

## Range of Ultrasonic Flowmeters



# Ultrasonic Flowmeter Series 6700

## Working Principle

The Transit Time Flowmeter utilises two transducers that function as both, ultrasonic transmitters and receivers. The transducers are clamped on the outside of a closed pipe or inserted in the pipeline by using an isolating ball valve assembly at a specific distance from each other. Transit Time Flowmeters measure the time it takes for an ultrasonic signal transmitted from one sensor to cross a pipe and be received by a second sensor. Upstream and downstream time measurements are compared. With no flow, the transit time would be equal in both directions.

With flow, sound will travel faster in the direction of the flow and slower against the flow. The liquid velocity ( $V$ ) inside the pipe can be related to the difference in time of flight ( $\Delta t$ ) through the following equation:

$$V = K \times D \times \Delta t$$

where  $V$  : Liquid velocity

$K$  : Constant

$D$  : Distance between the two transducers

$\Delta t$  : Difference in time of flight



UFM 6710



UFM 6720



UFM 6730



## Technical Specifications: UFM 6710 & UFM 6720

| Parameters          | UFM 6710   | UFM 6720   |             |
|---------------------|--|--|-------------|
| <b>Transmitter</b>  |  |  |             |
| Power supply        | 24 V DC $\pm$ 20%<br>110 V AC $\pm$ 15%<br>240 V AC $\pm$ 15%                      | 3 AAA NiMH built-in battery<br>(12 hours of operation) &<br>100-240 V AC for the charger |             |
| Velocity            | $\pm$ 12 m/sec. Bidirectional  | $\pm$ 12 m/sec. Bidirectional  |             |
| Display             | 2 lines, 16 characters,<br>LCD with backlight, flow rate,<br>velocity, totaliser   | 4 lines, 16 characters,<br>LCD with backlight, flow rate,<br>velocity, totaliser         |             |
| Units               | User configurable English/Metric   | User configurable English/Metric   |             |
| Totaliser           | FWD, NET, REV, BATCH<br>(Gallons, ft <sup>3</sup> , Barrels, lbs, m <sup>3</sup> ) | FWD, NET, REV, BATCH<br>(Gallons, ft <sup>3</sup> , Barrels, lbs, m <sup>3</sup> )       |             |
| Output              | 4-20 mA DC Std.*   | RS 232   |             |
| Accuracy            | $\pm$ 1% of reading @ rate > 0.5 m/sec.<br>(Optional $\pm$ 0.5% of reading)        | $\pm$ 1% of reading @ rate > 0.5 m/sec.<br>(Optional $\pm$ 0.5% of reading)              |             |
| Repeatability       | 0.2% of Span   | 0.2% of Span   |             |
| Dimensions          | 251x190x96 mm  | 204x90x30 mm   |             |
| Weight              | < 2.5 kg   | < 0.5 kg   |             |
| Security            | Keypad lockout, access code enabled  | Keypad lockout, access code enabled  |             |
| <b>Transducer</b>   |  |  |             |
| Suited temp. - Std. | -40°C to 120°C   | -40°C to 120°C   |             |
| Suited temp. - High | -40°C to 250°C   | -40°C to 250°C   |             |
| Pipe size           | S Transducer   | 15-80 mm   | 15-80 mm    |
|                     | M Transducer   | 50-700 mm  | 50-700 mm   |
|                     | L Transducer   | 400-4570 mm  | 400-4570 mm |
| Dimensions          | S Transducer   | 45x30x30 mm  | 45x30x30 mm |
|                     | M Transducer   | 60x45x45 mm  | 60x45x45 mm |
|                     | L Transducer   | 80x70x55 mm  | 80x70x55 mm |
| Weight              | S Transducer   | < 0.3 kg   | < 0.3 kg    |
|                     | M Transducer   | < 0.5 kg   | < 0.5 kg    |
|                     | L Transducer   | < 1.0 kg   | < 1.0 kg    |
| Cable length        | 6 m Std. can be extended up to 300 m   | 6 m Std. can be extended up to 25 m  |             |
| Flexible belts      | SS belt according to pipe size   | SS belt according to pipe size   |             |
| Portable case       | NA   | Size - 463x383x103 mm  |             |

