



ONICON
Flow and Energy Measurement

F-3500 SERIES INSERTION ELECTROMAGNETIC FLOW METERS

F-3500 series flow meters combine the convenience of an insertion style design with the reliability of electromagnetic flow measurement. They are ideal for measuring flow in a wide variety of applications.



- Chilled Water • Heating Hot Water • Domestic/Municipal Water •
- Condenser Water •

F-3500 SERIES

INSERTION ELECTROMAGNETIC FLOW METERS



DESCRIPTION

ONICON's F-3500 series insertion electromagnetic flow meters are suitable for measuring electrically conductive liquids in a wide variety of applications. Each F-3500 provides a single analog output for flow rate, a high resolution frequency output to drive peripheral devices, a scalable pulse output for totalization, and an empty pipe alarm signal.



Standard Configuration



Small Pipe Configuration

Two versions of the F-3500 are available. The standard configuration F-3500 is suitable for pipe sizes ranging from 3" to 72" in diameter. The small pipe configuration F-3500 is suitable for pipes ranging in size from 1 1/4" to 2 1/2" in diameter.

Optional remote displays and BTU measurement systems are also available for both versions.

APPLICATIONS

- Chilled water
- Heating hot water
- Condenser water
- Domestic/municipal water
- Water/glycol

FEATURES

Simple Installation and Commissioning - Factory programmed and ready for use upon delivery.

Exceptional Performance & Value - Insertion style design provides cost-effective solution for accurate and reliable flow measurement in larger pipe sizes.

Excellent Long Term Reliability - Low maintenance, no-moving-parts flow sensing technology works well in difficult flow measurement applications such as open loop condenser water flow.

Highly Accurate Over a Wide Flow Range - Highly efficient sensor design and continuous auto-zero function improve accuracy and sensitivity, particularly at low flow rates.

Simplified Hot Tap Insertion Design - Standard on every insertion flow meter, this feature allows for insertion and removal by hand without a system shutdown.

Ideal Solution for Retrofits - The innovative hot tap adapter design allows for wet tapping pipes without interrupting flow.

CALIBRATION

Every ONICON flow meter is wet calibrated in a flow laboratory against standards that are directly traceable to National Institute of Standards and Technology (N.I.S.T.). A certificate of calibration accompanies every meter.



ONICON's F-3500 Insertion Electromagnetic Flow Meter combined with the System-20 BTU Meter forms an energy measurement system with unsurpassed accuracy and reliability.

