

■ FS301 (S) or (A)

1 channel – SIL3 module for switch or proximity detector with line fault detection

Description:

The FS301 module is a safety Discrete Input module according to IEC 61508, which can be used in safety circuitry requiring SIL3 level. It provides a 24Vdc floating power supply for dry contact or proximity detector and also the Line Fault Detection (LFD) for broken or shorted line, using the LFD system of the DCS or PLC. Switch status, broken and shorted line are indicated by Leds located on the top of the module.

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

Two models of FS301 module are available.

FS301-S: This module works with a normally closed contact, the contact opens in Safety mode.

FS301-A: This module works with a normally open contact, the contact closes in Alarm mode.

Product options:

Option **ST**:FI301-A or S-**ST**: signal connected using Screw Terminals

Option **CCT**:FI301-A or S-**CCT**: signal connected using Cage Clamp or spring Terminals



Main characteristics:

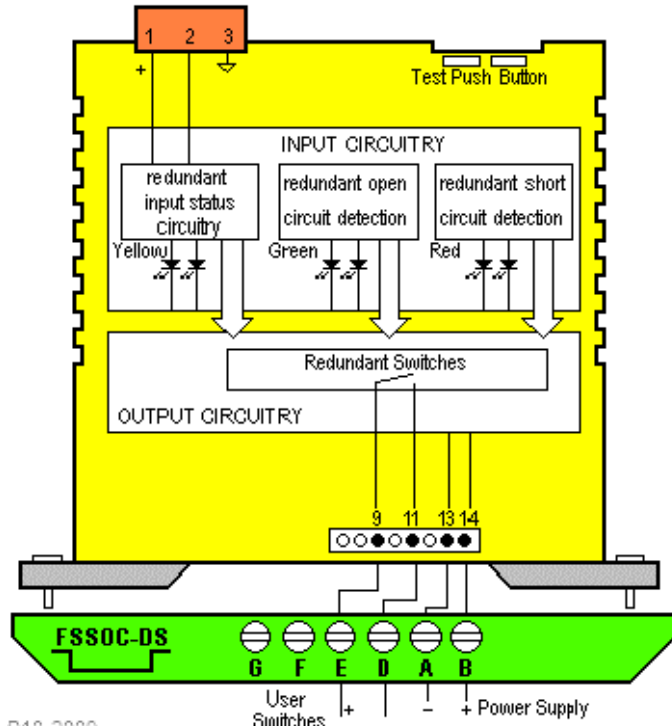
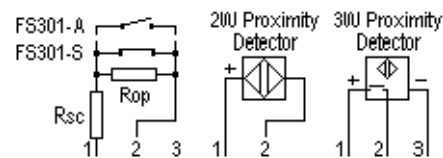
SIL3 level according to IEC61508.

Safety Discrete Input with galvanic isolation for dry contacts or 2 or 3 wire 24Vdc proximity detectors.

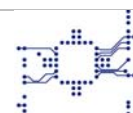
Line Fault Detection (open and shorted line).

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

Power Supply

Voltage range:	21Vdc to 28Vdc
Consumption (24Vdc):	70 mA
Replaceable fuse:	100 mA 250V quick action

Input specifications

Switch or detector power supply:	24Vdc at 21Vdc of module power supply
Input impedance:	3.3k Ω
Detection level ON:	>2mA
Detection level OFF:	<1.65mA
Status contact:	Indicated by two redundant yellow Leds
Broken line detection:	<0.35mA. Indicated by two redundant green leds. Leds are "ON" in normal situation and "OFF" when line is open.
Shorted line detection:	>6mA. Indicated by two redundant red leds. Leds are "OFF" in normal situation and ON when line is short-circuited
Value of Rop:	33K Ω +/- 5% (at the terminals of the contact)
Value of Rsc:	4.7k Ω +/- 5% (Serial connection with the contact)

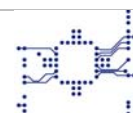
Output specifications

Nature of contact:	Solid state contact
Contacts arrangement	
FS301-A:	Two contacts in parallel
FS301-S:	Two contacts in series
Line Fault detection can be deactivate	Using one jumper. See label inside the module

