

# FS304

1 channel – SIL3 module for De-energize To Trip (DTT) functionality, with line fault monitoring

### Description :

The **FS304** module is a SIL3 safety relay according to IEC 61508, which can be used in safety circuitry requiring De-energize To Trip (DTT) functionality with current ratings from 10mA to 4A.

The **FS304** module is basically built with two redundant safety relays (according to EN50205, IEC/EN 60255, IEC 60664-1 standards. Each relay has two changeover forcibly guided contacts. One contact is use to drive the load, and the other is used to check the integrity of both relays when performing the periodic test.

To achieve the SIL3 level according to IEC 61508, a periodic test must be performed within an interval of one year.

### Product options :

- Option **ST** : FS304-ST, Screw terminals for the load power supply and the load connection
- Option **CCT** : FS304-CCT, Cage clamp terminals for the load power supply and the load connection
- Option **VSH** : Conformal coating (Tropicalization)



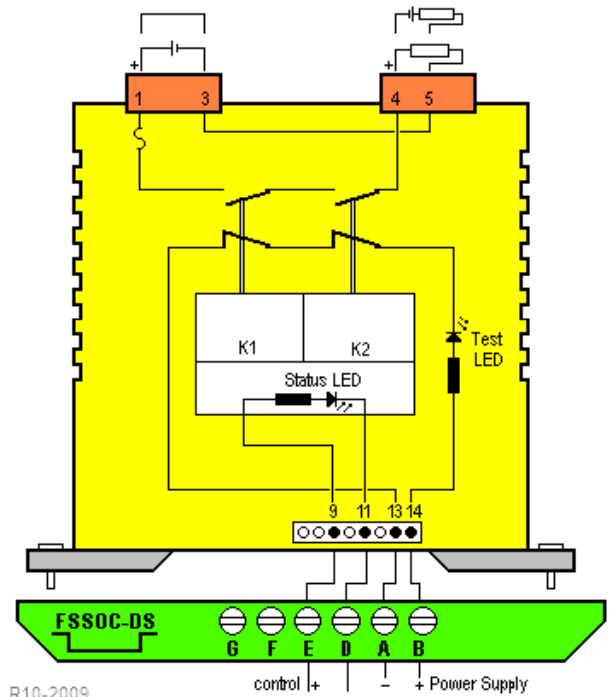
**Important :** See instructions for use of connectors at the end of the document.

**SIL3 Safety Relay according to IEC 61508.**

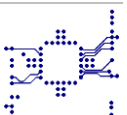
**De-energize To Trip (DTT) application.**

**DIN rail mounting, on individual socket or on termination panel modulo 16.**

**Slim version allowing high-density mounting and cabinet optimisation.**



R10-2009



**Technical specifications :****Technical input data :**

Nominal control voltage :	24Vdc
Operating control voltage :	18 to 31.2 Vdc
Control current at 24Vdc :	65mA
Power consumption at 24Vdc :	1.5W
Coil impedance	375 Ohms
Status indicator :	Yellow LED

**Technical output data :**

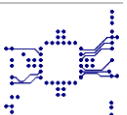
Contact type :	2 forcibly guided changeover contacts.
Contact material :	AgNi10 + 0.2µm Au
Maximum switching voltage :	250V AC/DC
Minimum switching voltage :	10V AC/DC
Continuous current / max (resistive load) :	4A with Vac, 4A with 24Vdc, 2A with 48Vdc, 0.5A with 110Vdc
Switching current / min :	10mA (Typical)
Continuous current protection :	4A (5 x 20) semi lagged fuse
Arc current protection :	RC filter
Switching power / min :	3 VA, 3W
Switching power / max :	1000 VA, 100W
Switching frequency max :	10/s
Response time :	10ms (typically)
Release time :	6ms (typically)

