



Target disk flowmeter for liquids and gases

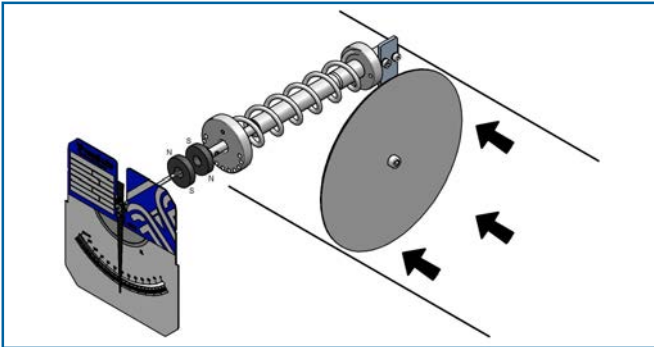
- Metallic, simple and robust construction
- Available for all flow directions
- Suitable for extreme pressure and temperature conditions
- Low pressure drop
- Straight pipe run requirement of only 3xDN before and after the flowmeter
- Provides a good measurement for fluids containing suspended solids
- Flow rate:
 - Water: 0.8 m³/h ... 1600 m³/h
 - Air: 45 Nm³/h ... 24000 Nm³/h
- Accuracy: ±2.5% f.s. (±1.6% f.s. on request)
- Connections:
 - DP65: DN40 ... DN300
between flanges (wafer)
 - DP500: DN250 ... DN500
with standard DIN 2501 flanges
- Other flange standards on request
- Materials: EN 1.4404 (SS 316L), plastic coated steel
- Local indication
- Options:
 - 1 or 2 limit switches
 - Electronic transmitter with 4-20 mA analog output for safe or hazardous area (Ex ia IIC T4 or T6 protection, ATEX certified). HART™ protocol available on request
 - Local volume totalizer. Remote volume totalizer by means of pulse output (not available for Ex transmitters)



Working principle

A target disk flowmeter is based on the indirect measurement of the force which is exerted on a disk suspended in the trajectory where a fluid flows at a certain speed.

The disk is held by a shaft which is perpendicular to the fluid direction, so that the force applied by it affects the shaft rotation. At the same time, a spring attached to the shaft is opposed to its turn. When the force applied on the spring is equal to the force exerted by the fluid, an equilibrium point of the turn angle of the disk, which is equivalent to a flow rate, is achieved.



The flow reading is made by means of magnetic coupling with the housing indication system, thus avoiding fluid leakage to it.

Applications

- Water treatment & distribution
- Pharmaceutical, chemical and paper industry
- Heating and cooling circuits
- Swimming pools
- Fire protection systems
- Automotive industry (cutting oil, paint lines and refrigeration systems)
- Power plants
- Lubrication oil circuits

Technical data

- Accuracy:
 - DP65: $\pm 2.5\%$ at full scale
 $\pm 1.6\%$ at full scale on request
 - DP500: $\pm 4\%$ at full scale
- Direct scales in engineering units or in %
- Straight pipe run required of 3xDN before and after the flowmeter
- Fluid temperature for standard versions:
 - Coated steel body: $-20^{\circ}\text{C} \dots +130^{\circ}\text{C}$
 - EN 1.4404 (SS 316L) body: $-20^{\circ}\text{C} \dots +180^{\circ}\text{C}$
 For higher process temperatures, see thermal separator p. 5
- Ambient temperature: $-20^{\circ}\text{C} \dots +80^{\circ}\text{C}$

• Working pressure:

- DP65: DN40 ... DN80: PN40
DN100 ... DN300: PN16
- DP500: DN250 ... DN500: PN10

Other pressure ratings for DP65 and DP500 models available on request

• Connections:

- DP65: DN40 ... DN300
installation between flanges (wafer). Counter flanges and gaskets not supplied
- DP500: DN250 ... DN500
with standard DIN 2501 flanges

Other flange standards on request

• Mounting length:

