

DLMS MODBUS GATEWAY CONFIGURATION SOFTWARE

- MDC100 SERIES
DLMS MODBUS GATEWAY

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MIKRODEV_SM_MDC100_EN_v2.0

CONTENT

FIGURES LIST	2
Preface.....	3
About Mikrodev	4
Warning!	5
1 MODC GATEWAY CONFIGURATION SOFTWARE	6
1.1 General Information	6
1.2 Device Connection	7
1.3 Offline Settings	11
2 MODC GATEWAY Settings	12
2.1 Status Tab.....	12
2.2 Basic Settings	13
2.3 Gateway General Settings	14
2.4 Loading Settings to Device	15
3 MODC GATEWAY PARAMETER SETTINGS	17
3.1 Adding Meters.....	17
3.2 Adding OBIS Codes	18
3.3 Adding OBIS Codes with Special Commands	19
3.4 MODBUS Adress Table	20
3.5 Terminal	22

FIGURES LIST



Figure 1 USB Connection	7
Figure 2 TCP Device Discovery	8
Figure 3 TCP Connection.....	9
Figure 4 Version Query.....	10
Figure 5 Response of Version Query.....	10
Figure 6 Offline Device Selection	11
Figure 7 Status Screen	12
Figure 8 Basic Settings.....	13
Figure 9 Gateway General Settings	14
Figure 10 Load Settings.....	15
Figure 11 Loading Finished	15
Figure 12 Serial Connection Reset	16
Figure 13 TCP Connection Reset	16
Figure 14 Add Meter Screen	17
Figure 15 Adding Obis Code	18
Figure 16 Adding Special Command	19
Figure 17 MODC Address Table	20
Figure 18 MODC - MODBUS Address List Figure.....	21
Figure 19 Terminal Command Window	22

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 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)

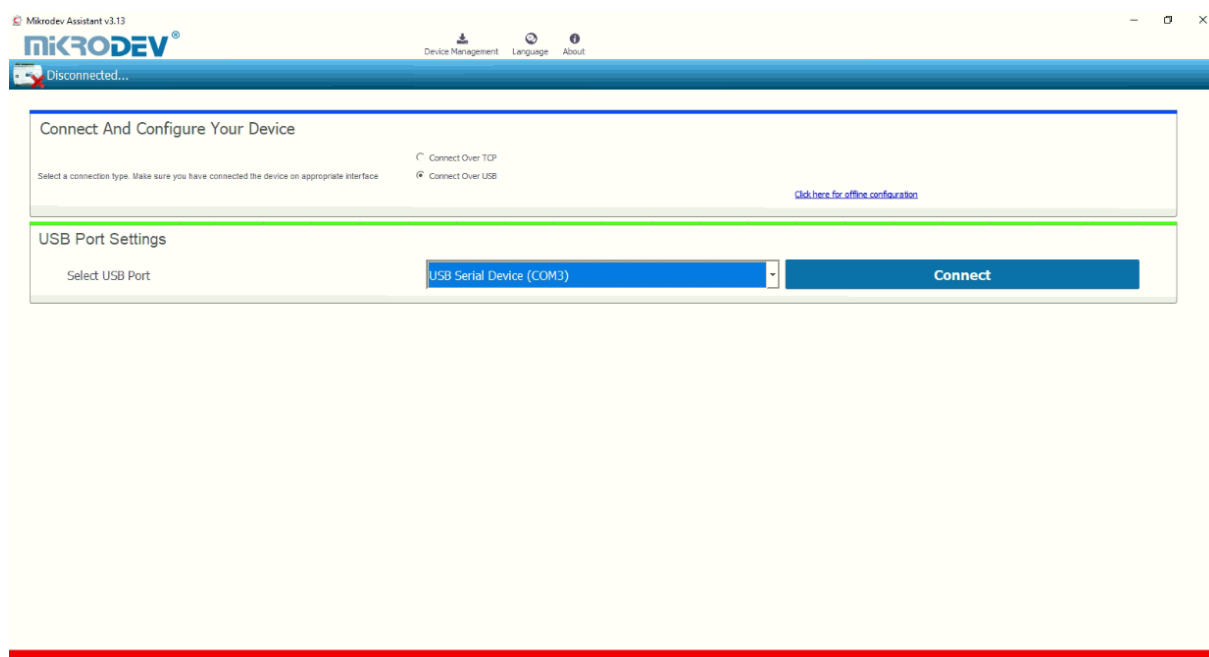


Figure 1 USB Connection

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. (Fig. 2) You can connect the device on the list by double clicking on the device name on the screen.

