

## Bulk water meter

*WPD (type Woltman parallel, DN 50 - DN 150)*

*WPHD (type Woltman parallel, DN 200 - DN 300)*

*WSD (type Woltman perpendicular DN 50 - DN 200)*





### WPD / WPHD Bulk water meter

- WPD (DN 50 - 150), WPHD (DN 200 - 300)
- Replacable metrological unit (according to european MID)
- Prepared for remote meter reading

### Product characteristics

- Replacable metrological unit (according to european MID)
- Flood-proof (IP68) hermetically sealed glass/copper register
- Low starting flow, high overload security
- Wide measuring range, small pressure loss
- Hydraulic bearing relieve
- Long-term measuring stability
- Swirl-reducing inlet
- No straight inlet or outlet needed (U0/D0) according to OIML R49 and DIN EN 14154
- Materials and coating approved in accordance with KTW / W 270
- Optional WS overall length for DN 50, DN 65, DN 80 and DN 100 available
- Optional ISO length for DN 50, DN 80 and DN 100 available
- Approved in accordance with MID and OIML

## WPD / WPHD

### Woltman meter with parallel turbine shaft

The ZENNER Bulk water meter WPD / WPHD is specially constructed for the measuring of high flow rates with a mainly constant flow rate profile. Due to the robust design, WPD / WPHD can cover a wide measuring range and provide accurate measuring results over a long period. So it covers almost all measuring tasks in the drinking water supply and distribution.

The housing of the WPD / WPHD was flow-optimized. The measuring insert was newly constructed as a replacable metrological unit according to european MID. In combination with an up-to-date bearing of the impeller a good linearity and long-term stability of the error curve can be achieved. The robust copper-glass-register is non-diffusive and protected against condensation. It also works reliably under the hardest conditions (e.g. in flooded pits or shafts).

### Applications

- For the mesuring of high flow rates
- For horizontal or vertical installation
- For cold water up to 50° C

### AMR options

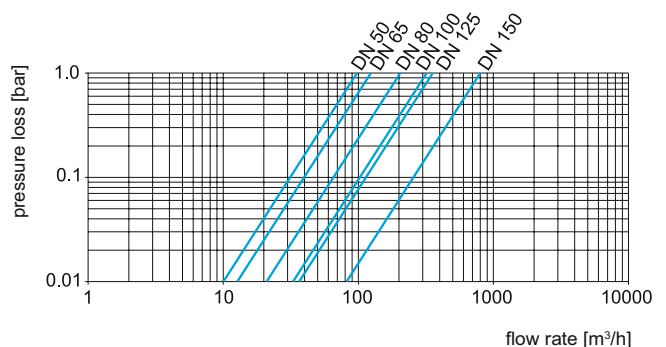
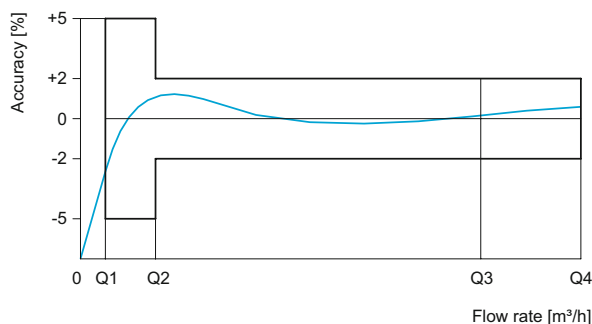
- Retrofittable with up to two reed-sensors
- Retrofittable with stationary GSM system
- Serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via Wireless M-Bus according to OMS (Open Metering System)
  - Radio via LPWAN (LoRaWAN™, SIGFOX)



