

Data sheet

ULTRAFLOW® 34 DN15-125

- Ultrasonic flow sensor
- For flow from 1.5 m³/h up to 100 m³/h
- Compact design
- Static meter with no moving parts
- Large dynamic range
- No wear
- Exceptionally accurate
- Longevity



MID 2014/32/EU

CE M19 0200

EN 1434

DK-BEK 1178 – 06/11/2014



EN 1434

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Application

ULTRAFLOW® 34 is a static flow sensor based on the ultrasonic measuring principle. The prime area of application is as a volume flow sensor for use with thermal energy meters such as MULTICAL®. ULTRAFLOW® 34 has been designed for use in cooling and heat/cooling installations where water is used as the heat-bearing medium.

ULTRAFLOW® 34 is not suitable for use with other media than water and should therefore not be used with e.g. non-freezing additives like glycol.

ULTRAFLOW® 34 employs micro-processor 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 pulse cable is used to connect ULTRAFLOW® 34 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® 34 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® 34.

If the distance between MULTICAL® and ULTRAFLOW® 34 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® 603 and ULTRAFLOW® 34.

Approvals

Type approval

ULTRAFLOW® 34 is approved as a heat meter in accordance with MID-2014/32/EU:

EC-Type Examination certificate	DK-0200-MI004-008
MID-certificate acc. to module D	DK-0200-MID-D-001



ULTRAFLOW® 34 is approved as a cooling meter in accordance with DK-BEK 1178 – 06/11/2014:

System designation	TS 27.02 002
Verification	DANAK accreditation 268



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

Standard

EN 1434:2015

CE-marking

ULTRAFLOW® 34 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
– Electromagnetic environment	Class E1 and E2
– Ambient temperature	5...55 °C, closed location (indoor installation)

Technical data

Mechanical data

Metrological class	2 or 3
Environmental class	Complies with EN 1434 class C
Ambient temperature	5...55 °C, closed location (indoor installation)
Protection class	
– Flow sensor	IP67
– Pulse Transmitter	IP67
– Cable Extender Box	IP65
Medium in flow sensor	Water (recommended water quality as in CEN TR 16911 and AGFW FW510)
Temperature* of medium	2...130 °C or 2...50 °C
Storage temperature (empty sensor)	-25...60 °C
Pressure stage	PN16, PS16 PN25, PS25

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

Electrical data

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 24 VAC ± 50 %, 50 Hz
Back-up supply	Integral super-cap eliminates operational disturbances due to short-term power-cuts
Cable length	
– Flow sensor	Max. 10 m
– Pulse Transmitter	Depends on calculator. Max 100 m when connected to MULTICAL® (Y=2).
– Cable Extender Box	Depends on calculator. Max 30 m when connected to MULTICAL® 603 or 803 (does not provide galv. separation, but supports extended info codes).
EMC data	Complies with EN 1434 class C

Flow data

Nom. flow q_p [m ³ /h]	Nom. diameter [mm]	Meter factor * [pulses/l]	Dynamic range $q_p:q_i$	$q_s:q_p$	Flow@125 Hz ** [m ³ /h]	$\Delta p@q_p$ [bar]	Min. cut off [l/h]
1.5	DN15 & DN20	100	100:1	2:1	4.5	0.22	3
2.5	DN20	60	100:1	2:1	7.5	0.03	5
3.5	DN25	50	100:1	2:1	9	0.07	7
6	DN25	25	100:1	2:1	18	0.20	12
10	DN40	15	100:1	2:1	30	0.06	20
15	DN50	10	100:1	2:1	45	0.14	30
25	DN65	6	100:1	2:1	75	0.06	50
40	DN80	5	100:1	2:1	90	0.05	80
60	DN100	2.5	100:1	2:1	180	0.03	120
100	DN100 & DN125	1.5	100:1	2:1	300	0.07	200

* The meter factor can be seen on the ULTRAFLOW® label.

