# US ECHO II

Ultrasonic volume measuring meter

## Your benefits

- Robust, high grade wear resistant materials:
  **Excellent measuring stability and reliability**
- Universal applicable with diverse calculators:
  **Meets various requirements also with regard to interfaces**
- Integrated intelligence (status and warning messages):
  **Simple and quick on-site troubleshooting**

## Applications

- As a replacement for mechanical impeller heat meters
- Metering of heat and/or cooling consumption in building management

## Properties

- Nominal diameters from DN 15 up to DN 50
- Nominal flow rates from $q_p$ 0,6 up to $q_p$ 15
- Lower pressure loss
- No moving parts
- Maximum operating pressure PN 16 bar (Threaded) / PN 25 bar (Flanged)
- Temperature up to 130 °C
- CE Conformity according to European Measuring Instruments Directive (MID)
- Pulser with 3 m cable
  (Standard pulse value: DN 15–32: 2,5 liters, DN 40-50: 10 liters)
- Environmental class C, Accuracy class 2

## Options

- Pulser with 5 m or 9 m cable

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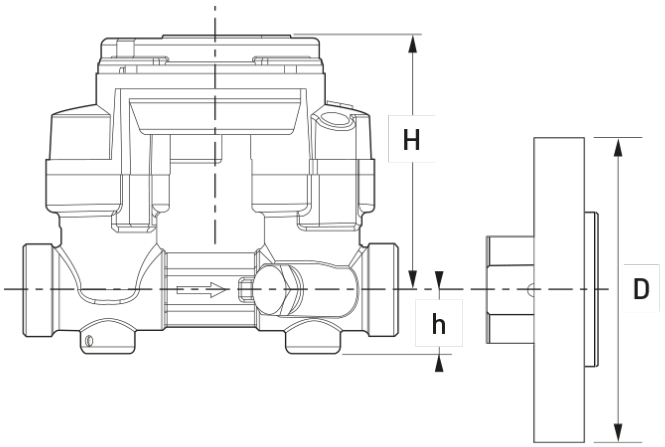
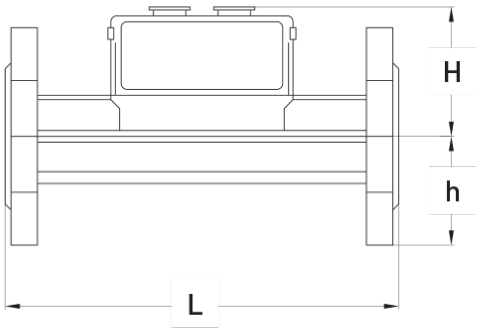
# Technical Data

| Execution | | | US ECHO II | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nominal diameter | DN | mm | 15 | 15 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 25 | 25 | 25 | 25 | 25 | 25 | 32 | 40 | 40 | 40 | 50 |
| Operating pressure | PN | bar | 16 | 16 | 16 | 16 | - | 16 | 16 | - | 16 | 16 | - | 16 | 16 | - | 16 | 16 | - | 16 | 16 | 16 | - | - |
| Operating pressure (flanged) | PN | bar | - | - | - | - | 25 | - | - | 25 | - | - | 25 | - | - | 25 | - | - | 25 | - | - | - | 25 | 25 |
| Connection thread on meter | G...B | Inch | ¾ | ¾ | 1 | 1 | - | 1 | 1 | - | 1 | 1 | - | 1¼ | 1¼ | - | 1¼ | 1¼ | - | 1½ | 2 | 2 | - | - |
| Connection thread on coupling | R... | Inch | ½ | ½ | ¾ | ¾ | - | ¾ | ¾ | - | ¾ | ¾ | - | 1 | 1 | - | 1 | 1 | - | 1¼ | 1½ | 1½ | - | - |
| Nominal flow rate | $q_p$ | m³/h | 0,6 | 1,5 | 0,6 | 0,6 | 0,6 | 1,5 | 1,5 | 1,5 | 2,5 | 2,5 | 2,5 | 3,5 | 3,5 | 3,5 | 6 | 6 | 6 | 6 | 10 | 10 | 10 | 15 |
| Maximum flow rate | $q_s$ | m³/h | 1,2 | 3 | 1,2 | 1,2 | 1,2 | 3 | 3 | 3 | 5 | 5 | 5 | 7 | 7 | 7 | 12 | 12 | 12 | 12 | 20 | 20 | 20 | 30 |
| Minimum flow rate | $q_i$ | l/h | 6 | 15 | 6 | 6 | 6 | 15 | 15 | 15 | 25 | 25 | 25 | 35 | 35 | 35 | 60 | 60 | 60 | 60 | 100 | 100 | 100 | 150 |
| Starting flow | | app. l/h | 1,2 | 3 | 1,2 | 1,2 | 1,2 | 3 | 3 | 3 | 5 | 5 | 5 | 7 | 7 | 7 | 12 | 12 | 12 | 12 | 20 | 20 | 20 | 30 |
| Kvs-value | | m³/h | 3,2 | 3,2 | 3,2 | 3,2 | 3,2 | 3,2 | 3,2 | 3,2 | 6 | 6 | 6 | 10,4 | 10,4 | 10,4 | 16,4 | 16,4 | 16,4 | 16,4 | 33,2 | 33,2 | 33,2 | 33,2 |
| Temperature range | | °C | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 | 5...130 |
| Measuring range | $q_i/q_p$ | | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 | 1:100 |