### Technical Data WPD (DN 50 – DN 150)

Nominal diameter	DN	mm	50	50	65	80	80	100	125	150
Permanent flow	Q <sub>3</sub>	m <sup>3</sup> /h	25	40	40	63	63	100	100	250
Attainable measuring range	Q <sub>3</sub> /Q <sub>1</sub>	R	R125H	R200H	R200H	R200H	R200H	R315H	R315H	R315H
Standard measuring range (*)	Q <sub>3</sub> /Q <sub>1</sub>	R	R100H/63V	R100H/63V	R100H/63V	R100H/63V	R100H/63V	R100H/63V	R100H/63V	R100H/63V
Overload flow (**)	Q <sub>4</sub>	m <sup>3</sup> /h	31,25	50	50	78,75	78,75	125	125	312,5
Minimum flow (**)	Q <sub>1</sub>	m <sup>3</sup> /h	0,25/0,4	0,4/0,63	0,4/0,64	0,63/1,01	0,63/1,02	1,0/1,59	1,0/1,60	2,5/3,97
Transitional flow (**)	Q <sub>2</sub>	m <sup>3</sup> /h	0,4/0,63	0,64/1,02	0,64/1,03	1,01/1,61	1,01/1,62	1,6/2,54	1,6/2,55	4,0/6,35
Pressure loss at Q <sub>3</sub>	Δp	MPa	0,01	0,019	0,012	0,01	0,01	0,011	0,012	0,026
Start-up flow rate	-	l/h	65	65	65	110	110	150	150	350
Display range	min	l	0,5	0,5	0,5	0,5	0,5	0,5	0,5	5
	max	m <sup>3</sup>	999.999	999.999	999.999	999.999	999.999	999.999	999.999	9.999.999
Temperature range	-	°C	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50
Operating pressure, max.	MAP	bar	16	16	16	16	10	16	16	16
Pulse value Reed	-	l/Imp.	100/1000	100/1000	100/1000	100/1000	100/1000	100/1000	100/1000	1000/10.000
Pulse value modulator disc	-	l/Imp.	10	10	10	10	10	10	10	100
Pressure loss at Q <sub>3</sub>	Δp	bar	0,1	0,19	0,12	0,1	0,1	0,11	0,12	0,1
Mechanical environmental condition	-	-	M2	M2	M2	M2	M2	M2	M2	M2
Climatic condition (****)	-	°C	5 - 55	5 - 55	5 - 55	5 - 55	5 - 55	5 - 55	5 - 55	5 - 55
Flow profile sensitivity	-	-	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0
<b>Weight and dimensions:</b>										
Nominal diameter	DN	mm	50	50	65	80	80	100	125	150
Overall length (*)	L	mm	200	200	200	200/225	225	250	250	300
Height	H1	mm	135	135	135	143	143	152	152	183
Height	H2	mm	75	75	85	95	95	105	115	135
Total height approx. (****)	H1+H2	mm	210	210	220	238	238	257	267	318
Installation height of the measuring unit	H3	mm	230	230	230	256	256	266	266	373
Flange diameter	D	mm	165	165	185	200	200	220	250	285
Bolt circle diameter	D1	mm	125	125	145	160	160	180	210	240
Number of bolts	-	pcs.	4	4	4	8	4	8	8	8
Screw size	-	mm	M16	M16	M16	M16	M16	M16	M16	M20
Bolt diameter	-	mm	19	19	19	19	19	19	19	23
Weight approx.	-	kg	10,5	10,5	11,8	13,4	13,4	16,9	20,1	31,5

(\*) Other measuring ranges (R) on request (\*\*) Values refer to standard measuring range (\*\*\*) Total height WPDE/WPHDE + 24mm  
 (\*\*\*\*) Condensation possible



