WISNER CONTROLS

"INDUSTRIAL INSTRUMENTS AND CONTROLS SPECIALIST"

ABB Kent-Taylor

MagMaster MFE Transmitter

Features Include

- ***Pulsed DC Technology Incorporates Benefits of AC Systems***
- ***Keypad configurable***
  – A choice of engineering parameters in engineering units e.g. flowrate, flow units, all outputs
- ***Empty pipe detection***
  – insures units read zero on empty pipe
- ***Interchangeable***
  – Transmitter/sensor can be changed without affecting performance
- ***Advanced switching power supply***
  – 95 to 240V ac and 11 to 40V dc
- ***Test mode and Self diagnostics***
  – provides powerful start up tool. Exercises all outputs and displays, even without a connected sensor
- ***Three internal totalizers: forward , reverse, net; Forward and reverse flowrates and comprehensive range of outputs: current, pulse, data, and HART***
  - single package satisfying all user display requirements
  -insures compatibility with user's control system requirements
- ***Two - Year Warranty***
- ***FM / CSA Approved***

The ***MagMaster MFE*** pulsed DC transmitter is used with the 10D1475J/S, MFE and MFF series sensors. MagMaster offers analog or dual analog, pulse and alarm outputs and can accept a contact input. The transmitter can be powered by a 95 to 240 V ac or 11 to 40 V dc supply.
Features include: empty pipe detection, bi-directional flow measurement, and test loop verification. HART, RS-422 or RS-232 communications can be provided. The transmitter can be supplied blind or with a 2 line display or a 3 line display with keypad to allow local programming.
Wisner Controls <u>stocks</u> all popular models for immediate shipment. We also offer programming and repair services in house.

MagMaster Transmitters- fully featured integral and remote transmitters for electromagnetic flowmeters

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www.wisnercontrols.com

Assured Quality

MagMaster transmitters are designed and manufactured in accordance with international quality procedures (ISO 9001) and all flowmeters are calibrated on nationally traceable calibrations rigs to provide the end user with complete assurance of both quality and performance of the meter. An indication of the quality is the two year warranty which is offered as standard.

Fully Featured Transmitters

MagMaster is available with integral or remote transmitters, each being available with a choice of display, configuration and communication options to suit the application. Standard features include forward, reverse and net flow totalizers, flow rate, alarm monitoring, and automatic self diagnostics to insure integrity. All data and values are in customer-defined units of measurement. System compatibility is assured with a choice of current, pulse, serial data and Smart (HART) communications.

MagMaster operating parameters may be set via local keypad, remote configurators or computers as appropriate. The software features multi-level password protection capability to prevent inadvertent program or setting changes. Data is stored in non-volatile memory for 10 year retention.

In the non-keypad variant, display data can only be changed using a magnetic wand. No operational parameters can be changed without the use of configurators and appropriate passwords.

International Approvals

Alternative versions of MagMaster are available for general locations with FM Approval/CSA Certification and for Hazardous Area locations to CENELEC, FM, CSA and SAA Standards. No external safety barriers are required.

GENERAL SPECIFICATION

Programming Options

- Integral keypad with 3 line display (Standard)
- Local hand-held configurator
- HART
- Up to 1000m (3280ft) remote via serial communications and remote 1/4 DIN panelmounted keypad/display unit

Environmental Protection: IP65/NEMA 4X.

EMC Specification: Conforms to – EMC Directive 89/336/EEC to 10V/m

Enclosure: Glass loaded polypropylene, polycarbonate window. UL VO rated.

Electrical connections: accepts 0.5in NPT connections.

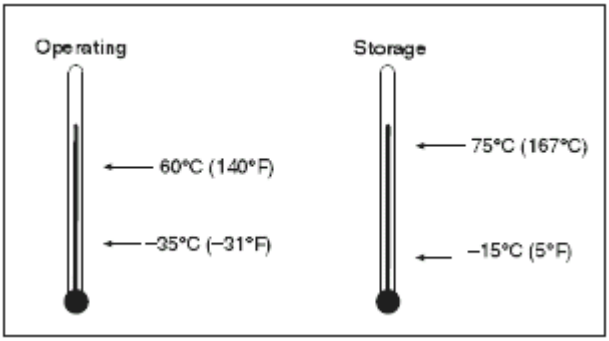
Sensor Cable: ABB supplied standard and armoured versions.

