ULTRAFLOW® 54

Ultrasonic volume measuring device

Your benefits

- Durable, wear-free ultrasonic volume measuring device:
  High measurement stability and operational reliability
- Compact design:
  Requires little installation space on site
- High resolution of pulse values:
  Precise instantaneous values
- CH refrigeration certification (METAS) incl. initial calibration:
  Approved for use in commercial transactions

Applications

- Particularly suitable for district heating/cooling applications (main meters, transfer stations, etc.) in billing transactions
- Replacement of mechanical impeller heat meters
- Heat and/or cooling consumption measurement in building services engineering
- Can only be used with MULTICAL® series calculators

Properties

- Nominal diameters:
  Heating: DN 20 to DN 300
  Combined heating/cooling: DN 150 to DN 300
  Cooling: DN 150 to DN 300
- Nominal flow rates:
  Heat: q_p 1,5 to q_p 1000
  Heat/cooling combined: q_p 150 to q_p 1000
  Cooling: q_p 150 to q_p 1000
- Low pressure loss
- No moving parts
- Signal transmission to the computing unit and power supply to the volume measuring device via a 3-wire cable
- Medium temperature:
  Heat: 15 to 130 °C
  Heat/cooling combined: 2 to 130 °C
  Cooling: 2 to 130 °C
  From 90 °C, a flange meter, wall mounting of the electronic unit of the volume measuring part from DN 150, and relocation of the calculator are recommended.
- Type approval/certification:
  - Heat: CE Conformity acc. European Measuring Instruments Directive (MID)
  - Cold: Swiss certification (METAS) including initial calibration

Options

- Pulse transmitter with its own power supply for cable lengths >10 m

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Technical Data ULTRAFLOW® 54 (DN 20 - 65)

Series			ULTRAFLOW® 54										
Nominal diameter	**DN**	**mm**	**20**	**20**	**25**	**25**	**25**	**25**	**32**	**40**	**40**	**50**	**65**
Nominal flow rate	**q_p**	**m^3/h**	**1,5**	**2,5**	**3,5**	**3,5**	**6**	**6**	**6**	**10**	**10**	**15**	**25**
Nominal pressure	**PN**	**bar**	**-**	**-**	**16**	**-**	**16**	**-**	**-**	**16**	**-**	**-**	**-**
Nominal pressure with flanges	**PN**	**bar**	**25**	**25**	**-**	**25**	**-**	**25**	**25**	**-**	**25**	**25**	**25**
Connection thread on meter	G...B	Inch	-	-	1¼	-	1¼	-	-	2	-	-	-
Maximum flow rate	q_s	m^3/h	3	5	7	7	12	12	12	20	20	30	50
Minimum flow rate +/- 5 %	q_i	l/h	15	25	35	35	60	60	60	100	100	150	250
Kvs value		m^3/h	3,2	13,4	13,4	13,4	13,4	13,4	13,4	40	40	40	102
Starting flow		l/h	3	5	7	7	12	12	12	20	20	30	50
Temperature		max. °C	130	130	130	130	130	130	130	130	130	130	130
Standard 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

Dimensions and weights													
Length without couplings	**A**	**mm**	**-**	**-**	**260**	**-**	**260**	**-**	**-**	**300**	**-**	**-**	**-**
Total height	B	mm	-	-	80	-	80	-	-	96	-	-	-
Height from pipe center line	C	mm	-	-	58	-	58	-	-	65	-	-	-
Width	D	mm	-	-	55	-	55	-	-	55	-	-	-
Length with flanges	**A**	**mm**	**190**	**190**	**-**	**260**	**-**	**260**	**260**	**-**	**300**	**270**	**300**
Height with flanges	E	mm	95	95	-	106	-	106	128	-	136	145	168
Flange outer diameter[1)]	H	mm	105	105	-	115	-	115	140	-	150	165	185
Bolt circle diameter[1)]	K	mm	75	75	-	85	-	85	100	-	110	125	145
Number of screws[1)]		Pcs.	4	4	-	4	-	4	4	-	4	4	8
Weight without couplings		app. kg	-	-	2,3	-	2,3	-	-	4,5	-	-	-
Weight with flanges		app. kg	2,9	2,9	-	5,0	-	5,0	5,2	-	8,3	10,1	13,2

1] DIN EN 1092

Technical Data ULTRAFLOW® 54 (DN 80 - 300)