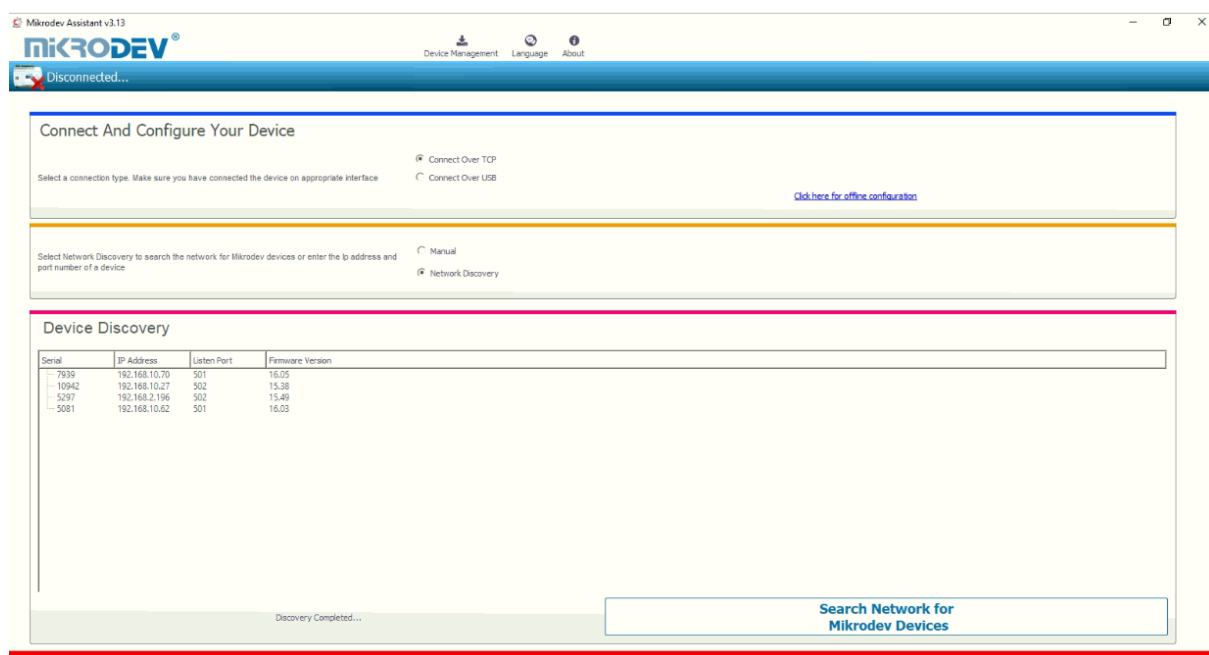


Figure 2 TCP Device Discovery

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. (Figure 3) Assistan software connects to the Mikrodev device with specified IP address and port number.

The screenshot shows the Mikrodev Assistant v3.13 application window. The title bar includes the Mikrodev logo and version number. The main interface is divided into several sections. At the top, there's a status bar showing 'Disconnected...'. Below this, the 'Connect And Configure Your Device' section has two radio buttons: 'Connect Over TCP' (selected) and 'Connect Over USB'. A link for 'Click here for offline configuration' is present. The next section, 'Select Network Discovery to search the network for Mikrodev devices or enter the ip address and port number of a device', has two radio buttons: 'Manual' (selected) and 'Network Discovery'. The 'Manual Connection' section contains two input fields: 'Device IP' with the value '192.168.3.200' and 'Port' with the value '502'. A blue 'Connect' button is located to the right of these fields.

Figure 3 TCP Connection

1.2.4 Port Numbering

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.

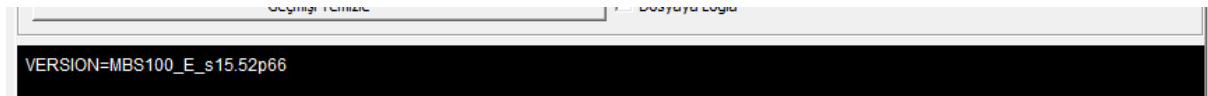


Figure 5 Response of Version Query

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

VERSION=MBS100_E_s15.52p66

- 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.

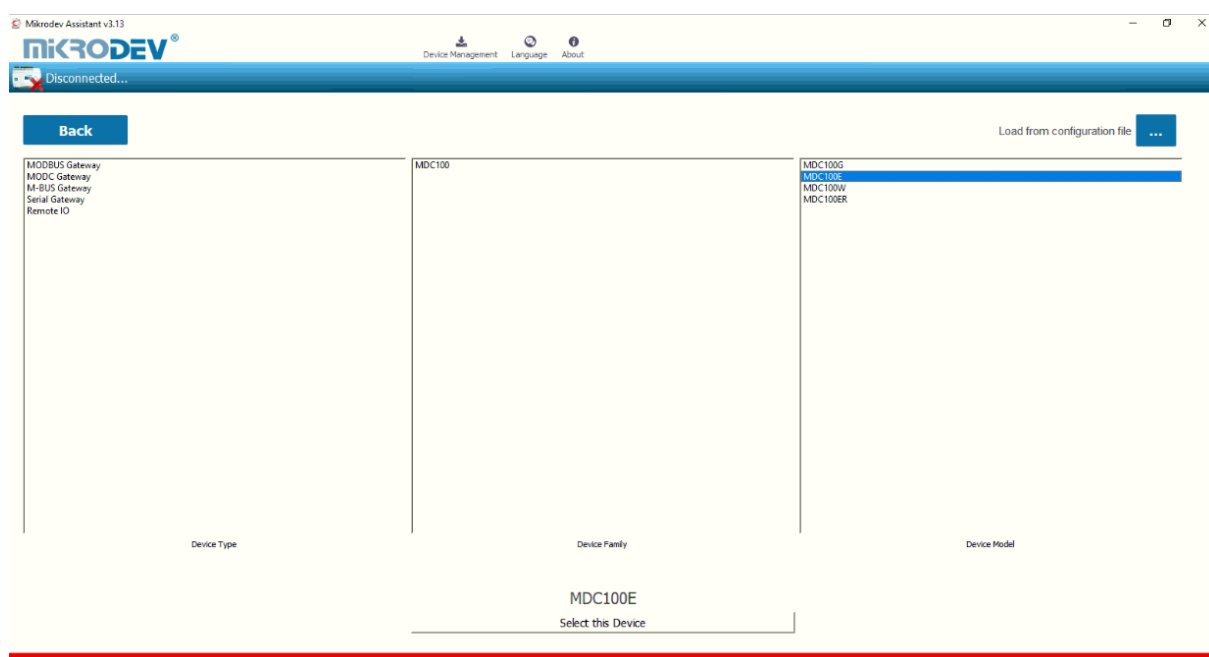


Figure 6 Offline Device Selection

2 MODC GATEWAY Settings

2.1 Status Tab

It is the status information screen which shows related information to the connected Mikrodev device. This screen contains the device's manufacturing information, IP settings and serial connection settings (port1, port2). (Fig. 7) You can access the web interface of the device from this screen as well. Select "Click here to access the web interface of the device" to access the web interface.