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

Materials

Wetted parts

ULTRAFLOW® 34, q_p 1.5 m³/h

Housing, thread	DZR brass (Dezincification resistant brass), CW602N
Transducers	Stainless steel, W.no. 1.4401
Gaskets	EPDM
Reflectors	Thermoplastic, PES 30 % GF and stainless steel, W.no. 1.4301
Measuring pipe	Thermoplastic, PES 30 % GF

ULTRAFLOW® 34, q_p 2.5 to 100 m³/h

Housing, thread	DZR brass (Dezincification resistant brass), CW602N
Housing, flange	Stainless steel, W.no. 1.4308
Transducers	Stainless steel, W.no. 1.4401
Gaskets	EPDM
Reflectors	Stainless steel, W.no. 1.4301
Measuring pipe	Thermoplastic, PES 30 % GF

Electronic housing

Base	Thermoplastic, PC 10 % GF
Lid	Thermoplastic, PC 20 % GF

Connection cable	Silicone cable (3 x 0.5 mm ²)
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Type summary

Nom. flow q_p [m ³ /h]	Size		
1.5	G¾B x 110 mm	G1B x 130 mm	G1B x 190 mm
2.5	G1B x 190 mm		
3.5	G5/4B x 260 mm		
6	G5/4B 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	

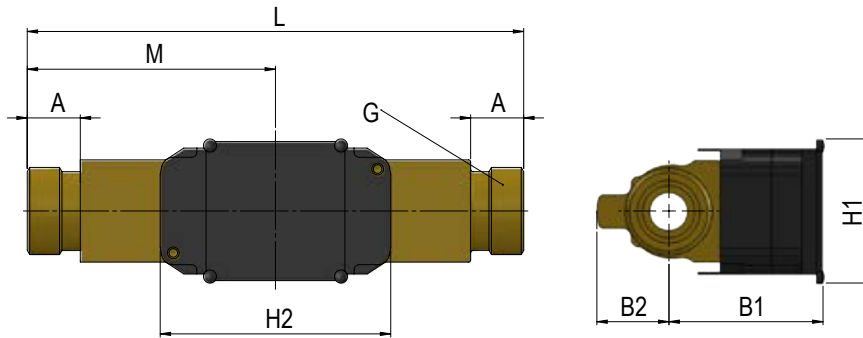
Thread EN ISO 228-1.

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

Dimensional sketches

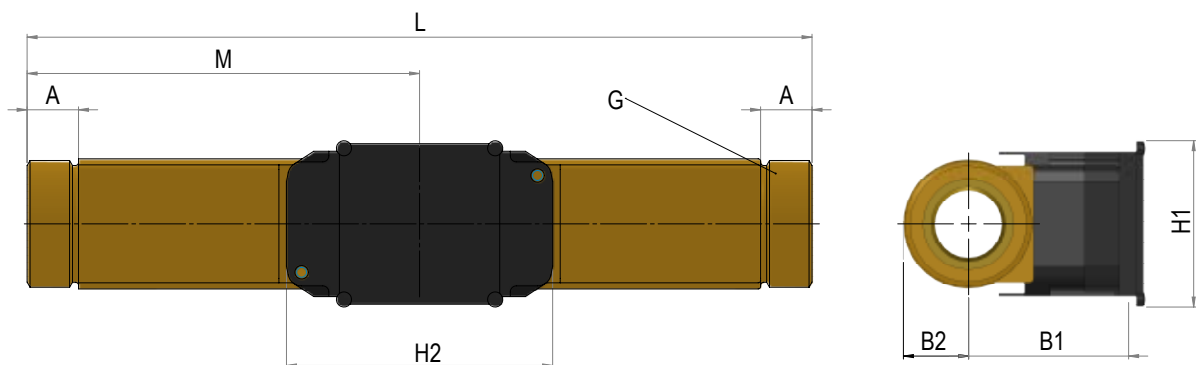
ULTRAFLOW® 34, G $\frac{3}{4}$ B and G1B

All measurements are in mm, unless otherwise stated.



