



Akıllı Kontrolde Teknoloji Devi

M-BUS MODBUS GATEWAY CONFIGURATION SOFTWARE

- MMS100 SERIES
M-BUS MODBUS GATEWAY

DOCUMENT NAME	DATE	VERSION
MIKRODEV_AN_MMS100_CG _EN_v3.2	11 / 2025	Assistant 3.13 and above Firmware: 16 and above

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Preface

Mikrodev MMS100 series M-BUS MODBUS gateway is used to read M-BUS measuring devices (water meter, natural gas meter, heat meter, ...) from MODBUS TCP and/or MODBUS RTU master device. In this way, integration of M-Bus measuring devices into central control and monitoring systems is ensured. The MMS100 series gateway decodes the data packets it receives from measurement devices that support EN1434-3 M-BUS and writes them to possible MODBUS addresses.

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.

Assistant software is used for configuring Mikrodev MMS100 Series gateways. Thanks to the Assistant program, parameter settings of the MMS100 products are easily performed.

Please follow our site <https://www.mikrodev.com> for the upto date 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 M-BUS 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.

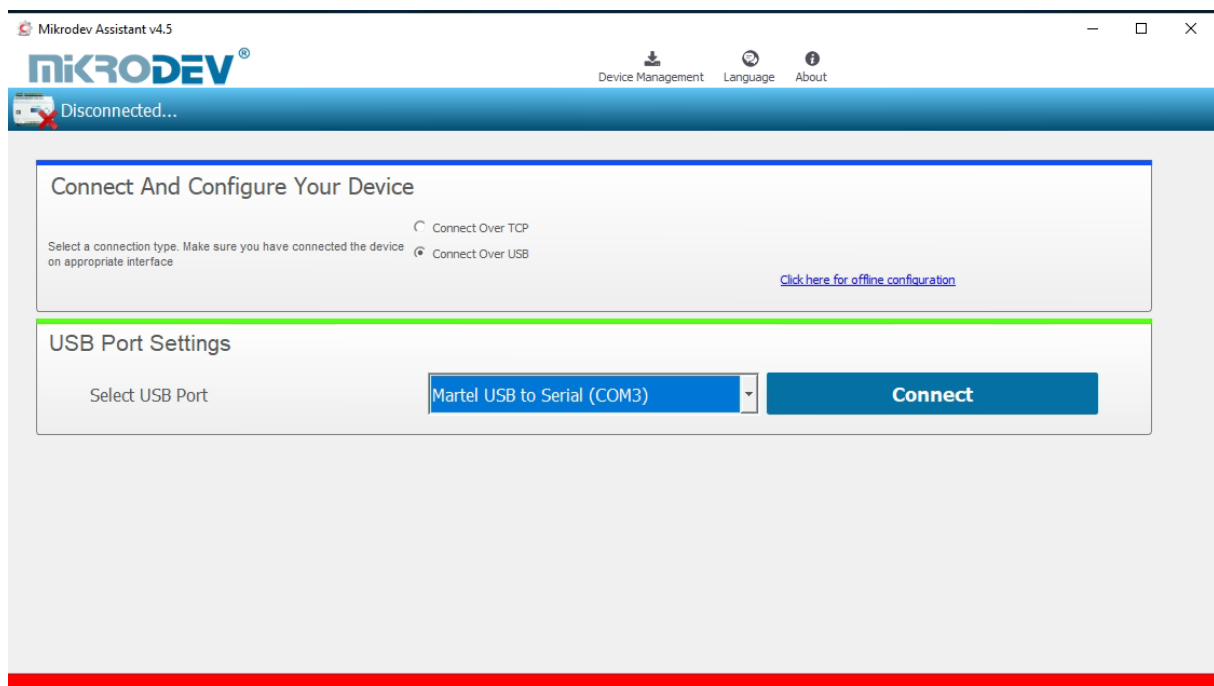


Figure 1 USB Connection

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.

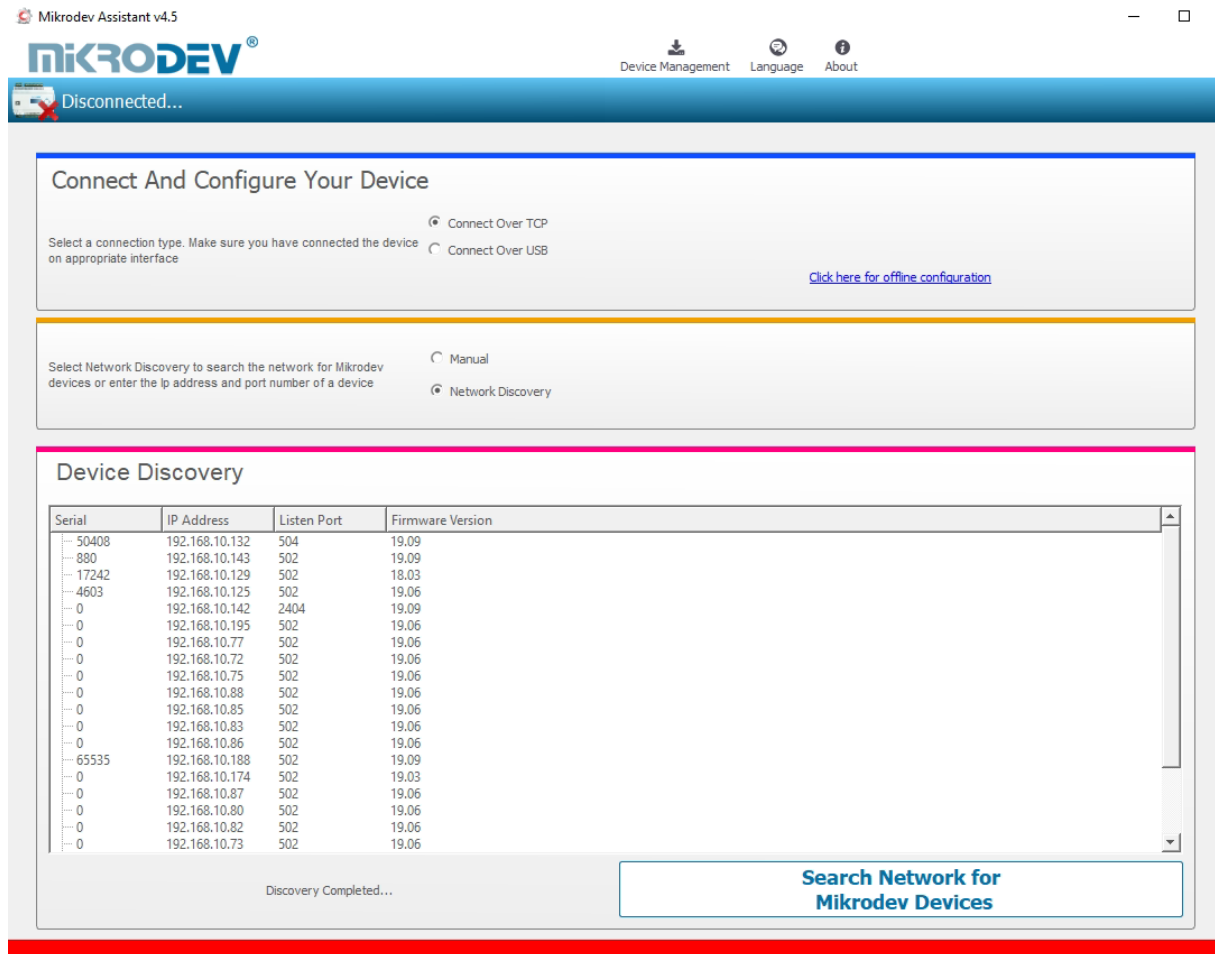


Figure 2 TCP Device Discovery

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.

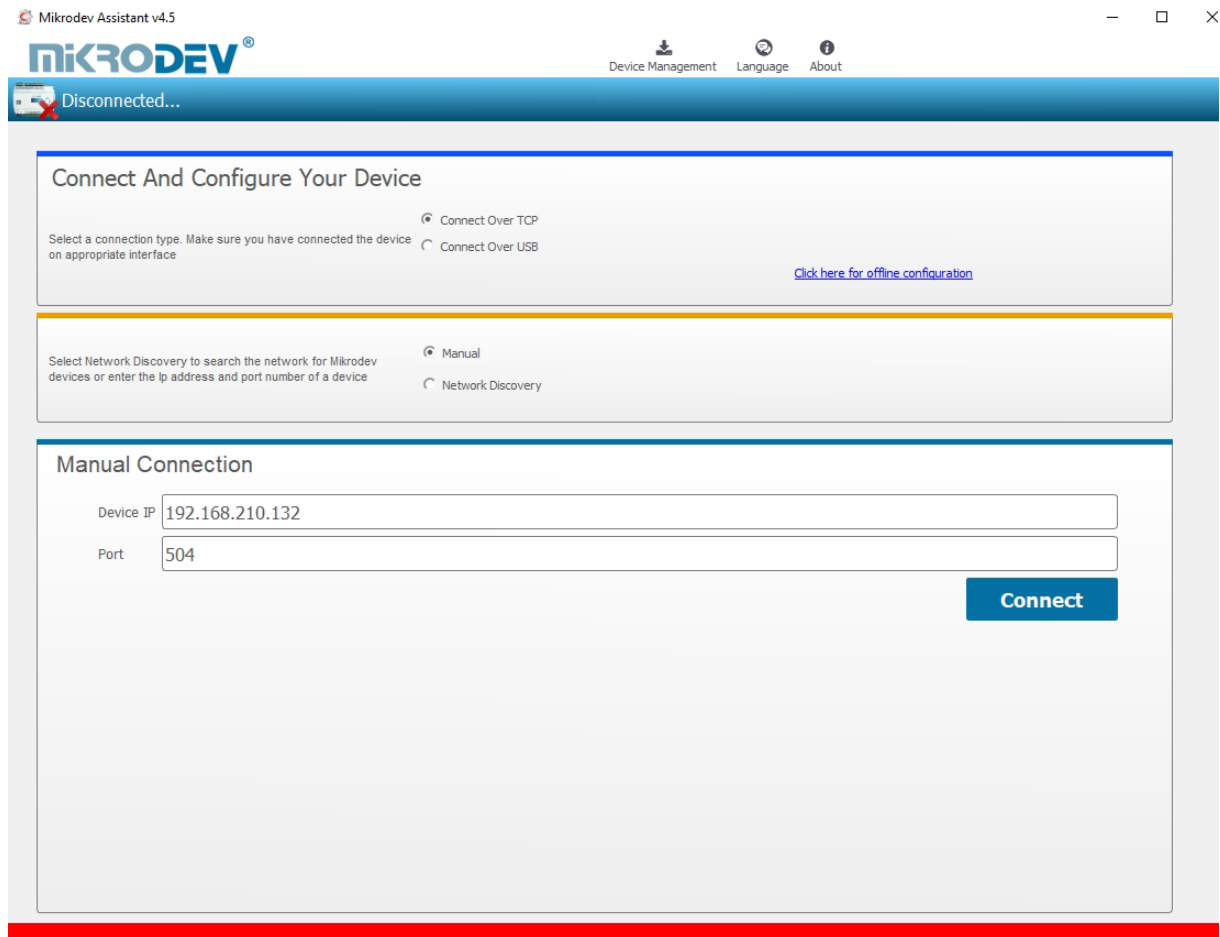


Figure 3 TCP Connection

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.

