



## H210 Technical Datasheet

### Variable area flowmeter

- Sturdy construction for high pressure, temperature and media resistance
- Simple to install -Measure and display without auxiliary power supply
- High application safety, even with extremely low flows



## 1.1 Description

The all-metal variable area flowmeter H210 is used for flow measurement of conductive and non-conductive liquids, gases and vapors. It is a completely mechanical flowmeter, measure and display without any power supply.

## 1.2 Highlights

- Simple, low-cost installation: Measure and display without auxiliary power supply
- Robust measuring tube construction for high process temperatures and extreme operating pressures
- High application safety, even with extremely low flows

## 1.3 Industries

Can be used in all industrial sectors, for example:

- |                   |                        |
|-------------------|------------------------|
| ● Chemicals       | ● Oil & Gas            |
| ● Petrochemicals  | ● Iron, Steel & Metals |
| ● Pharmaceutical  | ● Power plants         |
| ● Machinery       | ● Pulp & Paper         |
| ● Food & Beverage | ● Water & Wastewater   |

## 1.4 Applications

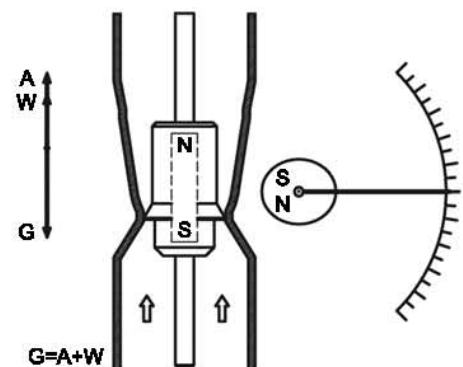
- Continuous gas and liquid measurement
- Measurement of conductive and non-conductive media
- Industrial burner controlling
- Compressor monitoring
- Dry-run protection of pumps

## 1.5 Operating principle

The flowmeter H210 operates on the float measuring principle. The measuring unit consists of a metal cone, inside of which a float can move up and down freely. The medium flows through the flowmeter from bottom to top.

The float adjusts itself so that the lifting force acting on it  $A$  is in equilibrium with the form drag  $W$  and its weight  $G$  :

$$G = A + W.$$



## 2.1 Technical data

- The following data is provided for general applications. If you require data that is more relevant to your specific application, please contact us or your local representative.
- Additional information (certificates, special tools, software,...) and complete product documentation can be downloaded free of charge from the website.

### Measuring system

Application range	Flow measurement of liquids, gases and vapors
Operating method / measuring principle	Variable area measuring principle
Measured value	
Primary measured value	Float position
Secondary measured value	Operating and standard volumetric flow

### Measuring accuracy

Directive	VDI / VDE 3513, sheet 2 (qG = 50%)
H210	1.6%

### Operating conditions

Temperature	
Max. operating temperature TS	-196...+300°C / -321...+572°F
Pressure	
Max. operating pressure PS	Depending on the version up to 400 bar / 5802 psig
Max. test pressure PT	Pressure equipment directive 97/23/EC or AD 2000-HP30
Min. required operating pressure	2 times greater than pressure loss
Float damping during gas measurement recommended:	
DN15...25 / ½" ...1"	Operating pressure <0.3 bar / 4.4 psig
DN50...100 / 2" ...4"	Operating pressure <0.2 bar / 2.9 psig

### Installation conditions

Inlet run	≥5 x DN
Outlet run	≥3 x DN

### Materials

Device	Flange / raised face	Measuring tube	Float	Float stop / guide	Ring orifice
H210/RR	304 Stainless Steel	304 Stainless Steel			-
H210/RRL	316L Stainless Steel	316L Stainless Steel			-

## Other options

- Special materials on request
- Float damping: ceramic or PEEK

## Temperatures

Temperatures H210/M30 - mechanical indicator without power supply

	Material	Product temperature		Ambient temperature	
		[°C]	[°F]	[°C]	[°F]
H210 / M30	Stainless Steel	-196...+300	-321...+572	-40...+120	-40...+248

## 2.2 Measuring range

H210 - Stainless Steel

Measuring span:	10 : 1		
Declaration of flow:	Values = 100%	Water: 20°C [68°F]	Air: 20°C [68°F], 1.013 bar abs. [14.7 psia]

