PU5 - Digital 5-digit panel meter

Universal measuring instrument :

- Voltage
- Current
- Thermocouple
- Resistance
- Resistance thermometer

Technical features:

- 24 bit transducer resolution
- measuring rate with up to 50 measurements/s
- Min/Max value survey
- 30 point linearization
- 4 free setpoints / Hysteresis / Delay (Optional)
- optical setpoint indication
- Sensor supply (Option)
- Analogausgang (Option)
- Schnittstelle RS232 /RS485
- Schutzart IP64 (IP65 Option)
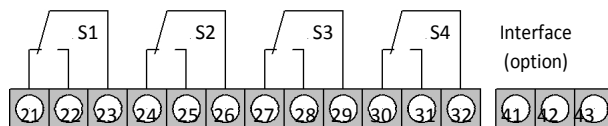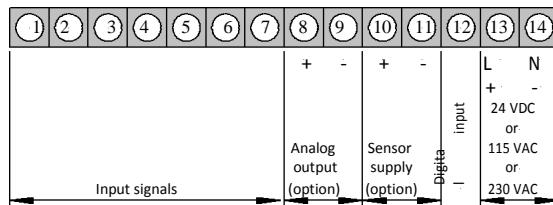
Relay (option)

Sensor input signals PU5

Sensor	BR. 1	BR. 2	BR. 3	BR. 4	BR. 5	BR. 6	BR. 7
0...10 V 0...5 V					+ U		− U
-0.5...2.5 V -0,5...1.25 V 500 mV 300 mV 35 mV 15 mV			+ U	− U			
0/4...20 mA 0...5 mA 0...2 mA						+ I	− I
PTxxx 2-wire	+ Force bridged to term 3	+ Force bridged to term 4	+ Sense	− Sense			
PTxxx 3-wire	+ Force bridged to term 3	− Force	+ Sense	− Sense			
PTxxx 4-wire	+ Force	− Force	+ Sense	− Sense			
Thermocouples			+ Signal	− Signal			
Resistance 2-wire	+ Force bridged to term 3	+ Force bridged to term 4	+ Sense	− Sense			
Resistance 3-wire	+ Force bridged to term 3	− Force	+ Sense	− Sense			
Resistance 4-wire	+Force	- Force	+ Sense	− Sense			

Technical data

Housing

Dimensions	96 x 48 x 134 mm (WxHxD) including screw terminal
	96 x 48 x 148 mm (WxHxD) including plug-in terminal
Assembly cut out	92.0 $^{+0,8}$ x 45.0 $^{+0,6}$ mm
Fastening	snap in / screw element
Wall thickness	0...50 mm
Material	PC/ABS-blend, black, UL94V-0
Protection	standard IP54 (front), IP00 (rear side)
Weight	approx. 450 g
Connection	screw- /plug-in terminal; wire cross section up to 2.5 mm^2

Display

Character height	14 mm
Segment colour	red
Display range	-9999...99999
Setpoints	1 LED per setpoint
Overflow	horizontal bars at top
Underflow	horizontal bars at the bottom

Input	Measuring range	R_I	Measuring error T_U= 20...40°C [%] MB	Digit
Measuring range /	−1...10 V	150 kΩ	0.01	1
Input resistance /	−1...5 V	150 kΩ	0.02	1
Measuring error	0/4...20 mA	50 Ω	0.02	1
at measuring time = 1 s	0...5 mA	50 Ω	0.02	1
	0...2 mA	50 Ω	0.02	1
	−500...2500 mV	1 MΩ	0.03	1
	−500...1250 mV	1 MΩ	0.03	1
	500 mV	1 MΩ	0.03	1
	300 mV	1 MΩ	0.03	1
	150 mV	1 MΩ	0.03	1
	75 mV	1 MΩ	0.04	1
	35 mV	1 MΩ	0.06	1
	15 mV	1 MΩ	0.06	1
	PTxxxx (2/3/4-wire) -200.0 – 850.0°C	1 MΩ	0.04	1
	Thermocouple			
	type L (−200...900°C)	1 MΩ	0.06 1K	
	type J (−210...1200°C)	1 MΩ	0.05 1K	
	type K (−250...1271°C)	1 MΩ	0.05 1K	
	type B (100...1810°C)	1 MΩ	0.10 1K	

Input	Measuring range	R_I	Measuring error T_U= 20...40°C [%] MB	Digit
	type S (0...1767°C)	1 MΩ	0.06 1K	
	type N (−250...1300°C)	1 MΩ	0.06 1K	
	type E (−260...1000°C)	1 MΩ	0.06 1K	
	type R (0...1767°C)	1 MΩ	0.07 1K	
	type T (−240...400°C)	1 MΩ	0.07 1K	
	resistance 100 Ω 2-/3-/4-wire	1 MΩ	0.04	1
	resistance 1 kΩ 2-/3-/4-wire	1 MΩ	0.04	1
	resistance 10 kΩ 2-/3-/4-wire	1 MΩ	0.04	1