### Technical Data WPHD (DN 200 - DN 300)

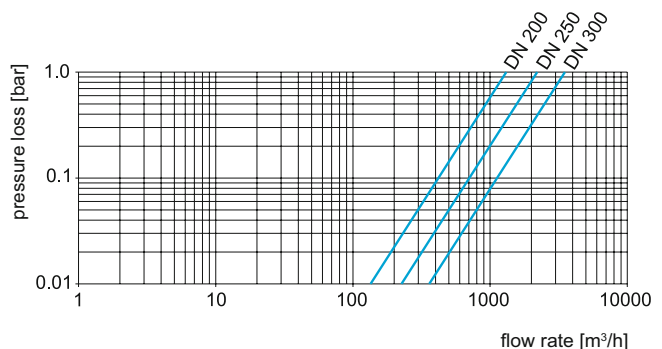
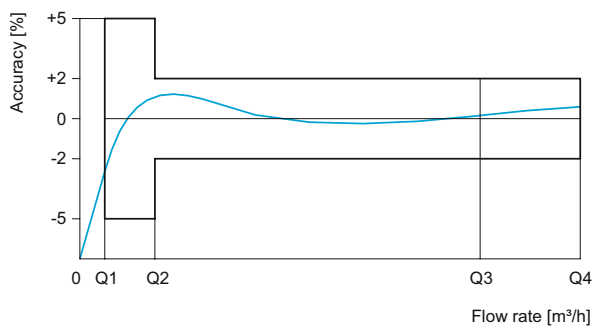
Nominal diameter	DN	mm	200	200	250	250	300	300
Permanent flow	Q <sub>3</sub>	m <sup>3</sup> /h	400	400	630	630	1000	1000
Attainable measuring range	Q <sub>3</sub> /Q <sub>1</sub>	R	R160H	R160H	R160H	R160H	R160H	R160H
Standard measuring range (*)	Q <sub>3</sub> /Q <sub>1</sub>	R	R100H/63V	R100H/63V	R100H/63V	R100H/63V	R100H/63V	R100H/63V
Overload flow (**)	Q <sub>4</sub>	m <sup>3</sup> /h	500	500	787	787	1250	1250
Minimum flow (**)	Q <sub>1</sub>	m <sup>3</sup> /h	4,0/6,35	4,0/6,36	6,3/10,0	6,3/10,1	10,0/15,87	10,0/15,88
Transitional flow (**)	Q <sub>2</sub>	m <sup>3</sup> /h	6,4/10,16	6,4/10,17	10,08/16,0	10,08/16,1	16,0/25,4	16,0/25,5
Pressure loss at Q <sub>3</sub>	Δp	MPa	0,009	0,009	0,008	0,008	0,008	0,008
Start-up flow rate	-	l/h	2000	2000	2000	2000	2000	2000
Display range	min	l	5	5	5	5	5	5
	max	m <sup>3</sup>	9.999.999	9.999.999	9.999.999	9.999.999	9.999.999	9.999.999
Temperature range	-	°C	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50
Operating pressure, max.	MAP	bar	16	10	16	10	16	10
Pulse value Reed	-	l/imp.	1000/10.000	1000/10.000	1000/10.000	1000/10.000	1000/10.000	1000/10.000
Pulse value modulator disc	-	l/imp.	100	100	100	100	100	100
Pressure loss at Q <sub>3</sub>	Δp	bar	0,09	0,09	0,08	0,08	0,08	0,08
Mechanical environmental condition	-	-	M2	M2	M2	M2	M2	M2
Climatic condition (****)	-	°C	5 - 55	5 - 55	5 - 55	5 - 55	5 - 55	5 - 55
Flow profile sensitivity	-	-	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0
<b>Weight and dimensions:</b>								
Nominal diameter	DN	mm	200	200	250	250	300	300
Overall length (*)	L	mm	350	350	450	450	500	500
Height	H1	mm	215	215	267	267	250	250
Height	H2	mm	160	160	193	193	220	220
Total height approx. (***)	H1+H2	mm	375	375	460	460	470	470
Installation height of the measuring unit	H3	mm	460	460	460	460	470	470
Flange diameter	D	mm	340	340	405	395	460	445
Bolt circle diameter	D1	mm	295	295	355	350	410	400
Number of bolts	-	pcs.	12	8	12	12	12	12
Screw size	-	mm	M20	M20	M24	M20	M24	M20
Bolt diameter	-	mm	23	23	28	23	28	23
Weight approx.	-	kg	49	49	68	68	105	105