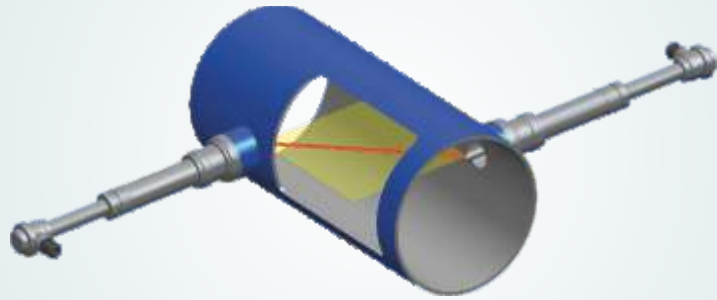
\* Please refer to order code for options.

## Technical Specifications: UFM 6730

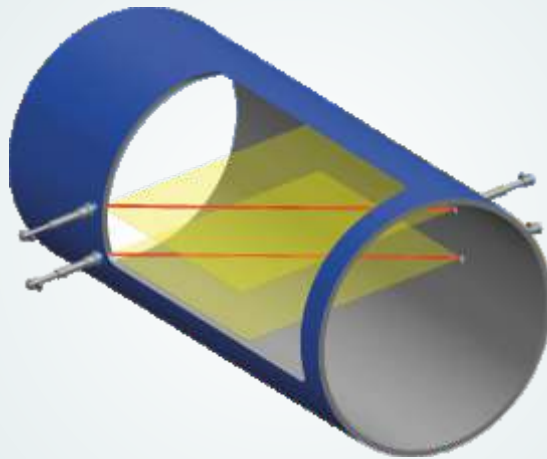
| Specification  | Single Path  | Two Path   | Four Path  |
|--|--|--|--|
| <b>General</b>   |  |  |  |
| No. of Sensors   | 2  | 4  | 8  |
| Operating principle  | Transit time technology  | Transit time technology  | Transit time technology  |
| Operating pressure   | 20 kg/cm <sup>2</sup> max  | 20 kg/cm <sup>2</sup> max  | 20 kg/cm <sup>2</sup> max  |
| Application  | Raw, clear, sewage water & homogeneous liquids                                 | Raw, clear, sewage water & homogeneous liquids                                 | Raw, clear, sewage water & homogeneous liquids                                 |
| <b>Transmitter</b>   |  |  |  |
| Power supply   | 24 V DC ± 20%<br>110 V AC ± 15%<br>240 V AC ± 15%                              | 24 V DC ± 20%<br>110 V AC ± 15%<br>240 V AC ± 15%                              | 24 V DC ± 20%<br>110 V AC ± 15%<br>240 V AC ± 15%                              |
| Velocity   | ±12 m/sec. Bidirectional   | ±12 m/sec. Bidirectional   | ±12 m/sec. Bidirectional   |
| Display  | 2 lines, 16 characters<br>LCD with backlight<br>Flow rate, velocity, totaliser | 2 lines, 16 characters<br>LCD with backlight<br>Flow rate, velocity, totaliser | 2 lines, 16 characters<br>LCD with backlight<br>Flow rate, velocity, totaliser |
| Units  | User configurable English/Metric   | User configurable English/Metric   | User configurable English/Metric   |
| Totaliser  | FWD, NET, REV  | FWD, NET, REV  | FWD, NET, REV  |
| Output Analog  | 4-20 mA Std.*  | 4-20 mA Std.*  | 4-20 mA Std.*  |
| Accuracy   | ±1% of reading @ rate >0.5 m/sec.  | ±0.5% of reading @ rate >0.5 m/sec.  | ±0.5% of reading @ rate >0.5 m/sec.  |
| Repeability  | 0.2% of Span   | 0.2% of Span   | 0.2% of Span   |
| Protection category  | IP 65  | IP 65  | IP 65  |
| Dimensions   | 251X190X96 mm  | 500x400x300 mm   | 500x400x300 mm   |
| Weight   | < 2.5 kg   | < 4.5 kg   | < 6.5 kg   |
| Security   | Keypad lockout, access code enabled  | Keypad lockout, access code enabled  | Keypad lockout, access code enabled  |
| Self diagnostic feature  | Available  | Available  | Available  |
| Facility to measure and display each path velocity             | NA   | Available  | Available  |
| Ability to work even though one or more path does not work     | NA   | Available  | Available  |
| Flow and totaliser unit programmability                        | Available  | Available  | Provided   |
| Password protection for configuration data                     | Available  | Available  | Available  |
| Totaliser value retention in the event of power fail condition | Available  | Available  | Available  |
| RS 485 Modbus RTU Protocol                                     | Available  | Available  | Available  |
| Lightening protection units                                    | Available  | Available  | Available  |
| <b>Transducer</b>  |  |  |  |
| Suited temp. - Std.  | -40°C to 120°C   | -40°C to 120°C   | -40°C to 120°C   |
| Pipe size  | 100-5000 mm dia  | 350-5000 mm dia  | 1000-5000 mm dia   |
| Protection class   | IP 68  | IP 68  | IP 68  |
| Sensor dimensions  | 186 mm with 20 mm bore size  | 186 mm with 20 mm bore size  | 186 mm with 20 mm bore size  |
| Weight   | < 1.5 kg   | < 1.5 kg   | < 1.5 kg   |
| Cable length   | 6 m std. can be extended upto 300 m  | 6 m std. can be extended upto 300 m  | 6 m std. can be extended upto 300 m  |

