

ABB MEASUREMENT & ANALYTICS | DATA SHEET

# Sensyflow FMT700-P

## Thermal Mass Flowmeter



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# Measurement made easy

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## Direct mass flow measurement of air

- No additional pressure and temperature compensation required

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## Wide measuring range of 1:40

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## Highest measuring accuracy over the entire range

- Measuring error < 1 % of measured value
- Factory calibration with optional DAkkS certificate

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## Amazingly quick response time < 12 ms

- Detection of rapid load changes on engine test benches

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## Low pressure loss, no moving parts, maintenance-free, no wear

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## Complete system with inlet / outlet sections, flow conditioner and connection parts

- Easy handling, ready for immediate operation, DN 25 to DN 200

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## Separate supply / evaluation unit with display, diagnosis functions and various signal outputs

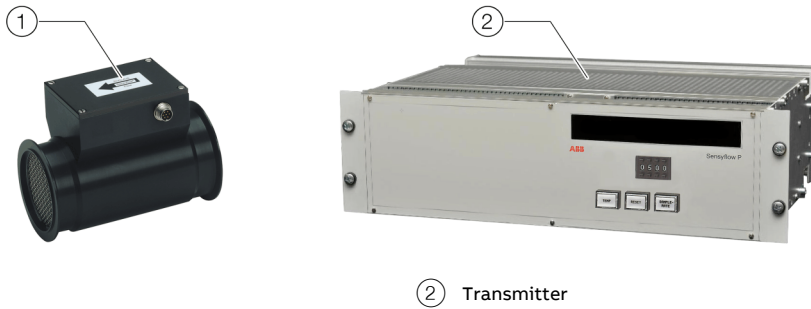
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## Reference system for intake air measurement at the leading automotive manufacturers worldwide

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## Used in quality assurance, test bench applications, research and development

## Overview



① Flowmeter sensor

② Transmitter

Figure 1: FMT700-P designs

Design	Remote mount design
<b>Model number</b>	FMT700-P
<b>Measuring media</b>	Air
<b>Measuring accuracy*</b>	$\leq \pm 1.0\%$ of measured value, repeatability $\leq \pm 0.25\%$ of measured value
<b>Permissible measuring medium temperature <math>T_{\text{medium}}</math></b>	$-25$ to $80\text{ }^{\circ}\text{C}$ ( $-13$ to $176\text{ }^{\circ}\text{F}$ )
<b>Permissible operating pressure</b>	Standard: 2.5 bar abs, optional (only for DN 25): 8 bar abs
<b>Process connections</b>	DN 25: ISO small flange in accordance with DIN 28403 and ISO 2861 DN 50 to 100: Wafer type with raised face
<b>Wetted materials</b>	Anodized aluminum, glass sensor (other materials upon request)
<b>Power supply</b>	115 / 230 V AC, 50 / 60 Hz
<b>IP rating</b>	Sensor: IP 54
<b>NEMA rating</b>	Sensor: NEMA 12
<b>Communication</b>	serial, V24 / RS232C
<b>Outputs in serial production</b>	
Analog outputs	0 to 10 V DC, 0/4 to 20 mA
Digital output	—
Pulse / frequency output	—
<b>Approvals and certificates</b>	Available on <a href="http://abb.com/flow">abb.com/flow</a> or on request

\* The stated measuring accuracy only applies under the calibration conditions in the stated measuring range.

## ... Overview

### Device description

The Sensyflow FMT700-P works in accordance with the measuring principle of a hot-film anemometer. This measurement method allows for direct measurement of the gas mass flow.

Taking into account the standard density of the air, the standard volume flow can be measured without the need for additional pressure and temperature compensation.

#### Flowmeter sensor

The Sensyflow FMT700-P is made up of two components, the flowmeter sensor and the transmitter.

#### Transmitter

The transmitter is available as a 19 inch plug-in version and provides the power supply for the sensor. The transmitter converts the flow-dependent signal of the sensor into flow-linear input signals, among others.

The transmitter with 6-digit display is suited for all flowmeter sensors and automatically identifies the appropriate nominal diameter. Further diagnostic functions allow simple and safe operation.

The measuring rate is adjustable according to measuring velocity or signal damping requirements.

In case of high measuring velocity requirements, the measuring rate can be reduced to 1 ms.

The following functions are optionally available:

- Gas temperature measurement,
- Measured value output as standard volume flow,
- Serial interface,
- Connection for a second sensor.

#### Measuring section

The flowmeter sensor is installed in a measuring section with the help of quick-clamping connectors.

The measuring section itself is made up of sufficiently dimensioned inlet and outlet sections as well as an air filter or flow conditioner.

The flow conditioner can be connected to an air duct, for example, using the connection piece on the suction side.

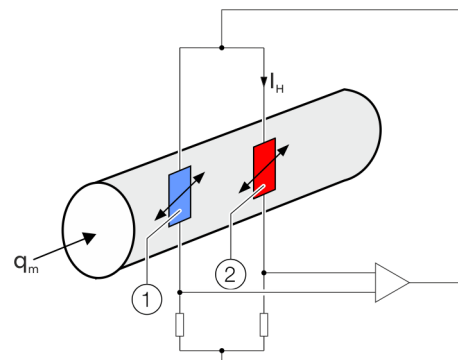
### Measuring principle

Thermal flow metering procedures use different ways to evaluate the flow dependent cooling of a heated resistor as measuring signal.

In a hotfilm anemometer with constant temperature difference control, the heated platinum resistor is maintained at a constant overtemperature in relation to an unheated platinum sensor inside the gas flow.

The heating power required for maintaining the overtemperature depends directly on the flow rate and the material properties of the gas. With a known (and constant) gas composition the mass-flow can be determined by electronically evaluating the heater current / mass-flow curve without additional pressure and temperature compensation.

Together with the standard density of the gas this results directly in the standard volume flow. Considering the high measuring range dynamics up to 1:40, an accuracy levels of less than 1 % of the measuring value are achieved.



- ① Gas temperature measurement resistor       $q_m$  Gas mass current  
 ② Heating resistor       $I_H$  Heater current

Figure 2: Measuring principle (simplified)

The gas flows past two temperature-sensitive resistors, measurement resistor and heating resistor, which are part of an electric bridge circuit. Due to the chosen resistance ratio, the heating resistor is heated by the heating current  $I_H$ .

The measurement resistor adopts the same temperature as the gas. The heating current  $I_H$  is preset by the electronic control circuit to produce a constant temperature difference between the heated resistor and the temperature of the gas.

The electric power generated in the heating resistor precisely compensates its loss of heat to the gas flow. As this loss of heat is dependent on the number of particles which collide with the surface of the heating resistor, the heating current  $I_H$  represents a measure of the mass flow rate.

### Typical applications

Sensyflow FMT700-P for air provide a unique combination of high measuring accuracy, wide measuring range and extremely fast response time. These features especially qualify them for the following application fields:

- Suction air measurements on combustion engines,
- Test benches for turbo chargers,
- Serial testing of flow dependent components like throttle valves, exhaust fans, air filters, etc.
- Quality assurance: Reference device for flowmeters,
- Research and development at universities and institutes.

### Notes for ordering

The measuring system consists of the following components, which must be ordered separately:

1. Flowmeter sensor (meter tube),
2. Transmitter with measured value display,
3. Measuring section with air filter or flow conditioner,
4. Signal cables for connecting the sensor and the supply / evaluation unit.

## Flowmeter sensor



Figure 3: Sensyflow FMT700-P Sensor

### Measuring accuracy

#### Note

When using the flowmeter sensor with a measuring section other than the ABB measuring section or with no measuring section at all, the specified measuring accuracy cannot be guaranteed.

#### Measured error

< ±1 % of measured value

#### Repeatability

< ±0.25 % of measured value

#### Effect of the measuring medium temperature

< 0.03 % of measured value per Kelvin

#### Effect of the measuring medium pressure

< 0.2 % / 100 kPa (/ bar) of measured value

#### Effect of the measuring medium humidity

A change in the relative humidity of the measuring medium to the relative humidity of the calibration medium has an effect on the measurement result. In technical terms, the change of humidity constitutes a change in the composition of the measuring medium. An increase in the relative humidity as compared to the calibration medium results in a positive deviation of the measured value, while reduced relative humidity in a negative deviation.

The magnitude of the deviation depends on the relative humidity in conjunction with the temperature of the measuring medium.

