



Flow measurement of Liquids and Gases

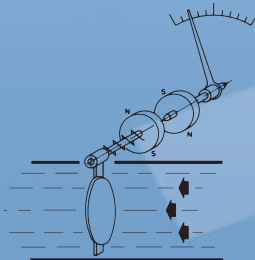
- Metallic construction
- Operates horizontally or vertically
- DN 40 to DN 500
- Flow rate:
 - Water: 0.8 m³/h up to 1600 m³/h.
 - Air: 45 Nm³/h up to 24000 Nm³/h.
- Low pressure drop
- Straight pipe requirement of 3 x DN before & after
- Local indication
- Options:
 - 1 or 2 limit switches
 - 4-20 mA electric transmitter (2 or 4 wire)
 - EEEx ia IIC T4 (ATEX)
 - EEEx ia IIC T6 (ATEX)
 - Local or remote volume totalizer
 - Pneumatic transmitter 3-15 psi (0.2-1 bar)
- Mounting:
 - Between DIN 2501 flanges (wafer) for DN 40 to DN 300 (DP-65 Series)
 - With standard DIN 2501 flanges for DN 250 to DN 500 (DP-500 Series)
 - Mounting with other flange standards on request

Operation

The fluid flows through the meter and displaces the target disc with a force proportional to the flow. The disc movement is restricted with a coil spring until a force balance is achieved between the force from the fluid and the torsion of the spring. The equilibrium position of the target disc is proportional to the flow rate and provides the measurement of flow.

The position of the disc is transferred to the flow indicator by means of magnetic coupling.

This magnetic coupling avoids fluid leakage to the indicator box.





Applications

The construction of the flowmeter is simple and robust. It is suitable for liquids and gases and provides a good measurement for fluids containing suspended solids.

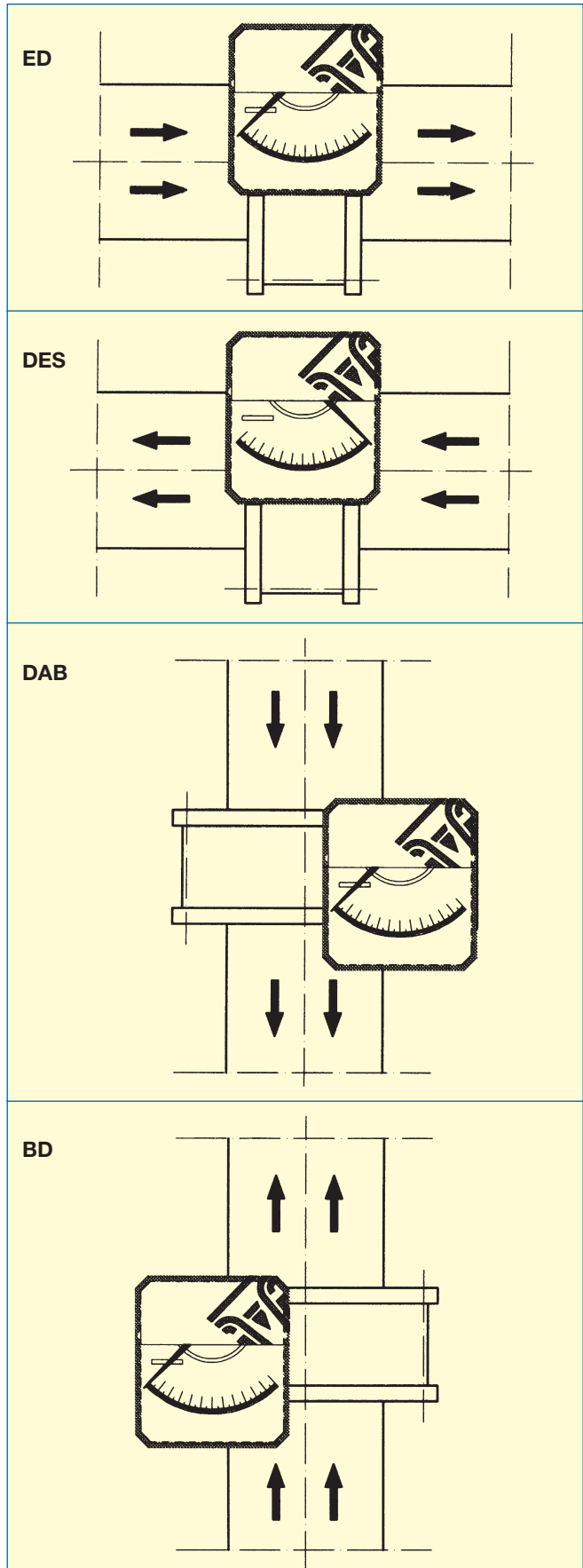
The DP-65 & DP-500 are used in many industries, including:

