SPM

- low sensitivity to dirt
- high switch rating
- low pressure drop

06

SPM-L

- low sensitivity to dirt
- high switch rating
- low pressure drop

06

SPKM

- low sensitivity to dirt
- low pressure drop
- threaded connection

06

SPKR

- low sensitivity to dirt
- low pressure drop
- threaded connection

06

DP-65

- Target - disc - flowmeter
- high reliability
- suitable for high temperatures
- sandwich mounting

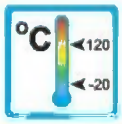
06

Flow Monitor

SPM

Operation

The flow monitors type SPM are paddle switches



Application

The flow monitors type SPM are used for monitoring volumeflow of liquid media in pipe constructions and open ducts.

Areas of application:

– Coolingsystems and cooling-circuits

– Heating and air-conditioning systems

– Research and development

Features

The SPM series proves itself through reliable function and easy handling.
A bellow separates the electrical and the wetted part of the SPM.
All instruments without a T-piece are supplied with four separate paddles, which can be combined.
The choice of the combination is determined by the pipe diameter (refer to table 3 on page 2).
If necessary the paddles have to be shortened according to pipe size.

Further characteristics of this sturdy type are:

– low sensitivity to dirt

– high contact rating

– easy installation

– low pressure drop

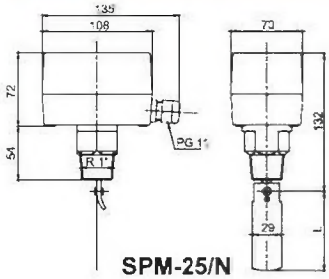
Hints

The installation of the flow monitor can be done in any way in the system. The flow direction must be observed.
Flow-straightening sections of at least 5x the pipe diameter should be considered up- and down-stream of the SPM.
The switchpoint must be re-adjusted for vertical installation to compensate the paddle weight.
If the monitor is installed upside down, it must be observed that no deposits can clog the bellow!

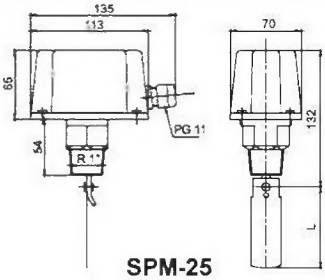
The flow monitor must not be used as a supporting part in a pipe construction!

SPM 1 0001 11-04 E M

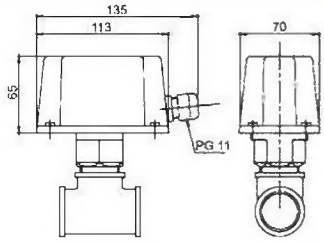
Technical Data



SPM-25/N

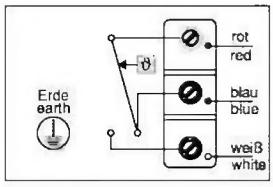


SPM-25



SPM-20

Connection diagram



red. common

blue: N. C. (Normally closed)

white: N. O. (Normally open)

For switch values refer to table 3.
The instruments are factory adjusted for minimum switch values.
By turning the spanscrew clockwise the switch values can be increased (refer to operating instruction).

Table 1: Overview

Type	Pipe size	p_{max} [bar]	Material
SPM-15	1/2"	11	Brass
SPM-20	3/4"	11	Brass
SPM-25	1" - 8"	11	Brass
SPM-25 VA	1" - 8"	30	SS: 316L
SPM-25T*	1" - 8"	11	Brass
SPM-25/N	1" - 8"	11	Brass
SPM-25/N VA	1" - 8"	30	SS: 316L
SPM-25R	1" - 8"	11	Brass
SPM-25R VA	1" - 8"	30	SS: 316L
SPM-25R/N	1" - 8"	11	Brass
SPM-25R/N VA	1" - 8"	30	SS: 316L

