

## Operating Instructions

Piston Meter Cartridge Version

WECOUNT / MODULARIS

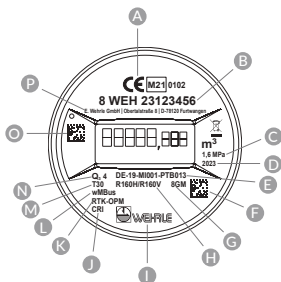
Multi-Jet Wet Meter Cartridge Version

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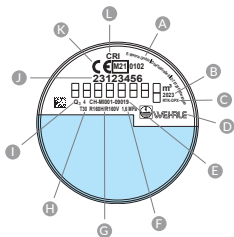
## Device marking WECOUNT RTK-OPM



- A** CE marking
- B** Serial number
- C** Max. permissible pressure
- D** Year of production
- E** Type approval number
- F** Placeholder for 2D data matrix code (key management platform)
- G** Counter version  
8=868 MHz (OMS), G/K=Large/Small Battery, M=WECOUNT
- H** Measuring class/permitted installation position RxxH: horizontal position, RxxV: vertical position
- I** Placeholder for customized logo

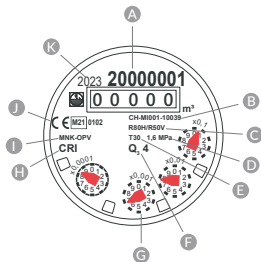
- J Meter type interface
- K Meter type marking
- L Radio standard (wMbus, LoRa)
- M Max. permissible water temperature
- N Meter size Q3
- O Placeholder for 2D data matrix code (e.g. serial number)
- P Postal address

## Device marking MODULARIS MNK-OPX



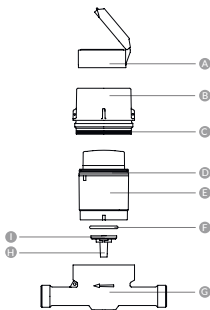
- A Postal address
- B Year of production
- C Meter type marking
- D Placeholder for customized logo
- E Type approval number
- F Max. permissible pressure
- G Measuring class/permitted installation position RxxH: horizontal position, RxxV: vertical position
- H Max. permissible water temperature
- I Meter size Q3
- J Serial number
- K CE marking
- L Meter type interface

## Device marking MNK-OPV



- A** Serial number
- B** Type approval number
- C** Measuring class/permitted installation position RxxH: horizontal position, RxxV: vertical position
- D** Max. permissible pressure
- E** Max. permissible water temperature
- F** Meter size Q3
- G** 10 liter scale
- H** Meter type interface
- I** Meter type marking
- J** CE marking
- K** Year of production

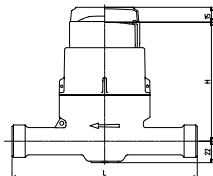
## Device design



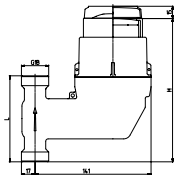
- A** Alternatively with protective cover (consisting of protective ring and protective cover)
- B** Cartridge screw connection
- C** Head screwed O-ring
- D** Measuring cartridge O-ring
- E** Measuring cartridge
- F** O-ring (already mounted onto cartridge)
- G** Housing according to DIN EN 14154
- H** Backflow preventer (BFP) optional
- I** O-ring seating (also available without BFP)



## Device dimensions

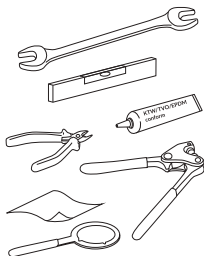


L = 190 mm  
H = 106 - 122 mm



L = 105 mm  
H = 164 - 178 mm

## Required tools

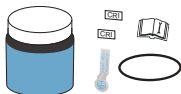


## Scope of delivery

Entire meter



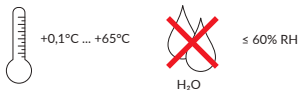
Measuring cartridge



## Transport



## Storage and environmental conditions






## Cleaning






## Personnel qualification

The water meter may only be installed or replaced by trained specialists for sanitary, heating and air-conditioning technology.