Thread EN ISO 228-1	L	M	H2	A	B1	B2	H1	App. weight [kg]
G $\frac{3}{4}$ B	110	L/2	89	10.5	58	35	55	0.8
G1B	130	L/2	89	20.5	58	35	55	0.9
G1B (q _p 1.5)	190	L/2	89	20.5	58	36	55	1.4
G1B (q _p 2.5)	190	L/2	89	20.5	58	36	55	1.3

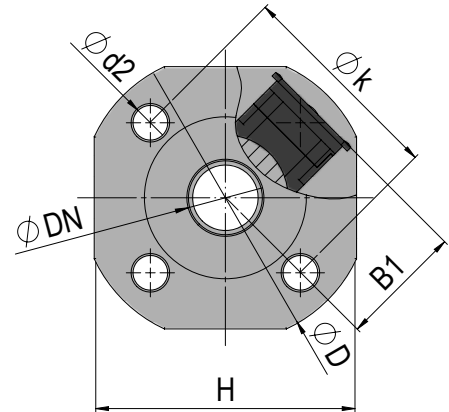
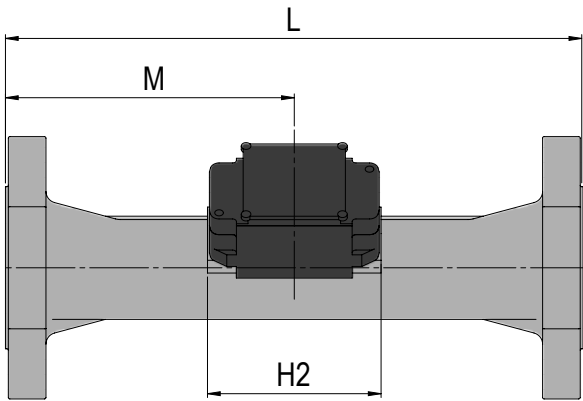
ULTRAFLOW® 34, G5/4B and G2B



Thread EN ISO 228-1	L	M	H2	A	B1	B2	H1	App. weight [kg]
G5/4B	260	L/2	89	17	58	22	55	2.3
G2B	300	L/2	89	21	65	31	55	4.5

