



WATER AND HEAT
METERS



METERING
SOLUTIONS



SERVICES

PRODUCTS CATALOGUE



**WATER AND HEAT
METERS**



**METERING
SOLUTIONS**



SERVICES

*Passion and
knowledge
through the
generations*

1925 – setting up a group of 10 employees from the "Water Meter Repair Workshop", which at that time operated at the Water Supply Company in Poznań, to establish the "Water Meters Workshops" and commence the manufacture of water meters

1926 – first 10 prototypes of vane-wheel water meters

1927/1928 – first deliveries of the manufactured water meters to Lviv, Warsaw, Katowice and Gdynia



1929 – Gold and Bronze medal at the Polish National Exhibition in Poznań



1930-1939 – manufacture of other types of water meters, including: propeller, compound, standpipe and Venturi water meters. Also, a time of close scientific and research cooperation with the eminent engineer A. Troskoleński (notable expert in plumbing and water meters, and scientific advisor to the Polish Central Office of Measures)



1945-1953 – reconstruction and renovation of production halls destroyed in the war and gradual resumption of water meter and gas meter manufacture

1954 – transformation of the "Water Meters Workshops" into an independent enterprise called the "District Water Meter Manufacturing and Repair Company" and production launch of IWO-4 type chlorinators

1957 – a new company name "PoWoGaz – Poznańska Fabryka Wodomierzy i Gazomierzy" (Poznań Water and Gas Meter Company) is chosen as a result of a competition



1958 – addition of POLTAX taximeters to the product portfolio

1957-1960 – construction of a new manufacturing plant at ul. Janickiego in Poznań and moving the plant to its new headquarters

1960-1970 – further expansion of the product portfolio to include adaptor fittings, new types of chlorinators (C 32) and flow meters for open channels; the development of export as products are sent to as many as 22 countries



1980 – further expansion of export with market participants such as the USSR, Czechoslovakia, Bulgaria, Yugoslavia, Egypt, Indonesia and Greece

1981 – the company is granted the right to label ten of its products with the quality certification mark - "1", awarded by the state, including the POLTAX 2 taximeter, and MZ-120 POLMATIK water meters of various sizes

1991 – privatization, incorporation of the company and registration of the joint-stock company as "Fabryka Wodomierzy PoWoGaz" S.A. with its registered office in Poznań

1993 – launch of the manufacture of residential and domestic water meters

1997 – introduction of new products onto the market, including compact heat meters and multi-jet water meters



1998 – commissioning of the production unit of PoWoGaz S.A. in Pniewy near Poznań

1999 – introduction of the new "Nubis" propeller water meters onto the market



2000 – marking the achievements of PoWoGaz as a company of the highest quality – PoWoGaz receives the Polish Quality Award from the Polish Prime Minister, Jerzy Buzek

2003 – introduction of single-jet water meters (DN50-100 mm, "C" class) onto the market



2004 – introduction of multi-jet cold water meters (DN25-40 mm) onto the market



2008 – "Fabryka Wodomierzy PoWoGaz" S.A. joins the Apator Group - the new name of the company is now Apator Powogaz; acquisition of "WMC Telemetria" company from Słupsk; introduction of the remote reading system onto the market



2009 – acquisition of "Apator-KFAP" company from Kraków; expansion of the product portfolio to include LQM and LEC heat meters



2010 – Smart+ residential water meters go on sale; introduction of the new-generation "ELF" compact heat meters onto the domestic market



2011 – acquisition of the Czech company "Metra Sumperk" – a manufacturer of control and measurement instruments; introduction of heating cost allocators onto the Polish market

2012 – expansion of the product portfolio to include class "C" (R=160) residential and domestic water meters



2014 – the company is awarded the title of the "Eagle of Export" ("Orzeł Eksportu") – the decision on the award is made by the chapter presided by the Deputy Prime Minister of the Republic of Poland and the Minister of Economy, Janusz Piechociński. Introduction of new "FAUN" heat meters onto the market.



2015 – anniversary year



2016/2017 – ULTRIMIS W ultrasonic water meter and INVONIC H ultrasonic heat meter

Ultrasonic water meters 06

Ultrasonic water meters UL Ultrimis W _____ 06

Vane-wheel water meters 07

Single-jet dry water meters JS Smart C+ _____ 07
 Single-jet dry water meters JS Smart+ _____ 08
 Single-jet dry water meters JS-NK, JS-NKP _____ 09
 Single-jet dry water meters JS Master C+ _____ 10
 Single-jet dry water meters JS, JS-NK, JS-NO _____ 11
 Single-jet wet water meters JM _____ 12
 Multi-jet dry water meters WS-NK, WS-NKP _____ 13
 Multi-jet wet water meters WM-NK, WM-NKP _____ 14

Volumetric water meters 16

Volumetric water meters SV-RTK _____ 16

AquaSystem – water sales management 17

AquaCode - prepaid water meters _____ 18

Propeller water meters 19

With horizontal rotor axis MWN Nubis _____ 19
 With vertical rotor axis MP _____ 21
 Well water meters with vertical rotor axis MK _____ 23

Special use water meters 24

Compound water meters with the spring valve _____ 24
 Hydrant water meters _____ 26

Flow meters 27

Floqua - electromagnetic flow meters _____ 27
 Meters for irrigation water WI _____ 28

Heat meters 30

Compact heat meters ELF _____ 31
 Ultrasonic compact heat meters Invonic H _____ 32
 FAUN - electronic calculators for heat meters _____ 33
 Cost allocator E-ITN 30.6 _____ 34

Flow sensors for heat meters 35

Ultrasonic flow sensors Invonic F _____ 35
 Single-jet dry flow sensors JS90-NC, JS130-NC _____ 36
 Propeller flow sensors MWN130-NC, MP130-NC _____ 37

Temperature sensors for heat meters 38

Resistance cable sensors TOPE 41, TOPE 42, TOP 1068 _____ 38
 Resistance head sensors TOP 146.1, TOPGN 12/C _____ 39

Metering solutions 40

Wireless remote control reading system AMR _____ 40
 Elements of wireless remote control reading system AMR _____ 43
 Cable remote control reading system FLAT _____ 51
 Elements of cable (impulse) water meters reading system _____ 55

Additional offer 56

Chlorinator C53 _____ 56
 Accessories _____ 56

*) to be included in our range from the second half of the year



Our Outstanding Products



ultrimis ^W

Ultrimis W is a modern ultrasonic type of water meter intended for measuring the flow rates and volumes of water up to a maximum temperature of 50°C using a closed-loop system, with full flow rates up to a maximum pressure of 16 bar (PN16). This is especially important when precise measurements of water consumption and the application of modern communication technologies are required, including NFC and radio reading systems. The water meter features an e-display (IP68); may be installed in any working orientation (U, V, H/V) and does not require the use of U0D0 straight sections.

» [More information on page 6](#)



invonic ^H

INVONIC H is a modern and precise meter for measuring the consumption of energy in heating and cooling systems, intended for residential, office and industrial buildings.

The ultrasonic flow transducer with a brass body used in this meter guarantees high precision, dynamics and stability of measurement regardless of the assembly orientation (horizontal/vertical) and ensures the meter's resistance to magnetic fields. Information on the meter can be read remotely by wire or wirelessly, ensuring that INVONIC H is compatible with various data reading and building automation systems.

» [More information on page 32](#)



AquaCode

The AquaCode prepaid system for water meters is intended for the settlement of water consumption based on advance payments using 6-digit codes that allow the consumption of a specific volume of water. When the purchased credit is exhausted, further water flow is prevented by the closing of a valve. The prepaid system is recommended for water distribution systems in rented flats, council houses, holiday homes or anywhere that there is a frequent change in water consumer or problems related to water consumption charges.

» [More information on page 18](#)



- Apator Metra
- Apator Metroteks
- Apator Miitors
- Apator Telemetry
- Teplovodomer



- George Wilson Industries
- Inda



smart C+

The best protected
dry water meter



UL ULTRIMIS W

ULTRASONIC WATER METERS (DN15-32)

APPLICATION

For measuring water flow rates and volumes up to a maximum temperature of 50°C using a closed-loop system, with full flow rates up to a maximum pressure of 16 bar (PN16). This is especially important when precise measurements of water consumption and the application of modern communication technologies are required, including NFC, radio AMR Walk-by and Drive-by systems. The water meter features an e-display (IP68); may be installed in any working orientation (**U**; **V**; **H/V**) and does not require the use of U0D0 straight sections



UL ULTRIMIS W

MEASUREMENT RANGE (MID):

- Cold water **R250; R400 or R800**

Table 1. BASIC TECHNICAL DATA

Type		Q ₃ [m ³ /h]	DN [mm]	Length [mm]	Connection	Weight [kg]
WATER METERS for cold water – brass body						
UL 2,5 Ultrimis W	up to R800	2,5	15	80; 110; 115; 165	G ³ / ₄ G ⁷ / ₈ -> G ³ / ₄ *	0,48 ÷ 0,60
UL 4 Ultrimis W	up to R800	4	20	105; 115; 130; 190	G1	0,61 ÷ 0,77
UL 6,3 Ultrimis W	up to R800	6,3	25	165; 260	G1 ¹ / ₄	1,05; 1,39
UL 10 Ultrimis W	up to R800	10	32	260	G1 ¹ / ₂	1,68
WATER METERS for cold water – composite body						
UL 2,5 -01 Ultrimis W	up to R800	2,5	15	80; 110	G ³ / ₄ G ⁷ / ₈ -> G ³ / ₄ *	0,29; 0,31
UL 4-01 Ultrimis W	up to R800	4	20	105; 130	G1	0,33; 0,34

*) Thread 7/8" -> 3/4" only, with the length of 115 mm

PRODUCT FEATURES

- Measurements based on a unique and patented ultrasonic beam path through the measurement chamber (W-Sonic Technology)
- No movable elements in the measurement chamber
- Resistant to strong magnetic fields
- IP68 as standard
- Resistant to hydrodynamic impacts
- No need for a strainer or check valve
- Measurement stability regardless of the soiling of the measurement system elements
- Measurement range up to R800 in every installed orientation (H, V, H/V)
- Startup threshold from 0.75 l/h for DN15
- Very low pressure losses
- Battery life warranty of up to 16 years (12 years with the radio)
- Choice between a brass and composite body

JS SMART C+

VANE-WHEEL SINGLE-JET DRY WATER METERS (DN15-20)

APPLICATION

For measuring the flow and volume of water with a temperature up to 30°C or 50°C, or warm water with a temperature up to 90°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**) and in vertical or horizontal hoses with the counter directed sideways (**V**). Water meters SMART C+ and standard version are equipped with low eight-barrel counter (IP65), antimagnetic protection SN +, brass housing and they are adapted to operation in the systems of remote data transfer (AMR).



JS SMART C+

MEASUREMENT RANGE (MID):

- Cold water **R160 - H; R63 - V**,
- Warm water **R160 - H; R63 - V**,

Table 2. BASIC TECHNICAL DATA

Type		Q ₃ [m ³ /h]	DN [mm]	Length [mm]	Connection	Weight [kg]
WATER METERS for cold water						
JS 1,6-02 Smart C+	R160	1,6	15	110	G¾	0,43
JS 2,5-02 Smart C+	R160	2,5	15	110**	G¾	0,43
JS 2,5-G1-02 Smart C+	R160	2,5	20	130	G1	0,57
JS 4-02 Smart C+	R160	4	20	130	G1	0,53
WATER METERS for warm water*						
JS90 1,6-02 Smart C+	R160	1,6	15	110	G¾	0,43
JS90 2,5-02 Smart C+	R160	2,5	15	110**	G¾	0,43
JS90 2,5-G1-02 Smart C+	R160	2,5	20	130	G1	0,57
JS90 4-02 Smart C+	R160	4	20	130	G1	0,53

Counter version IP68 on request

*) Special design of water meters available on request:

-02-S – with hard bearings (water meters for warm water circulation systems)

**) The length of 115 or 80 mm available on request (for JS 2,5 and JS90 2,5 – brass housing)

PRODUCT FEATURES

- Resistant to strong external magnetic field
- Preequipped for installation of: radio module for communication in the Wireless M-Bus, impulse module and M-Bus module
- Readings reliability – fulfils the newest metrological requirements of MID
- Easy reading of the water meter counter
- Hermetic counter (with increased tightness) resistant to steaming
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Protection against mechanical tampering
- Protection limiting the results of water freezing
- Double-sided rotor bearing
- Outlet port of water meter housing suitable for optional installation of a return valve

JS SMART+

VANE-WHEEL SINGLE-JET DRY WATER METERS (DN15-20)

APPLICATION

For measuring the flow and volume of water with a temperature up to 30°C or 50°C, or warm water with a temperature up to 90°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**) and in vertical or horizontal hoses with the counter directed sideways (**V**). Water meters SMART+ and standard version are equipped with low eight-barrel counter (IP65), antimagnetic protection SN +, brass housing and they are adapted to operation in the systems of remote data transfer (AMR).



JS SMART+

MEASUREMENT RANGE (MID):

- Cold water **R100 - H; R50 - V,**
- Warm water **R80 or R100**** - H; R40 or R50**** - V,**

Table 3. BASIC TECHNICAL DATA

Type*		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]
WATER METERS for cold water						
JS 1,6-02 Smart+	R100	1,6	15	110	G¾	0,43
JS 1,6-03 Smart+	R80	1,6	15	110	G¾	0,25
JS 2,5-02 Smart+	R100	2,5	15	110***	G¾	0,43
JS 2,5-03 Smart+	R80	2,5	15	110	G¾	0,25
JS 2,5-G1-02 Smart+	R100	2,5	20	130	G1	0,57
JS 4-02 Smart+	R100	4	20	130	G1	0,53
WATER METERS for warm water**						
JS90 1,6-02 Smart+	R100****	1,6	15	110	G¾	0,43
JS90 1,6-03 Smart+	R80	1,6	15	110	G¾	0,25
JS90 2,5-02 Smart+	R100****	2,5	15	110***	G¾	0,43
JS90 2,5-03 Smart+	R80	2,5	15	110	G¾	0,25
JS90 2,5-G1-02 Smart+	R100****	2,5	20	130	G1	0,57
JS90 4-02 Smart+	R100****	4	20	130	G1	0,53

Counter version IP68 on request

*) Water meters designs:

-02 – eight-barrel counter, brass housing, water meter preequipped for installation of: radio module for communication in the Wireless M-Bus, impulse module and M-Bus module

-03 – eight-barrel counter, composite body (concerns JS1,6 and JS2,5 with the length of 110 mm, R80 for cold or warm water)

**) Special design of water meters available on request:

-02-S – with hard bearings (water meters for warm water circulation systems)

*** The length of 115 or 80 mm available on request (for JS 2,5 and JS90 2,5 – brass housing)

**** On request

PRODUCT FEATURES

- Resistant to strong external magnetic field
- Preequipped for installation of: radio module for communication in the Wireless M-Bus, impulse module and M-Bus module
- Readings reliability – fulfils the newest metrological requirements of MID
- Easy reading of the water meter counter
- Hermetic counter (with increased tightness) resistant to steaming
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Protection against mechanical tampering
- Protection limiting the results of water freezing
- Outlet port of water meter housing suitable for optional installation of a return valve
- Double-sided rotor bearing

JS-NK | JS-NKP**VANE-WHEEL SINGLE-JET DRY WATER METERS (DN15-20)****APPLICATION**

For measuring the flow and volume of water with a temperature up to 30°C or 50°C, or warm water with a temperature up to 90°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**) and in vertical or horizontal hoses with the counter directed sideways (**V**). Water meters are equipped with impulse transmitter (JS-NK) or adapted for installation of the transmitter (JS-NKP). In standard version they are equipped with five-barrel counter (IP65), antimagnetic protection SN + and brass housing. Possible operation of water meters in the systems of remote readings transfer.















JS-NK

MEASUREMENT RANGE (MID):

- Cold water **R100 - H; R50 - V,**
- Warm water **R80 - H; R40 - V,**

Table 4. BASIC TECHNICAL DATA

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value NK [dm³/imp.]	
							Standard	On request
WATER METERS for cold water								
 JS 1,6-XX*	R100	1,6	15	110	G¾	0,65	10	0,25; 1; 2,5 25; 100 250; 1000
 JS 1,6-03-XX*	R80	1,6	15	110	G¾	0,47		
 JS 2,5-XX*	R100	2,5	15	110***	G¾	0,65		
 JS 2,5-03-XX*	R80	2,5	15	110	G¾	0,47		
 JS 2,5-G1-XX*	R100	2,5	20	130	G1	0,75		
 JS 4-XX*	R100	4	20	130	G1	0,75		
WATER METERS for warm water**								
 JS90 1,6-XX*	R80	1,6	15	110	G¾	0,65	10	0,25; 1; 2,5 25; 100 250; 1000
 JS90 1,6-03-XX*	R80	1,6	15	110	G¾	0,47		
 JS90 2,5-XX*	R80	2,5	15	110***	G¾	0,65		
 JS90 2,5-03-XX*	R80	2,5	15	110	G¾	0,47		
 JS90 2,5-G1-XX*	R80	2,5	20	130	G1	0,75		
 JS90 4-XX*	R80	4	20	130	G1	0,75		

Counter version IP68 on request

*) XX – Water meters designs – where -XX stands for:

-NK – Water meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NKP – Water meter adapted for installation of pulse transmitter

-03-NK or -03-NKP – five-barrel counter, composite body (concerns JS1,6 and JS2,5 with the length of 110 mm, R80 for cold or warm water)

**) Special design of water meters available on request:

-S – with hard bearings (water meters for warm water circulation systems), not applicable to design 03

*** The length of 115 or 80 mm available on request (for JS 2,5 and JS90 2,5 – brass housing)

PRODUCT FEATURES

- Readings reliability – fulfils the newest metrological requirements of MID
- Adapted to operation in AMR systems
- Easy reading of the water meter counter
- Hermetic counter (with increased tightness) resistant to steaming
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Protection against mechanical tampering
- Protection limiting the results of water freezing
- Double-sided rotor bearing
- Outlet port of water meter housing suitable for optional installation of a return valve

JS MASTER C+ | JS-NK MASTER C+ | JS-NKP MASTER C+

VANE-WHEEL SINGLE-JET DRY WATER METERS (DN25-40)

APPLICATION

For measuring the flow and volume of water with a temperature up to 30°C or 50°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**) and in vertical or horizontal hoses with the counter directed sideways (**V**). Water meters JS Master c+ are equipped with impulse transmitter (JS-NK) or adapted for installation of the transmitter (JS-NKP), in standard version with five-barrel counter (IP65), brass housing with antimagnetic protection. Water meters are adapted to operation in the systems of remote data transfer (AMR).



