



Akıllı Kontrolde Teknoloji Devi

# DLMS MODBUS GATEWAY CONFIGURATION SOFTWARE

- MDC100 SERIES  
DLMS MODBUS GATEWAY

DOCUMENT NAME	DATE	VERSION
MIKRODEV_AN_MDC100_CG _EN_v3.0	10 / 2025	Assistant 3.13 and above Firmware: 16 and above

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# Preface



Mikrodev DLMS MODBUS Gateway creates a gateway between meters with IEC 62056-21 MOD-C and MODBUS networks.

Serial ports can be selected as two different options as 1 port RS232, 1 port RS485 or 2 ports RS485. With this converter, which has an Ethernet or GSM communication card, four different model options are offered, which can read 2.8, 16 and 32 meters. For the Wi-Fi communication card, there is an option to read only 32 meters.

It can work as client or server in TCP/IP connection, without depending on socket type specified in MODBUS protocol. At this point, it is possible to provide access to the devices over the internet when port routing is not possible. It also provides multiple connection support for TCP socket connections and can serve up to 4 different TCP Master devices over the same port.

The Mikrodev MDC100 Series gateway is programmed using the Assistant program.

Please follow our site [www.mikrodev.com](http://www.mikrodev.com) for the current version of the document.

## About Mikrodev



Since 2006, MIKRODEV has been developing and manufacturing industrial control and communication products. MIKRODEV serves the system integrators in the public and private sector, OEM and end users.

Our products are manufactured complying with the quality standards required by the industrial automation industry and the quality of our products are proved on the field for many years

MIKRODEV is one of the few companies in the world that has its own designed IEC 61131-3 compliant library for its programmable logic control devices. In addition, the open, flexible, programmable SCADA solution developed by MIKRODEV is also available to customers.

MIKRODEV products' performance and wide range of applications make them possible for customers to achieve faster, simplified and cost-effective results.

# Warning!



- ✓ Use the programming editor only for Mikrodev Certified devices
- ✓ When you change your physical hardware configuration, update your development to the appropriate version.
- ✓ The developed program should be tested separately before taking to field service and should be shipped to the field after the tests are successfully completed.
- ✓ Take all accident prevention measures and safety measures identified by local law



**Failure to comply with these rules may result in death, serious injury or property damage**

## **1 MODC GATEWAY CONFIGURATION SOFTWARE**

### **1.1 General Information**

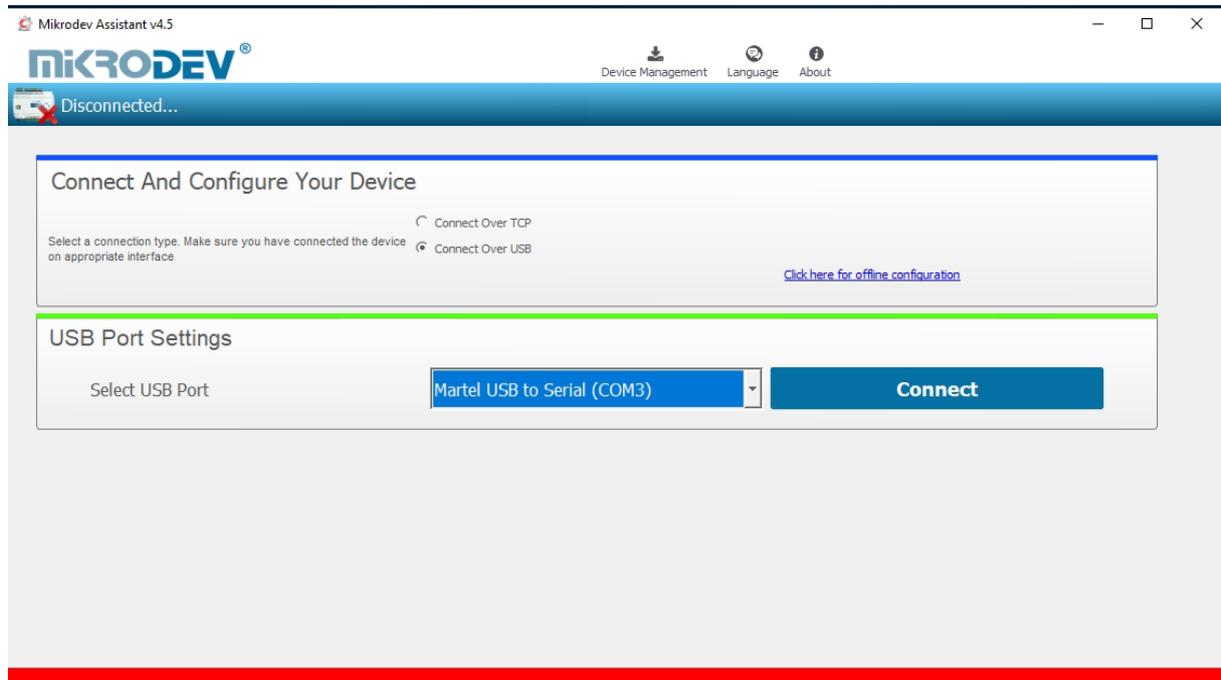
The Assistant software is used to make all necessary settings for the Mikrodev gateway devices. Thanks to the software, device settings can be made online and/or offline. The settings that are loaded on the device can easily be downloaded and the previously saved settings can easily be uploaded into the device by the program.

The connection between the program and the device can be established in various ways such as USB, Ethernet, GSM, Wi-Fi. For Ethernet supported devices; there is also the ability to search the network and list details with connection information.

## 1.2 Device Connection

### 1.2.1 USB Serial Connection

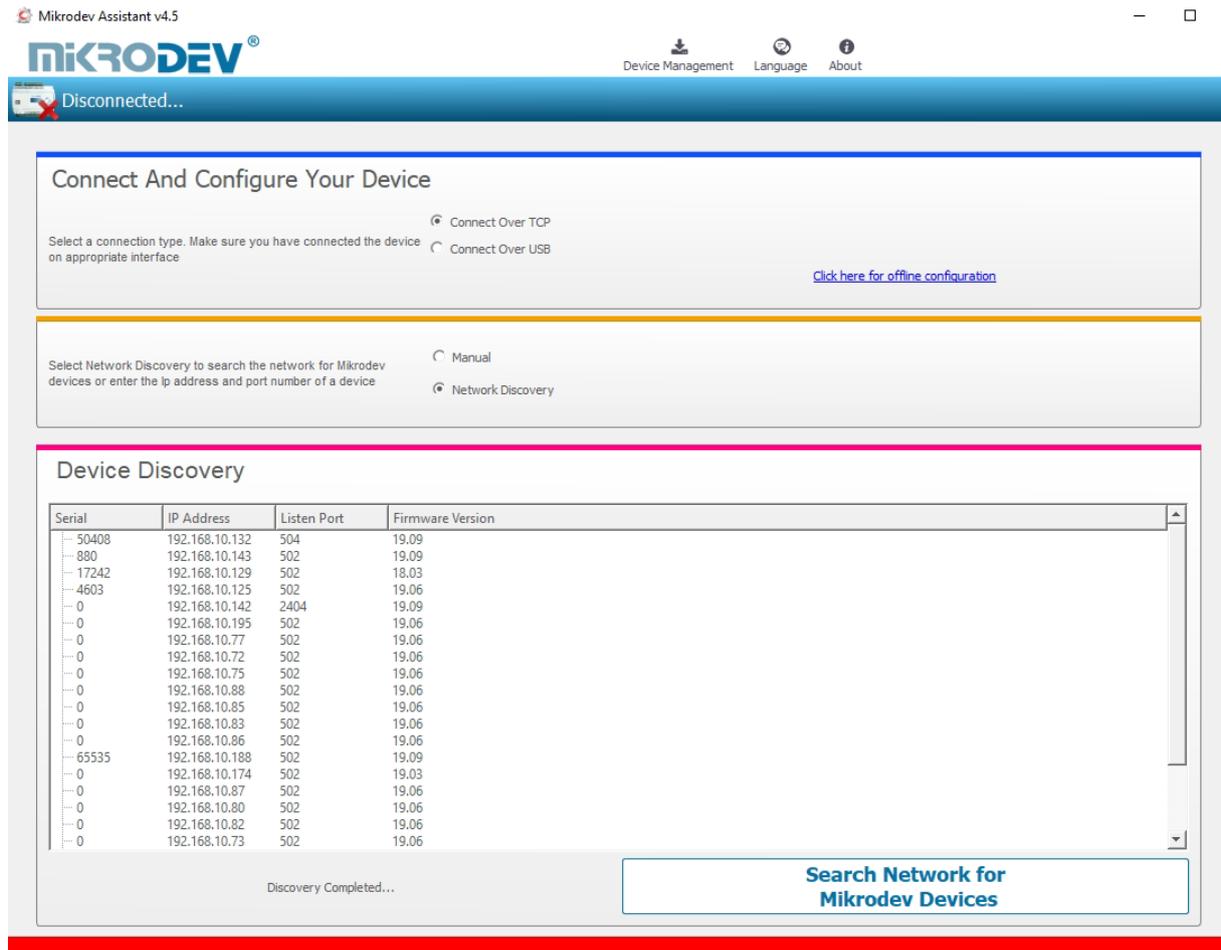
One of the methods for establishing communication between PC and Mikrodev device in device configuration is USB serial connection. In order to perform USB connection between PC and device, you need to install USB driver for PCs with Windows 7/8/8.1 operating systems. There is no need to install the USB driver for Windows 10 operating systems. For serial connection over USB, "Connect over USB" box in the "Connect and Configure Your Device" section of the Assistant software is selected. In the "USB Port Selection" section, you should select the port and click "Connect". USB connection will be established after that.