- DP65: DN40 ... DN300: 65 mm
- DP500: DN250 ... DN300: 500 mm
DN350 ... DN400: 600 mm
DN500: 700 mm

- Housing: IP65 - coated aluminium (IP65 - polypropylene or IP67 - EN 1.4404 (SS 316L) with glass window, on request)

Operation

- Vertical:
 - upwards flow (BD)
 - downwards flow (DAB)
- Horizontal:
 - left to right flow (ED)
 - right to left flow (DES)

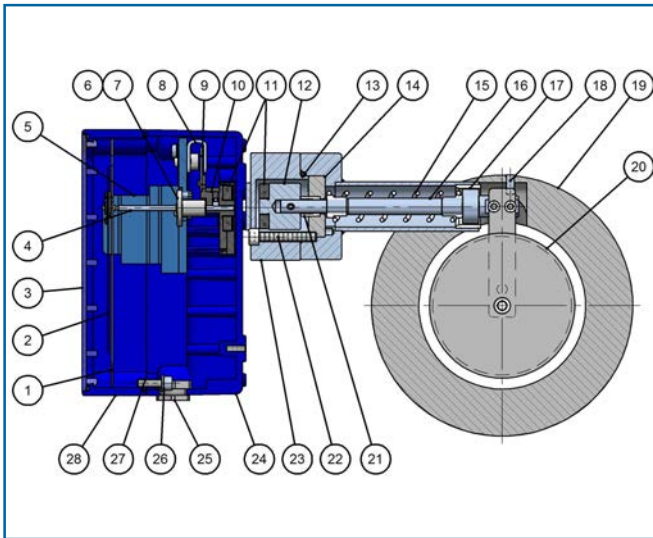
Models

- DP65 Fe R / DP500 Fe R:
 - Body in coated steel
 - Disc, shaft and spring in EN 1.4401 (SS 316)
- DP65 Fe / DP500 Fe:
 - Body in steel
 - Disc, shaft and spring in EN 1.4401 (SS 316)
- DP65 INOX / DP500 INOX:
 - Body in EN 1.4404 (SS 316L)
 - Disc, shaft and spring in EN 1.4401 (SS 316)

Limit switches and transmitters

- DP-AMM1 ... 2: 1 or 2 adjustable micro-switches
- DP-AMD1 ... 2: 1 or 2 adjustable inductive detectors (+ relays on request)
- TH5 ... TH5H: 4-20 mA transmitter 2 wires + pulse output HART™ protocol with model TH5H
- TH5T ... TH5TH: transmitter + totalizer 2 wires + pulse output HART™ protocol with model TH5TH
- TH5 Ex ... TH5H Ex: 4-20 mA transmitter 2 wires
Ex ia IIC T4/T6 (ATEX)
HART™ protocol with model TH5H Ex
- TH5T Ex ... TH5TH Ex: transmitter + totalizer 2 wires
Ex ia IIC T4/T6 (ATEX)
HART™ protocol with model TH5TH Ex

