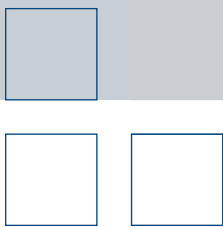


# FCI ST50 Series Flow Meters

Low Cost, Low Maintenance  
Air, Compressed Air and Nitrogen Flow Measurement  
for Process and Plant Applications



Wastewater Treatment Aeration Control  
Blower and Dryer Air Flow Control  
Burner and Furnace Air Flow Control  
Lake, Pond and Aquaculture Aeration  
HVAC Duct/Damper Control  
Compressed Air Distribution Measurements

FCI ST50 FLOW METER

# ST50 Series Features

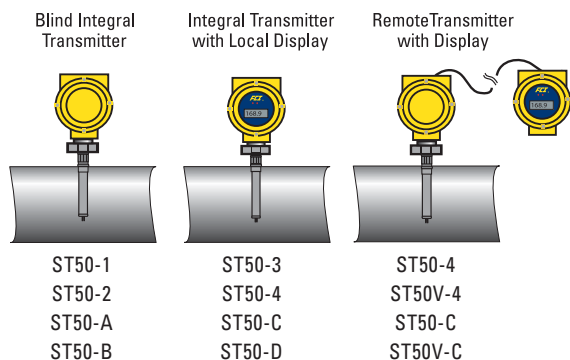
- **Direct mass, volumetric or velocity flow measurement**
- **Dual 4-20 mA analog outputs**
- **Line/pipe sizes from 2 to 24 [51 mm to 610 mm]**
- **Non-clogging, no moving parts sensor**
- **RS232 communications**
- **4-digit digital display option**
- **Small, compact design**
- **Easy installation**

## Easy to Install, Easy to Use

The ST50 flow meter is an accurate, easy to install, no moving parts solution for measuring and controlling air, compressed air or nitrogen flow. ST50 utilizes FCI proven thermal dispersion technology to provide direct mass flow measurement resulting in higher performance at a lower cost than orifice plates, DP, Vortex shedding and other thermal devices. The meter installs in line sizes ranging from 2 inches to 24 inches [51 mm to 610 mm] with 1/2" or 3/4" NPT.

ST50 uses precision, lithography structured platinum RTD sensors embedded in FCI's equal mass small diameter, all metal thermowells. Combined with microprocessor electronics and precision calibration, the ST50 achieves excellent accuracy, fast response and virtually maintenance free operation.

To serve a variety of application and installation requirements the ST50 is available in three standard configurations as shown below.



To provide convenient and easy access for wire-up and signal isolation, the instrument's enclosure features dual conduit ports in either NPT or M20 threads, as well as removable front and rear covers. ST50 can be ordered for DC (18V to 36V) or AC (85V to 265V) power.

The ST50 is available with four calibration and final set-up selections. Two are standard calibrations suitable for final ranging and set-up in the field and two are for factory custom calibration with factory performed final ranging and set-up. All final set-up and flow ranges are subject to 100:1 maximum and 3:1 minimum turndowns.

Two standard calibrations include one for air or nitrogen flow rates between 1.25 SFPS to 125 SFPS [0,4 NMPS to 38 NMPS] in service pressures between 10 psia to 50 psia [0,7 bar(a) to 3,5 bar(a)] and one

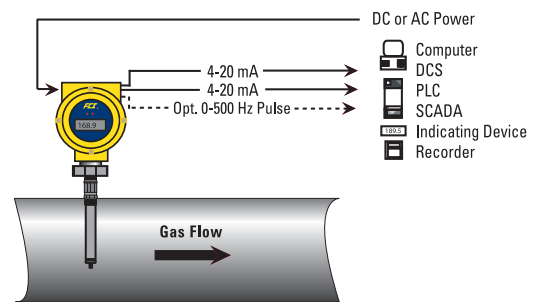
for compressed air, air or nitrogen flows between 4 SFPS to 400 SFPS [1,2 NMPS to 122 NMPS] in service pressures between 50 psia to 165 psia [3,5 bar(a) to 11,4 bar(a)]. All final user configurations for flow range, specific line size, standard volumetric or mass flow and engineering units are easily set-up in the field with a PC, PDA or FC88 programmer.

