

EnergyMetering

Residential Water Meters

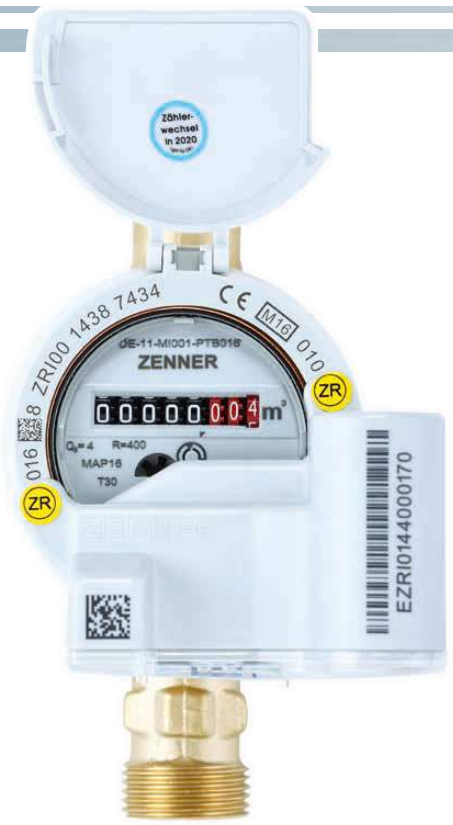
Multi-jet wet dial meters

Multi-jet dry dial meters

Positive displacement meters

AMR-technology

Accessories



ZENNER



Certified quality

ZENNER International GmbH & Co. KG is DIN EN ISO 9001:2008 and DIN EN ISO 14001:2004 certified.

All ZENNER meters correspond to the design and connection dimensions of DIN ISO 4064 and/or DIN ISO 13359 Part 3, DIN EN 1434 and other national and international standards and guidelines.

MID compliant

Before we ship our water and heat meters, we calibrate them in our state-approved testing station for measurement instruments according to 75/33/EEC or declare them compliant with MID European Measurement Instruments Directive 2014/32/EU.

We have successfully implemented approvals and procedures as per these guidelines of the MID since 2006.

Technology of the highest standard

Quality and reliability for the best measurement results



Customers around the world have relied on our experience and the quality and reliability of our products for more than 100 years. We sell more than three million water meters each year, which places us among the leading providers of innovative measurement technology on all five continents.

We have the right products and custom solutions for all technological requirements available, in particular for our customers in the residential and commercial area as well as in utilities and water supplyers.



Along with multi-jet meters for cold or hot water this includes positive displacement meters, plastic water meters and AMR-technologies.

AMR-technology

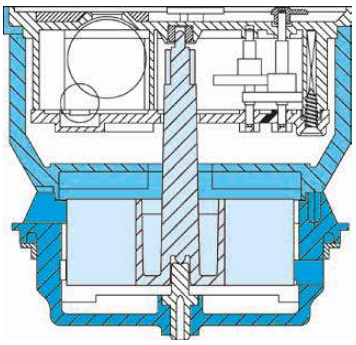
The prerequisite for the integration of water meters, heat meters, gas and electricity meters into modern remote reading systems is the ability of the meters to communicate.

AMR-technology by ZENNER provides modular structured solutions for smart metering systems via suitable interfaces, adapted to individual customer requirements. Our portfolio includes both wired bus systems and wireless radio solutions, as well as the associated software for activation and for taking readings with the systems.



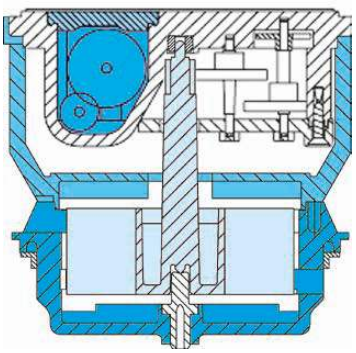
Residential water meters

Construction multi-jet wet dial meters



Our multi-jet turbine meters as wet dial model are characterised by the fact that the impeller shaft is connected directly with the register. The register's rollers and pointers are surrounded by the measuring fluid. The advantage here is that the power transmission from the measuring chamber takes place directly in the register and thus, no friction losses occur. The result is a very low starting flow. In contrast to dry dial meters, this meter model cannot be influenced magnetically and metallic pollution cannot deposit itself on the impeller shaft or the coupling. We recommend this meter for all potable water qualities where pollution of the register through fine particles can be ruled out as far as possible.

Construction "Roller Protect"

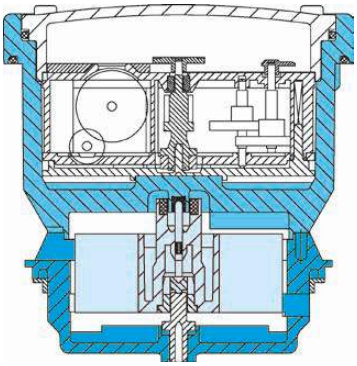


With the model "Roller Protect" (-RP) we refer to a special type of register which is a further development of the classic wet dial meter. Under conditions, over the years, fine deposits may set themselves on the register rollers and the entire dial area of the MNK-meters, despite the encapsulated rollers in the registers. At worst, it becomes extremely difficult to read the meters. This can be avoided with the hermetically encapsulated register developed by ZENNER. The digit rollers are located in their own chamber, which is filled with a special protective fluid. No water and thus, no fine particles can enter the dial area. This way, the meter can be read even in polluted or highly ferrous water and thus, the meter is often referred to as a "semi-dry dial". Meters from the model MNK-RP are the ideal alternative in all situations where readings were often no longer possible.

We recommend this model for all potable water qualities where the danger of deposits due to rust or other fine particles exists or where the meter will remain in use much longer than the calibration period applicable in Germany.

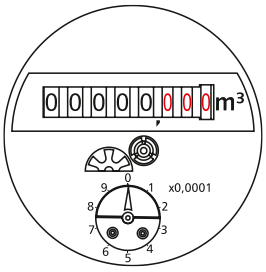
Construction multi-jet dry dial meters

With this meter, only the turbine functions in the wet chamber. The register with the digit rollers is hermetically encapsulated and does not come into contact with the measuring fluid. Both parts of the measuring insert are connected by way of a state-of-the-art magnetic coupling. Malfunctions due to polluted water don‘t affect the encapsulated, evacuated and rotating register. We especially recommend cold water meters (MTKD) for use in places where water quality varies. They can be used with an operatig temperature up to 50 °C. The hot water meters (MTWD) can be used in calciferous water. The temperature limit for this model is 90°C.



Construction positive displacement meters

Positive displacement meters record the flow by means of volumetric measuring method. Based on the known defined volume of the measuring chamber of the rotary piston meter a precise recording of consumption is given. As a result, this leads by the water supply companies to the reduction of the so-called network losses and allows to present a more accurate billing of consumption to the customer. The advantage of positive displacement meters, namely more precise measurement can be observed in the main area of application, in the private household. Positive displacement meters have a high measuring range and measurement stability. Their good stability helps to increase the possible operating time and therefore efficiency as well.



D-register
with modulator disc

The new ZENNER D-register

The D-register for dry dial and positive displacement meters makes possible non-reactive, electronic scanning with different pulse values and is the basis for remote reading via radio, M-bus or pulse module.

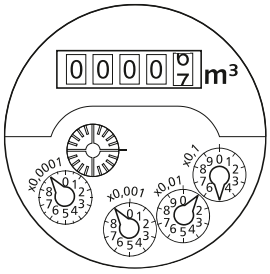


MNK and MNK-N

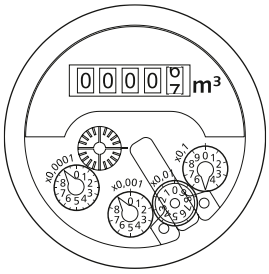
Multi-jet wet dial meters for cold water

The multi-jet wet dial meter MNK is an ideal domestic water meter for tamper-proof, high-precision consumption measurement. MNK is an MID compliant water meter, proven by the million, for service connection. Continuous further development guarantees the most precise measurement results and the best long-term stability. Its construction, thought out right down to the last detail, guarantees outstanding performance characteristics, minimum bearing loads and a long service life for the MNK water meter.

The MNK is available with an uncoated brass body as a standard (optionally with a powder-coated brass body). Version MNK-N is retrofittable with pulser (reed) for remote readout.



MNK



MNK-N

Performance characteristics

- Wet dial register construction
- High-quality mineral glass inspection window
- Optional: UV-resistant plastic (MNK-N)
- Operating pressure MAP 16
- Display range from 0.1 l to 99999 cubic meters
- Approved in accordance with MID

Applications

- For the consumption measuring of cold potable water up to 50° C
- Water meter for horizontal and vertical installation

AMR options

- Retrofittable with pulser
  (Standard pulse value 10 l/Imp., optional 100 l/Imp.)
- Radio via PDC-radio module:
  - Wireless M-bus (according to OMS)
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

MNK-L and MNK-L-N



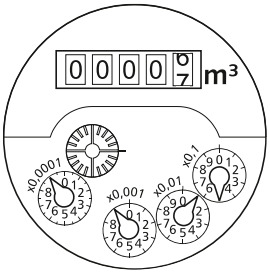
Multi-jet wet dial meters for cold water in a plastic housing

The multi-jet wet dial meter MNK-L is a further development of the classic MNK. Our engineers have successfully combined the high precision MNK measuring insert with an innovative polymer composite housing. The result is the new MNK-L plastic water meter. Its exceptional product characteristics are its low weight, its low starting flow and its reliable measurement characteristics.

The MNK-L-N can be retrofitted with a pulser and is therefore ready for all future AMR-applications.

Performance characteristics

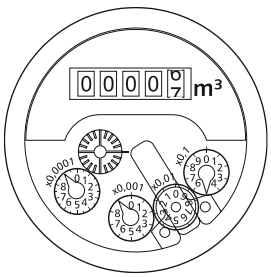
- Wet dial register construction
- Almost 50% lighter than a meter with a brass housing
- High-quality mineral glass inspection window
- Optional: UV-resistant plastic (MNK-L-N)
- Operating pressure MAP 16
- Display range from 0.1 l to 99999 cubic meters
- Approved in accordance with MID



MNK-L

Applications

- For the consumption measuring of cold potable water up to 30° C
- Water meter for horizontal and vertical installation



MNK-L-N

AMR options

- Retrofittable with pulser
  (Standard pulse value 10 l/Imp., optional 100 l/Imp.)
- Radio via PDC-radio module:
  - Wireless M-bus (according to OMS)
  - Radio via LPWAN (LoRaWAN™, SIGFOX)



PDC-Communication module

Gateway for the integration of meters with pulse outputs in remote reading systems

The PulseDataCapture module is optimal for the integration of measuring instruments with pulse output in radio reading systems.
The consumption data of water-, energy heat-, gas-, oil- and other electricity meters with pulse output can be transferred by means of this gateway wireless to a wM-bus receiver.
The gateway is battery powered. The battery lifetime is depending on the version, the transmission interval and the ambient conditions and can reach 15 years.

Model variant:

Our PDC module is available in two versions:

- wireless M-bus radio module according to OMS standard (868 MHz), EN 13757-4
- Radio via LPWAN (LoRaWAN™, SIGFOX)

Smart Metering Functions:

- Self-monitoring
- Leakage detection
- Meter stop detection
- Meter oversized detection
- Meter undersized respectively pipe burst detection

Typical applications:

- Radio reading of water meters with walk-by or drive-by system
- Remote reading of meters with pulse output via the stationary readout system Z.RTU from ZENNER.

Main features

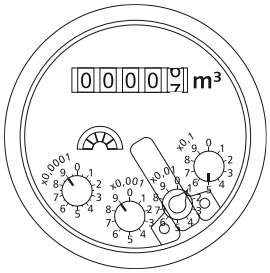
- Plastic housing incl. wall bracket
- Infrared interface
- Pulse and Open-Collector signals processible
- Battery powered
- Protection class IP54 or IP68 as an option
- Versions with connected ZENNER Reed pulser (cable length 1,5m) for the model ranges ETKD-N/ETWD-N, MNK-N, MTKD-N/MTWD-N, RTKD-N available
- Version with lose cable end to be connected to an external meter with pulse output available
- Optionally: to be connected with 2 meters with pulse output

MNK-MF-N Manifold

Multi-jet wet dial cartridge meter for cold potable water

The ZENNER MNK-MF-N is a manifold water meter for cold potable water. The MNK-MF-N combines a multi-jet register with a robust brass housing. The meter is suitable for water temperatures up to 50ºC. The version MNK-MF-N is retrofittable with pulser (reed) for remote readout.





MNK-MF-N

Performance characteristics

- Wet dial register construction
- High-quality mineral glass inspection window
- Optional: UV-resistant plastic (MNK-MF-N)
- Operating pressure MAP 16
- Approved in accordance with MID

Applications

- For the consumption measuring of cold potable water up to 50° C
- Water meter for horizontal installation

Technical data MNK-MF-N				
Permanent flow	Q_3	m³/h	2,5	4
Comparable to nominal flow (EWG)	Q_n	m³/h	1,5	2,5
Attainable measuring range	Q_3/Q_1	Ratio	R80H	R160H
Standard measuring range (*)	Q_3/Q_1	Ratio	R80H	R160H
Comparable to metrological class (EWG)	class		B-H	C-H
Overload flow	Q_4	m³/h	3,13	5
Minimum flow	Q_1	l/h	50	50
Start-up flow rate		l/h	5	5
Display range	min	l	0,1	0,1
	max	m³	99999	99999
Maximum temperature		°C	50	50
Operating pressure, max.	MAP	bar	16	16
Pulse value		l/pulse	10 or 100	10 or 100
Pressure loss at	Q_4	bar	<0,25	<0,55
Dimensions:				
Nominal diameter	DN	mm	20	20
		inch	¾"	¾"
Thread meter G x B	D1	inch	1 ½"	1 ½"
Width approx.	B	mm	103	103
Height approx.	H1	mm	128	128
	H2	mm	113	113
Weight approx.		kg	1,4	1,4

(*) other measuring ranges on request.

