

(continued from previous page)

Code [BLOCK 8] Pipe Installation, Display/Transmitter Orientation (Integral) or Flow Element Orientation (Remote), and Flow Direction		
For Code F-R selection, refer to visual representation on pages 3-4		
Horizontal Pipe		
	Integral Transmitter	Flow Element in Remote Configuration
F	Top mount, display/blind front facing forward	Top mount
G	Top mount, display/blind front facing forward	Top mount
H	Side mount, display/blind front facing up	Side mount
J	Side mount, display/blind front facing up	Side mount
K	Side mount, display/blind front facing down	
L	Side mount, display/blind front facing down	
Vertical Pipe		
	Integral Transmitter	Flow Element in Remote Configuration
M	Side mount left, display/blind front facing forward	Side mount left, flow up
N	Side mount right, display/blind front facing forward	Side mount right, flow up
P	Side mount left, display/blind front facing forward	Side mount left, flow down
R	Side mount right, display/blind front facing forward	Side mount down, flow down
3	Rain-shielded; vertical pipe, flow up and rain down <i>Block 1 Code must be P²²</i>	

Transmitter and Electronics

Code [BLOCK 9] Transmitter Mounting, Enclosure Material and Cable Entry Threading	
1	Integral mount, aluminum; NPT cable entries ⁶
A	Integral mount, aluminum; metric cable entries ⁶
2	Remote mount, aluminum; NPT cable entries ⁶
B	Remote mount, aluminum; metric cable entries ⁶
3	Integral mount, stainless steel; NPT cable entries ⁶
C	Integral mount, stainless steel; metric cable entries ⁶
4	Remote mount, stainless steel; NPT cable entries ⁶
D	Remote mount, 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 integral configurations, user supplied cable, or if cable ordered as separate line item from ST80 series accessories^{7,16}</i>
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
*	Non agency approved cable type or length other than above

Code [BLOCK 11] Transmitter Power Supply and Display		DC	AC	Display	Keypad
E	24 Vdc power; no digital display; no keypad	■			
J	24 Vdc power; digital display only; no keypad	■		■	
F	24 Vdc power; with digital display; 4-button keypad	■		■	■
G	85 Vac to 265 Vac power; no digital display; no keypad		■		
K	85 Vac to 265 Vac power; digital display only; no keypad		■	■	
H	85 Vac to 265 Vac power; with digital display; 4-button keypad		■	■	■
W	Other, agency approved				

Code [BLOCK 12] Transmitter Outputs and Communications	
A	(2) 4-20 mA analog; HART, Modbus
B	FOUNDATION™ Fieldbus; (2) 4-20 mA analog; HART, Modbus
C	PROFIBUS-PA; (2) 4-20 mA analog; HART, Modbus
D	PROFIBUS-DP; (2) 4-20 mA analog; HART, Modbus
W	Other
*	Other, not agency approved

Calibration^{10, 11, 12}

Code [BLOCK 13] Calibration Application	
Standard Calibration: General Purpose	
A	Air: 1.25 SFPS to 125 SFPS; 10 psia to 65 psia; 40 °F to 100 °F [0,4 NMPS to 38 NMPS; 0,7 bar(a) to 3,5 bar(a); 4 °C to 38 °C]
D	Compressed air: 6 SFPS to 600 SFPS; 50 psia to 165 psia; 40 °F to 100 °F [1,8 NMPS to 183 NMPS; 3,5 bar(a) to 11 bar(a); 4 °C to 38 °C]
Custom Calibration: Calibration matched to user specified gas, flow range and conditions	
B	Air
C	Specific gas equivalency (digester gas, flue gas, etc.)
E	Nitrogen, helium, argon, CO ₂ , compressed air, digester gas
1	Natural gas (90% or greater methane content)
F	Hydrocarbons (methane, ethane, propane, etc.)
G	Hydrogen or hydrogen mixture
W¹³	Agency approved, customer specified

