

## Type 2350 Temperature Sensor

Blind Transmitter or Digital (S<sup>3</sup>L) Sensor



### Product description

The type 2350 Temperature Sensor has a one piece injection molded PVDF body that is ideal for use in high purity applications. It also outlasts metal sensors in aggressive liquids and eliminates the need for costly custom thermowells. These sensors are available with a proprietary digital (S<sup>3</sup>L) output or field-scaleable 4 to 20 mA output.

Dual threaded ends ( $\frac{3}{4}$  in. NPT) allow submersion in process vessels, or in-line installation with conduit connection. An integral adapter kit (sold separately) may be used to create a compact assembly with field mount versions of the type 9900 Transmitter.

### Features

- 4 to 20 mA or digital (S<sup>3</sup>L) output
- Standard  $\frac{3}{4}$  in. NPT process connection
- One-piece injection molded PVDF body
- Pt1000 platinum RTD in extended tip for quick response
- Easy installation
- Threaded for in-line or submersible installation

### Applications

- Plating Bath Temperature Control
- Heat Exchange Monitor
- R.O. and D.I. System Monitor
- Hot/Cold Mixing System Monitor
- Data Acquisition
- Cooling Loops
- Effluent Monitoring
- HVAC
- Chemical Processing



## Technical Details

### General

Output	Digital (S <sup>3</sup> L) output or 4 to 20 mA
Accuracy	±0.5 °C (±0.9 °F)
Response Time	10 seconds
Repeatability	±0.1 °C (±0.2 °F)
Resolution	0.01 °C (0.02 °F)
Sensing-End Connection	¾ in. NPT male thread
Cable-End Connection	¾ in. NPT male thread

### Wetted Materials

Sensor Housing	PVDF
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### Electrical

Power Requirements		
	Digital (S <sup>3</sup> L)	5 to 6.5 VDC ±10 %, <1.5 mA
	4 to 20 mA	12 to 24 VDC ±10 %, regulated
Cable Length	4.6 m (15 ft) cable length can also be extended up to 121 m (400 ft)	
Digital (S <sup>3</sup> L) Output	Serial ASCII, TTL Level 9600 bps. Reverse polarity and short circuit protected.	
4 to 20 mA Output		
Accuracy	±32 µA	
Resolution	<5 µA	
Span	4 to 20 mA factory calibrated 0 °C to 100 °C (32 °F to 212 °F)	
Max. Loop Impedance	50 Ω @ 12 V	
	325 Ω @ 18 V	
	600 Ω @ 24 V	
Update Rate	<100 ms	

### Max. Temperature/Pressure Rating

Operating Temperature		
In-line Mounting	-10 °C @ 16 bar	14 °F @ 232 psi
	to 100 °C @ 7.5 bar	to 212 °F @ 108 psi
Submersible Mounting	-10 °C @ 16 bar	14 °F @ 232 psi
	to 100 °C @ 7.5 bar	to 185 °F @ 108 psi
Storage Temperature	-55 °C to 100 °C -67 °F to 212 °F	
Relative Humidity	0 to 95% non-condensing	

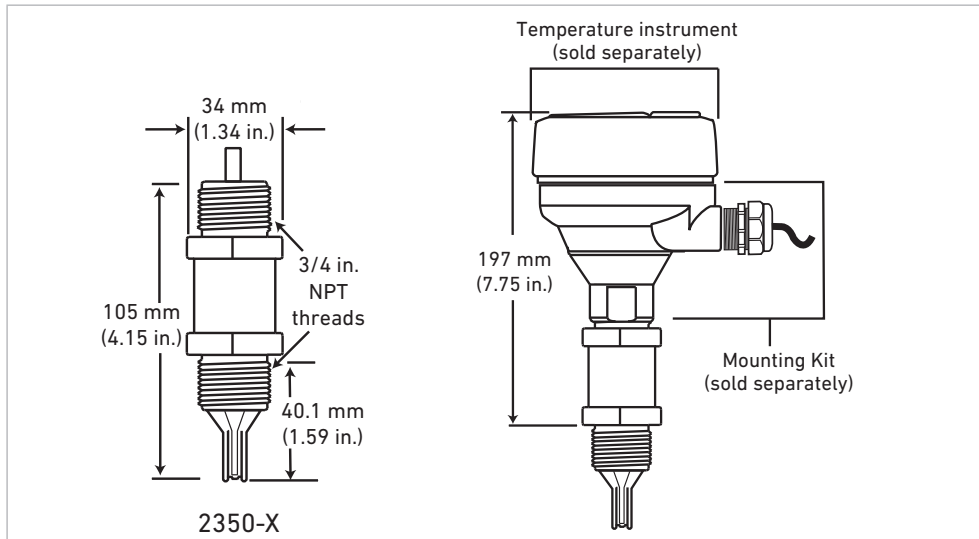
### Shipping Weight

	0.22 kg	0.5 lb
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### Standards and Approvals

