

Type 2581 FlowtraMag® Meter



Product description

The type 2581 FlowtraMag is a full-bore plastic PVC in line style magnetic flowmeter. The PVC body with Titanium or Hastelloy® C electrodes has no moving parts, and is two to three times lighter in weight compared to traditional metal magmeters on the market. It is designed for high accuracy flow measurement in short pipe runs, making it an ideal solution for industrial applications where performance and ease of use are important.

The FlowtraMag design is factory calibrated with certificate at $\pm 1\%$ of reading accuracy. It is offered in corrosion resistant materials to provide long-term reliability with minimal maintenance costs. The LED indicators show at-a-glance system status, including normal operation, zero flow and partially filled pipe detection.

The flow meter provides three different outputs; field selectable frequency or digital (S^3L) as well as analog 4 to 20 mA in both passive and active configuration. The GF Config Tool Bluetooth® app supports iOS and Android for simple on-the-fly user configuration with in with instantaneous flow reading.

These versatile, easy-to-install meters deliver accurate flow measurement in pipe sizes of DN25 (1 in.), DN40 (1.5 in.), DN50 (2 in.), DN80 (3 in.) and DN100 (4 in.), optimized for performance in short pipe runs often associated with final effluent lines, well heads and water treatment skids.

Features

- No moving parts
- Lighter in weight compared to traditional metal magmeters
- Reduced straight run requirements, ideal for final effluent lines, wellheads and skids
- Factory calibrated with certificate ($\pm 1\%$ of reading accuracy)
- Partially filled pipe detection status indicator
- Reverse flow direction configurable with 0252 Configuration Tool or GF Config Tool Bluetooth® App
- One device with three different outputs: field selectable Frequency or Digital (S^3L), and analog 4 to 20 mA in both passive and active configuration
- On-the-fly configuration with GF Config Tool Bluetooth® App
- Bluetooth® 4.2 capable, support iOS and Android for simple user configuration with instantaneous flow reading

* Patent #: US 10,712,184 B1. Other U.S. and International Patents Pending.
Hastelloy® is a registered trademark of Haynes International.



Applications

- Chemical Processing/Production
- Cooling Tower
- Filtration Systems
- Water and Wastewater Treatment
- Municipal and Industrial Water Distribution
- Pool and Aquatics
- Process Control, Water Process Flow
- Reverse Osmosis
- Scrubber Systems
- Metal Recovery and Landfill Leachate
- Mining

Specifications

General

General		
Pipe Size Range	DN25, DN40, DN50, DN80, DN100	1 in., 1.5 in., 2 in., 3 in., 4 in.
Flow Range Titanium or Hastelloy C	0.02 to 10 m/s	0.07 to 33 ft/s
DN25 (1")	0.53 LPM to 266.35 LPM	0.14 to 70.36 GPM
DN40 (1.5")	1.36 LPM to 662.34 LPM	0.36 to 174.97 GPM
DN50 (2")	2.23 LPM to 1112.60 LPM	0.59 to 293.92 GPM
DN80 (3 in.)	5.11 LPM to 2493.75 LPM	1.35 to 658.78 GPM
DN100 (4")	8.72 LPM to 4357.83 LPM	2.30 to 1151.22 GPM
Minimum Conductivity	20 µS/cm – water based	
Power Cable Wire	7.6 m (25 ft) 2-conductor shielded	
Output Cable Wire	7.6 m (25 ft) 5-conductor shielded	
Cable wires may be extended up to 305 m (1,000 ft), field splice or special order		

Wetted Materials

Flow Tube Body	PVC
Electrode	Titanium, grade 2 or Hastelloy C-276
O-rings	FKM or EPDM

Performance

Accuracy	± 1% of reading plus ± 0.01 m/s (0.033 ft/s), reference condition 50 µS/cm and water based
Repeatability	± 0.5% of reading @ 25 °C (77 °F)
Low Flow Cutoff	0.02 m/s (0.07 ft/s) (adjustable via GF Config Tool App or 0252 Configuration Tool)

Electrical

DC Power (Functional Rating)	24 VDC, max 24 W (12 to 32 VDC)
Reverse Polarity Protected	Up to 35 VDC
Over-Voltage Maximum Rating	35 VDC

Current Output

Passive (low power)	4 to 20 mA per ANSI-ISA 50.00.01 Class H
Active Output	4 to 20 mA
Passive / Active	User selectable
Passive Loop Voltage	12 to 32 VDC
Loop Accuracy	±32 µA (@ 25 °C @ 24 VDC)
Loop Resolution	5 µA
Loop Span	3.8 mA to 21 mA
Error Condition	None, 3.6 mA or 22 mA
Max. Cable	305 m (1'000 ft)
Max. Loop Resistance	600 Ω @ 24 VDC
	Compatible with PLC, PC or similar equipment

