

MPU™ 1600c

Bulletin SSKS009 Issue/Rev. 0.2 (11/18)

Eight Path Gas Ultrasonic Flowmeter

The **MPU™ 1600c Ultrasonic Gas Flowmeter** is our most advanced solution for custody transfer gas flow measurement with minimal pressure drop and only 5D upstream straight run required. The meter's path geometry allows for the cancellation of swirl velocities for installations without flow conditioning. Combined with the enhanced features of the next generation Series C electronics, the MPU 1600c is the leader in ultrasonic gas measurement accuracy, diagnostic intelligence and installation flexibility.

Principle of Operation

The MPU 1600c calculates flow rate by measuring the acoustic transit time of ultrasonic signals traveling back and forth across the flow. The signal transmission and detection is achieved using two piezoelectric transducers located on each side of the measurement path.

The high speed electronics measure the transit time in both the upstream and downstream direction. This information is used to accurately calculate the flowing velocity and volumetric flow rate of gas through the meter.



Features

- **Cancellation of Swirl** – Eight path design meets OIML R137 accuracy class 0.5 with just 5D upstream straight run from a double elbow out of plane disturbance without the use of a flow conditioner.
- **Accuracy** – Nominal accuracy is $\pm 0.1\%$ and repeatability of $\pm 0.05\%$ or better with flow calibration.
- **On Board Memory for Diagnostic Analysis** – On board memory stores 8GB of continuous process data which is configurable. A detailed diagnostic analysis of process conditions and meter operation is possible following any process upset or alarm condition by simply downloading the file; no logging time necessary.
- **Compliance to International Standards** – The MPU 1600c has been field tested and verified to AGA-9 2017, Welmec 7.2, OIML R137-1 and 2 and ISO 17089 performance specifications.
- **Advanced Noise Immunity** – The digital signal filtering and processing enhances noise immunity allowing for accurate measurement in difficult, high noise installations.
- **Integrated or Remote Color Touch Screen Display** – The optional color touch screen display can be attached as the front panel of the meter electronics or remotely mounted using the optional wall-mounted display. The color touch screen display assembly is explosion-proof and communicates via Ethernet with the meter electronics.
- **Web-based Interface** – Meter can be directly accessed with a web browser to serve as the operator interface display, eliminating the need for specialized software interfacing, improving accessibility and ease of use.
- **Low Maintenance** – No moving parts that need replacement due to wear, providing stable measurement over the life of the meter. Non-intrusive parts help avoid product build up on equipment.
- **In-line Transducer Replacement** – The transducers can easily and safely be removed under pressure using a transducer retraction tool with isolation valves eliminating the need for process shut down or recalibration due to servicing.

Operating Specifications

Size	Velocity, m/sec		Velocity, ft/sec		Flow Rate, Am ³ /h ⁽¹⁾		Flow Rate, AMCFD ⁽¹⁾	
	Min	Max	Min	Max	Min	Max	Min	Max
6"	0.40	30.0	1.31	98.4	27	2,010	23	1,700
8"	0.40	30.0	1.31	98.4	47	3,485	39	2,950
10"	0.40	30.0	1.31	98.4	73	5,495	62	4,660
12"	0.40	30.0	1.31	98.4	105	7,880	89	6,680
16"	0.40	30.0	1.31	98.4	170	12,730	145	10,790
20"	0.30	30.0	0.98	98.4	200	20,280	170	17,190
24"	0.30	30.0	0.98	98.4	300	29,580	250	25,070
30"	0.30	30.0	0.98	98.4	470	46,820	400	39,680
36"	0.20	25.0	0.66	82.0	450	56,670	385	48,030
48"	0.20	25.0	0.66	82.0	815	101,810	690	86,290
60"	0.20	25.0	0.66	82.0	1,280	160,090	1,085	135,690

Flow rates calculated for schedule STD pipe, other schedules will vary. Consult factory for additional pipe sizes and schedules. Consult factory for flow velocities outside of the normal minimum and maximum values.

