

**ST51** - 

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Block No.    1    2    3    4    5    6    7    8    9

**INSTRUCTIONS:** To order an **ST51**, 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).

Code	[BLOCK 1] Base Unit, Enclosure Style
1	Blind, integral transmitter with two 1/2" FNPT cable entries 18 Vdc to 36 Vdc powered
2	Blind, integral transmitter with two 1/2" FNPT cable entries 85 Vac to 265 Vac powered
3	Integral transmitter with local digital display, with two 1/2" FNPT cable entries 18 Vdc to 36 Vdc powered
4	Integral transmitter with local digital display, with two 1/2" FNPT cable entries 85 Vac to 265 Vac powered
7	Remote transmitter with two 1/2" FNPT cable entries and with digital display (specify cable length in Block 8) 18 Vdc to 36 Vdc powered
8	Remote transmitter with two 1/2" FNPT cable entries and with digital display (specify cable length in Block 8) 85 Vac to 265 Vac powered
A	Blind, integral transmitter with two M20x1.5 cable entries 18 Vdc to 36 Vdc powered
B	Blind, integral transmitter with two M20x1.5 cable entries 85 Vac to 265 Vac powered
C	Integral transmitter, with local digital display, with two M20x1.5 cable entries 18 Vdc to 36 Vdc powered
D	Integral transmitter, with local digital display, with two M20x1.5 cable entries 85 Vac to 265 Vac powered
E	Remote transmitter with two M20x1.5 cable entries and with digital display (specify cable length in Block 8) 18 Vdc to 36 Vdc powered
F	Remote transmitter with two M20x1.5 cable entries and with digital display (specify cable length in Block 8) 85 Vac to 265 Vac powered

Code	[BLOCK 2] Pipe Installation, Display/Transmitter Mounting Orientation and Flow Direction		
Code	Horizontal Pipe	Code	Vertical Pipe
F	Top mount, display/blind front facing forward, flow left-to-right	M	Side mount left, display/blind front facing forward, flow up
G	Top mount, display/blind front facing forward, flow right-to-left	N	Side mount right, display/blind front facing forward, flow up
H	Side mount, display/blind front facing up, flow left-to-right	P	Side mount left, display/blind front facing forward, flow down
J	Side mount, display/blind front facing up, flow right-to-left	R	Side mount right, display/blind front facing forward, flow down
K	Side mount, display/blind front facing down, flow left-to-right		
L	Side mount, display/blind front facing down, flow right-to-left		

*For visual representation, see FCI drawing number 021263 on page 2*

Code	[BLOCK 3] Process Connection
1	1/2" male NPT compression fitting with Teflon ferrule <sup>9</sup>
2	1/2" male NPT compression fitting with metal ferrule <sup>9</sup>
3	3/4" male NPT compression fitting with Teflon ferrule <sup>9</sup>
4	3/4" male NPT compression fitting with metal ferrule <sup>9</sup>
5	Retractable packing gland, 1/2" male NPT; graphite packing <sup>11,12,13</sup>
6	Retractable packing gland, 1/2" male NPT; Teflon packing <sup>11,12,13</sup>
7	Retractable packing gland, 3/4" male NPT; graphite packing <sup>11,13</sup>
8	Retractable packing gland, 3/4" male NPT; Teflon packing <sup>11,13</sup>
W	Agency approved, customer specified

Code	[BLOCK 4] Insertion Length
1	6" [152 mm] maximum "U" length
2	12" [305 mm] maximum "U" length
3	18" [457 mm] maximum "U" length

Code	[BLOCK 5] Gas Medium and Calibration <sup>2</sup>
<b>For Biogas, Digester Gas, Natural Gas, Methane, Flue Gas and Other Hydrocarbon Mixed Gases</b>	
C	Customized air equivalency: 0.75 SFPS to 100 SFPS; 10 psia to 50 psia [0,2 NMPS to 30 NMPS; 0,7 to 3,5 bar (a)]
1	Natural gas (90% or greater methane content)
F	Customized actual gas
<b>For Air, Nitrogen or Compressed Air Calibration</b>	
A	Standard; 1.25 SFPS to 125 SFPS; 10 psia to 50 psia [0,4 NMPS to 38 NMPS; 0,7 bar (a) to 3,5 bar (a)] <sup>7</sup>
B	Customized; 0.75 SFPS to 150 SFPS; 10 psia to 50 psia [0,2 NMPS to 45,7 NMPS; 0,7 bar (a) to 3,5 bar (a)]
D	Standard; 4 SFPS to 400 SFPS; 50 psia to 165 psia [1,2 NMPS to 122 NMPS; 3,5 bar (a) to 11,4 bar (a)] <sup>6,7</sup>
E	Customized; 4 SFPS to 400 SFPS; 50 to 165 psia [1,2 NMPS to 122 NMPS; 3,5 bar (a) to 11,4 bar (a)] <sup>6</sup>
W	Factory approved, customer specified, special calibration

