

# RAY FS WS 453/455

FLOW SENSOR | MECHANICAL

**DIEHL**  
Metering



## APPLICATION

Volume measuring device to measure thermal quantities

## FEATURES

- ▶ Possibility of remote transmission of quantities of flow
- ▶ For easy reading the complete head part with totalizer can be turned to any position
- ▶ Easily removeable reed-switch
- ▶ The pulse transmitter is fitted with a 100  $\Omega$ , 1/4 W series resistor (cable length 3 m) - can be supplied without series resistor on request
- ▶ Contact load (without series resistor) max. 24 V AC/DC (protective low voltage) 0.2 A
- ▶ Outstanding continuance of accuracy even with extreme charges because of vane bearing bearing of ring sapphire and carbide metal
- ▶ Considerably extended measuring range towards small flows compared to documentation of metrological class
- ▶ As a safeguard against magnetic influences, a sealable antimagnetic screen is fitted on the meter
- ▶ Approved according MID in class 2 and 3
- ▶ Completely dry-running

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## GENERAL

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Application	Heating		
Mounting position	Horizontal		
Medium temperature range	°C	15 ... 105	
Ambient temperature	°C	5 ... 55	
Ambient class	E1 + M1		
Nominal pressure	PN	bar	16 <sup>1</sup>
Protection class	IP 54		
Approval	MID (DE-15-MI004-PTB010)		

<sup>1</sup>special version on request

## REACH

Information pursuant to Article 33 (1) of Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006:

This product series contains components with the following substances in a concentration of more than 0.1% weight by weight (w/w):  
- Lead (CAS no.: 7439-92-1)

## TECHNICAL DATA

Nominal diameter	DN	mm	50	65	80	100	150
Nominal flow rate	q <sub>p</sub>	m <sup>3</sup> /h	15	25	40	60	150
Maximum flow rate (short-term)	q <sub>s</sub>	m <sup>3</sup> /h	30	30	50	75	187.5
Minimum flow rate	q <sub>i</sub>	l/h	600	1000	1600	2400	6000
Starting flow rate		l/h	60	60	90	90	1000
Pressure loss at q <sub>p</sub>	Δp	bar	0.06	0.14	0.09	0.07	0.09
Pulse value reed switch <sup>1</sup>		l/pulse	10 / 100	10 / 100	10 / 100	10 / 100	10 / 100
Metrological class <sup>2</sup>	q <sub>p</sub> / q <sub>i</sub>		25:1	25:1	25:1	25:1	25:1
Flow rate at 0.1 bar pressure loss		m <sup>3</sup> /h	19	21	42	70	160

<sup>1</sup>other pulse values on request

<sup>2</sup>other q<sub>p</sub> / q<sub>i</sub> on request

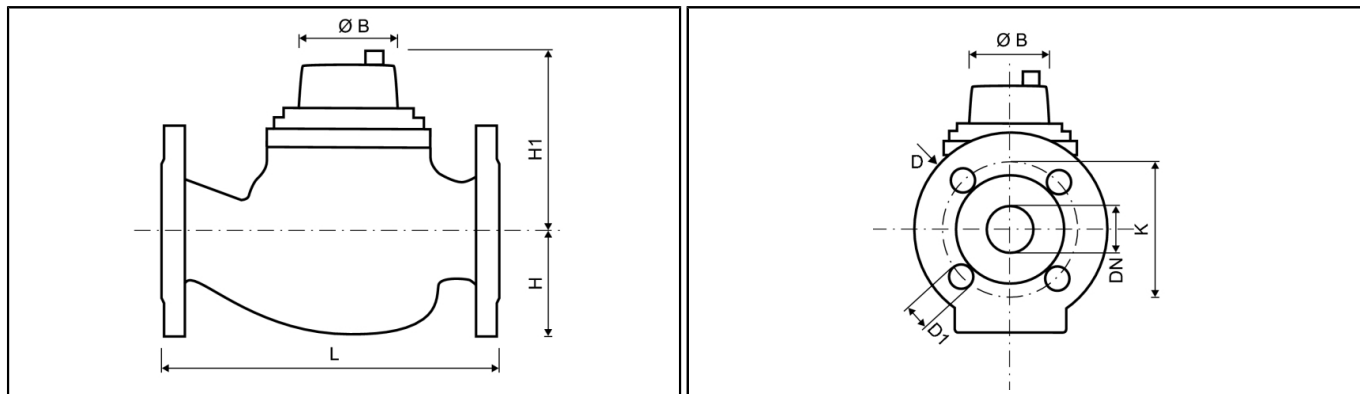
## DISPLAY RANGE

Nominal diameter	DN	mm	50	65	80	100	150
0.5 l ... 999,999 m <sup>3</sup>			•	•	•	•	
5.0 l ... 9,999,999 m <sup>3</sup>							•

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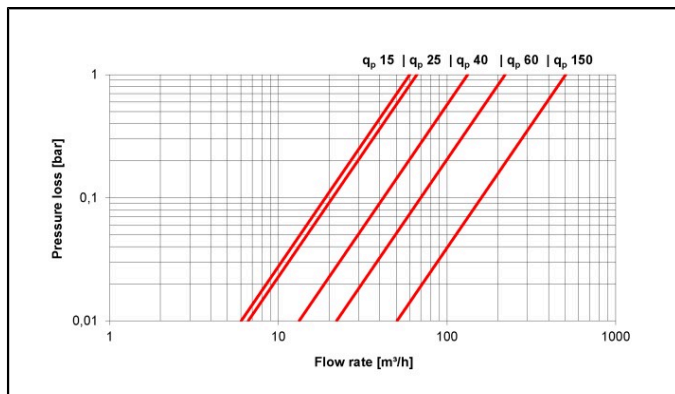
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## DIMENSIONS

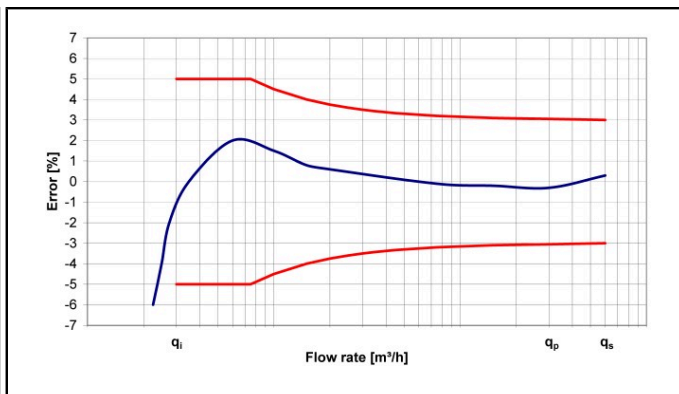


Nominal diameter	DN	mm	50	65	80	100	150
Overall length (DIN 19625)	L	mm	270	300	300	360	500
Overall length (DIN ISO 4064)	L	mm	300	300	350	350	500
Flange diameter	D	mm	165	185	200	220	285
Hole circle diameter	K	mm	125	145	160	180	240
Number of screwholes		pcs	4	4	8 / 4	8	8
Screw hole diameter	D1	mm	18	18	18	18	23
Height	H	mm	84	97	102	113	155
Height (without counter extension)	H1	mm	155	155	190	200	400
Height (with counter extension)	H1	mm	195	195	230	240	440
Diameter	Ø B	mm	165	185	200	220	285
Weight		kg	14.2	18	24	28	79.5

## PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph