

Ultrimis NEO

Ultrasonic water meter

DN15-DN50



Ultrimis Neo, a state-of-the-art ultrasonic water meter with the latest patented design features the W-Sonic Technology, a unique metering method. The W-Sonic Technology enables meter readings in the R1000 range with the starting flow already from 0.75 l/h.

The water meter is designed and manufactured to the highest quality standards. The water meter is rated at IP68 and with a high resistance to hydraulic shock and magnetic interference. The measurement chamber is designed to provide the water meter with insensitivity to hydraulic shock. The ultrasonic measurement technology of the water meter is completely impervious to interference from magnetic fields.

APPLICATION

Water supply systems with the maximum cold water temperature of 50°C and the maximum hot water temperature of 70°C, requiring reliable water consumption metering and reliable data communication methods, including remote meter reading over NFC, WM-Bus or LoRaWAN. The water meter can be installed in any orientation and does not require upstream and downstream sections of straight piping.

Ultrimis NEO



Advantages

Provides savings

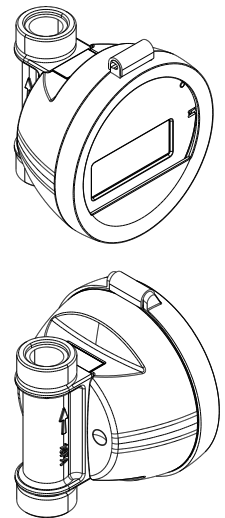
- High-precision measurement **improves efficiency** of water use: the water meter can detect all leaks in the supply system
- Pass-through design of the measurement chamber, without moving parts, resistant to contamination - no expenses for inspections and maintenance
- No upstream or downstream **straight sections** of piping required
- **Compact size** for easy installation in confined spaces
- Robust design, reliable electronic components and **minimum electrical power demand** for a stable, long-term operation
- A wide **measurement range** with immunity to electrical conductivity of metered water (as required for electromagnetic water meter systems)
- Extremely **low pressure loss** (and low resistance to flow)

Convenient in operation

- Standard **IP68**-rated hermetically sealed body
- **No risk of physical wear** of the measurement chamber components during continuous operation, even at high flow rates
- MAP - **16 bar**
- Body material - **brass or composite**
- **Resistant** to strong magnetic fields
- Resistant to **hydraulic shock**
- Highly resistant to overload flow rate - Q_4

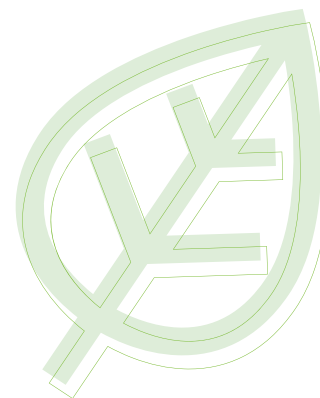
Measurement accuracy

- Optimized measurement range: up to **R1000** in every operating orientation (H, V)
- Starting flow already from **0.75 l/h**
- **Stable** measurement system performance by insensitivity to fouling
- Back flow with an accuracy up to R800



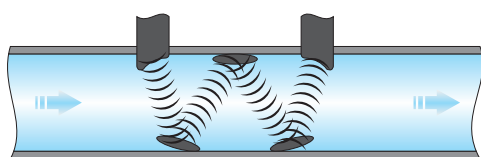
Environmentally friendly

- Extremely **low power usage** when in operation
- Very low lithium content: **Li < 2.0 g**
- Expected battery life up to 16 years (depending on the configuration and environmental conditions)
- Low energy output at the water supply side (the unit pressure drop across the water meter is below **0.17 bar** for Q_3)
- A measurement range up to R1600 is also available for the water meter installation length **L = 80 mm**
- **Very low weight**: low costs of transport
- Low carbon footprint



Innovative

The Ultrimis Neo water meter features a unique measurement system: it emits an ultrasonic beam across the measurement chamber, which results in steady indications and errors in the whole measurement range. This is the W-Sonic Technology which includes distinctive characteristics:



- With its unique ultrasonic beam pattern, the Ultrimis Neo can be much more compact than other ultrasonic metering systems
- The straight-through design prevents accumulation of fouling or solids
- Insensitive to measurement bias from water contamination
- Sophisticated control algorithms of the ultrasonic beam system provide compensation for component ageing
- Requires no filters or check valves

Communication

- Water meter data reading over NFC (Near Field Communication)
- RF (radio-frequency) reading of indications compatible with WM-Bus and/or LoRaWAN
- RF indication reading for walk-by, drive-by and stationary reading systems
- Secondary verification at any suitable location with the Testbox module and a dedicated application SPIDAP Mobile

NFC configuration

The Ultrimis Neo water meters feature standard NFC data communication which enables configuration of the operating mode, reading of actual parameter values of the instrument and downloading the historical indications of statuses and errors (even in case of a depleted battery or meter failure).

Developed specifically for the Ultrimis Neo water meter, the data communication interface includes a dedicated SPIDAP Mobile application and the Testbox module.

The data communication interface enables re-verification by secondary verification operators.

The data logger supported by NFC enables modification of the interval and range of data logging.

The data logging interval can be configured from 12 minutes to 45 days. One of the 10 predefined data acquisition sets can also be selected.

Depending on the data acquisition set selected, up to 800 unique records can be stored. The data acquired can drive histograms to evaluate whether the water meter has been specified correctly for its actual application.



Rf reading

The water meter has an integrated RF data communication module for easy and efficient remote data reading in walk-by, drive-by and stationary reading systems.

Wireless M-Bus + LoRaWAN

The Ultrimis Neo LoRaWAN + WM-Bus water meter versions are intended for stationary reading systems. They facilitate default data communication over LoRaWAN with long range and low power consumption. If there is no LoRaWAN service, the water meter automatically switches over to WM-Bus communication. In addition, the water meter can operate in a simultaneous communication mode, in which WM-Bus transmits continuously in parallel with LoRaWAN, enabling both communication channels to operate at the same time.. One of the following data communication methods can also be configured for permanent use:

- LoRaWAN only,
- WM-Bus only,
- Hybrid – LoRaWAN is the default; if there is no LoRaWAN service, the device automatically switches to WM-Bus,
- Simultaneous communication – LoRaWAN and WM-Bus operate in parallel, with WM-Bus transmitting continuously alongside LoRaWAN.

The LoRaWAN communication is divided into two areas:

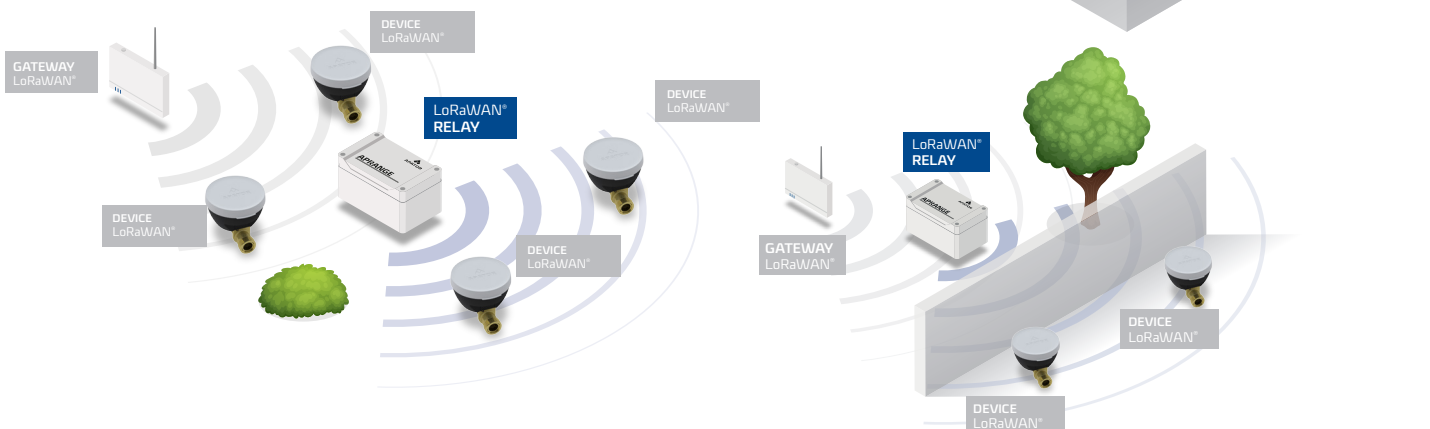
- Standard data communication, each with an RF data frame output every 7 hours and holding the data from the previous 14 hours
- Emergency data communication is triggered instantly when a predefined event emerges.