- Water treatment & distribution
- Pharmaceutical industry
- General chemical industries
- Paper industry
- Heating and cooling circuits
- Swimming pools
- Fire protection systems
- Automotive
- Power plants

Technical Data

- DP-65 for pipe sizes from DN 40 to DN 300
- DP-500 for pipe sizes from DN 250 to DN 500
- Mounting Length:
 - DP-65 DN 40 ... DN 300, Length = 65 mm
Installation between flanges (wafer)
(Flanges and gaskets not supplied)
 - DP-500 DN 250 ... DN 300, Length = 500 mm
DN 350 ... DN 400, Length = 600 mm
DN 500, Length = 700 mm
Standard flanges according to DIN 2501
- Accuracy:
 - DP-65 Series
 - +/- 2.5% at full scale
 - +/- 1.6% at full scale, special version on demand
 - DP-500 Series
 - +/- 4 % at full scale
- Scales:
 - Direct in engineering units or in %
- Temperature of fluid for standard versions:
 - 20°C to +130°C for Polyamide Coated Steel body
 - 20°C to +180°C for Steel body
 - 20°C to +180°C for EN 1.4404 (SS 316L) body
- Temperature of fluid for special versions:
 - Refer to page 5
- Ambient temperature:
 - 20°C to +80°C
- Working pressure:
 - PN40 DN 40 ... DN 80
 - PN16 DN 100 ... DN 200
 - PN10 DN 250 ... DN 500
(Others on request)
- Indicator housing:
 - Standard: IP65 - polyamide coated aluminium
 - On demand: IP65 - polypropylene, IP67 - EN 1.4404 (SS 316L)

Flow Directions



Operation

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

Models

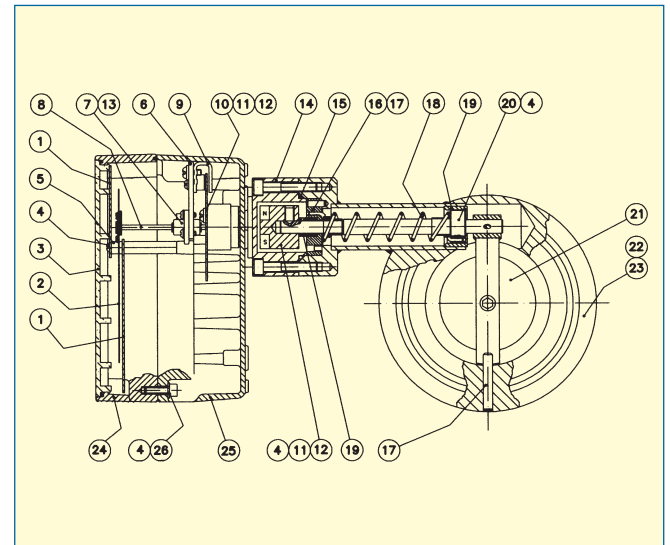
- DP-65 Fe R & DP-500 Fe R
Body in Polyamide Coated Steel
Disc, shaft and spring in EN 1.4401 (SS 316)
- DP-65 Fe & DP-500 Fe
Body in Steel
Disc, shaft and spring in EN 1.4401 (SS 316)
- DP-65 INOX & DP-500 INOX
All wetted parts in EN 1.4401 (SS 316)

Limit switches and transmitters

- .../AMM1...2 1 or 2 adjustable micro-switches
- .../AMD1...2 1 or 2 adjustable inductive detectors (+relays on order)
- TH32...TH34 4-20 mA transmitter 2 or 4 wire
- THT32Ex 4-20 mA transmitter 2 wire
EEx ia IIC T4 (ATEX)
- THT32...THT34 Transmitter +Totalizer 2 or 4 wire
- THT32Ex Transmitter +Totalizer 2 wire
EEx ia IIC T4 (ATEX)
- TKEx 0...4-20 mA Transmitter 2, 4 wire
EEx ia IIC T6 (ATEX)
- TP1200 Pneumatic Transmitter
3-15 psi (0.2-1 bar)

