

## Universal trip amplifier



### 4131

- Input for RTD, TC, Ohm, potentiometer, mA and V
- 2 adjustable alarm limits
- FM-approved for installation in Div. 2
- 2 relay outputs
- Universal AC or DC supply



#### Advanced features

- Programmable via detachable display front (4501), process calibration, relay simulation, password protection, error diagnostics and selection of help text in several languages.

#### Application

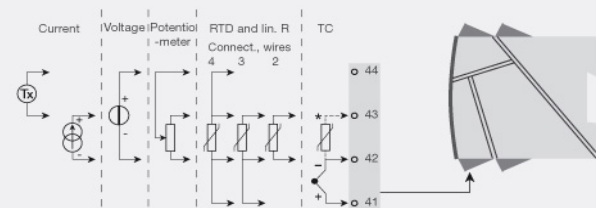
- Process control with 2 pairs of potential-free relay contacts which can be configured to suit any application.
- Trip amplifier with window function defined by a high and a low setpoint. The relay changes state outside the window.
- Relay latch function, where the relay is activated and can only be reset manually.
- Sophisticated sensor error surveillance, where one relay holds the state immediately prior to the sensor error, while allowing the process to continue. The other relay can be set for sensor error alarm so that the defect sensor can be replaced immediately.

#### Technical characteristics

- When 4131 is used with the 4501 display / programming front, all operational parameters can be modified to suit any application. As the 4131 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP-switches.
- A green front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 3-port 2.3 kVAC galvanic isolation.

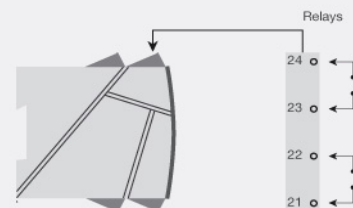
#### Connections

##### Input signals:

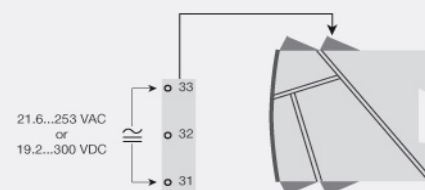


\*Order separately: CJC connector 5910.

##### Output signals:



##### Supply:



**Order:**

<b>Type</b>
4131

**Environmental Conditions**

Specifications range.....	-20°C to +60°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20

**Mechanical specifications**

Dimensions (HxWxD).....	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511.....	109 x 23.5 x 116 / 131 mm
Weight approx.....	170 g
Weight incl. 4501 / 4511 (approx.).....	185 g / 270 g
Wire size.....	1 x 2.5 mm <sup>2</sup> stranded wire
Screw terminal torque.....	0.5 Nm
Vibration.....	IEC 60068-2-6 : 2007
Vibration: 2...13.2 Hz.....	±1 mm
Vibration: 13.2...100 Hz.....	±0.7 g

**Common specifications**

Supply voltage, universal.....	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse.....	400 mA SB / 250 VAC
Max. power consumption.....	≤ 2.0 W
Isolation voltage, test / working.....	2.3 kVAC / 250 VAC
Communications interface.....	Communication enabler 4511 / Programming front 4501
Signal / noise ratio.....	Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%): Temperature input.....	≤ 1 s
Response time (0...90%, 100...10%): mA / V input.....	≤ 400 ms
Accuracy.....	Better than 0.1% of selected range
Auxiliary supplies: 2-wire supply (terminal 44...43).....	25...16 VDC / 0...20 mA
EMC immunity influence.....	< ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst.....	< ±1% of span

**Input specifications**

RTD input.....	Pt10, Pt20, Pt50, Pt100, Pt200, Pt250, Pt300, Pt400, Pt500, Pt1000 Ni50, Ni100, Ni120, Ni1000, Cu10, Cu20, Cu50, Cu100
Cable resistance per wire (max.), RTD.....	50 Ω
Sensor current, RTD.....	Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD.....	< 0.002 Ω / Ω
Sensor error detection, RTD.....	Yes
Short circuit detection, RTD.....	< 15 Ω
Linear resistance input.....	0 Ω...10000 Ω
Potentiometer input.....	10 Ω...100 kΩ
TC input: Thermocouple type.....	B, E, J, K, L, N, R, S, T, U, W3, W5, LR
Cold junction compensation (CJC) via ext. sensor in connector 5910.....	20...28°C ≤ ±1°C, -20...20°C / 28...70°C ≤ 2°C
CJC via internally mounted sensor.....	±(2.0°C + 0.4°C * Δt)
Δt =.....	Internal temperature-ambient temperature
Sensor error detection, TC.....	Yes

Sensor error current: When detecting / else.....	Nom. 2 μA / 0 μA
Current input: Measurement range.....	0...20 mA
Current input: Programmable measurement ranges.....	0...20 and 4...20 mA
Input resistance, current input.....	Nom. 20 Ω + PTC 50 Ω
Voltage input: Measurement range.....	0...12 VDC
Programmable measurement ranges, VDC.....	0/0.2...1, 0/1...5, 0/2...10 VDC
Input resistance, voltage input.....	Nom. 10 MΩ

**Output specifications**

Relay output: Relay functions.....	Setpoint, Window, Sensor error, Latch, Power and Off
Hysteresis.....	0...100%
ON and OFF delay.....	0...3600 s
Max. voltage.....	250 VRMS
Max. current.....	2 AAC or 1 ADC
Max. AC power.....	500 VA
Sensor error reaction.....	Break / Make / Hold
*of span.....	= of the currently selected measurement range

**Approvals**

EMC.....	EN 61326-1
LVD 2006/95/EC.....	EN 61010-1
FM.....	3025177
UL.....	UL 508
EAC TR-CU 020/2011.....	EN 61326-1
DNV Marine.....	Stand. f. Certific. No. 2.4