Temperature drift with T_U < 20°C resp. > 40°C	all measuring inputs	50 ppm/K
Measuring time	Current, Voltage	0.02...10.00 seconds
	PTxxxx 2-/4-wire	0.04...10.00 seconds
	PTxxxx 3-wire	0.06...10.00 seconds
	Thermocouple	0.04...10.00 seconds
	Resistance 2/4-wire	0.04...10.00 seconds
	Resistance 3-wire	0.06...10.00 seconds
Measuring principle	Sigma/Delta	

The maximum permitted value on the input clips is 120% of the nominal value.

Output

Relays	change-over contact
	charge 230 VAC / 5 A – 30 VDC / 2 A, with ohm resistive
	Separation in accordance with DIN EN 50178
	Specifications in accordance with DIN EN 60255
Analog output (galvanic separated)	0...10 V (12-bit) load ≥ 100 kΩ (PU5)
	0...20 mA (12-bit) load ≤500 Ω
	4...20 mA (12-bit) load ≤500 Ω
Error	0.1 % within range T_U= 20...40°C, outside 50 ppm/K
Internal resistance	100 Ω
Sensor supply (galvanic separated)	10 VDC 20 mA
	24 VDC 50 mA

Interface

Protocol	Manufacturer specific ASCII
RS232	9600 baud, no parity, 8 databits, 1 stopbit max
Lead length	3 m
RS485	9600 baud, no parity, 8 databits, 1 stopbit
Lead length	max. 1000 m

Power pack

Power supply (galv. separated)	230 VAC / 50/60 Hz / ±10 % and 115 VAC / 50/60 Hz / ±10 % 24 VDC / ±10 %
Power consumption	**max. 15 VA**

Memory	Parameter memory EEPROM
Data life	>100 years

Ambient conditions

Working temperature	0...60 °C
Storing temperature	-20...80 °C
Climatic resistance	rel. humidity ≤75 % in the annual mean without dew

EMV	DIN 61326
CE-sign	Conformity to 89/336/EWG
Safety standard	DIN 61010

AK Industries   Tel : +33 (0)3 88 02 09 02 / Fax : +33 (0)3 88 02 09 03 / E-mail : info@ak-industries.com / Web : http://www.ak-industries.com

We reserve the right to make technical alterations without prior notice – Photos and drawings are not contractual - Version 2.0
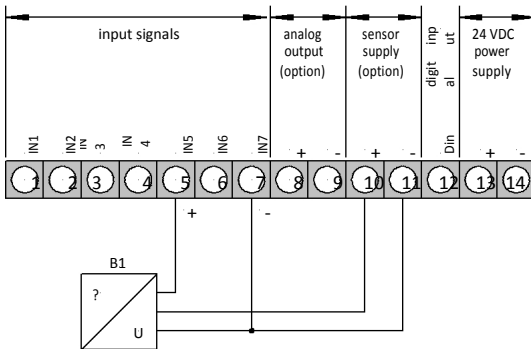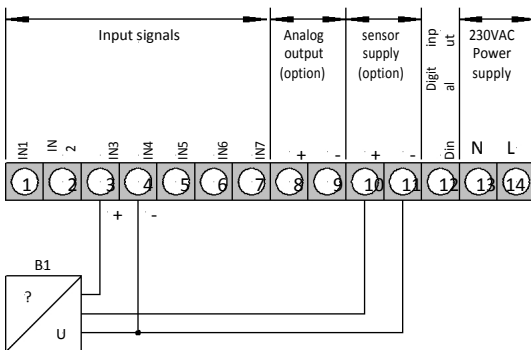Made in France

Connecting examples

Measurement of a **current signal** from a **2-line transmitter** using the sensor supply; supply voltage 230 VAC
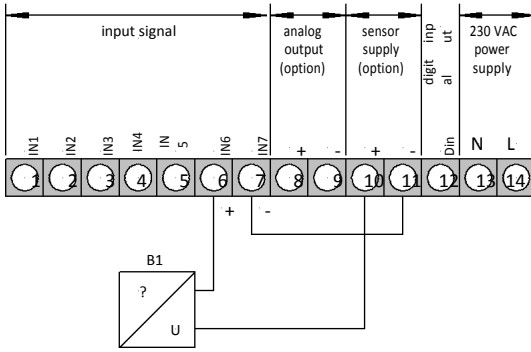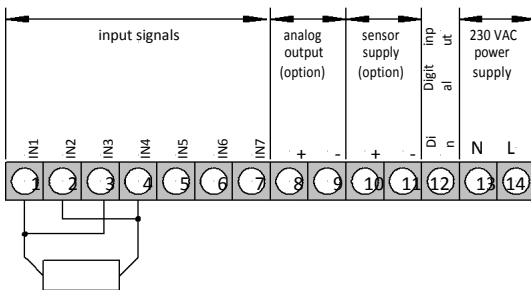

