



US-WV

Ultrasonic energy meters

Externally threaded ultrasonic energy meters, intended for heating or cooling.

- ✓ Size DN15...DN40
- ✓ Nominal flow 1.5...10 m³/h
- ✓ For horizontal or vertical mounting
- ✓ No data loss when changing battery
- ✓ No moving parts enable flow measurement at low pressure drops
- ✓ Available with M-Bus, pulse output or M-Bus and 2 pulse inputs

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.

Connection

The energy meter comes equipped with two PT500 temperature sensors. The resistors for the sensors are composed of platinum and maintain a standard of DIN IEC 60751.

The return temperature sensor is normally integrated into the flow meter while the supply temperature sensor is connected via a cable.

Mounting

One temperature sensor is mounted inside the flow meter and the other has a 3 m cable.

The calculator can be wall mounted or DIN-rail mounted.

More installation accessories are also available such as ball valves with installation point for a temperature sensor or pipe connection kits etc. See more under the heading Accessories.

High reliability

The meter offers reliable and accurate performance over long periods of measurement.

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.

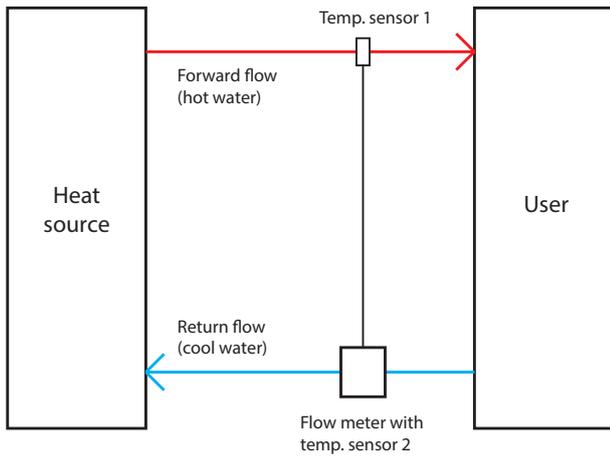
Flexible design

Due to the multiple combination options offered by its components, the meters can easily be adapted to suit a large number of individual requirements.

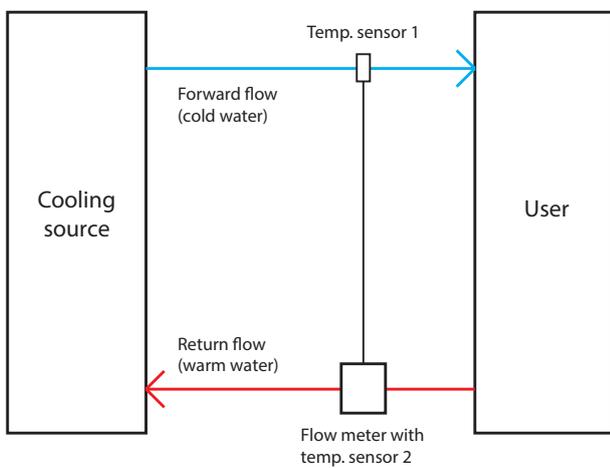
Models with M-Bus, pulse output or M-Bus + pulse input are available.

Energy meters with M-Bus have a default address 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).

Installation example, heating



Installation example, cooling



Technical data, calculator

Power supply	3.6 V lithium battery
Temperature range	1...150 °C
Temperature difference limits	3...100 K (heating), -3...-50 K (cooling)
Temperature resolution	0.01 °C
Ambient temperature	5...55 °C
Storage temperature	-20...+60 °C
Ambient humidity	< 93 % RH
Protection class	IP54 (heating), IP65 (cooling)
Calculation of heat from K	$\Delta\Theta > 0.05$ K
Calculation of cooling from K	$\Delta\Theta < -0.05$ K
Dual purpose heat/cooling meter	$\Delta\Theta_{HC} < -0.5$ K
Measurement frequency at q_p	Cycle 30 s
Data storage	EEPROM, daily storage of values
Interfaces	M-Bus, pulse output or M-Bus with 2 pulse inputs
Reading dates	Annual billing date selectable, 24 monthly values
Display	LCD, 8 digits + additional symbols
Display units	MWh, kWh, GJ, m ³ , m ³ /h, l/h, kW, MW, °C
Mechanical class	Class M1 (MID: 31.03.2004 annex I)
EMC	Class E1 (MID: 31.03.2004 annex I)
Environmental class	A (EN 1434)