Code [BLOCK 14] Calibrations, Set-up and Conditions	
0	Standard
A	Extended temperature compensation
B	Extended range
C	Vortab (VEL, VFK, VIS, VMR or VSR)
1	Vortab (VIP)
D	Flat velocity profile
E	Extended temperature compensation and extended range
F	Extended temperature compensation and Vortab (VEL, VFK, VIS, VMR or VSR)
2	Extended temperature compensation and Vortab (VIP)
G	Extended temperature compensation and flat velocity profile
H	Extended range and Vortab (VEL, VFK, VIS, VMR or VSR)
J	Extended range and flat velocity profile
3	Extended range and Vortab (VIP)
K	Extended temperature compensation, extended range and Vortab (VEL, VFK, VIS, VMR or VSR)
4	Extended temperature compensation, extended range and Vortab (VIP)
L	Extended temperature compensation, extended range and flat velocity profile

Code [BLOCKS 15-16] Second Calibration	
0 0	Not required
<input type="checkbox"/> <input type="checkbox"/>	Select from Codes shown in Blocks 13-14

General

Code [BLOCK 17] Agency Approval	
0	Not required <i>CE included</i>
1	FM
2	FMc ²¹
3	ATEX ¹⁶
4	IECEX ¹⁶
C	ATEX, with elevated T-ratings ^{16,24}
D	IECEX with elevated T-ratings ^{16,24}
5	EAC / TR CU (Russia)
7	NEPSI
W	Other <i>Contact FCI for other approvals and conditions of use</i>

(continued next page)

Notes

6. See Notes, page 1
7. Remote cable in an ST80 is 8-conductor. For user-supplied cable, overall shielded conductor type is required and wire resistance must be less than 8 Ohms.
8. Cable suitable for conduit and some cable gland systems. For other cable gland system choices, see ST80 accessories list or contact FCI to supply separately. PVC cable maximum temperature 176°F [80°C]; Teflon cable maximum temperature 392°F [200°C].
10. FCI standard conditions are 14.7 psia [1,01 bar(a)] and 70 °F [21.1 °C].
11. Calibration codes must be selected using FCI's proprietary AVAL application evaluation software.
12. Transmitter setup, changes to factory supplied standard settings, verification or modification to calibration parameters or diagnostics requires external source communication with the transmitter.
13. Customer specified calibration must not exceed temperature and pressure limitations of the ST80 Series product specifications.
16. 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 ST80 accessories list and ordered separately, enter Code 0 in Block 10.
21. Selection of FMc approval requires selection of NPT threaded enclosure. If Block 17 = Code 2, then Block 9 must be Code 1, 2, 3, 4, or W.
22. For wet gas applications where moisture is entrained or otherwise flowing in same direction as the gas, select Code F-R, as appropriate, in Block 8 For application as rain-shield when flow direction is coming up and water (rain, snow, etc.) would be coming down such as an open stack, select Code 3 in Block 8.
24. Elevated T-ratings are only available with instrument operating in AST measuring mode. Ability to field change to constant power measuring mode is disabled and not available.

