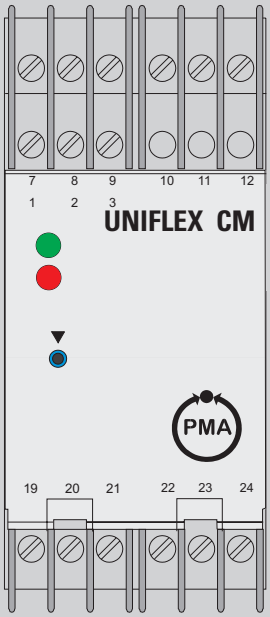


UNIFLEX-CM
Universal Transmitter

Pt100, Thermocouple , RTD, Potentiometer,

Voltage, Current

Temperature linear for temperature sensors

Comprehensive galvanical isolation

Relay output for alarm

CE tested to EN and NAMUR

PROFILE

The UNIFLEX CM transmitter provides solutions for process as for industrial applications. Temperature, voltage, current and resistive sensors can be measured and monitored.

Uniflex CM transmitter will be configured and adjusted ex works to the required characteristics, measuring and signalling parameters.

DESCRIPTION

The transmitter has independent signal inputs for thermocouple, resistive temperature sensors, resistance transducer, DC-voltage and DC-current.

For thermocouple measurement, the cold-junction compensation is provided by a built-in sensor. Resistance thermometers can be conneted in 3- or 4-wire connection.

INPUT CIRCUIT MONITOR,

Resistance thermometer, thermocouples and resistance transducers are always monitored for break.

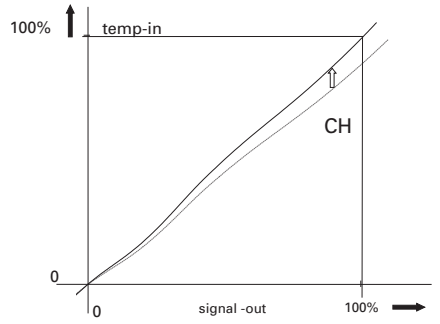
Signalling options:

- red LED in front (lights up on alarm)
- via switching output (selection of energized or de-energized or not operational)
- via the output signal (upscale oder downscale)

SENSOR SIGNAL CORRECTION

Sensor signal correction (Fig. 1) is used to match sensor and transmitter for tolerance-compensated readings.

Fig. 1 Sensor signal correction



Corrections are possible by means of the front panel key. The signal can be adjusted for offset (e.g. zero) and gain (e.g. span).

Limit signalling

Min- and/ or Max. alarm

Hysterisis

In Kelvin respectively 0,0... 99,9 % reffered to the output signal span.

Signal suppression (response delay)

0... 999 s. All alarms shorter than the selected delay are ignored..

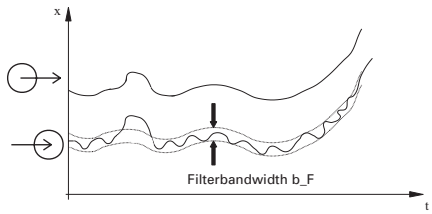
Signalling

- via red LED in front panel (lights up on alarm).
- with switching output (selection of energized or de-energized or no operation).

FILTER

A mathematical filter of 1st order is built-in . It is adjusted for time constant and band-width.

Fig. 2 Filter function



The bandwidth is the tolerance above and below the process value, in which the filter is active. Changes of the process value larger than the bandwidth are not filtered and will be transferred directly to the output.

TECHNICAL DATA

INPUT (CONFIGURED EX WORKS)

Resolution: 20.000 steps, referred to full span
Measuring cycle: 200 ms

Thermocouples

Measurement limits (TC-group 1)

Type	Span start[°C]	Span end [°C]
J	-100	1200
L	-100	900
K	-100	1370
N	-100	1300

Smallest span: 4 (2) mV[1)]

Type	Span start[°C]	Span end [°C]
R	0	1760
S	0	1760

Measurement limits (TC-group 2)
Smallest span: 2 mV
Input resistance: > 1 MΩ

Linearization

built-in (temperature linear)
conformity error:
for TC group 1: ≤ 0,2 K
for TC group 2: ≤ 0,5 K

