

ST102 Dual-Element Mass Flow Meter

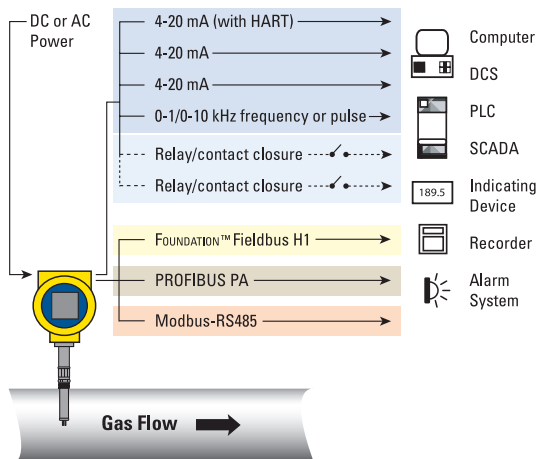
Thermal Dispersion Air/Gas Insertion Flow Meter



Model ST102 is a dual-element system that can be applied in an averaging mode or as two discrete and independent sensors operating through a single transmitter. A single dual-element instrument can result in significant cost and space savings compared to installing and integrating two single-element instruments.

Flow Element and Process Connections

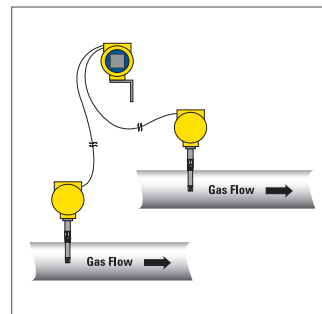
- All welded construction
- 316L stainless steel or Hastelloy-C276
- 350 °F, 500 °F or 850 °F [177 °C, 260 °C or 454 °C]
- Fast response and extra-rugged duty choices
- Variable (adjustable) and fixed insertion depths
- Compression fitting, NPT, flanges, hot-tap retractable packing gland connections



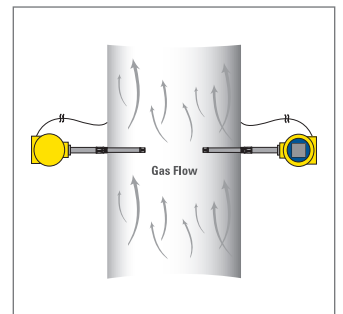
Model ST102 Features

- Compatible with More than 200 Gases
- Direct Mass Flow Measurement
- Dual Function – Flow and Temperature
- Temperature Service to 850 °F [454 °C]
- No Moving Parts, Non-Clogging
- Easy, Low Cost Single Point Insertion
- Best-In-Class Digital / Graphical Readout
- Multiple Analog Outputs
- Extensive Bus Communications Options
- Agency Approvals on Full Instrument
- On-Board Data Logger

Discrete Mode



Averaging System



Transmitter and Electronics

- All metal enclosure
- Four (4) conduit ports
- 2" x 2" [50 mm x 50 mm] backlit LCD readout/display
- Flow, total flow and temperature
- Triple analog outputs with HART
- FOUNDATION™ fieldbus, PROFIBUS PA, Modbus options
- Dual relays/alarms option
- Integral or remote mounting (up to 1000')
- AC or DC power
- FM, FMc, ATEX and IECEx approvals for Division 1, Zone 1 hazardous locations
- Standard and extended range temperature compensation
- Data logging to removable micro-SD card

Calibration

- Calibrated to your installation conditions and gas specifications on one of 18 precision, NIST traceable flow stands
- Up to five (5) unique calibrations stored onboard
- SpectraCal™ – 10 user selectable / changeable gases

Model ST102 Features

Dual flow elements

- Dual remotes or one integral plus one remote
- Averaging or discrete (independent) configurations

Four conduit ports provide greatest signal integrity and separation for power input, analog output lines, digital I/O, relays and/or auxiliary input signals; choice of NPT or M20 threads