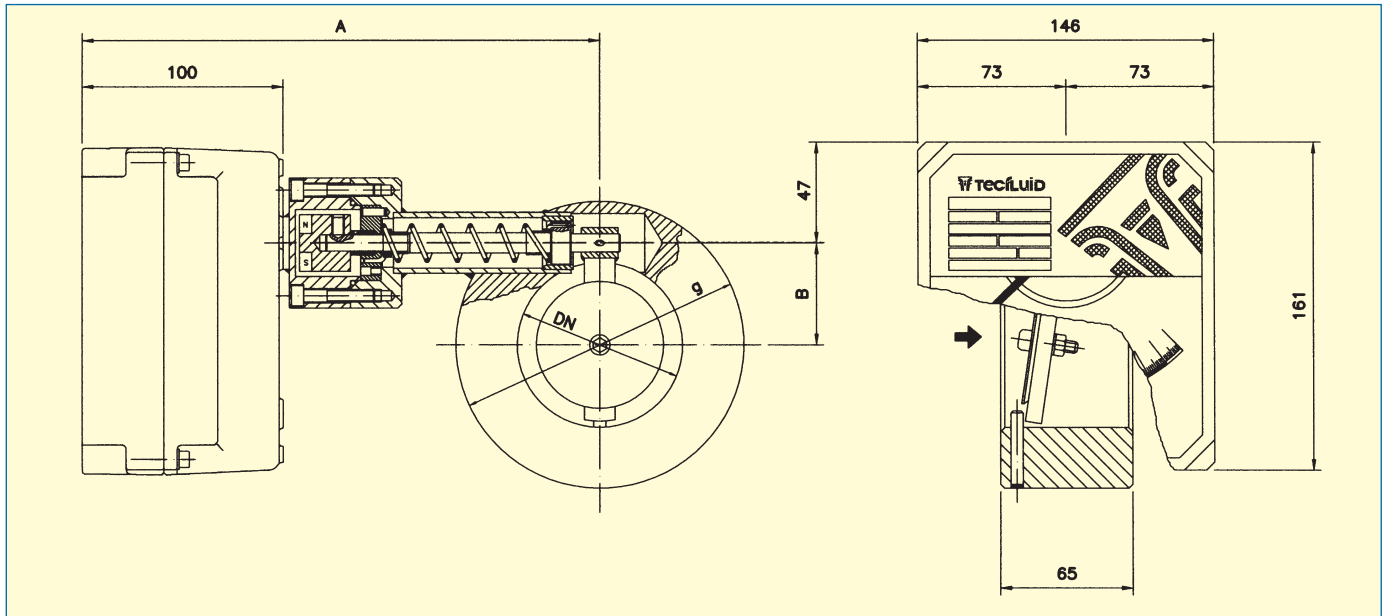


Metallic Disc Target Flowmeter Series DP-65/DP-500

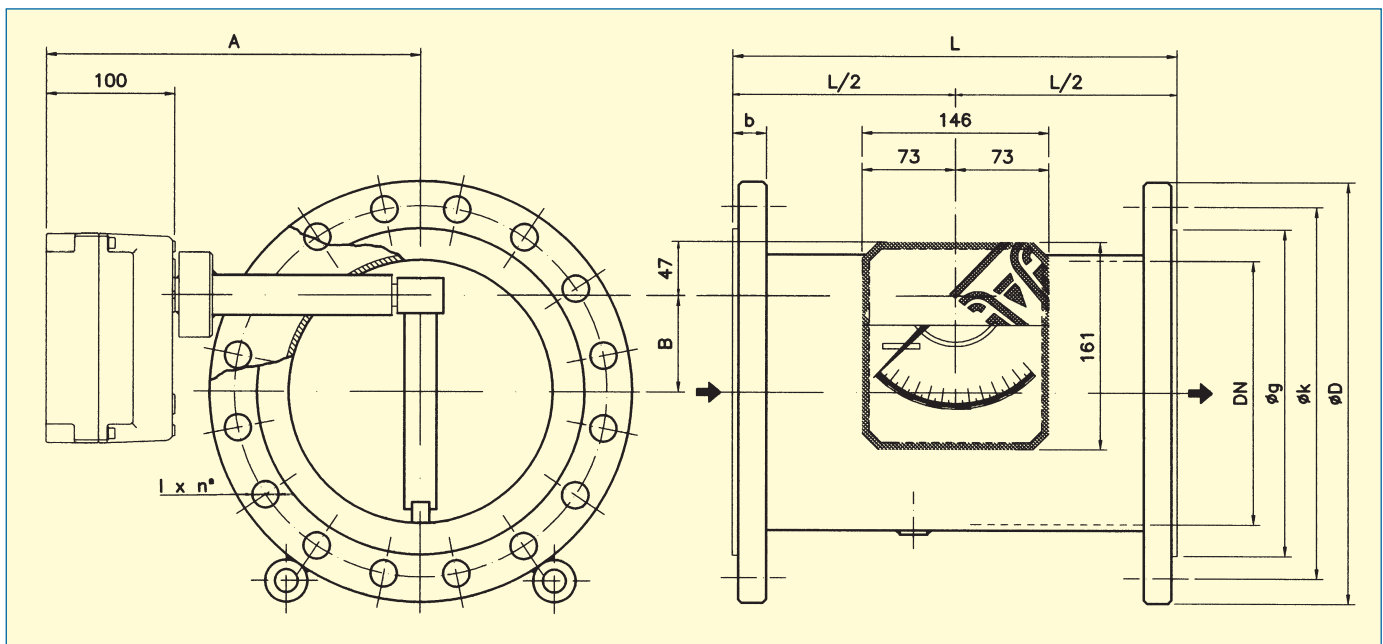


| Item | Description | Materials | |
|------|-------------------|-------------------------------|-------------------------------|
| | | DP-65 Fe R DP-500 Fe R | DP-65 INOX DP-500 INOX |
| 1 | Scale plate | Aluminium | Aluminium |
| 2 | Indicating needle | Aluminium | Aluminium |
| 3 | Window | Polycarbonate (UV treated) | Polycarbonate (UV treated) |
| 4 | Screw | SS 316 | SS 316 |
| 5 | Spacer | Brass | Brass |
| 6 | Bridge | Aluminium | Aluminium |
| 7 | Bearing holder | Brass | Brass |
| 8 | Shaft | SS 316 L | SS 316 L |
| 9 | Magnetic brake | Aluminium | Aluminium |
| 10 | Disc brake | Aluminium | Aluminium |
| 11 | Magnet housing | Aluminium | Aluminium |
| 12 | Magnet | Supernialco | Supernialco |
| 13 | Ball bearing | SS 316L | SS 316L |
| 14 | Locking piece | SS 316 | SS 316 |
| 15 | Gasket | NBR | NBR |
| 16 | Disc spring | SS 316 | SS 316 |
| 17 | Disc stop pin | SS 316 | SS 316 |
| 18 | Spring | SS 316 | SS 316 |
| 19 | End bush | PTFE | PTFE |
