

# TURBISENS

**Turbidity transmitter, Immersion Probe**  
According to ISO 7027



**INSTRUCTION MANUAL**

**BAMO MESURES**

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443 M1 01 E

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**MES**

**443-01/1**

## SAFETY PRECAUTIONS

- Only qualified person should operate, install and assure the maintenance. All International and European recommendations on electrical installation should be applied.
- The device may only be connected to supply power, which complies with the specifications included 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.

## FUNCTIONS – DESCRIPTION

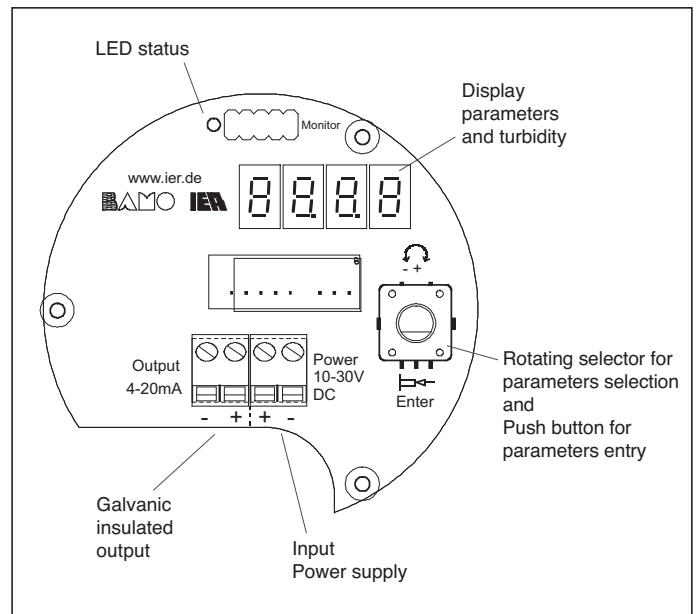
- TURBISENS determines the turbidity of liquids according to ISO 7027, using infrared light in pulsating light mode with 2 emitters and 1 receiver.
- Output signal: 4 to 20 mA
- Automatic compensation is assured on external light and colour.

**MOUNTING : Caution!** The probe must be installed vertically using the supplied bracket in order to let a **free space of 10 cm as a minimum** from the tank or channel floor. The cable sensor is connected with an IP67 protected connector to the head housing.

## RANGE SET UP

- Connect the power supply, at this moment the initializing sequence runs until the green LED blinks.
- Press the push button. Display: **"OUT"**
- Press the push button once more. Display: **"present value"**
- Choose the right range with the selector.
- The instrument after 5 seconds saves your selected range and returns back to measuring mode.

See fig.1: Configuration menu



## Switching the power on:

The initializing sequence begins, display indicates the software version. Within 3 seconds, green LED blinks: measuring mode is operating and display indicates the measured turbidity.

## Compensation:

Colour compensation only for 0...50 and 0...100 FNU ranges.

## Status indicators:

- Blinking green LED: = All in operation, measurement mode
- OFF green LED: = Faulty power supply
- ON red LED: = Dysfunction on 4-20 mA output

## Error indications on the display:

- "SUN" → Too much external light
- "dirt" → Dirty glass windows
- "hhhhh" → Over range
- "noSd" → Faulty probe or not connected, broken cable

## Dysfunction diagnostics

### - No entry on colour compensation:

This function is available only for two ranges 0...50 and 0...100 FNU.

Choose an appropriate range to check this function.

### - No choice of range over 100 FNU:

The colour compensation is working and does not allow any range over 0...100 FNU.

Set off the colour compensation and set up the right range.