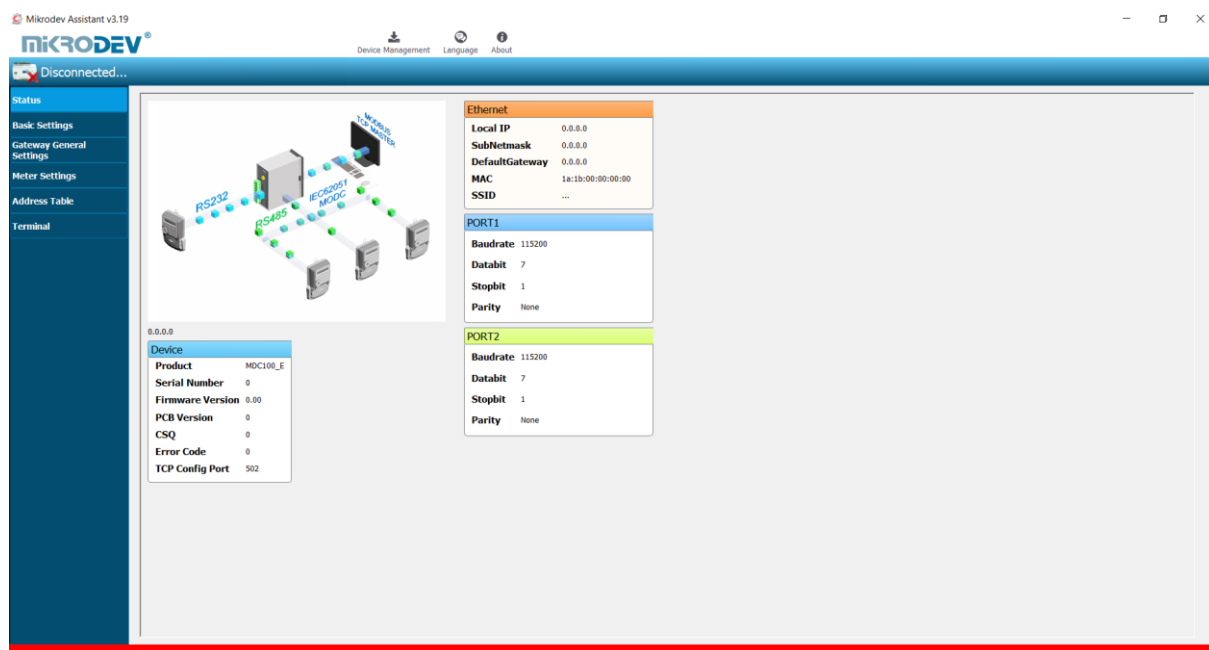


Figure 7 Status Screen

2.2 Basic Settings

In the basic settings section, parameter set values are entered according to communication types. When entering local IP, gateway IP, subnet for Ethernet connection; For GSM connection, APN, username, user password are entered. When Wi-Fi connection is desired, SSID (modem username), password, Wi-Fi local IP, Wi-Fi gateway IP and Wi-Fi netmask IP are entered. In addition, the password definition for access control to the Mikrodev device is performed on this page. Also, device connection follow-up duration, auto reset duration, and configuration port can be entered. You can send ID after connection by checking the "Send ID after connection" checkbox. (Figure 8)

Figure 8 Basic Settings

2.3 Gateway General Settings

In the Gateway General Settings section, the MODBUS communication settings of the Mikrodev device are made. In case of connection via MODBUS TCP, server or client selection of the connection type is made and port settings are defined. And also, MODBUS slave ID settings are defined.

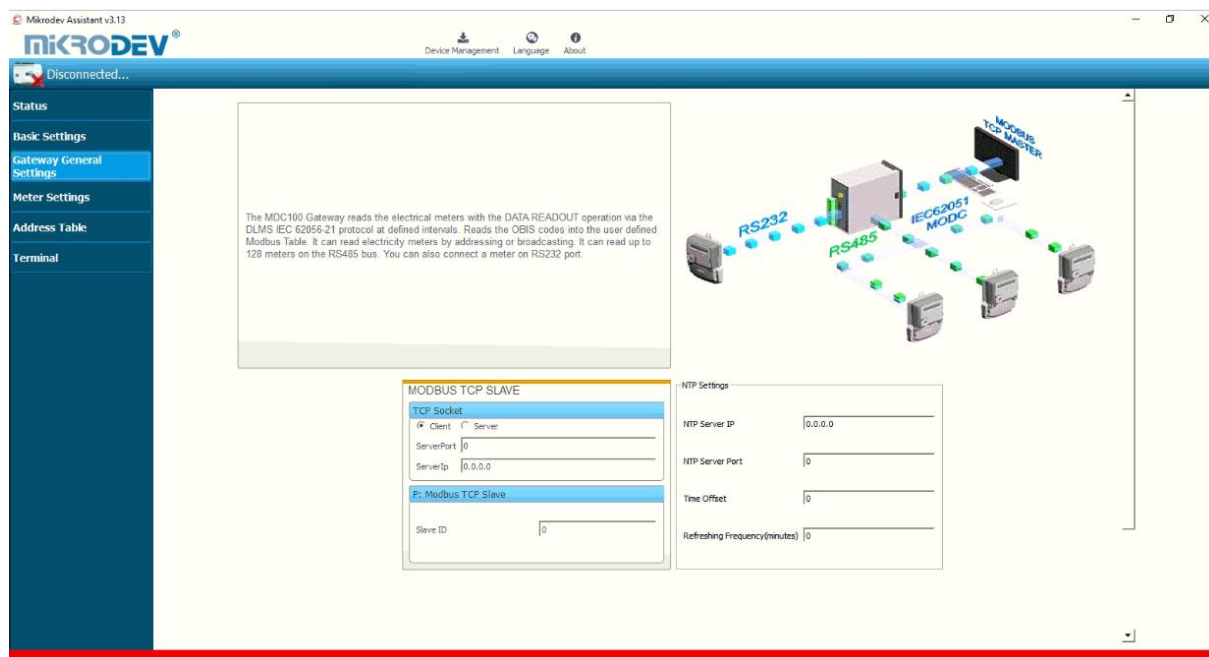


Figure 9 Gateway General Settings

2.4 Loading Settings to Device

Click "Device Management" on the Assistant software to send the configuration settings to the device. Then click "Send Configuration" option. (Figure 10)

