

FCI ST50 Series Flow Meters

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



FCI ST50 FLOW METER

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 FLUID COMPONENTS
INTERNATIONAL LLC

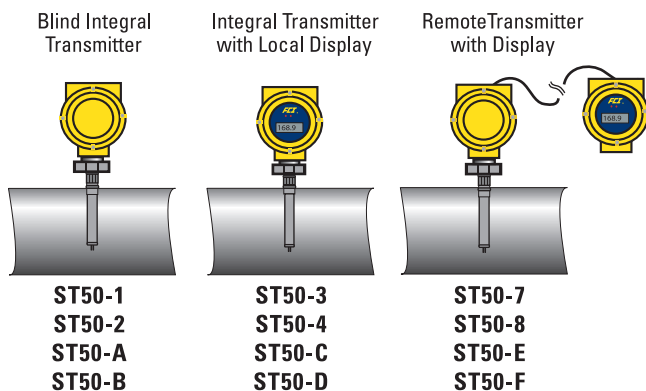
FCI ST50 Series Flow Meters

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. (Other display options are described in Accessory Remote Digital Display section.)



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

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 and wireless IR communications
- 4-digit digital display option
- Small, compact design
- Easy installation

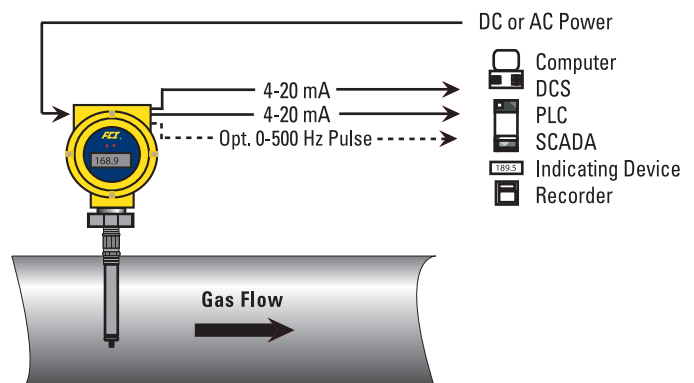
range, specific line size, standard volumetric or mass flow and engineering units are easily set-up in the field with a PC, PDA or FC88 programmer.

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 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 0-1000 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. Also included in all models is a wireless IR sensor to enable wireless connectivity to PDA devices.





Exclusive "Wireless" Communications Option

With FCI's unique new IR link option, any Palm-OS based PDA can be used to communicate with the ST50 without contact. This wireless IR link features a password protected, easy-to-follow menu driven program to access all its features. Parameters include measured readings and totalizer values, configuration settings, calibration downloads, diagnostic service codes, and more. This wireless interface is ideal to save cost and time when the ST50 will be mounted in a hard to reach location. Requires FCI software accessory kit P/N 019819-01 for the PDA.

Designed and Built to Last

The all stainless steel element with Hast-C tips, provides protection from invasive conditions within the pipe and ensures long service life. The electronics are housed in an all metal NEMA 4X (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 owns and operates a best-in-class test and NIST traceable calibration laboratory. 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.

- NIST traceability
- Automated data acquisition
- ISO 9001 certified
- Flow, pressure and temperature calibrations

Accessory Remote Digital Displays

For remote mounted digital readouts of flow, temperature and /or total flow, three types of accessory displays are available.



Model DM10 is a LCD readout meter which can be inserted and located anywhere in the 4-20 mA output loop from the ST50. It requires no separate power as it derives its power directly from the 4-20 mA loop. The DM10 is user scalable to ± 1999 digits and features oversized, 1 inch H [25 mm] characters for an easy-to-read display. NEMA 4X rated. FM and CSA certified models optional

Size: 3.15" H x 5.51" W x 2.56" D [80 mm H x 140 mm W x 65 mm D]

Mounting: Wall. Panel mount or pipe mount kit optional

Wire-Up: Screw terminals via 1/2" conduit hole at bottom of case



Model DM15 is a high accuracy, 1/8 DIN panel mount, AC line powered meter with a bright red LED readout. It features a user scalable, ± 9999 digit display and will accept both the 4-20 mA or 0-10 Vdc signals from the ST50. Optionally available with DM15 is a user programmable alarm setpoint with a Form C relay output.

Size: 1.89" H x 3.78" W x 5.35" D [48 mm H x 96 mm W x 136 mm D]

Mounting: Panel. Standard 1/8 DIN, 45 mm H x 92 mm W cutout

Wire-Up: Screw terminals at rear of instrument



Model DM20 is a miniature sized, totalizer counter that accepts the pulse output from the ST50. It features an 8-digit (0 to 99999999 counts) LCD that can be reset via its front-panel push-button. It is a panel-mount style that can be located in the field, in a separate enclosure or in the control room. It is self-powered by a lithium battery (included, 10 year life).

