protected and that the two protection devices are bonded together to the electrical earth.

Order codes	
Model	
12-00321	16 x 12-00299
12-00614	16 x 12-00199
12-00503	Panel only

100 BASE T

Protects Fast Ethernet LAN equipment, such as hubs, switches and network interface cards from induced lightning and electrostatic discharge. Supports the full compliment of 100 Base T configurations: 100 Base Tx, 100 Base T4 and 100 Base VG. Available as a stand alone unit or as a 12 to 24 port 19" 1U rack mount unit. EIA/TIA 568B category 5 patch leads included.

Features:

- 4 lines protected
- Very low insertion loss
- Each pair supports 100Mbps/s



Order code: 12-00667

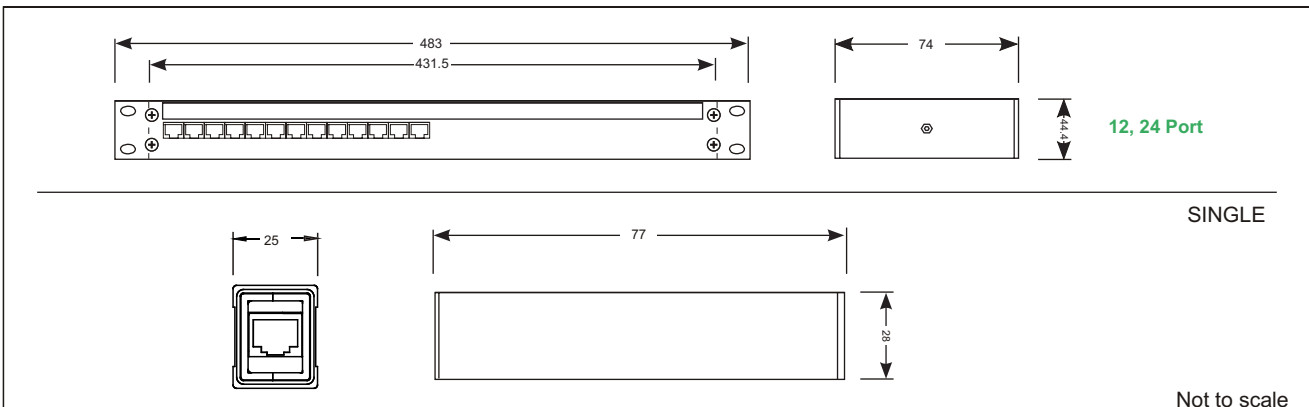
Order codes	
Model	
12-00670	Single Unit
12-00677	12 Port 19" rack mount
12-00667	24 Port 19" rack mount



Order code: 12-00670

Specifications			
Max. discharge current 8/20 coarse protection	2500A		
Max. discharge current 8/20 fine protection	300A		
Max. clamping voltage	<10V 1.2/50		
Pairs protected	1-2, 3-6		
Data rate	>100Mbps/s		
Bandwidth (3dB) per pair	>220MHz		
Standards compliance	Fast Ethernet 802.3U, IEC 11801 and IEEE 802.3		
Test frequencies in MHz	20	62.5	100
Insertion loss in dB (with RJ45 sockets)	0.13	0.39	0.83
Next (limits as per IEC 11801)	>40.7 (35)	>30.7 (27)	>29.1 (24)
Return loss (limits as per IEC 11801)	>27.8 (15)	>31.4 (10)	22.8 (10)

Dimensions



DATA

RF LINE ANTENNA INPUT PROTECTION

A complete range of coaxial protection devices for HF, VHF and UHF systems. Mates with BNC, SO239 and N-Type connectors. Frequencies up to 2.5GHz. Can be used on distributed TV cable installations.

