Overview

SITRANS F X vortex flowmeters provide accurate volumetric and mass flow measurement of steam, gases and liquids as an all-in-one solution with integrated temperature and pressure compensation.

Benefits

- All devices have 2-wire technology and HART communication
- Temperature compensation for saturated steam as standard feature
- Integrated temperature and pressure measurement enabling direct compensation of density
- Pressure, temperature and flow can be read at a single point. No additional installation of pressure and temperature sensors
- Direct measurement of energy or energy consumption
- Optimum process reliability thanks to Intelligent Signal Processing (ISP) - stable readings, free of external perturbations
- Fully welded stainless steel construction with high corrosion, pressure and temperature resistance
- Maintenance-free sensor design
- Ready to use due to plug & play feature. No additional cabling work
- Minimal pressure drop
- Pressure and temperature compensation for fluctuating volume flows
- Measurement of comsumption in compressed air systems
- No risk of deposits or damage (sensor in the turbulent area)
- All units parameterized prior to delivery

Application

The SITRANS FX300 is a compact flowmeter in a single or dual transmitter version, suitable for measuring industrial steam, gases, as well as conductive and non-conductive liquids. E.g. steam (saturated steam, superheated steam), industrial gases (compressed air, nitrogen, liquefied gases, flue gases), and conductive and non-conductive liquids (demineralized water, boiler feed water, solvents, heat transfer oil).

The main applications of SITRANS FX300 can be found in the following sectors:

- Chemical
- Petrochemical
- Oil & Gas
- Power plants
  - Air
  - Heating
  - Cooling
  - Chilling
- Food & beverage
  - Pharmaceutical
  - Sugar refineries
  - Dairies
  - Breweries
  - Production of soft drinks
- Refining
- Water & waste water

System Overview

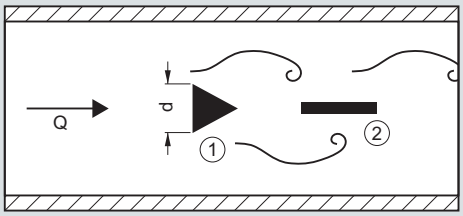
Version	Single transmitter			Dual transmitter
Options	Standard	Pressure sensor	Pressure sensor and isolation valve	Standard
Flange				
Sandwich				

Function

Operating Principle

SITRANS F X vortex flowmeters measure flow rate by detecting the frequency at which alternating vortices are shed from a bluff body inserted into the flow stream. This principle of measurement is known as Von Karman's vortex street principle: alternating vortices form behind an object in a stream. The frequency of the alternating vortices is proportional to the flow rate.
The passage of a vortex causes a slight stress on a pick-up placed downstream of the bluff body. The stress is picked up and counted as pressure surges by a dual Piezo crystal placed inside the wing.

SITRANS FX300



① = Bluff Body, ② = Pick-up

The flowmeter calculates the flow velocity using the following equation:

$Q = A \cdot V = A \cdot d / St \cdot f = 101{,}93 \cdot f / K$ [m^3/h]

Where:

Q = flow rate [m^3/h]
f = vortex shedding frequency [Hz]
K = calibration constant [pulses/m^3]
d = width of the bluff body [m]
St = Strouhal Number
A = cross-section area [m^2]
V = flow velocity [m/s]

Requirements

In order to generate the vortex streets, the medium must have a minimum velocity:

- For steam and gases, the flow velocity must be 2 to 80 m/s (6.6 to 262 ft/s)
- For liquids the flow velocity must be 0.4 to 10 m/s (1.3 to 32.8 ft/s)

Design

SITRANS FX300 volumetric and mass flowmeter is available in the following configurations:

SITRANS FX300 Single transmitter

The single transmitter is available as a flange or sandwich solution in the following versions:

- Vortex standard flowmeter
  Measurement with integrated temperature sensor as standard feature
- Vortex flowmeter with pressure sensor
  Measurement with integrated temperature and pressure sensors for compensation of gases, wet gases, gas mixtures or steam (for engergy measurement).
- Vortex flowmeter with pressure sensor and isolation valve
  Allowing the pressure sensor to be shut off for the purpose of pressure or leak testing of the pipeline or for being exchanged without interrupting the process. Using the built-in two-way valve, the pressure sensor can also be calibrated and tested at a later time.

SITRANS FX300 Dual transmitter

This is a genuine redundant system with two independent sensors and two converters providing twofold functional reliability and availability of the measurement. This variant is optimally suited for measurements in multi-product pipelines.

The dual converter is available as:

- Vortex standard flowmeter
  Measurement with temperature sensor for saturated steam compensation as standard feature

Technical specifications

Input	
Measuring range limits	See „Dimensional Drawings“
Media pressure	1 ... 100 bar (Higher pressures on request)
Output	
Current output	
• Measuring range	4 … 20 mA
• Over range	20.8 mA ± 1 % (105 % ± 1 %)
• Load	
- min.	100 Ω
- max.	$R_{max} = (U_{Power\ Supply} - 14\ V)/22\ mA$
• Error signal	NAMUR NE 43
• Maximum output	22 mA (112.5 %)
• Multidrop mode	4 mA
Digital output	
• Communication	HART
• Physical layer	FSK
• Device category	Transmitter
Pulse output	
(Passive pulse output, needs separate power supply. Pulse output has to be defined in the Option menu Y47 totalizer or energy unit has to be entered. E.g.: 1 pulse/kg or 1 pulse/10 m^3)	
• Pulse frequency	Max. 0.5 Hz
• Power supply	Min. 24 V DC as NAMUR or
• Non-Ex version	open < 1 mA, max. 36 V, closed 100 mA, U < 2 V
• Ex version	open < 1 mA, max. 30 V, closed 100 mA, U < 2 V
Accuracy	
Standard version	
• For liquids	
- Re ≥ 20 000	± 0.75 %
• For steam and gases	
- Re ≥ 20 000	± 1 %
• For steam, gases and liquids	
- 10 000 < Re < 20 000	± 2 %
Pressure and temperature-compensated version	
• For liquids	
- 10 000 < Re < 20 000	± 2 %
- Re ≥ 20 000	± 0.75 %
• For gases and steam	
- 10 000 < Re < 20 000	± 2.5 %
- Re ≥ 20 000	± 1.5 %
Repeatability	± 0,1 %
Installation conditions	
(At different conditions, e.g. installation after control valve, bends or reductions, please refer to the operating instructions.)	
• Inlet run	≥ 20 x DN
• Outlet run	≥ 5 x DN

Software	
Uncompensated for gases, steam and liquids, but temperature-compensated for saturated steam	Order option 1
Density-compensated by temperature and pressure for superheated steam, no energy calculation	Order option 4
Gross heat When the device has to operate as a energy calculation device	Order option 5
In options Y51 to Y56 add information regarding:	• Y51 Variable current output • Y52 Power unit Select one of the following units from power units table in Y52: kJ/h, MJ/h, GJ/h, Btu/h, kcal/h, kW, MW or special (custom) • Y53 Fullscale power value • Y54 Variable pulse output • Y55 Totalizer on/off • Y56 Configures for totalizer select one of the following units from energy units table in Y56: kJ, MJ, GJ, Btu th, kcal, kWh, MWh or special (custom).
Gases and wet gases	Order option 7
Wet gases	Select Y49 and enter relative humidity in %
FAD - Free Air Delivery When the device has to operate close to a compressor	Order option 8
In Y81 to Y87 add information regarding:	• Y81 Inlet suction temperature • Y82 Atmosphere pressure • Y83 Pressure drop filter • Y84 Inlet relative humidity • Y85 Actual revolutions per minute (of compressor) • Y86 Rated rpm of compressor • Y87 Outlet relative humidity. This information is available from compressor supplier.
Mixed gases	When the fluid is a gas mixture, make an SDR request (sheet available on intranet) and fill in gas names and amount in %
Rated operation conditions	
Ambient temperature	
• Non-Ex version	-40 … +85 °C (-40 … +185 °F)
• Ex version	-40 … +65 °C (-40 … +149 °F)
Storage temperature	-50 … +85 °C (-58 … +185 °F)
Media temperature	-40 … +240 °C (-40 … +464 °F)
Density	Taken into consideration when rating
Viscosity	< 10 cP
Reynolds number	10 000 … 2 300 000
Media pressure limit	Max. 100 bar (Higher pressure on request. Make an SDR request, sheet available on intranet)