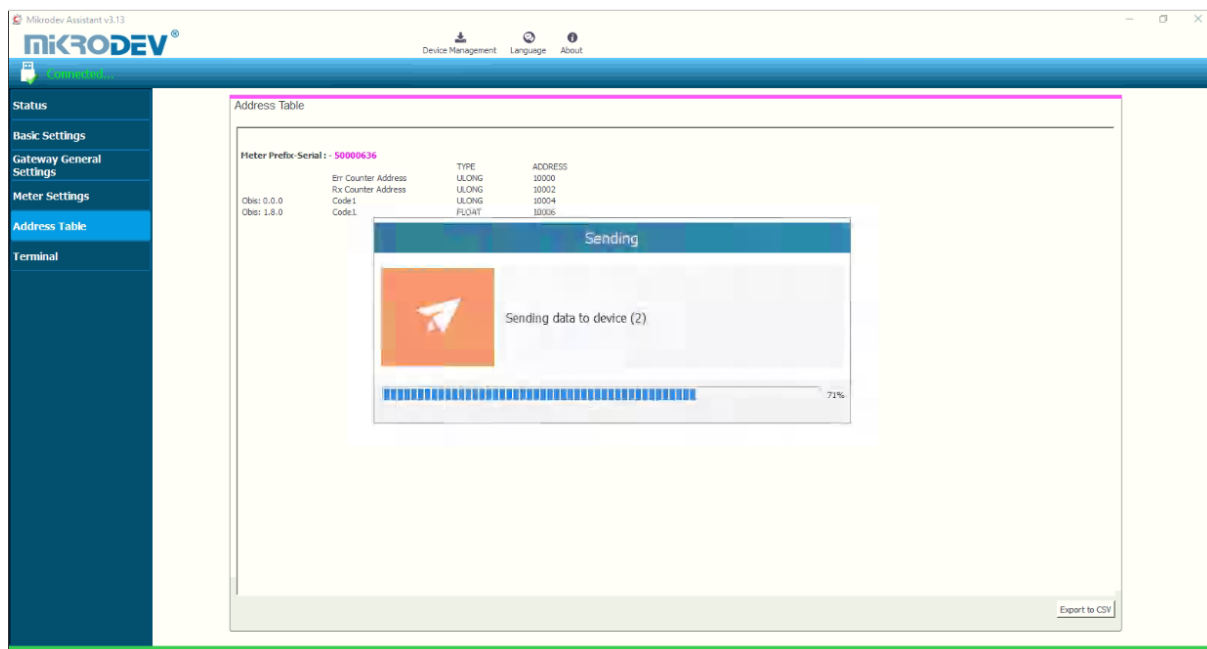


Figure 10 Load Settings

After completing the configuration, the device must be rebooted in order to register the settings. (Figure 11)

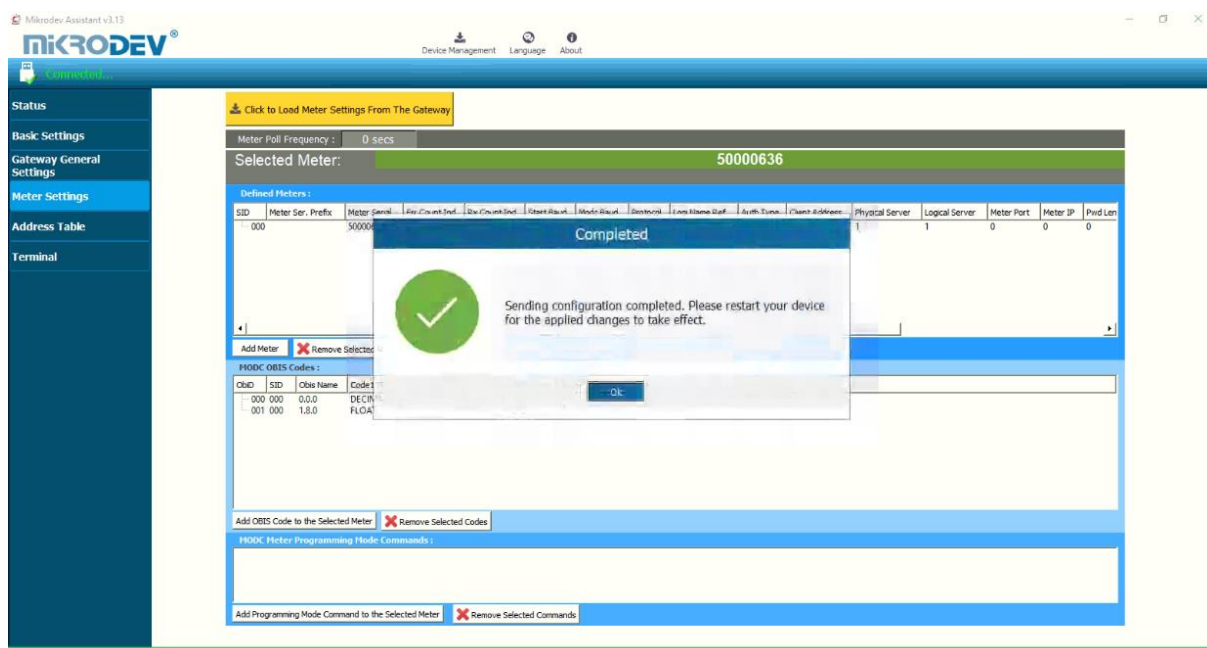


Figure 11 Loading Finished

Restart the device by clicking "Restart Device" under "Device Management" on the main screen of the Assistant program. When the device is rebooted, you may need to remove and reinsert the USB cable to reconnect with the serial port. (Figure 12)

