kamstrup

Data sheet

# ULTRAFLOW® 44 DN15-125

## 5HX Series (Cooling)
## 2HX Series (Heat)

- Exceptionally accurate, ± 0.5 % at nominal flow $q_p$
- Ultrasonic flow sensor ($q_p$ 1.5...100 $m^3/h$)
- Static sensor, no moving parts and no wear
- Excellent water resistance (IP68)
- Allows insulation and submersion
- Enables direct mounting of a temperature sensor ($q_p$ 1.5...10 $m^3/h$)
- Large dynamic range
- Small pressure loss

MID 2014/32/EU

CE M21 0200

EN 1434

DK-BEK 1178 – 06/11/2014

DK 268 21

EN 1434

## Contents



## Application

ULTRAFLOW® 44 is a static flow sensor based on the ultrasonic measuring principle. It is used as a volume flow rate sensor primarily for thermal energy meters such as MULTICAL® 603 and MULTICAL® 803. ULTRAFLOW® 44 has been designed for use in cooling installations, with water as the thermal energy-conveying liquid, and can also be used for heat/cooling installations. ULTRAFLOW® 44 - 5HX/2HX Series is a variant of ULTRAFLOW® 44, with documented accuracy of ± 0.5 % at nominal flow $q_p$.

ULTRAFLOW® 44 is not suitable for use with other media than water and should therefore not be used with e.g. non-freezing additives like glycol.

Particular focus has been spent on condensation/water protection of ULTRAFLOW® 44 by gel-encapsulated transducers and by physical removal of the flow sensor's PCB from the meter housing. As the PCB itself is also waterproof encapsulated, it withstands even temporary submersion (up to 2 months).

ULTRAFLOW® 44 employs microprocessor technology and ultrasonic measuring techniques. All circuits for calculating and measuring are collected on a single board, providing compact and rational design in addition to an exceptionally high level of measuring accuracy and reliability.

The flow is measured using bidirectional ultrasonic technique based on the transit time method, with proven long-term stability and accuracy. Two ultrasonic transducers are used to send the sound signal both against and with the flow direction.

The ultrasonic signal travelling with the flow direction reaches the opposite transducer first. The time difference between the two signals can be converted to a flow velocity and thus a volume.

A three-wire signal cable is used to connect ULTRAFLOW® 44 to MULTICAL®. This cable is used to supply the flow sensor from the calculator and also to send the signal to the calculator. The signal corresponds to the flow or, more correctly, a number of pulses proportional to the water volume flowing through the meter is transmitted.

If ULTRAFLOW® 44 is used as a flow sensor for other equipment, it must be connected through a Pulse Transmitter. The Pulse Transmitter has a galvanically separated pulse output and a built-in supply for ULTRAFLOW® 44.

If the distance between MULTICAL® and ULTRAFLOW® 44 is more than 10 m, a Pulse Transmitter allows prolongation of the connecting cable (up to 100 m). Alternatively, a Cable Extender Box can be used for this purpose for distances up to 30 m between MULTICAL® and ULTRAFLOW® 44.

# Approvals

## Type approval

ULTRAFLOW® 44 is approved as a heat meter in accordance with MID-2014/32/EU:

| | |
|---|---|
| EU-Type Examination Certificate | DK-0200-MI004-044 |
| MID certificate acc. to module D | DK-0200-MID-D-001 |

CE M21 0200

ULTRAFLOW® 44 is approved as a cooling meter in accordance with DK-BEK 1178 – 06/11/2014:

| | |
|---|---|
| System designation | TS 27.02 014 |
| Verification | DANAK accreditation 268 |

DK 268 21

Please contact Kamstrup A/S for further information relating to type approval and verification.

## Standard

EN 1434:2015

## CE marking

ULTRAFLOW® 44 is marked in accordance with:

| | |
|---|---|
| – EMC directive | 2014/30/EU |
| – LV directive | 2014/35/EU (together with Pulse Transmitter or Pulse Divider) |
| – PE directive | 2014/68/EU (DN50...DN125 category I) |

## MID designation

| | |
|---|---|
| – Mechanical environment | Class M1 and M2 |
| – Electromagnetic environment | Class E1 and E2 |
| – Ambient temperature | 5...55 °C, condensing and non-condensing, closed location (indoor installation) |

# Technical data

## Mechanical data

| | |
|---|---|
| Metrological class | 2 |
| Accuracy | ± 0.5 % at nominal flow $q_p$ |
| Environmental class | Complies with EN 1434 class C |
| Ambient temperature | 5...55 °C, condensing and non-condensing, closed location (indoor installation) |
| Protection class<br>– Flow sensor<br>– Pulse Transmitter<br>– Cable Extender Box | <br>IP68<br>IP67<br>IP65 |
| Medium in flow sensor | Water (recommended water quality as in CEN TR 16911 and AGFW FW510) |
| Temperature* of medium | 2...50 °C or 2...130 °C |
| Storage temperature (empty sensor) | -25...60 °C |
| Pressure stage | PN16, PS16<br>PN25, PS25 |

* If the temperature of the medium exceeds 90 °C, the use of flange meters is recommended.
At a medium temperature above 90 °C or at a medium temperature below the ambient temperature, calculator and Pulse Transmitter must not be mounted on the flow sensor. Instead wall mounting is recommended.

## Electrical data

### ULTRAFLOW® 44 and MULTICAL®

| | |
|---|---|
| Supply voltage | 3.6 VDC ± 0.1 VDC |
| Battery | 3.65 VDC, D-Cell lithium |
| Replacement interval | Up to 16 years @ $t_{BAT}$ < 30 °C |
| Power supply | 230 VAC + 15/-30 %, 50 Hz or 24 VAC ± 50 %, 50 Hz |
| Backup supply | Integral supercap eliminates operational disturbances due to short-term power cuts |
| Cable length<br>– Flow sensor<br>– Cable Extender Box | <br>Max 10 m<br>Depends on calculator.<br>Max 30 m when connected to MULTICAL® 603 or 803 (does not provide galvanic separation, but supports extended info codes) |
| EMC data | Complies with EN 1434 class C |

### ULTRAFLOW® 44 and Pulse Transmitter

| | |
|---|---|
| Supply voltage | 3.6 VDC ± 0.1 VDC |
| Battery (Pulse Transmitter) | 3.65 VDC, D-Cell lithium |
| Replacement interval | 6 years @ $t_{BAT}$ < 30 °C |
| Power supply (Pulse Transmitter) | 230 VAC + 15/-30 %, 50 Hz or 24 VAC ± 50 %, 50 Hz |
| Backup supply | Integral supercap eliminates operational disturbances due to short-term power cuts |
| Cable length<br>– Flow sensor<br>– Pulse Transmitter | <br>Max 10 m<br>Depends on calculator. Max 100 m when connected to MULTICAL® (Y=2) |
| EMC data | Complies with EN 1434 class C |