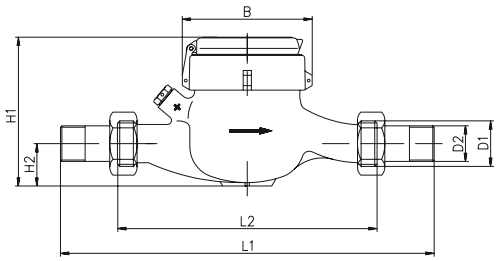
M-Bus wireless | LoRa | SIGFOX

AMR options:

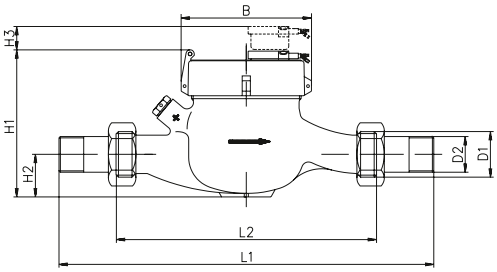
- Retrofittable with pulser (Standard pulse value 10 l/Imp., optional 100 l/Imp.)
- Radio via PDC-radio module:
  - Wireless M-bus (according to OMS)
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

Technical data MNK, MNK-N, MNKI-N										
Permanent flow	Q_3	m³/h	2,5	2,5	2,5	2,5	2,5	4	4	4
Comparable to nominal flow (EWG)	Q_n	m³/h	1,5	1,5	1,5	1,5	1,5	2,5	2,5	2,5
Attainable measuring range	Q_3/Q_1	R	200H/50V	200H/50V	200H/50V	200H/50V	200H/50V	200H/80V	200H/80V	200H/80V
Standard measuring range (*)	Q_3/Q_1	R	80H/40V	80H/40V	80H/40V	80H/40V	80H/40V	80H/40V	80H/40V	80H/40V
Comparable to metro-logical class (EWG)	class		B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V
Overload flow (**)	Q_4	m³/h	3,13	3,13	3,13	3,13	3,13	5	5	5
Minimum flow (**)	Q_1	l/h	31H/63V	31H/63V	31H/63V	31H/63V	31H/63V	50H/100V	50H/100V	50H/100V
Start-up flow rate	-	l/h	<4	<4	<4	<4	<4	<5	<5	<5
Display range	min	l	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	max	m³	99999	99999	99999	99999	99999	99999	99999	99999
Maximum temperature	-	°C	50	50	50	50	50	50	50	50
Operating pressure, max.	MAP	bar	16	16	16	16	16	16	16	16
Pulse value		l/ pulse	10/100	10/100	10/100	10/100	10/100	10/100	10/100	10/100
Dimensions:										
Nominal diameter	DN	mm	15	15	20	20	25	20	20	20
		inch	½"	½"	¾"	¾"	1"	¾"	¾"	¾"
Overall length without connectors (*)	L2	mm	110	165/170	130	190	175	130	190	220
Overall length with connectors approx.	L1	mm	190	245/250	226	286	255	226	286	316
Thread meter G x B	D1	inch	¾"	¾"	1"	1"	1 ¼"	1"	1"	1"
Thread connector R x	D2	inch	½"	½"	¾"	¾"	1"	¾"	¾"	¾"
Width approx.	B	mm	95	95	95	95	95	95	95	95
Height (plastic glass) approx.	H1 k*	mm	120	120	120	120	120	120	120	120
Height (mineral glass) approx.	H1 m*	mm	125	125	125	125	125	125	125	125
	H2	mm	~30	~35	~25	~25	~35	~25	~25	~35
	H3	mm	15	15	15	15	15	15	15	15
Weight approx.	-	kg	1,2	1,3	1,3	1,45	1,8	1,3	1,45	1,6

(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range
k* plastic glass (MNK-N, MNKI-N, MNK-L-N) / m* mineral glass (MNK, MNK-L)

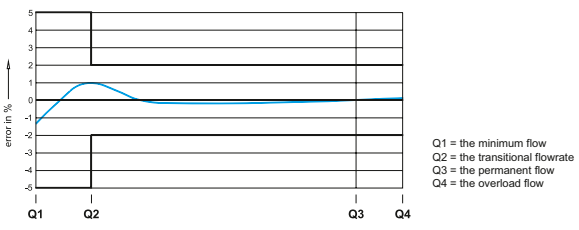


Dimensions MNK, MNK-L

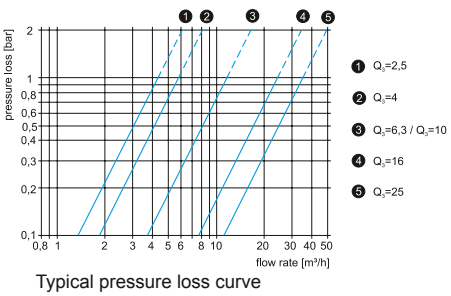


Dimensions MNK-N, MNK-L-N with pulser

Technical data MNK, MNK-N, MNKI-N									MNK-L, MNK-L-N, MNKI-L-N	
4	6,3	10	10	16	16	25	25	25	2,5	4
2,5	3,5	6	6	10	10	15	15	15	1,5	2,5
200H/80V	200H/80V	200H/80V	200H/80V	200H/63V	200H/63V	160H	160H	160H	200H/50V	200H/80V
80H/40V	80H/40V	80H/40V	80H/40V	80H/40V	80H/40V	80H	80H	80H	80H/40V	80H/40V
B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H	B-H	B-H	B-H/A-V	B-H/A-V
5	7,88	12,5	12,5	20	20	31,3	31,3	31,3	3,13	5
50H/100V	79H/158V	125H/250V	125H/250V	200H/400V	200H/400V	313H	313H	313H	31H/63V	50H/100V
<5	<10	<10	<10	<20	<20	<25	<25	<25	<4	<5
0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
99999	99999	99999	99999	99999	99999	99999	99999	99999	99999	99999
50	50	50	50	50	50	50	50	50	30	30
16	16	16	16	16	16	16	16	16	16	16
10/100	10/100	10/100	10/100	10/100	10/100	10/100	10/100	10/100	10/100	10/100
25	25	25	32	40	40	50	50	50	15	20
1"	1"	1"	1 ¼"	1 ½"	---	2"	---	---	½"	¾"
175	175/260	260	260	300	270	300	270	300	165/170/190	190
293	293/378	378	384	428	---	444	---	---	245/250/270	286
1 ¼"	1 ¼"	1 ¼"	1 ½"	2"	flange	2 ½"	flange	flange	¾"	1"
1"	1"	1"	1 ¼"	1 ½"	---	2"	---	---	½"	¾"
95	95	95	95	110	110	110	114	114	99	99
120	120	120	120	145	165	145	170	170	115	115
125	125	125	125	150	170	150	175	175	---	120
~35	~35	~40	~40	~50	~70	~60	~75	~75	~30	~30
15	15	15	15	15	15	15	15	15	15	15
1,7	1,7/2,1	2,1	2,2	3,6	7,5	4	9,5	9,5	0,6	0,6



Typical accuracy curve



Typical pressure loss curve

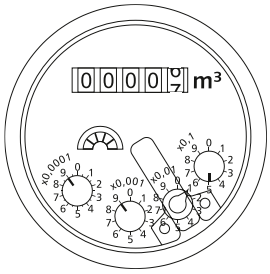


MNK-RP and MNK-RP-N

Multi-jet wet dial meters with protected digit rollers

The digit rollers of the MNK-RP register are housed in a chamber which is filled with a special protective fluid. Thanks to the protected digit rollers, the water meters delivers optimum measurement results, even in difficult conditions.

No water and no suspended particles can reach the dial level of the water meter. Accordingly the MNK-RP water meter is always legible, even in heavily contaminated water or in water containing ice. Version MNK-RP-N is retrofittable with pulser (reed) for remote readout.



MNK-RP-N

Performance characteristics

- Wet dial register construction
- Specially protected encapsulated digit rollers
- High-quality mineral glass inspection window
- Optional: UV-resistant plastic (MNK-RP-N)
- Operating pressure MAP 16
- Display range from 0.1 l to 99999 cubic meters
- Approved in accordance with MID

Applications

- For the consumption measuring of cold potable water up to 50° C
- Water meter for horizontal and vertical installation

AMR options

- Retrofittable with pulser (Standard pulse value 10 l/Imp., optional 100 l/Imp.)
- Radio via PDC-radio module:
  - Wireless M-bus (according to OMS)
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

MNK-L-RP and MNK-L-RP-N

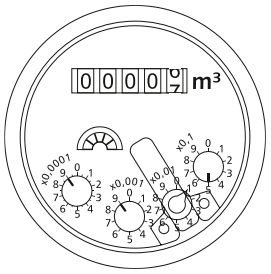


Multi-jet wet dial meters with protected digit rollers in a plastic housing

Developing the MNK-RP we combined the high-precise measuring insert of the MNK-RP with a body of pressure-tight polymer composite, suitable for use with potable water. The result is the innovative MNK-L-RP.

Its main features are a low starting flow and reliable performance even with aggressive water qualities or dezincification effects. The protected roller register is reliably readable even under difficult climatic conditions. The construction principle of the MNK-L-RP with direct transmission from the measuring chamber to the register ensures by standard protection against manipulation or interference.

Version MNK-L-RP-N is retrofittable with pulser (reed) for remote readout.



MNK-L-RP-N

Performance characteristics

- Wet dial register construction
- Almost 50% lighter than a meter with a brass housing
- Specially protected encapsulated digit rollers
- High-quality mineral glass inspection window
- Optional: UV-resistant plastic (MNK-L-RP-N)
- Operating pressure MAP 16
- Display range from 0.1 l to 99999 cubic meters
- Approved in accordance with MID

Applications

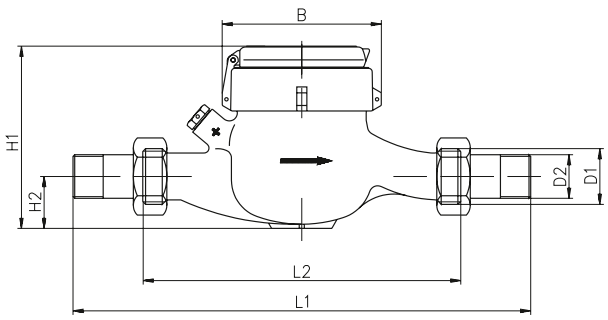
- For the consumption measuring of cold potable water up to 30° C
- Water meter for horizontal and vertical installation

AMR options

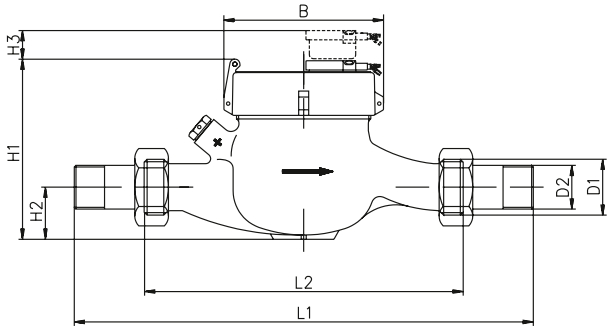
- Retrofittable with pulser (Standard pulse value 10 l/Imp., optional 100 l/Imp.)
- Radio via PDC-radio module:
  - Wireless M-bus (according to OMS)
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

Technical data MNK-RP, MNK-RP-N, MNK-RPI-N									
Permanent flow	Q_3	m³/h	2,5	2,5	2,5	4	6,3	10	10
Comparable to nominal flow (EWG)	Q_n	m³/h	1,5	1,5	1,5	2,5	3,5	6	6
Attainable measuring range	Q_3/Q_1	R	200H/50V	200H/50V	200H/50V	200H/80V	200H/80V	200H/80V	200H/80V
Standard measuring range (*)	Q_3/Q_1	R	80H/40V	80H/40V	80H/40V	80H/40V	80H/40V	80H/40V	80H/40V
Comparable to metrological class (EWG)	class		B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V	B-H/A-V
Overload flow (**)	Q_4	m³/h	3,13	3,13	3,13	5	7,88	12,5	12,5
Minimum flow (**)	Q_1	l/h	31H/63V	31H/63V	31H/63V	50H/100V	79H/158V	125H/250V	125H/250V
Start-up flow rate	-	l/h	<4	<4	<4	<5	<10	<10	<10
Display range	min	l	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	max	m³	99999	99999	99999	99999	99999	99999	99999
Maximum temperature	-	°C	50	50	50	50	50	50	50
Operating pressure, max.	MAP	bar	16	16	16	16	16	16	16
Pulse value		l/pulse	10/100	10/100	10/100	10/100	10/100	10/100	10/100
Dimensions:									
Nominal diameter	DN	mm	15	15	20	20	25	32	32
		inch	½"	½"	¾"	¾"	1"	1"	1 ¼"
Overall length without connectors (*)	L2	mm	110	165/170	190	190	260	260	260
Overall length with connectors approx.	L1	mm	190	245/250	286	286	378	384	384
Thread meter G x B	D1	inch	¾"	¾"	1"	1"	1 ¼"	1 ¼"	1 ½"
Thread connector R x	D2	inch	½"	½"	¾"	¾"	1"	1"	1 ¼"
Width approx.	B	mm	95	95	95	95	95	95	95
Height approx.	H1	mm	110	110	110	110	110	110	110
	H2	mm	~30	~35	~25	~25	~35	~35	~35
	H3	mm	15	15	15	15	15	15	15
Weight approx.	-	kg	1,1	1,2	1,3	1,3	2	2	2,1

(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range



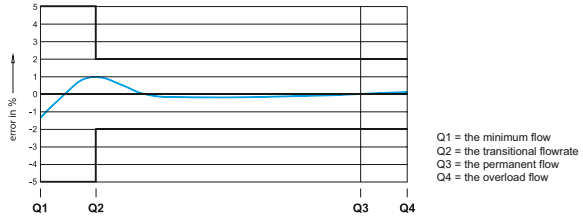
Dimensions MNK-RP, MNK-L-RP



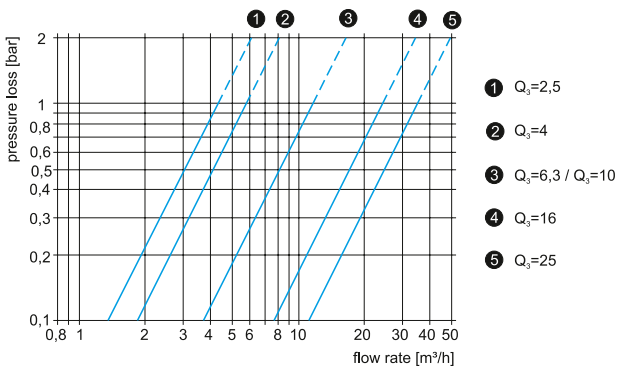
Dimensions MNK-RP-N, MNK-L-RP-N with pulser