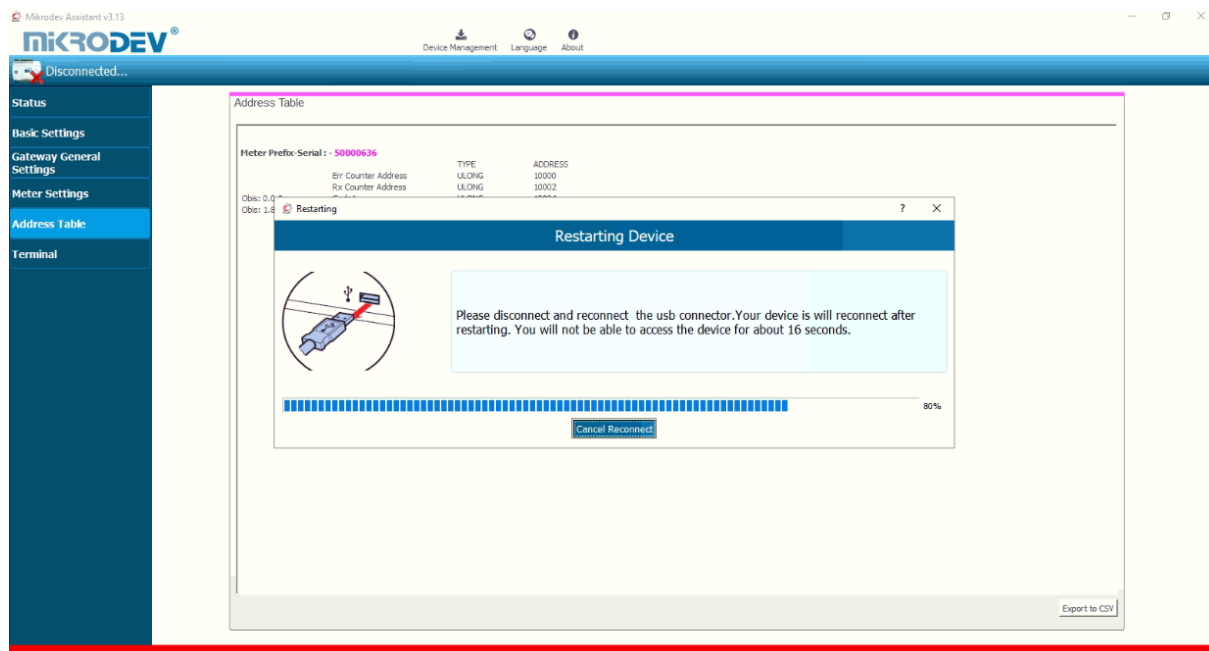


Figure 12 Serial Connection Reset

The TCP connection between the device and the PC will be established automatically after the device is rebooted, after waiting approximately 20 seconds to reconnect to the device through the TCP connection. (Figure 13)

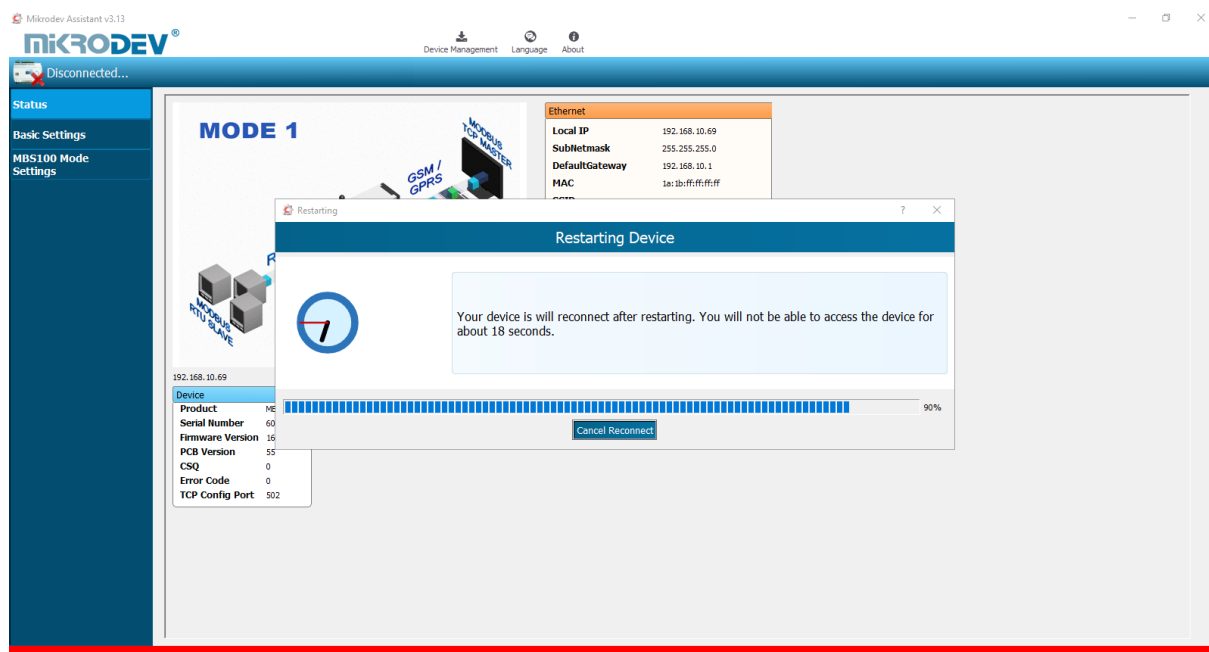


Figure 13 TCP Connection Reset

3 MODC GATEWAY PARAMETER SETTINGS

3.1 Adding Meters

To add a electric meter, first click "Add Meter" on the meter settings page. On the add meter section, a serial prefix, if any, is written in the "Meter Serial Prefix" section. The serial number on the electric meter is entered in the "Meter Serial No" section. The baud rate of the electric meter to be connected is entered in the "Start Baudrate" section. In the standard case, the start baudrate value is entered as 300. In the "Media" section, the connection port is selected. The connection settings defined in the electric meter are entered in the "MODC Baudrate", "Data Bit", "Parity Bit" and "Stop Bit" sections. (Fig. 14)