Transmitter/Sensor Separation: < 100m (328ft)

High Input Impedance

10^{15} ohm performance allows non-conductive coatings on the electrodes to be ignored. Eliminates the need for removable electrodes or electrode cleaners.

Temperature Ranges:



Supply Voltage*:

Voltage Type	Voltage Range (V) Absolute rating	Frequency (Hz)	VA with sensor
a.c.	85 to 265	47 to 440	<2 0
d.c.	11 to 40	-	<2 0

*Power supply fully isolated

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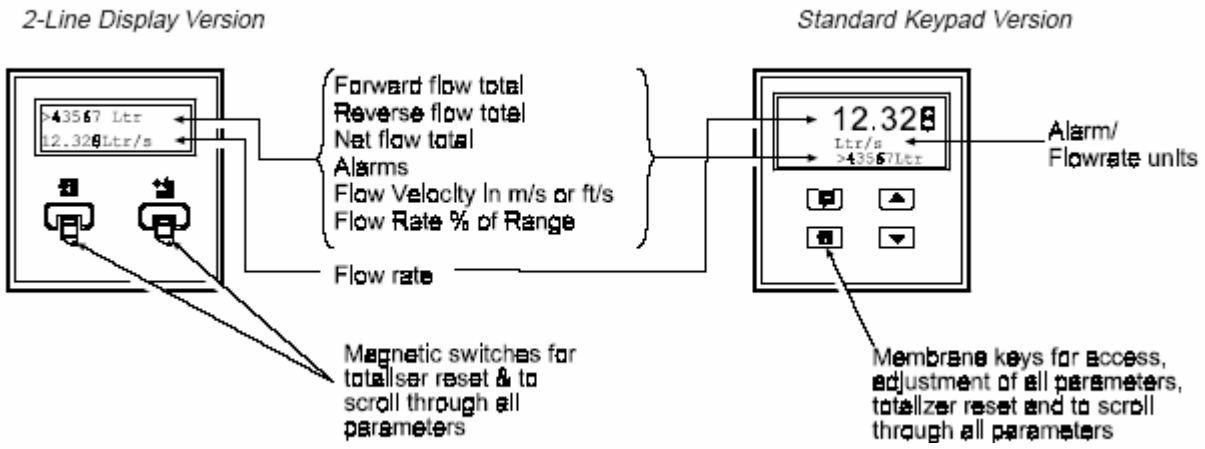
Display (optional):



Outputs:
Standard
1. Analog:
Fully programmable for zero, full scale, up to 21mA and flow direction. Fully isolated. Output capability <16V. (800 ohm, 4-20mA) Secondary range enabled by external input or programmed alarm condition as a percent of full scale.

2. Pulse / Frequency
One frequency/pulse output for forward and one for reverse flow. Forward and reverse flows 0 to 800Hz squarewave or fixed pulse width up to 2.5 sec. Fully programmable for pulse rate, pulse factor, low flow cutoff, pulse width, etc. Minimum frequency/resolution <0.1 pulse/day. Frequency limit settable 1Hz-800Hz in 1Hz steps. Isolated protected transistor switch capable of sinking >250mA. Voltage <35V.

3. Dual Alarms (2 separate outputs): Isolated protected transistor switch capable of sinking <250mA. Voltage <35V. Note: Not isolated from frequency output. Fully programmable for high/low flow rates, % of range, emptypipe zero, fault conditions, forward/ reverse, polarity (normally open/close), analog over-range, pulse overrange, pulse cutoff, etc.