Technical data, temperature sensor

Cable length	3 m (the other temperature sensor is integrated into the flow meter)
Sensor element	PT500; separately approved type as per EN60751, unshielded
Diameter, sensor	5 mm
Installation	Direct (see the accessories section) or indirect in a temperature sensor pocket per EN1434
Temperature sensor requirements, heat meter	EU (MID) identification on the temperature sensors
Temperature sensor requirements, cooling meter	National German approval as a temperature sensor for cooling meters. Requirements in other countries may be different.

Technical data, flow meter

Connection	Threaded according to ISO 228/1
Pressure rating	PN16
Media	Water
Mounting position	Horizontal or vertical
Mounting position, cooling	Transducers (black housing) to the side of or under the measuring tube
Point of installation	Return flow
Temperature range	5...130 °C (National approvals may differ.)
Temperature range, heating	10...130 °C (20...130 for short versions)
Temperature range, cooling	5...50 °C
Recommended minimum system pressure	1 bar (to avoid cavitation problems)

Models

Article	Nominal diameter	Nominal flow, q_p	Maximum flow, q_s	Minimum flow, q_l	Flow at 0.1 bar pressure drop	Low flow threshold	Pressure drop at q_p
US-WV15-1.5...	DN15	1.5 m ³ /h	3 m ³ /h	15 l/h	1.3/1 m ³ /h	6 l/h	160 mbar
US-WV20-1.5...	DN20	1.5 m ³ /h	3 m ³ /h	15 l/h	1.2 m ³ /h	6 l/h	160 mbar
US-WV20-2.5...	DN20	2.5 m ³ /h	5 m ³ /h	25 l/h	1.7 m ³ /h	10 l/h	220 mbar
US-WV25-3.5...	DN25	3.5 m ³ /h	7 m ³ /h	35 l/h	4.4 m ³ /h	14 l/h	60 mbar
US-WV25-6.0...	DN25	6 m ³ /h	12 m ³ /h	6 l/h	4.4 m ³ /h	24 l/h	180 mbar
US-WV40-10...	DN40	10 m ³ /h	20 m ³ /h	0.1 l/h	8.9 m ³ /h	40 l/h	110 mbar

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.

Ordering code selection table

Options	US-S/FFL...	-...	-...
Flow (DN) (thread on meter body) (length)			
1.5 m ³ /h (DN15) (G $\frac{3}{4}$ " (110 mm))	US-WV15-1.5		
1.5 m ³ /h (DN20) (G1" (190 mm))	US-WV20-1.5		
2.5 m ³ /h (DN20) (G1" (190 mm))	US-WV20-2.5		
3.5 m ³ /h (DN25) (G1 $\frac{1}{4}$ " (260 mm))	US-WV25-3.5		
6.0 m ³ /h (DN25) (G1 $\frac{1}{4}$ " (260 mm))	US-WV25-6.0		
10 m ³ /h (DN40) (G2" (300 mm))	US-WV40-10		
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			-M
M-Bus with 2 pulse inputs ³			-MPI
Pulse output for energy			-PO

¹ National German approval.

² MID approval for heating, not for cooling

³ The standard setting for the pulse counters is 1 l/pulse. Please contact Regin if other values (10 l/pulse or 100 l/pulse) are needed.

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

Example 1:

Desired application: Meter with 1.5 m³/h. Heating, installation in return pipe. M-Bus.

Resulting item ordering number: **US-WV15-1.5-HR-M**

Possible accessories needed:

- KH- $\frac{1}{4}$, 2 pcs, ball valve connection for both sides of the meter, alternatively brass fittings VSR- $\frac{1}{2}$
- KH-S- $\frac{1}{4}$, 1 pc, ball valve with installation point for a temperature sensor in supply flow

Example 2:

Desired application: Meter with 2.5 m³/h. Cooling, installation in return pipe. M-Bus + pulse input.

