



DKG-210 UNIVERSAL INTERNET GATEWAY UNIT

AC & DC SUPPLY VERSIONS



DESCRIPTION

The DKG-210 is designed for internet monitoring and control of industrial devices using different protocols through the RAINBOW SCADA monitoring system

The DKG-210 does not require any static or real IP number or any port redirection. It is a simple “**plug & play**” unit working on any internet enabled connection.

The RAINBOW SCADA system is informative (rather being query based), thus data traffic is reduced and data security enforced.

The slave device Modbus map is held by the central server and automatically downloaded to the DKG-210 when needed, thus no firmware upgrade is required to add new device types to the monitoring system.

Data ports available for device polling include dual RS-485, RS-232 and USB. The unit supports up to 32 devices on each RS-485 port. Adding RS-232 and USB ports, a maximum of 66 devices may be polled with one DKG-210 unit

Supported protocols include, but not limited to MODBUS-RTU, IEC62056 and Datakom-Rainbow communication.

The DKG-210 unit features 2 relay outputs for remote control and 2 digital inputs for remote sensing.



FEATURES

- Plug & play IP system, easy installation*
- Provides data security with dynamic IP*
- AC and DC supply types available*
- Free PC configuration software*
- Internal GPRS modem with magnetic antenna*
- Ethernet and GPRS connection support*
- Dual RS-485 ports*
- RS-232 port*
- USB Host port*
- 2 x Digital inputs*
- 2 x Relay Outputs*
- GPRS can back-up the Ethernet*
- DIN rail mounted*

COMMUNICATION

- Ethernet Port (10/100Mb)*
- Internal GPRS modem (optional)*
- Dual RS-485 ports, adjustable speed*
- RS-232, adjustable baud rate*
- USB Host 2.0*
- USB Device 2.0*



TABLE OF CONTENTS

Section

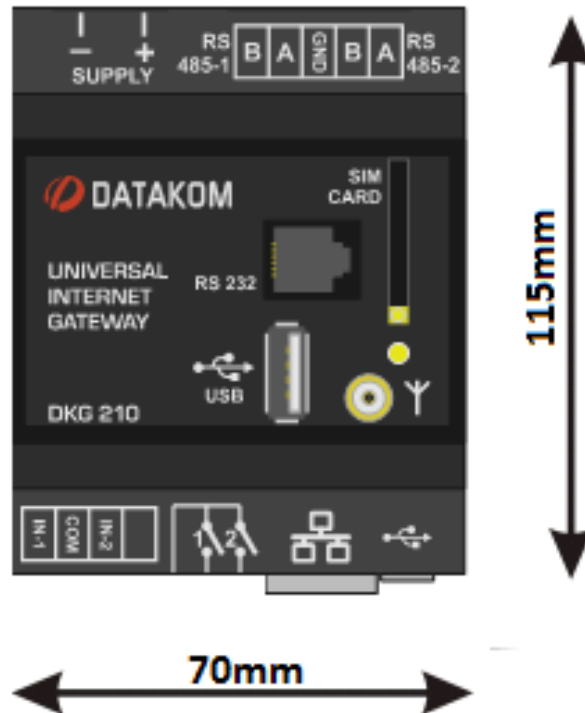
- 1. MOUNTING THE UNIT**
 - 1.1. Dimensions
 - 1.2. Wiring the Unit
- 2. INPUTS AND OUTPUTS**
 - 2.1. Power Supply Inputs
 - 2.2. Relay Outputs
 - 2.3. Digital Inputs
 - 2.4. Mini USB
 - 2.5. USB Host Port
 - 2.6. RS-232 Port
 - 2.7. RS-485 Terminals
 - 2.8. Ethernet Port
 - 2.9. GPRS Modem
- 3. PROGRAMMING**
 - 3.1. Device Selection
 - 3.2. Communication Parameters
 - 3.2.1. Connection to Remote Monitoring via Ethernet
 - 3.2.2. Connection to Remote Monitoring via GPRS
- 4. DECLARATION OF CONFORMITY**
- 5. TECHNICAL SPECIFICATIONS**

1. MOUNTING THE UNIT

1.1 Dimensions

The DKG-210 is DIN rail mounted gateway unit.

Dimensions: 70 x 115 x 66mm (WxHxD)



1.2 Wiring the Unit



WARNING: THE UNIT IS NOT FUSED.
Use external fuses for Phase input of AC version
Battery positive BAT(+) of DC version
Install the fuses as nearly as possible to the unit in a place easily accessible for the user.
The fuse rating should be 6 Amps.



WARNING: ELECTRICITY CAN KILL
ALWAYS disconnect the power **BEFORE**
connecting the unit.

