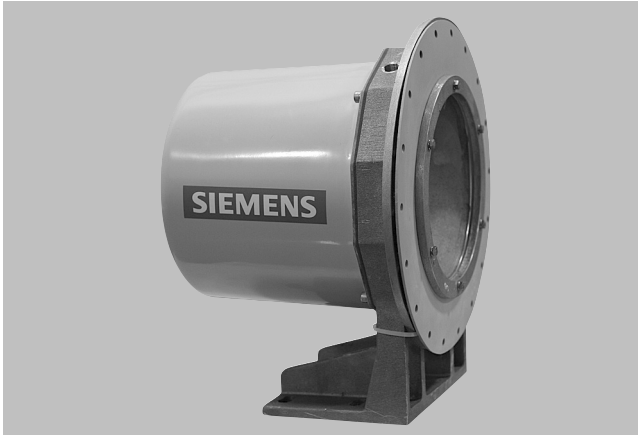


### Overview



SITRANS WFS300 and WFS320 sensing heads are out-of-the process sensing elements for SITRANS WF300 series solids flowmeters.

### Benefits

- Easy installation with modular assembly
- $\pm 1\%$  accuracy (or better) with high repeatability
- Totally enclosed, dust-tight, flow metering of bulk solids
- Sensing mechanism is outside the process, protected from contamination
- No zero drift, due to unique sensing mechanism
- Low maintenance; only the sensing plate is in the process
- No restriction of product flow

### Application

SITRANS WFS300 and WFS320 sensing heads are used in applications such as product rationing, batch load-out, and process feed rate control, the WFS series of sensing heads has been field-proven in thousands of applications with some units providing over a quarter century of reliable performance.

The WFS sensing heads use only the horizontal force created by impact of product upon the sensing plate and then apply the horizontal deflection to a highly reliable linear variable differential transformer (LVDT).

Friction-less pivots exclude the vertical force from the sensing process and the LVDT travel range is controlled by a coil spring selected for the specified full-scale flow rate. A viscous fluid damper provides mechanical damping in the event of pulsating flows.

The LVDT converts the horizontal movement, proportional to the impact forces into an electrical signal, which is converted by the integrator to time-based flow rate indication and totaling. This method of sensing material flow has been proven best in thousands of applications all over the world.

# Solid Flowmeters

## SITRANS WFS300 sensing heads

### Selection and ordering data

SITRANS WFS300 Sensing head Impact solids flowmeter for low to medium capacity applications. Accuracy is $\pm 1\%$ or better, with capacity up to 40 t/h (44 STPH).	Article No. 7MH7110- ● ● ● ● ●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
<b>Mounting</b>	
Base - Ordinary Locations/General Purpose (Non-Ex)	0
Side - Ordinary Locations/General Purpose (Non-Ex)	1
Base CSA/FM Class I, Div. 1, Groups C, D, Class II, Div. 1, Groups E, F, G; ATEX II 2D Ex tb IIIC T70°C Db, $-40^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$ , IP64; UKEX II 2D Ex tb IIIC T70°C Db, $-40^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$ , IP64; ATEX II 3G Ex ec IIC T6 Gc, $-40^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$ , IP64; UKEX II 3G Ex ec IIC T6 Gc, $-40^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$ , IP64; IECEX Ex tb IIIC T70°C Db, $\text{Ta} = -40^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ , IP64; IECEX Ex ec IIC T6 Gc, $\text{Ta} = -40^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ ; EAC Ex Ex tb IIIC T70°C Db X; EAC Ex Ex nA IIC T6 Gc X; RCM, EAC, KC	3
Side CSA/FM Class I, Div. 1, Groups C, D, Class II, Div. 1, Groups E, F, G; ATEX II 2D Ex tb IIIC T70°C Db, $-40^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$ , IP64; UKEX II 2D Ex tb IIIC T70°C Db, $-40^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$ , IP64; ATEX II 3G Ex ec IIC T6 Gc, $-40^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$ , IP64; UKEX II 3G Ex ec IIC T6 Gc, $-40^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$ , IP64; IECEX Ex tb IIIC T70°C Db, $\text{Ta} = -40^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ , IP64; IECEX Ex ec IIC T6 Gc, $\text{Ta} = -40^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ ; EAC Ex Ex tb IIIC T70°C Db X; EAC Ex Ex nA IIC T6 Gc X; RCM, EAC, KC	4
Note: Externally mounted LVDT Conditioner in NEMA 4 enclosure required for use with SF500 or SIWAREX FTC and mounting options 3 and 4. See optional equipment.	
<b>Range (Range spring size/leaf spring thickness/viscosity of damping fluid)</b>	
C2/A2/1 000	A
C3/A2/1 000	B
C4/A2/1 000	C
C5/A2/1 000	D
C6/A2/1 000	E
C7/A2/1 000	F
C8/A2/3 000	G
C9/A2/3 000	H
C10/A2/3 000	J
C11/A3/5 000	K
C12/A3/5 000	L
C13/A3/5 000	M
C14/A3/5 000	N
C0/A2/500	P
C0/A3/500	Q
C10/A3/3 000	R
<b>Gasketing</b>	
Silicone	A
Silicone, light duty	B
PTFE	E
<b>Coating (process side only)</b>	
None, standard aluminum	0
Epoxy - white/aluminum, external castings only	1
<b>Sensing head mounted LVDT conditioner</b>	
None <sup>1)</sup>	0
Included, required for use with SF500 or SIWAREX FTC integrator <sup>2)</sup>	1

