

# The SMTF dedicated Clamp-on Transit Time Ultrasonic Flow Meter provides for accurate liquid flow measurement from outside the pipe.

Employing state-of-the-art technology in ultrasonic flow measurement and digital processing, the self-adapting proprietary signal quality tracking allows the system to optimally adapt to the pipe material and flow profile automatically. The unique clamp-on fixture design makes the installation very straightforward and requires no special tools or skills.

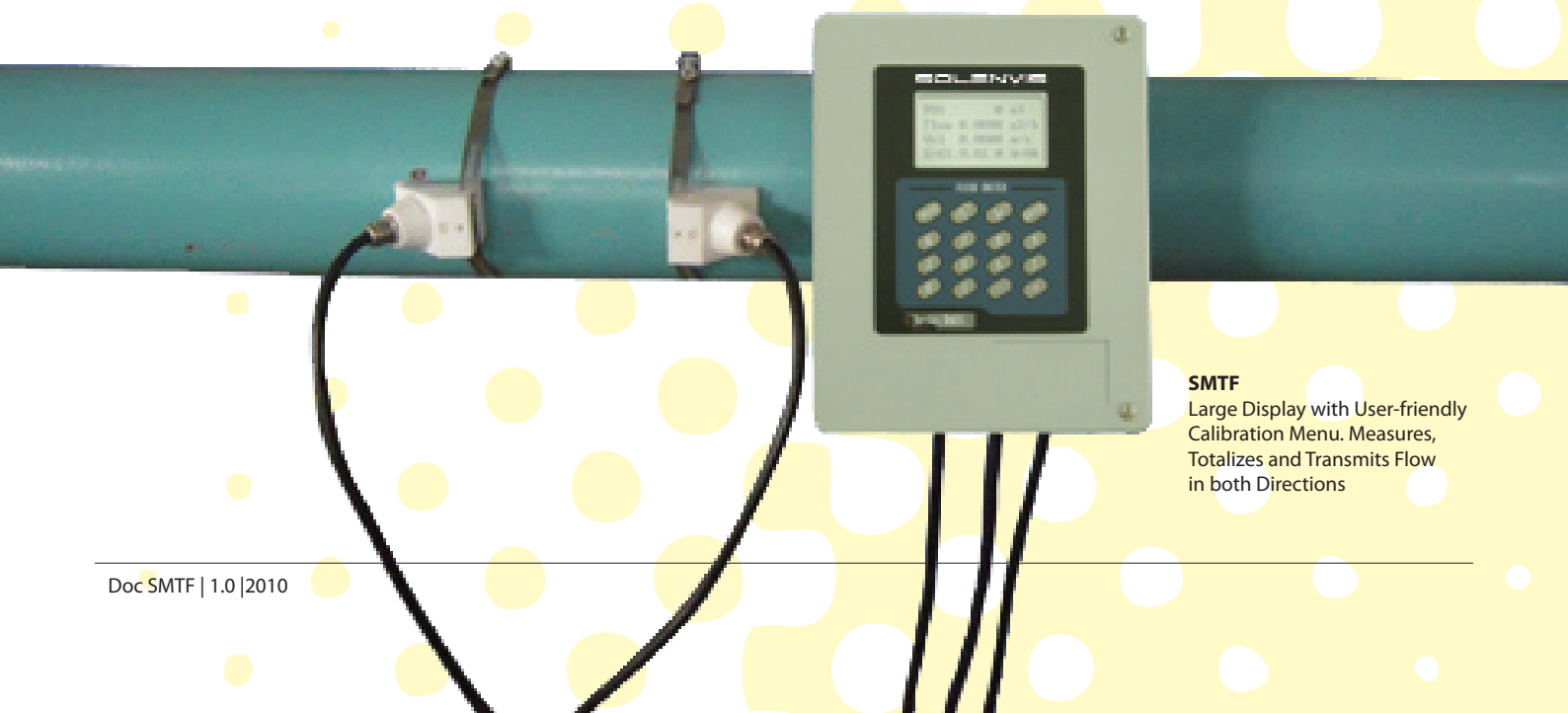
Due to the non-invasive nature of clamp-on transducers, there is no pressure drop, no moving parts, no leaks, and no risk of contamination or corrosion.

