Type 2540 Stainless Steel High Performance Paddlewheel Flow Sensor

Standard Sensor

Hot-Tap Sensor

Product description

The type 2540 Paddlewheel Flow Sensor offers the strength and corrosion resistance of stainless steel for liquid applications with low velocity measurements. Unique internal circuitry eliminates the need for magnets in the process fluid, enabling flow measurement of 0.1 to 6 m/s (0.3 to 20 ft/s) while maintaining the advantages of insertion sensor design. Ultraflon 500C bearings and Tungsten Carbide shaft provide exceptional wear resistance.

The type 2540 offers field replaceable electronics and transient voltage suppression (TVS) to provide greater immunity to large voltage disturbances (i.e. lightning) sometimes encountered in field wiring. Sensors can be installed in DN40 to DN600 (1½ to 24 inch) pipes using the 1½ inch or ISO 7/1-R 1.5 threaded process connection.

The sensors are also offered in a hot-tap configuration with a bleed valve service without process shutdown in pipes up to DN900 (36 in.). Both styles of sensors must be used in full pipes and can be used in low pressure systems.

Features

- Operating range 0.1 to 6 m/s (0.3 to 20 ft/s)
- Field replaceable electronics
- Non-magnetic RF detection
- Standard NPT or ISO process connections
- Hot-tap versions for installation/service without system shutdown
- For pipe sizes up to DN900 (36 in.)
- Adjustable sensor - one size for entire pipe range
- 7.6 m (25 ft) cable

Applications

- HVAC
- Turf Irrigation
- Cooling Systems
- Filtration Systems
- Water Distribution
- Leak Detection
- Pump Protection
- Clarified Effluent Totalization
- Ground Water Remediation
- Gravity Feed Line

Technical Details

General			
Operating Range	0.1 to 6 m/s	0.3 to 20 ft/s	
Pipe Size Range	Standard Version	DN40 to DN600	1½ to 24 in.
	Hot-Tap Version	DN40 to DN900	1½ to 36 in.
Sensor Fitting Options	1½ in. NPT threads ISO	7/1-R 1.5 threads	
Linearity	±1% of full range		
Repeatability	±0.5% of full range		
Min. Reynolds Number Required	4500		

Wetted Materials	
Body	316 stainless steel (1.4401)
Fitting	318 stainless steel (1.4401)
Fitting O-rings	FKM, optional EPR (EPDM)
Rotor	17-4PH-1 Stainless Steel
Rotor Shaft	Tungsten Carbide GRP 1 (standard) stainless steel (optional)
Retainers (2)	316 stainless steel (1.4401)
Rotor Bearings (2)	Carbon fiber reinforced PTFE

Electrical		
Frequency	15 Hz per ft/s nominal	49 Hz per m/s nominal
Power	5 to 24 VDC ±10%, regulated, 1.5 mA max.	
Output type	Open collector, sinking, max 10.0 mA	
Cable Length	7.6 m (25 ft), can be extended up to 300 m (1,000 ft)	
Cable type	2-conductor twisted-pair with shield, 22 AWG	

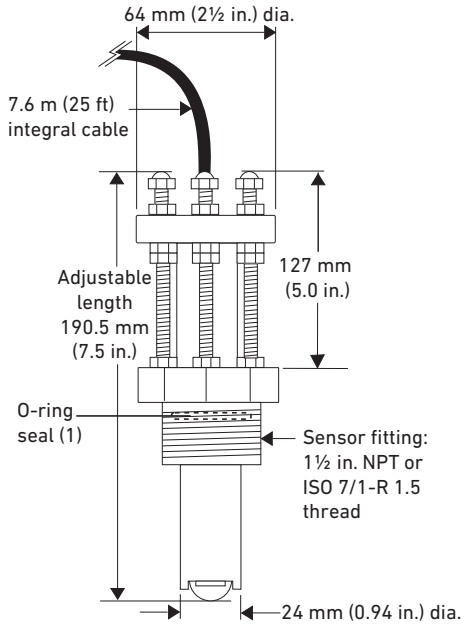
Max. Temperature/Pressure Rating		
Sensor with standard FKM sensor fitting O-rings	17 bar @ 82 °C	250 psi @ 180 °F
Sensor with optional EPR (EPDM) sensor fitting O-rings	17 bar @ 100 °C	250 psi @ 212 °F
Operating Temperature	-18 °C to 100 °C	0 °F to 212 °F

Shipping Weight			
	3-2540-/1/-2/-1S/-2S	1.79 kg	3.9 lb
	3-2540-3/-4/-3S/-4S	2.15 kg	4.7 lb

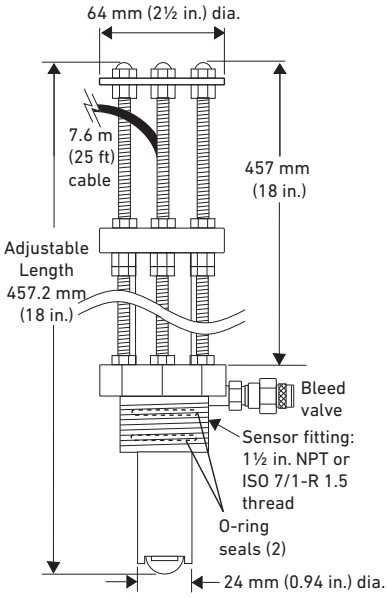
Standards and Approvals
CE, UKCA, FCC
RoHS compliant, China RoHS
Manufactured under ISO 9001, ISO 14001 and ISO 45001

