### flow switch for water-based media

# flow-captor 4320.1xM/xx



The flow-captor type 4320.1xM/xx is a flow monitor which is other used automation processes or industrial applications where liquid media need to be monitored. The 4320.1x-series offers inline models which have installation smaller specially designed for in diameters. The sensor works according to the calorimetric measuring principle. The detection takes place inside the inline tube, whereby the sensor measures the flow velocity of the medium and converts it into an electrical signal.

- for small pipe sizes from OD6 up to OD28
- fully electronic
- separate adjustment of flow range and switching point
- no mechanically moved parts
- separate adjustment for "range"and "set-point"
- analogue flow display and indication of the adjusted set-point via LED chain.
- LED for output status
- ISO 9001: 2015



## Control and display panel



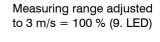
LED chain for display of flow speed

Flashing LED for display of adjusted set-point

Potentiometer for set-point adjustment

Potentiometer for range adjustment from .2 to 3 m/s.

# example of operation



Set-point adjusted to 50 % of end value (5. LED)

Flow speed equates 75 % (7. LED)

Green LED is ON: Flow rate is above the adjusted set-point



## The sensor tube

sensor (length 200 mm) is made of stainless steel 316Ti and is an integral part of the inline flow-captor.

This series is available with sensor tubes in different sizes as 6 x 1, 8 x 1, 12 x 1, 18 x 1,5, 22 x 1,5 as well as 28 x 1,5 mm.

For aggressive media special sensor tube materials as Titanium and Hastelloy can be offered.



#### Free flow

The sensor element of the inline flow-captor is fitted to the out-side of the sensor tube. Since there is no element inside the tube, the sensor is non-intrusive to the flow. The robust housing is constructed of stainless steel 316 Ti (V4A). The electronics is completely resin encapsulated.

#### Mechanical connection

Cutting ring couplings, to be ordered separately, have proven their value when mounting the sensor into pipe systems. By slightly tightening the swivel nut the v-shaped ring inside of the coupling cuts into the sensor tube wall and thus ensures a dense and reliable form closure.



#### weber

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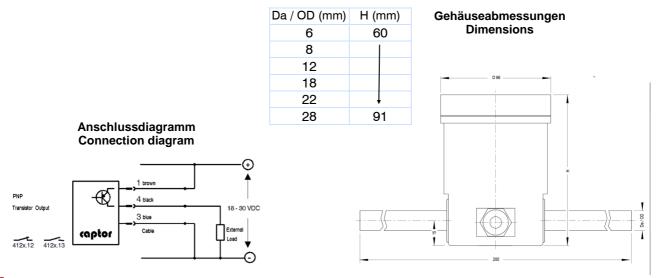
www.captor.de info@captor.de sales@captor.co.uk sales@captor.com