Measurement of a **voltage signal** (5 V or 10 V) from a **3-wire transmitter** using the sensor supply; supply voltage 24 VDC
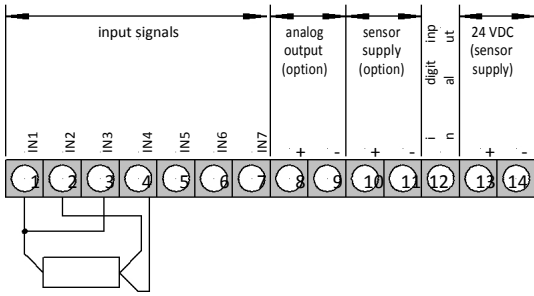

Measurement of a **voltage signal** ≤ 2,5 V) from a **3-wire transmitter** using the sensor supply; supply voltage 230 VAC

Measurement of a **resistance thermometer** (e.g. PT100) or **resistance** in the 2-wire technology; supply voltage 230 VAC

We reserve the right to make technical alterations without prior notice – Photos and drawings are not contractual - Version 2.0
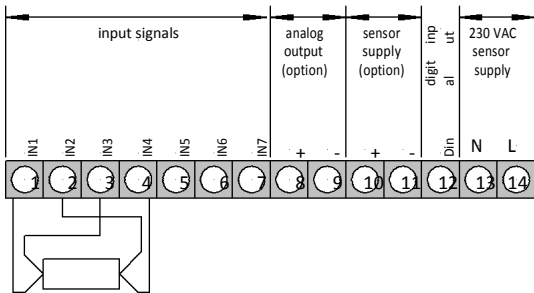
Made in France

Measurement of a **resistance thermometer** (i.e. PT100) **or resistance** in the 3-wire technology; supply voltage 24 VDC

Measurement of a **resistance thermometer** (i.e. PT100) or **resistance** in the 4-wire technology; supply voltage 230 VAC
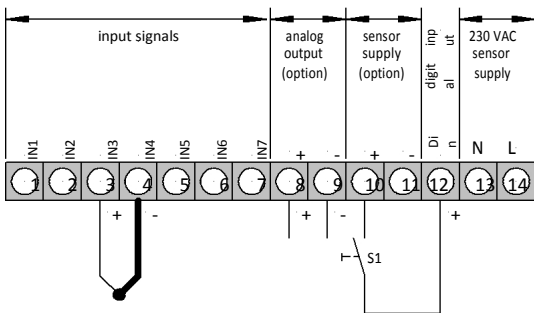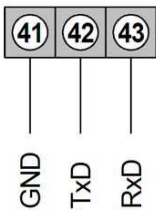

Measurement of a **thermocouple**; connection of the analog output; connection of the digital input to the sensor supply; supply voltage 230 VAC
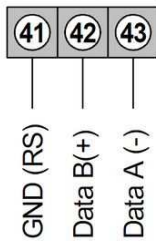

Terminal assignment for interface

Ordering code

| P | U | 5 | 0 | 0 | 0 | X | 1 | 5 | 4 | 0 | B |

Basic model
P   = processor

Base
U   = Universal measuring device
Z   = 2 inputs

Number of digits
5   = 5 digits

Interface
0   = no interface
2   = RS232
3   = RS232 (galv. insulated)
4   = RS485 (galv. insulated)

Sensor supply
0   = No sensor supply
2   = 10V / 20mA
3   = 24V / 50mA

Outputs
0   = No output
1   = 0 - 10V
2   = 0 - 20mA
3   = 4 - 20mA

Measuring input
X   = Universal input
1   = Direct voltage, direct current

Size of housing
1   = 96 x 48

Power supply
4   = 115 VAC
5   = 230 VAC
7   = 24 VDC (galv. insulated)

Mechanical options
1   = IP65, foil keyboard, screw terminal
4   = IP54, foil keyboard, screw terminal
7   = IP65, foil keyboard, screw terminal
9   = IP54, foil keyboard, screw terminal

Setpoints
0   = No setpoint
2   = 2 relay outputs
4   = 4 relay outputs

Internal Index