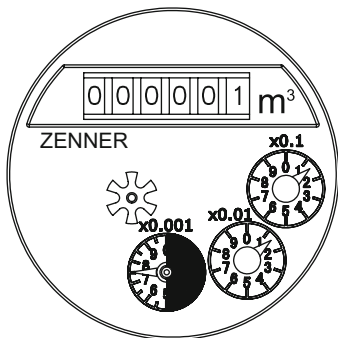
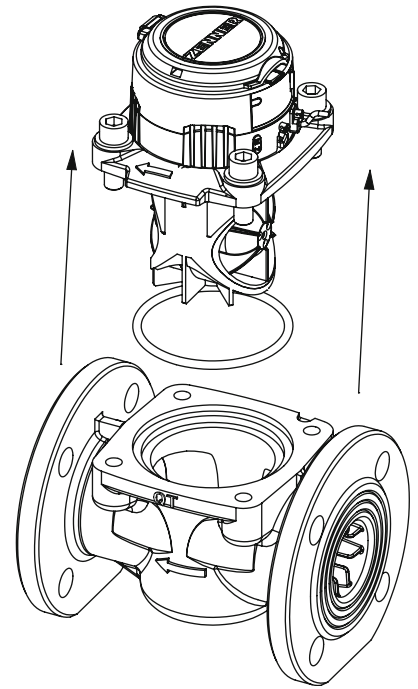
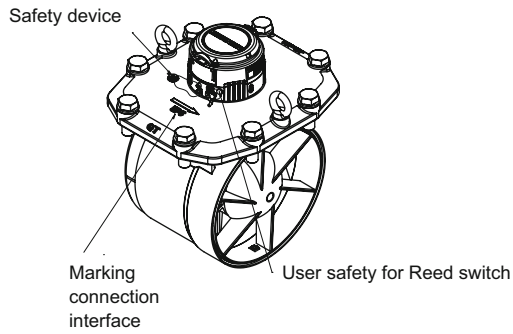
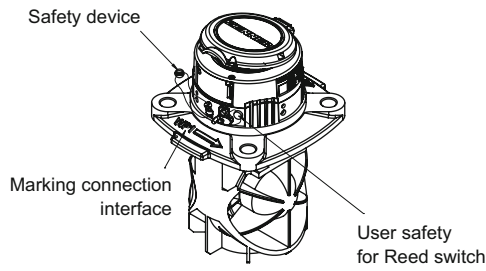
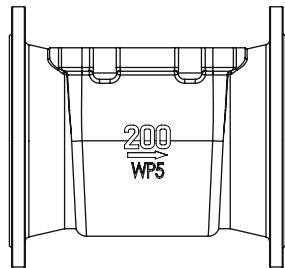
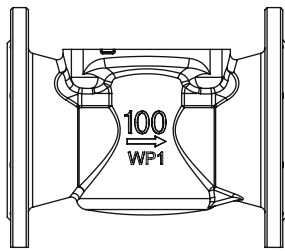
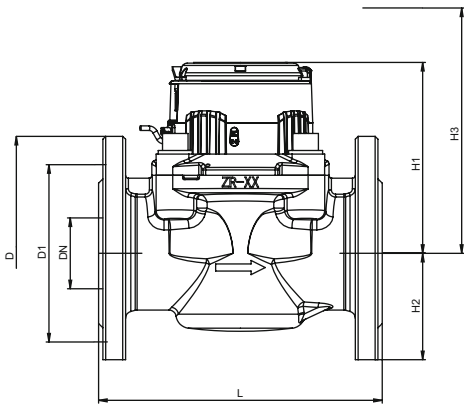
(\*) Other measuring ranges (R) on request

