Jupiter™

DESCRIPTION

The Jupiter Magnetostrictive level transmitter provides a 4–20 mA output proportional to the level being measured. Jupiter is available as an externally mounted model for use with Orion Atlas™ and Gemini™ magnetic level indicators or as a direct insertion version for use in a wide variety of process vessels.

Packaged in an ergonomic dual compartment enclosure, the unit offers many features not found in typical magnetostrictive units today. The dual compartment design allows for separation of wiring and electronics and helps facilitate simple, easy installation and set-up for top, bottom, and direct insertion mount versions.

FEATURES

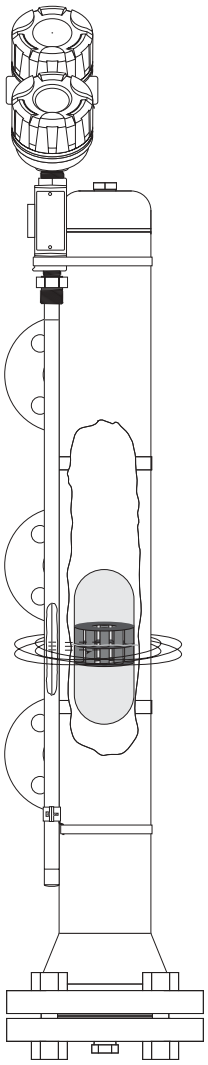
- Precision level measurement ±0.015" (.254 mm)
- Two-wire, loop-powered intrinsically safe and explosion proof level transmitter
- 4–20 mA output
  (HART® Digital Communications Optional)
- LCD with push-button operation
- LCD local indication is standard
- High repeatability ±0.005" (0.127 mm)
- Simple set-up and configuration thru Fast-Cal™
- Ergonomic, functional, dual compartment enclosure
- -40° to +160° F (-40° to +70° C) ambient operation
- Lengths to 35 feet (10.7 meters)
- Process temperatures to +248° F (+120° C) at waveguide

APPLICATIONS

- Separators
- Surge Tanks
- Gas Chillers
- Alkylation Units
- Propane Vessels
- Process Vessels
- Storage Vessels
- Vacuum Tower Bottoms

APPLICATIONS

The Jupiter transmitter is designed for mounting directly to the Orion Atlas or Gemini magnetic level indicators or can be inserted directly into the process vessel. The Jupiter transmitter can provide a 4–20 mA signal to a remote display, local indicator and/or analog input channel, and HART communication. The analog input channel may be a PLC, DCS or A/I card for a PC. From a remote area, typically a safe area such as a blend center or area control room, an operator can view the actual liquid level value, percentage of level, or a 4–20 mA value safely and conveniently.



TECHNOLOGY

The Jupiter transmitter utilizes the engineering principle of magnetostriction and the effect of a magnetic field on the magnetostrictive wire as the basis for operation of the instrument. The primary components are the waveguide assembly containing the wire and the electronics "head" assembly.

A low energy pulse which is generated by the electronics travels the length of the magnetostrictive wire. A return signal is generated from the precise location where the magnetic field of the MLI float intersects the wire. A timer precisely measures the elapsed time between the generation of the pulse and the return of the mechanical or acoustic signal. This is detected by the acoustic sensor located within the cast aluminum housing. The software is set up to interpret the data and to display and transmit the process variable data resulting from the measurement.

AGENCY APPROVALS

AGENCY	MODEL	PROTECTION METHOD	AREA CLASSIFICATION
FM & CSA	2XX-XXXX-XXX	Intrinsically Safe	Class I, Div. 1: Groups A, B, C, & D Class II, Div. 1: Groups E, F, & G Class III, NEMA 4X, T4 at 80° C Entity
	2XX-XXXX-XXX	Explosion Proof	Class I, Div. 1 Groups B, C, & D Class II, Div. 1 Groups E, F, & G Class III, IP66 Type 4X T5 at 80° C
	2XX-XXXX-XXX	Non-Incendive	Class I, Div. 2 Groups A, B, C, & D Class II, Div. 2 Groups E, F, & G ① Class III, IP66 Type 4X T5 at 80° C

