The thermocouple transducer type MC34-121Ex0-LRP is designed to drive thermocouple elements type E, J, K, R and S located in the hazardous area. It evaluates temperature dependent changes from the thermocouple and converts them into standard current and voltage signals.

Reference point compensation is accomplished internally through a Ni1000 resistor. When it is used with a thermostat, then its nominal value is selectable at the time of programming. The input circuit and the output circuit are isolated from each other and from the power supply.

The display on the front of the device indicates the actual temperature, independent of the preset range.

The current signal output (0/4...20 mA) and the voltage signal output (0...10 V) may be used at the same time.

The two setpoint outputs, each with relay and pnp short-circuit protected transistor output are independently adjustable. Setting of the switch-on and switch-off point determines the overrange or underrange monitoring function of the output relays.
Analogue Data Transmitters

The input circuit is monitored for wire-break. The performance of both setpoint outputs can be selected to indicate faults in the input circuit (relays energised or de-energised, relays maintain the same position as before the fault occurred). The display indicates “err” (Error) and the green Power LED changes to red.

The parameters for the current monitoring function during a wire-break are programmable. When a fault in the input circuit occurs, then the current output is either 0 mA or ± 22 mA.

**Programming**

Card parameter programming is accomplished either with two front toggle switches, or with personal computer (PC). The following functions can be preselected:

- thermocouple type E, J, K, R, S
- reference point compensation internal (Ni1000), constant (thermostat)
- lower limit of analogue range, depending on the thermocouple used
- upper limit of analogue range, depending on the thermocouple used
- current output 0/4...20 mA
- analogue output characteristics during a malfunction:
  - 0 mA±/± 22 mA/maintain value
  - setpoint 1
  - setpoint 2
  - setpoint function (overrange/underrange)
  - thermocouple line resistance

The selected parameters are indicated by LEDs on the front of the device. The value of the parameter will be displayed on the four digit display.

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### Technical Specifications

**Type**

- **Ident-No.**: MC34-121Ex0-LRP/24 VDC
- **90 405 10**

**Supply Voltage**

- **Ua**: 20.4...27.6 VDC
- **Ripple Wpp**: ≤ 10 %
- **Overvoltage release**: 33 V ± 1.5 V
- **Current Consumption**: ≤ 200 mA
- **Galvanic isolation**: between input circuit, output circuit and supply voltage for 250 Vrms, test voltage 2.5 KVrms

**Input Circuit**

- **Transducer circuit**
- **Reference point compensation**: intrinsically safe per EN 50020
  - thermocouples type E, J, K, R and S (IEC 584)
  - internal (Ni1000), constant (thermostat)

**Output Circuit**

- **Current output 0/4...20 mA**
- **Voltage output**: 0...10 V
- **Status outputs**: 2 preset outputs, each with 1 transistor and 1 relay output
- **Transistor output**: pnp, short-circuit protected (I ≤ 50 mA)
- **Relay output**: 1 potential-free SPDT contact
- **Switching voltage**: ≤ 250 V
- **Switching current**: ≤ 2 A
- **Switching capacity**: ≤ 500 VA/60 W
- **Contact material**: silver-alloy + 3 µm Au

**Interface**

- **RS232 serial/V.24 via adapter MC-IM-232**

**Ex-Approval acc. to Certification of Conformity**

- **PTB No. Ex-91.C.2066X**

**Input circuit**

- **Maximum nominal values**
  - Load voltage U0: 18.9 V
  - Short-circuit current I: 30.8 mA
- **Maximum external inductances/capacitances [Ex ia] IIC**: 1 mH/136 nF

**Transfer Characteristics**

- **Effective temperature range**: -270...+1700 °C
  (depending on the used thermocouple)
- **Linearity tolerance**: ≤ 0.1 % of full scale (typically 0.03 %)
- **Effect of load impedance**: ≤ 0.01 % of final value
- **Effect of supply voltage impedance**: negligible
- **Ambient temperature sensitivity**: ≤ 1.5 K (E, J, K); ≤ 3 K (R, S)

**LED Indications**

- **Power “ON” (2-colour LED)**: green: power “ON” – red: fault
- **Limit values (2-colour LED)**: green: programming mode – yellow: at preset value
- **Display**: red (4 digits)

**Eurocard**

- **Connection**: 100 x 160 mm (DIN 41 494)
- **type F**, 32-pole (series z+d)

**Coding No. 16**