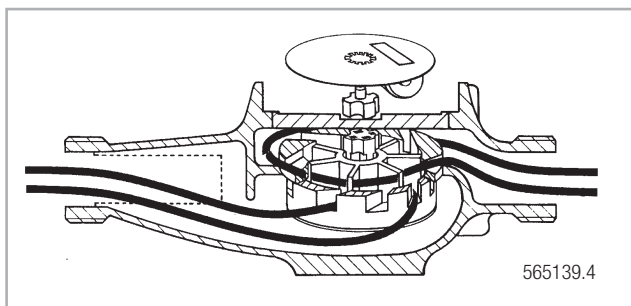
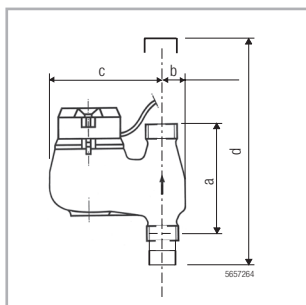
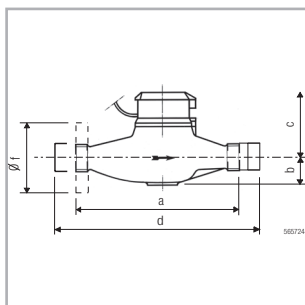




## TOPAS PMG

Hydraulic sensor hot water



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

### Applications

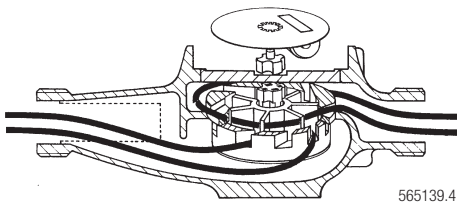
- Insensitive to turbulences
- correct mounting ensures high accuracy and long-term stability
- No inlet or outlet paths required

### 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.

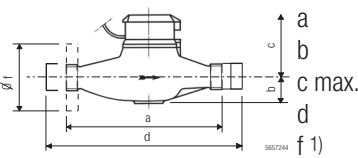


## Product range

### TOPAS PMG



- Multi-jet turbine meters with dry-type registers
- Type approval as hydraulic sensors for hot water meters conforming to Directive 2014/32/EU (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.	°C	94246 130	94247 130	94248 130	94249 130	94351 120	94354 120
With inductive pulser IH, Tmax	Art. No.	°C	89686 90	89687 90	89688 90	89689 90	94228 90	94229 90
Maximum flow rate	qs	m <sup>3</sup> /h	3	5	7	12	20	30
<b>Permanent flow rate</b>	<b>qp</b>	<b>m<sup>3</sup>/h</b>	<b>1.5</b>	<b>2.5</b>	<b>3.5</b>	<b>6</b>	<b>10</b>	<b>15</b>
Minimum flow rate	qi	m <sup>3</sup> /h	0.031	0.031	0.07	0.075	0.2	0.2
Starting flow at approx.		m <sup>3</sup> /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 <sup>3</sup> /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 <sup>3</sup> /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

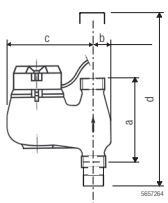
1) Diameter with threaded flange

**Pressure loss curves:** page 9

## TOPAS PMGF (downpipe) and PMGS (riser pipe)



- Multi-jet turbine meters with dry-type registers
- 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
<b>PMGF (downpipe)</b>						
With reed pulser RH 1 (1 litre), Tmax	Art. No.	°C	94250	94251	94252	94352
With inductive pulser IH, Tmax	Art. No.	°C	94616	94617	94618	94237
<b>PMGS (riser pipe)</b>						
mit Reed-pulser RH1 (1 litre), Tmax	Art. No.	°C	94253	94254	94255	94353
With inductive pulser IH Tmax	Art. No.	°C	89694	89695	89696	94245
Maximum flow rate	qs	m <sup>3</sup> /h	3.1	4.4	6.3	12.5
<b>Permanent flow rate</b>	<b>qp</b>	<b>m<sup>3</sup>/h</b>	<b>2.5</b>	<b>3.5</b>	<b>5</b>	<b>10</b>
Minimum flow rate	qi	m <sup>3</sup> /h	0.031	0.07	0.1	0.2
Starting flow at approx.		m <sup>3</sup> /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 Δp = 1bar	PMGF	m <sup>3</sup> /h	5.4	8.6	10.3	22.2
Flowrate at Δp = 1bar	PMGS	m <sup>3</sup> /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 <sup>3</sup> /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