Frequency Output

Frequency	5 to 24 VDC, 50 mA max.
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Frequency Output

Frequency Range	0 to 1500 Hz
Max. Cable	305 m (1'000 ft)
Max. Pull-up Voltage	30 VDC, 10k pull-up recommended
	Compatible with type 9900, 9950, and 0486 Profibus Concentrator

Digital (S³L) Output

Digital (S ³ L)	4.5 to 5.5 VDC
	Serial ASCII, TTL level 9600 bps Compatible with type 9900, 9950 and 0486 Profibus Concentrator
Max. Cable Length	Application dependent

Environmental Requirements

Enclosure	NEMA 4X / IP65		
Relative Humidity	0 to 95% non-condensing		
Storage Temperature	-10 °C to 60 °C (14 °F to 140 °F)		
Operating Temperature			
	Ambient	-10 °C to 60 °C	14 °F to 140 °F
	Media	0 °C to 60 °C	32 °F to 140 °F
UL Environmental Rating	UL 50, type 6P Storage		
Altitude	4,000 m	13,123 ft	

Pressure/Temperature Ratings

Maximum Operating Pressure	10 bar @ 23 °C (145 psi @ 73 °F)		
DN25 (1"), DN40 (1.5"), DN50 (2")	3.5 bar @ 60 °C (51 psi @ 140 °F)		
DN80 (3"), DN100 (4")	2.27 bar @ 60 °C (33 psi @ 140 °F)		

Shipping Weight -Titanium or Hastelloy C

DN25 (1")	3.4 kg	7.5 lbs
DN40 (1.5")	4.1 kg	9.1 lbs
DN50 (2")	4.5 kg	9.9 lbs
DN80 (3")	7.5 kg	16.5 lbs
DN100 (4")	8.3 kg	18.3 lbs

Standards and Approvals

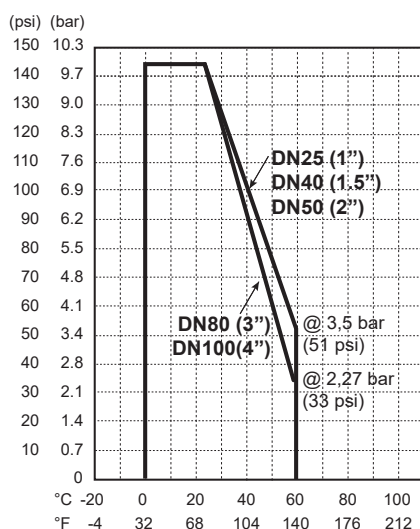
CE, UKCA, FCC, NSF (Titanium only, does not include flange gaskets)
UL, CUL Recognized Component
RoHS compliant, China RoHS
Manufactured under ISO 9001, ISO 14001 and ISO 45001

Pressure-temperature diagram

Note:

The pressure/temperature graphs are specifically for the GF sensor. During system design the specifications of all components must be considered.

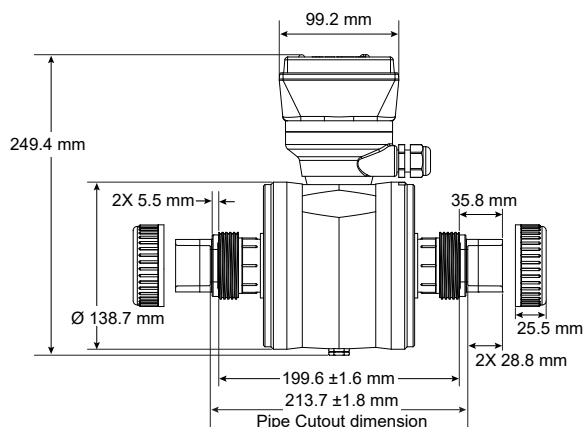
In the case of a metal piping system, a plastic sensor will reduce the system specification.



