

# BRAVO COMMUNICATIONS, INC.



## SURE/FIRE® TELECOM SURGE-PROTECTED PATCH PANELS

### Description

Bravo's Sure/Fire family of TELECOM SURGE-PROTECTED PATCH PANELS stops all forms of telecom damaging voltage transients (spikes and surges) as well as hazardous overcurrent fault conditions that are prevalent in Telecom networks. The mass of cable segments exposed in a typical telecom environment act as antennae for attracting (inducing) damaging lightning and electrostatic discharge (ESD) energy waveforms. Telecom lines represent the longest antennae usually seen in a business or home environment and their exposure to outside natural phenomenon such as storms and downed transformers can easily disrupt your business or can even be the source of a disastrous fire.

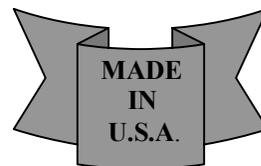
Bravo's Sure/Fire TELECOM Patch Panels are designed to take a minimum of vertical unit rack space in an industry standard 19.0-inch rack. Each surge-protected patch panel provides 16 in-line ports (16 ports/Line & 16 ports/Load) with the convenience of single-point grounding to earth/chassis ground. These Surge-Protected Patch Panels safeguard telecom ports of PCs, modems, multiplexers, fax machines, answering machines, digital phone systems, CSU/DSU equipment, T1/E1/ISDN/DS1/DS2/DS3 and virtually all types of analog and digital telecom equipment.

### Features

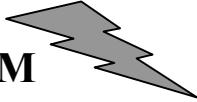
- ◆ Both modular telephone jack (**RJ**) and screw-down terminal block (**TB**) styles available.
- ◆ Protects dial-up (switched analog), dedicated (leased analog) and high-speed digital lines.
- ◆ Advanced balanced thyristor technology on all signal lines. Plus tripolar gas tube protection on Primary 25KA models.
- ◆ AUTOMATICALLY RESETTABLE high precision fuses never need replacement.
- ◆ Stops all voltage transients and high current faults repeatedly in less than a nano-second and then automatically resets itself.
- ◆ High-Quality metal rack mounting frame only takes about 1U of rack's vertical space and comes with easy earth grounding using a choice of grounding points.
- ◆ Diamond-Shaped Ringer Protection Lights are available on RM16DDD/TEL1(+) & RM16DDD/TEL2(+) models.
- ◆ High-Speed TELECOM design allows speeds up to 100 Mhz.
- ◆ Front or Rear Panel Protection can be ordered or changed on-site by simply reversing the 4-port modular cards (four cards per panel). These modular 4-port cards can also be swapped out easily in the field. Bravo's standard is Rear-Panel Protected unless otherwise specified.
- ◆ All models available as Secondary Telecom Protectors (5KA protection) or Primary/Secondary Protectors (25KA protection).

### Benefits

- ◆ The highest performance hybrid telecom protection dedicated for protecting patch panel circuits.
- ◆ The best protection available against both metallic (line-to-line) and common (line-to-ground) damaging transients.
- ◆ Eliminates "Blown Fuse" nuisance service calls and downtime.
- ◆ Ringer Protection Light indicates an incoming call, proper grounding and that TELECOM protection is active.
- ◆ Fails open if overstressed in an overcurrent fault to prevent fires from traversing telecom lines into building.
- ◆ Telecom connector styles can be mixed for Line/Load port wiring for different wiring requirements (specify at time of ordering).
- ◆ Single-Point Earth/Frame Grounding for all 16 ports across. Additional rack patch panels can be easily grounded as well.



# SURE/FIRE® TELECOM SURGE-PROTECTED PATCH PANELS



There are Bravo TELECOM Patch Panels to protect all major telecom networks including Switched, Dedicated/Leased, WAN, ISDN, DDS, T1/E1/DS1/DS2/DS3, and most other types of voice/data networks. Inquire at Bravo if you need more information regarding your specific protection requirements.

