US-S/FFL

Ultrasonic energy meters

Ultrasonic energy meters for horizontal or vertical mounting.

US-S/FFL is a range of flanged, compact energy meters intended for heating or cooling.

Function

The menu system, available in the display, makes it possible to read a large number of parameters, such as heat and cold consumption, total energy spent on heating and cooling, temperatures along with current energy consumption.

Installation is normally in the return pipe.

US-S/FFL comes equipped with two PT500 temperature sensors. The resistors for the sensors are composed of platinum and maintain a standard of DIN IEC 60751.

Mounting

The US-S/FFL model flow meters are designed for horizontal or vertical mounting positions.

The calculator can be wall mounted or DIN rail mounted.

Both temperature sensors have a cable length of 3 m.

Nominal flow sizes

US-S/FFL is available in nominal flows between q_p 3.5 and 60 m^3/h. See selection table on page 2.

High reliability

The calculator features a high accuracy of measurement, in addition to a long life and robust design. The calculator utilizes EEPROM memory, meaning loss of data does not occur if the battery is changed.

Short facts about US-S/FFL

- Compact meter with easy-to-read display
- No data loss when changing battery
- Constant display of energy consumption
- For horizontal or vertical mounting
- Available with M-Bus, pulse output or M-Bus and 2 pulse inputs

Flexible design

Due to the multiple combination options offered by its components, meters in the US-S/FFL range can easily be adapted to suit a large number of individual requirements. Models with M-Bus, pulse output or M-Bus + pulse input are available.

Energy meters with M-Bus have a default adress of ”0”, which is not a valid primary communication address. This primary address can be changed by searching for secondary addresses (i.e., the ID number of the meter).

For more information on different options, see ordering examples and item number structure overleaf.

Ordering code selection table

Options	US-S/FFL					
Flow select m³/h (DN) (Length in mm) (Flange)	3.5 m³/h (DN25) (260 mm) (PN25 flange with 4 bolt holes)	25-3.5				
	6.0 m³/h (DN25) (260 mm) (PN25 flange with 4 bolt holes)	25-6.0				
	10 m³/h (DN40) (300 mm) (PN25 flange with 4 bolt holes)	40-10				
	15 m³/h (DN50) (270 mm) (PN25 flange with 4 bolt holes)	50-15				
	25 m³/h (DN65) (300 mm) (PN25 flange with 8 bolt holes)	65-25				
	40 m³/h (DN80) (300 mm) (PN25 flange with 8 bolt holes)	80-40				
	60 m³/h (DN100) (360 mm) (PN25 flange with 8 bolt holes)	100-60				
Type of measurement and installation point	Heating, installation of flow meter in return pipe (MID approval)		-	HR		
	Cooling[1], installation of flow meter in return pipe		-	CR		
	Heating and cooling in combination[2], installation of flow meter in return pipe.		-	HCR		
Communication interface	M-Bus with power supply				-	M
	M-Bus with 2 pulse inputs				-	MPI
	Pulse output for energy				-	PO

[1] National German approval.
[2] MID approval for heating, not for cooling.

If any further requirements or options are needed, please contact Regin.

Ordering code table explanation

Example 1:

Desired application: Meter with 10 m³/h. Heating, installation in return pipe. M-Bus.

Resulting item ordering number: **US-S/FFL40-10-HR-M**

Possible accessories needed:

• Sensor pockets (2pcs): TH-85-½

Example 2:

Desired application: Meter with 60 m³/h. Cooling, horizontal installation in return pipe. M-Bus + pulse input.

