ZENNER

ULTRASONIC BULK WATER METER
TYPE: IUW
INLINE ULTRASONIC WATER METER

CONTENT

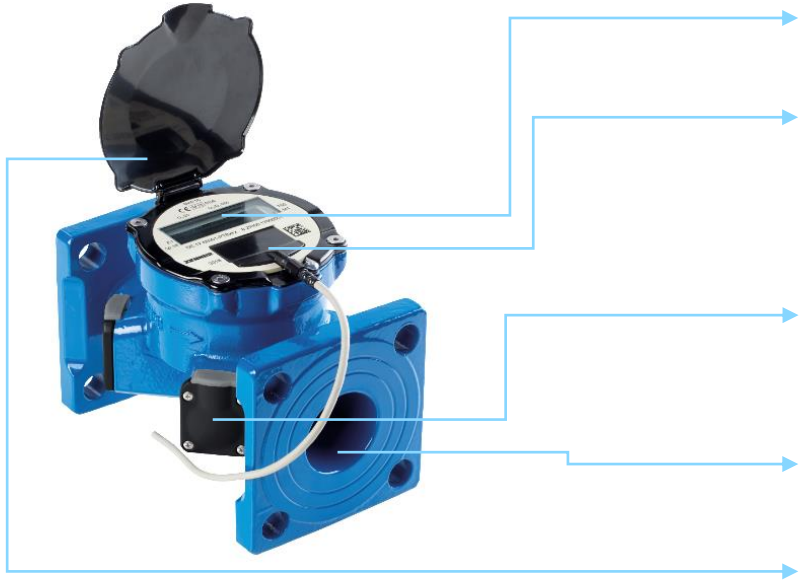
- Scope of application
- Structure and performance characteristics
- Installation positions
- Communication interface
- Display descriptions and menu
- Extensive Data logger
- Smart Functions
- Radio-Communication module NDC

SCOPE OF APPLICATION

- For consumption measurement of cold water up to 50 ° C
- For recording high and fluctuating flows in drinking water distribution in C&I, with a very low pressure loss at the same time
- Classic mechanical Bulk water meters like WP, WS and WPV series can be replaced with the IUW

- ✓ **ULTRASONIC** Technology
- ✓ Highest **PRECISION**
- ✓ **SMART** Communication

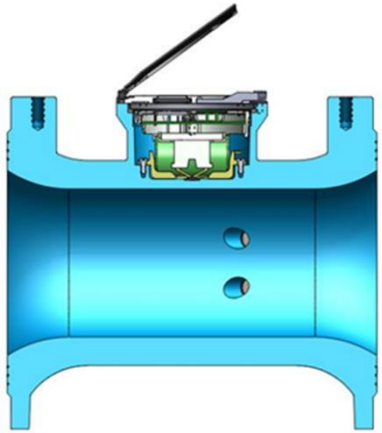
STRUCTURE



- Large, easy-to-read LC display
- NFC interface with mounted NFC coupler (NFC interface is galvanically separated from the meter electronics)
- 2 pairs of ultrasonic sensors (Continued correct measurement even if a pair of sensors fails)
- Flow-optimized hydraulic construction
- Robust design with metal meter cover and security ring

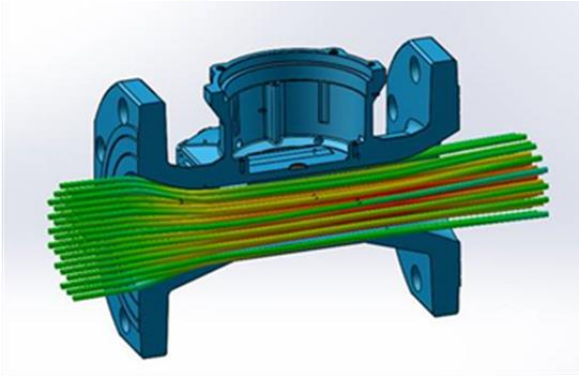
PERFORMANCE CHARACTERISTICS – CLASSICS

- No moving parts, no wear and tear
  That leads to:
  1. Long-term stable measurement result
  2. Very low pressure loss
  3. Insensitive against deposits and particles
     (Conditionally suitable for irrigation use)



