

Signet 0486 Profibus Concentrator



3-0486.090 Rev. 3 04/18

Installation and GSD Manual



Description

The Georg Fischer Signet 3-0486 Profibus Concentrator allows for the connection of Signet sensors and relay modules, Georg Fischer Sensors and Actuated Valves to a Profibus network.

The Concentrator eases the integration of Signet sensors by incorporating the Signet sensor setup information into the GSD (General Station Description) of the Concentrator. Automation programming is simplified and errors are reduced through the advanced features incorporated in the Concentrator.

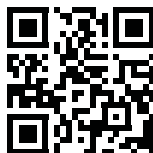
The Concentrator supports Signet digital (S³L), current loop, frequency, and open collector devices.

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GSD file available for download at:
www.gfsignet.com

Warranty Information

Refer to your local Georg Fischer Sales office for the most current warranty statement.

All warranty and non-warranty repairs being returned must include a fully completed Service Form and goods must be returned to your local GF Sales office or distributor. Product returned without a Service Form may not be warranty replaced or repaired.

Signet products with limited shelf-life (e.g. pH, ORP, chlorine electrodes, calibration solutions; e.g. pH buffers, turbidity standards or other solutions) are warranted out of box but not warranted against any damage, due to process or application failures (e.g. high temperature, chemical poisoning, dry-out) or mishandling (e.g. broken glass, damaged membrane, freezing and/or extreme temperatures).

Product Registration

Thank you for purchasing the Signet line of Georg Fischer measurement products.

If you would like to register your product(s), you can now register online in one of the following ways:

- Visit our website www.gfsignet.com. Under **Service and Support** click on **Product Registration Form**
- If this is a pdf manual (digital copy), [click here](#)

Safety Information



Caution / Warning / Danger

Indicates a potential hazard. Failure to follow all warnings may lead to equipment damage, injury, or death.



Electrostatic Discharge (ESD) / Electrocutation Danger

Alerts user to risk of potential damage to product by ESD, and/or risk of potential of injury or death via electrocution.



Personal Protective Equipment (PPE)

Always utilize the most appropriate PPE during installation and service of Signet products.



Note / Technical Notes

Highlights additional information or detailed procedure.

Qualified Personnel

The Concentrator may be installed and operated by qualified personnel. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working on this product.

Specifications

General

Enclosure Material	Aluminum 6063 T6 and 5052 H32, Powder Coated finish
Mounting Options.....	35 mm DIN Rail mount (included), Surface mount (hardware not included)
Terminal Plug Type	Pluggable Screw Types, 24 to 12 AWG
System Accuracy	Determined by Device Accuracy
System Response.....	Determined by Devices and PROFIBUS Network

PROFIBUS Interface

Version	DP V1
Address	1 to 99
3-0486-D	Female DB9 Connector
3-0486-M.....	Male & Female M12 Connector (Special Order)

Electrical

Input power	24 VDC $\pm 10\%$ @ 10 W max., 0.40 A max. External Surge Protection is Required, 2KV Common Mode, 1KV Differential Mode.
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Frequency Inputs: Channels 1, 2, 3, 4

Range.....	1 to 1300 Hz
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S³L Inputs: Channels 1, 2, 3, 4, 5, 6

Output power	5 VDC regulated @ 20 mA
Overcurrent Protected	Each channel independently. A short on a channel will not impair the other channels.

4 to 20 mA Current Input: Channels 5, 6, 7

Passive, external power supply required	
Max. Voltage	40 VDC
Max. Current	40 mA
Max. Voltage Drop	5 VDC
Min. Update Rate	100 mS
• Reverse Voltage and Over Current Protected	

4 to 20 mA Current Output: Channel 7

Passive, external power supply required	
Min. and Max. Voltage	12 to 24 VDC
Max. Impedance	250 Ω @ 12 VDC
	500 Ω @ 18 VDC
	750 Ω @ 24 VDC
Min. Update Rate	100 mS

Environmental

Enclosure Rating	NEMA TYPE 1 / IP10
Storage Temperature	-20 °C to 85 °C (-4 °F to 185 °F)
Operating Temperature	-10 °C to 70 °C (14 °F to 158 °F)
Relative Humidity	5% to 95% non-condensing

Shipping Weight	1.4 kg (3.0 lb)
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Standards and Approvals

- Profibus Certified
- RoHS Compliant, WEEE
- Manufactured under ISO 9001 for Quality
- Safety: UL 61010-1, CAN/CAS-C22.2 No. 61010-1, IEC 61010-1:2010
- EMC: EN 61000-6-3: 2007+A1, IEC 61000-6-3: 2006+A1, FCC 15.09(g) Class B, EN 61000-6-2



China RoHS (visit gfsignet.com for details)

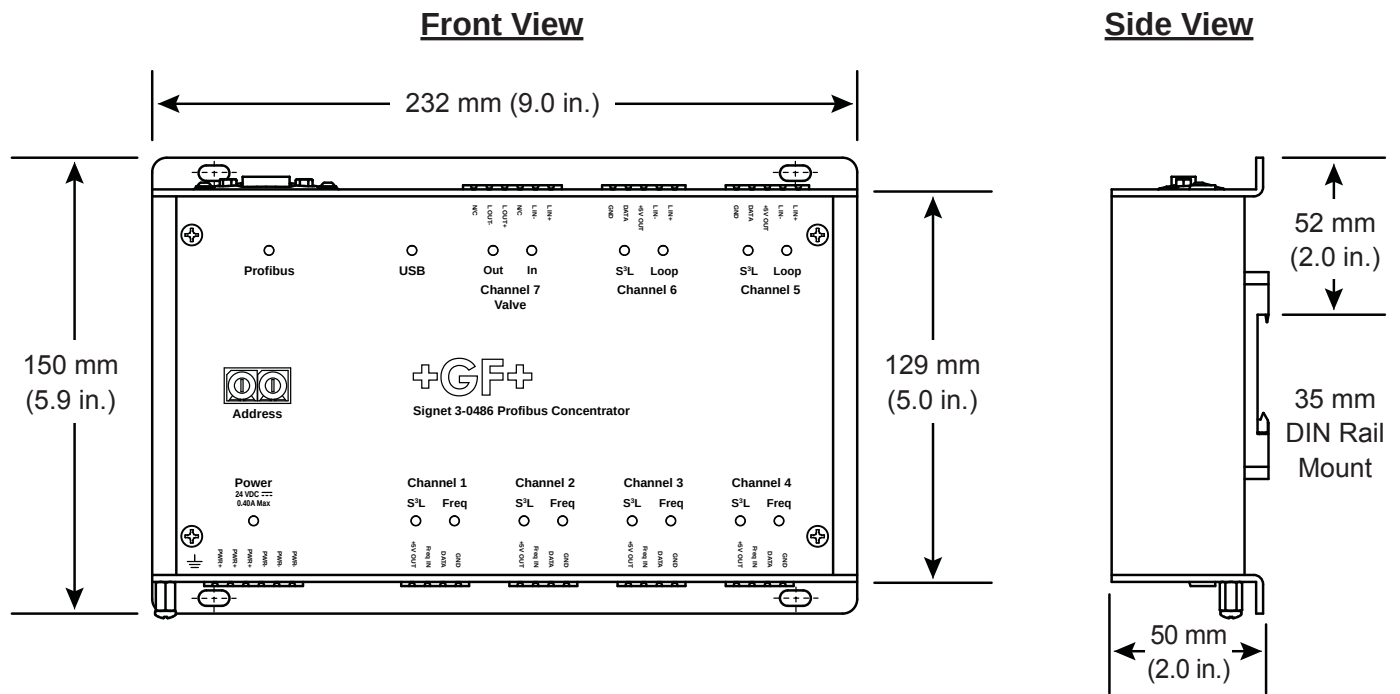


This device complies with Part 15 of the FCC rules.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