## Flow data

| Nom. flow $q_p$ [$m^3/h$] | Meter factor * [pulses/l] | Dynamic range $q_p:q_i$ | $q_s:q_p$ | Flow@125 Hz ** [$m^3/h$] | Min. cut off [l/h] |
|---|---|---|---|---|---|
| 1.5 | 100 | 100:1 | 2:1 | 4.5 | 3 |
| 2.5 | 60 | 100:1 | 2:1 | 7.5 | 5 |
| 3.5 | 50 | 100:1 | 2:1 | 9 | 7 |
| 6 | 25 | 100:1 | 2:1 | 18 | 12 |
| 10 | 15 | 100:1 | 2:1 | 30 | 20 |
| 15 | 10 | 100:1 | 2:1 | 45 | 30 |
| 25 | 6 | 100:1 | 2:1 | 75 | 50 |
| 40 | 5 | 100:1 | 2:1 | 90 | 80 |
| 60 | 2.5 | 100:1 | 2:1 | 180 | 120 |
| 100 | 1.5 | 100:1 | 2:1 | 300 | 200 |

* The meter factor appears from the type label.

** Saturation flow 125 Hz. Max pulse frequency is maintained at higher flow rates.

## Measurement accuracy

ULTRAFLOW® 44 - 5HX/2HX Series is a variant of ULTRAFLOW® 44 with documented accuracy of ± 0.5 % at nominal flow $q_p$. Both the 5HX Series (Cooling) and the 2HX Series (Heat) comply to the European standard EN 1434 and the Measuring Instruments Directive (MID).

For being qualified for the 5HX/2HX Series, the flow sensor must be particular accurate, which means that the observed deviation of the flow sensor's registered volume compared to the reference volume in that test must be within ± 0.5 %*. Kamstrup can document the test result by a certificate or test report that the individual flow sensor has been tested on an ISO accredited flow bench at nominal flow $q_p$ with an accuracy of ± 0.5 %. The documents can be ordered together with the meter in paper or by e-mail. Kamstrup can provide the test results up to 10 years after delivery of the meter.

* Uncertainties of the test method are not considered.

# Materials

## Wetted parts

**ULTRAFLOW® 44, $q_p$ 1.5 and 2.5 $m^3/h$**

| | |
|---|---|
| Housing, thread | DZR brass (dezincification resistant brass), CW602N |
| Transducers | Stainless steel, W.no. 1.4404 |
| O-ring | Ethylene-propylene (EPDM) |
| Reflectors | Thermoplastic, 30 % glass fibre-reinforced polyethersulfone (PESU 30 % GF) and stainless steel, similar to AISI 316 |
| Measuring tube | Thermoplastic, Polyethersulfone (PESU) |

**ULTRAFLOW® 44, $q_p$ 3.5 to 100 $m^3/h$**

| | |
|---|---|
| Housing, thread | DZR brass (dezincification resistant brass), CW602N |
| Housing, flange | Stainless steel, W.no. 1.4308 |
| Transducers | Stainless steel, W.no. 1.4404 |
| O-ring | Ethylene-propylene (EPDM) |
| Reflectors | Thermoplastic, 30 % glass fibre-reinforced polyethersulfone (PESU 30 % GF) and stainless steel, similar to AISI 304 - ($q_p$ 6.0 and 10 $m^3/h$) |
| | Stainless steel, similar to AISI 304 or AISI 316 - ($q_p$ 3.5, 15...100 $m^3/h$) |
| Measuring tube | Thermoplastic, 30 % glass fibre-reinforced polyethersulfone (PESU 30 % GF) |

## Electronics housing

**$q_p$ 1.5...100 $m^3/h$**

| | |
|---|---|
| PCB box | Thermoplastic, inside - polyolefin, outside - polyamide |

**$q_p$ 1.5 and 2.5 $m^3/h$**

| | |
|---|---|
| Base (flow sensor) | Thermoplastic, 30 % glass fibre-reinforced polyethersulfone (PESU 30 % GF) |
| Top cover (flow sensor) | Thermoplastic, 10 % glass fibre-reinforced polycarbonate (PC 10 % GF) |

**$q_p \geq 3.5$ $m^3/h$**

| | |
|---|---|
| Base (flow sensor) | Thermoplastic, 10 % glass fibre-reinforced polycarbonate (PC 10 % GF) |
| Cover (flow sensor) | Thermoplastic, 10 % glass fibre-reinforced polycarbonate (PC 10 % GF) |

## Cables

| | |
|---|---|
| Coaxial cable | Copper cable with silicon jacket and inner fluoropolymer insulation |
| Signal cable | Silicone cable (3 x 0.25 $mm^2$) |

## Housing, Cable Extender Box

| | |
|---|---|
| Base, cover | Thermoplastic, acrylonitrile butadiene styrene (ABS) |

## Type summary

| Nom. flow $q_p$ [$m^3/h$] | Installation size | | |
|---|---|---|---|
| 1.5 | G¾B x 110 mm | G1B x 130 mm | |
| 2.5 | G1B x 190 mm | | |
| 3.5 | G1¼B x 260 mm | | |
| 6 | G1¼B x 260 mm | G1½B x 260 mm | DN25 x 260 mm |
| 10 | G2B x 300 mm | DN40 x 300 mm | |
| 15 | DN50 x 270 mm | | |
| 25 | DN65 x 300 mm | | |
| 40 | DN80 x 300 mm | | |
| 60 | DN100 x 360 mm | | |
| 100 | DN100 x 360 mm | DN125 x 350 mm | |

Thread EN ISO 228-1.

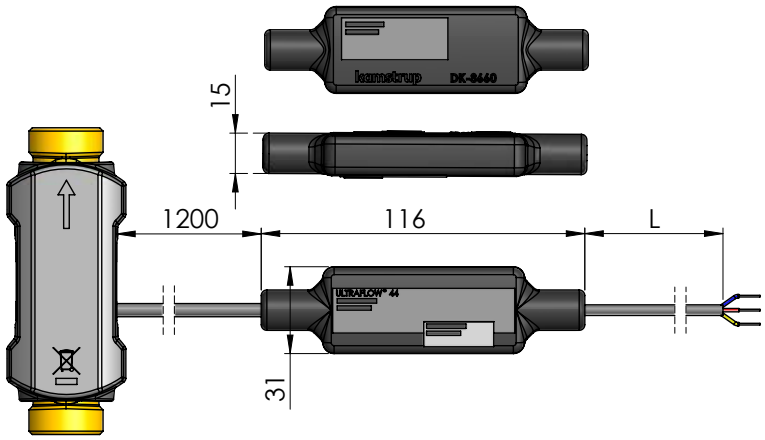
Flange facing type B, raised face according to EN 1092-1, PN25.

