

# NOW MEASURE SUPERHEATED STEAM FLOW



## STEAM FLOW METER

We are certified with

ISO/IEC 17025:2017 | ISO 9001:2015

ISO 14001:2015 | OHSAS 45001:2018

# STEAM FLOW METER SFMc - 150

## INTRODUCTION

The SFMc-150 flow meter is applicable for measuring flow rates of saturated and superheated steam, mass flow rates of Boiler feed water in closed conduits. It is best suited for applications where affordability, reliability and ruggedness are of prime concerns. It can be used as heat energy transfer meter to measure thermal energy using various fluids which are being used as the heat transfer medium. In conventional system of measurement, the differential pressure generated by orifice plate is measured by DP

transmitter. The output from DP transmitter after square rooting is accepted as proportional to flow rate. This assumption is true only when the density is constant. Unfortunately density of compressible fluid is never constant. The density of compressible fluid changes with line pressure and line temperature. Thus, introducing errors in flow rate measurement.

## PRINCIPLE OF OPERATION

As per BS 1042/ ISO: 5167 standard, the equation for mass flow when measured with orifice states:

$Q_m \propto \sqrt{p \cdot \Delta P}$  Where,

$Q_m$  = mass flow rate

$p$  = instantaneous density

$\Delta P$  = differential pressure

Thus by measuring the line pressure and temperature and using relevant algorithms instantaneous density can be found. By knowing the correct density one can compute the accurate flow rate. The further operation of integration, square rooting is similar to ordinary totaliser.

## ADVANTAGES

- Online density compensation possible because of the online pressure and temperature measurement
- Various sizes of orifice assemblies available accurate design calculations, with or without IBR approval as per application
- Sturdy, rugged field mounting type of pressure and DP transmitter is supplied with standard end connection
- Online display of compensated mass flow rate, density, temperature and output of DP transmitter is offered. LED indication for status of steam (saturated or superheated) is provided
- User friendly. No need to feed all the complicated orifice constants since the system is intelligent enough to calculate
- Isolated 4-20mA dc output proportional to compensated flow rate

- Disconnection of DPT, PT and Temperature sensor is indicated by error message.
- Complete system engineered to suit your requirement
- Standard System and highly reliable
- Calibration of RTD, DP transmitter, pressure transmitter is easy and inexpensive
- No moving Parts
- No wiring connections are required during installation
- Installation is easy and suitable, because very little care at site during installation to avoid the leakages

## APPLICATIONS

- Engineering and Automation
- Textiles
- Chemical / Pharmaceutical
- Food and Drugs
- Petrochemicals
- Fertilizers
- Steel / Aluminum
- Sugar Factories / Distilleries

## FEATURES OF STEAM FLOW METER

- Easy user friendly programming
- Password protected for all modes except display mode.
- Computer/Printer Interfacing with RS 232/RS 485 port with MODBUS RTU
- Fault indication indicated by different error codes
- Overflow indicated by blinking display up to 3000 readings (for more readings consult factory)
- Data logging facility with 3450/ 6900 number of reading is available
- Linear or square root operation
- Universal power supply
- Suitable for Saturated &/or Superheated Steam
- Two alarm setting configured on pressure input
- Steam status indication (Saturated/ Superheated)
- Pressure and temperature offsets generated by site condition can be compensated
- Mass flow calculation as per ASME algorithm

## SECTORS



Chemical /  
Pharmaceutical



Petrochemicals



Fertilizers

## SPECIFICATIONS\*

### SFMc - 150

Service : Saturated and superheated steam, Hot Water, Thermic Fluids in closed Pipes

Size : 1" to 10"

Type of flow element : Orifice type.

MOC of flow element : SS 316

End Connection : SORF flange

MOC of flanges : M.S/C.S/S.S

Flange Rating : Class 150 (Other on request)

Orifice Flange assembly : WNRF Class 300

DPT : With Display

Data logging : Every hour 3370 Logs

Comm. Port : RS485, RS232 (optional)

Comm. Protocol : MODBUS , RTU

Design Standard : BS : 1042/ ISO : 5167

Accuracy :  $\pm 2.5\%$  to 3% of actual reading

Typical turndown : 10:3 (Std)  
10:1 (Contact to Factory)

