



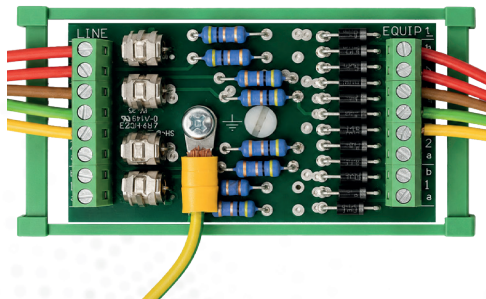
Q3 ENERGIE
GmbH & Co. KG



QFire Surge Protection for Control Lines

Integrated Protection for sensitive 24 V DC control and signal lines

Robust protection. Reliable signals. Dependable system communication.



The protective device uses a combined protection circuit comprising:

Three-electrode gas discharge tube

The gas discharge tube diverts high-energy surge currents and provides the primary protection stage for the line.

Series resistor

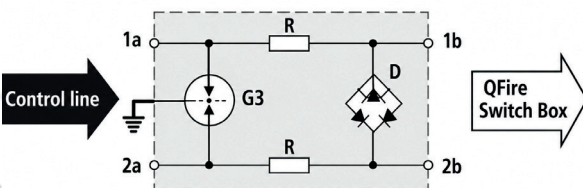
The integrated series resistor forms part of the multi-stage protection circuit between the gas discharge tube and the clamping diode.

The series resistance is $< 4.7 \Omega$.

Three-pole clamping diode

The fast-responding clamping diode reduces the residual voltage to a level that can be more readily tolerated by downstream components.

This combination provides a high surge-current withstand capability at a protection level of 40 V in the specified C3 test.



G: 3-electrode gas discharge tube
R: Resistor
D3: 3-pole clamping diode

Q3. The Box Makers.

Electrical Data

Application	4–20 mA, 24 V DC	Nominal voltage Un	24 V DC
Maximum continuous operating voltage Uc	28 V DC	Maximum load current IL	300 mA
Maximum frequency range	20 MHz	Insertion loss	< 1 dB
Series resistance	< 4.7 Ω	Series inductance	none
Maximum discharge current I _{max} , 8/20 μ s	20 kA per pole	C2 nominal discharge current, line-to-line	5 kA
D1 lightning impulse current, 2 $\times$ 10/350 μ s	2.5 kA	C3 voltage protection level, line-to-line	40 V
Failure mode	Short circuit		

Mechanical / Connection Data

Design	Protective assembly for integration into QFire systems
Protection technology	Gas discharge tube, resistor and clamping diode
Protected lines	4 pairs
Conductor connection	Screw terminals
Conductor cross-section	0.4 to 1.5 mm ²
Remote signalling contact	no
Installation	Integration within a QFire enclosure
Operating temperature	- 25°C to +50°C

Normative References

Compliant with	IEC 61643-21 / DIN EN 61643-21 / UL497B		
Approvals	UL 497B	Environmental standards	EU RoHS

Integrated Protection for the QFire Control Line

The QFire surge protective device protects 24 V DC control and signal lines against transient over-voltages and surge currents. The multi-stage protection circuit comprising a gas discharge tube and clamping diode combines a high discharge capability with a low voltage protection level.

Reliable line protection for dependable system communication.



Note: All information has been carefully checked. Subject to changes, errors and printing mistakes.
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