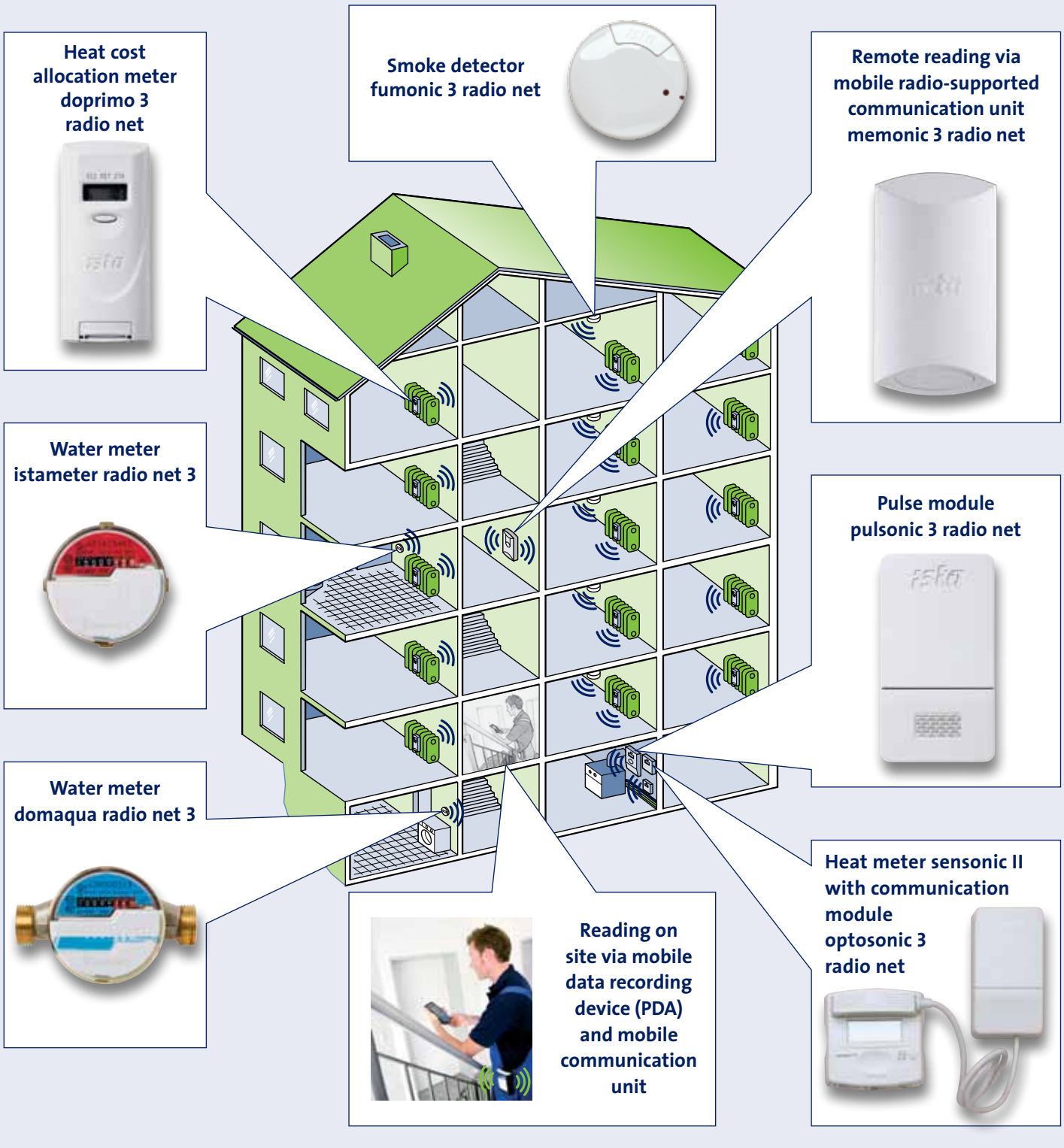
The innovative way forward

symphonic sensor net radio system

Radio system technology

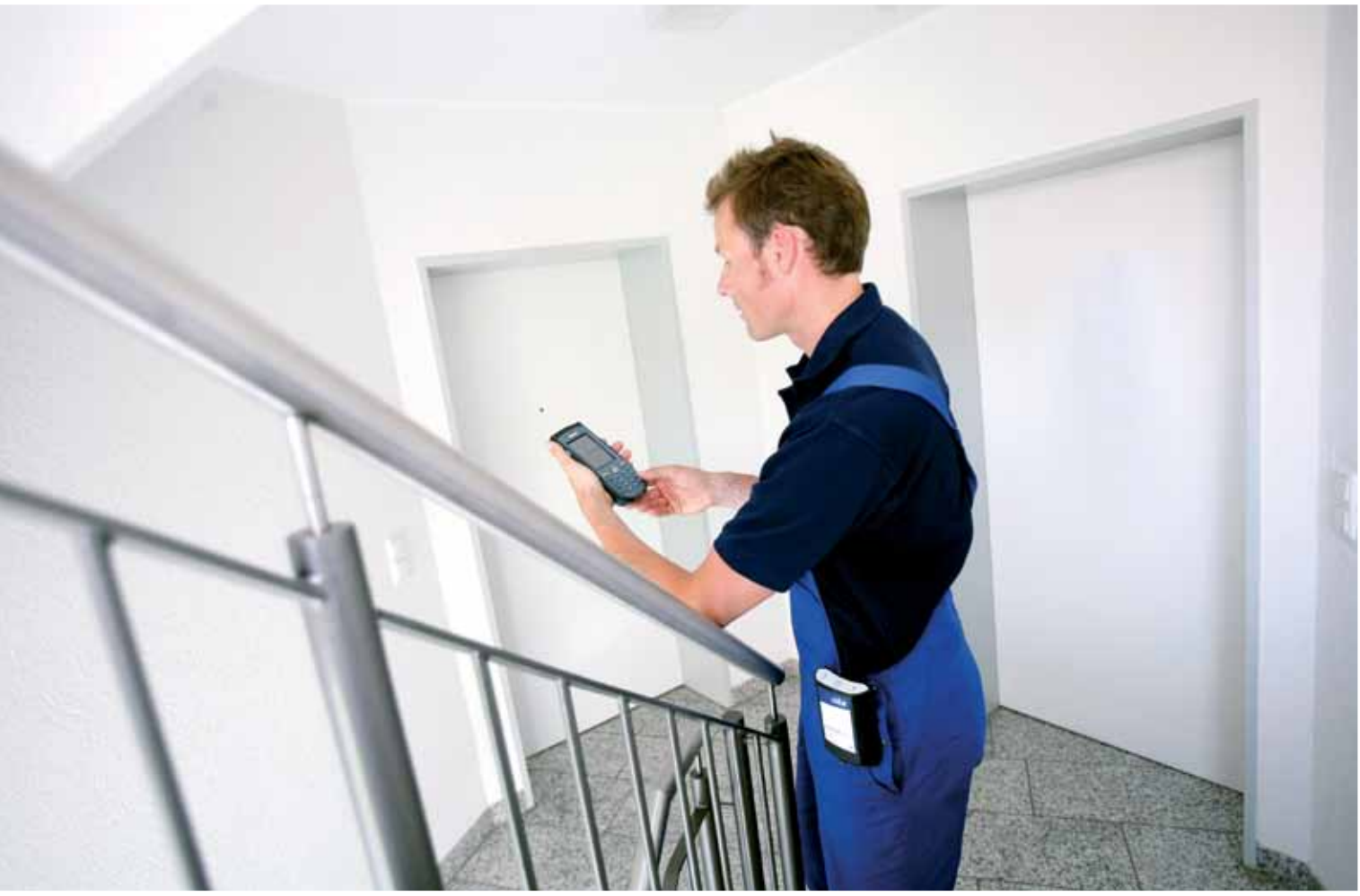
The symphonic sensor net radio system – Applications at a glance



Reading in stairwell without entering apartments.

Contents

The symphonic sensor net radio system – professional and individual



The innovative symphonic sensor net radio system from ista offers optimal convenience and maximum flexibility for consumption-based heating and water billing. All data from heat allocation meters and heat and water meters is transmitted wirelessly and only read from publicly accessible areas of a building.

The advantages are obvious

- No more arranging appointments as apartments no longer need to be entered for readings to be taken
- If an interim reading is forgotten, a precise bill can be created retrospectively by providing interim reading values
- Estimates for apartments that are difficult to access are a thing of the past now that you can obtain gapless consumption data with certainty
- Enhanced billing quality and efficiency via fully electronic data transfer
- Individual solutions for all installation requirements
- The system can be subsequently expanded with ease

Five devices – one system

The electronic metering and allocation devices, as well as the smoke detector from ista, are equipped with integrated radio transmitters allowing them to be seamlessly integrated into the symphonic sensor net radio system.

The heat cost allocator doprimo 3 radio net calculates the difference between the temperature of the radiator surface and the room air electronically. This difference is known as overtemperature and is the measure for heat consumption.

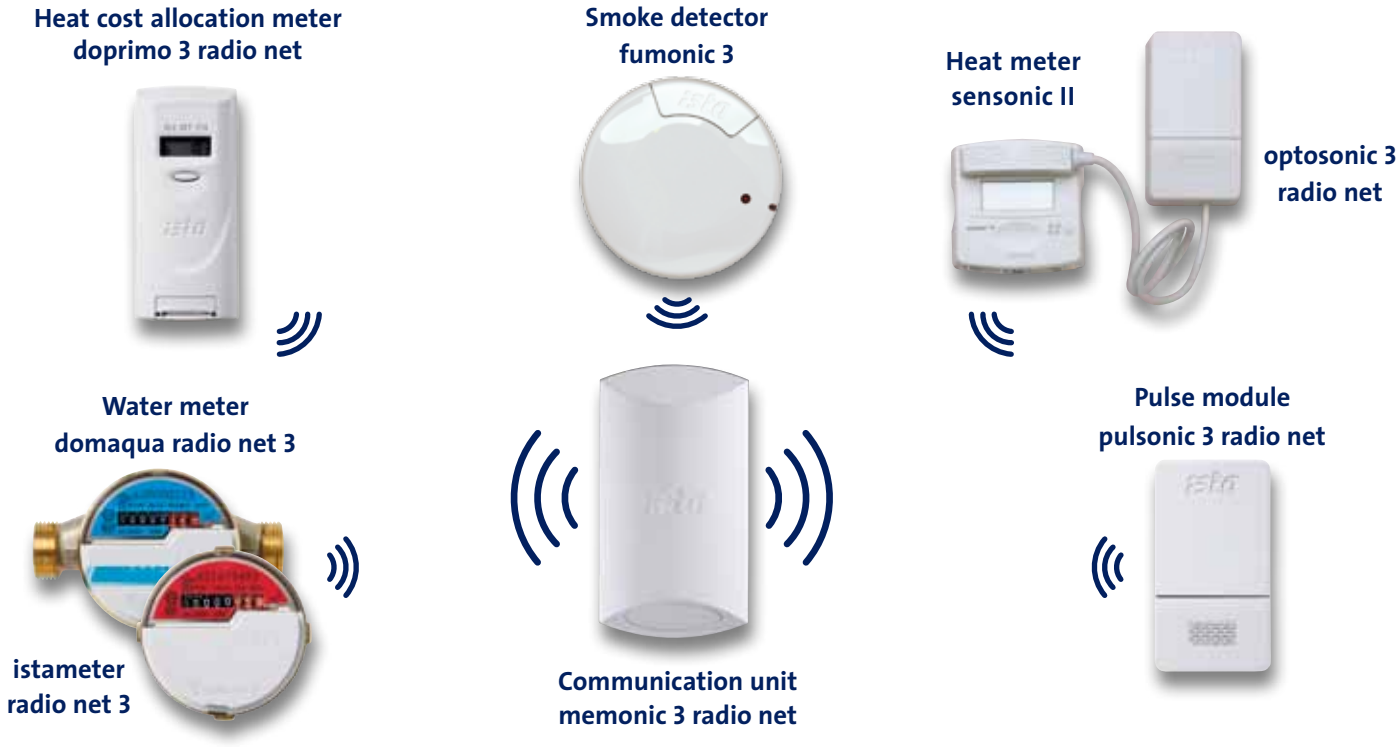
The display of the consumption units on the doprimo 3 radio net is particularly easy to read and user-friendly.

sensonic II is the electronic heat meter for individual recording of proportional heat consumption. It impresses with its compact, attractive design, state-of-the-art electronics and variable installation options.

The modular cold and hot water meters istameter radio net 3 and domaqua radio net 3 provide property managers and planners with all the benefits of a modular water meter: precise recording, simple handling and limitless variety thanks to the modular concept.

The pulse module pulsonic 3 radio net facilitates the integration of electricity, gas and water meters without their own radio interfaces into the ista radio system.

The fumonic 3 radio net smoke detector sends regular information wirelessly about its operability, offering optimal security beyond the annual function test.



Typical ista: perfect customised service

Gone are the days when all meters had to be read individually in apartments. All devices integrated into the symphonic sensor net radio system can be read centrally. This increases quality of living for your tenants while allowing you to monitor the energy management of an entire building at all times. You can also react flexibly with measures to further reduce energy consumption for everybody. For economic and ecological success. ista offers complete solutions allowing you to use the symphonic sensor net radio technology effectively from the first device to the last. This all starts with our on-site consultancy. Professional completion of planning, installation and programming of the appropriate metering and recording devices go without saying. ista takes care of complete billing of individual consumption figures. Legally secure and trouble-free. Further information and documentation for your planning can be obtained from us.

The symphonic sensor net radio system – how easy technology can be

With the ista radio system, every end device can communicate with every other end device and forward its data. Thus, the data is sent via different routes to the memonic 3 radio net communication unit or from there to the end devices.

symphonic sensor net comprises various components which are harmonised with each other. Alongside the doprimo 3 radio net heat cost allocation meter, which calculates the proportional heat consumption of every individual radiator, the istameter radio net 3 and domaqua radio net 3 hot and cold water meters make the individual water consumption transparent. A further important element is the sensonic II heat meter in conjunction with the optosonic 3 radio net. With the help of a pulsonic 3 radio net pulse module, each end device with an appropriate interface, e.g. electricity, gas or domestic water meter, can be integrated into the radio system.