Code	[Block 6] Calibration <sup>4</sup> and Conditions
0	Standard 2% accuracy calibration
A	Standard 2% accuracy calibration and extended temperature compensation
M	High accuracy 1% calibration
N	High accuracy 1% calibration and extended temperature compensation
Q	High accuracy 1% calibration with Vortab (VEL, VFK, VIS, VMR or VSR)
5	High accuracy 1% calibration with Vortab (VIP)
T	High accuracy 1% calibration and extended temperature compensation and Vortab (VEL, VFK, VIS, VMR or VSR)
6	High accuracy 1% calibration and extended temperature compensation and Vortab (VIP)
R	High accuracy 1% calibration and flat flow profile
U	High accuracy 1% calibration, and extended temperature compensation, and flat flow profile

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**Notes**

- Must use FCI's AVAL program to determine letter code. AVAL is a custom flow meter optimizer program which considers gas medium, flow range, pipe size and other conditions to determine best calibration and supplies FCI letter code to be used here. Consult your local FCI Representative.
- Calibration accuracy is ±% of reading, ± 0.5% of full scale.
- Flow element will be -FPC type with FCI patent-pending flow conditioner.
- User configures line size, scaled flow range and engineering units in the field with PC or FCI FC88 Calibrator.
- Teflon ferrule maximum is 200 °F [93 °C], 150 psi(g) [10 bar(g)]; metal ferrule maximum is 500 °F [260 °C], 500 psi(g) [34 bar(g)]
- Teflon packing material must be ordered when process media is ozone, chlorine, or bromine.
- Compatible 1/2" ball valve must have ID of 0.6" [15,24 mm] or greater for proper retraction. FCI ball valve part number 025172-09 meets this specification and is recommended.
- Retractable packing gland pressure rated to 500 psig [34 bar(g)]



**ST51 A** - 

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Block No.      1    2    3    4    5    6    7    8    9

**INSTRUCTIONS:** To order an **ST51 A**, 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).

Code	[BLOCK 1] Base Unit, Enclosure Style, Power Supply
1	Blind, integral transmitter with two 1/2" FNPT cable entries 18 Vdc to 36 Vdc powered
2	Blind, integral transmitter with two 1/2" FNPT cable entries 85 Vac to 265 Vac powered
3	Integral transmitter with local digital display, with two 1/2" FNPT cable entries 18 Vdc to 36 Vdc powered
4	Integral transmitter with local digital display, with two 1/2" FNPT cable entries 85 Vac to 265 Vac powered
7	Remote transmitter with two 1/2" FNPT cable entries and with digital display (specify cable length in Block 8) 18 Vdc to 36 Vdc powered
8	Remote transmitter with two 1/2" FNPT cable entries and with digital display (specify cable length in Block 8) 85 Vac to 265 Vac powered
A	Blind, integral transmitter with two M20x1.5 cable entries 18 Vdc to 36 Vdc powered
B	Blind, integral transmitter with two M20x1.5 cable entries 85 Vac to 265 Vac powered
C	Integral transmitter, with local digital display, with two M20x1.5 cable entries 18 Vdc to 36 Vdc powered
D	Integral transmitter, with local digital display, with two M20x1.5 cable entries 85 Vac to 265 Vac powered
E	Remote transmitter with two M20x1.5 cable entries and with digital display (specify cable length in Block 8) 18 Vdc to 36 Vdc powered
F	Remote transmitter with two M20x1.5 cable entries and with digital display (specify cable length in Block 8) 85 Vac to 265 Vac powered

Code	[BLOCK 2] Pipe Installation, Display/Transmitter Mounting Orientation and Flow Direction		
Code	Horizontal Pipe	Code	Vertical Pipe
F	Top mount, display/blind front facing forward, flow left-to-right	M	Side mount left, display/blind front facing forward, flow up
G	Top mount, display/blind front facing forward, flow right-to-left	N	Side mount right, display/blind front facing forward, flow up
H	Side mount, display/blind front facing up, flow left-to-right	P	Side mount left, display/blind front facing forward, flow down
J	Side mount, display/blind front facing up, flow right-to-left	R	Side mount right, display/blind front facing forward, flow down
K	Side mount, display/blind front facing down, flow left-to-right		
L	Side mount, display/blind front facing down, flow right-to-left		