| 20 | Shaft | SS 316 | SS 316 |
| 21 | Disc | SS 316 | SS 316 |
| 22 | Body | Steel | SS 316 |
| 23 | Coating | Polyamide 11 | --- |
| 24 | Housing top | Polyamide 11 coated aluminium | |
| 25 | Housing base | Polyamide 11 coated aluminium | |
| 26 | Washer | Nylon | Nylon |

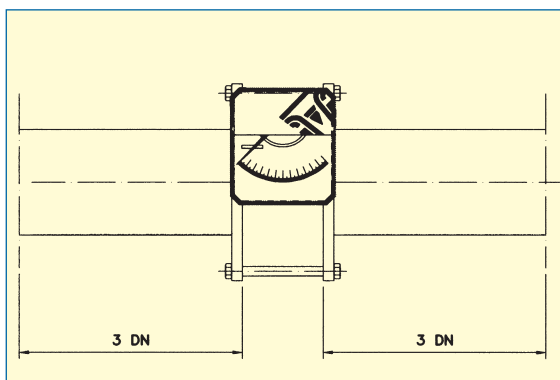
Series DP-65/DN 40 to DN 300



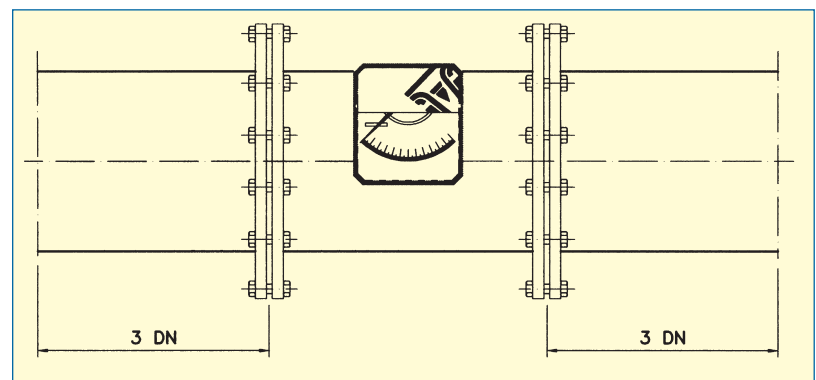
Series DP-500/DN 250 to DN 500



DP-65



DP-500



Series DP-65 / DN 40 to DN 300

| DN DIN 2501 | Standard Flow Rates m ³ /h H ₂ O @ 20°C | | | | Weights and Dimensions | | | |
|----------------|--|--------|--------|---------|------------------------|-----|-----|----|
| | g | B | A | Wt(kg) | | | | |
| 40 | 0.8-4 / 0.8-6 | 1-8 | 2-10 | 3-16 | 88 | 28 | 250 | 5 |
| 50 | 0.8-6 | 2-10 | 3-16 | 3-25 | 102 | 33 | 250 | 6 |
| 65 | 2-10 | 3-16 | 3-25 | 4-30 | 122 | 40 | 250 | 7 |
| 80 | 2-16 | 3-25 | 5-40 | 10-60 | 138 | 50 | 250 | 8 |
| 100 | 5-40 | 8-60 | 10-80 | 12-90 | 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 | 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 15 (approx.)