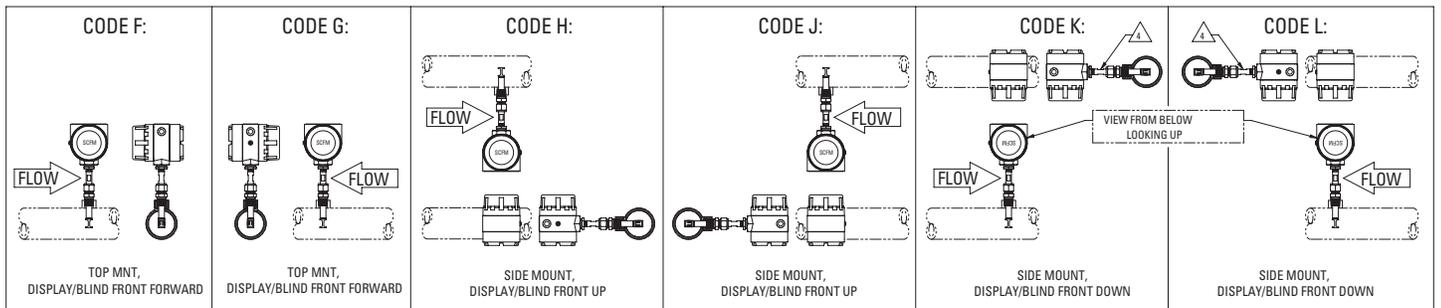
Accessories

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

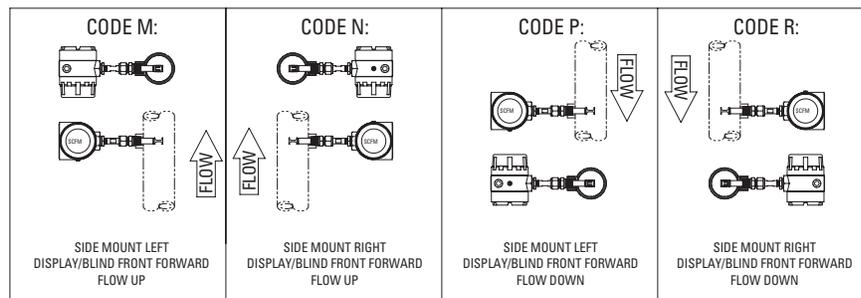
Refer to separate ST80 Accessories List for a complete listing of all accessories such as cabling, ball valves, documentation test and QA documents and certificates, and spare parts.

Pipe Installation and Orientation Selection – Block 8

INTEGRAL Horizontal Mountings

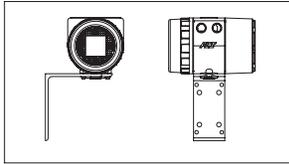


INTEGRAL Vertical Mountings

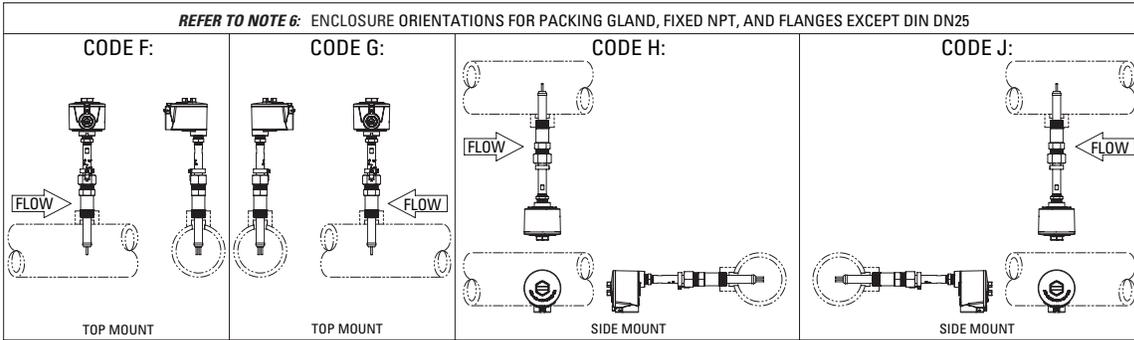
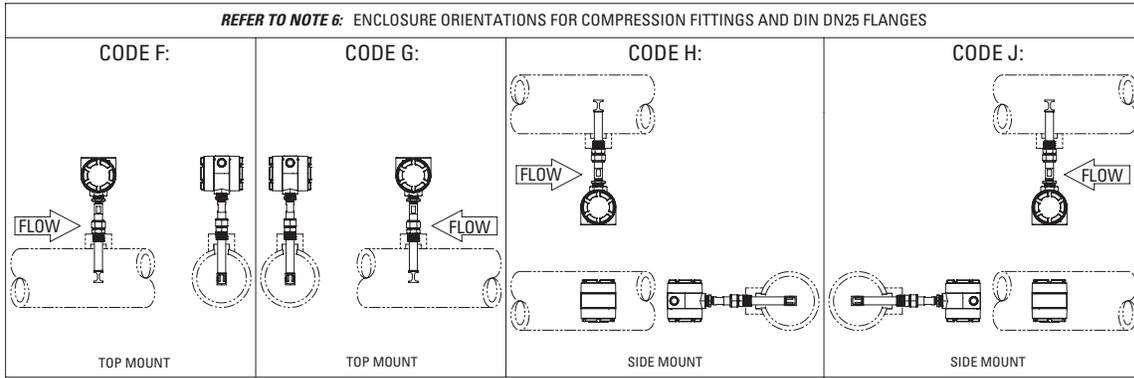