**Figure 1 USB Connection**

### 1.2.2 TCP Connection – Device Discovery Mode

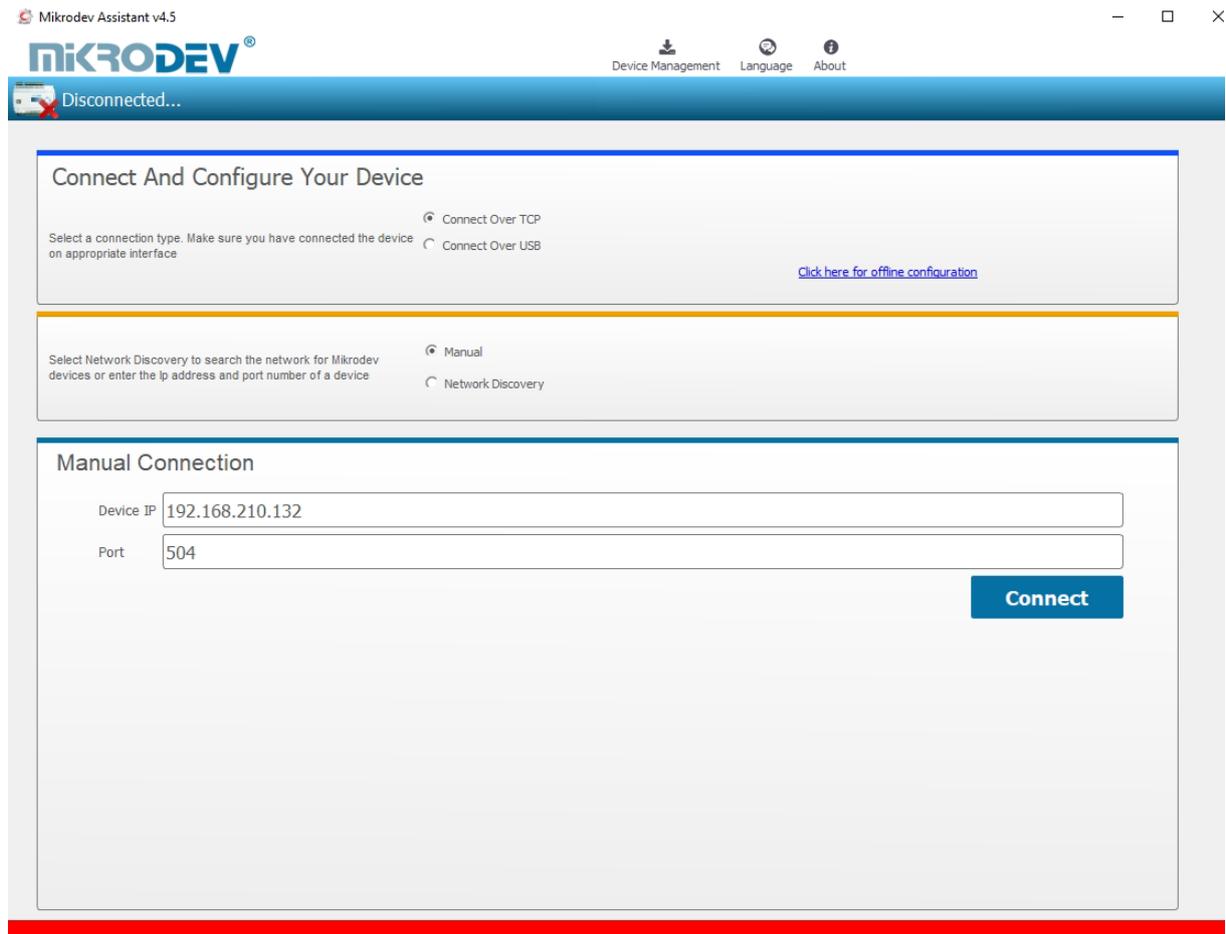
"Network Discovery" option is used to detect and connect IP addresses of Mikrodev devices which are active in the local network. The "Network Discovery" box will be highlighted after the "Connect via TCP" box is checked in the "Connect and Configure to Device" section of the Assistant software. After clicking "Scan Network for Mikrodev Devices", the serial number, IP address, listening port and software versions of all Mikrodev devices which are active in the network are listed on the screen. You can connect the device on the list by double clicking on the device name on the screen.



**Figure 2 TCP Device Discovery**

### 1.2.3 TCP Connection – Manual

When manually entering the IP address and port number of the device that is active in the local network, "Manual" option is used. The "Manual" box is checked after the "Connect over TCP" checkbox is checked in the "Connect and Configure Device" section from the Assistant software. The IP address of the device to be connected is entered into the "Device IP" section, the port number is entered into the "Port" section and "Connect" is clicked. Assistant software connects to the Mikrodev device with specified IP address and port number.



**Figure 3 TCP Connection**

### 1.2.4 Port Numbering\*

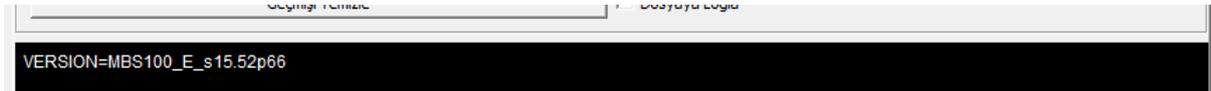
**\*Note:** The serial port locations described in this section, based on the PCB version, apply to device firmware versions between 15.xx and 18.06.

Port terminal places might difference according to PCB version of device. To do right configuration connect over USB to device and check version with AT commands.



**Figure 4 Version Query**

Response from device should be like below.



**Figure 5 Response of Version Query**

Check the PCB version number placed to last 3 character of response like “pXX”

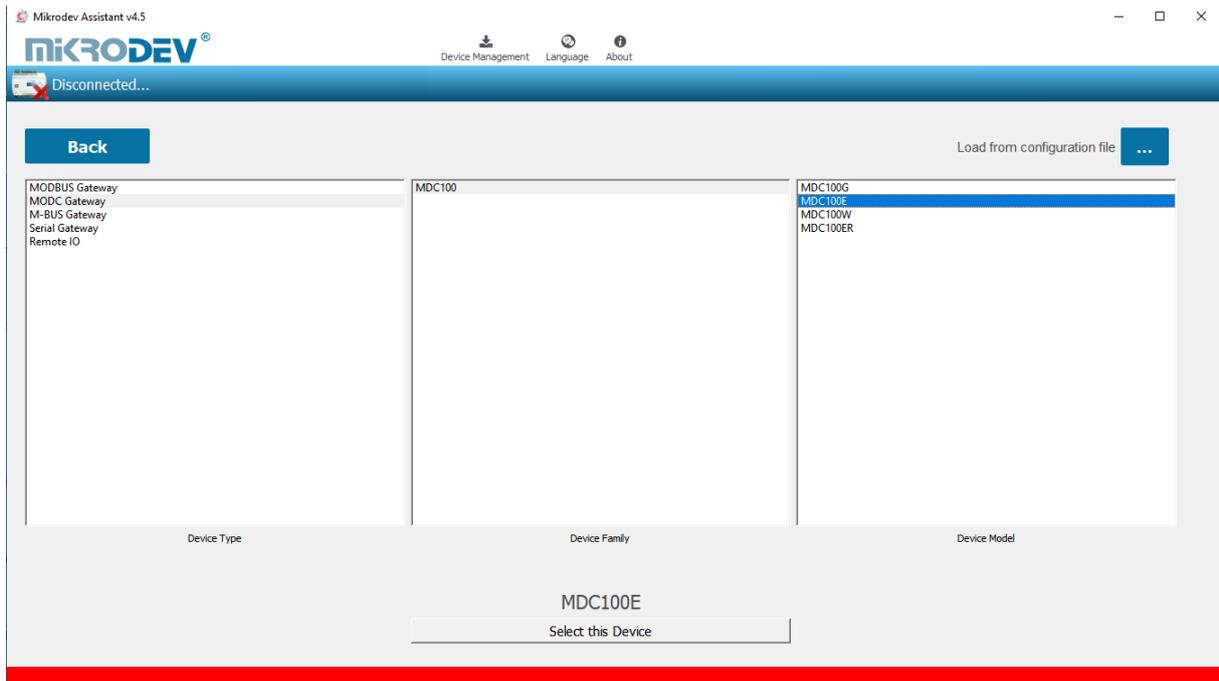
VERSION=MBS100\_E\_s15.52

**p66**

- If PCB version is p55 ;
  - Port 1 -> RS 232 (ROUTE 1)
  - Port 2 -> RS 485 (ROUTE 2)
- If PCB version is p66 ;
  - Port 1 -> RS 485 (ROUTE 1)
  - Port 2 -> RS 232 (ROUTE 2)

### 1.3 Offline Settings

Offline mode is used when parameter settings are made and saved without connecting to the device. Click on "Click here for offline configuration" on the Assistant main screen when you want to make the offline parameter settings. The device is selected in the screen that appears, and then "Select this device" is clicked. Offline parameter settings of the selected device can be made. In addition, using the "Load from configuration file" option on the same page, previously saved configuration values can also be loaded to the program.



**Figure 6 Offline Device Selection**

## 2 Assistant Program Top Menu Options

The menu located at the top of the Assistant program is used for accessing administrative operations of the device, as well as language settings and help information.

### 2.1 Device Management

This menu includes basic operations such as device configuration management and restarting.

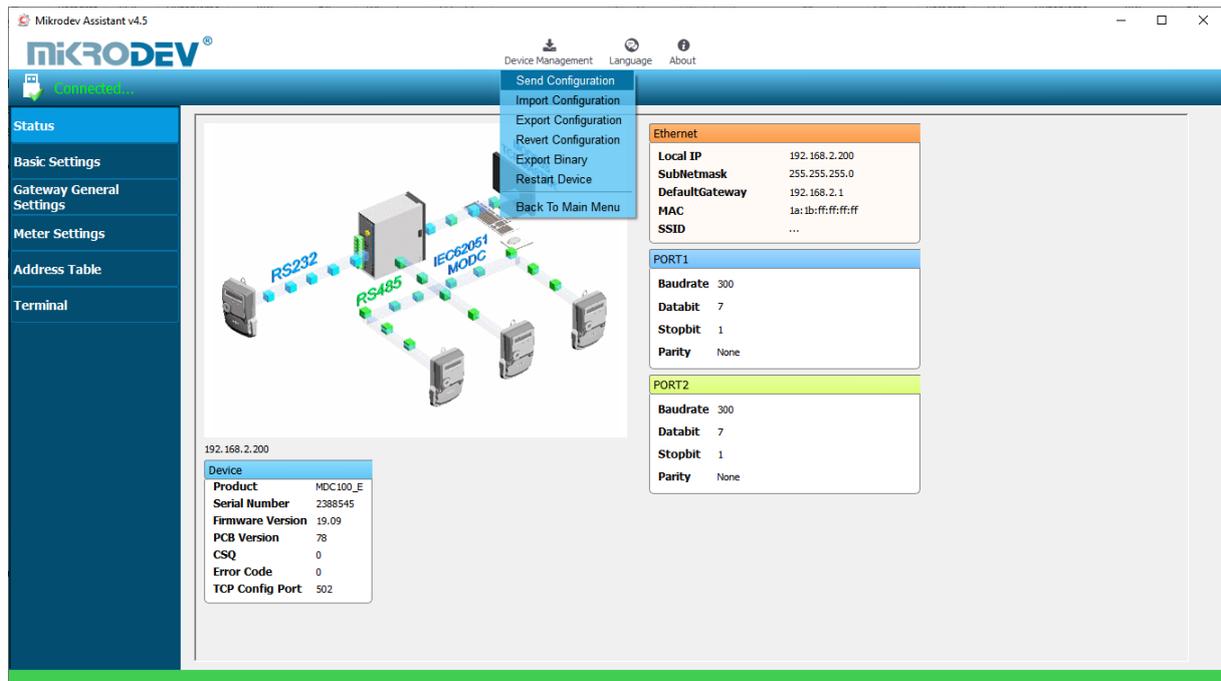


Figure 7 Device Management Options

- **Send Configuration:** With this option, the prepared configuration file is uploaded to the device.