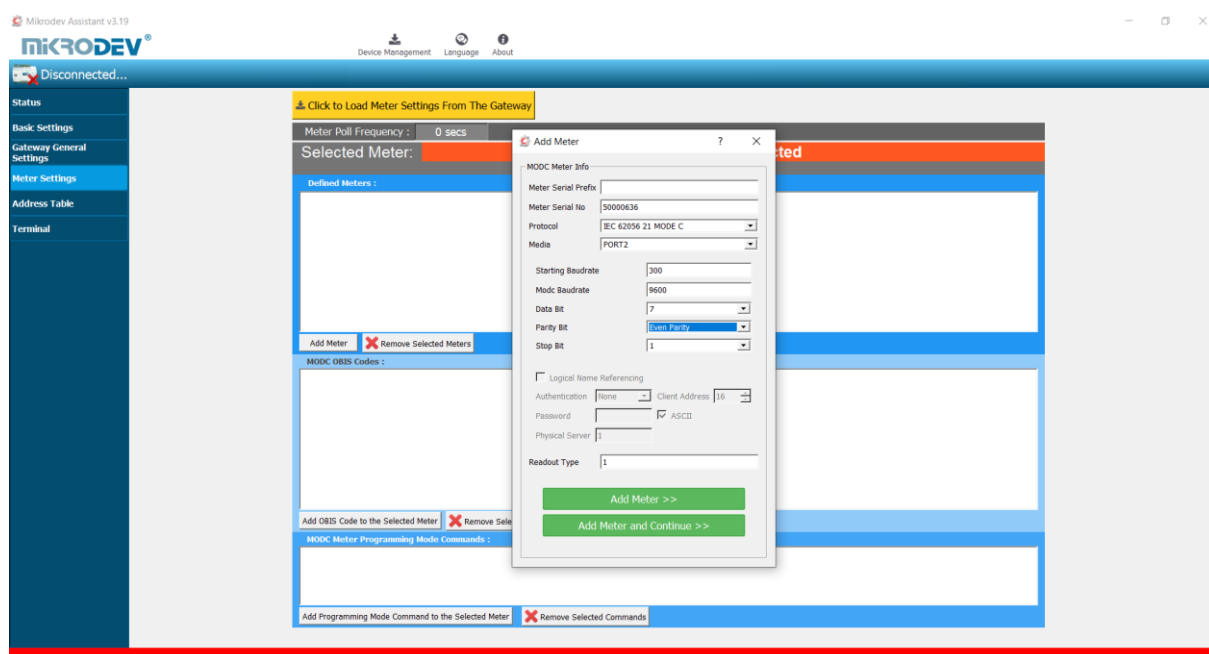


Figure 14 Add Meter Screen

After all the settings are made, click "Add Meter". If more than one counter is to be added, the "Add Meter and Continue" option is clicked. In this way, you can add new electric meters one after the other.

3.2 Adding OBIS Codes

To define the OBIS codes to be read out from the electric meters, first click on the meter from the list of defined meters. Then click "Add OBIS Code to Selected Meter" on the "MODC OBIS Codes" section. The OBIS value to be read is entered in the "OBIS Name" section in the opened page. (Eg 0.0.0, 1.8.0, ...) In the "Code 1 Type" section, the variable type of the value from the relevant OBIS code is selected. If more than one value is read from an OBIS code to be defined, the variable type of the second value to be read is selected in the "Code 2 Type" section. (Figure 15)

