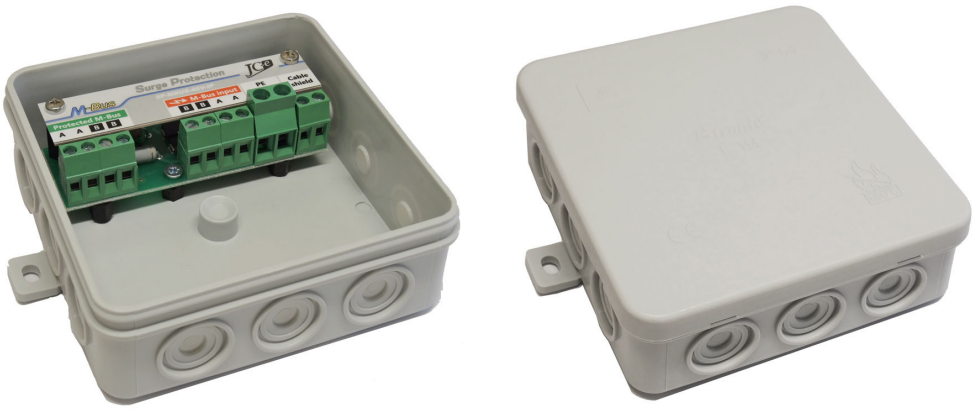
Combined coarse and fine surge protection for M-Bus networks SP-MBUS-40V-IP



Instructions manual

Version: 2017/1.2-EN

Surge Protection SP-MBUS-40V-IP

The surge protector is designed to protect a two wire communication line of an M-Bus network against impulse overvoltage. The two stage protection protects M-Bus devices against overvoltage between the wires and between the ground and each wire.

The surge protector is suitable for M-Bus slave and master devices regardless of type.

Maximum operating voltage between the wires is 40V and the maximum current load is equivalent to 255 M-Bus slave devices. The surge protector is designed for wall mounting and can be used in environments with increased humidity.

Technical parameters

Electrical properties	
Operating voltage A-B	40V
Maximum operating voltage A-B	44V
Maximum operating current A,B	0.4A - 255 M-Bus slaves
Maximum operating voltage A,B to PG	90V
Peak surge current I_n (8 / 20 µs)	10 kA
Response time	< 1ns
Maximum clamping voltage A-B at I_n	< 74V
Maximum clamping voltage A,B to ground at I_n	< 300V
Serial resistance per line	2,2 Ω
Connectors	terminals for wires of up to 2.5mm² c.s.a., 4mm² for PE
Temperature	
Operating range	-40°C to 80°C
Mechanical construction	
Mechanical design	plastic box
Mounting	two holes spread 110mm apart
Dimensions: height x width x depth	100 x 100 x 39mm (100 x 120 x 39mm with tabs)
Protection classification	IP54
Weight	93g

Layout of terminals

Protected M-Bus

A, B

Terminals for connecting the M-Bus line which will be protected against overvoltage. Connection of the protected M-Bus device.

M-Bus input

A, B

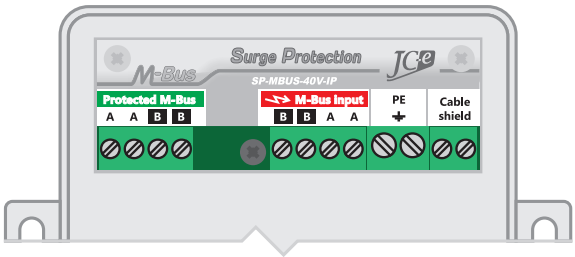
Terminals for connecting the M-Bus line with the risk of overvoltage occurrence.

PE

Grounding terminal. Connect to ground of electrical installation. Use shortest possible wire with cross-section of 2.5 to 4 mm²

