

Service One Pager



PRODUCT : SFM - Steam Flow Meter Orifice Type

Document No : SE/SOP/SFM/ORIFICE Rev: 00

Product

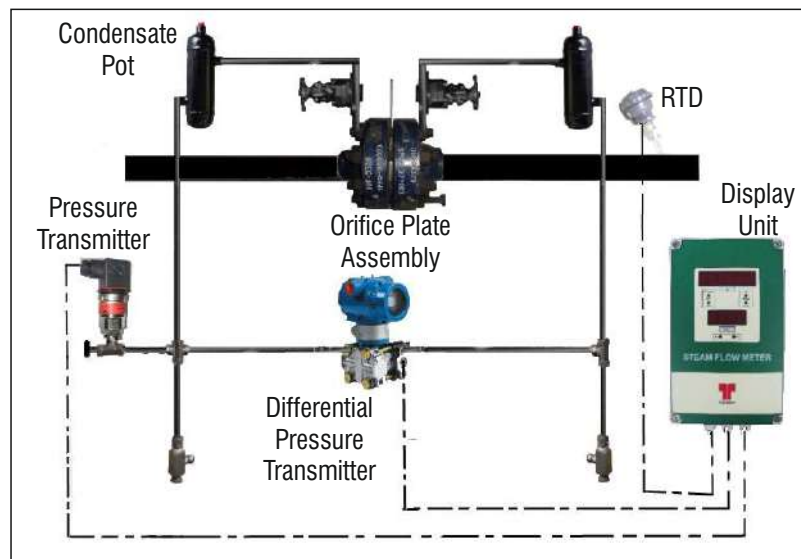
A2Z flo-S is a steam flow meter for measuring the mass of saturated and superheated steam. It works on the principle of differential pressure, has high level of accuracy and is resistant to errors due to pipeline vibrations.

Working Principle

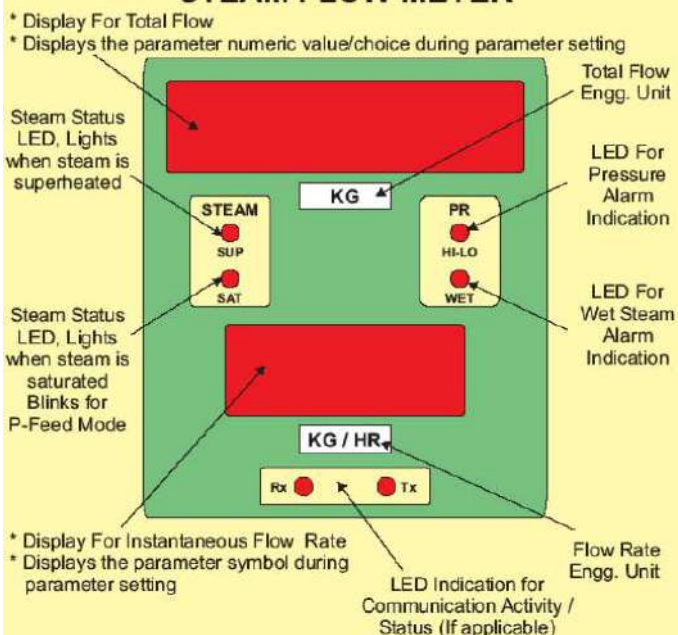
When steam passes through orifice plate installed in a pipeline, pressure drop occurs. A Differential pressure transmitter measures DP across the orifice.

Steam flow is proportional to square root of this pressure drop. Pressure & temperature sensor are provided to measure the change in density of the fluid and all inputs are taken into computation unit for calculating the mass flow. Then instantaneous and totalised steam mass flow displayed on computing unit screen.

Critical Components



STEAM FLOW METER



System Requirement

- 1 Necessary IBR approvals from local authorities.
- 2 Flow meter range selection should be in line with expected flow in the pipe line.
- 3 Condensate pots should be installed 500 mm above steam line and at same elevation.
- 4 Minimum straight distance of 18D at upstream and 8D at downstream from orifice plate.
- 5 If input voltage is fluctuating, CVT rated for 230V AC/30VA is strongly recommended.

