

SGM-100F

Time Transit Ultrasonic Flow Meter



Features

- Clamp-on or Insertion transducers
- Panel or Wall mounting instrument
- Simultaneous display of flow rate and cumulative volume data

The SGM-100F time transit ultrasonic flow meter comprises a digital converter and two clamp-on or insertion ultrasonic transducers. The system is designed to measure the fluid velocity of a liquid inside a closed pipe. The transducers are a non-contacting, clamp-on type, which provide the benefits of non-fouling operation and easy installation.

The SGM-100F utilizes two transducers which work as ultrasonic transmitters and receivers.

They are clamped on the outside of a closed pipe at a specific distance from each other and can be mounted in V position where the sound crosses the pipe twice. This is the most common measurement method for pipes with inner diameters ranging from 20 to 300mm. They can also be used in the W position where the sound crosses the pipe 4 times for plastic pipes with a diameter from 10 to 100mm. Alternatively they can be used in the Z position with the transducers mounted on opposite sides of the pipe and the sound crosses the pipe once and the pipe diameter is between 300 and 500 millimetres. The selection of the mounting position depends on the characteristics of the pipe and liquids being measured, insertion transducers are also available.

The SGM-100F instrument is available in an IP65 panel or wall format and has a number of output options available, RS232, RS485, 4-20mA, frequency or 2 relays. It is possible to select more than one option.

The instrument has approximately 100 different menu windows numbered from M00 to M99 simplifying the selection and configuration of parameters and options

The SGM-100F system is suitable for many flow measurement applications including:

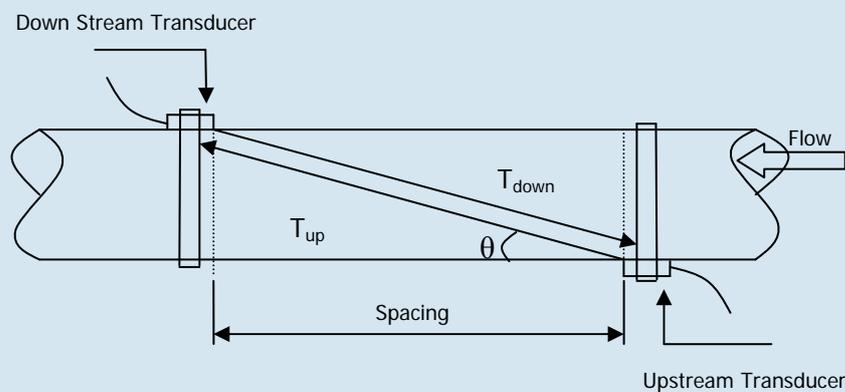
- Water, water supply and drainage water
- Sewage with low particle content
- Seawater
- Power generation plants, heat energy, boiler feed water and energy management systems
- Metallurgy and mining applications
- Petroleum and chemicals
- Food, beverage and pharmaceutical
- Pulp and paper
- Pipeline leak detection
- Network monitoring systems, energy and flow computer management

Specification:

Display:	2x20 digit alphanumeric, backlit LCD
Switches:	16 button keypad
Displayed data:	Instantaneous flowrate, flow totaliser
Housing:	Aluminium
Mounting:	IP65 wall
Input:	5 current loop 4 - 20mA (accuracy 0.1%)
Current Output:	4 - 20m A or 0 - 20mA selectable current loop (accuracy 0.1%)
Instrument Accuracy:	± 1%
Instrument Repeatability:	± 0.2 - 0.5%
Instrument Linearity:	± 0.5%
Serial port:	RS 232 (optional RS 485)
Programmable frequency output:	12 - 9999HZ
Relay output:	For pulse totaliser or alarm
Medium speed:	±32m/s
Working temperature:	-30 to 80°C
Instrument humidity:	85% RH (40°C)
Sensor process temperature:	Maximum 0-70°C - clamp-on / 0 -150°C - Insertion
Sensor humidity:	non condensing 98% RH (40°C)
Power supply:	230vAC / 24vDC
Dimensions:	251x192x80mm
Weight:	3.1Kg

The SGM-100F utilises two transducers which work as ultrasonic transmitters and receivers. They are clamped on the outside of a closed pipe at a specific distance from each other. They can be mounted in V position (the sound crosses the pipe twice), in W position (the sound crosses the pipe 4 times) or in Z position (mounted on opposite sides of the pipe - the sound crosses the pipe once). The selection of the mounting position depends on pipe and on liquid characteristics. The SGM-100F operates by alternately transmitting and receiving a frequency modulated burst of sound energy between the two transducers, and measuring the transit time that takes the sound to travel between them. The difference in measured transit time is directly and exactly related to the velocity of the liquid inside the pipe (fig.1).

figure 1.



$$V = \frac{M \cdot D}{\sin 2\theta} \times \frac{\Delta T}{T}$$

Where:

- θ = include angle for the flow direction
- M = transit time of the ultrasonic signal
- D = Internal pipe diameter
- T_{up} = Transit time in the forward direction
- T_{down} = Transit time in the reverse direction
- $\Delta T = T_{up} - T_{down}$

Order Codes

Type No.	Description
SGM 100F	IP66 Time Transit Ultrasonic flow meter with clamp on or insertion transducers. Simultaneous display of flowrate & cumulative volume data. Transducers have 5 metre cables. Outputs: 4-20mA Current Output + Frequency + 2 Relays
Version	
W	Wall mounting
Z	Special
Power Supply	
A	230vAC
D	24vDC
Transducers	
S1	Clamp on type, for pipe sizes DN15-DN100, 0-70°C
SH	Clamp on type, for pipe sizes DN15-DN100, 0-160°C
M1	Clamp on type, for pipe sizes DN50-DN700, 0-70°C
MH	Clamp on type, for pipe sizes DN50-DN700, 0-160°C
L1	Clamp on type, for pipe sizes DN300-DN4000, 0-70°C
I1	Insertion type, for Steel pipes, 0-150°C
I2	Insertion type, for Cement pipes, 0-150°C
Output	
2	RS232
4	RS485
Accessories	
A	None
B	RS485 Communication software (010D109A)
C	Fixing chain for transducers (5mtre) + 2 tie rods M1 Mounting brackets (Pair) L1 Mounting Brackets (Pair)
118/011	Soundsafe Industrial Ultrasonic couplant, 355ml



These products comply with current European Directives

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