Series DP-500 / DN 250 to DN 500

| DN DIN 2501 | Standard Flow Rates m ³ /h H ₂ O @ 20°C | | | Weights and Dimensions | | | | | | | | |
|----------------|--|----------|----------|------------------------|-----|-----|-----|------|--------|----|-------|-----|
| | L | A | B | D | k | g | B | lxn° | Wt(kg) | | | |
| 250 | 25-200 | 50-400 | 60-500 | 500 | 330 | 90 | 395 | 350 | 320 | 26 | 23x12 | 70 |
| 300 | 30-250 | 50-400 | 80-600 | 500 | 330 | 115 | 445 | 400 | 370 | 26 | 23x12 | 78 |
| 350 | 40-300 | 60-500 | 100-800 | 600 | 350 | 124 | 505 | 460 | 430 | 26 | 23x16 | 86 |
| 400 | 50-400 | 80-600 | 120-1000 | 600 | 350 | 142 | 565 | 515 | 482 | 26 | 27x16 | 97 |
| 500 | 80-600 | 120-1000 | 200-1600 | 700 | 430 | 160 | 670 | 620 | 585 | 28 | 27x20 | 115 |

Equivalent scales for Air @ 1.013 bar abs, 20°C in Nm³/h = m³/h H₂O x 15 (approx.)

Thermal Separator DT

- Standard in aluminium, optional in SS 316L
- For working with fluids at high and low temperatures
- Data for bodies in Steel and in SS 316L
- With electronics
 - DN 40 ... DN 100: -20°C to +400°C
 - DN 125 ... DN 150: -20°C to +320°C
 - DN 200 ... DN 300: -20°C to +280°C
 - DN 350 ... DN 500: -20°C to +250°C
- Without electronics
 - DN 40 ... DN 500: -20°C to +400°C
- Reference ambient temperature = 20°C

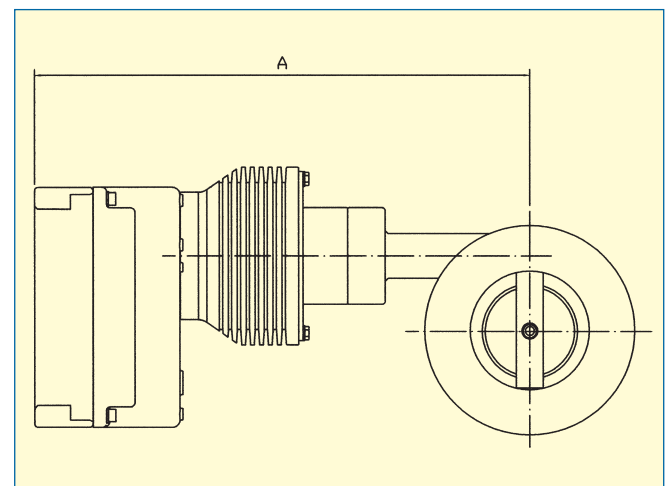
DP-65

| DN | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| A | 325 | 325 | 325 | 325 | 325 | 355 | 355 | 395 | 425 | 443 |

DP-500

| DN | 250 | 300 | 350 | 400 | 500 |
|----|-----|-----|-----|-----|-----|
| A | 405 | 405 | 425 | 425 | 505 |

Indicator Housing with Thermal Separator



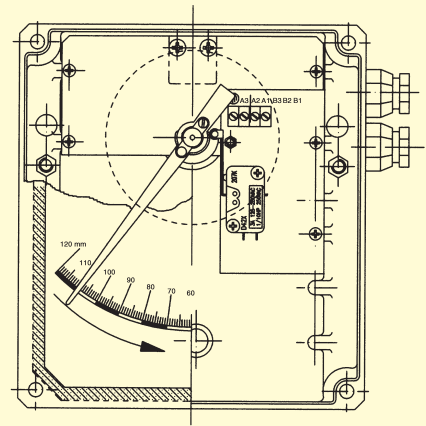
Limit Switches and Transmitter Options

Adjustable limit switch DP-AMM

Electrical micro-switch mounted in the indicator housing.