2. INPUTS AND OUTPUTS

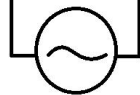
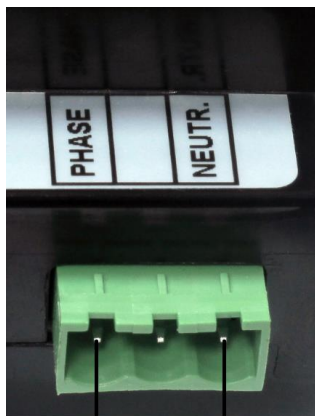
2.1 Power Supply Inputs

AC Models:

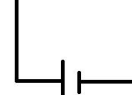
Function	Technical data	Description
Phase	170 to 270 VAC 50/60Hz	Phase input of AC supply model
Neutral	Input, 0V-AC	Neutral terminal for the AC supply model.
Relay Outputs	5Amps @ 250VAC/30VDC	Both configurable relay outputs
Digital Inputs	6 to 135 V-DC 6 to 270 V-AC	Both configurable digital inputs.

DC Models:

Function	Technical data	Description
Bat +	8.0 to 36.0 V-DC	The positive terminal of the DC Supply shall be connected to this terminal.
Bat -	0 VDC	Power supply negative connection



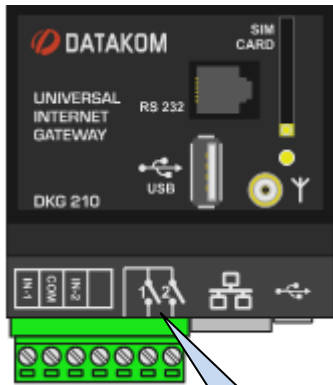
170-270 V-AC



8-36 V-DC

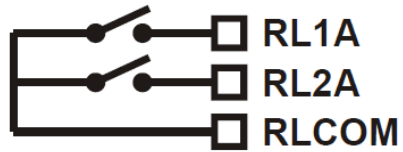
2.2 Relay Outputs

Function	Technical data	Description
Relay Outputs	5Amps @ 250VAC/30VDC	Both configurable relay outputs



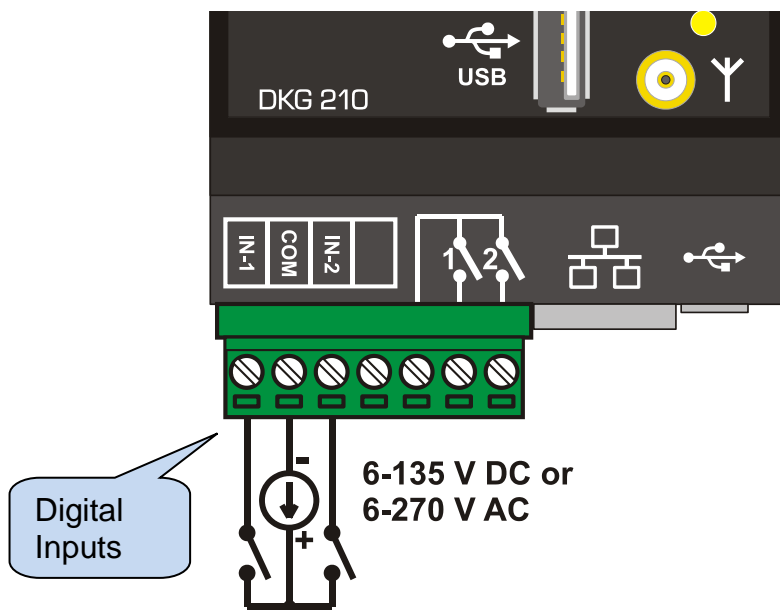
INTERNAL STRUCTURE OF RELAY OUTPUTS:

MAX 5A
30V DC or
250V AC



2.3 Digital Inputs

Function	Technical data	Description
Digital Inputs	6 to 135 V-DC 6 to 270 V-AC	Both configurable digital inputs.



2.4 Mini USB

Mini USB connector is used to connect DKG-210 unit to a PC. PC connection will allow the user to make configuration of the unit.



Mini USB cable is not shipped with the product.



The RainbowPlus program must be installed to PC.

Please check RainbowPlus D500 D700 Installation Guide



Mini USB cable



Mini USB
connector

2.5 USB Host Port

USB host port is designed to connect any other products for polling. The connector on the unit is of USB-A type. Thus, other product must be USB-B type. Standard A to B type cable should be used. This is the same cable used for USB printers.



USB cable is not shipped with the product.



PC configuration is not available through USB host port.



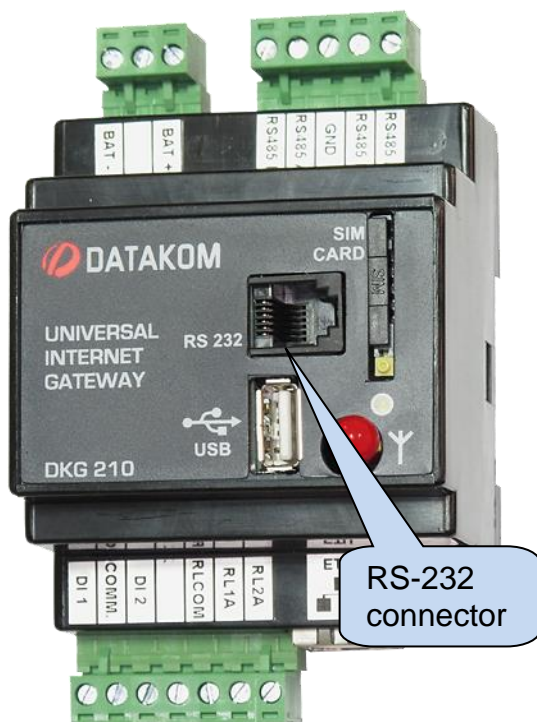
2.6 RS-232 Port

RS232 port is used for polling of any other products which has RS232 connection feature. Only one unit can be connected through RS232 port, multiple connection is not available.

