

Electro-Magnetic Flowmeters Signal Converters

50XM1000

- μ -Processor based converter for use with magmeter flowtubes.
- Empty pipe detection is standard.
- External totalizer reset contact is software configurable.
- Dual range is standard. System can be set for automatic or manual switching.
- User configurable unit: Push button design allows any unit desired to be configured.
- Bi-directional flow indication via directional contact or split 4-20 mA range.
- Automatic system monitoring with error diagnostics and alarms.
- All data is stored in nonvolatile memory for 10 years without battery back-up.
- Utilizes surface mount and ASIC technology for long term reliability.
- Enclosure classification is NEMA 4X as standard for use in corrosive environments.
- Typical flow rate measurement is independent of viscosity, density, and temperature.
- Back lit 2 line x 16 characters liquid crystal display.

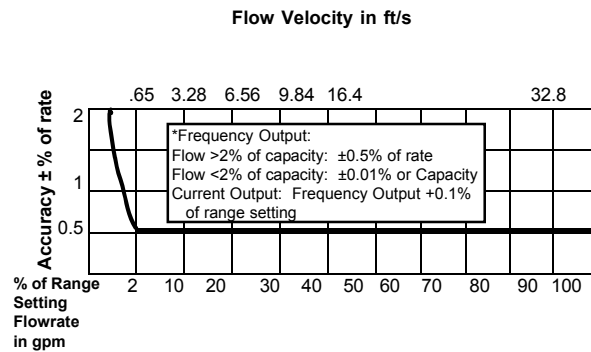


**Signal Converter
Series 50XM1000D**

SMART DC SIGNAL CONVERTER

The Series 50XM1000D Magnetic Flowmeter Signal Converter is a μ -processor based DC unit. The coils of the magnetic flowmeter are excited with pulsed DC current in order to generate the magnetic field. As a conductive liquid passes through this magnetic field, an electrical voltage is induced which is directly proportional to its velocity. The voltage is sensed by the electrodes and sent to the converter which digitally processes these signals and configures them into analog and digital output signals.

Engineering Specifications System Accuracy



Accuracy:

Standard: $\pm 0.50\%$ of rate is available.

Optional: $\pm 0.25\%$ of rate is available.

Range: Typically configured from 0.67 to 49 ft/s (0.2 to 15 m/s)

Operable Flow Range: 1000:1

Display: Illuminated Liquid Crystal display, 2 lines each with 16 alphanumeric characters, 5x7 dot matrix. Each line is configurable for a number of different items.

Data Entry: Input of configuration data is by means of three push-buttons or via magnetic coupling without removal of converter cover.

Language: Configuration in English and others upon request.

Program Protection: Three digit password is entered by the user to limit entry to configuration.

Current Output: User defined 4-20, 0-20, 2-10, 0-10, 4-12-20, and 0-10-20 mA into 0-750 Ω load. The last two choices are for bi-directional flow.

Bi-Directional Flow: Indication and totalization in both forward and reverse directions. Flow direction for analog output is indicated by contact closure. The scaled frequency option provides a separate output for each flow direction.

Isolation: Inputs and outputs are galvanically isolated 400V.

HART®: The unit can be fully configured remotely using optional HART® Communications Protocol. The unit is fully compliant and registered with the HART Foundation. Both Handheld (HART 275) and PC Configuration tools are available as options.

Scaled Frequency Output: 24 Vdc, 150 Ω minimum load, 0-4 kHz maximum, pulse width from 0.1 ms to 2000 ms, pulse factors from 0.001 to 1000 per unit of flow.

Unscaled Frequency Output: 5 Vdc (TTL), 0-10 kHz maximum, pulse width from 0.032 ms to 3000 ms, 415 ft (5m) maximum cable length.

Low Flow Cut-off: Adjustable

Damping: 1 to 100 seconds configurable.

Response Time: 0.5 second minimum.