Size: 0.944" H x 1.89" W x 1.20" D [24 mm H x 48 mm W x 30.5 mm D]

Mounting: Panel. 22.5 mm H x 45 mm W cutout

Wire-Up: Screw-terminals at rear of instrument

ST50 Specifications

Instrument

Media Compatibility: Air, compressed air, and nitrogen

Pipe/Line Size Compatibility: 2" to 24" [51 mm to 610 mm]

Range: Air, compressed air, or nitrogen: 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:¹

FM/CSA: Nonincendive for use in Class 1, Division 2, Groups A, B, C and D T4 Ta = 60°C Indoor Hazardous (Classified) Locations.

ATEX/IECEX: II 3 G EEx nA II T6; II 3 D T65°C (DC input power only)

CPA, CE Marking, PED

Warranty: One year

Flow Element

Installation: Insertion, variable length with 1/2" or 3/4" MNPT compression fitting

Type: Thermal dispersion

Material of Construction: 316 stainless steel body with Hastelloy C 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 Connection: 1/2" MNPT or 3/4" MNPT with stainless steel or teflon ferrule

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: NEMA 4X [IP67], aluminum, dual conduit ports with either 1/2" NPT or M20x1.5 entries. Epoxy coated.

Output Signal:

Standard: (2) 4-20 mA, user assignable to flow rate and/or temperature

Optional: 0-500 Hz pulse for total flow

Communication Port: RS232C; wireless IR to PDA.²

Input Power:

DC: 18 Vdc to 36 Vdc (6 watt maximum)

AC: 85 Vac to 265 Vac (12 watt maximum)

(CE Marking Approval from 100Vac to 240Vac)

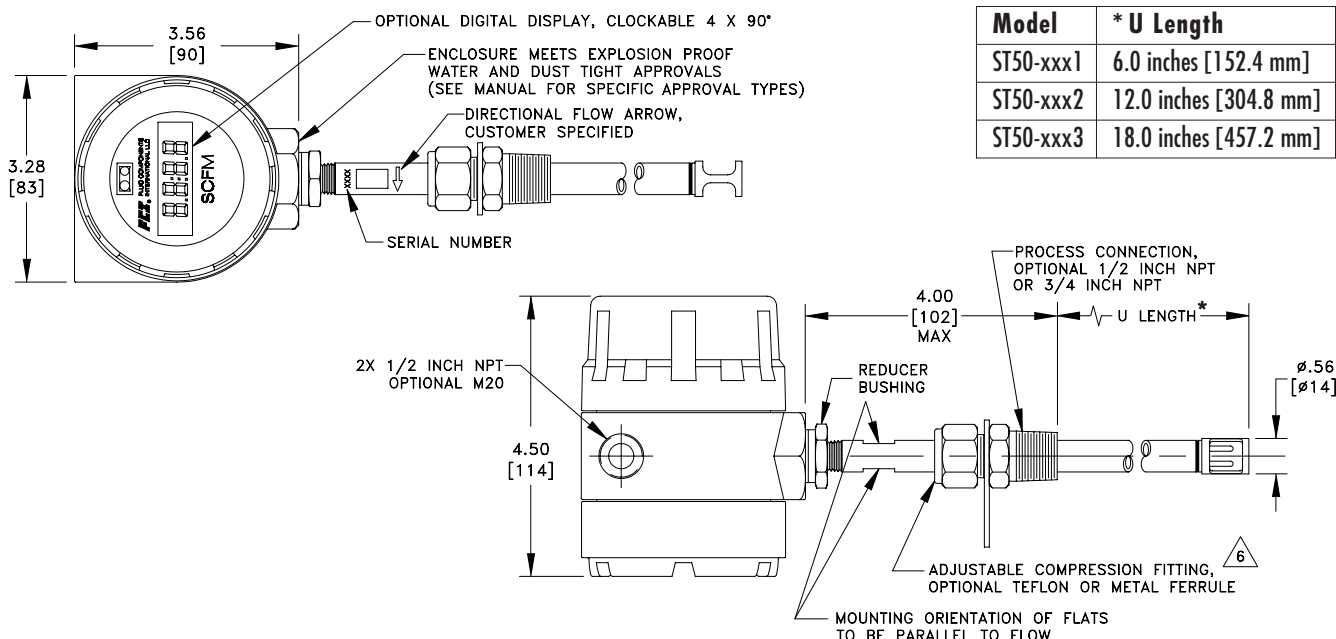
Operating Temperature: 0 °F to 140 °F [-18 °C to 60 °C]

Digital Display: ± 9999 Counts LCD, 0.45" H [11.4 mm] characters, user scalable to flow rate units or as 0-100%.¹