(\*\*) Values refer to standard measuring range

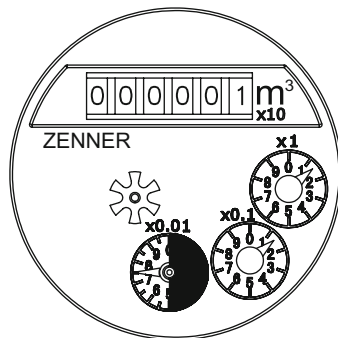
(\*\*\*) Total height WPHD/WPHDE + 24mm

(\*\*\*\*) Condensation possible

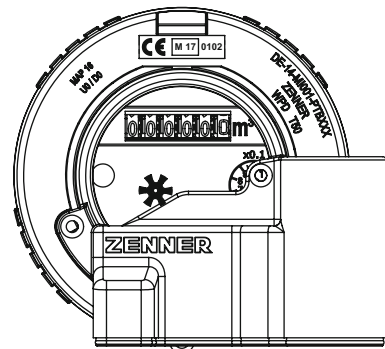




DN 50 - 125  
(WSD DN 50 - 200)



DN 150 - 300



# AMR Options

All Woltman meters are equipped with the ZENNER 6-digit-rollers register with modulator disc. Combined with the ZENNER EDC communication module the modulator disc enables a non-reactive scanning for remote meter reading via radio (wireless M-Bus according to OMS), M-Bus or LPWA-networks in the Internet of Things.

The Woltman meters WPD / WPHD and WSD are prepared for the installation of EDC communication modules as a standard. The EDC communication modules are designed for outdoor use and can be retrofitted at any time.

In addition the meters are retrofittable with up to two reed-pulsers. This enables the integration in an M-Bus system or the connection of a GSM datalogger.

## Interface for up to two mechanical reed pulser: .....

### ■ Integration into an M-bus-system

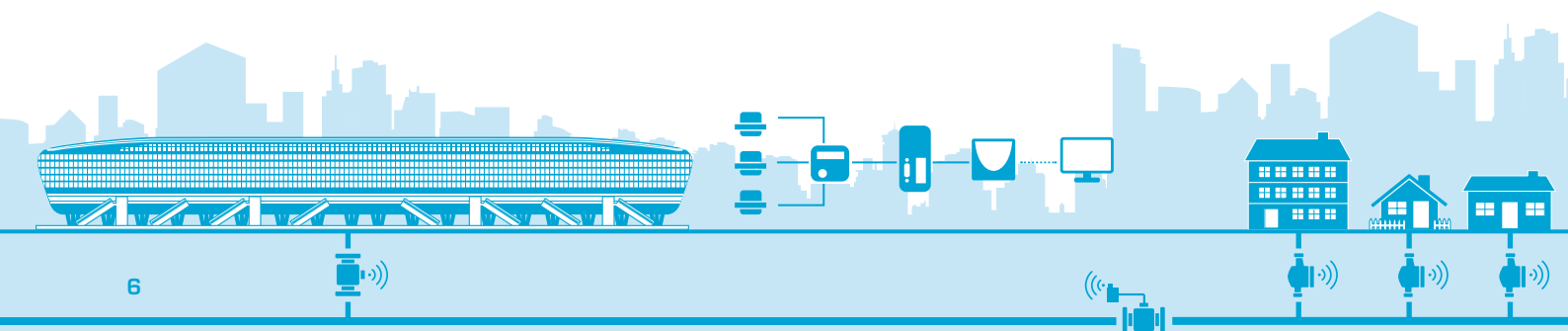
Learn more about M-Bus: [www.zenner.com/bus-systems.html](http://www.zenner.com/bus-systems.html)



### ■ Connection of a GSM datalogger

- ▶ Leak detection
- ▶ remote readout via GSM
- ▶ Pipe burst
- ▶ Error detection

Learn more about GSM: [www.zenner.com/gsm.html](http://www.zenner.com/gsm.html)





### Communication interface for EDC modules for electronic pulser, M-Bus or radio

Water meters with EDC-modules 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

### 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 with several third-party software systems
- Frequency: 868MHz
- Power: 25mW at 868 MHz
- Operating time up to 15 years

*Learn more about wireless M-Bus:*

[www.zenner.com/opera.html](http://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)
- Use of the international LoRaWAN™- standard
- Use of the international SIGFOX- standard