WMBUS/LoRaWAN/NFC communication allows you to receive the following data:

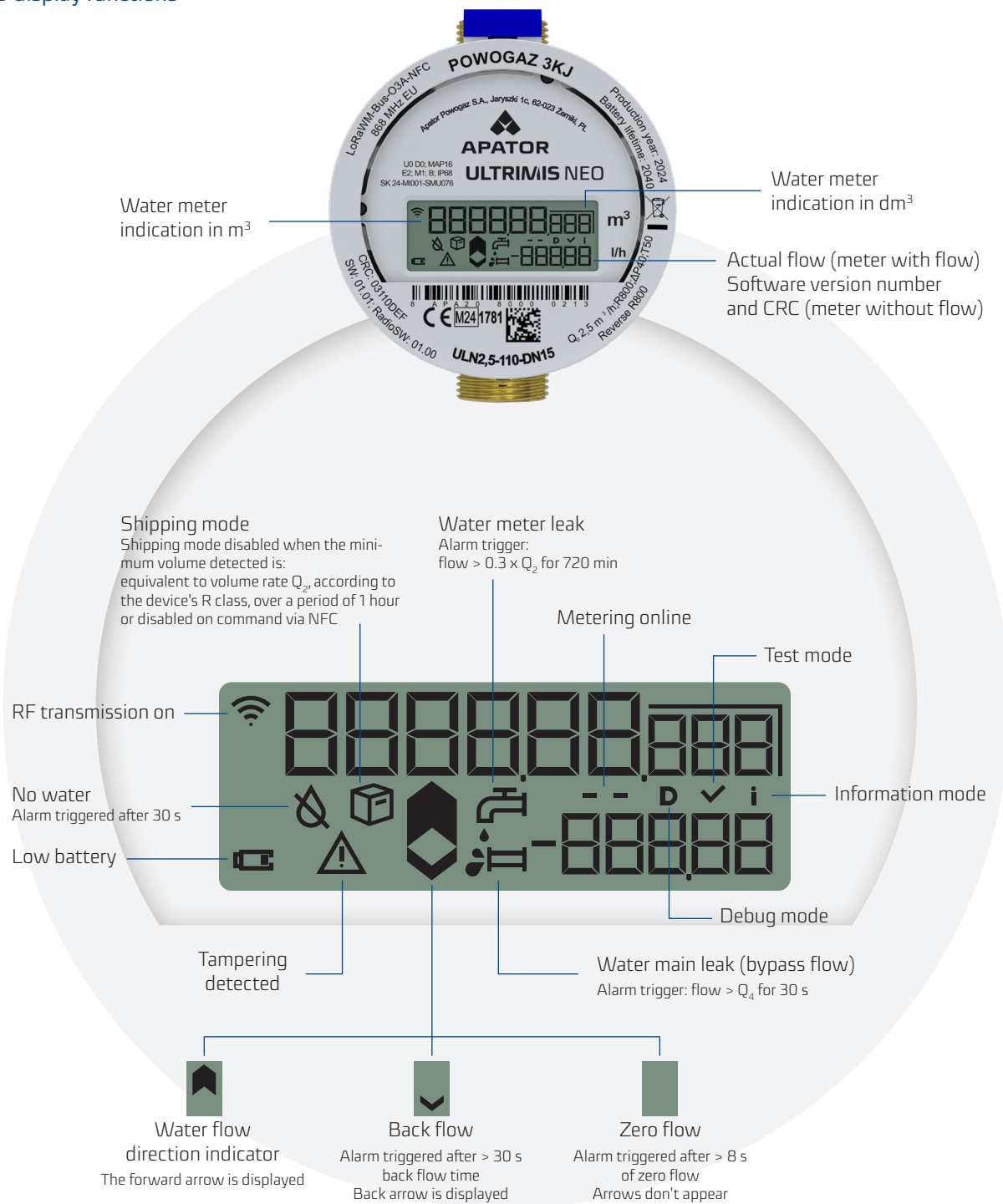
- Water meter indications (historical and at the time of reading)
- Reverse volume (at the time of the reading)
- Water temperature (at the time of the reading)
- Events/alarms (from the last logged month, the current month and at the time of reading), including:
 - Reverse flow
 - Low flow
 - High flow
 - No water
 - Low battery
 - Tampering detected
 - Temperature limit violation
 - Zero flow