Design	
Material	
• Sensor: house/pick-up	1.4404(316L)/1.4435(316L) Hastelloy C22 available (make an SDR request, sheet available on intranet)
• Housing: transmitter	Aluminium for increased requirements
• Sensor gaskets: for pick-up and pressure sensor	1.4435(316L)/FPM or FFKM FPM (Viton) by steam and non-aggressive gases. FFKM (Kalrez) by chlorine and other aggressive gases (only available together with a pressure sensor).
Process connections	Flange norm EN 1092-1 form B1/B2 or ASME B16.5 RF. Other flanges on request. Make an SDR request, sheet available on intranet
• Flange version	DN 15 … 300 (½ … 12")
• Sandwich version	DN 15 … 100 (½ … 4")
Degree of protection	IP66/IP67
Dimensions and weights	See „Dimensional Drawings“
Display and operating interface	
Local display	2 lines, 10 characters per line
Languages	German, English, French
Power supply	
• Standard version	14 … 36 V DC
• Ex version	14 … 30 V DC
Certificates and approvals	
Explosion protection	
• ATEX	II 2G EEx d ia [ia] IIC T6
• FM US/C	Class I, II, III, Div. 1 and 2
Calibration	All flowmeters will be delivered with a 3 point calibration certificate
Material Certificate	Certificate of compliance, pressure test, material certificate, material in acc. of NACE and PMI of pressure bearing metal parts.
Cleaning	Choose Cleaning Class1 when fluid is oxygen or contains chloride.
Certificates	X-ray test on pressurized weldings and dye penetration test on pressure bearing weldings Dye penetration test

SITRANS FX300

Selection and Ordering data		Order No.
SITRANS FX300 Flanged **Single transmitter and T_{max} = 240 °C (464 °F)**		**7ME2600 -** ■■■■■ - ■■■■
Connection size	**Sensor size**	
DN 15 (½")	DN 15	**1A**
DN 25 (1")	DN 25	**2B**
DN 40 (1½")	DN 40	**2K**
DN 50 (2")	DN 50	**2R**
DN 80 (3")	DN 80	**3L**
DN 100 (4")	DN 100	**3S**
DN 150 (6")	DN 150	**4M**
DN 200 (8")	DN 200	**4T**
DN 250 (10")	DN 250	**4W**
DN 300 (12")	DN 300	**5E**
Flange norm and nominal pressure		
Form B1/B2	**EN 1092-1**	
PN 10	DN 200 ... 300	**A**
PN 16	DN 50 ... 300	**B**
PN 25	DN 200 ... 300	**C**
PN 40	DN 15 ... 300	**D**
PN 63	DN 50 ... 150	**E**
PN 100	DN 15 ... 150	**F**
RF	**ASME B16.5**	
150 lb	½ ... 12"	**J**
300 lb	½ ... 12"	**K**
600 lb	½ ... 6"	**L**
Sensor material/Gasket		
Stainless steel 1.4404 (316L)/1.4435 (316L)/FPM		**1**
Stainless steel 1.4404 (316L)/1.4435 (316L)/FFKM		**5**
Transmitter design		
Compact, no cable		**1**
Approval and cable gland		
Non Ex, M20 x 1.5		**1**
Non Ex, ½" NPT		**2**
ATEX, M20 x 1.5		**4**
ATEX, ½" NPT		**5**
FM US/C, M20 x 1.5		**6**
FM US/C, ½" NPT		**7**
Transmitter, display and communication		
With display, HART		**A**
Pressure sensor and isolation valve		
Without pressure sensor		**A**
With pressure sensor, range:		
4 bar		**B**
6 bar		**D**
10 bar		**E**
16 bar		**G**
25 bar		**H**
40 bar		**K**
60 bar		**L**
100 bar		**N**
With isolation valve and pressure sensor, range:		
4 bar		**P**
6 bar		**Q**
10 bar		**R**
16 bar		**S**
25 bar		**U**
40 bar		**V**
60 bar		**W**
100 bar		**Y**

Selection and Ordering data	Order No.
SITRANS FX300 Flanged **Single transmitter and T_{max} = 240 °C (464 °F)**	**7ME2600 -** ■■■■■ - ■■■■
Software	
Uncompensated for gases, wet gases, steam and liquids, respectively, temperature compensation for saturated steam	**1**
Density compensation for superheated steam	**4**
Density compensation for superheated steam and setting of Gross heat Opt. Y51 ... Y56 for Energy measuring	**5**
Density compensation for gases and wet gases and setting of Relative humidity at opt. Y49	**7**
Density compensation for gases, wet gases and setting of FAD - free air delivery Opt. Y49 and Y81 ... Y87 for Compressor settings	**8**
Accessories	
Operating instructions for SITRANS FX300	
English	**A5E02100423**

This device is shipped with a Quick Start guide and a CD containing further SITRANS F literature.

All literature is also available for free at:
http://www.siemens.com/flowdocumentation

Selection and Ordering data	Order code
Further designs Please add **"-Z"** to Order No. and specify Order code.	
Converter housing material	
Aluminium for increased requirement, color: petrol green	**A10**
Material certificate	
Certificate of compliance EN 10204-2.1	**C10**
Pressure test + 3.1 accordance EN 10204	**C11**
Material certificate pressure parts + certificate 3.1	**C12**
Material in accordance with NACE MR 0175-01	**C13**
PMI of pressure bearing metal parts + certificate 3.1	**C14**
Material certificate pressure parts + PMI/certificate 3.1	**C15**
Calibration certificate FX300 As standard the flow device has a 3-point calibration certificate.	
Calibration certificate (5 point)	**D11**
Hardness test	
Hardness test on pressure bearing parts + 3.1 Equotip LD procedure according to NACE MR 0175-01	**H30**
Cleaning for oil and fat	
Class 1 increased requirement (customer-specified) and 3.1 (EN 10204)	**K46**
Class 2 and 3.1 (EN 10204)	**K48**
Certificates	
X-ray test on ppressure bearing weldings	**M56**
Dye penetration test on pressure bearing weldings	**M58**
Tag name plate	
Stainless steel tag with 3 mm characters, max. 2 x 8 characters (40 x 20 mm, add plain text)	**Y17**
Stainless steel tag with 2,5 mm characters, max. 8 x 40 characters (120 x 46 mm, add plain text)	**Y18**