*Learn more about Internet of Things:* [www.zenner.com/iot.html](http://www.zenner.com/iot.html)





### WSD Bulk water meter

- type Woltman perpendicular
- Replacable metrological unit (according to european MID)
- Prepared for remote meter reading

### Product characteristics

- Replacable metrological unit (according to european MID)
- Flood-proof (IP68) hermetically
- sealed glass/copper register"
- Low starting flow, high overload security
- Hydraulic bearing relieve
- Long-term measuring stability
- Swirl-reducing inlet
- No straight inlet or outlet needed (U0/D0) according to OIML R49 and DIN EN 14154
- Materials and coating approved in accordance with KTW / W 270
- Optional WP overall length for DN 50, DN 80 and DN 100 available
- Optional ISO length for DN 50, DN 80 and DN 100 available
- Approved in accordance with MID and OIML

### Applications

- For the mesuring of fluctuating flow rates
- For horizontal installation
- For cold water up to 50° C

## WSD

### Woltman meter with perpendicular turbine shafts

The impeller axis of the WSD is aligned perpendicular to the tube axis. Due to the minimal friction, extremely low starting values can be achieved. Thanks to its design advantages, the Woltmann meter type WSD is an ideal choice especially with fluctuating flow rates and different pressure conditions.

The hydrodynamic optimized impeller is driven reliably even at low flow rates. Also under the highest loads it has enough reserve to detect even flow rate peaks. The specially enhanced bearing of the impeller causes low friction and guarantees a long service lifetime of the meter. The robust copper-glass-register is non-diffusive and protected against condensation. It also works reliably under the hardest conditions (e.g. in flooded pits or shafts).

### AMR options

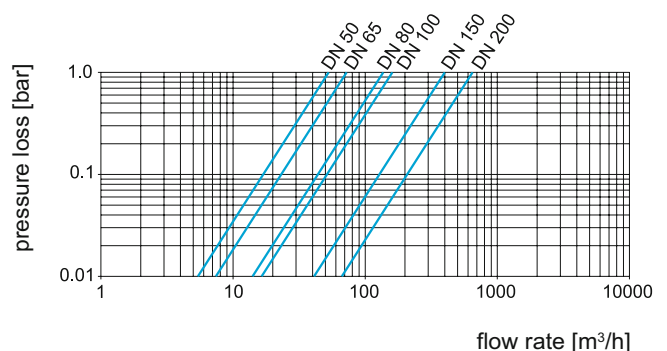
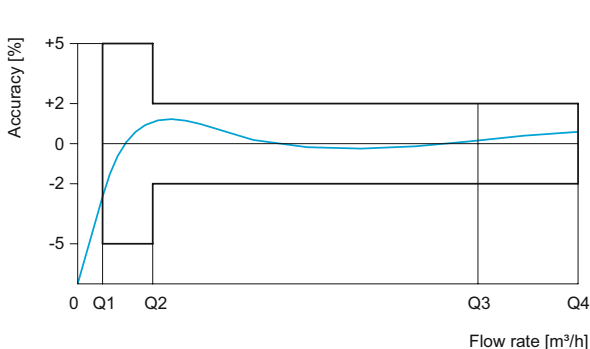
- Retrofittable with up to two reed-sensors
- Retrofittable with stationary GSM system
- Serially equipped with communication interface for:
  - Electronic pulser
  - Wired M-bus
  - Radio via Wireless M-Bus according to OMS (Open Metering System)
  - Radio via LPWAN (LoRaWAN™, SIGFOX)