LoRaWAN® Network Extension

Enhance your IoT infrastructure with **LoRaWAN® APRANGE**. Seamlessly extend the connectivity of Ultrimis NEO water meters, ensuring reliable communication even in challenging environments. With APRANGE, maximize network coverage, improve data availability, and unlock the full potential of your LoRaWAN® IoT solutions.



LCD display functions



Events not indicated on the LCD

Overtemperature
 Switchover thresholds:
 for T50: <2°C or >50°C
 for T70: <2°C or >70°C

Table 1. Technical specifications

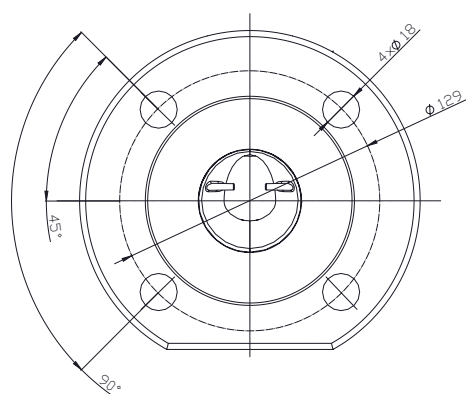
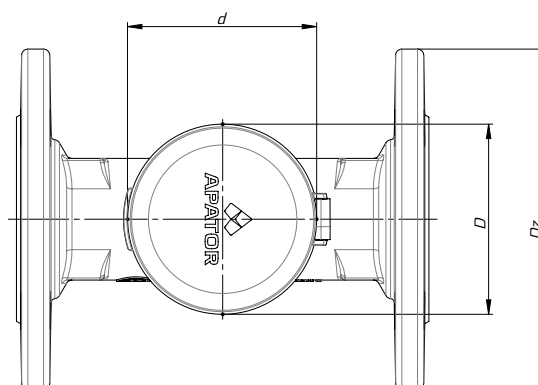
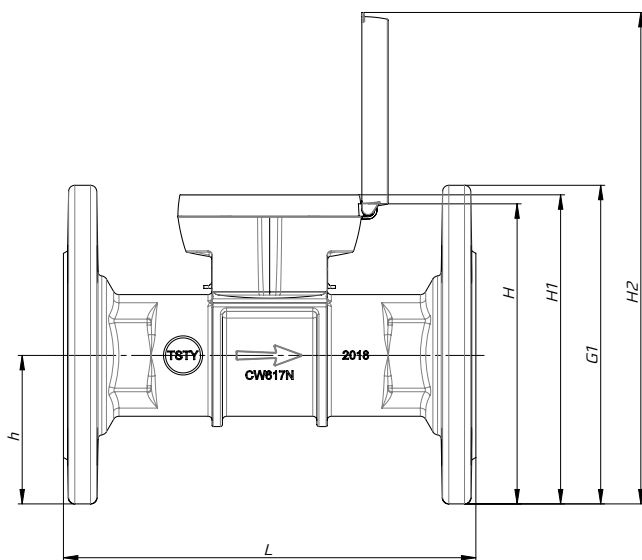
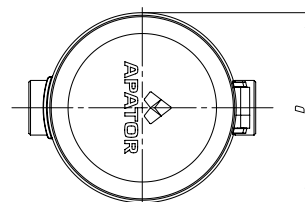
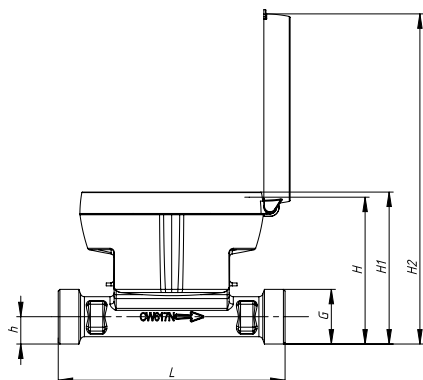
Specification			Ultrimis NEO																
			ULN 2.5		ULN 2.5-01		ULN 4		ULN 4-01		ULN6.3	ULN10	ULN16	ULN25					
Nominal diameter	DN	mm	15		20		25		32	40	50								
Permanent flow rate	Q₃	m³/h	2.5		4		6.3		10	16	25								
Overload flow rate	Q₄	m³/h	3.125		5		7.875		12.5	20	31.25								
Measurement range	R	Q ₃ /Q ₁	250																
Transitional flow rate	Q ₂	dm ³ /h	16		25.6		40.32		64	102,4	160								
Minimum flow rate	Q ₁	dm ³ /h	10		16		25.2		40	64	100								
Measurement range	R	Q ₃ /Q ₁	400																
Transitional flow rate	Q ₂	dm ³ /h	10		16		25		40	64	100								
Minimum flow rate	Q ₁	dm ³ /h	6		10		16		25	40	62.5								
Measurement range	R	Q ₃ /Q ₁	500																
Transitional flow rate	Q ₂	dm ³ /h	-		-		-		-	-	80								
Minimum flow rate	Q ₁	dm ³ /h	-		-		-		-	-	50								
Measurement range	R	Q ₃ /Q ₁	800																
Transitional flow rate	Q ₂	dm ³ /h	5		8		13		20	32	-								
Minimum flow rate	Q ₁	dm ³ /h	3		5		8		13	20	-								
