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APPLICATION NOTE

Rainbow Scada Usage Guide	
PRODUCTS AFFECTED:	D-500 / D-700
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Issue	01

Related documents	Rainbow Scada Installation Guide

This document assumes that the RainbowScada program is installed to PC.

For installation details please check **Rainbow Scada D-500 D-700 Installation Guide**.

Data Connection Establishment

Rainbow Scada requires an active internet connection to function. It acts as a server for all configured controllers.

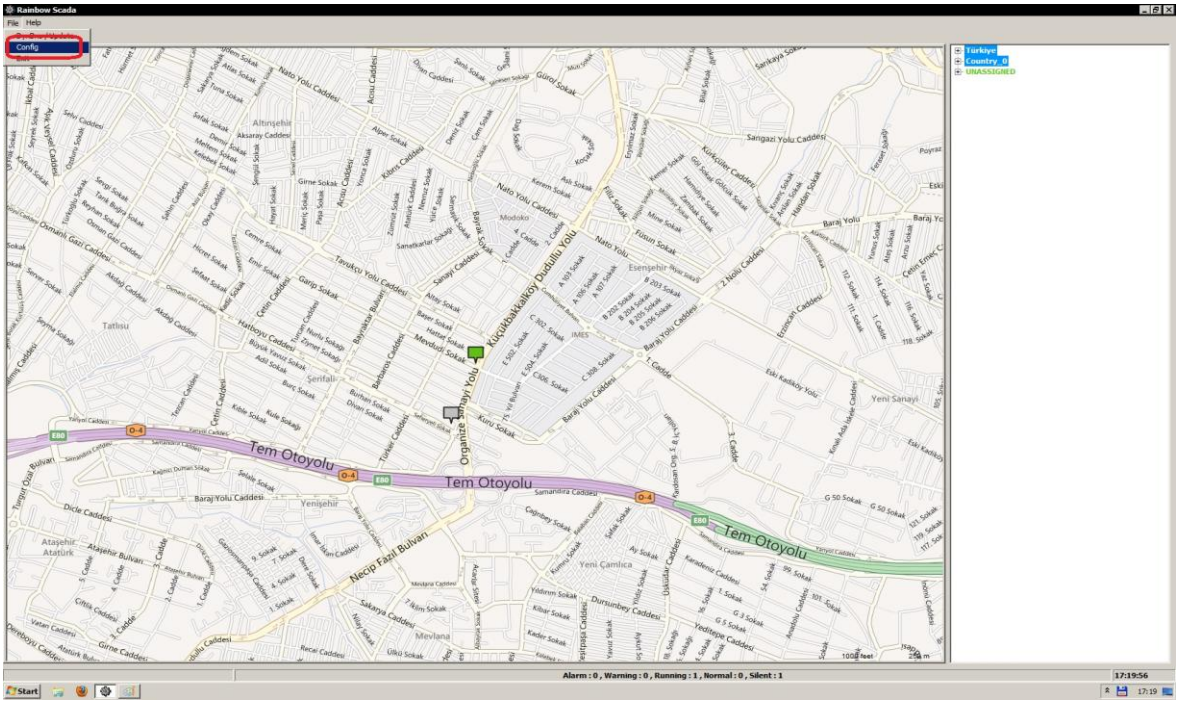
As the Rainbow Scada program acts as a server, the router (ADSL modem, Fiber modem or standalone Router) must be configured to allow certain port(s) to be directed to the computer that the Rainbow Scada is running on.

Other than that, your internet connection must have a static IP-address or you have to use a Dynamic DNS service.
Static IP-address configuration requires you to communicate with your ISP (this may incur charges).