- DP-AMM1: 1 adjustable limit switch
 - DP-AMM2: 2 adjustable limit switches
 - Ratings: 3(1) A, 250 V (VDE/CEE)
 - Hysteresis: $\pm 10\%$ of full scale value
 - Ambient temperature: -25°C to $+80^{\circ}\text{C}$
 - Mechanical life: 10^7 Operations
- Gold plated contacts on order

DP-AMM



Adjustable limit switch DP-AMD

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

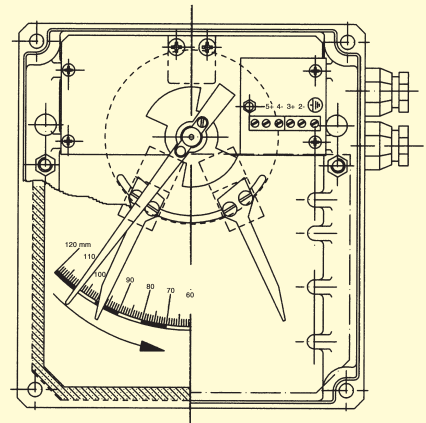
- DP-AMD/DP-AMD1...2: 1...2 bi-stable limit switches
- Detector power supply: 8 V dc
- Ambient temperature: -25°C to $+70^{\circ}\text{C}$

Control Relay (on demand)

NAMUR (DIN19234) for 1 or 2 inductive detectors.

- Power supply: 24...230 V ac 50-60 Hz
24...250 V dc
- Input: NAMUR EEx ia IIC
- Output: 1 or 2 inductive detectors
- Output Rating: 2...5 A / 40 V dc
- Ambient temperature: -25°C to $+70^{\circ}\text{C}$

DP-AMD

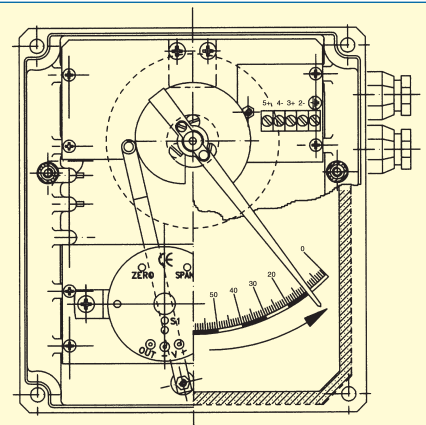


Electric transmitter DP-TKEx

The TKEx electric transmitter is an angular position converter coupled to the indicating system of the flowmeter and uses a 2 wire connection. It gives a linear output of 4-20 mA proportional to the flow rate. It is intrinsic safety ATEX certified to EEx ia IIC T6.

- Power supply: 12...30 V dc
- Output signal: 4-20 mA
- Electrical connection: 2 wire
- Short circuit current: <160 mA
- Internal Inductance: $L_i=0$
- Internal Capacitance: $C_i \leq 10$ nF
- Ambient Temperature: -20°C to $+40^{\circ}\text{C}$

DP-TKEx

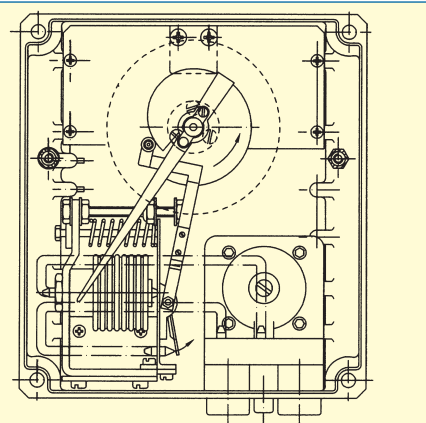


Pneumatic Transmitter DP-TP1200

The DP-TP1200 pneumatic transmitter gives a 3-15 psi or 0.2-1 bar, proportional to the flow rate.

- Air supply: 1.4 bar \pm 0.1 bar
- Air consumption: 460 NI/h
- Output signal: 3-15 psi (0.2-1 bar)
- Linearity: $\pm 0.4\%$
- Hysteresis: $\pm 0.25\%$
- Ambient temperature: -10 ... $+70^{\circ}\text{C}$