Dimensional sketches

ULTRAFLOW® 34, DN25 to DN50

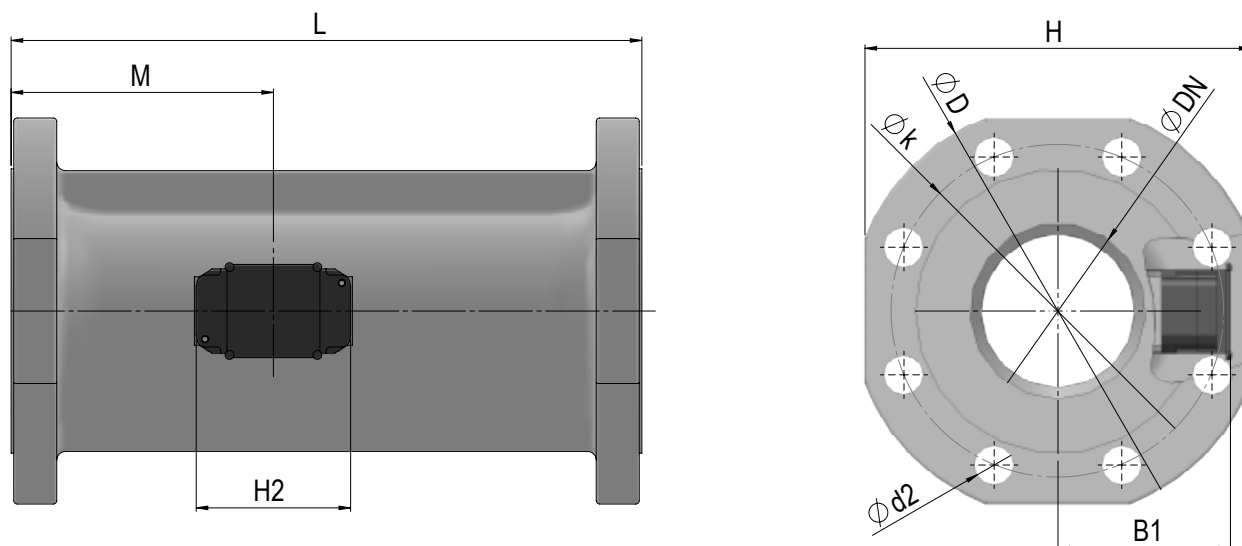


Flange facing type B, raised face according to EN 1092-1, PN25

Nom. diameter	L	M	H2	B1	D	H	k	Bolts			App. weight [kg]
								No.	Thread	d ₂	
DN25	260	L/2	89	58	115	106	85	4	M12	14	5.0
DN40	300	L/2	89	<D/2	150	136	110	4	M16	18	8.3
DN50	270	155	89	<D/2	165	145	125	4	M16	18	10.1

Dimensional sketches

ULTRAFLOW® 34, DN65 to DN125

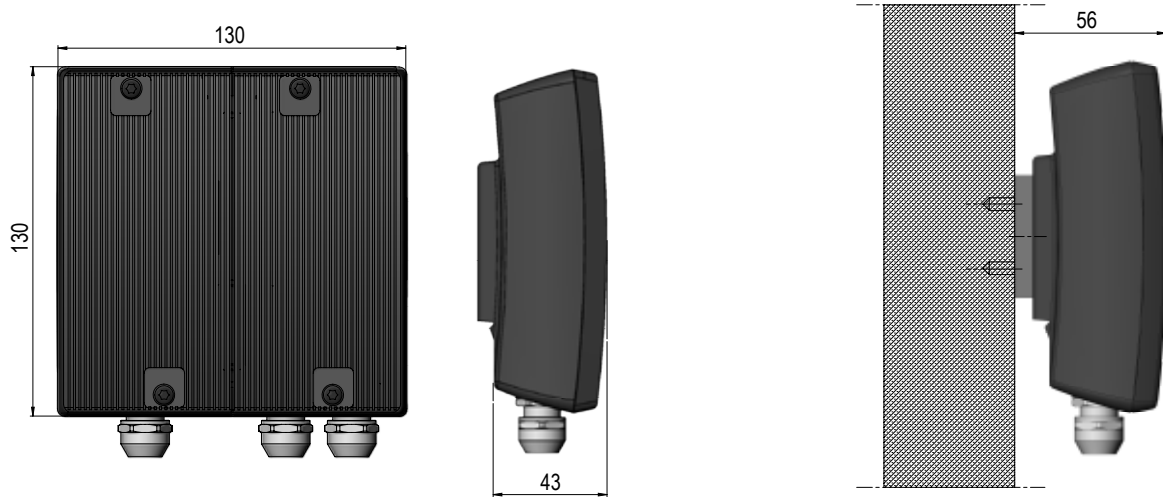


Flange facing type B, raised face according to EN 1092-1, PN25

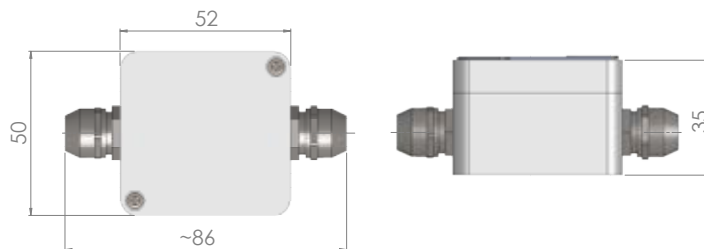
Nom. diameter	L	M	H2	B1	D	H	k	Bolts			App.weight [kg]
								No.	Thread	d ₂	
DN65	300	170	89	<H/2	185	168	145	8	M16	18	13,2
DN80	300	170	89	<H/2	200	184	160	8	M16	18	16.8
DN100	360	210	89	<H/2	235	220	190	8	M20	22	21.7
DN125	350	212	89	<H/2	270	260	220	8	M24	26	28.2