Description:	RS-232, non isolated.
Functionality:	Connection to other products
Connector:	RJ-6
Connection:	3 wires (Rx-Tx-GND). Full duplex.
Baud rate:	2400-115200 bauds, selectable
Data type:	8 bit data, no parity, 1 bit stop
Max distance:	15m
Cable type:	Standard modem cable
Terminal description:	2: Rx input 4: GND 3: GND 5: Tx output



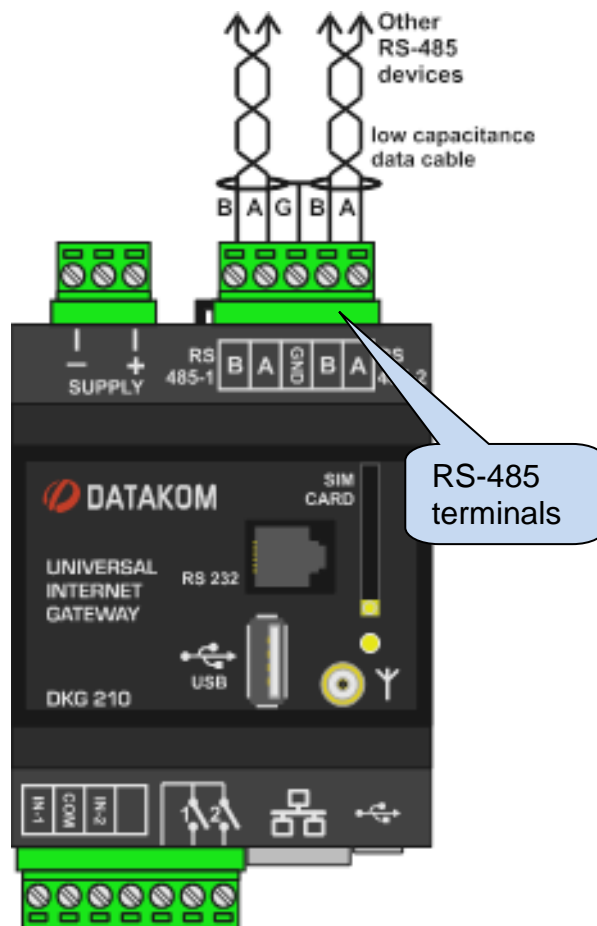
**RS-232 cable is shipped with the product for Datakom controllers.
For other brands, please contact to Datakom.**



2.7 RS-485 Terminals

The DKG-210 unit has dual RS-485 terminals. These terminals are used for device polling and each terminal supports 32 devices. Different baud rates can be adjusted for RS-485 terminals.

Structure:	RS-485, non isolated.
Connection:	3 wires (A-B-GND). Half duplex.
Baud rate:	2400-115200 bauds, selectable
Data type:	8 bit data, no parity, 1 bit stop
Termination:	External 120 ohms required
Common mode voltage:	-0.5 VDC to +7VDC, internally clamped by transient suppressors.
Max distance:	1200m @ 9600 bauds 200m @ 115200 bauds

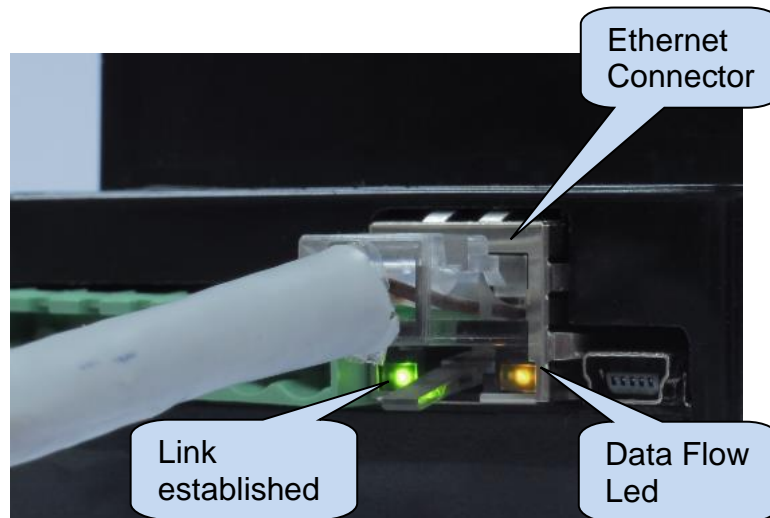


RS-485 cable is not shipped with the product.

2.8 Ethernet Port

The DKG-210 unit connects to datakom server through Ethernet connection. It doesn't require any static or real IP number or any port redirection. It is a simple **"Plug&Play"** unit working on any internet enabled connection.