Power Requirements:

210-240, 110-130, 24 Vac +10% / - 10%

24/48 Vdc $\pm 30\%$

Effect 0.2% of rate per 10% change in line voltage.

Power consumption Minimal 15 Va

Line frequency 50/60 Hz $\pm 6\%$.

Coil Excitation Frequency:

Standard: 6.25 or 7.5 for 50/60 Hz power

Optional: 12.5 / 15 for 50/60 Hz power

Contact Outputs:

For alarm and flow direction

Relay: Max. 28V, max. 250 mA, max. 3 W

Optocoupler: UCE<25 Vdc, IEC<7.5 mA

Contact Input: For zero return, external totalizer reset. Dry Contact Input

Serial Interface:

- via RS-232C
 - Baud rate: 110 to 9600 Baud
 - Maximum Cable Length: 45 ft. (15m)
 - Number of Nodes: 1 instrument
- via RS-485
 - Baud rate: 110 to 28.8K Baud
 - Maximum Cable Length: 4000 ft (1200m)
 - Number of Nodes: 32 instruments
- via HART® Protocol
 - 1200 bits/s using frequency shift keying
 - Maximum cable length: 5000 ft (1500m)

The following units of measure are not available with HART option: ml, hl, Ml, Mgal, uton

Empty Pipe Detection: Drives the outputs to a predetermined flow condition when the electrodes are no longer covered with fluid. Not available with non-wetted electrode design, if conductivity <math> < 20\mu\text{S}/\text{cm}</math>, or for meters $\leq 3/8''$ (10mm)

Certification: FM Approved non-incendive for Cl. I, Div. 2, Gp. A, B, C, & D. Dust ignition proof Cl. II, Div. 1, Gp. E, F, & G. Suitable for Cl. III, Div. 1, Outdoor Hazardous Locations.

Physical Characteristics

Ambient Temperature: -4°F to 140°F (-20°C to 60°C)

Storage: -40°F to 150°F (-40°C to 70°C)

Relative Humidity: 10 to 90% non-condensing

Vibration Limit:

<math> < 0.75\text{g}</math> continuous (10 to 150 Hz)

<math> < 1.5\text{g}</math> intermittent (10 to 150 Hz)

Enclosure Classification: NEMA 4X, IEC 529 IP65 (weather tight and dust tight)

Housing: Three piece aluminum housing with gasketed covers, panel or wall-mounting.

Cable Entrance: Five 1/2" NPT conduit or PG 13.5 cable connections.

Weight:

Wall enclosure = 9.71bs. (4.4Kg)

Rack= 4 lbs. (1.8Kg)

Signal Cable: Maximum signal cable length is 500 ft. Only one conduit is required between the flowtube and the signal converter. Signal cable from different meters can be run in the same conduit or in cable trays. Signal cable should be distanced from high magnetic fields. Signal cable jacket is suitable for outdoor cable tray applications. 30 ft. (10m) is supplied as standard.

For detailed specifications, refer to Product Specification D-FMC-50XM1000 Product Family D

Pipe Bracket and Hardware Supplied 30 ft of cable supplied (IP67 only) - other lengths available -
See D9000

Standard Product =	Code
Electromagnetic Flowmeter DC Signal Converter 50XM1000	50XM1

1 : Excitation Frequency / Line Frequency

6-1/4 Hz / 50 Hz	(Note: 1)	1
12-1/2 Hz / 50 Hz	(Note: 1)	2
7-1/2 Hz / 60 Hz, Standard	(Note: 1)	3
15 Hz / 60 Hz	(Note: 1)	4
6-1/4 Hz / DC	(Note: 1)	5
12-1/2 Hz / DC	(Note: 1)	6
7-1/2 Hz / DC	(Note: 1)	7
15 Hz / DC	(Note: 1)	8

2 : Design Level

(Specified by ABB)	D
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3 : Software Level

(Specified by ABB)	X
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4 : Usage Certifications

