

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 R1250 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

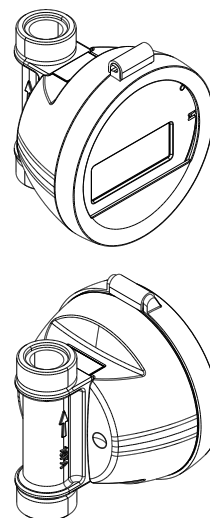
- High-precision measurement **improves efficiency** of water use: the water meter can detect all leaks in the supply system
- Pass-through design of the measurement chamber, without moving parts, resistant to contamination - no expenses for inspections and maintenance
- No upstream or downstream **straight 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

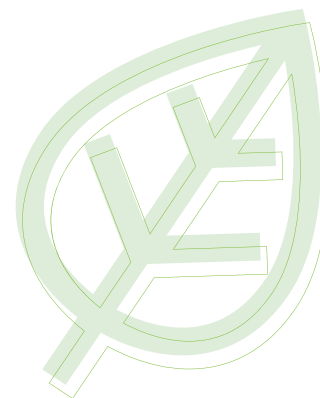
Measurement accuracy

- Optimized measurement range: up to **R1250** 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



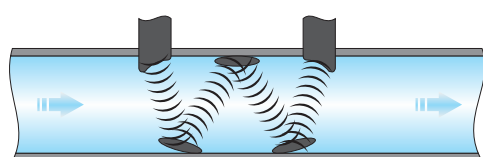
Environmentally friendly

- 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 R1250 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:

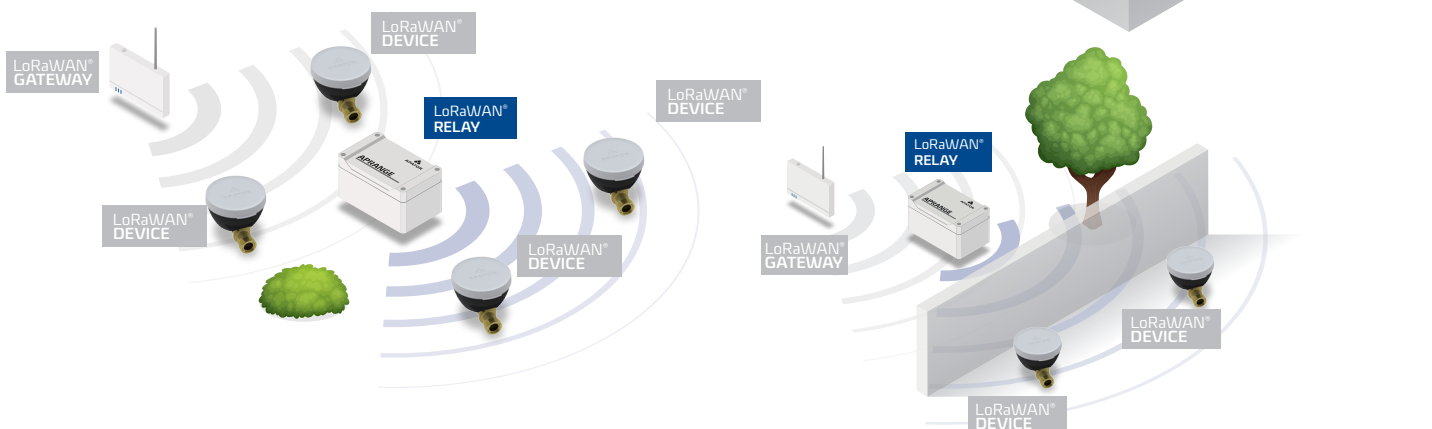
- Standard data communication, each with an RF data frame output every 7 hours and holding the data from the previous 14 hours
- Emergency data communication is triggered instantly when a predefined event emerges.