SPECIFICATIONS

PERFORMANCE

Accuracy		±0.015"
Repeatability		±0.005% of full span or 0.005" (0.127 mm)
Linearity		0.020% of full span or 0.031" (0.794 mm)
Maximum level rate of change		6 inches per second
Response time		0.1 second
Dead zone		Upper: None, Lower: <2"
Ambient temperature range	Transmitter:	-40° to +160° F (-40° to +70° C)
	LCD:	-10° to +160° F (-20° to +70° C)
Process temperature		-40° to +248° F (-40° to +120° C)
		-40° to +800° F (-40° to +427° C) with factory insulated MLI
Humidity		0 to 99% non-condensing
Electromagnetic compliance		EN 50081-1 and EN 50082-2
Environmental protection compliance		EN 60654-1
Vibration protection compliance		ANSI/ISA – S71.03 VC2
Shock protection compliance		ANSI/ISA – S71.03 SA1
Drop protection compliance		EN 50178
Maximum Pressure (Direct Insertion)		1700 psig @ +100° F (limited to the pressure rating of the selected flange or float)

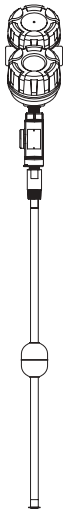
FUNCTIONAL

Input power (at terminals)	12–28 VDC
Signal output	4–20 mA with optional HART 5.0
	NAMUR NE 43 compliant with 3.8 to 21.5 mA useable range
Loop resistance	550 maximum ohms @ 24 VDC
Power consumption	0.7 watt
Error signal	3.6 or 22 mA, field selectable
User interface	3-button keypad, HART communicator, or AMS software
Display	2-line × 8-character LCD in inches or cm, mA, and % of level
Resolution	Analog: 0.01 mA, Digital: 0.01 units
Span	6 to 418 inches

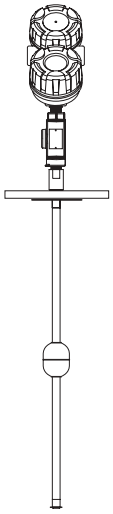
SPECIFICATIONS

PHYSICAL

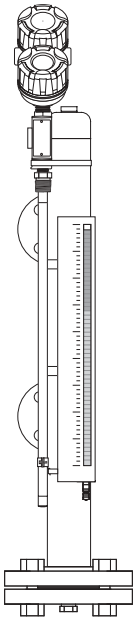
Enclosure type	Dual compartment
Enclosure material	Sand cast aluminum grade 356 HT or 316 stainless steel
Enclosure finish	Baked on polymer powder coat
Enclosure rating	NEMA 4X7/9, IP 66
Sensor material	316 stainless steel
Sensor length	6 inches to 35 feet



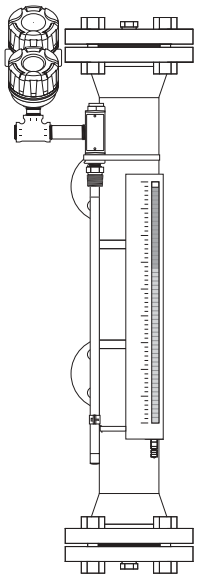
NPT Direct Insertion Jupiter Magnetostrictive



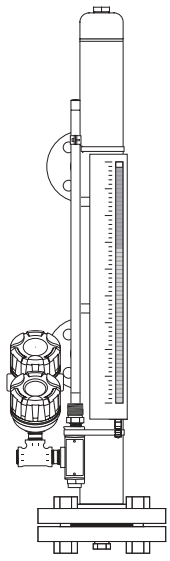
Flanged Direct Insertion Jupiter Magnetostrictive



Top Mount Jupiter Magnetostrictive Mounted to Atlas MLI



Top Mount Jupiter Offset Magnetostrictive Mounted to Atlas Flanged Top/Bottom MLI



Bottom Mount Jupiter Magnetostrictive Mounted to Atlas MLI

MODEL NUMBER

External Mount Magnetostrictive Transmitter For Use With MLI

TRANSMITTER TYPE

2	Jupiter Magnetostrictive

OUTPUT

2	4–20 mA with LCD
4	4–20 mA with HART and LCD

CONFIGURATION ①② – measuring range in inches

1	Top mount
2	Top mount offset
3	Bottom mount offset

CONFIGURATION ①② – measuring range in centimeters

A	Top mount
B	Top mount offset
C	Bottom mount offset

① Use top mount offset configuration with Atlas chamber mounting configurations 2, 3, 5, 6, B, C, Gemini configurations 2, 3, 5, 6, B, C, L, M, N, R, all Aurora.