Dimensional sketches

Pulse Transmitter



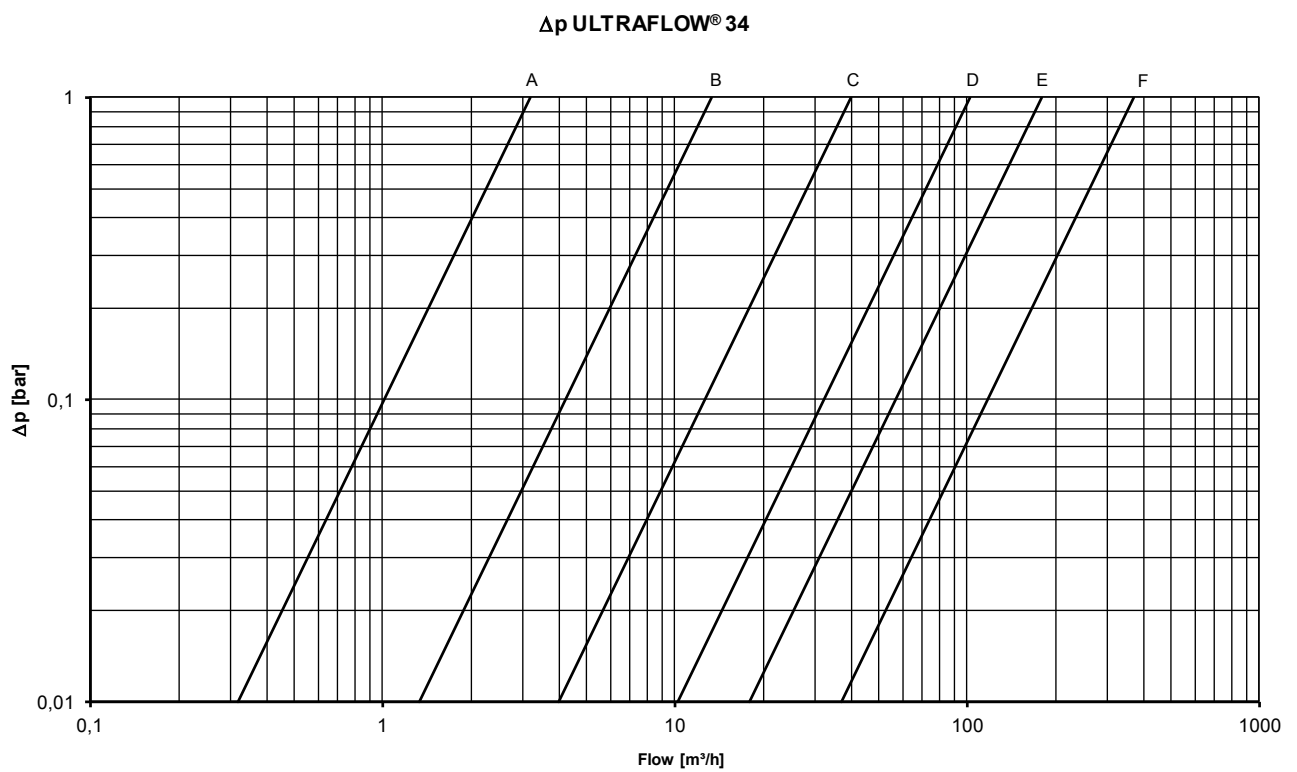
Cable Extender Box



Pressure loss

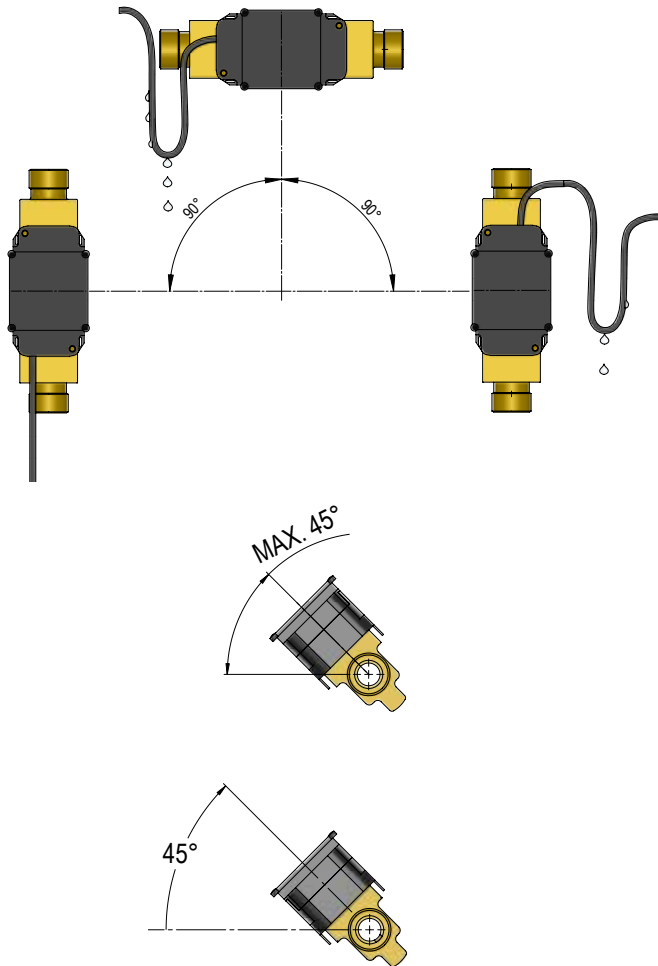
Graph	Nom. flow q_p [m ³ /h]	Nom. diameter [mm]	k_v^*	Q@0.25 bar [m ³ /h]
A	1.5	DN15 & DN20	3.2	1.6
B	2.5 & 3.5 & 6	DN20 & DN25	13.4	6.7
C	10 & 15	DN40 & DN50	40	20
D	25	DN65	102	51
E	40	DN80	179	90
F	60 & 100	DN100 & DN125	373	187

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



Installation

Installation angle for ULTRAFLOW® 34



ULTRAFLOW® 34 may be installed horizontally, vertically or at an angle.

IMPORTANT!

For ULTRAFLOW® 34, the electronics/plastic case must be turned to the side (when installed horizontally).

ULTRAFLOW® 34 may be turned up to +45° around the pipe axis.

