# TrueShot
ULTRASONIC METERS

Transus Instruments

# UIM-4F

## For Custody Transfer Measurement

## Four Paths for Enhanced Accuracy and Reliability

Patented Broadband Continuous Wave Technology

### APPLICATIONS

- Custody Transfer Metering of Natural Gas and other Gasses
- Allocation Metering

TMCO
THE MEASUREMENT COMPANY

**www.tmcousa.com** | support@tmcousa.com | 713.465.3255

## FEATURES

# UIM SERIES: UIM-4F

- Highly accurate four path custody transfer ultrasonic flowmeter.
- OIML R137-1&2 (class 0.5) certified.
- AGA-9 compliant.
- MID 2014/32/EU approved.
- Available in sizes from 3" and larger and flange ratings up to 900#.
- Patented Broadband Continuous Wave technology.
- Extremely low power operation.
- Simultaneous transmission on multiple paths resulting in very fast response.
- Fully Intrinsically safe.
- Extensive diagnostic information using TIMCare® software.
- Rugged, highly efficient all metal transducers.
- Extensive range of versatile I/O including optional pressure and temperature sensors for PTZ compensation.
- Retraction tool available for removal and replacement of transducers under pressure.

## BENEFITS

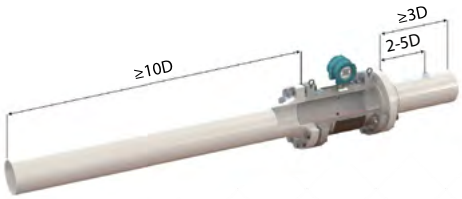
- The combination of cutting edge electronic processing, rugged and powerful transducers and international certifications result in the optimum solution for custody transfer gas measurement conditions.
- Simultaneous transmission and fast response provide reliability and accuracy in the most challenging flow regimes and pulsating flow conditions.
- TIMCare® software provides extensive diagnostic information to determine the "health" of the flow system, including blockages, dirt build-up and up-stream disturbances.
- On-board diagnostics and flow readings may also be accessed using the LCD and keypad.
- Complete intrinsic safety means there are no restrictions accessing the display/keypad even in hazardous areas.
- Full intrinsic safety also reduces wiring costs and installation costs and greatly simplifies field maintenance.

