

13 Modules for special functions

13.5 Earth Leakage Detector terminal (TELD)

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The TELD-0001 is an Earth Fault Monitor in a terminal shaped housing. It is used to detect earth faults in all circuits and wiring that are galvanically connected in a power supply group. The TELD-0001 brings earth voltage to (approximately) +4Vdc as referenced to the 0Vdc of the monitored power supply group.

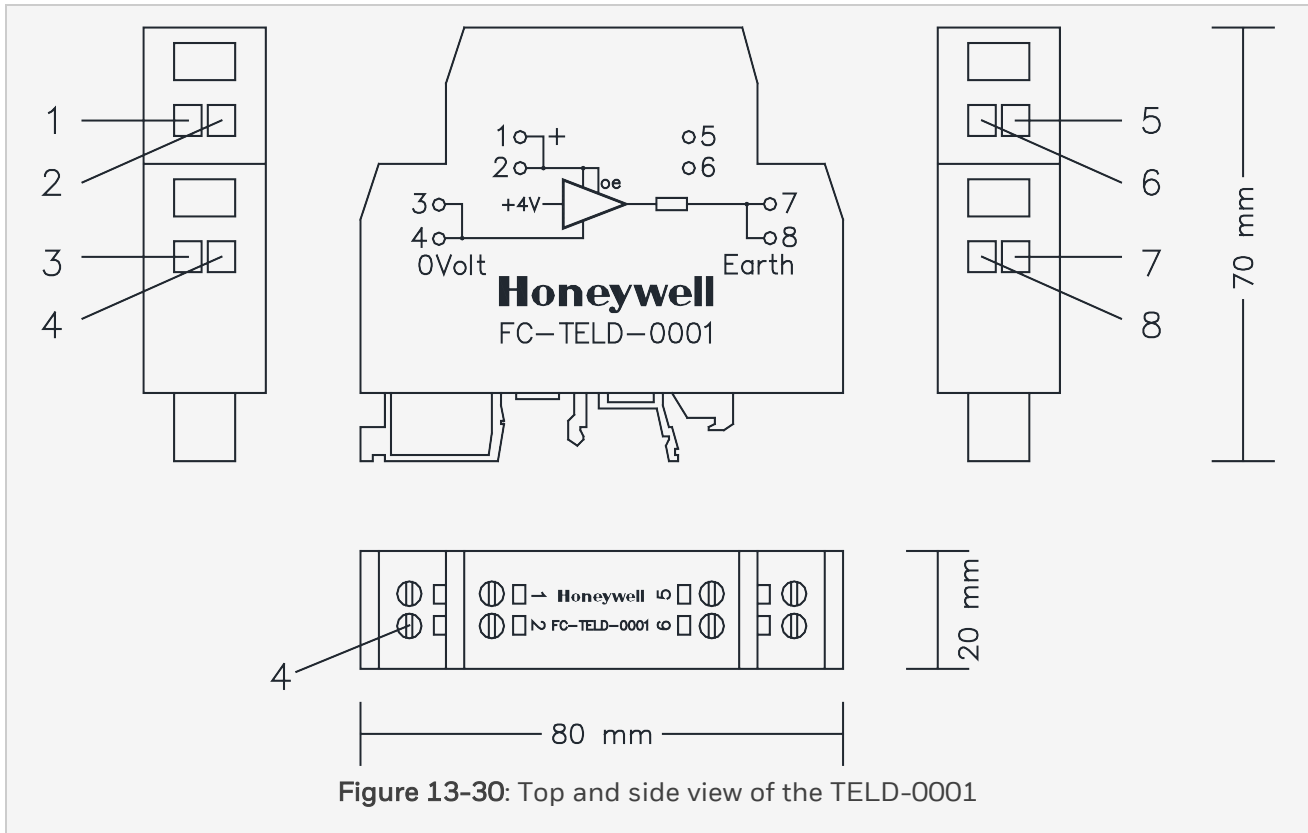
The (0-20mA) current that is drawn by the TELD-0001 gives the control system an indication of the type of earth fault present. While no earth fault is present, the TELD-0001 will draw approximately 10mA. An earth fault current flowing through the earth connection of the TELD-0001 will change that depending on its value and polarity.

The control system can switch-off the power to the TELD-0001. This will isolate the internal TELD-0001 circuit from its earth pin. That removes the earth fault current that ran at the point in the field where the earth fault is located.

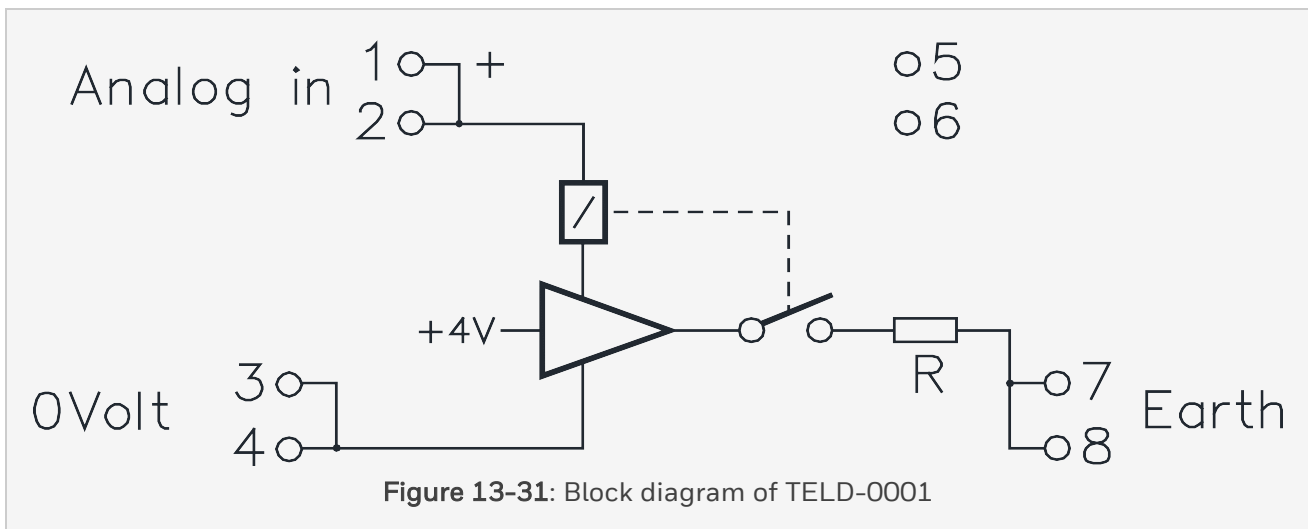
The TELD-0001 needs to be connected with the RUSIO or RUSLS channel that is configured as the 'earth fault detection' channel.