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

² Requires user supplied PDA and FCI software P/N 019819-01

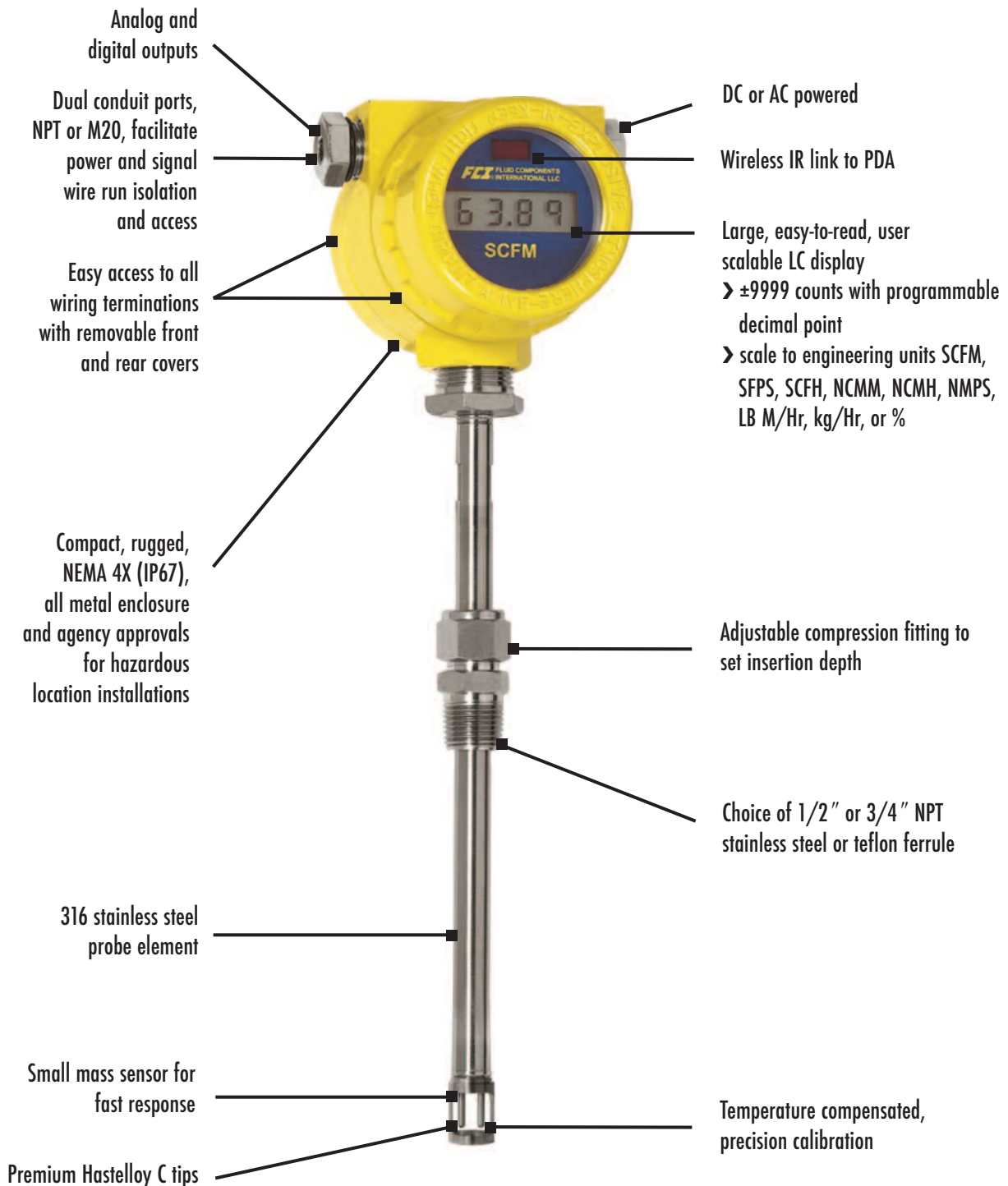
ST50 Dimension Drawing



ST50 Flow Meter

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. It's features and functions ensure application compatibility, maximum installation convenience, superior industrial durability and lowest maintenance.



Companion FCI Flow Meters in the ST50/ST75 Series



■ ST51 Flow Meter

Insertion style flow meter similar to Model ST50 for biogas, digester gas and other methane composition gases, also with enhanced features for air applications.

- Two-line, Flow Rate + Totalizer Digital Display
- Agency Approvals for Div.1/Zone 1 Installations
- Pulse Output for External Totalizers is standard
- Special Low Flow Rate Calibration Option



■ ST75 Flow Meter Series

In-line (spool-piece) version for applications with smaller line sizes, 1/4" to 2" [6 to 51mm] and for all air and gases.

- For all air and gases including hydrocarbons and hydrogen
- Two-line, Flow Rate + Totalizer Digital Display
- Agency Approvals for Div.1/Zone 1 Installations

Data sheets and full product details for Model ST51, ST75 Series and other FCI models are available at www.fluidcomponents.com

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INTERNATIONAL LLC

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