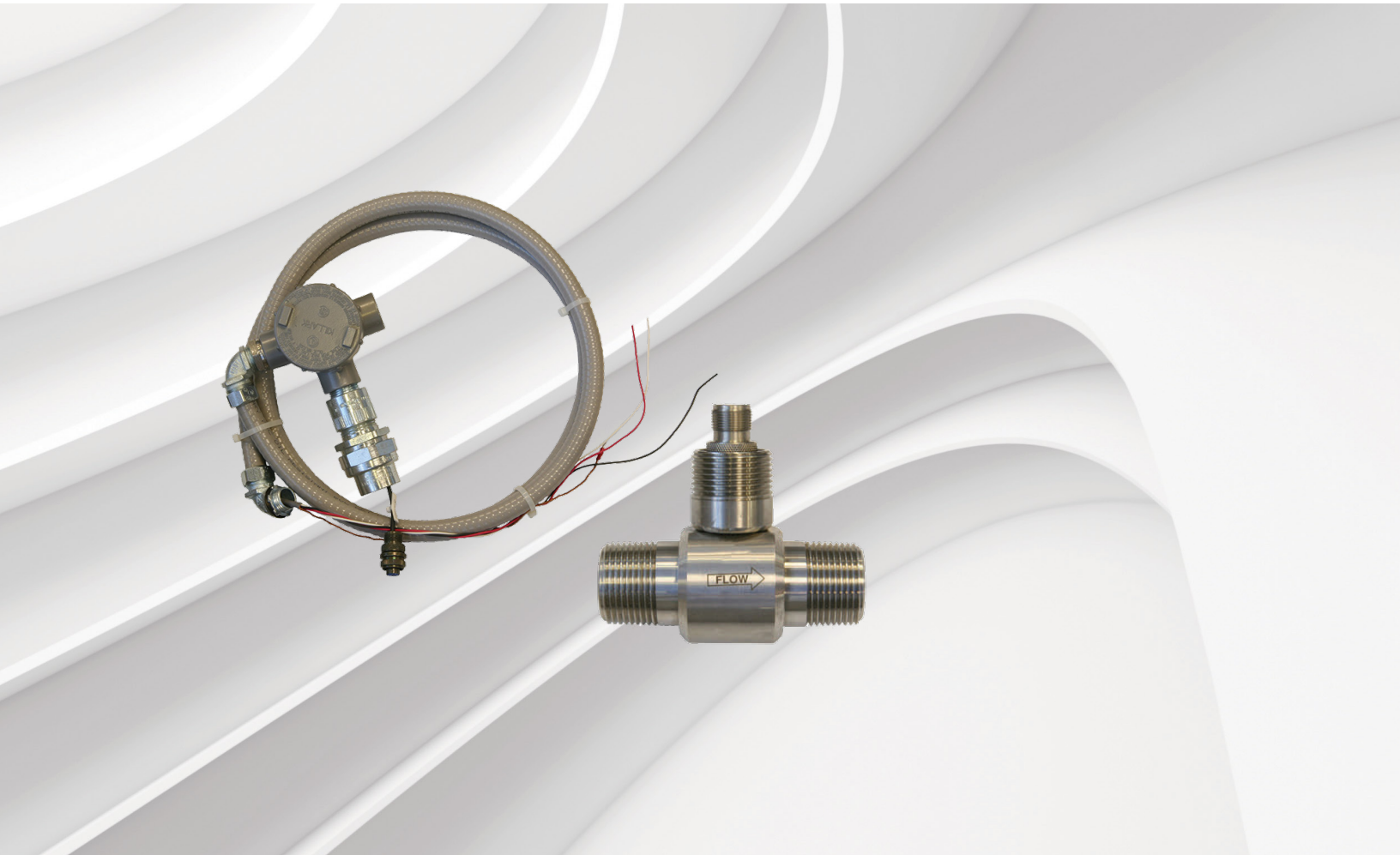
ABB MEASUREMENT & ANALYTICS | DATA SHEET