Operating Pressure Range

1-275 bar_a / 15 to 3,990 psi_a

Please consult factory for pressures up to 350 bar.

Maximum Working Pressure - PSI (bar)

ASME	Carbon Steel	Stainless Steel
150	285 (20)	275 (19)
300	740 (51)	720 (50)
600	1,480 (102)	1,440 (99)
900	2,220 (153)	2,160 (149)
1500	3,990 (275)	3,990 (275)

Nominal Accuracy

OIML R137-1 Accuracy Class 0.5 with 5D upstream and no flow conditioning.

Without flow calibration²: ≤ ±0.35% of measured value sizes 12" and larger; ≤ ±0.5% of measured value sizes 10" and smaller

With flow calibration: ≤ ±0.1% of measured value

Repeatability: ≤ ±0.05% of measured value

Weights and Measures Approvals and Compliance

WELMEC 7.2

OIML R137-1&2 (Edition 2012) Including Amendment 2014

OIML R137-3 Edition 2014 (E)

AGA Report No. 9 (2017)

ISO 17089-1 First Edition 2010-11-15

Compliance to International Standards

The MPU 1600c has been field tested and verified to AGA-9 2017, Welmec 7.2 Software, OIML R137-1&2 and ISO 17089 performance specifications.

Temperature Range

Process Fluid Temperature:

Gas Temperature: -4°F to 158°F (-20°C to 70°C)

Ambient Temperature: -13°F to 140°F (-25°C to 60°C)

Storage Temperature: -40°F to 140°F (-40°C to 60°C)

Standard Flange Connections

Typically ANSI B16.5 RF or RTJ face flanges. Other types flange connections available on request.

NACE Compliant

Designed for NACE MR0175 compliance

Meter Body and Flanges Material

Carbon Steel: A350 LF2

Stainless Steel: A182 F316

For other options consult factory.

Transducer

Piezoelectric element, fully encapsulated in a titanium housing – special solution for H₂S and C₆+ applications.

¹ Flow rates correspond to conditions of actual temperature and pressure (AVF). For ranges in units of standard volumetric flow (SVF) use the following:

$$SVF = AVF \left(\frac{P_{\text{actual}}}{P_{\text{standard}}} \right) \left(\frac{T_{\text{standard}}}{T_{\text{actual}}} \right)$$

² Values are Weighted Mean Error according to the OIML R137-1&2:2012 calculation.

Instrument Power

DC Instrument Input Power to Field Mounted Electronics

24 Vdc, +20% / -15%, 0.5A without integrated display 0.7A with integrated display
Power inrush: 10 Amps for < 20mS at 24 Vdc.
The DC power input circuitry is reverse current protected and fused.
Tested to 20 milliseconds power dropout, 100 milliseconds power brownout without shut down.
Meter will always restart orderly after power loss.

Electrical Inputs

Digital Inputs

Quantity: 2

Function: Input 1 – Consult Factory.

Input 2 – Dedicated to external Weights & Measures switch input

Type: Optically isolated, internally current limited digital input

Input voltage range (V-high): 5 to 28 VDC

Maximum input frequency: 10KHz

V (high): 5.5 VDC minimum to 28 VDC maximum.*

V (low): 1 VDC maximum.*

Current at maximum voltage: 20mA maximum

Input impedance: 1.67 kΩ.

***Note:** The input pulse must rise above V (high-minimum) for a period of time then fall below V (low) to be recognized as a pulse.

Analog Input (4-20mA)

Quantity: 2

Type: Two-wire, 4-20mA current loop receiver, common neutral isolated from system ground, programmable as to function.

Span Adjustment: 3.8mA to 22mA span, User-programmable inside these limits.

Input burden: 50Ω

Resolution: 24-bit

Voltage drop: 2 Volts maximum.

Recommended cable: Belden 8729, 9940 or equivalent

Analog Input (Temperature Probe – RTD)

Quantity: 1

Type: Four-wire, 100Ω Platinum Resistance Temperature Detector (PRTD).

