

# TRUBOMAT GS3

## Turbidity controller



## INSTRUCTION MANUAL

**BAMO MESURES**

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Turbidity controller  
**TRUBOMAT GS3**

03-08-2007

410 M1 01 B

**MES**

**410-01/1**

## Safety Precautions

Installation, initial start-up and maintenance work may only be performed by trained personnel!

Applicable European and national regulations regarding the installation of electrical equipment must be observed.

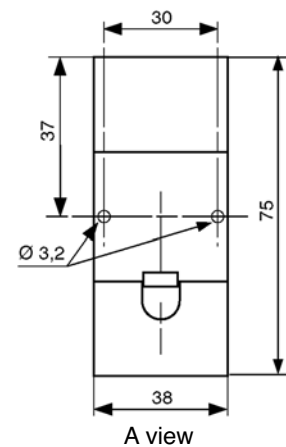
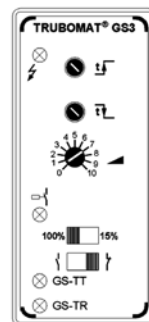
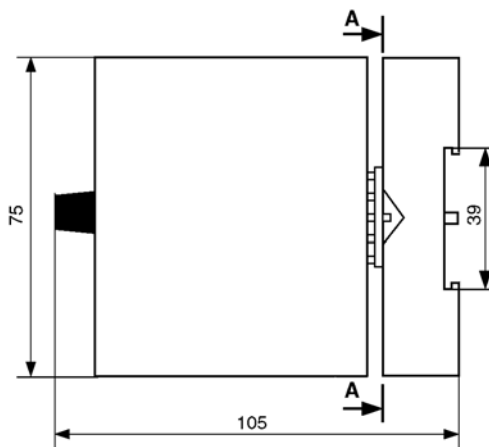
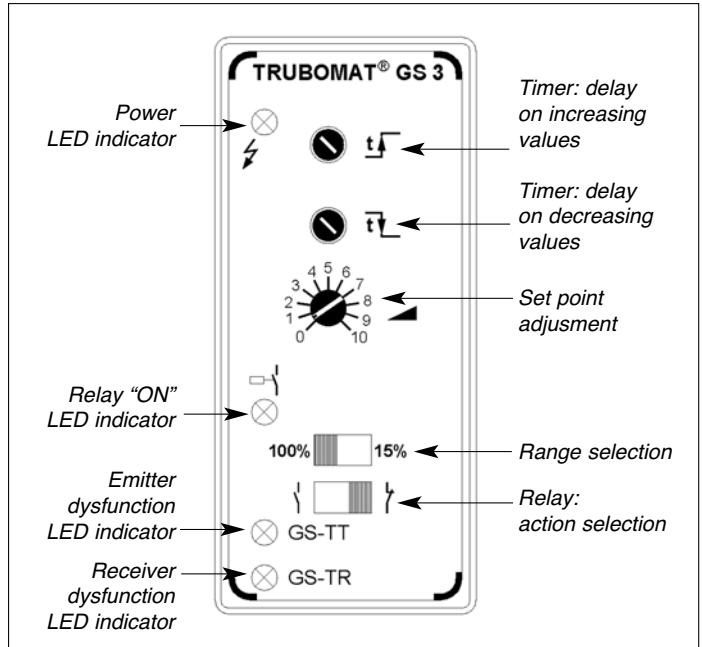
The device may only be connected to supply power which complies with the specifications listed under "Technical Data" and on the serial plate!

The device must be disconnected from supply power before performing installation or maintenance work!

The device may only be operated under the conditions specified in the operating instructions!