Technical data MNK-RP, MNK-RP-N, MNK-RPI-N									MNK-L-RP, MNK-L-RP-N	
Permanent flow	Q_3	m³/h	16	16	16	25	25	25	2,5	4
Comparable to nominal flow (EWG)	Q_n	m³/h	10	10	10	15	15	15	1,5	2,5
Attainable measuring range	Q_3/Q_1	R	200H/63V	200H/63V	200H/63V	160H	160H	160H	200H/50V	200H/80V
Standard measuring range (*)	Q_3/Q_1	R	80H/40V	80H/40V	80H/40V	80H	80H	80H	80H/40V	80H/40V
Comparable to metrological class (EWG)	class		B-H/A-V	B-H/A-V	B-H/A-V	B-H	B-H	B-H	B-H/A-V	B-H/A-V
Overload flow (**)	Q_4	m³/h	20	20	20	31,3	31,3	31,3	3,13	5
Minimum flow (**)	Q_1	l/h	200H/400V	200H/400V	200H/400V	313H	313H	313H	31H/63V	50H/100V
Start-up flow rate	-	l/h	<20	<20	<20	<25	<25	<25	<4	<5
Display range	min	l	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	max	m³	99999	99999	99999	99999	99999	99999	99999	99999
Maximum temperature	-	°C	50	50	50	50	50	50	30	30
Operating pressure, max.	MAP	bar	16	16	16	16	16	16	16	16
Pulse value		l/pulse	10/100	10/100	10/100	10/100	10/100	10/100	10/100	10/100
Dimensions:										
Nominal diameter	DN	mm	40	50	40	50	50	50	15	20
		inch	1 ½"	2"	---	2"	---	---	½"	¾"
Overall length without connectors (*)	L2	mm	300	300	270	300	270	300	165/170/190	190
Overall length with connectors approx.	L1	mm	428	444	---	444	---	---	245/250/270	286
Thread meter G x B	D1	inch	2"	2 ½"	flange	2 ½"	flange	flange	¾"	1"
Thread connector R x	D2	inch	1 ½"	2"	---	2"	---	---	½"	¾"
Width approx.	B	mm	110	110	110	110	165	165	99	99
Height approx.	H1	mm	150	150	170	150	175	175	115	115
	H2	mm	~50	~50	~70	~60	~75	~75	~30	~30
	H3	mm	15	15	15	15	15	15	15	15
Weight approx.	-	kg	3,5	3,9	7,5	3,9	9,4	9,4	0,6	0,6

(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range



Typical accuracy curve



Typical pressure loss curve



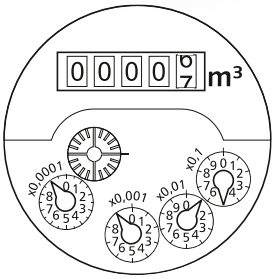
MNK-ST and MNK-N-ST

Multi-jet wet dial meters for cold water in a standpipe design

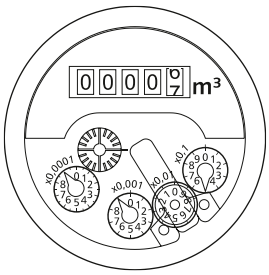
For installation in vertical pipelines with an upwards flow direction, the high quality MNK wet dial measuring insert is available in a standpipe housing.

The MNK-ST water meter is designed for standpipe installation and guarantees an uncomplicated calibration replacement. In comparison with a vertically installed standard water meter, the register keeps on functioning, even in a horizontal position. Thanks to the resulting decrease in bearing load, a significant improvement in the long-term measuring reliability can be achieved.

Version MNK-N-ST is retrofittable with pulser (reed) for remote readout.



MNK-ST



MNK-N-ST

Performance characteristics

- Wet dial register construction
- Specially protected encapsulated digit rollers
- High-quality mineral glass inspection window
- Optional: UV-resistant plastic (MNK-N-ST)
- Operating pressure MAP 16
- Display range from 0.1 l to 99999 cubic meters
- Approved in accordance with MID

Applications

- For the consumption measuring of cold potable water up to 50° C
- Water meter for standpipe installation

AMR options

- Retrofittable with pulser (Standard pulse value 10 l/Imp., optional 100 l/Imp.)
- Radio via PDC-radio module:
  - Wireless M-bus (according to OMS)
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

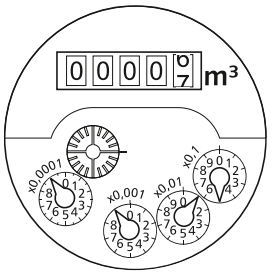
MNK-FA and MNK-N-FA

Multi-jet wet dial meters for cold water in a downpipe design

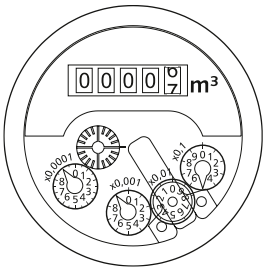
For vertical installation positions with a downward flow direction, the proven MNK wet dial measuring insert is available with downpipe housing. The MNK-FA water meter is designed for downpipe installation and makes calibration replacement uncomplicated.

In comparison with a vertically installed standard water meter, the register keeps on functioning, even in a horizontal position. Thanks to the resulting decrease in bearing load, a significant improvement in the long-term measuring reliability can be achieved. Version MNK-N-FA is retrofittable with pulser (reed) for remote readout.





MNK-FA



MNK-N-FA

Performance characteristics

- Wet dial register construction
- Specially protected encapsulated digit rollers
- High-quality mineral glass inspection window
- Optional: UV-resistant plastic (MNK-N-FA)
- Operating pressure MAP 16
- Display range from 0.1 l to 99999 cubic meters
- Approved in accordance with MID

Applications

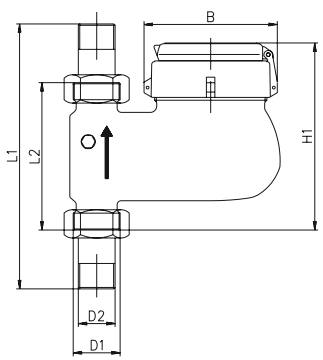
- For the consumption measuring of cold potable water up to 50° C
- Water meter for downpipe installation

AMR options

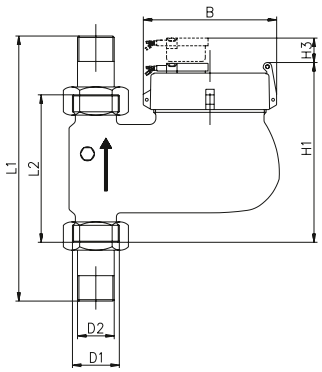
- Retrofittable with pulser (Standard pulse value 10 l/Imp., optional 100 l/Imp.)
- Radio via PDC-radio module:
  - Wireless M-bus (according to OMS)
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

Technical data MNK-ST, MNK-N-ST, MNKI-N-ST									
Permanent flow	Q_3	m³/h	2,5	4	6,3	10	10	16	16
Comparable to nominal flow (EWG)	Q_n	m³/h	1,5	2,5	3,5	6	6	10	10
Attainable measuring range	Q_3/Q_1	R	200H	200H	200H	200H	200H	200H	200H
Standard measuring range (*)	Q_3/Q_1	R	80H	80H	80H	80H	80H	80H	80H
Comparable to metrological class (EWG)	class		B-H	B-H	B-H	B-H	B-H	B-H	B-H
Overload flow (**)	Q_4	m³/h	3,13	5	7,88	12,5	12,5	20	20
Minimum flow (**)	Q_1	l/h	31H	50H	79H	125H	125H	200H	200H
Start-up flow rate	-	l/h	<4	<5	<10	<10	<10	<20	<20
Display range	min	l	0,1	0,1	0,1	0,1	0,1	0,1	0,1
	max	m³	99999	99999	99999	99999	99999	99999	99999
Maximum temperature	-	°C	50	50	50	50	50	50	50
Operating pressure, max.	MAP	bar	16	16	16	16	16	16	16
Pulse value		l/pulse	10/100	10/100	10/100	10/100	10/100	10/100	10/100
Dimensions:									
Nominal diameter	DN	mm	20	20	25	25	32	40	40
		inch	¾"	¾"	1"	1"	1 ¼"	1 ½"	1 ½"
Overall length without connectors (*)	L2	mm	105	105	150	150	150	150	200
Overall length with connectors approx.	L1	mm	201	201	268	268	274	278	328
Thread meter G x B	D1	inch	1"	1"	1 ¼"	1 ¼"	1 ½"	2"	2"
Thread connector R x	D2	inch	¾"	¾"	1"	1"	1 ¼"	1 ½"	1 ½"
Width approx.	B	mm	95	95	95	95	95	110	110
Height (plastic glass) approx.	H1 k*	mm	140	140	160	160	160	165	165
Height (mineral glass) approx.	H1 m*	mm	140	140	160	160	160	165	165
	H3	mm	15	15	15	15	15	15	15
Weight approx.	-	kg	1,7	1,7	2,6	2,6	2,7	4,1	4,3

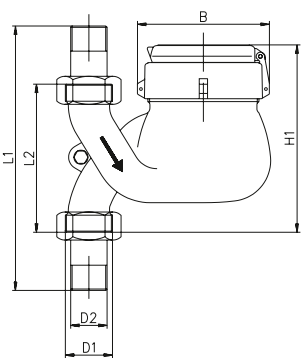
(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range
k* plastic glass (MNK-N-ST, MNKI-N-ST) / m* mineral glass (MNK-ST)



Dimensions MNK-ST



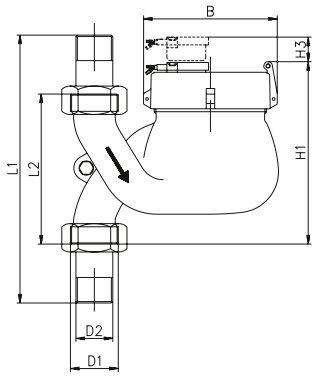
Dimensions MNK-N-ST with pulser



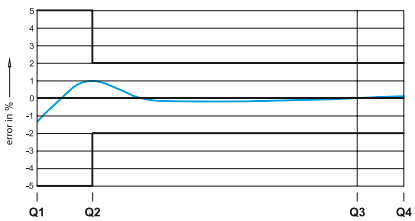
Dimensions MNK-FA

Technical data MNK-FA, MNK-N-FA, MNKI-N-FA				
Permanent flow	Q_3	m³/h	2,5	4
Comparable to nominal flow (EWG)	Q_n	m³/h	1,5	2,5
Attainable measuring range	Q_3/Q_1	R	200H	200H
Standard measuring range (*)	Q_3/Q_1	R	80H	80H
Comparable to metrological class (EWG)	class		B-H	B-H
Overload flow (**)	Q_4	m³/h	3,13	5
Minimum flow (**)	Q_1	l/h	31H	50H
Start-up flow rate	-	l/h	<4	<5
Display range	min	l	0,1	0,1
	max	m³	99999	99999
Maximum temperature	-	°C	50	50
Operating pressure, max.	MAP	bar	16	16
Pulse value		l/pulse	10/100	10/100
Dimensions:				
Nominal diameter	DN	mm	20	20
		inch	¾"	¾"
Overall length without connectors (*)	L2	mm	105	105
Overall length with connectors approx.	L1	mm	201	201
Thread meter G x B	D1	inch	1"	1"
Thread connector R x	D2	inch	¾"	¾"
Width approx.	B	mm	95	95
Height (plastic glass) approx.	H1 k*	mm	140	140
Height (mineral glass) approx.	H1 m*	mm	140	140
	H2	mm	---	---
	H3	mm	15	15
Weight approx.	-	kg	1,7	1,7

(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range
k* plastic glass (MNK-N-FA, MNKI-N-FA) / m* mineral glass (MNK-FA)

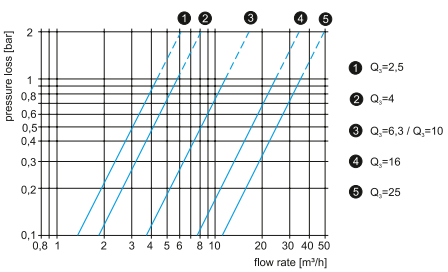


Dimensions MNK-N-FA with pulser



Typical accuracy curve

Q1 = the minimum flow
Q2 = the transitional flowrate
Q3 = the permanent flow
Q4 = the overload flow



Typical pressure loss curve

AMR Options

ZENNER multi-jet dry dial and piston type dry dial water meters are equipped with the 8-digit-rollers register with modulator disc. In combination with the ZENNER EDC communication module they provide an electronic and non-reactive scanning as a prerequisite for the remote readout of the meter data via radio (wireless M-bus according to OMS), M-bus or LPWA-networks in the Internet of Things.

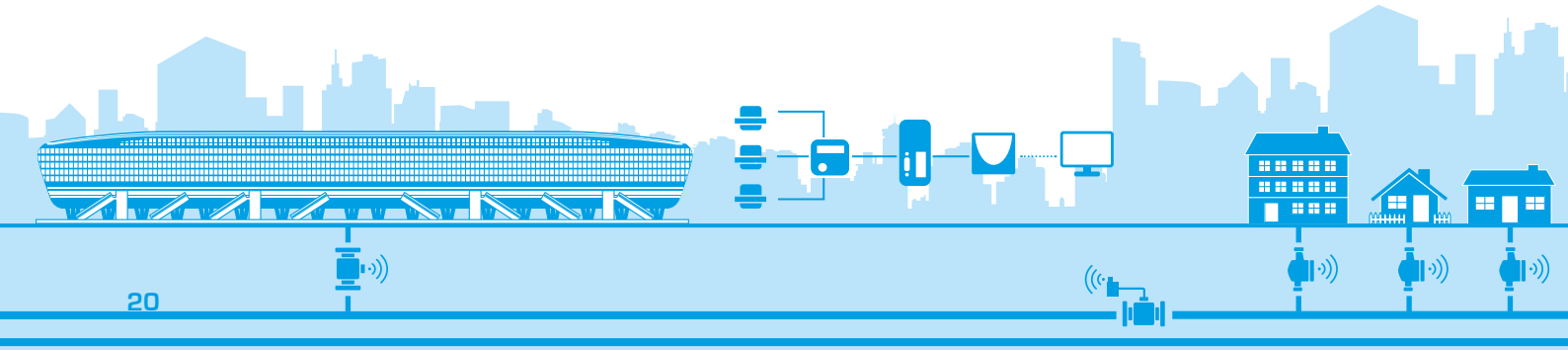
All meters with modulator disc are prepared for the installation of the ZENNER EDC- communication modules. The communication modules are designed for outdoor use and can be retrofitted anytime.