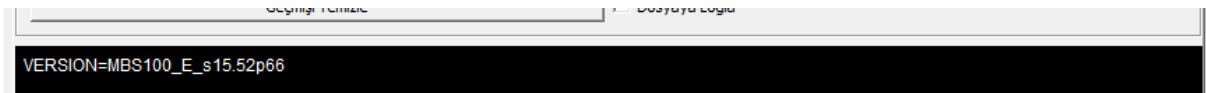


Figure 5 Response of Version Query

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. (Fig. 6) 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.

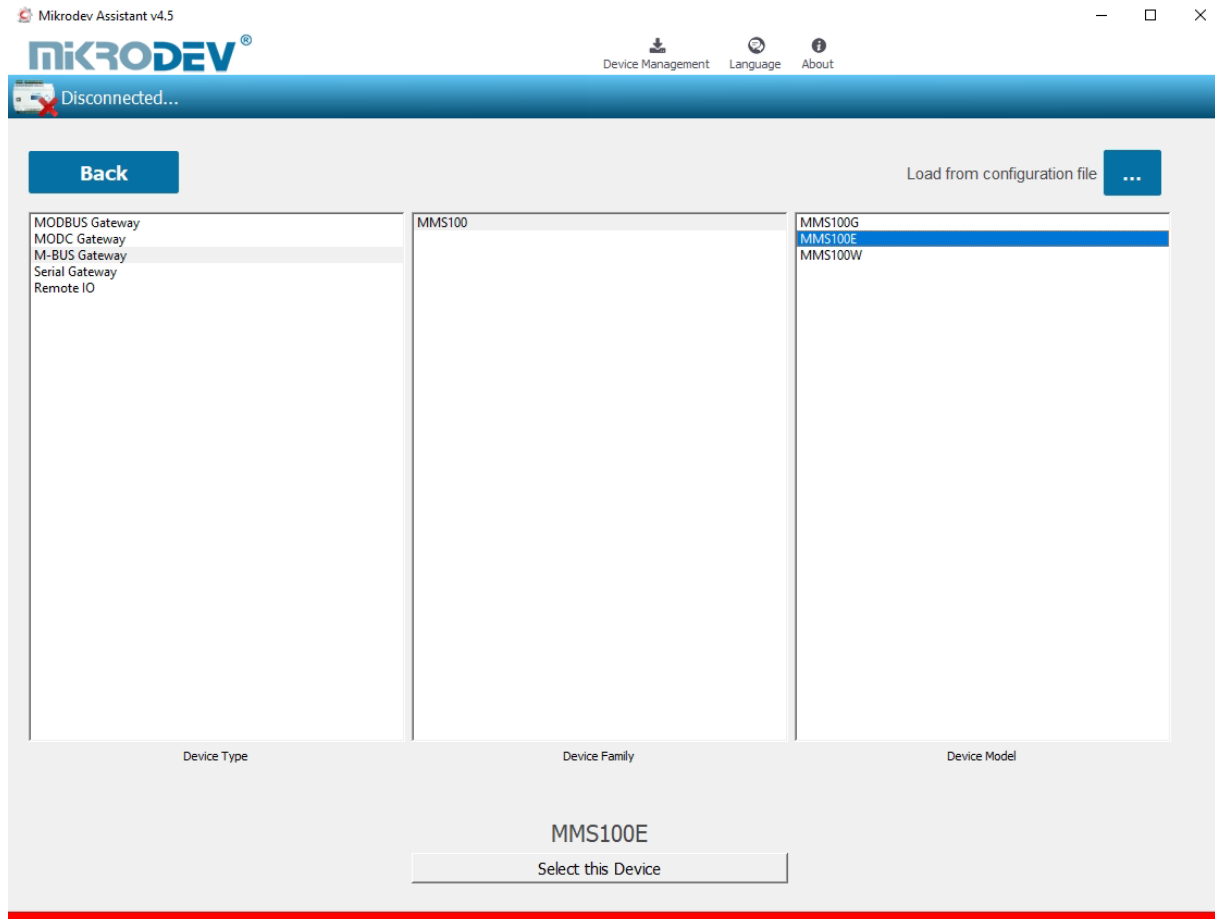


Figure 6 Offline Device Selection

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.

