PROFILE
With their compact dimensions, these mini-indicators can be mounted even in the smallest machines. They have one signalizer output and two alarm outputs.

SAFE OPERATION
Operation is done by means of 3 front-panel keys in the Operating, Parameter and Configuration Levels. Easily remembered mnemonics are displayed for every adjusted parameter, thus simplifying the unit’s configuration. Alarm and control parameters can be selected for adjustment in the Operating Level. Two DIP switches enable the adjustment of set-point and parameters to be disabled.

UNIVERSAL INPUT INP1
The measurement input is configurable for all conventional applications. With thermocouple and Pt 100 input, resolution is 0.1°C. Optionally, the display can be in °F or in a linear engineering unit of your choice. Measurement value correction is fitted as standard. Current/voltage input signals are scalable in the range of -19999...+45536. Set-point limits are adjustable within the measurement range. In case of sensor break, the output goes to a pre-defined state.

ADDITIONAL DISPLAY MODE
Apart from the standard display of set-point and process value, it is possible to select a display mode for previous min/max process values together with their gradients. Heating current and output value can also be displayed in this way.

TWO UNIVERSAL, CONFIGURABLE ALARM OUTPUTS
Both alarm outputs operate on the working current principle; when triggered by an alarm, the relays are energized, and the front-panel LED lights. The switching difference is individually adjustable. Configurable alarm modes are: Absolute or relative measurement value alarm, min/max alarm, tolerance band alarm, or control loop monitoring. The absolute alarm is selectable for INP1 or INP2. Further, more, alarm behaviour is configurable: Alarm suppression after power-up, alarm „latch” or alarm „on/off” in case of a fault, e.g. sensor break. Latched alarms can be reset via an external contact.

SIGNALLER OUTPUT (OUT1)
In addition to the alarm outputs a signalizer output operating on the quiescent current principle for the monitoring of INP1 is implemented. The relay attracts in case of alarm on the depending red LED is lighted. The switching difference can be adjusted separately.

OPTION: INTERFACE OR MEASUREMENT VALUE OUTPUT
The RS 485 interface with Modbus RTU protocol can be used for remote access to all the parameters. The high-precision 0/4...20 mA measurement value output is galvanically isolated and configurable to represent the process value, the control deviation, or the controller output.

DELIVERY STATUS
OUT1: MAX-monitoring of INP1
Relay 2A / 230VAC
ALM1: MAX-monitoring of INP1
Logic 5V / 100mA
ALM2: MAX-monitoring of INP1
Relay 2A / 230VAC

DIMENSIONS

VERSIONS

OPTIONS

RS 485 interface

Retransmission output 0/4-20 mA

CONNECTION DIAGRAMM
TECHNICAL DATA

POWER SUPPLY
AC supply
90...264 VAC, 50/60 Hz
Universal supply
11-26 VUC
Power consumption
Max 15VA / 7 W

UNIVERSAL INPUT INP1
Scanning cycle
100 ms
Input filter
Time constant adjustable: max. 60 s
Display
°C, °F or engineering unit selectable
Sensor break monitoring
Response time: approx. 1 s
Thermocouple and Pt 100 break protection
Lead break monitoring:
current <1 mA for 4...20 mA input;
voltage <0.025 V for 1...5 V input
Output response: adjustable 0...100.0%
Alarm output action: adjustable On/Off