The fumonic 3 radio net smoke detector, with its permanent function monitoring and regular transmission of its device status, offers optimal security.

The ista radio system at a glance:

- The ista radio system works with a bi-directional transmission procedure. This means information can be both transmitted and received. Re-programming, reading or inspection of the metering and allocation devices is carried out after installation, either in passing or remotely.
- Thanks to its modular design, the radio system can be optimally adapted to properties and individual customer requirements.
- All metering and allocation devices store the consumption data from the last 14 months and the last two effective dates. This means that separating consumption upon a change of tenancy can be done without a problem. If metering results are also collected centrally in the communication unit, this forwards the operating and consumption data to the ista systems via the mobile radio network at regular intervals.
- Since the metering and allocation devices only "listen" passively during bidirectional data transfer, environmental impact from transmission signals ("electrosmog") is practically negligible compared with uni-directional data transmission.
- The ista radio system comprises an integrated system for recording and monitoring consumption across all energy types (heating, water, electricity) in relevant properties. The performance spectrum is of a modular structure and offers solutions from installation of the metering and allocation technology to billing (conventional or integrated) and visualisation of consumption data. The energy consumption and costs of the individual usage units are treated in individual evaluations while supplier meters and cost data (multi-utility) can also be optionally integrated.

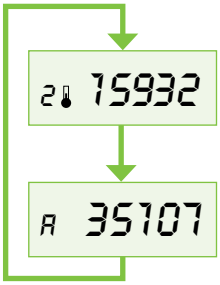
memonic 3 radio net – the centrepiece

The central point of the ista radio system is the memonic 3 radio net communication unit. The device is the interface between the transmitting end devices and the mobile radio network. The communication unit regularly records the consumption and operating data (alarms, messages) of all metering and allocation devices in the network, as well as smoke detectors. All components of the radio system are exclusively battery operated. The communication unit is also fitted with a ten-year battery plus one year reserve and one year storage. By default, it establishes a connection to the ista IT system once per week via the integrated GSM/GPRS mobile radio modem in order to transmit all consumption and operating data of the installed devices.

Technical data

Device type	**memonic 3 radio net**
Part No.	**18359**
Dimensions in mm (H x W x L)	54 x 104 x 186
Power supply	3.6 V lithium battery for 10 year service life + 1 year reserve + 1 year storage
Interfaces	For communication module: Serial interface GPRS modem ista radio system
Stored values of the end devices	Incremental consumption figures: only those yet to be transmitted Error and status message
Reading frequency	Default, weekly In calendar mode, on fixed defined dates
Radio interface	Transmission power < 10 mW Radio frequency 868 MHz Duration of sent telegrams < 10 msec/transmission Transfer rate ~90 kBaud (bit/sec) Transmission procedure, bidirectional
GPRS interface	SIM card integrated Radio frequency 900/1800 MHz
Data security	Telegrams are encrypted
Memory	1 MB flash memory
Display	2 diodes (red/green)
Protection class	IP 43 (DIN 40050)
CE mark	1999/5/EG

doprimo 3 radio net – intelligent and future-oriented heat cost allocation



Display loop

Current display value
2-sensor operation (2 sec)

Effective date figure
(2 sec)

Storage data

- Current consumption figure
- Last year's consumption figure
- Year before last's consumption figure
- 14 month-end figures
- Error status with error date
- t_{max} (radiator sensor) current
- t_{max} (radiator sensor) last year

Performance features

The heat cost allocation meter is designed as a 2-sensor recording device. It is available in compact and remote sensor versions. Power is supplied via a 10+2-year long-life lithium battery. This saves the last 14 month-end values as well as the effective dates of the last year and the year before last.

The ista heat cost allocation meter has a five-digit, high-temperature-resistant, multi-functional LCD with alternating display, which is activated via the integrated button. The device comes equipped with a unit scale as standard. Conversion to a product scale is possible. It can be mounted quickly and easily using all customary weld stud spacings (32 mm, 50 mm and 57 mm). A special plastic cover can elegantly conceal unattractive areas at the installation site.

Functional description

The doprimo 3 radio net is an electronic heat cost allocation meter that records the temperature of the radiator surface and room air with its two sensors. The temperature difference is the measure for heat consumption. The device starts to meter as soon as there is a temperature difference between the radiator sensor and room air sensor of at least 4.5 Kelvin. No metering takes place below a temperature reading of 23°C on the radiator.

Area of application

The area of application of the doprimo 3 radio net lies between

- 35 °C and 90 °C (compact version)
- 35 °C and 110 °C (remote sensor version)
  (average design temperature of the heating medium t_m, A)

i

Your benefits

- Wide range of application via 2-sensor technology
- High billing security and billing quality via electronic reading
- The previous 14 month-end figures can be called up at any time, ensuring that no figures are lost during a change of tenancy
- Economic thanks to the 10+2-year long-life battery
- Inconspicuous elegance, through contemporary design
- High reliability thanks to consistent development of the technology

Technical data – doprimo 3 radio net

Device type	**doprimo 3 radio net**	
Part No.	Compact device: **11190**	Remote sensor device: **11199**
Operating modes	2-sensor operation (automatic switchover to 1-sensor operation at tL > 25 °C)	
Dimensions in mm (H x W x L)	▪ Compact device: ▪ Remote sensor housing: ▪ Remote sensor on radiator: ▪ Length of remote sensor cable:	92.3 x 40.2 x 29.1 190.2 x 51.6 x 31.6 45.0 x 12.9 x 11.5 3.0 m
Material	▪ Upper section: ABS plastic	▪ Lower section: Aluminium alloy F22
Display	▪ Multi-functional LC display, 5-digit + symbols ▪ Alternating display between current display figure and effective date figure (2 sec) ▪ Zero setting following effective date	
Manipulation protection	▪ In the event of heat accumulation, switchover from 2-sensor operation to 1-sensor operation ▪ Registration of the time of errors/manipulation to sensors and cables	
Idling suppression	Temperature at radiator	< 23 °C
Metering start temperature	Δt_m > 4.5 K (radiator sensor/room air sensor)	
Seasonal heating operation detection Summer/winter	40 °C (June–September)/29 °C (October–May)	
Min. average design temperature of the heating medium (t_{min})	2-sensor operation:	35 °C
Max. average design temperature of the heating medium (t_{max})	▪ Compact device: ▪ Remote sensor device:	90 °C 110 °C
Scale	▪ Unit scale ▪ Product scale	
Calendar function	▪ Display value storage on programmable effective date at month end (14 dates/year) ▪ Last year memory ▪ Year before last memory	
Power supply	3.0 V lithium battery for 10 year service life + 1 year reserve + 1 year storage	
Transmission data update	Upon request	
Transmitting power	< 10 mW	
Radio frequency	868 MHz	
Duration of send telegram	< 10 msec/transmission	
Transfer rate	~ 90 kBaud (bits/sec)	
Transmission procedure	Bidirectional data transfer	
Data security	Telegram encrypted	
Protection class	IP 42 (EN 60529)	
Radio interface	For reading systems and programming (with stationary gateway or mobile gateway with data recording device)	
Technology	Standard microprocessor	
Function test	Can be activated and controlled independently and without opening the device from the outside	
Installation point	Normally centrally at 75 % of radiator height	
Installation tools/materials	Identical to previous model	
Assembly Type	Screw and welding assembly	
Approval Number	A2.01.2004	
European standard	DIN EN 834	
CE mark	1999/5/EG	89/336/EEC

The sensonic II heat meter – innovative and future-oriented technology

Functional description

With its different model ranges, the sensonic II heat meter generation offers a variety of options for combination and application.

The various compact versions come with an integrated calculator, flow sensor and temperature sensor in the device as standard.

The compact version with two external sensors fulfils all requirements of the new European Measuring Instrument Directive, which sets out significant changes for the new installation of heat meters under the Calibration Order. The compact version with integrated return flow sensor is available to replace meters already installed.

The combined heat meters comprise the sensonic II calculator, a flow sensor and a temperature sensor pair and offer almost unlimited application.

The flow sensors of the compact versions and combined heat meter sensonic II flow sensor are designed in accordance with the proven istameter principle, offering a high degree of flexibility in replacement.

Performance features

The compact devices and flow sensors are designed for nominal flow rates of 0.6/1.5/2.5 m^3/h. For the calculators of the combined heat meters, flow sensors with nominal flow ratings of 0.6 m^3/h to 250 m^3/h and temperature sensors with lengths of 3 m and 10 m are available. The temperature difference between forward flow and return flow is measured every 60 seconds by default. The last two effective date figures are stored automatically. The LC display clearly shows all relevant data in five display loops.

Interfaces

Besides direct readout, mobile data recording and programming are also possible via the integrated optical interface. The optical interface allows all heat meters of the sensonic II model range to be directly or subsequently integrated into the ista radio system. Additional services, such as energy data management, can also be implemented without a problem.

Applications

The compact versions of the sensonic II heat meter are specially tailored to the requirements of heat metering in apartment blocks.

The combined heat meters of the sensonic II model range, with their wide-ranging applications, cover the entire spectrum of heat metering and can be used in conjunction with district heating, for example, as well as in the commercial sector.

Your benefits

- The ista radio system can be integrated directly or subsequently. This enables the implementation of additional services, such as energy data management.
- High reliability via innovative microchip technology
- Seamless replacement thanks to the istameter principle
- Reliability and durability through sophisticated technology
- Wear-free and corrosion-resistant
- High-performance battery
- Secure protection against dirt and spray water via high degree of seal-tightness
- Integrated sensor button
- Definite and convenient reading
- Security against manipulation via sealing
- Approved in accordance with European Measuring Instrument Directive or national approval
- Manufacturer certification in accordance with ISO 9001
- CE mark provides assurance of electronic compatibility in domestic and industrial environments

Product range

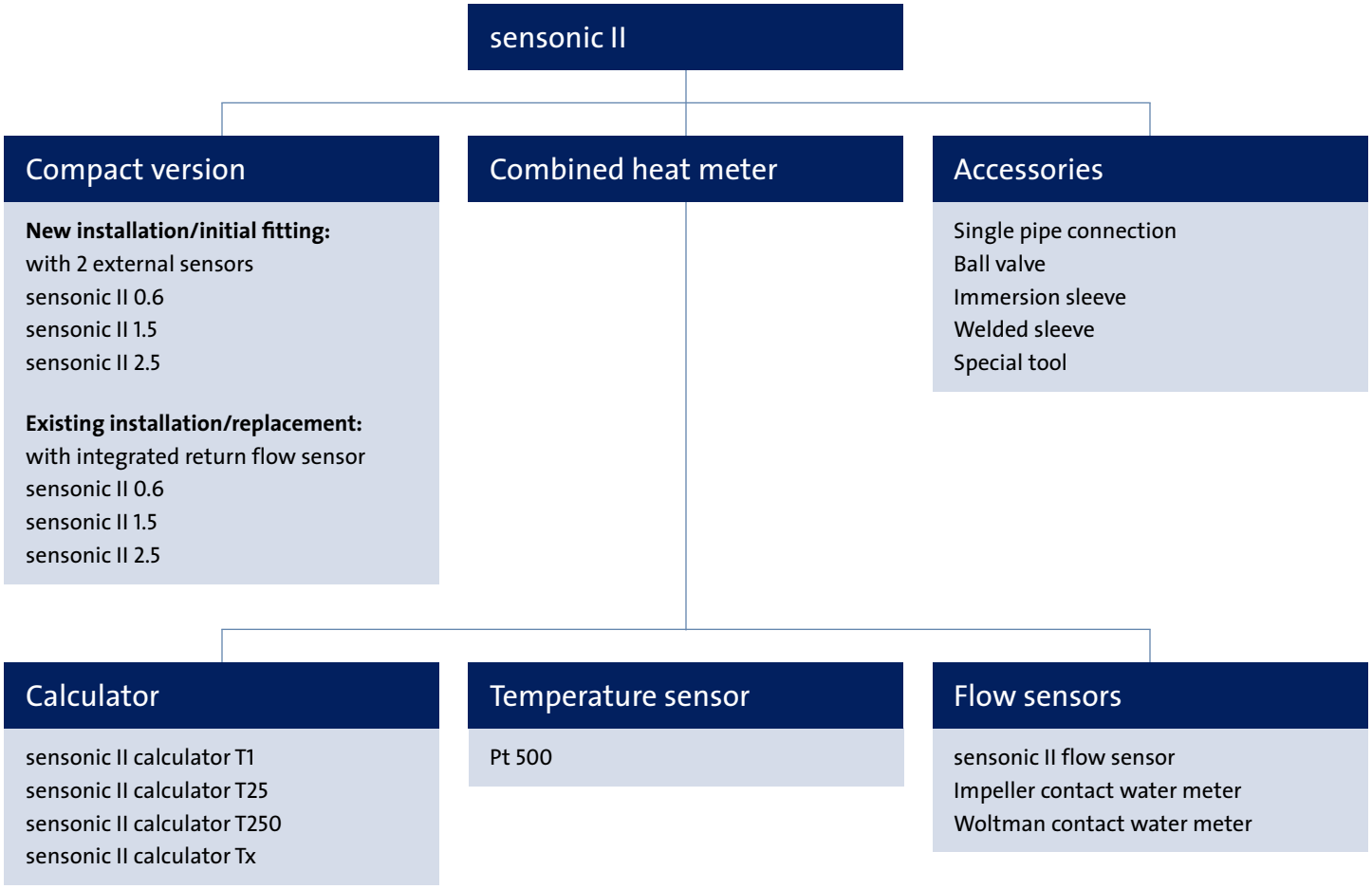
Whether heat meters are required for new installation/initial fitting or replacement, in accordance with legal calibration periods, ista always has the right solution. From compact devices for domestic heat metering to combined heat meters, we can offer you devices with state-of-the-art electronics.

