

# RAY FS WP 456/457

HYDROMETER

FLOW SENSOR | MECHANICAL



## APPLICATION

Volume measuring component for measuring heat for billing hot water consumption

## FEATURES

- ▶ Facility for remote transmission of flow rates
- ▶ For installation in any position
- ▶ Encapsulated and evacuated counter
- ▶ Counter can be rotated as required for easier reading
- ▶ Easily replaceable reed switch
- ▶ Contact rating (without series resistor) max. 24 V (SELV) 0.2 A
- ▶ Very low pressure loss
- ▶ Sealed shield protects against magnetic interference
- ▶ The reed switch is fitted with a 100  $\Omega$ , 1/4 W protective resistor (cable length 3 m). Can be ordered without series resistor
- ▶ Outstanding long-term accuracy achieved by mounting vane in ring sapphire and carbide bearing
- ▶ Condensation-proof transparent cover for unobstructed reading
- ▶ Completely dry-running - no gears in the wet chamber

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## GENERAL

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Medium temperature range	°C	0 ... 120
Medium temperature range with counter extension	°C	0 ... 130
Nominal pressure	PN bar	16 (40 on request)
Protection class		IP 65

## TECHNICAL DATA ACCORDING NATIONAL APPROVAL

Nominal diameter	DN	mm	50	65	80	100	125	150
Nominal flow rate	$Q_n$	m <sup>3</sup> /h	-	-	-	60	100	-
Permissible continuous load (HY)		m <sup>3</sup> /h	-	-	-	70	100	-
Maximum flow rate (short-term)	$Q_{max}$	m <sup>3</sup> /h	-	-	-	180	250	-
Transition flow rate	$Q_t$	l/h	-	-	-	9	15	-
Minimum flow rate	$Q_{min}$	m <sup>3</sup> /h	-	-	-	2	3	-
Starting flow rate		l/h	-	-	-	400	600	-
Flow rate at 0.1 bar pressure loss		m <sup>3</sup> /h	-	-	-	95	200	-
Flow resistance coefficient Zeta			-	-	-	18	9.9	-
Pulse value reed switch		l/pulse	-	-	-	25 / 100 / 250 / 1000	25 / 100 / 250 / 1000	-

Nominal diameter	DN	mm	200	250	300	400	500
Nominal flow rate	$Q_n$	m <sup>3</sup> /h	-	400	600	1000	1500
Permissible continuous load (HY)		m <sup>3</sup> /h	-	400	600	1000	1500
Maximum flow rate (short-term)	$Q_{max}$	m <sup>3</sup> /h	-	800	1000	2000	3000
Transition flow rate	$Q_t$	l/h	-	45	50	150	225
Minimum flow rate	$Q_{min}$	m <sup>3</sup> /h	-	25	30	40	60
Starting flow rate		l/h	-	2500	5000	-	-
Flow rate at 0.1 bar pressure loss		m <sup>3</sup> /h	-	1300	2000	3000	6000
Flow resistance coefficient Zeta			-	3.8	3.3	-	-
Pulse value reed switch		l/pulse	-	250 / 1000 / 2500 / 10000	250 / 1000 / 2500 / 10000	25000 / 100000	25000 / 100000

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## TECHNICAL DATA ACCORDING EN APPROVAL

Nominal diameter	DN	mm	50	65	80	100	125	150
Nominal flow rate	$q_p$	m <sup>3</sup> /h	15	25	32	-	-	200
Short-term maximum flow rate (1x24 h)		m <sup>3</sup> /h	60	60	90	-	-	300
Maximum flow rate (short-term)	$q_s$	m <sup>3</sup> /h	30	30	45	-	-	300
Minimum flow rate	$q_i$	m <sup>3</sup> /h	0.6	1	3.2	-	-	8
Lower measuring range limit (± 5 %)			0.55	0.55	2.5	-	-	4.5
Starting flow rate		l/h	130	130	400	-	-	1500
Pressure loss at $q_p$	$\Delta p$	bar	0.01	0.03	0.01	-	-	0.04
Flow rate at 0.1 bar pressure loss		m <sup>3</sup> /h	35	63	102	-	-	310
Flow resistance coefficient Zeta			0.5	1.4	0.7	-	-	8.6
Pulse value reed switch		l/pulse	25 / 100 / 250 / 1000	25 / 100 / 250 / 1000	25 / 100 / 250 / 1000	-	-	100 / 250 / 1000

Nominal diameter	DN	mm	200	250	300	400	500
Nominal flow rate	$q_p$	m <sup>3</sup> /h	250	-	-	-	-
Short-term maximum flow rate (1x24 h)		m <sup>3</sup> /h	500	-	-	-	-
Maximum flow rate (short-term)	$q_s$	m <sup>3</sup> /h	500	-	-	-	-
Minimum flow rate	$q_i$	m <sup>3</sup> /h	10	-	-	-	-
Lower measuring range limit (± 5 %)			8	-	-	-	-
Starting flow rate		l/h	2000	-	-	-	-
Pressure loss at $q_p$	$\Delta p$	bar	0.02	-	-	-	-
Flow rate at 0.1 bar pressure loss		m <sup>3</sup> /h	550	-	-	-	-
Flow resistance coefficient Zeta			7	-	-	-	-
Pulse value reed switch		l/pulse	100 / 250 / 1000	-	-	-	-