#### Response time

$T_{63} = 12 \text{ ms}$

## ... Flowmeter sensor

### Ambient conditions

Storage temperature range  
-25 to 85 °C (-13 to 185 °F)

### Ambient temperature

#### Flowmeter sensor

Standard: -25 to 80 °C (-13 to 176 °F)

Optional\*: -45 to 55 °C (-49 to 131 °F)

\* Low temperature design available upon request

#### Transmitter

-25 to 50 °C (-13 to 122 °F)

### Measured medium temperature

-25 to 80 °C (-13 to 176 °F)

### IP rating

in accordance with EN 60529: IP 54

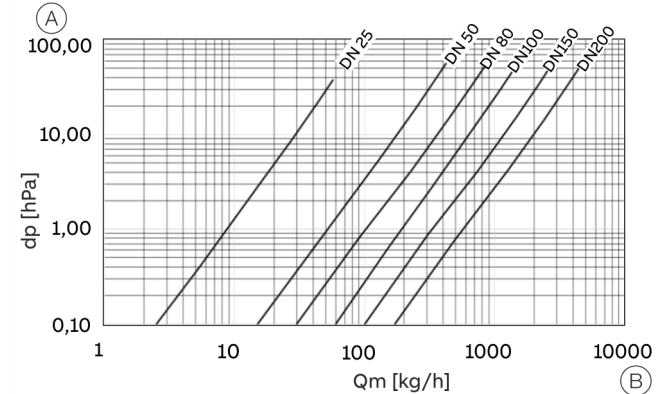
### NEMA IP rating

in accordance with NEMA 12

### Operating pressure

Operating pressure  $P_{\text{medium}}$   
0.6 to  $2.5 \times 10^2$  kPa (2.5 bar abs)

### Pressure loss sensor

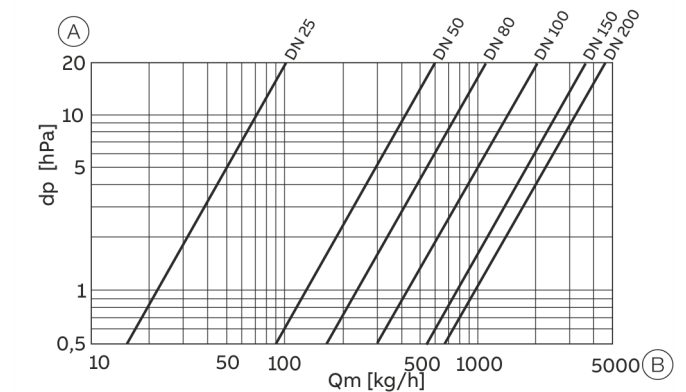


(A) Pressure drop  $dp$  [hPa]

(B) Mass flow  $Q_m$  [kg/h]

Figure 4: Pressure loss sensor

### Air filter pressure loss (open)

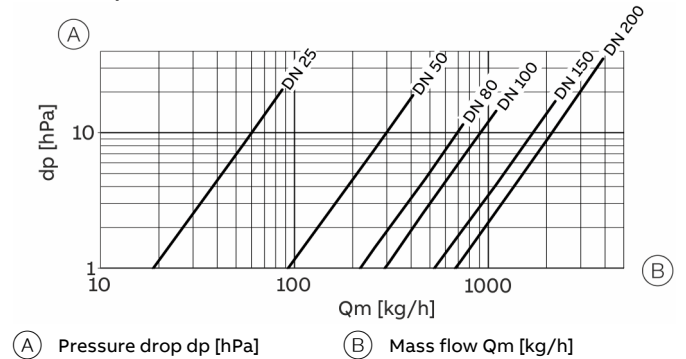


(A) Pressure drop  $dp$  [hPa]

(B) Mass flow  $Q_m$  [kg/h]

Figure 5: Air filter pressure loss (open)

### Air filter pressure loss (closed)



(A) Pressure drop  $dp$  [hPa]

(B) Mass flow  $Q_m$  [kg/h]

Figure 6: Flow conditioner / air filter pressure loss (closed)

## Measuring range table

### Standard measuring ranges

Reference values are given for applications with air under atmospheric conditions.

The values in brackets indicate the low limit of the measuring range for which the measured value accuracy indicated is specified.

Nominal diameter	Meas. range
DN 25	0 (1) to 60 kg/h
DN 50	0 (10) to 400 kg/h
DN 80	0 (20) to 720 kg/h
DN 100	0 (40) to 1200 kg/h
DN 150	0 (80) to 2400 kg/h
DN 200	0 (200) to 4000 kg/h

### Units of mass / standard volume

The possible units and measuring range upper limits for the respective nominal diameters are listed in the following table. The standard unit is **kg/h**.

Unit	DN 25	DN 50	DN 80	DN 100	DN 150	DN 200
kg/h	60	400	720	1200	2400	4000
g/s	15	100	180	300	600	1000
Nm <sup>3</sup> /h*	45	300	540	900	1800	3000
Nm <sup>3</sup> /h**	50	333.3	600	1000	2000	3333
NI/s*	12	80	144	240	480	800
NI/s**	13.5	90	162	270	540	900
NI/min*	750	5000	9000	15000	30000	—

\* Reference temperature 0 °C

\*\* Reference temperature 20 °C

Using the '**UNIT-SELECT**' switch on the transmitter, you can switch from the standard unit to a second unit. The second unit is defined through the '**Second Display Unit**' order code when ordering the device.

## Process connections

Quick-clamping pipe flange, aluminum with quick clamping chains / quick-clamping rings.

## Materials

### Sensor

Aluminum, black anodized

### Measuring section

DN 25 to 100: Aluminum, black anodized

DN 150 to 200: stainless steel

## Installation conditions

To achieve the provided measuring accuracy, the sensor needs to be installed in the available ABB measuring sections.

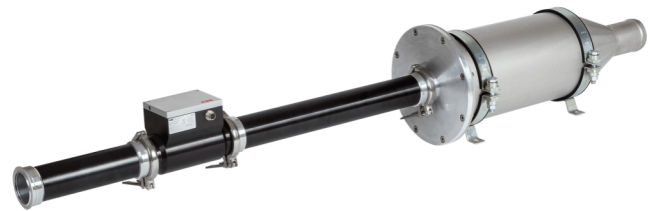


Figure 7: Standard measuring sections

The use of an ABB measuring section with an uninterrupted inlet section of  $10 \times D^*$  and an outlet section of  $5 \times D^*$  in connection with an air filter or flow conditioner complies with the calibration set and ensures measuring accuracy.

Separate components of the measuring sections are also available in the accessory product range.

\* D = Piping diameter

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## Transmitter



Figure 8: FMT700-P Transmitter

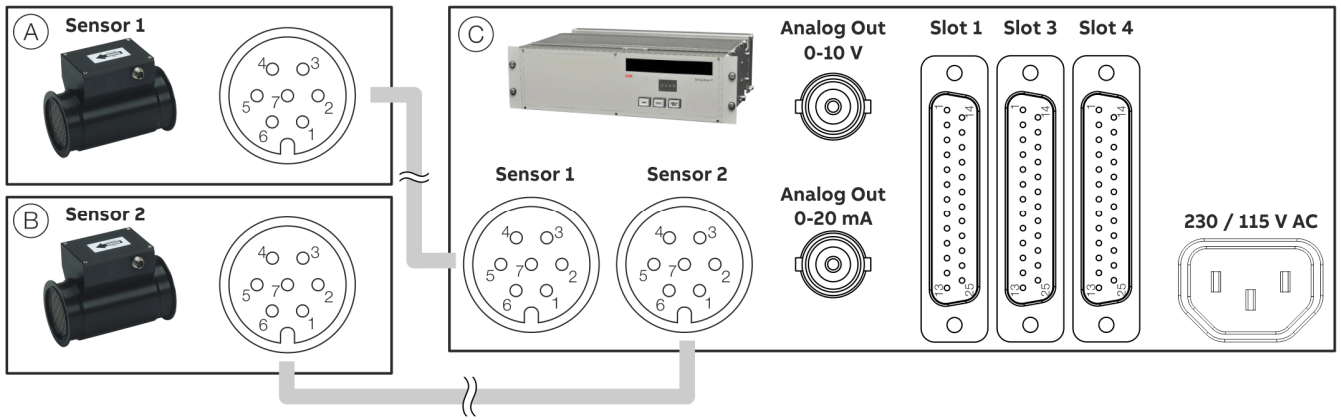
## General information

### Features

- 0 (4) to 20 mA current output
- 0 to 10 V analog output
- RS 232 serial interface
- Output for totalizing measurement
- Adjustable measuring rate
- Can be switched to second unit
- Connection of up to two flowmeter sensors
- LED display(6-character)



### Electrical connections



- (A) Sensor 1
- (B) Sensor 2

- (C) Transmitter

Figure 9: FMT700-P electrical connection

#### Connections for the power supply

Transmitter	
L, N, PE	Via grounded instrument connector

#### Connection of the signal cable for sensor 1 / 2

Only for remote mount design.

