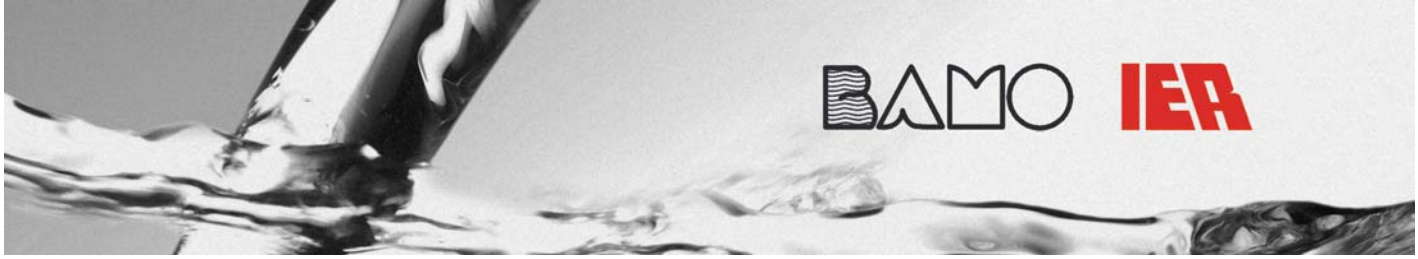

TURBISENS Immersion Turbidity Probe

Compact turbidity measuring instrument **laid out as an immersion probe; in accordance with ISO 7027**

Safety Precautions

- Installation, initial start-up and maintenance may only be performed by trained personnel!
- The device may only be connected to supply power which is rated as specified in the technical data!
- The device must be disconnected from all sources of power during installation and maintenance work!
- The device may only be operated under the conditions specified in the operating instructions!

Functional Principal / Features:

Pulsating chopped light method with two emitters and one receiver,
monochromatic IR light (860 nm),
90° spurious light measurement per ISO 7027,
linear turbidity output signal from 4 to 20 mA,
electronic compensation of extraneous light and discolouration

Installation

Attention!

The immersion probe must be mounted with the included angle bracket such that a distance of **at least 10 cm** to the bottom of the channel or the container is maintained. It should be installed in such a way that the probe head can be easily removed from the medium for cleaning at regular intervals.

The probe cable is connected to the analysis electronics in the terminal housing by means of a waterproof plug.

Technical Data

Measuring signal
4 to 20 mA, e.g. for connection to the BAMOPHOX TUR (436) measuring amplifier
Attention!
An external 10 to 30 V DC power supply is required if other measuring amplifiers are used.
Supply power
24 V DC_{nom} (10 to 30 V DC)
Auxiliary power connected load
0.7 W
Note: If the measuring signal is also supplied with power from the auxiliary power pack, load is increased by an additional 24 V DC x 20 mA (= 0.48 W).
Ambient temperature:
0 to +45° C
Measuring probe immersion depth:
Max. 10 metres
Immersion body protection:
IP 68 (max. 10 m) per EN 60 529
Measuring probe:
The probe is connected to the analysis electronics in the terminal housing by means of a waterproof plug (IP 67).
Medium temperature:
0 to +60° C
Probe body material:
PVC
Measuring ranges (can be selected from the setup menu):
1 = 0 to 50 FNU *
2 = 0 to 100 FNU
3 = 0 to 200 FNU
4 = 0 to 500 FNU
5 = 0 to 1000 FNU
6 = 0 to 2000 FNU
* FNU = formazin nephelometric units
Accuracy:
±5% of the momentary measured value and ±1% of the respective measuring range upper limit
Resolution:
0.01 to 1 FNU depending on the measuring range
Terminal housing:
Plastic (PBT), IP 65 per EN 60 529 with G2" thread, locknut and angle bracket
Display and indication:
Digital display in the terminal housing for indicating momentary turbidity value and for programming operating parameters, status LED in the terminal housing for indicating operating and alarm signals
Operation:
Rotary switch and pushbutton, for programming operating parameters with the help of the operating menu
Probe cable:
Resistant to diluted acids and lye, standard length: 6 metres (special lengths upon request)