## Intended use

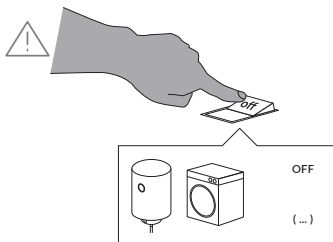
-  Water meters are used to record the drinking water consumption (according to TrinkwV), depending on the version for cold or warm water. Other cases of application that deviate from these specifications must be approved of in writing by E. Wehrle GmbH.
-  Water meters are exclusively intended for the above-mentioned function. The conversion and any use of the water meters different or beyond this is considered improper use and therefore not permitted.
-  Warranty is only effective after compliance with these regulations and the applicable technical rules has been proven.
  - ▶ For the period of use, observe all applicable national regulations and in particular the calibration regulation.
  - ▶ During installation, observe all specifications according to DIN EN 806 and DIN 1988, especially hygiene regulations and ambient temperatures.
  - ▶ Observe the nominal operating conditions according to the type examination certificate and information on the devices.
  - ▶ Keep these instructions close to the meter.

## Safety notes and hazard warnings

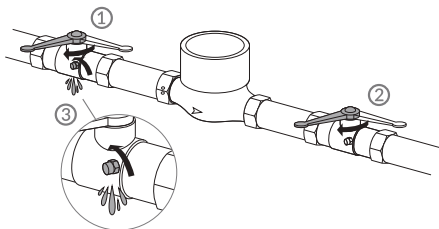
-  Improper assembly, pressure tests, modifications or incorrect operation can cause personal injury and damage to property.
  - ▶ If the seal is damaged or removed, the water meter is no longer licenced for legal metering.
  - ▶ Check water meter for transport damage before installation.
  - ▶ Do not drop, never hold by the protective cover or counter.
  - ▶ If the water meter has fallen down, it must not be installed anymore.
  
-  Pressure shocks in the pipe may damage the meter!
  
-  Present air pockets falsify the measurement result.
  - ▶ Only use KTW/TVO compliant lubricants that are suitable for EPDM gaskets.
  - ▶ Water meters may only be installed after a pressure test.
  - ▶ Water meters may only be installed in pipes that have already been leak-tested, flushed and vented and they must be well vented before commissioning.
  - ▶ Make sure that the water meter is always filled with water.

## Installing the water meter

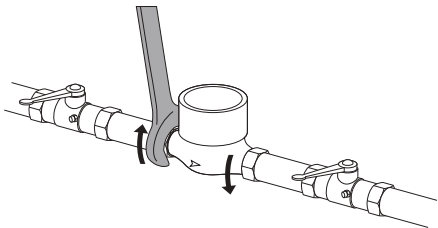
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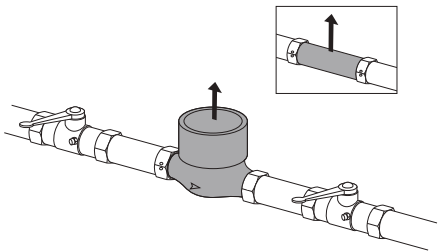
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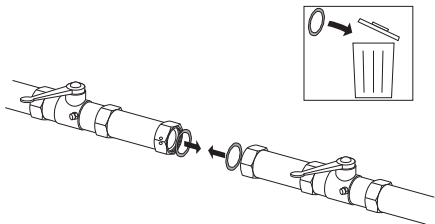
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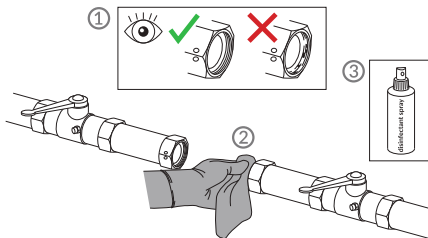
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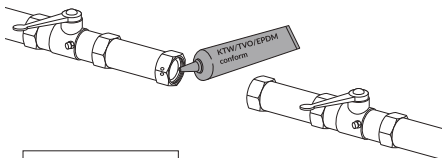
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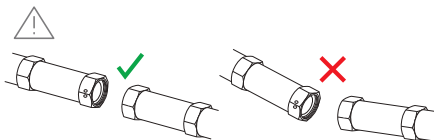


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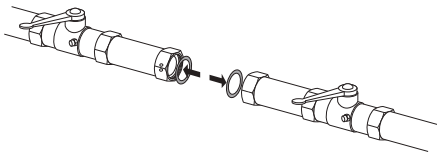
KTW/TVO/  
EPDM conform!