<sup>1)</sup> For use with Compu Series integrators or when externally mounted LVDT conditioner required.

<sup>2)</sup> Applicable for mounting options 0 and 1 only.

## Selection and ordering data (Continued)

Further designs	Order Code
Please add "-Z" to article no. and specify order code(s).	
Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number/identification (max. 27 characters), specify in plain text.	Y15
Application Eng. reference number (max. 15 characters), specify in plain text.	Y31
Manufacturer's test certificate: According to EN 10204-2.2	C11
<b>Instruction manuals</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/weighing/documentation">http://www.siemens.com/weighing/documentation</a>	
<b>Calibration hanger weights</b>	
20 g (0.04 lb)	Article No. 7MH7724-1AC
50 g (0.1 lb)	7MH7724-1AD
100 g (0.2 lb)	7MH7724-1AE
200 g (0.4 lb)	7MH7724-1AF
500 g (1.1 lb)	7MH7724-1AG
1 000 g (2.2 lb)	7MH7724-1AH
2 000 g (4.4 lb)	7MH7724-1AJ
5 000 g (11 lb)	7MH7724-1AK
Note: calibration accessories should be ordered as a separate item on the order.	

Spare parts	Article No.
LDVT conditioner in NEMA 4 enclosure (to interface SF500 or SIWAREX FTC and LVDT sensor)	7MH7723-1AJ
Silicone inner diaphragm	7MH7723-1DN
Silicone outer diaphragm	7MH7723-1DP
PTFE inner diaphragm	7MH7723-1AL
PTFE outer diaphragm	7MH7723-1AM
LVDT transformer and core, standard spare	7MH7723-1DS
Encapsulated LVDT replacement kit	7MH7723-1DE
Damping fluid, 1 000 CS, 1 lb bottle	7MH7723-1EU
Damping fluid, 3 000 CS, 1 lb bottle	7MH7723-1EV
Damping fluid, 5 000 CS, 1 lb bottle	7MH7723-1EW
Range spring assembly, C2	7MH7723-1EX
Range spring assembly, C3	7MH7723-1EY
Range spring assembly, C4	7MH7723-1FA
Range spring assembly, C5	7MH7723-1FB
Range spring assembly, C6	7MH7723-1FC
Range spring assembly, C7	7MH7723-1FD
Range spring assembly, C8	7MH7723-1FE
Range spring assembly, C9	7MH7723-1FF
Range spring assembly, C10	7MH7723-1FG
Range spring assembly, C11	7MH7723-1FH
Range spring assembly, C12	7MH7723-1FJ
Range spring assembly, C13	7MH7723-1FK
Range spring assembly, C14	7MH7723-1FL
Leaf spring, A2, kit	7MH7723-1BN
Leaf spring, A3, kit	7MH7723-1BP
WFS300 calibration wheel kit	7MH7723-1KB
Circuit card, LVDT, conditioner, internal to sensing head	7MH7723-1ET
WFS300 replacement O-ring kit	7MH7723-1DC
Side mount gasket replacement	7MH7723-1FT

