Type 2552 Metal Magmeter Flow Sensor

Product description

The type 2552 Metal Magmeter from Georg Fischer features all-stainless steel construction. The PVDF nosepiece and FKM O-rings are the only other wetted materials. The 2552 installs quickly into standard 1¼ in. or 1½ in. pipe outlets, and is adjustable to fit pipes from DN50 to DN2550 (2 to 102 inches). Two sensor lengths allow maximum flexibility to accommodate a variety of hardware configurations, including ball valves for hot-tap installations.

When equipped with the frequency output, the 2552 is compatible with any externally powered GF flow instrument, while the digital (S^3L) output enables multi-channel compatibility with the type 9900 or 9950 Multi-Parameter instruments. Select the blind 4 to 20 mA current output to interface directly with Dataloggers, PLCs or telemetry systems. Key features include Empty Pipe Detection, LED-assisted troubleshooting, and bi-directional span capability (in 4 to 20 mA types).

The type 3-0252 Configuration Tool is available to customize every performance feature in the 2552 so it can be adapted to the user's application requirements.

Features

- Test certificate included
- Award winning hot-tap magnetic flow sensor up to DN2550 (102 in.)
- Patented Magmeter technology*
- Operating range 0.05 to 10 m/s (0.15 to 33 ft/s)
- Reliable operation in harsh environments
- Repeatable: ±0.5% of reading @ 25 °C
- Three output options: 4 to 20 mA, Frequency/Digital (S^3L)
- ISO or NPT Threads

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

Applications

- Municipal Water Distribution
- Process and Coolant Flow
- Chemical Processing
- Wastewater
- Mining Applications
- Water Process Flow
- HVAC

Technical Details

General			
Operating Range	Minimum	0.05 m/s	0.15 ft/s
	Pipes to DN1200 (48 in.)	10 m/s	33 ft/s
	Pipes over DN1200 (48 in.)	3 m/s	10 ft/s
Pipe Size Range	DN50 to DN2550	2 in. to 102 in.	
Linearity	±1% of reading plus 0.1% of full scale		
Repeatability	±0.5% of reading @ 25 °C		
Accuracy	±2% of measured value*		
Minimum Conductivity	20 µs/cm		

Wetted Materials	
Body and Electrodes	316L stainless steel
Insulator	PVDF
O-rings	FKM
Cable	4-cond + shield, PVC jacket (Fixed cable types) or Water-resistant rubber cable assembly with Turck NEMA 6P connector

Power Requirements	
4 to 20 mA	24 VDC ±10%, regulated, 22.1 mA maximum
Frequency	5 to 24 VDC ±10%, regulated, 15 mA maximum
Digital (S^3L)	5 to 6.5 VDC 15 mA maximum
Reverse Polarity and Short Circuit Protected	

Cable Options		
Fixed Cable	7.6 m	25 ft
Detachable water tight sensor cable with Turck connector (sold separately) two lengths: 4 m (13 ft) or 6 m (19.5 ft)		

Electrical			
Current Output (4 to 20 mA)	Programmable and Reversible		
	Loop Accuracy	32 µA max. error (@ 25 °C @ 24 VDC)	
	Temperature Drift	±1 µA per °C max.	
	Power Supply Rejection	±1 µA per V	
	Isolation	Low voltage < 48 VAC/DC from electrodes and auxiliary power	
	Maximum Cable	300 m	1000 ft
	Max. Loop Resistance	300 Ω	
	Error Condition	22.1 mA	
Frequency Output	Compatible with	Type 9900, 9900-1BC and 9950	
	Max. Pull-up Voltage	30 VDC	
	Short Circuit Protected	≤30 V @ 0 Ω pull-up for one hour	
	Reverse Polarity Protected	To -40 V for 1 hour	
	Over-voltage Protected to +40 V for 1 hour		
	Max. Current Sink	50 mA, current limited	
	Maximum Cable	300 m	
Digital (S^3L)Output	Compatible with	Type 9900, 9950 and 0486	
	Serial ASCII, TTL level 9600 bps		
	Maximum Cable	Application dependent (See 9900 or 9950 manual) in non-icing conditions	
Operating Temp.	Ambient (non-icing conditions)	-15 °C to 70 °C	5 °F to 158 °F
	Media	-15 °C to 85 °C	5 °F to 185 °F
Max. Operating Pressure	20.7 bar @ 25 °C	300 psi @ 777 °F	

* In reference conditions where the fluid is water at ambient temperature, the sensor is inserted at the correct depth and there is a fully developed flow profile which is in compliance with ISO 7145-1982 (BS 1042 section 2.2)

Hot-Tap Installation Requirements		
Maximum Installation Pressure	20.7 bar	300 psi
Maximum Installation Temp (Insertion/Removal)	40 °C	104 °F
Do not use hot-tap installation where temperatures will exceed 40 °C or if hazardous liquids are present.		

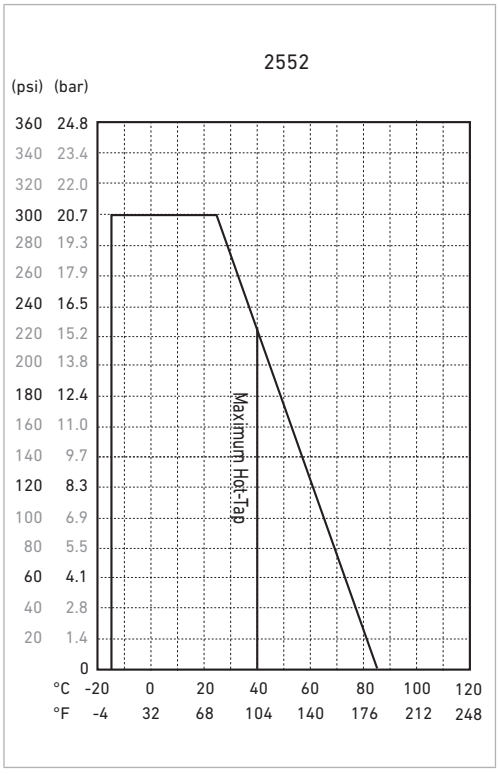
Shipping Weights		
3-2552-2X-A-11/A-12	2.50 kg	5.51 lb
3-2552-2X-B-11/B-12	2.30 kg	5.07 lb
3-2552-3X-A-11/B-11	4.00 kg	8.81 lb
3-2552-3X-A-12/B-12	4.00 kg	8.81 lb

Standards and Approvals	
CE, UKCA, FCC	
RoHS compliant, China RoHS	
NEMA 4 (IP65)	Fixed cable types
NEMA 6P (IP68)	Submersible cable types only. GF recommends maximum 3 m (10 ft) submersion depth for maximum 10 days continuous submersion.
Manufactured under ISO 9001, ISO 14001 and ISO 45001	

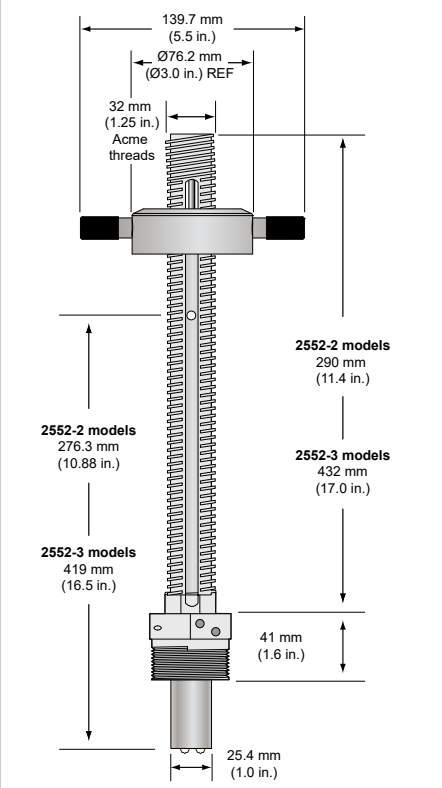
Pressure-temperature diagrams

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.



