

Type 2751 DryLoc® pH/ORP Smart Sensor Electronics



DryLoc® Electrodes sold separately

Product description

The type 2751 pH/ORP Smart Sensor Electronics featuring the DryLoc® connector, is the solution for field-free calibration, out of range glass impedance and broken glass detection, alerting the operator to probe failure or maintenance needs.

The 2751 features two different outputs: a two-wire 4 to 20 mA loop output with optional EasyCal function or a digital (S³L) output which allows for longer cable lengths and is compatible with all types 9900, 9950-1/2*, 9950-10/-11 instruments or in blind, 4 to 20 mA.

The pH/ORP Smart Sensor Electronics will allow for calibration of electrodes in a laboratory setting and installation of pre-calibrated probes in the field, reducing system downtime.

Memory chip enabled electrodes will store operational data such as minimum and maximum pH/mV readings, runtime, minimum and maximum temperature (pH only), for troubleshooting and operational evaluation. To take full advantage of all features and benefits of the 2751, use with types 9900 (Generation IV or later), 9950 Transmitter or 0486 Profibus Concentrator.

The 2751 self-configures for pH or ORP operation via automatic recognition of the electrode type. The optional EasyCal feature allows simple push-button calibration and includes an LED indicator for visual feedback.

The 2751 pH/ORP Smart Sensor Electronics available for submersible and inline installations. Can be used with GF installation fittings ½" to 4".

Features

- Probe health monitoring, glass impedance and broken glass detection
- Memory chip interface that allows for transferable calibration, runtime data, and manufacturing information
- In-line integral mount and submersible installation versions
- Automatic pH temperature compensation
- Auto configuration for pH or ORP operation
- Optional EasyCal calibration aid with automatic pH buffer recognition for 4, 7 and 10 pH and ORP solutions: quinhydrone saturated pH 4 or 7 buffers and Light's Solution +469 mV
- Patented DryLoc® connector provides a quick and secure connection to the sensor**

* Users of 9950 Gen I and 9950 (Gen 2a) should update to 9950 (Gen 2b or later) to take full advantage of the 2751 features and benefits. Visit www.gfps.com for the latest software update.



** U.S. Patent No.: 6,666,701

Applications

- Water and Wastewater Treatment
- Neutralization Systems
- Scrubber Control
- Effluent Monitoring
- Surface Finishing
- Flocculent Coagulation
- Heavy Metal Removal and Recovery
- Toxics Destruction
- Sanitization Systems
- Pool & Spa Control
- Aquatic Animal Life Support Systems

Specifications

General

Compatible Electrodes

DryLoc® pH and ORP Electrodes, types 2724-2726, 2734-2736, 2744-2747, 2756-2757 Wet-Tap, 2774-2777		
Operating Range	pH	-1 to 15 pH
	ORP	±2'000 mV
Response Time	pH	Electrode dependent
	ORP	Application dependent
Materials	In-line	PBT (thermal plastic polyester) and polypropylene (retaining nut)
	Submersible	CPVC