Selection and Ordering data	Order code
Additional data Please add **"-Z"** to Order No. and specify Order code and plain text.	
Input process data	
Medium: Specify steam, gas, liquid or customised	**Y40**
Temperature: Specify max. operating temperature and units	**Y41**
Pressure: Specify max. operating pressure and units	**Y42**
Density; (only by customer-specified medium): Specify medium density and units	**Y43**
Viscosity; (only by customer-specified medium): Specify medium viscosity and units	**Y44**
Flow rate: Specify min./max. flow rate and units	**Y45**
Setting of pulse output: Specify totalizer or energy unit (1 pulse/unit)	**Y47**
Relative humidity (amount in %)	**Y49**
Settings of gross heat	
Variable current output	**Y51**
Power unit (specify: kJ/h, MJ/h, GJ/h, Btu/h, kcal/h, kW, MW or special(custom))	**Y52**
Fullscale power value	**Y53**
Variable pulse output	**Y54**
Totalizer on/off	**Y55**
Configure totalizer (specify: kJ, MJ, GJ, Btu th, kcal, kWh, MWh or special(custom))	**Y56**
Settings of FAD	
Inlet suction temperature	**Y81**
Atmosphere pressure	**Y82**
Pressure drop filter	**Y83**
Inlet relative humidity	**Y84**
Actual revolutions per minute (of compressor)	**Y85**
Rated Rpm of compressor	**Y86**
Outlet relative humidity This information is available from compressor supplier.	**Y87**

SITRANS FX300

Selection and Ordering data		Order No.
SITRANS FX300 Sandwich **Single transmitter and T_{max} = 240 °C (464 °F)**		**7ME2700 -** ■■■■■ - ■■■■
Connection size	**Sensor size**	
DN 15 (½")	DN 15	**1 A**
DN 25 (1")	DN 25	**2 B**
DN 40 (1½")	DN 40	**2 K**
DN 50 (2")	DN 50	**2 R**
DN 80 (3")	DN 80	**3 L**
DN 100 (4")	DN 100	**3 S**
Nominal pressure		
EN		
PN 16	DN 50 ... 100	**B**
PN 40	DN 15 ... 100	**D**
PN 63	DN 50 ... 100	**E**
PN 100	DN 15 ... 100	**F**
ASME		
150 lb	½ ... 4"	**J**
300 lb	½ ... 4"	**K**
600 lb	½ ... 4"	**L**
Sensor material/Gasket		
Stainless steel 1.4404 (316L)/1.4435 (316L)/FPM		**1**
Stainless steel 1.4404 (316L)/1.4435 (316L)/FFKM		**5**
Transmitter design		
Compact, no cable		**1**
Approval and cable gland		
Non Ex, M20x1.5		**1**
Non Ex, ½" NPT		**2**
ATEX, M20x1.5		**4**
ATEX, ½" NPT		**5**
FM US/C, M20x1.5		**6**
FM US/C, ½" NPT		**7**
Transmitter, display and communication		
With display, HART		**A**
Pressure sensor and isolation valve		
Without pressure sensor		**A**
With pressure sensor, range:		
4 bar		**B**
6 bar		**D**
10 bar		**E**
16 bar		**G**
25 bar		**H**
40 bar		**K**
60 bar		**L**
100 bar		**N**
With isolation valve and pressure sensor, range:		
4 bar		**P**
6 bar		**Q**
10 bar		**R**
16 bar		**S**
25 bar		**U**
40 bar		**V**
60 bar		**W**
100 bar		**Y**
Software		
Uncompensated for gases, wet gases, steam and liquids respectively temperature compensation for saturated steam		**1**
Density compensation for superheated steam		**4**
Density compensation for superheated steam and setting of Gross heat Opt. Y51 ... Y56 for Energy measuring		**5**
Density compensation for gases and wet gases and setting of Relative humidity at opt. Y49		**7**
Density compensation for gases, wet gases and setting of FAD - free air delivery Opt. Y49 and Y81 ... Y87 for Compressor settings		**8**

Selection and Ordering data	Order code
Further designs Please add **"-Z"** to Order No. and specify Order code.	
Converter housing material	
Aluminium for increased requirement, color: petrol green	**A10**
Material certificate	
Certificate of compliance EN 10204-2.1	**C10**
Pressure test + 3.1 accordance EN 10204	**C11**
Material certificate pressure parts + certificate 3.1	**C12**
Material in accordance with NACE MR 0175-01	**C13**
PMI of pressure bearing metal parts + certificate 3.1	**C14**
Material certificate pressure parts + PMI/certificate 3.1	**C15**
Calibration certificate FX300 As standard the flow device has a 3-point calibration certificate.	
Calibration certificate (5-point)	**D11**
Hardness test	
Hardness test on pressure bearing parts + 3.1 Equotip LD procedure according to NACE MR 0175-01	**H30**
Cleaning for oil and fat	
Class 1 increased requirement (customer-specified) and 3.1 (EN 10204)	**K46**
Class 2 and 3.1 (EN 10204)	**K48**
Certificates	
X-ray test on pressure bearing weldings	**M56**
Dye penetration test on pressure bearing weldings	**M58**
Tag name plate	
Stainless steel tag with 3 mm characters, max. 2 x 8 characters (40 x 20 mm, add plain text)	**Y17**
Stainless steel tag with 2,5 mm characters, max. 8 x 40 characters (120 x 46 mm, add plain text)	**Y18**

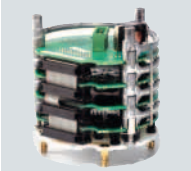
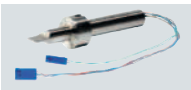
Selection and Ordering data	Order code
Additional data Please add "**-Z**" to Order No. and specify Order code and plain text.	
Input process data	
Medium: Specify steam, gas, liquid and customised	**Y40**
Temperature: Specify max. operating temperature and units	**Y41**
Pressure: Specify max. operating pressure and units	**Y42**
Density: (only by customer-specified medium): Specify medium density and units	**Y43**
Viscosity: (only by customer-specified medium): Specify medium viscosity and units	**Y44**
Flow rate: Specify min./max. flow rate and units	**Y45**
Setting of pulse output: Specify totalizer or energy unit (1 pulse/unit)	**Y47**
Relative humidity (amount in %)	**Y49**
Settings of gross heat	
Variable current output	**Y51**
Power unit (specify: kJ/h, MJ/h, GJ/h, Btu/h, kcal/h, kW, MW or special(custom))	**Y52**
Fullscale power value	**Y53**
Variable pulse output	**Y54**
Totalizer on/off	**Y55**
Configure totalizer (specify: kJ, MJ, GJ, Btu th, kcal, kWh, MWh or special(custom))	**Y56**
Settings of FAD	
Inlet suction temperature	**Y81**
Atmosphere pressure	**Y82**
Pressure drop filter	**Y83**
Inlet relative humidity	**Y84**
Actual revolutions per minute (of compressor)	**Y85**
Rated Rpm of compressor	**Y86**
Outlet relative humidity This information is available from compressor supplier.	**Y87**

SITRANS FX300

Selection and Ordering data		Order No.
SITRANS FX300 Flanged **Dual transmitter and T_{max} = 240 °C (464 °F)**		**7ME2800 -** ■■■■ - ■■■■
Connection size	**Sensor size**	
DN 40 (1½")	DN 40	**2K**
DN 50 (2")	DN 50	**2R**
DN 80 (3")	DN 80	**3L**
DN 100 (4")	DN 100	**3S**
DN 150 (6")	DN 150	**4M**
DN 200 (8")	DN 200	**4T**
DN 250 (10")	DN 250	**4W**
DN 300 (12")	DN 300	**5E**
Flange norm and nominal pressure		
Form B1/B2	**EN 1092-1**	
PN 10	DN 200 ... 300	**A**
PN 16	DN 50 ... 300	**B**
PN 25	DN 200 ... 300	**C**
PN 40	DN 40 ... 300	**D**
PN 63	DN 50 ... 150	**E**
PN 100	DN 40 ... 150	**F**
RF	**ASME B16.5**	
150 lb	1½ ... 12"	**J**
300 lb	1½ ... 12"	**K**
600 lb	1½ ... 6"	**L**
Sensor material/Gasket		
Stainless steel 1.4404 (316L)/1.4435 (316L)/FPM		**1**
Stainless steel 1.4404 (316L)/1.4435 (316L)/FFKM		**5**
Transmitter design		
Compact, no cable		**1**
Approval and cable gland		
Non Ex, M20x1.5		**1**
Non Ex, ½" NPT		**2**
ATEX, M20x1.5		**4**
ATEX, ½" NPT		**5**
FM US/C, M20x1.5		**6**
FM US/C, ½" NPT		**7**
Transmitter, display and communication		
With display, HART		**A**
Pressure sensor and isolation valve		
Without pressure sensor		**A**
Software		
Uncompensated for gases, wet gases, steam and liquids respectively temperature compensation for saturated steam		**1**