Input circuit monitor

For break and reverse connection

Cold-junction compensation

intern, sensor built in

Resistance thermometer Pt100 DIN IEC

Span start[°C]	Span end [°C]
-200	650

Measurement limits:
Smallest span: 50 (25) K[1)]
Sensor current: < 0,4 mA

Connection technique

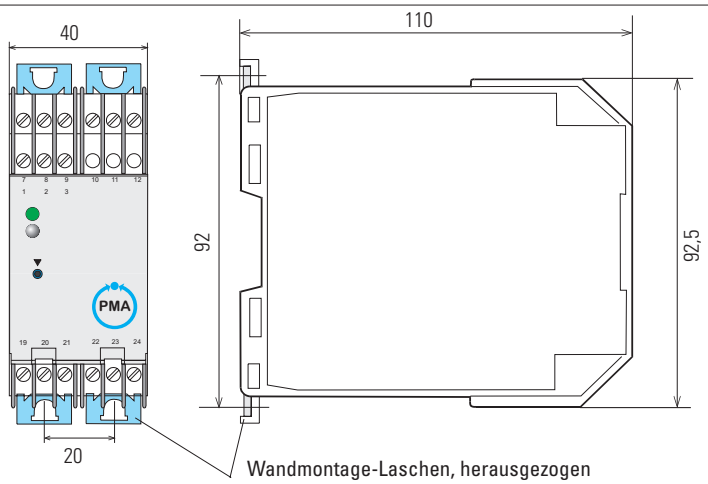
Three- and four-wire connection
Lead resistance: : ≤ 30 Ω per lead
Input resistance: 1 M Ω

Linearization

built-in, temperature linear
Conformity error: ≤ 0,1 K
Input circuit monitor: for break

[1)] Figure in brackets with approx. double error

Fig.3 Einbaumaße (in mm)



Resistance / potentiometric transducer

Range 1: 0... 400 Ω
Range 2: 0....1500 Ω
(incl. lead resistance)

Smallest span

Range 1: 20(10) Ω [1)]
Range 2: 50 Ω

Connection

Transducer: 3-wire connection, current through resistor,

Resistance:

3 or 4-wire connection

Lead resistance:

≤ 30 Ω per lead

Input resistance:

MΩ

Measuring current

Range 1: approx. 0,4 mA
Range 2: approx. 0,1 mA

DC voltage/ DC current

mV direct

Range 1: -3...23 mV, min. 2,5 mV
Range 2: -11...69 mV, min. 9 mV
Range 3: 0...160 mV, min. 15 mV
Input resistance: 1 MΩ

V via internal voltage divider

Range 1: - 0,6...4,4 V, min. 400 mV
Range 2: - 2...13 V, min. 1000 mV
Range 3: 0...30 V, min. 2000 mV
Input resistance: approx. 100 κ Ω

Current

Range 1: - 1...7,3 mA, min. 1 mA
Range 2: - 3...22 mA, min. 2 mA
Range 3: 0...50 mA, min. 4 mA
Input resistance: approx. 18 Ω

Permissible interference at input

(to DIN IEC 770 6.2.4)
Common mode suppression: negligible
Series mode: no effect up to approx.:
450 mVrms for TC (Typ S)
1 Vrms for mV (0...50 mV)
750 mVrms for Pt100 (0...100 °C)
10 Vrms for DC 0...4V / 0...5 mA

OUTPUT

The ordered calibrated output signal is configured ex works. Current and voltage signal are always available inparallel
Synchronism error: ≤ ± 0,5%

Standard current signal

0...20 mA or 4...20 mA
Output sense: direct oder inverse
Controlled range: -0,3...23 mA

Load: 0...700 Ω

Load effect: ≤ 0,1 % / 100 Ω

Standard voltage signal:

0/2...10 V, parallel to current signal
Output sense: direct oder inverse
Controlled range: - 0,15...11,5 V

Load: ≥ 2 κΩ

(not continously short circuit proof)
Load effect: negligible with ≥ 2 κΩ

Resolution:

13 bit (9000 steps)

Characteristic:

linear
Conformity error, including factory calibration error: ≤ 0,06% of fsd

Factory calibration:
at 23 °C
RT ± 1 K, TC ± 2 K
Rload for current: 350 Ω

Hysterisis:
≤ 0,02 %

Reproducibility:
≤ 0,01 %

INPUT CIRCUIT MONITORING

Output action selectable: upscale, downscale.

Dynamic response
For a step change from 10 to 90 % of input signal. Output follows input: approx. 630 ms

Switching output
Relay with change-over contact, contact rating: max. 250 VAC, 1 A; min. 10 V, 0,1 A

Energized or de-energized operation:
configurable. Operation mode: selectable for input circuit monitor and/or limit signalling.

DISPLAY

LED green: ready for operation
LED red: input circuit monitor or limit signaller activated.
Additionally: display of operating mode during adjustment of span start and span end.

OPERATION

Input signal correction is done by means of a front key and a digital voltmeter at the output. Setting of configuration and parameter only possible at works.

