

CONFIGURATION MANUAL

ULTRASONIC WATER METER

IUWS B.ONE & IUW WITH NDC B.ONE MODULE



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1 General Information

Be sure to read the operating instructions for the **IUW/S B.One Ultrasonic Water Meter** and for the **B.One Device Manager app** before starting the configuration. This will protect you and prevent any possible damage to the device. Check the contents of the packaging for completeness before the installation. Installation and commissioning may only be carried out by qualified personnel. Current applicable laws and regulations as well as the generally recognized rules of technology must be observed during assembly and installation.

IUWS stands for *Inline Ultrasonic Water Meter Small* and includes domestic water meters in sizes DN15-DN50.

IUW stands for *Inline Ultrasonic Water Meter* and includes bulk water meters in sizes DN50-DN200.

The IUWS series meters feature an integrated radio module. This module is factory configured to transmit data via wireless M-Bus (compliant with EN 13757-4) or LoRaWAN®, depending on customer requirements. This ensures maximum flexibility. Using the **B.One Device Manager App**, utility providers are able to switch between radio technologies according to infrastructure requirements or operational processes. Further, the IUWS supports parallel radio, which means that measurement data can be transmitted via wireless M-Bus and LoRaWAN® simultaneously.

The IUW does not have an internal radio interface. To enable radio functionalities, it can be combined with an external radio module (NDC B.One).

1.1 Intended Use

The IUWS B.One Ultrasonic Water Meter is used to measure and transmit water consumption and meter information using ultrasonic sensors. The meter is used in the area of water management and consumption recording. Users are usually utility companies and service providers in the area of consumption billing, energy monitoring, etc. Only qualified specialist personnel should carry out the installation and commissioning of the modules. Operational safety is only guaranteed if the product is used as intended according to the manufacturer. No liability is accepted for damage caused by other uses. Any modification is only permitted with the approval of the manufacturer. Otherwise, the manufacturer's declaration becomes invalid.

1.2 Safety Instructions

General information about the device and safety instructions:

- The device is only intended for the designated use. Attention! Improper use may result in damage to the device. Caution! Opening of the device can lead to damage and possibly injury to hands. The device is filled with resin at the factory and is not designed to be opened.
- Unauthorized work on the device can no longer guarantee its safety and functionality. Loss of functionality and injuries may result from unauthorized work on the device. Make sure of the required procedure in advance.
- Make sure that the installation environment corresponds to the specified operating range. Adhere to specified temperature and limit values at all times.
- To avoid damaging the device or impairing its functionality, chemical cleaning agents should not be used. If cleaning is necessary, use a dry or slightly damp cloth.
- The device is equipped with a permanently installed lithium battery, which must not be recharged. This type of battery is classified as dangerous goods (Hazardous goods class 9). The applicable transport regulations must be observed! Data sheets, safety data sheets and test reports of the batteries are available on request. Please also note the following **general information on handling batteries**. The instrument contains a non-rechargeable lithium battery. Attempting to recharge it will damage the device and possibly cause injury.
- Under no circumstances may the device be disposed of in normal household waste. Please observe our regulations for disposal mentioned separately in this manual.

General information on handling batteries

Caution! The following must be observed when handling lithium batteries and devices with lithium batteries.



- store protected from moisture
- do not heat or throw into fire to avoid explosions
- do not short-circuit
- do not open or damage
- do not recharge
- do not store within reach of children

2 Required Materials

- Software B.One Device Manager App (only for Android devices)
- NFC-enabled Android mobile device (at least Android Version 8)
- IUWS/IUW

3. Configuration Possibilities IUWS/IUW

To see and configure the IUWS/IUW parameters, please proceed as follows:

- Open the B.One Device Manager App on your mobile device
- Head to the main menu and select “CONFIGURATION”
- In the new menu, please select “Default” as device. Select “NFC” to configure devices using a mobile android device.
- Make sure that the android device supports NFC and that the function is enabled.
- Place your android device near the NFC interface of the meter (see Figure 1)
- As soon as the NFC interface is detected, the readout will start automatically.
- After successful data retrieval, you will be able to see and configure the various parameters of the IUWS/IUW (see table below)
- Configurable parameters are marked by this symbol 
- After tapping this symbol, please select the desired option from the drop-down menu and press “OK”
- In the configuration menu, press the “WRITE” button to execute the command. Make sure that your android device is still positioned near the NFC interface.
- This symbol indicates, that the command has been executed successfully. 