Float		Water			Air			Max. pressure loss			
		TIV	CIV	DIV	TIV Alu	TIV	DIV	CIV	TIV Alu	TIV	DIV
Nominal size	Cone	l/h			Nm <sup>3</sup> /h			mbar			
DN15, 1/2"	K 15.1	18	25	-	0.42	0.65	-	26	12	21	-
	K 15.2	30	40	-	0.7	1.0	-	26	12	21	-
	K 15.3	55	63	-	1	1.5	-	26	12	21	-
	K 15.4	80	100	-	1.7	2.2	-	26	12	21	-
	K 15.5	120	160	-	2.5	3.6	-	26	12	21	-
	K 15.6	200	250	-	4.2	5.5	-	26	12	21	-
	K 15.7	350	400	700	6.7	10	18 ①	28	12	21	38
	K 15.8	500	630	1000	1.0	14	28 ②	32	13	22	50
DN25, 1"	K 15.8	-	-	1600 ③	-	-	50 ③	-	-	-	85
	K 25.1	480	630	1000	9.5	14	-	32	11	24	72
	K 25.2	820	1000	1600	15	23	-	33	11	24	74
	K 25.3	1200	1600	2500	22	35	-	34	11	25	75
	K 25.4	1700	2500	4000	37	50	110 ②	38	12	26	78
DN50, 2"	K 25.5	3200	4000	6300	62	95	180 ②	45	13	30	103 ④
	K 55.1	2700	6300	8400	58	80	230 ②	74	8	13	60
	K 55.2	3600	10000	14000	77	110	350 ②	77	8	13	69
DN80, 3"	K 55.3	5100	16000	25000	110	150	700 ②	84	9	13	104
	K 85.1	12000	25000	37000	245	350	1000 ②	68	8	16	95
DN100, 4"	K 85.2	16000	40000	64000	280	400	1800 ②	89	9	16	125
	K 105.1	19000	63000	100000	-	500	2800 ②	120	-	-	220

① P > 0.5 bar

② P > 0.5 bar

③ With TR float

④ 300 mbar with damping (gas measurement)



The operating pressure should be at least double the pressure loss for liquids and five times for gases. The indicated pressure losses are valid for water and air at maximum flow rate. Other flow ranges on request. Conversion of other media or operating data is performed using the calculation method in accordance with VDI/VDE Directive 3513.

### Reference condition for gas measurements:

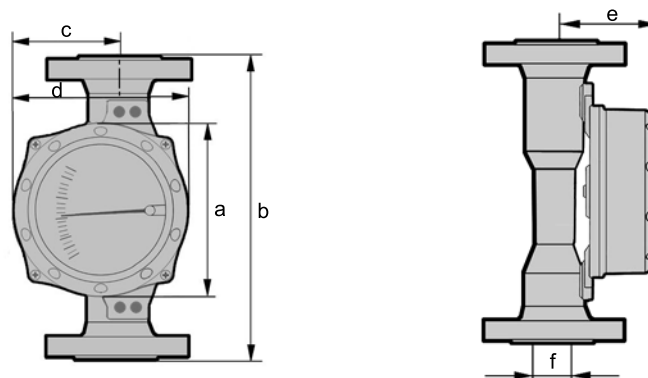
Flow measurements for gases are attributed to

NI/h or Nm<sup>3</sup>/h: Volume current in standard state 0°C -1.013 bar abs. [DIN 1343]

## 2.3 Dimensions and weights

H210/M30, Flange Connection

EN	ASME	a/d		b		c		e		f		Weight kg
		mm	"	mm	"	mm	"	mm	"	mm	"	
DN15	1/2"	141	5.55	250	9.85	85.5	3.37	71	2.79	20	0.79	3.5
DN25	1"					85.5	3.37	83	3.26	32	1.26	5.0
DN50	2"					98.5	3.88	97.5	3.84	65	2.56	8.2
DN80	3"					98.5	3.88	113.5	4.47	89	3.51	12.2
DN100	4"					98.5	3.88	123	4.84	114	4.49	14.0



### 3.1 Intended use

The variable area flowmeters are suitable for measuring gases, vapors and liquids.

