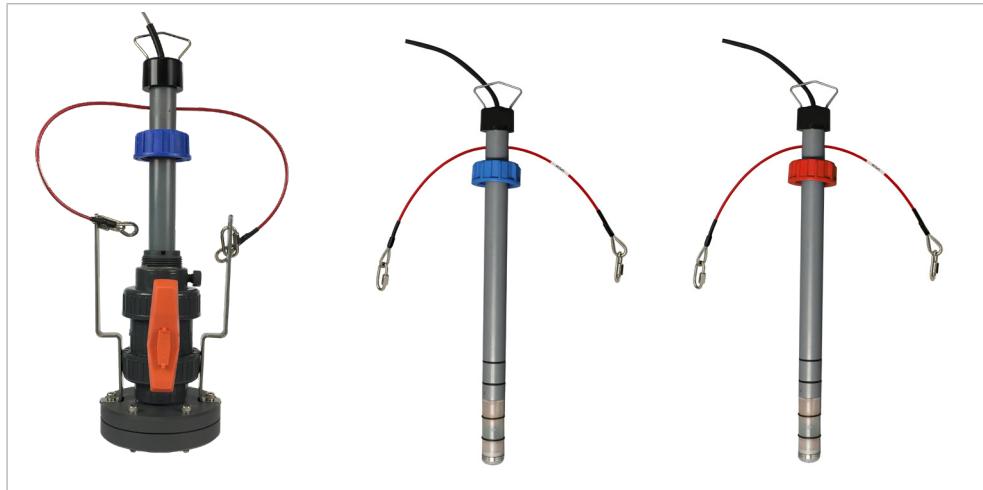


## Type 2551 Wet-Tap Magmeter Flow Sensor



Note: Image for illustration only. Red cap indicates Frequency/Digital (S<sup>3</sup>L) output; blue cap indicates 4–20 mA output.

### Product description

The Type 2551 Wet-Tap Magmeter is an insertion-style magnetic flow sensor with no moving parts. The ball valve enables safe and controlled pressure relief when the sensor is retracted during operation, without interrupting the process flow. The patented\* sensor design is available in the corrosion resistant material combination PVDF/Hastelloy-C to provide long-term reliability with minimal maintenance costs.

Utilizing the comprehensive line of GF installation fittings, sensor alignment and immersion depth are already predefined. These versatile, simple-to-install sensors deliver accurate flow measurement over a wide dynamic range in pipe sizes ranging from DN15 to DN900 (½ to 36 in.), satisfying the requirements of many diverse applications.

Type 2551 Magmeters offer the output options of frequency/digital (S<sup>3</sup>L) or 4 to 20 mA. The frequency or digital (S<sup>3</sup>L) sensor output can be used with GF's line of transmitters (9900 and 9950-XX), while the 4 to 20 mA output can be used for a direct input to PLCs, chart recorders, etc. An additional benefit is the empty pipe detection which features a zero flow output when the sensors are not completely wetted.

#### Features

- Test certificate included
- Patented Magmeter technology\*
- No moving parts
- Bi-directional flow
- Empty pipe detection
- Installs into pipe sizes DN15 to DN900 (0.5 to 36 in.)
- Operating range 0.05 to 10 m/s (0.15 to 33 ft/s)
- Reliable measurement even in dirty liquids
- Frequency/digital (S<sup>3</sup>L) output (with red cap), or 4 to 20 mA output (with blue cap)
- No pressure drop
- Corrosion resistant materials PVDF with Hastelloy-C

#### Applications

- Aquariums, Life Support
- Commercial Pools, Spas
- Ship Building (Marine)
- Chemical Processing
- Water and Wastewater Monitoring
- Metal Recovery and Landfill Leachate
- Commercial Pools, Spas, and Aquariums
- Irrigation
- Scrubber Control
- Neutralization Systems
- Industrial Water Distribution



\* U.S. Patent No: 7,055,396 B1

# Datasheet

## Technical Details

### General

|                      |                                      |                 |
|----------------------|--------------------------------------|-----------------|
| Operating Range      | 0.05 to 10 m/s                       | 0.15 to 33 ft/s |
| Pipe Size Range      | DN15 to DN900                        | ½ in. to 36 in. |
| Linearity            | ± 1% reading plus 0.1% of full scale |                 |
| Repeatability        | ±0.5% of reading @ 25 °C (77 °F)     |                 |
| Minimum Conductivity | 20 µS/cm                             |                 |

### Wetted Materials

|  |   |
|--|---|
| Sensor Body/Electrodes and<br>Grounding Ring | -V3, -V4, -V5: PVDF/Hastelloy-C               |
| O-rings                                      | FKM (standard)<br>EPR (EPDM), FFKM (optional) |

