NIEUWKOOP

METEN.NL

USER MANUAL

TU5000

TURBIDITY PROBE

TO MEASURE = TO KNOW

1 PRESENTATION OF THE PRODUCT

TU5000/TU 810, TU 8105 are designed to measure the turbidity of a liquid when installed with TU3020/TU7685 controller, while TU820 requires TU7685.010.

The technical characteristics of the probes TU5000/TU810 and TU8105 and of the controller TU7685, allow to measure turbidity in four different selectable scales: 0/4,000 - 0/40,00 - 0/400,0 - 0/4000 NTU.
The measures can also be displayed in ppm and mg/l of SiO2.
TU820 and TU7685.010 have the same characteristics, with scales are: 0/4,000 - 0/40,00 - 0/400,0 NTU

The probes have been designed in accordance with the following primary methods:

- ISO 7027 – EN 27027 TU5000/TU810 and TU8105
- USEPA 180.1 TU820

1.1 ACCESSORIES

The accessories to be used with the turbidity probe, and to be ordered separately, are the following:

TU5300/TU 910 Flowcell
TU 920 Flowcell

SZ 9481 Cable 10 m, with connector 2231520
2231520 Connector IP67 for 7 wires cable
SZ 927.1 Extension cable for length > 10 m

1892702 Adapter for in-line installation
2713118 O ring for adpater 1892702

2 GENERAL WARNINGS AND INFORMATION FOR ALL USERS

2.1 WARRANTY

This product is guaranteed for all manufacturing defects.
Please take a look at the terms and conditions described on the Warranty certificate at the end of the manual.

2.2 AFTER SALES SERVICE

Nieuwkoop/B&C offers to all of its Customers the following services:
- a free of charge technical assistance over the phone for problems regarding installation, calibration and regular maintenance;
- a repairing service in our Aalsmeer (Netherlands) headquarter for all types of damages, calibration or for a scheduled maintenance.

Please take a look at the technical support data sheet at the end of the manual for more details.

2.3 CE MARKING

This sensor is manufactured according to the following European Community directives:

- 2011/65/EU "Restriction of the use of certain hazardous substances in electrical and electronic equipment"
- 2014/30/EU "Electromagnetic compatibility" EMC
- EN 61326-2-3/2013 "Electromagnetic compatibility" EMC
  – Controlled electromagnetic environment
- EN 55011/2009 "Radio-frequency disturbance characteristics"
  – Class A (devices for usage in all establishment other than domestic)
  – Group 1 (Industrial equipment that do not exceed 9kHz)

2.4 SAFETY WARNINGS

It is important to underline the fact that electronic instruments are subject to accidents.
For this, it is important to take all necessary precautions to avoid damages caused by malfunctions.
All types of operations must be performed by authorized and trained staff.

3 TECHNICAL SPECIFICATIONS

When connected to TU3020/TU7685 and TU7685.010, the probes have the following characteristics:

Range	0/4000 NTU
Resolution	0,001 on scale 0/4,000 NTU
	0,01 on scale 0/40,00 NTU
	0,1 on scale 0/400,0 NTU
	1 on scale 0/4000 NTU
Accuracy	± 5% of reading on 0/400 NTU
	± 10% of reading on 400/4000 NTU
Check signal	0/200 %
Response time	10 seconds

3.1 TU5000/TU 810 – TECHNICAL SPECIFICATIONS

Measuring principle	Nephelometric (ISO 7027 – EN 27027)
Light source	LED IR 890 nm
Preamplifier	Built-in
Power	± 12 Vdc
Ambient temperature	0/50 °C
Sample temperature	0/50 °C
Pressure	6 bar max. at 20 °C
Body	PVC
Optycal window material	Acrylic
O ring	NBR
Diameter	40 mm
Body length	112 mm
Connector	7 pin IP 65
Cable length	100 mt max.