Features:

- Compact design
- Low insertion loss
- High power capability



Order code: 12-00297



Order code: 12-00121



Order code: 12-00296



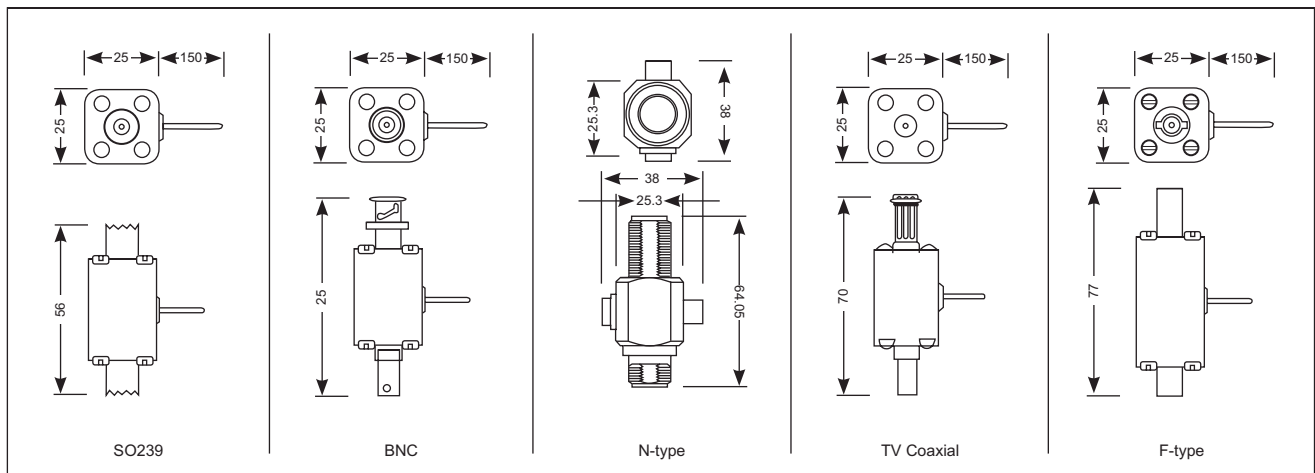
Order code: 12-00118



Order code: 12-00122

Specifications					
Order codes	12-00297	12-00121	12-00296	12-00118	12-00122
Max. operating voltage	600VDC	600VDC	600VDC	48VDC	48VDC
Operating current (watts-50Ω)	500	500	500	-	-
Max. discharge current 8/20	10kA	10kA	10kA	10kA	10kA
Residual voltage (50Ω performance)	Approx. 100V	Approx. 100V	Approx. 100V	Approx. 100V	Approx. 100V
VSWR at 500MHz/50Ω	1.05:1	1.05:1	1.05:1 / 2500MHz	1.05:1	1.05:1
Insertion loss at 500MHz	0.1dB	0.1dB	0.1dB	0.1dB	0.5dB at 1GHz
Temperature range	-20°C to +70°	-20°C to +70°	-20°C to +70°	-20°C to +70°	-20°C to +70°
Applications	Radio communications transceivers			TV systems	Satellite systems
Connectors	SO239	BNC	N-type	TV	F-type

Dimensions



DATA

COMBINATION PROTECTION DEVICES - INTRODUCTION

In many instances, installed protection devices fail to offer the required protection and equipment still suffers damage. The installation of these devices plays a major part in the effectiveness of the protection system. Clearline has used its patented “equipotential platform technology” to provide “Plug and Play” products that allow the user to install protection products and still have the assurance that the equipment will be protected. It is essential that all inputs and outputs to equipment are protected through the same device.

Features:

- Compact size
- Plug-and-play installation
- Status indication
- Power and data protection
- Failsafe protection

Telecommunication Protection

Devices are available to protect fax machines, digital copiers, laptops and other equipment connected to a subscriber, ISDN communication line.



Order code: 12-00169 (IEC)

Lan Protection

These lightweight units are ideal for laptops and personal computers. Easy to use, these devices simply fit in line with the lan socket and power plug. The combotector allows protection for modem, lan and power in one unit.



Order code: 12-00539 (IEC)



Order code: 12-00462 (IEC)



Network cable supplied for both Lantector and Combotector Protection range.



Modem patch lead supplied for the Combotector Protection range only

Professional Protection Series

The Duoline range offers exceptional power filtration with data protection in an aluminium extruded high quality casing. A Combination of various socket outlets are available with protection modules for modems, ISDN, ADSL, 100 Base T, TV and satellite TV services. Status indication, failsafe and thermal protection are all standard features on these units.