Dimensions

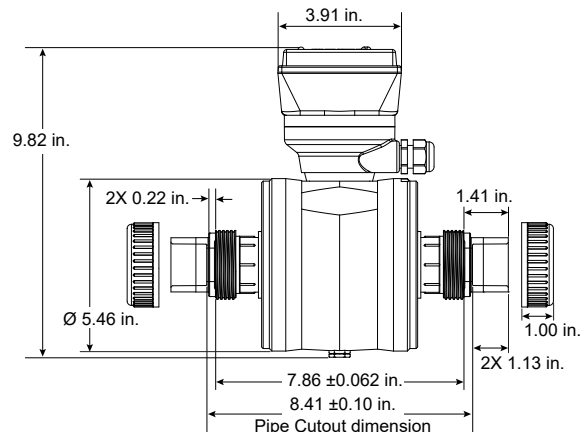
DN25

Metric Union ends and union nuts shown



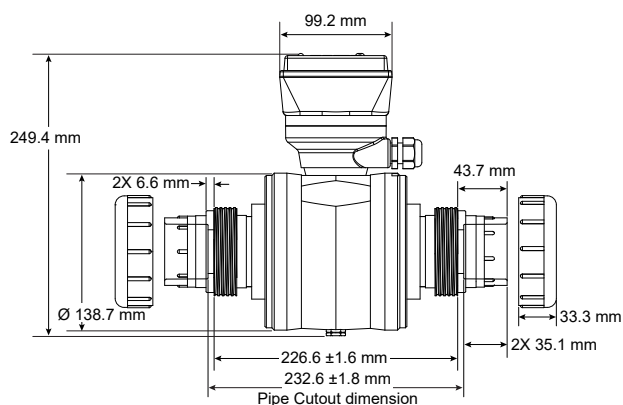
1 in.

ASTM Union ends and union nuts shown



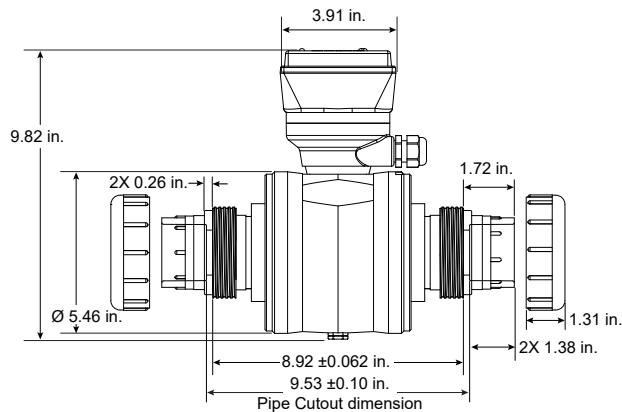
DN40

Metric Union ends and union nuts shown



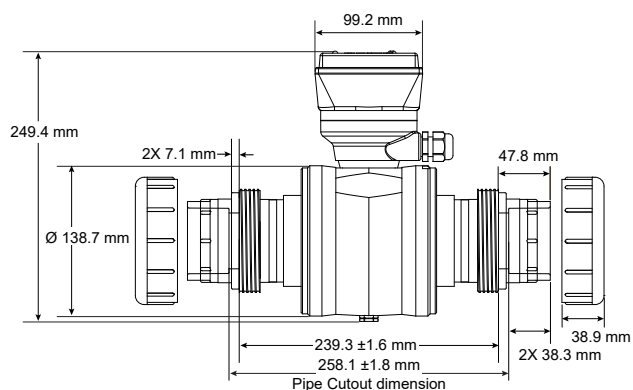
1.5 in.