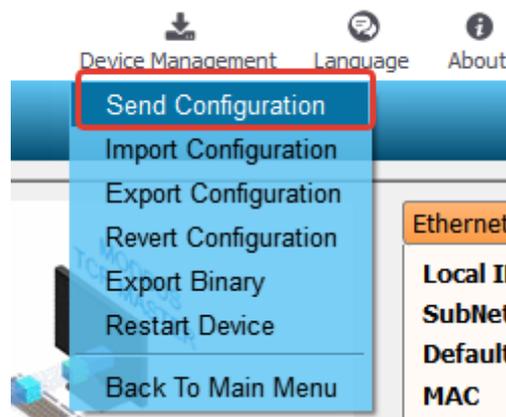
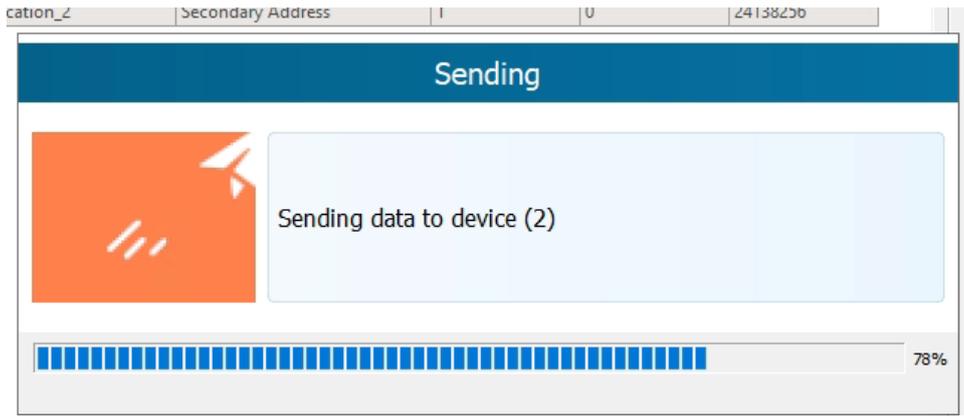


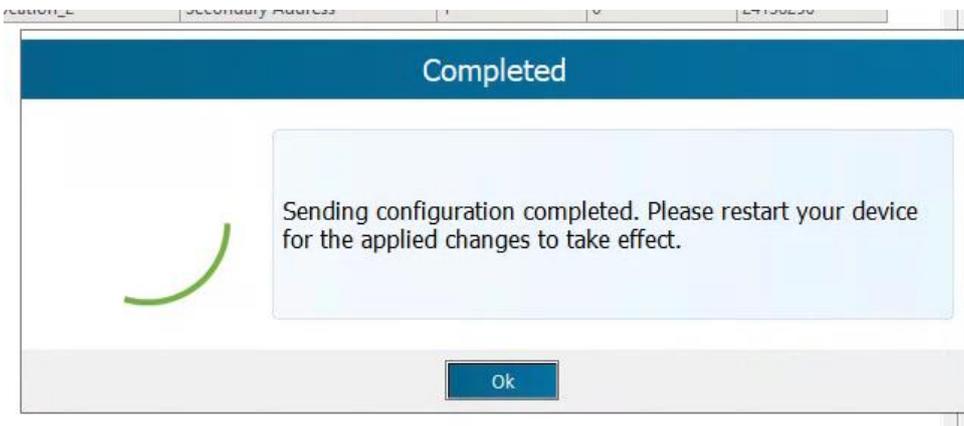
Figure 8 Send Configuration Option

To send the configuration settings to the device, click the “Send Configuration” option under the “Device Management” section on the Assistant program screen.



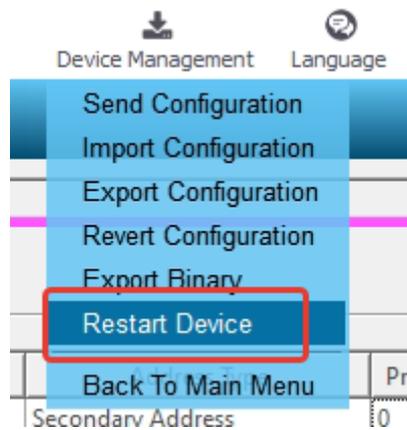
**Figure 9 Settings Upload Screen**

After the configuration sending process is completed, the device must be restarted in order for the settings to be saved.



**Figure 10 Upload Confirmation Screen**

By clicking the “Restart Device” option under “Device Management” on the main screen of the Assistant program, the device restart process is carried out.



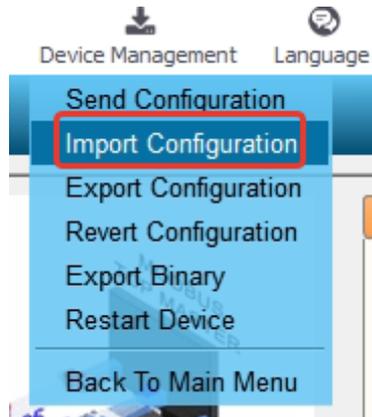
**Figure 11 Restart Device Option**

When the “Restart Device” option is selected, the connection between the device and the PC will be automatically established after waiting for 20 seconds.



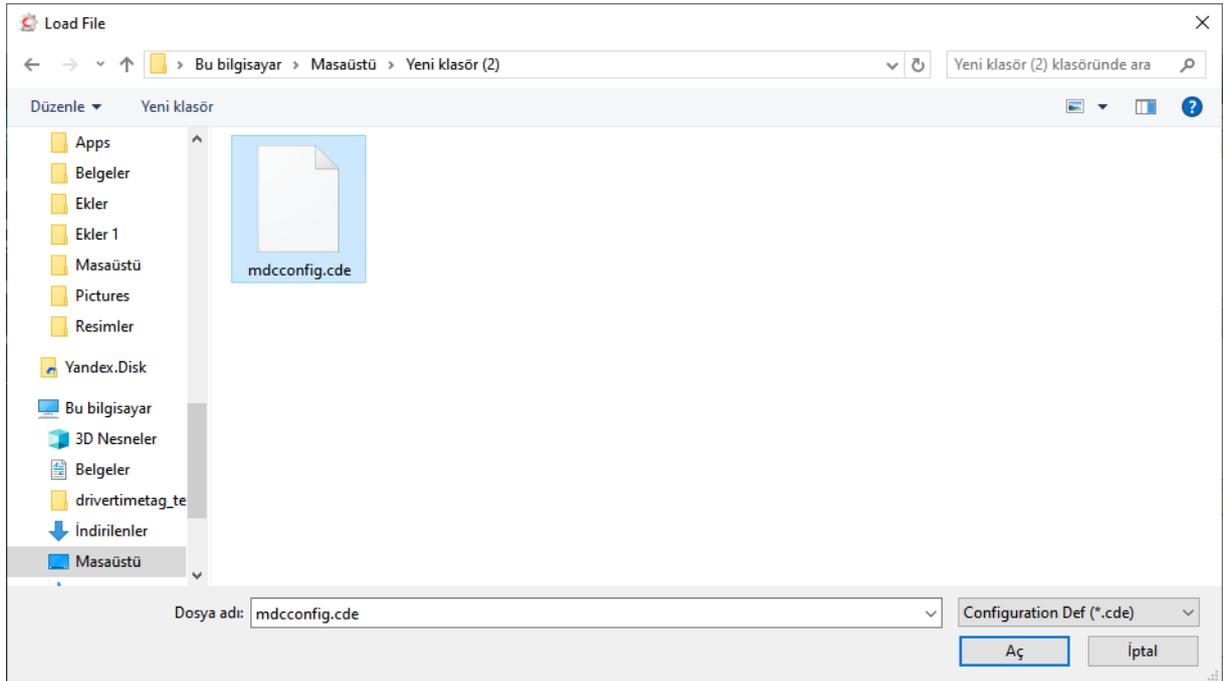
**Figure 12 Device Restarting Information Screen**

- **Import Configuration:** With this option, a previously exported or locally prepared configuration file is reloaded into the device.



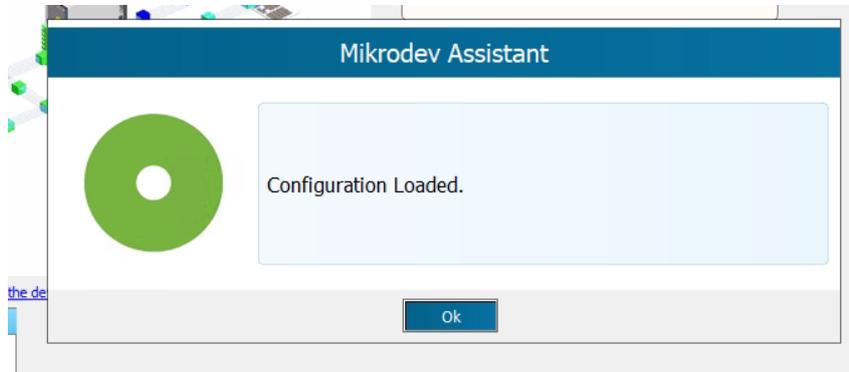
**Figure 13 Import Configuration Option**

When the import configuration option is clicked, a file upload window opens. From this window, the project file to be opened is selected.



**Figure 14 Configuration File Upload Screen**

When the selected configuration file is successfully loaded into the assistant program, the “Configuration Loaded” information screen will appear.



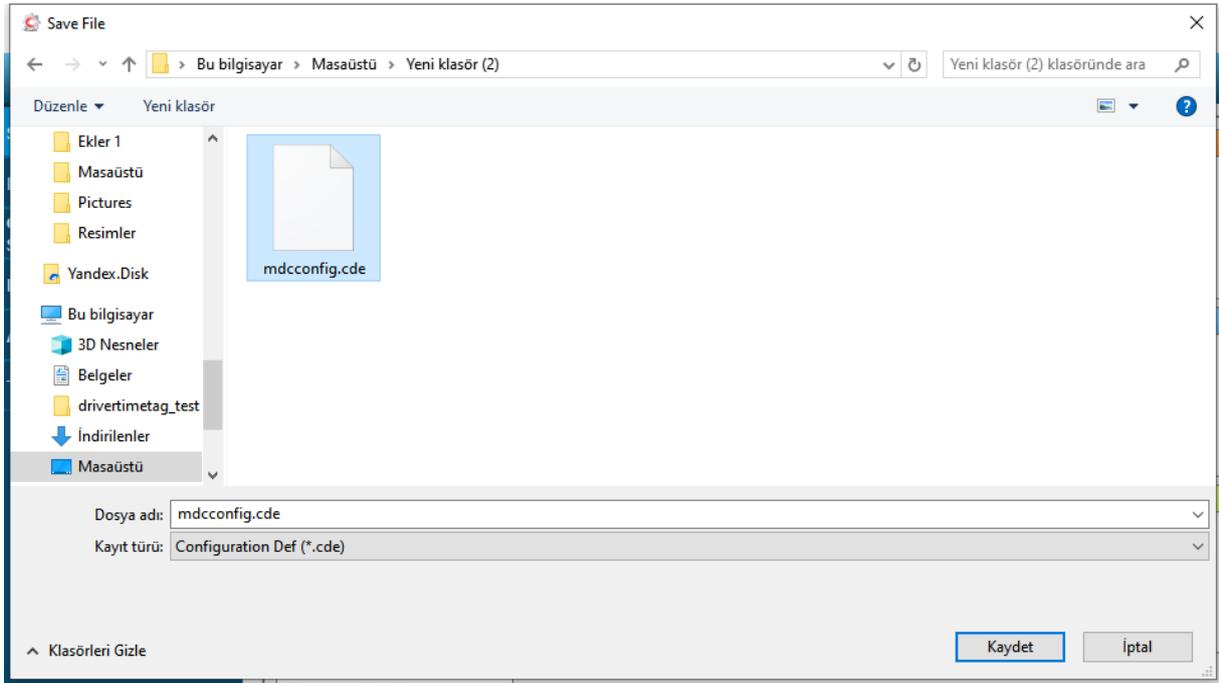
**Figure 15 Configuration Loaded Information Screen**

- **Export Configuration:** The current configuration file is saved to the computer. It is used for backup or transfer to other devices.