## Solid Flowmeters

### SITRANS WFS300 sensing heads

#### Selection and ordering data (Continued)

		Article No.				
<b>SITRANS WFS320 Sensing head</b>		7MH7112-	•	•	•	•
<b>Impact solids flowmeter for medium capacity applications. Accuracy is ± 1 % or better, with capacity up to 300 t/h (330 STPH).</b>						
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.						
<b>Classification</b>						
Ordinary Locations/General Purpose (Non-Ex)						1
CSA/FM Class I, Div. 1, Groups C, D, Class II, Div. 1, Groups E, F, G; ATEX II 2D Ex tb IIIC T70°C Db, -40°C ≤ Ta ≤ +60°C, IP64; UKEX II 2D Ex tb IIIC T70°C Db, -40°C ≤ Ta ≤ +60°C, IP64; ATEX II 3G Ex ec IIC T6 Gc, -40°C ≤ Ta ≤ +60°C, IP64; UKEX II 3G Ex ec IIC T6 Gc, -40°C ≤ Ta ≤ +60°C, IP64; IECEX Ex tb IIIC T70°C Db, Ta = -40°C to +60°C, IP64; IECEX Ex ec IIC T6 Gc, Ta = -40°C to +60°C; EAC Ex Ex tb IIIC T70°C Db X; EAC Ex Ex nA IIC T6 Gc X						2
Note: Externally mounted LVDT conditioner in NEMA 4 enclosure required for use with SF500 or SIWAREX FTC and classification option 2. See calibration hanger weights.						
<b>Range (range spring size/viscosity of damping fluid)</b>						
D1/1 000 Position 1						A
D1/1 000 Position 2						B
D1/1 000 Position 3						C
D2/1 000 Position 1						D
D2/1 000 Position 2						E
D2/1 000 Position 3						F
D3/3 000 Position 1						G
D3/3 000 Position 2						H
D3/3 000 Position 3						J
D4/5 000 Position 1						K
D4/5 000 Position 2						L
D4/5 000 Position 3						M
D5/5 000 Position 1						N
D5/5 000 Position 2						P
D5/5 000 Position 3						Q
<b>Gasketing</b>						
Silicone						A
PTFE						D
Other gasketing available upon request						
<b>Coating (process side only)</b>						
None, standard aluminum						0
Epoxy - white/aluminum, external castings only						1
Other coatings available upon request.						
<b>Sensing head mounted LVDT conditioner</b>						
None <sup>1)</sup>						0
Included, required for use with SF500 or SIWAREX FTC integrator <sup>2)</sup>						1

<sup>1)</sup> For use with Compu series integrators or when externally mounted LVDT conditioner required. See Note under Classification.

<sup>2)</sup> Available with classification option 1 only.

Further Designs	Order Code
Please add "-Z" to article no. and specify order code(s).	
Stainless steel tag [69 x 38 mm (2.7 x 1.5 inch)], Measuring-point number/identification (max. 27 characters), specify in plain text.	Y15
Application Eng. reference number (max.15 characters), specify in plain text.	Y31
Manufacturer's test certificate: According to EN 10204-2.2	C11
<b>Instruction manual</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/weighing/documentation">http://www.siemens.com/weighing/documentation</a>	

### Selection and ordering data (Continued)

Further Designs	Order Code
<b>Calibration hanger weights</b>	<b>Article No.</b>
20 g (0.04 lb)	7MH7724-1AC
50 g (0.1 lb)	7MH7724-1AD
100 g (0.2 lb)	7MH7724-1AE
200 g (0.4 lb)	7MH7724-1AF
500 g (1.1 lb)	7MH7724-1AG
1 000 g (2.2 lb)	7MH7724-1AH
2 000 g (4.4 lb)	7MH7724-1AJ
5 000 g (11 lb)	7MH7724-1AK
Note: calibration accessories should be ordered as a separate item on the order.	