ASTM Union ends and union nuts shown



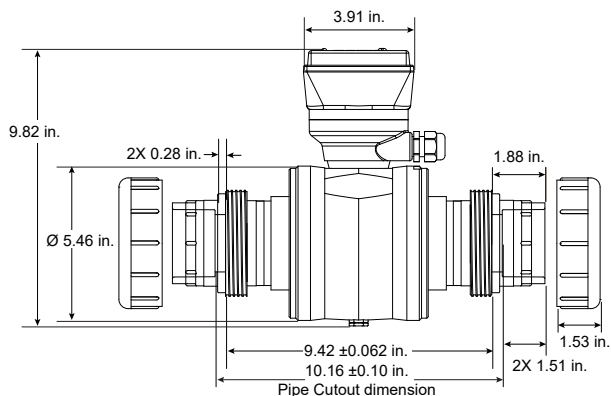
DN50

Metric Union ends and union nuts shown



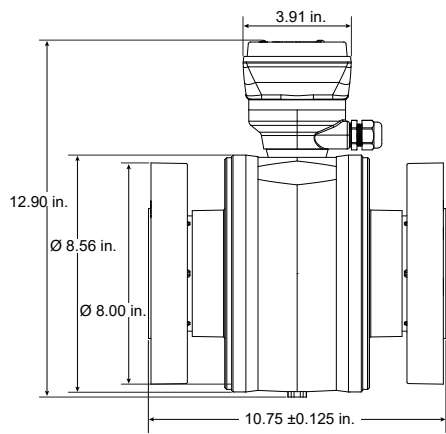
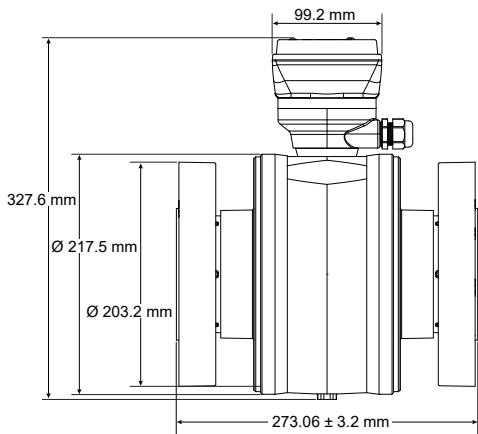
2 in.

ASTM Union ends and union nuts shown



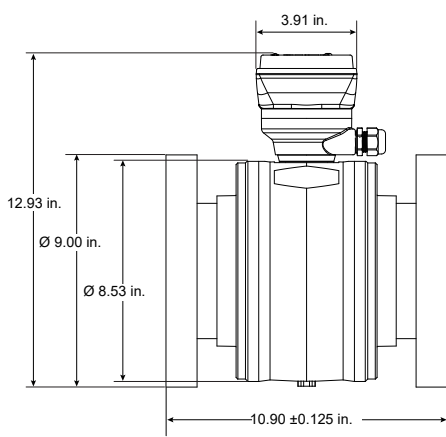
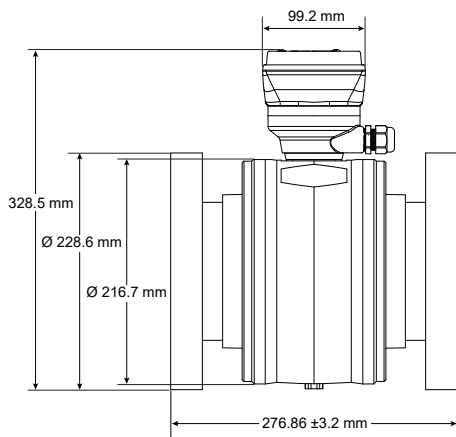
DN80
Flange bolt kits and gaskets not shown (Sold separately)

3 in.
Flange bolt kits and gaskets not shown (Sold separately)



DN100
Flange bolt kits and gaskets not shown (Sold separately)

4 in.
Flange bolt kits and gaskets not shown (Sold separately)



System Overview

Stand-Alone	Panel Mount	Pipe, Tank, Wall	4 to 20 mA Output	Automation System
Type 2581 FlowtraMag	GF Instruments - 9900-1P - 9900-1BC - 9950	GF Instruments - 9900-1 with 3-8050-1 Universal Mount Kit - 9900-1BC with Rear Enclosure	- Customer Supplied Chart Recorder, Programmable Logic Controller or - Programmable Automation Controller OR	- 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or - Programmable Automation Controller
	Type 2581 FlowtraMag - 3-2581PTXX-10X - 3-2581PHXX-10X			

GF Configuration Tool Bluetooth® App



On-the-fly configuration, sensor Information at your fingertips

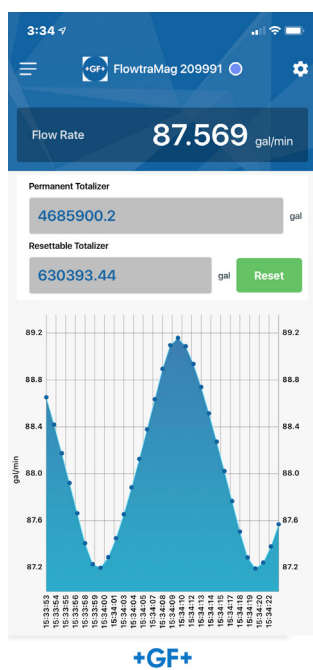
- **Bluetooth® 4.2 capable, support iOS and Android for simple user configuration**
- **Application setup**
Set Averaging, Sensitivity, Low Flow Cut Off, Direction of Flow, Flow Units and Totalizer Unit
- **Name files**
- **Share and/or Save files**
- **Monitor flow and totalizer**
- **Loop adjustment is a live update**
Set 4 mA, 20 mA, Error condition of the current output alarm (3.6 or 22 mA), adjust your 4 to 20 mA setting and select output mode
- **Calibration**
Custom Calibration of Rate, Volumetric, Zero Flow Calibration

(example shows Menu)

Live Logging while connected
to mobile / tablet device, set
1 sec or more increments.