Electrical

Cable	4.6 m	15 ft	3-conductor shielded (3-2751-1 in-line and the 3-2751-3 or -4 submersible sensor electronics only) See ordering information for additional cable sizes	
	22 AWG		For 9900, 9950 and 4 to 20 mA max. cable length is 305 m (1'000 ft.).	
Power	12 to 24 VDC		±10%, regulated for 4 to 20 mA output	
	5 to 6.5 VDC		±5% regulated recommended, 3 mA max., for digital (S ³ L) output	
Current Output	pH		Fixed 4 to 20 mA, isolated, = 0 to 14 pH (custom scaling available with 0252 tool)	
	ORP		Fixed 4 to 20 mA, isolated, = -1'000 to +2'000 mV (custom scaling available from ± 2000 mV with 0252 tool)	
Max Loop Resistance	100 Ω max. @ 12 V	325 Ω max. @ 18 V	600 Ω max. @ 24 V	
Accuracy	±32 µA			
Resolution	±5 µA			
Update Rate	0.5 seconds			
Error Indication	3.6 mA, 22 mA, or none			
Digital (S ³ L) Output	Serial ASCII, TTL level 9600 bps			
Accuracy	pH	± 0.02 pH @ 25 °C	± 0.02 pH @ 77 °F	
	ORP	± 1.5 mV @ 25 °C	± 1.5 mV @ 77 °F	
	Temperature	≤ 0.4 °C	0.72 °F	
Resolution	pH	≤ 0.01 pH		
	ORP	1.5 mV		
Update Rate	0.5 seconds			
Available Data	Raw mV, pH or ORP, Temperature (pH), Glass Impedance (pH), Minimum mV (pH), Maximum mV (pH), Minimum Temperature (pH), Maximum Temperature (pH), type Number, Serial Number, Manufacturing Date, Runtime, Slope pH/mV, Measurement Offset, and Temperature			
Error Indication	Open input diagnostic, broken glass detection (pH), High Impedance			
Input Impedance, Z	>10 ¹¹ Ω			

Environmental

Enclosure	3-2751-1 & -2	NEMA 4X/IP65 with electrode connected
	3-2751-3 & -4	NEMA 6P/IP68 with electrode and watertight conduit and/or extension pipe connected

Max. Temperature/Pressure Rating

Operating Temperature		
Submersible	0 °C to 85 °C	32 °F to 185 °F
In-line	0 °C to 85 °C	32 °F to 185 °F
Storage Temperature	-20 °C to 85 °C	-4 °F to 185 °F
Relative Humidity	0 to 95%, non-condensing (without electrode connected)	

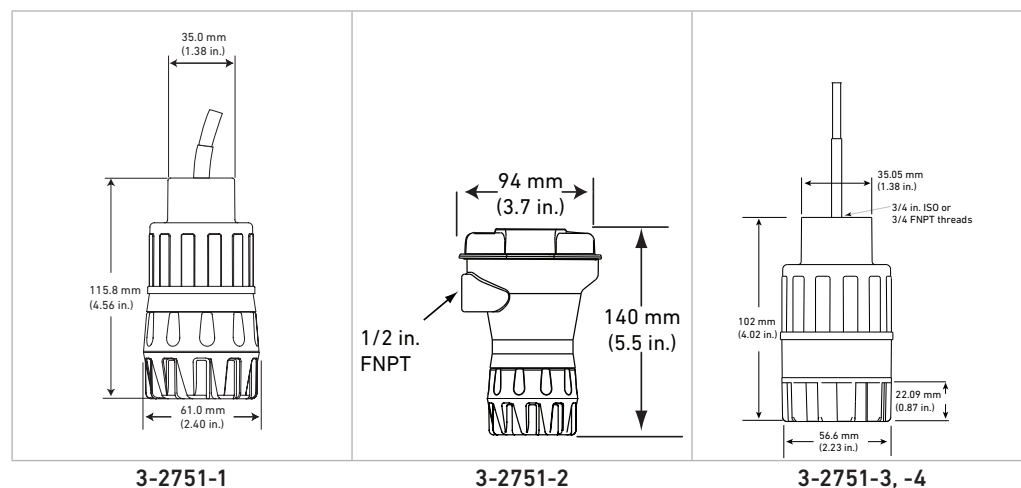
Shipping Weight

2751-2	0.75 kg	1.65 lb
2751-1, -3 & -4	0.64 kg	1.41 lb




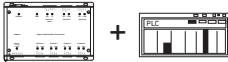



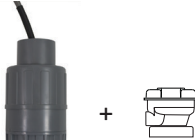




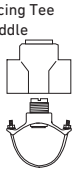
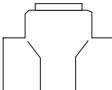



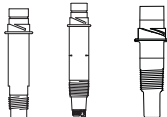
Standards and Approvals

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

Dimensions



System Overview

Panel Mount	Pipe, Tank, Wall Mount	4 to 20 mA Output*	Automation System
GF Instruments - 9900 - 9950  Digital (S ³ L) output from sensor electronics	GF Instruments - 9900 and Rear Enclosure  Digital (S ³ L) output from sensor electronics	Type 2751 Smart Sensor Electronics with - Customer Supplied Chart Recorder or Programmable Logic Controller or - Programmable Automation Controller  4-20mA Output from sensor electronics	- 0486 Profibus Concentrator and - Customer Supplied Programmable Logic Controller or - Programmable Automation Controller  Digital (S ³ L) output from sensor electronics
In-Line Installation type 2751 Smart Sensor Electronics  3-2751-1  3-2751-2 with EasyCal		In-Line Installation type 2751 Smart Sensor Electronics  2751-3 (Digital [S ³ L] output from sensor electronics) OR  2751-3 (4-20mA Output from sensor electronics)	
GF Electrodes - 2724-2726 - 2734-2736 	3719-xx 275x 1½" or 2" MNPT 	2744-2747 1" MNPT 	2744-2747 ¾" MNPT 
½" to 4" GF Installation Fitting 	¾" FNPT Reducing Tee 	1½" or 2" FNPT Reducing Tee or Saddle 	1" FNPT Reducing Tee 
			¾" FNPT Reducing Tee 
Submersible Installation GF 2751 Smart Sensor Electronics  2751-3 (Digital [S ³ L] output from sensor electronics) OR  2751-3 (4-20mA Output from sensor electronics)			
GF Electrodes 2724-2726 2734-2736 2744-2747 2774-2777 			

All sold separately

* See fittings section for more information.

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

Application Tips

- The EasyCal feature automatically recognizes standard 4.0, 7.0, and 10.0 pH buffer or ORP quinhydrone solutions of +87 and +264 mV or Light's Solution, +469 mV, and simplifies calibration. For EasyCal ORP only single point calibration is used.
- Frequency of calibration of electrodes is dependent upon the application.
- It is recommended to clean and condition pH/ ORP electrodes prior to recalibration. See instruction manual for cleaning and conditioning recommendations.

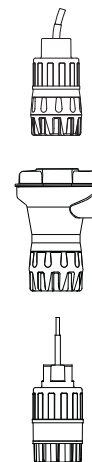


Ordering Information

Mfr. Part No.	Code	Description
In-line pH/ORP Smart Sensor Electronics (yellow body)		
3-2751-1	159 001 804	with 4.6 m (15 ft) cable, recommended for 9900 or 9950 instruments
3-2751-1-025	159 070 110	with 7.6 m (25 ft) cable, recommended for 9900 or 9950 instruments
3-2751-1-050	159 070 111	with 15.2 m (50 ft) cable, recommended for 9900 or 9950 instruments
3-2751-1-100	159 070 112	with 30.5 m (100 ft) cable, recommended for 9900 or 9950 instruments
3-2751-2	159 001 805	with junction box and EasyCal, recommended for 4 to 20 mA use
Submersible pH/ORP Smart Sensor Electronics (gray body)		
3-2751-3	159 001 806	with 4.6 m (15 ft) cable and ¾ in. NPT threads - when 4 to 20 mA is required use the 3-8050-2 junction box with EasyCal
3-2751-3-025	159 070 113	with 7.6 m (25 ft) cable and ¾ in. NPT threads - when 4 to 20 mA is required use the 3-8050-2 junction box with EasyCal
3-2751-3-050	159 070 114	with 15.2 m (50 ft) cable and ¾ in. NPT threads - when 4 to 20 mA is required use the 3-8050-2 junction box with EasyCal
3-2751-3-100	159 070 115	with 30.5 m (100 ft) cable and ¾ in. NPT threads - when 4 to 20 mA is required use the 3-8050-2 junction box with EasyCal
3-2751-4	159 001 807	with 4.6 m (15 ft) cable and ISO 7/1-R 3/4 threads - when 4 to 20 mA is required use the 3-8050-2 junction box with EasyCal

Sensor Electronics with preamplified signal and Digital (S³L) output (for use with the SmartPro Instruments) or 4 to 20 mA output - power supplied to unit dictates output type.