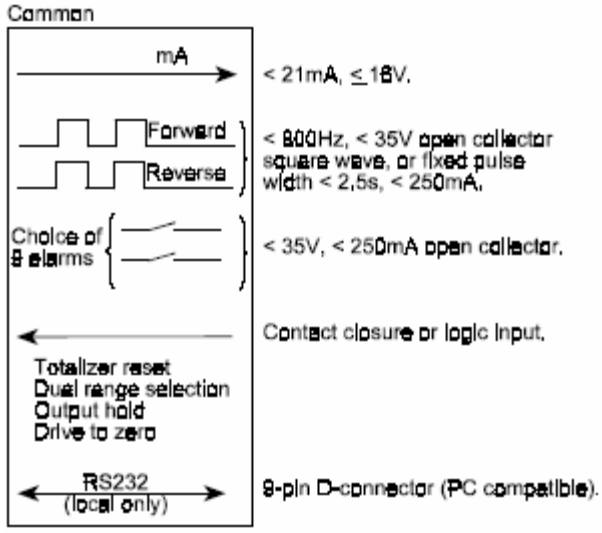
4. RS232C: 9-pin data connector for local hand held configurator or any computer with serial communications.

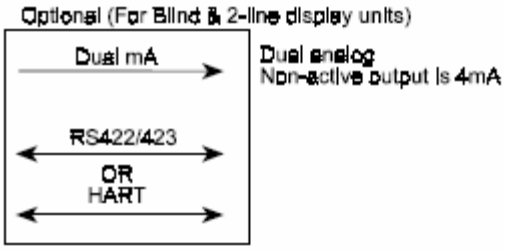
Optional

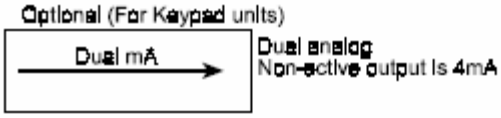
1. Dual Analog:
Additional analog outputs for reranging (provides two separate inputs to a recorder/controller). Only one output is active at a time. Non-active output is 4mA.

2. Serial communication RS423/RS422: Compatible data link (via terminal block).

3. HART Communications: See separate description.







Input:
An external input such as contact closure, open collector, voltage or logic signal can be used to:

1. Reset totalizer
2. Change range (span)
3. Hold the output constant
4. Drive the output to zero (i.e., empty pipe or partial filled pipe conditions)
5. Settable for low flow cut off.

Note: Not isolated from pulse and alarm outputs.
Isolation:
Galvanic separation to 50V dc between analog, pulse/alarm, and earth/ground.

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SPECIFICATIONS

Configuration:
Transmitter may be integral with sensor for sizes 1/2 to 16-inches (400mm) or remote from sensor for all sizes.

Separation (remote transmitters):
The maximum cable length in feet is the lower of 330 feet (100m) or 15 x the conductivity (µS/cm). Longer lengths are special order.

Accuracy (under reference conditions):
See separate specifications for MagMaster sensors.

Display, Serial comms, Frequency output:
with MFE Series Sensors: ±0.2% of reading
with MFF Series Sensors: ±0.15% of reading
or ±0.003 ft/sec (0.001m/s) (whichever is greater) up to a maximum velocity of >49 ft/sec (15m/s).

Analog output:
As Frequency output plus ±0.008mA.

Temperature effect:
Transmitter: Display, frequency output, Serial comms <±0.08% of reading per 10°C. Analog output – as frequency plus <±0.08% of reading per 10°C.

Repeatability & Reproducibility:
±0.05% or ±.0008ft/s (±0.25mm/s), whichever is greater.

Power Supply Variation:
Negligible effect— within published specification.

Conductivity:
Liquids and slurries having a conductivity of not less than 5µS/cm (5µmho/cm).

Power consumption:
Less than 20VA.

Warm-up Time:
1 minute.

Calibration:
3 point, 8 point, witnessed, NAMAS (8- to 66-inch only), slurry calibration options.

Sensor cable connection:
0.5 inch NPT--single opening. A single cable is available that provides for the coil drive and electrode signals. See Options.