## DISPLAY RANGE

Nominal diameter	DN	mm	50	65	80	100	125	150
0.05 l ... 10,000,000 m <sup>3</sup>						•	•	
0.5 l ... 10,000,000 m <sup>3</sup>			•	•	•			•
5 l ... 1,000,000,000 m <sup>3</sup>								

Nominal diameter	DN	mm	200	250	300	400	500
0.05 l ... 10,000,000 m <sup>3</sup>							
0.5 l ... 10,000,000 m <sup>3</sup>			•				
5 l ... 1,000,000,000 m <sup>3</sup>				•	•	•	•

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## APPROVAL

Nominal diameter	DN	mm	50	65	80	100	125	150
National			-	-	-	22.16 / 87.01	22.16 / 87.01	-
EN approval 1434			22.56 / 01.01	22.56 / 01.01	22.56 / 01.01	-	-	22.56 / 01.01
Metrological class			C	C	C	A•H/V	A•H/V	C

Nominal diameter	DN	mm	200	250	300	400	500
National			-	-	-	-	-
EN approval 1434			22.56 / 01.01	-	-	-	-
Metrological class			C	-	-	-	-

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## DIMENSIONS



Nominal diameter	DN	mm	50	65	80	100	125	150
Overall length	L	mm	200	200	200 / 225	250	250	300
Flange diameter	D	mm	165	185	200	220	250	285
Hole circle diameter	K	mm	125	145	160	180	210	240
Number of screwholes		pcs	4	4	8	8	8	8
Screw hole diameter	D1	mm	18	18	18	18	18	22
Height	H	mm	75	82.5	94	110	125	135
Height (without counter extension)	H1	mm	141	141	141	200	200	244
Height (with counter extension)	H1	mm	182	182	182	240	240	284
Diameter	Ø B	mm	165	185	200	220	250	285
Weight		kg	11.1	11.6	12.5	19.8	22.4	39

Nominal diameter	DN	mm	200	250	300	400	500
Overall length	L	mm	350	450	500	500	500
Flange diameter	D	mm	240	405	460	580	715
Hole circle diameter	K	mm	295	350 / 355	400 / 410	515 / 525	620 / 650
Number of screwholes		pcs	8 / 12	12	12	16	20
Screw hole diameter	D1	mm	22	23 / 27	23 / 27	26 / 30	26 / 33
Height	H	mm	163	203	230	290	358
Height (without counter extension)	H1	mm	244	240	270	316	399
Height (with counter extension)	H1	mm	284	280	310	356	440
Diameter	Ø B	mm	240	405	460	-	-
Weight		kg	47	108	136	190	300

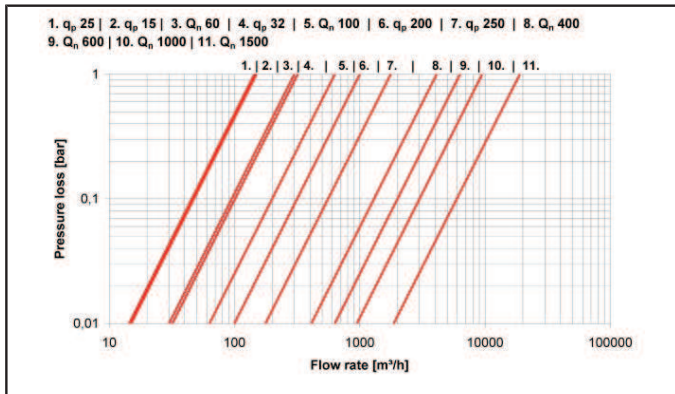
## NOTE

When using the contact water meters as volume measuring component, we recommend that the meters are selected so that the pressure loss of 0.1 bar is not exceeded at maximum load.

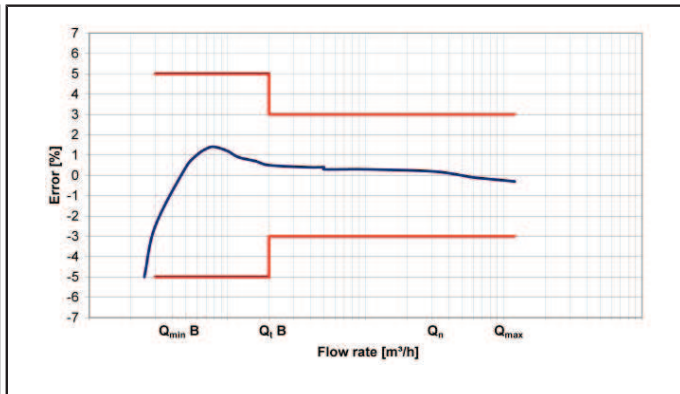
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## PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH




Pressure loss graph



Typical error graph

**HYDROMETER**

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