8

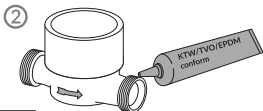
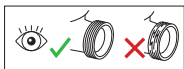




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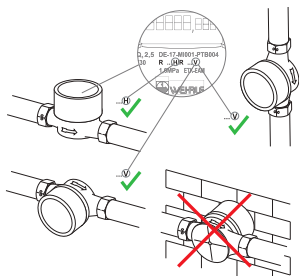


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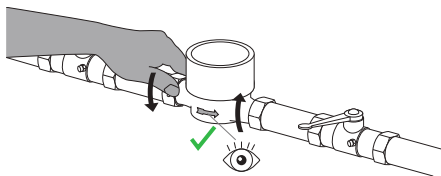


KTV/TVO/  
EPDM conform!

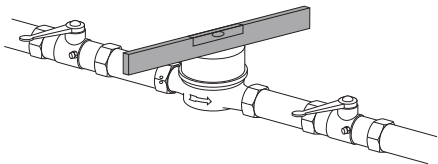
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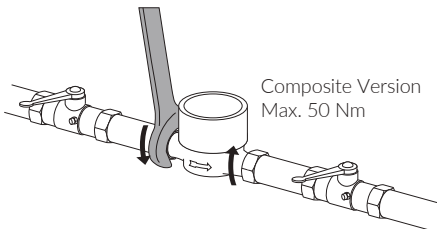
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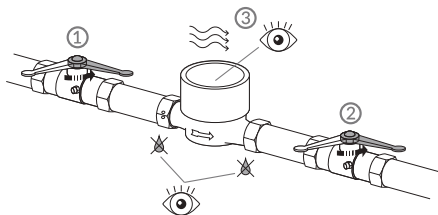
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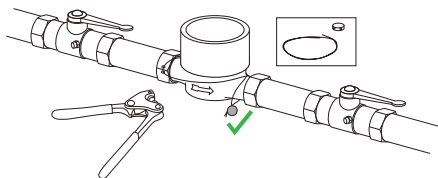
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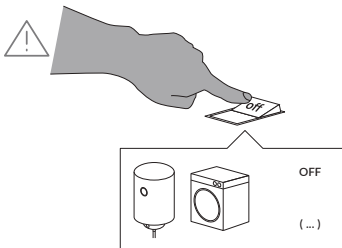


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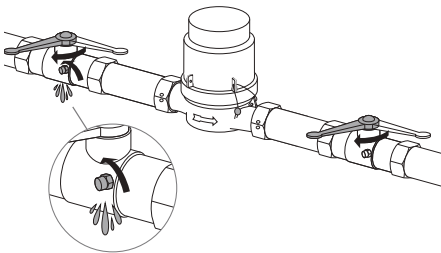


## Installing the measuring cartridge

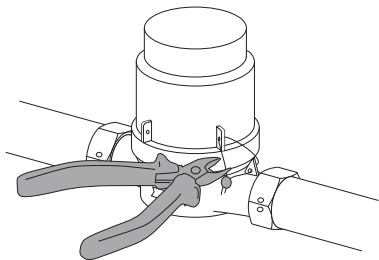
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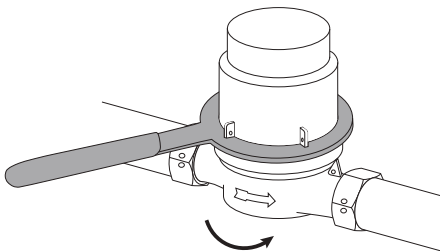
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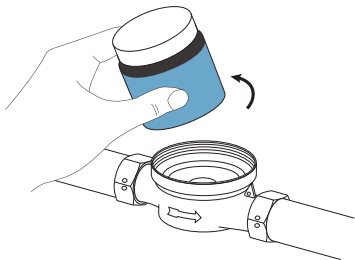
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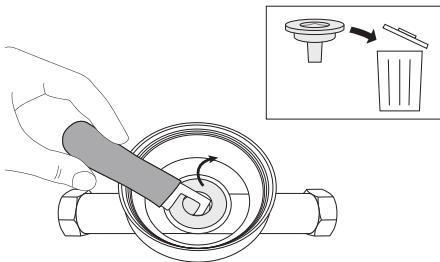
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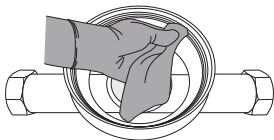
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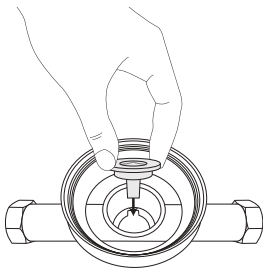
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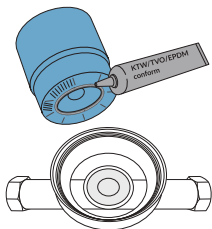