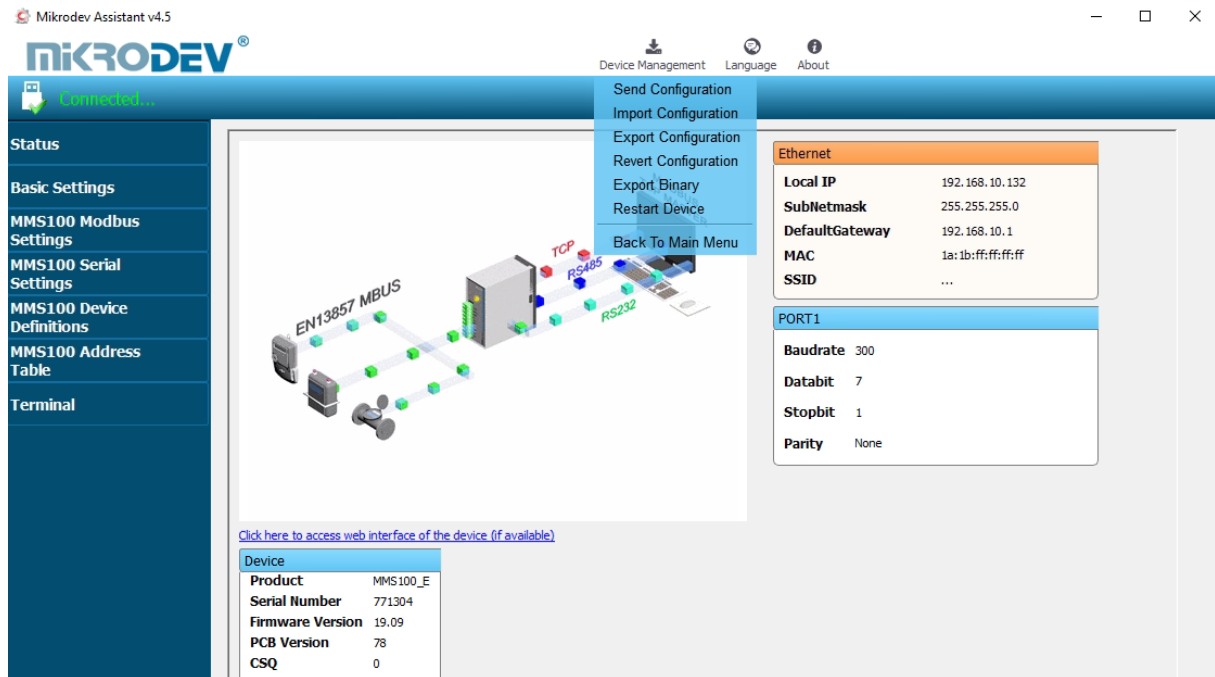


Figure 7 Device Management Options

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

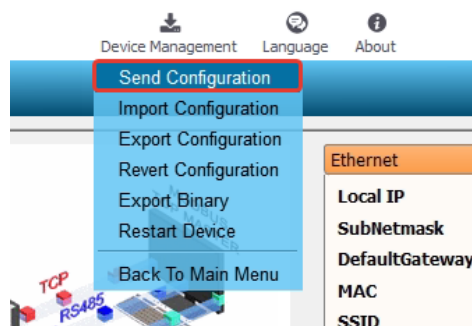


Figure 8 Send Configuration Option

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

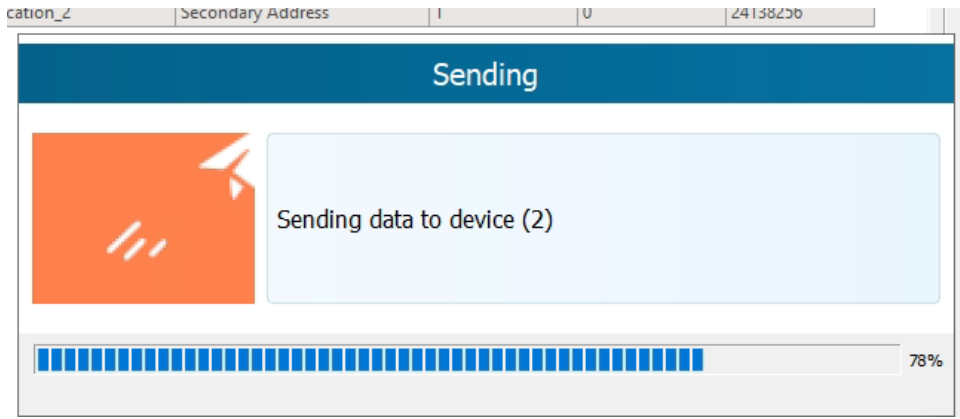


Figure 9 Settings Upload Screen

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

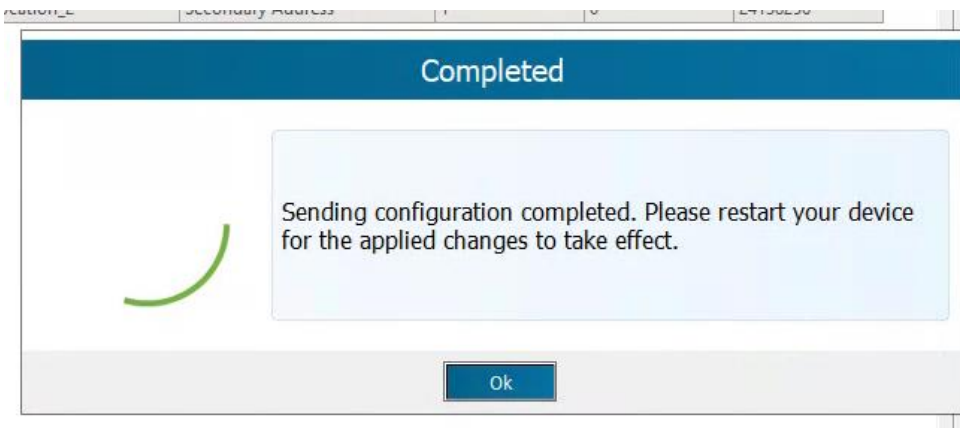


Figure 10 Upload Confirmation Screen

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

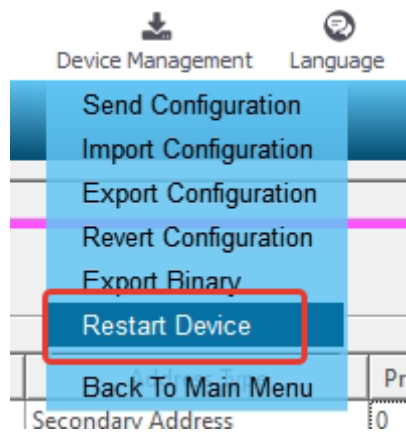


Figure 11 Restart Device Option

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.

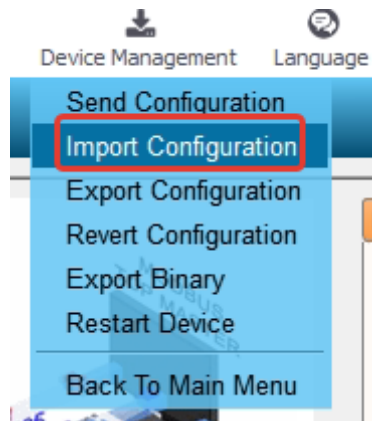


Figure 13 Import Configuration Option

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

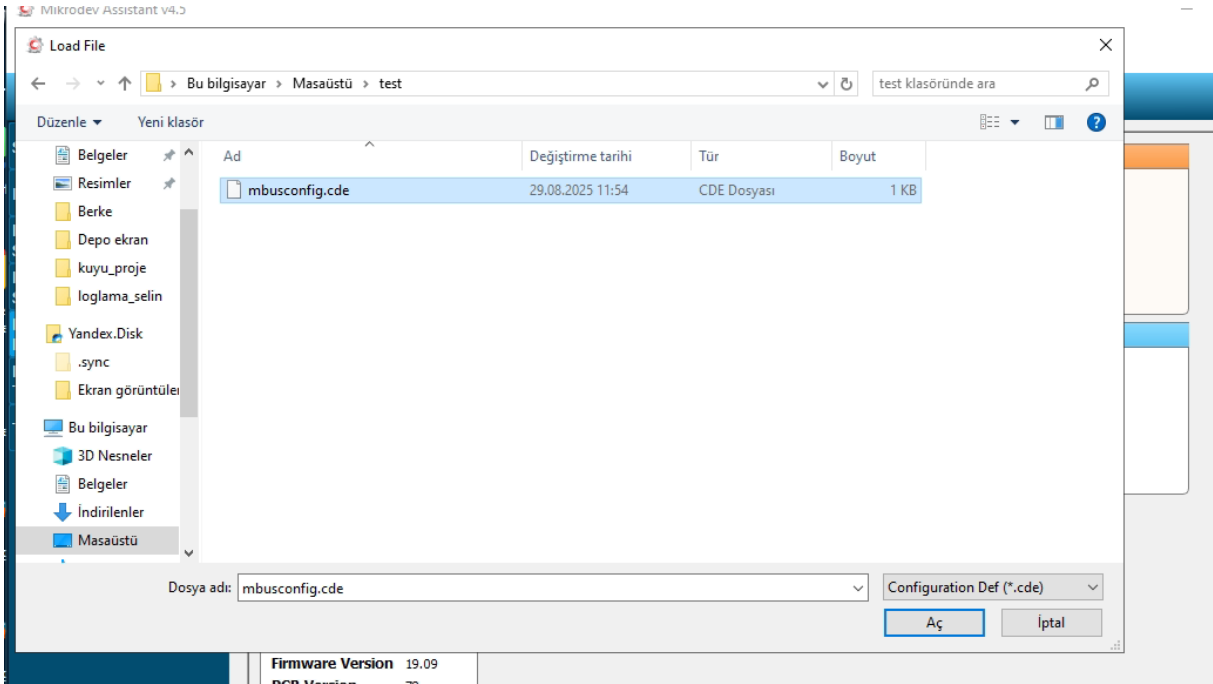


Figure 14 Configuration File Upload Screen

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

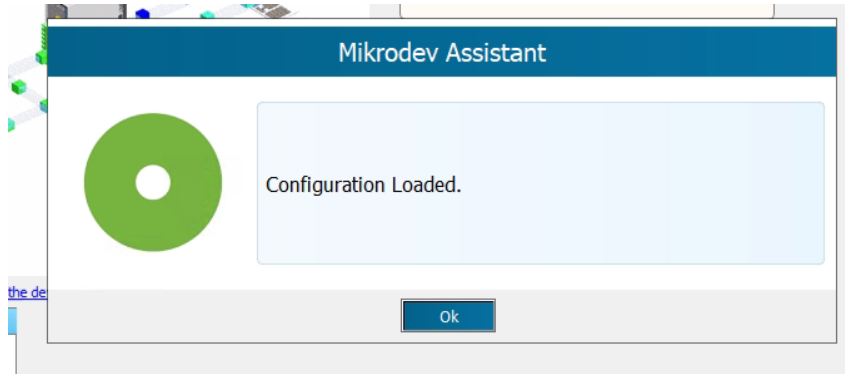


Figure 15 Configuration Loaded Information Screen

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

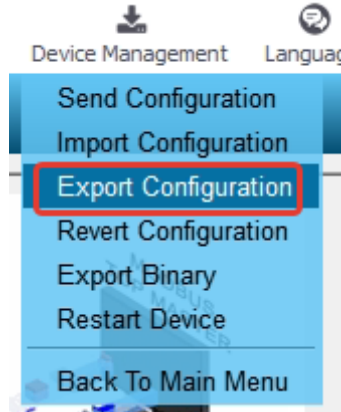


Figure 16 Export Configuration Option

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.

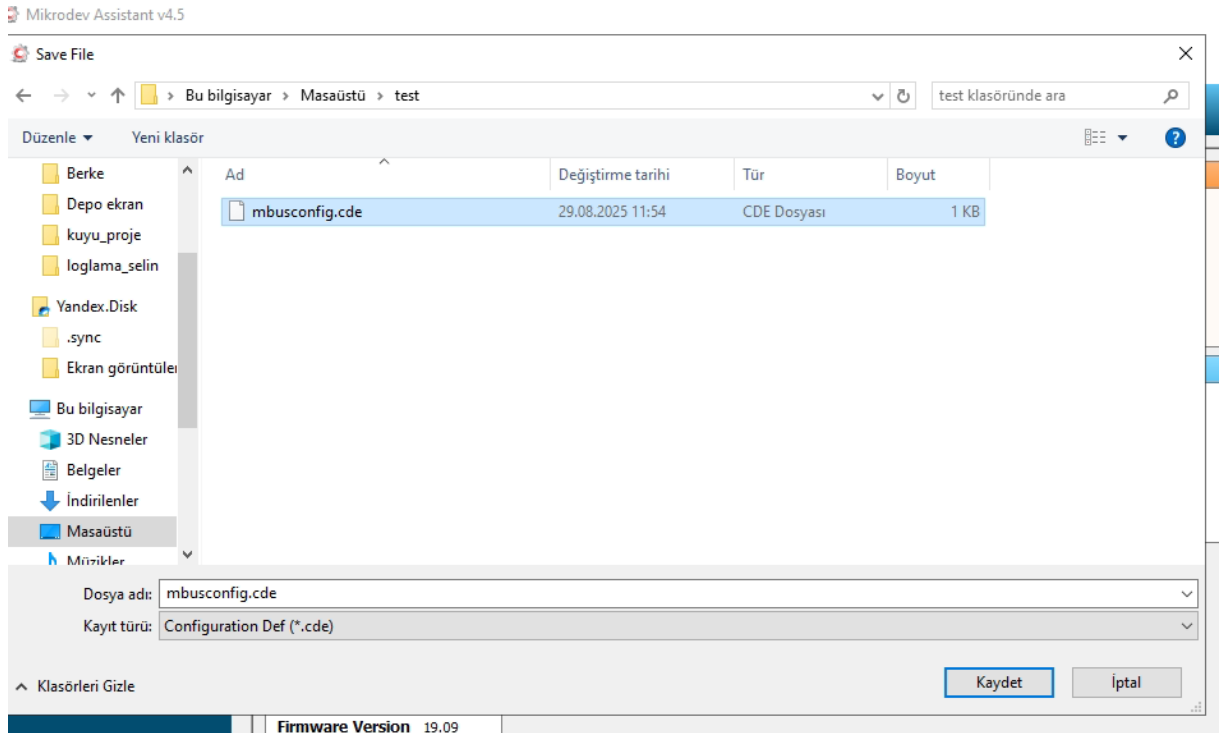


Figure 17 Save File Window

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

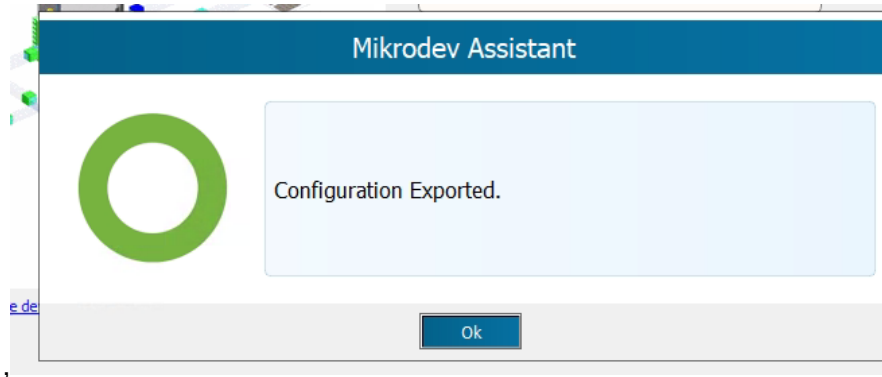


Figure 18 Configuration Exported Information Screen

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

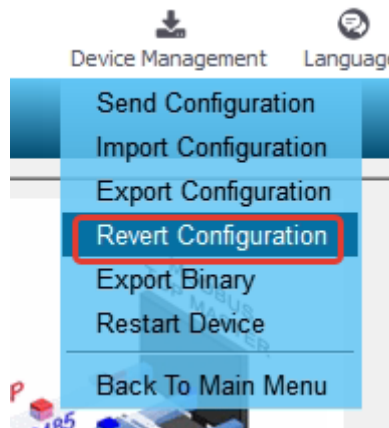


Figure 19 Reset Configuration Option

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.