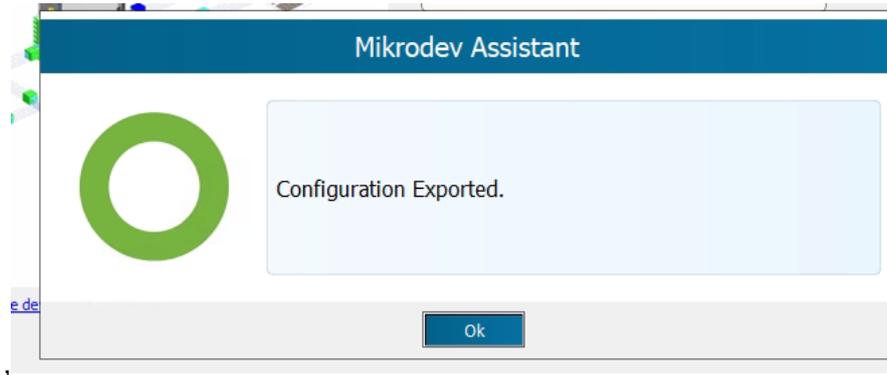
**Figure 16 Export Configuration Option**

When the “Export Configuration” option is clicked, the save file window will open. From this window, the desired file path is selected and a name is given to the configuration file in the file name field.



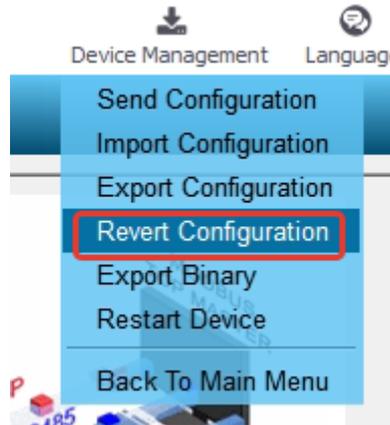
**Figure 17 Save File Window**

When the configuration file is successfully exported, the “Configuration Exported” information screen will appear.



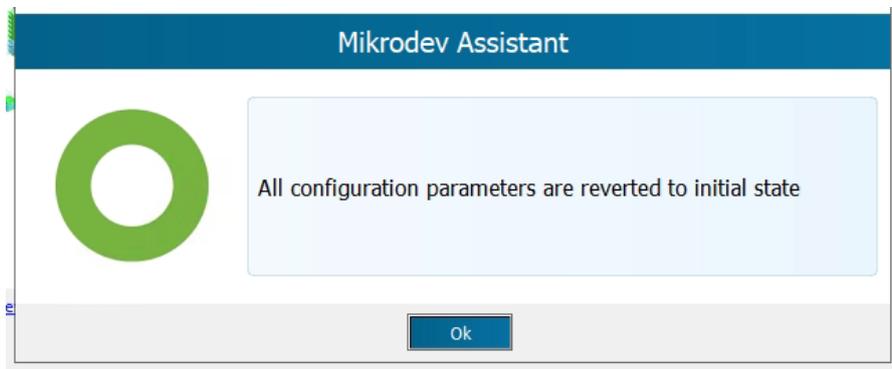
**Figure 18 Configuration Exported Information Screen**

- **Reset Configuration:** The device is restored to factory default settings. All user settings are deleted.



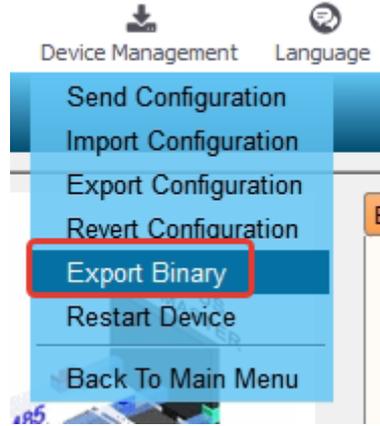
**Figure 19 Reset Configuration Option**

When the “Reset Configuration Option” is selected, the “All configuration parameters have been restored to default” information screen will appear, indicating that the operation has been successful.



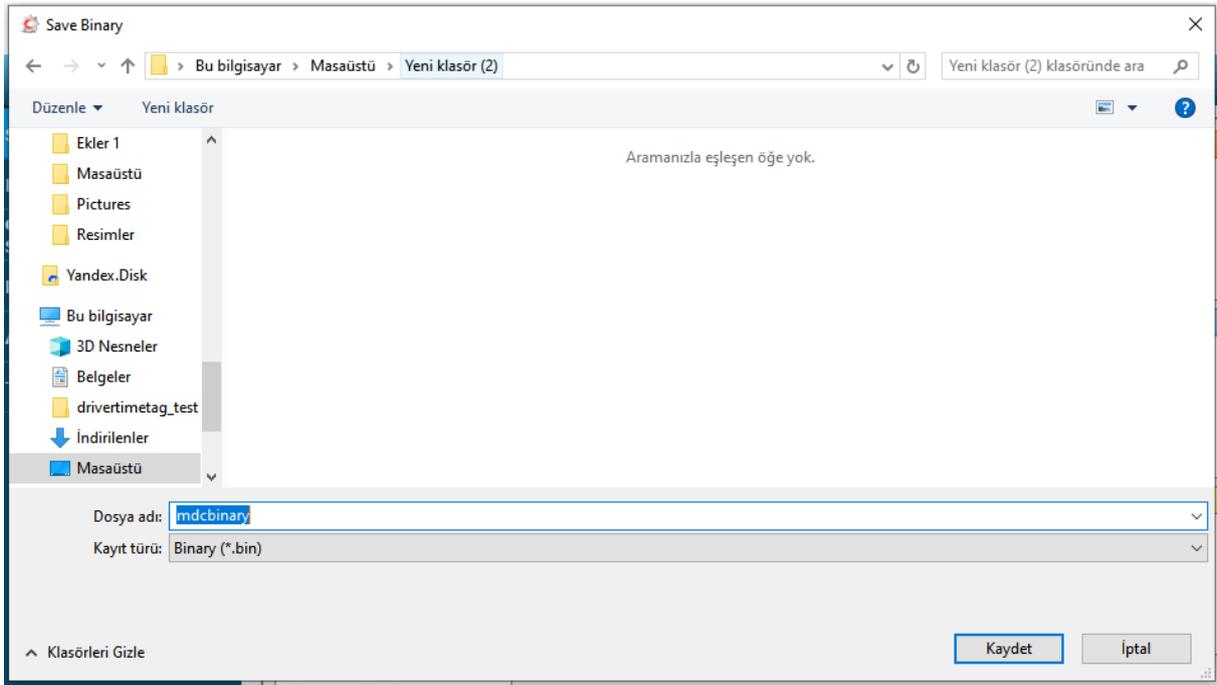
**Figure 20 Configuration Parameters Restored to Default Information Screen**

- **Export Binary:** Configuration data is exported in binary format.



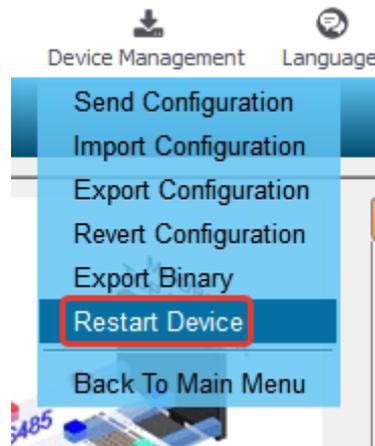
**Figure 21 Export Binary Option**

When the “Export Binary Option” is selected, the “Save Binary” window will open. From this window, the desired file path is selected and a name is given to the binary file in the file name field.



**Figure 22 Save Binary Information Screen**

- **Restart Device:** The device is restarted, ensuring that the applied changes take effect.



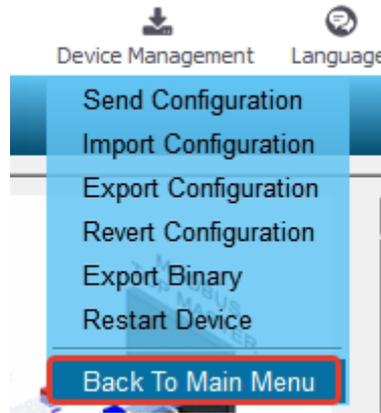
**Figure 23 Restart Device Option**

When the “Restart Device” option is selected, the connection between the device and the PC will be automatically established at the end of the period specified in the “Device Restarting” information screen.



**Figure 24 Device Restarting Information Screen**

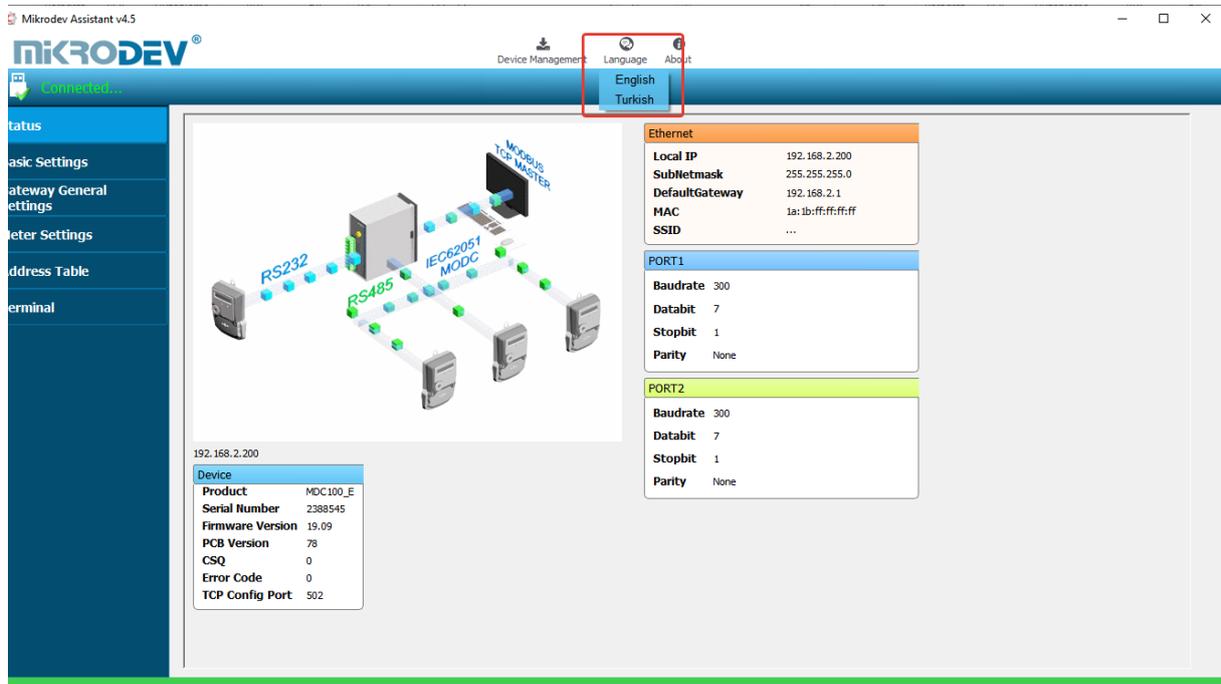
- **Back to Main Menu:** Returns to the main screen of the user interface.



**Figure 25 Back to Main Menu Option**

## 2.2 Language

With this option, the interface language can be changed.



**Figure 26 Assistant Interface Language Options**

Turkish or English language options are available. After selecting the language, the Assistant program must be closed and reopened for the change to take effect.

## 2.3 Help

This section contains basic help information about the device interface.