AC or DC power supply

Weather-proof, ruggedized, Ex rated enclosures

- Choices for local or remote mounting
- NEMA 4X, IP67

Global agency approvals of entire instrument system for hazardous location installations:

FM, FMc, ATEX, IEC, NEPSI, CPA
NEPSI, CPA, Inmetro, GOST-R, GOST-K pending

Transmitter remote up to 1000' [300 m]

Multiple calibrations

- Up to five independent, separate calibrations
- Multiple gases or mixed gas compositions
- Same gas, different flow range to optimize accuracy and extend turndown up to 1000:1

Precision calibration and calibration choices

- Specific gas and application matched calibration in FCI NIST traceable facility
- Exclusive patented SpectraCal gas equivalency calibration with ten (10) user selectable gases

Extensive selection of process connections

- Simple, adjustable installation with threaded NPT connector
- Teflon or metal ferrule seals
- Fixed connections
- ANSI or DIN flanges
- Retractable assemblies

Stainless steel or Hastelloy-C276 wetted parts

Extensive analog and digital communications output choices

- Triple 4-20 mA with HART
- FOUNDATION™ fieldbus H1
- PROFIBUS PA
- Modbus RS-485
- 0-1 kHz or 0-10 kHz frequency or pulse
- Dual relays
- USB port
- Ethernet

On-board data logger

Multi-function: measures mass flow rate and temperature

Four (4) optical touch buttons

- Proximity activation, no need to open enclosure
- Full instrument programmability
- Protected against unwanted activation

Comprehensive informational display

- Digital readout of all measured parameters; flow rate, total flow, temperature and pressure with engineering units
- Analog flow rate bar graph
- Alarm relay status indication
- Instrument fault indication
- User programmable 17 character field (example: display gas type, tag number or application/location)
- Display orientation rotates in 90° increments electronically
- Backlighted: auto-on activation via proximity sensor or set for always on

Permanent laser-etched depth gauge markings; ensures accurate centering of adjustable-length elements

All welded sensor elements for maximum service life and leak-proofing

Precision, wide-ranging platinum RTD sensors

Exclusive equal mass sensors provide optimum performance in processes with wide temperature swings

Choice of three flow element styles to optimize application performance (-FPC, -FP, -S)



— FPC style



— FP style



— S style

Model ST102 Dual-Element Insertion Mass Flow Meter Specifications

Instrument

- **Measuring Capability:** Flow rate, total flow and temperature
- **Basic Style:** Insertion, dual-element system
- **Flow Measurement Range:** 0.25 SFPS to 600 SFPS [0,07 NMPS to 172 NMPS]
– Air at standard conditions; 70 °F and 14.7 psia [0 °C and 1013,25 bar(a)]
- **Temperature Measurement Range:** Up to 850 °F [454 °C]
commensurate with element; *see operating temperature in flow element specification*
- **Media:** All gases that are compatible with the flow element material
- **Accuracy**
Flow:
Gas Specific Calibration: $\pm 0.75\%$ reading, $\pm 0.5\%$ full scale
SpectraCal™ Gas Equivalency: Typically $\pm 4\%$ reading, $\pm 0.5\%$ full scale; gas conditions specific to application will determine accuracy; *utilize FCI's online tool, AVAL, to evaluate your application and provide expected accuracy*
Temperature: $\pm 2^\circ\text{F}$ [$\pm 1,1^\circ\text{C}$] (display only, flow rate must be greater than 5 AFPS [1,5 m/sec])
- **Repeatability**
Flow: $\pm 0.5\%$ reading
Temperature: $\pm 1^\circ\text{F}$ [$\pm 1^\circ\text{C}$] (flow rate must be greater than 5 AFPS)
- **Temperature Coefficient**
With optional temperature compensation; valid from 10% to 100% of full scale calibration
Flow: Maximum $\pm 0.015\%$ of reading / °F up to 850 °F [$\pm 0.03\%$ of reading / °C up to 454 °C]
- **Turndown Ratio**
Standard: Factory set and field adjustable from 10:1 to 100:1 within calibrated flow range
- **Temperature Compensation**
Standard: $\pm 30^\circ\text{F}$ [$\pm 16^\circ\text{C}$]
Optional: $\pm 100^\circ\text{F}$ [$\pm 55^\circ\text{C}$]
- **Agency Approvals**
FM, FMc (Canadian): Class I, Division 1, Hazardous Locations; Groups B,C,D,E,F,G
ATEX and IECEx: Zone 1, II 2 GD Ex d IIC T4
NEPSI, CPA, Inmetro, GOST-R, GOST-K pending
- **Calibration:** Performed on NIST traceable equipment