Magnetic pickup preamplifier overview

XSeries products



Description

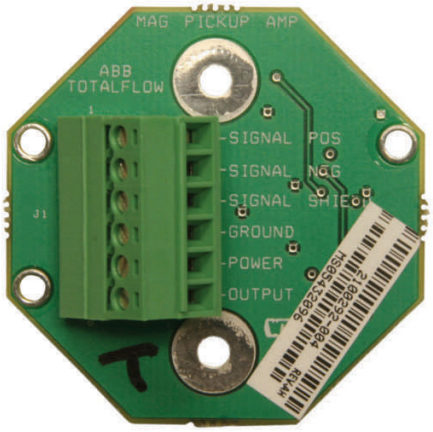
The ABB Totalflow Magnetic Pickup Preamplifier/Signal Conditioner is a high performance, low power, amplifier designed for amplifying and conditioning the output signals of a magnetic pickup (such as used in liquid turbine meters). Special design considerations and on-site testing were performed with the amplifier to insure reliable operation, even under extremely noisy conditions such as: the presence of variable frequency drives, motors, or pumps.

The unit's wide power supply voltage range combined with its very low current draw make the amplifier especially suitable for use in low power applications such as solar power and remote sensing applications up to 4000 feet1 or more from its power source. The amplifier has also been designed to drive highly capacitive loads, often used for input signal de-bouncing and filtering. The amplifier is especially recommended when using ABB Totalflow Flow Computers or Remote Controllers. It is also excellent for driving the digital inputs of any other device having 5VDC compatible inputs.

- Specifically designed for use with turbine flow meters
- Designed for extremely noisy environments
- Very low power consumption (600 µA)
- Wide temperature operation
- Wide power supply voltage range
- 5 Vdc output drive requires no additional pull-up resistors
- 0 to 20 KHz operation
- Capable of driving very long cables with highly capacitive loads[1]

The Magnetic Pickup Preamplifier/Signal Conditioner is available in several configurations.

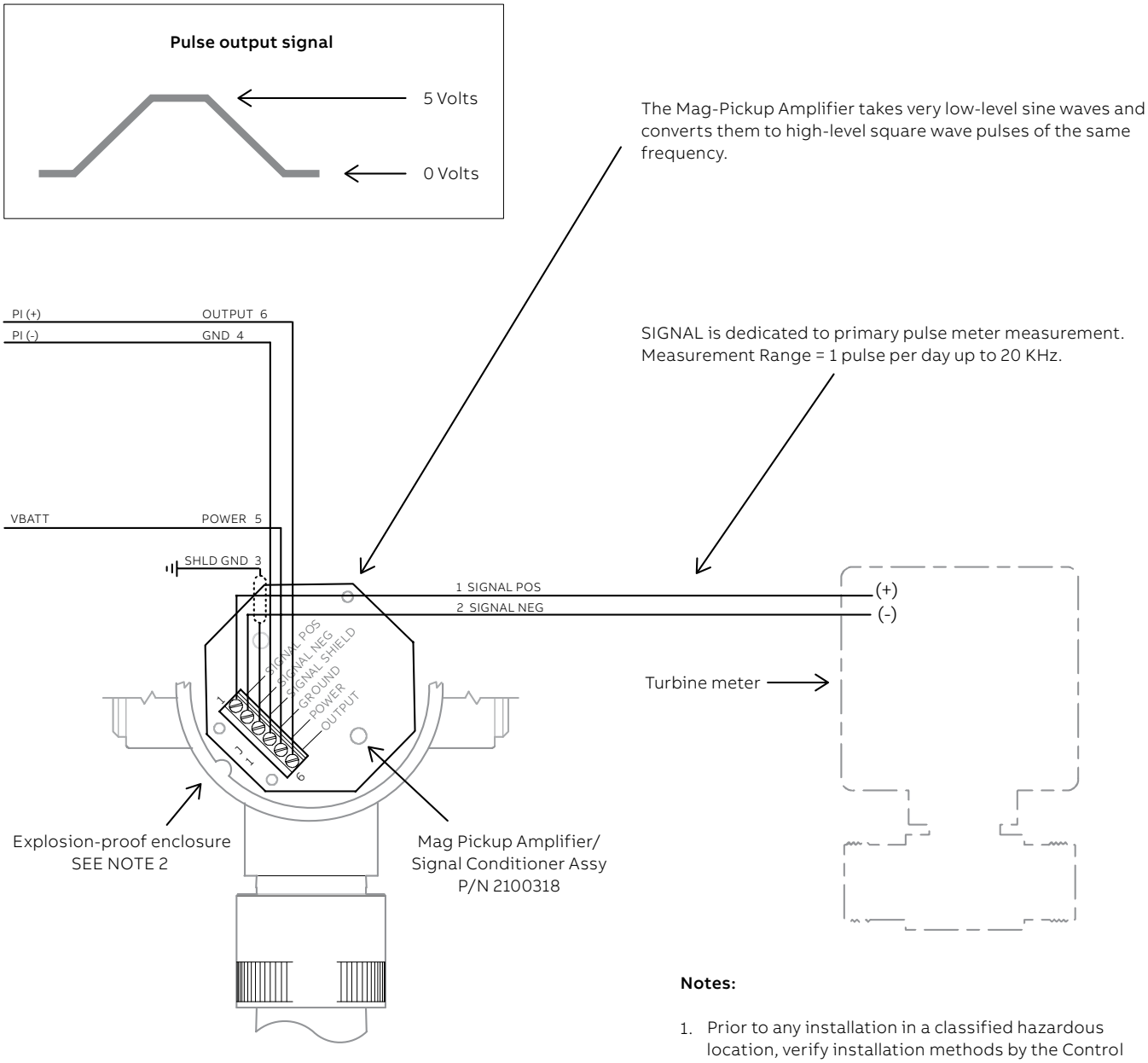
- Pulser Magnetic pickup amplifier electronic board only
- Mag-Pickup Amplifier/Signal Conditioner, with 15 foot cable, in flex conduit
- Mag-Pickup Amplifier/Signal Conditioner, with fittings (Customer supplies cable)
- Mag-Pickup Amplifier/Signal Conditioner, with twisted pair turbine sensor cable & 15 foot flow computer unit cable
- Mag-Pickup Amplifier/Signal Conditioner, with twisted pair turbine sensor cable & fittings, (Customer supplies flow computer unit cable)
- Mag-Pickup Amplifier/Signal Conditioner, with twisted pair turbine sensor cable, fittings & 6 foot flow computer unit cable