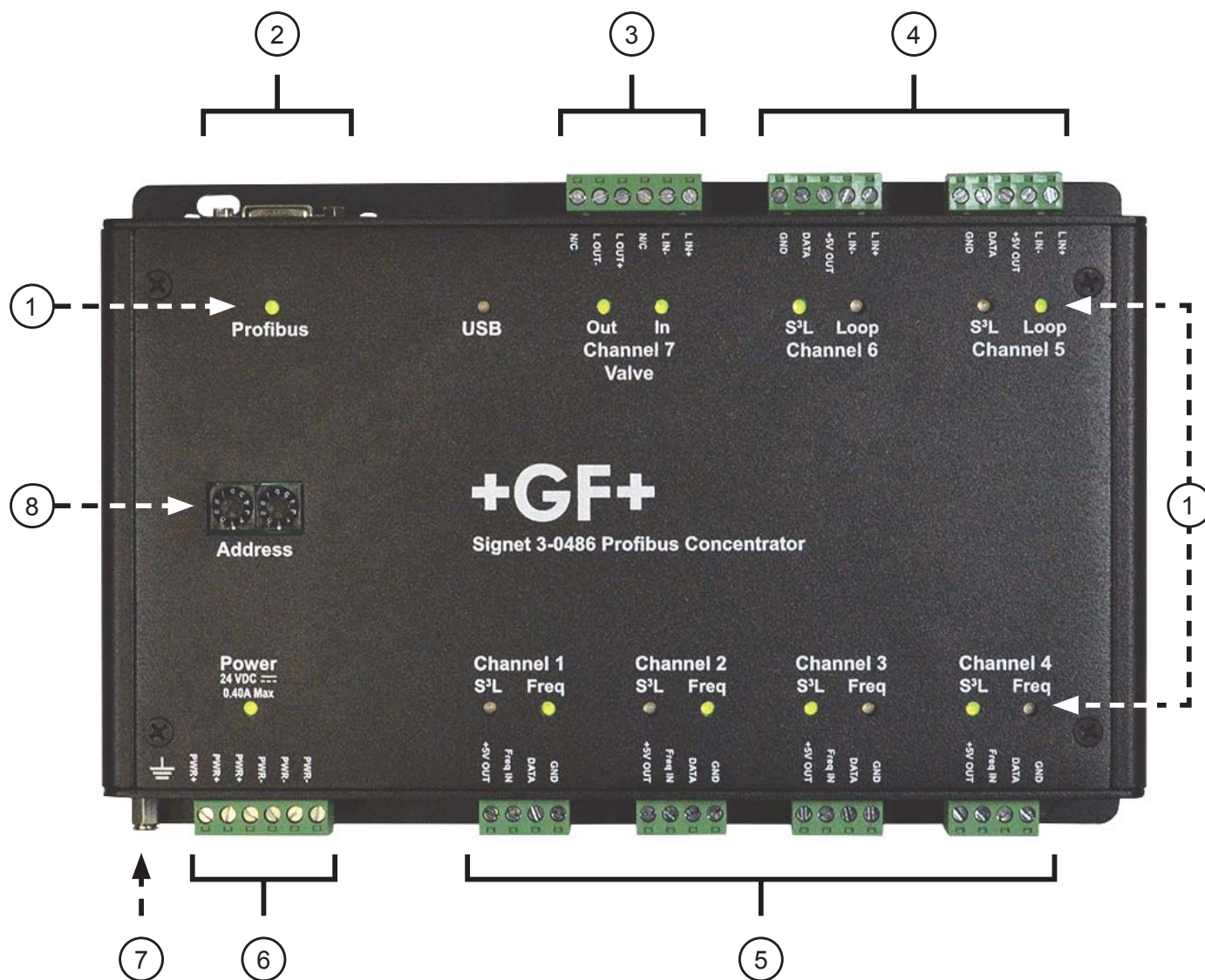
Dimensions



Compatible Products

Channel	Input	Description	Compatible Products
1 2 3 4	Frequency (Flow sensors)	Open Collector Output sensors	2000, 2100, 2507, 2536, 2537-2, 2540, 2551-XX-X1, 2552-XX-X-X1, PF220, PF330, U1000, U3000, U4000, Generic Open Collector Output Devices
		Sinusoidal Output sensors	515, 525
	Digital (S³L)	Single Channel Digital (S³L) sensors *	2250-11X, 2350-1, 2450-3X, 2551-XX-X1, 2552-XX-X-X1, 2610-41, 2750-1/-2/-3/-4/-7, 2751-1/-2/-3/-4, 2850-51, 8058-1, 8059
		Single Channel Digital (S³L) sensors *	2250-11X, 2350-1, 2450-3X, 2551-XX-X1, 2552-XX-X-X1, 2610-41, 2750-1/-2/-3/-4/-7, 2751-1/-2/-3/-4, 2850-51, 8058-1, 8059
5 6	Digital (S³L)	Single Channel Digital (S³L) sensors *	2250-11X, 2350-1, 2450-3X, 2551-XX-X1, 2552-XX-X-X1, 2610-41, 2750-1/-2/-3/-4/-7, 2751-1/-2/-3/-4, 2850-51, 8058-1, 8059
	4 to 20 mA	Current Loop Input (passive, external power supply required)	2250-21X, 2350-3, 2450-7X, 2537-6C, 2551-XX-X2, 2750, 2751, PF220, PF330, U1000, U3000, U4000, 2750-2, 2751-2, 2850-52, 2610-41, 8900, 9900, Generic Passive Current Loop Input
7 (Valve)	GF Valve Positioner Control	Current Loop Output (passive, external power supply required)	GF PE-25 Positioner (199 190 100), EA21, EA31, EA42 Actuators, Generic Passive Current Loop Input and Output
	Current Loop Input & Output	Current Loop Input (passive, external power supply required)	

*NOTE: If a Dual Channel (S³L) device is connected to the 0486, only Channel 1 will be utilized. Ex: 3-8058-2, 3-2850-63



Overview

	Feature	Function	For details see:
①	Status LEDs	Indicates: Configuration Status, Error Messages, Device Status	LED Status table, page 6 Troubleshooting, page 24
②	Profibus Connector	M12 or DB9 Connector	Specifications, page 2
③	Channel 7 terminal	GF Valve Positioner Control Current Loop Input & Output	GF Valve and Current Loop Input and Output wiring, page 20-21
④	Channel 5, 6 terminals	Digital (S ³ L) Sensors Current Loop Input	Digital (S ³ L) device setup, page 11-19 Current Loop Input setup, page 10
⑤	Channel 1, 2, 3, 4 terminals	Digital (S ³ L) Sensors Frequency Sensors	Digital (S ³ L) device setup, page 11-19 Frequency device setup, page 8-9
⑥	Power Input terminal	24 VDC ±10% @ 10 W max., 0.40 A max. External Surge Protection Required, 2KV Common Mode, 1KV Differential Mode	Specifications, page 2 Power Wiring, page 22
⑦	Grounding terminal	Route all device grounding to this terminal. Concentrator <u>must</u> be grounded to protective earth ground.	Ground Wiring, page 22
⑧	Address Dial	Used to set PROFIBUS Address. Must match Address set in PLC.	Address Dial, page 22
	USB Interface	Not Used	

Terminal Identification

	Channel	Input	Label	Terminal Description
⑤	1	Digital (S ³ L) Frequency	GND	Sensor Ground
	2		DATA	Digital (S ³ L) Input
	3		Freq IN	Frequency Input
	4		+5V OUT	Sensor Power
④	5 6	Digital (S ³ L)	GND	Sensor Ground
			DATA	Digital (S ³ L) Input
		Current Loop Input	+5V OUT	Sensor Power
			L IN+	+ 4 to 20 mA Current Loop Input (passive)
③	7 (Valve)	GF Valve Positioner Control Current Loop Input & Output	L IN-	- 4 to 20 mA Current Loop Input (passive)
			L OUT-	- 4 to 20 mA Current Loop Output (passive)
			L OUT+	+ 4 to 20 mA Current Loop Output (passive)
			N/C	No Connection (not used)
			L IN-	- 4 to 20 mA Current Loop Input (passive)
			L IN+	+ 4 to 20 mA Current Loop Input (passive)

LED Status

	Channel	LED Label	LED appearance	Status
⑥		Power	 Green (solid)	Power
			 Off	No Power
⑤	1	Freq	 Green (solid)	Configured and Working
			 Off	Not Configured
	2 3 4	S ³ L	 Green (solid)	Configured and Working
			 Green (flashing)	Configured and Device Error
			 Red (solid)	Configured and Wrong Device
			 Red (flashing)	Configured and No Device
			 Off	Not Configured
④	5 6	S ³ L	 Green (solid)	Configured and Working
			 Green (flashing)	Configured and Device Error
			 Red (solid)	Configured and Wrong Device
			 Red (flashing)	Configured and No Device
			 Off	Not Configured
		Loop	 Green (solid)	Configured and In Range
			 Red (solid)	Configured and Out of Range
			 Off	Not Configured
③	7 (Valve)	Out	 Green (solid)	Configured and In Range
			 Green (flashing)	Configured and Out of Range
			 Off	Not Configured
		In	 Green (solid)	Configured and In Range
			 Red (solid)	Configured and Out of Range
			 Off	Not Configured
②		Profibus	 Green (solid)	Configured and Communicating
			 Green (flashing)	Waiting to be Configured
			 Off	No Power

DIN Rail Hardware Installation

DIN rail hardware included:

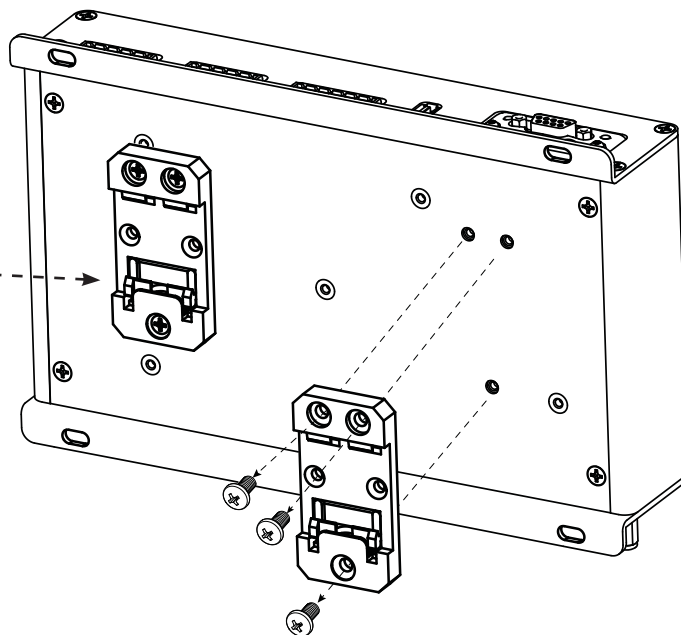
- (2) 35 mm DIN rail 'C' clips,
- (6) #6-32, 3/8" flat screws for 'C' clips

DIN rail 'C' clamps only install in one direction, with the spring-loaded tab on bottom.



WARNING:

Concentrator must be grounded to protective earth ground.

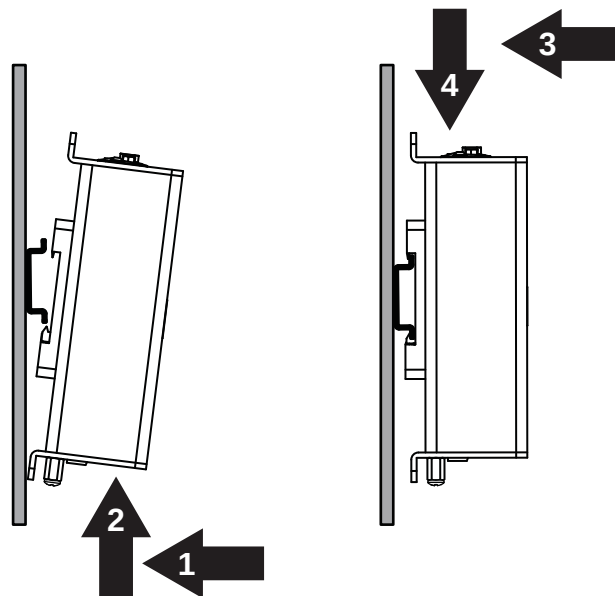


DIN Rail Mounting

The 0486 Profibus Concentrator is designed for mounting inside a protected enclosure.

1. While rotating concentrator top away from DIN rail, place spring-loaded tab under DIN rail.
2. Lift up to compress spring-loaded tab.
3. Rotate top toward DIN rail.
4. Lower tab down onto DIN rail

To Remove: Reverse the above steps.