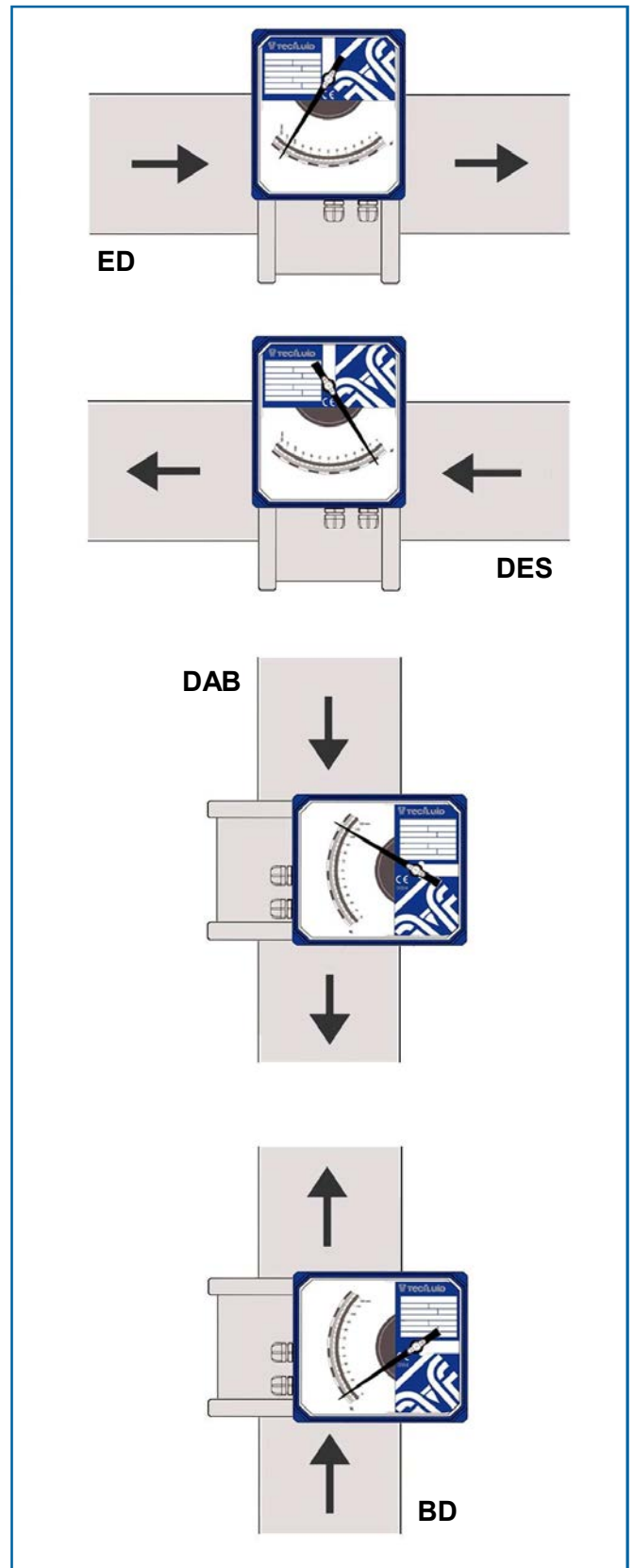
Materials



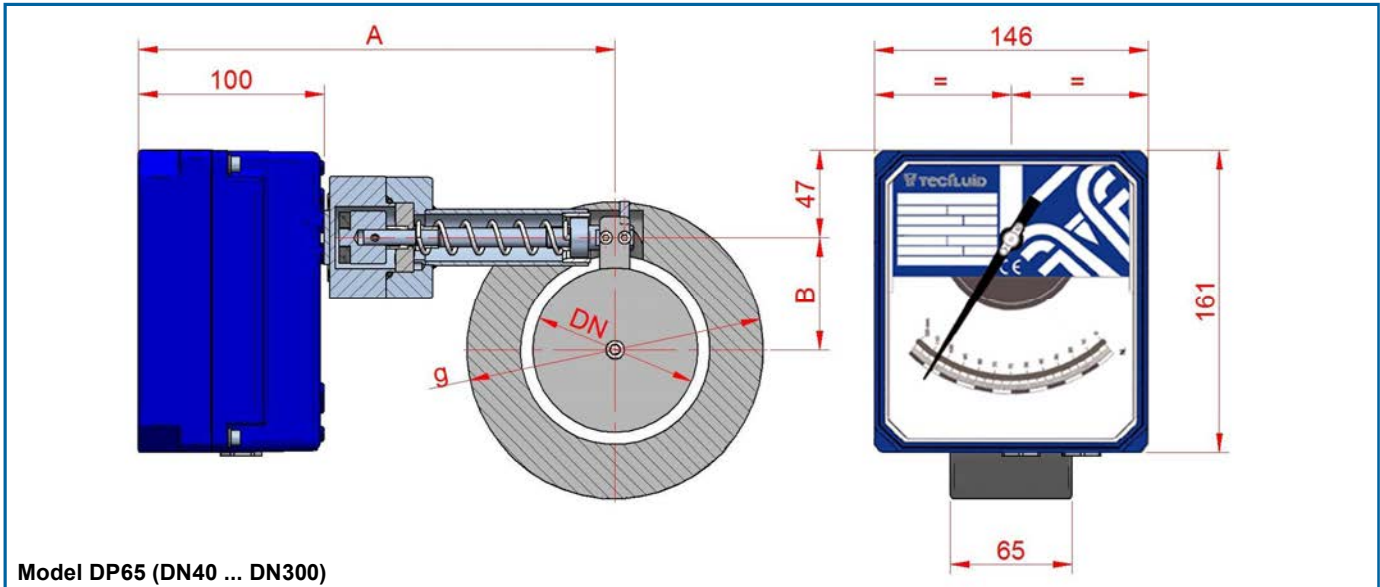
Item	Description	Materials	
		DP65 Fe R	DP65 INOX
		DP500 Fe R	DP500 INOX