Description:	IEEE802.3 compliant, 10/100 Base-TX RJ45 ethernet port with indicating leds
Data rate:	10/100 Mbits/s, auto detecting
Connector:	RJ45
Cable type:	CAT5 or CAT6
Isolation:	1500 VAC, 1 minute
Max distance:	120m
Functionality:	Connection to datakom server, Modbus TCP/IP



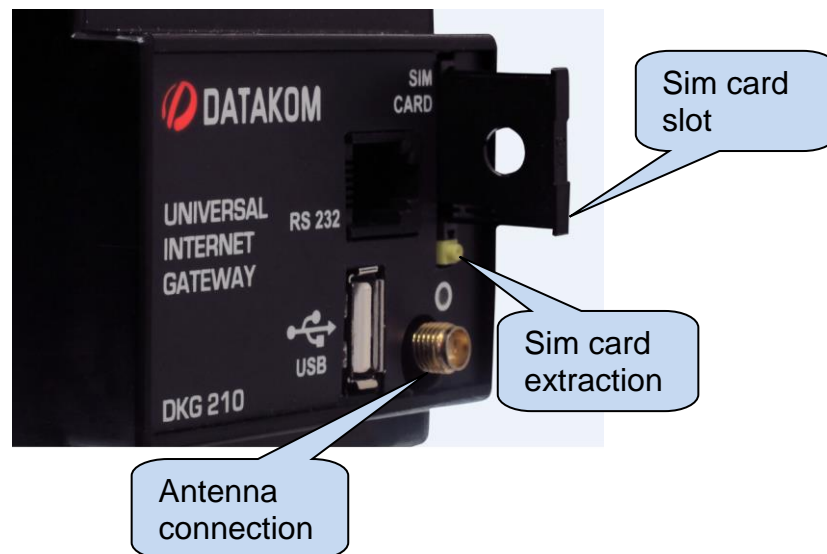
STANDARD ETHERNET CABLE



2.9 GPRS Modem

The DKG-210 unit offers an optional built in GPRS modem. GPRS modem allows the unit to connect Datakom server.

Description:	Quad-band GSM/GPRS 850/900/1800/1900MHz module. GPRS multi-slot class 12/12 GPRS mobile station class B Compliant to GSM phase 2/2+. – Class 4 (2 W @850/ 900 MHz) – Class 1 (1 W @ 1800/1900MHz)
Functionality:	Connection to Datakom server, Modbus TCP/IP
Operating temp range:	-40°C to +85 °C
Data speed:	max. 85.6 kbps (download), 85.6 kbps (upload)
SIM card type:	external SIM 3V/1.8V, GPRS enabled
Antenna:	Quad band, magnetic, with 2m cable (provided with the module)
Module certificates:	CE, FCC, ROHS, PTCRB, GCF, IC, ICASA, REACH



3. PROGRAMMING

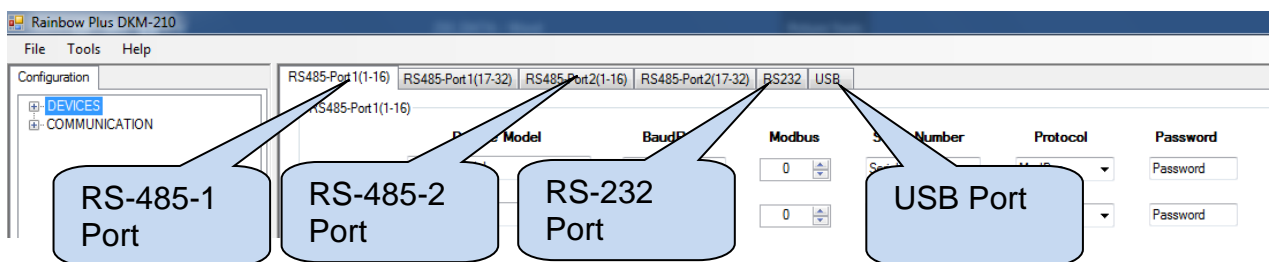
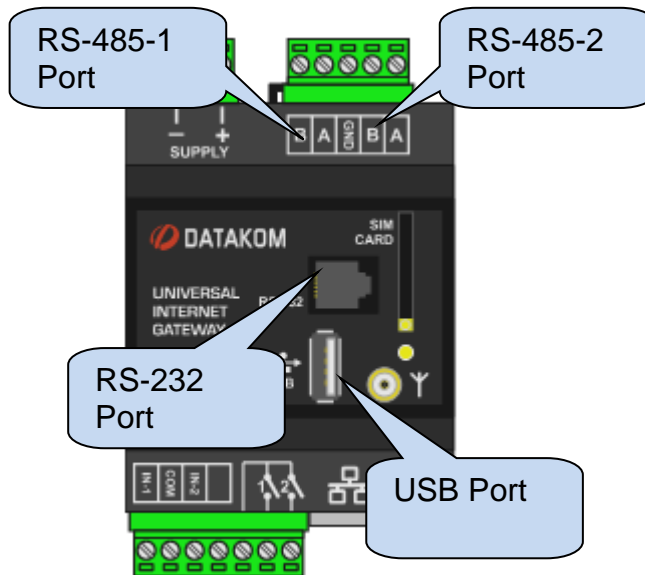
RainbowPlus software must be installed to PC to make configuration through mini USB connector. Please refer to **D500 D700 RainbowPlus Configuration** manual for detailed information.

