

Insertion Magnetic Inductive Flowmeter for Conductive Liquids

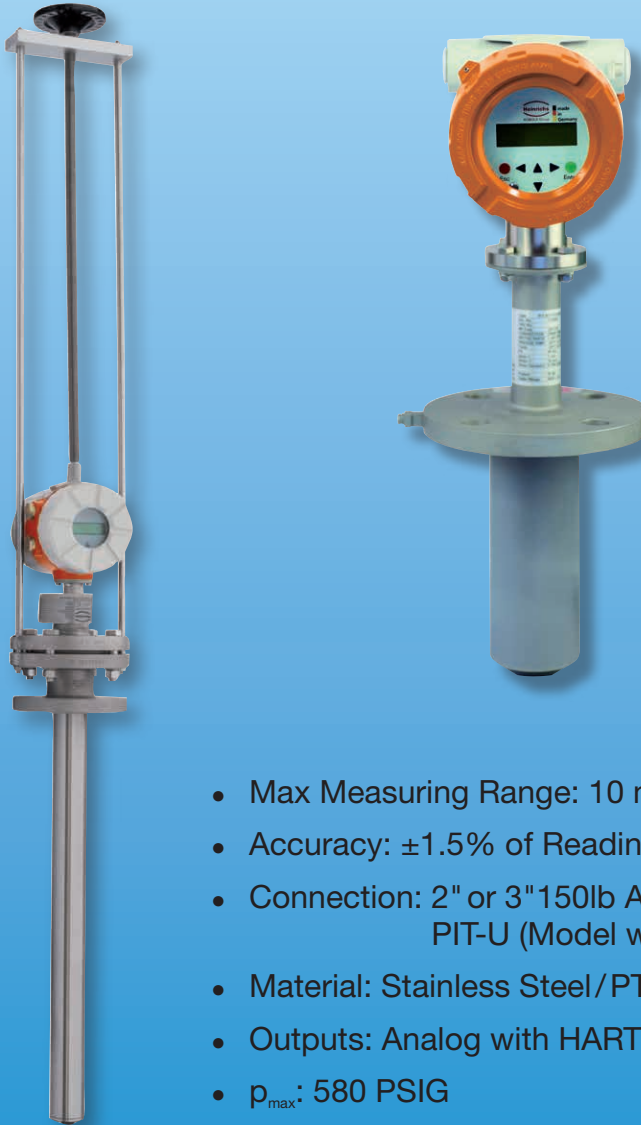
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AQUATRONIX

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measuring
•
monitoring
•
analyzing

PIT



HART
COMMUNICATION FOUNDATION



ATEX

- Max Measuring Range: 10 m/s (32.8 ft/sec)
- Accuracy: $\pm 1.5\%$ of Reading $\pm 0.5\%$ of Full Scale
- Connection: 2" or 3" 150lb ANSI or DN40 PN 40 for PIT-U (Model with Extraction Device)
- Material: Stainless Steel/PTFE or PFA-Coated
- Outputs: Analog with HART®, Pulse and Status
- p_{max} : 580 PSIG
- t_{max} : 284 °F



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Description

An electrically conductive media flowing through an oriented magnetic field, in accordance to Faraday's law of induction, will induce a voltage proportional to the media flow velocity and hence the volumetric flow. The PIT-sensor is available with an integral or remote mount transmitter. A retracting device for installing and uninstalling under process conditions is available. The magnetic-inductive PIT flow velocity sensor is used to measure or monitor the volume flow of liquids, slurries, and other electrically conductive media while minimizing pressure drop. Pressure, temperature, density, and viscosity do not affect the volume measurement. Solid particles and small gas pockets should be avoided.

Advantages:

- Variety of wetted materials
- Electrodes in Hastelloy®, Tantalum, and Platinum (Other materials upon request)
- Retracting device for use under process conditions