Dimensions



System Overview

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

Type 2552 Magmeter

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

* Contact GF for ordering information
All Sold Separately

Application Tips

- Minimum process liquid conductivity requirement is 20 µS/cm.
- 1½ x 1¼ inch and 2 x 1¼ inch (2552-2x only) retrofit adapters are available for replacement installations of type 2550 and 2540 sensors

Sensor Selection Guide

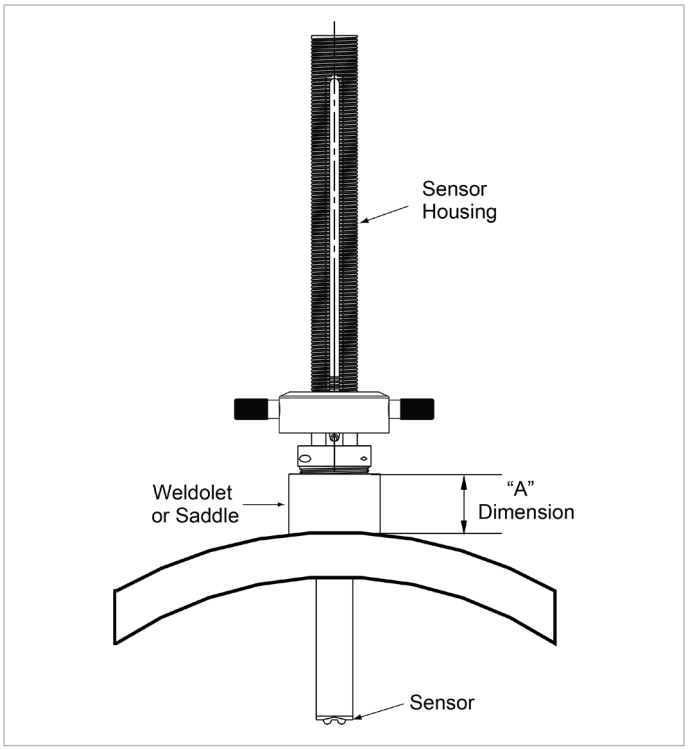
The 2552 Magmeter can be installed into a variety of pipe sizes. Follow the steps below to ensure that you choose the right sensor for your application.

Step 1: Determine how the sensor will be installed

A For standard (non Hot-Tap) installation:

The height of the weldolet (threadolet) and pipe adapter(s) should be determined before the sensor is purchased.

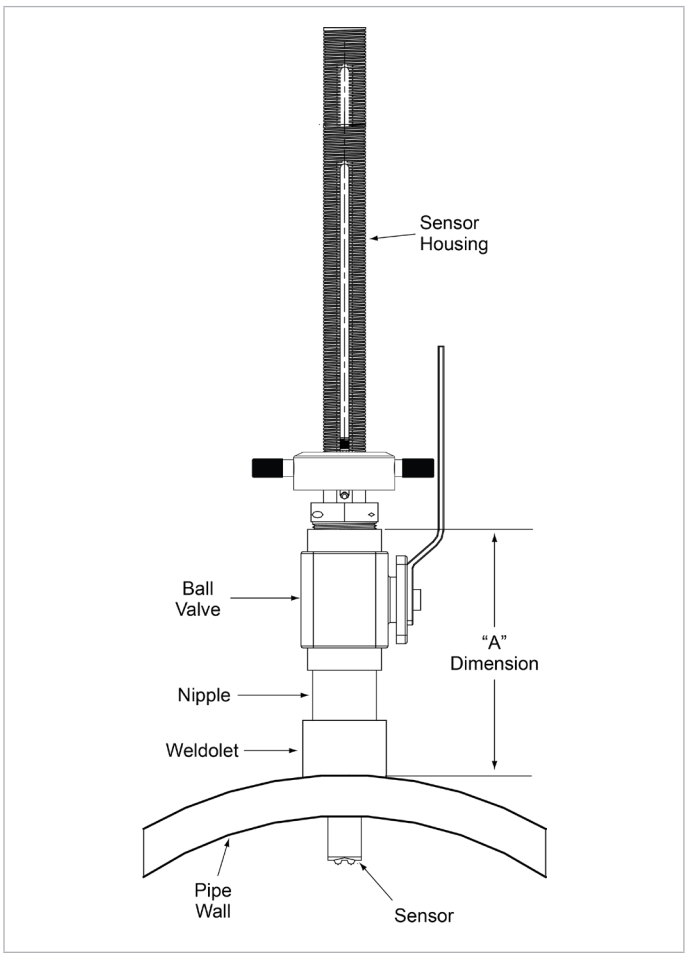
- For retrofit installations, the stack height, or "A" dimension, is the overall height from the top oof the pipe to the highest point of the stack.
- Sensor tip must be positioned at 10% of pipe ID
- For new installations, GF recommends a weldolet (threadolet) and and adapter to accommodate the 1¼ in. (or 1½ in. for 3-2552-3X) sensor process threads. The stack height, or "A" dimension, is the overall height from the top of the pipe to the highest point of the stack before the sensor is connected.