### Electrical

|  |   |   |
|--|---|---|
| Power Requirements                           | 4 to 20 mA  | 24 VDC ±10%, regulated, 22.1 mA max.                        |
|  | Frequency   | 5 to 24 VDC ±10%, regulated, 15 mA max.                     |
|  | Digital (S <sup>3</sup> L)                                  | 5 to 6.5 VDC, 15 mA max.                                    |
| Reverse Polarity and Short Circuit Protected |   |   |
| Cable Length                                 | 7.6 m (25 ft), can be extended up to 300 m (1,000 ft)       |   |
| Current Output 4 to 20 mA                    | Loop Accuracy   | 32 µA max. error (25 °C @ 24 VDC)                           |
|  | Isolation   | Low Voltage < 48 VAC/DC from electrodes and auxiliary power |
|  | Maximum Cable   | 300 m (1,000 ft)  |
|  | Error Condition   | 22.1 mA   |
|  | Max. Loop Resistance  | 300 Ω   |
|  | Compatible with PLC, PC or similar equipment                |   |
|  | 4 to 20 mA load needed                                      |   |
| Frequency Output                             | Output Modes  | Frequency   |
|  | Max. Pull-up Voltage  | 30 VDC  |
|  | Max. Current Sink   | 50 mA, current limited                                      |
|  | Maximum Cable   | 300 m (1,000 ft)  |
|  | Compatible with type 9900, 9950                             |   |
| Digital S <sup>3</sup> L Output              | Serial ASCII, TTL level 9600 bps                            |   |
|  | Compatible with type 9900, 9950, 0486 Profibus Concentrator |   |

### Max. Temperature/Pressure Rating

|  |               |   |                 |
|--|---------------|---|-----------------|
| Storage Temperature                        |               | -20 °C to 70 °C   | -4 °F to 158 °F |
| Relative Humidity                          |               | 0 to 95% (non-condensing)   |                 |
| Operating Temperature (with Wet-Tap Valve) | Ambient       | -10 °C to 70 °C   | 14 °F to 158 °F |
|  | Media         | 0 °C to 65 °C   | 32 °F to 149 °F |
| Maximum Operating Pressure                 | -V3, -V4, -V5 | 6.9 bar (100 psi) @ 0 °C (32 °F)<br>1.4 bar (20 psi) @ 65 °C (149 °F) |                 |
| Max. Wet-Tap Sensor Removal Rating         |               | 1.7 bar (25 psi) @ 22 °C (72 °F)                                      |                 |

See Temperature and Pressure graphs for more information.

### Shipping Weight

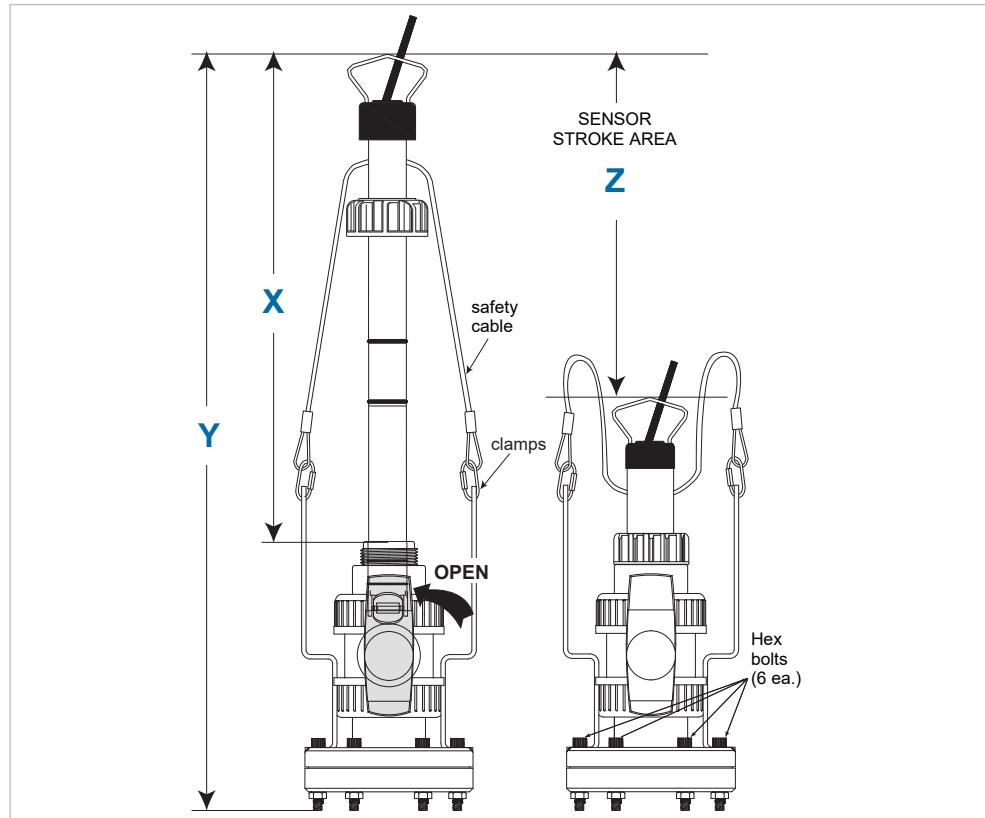
|  |          |         |
|--|----------|---------|
|  | 0.680 kg | 1.50 lb |
|--|----------|---------|

### Standards and Approvals

|  |
|--|
| CE, UKCA, FCC  |
| RoHS compliant, China RoHS                           |
| Manufactured under ISO 9001, ISO 14001 and ISO 45001 |