Technical Details

Sensor Versions:	PIT-S (Stainless Steel/PTFE), PIT-A (PFA-Coated), PIT-U (With Extraction Device)
Electrodes:	Hastelloy®, Tantalum, Platinum (Other Materials upon Request)
Wetted Parts	
Outer Sensor Tube:	Stainless Steel/PTFE (PIT-S), PFA (PIT-A), Stainless Steel/PTFE (PIT-U)
Measuring and Grounding	
Electrodes:	Standard: Hastelloy® C4 Special: Tantalum, Titanium
Non-Wetted Parts	
Sensor Flange:	Stainless Steel
Welding Socket and Flange:	Stainless Steel
Sensor Neck:	Stainless Steel
Terminal Box for Remote Mounted Sensor/Transmitter:	Aluminum Pressure Casting, Painted
Connection:	ASME B16.5, Flanges Acc. EN 1092, DIN 2512 (Special Connections on Request)
Nominal Pressure:	232 PSIG, ANSI Class 150 (PIT-S) 580 PSIG, ANSI Class 150 (PIT-A) 232 PSIG, DN 40 (PIT-U) (Higher Pressures on Request)
Process Temp:	
Compact Version:	-4...176 °F (PIT-S, PIT-A, PIT-U)
Remote Version:	-40...212 °F (PIT-S, PIT-U) -40...300 °F (PIT-A)
Ambient Temp:	-40...140°F



Range of Application for Sizes:

5" ...80" (PIT-S),
5" ...24" (PIT-A),
5" ...80" (PIT-U)

Accuracy:

± 1.5 % of Reading plus
± 0.5 % Adjusted Full Scale
(Under Reference Conditions)

Repeatability:

± 0.75 % of Reading
± 0.25 % Adjusted Full Scale
(Under Reference Conditions)

Conductivity:

≥ 20 µS/cm (50 µS/cm for
Demineralized Water)

Communication:

HART®

Range Values

Standard: 3.28...32.8 ft/sec (1 ... 10 m/s)
Optional: 1.64...16.4 ft/sec (0.5 ... 5 m/s)

Protection

Standard: IP 67
Optional: IP 68 (EN 60529)

Transmitter

Mounting: Compact or Remote
Power Supply: 115/230 V_{AC}, 24 V_{DC}

UMF2

Output Code F: Current Output: 4-20 mA
Pulse Output: Passive U_m = 24 V_{DC}
Status Output: Passive U_m = 24 V_{DC}

Output Code G: Current Output: 4-20 mA with HART®
Pulse Output: Passive U_m = 24 V_{DC}
Status Output: Passive U_m = 24 V_{DC}

Ambient Temp:

-4...140 °F

Approval:

General Purpose
(ATEX Version upon Request)

Insertion Magnetic Inductive Flowmeter Model PIT

Order Details Sensor (Example: PIT-S 206R 163 H 0 1 0 0 0K)

Model	Process Connection Flange	Sensor Length	Electrode Material	Measuring Range (Media Velocity)
PIT-S ¹⁾³⁾ .. = SS Version	..206R.. = 2" ANSI Class 150 RF	..163.. = 163 mm (Up to Diameters 24")	..H.. = Hastelloy® C-4	..0.. = 3.28...32.8 ft/s (1...10 m/s) ..L.. = 1.64...16.4 ft/s (0,5 - 5 m/s)
PIT-A ²⁾³⁾ .. = PFA Coated Version	..208R.. = 3" ANSI Class150 RF	..XXX ⁵⁾ .. = Special Length	..T.. = Tantalum (Only for Model PIT-A)	
PIT-U ¹⁾³⁾⁴⁾ .. = Version with Extraction Device	..317B.. = DN40 PN40 Form B1 DIN EN 1092-1 (Standard)	..XXX ⁶⁾ .. = Special Length	..N.. = Platinum (Only for Model PIT-A)	

¹⁾ Without Grounding Electrode

²⁾ With Grounding Electrode

³⁾ Include Gasket SIL C-4400 (Klinger)

⁴⁾ Model including Installation/Extraction Device, Mounting Adaptor and Valve:

Welding Socket PIT-60019917, Valve Lock PIT-EVVS and Pressure Screw Set PIT-1G or PIT-1A (See Accessories and Spare Parts for description)

⁵⁾ 3 digits in mm (PIT-S: 28"...48" = 263, PIT-S: 56"...80" = 363)

⁶⁾ 3 digits in mm (Sensor length must be calculated. See manual)

Order Details Sensor (Continued)

Sensor Configuration	Approvals	Certificates	Special Design
..1.. = Compact Transmitter, IP67	..0.. = Without	..0.. = Without	..0K = Without ..XK = With (Separate Specification Needed)
..4.. = Remote Transmitter, IP67 (Junction Box on Sensor)		..1 ²⁾ .. = Certificate of Compliance with the Order 2.1 According to EN 10204:2004	
..5.. = Remote Transmitter, IP68 (Grouted Junction Box on Sensor)		..2 ¹⁾²⁾ .. = Test Report 2.2 According to EN 10204:2004 ..B ¹⁾²⁾ .. = Inspection Certificate with Material Certificate 3.1 ..C.. = Inspection Certificate with Material Certificate 3.2	