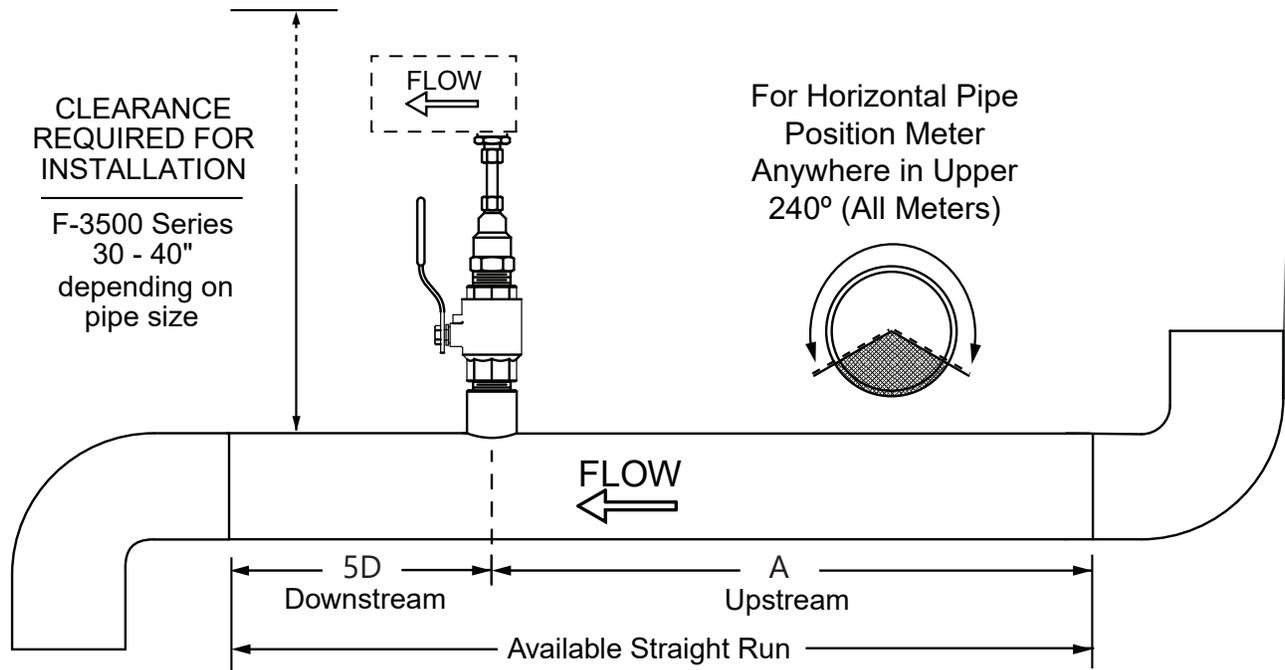
SPECIFICATIONS*

MODEL F-3500		
PERFORMANCE	ACCURACY	±1.0% of reading from 2 - 20 ft/s ±0.02 ft/s below 2 ft/s
	MINIMUM CONDUCTIVITY	25 µS/cm
INPUT POWER	20 - 28 VDC, 250 mA at 24 VDC 20 - 28 VAC, 60 Hz, 6 VA	
I/O SIGNAL	ANALOG OUTPUT (ISOLATED)	Selectable: 4-20 mA, 0-10 V or 0-5 V
	FREQUENCY OUTPUT	0-15 V peak pulse, 0-500 Hz
	SCALABLE PULSE OUTPUT	Isolated solid state dry contact Contact rating: 50 VDC, 100 mA maximum Pulse Duration: 0.5, 1, 2 or 6 seconds
ELECTRONICS ENCLOSURE	Weathertight NEMA 4 aluminum enclosure	
ELECTRICAL CONNECTIONS	10' of PVC jacketed cable with ½" NPT conduit connection	
FLOW RANGE	0.1 ft/s to 20 ft/s (200:1 turndown)	
SENSING METHOD	Electromagnetic sensing (no moving parts)	
PIPE SIZE RANGE	AVAILABLE OPTIONS	Standard Configuration: 3 - 72" nominal diameter Small Pipe Configuration: 1¼ - 2½" nominal diameter
LIQUID TEMPERATURE RANGE	15°F to 250°F	
AMBIENT TEMPERATURE RANGE	-20°F to 150°F	
OPERATING PRESSURE	400 psi maximum	
PRESSURE DROP	Standard Configuration: 0.1 psi at 12 ft/s in 3" pipe, decreasing as line size increases Small Pipe Configuration: 0.33 psi at 8 ft/s in 1.25" pipe, decreasing as the line size increases	
MATERIAL	Wetted metal components: 316 Stainless Steel Sensor head: XAREC Optional: NSF/ANSI 61/372 version	
APPROVAL	SAFE DRINKING WATER	NSF/ANSI 61
	LEAD CONTENT VERIFICATION	NSF/ANSI 372

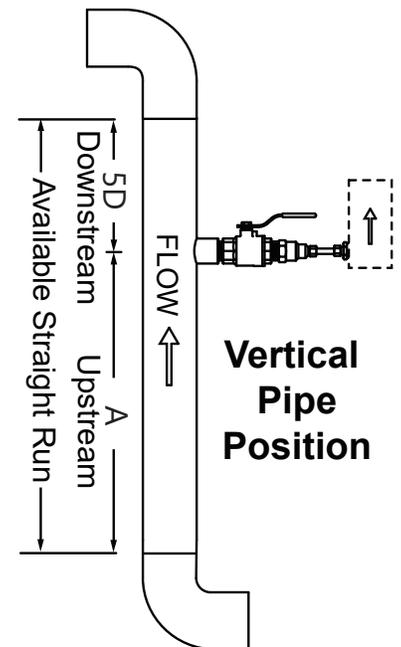
*Specifications subject to change without notice.

OPERATING RANGE FOR COMMON PIPE SIZES					
PIPE SIZE (inches)	FLOW RATE (GPM) (0.1 ft/s to 20 ft/s)	PIPE SIZE (inches)	FLOW RATE (GPM) (0.1 ft/s to 20 ft/s)	PIPE SIZE (inches)	FLOW RATE (GPM) (0.1 ft/s to 20 ft/s)
1¾	0.4 - 95	6	9 - 1,800	18	70 - 14,600
1½	0.6 - 130	8	16 - 3,100	20	86 - 18,100
2	1.0 - 200	10	24 - 4,900	24	125 - 26,500
2½	1.1 - 230	12	35 - 7,050	30	223 - 41,900
3	2.4 - 460	14	42 - 8,600	36	304 - 60,900
4	4 - 800	16	55 - 11,400		