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

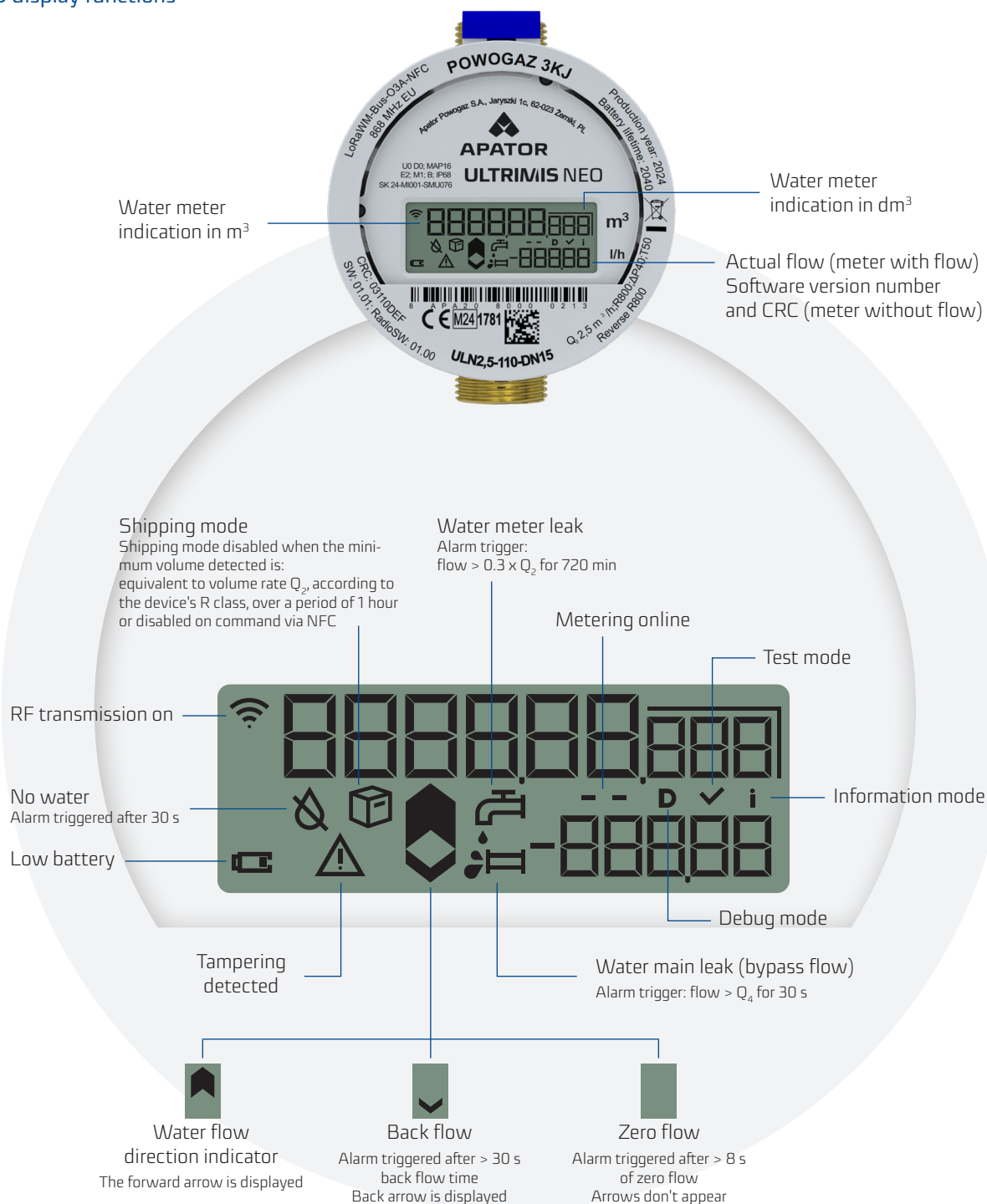
- Water meter indications (historical and at the time of reading)
- Reverse volume (at the time of the reading)
- Water temperature (at the time of the reading)
- Events/alarms (from the last logged month, the current month and at the time of reading), including:
 - ☐ Reverse flow
 - ☐ Low flow
 - ☐ 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