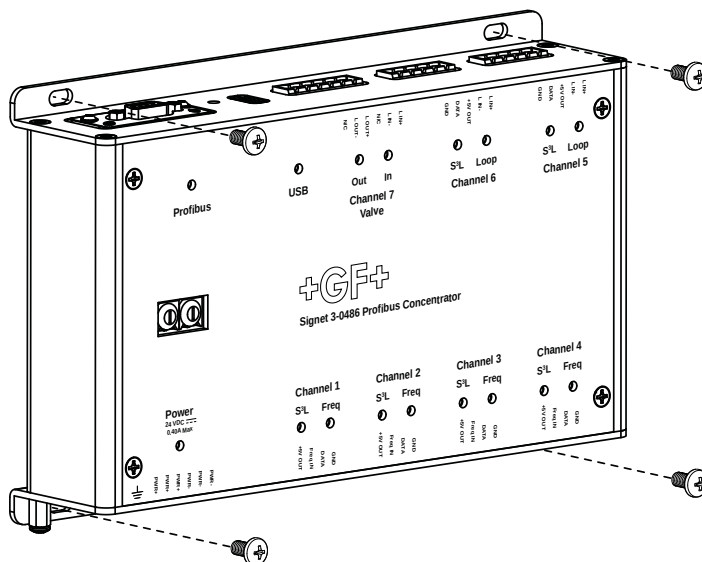
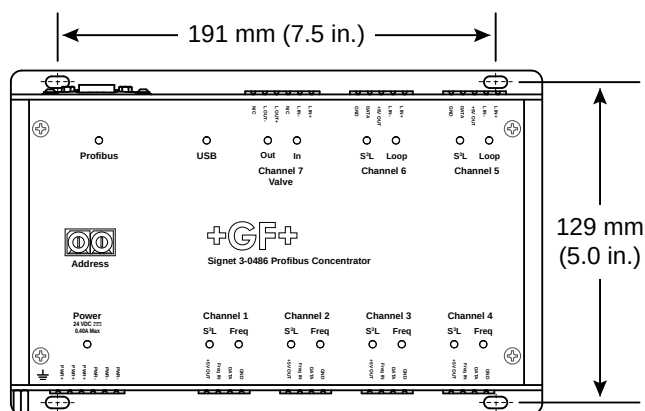


Surface Mounting

The 0486 Profibus Concentrator is designed for mounting inside a protected enclosure.

Customer Supplied Hardware:

- (4) M4 (#10) pan head screws



Frequency Flow Sensors

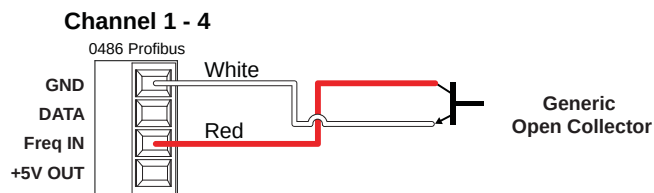
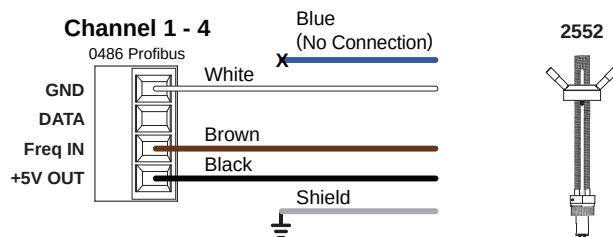
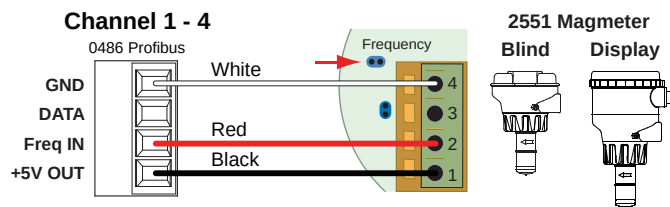
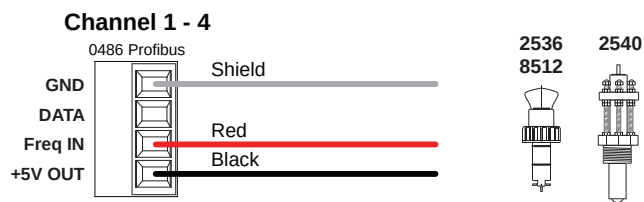
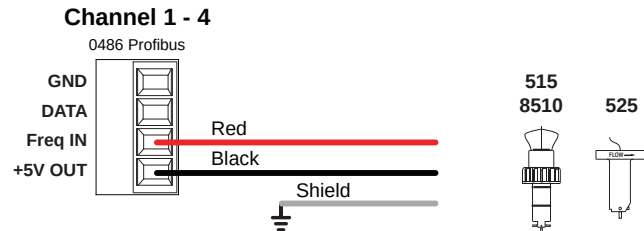
Compatible Sensors and Devices

515, 525, 2000, 2100, 2507, 2536, 2537-2, 2540, 2551*, 2552*, 220, 330, U1000, U3000, U4000, Generic Open Collector Devices

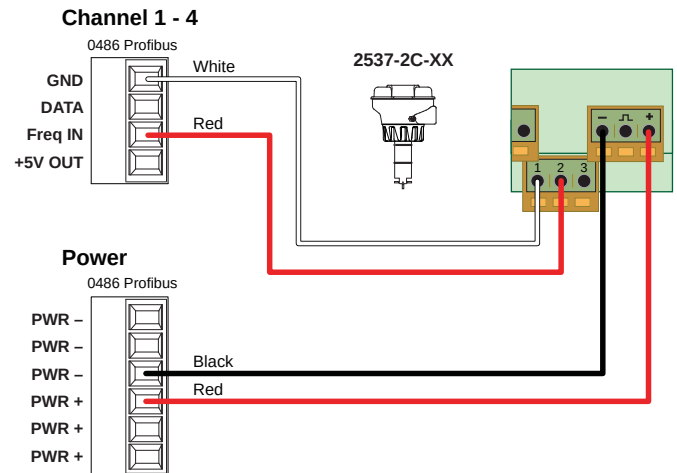
*NOTE: Frequency 2551 & 2552 configuration only. For digital (S³L) see page 12-13.

Measurement..... Flow

Channel..... 1, 2, 3, 4



NOTE: Concentrator supplies an internal pull up to 5 volts.



Cyclical Data

Primary Reading

Flow if K-Factor > 0
Frequency if K-Factor = 0
Type Float
Address Base +0

Secondary Reading

Totalizer
Type Unsigned 32 bit Integer
Address Base +4

Status (Read)

Type Unsigned 8 bit Integer
Address Base +8
Bit 0 Sensor signal is detected (> 1 Hz)
Bit 1 Not Used
Bit 2 Totalizer has rolled over
Bit 3 Measurement Error

Control Word (Write)

Reset Totalizer or Roll Over Bit
Type Unsigned 16 bit Integer
Address Base
Bit 0 0 to 1 transition resets Totalizer to 0
Bit 1 0 to 1 transition reset the Roll Over bit to 0

GSD Configuration

K-Factor

Unsigned 32 bit Integer

Range0 to 99 999 999 (8 digits)

Default0

Decimal Places

Position0, 1, 2, 4

Default0

Example: K-Factor of 10 000, with Decimal Position of 4, gives a K-Factor of 1.0000

Flow UnitsGPS, **GPM (Default)**, GPH, GPD, LPS, LPM, LPH, LPD, m³/s, m³/min, m³/hour, m³/day, ft³/sec, ft³/min, ft³/hour, ft³/day, MPS, ft/sec

Totalizer Power Up Action.....**Reset Totalizer (Default)** or Get Last Value on Power Up

Totalizer Factor

Divisor Constant

Range1 to 99 999 999 (8 digits)

Default1

Decimal Places

Position0, 1, 2, **4 (Default)**, 6, 8

Example: Divisor Range of 12 345, with Decimal Position of 4, gives a Multiplication Constant of 1.2345

Totalizer Factor is calculated as follows:

Totalizer Factor = Unit Conversion Factor • Number of Seconds in Timebase

Example 1

The flow reading is in Liters per Hour, the desired Totalizer reading is in Liters. In this example the Unit Conversion Factor will be 1, 1 Liter = 1 Liter. The number of seconds in the flow time base is 3600, 3600 Seconds = 1 Hour.

Totalizer Factor = 1 • 3600 = 3600

Example 2

The flow reading is in Gallons per Minute, the desired Totalizer reading is in Cubic Feet. The Unit Conversion Factor will be 0.13368, 1 Gallon = 0.13368 Cubic feet. The number of seconds in the timebase is 60 seconds, 60 Seconds = 1 Minute.

Totalizer Factor = 0.13368 • 60 = 8.0208

Averaging (in seconds)

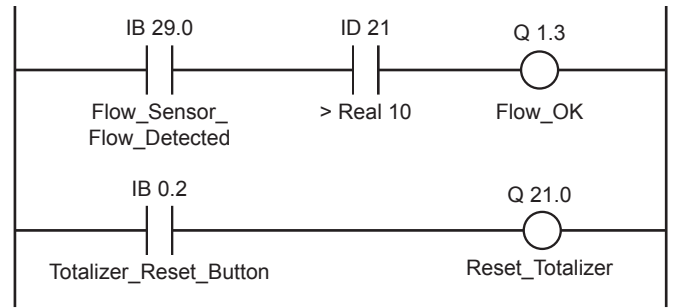
Range0, 10, 40, 120

Default0 (OFF)

Sensitivity**100% (Default)**, 50%, 30%, 25%, 20%, 15%, 10%, 7.5%, 5.0%, 2.5%

Frequency Input Type.....**Open Collector (Default)**, Sinusoidal (515 or 525)

Sample Program



Operation:

Upper Ladder Rung::

If Flow is detected and flow is greater than 10, turn on the Flow_OK Coil.

Lower Ladder Rung :

If Totalizer_Reset_Button is closed, then Reset_Totalizer to 0 (zero).

Current Loop Input

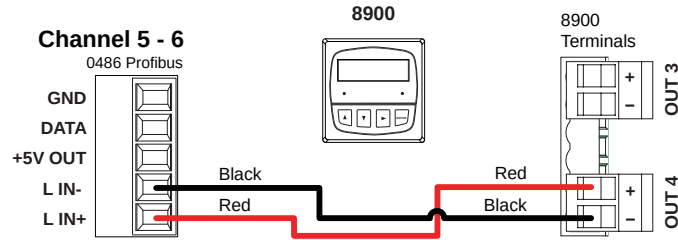
Compatible Devices.....4 to 20 mA versions of Signet sensors, other Current Loop devices

NOTE: For 4 to 20 mA versions of Signet sensors, refer to the appropriate manual for wiring instructions.

