

## ● Characteristics

1640 - DIN RAIL - TOP HAT RAIL -



- Input:	universal input (see technical data)
- Output:	current / voltage / 2 relays
- Supply of device:	22...250 VAC / 20...300 VDC
- Accuracy:	±0,1% of range
- Configuration:	with programming front
- 2-wire supply:	0...20 mA (e.g. transmitter)
- Indication:	3 LED on front
- Visualization:	display on programming front
- Mounting:	top hat rail
- Copy settings:	with programming front
- Protection:	degree IP20

## ● Technical data

### Input (RTD (resistance thermometer) / linear resistance / potentiometer)

Resistance thermometer:	Pt10, Pt20, Pt50, Pt100, Pt200, Pt250, Pt300, Pt400, Pt500, Pt1000 Ni50, Ni100, Ni120, Ni1000
Cable resistance:	50 Ω maximum (each wire)
Sensor current:	0,2 mA nominal
Effect of sensor cable:	<0,002 Ω/Ω (3- / 4-wire)
Sensor error:	with detection
Short circuit detection:	<15 Ω
RTD Pt100:	-200...+850°C (IEC60751)
RTD Ni100:	-60...+250°C (DIN 43760)
Resistance:	0...10 kOhm (linear)
Potentiometer:	10 Ω...100 kOhm

### Input (thermocouple)

Types:	B / E / J / K / L / N / R / S / T / U / W3 / W5 / LR
Sensor error:	with detection
Error current:	nominal 2 μA (when detecting) 0 μA (else)
Cold junction compensation:	with external sensor on terminal (5910) 20...28 °C: <±1 °C -20...+20 °C and 28...70 °C: <±2 °C with internal sensor: ±(2 °C + 0,4 °C x Δt)

### Input (current)

Range:	0...20 mA
Programmable:	0...20 mA / 4...20 mA
Input resistance:	20 Ω nominal + 50 Ω PTC

### Input (voltage)

Range:	0...+12 VDC
Programmable:	0...1 / 0,2...1 / 0...5 / 1...5 / 0...10 / 2...10 V
Input resistance:	10 MΩ (nominal)

## ● Applications

The universal transmitter is suitable in installations in the whole range of industrial applications. Because of the galvanical insulation it's in particular usable in measuring paths with mains interferences.

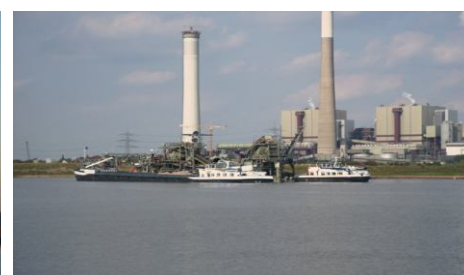


photo: www.pixelquelle.de

photo: www.pixelquelle.de

## ● Technical data (continued)

### Output (voltage)

Range:	0...10 VDC
Programmable:	0...1 V / 0,2...1 V / 0...5 V / 1...5 V / 0...10 V / 2...10 V 1...0 V / 1...0,2 V / 5...0 V / 5...1 V / 10...0 V / 10...2 V
Load (minimum):	500 k $\Omega$

### Output (current)

Range:	0...20 mA
Programmable:	0...20 / 4...20 / 20...0 / 20...4 mA
Load maximum:	20 mA / 800 $\Omega$ / 16 VDC
Load stability:	<0,01% of range / 100 $\Omega$
Sensor error detection:	0 / 3,5 / 23 mA / without
NAMUR NE 43:	23 mA / 3,5 mA (upscale / downscale)
Current limit:	<28 mA

### Output (2 Relays)

Functions:	setpoint / window / sensor error / interlock / supply / off
Hysteresis:	0,1...25% / 1...2999 display counts
Delay:	0...3600 s (On / Off)
Voltage:	250 VRMS (maximum)
Current:	2 A AC / 1 A DC (maximum)
Power AC:	500 VA maximum
Sensor error detection:	break / make / hold

### Accuracy

The greater value of the general values or basic values is valid

General values:

For all ranges:	Absolutely:	< $\pm$ 0,1% of range
	Temperature coefficient:	< $\pm$ 0,01% of range / $^{\circ}$ C

Basic values:

mA:	Basic value:	< $\pm$ 4 $\mu$ A
	Temperature coefficient:	< $\pm$ 0,4 $\mu$ A / $^{\circ}$ C
Voltage:	Basic value:	< $\pm$ 20 $\mu$ V
	Temperature coefficient:	< $\pm$ 2 $\mu$ V / $^{\circ}$ C
RTD Pt100:	Basic value:	< $\pm$ 0,2 $^{\circ}$ C
	Temperature coefficient:	< $\pm$ 0,01 $^{\circ}$ C / $^{\circ}$ C
Resistance linear:	Basic value:	< $\pm$ 0,1 $\Omega$
	Temperature coefficient:	< $\pm$ 0,01 $\Omega$ / $^{\circ}$ C
Potentiometer:	Basic value:	< $\pm$ 0,1 $\Omega$
	Temperature coefficient:	< $\pm$ 0,01 $\Omega$ / $^{\circ}$ C
Thermocouple (E, J, K, L, N, T, U):	Basic value:	< $\pm$ 1 $^{\circ}$ C
	Temperature coefficient:	< $\pm$ 0,05 $^{\circ}$ C / $^{\circ}$ C
Thermocouple (R, S, W3, W5, LR):	Basic value:	< $\pm$ 2 $^{\circ}$ C
	Temperature coefficient:	< $\pm$ 0,2 $^{\circ}$ C / $^{\circ}$ C
Thermocouple (B, 160...400 $^{\circ}$ C):	Basic value:	< $\pm$ 4,5 $^{\circ}$ C
	Temperature coefficient:	< $\pm$ 0,45 $^{\circ}$ C / $^{\circ}$ C
Thermocouple (B, 400...1820 $^{\circ}$ C):	Basic value:	< $\pm$ 2 $^{\circ}$ C
	Temperature coefficient:	< $\pm$ 0,2 $^{\circ}$ C / $^{\circ}$ C

### Parameter

EMC immunity influence:	< $\pm$ 0,5% of span
Extended EMC immunity:	NAMUR NE 21, A criterion, Burst: < $\pm$ 1% of span
Signal- / noise ratio:	minimum 60 dB (0...100 kHz)
Response time (0...90% / 100...10%):	Temperature: <1 s mA / V: <400 ms
Calibration temperature:	20...28 $^{\circ}$ C
Isolation voltage:	Test: 2,3 kV AC / Operation: 250 VAC

## ● **Technical data (continued)**

### **Output (auxiliary supply)**

2-wire supply: 25...16 V / 0...20 mA (for transmitter)  
galvanically insulated

### **Ambient conditions**

Temperature: -20...+60°C  
Relative humidity: <95% (non condensation)

### **Supply**

Voltage: 21,6...253 VAC, 50...60 Hz / 19,2...300 VDC  
Power consumption: <2,5 W  
Fuse: 400 mA SB / 250 VAC

### **Mechanics**

Dimensions (HxBxD): 109x23,5x104 mm (without programming front)  
109x23,5x116 mm (with programming front)  
Communication interface: programming front 4501  
Electrical connection: terminal  
Wire size: 1x2,5 mm<sup>2</sup> stranded wire (maximum)  
Screw terminal torque: 0,5 Nm  
Weight: 170 g / 185 g with programming front  
Protection: IP20  
Directives: EMC: 2004/108/EG  
Low-voltage (LVD): 2006/95/EG

### **Advanced features**

Programmable are process calibration, signal and relay simulation, password protection, error diagnostics and choice of help text.

Additional information:

- Galvanic separation of analog signals and measurement of floating signals.
- UMX0... and UMX2... are designed according safety requirements a are thus suitable for applications in SIL2 applications.
- Continuous check of vital stored data for safety reasons.
- 4 port 2,3 kVAC galvanic insulation.

## ● **Programming front**

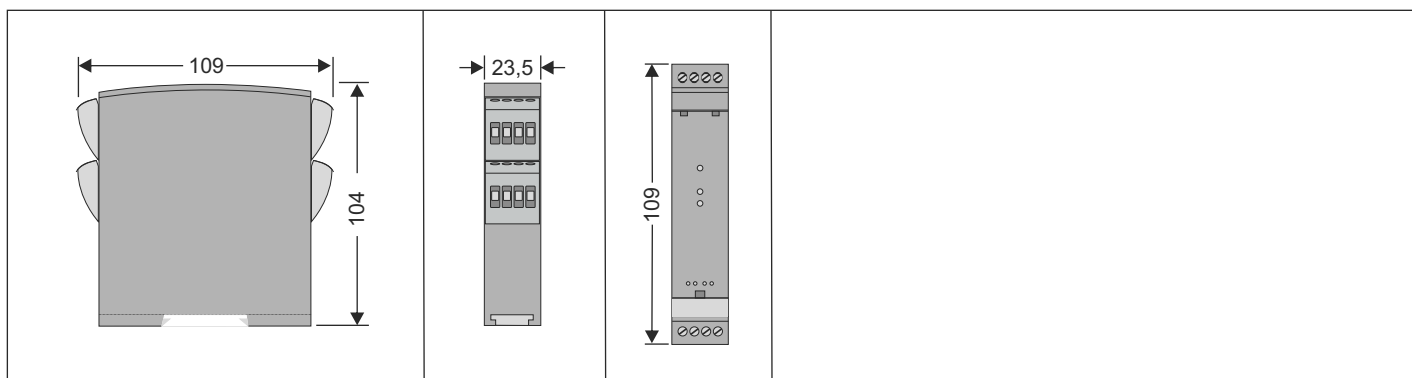


**Application:** Communications interface for modification of operational parameters in universal transmitter. Can be moved from one module to another and download the configuration of the first transmitter to subsequent transmitters. Fixed display for visualisation of process data and status.

