

**ST102 A** - 

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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 <sup>1</sup>	-FPC style; 316L stainless steel
A	B	C <sup>1</sup>	-FPC style; Hastelloy C276
4	5	6 <sup>1</sup>	-FP style; 316L stainless steel
D	E	F <sup>1</sup>	-FP style; Hastelloy C276
7	8	9 <sup>1</sup>	-S style; 316L stainless steel
G	H	J <sup>1</sup>	-S style; Hastelloy C276
W	W	W <sup>1</sup>	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 <sup>3</sup>			
C	0	3/4 inch, male NPT <sup>4</sup>	
D	0	1 inch, male NPT <sup>4</sup>	
G	Table A	Flange, tapped and threaded for 3/4 inch fitting <sup>15</sup>	
Compression Fitting, Metal Ferrule <sup>3</sup> Metal ferrule permanent locks after tightening			
M	0	3/4 inch, male NPT <sup>4</sup>	
N	0	1 inch, male NPT <sup>4</sup>	
J	Table A	Flange, tapped and threaded for 3/4 inch fitting <sup>15</sup>	
Retractable Packing Gland, Low Pressure; 50 psig [3.5 bar (g)] <sup>2</sup>			
P	0	1 1/4 inch, male NPT; graphite packing	
H	0	1 1/4 inch, male NPT; Teflon packing	
Q	Table A	Flange <sup>5,15</sup> ; graphite packing	
K	Table A	Flange <sup>5,15</sup> ; Teflon packing	
Retractable Packing Gland, Medium Pressure; 500 psig [34 bar (g)] <sup>2,17</sup>			
R	0	1 1/4 inch, male NPT; graphite packing	
L	0	1 1/4 inch, male NPT; Teflon packing	
T	Table A	Flange <sup>5,15</sup> ; graphite packing	
V	Table A	Flange <sup>5,15</sup> ; Teflon packing	
Fixed			
Y	0	1 inch, male NPT	
F	Table A	Flange <sup>15</sup>	
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 <sup>6</sup>
E	Transmitter integral with flow element #1, and flow element #2 is remote; aluminum, metric cable entries <sup>6</sup>
6	Transmitter remote from both flow elements; aluminum, NPT cable entries <sup>6</sup>
F	Transmitter remote from both flow elements; aluminum, metric cable entries <sup>6</sup>
7	Transmitter integral with flow element #1, and flow element #2 is remote; stainless steel, NPT cable entries <sup>6</sup>

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

**Calibration**<sup>10, 11, 12</sup>

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

General	
Code [BLOCK 19] Agency Approval	
<i>CE Mark always included</i>	
<b>0</b>	Not required
<b>1</b>	FM, FMc
<b>3</b>	ATEX, IECEx <sup>16</sup>
<b>5</b>	EAC / TR CU (Russia)
<b>6</b>	Inmetro
<b>7</b>	NEPSI
<b>*</b>	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
<b>ST100, ST102A</b>	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
<b>ST100, ST102A</b>	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
<b>ST100L</b>	Block 3 = Any	(2) 1/2"	(2) M20 x 1.5	(1) 1/2"	(1) M20 x 1.5
<b>ST110, ST112A, and all STP</b>	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
<b>Sun Shield Kits</b> 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	
<b>023241-01</b>	For use with <b>integral</b> mount transmitter
<b>023237-01</b>	For use with <b>remote</b> 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.