* SPM-25T is TÜV certified

Table 2: Paddle lengths and paddle material

Paddle	Length L		Material
1	standard (as of DN 50):	28,5 mm	SS: 316
	with DN 25 the paddle must be cut to size		
2	standard:	54,5 mm	SS: 316
3	standard:	83,5 mm	SS: 316
4	standard (ab DN 175):	162,5 mm	SS: 316
	*Special length for DN 100:	92,0 mm	
	*Special length for DN 125:	117 mm	
	*Special length for DN 150:	143 mm	

*By shorten the standard paddle, the user can obtain the special lengths

Table 3: Switch values for H_2O

Types: SPM-15 (with T-piece), SPM-20 (with T-piece)						
Type	Connection				switch-off value [l/h]	switch-on value [l/h]
SPM-15	1/2"				174 - 846	480 - 948
SPM-20	3/4"				138 - 768	408 - 858
Types: SPM-25, SPM-25 VA, SPM-25T, SPM-25/N, SPM-25/N VA						
DN	fitted paddle				switch-off value [m³/h]	switch-on value [m³/h]
25	1				0,6 - 2,0	1,0 - 2,1
32	1				0,8 - 2,8	1,3 - 3,0
40	1				1,1 - 3,7	1,7 - 4,0
50	1	2			2,2 - 5,7	3,1 - 6,1
65	1	2			2,7 - 6,5	4,0 - 7,0
80	1	2	3		4,3 - 10,7	6,2 - 11,4
100	1	2	3		11,4 - 27,7	14,7 - 29,0
100	1	2	3	4	6,1 - 17,3	8,0 - 18,4
125	1	2	3		22,9 - 53,3	28,4 - 55,6
125	1	2	3	4	9,3 - 25,2	12,9 - 26,8
150	1	2	3		35,9 - 81,7	43,1 - 85,1
150	1	2	3	4	12,3 - 30,6	16,8 - 32,7
200	1	2	3		72,6 - 165,7	85,1 - 172,5
200	1	2	3	4	38,6 - 90,8	46,5 - 94,2
Types: SPM-25R, SPM-25R VA, SPM-25R/N, SPM-25R/N VA						
DN	fitted paddle				switch-off value [m³/h]	switch-on value [m³/h]
25	1				0,2 - 1,0	0,6 - 1,1
32	1				0,25 - 1,4	0,9 - 1,6
40	1				0,5 - 1,9	1,2 - 2,2
50	1	2			0,9 - 3,6	2,3 - 4,1
65	1	2			1,2 - 4,9	3,1 - 5,5
80	1	2	3		2,1 - 7,4	4,9 - 8,2
100	1	2	3		4,9 - 17,1	11,3 - 19,1
100	1	2	3	4	3,3 - 11,6	7,7 - 13,0
125	1	2	3		9,7 - 34,0	22,4 - 37,9
125	1	2	3	4	5,0 - 17,5	11,5 - 19,6
150	1	2	3		13,6 - 47,6	31,5 - 53,2
150	1	2	3	4	6,1 - 21,4	14,1 - 23,9
200	1	2	3		25,7 - 90,1	59,6 - 100,7
200	1	2	3	4	21,7 - 55,3	36,5 - 61,8

Technical Data

Housing:	Galvanized steel bottom plate with ABS-Cover; Ingress protection: IP 65		
optional (SPM-.../N):	Painted aluminium bottom housing with ABS-Cover; Ingress Protection: IP 65		
Contact:	Dust tight micro switch	switch values:	15 (8) A, 24 - 250 V AC
optional:	Gold contacts on request		
Medium temperature:	-20 °C to 120 °C	Ambient temperature max.:	85 °C

SPM 2 0001 11-04 E M

Flow Switch

SPM-L

Operation

The flow switches type SPM-L are paddle switches

Application

The flow switches type SPM-L are used for monitoring volumeflow of air.

Areas of application:

- Coolingsystems and cooling-circuits
- Heating and air-conditioning systems
- Research and development

Features

The SPM-L series proves itself through reliable function and easy handling.