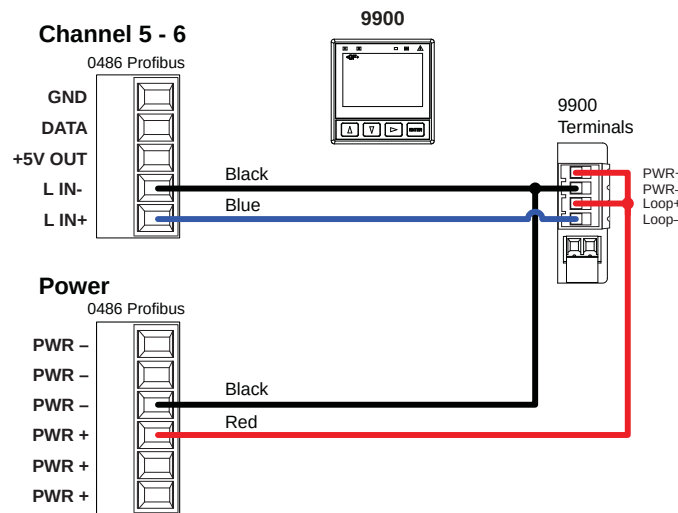
Measurement.....4 to 20 mA Current Loop Input

Channel.....5, 6

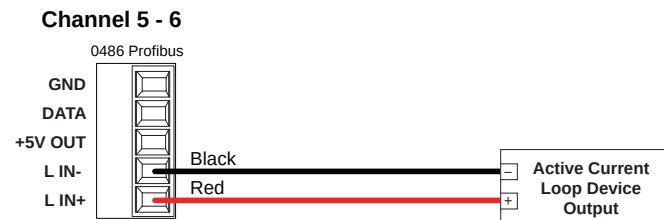
Active 4 to 20 mA Current Loop Input



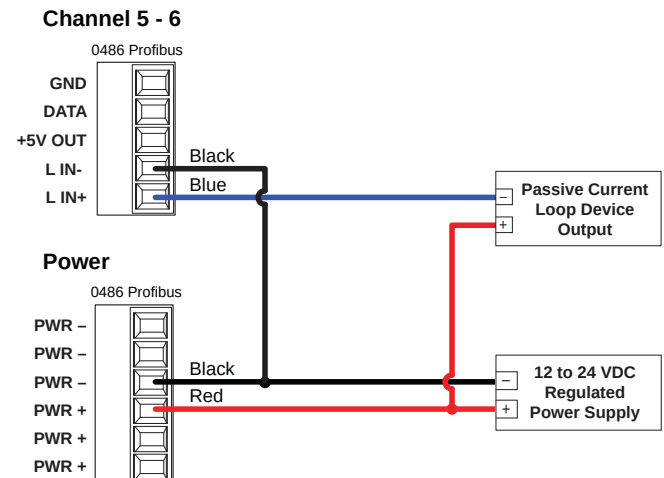
Passive 4 to 20 mA Current Loop Input



Generic Active 4 to 20 mA Current Loop Input



Generic Passive 4 to 20 mA Current Loop Input



Cyclical Data

Primary Reading

Scaled Current

Type.....Float

AddressBase +0

Secondary Reading

Raw Current

Type.....Float

AddressBase +4

Status (Read)

Type.....Unsigned 8 bit Integer

AddressBase +8

Bit 0Current is within range:
(≥ 4 mA and ≤ 20 mA)

Bit 1Current is in Error Range:
(≥ 3.6 mA and < 4.0 mA or
 ≤ 22 mA and > 20 mA)

Bit 2Current is Out of Range:
(< 3.6 mA or > 22 mA)

GSD Configuration

4 mA Setpoint

Signed 32 bit Integer

Range-99 999 999 to 99 999 999

Default.....0

4 mA Decimal Places

Position.....0, 1, 2, 4

Default.....4

Example: 4 mA Setpoint of 10 000, with Decimal Position of 4, gives a 4 mA Setpoint of 1.000

20 mA Setpoint

Signed 32 bit Integer

Range-99 999 999 to 99 999 999

Default.....1 000 000

20 mA Decimal Places

Position.....0, 1, 2, 4

Default.....4

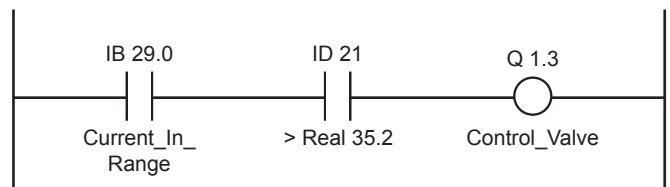
Example: 20 mA Setpoint of 1 000 000, with Decimal Position of 4, gives a 20 mA Setpoint of 100.000

Averaging (in seconds)

Range0, 4, 10, 30

Default0 (OFF)

Sample Program



Operation:

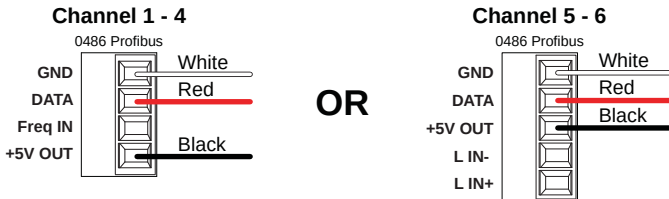
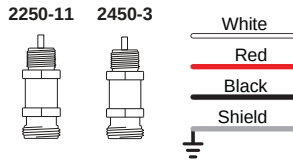
If Current_In_Range is on and Scaled Current is greater than 35.2 then turn on the Control_Valve Coil.

Digital (S³L) Level Sensors

Compatible Sensors 2250, 2450

Measurement Level

Channel 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

Level
Type Float
Address Base +0

Secondary Reading

Not Used; set to 0 (zero)
Type Float
Address Base +4

Status (Read)

Type Unsigned 8 bit Integer
Address Base +8
Bit 0 Level Sensor is Ready and Communicating
Bit 1 Wrong Device Found
Bit 2 Missing, No Sensor
Bit 3 Measurement Error

GSD Configuration

Specific Gravity x 0.001 (of Fluid being Measured)

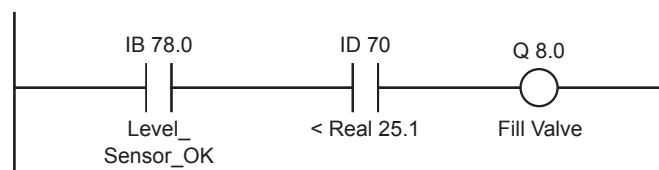
Unsigned 16 bit Integer (fixed decimal, 3rd position)
Range 100 to 9 999 (0.1 to 9.999 specific gravity)
Default 1 000 (Water = 1.000)

Level Units Centimeters (Default), Meters, Inches, Feet

Averaging (in seconds)

Range 0, 4, 10, 30
Default 0 (OFF)

Sample Program



Operation:

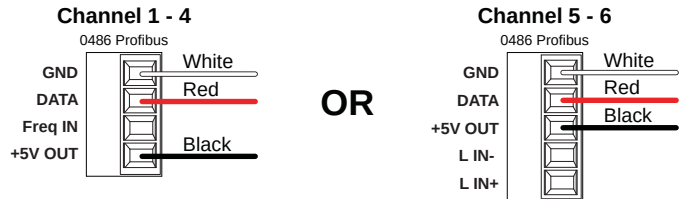
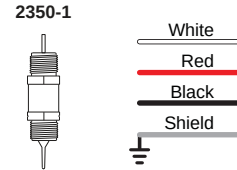
If level sensor is OK and communicating. Check if level is below 25.1 cm, if it is less than 25.1 turn on the fill valve.

Digital (S³L) Temperature Sensors

Compatible Sensors 2350

Measurement Temperature

Channel 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

Temperature
Type Float
Address Base +0

Secondary Reading

Not Used; set to 0 (zero)
Type Float
Address Base +4

Status (Read)

Type Unsigned 8 bit Integer
Address Base +8
Bit 0 Temperature Sensor is Ready and Communicating
Bit 1 Wrong Device Found
Bit 2 Missing, No Sensor
Bit 3 Measurement Error

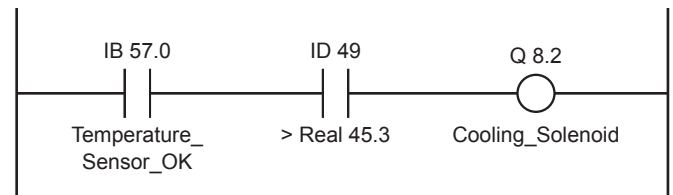
GSD Configuration

Temperature Units Celsius (Default), Fahrenheit

Averaging (in seconds)

Range 0, 3, 10, 30
Default 0 (OFF)

Sample Program



Operation:

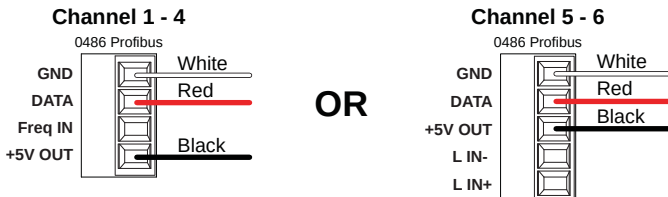
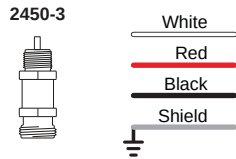
If Temperature sensor is OK and communicating. Check if Temperature is above 45.3, if it is above 45.3 turn on the cooling solenoid.

Digital (S³L) Pressure Sensors

Compatible Sensors 2450

Measurement Pressure

Channel 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

Pressure
Type Float
Address Base +0

Secondary Reading

Not Used; set to 0 (zero)
Type Float
Address Base +4

Status (Read)

Type Unsigned 8 bit Integer
Address Base +8
Bit 0 Pressure Sensor is Ready and Communicating
Bit 1 Wrong Device Found
Bit 2 Missing, No Sensor
Bit 3 Measurement Error

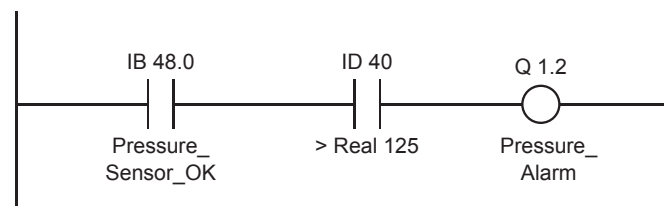
GSD Configuration

Pressure Units PSI (Default), Bar, kPa

Averaging (in seconds)

Range 0, 4, 10, 30
Default 0 (OFF)

Sample Program



Operation:

If pressure sensor is OK and communicating check if pressure is greater than 125. If it is greater then 125, turn on the Pressure Alarm.

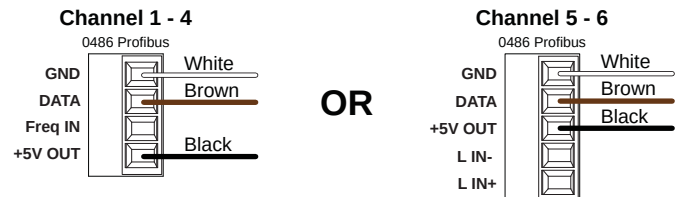
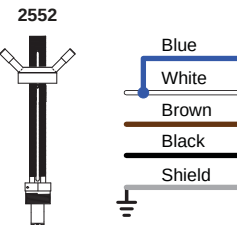
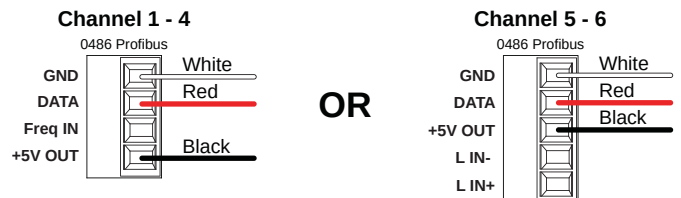
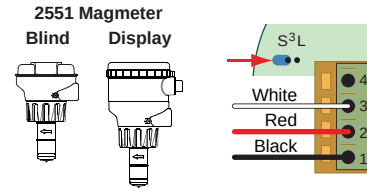
Digital (S³L) Flow Sensors

Compatible Sensors 2551, 2552

NOTE: Digital (S³L) 2551 & 2552 configuration only.
For frequency see page 8-9.