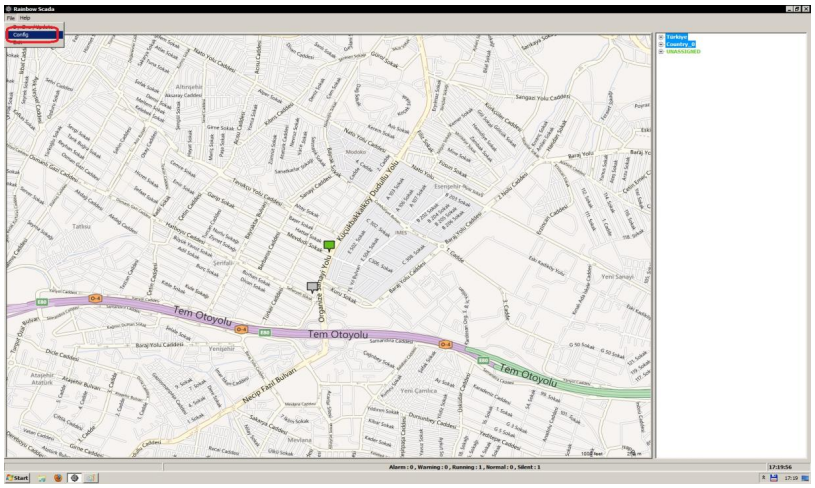
Dynamic DNS service is subscribed over the internet, very flexible and generally free for this kind of usage.

Running the program

When the program is installed, the RainbowScada icon is on your desktop.
Double click this icon in order to start the RainbowScada program



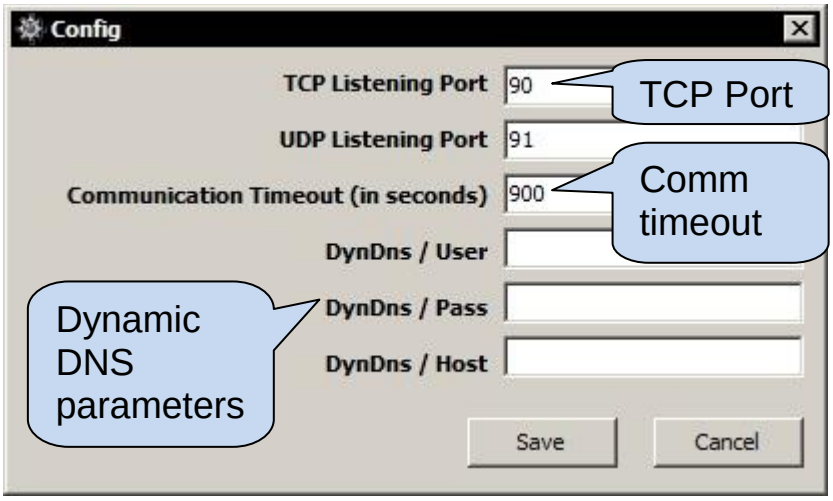
Configuring RainbowScada



The default TCP port that controllers will connect is port 90.

Other ports may be used as well.

To do that, please choose “Config” from the “File” menu. The “Config” screen will open.



In order to change the TCP port number, enter a valid new port number and then click “Save”.

