

## Flowmeter

SC-250H

SC-250V



## OVERVIEW

### Operation

- The metering system is made up of a calibrated orifice, a conical float and a spring.
- The SC-250H flowmeter is installed horizontally in the pipe system, with flow from left to right or right to left.
- The SC-250V flowmeter is installed vertically in the pipe system, with upwards flow or downwards flow.

### Application

- Heating and cooling circuits
- Water treatment
- Pharmaceutical industry
- Chemical industry
- Power plants

### Features

- High reliability
- Product designated scale at no charge
- EX-version according to ATEX directive available
- Low pressure drop
- Flange connection, special process connection on request

### Options:

- Adjustable limit switch contacts
- Analog transmitter
- Damping mechanism
- Fully hygienic design available

### Installation information

- The operating instructions for SC-250H and SC-250V must be observed!
- **Download: [www.meister-flow.com](http://www.meister-flow.com)**

## OPERATING DATA

<b>Operating pressure, max.</b>	refer to table on page 6
<b>Pressure drop</b>	refer to table on page 7
<b>Viscosity max.</b>	10 cP
<b>Measuring accuracy <sup>(1)</sup></b>	± 2,5 % (optional ± 1,6 %)
<b>Media temperature</b>	refer to table on page 6
<b>Ambient temperature</b>	refer to table on page 6

<sup>(1)</sup> According to VDI/VDE 3513

## MEASURING RANGES

<b>Type</b>	<b>Measuring range for H<sub>2</sub>O at 20 °C</b> refer to table on page 7
<b>Type</b>	<b>Measuring range for air at 1 bar abs. &amp; 20 °C</b> on request
	<b>Scale range</b> 10 : 1

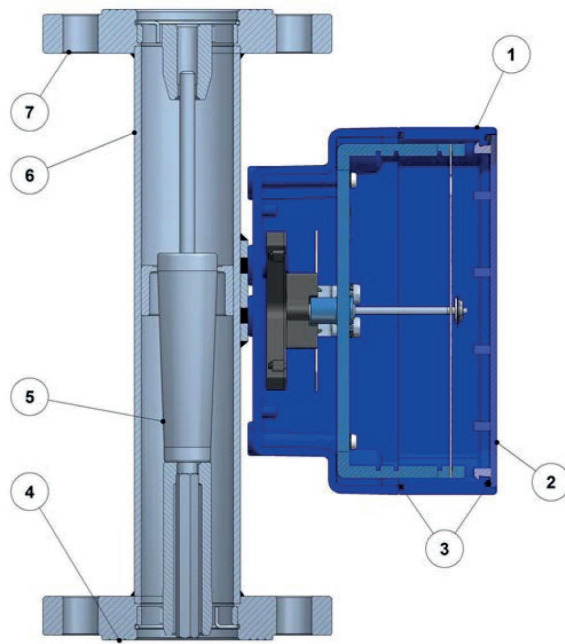
## MATERIALS

<b>Description</b>	<b>1.4404</b>	<b>PVC / PP</b>	<b>PTFE</b>
Indicator housing:	Coated aluminum		
Housing cover:	Polycarbonate (UV resistant)		
O-rings:	NBR		
Flange seat:	1.4404	PVC / PP	PTFE
Float:	1.4404	PVC / PP	PTFE
Flow tube:	1.4404	PVC / PP VA + PTFE <sup>(2)</sup>	
Flanges:	1.4404	PVC / PP	1.4404