Order code: 12-00003
(Computer Protector)

Compact Computer and Video Protectors

The compact ranges of protection units are low cost protectors for domestic computer and video equipment. Utilizing Clearline’s “surge platform” concept these devices may be used for effective protection for all home equipment connections to telephone and video antennas.



Order code: 12-00198

TELECOMMUNICATIONS PROTECTION

The Faxtector is a lightweight protection unit suitable for the protection of fax machines and digital copiers. It features high energy surge protection and filtration, as well as failsafe thermal and overload disconnection.

Features:

- Compact size
- Plug-and-play installation
- For analogue and ISDN applications
- Power and data protection incorporates surge platform concept



Modem patch lead



Order code: 12-00169 (IEC)

Specifications	
	SA / 16A
Max. continuous voltage	250VAC 50Hz
Max. continuous current	6A
Max. discharge current 8/20 ismax L-L	4.5kA
Max. discharge current 8/20 ismax L-E	4.5kA
Residual voltage at ismax L-L	900V typ.
Residual voltage at ismax L-E	900V typ.
Response time	<25nS
Power connectors	16A round pin
Standards compliance	IEC 950, ANSI C62.41
Data module	
Max. operating voltage	230VDC
Max. operating current	0.3A
Max. discharge current 8/20 ismax L-L	20kA
Max. discharge at current 8/20 ismax L-E	20kA
Residual voltage at ismax L-L	70V typ.
Residual voltage at ismax L-E	100V typ
Number of wires protected	2
Data speed	128kBits/s
Data protector	2 x RJ11
Order Codes	
	SA
Faxtector, IEC connector to equipment	12-00169

LANTECTOR LAN PROTECTION

The Lantector is an 'easy to use', lightweight protection unit for laptops and personal computers. Takes the place of the equipment power cord and provides power and data protection. The power connector is IEC and the data connector is RJ45. The protection unit features a thermal disconnect device along with power indication.

Features:

- Lightweight
- Easy installation
- Power indication
- Failsafe protection
- Slimline and compact



Network Cable



Order code: 12-00539 (IEC)

Specifications			
Max. discharge current 8/20	4kA L-N, L-E, N-E		
Max. continuous voltage	250V 50Hz		
Max. continuous current	3A		
Residual voltage at 8/20	Approx. 900V		
Response time	<25nS		
Temperature range	-20°C to 70°C		
Standards compliance	IEC 6164-3, ANSI C62.41		
100 Base T			
Max. clamping voltage	<10V (1.2/50)		
Max. discharge current 8/20 – coarse protection	1kA		
Max. discharge at current 8/20 – fine protection	300A		
Pairs protected	1-2, 3-6		
Data rate	>100Mbits/s		
Bandwidth	>350MHz		
Test frequencies in MHz	20	62.5	100
Insertion loss in dB (with RJ45 sockets)	0.13	0.39	0.83
Next (limits as per IEC 11801)	>40.7 (35)	>30.7 (27)	>29.1 (24)
Return loss (limits as per IEC 11801)	>27.8 (15)	>31.4 (10)	>22.8 (10)
Standards compliance	IEC 11801 & IEEE 802.3		

Order codes	
	SA
Lantector, IEC connector to equipment	12-00539

THE DUOLINE SERIES

ADSL & 100 Base T Protector ~ “Combotector”

The Combotector is a lightweight protection unit designed especially for combination of fax machines and Fast Ethernet LAN equipment. The unit is compact and easy to install. The protection unit features a thermal disconnect device along with visual indication, showing the status of the unit. Various power inputs and outputs are available.

