

- Oversampling
- MSI

No

No

CiR – Configuration in RUN

Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes

Supply voltage

Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes

Input current

Current consumption, max.	35 mA
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Power loss

Power loss, typ.	0.75 W
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Address area

Address space per module	
<ul style="list-style-type: none"> • Address space per module, max. 	8 byte; + 1 byte for QI information

Hardware configuration

Automatic encoding	Yes
<ul style="list-style-type: none"> • Mechanical coding element 	Yes

Selection of BaseUnit for connection variants

- | | |
|--|----------------------------------|
| <ul style="list-style-type: none"> • 2-wire connection • 3-wire connection | BU type A0, A1
BU type A0, A1 |
|--|----------------------------------|

Analog inputs

Number of analog inputs	4
permissible input voltage for voltage input (destruction limit), max.	30 V
Constant measurement current for resistance-type transmitter, typ.	0.7 mA; 1.7 mA for Cu10 sensors
Cycle time (all channels), min.	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels); for line compensation in case of a three-wire connection, an additional cycle is necessary
Technical unit for temperature measurement adjustable	Yes; °C/°F/K

Input ranges (rated values), voltages

- | | |
|--|--|
| <ul style="list-style-type: none"> • -1 V to +1 V <ul style="list-style-type: none"> — Input resistance (-1 V to +1 V) • -250 mV to +250 mV <ul style="list-style-type: none"> — Input resistance (-250 mV to +250 mV) • -50 mV to +50 mV | Yes; 16 bit incl. sign
1 MΩ
Yes; 16 bit incl. sign
1 MΩ
Yes; 16 bit incl. sign |
|--|--|

— Input resistance (-50 mV to +50 mV)	1 MΩ
• -80 mV to +80 mV	Yes; 16 bit incl. sign
— Input resistance (-80 mV to +80 mV)	1 MΩ
Input ranges (rated values), thermocouples	
• Type B	Yes; 16 bit incl. sign
— Input resistance (Type B)	1 MΩ
• Type C	Yes; 16 bit incl. sign
— Input resistance (Type C)	1 MΩ
• Type E	Yes; 16 bit incl. sign
— Input resistance (Type E)	1 MΩ
• Type J	Yes; 16 bit incl. sign
— Input resistance (type J)	1 MΩ
• Type K	Yes; 16 bit incl. sign
— Input resistance (Type K)	1 MΩ
• Type L	Yes; 16 bit incl. sign
— Input resistance (Type L)	1 MΩ
• Type N	Yes; 16 bit incl. sign
— Input resistance (Type N)	1 MΩ
• Type R	Yes; 16 bit incl. sign
— Input resistance (Type R)	1 MΩ
• Type S	Yes; 16 bit incl. sign
— Input resistance (Type S)	1 MΩ
• Type T	Yes; 16 bit incl. sign
— Input resistance (Type T)	1 MΩ
• Type U	Yes; 16 bit incl. sign
— Input resistance (Type U)	1 MΩ
• Type TXK/TXK(L) to GOST	Yes; 16 bit incl. sign
— Input resistance (Type TXK/TXK(L) to GOST)	1 MΩ
Input ranges (rated values), resistance thermometer	
• Cu 10	Yes; 16 bit incl. sign
— Input resistance (Cu 10)	1 MΩ
• Ni 100	Yes; 16 bit incl. sign
— Input resistance (Ni 100)	1 MΩ
• Ni 1000	Yes; 16 bit incl. sign
— Input resistance (Ni 1000)	1 MΩ
• LG-Ni 1000	Yes; 16 bit incl. sign
— Input resistance (LG-Ni 1000)	1 MΩ
• Ni 120	Yes; 16 bit incl. sign
— Input resistance (Ni 120)	1 MΩ
• Ni 200	Yes; 16 bit incl. sign

— Input resistance (Ni 200)	1 MΩ
• Ni 500	Yes; 16 bit incl. sign
— Input resistance (Ni 500)	1 MΩ
• Pt 100	Yes; 16 bit incl. sign
— Input resistance (Pt 100)	1 MΩ
• Pt 1000	Yes; 16 bit incl. sign
— Input resistance (Pt 1000)	1 MΩ
• Pt 200	Yes; 16 bit incl. sign
— Input resistance (Pt 200)	1 MΩ
• Pt 500	Yes; 16 bit incl. sign
— Input resistance (Pt 500)	1 MΩ
Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes; 15 bit
— Input resistance (0 to 150 ohms)	1 MΩ
• 0 to 300 ohms	Yes; 15 bit
— Input resistance (0 to 300 ohms)	1 MΩ
• 0 to 600 ohms	Yes; 15 bit
— Input resistance (0 to 600 ohms)	1 MΩ
• 0 to 3000 ohms	Yes; 15 bit
— Input resistance (0 to 3000 ohms)	1 MΩ
• 0 to 6000 ohms	Yes; 15 bit
— Input resistance (0 to 6000 ohms)	1 MΩ
• PTC	Yes; 15 bit
— Input resistance (PTC)	1 MΩ
Thermocouple (TC)	
Temperature compensation	
— parameterizable	Yes
— Reference channel of the module	Yes
— internal comparison point	Yes; with BaseUnit type A1
— Reference channel of the group	Yes
— Number of reference channel groups	4; Group 0 to 3
— fixed reference temperature	Yes
Cable length	
• shielded, max.	200 m; 50 m with thermocouples
Analog value generation for the inputs	
Measurement principle	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Integration time, parameterizable	Yes

- Basic conversion time, including integration time (ms)
 - additional processing time for wire-break check
2 ms; In the ranges resistance thermometers, resistors and thermocouples
 - additional power line wire-break check
2 ms; for 3/4 wire transducer (resistance thermometer and resistor)
- Interference voltage suppression for interference frequency f_1 in Hz
16.6 / 50 / 60 Hz
- Conversion time (per channel)
180 / 60 / 50 ms

Smoothing of measured values

- Number of smoothing levels
4; None; 4/8/16 times
- parameterizable
Yes

Encoder

Connection of signal encoders

- for voltage measurement
Yes
- for resistance measurement with two-wire connection
Yes
- for resistance measurement with three-wire connection
Yes
- for resistance measurement with four-wire connection
Yes

Errors/accuracies

- Linearity error (relative to input range), (+/-)
0.01 %; ± 0.1 % for resistance thermometers and resistance
- Temperature error (relative to input range), (+/-)
0.0009 %/K; ± 0.005 % / K at thermocouple
- Crosstalk between the inputs, min.
-50 dB
- Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)
0.05 %

Operational error limit in overall temperature range

- Voltage, relative to input range, (+/-)
0.1 %
- Resistance, relative to input range, (+/-)
0.1 %

Basic error limit (operational limit at 25 °C)

- Voltage, relative to input range, (+/-)
0.05 %
- Resistance, relative to input range, (+/-)
0.05 %

Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency

- Series mode interference (peak value of interference < rated value of input range), min.
70 dB
- Common mode voltage, max.
10 V
- Common mode interference, min.
90 dB

Interrupts/diagnostics/status information

- Diagnostics function
Yes

Alarms

- Diagnostic alarm
Yes

• Limit value alarm	Yes; two upper and two lower limit values in each case
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; channel by channel
• Group error	Yes
• Overflow/underflow	Yes; channel by channel
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
• between the channels	No
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes
Permissible potential difference	
between the inputs (UCM)	10 V DC
Isolation	
Isolation tested with	707 V DC (type test)
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
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