



***LH Protector Gigabit FTP
for Ethernet
10/100/1000 Mbit***

protects your PC and other equipment

More than 90% of damages of electronic equipment are caused by supervoltage. Your PC, switch, hub or server can be destroyed by powerful electromagnetic pulse resulting from any atmospheric discharge, even 1 mile from the place where lightning hits the ground. Such pulse penetrates even building walls causing supervoltages, especially in long computer network cables. Induced voltage can be of tens to dozens of thousands of volts.

LH Protector reduces such voltage to a safety level acc. to European standards requirements for computer equipment. Therefore, damages are decreased by 95%. Power supply is not needed and data transmission is not disturbed. LH Protector has Electromagnetic Compatibility Certificate issued by Technical University of Białystok. LH Protector is not designed for life-supporting systems as well as for military systems.

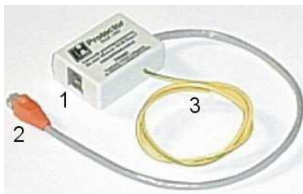
Specifications and environmental data

- $I_{dmax}=350A$ - Max. actual current surge value between two wires ($t < 1\mu s$)
- $I_{dconst}=1 A$ - Max. long-lasting current between two wires
- $I_{gmax}=350A$ - Max. actual earth current surge value ($t=1\mu s$)
- $I_{gconst}=0,1 A$ - Max. long-lasting earth current surge value
- $V_d=65 V \pm 10\%$ - Trip voltage for protection between two wires
- $V_g=220V \pm 10\%$ - Trip voltage for earth protection
- Working temperature - 5 to 45 °C
- Humidity - 10-95 % R.H., no condensation
- Remarks: If In the protected line surge voltages are higher than above mentioned values additional protection input circuits are required.

Installation

LH Protector doesn't need any power supply. No qualified technician for its installation is necessary. Although, if any part of this description is not clear for you call network provider or computer service nearest you for help.

First of all, before starting installation you have to check, if your wall outlet is correct earthed and equipment to be protected is correct connected. **Wrong grounding system can cause faulty operation of this protector.** Switch off power supply of any electrical equipment concerned before installation!



1. Connect equipment to Ethernet Base-T network plugging in RJ-45 connector (1).
2. Connect cable (2) to the network card socket of PC or another equipment to be protected. Now, your PC is protected against any surgevoltage between phase cables.

3. Ground enclosure of your PC using cable (3).

Grounding

To ensure effective protection against ground surgevoltage protector must be connected to the grounding system having resistance less than 4 ohms. Connection should be bolted or soldered.

It is recommended to use the local electricity grid grounding system, i.e. ground pin in the wall outlet or computer ground connection. Otherwise, you can connect grounding cable to a building reinforcement or pipe of water supply system. In such cases grounding effectiveness is to be checked.

Do not use lightning conductors or gas pipelines for this purposes !!!

Protection of long network cables and concentrators.

Surgevoltage protector will protect directly connected equipment only. To protect both ends of UTP cable two protectors are necessary.

All concentrator ports to be used must be protected. Otherwise, full protection is not secured.

How to avoid transfer speed drop in the network...

If network doesn't fulfill requirements of Ethernet standard connection of additional equipment as LH Protector can cause essential transfer speed losses. Before you call service team check network ??? cable, sockets and RJ-45 plugs. To maintain maximum transfer speed cables of at least class 5e and sockets of suitable quality must be used. Power supply cable should be protected against damage and mechanical stress as well as humidity and direct sunshine. It shouldn't be bent, partially connected as well as must be uniform.

If one of PC connected to the concentrator is wrong grounded then it can cause additional voltage resulting in protector tripping and network interlocking or essential transfer speed drop will be observed.

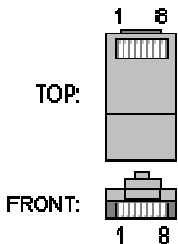
Cable Ethernet 10Base-T, 100Base-TX and 1000Base-T

Remarks: Although for 10BaseT and 100Base-TX only two pairs are needed connect all pairs at this stage. It will make easier further transition into 1000BaseT network.

Wires TX+ & TX and RX+ & RX- should form one pair respectively. (s. tables below).

“Straight Thru”

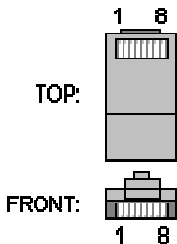
Connection cable 10Base-T, 100Base-TX or 1000Base-T is used to connect PC with concentrator and two network concentrators. (one with uplink connector)



Name	Pin	Wire colour	Pin	Name
TX+	1	White-orange	1	TX+
TX-	2	Orange	2	TX-
RX+	3	White-green	3	RX+
	4	Blue	4	
	5	White-blue	5	
RX-	6	Green	6	RX-
	7	White-brown	7	
	8	Brown	8	

“Crossover”

Connection cable 10Base-T, 100Base-TX or 1000Base-T is used to connect PC with the second PC and two concentrators in a cascade.



Name	NIC1	Wire colour	NIC2	Name
TX+	1	White-orange	3	RX+
TX-	2	Orange	6	RX-
RX+	3	White-green	1	TX+
	4	Blue	7	
	5	White-blue	8	
RX-	6	Green	2	TX-
	7	White-brown	4	
	8	Brown	5	

Warranty

1. LH Serwis Komputerowy (LH Computer Services) ensures good quality of the LH Protector.
2. LH Serwis Komputerowy gives lifelong guaranty for proper operation of this equipment according to above specifications. Any product which proves to be defective will be repaired within 14 days from its arrival date to the producer.
3. The Purchaser is obliged to deliver faulty product to the producer or distributor on its own cost.
4. This warranty does not apply to damages or problems which result from causes other than being inside the purchased goods, especially:
 - which result from repairs or modifications made by the Purchaser, and
 - mechanical damages, and
 - which result from misuse (not in accordance with intended use, installation instructions) or if operation conditions are not according to specifications.
5. This warranty does not constitute any ground for compensation, if damage is caused by any equipment connected to LH Protector.