Mini Turbine Flowmeter GTN

Combined Temp & Flow sensor

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Self-Lit OLED clear display

English + GUI easy menu

Dual output Digital + Analog

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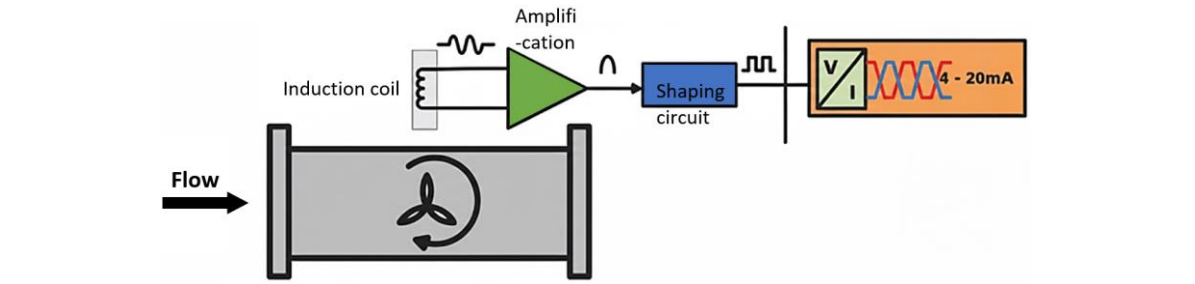
1. Product Description

The schematic diagram of the **GTN-Mini Turbine Flowmeter** is shown.
A turbine is installed at the center of the pipeline, supported at both ends by bearings.
When the fluid passes through the pipeline, it impacts the turbine blades, causing the turbine to rotate, and the rotational speed of the turbine is proportional to the fluid flow velocity.



The liquid flow drives the turbine to rotate, cutting the magnetic field lines generated by the permanent magnetic steel inside the shell, resulting in changes in magnetic flux.
The sensing coil sends the detected magnetic flux periodic change signal to the preamplifier for amplification, generating a pulse signal proportional to the flow rate and calculating the flow rate value through circuit operation.

2. Product Features

● Integrated Temp & Flow Measurement	● Self-Illuminating OLED Display
● Smart Temp Display Alarm Contact Output	● Smart FLOW Display Alarm Contact Output
● Intuitive English GUI	● Digital Communication & Analog Integration
● High-Precision Probe Technology	● Anti-fouling Probe Scale/ Corrosion Resistant
● Fully Sealed Waterproof Housing	● High-Pressure pressure resistance: 10 MPa

GTN-Mini Turbine Flowmeter is flow and temperature sensor features a simple structure, high accuracy, and easy installation, maintenance, and operation. it enables real-time monitoring of liquid flow and temperature in pipelines, providing flow measurement via 4-20mA or pulse signals with alarm switch outputs, and temperature measurement via 4-20mA signals with alarm switch outputs.

Equipped with an OLED real-time display for simultaneous visualization of flow rate and temperature, it achieves integrated monitoring of both parameters in pipelines.

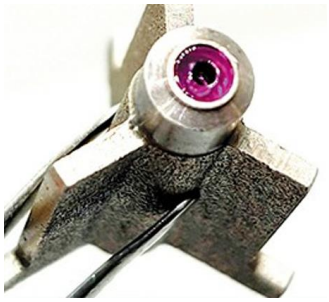
Widely utilized in petrochemical, power, metallurgy, steel plants, papermaking, food processing, water treatment, and battery factories, this sensor ensures reliable performance in diverse industrial environments.