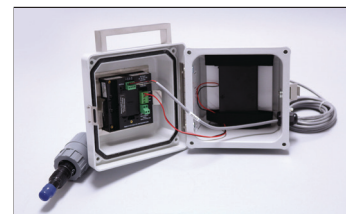
i The 2751 Smart Sensor Electronics is compatible with 9900 and 9950 SmartPro Transmitters, and type 0486 Profibus Concentrator. To take full advantage of the 2751 features, use 9900 (Generation IV or later), 9950 or 0486 Profibus Concentrator.



9900 pH/ORP Calibrator (150 399 007)

The 9900 battery operated calibrator is built to enhance the user experience with the new line of 2751 Smart pH/ORP sensor electronics. This unit can be kept in a lab or taken in to the field. The calibration storage capability of the pH/ORP electrodes when used with the 2751 Smart sensor electronics, allows the user the ability to rotate electrodes, meaning unplug an aged/dirty electrode replacing with a pre-calibrated electrode.

With larger installations, all collected dirty and uncalibrated electrodes can be taken to a central well organized location where proper cleaning and calibration can be performed. This improves efficiency of this process resulting more stable readings, higher sensitivity, faster response time, and overall more accurate readings. Runs on (8) AA Alkaline batteries (included).

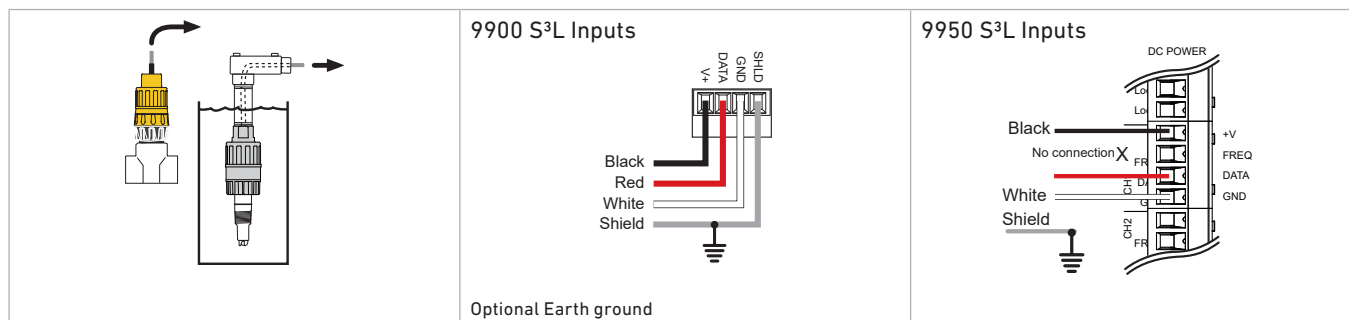


Accessories and Replacement Parts

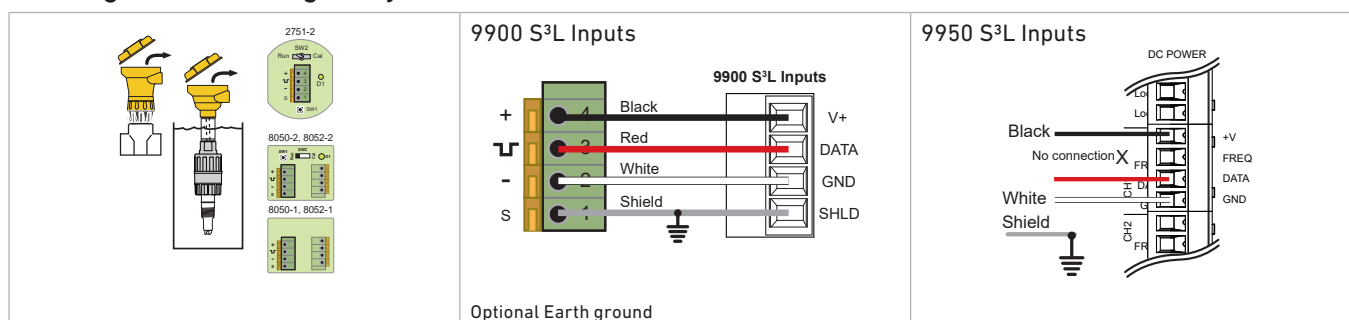
Mfr. Part No.	Code	Description
Calibration		
3-2700.395	159 001 605	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint pH 4.01, 1 pint pH 7.00
3822-7115	159 001 606	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
3-2759	159 000 762	pH/ORP system tester (adapter cable sold separately)
3-2759.391	159 000 764	2759 adapter cable for use with 2751 DryLoc sensor electronics