The selection tables on the following pages will help you to easily find the right heat meter for your installation.

The compact devices and sensonic II flow sensors are capable of variable installation thanks to the istameter principle. This also guarantees problem-free replacement of devices from the old sensonic model range.

Whichever sensonic II version you choose, you will always receive a technically sophisticated, top-class device. Simple installation, problem-free replacement, flexible application and reliable metering.

sensonic II – overview



The sensonic II generation product range includes compact versions, combined heat meters and extensive accessories.

The use of the proven istameter principle offers you optimal flexibility. Two model ranges with various combinations variants offer you a variety of applications in heat metering.

The electronic recording of the impeller rotation guarantees delay-free, precise metering. The scanning is extremely low on wear thanks to the use of a corrosion-protected modulation body.

The integrated electronic microchip (ASIC) calculates the heat quantity consumed from the calculated metered values and various constants for the flowing liquid (the 'K-factor'). The cumulated heat quantity is then displayed on the LCD. A total of five different display loops can be called up via the display.

The LCD is dark during normal operation. It is only activated when the sensor button is pressed to save the battery capacity.

By default, the temperature difference is measured every 60 seconds regardless of the flow rate. The maximum values for flow and performance are updated automatically every 15 minutes.

sensonic II – compact version

The sensonic II compact heat meter combines a calculator, flow sensor and temperature sensor pair in a single device. For new installations, the compact version is available with two external sensors. For replacements in existing installations, where necessary, we offer a version with integrated return flow sensor.

A 30-cm cable between the flow sensors and calculator means that the calculator can be mounted separately without a problem with both versions.

sensonic II new installation

The heat meter with two external sensors can be mounted onto all single pipe connections from ista. Installation of the sensors in ball valves fulfils the legal requirements of the Calibration Order with regard to the new installation of heat meters. The compact dimensions of the sensonic II enable problem-free installation, even in difficult installation conditions.

The sensonic II is a multi-jet impeller meter with which the rotation of the impeller is recorded electronically. Since the impeller and bearing pin are loaded equally with water pressure owing to the multi-jet principle, the ista heat meter has very high metering stability throughout its entire service life.

New installation/initial fitting – technical data

Devices with 2 external sensors Meters labelled according to EU Directive 2004/22/EC (Symmetrical sensor installation)		**sensonic II 0.6**		**sensonic II 1.5**		**sensonic II 2.5**	
Forward flow sensor length	m	1.5	3	1.5	3	1.5	3
Return flow sensor length	m	1	1	1	1	1	1
Part No.		**59152**	**59158**	**59154**	**59160**	**59156**	**59161**
Flow sensor **Also applies for sensonic II flow sensor**							
Nominal flow rate q_p	m^3/h	0.6		1.5		2.5	
Pressure loss* Δp at q_p	bar	0.16		0.23		0.24	
Minimum flow q_i	l/h	12		30		50	
Horizontal installation starting value	l/h	3		5		7	
Vertical installation starting value	l/h	4		7		10	
Nominal pressure PN	bar			16			
Temperature range limit values	Θ			15–90			
Inflow and outflow sections				Not required			
Microprocessor calculator							
Temperature range limit values Θ				5–150			
Temperature difference limit values ΔΘ				3–100			
Temperature difference suppression				< 0.2			
Measuring sensitivity				< 0.01			
Heat coefficient K				Temperature-dependent, variable			
Ambient temperature	°C			5–55			
Ambient conditions				Acc. to DIN EN 1434 class E1/M2			
Display of heat consumption				8-digit including one decimal place			
Power supply				Integrated 6-year battery**			
Protection class				IP 54 according to EN 60529			

* In combination with SPC Rp 3/4.

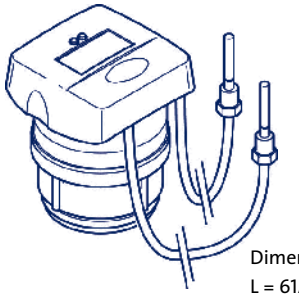
** For Switzerland and Luxembourg, other battery lives and conditions apply.

Additional accessories

45221 Wall installation adapter

45222 Wall installation adapter with magnet

sensonic II
with two external sensors



Dimensions in mm:
L = 61/W = 76/H = 80

Existing installation/replacement – technical data

Devices with integrated return flow sensor Meters in accordance with national approval and calibration (asymmetrical sensor installation)		**sensonic II 0.6**		**sensonic II 1.5**		**sensonic II 2.5**	
Forward flow sensor length	m	1.5	3	1.5	3	1.5	3
Return flow sensor length	m	1	1	1	1	1	1
Part No.		**19120**	**19123**	**19121**	**19124**	**19122**	**19125**
Flow sensor, **Also applies for sensonic II flow sensor**							
Nominal flow rate Q_n	m^3/h	0.6		1.5		2.5	
Pressure loss* Δp at Q_n	bar	0.16		0.23		0.24	
Minimum flow Q_{min}	l/h	24		60		100	
Separation limit** Q_t	l/h	60		120		200	
Horizontal installation starting value	l/h	3		5		7	
Vertical installation starting value	l/h	4		7		10	
Nominal pressure PN	bar	16					
Temperature range limit values	Θ	15–90					
Inflow and outflow sections		Not required					
Microprocessor calculator							
Temperature range limit values Θ		5–150					
Temperature difference limit values ΔΘ		3–100					
Temperature difference suppression		< 0.2					
Measuring sensitivity		< 0.01					
Heat coefficient K		Temperature-dependent, variable					
Ambient temperature	°C	5–55					
Ambient conditions		Acc. to DIN EN 1434 class C					
Display of heat consumption		8-digit including one decimal place					
Power supply		Integrated 6-year battery***					
Protection class		IP 54 according to EN 60529					

* In combination with SPC Rp 3/4.

** The table shows the type-approved measuring ranges in Germany in accordance with national approval by the Physikalisch-Technische Bundesanstalt (PTB).

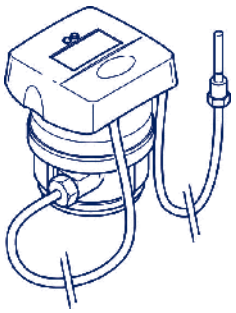
*** For Switzerland and Luxembourg, other battery lives and conditions apply.

Additional accessories

45221 Wall installation adapter

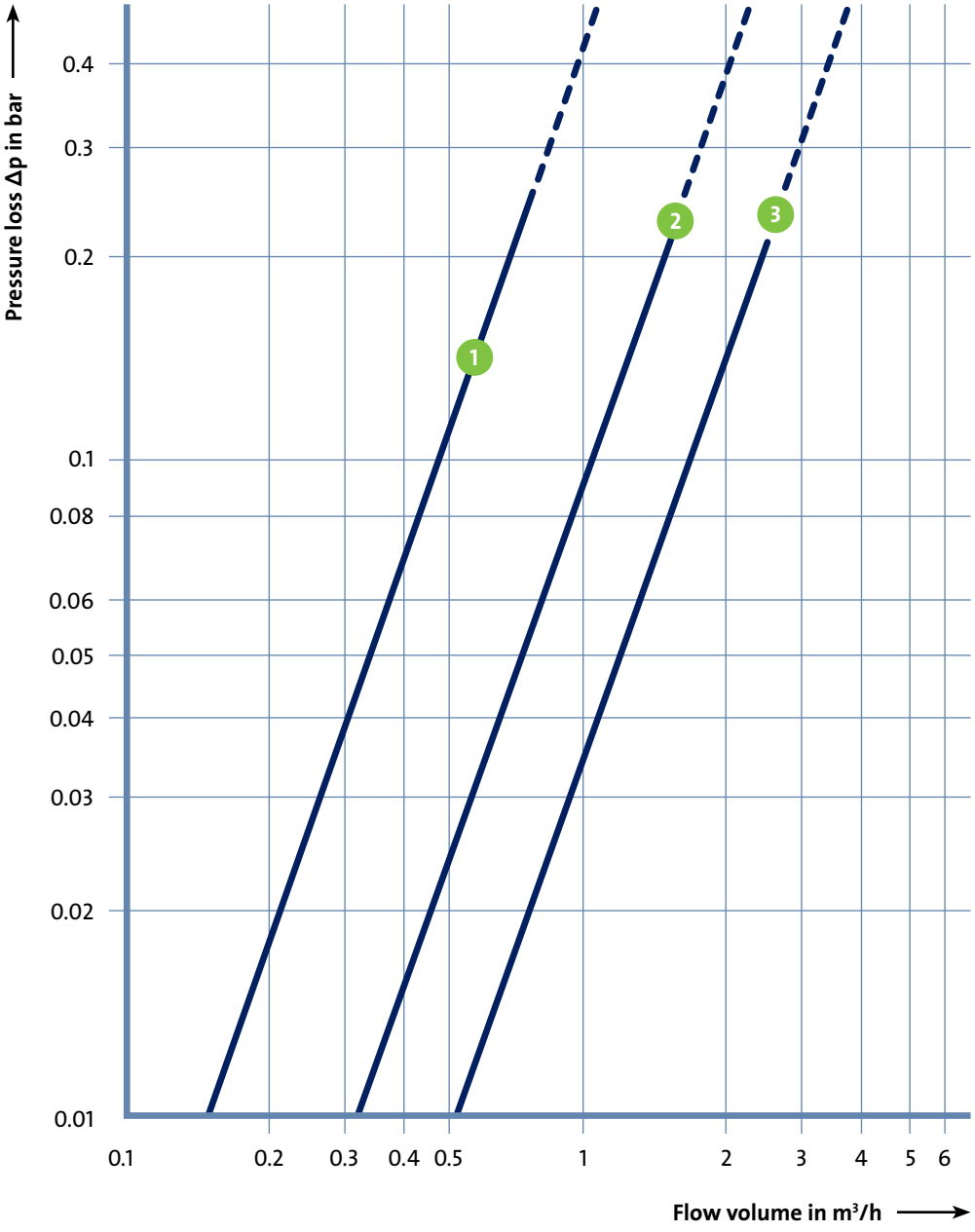
45222 Wall installation adapter with magnet

sensonic II with integrated return flow sensor



Dimensions in mm:
L = 61/W = 76/H = 80

Pressure loss curves – sensonic II compact version



Pressure loss at Q_n/q_p

1 = Q_n/q_p 0.6 m³/h
2 = Q_n/q_p 1.5 m³/h
3 = Q_n/q_p 2.5 m³/h

Identical values for meters with two external sensors and those with integrated return flow sensor.

sensonic II calculator

- sensonic II
  - Compact version
  - Combined heat meter
    - Calculator
      - sensonic II calculator T1
      - sensonic II calculator T25
      - sensonic II calculator T250
      - sensonic II calculator Tx
    - Temperature sensor
    - Flow sensors
  - Accessories

As a combined heat meter, the sensonic II calculator can be combined with various flow sensors and temperature sensors.

The calculator is available in three different versions with values of 1/25/250 litres per pulse. In the sensonic II calculator Tx version, the pulse value can be set during production.

The base plate of the calculator has the same dimensions as the previous model meaning that this can be replaced easily without replacing the mounting plate.

Technical data – sensonic II calculator

Device type		sensonic II calculator T1	sensonic II calculator T25	sensonic II calculator T250	sensonic II calculator Tx
Part No.		**59135**	**59136**	**59137**	**59138**
Temperature sensor connection technology		2 conductor/ 4 conductor	2 conductor/ 4 conductor	2 conductor/ 4 conductor	2 conductor/ 4 conductor
Input pulse value	l/pulse	1	25	250	X*
Display of heat consumption		0.1 kWh	0.001 MWh	0.1 MWh	Variable**
Temperature range limit values	Θ	5–150			
Temperature difference limit values ΔΘ	K	3–100			
Temperature difference suppression	K	< 0.2			
Measuring sensitivity	K	< 0.01			
Heat coefficient K		Temperature-dependent, variable			
Ambient temperature	°C	0–55			
Ambient conditions		According to DIN EN 1434 class E1/M2			
Power supply		Integrated 6-year battery***			
Protection class		IP 54 according to EN 60529			

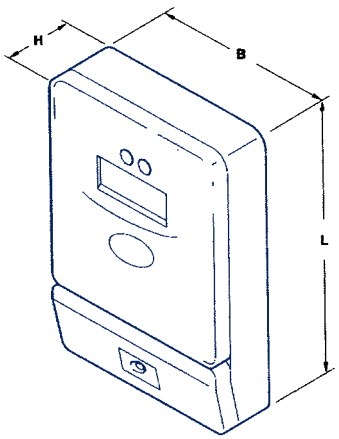
All ista sensonic II calculators are labelled in accordance with EU Directive 2004/22/EC. They can be combined with all flow sensors and temperature sensors supplied by ista, regardless of whether these are nationally approved or CE marked.

* The following pulse values are possible for the Tx version: 2.5/10/100/1,000/2,500 litres per pulse. Please ensure that you state pulse value when ordering.

** The display type is dependent on the pulse value.

*** For Switzerland and Luxembourg, other battery lives and conditions apply.

sensonic II calculator



Dimensions in mm: L = 134/W = 93/H = 35

sensonic II – display loops

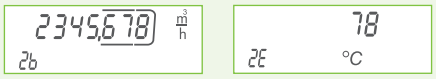
The sensonic II has a high-precision LC display with eight digits and various special characters. The display is activated by pressing the sensor button. Pressing this again briefly cycles through the various displays.

Holding the button (for longer than two seconds) switches from one main loop to the next. To save battery capacity, the display switches off automatically 60 seconds after the last push of the button.

All relevant data is displayed in five display loops: metering, diagnosis, type plate, statistics, tariff. The metered values are displayed on an 8-digit LCD. The decimal places are marked with a frame. Some special characters can only be activated during particular applications. These can only be seen during the LCD test following activation of the display.