At risk of condensation, e.g. in cooling installations, or if ULTRAFLOW® 34 is installed in moist environments, ULTRAFLOW® 34 must be turned +45° around the pipe axis.

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. Only in case of heavy flow disturbances before the meter will a straight inlet section be necessary. We recommend to follow the guidelines in CEN CR 13582.

Working Pressure

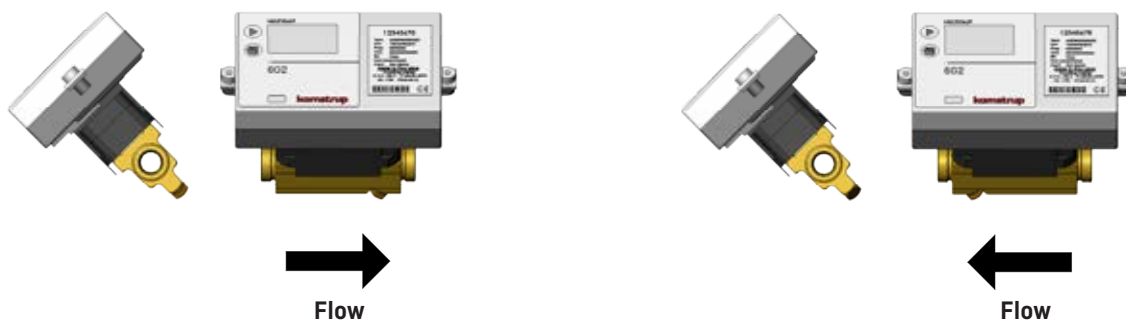
In order to prevent cavitation, the back pressure at ULTRAFLOW® 34 (pressure at sensor outlet) must be min. 1.5 bar at q_b and min. 2.5 bar at q_s . This applies to temperatures up to approx. 80 °C. ULTRAFLOW® 34 must not be exposed to lower pressure than the ambient pressure (vacuum).