- **High precision up to 0.5%:**
  With excellent stability and negligible drift
- **The display screen supports 180° orientation adjustment**
  The sensor can be configured via custom settings for either forward display or inverted display.
- **Parallel installation:**
  Sensors are installed in parallel, featuring a compact structure
- **IP65 protection level:**
  The sensor enclosure protection level is IP65, suitable for use in harsh environments

Detail presentation exemplifying quality

- **304 base aluminum alloy case**
  Corrosion resistant, excellent anti-interference

- **Ruby bearing**
  High hardness, wear-resistant



- **Tungsten alloy steel impeller**
  High hardness, wear/corrosion resistant

3. Technical Specifications and Parameters

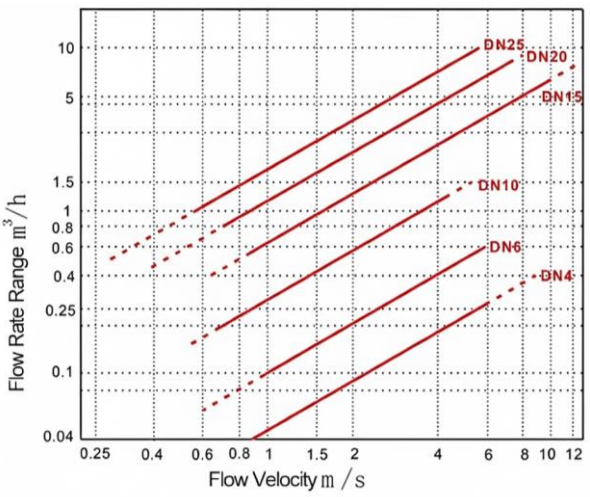
Flow	Measuring Range	See the comparison table below
	Accuracy	Class 0.5, Class 1, Class 2
	Switching time	Turn-on: ≤ 2s / Turn-off: ≤ 2s (1~2s)
Temp	Measuring Range	0 ~ 100°C (customizable)
	Resolution	±0.1°C

Power Supply & Consumption	24VDC / 3W
Output Supply & Consumption	1 alarm contact, 4-20mA analog / pulse output (configurable)
Alarm contact type	NPN / PNP
Insulation resistance	50MΩ @ 100VDC
Power consumption	3W (24VDC)
Interfaces	G1/4", G3/8", G1/2", G3/4", G1" internal thread
Housing material	Aluminum alloy
Base material	304 stainless steel
Environmental conditions	-20 ~ 85°C, <85% RH

The liquid flow drives the turbine to rotate, cutting the magnetic field lines generated by the permanent magnetic steel inside the shell, resulting in changes in magnetic flux.

The sensing coil sends the detected magnetic flux periodic change signal to the preamplifier for amplification, generating a pulse signal proportional to the flow rate and calculating the flow rate value through circuit operation.

Pipe diameter, measuring range, and pressure correlation table



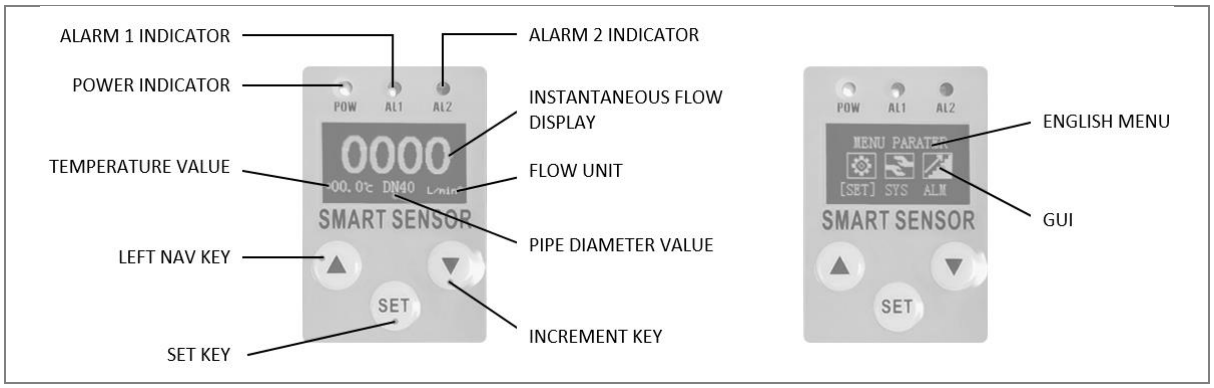
Pipe Diameter	Normal Flow Range (m³/h)	Extended Flow Range (m³/h)	Interface
DN4	0.04~0.25	0.04~0.4	G1/4"
DN6	0.1~0.6	0.06~0.6	G1/4"
DN10	0.2~1.2	0.15~1.5	G1/4"
DN15	0.6~6	0.4~8	G1/2"
DN20	0.8~8	0.45~9	G3/4"
DN25	1~10	0.5~10	G1"