(continued next page)

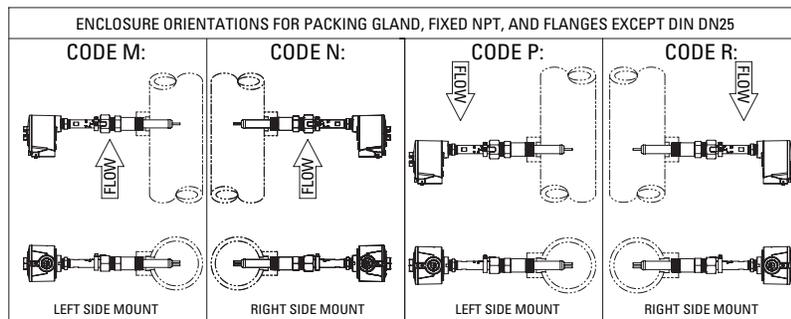
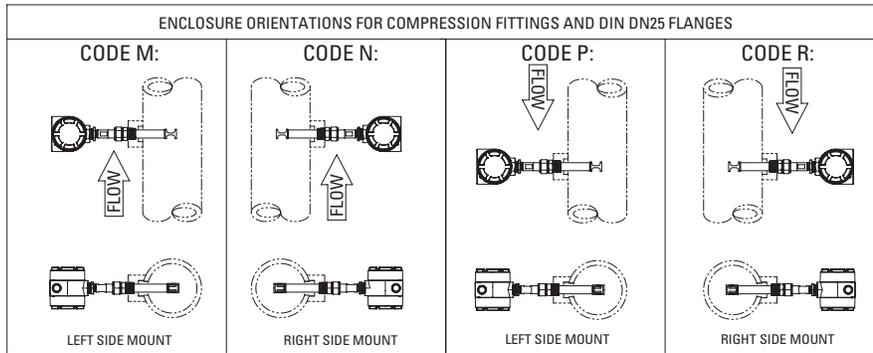
REMOTE TRANSMITTER *Included with all remote units*



REMOTE Configuration, Local Flow Element Horizontal Mountings



REMOTE Configuration, Local Flow Element Vertical Mountings



ST80L -

				0	0	0	
--	--	--	--	---	---	---	--

 -

--	--	--	--

 -

--	--	--	--

 -

--

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

INSTRUCTIONS: To order an **ST80L**, 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		
4	-F style, 316L stainless steel, to 250 °F [121 °C]		
D	-F style, Hastelloy C276, to 250 °F [121 °C]		
7	-S style, 316L stainless steel, to 250 °F [121 °C]		
G	-S style, Hastelloy C276, to 250 °F [121 °C]		
W	Agency approved, customer specified		
*	Other, not agency approved		
Code	[BLOCK 2] In-Line Body Material of Construction		
3	316L Stainless steel; all welded connection of sensor element		
4	Hastelloy C276 ^{15, 18} ; all welded connection of sensor element		
Code	[BLOCK 3] In-Line Body Type / Diameter / Length		
A	1 inch tubing ¹⁸ 9 inch [229 mm]		
B	1 inch tubing with 1/8 inch injection tube reducer ^{18, 20} 9 inch [229 mm]		
C	1 inch tubing with 1/4 inch injection tube reducer ^{18, 20} 9 inch [229 mm]		
D	1 inch tubing with built-in Vortab flow conditioner ¹⁸ 9 inch [229 mm]		
E	1 inch pipe, schedule 40 9 inch [229 mm]		
F	1 inch pipe, schedule 40 with built-in Vortab flow conditioner 9 inch [229 mm]		
L	1 inch pipe, schedule 80 9 inch [229 mm]		
M	1 inch pipe, schedule 80 with built-in Vortab flow conditioner 9 inch [229 mm]		
G	1 1/2 inch pipe, schedule 40 13 1/2 inch [343 mm]		
H	1 1/2 inch pipe, schedule 40 with built-in Vortab flow conditioner 13 1/2 inch [343 mm]		
J	2 inch pipe, schedule 40 18 inch [457 mm]		
K	2 inch pipe, schedule 40 with built-in Vortab flow conditioner 18 inch [457 mm]		
W	Agency approved, customer specified		
*	Other, not agency approved		
Code	[BLOCK 4] Process Connection		
7	NPT, male		
8	NPT, female		
Table A	Flanged ¹⁵		
Z	Butt weld preparation ¹⁹		
W	Agency approved, customer specified		
*	Other, not agency approved		
Code	Code	Code	[BLOCKS 5-7]
BLOCK 5	BLOCK 6	BLOCK 7	
0	0	0	Block 5, 6, 7 Codes are always "0" with Model ST80L