MEASUREMENT RANGE (MID):

- Cold water R160 - H; R63 - V,

Table 5. BASIC TECHNICAL DATA

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value NK [dm³/imp.]	
							Stand.	On request
WATER METERS for cold water								
JS 6,3 Master C+	R160	6,3	25	260	G1¼	2,0	10	2,5 25 100 250 1000
JS 6,3-XX* Master C+	R160	6,3	25	260	G1¼	2,2		
JS 10-G1¼ Master C+	R160	10	25	260	G1¼	2,2		
JS 10-G1¼-XX* Master C+	R160	10	25	260	G1¼	2,4		
JS 10 Master C+	R160	10	32	260	G1½	2,2		
JS 10-XX* Master C+	R160	10	32	260	G1½	2,4		
JS 16 Master C+	R160	16	40	300	G2	2,5	100	2,5; 10; 25; 250; 100; 1000
JS 16-XX* Master C+	R160	16	40	300	G2	2,7		

Counter version IP68 on request

*) Water meters designs – where -XX stands for:

- NK – Water meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting
- NKP – Water meter adapted for installation of pulse transmitter

PRODUCT FEATURES

- Preequipped for installation of: radio module for communication in the Wireless M-Bus, impulse module (not applicable to JS-NK, JS-NKP)
- Easy reading of the water meter counter
- Hermetic counter (with increased tightness) resistant to steaming
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Protection against mechanical tampering
- Double-sided rotor bearing

JS MASTER+ | JS-NK MASTER+ | JS-NKP MASTER+

VANE-WHEEL SINGLE-JET DRY WATER METERS (DN25-40)

APPLICATION

For measuring the flow and volume of water with a temperature up to 30°C or 50°C or warm water with a temperature up to 130°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (H) and in vertical or horizontal hoses with the counter directed sideways (V).

Water meters JS Master + are equipped with impulse transmitter (JS-NK) or adapted for installation of the transmitter (JS-NKP), in standard version with five-barrel counter (IP65), brass housing, antimagnetic protection. Water meters are adapted to operation in the systems of remote data transfer (AMR).



JS MASTER+

MEASUREMENT RANGE (MID):

- Cold water R100 - H; R50 - V,
- Warm water R80 - H; R40 - V,

Table 6. BASIC TECHNICAL DATA

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value NK [dm³/imp.]	
							Stand.	On request
WATER METERS for cold water								
JS 6,3 Master+	R100	6,3	25	260	G1¼	2,0	10	2,5 25 100 250 1000
JS 6,3-XX* Master+	R100	6,3	25	260	G1¼	2,2		
JS 6,3/165 Master+	R100	6,3	25	165	G1¼	1,6		
JS 6,3/165-XX* Master+	R100	6,3	25	165	G1¼	1,8		
JS 10-G1¼ Master+	R100	10	25	260	G1¼	2,2		
JS 10-G1¼-XX* Master+	R100	10	25	260	G1¼	2,4		
JS 10 Master+	R100	10	32	260	G1½	2,2		
JS 10-XX* Master+	R100	10	32	260	G1½	2,4	100	2,5; 10; 25 250; 100; 1000
JS 16 Master+	R100	16	40	300	G2	2,5		
JS 16-XX* Master+	R100	16	40	300	G2	2,7		
WATER METERS for hot water								
JS130 6,3 Master+	R80	6,3	25	260	G1¼	2,0	10	2,5 25 100 250 1000
JS130 6,3-XX* Master+	R80	6,3	25	260	G1¼	2,2		
JS130 10-G1¼ Master+	R80	10	25	260	G1¼	2,2		
JS130 10-G1¼-XX* Master+	R80	10	25	260	G1¼	2,4		
JS130 10 Master+	R80	10	32	260	G1½	2,2		
JS130 10-XX* Master+	R80	10	32	260	G1½	2,4		
JS130 16 Master+	R80	16	40	300	G2	2,5	100	2,5; 10; 25 250; 100; 1000
JS130 16-XX* Master+	R80	16	40	300	G2	2,7		

Counter version IP68 on request

*) Water meters designs – where -XX stands for:

-NK – Water meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NKP – Water meter adapted for installation of pulse transmitter

PRODUCT FEATURES

- Preequipped for installation of: radio module for communication in the Wireless M-Bus, impulse module (not applicable to JS-NK and JS-NKP)
- Easy reading of the water meter counter
- Hermetic counter (with increased tightness) resistant to steaming
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Protection against mechanical tampering
- Double-sided rotor bearing

JS IMPERO | JS-NK | JS-NO | JS-NKO | JS-NKOP

VANE-WHEEL SINGLE-JET DRY WATER METERS (DN50-100)

APPLICATION









For precise measuring of consumption of greater amounts of cold water with a temperature up to 50°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**). Water meters JS; JS-NK; -NO; -NKO; -NKOP in standard version are equipped with six-barrel counter (IP65) and painted cast-iron housing. Water meters are adapted to operation in the systems of remote data transfer (AMR).

MEASUREMENT RANGE (MID):

- Cold water R315 - H,



Table 7. BASIC TECHNICAL DATA

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection ****	Weight [kg]	Impulse value [dm³/imp.]		
							NK**		NO
							Standard	On request	
WATER METERS for cold water									
 JS 50	R315	25	50	270	flange	11,8	1000	2,5 10 25 100 250	1
	R315	25	50	300***	flange	14,3			
 JS 50-XX*	R315	25	50	270	flange	12,2			
	R315	25	50	300***	flange	14,7			
 JS 65	R315	40	65	300	flange	16,6			
 JS 65-XX*	R315	40	65	300	flange	17,0			
 JS 80*	R315	63	80	300	flange	20,0			
	R315	63	80	350***	flange	21,6			
 JS 80-XX*	R315	63	80	300	flange	20,4			
	R315	63	80	350***	flange	22,0			
 JS 100	R315	100	100	360	flange	23,5			
	R315	100	100	350***	flange	23,0			
 JS 100-XX*	R315	100	100	360	flange	23,9			
	R315	100	100	350***	flange	23,4			

Water meter housing with pressure measurement outlet available on request

*1) Water meters designs – where -XX stands for:

-NK – Water meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NO – opto-electronic transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NKO – water meter equipped with NK and NO transmitter

-NKOP – water meter adapted for installation of NK and NO transmitter

On request — housing with pressure measurement outlet (coupling with lockshield valve of the HASCO type: Z807/13/16x1.5)

**1) Hermetic counter (IP68) available on request, pre equipped for radio transmitters - Wireless M-Bus standard

or NK transmitter with pulse range 10, 100 or 1000 (not applicable to NO and NKO)

***1) On request (housing length according to ISO 4064)

****1) Flange drilling: standard according to PN-EN 1092-2 (PN10), DIN 2532, DIN 2501 (PN10), BS4504 (PN10).

PRODUCT FEATURES

- Preequipped for installation of: radio module for communication in the Wireless M-Bus, impulse module (not applicable to JS-NK; -NO; -NKO; -NKOP)
- Wide measuring range
- Low starting rate
- Double-sided rotor bearing
- Removable measuring panel
- Easy reading of the water meter counter
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Standard adaptation for installation of radio and impulse module
- Readings reliability
- Hermetic counter – IP68 on request *)
- Special housing design with the connection for pressure measurement available

JM**VANE-WHEEL SINGLE-JET WET WATER METERS (DN15-20)****APPLICATION**

For measuring the flow and volume of water with a temperature up to 30°C or 50°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**) and in vertical or horizontal hoses with the counter directed sideways (**V**). Water meters JM in standard version are equipped with five-barrel counter (IP68), brass housing and are fully resistant against the external magnetic field.

MEASUREMENT RANGE (MID):

- Cold water **R160 - H; R80 - V**,



JM

Table 8. BASIC TECHNICAL DATA

Type		Q_3 [m ³ /h]	DN [mm]	Length [mm]	Connection	Weight [kg]
WATER METERS for cold water						
JM 2,5	R160	2,5	15	110	G¾	0,4
JM 4	R160	4	20	130	G1	0,5

PRODUCT FEATURES

- Full resistance against the external magnetic field
- Indicator-barrel counter, barrels immersed in glycerine solution
- Easy reading of the water meter counter
- Low starting rate
- Readings reliability – fulfils the newest metrological requirements of MID
- Protection against mechanical tampering

WS-NK | WS-NKP

VANE-WHEEL MULTI-JET DRY WATER METERS (DN15-50)

APPLICATION

For measuring the flow and volume of water with a temperature up to 30°C or 50°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (H). Water meters in standard version are equipped with five-barrel counter (IP54) and brass housing. By optional equipment with pulse transmitters water meters are adapted to operation in the systems of remote data transfer (AMR).



WS-NKP

MEASUREMENT RANGE (MID):

- Cold water R100 - H

Table 9. BASIC TECHNICAL DATA

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value NK [dm³/imp.]	
							Standard	On request
WATER METERS for cold water								
WS 2,5-NKP*	R100	2,5	15	165	G¾	1,4	1	10
WS 2,5-G1-NKP*	R100	2,5	20	190	G1**	1,5		
WS 4-NKP*	R100	4	20	190	G1	1,5	10	100
WS 6,3-NKP*	R100	6,3	25	165	G1¼	2,0		
WS 6,3-NKP*	R100	6,3	25	260	G1¼	2,1		
WS 10-NKP*	R100	10	32	260	G1½	2,3	100	10
WS 16-NKP*	R100	16	40	300	G2	4,0		
WS 25-NKP*	R100	25	50	300	flange	10,7		

*) Standard design:

-NKP – water meter adapted for installation of pulse transmitter

Version available on request:

-NK – water meter with pulse transmitter with standard cable length of 2 linear metres – remote transmission of volume counting

**) Water meter manufactured on request

PRODUCT FEATURES

- New generation protection against the external magnetic field, resistance according to PN-EN 14154
- Readings reliability – fulfils the newest metrological requirements of MID (cold water)
- Easy reading of the water meter counter
- Protection against mechanical tampering
- Adaptation of water meters in the version with NK transmitter for cooperation with external radio modules for communication in the Wireless M-Bus

WM-NK | WM-NKP**VANE-WHEEL MULTI-JET WET WATER METERS (DN15-40)****APPLICATION**

For measuring the flow and volume of water with a temperature up to 30°C or 50°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**). Water meters in standard version are equipped with five-barrel counter (IP68) and brass housing. By optional equipment with pulse transmitters water meters are adapted to operation in the systems of remote data transfer (AMR).

MEASUREMENT RANGE (MID):

- Cold water **R160 - H**



WM-NKP

Table 10. BASIC TECHNICAL DATA

Type	Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value NK [dm³/imp.]		
						Standard	On request	
WATER METERS for cold water								
WM 2,5-NKP*	R160	2,5	15	165	G¾	1,2	10	100
WM 4-NKP*	R160	4	20	190	G1	1,4		
WM 6,3-NKP*	R160	6,3	25	260	G1¼	2,0		
WM 10-NKP*	R160	10	32	260	G1½	2,2		
WM 16-NKP*	R160	16	40	300	G2	5,7	100	10

*) Standard design: **-NKP** – water meter adapted for installation of pulse transmitter

Version available on request: **-NK** – water meter with pulse transmitter – remote transmission of volume counting

PRODUCT FEATURES

- Full resistance against the external magnetic field
- Readings reliability – fulfils the newest metrological requirements of MID
- Easy reading of the water meter counter
- Hermetic counter resistant to steaming
- Protection against mechanical tampering
- Adaptation of water meters in the version with NK transmitter for cooperation with external radio modules for communication in the Wireless M-Bus
- Indicator-barrel counter, barrels immersed in glycerine solution

SV-RTK

VOLUMETRIC DRY WATER METERS FOR COLD WATER (DN15-40)

APPLICATION

For measuring the flow and volume of water with a temperature up to 30°C or 50°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal, vertical and diagonal hoses in any position without losing metrological parameters. Water meters in standard version are equipped with eight-barrel counter (IP65) and brass housing.



SV-RTK

MEASUREMENT RANGE (MID):

- Cold water R200 to 400 - H

Table 11. BASIC TECHNICAL DATA

Type		Q ₃ [m ³ /h]	DN [mm]	Length [mm]	Connection	Weight [kg]
WATER METERS for cold water						
■ SV-RTK 2,5-composite*	R200 ÷ R315	2,5	15	110	G¾	0,5
	R200 ÷ R315	2,5	15	115	G¾	0,5
	R200 ÷ R315	2,5	15	165	G¾	0,6
■ SV-RTK 2,5*	R200 ÷ R400	2,5	15	110	G¾	1,0
			20	165	G1	1,4
■ SV-RTK 4,0*	R200 ÷ R400	4,0	20	190	G1	1,3
■ SV-RTK 6,3	R200 ÷ R400	6,3	25	260	G1¼	3,2
■ SV-RTK 10	R200 ÷ R400	10	32	260	G1½	4,6
■ SV-RTK 16	R200 ÷ R400	16	40	300	G2	6,9

*) On request IP68 counter available (lack of adaptation for remote reading)

PRODUCT FEATURES

- Very precise measurement even of the smallest amounts of flow water
- Keeping constant metrological parameters regardless the mounting position
- Very low starting rate that allows to detect flows from 1,5 dm³/h for DN15
- Protection against mechanical tampering
- Version with composite housing available (DN15, length L=165 mm)
- Double protection against penetration of pollutions into the measuring unit
- Outlet port of water meter housing suitable for optional installation of a return valve

AquaSystem

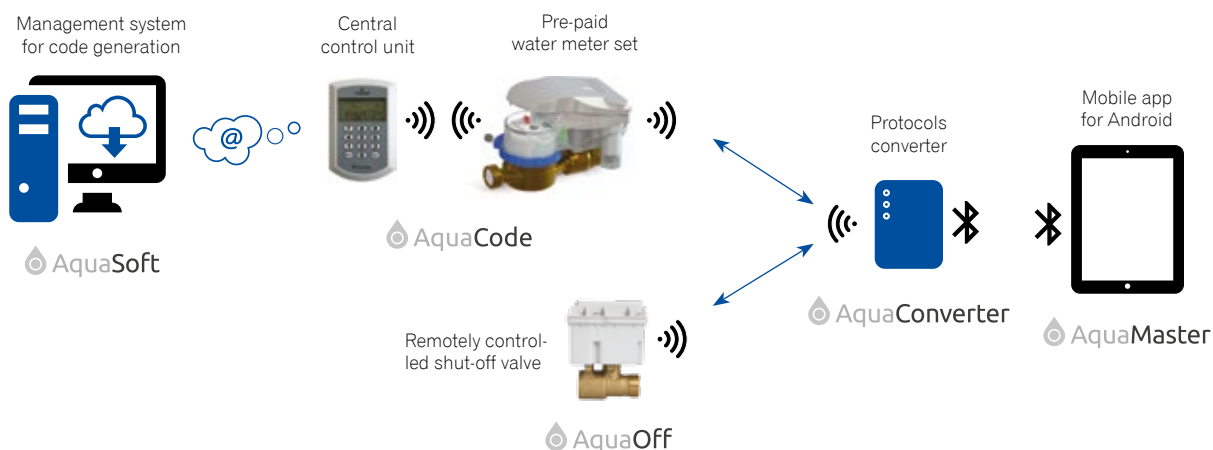
WATER SALES MANAGEMENT

APPLICATION

AquaSystem is a group of products for water sales management. The system elements allow sales of water through pre-paid systems (AquaCode pre-paid water meter) and restricting access to water if the user fails to settle the bill in the standard post-paid system (AquaOff valve).

AQUASYSTEM CONSISTS OF THE FOLLOWING ELEMENTS:

- AquaCode – pre-paid water meters
- AquaOff – remotely controlled valves
- AquaSoft – web app for the distribution of codes
- AquaMaster – Android app for AquaCode and AquaOff management/administration



AquaMaster

MANAGEMENT APP

APPLICATION

AQUACODE MANAGEMENT:

- Recharge value setting for one code (xx m³/code)
- Credit value setting (reserve water if a code cannot be bought)
- Assignment of a name, address and telephone no. to the water meter no.
- Pre-payment on/off
- Recharge reset
- Alert detection
- Code recharge

AQUAOFF MANAGEMENT:

- Valve opening/closing
- Valve state check

AquaMaster communications (app for smartphones and tablets with Android) with AquaCode is possible thanks to the Bluetooth signal converter to 868 MHz radio signals.

AquaOff

REMOTELY CONTROLLED VALVES

APPLICATION

Shutting off the water supply to the premises. Remote control is possible thanks to the AquaMaster app and Bluetooth/Radio converter.



