

AGRINOVO-TUR-100

Digital Stainless Steel Turbidity Sensor

1. Overview

The AGRINOVO-TUR-100 is a digital online turbidity sensor in a stainless steel IP68 housing. It goes straight into the water for long-term immersion, with no protective tube required.

It measures turbidity by scattered light. Infrared light passes through the water, suspended particles scatter it, and the sensor reads the scattered light at 90° to the beam and converts it to NTU with its internal calibration. An infrared light path with an optical filter rejects ambient light, and the output is linearised for a stable, accurate reading over RS485 Modbus-RTU.



Features

- Range: 0 to 4000 NTU, selected per order
- Accuracy: $\pm 2\%$
- Stability: ≤ 1 NTU per 24 hours
- Not affected by ambient light
- RS485 Modbus-RTU output
- IP68 stainless steel housing, direct immersion
- Four-stage isolation against field interference
- Low power: ≤ 0.5 W

Applications

- Aquaculture and recirculating systems (biofilter inlet and outlet)
- Environmental and water treatment works
- Drinking water supply monitoring
- Chemical, pharmaceutical and food process water
- Metallurgy and fertilizer process solutions

2. Specifications

Parameter	Specification
Measurement Principle	90° infrared scattered light
Measurement Ranges	0 to 10, 0 to 20, 0 to 100, 0 to 400, 0 to 1000 or 0 to 4000 NTU (custom ranges available)
Accuracy	$\pm 2\%$
Resolution	0.1 NTU (register value $\div 10$)
Stability	≤ 1 NTU per 24 hours
Output	RS485, Modbus-RTU (4 to 20 mA optional)
Supply Voltage	12 to 24 V DC
Power Consumption	≤ 0.5 W

Parameter	Specification
Operating Environment	0 to 60°C, ≤85% RH
Protection	IP68
Housing	Stainless steel
Cable	Low-noise cable, runs of 20 m and more

3. Wiring

Wire Color	Function	Description
Red	V+	Power Supply (12 to 24 V DC)
Black	GND	Power Ground
Yellow	RS485-A	Data+
Green	RS485-B	Data-

Note: The wire colours are confirmed by the label on each cable. Wire the sensor with the power off and check every connection before powering up.

4. Communication Settings

Parameter	Value
Protocol	Modbus-RTU
Baud Rate	9600 bps
Data Bits	8
Parity	None
Stop Bits	1
Default Address	0x01
Broadcast Address	0xFE (one sensor on the bus only)

5. Register Map

Address	Description	Type	R/W	Notes
0x0000	Turbidity	Int	R	NTU = value ÷10
0x0050	Slave Address	Int	W	New address
0x0053	Slope	Int	W	Value ÷1000, default 1000 (1.000)
0x0054	Intercept	Int	W	Default 0

6. Reading Data

Read turbidity (1 register from 0x0000):

```
Request: 01 03 00 00 00 01 84 0A
Response: 01 03 02 1A 0A 33 23
```

Decoding:

Register	Raw	Decimal	Result
Turbidity	0x1A0A	6666	666.6 NTU

7. Address Configuration

Change Address (0x01 to 0x02)

```
01 06 00 50 00 02 08 1A
```

If the current address is unknown, send the read or write to the broadcast address 0xFE with only one sensor connected:

```
FE 03 00 00 00 01 90 05
```

9. Installation Notes

Placement

- Keep the optical window at least 10 cm from the bottom of the tank or vessel
- Keep at least 3 cm between the window and any side wall
- Less space causes stray reflections and offsets the reading
- Avoid air bubbles at the measuring window

10. Ordering Information

Part number	Description
AGRINOVO-TUR-100	Digital Stainless Steel Turbidity Sensor

8. Calibration

The sensor ships calibrated. A linear correction is applied in the field by writing a slope and an intercept.

Set Slope to 1.200

```
01 06 00 53 04 B0 7A AF
```

Set Intercept to 10

```
01 06 00 54 00 0A 48 1D
```

Handling

- Wire with the power off; power up only after checking the wiring
- Do not open the sensor or alter its internal wiring
- Keep sharp objects and corrosive liquids away from the optical surface
- Check the model on the package matches the order

11. Revision History

Rev	Date	Changes
1.0	October 2026	Initial release

Modular IoT sensors and controllers for agriculture and aquaculture. Specifications subject to change without notice.