Hazardous Area Certification:
FM approved and CSA certified for Class I, Div. 2, Groups A, B, C, D hazardous locations, 0.5-24 inches (15-600 mm).

NOTE: FM approved sensors for hazardous locations include an intrinsic safety shunt circuit for the electrodes allowing for a Div. 1 rating inside the pipe. The circuit is located in the larger than standard terminal box housing. CSA certified sensors for hazardous locations may or may not include the circuit, depending on the rating inside the pipe. **Appropriate approved sensor must be selected.**

Meets:
Electrical safety: BS4743 Class 1. (IEC 348).
Vibration specification: BS2011 : Part 2.1Fc : 1983.

Configuration Methods:
All configurations are user defined and password protected. The configuration is stored in non-volatile memory with a 10 year retention. The transmitter is fully programmed before shipping. Reprogramming can be easily done on site using the following methods:

Keypad - can be used to access and change all menu parameters using four membrane keys and 3-line display.

RS232 - standard 9-pin data connection for local handheld terminal or computer (null modem/Lap Link cable required). Software such as ProComm Plus, Windows, PC Tools, or our communications option is required. See options section.

RS423/RS422 - option for remote serial communication

HART Communications - see separate description.
Displays:
Keypad: 3-Line, 16 character, backlit display with large 1/2" numerals for flowrate and two lines for engineering units, totalizers, alarm status, velocity and percent of range.
2-Line: 16-character, read only display for flowrate (in a choice of engineering units and % of range), totalized flow, forward, reverse and net totals, alarm conditions, flow velocity, and percent of range. Display is scrolled and reset by magnetic reed switches actuated by a magnetic wand.
Blind: no display, but data can be read through serial communications or HART.

Internal Totalizer:
Resettable 9-digit for forward, reverse and net totals. Can be programmed to reset via external input.

Test Mode and Output Circuit Loop Verification:
After transmitter has been programmed, operation of the test mode will drive all outputs to programmed value to provide total system test.

HART Communications:
The MagMaster transmitter HART option allows communications via the HART field communications protocol using a communications device connected to points located anywhere in the 4-20mA current output circuit wiring. MagMaster also supports a multi-drop system and permits up to 15 MagMasters on a single pair of wires without losing the 4-20mA signals on the individual meters. The unit can be configured with universal HART communications such as the Rosemount 275 or 268 (version 6 or higher). HART burst mode is also supported, enabling regular transmission of selected data.

Self Diagnostic:
Transmitter confirms correct operation of hardware with fault diagnosis, eg. coil drive problems.

Empty Pipe Detection:
Programmable for conductivity trip point. Liquid level sensing results in drive to zero (i.e., empty pipe zero when electrodes are uncovered). For Process Mode only. Also can drive output to zero via external input in process or slurry mode.