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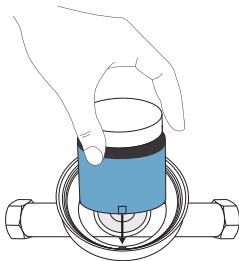


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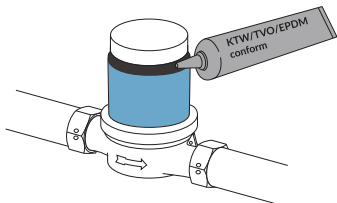


KTV/TVO/  
EPDM conform!

10

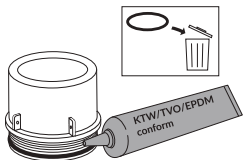


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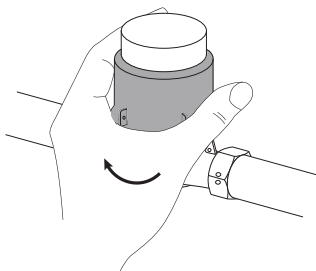
KTW/TVO/  
EPDM conform!

12

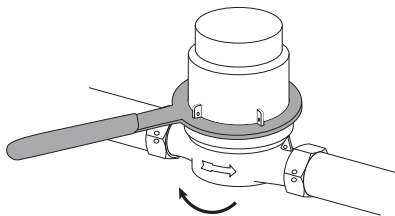


KTW/TVO/  
EPDM conform!

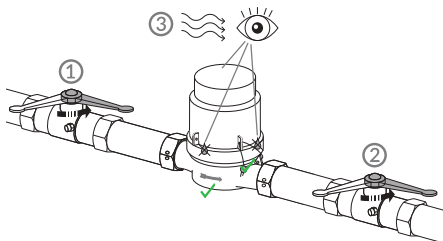
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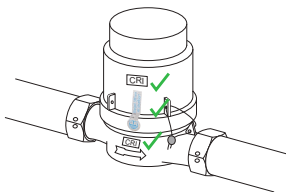
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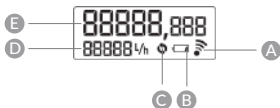
16



## WECOUNT (electronic register)

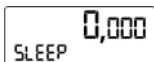
The following device displays are examples!

### Display explanation



- A** Shows active radio signal
- B** Battery warning symbol (replace device)
- C** Flow rate symbol (flashes in case of flow)
- D** Current flow rate value (optional)
- E** Main display ( $\text{m}^3$ ), cumulative consumption with 3 decimal places (litres)

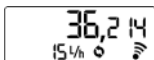
## Delivery condition



The SLEEP mode is the regular delivery condition of the meter. In this condition the meter already counts the consumption, with the radio transmission not yet active to save energy during transport and until installation.

Note: The end customer/installer can be sure of the meter being a new device, when the word SLEEP is displayed.

## Switching to operating mode + trigger radio



Opening a tap for a few seconds triggers the meter to switch to operating mode. The device display changes and only now the installation radio starts up.

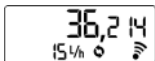
A minimum flow rate of approx. 140 L/h is necessary (e.g. for a short time, fully open the tap).

### Installation radio

If you have triggered the installation radio after installing the meter, you can use it to check for reception. The devices continuously transmit the consumption data for 72 hours at a radio frequency of 16 seconds. This discounts the set radio times. Only after that does the meter run in the normally programmed radio operation. The radio symbol in the display flashes during installation radio. During normal radio operation the radio signal lights up permanently.