Measurement Flow

Channel 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

Flow
Type Float
Address Base +0

Secondary Reading

Totalizer
Type Unsigned 32 bit Integer
Address Base +4

Status (Read)

Type Unsigned 8 bit Integer
Address Base +8
Bit 0 Flow Sensor is Ready and Communicating
Bit 1 Wrong Device Found
Bit 2 Missing, No Sensor
Bit 3 Measurement Error
Bit 4 Totalizer Overflow

Control Word (Write)

Type Byte
Address Base
Bit 0 Low to High transition resets
Totalizer to 0 (Zero)
Bit 1 Low to High transition resets
Totalizer Overflow Flag

GSD Configuration

K-Factor

Unsigned 32 bit Integer

Range 0 to 99 999 999 (8 digits)

Default..... 0

Decimal Places

Position 0, 1, 2, 4

Default..... 0

Example: K-Factor of 10 000, with K-Factor Decimal Position of 4, gives a K-Factor of 1.000

Flow Units GPS, **GPM (Default)**, GPH, GPD, LPS, LPM, LPH, LPD, m³/s, m³/min, m³/hour, m³/day, ft³/sec, ft³/min, ft³/hour, ft³/day, MPS, ft/sec

Totalizer Power Up Action... **Reset Totalizer (Default)** or Get Last Value on Power Up

Totalizer Factor

Divisor Constant

Range **1 (Default)** to 99 999 999 (8 digits)

Decimal Places

Position 0, 1, 2, **4 (Default)**, 6, 8

Example: Divisor Range of 12 345, with Decimal Position of 4, gives a Multiplication Constant of 1.2345

Totalizer Factor is calculated as follows

*Totalizer Factor = Unit Conversion Factor * Number of Seconds in Timebase*

Example 1

The flow reading is in Liters per Hour, the desired Totalizer reading is in Liters. In this example the Unit Conversion Factor will be 1, 1 Liter = 1 Liter. The number of seconds in the flow time base is 3600, 3600 Seconds = 1 Hour.

*Totalizer Factor = 1 * 3600 = 3600*

Example 2

The flow reading is in Gallons per Minute, the desired Totalizer reading is in Cubic Feet. The Unit Conversion Factor will be 0.13368, 1 Gallon = 0.13368 Cubic feet. The number of seconds in the timebase is 60 seconds, 60 Seconds = 1 Minute.

*Totalizer Factor = 0.13368 * 60 = 8.0208*

Averaging (in seconds)

Range 0, 0.2, 0.4, 0.8, 1.6, 3.3, 6.6, 13, 26, 52, 105

Default 0 (OFF)

Sensitivity **100% (Default)**, 50%, 30%, 25%, 20%, 15%, 10%, 7.5%, 5.0%, 2.5%

Cutoff Low Flow Percentage of 2.5 m/sec

Unsigned 8 bit Integer

Range 0 to 100

GSD Configuration

Default..... 0 (Zero %)

Formulas for Low Flow Cutoff

Low Flow Cutoff GPM =

$20.0784 * (\text{Pipe ID in inches})^2 * \text{Low Flow Cutoff Percentage}$

Example: 2 in. OD, Sch 80, PVC Pipe, Pipe ID = 1.939 in.

Low Flow Cutoff Percentage = 12%

*Low Flow Cutoff GPM = $20.0784 * (1.939)^2 * 0.12$*

Low Flow Cutoff GPM = 9.0587

Low Flow Cutoff LPM =

$0.1178 * (\text{Pipe ID in mm})^2 * \text{Low Flow Cutoff Percentage}$

Example: DN50, PN12, PVC Pipe, Pipe ID = 53.7 mm

Low Flow Cutoff Percentage = 25%

*Low Flow Cutoff LPM = $0.1178 * (53.7)^2 * 0.25$*

Low Flow Cutoff LPM = 84.92

Notch Filter 50 Hz (Default), 60 Hz

Totalizer Action

Negative Flow Use Negative Flow (Default),
Use Absolute Value

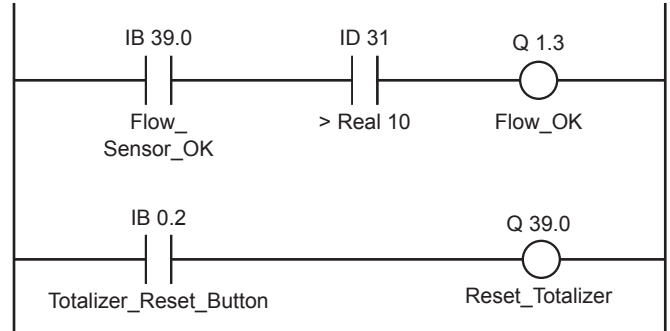
Use Negative Flow

Flow against the direction arrow on the magmeter will cause the totalizer to count down. Flow with the direction arrow causes the totalizer to count up.

Use Absolute Value

The totalizer will count up no matter the direction of flow.

Sample Program



Operation:

Upper Ladder Rung:

If flow sensor is OK and communicating check if flow is greater than 10.

If it is greater then 10 turn on the Flow OK relay.

Lower Ladder Rung:

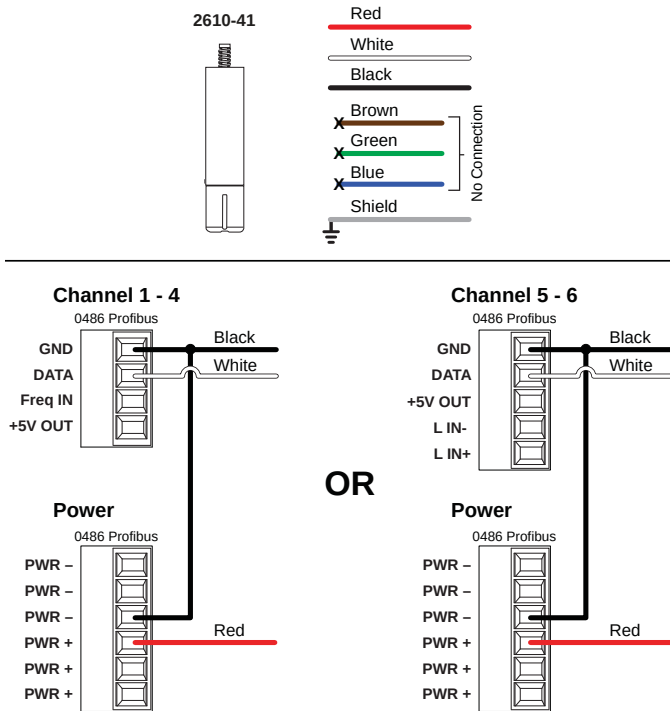
If input IB 0.2 is active reset the totalizer of the flow sensor.

Digital (S³L) Dissolved Oxygen Sensors

Compatible Sensors 2610

Measurement Dissolved Oxygen

Channel 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

Dissolved Oxygen
Type Float
Address Base +0

Secondary Reading

Temperature (Default)
Type Float
Address Base +4
Cap Expiration Date, Unix Timestamp
Type Integer 32 bits
Address Base +4

Dissolved Oxygen Sensor Current Time, Unix Timestamp
Type Integer 32 bits
Address Base +4

Status (Read)

Type Unsigned 8 bit Integer
Address Base +8
Bit 0 Dissolved Oxygen Sensor is Ready and Communicating
Bit 1 Wrong Device Found
Bit 2 Missing, No Sensor
Bit 3 Measurement Error
Bit 4 Missing Measurement Cap
Bit 5 Expired Measurement Cap
Bit 6 Secondary Reading is Temperature
Bit 7 Secondary Reading is Cap Expiration Timestamp

Cyclical Data

Control Word (Write)

Address Base
Bit 0 Set bit to 1 to read Measurement Cap Expiration date as Secondary
Bit 1 Set bit to 1 to read Dissolved Oxygen sensor Current Time as Secondary

GSD Configuration

Dissolved Oxygen Units... ppm (Default), Percent Saturation, Torr (Partial Pressure of Oxygen)

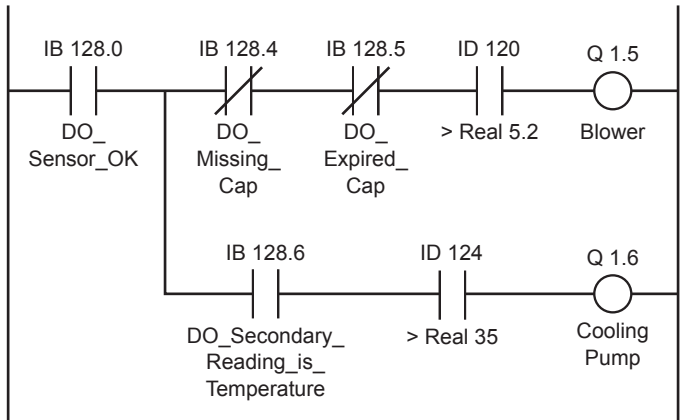
DO Temperature Units Celsius (Default), Fahrenheit

Barometric Pressure mBar x 0.01 (Altitude)
Unsigned 32 bit Integer (fixed decimal, 2nd position)
Range 50 700 to 111 450
(507.00 mBar to 1114.50 mBar)
Default 101 325 (1013.25 mBar)

Salinity PSU x 0.1
Unsigned 32 bit Integer (fixed decimal, 1st position)
Range 0 to 420 (0 to 42.0 PSU)
Default 0

Averaging (in seconds)
Range 0, 4, 6, 12
Default 0 (OFF)

Sample Program



Operation:

Upper Ladder Rung:

If DO sensor is OK and communicating and DO Missing Cap is not active and DO Expired Cap is not active check if the DO level is greater than 5.2. If the DO level is greater than 5.2 activate the Blower.