3.2 TU 8105 – TECHNICAL SPECIFICATIONS

Measuring principle	Nephelometric (ISO 7027 – EN 27027)
Light source	LED IR 890 nm
Preamplifier	Built-in
Power	± 12 Vdc
Ambient temperature	0/50 °C
Sample temperature	0/50 °C
Pressure	6 bar max. at 20 °C
Body	PVDF
Optycal window material	Acrylic
O ring	NBR
Diameter	40 mm
Body length	112 mm
Connector	7 pin IP 65
Cable length	100 mt max.

3.2 TU 820 – TECHNICAL SPECIFICATIONS

Range	0/400 NTU
Measuring principle	Nephelometric
Primary method	Standard methods 2130B – USEPA 180.1
Light source	Tungsten Lamp 2200 °K
Average lamp life	100.000 hours
Sensor sensitivity	600 nm
Preamplifier	Built-in
Power	± 12 Vdc
Ambient temperature	0/50 °C
Sample temperature	0/50 °C
Pressure	6 bar max. at 20 °C
Body	PVC
Optycal window material	Acrylic
O ring	NBR
Diameter	40 mm
Body length	112 mm
Connector	7 pin IP 65
Cable length	100 mt max.

4 INSTALLATION

It is recommend to install the probe inside the flowcell TU 910, especially for measures of low turbidity values (up to 40 NTU).

- Install the adapter with O-ring on the probe's body, as shown in the picture below;
- insert the probe inside the flowcell;
- screw the flowcell fitting;
- connect the cable.

In applications where there is a high turbidity value, the probe may be installed in-flow. In this case, it is recommended to install the probe in a bypass for an easy maintenance.

Feel free to contact our Sales Department for more information about this installation.

Probe with installed the adapter

4.1 CONNECTING THE PROBE TO THE CONTROLLER

The probe is connected to the controller TU3020/TU7685 by means of cable SZ 9481, which have numbered wires and connector, or by means of a cable provided by the Customer and connected to the 7 pin connector with P/N 2231520.

The connections to the controller are as follows:

Connector	**Cable**	**Controller**	**Description**
Pin N°	Wire N°	Terminal N°	
	0	23	Shield
1	1	22	Turbidity signal HI
2	2	25	Turbidity signal LO
3	3	24	Check signal
4	4	19	Control LED
5	5	21	0
6	6	18	+ 12V
7	7	17	- 12V

WARNING

- Do not interrupt the cable. If necessary use only junction box with high isolation terminals.

5 CALIBRATION

The probes TU5000/TU810, TU8105 and TU820 are factory calibrated with Formazine solutions prepared in our lab.

A new calibration may be needed with time, in this case please follow the procedures described in the TU3020/TU7685 manual.

6 MAINTENANCE

Cleaning the optical windows

The two optical windows, placed at the bottom of the probe, must be inspected and cleaned periodically.