Table 12. BASIC TECHNICAL DATA

Type	DN [mm]	Length [mm]	Connection	Weight [kg]
Remotely controlled shut-off valve				
AquaOff DN15	15	65,5	G¾	0,60
AquaOff DN20	20	88	G1	0,65

AquaCode

PREPAID SYSTEM FOR WATER METERS DN15-20

APPLICATION

For measuring the flow and volume of cold water with a temperature up to 30°C or 50°C in the closed-circuit system with the full flow of the flux, and on the maximum working pressure up to 16 bar (PN16). Recommended installation of a prepaid water meter set concerns metering of water consumption in rented flats, social flats or in holiday cottages i.e. everywhere where the consumer changes very often and there might be a problem to collect the amounts due for water consumption. Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**) and in vertical or horizontal hoses with the counter directed sideways (**V**). Prepaid water meter system consists of: prepaid water meter set (IP68 – JS water meter, stop valve, electronic module), wireless control unit and PC software. The system is intended for settlement of water consumption based on in advance payments for 6-digit codes that allow drawing a definite water volume. When the water volume bought will be used up, the water flow is closed by the valve. The outlet port of stop valve housing is adapted for optional installation of a return valve.



PREPAID SYSTEM
FOR WATER METERS

MEASUREMENT RANGE (MID):

- Cold water R160; 100; - H; R63; 50 - V,
- Hot water R100-H; R50-V

Table 13. BASIC TECHNICAL DATA

Type		Q ₃ [m ³ /h]	DN [mm]	Length [mm]	Connection	Weight [kg]
PREPAID WATER METERS for cold water						
AquaCode DN15 R100	R100	2,5	15	165	G¾	1
AquaCode DN15 R160	R160	2,5	15	165	G¾	1
AquaCode DN20 R100	R100	4	20	190	G1	1,2
AquaCode DN20 R160	R160	4	20	190	G1	1,2
PREPAID WATER METERS for hot water						
AquaCode DN15 R100 T90	R100	2,5	15	165	G¾	1
AquaCode DN20 R100 T90	R100	4	20	190	G1	1,2

PRODUCT FEATURES

- Unique prepaid codes
- Possibility to buy codes via Internet or mobile phones
- If the volume of water bought will be used up, further drawing of strictly defined water volume is possible after activation of overdraft function
- Elimination of the costs of meter reader's services and monitoring of the amounts due
- Minimum battery life 6 years – 700 operations of valve opening/closing
- Full control over water expenses

AquaSoft

WEB APP

APPLICATION

Intended for pre-paid system management as well as the creation and distribution of recharge codes for pre-paid water meters

MWN NUBIS | MWN-NK | MWN-NO | MWN-NKO | MWN-NKOP MWN130 | MWN130-NK | MWN130-NKP

PROPELLER WATER METERS (WOLTMAN) WITH HORIZONTAL ROTOR AXIS (DN40-500)

APPLICATION

For measuring of consumption of greater amounts of cold water with a temperature up to 30°C or 50°C, or hot water with a temperature up to 130°C, on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**), in vertical or horizontal hoses with the counter directed sideways (**V**) or in diagonal hoses (**H/V**). MWN water meters in standard version are equipped with six-barrel counter (IP66, IP68 – optional) and painted cast-iron housing. Water meters are adapted to operation in the systems of remote data transfer (AMR).



MWN



MWN50-G

MEASUREMENT RANGE (MID):

MWN / MWN130

- Cold water R100 ÷ 200 - H, V
- Warm water R25 ÷ 40 - H, V

MWN-G / MWN130-G

- Cold water R100 - H, V
- Warm water R40 - H, V

Table 14. BASIC TECHNICAL DATA

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value [dm³/imp.]		
							NK***		NO
							Stand.	On request	
WATER METERS for cold water									
MWN 40 Nubis	R100	25	40	200	flange***	7,9	1000	2,5 10 25 100 250	1
MWN 40-XX* Nubis	R100	25	40	200	flange***	8,3			
MWN 50 Nubis	R100	40	50	200	flange***	9,9			
MWN 50-XX* Nubis	R100	40	50	200	flange***	10,3			
MWN 50-G Nubis	R100	40	50	200	G2½	5,4			
MWN 50-G-XX* Nubis	R100	40	50	200	G2½	5,8			
MWN 65 Nubis	R125	63	65	200	flange***	10,6			
MWN 65-XX* Nubis	R125	63	65	200	flange***	11,0			
MWN 80 Nubis	R160	100	80	225	flange***	13,8			
				200**	flange***	13,3			
MWN 80-XX* Nubis	R160	100	80	225	flange***	14,2			
				200**	flange***	13,7			
MWN 100 Nubis	R200	160	100	250	flange***	15,6			
MWN 100-XX* Nubis	R200	160	100	250	flange***	16,0			
MWN 125 Nubis	R160	250	125	250	flange***	18,1			
MWN 125-XX* Nubis	R160	250	125	250	flange***	18,5			
MWN 150 Nubis	R200	400	150	300	flange***	40,1			
MWN 150-XX* Nubis	R200	400	150	300	flange***	40,5			
MWN 200 Nubis	R125	630	200	350	flange***	51,1			
MWN 200-XX* Nubis	R125	630	200	350	flange***	51,5			
MWN 250 Nubis	R100	1000	250	450	flange***	75,1			
MWN 250-XX* Nubis	R100	1000	250	450	flange***	75,5			
MWN 300 Nubis	R125	1600	300	500	flange***	103,1			
MWN 300-XX* Nubis	R125	1600	300	500	flange***	103,5			
							10000	250, 1000, 2500	105,23

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value [dm³/imp.]		
							NK****		NO
							Stand.	On request	
MWN 400 Nubis	Class B	1000 (Qn)	400	600	flange***	240,0	10000	1000	105,23
MWN 400-XX* Nubis	Class B	1000 (Qn)	400	600	flange***	240,4			100
MWN 500 Nubis	Class B	1500 (Qn)	500	800	flange***	380,0			
MWN 500-XX* Nubis	Class B	1500 (Qn)	500	800	flange***	380,4			
WATER METERS for hot water									
MWN130 40 Nubis	R40	25	40	200	flange***	7,9	100	2,5 10; 25 250 1000	–
MWN130 40-XX* Nubis	R40	25	40	200	flange***	8,3			
MWN130 50 Nubis	R40	25	50	200	flange***	9,9			
MWN130 50-XX* Nubis	R40	25	50	200	flange***	10,3			
MWN130 50-G Nubis	R40	25	50	200	G2½	5,4	1000	25; 100 250	
MWN130 50-G-XX* Nubis	R40	25	50	200	G2½	5,8			
MWN130 65 Nubis	R40	40	65	200	flange***	10,6	100	2,5 10 25 250 1000	
MWN130 65-XX* Nubis	R40	40	65	200	flange***	11,0			
MWN130 80 Nubis	R40	63	80	200**	flange***	13,3			
				225	flange***	13,8			
MWN130 80-XX* Nubis	R40	63	80	200**	flange***	13,7			
				225	flange***	14,2			
MWN130 100 Nubis	R40	100	100	250	flange***	15,6			
MWN130 100-XX* Nubis	R40	100	100	250	flange***	16,0			
MWN130 125 Nubis	R40	160	125	250	flange***	18,1			
MWN130 125-XX* Nubis	R40	160	125	250	flange***	18,5			
MWN130 150 Nubis	R40	250	150	300	flange***	40,1	1000	25 100 250 2500 10000	
MWN130 150-XX* Nubis	R40	250	150	300	flange***	40,5			
MWN130 200 Nubis	R25	400	200	350	flange***	51,1			
MWN130 200-XX* Nubis	R25	400	200	350	flange***	51,5			
MWN130 250 Nubis	R25	630	250	450	flange***	75,1			
MWN130 250-XX* Nubis	R25	630	250	450	flange***	75,5			
MWN130 300 Nubis	R25	1000	300	500	flange***	103,1	1000	250, 2500, 10000	
MWN130 300-XX* Nubis	R25	1000	300	500	flange***	103,5			

*) **DN-XX / DN-G-XX** – Water meters designs – where **-XX** stands for:

-**NK** – water meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-**NO** – opto-electronic transmitter (not applicable to water meters for hot water) with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-**NKO** – water meter equipped with NK and NO transmitter

-**NKOP** – water meter adapted for installation of NK and NO transmitter

On request – special design for demineralised water, only for diameters DN40-125 cold and hot water

On request – water meter (at the inlet) housing with pressure measurement outlet (coupling with lockshield valve, of the HASCO type: Z807/13/16x1.5), concerning diameter DN40-DN150 - only cold water

**) On request housing length according to ISO 4064

***) Flange drilling:

- Standard according to PN-EN 1092-2 (PN10), DIN 2532, DIN2501 (PN10), BS4504 (PN10)

- Special according to PN-EN 1092-2 (PN16) (on request)

- Additional according to JIS B2220-1984 (DN40-300) and ANSI B16.5 class 150 (DN40-300) (on request)

****) On request IP68 – cold water only, pre equipped for radio transmitters - Wireless M-Bus standard or NK transmitter with pulse range 10, 100, 1000 dm³/imp. (not applicable to NO and NK)

PRODUCT FEATURES

- Preequipped for installation of: radio module for communication in the Wireless M-Bus and impulse module (not applicable to water meters for hot water and versions with NK, NO, NKO and NKOP transmitters)
- Wide measuring range
- Low starting rate
- Removable measuring panel
- Double-sided rotor bearing
- Easy reading of the water meter counter
- Hermetic counter - IP68 on request ****)
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Readings reliability
- In special option housing with connection for pressure measurement DN50-300 (cold and hot water)
- Optional version for demineralised water DN40-125 (cold and hot water)
- On request possibility of another drilling

MP-01 | MP-01-NK | MP-01-NO | MP-01-NKO | MP-01-NKOP
MP130-01 | MP130-01-NK | MP130-01-NKP

PROPELLER WATER METERS (WOLTMAN) WITH VERTICAL ROTOR AXIS (DN40-100)

APPLICATION

For measuring of consumption of greater amounts of cold water with a temperature up to 30°C or 50°C, or hot water with a temperature up to 130°C, on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (H). MP water meters in standard version are equipped with six-barrel counter (IP68 – optional) and painted cast-iron housing. Water meters are adapted to operation in the systems of remote data transfer (AMR).



MP-01

MEASUREMENT RANGE (MID):

- Cold water R80 - H
- Hot water R80 - H

Table 15. BASIC TECHNICAL DATA

Type	Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value [dm³/imp.]		
						NK***		NO
						Stand.	On request	

WATER METERS for cold water

MP 40-01	R80	25	40	300	flange***	11,6	1000	2,5 10 25 100 250	1
MP 40-01-XX*	R80	25	40	300	flange***	12,1			
MP 50-01	R80	25	50	270	flange***	12,7			
				200	flange***	11,5			
				300**	flange***	13,4			
MP 50-01-XX*	R80	25	50	270	flange***	13,2			
				200	flange***	12,0			
				300**	flange***	13,9			
MP 65-01	R80	40	65	300	flange***	19,0			
MP 65-01-XX*	R80	40	65	300	flange***	19,5			
MP 80-01	R80	63	80	300	flange***	21,0			
				350**	flange***	25,0			
				300	flange***	21,5			
MP 80-01-XX*	R80	63	80	350**	flange***	25,5			
				360	flange***	30,0			
MP 100-01	R80	100	100	350**	flange***	29,6			
MP 100-01-XX*	R80	100	100	360	flange***	30,5			
				350**	flange***	30,1			

WATER METERS for hot water

MP130 40-01	R80	25	40	300	flange***	11,6	100	2,5 10 25 250 1000	-
MP130 40-01-XX*	R80	25	40	300	flange***	12,1			
MP130 50-01	R80	25	50	270	flange***	12,7			
				200	flange***	11,5			
				300**	flange***	13,4			
MP130 50-01-XX*	R80	25	50	270	flange***	13,2			
				200	flange***	12,0			
				300**	flange***	13,9			
MP130 65-01	R80	40	65	300	flange***	19,0			
MP130 65-01-XX*	R80	40	65	300	flange***	19,5			



Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value [dm³/imp.]		
							NK****		NO
							Stand.	On request	
MP130 80-01	R80	63	80	300	flange***	21,0	100	2,5 10 25 250 1000	–
				350**	flange***	25,0			
MP130 80-01-XX*	R80	63	80	300	flange***	21,5			
				350**	flange***	25,5			
MP130 100-01	R80	100	100	360	flange***	30,0			
				350**	flange***	29,6			
MP130 100-01-XX*	R80	100	100	360	flange***	30,5			
				350**	flange***	30,1			

*) Water meters designs – where -XX stands for:

-NK – water meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NO – opto-electronic transmitter (not applicable to water meters for hot water) with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NKO – water meter equipped with NK and NO transmitter

-NKOP – water meter adapted for installation of NK and NO transmitter

**) On request (housing length according to ISO 4064)

***) Flange drilling: according to PN-EN 1092-2 (PN10), DIN 2532, DIN2501 (PN10), BS4504 (PN10)

****) On request hermetic counter IP68 – cold water only, pre equipped for radio transmitters - Wireless M-Bus standard or NK transmitter with pulse range 10, 100, or 1000 dm³/imp. (not applicable to NO and NKO)

PRODUCT FEATURES

- Preequipped for installation of: radio module for communication in the Wireless M-Bus and impulse module (not applicable to water meters for hot water and versions with NK, NO, NKO and NKOP transmitters)
- Wide measuring range
- Low starting rate
- Removable measuring panel
- Double-sided rotor bearing
- Easy reading of the water meter counter
- Hermetic counter - IP68 on request ****)
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Readings reliability
- On request possibility of another drilling

MK-01 | MK-01-NK | MK-01-NO | MK-01-NKO | MK-01-NKOP

WELL WATER METERS (WOLTMAN) WITH VERTICAL ROTOR AXIS (DN80-150)

APPLICATION

For measuring the consumption of greater amounts of cold water with a temperature up to 30°C on the maximum working pressure up to 16 bar (PN16). For installation at water intakes (drilled wells). Installation of water meter in the area where a vertical pipeline turns to horizontal pipeline, with the counter directed upwards. MK water meters in standard version are equipped with six-barrel counter (IP65, IP68 – optional) and painted cast-iron housing. Water meters are adapted to operation in the systems of remote data transfer (AMR).



MK-01

MEASUREMENT RANGE (MID):

- Cold water R63

Table 16. BASIC TECHNICAL DATA

Type	Q ₃ [m³/h]	DN [mm]	Length [mm]**	Connection	Weight [kg]	Impulse value [dm³/imp.]			
						NK***		NO	
						Stand.	On request		
WATER METERS for cold water									
MK 50-01	R63	25	50	150	flange***	14,0	1000	2,5, 10, 25, 100, 250	1
MK 50-01-XX*	R63	25	50	150	flange***				
MK 80-01	R63	63	80	180	flange***	18,0			
MK 80-01-XX*	R63	63	80	180	flange***				
MK 100-01	R63	100	100	200	flange***	24,0			
MK 100-01-XX*	R63	100	100	200	flange***		10000	25, 100, 250, 1000, 2500	10
MK 150-01	R63	250	150	250	flange***	45,0			
MK 150-01-XX*	R63	250	150	250	flange***				

*) Water meters designs – where -XX stands for:

-NK – water meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NO – opto-electronic transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NKO – water meter equipped with NK and NO transmitter

-NKOP – water meter adapted for installation of NK and NO transmitter

**) Size measured from the vertical inlet axis to external surface of outlet flange

**) Flange drilling: according to PN-EN 1092-2 (PN10), DIN 2532, DIN2501 (PN10), BS4504 (PN10)

****) On request hermetic counter IP68 – pre equipped for radio transmitters - Wireless M-Bus standard or NK transmitter with pulse range 10, 100, or 1000 dm³/imp. (not applicable to NO and NKO)

PRODUCT FEATURES

- Preequipped for installation of radio module for communication in the Wireless M-Bus and impulse module (not applicable to versions with NK, NO, NKO and NKOP transmitters)
- Wide measuring range
- Low starting rate
- Removable measuring panel
- Double-sided rotor bearing
- Easy reading of the water meter counter
- Hermetic counter - IP68 on request *****)
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Readings reliability
- On request possibility of another drilling

MWN/JS-S | MWN/WS-S | MWN/MTK-S | MWN/JM-S | MWN/WM-S

COMPOUND WATER METERS WITH THE SPRING VALVE (DN50-150)

APPLICATION

For measuring of cold water consumption with a temperature up to 30°C or up to 50°C under the conditions of very differentiated flows (small or big), on the maximum working pressure up to 16 bar (PN16). Recommended for installation in industrial buildings, public buildings (hospitals, schools and hotels) and in buildings with many apartments, above all in the ones equipped with hydrant connections. Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (H). Compound water meters in standard version are equipped with counters (IP65). Water meters are adapted to operation in the systems of remote data transfer (AMR).