3-0700.390	198 864 403	pH buffer kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	159 001 581	pH 4 buffer solution, 1 pint (473 ml) bottle
3822-7007	159 001 582	pH 7 buffer solution, 1 pint (473 ml) bottle
3822-7010	159 001 583	pH 10 buffer solution, 1 pint (473 ml) bottle
Mounting		
3-8050.390-3	159 310 116	Retaining nut replacement kit, Black Polypropylene
3-8050-1	159 000 753	Universal mount junction box
3-8050-2	159 000 754	Universal mount junction box w/EasyCal (for submersible applications, use with 3-2751-3 and -4 where 4 to 20 mA is required)
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)
Other		
3-8050.390-1	159 001 702	Retaining Nut Replacement Kit, NPT, Valox
3-8050.390-3	159 310 116	Retaining Nut Replacement Kit, NPT, PP
5523-0322	159 000 761	Sensor cable (per ft), 3-cond. plus shield, 22 AWG, black/red/white (for use with 2751)
P31515-0P200	159 000 630	Universal Pipe Adapter PVC
P31515-0C200	159 000 631	Universal Pipe Adapter CPVC
7310-1024	159 873 004	24 VDC power supply, 10W, 0.42 A
7310-2024	159 873 005	24 VDC power supply, 24W, 1.0 A
7310-4024	159 873 006	24 VDC power supply, 40W, 1.7 A
7310-6024	159 873 007	24 VDC power supply, 60W, 2.5 A
7310-7024	159 873 008	24 VDC power supply, 96W, 4.0 A
3-2700.398	159 001 886	O-ring Lubricant Kit (5 packs of Super Lube®, 1cc each)

Wiring information

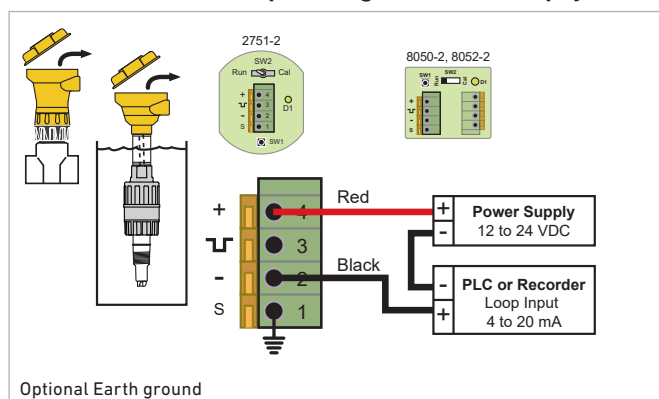
2751 Digital (S³L) Wiring with no junction box



2751 Digital (S³L) Wiring with junction box



2751 4 to 20 mA Loop Wiring - Current loop, junction box with Easy Cal



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