## Dimensional sketches

All ULTRAFLOW® 44 flow sensors include a separate electronics box, which contains the PCB. This electronics box is connected to the plastic casing on the respective meter housing with a coaxial cable with a length of l < 1.2 m. The plastic casing on the meter housing contains the transducers of the flow sensor.

### ULTRAFLOW® 44 - PCB and cables

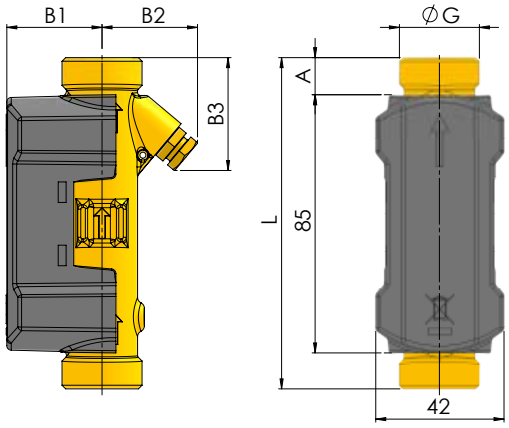
All measurements are in mm, unless otherwise stated.




| Nom. flow | L [m] | Approx. weight* [kg] |
|---|---|---|
| $q_p$ 1.5 and 2.5 m³/h | 2.5 | 0.18 |
| $q_p$ 1.5-100 m³/h | 10 | 0.36 |

* Electronics box together with coaxial cable and 2.5 m signal cable.

### ULTRAFLOW® 44, G¾B and G1B

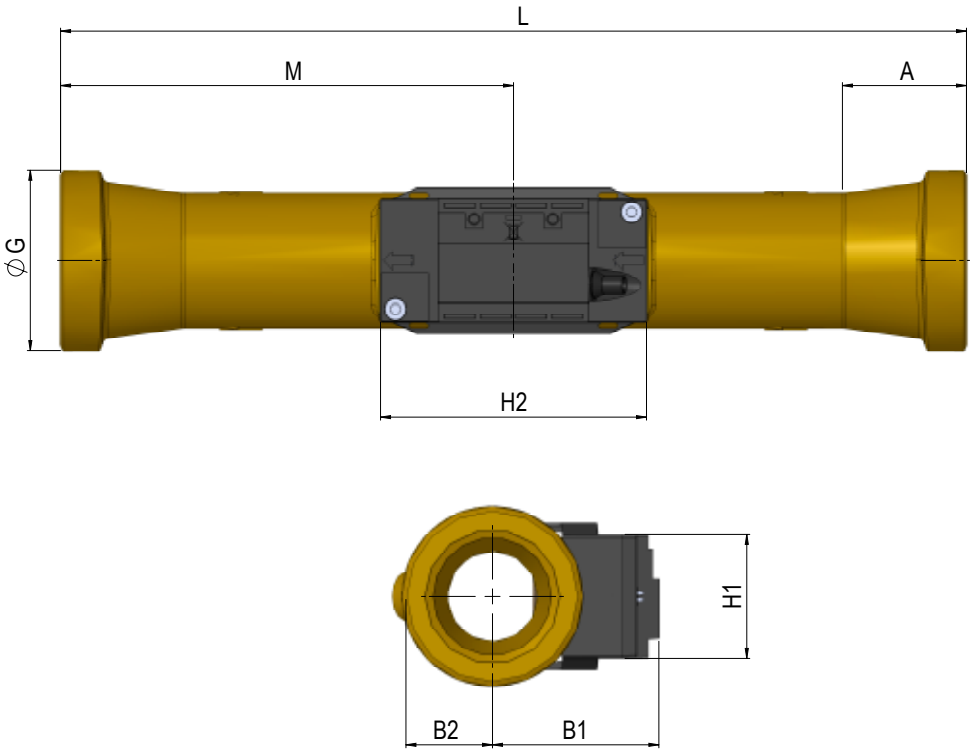



| Thread EN ISO 228-1 | L | A | B1 | B2 | B3 | Approx weight * [kg] |
|---|---|---|---|---|---|---|
| G¾B ($q_p$ 1.5) | 110 | 12 | 35 | 32 | 38 | 0.6 |
| G1B ($q_p$ 1.5) | 130 | 22 | 38 | 32 | 48 | 0.7 |
| G1B ($q_p$ 2.5) | 190 | 52 | 38 | 38 | 78 | 0.9 |

* Including the electronics box and 2.5 m signal cable.