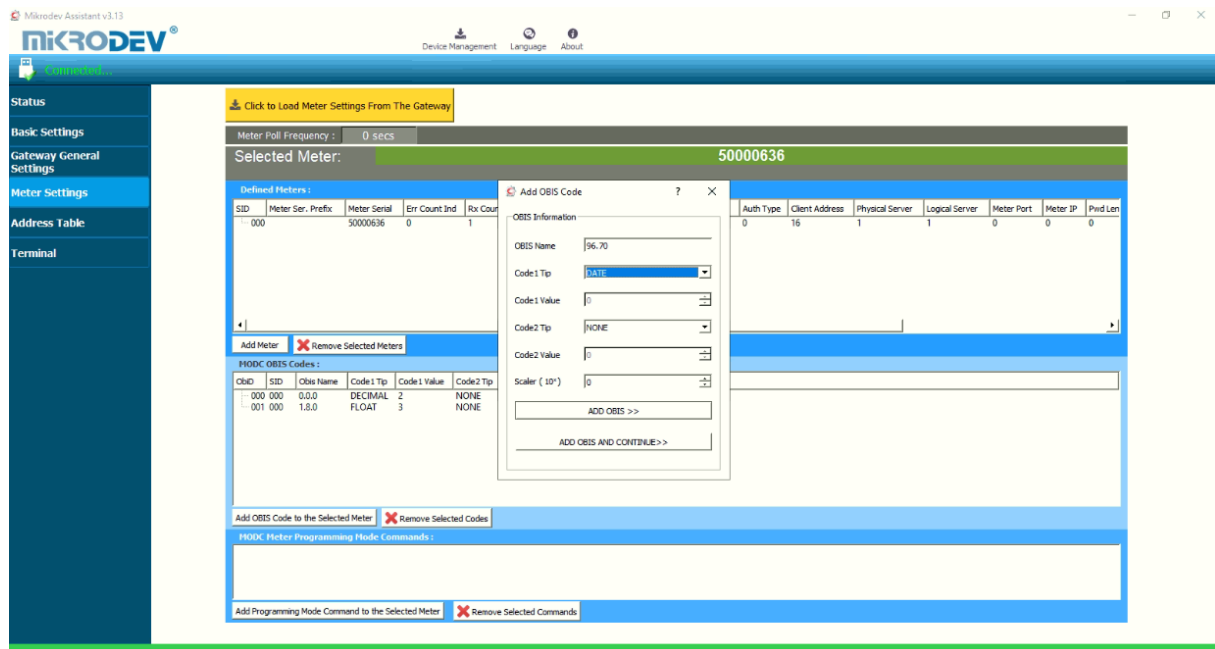


Figure 15 Adding Obis Code

After all settings are made, click "Add OBIS". If more than one OBIS code is to be defined, the "Add OBIS and Continue" option is clicked. Here you can add new OBIS codes in succession.

If you want to modify the OBIS codes created in the "MODC OBIS Codes" list, you can click on the parameter to be modified and make changes.

3.3 Adding OBIS Codes with Special Commands

Special instructions may be required to read certain information on the electric meters. In such cases, the specific command information must be requested from the electric meter's manufacturer. In order to add OBIS code with special command, click "Add Programming Mode Command to Selected Meter" option on the MODC Meter Programming Mode Commands" section. In the incoming screen, special command input is entered in the "Command" section. (Figure 16)