Sensor Information when you need it

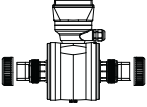
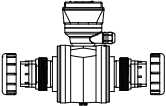
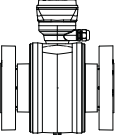
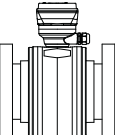
Sensor information, Bluetooth Device Tag, Permanent Totalizer, Resettable Totalizer, Calibration Adjustment Factor, Zero Offset Adjustment.



The screenshot shows the 'Information' screen of the GF+ app. It contains the following fields: Bluetooth Device Tag (FlowtraMag 209991), Device Passkey (209991), Sensor Serial Number (61903209991), Sensor Part Number (3-2580-P-50), Sensor Order Number (?????????), Body Material (PVC), and Body Size (d060_DN050/2in Sch80). At the bottom, there are buttons for READ, WRITE, SAVE, and LOAD.



Ordering information

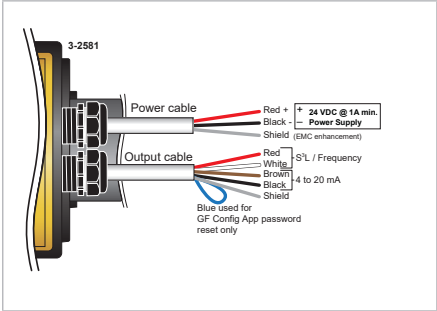
	Mfr. Part No.	Code	Description
	3-2581-PT01-101	159 001 970	FlowtraMag, PVC, Titanium, FKM O-Ring, Union, DN25 (1 in.)
	3-2581-PT15-101	159 001 971	FlowtraMag, PVC, Titanium, FKM O-Ring, Union, DN40 (1.5 in.)
	3-2581-PT02-101	159 001 972	FlowtraMag, PVC, Titanium, FKM O-Ring, Union, DN50 (2 in.)
	3-2581-PT03-101	159 001 973	FlowtraMag, PVC, Titanium, FKM O-Ring, Flange, DN80 (3 in.)
	3-2581-PT04-101	159 001 974	FlowtraMag, PVC, Titanium, FKM O-Ring, Flange, DN100 (4 in.)
	3-2581-PH01-101	159 001 975	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Union, DN25 (1 in.)
	3-2581-PH15-101	159 001 976	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Union, DN40 (1.5 in.)
	3-2581-PH02-101	159 001 977	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Union, DN50 (2 in.)
	3-2581-PH03-101	159 001 978	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Flange, DN80 (3 in.)
	3-2581-PH04-101	159 001 979	FlowtraMag, PVC, <i>Hastelloy C</i> , FKM O-Ring, Flange, DN100 (4 in.)
	3-2581-PT01-102	159 001 980	FlowtraMag, PVC, Titanium, EPDM O-Ring, Union, DN25 (1 in.)
	3-2581-PT15-102	159 001 981	FlowtraMag, PVC, Titanium, EPDM O-Ring, Union, DN40 (1.5 in.)
	3-2581-PT02-102	159 001 982	FlowtraMag, PVC, Titanium, EPDM O-Ring, Union, DN50 (2 in.)
	3-2581-PT03-102	159 001 983	FlowtraMag, PVC, Titanium, EPDM O-Ring, Flange, DN80 (3 in.)
	3-2581-PT04-102	159 001 984	FlowtraMag, PVC, Titanium, EPDM O-Ring, Flange, DN100 (4 in.)
	3-2581-PH01-102	159 001 985	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Union, DN25 (1 in.)
	3-2581-PH15-102	159 001 986	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Union, DN40 (1.5 in.)
	3-2581-PH02-102	159 001 987	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Union, DN50 (2 in.)
	3-2581-PH03-102	159 001 988	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Flange, DN80 (3 in.)
	3-2581-PH04-102	159 001 989	FlowtraMag, PVC, <i>Hastelloy C</i> , EPDM O-Ring, Flange, DN100 (4 in.)

