TU 8525.090 – TU 910.090

Turbidity probes 4/20 mA – RS485 – Modbus RTU

TU 8525.090 is designed for measuring low turbidity values according to nephelometric method and they are ISO 7027 - EN 27027 compliant.
TU 8525.090 probe installation is in overflow, assembled with our specially designed accessory TU 910.090 model, for an easy and compact installation with a simple detachable cable, easy to plug and unplug.

Thanks to the analog and digital outputs, the probes can be connected to the most common PLC's or data acquisition boards. B&C Electronics offers MC 6587 and MC 7687 multi-channel controllers that allow complete management of up to three probes, displaying the measurements and the messages that guide calibration and configuration.

Main features

Ranges
The probes can be configured in range from 4 NTU to 400 NTU. It is also possible to associate a scalability factor from 10% to 100% to obtain intermediate full-scale values on the 4/20 mA current loop through digital commands.

Operating mode
The probes can be configured to operate in analog or digital mode.
If connected to a master device it is possible to carry out several operations through specific digital commands.

Analog output
The 4/20 mA current loop is proportional to the main measurement value.The current loop is galvanically isolated, for direct connection to PLC or data acquisition boards.

Serial interface
The RS485 isolated serial interface allows for calibration and configuration of the probes, the simultaneous transmission of turbidity measurements, check signal and average value of ambient light and temperature.The boot loader function allows the user to update the probe's firmware.

Communication protocols
The B&C ASCII protocol coexists with the MODBUS RTU protocol (03, 06, 16 function) for the transmission of the measurements, the configuration and calibration of the probe.

Filter software
A filter software operates on the sensor input signal with two selectable time constants. In order to obtain good reading stability and fast response to the changes in the process, the user can set the response time for both the small or large variation signals.

Self-diagnostic
The "check signal" is a unique feature that provides a continuous verification of the status of the optical lens and the potential absence of sample in the measuring cell or in the tank.
A dedicated alarm can be configured to alert the user in case of potential malfunctions.

Zero stability
Thanks to a pulsed light source, then sensor performs an automatic zero at every measuring cycle.This unique feature guarantees for accuracy and stability in samples with near-zero turbidity.

Temperature compensation
The probes include a temperature sensor for internal compensation of optical efficiency.

Power supply
The probes are powered with 9/36Vdc voltage on the current loop, supplied by a PLC or data acquisition boards or by a power supply placed in series between the analog output and the acquisition device. Even in digital mode the power is supplied by the current loop.

Measuring method

The turbidity measurement is carried out with the method of light diffusion caused by the suspended particles in the sample. A light beam of a given wavelength is sent into the sample through a transparent lens.The portion of light diffused at an angle of 90° by the suspended particles in the sample returns to the probe through a second optical lens.
Then it is detected by the internal circuits and converted into an electrical signal proportional to the sample turbidity.The infrared light source makes the measurement independent from the sample color.

Technical specifications TU 8525.090

Turbidity ranges:	0/4.000 – 0/40.00 – 0/400.0 NTU
Scalability factor 4/20 mA:	10/100 %
Sensitivity:	70/130 %
Zero:	± 0.400 NTU
Resolution:	0.001 NTU
Accuracy:	0.2 % of the full-scale selected
Repeatability:	0.1 %
Non-linearity:	0.1 %
Check signal:	0/200.0 %
Temperature limit:	0/50 °C
Dual filter software:	2/220 seconds
Power supply:	9/36Vdc
Current loop:	4/20 mA isolated
Load:	600 Ohm max. at 24Vdc
Digital output:	RS 485 isolated
Protocols:	B&C ASCII and Modbus RTU (03, 06, 16 functions)
Baud rate:	2400 / 4800 / 9600 / 19200 baud
Probes ID:	01/99 (B&C protocol) 01/243 (Modbus protocol)
Probes network:	32 max.
Operating temperature:	60 °C max.
Operating pressure:	6 bar at 25 °C
TU 8720 dimensions:	L=137 mm, D=44 mm
TU 8720 weight:	Body 820 g
Body:	PVC-C
Cable:	**SZ 9501** 7-pin connector IP65 with cable L=10 m.
Protection:	IP 68
EMC/RFI conformity:	EN 61326-2-3/2013, EN 55011/2009

The technical specifications could be changed without notice.

Overflow installation

TU 8525.090 probe can be installed in overflow with the **TU 910.090** overflow cell.

TU 910.090 is equipped with a small valve to regulate the flow in the cell and to keep the liquid under pressure.The valve also works as a degasser to remove air bubbles in the sample.

Technical specifications TU 910.090

Sample flow	0.2 ÷ 0.5 l/min
Operating Temperature	0 ÷ 50 °C
Sample temperature	0 ÷ 50 °C
Sample pressure	max 6 bar a 20 °C
Body material	PVC
Seals material	NBR
Valve material	POM
Fittings	1/8" for 4x6 mm pipe

PC connection

Customers that use the probes in analog mode can also take advantage of the functions available through the digital mode. B&C Electronics offers BC 8701 a RS485/USB converter to connect the probes to a PC. An easy-to-use software, supplied on demand and free of charge, guides the user through configuration and calibration operations.

Applications

- Drinking water
- Aquaculture
- Food and Beverage
- Pulp and Paper
- Chemical Industry
- Pharmaceutical Industry
- Electroplating
- Printing Industry
- Textile Industry
- Fertirrigation
- Swimming pools
- Waste WaterTreatment
- SurfacesTreatment

Dimensions