Flow Element

- **Material of Construction**
All-welded 316L stainless steel; Hastelloy-C optional
- **Operating Pressure**
Metal ferrule: 1000 psig [69 bar(g)]
Teflon ferrule: 150 psig [10 bar(g)] (200 °F [93 °C] maximum)
Fixed Connection NPT: 1000 psig [69 bar(g)]
Fixed Connection Flanged: per flange rating
- **Operating Temperature (Process)**
All Flow Elements (–FPC, –FP and –S):
–40 °F to 350 °F [-40 °C to 177 °C]
–40 °F to 500 °F [-40 °C to 260 °C]
–40 °F to 850 °F [-40 °C to 454 °C]
- **Process Connection**
Compression Fittings
3/4" or 1" male NPT, stainless steel with adjustable Teflon ferrule or metal ferrule; or flanged tapped and threaded for 3/4" fitting, ANSI or DIN flanges
Compression fittings not available with ultra high temperature version (850 °F [454 °C])
Retractable Packing Glands
Low pressure 50 psig [3,5 bar(g)] or medium pressure (500 psig [34 bar(g)]) with graphite or Teflon packing material; 1 1/4" male NPT or ANSI or DIN flange
Teflon packing required when process media is ozone, chlorine or bromine
Fixed Fittings: 1" male NPT or ANSI or DIN flange
Insertion Length: Field adjustable lengths
1" to 6" [25 mm to 152 mm]
1" to 12" [25 mm to 305 mm]
1" to 21" [25 mm to 533 mm]
1" to 60" [25 mm to 1524 mm]
Fixed lengths from 2.6" to 60" [66 mm to 1524 mm]
- **Remote Transmitter Configurations:** Transmitter may be mounted remotely from flow element using interconnecting cable (up to 1000' [300 m])