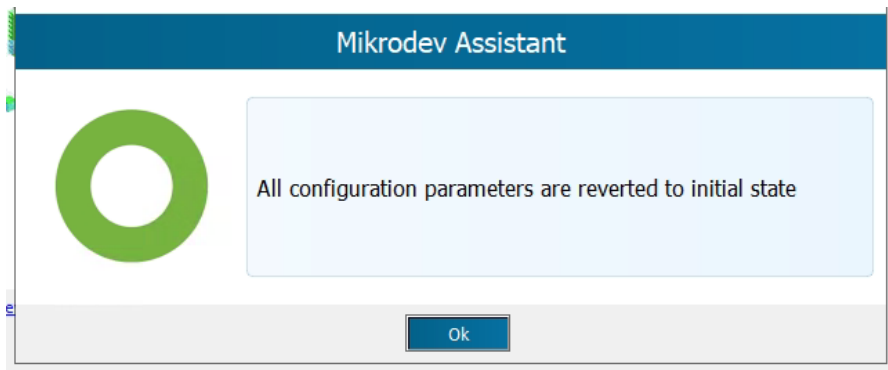


Figure 20 Configuration Parameters Restored to Default Information Screen

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

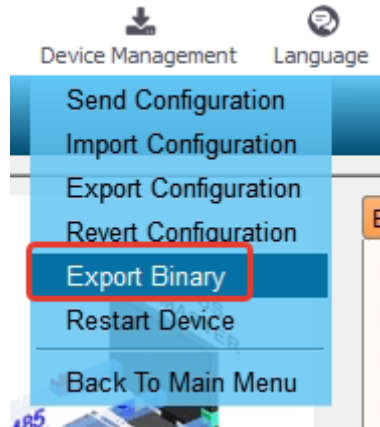


Figure 21 Export Binary Option

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.

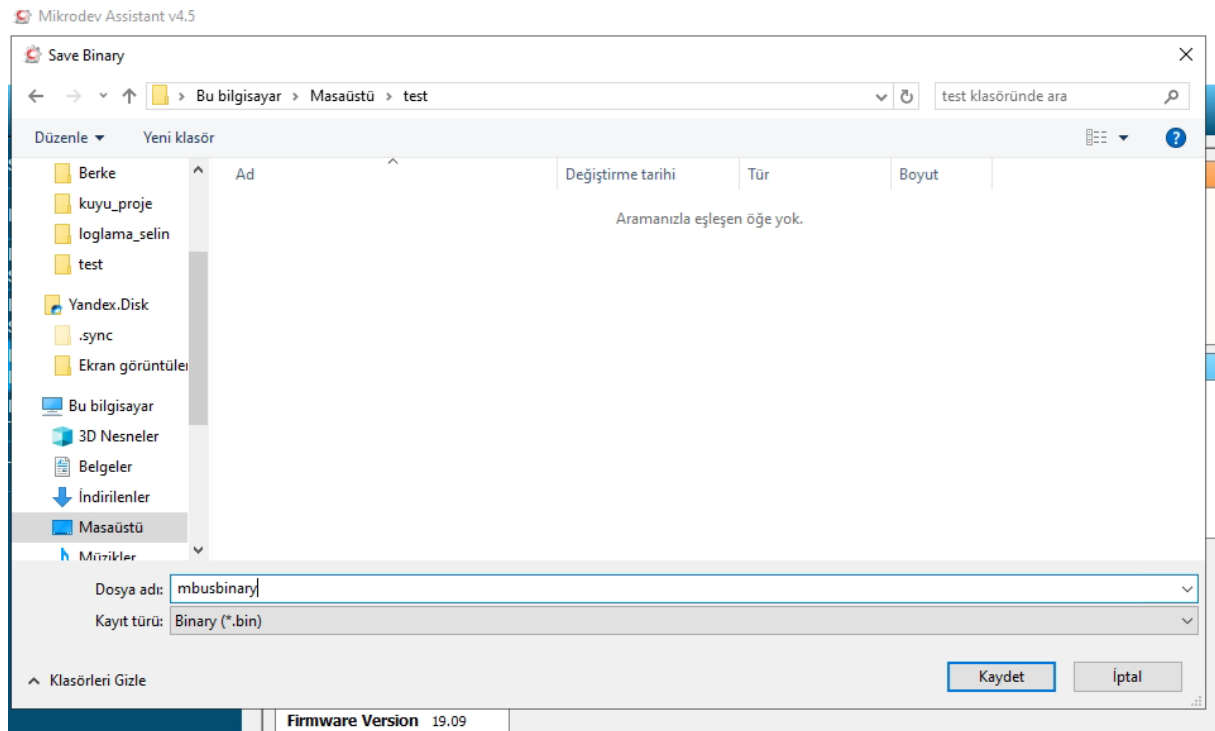


Figure 22 Save Binary Information Screen

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

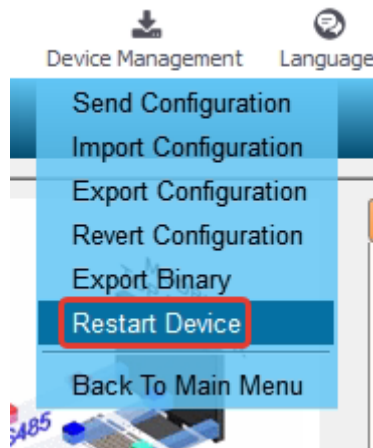


Figure 23 Restart Device Option

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.

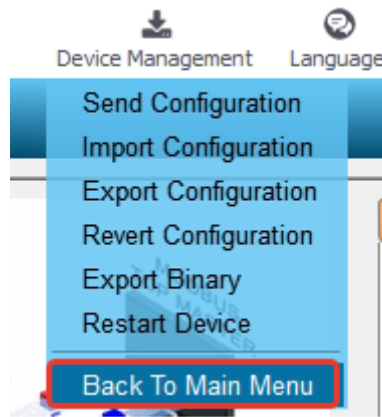


Figure 25 Back to Main Menu Option

2.2 Language

With this option, the interface language can be changed.

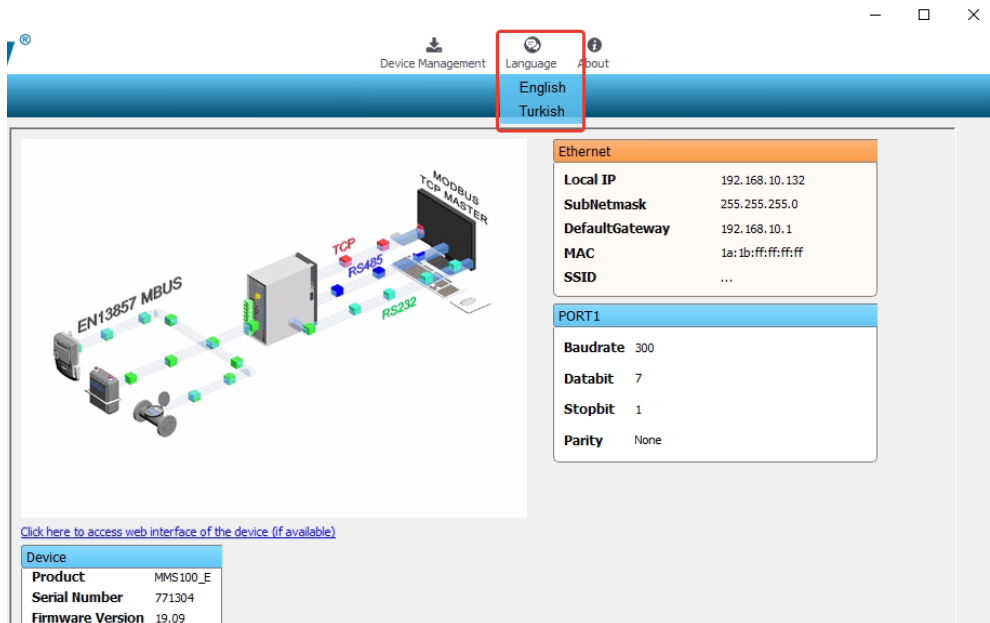


Figure 26 Assistant Interface Language Options

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 M-BUS GATEWAY SETTINGS

3.1 Status Screen

After connecting to the Mikrodev device, the first screen that greets the user is the Status Screen. This screen is a monitoring panel where general information regarding the device's hardware, software, network, and serial communication settings is displayed.