FM Approved Non-Incendive CI I, Div. 2, Groups A, B, C & D. Dust Ignition Proof CI II, Div. 1, Groups E, F & G. Suitable for CI III, Div. 1, Outdoor Hazardous Locations	K
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5 : Enclosure

NEMA 4X Field Housing, 1/2 in. NPT Connections, Standard	D
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6 : Contact Outputs

Optocoupler, Standard	1
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7 : Pulse Output, Data Link

Without	0
Active Scaled Pulse, Forward and Reverse	1
Relay Contact Scaled Pulse, Forward and Reverse	2
Opto-coupled Scaled Pulse, Forward and Reverse	3
RS485 Port	4
RS232C Port	5

8 : Operation Mode

Continuous Measurement	AA
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9 : Accessories

Without	B
HART Protocol (not Available with RS232 or RS485)	H

50XM1

Code

10 : Power Supply

220 ... 240 V 50 / 60 Hz	A
110 ... 130 V 50 / 60 Hz	C
24 V DC	H

11 : Language

English	2
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12 : Output Signal

4 ... 20 mA, Standard	2
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13 : Primary Model Number

Series 10D14 (Except 10D1477)	1
10D1477	6
Continuous Submergence (14 ... 24 in. only)	8
Series 10DX/DM	9

ACCESSORIES

Instruction Manual	694A090U01
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Note 1: Drive Frequency must be Same as Primary

Software Configuration

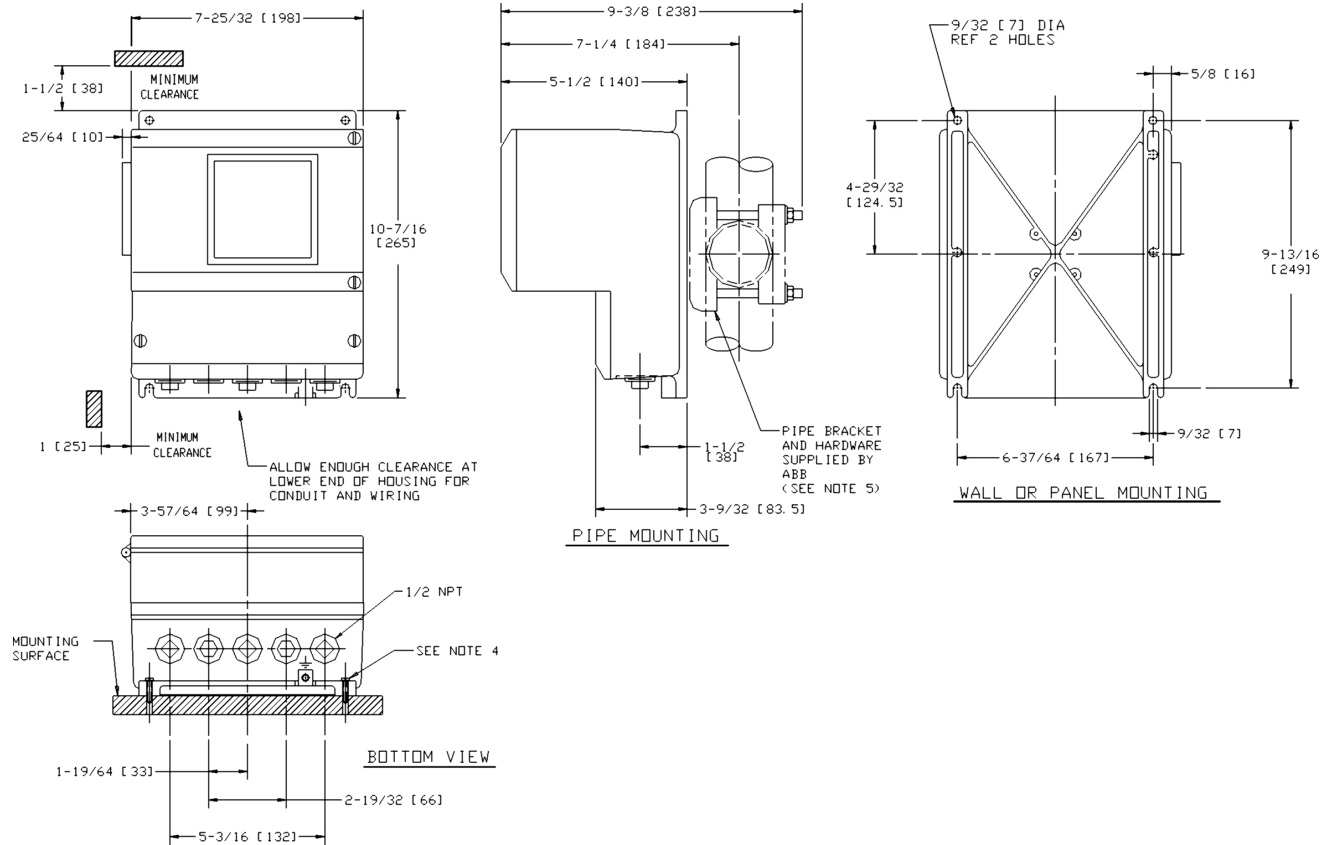
The table below shows default configuration for the 50XM1000 signal converter. If you want your signal converter configured for different parameters, list your preferences on the order.