Accessories

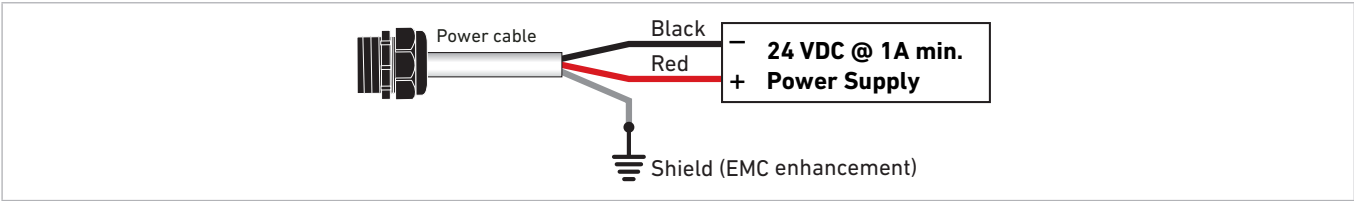
Mfr. Part No.	Code	Description
3-0252	159 001 808	0252 Configuration Tool (optional for configuring with PC)
5523-0222	159 000 392	Cable (per foot), 2 cond. w/shield, 22 AWG
5523-0224	159 855 034	Cable (per foot), 6 cond. w/shield, 22 AWG
3-2581-PX01-10X Accessories		
857 375 010	857 375 010	PVC 80 type 375 Union FKM (SxS) 1 in. (ASTM)
1220-0218	159 812 039	1.234IDX.139 FKM O-ring RMS 1071 (1 in.) (2 required per unit)
897 375 010	897 375 010	PVC 80 type 375 Union EPDM (SxS) 1 in. (ASTM)
1224-0218	159 812 044	NSF 1.234IDX.139 EPDM O-ring (1 in.) (2 required per unit)
161 375 904C	161 375 904C	Union End, PVC, PN16, d32DN25 (Metric)
3-2581-PX15-10X Accessories		
857 375 015	857 375 015	PVC 80 type 375 Union FKM (SxS) 1.5 in. (ASTM)
1220-0327	159 812 040	1.725IDX.210 FKM O-ring RMS1071 (1.5 in.) (2 required per unit)
897 375 015	897 375 015	PVC 80 type 375 Union EPDM (SxS) 1.5 in. (ASTM)
1224-0327	159 812 045	NSF 1.725IDX.210 EPDM O-RING (1.5 in.) (2 required per unit)
161 375 906C	161 375 906C	Union End, PVC, PN16, d50DN40 (Metric)
3-2581-PX02-10X Accessories		
857 375 020	857 375 020	PVC 80 type 375 Union FKM (SxS) 2 in. (ASTM)
1220-0331	159 812 041	2.225X.210 FKM O-RING RMS1071 (2 in.) (2 required per unit)
897 375 020	897 375 020	PVC 80 type 375 Union EPDM (SxS) 2 in. (ASTM)
1224-0331	159 812 046	NSF 2.225X.210 EPDM O-RING (2 in.) (2 required per unit)
161 375 907C	161 375 907C	Union End, PVC, PN16, d63DN50 (Metric)
3-2581-PX03-10X Accessories		
854-030	854-030	3 in. PVC80 Van-Stone Flange (S)
37X 002 117	37X 002 117	FKM Full Face Flange Gasket - 150# ANSI Bolt Pattern - 3 in.
37X 002 008	37X 002 008	EPDM Full Face Flange Gasket - 150# ANSI Bolt Pattern - 3 in.
37Z 000 068	37Z 000 068	Van Stone Flange 316SS Bolt Kit, 4-hole, 3 in. ASTM
721 790 113	721 790 113	DN80 Flange Adapter, PVC-U, Metric (Use with backing flange 721 700 013)
721 700 013	721 700 013	DN80 Backing Flange, PVC-U, Metric
749 440 713	749 440 713	DN80 FKM Profile Flange Gasket, Metric
748 440 713	748 440 713	DN80 EPDM Profile Flange Gasket, Metric
3-2581-PX04-10X Accessories		
854-040	854-040	4 in. PVC80 Van-Stone Flange (S)
37X 002 118	37X 002 118	FKM Full Face Flange Gasket - 150# ANSI Bolt Pattern - 4 in.
37X 002 009	37X 002 009	EPDM Full Face Flange Gasket - 150# ANSI Bolt Pattern - 4 in.
37Z 000 069	37Z 000 069	Van Stone Flange 316SS Bolt Kit, 8-hole, 4 in. ASTM
721 790 114	721 790 114	DN100 Flange Adapter, PVC-U, Metric (Use with backing flange 721 700 014)
721 700 014	721 700 014	DN100 V-Flange Ring PVC-U, Metric
749 440 714	749 440 714	DN100 FKM Profile Flange Gasket, Metric
748 440 714	748 440 714	DN100 EPDM Profile Flange Gasket, Metric