Communication interface for EDC communication module for electronic pulser, M-bus or radio

Meters with EDC module provide the following Smart Metering functions:

- Self-monitoring
- Tampering detection
- Dismounting of module and meter detection
- Reverse water flow detection
- Leakage detection
- Meter Stop detection
- Meter oversized detection
- Meter undersized respectively pipe burst detection





Electronic pulser for M-Bus

- Integration into M-bus systems
  Learn more about M-bus: www.zenner.com/bus-systems.html
- Connection to a GSM data logger
  - Leak detection
  - Remote readout via GSM
  - Pipe burst
  - Errors

  Learn more about GSM: www.zenner.com/gsm.html

Walk-by / drive-by radio system OPERA

- Wireless M-bus radio technology according to OMS
- Unidirectional radio technology according to EN 13757-4 and OMS-specification
- Compatible to various mobile readout-systems
- Frequency: 868MHz
- Transmitting power: 25mW
- Battery lifetime: up to 15 years

  Learn more about wireless M-bus: www.zenner.com/opera.html

Stationary Radio System (Internet of Things)

- Bidirectional LPWAN radio technology (Low Power Wide Area Network)
- Integration of meters into the Internet of Things (IoT)
- Using the international communication standard LoRaWAN™
- Using the international communication standard SIGFOX

  Learn more about the Internet of Things: www.zenner.com/iot.html



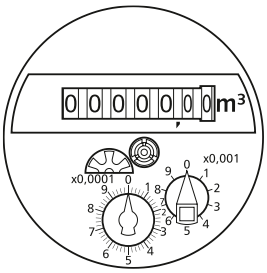


MTKD-M and MTKD-N

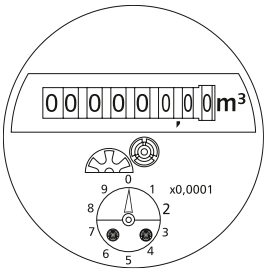
Multi-jet dry dial water meter for cold water

In use by the million worldwide the MTKD provides a high technical standard and a high-quality workmanship. Precise measurement results are achieved, even with difficult water quality or in difficult installation situations.

The MTKD is equipped with the ZENNER D-register and is available in two versions:
MTKD-M with 8-digit-rollers register and modulator disc for non-reactive scanning for radio (wireless M-bus, LPWAN), M-bus or pulse. MTKD-N with 7- or 8-digit rollers for different pulse values and retrofittable with mechanic pulser.



MTKD-N



MTKD-M

Performance characteristics

- High-quality UV-resistant plastic inspection window
- Dry dial register with shielded magnetic coupling
- Operating pressure PN 16
- Available with flood-proof (IP68 hermetically sealed glass/copper register)
- Approved in accordance with MID

Applications

- For the consumption measuring of cold potable water up to 50° C
- Water meter for horizontal and vertical installation

AMR options

- MTKD-N with pulse output (reed) for remote readout
- Standard pulse value 10 l/pulse, optional 1 l/pulse available
- MTKD-M serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via wireless M-bus
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

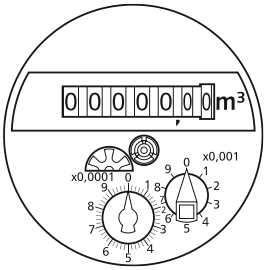
MTKD-L-M and MTKD-L-N



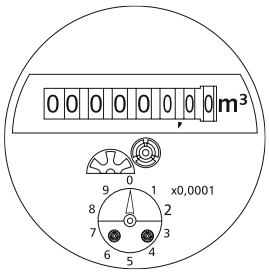
Multi-jet dry dial water meter in an innovative plastic housing

The new series of our multi-jet dry dial meter are an improvement of the classical MTKD. Its main features are a low starting flow and reliable performance even with difficult water qualities or dezincification effects. Constant development guarantees accurate measuring results and the best long-term stability.

The MTKD-L is equipped with the ZENNER D-register and is available in two versions:
MTKD-L-M with 8-digit-rollers register and modulator disc for non-reactive scanning for radio (wireless M-bus, LPWAN), M-bus or pulse.
MTKD-L-N with 7- or 8-digit rollers for different pulse values and retrofittable with mechanic pulser.



MTKD-L-N



MTKD-L-M

Performance characteristics

- Almost 50% lighter than a meter with a brass housing
- Dry dial register with shielded magnetic coupling
- High-quality UV-resistant plastic inspection window
- Operating pressure MAP 16
- Available with flood-proof (IP68) hermetically sealed glass/copper register
- Approved in accordance with MID

Applications

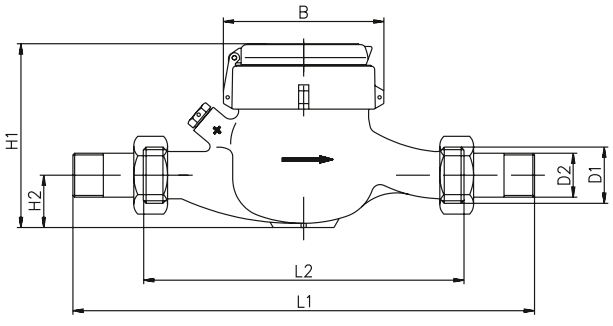
- For the consumption measuring of cold potable water up to 30° C
- Water meter for horizontal and vertical installation

AMR options

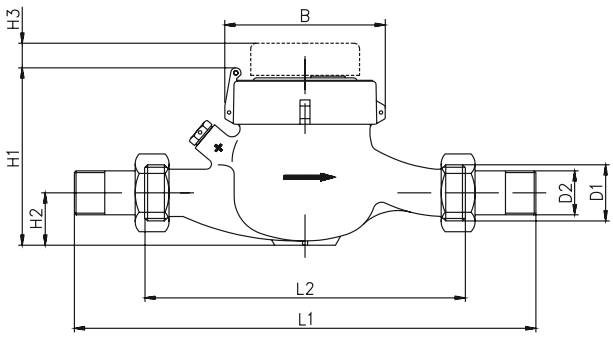
- MTKD-L-N with pulse output (reed) for remote readout
- Standard pulse value 10 l/pulse, optional 1 l/pulse available
- MTKD-L-M serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via wireless M-bus
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

Technical data MTKD-N, MTKDI-N, MTKD-M							
Permanent flow	Q_3	m³/h	2,5	4	6,3	10	10
Comparable to nominal flow (EWG)	Q_n	m³/h	1,5	2,5	3,5	6	6
Attainable measuring range	Q_3/Q_1	R	100H	160H/40V	R40 160H	R50 160H	R50 160H
Standard measuring range (*)	Q_3/Q_1	R	R80H	R80H/40V	R40 R80H	R40 R80H	R40 R80H
Comparable to metrological class (EWG)	class		B-H	B-H / A-V	A / B-H	A / B-H	A / B-H
Overload flow (**)	Q_4	m³/h	3,13	5	7,88	12,5	12,5
Minimum flow (**)	Q_1	l/h	100 / 31H	160 / 50H	158 / 79H	250 / 125H	250 / 125H
Start-up flow rate	-	l/h	<10	<10	<18	<18	<18
Display range	min	l	0,02	0,02	0,02	0,02	0,02
	max	m³	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99
Maximum temperature	-	°C	50	50	50	50	50
Operating pressure, max.	MAP	bar	16	16	16	16	16
Pulse value		l/pulse	1/10	1/10	1/10	1/10	1/10
Dimensions:							
Nominal diameter	DN	mm	15	20	25	25	32
		inch	½"	¾"	1"	1"	1 ¼"
Overall length without connectors (*)	L2	mm	165/170	190	260	260	260
Overall length with connectors approx.	L1	mm	245/250	286	378	384	384
Thread meter G x B	D1	inch	¾"	1"	1 ¼"	1 ¼"	1 ½"
Thread connector R x	D2	inch	½"	¾"	1"	1"	1 ¼"
Width approx.	B	mm	95	95	95	95	95
Height (plastic glass) approx.	H1 k*	mm	120	120	120	120	120
	H2	mm	35	25	35	40	40
	H3	mm	15	15	15	15	15
Weight approx.	-	kg	1,2	1,3	2,1	2,1	2,1

(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range
k* plastic glass



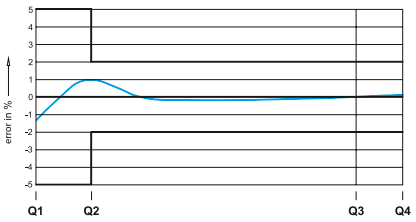
Dimensions MTKD-N/ -M, MTKD-L-N/ -M



Dimensions MTKDI-N, MTKDI-L-N with pulser

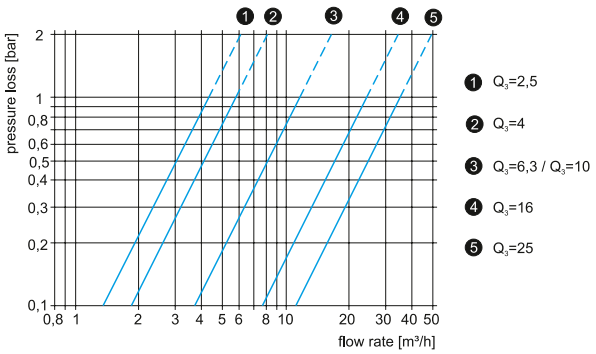
Technical data MTKD-N, MTKDI-N, MTKD-M						MTKD-L-N, MTKDI-L-N, MTKD-L-M	
Permanent flow	Q_3	m³/h	16	25	25	2,5	4
Comparable to nominal flow (EWG)	Q_n	m³/h	10	15	15	1,5	2,5
Attainable measuring range	Q_3/Q_1	R	R40 160H	125H/40V	125H/40V	100H	160H/40V
Standard measuring range (*)	Q_3/Q_1	R	R40 R80H	80H/40V	80H/40V	R80H	R80H/40V
Comparable to metrological class (EWG)	class		A / B-H	B-H / A-V	B-H / A-V	B-H	B-H / A-V
Overload flow (**)	Q_4	m³/h	20	31,3	31,3	3,13	5
Minimum flow (**)	Q_1	l/h	640 / 200H	313H	313H	100 / 31H	160 / 50H
Start-up flow rate	-	l/h	<40	<25	<25	<10	<10
Display range	min	l	0,02	0,1	0,1	0,02	0,02
	max	m³	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99
Maximum temperature	-	°C	50	50	50	30	30
Operating pressure, max.	MAP	bar	16	16	16	16	16
Pulse value		l/pulse	1/10	1/10	1/10	1/10	1/10
Dimensions:							
Nominal diameter	DN	mm	40	50	50	15	20
		inch	1 ½"	2"	---	½"	¾"
Overall length without connectors (*)	L2	mm	300	300	270	165/170	190
Overall length with connectors approx.	L1	mm	428	444	---	245/250	286
Thread meter G x B	D1	inch	2"	2 ½"	flange	¾"	1"
Thread connector R x	D2	inch	1 ½"	2"	---	½"	¾"
Width approx.	B	mm	110	110	110	99	99
Height (plastic glass) approx.	H1 k*	mm	150	150	175	120	120
	H2	mm	50	60	75	35	30
	H3	mm	15	15	15	15	15
Weight approx.	-	kg	4,0	4	9,5	0,6	0,6

(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range
k* plastic glass



Q1 = the minimum flow
Q2 = the transitional flowrate
Q3 = the permanent flow
Q4 = the overload flow

Typical accuracy curve



Typical pressure loss curve



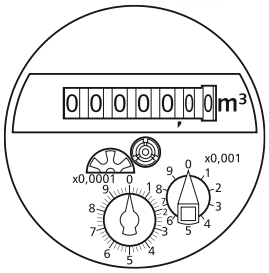
MTKD-M-ST and MTKD-N-ST

Multi-jet dry dial water meter in a standpipe housing

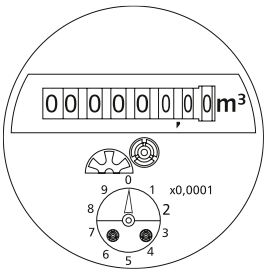
The proven MTK dry dial measuring insert is available in a standpipe housing. It is designed for installation in vertical pipelines with an upwards flow direction and makes calibration replacement uncomplicated.

The MTKD-ST is equipped with the new ZENNER D-register and is available in two versions:
MTKD-M-ST with 8-digit rollers register and modulator disc for non-reactive scanning for radio (wireless M-bus, LPWAN), M-bus or pulse.
MTKD-N-ST with 7- or 8-digit rollers for different pulse values and retrofit-table with mechanic pulser.

In comparison with a vertically installed standard water meter, the register keeps on functioning, even in a horizontal position. Thanks to the resulting decrease in bearing load, a significant improvement in the long-term measuring stability can be achieved.



MTKD-N-ST



MTKD-M-ST

Performance characteristics

- Dry dial register with shielded magnetic coupling
- High-quality UV-resistant plastic inspection window
- Operating pressure MAP 16
- Available with flood-proof (IP68) hermetically sealed glass/copper register
- Approved in accordance with MID

Applications

- For the consumption measuring of cold potable water up to 50° C
- Water meter for standpipe installation

M-Bus | M-Bus wireless | LoRa | SIGFOX

AMR options

- MTKD-N-ST with pulse output (reed) for remote readout
- Standard pulse value 10 l/pulse, optional 1 l/pulse available
- MTKD-M-ST serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via wireless M-bus
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

MTKD-M-FA and MTKD-N-FA

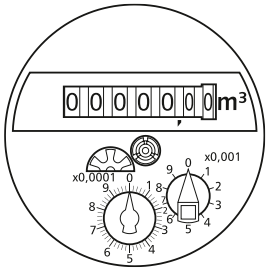
Multi-jet dry dial water meter in a downpipe housing

The proven MTK water meters dry dial measuring insert is available in a downpipe housing for vertical installation positions with a downward flow direction and makes calibration replacement uncomplicated.