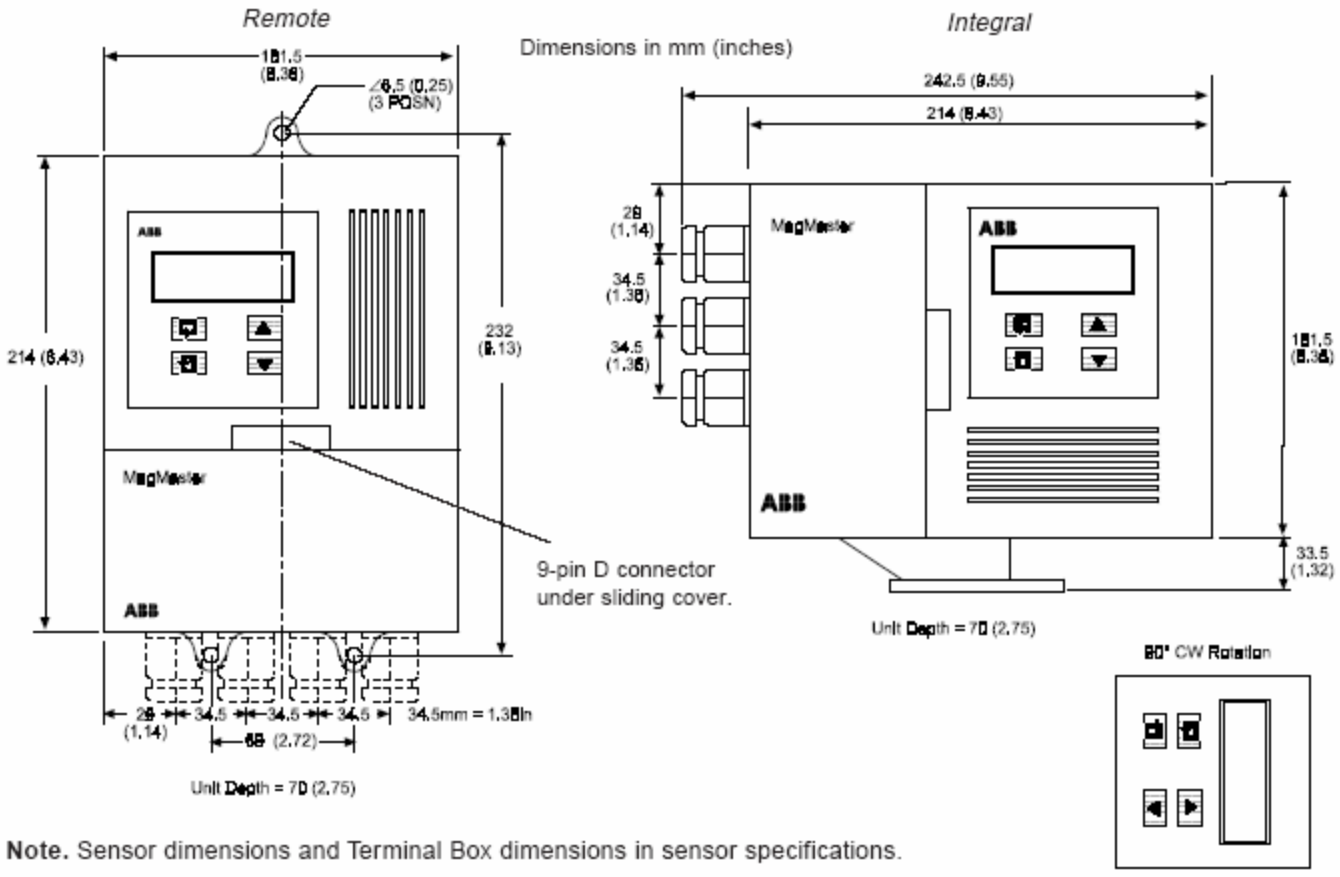
Interchangeability:
Transmitters are fully interchangeable with all sizes of MAGMASTER sensors and configurable on site. System specification not affected by transmitter change.

Time Constant:
Fully programmable from 1 to greater than 100 secs.

Test Equipment:
Flow signal simulators for testing and checking the electronic calibration of the MAGMASTER transmitter are available. See Options.

Retrofit
The MAGMASTER transmitter can be used to upgrade earlier version magnetic flowmeters, including the 1100L/1210L series. In addition, the MAGMASTER transmitter can be used as a replacement on other manufacturers sensing heads. Refer to the options section for restrictions and ordering information.

TRANSMITTER DIMENSIONS



Note. Sensor dimensions and Terminal Box dimensions in sensor specifications.

