

TOPAS PMG / PMH

Hydraulic sensor

Hot water

Applications

The hydraulic sensors form part of a heat meter and operate according to the multiple-jet measuring principle.



Features

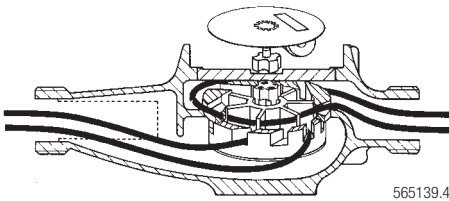
- Insensitive to turbulences
- Correct mounting ensures high accuracy and long-term stability
- No inlet or outlet paths required

Benefits

- The dial can be turned through 360° for ease of reading
- Available with a reed, inductive or optoelectronic pulser
- Accurate flow measurement significantly increases the value of the system

Design

- The TOPAS series is a range of velocity flowmeters based on the well-established multijet principle which is insensitive to flow turbulences.
- Sapphire bearings on each side of the vane wheel (DN 15 - 32) rotate on a thin film of water in swivel units to ensure smooth and accurate motion and excellent longterm measuring stability.
- The (hydraulic) sensor is completely separated from the roller counter and from an electronic (dry running) meter. The speed of the vane wheel is transmitted by a pressure-resistant closure plate via a magnetic coupling.
- The adjusting elements for verification purposes are located inside the instrument (DN 15 - 32) and cannot be manipulated externally.
- The measuring chamber is protected by a robust cover
- The drive star and the roller counter register even the smallest flowrates.



Product range

TOPAS PMG



- Multi-jet turbine meters with dry-type registers
- Type approval as hydraulic sensors for hot water meters conforming to Directive 2004/22/EC (EN 1434)
- Accuracy class 3 and ambient temperature class C according to EN 1434
- Suitable for horizontal mounting
- Brass housing with threaded connections according to ISO 228-1
- Nominal pressure PN 16
- Maximum temperature 90 °C / 120 °C / 130 °C
- No inlet or outlet paths required

Nominal diameter	DN	mm inches	15 1/2	20 3/4	25 1	32 1 1/4	40 1 1/2	50 2	
With reed pulser RH 1 (1 litre), Tmax	Art. No.		94246	94247	94248	94249	94351	94354	
With inductive pulser IH, Tmax	Art. No.	°C	130	130	130	130	120	120	
Maximum flow rate	qs	m ³ /h	3	5	7	12	20	30	
Permanent flow rate	qp	m³/h	1.5	2.5	3.5	6	10	15	
Minimum flow rate	qi	m ³ /h	0.031	0.031	0.07	0.075	0.2	0.2	
Starting flow at approx.		m ³ /h	0.014	0.014	0.022	0.022	0.045	0.045	
Max. pressure loss at qp		bar	0.15	0.2	0.22	0.22	0.2	0.2	
Flowrate at Δp = 1bar		m ³ /h	4.5	5.2	9.5	12.7	25.6	32.5	
Measuring range	qp/qi		50	80	50	80	50	80	
Smallest readable volume		litre	0.1	0.1	0.1	0.1	0.1	0.1	
Recording capacity		m ³ /h	99'999	99'999	99'999	99'999	99'999	99'999	
Thread size: Body	G...B	inches	3/4	1	1 1/4	1 1/2	2	2 3/8	
Thread size: Connector	R...	inches	1/2	3/4	1	1 1/4	1 1/2	2	
Body surface finish			lacquered						
Weight without connections		kg	1	1.8	2.8	2.8	5	7	
Dimensions									
		a	mm	165	190	260	260	300	300
		b	mm	35	37	40	40	60	62
		c max.	mm	76	84	93	93	102	109
		d	mm	260	285	375	375	440	460
		f 1)	mm	-	105	115	140	150	165

1) Diameter with threaded flange

Pressure loss curves: page 9

TOPAS PMGF (downpipe) and PMGS (riser pipe)



- Multi-jet turbine meters with dry-type registers
- Type approval as hydraulic sensors for hot water meters conforming to Directive 2004/22/EC (EN 1434)
- Accuracy class 3 and ambient temperature class C according to EN 1434
- Suitable for vertical mounting
- Brass housing with threaded connections according to ISO 228-1
- Nominal pressure PN 16
- Maximum temperature 90 °C / 120 °C / 130 °C
- No inlet or outlet paths required

