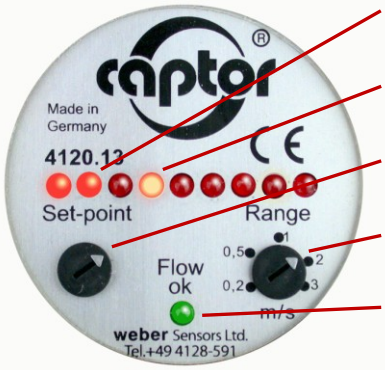
Flow monitor for liquid and pasty media

flow-captor 4320.1- / 4321.1-

The flow-captor type 4320.1- / 4321.1- is a further development with an additional pressure resis–tance. This – highly accurate metering – flow switch is used in every industry where flow moni-toring, measuring and displaying liquid media is of importance. With this flow-captor it is possible to adjust an exact flow set-point and simul-taneously measure the flow speed, even up to very low flows.

- Precise switching sensor for water- and oil-based media up to 100 bar (10000 kPa)
- High accuracy even at low flow rates
- Separate adjustments for range and set-point
- Analogue display of actual flow and display of the adjusted set-point.
- LED display of output status
- ISO 9001 : 2008

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.

LED (green) for display of output status

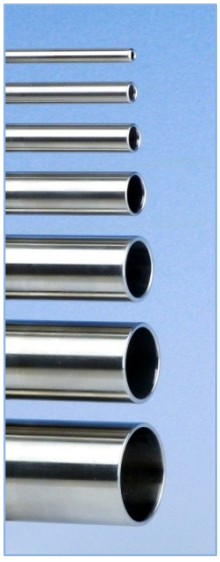
Example of operation

Measuring range adjusted to 3 m/s = 100% (9. LED)

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

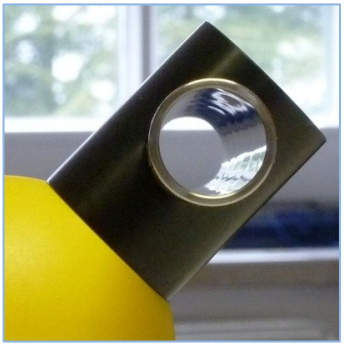


The sensor tube

The sensor tube (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 glass fibre reinforced PBTP (Ultradur ®). The electronics housing includes a full resin encapsula-tion.

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.

Technical Data

Type	**flow-captor 4320.12/.13**			**flow-captor 4321.12/.13**		
Medium	water-based solutions			oil-based solutions		
Sensor Data						
Measuring range	0 - 20 cm/s to 0 - 300 cm/s, cont. adjustable *1			0 - 30 cm/s to 0 - 300 cm/s, cont. adjustable *2		
Flow volume at 300 cm/s related to tube inner diameter	6 x 1 mm 2,25 l/min	8 x 1 mm 5,1 l/min	12 x 1 mm 14,1 l/min	18 x 1,5 mm 31,8 l/min	22 x 1,5 mm 51 l/min	28 x 1,5 mm 88,4 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 s to 10 s (according to range setting)			2 s to 15 s (according to range setting)		
Linearity deviation	< 5% *1			< 5% *2		
Repeatability	< 2%					
Hysteresis	ca. 10%					
Temperature drift	< 0,3% K					
Mechanical Data						
Protection rate	IP65					
Housing material	electronics: PBTP, glass fibre reinforced (Ultradur ®)					
Sensor material	stainless steel 316Ti (**B**: Titanium; **C**: Hastelloy ® C4)					
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	28 x 1,5 mm
Connection	Integrated plug connection with PG9 coupling, 2 m oilflex cable 3 x 0,5 mm² (M12-coupling on request)					
Dimensions of housing	D 60 x L 200 – (drawing K705121)					
Electrical Data						
Operating voltage	18 to 30 VDC, incl. residual ripple					
Current consumption	max. 150 mA (pulsed)					
Power consumption	approx. 1 W					
Switching current	≤ 400 mA					
Circuit protection	reverse polarity / short circuit / overload					
Voltage drop	< 2 V at max. load					
State of readiness	approx. 10 s after connection of power					
Electrical output Without flow:	4320.12 PNP current-carrying (opener / n. c.) 4320.13 PNP currentless (closer / n. o.)			4321.12 PNP current-carrying (opener / n. c) 4321.13 PNP currentless (closer / n. o)		

High temperature version		
Type	**flow-captor 432-.1- S107**	
Medium temperature in relation to ambient temperature	Medium temperature max.	Ambient temperature max.
	130 °C	30 °C
	120 °C	40 °C
	110 °C	50 °C
	100 °C	60 °C
	90 °C	70 °C
	Medium temperature min.	Ambient temperature min.
	– 20 °C	– 20 °C
	– 30 °C	– 10 °C

*1 related to water *2 depending on oil grade