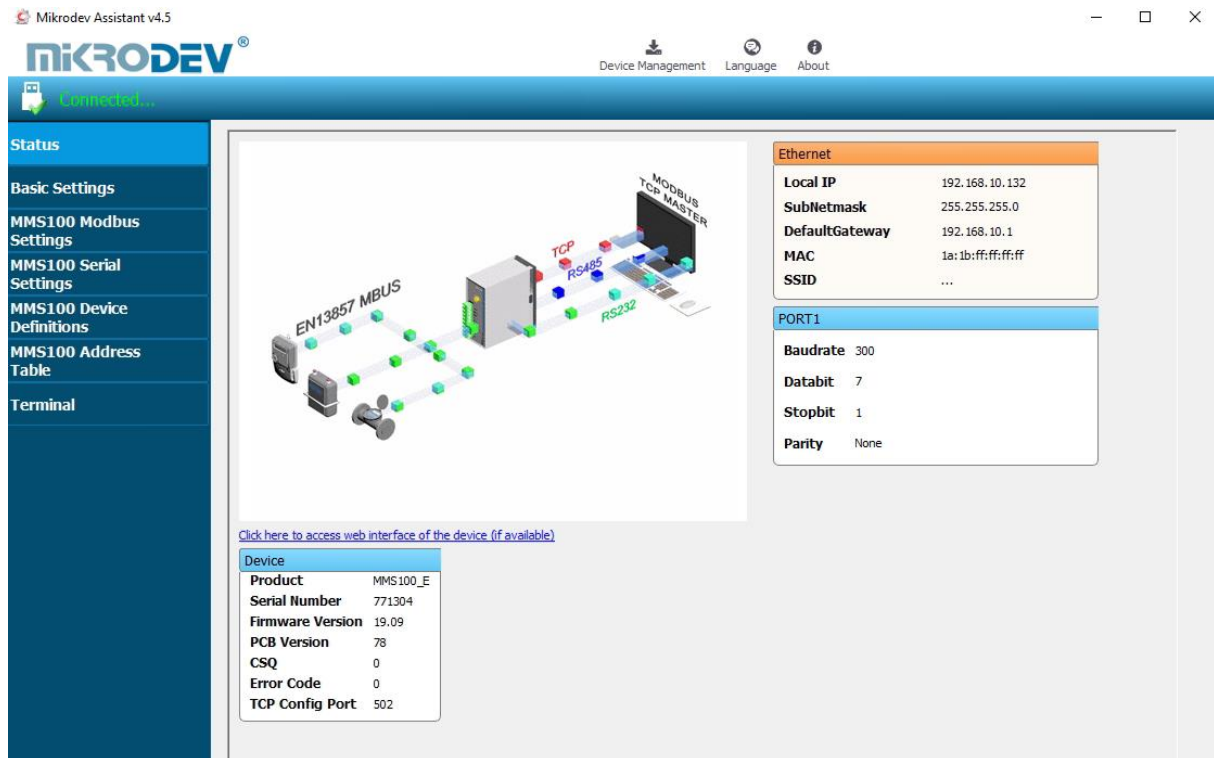


Figure 28 Status Screen

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., MMS100_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 section of the status screen graphically represents the communication structure of the device. In this topology, the following are schematically displayed:

EN13857 M-BUS devices

RS232 / RS485 serial communication lines

TCP/IP connection

Modbus TCP Master

Through this visual representation, the user can quickly see the device's position in the network and the communication protocols it is connected to.

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.

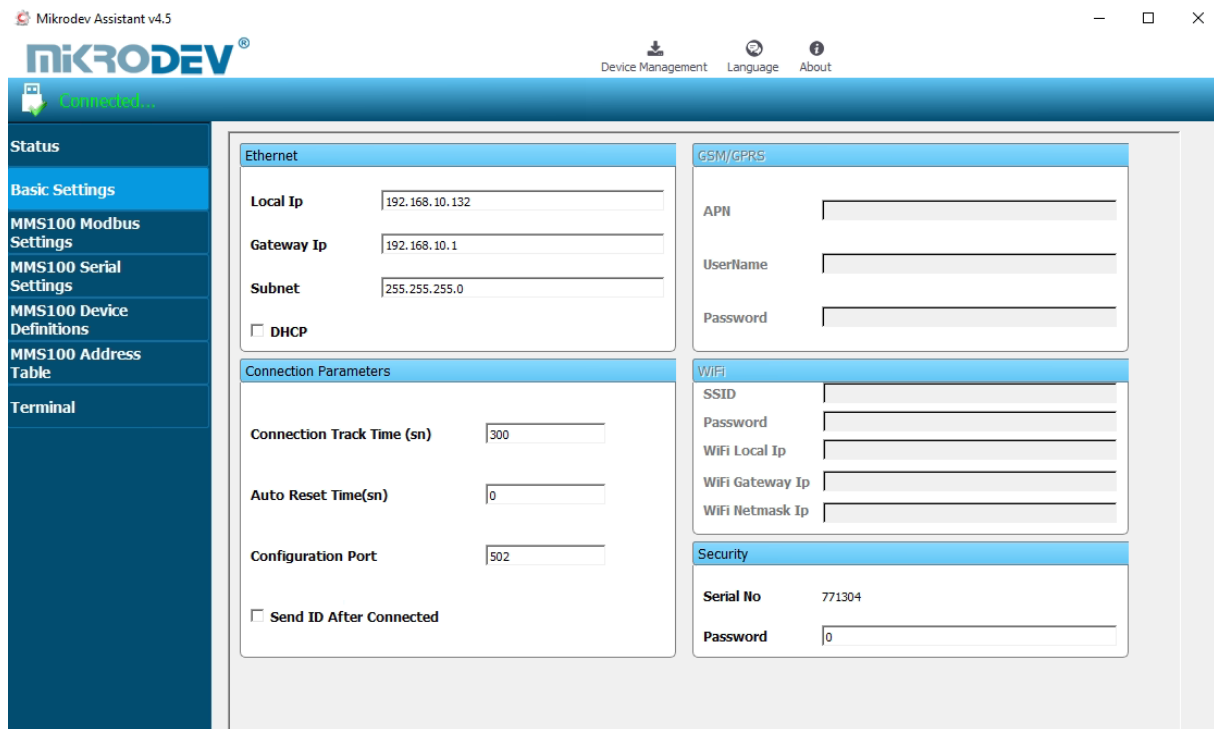


Figure 29 Basic Settings Screen

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 MMS100 MODBUS Settings

The device converts the data it reads from M-BUS–based water meters, heat meters, and similar meters into the Modbus protocol. At the physical layer, up to 100 devices can be read using the M-BUS standard. The data read is decoded according to the EN1434-3 standard and transmitted over the Modbus protocol.

The MMS100 Modbus Settings section is the screen where the parameters enabling the device to communicate via the Modbus protocol are defined. In this section, both Modbus TCP and Modbus RTU (serial communication) settings can be configured.

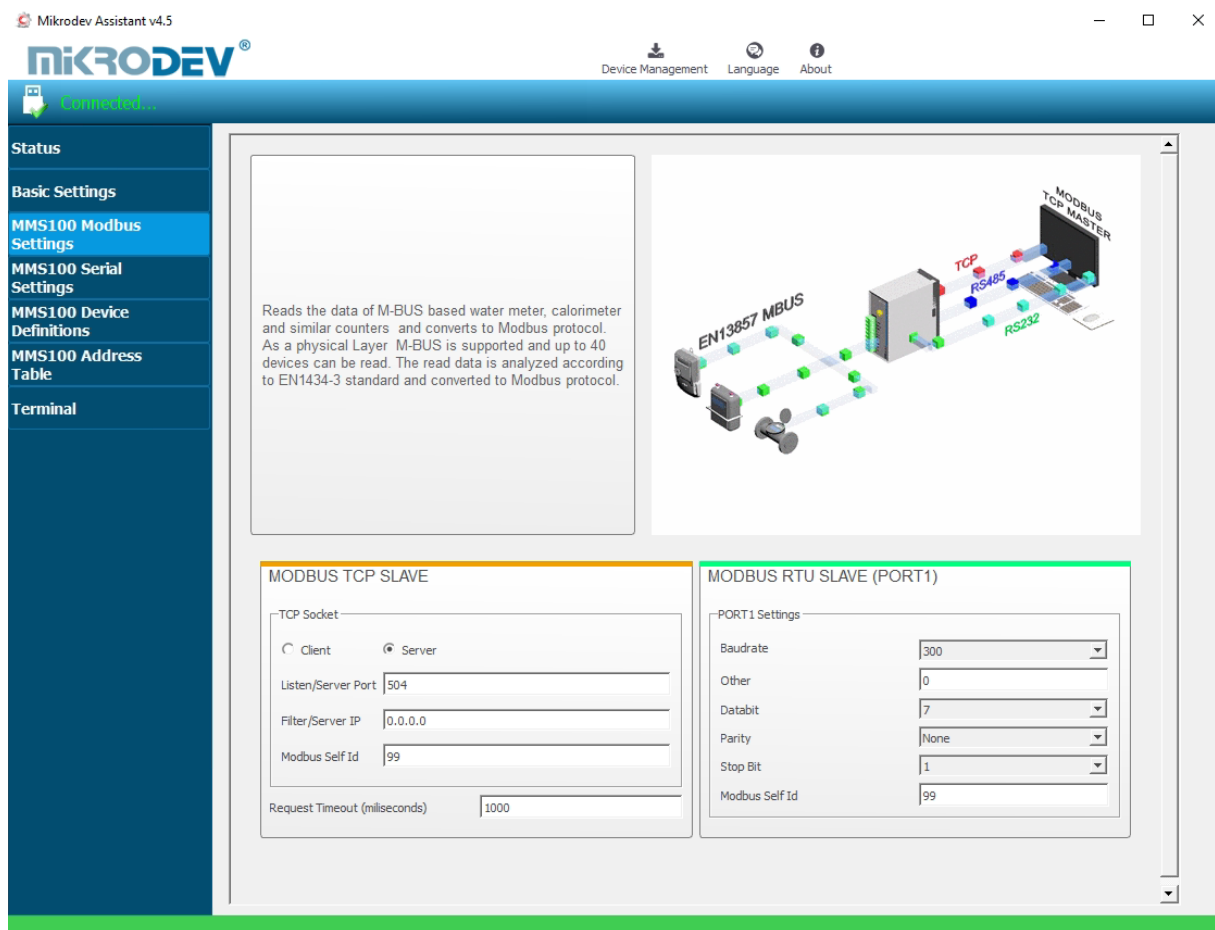


Figure 30 MMS100 MODBUS Settings Screen

3.3.1 Modbus TCP Settings

For communication via Modbus TCP, the following parameters are defined:

TCP Socket:

- **Client:** The mode in which the device connects to the Modbus TCP master and requests data.
- **Server:** The mode in which the device listens and responds to queries from the master.
- **Listening/Server Port:** The TCP port number to be used in server mode.
- **Filter/Server IP:** A filtering parameter that allows communication only from specific IP addresses.
- **Modbus ID:** The Modbus address assigned to the device.
- **Request Timeout (ms):** The timeout period defined when no response is received to a request in TCP communication.