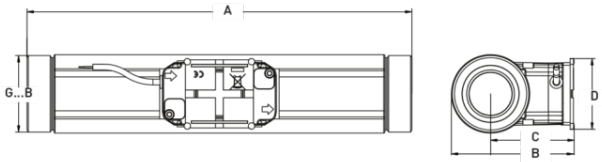
Series			ULTRAFLOW® 54												
Nominal diameter	**DN**	**mm**	**80**	**100**	**100**	**125**	**150**	**150**	**150**	**200**	**200**	**250**	**250**	**250**	**300**
Nominal flow rate	**q_p**	**m^3/h**	**40**	**60**	**100**	**100**	**150**	**250**	**400**	**400**	**600**	**400**	**600**	**1000**	**1000**
Nominal pressure	**PN**	**bar**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Nominal pressure with flanges	**PN**	**bar**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**16**
Connection thread on meter	G...B	Inch	-	-	-	-	-	-	-	-	-	-	-	-	-
Maximum flow rate	q_s	m^3/h	80	120	200	200	300	500	800	800	1200	800	1200	2000	2000
Minimum flow rate +/- 5%	q_i	l/h	400	600	1000	1000	1500	2500	4000	4000	6000	4000	6000	10000	10000
Kvs value		m^3/h	179	373	373	373	1060	1060	2000	4040	4040	4040	4040	8160	8160
Starting flow		l/h	80	120	200	200	300	500	800	800	1200	800	1200	2000	2000
Temperature		max. °C	130	130	130	130	130	130	130	130	130	130	130	130	130
Standard 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

Dimensions and weights															
Length without couplings	**A**	**mm**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total height	B	mm	-	-	-	-	-	-	-	-	-	-	-	-	-
Height from pipe center line	C	mm	-	-	-	-	-	-	-	-	-	-	-	-	-
Width	D	mm	-	-	-	-	-	-	-	-	-	-	-	-	-
Length with flanges	**A**	**mm**	**300**	**360**	**360**	**350**	**500**	**500**	**500**	**500**	**500**	**600**	**600**	**600**	**500**
Height with flanges	E	mm	184	220	220	260	300	300	300	360	360	425	425	425	460
Flange outer diameter[1)]	H	mm	200	235	235	270	300	300	300	360	360	425	425	425	460
Bolt circle diameter[1)]	k	mm	160	190	190	220	250	250	250	310	310	370	370	370	410
Number of screws[1)]		Pcs.	8	8	8	8	8	8	8	12	12	12	12	12	12
Weight without couplings		app. kg	-	-	-	-	-	-	-	-	-	-	-	-	-
Weight with flanges		app. kg	16,8	21,7	21,7	28,2	37	37	36	49	49	79	79	75	76