Further characteristics of this sturdy type are:

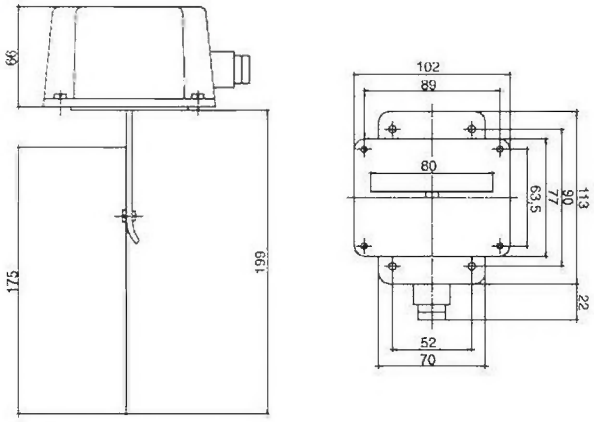
- low sensitivity to dirt
- high contact rating
- easy installation
- low pressure drop

Installation hints

The flow switch can be installed horizontally or vertically in the system.
The instrument must not be installed upside down.
The flow direction must be observed.
Flow-straightening sections of at least 5x the pipe diameter should be considered up- and down-stream of the SPM-L.
The switchpoint must be re-adjusted for vertical installation to compensate the paddle weight.
The flow switch must not be used as a supporting part in a pipe construction!

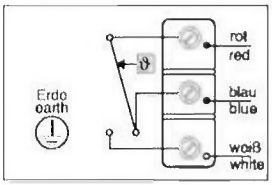
SPM-L 1 0003 08-07 E M

Technical Data



SPM-L

Connection diagram



red: common

blue: N. C. (Normally closed)

white: N. O. (Normally open)

For switch values refer to table 1.
The instruments are factory adjusted for minimum switch values.
By turning the spancrew clockwise the switch values can be increased (refer to operating instruction).

Table 1: Switch values for air

Type	switch-off value min. [m/s]	switch-off value max. [m/s]	switch-on value min. [m/s]	switch-on value max. [m/s]
SPM-L	1,0	8,0	2,5	9,2

If the switchpoint is above 5 m/s the paddle has to be cut off at the marking.
Then the lowest switch-off value increases to 2,5 m/s flow velocity.

Technical Data			
Housing:	Galvanized steel bottom plate with ABS-Cover; Ingress protection of the external side: IP 65		
Mounting plate:	Brass		
Paddle:	Stainless Steel 1.4310		
Contact:	Dust tight micro switch	Switch values:	15 (8) A, 24 - 250 V AC
optional:	Gold contacts on request		
Medium temperature:	-10 °C to 85 °C	Ambient temperature:	-10 °C to 85 °C

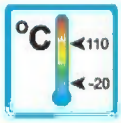
SPM-L 2 0002 02-05 E M

Flow Monitor

SPKM

Operation

The flow monitors type SPKM are paddle switches with magnetic triggering of a micro switch.



Application

The flow monitors type SPKM are used for monitoring volumeflow of liquid media in pipe constructions and open ducts.

Areas of application:

- Coolingsystems and cooling-circuits
- Heating and air-conditioning systems
- Research and development

Features

The SPKM series proves itself through reliable function and easy handling.
The electrical and the wetted part are hermetically separated.

Further characteristics of this sturdy type are:

- low sensitivity to dirt
- high repeatability
- low pressure drop
- easy switchpoint adjustment
- high contact rating
- threaded connection

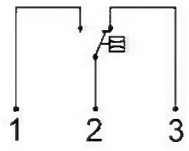
Installation hints

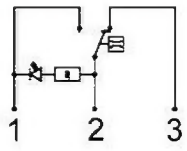
The flow monitor can be installed horizontally or vertically in the system.
The instrument must not be installed upside down.
The flow direction must be observed.
Flow-straightening sections of at least 5x the pipe diameter should be considered up- and down-stream of the SPKM.
The switchpoint must be re-adjusted for vertical installation to compensate the paddle weight.
The flow monitor must not be used as a supporting part in a pipe construction!

