PROGRAMMABLE CONVERTER UP1

- Input for temperature sensors (Pt100, Pt1000, Ni1000), resistance senders, J and K type thermocouples, voltage, current
- Galvanic input, output and power supply isolation
- Output voltage, current or frequency output
- Selectable ranges for input and output signals
- Converter allows for measuring of input differential signal
- Programming using PC
- PC software included with the device

The UP1 converter is a universal microprocessor based converter for handling signals of temperature sensors or events with a longer time base and their conversion to an analogue format. The basic elements are a microprocessor, A/D converter of the Sigma-Delta type and a D/A converter with PWM modulation. Working conditions are set by means of PC controlled software over an RS485 series interface. The converter supports signals from resistive sensors of temperature, resistive senders, as well as the current and voltage signals. The signals at the output can be voltage, current or frequency. The limits of a voltage signal are selectable between 0 and 10 Volts in steps of 0.1V and differentiation is typically 15 bites over the range. The output current signal may be selected between 0 and 20 mA in steps of 0.1 mA and differentiation is typically 15 bites over the range. Frequency output is selectable between 1 and 10,000 Hz in steps of 1 Hz and differentiation is typically 50 ns. The converter also allows for the measurement of a differential input signal.

Basic technical data

Ambient temperature - operational	-25 to 50 °C
Ambient temperature – storage	-25 to 70 °C
Relative humidity	< 70%
Degree of protection	IP20
Attachment	DIN board EN 50022
Dimensions (L x W x H)	85 x 22,5 x 65 mm
Connection	screw type terminal board, cross section 2,5mm² max.

Input

current source	maximum 40 mA (not connected to the RS485 line)		
input signal	Resistance transmitter	Pt100, Pt1000	- 50 ÷ 600 °C
		Ni1000/5000ppm/°C	- 50 ÷ 200 °C
		Ni1000/6180ppm/°C	- 50 ÷ 200 °C
	Resistance transmitter	100 Ω , 105 Ω, 1 kΩ	
	voltage signal	0 ÷ 10 V	
	active current signal	0 ÷ 20 mA, 4 ÷ 20 mA	
	passive current signal	4 ÷ 20 mA	
	thermocouple	J type	-200 ÷ 650 °C
		K type	-200 ÷ 850 °C
differential input signal	2x voltage signal	0 ÷ 10 V	
	2x active current signal	0 ÷ 20 mA, 4 ÷ 20 mA	
	2x passive current signal	4 ÷ 20 mA	
input resistance	voltage signal	1,133 MΩ	
	current signal	15 Ω	
	thermal elements	10^{12} Ω	
Galvanic separation from RS 485	no		

Output

galvanic separation from the input and RS485	yes	
output signal	voltage signal	adjustable within 0 ÷ 10 V
	current signal	adjustable within 0 ÷ 20 mA
	frequency signal	adjustable within 1 ÷ 10 000 Hz
output resistance	voltage signal	100 Ω
	frequency signal	220 Ω

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Supervision of the input circuit
S/C or O/C sensor in resistance thermometers and senders is indicated by a red LED

Offset adjustment
For an eventual customized compensation of the measured value the converter has the OFFSET function installed to allow for the addition or subtraction of a programmed constant from the measured value.

Dynamic properties
Response to a step change in the input is typically 450 ms

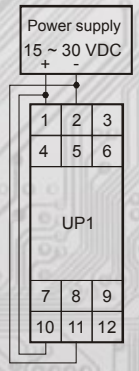
Mathematical functions
The converter allows for an up to 16 segment approximation, which can rectify in segments the selected types of input signals.

Ordering methods

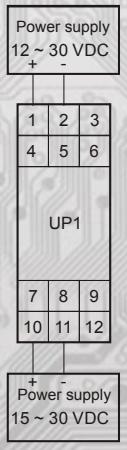
The order shows the quantity and type of converter.
For example: **3 pcs of converter UP1**
Software allowing the configuration of specific parameters is supplied automatically
To allow the device to be set to the communication line RS485, one has to apply the communication card for the PC or attach converter RS232/RS458 to the serial port RS232.