**Technical characteristics:** LCD display with 4 lines: Line 1 (H=5,57 mm) shows input signal, line 2 (H=3,33 mm) shows unit, line 3 (H=3,33 mm) shows analogue output or TAG no. and line 4 shows communication and relay status. Programming access can be blocked by assigning a password. The password is saved in the transmitter in order to ensure a high degree of protection against unauthorised modifications to the configuration.

**Mounting / installation:** Click the front onto the universal transmitter.

## ● **Dimensions (in mm)**



● **Order code**

**U M X X X X X X - X X X**

<b>Input:</b>	universal input	0
<b>Output:</b>	current / voltage	0
	2 relays	1
	current / voltage / 2 relays	2
<b>Voltage supply:</b>	22...253 VAC / 20...300 VDC	0
<b>Configuration:</b>	factory configuration	0
	customized (to specify) <sup>1)</sup>	1
<b>Other:</b>	special model	0

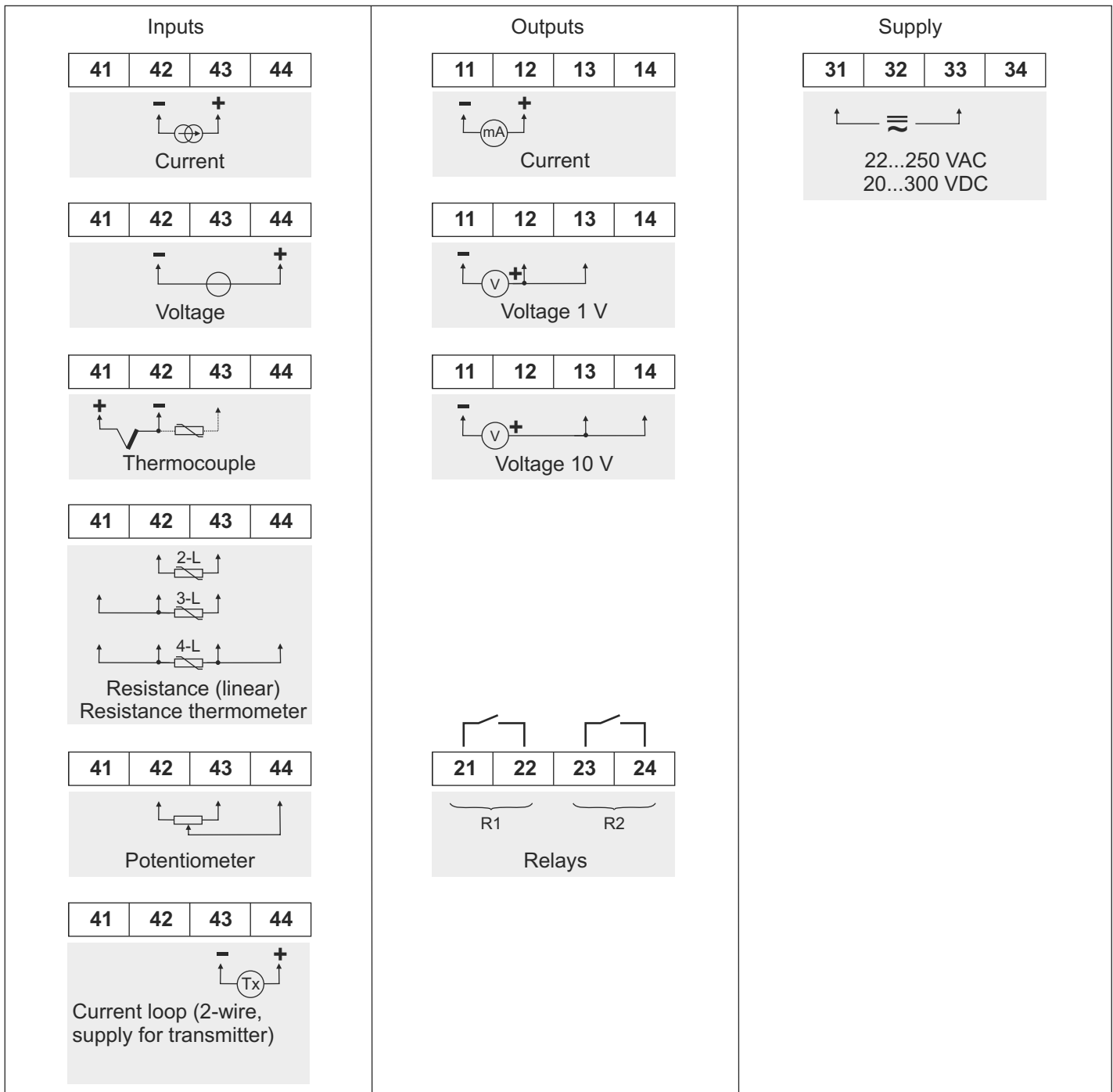
1) The possibilities which are specified in the technical data can be selected. For not given values the details of factory configuration are used.

**Accessories:**

Programming front (4501)

Order.-No.: 1320-00004

● **Electrical connection**



Subject to change, version 40-637