Temperature coefficient: @ 0°C: 0.00385Ω/Ω/°C

Temperature range: -60°C to 180°C

Offset: Temperature probe offset is user-programmable.

Self calibrating: Lead length compensation that requires no resistance balancing of leads.

Electrical Outputs

Communications

Ethernet

Quantity: 2

IEEE 802.3 Ethernet operating at 10/100 Mbps.

Modbus TCP/IP at port 502

10/100Base-TX (Ethernet over twisted pair)

Quantity 1: if integrated display is fitted.

Auto-MDIX – Will work with straight or crossover cable automatically

RJ-45 connector per port

Maximum distance between Ethernet devices: 100m (328ft)

Recommended cable: Category 5 or better

100Base-FX (Ethernet over fiber optic)

Quantity: 1

1300nm wavelength MT-RJ connector

Maximum Distance between Ethernet devices: 2km (6,561ft)*

Recommended cable: 1-pair 62.5/125 μm multimode glass

Recommended cable: 1-pair 62.5/125 μm multimode glass

Transmitter output minimum optical power:

-20dBv avg

Receiver input minimum optical power: -31dBm avg.

Optical Power Budget (OPB) at 0.5km with recommended cable: 9dB

Optical Power Budget (OPB) at 2km with recommended cable: 6dB

***Note:** Optical losses in cables, connectors, and couplers can reduce this maximum limit.

Serial

Quantity: 1

EIA-485 Port: 2 wire

120Ω endpoint termination resistor included in circuit, user selectable via jumper

Configuration: Multi-drop network

Line Protocol: Half duplex

Data Rate: Selectable asynchronous data (Baud) rates of 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 bps.

Word Length: 7 or 8 bits

Parity: None, odd, or even

Protocol: MODBUS (RTU) or Modbus ASCII

Recommended cable: Belden 3106A, 9841, or equivalent low capacitance cable

HART

The optional HART interface operates over the 4-20 mA analog output and supports the following command:

All Universal Commands:

- Read up to four dynamic variables
- Read and write TAG name
- Read range values and sensor limits
- Read and write user messages and date

Common Practice Commands required for:

- Selection of engineering units
- Burst mode control

Digital/Pulse Outputs

Quantity: 2

Volume output with programmable K-factor.

Configuration Selections:

- 1). Quadrature (I, Q)
- 2). Pulse (forward, reverse)
- 3). Pulse (pulse, direction)
- 4). Pulse (pulse, direction inverted)

Type: Current limited active output or open collector – jumper selectable.

Switch blocking voltage (switch off): 30Vdc maximum.

Frequency Range: 0 to 10kHz nominal, overrange up to 15kHz.

Minimum Pulse Width: > 66µs (50% duty cycle nominal)

24 VDC Input Power Supply: No Load: 23 ±0.3 Vp-p square wave.

270Ω Load: 12 ±0.3 Vp-p square wave (minimum).

12 VDC external power supply for pulse output

circuitry: No Load: 11 ±0.3 Vp-p square wave.

270Ω Load: 6 ±0.3 Vp-p square wave (minimum).

Current: Maximum Sink Current: 300mA @ 29 Vdc.

Maximum Source Current: 80mA @ 29 Vdc.

Recommended cable: Belden 9402. Up to 2000 ft use 20AWG, up to 3000 ft use 18AWG. Shielded cable is recommended with the shield connected only at the receiving instrument. If using dual (quadrature) pulse output, the two conductors carrying the outputs must not be in the same pair and ideally individually shielded.

Analog Output (4-20mA)

Quantity: 1

Type: Two-wire, loop powered, isolated from ground, user programmable as to function.

Span adjustment: 3.8mA to 21mA User adjustable

Alarm output: 22.5mA

Resolution: 16-bit.

Compliance voltage range: 6 VDC to 28VDC.