## 1. TECHNICAL FEATURES

Supply power:	230 V AC / 40 to 60 Hz $\pm$ 15%
Optional:	24 V AC, 110 V AC $\pm$ 15%
	24 V DC $\pm$ 15%
Power consumption:	3.5 VA
Ambient temperature:	-10 to +50°C
Range selection:	Switch on 15% or 100% full scale
Sensitivity:	Adjustment with potentiometer
Relay output:	Floating changeover contact 250 V AC, 5 A, 500 VA
Transistor output:	NPN 2.5 to 30 V, max. 60 mA
Delay, decreasing signal:	Adjustable from 0 to 10 s
Delay, increasing signal:	Adjustable from 0 to 10 s
Indicators:	Power supply, green LED Relay indicator yellow LED Emitter dysfunction red LED Emitter error red LED Receiver error red LED
Dimensions:	Housing DIN 83 x 37 x 105 mm



## 2. DESCRIPTION

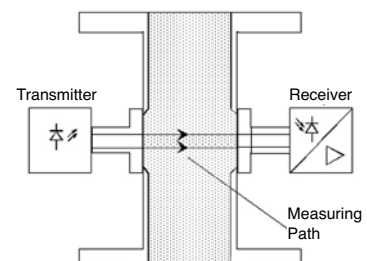
The turbidity system works as a limit monitor. Turbidity measurement is based upon absorption, i.e. it responds to loss of light caused by turbidity in the liquid medium. The emitter send the IR beam (940 nm pulsated 8 kHz) through the fluid to the receiver. The variations due to the turbidity are fully used by the TRUBOMAT to detect the over passing preset value. A complete system compares continuously the measured value with the preset value; it is not pre-calibrated in factory but calibrated on site by end-user.

### A complete turbidity control system includes:

- 1 turbidity controller TRUBOMAT GS3
- + 1 armature GA ...1 / ...2/ ... 5/ ...11 (DN 15 to DN 125)
- for in-line control / by-pass (including emitter and receiver)

Or

- 1 turbidity controller TRUBOMAT GS3
- + 1 immersion probe CP1 (built in emitter and receiver)
- for control in basin or open channel.

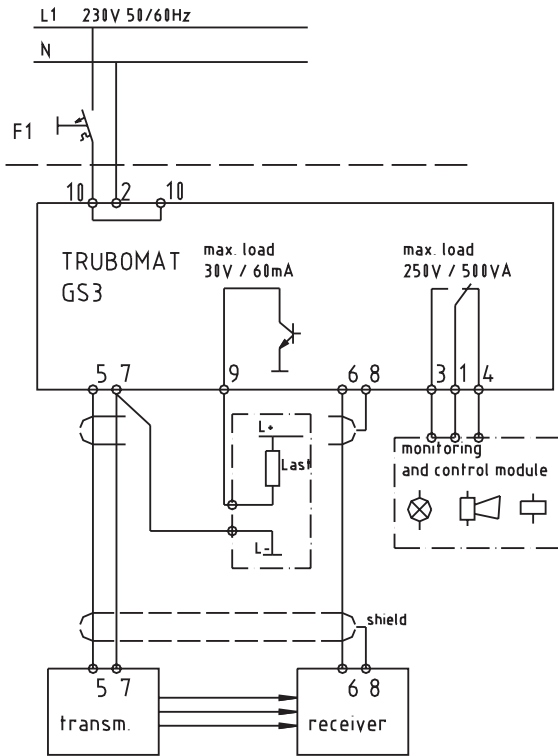


### 3. WIRING GA., flow through probes

Check if the unit accepts the main supply available on site. As a standard, the power supply is 230 V AC - 50/60 Hz