The program will warn you to exit & re-run the application. “

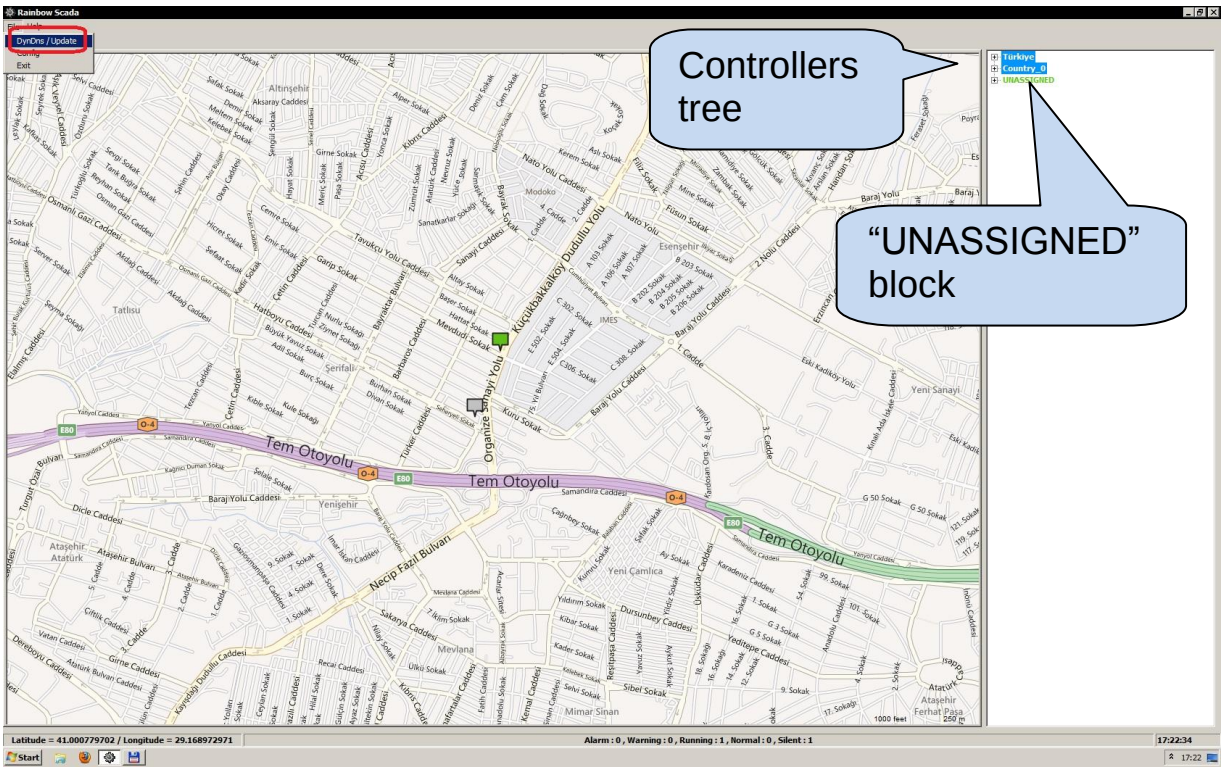
UDP Listening Port” parameter is reserved for future use and has no effect in the operation of the unit.

The “Communication Timeout” parameter’s default value should not be changed.

DynDns parameters hold your DynDns account details and when configured, refresh your IP information automatically. (there is no need to install DynDns update tool)

