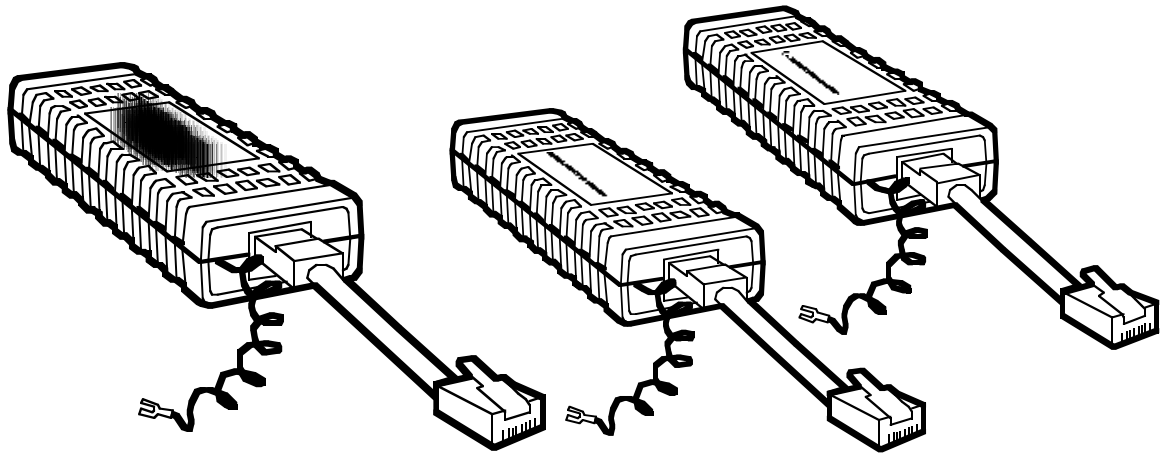
BLACK BOX®
NETWORK SERVICES

Black Box Network Services • 464 Basingstoke Road • Reading, Berkshire, RG2 0BG • Tech Support: 0118 965 6000 • **www.blackbox.co.uk** • **e-mail: techhelp@blackbox.co.uk**

SURGE PROTECTORS



The protection you need for your data lines.

Key Features

- ***Protect against surges, damage caused by induced lightning, electrostatic discharges, noise, and ground loops.***
- ***Surge protectors are available for various network types.***
- ***Protectors are also available for various communication lines.***
- ***We even carry surge protectors for special equipment, such as CATV, keyboards, and more!***

Here's why you need a surge protector.

In an ideal world, the flow of electrical current in your computer systems would be equal at all times. No outside power disturbances would disrupt the balance of power in your electronic devices.

In the real world, however, several forms of power disturbances can wreak havoc on your electrical devices. These power disturbances come in the forms of induced transients (which include lightning, electrostatic discharge [ESD], and noise), ground-loop currents, and surges.

Although only a lightning arrestor can protect against direct lightning hits, a surge protector can guard your equipment against damage caused by induced lightning. To understand the need for this protection, consider the enormous magnitude of energy that a lightning strike generates. As this large current flows through conductors, the expanding magnetic field causes induced current to flow in nearby conductors that could then carry damaging impulses to computers.

A surge protector can also guard against the second type of induced transient, electrostatic discharge (ESD). What we commonly think of as static is that zap we get when we grab something metallic after walking across a carpet during the winter. This static is actually called triboelectricity, from the Greek word tribo, which means rubbing. When two unlike materials rub together, the electrons from one and the electrons from the other produce a negative charge (or electrostatic discharge), causing a potential difference between the two surfaces. The excess electrons look for a discharge path, which they find in any good conductor. The excess energy can damage your equipment.

A third type of induced transient, noise, can also damage your equipment. Noise is a signal appearing in a circuit other than the desired signal. It can result from lightning or ESD, but more commonly results from other events happening in the environment. Noise of a low magnitude will not bother a PC, but noise or impulses of a high magnitude can interfere with data processing or can damage internal components. Noise as it appears on power lines comes in two varieties: normal-mode and common-mode noise. Turning large loads off or on, or shunting utility power-factor correcting capacitors across the line, creates normal-mode noise. Lightning and tripping and reclosing utility breakers,

poor grounding techniques, ground faults, radio transmitters, time clocks, and machine tools can cause common-mode noise.