3.1 Device Selection

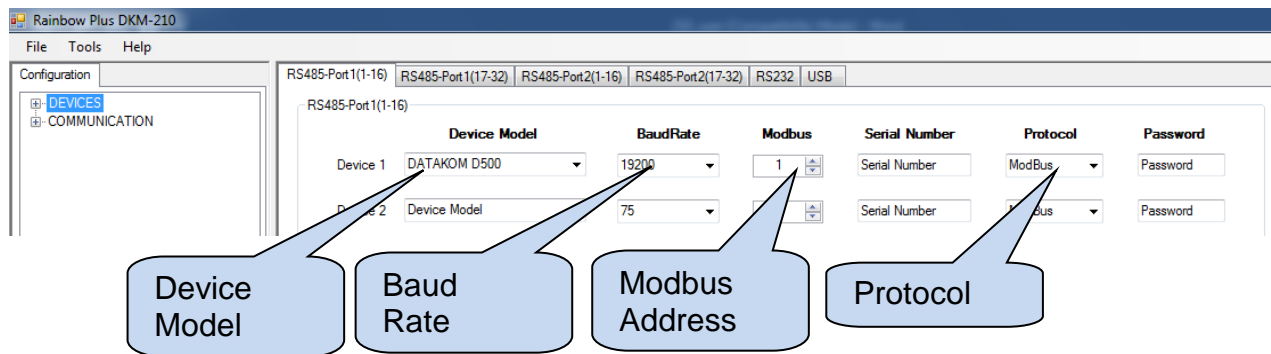
Data ports available for device polling include dual RS-485, RS-232 and USB. Device model, baud rate and Modbus address must be configured from RainbowPlus software.

RainbowPlus software has two configuration tabs. Device selection is done from DEVICES tab.

If the device to poll is connected to the RS-485-1 port, then the device model must be selected from RS-485-1 Port tabs. If the device to poll is connected to RS-485-2 port, then the device model must be selected from RS-485-2 Port tabs. If device is connected to the RS-232 port, the device model must be selected from RS232 tab and if the device is connected to USB host port, then the device model must be selected from USB Port tab.



Each RS-485 port supports 32 devices.



Devices connected to the same RS-485 port, must have identical baud rates.



Each device connected to the same RS-485 port, must have a different Modbus node address.



If an energy meter is connected to the DKG-210 unit, the protocol must be selected EN62056 instead of Modbus.

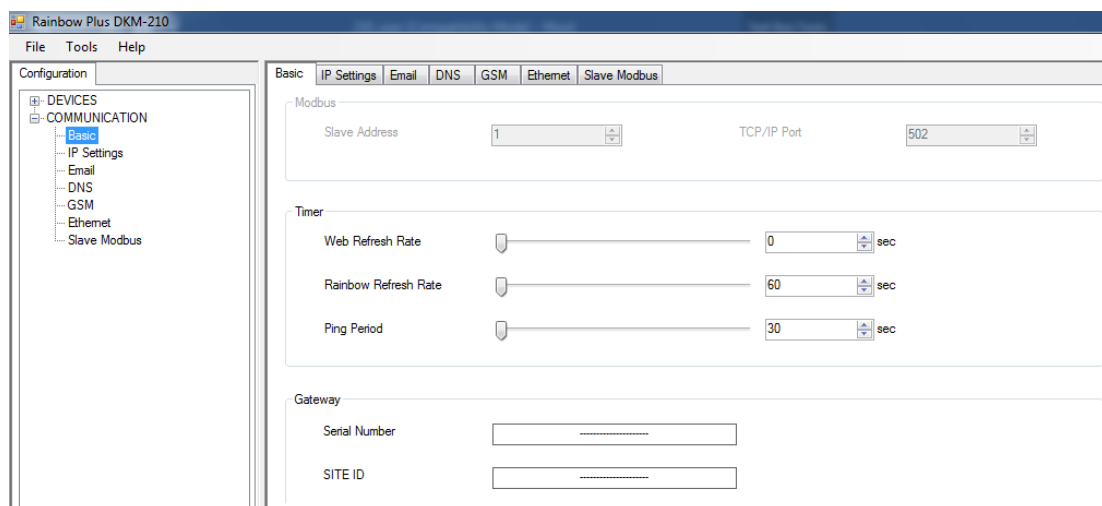


If the required device model is not available in the list, please contact to Datakom Technical Support.

