

# ST75V Mass Flow Meter

with Vortab® Flow Conditioners



**Precision Mass Flow Meters Compatible with Line Sizes from 1/4" to 2" [6 to 51mm] for Industrial and Commercial Process Gases**

For installations with inadequate straight-run or obstructed flows that prevent a fully developed profile for accurate flow measurement with the standard ST75, the Model ST75"V" provides the solution. FCI's Model ST75V includes all of the features and functionality of the ST75 plus built-in Vortab flow conditioning. Vortab flow conditioners are the flow conditioning technology proven and recommended by flow measurement experts to eliminate both swirl and velocity profile distortions to ensure accurate flow measurement.

Vortab flow conditioners also are the lowest pressure loss solution of all flow conditioning techniques. FCI is the exclusive provider of Vortab flow conditioners for use with thermal mass flow meters such as the ST75V.

In applications with limited space for pipe straight-run or when obstructors such as valves, bends, couplings or any other disturber which alters the flow profile are present, the ST75V is the solution to ensure the highest accuracy and repeatability.

## ST75V Specifications

**Process Connections:** Choice of Female NPT, Male NPT, ANSI flanges, DIN flanges

**Media Compatibility:** Air, compressed air, nitrogen, oxygen, argon, CO<sub>2</sub>, ozone, other inert gases, natural gas and other hydrocarbon gases, hydrogen.

**Accuracy:** ±1% of reading, ±0.5% full scale

**Repeatability:** ±0.5%

**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:** 10:1 to 100:1

**Agency Approvals:**

FM/CSA: Class 1, Div. 1, Groups B,C,D; Class 1, Div. 2, Groups A-D

ATEX/IECEx: Zone 1, II 2 G Ex d IIC T6...T3; II 2 D Ex tD A21, IP67 T90...T300°

**Element Materials of Construction:** All-welded 316 Stainless Steel with Hastelloy-C thermowells.

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

**Output Signal:**

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

(1) 0-1000 Hz pulse for total flow

**Maximum Operating Pressure:** 240 psi [16.5 bar(g)]

**Input Power:**

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

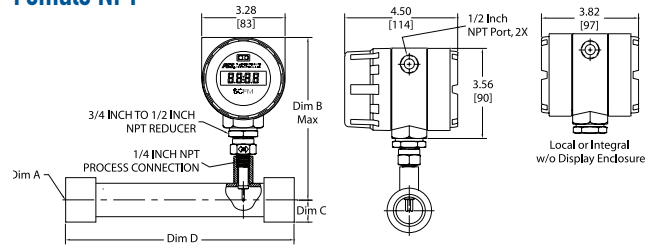
AC: 85 Vdc to 265 Vac 85 to 265 Vac (12 Watts maximum) (CE approval for 100 Vac to 240 Vac)

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

**Digital Display (Optional):** Two-line x 16 characters LCD. Displays measured value and engineering units. Top line assigned to flow rate. Second line is user assignable to temperature reading, as flow totalizer or alternating. Display can be rotated in 90° increments for optimum viewing orientation.

## ST75V Specifications

### Female NPT

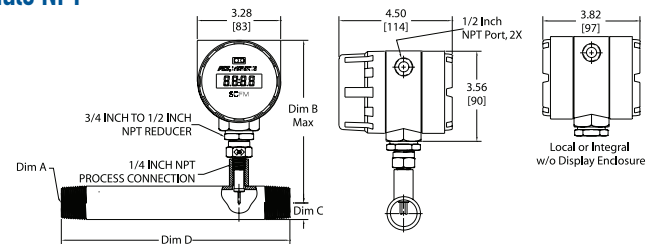


1. Dimensions are in INCHES; brackets [ ] are in MILLIMETERS.

### Female NPT Configuration

Configuration	DIM A Pipe Size	DIM B Top to Flow CL	DIM C Flow CL to Bottom	DIM D VMR Length
ST75V-XXXCE	1/4"	5.50 [140]	0.38 [9,5]	5.00 [127]
ST75V-XXXEE	1/2"	5.69 [144,5]	0.57 [14]	7.50 [190,5]
ST75V-XXXFE	3/4"	6.45 [164]	0.69 [17,5]	9.00 [229]
ST75V-XXXGE	1"	6.44 [163,5]	0.88 [22]	9.00 [229]
ST75V-XXXHE	1 1/2"	6.42 [163]	1.25 [32]	13.50 [343]
ST75V-XXXJE	2"	6.43 [163]	1.50 [38]	18.00 [457]