Wiring Information

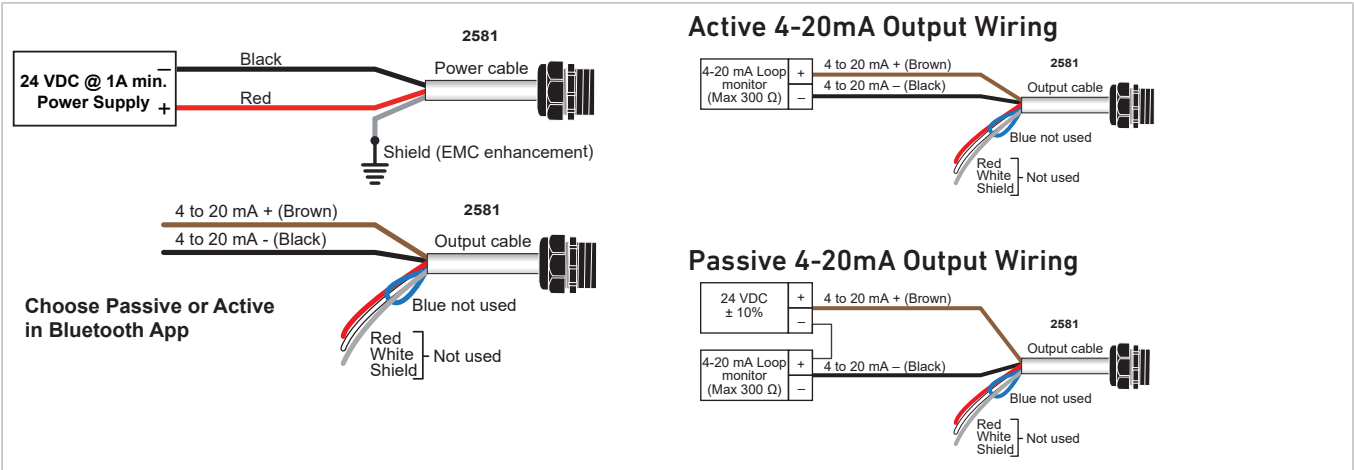
When wiring the 2581 FlowtraMag output cable to a 9900/9950, use the red wire for Frequency/DATA and the white wire as ground.



Power Wiring



4 to 20 mA Loop Output Wiring

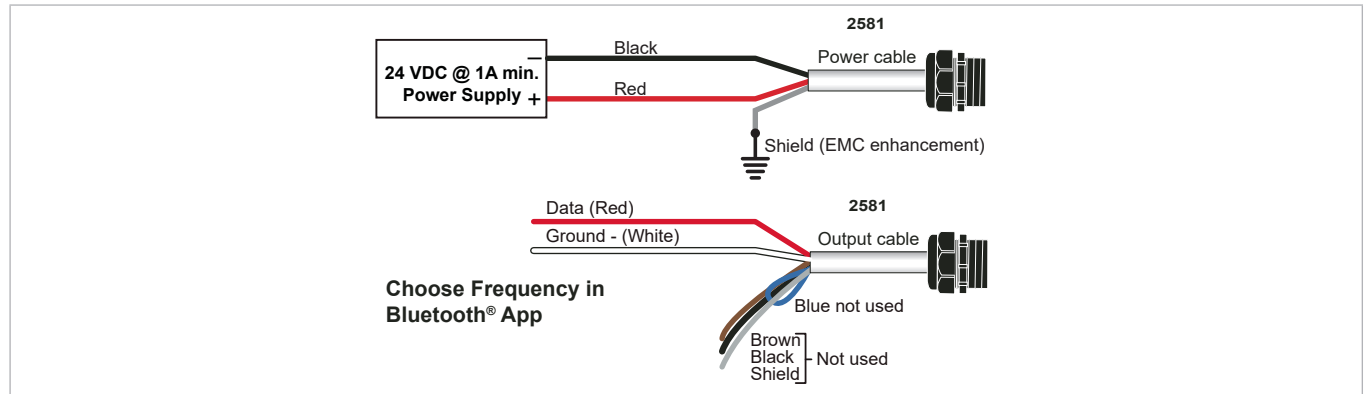


Frequency Output Wiring

Compatible with all POWERED GF Flow Instruments.

- When choosing Frequency in the Bluetooth® App, the 2581 outputs an open collector frequency signal that can be connected to any powered GF flow meter (Types 9900, 9900-1BC or 9950).
- 24 VDC power at 1 amp should always be connected.

NOTE: The frequency output will be displayed as positive flow regardless of the flow direction.