POWER SUPPLY

AC (DC) Supply
85...264 VAC 1) , 50or 60 Hz
Consumption: approx. 5,3 VA

Universal supply
18...50 VDC / 18... 40 VAC
Consumption: approx. 1,9 W / 2,9 VA

Power supply effect
Negligible within specified limits.

Behaviour with mains failure
no loss of configuration data

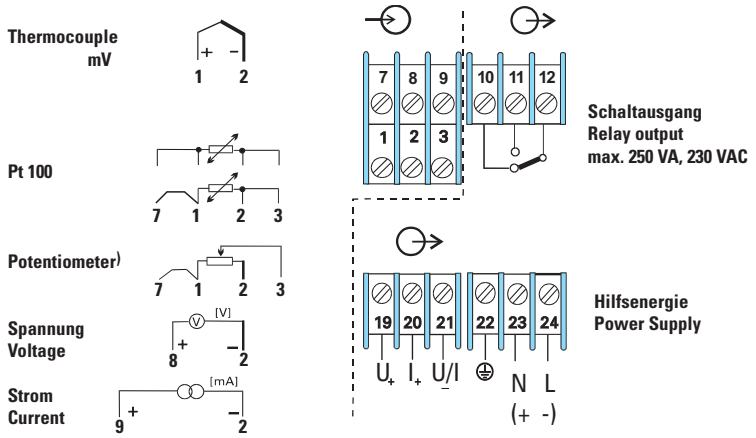
1) also suitable for DC

GALVANIC ISOLATION

Between input and output and power supply.

Test voltages
Between input and output: 500 VAC
Between mains and in/output: 3,75 kVAC

Fig.4 elektrische Anschlüsse



ENVIRONMENTAL CONDITIONS

Temperature limits
For specified accuracy: 0...55 °C
For operation: -10 ... + 60 °C 2)
For storage: -20 ... + 70 °C

Temperature effect
(within -10...+ 60 °C)

on span start
R-input: ≤ 0,03 % / 10K
TC/U/I-input: ≤ 0,04 % / 10K

on span
R-input: ≤ 0,05 % / 10K
TC/U/I-input: ≤ 0,05 % / 10K

Influence of internal cold junction compensation
≤ 0,13 K / 10 K (after running in)
Moisture: 90 % rH, no condensation

Vibrations
to DIN IEC 68-2-6/Fc and DIN 68.2.29/Eb

2) In field housing max. +54 °C

ELECTROMAGNETIC COMPATIBILITY

Complies with EN 50081-1 and EN 50082-2 for unlimited use within rural and industrial areas.

Interference on input- and output leads
IEC 801-4; level 4; 2 kV CM [4] Burst
IEC 801-5; level 3; 2 kV CM/ 1 kV DM [4]

High frequency interferences
IEC 801-3; level 3; 10 V/m
no effect with 27...1000 MHz [3]

3) not valid for smallest spans
4) CM = Common mode, DM = Differential mode)

Interference on leads
IEC 801-6; 10 Vrms ,
no effect with 0,15 bis 80 MHz 3)

Electrostatic discharge
IEC 801-2; level 3, no effect within 8 kV air discharge, 4 kV(via coupling plate)

Low frequency magnetic field
400 A/m, 50 Hz

SAFETY CHARACTERISTICS

According to EN 61010-1 (VDE 0411-1)
Excess-voltage category III
Pollution degree 2
Operating voltage 300 V
Protective class I

CE marking:
According to European directives for "Electromagnetic compatibility" and "Electrical equipment use within specified voltage limits" (safety characteristics).

ORDERING-INFORMATION

The device must be specified with complete 12 nc order no., its configuration code and clear text for the specified measuring-parameter (see next page).

GENERAL

Dimensions:
93x 111x 40mm

Protection
Housing IP30 / terminals IP30

Electrical connection
Screw terminals for max. 2,5 mm^2

Weight:
0,225 kg net.