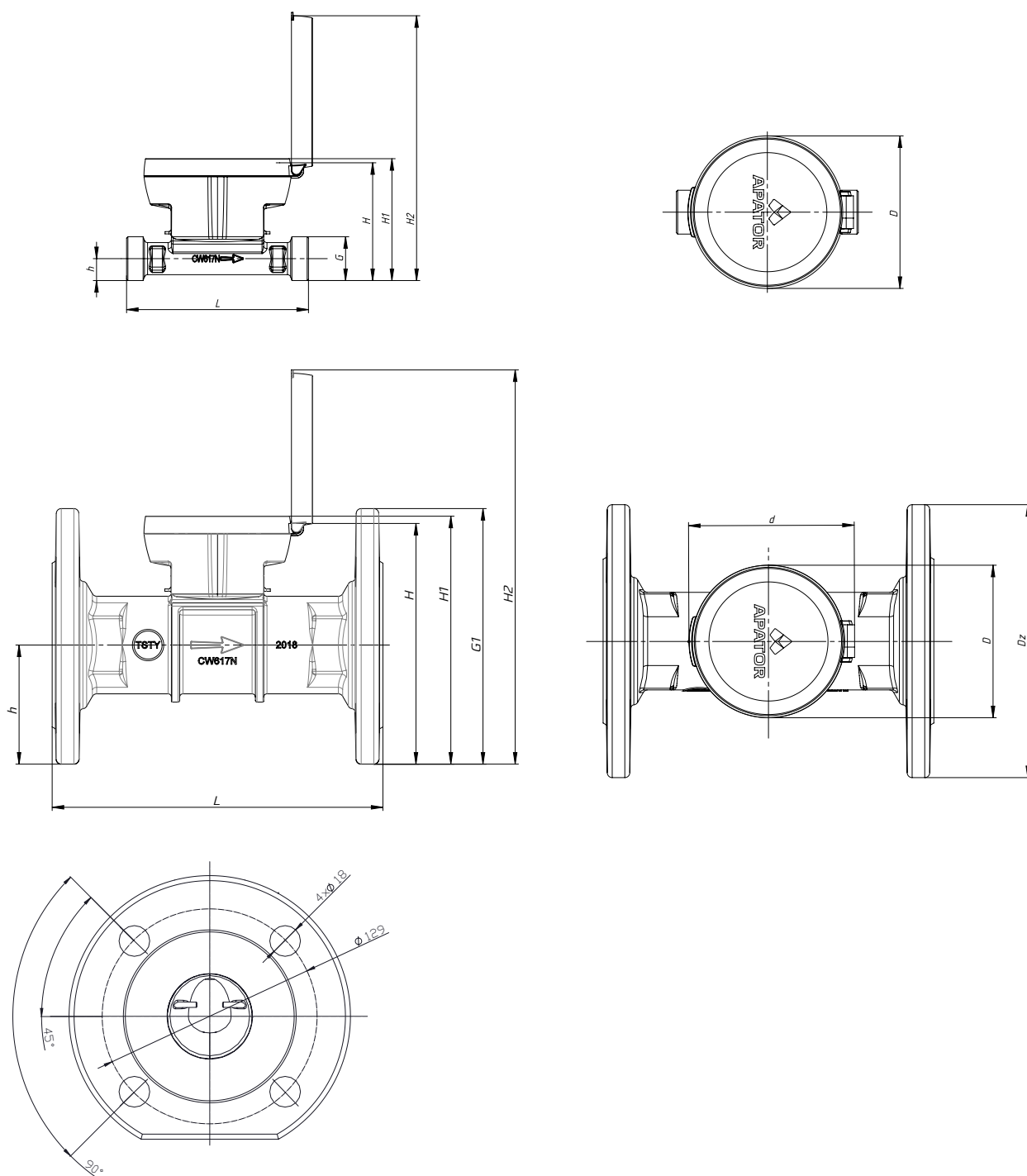
Specification			Ultrimis NEO											
			ULN 2.5		ULN 2.5-01		ULN 4		ULN 4-01		ULN6.3	ULN10	ULN16	ULN25
Nominal diameter	DN	mm	15				20				25	32	40	50
Permanent flow rate	Q ₃	m³/h	2.5				4				6.3	10	16	25
Overload flow rate	Q ₄	m³/h	3.125				5				7.875	12.5	20	31.25
Measurement range	R	Q ₃ /Q ₁	250											
Transitional flow rate	Q ₂	dm³/h	16				25.6				40.32	64	102,4	160
Minimum flow rate	Q ₁	dm³/h	10				16				25.2	40	64	100
Measurement range	R	Q ₃ /Q ₁	400											
Transitional flow rate	Q ₂	dm³/h	10				16				25	40	64	100
Minimum flow rate	Q ₁	dm³/h	6				10				16	25	40	62.5
Measurement range	R	Q ₃ /Q ₁	800											
Transitional flow rate	Q ₂	dm³/h	5				8				13	20	32	-
Minimum flow rate	Q ₁	dm³/h	3				5				8	13	20	-
Measurement range	R	Q ₃ /Q ₁	1250											
Transitional flow rate	Q ₂	dm³/h	3.2				5.12				-	-	-	-
Minimum flow rate	Q ₁	dm³/h	2				3.2				-	-	-	-
Starting flow for R250, R400, R800, R1250	—	dm³/h	0.75				1.2				1.89	3	4.8	-
Starting flow for R250, R400, R800, R1250	—	dm³/h	0.15 x Q ₂											
Range for R250, R400, R800, R1250	—	Q ₂ /Q ₁	1.6											
Temperature class (EN and OIML)	—	°C	T30, T50, T70						T30, T50					
Flow profile sensitivity class (EN)	—	—	U0, D0											
Counter indication range	—	m³	999999											
Scale interval value	—	m³	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 pres- sure class	(EN)	—	bar	MAP16										
	(OIML)	—		0.3 to 16										
Pressure loss class at Q ₃	(EN)	ΔP	bar	ΔP40 at T30, T50				ΔP25 at T70		ΔP40 at T30, T50				
	(OIML)	—		0.4								0.25		
	manufacturer-spec- ified	—		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