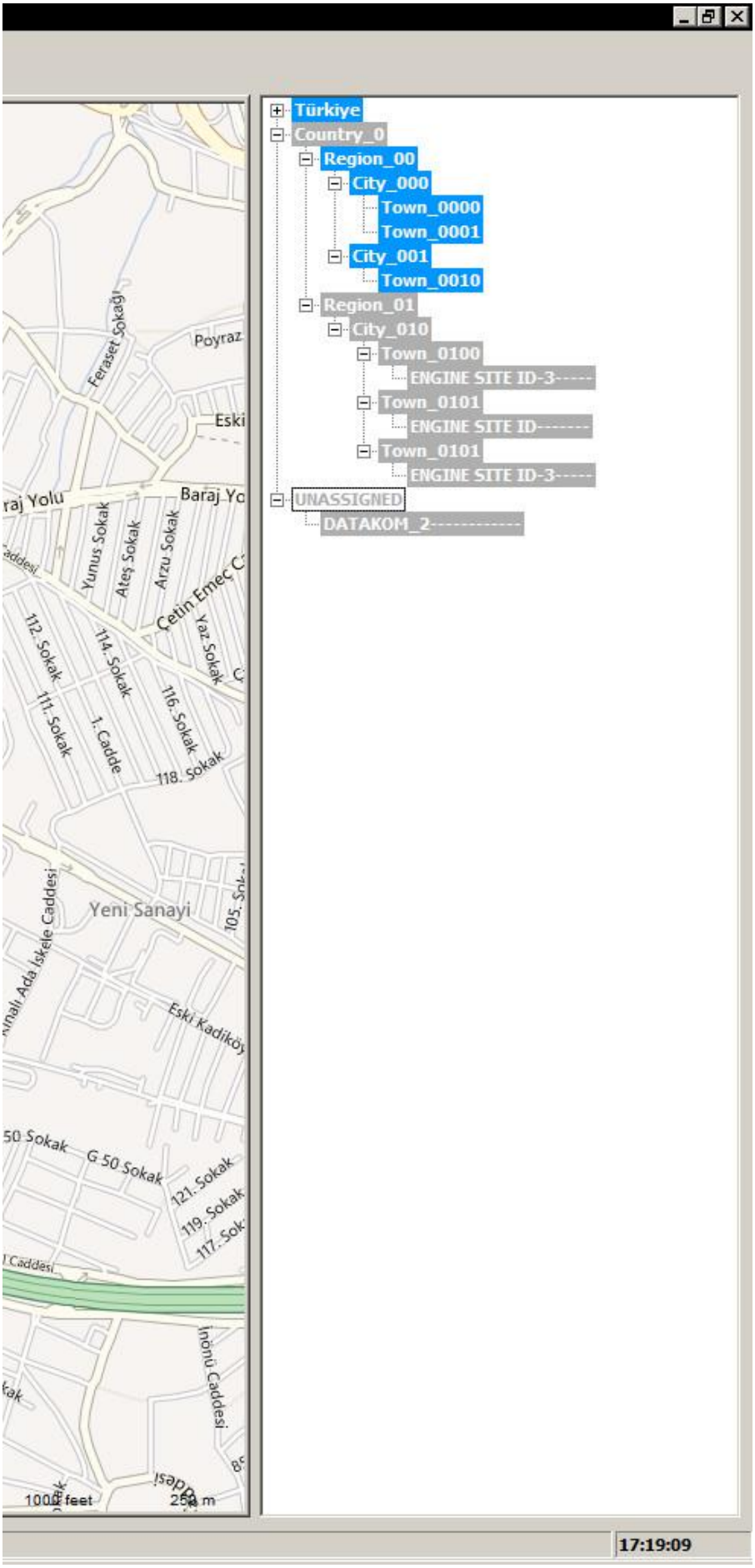
If DynDns parameters are not configured properly, then the automatic refreshing of the IP address will not occur.

After Rainbow Scada and remote controllers are configured and the router port redirection is set-up properly, remote controllers should start to appear on the geographical map.



They are also listed on the right hand “ControllerTree” under the “UNASSIGNED” block.

This ControllerTree configuration is read from the tree_*.cnf files that reside in the application executable directory.



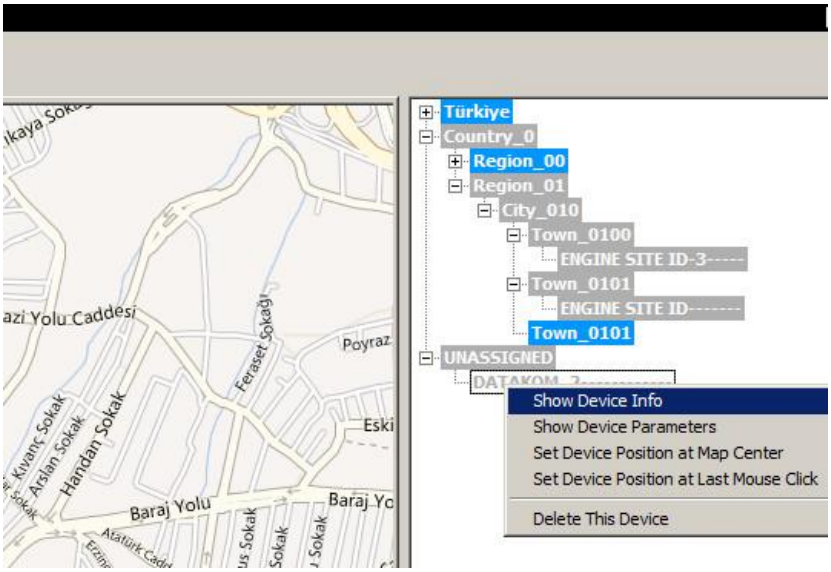
As controllers connect to the Rainbow Scada, they appear on the Geographical Map and under the UNASSIGNED block at the right hand side of the screen.