3.3.2 Modbus RTU Slave (PORT1) Settings

For Modbus RTU Slave communication, the device's serial port (RS232/RS485) is configured with the following parameters:

- **Baud Rate:** Defines the data transmission speed (e.g., 115200 baud).
- **Data Bit:** The number of bits in each transmitted data packet (e.g., 7).
- **Parity:** The error-checking method (options: None, Even, Odd).
- **Stop Bit:** The number of bits marking the end of the frame (e.g., 1).
- **Modbus ID:** The RTU communication address assigned to the device.

3.4 MMS100 Serial Communication Settings (MBUS Settings)*

* **Note:** This section differs on devices with Assistant 4.11 and firmware version 19.09 and above.

3.4.1 For Assistant 4.11 and earlier (devices with firmware prior to 19.09)

The serial (RTU) connection settings of the MMS100 series gateways are defined in this section. The baud rate, databit value, parity value and stop bit value of the device or devices (water meters, natural gas meters, calorimeters ...).

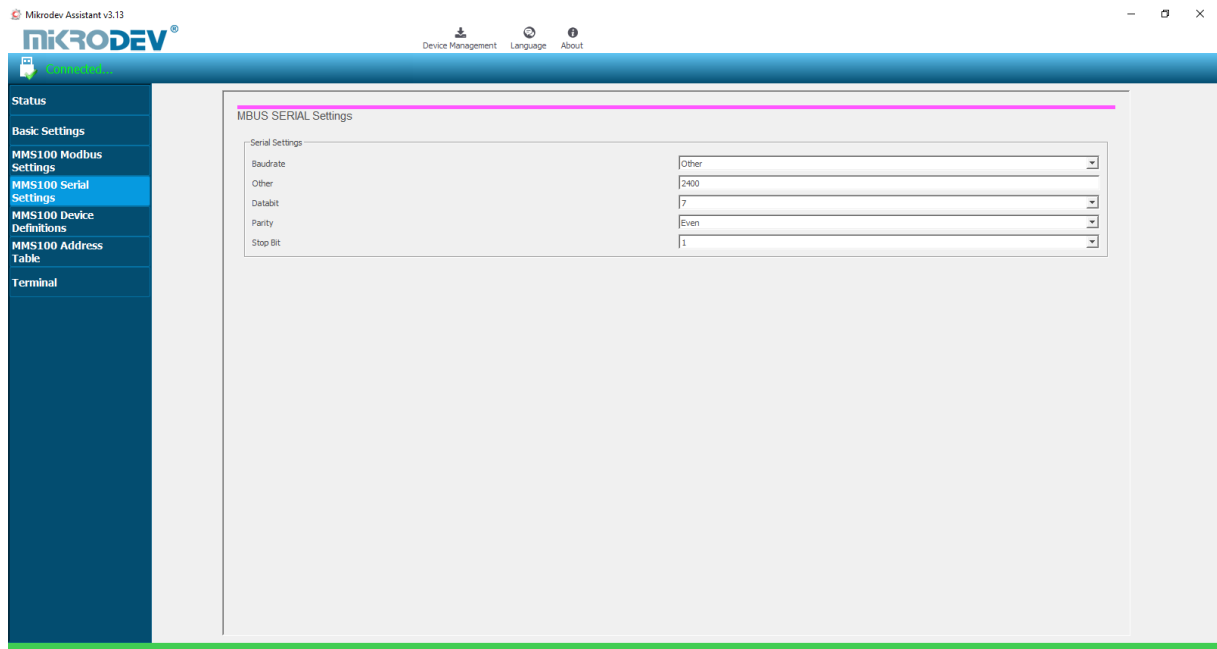


Figure 31 Serial Connection Settings

3.4.2 For Assistant 4.11 and later (devices with firmware 19.09 and above)

This section is the configuration page for the MBUS line. Through Port 2 (MBUS Port) available on the device, the parameters required for communication with meters are configured from this screen.

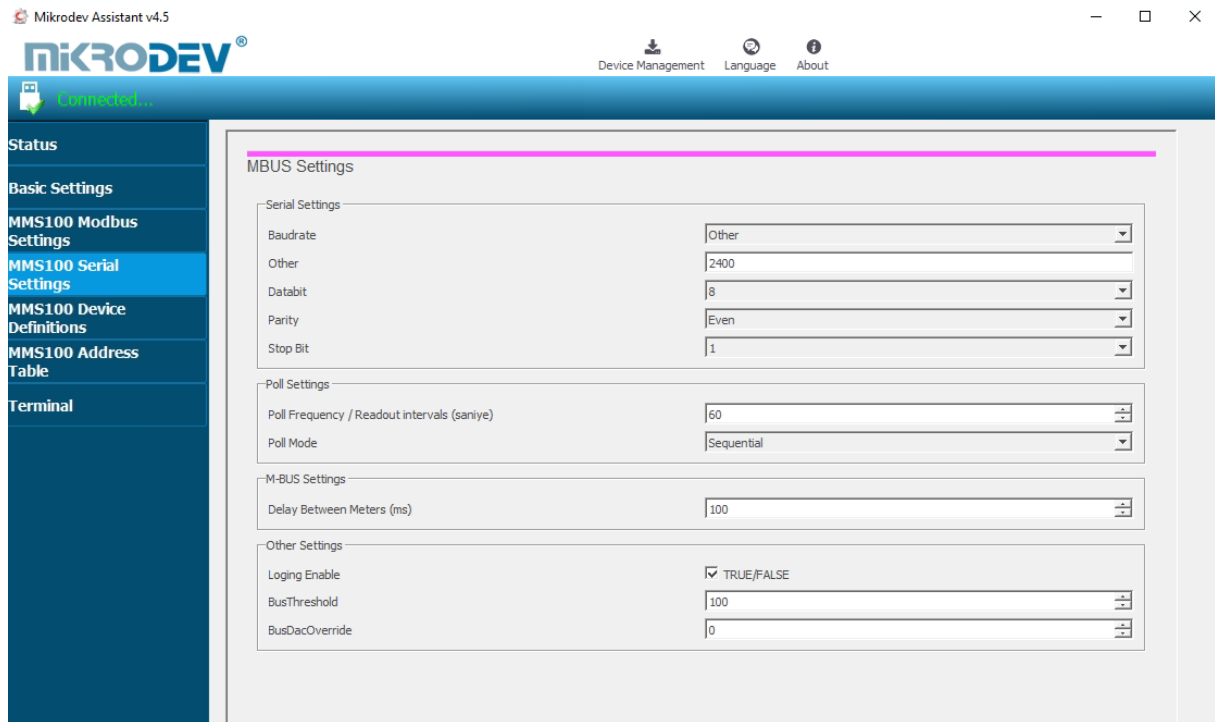


Figure 32 MMS Serial Communication Settings Screen

3.4.2.1 Serial Connection Settings

The serial port parameters for MBUS communication are defined as follows:

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

Other: If the required baud rate is not available in the options, it can be entered here (default: 0).

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

Parity: Error-checking method (options: None, Even, Odd).

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

3.4.2.2 Poll Settings (Readout Settings)

Determines the method for reading the meters:

Poll Frequency / Readout Intervals (s): All defined meters are periodically re-read according to the value specified here (in seconds). Once the readout cycle is completed for all meters, the gateway waits for the specified duration starting from the last read meter. After this period, the gateway restarts the cycle beginning with the first meter.

Example: If the value is set to 60 seconds, after reading all meters sequentially, the gateway waits 60 seconds and then restarts the cycle.

Poll Mode: Defines the reading method.

- **Periodic:** The gateway automatically reads all meters in sequence and writes the retrieved data to the Modbus address table. When the configured interval elapses, the gateway restarts the reading cycle from the beginning.
- **Manual Poll Only:** Meter reading is performed only when manually triggered. To do this, the *Meter Manual Trig* bit of the desired meter in the Modbus address table must be set to 1. When the gateway detects this bit, it reads the corresponding meter once and then automatically resets the bit.
- **Transparent:** The gateway does not query the meters itself or write any data to the Modbus address table. In this mode, the gateway directly forwards M-Bus requests from the upper side to the M-Bus line and returns the responses from the meters as they are. Thus, the device acts only as a bridge and does not perform any protocol conversion (M-Bus → Modbus). This allows an M-Bus master software running on the upper side to directly access the meters through the gateway.

3.4.2.3 MBUS Settings

Delay Between Meters (ms): Defines the waiting time (in milliseconds) applied between meter readouts. This value should be adjusted according to the response times of the meters. If set too low, some meters may fail to respond. If set too high, the overall readout cycle may take unnecessarily long. This parameter defines the transition time between meters.

3.4.2.4 Other Settings

Logging Enable: When checked, the debug codes of the meter are displayed on the terminal screen.

Bus Threshold: The detection threshold value of the MBUS line. This value should not be changed unless necessary. The default value is 100.

Bus DAC Override: Allows manual modification of the default line driver settings. This value should not be changed unless necessary. The default value is 0.

3.5 MMS100 Device Selection (Meter Definition)*

This section is the screen where the meters connected to the MBUS line are defined. The information of the meters to be read by the device is entered and edited in a table format. In addition, the meter list can be exported in Excel format or previously prepared files can be imported.

* **Note:** This section differs on devices with Assistant 4.11 and firmware version 19.09 and above.

3.5.1 For Assistant 4.11 and earlier (devices with firmware prior to 19.09)

The query sending period of the Mikrodev MMS100 series gateways are defined in the "Poll Frequency" section. The value is entered in seconds. The number of devices to be connected with the MMS100 series gateway is determined in the "Device Count" section. In the "Physical Device Address" section, the number of slots specified in the device count section starts from 1 and appended. In this section, the slave addresses of the devices in the field are defined. "Physical Device Address" is the section where the MODBUS addresses are determined according to the device selections.