see also parts description on page 3

<sup>(2)</sup> Stainless steel, PTFE-coated

## ASSEMBLY DRAWING



## PARTS DESCRIPTION

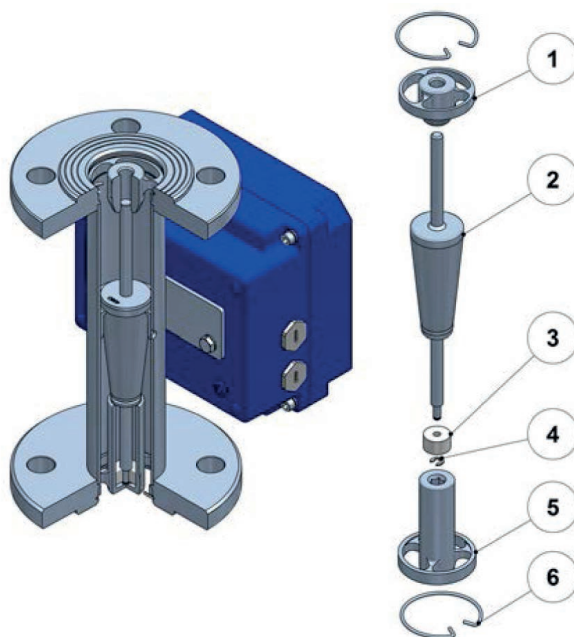
Item	Description	Materials		
		Version	PVC / PP	PTFE
		<b>1.4404</b>		
1	Indicator housing:		Coated aluminum	
2	Housing cover:		Polycarbonate (UV resistant)	
3	O-rings:		NBR	
4	Flange seat:	1.4404	PVC / PP	PTFE
5	Float:	1.4404	PVC / PP	PTFE
6	Flow tube:	1.4404	PVC / PP	SS + PTFE <sup>(3)</sup>
7	Flanges:	1.4404	PVC / PP	1.4404

<sup>(3)</sup> Stainless steel, PTFE-coated

## FLOAT DAMPING SYSTEM (FOR GASES AND STEAM APPLICATIONS)

Ceramic, PEEK or metallic piston system to prevent float oscillations in flowmeters for gas and steam service, obtaining stable readings even at very low working pressures and low gas densities.

Available for DN15 ... DN80

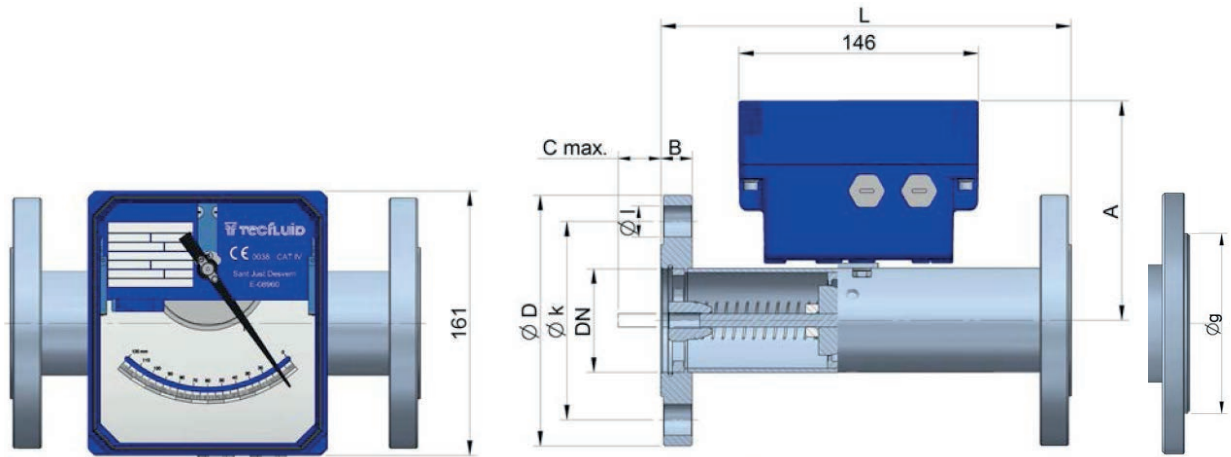


Item	Description
1	Upper float stop
2	Float
3	Piston
4	Piston locking circlip
5	Guide cylinder
6	Circlips for locking upper float stop and guide cylinder

## FLOAT TYPES



# TECHNICAL DRAWING



## SUMMARY OF TYPES

Type	EN 1092-1 flanges									Weight approx.
	Overall dimensions (mm)									
DN	D	k	g	l x n	B	PN <sup>(4)</sup>	A	C	L	[g]
15	95	65	49	14x4	16	40	133	45	250	3500
25	115	85	68	14x4	18	40	146	45	250	4500
40	150	110	88	18x4	18	40	154	45	250	7300
50	165	125	102	18x4	20	40	167	45	250	8300
65	185	145	122	18x8	18	16	176	45	250	10000
80	200	160	138	18x8	20	16	192	45	250	12000