Insulation

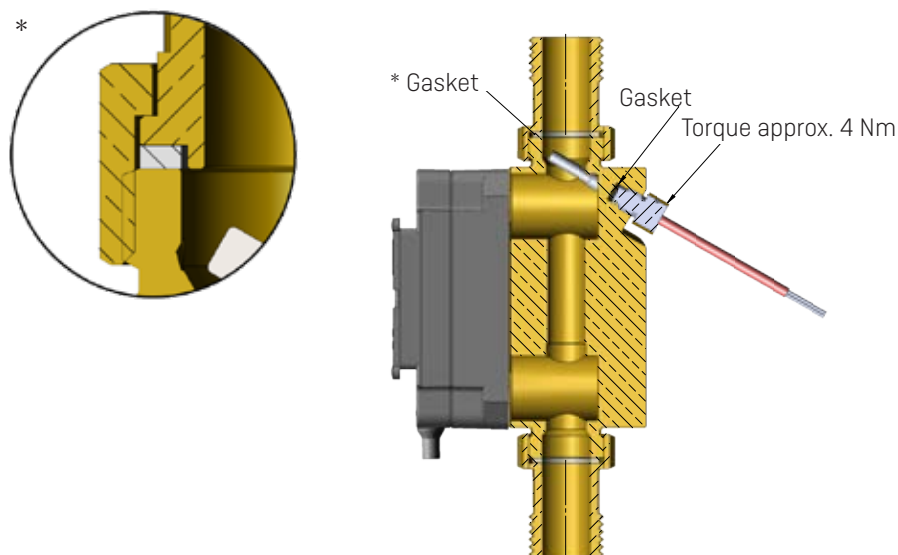
ULTRAFLOW® 34 should not be insulated or enclosed as condensation around the meter will be trapped. If, after careful consideration, ULTRAFLOW® 34 is insulated anyway, the electronics housing must remain uninsulated.

Examples of installation

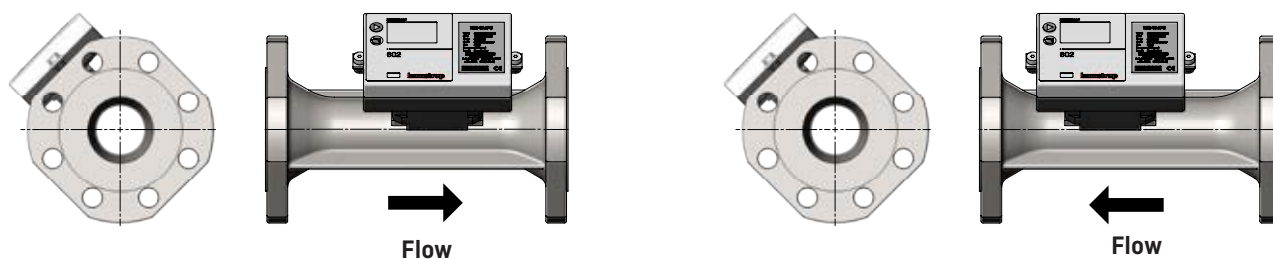
Threaded meter with MULTICAL® fitted directly on ULTRAFLOW® 34.



Couplings and short direct sensor fitted in ULTRAFLOW® 34 [G¾B (R½) and G1B (R¾) only].



Flanged meter with MULTICAL® fitted directly on ULTRAFLOW® 34.



Note: At medium temperature above 90 °C or at medium temperature below ambient temperature, calculator and Pulse Transmitter must not be mounted on the flow sensor. Instead wall mounting is recommended.

Electrical connection

Connecting MULTICAL® & ULTRAFLOW® 34

ULTRAFLOW® 34	->	MULTICAL®
Blue (GND)	->	11
Red (supply)	->	9
Yellow (signal)	->	10

Connecting via Pulse Transmitter/Cable Extender Box

ULTRAFLOW® 34	->	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.