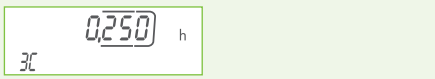
Metering

Diagnostics

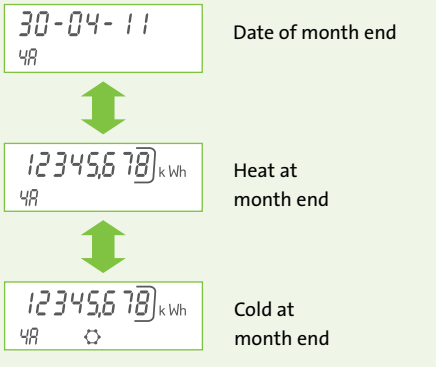


Error checklist	
Error C	calculator (hardware): gen. electronic error
Error t	temperature sensor: Temperature sensor defective
Error F	flow sensor: Volume scanning defective

Type plate

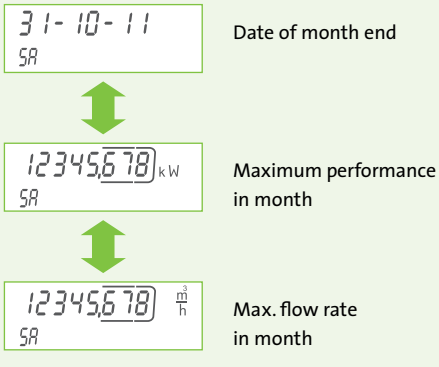


Statistics



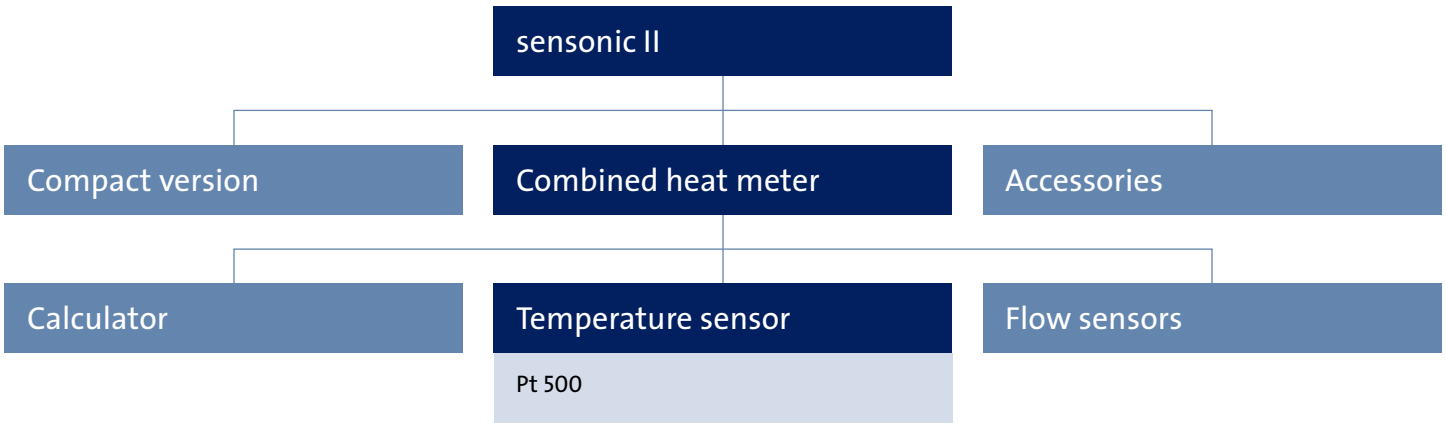
Twelve month-end figures: Change of display to heat quantities of previous months

Tariff



Twelve month-end figures: Change of display to maximum performance and flow rate figures of previous months

sensonic II – temperature sensor



The temperature in the forward flow and return flow is measured by platinum temperature sensors, which guarantee optimal precision in calculating the temperature difference. With the combined heat meters, these are not connected directly to the calculator but must be separately ordered and connected. The temperature sensors are available in 3 m length with 2-conductor technology and in 10 m length with 4-conductor technology.

The temperature sensors are installed directly in conjunction with ball valves or with the help of immersion sleeves. For the new installation of heat meters, in accordance with the specifications of the Calibration Order, installation of temperature sensors is only permissible directly in pipes up to DN 25.

Temperature sensor pairs

Device type		Temperature sensor Pt 500	
Part No. with national approval		**19142**	**19143**
Part No. in accordance with EU Directive 2004/22/EC		**59142**	**59143**
Length	m	3	10
Connection technology		2-conductor	4-conductor
Platinum resistance thermometer		Acc. to DIN IC 751 Pt 500	
Temperature range limit values	°C	0–150	
Temperature sensor installation		Ø 5 mm, direct installation or immersion sleeve installation	

sensonic II – combined heat meter

- sensonic II
  - Compact version
  - Combined heat meter
    - Calculator
    - Temperature sensor
    - Flow sensors
      - sensonic II flow sensor
      - Impeller contact water meter
      - Woltman contact water meter
  - Accessories

The calculators can be combined with different flow sensors – sensonic II flow sensor, impeller or Woltman meters.

Combination with sensonic II flow sensor
As multi-jet impeller meters working in accordance with the proven istameter principle, the ista flow sensor offers optimal flexibility and security. The electronic recording of the impeller rotation guarantees delay-free, precise metering.

Flow sensor*

Part No.	Q_n in m³/h	With calculator	Produces			
59132	0.6	sensonic II T1	WMZ	0.6	–	0.6/T1
59133	1.5	sensonic II T1	WMZ	1.5	–	1.5/T1
59134	2.5	sensonic II T1	WMZ	2.5	–	2.5/T1

* For technical data, see page 14 under flow sensor. For dimensions, see page 25.

Impeller/Woltman contact water meter

Combination with impeller contact water meters

With these completely dry runners with magnetic coupling, the roller counter is fully evacuated and is also rotatable. The voluminous part is made from brass while the bearing for the moving parts is made from carbide.

The meters are available with threaded connection for standard screw connections and, depending on the version ordered, are suitable for installation in horizontal risers or downpipes. A version with flange connection is also available for installation in horizontal pipes.

	Q_{max} in m³/h		Q_n in m³/h	With calculator	Produces		
Size	1.5	–	0.75	sensonic II T1	WMZ	1.5	– 0.75/T1
	3	–	1.5	sensonic II T1	WMZ	3	– 1.5/T1
	5	–	2.5	sensonic II T1	WMZ	5	– 2.5/T1
	7	–	3.5	sensonic II T1	WMZ	7	– 3.5/T1
	10	–	6	sensonic II T1	WMZ	10	– 6/T1
	20	–	10	sensonic II T25	WMZ	20	– 10/T25
	30	–	15	sensonic II T25	WMZ	30	– 15/T25

Combination with Woltman contact water meters

These completely dry runners have a hermetically encapsulated roller counter. To facilitate reading, the counter can be rotated by almost 360°. The counters are available for horizontal installation in the WS model and for horizontal or vertical installation in the WP model.

	DN in mm		Q_n in m³/h	With calculator	Produces		
Size	50	–	15	sensonic II T25	WMZ	50	– 15/T25
	65	–	25	sensonic II T25	WMZ	65	– 25/T25
	80	–	40	sensonic II T25	WMZ	80	– 40/T25
	100	–	60	sensonic II T25	WMZ	100	– 60/T25
	125	–	100	sensonic II T25	WMZ	125	– 100/T25
	150	–	150	sensonic II T250	WMZ	150	– 150/T250
	200	–	250	sensonic II T250	WMZ	200	– 250/T250

Ultrasound volumetric flow meters

Combination with ultrasound volumetric flow meters

The ultego III flow sensor is a volume measurement device that measures the volumetric flow statically, i.e. without moving parts, via ultrasound. It is available for flow rate measurements from 0.6 to 60 m^3/h. Available with threaded connection for standard screw connections or with flange connection, the meters can be installed in horizontal or vertical pipes.

	DN in mm		Q_n in m^3/h	With calculator	Produces		
Size	15	–	0.6	sensonic II calculator T1	WMZ	15	– 0.6/T1
	15	–	1.5	sensonic II calculator T1	WMZ	15	– 1.5/T1
	20	–	2.5	sensonic II calculator T1	WMZ	20	– 2.5/T1
	25	–	3.5	sensonic II calculator T1	WMZ	25	– 3.5/T1
	25	–	6	sensonic II calculator T1	WMZ	25	– 6/T1
	32	–	6	sensonic II calculator T1	WMZ	32	– 6/T1
	40	–	10	sensonic II calculator T25	WMZ	40	– 10/T25
	50	–	15	sensonic II calculator T25	WMZ	50	– 15/T25
	65	–	25	sensonic II calculator T25	WMZ	65	– 25/T25
	80	–	40	sensonic II calculator T25	WMZ	80	– 40/T25
	100	–	60	sensonic II calculator T25	WMZ	100	– 60/T25

Technical data
Impeller contact water meter

Impeller contact water meter with threaded connection in accordance with ISO 228/1, PN = 16 bar, t_{max} = 120 °C

			Single-jet meter	Multi-jet meter				
Part No. horizontal version	**Dimension drawing 1**		**18815**	**18816**	**18817**	**18818**	**18819**	**18829**
Part No. adapter set			**17030**	**17031**	**17032**	**17033**	**17034**	**17035**
Part No. riser version	**Dimension drawing 2**		**–**	**18850**	**18851**	**18852**	**18853**	**18854**
Part No. downpipe version	**Dimension drawing 2**		**–**	**18859**	**18860**	**18861**	**18862**	**18863**
Part No. adapter set			**–**	**17036**	**17036**	**17037**	**17038**	**17039**
Nominal flow rate Q_n /q_p		m³/h	0.75	1.5	2.5	3.5**	6*/**	10**
Pressure loss Δp at Q_n/q_p		bar	0.25	0.2	0.24	0.25	0.24	0.25
Lower measuring range limit Q_{min}/q_i		l/h	30	60	100	140	240	400
Separation limit** Q_t		m³/h	0.075	0.15	0.25	0.35	0.6	1.0
Weight		kg	1.6	2.1	2.1	3.1	3.1	5.5
Pulse value		l/pulse	1	1	1	1	1	25
Combinable with sensonic II calculator			T1	T1	T1	T1	T1	T25
Dimensions								
Nominal width		DN	20	20 (waag. 15)	20	25	32	40
Dimension drawing 1 horizontal version	Length L/L1	mm	150/248	165/245	190/288	260/378	260/378	300/438
	Height H/h	mm	135/30	135/40	135/40	140/45	140/45	155/50
	Width (not pictured)	mm	96	96	96	102	102	137
	Connection thread according to ISO 228/1		G 1 B	G 3/4 B	G 1 B	G 11/4 B	G 11/2 B	G 2B
	Connection thread of screw connection acc. to DIN 2999		R 3/4	R 1/2	R 3/4	R 1	R 11/4	R 11/2
Dimension drawing 2 Riser/downpipe version	Length L/L1	mm	–	105/203	105/203	150/268	150/268	150/268
	Height H/h	mm	–	135/18	135/18	140/22	140/22	106/46
	Width (not pictured)	mm	–	82/96	82/96	95/102	95/102	120/136
	Connection thread according to ISO 228/1		–	G 1 B	G 1 B	G 11/4 B	G 11/2 B	G 2 B
	Connection thread of screw connection acc. to DIN 2999		–	R 3/4	R 3/4	R 1	R 11/4	R 11/2

* Q_n 6 m³/h can be supplied with a connection thread on the meter of G 1 1/4 B upon request.

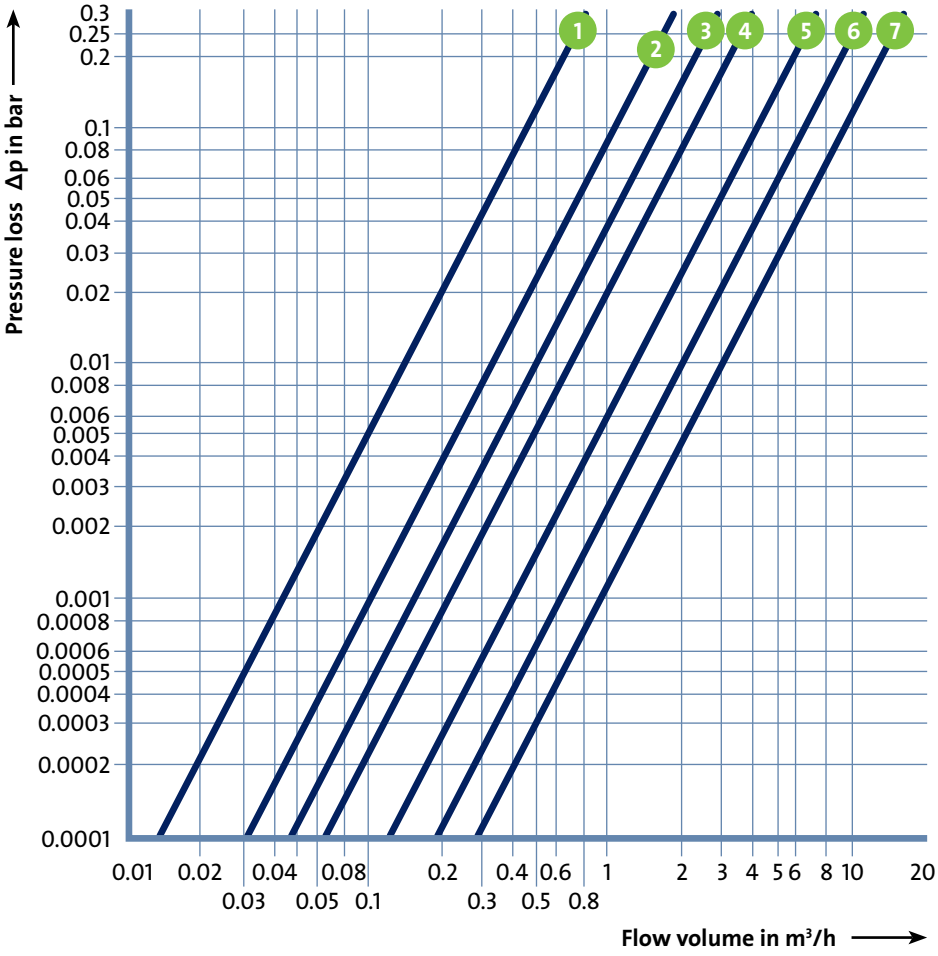
** Upon request, the nominal width DN 25/DN 32 can be supplied at a length of 135 mm and DN 40 at a length of 200 mm.