- State-of-the-art ultrasonic sensors

- Flow-optimized design for precise measurement results



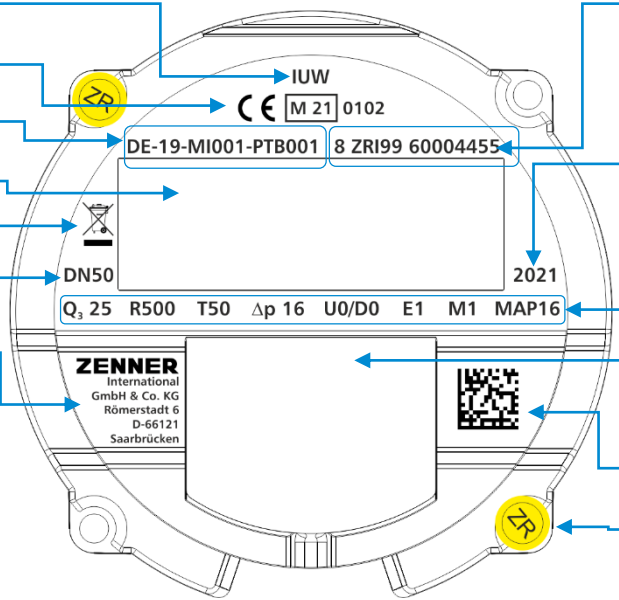
- High dynamic range (1: 500/1: 800)

PERFORMANCE CHARACTERISTICS – DETAILS

- 2 ultrasonic measuring paths
- Protection class IP68
- Large LC Display
- NFC interface
- Extensive data logger
- Smart functions
- Battery life > 15 years
- Operating pressure: MAP 16

- Temperature compensation
- Auto start after 10 s of flow
- Temperature range T50
- External NDC radio module
- Radio options:
  - wireless M-Bus
  - LoRaWAN®
- Nominal sizes: DN 50, 65, 80, 100, 150, 200 [125 approval in progress] DN250/300 approval intended for Q2/22
- Connection for pressure sensor in development

DIAL DESCRIPTIONS



Product name

Conformity sign

Approval no.

LC-Display

Disposal symbol

Nominal size

Manufacturer address

Serial no. (14 digits)

Year of manufacture

Technical data

Q3; Accuracy class; Temperature range; Pressure loss class; Flow profile class; Work environment class; max. operation pressure

NFC-Interface (protected w. NDC dummy)

Datamatrix code with serial no.

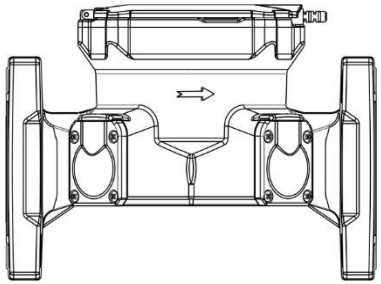
Security label

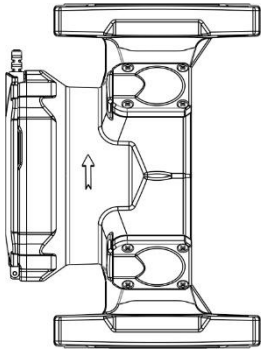
APPROVALS

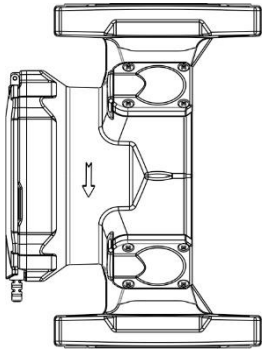
- **MID approval:**
  Module B + D for DN50-DN200 (except DN125) available including WS and ISO long lengths
- **Drinking water approval for Germany:**
  KTW / W270 available
- **Country-specific drinking water approvals:**
  WRAS (UK) and ACS (FR) available
- **NDC module:** LoRaWAN® certified CE conformity: according to Directive 2014/53 / EU (RED)
  (OMS wM-Bus certification in preparing)