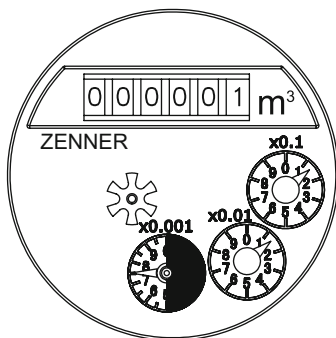
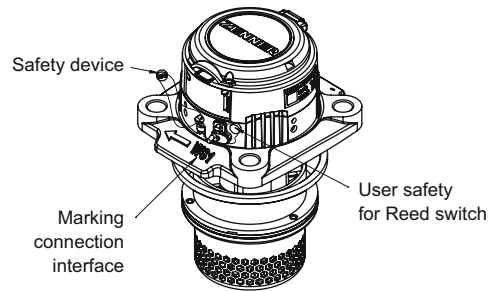
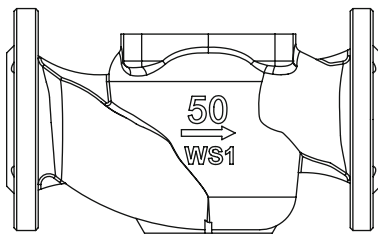
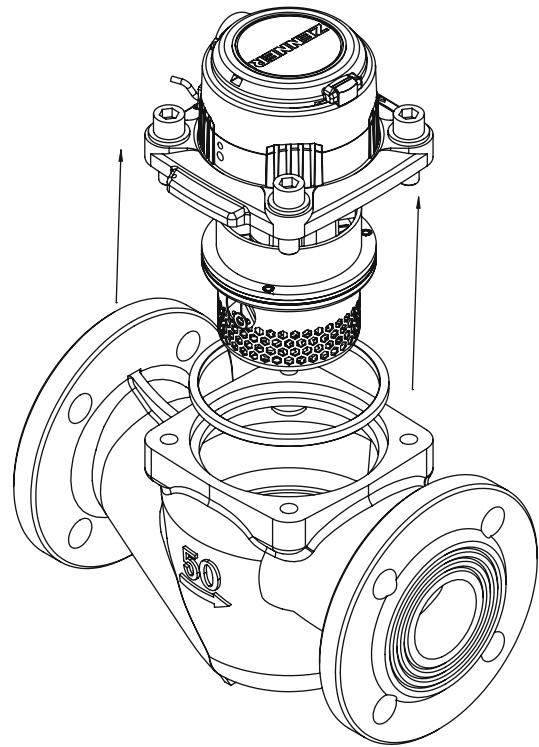
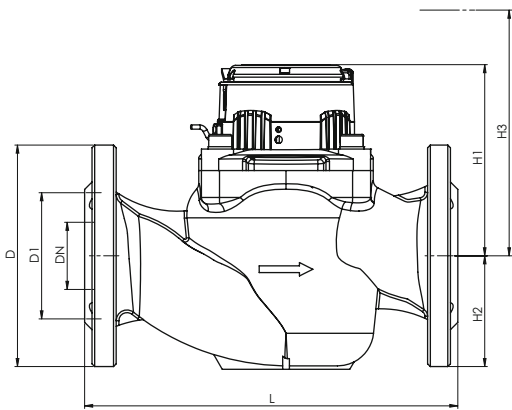