Resulting item ordering number: **US-WV20-2.5-CR-MPI**

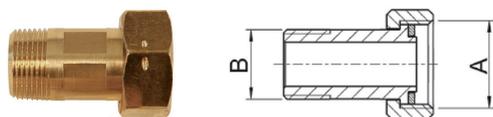
Possible accessories needed:

- KH-1, 2 pcs, ball valve connection for both sides of the meter, alternatively brass fittings VSR- $\frac{3}{4}$
- KH-S-1, 1 pc, ball valve with installation point for a temperature sensor in supply flow

Accessories

Threaded fitting with coupling ring and gasket *

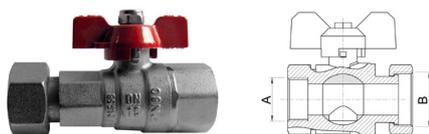
Article	Connection A	Connection B	Compatible with
VSR-1/2	G $\frac{3}{4}$	R $\frac{1}{2}$	q _p 0.6/1.5 m ³ /h
VSR-3/4	G1	R $\frac{3}{4}$	q _p 2.5/3.5 m ³ /h
VSR-1	G1 $\frac{1}{4}$	R1	q _p 3.5/6.0 m ³ /h
VSR-1 1/2	G2	R1 $\frac{1}{2}$	q _p 10 m ³ /h



* Either the brass threaded fittings or the ball valves are to be used on each side of the flow meter. 2 pcs are required for each meter.

Ball valve with coupling ring and gasket *

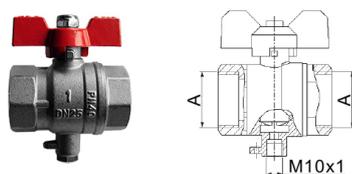
Article	Connection A	Connection B	Compatible with
KH-3/4	Rp $\frac{3}{4}$	G $\frac{3}{4}$	q _p 0.6/1.5 m ³ /h
KH-1	Rp1	G1	q _p 2.5/3.5 m ³ /h
KH-1 1/4	Rp1 $\frac{1}{4}$	G1 $\frac{1}{4}$	q _p 3.5/6.0 m ³ /h
KH-2	Rp2	G2	q _p 10 m ³ /h



* Either the brass threaded fittings or the ball valves are to be used on each side of the flow meter. 2 pcs are required for each meter.

Ball valve with installation point for a temperature sensor (socket M10x1)

Article	Connection A	Compatible with
KH-S-3/4	G $\frac{3}{4}$	q _p 0.6/1.5 m ³ /h
KH-S-1	G1	q _p 2.5/3.5 m ³ /h
KH-S-1 1/4	G1 $\frac{1}{4}$	q _p 3.5/6.0 m ³ /h
KH-S-2	G2	q _p 10 m ³ /h



Supply flow adapter with gasket, for direct mounting of a temperature sensor in a T-piece

Article	Connection A
VAD-1/2	G $\frac{1}{2}$, M10x1
VAD-3/8	G $\frac{3}{8}$, M10x1



Threaded adapter to replace a flow meter temporarily or permanently

Article	Connection A	Compatible with	Installation length
PS-110-3/4	G $\frac{3}{4}$	q _p 0.6/1.5 m ³ /h	110 mm
PS-190-1	G1	q _p 1.5/2.5 m ³ /h	190 mm
PS-260-1 1/4	G1 $\frac{1}{4}$	q _p 3.5/6 m ³ /h	260 mm
PS-300-2	G2	q _p 10 m ³ /h	300 mm