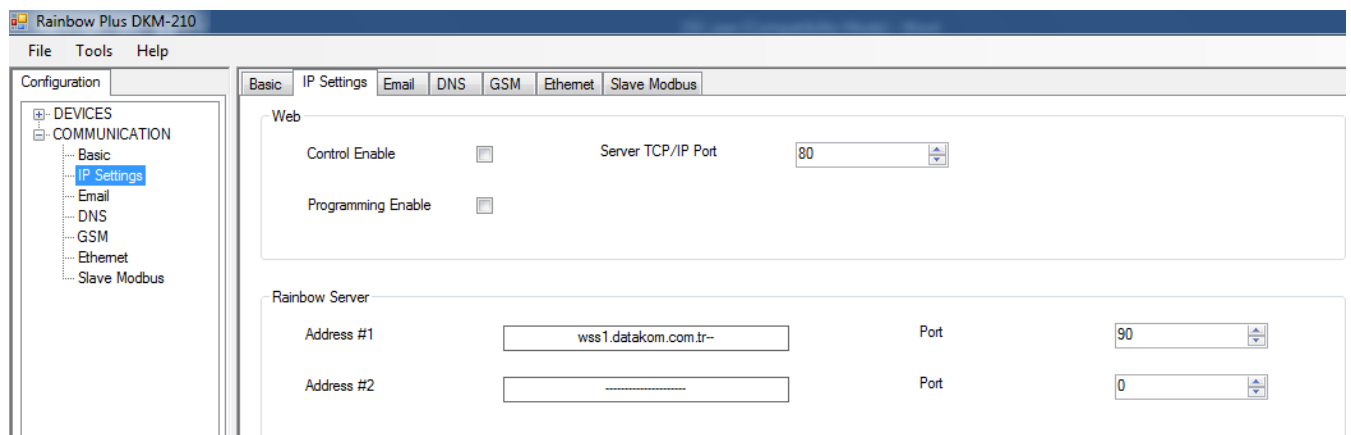
3.2 Communication Parameters

3.2.1. Connection to Remote Monitoring via Ethernet

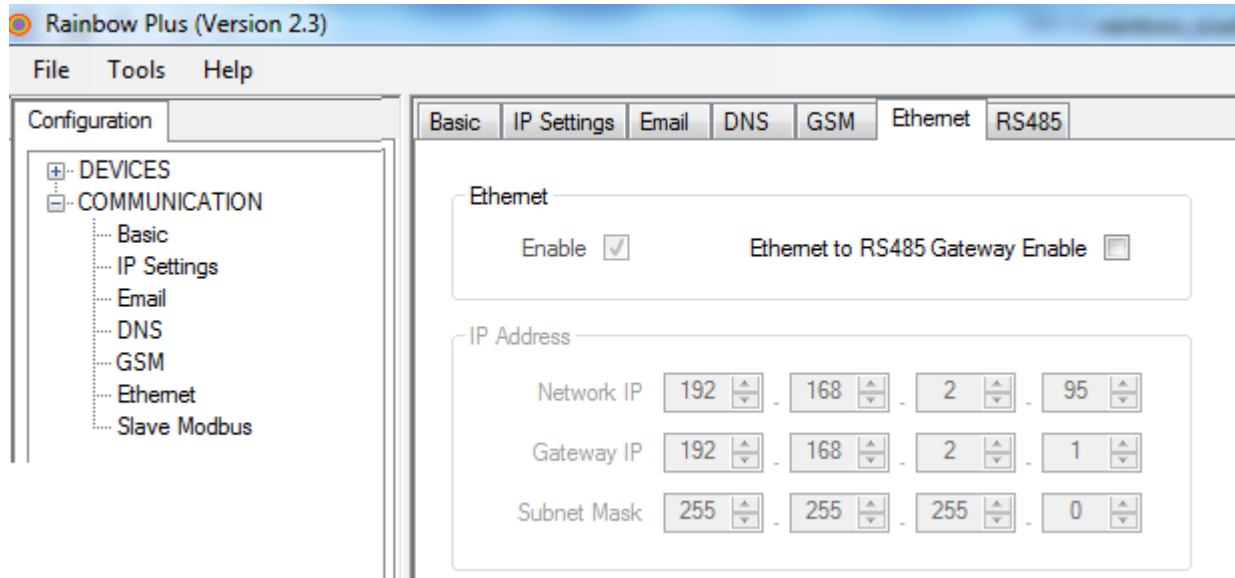
- Open the Rainbow Plus program.
- Connect to the device through mini USB.
- Read parameters from device.
- Select **Communication > Basic** tab.
- Adjust the **Rainbow Refresh Rate** parameter as required. The minimum advised refresh rate is 60 seconds.
- Fill **Serial Number** and **Site Id** definitions. These strings will let you identify this controller from the data center.



- Select **Communication > IP Settings** tab.
- Datakom server address is already written as **Rainbow Server Address #1** (wss1.datakom.com.tr).



- Select **Communication > Ethernet** tab.
- Click on Ethernet Enable parameter.
- Enter IP settings if static IP is required.