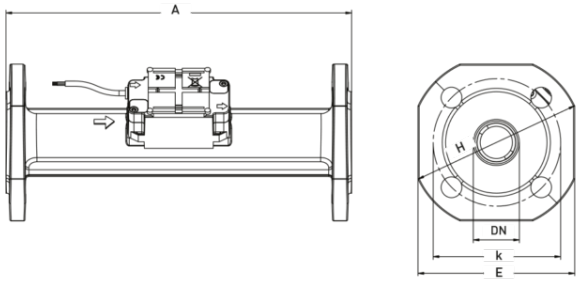
1) DIN EN 1092

Dimension Diagram

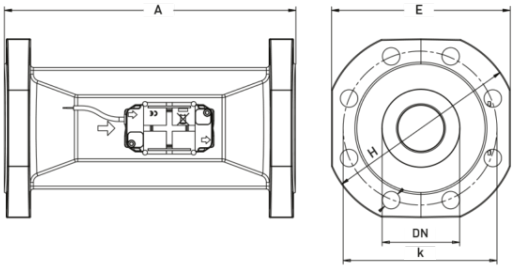
ULTRAFLOW® 54, G1¼B and G2B



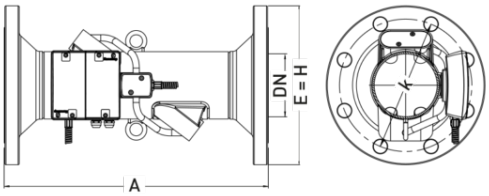
ULTRAFLOW® 54, DN 20 to DN 50



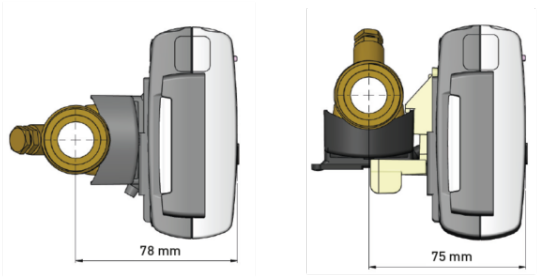
ULTRAFLOW® 54, DN 65 to DN 125

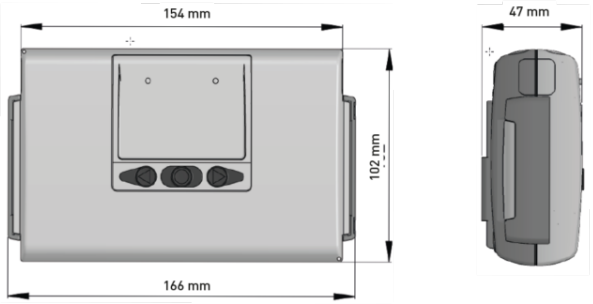


ULTRAFLOW® 54, DN 150 – DN 300



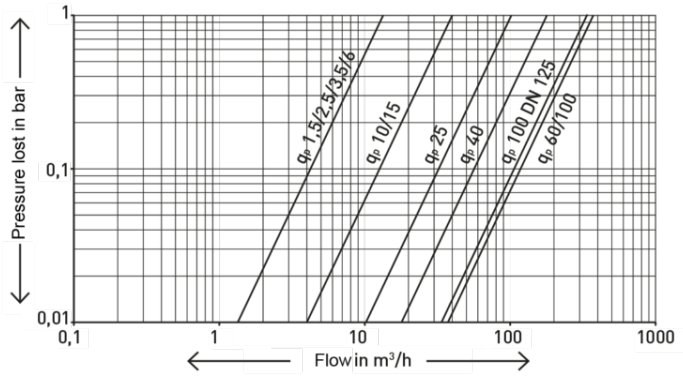
Calculator MULTICAL©
installed on ULTRAFLOW©54



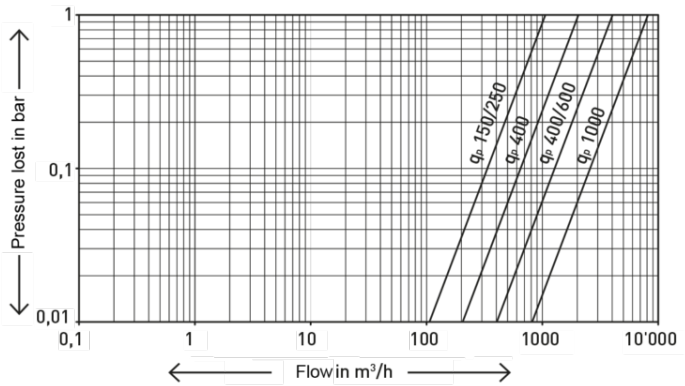


Typical Head Loss Curve

ULTRAFLOW® 54, DN 20 – DN 125



ULTRAFLOW® 54, DN 150 – DN 300



Installation positions

Pipe:	horizontal	
	vertical	
	inclined	
Head of the meter	to the side	
ULTRAFLOW® 54 DN 20 – DN 125:	± 45°	
ULTRAFLOW® 54 DN 150 – DN 300:	± 90°	

Electrical connections

ULTRAFLOW® 54	→	MULTICAL®
Blue (Masse) / 11 A	→	11
Red (Supply) / 9 A	→	9
Yellow (Signal) / 10 A	→	10

Installation note

For ULTRAFLOW® 54 ⩽ DN 125 (100 m^3/h), the black electronics housing must be installed on the side (for horizontal installation). ULTRAFLOW® 54 can be rotated up to ± 45° in relation to the pipe axis. ULTRAFLOW® 54 does not require a straight inlet or outlet section. ULTRAFLOW® 54 must not be exposed to pressure lower than the ambient pressure (vacuum).

For ULTRAFLOW® 54 ⩾ DN 150 (150 m^3/h), it is recommended that the black electronics housing be installed on the side (for horizontal installation) in order to better measure any layer flows. However, ULTRAFLOW® 54 may also be rotated up to ± 90° in relation to the pipe axis. ULTRAFLOW® 54 does not require a straight inlet or outlet section. ULTRAFLOW® 54 must not be exposed to pressure lower than the ambient pressure (vacuum).

Installation recommendations

Strong flow disturbances mostly occur in connection with valves and pumps that aren't fully open, as well as multiple bends. The minimal distances listed below have proven effective when installing thermal energy meters (best-practice approach):

Minimum recommended distances	Ultrasonic volume measuring device DN 20 - 80	Ultrasonic volume measuring device DN 100 - 300
If valves are not fully open	20 x DN	40 x DN
On the pressure side of pumps	20 x DN	20 x DN
For multiple arches	5 x DN	5 x DN

Materials

Parts in contact with medium

ULTRAFLOW® 54 q_p 1,5 and q_p 2,5

Housing with flange connection: Stainless steel, W. No. 1.4308

Sensor: Stainless steel, W. No. 1.4401

Seals: EPDM

Reflector: Thermoplastic, PESU 30 % GF and stainless steel, comparable to AISI 304 or AISI 316

Measuring tube: Thermoplastic, PESU 30 % GF

ULTRAFLOW® 54 q_p 3,5 to q_p 100

Housing with threaded connection: Dezincification-resistant brass

Housing with flange connection: Stainless steel, W. No. 1.4308

Sensor: Stainless steel, W. No. 1.4401

Seals: EPDM

Reflector: Thermoplastic, PESU 30 % GF and stainless steel, comparable to AISI 304 or AISI 316

Measuring tube: Thermoplastic, PESU 30 % GF

ULTRAFLOW® 54 q_p 150 to q_p 1000

Housing with flange connection: Stainless steel, W. No. 1.4301

Electronic housing

Base: Thermoplastic, PC 10 % GF

Cover: Thermoplastic, PC 20 % GF

Connection cable

Cable: Silicone (3 x 0,5 mm^2)