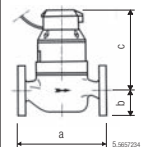
Nominal diameter	DN	mm inches	20 3/4	25 1	32 1 1/4	40 1 1/2
PMGF (downpipe)						
With reed pulser RH 1 (1 litre), Tmax	Art. No.	°C	94250 130	94251 130	94252 130	94352 120
With inductive pulser IH, Tmax	Art. No.	°C	94616 90	94617 90	94618 90	94237 90
PMGS (riser pipe)						
mit Reed-pulser RH1 (1 litre), Tmax	Art. No.	°C	94253 130	94254 130	94255 130	94353 120
With inductive pulser IH Tmax	Art. No.	°C	89694 90	89695 90	89696 90	94245 90
Maximum flow rate	qs	m ³ /h	3.1	4.4	6.3	12.5
Permanent flow rate	qp	m³/h	2.5	3.5	5	10
Minimum flow rate	qi	m ³ /h	0.031	0.07	0.1	0.2
Starting flow at approx.		m ³ /h	0.014	0.022	0.022	0.045
Max. pressure loss at qp	PMGF	bar	0.22	0.18	0.26	0.23
Max. pressure loss at qp	PMGS	bar	0.18	0.14	0.14	0.23
Flowrate at $\Delta p = 1$ bar	PMGF	m ³ /h	5.4	8.6	10.3	22.2
Flowrate at $\Delta p = 1$ bar	PMGS	m ³ /h	6	9.7	13.6	20.8
Measuring range	qp/qi		80	50	50	50
Smallest readable volume		litre	0.1	0.1	0.1	0.1
Recording capacity		m ³ /h	99'999	99'999	99'999	99'999
Thread size: Body	G...B	inches	1	1 1/4	1 1/2	2
Thread size: Connector	R...	inches	3/4	1	1 1/4	1 1/2
Body surface finish			lacquered			
Weight without connections		kg	1.8	2.8	2.9	7
Dimensions						
	a	mm	105	150	150	200
	b	mm	25	30	30	50
	c	mm	126	148	148	200
	d	mm	200	265	265	340

Pressure loss curves: page 9

TOPAS PMH



- Multi-jet turbine meters with dry-type registers
- Better than class B
- Error tolerance $\pm 3\%$ of measured value in upper range $Q_t \leq Q \leq Q_{max}$ and $\pm 5\%$ in lower range $Q_{min} \leq Q \leq Q_t$
- Suitable for horizontal mounting
- Spheroidal graphite iron body with flange connections
- Nominal pressure 40 bar
- Maximum temperature 130 °C
- No inlet or outlet paths required

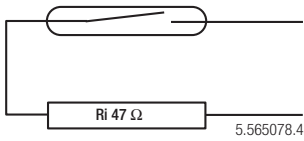
Nominal diameter	DN	mm inches	20 3/4	25 1	40 1) 1 1/2
Standard	Art. No.		92270	92271	92272
With reed pulser RH 1 (1 litre)	Art. No.		89670	89674	-
With inductive pulser IN	Art. No.		89672	89675	-
Maximum flow rate	Q _{max}	m ³ /h	5	7	20
Nominal flow rate	Q_n	m³/h	2.5	3.5	10
Transitional flow rate	Q _t	m ³ /h	0.2	0.28	0.8
Minimum flow rate	Q _{min}	m ³ /h	0.03	0.07	0.2
Starting flow at approx.		m ³ /h	0.014	0.022	0.15
Max. pressure loss at Q _n		bar	0.2	0.12	0.022
Flowrate at $\Delta p = 1$ bar		m ³ /h	5.4	10	55
Smallest readable volume		litre	0.1	0.1	0.1
Recording capacity		m ³ /h	100'000	100'000	1'000'000
Body surface finish			lacquered		
Weight		kg	6.5	8.5	21
Dimensions					
		a	190	260	300
		b	55	61	75
		c	63	76	155

1) Pulsers RD 02, OD AM or OD 04 must be ordered separately.