<sup>(4)</sup>Stainless steel EN 1.4404 (AISI 316L)

Type	ANSI flanges									Weight approx.
	Overall dimensions (mm)									
DN	D	k	g	l x n	B	Pressure <sup>(5) (6)</sup>	A	C	L	[g]
1/2"	88,9	60,3	44,0	15,90x4	11,1	150	122	45	250	3500
3/4"	98,4	69,8	42,9	15,90x4	12,7	150	133	45	250	4500
1"	107,9	79,4	50,8	15,90x4	14,3	150	146	45	250	7300
1 1/4"	117,5	88,9	63,5	15,90x4	15,9	150	146	45	250	8300
1 1/2"	127,0	98,4	73,0	15,90x4	17,5	150	154	45	250	10000
2"	152,4	120,6	92,1	19,05x4	19,1	150	167	45	250	12000
2 1/2"	177,8	139,7	104,8	19,05x4	22,2	150	176	45	250	15000
3"	190,5	152,4	127,0	19,05x4	23,8	150	192	45	250	20000

<sup>(5)</sup>Stainless steel EN 1.4404 (AISI 316L)

<sup>(6)</sup>Class lbs

## TECHNICAL DATA

### MEDIA TEMPERATURE

1.4404	-50 °C – 300 °C
PVC (full material)	0 °C – 50 °C
PTFE (coated)	-20 °C – 150 °C
PP (full material)	-5 °C – 90 °C

### AMBIENT TEMPERATURE

1.4404	-20 °C – 80 °C
PVC (full material)	0 °C – 45 °C
PTFE (coated)	-20 °C – 80 °C
PP (full material)	-50 °C – 80 °C

### OPERATING PRESSURE

#### SC-250 with EN 1092-1 flanges

Stainless steel Version (1.4404)	DN-15 – DN-50	PN40
	DN-65 – DN-150	PN16
Stainless steel tube, PTFE-coated	DN-15 – DN-40	PN40
	DN-50 – DN-125 DN-150	PN16 PN10
Full PVC- and PP-version	DN-15 – DN-150	PN16

### VISCOSITY

Viscosity max:	10 cP
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### CONNECTION

Standard	EN 1092-1 flanges
on request	ANSI flanges Threaded connection BSP, NPT Sanitary connections according to ISO 2852 SMS 1145 DIN 11851

### SCALE

Range	10 : 1
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media customized, various units

e.g.: l/h, m<sup>3</sup>/h, kg/h

Mode:

Vertically, with SC-250V	flow from bottom to top (BD)
	flow from top to bottom (DAB)
Horizontally, with SC-250H	flow from left to right (ED)
	flow from right to left (DES)

### ACCURACY ACCORDING TO VDI / VDE 3513

Standard	± 2,5 % (q <sub>G</sub> = 50 %)
Optional	± 1,6 % (q <sub>G</sub> = 50 %)

### MECHANICAL DISPLAY

#### Housing material

Standard	coated aluminum, with Polycarbonate cover IP 65
Optional	1.4404 with glass cover IP 67
Cable entry	PG9 - cable gland

# MEASURING RANGES

## Standard ranges for H<sub>2</sub>O

DIN (ANSI)	Spring 1	Spring 2	Spring 3	Pressure
	l/h	l/h	l/h	drop mbar
DN-15 (1/2")	10 – 100			390
	16 – 160	25 – 250		290
	25 – 250			290
	40 – 400	60 – 600		200 / 350
DN-15 (3/4")	100 – 1000			350
	150 – 1500	250 – 2500		350 / 600
DN-25 (1")	60 – 600 <sup>(7)</sup>			90
	100 – 1000 <sup>(7)</sup>			90
	160 – 1600	250 – 2500		290
	400 – 4000			290
	600 – 6000			290
	800 – 8000 <sup>(7)</sup>			120
DN-40 (1 1/2")	1000 – 10000			300
	400 – 4000 <sup>(7)</sup>			90
	650 – 6500	800 – 8000		130 / 60
DN-50 (2")	1000 – 10000			150
	1600 – 16000	2000 – 20000		180 / 270
	600 – 6000			120
	1100 – 11000			120
DN-65 (2 1/2")	1800 – 18000			150
			4000 – 40000	280
DN-80 (3")	1800 – 18000			110
			4000 – 40000	220
DN-80 (3")	2500 – 25000 <sup>(7)</sup>	3000 – 30000 <sup>(7)</sup>		50 / 60
	4000 – 40000	5000 – 50000		140
	6000 – 60000			220