Impeller contact water meter with flange connection in accordance with DIN 2501, PN = 16 bar, t_{max} = 120 °C

		Single-jet meter	Multi-jet meter					
Part No. horizontal version dimension drawing 1		**18820**	**18821**	**18822**	**18823**	**18824**	**18825**	**18830**
Nominal flow rate Q_n /q_p	m³/h	0.75	1.5	2.5	3.5	6	10	15
Pressure loss Δp at Q_n/q_p	bar	0.25	0.2	0.24	0.25	0.24	0.25	0.24
Lower measuring range limit Q_{min}/q_i	l/h	30	60	100	140	240	400	600
Separation limit** Q_t	m³/h	0.075	0.15	0.25	0.35	0.6	1.0	3.0
Weight	kg	1,6	2.1	2.1	3.1	3.1	5.5	12.5
Pulse value	l/pulse	1	1	1	1	1	25	25
Combinable with sensonic II calculator		T1	T1	T1	T1	T1	T25	T25
Dimensions								
Nominal width	DN	20	15	20	25	25	40	40
Dimension drawing 3 horizontal version – Length L/L1	mm	150	165	190	260	260	300	270
Height H/h	mm	135/30	135/40	135/40	140/45	140/45	155/50	180/83
Width (not pictured)	mm	96	96	96	102	102	137	166
Connection thread according to ISO 228/1		105	95	105	115	115	150	165
Connection thread of screw connection acc. to DIN 299		75	65	75	85	85	110	125

All meters in horizontal version are approved in accordance with EU Directive 2004/22/EC; riser and downpipe meters are nationally approved and calibrated.
With impeller contact water meters, a free, straight pipe section of the nominal width of the meter must be fitted upstream of the meter in the direction of flow.

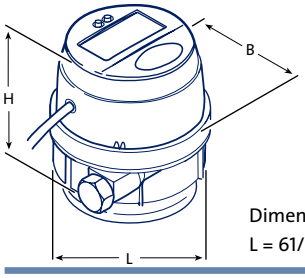
Pressure loss curves
Impeller contact water meter



● Pressure loss at Q_n/q_p

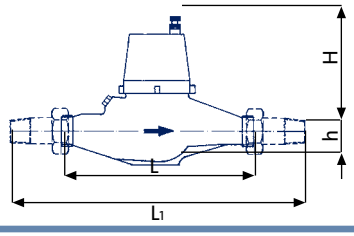
1 = Q_n/q_p 0.75 m³/h
2 = Q_n/q_p 1.5 m³/h
3 = Q_n/q_p 2.5 m³/h
4 = Q_n/q_p 3.5 m³/h
5 = Q_n/q_p 6.0 m³/h
6 = Q_n/q_p 10.0 m³/h
7 = Q_n/q_p 15.0 m³/h

sensonic II flow sensor

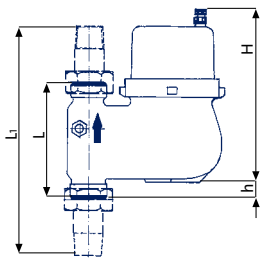


Dimensions in mm:
L = 61/W = 68/H = 67

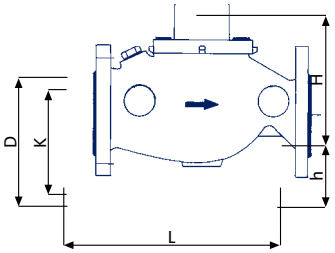
Dimension drawing 1 (horizontal version)



Dimension drawing 2 (riser/downpipe version)



Dimension drawing 3 (horizontal version)



Technical data
Woltman contact water meter

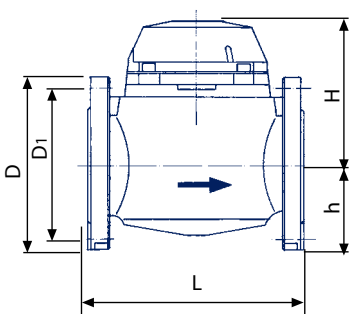
Woltman contact water meter with flange connection, PN = 16 bar, t_{max} = 130 °C

Part No. horizontal version	**WS**		**18757**	**18836**	**18759**	**18761**	**18763**	**18765***	**18766**	**18768***
Part No. adapter set			**17040**	**17040**	**17060**	**17041**	**17042**	**17061**	**17043**	**17044**
Part No. riser version	**WP**		**18758**		**18760**	**18762**	**18764**	**18765**	**18767**	**18768**
Part No. downpipe version	**WP**		**18758**		**18760**	**18762**	**18764**	**18765**	**18767**	**18768**
Part No. adapter set			**17045**		**17059**	**17046**	**17047**	**17061**	**17048**	**17044**
Nominal flow rate Q_n		m³/h	15	15	25	40	60	100	150	250
Horizontal versions	Pressure loss Δp at Q_n	bar	0.07	0.04	0.06	0.1	0.1	0.06	0.14	0.01
	Lower measuring range limit Q_{min}	m³/h	0.25	0.3	0.3	0.3	0.5	3.5	0.8	8
	Separation limit Q_t	m³/h	1.5	1.5	2.5	2.5	4	8	12	20
	Weight	kg	13.5	13.9	17.5	19.5	32.5	21	91.5	51
Riser/ downpipe version	Pressure loss Δp at Q_n	bar	0.015		0.034	0.03	0.03	0.06	0.025	0.01
	Lower measuring range limit Q_{min}	m³/h	0.6		1	1.4	2	3.5	4.5	8
	Separation limit Q_t	m³/h	1.8		2	3.2	4.8	8	12	20
	Weight	kg	8		10	14	18	21	36	51
Pulse values		l/pulse	25	25	25	25	25	25	250	250
Combinable with sensonic II calculator			T25	T25	T25	T25	T25	T25	T250	T250
Installation dimensions*										
Nominal width		DN	50	50	65	80	100	125*	150	200*
Dimension drawing 1, WS model	Length L	mm	270	270	300	300	360	250	500	350
	Height H/h	mm	151/80	195/84	161/100	161/100	191/110	106/46	301/180	206/162
	Width (not pictured)	mm	170	165	200	200	260	250	320	340
Dimension drawing 1, WP model	Length L	mm	200		200	225	250	250	300	350
	Height H/h	mm	120/73		120/85	150/95	150/105	160/118	117/135	206/162
	Width (not pictured)	mm	175		185	200	220	250	285	340
Flange diameter		D	165	165	185	200	220	250	285	340
Pitch circle diameter		D1	125	125	145	160	180	210	240	295
Number of screws/threads			4/M16	4/M16	4/M16	8/M16	8/M16	8/M16	8/M20	12/M20

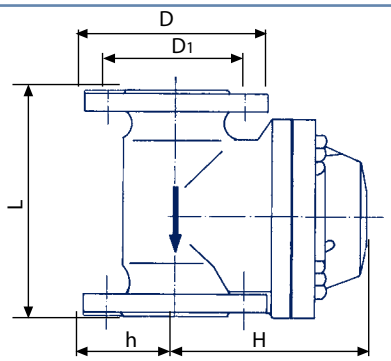
All meters are nationally approved and calibrated.
* Only available as WP.
WS = Woltman vertical
WP = Woltman parallel

The values stated at Qt and Qmin are performance data that exceed the requirements in accordance with the Calibration Order for metrological classes A and B.
With Woltman meters, a free, straight pipe section of at least five times the nominal width of the meter must be observed upstream of the meter in the direction of flow.

Dimension drawing 1 (WS model)

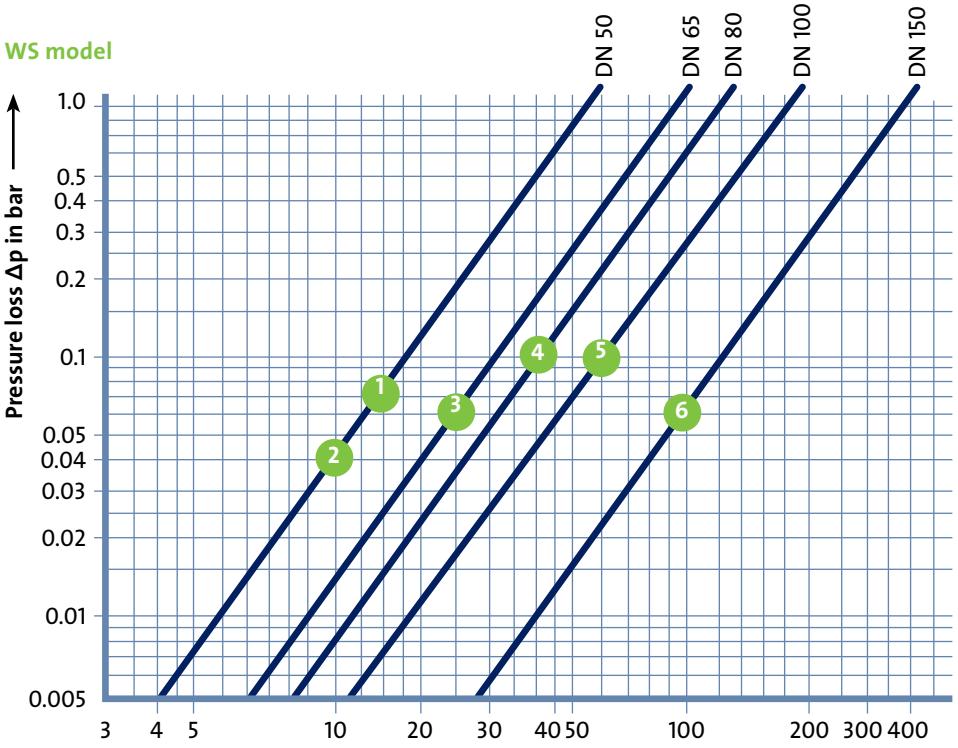


Dimension drawing 2 (WP model)



Pressure loss curves
Woltman contact water meter

WS model

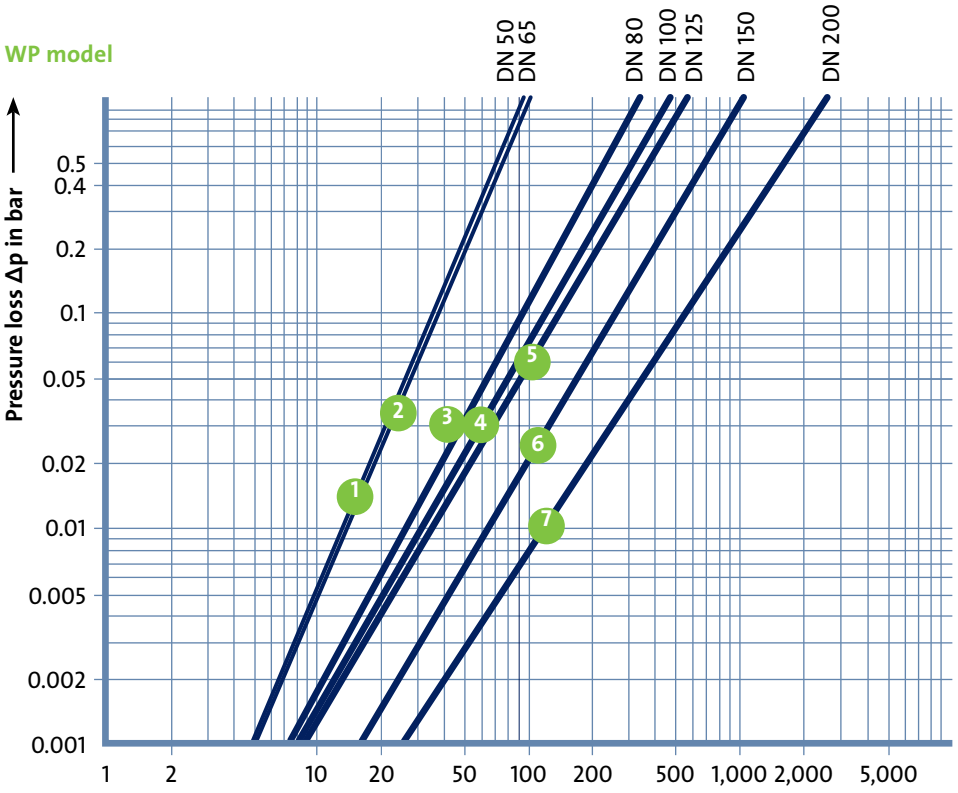


Pressure loss at Q_n

1 = Q_n 15 m³/h (Part No. 18757)
2 = Q_n 15 m³/h (Part No. 18836)
3 = Q_n 25 m³/h
4 = Q_n 40 m³/h
5 = Q_n 60 m³/h
6 = Q_n 100 m³/h

Flow volume in m³/h

WP model



Pressure loss at Q_n

1 = Q_n 15 m³/h
2 = Q_n 25 m³/h
3 = Q_n 40 m³/h
4 = Q_n 60 m³/h
5 = Q_n 100 m³/h
6 = Q_n 150 m³/h
7 = Q_n 250 m³/h