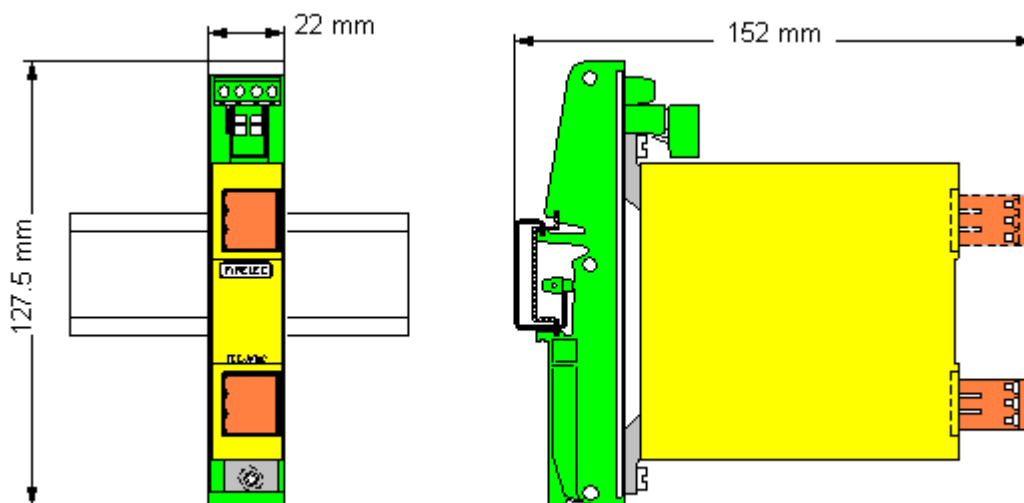
Mechanical and environment characteristics

Isolation Voltage (input / output / P.S):	1500Vdc
Protection:	IP20
Wiring conductor section:	Option ST: 24 to 12 AWG (0.2 to 2.5 mm ²) Option CCT: 24 to 12 AWG (0.2 to 2.5 mm ²)
Weight:	100g
Size:	H=130mm W=16mm D=120mm with front connector
Operating temperature:	-10°C to 60°C
Storage temperature:	-20°C to 60°C
Relative humidity:	10 to 90% (no condensation)
Mounting:	<u>DIN rail</u> : 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



FS301 installed on FSSOC-DS socket

Individual socket characteristics

Reference of individual socket:	FSSOC-DS
Power Supply connection:	Screw Terminal B (+) and A (-) AWG 14 to 26 or 0.14 to 1.5mm ²
Fuse protection on power supply:	1A
Protection:	Against over voltage and reverse polarity
Output connection:	Screw terminals E (+) and D (-) AWG 14 to 26 or 0.14 to 1.5mm ²

Periodic test:

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

FS301-S module:

The input contact is closed in a normal situation, and the redundant yellow leds (contact status) are "ON". The redundant green Leds (broken line) are "ON" and the redundant red Leds (shorted line) are "OFF".

Move the input contact from closed to open. The redundant yellow leds (Contact Status) move to "OFF". Check that it is well indicated to the Safety System. Push successively the pushbuttons BP1 and BP2 on front side. In both cases the redundant yellow leds remain "OFF". Remove the female connector (1,2,3) from the module. Both yellow leds and green leds move to 'OFF'

Short-circuits the pin 1 and 2 of the male connector on front side of the module. The redundant red leds (shorted line) and yellow leds (status) move to "ON". Check that it is well indicated to the Safety System.

Module FS301-A:

The input contact is opened in a normal situation, and the redundant yellow leds (contact status) are "OFF". The redundant green Leds (broken line) are "ON" and the redundant red Leds (shorted line) are "OFF".

Remove the female connector (1,2,3) from the module. The redundant yellow leds (Contact Status) remain "OFF", and the redundant green leds (broken line) move to "OFF". Check that it is well indicated to the Safety System.

Short-circuits the pin 1 and 2 of the male connector on front side of the module. The redundant yellow leds (contact status) and red leds (shorted line) move to "ON". Check that it is well indicated to the Safety System.

Important: For both type of module, every time the Leds work by pair, and both leds of the same colour must be in the same status. If the module does not pass the periodic test, return the faulty module to FIRELEC for general FS series product management.