# FLOW RANGES

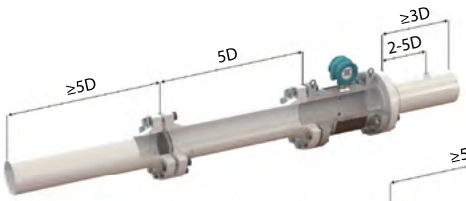
## UIM SERIES: UIM-4F

| Nominal Size | Schedule | Internal diameter [mm] | Internal diameter [inch] | Flow [m3/hr] | | | Flow [CFH] | | | Turndown |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Qmax | Qt | Qmin | Qmax | Qt | Qmin | |
| 3" / DN80 | 40 | 77.9 | 3.068 | 610 | 61 | 4,9 | 21.223 | 2.122 | 170 | 125 |
| | 80 | 73.7 | 2.900 | 540 | 54 | 4,3 | 18.970 | 1.897 | 160 | 126 |
| 4" / DN100 | 40 | 102.3 | 4.026 | 1000 | 100 | 8 | 34.980 | 3.498 | 290 | 125 |
| | 80 | 97.2 | 3.826 | 900 | 90 | 7,2 | 31.600 | 3.160 | 260 | 125 |
| 6" / DN150 | 40 | 154.1 | 6.065 | 2020 | 202 | 16 | 71.090 | 7.109 | 550 | 127 |
| | 80 | 146.3 | 5.761 | 1820 | 182 | 14 | 64.150 | 6.415 | 500 | 130 |
| 8" / DN200 | 40 | 202.7 | 7.981 | 3490 | 349 | 27 | 123.100 | 12.310 | 950 | 130 |
| | 80 | 193.7 | 7.625 | 3190 | 319 | 25 | 112.370 | 11.237 | 870 | 128 |
| 10" / DN250 | 40 | 254.5 | 10.020 | 5500 | 550 | 43 | 194.100 | 19.410 | 1.490 | 128 |
| | 80 | 242.9 | 9.562 | 5100 | 510 | 39 | 176.700 | 17.670 | 1.360 | 131 |
| 12" / DN300 | STD | 304.7 | 11.938 | 7900 | 790 | 61 | 278.200 | 27.820 | 2.140 | 130 |
| | 80 | 289.0 | 11.376 | 7100 | 710 | 55 | 250.200 | 25.020 | 1.920 | 130 |
| 14" / DN350 | STD | 336.5 | 13.126 | 9700 | 970 | 74 | 339.200 | 33.920 | 2.610 | 132 |
| | 80 | 317.5 | 12.500 | 8600 | 860 | 66 | 302.000 | 30.200 | 2.320 | 131 |
| 16" / DN400 | STD | 387.3 | 15.250 | 12800 | 1280 | 98 | 449.500 | 44.950 | 3.450 | 131 |
| | 80 | 363.5 | 14.314 | 11300 | 1130 | 86 | 395.900 | 39.590 | 3.040 | 132 |
| 18" / DN450 | STD | 437.9 | 17.250 | 16300 | 1630 | 125 | 574.600 | 57.460 | 4.410 | 131 |
| | 80 | 409.3 | 14.124 | 14300 | 1430 | 109 | 502.000 | 50.200 | 3.850 | 132 |
| 20" / DN500 | XS | 482.6 | 19.250 | 19800 | 1980 | 152 | 697.700 | 69.770 | 5.350 | 131 |
| | 80 | 455.6 | 17.974 | 17700 | 1770 | 136 | 621.900 | 62.190 | 4.770 | 131 |
| 24" / DN600 | XS | 584.6 | 23.250 | 28100 | 2810 | 223 | 989.700 | 98.970 | 7.850 | 127 |
| | 80 | 547.7 | 21.562 | 24600 | 2460 | 196 | 868.800 | 86.880 | 6.890 | 126 |
| 30" / DN750 | 30 | 730.2 | 28.750 | 42300 | 4230 | 347 | 1.490.900 | 149.090 | 12.250 | 122 |
| | wt. = 35 | 692.0 | 27.244 | 38000 | 3800 | 312 | 1.338.900 | 133.890 | 11.000 | 122 |
| 36" / DN900 | 30 | 882.2 | 28.750 | 61700 | 6170 | 507 | 2.176.000 | 217.600 | 17.880 | 122 |
| | wt. = 35 | 844.0 | 33.244 | 56400 | 5640 | 464 | 1.991.600 | 199.160 | 16.360 | 122 |

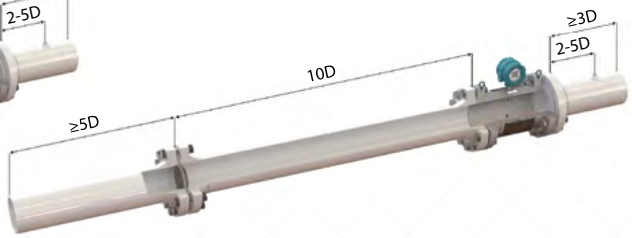
* Actual flowrange may vary depending on application