Connector pin	Function / comments
1	Temperature signal
2	Flow signal
3	Power supply sensor
4	Coding of the sensor 2 <sup>0</sup>
5	Coding of the sensor 2 <sup>1</sup>
6	Coding of the sensor 2 <sup>2</sup>
7	Coding of the sensor 2 <sup>3</sup>

#### Connections for the outputs

Analog output via BNC connector	
<b>Voltage output 0 to 10 V</b>	
Pin: Signal (+) / Shield: GND	
<b>Current output 0 to 20 mA</b>	
Pin: Signal (+) / Shield: GND	
SLOT 1: Serial output (D-Sub 25 female connector)	
Pin	Description / function
2	RS 232C TxD – transmi data
3	RS 232C RxD – receive data
7	GND

## ... Transmitter

### SLOT 3: Totalizing measurement (D-Sub 25 female connector)

Pin	Description / function
1	2 <sup>0</sup> (Least significant Bit)
2	2 <sup>1</sup>
3	2 <sup>2</sup>
4	2 <sup>3</sup>
5	2 <sup>4</sup>
6	2 <sup>5</sup>
7	2 <sup>6</sup>
8	2 <sup>7</sup>
9	2 <sup>8</sup>
10	2 <sup>9</sup>
11	2 <sup>10</sup>
12	2 <sup>11</sup>
13	2 <sup>12</sup>
14	2 <sup>13</sup>
15	2 <sup>14</sup> (Most significant Bit)
23	Measurement Start / Stop (REMOTE-CTRL)
24	U <sub>ext</sub> Power supply for external wiring
25	GND for external wiring

### SLOT 4: Analog outputs / coding (D-Sub 25 female connector)

Pin	Description / function
1	GND
2	Current output 0 to 20 mA, signal (+)
3	Voltage output 0 to 10 V, signal (+)
4	Digital output coding sensor
5	Digital output coding nominal diameter
6	Digital output coding nominal diameter
7	Digital output coding free
8	Digital output coding free
11	Temperature sensor 1, signal (+)
12	Temperature sensor 2, signal (+)
13	GND for external wiring
14	Current output 0 to 20 mA, GND
15	Voltage output 0 to 10 V, GND
16	GND
17	Digital output coding sensor
18	Digital output coding nominal diameter
19	Digital output coding nominal diameter
20	Digital output coding free
21	Digital output coding free
24	Temperature sensor 1, signal (-)
25	Temperature sensor 2, signal (-)

### Nominal diameter and sensor coding

The digital outputs for coding provide the following information in binary coded form:

- Nominal diameter of the sensor
- Number (1 / 2) of the active sensor
- Measuring medium temperature (1 / 2) of the active sensor

SLOT 4:	Pin 5	Pin 18	Pin 6	Pin 19	Hex
No sensor	0	0	0	0	00
DN 25	1	1	0	0	30
DN 50	1	0	1	0	50
DN 80	1	1	1	0	70
DN 100	1	0	0	1	90
DN 150	1	1	0	1	B0
DN 200	1	0	1	1	D0
Special	1	1	1	1	F0

SLOT 4:	Pin 4	Pin 17
Sensor 1	1	1
Sensor 2	1	0
Medium temperature sensor 1	0	1
Medium temperature sensor 2	0	

**Electrical data for inputs and outputs**

**Power supply**

Transmitter	
Connection	Grounded instrument connector (L, N, PE)
Operating voltage	230 / 115 V AC, 50 / 60 Hz
Power consumption	38 W (transmitter) 10 W (sensor)

**Analog outputs / digital coding – Slot4**

Current output	Active
Connection	BNC connector, D-Sub 25 female connector (Slot 4, Pin 2 / 14)
Current output	0 (4) to 20 mA
Load $R_B$	< 500 $\Omega$

Voltage output	Active
Connection	BNC connector, D-Sub 25 female connector (Slot 4, Pin 3 / 15)
Voltage output	0 to 10 V DC
$I_{max}$	< 1 mA

Temperature signal	Active
Connection	D-Sub 25 female connector (Slot 4, Pin 11 / 24, Pin 12 / 25)
Voltage output	0 to 10 V DC
$I_{max}$	< 1 mA

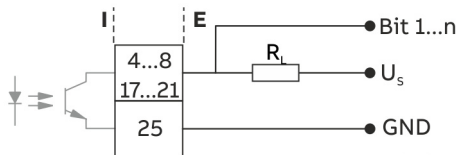
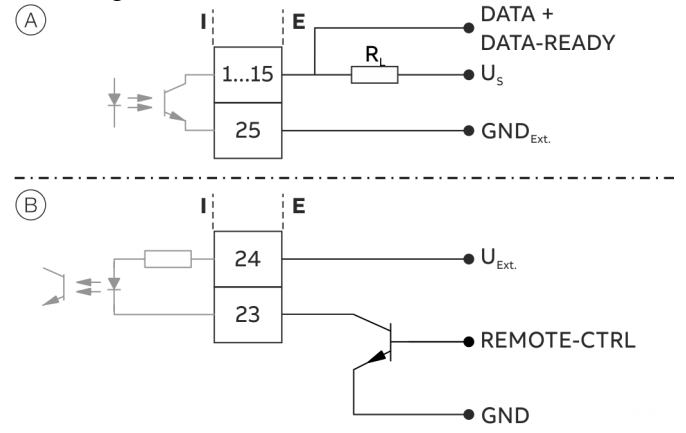


Figure 10: Wiring of the coding outputs (I = internal, E = external)

Coding outputs	Slot 4
Connection	D-Sub 25 female connector (Slot 4, Pin 4 to 8, Pin 17 to 21)
Pin assignment	See table <b>SLOT 4: Analog outputs / coding (D-Sub 25 female connector)</b> on page 10.
Type	Open collector
Voltage $U_S$	5 to 24 V DC
Load resistance $R_L$	> 2 k $\Omega$
Logical level '0'	Corresponds to $U_S$
Logical level '1'	e.g. approx. 0.8 V (at +15 V $U_S$ ; negative logic)

**Totalizing measurement – Slot 3**



(A) Digital outputs  $2^0$  to  $2^{14}$  (B) Digital input REMOTE-CTRL

Figure 11: Wiring of the coding inputs/outputs (I = internal, E = external)

Digital outputs	Slot 3
Connection	D-Sub 25 female connector (Slot 3)
Pin assignment	See table <b>SLOT 3: Totalizing measurement (D-Sub 25 female connector)</b> on page 10.
Type	Open collector
Voltage $U_S$	5 to 24 V DC
Load resistance $R_L$	> 2 k $\Omega$
Logical level '0'	Corresponds to $U_S$
Logical level '1'	e.g. approx. 0.8 V (at +15 V $U_S$ ; negative logic)

Digital input	Slot 3
Connection	D-Sub 25 female connector (Slot 3)
Pin assignment	See table <b>SLOT 3: Totalizing measurement (D-Sub 25 female connector)</b> on page 10.
Type	Optocoupler
Function	Start / stop measurement
Voltage $U_{Ext.}$	5 to 24 V DC

## Dimensions

### Sensor

#### Sensyflow FMT700-P, DN 25

All specified dimensions and weights are in mm (in) or kg (lb).

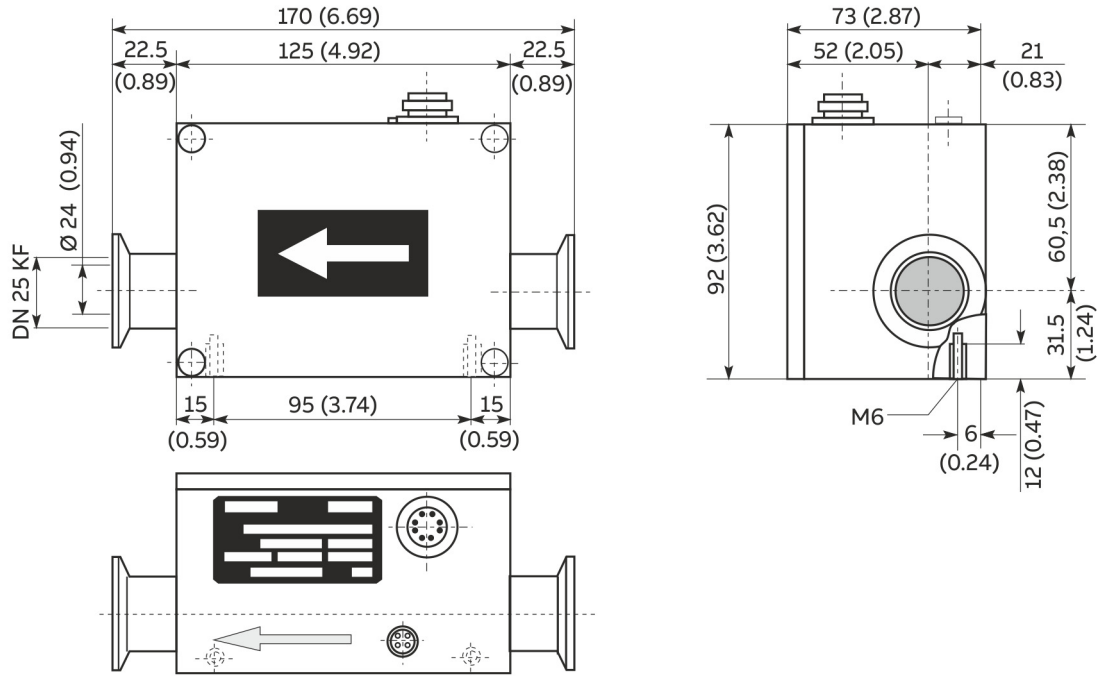


Figure 12: Dimensions

Nominal diameter	Weight
DN 25	1.1 (2.4)

**Sensyflow FMT700-P, DN 50 to DN 200**

All specified dimensions and weights are in mm (in) or kg (lb).