Mag pickup electrical characteristics

Symbol	Parameter	Condition	Min	Typical	Max	Unit
Environmental						
T_A	Ambient operating temperature range		-40		85	Deg C
Power supply						
V_{supply}	Power supply voltage		7		30	Vdc
I_{supply}	Power supply voltage	I_{OUT} = 0 ma		600		µA
Input						
F_{in}	Input frequency[(1)]		0		20	KHz
V_{in_min}	Input voltage sensitivity with sinusoidal input[(2)]	1 Hz		24		mVp-p[(3)]
		60 Hz		24		mVp-p[(3)]
		3 Hz		38		mVp-p[(3)]
		10 Hz		115		mVp-p[(3)]
		20 Hz		250		mVp-p[(3)]
Input						
V_{OH}	Voltage output high	I_{OUT} = -0.01 mA		5	5.05	Vdc
		I_{OUT} = -0.1 mA	4.944	5		Vdc
		I_{OUT} = -1 mA	4.892	5		Vdc
		I_{OUT} = 0.01 mA	0	0		Vdc
		I_{OUT} = 0.1 mA		0	0.006	Vdc
		I_{OUT} = 1 mA		0	0.057	Vdc

Wiring example



Notes:

1. Prior to any installation in a classified hazardous location, verify installation methods by the Control Drawing referenced on the product's name tag.

2. To access termination board, remove the enclosure front cover.

1. The preamp is DC coupled and can sense differential signals down to 0 Hz. However, inductive pickups do not generate signals this low since they are inherently an AC type signal generator. For reference, a small 1" Halliburton turbine meter Part No. 458-85228, with Mag Sensor EC 3030AN is normally rated for operating with a minimum flow rate of 5 GPM (Gallons Per Minute), which would generate a Minimum Pulse Output Frequency of 79 Hz.
2. The input of the preamp is a fully differential input designed for connection directly to floating inductive sensors such as used on turbine meters. It is not designed for single ended input applications. Attempting to directly drive the preamp inputs with a single ended device (such as a signal generator) will result in improper operation. For field test procedures, please contact ABB Totalflow for test configuration details.
3. Millivolts peak to peak.

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