MEASUREMENT RANGE (MID):

- Cold water R630 ÷ R4000 - H

INSTALLATION OF SIDE WATER METERS

- Standard design – right side when looking at the direction of flow
- On request – left side when looking at the direction of flow













MWN/JS

MWN/WS-S

Table 17. BASIC TECHNICAL DATA

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value NK [dm³/imp.]			
							Stand.	On request		
MWN / SIDE WATER METER TYPE JS – vane-wheel single-jet dry water meters										
■ MWN/JS 50/4,0-S	R630	25	50	270	flange***	17,5	1 000 / 10	2,5 10 25 100 250 / 0,25 1 2,5 25 1000 250 1000		
				300**	flange***	19,4				
■ MWN/JS 50/4,0-S-XX*	R630	25	50	270	flange***	18,0				
				300**	flange***	19,9				
■ MWN/JS 65/4,0-S	R1000	40	65	300	flange***	21,0				
■ MWN/JS 65/4,0-S-XX*	R1000	40	65	300	flange***	21,5				
■ MWN/JS 80/4,0-S	R1600	63	80	300	flange***	25,0				
				350**	flange***	27,7				
■ MWN/JS 80/4,0-S-XX*	R1600	63	80	300	flange***	25,5				
				350**	flange***	28,2				
■ MWN/JS 100/4,0-S	R2500	100	100	360	flange***	30,0				
				350**	flange***	30,0				
■ MWN/JS 100/4,0-S-XX*	R2500	100	100	360	flange***	30,5				
				350**	flange***	30,5				
■ MWN/JS 150/16-S	R1600	250	150	500±15	flange***	75,0			10 000 / 100	25; 100; 250; 1000; 2500 / 2,5; 10; 25; 100; 250; 1000
■ MWN/JS 150/16-S-XX*	R1600	250	150	500±15	flange***	75,5				
MWN / SIDE WATER METER TYPE WS – vane-wheel multi-jet dry water meters										
■ MWN/WS 50/4,0-S	R630	25	50	270	flange***	20,0	1 000 / 10	2,5 10 25 100 250 / 100		
				300**	flange***	21,9				
■ MWN/WS 50/4,0-S-XX*	R630	25	50	270	flange***	20,5				
				300**	flange***	22,5				
■ MWN/WS 65/4,0-S	R1000	40	65	300	flange***	22,2				
■ MWN/WS 65/4,0-S-XX*	R1000	40	65	300	flange***	22,7				
■ MWN/WS 80/4,0-S	R1600	63	80	300	flange***	26,2				
				350**	flange***	28,7				
■ MWN/WS 80/4,0-S-XX*	R1600	63	80	300	flange***	26,7				
				350**	flange***	29,2				
■ MWN/WS 100/4,0-S	R2500	100	100	360	flange***	31,2				
				350**	flange***	33,5				
■ MWN/WS 100/4,0-S-XX*	R2500	100	100	360	flange***	31,7				
				350**	flange***	34,2				
■ MWN/WS 150/16-S	R1600	250	150	500±15	flange***	76,9			10 000 / 100	25; 100; 250; 1000; 2500 / 10
■ MWN/WS 150/16-S-XX*	R1600	250	150	500±15	flange***	77,4				

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value NK [dm³/imp.]	
							Stand.	On request
MWN / SIDE WATER METER TYPE MTK – vane-wheel multi-jet dry water meters								
 MWN/MTK 50/4,0-S		25	50	270	flange***	20,0	1 000 / 10	2,5; 10 25; 100 250 / 0,25; 0,5 1; 2,5 5; 25 50; 100 250; 500 1000
				300**	flange***	21,9		
 MWN/MTK 50/4,0-S-XX*	25	50	270	flange***	20,5			
			300**	flange***	22,5			
 MWN/MTK 65/4,0-S	40	65	300	flange***	22,2			
 MWN/MTK 65/4,0-S-XX*			300	flange**	22,7			
 MWN/MTK 80/4,0-S	63	80	300	flange***	26,2			
			350**	flange***	28,7			
 MWN/MTK 80/4,0-S-XX*	63	80	300	flange***	26,7			
			350**	flange***	29,2			
 MWN/MTK 100/4,0-S	100	100	360	flange***	31,2			
			350**	flange***	33,5			
 MWN/MTK 100/4,0-S-XX*	100	100	360	flange***	31,7			
			350**	flange***	34,2			
 MWN/MTK 150/16-S	250	150	500±15	flange***	33,5	10 000 / 100	25; 100; 250 / 0,25; 0,5; 1; 2,5; 5; 25; 50; 100; 250; 500; 1000	
 MWN/MTK 150/16-S-XX*	250	150	500±15	flange***	34,2			

MWN / SIDE WATER METER TYPE JM – vane-wheel single-jet wet water meters

MWN/JM 50/4,0-S	R1000	25	50	270	flange***	17,5	–	–
				300**	flange***	19,4		
MWN/JM 65/4,0-S	R1600	40	65	300	flange***	21,0		
MWN/JM 80/4,0-S	R2500	63	80	300	flange***	25,0		
				350**	flange***	27,7		
MWN/JM 100/4,0-S	R4000	100	100	360	flange***	30,0		
				350**	flange***	30,0		

MWN / SIDE WATER METER TYPE WM – vane-wheel multi-jet wet water meters

MWN/WM-NKP 50/4,0-S	R1000	25	50	270	flange***	20,0	1 000 / 10	2,5 10 25 100 250 / 100
				300**	flange***	21,9		
MWN/WM-NKP 50/4,0-S-XX*	R1000	25	50	270	flange***	20,5		
				300**	flange***	22,5		
MWN/WM-NKP 65/4,0-S	R1600	40	65	300	flange***	22,2		
MWN/WM-NKP 65/4,0-S-XX*	R1600	40	65	300	flange***	22,7		
MWN/WM-NKP 80/4,0-S	R2500	63	80	300	flange***	26,2		
				350**	flange***	28,7		
MWN/WM-NKP 80/4,0-S-XX*	R2500	63	80	300	flange***	26,7		
				350**	flange***	29,2		
MWN/WM-NKP 100/4,0-S	R4000	100	100	360	flange***	31,2	10 000 / 100	100; 250; 1000 / 100
				350**	flange***	33,5		
MWN/WM-NKP 100/4,0-S-XX*	R4000	100	100	360	flange***	31,7		
				350**	flange***	34,2		
MWN/WM-NKP 150/16-S	R2500	250	150	500±15	flange***	76,9		
MWN/WM-NKP 150/16-S-XX*	R2500	250	150	500±15	flange***	77,4		

*) Water meters designs – where -XX stands for:

-NK – water meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NKP – water meter adapted for installation of NK transmitter

- On request hermetic counter IP68

– main water meter (pre equipped for radio transmitters - Wireless M-Bus standard or NK transmitter with pulse range 10, 100 or 1000 dm³/imp.)

– side water meter pre equipped for radio transmitters - Wireless M-Bus standard or NK transmitter - only water meter JS, for water meter MW - adapted for NK only; for water meter JM - without the possibility of adaptation for NK and radio transmitters

**) On request

**) Flange drilling: according to PN-EN 1092-2 (PN10), DIN 2532, DIN2501 (PN10), BS4504 (PN10)

PRODUCT FEATURES

- Preequipped for installation of: radio module for communication in the Wireless M-Bus and impulse module (not applicable to versions with NK transmitters)
- Wide measuring range
- Low starting rate
- Removable measuring panel
- Double-sided rotor bearing
- Easy reading of the water meter counter
- Hermetic counter - IP68 on request *)
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Readings reliability

**HYDRANT WATER METERS MH-01 | MWN50-GH | JS16-H**

- PROPELLER WATER METERS WITH VERTICAL (MH-01) AND HORIZONTAL (MWN50-GH) ROTOR AXIS

- VANE-WHEEL SINGLE-JET WATER METERS (JSH)

**APPLICATION**

MH-01 – for immediate measuring of water volume with a temperature up to 30°C through fast connection to underground hydrant with a diameter of 80 mm, on the maximum working pressure up to 16 bar (PN16). Hydrant outlet with quick-release connection, adapter size 75.

JS16-H and MWN50-GH – for immediate measuring of water volume with a temperature up to 30°C (JS16-H) and up to 50°C (MWN50-GH) through fast connection to over ground hydrant DN80 and DN100 and with quick-release connection, adapter size 75, on the maximum working pressure up to 16 bar (PN16). Water meter suitable for connection to hydrants with counters directed upwards.



MWN50-GH



JS16-H

MEASUREMENT RANGE (GUM/MID):**MH-01**

- Cold water R63

MWN50-GH, JS16-H

- Cold water R100

Table 18. BASIC TECHNICAL DATA

Type		Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]
WATER METERS for cold water						
MH-01	R63	25	50	130*	adapter 75T	9,5
	R63	40	65	130*	adapter 75T	10,5
JS16-H	R100	16	40	430	connector 75T and adapter 52T	3,6
MWN50-GH**	R100	40	50	300	connector 75-T and adapter 75T	5,6
MWN50-GH-NK***	R100	40	50	300	connector 75-T and adapter 75T	5,6

*) Size measured from the vertical inlet axis to external surface of outlet flange

**) On request hermetic counter IP68 pre equipped for radio transmitters M-Bus standard or NK transmitter with pulse range: 10; 100; 1000 dm³/imp.

***) Water meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting



MH-01

PRODUCT FEATURES

- Mobility of measurements
- Easy reading of the water meter counter
- Hermetic counter
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Double-sided rotor bearing

FLOQUA

ELECTROMAGNETIC FLOW METERS (DN25 — DN2000)

APPLICATION

FLOQUA electromagnetic flow meters are measuring devices used to calculate the flow rate of conductive liquids with a conductivity higher than $5 \mu\text{S}/\text{cm}$ in closed piping systems. FLOQUA electromagnetic flow meters are recommended for water, waste water and heat management systems as well as for many other industries, e.g. the chemical and food industries. They measure clean and waste water, sludge, pulp and corrosive liquids.

METER DESIGN

- separate, compact
- flange (DN25-DN2000)
- flangeless "wafer" (DN25-DN400)

FL2500/FL210



Table 19. BASIC TECHNICAL DATA

Typ	DN [mm]	q _{min} [m³/h]	q _{max} [m³/h]	Flow meters of connection type			
				flange FL2500		flangless FL100	
				weight [kg]*	length [mm]**	weight [kg]	length [mm]***
Electromagnetic flow meters							
FLOQUA*	25	0,72	18	3,5	200	1,2	100
	32	1,16	29	4,0	200	1,6	100
	40	1,8	45	4,5	200	1,8	100
	50	2,88	72	6,0	200	2	100
	65	4,8	120	8,0	200	3,6	150
	80	7,2	180	11,0	200	3,8	150
	100	11,2	280	14,5	250	5	150
	125	18	450	16,0	250	7,8	180
	150	25,6	640	26,0	300	8,2	180
	200	45,2	1130	32,0	350	18,2	200
	250	70,8	1770	58,0	450	24	250
	300	100,8	2520	69,0	500	27	300
	350	138	3450	104,0	550	32	350
	400	180	4500	148,0	600	39	400
	450	228,8	5720	176,0	600	-	-
	500	284	7100	198,0	600	-	-
	600	408	10200	287,0	600	-	-
	700	560	14000	383,0	700	-	-
	800	720	18000	482,0	800	-	-
	900	920	23000	595,0	900	-	-
	1000	1140	28500	700,0	1000	-	-
	1200	1600	40000	810,0	1200	-	-
	1400	2200	55000	1500,0	1400	-	-
	1600	2880	72000	2000,0	1600	-	-
	1800	3640	91000	on request	1800	-	-
	2000	4520	113000	on request	2000	-	-

*) standard design: -PN16:

**) standard design: -PN16: DN25 ÷ DN2000, special design: -PN10: DN25 ÷ DN2000, -PN25 i PN40: DN25 ÷ DN1000, -PN64: DN25 ÷ DN400

***): standard design: -PN16: DN25 ÷ DN400, special design: -PN10: DN25 ÷ DN400; -PN25 i PN40: DN25 ÷ DN150

PRODUCT FEATURES

- Wide range of nominal diameters
- Wide range of sensor linings suitable for contact with different liquids: Polypropylene, hard rubber, PTFE, Rilsan and others
- No moving mechanical parts
- No hydraulic resistance
- High measurement accuracy
- A range of communication methods: HART, MODBus, ProfiBus DP
- Available power supply types: mains, mains with battery support, battery and possibility of power supply from a solar panel
- Possibility of GSM/GPRS data transmission
- Bidirectional flow measurement
- Diagnostic functions
- Empty pipe detection

WI-01; -02; -03; -04 | WI-01; -02; -03; -04-NK | WI-01; -02; -03; -04-NKP

METERS FOR IRRIGATION WATER (DN40-250)

APPLICATION

For measuring of consumption of water drawn from the rivers or water bodies, as well as for measuring the outflow of purified sewage from closed-circuit systems in sewage treatment plants, with a temperature up to 50°C, on the maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (**H**), or in vertical (**V**) or diagonal hoses. Meters for irrigation water equipped with an IP65 counter as standard (IP68 possible, version-04), in standard version are adapted to operation in the systems of remote data transfer (AMR).

METER DESIGN:

- -01 – metal covers,
- -02 – plastic covers,
- -03 – plastic covers, rotating counter
- -04 – plastic covers, rotating counter IP68



Table 20. BASIC TECHNICAL DATA

Type	Q ₃ [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value NK [dm³/imp.]	
						Stand.	On request
Irrigation meters for cold water							
WI 40-01	25	40	200	flange***	7,8	1 000	100 or 10 000
WI 40-01-XX*	25	40	200	flange***	8,0		10 000 / 10 000 or 100
WI 40-02	25	40	200	flange***	7,5		
WI 40-02-XX* / -03-XX* / -04-XX*	25	40	200	flange***	7,6		100 or 10 000
WI 50-01	30	50	200	flange***	8,4		
			200	G2½**	7,4		
WI 50-01-XX*	30	50	200	flange***	9,2		
			200	G2½**	7,6		
WI 50-02	30	50	200	flange***	8,1		10 000 / 10 000 or 100
WI 50-02-XX* / -03-XX* / -04-XX*	30	50	200	flange***	8,2		
WI 65-01	50	65	200	flange***	9,9		100 or 10 000
			200	G3**	8,9		
WI 65-01-XX*	50	65	200	flange***	10,1		
			200	G3**	9,1		
WI 65-02	50	65	200	flange***	9,6		
WI 65-02-XX* / -03-XX* / -04-XX*	50	65	200	flange***	9,7		
WI 80-01	90	80	225	flange***	12,3		100 or 10 000
WI 80-01-XX*	90	80	225	flange***	12,5		
WI 80-02	90	80	225	flange***	12,0		10 000 / 10 000 or 100
WI 80-02-XX* / -03-XX* / -04-XX*	90	80	225	flange***	12,1		
WI 100-01	125	100	250	flange***	15,0		100 or 10 000
WI 100-01-XX*	125	100	250	flange***	15,2		
WI 100-02	125	100	250	flange***	14,7		10 000 / 10 000 or 100
WI 100-02-XX* / -03-XX* / -04-XX*	125	100	250	flange***	14,8		
WI 125-01	175	125	250	flange***	19,0		100 or 10 000
WI 125-01-XX*	175	125	250	flange***	19,2		
WI 125-02	175	125	250	flange***	18,7		10 000 / 10 000 or 100
WI 125-02-XX* / -03-XX* / -04-XX*	175	125	250	flange***	18,8		
WI 150-01	250	150	300	flange***	24,8		100 or 10 000
WI 150-01-XX*	250	150	300	flange***	25,0		
WI 150-02	250	150	300	flange***	24,5		10 000 / 10 000 or 100
WI 150-02-XX* / -03-XX* / -04-XX*	250	150	300	flange***	24,6		

IP68 counter on request

*) Meter designs – where -XX stands for:

-NK – meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NKP – meter adapted for installation of NK transmitter

**) On request

***) Flange drilling: according to PN-EN 1092-2 (PN10), DIN 2532, DIN2501 (PN10), BS4504 (PN10)

Type	Q ₃ [m ³ /h]	DN [mm]	Length [mm]	Connection	Weight [kg]	Impulse value NK [dm ³ /imp.]	
						Stand.	On request
WI 200-01	450	200	350	flange***	34,9	1 000	100 or 10 000
WI 200-01-XX*	450	200	350	flange***	35,1		
WI 200-02	450	200	350	flange***	34,6		10 000 / 10 000 or 100
WI 200-02-XX* / -03-XX* / -04-XX*	450	200	350	flange***	34,7		
WI 250-01	630	250	450	flange***	43,3		10 000
WI 250-01-XX*	630	250	450	flange***	43,5		
WI 250-02	630	250	450	flange***	43,0		
WI 250-02-XX* / -03-XX* / -04-XX*	630	250	450	flange***	43,1		

IP68 counter on request

*) Meter designs – where -XX stands for:

-NK – meter with pulse transmitter with standard cable length of 2 linear metres – max. 10 m – remote transmission of volume counting

-NKP – meter adapted for installation of NK transmitter

**) On request

***) Flange drilling: according to PN-EN 1092-2 (PN10), DIN 2532, DIN2501 (PN10), BS4504 (PN10)

PRODUCT FEATURES

- Easy reading of the water meter counter
- Hermetic counters, IP68 option
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Double-sided rotor bearing
- Readings reliability

elf

INVONIC H

Faun



Electronic clutch, full resistance to magnetic field



Digital communication with ultrasonic flow sensors



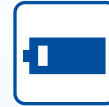
Extended configuration possibilities



Measuring class 2, acc. to EN-1434



Measuring class 2, acc. to EN-1434



Many power supply options



Extensive archive of measuring data



Compatible with heating and/or cooling systems



Compatible with heating and/or cooling systems



Compatible with heating systems



Compatible with 2-wire temperature sensors



3 designs of housing sealing



Detects 1/4 of a rotor cycle



Battery power supply (mains independent) mains supply available as an option



Digital communication with ultrasonic flow sensors



Compatible with 2-wire temperature sensors



Removable communication modules



2 independent removable communication modules



Battery power supply (mains independent)



Easy mounting, including on a flow sensor



Compatible with 2- or 4-wire temperature sensors



Removable communication modules



Large and clear LCD screen



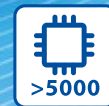
Measures down to 0.1°C



Easy mounting



Extensive archive of measuring data



Large memory, capable of saving over 5000 records



Large and clear LCD screen



Easy mounting, including on a flow sensor



Large and clear LCD screen



Many levels of configuration protection

ELF

COMPACT HEAT METER WITH ROTATING FLOW SENSOR (DN15-20)

– with Flow sensor type JS90-NI*

APPLICATION

Precise and reliable heat meter, equipped with high class heat calculator and Flow sensor of class 2, with electronic detection of rotor rotation and archiving many of data readings. It is distinguished by its modern design. Heat meter for measuring the consumption of heat energy drawn from heat networks by small residential or office buildings. Heating factor with a temperature up to 90°C (105°C**) and maximum working pressure up to 16 bar (PN16). Suitable for installation in the horizontal hoses (pipelines) with the counter directed upwards (H), or in vertical hoses (V).

