

**Operating Instructions
for
Plug-On Display**

Model: AUF-1...

AUF-3...

AUF-4...



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2. Note

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EU-machine guidelines.

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition.

Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:

The standard delivery includes:

- Plug-On Display model: AUF-1.../AUF-3.../AUF-4...
- Operating Instructions

4. Regulation Use

Any use of the Plug-On Display, model: AUF-..., which exceeds the manufacturer's specification, may invalidate its warranty. Therefore any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

5. Operating Principle

The model AUF-... plug-on display is a universal local display suitable for use with various transmitters. The transmitter must be fitted with an analogue output 4-20 mA and a connector in accordance with DIN 43 650. The plug-on display is simply plugged in between the connector and socket; it is then ready for operation. Scaling, the position of the decimal point, gate time and switch point (optional) may be set with two keys. The menu steps are output to the LED display field.

The Auf-4000 transforms the input pulses into a 4-20mA output signal.

6. Mechanical Connection

The plug-on display is simply plugged in between the connector and the socket; it is then ready for operation. The mounting screw must be replaced with the longer screw that is part of the delivery scope. The seals must be located between the sensor/AUF and AUF/sensor.

The indicating unit can be rotated in 90° steps.

Beneath the LED-display a dimension-band can be mounted.

7. Electrical Connection

Connect the plug-on display as shown in the wiring diagram.

Connector assignment

	AUF-1000	AUF-1001	AUF-3000 AUF-4000
PIN 1	+V _S /S+	+V _S /S+	+V _S
PIN 2	GND/S-	GND/S-	GND
PIN 3	-	Switch out	Signal

Signal	AUF-1000	AUF-1001	AUF-3000	AUF-4000
Input	4-20 mA, 2-wire	4-20 mA, 2-wire	4-20 mA, 3-wire	pulses
Output	4-20 mA, 2-wire	4-20 mA, 2-wire + switch out	4-20 mA, 3-wire	4-20 mA, 3-wire

Auxiliary power (only AUF-1...)

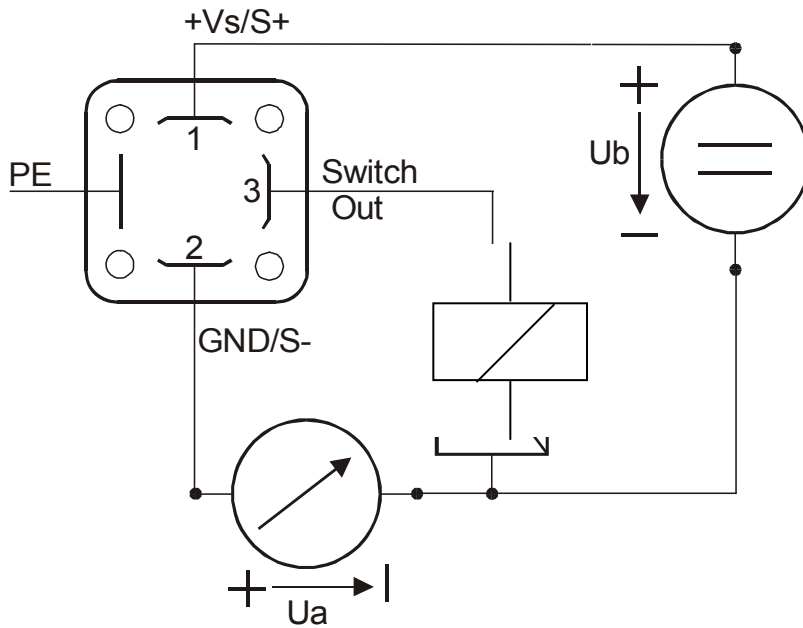
The auxiliary power (typically 24 V_{DC}) must be greater than the voltage drop across the sensor, the voltage drop across the display (5 V) and any other voltage losses (additional evaluation, cable losses).

$$U_b \geq U_s + (U_a) + 5V \quad (U_s = \text{voltage drop across sensor})$$

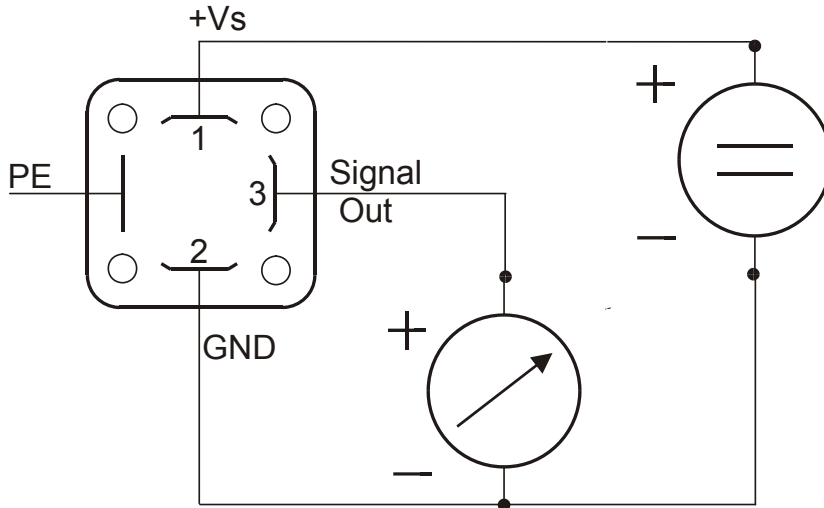
Switching output (only AUF-1001)

The operating voltage U_b at PIN 3 is connected through via a PNP-transistor when reaching the switching threshold. The max. current load constitutes 60 mA.

Connection example AUF-1001



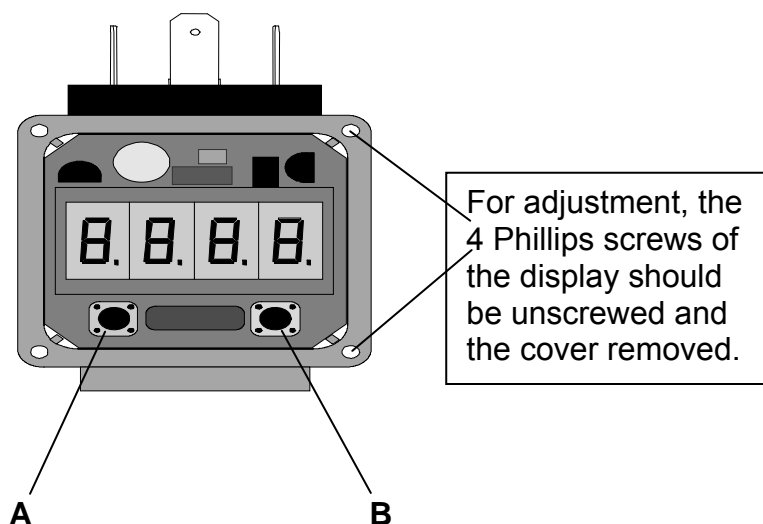
Connection example AUF-3000, AUF-4000



If the signal output is not used, the signal output (PIN 3) needs to be short-circuited with GND (PIN 2).

8. Commissioning

8.1 Adjusting the Display



A ⇒ Downward and selection of menu items

B ⇒ Upward and selection menu items

A+B ⇒ Enter menu selection for adjustment or to exit acknowledge setting

8.2 Decimal Point

Press key **B** until: is displayed.

Press **A+B** to enter adjustment menu:

Press **B** or **A** for up and down:

Press **A+B** to acknowledge setting and return to menu item “dP”

8.3 Zero-Point (value to be displayed for 4 mA)

Press key **B** until: is displayed.

Press **A+B** to enter adjustment menu: for example: (0 bar)

Press **B** or **A** for up and down

Press **A+B** to acknowledge setting and return to menu item “ZP”

8.4 Span (value to be displayed for 20 mA)

Press key **B** until:

E	P	2	0
---	---	---	---

 is displayed.

Press **A+B** to enter adjustment menu:

		0.	0	0
--	--	----	---	---

Press **B** or **A** for up and down:

6	0.	0	0
---	----	---	---

 (for example: 60 bar)

Press **A+B** to acknowledge setting and return to menu item "EP"

8.5 Damping

Press key **B** until:

F	I	L	t
---	---	---	---

 is displayed.

Press **A+B** to enter adjustment menu:

		0.	3
--	--	----	---

(min. = 0.3 s; max. = 20.0 s)

Press **B** or **A** for up and down:

		1.	5
--	--	----	---

 (for example: 1,5 sec)

Press **A+B** to acknowledge setting and return to menu item "FILt"

8.6 Range Exceeded

(indication of less than 4 mA or greater than 20 mA)

Indicates "HI" if the upper limit or "LO" if the lower limit is exceeded

Press key **B** until:

H	I	L	O
---	---	---	---

 is displayed.

Press **A+B** to enter adjustment menu:

	o	F	F
--	---	---	---

 message disabled

Press **B** or **A** for up and down:

		o	n
--	--	---	---

 message enabled

Press **A+B** to acknowledge setting and return to menu item "HILO"

Indication: "HI" = Upper range exceeded, "LO" = Lower range exceeded



Attention: When the "HILO" indication is disabled, error code "Er06" is displayed if the scale range (-1999 to +9999) is exceeded.

8.7 Switching Point (only model: AUF-1001, optional)

Press key **B** until:

S	P	t	
---	---	---	--

 is displayed.

Press **A+B** to enter adjustment menu:

	0.	0	0
--	----	---	---

Press **B** or **A** for up and down

2	0.	0	0
---	----	---	---

 (20 bar)

Press **A+B** to acknowledge setting and return to menu item "SPt"



Attention: The standard hysteresis is the adjusted switching point minus 3 digits (first digit resp. first position right). On customer's request the hysteresis can be factory-set.

8.8 Switching direction (only model AUF-1001, optional)

Press key **B** until:

D	I	R
---	---	---

 is displayed.

