



Model # 600-9SAN & Model # 600-9UHP In-line

Thermal Mass Flow Meters

(Shown with 9500P Integral Electronics)

Thermal Instrument provides in-line unobstructed path flow meters for both Sanitary (Model # 600-9SAN) and Ultra High Pure production environments. Our Sanitary meter design is 3A certified and comes with Tri-Clamp process connection for easy installation into your process lines.

Our Ultra High Pure Model # 600-9UHP measures clean gases supporting semi-conductor and other laboratory environments. This model can be supplied with tube ends so that it can be orbitally welded into the process line for a permanent seal.

Both models are manufactured with flow wetted materials that meet or exceed 15 Ra surface finish.

All of our flow measurement instruments have standard redundant flow and temperature sensors further enhancing the long life of the instrument and maximizing return on investment.

Standard Features:

- ◇ 316L Electro-Polished Stainless Steel Material
- ◇ 15 RA or better flow wetted surface
- ◇ Robust Welded Construction
- ◇ "CIP" Clean in place design
- ◇ Up to 100:1 Turndown Available
- ◇ Unobstructed Flow Path
- ◇ Negligible Pressure Drop
- ◇ Pressure & Temperature Compensated
- ◇ No Moving Parts
- ◇ Sizes from ¼" OD to 4" OD Tube
- ◇ Available with Integral or Remote Electronic Flow Transmitter
- ◇ Available as a Flow Switch
- ◇ Designed & Manufactured in the USA



Model 600-9UHP with Tube Ends (Shown with Integral 9500P Electronic Transmitter—No Display)



Model 600-9SAN with Tri-Clamp Connection (Shown with Integral 9500P Electronic Transmitter & Display)



Unobstructed Flow Path is a unique feature found in all Thermal Instrument In-line Model 600-9 Mass Flow Meters



Model # 600-9SAN & 600-9UHP In-line Mass Flow Meter

Thermal Mass Technology Advantages:

- Accurate
- Repeatable Measurements
- Excellent Turndown up to 1000:1
- Capable of measuring low flow rates
- Non-wetted sensors do not come into direct contact with fluid
- Operates in varying pressures and vacuum environment
- Temperature Compensated
- No Moving Parts
- Independent 4-20mA output for Flow and Temperature

Options:

Wetted Materials:

316L Stainless Steel, 15 Ra Internal Finish. Electro-polished.

Process Connections:

Tube Ends, Tri-Clamp, VCR, VCO

Face to Face:

Standard and Custom lengths available

Sensor:

2 Ea. Flow (Std), 2 Ea. Temperature, Bi-Directional Flow (Optional)

Clean-In-Place:

Circuitry shuts down meter electronics during process

Applications:

Gas Flow Measurement, Liquid Flow Measurement, Fluid Temperature (Optional)

Gases:

All inert, clean, Hydrogen, and non-condensing gases

Liquids:

Water, solvents, customer proprietary

Contact factory for others

Standard Installation:

10 pipe diameters before meter and 5 pipe diameters after meter without any piping changes (Note: We can calibrate to installation conditions if above cannot be met)

Pictured: In-line Sanitary Model shown with optional VCO connection and integral 9500P electronic transmitter



Engineering Specifications:

Accuracy:	±0.50% of Full Scale or 1% of reading under 20% of flow range ** Process Fluid Temperature Span ±50°F
Repeatability:	± .20% of Rate
Turndown	10:1 Std. 1000:1 Application Dependent
Response Time:	Gases—1 to 2 Seconds Liquids— < 500ms.
Pressure Rating	Extreme Pressure Capability*
Mass Flowrates	Gas 40—50,000 SFPM Liquid .02— 7 FPS

Temperature Capabilities:

-40—350°F (Std) , -40—175°C (Std.)

Optional High Temps to 500°F (260°C)

** Note—Accuracy of Meter reading based on air and meeting all piping conditions.

* Note—Contact Factory to consult on pressure capability

Transmitter Specifications (Integral or Remote):

Model Shown:	9500P
Display:	8 Digit Flow Rate & Total Flow Rate
Power:	120 / 240 VAC, 50/60 Hz 24 VDC, 1 Amp
Outputs:	4-20 MADC Flow (Std.) 4-20 MADC Temperature (Opt.)

Optional Outputs:

0-5 VDC, 0-10 VDC (Optional)

Pulse, Modbus RS 485, Hart Communication

Remote: Up to 2000'. Signal Cable- 18 Gauge, 2 Pair with shield

Communication via Micro-USB Cable & 4 Button Menu System (Opt.)

Adjustable Variables:

Filter Factor, Flow Full Scale, Flow Factor, Pipe ID, Zero Cutoff %

Enclosure Specifications:

Cast Aluminum, Epoxy painted with window

Connection: ¾" FNPT Power & Signal

Ratings: Nema 4, Explosion Proof, Class 1, Div 1 Groups B, C, D Weatherproof

Temperature: Ambient—13 to 140°F (-25 to 60°C)

Storage—-40 to 158°F (-40 to 70°C)



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