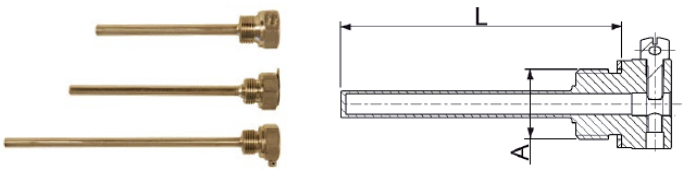
Resulting item ordering number: **US-S/FFL100-60-CR-MPI**

Possible accessories needed:

• Sensor pockets (2pcs): TH-120-½

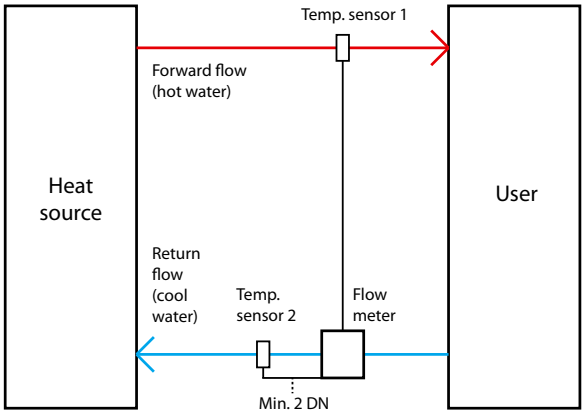
Accessories

Temperature pockets for installation of universal temperature sensor with 6 mm sheath diameter

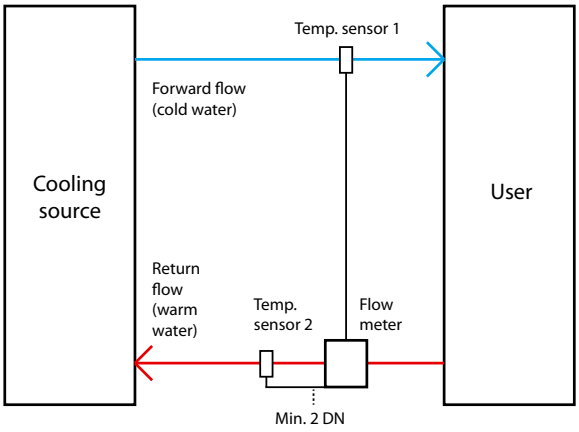


Connection A	Installation length L	Compatible with	Article number
G½	85 mm	q_p 1.5 m³/h - 10 m³/h	TH-85-½
G½	120 mm	q_p 15-100 m³/h	TH-120-½