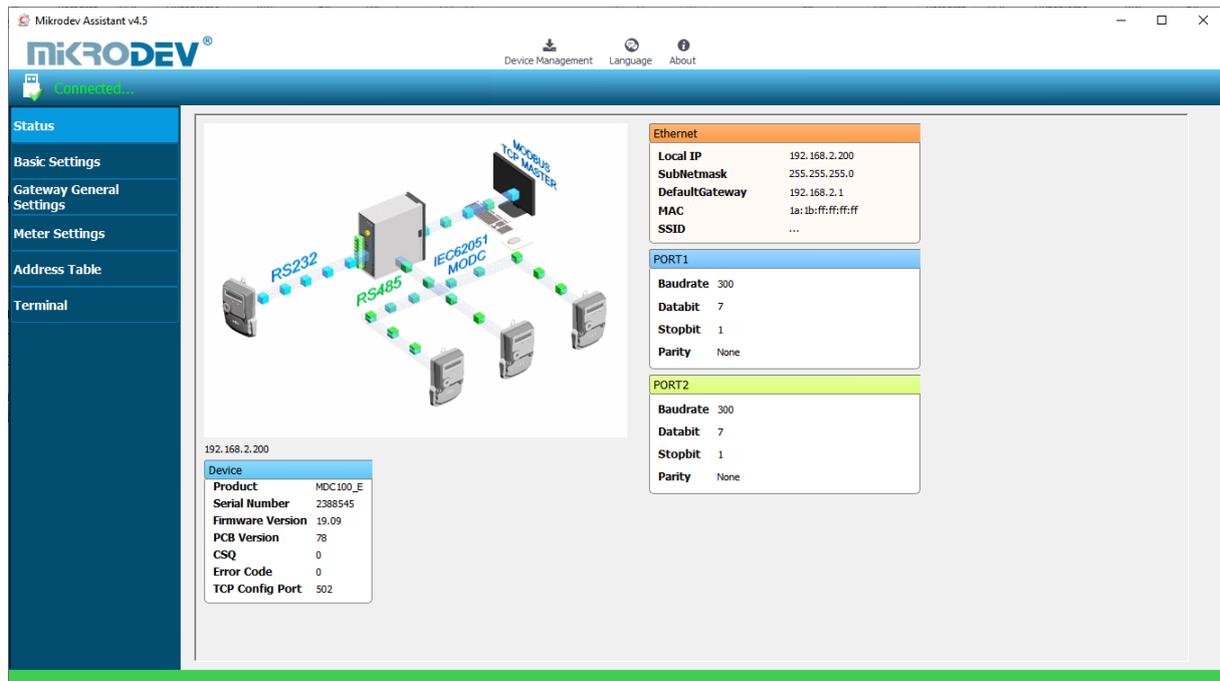
**Figure 27 Assistant Help Information Screen**

Assistant Version: The version of the software interface in use can be viewed.

## 3 MODC GATEWAY SETTINGS

### 3.1 Status Screen

After establishing a connection to the Mikrodev device, the first screen presented to the user is the **Status Screen**. This screen serves as a monitoring panel displaying general information about the device's hardware, software, network, and serial communication settings.



**Figure 28 Status Screen**

The status screen consists of the following sections:

#### 3.1.1 Device Information

This section lists the manufacturing and software details of the device.

**Product:** Displays the model name of the device (e.g., MDC100\_E).

**Serial Number:** The unique identifier assigned to the device. It is used for support, warranty, and inventory management.

**Software Version:** Indicates the firmware version running on the device (e.g., 19.09). Version information is important for tracking updates.

**PCB Version:** Refers to the version number of the device's hardware board (PCB).

**CSQ:** Shows the signal quality of the communication module. A value of 0 indicates that no signal is received.

**Error Code:** Displays the error status of the device. A value of 0 means no error.

**TCP Setting Port:** The port number used in TCP/IP-based communication (default: 502).

### 3.1.2 Ethernet Information

This section displays the network settings related to the Ethernet interface:

**Local IP:** The IP address assigned to the device on the network (e.g., 192.168.10.132).

**Subnet Mask:** The subnet mask used along with the IP address (e.g., 255.255.255.0).

**Default Gateway:** The gateway address through which data packets are routed (e.g., 192.168.10.1).

**MAC Address:** The unique hardware address of the device's physical network card.

**SSID:** If the device has Wi-Fi capability, this shows the name of the connected wireless network.

### 3.1.3 Serial Port (PORT1) Settings

This section contains parameters related to the device's serial communication port:

**Baud Rate:** Defines the data transmission speed (e.g., 300 baud).

**Data Bit:** The number of bits in each data packet (e.g., 7 bits).

**Stop Bit:** The number of bits indicating the end of a data frame (e.g., 1).

**Parity:** The error-checking method used in data transmission. The "None" option means that no parity control is applied.

### 3.1.4 Visual Topology

The central part of the Status Screen visually displays the device's communication structure.

This topology diagram includes:

A measurement device connected via RS232 line,

Multiple meters connected via RS485 line,

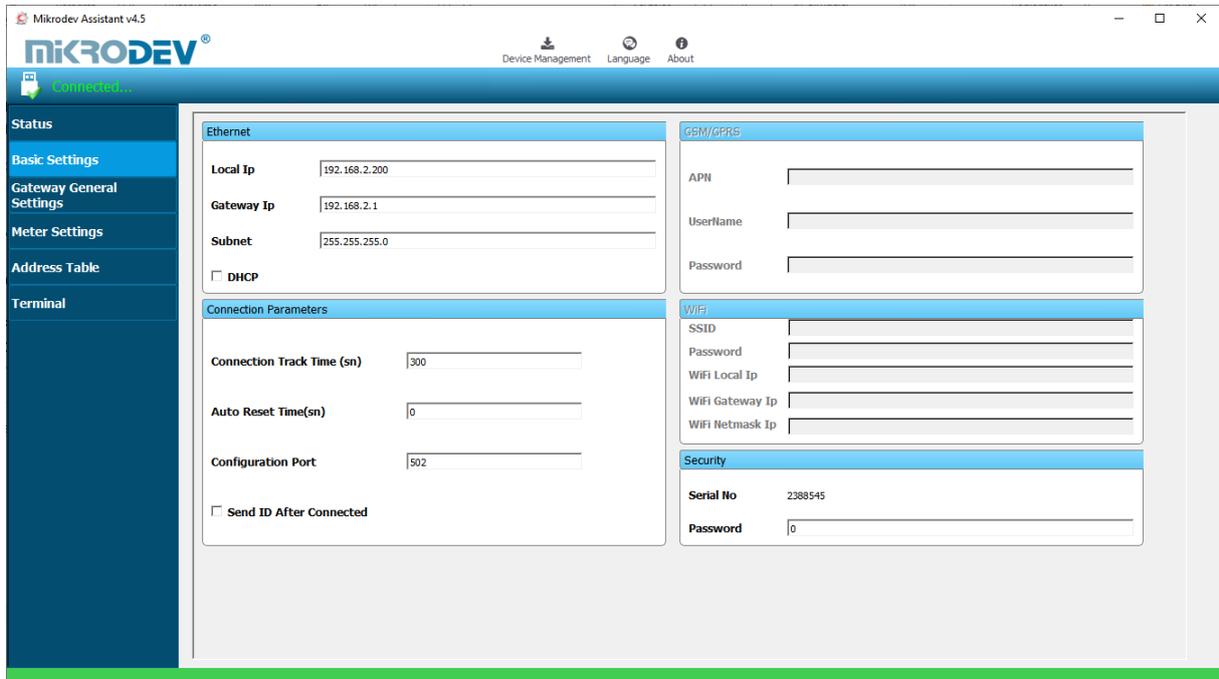
Serial communication using the IEC 62056-21 / MODC protocol,

Communication with a Modbus TCP Master over a TCP/IP connection.

This visualization allows users to easily understand the device's position within the network, the communication lines it uses (RS232, RS485), and its connection with the Modbus TCP Master.

### 3.2 Basic Settings

The Basic Settings section is the area where the network and connection parameters to be used depending on the device's communication method are defined. On this screen, the necessary information is entered for the device to communicate via Ethernet, GSM/GPRS, and Wi-Fi. In addition, connection security, monitoring parameters, and configuration port settings are also managed from this section.



**Figure 29 Basic Settings Screen**

### 3.2.1 Ethernet Settings

When communication is to be established via Ethernet, the following parameters are defined:

**Local IP:** The IP address the device will use on the network.

**Gateway IP:** The default gateway address used for routing data packets.

**Subnet Mask:** The subnet mask information of the network to which the device is connected.

**DHCP:** If this option is selected, the device automatically obtains its IP address from a DHCP server.

### 3.2.2 GSM/GPRS Settings

If the device will communicate via GSM/GPRS, the following parameters must be entered:

**APN (Access Point Name):** The access point name provided by the operator.

**Username:** The username required for connection over the GSM network.

**Password:** The password required for connection over the GSM network.

### 3.2.3 Wi-Fi Settings

If Wi-Fi connection is to be used, the following parameters must be entered:

**SSID:** The access point name of the wireless network (modem username).

**Password:** The password required to connect to the wireless network.

**Wi-Fi Local IP:** The IP address that the device will receive via Wi-Fi.

**Wi-Fi Gateway IP:** The gateway IP address of the wireless network.

**Wi-Fi Netmask IP:** The subnet mask to be used for the wireless network.

### 3.2.4 Connection Parameters

This section is used to configure the time and port settings related to the device's connection management:

**Connection Monitoring Time (sec):** The duration in which the device actively monitors the connection.

**Auto Reset Time (sec):** Ensures that the device restarts automatically after the specified time.

**Configuration Port:** The port number used for configuring the device via TCP/IP.

**Send ID After Connection:** If this checkbox is selected, the device automatically sends its identity (ID) information to the remote side after the connection is established.

### 3.2.5 Security

Security parameters are configured in this section to prevent unauthorized access to the device:

**Serial Number:** The unique serial number specific to the device.

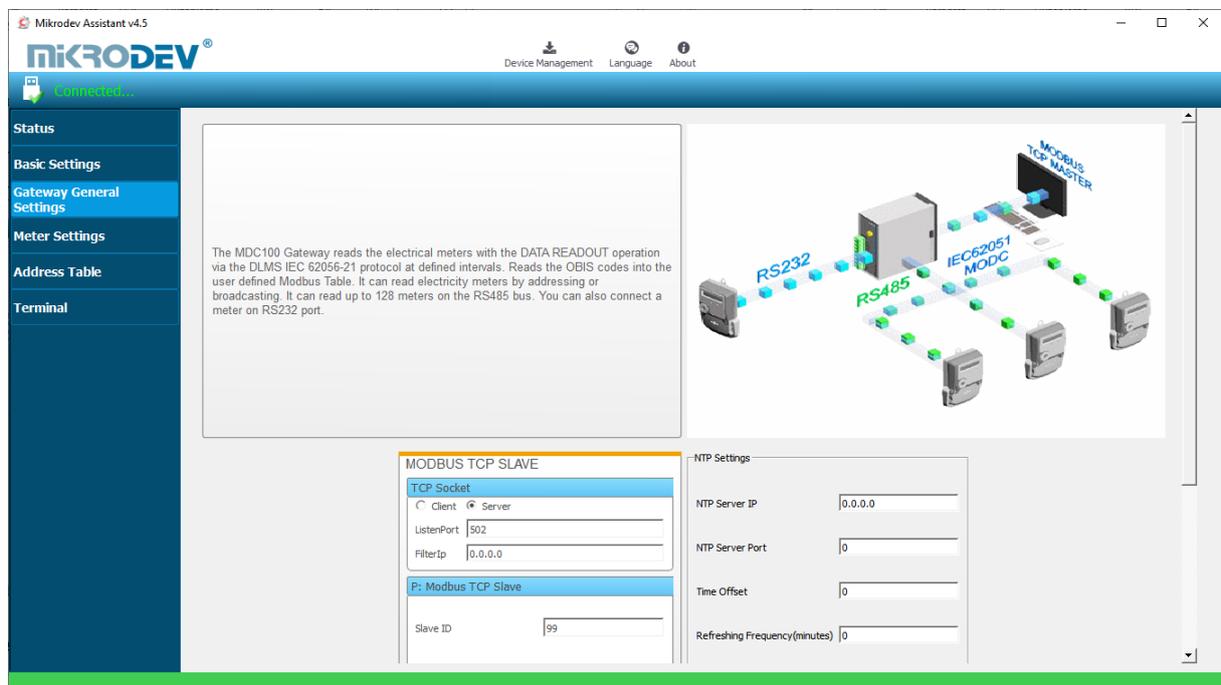
**Password:** The password defined by the user to control access to the device.