\* Please refer to order code for options.

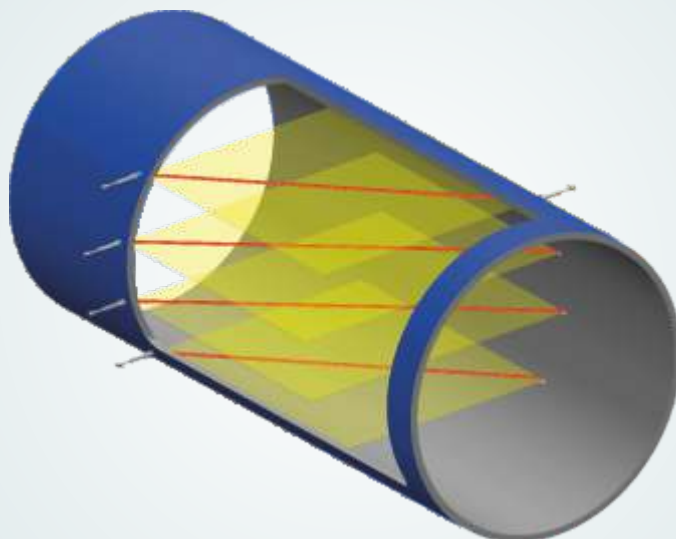
Single  
Path



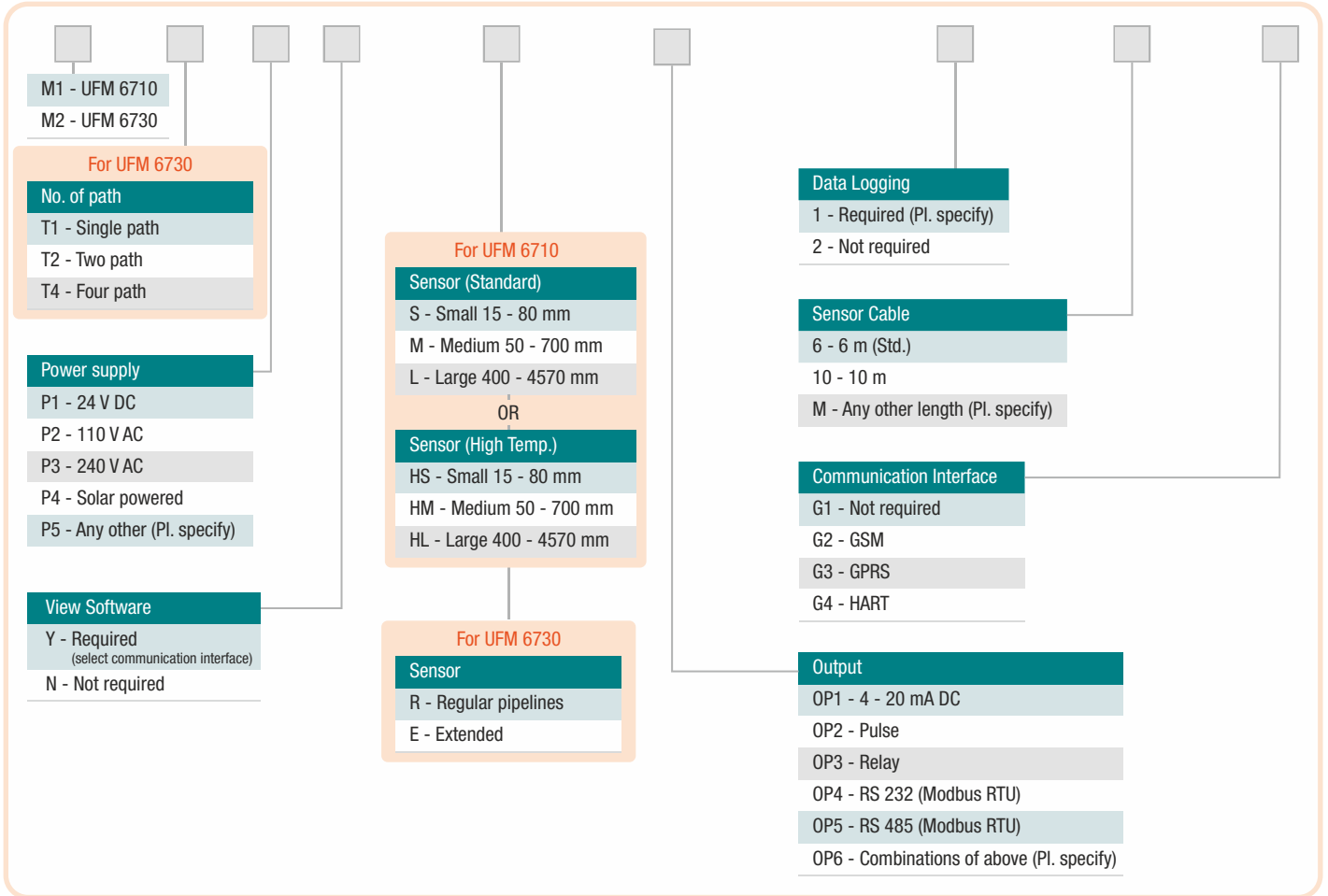
Two  
Path



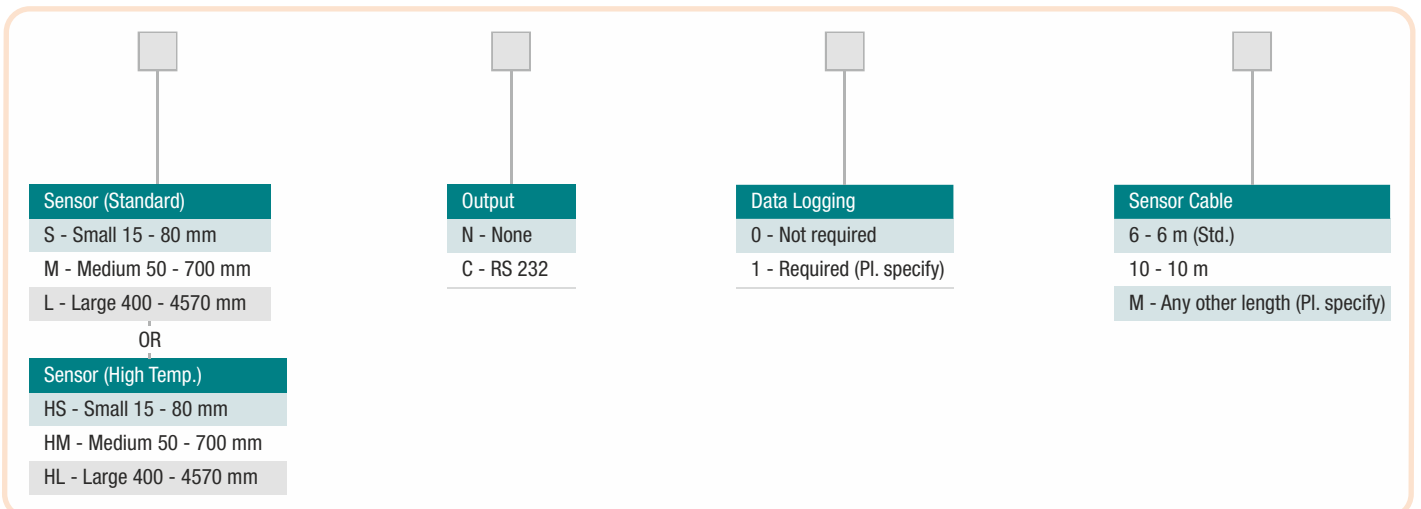
Four  
Path



## Ordering Code: UFM 6710/6730



## Ordering Code: UFM 6720





## UFM 6740 Ultrasonic Water Meter

This is a battery-powered, Transit Time Flowmeter utilising advanced digital processing technology. The meter contains no moving parts and does not require external power. It also has advantages such as ultra-low power consumption, high accuracy and reliability. The meter is designed for easy installation. It has the same conduit length as industrial mechanical water meter, but can be used just as conveniently as a mechanical water meter.