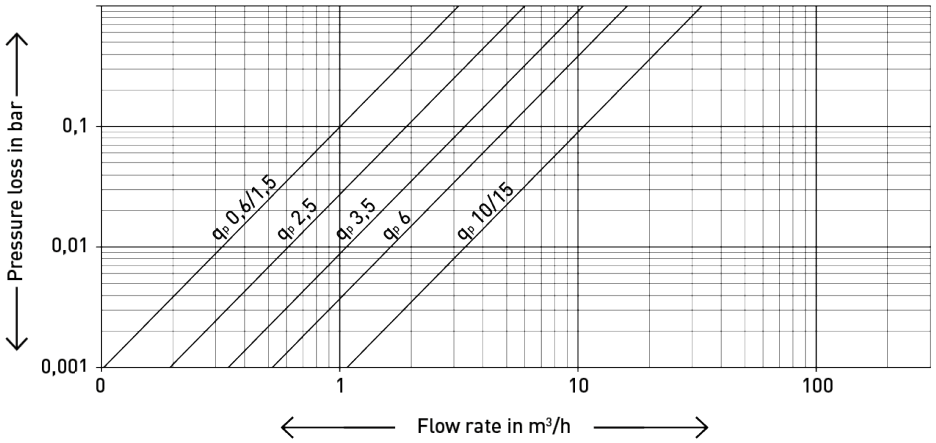
| Dimensions and weights | | | US ECHO II | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Length without couplings | L | mm | 110 | 110 | 130 | 190 | - | 130 | 190 | - | 130 | 190 | - | 150 | 260 | - | 150 | 260 | - | 260 | 200 | 300 | - | - |
| Height | H | mm | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 85 | 85 | 85 | 85 |
| Height | h | mm | 18 | 18 | 18 | 18 | - | 18 | 18 | - | 18 | 18 | - | 23 | 23 | - | 23 | 23 | - | 23 | 35 | 35 | - | - |
| Length with flanges | L | mm | - | - | - | - | 190 | - | - | 190 | - | - | 190 | - | - | 260 | - | - | 260 | - | - | - | 300 | 270 |
| Height with flanges | h | mm | - | - | - | - | 52,5 | - | - | 52,5 | - | - | 52,5 | - | - | 57,5 | - | - | 57,5 | - | - | - | 82,5 | 82,5 |
| Flange external dimension | D | mm | - | - | - | - | 105 | - | - | 105 | - | - | 105 | - | - | 115 | - | - | 115 | - | - | - | 165 | 165 |
| Hole circle diameter | L | mm | - | - | - | - | 75 | - | - | 75 | - | - | 75 | - | - | 85 | - | - | 85 | - | - | - | 125 | 125 |
| Number of screws | | Pcs. | - | - | - | - | 4 | - | - | 4 | - | - | 4 | - | - | 4 | - | - | 4 | - | - | - | 4 | 4 |
| Weight | | app. kg | 1,1 | 1,1 | 1,2 | 1,5 | 3,2 | 1,2 | 1,5 | 3,2 | 1,1 | 1,4 | 3,2 | 1,5 | 1,9 | 3,6 | 2,4 | 2 | 3,7 | 1,8 | 2,5 | 5,5 | 7 | 6,5 |

# Dimension Diagram



## Typical Head Loss Curve




## Materials

**Body up to DN 20:** Brass
**Body from DN 25:** Bronze

## Installation

| | | |
|---|---|---|
| **Pipeline:** | horizontal | — |
| | vertical | \| |
| **Meter head:** | sideways | ←→ |
| | ± 45° | ⟷ |

## Installation - Recommendation

With the US ECHO II, the electronic housing must be mounted on the side (when installed horizontally). US ECHO II may be turned up to max. ± 45° in relation to the pipe axis. A straight inlet or outlet section is not required for US ECHO II ultrasonic volume measuring meters. However, an inlet section of at least 5 x DN is recommendable if sufficient space is available.

**Installation recommendations**
The choice of installation site must ensure air cannot collect in the meter.

## Technical data Pulse generator

| Switching element | | |
|---|---|---|
| Type | | Passive Open collector |
| Switching voltage | $U_{max}$ | 30 V DC |
| Switching current | $I_{max}$ | 27 mA |
| Switching capacity | $P_{max}$ | 0,81 W |
| Pulse length | | 5 ms |

## Pulse value table

| Pulse generator | DN 15□...32 1 Pulse = ... Liters | DN 40/50 1 Pulse = ... Liters |
|---|---|---|
| Pulse | 2,5 | 10 |

## Installation – Recommendations

**Pulse transmission interference**
In case of interference during the pulse transmission between the pulse generator and the pulse receiver, (i.e. cable is in the same duct as power cable), we recommend shielded and twisted cables.