Industrial EMP Solutions
CIVILIAN CRITICAL INFRASTRUCTURE PROTECTION
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HEMP

Protection Module for Telecommunication (Cat. No. 51)

* For civilian critical infrastructure protection
* For typical industrial, power substation and power plant Ethernet systems
* Very low losses and capacitance
* Small dimensions and easy installation
* High efficiency of protection

Telecommunications are widely used in relay protection systems and other important systems at substations, power plants, and water supply systems. As a rule, it is based on 10 Base-T and 10/100 Base-TX Ethernet (IEEE 802.2).

Complex equipment that provides transmission an important data in such a system contains microprocessors and other electronic chips operating at very low voltages, that is, it is very sensitive to electrical influences. This is the most vulnerable part of the infrastructure, which requires special high-effective HEMP protection. Moreover, such protection should not affect the work of telecommunication.

Such a protective module was developed and tested for compliance with standards IEC 61000-4-25, IEC 61000-4-4, IEC 61000-4-5 and ITU K.78.

Additional tests were carried out when pulses 5/50 ns and 1.2/50 µs were applied to the input of an industrial telecommunications equipment with an amplitude of 1 to 8 kV without the protective module and with the protective module connected at the input of equipment. In the first case, the telecommunications equipment was always damaged even at the smallest amplitude of pulses, and in the second case it remained fully operational even at the largest amplitude of pulses.

Specification

Parameter	Value
Peak pulse discharge current for (E1) very short rise time (less than 0.2 µs)	300 A during 20 µs
Peak pulse discharge current: - for E2 HEMP component (25/1500 µs) - for lightning (8/20 µs)	 1000 A 5.000 A
Max. surge voltage amplitude L-L, L-G (for E1 & E2 HEMP components), at clamping voltage not more than 15 V	8 kV
Insulation level between input and output circuit (rms)	5 kV
Internal series resistance L-L, L-G	30 Ohm
Max. losses: - for 10 Base-T - for 100 Base-T	 3 dB 5 dB
Pins protected	1-2, 3-6
LAN Protocol	10 Base-T (10 Mbps) 100 Base-TX (100 Mbps)
Typical Capacitance (1 MHz) L-L/L-G	30/40 pF
Punch-Through Voltage	4.5 V
Clamping voltage at current 300 A	15 V
Dimensions: - without mounting plate - mounting plate	 115 x 75 x 40 mm 145 x 75 x 2 mm
Weight	280 g
Operating temperature, °C	-20+50
Max. Humidity non-condensed, %	95

To confirm the absence of the influence of the protective module on the operation of the Ethernet network, such a module has been used for a long time when inserting between a computer network and a personal computer. During the test period, no side effects of the module on the operation of the computer were detected. The measured data transmission and receiving speed also did not change.

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