CONFIGURATION 1
Recommended configuration without flow conditioner




CONFIGURATION 2
Rocommended configuration with flow conditioner



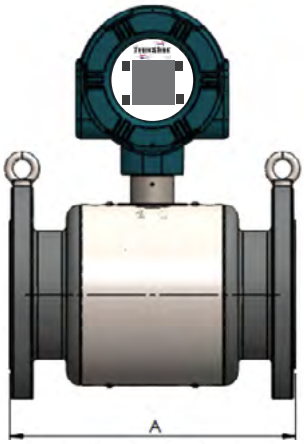

CONFIGURATION 3
Conservative configuration with flow conditioner

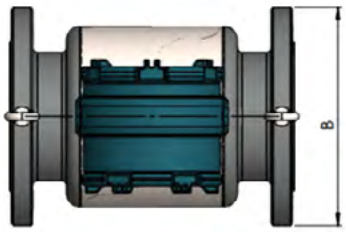
# DIMENSIONS & WEIGHTS

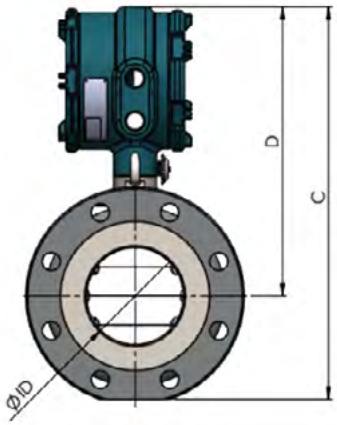
## UIM SERIES: UIM-4F

| Nominal Size [inch] | Rating | A- Length [mm] | B- Width [mm] | C - Height [mm] | Weight [kg] | A- Length [IN] | B- Width [IN] | C - Height [IN] | Weight [lb] |
|---|---|---|---|---|---|---|---|---|---|
| 3" / DN80 | 150 | 300 | 190 | 390 | 41 | 11.81 | 7.48 | 15.35 | 90 |
| | 300/600 | 320 | 210 | 400 | 53 | 12.60 | 8.27 | 15.75 | 117 |
| 4" / DN100 | 150 | 300 | 230 | 410 | 55 | 11.81 | 9.06 | 16.14 | 121 |
| | 300 | 350 | 255 | 440 | 65 | 13.78 | 10.04 | 17.32 | 143 |
| | 600 | 350 | 275 | 450 | 82 | 13.78 | 10.83 | 17.72 | 181 |
| 6" / DN150 | 150 | 400 | 280 | 460 | 78 | 15.75 | 11.02 | 18.11 | 172 |
| | 300 | 400 | 320 | 480 | 96 | 15.75 | 12.60 | 18.90 | 212 |
| | 600 | 400 | 355 | 510 | 123 | 15.75 | 13.98 | 20.08 | 271 |
| 8" / DN200 | 150 | 400 | 345 | 515 | 125 | 15.75 | 13.58 | 20.28 | 276 |
| | 300 | 500 | 380 | 532 | 165 | 19.69 | 14.96 | 20.94 | 364 |
| | 600 | 500 | 420 | 570 | 205 | 19.69 | 16.54 | 22.44 | 452 |
| 10" / DN250 | 300 | 550 | 445 | 610 | 225 | 21.65 | 17.52 | 24.02 | 496 |
| | 600 | 550 | 510 | 640 | 320 | 21.65 | 20.08 | 25.20 | 706 |
| 12" / DN300 | 300 | 600 | 520 | 675 | 305 | 23.62 | 20.47 | 26.57 | 673 |
| | 600 | 600 | 560 | 695 | 419 | 23.62 | 22.05 | 27.36 | 924 |
| 14" / DN350 | 300 | 650 | 585 | 705 | 535 | 25.59 | 23.03 | 27.76 | 1180 |
| | 600 | 650 | 605 | 730 | 585 | 25.59 | 23.82 | 28.74 | 1290 |
| 16" / DN400 | 300 | 700 | 650 | 755 | 690 | 27.56 | 25.59 | 29.72 | 1521 |
| | 600 | 700 | 690 | 775 | 760 | 27.56 | 27.17 | 30.51 | 1676 |
| 18" / DN450 | 600 | 800 | 745 | 905 | 950 | 31.50 | 29.33 | 35.63 | 2095 |
| 20" / DN500 | 600 | 900 | 815 | 940 | 1240 | 35.43 | 32.09 | 37.01 | 2734 |
| 24" / DN600 | 600 | 1100 | 940 | 1010 | 1800 | 43.31 | 37.01 | 39.76 | 3969 |
| 30" / DN750 | 600 | 1300 | 1130 | 1220 | 2750 | 51.18 | 44.49 | 48.03 | 6084 |
| 36" / DN900 | 600 | 1400 | 1300 | 1400 | 3600 | 51.18 | 44.49 | 48.03 | 7938 |