### 3.3 Gateway General Settings

The MDC100 Gateway reads electrical meters at defined intervals via the DLMS/IEC 62056-21 protocol using the DATA READOUT process. The OBIS codes obtained from the meters are written to a Modbus table defined by the user.

The device can read electrical meters either through addressed or broadcast methods. It supports reading up to 128 meters over the RS485 line. In addition, meter connections can also be made through the RS232 port.

This section is used to configure the Modbus TCP communication and NTP (Network Time Protocol) time synchronization settings of the device.



**Figure 30 Gateway General Settings Screen**

### 3.3.1 Modbus TCP Settings

The following parameters are defined for communication over Modbus TCP:

**TCP Socket:**

**Client:** The mode in which the device connects to a Modbus TCP master to request data.

**Server:** The mode in which the device listens and responds to queries from a Modbus TCP master.

**Listening/Server Port:** The TCP port number used when operating in server mode.

**Filter/Server IP:** A filtering parameter that restricts communication to specific IP addresses only.

**Modbus ID:** The Modbus address assigned to the device.

**Request Timeout (ms):** The timeout duration applied when no response is received for a request during TCP communication.

### 3.3.2 NTP (Network Time Protocol) Settings

The MDC100 Gateway can synchronize its system time with an external **NTP server** to maintain accurate timekeeping. Through this synchronization, meter reading logs and Modbus data updates are recorded with consistent timestamps.

**NTP Configuration Parameters:**

**NTP Server IP:** The IP address of the server used for time synchronization.

**NTP Server Port:** The port number used for NTP communication (default: 123).

**Time Offset:** The time shift (in seconds) used for local time difference or manual correction.

**Update Frequency (minutes):** Defines how often the device synchronizes with the NTP server.

## 4 Meter Settings

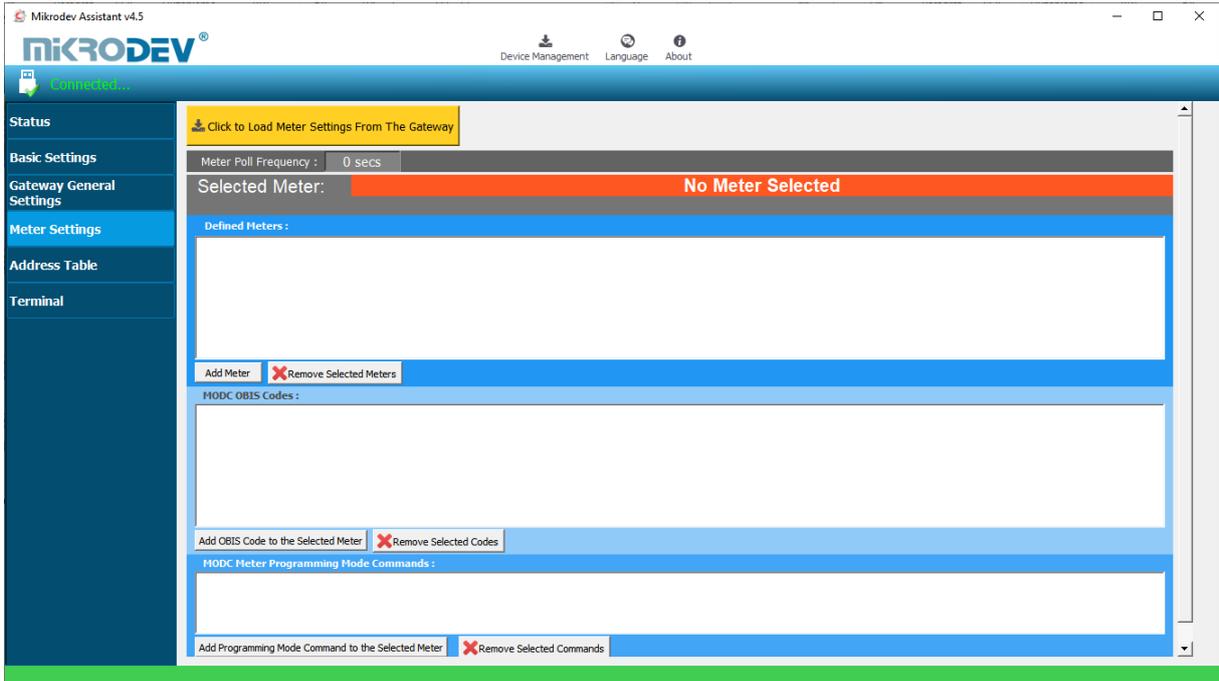
The Meter Settings screen is used to define the electrical meters connected to the MDC100 Gateway, add OBIS codes, and enter special commands. This interface allows configuration of communication between the device and the meters.

The screen consists of three main sections:

### Defined Meters

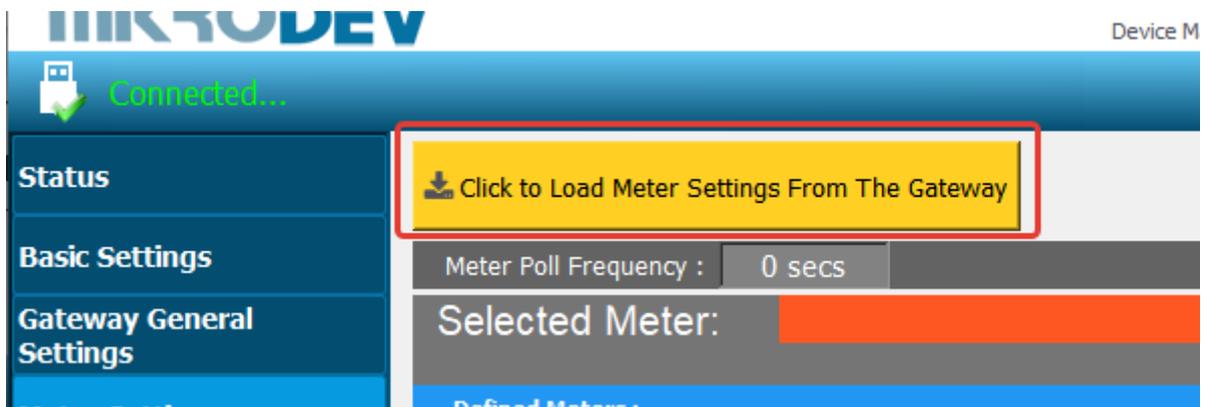
### MODC OBIS Codes

### MODC Meter Programming Mode Commands



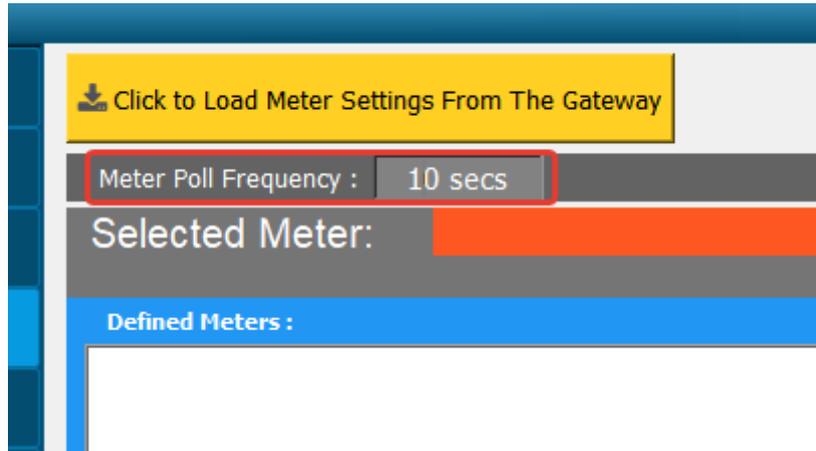
**Figure 31 Meter Settings Screen**

At the top of the screen, the “Click to Load Meter Settings From The Gateway” button loads the meter and OBIS configurations stored on the gateway into the software.



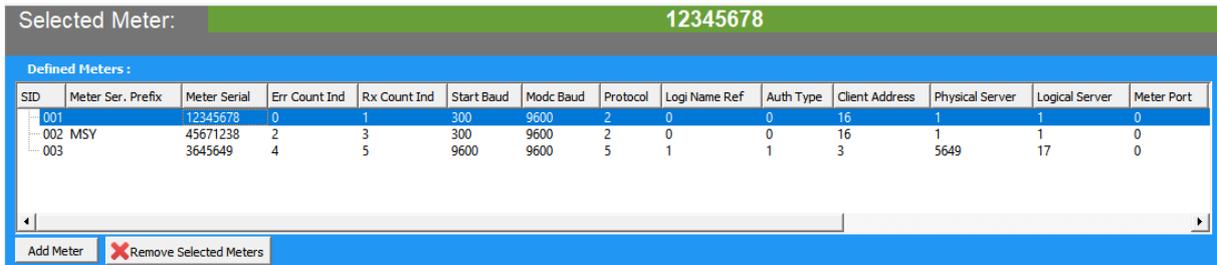
**Figure 32 Click to Load Meter Settings From The Gateway Button**

**Meter Poll Frequency:** Defines how often the gateway collects data from the meters, in seconds. For example, if set to 60 seconds, the gateway reads data every 60 seconds.



**Figure 33 Meter Poll Frequency**

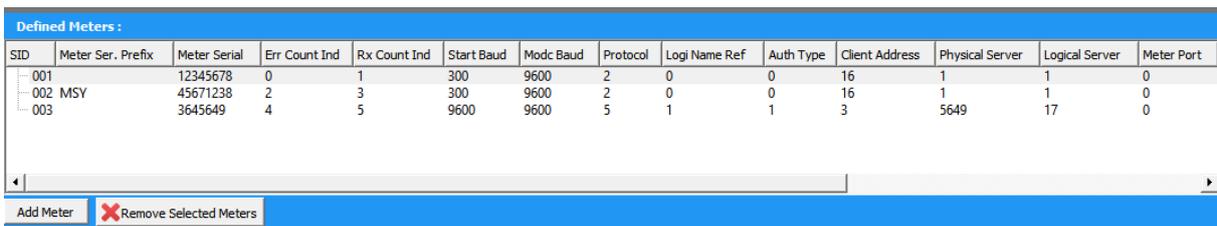
**Selected Meter Field:** Displays the serial number of the currently selected meter. The active meter being configured appears in a green-highlighted area (e.g., 3645649).



**Figure 34 Selected Meter Field**

#### 4.1 Defined Meters Section

This section lists all meters defined on the gateway. If the list is empty, no meters have been added yet.



**Figure 35 Defined Meters Section**

**Buttons below the table:**

**Add Meter:** Used to define a new meter. The add meter window allows the user to input parameters such as serial number, baud rate, data bits, parity, stop bits, and connection port (RS232 or RS485).