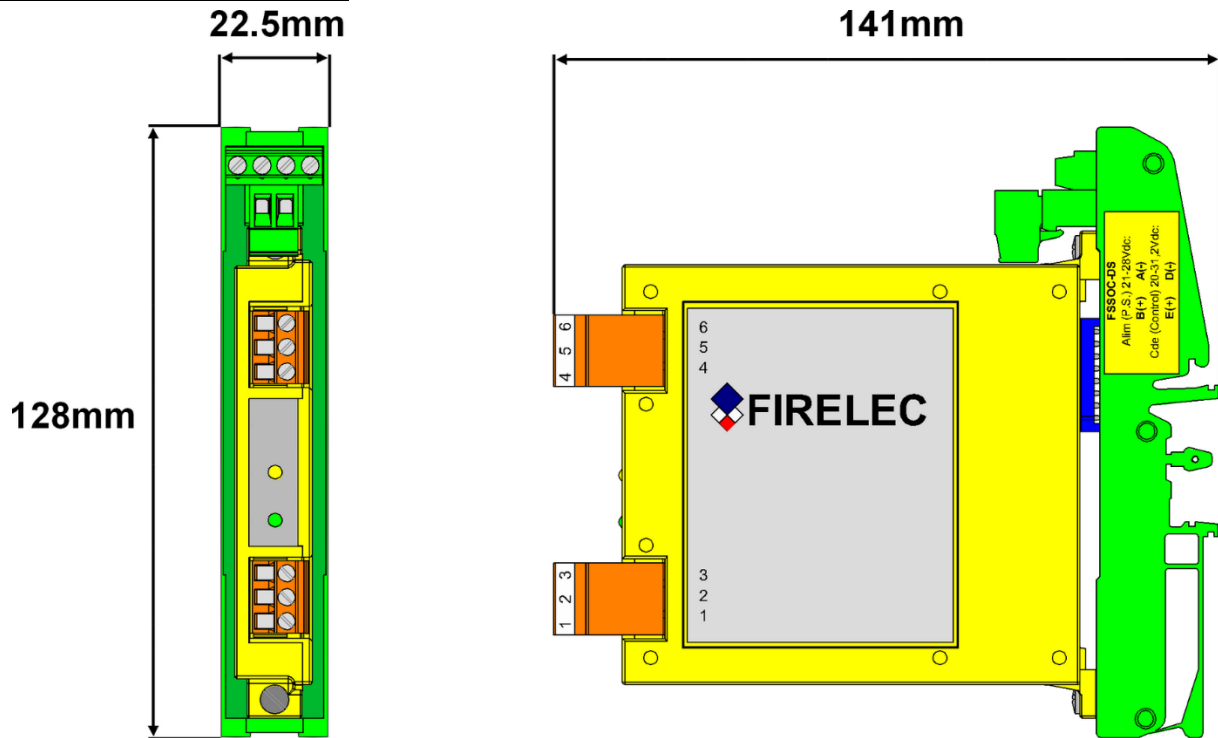
**General Data :**

Module Power Supply Voltage :	21Vdc to 28Vdc (24Vdc Nominal)
Operating temperature :	-10°C to +60°C
Storage temperature :	-20°C to +60°C
Relative humidity :	10 to 90% (non condensed)
Mechanical life :	>10 <sup>7</sup> cycles
Degree of protection / housing :	IP20
Insulation voltage :	1500 Vac between command and load power supply 1500 Vac between command and load
Relay Insulation according to EN50178 :	Contact / Coil : > 4kVac (1min)
Dimensions (W x H x D) :	16mm x 85mm x 95 mm without front connector 16mm x 85mm x 120 mm with front connector
Weight :	100g
Wiring conductor section :	Option ST : 24 to 12 AWG (0.2 to 2.5 mm <sup>2</sup> ) Option CCT : 24 to 12 AWG (0.2 to 2.5 mm <sup>2</sup> )
Load wiring :	
• Load free of potential :	Load power supply : removable connector 1(+) and 3(-) Load : removable connector 4(+) and 5(-)
• Polarized load :	Strap on removable connector 1(+) and 3(-) Load : removable connector 4(+) and 5(-)
Mounting :	DIN rail : panel modulo 16 type FS-61508-16 or type FS-61508-Mxx ( see panel documentation) or individual socket type FSSOC-DS.



Bureau Veritas approved



**Socket for individual mounting on DIN rail**


FS304 installed on FSSOC-DS socket

**Individual socket characteristics**

<b>Reference of individual socket :</b>	FSSOC-DS
<b>24Vdc Power Supply connection :</b>	Screw Terminal B (+) and A (-) AWG 14 to 26 (0.14 to 1.5mm <sup>2</sup> )
<b>Fuse protection on power supply :</b>	2A (soldered picofuse on the FSSOC-DS)
<b>Protection :</b>	Against over voltage and reverse polarity
<b>Command connection :</b>	Screw terminals E (+) and D (-) AWG 14 to 26 (0.14 to 1.5mm <sup>2</sup> )

**Periodic test :**

To achieve the SIL3 level according to IEC61508, a periodic test must be performed within an interval of one year.

The FS304 module is normally energized, the yellow LED on the front face is ON and the green LED is OFF.

To perform the test, proceed as follow :

De-energize the FS304 module, and check that the green LED turns ON. If the green LED remains OFF, replace the FS304 module with a spare. Return the faulty module to FIRELEC for general FS series product safety management.

**Recommendation and warning about the use of connectors and their wiring :**

The connectors on the front of the modules provide the possibility of quick connection / disconnection between the module and its external environment. The female connectors and their male sockets are strictly paired. Any use of other type of female connector, different than that supplied by FIRELEC is strictly prohibited. and could generate a non reversible damage of the female connector.

The user is also warned against the introduction of any foreign element into the female connector.

Actually, this could, more or less, distort and even destroy the internal structure of the female connector and consequently cause a random connection or the loss of any connection when the standard female connector is re-installed in its male socket.

To perform a continuity test between the female connector (removable part) and associated external components, use the extension adapter : PRG-001.

**Product warranty :**

Any damage caused by :

- the use of a connector other than that recommended and supplied by FIRELEC
- the introduction of unsuitable element in the female connector

is not covered by the product warranty.