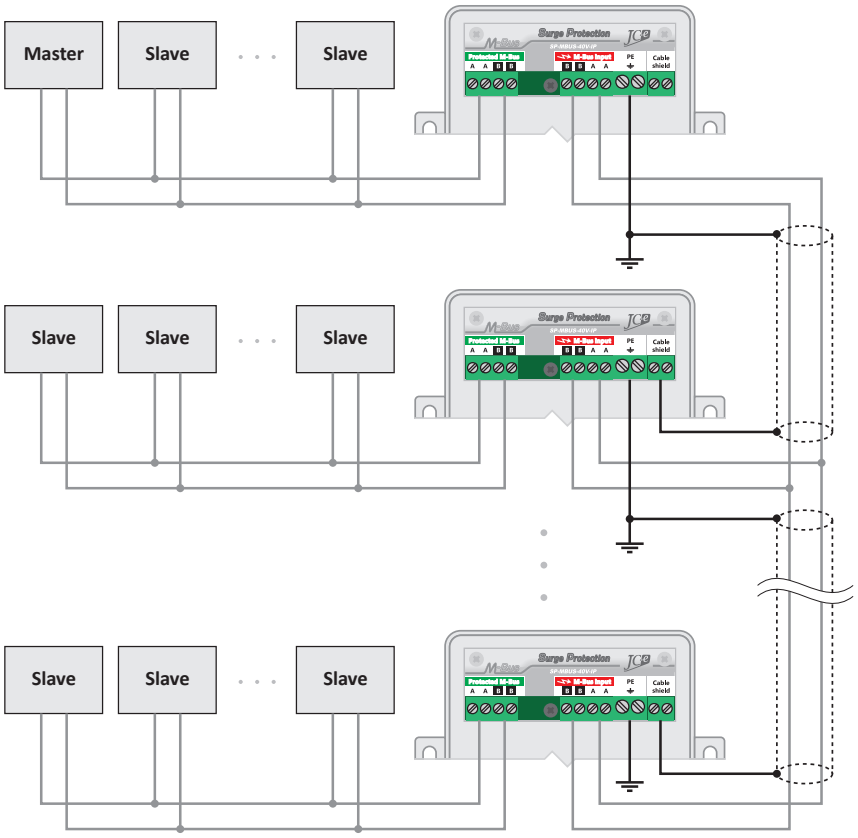
Cable shield

Terminal for connecting the cable shielding.

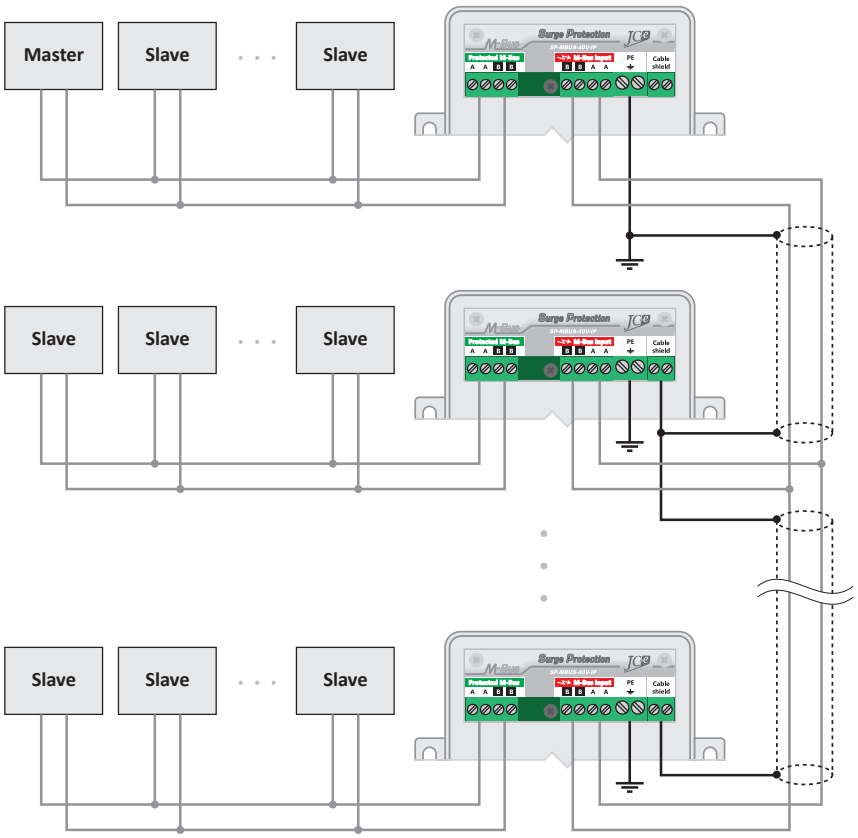


Note: Wires connected to *M-Bus Protected* terminals must not be routed near the *M-Bus input* and *PE* wires!