Starting flow for R800	-	dm ³ /h	0.75		1.2		1.89		3	4.8	-								
Starting flow for R250, R400, R500	-	dm ³ /h	0.15 x Q ₂																
Range for R250, R400, R500, R800	-	Q₂/Q₁	1.6																
Temperature class (EN and OIML)	-	°C	T30, T50, T70					T30, T50											
Flow profile sensitivity class (EN)	-	-	U0, D0																
Counter indication range	-	m ³	999999																
Scale interval value	-	m ³	0.001																
Maximum permissible error in the range of Q ₂ ≤ Q ≤ Q ₄	ε	%	±2 for cold water T ≤ 30°C ±3 for water T > 30°C																
Maximum permissible error in the range of Q ₁ ≤ Q < Q ₂	ε	%	±5																
Battery	-	-	2x integrated 3V DC lithium batteries																
RF	-	-	868 MHz up to 25 mW E.R.P. EU868 MHz LoRa up to 25 mW E.R.P.																
RF communication standard	-	-	OMS-compliant WM-Bus OMS-compliant WM-Bus + LoRaWAN																
Radio transmission mode (WM-Bus)	-	-	T1 or C1																
Water pressure class	(EN)	-	MAP16																
	(OIML)	-	0.3 to 16																
Pressure loss class at Q ₃	(EN)	ΔP	ΔP40 at T30, T50					ΔP25 at T70					ΔP40 at T30, T50						
	(OIML)	-	0.4										0.25						
	manufacturer-specified	-	0.25		0.25		0.28		0.26		0.17		0.24						
Installation orientation	-	-	H, V																
Reverse flow (manufacturer-specified)	-	-	Reverse flow metering by design																
Relative humidity	-	%	≤ 100																
IP rating	-	-	IP68																
Water meter body material			Brass		Composite		Brass		Composite		Brass								
Connection end thread size	G	Inch	¾"; 7/8 -> ¾" *				1"		1 1/4"		1 1/2"		2"		Flanged ends**				
	G1	mm	-										155						
Water meter length	L	mm	80		110		80		105		130		105		165		260	300	200; 270; 300
			115		165		110		115		190		130		260				