Sensor and signal types

<table>
<thead>
<tr>
<th>Sensor/signal Type</th>
<th>Measuring range</th>
<th>Error*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe-CuNi J</td>
<td>-120...1000 °C</td>
<td>±184...1832 °F 2 K</td>
</tr>
<tr>
<td>Fe-CuNi L</td>
<td>-200...900 °C</td>
<td>±328...1625 °F 2 K</td>
</tr>
<tr>
<td>NiCr-Ni K</td>
<td>-200...1370 °C</td>
<td>±328...2498 °F 2 K</td>
</tr>
<tr>
<td>PtRh-Pt 10% S</td>
<td>0...1767 °C</td>
<td>±32...3214 °F 2 K</td>
</tr>
<tr>
<td>PtRh-Pt 13% R</td>
<td>0...1767 °C</td>
<td>±32...3214 °F 2 K</td>
</tr>
<tr>
<td>PtRh-Pt 6% B</td>
<td>0...1820 °C</td>
<td>±32...3308 °F 2 K**</td>
</tr>
<tr>
<td>Cu-CuNi T</td>
<td>250...400 °C</td>
<td>±418...752 °F 2 K</td>
</tr>
<tr>
<td>Nicrosil/Nisil N</td>
<td>-250...1300 °C</td>
<td>±418...2372 °F 2 K</td>
</tr>
<tr>
<td>NiCr-CuNi E</td>
<td>-100...900 °C</td>
<td>±418...1652 °F 2 K</td>
</tr>
<tr>
<td>Pt 100</td>
<td>-210...700 °C</td>
<td>±46...1252 °F 0.1 K</td>
</tr>
<tr>
<td>Linear</td>
<td>4-20 mA</td>
<td>±19999...45538 0.05 %</td>
</tr>
<tr>
<td>Linear</td>
<td>0-20 mA</td>
<td>±19999...45538 0.05 %</td>
</tr>
<tr>
<td>Linear</td>
<td>0-1 V</td>
<td>±19999...45538 0.05 %</td>
</tr>
<tr>
<td>Linear</td>
<td>0-5 V</td>
<td>±19999...45538 0.05 %</td>
</tr>
<tr>
<td>Linear</td>
<td>1-5 V</td>
<td>±19999...45538 0.05 %</td>
</tr>
<tr>
<td>Linear</td>
<td>0-10 V</td>
<td>±19999...45538 0.05 %</td>
</tr>
</tbody>
</table>

* Error includes linearity, temperature compensation, lead resistance, and offset drift
* *For range 200...1820 °C

Current 0/4...20 mA
Input resistance: 70.5 Ω

Voltage

Input resistance: 302 kΩ
Lead resistance
Max. 100 Ω
Temperature compensation
Additional error: typically 0.1 K / 10 K
Effect of compensating lead
Additional error: 0.1 μV / Ω
Resistance thermometer connection
2 or 3-wire connection
Measurement value correction
-200.0...200.0 °C
Decimal point adjustment
0 or 1 for thermocouple, Pt 100 ranges
0, 1, 2 or 3 for mA, V ranges
Interference suppression
Series mode rejection: 40 dB
Common mode rejection: 120 dB

DIGITAL INPUT
Configurable action:

<table>
<thead>
<tr>
<th>Display Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE No function</td>
</tr>
<tr>
<td>RS.A1 Reset alarm 1 output</td>
</tr>
<tr>
<td>RS.A2 Reset alarm 2 output</td>
</tr>
<tr>
<td>RA.12 Reset Alarm 1&amp;2</td>
</tr>
<tr>
<td>LOCK All parameters disabled</td>
</tr>
</tbody>
</table>

OUTPUTS
Relay contacts
Rating: 240 VAC, 2 A, resistive load
Logic output
Rating: >4V with R_L > 400 Ω
max. 30 mA with R_L < 400 Ω

CONTROL BEHAVIOUR
Absolute alarm: within measuring range
Switching difference (hysteresis): 0,1...55,6 °C

ALARM OUTPUTS 1 AND 2
Alarm 1: Logic output 5 V /100mA
Alarm 2: Relay output

Configurable alarm action
Alarm suppression on power up
Alarm latch
Alarm On/Off for sensor break

Adjustment of alarm trigger points
Absolute alarm: within measuring range
Switching difference (hysteresis): 0,1...55,6 °C

COMMUNICATION
RS 485 interface
Data protocol: Modbus RTU
Interface address: 1..247
Transmission speed: max. 38.400 bits/s
Measurement value output
0/4...20 mA, load max. 250 Ω
Galvanically isolated, scalable
Resolution: 0.025 %
Accuracy: ± 0.05 %
Configurable, scalable for representation of: Process value x

ENVIRONMENTAL CONDITIONS
Operating temperature
-10...+50 °C
Storage temperature
-40...+60 °C
Relative humidity
0...90 %, no condensation
Shock and vibration
Shock test: 20 g
Vibration test: 10...55 Hz, 1 mm

CONFORMITY TESTS
CE marking
The unit meets the relevant European Standards
Electrical safety
According to DIN EN 61 010-1
Over-voltage category II
Contamination degree 1
Working voltage range 300 V
Protection class II
UL approval (in preparation)
CSA approval (in preparation)
Electromagnetic compatibility
Meets EN 50 081-1, EN 50 082-2 and EN 61326

GENERAL
Housing
Front dimensions: 48 x 24 mm
Depth behind panel: 99 mm
Panel cut-out: 45+0.5 x 22.2+0.3
Electrical connection
Screw terminals for max. 2.5 mm²
Weight
Approx. 0.11 kg
Protection mode
Front: IP 65 (NEMA 4X)
Accessories
operating instructions (D, GB, F)

Your local representative:
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