

# ULTRASONIC TRANSIT TIME FLOWMETERS

## TTFM100-NG SERIES

### *Technical Datasheet*



**TTFM100-F1-NG**



**TTFM100-F18-NG**

**Vs.6**

**HISPACONTROL**  
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The New Generation Transit Time Flow Meter series (**TTFM100-F1-NG**) measures flow rate by calculating the spreading time of an ultrasonic wave in a liquid, going upstream and downstream into a pipe.

This flow meter is mostly used to measure the flow rate of homogeneous fluids, also with a **quite high percentage of suspended solids.**

The measuring system is composed of a pair of ultrasonic transducers acoustically coupled to the external pipe wall and a HOST unit elaborating the signal that are sent and received from the transducers. It is also possible to use transducers in direct contact with the fluid that need to be measured (wetted sensors).

The HOST unit has a DSP microprocessor. It gives signals for **interfacing with the process or the control systems.**

The TTFM100-NG series includes a range of flow meters whose electronics is composed of a single board: high precision, high fidelity, high competitiveness.

The main features are:

- ✓ Clamp-on sensors: it is not necessary to stop the flow to install them;
- ✓ Wetted sensors.
- ✓ AC and DC supply: 110-230VAC and 12-36VDC; battery supply, depending from the type of device.
- ✓ The time difference during the measuring process could be 0.2 ns.
- ✓ Analog (4-20 ma), pulses (relays), frequency (OCT) and RS485 MODBUS or RS232 outputs.
- ✓ Serial communication interface RS485 MODBUS (model TTFM100-F1-NG & TTFM100-F18-NG).
- ✓ Serial communication interface RS232 (Hand-held type TTFM100B-HH-NG).

### Main Features

### Main Applications

- ✓ Water treatment, slurry and process water pumping;
- ✓ Flow balancing;
- ✓ Hydro-electric, cooling, anti-fire stations;
- ✓ Water District;
- ✓ Oil and chemical industries;
- ✓ Extraction industries;
- ✓ Food, paper and pharmaceutical industries;
- ✓ Car industries

## TTFM100-F1-NG - WALL MOUNTING STATIONARY TYPE



### TECHNICAL FEATURES

Accuracy	Linearity: higher than 0.5% Repeatability: higher than 0.2% Accuracy: higher than $\pm 1\%$
Measuring Range	Several types of transducers available. Measuring pipe size from DN15mm to DN6000mm with four different types of sensors. Temperature sensors are required when used as heat meter.
Menu Languages	TTFM100-F1-NG can support Italian, English or Turkish menus. Other languages will be implemented shortly.
Power Supply	24VDC and/or 85-264VAC
Dimensions	220mm x 179mm x 70mm
Protection Grade	IP65
Output	Relay OCT / 4-20mA / RS485
Protocol	MODBUS
Data Logging	Built-in SD Card with 2Gb memory

**TTFM100-F18-NG - DIN RAIL MOUNTING STATIONARY TYPE  
with display & Keypad**



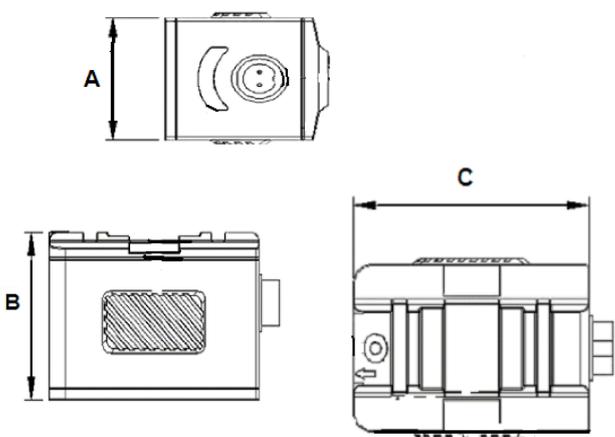
**TECHNICAL FEATURES**

Accuracy	Linearity: higher than 0.5% Repeatability: higher than 0.2% Accuracy: higher than $\pm 1\%$
Measuring Range	Several types of transducers available. Measuring pipe size from DN15mm to DN6000mm with four different types of sensors. Temperature sensors are required when used as heat meter.
Menu Languages	TTFM100-F1-NG can support Italian, English or Turkish menus. Other languages will be implemented shortly.
Power Supply	12...36 VDC
Engineering Units	Flow: Imperial and metric Calories: BTU; GJ; KW; KCal
Dimensions	90 x 90 x 36mm
Protection Grade	IP20
Set-up	By integrated keypad
Output	Relay OCT / 4-20mA / RS485
Protocol	MODBUS