SPKM 1 0002 09-05 E M

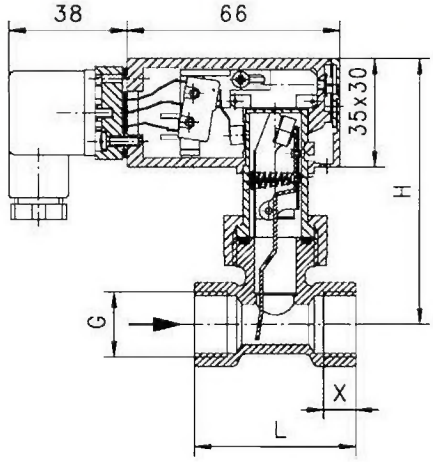
Measuring Ranges, Technical Data

Connection diagram





optional: with LED red



SPKM

Summary of types SPKM

Type	Switch range* (H_2O) [l/min]	Qmax. (H_2O) [l/min]	DN	G	PN [bar]	H [mm]	L [mm]	X [mm]	Weight Brass [kg]	Weight Stainless Steel [kg]
SPKM-10	4 — 5,5	10	10	3/8"	25	87	50	10	0,35	0,40
SPKM-15	5,5 — 7	20	15	1/2"	25	87	50	10	0,35	0,41
SPKM-20	7,5 — 10	40	20	3/4"	25	88	50	12	0,35	0,35
SPKM-25	14 — 18	60	25	1"	25	92	50	12	0,40	0,45
SPKM-32	22 — 30	80	32	1 1/4"	25	96	50	12	0,55	0,55
SPKM-40	37 — 50	100	40	1 1/2"	25	99	50	12	0,60	0,70
SPKM-50	67 — 93	150	50	2"	25	108	50	12	1,00	1,00

*The stated values are switch-off points for horizontal installation. Measuring ranges for other flow media on request!

Operating data	**SPKM**	
Operating pressure max. Brass-Version:	25 bar	
Operating pressure max. Stainless Steel-Version:	25 bar	
Average pressure drop at Qmax.:	0,01 bar	
Maximum temperature:	110 °C	
Measuring accuracy:	±15% of full scale	
Hysteresis:	Depending on switch value, at least 0,7 l/min	
Electrical data:		
Change over:	max. 250 V AC • 5 A	
Ingress protection:	IP65 (plug connection DIN 43650 Form A)	
Output signal:	The contact changes, when the flow falls below the set point.	
Power supply:	Not required (micro switch)	
Status indication (optional):	LED red (refer to connection diagram)	
Gold contact (optional):	125 V AC / 30 V DC • 100 mA	
Other plug types on request!		
Material:	**Brass-Version**	**Stainless Steel-Version**
Housing (wetted part):	MS 58 nickel-plated	1.4305
Body (wetted part):	MS 58	1.4571
Paddle parts (wetted part):	1.4301 ; 1.4571	1.4301 ; 1.4571
Spring (wetted part):	1.4310	1.4310
Magnet (wetted part):	Oxyd 300	Oxyd 300
Gasket (wetted part):	NBR	Viton

Please indicate flow direction, flow medium and switch range with your order!

SPKM 2 0002 09-05 E M

meister strömungstechnik gmbh

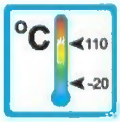
TAMO LIMITED, 22 Saxum Complex, Salisbury Road, Uxbridge, Middlesex. UB8 2RZ
TEL: 01895 200015 FAX: 01895 252205 E-Mail: info@tamo.co.uk Website: www.tamo.co.uk

Flow Monitor

SPKR

Operation

The flow monitors type SPKR are paddle switches with magnetic triggering of a reed contact.



Application

The flow monitors type SPKR are used for monitoring volumeflow of liquid media in pipe constructions and open ducts.