Features:

- Lightweight
- Easy installation
- Visual indication
- Failsafe protection
- Slimline and compact

Cables Supplied:



Modem patch lead



Network Cable



Order code: 12-00462 (IEC)

Specifications

Power Module

Nom. Voltage	230V 50Hz
Max. continuous current	6A
Max. discharge current 8/20	2.5kA L-N, L-E, N-E
Residual voltage at 8/20	Approx 900V
Response time	<25ns
Temperature range	-20°C to 70°C
Standards compliance	IEC 61643-1, ANSI C62.41

Data Module (Modem Connection)

Max. discharge current 8/20	20kA*
Residual voltage 8/20 differential mode	Approx. 200V
Residual voltage 8/20 common mode	Approx. 200V
Response time	10nS
Data speed	10Mbits/s
Connector	RJ11
Number of wires	2

*Without connectors

100 Base T Connection

Clamping voltage	<5V(1.2/50)
Max. discharge current (Fine protection)	40A (8/20)
Pairs protected	1-2, 3-6
Data rate	>200Mbits/s
Bandwidth	>350MHz
Standards compliance	IEC 11801 & IEEE 802.3

Test frequencies in Mhz	20	62.5	100
Insertion loss in dB (with RJ45 sockets)	0.13	0.39	0.83
Next (Limits as per IEC 11801)	>40.7(35)	>30.7(27)	>29.1 (24)
Return loss (Limits as per IEC 11801)	>27.8 (15)	>31.4 (10)	>22.8 (10)

THE DUOLINE SERIES

Multitector

Features

- Plug-and-Play concept
- High surge capability
- Fire hazard protection
- All 4 data lines protected (RJ45)

Protects fast ethernet LAN equipment such as hubs, switches and network interface cards from induced lightning and electrostatic discharge.

Supports the compliment of 100Base-T configurations:
100Base-Tx, 100Base-T4 and 100Base-VG.
Backwards compatible to 10Base-T



Order code: 12-00422 (IEC)

The unit simply gets plugged into the wall socket and the equipment plugs directly into the unit. Clearline protects your equipment against lightning and surges without additional earthing. The protection is capable of blocking severe lightning and power surges. The unit incorporates a fast overload device which will be activated in extreme conditions. Clearline's unique built-in thermal protection technology has been included to eliminate fire hazards.

Specifications

Power Module	
Nom. input voltage	230VAC 50Hz
Max. load current (Thermal Overload protected)	16A
Max. discharge current at 8/20	2.5kA L-N, L-E, N,E
Response Time	<25ns
Indication LED	Power on & Earth connected
Standards compliance	IEC 99.4, ANSI C62.42

Modem Module

Operating Voltage	230V DC
Max. discharge current at L-L	20kA
Residual voltage at Ismax L-L	100V (typ)
Max. discharge current at L-E	10kA
Residual voltage at Ismax L-E	100V (typ)
Data speed	64kbits/s
Data connector	RJ 11
No. of wires	2

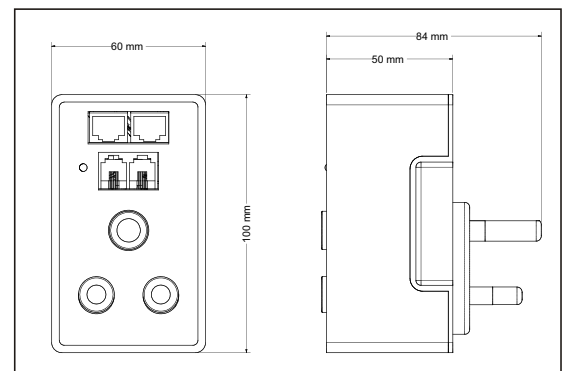
Data module

Clamping voltage	<5V(1.2/50)		
Max. discharge current (Fine protection)	40A (8/20)		
Max. discharge current (coarse protection)	2kA (8/20)		
Pairs protected	1-2, 3-6		
Data rate	>200Mbps/s		
Bandwidth	>350MHz		
Standards compliance	Fast ethernet 802.3u; IEC 11801 and IEEE 802.3		
Test frequencies in Mhz	20	62.5	100
Insertion loss in dB (with RJ45 sockets)	<0.10	<0.10	<0.30
Next (Limits as per IEC 11801)	>43 (35)	>32.4 (27)	>33.6 (24)
Return loss (Limits as per IEC 11801)	>27.8 (15)	>31.4 (10)	>22.8 (10)

Supplied with:

- 1 x 1m x RJ45 Cable Cat5
- 1 x 2m x RJ11 Cable

Dimensions



THE DUOLINE SERIES

Multitector

Features

- Plug-and-Play concept
- High surge capability
- Fire hazard protection
- All 8 data lines protected (RJ45)

Protects fast ethernet LAN equipment such as hubs, switches and network interface cards from induced lightning and electrostatic discharge.