Density compensation : Online monitoring and compensation of density

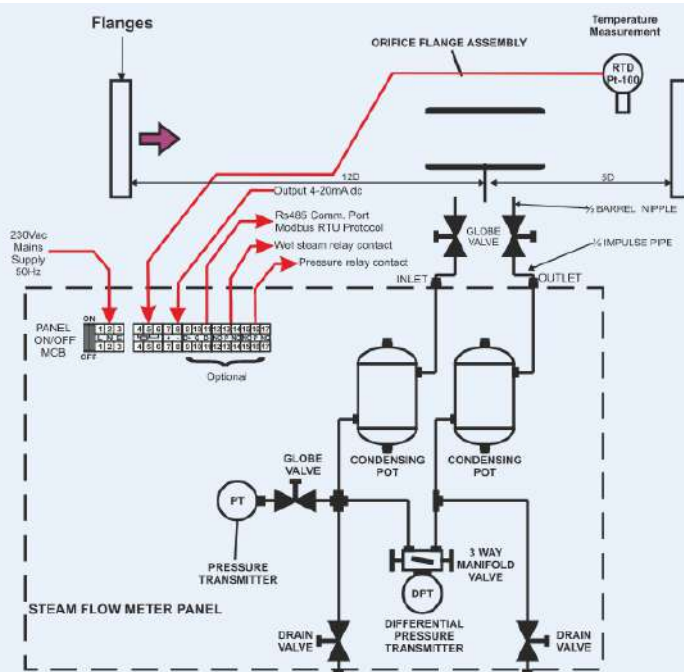
Temperature : Up to 600°C

Pressure : 22 Kg/cm<sup>2</sup> Max. (if pressure is above : consult factory)

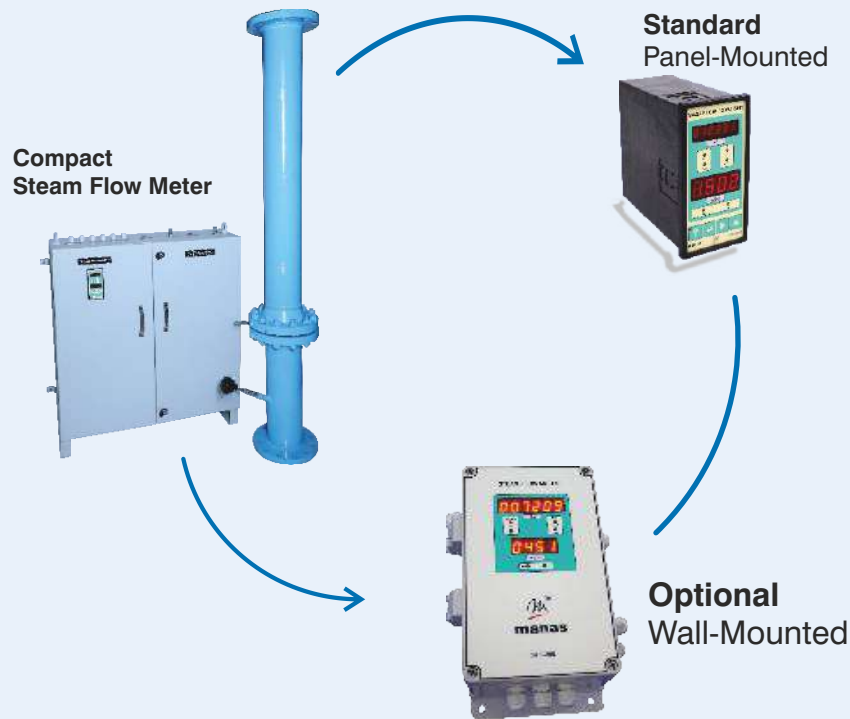
Power Supply : 85 to 265 VAC @ 50HZ

Ingress Protection : IP65 Equivalent

## SCHEMATIC ARRANGEMENT FOR STEAM FLOW METER



## SCHEMATIC DIAGRAM FOR STEAM FLOW METER



### ORDERING INFORMATION

Sample code explained: 01 - 80NB - 01 - 01 - MS/CS - IBR - SFT200P - RS4 - 1L - U

<b>01</b>	<b>Service</b>		<b>01</b>	<b>End Connection</b>		<b>SFT200P</b>	<b>Computing Unit</b>
	Steam : 01			SORF ANSI 150 : 01			Steam Flow Totalizer : SFT200/PW
	Hot Water/Feed Water : 02			Any Other : 02			Liquid Mass Flow Totalizer : LMFT
	Thermic Fluids : 03						Heat Energy Meter : HET-100L
							Flow Totalizer : FIT-100D
<b>80NB</b>			<b>01</b>	<b>Orifice Flanges</b>			
	25NB : 1"			WNRF ASA 300 : 01			
	40NB : 1 1/2"			Any Other : 02			
	50NB : 2"						
	80NB : 3"		<b>MS/CS</b>	<b>MOC of Meter</b>		<b>RS4</b>	<b>Communication</b>
	100NB : 4"			Stainless Steel 304 : SS 304			RS 485 : RS4
	150NB : 6"			Stainless Steel 316 : SS 316			RS 232 : RS2
	200NB : 8"			Mild/Carbon Steel : MS/CS			
	250NB : 10"					<b>1L</b>	<b>Logging Facility</b>
	Any Other : AO		<b>IBR</b>	<b>IBR Certification</b>			Logging : 1L
				IBR : IBR			Extended Logging : 2L
				Non IBR : NIBR		<b>U</b>	<b>Power Supply</b>
							Universal : U
							Any Other : Z

Due to continuous development specifications are subject to change without prior notice.



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