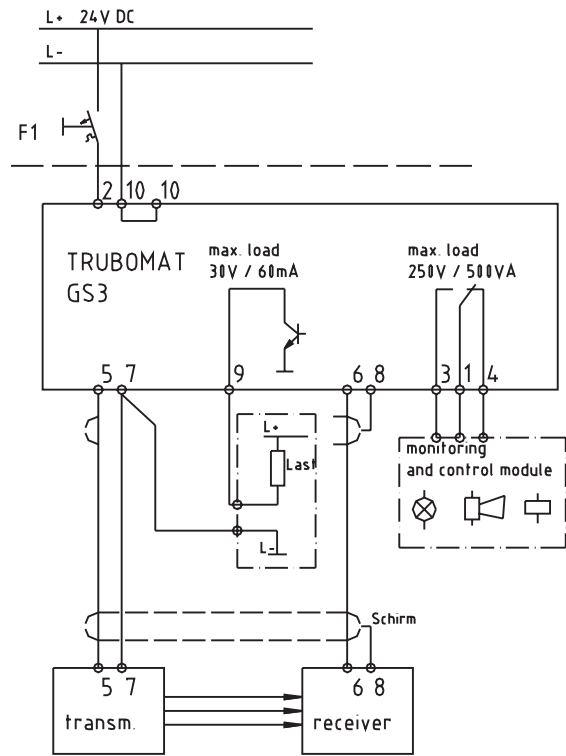
#### Wiring diagram, 230 V 50 / 60 Hz

external control voltage supply



#### Wiring diagram, 24 VDC

external control voltage supply



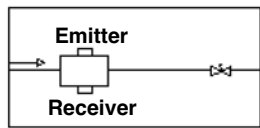
### 4. MOUNTING GA., flow through probes

**TRUBOMAT GS3: To fix on its base (11 pins) for rail DIN 46277 mounting.**

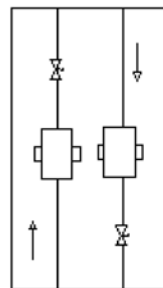
**IN-LINE PROBES: GA 1..., GA 2..., GA 5..., GA 11...,**

The following points must be observed in order to assure accurate measurements:

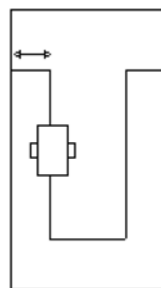
- For the normal maintenance operation, mounting should care of possibility to dismantle all the system.
- The glass windows must always be clean – determination of the cleaning operation frequency depends of process conditions and fluid.
- The emitter and receiver have to be installed within a horizontal plan, to avoid accumulated particles or gas bubble.



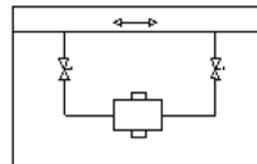
**Horizontal installation**  
(Top view)



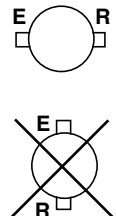
**Vertical installation**  
(Front view)



**Installation to Trap**  
(Front view)



**By-pass mounting**  
(Top view)



- If necessary, generate back-pressure by throttling the discharge line, or install to a trap.
- The fluid to be measured must be free of gaseous bubbles. Gaseous bubbles distort measured values. Installation to a trap is advantageous.
- Snugly tighten the sleeve nuts at the transmitter and receiver seats by hand if the GA 5... sensor fixture is used, in order to assure that the O-rings are adequately pressed against the lenses.
- Install a stopcock if mounted to a trap to assure that no fluid enters the transmitter or the receiver when the lenses are removed.
- Use the included suction cup when removing lenses from GA 5... devices.

## 5. MOUNTING immersion probe CP1

The immersion probe CP1 is intended for the installation in basins, open gutters and containers for the monitoring of the turbidity or sludge level. The probe is available for 2 measuring ranges.

**Low range:** approximately 50...1300 FAU for over runs and sewers

**High range:** approximately 600...3000 FAU for sludge levels and interfaces.

Mount the probe in such a way that the probe is easily removable for cleaning. Cleaning intervals result from the operating conditions. Do not scratch the glasses with abrasive cleaning materials!