Lower Ladder Rung:

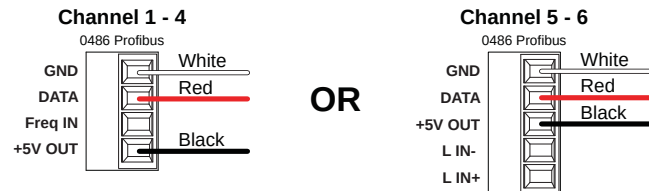
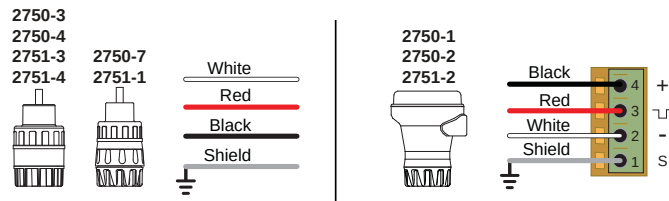
If the DO sensor is OK and communicating and the Secondary reading is Temperature, check if the temperature is above 35. If the temperature is above 35, turn on the Cooling Pump.

Digital (S³L) pH Sensor Electronics

Compatible Sensors 2750, 2751

Measurement pH

Channel 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

pH
Type Float
Address Base +0

Secondary Reading

Temperature (Default)
Type Float
Address Base +4
Error Code if Status Bit 3 equals 1
Type Unsigned 32 bit Integer
Address Base +4
Bit 0 Missing Probe
Bit 1 Wrong Probe

Glass Impedance (2751 Only)
Type Float
Address Base + 4

Raw millivolts
Type Float
Address Base +4

Status (Read)

Type Unsigned 8 bit Integer
Address Base +8
Bit 0 pH sensor is Ready and Communicating
Bit 1 Wrong Device Found
Bit 2 Missing, No Sensor
Bit 3 Measurement Error (see Secondary Reading)
Bit 4 Sensor Busy
Bit 5 Secondary Reading is Temperature
Bit 6 Secondary Reading is pH Glass Impedance (2751 Only)
Bit 7 Secondary Reading is Raw millivolts

Control Word (Write)

Address Base
Bit 0 Transition from 0 to 1 will start Glass Impedance Measurement (2751 Only)
Bit 1 Set bit to 1 to read raw millivolts as Secondary

GSD Configuration

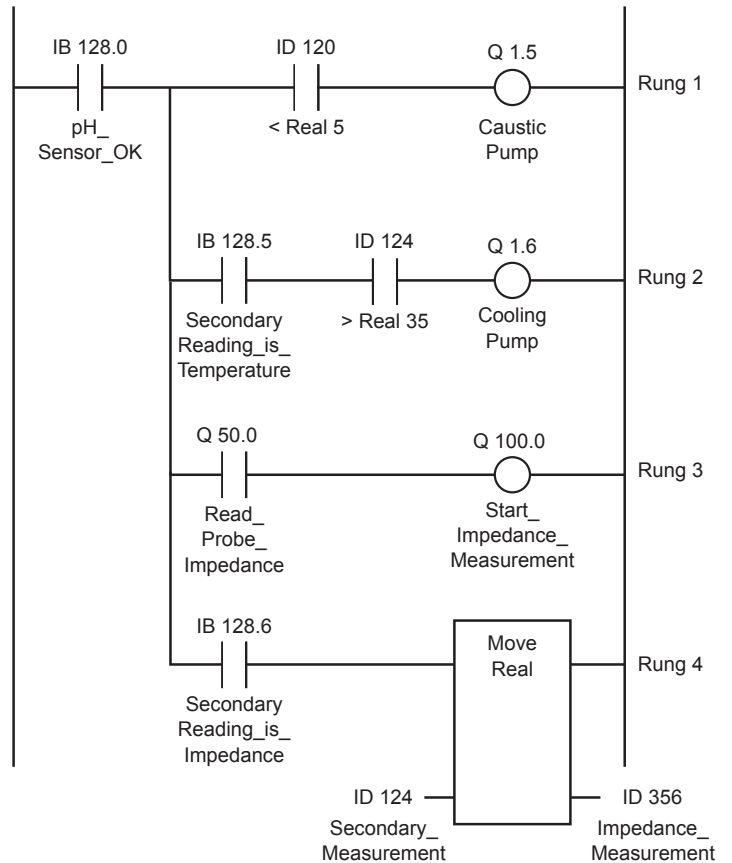
pH Temperature Units Celsius (Default), Fahrenheit

Averaging (in seconds)

Range 0, 2, 4, 12

Default 0 (OFF)

Sample Program



Operation:

Ladder Rung 1:
If pH sensor is OK and communicating, check if the pH level is less than 5. If the pH level is less than 5 activate the caustic pump.

Ladder Rung 2:
If the pH sensor is OK and communicating and the Secondary reading is Temperature, check if the temperature is above 35. If the temperature is above 35, turn on the Cooling Pump.

Ladder Rung 3:
Closing the contact Q50.0 will initiate a probe impedance measurement.

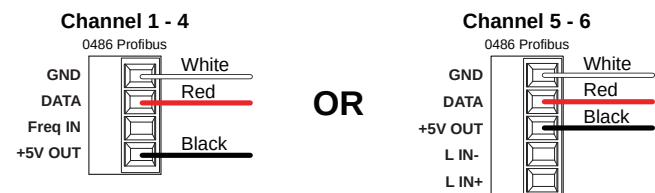
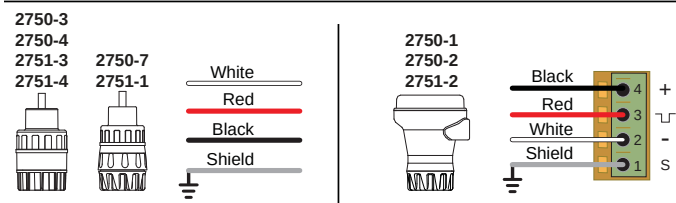
Ladder Rung 4:
When the impedance measurement is complete, contact IB 128.6 will close. This will move the impedance measurement into ID 356.

Digital (S³L) ORP Sensor Electronics

Compatible Sensors 2750, 2751

Measurement..... ORP

Channel 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

ORP

Type..... Float

Address Base +0

Secondary Reading

Raw millivolts

Type..... Float

Address Base +4

Status (Read)

Type..... Unsigned 8 bit Integer

Address Base +8

Bit 0 ORP sensor is Ready and Communicating

Bit 1 Wrong Device Found

Bit 2 Missing, No Sensor

Bit 3 Measurement Error

Bit 4 Missing Probe

Bit 5 Wrong Probe

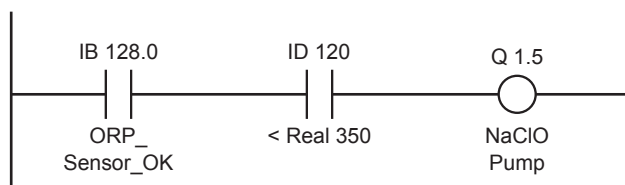
GSD Configuration

Averaging (in seconds)

Range..... 0, 2, 4, 12

Default 0 (OFF)

Sample Program



Operation:

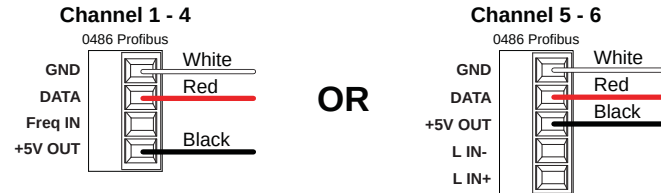
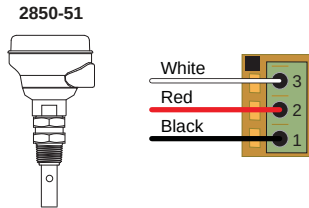
If ORP sensor is OK and communicating, check if the ORP level is less than 350. If the ORP level is less than 350 activate the sodium hypochlorite pump.

Digital (S³L) Cond/Res Sensor Electronics

Compatible Sensors 2850

Measurement..... Conductivity / Resistivity

Channel 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

Conductivity
Type Float
Address Base +0

Secondary Reading

Temperature (Default)
Type Float
Address Base +4

Status (Read)

Type Unsigned 8 bit Integer
Address Base +8
Bit 0 Conductivity sensor is Ready and Communicating
Bit 1 Wrong Device Found
Bit 2 Missing, No Sensor
Bit 3 Measurement Error
Bit 4 Sensor Busy
Bit 5 Conductivity Over Range
Bit 6 Conductivity Calculation Error

GSD Configuration

Temperature Units Celsius (Default), Fahrenheit

Conductivity Units uS (Default), mS, Megohm

Temperature Compensation None (Default), Linear, Pure Water

Temperature Compensation Percentage x 0.001

Unsigned 16 bit Integer (fixed decimal, 3rd position)

Range 0 to 6 000 (0 to 6.000)

Default 2 000 (2.000%)

Cell Constant

Unsigned 16 bit Integer

Range 0 to 99 999

Default 10 000

Custom Cell Constant Decimal Places

Position 3 to 7

Default 4

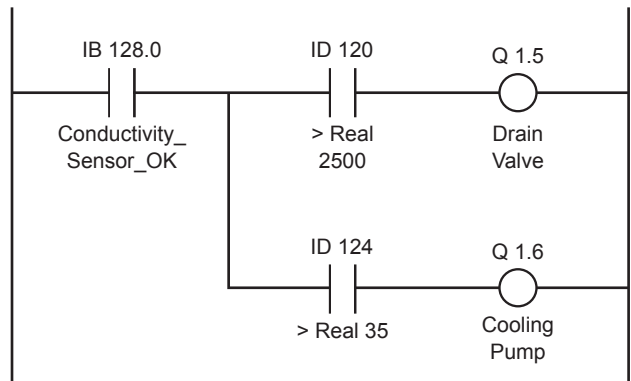
Example: Cell Constant of 20 000, with Decimal Position of 3, gives a Conductivity Cell Constant of 20.000

Averaging (in seconds)

Range 0, 2, 4, 12

Default 0 (OFF)

Sample Program



Operation:

Upper Ladder Rung:

If Conductivity sensor is OK and communicating, check if the conductivity level is greater than 2500. If the conductivity level is greater than 2500, activate the drain valve.

Lower Ladder Rung:

If the Conductivity sensor is OK and communicating, check if the temperature is above 35. If the temperature is above 35, turn on the cooling pump.

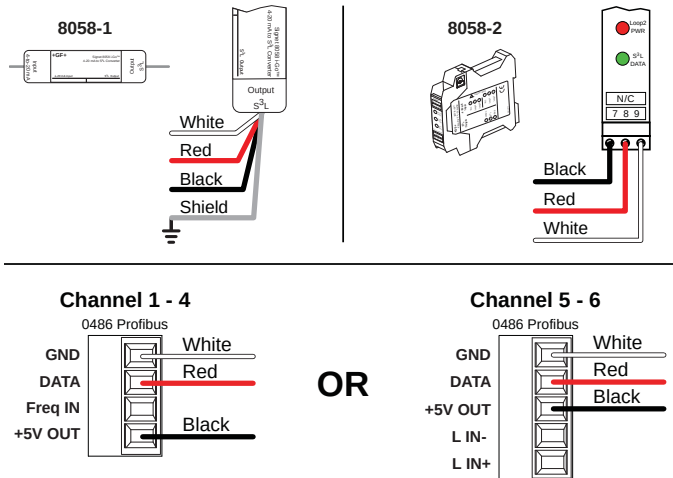
Current Loop to Digital (S³L) Input

Compatible Devices..... 8058-1, 8058-2

NOTE: Only Loop 1 (Terminals 1 and 2) is supported on the 8058-2, two channel iGo Signal Converter.