Flow volume in m³/h

Technical data
Ultrasound volumetric flow meters

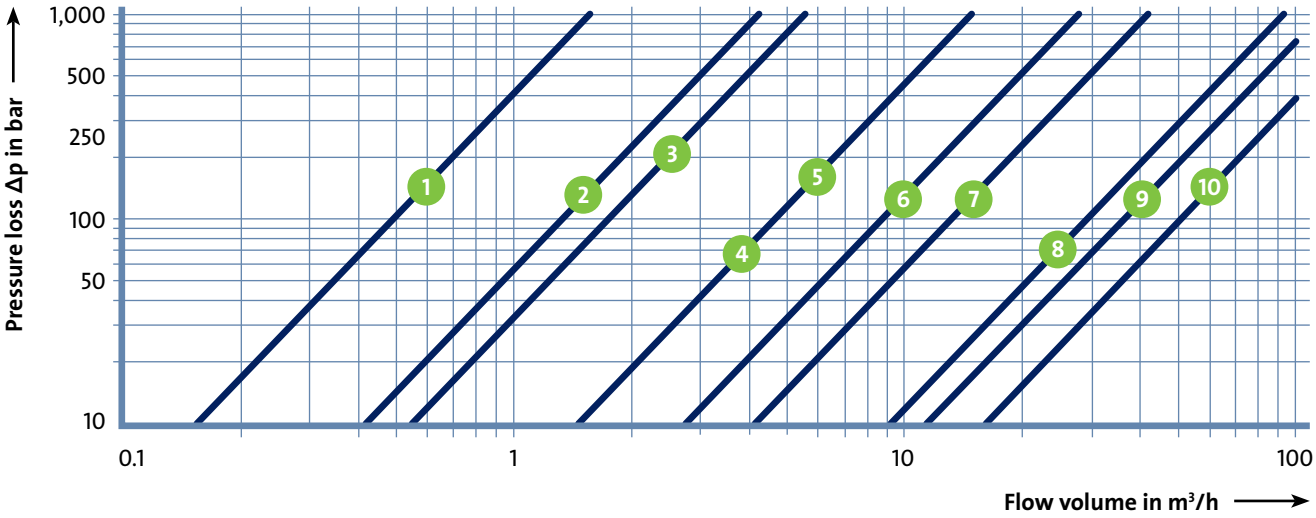
Ultrasound volumetric flow meters

Part No. threaded connection according to ISO 228/1			**19670**	**19672**	**19674**	**19676**	**19678**	**19680**
Part No. flange connection according to DIN 2501			**19671**	**19673**	**19675**	**19677**	**19679**	**19681**
Part No. adapter set for threaded connection			–	–	–	**17033**	**17033**	**17035**
Measuring accuracy			EN 1434 class 3					
Nominal flow rate Q_n/q_p		m^3/h	0.6	1.5	2.5	3.5	6	10
Max. flow rate Q_{max}/q_s		m^3/h	1.2	3	5	7	12	20
Min. flow rate Q_{min}/q_i		l/h	6	15	25	35	60	100
Response limit approx.		l/h	1.2	3	5	7	12	20
Pressure loss Δp at Q_n/q_p	Thread and flange	mbar	140	130	205	65	152	120
Nominal pressure PN	Thread/flange	bar	16/25	16/25	16/25	16/25	16/25	16/25
Pulse value		l/pulse	1	1	1	1	1	25
Combinable with calculator: **sensonic II** calculator			T1	T1	T1	T1	T1	T25
Connection thread according to ISO 228/1			G 3/4 B		G 1 B	G 1 1/4 B		G 2 B
Connection thread of screw connection acc. to DIN 2999			R 1/2		R 3/4	R 1		R 1 1/2
Nominal width of flange connection		DN	20			25		40
Thread installation	length	mm	110		130	260		300
	Flange	mm	190			260		300
Inflow settling section			Not required					
Outflow settling section			Not required					
Temperature range limit value		°C	10–130					
		°C	To 150 for 2000 h					
Protection class			IP 54					

Ultrasound volumetric flow meters

Part No. flange connection according to DIN 2501		**19682**	**19683**	**19684**	**19685**
Part No. adapter set		**17040**	**17060**	**17041**	**17042**
Measuring accuracy		EN 1434 class 3			
Nominal flow rate Q_n/q_p	m^3/h	15	25	40	60
Max. flow rate Q_{max}/q_s	m^3/h	30	50	80	120
Min. flow rate Q_{min}/q_i	l/h	150	250	400	600
Starting value	l/h	30	50	80	120
Pressure loss Δp at Q_n/q_p	mbar	120	70	120	140
Nominal pressure PN	bar	25	25	25	25
Pulse value	l/pulse	25	25	25	25
Combinable with calculator: **sensonic II** calculator		T25	T25	T25	T25
Nominal width	DN	50	65	80	100
Installation length	mm	270	300	300	360
Inflow settling section		Not required			
Outflow settling section		Not required			
Temperature range limit value	°C	10–130			
	°C	To 150 for 2000 h			
Protection class		IP 54			

Pressure loss curves
Ultrasound volumetric flow meters



● Pressure loss at q_p

1 = q_p 0.6 m³/h
2 = q_p 1.5 m³/h
3 = q_p 2.5 m³/h
4 = q_p 3.5 m³/h
5 = q_p 6 m³/h
6 = q_p 10 m³/h
7 = q_p 15 m³/h
8 = q_p 25 m³/h
9 = q_p 40 m³/h
10 = q_p 60 m³/h

ultego III flow sensor pressure losses

Q_n/q_p in m³/h	0.6	1.5	2.5	3.5	6	10	15	25	40	60
Length in mm	110	110	130	260	260	300	270	300	300	360
Pressure loss at q_p in mbar	140	130	205	65	152	120	120	70	120	140
kv (q [m³/h] @ Δp = 1 bar)	1.6	4.2	5.5	13.7	15.4	29	43	94	115	160

sensonic II – accessories

sensonic II

- Compact version
- Combined heat meter
- **Accessories**
  - Single pipe connection
  - Ball valve
  - Immersion sleeve
  - Welded sleeve
  - Special tool

In addition to our extensive product range, naturally we also offer you a comprehensive range of accessories. From our single pipe connection (SPC) for the installation of heat meters in accordance with the istameter principle to ball valves, immersion sleeves, welded sleeves and the right special tools. We can offer you the right solution for every situation.

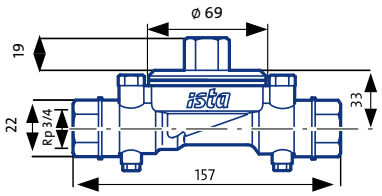
Single pipe connection, SPC	Connection	Length	Part No.	
			Brass	Red brass
SPC with 2 integrated ball valves (with mounting for the return flow temperature sensor)	Rp 3/4	157 mm		**14450**
	Rp 1	169 mm		**14451**
SPC with shut-off, without picture (with 1 integrated ball valve)	Rp 3/4	105 mm	**14949**	
	Rp 1	105 mm	**14950**	
SPC with press-fit connection	15 mm	145 mm		**14008**
	18 mm	145 mm		**14009**
	22 mm	145 mm		**14010**
SPC with external thread	G 3/4 B	110 mm	**14103**	
	G 1 B	105 mm	**14403**	
	G 1 B	130 mm	**14414**	**14404**
	G 1 B	190 mm		**14408**
SPC with internal thread	Rp 1/2	94 mm	**14000**	**14011**
	Rp 3/4	100 mm	**14100**	**14012**
SPC with solder connection	15 mm	94 mm	**14200**	
	18 mm	100 mm	**14300**	
	22 mm	105 mm	**14000**	
	28 mm	190 mm		**14402**

Single pipe connection SPC

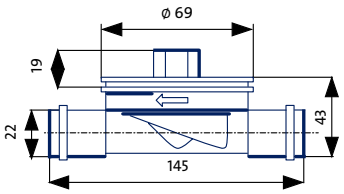
The single pipe connection can be installed both vertically and horizontally in all customary pipe types and installations. The SPC is available in brass and, in certain cases, in the high-quality red brass version. The SPC remains connected to the installation for the long term. All sensonic II heat meters and the sensonic II flow sensors following the istameter principle can be installed in this service-friendly way.

Before installation or after removal, the overflow cap is fitted instead of the heat meter. This means that pipes can be tested or flushed with no problems.

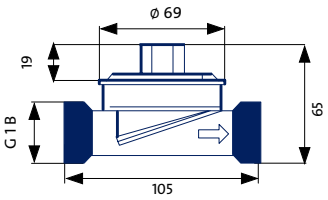
SPC with 2 integrated ball valves (with mounting for the return flow temperature sensor)*



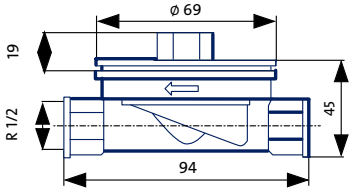
SPC with press-fit connection



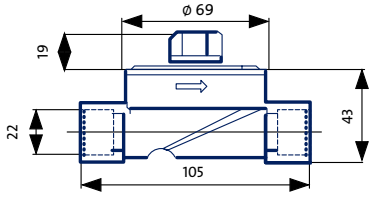
SPC with external thread*



SPC with internal thread*



SPC with solder connection*



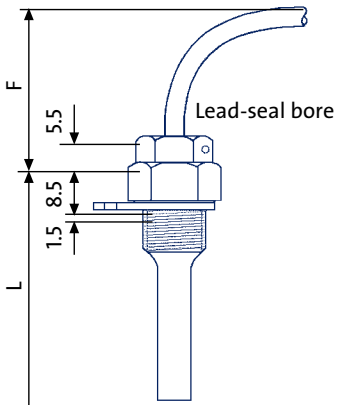
* All measurements given in mm.

Immersion sleeves and welded sleeves

The ista immersion sleeves for holding the temperature sensors can be mounted with pinpoint accuracy. The immersion sleeves can be supplied individually or as a set with a welded sleeve.

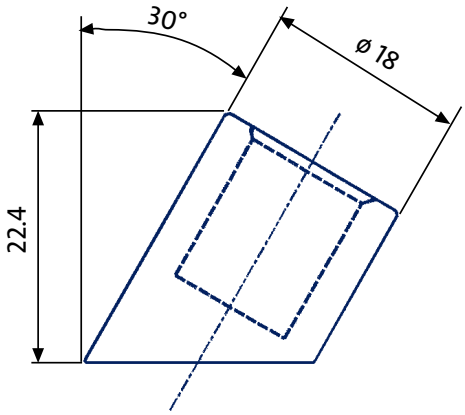
Immersion sleeve set 5 mm*

View with inserted temperature sensor



Length L	Free space F	Part No.
50 mm	70 mm	**18380**
80 mm	100 mm	**18381**
150 mm	170 mm	**18382**

Immersion sleeve set 5 mm with welded sleeve*



Nominal pipe width	Immersion sleeve length	Part No.
32–40 mm	50 mm	**18391**
50–120 mm	80 mm	**18392**
150–300 mm	150 mm	**18393**

* All dimensions in mm.

Ball valves and tool

The temperature sensors can be installed directly in conjunction with the corresponding ball valves. For the new installation of heat meters, in accordance with the Calibration Order, installation of temperature sensors in pipes up to DN 25 is only permissible directly. If corresponding ball valves are installed in the forward flow and return flow pipe of the heating system, the meter can be changed regularly without a problem.

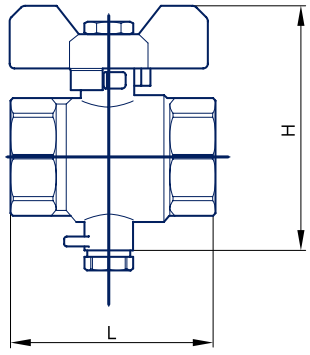
Performance features

- Ball valves for hot water heating systems with sensor connection M 10 x 1.
- Metal butterfly handle with stop, hard chrome-plated ball with Teflon seal and spindle with double O-ring seal.
- Housing in nickel-plated brass, internal thread on both sides.

Ball valve with screw-in connector in temperature sensor

Technical data

Max. pressure	Max. temperature		Both-sided Internal thread	Sensor Connection
	Long-term	Short-term		
25 bar	100 °C	150 °C	Rp1/2;Rp3/4; Rp1 acc. to DIN ISO 228	M 10 x 1 mm



Connection	Length dimension L	Height dimension H	Part No.
R_p 1/2	51.8 mm	75.9 mm	**18529**
R_p 3/4	57.5 mm	76.1 mm	**18527**
R_p 1	67.0 mm	91.6 mm	**18528**

Tool	Art.-Nr.
Hook spanner, small	**80008**
Hook spanner, large	**80518**

optosonic 3 radio net – for greater flexibility

The optosonic 3 radio net is a decisive factor in the flexibility of the ista radio system. Equipped with a transmitter, the device enables the integration of conventional sensonic II heat meters. In conjunction with the option to combine this with radio, this opens up an even greater spectrum of application.

The optosonic 3 radio net connects simply to the optical interface of the heat meter, saves the metered values and performs the radio transmission. This means that heat meters already installed can be easily integrated into the radio system.

Technical data

Device type	**optosonic 3 radio net**
Part No.	**19450**
Dimensions in mm (W x H x D)	55 x 100 x 30
Optical input	ista Standard
Length of optical head cable	Min. 0.5 m
Radio interface	For reading systems and programming (with mobile gateway and mobile data recording device)
Power supply	3 V lithium battery for 10 year service life + 1 year reserve + 1 year storage
Data back-up	RAM memory
Parameter data	Effective date (transmission date)
Registration data	Energy volume (total volume)
Transmission data update	Upon request
Transmitting power	< 10 mW
Radio frequency	868 MHz
Duration of send telegram	< 10 msec/transmission
Transfer rate	~ 90 kBaud (bit/sec)
Transmission procedure	Bidirectional data transfer
Data security	Telegram encrypted
Protection class	IP 54 (EN 60529)
Ambient temperature	0–70 °C
Ambient conditions	Class C (EN 1434)
CE mark	1999/5/EC

istameter radio net 3 – state-of-the-art electronics for a proven system

Functional description

The istameter radio net 3 is a mechanical water meter which, with its modular design, forms the basis for integration into the symphonic sensor net radio system.

Both the cold and hot water meters can be equipped with a radio module easily and at any time. The istameter radio net 3 is a multi-jet impeller meter with magnetic coupling and roller counter. The multi-jet principle also ensures even loading of the bearing.

All istameter radio net 3 units have an encoder disc in the form of a reflecting segment located on the counter of the water meter. The optical electronic recording of the encoder disc ensures long-term, instantaneous and precise metering.