# Dimensional sketches

## ULTRAFLOW® 44, G1¼B, G1½B and G2B

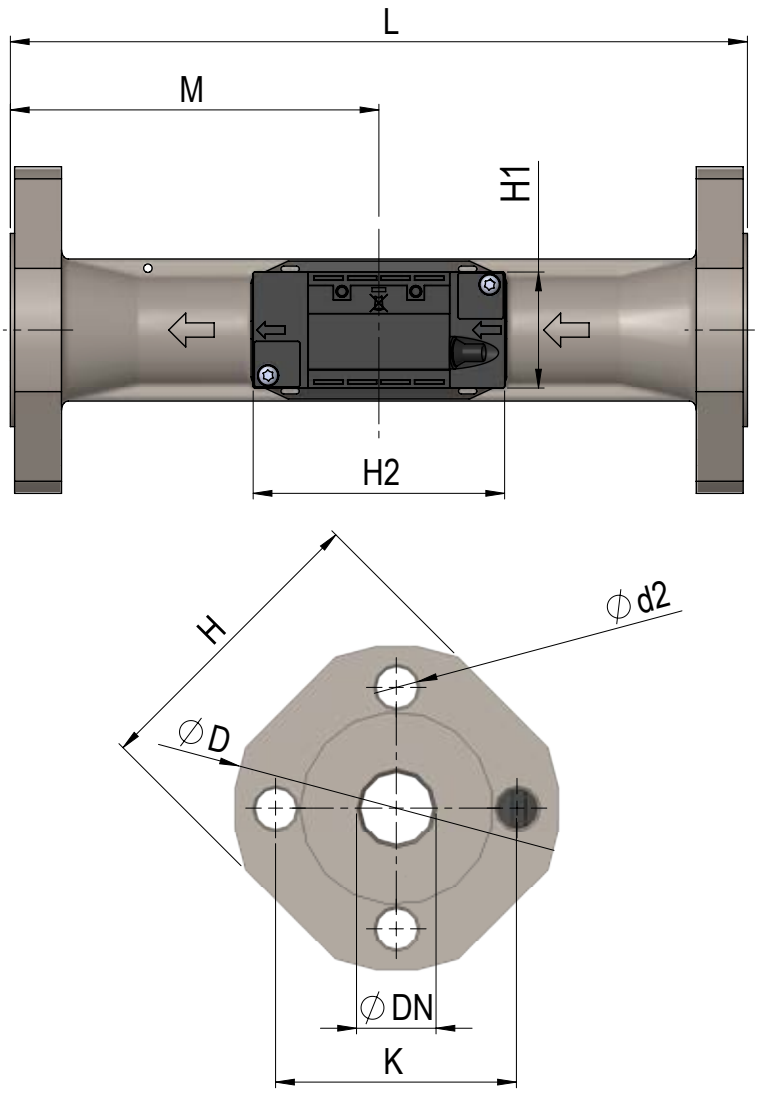



| Thread EN ISO 228-1 | L | M | H2 | A | B1 | B2 | H1 | Approx weight * [kg] |
|---|---|---|---|---|---|---|---|---|
| G1¼B ($q_p$ 3.5) | 260 | L/2 | 88 | 16 | 51 | 20 | 41 | 1.9 |
| G1¼ ($q_p$ 6.0) | 260 | L/2 | 88 | 16 | 53 | 20 | 41 | 2.0 |
| G1½ ($q_p$ 6.0) | 260 | L/2 | 88 | 31 | 60 | 24 | 41 | 2.0 |
| G2B ($q_p$ 10) | 300 | L/2 | 88 | 40.2 | 55 | 29 | 41 | 2.9 |

* Including the electronics box and 10 m signal cable.

## Dimensional sketches

### ULTRAFLOW® 44, DN25, DN40 and DN50



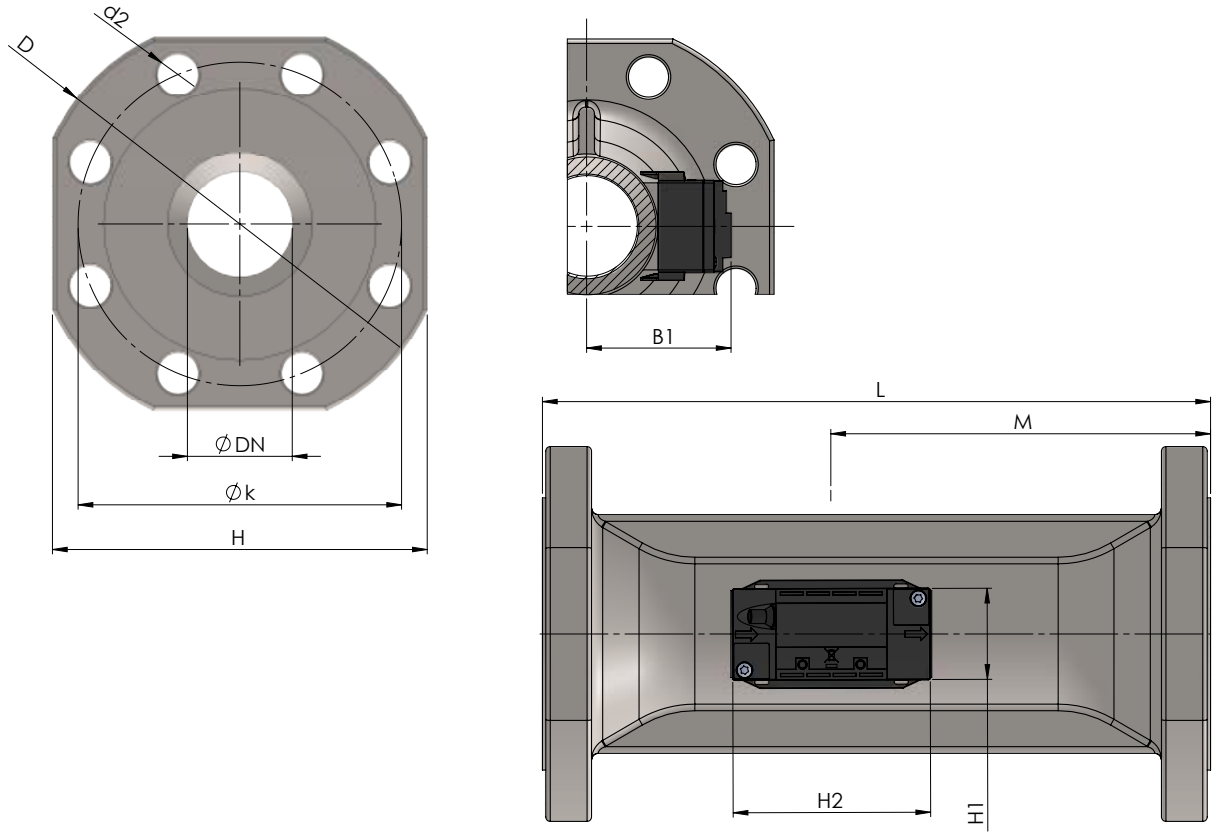

**Flange facing type B, raised face according to EN 1092-1, PN25**

| Nom. diameter | L | M | H2 | D | H | k | H1 | Bolts | | | Approx weight * |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | No. | Thread | $d_2$ | [kg] |
| DN25 ($q_p$ 6.0) | 260 | L/2 | 88 | 115 | 106 | 85 | 41 | 4 | M12 | 14 | 4.5 |
| DN40 ($q_p$ 10) | 300 | L/2 | 88 | 150 | 140 | 110 | 41 | 4 | M16 | 18 | 7.4 |
| DN50 ($q_p$ 15) | 270 | 155 | 88 | 165 | 145 | 125 | 41 | 4 | M16 | 18 | 8.5 |

* Including the electronics box and 10 m signal cable.