Supports the compliment of 100 & 1000 Base-T configurations:

100Base-Tx, 100Base-T4 and 100Base-VG.

Backwards compatible to 10Base-T



Order code: 12-01422 (IEC)

The unit simply gets plugged into the wall socket and the equipment plugs directly into the unit. Clearline protects your equipment against lightning and surges without additional earthing. The protection is capable of blocking severe lightning and power surges. The unit incorporates a fast overload device which will be activated in extreme conditions. Clearline's unique built-in thermal protection technology has been included to eliminate fire hazards.

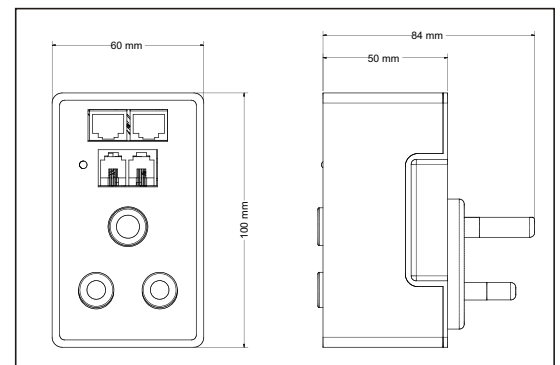
Specifications		
Power Module		
Nom. input voltage	230VAC 50Hz	
Max. load current (Thermal Overload protected)	16A	
Max. discharge current at 8/20	2.5kA L-N, L-E, N,E	
Response Time	<25ns	
Indication LED	Power on & Earth connected	
Standards compliance	IEC 99.4, ANSI C62.42	
Modem Module		
Operating Voltage	230V DC	
Max. discharge current at L-L	20kA	
Residual voltage at Ismax L-L	100V (typ)	
Max. discharge current at L-E	10kA	
Residual voltage at Ismax L-E	100V (typ)	
Data speed	64kbits/s	
Data connector	RJ 11	
No. of wires	2	
Network Module		
Clamping voltage	<5V(1.2/50)	
Max. discharge current (Fine protection)	40A (8/20)	
Max. discharge current (coarse protection)	2kA (8/20)	
Pairs protected	1-2, 3-6, 4-5, 7-8	
Data rate	>200Mbits/s	
Bandwidth	>350MHz	
Standards compliance	Fast ethernet 802.3u; IEC 11801 and IEEE 802.3	
Test frequencies in MHz	100	250
NEXT (Limits as per IEC 802.3)	<39.9	<33.1
Return loss (Limits as per IEC 802.3)	<10.2	< 8.0
Attenuation (Limits as per IEC 802.3)	<20.8	<33.8

Supplied with:

1 x 1m x RJ 45 Cable Cat5e

1 x 2m x RJ 11 Cable

Dimensions



PROFESSIONAL PROTECTION SERIES

This range of combination protector utilises Clearline's equipotential platform technology for effective protection. The power protector includes failsafe current and thermal monitoring, with visual indication, showing the status of the protection device. Various data protection modules available.

The computer Protector is a high quality protector for high end computer systems. (This unit protects power and data premium surge and power filter).

Features:

- Easy installation
- Compact design
- Plug-and-play concept



Order code: 12-00897
(Computer Protector)



Order code: 12-00615
(DSTV Protector)

Specifications

Max. continuous voltage	250V 50Hz
Max. continuous current	16A
Max. discharge current 8/20	8kAL-N, L-E, N-E
Residual voltage at 8/20	Approx. 600V
Response time	<5nS
Filtration	>60dB
Standards compliance	IEC 99.4, ANSI C62.41