Another hazardous form of power disturbance is called a ground loop. A ground loop is formed when a potential difference exists between any two places that are, by definition, at ground potential. A ground loop may form in a circuit when the circuit contains two or more different ground connections. This circuit may also be formed between boards inside a PC or in a local area network. Whenever there is some impedance existing between two points, voltage can appear across these points and current can flow. Ground loops can also develop because of the length of a circuit wire.

The final type of power disturbance which the protectors guard against is, quite obviously, surges. A surge is a short-term voltage increase that exceeds established upper limits for less than 2.5 seconds. Each type of electrical interface contained in your data communications equipment has an acceptable operating voltage range. Voltages above the range of the particular device's interface can damage the device in two ways. First, a massive voltage (called a spike) can immediately damage your equipment. Second, multiple smaller out-of-range voltages can gradually damage your equipment over time.

Our surge protectors provide an immediate path to ground, so power disturbances go straight to ground instead of to your equipment.

Choose the model to suit your application from our complete line of in-line surge protectors described below.

- 10BASE-T Hub Surge Protectors (SP530A–SP532A)—These models protect 4, 8, or 12 RJ-45 ports on a 10BASE-T hub.
- 100BASE-TX Hub Surge Protector (SP512A-R3)—This model protects a 100BASE-TX interface that uses an RJ-45 connector.
- ARCNET® Surge Protector (SP502A)—This model protects your ARCNET devices that use a coax, straight connection.
- CATV Surge Protector (SP517A)—This model protects CATV (cable TV) F59 interfaces.
- Centronics® Surge Protector (SP516A)—This model protects 36-pin Centronics parallel interfaces.
- DDS Surge Protector (SP527A)—This model protects the four active leads on a standard DDS line.
- Thin Protector ST® (SP350A-R2)—This model protects your 10BASE2 ThinNet coaxial devices that use a straight connection.
- AUI Surge Protector (SP362)—This model protects your DB15 AUI interface.
- Thin Protector T (SP501A)—This model protects your devices that use a T-style connector for 10BASE2 ThinNet.
- ThickNet Protectors (SP505A–SP506A)—These models protect your 10BASE5 interfaces that require N-series connectors.
- ISDN Data Line Surge Protectors (SP050A, SP060A)—These models protect terminal adapters, NTUs, and other ISDN equipment. SP050A is for the U interface; SP060A is for the S/T interface (8-pin).
- Keyboard Surge Protector for AT® (SP518A-R2)—This model protects 5-pin DIN interfaces.
- Keyboard Surge Protector for PS/2® (SP519A-R2)—This model protects 6-pin mini-DIN interfaces.
- RS-232 Surge Protector for DB25 4-Wire Serial (SP141A)—This model protects pins 2, 3, 7, and 20 of your RS-232 interface.
- RS-232 Surge Protector for All Wires (SP360A)—This model protects all 25 pins on your RS-232 interface.
- RS-232 Surge Protector for DB9 (SP361A-R2)—This model protects RS-232 ports that use a DB9 connector.
- RS-232 Surge Protector for DB15 (SP507A)—This model protects your RS-232 ports that use DB15 connectors.
- RS-232 Surge Protector for 4-Wire Serial RJ-11 (SP515A-R2)—This model protects 4-wire interfaces that use RJ-11 connectors.
- RS-422 Surge Protector (SP508A)—This model protects your RS-422 or X.21 ports that use DB15 connectors.
- T1 Non-Span Surge Protectors (SP513A-R2, SP526A)—These models protect T1 interfaces that use RJ-45 connectors.
- Telco Surge Protector (SP365A-R2)—This model protects dialup telco interfaces.
- Token Ring Surge Protector (SP522A-R2)—This model protects 8-wire RJ-45 interfaces.
- Twinax Surge Protectors (SP524A–SP525A)—These models protect twinax interfaces.