ACCURACY CLASS:

- Class 2
- Class 3

PRODUCT FEATURES

- The modern multi-functional microprocessor heat counter
- Maintenance using one button
- Power supply independent – battery powered
- Standard version battery life is 5 years +1 year, special version battery life is 10 years + 1year
- Fully resistant to strong external magnetic field
- Flat characteristics of Flow sensor error
- Highly accurate readings
- Sensors' connecting cable 2 m



ELF

Table 21. BASIC TECHNICAL DATA

Type	Dynamic range	q_p [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]
Compact heat meters						
ELF*	1:100 H; 1:50 V	0,6	15	110	G¾	0,58
		1	15	110	G¾	0,58
		1,5	15	110	G¾	0,58
		1,5	20	130	G1	0,68
		2,5	20	130	G1	0,68

- Medium temperature range: 5...105°C. **
- Nominal pressure: PN16
- Meter protection rating: IP54
- Energy units: GJ or kWh

*) With a pair of temperature sensors: one mounted in the housing, the other in mounting T-pipe

**) When installing the heat meter on a return pipe. When installing the heat meter on a supply pipe $t_{max} = 90^\circ\text{C}$.

REMOVABLE COMMUNICATION MODULES

- M-Bus + 4 impulse inputs
- M-Bus + 2 impulse inputs + 1 impulse output
- 4 impulse inputs (possibility of independent configuration of impulse weight of each output)
- 3 impulse inputs + 1 impulse output
- Radio module AT-WMBUS-MR-01
- Service module (configuration module) – USB



INVONIC H

COMPACT ULTRASONIC HEAT/COOLING METER (DN15-50)

APPLICATION

INVONIC H is a modern and accurate meter for measuring consumption energy in heating and cooling* systems in residential, office and industrial facilities. Ultrasonic flow sensor, with brass housing, is key part of device that ensures high precision, dynamic and measurement stability of meter regardless of its mounting position (horizontal/vertical). Besides it ensures insensitivity of device to magnetic field. Information from the meter can be read remotely by wire (M-Bus, Modbus RTU, pulse/analog output) or wirelessly (Wireless M-Bus 868 Mhz), allowing cooperation of INVONIC H with different data reading systems and building automation.



ACCURACY CLASS:

■ Class 2



Table 22. BASIC TECHNICAL DATA

Type	Dynamic range	q _p [m³/h]	DN [mm]	Length [mm]	Connection	Weight [kg]
Compact ultrasonic heat/cooling meter						
INVONIC H 0,6	1:100	0,6	15	110	G¾	0,8
		0,6	20	190	G1	1,1
		0,6	20	190	flange	2,9
INVONIC H 1,0		1,0	15	110	G¾	0,8
		1,0	20	190	G1	1,1
		1,0	20	190	flange	2,9
INVONIC H 1,5		1,5	20	130	G1	0,9
INVONIC H 1,5	1:100 1:250*	1,5	15	110	G¾	0,8
		1,5	20	130/190	G1	0,9/1,1
		1,5	20	190	flange	2,9
INVONIC H 2,5		2,5	20	130/190	G1	0,9/1,1
		2,5	20	190	flange	2,9
INVONIC H 3,5	1:100	3,5	25	260	G1¼	3,6
		3,5	25	260	flange	6,1
INVONIC H 6,0	1:100 1:250*	6,0	25	260	G1¼	3,6
		6,0	25	260	flange	6,1
INVONIC H 10,0		10,0	40	300	G2	7,2
		10,0	40	300	flange	8,4
INVONIC H 15,0		15,0	50	270	flange	8,5

■ **Medium temperature range:** 5...105/130 °C. Maximum temperature depends from the selected temperature sensors, minimum temperature concerns only type approval (heat meter measure starting from 0,1 °C)

■ **Nominal pressure:** PN16/PN25*

■ **Meter protection rating:** IP65/IP67*; **Calculator:** IP65

■ **Energy units:** GJ (kWh, MWh, Gcal)*

*) Option

PRODUCT FEATURES

- Capable to work with systems containing water or glycol-water solutions (ethylene / propylene glycol)
- Easy to read 8 digit display, with symbols indicating operation state of meter, operated by a single button
- Rotatable by 180° calculator with wall-mount possibility (standard length of connecting cable 1,2 m)
- Power supply from 230 V AC, 12-36 V AC, 12-48 V DC or battery (battery lifetime up to 11 years)
- Built-in data logger capable of storing data from last 36 months for period of 15 years without power supply
- Integrated pulse outputs for energy and volume or two pulse inputs for water meters
- Possibility to mount communication modules without compromising manufacturer protecting seals

FAUN

ELECTRONIC CALCULATOR FOR HEAT METERS

APPLICATION

FAUN is a precise and reliable, high class calculator for application in the installations with water as a heating/cooling factor. It is a perfect solution for heat distribution centres, residential and functional buildings, industrial buildings etc.

The calculator was developed based on the most up-to-date microcontroller system, innovative technical design and functional solutions. Its wide communication possibilities allow an easy and correct reading and transfer of measuring data.

Depending on the design and configuration the calculator can function as:

- heat meter for heating installation
- heat meter for cooling installation
- heat meter for heating and cooling installation in one circuit



FAUN

Table 23. TECHNICAL DATA

Basic working parameters of the calculator			
Unit of heat energy		–	GJ, MWh, kWh or Gcal
Unit of volume		–	m ³
Temperature range		°C	$\Theta_{\min} = 1^{\circ}\text{C}$ $\Theta_{\max} = 180^{\circ}\text{C}$
Temperature difference range		°C	$\Delta\Theta_{\min} = 3^{\circ}\text{C}$ $\Delta\Theta_{\max} = 175^{\circ}\text{C}$
Nominal flow range		m ³ /h	0,6 ... 3 000
Impulse constant range for flow sensor	dm ³ /imp.		1 ... 10 000
	imp/dm ³		0,01 ... 300
Maximum permissible error MPE		%	$E_c = \pm (0,5 + \Delta\Theta_{\min} / \Delta\Theta)$
Cooperating temperature sensors		–	- Pt 500 - 2 or 4 wire measurement - Pt 100 - 2 or 4 wire measurement
Cooperating flow sensors		–	Ultrasonic or rotor flow sensors
Switching for cold measurement when operating in heating and cooling installation in one circuit		–	Supply temperature < return temperature and power supply temperature below the set value
Power supply		–	Lithium battery 3,6 V type: AA, 2xAA, C or D or plug in power supply 230 VAC
Battery life		years	6-12 years, depending on battery type
Environmental class	PN-EN 1434	-	C
	MID	-	E1, M1
Ambient temperature		°C	5 ... 55
Protection degree		-	IP54 or IP65 or IP68

PRODUCT FEATURES

- Big and readable 8-position display with many intuitive symbols and units for the displayed values
- Intuitive calculator operation using two buttons
- Possibility of individual configuration of the calculator according to particular requirements using a dedicated software (on PC)
- Possibility of manual configuration of some parameters of the calculator using the buttons
- Possibility to mount (without legalisation infringement) two independent communication modules and a selection of communication protocols

REMOVABLE COMMUNICATION MODULES

- M-Bus
- RS232
- RS485
- impulse outputs (2 outputs)
- impulse outputs and inputs (2 outputs OB, OC or OD class and 2 inputs IB or IC class)
- analogue outputs (2 outputs, 4-20 mA or 0-10V)
- LonWorks
- radio module AT-WMBUS-MR-10
- radio module for telemetric systems IMR-AIUT

COST ALLOCATOR E-ITN 30.6

ELECTRONIC DOUBLE-SENSORED HEATING COST ALLOCATOR

Heating cost allocator E-ITN 30.6 designed for monthly calculations of heating consumption costs in the rooms with heating systems. Preferable application range – horizontal or vertical heating systems with one or two pipes with an average minimum heating transmitter temperature equal or higher than 35°C and at a maximum equal or lower than 90°C.

Table 24. BASIC TECHNICAL DATA

Parameter	E-ITN 30.6
Reading range in open space	< 250 m
Data protocol format	Wireless M-Bus
Frequency range	868 MHz
Output power	< 5 mW
Protection degree	IP42
Weight	0,076 kg



E-ITN 30.6

PRODUCT FEATURES

- Wireless data transmission system realised by: infrared port – direct reading through the reader and radio interface – remote reading outside the room with installed cost allocators.
- Cost allocator is equipped with ergonomically placed LCD display that allows the user to comfortably read the current values of heat consumption. Moreover, these data are registered in internal memory module and thanks to this it is possible to perform full analysis of heat consumption and operating conditions of cost allocator in heating season.
- E-ITN 30.6 cost allocator guarantees precise measurement of heater temperature. Installation and configuration of additional equipment is not required. The cost allocator operates based on the software that considers real heat consumption in the given apartment.
- Any unauthorised manipulation (breaking the electronic seal) is registered with the exact date of this occurrence. The information about manipulation trial is sent together with the next radio reading.

INVONIC F

ULTRASONIC FLOW SENSOR FOR HEAT/COOLING METERS (DN15-100)

APPLICATION

INVONIC F is an accurate ultrasonic flow sensor for measuring water volume and sending collected data in form of electrical pulses to heating and cooling systems of residential, office and industrial facilities. Ultrasonic flow sensor, with brass housing, ensures high precision, dynamic and measurement stability regardless of its mounting position (horizontal/vertical). Besides it ensures insensitivity of device to magnetic field. INVONIC F is used in connection with other type approved devices like heat and cooling energy calculators and temperature sensors for efficient heat/cooling cost allocation and billing.

ACCURACY CLASS:

■ Class 2



INVONIC F

Table 25. BASIC TECHNICAL DATA

Type	Dynamic range	q _p [m³/h]	q _s [m³/h]	DN [mm]	Pressure loss at q _p [kPa]	Length [mm]	Connection	Weight [kg]	Pulse value [l/imp.]	
Ultrasonic flow sensor for heat/cooling meters										
INVONIC F 0,6	1:100	0,6	1,2	15	110	7,0	G¾	0,8	1	
INVONIC F 1,0		0,6	1,2	20	190	0,9	G1	1,1		
		0,6	1,2	20	190	0,9	flange	2,9		
		1,0	2,0	15	110	11,3	G¾	0,8		
		1,0	2,0	20	190	2,5	G1	1,1		
		1,0	2,0	20	190	2,5	flange	2,9		
INVONIC F 1,5	1:100 1:250*	1,5	3,0	15	110	17,1	G¾	0,8		
		1,5	3,0	15	165	17,1	G¾	0,9		
		1,5	3,0	20	130	7,2	G1	0,9		
		1,5	3,0	20	190	5,8	G1	1,1		
		1,5	3,0	20	190	5,8	flange	2,9		
INVONIC F 2,5		2,5	5,0	20	130	19,8	G1	0,9		
		2,5	5,0	20	190	9,4	G1	1,1		
		2,5	5,0	20	190	9,4	flange	2,9		
INVONIC F 3,5		1:100	3,5	7,0	25	260	4	G1¼	3,6	10
			3,5	7,0	25	260	4	flange	6,1	
INVONIC F 6,0	1:100 1:250*	6,0	12,0	25	260	10	G1¼	3,6		
		6,0	12,0	25	260	10	flange	6,1		
INVONIC F 10,0		10,0	20,0	40	300	18	G2	7,2		
		10,0	20,0	40	300	18	flange	8,4		
INVONIC F 15,0	1:100	15,0	30,0	50	270	12	flange	8,5	100	
INVONIC F 25,0		25,0	50,0	65	300	20	flange	12		
INVONIC F 40,0		40,0	80,0	80	350	18	flange	14		
INVONIC F 60,0		60,0	120,0	100	350	18	flange	15		

■ Temperature range of medium: 5...130 °C. Minimum temperature concern only type approval (flow sensor measure starting from 0,1 °C)

■ Nominal pressure: PN16/PN25*

■ Protection class of flow sensors part: IP65/IP67*.

■ Protection class of electronic part: IP65

*) Option

PRODUCT FEATURES

- Wide dynamic measuring range up to 1:250 (q_i/q_p) in class 2 (available only in selected flow sensor sizes)
- No requirements for straight pipeline in upstream and downstream direction for flow sensors DN15-50
- Dismountable electronic part with wall-mount possibility (standard length of connecting cable 1,2 m)
- Power supply from 230 V AC, 12/24/48 V AC/DC or battery (battery lifetime up to 12 years)
- Low pressure loss reducing the amount of electricity required by the circulation pumps
- Flow meter operating temperature from 5 °C to 55 °C
- Integrated pulse output

JS90-NC | JS130-NC

VANE-WHEEL SINGLE-JET FLOW SENSORS FOR HEAT METERS (DN15-40)

APPLICATION

For cooperation with indicating calculators of heat meters or for measuring the flow and volume of water with a temperature up to 90°C (JS90-NC) and 130°C (JS130-NC), on the maximum working pressure up to 16 bar (PN16). Recommended mounting in heating installations – central heating or hot water storage tanks (for circulation systems) in residential or industrial buildings. Suitable for installation in the horizontal hoses (pipelines) **H** (JS90-NC and JS130-NC) with the counter directed upwards or in vertical hoses **V**.

ACCURACY CLASS (MID):

- JS90-NC q_v/q_p range = 1:50 - H; 1:25 - V
- JS130-NC q_v/q_p range = 1:50 - H; 1:10 - V



JS90-NC



JS130-NC

Table 26. BASIC TECHNICAL DATA

Type	q _p [m³/h]	DN [mm]	Length* [mm]	Connection**	Weight [kg]	Impulse value NC [dm³/imp.]	
						Standard	On request
Flow sensors for heat meters							
JS90-0,6-NC	0,6	15	110	G¾	0,49	10	0,25; 1; 2,5; 25; 100; 250; 1 000
JS90-1-NC	1	15	110	G¾	0,49		
JS90-1,5-NC	1,5	15	110	G¾	0,49		
JS90-1,5-G1-NC	1,5	20	130	G1	0,56		
JS90-2,5-NC	2,5	20	130	G1	0,58		
JS130-3,5-NC***	3,5	25	260	G1¼	2,2	10	2,5 25 100 250 1000
JS130-6-G1¼-NC***	6	25	260	G1¼	2,4		
JS130-6-NC***	6	32	260	G1½	2,4		
JS130-10-NC***	10	40	300	G2	2,9		

NC – pulse transmitter with standard 2 m cable – remote transmission of volume counting

*) other lengths on request

**) other connections on request

***) under development

PRODUCT FEATURES

- Low starting rate
- Easy reading of the water meter counter
- Hermetic counter
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Resistance against the external magnetic field
- Readings reliability

MWN130-NC | MP130-NC

PROPELLER FLOW SENSORS FOR HEAT METERS (DN40-300)

APPLICATION
















For cooperation with indicating calculators of heat meters or for measuring the flow and volume of water with a temperature up to 130°C, on the maximum working pressure up to 16 bar (PN16). Recommended mounting in heating installations – central heating in residential or industrial buildings. Suitable for installation in the horizontal hoses (pipelines) **H** (MWN130-NC; MP130-NC) with the counter directed upwards or in vertical hoses **V** (MWN130-NC) and in diagonal hoses with the counter directed sideways or alternatively in middle positions **H/V** (MWN130-NC).

ACCURACY CLASS (MID/GUM):

- MWN130-NC q_i/q_p range = 1:25 – H/V DN40-200
 q_i/q_p range = 1:10 – H/V DN250;300
- MP130-NC q_i/q_p range = 1:50 – H



Table 27. BASIC TECHNICAL DATA

Type	q _p [m³/h]	DN [mm]	Length [mm]	Connection*	Weight [kg]	Impulse value NC [dm³/imp.]	
						Standard	On request
Flow sensors for heat meters							
 MWN130-40-NC	15	40	200	flange	7,9	100	2,5 10 25 250 1 000
 MWN130-50-NC	15	50	200	flange	9,9		
 MWN130-65-NC	25	65	200	flange	10,6		
 MWN130-80-NC	40	80	200**	flange			
			225	flange	13,3		
 MWN130-100-NC	60	100	250	flange	15,6		
 MWN130-125-NC	100	125	250	flange	18,1	1 000	25, 100 250, 2 500 10 000
 MWN130-150-NC	150	150	300	flange	40,1		
 MWN130-200-NC	250	200	350	flange	51,1		
 MWN130-250-NC	400	250	450	flange	75,1		
 MWN130-300-NC	600	300	500	flange	103,1		
 MP130-40-NC	15	40	300	flange	12	100	2,5 10 25 100 250 1000
 MP130-50-NC	15	50	200**	flange			
			270	flange	13		
			300**	flange			
 MP130-65-NC	25	65	300	flange	19,5		
 MP130-80-NC	40	80	300	flange	21,5		
			350**	flange			
 MP130-100-NC	60	100	360	flange	30		
			350**	flange			

-NC - pulse transmitter with standard 2 m cable – remote transmission of volume counting

*) Standard flange drilling according to PN-EN 1092-2 (PN10), DIN 2532 (PN10), BS 4504 (PN10), on request PN-EN 1092-2 (PN16)

***) On request

PRODUCT FEATURES

- Wide measuring range and low starting rate
- Removable measuring panel
- Indicator-barrel counter in hermetic cover
- Counter mechanism with blockade against multiple rotating, at rotation angle more than 360°
- Resistance against the external magnetic field
- Readings reliability

TOPE 41 | TOPE 42 | TOP 1068

RESISTANCE CABLE TEMPERATURE SENSORS FOR HEAT METERS

APPLICATION

The sensors TOPE 41 and TOPE 42 are designed for temperature measurement of liquid media, above all as steam sensors for heat meters. Measuring sensors are manufactured based on a platinum resistor Pt100 or Pt500. The sensors are delivered in pairs. The sensors can be mounted on a T-pipe, on a valve or on a housing of the transducer of compact heat meter Elf and SHARKY 473 (DN15 and 20). TOP 1068 sensors are designed for temperature measurement of liquid media, above all as steam sensors for heat meters. Measuring sensors are manufactured based on a platinum resistor Pt100 or Pt500. The sensors are delivered in pairs. Each pair of sensors is equipped with external covers made of brass M63 or steel 1H18N9T. They are applied for heat meters with calculators FAUN.