Selection and Ordering data	Order code
Further designs Please add "**-Z**" to Order No. and specify Order code.	
Converter housing material	
Aluminium for increased requirement, color: petrol green	**A10**
Material certificate	
Certificate of compliance EN 10204-2.1	**C10**
Pressure test + 3.1 accordance EN 10204	**C11**
Material certificate pressure parts + certificate 3.1	**C12**
Material in accordance with NACE MR 0175-01	**C13**
PMI of pressure bearing metal parts + certificate 3.1	**C14**
Material certificate pressure parts + PMI/certificate 3.1	**C15**
Calibration certificate FX300 As standard the flow device has a 3-point calibration certificate.	
Calibration certificate (5-point)	**D11**
Hardness test	
Hardness test on pressure bearing parts + 3.1 Equotip LD procedure according to NACE MR 0175-01	**H30**
Cleaning for oil and fat	
Class 1 increased requirement (customer-specified) and 3.1 (EN 10204)	**K46**
Class 2 and 3.1 (EN 10204)	**K48**
Certificates	
X-ray test on pressure bearing weldings	**M56**
Dye penetration test on pressure bearing weldings	**M58**
Tag name plate	
Stainless steel tag with 3 mm characters, max. 2 x 8 characters (40 x 20 mm, add plain text)	**Y17**
Stainless steel tag with 2,5 mm characters, max. 8 x 40 characters (120 x 46 mm, add plain text)	**Y18**
Additional data Please add "**-Z**" to Order No. and specify Order code and plain text.	
Input process data	
Medium: Specify steam, gas, liquid and customised	**Y40**
Temperature: Specify max. operating temperature and units	**Y41**
Pressure: Specify max. operating pressure and units	**Y42**
Density; (only by customer-specified medium): Specify medium density and units	**Y43**
Viscosity; (only by customer-specified medium): Specify medium viscosity and units	**Y44**
Flow rate: Specify min./max. flow rate and units	**Y45**
Setting of pulse output; Specify totalizer or energy unit (1 pulse/unit)	**Y47**
Relative humidity (amount in %)	**Y49**

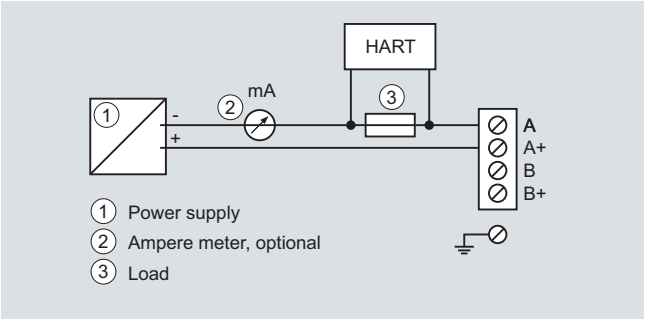
Accessories or spare parts for SITRANS FX300

Description	Order No.	
Seal disc 21.8-12-0.1	**A5E02181439**	
Socket only for DN 15/25 ; 1/2"	**On request**	
Socket only for DN 15/25 ; 1"	**On request**	
Pickup 1.4404	**On request**	
O-ring pickup	**A5E02181464**	
O-ring for pressure screw 17.13 x 2.62-FPM-70	**A5E02181488**	
Pressure sensor 4/6/10/16/25/40/60/100 bar	**On request**	
Cover gasket O-Ring 91.67 x 3.5	**A5E02181492**	
Converter housing gasket 59,35,5-2-N	**A5E02181495**	
O-ring DIN3771-20 x 1-FPM for sensor	**A5E02181515**	
O-ring 10x2-NBR for lead-through	**A5E02181525**	
DUBOX plug, 5-pole-RM2	**A5E02181527**	
Electronic		
• Basic D-HART	**A5E02181531**	
• Steam D-HART	**A5E02181541**	
• Gas D-HART	**A5E02181544**	
Display	**A5E02181558**	
Cable feedthrough 10-pole (non Ex). O-ring for cable feedthrough 21.89 x 2.62 10-pole plug	**A5E02181562**	
Sensor replacement (incl. Seal disc, pickup, O-rings for pickup, and pressure screw		
• DN 15 (incl. ½" socket)	**A5E02181087**	
• DN 25 (incl. 1" socket)	**A5E02181116**	
• DN 40 ... 100	**A5E02181152**	
• DN 150 ... 300	**A5E02275105**[F)]	
Pressure sensor replacement (Incl. pressure sensor, DUBOX plug, 2 O-rings and calibration certificate)		
• 4 bar (58 psi)	**A5E02181157**	
• 6 bar (87 psi)	**A5E02181175**	
• 10 bar (145 psi)	**A5E02181180**	
• 16 bar (232 psi)	**A5E02181221**	
• 25 bar (363 psi)	**A5E02181307**	
• 40 bar (580 psi)	**A5E02181316**	
• 60 bar (870 psi)	**A5E02181322**	
• 100 bar (1450 psi)	**A5E02181437**	

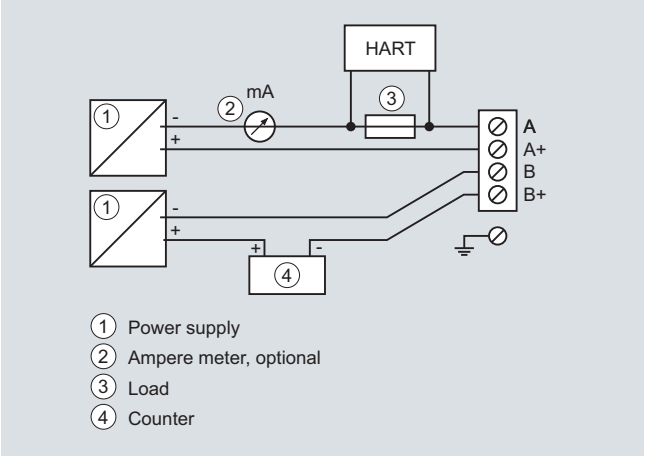
Description	Order No.	
Service Toolbox for changing software (basic, steam and gas) and different settings in the electronic.	**A5E02375819**	

F) Subject to export regulations AL: 9I999, ECCN: N.

Schematics

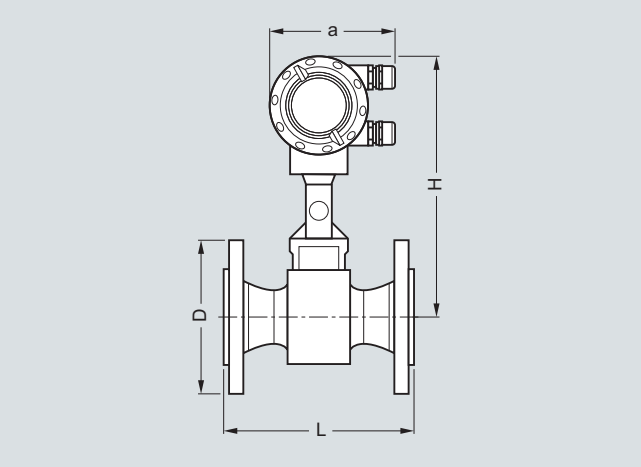


Load for HART communication

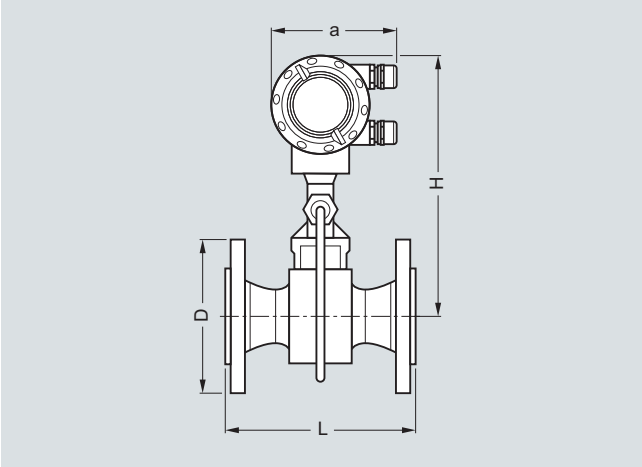


Connection pulse output

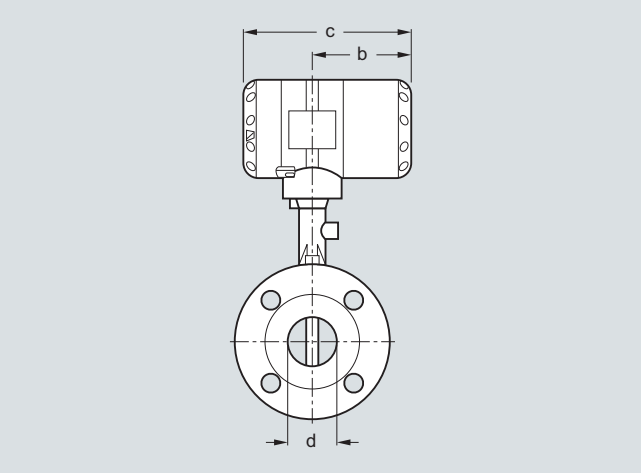
Dimensional drawings



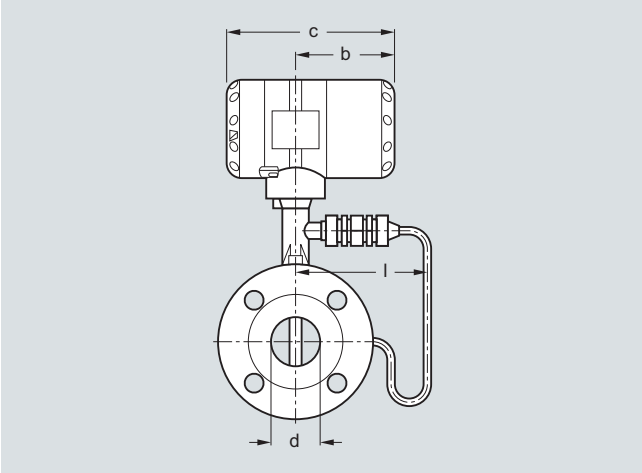
Flange version, frontal view, a = 133 mm (5.24 inches)



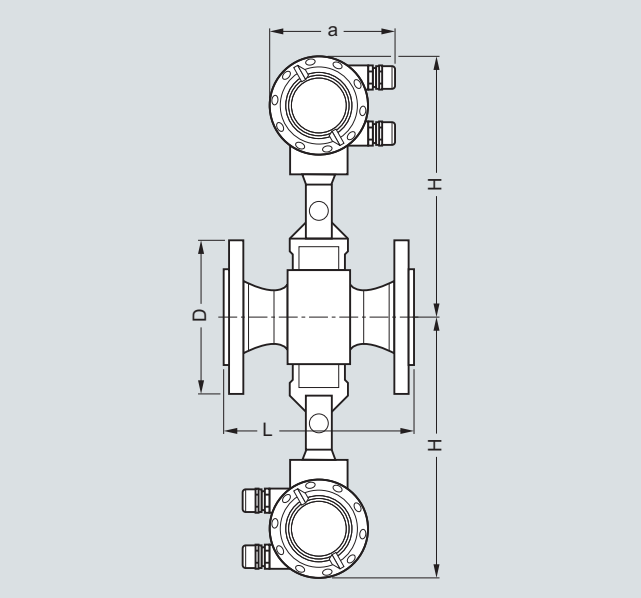
Flange version, frontal view, a = 133 mm (5.24 inches)



Flange version, side view, b = 105 mm (4.13 inches),
c = 179 mm (7.05 inches)



Flange version, side view, b = 105 mm (4.13 inches),
c = 179 mm (7.05 inches)



Flange version, dual converter, specified weight + 2.80 kg (6.17 lb)