<sup>(7)</sup>Flow ranges only with plastic float (PP / PVC / PTFE) available

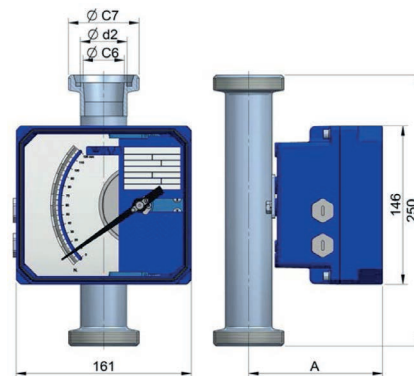
Scales for air, liquids or gases available

# SPECIAL CONNECTIONS

## Sanitary connection DIN 11851 (EN 1.4404)

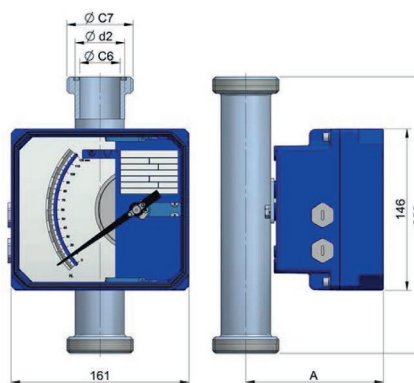
NW-DN	15	25	40	50	65	80	100
	Rd 34	Rd 52	Rd 65	Rd 78	Rd 95	Rd 110	Rd 130
$\varnothing C_7$	x 1/8"	x 1/6"	x 1/6"	x 1/6"	x 1/6"	x 1/4"	x 1/4"
$\varnothing C_6$	17,0	24,8	35,6	45,8	67,0	82,8	100,0
$\varnothing d_2$	21,3	30,0	42,0	51,0	73,0	88,9	108,0
A	114	118	124	129	140	148	157
DIN EQ.	15(PC) <sup>(8)</sup>	15	25	40	50-65	80	100

<sup>(8)</sup> max. flow rate 250 l/h H<sub>2</sub>O



## Sanitary connection SMS 1145 (EN 1.4404)

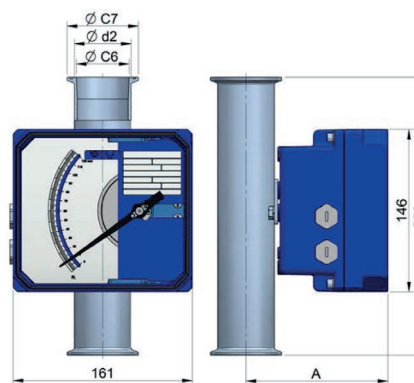
NW-DN	15	25	40	50	65	100
$\varnothing C_7$	40	60	70	85	98	125
$\varnothing C_6$	22,5	35,5	48,5	60,5	72,0	100,0
$\varnothing d_2$	25,0	42,0	51,0	63,5	73,0	108,0
A	115	124	129	135	140	157
DIN EQ.	15	25	40	50	65	100



## Sanitary connection CLAMP ISO 2852 (EN 1.4404)

$\varnothing C_7$	34,0	50,5	50,5	64,0	77,5	91,0	106	130
$\varnothing C_6$	17,0	24,8	35,6	45,8	58,3	67,0	82,8	100,0
$\varnothing C_2$	21,3	30,0	42,0	51,0	63,5	73,0	88,9	108,0
A	114	118	124	129	135	140	148	157
DIN EQ.	15(PC) <sup>(9)</sup>	15	25	40	50	65	80	100