# Datasheet

## Dimensions

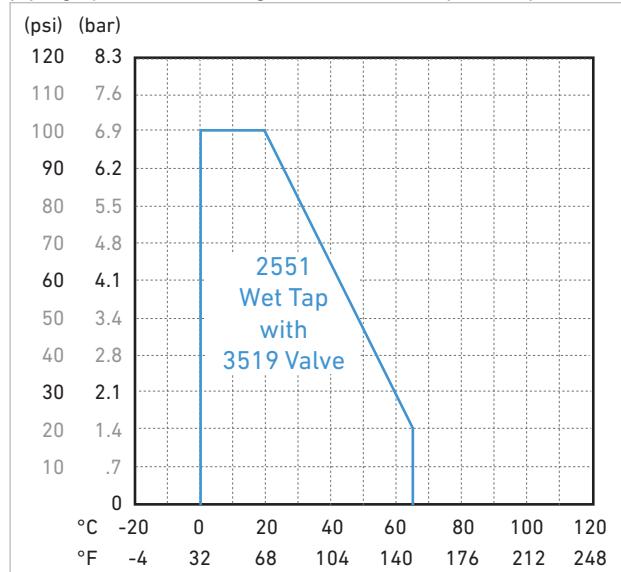


| Sensor type  | Sensor length     | Total length    | Sensor stroke area |
|--------------|-------------------|-----------------|--------------------|
|              | X                 | Y               | Z                  |
| 3-2551-V3-1x | 297 mm (11.7 in.) | 737 mm (29 in.) | 197 mm (7.75 in.)  |
| 3-2551-V4-1x | 332 mm (13.1 in.) | 762 mm (30 in.) | 229 mm (9 in.)     |
| 3-2551-V5-1x | 408 mm (16.1 in.) | 813 mm (32 in.) | 305 mm (12 in.)    |

## Pressure-temperature diagram

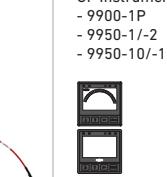
### Note

The pressure-temperature diagrams are specifically for the GF sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.



# Datasheet

## System Overview

| Stand-Alone  | Panel Mount   | Pipe, Tank, Wall  | 4 to 20 mA Output   | Automation System   |
|--|---|---|---|---|
| <b>GF 2551</b><br><b>Wet-Tap</b><br><b>Magmeter</b><br> | GF Instruments<br>- 9900-1P<br>- 9950-1/-2<br>- 9950-10/-12 | GF Instruments<br>- 9900-1 with 3-8050-1 Universal Mount Kit                      | - Customer Supplied Chart Recorder, Programmable Logic Controller or<br>- Programmable Automation Controller  | - 0486 Profibus Concentrator and Customer Supplied<br>- Programmable Logic Controller or Programmable Automation Controller   |
| <b>GF 3519</b><br><b>Wet-Tap Valve</b><br><b>(required)</b>  |   |  | <br>OR<br> | <br>+<br> |
| GF Fittings  |   |  |   | All Sold Separately   |

## Ordering information

### Frequency or Digital (S<sup>3</sup>L) output, with red cap

| Mfr. Part No. | Code        | Description   |
|---------------|-------------|---|
| 3-2551-V3-11  | 159 002 208 | Wet-Tap Magmeter, Frequency/S <sup>3</sup> L output, PVDF/Hastelloy-C, 0.5 to 4" pipe |
| 3-2551-V4-11  | 159 002 214 | Wet-Tap Magmeter, Frequency/S <sup>3</sup> L output, PVDF/Hastelloy-C, 5 to 8" pipe   |
| 3-2551-V5-11  | 159 002 220 | Wet-Tap Magmeter, Frequency/S <sup>3</sup> L output, PVDF/Hastelloy-C, 10 to 36" pipe |

4 to 20 mA output, with blue cap

| Mfr. Part No. | Code        | Description  |
|---------------|-------------|--|
| 3-2551-V3-12  | 159 002 209 | Wet-Tap Magmeter, 4-20 mA output, PVDF/Hastelloy-C, 0.5 to 4" pipe |
| 3-2551-V4-12  | 159 002 215 | Wet-Tap Magmeter, 4-20 mA output, PVDF/Hastelloy-C, 5 to 8" pipe   |
| 3-2551-V5-12  | 159 002 221 | Wet-Tap Magmeter, 4-20 mA output, PVDF/Hastelloy-C, 10 to 36" pipe |

## Accessories and Replacement Parts

Please refer to Wiring, Installation, Accessories and Fitting section for more information.

| Mfr. Part No. | Code        | Description                                  |
|---------------|-------------|--|
| 3-3519        | 159 000 757 | Wet-Tap Valve for Wet-Tap flow sensors       |
| 1220-0021     | 198 801 000 | O-ring, FKM (4 required per sensor)          |
| 1224-0021     | 198 820 006 | O-ring, EEPTR (EPDM) (4 required per sensor) |
| 1228-0021     | 198 820 007 | O-ring, FFKM (4 required per sensor)         |

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08/2025-A 3-2551.099 Rev A

6072025 A 7-25351.877 REV A  
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