

## Distribution Surge Protector 600 Series

Ideal for industrial, commercial and domestic applications, the Distribution Surge Protector 600 (DSP600) provides an economic means of preventing damage to electrical distribution systems from mainsborne transient voltages. These transients may occur as the result of nearby lightning strikes or surges derived from the switching of inductive or capacitive loads.

The DSP600 should be installed at the point of cable entry to a building and at the distribution point for each floor of a multi-storey building containing sensitive electrical/electronic equipment.

The DSP600 is normally used as part of a totally integrated surge protection system and as such should be considered as the first line of defence. Local distribution panels and equipment connected 'downstream' should also be protected in order to achieve a systematic and co-ordinated approach to surge protection.

The DSP600 provides suppression from mainsborne voltage spikes and surges that can occur between phases, phase to neutral, phase to earth and neutral to earth, thus ensuring protection in all modes. This protection is achieved by using carefully matched high energy absorbing elements.

The DSP600 features high surge current handling capability which operates in two stages to ensure continuity of transient suppression. Under normal conditions the DSP600 will automatically reset after clamping smaller, more commonly occurring surges, and a green Light Emitting Diode (LED) indicates that full protection is present. However, should a surge current, in excess of 30kA, appear on the line it will be clamped by the DSP600 but the first protection stage may possibly suffer damage and fail safe.

In this instance the red LED will be illuminated in addition to the green and although the system will still be adequately protected, the unit should be replaced before a further large surge can remove the second protection stage. There is no protection present when only the red LED is illuminated, although unprotected power is still supplied.

An alternative version of the DSP600 is also available which additionally offers a remote signalling facility where volt free terminals (which can be connected as either normally open or normally closed),



open or close when the first stage protection is lost, (Red and Green LEDs on), and these can be used to activate a remote indicator such as a lamp or an audible alarm. The switching contacts are completely isolated from the supply and may be used for AC mains voltage 230V RMS 200mA or 30V DC 2 Amp loads.

### Installation:

Designed to be easily installed alongside the incoming electrical supply panel or at the sub distribution board of a multi-storey block, the DSP600 is connected in parallel with the supply, thus eliminating complicated by-pass wiring associated with series suppressors. Connected in this manner the DSP600 carries only the current associated with the transient being discharged.

The DSP600 should be installed as close as possible to the supply cables being protected, with as large a conductor as possible (16mm<sup>2</sup> max). The connecting wires should be routed, avoiding looping, and secured together with ties. See installation data sheet instructions. The Distribution Surge Protector must be connected in parallel to the supply via an isolating switch if the mains supply cannot be switched off for DSP600 replacement.

If RCDs are used on the supply the DSP600 must be fitted in front of such devices to avoid nuisance tripping. Provision should be made for safe replacement of the DSP600 should this become necessary.

The DSP600 may be installed in an existing cubicle with viewing window or in a separate housing with transparent cover, available separately from Bowthorpe EMP.

### Fusing:

The DSP600 is suitable for direct connection to a line rated up to 100A (6mm<sup>2</sup> min. connecting cables), but can be connected to lines of higher rating by the provision of series fuses rated 50A min – 100A max (IEC269-2). If MCBs are used in place of fuses they should be of type C.

### Maintenance:

The DSP600 requires no maintenance but the LEDs should be checked at regular intervals to ensure that full protection is present. The remote signalling facility version allows the DSP600 to be installed in areas that are inaccessible for regular inspection.



### Quality Assurance:

Approved to BS EN ISO 9000

### Surge Test:

The DSP600 complies with, or is tested to, the requirements of: IEEE C62.41.1991, UL 1449. 1985, BS6651, 1999 Annex C. The test waveform – 6kV 1.2/50µs O/C, 3kA 8/20µs S/C – applied to the DSP600 gives the resultant let through voltage. See tabulation below. (The 'let through voltage' will vary due to the parasitic inductance of the associated mains cable.) Values given are at protector terminals.



	SINGLE PHASE	THREE PHASE
Specification		
Voltage rating (nominal)	230V rms	400V rms
Operating voltage range	200 - 300V rms	L-N 200 - 300 V rms L-L 350 - 500 V rms
Maximum current rating	Unlimited (Parallel Connection)	Unlimited (Parallel Connection)
Maximum surge current handling (8/20 μs)	30kA	30kA per phase
Response time	<10 ns	<10 ns
Power consumption (nominal)		
Without remote signalling	10mA	10mA per phase
With remote signalling	18mA	18mA per phase
Leakage current to earth	200μA	600μA
No system impairments auto reset after surge has occurred	✓	✓
Terminals	16mm <sup>2</sup> max - Line, Neutral, Earth 2.5mm <sup>2</sup> max - Remote Signalling	16mm <sup>2</sup> max - Line, Neutral, Earth 2.5mm <sup>2</sup> max - Remote Signalling
Remote signalling terminals	Rated at 230V rms 0.2 Amp or 30V DC 2 Amp	Rated at 230V rms 0.2 Amp or 30V DC 2 Amp
Operating temperature	-40° to +70° Celcius	-40° to +70° Celcius
Light emitting diodes Status Indication	Green - Full Protection Red & Green - Reduced Protection Red - No Protection	Green - Full Protection Red & Green - Reduced Protection Red - No Protection
Case	Steel - Epoxy Paint	Steel - Epoxy Paint
BS6651: 1999 Annex C location category	C	C
Dimensions (in mm)		
L	176	176
W	42	110
D	72	72
Weight (in grams)	650	1110
Order code without remote signalling	DSP1/600/BOW	DSP3/600/BOW
Order code with remote signalling	DSP1A/600/BOW	DSP3A/600/BOW

LET THROUGH VOLTAGE	
Tests simulating the effects of lightning and switching transients	Phase/Neutral Phase/Earth
6kV 1.2/50μs open circuit voltage 3kA 8/20μs short circuit current	600V
4kV 1.2/50μs open circuit voltage 2kA 8/20μs short circuit current to IEC 801-5 (draft)	560V
5kA 8/20μs to NFC 61-740	670V
6kV 0.5μs 100kHz ring wave, 500A	520V

All of the above information, including drawings, illustrations and graphic designs, reflects our present understanding and is to the best of our knowledge and belief correct and reliable. Users, however, should independently evaluate the suitability of each product for the desired application. Under no circumstances does this constitute an assurance of any particular quality or performance. Such an assurance is only provided in the context of our product specifications or explicit contractual arrangements. Our liability for these products is set forth in our standard terms and conditions of sale.

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