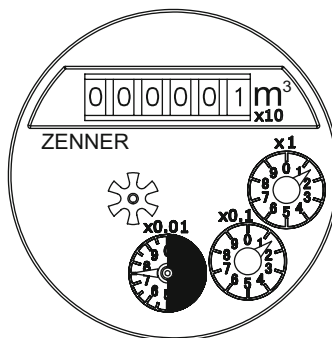
Technical Data WSD										
Nominal diameter			DN 50	DN 50	DN 65	DN 80	DN 80	DN 100	DN150	DN 200
Permanent flow	Q <sub>3</sub>	m <sup>3</sup> /h	25	40	40	63	63	100	250	400
Measuring range	Q <sub>3</sub> /Q <sub>1</sub>	R	200H	200H	200H	200H	200H	200H	200H	200H
Standard measuring range *	Q <sub>3</sub> /Q <sub>1</sub>	R	R100H	R100H	R100H	R100H	R100H	R100H	R100H	R100H
Overload flow **	Q <sub>4</sub>	m <sup>3</sup> /h	31,25	50	50	78,75	78,75	125	312,5	500
Minimum flow**	Q <sub>1</sub>	m <sup>3</sup> /h	0,25	0,4	0,4	0,63	0,63	1	2,5	4
Transitional flow **	Q <sub>2</sub>	m <sup>3</sup> /h	0,4	0,64	0,64	1,01	1,01	1,6	4	6,4
Pressure loss at Q <sub>3</sub>	Δp	MPa	0,054	0,054	0,050	0,050	0,050	0,053	0,051	0,053
Starting flow	-	l/h	50	50	65	100	100	110	250	450
Display range	min	l	0,5	0,5	0,5	0,5	0,5	0,5	5	5
	max	m <sup>3</sup>	999.999	999.999	999.999	999.999	999.999	999.999	9.999.999	9.999.999
Temperature range	T	°C	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50	0,1 - 50
Operating pressure	MAP	bar	16	16	16	16	10	16	16	16
Pulse value Reed	-	l/Imp.	100/1000	100/1000	100/1000	100/1000	100/1000	100/1000	100/1000	100/1000
Pulse value modulator disc	-	l/Imp.	10	10	10	10	10	10	10	10
Pressure loss at Q3	Δp	bar	0,54	0,54	0,50	0,50	0,50	0,53	0,51	0,53
Mechanical environmental condition	-	-	M2	M2	M2	M2	M2	M2	M2	M2
Climatic condition (****)	-	°C	5 - 50	5 - 50	5 - 50	5 - 50	5 - 50	5 - 50	5 - 50	5 - 50
Flow profile sensitivity	-	-	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0	U0/D0
<b>Weight and dimensions:</b>										
Diameter	DN	mm	50	50	65	80	80	100	150	200
Overall length*	L	mm	200/270	200/270	300	225/300	300	250/360	500	500
Height	H1	mm	143	143	143	190	190	195	270	351
Height	H2	mm	85	85	95	102	102	114	146	174
Total height approx.***	H1+H2	mm	228	228	238	292	292	309	416	525
Removal height measuring unit	H3	mm	270	270	270	370	370	382	557	743
Flange diameter	D	mm	165	165	185	200	200	220	285	340
Bolt circle diameter	D1	mm	125	125	145	160	160	180	240	295
Number of bolts	-	pcs.	4	4	4	8	4	8	8	12
Screw size	-	mm	M16	M16	M16	M16	M16	M16	M20	M20
Bolt diameter	-	mm	19	19	19	19	19	19	23	23
Weight approx.	-	kg	12/13	12/13	18	19/21	21	23/24	58	94

(\*) Other measuring ranges (R) on request (\*\*) Values refer to standard measuring range (\*\*\*) Total height WSDE + 24mm  
 (\*\*\*\*) Condensation possible

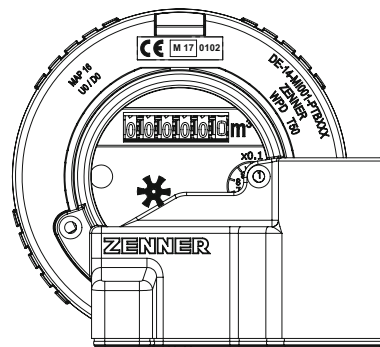




DN 50 - 125  
(WSD DN 50 - 200)



DN 150 - 300



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# SMART METERS NOW GOING ONLINE

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## Stationary LPWAN wireless system

For remote wireless reading via the Internet of Things

The new ZENNER communication modules turn the integration of water meters, heat meters, heat cost allocators and other measurement devices with wireless functionality into the Internet of Things into reality. By using LPWAN (Low Power Wide Area Network) technology and the internationally established communication standards LoRaWAN™ and SIGFOX meters can now be read more frequently, more quickly and more efficiently. This allows the efficient and extensive fixed-network reading of consumption measurement devices – with maximum flexibility and minimum effort.

Learn more!

[www.zenner.com/iot.html](http://www.zenner.com/iot.html)



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