Maximum load resistance @ 10VDC: 250

Recommended cable: Belden 8729, 9940 or equivalent

Alarm Output

Quantity: 1

Type: Optically-isolated solid state output.

Polarity: Open during alarm and power off.

Switch blocking voltage: 30 VDC maximum.

Load current: 125mA maximum with 0.6 volt drop.

Safety Classifications

Model (Ultrasonic Transducer)

Explosion / Flame Proof certifications: UL, CUL, ATEX, IECEx

ATEX (European Community)

PTB 07 ATEX 1018

Ex d IIC T4/T5

Type US-A -40°C to +80°C

Type US-B -55°C to +100°C

IP 66

Note: Transducer US-A and US-B are included in the IECEx (Global Approach) and are listed by UL for North America, see Model UTS

Model UTS (Ultrasonic Transducer System)

ATEX (European Community)

DEMKO 09 ATEX 0907098X

Ex d IIB T4/T5 Gb

UTS-GA -40°C to +80°C

UTS-GB -55°C to +100°C

IP 66

IECEx (Global Approach)

IEC Ex UL 09.0023X

Ex d IIB T4/T5 Gb

UTS-GA -40°C to +80°C

UTS-GB -55°C to +100°C

IP 66

UL/CUL (North American)

UL File E23545

Class I, Division 1, Groups C & D

Class I, Zone 1, Groups IIB

Type 4X

UTS-GA -40°C to +80°C

UTS-GB -55°C to +100°C

Electronics Enclosure: Ultrasonic Meter Control (UMC)

Explosion / Flame Proof Certification UL, C-UL, ATEX, IECEx

ATEX (European Community)

DEMKO 13 ATEX 1204991X

Ex d ia op is IIB T5 Gb (Um=250v) IP66 Tamb = -40°C to 60°C (Display Version)

Ex d op is IIB T5 Gb IP66 Tamb = -40°C to 60°C (Non Display Version)

IECEx (Global Approach)

IECEx UL 13.0019X

Ex d ia op is IIB T5 Gb (Um=250v) IP66 Tamb = -40°C to 60°C (Display Version)

Ex d op is IIB T5 Gb IP66 Tamb = -40°C to 60°C (Non Display Version)

UL/CUL (North American)

UL File E23545

Class I, Division 1, Groups C & D Class I, Zone 1, Groups

IIB T5, IP66 Enclosure

Tamb = -40°C to 55°C (Display Version)

Tamb = -40°C to 60°C (Non Display Version)

Remote Mounted Display: Touch Screen Control Interface (TCI)

Explosion / Flame Proof Certification UL, C-UL, ATEX, IECEx

ATEX (European Community)

DEMKO 13 ATEX 1204991X

Ex d ia op is IIB T5 Gb (Um=250v) IP66 Tamb = -40°C to 60°C (Display Version)

IECEx (Global Approach)

IECEx UL 13.0019X

Ex d ia op is IIB T5 Gb (Um=250v) IP66 Tamb = -40°C to 60°C (Display Version)

UL/CUL (North American)

UL File E23545

Class I, Division 1, Groups C & D Class I, Zone 1, Groups

IIB T5, IP66 Enclosure

Tamb = -40°C to 55°C (Display Version)

Electronic Enclosure: (UMH)

Flame proof certifications ATEX & IECEx only.

ATEX (European Community)

BVS 17 ATEX E 052 X

Ex db op is IIB + H₂ T5

Tamb = -50°C to +60°C

IECEx (Global Approach)

