

SDIL-1608

Safe loop-monitored digital input module with earth fault monitor (16 channels)

Description

The SDIL-1608 digital input module has sixteen channels for either loop-monitored loops or status signals derived from proximity switches, as set in DIN 19234 (NAMUR). The module also supports monitoring of earth faults that occur within these sixteen loops.

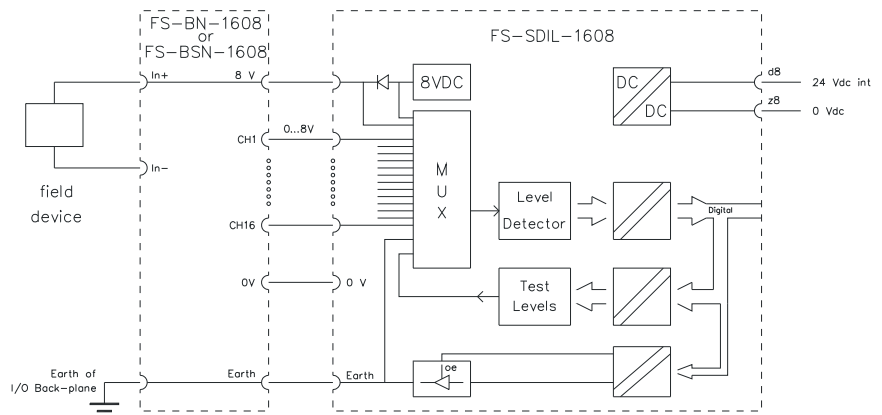
The SDIL-1608 module can be used in applications up to SIL 3, in compliance with IEC 61508.

The power for the connected field devices is supplied by an on-board DC/DC converter common to all sixteen channels.

LEDs on the front of the module indicate the status of the channel, loop and module diagnostics.

The input of proximity switch signals to the SDIL-1608 module needs to be converted to a level that is suitable for the SDIL-1608 module. To enable this conversion, you need to place the signal converter module BN-1608 or BSN-1608 on programming connector P_x on the back of the IO backplane in the IO chassis.

Figure 186 Schematic diagram for connection of inputs to SDIL-1608 module



Self-test

The self-test of the module, which is controlled by the SM Controller, includes:

- Functional tests of the various trip levels applied
- Channel independence
- Monitoring of supply voltage to input devices
- Earth connection
- Used supply voltages

Field devices

Different types of field devices can be connected to the SDIL-1608 channels, depending on the signal converter that is used, as shown in Table 50 on page 314.

Table 50 Connection of field devices

| Type of field signal | Used converter type | |
|--|---------------------|------------------|
| | BN-1608 | BSN-1608 |
| Dry contacts with line monitoring function ¹ | Yes | Yes |
| Dry contacts without line monitoring function | Yes | Yes ² |
| Proximity switches according to DIN 19234 (NAMUR), for example Pepperl+Fuchs (P+F) N-series | Yes | No |
| Pepperl+Fuchs (P+F) SN-series safe proximity switches (ferrometal sensing) ³ | No | Yes |
| Pepperl+Fuchs (P+F) S1N-series safe proximity switches (non-ferrometal sensing) ^{***} | No | Yes |

1 This requires a line terminator with a 10 kΩ resistor and a 1 kΩ resistor ±10%, 0.25 W (see electronic diagrams in the first column of Table 52 on page 317).

2 Max. 8 channels per BSN-1608 converter may be used for dry contacts without line-monitoring function.

3 The combination of safe sensors with the safe input module SDIL-1608 meets the safety integrity requirements in IEC 61508.

Earth fault monitor

For proper operation of the earth fault monitor, you need to ensure there is an earth connection for pin z28 of the SDIL-1608 module and the monitor software has been activated.

The earth fault monitor uses floating field sensors to check for and indicate a connection between any of the 2x16 input wires and earth. In zener-barrier

applications, the earth fault monitor checks for and indicates a loss of connection between the '8 Vdc' of the SDIL-1608 module and earth.

LED indicators

The module front has a number of LED indicators that indicate the status of the channel, loop and module.

Each channel has two LEDs to indicate its status.

- The green channel LED shows the channel status is high (**ON**) or low (**OFF**).
- The **red** channel LED shows a fault occurred in the channel, or if a lead breakage or short circuit was found (**ON**).

For inputs without active line monitors, these two LEDs are always off.

Table 51 on page 316 and Table 52 on page 317 shows the status indications of the green and red channel LEDs for different field situations.

The bi-colored earth LED indicates whether the earth connection test is OK (**green**), false (**red**) or disabled (**OFF**).

The bi-colored status LED indicates whether the module is OK (**green**) or faulty/not running (**red**).

Figure 187 Module front

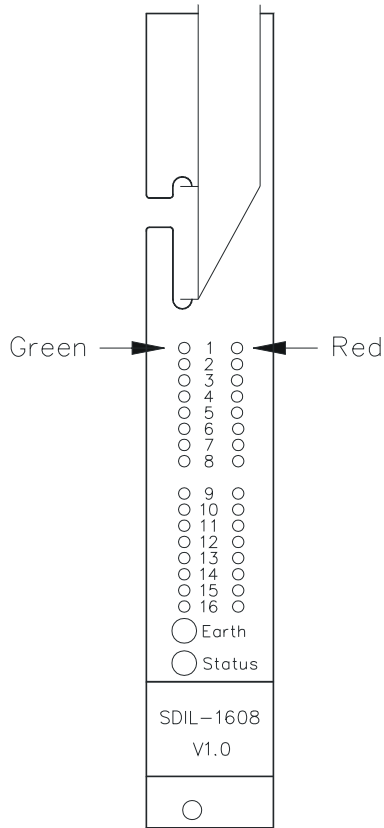


Table 51 Status LED behavior for line-monitored inputs

| Field status | Green channel LED | Red channel LED |
|---------------|--------------------------|---------------------|
| Normal | See Table 52 on page 317 | ON/OFF ¹ |
| Lead breakage | OFF | ON |
| Short circuit | ON | ON |

¹ OFF if no channel fault has been detected since the last fault reset.
ON if a channel fault has been detected since the last fault reset.