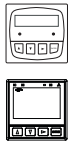
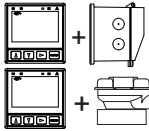
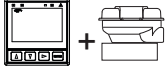

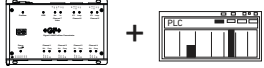

CE, UKCA, FCC
RoHS compliant, China RoHS
Manufactured under ISO 9001, ISO 14001, and ISO 45001

## Dimensions


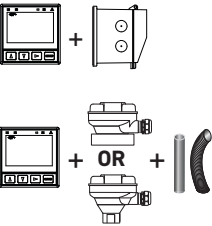

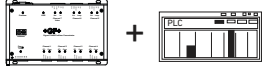



## System Overview

### In-Line Installation

Panel Mount	Pipe, Tank, Wall Mount	Field Mount	4 to 20 mA Output	Automation System
GF Instruments - 9900 - 9950 	GF Instruments* - 9900-1P with Rear Enclosure - 9900-1 with 3-8050 Universal Mount Kit* 	GF Instruments with 3-8052 Integral Mount Kit - 9900 	- Customer Supplied Chart Recorder, Programmable Logic Controller or Programmable Automation Controller 	- 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
<b>Type 2350 Temperature Sensor</b> 				
In-Line Installation - Fittings Customer Supplied			All sold separately	

### Submersible Installation

Panel Mount	Pipe, Tank, Wall Mount	4 to 20 mA Output	Automation System
GF Instruments - 9900 - 9950 	GF Instruments* - 9900-1P with Rear Enclosure - 9900-1 with 3-8050 Universal Mount Kit or 3-8052 Integral Mount Kit and Pipe Extension or Conduit with 3/4 in. FNPT Threads** 	- Customer Supplied Chart Recorder, Programmable Logic Controller or Programmable Automation Controller 	- 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
<b>Type 2350 Temperature Sensor</b> 			
			All sold separately

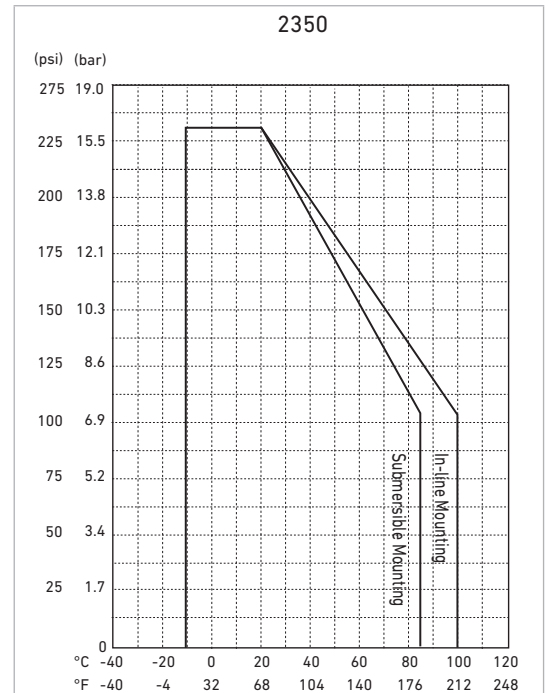
\*For tank or wall mount installations, user must use the Universal Adapter Kit (3-8050)

\*\*Refer to the GF Submersion Kit brochure (3-0000.707) located on our website for installation suggestions and options.

## 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.

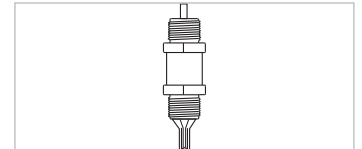


### Application Tips

- For submersible sensor mounting, always use a water tight conduit and a cable gland to prevent moisture intrusion.
- To extend the cable, use a 3-conductor shielded cable and junction box.
- Sensors with extended cables available, contact Special Order products.

## Ordering Information

Mfr. Part No.	Code	Output and Cable Length
<b>Temperature Sensor</b>		
3-2350-1	159 000 021	Digital (S <sup>3</sup> L) and 4.6 m (15 ft) cable
3-2350-3	159 000 920	Current (4 to 20 mA) and 4.6 m (15 ft) cable



## Accessories

Mfr. Part	Code	Description
5523-0322	159 000 761	Sensor cable (per ft), 3 cond. plus shield, 22 AWG
3-8052	159 000 188	¾ in. Integral mounting kit
3-8052-1	159 000 755	¾ in. NPT mount junction box with one liquid tight connector and cap with junction terminals
3-9000.392-1	159 000 839	Liquid tight connector kit, NPT (1 connector)
3-9000.392-2	159 000 841	Liquid tight connector kit, PG 13.5 (1 connector)
3-0252	159 001 808	Configuration Tool
Universal Sensor Adapter	150 300 300	For in-line applications requiring extra insertion depth for conductivity, temperature, and pressure process measurements.
	Contact Factory	Custom cable length available



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