1	Scale plate	Aluminium	
2	Indicating needle	Aluminium	
3	Window	Polycarbonate (UV treated)	
4	Shaft	EN 1.4301 (SS 304)	
5	Support	ABS	
6	Bearings	EN 1.4401 (SS 316)	
7	Bearing holder	Aluminium	
8	Magnetic brake	Steel	
9	Disk brake	Aluminium	
10	Magnet holder	Polyamide 6	
11	Magnet	Alnico	
12	Magnet support	EN 1.4401 (SS 316)	
13	Gasket	NBR	
14	Shaft support disk	EN 1.4401 (SS 316)	
15	Spring	EN 1.4401 (SS 316)	
16	Shaft	EN 1.4401 (SS 316)	
17	Bearing	PTFE	
18	Disc stop	EN 1.4404 (SS 316L)	
19	Body	Polyamide coated steel	EN 1.4404 (SS 316L)
20	Disk	EN 1.4404 (SS 316L)	
21	Bearing	PTFE	
22	Screw M6 x 35	EN 1.4301 (SS 304)	
23	Closing disk	EN 1.4404 (SS 316L)	
24	Housing base	Coated aluminium	
25	Plug M16 + gasket	Polyamide 6 + NBR	
26	Washer	Nylon	
27	Screw M5 x 16	EN 1.4301 (SS 304)	
28	Housing cover	Coated aluminium	