CE Mark

In accordance with low-voltage directive (2006/95/EC) and EMC directive (2004/108/EC)

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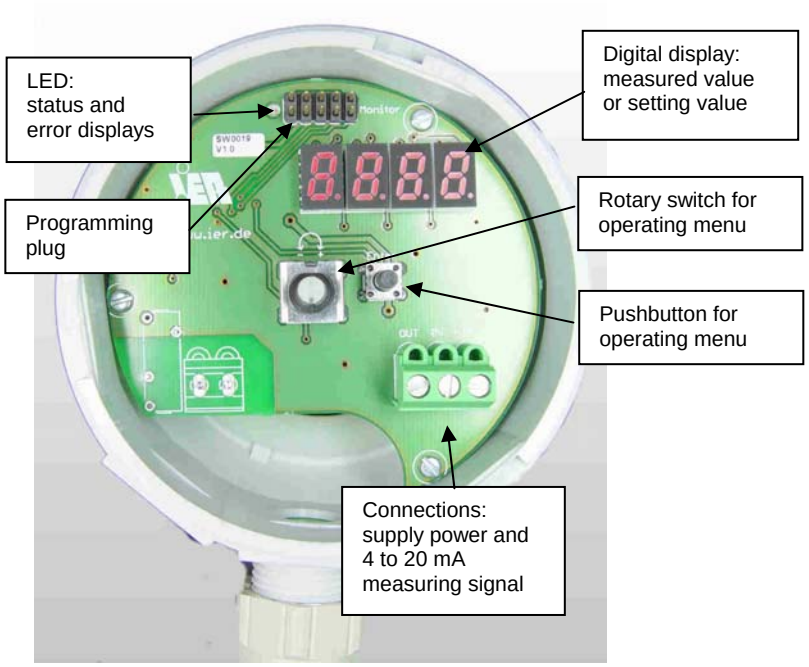
Tel. +49 (0)621 84224-0 ● Fax: +49 (0)621 84224-90 . e-Mail: info@bamo.de ● Internet: www.bamo.de

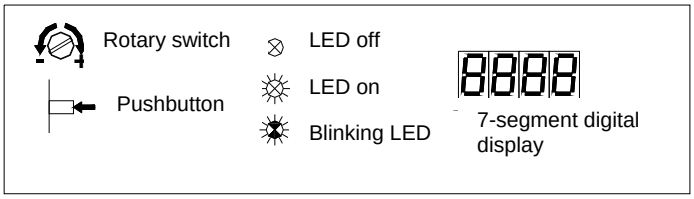
Operation / Settings:

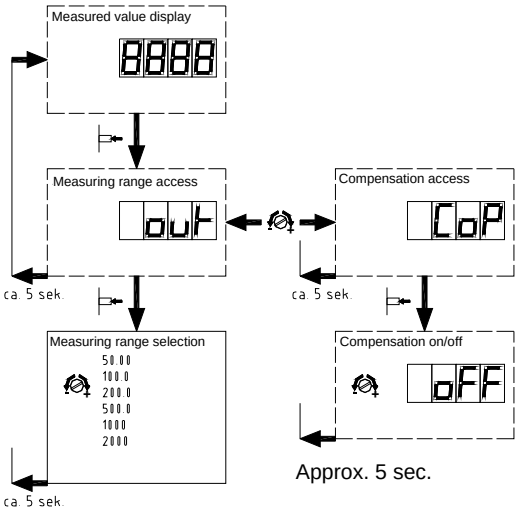


Selecting measuring ranges:

- Switch supply power on and wait for the device to boot (until the LED blinks green).
- Press the pushbutton.
  Display: out
- Press the pushbutton again.
  Display: **numeric value**
- Select the desired measuring range with the rotary switch.
- If no settings are changed for a period of approximately 5 second, the display is automatically returned to the measured value mode and saves the selected measuring range to permanent memory.

Refer also to the operating menu shown below.





Display menu:
Switch supply power on.
Device boots up.
Software version is displayed.

After approximately 3 seconds:
Status LED blinks green = measured values are being acquired and the momentary turbidity value appears at the digital display.

Compensation:
Colour compensation can only be activated in the **50 and 100 FNU measuring ranges**.

Indication:

LED blinks green	Device is ready for use and measured values are being acquired
LED off	No operating power
Red LED	4 to 20 mA output is defective

Error messages:
The following appears at the digital display:

Sun	Too much extraneous light
dirt	Disc is excessively contaminated
∩ ∩ ∩ ∩	Overranging → switch up to the next higher measuring range.

Factory calibration:
The sensor set is equipped with a calibration constant as a design feature. As a rule, no recalibration is required.

Test equipment monitoring:
If device calibration testing is required as part of the respective quality assurance system for test equipment monitoring, the device can either be tested, and if necessary readjusted by BAMO IER, or tested on-site with the internationally specified, standard **formazin** suspension.
Please contact us for details.

Troubleshooting:

- **Colour compensation cannot be activated:**
  Compensation only works in measuring ranges of up to 100 FNU. Select a range of 100 FNU or less. Compensation can then be activated.
- **It's not possible to activate measuring ranges of greater than100 FNU:**
  Compensation only works in measuring ranges of up to 100 FNU. After switching compensation off, measuring ranges of greater than100 FNU can be selected.

Testing the TURBISENS with the Test-Unit

Factory Calibration
The sensor set is equipped with a calibration constant as a design feature.
As a rule, no recalibration is required.

Test Equipment Monitoring
If device calibration testing is required as part of the respective quality assurance system for test equipment monitoring, calibration can be checked with the test-unit

A suitable test-unit can be delivered optionally with each TURBISENS

Observe:
The TURBISENS instrument and the test-unit must have the same serial number!

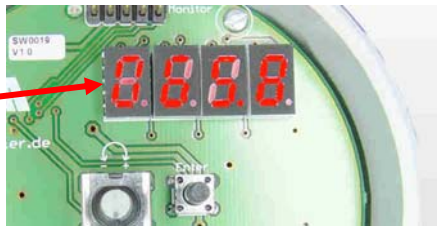
Test procedure:

- remove the TURBISENS-sensor out of the liquid
- Clean all glasses and wipe them dry
  (all visible water droplets and water film must be removed!)
  !!!! do not use abrasive cleaners !!!!!
- **choose the 200,0 FNU measuring range**
- mount the test-unit onto the sensor as shown in the pictures
  (→ no preferred direction is needed)
- wait approx. 10 – 15 sec.
- compare the FNU-value on the type plate of the test-unit
  and the value on the display
- type plate FNU-value / display-value deviation:
  Less than ±15% → measuring instrument is OK