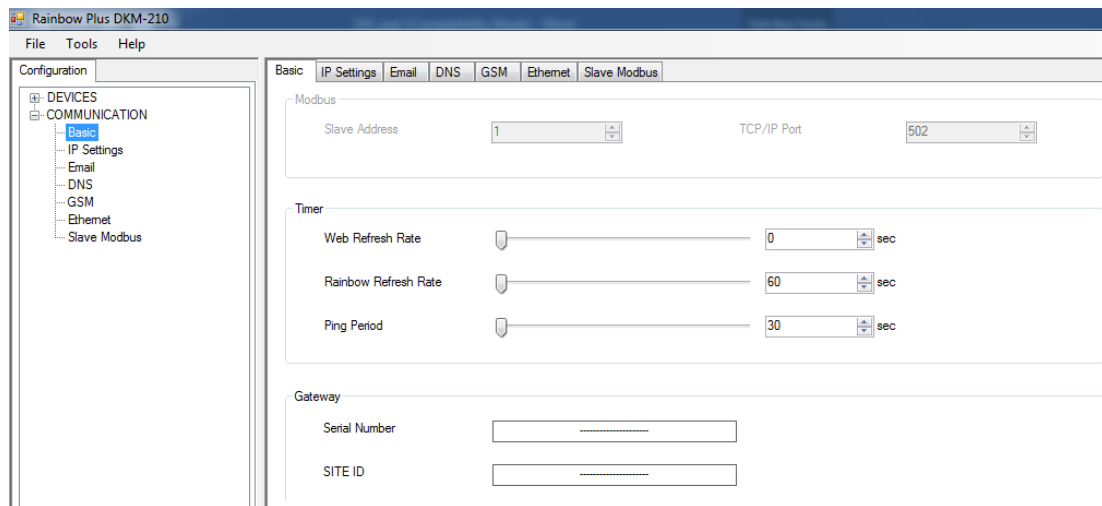
- When parameter editing is over, click **Write To Device** button.
- Reset your device and wait for the Ethernet connection get ready.



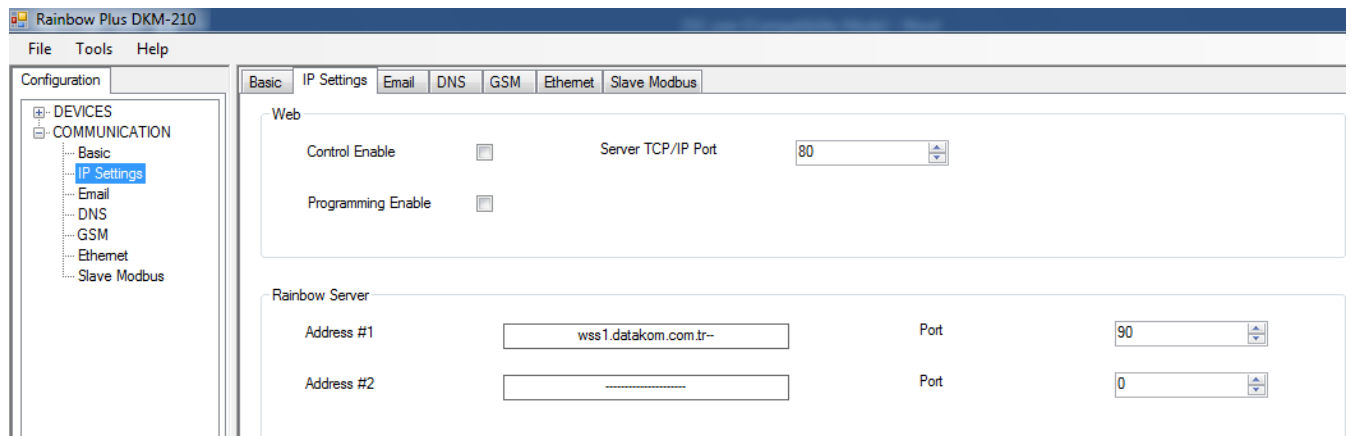
Contact Datakom Technical Support to add your gateway unit to the Remote Monitoring system.