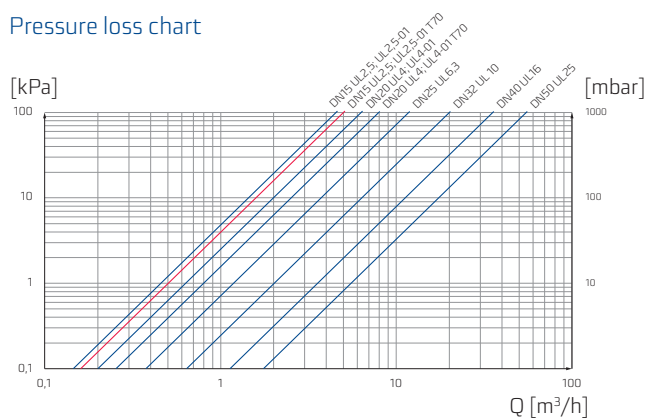
** Also available in a G2 1/2 version

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	-									165
Lid size	d	mm	100.19									
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			

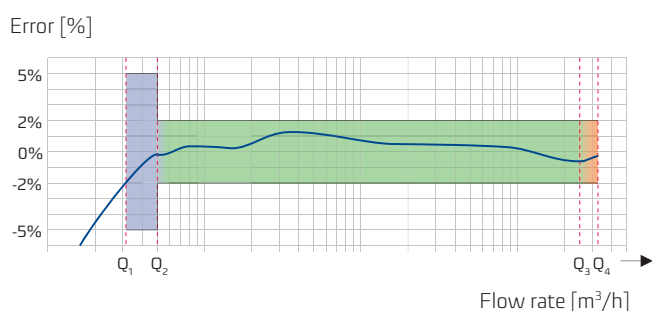
*** Applies to thread size $\frac{7}{8}$ " -> $\frac{3}{4}$ "



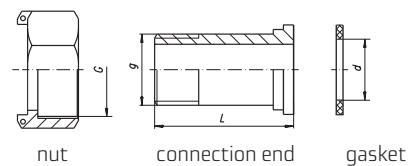
Pressure loss chart



Typical error chart

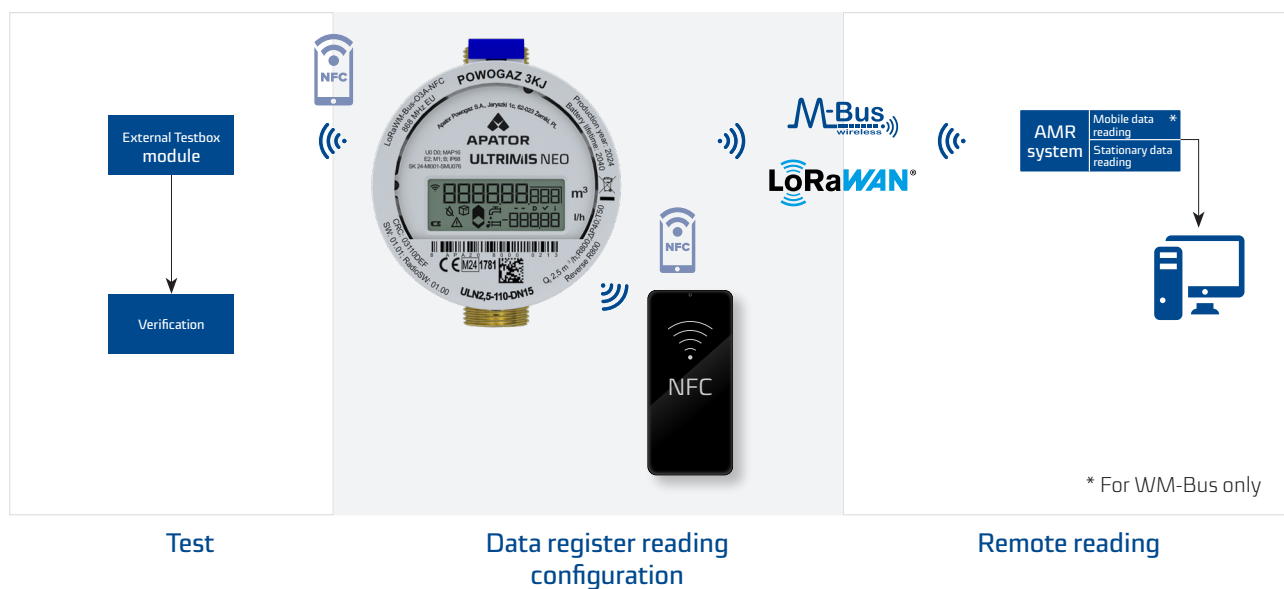


Connection fittings



DN	G inch	g inch	d mm	L 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

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

The data presented in the data sheet was correct on the date of publication.
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