Specifications

Clamp Voltage:
SP527A, SP508A, SP050A, SP530A–SP532A, SP060A: 7.5 V (pins 3, 4, 5, 6 only for SP060A);
SP512A-R3, SP516A–SP517A, SP350A-R2, SP501A, SP505A–SP506A, SP518A-R2–SP519A-R2: 8 V;
SP502A: 30 V;
SP362: 9 V;
SP141A, SP361A-R2, SP507A, SP522A-R2: 18 V;
SP360A: 19 V;
SP515A-R2: 27 V;
SP060A, SP513A-R2, SP526A: 60 V (pins 1, 2, 7, 8 only for SP060A);
SP365A-R2: 240 V;
SP524A–SP525A: 10 V

Response Time:
SP050A, SP060A: 500 ns;
All others: < 10 ns

Series Resistance: None;
SP050A, SP060A: 0.34 ohms;

Connectors:
SP530A: (8) RJ-45 F;
SP531A: (16) RJ-45 F;
SP532A: (24) RJ-45 F;
SP512A-R3, SP522A-R2: (2) RJ-45 F;
SP502A, SP350A-R2: (1) BNC M, (1) BNC F;
SP517A: (2) CATV F;
SP516A: (1) 36-pin Centronics M, (1) 36-pin Centronics F;
SP527A, SP050A, SP060A, SP526A: (2) RJ-45 F;
SP362, SP507A, SP508A: (1) DB15 M, (1) DB15 F;
SP501A: (1) BNC M, (2) BNC F;
SP505A: (2) coax ("N" series) F;
SP506A: (1) coax ("N" series) M, (1) coax N-series F;
SP518A-R2: (1) 5-pin DIN M, (1) 5-pin DIN F;
SP519A-R2: (1) 6-pin-mini-DIN M, (1) 6-pin mini-DIN F;
SP141A, SP360A: (1) DB25 M, (1) DB25 F;
SP361A-R2: (1) DB9 M, (1) DB9 F;
SP515A-R2: (1) RJ-11 6-wire M on 3" pigtail, (1) RJ-11 6-wire F;
SP513A-R2: (1) RJ-45 M on 3" pigtail, (1) RJ-45 F;
SP365A-R2: (1) RJ-11 4-wire M on 3" pigtail, (2) RJ-45 F;
SP524A: (1) Twinax M, (1) Twinax F;
SP525A: (2) Twinax F

Why Buy From Black Box? Exceptional Value. Exceptional Tech Support. Period.

Recognise these situations?

- You wait more than 30 minutes to get through to a vendor's tech support.
- The so-called "tech" can't help you or gives you the wrong answer.
- You don't have a purchase order number and the tech refuses to help you.

According to a survey by Data Communications magazine, 90% of network managers surveyed say that getting the technical support they need is extremely important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, the technical support and service they receive falls far short of their expectations—and certainly isn't worth what they paid.

At Black Box, we guarantee the best value and the best support. You can even consult our Technical Support Experts before you buy if you need help selecting just the right component for your application.

Don't waste time and money—call Black Box today.

Ordering Information

ITEM	CODE
10BASE-T Hub Surge Protectors (RJ-45)	
4-Port	SP530A
8-Port	SP531A
12-Port	SP532A
100BASE-TX Hub Surge Protector (RJ-45)	
1-Port	SP512A-R3
ARCNET Surge Protector (ST In-Line)	SP502A
CATV Surge Protector	SP517A
Centronics Surge Protector	SP516A
DDS Surge Protector (RJ-45)	SP527A
Ethernet Surge Protectors	
Thin Protector (ST In-Line)	SP350A-R2
AUI	SP362
Thin Protector T	SP501A
ThickNet Protectors	
Female/Female	SP505A
Male/Female	SP506A
ISDN Data Line Surge Protectors (RJ-45)	
U Interface	SP050A
S/T Interface (8-Pin)	SP060A
Keyboard Surge Protectors	
AT	SP518A-R2
PS/2	SP519A-R2
RS-232 Surge Protectors	
DB25	
4-Wire Serial	SP141A
All Wires	SP360A
DB9	SP361A-R2
DB15	SP507A
RJ-11 (4-Wire Serial)	SP515A-R2
RS-422 Surge Protector (DB15)	SP508A
T1 Non-Span Surge Protectors (RJ-45)	
8-Wire	SP513A-R2
4-Wire	SP526A
Telco Surge Protector (RJ-11)	SP365A-R2
Token Ring Surge Protector (RJ-45 UTP)	SP522A-R2
Twinax Surge Protectors (AS/400®, S/3X)	
Male/Female	SP524A
Female/Female	SP525A