Table 28. BASIC TECHNICAL DATA

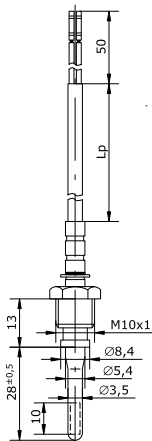
Type		TOPE 41	TOPE 42	TOP 1068
Resistance cable temperature sensors				
Temperature range	°C	0...150	0...105	0...150
Temperature difference range	°C	3...150	3...105	3...150
Measuring resistor	—	Pt100 or Pt500		
Max working pressure	MPa	1,6	1,6	1,6
Immersion length	mm	28	28	42...160
Sensor cover material	—	1H18N9T	1H18N9T	M63
Mounting cover material	—	—	—	M63 or 1H18N9T
Cable	—	straight, cord	spiral	straight, cord
Cable isolation	—	silicone	polyurethane	silicone
Cable length	Pt100	1...3 m, every 0,5 m*	2 m	1...3 m, every 0,5 m**
	Pt500	1...15 m, every 1 m*	2 m	1...15 m, every 1 m**
Approval	—	MID	MID	MID
Mounting	—	on T-pipes	on T-pipes	in mounting covers

*) standard 2 m

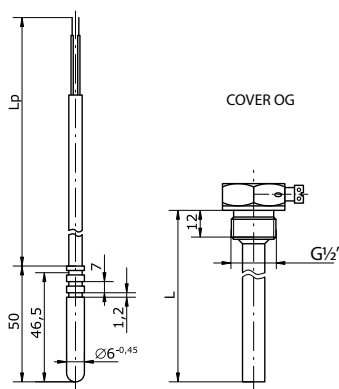
**) standard 3 m

TEMPERATURE SENSORS SIZES

TOPE 41 / TOPE 42



TOP 1068



TOP 146.1 | TOPGN 12/C**RESISTANT HEAD TEMPERATURE SENSORS FOR HEAT METERS****APPLICATION**

The sensors **TOP 146.1** are designed for temperature measurement of liquid media, above all as steam sensors for heat meters. Measuring sensors are manufactured based on a platinum resistor Pt100 or Pt500. The sensors are delivered in pairs. Each pair of sensors is equipped with external covers made of steel 1H18N9T.

The sensors **TOPGN 12/C** are designed for temperature measurement of liquid media, above all as steam sensors for heat meters. Measuring sensors are manufactured based on a platinum resistor Pt100 or Pt500. The sensors are delivered in pairs. The sensors shall be installed directly in the pipeline.



TOP 146.1



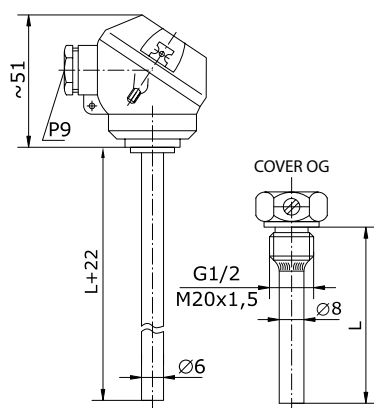
TOPGN 12/C

Table 29. BASIC TECHNICAL DATA

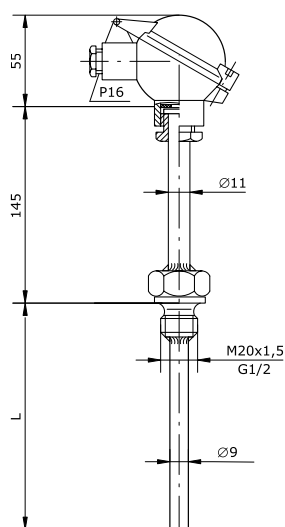
Type		TOP 146.1	TOPGN 12/C
Resistance head temperature sensors			
Temperature range	°C	0...150	0...150
Temperature difference range	°C	3...150	3...150
Measuring resistor	—	Pt100 or Pt500	
Max working pressure	MPa	1,6	4,9
Immersion length	mm	85...210	160 / 250 / 400
Sensor cover material	—	1H18N9T	1H18N9T
Mounting cover material	—	M63 or 1H18N9T	—
Max head operating temperature	°C	100	100
Housing protection degree		IP54	IP54
Approval	—	MID	MID
Mounting	—	in mounting covers	directly in the pipeline

TEMPERATURE SENSORS SIZES

TOP 146.1



TOPGN 12/C





REMOTE READING SYSTEMS

APPLICATION

For the readings of indications of heat meters, water meters and heat cost allocators mounted in residential buildings, public or industrial buildings. The system operates based on a communication protocol according to PN-EN 13757 Wireless M-Bus, frequency: 868 MHz, reading mode – unidirectional (Wireless M-Bus T1), configuration mode – bidirectional. It is possible to configure the transmission frequency in the range of selected days and hours.

RADIO DATA TRANSFER VIA:

Water meters / heat meters – serial number, reading date, consumption in m³/GJ/temp. in°C, indication history, information about the alarms (magnet usage, reverse flow, maximum flow, leakage, low battery level).

Cost allocators – measurement values from previous and current year, from previous and current month. Average temperatures of heater environment, reading date and date of seal break, if applicable.

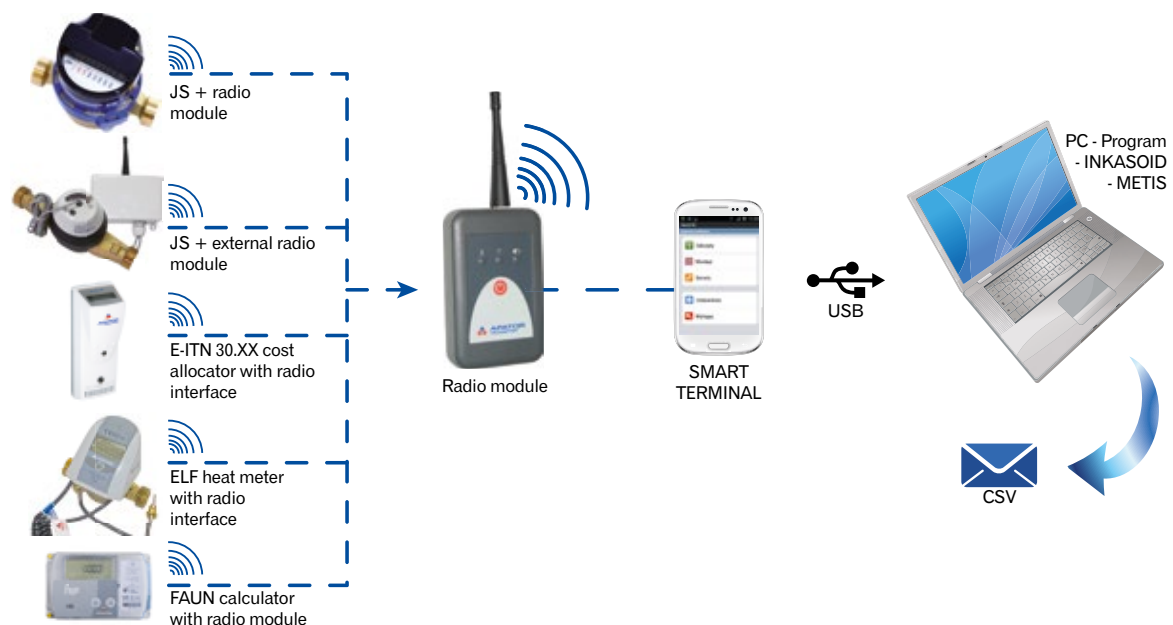
READING TYPES:

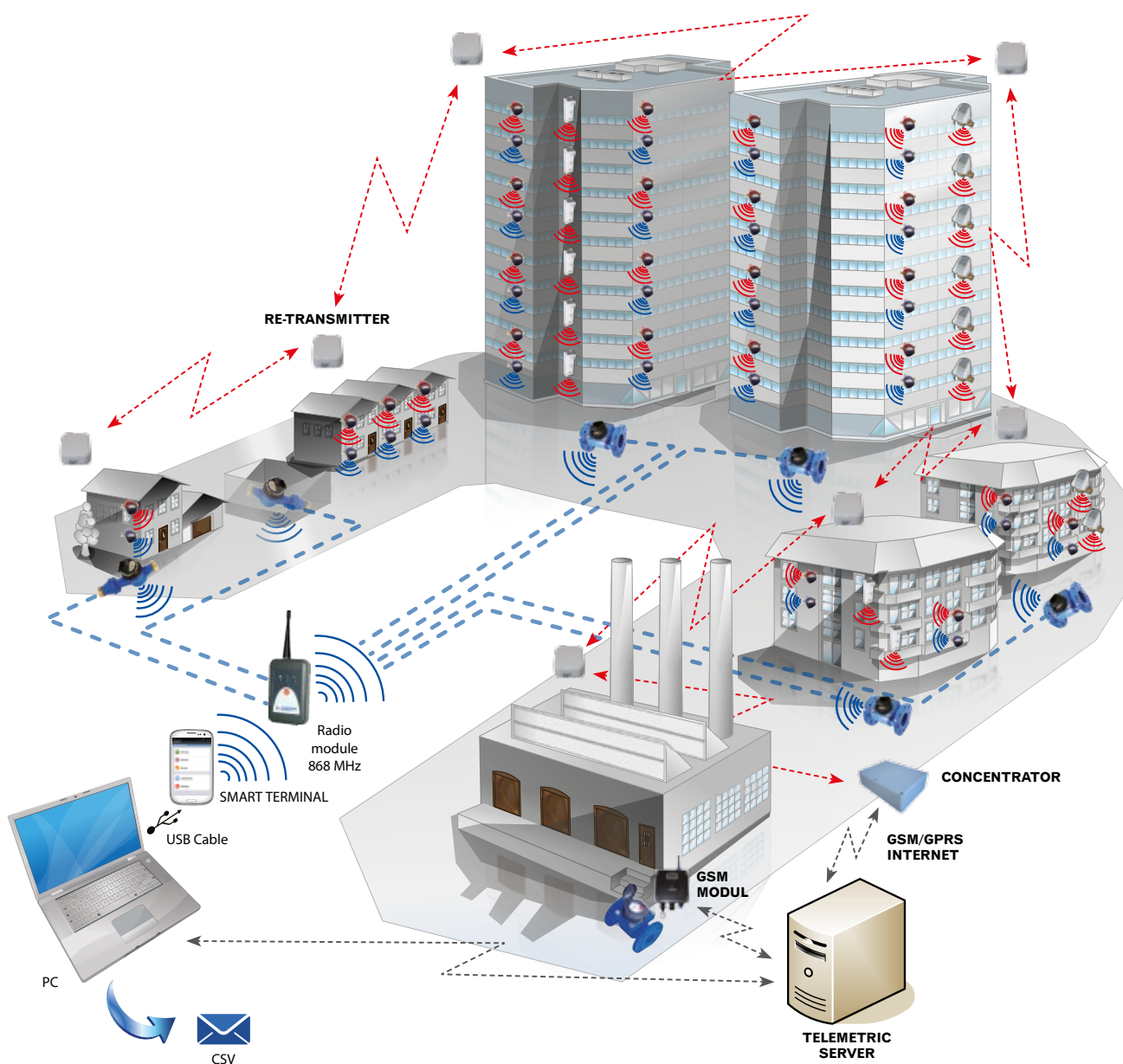
- **WALK BY** – with additional possibility of manual reading
- **STATIONARY** – using the concentrators

PRODUCT FEATURES

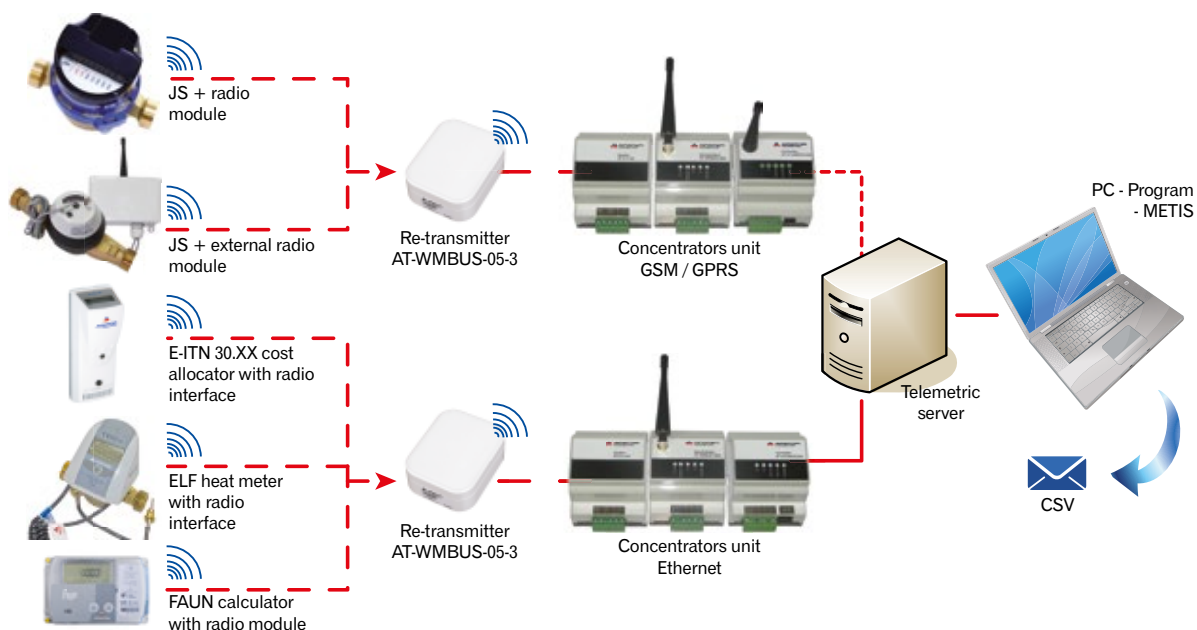
- Data reading using portable terminal or stationary automatic data reading network
- Elimination of potential mistakes caused by human factor
- Data reading from the devices installed in hardly accessible places
- Optical sensors system allows the recognition of flow direction (AT-WMBUS-04 – not applicable)
- Reading of measuring data fully resistant against any interferences caused by magnetic field
- Possibility of signalling alarms (AT-WMBUS-04 – in limited range)

DATA COLLECTION THROUGH METER READER'S – EXAMPLES OF CONFIGURATIONS





FIX NETWORK SYSTEM – EXAMPLES OF CONFIGURATIONS





EVENT NOTIFICATIONS



Maximum flow



Minimum flow



Reverse flow



Reading without changes



Leakage



Device disconnected



Magnetic field detected



Intense light detected



Low battery voltage



Battery operation time exceeded



Battery usage level exceeded



Detector failure



Indicator error



Instruction completed



BOR reset



IWDG reset



POR reset



External reset



Processor reset



Device access error



Processor calculation error



EEPROM memory recording error

ELEMENTS OF THE REMOTE READING SYSTEM OF WATER METERS, HEAT METERS AND HEAT COST ALLOCATORS

MODULE **AT-WMBUS-09** | **AT-WMBUS-10** | **AT-WMBUS-11**

External radio module – designed for direct mounting on the counting mechanism of type JS domestic water meters and type MWN; MP; JS class C; MK; and MWN/JS industrial water meters. Power 10mW, range up to 300m in open areas.

PRODUCT FEATURES

- Quick and easy configuration with the use of mobile devices
- Capacity readings for the last 12 months
- Detecting, recording and notifying about errors in water usage measurements and module operation through event notifications
- Optimum range due to external aerial on aerial rail (refers to design -1*)

COOPERATION WITH WATER METERS:

- AT-WMBUS-09 / -09h; -09-1* – **MWN40 ÷ 125 ; MP40 ÷ 100; MK80 ÷ 100**
- AT-WMBUS-10 / -10h; -10-1* – **MWN150 ÷ 300; MK150**
- AT-WMBUS-11 / -11h; -11-1* – **JS3,5 ÷ 10; MP40 ÷ 100; JS50 ÷ 100;**

*) Extended aerial rail – 2 m



AT-WMBUS-09; -10; -11

Table 30. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-09; -10; -11	AT-WMBUS-09h; -10h; -11h	AT-WMBUS-09-1; -10-1; -11-1
Communication protocol	Wireless M-Bus	Wireless M-Bus	Wireless M-Bus
Transmission frequency	868 MHz	868 MHz	868 MHz
Usage detection	optical	optical	optical
Power supply	lithium battery 3,6 V; AA	lithium battery 3,6 V; AA	lithium battery 3,6 V; AA
Protection degree	IP65	IP68	IP65
Signal output	internal aerial	internal aerial	external aerial
Battery life (depending on configuration)	up to 10 years**	up to 10 years**	up to 10 years**
Aerial output power	10 mW / 50 Ω	10 mW / 50 Ω	10 mW / 50 Ω
Dimensions	h = 44,1 mm; s = 65,5 mm	h = 44,1 mm; s = 65,5 mm	h = 44,1 mm; s = 65,5 mm
Working temperature	0°C ÷ 55°C	0°C ÷ 55°C	0°C ÷ 55°C

**) for a device working at a temperature of 25°C

MODULE **AT-WMBUS-16-2**

External radio module – designed for direct mounting on the counting mechanism of type JS residential water meters. Power 10mW, range up to 300m in open areas.