Ideal for new build and retrofit applications, the SMTF is perfectly suited to HVAC applications where its affordability ensures a rapid return on investment. Well managed systems are measured systems and this easy to implement flow data provider allows for access and control over your systems with fast results and the potential for immediate energy savings and application fine tuning. Don't leave it to your best estimates, get accurate data fast with the SMTF clamp on flow meter.

With maximum long term reliability built in, the SMTF provides sustained operation in a wide range of industrial applications and environments and due to the non-intrusive nature of the clamp-on technique, no mechanical parts need to be inserted through the pipe wall or to protrude into the flow system so there is no pressure drop (save energy), no moving parts (low maintenance), no leaks and no contamination.

Perfectly suited to the measurement of flows in clean, non-aerated fluids such as water, water/glycol and oils in full pipes from 1/2" to 180" (12 to 4570 mm) diameter can be measured and the ultrasonic signal penetrates all common metal and plastic pipe materials.

User friendly and no cumbersome hardware, begin reading flow and gathering useful data as soon as the transducers are mounted. Connect the SMTF to external displays, recorders, data loggers, controllers and BMS systems via a wide range of industry standard outputs such as HART, Modbus and RS485.



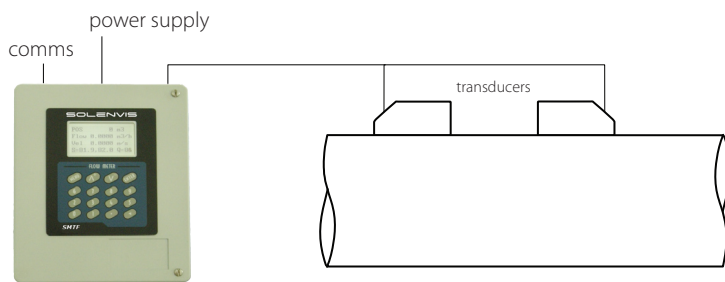
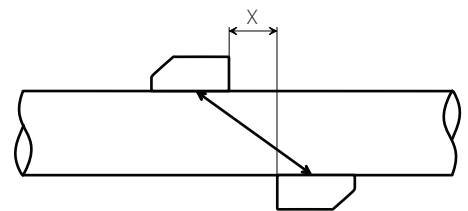
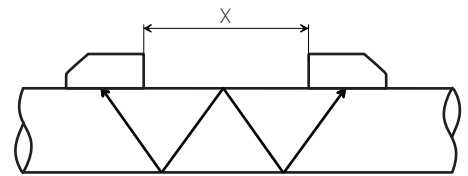
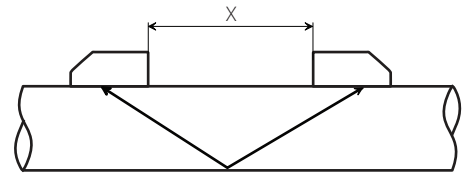
**SMTF**  
Large Display with User-friendly Calibration Menu. Measures, Totalizes and Transmits Flow in both Directions

# Accurate Flow measurement of Clean Fluids from Outside Plastic or Metal Pipes

## How it Works:

Transit Time flow meters utilize two transducers that function as both ultrasonic transmitters and receivers. The transducers are clamped on the outside of a vertical or horizontal pipe at a specific distance calculated by the instrument. The elapsed time between transmitted and received signals varies very slightly depending on whether the signal is traveling upstream or downstream and by comparing these time differences an accurate calculation of the flow rate is possible and is displayed in your choice of engineering units. As the ultrasonic beam crosses the pipe, compensation for laminar or turbulent flow is automatic.