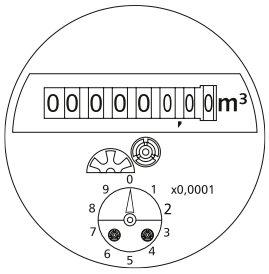
The MTKD-FA is equipped with the new ZENNER D-register and is available in two versions:
MTKD-M-FA with 8-digit rollers register and modulator disc for non-reactive scanning for radio (wireless M-bus, LPWAN), M-bus or pulse.
MTKD-N-FA with 7- or 8-digit rollers for different pulse values and retrofittable with mechanic pulser.

In comparison with a vertically installed standard water meter, the register keeps on functioning, even in a horizontal position. Thanks to the resulting decrease in bearing load, a significant improvement in the long-term measuring stability can be achieved.





MTKD-N-FA



MTKD-M-FA

Performance characteristics

- Dry dial register with shielded magnetic coupling
- High-quality UV-resistant plastic inspection window
- Operating pressure MAP 16
- Available with flood-proof (IP68) hermetically sealed glass/copper register
- Approved in accordance with MID

Applications

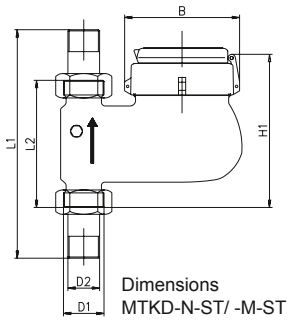
- For the consumption measuring of cold potable water up to 50° C
- Water meter for downpipe installation

AMR options

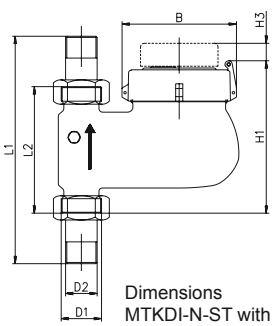
- MTKD-N-FA with pulse output (reed) for remote readout
- Standard pulse value 10 l/pulse, optional 1 l/pulse available
- MTKD-M-FA serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via wireless M-bus
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

Technical data MTKD-N-ST, MTKDI-N-ST, MTKD-M-ST								
Permanent flow	Q_3	m³/h	2,5	4	6,3	10	16	16
Comparable to nominal flow (EWG)	Q_n	m³/h	1,5	2,5	3,5	6	10	10
Attainable measuring range	Q_3/Q_1	R	100H	160H	125H	160H	160H	160H
Standard measuring range (*)	Q_3/Q_1	R	R80H	R80H	R80H	R80H	R80H	R80H
Comparable to metrological class (EWG)	class		B-H	B-H	B-H	B-H	B-H	B-H
Overload flow (**)	Q_4	m³/h	3,13	5	7,88	12,5	20	20
Minimum flow (**)	Q_1	l/h	31H	50H	79H	125H	200H	200H
Start-up flow rate	-	l/h	<10	<10	<18	<18	<40	<40
Display range	min	l	0,02	0,02	0,02	0,02	0,02	0,02
	max	m³	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99
Maximum temperature	-	°C	50	50	50	50	50	50
Operating pressure, max.	MAP	bar	16	16	16	16	16	16
Pulse value		l/pulse	1/10	1/10	1/10	1/10	1/10	1/10
Dimensions:								
Nominal diameter	DN	mm	20	20	25	25	40	40
		inch	¾"	¾"	1"	1"	1 ½"	1 ½"
Overall length without connectors (*)	L2	mm	105	105	150	150	150	200
Overall length with connectors approx.	L1	mm	201	201	268	268	278	328
Thread meter G x B	D1	inch	1"	1"	1 ¼"	1 ¼"	2"	2"
Thread connector R x	D2	inch	¾"	¾"	1"	1"	1 ½"	1 ½"
Width approx.	B	mm	95	95	95	95	110	110
Height (plastic glass) approx.	H1 k*	mm	140	140	160	160	165	165
	H3	mm	15	15	15	15	15	15
Weight approx.	-	kg	1,7	1,7	2,1	2,1	4,0	4,9

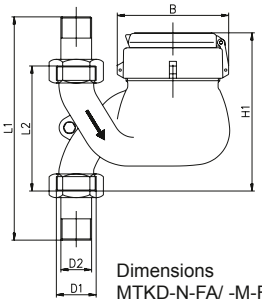
(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range
k* plastic glass



Dimensions
MTKD-N-ST/ -M-ST



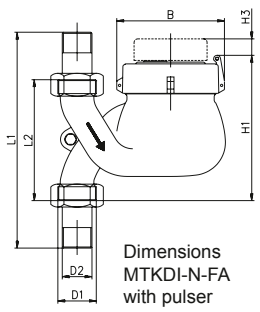
Dimensions
MTKDI-N-ST with pulser



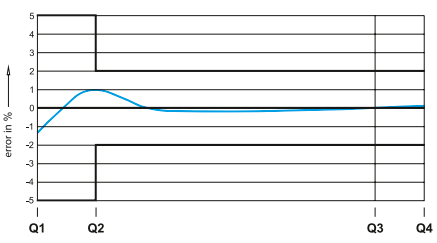
Dimensions
MTKD-N-FA/ -M-FA

Technical data MTKD-FA, MTKD-N-FA, MTKDI-N-FA, MTKD-M-FA				
Permanent flow	Q_3	m³/h	2,5	4
Comparable to nominal flow (EWG)	Q_n	m³/h	1,5	2,5
Attainable measuring range	Q_3/Q_1	R	100H	160H
Standard measuring range (*)	Q_3/Q_1	R	R80H	R80H
Comparable to metrological class (EWG)	class		B-H	B-H
Overload flow (**)	Q_4	m³/h	3,13	5
Minimum flow (**)	Q_1	l/h	31H	50H
Start-up flow rate	-	l/h	<10	<10
Display range	min	l	0,02	0,02
	max	m³	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99
Maximum temperature	-	°C	50	50
Operating pressure, max.	MAP	bar	16	16
Pulse value		l/pulse	1/10	1/10
Dimensions:				
Nominal diameter	DN	mm	20	20
		inch	¾"	¾"
Overall length without connectors (*)	L2	mm	105	105
Overall length with connectors approx.	L1	mm	201	201
Thread meter G x B	D1	inch	1"	1"
Thread connector R x	D2	inch	¾"	¾"
Width approx.	B	mm	95	95
Height (plastic glass) approx.	H1 k*	mm	140	140
	H3	mm	15	15
Weight approx.	-	kg	1,7	1,7

(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range
k* plastic glass

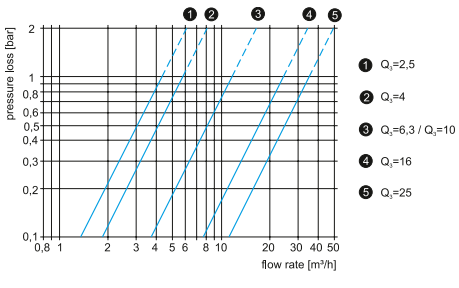


Dimensions
MTKDI-N-FA
with pulser



Typical accuracy curve

Q1 = the minimum flow
Q2 = the transitional flowrate
Q3 = the permanent flow
Q4 = the overload flow



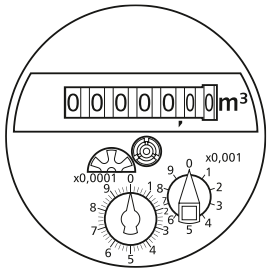
Typical pressure loss curve



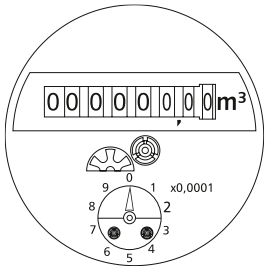
MTKD-S

Multi-jet dry dial meter for cold water

Equipped with the new ZENNER D-register, the MTKD-S is a compact dry dial multi-jet meter for cold potable water with a lightweight brass body. Our developers succeeded in reducing substantially the weight of the brass body - with positive effects on the measuring quality. The innovation is called MTKD-S. „S“ stands for small body. It´s almost 25% lighter than a WVG brass housing.

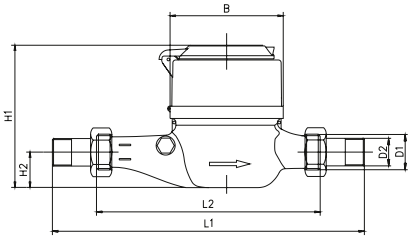


MTKD-S-N



MTKD-S-M

M-Bus | M-Bus Wireless | LoRa | SIGFOX



Dimensions MTKD-S

Technical data MTKD-S, MTKD-S-N, MTKD-S-M					
Permanent flow	Q_3	m³/h	1,6	2,5	4
Comparable to nominal flow (EWG)	Q_n	m³/h	1,0	1,5	2,5
Attainable measuring range	Q_3/Q_1	R	100H/25V	160H/40V	160H/40V
Standard measuring range (*)	Q_3/Q_1	R	R80H	R80H	R80H
Comparable to metrological class (EWG)	class		B-H	B-H	B-H
Overload flow (**)	Q_4	m³/h	2,0	3,13	5,0
Minimum flow (**)	Q_1	l/h	20H	31H	50H
Start-up flow rate	-	l/h	<8	<8	<10
Display range	min	l	0,02	0,02	0,02
	max	m³	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99
Maximum temperature	-	°C	30	30	30
Operating pressure, max.	MAP	bar	16	16	16
Pulse value		l/pulse	1/10	1/10	1/10
Dimensions:					
Nominal diameter	DN	mm	15	15	20
		inch	½"	½"	¾"
Overall length without connectors (*)	L2	mm	165/190	165/190	190
Overall length with connectors approx.	L1	mm	245/270	245/270	286
Thread meter G x B	D1	inch	¾"	¾"	1"
Thread connector R x	D2	inch	½"	½"	¾"
Width approx.	B	mm	85	85	85
Height approx.	H1	mm	105	105	105
	H2	mm	30	30	30
	H3	mm	15	15	15
Weight approx.	-	kg	0,85/0,95	0,85/0,95	1,0

(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range

MTWD-M and MTWD-N

Multi-jet dry dial water meter for hot water

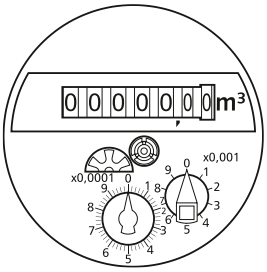
The MTWD is a multi-jet dry dial meter for hot water up to 90° C. The MTWD water meter is ideally suited for measuring tasks at temperatures up to 90° C. By using special materials in the hot water version of the multi-jet dry dial meter, we can combine outstanding measurement readings with a high maximum temperature.

The MTWD is equipped with the ZENNER D-register and is available in two versions:

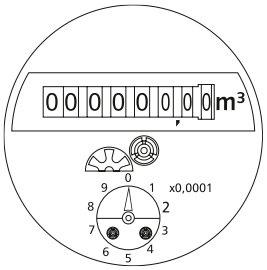
MTWD-M with 8-digit-rollers register and modulator disc for non-reactive scanning for radio (wireless M-bus, LPWAN), M-bus or pulse.

MTWD-N with 7- or 8-digit rollers for different pulse values and retrofittable with mechanic pulser.





MTWD-N



MTWD-M

Performance characteristics

- Dry dial register with shielded magnetic coupling
- High-quality UV-resistant plastic inspection window
- Operating pressure MAP 16
- Available with flood-proof (IP68) hermetically sealed glass/copper register
- Approved in accordance with MID

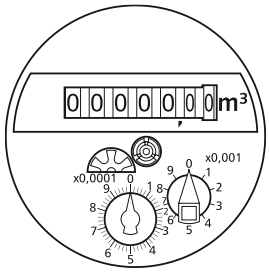
Applications

- For the consumption measuring of hot water up to 90° C
- Water meter for horizontal and vertical installation

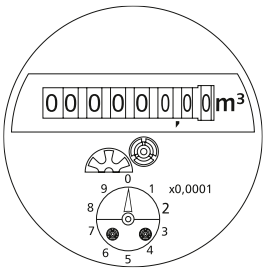
AMR options

- MTWD-N with pulse output (reed) for remote readout
- Standard pulse value 10 l/pulse, optional 1 l/pulse available
- MTWD-M serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via wireless M-bus
  - Radio via LPWAN (LoRaWAN™, SIGFOX)





MTWD-N-ST



MTWD-M-ST

MTWD-M-ST and MTWD-N-ST

Multi-jet dry dial water meter for hot water in a standpipe housing

The MTW multi-jet measuring insert is available in a standpipe housing for vertical installation positions with an upwards flow direction and makes calibration replacement uncomplicated.

The MTWD-ST is equipped with the ZENNER D-register and is available in two versions:
MTWD-M-ST with 8-digit-rollers register and modulator disc for non-reactive scanning for radio (wireless M-bus, LPWAN), M-bus or pulse.
MTWD-N-ST with 7- or 8-digit rollers for different pulse values and retrofittable with mechanic pulser.

In comparison with a vertically installed standard water meter, the register keeps on functioning, even in a horizontal position. Thanks to the resulting decrease in bearing load, a significant improvement in the long-term measuring stability can be achieved.

Performance characteristics

- Dry dial register with shielded magnetic coupling
- High-quality UV-resistant plastic inspection window
- Operating pressure MAP 16
- Available with flood-proof (IP68) hermetically sealed glass/copper register
- Approved in accordance with MID

Applications

- For the consumption measuring of cold potable water up to 90° C
- Water meter for standpipe installation

AMR options

- MTWD-N-ST with pulse output (reed) for remote readout
- Standard pulse value 10 l/pulse, optional 1 l/pulse available
- MTWD-M-ST serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via wireless M-bus
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

MTWD-M-FA and MTWD-N-FA

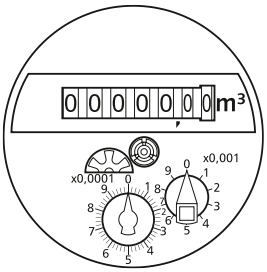
Multi-jet dry dial water meter for hot water in a downpipe housing

The MTW multi-jet measuring insert is available in a downpipe housing for vertical installation positions with a downwards flow direction and makes calibration replacement uncomplicated.

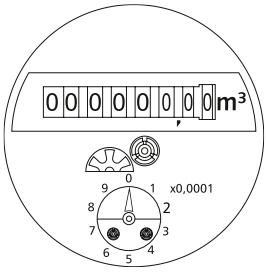
The MTWD-FA is equipped with the ZENNER D-register and is available in two versions:
MTWD-M-FA with 8-digit-rollers register and modulator disc for non-reactive scanning for radio (wireless M-bus, LPWAN), M-bus or pulse.
MTWD-N-FA with 7- or 8-digit rollers for different pulse values and retrofittable with mechanic pulser.