Areas of application:

- Coolingsystems and cooling-circuits
- Heating and air-conditioning systems
- Research and development

Features

The SPKR series proves itself through reliable function and easy handling.
The electrical and the wetted part are hermetically separated.

Further characteristics of this sturdy type are:

- low sensitivity to dirt
- high repeatability
- low pressure drop
- easy switchpoint adjustment
- threaded connection

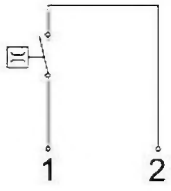
Installation hints

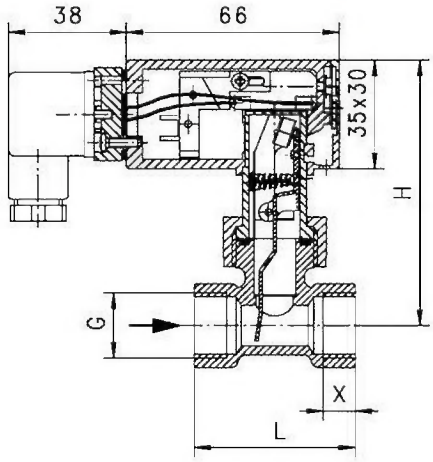
The flow monitor can be installed horizontally or vertically in the system.
The instrument must not be installed upside down.
The flow direction must be observed.
Flow straightening sections of at least 5x the pipe diameter should be considered up- and down-stream of the SPKR.
The switchpoint must be re-adjusted for vertical installation to compensate the paddle weight.
The flow monitor must not be used as a supporting part in a pipe construction!

SPKR 1 0002 09-05 E M

Measuring Ranges, Technical Data

Connection diagram





SPKR

Summary of types SPKR

Type	Switch range* (H_2O) [l/min]	Qmax. (H_2O) [l/min]	DN	G	PN [bar]	H [mm]	L [mm]	X [mm]	Weight Brass [kg]	Weight Stainless Steel [kg]
SPKR-10	3,5 — 5	10	10	3/8"	25	87	50	10	0,35	0,40
SPKR-15	5 — 6,5	20	15	1/2"	25	87	50	10	0,35	0,41
SPKR-20	6 — 8,5	40	20	3/4"	25	88	50	12	0,35	0,35
SPKR-25	12 — 15	60	25	1"	25	92	50	12	0,40	0,45
SPKR-32	20 — 27	80	32	1 1/4"	25	96	50	12	0,55	0,55
SPKR-40	34 — 44	100	40	1 1/2"	25	99	50	12	0,60	0,70
SPKR-50	54 — 69	150	50	2"	25	108	50	12	1,00	1,00

*The stated values are switch-off points for horizontal installation. Measuring ranges for other flow media on request!

Operating data	**SPKR**
Operating pressure max. Brass-Version:	25 bar
Operating pressure max. Stainless Steel-Version:	25 bar
Average pressure drop at Qmax.:	0,01 bar
Maximum temperature:	110 °C
Measuring accuracy:	±15% of full scale
Hysteresis:	Depending on switch value, at least 0,7 l/min
Electrical data:	
Normally open:	max. 250 V AC • 1 A • 50 VA
Ingress protection:	IP65 (plug connection DIN 43650 Form A)
Output signal:	The contact opens, when the flow falls below the set point.
Power supply:	Not required (potentialfree reed contacts)
Other plug types on request!	

Material:	**Brass-Version**	**Stainless Steel-Version**
Housing (wetted part):	MS 58 nickel-plated	1.4305
Body (wetted part):	MS 58	1.4571
Paddle parts (wetted part):	1.4301 ; 1.4571	1.4301 ; 1.4571
Spring (wetted part):	1.4310	1.4310
Magnet (wetted part):	Oxyd 300	Oxyd 300
Gaskets (wetted part):	NBR	Viton

Please indicate flow direction, flow medium and switch range with your order!