Pressure loss curves: page 10

Pulsers

Reed pulser RH 1

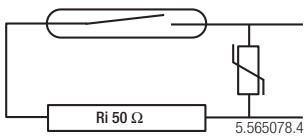


Switch type

Switch voltage
Switch current
Quiescent current
Switch power
Ambient temperature
Protection
Connection

- Reed contact tube protected with an inert gas filling
- max. 48 VAC or DC
- max. 50 mA (internal resistance 47 Ω / 0,5 W)
- Contact open
- max. 2 W
- -10 ... +70 °C
- IP 65
- Fixed mounting cable, length 3 m

Reed pulser RD 02 for PMH 40



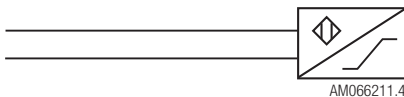
Switch type

Contact protection
Switch voltage
Switch current
Quiescent current
Switch power
Pulse duration

Ambient temperature
Protection
Connection

- Reed contact tube protected with an inert gas filling
- With protective resistor (50 Ω) and varistor
- max. 48 VAC or DC
- max. 200 mA
- Contact open
- max. 4 W
- Depends on flowrate; continuous contact is possible
- -10 ... +70 °C
- IP 68
- Fixed mounting cable, length 3 m

Inductive pulser IH

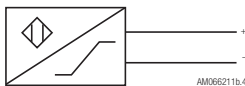


Switch type

Switch voltage
Switch current
Quiescent current
Ambient temperature
Protection
Connection

- Inductive proximity switch conforming to EN 50227
- 5 ... 15 VDC
- >3 mA (at 8 V, 1 k Ω)
- <1.35 mA (at 8 V, 1 k Ω)
- -10 ... +70 °C
- IP 65
- Fixed mounting cable, length 3 m

Inductive pulser IN



Switch type
Switch voltage
Residual ripple
Switch current
Quiescent current
Switch power
ON-time
Ambient temperature
Protection
Connection

- Slot initiator according to EN 50227
- 5 ... 15 VDC
- max. 5 %
- max. 50 mA (internal resistance 47 Ω / 0,5 W)
- Contact open
- max. 2 W
- 50 % \pm 10 %
- -10 ... +70 °C
- IP 65
- Fixed mounting cable, length 3 m

Optoelectronic pulser OD AM and OD 04 for PMH 40

Switch type	• IR reflex light barrier to EN 50227
Switch voltage	• 8.2 VDC
Switch current	• <1.2 mA
Quiescent current	• >2.1 mA
Forward/reverse flow	• This is integrated in OD 04 by means of an additional current recognition threshold at 1.5 mA
	• OD AM has an integrated forward/reverse flow recognition feature and it only emits forward flow pulses (jitter suppression)
Ambient temperature	• -10 ... +70 °C
Protection	• IP 68
Connection	• Fixed mounting cable, length 3 m

Pulse values for TOPAS PMG und PMGF/S

Nominal diameter	DN	mm	15	20	25	32	40	50
		inches	1/2	3/4	1	1 1/4	1 1/2	2
Reed pulser RH 1		l/pulse	1	1	1	1	1	1
Inductive pulser IH		ml/pulse	12.95	12.95	21.51	26.80 ¹⁾	65.34	66.96

¹⁾ PMGF/S = 21.51

Pulse values for TOPAS PMH

Nominal diameter	DN	mm	20	25	40
		inches	3/4	1	1 1/2
Reed pulser RH 1		l/pulse	1	1	-
Reed pulser RD 02		l/pulse	-	-	100
Inductive pulser IN		l/pulse	1	1	-
Optoelectronic pulser OD AM		l/pulse	-	-	1
Optoelectronic pulser OD 04		l/pulse	-	-	10

Installation notes

Piping

Ensure that all measuring and auxiliary instruments can be easily operated and values read off. Measuring instruments must be installed so that the dial is horizontal and facing upwards. The layout of the piping must ensure that all measuring instruments are filled with liquid at all times and that no air bubbles or pockets can occur. All consumption values are to be registered by the flowmeter. TOPAS vane wheel counters require no straight inlet or outlet paths.