Code	[BLOCK 8] Pipe Installation, Display/Transmitter Orientation (Integral) or Flow Element Orientation (Remote), and Flow Direction	
<i>For Code F-R selection, refer to visual representation on page 3</i>		
Horizontal Pipe		
	Integral Transmitter	Flow Element in Remote Configuration
F	Top mount, display/blind front facing forward	Top mount
G	Top mount, display/blind front facing forward	Top mount
H	Side mount, display/blind front facing up	Side mount
J	Side mount, display/blind front facing up	Side mount
K	Side mount, display/blind front facing down	
L	Side mount, display/blind front facing down	
Vertical Pipe		
	Integral Transmitter	Flow Element in Remote Configuration
M	Side mount left, display/blind front facing forward	Side mount left, flow up
N	Side mount right, display/blind front facing forward	Side mount right, flow up
P	Side mount left, display/blind front facing forward	Side mount left, flow down
R	Side mount right, display/blind front facing forward	Side mount down, flow down

(continued next page)

Table A – Flange [BLOCK 4]			
CS ¹⁵	316L SS	Hast C	Material
	9		ANSI 3/4 inch 150 lb
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 approved, customer specified

Notes

6. See Notes, page 2
7. Remote cable in an ST80 Series is 8-conductor. For user-supplied cable, overall shielded conductor type is required and wire resistance must be less than 8 Ohms.
8. Cable suitable for conduit and some cable gland systems. For other cable gland system choices, see ST80 accessories list or contact FCI to supply separately. PVC cable maximum temperature 176 °F [80 °C]; Teflon cable maximum temperature 392 °F [200 °C].
15. Carbon steel flanges available only with 316L stainless steel body type (Block 2, Codes 1 or 3). Cannot select carbon steel flange when Hastelloy is selected in Block 2.
18. With 1" inch tubing:
 - a) Not available in Hastelloy; Block 2 must be Codes 1 or 3 only
 - b) If NPT selected in Block 4 (Code 7 or 8), NPT will be 3/4"
 - c) If flanged, connection must be 3/4" or 1" only and Block 4 Codes 9, D, 1, E or A
19. When welded into process piping, be aware that cutting or un-welding may be required to extract flow meter for service, repair and/or recalibration.
20. Cannot select -S style sensor with injection tube reducer. If Block 1 is Code 7 or G, then Block 3 cannot be Code B or C.

(continued from previous page)

Transmitter and Electronics

Code	[BLOCK 9] Transmitter Mounting, Enclosure Material and Cable Entry Threading
1	Integral mount, aluminum, NPT cable entries ⁶
A	Integral mount, aluminum, metric cable entries ⁶
2	Remote mount, aluminum, NPT cable entries ⁶
B	Remote mount, aluminum, metric cable entries ⁶
3	Integral mount, stainless steel; NPT cable entries ⁶
C	Integral mount, stainless steel; metric cable entries ⁶
4	Remote mount, stainless steel; NPT cable entries ⁶
D	Remote mount, 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 integral configurations, user supplied cable, or if cable ordered as separate line item from ST100 series accessories</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
*	Non agency approved cable type or length other than above

Code	[BLOCK 11] Transmitter Power Supply and Display	DC	AC	Display	Keypad
E	24 Vdc power; no digital display; no keypad	■			
J	24 Vdc power; digital display only; no keypad	■		■	
F	24 Vdc power; with digital display; 4-button keypad	■		■	■
G	85 Vac to 265 Vac power; no digital display; no keypad		■		
K	85 Vac to 265 Vac power; digital display only; no keypad		■	■	
H	85 Vac to 265 Vac power; with digital display; 4-button keypad		■	■	■
W	Other, agency approved				