**Delete Selected Meters:** Deletes the selected meter(s) from the list.

### 4.1.1 Add Meter via Mode C

**Purpose:** To read meters through a serial interface (RS232/RS485) using the IEC 62056-21 Mode C (MODC) protocol.

The screenshot shows a configuration window titled "Add Meter" with the following fields and settings:

- MODC Meter Info**
  - Meter Serial Prefix: [Empty]
  - Meter Serial No: [Empty]
  - Protocol: IEC 62056 21 MODE C
  - Media: PORT1
- Starting Baudrate: 0
- Modc Baudrate: 0
- Data Bit: 5
- Parity Bit: Even Parity
- Stop Bit: 1
- Logical Name Referencing
- Authentication: None
- Client Address: 16
- Password: [Empty]
- ASCII
- Physical Server: 1
- Readout Type: 1

At the bottom of the window, there are two green buttons: "Add Meter >>" and "Add Meter and Continue >>".

**Figure 36 Add Meter via Mode C Window**

The following parameters are defined through the Add Meter menu:

**Meter Serial Prefix:** The manufacturer-specific prefix, if any (e.g., “MSY” for Makel meters).

**Meter Serial Number:** The actual serial number printed on the meter label.

**Protocol:** Select **IEC 62056-21 MODE C** from the dropdown list.

**Media:** Select the physical port on the MDC100 gateway (e.g., PORT1 or PORT2).

**Initial Baud Rate:** Defines the speed used during the first “handshake” connection (typically 300 baud).

**MODC Baud Rate:** The baud rate used after handshake for data reading (commonly 2400 or 9600 baud).

**Data Bit / Parity Bit / Stop Bit:** The most common IEC 62056-21 combination is **7-E-1** (7 data bits, Even parity, 1 stop bit). Some meters use **8-N-1** (8 data bits, No parity, 1 stop bit). The manufacturer’s documentation takes precedence.

**Readout Type:** Defines the type of readout; for Mode C, typically **1** is used.

After completing the configurations:

A single meter can be added using the **Add Meter** button.

Multiple meters can be added consecutively using the **Add Meter and Continue** button.

### 4.1.1.1 Quick Example – Typical Settings for Makel Meters

The screenshot shows a software window titled "Add Meter" with a close button (X) and a help button (?). The window contains a "MODC Meter Info" section with the following fields and values:

- Meter Serial Prefix: MSY
- Meter Serial No: 12345672
- Protocol: IEC 62056 21 MODE C
- Media: PORT1
- Starting Baudrate: 300
- Modc Baudrate: 9600
- Data Bit: 7
- Parity Bit: Even Parity
- Stop Bit: 1

Below these fields, there is a checkbox for "Logical Name Referencing" which is unchecked. Further down, there are fields for:

- Authentication: None
- Client Address: 16
- Password: (empty)
- Physical Server: 1
- Readout Type: 1

At the bottom of the window, there are two green buttons: "Add Meter >>" and "Add Meter and Continue >>".

**Figure 37 Makel Electric Meter Reading Settings**

Meter Serial Prefix: MSY

Protocol: IEC 62056-21 MOD C

Media: PORT1

Initial Baud Rate: 300

MODC Baud Rate: 9600

Data Bit: 7

Parity Bit: Even

Stop Bit: 1

Readout Type: 1

### 4.1.2 Add Meter via DLMS (Direct DLMS)

**Purpose:** This section explains how to define meters communicating via the DLMS/COSEM protocol on the MDC100 device.

The screenshot shows the 'Add Meter' configuration window. The 'MODC Meter Info' section includes the following fields:

- Meter Serial Prefix: [ ]
- Meter Serial No: [ ]
- Protocol: DIRECT DLMS (dropdown)
- Media: PORT1 (dropdown)
- Starting Baudrate: 0
- Modc Baudrate: 0
- Data Bit: 5 (dropdown)
- Parity Bit: Even Parity (dropdown)
- Stop Bit: 1 (dropdown)
- Logical Name Referencing
- Authentication: None (dropdown)
- Client Address: 16 (spin box)
- Password: [ ]
- ASCII
- Physical Server: 1
- Logical Server: 1

At the bottom of the window, there are two green buttons: 'Add Meter >>' and 'Add Meter and Continue >>'.

**Figure 38 Add Meter via DLMS Window**

The following parameters are defined on the meter adding screen:

**Meter Serial Prefix:** Optional manufacturer-specific prefix (useful for brand-based identification).

**Meter Serial Number:** The unique serial number printed on the meter label.

**Protocol:** Select DIRECT DLMS from the dropdown.

**Media:** Choose the physical port (e.g., PORT1).

**Initial Baud Rate / MODC Baud Rate:** DLMS meters typically operate at a fixed rate (commonly 9600 baud).

**Data Bit / Parity Bit / Stop Bit:** Standard DLMS parameters are 8-N-1 (8 data bits, No parity, 1 stop bit).

**Logical Name Referencing:** DLMS meters use Logical Name (LN) referencing; this must be enabled.

**Authentication:** Select the authentication type used by the meter.

**Client Address:** Defines the DLMS client (e.g., 16 for public, 1 for utility, 3 for management).

**Password:** The access password configured on the meter.

**Physical Server Address:** The hardware address of the meter (often the last 4 digits of the serial number or manufacturer-specific).

**Logical Server:** The logical address number defined in the meter documentation.

After configuration:

**Add Meter:** Adds a single meter.

**Add Meter and Continue:** Adds multiple meters consecutively.

### 4.1.2.1 Quick Example – Typical DLMS Meter Settings

The screenshot shows a software window titled "Add Meter" with a close button (X) and a help button (?). The window contains the following fields and settings:

- MODC Meter Info** (Section Header)
- Meter Serial Prefix: [Empty text box]
- Meter Serial No: [3645649]
- Protocol: [DIRECT DLMS] (Dropdown menu)
- Media: [PORT1] (Dropdown menu)
- Starting Baudrate: [9600]
- Modc Baudrate: [9600]
- Data Bit: [8] (Dropdown menu)
- Parity Bit: [None] (Dropdown menu)
- Stop Bit: [1] (Dropdown menu)
- Logical Name Referencing
- Authentication: [Password] (Dropdown menu)
- Client Address: [3] (Spin box)
- Password: [\*\*\*\*] (Text box)
- ASCII
- Physical Server: [5649] (Text box)
- Logical Server: [17] (Text box)

At the bottom of the window, there are two green buttons:

- Add Meter >>
- Add Meter and Continue >>

**Figure 39 Typical DLMS Meter Settings**

Protocol: DIRECT DLMS  
 Media: PORT1  
 Initial Baud Rate: 9600  
 MODC Baud Rate: 9600  
 Data Bit / Parity Bit / Stop Bit: 8-N-1  
 Logical Name Referencing: Enabled  
 Authentication: Password  
 Client Address: 3

Password: Provided by manufacturer

Physical Server: Last 4 digits of serial number

Logical Server: 17

**Note:** The password, client address, and logical server values vary depending on the meter manufacturer.

These values must be obtained from the manufacturer to ensure correct and secure configuration.

## 4.2 MODC OBIS Codes Section

This section defines the OBIS (Object Identification System) codes to be read from meters using the MODC (IEC 62056-21 Mode C) protocol. OBIS codes specify which energy parameters (e.g., active, reactive, inductive energy) are to be retrieved.

MODC OBIS Codes :							
ObID	SID	Obis Name	Code1 Tip	Code1 Value	Code2 Tip	Code2 Value	Scaler
<input type="checkbox"/>	001 002	0.0.0	DECIMAL	4	NONE	-1	0
<input type="checkbox"/>	002 002	1.8.1	FLOAT	5	NONE	-1	0
<input type="checkbox"/>	003 002	1.8.0	FLOAT	6	NONE	-1	0

**Figure 40 MODC OBIS Codes Section**

Buttons below the table:

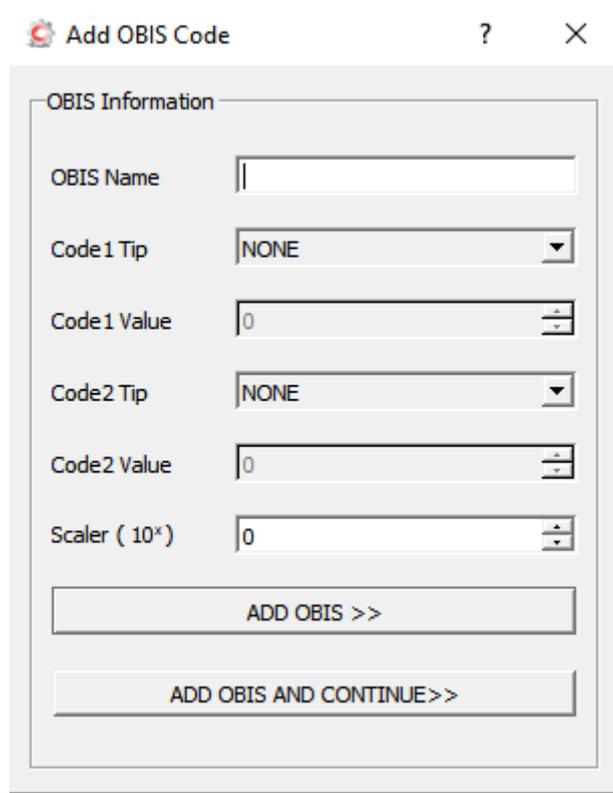
**Add OBIS Code to Selected Meter:** Defines a new OBIS code for the selected meter.

**Delete Selected Codes:** Removes the selected OBIS code(s) from the list.

### 4.2.1 Adding an OBIS Code

**Purpose:** Used to define the OBIS codes to be read via the IEC 62056-21 Mode C protocol.

To add an OBIS code, first click on the meter to be read from the list. Then, click the "Add OBIS Code to Selected Meter" button to open the OBIS code definition window. On the screen that opens, define the following parameters:



**Figure 41 Add OBIS Code Window**

**OBIS Name:** Enter the OBIS code (e.g., 1.8.0 for active energy).

**Code 1 Type:** Select the data type for the first value (e.g., Float, Integer, or Double).

**Code 1 Value:** The primary data address, typically left as 0.

**Code 2 Type:** If a second value is to be read, specify its type; if not, select NONE.

**Code 2 Value:** The secondary address or offset, typically 0.

**Multiplier (10<sup>n</sup>):** Defines the decimal scaling factor. For example, if the raw value is 1234 and the multiplier is -1, the actual value will be 123.4.

**Note:** In IEC 62056-21 Mode C, OBIS codes use a short format (e.g., 1.8.0), while in DLMS they use a six-field long format (e.g., 1.1.1.8.0.255). The correct format must be selected based on the communication protocol.

#### 4.2.1.1 Quick Example – MODC OBIS Code Definitions

OBIS Name	Description	Code 1 Type	Code 2 Type
0.0.0	Meter Serial Number	Decimal	-
1.8.0	Total Active Energy	Float	-
2.8.0	Total Reactive Energy	Float	-
3.8.0	Inductive Energy	Float	-
4.8.0	Capacitive Energy	Float	-

#### 4.2.1.2 Quick Example – DLMS OBIS Code Definitions

OBIS Name	Description	Code 1 Type	Code 2 Type
1.1.1.8.0.255	Total Active Energy	Float	-
1.1.2.8.0.255	Total Reactive Energy	Float	-
1.1.3.8.0.255	Inductive Energy	Float	-
1.1.4.8.0.255	Capacitive Energy	Float	-
1.1.31.7.0.255	Instantaneous Current (L1)	Float	-
1.1.32.7.0.255	Instantaneous Voltage (L1)	Float	-
1.1.13.7.0.255	Instantaneous Power (Total)	Float	-

**Note:** OBIS codes vary by meter brand and model.

MODC meters typically use short 3- or 4-field formats (e.g., **1.8.0**), while DLMS meters use long 6-field formats (e.g., **1.1.1.8.0.255**).