3.2.2.Connection to Remote Monitoring via GPRS

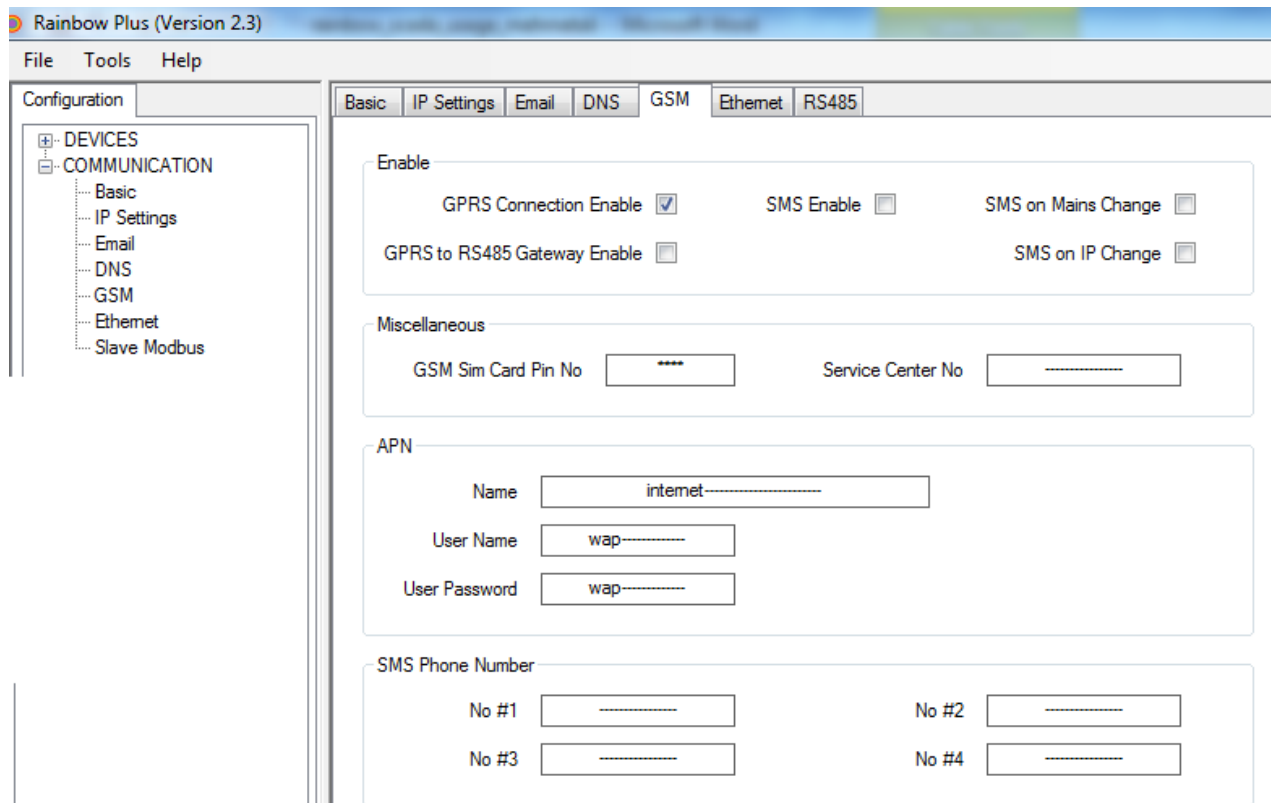
- Open the Rainbow Plus program.
- Connect to the device through mini USB.
- Read parameters from device.
- Select **Communication > Basic** tab.
- Adjust the **Rainbow Refresh Rate** parameter as required. The minimum advised refresh rate is 60 seconds.
- Fill **Engine Serial Number** and **Site Id** definitions. These strings will let you identify this controller from the data center and display on Rainbow Scada.



- Select **Communication > IP Settings** tab.
- Datakom server address is already written as **Rainbow Server Address #1** (wss1.datakom.com.tr).



- Select **Communication>GSM** tab. This page contains GPRS parameters.
- Enable GPRS Connection Enable parameter.
- APN (access point name) information are necessary in order to connect to the GPRS network, and **must** be entered correctly. Otherwise connection to the GPRS network may not take place. These information is usually supplied by your GSM operator company.



Rainbow Plus (Version 2.3)

File Tools Help

Configuration

DEVICES

COMMUNICATION

- Basic
- IP Settings
- Email
- DNS
- GSM
- Ethernet
- Slave Modbus

Basic IP Settings Email DNS GSM Ethernet RS485

Enable

GPRS Connection Enable SMS Enable SMS on Mains Change

GPRS to RS485 Gateway Enable SMS on IP Change

Miscellaneous

GSM Sim Card Pin No Service Center No

APN

Name

User Name

User Password

SMS Phone Number

No #1 No #2

No #3 No #4

- When parameter editing is over, click **Write To Device** button.
- Reset your device and wait for the GPRS connection get ready.



Contact Datakom Technical Support to add your gateway unit to the Remote Monitoring system.

4. DECLARATION OF CONFORMITY

The unit conforms to the EU directives
-2006/95/EC (low voltage)
-2004/108/EC (electro-magnetic compatibility)

Norms of reference:
EN 61010 (safety requirements)
EN 61326 (EMC requirements)

The CE mark indicates that this product complies with the European requirements for safety, health environmental and customer protection.

5. TECHNICAL SPECIFICATIONS

Power Supply:

DC Supply Models: 8.0 to 36.0 V-DC.

AC Supply Models: 170 to 270 V-AC. 50/60Hz

Power consumption: 5W / 5VA max.

Digital inputs: 6 to 135 V-DC (6 to 270 V-AC).

Relay outputs: 5Amps @ 250V

Ethernet Port: 10/100 Mbits

USB Device: USB 2.0 Full speed

USB Host: USB 2.0 Full speed

RS-485 Ports: 1200-115200baud

RS-232 Port: 1200-115200baud

Operating temperature:

-20°C to 70°C (-4 to +158 °F)

Storage temperature:

-40°C to 80°C (-40 to +176°F)

Maximum humidity: 95% non-condensing.

Dimensions: 70 x 115 x 66mm (WxHxD)

Weight: 400g max.

Installation: DIN Rail mounted

Case Material:

High Temperature, non-flammable ABS/PC