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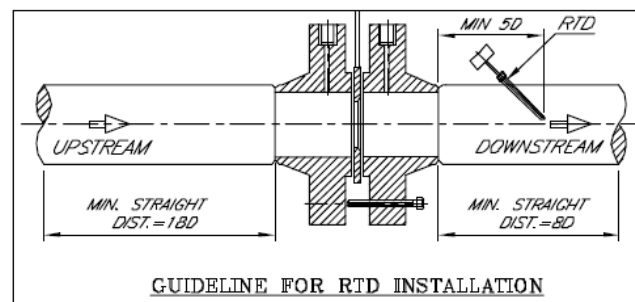
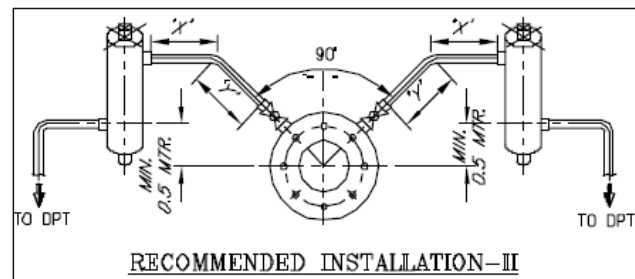
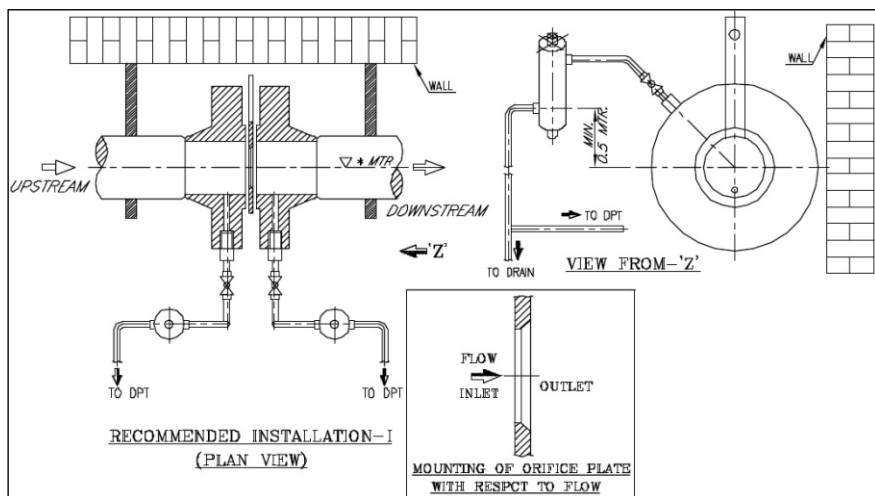


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Installation

1. "Upstream" marked on the orifice plate should be at inlet of steam flow.
2. Upstream side impulse tube should be connected to "H" port and downstream side to "L" port of the DPT.
3. Install the computing (display) unit in safe location.
4. For complete details please refer the standard drawing.



Start up Sequence

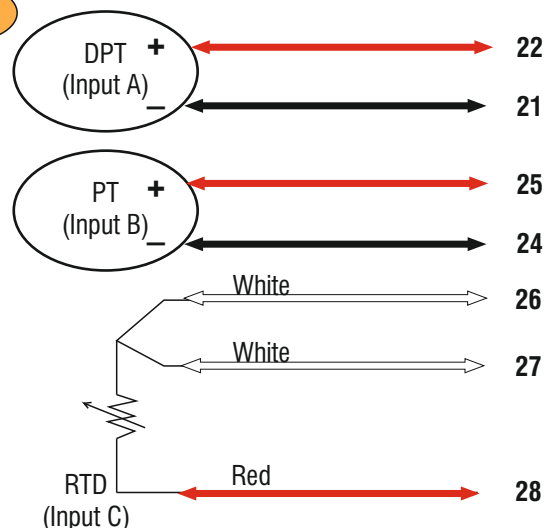
Fill the condensate pots with RO/equivalent water

Remove air locks through DPT

In 3 way-manifold centre needle valve should be closed and both L & H side needle valve to be in open position

Now open the isolation valves so that steam pressure acts on condensate pots

Cable Connection



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Configuration

PARAMETERS	VALUE NEED TO ENTER / CHECK
DPPF	00.00 (Decimal point position of flow)
DPPT	000.000 (Decimal point position of totalizer scale)
*REFL	05.00 {Reference flow as per orifice data sheet} (Example taken for flow 5TPH)
*CNRT	005.000 (This value must be same as REFL)
dPTY	Linear
FLOY	COMP (Compensation)
CTYP	F-COMP, P-COMP, T-COMP (Compensation type)
	F=when RTD & PT in line
	P=When PT in line
	T=When RTD in line
*P-SP	21.00 (If pressure range of PT used 0-21kg/cm ²)
*PREF	10.00 (Reference pressure or line pressure)
* Marked parameters to be set at site as per design conditions.	

Key Points to Refer

Details punched on the orifice plate should match with the design data sheet.

Don't use MS pipe in place of SS tube for connecting the DPT, PT & condensate pot.

Don't loop the supply for the SFM display unit which is used to drive high inductive switching loads like motors, pumps, solenoids, etc. In such cases connect the mains supply directly from the source.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
No display	Fuse blown	Change the fuse
	PCB card faulty	Change PCB card
Error (AOPN/BOPN/COPN)	Input A/B/C open	1. DPT/PT/TT wire may be open check both ends. 2. DPT/PT/TT wire interchanged. 3. DPT/PT/TT faulty.
Error (AOVF/BOVF/COVF)	Input A/B/C over	1. Input A/B/C signal exceed design range by 7%. 2. Wrong range selection. 3. Short circuit. 4. Steam pressure drops below minimum specified.
Steam flow not matching	Low flow	1. Check the log book. 2. Increase load.
	Parameters incorrect	Recheck CNRT/REFL parameter.
	DPT out of calibration	Recalibrate DPT
	3 way manifold/ SS tube choked	Clean 3 way manifold and SS tube. Re-fill water in condensate pots (RO quality water)
Showing flow in no flow condition	DPT out of calibration	Recalibrate DPT
	Difference in condensate pots elevation	Install condensate pots at same elevation.

Periodic Maintenance

Flushing	Checking
3 Way manifold	Water inside condensate pots
Impulse tube	Equalising the DP by opening /closing needle valves
Condensate pots	Leakage from orifice plate gasket & impulse tube