Thread Connection: 2.5MPa

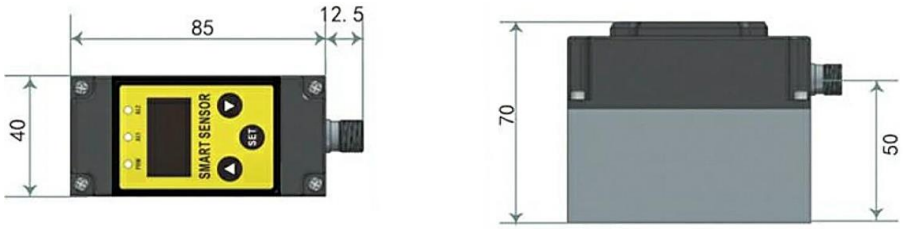
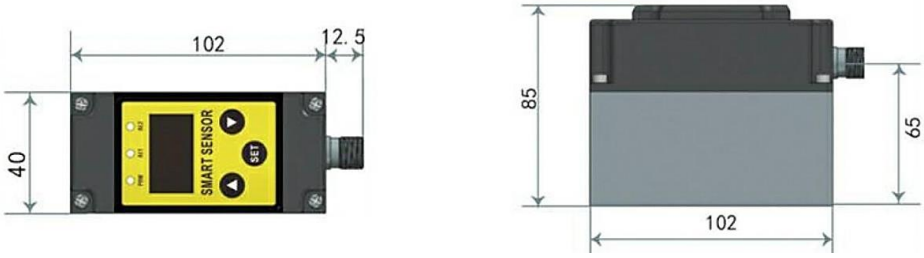
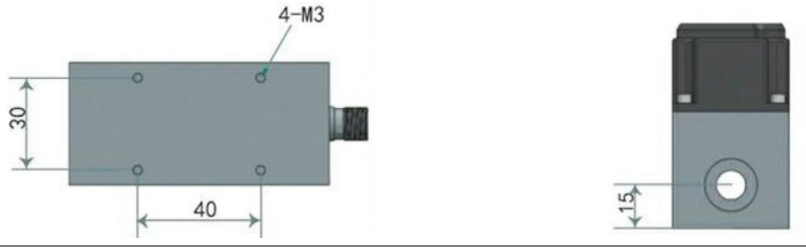
4. Installation and Configuration Diagram

4-1. Panel Introduction Interface & Controls

The GTN Flow & Temperature Online Sensor features an OLED display showing real-time pipeline flow rate or temperature values.
Three buttons on the panel allow easy configuration of flow alarm contacts and temperature alarm contacts.

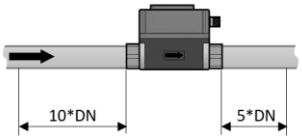
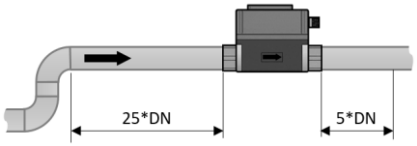
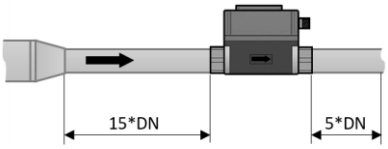
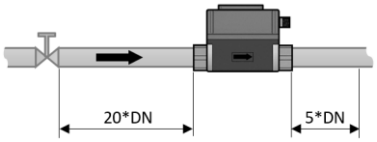