### Male NPT

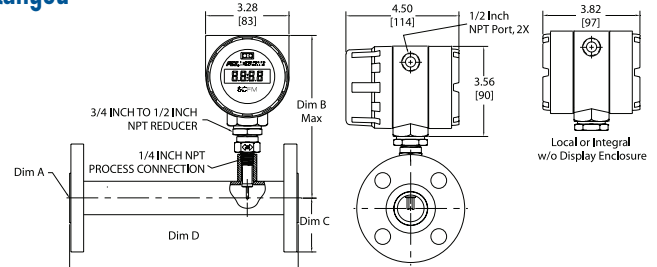


1. Dimensions are in INCHES; brackets [ ] are in MILLIMETERS.

### Male NPT Configuration

Configuration	DIM A Pipe Size	DIM B Top to Flow CL	DIM C Flow CL to Bottom	DIM D Tee Length
ST75V-XXXCN	1/4"	5.50 [140]	0.38 [9,5]	5.00 [127]
ST75V-XXXEN	1/2"	5.69 [144,5]	0.42 [10,6]	7.50 [190,5]
ST75V-XXXFN	3/4"	6.45 [164]	0.51 [13]	9.00 [229]
ST75V-XXXGN	1"	6.44 [163,5]	0.65 [16,5]	9.00 [229]
ST75V-XXXHN	1 1/2"	6.42 [163]	.95 [24]	13.50 [343]
ST75V-XXXJN	2"	6.43 [163]	1.19 [30]	18.00 [457]

### Flanged



1. Dimensions are in INCHES; brackets [ ] are in MILLIMETERS.  
2. Flanges are 150# Class.

### Flanged Configuration

Configuration	DIM A Pipe Size	DIM B Top to Flow CL	DIM C Flow CL to Bottom	DIM D Tee Length
ST75V-XXXCF	1/4"	n/a	n/a	n/a
ST75V-XXXEF	1/2"	5.69 [144,5]	1.75 [45]	7.50 [190,5]
ST75V-XXXFF	3/4"	6.45 [164]	1.94 [49]	9.00 [229]
ST75V-XXXGF	1"	6.44 [163,5]	2.12 [54]	9.00 [229]
ST75V-XXXHF	1 1/2"	6.42 [163]	2.50 [64]	13.50 [343]
ST75V-XXXJF	2"	6.43 [163]	3.00 [76]	18.00 [457]

# ORDERING GUIDE: ST75V Mass Flow Meter with Vortab® Flow Conditioners

Block No.	1	2	3	4	5	6	7	8	9	10
Model ST75V-										

Base Unit, Enclosure Style (Block 1) <i>Enclosures: All Aluminum, NEMA 4X/IP67 rated, epoxy coated</i>	Code
Blind, Integral Transmitter, with two 1/2" FNPT cable entries	1
Integral Transmitter with Local Digital Display, with two 1/2" FNPT cable entries	2
Remote Transmitter w/ two 1/2" FNPT cable entries and w/Digital Display. <i>(Specify cable length in Block 10)</i>	4
Blind, Integral Transmitter, w/ two M20x1.5 cable entries	A
Integral Transmitter with Local Digital Display, w/ two M20x1.5 cable entries	B
Remote Transmitter w/ two M20x1.5 cable entries and w/Digital Display. <i>(Specify cable length in Block 10)</i>	C

Pipe Installation, Display/Transmitter Mounting Orientation and Flow Direction (Block 2)			
Horizontal Pipe	Code	Vertical Pipe	Code
Top mnt, display face frwd, flow L-R	F	Side mnt L, display face frwd, flow up	M
Top mnt, display face frwd, flow R-L	G	Side mnt R, display face frwd, flow up	N
Side mnt, display face up, flow L-R	H	Side mnt L, display face frwd, flow down	P
Side mnt, display face up, flow R-L	J	Side mnt R, display face frwd, flow down	R
Side mnt, display face down, flow L-R	K	<i>For visual representation, refer to FCI drawing number 020943</i>	
Side mnt, display face down, flow R-L	L		

Power Supply (Block 3)	Code
DC; 18 - 36V	1
AC; 85 - 265V, 50/60 Hz	2

Line Size (Block 4)	Code
1/4" <i>(Available only with NPT, Block 5 must be Code E or N)<sup>5</sup></i>	C
1/2"	E
3/4"	F
1"	G
1-1/2"	H
2"	J

Process Connection Type (Block 5)	Code
Female NPT	E
Male NPT	N
Flanged, #150 CLASS	F
Other; agency approved, customer specified <i>(If selected, Block 6 and 7 which follow must also be Code WW only)</i>	W

Process Connection Size, Material, Rating, Finish Details (Block 6 & 7)	Code
1/4" NPT (must be selected if Block 4 is Code C)	Q0
1/2" NPT	H0
3/4" NPT	T0
1" NPT	10
1-1/2" NPT	B0
2" NPT	20
1/2" ANSI flanged 150 lb RF ANSI 16.5, 316L Stainless steel	HG
3/4" ANSI flanged 150 lb RF ANSI 16.5, 316L Stainless steel	TG
1" ANSI flanged 150 lb RF ANSI 16.5, 316L Stainless steel	1G
1-1/2" ANSI flanged 150 lb RF ANSI 16.5, 316L Stainless steel	BG
2" ANSI flanged 150 lb RF ANSI 16.5, 316L Stainless steel	2G
DN15 DIN flanged PN40, Form C per DIN2526 or Form B1 per DIN EN1092-1 in 316L ss	D2
DN25 DIN flanged PN40, Form C per DIN2526 or Form B1 per DIN EN1092-1 in 316L ss	E2
DN40 DIN flanged PN40, Form C per DIN2526 or Form B1 per DIN EN1092-1 in 316L ss	G2
DN50 DIN flanged PN16, Form C per DIN2526 or Form B1 per DIN EN1092-1 in 316L ss	J2
Other; agency approved, customer specified	WW

## Locally Represented By:

Gas Medium and System Calibration <sup>2</sup> (Block 8)	Code
Air	B
Air Equivalence (Oxygen, Chlorine, Ammonia, etc.)	C
Nitrogen, Helium, Argon, CO <sub>2</sub> , Compressed Air	E
Hydrocarbons (e.g. Natural Gas, Ethane, Methane, Propane, Ethylene, Propylene, Mixed)	F
Hydrogen or hydrogen mixture	G
Air, Compressed Air	H
Air Equivalence (e.g. Oxygen, Chlorine, Ammonia, etc.)	J
Nitrogen, Argon	K
CO <sub>2</sub> , Ethylene, Ethane	L
Propane, Propylene	M
Butane, Pentane	N
Methane, Helium, Natural Gas	P
Hydrogen	R

Calibration <sup>3</sup> and Calibration Temperature Conditions (Block 9)	Code
High Accuracy 1% Calibration and Standard Conditions +40 °F to 100 °F [+4 °C to 38 °C] w/Vortab	Q
High Accuracy 1% Calibration and Extended Temperature Compensation 0 °F to 250 °F [-18 °C to 121 °C] w/Vortab	T
Other, Agency approved, customer specified	W

Interconnecting Cable Length for Remote Configurations <sup>4</sup> (Block 10)	Code
Not required <i>(Specify with integral configurations)</i>	0
10' [3 meters]	A
25' [7.6 meters]	B
50' [15 meters]	C
Custom length <i>(Cannot exceed 50' [15 meters])</i>	W

Optional Accessories	
Part Number	Description
019819-01	Software Interface Package for PDA/PalmOS
020802-01	PDA, Palm® model Tungsten™ E2
FC88	Portable Hand-held Communicator
014108-02	PC Interface Communications Kit, For RS232 serial port connection
DM10-N	Digital Display/Readout, LCD, 4-20 mA loop pow
DM10-FC	DM10 with FM and CSA approvals
DM10-KIT1	Panel Mount Kit for DM10
DM10-KIT2	2 inch (52 mm) Pipe Mount Kit for DM10 <i>(Stainless steel)</i>
DM15	Digital Display/Readout, LED 115/230 Vac powered
DM15-ALM	Same as DM-15 with user programmable alarm limit, relay output
DM20	Digital Display Readout, 8-digit LCD Pulse totalizer/counter

## 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. AVAL is available on-line at [www.fluidcomponents.com](http://www.fluidcomponents.com) or consult local FCI representative/distributor.
- Calibration accuracy is ±% of reading, ±0.5% of full scale.
- Fixed cable length with instrument calibrated together as a matched set. Cable may be coiled, but not cut.
- Certified Material Test Report (CMTR) not available with ST75V 1/4".



Visit FCI on the Worldwide Web: [www.fluidcomponents.com](http://www.fluidcomponents.com)

Headquarters: 1755 La Costa Meadows Drive  
San Marcos, California 92078 USA

Phone: 760-744-6950 Toll Free: 800-854-1993 Fax: 760-736-6250

European Office: Persephonestraat 3-01 5047 TT Tilburg, The Netherlands

Phone: 31-13-5159989 Fax: 31-13-5799036

FCI is ISO 9001:2000 and AS9100 Certified

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