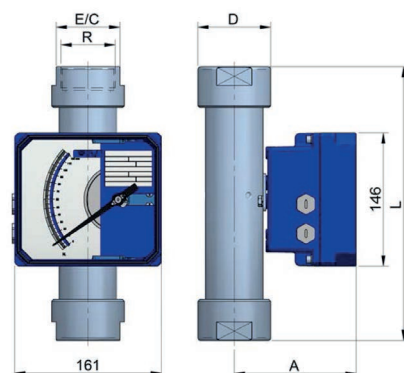
<sup>(9)</sup> max. flow rate 250 l/h H<sub>2</sub>O



## Threaded connection BSP / NPT (EN 1.4404)

R	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
L	275	275	285	300	300	310	310	310
D	35	40	50	65	80	90	110	130
A	114	118	124	129	135	140	146	156
E/C	30	35	45	60	70	84	104	124
DIN EQ.	15(PC) <sup>(10)</sup>	15	25	40	50	65	80	100

<sup>(10)</sup> max. flow rate 250 l/h H<sub>2</sub>O



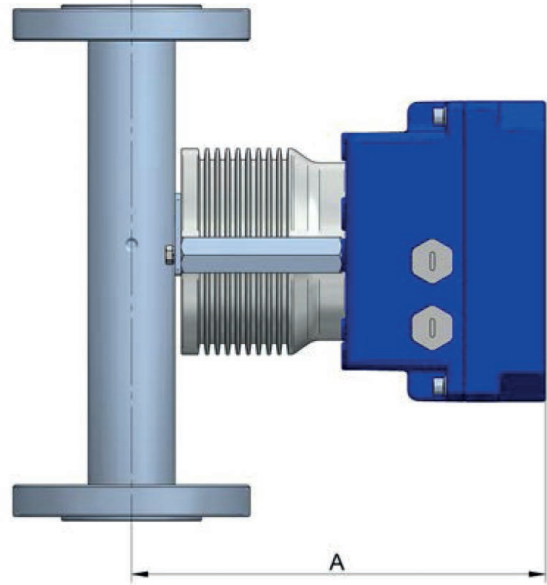


# ACCESSORIES

## Thermal separator

DN	15	25	40	50	65	80	100	125	150
A	177	183	187	194	198	207	216	228	241

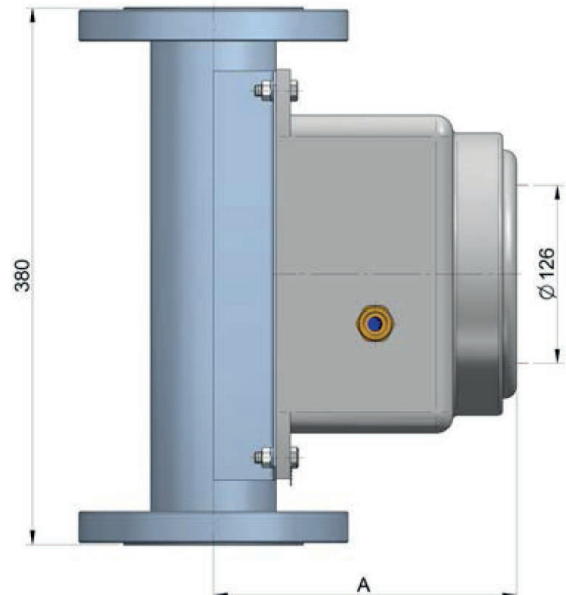
- Standard in aluminum, optional in EN 1.4404 (AISI 316L)
- For application with fluids at high and low temperatures
- With electronics:
  - DN-15 - DN-65: -180 °C - 300 °C
  - DN-80 - DN-150: -180 °C - 260 °C
- Without electronics: DN-15 - DN-150: -180 °C - 400 °C
- Reference ambient temperature: 20 °C



## Explosion proof enclosure Ex d IIC T6

DN	15	25	40	50	65	80	100	125	150
A	195	201	205	212	216	224	234	246	260

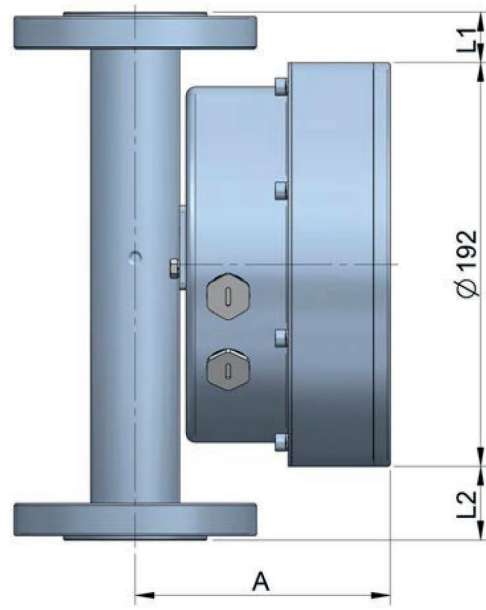
- Porthole with glass for viewing the flow rate
  - Standard limit switches and transmitters can be installed inside the SC-250 housing.
  - Explosion proof protection: Ex d IIC T6
  - Ingress protection: IP65
- (Pending certification)



**Stainless steel housing**

DN	15	25	40	50	65	80	100	125	150
L1	30	30	30	30	30	30	35	35	60
L2	40	40	40	40	40	40	35	35	60
A	115	121	125	132	137	145	154	167	180

- Particularly suitable within sanitary or sterile installations, saline atmospheres (offshore platforms), etc.
- All stainless steel construction EN 1.4404 (AISI 316L), with glass indicator housing cover
- Can be fitted with standard limit switches and TH transmitters
- Ingress protection: IP67



**Heating-cooling chamber**

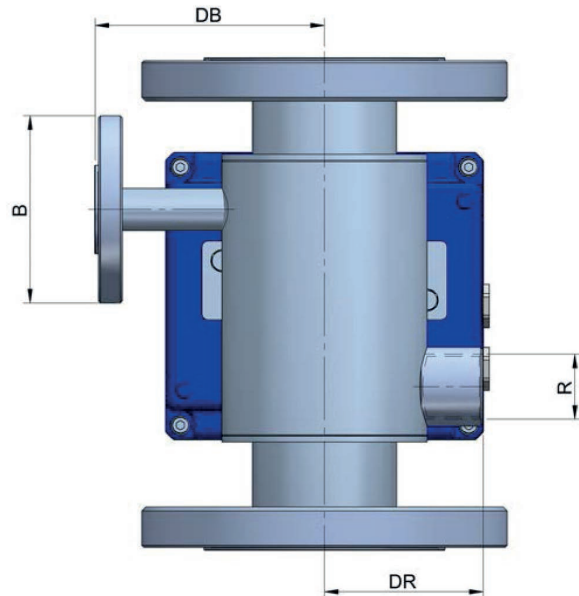
Circulating of heating or cooling media through the double chamber of the flowmeter

DN 15(PC)	15	25	40	50	65	80	100	125	150	
R	1/2"	1/2"	1/2"	3/4"	3/4"	1"	1"	1"	1"	
B <sup>(11)</sup>	DN 15		DN 20			DN 25				
DR	35	39	45	50	50	56	70	80	91	104
DB	77	77	88	105	112	122	130	140	155	172

For installations that require maintaining a constant process media temperature.

- Without contact with the process media
- Flanged or threaded pipe fittings (BSP, NPT, EN 1092-1)
- Other versions on request
- Stainless steel EN 1.4404 (AISI 316L)

Other materials on request



<sup>(11)</sup> EN 1092-1 PN16 Flange, other connections on request

# LIMIT SWITCHES

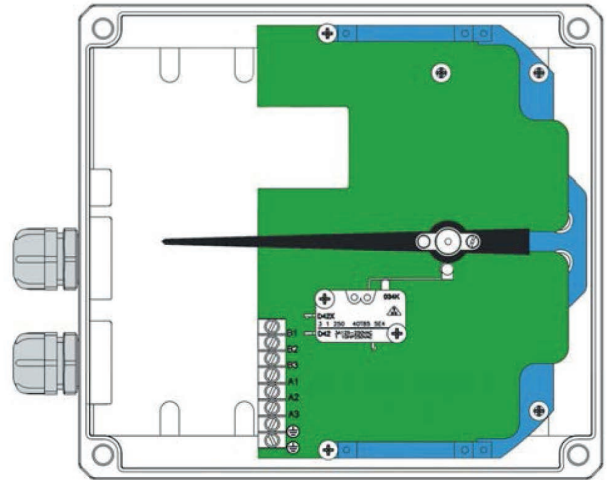
## Adjustable limit switch (microswitch) SC-AMM