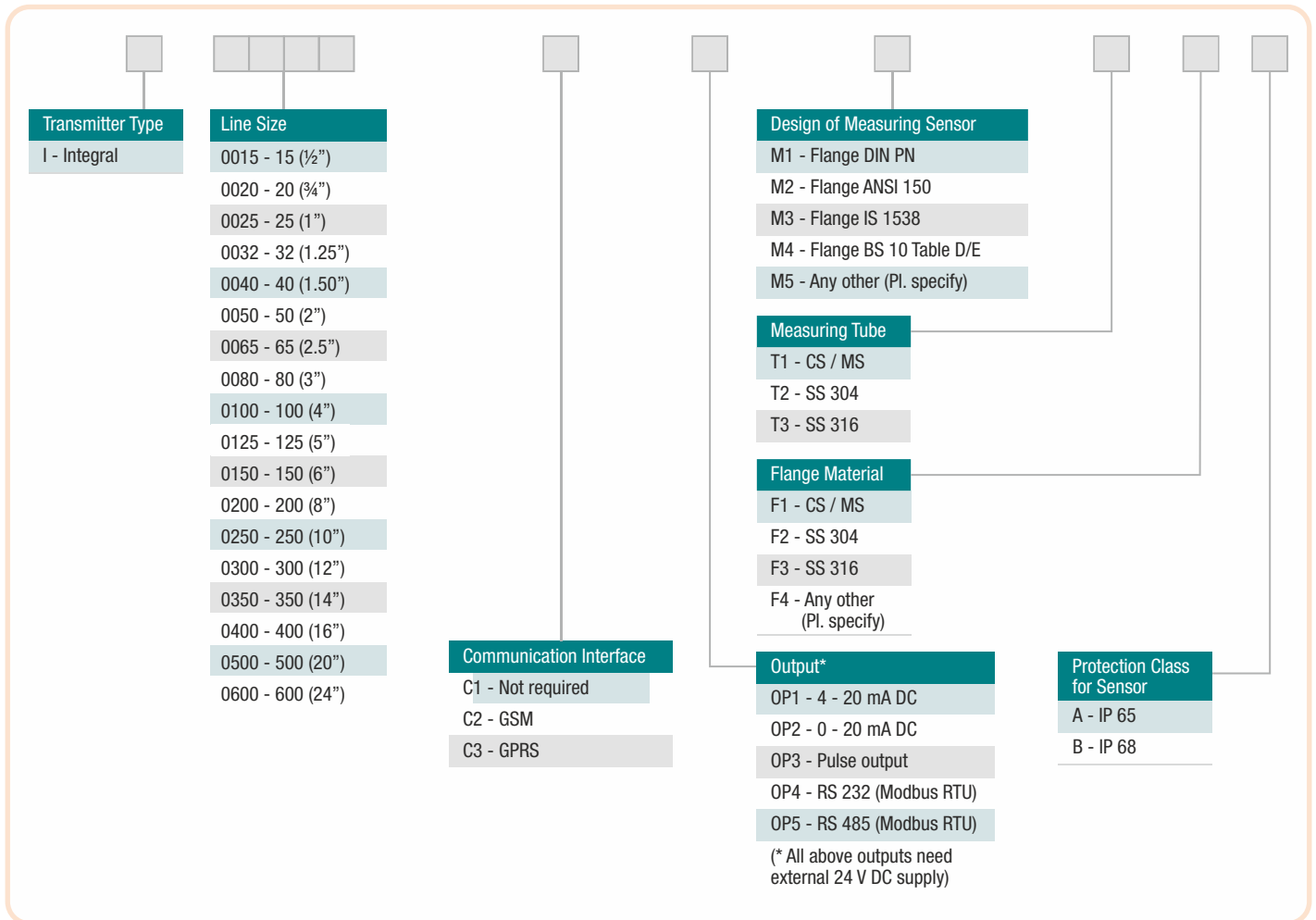
### Benefits

- ▲ Long-term stability and accuracy over a wide range of conditions
- ▲ High reliability and minimum maintenance requirement
- ▲ Maintenance-free meter where no external power sources are available
- ▲ Communication port permits transfer of data from remote stations to central system via GSM - GPRS Modem
- ▲ Self-adjusting transducer receiving circuit continually adapts to changing pipe diameters due to scaling or corrosion
- ▲ Fast response to flow transits
- ▲ Available with AMR function
- ▲ Battery life - 5 years (10 year optional)
- ▲ Unique housing design rated to IP 68
- ▲ On-board self diagnostic function and fault indicator

### Technical Specifications: UFM 6740 Ultrasonic Water Meter

| Parameters                | Specifications   |
|---------------------------|--|
| Technical characteristics | Low power consumption, digital process technology with stable and permanent PiezoSeal sensor     |
| Accuracy                  | ±1% of reading (Optional ±0.5%)  |
| Repeatability             | 0.2% of Span   |
| Display                   | Total flow, flow rate, velocity, working time & date, signal intensity, quality & battery status |
| Output                    | RS 485, 4-20 mA, Pulse for total flow (All outputs need external power supply 24 V DC)           |
| Communication interface   | GSM, GPRS  |
| Operation                 | Inside keypad available  |
| Sampling period           | 0.5 sec.   |
| Environment temp.         | Up to 65°C   |
| Water temp.               | 5 to 70°C  |
| Power supply              | 3.6 V Lithium battery  |
| Enclosure class           | IP 68  |
| Pipe size                 | DN 15-600  |
| Flange standard           | DIN PN, ANSI, BS, IS   |

## Ordering Code: UFM 6740



## Your advantages with Adept - Range. Size. Design excellence.

- ▲ Leaders in providing 'Total Solutions' for Flow Instrumentation, Controls, Telemetry and SCADA
- ▲ Operating in the instrumentation business since 1984
- ▲ ISO 17025:2005 accredited calibration laboratory
- ▲ Over 25000 Electromagnetic and 5000 Ultrasonic Flowmeters supplied to about 10000 customers
- ▲ ISO 9001, ISO 14001, BS OHSAS 18001 accreditation from TUV NORD, Germany
- ▲ Certified with SA 8001:2008 for Social Accountability



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