Dimensions

2540 High Performance Flow Sensor for 1½ to 24 in. pipes

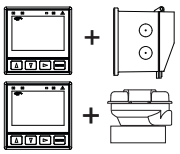


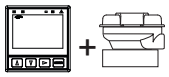
2540 Hot-Tap for 1½ to 36 in. pipes



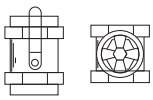
System Overview

Panel Mount	Pipe, Tank, Wall Mount	Field (Integral) Mount	Automation System
GF Instruments - 9900 - 9900-1BC - 9950	GF Instruments - 9900-1P with Rear Enclosure - 9900-1BC with Rear Enclosure - 9900 with 3-8050-1 Universal Mount Kit	GF Instruments - 9900-1 with 3-8050-1 Universal Mount Kit	- 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or - Programmable Automation Controller





Type 2540-XX

ball or gate valve 1¼" or 1½"	closed nipple 1¼" or 1½"	Weld-on weldolet 1¼" or 1½" outlet *	Iron strap-on saddle 1¼" or 1½" outlet*
			

* Contact GF for ordering information
All sold separately

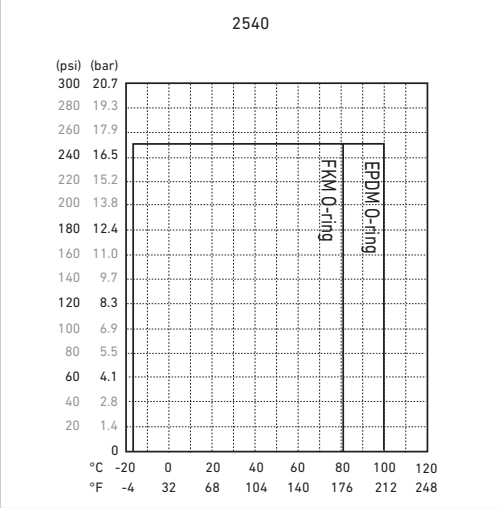
Application Tips

- For systems with components of more than one material, the maximum temperature/ pressure specification must always be referenced to the component with the lowest rating.
- Use the Conduit Adapter Kit to protect the cable-to-sensor connection when used in outdoor environments.
- Sensor electronics can be easily replaced by 3-2541.260-1 or 3-2541.260-2.

Pressure-temperature diagram

Note

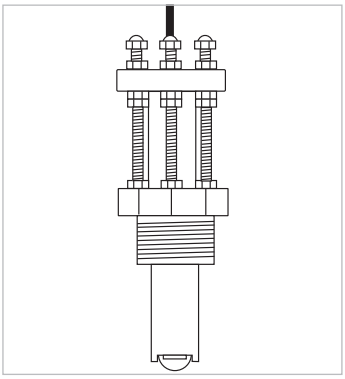
The pressure-temperature diagrams are specifically for the GF sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting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



Ordering Information

Mfr. Part	Code	Mounting Option	Rotor Shaft Material
Stainless Steel High Performance flow sensor with removable electronics			
3-2540-1	198 840 035	1½ inch NPT thread	Tungsten Carbide
3-2540-2	198 840 036	1½ inch ISO thread	Tungsten Carbide
3-2540-3	198 840 037	1½ inch NPT thread, Hot-Tap design*	Tungsten Carbide
3-2540-4	198 840 038	1½ inch ISO thread, Hot-Tap design*	Tungsten Carbide
3-2540-1S	159 001 501	1½ inch NPT thread	316 Stainless Steel
3-2540-2S	159 001 502	1½ inch ISO thread	316 Stainless Steel
3-2540-3S	159 001 503	1½ inch NPT thread, Hot-Tap design*	316 Stainless Steel
3-2540-4S	159 001 504	1½ inch ISO thread, Hot-Tap design*	316 Stainless Steel

* Must use 3-1500.663 Hot-Tap installation tool (ordered separately).



Ordering Notes

Installation fittings and Hot-Tap valves are customer supplied or can be ordered by contacting the Special Order products.

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-1500.663	198 820 008	Hot-Tap Installation Tool (see Installation for more info)
1220-0021	198 801 000	O-ring, FKM (2 required per sensor)
1224-0021	198 820 006	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	198 820 007	O-ring, FFKM (2 required per sensor)
3-2540.320	198 820 040	Rotor kit, 2540 PEEK Bearing (old version)
3-2540.321	159 000 623	Rotor kit, 2540 Tungsten Carbide Shaft (new version since January 1, 2000)
3-2540.322	159 000 864	Rotor kit, stainless steel shaft and rotor
P52504-3	159 000 866	Rotor shaft, Tungsten Carbide
P52504-4	159 000 867	Rotor shaft, 316 SS
P52503	198 820 013	Bearing, carbon reinforced PTFE
P52527	159 000 481	Retainers, SS (1.44019
3-2541.260-1	159 000 849	Standard replacement electronics module
3-2541.260-2	159 000 850	Hot-Tap replacement electronics module
5523-0222	159 000 392	Cable (per foot), 2 cond. w/shield, 22 AWG
P51589	159 000 476	Conduit adapter kit
P31934	159 000 466	Conduit cap

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