*For visual representation, see FCI drawing number 021263 on page 2*

Code	[BLOCK 3] Process Connection
1	1/2" male NPT compression fitting with Teflon ferrule <sup>9</sup>
2	1/2" male NPT compression fitting with metal ferrule <sup>9</sup>
3	3/4" male NPT compression fitting with Teflon ferrule <sup>9</sup>
4	3/4" male NPT compression fitting with metal ferrule <sup>9</sup>
5	Retractable packing gland, 1/2" male NPT; graphite packing <sup>11,12,13</sup>
6	Retractable packing gland, 1/2" male NPT; Teflon packing <sup>11,12,13</sup>
7	Retractable packing gland, 3/4" male NPT; graphite packing <sup>11,13</sup>
8	Retractable packing gland, 3/4" male NPT; Teflon packing <sup>11,13</sup>
W	Agency approved, customer specified

Code	[BLOCK 4] Insertion Length
1	6" [152 mm] maximum "U" length
2	12" [305 mm] maximum "U" length
3	18" [457 mm] maximum "U" length

Code	[BLOCK 5] Gas Medium and Calibration <sup>2</sup>
<b>For Biogas, Digester Gas, Natural Gas, Methane, Flue Gas and Other Hydrocarbon Mixed Gases</b>	
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1	Natural gas (90% or greater methane content)
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A	Standard; 1.25 SFPS to 125 SFPS; 10 psia to 50 psia [0,4 NMPS to 38 NMPS; 0,7 bar (a) to 3,5 bar (a)] <sup>7</sup>
B	Customized; 0.75 SFPS to 150 SFPS; 10 psia to 50 psia [0,2 NMPS to 45,7 NMPS; 0,7 bar (a) to 3,5 bar (a)]
D	Standard; 4 SFPS to 400 SFPS; 50 psia to 165 psia [1,2 NMPS to 122 NMPS; 3,5 bar (a) to 11,4 bar (a)] <sup>6,7</sup>
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W	Factory approved, customer specified, special calibration

Code	[Block 6] Calibration <sup>4</sup> and Conditions
0	Standard 2% accuracy calibration
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N	High accuracy 1% calibration and extended temperature compensation
Q	High accuracy 1% calibration with Vortab (VEL, VFK, VIS, VMR or VSR)
5	High accuracy 1% calibration with Vortab (VIP)
T	High accuracy 1% calibration, and extended temperature compensation, and Vortab (VEL, VFK, VIS, VMR or VSR)
6	High accuracy 1% calibration, and extended temperature compensation, and Vortab (VIP)
R	High accuracy 1% calibration and flat flow profile
U	High accuracy 1% calibration, and extended temperature compensation, and flat flow profile

(continued next page)

**Notes**

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- Calibration accuracy is ±% of reading, ± 0.5% of full scale.
- Flow element will be -FPC type with FCI patent-pending flow conditioner.
- User configures line size, scaled flow range and engineering units in the field with PC or FCI FC88 Calibrator.
- Teflon ferrule maximum is 200°F [93°C], 150 psi(g) [10 bar(g)]; metal ferrule maximum is 500°F [260°C], 500 psi(g) [34 bar(g)]
- Teflon packing material must be ordered when process media is ozone, chlorine, or bromine.
- Compatible 1/2" ball valve must have ID of 0.6" [15,24 mm] or greater for proper retraction. FCI ball valve part number 025172-09 meets this specification and is recommended.
- Retractable packing gland pressure rated to 500 psig [34 bar (g)]

(continued from previous page)

Code	[BLOCK 7] Transmitter Housing Material and Output Options
2	Standard aluminum housing, dual 4-20 mA outputs, HART and pulse output
3	Standard aluminum housing, dual 4-20 mA outputs, Modbus and pulse output
C	Stainless steel housing, dual 4-20 mA outputs, HART and pulse output
D	Stainless steel housing, dual 4-20 mA outputs, Modbus and pulse output
W	Other, agency approved
Code	[BLOCK 8] Interconnecting Cable Length for Remote Configurations
0	Not required (specify with integral configurations) <sup>8</sup>
A	10' [3 m]
B	25' [7,6 m]
C	50' [15 m]
D	100' [30 m]
W	Custom length
Code	[BLOCK 9] Agency Approval
<i>CE Mark always included</i>	
0	Not required, CE Mark only
1	FM, FMc
3	ATEX, IECEx <sup>8</sup>
5	EAC/TR CU
7	NEPSI
*	Other <i>Contact FCI for other approvals and conditions of use</i>

Notes

- ATEX/IECEx rated remote requires cable glands or conduit fittings which meet or exceed the installation area's required rating. When rated cable glands and cable are user-supplied, or selected separately from FCI accessories list, enter Code 0 in Block 10.