¹⁾ Only on Model PIT-S or PIT-U

²⁾ No discount for each additional exact same device (Consolidated Certificate)

Order Details Transmitter UMF2 (Example: UMF2- A 1 1 F0BK)

Model	Transmitter Layout/ Cable Entry	Display/ Interface Board	Power Supply	Output	Interconnecting Cable for Remote Versions
UMF2-..	..A.. = Compact Transmitter IP67 / ½" NPT (f)	..1.. = Integrated	..1.. = 230 V _{AC} (+10%, -15%), 50/60 Hz	..F0BK = Current Output: 4-20 mA (Passive) Pulse Output: Passive U _m = 24 V _{DC} Status Output: Passive U _m = 24 V _{DC}	IP67 (Cable Prefabricated on Transmitter) ..0 = 2.5 m (Standard) ..1 = 5 m ..2 = 10 m IP67 (Junction Box on Transmitter) ..3 = 15 m ..4 = 20 m ..5 = 30 m ..6 = 40 m ..7 = 50 m
	..B.. = Compact Transmitter IP67 / M20x1.5				
	..C.. = Remote Transmitter IP67 Including Pipe-Wall Mounting Bracket/ ½" NPT (f)				
	..D.. = Remote Transmitter IP67 Including Pipe-Wall Mounting Bracket/ M20x1.5				
	..G.. = Remote Transmitter IP68 Including Pipe-Wall Mounting Bracket/ ½" NPT (f)				
..H.. = Remote Transmitter IP68 Including Pipe-Wall Mounting Bracket / M20x1.5	..2.. = 115 V _{AC} (+10%, -15%), 50/60 Hz	..4.. = 24 V _{DC} (±15%)	..G0BK = Analog Output: 4-20 mA with HART® Pulse Output: Passive U _m = 24 V _{DC} Status Output: Passive U _m = 24 V _{DC}	IP68 (Junction Box on Transmitter) ..A = 2.5 m (Standard) ..B = 5 m ..C = 10 m ..D = 15 m ..E = 20 m ..F = 30 m ..G = 40 m ..H = 50 m	

Accessories and Spare Parts

Order Details Welding Socket (Item Included as Standard with PIT-U)

Order Number	Description
PIT-60018833	316-Ti SS/316L SS, 2" Class 150 RF ASME B16.5-2013, Standard Length
PIT-60019025	316-Ti SS/316L SS, 3" Class 150 RF ASME B16.5-2013, Standard Length
PIT-60019917	316-Ti SS/316L SS, DN65 PN 16, Standard Length, (included with base model PIT-U)

Screws on Request

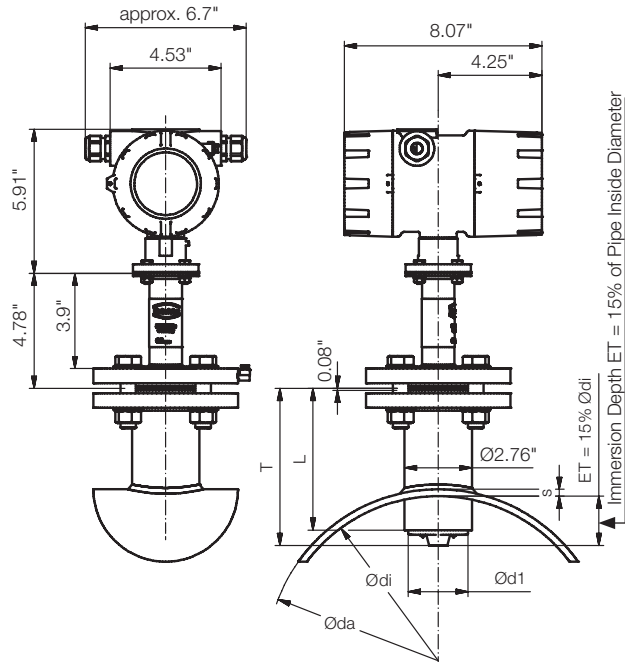
Order Details Installation/Extraction Device (Item Included as Standard with PIT-U)

Model	Description
PIT-EVVS	Valve Lock 1.4408 (Ball Valve + Fitting Adapter), DN40 PN40 (Sensor Side) to DN65 PN 16 (Process Side, Valve)
PIT-1G	Pressure Screw Set for use with Compact Transmitter. Length = 40" or less
PIT-1A	Pressure Screw Set for use with Remote Transmitter. Length = 40" or less

