

ECCUS

ULTRASONIC METER FOR DOMESTIC WATER NETWORKS

Table of contents

1.	Disclaimer	3
2.	Safety rules and precautions	3
2.1.	Information on the user manual relating to legal notice	3
2.2.	Handling, transport and storage	3
2.3.	Disposal rules for ECCUS	4
3.	Technical characteristics	4
3.1.	Metrological data	4
3.2.	Dimensions	5
3.3.	Power supply	5
4.	Installations and checks	5
4.1.	Installation of ECCUS	5
4.2.	Check the correct location of ECCUS	6
4.2.1.	Environment	6
4.2.2.	Installation	7
4.3.	Non-return valve	7
4.4.	Maintenance and cleaning	8
5.	ECCUS Interface	8
5.1.	Face plate	8
5.2.	Screen display information	8
5.2.1.	Display sequence	8
5.2.2.	Display characteristics	9
5.3.	Understand the events on the LCD screen	9
5.3.1.	Set LC display symbols	9
5.3.2.	Understanding display codes	10
6.	Commiuncation systems	10
6.1.	Communication systems overview	10
7.	ECCUSapp Android application	11
7.1.	Presentation of ECCUSapp	11
7.1.1.	Features	11
7.1.2.	Datalog	11
7.2.	InstallationECCUSapp Android application	12

1. Disclaimer

Reproduction of these instructions or parts of them in whatever form is not permitted without express written permission from the publisher.

The figures and information in these instructions are subject to technical changes that become necessary to improve the product.

2. Safety rules and precautions

2.1. Information on the user manual relating to legal notice

This guide is intended for trained specialized personnel. For this reason, no basic working steps are included.



Danger

This safety warning indicates a high risk which will result in serious personal injury or death.
- Measures to avoid incidents.



Warning

This safety warning indicates medium risk that could result in serious injury.
- Measures to avoid incidents.



Caution

This safety warning indicates a low risk which could result in minor injury or mechanical damage.
- Measures to avoid incidents.



Notice

Indicates an action or measure which, if performed incorrectly, may have an indirect effect on the operation of the device.
- Measures to avoid malfunctions.



Comment

Comment, provides information and recommendations for efficient and trouble-free operation.
- Measures to avoid malfunctions.



Reference

Refers to additional sources.

2.2. Handling, transport and storage

The manufacturer assumes no responsibility if the following safety instructions and instructions are followed precautionary measures are not observed:

- Any changes made to the unit without the prior written consent of the manufacturer will result in the following leads to the immediate expiration of product liability and warranty.
- Installation, operation, maintenance and decommissioning of this device may only be carried out by trained personnel, by qualified specialist personnel who have been instructed by the manufacturer, operator or owner to of the plant authorized. The specialist must have read and understood all of these operating instructions and the have read and understood the installation instructions and have understood the instructions contained therein. to the rules of the law.
- Check all connections, settings and technical data of peripheral devices.
- Open housing or parts of the housing are completely forbidden.
- The specified classifications for mechanical loads (e.g. pressure, temperature, etc.) must be observed. Protection class (IP etc) must not be exceeded.

- Only operate the system under the specified ambient conditions and installation positions.
- Protect the system against over-voltage. In particular, electrical welding is prevented on the associated equipment.
- None of the information contained in this manual or in any other document releases the user from the responsibility for planners assessment of the respective system configuration with regard to functionality and operational safety.
- The local labor and safety laws and regulations must be observed.

2.3. Disposal rules of ECCUS



Warning

The device must not be opened. The battery is permanently installed and cannot be changed.

This device must not be disposed together with the domestic waste. Please return it to the manufacturer for recycling.

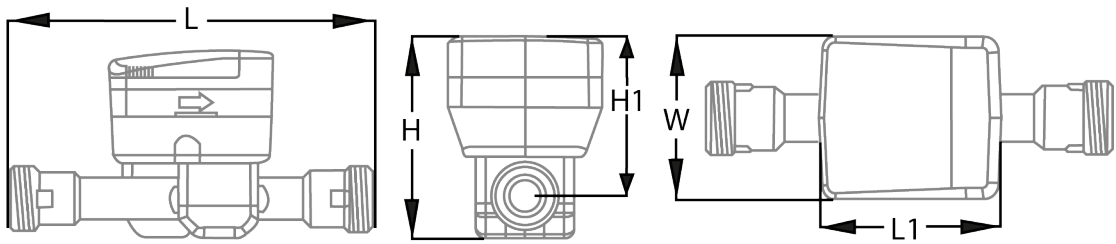


3. Technical characteristics

3.1. Metrological data

Nominal size	DN		15	20	25	32	40	50
Thread			G¾"B	G1"B	G1¼"B	G1½"B	G2"B	G2½"B
Material			CW617N					
Length	L	mm	110, 170	105, 130, 190, 220	200, 260	260	300	300
Continuous flow rate	Q ₃	m³/h	2.5	4	10	10	16	25
Overload flow rate	Q ₄	m³/h	3.125	5	12.5	12.5	20	31
Transitional flow rate	Q ₂	l/h	8	13	32	32	51	80
Min. flow rate	Q ₁	l/h	5	8	20	20	31	50
Starting flow rate	Q _{START}	l/h	2.5	4	10	10	16	25
Pressure drop class Q ₃	ΔP	-	25	25	25	25	25	25
Measuring range	R	-	500					

3.2. Dimensions



Nominal size	DN	15	20	25	32	40	50
Thread		G¾"B	G1"B	G1¼"B	G1½"B	G2"B	G1½"B
Weight	kg	0.8	1	1.4	1.5	1.9	2.4
Height (H1)	mm	77	77	77	77	77	77
Total height (H)	mm	98	98	98	101	107	115
Width (W)	mm	76	76	76	76	76	76
Housing length (L1)	mm	87	87	87	87	87	87

3.3. Power supply

Type	Lithium battery
Lifetime	Up to 16 years*

* Depending on sending interval of radio telegram, telegram length operating temperature.

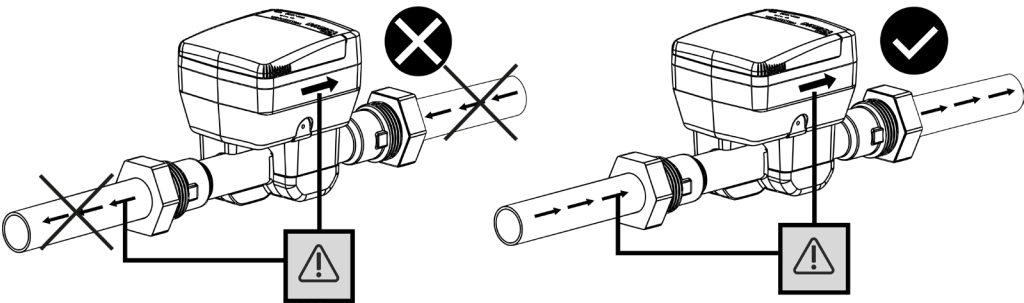
4. Installation and checks



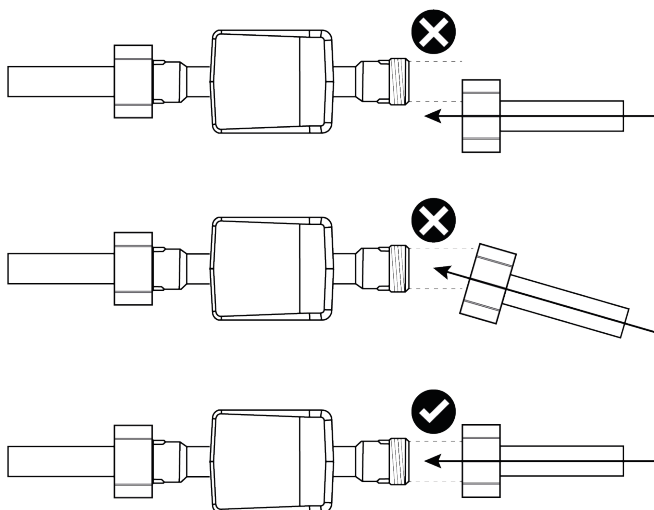
Notice
The meter must be installed in compliance with the requirements of ISO 4064 and the EC Type Examination Certificate. Medium: Water without additives.

4.1 Installation of ECCUS

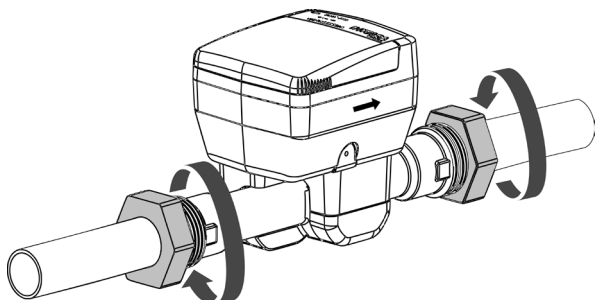
- 1. Thoroughly flush out the pipes before installing the meter.
- 2. The meter has to be installed so that the direction of the arrow on the meter housing corresponds to the direction of flow.



3. The installation of the meter should not be done with force or strain, make sure that the meter is aligned.



4. Remove old seals and clean sealing faces. Site-provided seals must be suitable for the purpose and comply with the local guidelines and directives. Only fit the newly supplied seals (the seals should not intrude into the pipeline). No liability is accepted for consequential damage resulting from the use of third-party seals such as corrosion to sealing surfaces and threads.
5. Simultaneously manually screw the meter fittings on both sides and then tighten using a suitable tool (minimum torque 30 Nm, maximum torque 50 Nm).



6. Slowly fill the pipeline with water on completion of the installation. Avoid the collection of air bubbles in the meter during the installation process.

4.2. Check the correct location of ECCUS

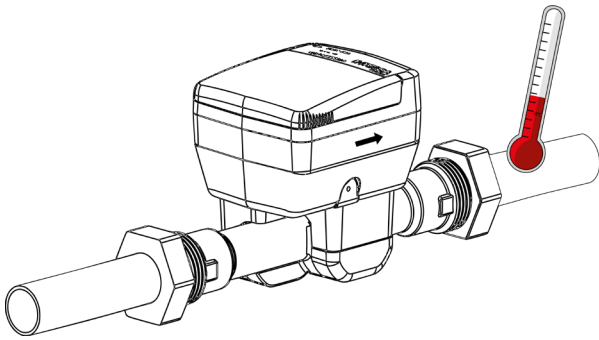
4.2.1. Environment

ECCUS must not exceed extreme conditions: max 70 °C / 158 °F (no more than 2 weeks at 35 °C / 95 °F); min -20 °C / -4 °F (2 weeks below 0 °C / 32 °F).

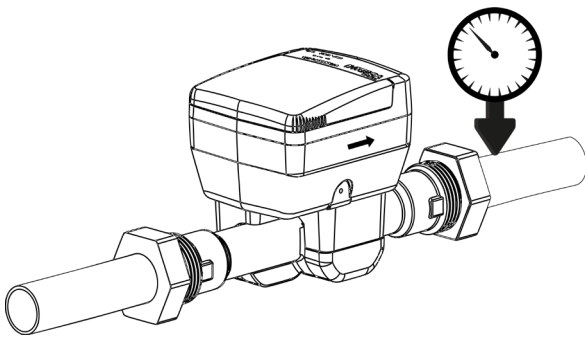
The ECCUS is IP68 rated. Installation environments of prolonged or permanent immersions in water should be avoided.

4.2.2. Installation

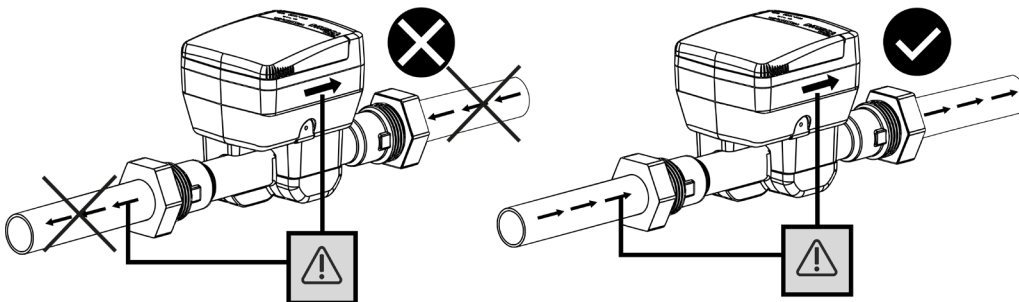
Water temperature: max +30 °C / +86 °F; min +0.1 °C / +32 °F.



The pressure should not exceed 16 bar.

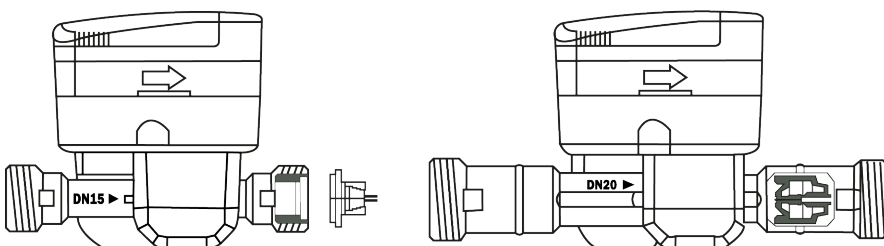


Refer to the arrow on the side of the meter for the correct installation location (water must flow in the direction of the arrow).



4.3. Non-return valve

Some ECCUS meters can be delivered with a non-return valve (accessory) (nominal diameter DN15 - DN40). The non-return valve must be mounted at the meter outlet.



For DN15 it is mounted outside the meter, for the other DN it is mounted inside the meter.

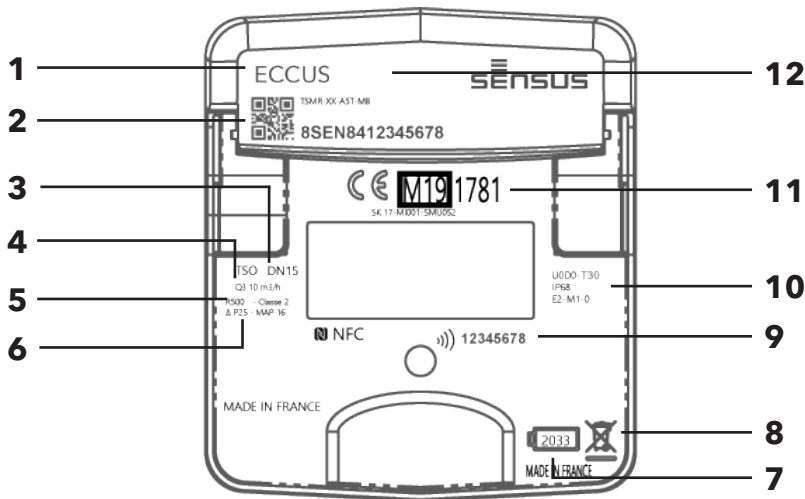
4.4. Maintenance and cleaning



Caution
Do not clean it with solvents or abrasives as these may damage the plastic cover. If necessary, use a damp cloth or sponge.

5. ECCUS Interface

5.1. Face plate

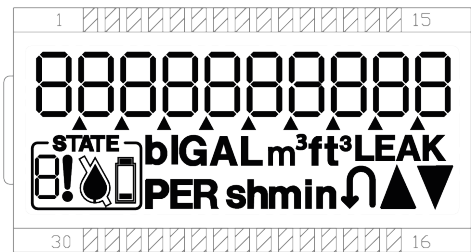


1	Product name	7	Battery Expiration Date
2	Data matrix, part number, serial number	8	Waste disposal mode
3	Diameter Q ₃	9	Communication ID
4	Nominal flow Q ₃	10	Specific and technical approval
5	Ratio (Q ₃ / Q ₁), accuracy Class 2	11	CE Marking according to MID, code of certifying lab
6	Pressure loss class, MAP	12	Communication system

5.2. Screen display information

5.2.1. Display sequence

To show the data read by the meter in the display, various windows have been created as functions that can display the assigned system information.



The LCD screen changes automatically to display the following information: net or forward volume, reverse volume, flow rate, events, firmware version, flow direction, meter state.
The basic display sequence is defined in two cycles, one main cycle and a secondary which launches after 120 seconds.

The basic display sequence:

LCD screen	Description	Display time
	Net volume	10s
	Flow rate	2s
	Events (if event are set)	2s
	Service (if service error are set)	2s

The second sequence of the display every 120s:

LCD screen	Description	Display time
	Display all segment ON	2s
	Display all segment OFF	2s
	Display metrology FW version and CRC	2s

5.2.2. Display characteristics

Display indication	LCD 10 digits
Units	m³, l, Hour
Displayed values	Volume, flow, reverse flow, display test, events and alarms statuts, F/W version
Events and alarms	Reverse flow, low battery warning, leakage, air bubbles, broken pipe, temperature low, temperature high, empty pipe, ambient temperature high, no consumption

5.3. Understand the events on the LCD screen

5.3.1. Set LC display symbols

Name	Symbol	Information
Flow direction		Instant flow is positive.
		Instant flow is negative.
Index indicator		Set when the screen is displaying the positive index (forward volume), (with or without water in the pipe).
		The display shows the net volume (with or without water in the pipe).
		Set when the screen is displaying the negative index.

Water detection		This symbol is displayed when the meter detects water.
		This symbol is displayed when the meter does not detect water.
Reverse flow		If a defined volume is detected in the opposite direction.
Leakage	LEAK	This symbol is displayed when there is high consumption for a long time.
Exclamation mark		This symbol is displayed when a service event or error occurs.
Low battery		This symbol is displayed when the battery is low.
Test mode		The meter is in test mode.
Idle mode		Display segment off.