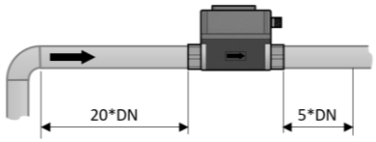
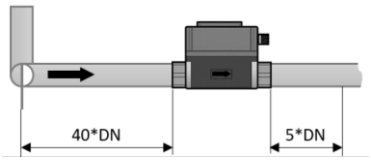
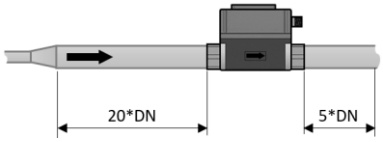
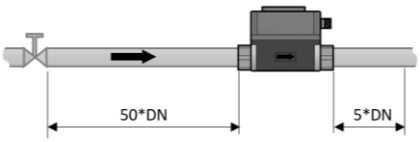
4-2. Dimension

Pipe Diameter **DN4~DN15**	
Pipe Diameter **DN20~DN25**	
Other	

4-3. Installation Instructions

To ensure measurement accuracy of the **GTN-Mini Turbine Flow meter** and minimize interference from disturbed flow and air bubbles, the following requirements apply to upstream/downstream straight pipe sections:

Inlet Section Flow Restrictors Type	Installation Requirements	
	Inlet Section	Outlet Section
General Case		
Two 90° Elbows in the Same Plane		
Pipe Reducer		
Fully Open Valve		

Inlet Section Flow Restrictors Type	Installation Requirements	
	Inlet Section	Outlet Section
90° Elbow		
Two 90° Elbows in Different Plane		
Pipe Expander		
Fully Open Valve		

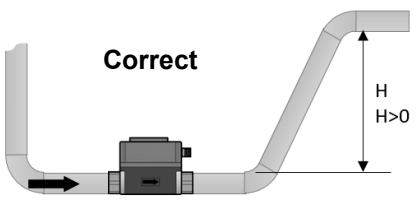
Notes:

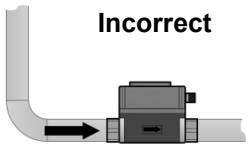
The dimensions shown are the straight pipe installation lengths required to ensure accuracy requirements. If the straight pipe length is doubled, measurement precision can be improved.

- **Upstream**: The minimum allowed straight pipe length must be at least 10 times the pipe diameter. For example, for a DN50 flow sensor, the upstream straight pipe length must be at least 500 mm, while the optimal upstream length should be 1000 mm.
- **Downstream**: The minimum allowed straight pipe length must be at least 5 times the pipe diameter. For example, for a DN50 flow sensor, the downstream straight pipe length must be at least 250 mm, while the optimal downstream length should be 500 mm.

● The pipeline must be entirely filled with liquid.

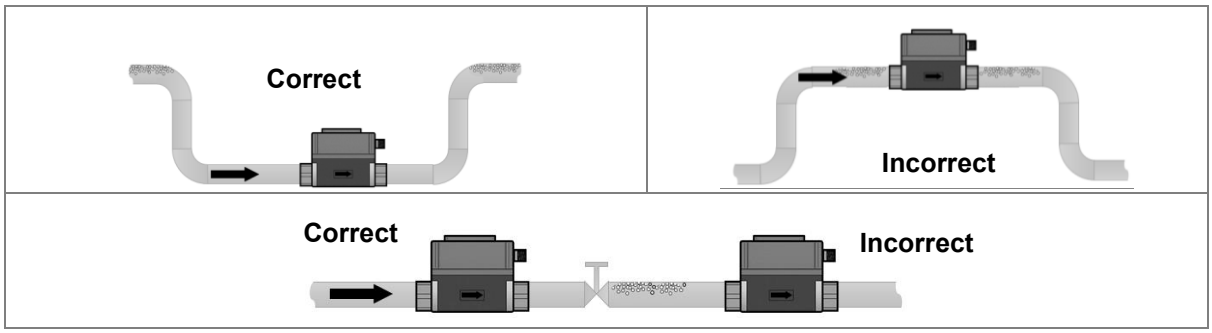
It is critical that the pipe remains completely filled with liquid at all times; otherwise, the flow rate display may be affected, potentially leading to measurement errors.