# Dimensional sketches

## ULTRAFLOW® 44, DN65 to DN125



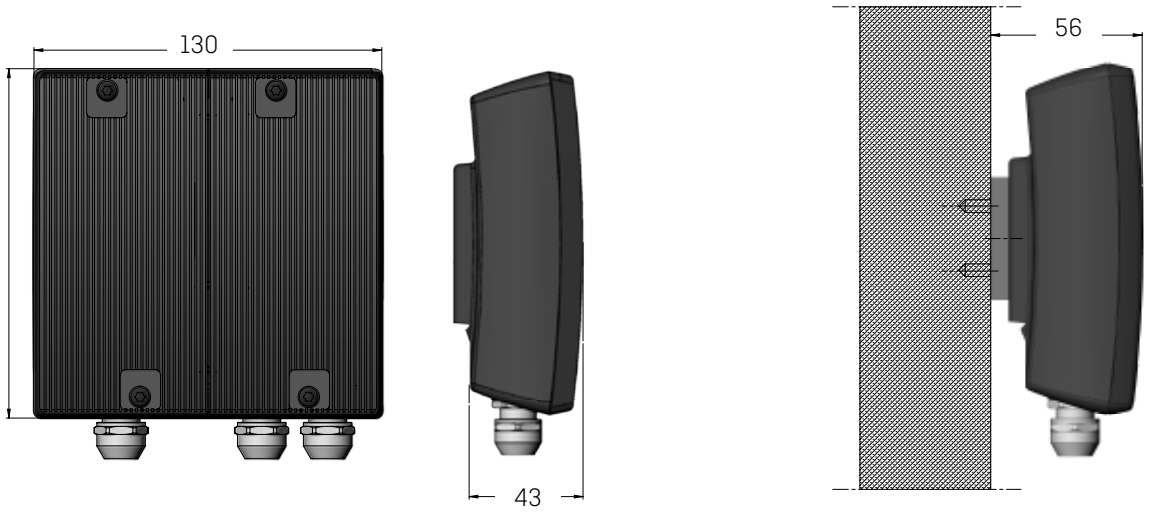

**Flange facing type B, raised face according to EN 1092-1, PN25**

| Nom. diameter | L | M | H1 | H2 | B1 | D | H | k | Bolts | | | Approx weight * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | No. | Thread | $d_2$ | [kg] |
| DN65 ($q_p$ 25) | 300 | 170 | 41 | 88 | <H/2 | 185 | 168 | 145 | 8 | M16 | 18 | 13.5 |
| DN80 ($q_p$ 40) | 300 | 170 | 41 | 88 | <H/2 | 200 | 184 | 160 | 8 | M16 | 18 | 17.1 |
| DN100 ($q_p$ 60 and 100) | 360 | 210 | 41 | 88 | <H/2 | 235 | 220 | 190 | 8 | M20 | 22 | 22.0 |
| DN125 ($q_p$ 100) | 350 | 212 | 41 | 88 | <H/2 | 270 | 260 | 220 | 8 | M24 | 26 | 28.5 |

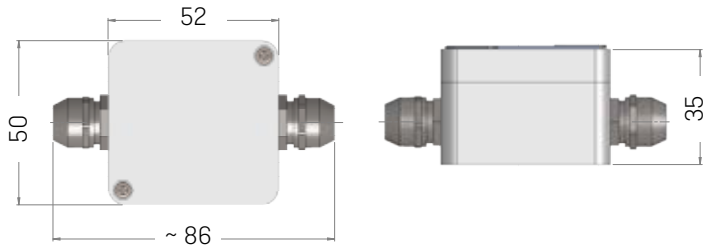
* Including the electronics box and 10 m signal cable.

## Dimensional sketches

### Pulse Transmitter




### Cable Extender Box

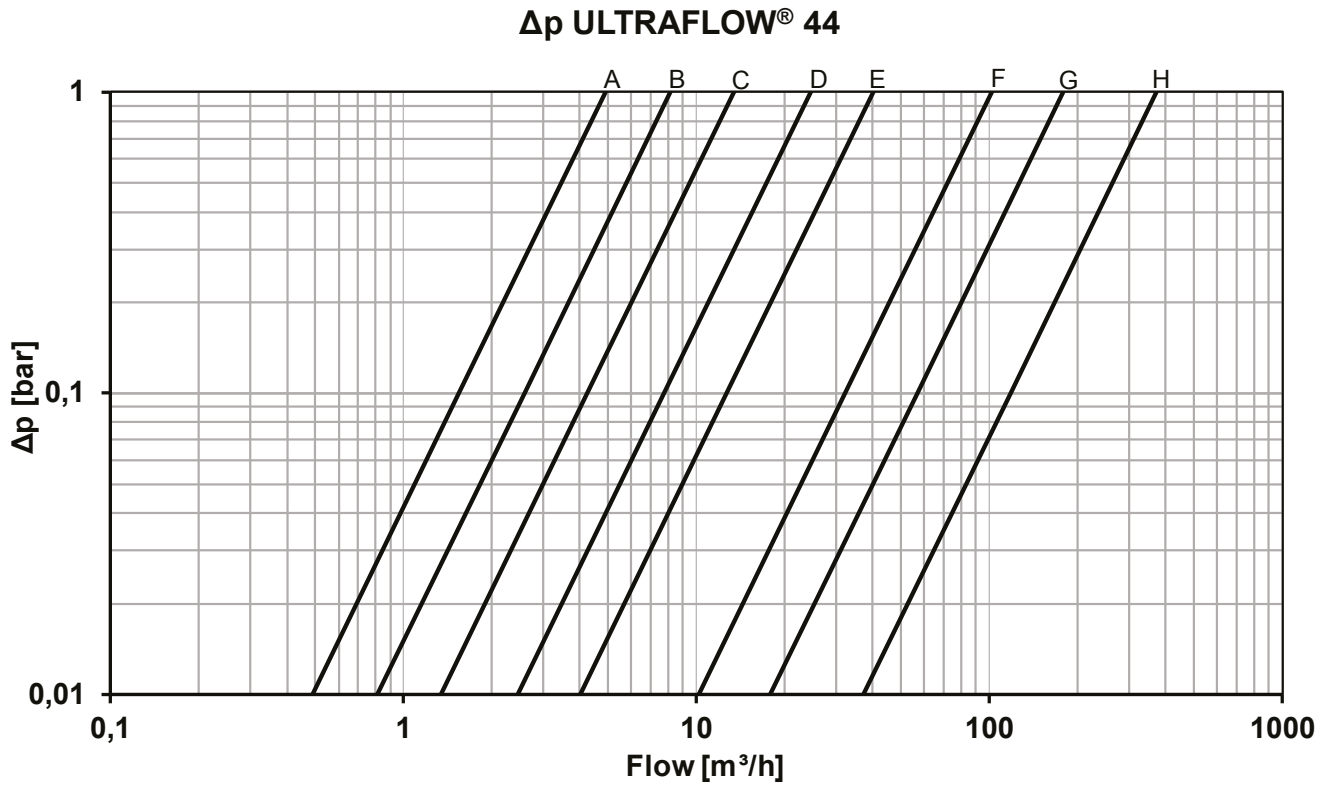



**Note:** To achieve the easiest possible adjustment (e.g. during reverification), we recommend to order ULTRAFLOW® 44 together with MULTICAL® 603 or MULTICAL® 803 whereby the flow sensor and the calculator will be delivered with identical serial number. Adjustment of separately delivered ULTRAFLOW® 44 requires individual encryption keys.