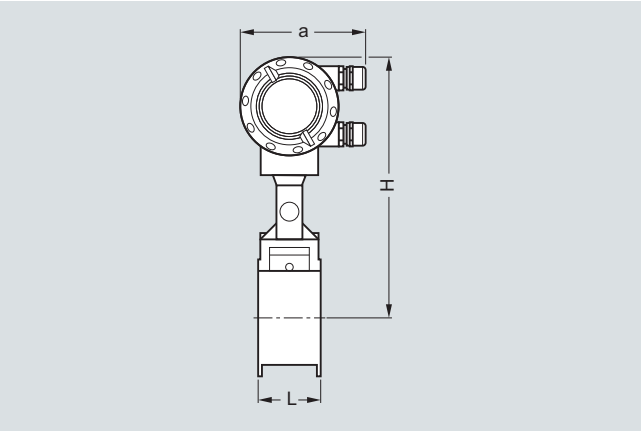
Flange version EN1092-1

Size	Pressure rating	Dimensions [mm (inches)]					Weight [kg (lb)]	
DN	PN	d	D	L	H	I	Flowmeter (with pressure sensor)	Flowmeter (without pressure sensor)
15	40	17.3 (0.68)	95 (3.74)	200 (7.87)	265 (10.43)	144 (5.67)	6.1 (13.45)	5.5 (12.13)
15	100	17.3 (0.68)	105 (4.13)	200 (7.87)	265 (10.43)	144 (5.67)	7.1 (15.65)	6.5 (14.33)
25	40	28.5 (1.12)	115 (4.53)	200 (7.87)	265 (10.43)	144 (5.67)	7.9 (17.42)	7.3 (16.09)
25	100	28.5 (1.12)	140 (5.51)	200 (7.87)	265 (10.43)	144 (5.67)	9.9 (21.83)	9.3 (20.50)
40	40	43.1 (1.70)	150 (5.91)	200 (7.87)	270 (10.63)	144 (5.67)	10.8 (23.81)	10.2 (22.49)
40	100	42.5 (1.67)	170 (6.69)	200 (7.87)	270 (10.63)	144 (5.67)	14.8 (32.63)	14.2 (31.31)
50	16	54.5 (2.15)	165 (6.50)	200 (7.87)	275 (10.83)	144 (5.67)	12.7 (28.00)	12.1 (26.68)
50	40	54.5 (2.15)	165 (6.50)	200 (7.87)	275 (10.83)	144 (5.67)	12.9 (28.44)	12.3 (27.12)
50	63	54.5 (2.15)	180 (7.09)	200 (7.87)	275 (10.83)	144 (5.67)	16.9 (37.26)	16.3 (35.94)
50	100	53.9 (2.12)	195 (7.68)	200 (7.87)	275 (10.83)	144 (5.67)	18.4 (40.57)	17.8 (39.24)
80	16	82.5 (3.25)	200 (7.87)	200 (7.87)	290 (11.42)	154 (6.06)	17.4 (38.36)	16.8 (37.04)
80	40	82.5 (3.25)	200 (7.87)	200 (7.87)	290 (11.42)	154 (6.06)	19.4 (42.77)	18.8 (41.45)
80	63	81.7 (3.22)	215 (8.46)	200 (7.87)	290 (11.42)	154 (6.06)	23.4 (51.59)	22.8 (50.27)
80	100	80.9 (3.19)	230 (9.06)	200 (7.87)	290 (11.42)	154 (6.06)	27.4 (60.41)	26.8 (59.08)
100	16	107.1 (4.22)	220 (8.66)	250 (9.84)	310 (12.20)	164 (6.46)	22 (48.50)	21.4 (47.18)
100	40	107.1 (4.22)	235 (9.25)	250 (9.84)	310 (12.20)	164 (6.46)	25 (55.12)	24.4 (53.79)
100	63	106.3 (4.19)	250 (9.84)	250 (9.84)	310 (12.20)	164 (6.46)	30 (66.14)	29.4 (64.82)
100	100	104.3 (4.11)	265 (10.43)	250 (9.84)	310 (12.20)	164 (6.46)	36 (79.37)	35.4 (78.04)
150	16	159.3 (6.27)	285 (11.22)	300 (11.81)	325 (12.80)	174 (6.85)	35.8 (78.93)	35.2 (77.60)
150	40	159.3 (6.27)	300 (11.81)	300 (11.81)	325 (12.80)	174 (6.85)	41.8 (92.15)	41.2 (90.83)
150	63	157.1 (6.19)	345 (13.58)	300 (11.81)	325 (12.80)	174 (6.85)	59.8 (131.84)	59.2 (130.51)
150	100	154.1 (6.07)	355 (13.98)	300 (11.81)	325 (12.80)	174 (6.85)	67.8 (149.47)	67.2 (148.15)
200	10	206.5 (8.13)	340 (13.39)	300 (11.81)	350 (13.78)	194 (7.64)	38.4 (84.66)	37.8 (83.33)
200	16	206.5 (8.13)	340 (13.39)	300 (11.81)	350 (13.78)	194 (7.64)	38.4 (84.66)	37.8 (83.33)
200	25	206.5 (8.13)	360 (14.17)	300 (11.81)	350 (13.78)	194 (7.64)	47.4 (104.50)	46.8 (103.18)
200	40	206.5 (8.13)	375 (14.76)	300 (11.81)	350 (13.78)	194 (7.64)	55.4 (122.14)	54.8 (120.81)
250	10	260.4 (10.25)	395 (15.55)	380 (14.96)	370 (14.57)	224 (8.82)	58.0 (127.87)	57.4 (126.55)
250	16	260.4 (10.25)	405 (15.94)	380 (14.96)	370 (14.57)	224 (8.82)	59.0 (130.07)	58.4 (128.75)
250	25	258.8 (10.19)	425 (16.73)	380 (14.96)	370 (14.57)	224 (8.82)	75.0 (165.35)	74.4 (164.02)
250	40	258.8 (10.19)	450 (17.72)	380 (14.96)	370 (14.57)	224 (8.82)	93.0 (205.03)	92.4 (203.71)
300	10	309.7 (12.19)	445 (17.52)	450 (17.72)	395 (15.55)	244 (9.61)	76.3 (168.21)	75.7 (166.89)
300	16	309.7 (12.19)	460 (18.11)	450 (17.72)	395 (15.55)	244 (9.61)	82.8 (182.54)	82.2 (181.22)
300	25	307.9 (12.12)	485 (19.09)	450 (17.72)	395 (15.55)	244 (9.61)	99.3 (218.92)	98.7 (217.60)
300	40	307.9 (12.12)	515 (20.28)	450 (17.72)	395 (15.55)	244 (9.61)	128.1 (282.41)	127.5 (281.09)

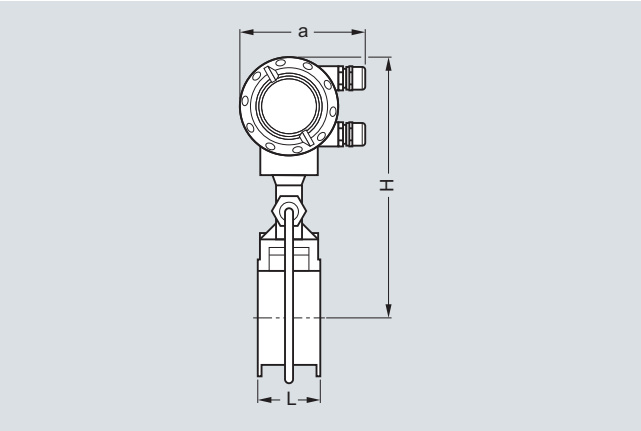
SITRANS FX300

Flange version ASME B16.5

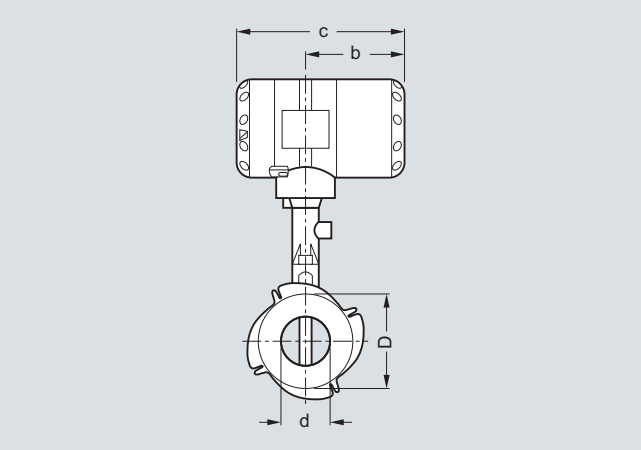
Size	Pressure rating	Dimensions [mm (inches)]					Weight [kg (lb)]	
DN	class	d	D	L	H	l	Flowmeter (with pressure sensor)	Flowmeter (without pressure sensor)
½	150	15.8 (0.62)	90 (3.54)	200 (7.87)	265 (10.43)	144 (5.67)	5.1 (11.24)	4.5 (9.92)
½	300	15.8 (0.62)	95 (3.74)	200 (7.87)	265 (10.43)	144 (5.67)	5.5 (12.13)	4.9 (10.80)
½	600	13.9 (0.55)	95 (3.74)	200 (7.87)	265 (10.43)	144 (5.67)	5.7 (12.57)	5.1 (11.24)
1	150	26.6 (1.05)	110 (4.33)	200 (7.87)	265 (10.43)	144 (5.67)	6.8 (14.99)	6.2 (13.67)
1	300	26.6 (1.05)	125 (4.92)	200 (7.87)	265 (10.43)	144 (5.67)	7.8 (17.20)	7.2 (15.87)
1	600	24.3 (0.96)	125 (4.92)	200 (7.87)	265 (10.43)	144 (5.67)	8.1 (17.86)	7.5 (16.53)
1½	150	40.9 (1.61)	125 (4.92)	200 (7.87)	270 (10.63)	144 (5.67)	8.9 (19.62)	8.3 (18.30)
1½	300	40.9 (1.61)	155 (6.10)	200 (7.87)	270 (10.63)	144 (5.67)	11 (24.25)	10.4 (22.93)
1½	600	38.1 (1.50)	155 (6.10)	200 (7.87)	270 (10.63)	144 (5.67)	12 (26.46)	11.4 (25.13)
2	150	52.6 (2.07)	150 (5.91)	200 (7.87)	275 (10.83)	144 (5.67)	11.6 (25.57)	11 (24.25)
2	300	52.6 (2.07)	165 (6.50)	200 (7.87)	275 (10.83)	144 (5.67)	13 (28.66)	12.4 (27.34)
2	600	49.3 (1.94)	165 (6.50)	200 (7.87)	275 (10.83)	144 (5.67)	14.5 (31.97)	13.9 (30.64)
3	150	78 (3.07)	190 (7.48)	200 (7.87)	290 (11.42)	154 (6.06)	20.4 (44.97)	19.8 (43.65)
3	300	78 (3.07)	210 (8.27)	200 (7.87)	290 (11.42)	154 (6.06)	23.4 (51.59)	22.8 (50.27)
3	600	73.7 (2.90)	210 (8.27)	200 (7.87)	290 (11.42)	154 (6.06)	24.4 (53.79)	23.8 (52.47)
4	150	102.4 (4.03)	230 (9.06)	250 (9.84)	310 (12.20)	164 (6.46)	24 (52.91)	23.4 (51.59)
4	300	102.4 (4.03)	255 (10.04)	250 (9.84)	310 (12.20)	164 (6.46)	32 (70.55)	31.4 (69.23)
4	600	97.2 (3.83)	275 (10.83)	250 (9.84)	310 (12.20)	164 (6.46)	41 (90.39)	40.4 (89.07)
6	150	154.2 (6.07)	280 (11.02)	300 (11.81)	325 (12.80)	174 (6.85)	36.8 (81.13)	36.2 (79.81)
6	300	154.2 (6.07)	320 (12.60)	300 (11.81)	325 (12.80)	174 (6.85)	51.8 (114.20)	51.2 (112.88)
6	600	146.3 (5.76)	355 (13.98)	300 (11.81)	325 (12.80)	174 (6.85)	76.8 (169.31)	46.2 (101.85)
8	150	202.7 (7.98)	345 (13.58)	300 (11.81)	350 (13.78)	194 (7.64)	50.6 (111.55)	50.0 (110.23)
8	300	202.7 (7.98)	380 (14.96)	300 (11.81)	350 (13.78)	194 (7.64)	75.4 (166.23)	74.8 (164.91)
10	150	254.5 (10.02)	405 (15.94)	380 (14.96)	370 (14.57)	224 (8.82)	75.0 (165.35)	74.4 (164.02)
10	300	254.5 (10.02)	455 (17.91)	380 (14.96)	370 (14.57)	224 (8.82)	107.0 (235.89)	106.4 (234.57)
12	150	304.8 (12.00)	485 (19.09)	450 (17.72)	395 (15.55)	244 (9.61)	106.9 (235.67)	106.3 (234.35)
12	300	304.8 (12.00)	520 (20.47)	450 (17.72)	395 (15.55)	244 (9.61)	151.9 (334.88)	151.3 (333.56)