The installation radio can also be triggered at any time via the Windows configuration app, see chapter "[WECOUNT additional functions](#)" on page 36.

## Radio settings



As soon as the radio is activated, it sends an encrypted radio telegram according to OMS (Open Metering System). During active radio times, the radio symbol lights up permanently.

Factory setting = short telegram in T1 mode:  
Current value + consumption at due date

In factory setting, the radio signal is transmitted in 1 minute intervals from Monday to Friday, 6:00 am – 7:00 pm.





If other transmission times and/or a different radio telegram are required, these can be configured using a communication head and a configuration app, see chapter [„Radio settings configuration“ on page 39](#).

### Attention!

**At the request of the customer, the meter can also be programmed with other radio settings as default.**



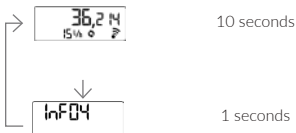
## Device display loop

Device display	Display duration	Example
	10 sec	Consumption 236.214 m3 Actual flow rate 15 L/h
	4 sec	Consumption at due date 175 m3 Check number c91 Due date 31.12
	1 sec	Segment test all OFF
	1 sec	Segment test all ON

Depending on the device configuration as delivered, the display scrolls through the various contents. Here is a typical example of the display for the consumption at due date.

The "consumption at due date" display can be optionally deactivated using the Windows configuration app, as can the "current flow rate" display, see chapter [„WECOUNT additional functions“ on page 36](#).

## Event and error messages



If the meter meets with an event or error, this is indicated by a message on the display. The event message display is integrated into the display loop for 1 second. Additionally, events 01 to 06 and 08 are transmitted via radio telegram.

### Battery lifetime



To indicate the end of the device's lifetime, the battery warning symbol is activated in the display (permanent notification) and the error message Err 09 is set. This is time-controlled once the "time to battery warning symbol" saved in the device for this purpose has expired. This warning symbol is also displayed in combination with error Err02 in the event of an unexpectedly early battery voltage drop.

### Attention!

**The device must then be replaced!**

## Overview of event and error messages

No.	Type	Description	Measures
Err01	System error	Memory error, detection defective	Replace device
Err02	BatLow	Battery voltage too low	Replace device
Err03	Manipulation	Fraud attempt (magnetic field)	Counter no longer valid for billing
InF04	Radio error	The meter no longer transmits a radio signal.	Check device
InF05	Pipe burst	Over a period of 24 hours an extremely high water consumption was determined.	Check pipe network
InF06	Leakage	The water has not been standing still for 24 hours, which indicates a permanent loss of water. (After 30 min stop the error is automatically reset).	Check pipe network for leaks
InF07	Qmax error	An inadmissibly high water flow rate has been detected, which may cause damage to the meter.	Check meter and pipe network
InF08	backflow error	Water runs through the meter in the wrong direction.	Check water meter installation
Err09	Battery end	End of the device's lifetime reached	Replace device

## WECOUNT additional functions

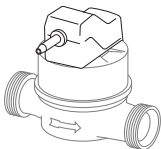
The functions described below can only be used in combination with a communication head (Koko).

The communication head is available as an accessory.

Requirements:

- Windows 10 compatible end device with USB interface (Notebook, Tablet, PC, ...)
  - Configuration app "µline config" from Microsoft Store installed
  - Communication head (Koko)
  - Device password
- Follow us at our homepage [www.wehrle.de/metering/fernauslesung/software-apps/](http://www.wehrle.de/metering/fernauslesung/software-apps/) to get to the configuration app.

### Device interface with communication head



The inductive device interface is located in the middle of the housing, directly on the printed circuit board below the display.

## End-of-day value memory

With one command, the 480 latest end-of-day values can be read out via the communication head in the meter. Values shown in litres.