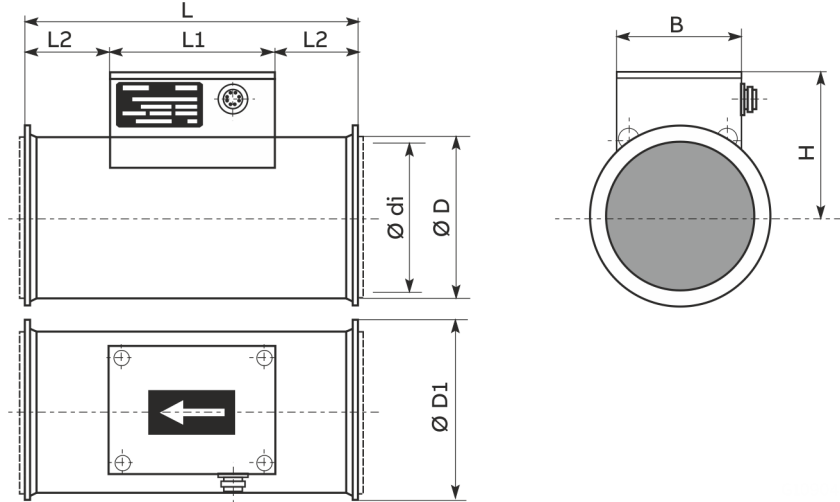
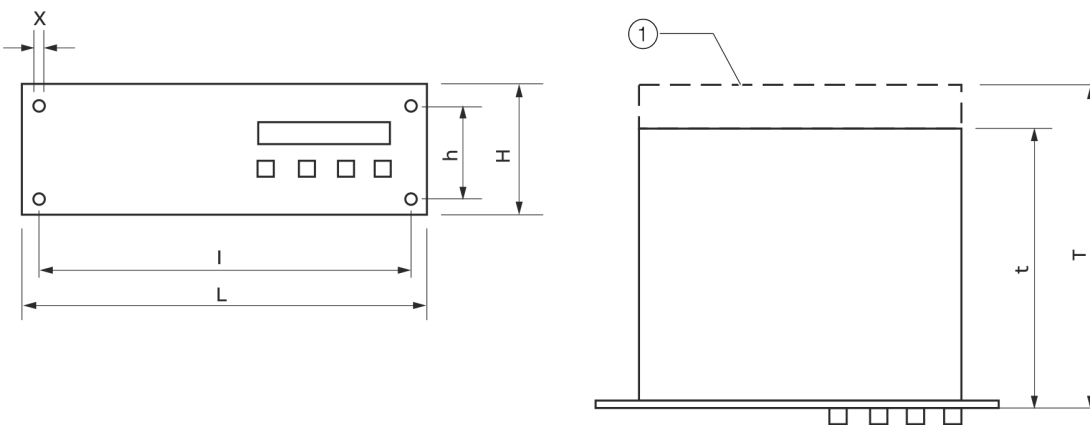


Figure 13: Sensor DN 50 to DN 200

DN	Ø D	Ø D1	Ø di	L	L1	L2	B	H	Weight
50	64 (2.52)	80.0 (3.15)	58 (2.28)	184 (7.24)	125 (4.92)	29.5 (1.16)	92 (3.62)	88.0 (3.46)	2 (4.1)
80	89 (3.50)	108.5 (4.27)	80 (3.15)	189 (7.44)		32.0 (1.26)		98.5 (3.88)	2.3 (5.1)
100	118 (4.65)	132.5 (5.22)	110 (4.33)	254 (10.00)		64.5 (2.54)		114.0 (4.49)	3.1 (6.8)
150	158 (6.22)	180.0 (7.09)	153 (6.02)	280 (11.02)		77.5 (3.05)		136.0 (5.35)	4.3 (9.5)
200	205.6 (8.09)	240.0 (9.45)	200 (8)	330 (12.99)		102.5 (4.04)		161.5 (6.36)	7.9 (17.42)

**Transmitter**

All dimensions and weights are specified in mm (in) or kg (lb).



① Space for wiring

Figure 14: Transmitter in 19 inch plug-in unit

L	I	H	h	T	t	X	Weight
483 (19.0)	462 (18.2)	132 (5.2)	58 (2.3)	425 (16.7)	325 (12.8)	M6	9.0 (19.8)

Installation cut-out: 450 × 131 mm (17.72 × 5.16 in)

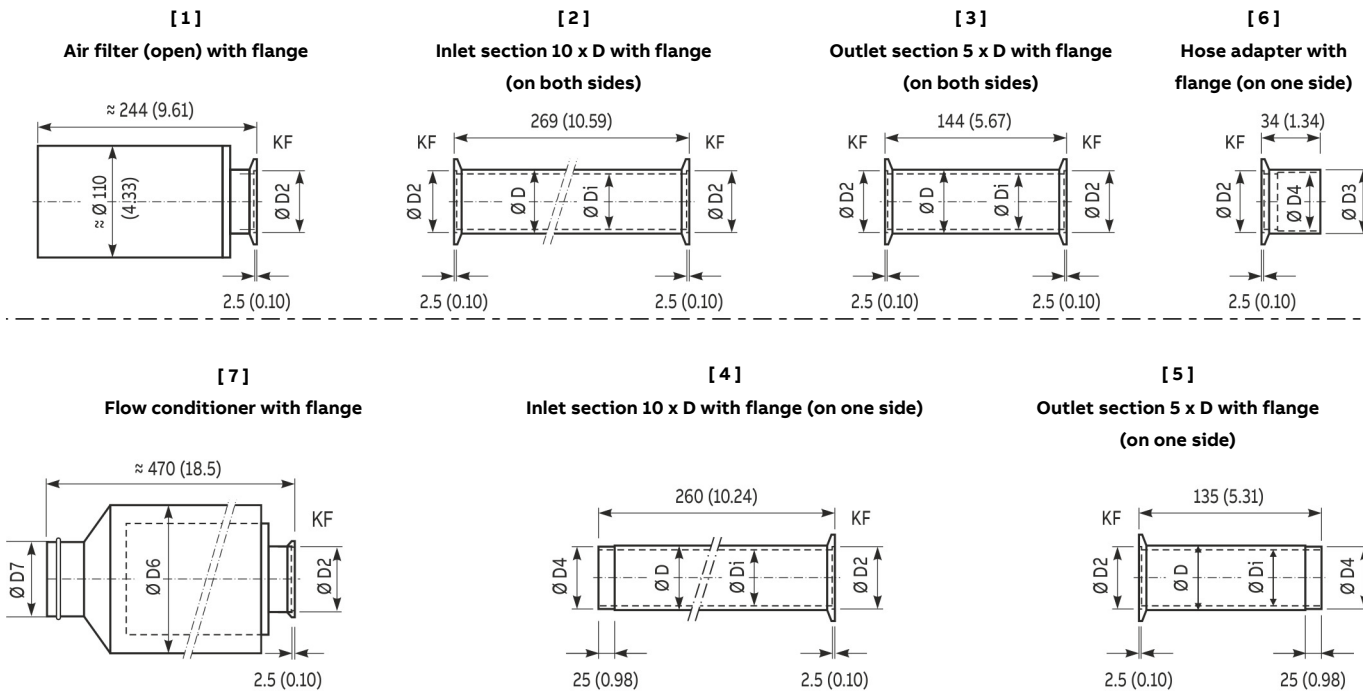
## ... Dimensions

### Accessories

#### DN 25 components

All dimensions specified in mm (in). The numbers (e.g. [ 1 ]) of the components correspond to the markings on the in the ordering information, see **Accessories** on page 23.