* Actual weights and dimensions may vary for specific designs



# TECHNICAL DATA — UIM-4F

| | |
|---|---|
| **Principle of Operation** | Broadband continuous wave-transit time |
| **Flange Rating and Sizes** | 150, 300, 600 and 900lbs. 3 -36", other sizes on request |
| **Flange Type** | ANSI, DIN, others on request |
| **Pressure Ranges** | Up to 153 bar (2250 psi), other ranges on request |
| **Ambient Temperature** | -40 to +60°C ( -40 to 140°F) |
| **Process Temperature** | - 30 to +80°C (-22 to + 176°F) |
| **Typical Uncertainty** | Factory calibration $Q_t$ - $Q_{max}$ 0.5%<br>$Q_{min}$ - $Q_t$ 1%<br>Flow calibrated $Q_t$ - $Q_{max}$ 0.2%<br>$Q_{min}$ - $Q_t$ 0.5% |
| **Metrology** | AGA-9 compliant, OIML R137-1 &2, MID2014-/32-EU |
| **Repeatability** | 0.1% |
| **Resolution** | <0.001 m/sec (<0.0033 ft/sec) |
| **Velocity Sampling Interval** | 20 - 40Hz (0.025 - 0.05 seconds) |
| **Turndown** | >100:1 (pipe size dependent) |
| **Meter Body Materials** | Carbon steel ASTM A350 LF2 Cl.1<br>Stainless steel ASTM A182-F316/316L<br>Other materials on request |
| **Transducers** | All metal Titanium; retractable version available as option |
| **Pressure Port** | 1/4" NPT female, other options on request |
| **Electronic Enclosure Material** | Epoxy painted, low copper aluminium alloy |
| **Electronic Enclosure Cable Entry** | M20x1.5 female<br>1/2" NPT female |
| **Power Supply** | Main power: 12 - 28.8V, 670mW max<br>I/O option board power 10.8 -28.8V, 225mW max |
| **User Interface** | 128X128 dot matrix LC Display, 4 keys |
| **Interface Ports** | 1 x USB (not intrinsically safe)<br>1 x Frequency output (HF or LF) |
| **Optional Interface Ports** | 01-0020 - I/O Option Board<br>1 x RS485, two wire, externally powered<br>2 x Digital, software configurable (HF, LF, Status)<br><br>01-0251 - Dual RS485 Option board<br>2 x RS485, two wire, externally powered<br>2 x Digital, software configurable (HF, LF, Status)<br>1 x PT100, 4-wire temperature sensor interface<br>1 x Bridge type, 4-wire pressure sensor interface<br><br>01-0022 - PT Option Board<br>1 x PT100, 4-wire temperature sensor interface<br>1 x Bridge type, 4-wire pressure sensor interface<br><br>01-0203 - 4-20mA Option Board (Not available when Dual RS485 board fitted)<br>1 x 4-20mA loop powered output |
| **Communication Protocols** | MODBUS (RS485 and USB) |
| **Hazardous Area Certification** | ATEX Ex II G Ex ia IIC T4 Ga (Zone 0)<br>IECEx Ex ia IIC T4 Ga (Zone 0)<br>ATEX Ex ec IIC T4 Gc (Zone 2)<br>USA/Canada Class 1, Divion 1, Group A, B, C, D T4 |
| **Ingress Protection** | IP66, NEMA 4x |

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TS-UIM-4F 04-2026