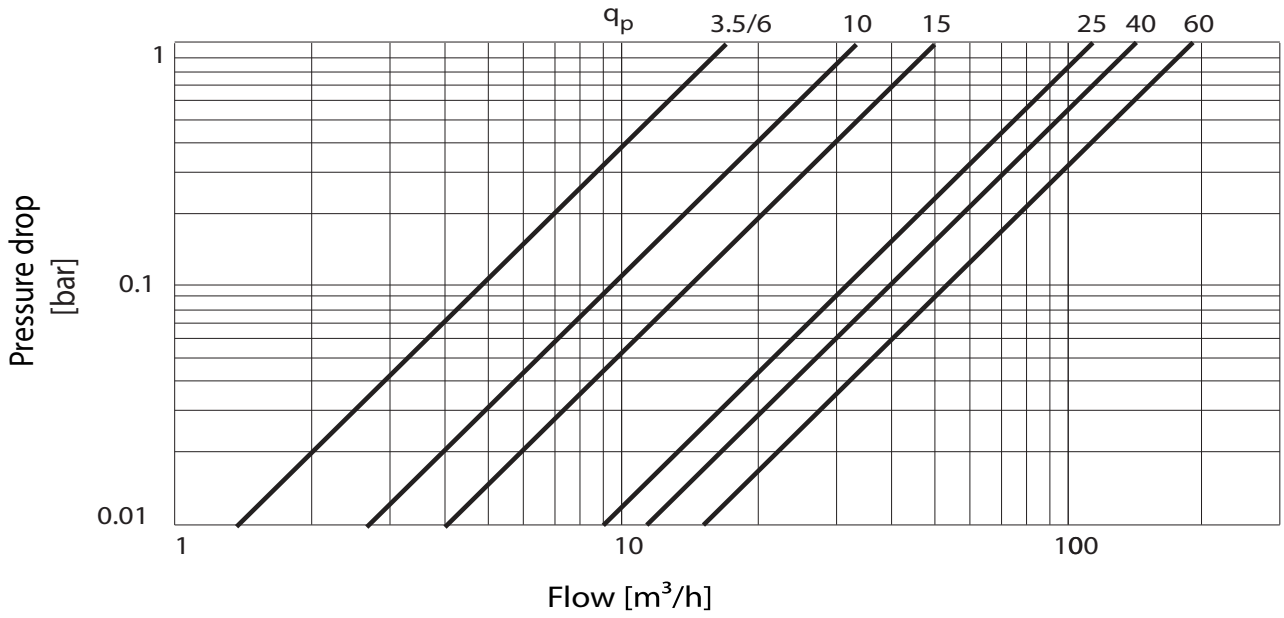
Installation example, heating



Installation example, cooling



Pressure drop curve



Technical data, calculator

Temperature measurement range calculator	1...150°C
Temperature difference range heat	3...100 K
Temperature difference range cooling	-3...-50 K
Ambient temperature	5...55°C
Calculation of heat from K	ΔΘ > 0.05
Calculation of cooling from K	ΔΘ < -0.05
Resolution temperature	0.01°C
Measuring frequency	Cycle 30 s
Display	LCD, 8 digits + additional symbols
Display units	MWh, kWh, GJ, m³, m³/h, l/h, kW, MW, °C
Interfaces	M-Bus, pulse output or M-Bus with 2 pulse inputs
Power supply	Battery 3.6 V lithium
Data storage	EEPROM, daily storage of values
Billing dates	Annual billing date selectable, 24 monthly values
Storage of maximum values for flow and power	3 values each
Protection class housing	
Heating	IP54
Cooling	IP65
Mechanical class	Class M1 (MID: 31.03.2004 annex I)
EMC	Class E1 (MID: 31.03.2004 annex I)
Flow meter installation position	Standard: return flow
Dimensions (L x W x H)	198 x 123.7 x 45.8 mm
Weight of calculator	250 g (approx.)

CE

Measuring Instruments Directive: This product conforms to the requirements of the Measuring Instruments Directive 2004/22/EC through product standards OIML R75, EN 1434, EN 60751, EN 14154 and PTB-Richtlinie K 7.1.

Low Voltage Directive (LVD) standards: This product conforms to the requirements of the European Low Voltage Directive (LVD) 2006/95/EC through product standards EN 61140, VDE 0140-1, EN 60529 and DIN 40050.

EMC emissions & immunity standards: This product conforms to the requirements of the EMC Directive 2004/108/EC through product standards EN 13757-2, EN 13757-3 and DIN 12900-1.

RoHS: This product conforms to the Directive 2011/65/EU of the European Parliament and of the Council.

Technical data, cont.

Technical data, flow meter

Nominal flow qp (m³/h)	3.5	6	10	15	25	40	60
Nominal diameter DN (mm)	25		40	50	65	80	100
Pressure rating PN	25						
Maximum flow qs (m³/h)	7	12	20	30	50	80	120
Minimum flow qi (l/h)	35	60	100	150	250	400	600
Flow at 0.1 bar pressure drop (m³/h)	4.4		8.9	13.3	30	36	50.6

Media	Water (only permissable media)
Maximum temperature range	5... 130 °C *
Temperature range heating	10... 130 °C **
Temperature range cooling	5... 50 °C
Mounting position by cooling	Transducers (black housing) to side of or under the measuring tube

* National approvals may differ.