Measurement..... 4 to 20 mA input (converted to S³L)

Channel..... 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

Scaled Current

Type..... Float

Address Base +0

Secondary Reading

Raw Current

Type..... Float

Address Base +4

Status (Read)

Type..... Unsigned 8 bit Integer

Address Base +8

Bit 0 8058 is Ready and Communicating

Bit 1 Wrong Device Found

Bit 2 Missing, no, Sensor

Bit 3 Current Under Range < 3.6 mA

Bit 4 Current Over Range > 22 mA

GSD Configuration

4 mA Setpoint

Signed 32 bit Integer

Range -99 999 999 to +99 999 999

Default..... 0

4 mA Decimal Places

Position 0, 1, 2, or 4

Default..... 4

Example: 4 mA Setpoint of 10 000, with Decimal Position of 4, gives a 4 mA Setpoint of 1.000

20 mA Setpoint

Signed 32 bit Integer

Range -99 999 999 to 99 999 999

Default..... 1 000 000

20 mA Decimal Places

Position 0, 1, 2, or 4

Default..... 4

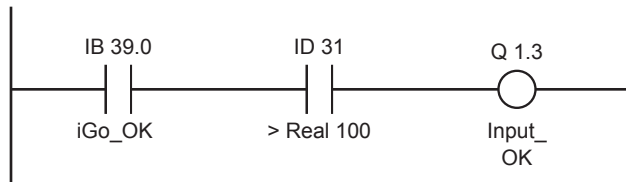
Example: 20 mA Setpoint of 1 000 000, with Decimal Position of 4, gives a 20 mA Setpoint of 100.0000

Averaging (in seconds)

Range 0, 4, 10, 30

Default 0 (OFF)

Sample Program



Operation:

If iGo Signal Converter is OK and communicating, check if the scaled output is greater than 100.

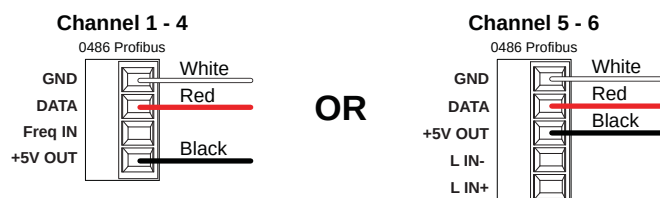
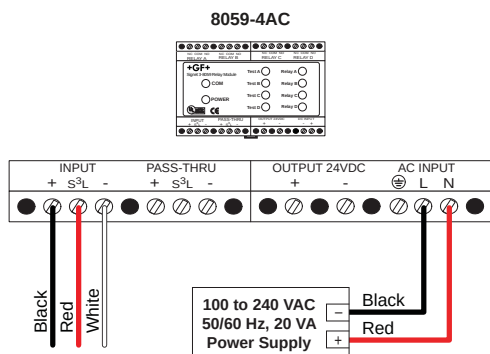
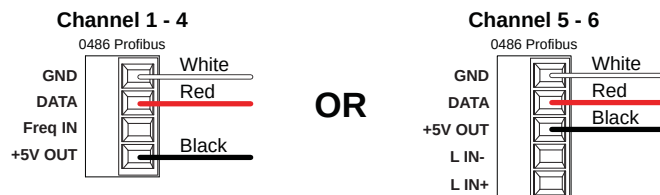
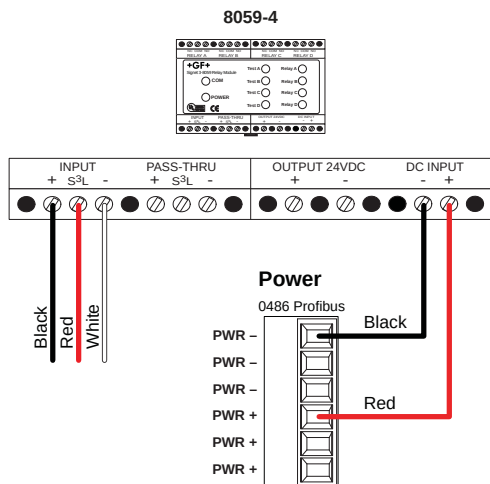
If the scaled output is greater than 100 turn on Input_OK.

Digital (S³L) External Relay Modules

Compatible Devices..... 8059

Measurement..... Relay Output Module

Channel 1, 2, 3, 4, 5, 6



Cyclical Data

Primary Reading

Status of Relays

Type..... Unsigned Byte

Address Base +3

Bit 0 Status Relay A: 1 = On, 0 = Off

Bit 1 Status Relay B: 1 = On, 0 = Off

Bit 2 Status Relay C: 1 = On, 0 = Off

Bit 3 Status Relay D: 1 = On, 0 = Off

Status (Read)

Type..... Unsigned 8 bit Integer

Address Base +8

Bit 0 8059 is Ready and Communicating

Bit 1 Wrong Device Found

Bit 2 Missing, No Sensor

Control (Write)

Relay Command

Type..... Unsigned 16 bit Integer

Address Base +0

Bit 0 Relay A Control: 1 = On, 0 = Off

Bit 1 Relay B Control: 1 = On, 0 = Off

Bit 2 Relay C Control: 1 = On, 0 = Off

Bit 3 Relay D Control: 1 = On, 0 = Off

GSD Configuration

Relay 1 (A) Failsafe

Range..... OFF, ON

Default OFF

Relay 2 (B) Failsafe

Range..... OFF, ON

Default OFF

Relay 3 (C) Failsafe

Range..... OFF, ON

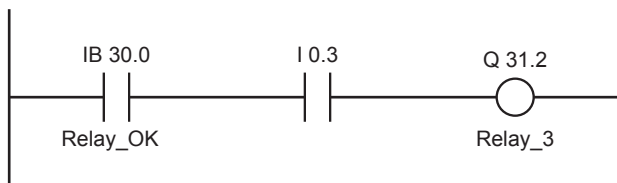
Default OFF

Relay 4 (D) Failsafe

Range..... OFF, ON

Default OFF

Sample Program



Operation:

If Relay is OK and communicating, check if the input I 0.3 is ON.

If the input I 0.3 is on, then turn on Relay 3.

GF Valve / Current Loop Input & Output

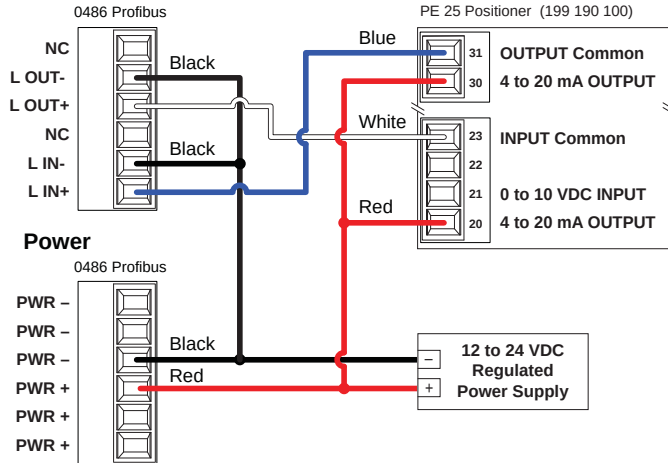
Compatible Devices..... PE-25 (EA21, EA31, EA42),
Current Loop Input and Output Devices

Measurement..... 4 to 20 mA Current Input and Output

Channel..... 7

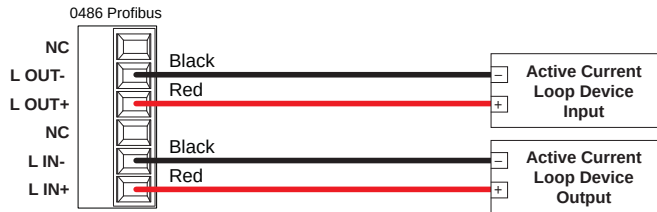
Passive PE 25 Valve Positioner Wiring

Channel 7



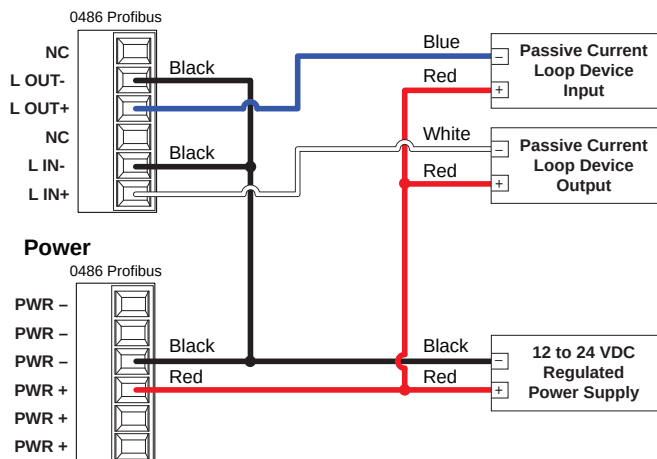
Generic Active Current Loop Input & Output Wiring

Channel 7



Generic Passive Current Loop Input & Output Wiring

Channel 7



Cyclical Data

Primary Input (Read)

Current Input

Type..... Unsigned 16 bit Integer
(fixed decimal, 3rd position)

Range..... 0 to 24 000 (0 mA to 24.000 mA)

Address Base +0

Primary Output (Write)

Current Output

Type..... Unsigned 16 bit Integer
(fixed decimal, 3rd position)

Range..... 0 to 24 000 (0 mA to 24.000 mA)

Address Base +0

Status (Read)

Type..... Unsigned 8 bit Integer

Address Base +2

Bit 0 Current is within Range
(≥ 4 mA and ≤ 20 mA)

Bit 1 Current is in Error Range:
(≥ 3.6 mA and < 4.0 mA or
 ≤ 22 mA and > 20 mA)

Bit 2 Current is Out of Range
(< 3.6 mA or > 22 mA)

GSD Configuration

Current Output Failsafe

Range..... 0 to 24 000 (0 mA to 24.000 mA)