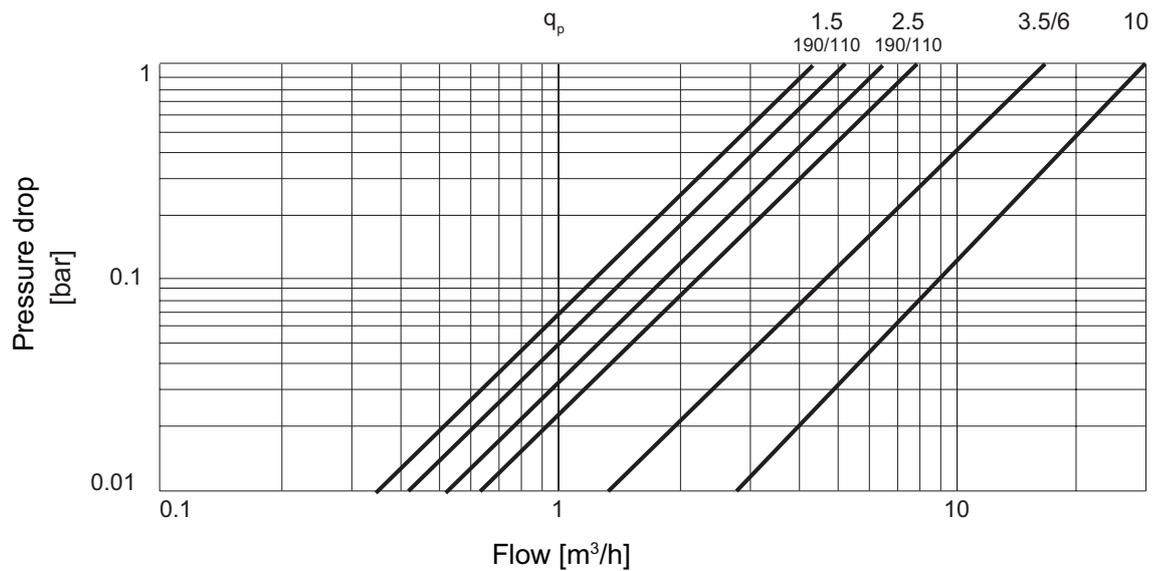


Optical interface and read-out software

Article	Description
OPTO-CABLE-USB	Optocoupler with USB interface
OPTO-TOOL	Software device monitor

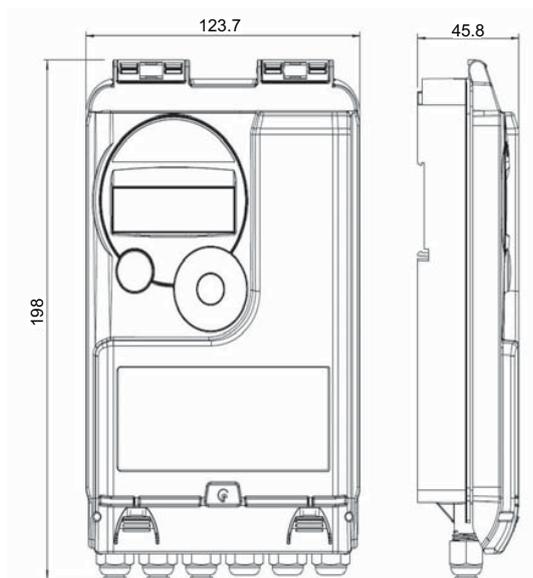


Pressure drop curves

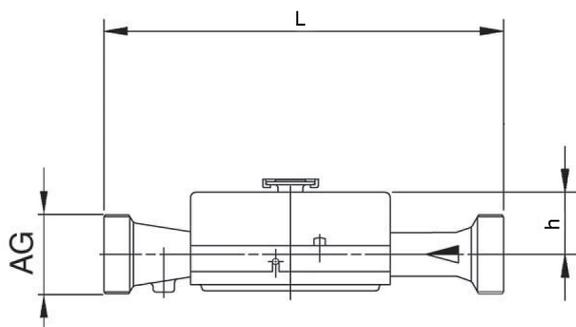


Dimensions

Calculator



Flow meter



DN	L	h	AG
15	110	51	G ¾"
20	190	51	G 1"
25	260	51	G 1¼"
40	300	48	G 2"

Measurements in mm unless otherwise specified.