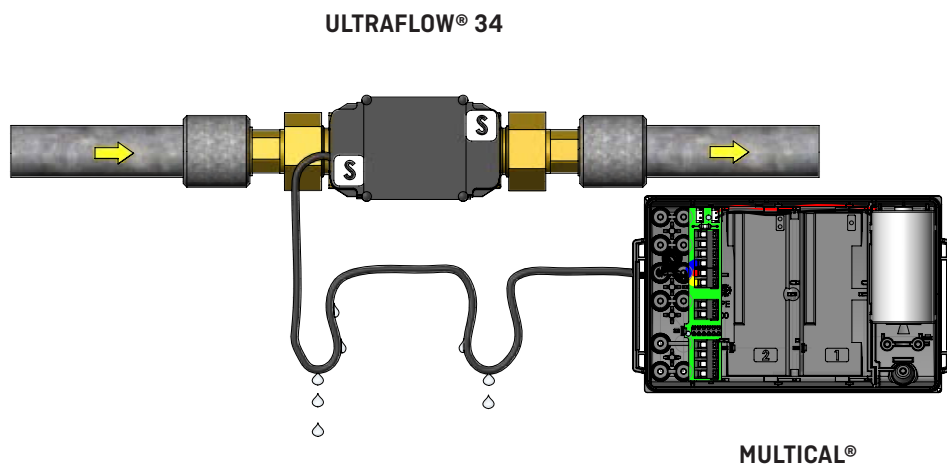
The Cable Extender Box does not provide galvanic separation, but supports extended info codes.

If long signal cables are used, please 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, please see the technical description 5512-2464, which can be downloaded via products.kamstrup.com.

Example of connecting ULTRAFLOW® 34 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
65-3- CDAA -XXX	1.5	0.015	3	G¾B (R½)	110	16/25	100	Brass
65-3- CDAD -XXX	1.5	0.015	3	G1B (R¾)	130	16/25	100	Brass
65-3- CDAF -XXX	1.5	0.015	3	G1B (R¾)	190	16/25	100	Brass
65-3- CEAF -XXX	2.5	0.025	5	G1B (R¾)	190	16/25	60	Brass
65-3- CGAG -XXX	3.5	0.035	7	G5/4B (R1)	260	16/25	50	Brass
65-3- CHAG -XXX	6	0.06	12	G5/4B (R1)	260	16/25	25	Brass
65-3- CHCB -XXX	6	0.06	12	DN25	260	25	25	Stainless steel
65-3- CJAJ -XXX	10	0.1	20	G2B (R1½)	300	16/25	15	Brass
65-3- CJCD -XXX	10	0.1	20	DN40	300	25	15	Stainless steel
65-3- CKCE -XXX	15	0.15	30	DN50	270	25	10	Stainless steel
65-3- CLCG -XXX	25	0.25	50	DN65	300	25	6	Stainless steel
65-3- CMCH -XXX	40	0.4	80	DN80	300	25	5	Stainless steel
65-3- FACL -XXX	60	0.6	120	DN100	360	25	2.5	Stainless steel
65-3- FBCL -XXX	100	1	200	DN100	360	25	1.5	Stainless steel
65-3- FBCM -XXX	100	1	200	DN125	350	25	1.5	Stainless steel

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

ULTRAFLOW® 34 is as default delivered with 2.5 m cable, but can also be delivered with 5 or 10 m cable.

Pulse Transmitter – type no. 6699-903

The Pulse Transmitter is delivered with built-in supply for ULTRAFLOW® 34.
Battery, 24 VAC and 230 VAC supply are available.
Please state the required supply type when ordering.

Cable Extender Box - type no. 6699-036

If ULTRAFLOW® must be connected to MULTICAL® 603 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-R0) for further information.

Accessories

Couplings including gaskets (PN16 and PN25)

Size	Nipple	Union	Type No.	
			1 pc.	2 pcs.
DN15	R½	G¾	-	6561-323
DN20	R¾	G1	-	6561-324
DN25	R1	G5/4	6561-325	-
DN40	R1½	G2	6561-315	-

Gaskets for couplings (PN16 and PN25)

Size (union)	Type No. (1 pc.)
G¾	2210-061
G1	2210-062
G5/4	2210-063
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® 34 DN15-125, please see the technical description 5512-2464 which can be downloaded via products.kamstrup.com.

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