Spare Parts	Article No.
LVDT conditioner in NEMA 4 enclosure to interface SF500 and LVDT sensor	7MH7723-1AJ
Silicone inner diaphragm	7MH7723-1DQ
Silicone outer diaphragm	7MH7723-1DR
PTFE inner diaphragm	7MH7723-1BA
PTFE outer diaphragm	7MH7723-1BB
LVDT transformer and core, standard spare	7MH7723-1DS
Encapsulated LVDT replacement kit	7MH7723-1DE
Damping fluid, 1 000 CS, 1 lb bottle	7MH7723-1EU
Damping fluid, 3 000 CS, 1 lb bottle	7MH7723-1EV
Damping fluid, 5 000 CS, 1 lb bottle	7MH7723-1EW
Range spring assembly, D1	7MH7723-1FM
Range spring assembly, D2	7MH7723-1FN
Range spring assembly, D3	7MH7723-1FP
Range spring assembly, D4	7MH7723-1FQ
Range spring assembly, D5	7MH7723-1GJ
Leaf spring kit	7MH7723-1BQ
Circuit card, LVDT, conditioner, internal to sensing head	7MH7723-1ET
WFS320 calibration wheel kit	7MH7723-1KA
WFS320 replacement o-ring kit	7MH7723-1DD
WFS320 Taper Pin, spare	7MH7723-1GD