In comparison with a vertically installed standard water meter, the register keeps on functioning, even in a horizontal position. Thanks to the resulting decrease in bearing load, a significant improvement in the long-term measuring stability can be achieved.





MTWD-N-FA



MTWD-M-FA

Performance characteristics

- Dry dial register with shielded magnetic coupling
- High-quality UV-resistant plastic inspection window
- Operating pressure MAP 16
- Available with flood-proof (IP68) hermetically sealed glass/copper register
- Approved in accordance with MID

Applications

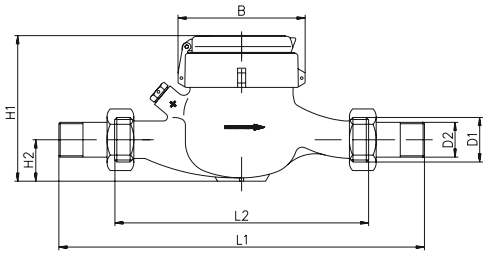
- For the consumption measuring of cold potable water up to 90° C
- Water meter for downpipe installation

AMR options

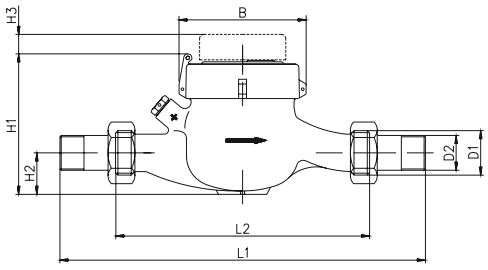
- MTWD-N-FA with pulse output (reed) for remote readout
- Standard pulse value 10 l/pulse, optional 1 l/pulse available
- MTWD-M-FA serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via wireless M-bus
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

Technical data MTWD-N, MTWDI-N, MTWD-M								
Permanent flow	Q_3	m³/h	2,5	4	6,3	10	10	16
Comparable to nominal flow (EWG)	Q_n	m³/h	1,5	2,5	3,5	6	6	10
Attainable measuring range	Q_3/Q_1	R	80H	80H/40V	80H/40V	80H/40V	80H/40V	80H/40V
Standard measuring range (*)	Q_3/Q_1	R	80H	80H	80H	80H	80H	80H
Comparable to metrological class (EWG)	class		B-H	B-H	B-H	B-H	B-H	B-H
Overload flow (**)	Q_4	m³/h	3,13	5	7,88	12,5	12,5	20
Minimum flow (**)	Q_1	l/h	31H/100V	50H/100V	79H/252V	125H/250V	125H/250V	200H/400V
Start-up flow rate	-	l/h	<10	<10	<18	<18	<18	<40
Display range	min	l	0,02	0,02	0,02	0,02	0,02	0,02
	max	m³	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99
Maximum temperature	-	°C	90	90	90	90	90	90
Operating pressure, max.	MAP	bar	16	16	16	16	16	16
Pulse value		l/pulse	1/10	1/10	1/10	1/10	1/10	1/10
Dimensions:								
Nominal diameter	DN	mm	15	20	25	25	32	40
		inch	½"	¾"	1"	1"	1 ¼"	1 ½"
Overall length without connectors (*)	L2	mm	165/170	190	260	260	260	300
Overall length with connectors approx.	L1	mm	245/250	286	378	378	384	428
Thread meter G x B	D1	inch	¾"	1"	1 ¼"	1 ¼"	1 ½"	2"
Thread connector R x	D2	inch	½"	¾"	1"	1"	1 ¼"	1 ½"
Width approx.	B	mm	95	95	95	95	95	110
Height approx.	H1	mm	120	120	120	120	120	145
	H3	mm	15	15	15	15	15	15
Weight approx.	-	kg	1,3	1,6	2,1	2,1	2,2	3,6
Weight approx.	-	kg	1,3	1,6	2,1	2,1	2,2	3,6

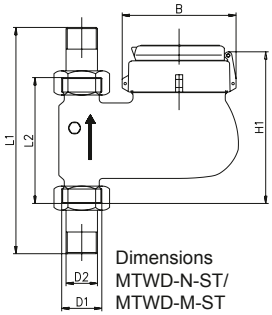
(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range



Dimensions MTWD-N/ -M



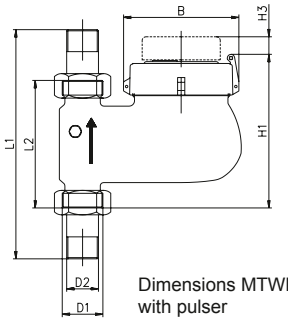
Dimensions MTWDI-N with pulser



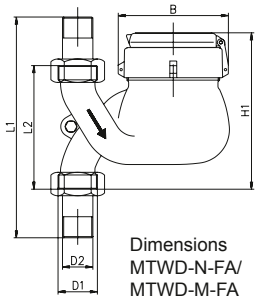
Dimensions MTWD-N-ST/ MTWD-M-ST

Technical data MTWD-N-ST/FA, MTWDI-N-ST/FA, MTWD-M-ST/FA							
Permanent flow	Q_3	m³/h	4	6,3	10	16	16
Comparable to nominal flow (EWG)	Q_n	m³/h	2,5	3,5	6	10	10
Attainable measuring range	Q_3/Q_1	R	R80H	R80H	R80H	R80H	R80H
Standard measuring range (*)	Q_3/Q_1	R	R80H	R80H	R80H	R80H	R80H
Comparable to metrological class (EWG)	class		B-H	B-H	B-H	B-H	B-H
Overload flow (**)	Q_4	m³/h	5	7,88	12,5	20	20
Minimum flow (**)	Q_1	l/h	50H	79H	125H	200H	200H
Start-up flow rate	-	l/h	<10	<18	<18	<40	<40
Display range	min	l	0,02	0,02	0,02	0,02	0,02
	max	m³	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99	R8 99999.999 R7 99999.99
Maximum temperature	-	°C	90	90	90	90	90
Operating pressure, max.	MAP	bar	16	16	16	16	16
Pulse value		l/pulse	1/10	1/10	1/10	1/10	1/10
Dimensions:							
Nominal diameter	DN	mm	20	25	25	40	40
		inch	¾"	1"	1"	1 ½"	1 ½"
Overall length without connectors (*)	L2	mm	105 ST/FA	150 ST	150 ST	150 ST	200 ST
Overall length with connectors approx.	L1	mm	201	268	268	278	328
Thread meter G x B	D1	inch	1"	1 ¼"	1 ¼"	2"	2"
Thread connector R x	D2	inch	¾"	1"	1"	1 ½"	1 ½"
Width approx.	B	mm	95	95	95	110	110
Height approx.	H1	mm	140	160	160	165	165
	H3	mm	15	15	15	15	15
Weight approx.	-	kg	1,7	2,1	2,1	4,0	4,9

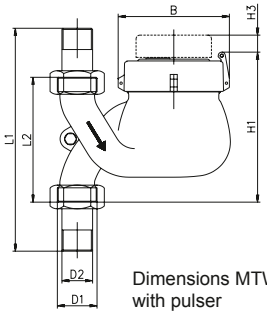
(*) Other measuring ranges (R) and overall lengths on request.
(**) The data refer to the standard measuring range



Dimensions MTWDI-N-ST with pulser

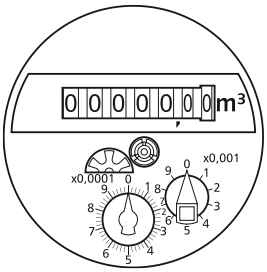


Dimensions MTWD-N-FA/ MTWD-M-FA

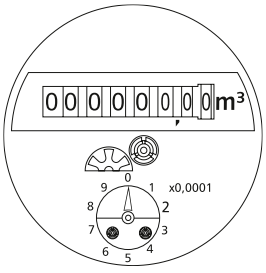


Dimensions MTWDI-N-FA with pulser





RTKD-N



RTKD-M

RTKD-M and RTKD-N

Positive displacement dry dial meter for cold water

RTKD positive displacement meter is a meter for all who place the highest demands on reliability and measuring accuracy. The RTKD records the flow rate using the volumetric measuring principle and guarantees extremely precise consumption recording and accounting. The RTKD positive displacement meter also has a high measuring range and a very good measurement stability.

The RTKD is equipped with the ZENNER D-register and is available in two versions:
RTKD-M with 8-digit-rollers register and modulator disc for non-reactive scanning for radio (wireless M-bus, LPWAN), M-bus or pulse.
RTKD-N with 7- or 8-digit rollers for different pulse values and retrofittable with mechanic pulser.

Performance characteristics

- Dry dial piston type register with shielded magnetic coupling
- Register can be turned through 355°
- High-quality UV-resistant plastic inspection window
- Operating pressure MAP 16
- Available with flood-proof (IP68) hermetically sealed glass/copper register
- Approved in accordance with MID

Applications

- For the consumption measuring of cold potable water up to 50° C
- Water meter for any installation position (not overhead!)

AMR options

- RTKD-N with pulse output (reed) for remote readout
- Standard pulse value 10 l/pulse, optional 1 l/pulse available
- RTKD-M serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via wireless M-bus
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

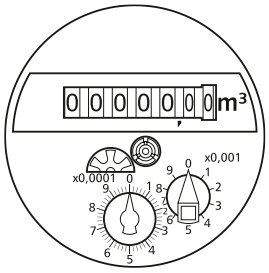
RTKD-L-M and RTKD-L-N



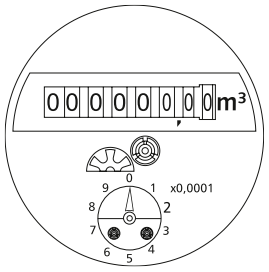
Positive displacement dry dial meter in a plastic housing

Equipped with the newly developed dry dial D-register by ZENNER, the new RTKD-L positive displacement meter is a meter for all who place the highest demands on reliability and measuring accuracy.
The RTKD-L records the flow rate using the volumetric measuring principle and guarantees extremely precise consumption recording (max. Ratio Q_3/Q_1 = 400) and accounting.

The RTKD-L is equipped with the ZENNER D-register and is available in two versions:
RTKD-L-M with 8-digit-rollers register and modulator disc for non-reactive scanning for radio (wireless M-bus, LPWAN), M-bus or pulse.
RTKD-L-N with 7- or 8-digit rollers for different pulse values and retrofittable with mechanic pulser.



RTKD-L-N



RTKD-L-M

Performance characteristics

- Dry dial piston type register with shielded magnetic coupling
- Almost 50% lighter than a meter with a brass housing
- Register can be turned through 355°
- High-quality UV-resistant plastic inspection window
- Operating pressure MAP 16
- Available with flood-proof (IP68) hermetically sealed glass/copper register
- Approved in accordance with MID

Applications

- For the consumption measuring of cold potable water up to 30° C
- Water meter for any installation position (not overhead!)

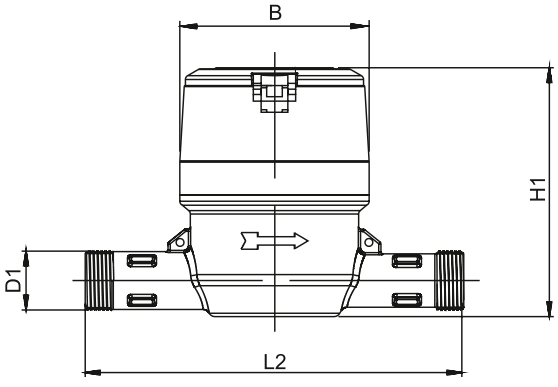
AMR options

- RTKD-L-N with pulse output (reed) for remote readout
- Standard pulse value 10 l/pulse, optional 1 l/pulse available
- RTKD-L-M serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via wireless M-bus
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

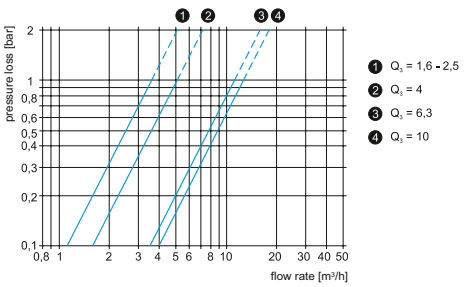
Technical data RTKD

Permanent flow	Q_3	m³/h	1,6	1,6	2,5	2,5	2,5	4	4	6,3	10	10
Comparable to nominal flow (EWG)	Q_n	m³/h	1	1	1,5	1,5	1,5	2,5	2,5	3,5	6	6
Attainable measuring range	Q_3/Q_1	R	250	250	400	400	400	400	400	200	315	315
Standard measuring range (*)	Q_3/Q_1	R	160	160	160	160	160	160	160	160	160	160
Comparable to metrological class (EWG)	class		C-H/V	C-H/V	C-H/V	C-H/V	C-H/V	C-H/V	C-H/V	C-H/V	C-H/V	C-H/V
Overload flow (**)	Q_4	m³/h	2	2	3,13	3,13	3,13	5	5	7,87	12,5	12,5
Minimum flow (**)	Q_1	l/h	10	10	16	16	16	25	25	39	63	63
Start-up flow rate	-	l/h	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 8	< 8	< 8
Display range	min	l	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02
	max	m³	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99
Maximum temperature	-	°C	50	50	50	50	50	50	50	50	50	50
Operating pressure, max.	MAP	bar	16	16	16	16	16	16	16	16	16	16
Pressure loss at	Q_3	bar	0,3	0,3	0,75	0,75	0,75	0,55	0,6	0,33	0,33	0,62
Dimensions (*)												
Nominal diameter	DN	mm	15	15	15	15	20	20	20	25	25	32
		Zoll	½"	½"	½"	½"	¾"	¾"	¾"	1"	1"	1 ¼"
Overall length without connectors	L2	mm	110/115	165/170	110/115	165/170	165/190	105	165/190	260	260	260
Overall length with connectors approx.	L1	mm	190/195	245/250	190/195	245/250	261/286	201	261/286	~374	~374	~384
Thread meter G x B	D1	inch	¾"	¾"	¾"	¾"	1"	1"	1"	1 ¼"	1 ¼"	1 ½"
Width	B	mm	89,5	89,5	89,5	89,5	90	90	90	137	137	137
Height	H1	mm	114,5	114,5	114,5	114,5	128	128	128	152,5	152,5	152,5
Weight	-	kg	0,86	0,98	0,86	0,98	1,28/1,35	1,15	1,28/1,35	3,7	3,7	3,77