Accessories

Part Number	Description
FC88	Portable hand-held communicator
014108-02	PC Interface Communications Kit, for RS232 serial port connection
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]

**NOTICE OF PROPRIETARY RIGHTS**  
This document contains confidential technical data, including trade secrets and proprietary information, which is property of Fluid Components International LLC (FCI). Disclosure of this data to you is expressly conditional upon your assent that its use is limited to use within your company only (and does not include manufacture or processing uses). Any other use is strictly prohibited without prior written consent of FCI.

REVISION		DATE
REV	DESCRIPTION	
C	ECN002415	6/23/2015

**INTEGRAL HORIZONTAL MOUNTINGS**

CODE F:

TOP MNT.  
DISPLAY/BLIND FRONT FORWARD  
FLOW LEFT TO RIGHT

CODE G:

TOP MNT.  
DISPLAY/BLIND FRONT FORWARD  
FLOW RIGHT TO LEFT

CODE H:

SIDE MOUNT.  
DISPLAY/BLIND FRONT UP  
FLOW LEFT TO RIGHT

CODE J:

SIDE MOUNT.  
DISPLAY/BLIND FRONT UP  
FLOW RIGHT TO LEFT

CODE K:

SIDE MOUNT.  
DISPLAY/BLIND FRONT DOWN  
FLOW LEFT TO RIGHT

CODE L:

SIDE MOUNT.  
DISPLAY/BLIND FRONT DOWN  
FLOW RIGHT TO LEFT

**INTEGRAL VERTICAL MOUNTINGS**

CODE M:

SIDE MOUNT LEFT  
DISPLAY/BLIND FRONT FORWARD  
FLOW UP

CODE N:

SIDE MOUNT RIGHT  
DISPLAY/BLIND FRONT FORWARD  
FLOW UP

CODE P:

SIDE MOUNT LEFT  
DISPLAY/BLIND FRONT FORWARD  
FLOW DOWN

CODE R:

SIDE MOUNT RIGHT  
DISPLAY/BLIND FRONT FORWARD  
FLOW DOWN

**FLOW ARROW ON TOP AS SHOWN.**

- THE LCD DISPLAY CAN BE USER ROTATED AND VIEWED AT ANY 90 DEGREE ORIENTATION.
- IN REMOTE ELECTRONIC CONFIGURATIONS, THE LOCAL ENCLOSURE WILL BE ORIENTED AS SHOWN WITH SOLID COVER ON BOTH SIDES. INTERCONNECTING TERMINALS LOCATED INSIDE.
- THIS DRAWING IS GENERIC IN NATURE, FOR SPECIFIC MODEL TYPE, ORIENTATION, CUSTOMER PROCESS CONNECTION, ETC, REFER TO IOM&M MANUAL.

NOTES: UNLESS OTHERWISE SPECIFIED

DESIGNED BY: [Blank]	DESIGNED BY: [Blank]	DESIGNED BY: [Blank]	DESIGNED BY: [Blank]
DRAWN BY: [Blank]	DRAWN BY: [Blank]	DRAWN BY: [Blank]	DRAWN BY: [Blank]
CHECKED BY: [Blank]	CHECKED BY: [Blank]	CHECKED BY: [Blank]	CHECKED BY: [Blank]
APPROVED BY: [Blank]	APPROVED BY: [Blank]	APPROVED BY: [Blank]	APPROVED BY: [Blank]
DATE: [Blank]	DATE: [Blank]	DATE: [Blank]	DATE: [Blank]

APPROVALS

DESIGNED BY: [Blank]	DATE: 6/23/2015
DRAWN BY: [Blank]	DATE: 6/23/2015
CHECKED BY: [Blank]	DATE: 6/23/2015
APPROVED BY: [Blank]	DATE: [Blank]

APPROVALS

DESIGNED BY: [Blank]	DATE: 6/23/2015
DRAWN BY: [Blank]	DATE: 6/23/2015
CHECKED BY: [Blank]	DATE: 6/23/2015
APPROVED BY: [Blank]	DATE: [Blank]

**FCI FLUID COMPONENTS INTERNATIONAL LLC**  
 SAN MARCOS, CA 92078

TITLE: ST50/ST51, ASSEMBLY ORIENTATION

REV: D    PART CODE: 64818    DATE: 021263    REV: C

SCALE: NONE    SHEET: 1 OF 1