KF = ISO-KF flange (ISO small flange) / ZWF = wafer type (with raised face)



#### Standard measuring section

##### Measuring section 3

(including flow conditioner, closed filter)

##### Alternative measuring section 1

(concealed shown with a dashed line, including open filter, filter cartridge only)

Including the required flanges and clamping rings / clamping chains

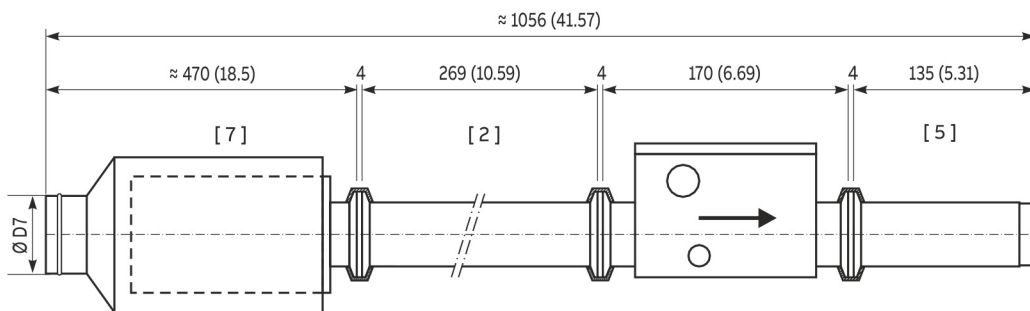


Figure 1: Component dimensions DN 25

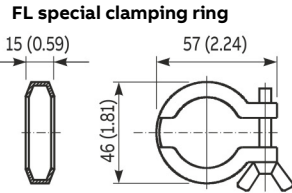
DN	Ø D	Ø D2	Ø D3	Ø D4	Ø D6	Ø D7	Ø Di
25	32 (1.26)	26.1 (1.03)	30 (1.18)	27 (1.06)	Approx. 150 (5.91)	78 (3.07)	24 (0.94)

KF = ISO-KF flange (ISO small flange) / ZWF = wafer type (with raised face)

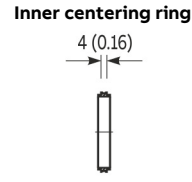
[ 12 ]  
O-ring



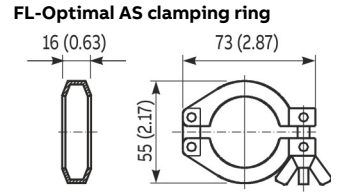
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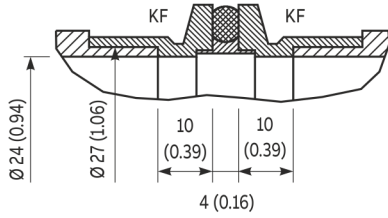


[ 14 ]



[ 6 ][ 11 ] / [ 12 ][ 6 ]

Sectional detail pipe connection (without clamping ring)



Individual planning

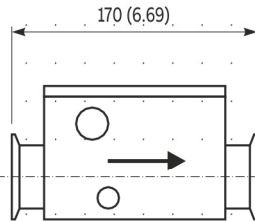


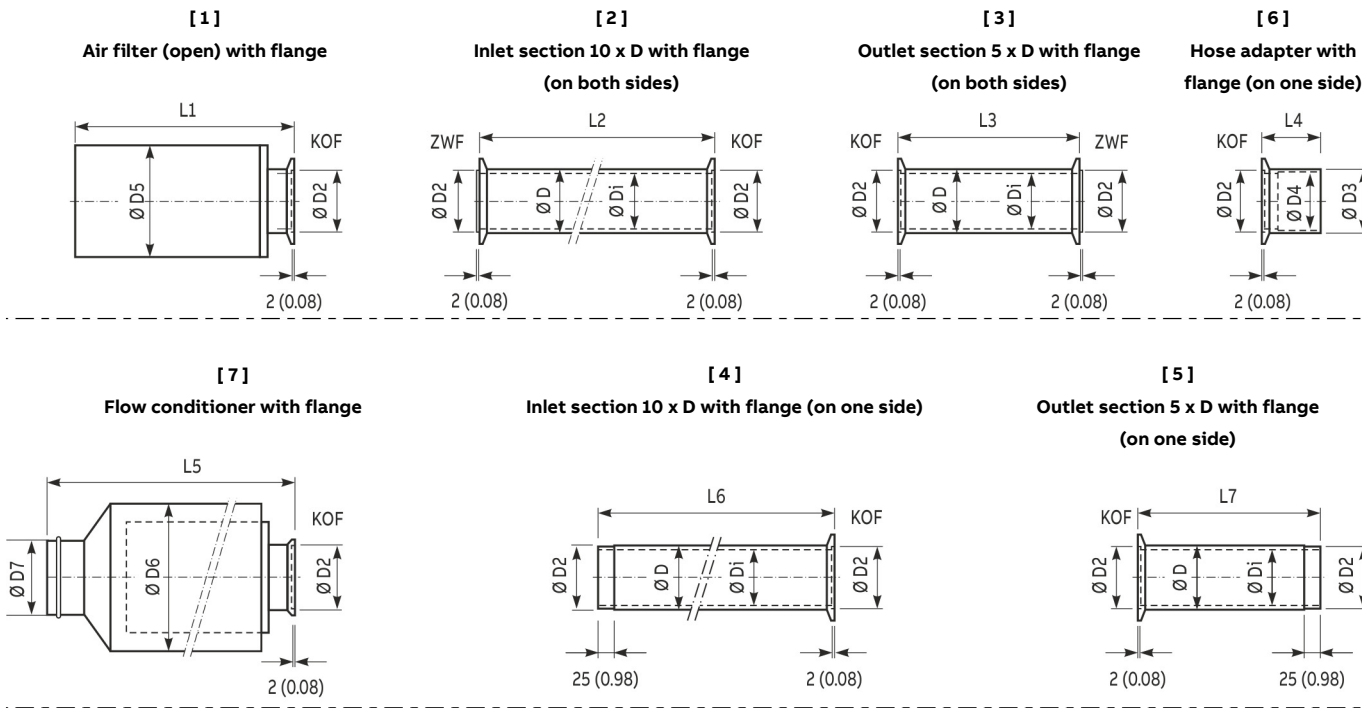
Figure 2: Accessory dimensions DN 25

## ... Dimensions

### Components DN 50 to DN 100

All dimensions specified in mm (in). The numbers (e.g. [ 1 ]) of the components correspond to the markings on the in the ordering information, see **Accessories** on page 23.

KOF = Tapered flange (with raised face and groove for O-ring) / ZWF = Wafer type (with recessed face)



### Standard measuring section

#### Measuring section 3

(including flow conditioner, closed filter)

#### Alternative measuring section 1

(concealed shown with a dashed line, including open filter, filter cartridge only)