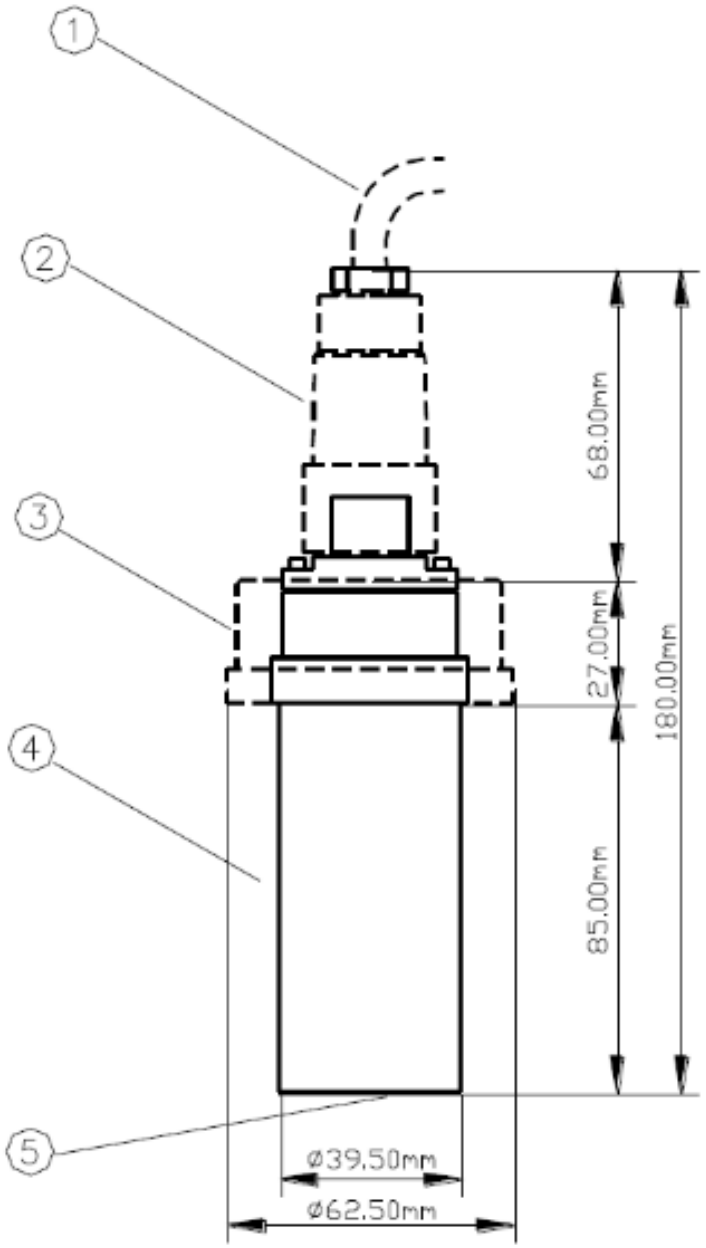
The clearing must be done before connecting the probe to the controller, and before the calibration procedures.

All deposits must be removed from the windows by using a humid soft cloth or a paper napkin.

Avoid putting pressure on the windows while cleaning.

The frequency of the clearing depends on the how the probe is used, and by the nature and concentration of suspended solids.