Fig. 5 ORDERING DATA

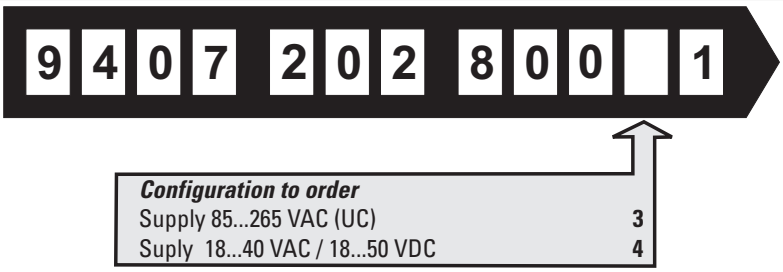


Fig. 6 Configuration code 1

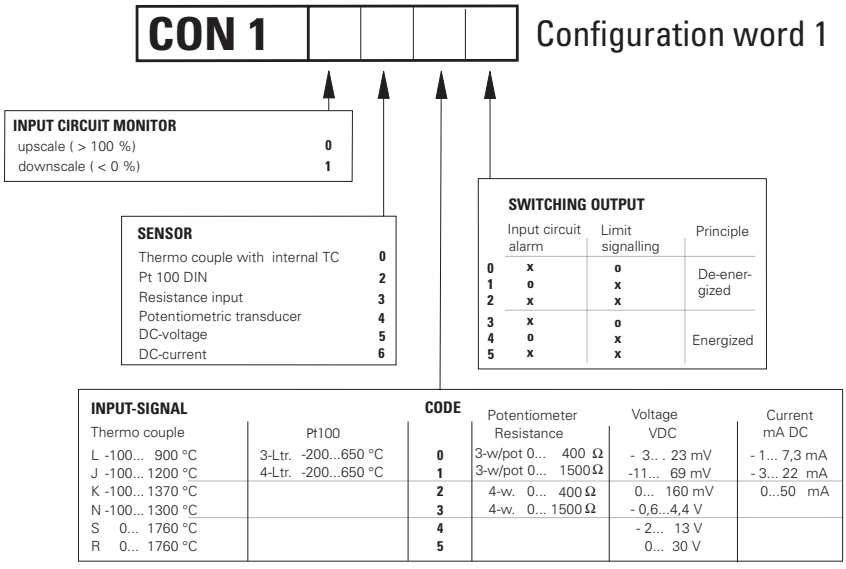
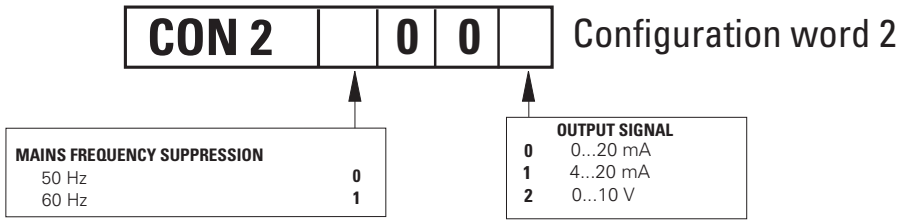


Fig. 7 Configuration code 2



CLEAR TEXT SPECIFICATIONS

Span start	
Span end	
Limit signalling, value Function	Min:..... Max:.....
Hysterisis	
Timegate (s)	

If not specified otherwise, the transmitters will be delivered with following standard settings: 0...150 °C, Pt100 3-wire, upscale, 4...20 mA, switching output sensor failure , de-energized, limit signalling de-activated (5 K hysterisis, suppression 2 s) Filter set with 5 K und 0,1 s adjusted.

Mounting:

35 mm rail to DIN 46277. Wall

Mounting position

Vertical. Dense mounting and temperatures ≥ 50 °C forced ventilation recommended.

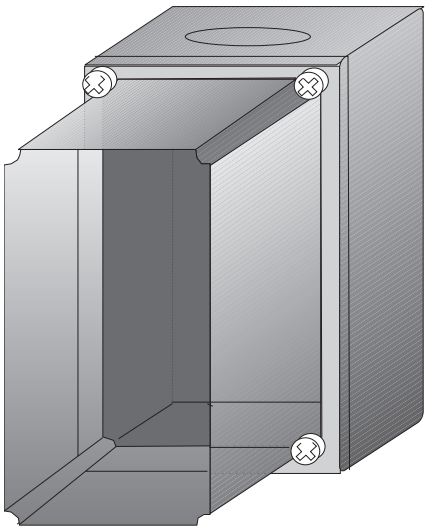
Operating notes D/E/F

9499-040-55701

ACCESSORIES

Description	**Order-no**
Field housing for UNIFLEX Protection IP67 with transparent lid. Cable entry gland PG 13,5	**9407-290-01001**

Fig. 8 Field housing IP 67



PMA
Prozess- und Maschinen- Automation GmbH
P.O Box 31 02 29
D - 34058 Kassel
Tel.: +49 - 561 - 505 1307
Fax: +49 - 561 - 505 1710
E-mail: mailbox@pma-online.de
Internet: http://www.pma-online.de

Your local representative

Printed in Germany - Edition 0008 - Subject to alteration without notice - 9498 737 35613