If you edit the tree_*.cnf file according to your needs, you can relocate the controllers to more appropriate nodes by just dragging them with the mouse.

If you single-click on a controller on the Tree, the Map repositions itself to show that controller. If you single-click a controller on the Map, that particular controller is selected on the Tree.

If you double-click on a controller on the Tree, the Map repositions itself and the Device tab shows all the received information from that particular controller if that controller is currently online.

If you right-click on a controller on the Tree, You see a menu for useful actions related to that controller.

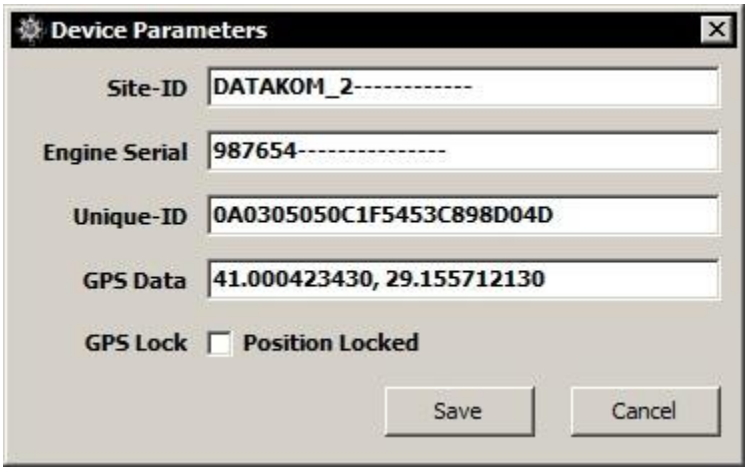


"Show Device Info" activates the Device Tab that displays all the information received from this controller.

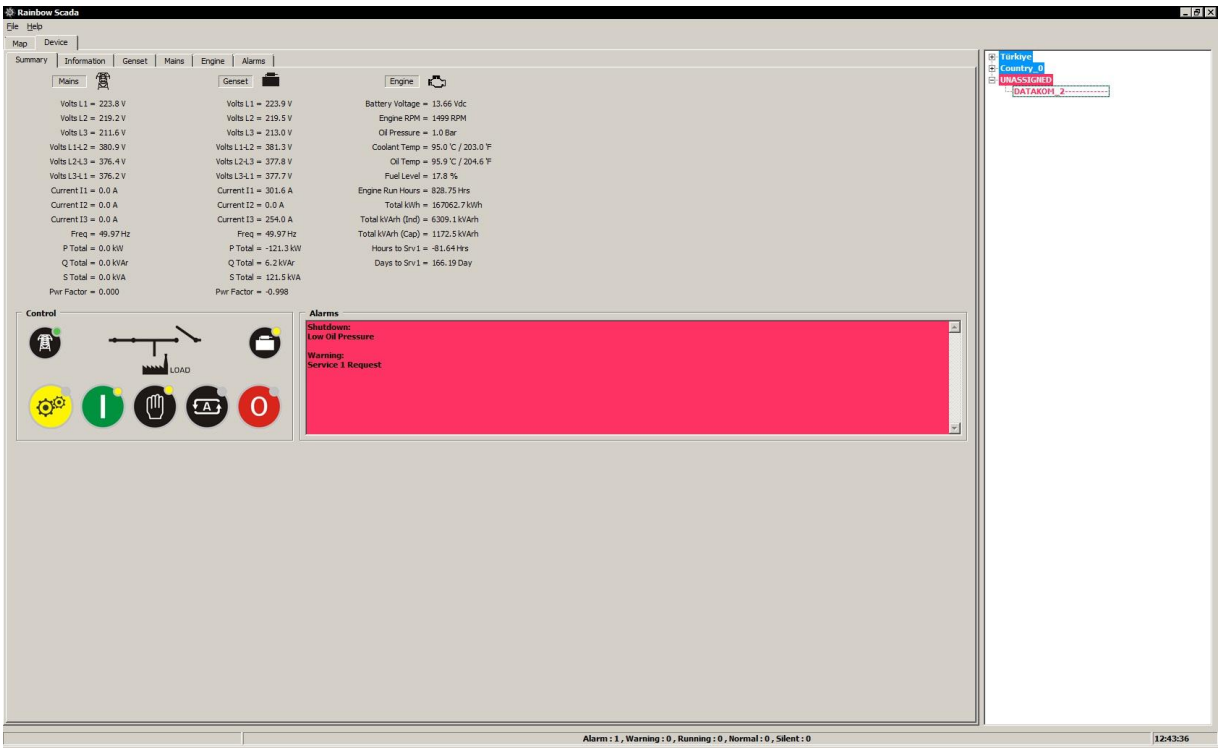
"Set Device Position at Map Center" relocates the icon of this controller to the center of the Map if it is not position-locked.