(*) Other measuring ranges (R) on request.
(**) The data refer to the standard measuring range



Dimensions RTKD

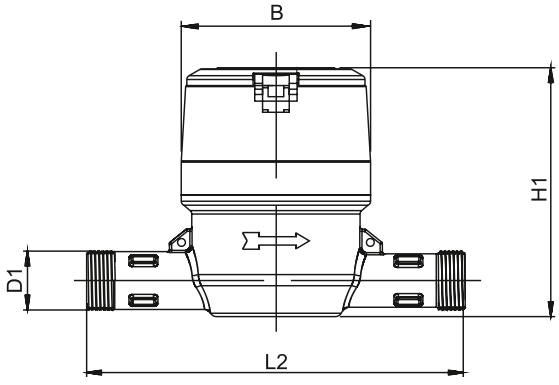


Typical pressure loss curve

Technical data RTKD-L

Permanent flow	Q_3	m³/h	1,6	2,5	1,6	2,5	4	4
Comparable to nominal flow (EWG)	Q_n	m³/h	1	1,5	1	1,5	2,5	2,5
Attainable measuring range	Q_3/Q_1	R	250	400	250	400	400	400
Standard measuring range (*)	Q_3/Q_1	R	160	160	160	160	160	160
Comparable to metrological class (EWG)	class		C-H/V	C-H/V	C-H/V	C-H/V	C-H/V	C-H/V
Overload flow (**)	Q_4	m³/h	2	3,13	2	3,13	5	5
Minimum flow (**)	Q_1	l/h	10	16	10	16	25	25
Start-up flow rate	-	l/h	1	1	1	1	1	1
Display range	min	l	0,02	0,02	0,02	0,02	0,02	0,02
	max	m³	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99	R8 99.999,999 R7 99.999,99
Maximum temperature	-	°C	30	30	30	30	30	30
Operating pressure, max.	MAP	bar	16	16	16	16	16	16
Dimensions:								
Nominal diameter	DN	mm	15	15	15	15	20	20
		Zoll	½"	½"	½"	½"	¾"	¾"
Overall length without connectors	L2	mm	110	110	165/170	165/170	165	190
Overall length with connectors approx.	L1	mm	~195	~195	~250	~250	~261	~285
Thread meter G x B	D1	Zoll	¾"	¾"	¾"	¾"	1"	1"
Width	B	mm	85	85	89,5	89,5	95	95
Height	H1	mm	115	115	119	119	137	135
Weight ca.	-	kg	0,5	0,5	0,58	0,58	0,73	0,74

(*) Other measuring ranges (R) on request.
(**) The data refer to the standard measuring range



Dimensions RTKD-L



RNK-RP-N

RNK-RP-N

Volumetric rotary-piston meter for cold potable water with protected dial and brass body

Our series of RNK-RP volumetric piston meters with protected dial are an improvement of the classical RTK. The millionfold proved and high-precise measuring insert in combination with the rugged casing performs perfectly the measurement of potable water. A very low starting flow and reliable performance are its main features.

The protected roller register is reliably readable even under demanding climatic conditions. Filter is including. The construction principle of the RNK-RP-N with direct transmission from the measuring chamber to the register ensures by standard protection against magnetic or other manipulation attempts or interference. The check valve ensures additional protection and backflow prevention.

Performance characteristics

- Rugged and intelligently conceived
- Register with protected encapsulated digit rollers
- Housing made from high-quality brass
- Operating temperature up to 50° C
- Operating pressure PN16
- Display range 0,02 l to 9999 m³
- Proven accuracy in any installation position
- Optional with integrated tamperproof check valve
- Retrofitable with pulser 0,5 l/pulse (DN 40 5l/pulse)
- Other sizes of volumetric meters up to DN 40 available on request
- Approved in accordance with MID

RNK-L-RP-N

Volumetric rotary-piston meter for cold potable water with protected dial and plastic body



RNK-L-RP-N

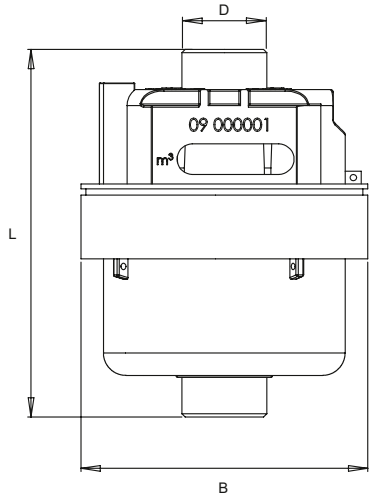
The new series of our volumetric rotary-piston meters with protected dial are an improvement of the classical RTK. Our developers succeeded in combining the millionfold proved and high-precise measuring insert with a body of pressure-tight plastics, suitable for use with potable water. The result is the innovative RNK-L-RP-N.

A very low starting flow and reliable performance even with aggressive or dezincification water qualities are its main features. The protected roller register is reliably readable even under demanding climatic conditions. The construction principle of the RNK-L-RP-N with direct transmission from the measuring chamber to the register ensures by standard protection against magnetic or other manipulation attempts or interference. The check valve ensures additional protection and backflow prevention.

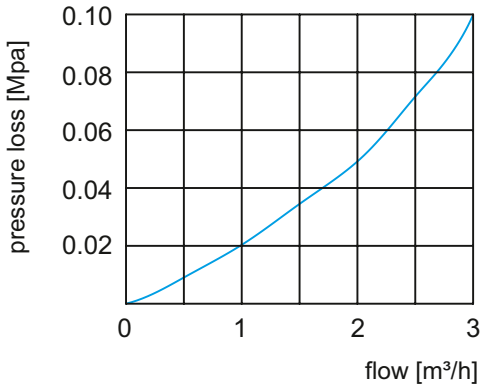
Performance characteristics

- Rugged, light and intelligently conceived
- Register with protected encapsulated rollers
- Approx. 50% lighter than meters with brass body
- Housing made from high-quality UV-resistant polymer composite
- Operating temperature up to 30° C
- Operating pressure PN 16
- Display range 0,02 l to 9999 m³
- Proven accuracy in any installation position
- Optional with integrated tamperproof check valve
- Retrofitable with pulser 0,5 l/pulse
- Approved in accordance with MID

Technical data RNK-RP-N, RNK-RPI-N								
Permanent flow	Q_3	m³/h	1,6	1,6	2,5	2,5	4	6,3
Comparable to nominal flow (EWG)	Q_n	m³/h	1	1	1,5	1,5	2,5	3,5
Attainable measuring range	Q_3/Q_1	R	160	160	160	160	200	200
Standard measuring range	Q_3/Q_1	R	160	160	160	160	160	160
Comparable to metrological class (EWG)	Class		C	C	C	C	C	C
Overload flow	Q_4	m³/h	2	2	3,125	3,125	5	7,875
Minimum flow	Q_1	l/h	10	10	16	16	25	32
Start-up flow rate	-	l/h	< 3,5	< 3,5	< 3,5	< 3,5	< 4	< 7
Display range	min	l	0,02	0,02	0,02	0,02	0,02	0,02
	max	m³	9999	9999	9999	9999	9999	9999
Maximum temperature	-	°C	50	50	50	50	50	50
Operating pressure, max.	MAP	bar	16	16	16	16	16	16
Pulse value		l/pulse	0,5	0,5	0,5	0,5	0,5	0,5
Pressure loss at	Q_3	bar	< 0,6	< 0,6	< 0,6	< 0,6	< 0,6	< 0,6
Dimensions:								
Nominal diameter	DN	mm	15	15	15	15	20	25
		inch	½"	½"	½"	½"	¾"	1"
Overall length without connectors	L	mm	110/115	165/170	110/115	165/170	165/190	260
Overall length with connectors approx.		mm	190/195	245/250	190/195	245/250	26½86	378
Thread meter G x B	D	inch	¾"	¾"	¾"	¾"	1"	1 ¼"
Width	B	mm	88	88	88	88	100	117
Weight	-	kg	0,79/0,80	0,95/1,00	0,79/0,80	0,95/1,00	1,1/1,2	2,5

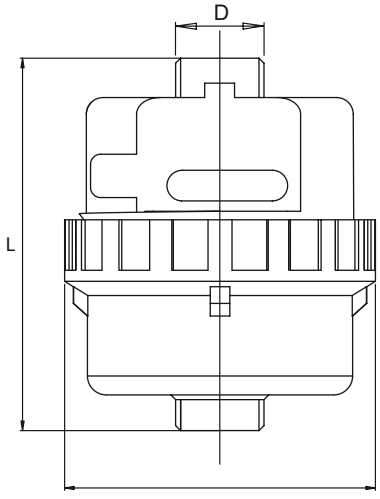


Dimensions RNK-RP-N

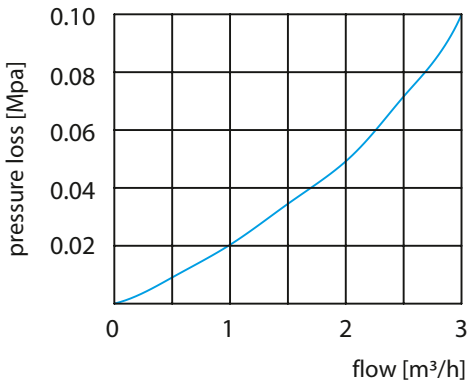


Typical pressure loss curve

Technical data RNK-RP-N, RNK-RPI-N					RNK-L-RP-N, RNK-L-RPI-N		
Permanent flow	Q_3	m³/h	10	16	1,6	2,5	4
Comparable to nominal flow (EWG)	Q_n	m³/h	6	10	1	1,5	2,5
Attainable measuring range	Q_3/Q_1	R	200	200	160	160	200
Standard measuring range	Q_3/Q_1	R	160	160	160	160	160
Comparable to metrological class (EWG)	Class		C	C	C	C	C
Overload flow	Q_4	m³/h	12,5	20	2	3,215	5
Minimum flow	Q_1	l/h	50	80	10	16	25
Start-up flow rate	-	l/h	< 13	< 20	< 3,5	< 3,5	< 4
Display range	min	l	0,02	0,2	0,02	0,02	0,02
	max	m³	9999	99999	9999	9999	9999
Maximum temperature	-	°C	50	50	30	30	30
Operating pressure, max.	MAP	bar	16	16	16	16	16
Pulse value		l/pulse	0,5	5	0,5	0,5	0,5
Pressure loss at	Q_3	bar	< 0,6	< 0,6	< 0,6	< 0,6	< 0,6
Dimensions:							
Nominal diameter	DN	mm	32	40	15	15	20
		inch	1 ¼"	1 ½"	½"	½"	¾"
Overall length without connectors	L	mm	260	300	115/130/165	115/130/165	165/190
Overall length with connectors approx.		mm	384	428	195/210/245	195/210/245	26½86
Thread meter G x B	D	inch	1 ½"	2"	¾"	¾"	1"
Width	B	mm	145	179	103	103	103
Weight	-	kg	3,6	5,9	0,43/0,44/0,45	0,43/0,44/0,45	0,49/0,50



Dimensions RNK-L-RP-N



Typical pressure loss curve

Bus systems

Cable readout systems: M-bus and ZENNER-bus

Imagine a building where several hundred meters of all kinds – water meters, heat meters, cooling meters, gas and electricity meters – have been installed. Now imagine that all of these meters could be read from a central computer within minutes.

In practice, such situations use cable bus systems. M-bus (meter-bus) and our specially developed ZR-bus (ZENNER-bus) are intelligent system solutions for smart remote reading of water, energy, electricity and gas meters.

Bus systems are used in properties where structural or infrastructure conditions mean that it is not possible or economical to use a radio system. These include larger commercial properties, industrial facilities, hospitals and airports.

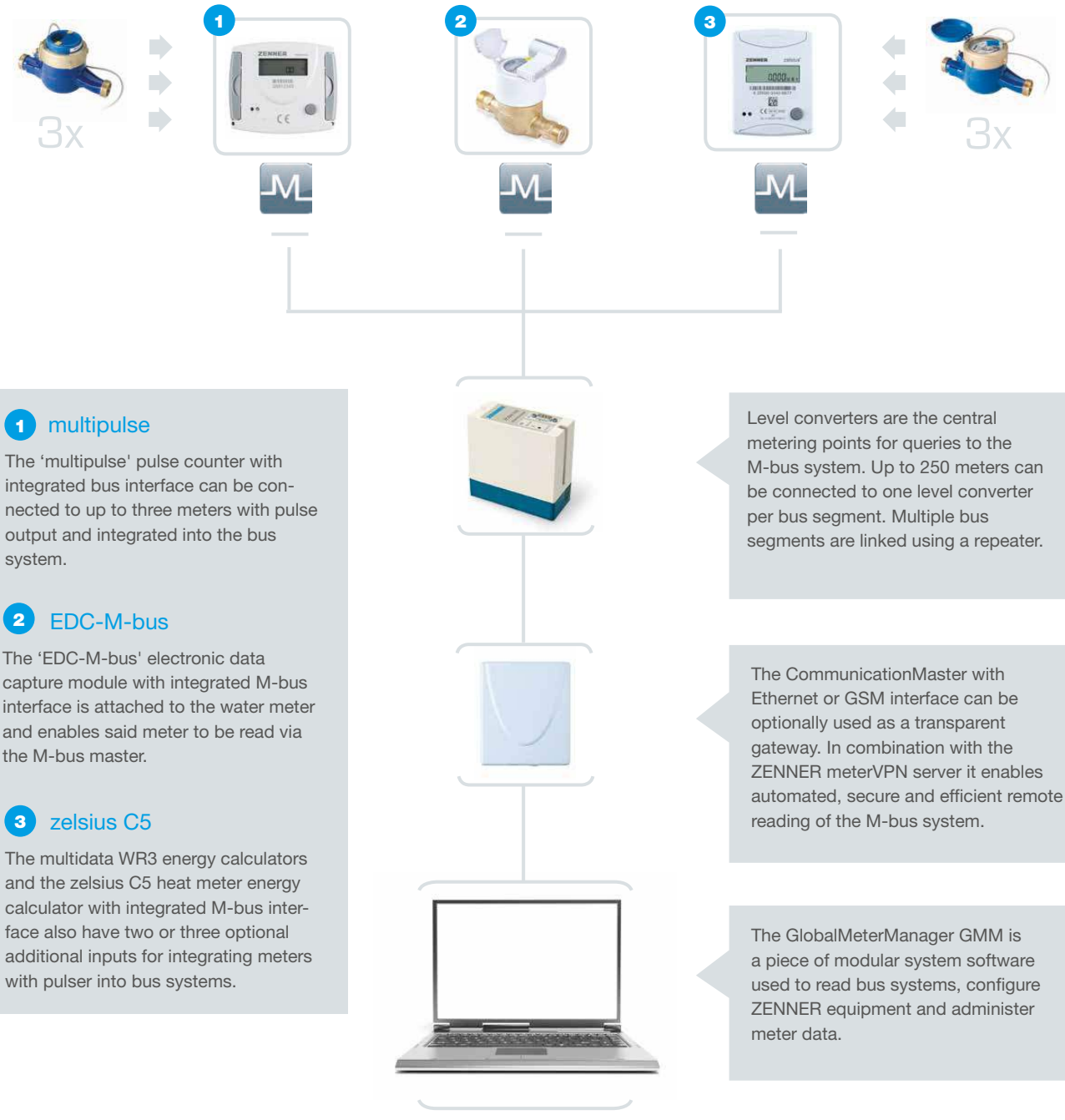
ZENNER offers such properties a comprehensive product range containing all the components needed to connect meters to a smart, cable remote readout system using transfers in accordance with the M-bus standard (DIN EN 1434). In addition to meters with an integrated bus interface, you can also integrate meters with pulse output into the bus system via pulse counters.