Code	[BLOCK 12] Transmitter Outputs and Communications
A	(2) 4-20 mA analog; HART, Modbus
B	FOUNDATION™ fieldbus; (2) 4-20 mA analog; HART, Modbus
C	PROFIBUS-PA; (2) 4-20 mA analog; HART, Modbus
D	PROFIBUS-DP; (2) 4-20 mA analog; HART, Modbus
W	Other
*	Other, not agency approved

Calibration^{10, 11, 12}

Code	[BLOCK 13] Calibration Application <i>Description for reference only; actual Code must be obtained using FCI AVAL</i> ^{10,11,12}
B	Air, standard
C	Custom, specific gas equivalency (digester gas, flue gas, etc.)
E	Nitrogen, helium, CO ₂ , nitrous oxide
1	Natural gas (90% or greater methane content)
2	Natural gas (90% or greater methane content); line sizes smaller than 1 1/2 inch
F	Hydrocarbon (methane, ethane, propane)
G	Hydrogen or hydrogen mixture
H	Air, standard
J	Custom, specific gas equivalency (digester gas, flue gas, etc.)
K	Nitrogen, argon
L	CO ₂ , ethylene, argon
M	Propylene or propane to 100 psig [7 bar (g)] maximum
N	Butane, pentane to 15 psig [1 bar (g)] maximum
P	Helium or methane
R	Hydrogen
W ⁸	Agency approved, customer specified

Code	[BLOCK 14] Calibrations, Setup and Conditions
0	Standard
A	Extended temperature compensation
B	Extended range
C	Vortab
E	Extended temperature compensation and extended range
F	Extended temperature compensation and Vortab
H	Extended range and Vortab
K	Extended temperature compensation, extended range and Vortab

Code	[BLOCKS 15-16] Second Calibration
0 0	Not required
<input type="checkbox"/> <input type="checkbox"/>	Select from Codes shown in Blocks 13-14

General

Code	[BLOCK 17] Agency Approval
0	Not required, CE Mark included
1	FM
2	FMc ²¹
3	ATEX ¹⁶
4	IECEX ¹⁶
C	ATEX, with elevated T-ratings ^{16,24}
D	IECEX with elevated T-ratings ^{16,24}
5	EAC (TRCU) <i>Russia</i>
7	NEPSI
W	Other <i>Contact FCI for other approvals and conditions of use</i>

Notes

- 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:

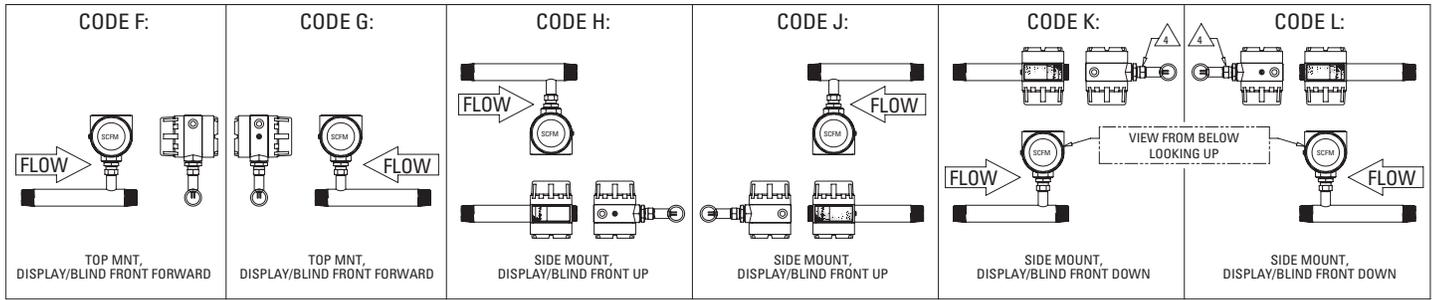
Model	Process Connection	Aluminum		Stainless Steel	
		NPT	Metric	NPT	Metric
ST80L	Block 3 = Any	(2) 1/2"	(2) M20 x 1.5	(1) 1/2"	(1) M20 x 1.5
- Cable suitable for conduit and some cable gland systems. For other cable gland system choices, see ST80 accessories list or contact FCI to supply separately. PVC cable maximum temperature 176 °F [80 °C]; Teflon cable maximum temperature 392 °F [200 °C].
- 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 ST80 Series product specifications.
- 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 ST80 accessories list and ordered separately, enter Code 0 in Block 10.
- Selection of FMc approval requires selection of NPT threaded enclosure. If Block 17 is Code 2, then Block 9 must be Code 1, 2, 3, 4, or W.
- Elevated T-ratings are only available with instrument operating in AST measuring mode. Ability to field change to constant power measuring mode is disabled and not available.