SPKR 2 0002 09-05 E M

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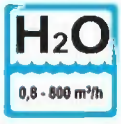
TEL: 01895 200015 FAX: 01895 252205 E-Mail: info@tamo.co.uk Website: www.tamo.co.uk

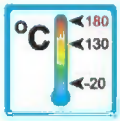
Flowmeter

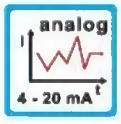
DP-65

Operation

The instruments, type DP-65, are target-disc flowmeters







Application

The flowmeters, type DP-65, are employed to monitor the volume flow of liquids.
The instruments are used in many different applications:

- water treatment
- chemical industry
- heating circuits
- pharmaceutical industry
- fire protection installations

Features

The DP-65 prove themselves through reliability and simple handling. Further properties of this sturdy series are:

- suitable for high temperature applications
- product designated scale at no charge
- sandwich mounting

Installation hints

The flowmeter can be installed in any position in the system. The flow direction must be observed (refer to page 3).

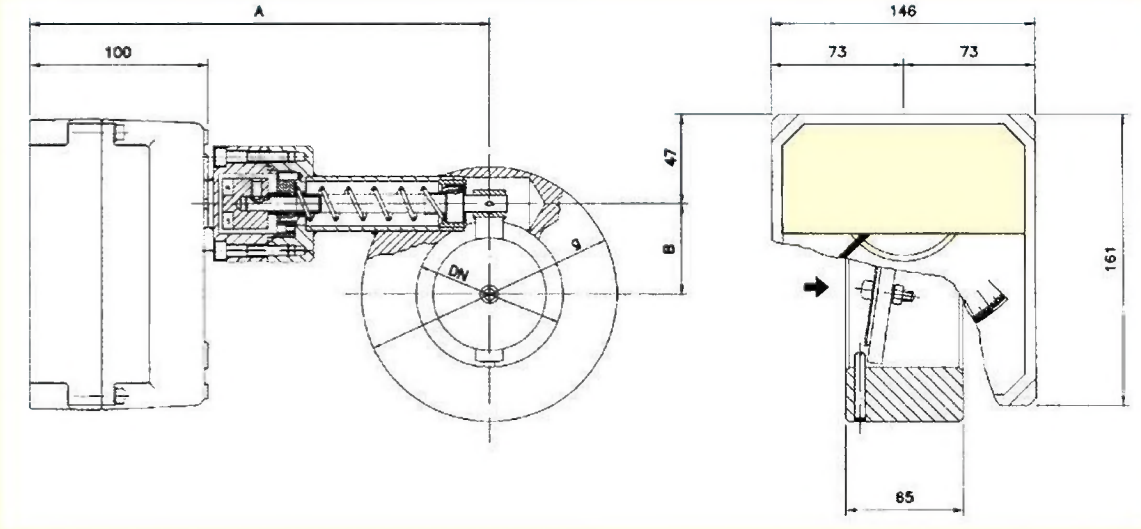
The flowmeter must not be used as a supporting part in a pipe construction!

Keep adequate distance to magnetic fields (e.g. electric-motors)!

The operating instruction for DP-65 must be observed!