TU5000/10 – TU 8105 – TU820
TURBIDITY PROBE

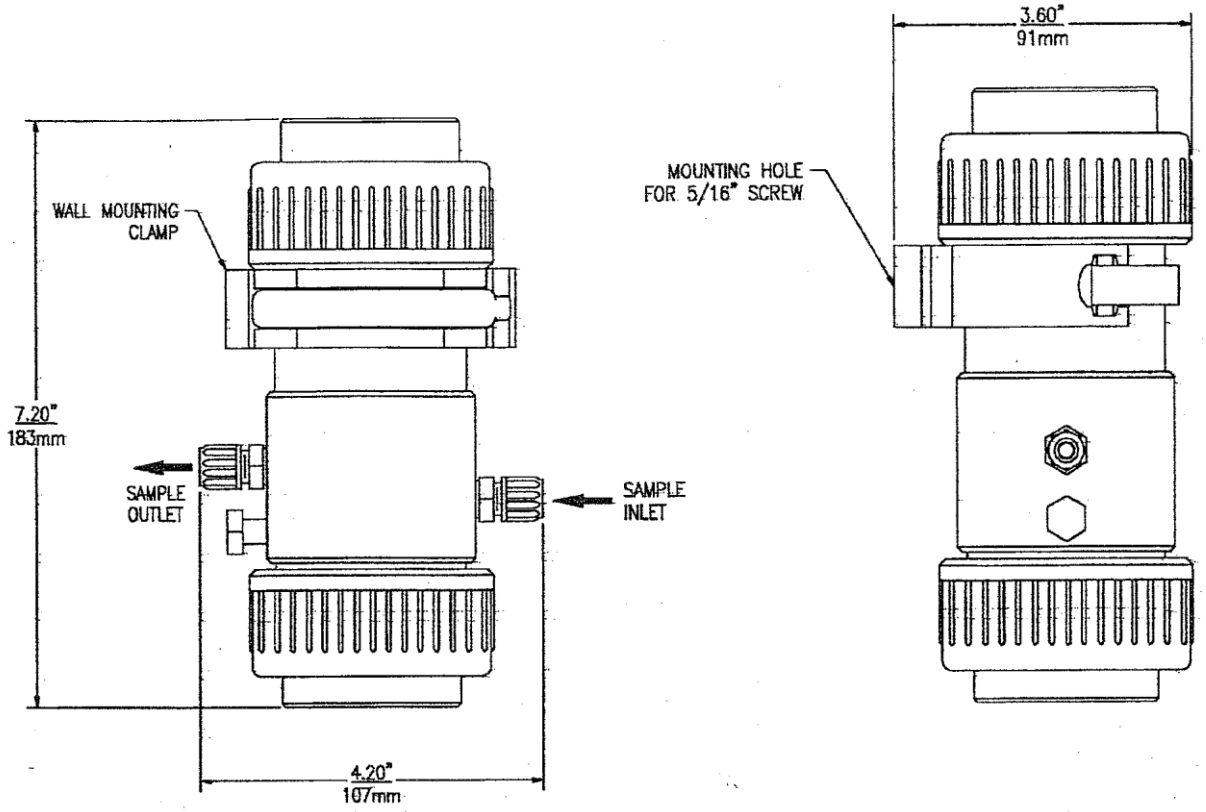


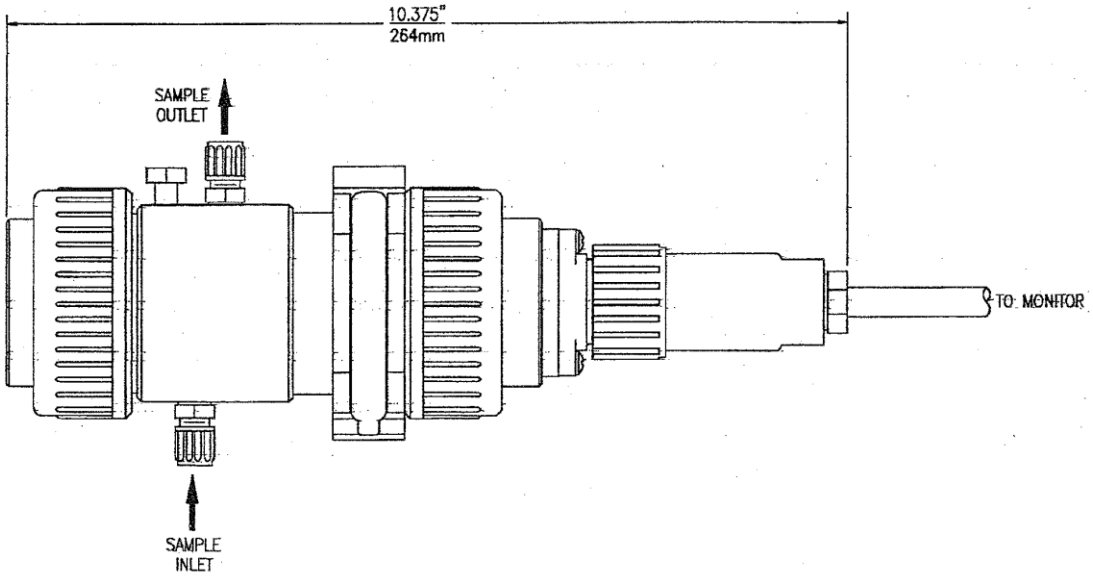
TU810X rev.A – A4 – 1:2

1. Cable
2. Connector
3. Adapter
4. Body
5. Optical windows

Fig. 1

TU5300/TU910
FLOWCELL





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Nieuwkoop BV
Aalsmeerderweg 249 -S
1432 CM AALSMEER

0297 325836
info@nieuwkoopbv.nl
www.meten.nl

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