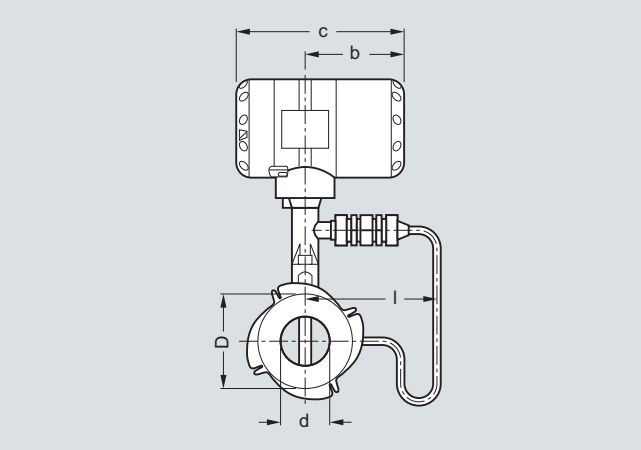
Sandwich version, front view, a = 133 mm (5.24 inches)



Sandwich version, front view, a = 133 mm (5.25 inches)



Sandwich version, side view, b = 105 mm (4.13 inches), c = 179 mm (7,05 inches)



Sandwich version, side view, b = 105 mm (4.13 inches), c = 179 mm (7.05 inches)

SITRANS FX300

Sandwich version EN

Size	Pressure rating	Dimensions [mm (inches)]					Weight [kg (lb)]	
DN	PN	d	D	L	H	I	Flowmeter (with pressure sensor)	Flowmeter (without pressure sensor)
15	16 ... 100	16 (0.63)	45 (1.77)	65 (2.56)	265 (10.43)	144 (5.67)	4.1 (9.04)	3.5 (7.72)
25	16 ... 100	24 (0.94)	65 (2.56)	65 (2.56)	265 (10.43)	144 (5.67)	4.9 (10.80)	4.3 (9.48)
40	16 ... 100	38 (1.50)	82 (3.23)	65 (2.56)	270 (10.63)	144 (5.67)	5.5 (12.13)	4.9 (10.80)
50	16 ... 100	50 (1.97)	102 (4.02)	65 (2.56)	275 (10.83)	144 (5.67)	6.6 (14.55)	6 (13.23)
80	16 ... 100	74 (2.91)	135 (5.31)	65 (2.56)	290 (11.42)	155 (6.10)	8.8 (19.40)	8.2 (18.08)
100	16 ... 100	97 (3.82)	158 (6.22)	65 (2.56)	310 (12.20)	164 (6.46)	10.1 (22.27)	9.5 (20.94)

Sandwich version ASME

Size	Pressure rating	Dimensions [inches]					Weight [lb]	
DN	class	d	D	L	H	I	Flowmeter (with pressure sensor)	Flowmeter (without pressure sensor)
½"	150, 300, 600	0.63	1.77	2.56	10.43	5.67	9.04	7.72
1"	150, 300, 600	0.94	2.56	2.56	10.43	5.67	10.80	9.48
1½"	150, 300, 600	1.50	3.23	2.56	10.63	5.67	12.13	10.80
2"	150, 300, 600	1.97	4.02	2.56	10.83	5.67	14.55	13.23
3"	150, 300, 600	2.91	5.31	2.56	11.42	6.10	19.40	18.08
4"	150, 300, 600	3.82	6.22	2.56	12.20	6.46	22.27	20.94

Flow tables

Measuring Range Limits

Size DN to EN 1092-1	DN to ASME B16.5	Q_{min} EN 1092-1 [m^3/h]	Q_{max} EN 1092-1 [m^3/h]	Q_{min} ASME B16.5 [m^3/h]	Q_{max} ASME B16.5 [m^3/h]
Water					
15	½"	0.45	5.07	0.44	4.94
25	1"	0.81	11.40	0.81	11.40
40	1½"	2.04	28.58	2.04	28.58
50	2"	3.53	49.48	3.53	49.48
80	3"	7.74	108.37	7.74	108.37
100	4"	13.30	186.22	13.30	186.21
150	6"	30.13	421.86	30.13	421.86
200	8"	56.6	792.42	56.60	792.42
250	10"	90.48	1 266.8	90.48	1 266.8
300	12"	131.41	1 839.8	131.41	1 839.8

Values based on water at 20 °C (68 °F) and 1.013 bar_{abs} (14.7 psi_{abs})

Size DN to EN 1092-1	DN to ASME B16.5	Q_{min} EN 1092-1 [m^3/h]	Q_{max} EN 1092-1 [m^3/h]	Q_{min} ASME B16.5 [m^3/h]	Q_{max} ASME B16.5 [m^3/h]
Air					
15	½"	6.80	25.33	6.72	24.70
25	1"	10.20	81.43	10.20	81.43
40	1½"	25.35	326.63	25.35	326.63
50	2"	43.89	565.49	43.89	565.49
80	3"	96.14	1 238.64	96.14	1 238.60
100	4"	165.19	2 128.27	165.19	2 128.27
150	6"	374.23	4 821.60	374.23	4 821.60
200	8"	702.95	9 056.8	702.95	9 056.8
250	10"	1 123.7	14 478.0	1 123.7	14 478.0
300	12"	1 632.1	21 028.0	1 632.1	21 028.0