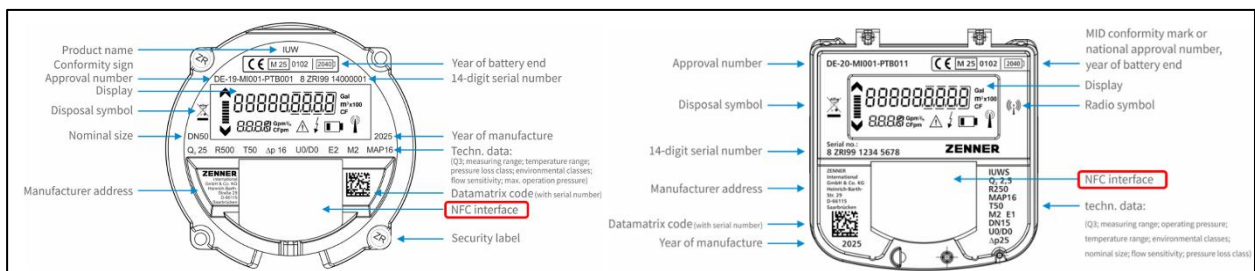


Figure 1: Position of the NFC Interface for IUW (left) and IUWS (right)

Please continue with this process until the IUWS/IUW is fully configured to your requirements. An overview and explanation of the parameters displayed in the B.One Device Manager app can be found in the tables below. All configurable parameters are shown in bold and cursive.

3.1 Description of the configuration parameters

Parameter	Description
Readout time	Time at which the meter is read (year month day and time of measurement)
Version	The firmware version of connected device
Serial number	14-character alphanumeric string as a supplier and multi-utility identification number
Medium	Identification of the measured medium
Generation	The generation number of the meter
Device time	The system time of the device
Battery end date	The date until which the battery if the device will last even at high loads. Normally, the device will last longer
Key date	Date on which the cumulative consumption is stored in the device. The due date value is often used to create the consumption billing, ZENNER factory setting: 01.01.
Device Mode	Mode of the device. Delivery Mode = Device is not activated, Operation Mode = Device as activated and transmitting values
Scenario LoRa	Configuration number of radio behavior. Defines which data is sent and corresponding intervals.
Scenario wMBus	Configuration number of radio behavior. Defines which data is sent and corresponding intervals.
Dev EUI	Unique ID of the end device
Join EUI	Unique ID of the application server
DevAddr	Device address = 32 bit. The logical address is used to identify objects in the network
Activation Mode	OTAA (Over The Air Activation) Device starts a join procedure with the network, which allocates a dynamic DevAddr and negotiates security keys with the device. When the device is activated, it switches to ABP (Activation By Personalization) .
Net ID	24-bit value used for identifying LoRaWAN networks. It is assigned by the LoRa alliance. It is sued by networks for assigning network-specific addresses to their end-devices (i.e. DevAddr), so that uplink frames sent by those devices even when they are roaming outside their home network c an be forwarded.
ADR	ADR (Adaptive Data Rate) is an optimization mechanism for transmission power, data rate and time on air in the network
Send Join Request	Allows you to re-join an already activated device. Beforehand, "Activation" needs to be set to OTAA.
Backflow	This is an event that triggers when reverse water flow is detected
Burst	This event logger indicates that the meter detects burst a burst for 30 minutes

Parameter	Description
Dry	An event logger that triggers when no water is detected for 48 hours
Frost	This event logger indicates that the water temperature is less or equal to 0 degrees Celsius for 3 hours
Leakage	This event logger indicates that the detects a leakage. A leak is indicated by a period of constant flow for 24h (flow is never 0)
No consumption	This event logger indicates that the meter detects no flow for 1 month
Oversized	<p>This event indicates that the meter is oversized. The meter is oversized when the flow rate never exceeds 0.1*Q3 (10% of Q3). This is averaged over a period of 15 minutes. It is counted how many times the flow rate does not reach 10% of Q3. If the flow rate is not reached after 30 days, "Oversized Meter" is detected.</p> <p>If once a flow rate of > 10% from Q3 averaged is reached by a quarter of an hour, the detection is permanently disabled, and the status "Oversized Meter" deleted . The event memory stores the date and time of the event</p>
Reverse Installation	An event logger that triggers if the return volume is higher as the forward volume for 4 hours.
Undersized	This event indicates that the meter is undersized. If the flow rate is continuously higher as Q3 (permanent flow) over a 4 hour period, this indicates an undersized meter, and the message "meter undersized" will be detected.
Volume	The value of the meter
Volume forward	
Volume return	The return volume from the meter
Flow	Registered flow in m ³ / h
Water Temperature	Temperature of the water inside the measuring area
Ambient temperature	Temperature of the meter environment
State	Shows the error states of the device

3.2 Example: Changing the communication scenario

This chapter demonstrates the parameter configuration process using the example of changing the communication scenario. While the configuration options differ, the process remains the same for all parameters.