DP-65 1 0002 08-06 E M

Technical Data



Flow ranges, dimensions and weights

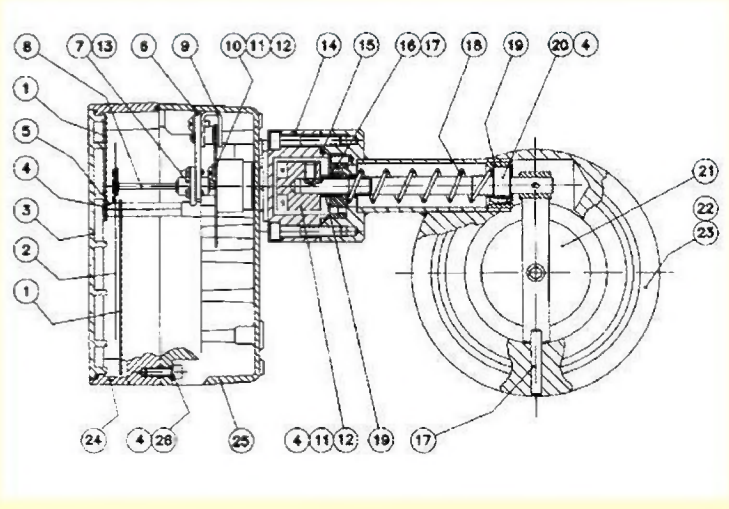
DN	Flow ranges (water at 20 °C)				Dimensions			Weight
	[m³/h]	[m³/h]	[m³/h]	[m³/h]	g	B	A	[kg]
40	0,8 - 4 / 6	1 - 8	2 - 10	3 - 16	88	28	250	5
50	0,8 - 6	2 - 10	3 - 16	3 - 25	102	33	250	6
65	2 - 10	3 - 16	3 - 25	4 - 30	122	40	250	7
80	2 - 16	3 - 25	5 - 40	10 - 60	138	50	250	8
100	5 - 40	8 - 60	10 - 80	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	—	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

Technical data

Measuring ranges:		**Accuracy:**	
Water	refer to table above	standard	± 2,5 % of full scale
		optional	± 1,6 % of full scale
Medium temperature:		**Ambient temperature:**	
Steel coated (beschichtet)	-20 °C to +130 °C	Steel (coated)	-20 °C to +80 °C
Stainless Steel	-20 °C to +180 °C	Stainless Steel	-20 °C to +80 °C
Pressure:			
DN-40 to DN-80	PN40	DN-100 to DN-200	PN16
DN-250 to DN-300	PN10		
Pressure drop	low pressure drop	**Viscosity max.:**	380 cP
Connection (standard):	sandwich mounting		
Scale:	medium customised, 120 mm, various units e.g.: l/h, m³/h, kg/h		
Special versions (on request):			
High temperature version	-20 °C to +250 °C (in Stainless Steel only)		
Ingress protection housing:	IP 65	**Cable entry:**	PG9-cable gland

DP-65 2 0001 08-04 E M

Materials, flow directions



Materials

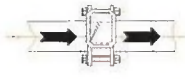
No.	Description	Steel	Stainless Steel	No.	Description	Steel	Stainless Steel
1	Scale	Aluminum	Aluminum	14	Cocking bolt	1.4404	1.4404
2	Pointer	Aluminum	Aluminum	15	Gasket	NBR	NBR
3	Show glass	Polycarbonate	Polycarbonate	16	Spring pad	1.4404	1.4404
4	Screw	1.4401	1.4401	17	Pin	1.4404	1.4404
5	Scale carrier (2-parts)	Brass chrome plated	Brass chrome plated	18	Spring	1.4310 NS	1.4310 NS
6	Linkage	Aluminum	Aluminum	19	Bushing	PTFE	PTFE
7	Bearing	Brass chrome plated	Brass chrome plated	20	Axle	1.4404	1.4404
8	Axle	1.4404	1.4404	21	Target disc	1.4404	1.4404
9	Magnet	Alnico	Alnico	22	Armature	Steel	1.4401
10	Brake disc	Aluminum	Aluminum	23	Lining	Polyamid 11	—
11	Magnet seat	Aluminum	Aluminum	24	Cover	Aluminum	Aluminum
12	Magnet	Alnico	Alnico	25	Housing	Aluminum	Aluminum
13	Bearing	1.4037	1.4037	26	Washer	Akulon	Akulon

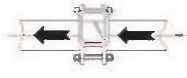
wetted parts

Flow directions


from bottom to top


from top to bottom


from left to right


from right to left

Please advise flow direction when ordering !