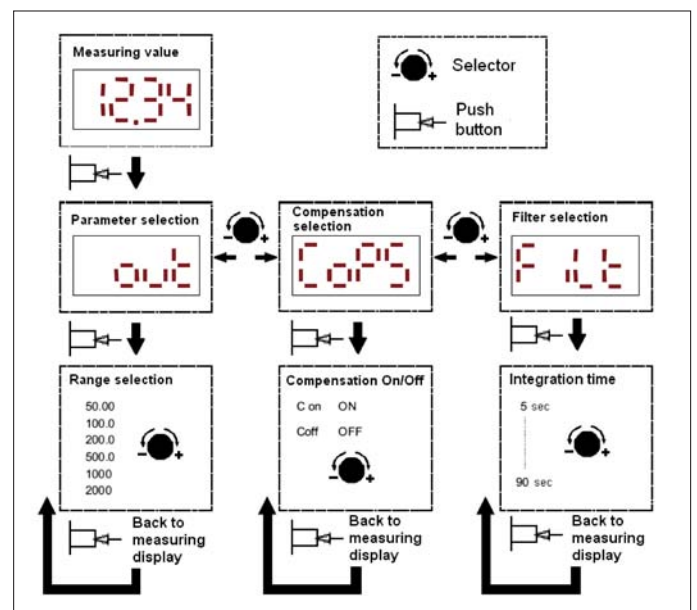


Fig.1

# TESTING THE TURBISENS WITH CALIBRATION KIT

## Factory Calibration:

The sensor is factory calibrated. 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 calibration kit. This kit is paired with only one TURBISENS: refer to serial numbers.



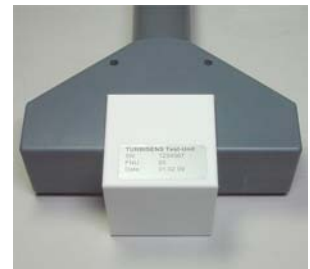
**CAUTION**  
TURBISENS and calibration kit  
Must have the same serial number

## Test procedure

- Lift up the TURBISENS out of liquid.
- Clean, rinse and dry carefully the beam windows (even traces of drop must be removed). Do not use abrasive materials.
- **Set up the measuring range to 200.00 FNU.**
- Fit the test kit on the probe as shown on the picture. There is no specific way to slide it on the probe.
- After 15 s the instrument is ready for check-up.
- Compare the value in FNU engraved on the kit with the reading value



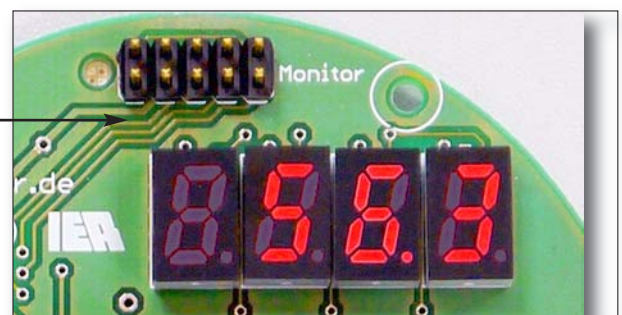
- If reading is 15% under the kit value → **Calibration test is right.**
- If reading is 15% over the kit value → **send the instrument to BAMO for a factory calibration**



### TURBISENS Test-Unit

SN: 1234567  
FNU: 56  
Date: 01.02.09

Calibration Kit identification



TURBISENS

## TECHNICAL FEATURES

Output signal: 4-20 mA ; 4 wire technique ; compatible with BAMOPHOX 436 (230 V AC version)  
 Power supply: 24 V DC (10 ... 30 V DC), galvanic insulated  
 Consumption: about 0.8 W; if the 4-20 mA loop is separately powered the consumption is 0.5 W

**CAUTION:** if a connection is done with another instrument than BAMOPHOX 436 (230 V AC version) a separated power supply could be necessary according to power supply available on the PLC.

Ambient temperature: + 0°C ... 45°C  
 Immersion: 10 m as a maximum  
 Sensor protection: IP68 acc. EN 60 529 (max. 10 m) Sensor PVC immersion probe ; connection to head housing: IP67 connector  
 Media temperature: +0°C ... 60°C

Ranges: 1 = 0...50 FNU / 2 = 0...100 FNU / 3 = 0...200 FNU / 4 = 0...500 FNU / 5 = 0...1000 FNU / 6 = 0...2000 FNU

FNU = Formazin Nephelometric Units

Accuracy:  $\pm 5\%$  of reading and  $\pm 1\%$  full scale of actual range in use  
 Resolution: 0.01 – 1 FNU (depending on range in use)  
 Housing: PBT Head, protection IP 65 (EN 60 529)  
 Fitting connection BSP 2" / bracket and blocking nut PG9  
 Display: All inside the head housing: 4 digits display for reading measured turbidity, programming and settings  
 LED status on alarms and functions  
 Configuration: Through rotating selector and push button  
 Cable: Length 6 m (other on request)

**CE label:** According to Directives **2006/95/CE** and **2004/108/EG**