Including the required flanges and clamping rings / clamping chains

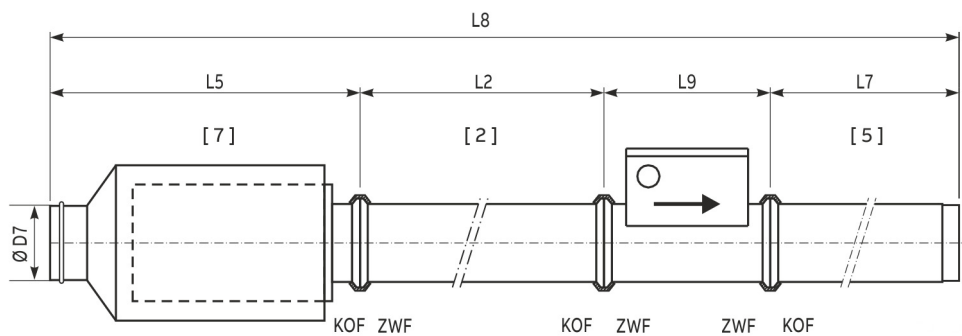


Figure 3: Component dimensions DN 50 to DN 100

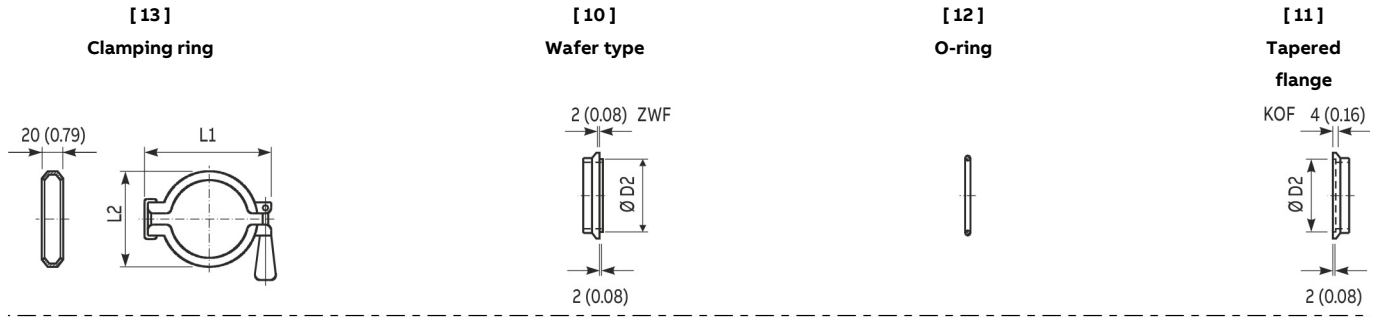
DN	L1	L2	L3	L4	L5	L6	L7	L8	L9
50	Approx. 356 (14.02)	506 (19.92)	256 (10.08)	50 (1.97)	Approx. 660 (25.98)	504 (19.84)	254 (10.00)	Approx. 1600 (62.99)	184 (7.24)
80	Approx. 401 (15.79)	806 (31.73)	406 (15.98)	80 (3.15)	Approx. 740 (29.13)	804 (31.65)	404 (15.91)	Approx. 2140 (84.25)	189 (7.44)
100	Approx. 526 (20.71)	1006 (39.61)	506 (19.92)	100 (3.94)	Approx. 840 (33.07)	1004 (39.53)	504 (19.84)	Approx. 2610 (102.76)	254 (10.00)

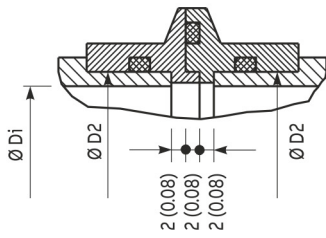
DN	Ø D	Ø D2	Ø D3	Ø D4	Ø D5	Ø D6	Ø D7	Ø Di
50	66 (2.60)	64 (2.52)	70 (2.76)	60 (2.36)	Approx. 150 (5.91)	Approx. 200 (7.87)	78 (3.07)	58 (2.28)
80	91 (3.58)	89 (3.50)	95 (3.74)	85 (3.35)	Approx. 200 (7.87)	Approx. 250 (9.84)	98 (3.86)	80 (3.15)
100	119 (4.69)	118 (4.65)	122 (4.80)	114 (4.49)	Approx. 240 (9.45)	Approx. 300 (11.81)	148 (5.83)	110 (4.33)



KOF = Tapered flange (with raised face and groove for O-ring) / ZWF = Wafer type (with recessed face)



**[10] [12] [11]**  
**Sectional detail pipe connection (without clamping ring)**



**Individual planning**

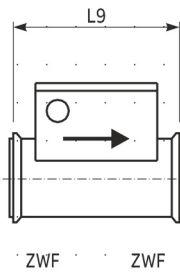


Figure 4: Accessory dimensions DN 50 to DN 100

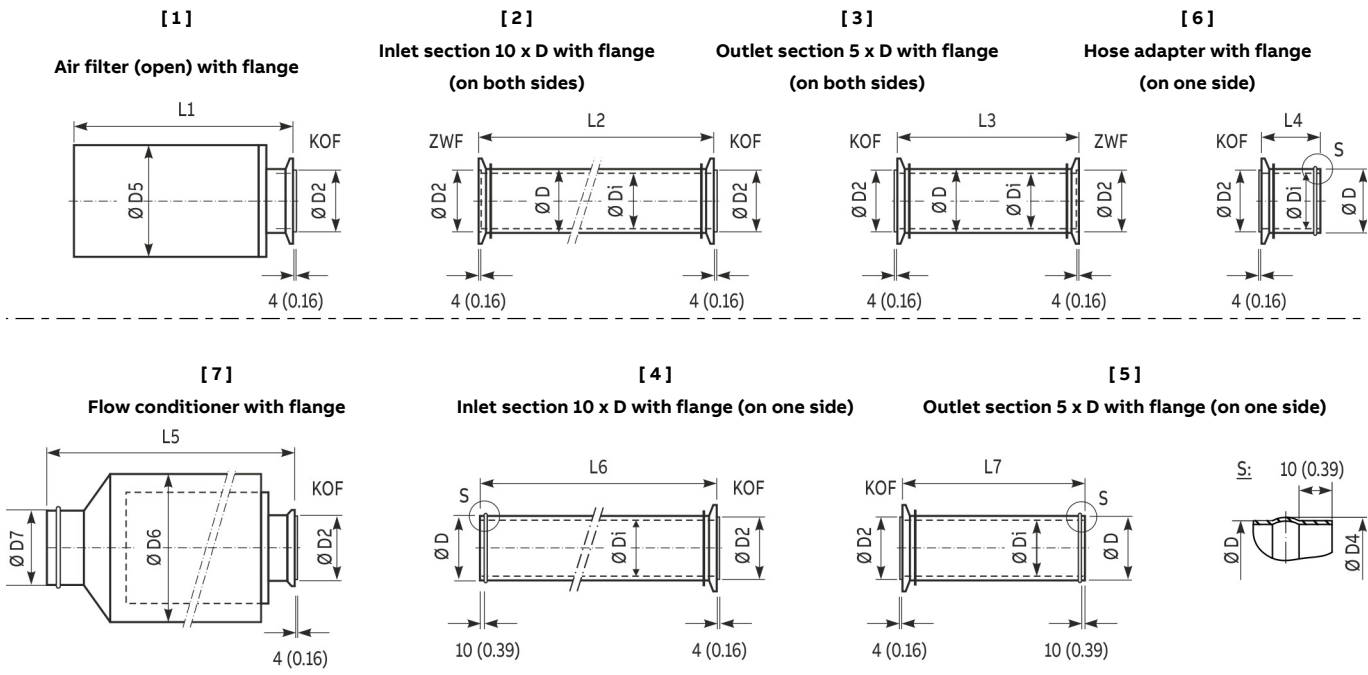
DN	L1	L2	L9	Ø D2	Ø Di
50	102 (4.02)	72 (2.83)	184 (7.24)	64 (2.52)	58 (2.28)
80	145 (5.71)	114 (4.49)	189 (7.44)	89 (3.50)	80 (3.15)
100	158 (6.22)	127 (5.00)	254 (10.00)	118 (4.65)	110 (4.33)

## ... Dimensions

### Components DN 150 to DN 200

All dimensions specified in mm (in). The numbers (e.g. [ 1 ]) of the components correspond to the markings on the in the ordering information, see **Accessories** on page 23.

KF = Tapered flange (with raised face and groove for O-ring) / ZWF = Wafer type (with recessed face)



### Standard measuring section

#### Measuring section 3

(including flow conditioner, closed filter)

#### Alternative measuring section 1

(concealed shown with a dashed line, including open filter, filter cartridge only)

Including the required flanges and clamping rings / clamping chains

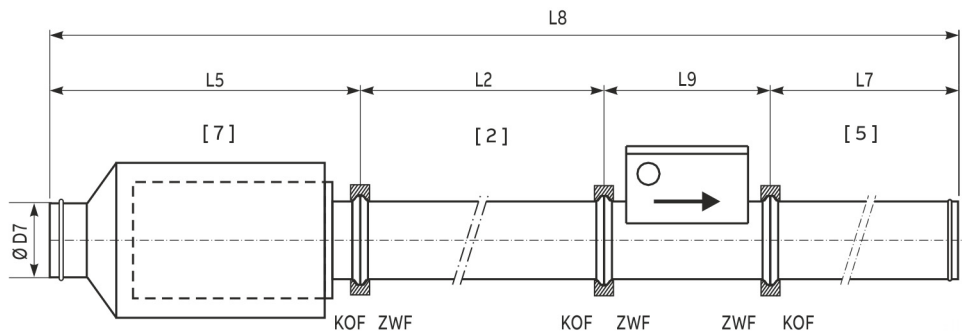


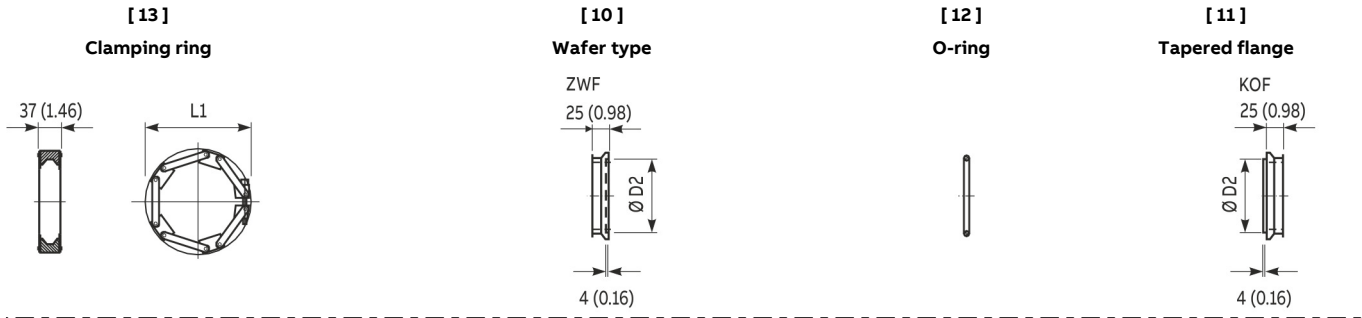
Figure 5: Component dimensions DN 150 to DN 200

