The MC43-221-RP is a single channel preset device designed to evaluate and monitor signals in the 0/4...22 mA or 0/2...11 V range.

The card can operate in two different modes: For setpoint control, two independent trip points can be set for the selected voltage or current input. The parameters for both setpoints (overrange and underrange) are independently adjustable. One relay output and one short-circuit protected transistor output are available for each setpoint.

In the second mode, the device compares any deviation of the input signal 2 with reference to input 1. The limit value for the difference is set to a percentage of input during the programming of the card. If the difference exceeds the preset value, the respective output triggers setpoint 1; if the difference falls below the limit values for setpoint 2, the related output switches. This switching function can also be reversed.

In the "comparator" mode, the display in front of the device can be set to show either the input values of input 1 or input 2 and the units of measure (V/mA or %).
The hysteresis of each setpoint output can be set separately between 1...10 % (for very low signals and a low hysteresis, the hysteresis is automatically set to the lowest possible value).

In "live zero" mode (4...22 mA) the input circuit is monitored for wire-break and short-circuit conditions. When faults in the input circuit occur, both setpoint outputs and the alarm output de-activate (relay contacts open, transistor not conducting). The display indicates "err" (Error) and the green power LED changes to red.

The card can also operate in memory mode. In this mode, the output stays energised after an overrange or under-range condition until the monitoring operation is interrupted and the ENTER key on the front of the device has been pressed.

Card parameters can be programmed either with two toggle switches in the front or via personal computer (PC):

The following parameters can be pre-selected:
- Setpoint 1
- Setpoint 2
- Setpoint hysteresis: 1...10 % (in 1% increments)
- Type of input: current / voltage
  - Current input: 0/4...22 mA
  - Voltage input: 0/2...11 V
- Live zero and dead zero monitoring
- Operating modes:
  - Setpoint control or comparator, each with or without memory function
  - Preset outputs (overrange/underrange)
  - Display units:
    - Units of measure: V/mA or %
    - Resolution: 0.1 V/mA or 0.1 %
    - During comparator function: input 1 or input 2 is displayed.

The selected parameter can be adjusted with the right hand toggle switch. The value of the parameter will be displayed on the four digit display.

### Type
- MC43-221-RP/24VDC
- Ident-No. 90 566 00

### Supply Voltage
- 20.4...27.6 VDC
- Ripple WPP \( \leq 10 \) %
- Power/Current consumption \( \leq 140 \) mA
- Galvanic isolation between input circuit, output circuit and supply voltage for 250 Vrms, test voltage 2.5 kVrms

### Input Circuits
- 2 current inputs/2 voltage inputs
- Current input
  - Input current \( \leq 80 \) mA
  - Input resistance 50 \( \Omega \)
  - Operating characteristics 0/4...22 mA
  - Adjustable range 1...110 %/0.2...22 mA
- Voltage input
  - Input voltage \( \leq 30 \) VDC
  - Input resistance 30 k\( \Omega \)
  - Operating values 0/2...11 VDC
  - Adjustable range 1...110 %/0.1...1 VDC
- Hysteresis (of preset) 1...10 % (adjustable in 1% increments)
- Linearity tolerance \( \pm 0.5 \) digit
- Temperature drift \( \leq 0.005 \) %/K

### Output Circuits
- Preset control / alarm outputs
  - Transistor output pnp, short-circuit protected \( (I_L \leq 50 \) mA)
  - Relay output 1 potential-free SPDT contact
  - Switching voltage \( \leq 250 \) VAC/DC
  - Switching current \( \leq 2 \) A
  - Switching capacity \( \leq 500 \) VA/60 W
  - Contact material silver-alloy + 3 \( \mu \)m Au

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

### LED Indications
- Power „ON“ (2-colour LED)
  - Green: setpoint control – red: fault
- Limit values (2-colour LED)
  - Green: programming mode
  - Yellow: at preset value
- Parameter selected for programming green
- Card parameter selection unit \( (V/mA) \) red
- Display red (4 digits)

### Eurocard
- 100 x 160 mm (DIN 41494)
- Material glass-fiber reinforced epoxy resin, quality class FR4
- Front panel plastic, 4TE = 20.32 mm individually interlocking connector per DIN 41612, type F, 32-pole (series z+d)
- Operating temperature -25...+60 °C