"Set Device Position at Last Mouse Click" relocates the icon of this controller to the position of the Last Mouse Click. With this, you can locate the controllers accurately.

"Delete This Device" deletes this controller from both Map and Tree. If the controllers sends data again, then it will reappear in the UNASSIGNED block.



"Show Device Parameters" opens the screen on the left. You can only edit the GPS Data value and check/uncheck the Position Locked checkbox. If Position Locked is checked, this controller can not be relocated (useful for accidental relocations).

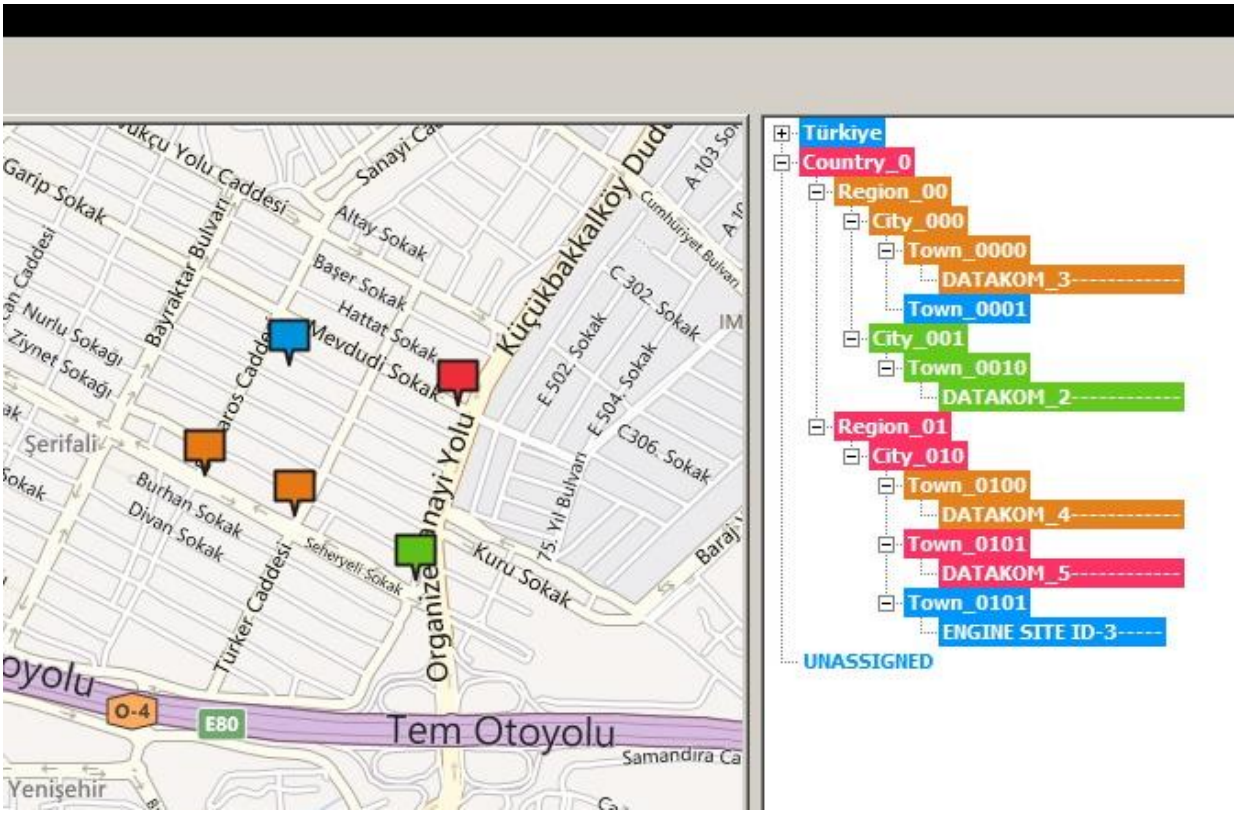


When you double-click a controller on the Tree, application takes you to the Summary screen that is shown on the left.

On this screen, you see the most vital information for your controller and the KeyPad that looks just like the one on an actual controller.

This KeyPad is functional but not real-time like a physical KeyPad. Depending on the connection type/quality, you may feel some feedback lag.

Color coding



Every genset is represented by a colour box, both on the map and on the right hand tree structure.