Performance features

The istameter radio net 3 is available for nominal flow rates of 1.5 m^3/h or 2.5 m^3/h as a hot or cold water meter. The radio module stores the following values irrespective of the receiver technology:

- Current metered value
- 14 month-end figures
- Two effective date figures

The transmission from the counter to the radio module is electronic and reactionless, ensuring backflow detection.

Your benefits

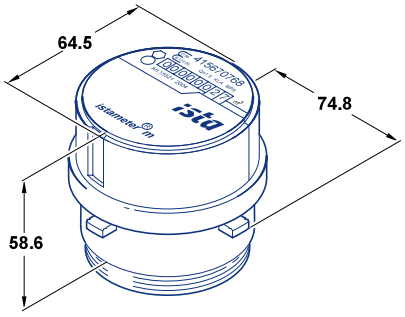
- Future-oriented technology through modular design
- Long service life thanks to the ultra-high-performance battery
- Secure protection against dirt and spray water via high degree of seal-tightness
- Compatible with all previous accessories
- Seamless replacement thanks to the istameter principle
- Secured against manipulation via lead sealing of meter and module with lead seal
- Manufacturer certification in accordance with ISO 9001
- CE mark assures electronic compatibility in domestic and industrial environments

Technical data istameter radio net 3

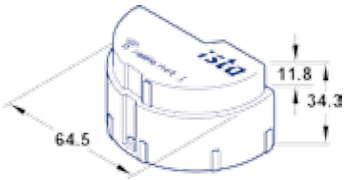
Device type		**istameter m**					
Metering principle		**Multi-jet impeller meter**					
Version **Part number**		Hot 1.5 **15521**		Cold 1.5 **15621**	Hot 2.5 **15523**		Cold 2.5 **15623**
Nominal flow rate **Flow rate**	Q_n (m³/h) Q_{max} (m³/h)	1.5 3.0			2.5 5.0		
Pressure loss at Q_n	Δp (bar)	0.2			0.2		
Horizontal installation position Kl. B	Q_{min} (l/h) Q_t (l/h)	30 120			50 200		
Vertical installation position Kl. B	Q_{min} (l/h) Q_t (l/h)	60 150			100 250		
Nominal temperature (water)	to °C	90		30	90		30
Nominal pressure **Test pressure**	PN (bar) PN (bar)	10 16			10 16		
Protection class		Complies with DIN 40050: IP 65			Complies with DIN 40050: IP 65		
Display of water consumption	m³ l	5 digit 3 digit			5 digit 3 digit		
Conn. thread mounting components SPC		Rp 1/2, Rp 3/4, G 3/4 B, G 1 B			Rp 3/4, G 3/4 B, G 1 B		
Connection dimensions mounting components SPC solder*		L 15, L 18, L 22			L 22, L 28		
Connection dimensions mounting components SPC press-fit*		P 15, P 18, L 22			P 22		
Connection dimensions mounting components VAS		R 1/2, R 3/4, R 1			–		
Magnetic protection		EN 14154-3			EN 14154-3		
Validity of calibration or certification		5 years		6 years	5 years		6 years
Compatibility		For all mounting components of the istameter system					
Radio communication							
Version		Modular					
Part No.		**19410**					
Service interfaces		Radio					
Saved values		Current metered value, 14 month-end figures and 2 effective date figures					
Transmission data update		Upon request					
Transmitting power		< 10 mW					
Radio frequency		868 MHz					
Duration of send period		< 10 msec/transmission					
Transfer rate		~ 90 kBaud (bit/sec)					
Transmission procedure		Bidirectional data transfer					
Data security		Telegram encrypted					
Protection class		IP 65 (EN 60529)					
Resolution		+/ – 10 l					
Power supply		Integrated 10-year battery					

* Hard soldering prohibited in accordance with DVGW (German Technical and Scientific Association for Gas and Water).

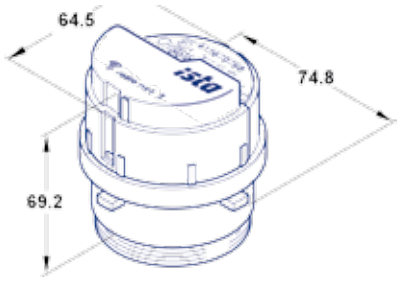
istameter m



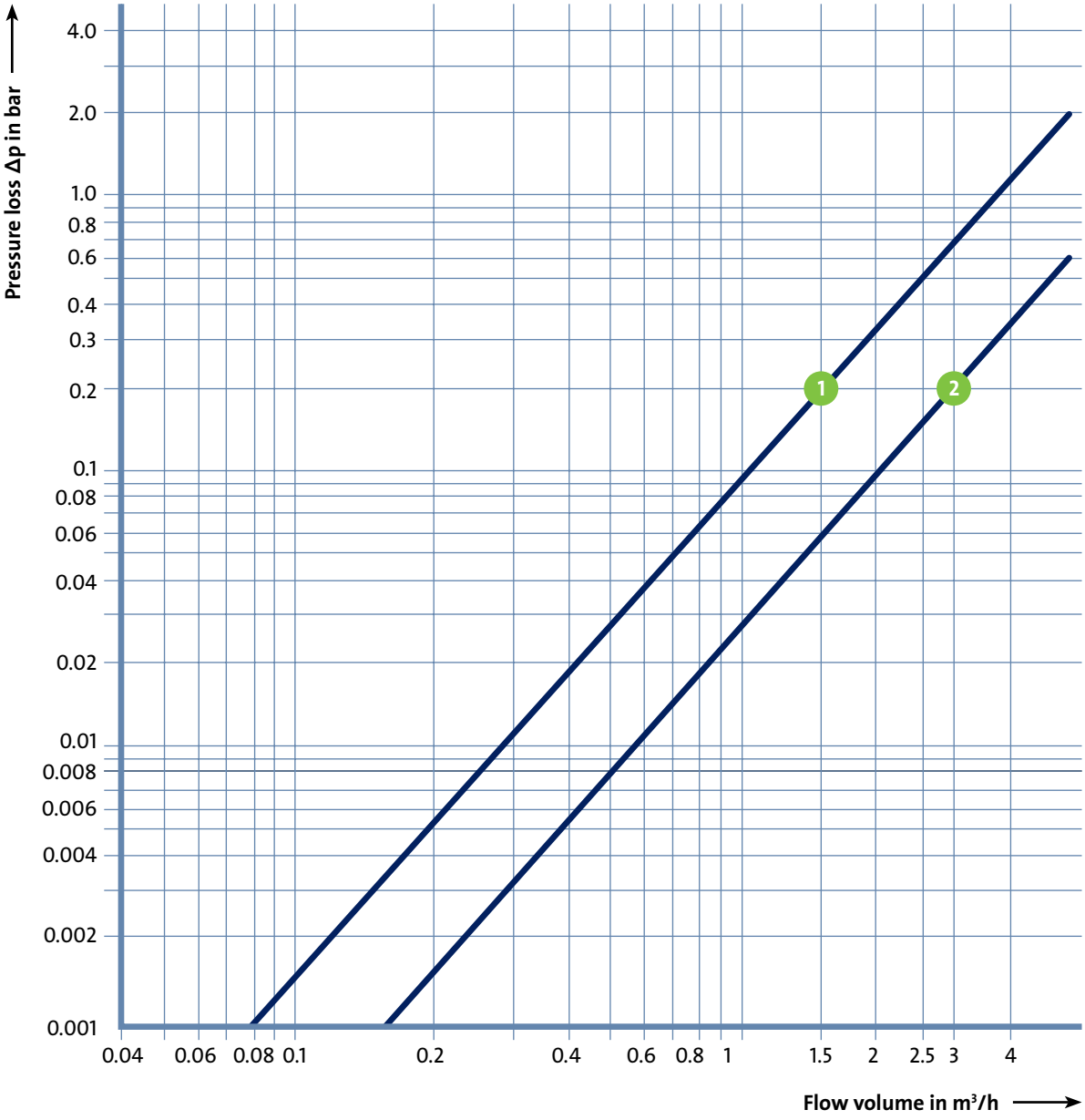
radio net 3 radio module



istameter radio net 3



Pressure loss curves – istameter radio net 3



Pressure loss curves – istameter m
Incl. single pipe connection piece (SPC)

In combination with SPC: Rp 1/2, Rp 3/4, G 3/4 B, G 1 B, L 15, L 18, L 22 P 15, P 18, P 22

Pressure loss at Q_n

1 = Q_n 1.5 m³/h
2 = Q_n 2.5 m³/h

istameter radio net 3 – accessories

The single pipe connection piece – usable in all pipes

Functional description

The single pipe connection piece (SPC) is used for installation of the water meter. It can be installed universally, horizontally or vertically, in all customary pipe types and installations and remains connected to the installation for the long term. Following successful installation of the SPC, the overflow cap supplied seals the meter connection. This means that the pipe can be tested or flushed with no problems.

In the case of flush-mounting of the SPC, the plastic mounting cap supplied is initially attached before the overflow cap is screwed on. Thus, the tiling is finished precisely to allow sufficient room for subsequent installation of the water meter. Following plastering and tiling work, the plastic mounting cap and overflow cap can be removed and the meter can be installed.

Performance features

The single pipe connection piece (SPC) is made from high-quality red brass or hot-pressed brass. If requested, it is available in different versions, e.g. internal or external thread, soldered/press-fit connection, as well as in different installation lengths. To avoid energy loss at the SPC in hot water pipes, an insulating cover can be supplied in CFC-free Elastopor, which also acts as noise insulation.

Area of application

Thanks to its versatility, the SPC can be used in almost all customary pipe types, both horizontally and vertically.

Your benefits

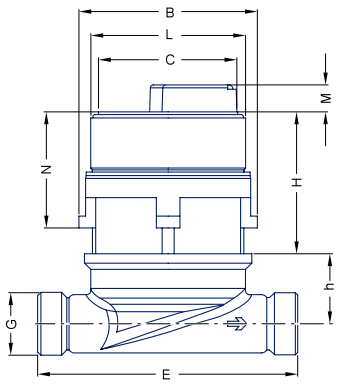
- Proven, sophisticated, complete metering system (“istameter principle”) for cold and hot water in domestic areas
- Problem-free exchange thanks to separation of meter and mounting components
- Wide range of application thanks to high versatility

Technical data – single pipe connection

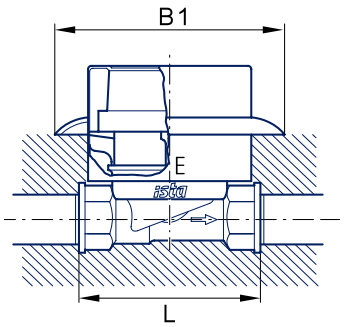
Model		Internal thread*		External thread					Soldered connection*				Press-fit connection*		
Part No. SPC	Brass MS 58	14000	14100	14103	14110	14414	14403	–	14200	14300	14400	–	–	–	–
	Red brass RG 5	14011	14012	–	–	14404	–	14408	14013	14014	14015	14402	14008	14009	14010
Nominal pressure	PN bar	10				10					10			10	
Test pressure	PN bar	16				16					16			16	
Nominal temperature to	°C	90				90					90			90	
Connection to SPC (G)		Rp 1/2	Rp 3/4	G 3/4 B			G 1 B		15 mm	18 mm	22 mm	28 mm	15 mm	18 mm	22 mm
Length of SPC in mm (E)		94	100	110	80	130	105	190	94	100	105	130		145	
Height SPC in mm (h)		29.0	29.0	29.0	36.0	37.0	29.0	37.0	29.0	29.0	29.0	37.0	33.5	33.5	33.5
Distance between 2 EAS		At least 100 mm (centre–centre)													
Overall height in mm (H+h)		88.9	88.9	88.9	97.9	96.9	88.9	96.9	88.9	88.9	88.9	96.9	93.4	93.4	93.4
Overall height with module in mm (H+h+M)		99.9	99.9	99.9	108.9	107.9	99.9	107.9	99.9	99.9	99.9	107.9	104.4	104.4	104.4
Connection to SPC acc. to old desig.		R 1/2"	R 3/4"	R 3/4"	R 3/4"	R 1"	R 1"	R 1"	15	18	22	28	15	15	22
Connection to SPC acc. to ISO 228/1 or DIN 2999 new desig.		Rp 1/2	Rp 3/4	G 3/4 B	G 3/4 B	G 1 B	G 1 B	G 1 B	–	–	–	–	–	–	–
Connection thread of screw connection according to DIN 2999		–	–	R 1/2	R 1/2	R 3/4	R 3/4	R 3/4	–	–	–	–	–	–	–
Part No. screw conn., pair:	Thread			**17000**		**17100**									
	Solder			**17005**	15 mm	**17105**	22 mm								
				17006	18 mm										
Rosette width (B1)		125.0													
Height in mm (H)		59.9													
Max. width in mm (B)		75.0													
Housing width in mm (L)		64.5													
Set-off ø in mm (C)		58.0													
Cam height (N)		48.6													
Module height (M)		11.0													

* SPC with mounting cap.

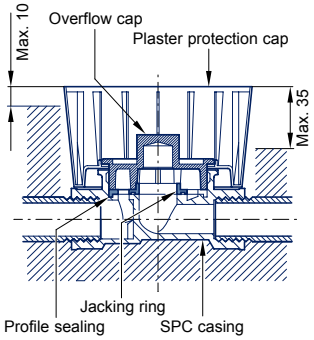
Connection dimensions



Half-section via installed SPC with istameter m, cap and rosette



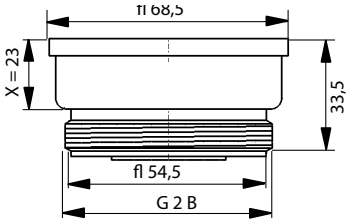
Section via single pipe connection with overflow and mounting cap



istameter radio net 3 – additional accessories

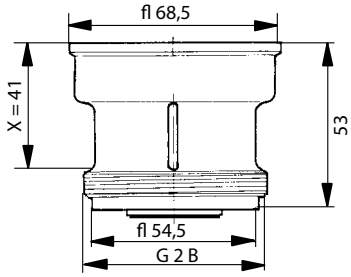
Extension 20 mm (Part No. 15003)

Half-section via extension*



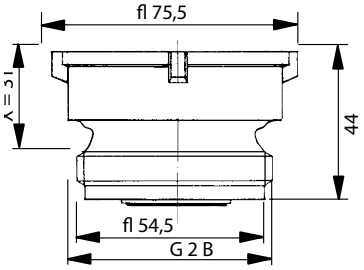
Extension 40 mm (Part No. 15004)

Half-section via extension*



Flow direction converter (Part No. 14903)

Half-section via flow direction converter*



* All measurements given in mm.