Alternatively, custom factory calibration and set-up is available for air or nitrogen with flow between 0.8 SFPS to 150 SFPS [0,2 NMPS to 46 NMPS] at service pressure between 10 psia to 50 psia [0,7 bar(a) to 3,5 bar(a)] or compressed air, air or nitrogen flow between 2.5 SFPS to 400 SFPS [0,8 NMPS to 122 NMPS] with service pressure between 50 psia to 165 psia [3,5 bar(a) to 11,4 bar(a)]. Custom calibration applications are subject to validation by FCI's AVAL flow meter optimizer program and a submittal of a completed FCI Application Data Sheet.

## Extensive Outputs Ensure Application Compatibility

The ST50 includes dual, NAMUR NE43 compliant 4-20 mA analog outputs which are field assignable as flow rate or temperature. Flow rate is selectable for reading in standard volumetric or mass flow engineering units. Optionally available as a third output, is a 0-500 Hz pulse output of total flow.

In all models a standard RS232C serial I/O link is provided for instrument configuration, service/troubleshooting data, and measured readings.



## Designed and Built to Last

The all stainless steel element with Hastelloy-C22 tips, provides protection from invasive conditions within the pipe and ensures long service life. The electronics are housed in an all metal NEMA 4X (IP66/IP67) rated enclosure for ruggedness and dust/weather proof service in industrial plant installations.

Whether adding flow measurement to improve the process or replacing high-maintenance flow meters, the ST50 provides an accurate, fast response and no-maintenance solution for air, compressed air and nitrogen flow measurement.

## Precision Calibration in FCI Flow Laboratory

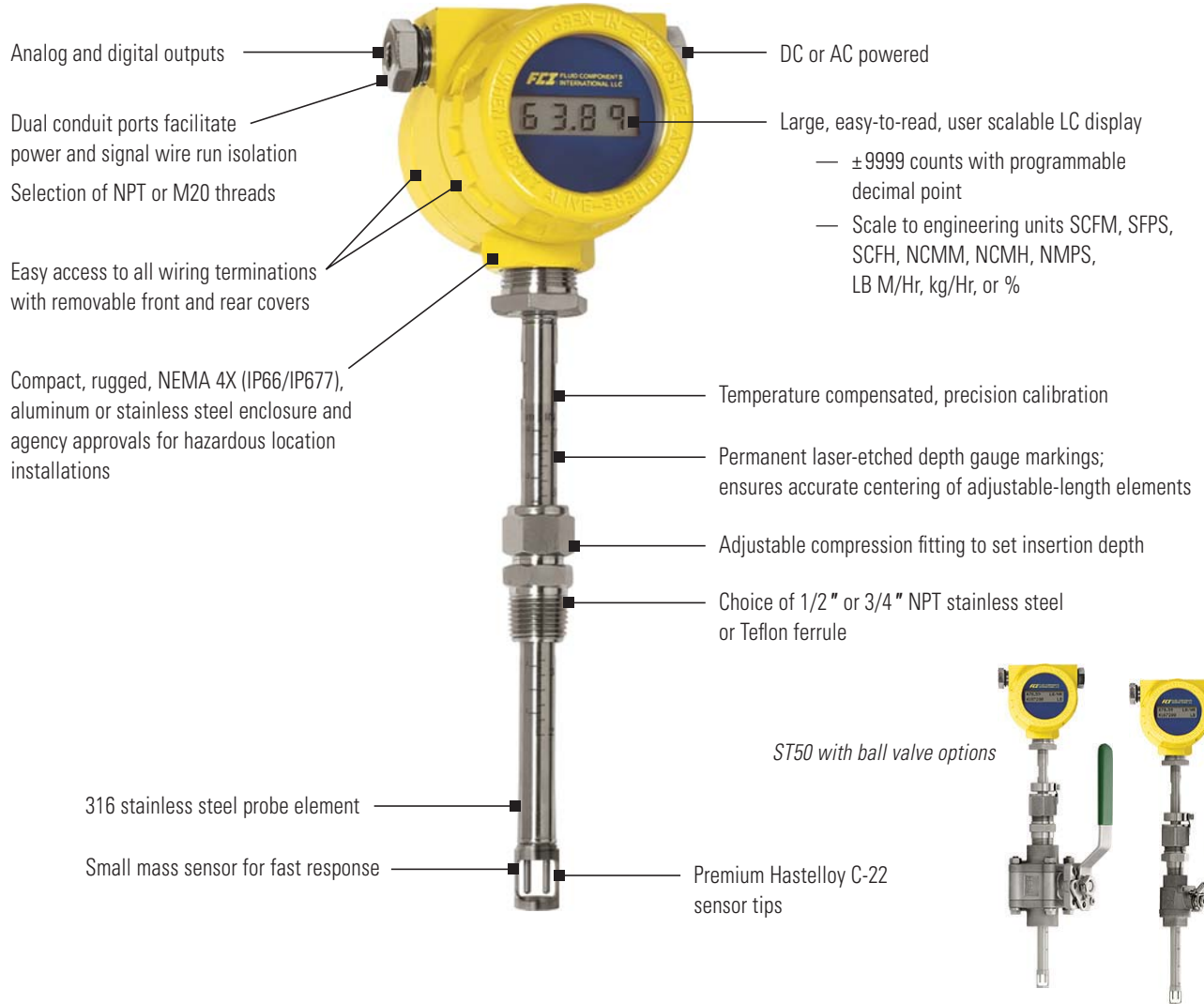
To ensure optimum accuracy, performance and quality, FCI operates a world-class flow calibration laboratory with calibrations performed on more than 19 different flow stands, using equipment traceable to NIST (US National Institute of Standards and Technology), and ISO/IEC 17025 (International Standards for test lab quality systems). FCI product developments are subject to rigorous testing and calibration integrity validation using high-speed data acquisition systems and precision flow calibration equipment.