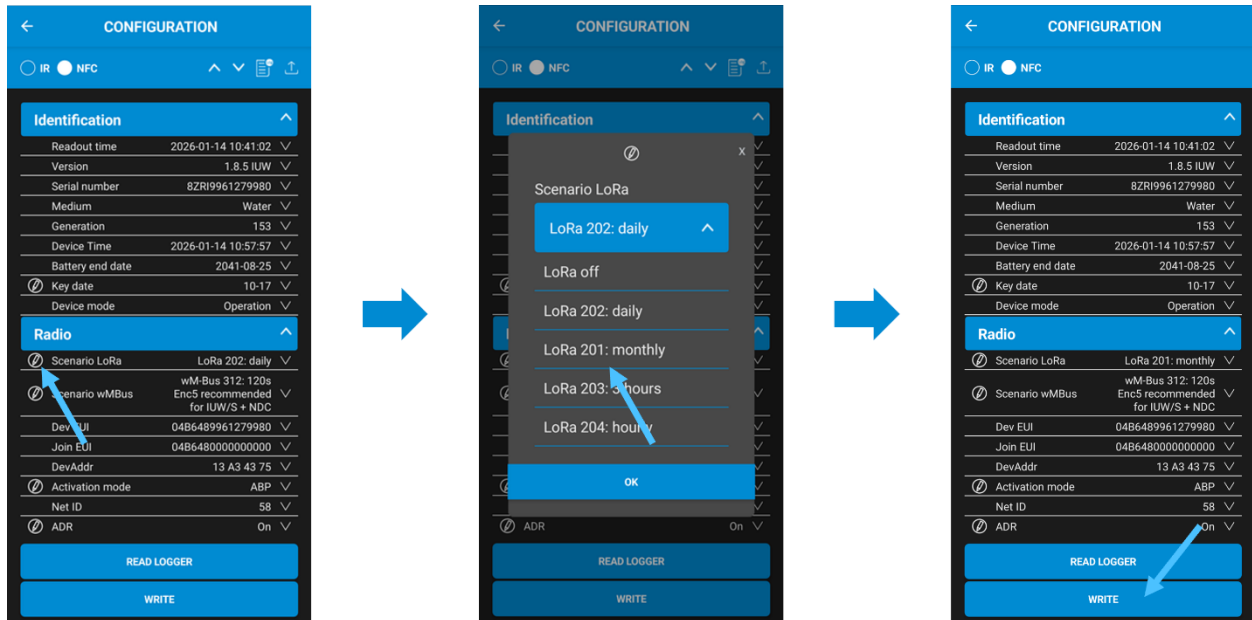


Figure 2: Example configuration Process

- Follow the steps at the beginning of Chapter 3 to set up your NFC connection and read your device.
- To change the communication scenario, please tap the icon to the left of the parameter name.
- In the appearing pop-up window, choose the desired scenario and confirm your selection with “OK”. Since the IUWS supports parallel radio communication, LoRa and wMBus scenarios can be configured without restraints.
- Back in the device overview, you will see a preview of the changes you have entered.
- If the changes you made are correct, tap the “WRITE” button at the bottom of the screen. Make sure that the NFC connection is still possible.
- This symbol indicates the successful configuration of the parameter. ✓

4 NDC B.One Communication Module

The NDC B.One communication module (Near Field Data Capture Module) with wireless MBus or LoRaWAN® interface can be used for remote reading of the ZENNER IUW ultrasonic meter series.



Figure 3: NDC B.One Communication Module

The NDC B.One is an optional addition for IUWS and IUW meters:

For the **IUWS**, the external NDC can be used to improve signal availability in difficult installation positions such as pit shaft installations

For the **IUW**, the external NDC can be used to enable remote reading and smart functions.

To configure the NDC B.One Communication Module, either the radio transceiver MinoConnect Bluetooth Radio Set Opto (including ZVEI – IrDA Combihead) or the K01-Blue 3000 is required.