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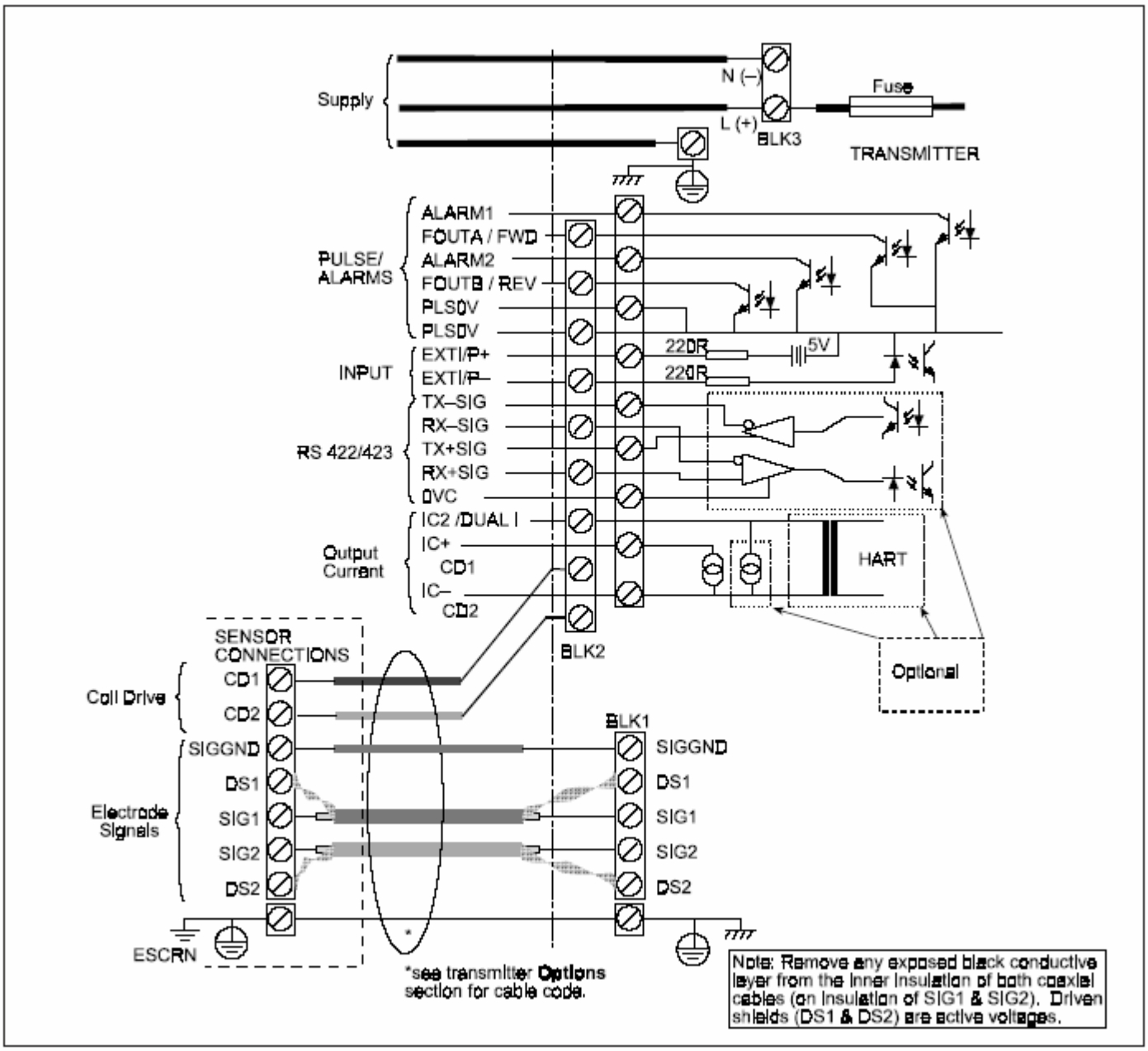
CONNECTION INFORMATION



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ORDERING INFORMATION
MAGMASTER Transmitter

Select one character or set of characters from each category and specify complete catalog numbers for transmitter as per sample below. See the options page for cable selection, accessories and instruction manuals.

