

# RAY FS WS 453/455

MECHANICAL FLOW SENSOR



## 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 beeing of ring saphire 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

## GENERAL

| RAY FS WS 453/455        |    |            |                          |
|--------------------------|----|------------|--------------------------|
| 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

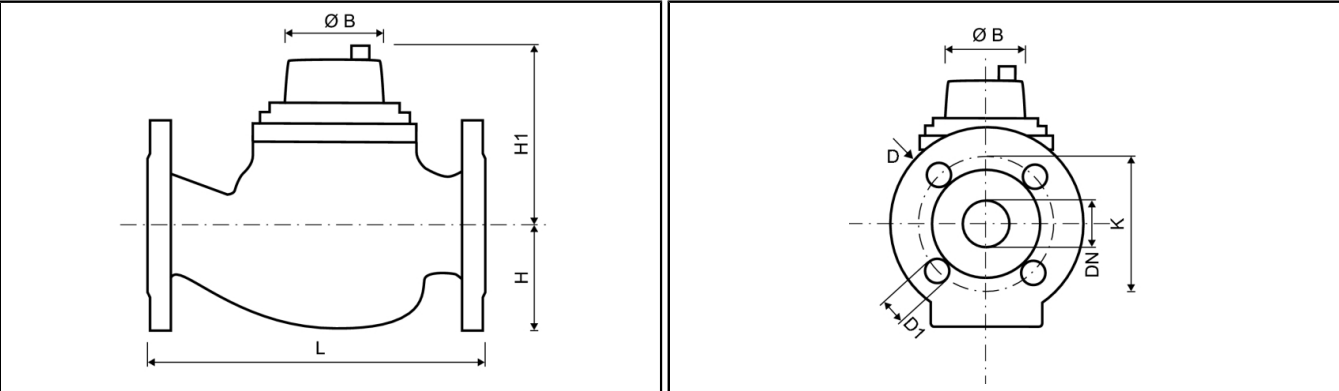
| Nominal diameter                     | DN                              | mm                | 50       | 65       | 80       | 100      | 150      |
|--------------------------------------|---------------------------------|-------------------|----------|----------|----------|----------|----------|
| 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

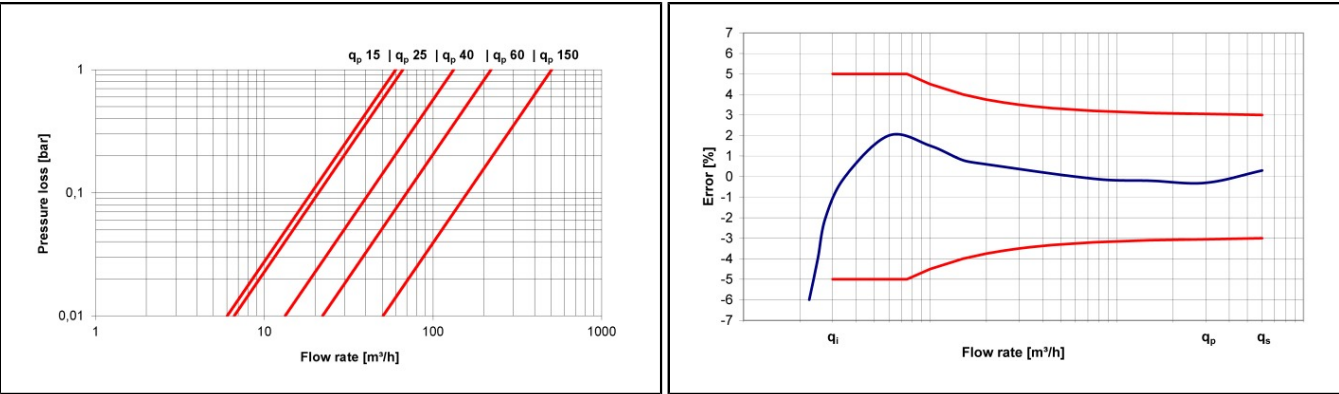
| Nominal diameter                   | DN | mm | 50 | 65 | 80 | 100 | 150 |
|------------------------------------|----|----|----|----|----|-----|-----|
| 0.5 l ... 999,999 m <sup>3</sup>   |    |    | •  | •  | •  | •   |     |
| 5.0 l ... 9,999,999 m <sup>3</sup> |    |    |    |    |    |     | • 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

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    |
| Screwhole 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

## **Economic Actor Information**

Applicable regulation and legal obligations for products may change.

DIEHL METERING monitors applicable regulation to ensure their products comply at the date of placing on the market.

Each economic actor making products available on the market thereafter must independently keep informed about the current applicable regulation.

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