5.3.2. Understanding display codes

This summary shows all possible events which require attention by the user.

Display codes	Events	Conditions
E1	Reserved	
E2	Air bubbles	Air is detected in the pipe.
E3	Broken pipe	A leak is detected
E4	Overload	High instantaneous flow
E5	Temperature low	Low water temperature
E6	Temperature high	High water temperature
E7	Ambient temperature high	High ambient temperature
E8	No consumption	Water no longer circulates
S	Service	Please contact the service



Notice

If error condition is still active after the clearing delay, it will not be cleared.

6. Communication systems

6.1. Global view of communication systems

MultiCom: simultaneous LoRaWAN 868 MHz and wM-Bus 868 MHz

wM-Bus 868 MHz

7. ECCUSapp Android application

7.1. Presentation of ECCUSapp

ECCUSapp is a powerful and user-friendly Android application dedicated to commissioning, configuration and diagnostics of smart devices or smart meters directly on site, with a smartphone and through NFC.



7.1.1. Features

With a full range of possibilities, you can configure and diagnose your setup:

- Modification of radio modules
- Pulse configuration (pulse weight, pulse length)
- Reading out the events for detailed inspections on site
- Setup of alarms detection (threshold parameters, durations)

And much more.

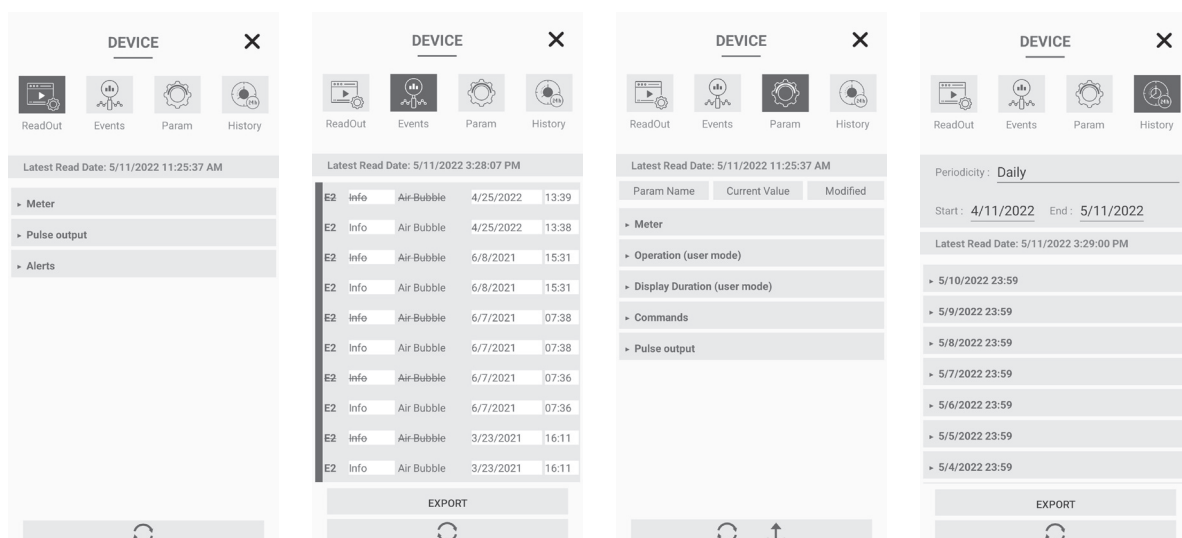
7.1.2. Datalog

Various history data can be extracted from the meter:

- Temperature (minimum, average, maximum)
- Flowrate (minimum, average, maximum)
- Volume (minimum, average, maximum)
- Events and alarms

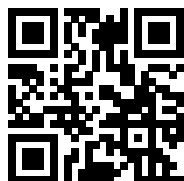
And much more.

The time granularity can be chosen for a precise analysis (hourly, daily, monthly, yearly), and data can be exported in CSV format.



7.2. Installation ECCUSapp Android application

Download the application here:



<https://qr.xylemsales.com/8va2go>

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com



Sensus UK Systems Ltd.
3 Lindenwood Crockford Lane
Chineham Business Park
Basingstoke
RG24 8QY UK
Tel +44 1256 372800
Email: info.gb@xylem.com
www.xylem.com

Sensus, the Sensus logo, FlexNet® and associated logos are trademarks of Sensus and its subsidiaries and affiliates.
© 2022, Sensus USA, Inc., a subsidiary of Xylem, Inc.
All Rights Reserved.