## Pressure loss

| Graph | Nom. flow $q_p$ [m³/h] | Nom. diameter [mm] | $\Delta p@q_p$ [bar] | $k_v$ * | q@0.25 bar [m³/h] |
|---|---|---|---|---|---|
| A | 1.5 | DN15/DN20 | 0.09 | 4.9 | 2.4 |
| B | 2.5 | DN20 | 0.09 | 8.2 | 4.1 |
| C | 3.5 | DN25 | 0.07 | 13.4 | 6.8 |
| D | 6 | DN25/DN32 | 0.06 | 24.5 | 12.3 |
| E | 10 | DN40 | 0.06 | 40 | 20 |
| E | 15 | DN50 | 0.14 | 40 | 20 |
| F | 25 | DN65 | 0.06 | 102 | 51 |
| G | 40 | DN80 | 0.05 | 179 | 90 |
| H | 60 | DN100 | 0.03 | 373 | 187 |
| H | 100 | DN100/DN125 | 0.07 | 373 | 187 |

* $q=k_v \times \sqrt{\Delta p}$



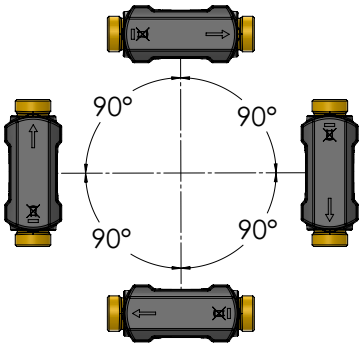
# Installation

## Orientation of Kamstrup flow sensors (mounted separately)

Kamstrup flow sensors can be installed horizontally, vertically or at an angle. For vertical mounting, Kamstrup flow sensors can be turned ±360° around the pipe axis.

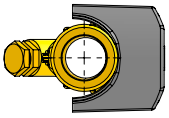
**IMPORTANT!**

The plastic box on the flow sensor must be turned to the side (when installed horizontally).

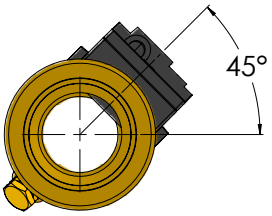


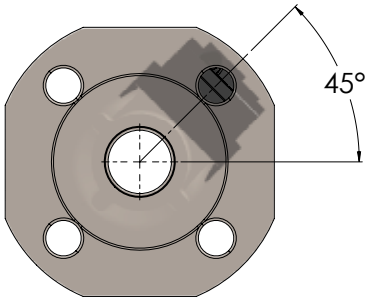

**Recommendations for cooling and combined heat/cooling applications**

**Threaded flow sensors with $q_p \leq 2.5\ m^3/h$**



**Threaded flow sensors with $q_p \geq 3.5\ m^3/h$ and flanged flow sensors**



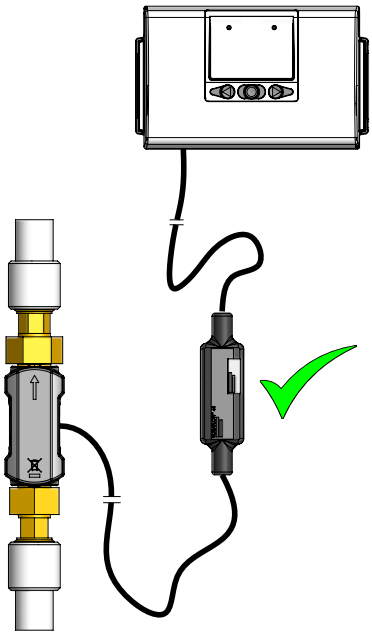




**Recommendations for heat applications**

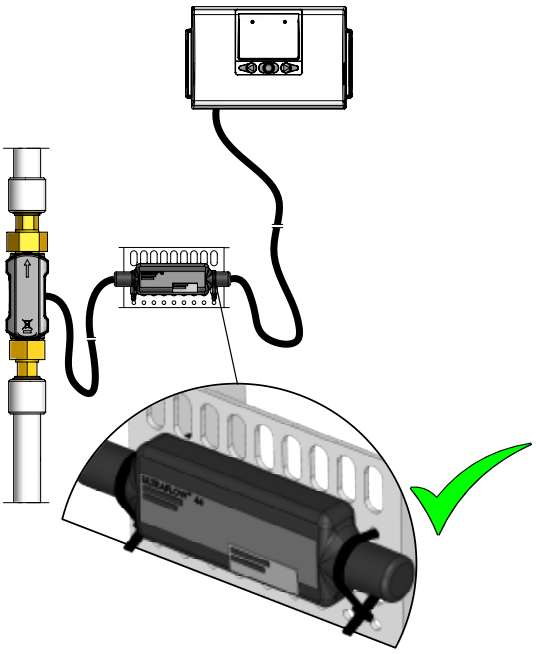
See the technical description for ULTRAFLOW® 44, doc. no. 5512-2599_GB.

## Mounting of the ULTRAFLOW® 44 electronics box

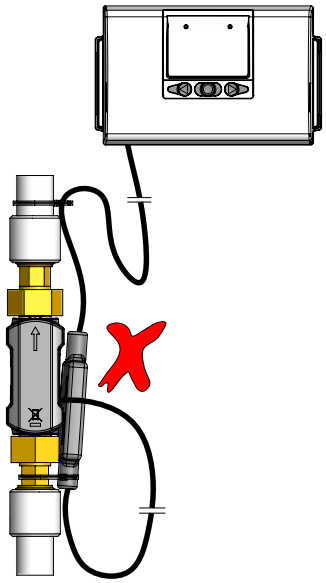
**Freely hanging**

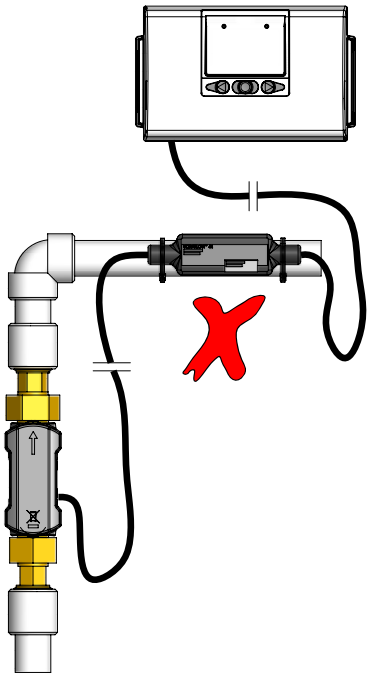


**Horizontally mounted with cable strips in humid environments**



**Must NOT be mounted on flow sensor or on pipes**





# Installation

## Straight inlet

ULTRAFLOW® requires neither straight inlet nor outlet to meet the Measuring Instruments Directive (MID) 2014/32/EU, OIML R75:2002 and EN 1434:2015. A straight inlet section is only necessary in case of heavy flow disturbances before the meter. We recommend to follow the guidelines in CEN CR 13582.