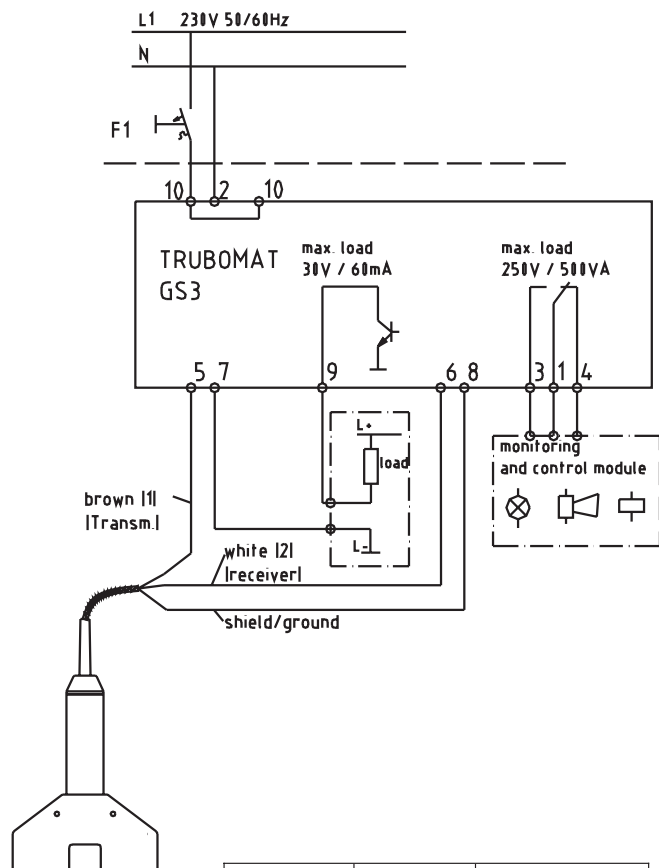
**Installation of the immersion probe CP1 Z0** by means of assembly angles and placing screw connection.

**Caution:** With strong current or viscous media, the cable may not be overstretched. At the two drillings in the probe foot a strain relief in these cases (rope, support rod ...) to be attached. The drillings are designed that into them if necessary a thread M6 can be cut.

**Mounting of the immersion probe CP1 ZR**

The probe is also available with extension tube.

## 6. WIRING immersion probe CP1



Wire color	Terminal	Function
white or (1)	6	Receiver
brown or (2)	5	Transmitter
shield	7/8	Ground

## 7. ADJUSTMENT immersion probe CP1

### Initial Start-Up

Adjust the switching point for the dark switching function (for fluid media, which become more turbid):

Adjustment is performed after installation and electrical connection.

- Set range selector switch to **15%**.
- Set sensitivity adjusting potentiometer to **0** – the yellow LED lights up.
- Turn adjusting potentiometers “**t - On**” and “**t - Off**” all the way anticlockwise (0.5 s delay).
- Fill sensor fixture with fluid medium or submerge immersion fixture.
- Slowly turn the sensitivity adjusting potentiometer towards 10 until the yellow LED goes out.
- The closer the potentiometer is set to the switching point, the more sensitively the device reacts to the onset of turbidity.
- With clear water, a turbidity change of approximately 7 TE/F is sufficient to trigger the device if it has been precisely adjusted.
- If a larger change is desired, turn the potentiometer to a correspondingly higher setting (actual settings must be determined by trial and error).
- If the 15% range is inadequate, switch to the **100%** range.
- The switching command can be delayed by up to 10 seconds with the “**t - On**” and “**t - Off**” potentiometers in order to prevent erroneous switching due to air bubbles or isolated turbidity particles.

## 8. MAINTENANCE

### Fixtures

Glass lenses must be kept clean.

A suction cup is provided with the GA 5... sensor fixture to this end. Completely empty the fixture before cleaning or performing maintenance work!

- Do not use hard objects for cleaning.
- Calcium deposits can be removed with commercially available decalcifying agents.
- Maintenance interval depends upon operating conditions.

### Transmitter and receiver

They are maintenance-free.

### Switching Amplifier

The switching amplifier is maintenance-free.