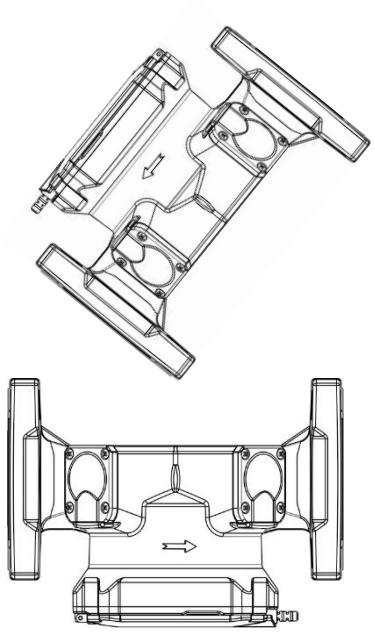
INSTALLATION POSITIONS

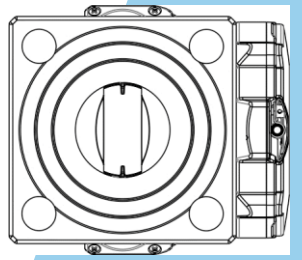
- No inlet / outlet sections required (U0 / D0)
- Any installation position possible (also over head)











IUW - LC DISPLAY

1. 9-digit Consumption display with unit m^3

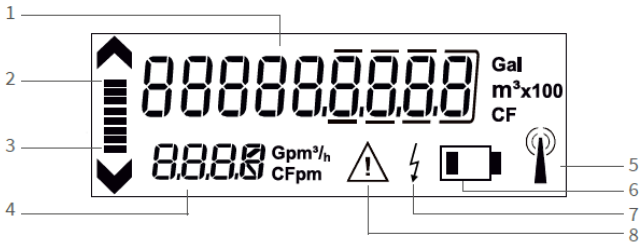
   DN50 – DN125 with 3 decimal places

   DN150 – DN300 with 2 decimal places

2. Flow direction indicator in the forward direction

3. Flow direction indicator in the return direction

4. 4-digit flow rate display with decimal point shift in m^3/h;
   the flow rate is updated every 2 seconds



5. Data transfer: The symbol is only displayed when the NDC module is connected and only during a data transfer (briefly)

6. Battery capacity: symbol is activated 15 months before the calculated end of battery lifetime

7. External power supply: The symbol is activated as soon as a communication module is connected via the NFC interface

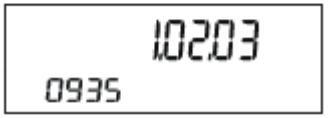
8. Indication of alarm or error messages (are saved in the data logger and can be read out via the NFC interface)

MENU

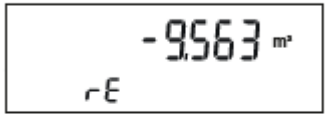
- The following (non-editable) menu displays can be called up and switched with an NFC-enabled device
- To do this, bring the NFC device close to the NFC interface and remove it again
- The next display appears with each new contact
- After the last display, the display jumps back to the main display for the next contact

Segment test

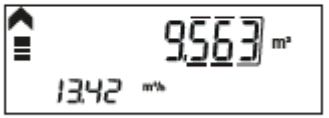
Forward volume



Firmware version



Backward volume



Volume (total)

High resolution test display
(for production or re-examination)

COMMUNICATION INTERFACE

- Innovative, state-of-the-art NFC interface
- Wikipedia: Near Field Communication is an international transmission standard based on RFID technology for the contactless exchange of data via electromagnetic induction ...
- Used to connect external communication modules:
  - NDC wM-Bus
  - NDC LoRaWAN®
- NFC-tag can be read with a smartphone, the tag is updated every hour

COMMUNICATION INTERFACE

- The IUW is tested and configured via the NFC interface
- The NFC-tag can be read out with a smartphone without any problems, can be repeated as often as required without affecting the battery life of the meter
- Usable for utility staff AND end customers
- NFC-tag contains up to 15 previous month values
- Total volume can be read out via NFC-tag even after the display has overflowed
- Configuration app under development