Depending on the application and flow profile, the transducers can be mounted in V-method in which case the ultra sound transverses the pipe twice, the W-method in which case the ultra sound transverses the pipe four times or the Z-method in which case the transducers are mounted on opposite sides of the pipe and the ultra sound transverses the pipe only once. These modes are automatically selected by the instrument and are also user selectable. (X denotes the distance between the transducers, this is automatically calculated by the instrument at setup depending on the inputted application data)



## Hardware & Operation

The SMTF electronics are housed in a rugged cast aluminum NEMA 4 (IP65) enclosure incorporating the graphic display, keypad, sensor and output facility connections. Programming the unit is carried out by selecting the options displayed in the main menu and by following the simple instructions. Enter the pipe diameter, wall thickness, pipe material, liquid and temperature and the optimum mounting method and

separation distance for the transducers is automatically calculated and displayed on screen. An acoustic gel (supplied) is used between the transducers and the outside of the pipe to ensure that sound is conducted from the sensors through the pipe wall. Signal strength, time and date, as well as flow information are all continuously displayed, keeping the user fully aware of the measurement process.

## Flow Transducers

Only 3 types are needed to cover the pipe ranges 12mm (1/2") up to 4750mm (190") so selection is straightforward and the flow electronics is able to work with different transducer sets depending on the unit supplied and the application. Optional high temperature sensors are also available for use up to 250C.



### Transducers

Easy to install, IP67 rated and supplied with cable up to 100m/300ft



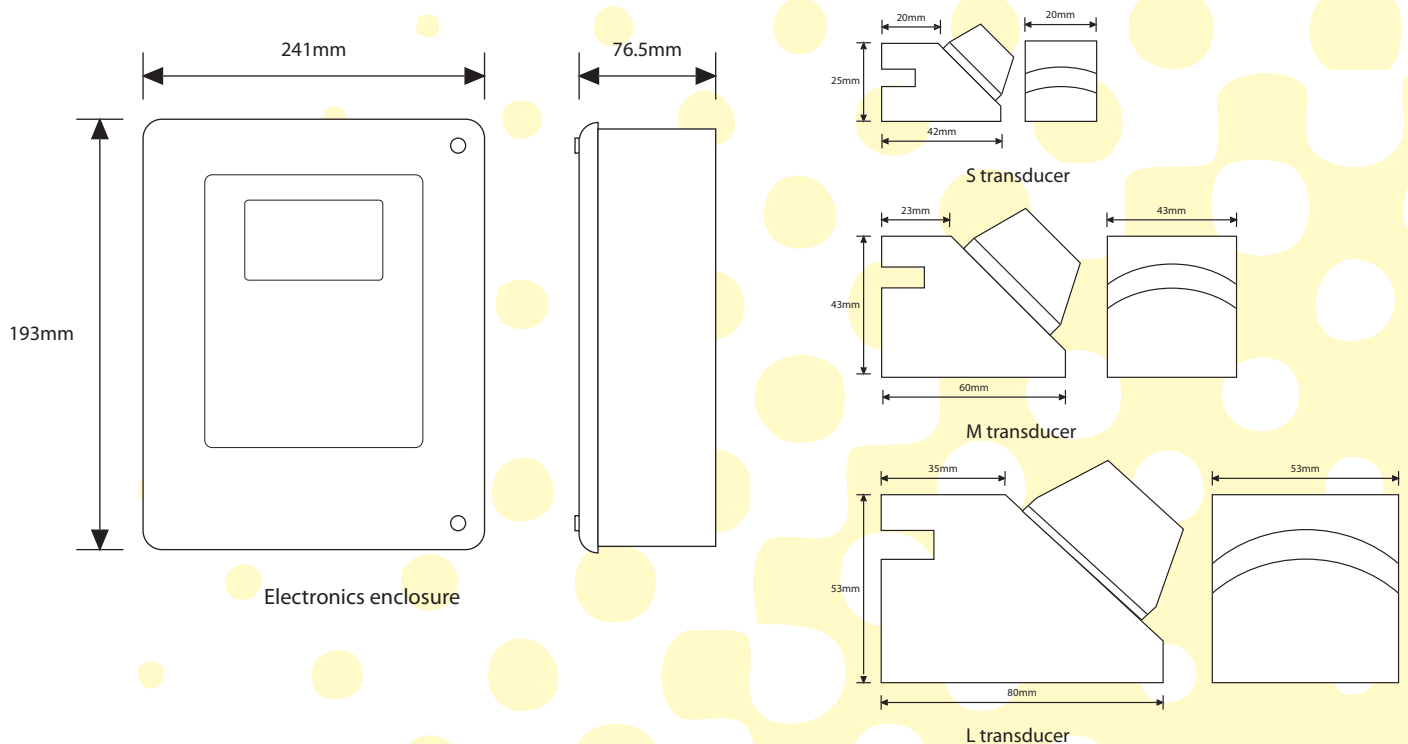
### < Explosion Proof type

ATEX certified version (ExSMTF) is also available to ExdIIBT6 as an option, please contact Solenvis for supporting documentation and detailed specification.