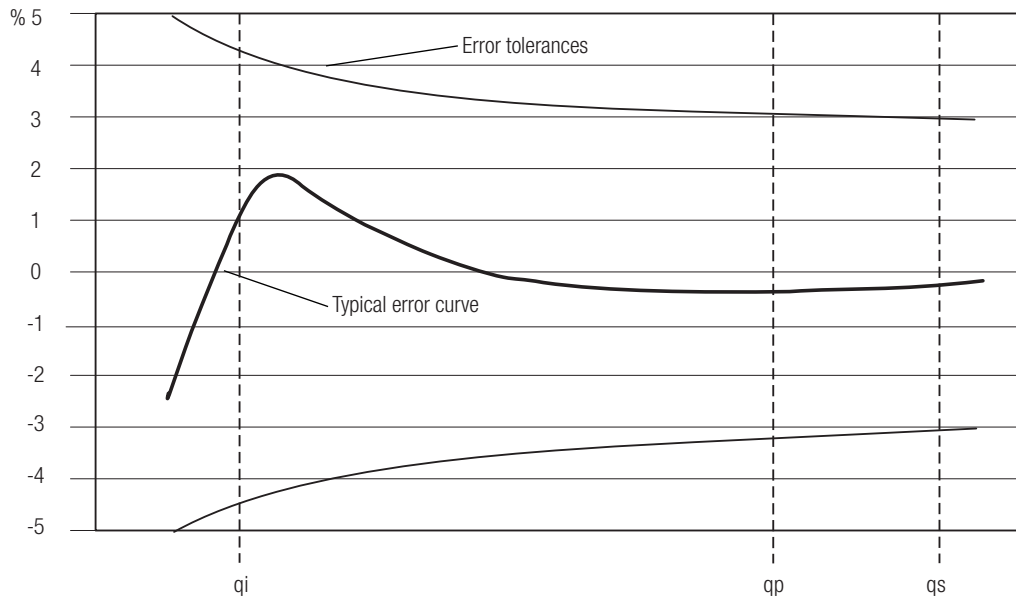
Dimensioning flowmeters and accessories

Flowmeters are dimensioned according to the flowrate and not according to the diameter of the piping. The diameter of the piping should be changed if necessary, or pipe reducers used. Flowmeters and peripherals should be dimensioned with regard to the maximum operating conditions of the system:

- flowrate
- operating pressure
- operating temperature
- ambient temperature

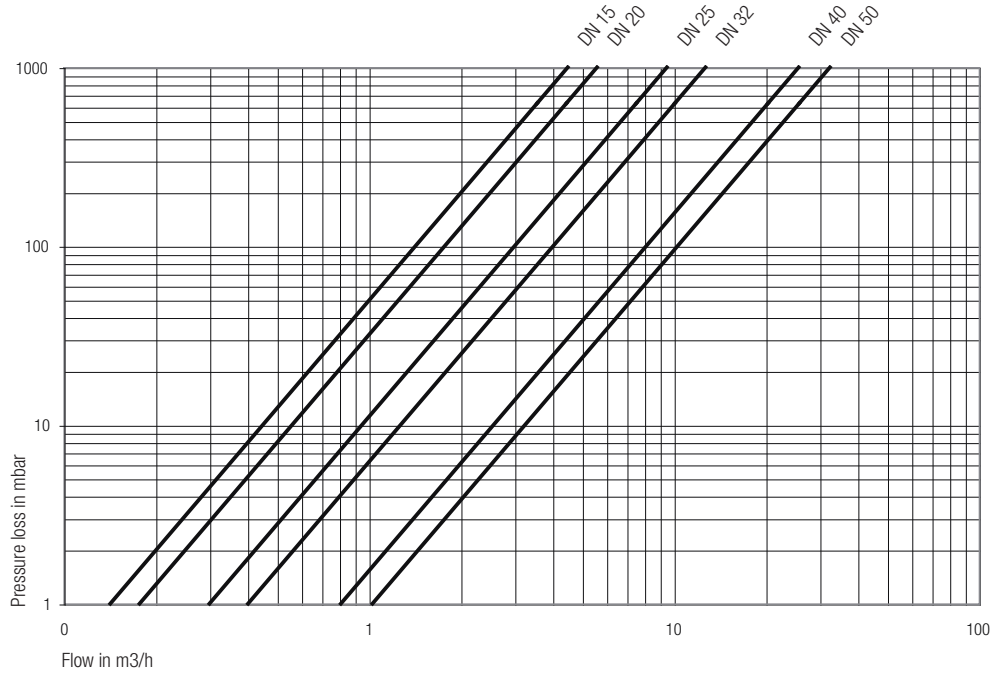
Measurement error limits

Hydraulic sensor: accuracy class 3 to EN 1434

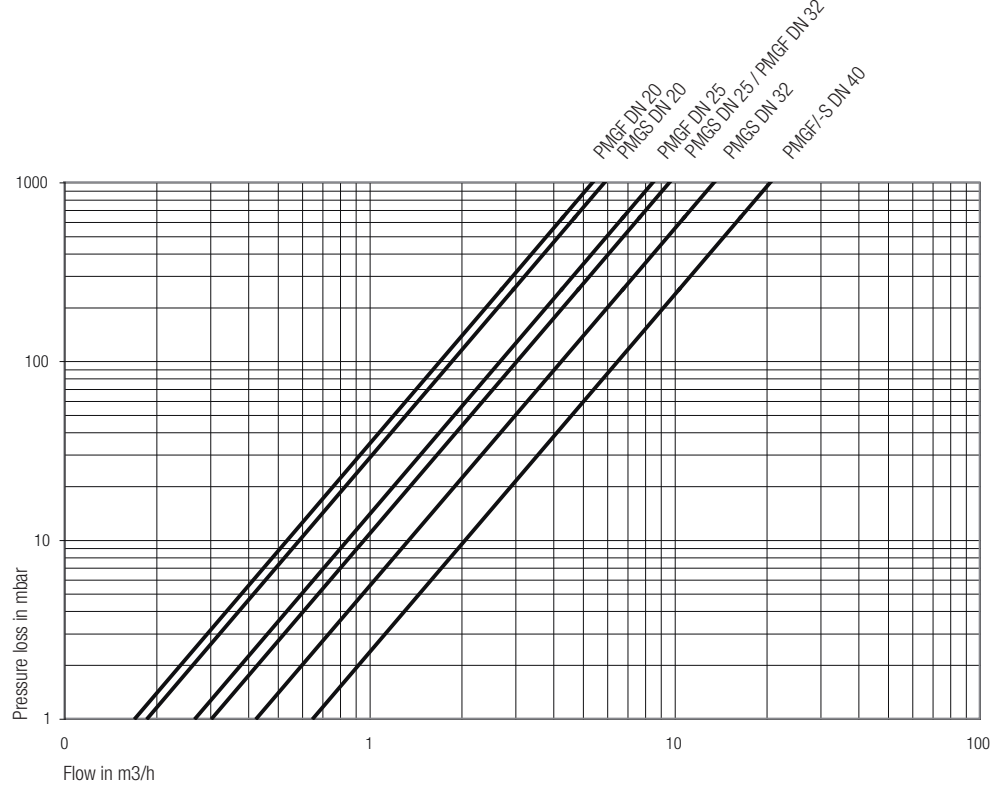


Pressure loss curves

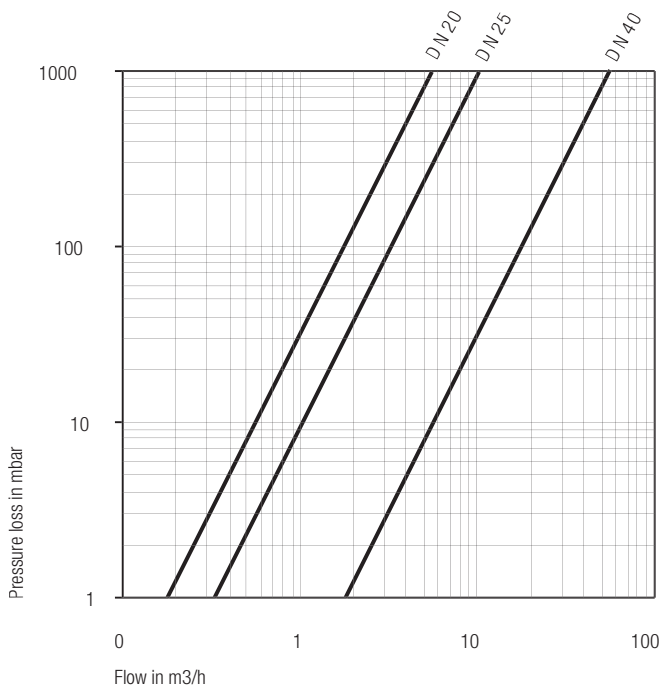
TOPAS PMG



TOPAS PMGF/-S



TOPAS PMH



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