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Medium	· · · · · · · · · · · · · · · · · · ·	
Sensor data   Measuring range   0 - 20 cm/s to 0 - 300 cm/s, cont. adjustable *1	,	
Measuring range         0 - 20 cm/s to 0 - 300 cm/s, cont. adjustable *1           Flow volume*1 at 300 cm/s related to tube inner diameter         6 x 1 mm 2.25 l/min         8 x 1 mm 12 x 1 mm 14.1 l/min         18 x 1,5 mm 31.8 l/min         22 x 1,5 m 51 l/min           Set-point range         approx. 15 % - 90 % of measuring range setting           Medium temperature         -20 °C to +80 °C           Ambient temperature         -20 °C to +70 °C           Pressure         max. 30 bar (3000 kPa)           Response time         2 sec. to 10 sec. according to range setting           Linearity deviation         < 5 % *1	,	
Flow volume*1 at 300 cm/s related to tube inner diameter	,	
cm/s related to tube inner diameter         6 x 1 mm 2.25 l/min         8 x 1 mm 12 x 1 mm 14.1 l/min         18 x 1,5 mm 31.8 l/min         22 x 1,5 m 51 l/min           Set-point range         approx. 15 % - 90 % of measuring range setting           Medium temperature         -20 °C to +80 °C           Ambient temperature         -20 °C to +70 °C           Pressure         max. 30 bar (3000 kPa)           Response time         2 sec. to 10 sec. according to range setting           Linearity deviation         < 5 % *1           Repeatability         < 2 %           Hysteresis         ca. 10 %           Temperature drift         < 0,3 % K           Mechanical data         Protection rate           Housing material         stainless steel 316 Ti           Sensor material         stainless steel 316Ti (other material on request)           Pipe sizes         OD x wall thickness           Connection         4-pin M12-coupling (cable type 4940 must be ordered separately)	,	
Medium temperature  Ambient temperature  -20 °C to +80 °C  -20 °C to +70 °C  Pressure  max. 30 bar (3000 kPa)  Response time  Linearity deviation  Repeatability  -2 %  Hysteresis  ca. 10 %  Temperature drift  Mechanical data  Protection rate  Housing material  Sensor material  Pipe sizes  OD x wall thickness  Connection  -20 °C to +80 °C  -20 °C to +70 °C  max. 30 bar (3000 kPa)  2 sec. to 10 sec. according to range setting  -2 %  Hysteresis  -2 %  -2 %  -2 %  Hysteresis  -2 %  -2		
Ambient temperature         -20 °C to +70 °C           Pressure         max. 30 bar (3000 kPa)           Response time         2 sec. to 10 sec. according to range setting           Linearity deviation         < 5 % *1           Repeatability         < 2 %           Hysteresis         ca. 10 %           Temperature drift         < 0,3 % K           Mechanical data         IP67           Housing material         stainless steel 316 Ti           Sensor material         stainless steel 316Ti (other material on request)           Pipe sizes         OD x wall thickness         6 x 1 mm         8 x 1 mm         12 x 1 mm         18 x 1,5 mm         22 x 1,5 mm           Connection         4-pin M12-coupling (cable type 4940 must be ordered separated)		
Pressure         max. 30 bar (3000 kPa)           Response time         2 sec. to 10 sec. according to range setting           Linearity deviation         < 5 % *1		
Response time  Linearity deviation  Repeatability  Repeatability  Hysteresis  Ca. 10 %  Temperature drift  Acanonical data  Protection rate  Housing material  Sensor material  Pipe sizes  OD x wall thickness  Connection  Pipe sizes  Connection  2 sec. to 10 sec. according to range setting  2 sec. to 10 sec. according to range setting		
Linearity deviation Repeatability Hysteresis Temperature drift Mechanical data Protection rate Housing material Sensor material Pipe sizes OD x wall thickness Connection Connection Sensor material Connection Connection Sensor material Sensor material 		
Repeatability < 2 %  Hysteresis		
Hysteresis ca. 10 %  Temperature drift < 0,3 % K  Mechanical data  Protection rate IP67  Housing material stainless steel 316 Ti  Sensor material stainless steel 316Ti (other material on request)  Pipe sizes OD x wall thickness 6 x 1 mm 8 x 1 mm 12 x 1 mm 18 x 1,5 mm 22 x 1,5 mm  Connection 4-pin M12-coupling (cable type 4940 must be ordered separate)		
Temperature drift <a href="color: red;">&lt; 0,3 % K</a> Mechanical data  Protection rate  Protection rate  Housing material  Sensor material  Pipe sizes OD x wall thickness  Connection  IP67  Stainless steel 316 Ti (other material on request)  8 x 1 mm 12 x 1 mm 18 x 1,5 mm 22 x 1,5 mm 20 x 1,5 mm 4-pin M12-coupling (cable type 4940 must be ordered separated)		
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	28 x 1,5 mm	
Dimensions of housing see drawing	ely)	
J		
Electrical data		
Operating voltage 18 to 30 VDC, incl. residual ripple		
Current consumption max. 150 mA (pulsed)		
Power consumption approx. 1 W	1 1	
Switching current ≤ 400 mA	≤ 400 mA	
Circuit protection reverse polarity / short circuit / overload		
Voltage drop < 2 V at max. load		
State of readiness approx. 10 sec. after connection of power		
Electrical output 4320.12M/xx PNP n. c. (opener) Without flow: 4320.13M/xx PNP n. o. (closer)		



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