Every FCI flow meter is also extensively tested and then calibrated using actual gases under customer conditions to assure their quality and performance.

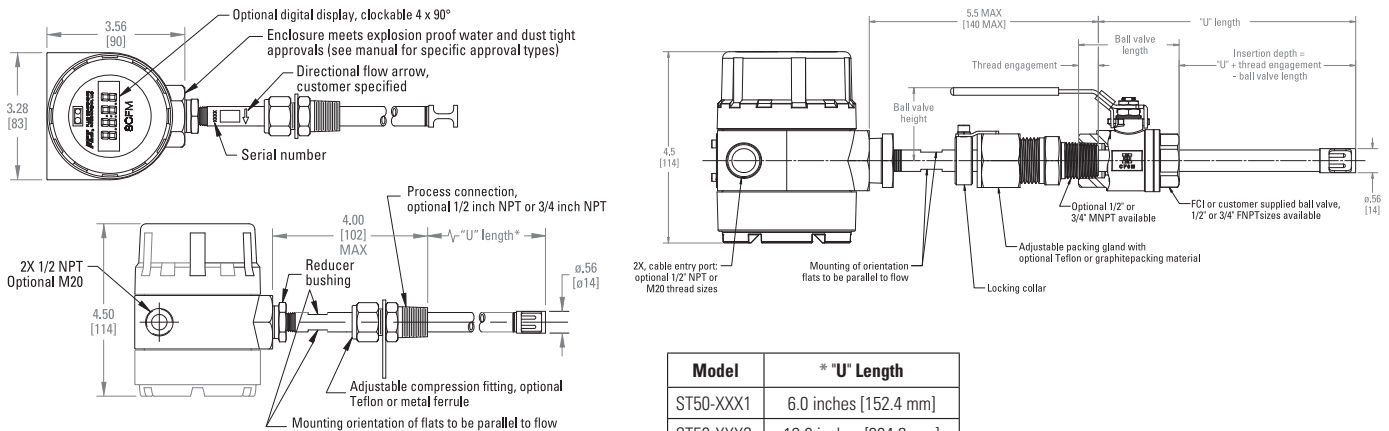
# ST50 Series Features

## Single Insertion Point, Mass Flow Measurement

With premium components and attention to detail, FCI's ST50 series provides long-lasting flow meter quality and value. Its features and functions ensure application compatibility, maximum installation convenience, superior industrial durability and lowest maintenance.