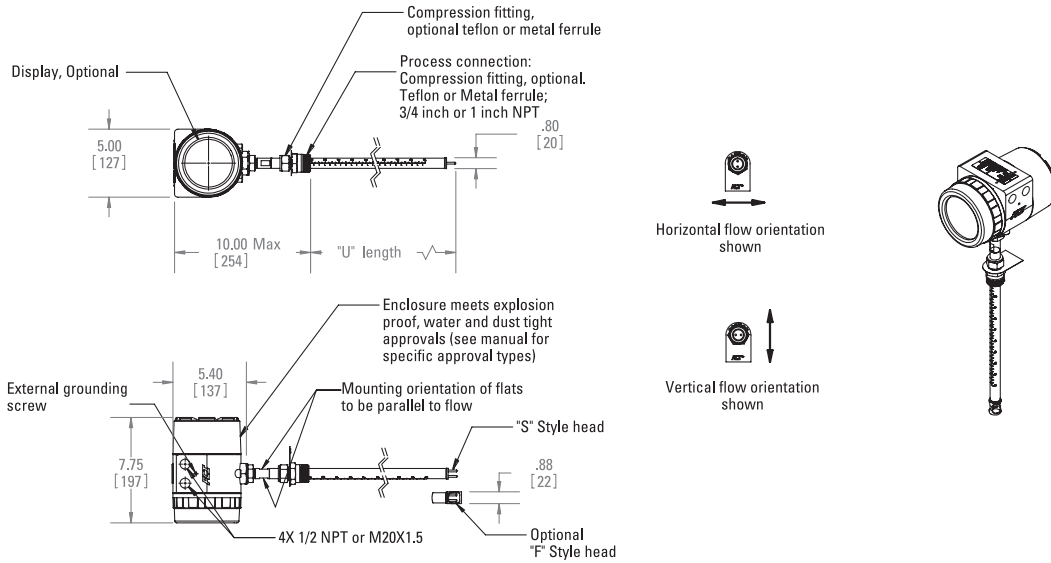
Flow Transmitter/Electronics

- **Operating Temperature:** 0 °F to 130 °F [-18 ° to 54 °C]
- **Input Power**
AC: 85 Vac to 265 Vac
DC: 24 Vdc $\pm 20\%$
- **Outputs**
Analog
Standard: Three (3) 4-20 mA*, 0-1kHz, or 0-10 kHz pulse/frequency
4-20 mA outputs are user assignable to flow rate, temperature and/or if so equipped, pressure; outputs are user programmable to full flow range or subsets of full flow range; pulse/frequency output is user selectable as pulse for external counter/flow totalizer, or as 0-1 kHz or 0-10 kHz frequency representing flow rate
* *Outputs are isolated and have fault indication per NAMUR NE43 guidelines, user selectable for high (>21.0 mA) or low (<3.6 mA)*
Optional: Standard output plus two (2) 2A SPDT relays
Relays independently user assignable to flow, temperature or pressure; user programmable for hi/lo trip, hysteresis from 00.0 to 99.9 counts and time delay from 00.0 to 99.9 seconds
Digital
Standard: USB, Ethernet
Optional: HART (comes standard with analog outputs, V7 compliant)
FOUNDATION™ fieldbus H1, PROFIBUS PA or Modbus RS-485
- **Auxiliary Inputs**
Two 4-20 mA input channels; used for FCI administered special configurations to allow ST102 series to accept outputs from external devices such as gas analyzers, gas composition or pressure sensors
- **Enclosures**
Main Transmitter/Electronics:
NEMA 4X, IP67; polyester powder coated aluminum; 4 conduit ports threaded as 1/2" NPT or M20x1.5; 7.74" x 5.40" x 5.00" [196.6 mm x 137.2 mm x 127 mm]; *stainless steel enclosure pending*
Local Enclosure (Remote Configuration):
Without packing gland option:
NEMA 4X, IP67; polyester powder coated aluminum; 2 conduit ports threaded as 1/2" NPT or M20x1.5; 3.75" x 4.00" x 3.24" [95 mm x 102 mm x 82 mm]
With packing gland option:
NEMA 4X, IP67; polyester powder coated aluminum; 1 conduit port threaded as 1" NPT or M20x1.5; 5.40" x 4.82" [137.2 mm x 122 mm]
- **Data Logger**
User programmable for readings per time increment to a maximum of 1 reading/second; removable, circuit board-mountable 2GB micro-SD (secure digital) memory card supplied; stores approximately 21M readings in ASCII comma-separated format
- **Readout/Display and Optical Touch Buttons (Optional):**
 - Large 2" x 2" [50 mm x 50 mm] LCD; digital plus bar graph and engineering units
 - Digital displays of flow rate, total flow, temperature and pressure (with STP models); user selectable for engineering units
 - Analog bar graph of flow rate
 - Relay/alarm status indication
 - User programmable 17 alphanumeric character field associated with each calibration group
 - Set-Up & Service mode displays text and service codes
 - Backlighted – backlight activated by proximity motion detection, or user may set for always on
 - Four (4) optical touch buttons for user programming of instrument set-up and service interrogation
 - Optical touch button activation through front window – no need to open enclosure to access or activate
 - Display is electronically rotatable in 90° increments to optimize viewing angle*Note: If readout/display not ordered, all user set-up and service interrogation must be done via computer link to bus comm and/or USB port.*

Specifications at reference operating conditions of 70 °F, 14.7 psia [21.1 °C, 1.013bar(a)] and straight pipe run 20d upstream, 10d downstream
FCI is a continuous improvement company; specifications subject to change without notice