Code No.	Description
	BASE NUMBER - 1st through 3rd characters
MFE	MAGMASTER Transmitter
	GLANDING - 4th Character
4	Conduit entry: 0.5 in NPT
	TRANSMITTER TYPE - 5th and 6th Characters
EH	Sensor mounted MagMaster transmitter
ER	Remote MagMaster transmitter
	POWER SUPPLY - 7th Character
1	95V to 240V ac nominal, 47 to 440Hz
3	11V to 40V dc (maximum)
	DISPLAY - 8th Character
4	3 Line Display with keypad (no RS422/423 or HART) -STANDARD
3	2 Line Display, Read Only Version
0	Blind
	OUTPUT OPTIONS - 9th Character
0	Standard outputs
1	Dual current output (Not Available with Class I, Div 2 - 10th Characters 5, 6, 7 or 8))
2	HART Communications (No RS422/423)
4	RS423/422 serial data communications (Not Available with HART)
5	RS423/422 serial data communications and dual current output (Not Available with HART)
	TRANSMITTER BUILD STANDARD - 10th Character
1	General Purpose (non-FM/CSA approved) (Note 5)
2	General Purpose Slurry (non-FM/CSA approved) (Notes 1 & 5)
3	FM approved, CSA certified, General Purpose (Notes 4 & 7)
4	FM approved, CSA certified, General Purpose Slurry (Notes 1, 4 & 7)
5	FM approved, CSA certified, Class I, Div 2, Groups A, B, C, D. Remote Mount Only. (Notes 4 & 6)
6	FM approved, CSA certified, Class I, Div 2, Groups A,B,C,D. Remote Mount Only. Slurry.(Notes 1, 4 & 6)
7	CSA certified, Class I, Div 2, Groups A, B, C, D (Notes 1 & 4) Non-incendive electrode circuit in sensor for Hazardous location.
8	CSA certified, Class I, Div 2, Groups A, B, C, D Slurry (Notes 1 & 4) Non-incendive electrode circuit in sensor for Hazardous location.
	DISPLAY ORIENTATION - 11th Character
0	Not Required
1	Standard
2	90° CW standard
	DISPLAY LANGUAGE - 12th Character
1	English
2	French
4	Spanish

MFE4ER140111 - Sample Transmitter Catalog Number

Notes:

1. A slurry mode transmitter system must have a slurry electrode option (see sensor ordering codes).
2. When ordering a transmitter for a retrofit (1100L, 1210L), customer must supply model and serial numbers of sensor. Limited to 12 inches.
3. For 1100T retrofit, order IB-17K241 retrofit instruction book.
4. FM approved, CSA certified sensors or transmitter must be part of an approved/certified MAGMASTER system. Not approved/certified when transmitter is used with 1100L and 1210L series sensors.
5. For MFF Series sensors, only Transmitter Build Standard 1 or 2 is available.
6. Sensor must have FM/CSA hazardous location rating with intrinsically safe electrodes.
7. Sensor must have FM/CSA non-hazardous location rating

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ORDERING INFORMATION
MAGMASTER Transmitter

Code No.	Description
	OPTIONS (specify as separate item on order)
	Cable, sensor/transmitter (list number of feet)
STT3350	Standard. Can be used with FM/CSA approved instruments.
STT3500	Submersible-Waterproof. Cannot be used with FM/CSA approved instruments.
STT3300	Armored. Cannot be used with FM/CSA approved instruments.
155S997	Pipe-mounting bracket kit
166S291	Flow Utilities and Communication Software (3.5" disk). Computer download/upload parameters.
SK20707	Factory Upgrade to Keypad.
MFE-CONFIG	Configurator (PSION Series 3 palm top computer and serial communications cable)
MFE-SIM	Standard flow signal simulator/calibrator for transmitter with leads
WEBC0003	Null Modem Cable for laptops. 9-pin female to 9-pin female connectors. Length is 3 meters (9.84 feet).
IM/MAGMAS	Instruction Manual for MagMaster (one included with each meter purchased).
IB-17K241	Instruction book for retrofitting/replacing 1100T transmitter that is installed with 1100L/1210L sensors (available up through 12 inches only, otherwise call Rochester)

Note:

1. When ordering a transmitter replacement or for a retrofit (1100L/1210L), customer must supply model and serial numbers of sensor. Limited to 12 inches.