Accessories

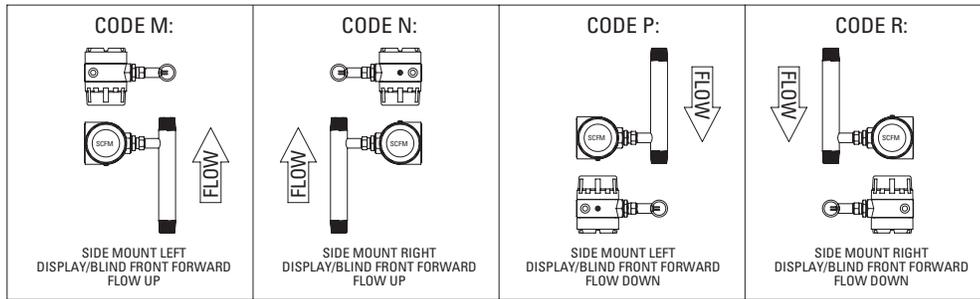
Part Number	Description
Sun Shield Kits Shades main transmitter, electronics, and/or display from direct sunlight; 316L stainless steel; attached directly to housing; kit includes shield, all hardware for attachment and instruction sheet	
023241-01	For use with integral mount transmitter
023237-01	For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

Refer to separate ST80 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.

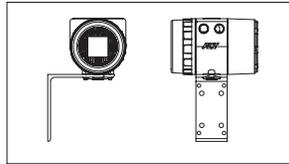
INTEGRAL Horizontal Mountings



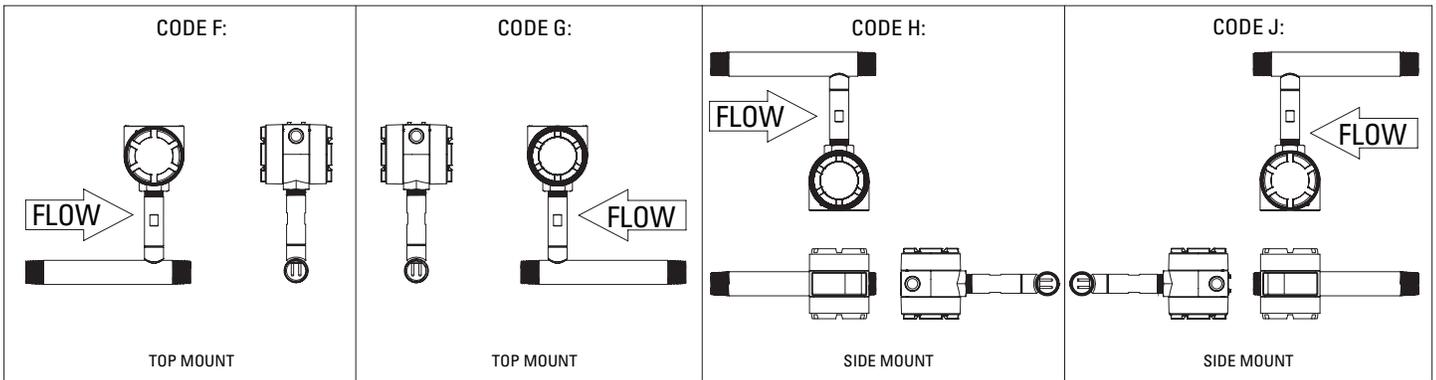
INTEGRAL Vertical Mountings



REMOTE TRANSMITTER *Included with all remote units*



REMOTE Configuration, Local Flow Element Horizontal Mountings



REMOTE Configuration, Local Flow Element Vertical Mountings