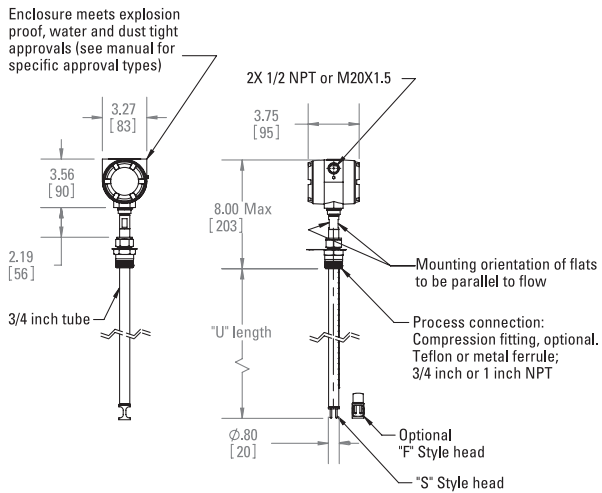
Model ST102 Dual-Element Insertion Mass Flow Meter

Integral Configuration

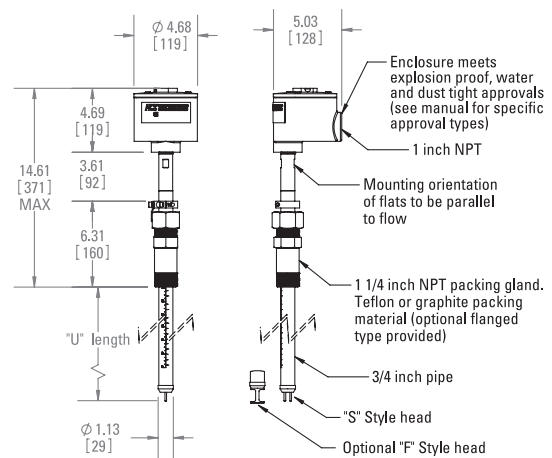


Remote Transmitter

With Ferrule Type Compression Fitting



With Packing Gland



FCI FLUID COMPONENTS INTERNATIONAL LLC

Locally Represented By:

Visit FCI online at www.FluidComponents.com | FCI is ISO 9001:2000 and AS9100 Certified

FCI World Headquarters

1755 La Costa Meadows Drive | San Marcos, California 92078 USA | Phone: 760-744-6950 Toll Free (US): 800-854-1993 Fax: 760-736-6250

FCI Europe

Persephonestraat 3-01 | 5047 TT Tilburg, The Netherlands | Phone: 31-13-5159989 Fax: 31-13-5799036

FCI Measurement and Control Technology (Beijing) Co., LTD | www.fluidcomponents.cn

Room 107, Xianfeng Building II, No.7 Kaituo Road, Shangi IT Industry Base, Haidian District | Beijing 100085, P. R. China
Phone: 86-10-82782381 Fax: 86-10-58851152

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Block No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

INSTRUCTIONS: To order an **ST102A**, please fill in each numbered block above by selecting required codes from the corresponding categories below. Use of any "W" or "*" codes requires prior approval from FCI. For special data, documentation, test reports or required quality reports, refer to FCI's Engineering and Quality Assurance Order Information Sheets (OIS).