Power supply

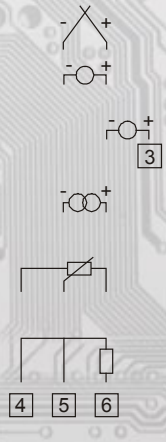
WIRING WITHOUT USING GALVANIC ISOLATION



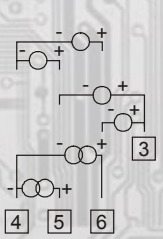
WIRING USING GALVANIC ISOLATION



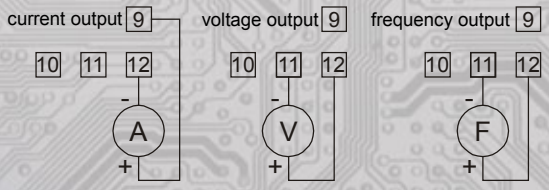
INPUT WIRING



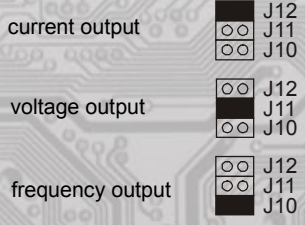
differential inputs



OUTPUT WIRING



OUTPUT SELECTION



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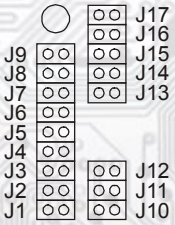
CONVERTER CONFIGURATION



J1~ J9	input selection
J10 ~ 12	output selection
J13	record allowed of configuration values
J15	definition of idle state RS 485 (wire A)
J16	definition of idle state RS 485 (wire B)
J17	Terminating RS 485 120R

INPUT SELECTION

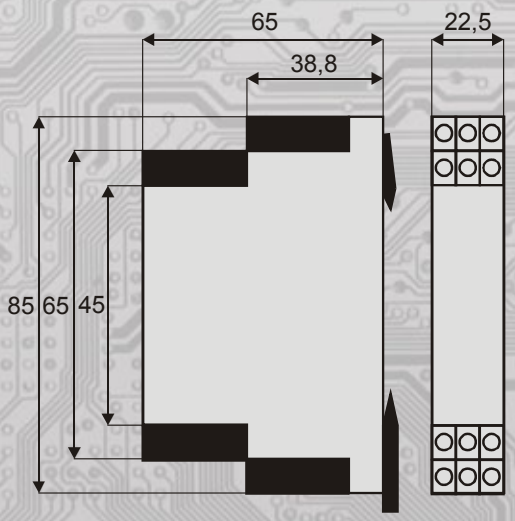
TYPE:	USED JUMPERS
Pt100, Pt1000, Ni1000, resist sender	J3, J7, J8, J9
current signal active 0(4) ~ 20mA	J3, J4, J5, J6, J7
current signal passive 4 ~ 20mA	J4, J5, J6, J7
voltage signal 0 ~ 10V	J3, J4, J5
thermocouple J, K	J1, J2, J3, J7
Differential inputs	
2x current active signal 0(4) – 20 mA	J1, J2, J3, J4, J6, J7
2x current passive signal 4 ~ 20mA	J1, J2, J3, J4, J6, J7,
2x voltage signál 0 ~ 10V	J2, J4

DESCRIPTION OF TERMINAL BOARD

1	Ucc1	positive terminal of power supply, input section
2	GND1	ground terminal of power supply, input section
3		auxiliary voltage for passive input signal 4 -20 mA
4	IN1	input signal
5	IN2	input signal
6	AGND1	ground terminal of input signal
7	A	RS 485
8	B	RS 485
9		auxiliary voltage for output current signal
10	UCC2	positive terminal of power supply, output section
11	GND2	ground terminal of power supply, output section
12	OUT	output signal

Mounting and putting into operation

Using a holder, fasten the transmitter to the DIN bar TS 35. Put on the upper pin of the box holder onto the upperedge of the bar first, and prying by means of a screw-driver, protrude slightly the lock of the lower arresting pin.Press completely the lower part of the box to the bar and release the lock. In this way, the box is fixed to thebar. Connect the inputs, the outputs, and the supply voltage to the corresponding terminals. Lead-in cable ofcross section from 0,35 to 4 mm2is recommended to be used, for the active signals a shielded one.



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