DP-85 3 0001 08-04 E M

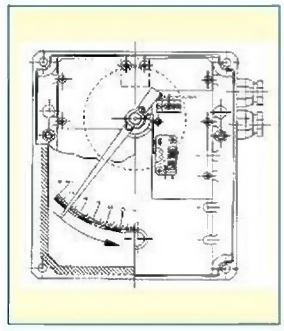
Electronic measuring transducers and limitswitches

Adjustable micro-limitswitch type DP-AMM

Bistable microswitch (change over) installed in the indicator housing of the flowmeter

- DP-AMM1: 1 adjustable limitswitch
- DP-AMM2: 2 adjustable limitswitches
- Switch values: 3 (1) A / 250 V (VDE/CEE)
- Hysteresis: ±10% of endvalue
- Ambient temperature: -25 °C to +80 °C
- Mechanical lifetime: 10^7 switch operations
- Supply: 220 V AC, load: 6 A 24 V DC, load: 0,5 A

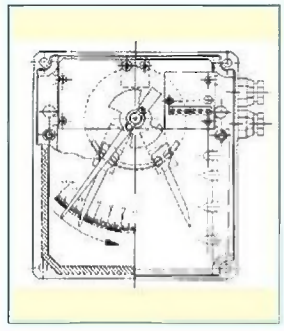
(gold plated on request)



Adjustable inductive limitswitch type DP-AMD

Inductive proximity switch, 3,5 mm, according to standard NAMUR DIN 19234, installed in the indicator housing of the flowmeter

- DP-AMD1...2: 1...2 adjustable limitswitches
- Power supply: 8 V DC (via amplifier)
- Temperature: -25 °C to +70 °C



Amplifier (on request)

Model NAMUR (DIN 19234) for 1 or 2 adjustable inductive contacts

- Power supply: 24...230 V AC, 50 - 60 Hz 24...250 V DC
- Input: intrinsic safe circuit EEx ia IIC
- Output: 1 or 2 relays
- Load: 2...5 A / 40 V DC
- Temperature: -25 °C to +70 °C

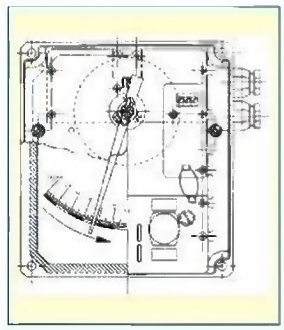
Electronic measuring transducer HALLTEC IV

The HALLTEC IV is a transducer in 2 wire technique with a hall effect sensor. The hall sensor is based on the non contact sensing through the indicator mechanism.

Model:

TH4 transducer
TH4T transducer + totalizer

- Power supply: 12...36 V DC
- max. current / load consumption: max. 20 mA
- Analog output: 4 - 20 mA
- Accuracy: < 0,6 % referenced to the magnet position
- Load max.: 1,1 kΩ at 36 V DC
- Pulse output: MOSFET potentialfree N-channel
- I max.: 200 mA
- max. frequency: 2 Hz
- Pulse length: approx. 250 ms
- Totalizer: 9 digits (8 + 1 decimal), 4,5 mm peak with reset via potentialfree contact
- Ambient temperature: -5 °C to +70 °C



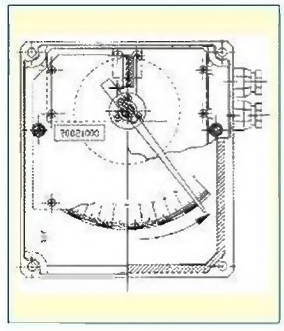
Electronic measuring transducer HALLTEC III (EEx ia IIC T4 ATEX)

The HALLTEC III is a transducer in 2 wire or 4 wire technique with a hall effect sensor. The hall sensor is based on the non contact sensing through the indicator mechanism.

Model:

2 wire:
TH32Ex transducer
TH32TEx transducer + totalizer

- max. current: 20 mA
- Analog output: 4 - 20 mA
- Accuracy: 0,6 % referenced to the magnet position
- Load max.: 700 Ω at 24 V DC power supply
- Totalizer: 9 digits, 4,5 mm peak with reset via potentialfree contact
- Ambient temperature: -5 °C to +40 °C



DP-65 4 0002 05-07 E M

meister strömungstechnik gmbh

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