B For Hot-Tap installations:

The stack height of the ball valve, nipple, weldolet (threadolet) and pipe adapters should be determined before the sensor is purchased.

- For retrofit installations, the ball valve must be at least a 1¼ in. (or 1½ in. for 3-2552-3X) valve. The stack height, or "A" dimension (see Fig. 2), is the overall height from the top of the pipe to the top of the ball valve.
- Sensor tip must be positioned at 10% of pipe ID
- For new installations, GF recommends a 1¼ in. or 1½ in. full port ball valve, a closed nipple and a weldolet (threadolet). The stack height or "A" dimension (see Fig. 2) is the overall height from the top of the pipe to the top of the ball valve before the sensor is connected.



Step 2: Determine how the sensor will be installed

Once the "A" dimension is determined, go to the sensor selection table and find you "A" dimension on the left column. Next, find the appropriate pipe size at the top of the chart. To determine the correct sensor size locate where the pipe size column meets the max "A" dimension row.

			Pipe Size																											
		inches	2	2.5	3 to 3 ½	4	5	6 to 8	10	12 to 14	16	18	20	22	24	26 to 28	30 to 32	34	36 to 38	40 to 42	48	54	60	66	72	78	84	102
		DN	50	65	80 to 90	100	125	150 to 200	250	300 to 350	400	450	500	550	600	650 to 700	750 to 800	850	900 to 950	1000 to 1100	1200	1400	1500	1700	1800	2000	2100	2.58
Max. "A" Dim	mm	inches																												
	50.8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	63.5	2.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	76.2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	88.9	3.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	101.6	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	114.3	4.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	
	127	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	
	139.7	5.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	
	152.4	6	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	3	3	3	3	3	3	3	3	3	
	165.1	6.5	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	177.8	7	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
	190.5	7.5	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3				
	228.6	9	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3						
	241.3	9.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3							
	254	10	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3								
	266.7	10.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3									
	279.4	11	3	3	3	3	3	3	3	3	3	3	3	3		3	3	3										
	292.1	11.5	3	3	3	3	3	3	3	3	3	3	3			3												
	304.8	12	3	3	3	3	3	3	3	3	3	3																
	317.5	12.5	3	3	3	3	3	3	3	3																		
	330.2	13	3	3	3	3	3	3	3																			
	342.9	13.5	3	3	3	3	3	3																				
	355.6	14	3	3	3	3	3																					
	375.9	14.8	3	3																								
	381	15																										

2 Use 3-2552-2, max. insertion = 236 mm (9.3 in.)
3 Use 3-2552-3, max. insertion = 368 mm (14.8 in.)
This chart is based on the thickest commonly available pipe.

Step 3: Refer to Ordering Information to select corresponding part numbers

Ordering Notes:

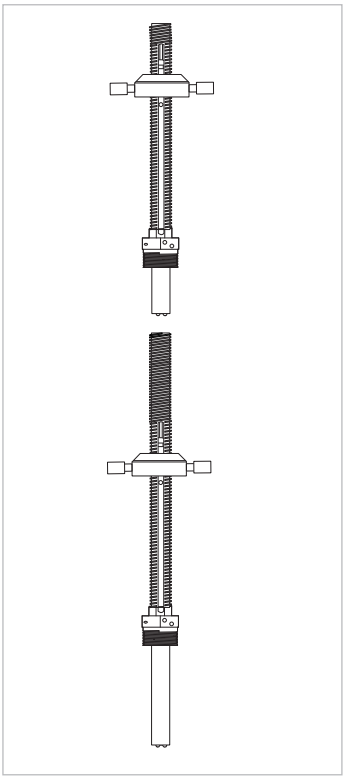
- Sensor insertion depth is the distance from the bottom of the sensor housing to the tip of the sensor.
- Hot-Tap installations require a 1¼ in. or 1½ in. ball valve.
- See Sensor Selection Guide on previous page to determine the sensor length required.