② Consult factory for use with process temperatures over +175° F (+79° C).

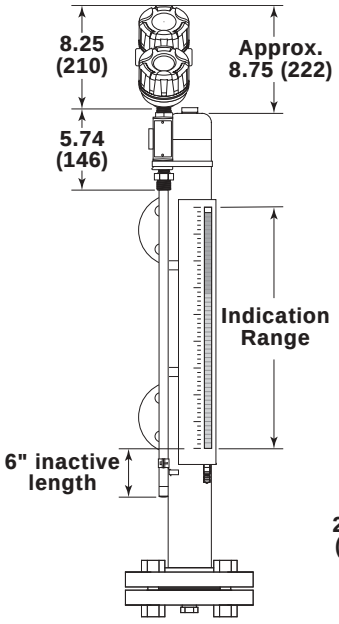
TRANSMITTER HOUSING

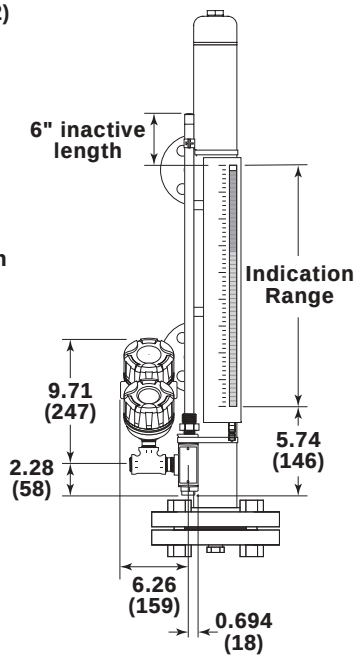
1	Cast aluminum with ¾" NPT conduit entry, FM/CSA: EP, IS, NI
2	Cast aluminum with M20 conduit entry, FM/CSA: EP, IS, NI
3	316 SS with ¾" NPT conduit entry, FM/CSA: EP, IS, NI
4	316 SS with M20 conduit entry, FM/CSA: EP, IS, NI

MEASURING RANGE

X X X	Probe length ③

③ Inches with third digit numeric (Probe length specified should be indication range of MLI plus 6 inches)
Centimeters with third digit alpha (Probe length specified should be indication range of MLI plus 15 cm)





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MODEL NUMBER
DIRECT INSERTION MAGNETOSTRICTIVE TRANSMITTER

TRANSMITTER TYPE

2	Jupiter Magnetostrictive

OUTPUT

2	4–20 mA with LCD
4	4–20 mA with HART and LCD

CONFIGURATION/UNITS OF MEASURE

1	Top Mount, length in inches
A	Top Mount, length in centimeters

MATERIALS OF CONSTRUCTION

1	316/316L SS (standard)
2	Hastelloy® C
3	Monel®
6	Sanitary probe design

MOUNTING CONNECTION

See opposite page

HOUSING MATERIAL, MOUNTING AND CONDUIT ENTRY

1	Cast Aluminum Integral Mount with ¾" NPT Conduit Entry	FM/CSA	EP, NI & IS
2	Cast Aluminum Integral Mount with M20 Conduit Entry	FM/CSA	
3	316 SS Integral Mount with ¾" NPT Conduit Entry	FM/CSA	EP, NI & IS
4	316 SS Integral Mount with M20	FM/CSA	

PROBE LENGTH

Specify measuring range in: Inches when third digit is numeric, lengths from 6 to 410 inches Inch Code Example: 24 inches = Code 024
Specify measuring range in: Centimeters when third digit is alpha, lengths from 15 to 999 cm Centimeter Code Example: 60 cm = Code 060