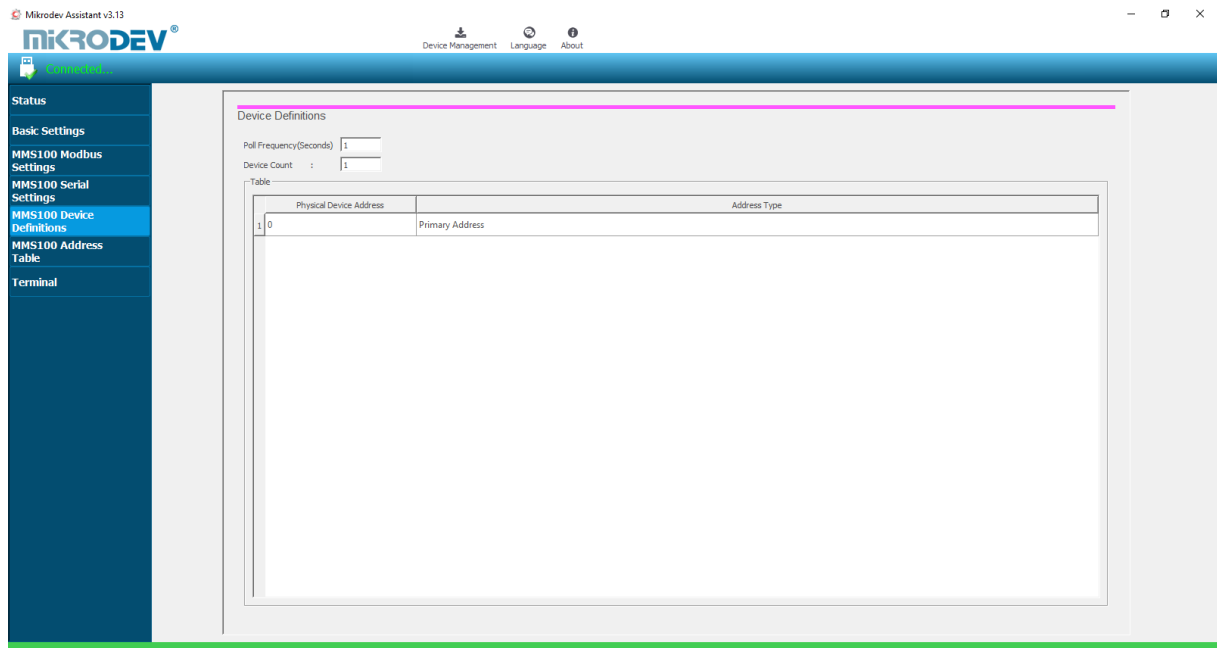


Figure 33 MMS100 Device Selection

3.5.2 For Assistant 4.11 and later (devices with firmware 19.09 and above)

The meter list can be exported in Excel format or imported from pre-prepared files.

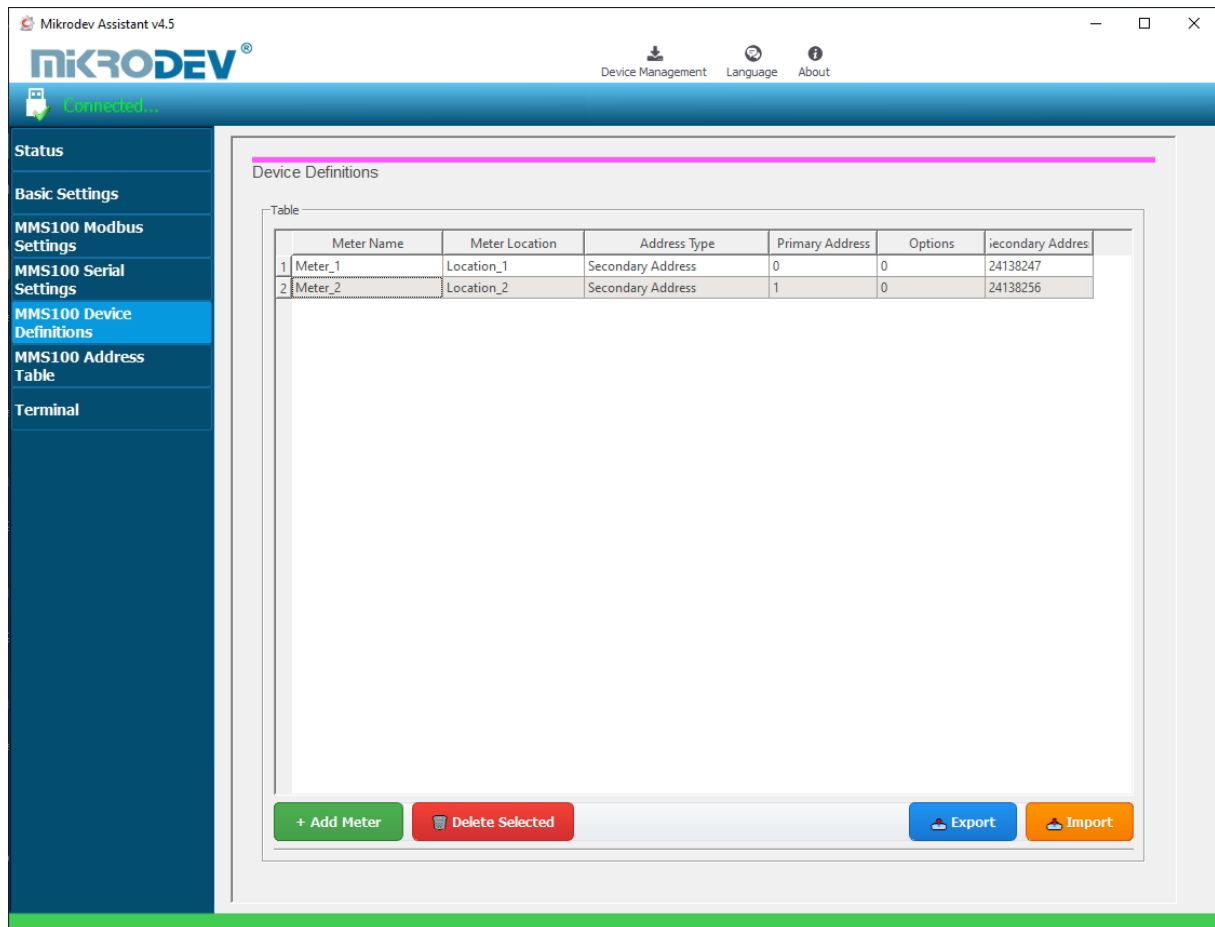


Figure 34 MMS100 Device Selection Screen

3.5.2.1 Table Fields

For each meter, the following parameters are defined:

Meter Name: The name of the meter (e.g., Meter_1).

Meter Location: The location of the meter (e.g., Location_1).

Address Type: Defines the address type of the meter (Secondary Address or Primary Address).

Primary Address: The primary address used for the meter (default: 0).

Options: Additional options related to the meter (default: 0).

Secondary Address: The secondary address used for the meter. For most MBUS meters, this field represents the unique identification number.

3.5.2.2 Meter Management Operations

+ Add Meter: Used to add a new meter.

Delete Selected: Deletes the selected meter(s).

Export: Used to export the defined meter list in Excel format. This feature facilitates backup of configurations and transfer to other devices.

Import: Used to import previously prepared or exported meter lists. This feature allows for quick definition of a large number of meters.

3.6 MMS100 Address Table

* **Note:** This section differs on devices with Assistant 4.11 and firmware version 19.09 and above.

3.6.1 For Assistant 4.11 and earlier (devices with firmware prior to 19.09)

MMS100 address table section is the section in which the MBUS information of the MMS100 series gateways are written to which MODBUS address. In this section, device numbers, physical addresses (slave addresses), data types, the names of the addresses and the addresses of the MODBUS are displayed.

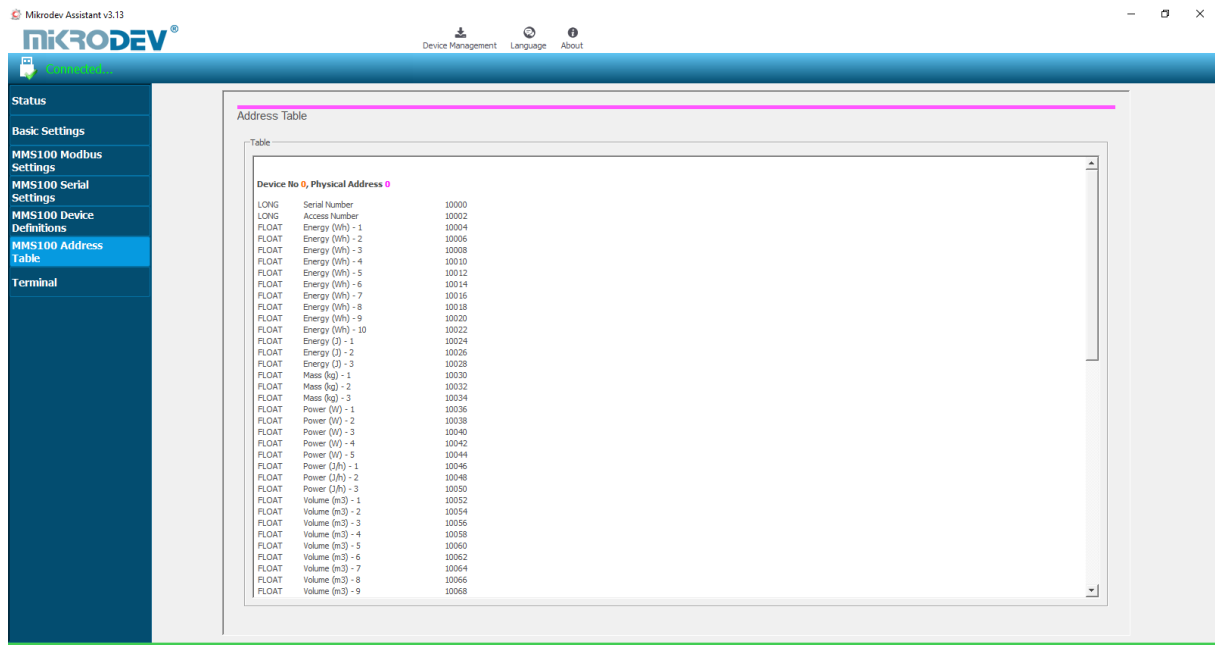


Figure 35 MMS100 Address Table

3.6.2 For Assistant 4.11 and later (devices with firmware 19.09 and above)

The Address Table page displays the list of all addresses exposed by the gateway to the Modbus side.