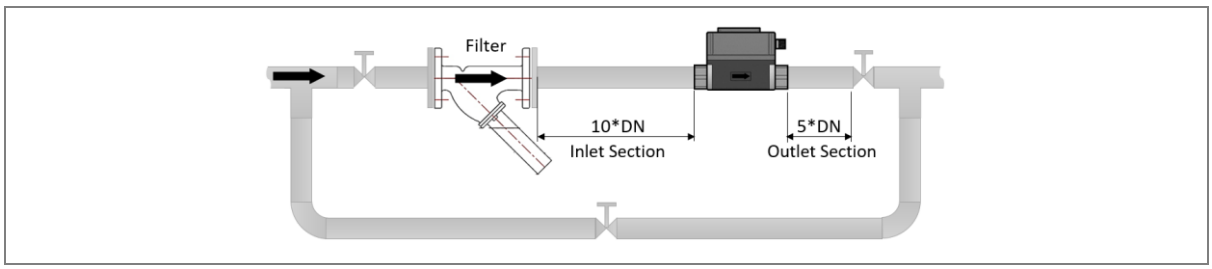


● **Avoid air bubbles.**

If air bubbles enter the measurement pipe, the flow rate display may be compromised, which could result in measurement inaccuracies.



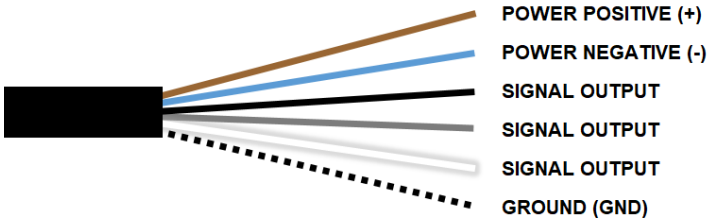
● **Installation location and requirements**



4-4. Pipeline installation precautions

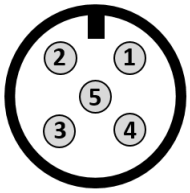
- Sensors should be installed in locations that facilitate maintenance, and must be free from pipeline vibration, strong electromagnetic interference, and thermal radiation effects.
- Horizontal installation: Pipeline inclination should not exceed 5°.
  Vertical installation: Vertical deviation should be ≤5°.
  For non-interruptible flow applications: Install a bypass pipe and shut-off valve; ensure zero leakage in the bypass pipe during measurement.
- Before formal sensor installation in new pipelines: Temporarily connect a short pipe section at the sensor position. Install the sensor only after confirming complete pipeline cleaning.
  For fluids with impurities: Install a filter upstream of the sensor; regularly clean and discharge settled impurities.
- For gas-containing liquids: Install a gas eliminator upstream; outlets of filters/ gas eliminators must be directed to safe areas.
- When installed outdoors: Implement measures to avoid direct sunlight exposure and prevent rain ingress.

4-5. Wiring Instructions



Power Connection: Brown (BN) for Positive (+) and Blue (BU) for Negative (-) power supply
Signal Outputs: Configure Flow/Temperature Alarms and 4-20mA outputs via Black (BK), Gray (GY), and White (WH) wires
Shielded Cable: Aviation-grade shielding design to minimize electromagnetic interference (EMI)

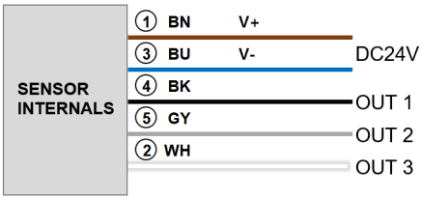
▶Wiring Instructions



Aviation Connector

Users can configure the output types of OUT1, OUT2, OUT3 with four options:
1. Flow Alarm
2. Temperature Alarm
3. Flow 4-20mA Output
4. Temperature 4-20mA Output