STRAIGHT RUN INFORMATION



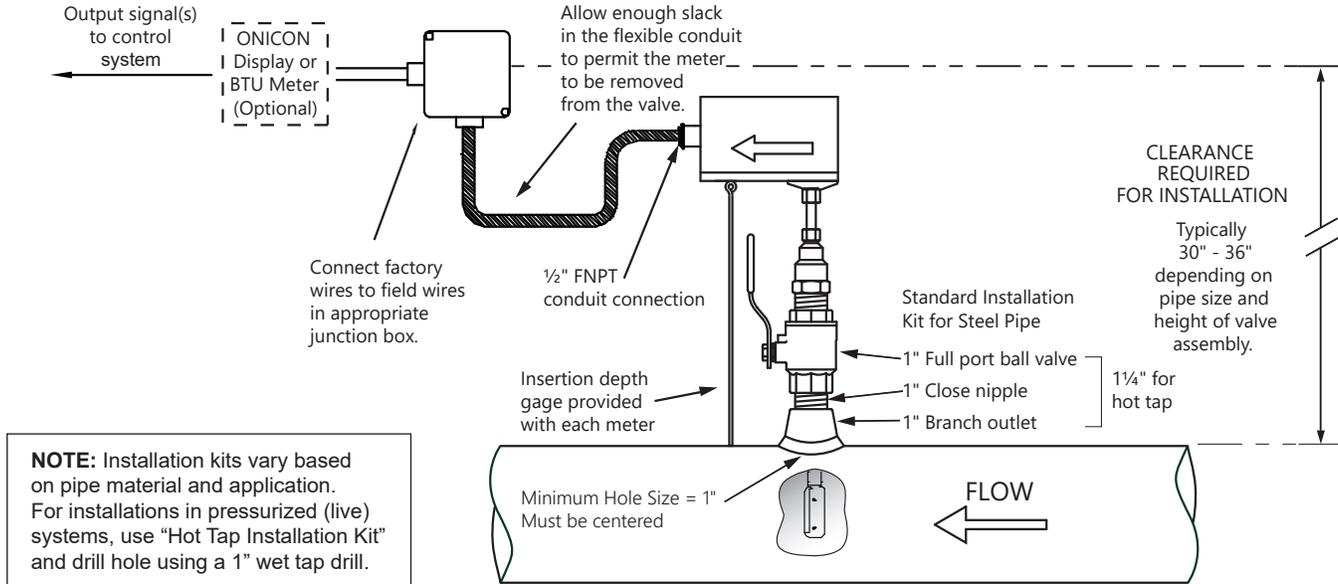
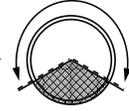
Upstream obstruction	(A) Minimum straight run required upstream of meter location
Single bend preceded by ≥ 9 diameters of straight pipe	10 Diameters
Pipe size reduction / expansion in straight pipe run	10 Diameters
Single bend preceded by ≤ 9 diameters of straight pipe	15 Diameters
Outflowing tee / Pump outflow	20 Diameters
Multiple bends out of plane	30 Diameters
Inflowing tee	30 Diameters
Control / Modulating valve	30 Diameters



TYPICAL METER INSTALLATION

(New construction or scheduled shutdown)

- Install in vertical or horizontal pipe
- For horizontal pipe position meter anywhere in upper 240°



METER ORDERING INFORMATION

F-3500 Meter Model Number Codification = F-35AA-BB-CC-DEFG

F-35AA = Insertion Electromagnetic Flow Meter

00 = Insertion electromagnetic flow meter

BB = Outputs

11 = Frequency, isolated analog, scaled pulse and alarm (dry contacts)

12 = Frequency, isolated analog, bi-directional, scaled pulse and alarm (dry contacts)*

CC = Pipe Size Range and Meter Length

A1 = 1.25 - 2.5"

C3 = 3.0 - 10.0"

D4 = 3.0 - 16.0"

E5 = 3.0 - 22.0"

F6 = 3.0 - 72"

D = Process Connection

1 = 1" NPT adapter. 3/8" stem

E = Wetted Material

1 = 316 SS, XAREC, Viton, Temp < 150°F*

2 = 316 SS, XAREC, FKM, Temp ≤ 250°F*

3 = 316 SS, XAREC, EPDM, NSF rated for domestic water

F = Electronics Enclosure

1 = NEMA 4 weathertight enclosure

G = Wiring Connection

1 = 10' PVC jacketed cable, pig tail with 1/2" conduit adapter

*For 3" and larger pipes