Parameter	Default	Acceptable Entries
Meter Size	1"	1/25" to 84"
Language	English	German, French, Italian, Spanish, Finnish, Dutch, Danish, Swedish
Flow Engineering Units	gpm	kgal/min/hr/sec (user configurable) ml/s, ml/min, ml/h , l/s, l/min, l/h, hl/s, hl/min hl/h , bbl/s, bbl/min, bbl/h, bls/day, bls/min bls/h, kg/s, kg/min, kg/h, t/s, t/min, t/h, gram/s gram/min, gram/h, MI/min, MI/h, MI/day , lbs/s lbs/min, lbs/h, mgd, gph, uton/min, uton/h, uton/day m ³ /s, m ³ /min, m ³ /h, igal/s, igal/min, igal/h
Cal Factor	52.83 gpm	0.05 to 1 of QDN max. for sizes listed above
Totalizer Units	gal	mgal , bbl, bls , kg, t, gram, ml, MI , lbs, uton kgal(user configurable), l, hl , m3, igal
Actual Flow Indication	%	Engineering Units
Low Flow Cut Off	1.00%	0 to 10% of specified range
Damping	3 seconds	1/2 to 99 seconds
Analog Output	4-20 mA	0-20 mA, 0-10 mA, 2-10 mA
Pulse Value Forward & Reverse	1/gal	0.001 – 1000 pulses / unit
Pulse Width	50 ms	0.032 – 2000 ms
Digital Filter	Off	On
Multiplex Display	Off	On
Instrument Address	0	1 to 99
Baud Rate (Serial Interface Only)	1200	100, 300, 600, 2400, 4800, 9600, 14400, 28800
Protocol (Serial Interface Only)	ASCII	ASCII
Flow Direction	Forward/reverse	Forward
Density	1.0 gram/cm ³	0.00001 to 5.0 gram/cm ³
Empty Pipe Detector	Off	On
Flow Indication	Standard	Opposite

Note: BOLD = Unavailable if HART option is selected

ABB reserves the right to change the above without notice

Outline Dimensions of Remote Signal Converter



Notes:

1. Dimensions are in inches, dimensions in parentheses () are in Millimeters.
2. Dimensions guaranteed only if this print is certified.
3. All dimensions subject to manufacturing tolerance of $\pm 1/8$ (3mm).
4. Mounting hardware supplied by customer.
5. For piping mounting, pipe yoke bracket for connection to customer 2" (ND50) horizontal or vertical pipe as shown.

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