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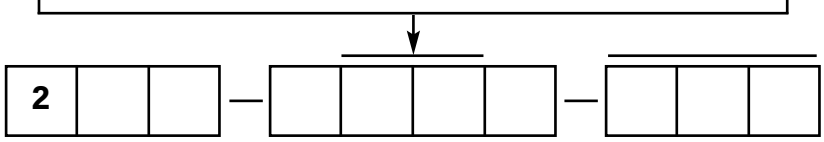
MODEL NUMBER
DIRECT INSERTION MAGNETOSTRICTIVE TRANSMITTER

MOUNTING CONNECTION

11	¾" NPT thread	
22	1" BSP thread	
3P	1", 1½" 3A	Triclamp (Material Code 6 only)
41	2" NPT thread	
43	2" 150#	RF ANSI Flange
44	2" 300#	RF ANSI Flange
45	2" 600#	RF ANSI Flange
47	2" 900/1500#	RF ANSI Flange
48	2" 2500#	RF ANSI Flange
4K	2" 600#	RTJ ANSI Flange
4M	2" 900/1500#	RTJ ANSI Flange
4N	2" 2500#	RTJ ANSI Flange
4P	2" 3A	Triclamp (Material Code 6 only)
53	3" 150#	RF ANSI Flange
54	3" 300#	RF ANSI Flange
55	3" 600#	RF ANSI Flange
56	3" 900#	RF ANSI Flange
57	3" 1500#	RF ANSI Flange
58	3" 2500#	RF ANSI Flange
5K	3" 600#	RTJ ANSI Flange
5L	3" 900#	RTJ ANSI Flange
5M	3" 1500#	RTJ ANSI Flange
5N	3" 2500#	RTJ ANSI Flange
5P	3" 3A	Triclamp (Material Code 6 only)
63	4" 150#	RF ANSI Flange
64	4" 300#	RF ANSI Flange
65	4" 600#	RF ANSI Flange
66	4" 900#	RF ANSI Flange
67	4" 1500#	RF ANSI Flange
68	4" 2500#	RF ANSI Flange

6K	4" 600#	RTJ ANSI Flange
6L	4" 900#	RTJ ANSI Flange
6M	4" 1500#	RTJ ANSI Flange
6N	4" 2500#	RTJ ANSI Flange
6P	4" 3A	Triclamp (Material Code 6 only)
DA	DN50 PN16	DIN 2527 Form B Flange
DB	DN50 PN25/40	DIN 2527 Form B Flange
DD	DN50 PN64	DIN 2527 Form E Flange
DE	DN50 PN100	DIN 2527 Form E Flange
DF	DN50 PN160	DIN 2527 Form E Flange
DG	DN50 PN250	DIN 2527 Form E Flange
DH	DN50 PN320	DIN 2527 Form E Flange
DJ	DN50 PN400	DIN 2527 Form E Flange
EA	DN80 PN16	DIN 2527 Form B Flange
EB	DN80 PN25/40	DIN 2527 Form B Flange
ED	DN80 PN64	DIN 2527 Form E Flange
EE	DN80 PN100	DIN 2527 Form E Flange
EF	DN80 PN160	DIN 2527 Form E Flange
EG	DN80 PN250	DIN 2527 Form E Flange
EH	DN80 PN320	DIN 2527 Form E Flange
EJ	DN80 PN400	DIN 2527 Form E Flange
FA	DN100 PN16	DIN 2527 Form B Flange
FB	DN100 PN25/40	DIN 2527 Form B Flange
FD	DN100 PN64	DIN 2527 Form E Flange
FE	DN100 PN100	DIN 2527 Form E Flange
FF	DN100 PN160	DIN 2527 Form E Flange
FG	DN100 PN250	DIN 2527 Form E Flange
FH	DN100 PN320	DIN 2527 Form E Flange
FJ	DN100 PN400	DIN 2527 Form E Flange



FLOAT CHART

Float Part Number	Float Material	Minimum S.G.	Maximum Pressure @ +100° F
007-1526-001	316 SS	.71	350 psi
007-1527-001	Titanium	.35	900 psi
007-1528-001	Hastelloy C	.81	275 psi
007-1529-001	Monel	Consult Factory	C/F
007-1530-001	Sanitary SS	C/F	C/F

ORION

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