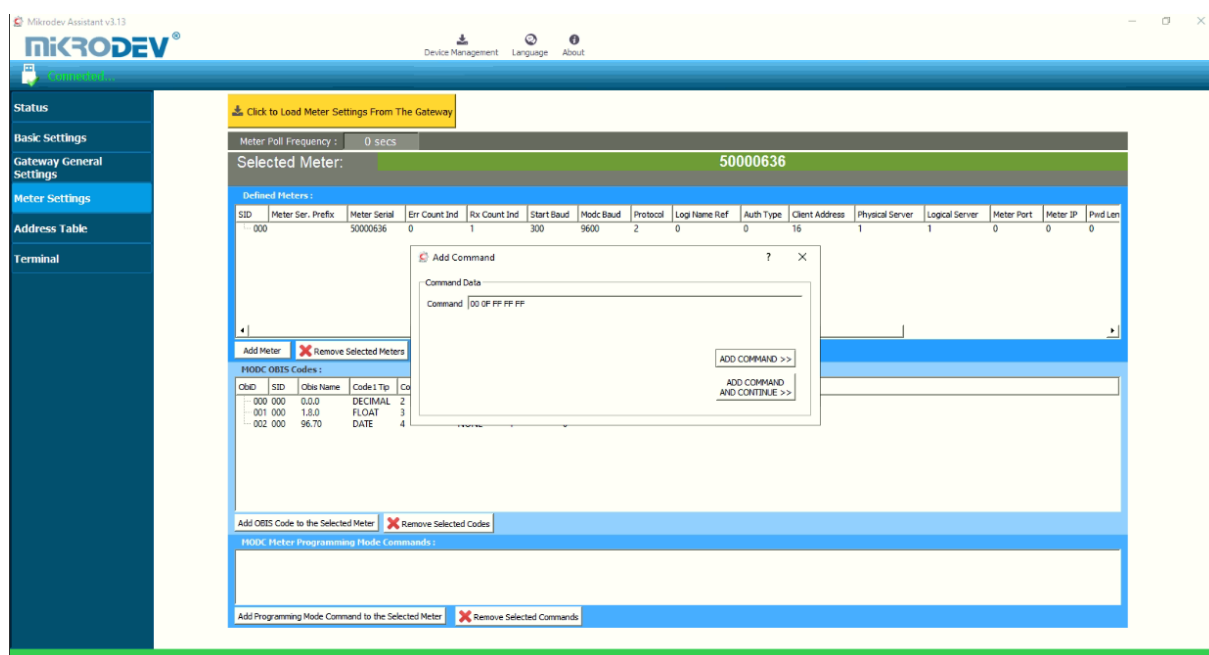


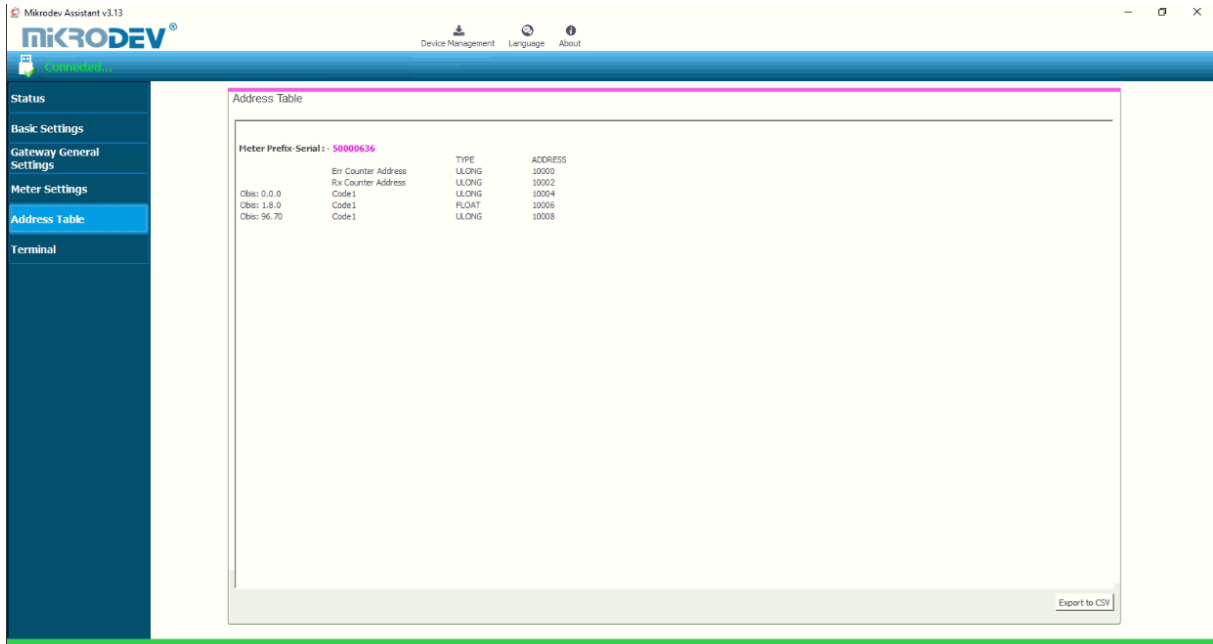
Figure 16 Adding Special Command

After all settings are made, click "Add Command". If more than one custom command will be added, the "Add Command and Continue" option is clicked. You can add successive OBIS codes in this way.

If you want to change the special commands created in the "MODC Meter Programming Mode Commands" list, you can click on the parameter to be changed and make changes.

3.4 MODBUS Address Table

MODBUS address table shows the type of OBIS codes defined earlier and corresponding MODBUS addresses. (Figure 17)



Mikrodev Assistant v3.13

MIKRODEV[®]

Device Management Language About

Status

Basic Settings

Gateway General Settings

Meter Settings

Address Table

Terminal

Address Table

Meter Prefix Serial : - 50000636

		TYPE	ADDRESS
Err Counter Address		ULONG	10000
Rx Counter Address		ULONG	10002
Code1		ULONG	10004
Code1		ULONG	10006
Code1		ULONG	10008

Export to CSV

Figure 17 MODC Adress Table

Addresses in the MODBUS Address Table start at 10000. The first two addresses of each counter added to the table represent error counter and rx counter values.

When adding new OBIS code definitions, it should be noted that; when multiple electric meters are defined on the system, if a new OBIS code value is defined on the first meter, the MODBUS addresses of the latter meters also change. For this reason, it is necessary to go through the next electric meter after defining all the parameters of the previous meters completely. (Figure 18)

Address Table

Meter Prefix Serial	TYPE	ADDRESS
Meter Prefix Serial : - 50000636		
Err Counter Address	ULONG	10000
Rx Counter Address	ULONG	10002
Code1	ULONG	10004
Code1	ULONG	10006
Code1	ULONG	10008
Meter Prefix Serial : - 12345678		
Err Counter Address	ULONG	10010
Rx Counter Address	ULONG	10012
Code1	ULONG	10014
Code1	ULONG	10016
Code1	ULONG	10018

Export to CSV

Figure 18 MODC - MODBUS Address List Figure

3.5 Terminal

Terminal window is the section where the commands for the MDC100 series gateways are entered. In this section, information coming from the device is displayed 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. (Figure 19) Click on "Clear History" in the "Console Window" section to clear the queries that are displayed on the screen.

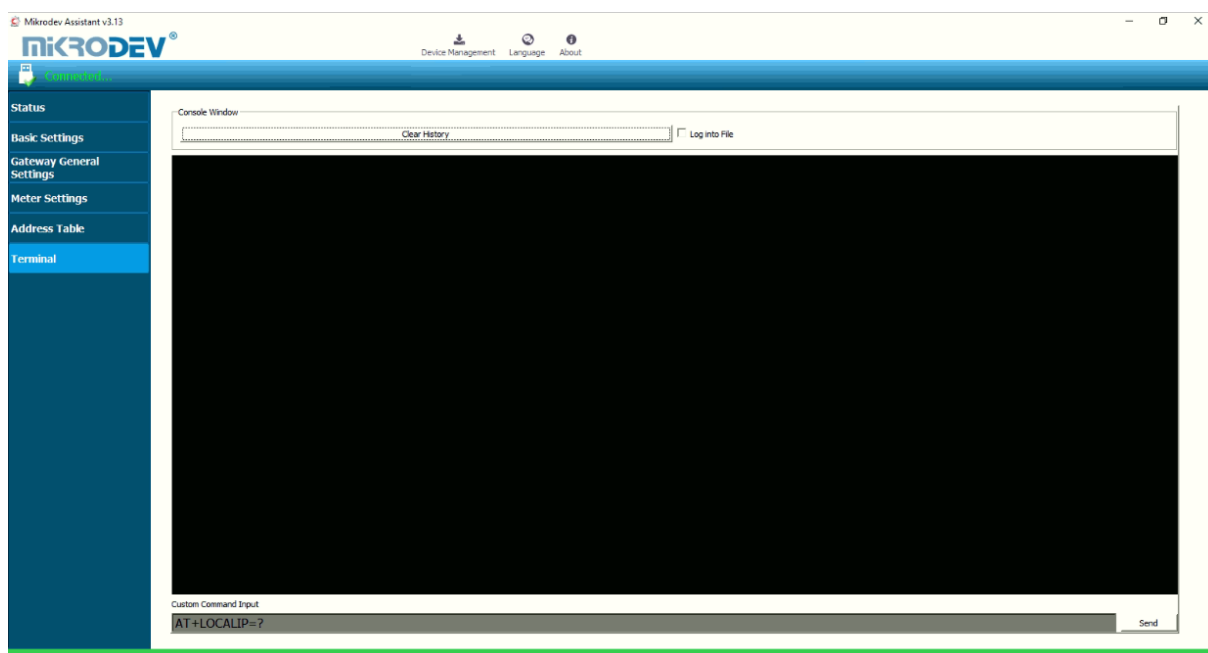


Figure 19 Terminal Command Window