Values based on air at 20 °C (68 °F) and 1.013 bar_{abs} (14.7 psi_{abs})

Flow rate limits

Product	Nominal diameters to EN	to ASME	Minimum flow rates [m/s]	Maximum flow rates [m/s]
Liquids	DN 15 … DN 300	DN ½"…DN 12"	$0.5 \times (998/\rho)^{0.5}$ 1)	$7 \times (998/\rho)^{0.47}$ 1)
Gas, steam/vapor	DN 15 … DN 300	DN ½"…DN 12"	$6 \times (1.29/\rho)^{0.5}$ 2)	$7 \times (998/\rho)^{0.47}$ 3)

ρ = operating density [kg/m^3]

1) Minimum flow rate 0.4 m/s (1.3 ft/s), maximum flow rate 10 m/s (32.8 ft/s)
2) Minimum flow rate 2 m/s (6.6 ft/s), maximum flow rate 80 m/s (262 ft/s)
3) Minimum flow rate 2 m/s (6.6 ft/s), maximum flow rate 80 m/s (262 ft/s); DN 15: 45 m/s (148 ft/s) and DN 25: 70 m/s (230 ft/s)

SITRANS FX300

Measuring range saturated steam: 1 to 7 bar

Overpressure [bar]		**1**		**3.5**		**5.2**		**7**	
Density [kg/m³]		**1.13498**		**2.4258**		**3.27653**		**4.16732**	
Temperature [°C]		**120.6**		**148.2**		**160.4**		**170.6**	
Flow [kg/h]		**min.**	**max.**	**min.**	**max.**	**min.**	**max.**	**min.**	**max.**
DN to EN 1092-1	**DN to ASME B16.5**								
15	½"	5.87	28.75	7.68	61.46	8.93	83.01	10.06	105.57
25	1"	11.82	92.42	17.28	197.53	20.09	266.81	22.66	339.35
40	1½"	29.64	370.71	43.33	792.33	50.63	1 070.2	56.8	1 361.2
50	2"	51.31	641.82	75.02	1 371.8	87.19	1 852.8	98.33	2 356.6
80	3"	112.41	1 405.8	164.33	3 004.7	191	4 058.4	215.39	5 161.8
100	4"	193.14	2 415.5	282.36	5 162.7	328.16	6 973.3	370.09	8 869.2
150	6"	437.56	5 472.4	639.69	11 696	743.45	15 798	838.44	20 093
200	8"	821.9	10 279.0	1 201.6	21 970.0	1 396.5	29 675.0	1 574.9	37 743
250	10"	1 313.9	16 433.0	1 920.9	35 122.0	2 232.5	47 439.0	2 517.7	60 337
300	12"	1 908.3	23 866.0	2 789.8	51 010.0	3 242.4	68 899.0	3 656.6	87 630

Measuring range saturated steam: 10.5 to 20 bar

Overpressure [bar]		**10.5**		**14**		**17.5**		**20**	
Density [kg/m³]		**5.88803**		**7.60297**		**9.31702**		**10.5442**	
Temperature [°C]		**186.2**		**198.5**		**208.7**		**215**	
Flow [kg/h]		**min.**	**max.**	**min.**	**max.**	**min.**	**max.**	**min.**	**max.**
DN to EN 1092-1	**DN to ASME B16.5**								
15	½"	12.78	149.17	16.51	192.61	20.23	236.04	22.89	267.12
25	1"	26.93	479.46	30.6	619.11	33.87	758.69	36.04	858.62
40	1½"	67.51	1 878.2	76.72	2 150.7	84.93	2 395.3	90.35	2 557.7
50	2"	116.89	3 251.7	132.82	3 723.4	147.03	4 147	156.42	4 428.1
80	3"	256.03	7 122.4	290.93	8 155.8	322.06	9 083.7	342.62	9 699.3
100	4"	439.91	12 238	499.9	14 013	553.38	15 608	588.69	16 666
150	6"	996.62	27 725	1 132.5	31 747	1 253.7	35 359	1 333.7	37 756
200	8"	1 872.1	52 079	2 127.3	59 634	2 354.9	66 419	2 505.2	70 921
250	10"	2 992.7	83 254	3 400.7	95 333	3 764.6	106 180	4 004.9	113 380
300	12"	4 346.5	120 920	4 939.1	138 460	5 467.5	154 210	5 816.5	164 660

Measuring range saturated steam: 15 to 100 psig

Overpressure [psig]		**15**		**50**		**75**		**100**	
Density [lbs/ft³]		**0.0719**		**0.1497**		**0.2036**		**0.2569**	
Temperature [°F]		**249.98**		**297.86**		**320.36**		**338.184**	
Flow [lbs/h]		**min.**	**max.**	**min.**	**max.**	**min.**	**max.**	**min.**	**max.**
DN to EN 1092-1	**DN to ASME B16.5**								
15	½"	12.95	64.35	16.83	133.87	19.62	182.02	22.04	229.63
25	1"	26.25	206.83	37.86	430.3	44.15	585.06	49.59	738.09
40	1½"	65.81	829.61	94.92	1 726	110.68	2 346.7	124.32	2 960.5
50	2"	113.94	1 436.3	164.34	2 988	191.63	4 062.9	215.23	5 125.6
80	3"	249.57	3 146.1	360	6 545.3	419.74	8 899.4	471.45	11 227
100	4"	428.81	5 405.7	618.51	11 246	721.21	15 291	810.06	19 291
150	6"	971.47	12 246	1 401.2	25 478	1 633.9	34 642	1 835.2	43 703
200	8"	1 824.8	23 004	2 632.1	47 859	3 069.1	65 072	3 447.2	82 092
250	10"	2 917.2	36 774	4 207.7	76 508	4 906.4	104 030	5 510.8	131 230
300	12"	4 236.8	53 410	6 111.1	111 120	7 125.8	151 080	8 003.6	190 600

Measuring range saturated steam: 150 to 300 psig

Overpressure [psig]		**150**		**200**		**250**		**300**	
Density [lbs/ft³]		**0.3627**		**0.4681**		**0.5735**		**0.6792**	
Temperature [°F]		**366.08**		**388.04**		**406.22**		**422.06**	
Flow [lbs/h]		**min.**	**max.**	**min.**	**max.**	**min.**	**max.**	**min.**	**max.**
DN to EN 1092-1	**DN to ASME B16.5**								
15	½"	27.79	324.21	35.86	418.47	43.94	512.66	52.04	607.12
25	1"	58.93	1 042.1	66.94	1 345.1	74.1	1 647.8	80.63	1 951.5
40	1½"	147.72	4 107.2	167.83	4 702.8	185.76	5 237	202.15	5 728
50	2"	255.75	7 111.9	290.56	8 141.9	321.6	9 066.8	350	9 917
80	3"	560.19	15 578	636.44	17 834	704.43	19 860	766.6	21 722
100	4"	962.54	26 766	1 093.5	30 643	1 210.4	34 124	1 317.2	37 324
150	6"	2 180.6	60 639	2 477.4	69 421	2 742.1	77 307	2 984	84 556
200	8"	4 096.1	113 900	4 653.6	130 400	5 150.7	145 210	5 605.2	158 830
250	10"	6 548.1	182 090	7 439.3	208 460	8 234.1	232 140	8 960.6	253 910
300	12"	9 510.2	264 460	10 805	302 760	11 959	337 150	13 014	368 770

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Fine Controls (UK) LTD, Bassendale Road, Croft Business Park,
Bromborough, Wirral, CH62 3QL UK
Tel: 0151 343 9966
Email: sales@finecontrols.com