Press **A+B** to enter adjustment menu:

		d	n
--	--	---	---

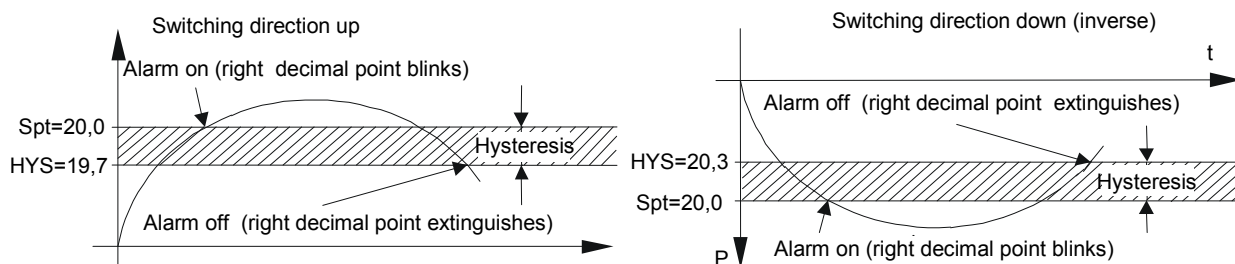
(hysteresis via switching point, inverse)

Press **B** or **A** for up and down

		u	p
--	--	---	---

(hysteresis below switching point)

Press **A+B** to acknowledge setting and return to menu item "dir"



8.9 Return to Measuring Mode

Depending on the selected menu point, press key **A** or **B** from one to eight times.

9. Technical Information

Display:	4-digit red LED display, Digit height: 7.62 mm Programmable decimal point setting
Indicating range:	-1999 to +9999
Accuracy:	0.2% of span \pm 1 digit
Electrical connection:	To transmitters with 4–20 mA output 2- or 3-wire and plug acc. DIN 43 650, polarised
Sensor supply:	not required, self-supply loop powered
Voltage drop:	\leq 5 V (acc. load: max. 250 Ω)
Max. current load:	max. 60 mA
Conversion rate:	Three measurements/s,
Gate time:	0.3–20 s (adjustable)
Data back-up:	Non-volatile EEPROM
Error message:	HI: overrange LO: underflow
Programming:	With two keys, menu-assisted, scaling of indication, decimal point, gate time, error message switch point (only AUF-1001)
Protection:	IP 65
Temperature influence on display:	0.1% / 10 K
Storage temperature:	-30...+80 °C
Ambient temperature:	0...+60 °C
Housing material:	Polyamide Pa6 GF30, light orange Front window made of PMMA red
Model: AUF-1001	
Switching output	
Open Collector:	PNP, max. current load 90 mA

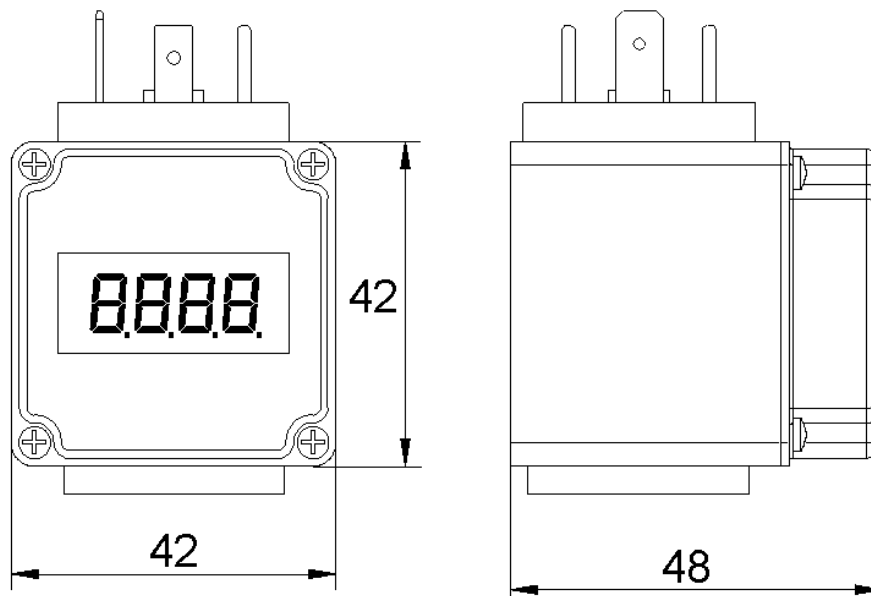
10. Order Codes

AUF-1000	Standard plug-on display, 4-20mA, 2-wire
AUF-1001	Plug-on display with open collector, 4-20mA, 2-wire
AUF-3000	Plug-on display, 4-20 mA, 3-wire
AUF-4000	Plug-on display, input: pulses, output: 4-20 mA, 3-wire

Special Operating Instruction for

AUF-2000	Plug-on display EEx ib IIC T4, 4-20 mA, 2-wire
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11. Dimensions



12. Declaration of Conformance

We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the products:

Plug-On Display Model: AUF-...

to which this declaration relates is in conformity with the standards noted below:

EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements


Also the following EU guidelines are fulfilled:

2014/30/EU **EMC Directive**
2011/65/EU **RoHS** (category 9) industrial monitoring and control instruments, compliant, no CE-marking for the transitional period until 2017

Hofheim, 1. June 2016



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