## Event logfile

For various examinations it is most helpful to examine the temporal trend of events. For this purpose, a rolling event logfile with max. 10 entries is integrated in the meter: If many temporary events occur in succession, older important messages may drop out. For this reason, the following statistical values are also saved (example):

Event message	Time stamp first occurrence of the event with meter reading	Timestamp last occurrence of the event with meter reading	Number of times that the event has occurred
03	14/03/2017, 03:43:22 pm 4256.354 m3	27/04/2017, 20:19:31 5132.337 m3	14

## High resolution mode



For the metrological verification of the meter by an approved inspection authority, the consumption display on the device can be changed to a high-resolution display for at most 24 hours. Instead of the usual  $\text{m}^3$ , the display shows litres with a resolution of 0.001 litres. On the device display, this mode is indicated by the stylized word "HIGH" below the main display. At 12:00 pm at the latest, the display is automatically reset to the standard  $\text{m}^3$  display.

In order to toggle the display mode without the additional aid of a communication head, the meter can also be put into this high resolution mode by running for 2 to 6 seconds in reverse operation.

Meter of size  $Q_3$  2.5: at least 1500 L/h backflow

Meter of size  $Q_3$  4: at least 3800 L/h backflow

## Radio settings configuration

For more information on installing the software for radio settings and programming, see [www.wehrle.de/metering/fernauslesung/software-apps/](http://www.wehrle.de/metering/fernauslesung/software-apps/).



### Adjustable radio telegram types

Short telegram	T1	Current value (factory settings)
Short telegram	T1	Previous day's value (midnight)
Short telegram	C1	Current value
Short telegram	C1	Previous day's value (midnight)
Long telegram	C1	Current value, 15 monthly end values

## Further radio parameters

Item	Setting option	Factory setting	Comment
Number of days of transmission from due date	0-127	30 days	Considering the active months and weekdays of transmission.
Number of days of transmission per month from beginning of month	0-31	31 days	Considering the active months and weekdays of transmission.
Days of transmission	Mon, Tue, Wed, Thu, Fri, Sat, Sun	Mon - Fri	Each weekday can be selected individually. This also allows for the radio to be suppressed during the weekend.
Months of transmission	Jan-Dec	All months	Each month can be selected individually.
Hour of transmission	0-12 am/pm, selectable by the hour	6 am-7 pm	For the active days of transmission, the active hours of transmission are selected here.
Interval of transmission	10 sec-4.5 h	1 min	-
Time zone	UTC -12:00 h to +12:00 h	UTC +01:00 h	This allows the time to be adjusted according to the location. Daylight saving time not taken into account.



## WECOUNT technical data

(Electronic register)

IP protection class	IP68, (4 weeks, max. 1 meter under water)
Radio standard	EN13757-4, wMBus according to OMS (Open Metering System), T1, C1 mode, AES-128 Encryption (4 <sup>th</sup> Generation, Mode 5, Security Profile A)
Radio frequency	868.95 MHz
Radio range/ transmission power	1.5 kilometres in open space / 14 dBm
Battery	1 lithium cell, 3.6 V Size ½ AA, lifetime up to 7 years (optional) Size 1 AA, lifetime 13 years to 16 years
Interface	NFC; 13.56 MHz; 4800 baud
Storage temperature	+0.1 °C to +65 °C, dry
Ambient temperature	+0.1 °C to +65 °C

## Translations

For delivery to countries of the European Economic Area, the operating instructions must be translated into the language of the country of use. Should discrepancies occur in the translated text, either consult the original operating instructions (German) for clarification or contact the manufacturer.

## Maintenance

The water meter is maintenance-free.

## Disposal

- ▶ Dispose of the water meter in accordance with the applicable local environmental and disposal regulations.



The following applies to electronic water meters containing an electronic system and a lithium battery:

- ▶ Never dispose of the devices in household waste.
- ▶ If required, test certificates for the batteries in use can be obtained from E. Wehrle GmbH.
- ▶ Protect lithium batteries from moisture, do not heat to 100°C or higher and do not throw them into fire.
- ▶ Do not short-circuit, open, damage or recharge lithium batteries.
- ▶ Always keep lithium batteries out of reach of children.

## Return

- ▶ Only send water meters to the supplier (distributor) in suitable packaging, carriage prepaid. Insufficiently prepaid packages cannot be accepted!