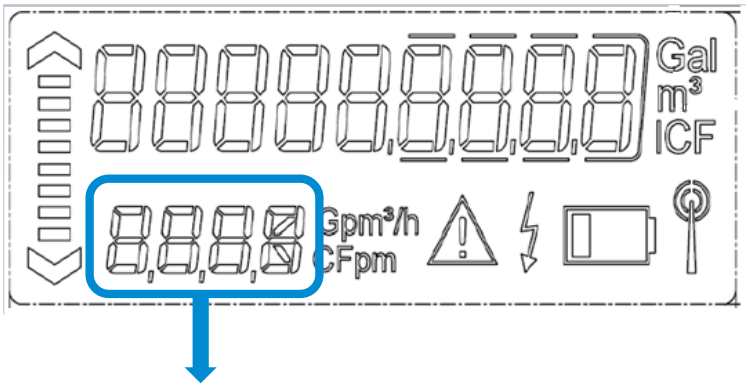
App-Preview:

Example NFC-Tag:

New Tag recognized

Ultrasonic Water Meter
S/N: 8ZRI9960004282
Time: 2021-09-03 18:00
Vol: 1.934 m³
KDate: 2020-01-01
KVol: -- m³
2021-09-01: 1.701 m³
2021-08-16: 1.701 m³
2021-08-01: 1.701 m³
2021-07-16: 1.701 m³
2020-12-15: 0.000 m³
Temp: 21.5 °C
FVol: 1.960 m³
RVol: -0.026 m³
Battery: 2032
FW: 1.05.1.1336
CRC 48719

MENU



- Permanent text visualization: Usually the second LCD line is used to display the flow rate.
- However, if the flow rate cannot be calculated due to a condition such as air in the pipe, then the second line shows this condition permanently as text.

- drY no water in the meter
- AIR inclusions of air
- FOR = Flow out of range: overload
- tOR = temperature outside the intended range
- ErrX X = error number
- ALXX XX = alarm number
- IFXX XX = info number
- SFXX XX = Smart function number
- nEXX XX = NDC module error

DATA LOGGER

Description	Entries (max.)
Due date values	3
Monthly- and Half monthly values	53
Daily values	460
Hourly values	1.440
Backward flow	50
Volumen analysis	50
Events	64
Short-term logger for the last 3 days (volume, temp., Status) in quarter-hour, hourly and 6-hour values	12

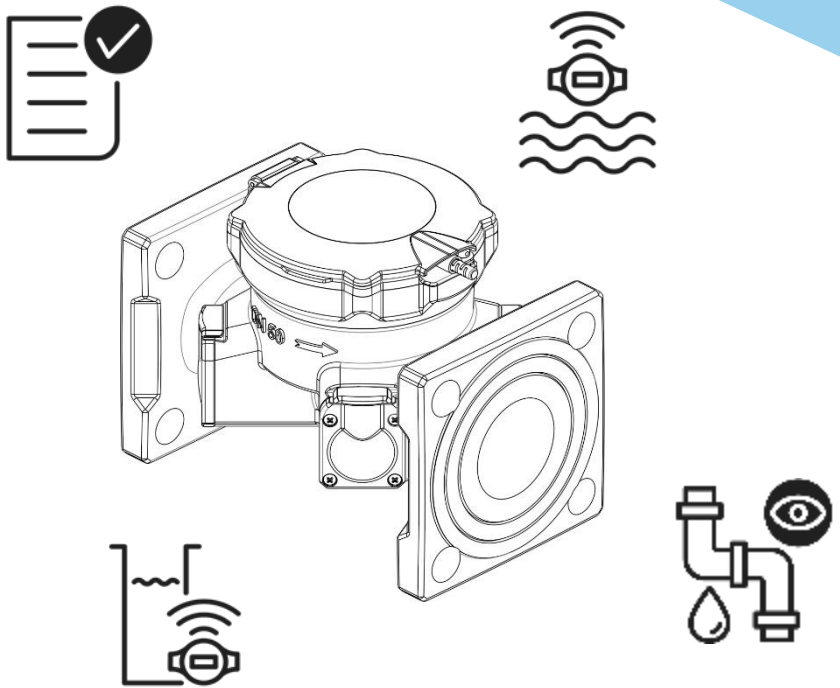
Events	No.
Leakage	1
Wrong installation position	2
Battery warning	3
Oversized	4
Undersized	5
Burst	6
Meter dry	7
Frost warning	8
Backflow	9
No consumption	10

These logger events are transmitted by radio.