The correct OBIS list and data types must be obtained from the **meter manufacturer**.

#### 4.2.2 Managing OBIS Codes

All defined OBIS codes appear in the list. To edit an OBIS code, select it and modify its parameters. OBIS codes can be deleted or redefined as needed.

### 4.3 MODC Meter Programming Mode Commands Section

This section defines special programming commands used to access additional data or functions on meters communicating via the MODC (IEC 62056-21 Mode C) protocol. Some meters allow access to certain information or configurations only through these special commands.

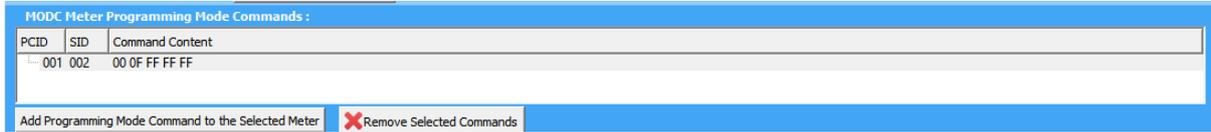


Figure 42 MODC Meter Programming Mode Commands Section

**Buttons below the table:**

**Add Programming Mode Command to Selected Meter:** Adds a custom programming command for the selected meter.

**Delete Selected Commands:** Removes the selected command(s).

#### 4.3.1 Adding a Special Command

**Purpose:** Some meters require special commands to read additional data or perform configuration tasks not accessible via standard OBIS codes. These commands are provided by the meter manufacturer and sent directly to the meter.

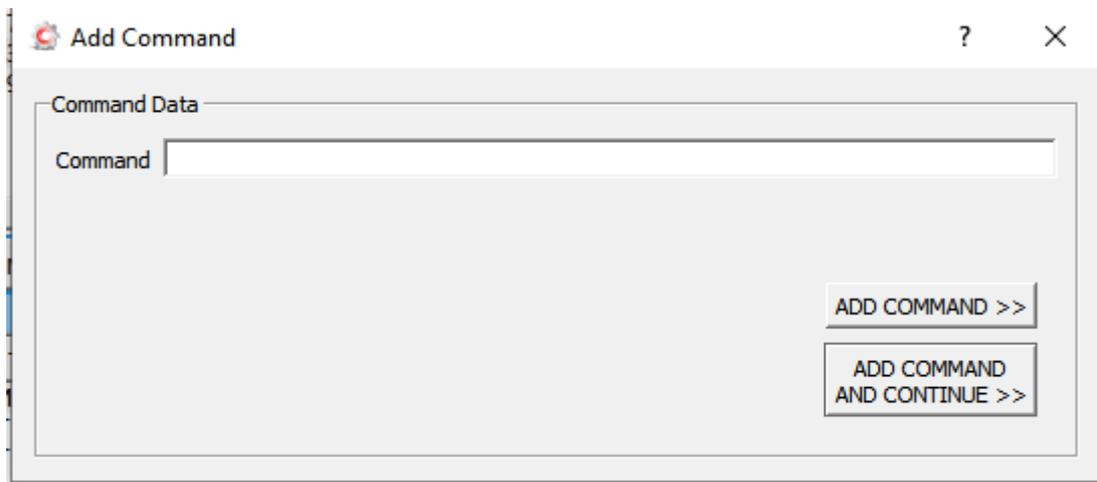


Figure 43 Add Command Window

The Add Command window is opened by clicking “Add Programming Mode Command to Selected Meter” under the “MODC Meter Programming Mode Commands” section.

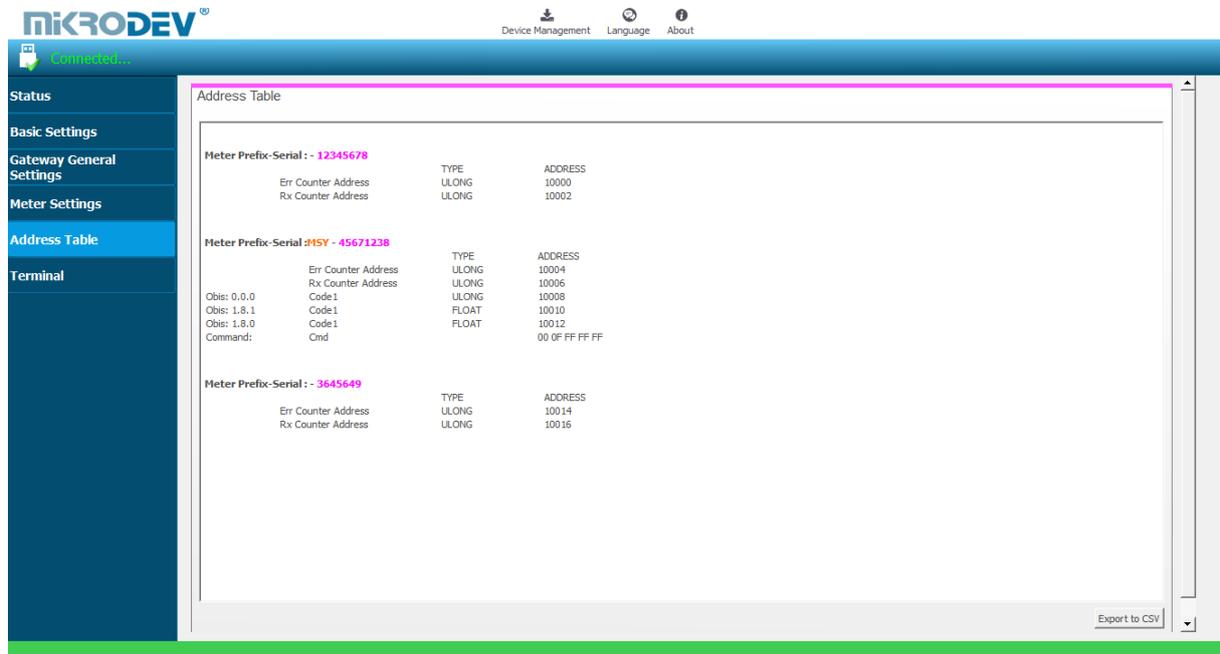
**Command:** The specific command string defined by the manufacturer. Commands are generally written in **ASCII** format and follow the meter’s communication protocol (e.g., a “READ PROFILE” command to retrieve profile data).

**Note:** Special commands should only be used with meters that support them. The command set and parameter format must be provided by the meter manufacturer and should not be modified by the user.

## 5 Address Table

The Address Table section displays which data types (TYPE) and Modbus addresses (ADDRESS) correspond to the OBIS codes of previously defined meters.

This table provides a view of the meter–OBIS mappings created in the MDC100 Gateway as a Modbus map.



**Figure 44 Address Table**

The address table includes the following information for each meter:

**Meter Prefix–Serial:** The combination of the prefix (e.g., MSY) and serial number entered during meter addition.

**Err Counter Address:** The Modbus address where the number of communication errors with the meter is stored.

**Rx Counter Address:** The Modbus address where the count of successfully received data packets from the meter is stored.

**OBIS Codes:** The OBIS values defined for the meter and their corresponding Modbus addresses.

**TYPE:** The Modbus data type of the OBIS code (e.g., FLOAT, ULONG).

**ADDRESS:** The Modbus address assigned to the OBIS code.

**Note:** Addresses start from 10000 and increase incrementally with each new meter added.

The first two addresses of each meter are reserved for error count (Err Counter) and read count (Rx Counter).

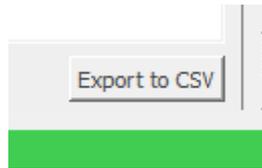
When a new OBIS code is defined, the Modbus addresses of subsequent meters are automatically reorganized by the system.

Therefore, it is recommended to define all OBIS codes for the first meter before proceeding to the next one.

### 5.1 Data Export

The “Export to CSV” button located at the bottom-right of the Address Table screen allows exporting all listed data in CSV format.

This file can be used for external analyses or for verifying the Modbus map.



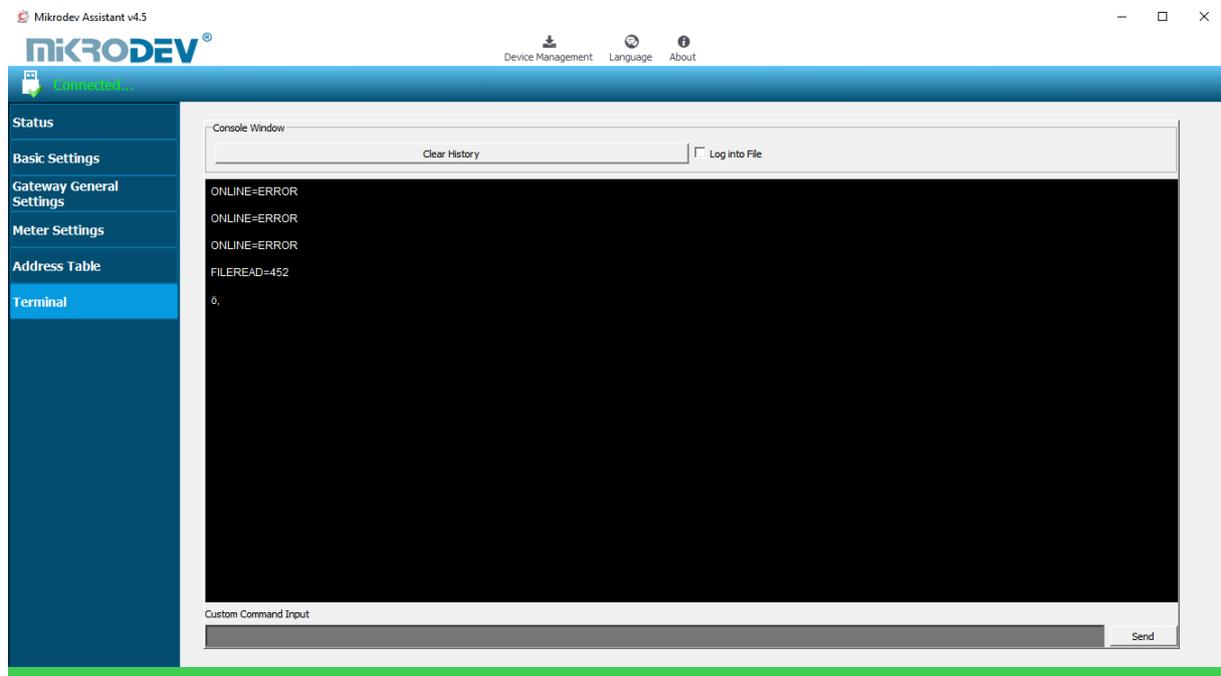
**Figure 45 Export to CSV Button**

## 6 Terminal

The Terminal section is used to enter command lines related to MDC100 series converters. In this section, information received from the device is displayed on the screen.

To send a command, type the desired query (e.g., AT+VERSION=?) into the “Custom Command Input” field and click “Send”. The device’s response will then appear on the screen.

To clear the displayed queries and responses, click “Clear History” in the “Console Window” section.



**Figure 46 Terminal Command Section**