- The product may not contain any ferromagnetic particles or solids. It may be necessary to install magnetic filters or mechanical filters.
- The product must be sufficiently liquid and free of deposits.
- Avoid pressure surges and pulsing flows.
- Open valves slowly. Do not use solenoid valves.

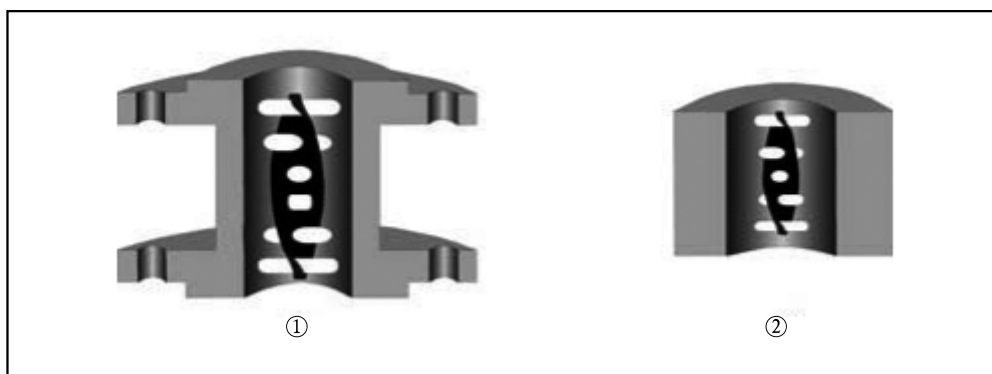
### 3.2 Installation conditions

When installing the device in the piping, the following points must be observed:

- The variable area flowmeter must be installed vertically (measuring principle). Flow direction from bottom to top. For installation recommendations please refer to VDI/VDE 3513 Sheet 3.
- A straight unimpeded inlet run of  $\geq 5x$  DN upstream of the device and a straight outlet run of  $\geq 3x$  DN downstream of the device are recommended.
- Screws, bolts and gaskets are to be provided by the customer and must be selected in accordance with the pressure rating of the connection or the operating pressure.
- The inside diameter of the flange deviates from the standard dimensions. Flange seal standard DIN2690 can be applied without any limitation.
- Align the gaskets. Tighten the nuts with the tightening torques of the appropriate pressure rating.
- Control devices are to be positioned downstream of the measuring device.
- Shutoff devices are preferably to be positioned upstream of the measuring device.
- Before connecting, blow or flush out the pipes leading to the device.
- Pipes for gas flow need to be dried before the device is installed.
- Use connectors suitable for the particular device version.
- Align the pipes axially with the connections on the measuring device so they are free of stresses.
- If necessary, the piping has to be supported to prevent vibrations being transmitted to the measuring device.

#### 3.2.1 Magnetic filters

The use of magnetic filters is recommended when the medium contains particles which can be influenced magnetically. The magnetic filter is to be installed in the flow direction upstream of the flowmeter. Bar magnets are positioned helically in the filter to provide optimal efficiency at low pressure loss. All of the magnets are coated individually with PTFE to protect against corrosion.



① Type F - fitting part with flange - overall length 100 mm

② Type FS - fitting part without flange - overall length 50 mm

**ORDER FORM 5**

Please provide us with the missing information so that we can be of help to you as quickly as possible. Then please fax this page to the appropriate sales associate. We will then contact you as soon as possible.

**Device data**

Connection type:						
Nominal connection size:						
Pressure rating:						
Raised face:						
Material of pipeline:						
Indicator:	<input type="checkbox"/> M30					

**Rating data**

Product:			
Operating pressure:		<input type="checkbox"/> .Absolute pressure	<input type="checkbox"/> Overpressure
Rated pressure:			
Operating temperature:			
Rated temperature:			
Density:		<input type="checkbox"/> .Standard density	<input type="checkbox"/> Operating density
Viscosity:			
Measuring range:			
Comments:			

**Contact data**

Company:	
Contact person:	
Telephone number:	
Fax number:	
E-mail:	

## KROHNE product overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Ultrasonic flowmeters
- Mass flowmeters
- Vortex flowmeters
- Flow controllers
- Level meters
- Temperature meters
- Pressure meters
- Analysis products
- Measuring systems for the oil and gas industry
- Measuring systems for sea-going tankers

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