SMART FUNCTIONS - SERVICES

Smart functions implemented ex works:

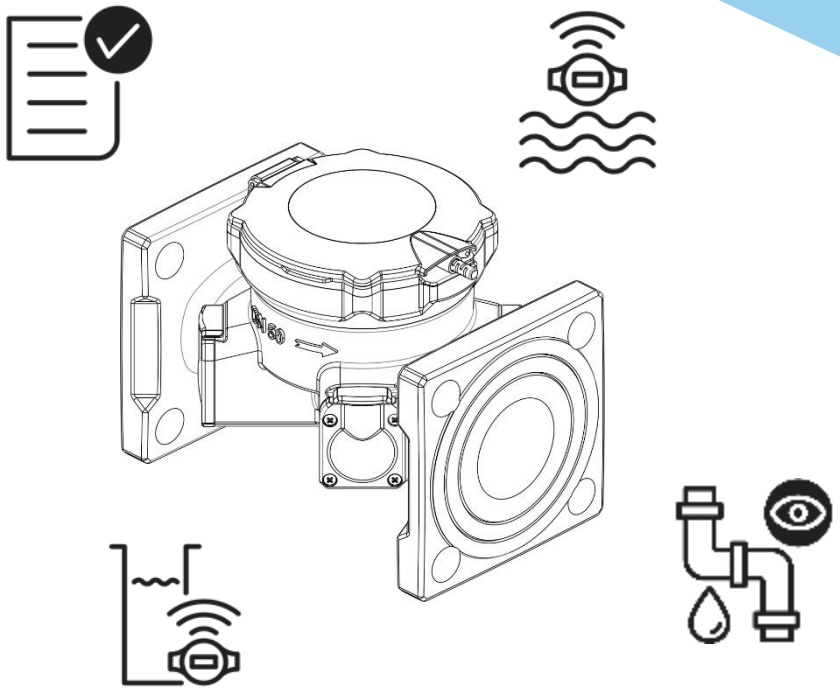
- Leakage warning
- Broken pipe warning
- Detection of incorrect installation
- Reverse flow detection
- Meter oversized
- Meter undersized
- No consumption detection
- Detection meter dry
- Frost warning
- Battery warning



SMART FUNCTIONS – FLEXIBEL & MODULAR

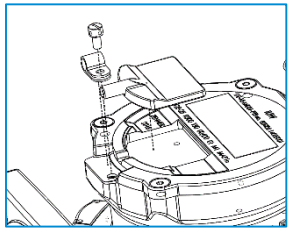
- In addition to the smart functions implemented ex works, further smart functions requested by the customer can be programmed and implemented (ex works)

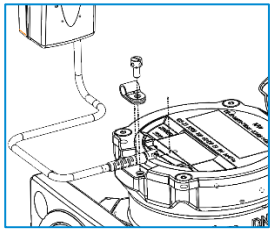
- E.g. exceeding a defined water temperature over a certain period of time

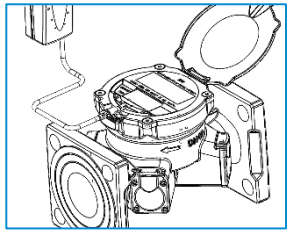


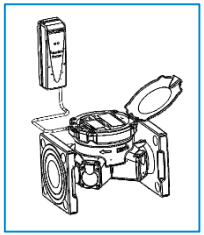
NDC-COMMUNICATION MODULE

- NDC communication module is required for radio remote reading of the IUW‘s
- The NDC module queries the consumption and status information via the NFC interface of the respective meter and transmits this wirelessly. The data is transferred unchanged from the NDC. The content of the data telegrams depends on the meter's activated transmission scenario
- Two NDC module variants are available:
  - NDC radio module LoRaWAN®
  - NDC radio module wireless M-Bus