Flow Element			
Code		[BLOCK 1] Flow Element: Temperature Service, Type and Materials of Construction	
350°F [177°C]	500°F [260°C]	850°F [454°C]	
1	2	3 ¹	-FPC style; 316L stainless steel
A	B	C ¹	-FPC style; Hastelloy C276
4	5	6 ¹	-FP style; 316L stainless steel
D	E	F ¹	-FP style; Hastelloy C276
7	8	9 ¹	-S style; 316L stainless steel
G	H	J ¹	-S style; Hastelloy C276
W	W	W ¹	Agency approved, customer specified
*	*	*	Other, not agency approved
Code (BLOCK 2)			
0 Block 2 Code is always "0"			
Code		[BLOCKS 3-4]	
BLOCK 3	BLOCK 4	Process Connections	
Compression Fitting, Teflon Ferrule ³			
C	0	3/4 inch, male NPT ⁴	
D	0	1 inch, male NPT ⁴	
G	Table A	Flange, tapped and threaded for 3/4 inch fitting ¹⁵	
Compression Fitting, Metal Ferrule ³ Metal ferrule permanent locks after tightening			
M	0	3/4 inch, male NPT ⁴	
N	0	1 inch, male NPT ⁴	
J	Table A	Flange, tapped and threaded for 3/4 inch fitting ¹⁵	
Retractable Packing Gland, Low Pressure; 50 psig [3.5 bar (g)] ²			
P	0	1 1/4 inch, male NPT; graphite packing	
H	0	1 1/4 inch, male NPT; Teflon packing	
Q	Table A	Flange ^{5,15} ; graphite packing	
K	Table A	Flange ^{5,15} ; Teflon packing	
Retractable Packing Gland, Medium Pressure; 500 psig [34 bar (g)] ^{2,17}			
R	0	1 1/4 inch, male NPT; graphite packing	
L	0	1 1/4 inch, male NPT; Teflon packing	
T	Table A	Flange ^{5,15} ; graphite packing	
V	Table A	Flange ^{5,15} ; Teflon packing	
Fixed			
Y	0	1 inch, male NPT	
F	Table A	Flange ¹⁵	
Other or Special			
W	W	Agency approved, customer specified	
*	*	Other, not agency approved	
Code		[BLOCKS 5-7]	
BLOCK 5	BLOCK 6	BLOCK 7	Insertion Length
0	6	0	Variable length: 1 inch to 6 inch [25 mm to 152 mm]
1	2	0	Variable length: 1 inch to 12 inch [25 mm to 305 mm]
2	1	0	Variable length: 1 inch to 21 inch [25 mm to 533 mm]
3	6	0	Variable length: 1 inch to 36 inch [25 mm to 914 mm]
6	0	0	Variable length: 1 inch to 60 inch [25 mm to 1524 mm]
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fixed length (required if Code Y or F in Block 3) or custom variable length; specify req'd length to 0.1 inch E.g. 18 inches = 18.0, max. length is 99.9 inches

Code	[BLOCK 8] Pipe Mounting and Flow Direction
G	Horizontal, element #1 right-to-left, element #2 left-to-right (opposite orientation) †
H	Horizontal, element #1 left-to-right, element #2 right-to-left (opposite orientation) †
J	Horizontal, both #1 and #2 elements left-to-right
K	Horizontal, both #1 and #2 elements right-to-left
L	Vertical up
M	Vertical down
*	Other, customer specified

† Note: If 'integral' is selected (Block 9, Codes 5 or E), element #1 is always the integral and element #2 the remote

Transmitter and Electronics	
Code	[BLOCK 9] Transmitter Mounting, Enclosure Material and Cable Entry Threading
5	Transmitter integral with flow element #1, and flow element #2 is remote; aluminum, NPT cable entries ⁶
E	Transmitter integral with flow element #1, and flow element #2 is remote; aluminum, metric cable entries ⁶
6	Transmitter remote from both flow elements; aluminum, NPT cable entries ⁶
F	Transmitter remote from both flow elements; aluminum, metric cable entries ⁶
7	Transmitter integral with flow element #1, and flow element #2 is remote; stainless steel, NPT cable entries ⁶

(continued next page)

Table A – Flange [BLOCK 4]			
CS ¹⁵	316L SS	Hast C	Material
D	1	C	ANSI 1 inch 150 lb
E	A	G	ANSI 1 inch 300 lb
F	2	H	ANSI 1 1/2 inch 150 lb
K	B	J	ANSI 1 1/2 inch 300 lb
P	3	M	ANSI 2 inch 150 lb
R	L	N	ANSI 2 inch 300 lb
	T		DIN DN25 PN40
	V		DIN DN40 PN40
	6		DIN DN50 PN16
	Y		DIN DN50 PN40
W			Agency appvd, customr spec'd