Recommended wiring of the surge protection



Recommended wiring option 1

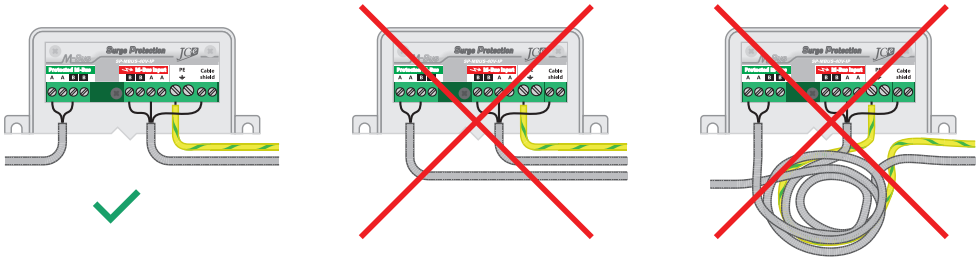


Recommended wiring option 2

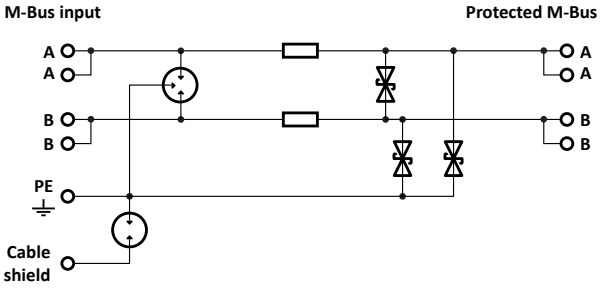
The role of surge protectors is to protect M-Bus devices against overvoltage created by atmospheric discharges (lightning) and other electromagnetic phenomena which could induce voltage into the M-Bus line.

A suitable location for a surge protector is in a place with available electrical grounding. The best locations are where the wiring enters the electrical switchgear cabinet and near the ground mounting point. Wiring rules that must be followed:

- A wire with at least 2.5 to 4mm^2 cross-section must be used for connecting the *PG* terminal with the ground and the connection must be as short as possible.
- The PG wire and the wires on the *M-Bus input* side must not be close to, cross with, or run parallel to the wires from the *M-Bus Protected* side.



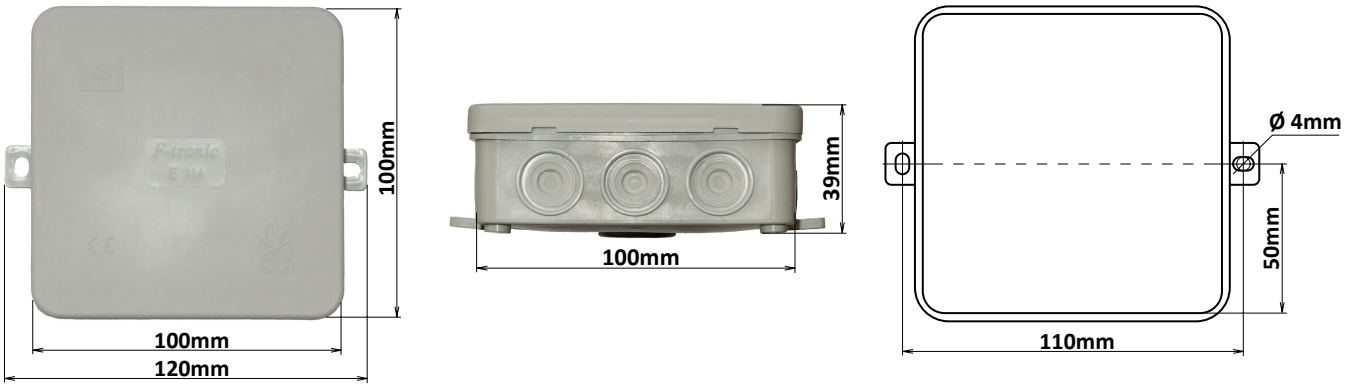
- It is recommended to connect the cable shielding on one end to the *PE* terminal and to the *Cable shield* terminal on the other end of the line. This will prevent creation of a grounding loop and the overvoltage will be limited on both ends of the line. It is possible to repeat this procedure on a continued line or connect the cable shielding just to the *Cable shield* terminals on all protectors after the first one.
- If there is a possibility of a permanent voltage exceeding the permitted operating range occurring on the line, it is necessary to connect fuses to the A,B wires before the surge protector to protect the line and the surge protector. In case of a lasting overvoltage the protector will switch to a zero resistance (short circuit) state.



Simplified circuit diagram of the protector.

Mechanical parameters

The surge protection is built in a plastic box designed for wall mounting with two 4mm mounting holes spread 110mm apart.



Top view Side view Mounting holes

Handling of electronic waste

- A non-functional, discarded electronic device must be handed to a proper collection authority.
- The electronic device must be separated from unsorted communal waste.
- Failure to handle the scrapped electronic device according the mentioned guidelines may cause negative impact on the environment and human health.
- Handing the old device to a proper collection authority will warrant the recovery of useful materials with which you contribute to their repeated use after recycling.
- All information in this paragraph is represented by the following symbol present on every electronic device.
- The purpose of this symbol is to guarantee the retrieval and separate collection of e-waste. These types of devices cannot be disposed into unsorted communal waste.

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