## Installation & Operation

- ◆ The Bravo TELECOM Surge-Protected Patch Panel simply slides into your 19.0" rack and you fasten as you would with any rackmount panel. The Bravo attached isolated 12 AWG ground wire is then connected to your rack's chassis/earth ground location that has continuity to your AC power ground. Normally the network LINE cables connect to the front panel connectors. The protected LOAD cables connect to the rear panel connectors. Alternately, you can order your patch panels with the LINE/LOAD orientation reversed or you can reverse the protection orientation in the field yourself by rotating the four, 4-port modular cards 180 degrees.
- ◆ For models RM16DDD/TEL1(+) & RM16DDD/TEL2(+), The diamond-shaped Ringer Protection Light will flash "RED" when the phone line rings indicating an incoming caller, that you have properly installed and grounded the patch panel, that the resettable fuse has not tripped, and that telecom protection is active.
- ◆ Normal telecom network interface signals are allowed to flow passively through the patch panel ports without interruption. If an abnormal voltage level is sensed, the Bravo TELECOM protection will instantly activate and clamp the damaging voltage transient to earth ground. Afterwards, the Protected Patch Panel safely resets itself and assumes its normal guardian/watchdog operation.
- ◆ In addition, Bravo TELECOM Protected Patch Panels feature a unique resettable line fuse for each signal line that will effectively disconnect the telecom line in the event of a hazardous and damaging overcurrent condition such as a power transformer fault. Once the hazardous overcurrent condition is removed from the line, the Bravo Patch Panel port will automatically reset its' fuse circuit and reconnect the line.
- ◆ It is highly recommended that every telecom node/port be protected by a Bravo Protector because damaging voltage and current transients can originate anywhere along a cable conductor run path or be induced through the cable jacket.

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## Transient Protection

- ◆ Advanced Balanced Thyristor Crowbar Protection on all lines with a nominal voltage clamping of  $\pm 265$  volts for all RM16DDD/TEL models and a nominal  $\pm 77$  volts for RM16LL/TEL and RM16HS/TEL models. Clamps in less than a nano-second.
- ◆ High precision Automatically Resettable Fusing Technology on all lines that effectively disconnects a line with a current fault above 150 ma of current.
- ◆ Metallic and Common telecom line protection.
- ◆ Plus Tripolar Gas Tube Protection on all Primary "+" models
- ◆ All Secondary Telecom Models Protect up to 5KA.  
All Primary Telecom Models Protect up to 25KA.

## Physical

- ◆ All models fit within a standard 19.0" rack in 1U of vertical space.
- ◆ All models weigh approximately 7 lbs. (3.36 kg.).

## Environment

- ◆ Operating temperature: -20° to +80° C; -4° to 176° F.
- ◆ Relative Humidity: 0-90% (non-condensing).

## Certifications

- ◆ Meets or exceeds all applicable UL, FCC, NEC, CCITT, R.E.A. and worldwide standards.
- ◆ UL 94 V-0 transient voltage suppressors.

## Warranty

- ◆ 5-year limited warranty.

Model Number	Description & Equipment Protected (16-PORTS)
RM16DDD/TEL1	Secondary Single Voice Circuit/RJ Style/ 5KA
RM16DDD/TEL1+	Primary Single Voice Circuit/RJ Style/25KA
RM16DDD/TEL2	Secondary Single Voice Circuit/TB Style/ 5KA
RM16DDD/TEL2+	Primary Single Voice Circuit/TB Style/25KA
RM16DDD/TEL3	Secondary Two Voice Circuit/RJ Style/ 5KA
RM16DDD/TEL3+	Primary Two Voice Circuit/RJ Style/25KA
RM16DDD/TEL4	Secondary Two Voice Circuit/TB Style/ 5KA
RM16DDD/TEL4+	Primary Two Voice Circuit/TB Style/25KA
RM16LL/TEL1	Secondary Leased Line Circuit/RJ Style/ 5KA
RM16LL/TEL1+	Primary Leased Line Circuit/RJ Style/25KA
RM16LL/TEL2	Secondary Leased Line Circuit/TB Style/ 5KA
RM16LL/TEL2+	Primary Leased Line Circuit/TB Style/25KA
RM16HS/TEL1	Secondary Hi-Speed Digital Circuit/RJ Style/ 5KA
RM16HS/TEL1+	Primary Hi-Speed Digital Circuit/RJ Style/25KA
RM16HS/TEL2	Secondary Hi-Speed Digital Circuit/TB Style/ 5KA
RM16HS/TEL2+	Primary Hi-Speed Digital Circuit/TB Style/25KA

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