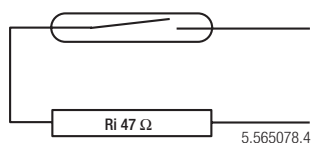
Pressure loss curves: page 8

### Certifications

Type approval as hydraulic sensors for hot water meters conforming to Directive 2014/32/EU (EN 1434)  
Accuracy class 3 and ambient temperature class C according to EN 1434

# Pulsers

## Reed pulser RH 1



Switch type

Switch voltage

Switch current

Quiescent current

Switch power

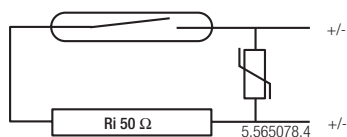
Ambient temperature

Protection

Connection

- Reed contact tube protected with an inert gas filling
- max. 48 VAC or DC
- max. 50 mA (internal resistance 47  $\Omega$  / 0,5 W)
- Contact open
- max. 2 W
- -10 ... +70  $^{\circ}\text{C}$
- 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

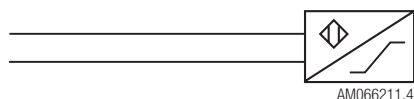
Ambient temperature

Protection

Connection

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

## Inductive pulser IH



Switch type

Switch voltage

Switch current

Quiescent current

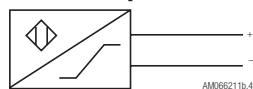
Ambient temperature

Protection

Connection

- Inductive proximity switch conforming to EN 50227
- 5 ... 15 VDC
- >3 mA (at 8 V, 1 k $\Omega$ )
- <1.35 mA (at 8 V, 1 k $\Omega$ )
- -10 ... +70  $^{\circ}\text{C}$
- 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  $\Omega$  / 0,5 W)
- Contact open
- max. 2 W
- 50 %  $\pm$ 10 %
- -10 ... +70  $^{\circ}\text{C}$
- 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 <sup>1)</sup>	65.34	66.96

<sup>1)</sup> PMGF/S = 21.51

## 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.

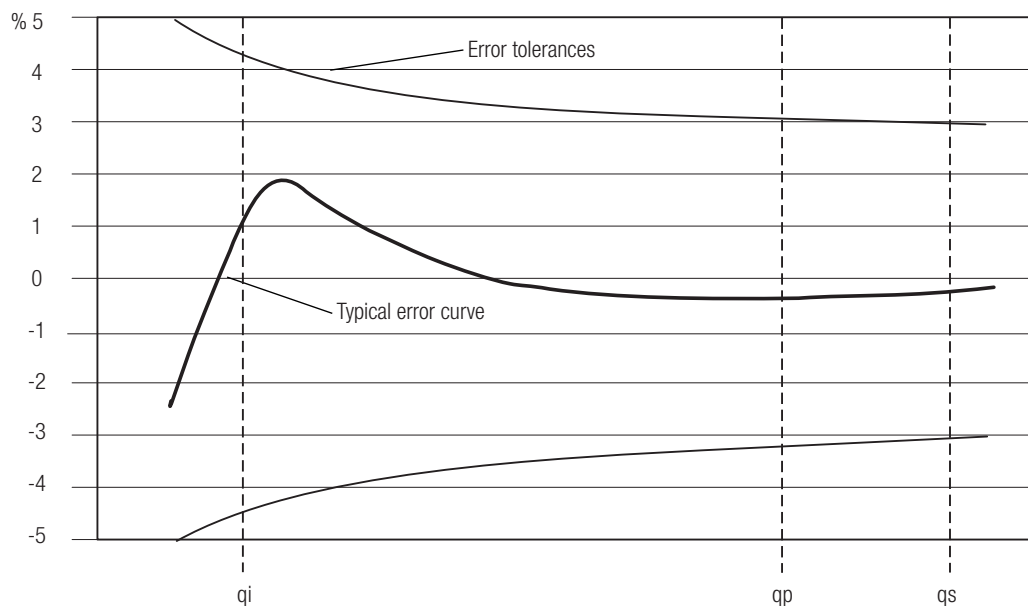
### Dimensioning flowmeters and accessories