DN	L1	L2	L3	L4	L5	L6	L7	L8	L9
150	Approx. 513 (20.20)	1518 (59.76)	768 (30.24)	159 (6.26)	Approx. 900 (35.43)	1509 (59.41)	759 (29.88)	Approx. 3460 (136.22)	280 (11.02)
200	Approx. 513 (20.20)	2018 (79.49)	1018 (40.08)	159 (6.26)	Approx. 850 (33.46)	2009 (79.09)	1018 (40.08)	Approx. 4220 (166.14)	330 (12.99)

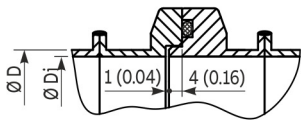
  

DN	Ø D	Ø D2	Ø D4	Ø D5	Ø D6	Ø D7	Ø Di
150	151 (5.94)	158 (6.22)	153 (6.02)	Approx. 300 (11.81)	Approx. 355 (13.98)	198 (7.80)	149 (5.87)
200	201,5 (7.93)	205 (8.07)	204 (8.03)	Approx. 300 (11.81)	Approx. 355 (13.98)	248 (9.76)	199 (7.83)

KOF = Tapered flange (with raised face and groove for O-ring) / ZWF = Wafer type (with recessed face)



**[10][12][11]**  
**Sectional detail pipe connection (without clamping ring)**



**Individual planning**

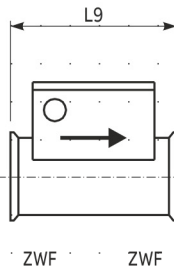


Figure 6: Accessory dimensions DN 150 to DN 200

DN	L1	L2	L9	Ø D2	Ø Di
150	Approx. 220 (8.66)	280 (11.02)	151 (5.94)	149 (5.87)	Approx. 220 (8.66)
200	Approx. 280 (11.02)	330 (12.99)	202 (7.95)	200 (7.87)	Approx. 280 (11.02)

## Ordering Information

### Sensyflow FMT700-P – transmitter

Basic model							
Sensyflow FMT700-P Thermal Mass Flowmeter, supply / evaluation unit	V14243	X	X	X	X	X	XX
<b>Number of Connectable Sensors</b>							
1 sensor		1					
2 sensors, 'stand by' power supply, fast sensor switching possible		2					
<b>Design</b>							
19 in desktop housing			1*				
½ 19 in desktop housing			2**				
<b>Power supply</b>							
230 V AC				1			
115 V AC				2			
<b>Digital Interface</b>							
Without					0		
V24 / RS 232 C, serial					1		
<b>Operating Mode</b>							
Standard						0	
Totalizer						1***	
<b>Output Signal</b>							
0 to 10 V							10
0 to 10 V and 0 to 20 mA							40
0 to 10 V and 4 to 20 mA							50

\* Weight 7.0 kg (15.4 lb)

\*\* Weight 7.3 kg (16.1 lb)

\*\*\* Only with V24 / RS 232 C interface

**Additional ordering information**

<b>Sensyflow FMT700-P</b>	<b>XXX</b>	<b>XXX</b>	<b>XX</b>
Sensyflow FMT700-P Thermal Mass Flowmeter, supply / evaluation unit			
<b>Second Display Unit</b>			
Switchable to g/s	401		
Switchable to Nm <sup>3</sup> /h, at 0 °C (32 °F) and 1013 mbar (101.3 kPa / 14.69 psi)	402		
Switchable to Nm <sup>3</sup> /h, at 20 °C (68 °F) and 1013 mbar (101.3 kPa / 14.69 psi)	403		
Switchable to NI/s, at 0 °C (32 °F) and 1013 mbar (101.3 kPa / 14.69 psi)	404		
Switchable to NI/s, at 20 °C (68 °F) and 1013 mbar (101.3 kPa / 14.69 psi)	405		
Switchable to NI/min, at 0 °C (32 °F) and 1013 mbar (101.3 kPa / 14.69 psi)	406		
<b>Temperature Display</b>			
For 1 sensor		411	
For 2 sensors		412	
<b>Language of Documentation</b>			
German			M1
Spanish			M2
French			M3
English			M4

**Preferred version**

<b>Description</b>	<b>Order code</b>
FMT700-P supply / evaluation unit, for 1 sensor, 19 in plug-in housing, preferred version, completely configured	7964113
FMT700-P supply / evaluation unit, for 1 sensor, ½ 19 in desktop housing, preferred version, completely configured	7964114

## ... Ordering Information

### Sensyflow FMT700-P – sensor

Description	Order code
FMT700-P Thermal Mass Flowmeter Sensor, standard characteristic curve, for air, test benches, nominal diameter DN 25, measuring range 0 to 60 kg/h	7962633
FMT700-P Thermal Mass Flowmeter Sensor, standard characteristic curve, for air, test benches, nominal diameter DN 50, measuring range 0 to 400 kg/h	7962634
FMT700-P Thermal Mass Flowmeter Sensor, standard characteristic curve, for air, test benches, nominal diameter DN 80, measuring range 0 to 720 kg/h	7962635
FMT700-P Thermal Mass Flowmeter Sensor, standard characteristic curve, for air, test benches, nominal diameter DN 100, measuring range 0 to 1200 kg/h	7962636
FMT700-P Thermal Mass Flowmeter Sensor, standard characteristic curve, for air, test benches, nominal diameter DN 150, measuring range 0 to 2400 kg/h	7962637
FMT700-P Thermal Mass Flowmeter Sensor, standard characteristic curve, for air, test benches, nominal diameter DN 200, measuring range 0 to 4000 kg/h	7962638
FMT700-P Thermal Mass Flowmeter Sensor, special characteristic curve, for air, test benches, nominal diameter DN 25	7962639
FMT700-P Thermal Mass Flowmeter Sensor, special characteristic curve, for air, test benches, nominal diameter DN 50	7962640
FMT700-P Thermal Mass Flowmeter Sensor, special characteristic curve, for air, test benches, nominal diameter DN 80	7962641
FMT700-P Thermal Mass Flowmeter Sensor, special characteristic curve, for air, test benches, nominal diameter DN 100	7962642
FMT700-P Thermal Mass Flowmeter Sensor, special characteristic curve, for air, test benches, nominal diameter DN 150	7962643
FMT700-P Thermal Mass Flowmeter Sensor, special characteristic curve, for air, test benches, nominal diameter DN 200	7962644

## Accessories

The numbers (e.g. [ 1 ]) of the components correspond to the identification of the components in **Dimensions** on page 12.

Description	Order code
<b>FMT700-P Measuring section</b>	
FMT700-P measuring section 1, nominal diameter DN 25	7962645
FMT700-P measuring section 1, nominal diameter DN 50	7962646
FMT700-P measuring section 1, nominal diameter DN 80	7962647
FMT700-P measuring section 1, nominal diameter DN 100	7962648
FMT700-P measuring section 1, nominal diameter DN 150	7962649
FMT700-P measuring section 1, nominal diameter DN 200	7962650
FMT700-P measuring section 3, nominal diameter DN 25, suction side DN 60	7964107
FMT700-P measuring section 3, nominal diameter DN 50, suction side DN 80	7964108
FMT700-P measuring section 3, nominal diameter DN 80, suction side DN 100	7964109
FMT700-P measuring section 3, nominal diameter DN 100, suction side DN 150	7964110
FMT700-P measuring section 3, nominal diameter DN 150, suction side DN 200	7964111
FMT700-P measuring section 3, nominal diameter DN 200, suction side DN 250	7964112
<b>Signal cable for remote mount design</b>	
FMT700-P sensor cable, length 3 m	7962693
FMT700-P sensor cable, length 8 m	7962694
FMT700-P sensor cable, length 15 m	7962695
FMT700-P sensor cable, length 30 m	7962696
<b>FMT700-P Air filter [ 1 ]</b>	
FMT700-P air filter (open) with flange, nominal diameter DN 25	7962657
FMT700-P air filter (open) with flange, nominal diameter DN 50	7962658
FMT700-P air filter (open) with flange, nominal diameter DN 80	7962659
FMT700-P air filter (open) with flange, nominal diameter DN 100	7962660
FMT700-P air filter (open) with flange, nominal diameter DN 150	7962661
FMT700-P air filter (open) with flange, nominal diameter DN 200	7962662
<b>FMT700-P Flow conditioner [ 7 ]</b>	
FMT700-P flow conditioner with flange, nominal diameter DN 25, suction side DN 60, leak-proof	7964101
FMT700-P flow conditioner with flange, nominal diameter DN 50, suction side DN 80, leak-proof	7964102
FMT700-P flow conditioner with flange, nominal diameter DN 80, suction side DN 100, leak-proof	7964103
FMT700-P flow conditioner with flange, nominal diameter DN 100, suction side DN 150, leak-proof	7964104
FMT700-P flow conditioner with flange, nominal diameter DN 150, suction side DN 200, leak-proof	7964105
<b>FMT700-P Inlet section [ 2 ]</b>	
FMT700-P inlet section 10 × D, nominal diameter DN 25, 2 ISO KF flanges, 1 clamping ring	7962663
FMT700-P inlet section 10 × D, nominal diameter DN 50, 1 tapered flange, 1 intermediate flange, 1 clamping ring	7962664
FMT700-P inlet section 10 × D, nominal diameter DN 80, 1 tapered flange, 1 intermediate flange, 1 clamping ring	7962665
FMT700-P inlet section 10 × D, nominal diameter DN 100, 1 tapered flange, 1 intermediate flange, 1 clamping ring	7962666
FMT700-P inlet section 10 × D, nominal diameter DN 150, 1 tapered flange, 1 intermediate flange, 1 clamping chain	7962667
FMT700-P inlet section 10 × D, nominal diameter DN 200, 1 tapered flange, 1 intermediate flange, 1 clamping chain	7962668