Colors on the map are sorted so that the most important information overrides other information.

On the right hand side tree structure, a controller with a fault condition will turn all upper levels to this color. As an example, if a controller shows a shutdown in a town, all these blocks will have orange color: the controller, the town, the city, the country.

Please check the controller DATAKOM_5 on the above picture. As the controller is red, Town_0101, City_010, Region_01 and Country_0 become red.

The color coding is as follows:

RED: The controller has a high priority fault condition (shutdown or loaddump alarm)

ORANGE: The controller has a low priority fault condition (a warning)

GREY: The controller has stopped communication with the Rainbow Scada program.

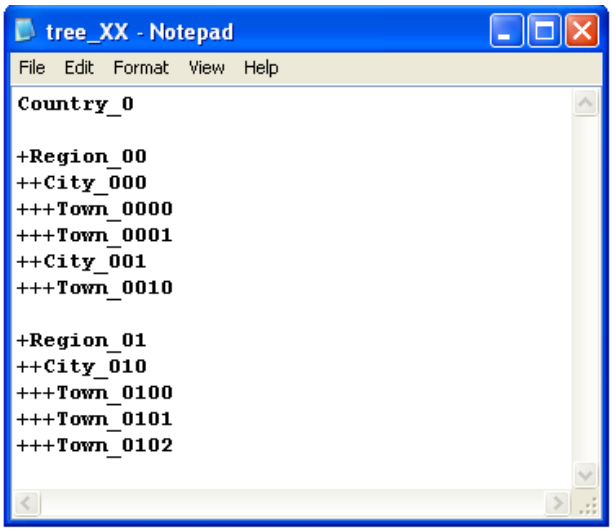
GREEN: The genset is running, there is no fault condition.

BLUE: The controller is at rest, genset is not running, there is no fault condition.

Editing the Tree.cnf file

When installed for the first time, the Rainbow Scada program will come with a default tree file which is named TREE_XX.CNF

This file is found in the RainbowScada executable folder.