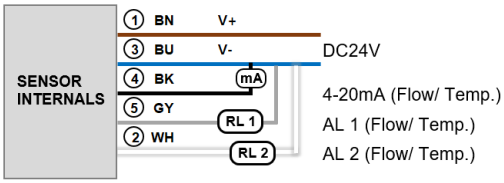
4-20mA, NPN/ PNP Output Wiring Diagram



①	**Brown(BN)**	Positive (+) Power Supply / V+ (DC24V)
③	**Blue(BU)**	Negative (-) Power Supply / V-
④ (OUT1)	**Black(BK)**	Flow Alarm Switch Signal, Temp Alarm Switch Signal, Flow: 4-20mA Output, Temp..: 4-20mA Output
⑤ (OUT2)	**Gray(GY)**	Flow Alarm Switch Signal, Temp Alarm Switch Signal
② (OUT3)	**White(WH)**	Flow Alarm Switch Signal, Temp Alarm Switch Signal, Flow: 4-20mA Output, Temp..: 4-20mA Output

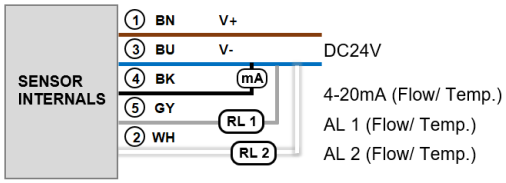
▶ PNP Output

Channel 1: 4-20mA Current,
Channel 1: PNP Alarm Output,
Channel 2: PNP Alarm Output

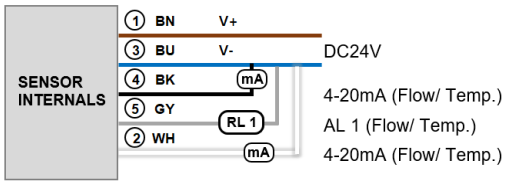


▶ NPN Output

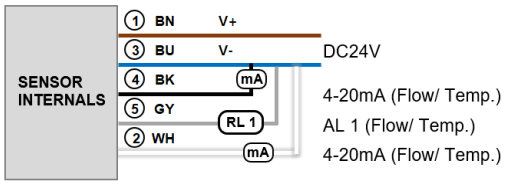
Channel 1: 4-20mA Current,
Channel 1: NPN Alarm Output,
Channel 2: NPN Alarm Output



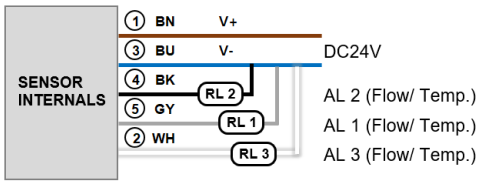
Channel 1: 4-20mA Current,
Channel 2: 4-20mA Current,
Channel 1: PNP Alarm Output



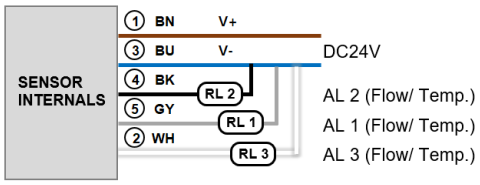
Channel 1: 4-20mA Current,
Channel 2: 4-20mA Current,
Channel 1: NPN Alarm Output



Channel 1: PNP Alarm Output,
Channel 2: PNP Alarm Output,
Channel 3: PNP Alarm Output

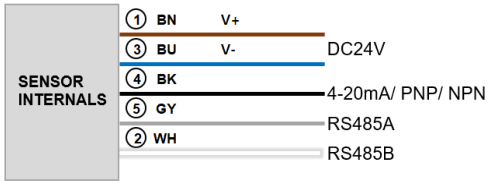


Channel 1: NPN Alarm Output,
Channel 2: NPN Alarm Output,
Channel 3: NPN Alarm Output



▶ RS485 Communication output

RS485 Communication, Single signal output



5. Ordering model selection

Code		Description
Model: GTN		**Mini Turbine Flowmeter**
Flow Output	**I**	4-20mA Output
	M	Pulse Signal
Flow/temperature alarm	**P**	3-wire DC PNP Output
	N	3-wire DC NPN Output
Pipe Diameter Specifications	**DN4**	Thread G1/4"
	DN6	Thread G1/4"
	DN8	Thread G1/4"
	DN10	Thread G3/8"
	DN15	Thread G1/2"
	DN20	Thread G3/4"
	DN25	Thread G1"