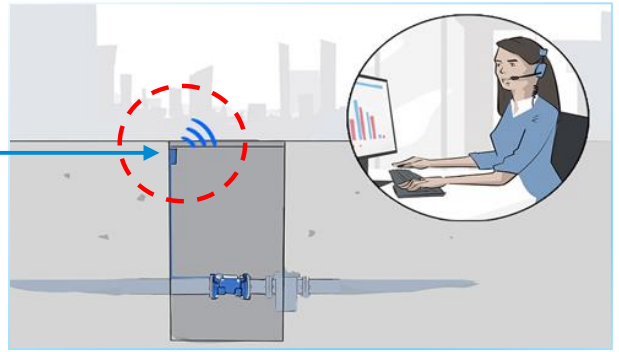






NDC-COMMUNICATION MODULE

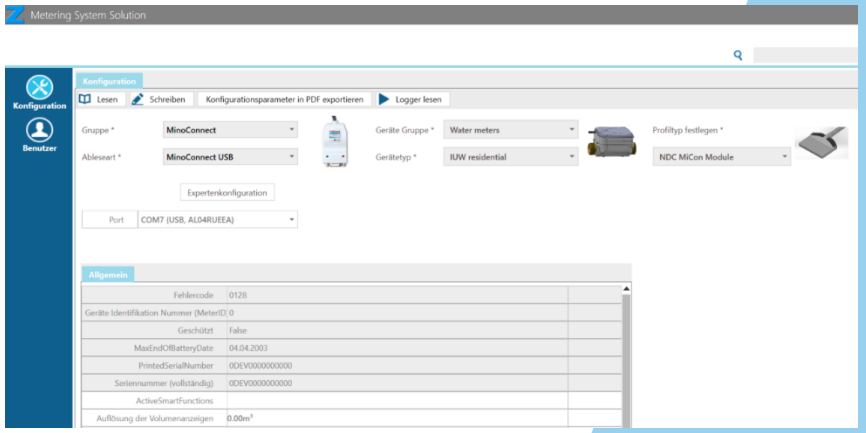
- Easy installation on the meter, plug & play commissioning
- Protection class IP68, cable length 3m
- LoRa version: LoRaWAN® certified: useable with different LoRaWAN® network providers
  Battery lifetime: - LoRaWAN®: 10 Years
  - wM-Bus: up to 12 Years
- **Advantage of the external NDC module:**
  particularly when installing in a shaft, it can be positioned directly below the shaft cover, thus achieving the best possible radio emission



IUW COMMUNICATION SCENARIOS

- **LoRaWAN®:** Standard-Sending interval:
  daily (Sc. 202), optionally monthly (Sc. 201)

- **wireless M-Bus:**
  - ✓ Security Profile A, Encryption mode 5
  - ✓ Otionally: Security Profile B, Encryption mode 7
  - ✓ Several sending intervals possible,
    e.g. 20s for walk- or drive-by
  - ✓ Different data contents possible: short telegrams
    or telegrams with monthly values
    - can be selected depending on customer
    requirements



- Scenarios can be changed in the meter using MSS
  configuration software and for the future is planned an Android app

ULTRASONIC BULK METER IUW & NDC DOCUMENTATION

- Data sheet:
  https://pim.zenner.com/wp-content/uploads/documents/data_sheets/water_meter/GWZ/EN/DB_GWZ_IUW_EN.pdf
- Manual:
  https://pim.zenner.com/wp-content/uploads/2019/documents/assembly_instruction/WZ/MA_GWZ_IUW.pdf
- NDC documents:
  https://zenner.com/?s=iuw
- Video (German)
  https://www.youtube.com/watch?v=SEjFnmY-1RU

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wM-Bus telegram content

wMBus Scenarios			
SAP Parameter			
CommunicationScenario	**300**	**312**	**313**
RadioTechnology	wMBus	wMBus	wMBus
RadioProtocolMode	off	C1_A_5	C1_A_5
RadioTelegramType	off	DdDKM12S	DdDKM1S
RadioFrequencyBand		PHY_A	PHY_A
RadioCycle		120 seconds	20 seconds
RadioActiveTime		always	always
commissioning scenario (20s for one hour)		x	x
SAP ShortTextParts			
Protocol Data			
current date		x	x
current date and time			
current value			
current value of second channel			
daily value date			
daily value (00:00)		x	x
key date			
key value		x	x
recent month date		x	
recent month		x	x
month-2		x	
month-3		x	
month-4		x	
month-5		x	
month-6		x	
month-7		x	
month-8		x	
month-9		x	
month-10		x	
month-11		x	
month-12		x	
month-13			
month-14			
month-15			
two byte status		x	x
Times and frame			
NFC cycle time		3600s	3600s
ModeOfOperation		C1	C1
FrameFormat		A	A
SecurityMode		5	5
HeaderFormat		S	S

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