Figure 4: MinoConnect Radio Bluetooth Set Opto (left) and Optohead K01 - Blue 3000 (right)

4.1 Description of the configuration parameters NDC

Parameter	Description
NDC Parameters	
Readout time	Time at which the meter is read.
Serial number	14-alphanumeric string as a supplier and multi-utility identification number of the NDC
Medium	Identification of the measured medium (RF-adapter for NDC)
Generation	Generation number of the device
Version	The firmware version of the NDC
Device time	The system time of the NDC
Device mode	Mode of the device. Delivery Mode = Device is not activated, Operation Mode = Device as activated and transmitting values
Battery end date	The date until which the battery of the NDC if the device will last even at high loads. Normally, the device will last longer
IUW Parameters	
Version	The firmware version of the connected IUW
Serial number	14-alphanumeric string as a supplier and multi-utility identification number of the IUW
Medium	Identification of the measured medium inside the IUW
Generation	Generation number of the IUW
State	The error states of the IUW
Battery end date	The date until which the battery of the IUW if the device will last even at high loads. Normally, the device will last longer
Key date	Date on which the cumulative consumption is stored in the device. The due date value is often used to create the consumption billing, ZENNER factory setting: 01.01.
Communication scenario	The configuration number of the radio behavior. Defines the transmission intervals and data contents
Volume	The value of the meter
Volume forward	
Volume return	The return volume from the meter
Flow	Registered flow in m ³ /h
Water Temperature	Temperature of the water inside the measuring area
Device Time	System time of the IUW
Connection Parameters	
NFC transmission	State of the NFC transmission
Connection to IUW	Connection status to the IUW via NFC
Initialization state	Initialization state when establishing a connection to the IUW
Connect with IUW	(Re-) establishes the connection to the IUW
Module Code	Internal identifier for the status of the NDC

4.2 Example: Upgrading the IUW with NDC B.One

This example explains the process of enabling radio functions for the IUW using the NDC B.One Communication Module and the B.One Device Manager app.

- Remove the protection cap of the NFC interface by loosening the screw
- Slide the NFC coupler of the NDC into the intended position under the IUW display
- Open the B.One Device Manager app on your device.
- Check your connected devices by tapping the slide menu in the upper left corner and selecting "Pairing". Your connected MinoConnect device should be displayed here.
- Return to the main menu and select "CONFIGURATION"
- In the new menu, select "Default" as the device. Select "IR" to configure devices with the optical head.
- Place the optical head in the designated spot on the NDC and ensure it is positioned correctly.
- Press the "READ" button at the bottom of the configuration menu.
- After successful data retrieval, you can view and configure the various parameters of the NDC (see table above)

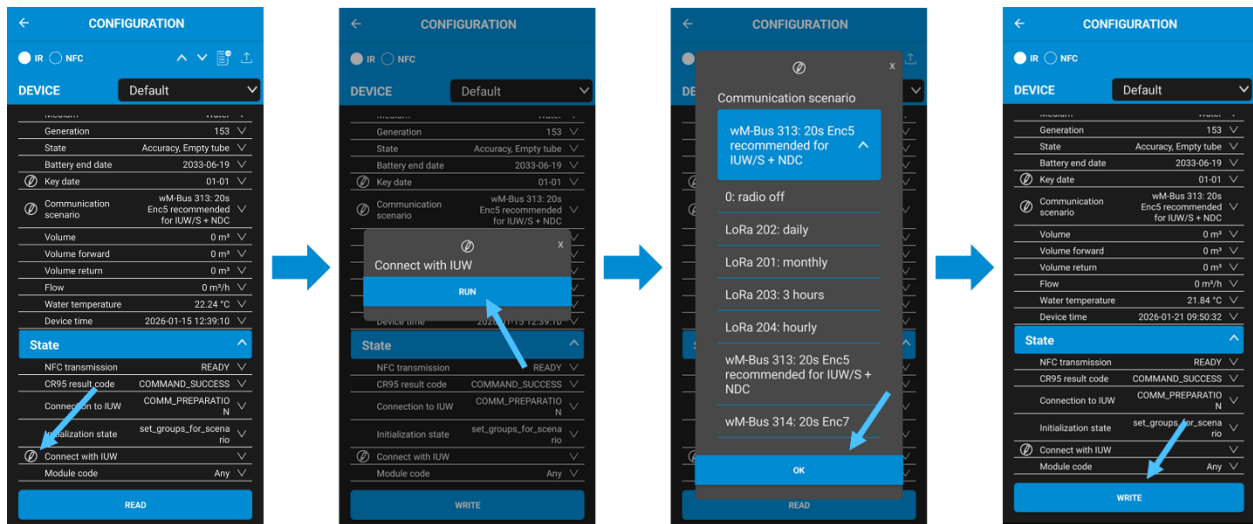


Figure 5: Connection procedure IUW & NDC B.One

- To connect the NDC B.One to the IUW, please select the option "Connect with IUW" and press "RUN"
- After a short delay, the successful connection will be indicated by this symbol (✔)
- Afterwards, you can configure other parameters, e.g. communication scenario, the same way as described in chapter 3.2

5 Contact

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