DP-TP1200



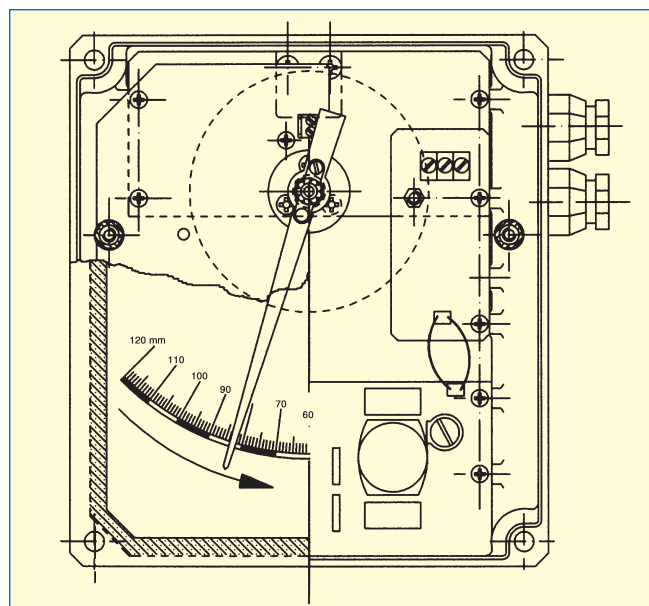
Transmitters and totalizers HALLTEC III

- 2 wire series: TH32 Transmitter
TH32T Transmitter + totalizer
- 4 wire series: TH34 Transmitter
TH34T Transmitter + totalizer

The HALLTEC electronic position transducers give an analog output proportional to the flow rate and can have a volume totalizer with a pulse output. They are based on the Hall effect using a magnetic field. They are mounted in the indicator housing.

Technical characteristics

- Power supply: 2 wire 10...50 V dc 4 wire 24...240 V ac (to be indicated)
less than 2 VA
- Power consumption: max. 20 mA
- Outputs:
 - 4-20 mA analogic:**
 - Precision: <0.6% of the magnet position
 - Maximum load in 4-20 mA loop: 2 k Ω (50 Vdc with power supply)
 - Pulse output:** Potential free N channel MOSFET
 - I_{max}. 200 mA
 - Max. frequency 2 Hz
 - Pulse duration approx. 250 ms
- Totalizer: 9 digits, 4.5 mm high
Reset by potential free contact
- Ambient temperature: -5°C to +70°C



Safety Characteristics

Conforms to 73/23/EEC Directive (low voltage)
Conforms to 89/336/EEC Directive (EMC)

Transmitters and totalizers HALLTEC III (EEx ia IIC T4 ATEX)

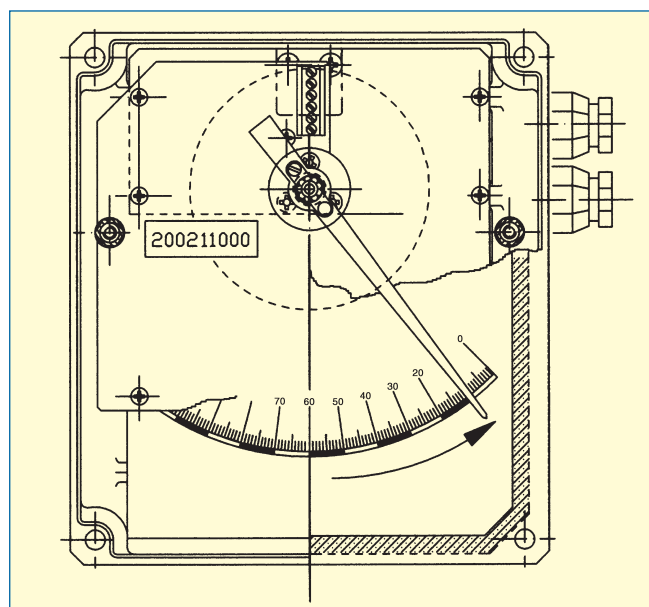


- 2 wire series: TH32Ex Transmitter
TH32TE_x Transmitter + totalizer

The HALLTEC electronic position transducers give an analog output proportional to the flow rate and can have a volume totalizer. They are based on the Hall effect using a magnetic field. They are mounted in the indicator housing.

Technical characteristics

- Power consumption: 4...20 mA for 0...100% of scale
- Output: 4...20 mA
- Precision: <0.6% of the magnet position
- Maximum load in 4-20 mA loop: 700 Ω (with 24 Vdc power supply)
- Totalizer: 9 digits, 4.5 mm high
Reset by potential free contact
- Ambient temperature: -5°C to +70°C



Safety Characteristics

Equipment conforms to the following directives and norms.

- 89/336/EEC Electromagnetic Compatibility.
- 94/9/EC Equipment and protective systems for use in potentially explosive atmospheres.
- EN 50284 Special requirements for the construction, test and marking of electrical apparatus of equipment group II, Category 1G.

This instrument, since it belongs to group II, is destined for use in locations where there may be the hazard of the formation of explosive atmospheres, except for mining.



Lloyd's Register España, S.A.