IECEx BVS 17.0046X

Ex db op is IIB + H₂ T5

Tamb = Tamb = -50°C to +60°C

Pressure Safety Information

ASME

Designed to ASME B31.3 / ASME Section VIII Div. 1

CRN

CRN certificates available, consult factory

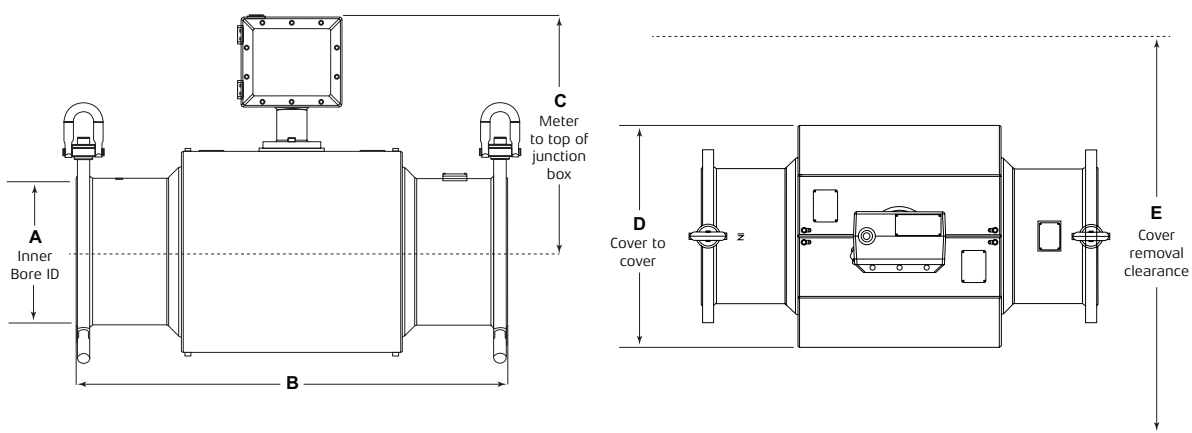
PED

EC Conformity Certificate available, consult factory.

Dimensions and Weight

Inches (mm) and Pounds (kg)

Dimensions – inches to the nearest tenth (millimetres to the nearest whole mm), each independently dimensioned from respective engineering drawings. For larger sizes or other flange types/classes and ASME 900, 1500 Class - please consult factory.



ASME Class 150 Flange*

Size	A	B	C	D	E	Weight - lb (kg)
6"	5.761" (146.3)	29.0" (737)	18.5" (470)	15.7" (398)	32" (813)	466 (202)
8"	7.625" (193.7)	33.5" (850)	19.4" (493)	19.7" (499)	40" (1,016)	674 (305)
10"	9.562" (242.9)	37.0" (940)	20.3" (516)	20.6" (524)	42" (1,067)	859 (390)
12"	11.374" (288.9)	39.0" (990)	21.3" (541)	22.6" (575)	46" (1,168)	1,090 (494)
16"	14.312" (363.5)	43.3" (1,100)	22.8" (579)	26.0" (661)	53" (1,346)	1,360 (616)
20"	17.938" (455.6)	45.5" (1,156)	24.6" (624)	30.5" (775)	62" (1,575)	2,325 (1,054)
24"	21.562" (547.7)	52.6" (1,337)	26.6" (675)	35.2" (893)	71" (1,803)	3,380 (1,533)
30"	27.500" (698.5)	66.25" (1,682)	29.8" (757)	44.5" (1,130)	55" (1,397)	5,516 (2,502)

ASME Class 300 Flange*

Size	A	B	C	D	E	Weight - lb (kg)
6"	5.761" (146.3)	29.0" (737)	18.5" (470)	15.7" (398)	32" (813)	500 (226)
8"	7.625" (193.7)	33.5" (850)	19.4" (493)	19.7" (499)	40" (1,016)	715 (324)
10"	9.562" (242.9)	37.0" (940)	20.3" (516)	20.6" (524)	42" (1,067)	930 (421)
12"	11.374" (288.9)	39.0" (990)	21.3" (541)	22.6" (575)	46" (1,168)	1,200 (544)
16"	14.312" (363.5)	43.3" (1,100)	22.8" (579)	26.0" (661)	53" (1,346)	1,485 (673)
20"	17.938" (455.6)	45.5" (1,156)	24.6" (624)	30.5" (775)	62" (1,575)	2,485 (1,127)
24"	21.562" (547.7)	52.6" (1,337)	26.6" (675)	35.2" (893)	71" (1,803)	3,510 (1,592)
30"	27.500" (698.5)	66.25" (1,682)	29.8" (757)	44.5" (1,130)	55" (1,397)	6,100 (2,767)