Data Module

	Modem	100 Base T	TV	Satellite
Max. discharge current 8/20	10kA	2.5kA	10kA	10kA
Residual voltage 8/20 differential mode	<100V	<25V	<100V	<100V
Residual voltage 8/20 common mode	<100V	<100V	<100V	<100V
Response time	10nS	10nS	10nS	10nS
Data speed	128kBits/s	100Mbits/s	800MHz	1500MHz
Connector	RJ11	RJ45	TV	F-type
Number of wires	2	4	2	2

Order codes

	SA
Modem	12-00419
100 Base T	12-00003
TV/Satellite	12-00615

THE DUOLINE SERIES

Home Theatre Protection Unit

This Home Theatre protection unit is ideal for home theatre systems, incorporating protection for TV, satellite and M-Net decoder. Four 16A and six 2-pin socket outlets have been provided. This unit has a premium power filter with silicon surge protection, thermal disconnection in the event of protection failure, and immediate disconnection of power to equipment when a fault occurs.

Features:

- Easy installation
- Compact design
- Plug-and-play concept
- Silicon avalanche diode protection
- Protects power- TV- and satellite signals



Order code: 12-00555

Power Tripconnect

Power protection devices used at home, office and work-place such as surge suppressors and stabilizers provide protection against power spikes that happens in milliseconds, mainly caused by lightning.

The **Power Tripconnect**® prevents damage from power surges and dips (brownouts) caused by power shutdowns and over- and under-voltages from unstable power. The duration of these conditions is normally longer and can be especially damaging to air conditioners, electric motors, etc., running under load, and expensive electronic equipment.

The **Power Tripconnect**® disconnects the power altogether when these conditions occur and remains off for 10 seconds giving the power feed time to stabilize.

The **Power Tripconnect**® is easy to use and LED indicators are provided.

Features

- Reduces inrush current
- Built-in Delay
- Easy installation
- Small size



Order code: 12-00333

Specifications	12-00555
Phase	Single
Low Voltage trip	180V
Low voltage connect	190V
Nominal Voltage	230V
High Voltage trip	260V
High Voltage connect	250V
Connect Delay	10 Seconds
Max. continuous current (Thermal overload protected)	15A
Earth leakage current	<1.5mA
Max. current ismax	8kA
Residual voltage at 5kA (8/20)	Approx 900V
Response time	<25ns
Temperature range	-20 C to +70 C
Standards compliance	IEC 61643-1, IEC 99.4 IEC 950, ANSI C62.41

Specifications	12-00333
Phase	Single
Low voltage trip	180V
Low voltage connect	190V
Nominal voltage	230V
High voltage trip	260V
High voltage connect	250V
Connect delay	10 seconds

TV/Satellite Modules	TV	Satellite
Max. discharge current	10kA	10kA
Residual voltage at ismax	<100V, L-L, L-E	<100V, L-L, L-E
Response Time	<100ns	<100ns
Frequency response	800MHz	3GHz

COMPUTER AND VIDEO PROTECTORS

The compact protection units are a combination of F-type and PAL connectors with full protection. Status indication and thermal overload protection.

Features:

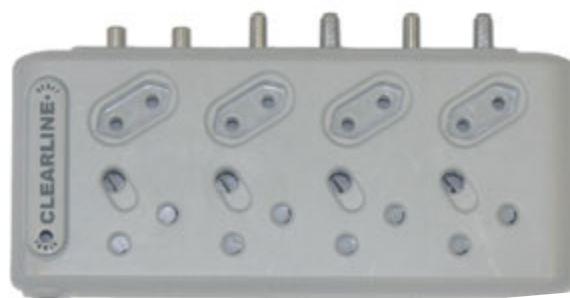
- Easy installation
- Compact design
- Plug-and-play concept
- Protects power- TV- and satellite signals



Order code: 12-00493



Satellite Cable and TV Cable



Order code: 12-00198

Specifications		
Order codes	SA 12-00493	SA 12-00198
Max. continuous voltage	250VAC	250VAC
Max. continuous current	16A	16A
Max. discharge current 8/20	8000A	8000A
Response time	<25nS	<25nS
Power connectors	16A	16A
Usable frequency TV system	800MHz	800MHz
Usable frequency satellite	3Ghz	3Ghz
Video connectors	TV & F-Type	F-Type
Standards compliance	ANSI 62.41 IEC 950	