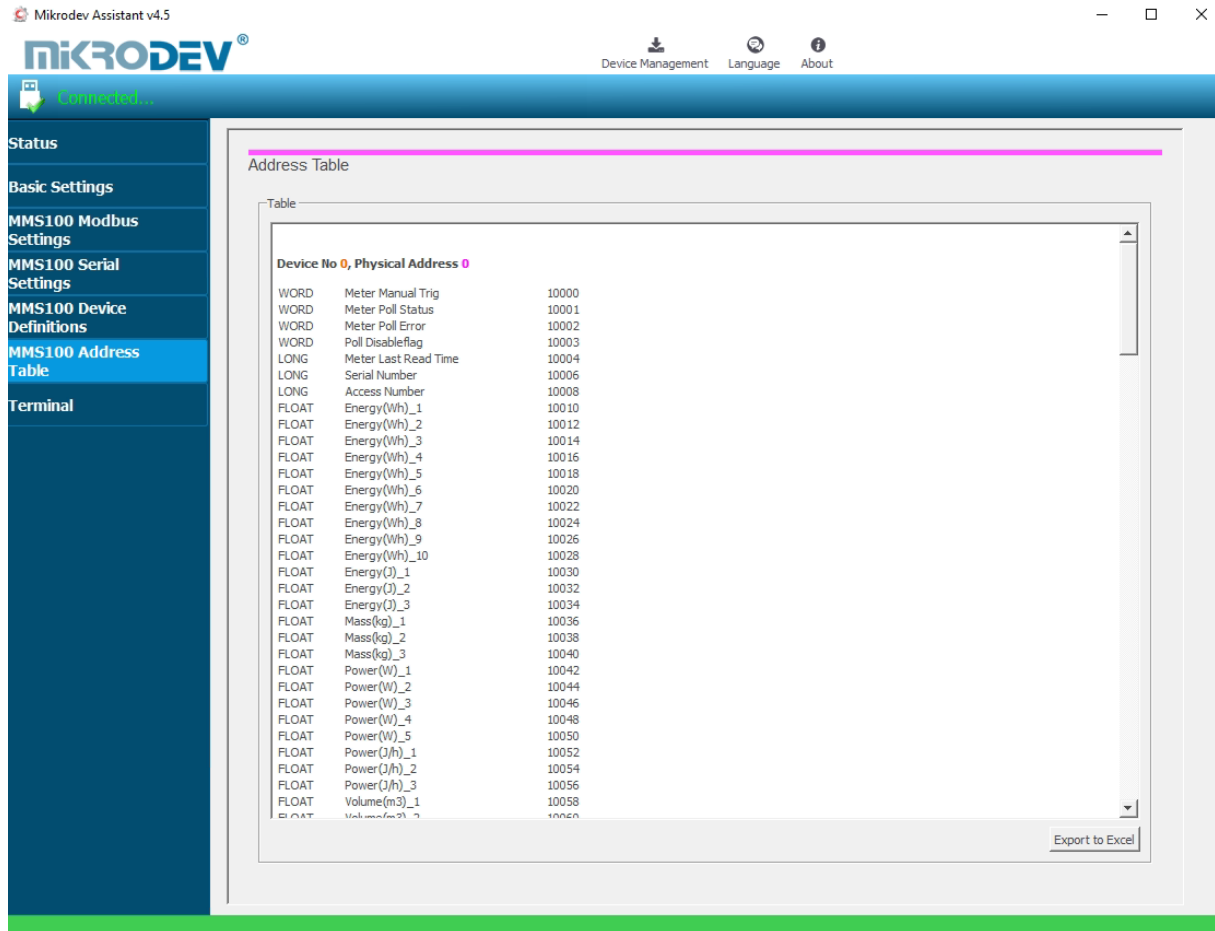


Figure 36 MMS100 Address Table Screen

Each row in the list contains the **Data Type**, **Tag Name**, and **Modbus Address**. This screen includes not only measurement data (energy, flow, power, volume, etc.) but also gateway-specific control/monitoring bits and counters. The table can be exported in Excel format via the **Export to Excel** button at the bottom right.

Gateway-generated (extra) addresses: Fields that indicate or control the device's own status/operation (listed below under Special (Gateway) Registers).

Addresses read from meters: Measurement values read from connected MBUS meters in accordance with EN1434-3 and transferred directly into Modbus (e.g., Energy(Wh)_n, Power(W)_n, Volume(m³)_n, etc.).

3.6.2.1 Special (Gateway) Registers

The following registers are generated by the gateway and made accessible via Modbus:

Name	Type	Access	Description
Meter Manual Trig	WORD	R/W	Provides a manual trigger for the corresponding meter. If set to 1 , a one-time readout is triggered; it automatically returns to 0 after completion. Used in Parallel or Mixed mode.
Meter Poll Status	WORD	R/O	Becomes 1 if the gateway is currently reading the corresponding meter during scanning; otherwise 0.
Meter Poll Error	WORD	R/O	Error code of the last read attempt (see table below).
Poll Disableflag	WORD	R/W	If set to 1 , the gateway skips this meter (no readout); 0 means active readout.
Meter Last Read Time	LONG	R/O	Indicates how many seconds after the device power reset the corresponding meter was successfully read. The value is expressed in seconds and is reset after every power reset . This allows monitoring of the timing of the first successful readout after the device restarts.

Meter Poll Error Values:

Code	Meaning
0	No Error.
1	Checksum FAILED.
2	Serial Number mismatch, does not match the expected.
3	Frame is not of the expected type.
4	Meter not responding.

3.6.2.2 Measurement Records Read from Meters

The rows labeled **Energy(Wh)_n**, **Power(W)_n**, **Mass(kg)_n**, **Volume(m³)_n**, etc. represent the measurement channels retrieved from MBUS meters.

The **Type** field (WORD/LONG/FLOAT) indicates the data length of the value on the Modbus side.

These records are **read-only (R/O)**; their values are determined by the gateway and cannot be written by the user.

The **_n index** (e.g., **_1**, **_2** ...) at the end of the channel name indicates the sequence of the channel in case the meter has multiple measurements of the same type.

3.6.2.3 Usage Notes

Relation to Poll Mode:

Sequential mode: The gateway reads all meters in sequence; there is no need to use Manual Trig.

Parallel mode: Readout is performed only for meters where Meter Manual Trig = 1 is set.

Mixed mode: Sequential readout continues, while manual trigger can also be applied to specific meters if desired.

Filtering/Reporting: The address list exported to Excel can be prepared in the office before field installation and then re-imported into the device (see Device Selection / Import-Export).

Access Types:

R/W: User can write (e.g., Manual Trig, Disableflag).

R/O: Read-only (e.g., Poll Status, Last Read Time, measurement values).

3.7 Terminal

Terminal is the section where the command lines for the MMS100 series gateways are entered. In this section, information coming from the device is listed on the screen. In the "Custom Command Input" section, type the command to be queried (eg AT + VERSION =?) And click "Send" to send the query to the device. The query answer appears on the screen. Click "Clear History" in the "Console Window" section to clear the inquiries on the screen.

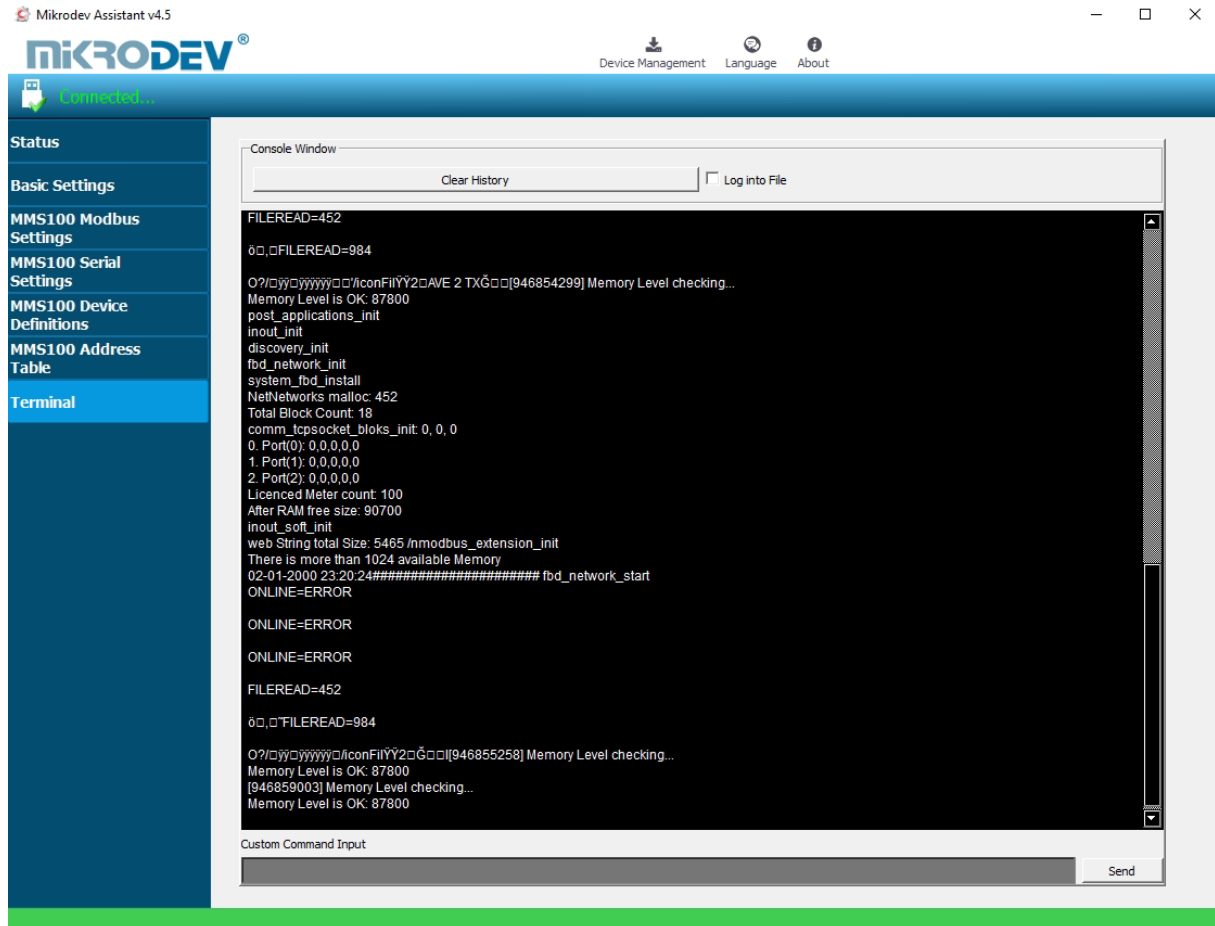


Figure 37 Terminal Command Screen