ASME Class 600 Flange*

Size	A	B	C	D	E	Weight - lb (kg)
6"	5.761" (146.3)	29.0" (737)	18.5" (470)	15.7" (398)	32" (813)	546 (248)
8"	7.625" (193.7)	33.5" (850)	19.4" (493)	19.7" (499)	40" (1,016)	791 (359)
10"	9.562" (242.9)	37.0" (940)	20.3" (516)	20.6" (524)	42" (1,067)	1,058 (480)
12"	11.374" (288.9)	39.0" (990)	21.3" (541)	22.6" (575)	46" (1,168)	1,306 (592)
16"	14.312" (363.5)	43.3" (1,100)	22.8" (579)	26.0" (661)	53" (1,346)	1,947 (883)
20"	17.938" (455.6)	45.5" (1,156)	24.6" (624)	30.5" (775)	62" (1,575)	2,632 (1194)
24"	21.562" (547.7)	52.6" (1,337)	26.6" (675)	35.2" (893)	71" (1,803)	3,776 (1713)
30"	27.500" (698.5)	66.25" (1,682)	29.8" (757)	44.5" (1,130)	55" (1,397)	6,600 (2,994)

*For other sizes or custom ID consult factory

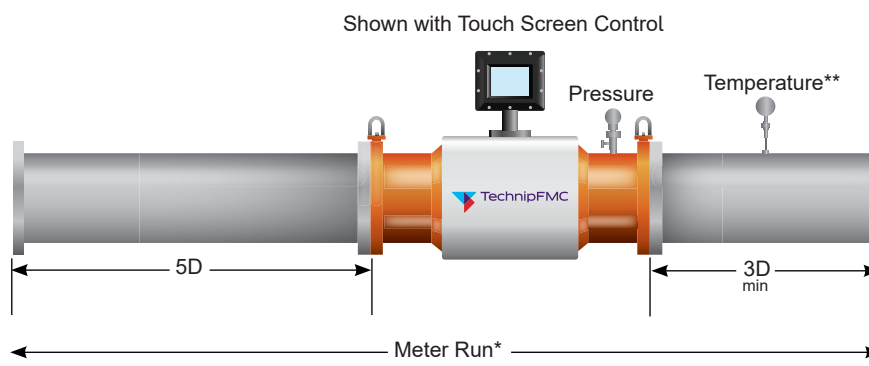
Note: Dimensions – inches to the nearest tenth (millimetres to the nearest whole mm), each independently dimensioned from respective engineering drawings.

Recommended Installation

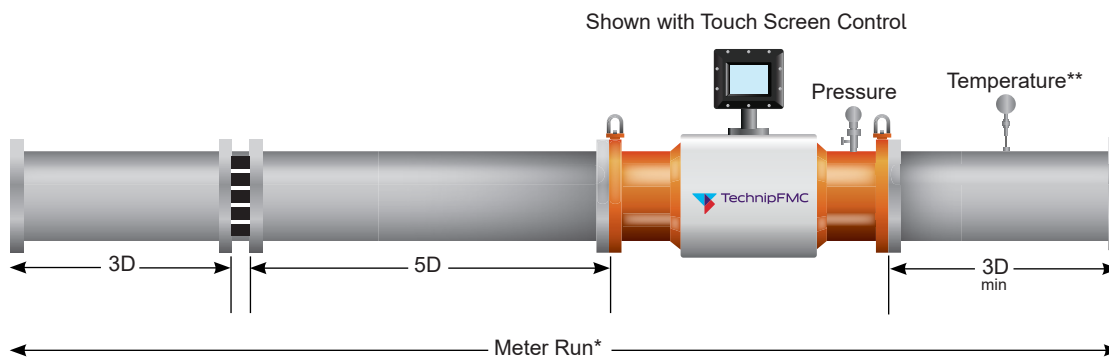
Without flow conditioning, the recommended installation for the MPU 1600c is 5D upstream straight run. For optimum performance it is recommended to keep partial restrictions or variable flow devices such as control valves away from the upstream area. Consult factory for confirmation of suitability of the upstream piping geometry.