Mounting

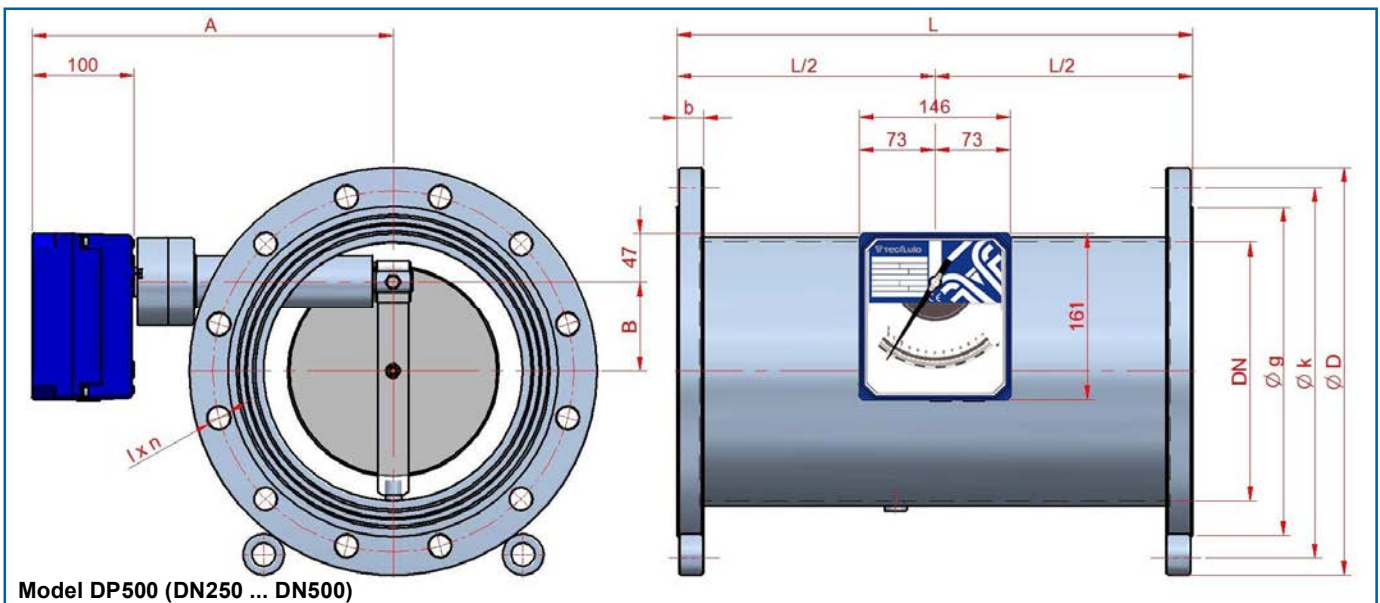


Dimensions



Model DP65 (DN40 ... DN300)

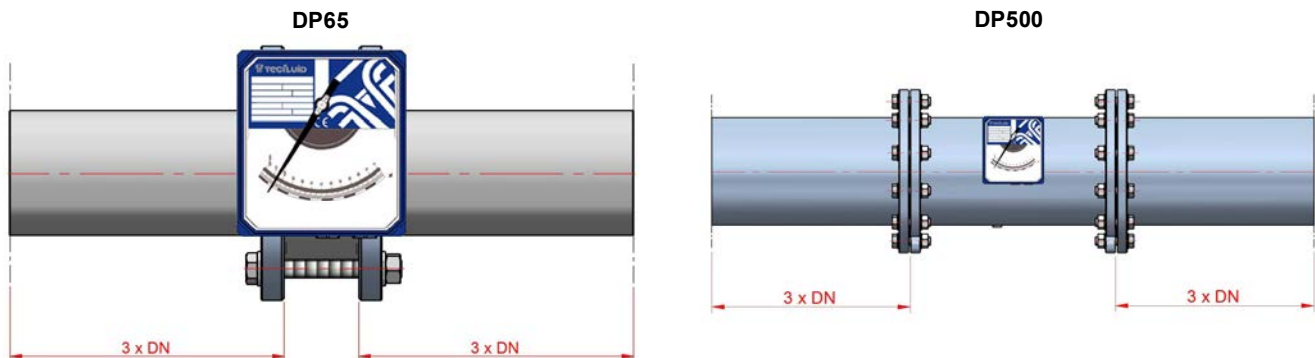
For dimensions g, B and A, please refer to page 5



Model DP500 (DN250 ... DN500)

For dimensions L, A, B, Ø D, Ø k, Ø g, b and 1 x n, please refer to page 5

Straight pipe run requirement



DP65 / DP500 flow ranges

Model DP65 (DN40 ... DN300)

DN DIN 2501	Flow scales m ³ /h water						Weights and dimensions				
							g	B	A	Weight (kg)	
40	0.8-4	0.8-6	1-8	2-10	3-16	-	88	28	250	5	
50	0.8-6	1-8	2-10	3-16	3-25	-	102	33	250	6	
65	2-10	3-16	3-25	4-30	5-35	6-40	122	40	250	7	
80	2-16	3-25	5-40	6-45	8-50	10-60	138	50	250	8	
100	5-40	8-60	10-80	12-90	15-100	-	158	60	250	10	
125	8-60	15-100	15-120	20-135	-	-	188	70	280	12	
150	15-100	20-160	25-200	40-220	50-250	-	212	78	280	14	
200	20-160	30-250	40-350	50-400	-	-	268	90	320	20	
250	25-200	50-400	60-500	80-600	-	-	320	102	350	29	
300	30-250	50-400	80-600	100-800	-	-	370	115	370	35	

