INSTRUCTION MANUAL

SIL 3 Surge Protective Device for Signal System Model D9510S

technology for safety

Instructions

Surge protection for signal circuits of the MCR technology
For the protection of intrinsically safe signals with 2-cable transmission

1. Safety notes

WARNING:
The installation and startup of this device may only be performed by an authorized (electrically) skilled person. The relevant country-specific regulations must be observed.
WARNING: Risk of electric shock and fire
Check the device for external damage. If the device is defective, it must not be used. Ensure that the system's maximum operating voltage does not exceed the highest continuous U_C voltage. Ensure that the maximum nominal current I_N of the overvoltage protection device is not exceeded during operation or in the event of a fault.

2. Installation in potentially explosive areas

EXPLOSION HAZARD!
Do not disconnect while circuit is live, unless area is known to be non-hazardous.
Take appropriate measures to avoid ignition hazards through static charge.
The device is adapted for installation in zone 1, zone 2 or outside of the potentially explosive area. When installing and connecting the supply and signal circuits observe the requirements of EN/IEC 60079-14.
Do not connect any cables within the potentially explosive area and do not cut any connections if they are live. Intrinsically safe circuits are an exception.
The IP20 degree of protection (EN/IEC 60529) of the device is intended for use in a clean and dry environment. If a higher degree of protection is required, corresponding measures are to be provided for during the installation.
The device does not fulfill the insulation requirements of 500 Vrms in accordance with EN/IEC 60079-11. This is because of the response voltage of the (earth) gas-filled surged arrester switched for the reference potential.
NOTE
During installation maintain a minimum lateral distance of 2 mm from grounded metal parts. Ensure to keep a distance of 50 mm (safety distance) during the attachment of modules for intrinsically and nonintrinsically safe circuits.

2.1 Intrinsic safety

If the device has been used in non-intrinsically safe circuits, it must not be used again in intrinsically safe circuits! The module must be clearly labeled as non-intrinsically safe.

3. Mounting

Observe the necessary safety precautions when handling components that are vulnerable to electrostatic discharge (EN/IEC 61340-5-1). The device is designed for mounting on grounded NS 35 DIN rails according to EN 60715. To protect the device against mechanical or electrical damage, install it in a suitable housing with appropriate degree of protection as per EN/IEC 60529.

3.1 Connecting cables

"Unprotected" and "protected" indicate the direction for installation of the protection modules.

- Connect the device upstream of the signal input to be protected so that “unprotected” points in the direction of the expected surge voltage. This is the direction of the incoming field cable.
- Connect the cables from the direction of the equipment to be protected to the terminal blocks marked "protected".

Do not lay protected and unprotected lines directly next to each another over longer distances. Equipotential leads are also considered to be unprotected.

3.2 Grounding

The device shows a current carrying capacity connection to the DIN rail. Make an electrical connection between the DIN rail and the ground potential, so that transient overvoltage between signal wires and the ground can be limited.

3.3 Knife disconnection

To operate the disconnect knife, use a suitable bladed screwdriver of the size 0.6 x 3.5 mm.

- To open the contacts, turn the function screw 360° anti-clockwise. When open (unscrewed), the function screw of the knife disconnection is 7 mm above the upper edge of the housing. The function screw remains in the item socket.
- To close the contacts, turn the function screw 360° clockwise. In the end position, the function screw is flush with the upper edge of the housing.

4. Insulation testing

Open the disconnect knife of the device before an isolation measurement. Otherwise, faulty measurements may occur.

5. Examination certificate

BVS 18 ATEX E 018 X	IECEx BVS 18.0012X
II 2(1)G Ex ia [ia Ga] IIC T6 Gb	Ex ia [ia Ga] IIC T6 Gb
II 2(1)G Ex ia [ia Ga] IIC T4 Gb	Ex ia [ia Ga] IIC T4 Gb
II (1)D [Ex ia Da] IIIC	[Ex ia Da] IIIC

Safety parameters:
Ex ia IIC intrinsically safe protection type. The output data complies with the input data.
Ui = 30 V, Ci = 0 nF, Li = 0 µH
Ta = -40 °C...+50 °C (T4 and Ii = 400 mA)
Ta = -40 °C...+70 °C (T4 and Ii = 250 mA)
Ta = -40 °C...+35 °C (T6 and Ii = 350 mA)
Ta = -40 °C...+70 °C (T6 and Ii = 100 mA)
Safety standards:

EN IEC 60079-0:2018	IEC 60079-0:2017
EN 60079-11:2012	IEC 60079-11:2011

Technical Data

IEC test classification: C1 / C2 / C3 / D1
Protection of signal types: 0/4-20 mA HART, Digital I/O, World FIP, F&G
Nominal system voltage U_n: 24 V DC
Max continuous operating voltage U_c: 30 V DC
Rated current: 600 mA (40°C)
Nominal discharge current (I_n) (8/20) µs: 5 kA (core-core)
5 kA (core-ground)
Impulse discharge current (I_{imp}) (10/350) µs: 0.5 kA (core-core)
0.5 kA (core-ground)
Total discharge current (I_{total}) (8/20) µs: 10kA
Max. total discharge current (I_{max}) (8/20) µs: 20kA (for one time)
Series resistance: 1.65Ω ± 20%
Voltage protection level (U_p): ≤ 55 V (C1 - 1 kV/500 A) core-core
≤ 65 V (C2 - 10 kV/5 kA) core-core
≤ 55 V (C3 - 100 A) core-core
≤ 900 V (C1 - 1 kV/500 A) core-ground
≤ 1.05 KV (C2 - 10 kV/5 kA) core-ground
≤ 1.4 KV (C3 - 100 A) core-ground
Response time tA: ≤ 1 ns (core-core)
≤ 100 ns (core-ground)
Environmental conditions:
Operating: temperature limits –40 to + 85 °C, relative humidity 5% to 95%.
Pollution degree: 2.
Overvoltage category: III.