* Thread size 7/8" -> ¾" available for 115 mm long versions only

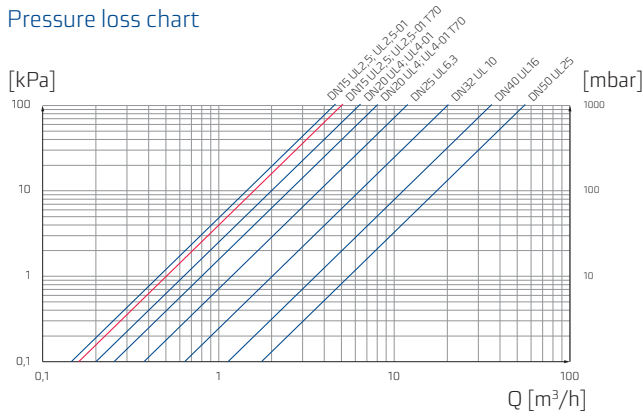
** Also available in a G2 1/2 version

Specification			Ultrimis NEO									
			ULN 2.5		ULN 2.5-01	ULN 4		ULN 4-01	ULN6.3	ULN10	ULN16	ULN25
Height	H	mm	71.20; 72.20***		71.20	77.85		81.96	88.4	98.31	111.09	
	H1	mm	73.68			80.33		86,33	92.76	102.67	115.47	
	H2	mm	160.08			166.73		174.76	181.2	191.11	203.89	
	h	mm	13.25; 14.25***		13.25	16.58		20.96	23.9	29.81	72	
Counter size	D	mm	92.2									
Flange size	Dz	mm	-									
Weight	-	kg	0.48	0.52	0.29	0.61	0.63	0.33	1.05	1.68	2.15	6.29; 6.75; 6.95
			0.53	0.6	0.31	0.66	0.77	0.34	1.39			

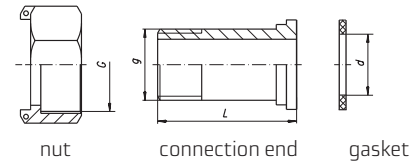
*** Applies to thread size 7/8" -> 3/4"