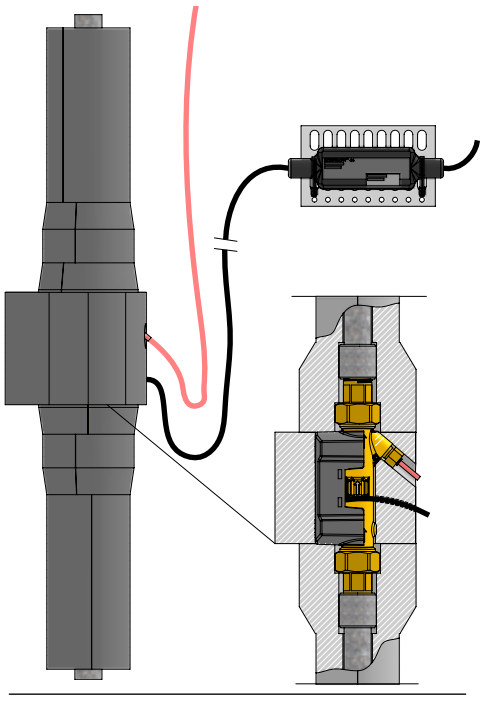
## Operating pressure

To minimise the risk of measuring errors as a result of cavitation or air in the water it is recommended to keep a sufficient static pressure at the flow sensor outlet of min. 1.5 bar (1.0 bar for ULTRAFLOW® 44 type 65-4-XXHX-XHX) up to $q_p$ and min. 2.5 bar (2.0 bar for ULTRAFLOW® 44 type 65-4-XXHX-XHX) at qs. This applies to temperatures up to approx. 80 °C. It is particularly recommended to follow this advice during meter testing. In absence of cavitation, the flow sensor is typically functioning at lower operating pressure. Furthermore, ULTRAFLOW® must not be exposed to pressure lower than the ambient pressure (vacuum). This minimises the risk of transducer damage.

## Insulation and water resistance

ULTRAFLOW® 44 can, dependent on the medium temperature, be permanently insulated or enclosed including the plastic casing on the meter housing. If ULTRAFLOW® 44 is insulated, the electronics (PCB) must remain uninsulated and be moved away from the meter housing. Furthermore, temperature sensors (mounted in the flow sensor) must also remain uninsulated.

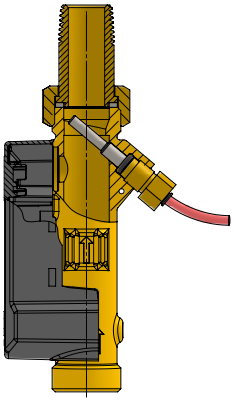
For further information about insulation of ULTRAFLOW® 44, see the technical description 5512-2599_GB, which can be downloaded from products.kamstrup.com.

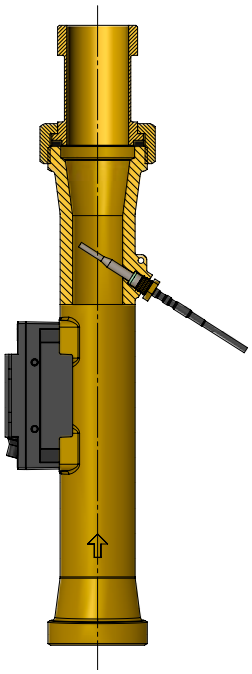


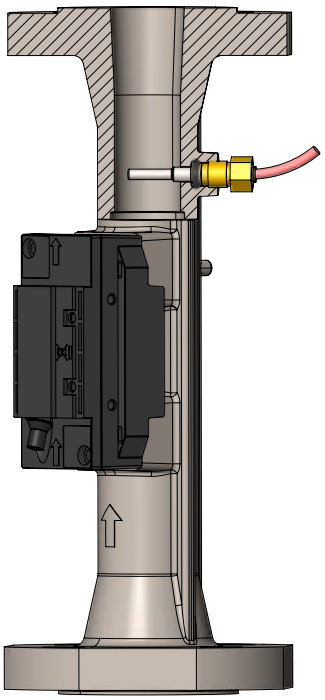
ULTRAFLOW® 44 tolerates periodical submersion. This applies to the meter housing as well as the electronics (PCB) of ULTRAFLOW® 44. If ULTRAFLOW® 44 is flooded, the connected MULTICAL® must not be flooded. Furthermore, temperature sensors must also not be flooded and therefore must be mounted elsewhere in the installation.

## Couplings and direct short sensor fitted in ULTRAFLOW® 44

A temperature sensor can be directly mounted in the outlet of flow sensors $q_p$ 1.5...10 $m^3/h$.







## Electrical connection

### Connecting MULTICAL® and ULTRAFLOW® 44

| ULTRAFLOW® 44 | -> | MULTICAL® |
|---|---|---|
| Blue (GND) | -> | 11 |
| Red (supply) | -> | 9 |
| Yellow (signal) | -> | 10 |

### Connecting via Pulse Transmitter/Cable Extender Box

| ULTRAFLOW® 44 | -> | Pulse Transmitter/ Cable Extender Box | | -> | MULTICAL® |
|---|---|---|---|---|---|
| | | Input | Output | | |
| Blue (GND) | -> | 11 | 11A/11 | -> | 11 |
| Red (supply) | -> | 9 | 9A/9 | -> | 9 |
| Yellow (signal) | -> | 10 | 10A/10 | -> | 10 |