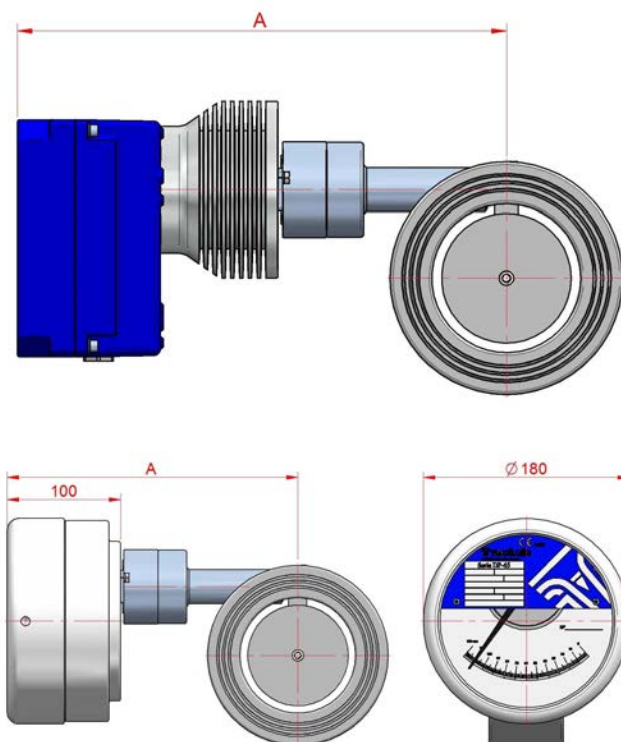
Equivalent scales for Air @ 1.013 bar abs, 20°C in Nm³/h = m³/h H₂O x 30 (approx.)

Model DP500 (DN250 ... DN500)

DN DIN 2501	Flow scales m ³ /h water			Weights and dimensions								
				L	A	B	Ø D	Ø k	Ø g	b	l x n	Weight (kg)
250	25-200	50-400	60-500	500	330	90	395	350	320	26	23 x 12	70
300	30-250	50-400	80-600	500	330	115	445	400	370	26	23 x 12	78
350	40-300	60-500	100-800	600	350	124	505	460	430	26	23 x 16	86
400	50-400	80-600	120-1000	600	350	142	565	515	482	26	27 x 16	97
500	80-600	120-1000	200-1600	700	430	160	670	620	585	28	27 x 20	115

Equivalent scales for Air @ 1.013 bar abs, 20°C in Nm³/h = m³/h H₂O x 30 (approx.)

Accessories



Thermal separator

- Standard in aluminium, optional in EN 1.4404 (SS 316L)
- For working with fluids at high and low temperatures
- Body in steel and EN 1.4404 (SS 316L):
 - With electronics: DN40 ... DN100: +400°C
DN125 ... DN150: +320°C
DN200 ... DN300: +280°C
DN350 ... DN500: +250°C
 - Without electronics: DN40 ... DN500: +400°C
- Reference ambient temperature: 20°C

	DN	40 ...	100	125	150	200	250	300	350	400	500
DP65	A	325	355	355	395	425	443				
DP500							405	405	425	425	505

Stainless steel housing

- Specially indicated for working within sanitary or sterile installations, saline atmospheres (marine platforms), etc.
- All stainless steel construction EN 1.4404 (SS 316L), with glass window
- Can fit standard limit switches and Halltec transmitters
- Ingress protection: IP67

A distance is the same as for standard aluminium housing

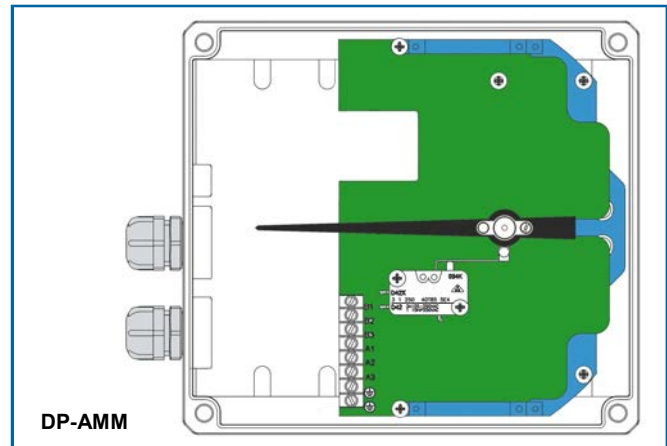
Limit switches

Adjustable limit switch DP-AMM

Electrical micro-switch mounted in the indicator housing.