EG-Konformitätserklärung  
EC declaration of conformity



**E. Wehrle GmbH, Obertalstraße 8, D-78120 Furtwangen**

Erklärt, dass die Ringkolben-Patronenzähler MODULARIS | *Declares that the Piston Meters Cartridge Version MODULARIS: RTK-OPX, RTK-HPX, RTK-SPX*

Mit der EG-Baumusterprüfbescheinigung, ausgestellt durch die notifizierte Stelle 1259 (METAS) | *With the EC type examination certificate, issued by the notified body 1259 (METAS): CH-MI001-09019*

Anerkennung des QM-Systems durch die notifizierte Stelle 0102 (PTB) | *Recognition of the QM system by the notified body (PTB): DE-M-AQ-PTB027*

Mit den Vorschriften folgender Europäischer Richtlinien und Normen übereinstimmen | *Are confirm with the regulations of the following European Directives and Standards:*

- **2014/32/EU, L 96/149, 29.3.2014 (MID)**  
EN 14154; ISO 4064; OIML R 49
- **2011/65/EU, L 174/88, 1.7.2011 (RoHS)**
- **1907/2006, L 396/1, 30.12.2006 (Reach)**

Furtwangen, 2022-06-22

i. V. Marcus Hanak  
Leitung Produktion

i. V. Thomas Pühler  
Metrologiebeauftragter



EG-Konformitätserklärung  
EC declaration of conformity



E. Wehrle GmbH, Obertalstraße 8, D-78120 Furtwangen

Erklärt, dass die Ringkolben-Patronenzähler WECOUNT | Declares that the Piston Meters Cartridge Version WECOUNT: **RTK-PM**

Mit der EG-Baumusterprüfbescheinigung, ausgestellt durch die notifizierte Stelle 0102 (PTB) | With the EC type examination certificate, issued by the notified body 0102 (PTB): **DE-19-MI001-PTB013**

Anerkennung des QM-Systems durch die notifizierte Stelle 0102 (PTB) | Recognition of the QM system by the notified body (PTB): **DE-M-AQ-PTB027**

Mit den Vorschriften folgender Europäischer Richtlinien und Normen übereinstimmen | Are confirm with the regulations of the following European Directives and Standards:

- **2014/32/EU, L 96/149, 29.3.2014 (MID)**  
EN 14154; ISO 4064; OIML R 49
- **2014/53/EU, L 153/62, 22.5.2014 (RED)**  
EN 300 220-1,-2; EN 300 330; EN 301 489-1; EN 301 489-3;  
EN 50364; EN 62369-1; EN 62479; EN 60950
- **2014/30/EU, L 96/79, 29.3.2014 (EMC)**
- **2011/65/EU, L 174/88, 1.7.2011 (RoHS)**
- **2012/19/EU, L 197/38, 24.7.2012 (WEEE)**
- **1907/2006, L 396/1, 30.12.2006 (Reach)**

Furtwangen, 2022-06-22

i. V. Marcus Hanak  
Leitung Produktion

i. V. Thomas Pühler  
Metrologiebeauftragter



EG-Konformitätserklärung  
EC declaration of conformity



**E. Wehrle GmbH, Obertalstraße 8, D-78120 Furtwangen**

Erklärt, dass die Mehrstrahl-Nassläufer Patronenzähler | Declares that the Multi-Jet Wet Meters Cartridge Version: **MNK-\_P\_**

Mit der EG-Baumusterprüfbescheinigung, ausgestellt durch die notifizierte Stelle 1259 (METAS) | With the EC type examination certificate, issued by the notified body 1259 (METAS): **CH-MI001-10039**

Anerkennung des QM-Systems durch die notifizierte Stelle 0102 (PTB) | Recognition of the QM system by the notified body (PTB): **DE-M-AQ-PTB027**

Mit den Vorschriften folgender Europäischer Richtlinien und Normen übereinstimmen | Are confirm with the regulations of the following European Directives and Standards:

- **2014/32/EU, L 96/149, 29.3.2014 (MID)**  
EN 14154; ISO 4064; OIML R 49
- **2011/65/EU, L 174/88, 1.7.2011 (RoHS)**
- **1907/2006, L 396/1, 30.12.2006 (Reach)**

Furtwangen, 2022-06-22

i. V. Marcus Hanak  
Leitung Produktion

i. V. Thomas Pühler  
Metrologiebeauftragter



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