Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

Proline Prosonic Flow 91W

Ultrasonic Flow Measuring System
Flowrate measurement for standard applications with drinking water and process water

Applications
The sensors are perfectly suited for the non-contact measurement of pure or slightly contaminated liquids, regardless of the pressure or electrical conductivity.

- Suitable for pipe diameters up to DN 4000 (160")
- Can be used with all metal and plastic pipes lined or unlined and with composite pipes
- Ideal solution for applications with water, e.g. drinking water, industrial water, saltwater, deionized water, cooling water and heating water
- Perfectly suitable for
  - subsequent mounting
  - flow monitoring
  - improving measuring points

Features and benefits
The Prosonic Flow ultrasonic clamp-on system allows accurate and cost-effective flow measurement from outside the pipe and without the need to interrupt the process. The flow measurement is bidirectional and causes no pressure loss.

- Easy, safe and menu-guided sensor mounting ensures precise measuring results
- Long-term system integrity thanks to robust sensor and industrial mounting kit design
- Automatic frequency scan for optimized installation and maximum measuring performance
- IP 68 for pipes under water
- Remote configuration using Endress+Hauser's FieldCare software

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Endress+Hauser
People for Process Automation

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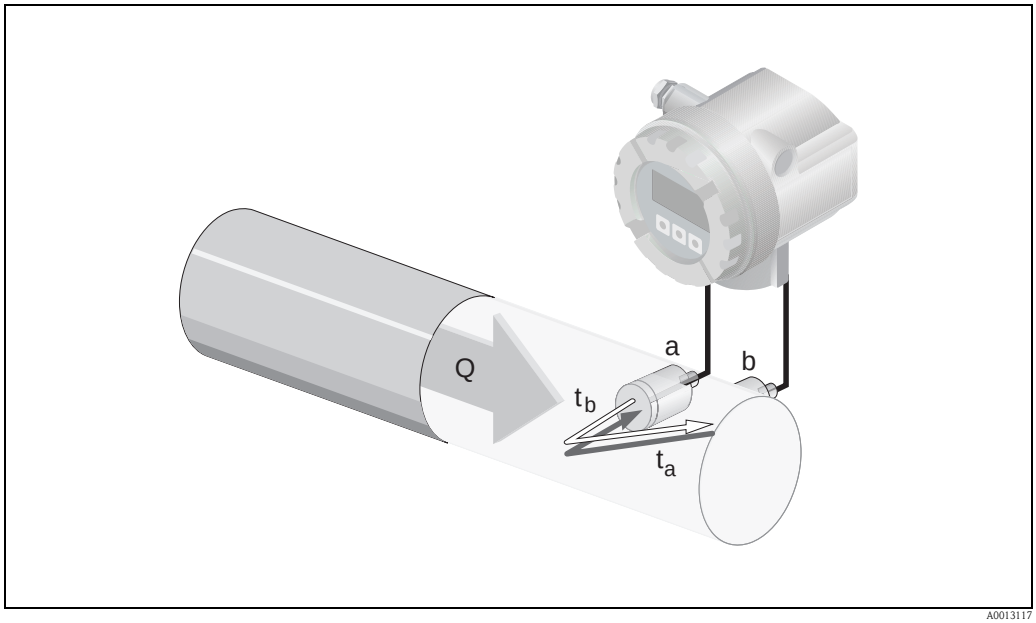
Function and system design

Measuring principle

The measuring system operates on the principle of transit time difference. In this measurement method, acoustic (ultrasonic) signals are transmitted between two sensors. The signals are sent in both directions, i.e. the sensor in question works as both a sound transmitter and a sound receiver.

As the propagation velocity of the waves is less when the waves travel against the direction of flow than along the direction of flow, a transit time difference occurs. This transit time difference is directly proportional to the flow velocity.



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Principle of the transit time difference measurement method

$Q = v \cdot A$

a Sensor
b Sensor
Q Volume flow
v Flow velocity ($v \sim \Delta t$)
Δt Transit time difference ($\Delta t = t_a - t_b$)
A Pipe cross-sectional area

The measuring system calculates the volume flow of the fluid from the measured transit time difference and the pipe cross-sectional area. In addition to measuring the transit time difference, the system simultaneously measures the sound velocity of the fluid. This additional measured variable can be used to distinguish different fluids or as a measure of product quality.

The measuring device can be configured onsite to suit the specific application using Quick Setup menus.

Measuring

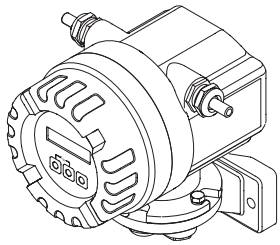
The measuring system consists of one transmitter and two sensors. Different versions are available depending on the specific requirements.

The transmitter is used both to control the sensors and to prepare, process and evaluate the measuring signals, and to convert the signals to a desired output variable.

The sensors work as sound transmitters and sound receivers. Depending on the application and version, the sensors can be arranged for measurement via one or two traverses → 5.

Transmitter

Prosonic Flow 91 W Field Housing



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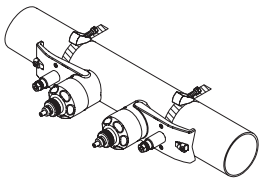
Sensor

Prosonic Flow W

Clamp-on version



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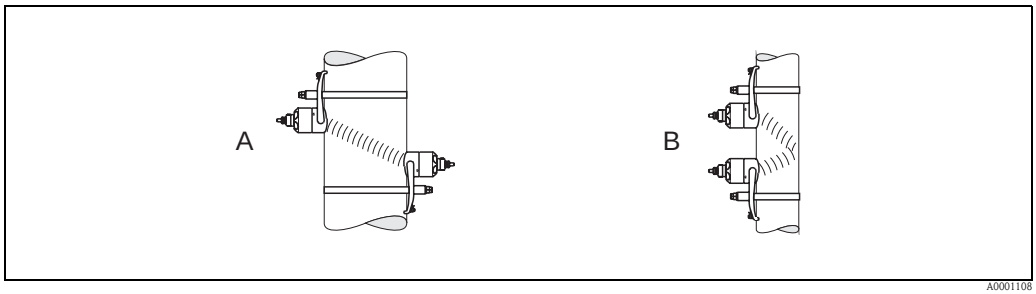
Mounting accessories

The requisite mounting distances must be determined for the sensors. Information on the fluid, the pipe material used and the exact pipe dimensions is needed to determine these values. The values for the sound velocity of the following fluids, pipe materials and lining materials are stored in the transmitter:

Fluid		Pipe material		Lining
■ Water	■ Glycol	■ Carbon steel	■ GRP	■ Mortar
■ Sea water	■ Kerosene	■ Ductile Iron	■ PVDF	■ Rubber
■ Distilled water	■ Milk	■ Stainless steel	■ PA	■ Tar Epoxy
■ Ammonia	■ Methanol	■ Alloy C	■ PP	
■ Alcohol	■ Toluene	■ PVC	■ PTFE	
■ Benzene	■ Lube oil	■ PE	■ Glass pyrex	
■ Bromide	■ Fuel Oil	■ LDPE	■ Cement asbestos	
■ Ethanol	■ Petrol	■ HDPE		

Sensor selection and arrangement

The sensors can be arranged in two ways:
- Mounting arrangement for measurement via one traverse: the sensors are located on opposite sides of the pipe.
- Mounting arrangement for measurement via two traverses: the sensors are located on the same side of the pipe.



Sensor mounting arrangement (top view)

A Mounting arrangement for measurement via one traverse
B Mounting arrangement for measurement via two traverses

The sensor type and the number of traverses required depends on the sensor type, the nominal diameter and the thickness of the pipe wall. We recommend the following types of mounting:

Sensor Type	Nominal Diameter	Sensor Frequency	Sensor ID	Type of Mounting [1]
Prosonic Flow W	DN 50 to 60 (2" to 2 ½")	2 MHz	W-CL-2F*	2 (or 1) traverse(s) [2]
	DN 80 (3")	2 MHz	W-CL-2F*	2 traverses
	DN 100 to 300 (4" to 12")	2 MHz (or 1 MHz)	W-CL-2F* W-CL-1F*	2 traverses [3]
	DN 300 to 600 (12" to 24")	1 MHz (or 2 MHz)	W-CL-1F* W-CL-2F*	2 traverses [3]
	DN 650 to 4000 (26" to 156")	1 MHz (or 0.5 MHz)	W-CL-1F* W-CL-05F*	1 traverse [3]

[1] The installation of clamp-on sensors is principally recommended in the 2 traverse type installation. This type of installation allows the easiest and most comfortable type of mounting and means that a system can also be mounted even if the pipe can only be accessed from one side. However, in certain applications a 1 traverse installation may be preferred. These include:
- Certain plastic pipes with wall thickness >4 mm (0.16 in)
- Pipes made of composite materials such as GRP
- Lined pipes
- Applications with fluids with high acoustic damping

[2] If the pipe nominal diameter is small (DN 60, 2½" and smaller), the sensor spacing with Prosonic Flow W can be too small for two traverse installation. In this case, the 1 traverse type of installation must be used.

[3] 0.5 MHz sensors are also recommended for applications with composite material pipes such as GRP and may be recommended for certain lined pipes, pipes with wall thickness >10 mm (0.4 in), or applications with media with high acoustic damping. In addition, for these applications we principally recommend mounting the W sensors in a 1 traverse configuration.

Input

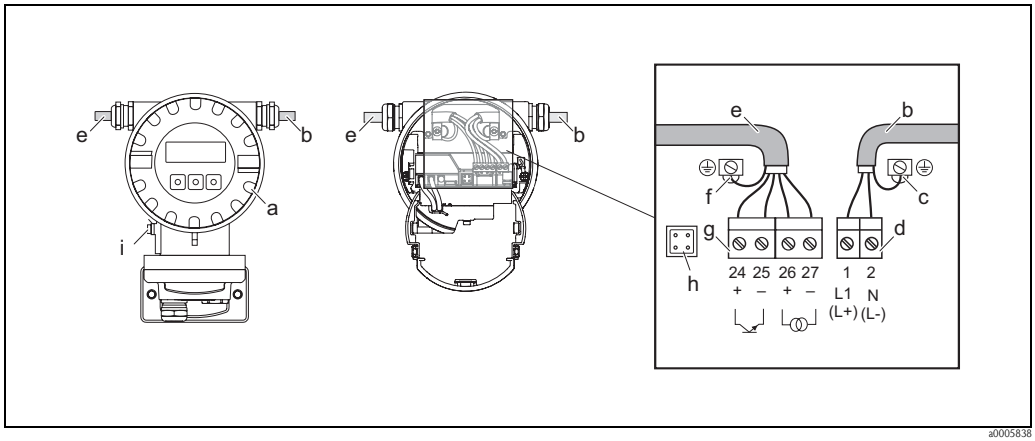
Measured variable	Flow velocity (differential delay proportional to flow velocity)
Measuring range	Typically v = 0 to 15 m/s (0 to 50 ft/s) at the specified measuring accuracy
Operable flow range	Over 150 : 1

Output

Output signal	**Current output**: ■ Galvanically isolated ■ Full scale value adjustable ■ Temperature coefficient: typ. 2 µA/°C, resolution: 1.5 µA ■ Active: 4 to 20 mA, R_L < 700 Ω (for HART: RL ≥ 250 Ω) **Pulse/status output:** ■ Galvanically isolated ■ Open collector ■ 30 V DC / 250 mA ■ Passive ■ Can be configured as: – **Pulse output**: pulse value and pulse polarity can be selected, max. pulse width adjustable (5 to 2000 ms), pulse frequency max. 100 Hz – **Status output**: for example, can be configured for error messages, empty pipe detection, flow recognition, limit value
Signal on alarm	■ Current output → failsafe mode selectable. ■ Pulse/frequency output → failsafe mode selectable
Load	See “Output signal”
Low flow	Switch-on point can be selected as required
Galvanic isolation	All circuits for inputs, outputs, and power supply are galvanically isolated from each other.

Power supply

Measuring unit electrical connection



Connecting the transmitter (Aluminium-Fieldhousing).
cable cross-section: max. 2.5 mm² (AWG 13)

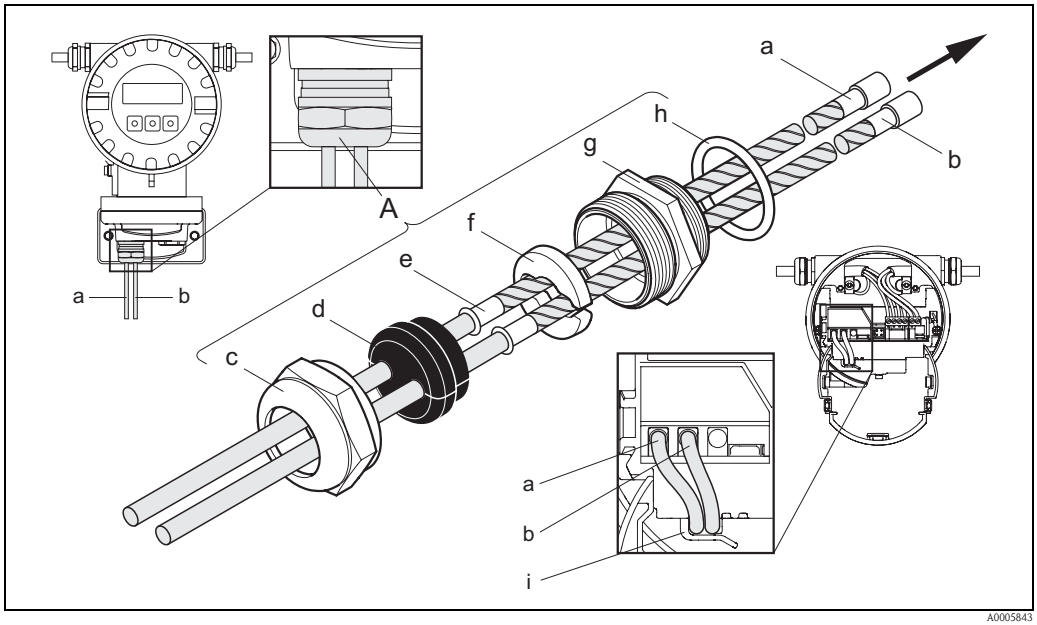
a *Cover*
b *Cable for power supply: 85 to 260 V AC, 20 to 55 V AC, 16 to 62 V DC*
c *Terminal for power supply:*
d *Terminal for power supply:* **Nr. 1–2** *(terminal assignment)*
e *Signal cable*
f *Ground terminal für signal cable*
g *Terminal connector for signal cable:* **Nr. 24–27** *(terminal assignment)*
h *Service connector*
i *Ground terminal for potential matching*

Terminal assignment Prosonic Flow 91W

Order variant	**Terminal No. (inputs/outputs)**		
	24 (+)/25 (–)	**26 (+)/27 (–)**	**1 (L1/L+) /2 (N/L–)**
Fixed communication boards (fixed assignment)			
91***-********** A	Pulse output	HART current output	Power supply
Functional values	see "Output signal"		see "supply voltage"

Connecting the connecting cable

Connection sensor cable in the electronics compartment



a, b *Sensor connection cable*
c *Cover of cable gland*
d *Rubber seal*
e *Cable retaining sleeves*
f *Ground disk*
g *Cable gland holder*
h *Seal*
i *Cable holder*

Supply voltage

Transmitter
85 to 260 V AC, 45 to 65 Hz
20 to 55 V AC, 45 to 65 Hz
16 to 62 V DC

Sensor
Powered by the transmitter

Cable entry

Power supply and signal cable (inputs/outputs)
- Cable entry M20 x 1.5 (8 to 12 mm; 0.31 to 0.47 in)
- Thread for cable entries ½" NPT, G ½"

Cable-specification

Sensor cable (Connecting cable sensor/transmitter)
- Use the ready-to-use cables supplied by Endress+Hauser with each sensor pair.
- The following cable lengths are available:
  – 5 m, 10 m, 15 m , 30 m, 60 m
  – 16 ft, 33 ft, 49 ft, 98 ft, 197 ft
- Cable material: PVC
- Operating temperature: –20 to +70 °C (–4 to +158 °F)

power consumption

85…250 V AC: <12 VA (incl. sensor)
20…28 V AC: <7 VA (incl. sensor)
11…40 V DC: <5 W (incl. sensor)

Power supply failure

Lasting min. 1 power cycle
HistoROM/T-DAT save measuring system data if the power supply fails

Potential equalization

For potential equalization, no special measures are necessary.

Performance characteristics

Reference operating conditions

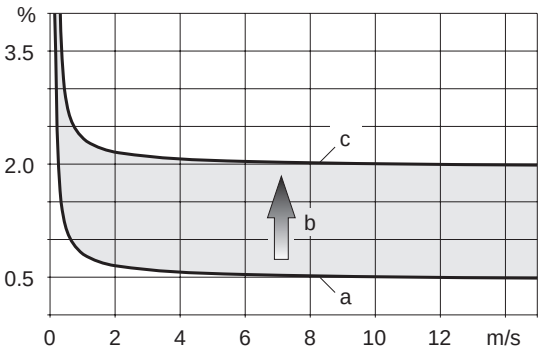
- Fluid temperature: +28 °C ± 2 K
- Ambient temperature: +22 °C ± 2 K
- Warm-up period: 30 minutes

Installation:
- Inlet run >10 × DN
- Outlet run > 5 × DN
- Sensor and transmitter grounded.
- The measuring sensors are mounted correctly.

Maximum measured error

Measured error

The measured error depends on a number of factors. A distinction is made between the measured error of the device (Prosonic Flow 91 = 0.5 % of the measured value) and an additional installation-specific measured error (typically 1.5 % of the measured value) that is independent of the device.
The installation-specific measured error depends on the installation conditions on site, such as the nominal diameter, wall thickness, real pipe geometry, fluid etc. The sum of the two measured errors is the measured error at the measuring point.



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Example of the measured error in a pipe with a nominal diameter DN > 200 (8")

a Measured error of the device (0.5 % o.r. ± 0,02 % o.f.s.
b Measured error due to installation conditions (typically 1.5 % o.r.)
c Measured error at the measuring point: 0.5 % o.r. ± 0,02 % o.f.s. + 1.5 % o.r. = 2 % o.r. ± 0,02 % o.f.s.

Measured error at the measuring point

The measured error at the measuring point is made up of the measured error of the device (0.5 % o.r.) and the measured error resulting from the installation conditions on site.
Given a flow velocity > 0.3 m/s (1 ft/s) and a Reynolds number > 10000, the following are typical error limits:

Nominal diameter	Device error limits	+	Installation-specific error limits (typical)	→	Error limits at the measuring point (typical)
DN 50 to 200	±0.5 % o.r. ± 0.05 % o.f.s.	+	±1.5 % o.r.	→	±2 % o.r. ± 0.05 % o.f.s.
> DN 200	±0.5 % o.r. ± 0.02 % o.f.s.	+	±1.5 % o.r.	→	±2 % o.r. ± 0.02 % o.f.s.

o.r. = of reading
o.f.s. = of full scale value (15 m/s; 50 ft/s)

Verification of Measurement Uncertainty

If required, the device can be supplied with a verification of measurement uncertainty (measurement report). To certify the uncertainty of the device, a measurement is performed under reference conditions. Here, the sensors are mounted on a pipe with a nominal diameter of DN 100.

The verification of measurement uncertainty guarantees the following error limits of the device (at a flow velocity > 0.3 m/s (1 ft/s) and a Reynolds number > 10000):

Nominal diameter	Guaranteed error limits of the device
DN 100	±0.5 % o.r. ± 0.05 % o.f.s.

o.r. = of reading
o.f.s. = of full scale value (15 m/s; 50 ft/s)

Repeatability

± 0,3 % for flow velocities > 0,3 m/s (1 ft/s)

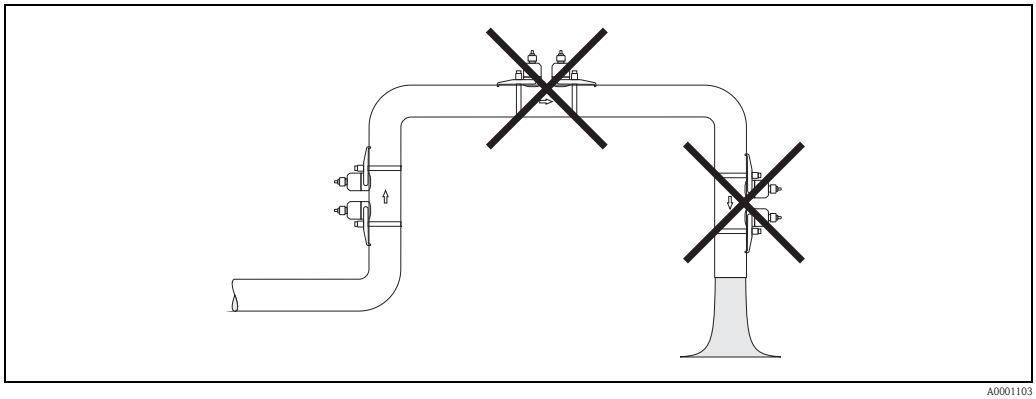
Operating conditions: installation

Installation instructions

Mounting location

Correct flow measurement is possible only if the pipe is full. It is preferable to install the sensors in a riser.

Note!
Entrained air or gas bubbles in the measuring tube can result in an increase in measuring errors.
For this reason, avoid the following mounting locations:
- Highest point of a pipeline. Risk of air accumulating.
- Directly upstream of a free pipe outlet in a vertical pipe. Risk of partial pipe filling.



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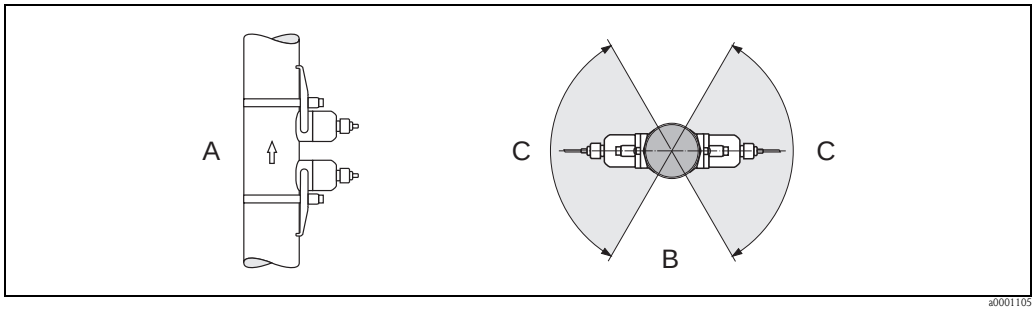
Orientation

Vertical

Recommended orientation with upward direction of flow (View A). With this orientation, entrained solids will sink and gases will rise away from the sensor when the fluid is stagnant. The piping can be completely drained and protected against solids buildup.

Horizontal

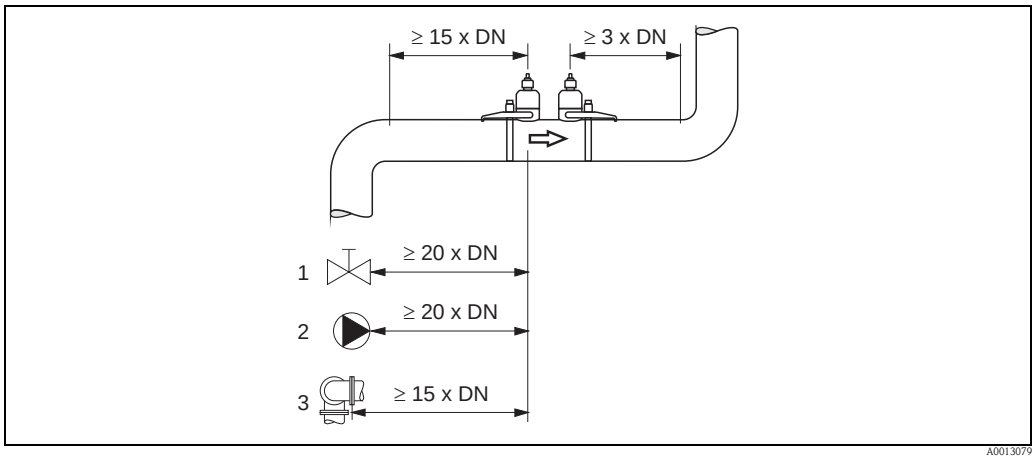
In the recommended installation range in a horizontal installation position (View B), gas and air collections at the pipe cover and problematic deposits at the bottom of the pipe have a smaller influence on measurement.



A Vertical
B Horizontal
C Recommended installation range max. 120°

Inlet and outlet runs

If possible, install the sensor well clear of assemblies such as valves, T-pieces, elbows, etc. If several flow obstructions are installed, the longest inlet or outlet run must be considered. Compliance with the following requirements for the inlet and outlet runs is recommended to ensure measuring accuracy.



Inlet and outlet runs (top view)

1 Valve (2/3 open)
2 Pump
3 Two pipe bends in different directions

Connection cable

Route the cable well clear of electrical machines and switching elements
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Operating conditions: environment

Ambient temperature range

Transmitter

–25 to +60 °C (–13 to +140 °F)
Optional: –40 to +60 °C (–40 to +140 °F)

At ambient temperatures below –20 °C (–4 °F) the readability of the display may be impaired.
Install the transmitter at a shady location. Avoid direct sunlight, particularly in warm climatic regions.

Sensor Prosonic Flow W

–20 to +80 °C (–4 to +176 °F)
Optional: 0 to +130 °C (–32 to +265 °F)

It is permitted to insulate the sensors mounted on the pipe.

Connecting cable (sensor/transmitter)

Standard (PVC): –20 to +70 °C (–4 to +158 °F)

Storage temperature

The storage temperature corresponds to the operating temperature range of the measuring transmitter and the appropriate measuring sensors and the corresponding sensor cable (see above).

Degree of protection

Transmitter

IP 67 (NEMA 4X)

Sensors

IP 67 (NEMA 4X)
Optional: IP 68 (NEMA 6P)

Shock and vibration resistance

according to IEC 68-2-6

Operating conditions: process

Medium temperature range

–20…+80 °C (–4…+176 °F)
Optional: 0…+130 °C (32…+265 °F)

Medium pressure range (nominal pressure)

Perfect measurement requires that the static fluid pressure is higher than vapor pressure.

Pressure loss

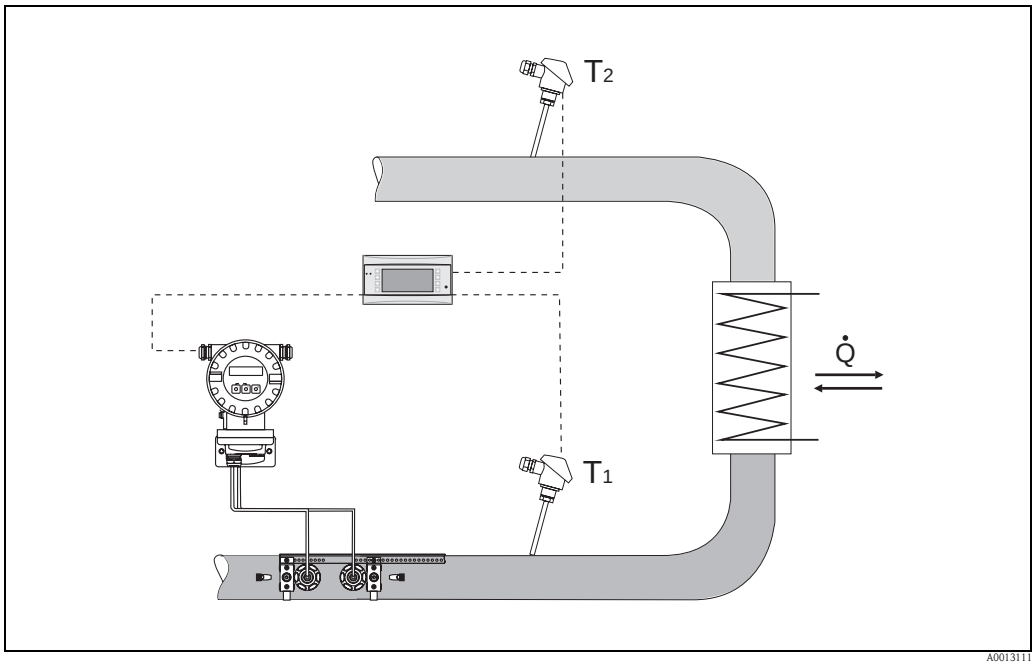
There is no pressure loss.

Energy Measurement

The Prosonic Flow 91W Ultrasonic is well suited for making or retrofitting energy measurement for hot or chilled water systems -often used in conjunction with Endress+Hauser Flow and Energy Manager RMC621/ RMS621.
The quantity of heat is calculated from the process variable for flow and the differential from the feed and return temperature. Energy Manager can also determine the quantity of heat in water flow from process variable flow and a single temperature measurement.

Installation of delta heat measurement

- Temperature measurement takes place via two separate sensors which are directly connected to the Endress+Hauser Energy Manager. (Temperature sensors and Energy Manager supplied separately).
- The Prosonic Flow 91W can be installed on either the hot or cold side of the heat exchanger.

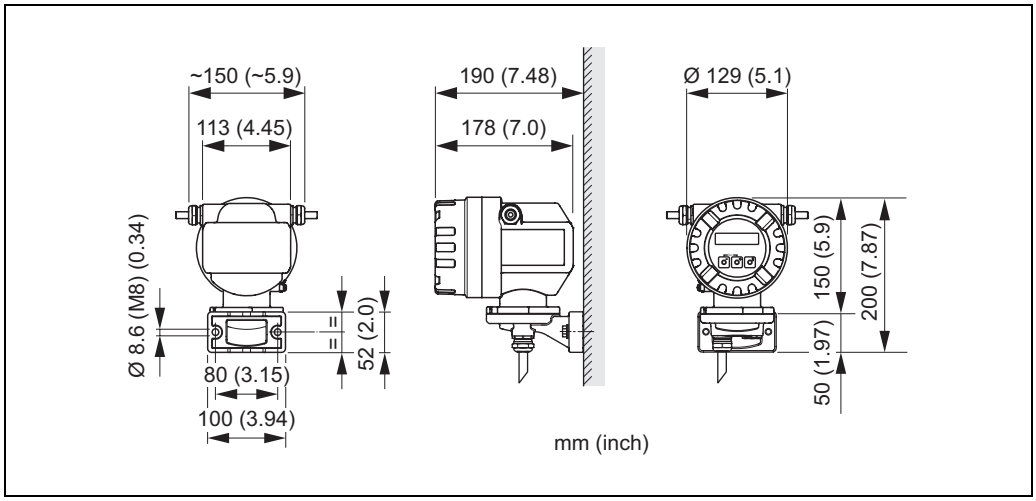


Layout for delta heat measurement of hot or chilled water system

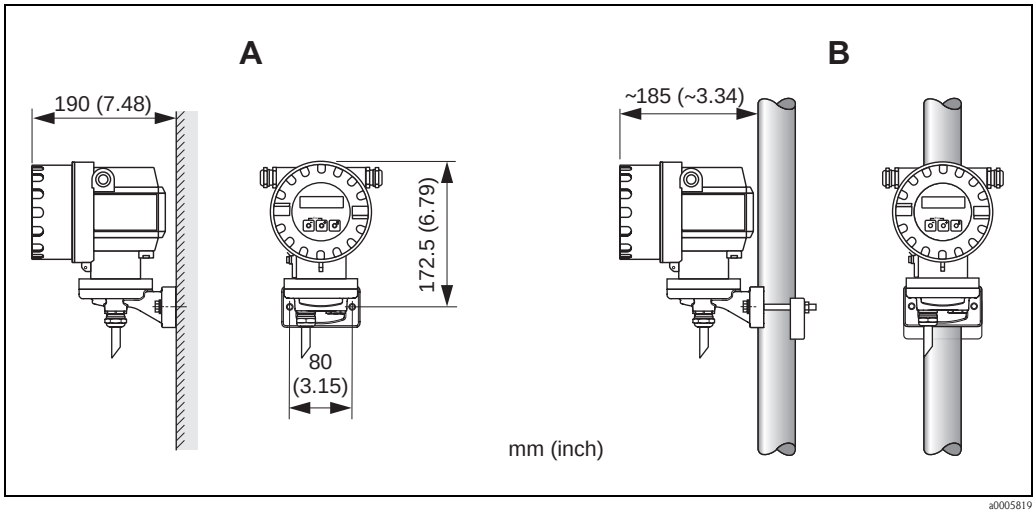
Mechanical construction

Design, dimensions

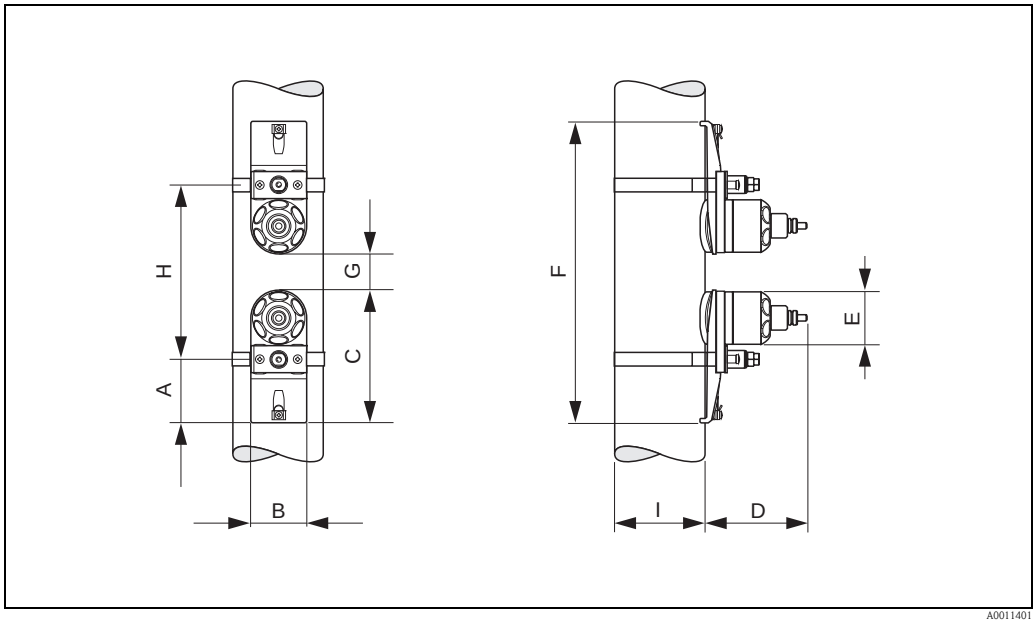
Dimensions Fieldhousing



Dimensions pipemounting



Prosonic Flow W sensor



Mounting arrangement for measurement via two traverses

Dimensions in SI units

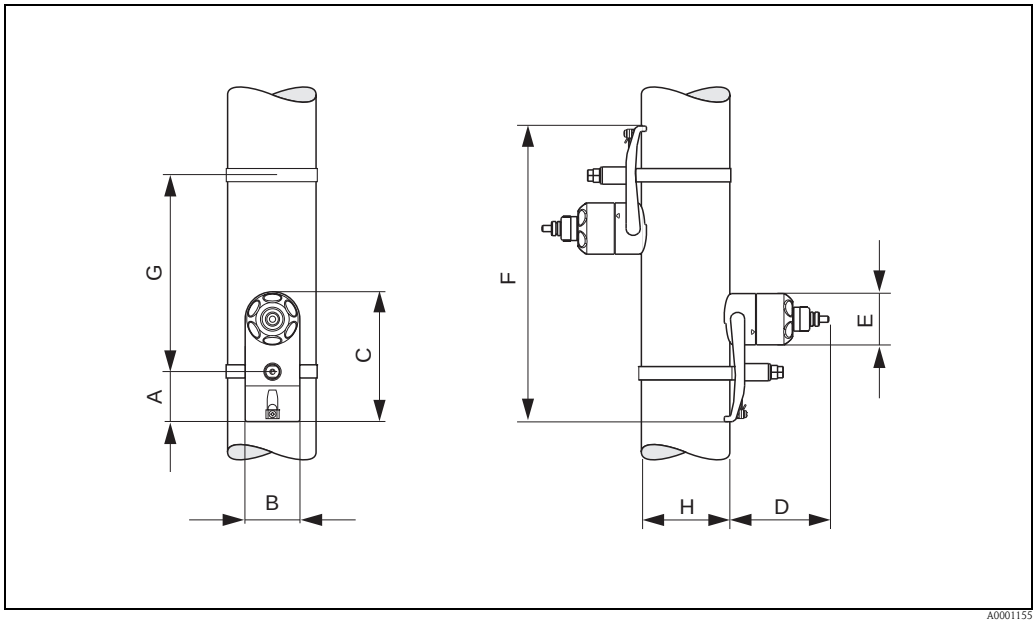
A	B	C	D	E	F	G
56	62	145	111	∅ 58	Max. 872	Min. 0.5
H					**I**	
Depends on the measuring point conditions (pipe, fluid etc.). Dimension "H" can be determined: ▪ Via the sensor when mounting (Quick Setup or FieldCare) ▪ Online (Applicator)					Pipe outer diameter	

All dimensions in [mm]

Dimensions in US units

A	B	C	D	E	F	G
2.20	2.44	5.71	4.37	∅ 2.28	Max. 34.3	Min. 0.2
H					**I**	
Depends on the measuring point conditions (pipe, fluid etc.). Dimension "H" can be determined: ▪ Via the sensor when mounting (Quick Setup or FieldCare) ▪ Online (Applicator)					Pipe outer diameter	

All dimensions in [inch]



Mounting arrangement for measurement via one traverse

Dimensions in SI units

A	B	C	D	E	F
56	62	145	111	∅ 58	Max. 872
G				**H**	
Depends on the measuring point conditions (pipe, fluid etc.). Dimension "G" can be determined: ■ Via the sensor when mounting (Quick Setup or FieldCare) ■ Online (Applicator)				Pipe outer diameter	

All dimensions in [mm]

Dimensions in US units

A	B	C	D	E	F
2.20	2.44	5.71	4.37	∅ 2.28	Max. 34.3
G				**H**	
Depends on the measuring point conditions (pipe, fluid etc.). Dimension "G" can be determined: ■ Via the sensor when mounting (Quick Setup or FieldCare) ■ Online (Applicator)				Pipe outer diameter	

All dimensions in [inch]

Weight

- Transmitter housing: 2.4 kg (5.2 lb)
- Flowrate measuring sensors W (clamp-on) incl. mounting rail and tensioning bands: 2.8 kg (6.2 lb)

Materials

Transmitter

Wall-mounted housing: powder-coated die-cast aluminum

Sensor

- Sensor holder: stainless steel 1.4308/CF-8
- Sensor housing: stainless steel 1.4301/304
- Strapping bands/bracket: stainless steel 1.4301/304
- Sensor contact surfaces: chemically stable plastic

Connecting cable (sensor/transmitter)

- PVC connecting cable
  - Cable sheath: PVC
  - Cable connector: nickeled brass 2.0401/C38500

Human interface

Display elements

- Liquid crystal display: illuminated, two lines each with 16 characters
- Custom configuration for presenting different measured values and status variables
- 1 totalizer

Operating elements

Local operation via three operating keys (−, +, E)

Remote operation

Operation via via HART and FieldCare

Language group

English, German, Spanish, Italian, French

Certificates and approvals

CE mark

The measuring system is in conformity with the statutory requirements of the EC Directives. Endress+Hauser confirms successful testing of the device by affixing to it the CE mark.

C-Tick mark

The measuring system is in conformity with the EMC requirements of the Australian Communications and Media Authority (ACMA).

Ex approval

Information about currently available Ex versions (FM, CSA) can be supplied by your Endress+Hauser Sales Center on request. All explosion protection data are given in a separate documentation which is available upon request.

Other standards and guidelines

- EN 60529
  Degrees of protection provided by enclosures (IP code)
- EN 61010-1
  Safety requirements for electrical equipment for measurement, control and laboratory use
- IEC/EN 61326
  "Emission in accordance with Class A requirements".
  Electromagnetic compatibility (EMC requirements).
- ANSI/ISA-S82.01
  Safety Standard for Electrical and Electronic Test, Measuring, Controlling and Related Equipment - General Requirements. Pollution Degree 2, Installation Category II.
- CAN/CSA-C22.2 No. 1010.1-92
  Safety Requirements for Electrical Equipment for Measurement and Control and Laboratory Use. Pollution degree 2
- NAMUR NE 21
  Electromagnetic compatibility (EMC) of industrial process and laboratory control equipment.
- NAMUR NE 43
  Standardization of the signal level for the breakdown information of digital transmitters with analog output signal.
- NAMUR NE 53
  Software of field devices and signal-processing devices with digital electronics.

Ordering information

The Endress+Hauser service organization can provide detailed ordering information and information on the order codes on request.

Accessories

Various accessories, which can be ordered separately from Endress+Hauser, are available for the transmitter and the sensor. The Endress+Hauser service organization can provide detailed information on the order codes on request.

Device-specific accessories

Accessory	Description	Order code
Sensor W (DN 50 to 4000, (2" ...157") Clamp-on version	DN 50 to 300, –20 to +80 °C (2" to 12", –4 to +176 °F), 2.0 MHz ■ IP 67 / NEMA 4X ■ IP 68 / NEMA 6P DN 100 to 4000, –20 to +80 °C (4" to 160", –4 to +176 °F), 1.0 MHz ■ IP 67 / NEMA 4X ■ IP 68 / NEMA 6P DN 100 to 4000, 0 to +130 °C (4" to 160", +32 to +266 °F), 1.0 MHz ■ IP 67 / NEMA 4X DN 50 to 300, 0 to +130 °C (2" to 12", +32 to +266 °F), 2.0 MHz ■ IP 67 / NEMA 4X DN 100 to 4000, –20 to +80 °C (4" to 160", –4 to +176 °F), 0.5 MHz ■ IP 67 / NEMA 4X ■ IP 68 / NEMA 6P	 DK9WS - B* DK9WS - N* DK9WS - A* DK9WS - M* DK9WS - P* DK9WS - S* DK9WS - R* DK9WS - T*

Device-specific accessories

Accessory	Description	Order code
Mounting kit for aluminum field housing	Mounting kit for wall-mount housing.	DK9WM - C
Sensor holder set	■ Prosonic Flow W (DN 50 to 4000; 2" to 160") – Sensor holder, fixed retaining nut, clamp-on version	DK9SH - A
Clamp-on installation set Clamp On	Sensor fastening for Prosonic Flow W (DN 50 to 4000; 2" to 157") ■ Without sensor fastening ■ Strapping bands DN 50 to 200 (2" to 8") ■ Strapping bands DN 200 to 600 (8" to 24") ■ Strapping bands DN 600 to 2000 (24" to 80") ■ Strapping bands DN 2000 to 4000 (80" to 160") Without mounting tools ■ Spacing ruler DN 50 to 200 (2" to 8") ■ Spacing ruler DN 200 to 600 (8" to 24") ■ Fastener, 1 Traverse DN 50 to 4000 (2" to 160")	 DK9IC - A* DK9IC - B* DK9IC - C* DK9IC - D* DK9IC - E* DK9IC - *1 DK9IC - *2 DK9IC - *3 DK9IC - *6
Conduit adapter for connecting cable	Prosonic Flow W (DN 50 to 4000; 2" to 160") ■ Conduit adapter incl. cable entry M20 × 1,5 ■ Conduit adapter incl. cable entry ½" NPT ■ Conduit adapter incl. cable entry G ½"	 DK9CB - AB1 DK9CB - AB2 DK9CB - AB3
Connecting cable	5 m (16 ft) sensor cable, PVC, –20 to +70 °C (–4 to 158 °F) 10 m (33 ft) sensor cable, PVC, –20 to +70 °C (–4 to 158 °F) 15 m (49 ft) sensor cable, PVC, –20 to +70 °C (–4 to 158 °F) 30 m (98 ft) sensor cable, PVC, –20 to +70 °C (–4 to 158 °F) 60 m (197 ft) sensor cable, PVC, –20 to +70 °C (–4 to 158 °F)	DK9SS - ABA DK9SS - ABB DK9SS - ABC DK9SS - ABD DK9SS - ABJ
Acoustic coupling fluid	■ Coupling fluid 0 to 170 °C (+32 to 338 °F), Standard ■ Adhesive coupling fluid –40 to +80 °C (–40 to 176 °F) ■ Water-soluble coupling fluid –20 to +80 °C (–4 to 176 °F) ■ SilGel –40 to +130 °C (–40 to +266 °F) ■ Coupling fluid DDU 19, –20 to +60 °C (–4 to 140 °F) ■ Coupling fluid –40 to +80 °C (–40 to 176 °F), Standard, type MBG2000	DK9CM - 2 DK9CM - 3 DK9CM - 4 DK9CM - 5 DK9CM - 6 DK9CM - 7

Communication-specific accessories

Accessory	Description	Order code
HART Communicator Field Xpert SFX 100	Handheld terminal for remote configuration and for obtaining measured values via the HART current output (4 to 20 mA). Contact your Endress+Hauser representative for more information.	SFX100 – *******
Fieldgate FXA320	Gateway for remote interrogation of HART sensors and actuators via Web browser: ■ 2-channel analog input (4 to 20 mA) ■ 4 binary inputs with event counter function and frequency measurement ■ Communication via modem, Ethernet or GSM ■ Visualization via Internet/Intranet in the Web browser and/or WAP cellular phone ■ Limit value monitoring with alarm signaling via e-mail or SMS ■ Synchronized time stamping of all measured values.	FXA320 - *****
Fieldgate FXA520	Gateway for remote interrogation of HART sensors and actuators via Web browser: ■ Web server for remote monitoring of up to 30 measuring points ■ Intrinsically safe version [EEx ia]IIC for applications in hazardous areas ■ Communication via modem, Ethernet or GSM ■ Visualization via Internet/Intranet in the Web browser and/or WAP cellular phone ■ Limit value monitoring with alarm signaling via e-mail or SMS ■ Synchronized time stamping of all measured values ■ Remote diagnosis and remote configuration of connected HART devices	FXA520 - ****
FXA195	The Commubox FXA195 connects intrinsically safe Smart transmitters with HART protocol to the USB port of a personal computer. This makes the remote operation of the transmitters possible with the aid of configuration programs (e.g. FieldCare). Power is supplied to the Commubox by means of the USB port	FXA195 – *

Service-specific accessories

Accessory	Description	Order code
Applicator	Software for selecting and planning flowmeters. The Applicator can be downloaded from the Internet or ordered on CD-ROM for installation on a local PC. Contact your Endress+Hauser representative for more information.	DXA80 - *
Fieldcheck	Tester/simulator for testing flowmeters in the field. When used in conjunction with the "FieldCare" software package, test results can be imported into a database, printed out and used for official certification. Contact your Endress+Hauser representative for more information.	50098801
FieldCare	FieldCare is Endress+Hauser's FDT-based plant asset management tool. It can configure all intelligent field units in your system and helps you manage them. By using the status information, it is also a simple but effective way of checking their status and condition.	See the product page on the Endress+Hauser Web site: www.endress.com
FXA291	Service interface from the measuring device to the PC for operation via FieldCare.	FXA291 – *
Memograph M graphic display recorder	The Memograph M graphic display recorder provides information on all the relevant process variables. Measured values are recorded correctly, limit values are monitored and measuring points analyzed. The data are stored in the 256 MB internal memory and also on a DSD card or USB stick. Memograph M boasts a modular design, intuitive operation and a comprehensive security concept. The ReadWin® 2000 PC software is part of the standard package and is used for configuring, visualizing and archiving the data captured. The mathematics channels which are optionally available enable continuous monitoring of specific power consumption, boiler efficiency and other parameters which are important for efficient energy management.	RSG40-**********

Documentation

- Flow measurement (FA005D/06)
- Operating Instructions for Prosonic Flow 91 (BA100D/06)
- Supplementary documentation on Ex-ratings: FM, CSA

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