The main components of our bus systems are electronic communication interfaces in the energy calculators of our heat meters and pulse counters. We use bus converters (level converters) to supply power to the bus segments and as interfaces to the PC or transmission equipment (e.g. CommunicationMaster with Ethernet or GSM interface).

For the remote reading and transmission of data in energy monitoring or energy management systems, we offer our customers modular software packages perfectly adapted to all of their individual needs.



M-bus overview



1 multipulse

The 'multipulse' pulse counter with integrated bus interface can be connected to up to three meters with pulse output and integrated into the bus system.

2 EDC-M-bus

The 'EDC-M-bus' electronic data capture module with integrated M-bus interface is attached to the water meter and enables said meter to be read via the M-bus master.

3 zelsius C5

The multidata WR3 energy calculators and the zelsius C5 heat meter energy calculator with integrated M-bus interface also have two or three optional additional inputs for integrating meters with pulser into bus systems.

Level converters are the central metering points for queries to the M-bus system. Up to 250 meters can be connected to one level converter per bus segment. Multiple bus segments are linked using a repeater.

The CommunicationMaster with Ethernet or GSM interface can be optionally used as a transparent gateway. In combination with the ZENNER meterVPN server it enables automated, secure and efficient remote reading of the M-bus system.

The GlobalMeterManager GMM is a piece of modular system software used to read bus systems, configure ZENNER equipment and administer meter data.

Walk-by radio system (Opera)

Wireless M-bus – wireless remote meter reading system

We at ZENNER have specially developed a smart, mobile radio system for the remote reading of water and heat/cooling meters. It is perfectly tailored to needs of public utilities with regard to efficient reading processes and optimum data quality.

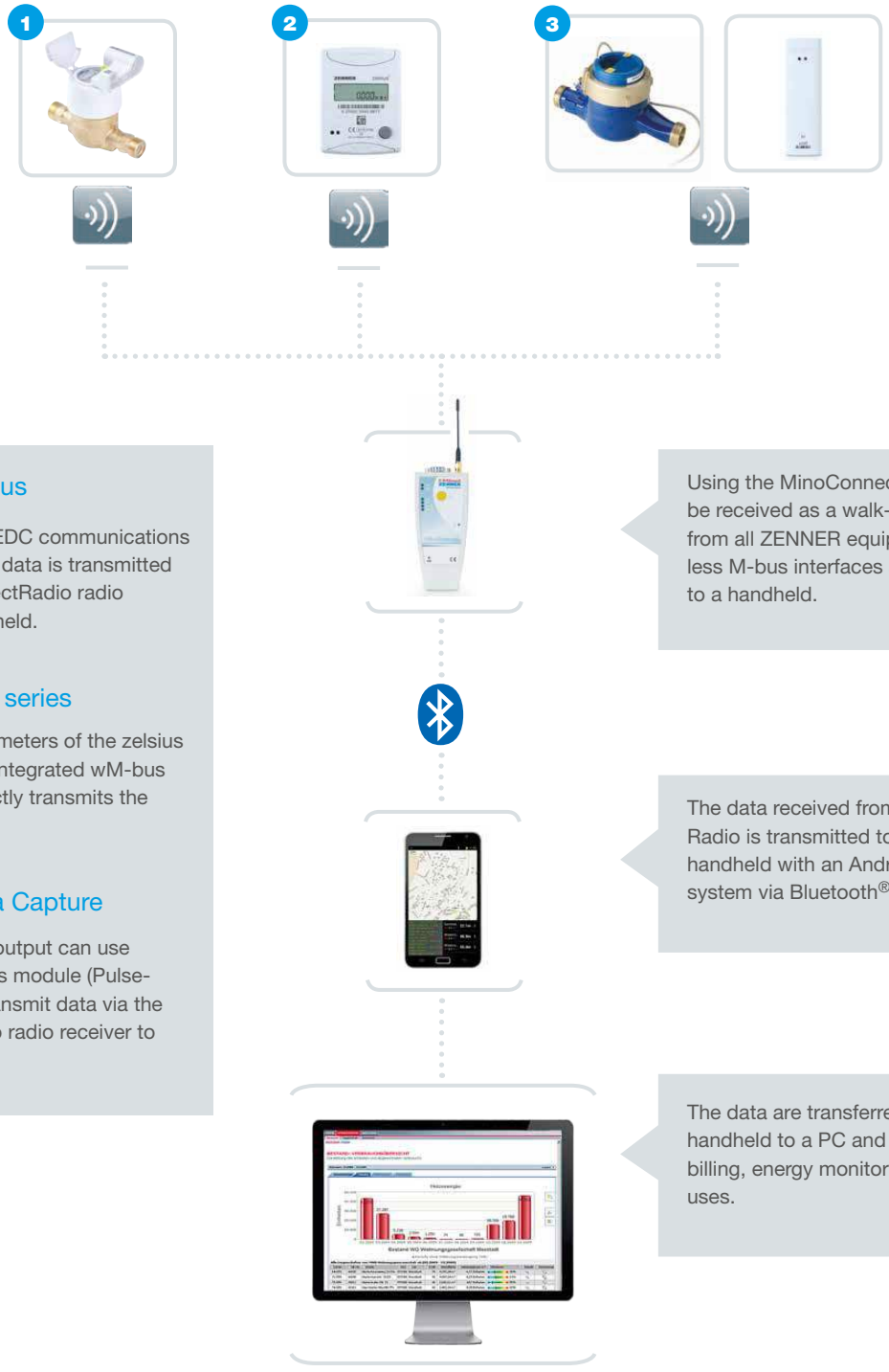
Our mobile radio system uses unidirectional data transmission. The measuring equipment independently sends a data protocol at set intervals. The radio protocols are encrypted to the latest technical standards for data security reasons. They are processed and stored by the MinoConnectRadio radio receiver and a handheld/tablet PC with reading software. The consumption data recorded and the associated meter parameters are then transmitted from the handheld device to the PC in the office, and are available for billing creation or energy monitoring purposes.

As well as the most common application of walk-by reading, our system is also available for drive-by use with suitable reading software.

Using ZENNER radio technology ensures that suppliers and service providers are viewed as innovative and customer-friendly. There is no longer any need for appointments or home inspections. The consumption data obtained from quarterly or monthly metering also results in significantly increased transparency for consumers, with the increasing importance of energy controlling taken into account.



Wireless M-bus overview



1 EDC-wM-bus

With the wM-bus EDC communications module, the meter data is transmitted via the MinoConnectRadio radio receiver to a handheld.

2 zelsius C5 series

The compact heat meters of the zelsius C5 series have an integrated wM-bus module which directly transmits the data.

3 Pulse Data Capture

Meters with pulse output can use an external wM-bus module (Pulse-DataCapture) to transmit data via the MinoConnectRadio radio receiver to a handheld.

Using the MinoConnectRadio, data can be received as a walk-by procedure from all ZENNER equipment with wireless M-bus interfaces and transmitted to a handheld.

The data received from MinoConnect-Radio is transmitted to a chosen handheld with an Android® operating system via Bluetooth®.

The data are transferred from the handheld to a PC and are available for billing, energy monitoring and other uses.

Stationary LPWAN Radio system

For the wireless meter reading in the Internet of Things

Billions of intelligent objects (Smart Things) are connected around the globe on the Internet of Things (IoT). It is also possible to globally integrate such metering devices as water meters, heat meters, gas meters and energy meters using radio technology.

Smart meters use the smallest data volumes for communication. All they need is a very low data rate and minimum battery power. The LPWAN technology is predestined for reading measuring instruments because it covers a long range and uses a low data rate. It can be realized at low cost in particular for reading water meters and other measuring instruments.

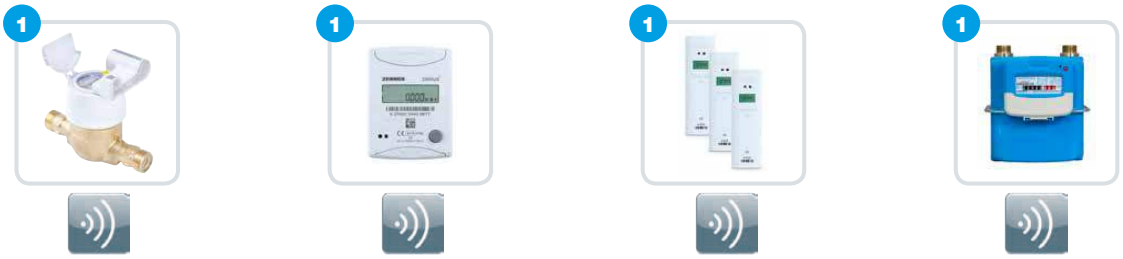
LPWAN stands for Low Power Wide Area Network and characterises a wireless telecommunications network with minimal power consumption, in which battery-powered objects such as sensors, radio-enabled water meters or heat meters in particular can be connected. Equipped with suitable radio modules, like the ZENNER EDC module, water meters, heat meters, gas or electricity meters can be integrated in these networks.

Zenner is relying on two communication standards in the development of smart LPWAN solutions for the Internet of Things. On the one hand on the internationally increasingly established communication standard LoRaWAN™ and on the other hand on SIGFOX.

At certain intervals the meters autonomously send a data protocol to an existing antenna (base station). From the base station, the data is transmitted to a data cloud and is available for different applications. The radio protocols are encrypted according to the latest technical standards for reasons of data security.

Using the wide-ranging LPWAN technology, a low-cost fixed network for remotely reading thousands of consumption meters is possible. The meter and device communication via the Internet of Things with LPWAN also enables meters to be read more often, more quickly and at lower costs. In addition, individual meters (for example water meters installed in shafts), which could be read only with great effort to date, can now be integrated into the LPWAN.











1 Measuring instruments with LPWAN

Battery-operated measurement instruments to measure the consumption of water and power with a bi-directional communication interface send consumption values wirelessly to LPWAN gateways.

2 Smart home with LPWAN

Smart home instruments such as smoke detectors with an LPWAN interface for bi-directional wireless transfer send data to LPWAN gateways.

3 Sensors

Any sensors with a bi-directional communication interface in industrial operations, buildings or smart cities can also be integrated into the LPWAN system.

The LPWAN gateways receive the individual radio telegrams and send commands or updates as necessary to the individual sensors. The data telegrams are managed by a network server.

The data is stored in cloud-based databases and is available there for further use and evaluation, e.g. during energy monitoring, for consumption billing, to initiate service calls or for alarm signaling.

Appropriate web applications are provided for the corresponding user groups for different uses.

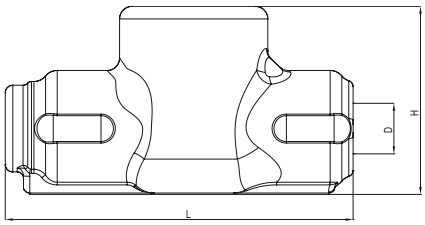


Insulation cover for water meters

Area of application

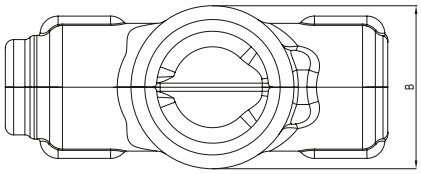
According to DIN 1988-200 pipes for cold potable water have to be isolated against condensation and unintended heating. The condensation protection has to be ensured wherever dripping condensation water can lead to humidity damages.

By using the insulating cover of ZENNER, the development of condensation could be avoided on the domestic water meter. Legal requirements are fulfilled. Mounting is performed with clip attachment. So is very easy to set up.



Performance characteristics

- For all standard domestic water meters with nominal size from Q_3=4 (Q_n2,5) to Q_3=16 (Q_n 10)
- Easily and quickly mounted shell mold
- Durable surface
- Thanks to included mounting clips and cover closable after meter reading
- Can continue to be used after calibration



Dimensions

	H (mm)	D (mm)	L (mm)	B (mm)
Q_n 2,5 (Q_3=4)	150	40	280	120
Q_n 6 (Q_3=10)	160	40	310	130
Q_n 10 (Q_3=16)	180	60	390	170

Water meter installation bracket

Made of polymer (reinforced engineered plastics)



According to many installation norms, like for example the German DIN 1988, supports have to be mounted for new installations or modification of old ones - for example water meter brackets for domestic water meters. The water meter installation bracket enables easy, trouble-free, quick and professional installation of the water meter.
The water meter installation bracket consists of glass fiber reinforced polymer plastic. The fittings are made of brass compliant to the current drinking water regulations. Seals and assembly parts are included.

Performance characteristics

- High-quality and load-change resistant polymer plastic for meters of nominal diameter DN 20 (Q_3 = 2,5 / 4) and length 190 mm and connection size from DN 15 (¾“) or DN 20 (1“)
- For horizontal or vertical installation of the meter
- Adjustable with variable wall distance from 58 to 135 mm
- With interchangeable connection fittings



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