Pressure loss chart

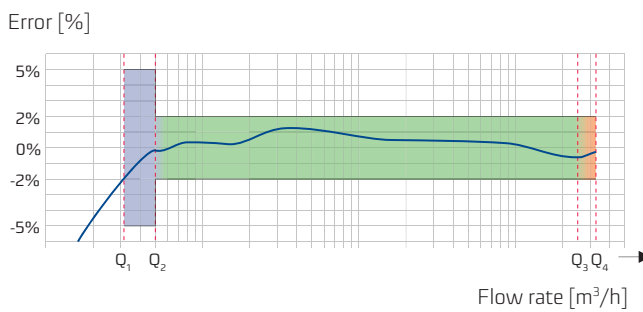


Connection fittings

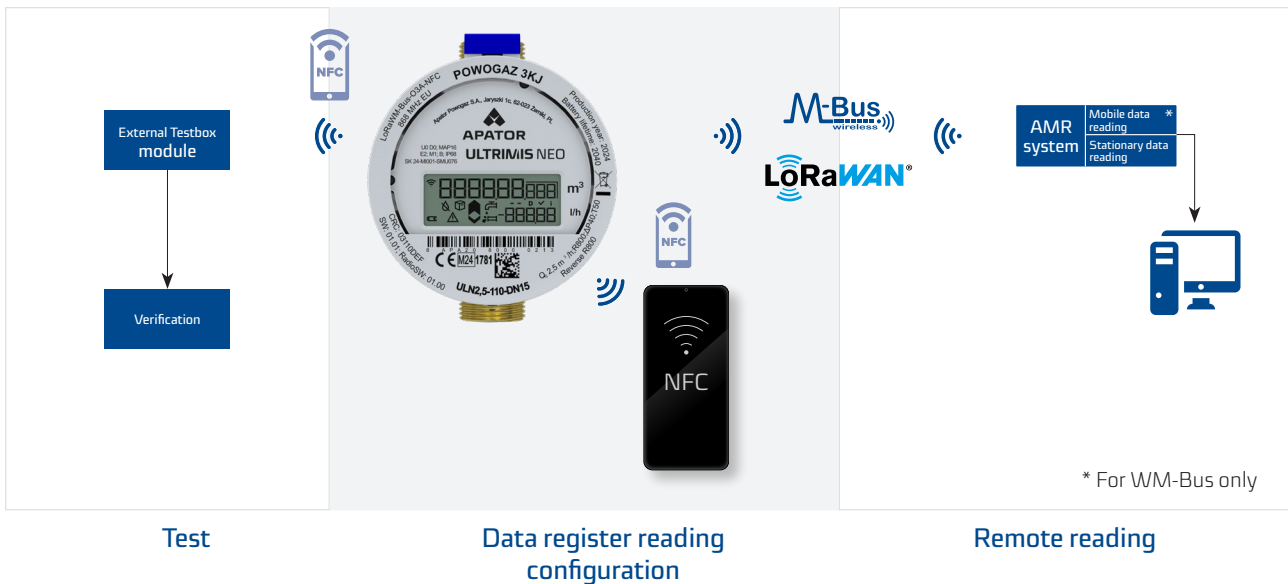


DN	G	g	d	L
	inch	inch	mm	mm
15	3/4"	1/2"	17	37.5
20	1"	3/4"	23	45.6
25	1 1/4"	1"	29	46.5
32	1 1/2"	1 1/4"	36	56
40	2"	1 1/2"	43	66
50	2 1/2"	2"	54	74.2

Typical error chart



Installation, configuration and remote reading



Available options:

- Disposable clamps with snap-on seals made of plastic, with unique ID numbers
- Half unions with gaskets
- Water meter brackets
- Testbox
- Bluetooth to RF or USB converter

Creating a product code

Measurement range	Flow [m ³ /h]	Thread [inch]	Water meter length [mm]	Design	Material	Lid	Communication	Frequency [MHz]	Temperature class
R1000	Q ₃ = 2,5	G 3/4	80	Battery life up to 12 years	Brass CW617N	x	WM-Bus T1		T50
R800	Q ₃ = 4	G 7/8 -> G3/4	110	Standard (battery life up to 16 years)	Composite	x	WM-Bus C1	868	T70
R400	Q ₃ = 6,3	G 3/4	115		Brass CW617N	✓	O3A T1		T50 + Strainer
R250	Q ₃ = 10	G 3/4	130		Composite	✓	O3A C1		T70 + Strainer
R160	Q ₃ = 16	G1	165		Brass CW510L	x	LoRaWAN		
R100	Q ₃ = 25	G1/4	190		Brass CW510L	✓	DualStack LoRaWAN + O3A T1		
		G1/2	260				DualStack LoRaWAN + O3A C1		
		G2	300				DualStack LoRaWAN + O4B C1		
		Flanged ends	200				O4B C1		
			270						
			300						
			200						
			270						
			300						

Example number: 75-6202062-001

In order to verify the implementation of a given design, please contact a sales representative of Apator Powogaz S.A.

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