- Notes**
- 850°F [454°C] temperature service:** All compression fittings and fixed flanged of 1 inch or DN25 process connections are not valid. Process connections in Block 3 must be P, H, Q, K, R, L, T, V, Y, or F; and if Code F, Block 4 cannot be code D, 1, C, E, A, G or T. Model ST100 transmitter maximum temperature is 150 °F [65 °C] and Model ST102A is 120 °F [49 °C], so remote mounting (Block 9, Code 2, B, 4 or D) and use of Teflon jacketed cable (Block 10, Code 1, 2, 3, or 4) is recommended.
 - Teflon packing material must be ordered when the process media is ozone, chlorine or bromine. *Contact FCI.*
 - Teflon ferrule maximum is 200 °F [93 °C], 150 psig [10 bar (g)]. Metal ferrule maximum is 500 °F [260 °C], 1000 psig [69 bar (g)].
 - S style sensor is retractable (will recess) into both 3/4 inch and 1 inch NPT. -FP style sensor is retractable (will recess) into 1 inch NPT only.
 - Minimum flange size is 1 1/2 inches or DN40.
 - See Notes, page 2
 - Cannot select carbon steel flange when Hastelloy type flow element is selected in Block 1.
 - Selection of medium pressure packing gland requires remote mount configuration. Block 9 must be Code 6, F, 8 or P.

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Code [BLOCK 9] Transmitter Mounting, Enclosure Material and Cable Entry Threading	
N	Transmitter integral with flow element #1, and flow element #2 is remote; stainless steel, metric cable entries ⁶
8	Transmitter remote from both flow elements; stainless steel, NPT cable entries ⁶
P	Transmitter remote from both flow elements; stainless steel, metric cable entries ⁶
W	Agency approved, customer specified
*	Other, not agency approved
Code [BLOCK 10] Interconnecting Cable Length for Remote Configuration	
0	Not required <i>Specify with user supplied cable or if cable ordered as separate line item</i> ^{7,16}
A	10 feet [3 meters] PVC jacketed ⁸
B	25 feet [7,6 meters] PVC jacketed ⁸
C	50 feet [15 meters] PVC jacketed ⁸
D	100 feet [30 meters] PVC jacketed ⁸
1	10 feet [3 meters] Teflon jacketed ⁸
2	25 feet [7,6 meters] Teflon jacketed ⁸
3	50 feet [15 meters] Teflon jacketed ⁸
4	100 feet [30 meters] Teflon jacketed ⁸
W	Other
*	Other, not agency approved
Code [BLOCK 11] Transmitter Power Supply and Display	
A	24 Vdc power (19.2 Vdc to 28.8 Vdc); no digital display
B	24 Vdc power (19.2 Vdc to 28.8 Vdc); with display
C	85 Vac to 265 Vac power; no display
D	85 Vac to 265 Vac power; with digital display
Code [BLOCK 12] Transmitter Outputs and Communications	
1	(3) 4-20 mA outputs, one with HART; (1) frequency/pulse output
F	FOUNDATION™ fieldbus H1 ⁹
M	Modbus 485 ⁹
P	PROFIBUS-PA ⁹
0	Only for use (<i>required</i>) when configuring ST102E
W	Other
*	Other, not agency approved
Code [BLOCK 13]	
E	Always "E"