The module has a universal snap-in provision for standard DIN EN rails.

The following figure shows the top and side view of the TELD-0001.



The following figure shows the block diagram of the TELD-0001.



Connections

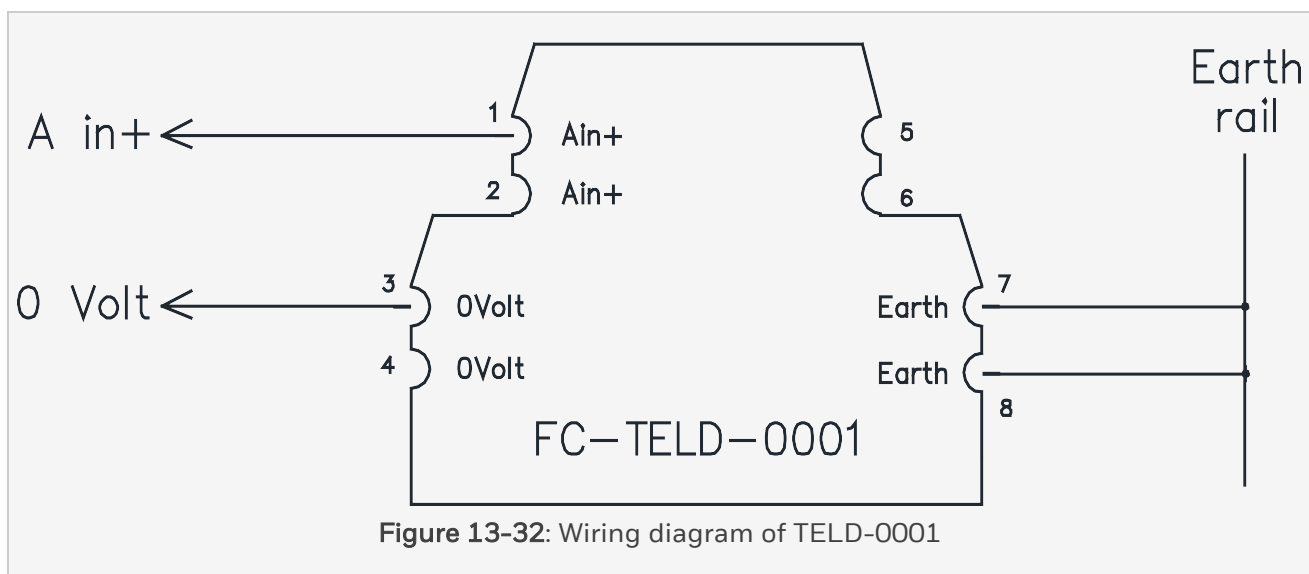
The TELD-0001 connection details are as follows:

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Connection	Pin	Function
A in+	1 + 2	Loop powered analog input signal (0-20mA)
0 Volt	3 + 4	0 V DC of supply
Earth	7 + 8	Earth connection

The following diagram shows the wiring diagram of the TELD-0001.



Note:

The Earth Leakage Detection (TELD) should be placed near the connected IOTA channel (Example: On a piece of DIN rail at the side). The TELD can be operated in an ambient air temperature range of -40°C to +75°C.

Connect the TELD earth wire and the instrument earth bar with a short wire. Route the earth wire two times through ferrite.

13.5.1 Technical data

The TELD-0001 module has the following specifications:

General	Type number:	FC-TELD-0001
	Temperature	-40°C to +75°C (-40°F to +167°F)
	Approvals	CE, TUV
Physical module dimensions		80 x 20 x 70 mm (L x W x H)
		3.15 x 0.79 x 2.76 in (L x W x H)
	DIN EN rails:	TS32 / TS35 x 7.5
	Used rail length	21 mm (0.82 in)
Analog	Input voltage:	24 VDC +30/-15% (with approximately 250 Ohm series impedance)
	Input current:	10 mA (no earth fault present) maximum 25 mA (to be limited by the power source)
Earth	Voltage	typically +4.1 VDC (with monitored 0 V as reference)
	Resistor (R)	approximately 2.8 kOhm (see "Block diagram of TELD-0001" on page 680)
	Earth fault detection threshold	approximately 0.6 mA (flowing into FC-TELD-0001) approximately 0.2 mA (coming from the FC-TELD-0001)
Termination screw terminals	wire size	0.2 mm ² - 4 mm ² (solid) 0.2 mm ² - 2.5mm ² (stranded)
	strip length	8 mm