** For short versions: 20…130°C.

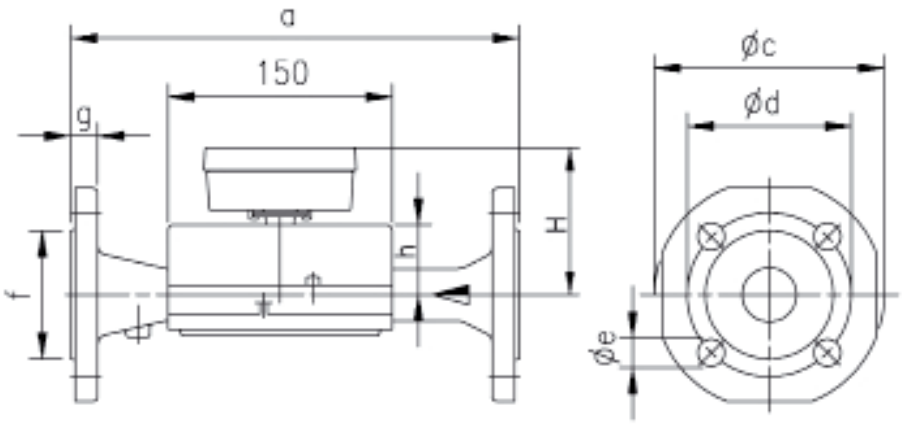
Technical data, temperature sensors

Platinum precision resistors	PT500; separately approved type as per EN60751, unshielded
Sensor diameter	Ø 6.0 mm
Sensor cable length	3 m
Installation	Direct or indirect in a temperature pocket per EN1434

Application	**Temperature sensor requirements**
Heat meter	EU (MID) identification on the temperature sensors
Cooling meter	National German approval as a temperature sensor for cooling meters *

* Requirements in countries other than Germany may be different.

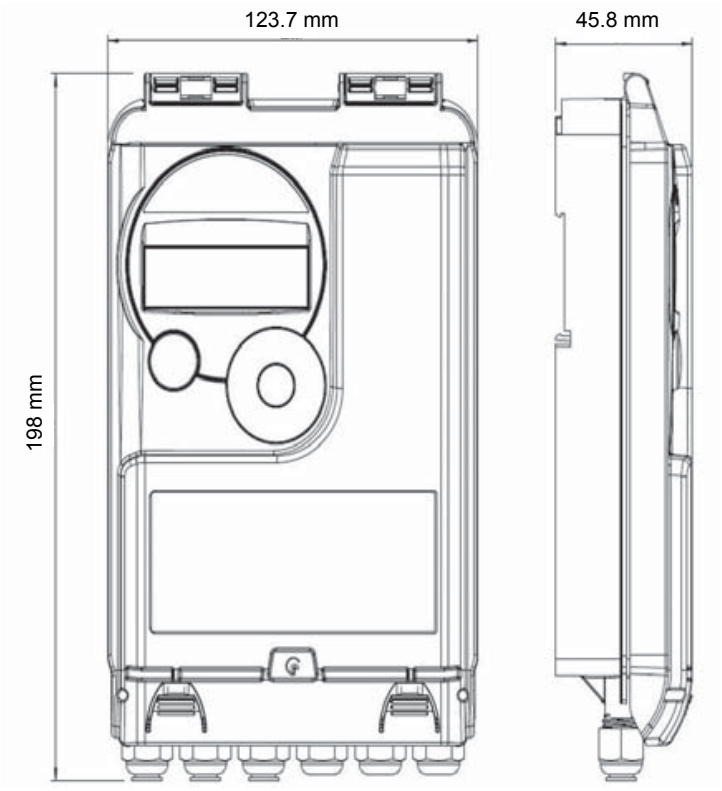
Dimensions, US-S/FFL



(mm)

q_p m³/h	PN bar	DN	a	b	Øc	Ød	Øe	No. of holes	f	g	h
3,5	25	25	260	51	115	85	14	4	68	18	96
6,0	25	25	260	51	115	85	14	4	68	18	96
10	25	40	300	48	150	110	18	4	88	18	93
15	25	50	270	46	165	125	18	4	102	20	91
25	25	65	300	52	185	145	18	8	122	22	97
40	25	80	300	56	200	160	18	8	138	24	101
60	25	100	360	68	235	190	22	8	158	24	113

Dimensions, calculator



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