Calibration^{10, 11, 12}

Code [BLOCK 14] Calibration Application	
T	Air; flat profile calibration
C	Air equivalency (digester gas, chlorine, flue gas, etc.)
E	Nitrogen, helium, argon, carbon dioxide or nitrous oxide
1	Natural gas (90% or greater methane content)
F	Hydrocarbons (methane, ethane, propane, etc.)
G	Hydrogen or hydrogen mixture
S	Flare gas, SR2x split-range, double calibration points, maximum 5% rdg accuracy <i>See specifications</i>
W ¹³	Agency approved, customer specified
Code [BLOCK 15] Calibrations, Set-up and Conditions	
0	None
A	Extended temperature compensation
B	Extended range (> 100:1 turndown)
E	Extended temperature compensation and extended range
Code [BLOCKS 16-17] Second Calibration	
0 0	Not required
<input type="checkbox"/> <input type="checkbox"/>	Select from Codes shown in Blocks 14-15
Code [BLOCK 18] Additional Calibration Groups	
0	Not required
3	Three (3) calibration groups; two as specified in Blocks 14-17, plus one additional ¹⁴
4	Four (4) calibration groups; two as specified in Blocks 14-17, plus two additional ¹⁴
5	Five (5) calibration groups; two as specified in Blocks 14-17, plus three additional ¹⁴

General	
Code [BLOCK 19] Agency Approval	
<i>CE Mark always included</i>	
0	Not required
1	FM, FMc
3	ATEX, IECEx ¹⁶
5	EAC / TR CU (Russia)
6	Inmetro
7	NEPSI
*	Other <i>Contact FCI for other approvals and conditions of use</i>

Notes

6. Transmitter enclosure has four (4) female conduit ports, NPT = 1/2", metric = M20 x 1.5. With remote mount, the local enclosure's conduit port (attached to the flow element) varies by type of process connection and enclosure material specified:

Model	Process Connection	Aluminum		Stainless Steel	
		NPT	Metric	NPT	Metric
ST100, ST102A	Block 3 = C, D, G, M, N, J, F*	(2) 1/2"	(2) M20 x 1.5	(1) 1/2"	(1) M20 x 1.5
ST100, ST102A	Block 3 = P, H, Q, K, R, L, T, V, Y, F**	(1) 1/2"	(1) M20 x 1.5	(1) 1/2"	(1) M20 x 1.5
ST100L	Block 3 = Any	(2) 1/2"	(2) M20 x 1.5	(1) 1/2"	(1) M20 x 1.5
ST110, ST112A, and all STP	Block 3 = Any	(1) 1/2"	(1) M20 x 1.5	(1) 1/2"	(1) M20 x 1.5

* with 1" or DN25 flange

** with flange size larger than 1" or DN25

- Remote cable in an ST100 Series model is 8-conductor; remote cable in an STP100 Series model is 10-conductor. For user-supplied cable, overall shielded conductor type is required and wire resistance must be less than 8 Ohms.
- Cable suitable for conduit and some cable gland systems. For other cable gland system choices, see ST100 accessories list or contact FCI to supply separately. PVC cable maximum temperature 176 °F [80 °C]; Teflon cable maximum temperature 392 °F [200 °C].
- No analog, frequency/pulse, or other digital bus communications.
- FCI standard conditions are 14.7 psia [1,01 bar(a)] and 70 °F [21.1 °C].
- Calibration codes must be selected using FCI's proprietary AVAL application evaluation software.
- Transmitter setup, changes to factory supplied standard settings, verification or modification to calibration parameters or diagnostics requires external source communication with the transmitter.
- Customer specified calibration must not exceed temperature and pressure limitations of the ST100 Series product specifications.
- May specify up to three (3) additional calibrations for a total of five (5). Contact FCI for instructions on how to specify third, fourth and/or fifth calibration.
- ATEX/IECEx rated remote requires cable glands or conduit fittings which meet or exceed the installation area's required rating. When rated cable glands, armored cables and non-armored cable supplied are user supplied or selected from ST100 accessories list and ordered separately, enter Code 0 in Block 10.

Accessories

Part Number	Description
Sun Shield Kits Shades main transmitter, electronics, and/or display from direct sunlight; 316L stainless steel; attached directly to housing; kit includes shield, all hardware for attachment and instruction sheet	
023241-01	For use with integral mount transmitter
023237-01	For use with remote mount transmitter

Refer to separate ST100 Series Accessories List for a complete listing of all accessories such as cabling, ball valves, documentation test and QA documents and certificates, and spare parts.