## ... Ordering Information

Description	Order code
<b>FMT700-P Inlet section [ 4 ]</b>	
FMT700-P inlet section 10 × D, nominal diameter DN 25, 1 ISO KF flange, 1 clamping ring	7962669
FMT700-P inlet section 10 × D, nominal diameter DN 50, 1 tapered flange, 1 clamping ring	7962670
FMT700-P inlet section 10 × D, nominal diameter DN 80, 1 tapered flange, 1 clamping ring	7962671
FMT700-P inlet section 10 × D, nominal diameter DN 100, 1 tapered flange, 1 clamping ring	7962672
FMT700-P inlet section 10 × D, nominal diameter DN 150, 1 tapered flange, 1 clamping chain	7962673
FMT700-P inlet section 10 × D, nominal diameter DN 200, 1 tapered flange, 1 clamping chain	7962674
<b>FMT700-P Outlet section [ 3 ]</b>	
FMT700-P outlet section 5 × D, nominal diameter DN 25, 2 ISO KF flanges, 1 clamping ring	7962675
FMT700-P outlet section 5 × D, nominal diameter DN 50, 1 tapered flange, 1 intermediate flange, 1 clamping ring	7962676
FMT700-P outlet section 5 × D, nominal diameter DN 80, 1 tapered flange, 1 intermediate flange, 1 clamping ring	7962677
FMT700-P outlet section 5 × D, nominal diameter DN 100, 1 tapered flange, 1 intermediate flange, 1 clamping ring	7962678
FMT700-P outlet section 5 × D, nominal diameter DN 150, 1 tapered flange, 1 intermediate flange, 1 clamping chain	7962679
FMT700-P outlet section 5 × D, nominal diameter DN 200, 1 tapered flange, 1 intermediate flange, 1 clamping chain	7962680
<b>FMT700-P Outlet section [ 5 ]</b>	
FMT700-P outlet section 5 × D, nominal diameter DN 25, 1 ISO KF flange, 1 clamping ring	7962681
FMT700-P outlet section 5 × D, nominal diameter DN 50, 1 tapered flange, 1 clamping ring	7962682
FMT700-P outlet section 5 × D, nominal diameter DN 80, 1 tapered flange, 1 clamping ring	7962683
FMT700-P outlet section 5 × D, nominal diameter DN 100, 1 tapered flange, 1 clamping ring	7962684
FMT700-P outlet section 5 × D, nominal diameter DN 150, 1 tapered flange, 1 clamping chain	7962685
FMT700-P outlet section 5 × D, nominal diameter DN 200, 1 tapered flange, 1 clamping chain	7962686
<b>FMT700-P Hose adapter [ 6 ]</b>	
FMT700-P hose adapter, nominal diameter DN 25	7962687
FMT700-P hose adapter, nominal diameter DN 50	7962688
FMT700-P hose adapter, nominal diameter DN 80	7962689
FMT700-P hose adapter, nominal diameter DN 100	7962690
FMT700-P hose adapter, nominal diameter DN 150	7962691
FMT700-P hose adapter, nominal diameter DN 200	7962692
<b>FMT700-P Tapered flange [ 11 ]</b>	
FMT700-P tapered flange, nominal diameter DN 25	7962700
FMT700-P tapered flange, nominal diameter DN 50	7962701
FMT700-P tapered flange, nominal diameter DN 80	7962702
FMT700-P tapered flange, nominal diameter DN 100	7962703
FMT700-P tapered flange, nominal diameter DN 150	7962704
FMT700-P tapered flange, nominal diameter DN 200	7962705
<b>FMT700-P O-ring [ 12 ]</b>	
FMT700-P o-ring, nominal diameter DN 25, including centering rings	7962706
FMT700-P o-ring, nominal diameter DN 50	7962707
FMT700-P o-ring, 94 × 3, nominal diameter DN 80	7962708
FMT700-P o-ring, 122 × 3, nominal diameter DN 100	7962709
FMT700-P o-ring, 165 × 4, nominal diameter DN 150	7962710
FMT700-P o-ring, 217 × 5, nominal diameter DN 200	7962711



Description	Order code
<b>FMT700-P Intermediate flange [ 10 ]</b>	
FMT700-P intermediate flange, nominal diameter DN 25	7962712
FMT700-P intermediate flange, nominal diameter DN 50	7962713
FMT700-P intermediate flange, nominal diameter DN 80	7962714
FMT700-P intermediate flange, nominal diameter DN 100	7962715
FMT700-P intermediate flange, nominal diameter DN 150	7962716
FMT700-P intermediate flange, nominal diameter DN 200	7962717
<b>FMT700-P Clamping ring [ 13 ]</b>	
FMT700-P clamping ring, nominal diameter DN 25	7962718
FMT700-P clamping ring, nominal diameter DN 50	7962719
FMT700-P clamping ring, nominal diameter DN 80	7962720
FMT700-P clamping ring, nominal diameter DN 100	7962721
<b>FMT700-P Clamping chain [ 13 ]</b>	
FMT700-P clamping chain, nominal diameter DN 150	7962722
FMT700-P clamping chain, nominal diameter DN 200	7962723
<b>FMT700-P Complete flange coupling</b>	
FMT700-P complete flange coupling, nominal diameter DN 25	7962724
FMT700-P complete flange coupling, nominal diameter DN 50	7962725
FMT700-P complete flange coupling, nominal diameter DN 80	7962726
FMT700-P complete flange coupling, nominal diameter DN 100	7962727
FMT700-P complete flange coupling, nominal diameter DN 150	7962728
FMT700-P complete flange coupling, nominal diameter DN 200	7962729
<b>FMT700-P Fine-filter tube</b>	
FMT700-P Fine-filter tube, synthetic fiber, class M5 (F5) EN779:2012, applicable at filter cartridge DN150 / 200	3KXF421700L0001
<b>FMT700-P Filter cartridge</b>	
FMT700-P filter cartridge, nominal diameter DN 25	7962730
FMT700-P filter cartridge, nominal diameter DN 50	7962731
FMT700-P filter cartridge, nominal diameter DN 80	7962732
FMT700-P filter cartridge, nominal diameter DN 100	7962733
FMT700-P filter cartridge, nominal diameter DN 150	7962734
FMT700-P filter cartridge, nominal diameter DN 200	7962735
<b>FMT700-P Filter coupling flange</b>	
FMT700-P filter coupling flange, nominal diameter DN 25	7962736
FMT700-P filter coupling flange, nominal diameter DN 50	7962737
FMT700-P filter coupling flange, nominal diameter DN 80	7962738
FMT700-P filter coupling flange, nominal diameter DN 100	7962739
FMT700-P filter coupling flange, nominal diameter DN 150	7962740
FMT700-P filter coupling flange, nominal diameter DN 200	7962741
<b>FMT700-P Documentation</b>	
FMT700-P Operating Instruction, English	3KXF421006R4201
FMT700-P Operating Instruction, German	3KXF421006R4203
FMT700-P Operating Instruction, French	3KXF421006R4207
FMT700-P Operating Instruction, Spanish	3KXF421006R4206

Sales



Service



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## Notes



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