Notified Body Nº 0094

EC CERTIFICATE OF CONFORMITY

In accordance with the requirements of R.D. 769/1999 which transpose the Pressure Equipment Directive 97/23/CE

This is to Certify that the Quality Management System of:
TECFLUID,S.A.

C/ Narcís Monturiol, 33
08960 Sant Just Desvern
Barcelona (España)

has been assessed against the requirements of Annex III Module H of the Pressure Equipment Directive 97/23/CE schedule and conforms to the requirements for the product shown below:

**DESIGN AND MANUFACTURING OF FLOWMETERS,
VOLUMETRIC ACCOUNTANT AND LEVELS**

Approval is subject to the continued maintenance of Quality System in accordance with the requirements of the above Directive and Regulations

Authorisation is hereby given to use the LR Notified Body Identification Number 0094 (Princesa 29, 1º Madrid - Spain) in accordance with the requirements of specified Directive and Regulations in relation to the products as identified above.

Certificate Nº: 031

Original Approval: 20/07/2005
Current Certificate: 20/07/2005
Certificate Expiry: 31/07/2008



Insuertes de R. M. de Madrid, al Tercer 0233 general, 4516, de la Seo. 1º del Libro de Socios, R011 131, reg.º 1º - C.I.F. - A20812017
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info@appluscorp.com
www.appluscorp.com



CERTIFICATE

Number **EC-0032/96**

LGA Technological Center certifies that the Quality Management System of the supplier:

TECFLUID, S.A.

C/ Narcís Monturiol, 33
08960 SANT JUST DESVERN, Barcelona, Spain

For the following activities:

Design, manufacture and after sales service of flowmeters (variable area, orifice plate, target and electromagnetic), volumetric counters and levels.

is in accordance with the requirements of the standard **ISO 9001:2000**



This certificate is valid until March 24, 2006
Cerdanyola del Vallès, March 12, 2004
Adequation to APPLUS+Certification Technological Center of the certification dated October 7, 1996

General Director

Manager of the Certification Center

Ramon Capelades i Font

Salvador Boix Iglesias

This certificate shall be valid provided that all the conditions of the contract of which it is a part are fulfilled
This certificate comes from the EC-0032/96 LGA certificate number (02/C-SC002 ENAC Accreditation)



LABORATORIO OFICIAL J. M. MADARIAGA

1. PRODUCTION QUALITY ASSURANCE NOTIFICATION

- Annex IV of Directive 94/9/EC.
- Notification Number: LOM 02ATEX0031
- MEASUREMENT AND CONTROL ELECTRICAL FOR EXPLOSIVE ATMOSPHERES OF CATEGORY IG.
- Applicant: TECFLUID, S.A.
Address: C/ Narcís Monturiol, 33
08960 SANT JUST DESVERN (Barcelona)
- Manufacturer: TECFLUID, S.A.
Address: C/ Narcís Monturiol, 33
08960 SANT JUST DESVERN (Barcelona)
- Laboratorio Oficial J. M. Madariaga (LOM), is the Notified Body Nº 0163 for Annex IV, in accordance with the Article 9 of the Parliament and Council Directive 94/9/EC of 23 March 1994, notifies to the applicant that the aforementioned manufacturer has a production quality control system which complies to Annex IV of the Directive.
- This notification is based on audit report Nº LOM 02.131.1, issued on 2002-06-06.
- The applicant shall inform Laboratorio Oficial J.M. Madariaga about any relevant modification to the Quality System, particularly concerning to:
 - Person(s) responsible of Quality System and Inspection Controls.
 - Person(s) substituting the Head of Quality Area.
 - Changes the inspection equipment affecting quality controls.
 - Relevant aspects affecting Quality System certification.
- The applicant is from now monitored by Laboratorio Oficial J. M. Madariaga to verify if the manufacturer duly fulfills the obligations arising out of the approved quality system, as stated in clause 4 of Annex IV of the Directive, and will be surveyed every year.
- This notification can be withdrawn if the manufacturer no longer satisfies the above mentioned requirements.
- As stated in article 10 of Directive 94/9/EC, CE marking is accompanied by the identification number of LOM (0163) notified body responsible of surveying the quality of the production.

Madrid, July 9º 2002

Carlos Fernández Ramón
DIRECTOR OF LABORATORY

Ricardo Rodríguez Auzón
Head of Audit Area

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UNIVERSIDAD POLITÉCNICA DE MADRID
EMPRESAS E INSTITUCIONES DE INVESTIGACIÓN Y EQUIPOS PARA ANÁLISIS, CALIBRACIÓN Y MUESTREO
(Final Decreto 234/1978 de 3 de Abril - BOE 1982-04-29)



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The technical data in this pamphlet is subject to modification without notification, if the technical innovations in the product or manufacturing processes so require.