## ULTRASONIC TRANSIT TIME SENSORS - CLAMP-ON TYPE

Quantity	Description	
1	<b>TTS100-TS2-NG-20</b> - Pair of standard clamp-on sensors Suitable for pipes DN15...DN100. Fluid Speed +/- 16 MT/SEC. Working frequency: 1.5 MHz. Working Temp. -30... +90°C. IP68. Cable length: min 5mt, max 200mt.	
1	<b>TTS100-TM1-NG-20</b> - Pair of standard clamp-on sensors Suitable for pipes DN50...DN1000. Fluid Speed +/- 16 MT/SEC. Working frequency: 1 MHz. Working Temp. -30... +90°C. IP68. Cable length: min 5mt, max 200mt.	
1	<b>TTS100-TL1-NG-20</b> - Pair of standard clamp-on sensors Suitable for pipes DN300...DN6000. Fluid Speed +/- 16 MT/SEC. Working frequency: 0.6 MHz. Working Temp. -30... +90°C. IP68. Cable length: min 5mt, max 200mt.	
1	<b>TTS100-S1-NG-HT-20</b> - Pair of high temperature clamp-on sensors Suitable for pipes DN 15...DN 150. Fluid Speed: +/- 16 MT/SEC. Working frequency: 1.5 MHz. <b>FOR HIGH TEMPERATURE APPLICATIONS -30... +160°C.</b> IP68. Cable length: min 5mt, max 200mt.	
1	<b>TTS100-M1-NG-HT-20</b> - Pair of high temperature clamp-on sensors Suitable for pipes DN 50...DN 700. Fluid Speed: +/- 16 MT/SEC. Working frequency: 1 MHz. <b>FOR HIGH TEMPERATURE APPLICATIONS -30... +160°C.</b> IP68. Cable length: min 5mt, max 200mt.	

### CLAMP-ON SENSORS DIMENSIONS

Sensor Type	A	B	C	
TTS100-TS2-NG	28 mm	25 mm	45 mm	
TTS100-TM1-NG	39 mm	44 mm	64 mm	
TTS100-TL1-NG	53 mm	54 mm	97 mm	
TTS100-TS1-NG-HT	28 mm	25 mm	45 mm	
TTS100-TM1-NG-HT	39 mm	44 mm	64 mm	

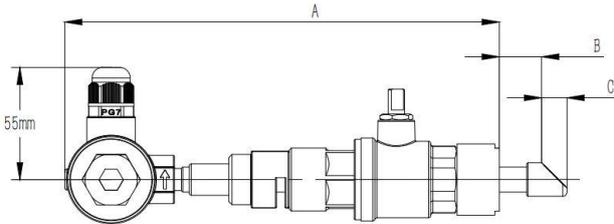
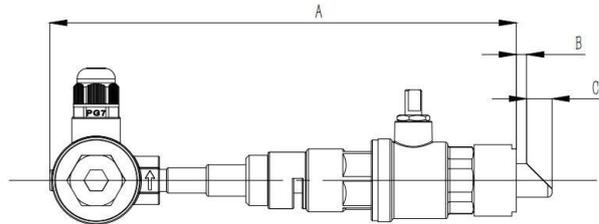
### CLAMP-ON SENSORS FIXING TOOLS

1	Mounting kit with stainless steel belts for ultrasonic transit time sensors <b>TTS100-TXX-NG</b> for pipes from dn15 up to dn6000	
1	Stretchers	
1	Stainless steel SS316 adjustable guide for clamp-on transit time sensors installation <b>RGMS-TS2/TM1-NG-FIX</b> For pipes DN15...DN250	

## ULTRASONIC TRANSIT TIME SENSORS - INSERTION TYPE

Quantity	Description	
1	<p><b>TTS100-B(45)-2-NG-3/4"-05-</b> Pair of insertion sensors                      Suitable for pipes from DN 50 to DN 2000.                      Pipe thickness <math>\geq 100\text{mm}</math>.                      Fluid Speed: +/- 16 MT/SEC                      Working Frequency: 1 MHz. Working temp. .. -30..+160 °C.                      Max. Pressure 20 bar. Connection: G 3/4" M with ball valve.                      IP68. Cable length: 0,5 mt, including IP68 connector.  <b>Hot tapping installation.</b></p>	

### INSERTION SENSORS DIMENSIONS

Type of Sensor	A	B	
<b>TTS100-B(45)-2-NG-3/4"-05</b>	285 mm	23 mm	
	215 mm	93 mm	

### FIXING SYSTEM FOR INSERTION SENSORS

DESCRIPTION				
<b>Fixing system for insertion sensors</b>				
suitable for hot tap installations for full pipes in cement, cast iron, fiberglass, synthetic resin or plastic from DN100 to DN2000 Material SS304				
<b>Composed of:</b>				
• Plate				
• Fixing belts				
• Threaded connection 1 1/2" GAS				
<b>IMPORTANT !!</b> Since the Ultrasonic Transit Time Insertion Sensors are provided <b>IN PAIRS</b>				