PRODUCT FEATURES

- Quick and easy configuration with the use of mobile devices
- Capacity readings and records from 1 to 16 months
- Five working modes allow adjustment of the data transmission cycle according to particular needs
- Detecting, recording and notifying about errors in water usage measurements and module operation through event notifications
- Optimum range due to external aerial on aerial rail (refers to AT-WMBUS-16-2-1)

COOPERATION WITH WATER METERS:

- AT-WMBUS-16-2; 16-2-1*; 16-2h; 16-2a; 16-2ah – **JS 1,6 ÷ 4,0 Smart+ and Smart C+**

*) Extended aerial rail – 2 m



AT-WMBUS-16-2



AT-WMBUS-16-2-1*

Table 31. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-16-2	AT-WMBUS-16-2h	AT-WMBUS-16-2a	AT-WMBUS-16-2ah	AT-WMBUS-16-2-1
Communication protocol	Wireless M-Bus	Wireless M-Bus	Wireless M-Bus	Wireless M-Bus	Wireless M-Bus
Transmission frequency	868 MHz	868 MHz	868 MHz	868 MHz	868 MHz
Usage detection	optical	optical	optical	optical	optical
Power supply	lithium battery 3,6 V; 1/2 AA	lithium battery 3,6 V; 1/2 AA	lithium battery 3,6 V; AA	lithium battery 3,6 V; AA	lithium battery 3,6 V; 1/2 AA
Protection degree	IP 65	IP 68	IP 65	IP 68	IP 65
Signal output	internal aerial				external aerial
Battery life (depending on configuration)	up to 10 years**	up to 10 years**	up to 10 years**	up to 10 years**	up to 10 years**
Aerial output power	10 mW / 50 Ω	10 mW / 50 Ω	10 mW / 50 Ω	10 mW / 50 Ω	10 mW / 50 Ω
Dimensions	h = 26,2 mm; s = 65,5 mm	h = 26,2 mm; s = 65,5 mm	h = 26,2 mm; s = 65,5 mm	h = 26,2 mm; s = 65,5 mm	h = 26,2 mm; s = 65,5 mm
Working temperature	0°C ÷ 55°C	0°C ÷ 55°C	0°C ÷ 55°C	0°C ÷ 55°C	0°C ÷ 55°C

***) for a device working at a temperature of 25°C

MODULE AT-WMBUS-17

External radio module – designed for direct mounting on the counting mechanism of type SV-TK volumetric water meters. Power 10mW, range up to 300m in open areas.

PRODUCT FEATURES

- Quick and easy configuration with the use of mobile devices
- Capacity readings and records from 1 to 16 months
- Five working modes allow adjustment of the data transmission cycle according to particular needs
- Detecting, recording and notifying about errors in water usage measurements and module operation through event notifications



AT-WMBUS-17

COOPERATION WITH WATER METERS:

- Module AT-WMBUS -17 – SV-RTK 2,5-16; and SV-RTK 2,5 composite



Table 32. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-17
Communication protocol	Wireless M-Bus
Transmission frequency	868 MHz
Usage detection	optical
Power supply	lithium battery 3,6 V; AA
Protection degree	IP65
Signal output	internal aerial
Battery life (depending on configuration)	up to 12 years*
Aerial output power	10 mW / 50 Ω
Dimensions	h = 44,1 mm; s = 65,5 mm
Working temperature	0°C ÷ 55°C

*) for a device working at a temperature of 25°C

MODULE **AT-WMBUS-18ah**

The radio module is intended for direct assembly on the counting mechanism of industrial water meters with IP68.

PRODUCT FEATURES

- Quick and easy setting with mobile devices
- Option of storing and reading measurements from 1 to 16 months
- Five module operation modes to adjust the data transmission period to the individual needs of the user
- Possible detection, registration and signalling of non-conformities in measured water consumption and module operation with an event signalling system

WATER METER COMPATIBILITY:

- AT-WMBUS-18ah module – **MWN 40-125 (IP68)**



Table 33. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-18ah
Communication protocol	Wireless M-Bus
Transmission frequency	868 MHz
Usage detection	optical
Power supply	lithium battery 3,6 V; AA
Protection degree	IP68
Signal output	internal aerial
Battery life (depending on configuration)	up to 12 years*
Aerial output power	10 mW / 50 Ω
Dimensions	h = 47,5 mm; s = 65,5 mm
Working temperature	0°C ÷ 55°C

*) for a device working at a temperature of 25°C



AT-WMBUS-18ah

MODULE **AT-WMBUS-18bh**

The radio module is intended for direct assembly on the counting mechanism of industrial water meters with IP68.

PRODUCT FEATURES

- Quick and easy setting with mobile devices
- Option of storing and reading measurements from 1 to 16 months
- Five module operation modes to adjust the data transmission period to the individual needs of the user
- Possible detection, registration and signalling of non-conformities in measured water consumption and module operation with an event signalling system

WATER METER COMPATIBILITY:

- AT-WMBUS-18ah module – **MWN 150-300 (IP68)**



AT-WMBUS-18bh



Table 34. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-18bh
Communication protocol	Wireless M-Bus
Transmission frequency	868 MHz
Usage detection	optical
Power supply	lithium battery 3,6 V; AA
Protection degree	IP68
Signal output	internal aerial
Battery life (depending on configuration)	up to 12 years*
Aerial output power	10 mW / 50 Ω
Dimensions	h = 47,5 mm; s = 65,5 mm
Working temperature	0°C ÷ 55°C

*) for a device working at an ambient temperature of 25°C

MODULE AT-WMBUS-19

External radio module – designed for direct mounting on the counting mechanism of type JS domestic water meters. Power 10mW, range up to 300m in open areas.

PRODUCT FEATURES

- Quick and easy configuration with the use of mobile devices
- Capacity readings and records from 1 to 16 months
- Five working modes allow adjustment of the data transmission cycle according to particular needs
- Detecting, recording and notifying about errors in water usage measurements and module operation through event notifications
- Optimum range due to external aerial on aerial rail (refers to AT-WMBUS-16-2-1)



AT-WMBUS-19

COOPERATION WITH WATER METERS:

- Module AT-WMBUS -19, -19-1* – **JS 6,3-16**

*) Extended aerial rail – 2 m



Table 35. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-19	AT-WMBUS-19-1
Communication protocol	Wireless M-Bus	Wireless M-Bus
Transmission frequency	868 MHz	868 MHz
Usage detection	optical	optical
Power supply	lithium battery 3,6 V; AA	lithium battery 3,6 V; AA
Protection degree	IP65	IP65
Signal output	internal aerial	external aerial
Battery life (depending on configuration)	up to 10 years**	up to 10 years**
Aerial output power	10 mW / 50 Ω	10 mW / 50 Ω
Dimensions	h = 44,1 mm; s = 65,5 mm	h = 44,1 mm; s = 65,5 mm
Working temperature	0°C ÷ 55°C	0°C ÷ 55°C

***) for a device working at a temperature of 25°C

MODULE **AT-WMBUS-04** | **AT-WMBUS-04-1**

External radio module – designed for cooperation with water meters equipped with NK pulse transmitters. 10 mW power, up to 300 m range in open space.

COOPERATION WITH WATER METERS:

- All water meters with NK transmitter, NO*



AT-WMBUS-04

Table 36. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-04	AT-WMBUS-04-1
Reading range in open space	< 300 m	< 300 m
Communication protocol	Wireless M-Bus	Wireless M-Bus
Transmission frequency	868,95 MHz	868,95 MHz
Aerial output power	10 mW / 50 Ω	10 mW / 50 Ω
Protection degree	IP65	IP68
Weight	0,180 kg	0,180 kg

*) Possible cooperation with NO transmitter under the condition of additional power supply 5-24 V DC

SMART TERMINAL

Smartphone (or another mobile device with Android or Windows Mobile system) is an universal communication device that thanks to the cooperation with communication module Bluetooth/WMBUS and professional software **INKASENT** (Windows Mobile) or **INKASOID** (Android) allows the reading and archiving of measuring data and alarms from the water meters, which are equipped with radio modules and a remote configuration of radio modules. Moreover, **INKASOID** software also allows data reading from heat meters or heat cost allocators, which are equipped with Wireless M-Bus module.



MODULE **AT-UPT-GSM/GPRS-01**

External communication module AT-UPT-GSM/GPRS-01 – a register and transmission device that works in GSM/GPRS network of any operator (no SIM card lock) using the TCP/IP protocol. This module allows direct indication reading from two water meters equipped with pulse transmitters, as well as registration and remote transfer of information to telemetric server.

COOPERATION WITH WATER METERS:

- All water meters with NK transmitter

Table 37. BASIC TECHNICAL DATA

Parameter	AT-UPT-GSM/GPRS-01
Power supply	Lithium battery EVE ER 34615M-(2x3,6V)
Communication protocol	TCP/IP
Frequency range	850÷900 MHz, 1800÷1900 MHz
Pulse inputs	2
Working time	>72 months (for 1 transmission per day)
Working temperature	from -10°C up to 50°C
Protection degree	IP68
Weight	0,758 kg



AT-UPT-GSM/GPRS-01



MODULE **APT-GSM-UT-1**

The APT-GSM-UT-1 external communications module is intended for registering the readings of water meters or other meters, registering events and notifying the user of their occurrence and for transmitting data over a GSM network using GPRS technology through any APN. The device is equipped with 4 pulse inputs that enable connecting up to 4 measuring or alarm devices. It enables the detection and registering of events, and sending of information about events via text messages. An integrated NFC module enables the direct reading of measurement data from the device and its complete adjustment using mobile devices equipped with a dedicated adjustment app.



APT-GSM-UT-1

WATER METER COMPATIBILITY:

- The device is compatible with pulse water meters and alarm devices equipped with pulse outputs

Table 38. BASIC TECHNICAL DATA

Parameter	APT-GSM-UT-1
Data protocol format	TCP/IP
Frequency range	850 ÷ 900 MHz, 1800 ÷ 1900 MHz
GPRS multichannel transmission class	12
Compatibility with SIM cards	3 V / 1,8 V
Pulse input count	4
Pulse signal type	potential-free (reed switch) transistor key (OC, OD)
Minimum pulse duration	1 ms
Max. pulse frequency	16 Hz
Voltage levels corresponding to the logical values	V_{LO} : 0 ÷ 0,5 V, V_{HI} : 2 ÷ 15 V
Power supply	lithium battery 3.6 V
Memory type	RAM
Operating time (depending on configuration)***	up to 6 years
Cable	2 x 0,14 mm ²
Cable length	4 x 1,5 m
Working temperature	-20°C ÷ 55°C
Assembly method	mounting pins ø 5 mm (4 pcs.)
Dimensions	120 x 104 x 63 mm
Weight	< 0,5 kg
Protection degree	IP68

*) for a device working at an ambient temperature of 25°C

COMMUNICATION MODULE BLUETOOTH/WMBUS **AT-WMBUS-02-1**

Portable device intermediating between radio module and Smartphone. Communication module listens to and collects radio frames in T1 mode and T2 mode that are sent from radio modules and it forwards them through Bluetooth interface to the Smartphone. Communication module is also used in the process of data configuration and in configuration of working parameters of radio modules in bi-directional T2 mode.

Table 39. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-02-1
Power supply	Li-Ion battery CGA103450
Working time	> 24 h
Working temperature	from 0°C up to 60°C
Protection degree	IP54
Weight	0,132 kg



AT-WMBUS-02-1

RETRANSMITTER AT-WMBUS-05-3

The radio signal retransmitter is a device intermediating in the radio transfer between radio modules and the concentrator. The re-transmitter increases the maximum permissible distance between these devices. The re-transmitter operates based on repeated sending of received WM-BUS frames from the radio modules.

PRODUCT FEATURES

- Mounted on flat surfaces with quick assembly bolts or screws
- Possibility of extending the transmission line by up to 8 re-transmitters
- Mains power supply, 230V
- Continuous operating mode
- Compatibility with devices within the remote reading and transmission of measuring data structure based on the Wireless M-Bus protocol
- IP67 hermetic housing with cable gland (design ATWMBUS-05-3h and ATWMBUS-05-3d)

COMPONENTS OF THE SET AT-MBUS-05-3d:

- Module AT-WMBUS-05-3h
- Aerial grip L5
- Supply cable 12 m
- Metal power cabinet, equipped with B6 overcurrent circuit breaker, power supply 12 V DC / 300 mA and power cord



AT-WMBUS-05-3



AT-WMBUS-05-3h



AT-WMBUS-05-3d

Table 40. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-05-3	AT-WMBUS-05-3h	AT-WMBUS-05-3d
Communication protocol	Wireless M-Bus (T1)	Wireless M-Bus (T1)	Wireless M-Bus (T1)
Transmission frequency	868 MHz	868 MHz	868 MHz
Modulation type	FSK, frequency deviation ± 50 kHz	FSK, frequency deviation ± 50 kHz	FSK, frequency deviation ± 50 kHz
Aerial	internal	internal	internal
Aerial output power	10 mW / 50 Ω	10 mW / 50 Ω	10 mW / 50 Ω
Receiver sensitivity	-100 dBm	-100 dBm	-100 dBm
Power supply	mains	mains	mains
Protection degree	IP54	IP67	IP67
Dimensions	110 x 81 x 40 mm	120 x 80 x 55 mm	120 x 80 x 55 mm
Working temperature	-20°C ÷ 55°C	-20°C ÷ 55°C	-20°C ÷ 55°C

CONCENTRATOR SET

Concentrator sets are devices designed for the collection of data sent from the radio modules mounted on the measuring devices or from re-transmitters, as well as for transferring the data to a telemetric server for further analysis using a GSM/GPRS network, Ethernet or radio modem. The combination of base stations with re-transmitters contributes to the establishment of a network with a larger number of read devices.

PRODUCT FEATURES

- Quick and easy mounting
- Metal cabinet with a lock
- Aerial connectors allowing for mounting aerials outside the cabinet

GSM CONCENTRATOR SET AT-WMBUS-ZE-GSM-01

The set consists of three modules mounted and integrated in a metal cabinet designed for mounting inside a building. The cabinet has a lock preventing unauthorised access.



AT-WMBUS-ZE-GSM-01



COMPONENTS OF THE SET:

- AT-WMBUS-06th - WMBUS base station
- AT-K-GSMRS232-3Gth - converter GSM 3G
- AT-Z-2-2th - power supply
- CN-AR-1-3 - metal cabinet
- AT-A-1-3 - aerial 868 MHz
- AT-A-1-4 - aerial GSM
- Power cord - 3 m

Table 41. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-ZE-GSM-01
Power supply	230 V
Dimensions	250 x 220 x 120 mm
Working temperature	0°C ÷ 55°C



AT-WMBUS-ZE-GSM-01

ETHERNET CONCENTRATOR SET **AT-WMBUS-ZE-ETH-01**

The set consists of three modules mounted and integrated in a metal cabinet designed for mounting inside a building.

The cabinet has a lock preventing unauthorised access.

COMPONENTS OF THE SET:

- AT-WMBUS-06th - WMBUS base station
- AT-K-ETHRS232th - converter Ethernet
- AT-Z-2-2th - power supply
- CN-AR-1-3 - metal cabinet
- AT-A-1-3 - aerial 868 MHz
- Power cord - 3 m

Table 42. BASIC TECHNICAL DATA

Parameter	AT-WMBUS-ZE-ETH-01
Power supply	230 V
Dimensions	250 x 220 x 120 mm
Working temperature	0°C ÷ 55°C



AT-WMBUS-ZE-ETH-01

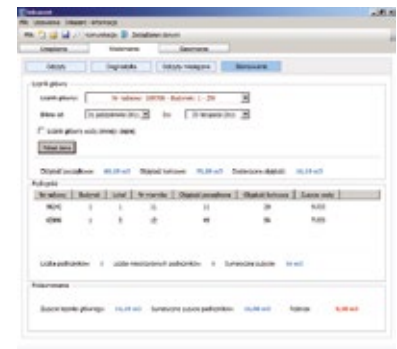


READING PROGRAM **INKASENT**

Inkasent software can be installed on every stationary or portable PC computer operating in Windows system: XP, Vista, 7 and it is fully integrated with the installed calculating software. It allows comfortable data reading and data management from any administration panel.

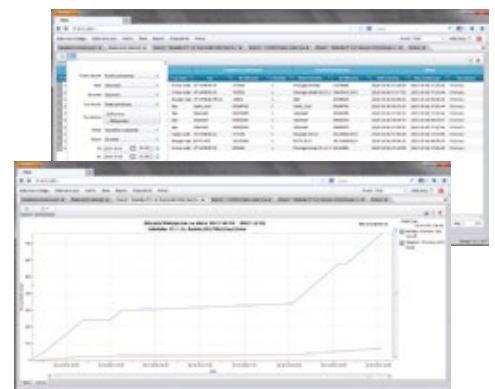
SELECTED POSSIBILITIES OF THE SOFTWARE:

- Creating data bases for water meters and heat meters together with meter reader's routes
- Introducing any comments for a given water meter
- Creating reports regarding the water consumption and heat consumption balancing
- Data export in form of commonly used *.txt or *.csv format



READING PROGRAM **METIS**

Metis system is an information system with a user-friendly interface that allows the adjustment of the applications to individual habits of every user of this system. This system cooperates with telemetric server whose target is to receive TCP/IP connections from transmission and measuring devices as well as storing the data in SQL database. The target of this system is to present the collected data on the users display screens using a telemetric system.