Insertion Magnetic Inductive Flowmeter Model PIT

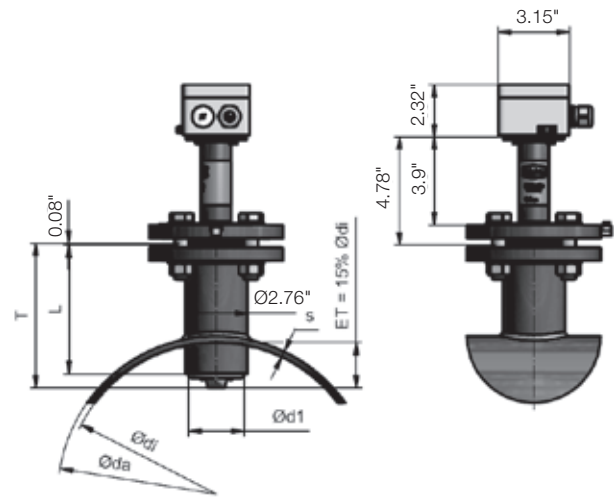
Dimensions

PIT - Integrated UMF2 Electronic



Weight:	12.13 lbs
DN:	Nominal Diameter
T:	Length of Sensor
Ød1:	Diameter of Sensor
L:	Length of Socket Weld Fitting
ET:	Immersion Depth in % of Pipe Diameter

PIT - Remote Sensor with IP 67 Terminal Box

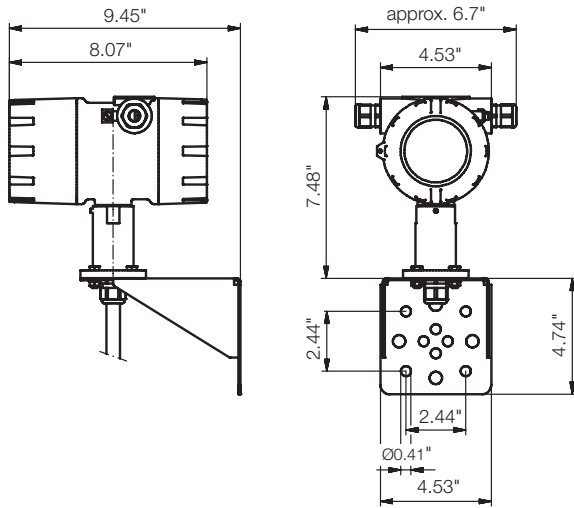


IP 68 Terminal Box:	2.25" x 2.95" x 4.33"
Weight:	7.94 lbs
DN:	Nominal Diameter
T:	Length of Sensor
Ød1:	Diameter of Sensor
L:	Length of Socket Weld Fitting
ET:	Immersion Depth in % of Pipe Diameter

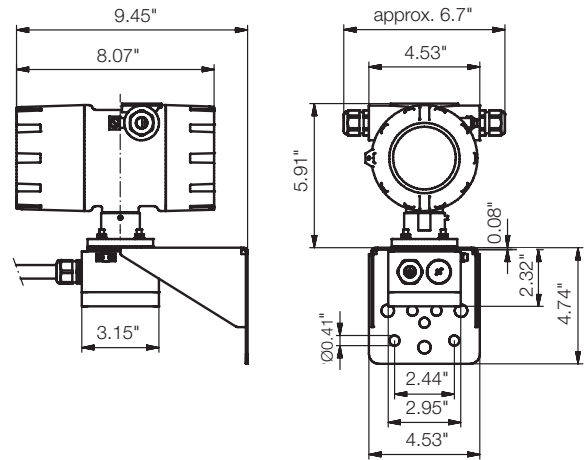
Model	Pipe	T	Ød1	L
PIT-S (SS/PTFE)	6" - 24"	6.42"	2.37"	5.71"
	28" - 48"	10.35"	2.37"	6.70"
	56" - 80"	14.30"	2.37"	6.70"
PIT-A (PFA-Coated)	6" - 24"	6.42"	2.44"	5.71"

Dimensions (Continued)

UMF2 - Remote Transmitter with Directly Connected Cable (For Cable Length < 10 m)



UMF2 - Remote Transmitter with Terminal Box (For Cable Length > 10 m)



UMF2 Transmitter Weight: 6.17 lbs