- DP-AMM1 ... 2: 1 ... 2 adjustable limit switches
- Ratings: 3(1) A, 250 V (VDE/CEE)
- Hysteresis: $\pm 10\%$ of full scale value
- Ambient temperature: $-25^{\circ}\text{C} \dots +80^{\circ}\text{C}$
- Mechanical life: 10^7 operations

Gold plated contacts on order.



Adjustable limit switch DP-AMD

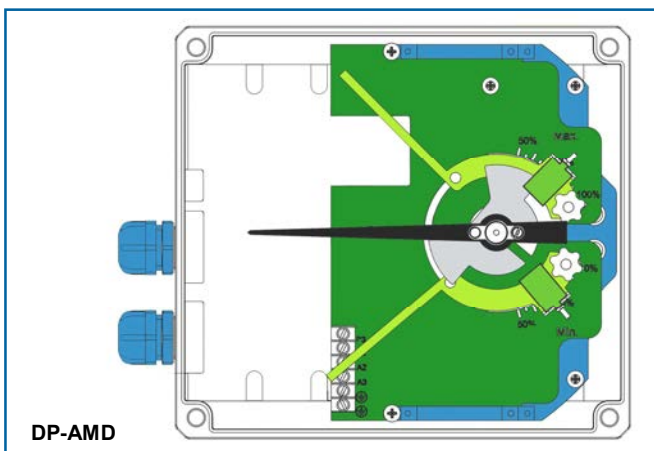
NAMUR (DIN19234) 3.5 mm slot type inductive detector activated by vane, mounted in the indicator housing.

- DP-AMD1 ... 2: 1 ... 2 adjustable limit switches
- Detector power supply: 8 VDC
- Ambient temperature: $-25^{\circ}\text{C} \dots +70^{\circ}\text{C}$

Control Relay (on request)

NAMUR (DIN19234) for 1 or 2 inductive detectors.

- Power supply: 24 ... 230 VAC 50-60 Hz
24 ... 250 VDC
- Input: NAMUR Ex ia IIC
- Output: 1 or 2 inductive detectors
- Output rating: 2 ... 5 A / 40 VDC
- Ambient temperature: $-25^{\circ}\text{C} \dots +70^{\circ}\text{C}$



Modular housing

Transmitters and totalizers

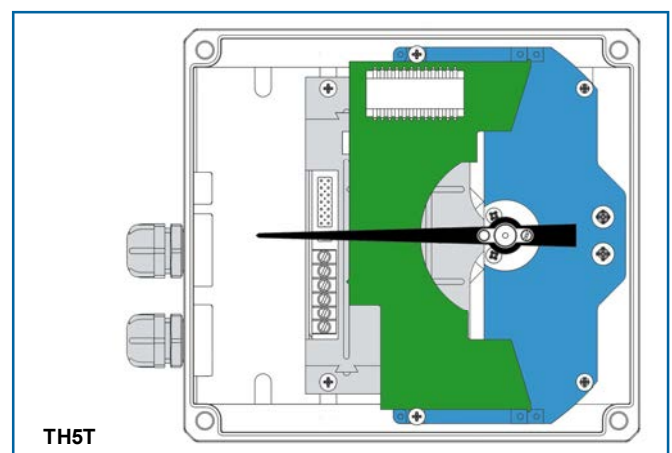
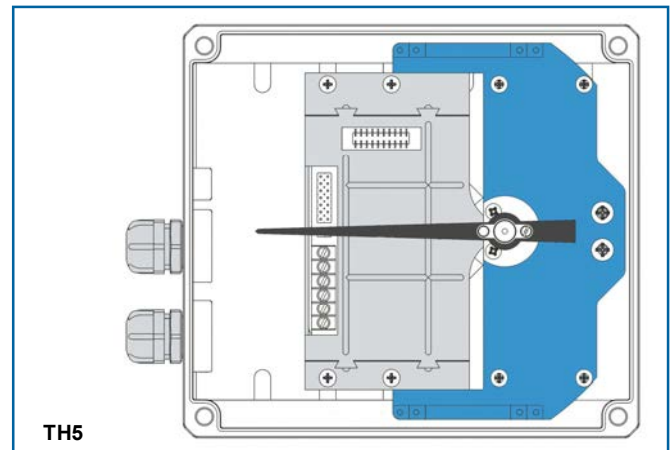
The HALLTEC V electronic transmitters provide an analog output proportional to the flow rate and a pulse output (except for the Ex versions). They can also include a display for volume totalization. They are based on the Hall effect and mounted inside the indicator housing.