Application Tips

- Minimum process liquid conductivity requirement is 20 µS/cm.
- 1½ x 1¼ in. and 2 x 1¼ in. (3-2552-2x only) retrofit adapters are available for replacement installations of GF 2552 and 2540 sensors.

Ordering Information

Mfr. Part	Code	Sensor Insertion Depth	Process Connection Thread Options
Frequency or Digital (S³L) output For use with any GF Flow or Multi-Parameter Instruments			
Fixed Cable, 7.6 m (25 ft); no connector			
3-2552-21-A-11	159 001 513	9.3 inches*	1¼ inch NPT**
3-2552-22-A-11	159 001 517	9.3 inches*	1¼ inch ISO**
3-2552-33-A-11	159 001 521	14.8 inches*	1½ inch NPT**
3-2552-34-A-11	159 001 522	14.8 inches*	1½ inch ISO**
Watertight sensor connector; cable sold separately			
3-2552-21-B-11	159 001 515	9.3 inches*	1¼ inch NPT**
3-2552-22-B-11	159 001 519	9.3 inches"	1¼ inch ISO**
3-2552-33-B-11	159 001 523	14.8 inches*	1½ inch NPT**
3-2552-34-B-11	159 001 524	14.8 inches*	1½ inch ISO**
4 to 20 mA output			
Fixed Cable, 7.6 m (25 ft); no connector			
3-2552-21-A-12	159 001 514	9.3 inches*	1¼ inch NPT**
3-2552-22-A-12	159 001 518	9.3 inches"	1¼ inch ISO**
3-2552-33-A-12	159 001 525	14.8 inches*	1½ inch NPT**
3-2552-34-A-12	159 001 526	14.8 inches*	1½ inch ISO**
Watertight sensor connector; cable sold separately			
3-2552-21-B-12	159 001 516	9.3 inches*	1¼ inch NPT**
3-2552-22-B-12	159 001 520	9.3 inches"	1¼ inch ISO**
3-2552-33-B-12	159 001 527	14.8 inches*	1½ inch NPT**
3-2552-34-B-12	159 001 528	14.8 inches*	1½ inch ISO**



* Customer must determine stack height (ball valve, nipple, weldolet, etc.). Refer to Sensor Selection on previous page to determine "A" dimension. Sensor tip must be positioned at 10% of pipe ID.

** 1¼ inch process connection is the standard thread size on the 3-2552-2X-X-XX: For the 2552-3X the 1½ inch process connection is standard and the 1¼ inch is available as a special order.

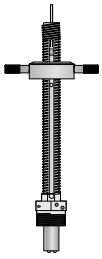
Accessories and Replacement Parts

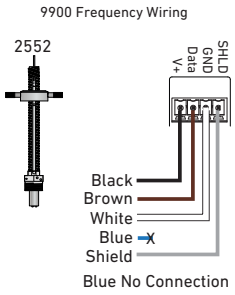
Mfr. Part	Code	Description
2120-1512	159 001 425	1½ x 1¼ inch NPT adapter for retrofitting 2540 installation to 2552 - 316 SS
3-2552.392	159 001 530	1¼ inch NPT full port stainless steel ball valve and nipple kit
3-2552.393	159 001 531	1¼ inch NPT full port brass ball valve and nipple kit
3-2552.394	159 011 532	1½ inch NPT conduit adapter, aluminum for -1 and -2 units
4301-2125	159 001 533	1¼ inch NPT full port ball valve – brass
4301-2125	159 001 387	1¼ inch NPT full port ball valve - stainless steel
5541-4184	159 001 388	4-conductor cable assembly with water-tight connector, 4 m (13 ft)
5541-4186	159 001 389	4-conductor cable assembly with water-tight connector, 6 m (19.5 ft)
Special order	Special order	1¼ in. NPT Iron saddle
Special order	Special order	1½ in. NPT Iron saddle
Special order	Special order	1¼ in. NPT threadolet (SS, Carbon Steel, Brass or copper)
Special order	Special order	1½ in. NPT threadolet (SS, Carbon Steel, Brass or copper)
Special order	Special order	1½ in. NPT full port ball valve with closed nipple - stainless steel
Special order	Special order	4-conductor cable assembly with water-tight connector, cable length in 25 ft increments
Special order	Special order	1¼ in. NPT or ISO process connection threads to replace 1½ in. NPT or ISO threads
3-0252	159 001 808	Configuration Tool

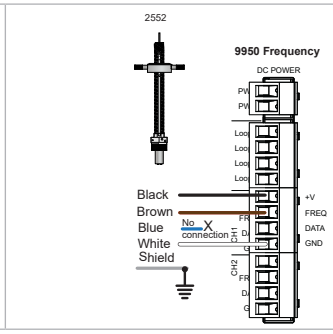
Wiring information

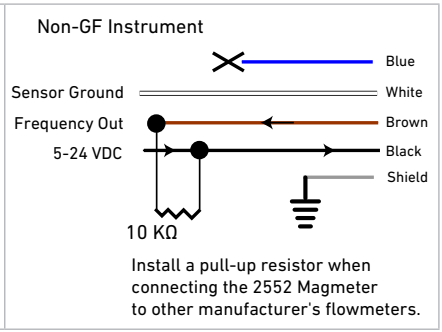
Frequency Wiring

- The 2552 outputs an open collector frequency signal that can be connected to any powered GF flow meter (Types 9900, 9900-1BC, 9950)
- DC power is provided to the 2552 Magmeter by all GF flow instruments. No additional power is required.
- If connecting the 2552 Magmeter to a flow instrument from another manufacturer, 5 to 24 VDC power must be provided to the 2552. A 10 KΩ pull up resistor must also be connected between the +V (Black) and the Freq. Out (Brown) wires.



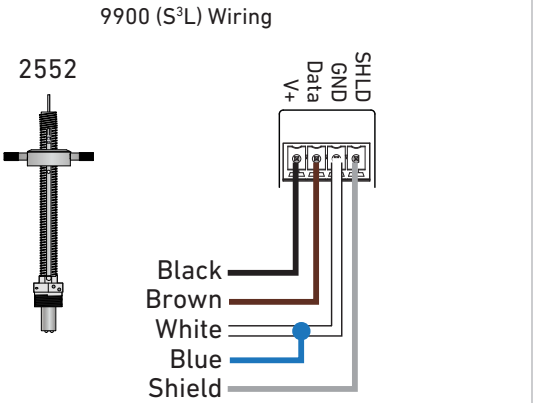


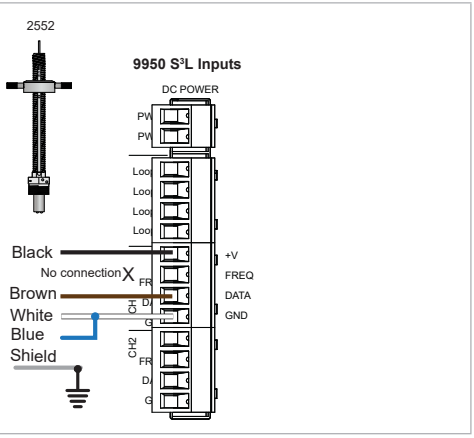




Digital (S³L) Wiring

The 2552 receives 5 VDC power from the 9900 or 9950. No additional power is required.





NOTE: The maximum cable length from the 2552 to the 9900 or 9950 is 300m (1000 ft.).

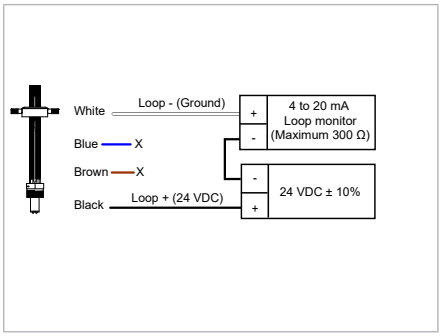
Loop Wiring

The 2552 is a traditional 2-wire passive 4 to 20 mA loop transmitter. External loop power (24 VDC ±10% regulated) is required. Please refer to the type 7310 Power Supplies.

⚠ The maximum loop resistance the Magmeter can accommodate is 300 Ω.

⚠ The cable length from the Magmeter to the loop monitor cannot exceed 300 m (1000 ft).

All 2552 Magmeters are shipped from the factory with the 4 to 20 mA output scaled for 0 to 5 m/s (0 to 16.4 ft/s). If this operating range is suitable, no adjustments are necessary.



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