## ST50 Series Flow Meter Dimension Drawing



Model	* "U" Length
ST50-XXX1	6.0 inches [152.4 mm]
ST50-XXX2	12.0 inches [304.8 mm]
ST50-XXX3	18.0 inches [457.2 mm]

# ST50 Series Flow Meter General Specifications

## Instrument

- **Media Compatibility:** Air, compressed air, and nitrogen
- **Pipe/Line Size Compatibility:** 2" to 24" [51 mm to 610 mm]
- **Range:** 0.75 SFPS to 400 SFPS [0.23 MPS to 122 MPS]
- **Accuracy**  
Standard:  $\pm 2\%$  of reading,  $\pm 0.5\%$  of full scale  
Optional:  $\pm 1\%$  of reading,  $\pm 0.5\%$  of full scale
- **Repeatability:**  $\pm 0.5\%$  of reading
- **Temperature Compensation**  
Standard: 40 °F to 100 °F [4 °C to 38 °C]  
Optional: 0 °F to 250 °F [-18 °C to 121 °C]
- **Turndown Ratio:** 3:1 to 100:1
- **Agency Approvals**<sup>1</sup>  
FM/CSA: Nonincendive for use in Class 1, Division 2, Groups A, B, C and D T4 Ta = 60 °C Indoor Hazardous (Classified) Locations  
Other: CPA, EAC/TR CU, CE Marking, CRN, PED
- **Warranty:** One year

## Flow Element

- **Installation:** Insertion, variable length with 1/2" MNPT or 3/4" MNPT compression fitting
- **Type:** Thermal dispersion
- **Material of Construction:** 316 stainless steel body with Hastelloy-C22 thermowell sensors, 316 stainless steel compression fitting with Teflon or stainless steel ferrule
- **Pressure (Maximum Operating without Damage)**  
Stainless steel ferrule: 500 psig [34 bar(g)]  
Teflon ferrule: 150 psig [10 bar(g)]
- **Temperature (Maximum Operation)**  
Stainless steel ferrule: 0 °F to 250 °F [-18 °C to 121 °C]  
Teflon ferrule: 0 °F to 200 °F [-18 °C to 93 °C]
- **Process Connections**  
1/2" MNPT or 3/4" MNPT with stainless steel or Teflon ferrule  
Retractable packing gland: Medium pressure 500 psig [34 bar(g)] with 1/2" MNPT or 3/4" MNPT, and either graphite or Teflon packing
- **Insertion Length:** Field adjustable lengths:  
1" to 6" [25 mm to 152 mm]; 1" to 12" [25 mm to 305 mm];  
or 1" to 18" [25 mm to 457 mm]

## Transmitter

- **Enclosure**  
Rating: NEMA 4X, IP66/IP67  
Material: *Standard* – aluminum, polyester powdered coated  
*Optional* – 316 stainless steel  
Conduit/Cable Port: Dual 1/2" NPT or M20x1.5
- **Output Signals**  
Standard: Dual 4-20 mA, user assignable to flow rate and/or temperature; output #1 has fault indication per NAMUR NE43 guidelines, user selectable for high (>21.0 mA) or low (<3.6 mA)  
Optional: 0-500 Hz pulse for total flow
- **Communication Port:** RS232C
- **Input Power**  
DC: 18 Vdc to 36 Vdc (6 watt maximum)  
AC: 85 Vac to 265 Vac (12 watt maximum)  
(CE Marking Approval from 100 Vac to 240 Vac)
- **Operating Temperature:** 0 °F to 140 °F [-18 °C to 60 °C]
- **Digital Display:**  $\pm 9999$  Counts LCD, 0.45" H [11.4 mm] characters, user scalable to flow rate units or as 0-100%.<sup>1</sup>

<sup>1</sup> For applications in Div. 1 / Zone 1 environments and/or for dual-line digital display with built-in totalizer display, see FCI Model ST51

## Optional Ball Valves

Part Number	Description
025172-09	1/2" ball valve; standard-duty, full port, 2-piece, 1000 psi [70 bar] max, -40 °F to 450 °F [-40 °C to 232 °C] <i>Pressure rating derated above 100 °F [38 °C]</i>
025172-10	3/4" ball valve; standard-duty, full port, 2-piece, 1000 psi [70 bar] max, -40 °F to 450 °F [-40 °C to 232 °C] <i>Pressure rating derated above 100 °F [38 °C]</i>
011144-05	3/4" ball valve; heavy-duty, full port, 3-piece, 1440 psi [99 bar] max, -40 °F to 550 °F [-40 °C to 288 °C]



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