HALLTEC V

- TH5 transmitter
- TH5H transmitter + HART™
- TH5T transmitter + totalizer
- TH5TH transmitter + totalizer + HART™

Technical characteristics

- Power supply: 2-wire system, 12 ... 36 VDC
- Power consumption: max. 20 mA
- Outputs:
 - **Analog output (4-20 mA):**
 - Error: < 0.6% of the magnet position
 - Maximum load in 4-20 mA loop: 1.1 kΩ (with 36 VDC power supply)
 - **Pulse output:** Potential free N channel MOSFET
 - I_{max} 200 mA
 - Max. frequency 2 Hz
 - Pulse duration approx. 250 ms
- Totalizer: 8 digits, 4.5 mm high
Reset by potential free contact
- Ambient temperature: -5°C ... +70°C



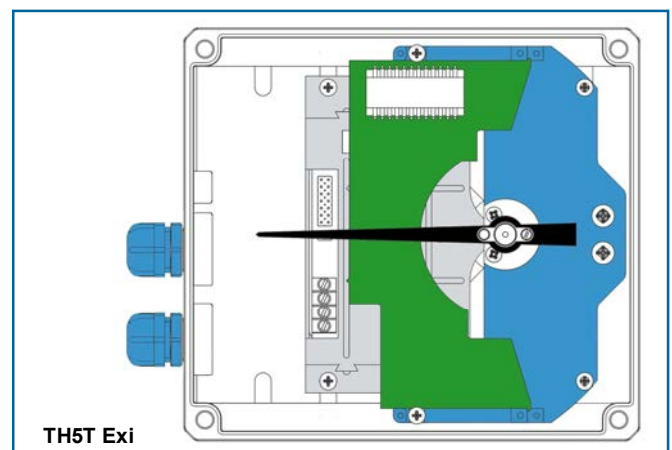
HALLTEC V

ATEX (Ex ia IIC T4 or T6)

- TH5 Ex transmitter
- TH5T Ex transmitter + totalizer
- TH5H Ex transmitter + HART™
- TH5TH Ex transmitter + totalizer + HART™

Technical characteristics

- ATEX certification II 1 GD
- Power consumption: 4-20 mA for 0 ... 100% of scale
- Output:
 - **Analog output (4-20 mA):**
 - Error: < 0.6% of the magnet position
 - Maximum load in 4-20 mA loop: 700 Ω (with 24 VDC power supply)
- Totalizer: 8 digits, 4.5 mm high
Reset by potential free contact
- Ambient temperature: -5°C ... +40°C



The Halltec V Exi transmitters belong to group II. They are intended for use in potentially explosive atmospheres, except in mining

Both limit switches (AMM or AMD) and electronic transmitters TH5 or TH5T can be mounted together in the same housing.



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R-CT-DP Rev.: 2 English version

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The technical data described in this specification sheet is subject to modification without notification if the technical innovations in the manufacturing processes so require.