Practical accessories and installation aids make day-to-day work easier. Thanks to our many years of collaboration with specialist trades, we have a solution for every instance. For mounting components (SPC), that are installed too deeply in the wall or against the direction of flow, ista provides the extension or flow direction converter. These extend by the dimension specified as x.

Cap, chrome-plated (part No. 15300) Rosette, chrome-plated (part No. 15400) Rosette, chrome-plated, ø 145 mm (part No. 15407)

Mounting/demounting key (Part No. 80410)

domaqua radio net 3 – radio-capable with radio net 3 module

Functional description

The domaqua radio net 3 is a single-jet impeller meter with magnetic coupling and roller counter. The magnetic coupling reliably transmits the rotation of the impeller to the roller counter.

Both the cold water and hot water meters can be equipped with a radio module easily and at any time. All domaqua radio net 3 units have an encoder disc in the form of a reflecting segment located on the counter of the water meter. The electronic recording of the encoder disc, optically, ensures long-term, delay-free, precise metering.

Performance features

As a dry-runner, this water meter offers security via high metering precision and long service life. Ingress of foreign bodies or deposits in the roller counter is prevented while the housing prevents the entry of spray water.

The meters can be installed horizontally and vertically while the roller counter can be rotated into any preferred reading position.

Area of application

As with the istameter system, the following installation types are possible depending on accessories:

- Flush mounting
- Surface mounting
- On the washstand or kitchen sink

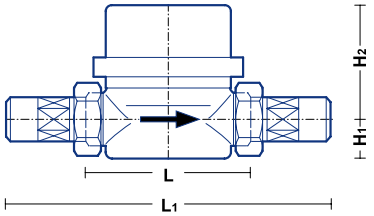
Your benefits

- Future-oriented technology through modular design
- Wide range of application thanks to high versatility
- Reliability and durability through sophisticated technology
- Available in nominal flow rates of Q_n 1.5 m³/h and Q_n 2.5 m³/h and lengths of 80, 110 and 130 mm
- Retrofittable to radio module

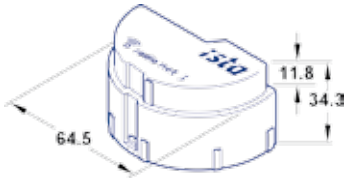
Technical data – domaqua radio net 3

Device type			**domaqua m**							
Metering principle			**Single-jet impeller meter**							
Version			Hot 1.5			Cold 1.5			Hot 2.5	Cold 2.5
Part No.			**16094**	**16095**	**16096**	**16090**	**16091**	**16092**	**16097**	**16093**
Nominal flow rate	Q_n	m^3/h	1.5						2.5	
Maximum load	Q_{max}	m^3/h	3.0						5.0	
Pressure loss at Q_n	Δp	bar	0.17						0.25	
Horiz. Installation position	Q_{min}	l/h	30						50	
class B	Q_t	l/h	120						200	
Vertical Installation position	Q_{min}	l/h	60						100	
class A	Q_t	l/h	150						250	
Nominal temperature (water)	until	°C	90			30			90	30
Nominal pressure	PN	bar	10						10	
Test pressure	PN	bar	16						16	
Protection class			Complies with DIN 40050: IP 65							
Magnetic protection			EN 14154-3							
Display of water consumption	m^3		5 digit						5 digit	
	l		3 digit						3 digit	
Radio communication										
Version			Modular							
Part No.			**19410**							
Service interfaces			Radio							
Saved values			Current metered value, 14 month-end figures and 2 effective date figures							
Transmission data update			Upon request							
Transmitting power			< 10 mW							
Radio frequency			868 MHz							
Duration of send period			< 10 msec/transmission							
Transfer rate			~ 90 kBaud (bit/sec)							
Transmission procedure			Bidirectional data transfer							
Data security			Telegram encrypted							
Protection class			IP 65 (EN 60525)							
Resolution			+/ – 10 l							
Power supply			Integrated 10-year battery							
Installation dimensions in mm										
Length	L/L1		80/160	110/190	130/210	80/160	110/190	130/210	130/227	
Height	H/H1		54.5/16	52.5/16		54.5/16	52.5/16		52.5/16	
Module height	M		10.2						10.2	
Conn. thread on meter acc. to ISO 228/1			G 3/4 B						G 1 B	
Conn. thread of screw fitting acc. to DIN 2999			R 1/2						R 3/4	
Part No. screw connection, pair	Brass		17000						17100	
	Chrome plated		17200						17300	
	Solder		17005 (15 mm)						17105 (22 mm)	
Period of validity of calibration or certification			5 years			6 years			5 years	6 years

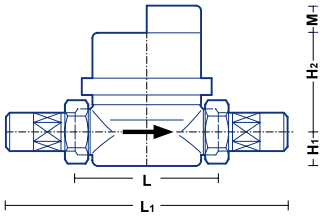
domaqua m



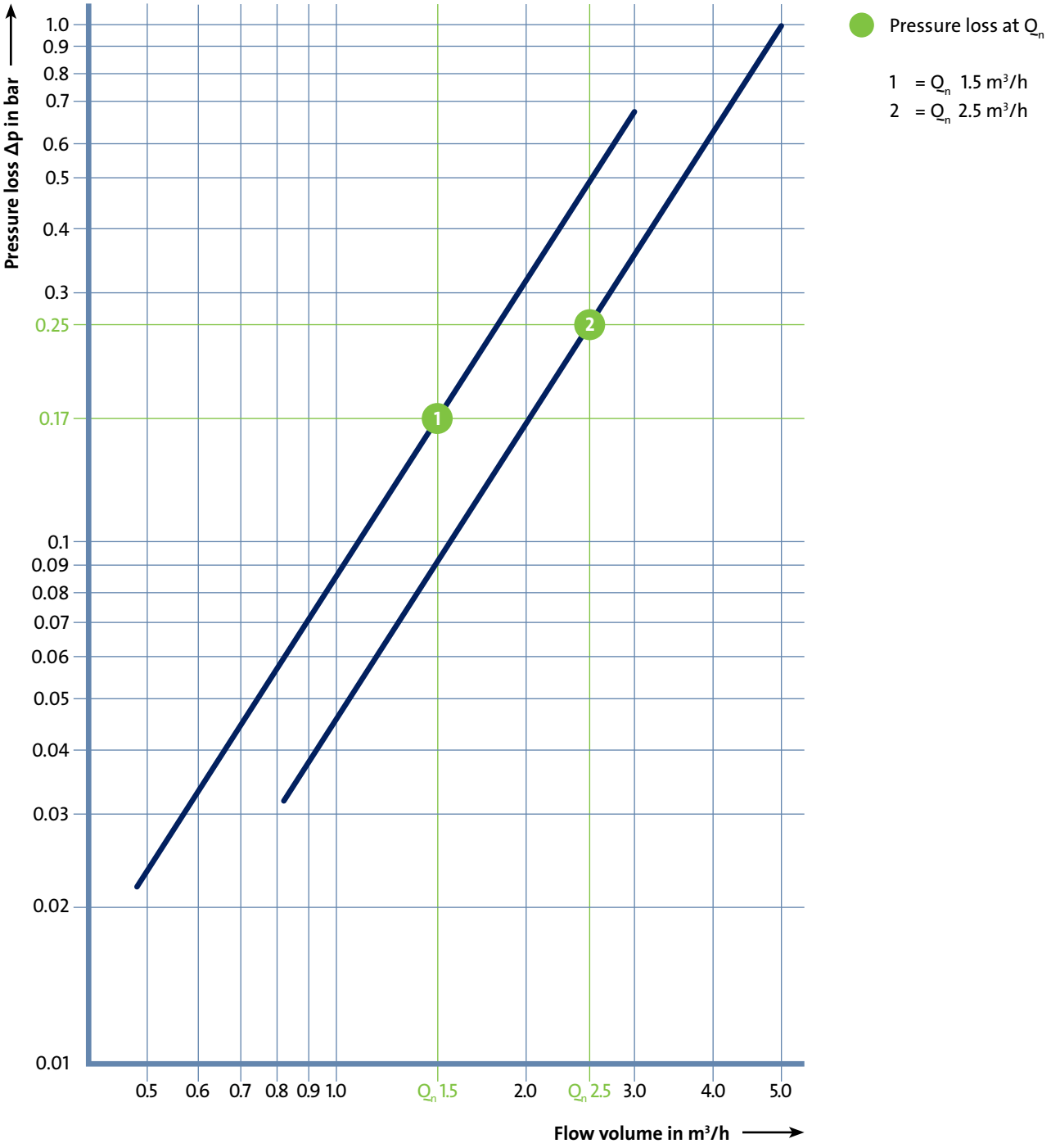
radio net 3 radio module



domaqua® radio net 3



Pressure loss curves – domaqua radio net 3



pulsonic 3 radio net – for more options

The pulsonic 3 radio net is a decisive factor in the flexibility of the ista radio system. Equipped with a transmitter, the pulsonic 3 radio net allows the integration of conventional devices with contact output. In conjunction with the option to combine this with radio, this opens up an even greater spectrum of application.

The pulsonic 3 radio net connects simply to a meter with a contact output, saves the metered values and takes over radio transmission. Connection can be via a S0 interface in accordance with DIN 43864. This enables meters already installed to be easily integrated into the radio system. These can be conventional ista devices or third party devices, such as gas, oil and electric meters.

Technical data

Device type	**pulsonic 3 radio net**
Part No.	▪ **Pulse input 19414** ▪ **S0-input 19419**
Dimensions in mm (W x H x D)	55 x 100 x 30
Input	▪ 1 x potential-free contact, open collector ▪ Frequency max. 5 Hz/pulse length min. 100 ms ▪ 1 x S0-interface (DIN 43864) ▪ Frequency max. 16.6 Hz
Radio interface	For reading systems and programming (with mobile gateway and mobile data recording device)
Power supply	3 V lithium battery (integrated) for 10 year service life + 1 year reserve + 1 year storage 24 V DC, 30 mA, short-circuit-proof (S0)
Data back-up	RAM memory
Parameter data	▪ Pulse value (0.001–1,000 units/pulse in 0.001 m3, 0.001 kWh, 0.001 MWh, 0.001 GJ) ▪ Resolution for register size (energy/volume) ▪ Units for register size (energy/volume) ▪ Meter reading (start value/zero setting) ▪ Effective date (transmission date)
Registration data	Energy volume (total volume)
Transmission data update	Upon request
Transmitting power	< 10 mW
Radio frequency	868 MHz
Duration of send telegram	< 10 msec/transmission
Transfer rate	~ 90 kBaud (bit/sec)
Transmission procedure	Bidirectional data transfer
Data security	Telegram encrypted
Protection class	IP 3 (EN 60529)
Ambient temperature	Classes A and C (EN 1434)
Ambient conditions	Classes A and C (EN 1434)

fumonic 3 radio net smoke detector – maximum security thanks to radio technology

The construction, purchase and management of property is an investment in the future that spans generations. Proper protection of the value of your property also includes protection against fire damage. A smoke detector offers reliable protection – when it works correctly. To ensure this, ista uses a reliable principle: radio technology.

Always up to date

The fumonic 3 radio net sends regular signals by radio regarding its operability, providing optimal security both for tenants' possessions as well as for the landlord. The status reports can be viewed by the landlord online at any time.

Ten years worry-free

From production and installation to annual servicing of smoke detectors in your property, ista offers everything under one roof and contacts the landlord immediately in the event of a fault report or removal. The smoke detector portal offers maximum transparency, allowing you to obtain information on the current status of devices around the clock

Annual check	Remote maintenance
The annual DIN 14676-compliant visual inspection and alarm test is carried out by a competent service partner. The function check includes: ▪ Checking for presence, mechanical damage, manipulation, correct mounting position as well as dirt ▪ Reading of the error memory ▪ Triggering of the test alarm ▪ Comprehensive documentation of the function check ▪ Replacement of the device where necessary	The radio remote maintenance service also offers the following benefits: ▪ Monthly function test by radio ▪ Transfer of device status to the ista web portal ▪ Usage rights for the ista web portal

Technical data – fumonic 3 radio net

	fumonic 3 radio net
Part No.	**11280**
Dimensions in mm (H x Ø)	53 x 108, including base
Material	ABS plastic
Housing colour	White, high-gloss, UV-stabilised
Alarm indication	Optical and acoustic
Individual display	Red LED, white LED
Detection principle	Tyndall effect (scattered light principle)
Power supply	3.6 V lithium battery for 10 year service life + 1 year reserve + 1 year storage
Operating voltage	< 20 µA
Response sensitivity	< 0.25 dB/m in test tunnel according to EN 54-7
Audible signal	> 85 dB (A) at 3 m distance
Ambient temperature	–10 °C at +60 °C
Humidity	Max. 90 % rH, non-condensing
Transmitting power	< 10 mW
Radio frequency	868 MHz
Duration of send telegram	< 10 msec/transmission
Transfer rate	~ 90 kBaud (bit/sec)
Transmission procedure	Bidirectional data transfer
Data security	Telegram encrypted
Protection class	IP 30 (EN 60529)
Approvals	VdS G211038
Standards fulfilled	EN 14604:2005, EN 300220-2 V2.3.1
CPD-CE-mark	0786-CPD-21051

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