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

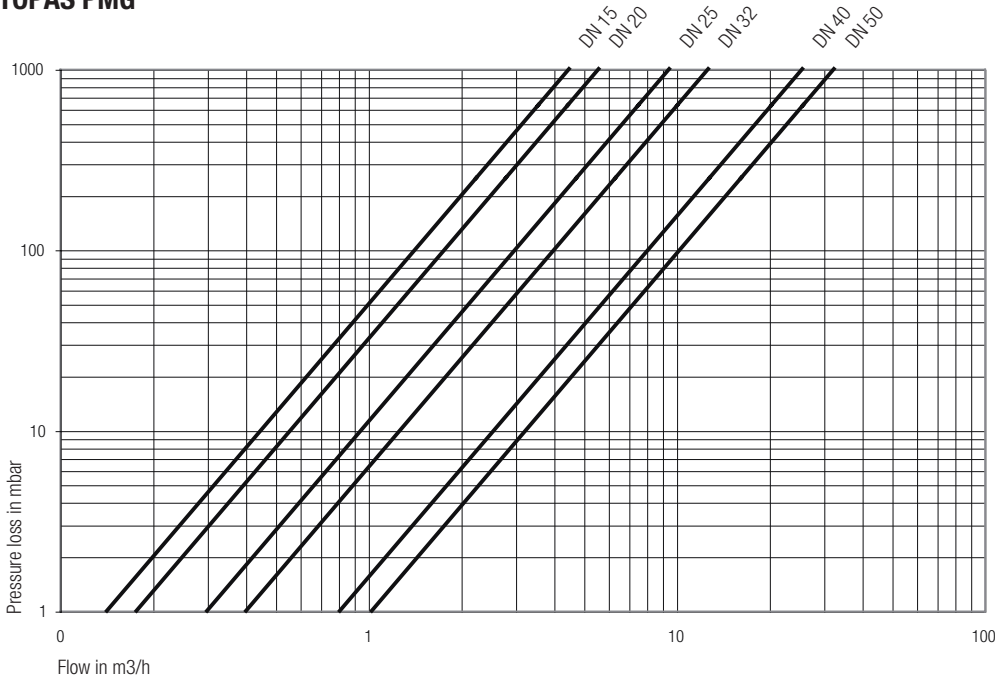
## Measurement error limits

### Hydraulic sensor: accuracy class 3 to EN 1434

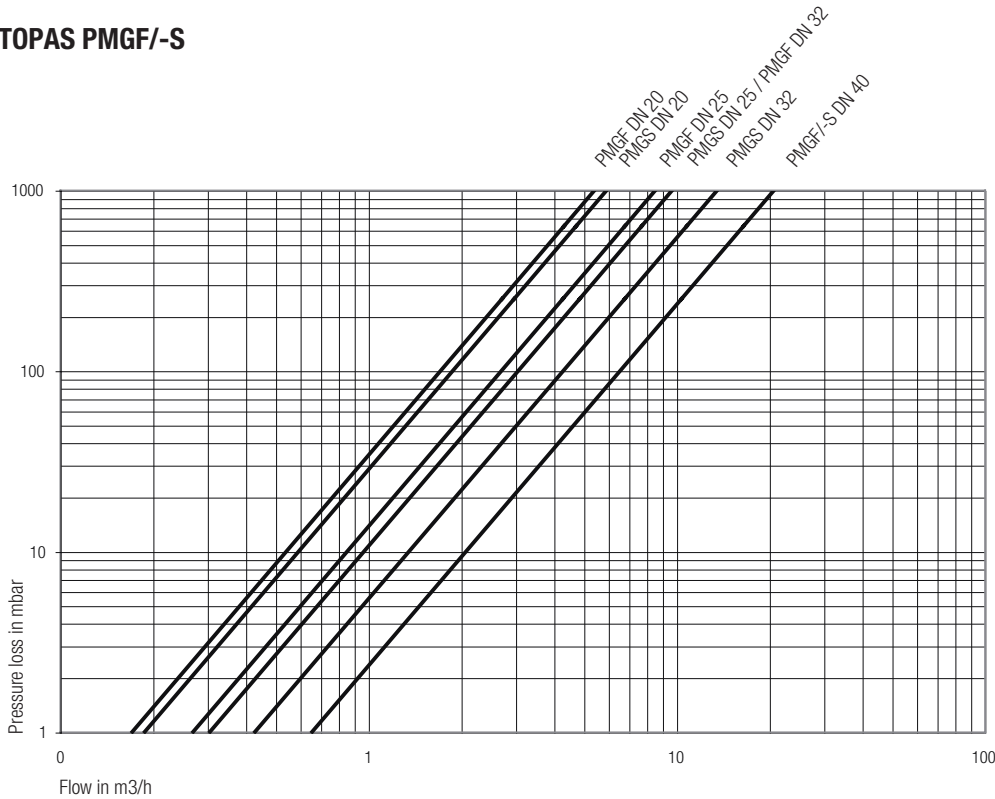


# Pressure loss curves

## TOPAS PMG



## TOPAS PMGF/-S



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