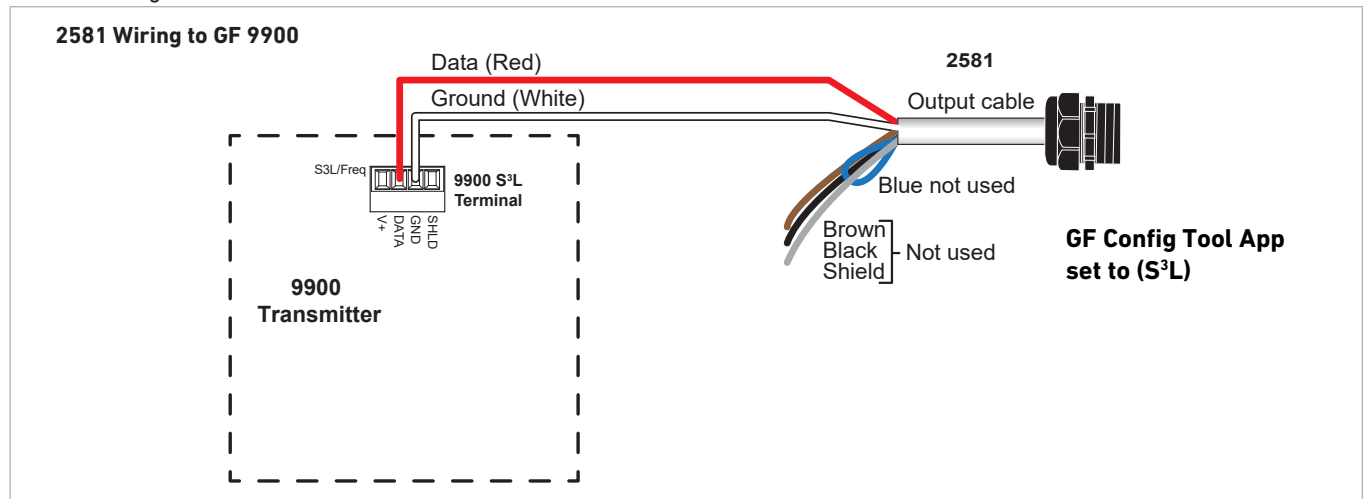


2581 Wiring to type 9900

Flow Meter Wiring Details for 2581 FlowtraMag Meter

Digital (S³L) Output (Compatible with 9900 and 9950)

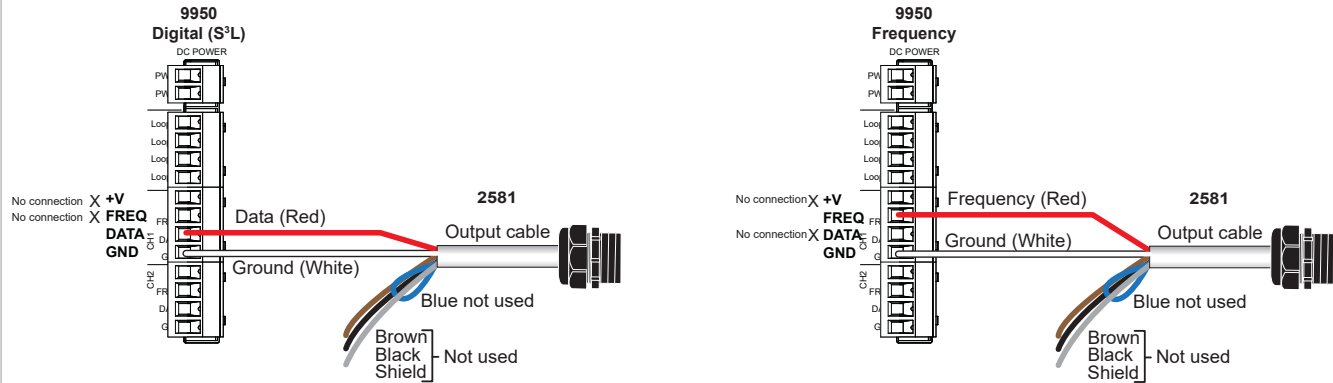
- To select (S³L), use Bluetooth® App.
- 24 VDC power at a minimum of 1 amp should always be connected to the 2581.
- The 9900 and 9950 will display negative numbers to indicate reverse flow
- The maximum cable length from the 2581 to the 9900 or 9950 depends on the 9900 or 9950 configuration.



2581 Wiring to type 9950

GF Config Tool App set to (S³L)

Refer to the 0486 Profibus Concentrator manual for Frequency wiring and programming instructions.



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