## Solid Flowmeters

### SITRANS WFS300 sensing heads

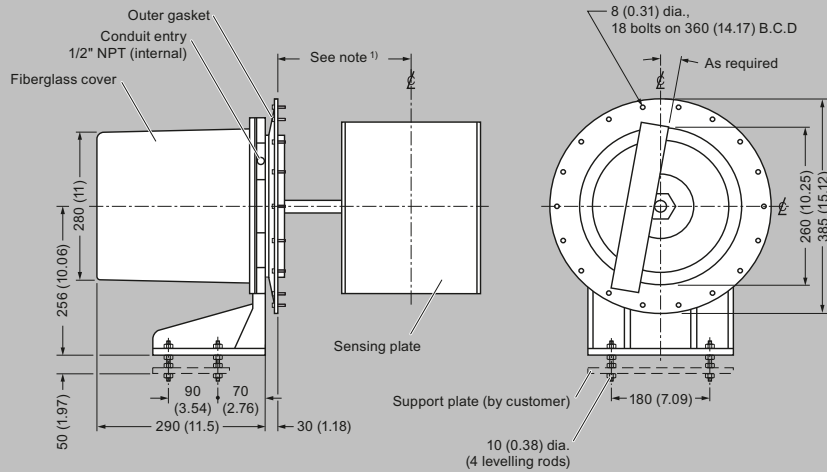
#### Technical specifications

	WFS300	WFS320
<b>Mode of operation</b>		
Measuring principle	Deflection measurement using LVDT (linear variable differential transformer)	Deflection measurement using LVDT (linear variable differential transformer)
Typical application	For use in all WF300 series flowmeters	For use in all WF300 series flowmeters
<b>Flow input</b>		
Maximum particle size	13 mm (0.5 inch)	25 mm (1 inch)
Minimum flow rate	0 ... 0.2 t/h (0 ... 0.2 STPH)	0 ... 20 t/h (0 ... 22 STPH)
Maximum flow rate	0 ... 40 t/h (0 ... 44 STPH)	0 ... 300 t/h (0 ... 330 STPH)
<b>Performance</b>		
Accuracy <sup>1)</sup>	± 1 % or better of full scale, higher accuracy with linearizing features offered by integrators	± 1 % or better of full scale, higher accuracy with linearizing features offered by integrators
Repeatability	± 0.2 %	± 0.2 %
Specified range	33 ... 100 %	33 ... 100 %
<b>Medium conditions</b>		
Ambient temperature		
• Without internally mounted LVDT card	-40 ... +60 °C (-40 ... +140 °F)	-40 ... +60 °C (-40 ... +140 °F)
• With optional internally mounted LVDT card	-40 ... +50 °C (-40 ... +122 °F)	-40 ... +50 °C (-40 ... +122 °F)
Maximum product temperature	232 °C (450 °F)	232 °C (450 °F)
<b>Design</b>		
	IP64 Aluminum body, fiberglass cover, 304 (1.4306) stainless steel sensing plate	IP64 Aluminum body, fiberglass cover, 304 (1.4306) stainless steel sensing plate
<b>Options</b>		
	<ul style="list-style-type: none"> <li>Epoxy paint coating of external aluminum casting surfaces</li> <li>Internally mounted LVDT conditioner card for use with SF500 integrator</li> <li>Externally mounted LVDT conditioner card in NEMA 4 (IP65) enclosure for use with Milltronics SF500 or SIWAREX FTC integrator when sensing head is mounted in hazardous areas or with high ambient temperatures</li> </ul>	
<b>Approvals</b>		
	CE, UKCA, RCM, CSA, FM, EAC, KC, ATEX, UKEX, IECEx, EAC Ex	CE, UKCA, RCM, CSA, FM, EAC, KC, ATEX, UKEX, IECEx, EAC Ex

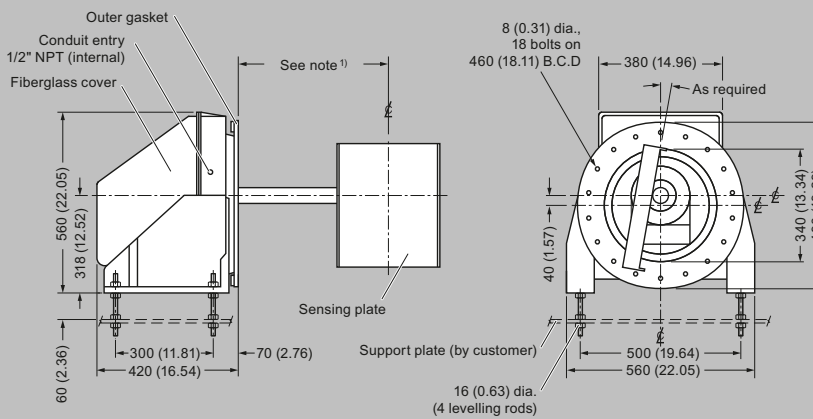
<sup>1)</sup> Accuracy subject to: On factory approved installations the flowmeter system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for at least ten minutes running time.

### Dimensional drawings

#### WFS300 Sensing Head



#### WFS320 Sensing Head



#### Notes:

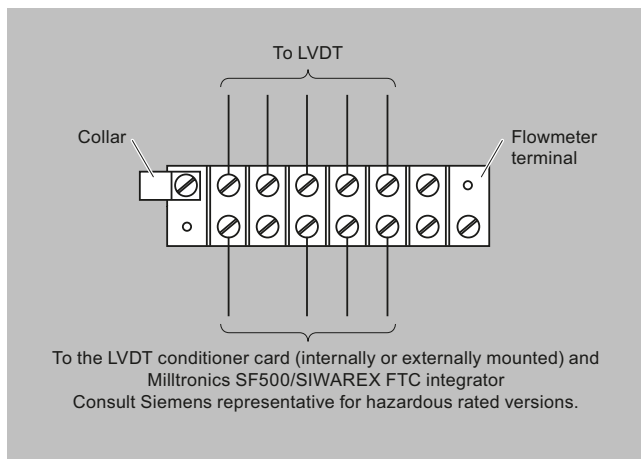
- <sup>1)</sup> Refer to flowmeter drawing for sensing head mounting hole to flowguide centerline dimension.
- <sup>2)</sup> Sensing head support plate should be rigid and independent of flowmeter housing.
- <sup>3)</sup> Ensure outer gasket seals dust tight to flowmeter housing wall.

SITRANS WFS300 sensing heads, dimensions in mm (inch)

## Solid Flowmeters

### SITRANS WFS300 sensing heads

#### Circuit diagrams



SITRANS WFS300 sensing heads connections