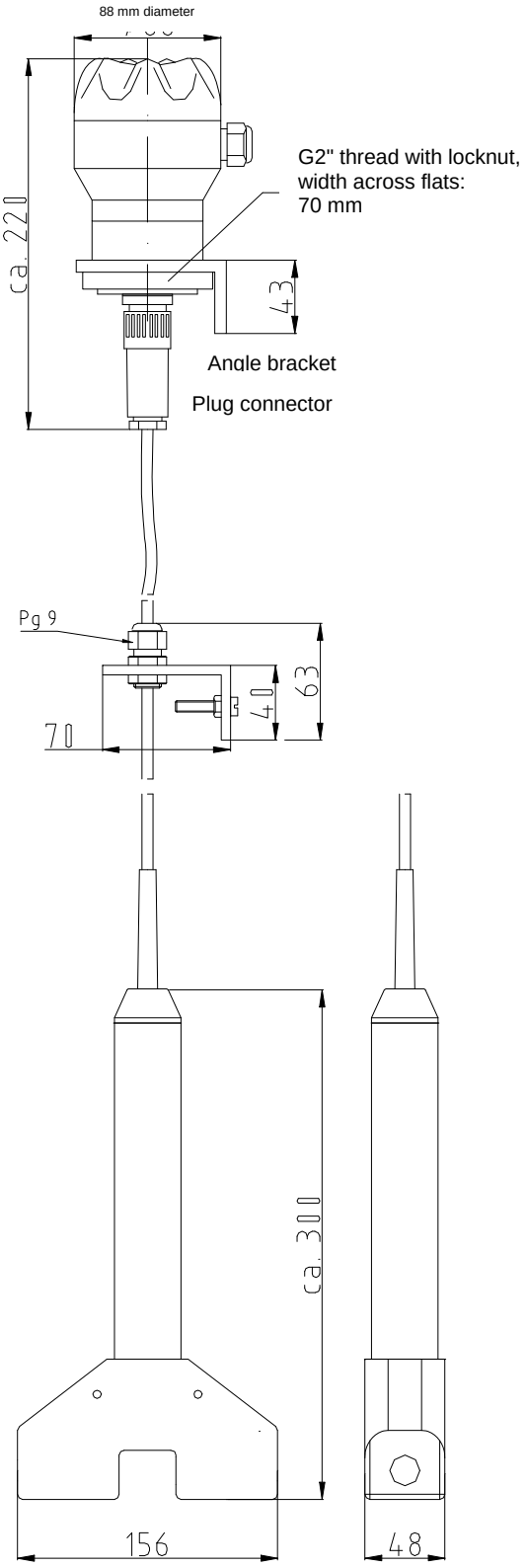
- deviation >15 %: the sensor should be adjusted by BAMO IER.

TURBISENS Test-Unit
SN: 1234567
FNU: **65**
Date: 01.02.09

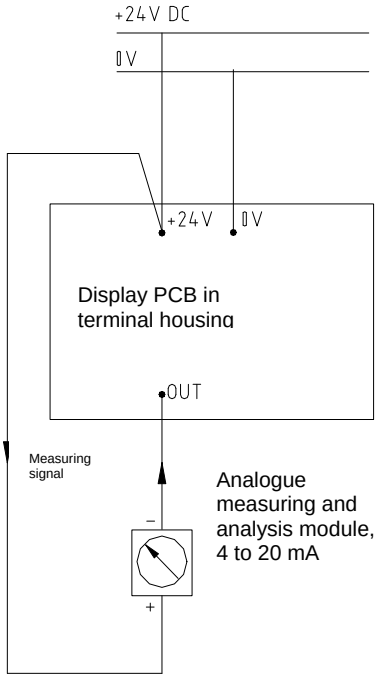
Type plate on the test-unit

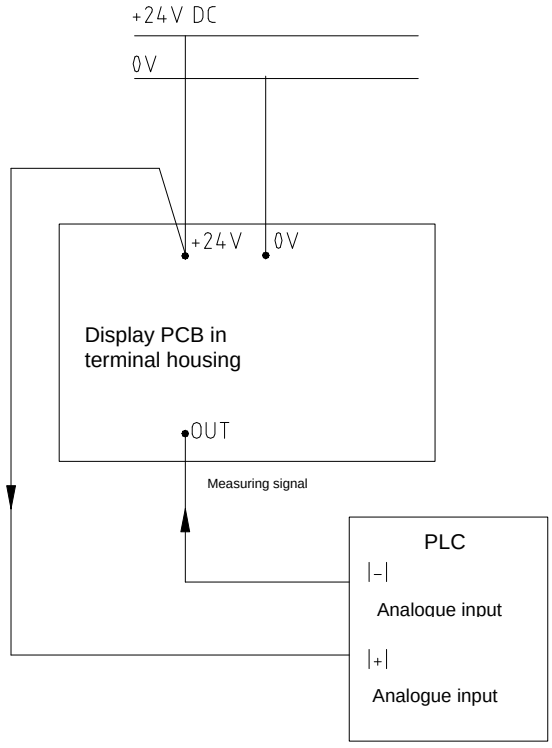


Dimensions:



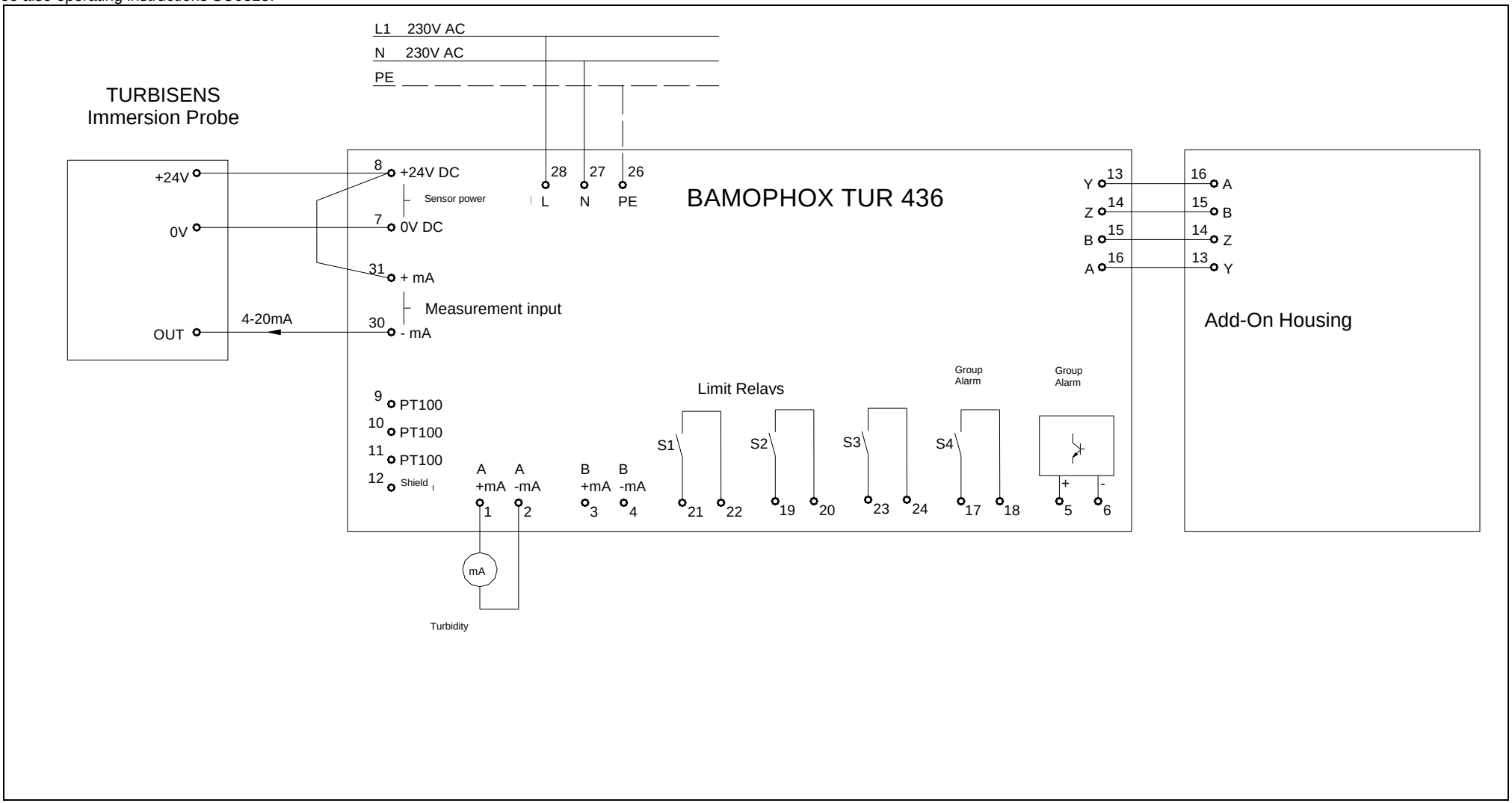
Electrical Connection





Electrical Connection to BAMOPHOX TUR 436

See also operating instructions SU0325.



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