With flow conditioning, the recommended installation is minimum 3D, then the flow conditioner, then 5D minimum upstream straight pipe before the meter. Downstream of the meter is minimum 3D. For bi-directional measurement the same upstream installation is repeated on both sides of the meter.

The meter run must be the same pipe diameter as the meter inlet and concentrically centered so that neither the pipe edge nor gasket protrude into the flow stream. For correct centering it is recommended to use the centering dowel pin provided on the meter flange.



* Diagram not drawn to scale.



* Diagram not drawn to scale.

** Thermowells, sample probes or densitometer installation locations should follow the applicable guidelines of AGA9 or ISO 17089 for unidirectional or bidirectional flow.

Catalog Code

The following guide defines the correct ultrasonic flowmeter for a given application and the respective catalog code. This code is part of the ordering information and should be included on the purchase order.

Standard Configuration

Instrument Power: 24 Vdc
2 Analog Inputs: 4-20mA
1 Analog Input: 4-wire RTD
1 Analog Output: 4-20mA
1 Digital Output: Dedicated to alarm – Optically isolated solid-state output
2 Digital Inputs: 1 dedicated to Weights & Measures switch
2 Pulse Outputs: Solid-state output (0 - 10 kHz) user-programmable K-factor, Quadrature
3 Ethernet: 2 Twisted pair (10/100Base-Tx); 1 fiber optic (100Base-Fx)
1 Serial: 2 Wire EIA-485

Ultrasonic Meter Body									
1	2	3	4	5	6	7	8	9	10
MPU16	S	0	6	1	1	S	S	B	C

Position 1: Code

MPU16 – MPU 1600c

Position 2: Hazardous Locations Certifications³

S – Standard: UL/CUL; ATEX; IEC Ex

Positions 3 and 4: Diameter⁴

06" 16"
08" 20"
10" 24"
12"

Position 5: End Connections

1 - Class 150 ASME Flange
2 - Class 300 ASME Flange
3 - Class 400 ASME Flange
4 - Class 600 ASME Flange
5 - Class 900 ASME Flange
6 - Class 1500 ASME Flange
7 - Class 2500 ASME Flange (consult factory)

Position 6: Body Housing Materials

1 - Carbon Steel
2 - 316 Series Stainless Steel
X - Special

Position 7: Transducer Material⁵

S - Standard Titanium
X - Special

Position 8: Transducer Type

S - Standard Transducer
L - Special

Position 9: Mechanical Certification

B - ASME B31.3
P - PED
C - CRN
X - Special

Position 10: Ethernet Connection

S - Standard

³ UL/CUL not available with alternate enclosure for ATEX/IECEX only; see page 10.

⁴ For other sizes or custom ID, consult factory. Standard bore match ID is Sch. 40, tapered to a sch80 measurement section.

⁵ "Special" transducer requirement for any application not compatible with Buna-N Elastomers or where other transducer materials are required.

Meter Mounted Electronics Enclosure: Ultrasonic Meter Control (UMC)

	1	2	3	4	5	6	7	8
UMC	E	A	P	N	S	0	B	0

Position 1: Hazardous Location Certification

E – Explosion Proof Certification UL, CUL, ATEX, IECEx

Position 2: Housing Material

A – Aluminum

S – 300 Series Stainless Steel

Position 3: Housing Style

P – Pedestal Mount

H – Pedestal Mount w/Height Extension
(High Temperature Product Applications)

C – Custom Enclosure

Position 4: Housing Electrical Entrances

M – M20 Thread

N – ½" NPT Thread

Position 5: Software

S – Standard UMC Software

X – Special

Position 6:

0 – Reserved

Position 7: Housing Cover

B – Blind Cover

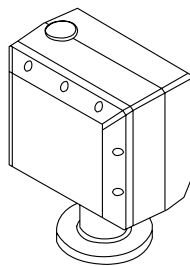
T – 5.7" Touch Screen*

Position 8: Additional Communication Options

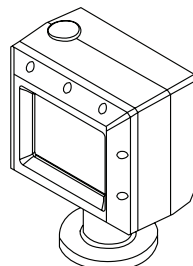
0 – None

1 – HART

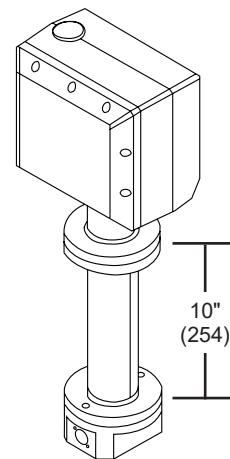
Model	Options and Option Combinations	Maximum Power (Based on Estimates)
UMC - E - (A or S) - (P or H) - (M or N) - S - 0 - T - (0 or 1)	UMCB board assembly (with display)	14.2W
UMC - E - (A or S) - (P or H) - (M or N) - S - 0 - B - (0 or 1)	UMCB board assembly (without display)	6W



Pedestal Mount



Pedestal Mount with Touch Screen



Pedestal Mount with Height Extension

* Local display required for MID if remote mounted display or microFlow.net is not selected.

**Special sunshade can be made available; consult factory for pricing option.

Meter Mounted Electronic Enclosure: (UMH) Ultrasonic Meter Housing

	1	2	3	4	5	6	7	8
UMH		H	A	M	5	0	0	0

Position 1: Housing Material

Blank – Aluminum
X – 300 Series Stainless Steel

Position 2: Housing Height

H – 170 mm

Position 3: Enclosure Type

A – Alternative Enclosure

Position 4: Housing Electrical Entrances

M – M20 Thread
N – ½" NPT Thread

Position 5: Software

S – Standard

Position 6:

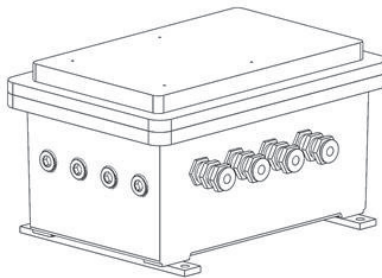
0 – Reserved

Position 7:

0 – Reserved

Position 8: Additional Communication Options

0 – None
1 – HART



(ATEX/IECEX only)

Remote Mounted Display: 5.7" Touch Screen Control Interface (TCI)

	1	2	3	4	5
TCI	E	A	S	N	S

Position 1: Hazardous Location Certification

E – Explosion Proof Certification UL, C-UL, ATEX, IECEx Class 1, Div 1, Gr C&D; Exd IIB Zone 1

Position 2: Housing Material

A – Aluminum
S – 300 Series Stainless Steel

Position 3: Housing Style

S – Surface Mount

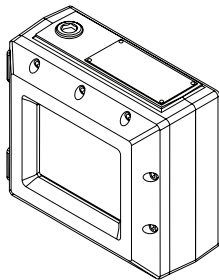
Position 4: Housing Entrances

M – M20 Thread
N – ½" NPT Thread

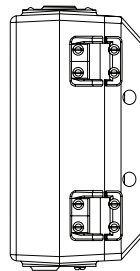
Position 5: Software

S – Standard
X – Special

Model	Options and Option Combinations	Maximum Power (based on estimates)
TCI - E - (A or S) - S - (M or N) - S	Display board assembly	8W



Housing With Display
Surface Mount



Housing With Display
Side View

Revisions included in SSKS009 Issue/Rev. 0.2 (11/18):

Total revision.

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

Contact information is subject to change. For the most current contact information, visit our website at www.fmctechnologies.com/measurementsolutions and click on the "Contact Us" link in the left-hand column.