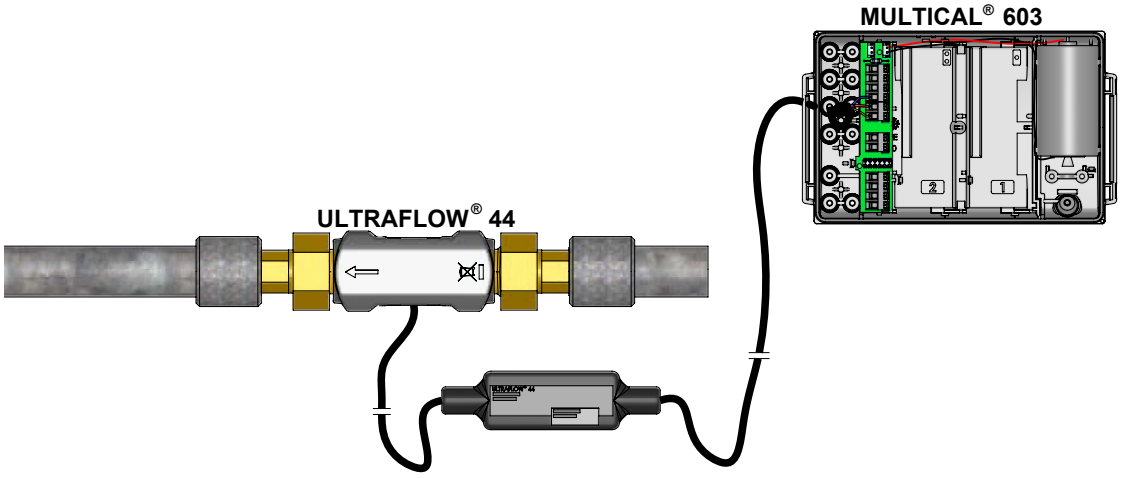
The Pulse Transmitter provides galvanic separation, but does not support extended info codes.

The Cable Extender Box does not provide galvanic separation, but supports extended info codes.

If long signal cables are used, consider the installation carefully. There must be **at least 25 cm** between the signal cable and all other cables due to EMC.

For further information about Pulse Transmitter and Cable Extender Box, see the technical description 5512-2599_GB, which can be downloaded from products.kamstrup.com.

## Example of connecting ULTRAFLOW® 44 and MULTICAL®



## Order specification

| Type number * | $q_p$ [$m^3/h$] | $q_i$ [$m^3/h$] | $q_s$ [$m^3/h$] | Connection | Length [mm] | PN [bar] | Meter factor [pulses/l] | Material |
|---|---|---|---|---|---|---|---|---|
| 65-4- CDHA -XHX | 1.5 | 0.015 | 3 | G¾B (R½) | 110 | 16/25 | 100 | Brass |
| 65-4- CDHD -XHX | 1.5 | 0.015 | 3 | G1B (R¾) | 130 | 16/25 | 100 | Brass |
| 65-4- CEHF -XHX | 2.5 | 0.025 | 5 | G1B (R¾) | 190 | 16/25 | 60 | Brass |
| 65-4- CGJG -XHX | 3.5 | 0.035 | 7 | G1¼B (R1) | 260 | 16/25 | 50 | Brass |
| 65-4- CHJG -XHX | 6 | 0.06 | 12 | G1¼B (R1) | 260 | 16/25 | 25 | Brass |
| 65-4- CHLB -XHX | 6 | 0.06 | 12 | DN25 | 260 | 25 | 25 | Stainless steel |
| 65-4- CHJH -XHX | 6 | 0.06 | 12 | G1½B(R1¼) | 260 | 16/25 | 25 | Brass |
| 65-4- CJJJ -XHX | 10 | 0.1 | 20 | G2B (R1½) | 300 | 16/25 | 15 | Brass |
| 65-4- CJLD -XHX | 10 | 0.1 | 20 | DN40 | 300 | 25 | 15 | Stainless steel |
| 65-4- CKCE -XHX | 15 | 0.15 | 30 | DN50 | 270 | 25 | 10 | Stainless steel |
| 65-4- CLCG -XHX | 25 | 0.25 | 50 | DN65 | 300 | 25 | 6 | Stainless steel |
| 65-4- CMCH -XHX | 40 | 0.4 | 80 | DN80 | 300 | 25 | 5 | Stainless steel |
| 65-4- FACL -XHX | 60 | 0.6 | 120 | DN100 | 360 | 25 | 2.5 | Stainless steel |
| 65-4- FBCL -XHX | 100 | 1 | 200 | DN100 | 360 | 25 | 1.5 | Stainless steel |
| 65-4- FBCM -XHX | 100 | 1 | 200 | DN125 | 350 | 25 | 1.5 | Stainless steel |

* XHX-code pertaining to final assembly, approvals, etc. is determined by Kamstrup A/S.
Some variants may not be included in national approvals.

ULTRAFLOW® 44 flow sensors with $q_p$ 1.5 and 2.5 $m^3/h$ are by default delivered with 2.5 m cable, but can also be delivered with 10 m cable.

ULTRAFLOW® 44 flow sensors with $q_p$ 3.5...100 $m^3/h$ are exclusively delivered with 10 m cable.

### Pulse Transmitter – type no. 6699-903

The Pulse Transmitter is delivered with built-in supply for ULTRAFLOW® 44. Battery, 24 VAC and 230 VAC supply are available. State the required supply type when ordering.

### Cable Extender Box - type no. 6699-036

If ULTRAFLOW® must be connected to MULTICAL® 603 or MULTICAL® 803 with a cable length between 10 m and 30 m and galvanic separation is not necessary, a Cable Extender Box can be utilized. See document no. 5512-2008 (DK-GB-DE-RO) for further information.

## Accessories

### Couplings including gaskets (PN16 and PN25)

| Size | Nipple | Union | Type no. (1 pc.) | Type no. (2 pcs.) |
|---|---|---|---|---|
| DN15 | R½ | G¾ | - | 6561-323 |
| DN20 | R¾ | G1 | - | 6561-324 |
| DN25 | R1 | G1¼ | 6561-325 | - |
| DN32 | R1¼ | G1½ | 6561-314 | - |
| DN40 | R1½ | G2 | 6561-315 | - |

### Gaskets for couplings (PN16 and PN25)

| Size (union) | Type no. (1 pc.) |
|---|---|
| G¾ | 2210-061 |
| G1 | 2210-062 |
| G1¼ | 2210-063 |
| G1½ | 2210-064 |
| G2 | 2210-065 |

### Gaskets for flanged meters (PN25)

| Size | Type no. (1 pc.) |
|---|---|
| DN25 | 2210-133 |
| DN40 | 2210-132 |
| DN50 | 2210-099 |
| DN65 | 2210-141 |
| DN80 | 2210-140 |
| DN100 | 1150-142 |
| DN125 | 1150-153 |

For further information about ULTRAFLOW® 44 DN15-125, see the technical description 5512-2599_GB, which can be downloaded from products.kamstrup.com.

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