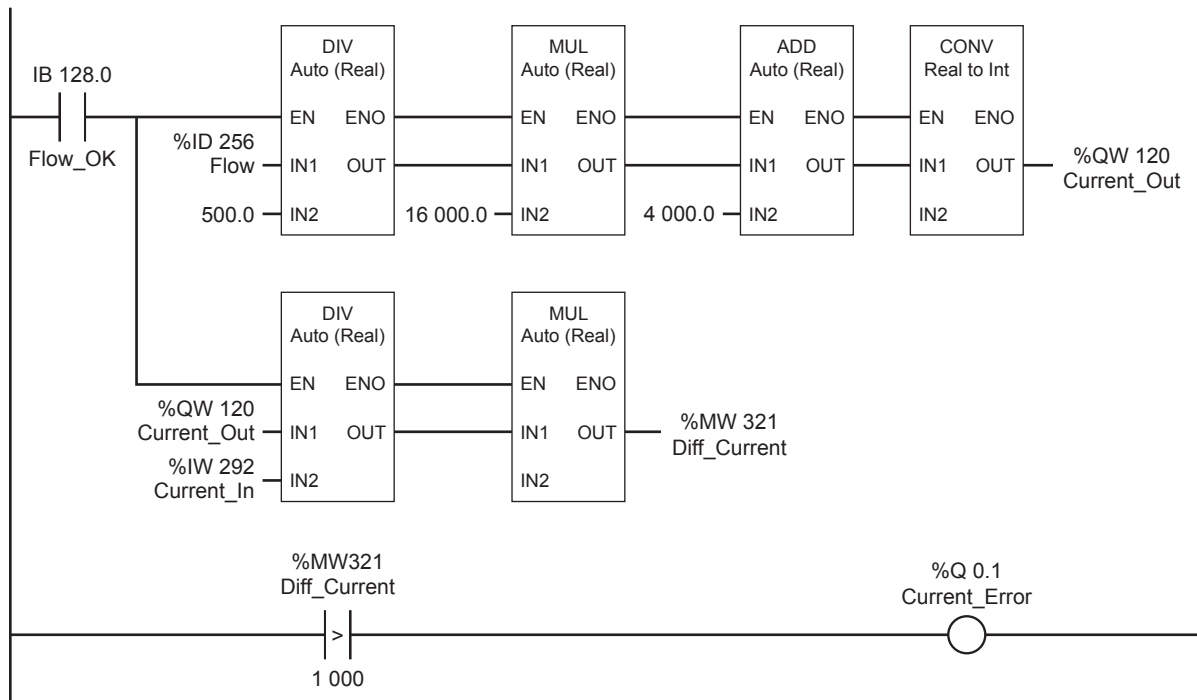
Default 0

Averaging (in seconds)

Range..... 0, 4, 10, 30

Default 0 (OFF)

Sample Program



Operation:

Upper Ladder Rung:

If flow is present, the Flow rate is divided by 500 to get a percentage. The percentage is multiplied by 16 000 and then 4 000 is added to the result. This converts the Flow rate to a 4 000 to 20 000 range.

Middle Ladder Rung:

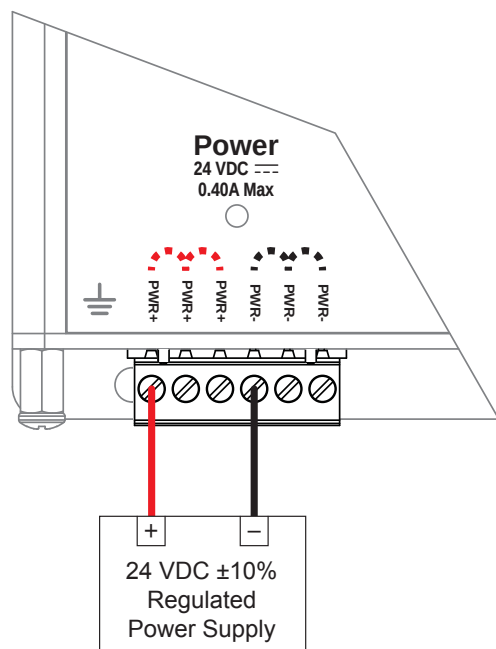
The Current Output is subtracted from the Current Input and the absolute value of the result is taken.

Lower Ladder Rung:

If the difference between the Current Output and Current Input exceeds 1 000 (1.000 mA), the Current_Error coil is activated.

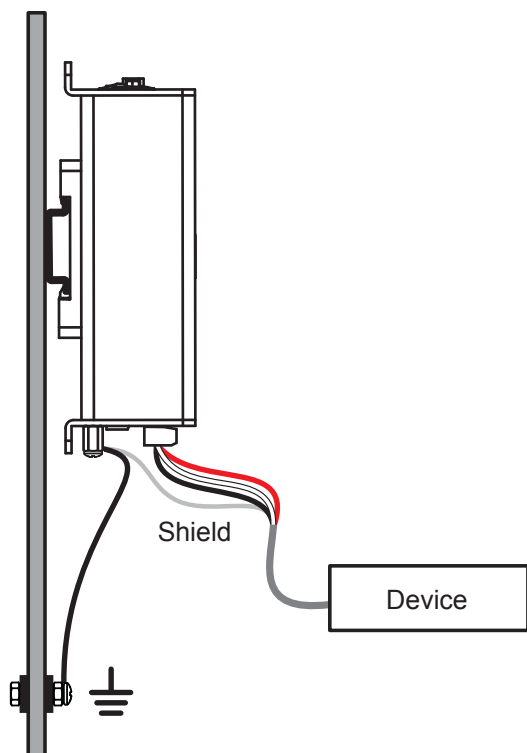
Power Wiring

- **PWR -** terminal ports are internally bonded.
- **PWR +** terminal ports are internally bonded.



Ground Wiring

- Route all device grounding to this terminal.
- Concentrator must be grounded to protective earth ground.
- **Recommended:**
Use the smallest possible length of ground wires of a large gauge, approx. 2 mm² (14 AWG).

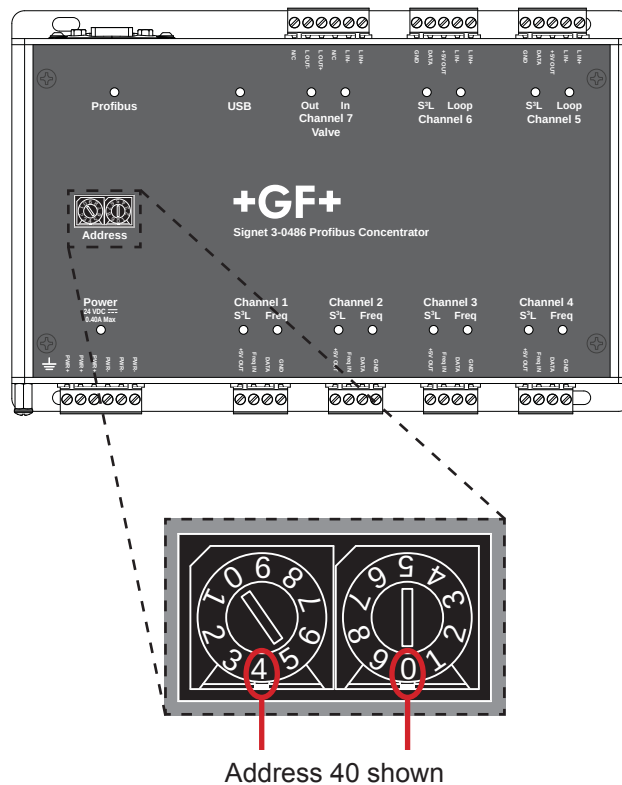


Address Dial

- Used to set PROFIBUS Address.
- Address Dial setting must match the Address set in PLC.
- Valid address range is 1 to 99:
 - Addresses 1 to 3 are reserved for Profibus masters.
 - **Recommended address range is 4 to 99.**

IMPORTANT:

Profibus Concentrator power must be cycled for address changes to take effect.



Identification and Maintenance Functions

Profibus Concentrator supports the following I&M Functions:

IM_Data_Block
Static

Name	Data Type	Value (Constant if Shown)
Manufacture_ID	UInt 16	24661
Order_ID	String (20)	3-0486-D
Serial Number	String (16)	
Software Version	IM0_Version	
Type	Char	
Functional	USInt 8	
Bugfix	USInt 8	
Internal	USInt 8	
Hardware_Revision	UInt 16	
Revision_Counter	UInt 16	0
Profile_ID	UInt 16	16#F600
Profile_Specific_Type	UInt 16	3
IM_Version	UInt 16	
IM_Supported	UInt 16	

Maintenance and Service

There are no serviceable parts in the Concentrator, return units to GF Signet for repairs or service.

Disassembly of the Concentrator voids the warranty.

Cleaning and Disinfection

IMPORTANT:

The Concentrator is designed for installation in automation control cabinets and should not require cleaning and decontamination. If cleaning is required, use a slightly damp cloth to wipe dirt off the exterior of the Concentrator.

Do not allow liquid to enter the Concentrator.

Do not use liquid or sprays on the Concentrator, as this may damage the internal electronics. Use of liquids and sprays on the Concentrator voids the warranty.

Troubleshooting

LED Status or Issue	Possible Cause	Suggested Solution(s)
No LEDs illuminated / No Communication	Power Supply	Check power source: 24 VDC $\pm$ 10%, Regulated
Profibus LED flashing / No Communication	Incorrect PROFIBUS Address	Check PROFIBUS Address Switches and PLC configured Address.
	Profibus Cable Disconnected	Ensure Profibus Cable is properly connected and terminated at both ends.
Frequency LED is OFF	Channel is not configured for the specific mode of operation	The PLC GSD configuration needs to be updated for the specific mode of operation on the channel.
S ³ L LED is OFF		
Loop LED is OFF		
S ³ L LED is Flashing Green	The connect device is reporting an error	Refer to the device manual for troubleshooting.
The S ³ L LED is a continuous RED	An incorrect device is connected to this channel	Check that the correct device is wired to the channel. Check the PLC GSD configuration.
The Loop LED is a continuous RED	The current loop input is below 4 mA or above 20 mA	Check external loop source.
The S ³ L LED is Flashing RED	Channel is configured for a S ³ L device but no device is connected	Ensure S ³ L device is properly wired to the channel.

Ordering Information

Signet 0486 Profibus Concentrator

Mfr. Part No.	Code	Description
3-0486-D	159 001 839	DB9 Profibus connector, Profibus Concentrator
3-0486-M	159 001 840	M12 Profibus connector, Profibus Concentrator (Special Order Only)*

Replacement Parts

6682-1104	159 001 712	Loop Power Plug, 4 Pos, Right Angle (Channel 1-4)
6682-0051	159 866 089	Terminal block plug, 5 Pos. (Channel 5-6)
6682-0061	159 866 090	Terminal block plug, 6 Pos. (Channel 7 and Power)
3-0486.390	159 310 266	Profibus DIN mount kit (two DIN mount plates and six screws)

* signet-specialproduct@georgfischer.com



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 For the most up-to-date information, please refer to our website at www.gfsignet.com