Electrical microswitch mounted inside the indicator housing

- SC-AMM1: 1 adjustable limit switch
- SC-AMM2: 2 adjustable limit switches
- Ratings: 3(1) A, 250 V (VDE/CEE)
- Hysteresis:  $\pm 10\%$  of full scale
- Ambient temperature:  $-25\text{ }^{\circ}\text{C} - 80\text{ }^{\circ}\text{C}$
- Mechanical life:  $10^7$  operations
- ATEX certificate: Ex ia IIC T6

Gold plated contacts on request



## Adjustable inductive limit switch SC-AMD

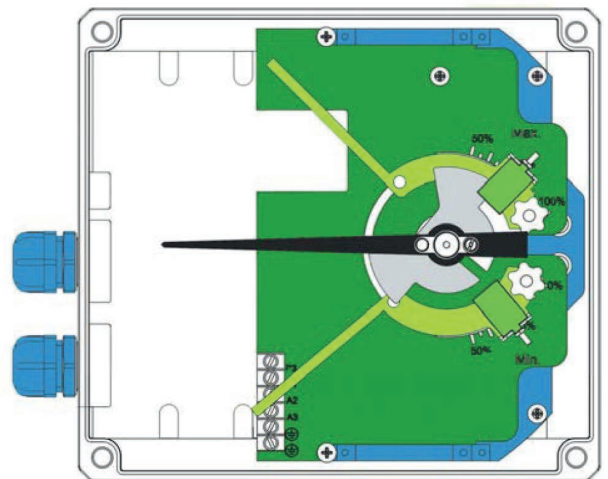


Inductive proximity switch, 3.5 mm (slot type)  
NAMUR (EN 60947-5-6) activated by vane, mounted inside the indicator housing

- SC-AMD1: 1 adjustable limit switch
- SC-AMD2: 2 adjustable limit switches
- Power supply: 8 VDC (via amplifier)
- Ambient temperature:  $-25\text{ }^{\circ}\text{C} - 70\text{ }^{\circ}\text{C}$
- ATEX certificate: Ex ia IIC T6

Amplifier (on request)

- NAMUR (EN 60947-5-6) for 1 or 2 inductive proximity switches
- Power supply: 24 ... 253 VAC, 50 - 60 Hz  
24 ... 300 VDC
- Input: NAMUR Ex ia IIC
- Output: 1 or 2 relay contacts
- Output rating: 2 A / 250 VAC / 100 VA  
1 A / 24 VDC
- Ambient temperature:  $-20\text{ }^{\circ}\text{C} - 60\text{ }^{\circ}\text{C}$



## Modular housing



# TRANSMITTERS AND TOTALIZERS

## Transmitter TH7

The TH7 electronic transmitters provide an analog output proportional to the flow rate and a digital output selectable either as a pulse or an alarm output (except for the Ex versions). The TH7 can also include a display for volume totalization. The transmitter is based on the Hall-effect and is mounted inside the indicator housing.

- TH7 Transmitter
- TH7T Transmitter + totalizer

### Technical data

- Power supply: 2-wire, 12 - 36 VDC
- Power consumption: 4 - 20 mA for 0 - 100% of scale

- Analog output: 4 - 20 mA
- Accuracy: < 0,6% of the magnet position
- Maximum load in 4 – 20mA loop: 1100 Ω
- (with 36 VDC power supply)

- Digital output: Potential-free N-channel MOSFET
- $I_{max}$ : 200 mA
- for either pulse or alarm output