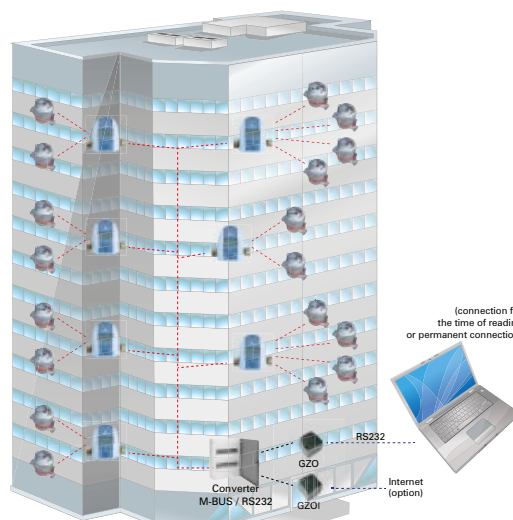
FLAT

CABLE SYSTEM OF REMOTE READING FOR WATER METERS AND HEAT METERS

APPLICATION

For remote reading of heat meters and water meters using the cable M-Bus network. The devices are connected into a network with a pair of cables, without considering the polarisation, with total length up to 1 km. A reading can include up to 250 network nodes with the possibility to multiply this amount. The readings are accessible directly through Internet using a network converter and computer (portable or stationary) with a professional multifunction FLAT program installer, or through a modem.

The program allows a reading of all data (current data, archived data, error registers) at any time and as many times as necessary from every counter in the network without any additional costs.



ELEMENTS OF CABLE SYSTEM OF REMOTE READING OF WATER METERS AND HEAT METERS (through M-Bus network):

COMPACT HEAT METERS (DN 15-20) **ELF**

Equipped with communication modules M-Bus



HEAT CALCULATORS **FAUN**

Equipped with communication modules M-Bus



WATER METERS FOR COLD AND WARM WATER (DN15-100) AND ELECTRICITY METERS, GAS METERS WITH IMPULSE OUTPUT



WATER METERS FOR COLD AND WARM WATER (DN15-20)

Equipped with communication modules M-Bus



**AT-MBUS-01 | AT-MBUS-02 | AT-MBUS-03 | AT-MBUS-04 MODULE**

M-Bus module – direct installation on the counter mechanism of the domestic water meters produced by Apator Powogaz. The device is used for the direct transmission of water meter readings to the network cable main of the M-Bus

PRODUCT FEATURES

- Contains optical sensors set allowing for the optical reading of water meter data, recognizing flow direction, etc., which ensures a reading consistent with the water meter measurement
- Allows for the selection of impulses for each impulse output
- Detecting, recording and notifying about errors in water usage measurements and module operation through event notifications and configuration connection

COOPERATION WITH WATER METERS:

- AT-MBUS-01 – JS 1,6 ÷ 4,0 Smart+ and Smart C+
- AT-MBUS-02 – JS 6,3 ÷ 16 Master+ and Master C+
- AT-MBUS -03a – SV-RTK 2,5-10
- AT-MBUS -03b – SV-RTK 16
- AT-MBUS -04 – MWN40 ÷ 300; MP40 ÷ 100; JS50 ÷ 100, MK80-150



AT-MBUS-01



AT-MBUS-02; -03a; -03b; -04

Table 43. BASIC TECHNICAL DATA

Parameter	AT-MBUS-01	AT-MBUS-02; -03a; -03b;-04
Communication protocol	M-Bus with producer's layer	M-Bus with producer's layer
Usage detection	optical	optical
Pulse outputs	2 (type OD)	2 (type OD)
Power supply	lithium battery 3,6 V; 1/2 AA	lithium battery 3,6 V; AA
Protection degree	IP65	IP65
Battery life	up to 10 years*	up to 10 years*
Wire	YTLY 4x0,14 mm ²	YTLY 4x0,14 mm ²
Wire length	1,5 m	1,5 m
Dimensions	h = 26,2 mm; s = 65,5 mm	h = 44,1 mm; s = 65,5 mm
Working temperature	0°C ÷ 55°C	0°C ÷ 55°C

*) for a device working at a temperature of 25°C

AT-MBUS-NE-01 | -01-1h | -02 | -03 MODULE

AT-MBUS-NE microprocessor pulse module – designed for direct mounting on the counting mechanism of the domestic water meters produced by Apator Powogaz. The device is used for direct transmission of water meter indications to receivers with an impulse input. Configuration settings of impulse value and the two outputs to be made while ordering the product.

PRODUCT FEATURES

- Contains an optical sensor set allowing for the optical reading of water meter data, recognizing flow direction, etc., which ensures a reading consistent with the water meter measurement
- Allows for the selection of impulses for each impulse output
- Detecting, recording and notifying about errors in water usage measurements and module operation through event notifications and the configuration connection
- The module in its normal state is closed; the pulse causes an opening lasting 250 ms.



AT-MBUS-NE-01; -01-1h and -03



AT-MBUS-NE-02

COOPERATION WITH WATER METERS:

- AT-MBUS-NE-01 – MWN40 ÷ 300; MP40 ÷ 100; JS50 ÷ 100
- AT-MBUS-NE-01-1h – MWN40-300 (IP68)
- AT-MBUS-NE-02 – JS 1,6 ÷ 4,0 Smart+ i Smart C+
- AT-MBUS-NE-03 – - JS 6,3 ÷ 16 Master+ i Master C+



Table 44. BASIC TECHNICAL DATA

Parametr	AT-MBUS-NE-01, -03	AT-MBUS-NE-01-1h	AT-MBUS-NE-02
Communication protocol	M-Bus with producer's layer	M-Bus with producer's layer	M-Bus with producer's layer
Usage detection	optical	optical	optical
Pulse outputs	2 (type OD)	2 (type OD)	2 (type OD)
Power supply	lithium battery 3,6 V; AA	lithium battery 3,6 V; AA	lithium battery 3,6 V; AA
Protection degree	IP65	IP68	IP65
Battery life	up to 10 years*	up to 10 years*	up to 10 years*
Wire	YTLY 4x0,14 mm ²	YTLY 4x0,14 mm ²	YTLY 4x0,14 mm ²
Wire length	1,5 m	1,5 m	1,5 m
Dimensions	h = 44,1 mm; s = 65,5 mm	h = 44,1 mm; s = 65,5 mm	h = 26,2 mm; s = 65,5 mm
Working temperature	0°C ÷ 55°C	0°C ÷ 55°C	0°C ÷ 55°C

*) for a device working at a temperature of 25°C

CONCENTRATOR OF WATER METERS KWI-1

KWI-1 allows counting of the impulses generated by measuring devices equipped with impulse outputs. It is possible to connect 16 such devices. KWI-1 concentrator does not have a display screen, the indications of the counter can be read through M-Bus interface using the FlatStandard software on a PC computer.

Table 45. BASIC TECHNICAL DATA

Parameter	KWI-1
Number of impulse inputs	16
Impulse constant	1 / 2,5 / 10 / 25 / 100 / 250 / 1000 / 2500 dm ³ /imp.
Power supply	Battery powered, 5 years of operation
Interface	M-Bus
Configuration set	Impulse constant and initial state independent for every input, network number M-Bus, transmission speed
Weight	0,3 kg



KWI-1

CONVERTERS M-BUS/RS232 (LOCAL DATA STATION – LSD)

Table 46. BASIC TECHNICAL DATA

Parameter	Local Data Station	M-Bus/RS232 converter
Recommended number of M-Bus nodes supported by a converter	60 (130*)	200 (250*)
Working output current (constant)	200 mA	600 mA
Maximum output current	0,3 A	1 A
Converter power supply	230 V AC	24 V DC
Design	On-the-wall housing	For installation on a rail Installation box kit

*) Applies for LQM-III... heat meter



LSD



SUPERIOR DATA STATION LSD

It allows to copy the number of accessible nodes in a network by creating an additional branch of the network main and the range of network operation.

REMOTE DATA READING TYPES **GZO** AND **GZOI**

Reading possibilities:

GZO – local reading

GZOI – reading through the Internet (Ethernet)



GZO



GZOI

SURGE PROTECTORS OF M-BUS NETWORK

They fulfil the function of repeated protection in constant mode against the induced surges in M-Bus network (among others in case of lightning discharges).



SURGE
PROTECTOR

READING PROGRAM **FLAT**

FLAT software can be installed on every stationary or portable PC computer operating in Windows system: XP, Vista, 7. It allows the reading of current and archived data from the water meters and heat meters that work in M-Bus network.

ELEMENTS OF CABLE (IMPULS) READINGS OF WATER METERS

IMPULSE MODULE NNK

For remote (cable) transmission of indications of domestic water meters JS-04, JS90-04 and SV-RTK. Impulse module is suitable for direct installation on the counting mechanism of these water meters.

Table 47. BASIC TECHNICAL DATA

Parameter	Impulse module NNK	
Number of pulse transmitters	2	
Impulse value [dm ³ /imp.]	1	1 / 10 / 100 / 1000
Supported counter	8-barrel	5-barrel
Interference detection using an external magnetic field	Yes	
Working temperature	-10°C up to 90°C	



IMPULSE MODULE NNK

N30o-S947 – programmable meter

P30o-S739 – impulse transducer

IZM-MULTIPULSE – counter of the impulses of remote volume counting

APPLICATION

For remote counting of water volume, which has flown through the water meter and for measuring the instantaneous flow rate. It is adapted for cooperation with water meter equipped with pulse transmitter NK, (NC) type or opto-electronic NO type.



N30o



IZM-MULTIPULSE



P30o

Table 48. BASIC TECHNICAL DATA

Functions / data	N30o –S947	P30o***		IZM-MULTIPULSE *)
		with Ethernet interface P30o-1.2.2.1.01.P0.	with external SD/SDHC slot P30o-1.1.2.1.01.P0.	
Information display	Exchangeable value and volume of flow displayed on the monitor	Simultaneous value and volume of flow displayed on the monitor		Change of the flow rate and flow volume displays on the monitor when the "INFO" button is pressed
Number of pulse inputs	2	2		3
Standard weight of impulse input**)	1000 dm ³ /imp.	1000 dm ³ /imp.		10 dm ³ /imp. 10 dm ³ /imp. 10 dm ³ /imp.
Interface maintenance	RS485 in MODBUS RTU protocol	RS485 in MODBUS ASCII and RTU protocol		RS232 and RS485 and M-Bus
Dosing function possibility	YES	YES		NO
Mounting	On-the-table	On-the-rail		On-the-wall
Housing protection degree	IP65	IP40		IP65
Working temperature	-25 ÷ 85°C	-25 ÷ 55°C		+5 ÷ 50°C
Weight	0,2 kg	0,3 kg		0,2 kg

*) Possible cooperation with NO transmitter under the condition that additional power supply will be provided 5-24 V DC

**) It is possible to change the impulse weight on request

****) Possibility to deliver P30o equipped with a different code on special request



CHLORINATOR C 53

APPLICATION

For water disinfection by sodium hypochlorite (NaOCl) diluted in water to maximum chlorine concentration of 3%. It is used mainly as a dispenser of coagulant, potassium permanganate solution and liquid fertilizers, as well as in:

- swimming pool technology
- small waterworks
- water pumps systems
- disinfection of industrial water or small amounts of sewage



CHLORINATOR C 53

Table 49. BASIC TECHNICAL DATA

Type	Chlorinator C53
Maximum performance	18 l/h
Minimum performance	1 l/h
Maximum pressure	0,6 MPa
Tank capacity	50 l
Weight	22 kg

PRODUCT FEATURES

- Simple construction
- Very long device lifetime

ACCESSORIES FOR WATER METERS AND HEAT METERS

Table 50. COUPLINGS FOR WATER METERS AND HEAT METERS

Model	Size of nut thread [G]	Size of connector thread [g]	Diameter [d]	Length [L]
Set of couplings with gaskets DN 15 mm	¾"	½"	17 mm	37,5
Set of couplings with gaskets DN 20 mm	1"	¾"	23 mm	45,5
Set of couplings with gaskets DN 25 mm	1¼"	1"	29 mm	46,5
Set of couplings with gaskets DN 32 mm	1½"	1¼"	36 mm	56,0
Set of couplings with gaskets DN 40 mm	2"	1½"	43 mm	66,0
Set of couplings with gaskets DN 50 mm	2½"	2"	54 mm	76,0

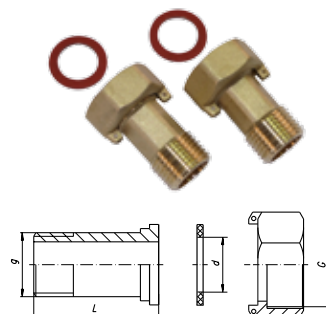


Table 51. EXTENSIONS FOR WATER METERS AND HEAT METERS

Model	G	L
Extension DN 15 mm	¾"	10; 20; 30; 40; 60; 70
Extension DN 20 mm	1"	20; 30; 40; 60
Extension DN 25 mm	1¼"	20; 90
Extension DN 32 mm	1½"	60; 90

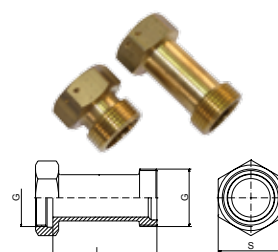


Table 52. CHECK VALVES FOR CONNECTORS OR FOR WATER METERS AND HEAT METERS

Model	Size of connector thread [g]
EA valve for mounting in the water meter outlet duct DN 15 mm	½"
RV-FK valve for mounting in the connector DN 15 mm	½"



EA

RV-FK

Table 53. CONNECTORS FOR WATER METERS AND HEAT METERS WITH RETURN VALVE

Model	Size of connector thread [g]	Size of nut thread [G]	Length
Connector with valve DN 15 mm	1/2"	3/4"	34
Connector with valve DN 20 mm	3/4"	1"	46
Connector with valve DN 25 mm	1"	1 1/4"	58



Table 54. WATER METER SEAL

Model	BLUE	SAN	PP
Water meter seal DN 15 (1/2")	X	X	X
Water meter seal DN 20 (3/4")	X	X	X
Water meter seal DN 25 (1")	X	X	X
Water meter seal DN 32 (1 1/4")	X	X	
Water meter seal DN 40 (1 1/2")	X	X	
Water meter seal DN 50 (2")	X		



Table 55. ROTO SEAL WITH WIRE

Model	Wire length
Roto seal with wire	40 cm
Roto seal with wire	60 cm

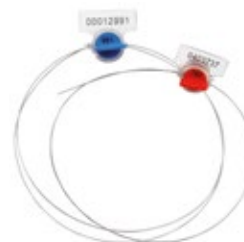


Table 56. T-PIPES FOR MOUNTING OF IMMERSION TEMPERATURE SENSORS

Model	Size	Length
T-pipe DN 15	1/2"	55 mm
T-pipe DN 20	3/4"	63,5 mm



Table 57. REDUCTIONS FOR MOUNTING IMMERSION TEMPERATURE SENSORS

Model	Size
DN15/M10x1 reduction	1/2"



Table 58. BALL VALVES FOR IMMERSION TEMPERATURE SENSORS

Model	Size
Ball valve DN 15	1/2"
Ball valve DN 20	3/4"



Table 59. BALL VALVES

Model	Size
Ball valve DN 15	1/2"
Ball valve DN 20	3/4"
Ball valve DN 25	1"





Table 60. REDUCTIONS FOR WATER METERS

Model	G1	G2	L
Reduction 1 1/4" x 1"	1 1/4"	1"	25
Reduction 1" x 3/4"	1"	3/4"	20
Reduction 1/2" x 3/8"	1/2"	3/8"	17
Reduction 1/4" x 1/2"	1/4"	1/2"	17

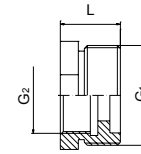


Table 61. WATER METER BRACKET

Water meter size	Length L [mm]	Hight H [mm]	Spacing range B [mm]	The thread on the water meter G1	The thread at the output of water meter bracket G2
DN15	≈280	115	80-150	G3/4	G3/4
DN15	300	≈110	110-170	G3/4	G3/4
DN20	≈280	123	130-150	G1	G1
DN20	300	≈110	130-170	G1	G1
DN20 - inverted connectors	300	≈110	160-200	G1	G1
DN25	380	≈130	130-190	G1 1/4	G1 1/4
DN25 - inverted connectors	380	≈130	190-260	G1 1/4	G1 1/4
DN32	410	≈145	190-270	G1 1/2	G1 1/4
DN40	490	≈150	300-350	G2	G1 1/2

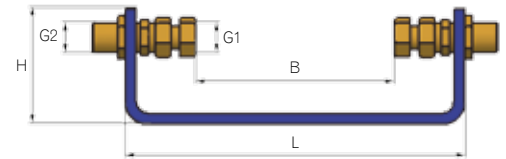


Table 62. THERMOSTATIC HEADS AND RADIATOR VALVES

Model	Size
Thermostatic head	M30x1,5
Thermostatic valves DN15 straight	1/2"
Thermostatic valves DN15 angled	1/2"
Lockshield valve DN15 straight	1/2"
Lockshield valve DN15 angled	1/2"



THERMOSTATIC
HEAD



THERMOSTATIC
RADIATOR VALVE
ANGLED



LOCKSHIELD
VALVE STRAIGHT



Apator Powogaz S.A.
ul. Klemensa Janickiego 23/25, 60-542 Poznań, Poland
e-mail: handel.powogaz@apator.com
Secretariat: tel. +48 61 8418 101, fax +48 61 8470 192
Export department: tel. +48 61 84 18 135 (English, Russian)
+48 61 84 18 139 (English), +48 61 84 18 233 (German)
+48 61 84 18 234 (English),
+48 61 84 18 235 (English, Spanish, French)



SWITCHGEAR



SURGE
ARRESTERS



MINING
EQUIPMENT



AUTOMATION



IT SYSTEMS



GRID CONTROL
AND SUPERVISION



ELECTRICITY
METERING



WATER
METERING



HEAT
METERING



GAS
METERING



SENSORS



METERING
SOLUTIONS