## Technical data SMTF

Transmitter	Power Supply	115/230VAC 50/60Hz $\pm 15\%$ @ 5VA max. 10-28 VDC @ 2.5VA max. Solar powered option
	Velocity	0 ~ $\pm 40$ ft/s (0 ~ $\pm 12$ m/s), bi-directional
	Display	Backlit LCD 4 line $\times$ 16 character English menu, total flow, flow rate, velocity and meter running status etc. displayed
	Units	User Configured (Imperial and Metric)
	Rate	Rate and Velocity Display
	Totalized	(FWD, NET, REV or BATCH) gallons, ft <sup>3</sup> , barrels, lbs, liters, m <sup>3</sup> ,kg
	Output	4~20mA, OCT Pulse, Relay, RS232C or RS485, Hart +(4~20mA), Modbus
	Accuracy	$\pm 1.0\%$ of reading at rates $>0.5$ m/s $\pm 0.003$ m/s of reading at rates $<0.5$ m/s
	Sensitivity	Flow Rate: 0.001ft/s (0.0003m/s)
	Repeatability	0.2% of reading
	Security	Keypad lockout, password enabled
	Weight and Dimensions	Std enclosure: Weight: 2.5kg, 241*193*76.5mm Ex Proof: Weight: 5.0kg, 255*220*110mm
	Transducer	Liquid Types
Liquid Temperature		Std. Temp. Transducer: -40°C~121°C (-40°F~250°F) High Temp. Transducer : -40°C~250°C (-40°F~482°F)
Cable Length		Std: 6m (30ft); option up to maximum 300m (990ft)
Pipe Size		M transducer: 40-1000mm L transducer: 1000-4570mm S transducer: 12-50mm K-mode round: 12-50mm Insertion transducer: 65-2540mm Flanged transducer: 65-2540mm
Transducer Size		S: Size:42*25*25mm; weight:<0.2kg M: Size:60*43*43mm ; weight:< 0.2kg L: Size:80*53*53mm; weight:<0.2kg
Accessories		Couplant: Dow Corning 111 (112 for high temp.) Data Logger: Optional up to 8GB on SD card Transducer Hardware: SS banding supplied as standard according to pipe size

## Dimensions SMTF



## Non-Contacting - Measures Flow from Outside the Pipe - Simple, User-Friendly Calibration System

### Applications Support

Take advantage of our applications experience. Contact one of our sales engineers, describe your requirements and receive our prompt quotation.

### The Solenvis Guarantee

Warranted against defects in materials and workmanship for a period of one year from date of purchase. Refer to our limited warranty included with each product.

### How to Order

A simple to use order sheet is available with all the available options, if you prefer, call Solenvis now and we can go through the options with you to ensure that your requirements are fully met.

### No Risk Appraisal

Solenvis are committed to providing the highest levels of service, in some cases it may be necessary to test the application in question to ensure total satisfaction. Please contact us to arrange a performance test.

### Industries:

Water  
Building Services  
Energy Management  
Power Generation  
Chemical  
Pharmaceutical  
Petrochemical  
Food

### Recommended For:

Potable water  
River water  
Cooling water  
Demineralised water  
Water/glycol solutions  
Hydraulic oil  
Diesel and fuel oils  
Chemicals  
Petroleum products

### Application/use:

HVAC and energy measurement  
Check system meters  
Pump verification  
Boiler testing  
Leak detection  
Filter sizing  
Ultrapure water measurement  
Heavy fuel oil metering  
Condensate measurement  
Balancing systems  
Clean in place evaluation  
Fire system testing  
Hydraulic system testing  
Marine operation and maintenance

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