#### Pulse output:

- max. frequency: 6 Hz
- Pulse duration: approx. 62.5 ms

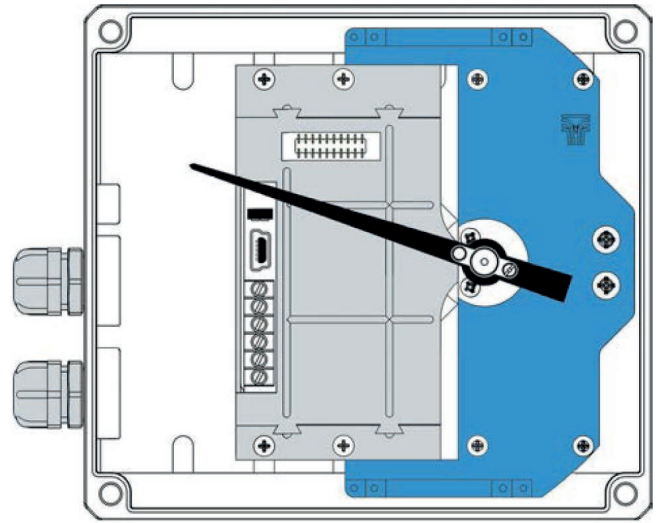
#### Alarm output:

- adjustable on a scale value

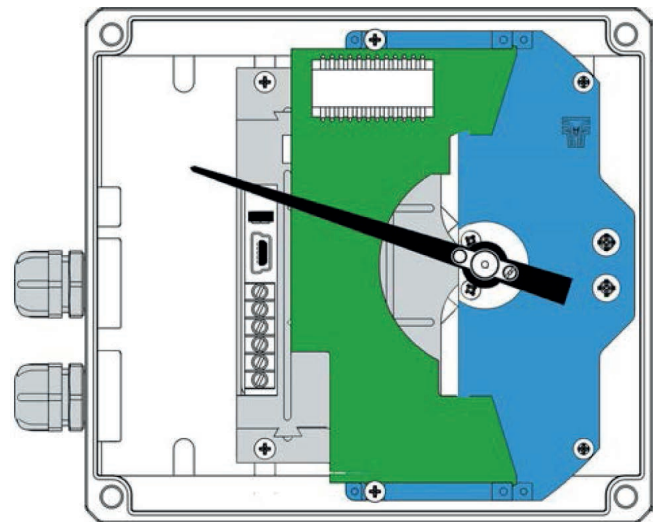
Programmable by means of Winsmeter TH7 software

- Totalizer: 8 digits, 4.5 mm high
- Reset by potential-free contact
- Ambient temperature: -5 °C - 70 °C
- Easy programming by means of Winsmeter TH7 software
- **Download: [www.tecfluid.com](http://www.tecfluid.com)**

## TH7



## TH7T



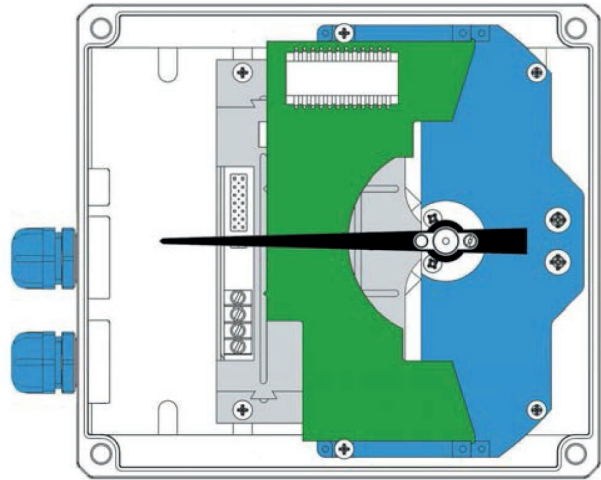
## ATEX version (Ex ia IIC T4 or T6)



## TH7T Ex

### Technical data

- ATEX certificate: Ex II 1 GD
- Power supply: 2-wire, 14 - 30 VDC
- Power consumption: 4 - 20 mA for 0 - 100% of scale
  
- Analog output: 4 - 20 mA
  - Accuracy: < 0,6% of the magnet position
  - Maximum load in 4 - 20mA loop: 900 Ω (with 30 VDC power supply)
  
- Totalizer: 8 digits, 4.5 mm high  
Reset by potential-free contact
  
- Ambient temperature: -5 °C - 40 °C



Both limit switches AMM or AMD and electronic transmitters TH7 or TH7T can be mounted together in the same housing. The TH7 Ex and TH7T Ex transmitters belong to group II. They are intended for use in potentially explosive atmospheres, except in mining.