This sample Tree Configuration file may be edited by **notepad** or any other text editor to reflect your Genset portfolio geographical distribution.

You can have several of these files in the form of "tree_***.cnf", they will be appended on the fly then used accordingly. Only ASCII/UTF-8 formatted files are accepted.

The tree file comprises a 4 level hierarchy which usually reflects countries, regions, cities and towns. In practice any other hierarch may be freely used.

Each block must be written on a new line without precedenting blank characters.

Top level blocks (usually countries), are directly written on a line.
Level_2 blocks are precedented by a “+” (plus) sign.
Level_3 blocks are precedented by “++” (double plus).
Level_4 blocks are precedented by “+++” (double plus).

COUNTRY	REGION	CITY	TOWN
Country_0	Region_00	City_000	Town_0000 Town_0001
		City_001	Town_0010
	Region_01	City_010	Town_0100 Town_0101 Town_0102

Configuring the controller

The RainbowScada program must be installed to PC.

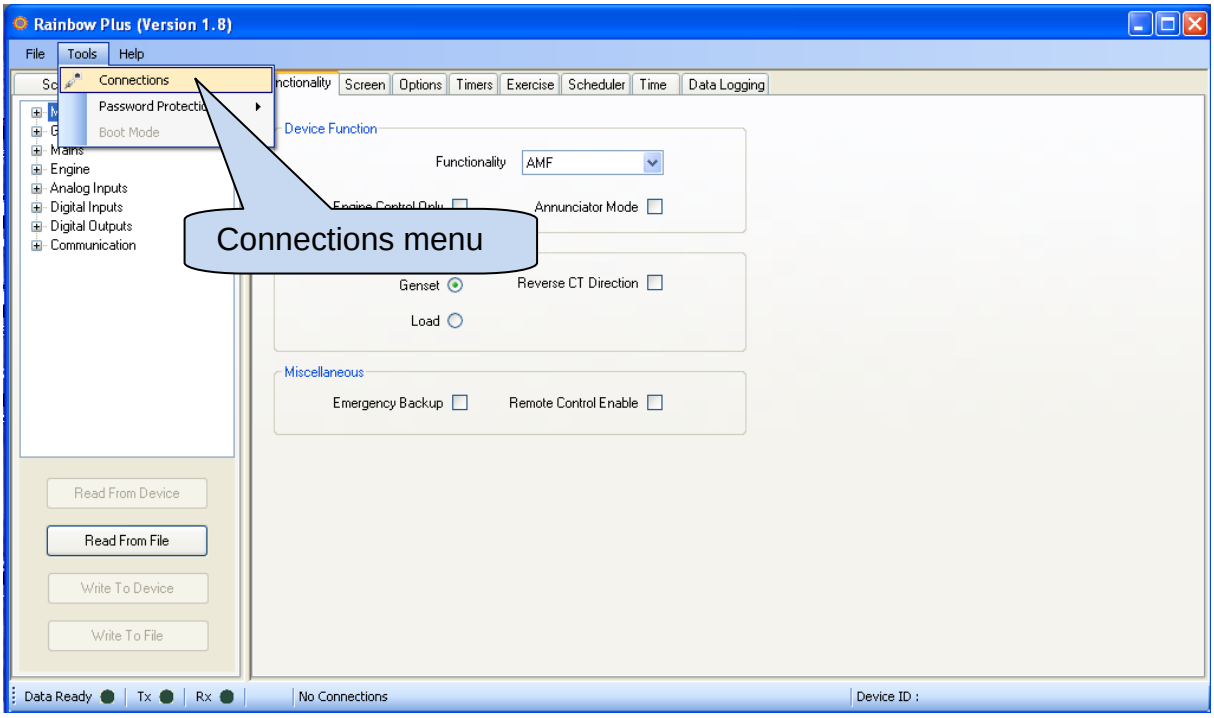
The controller should be connected to the PC.

Please check **Rainbow Scada D-500 D-700 Installation Guide**.

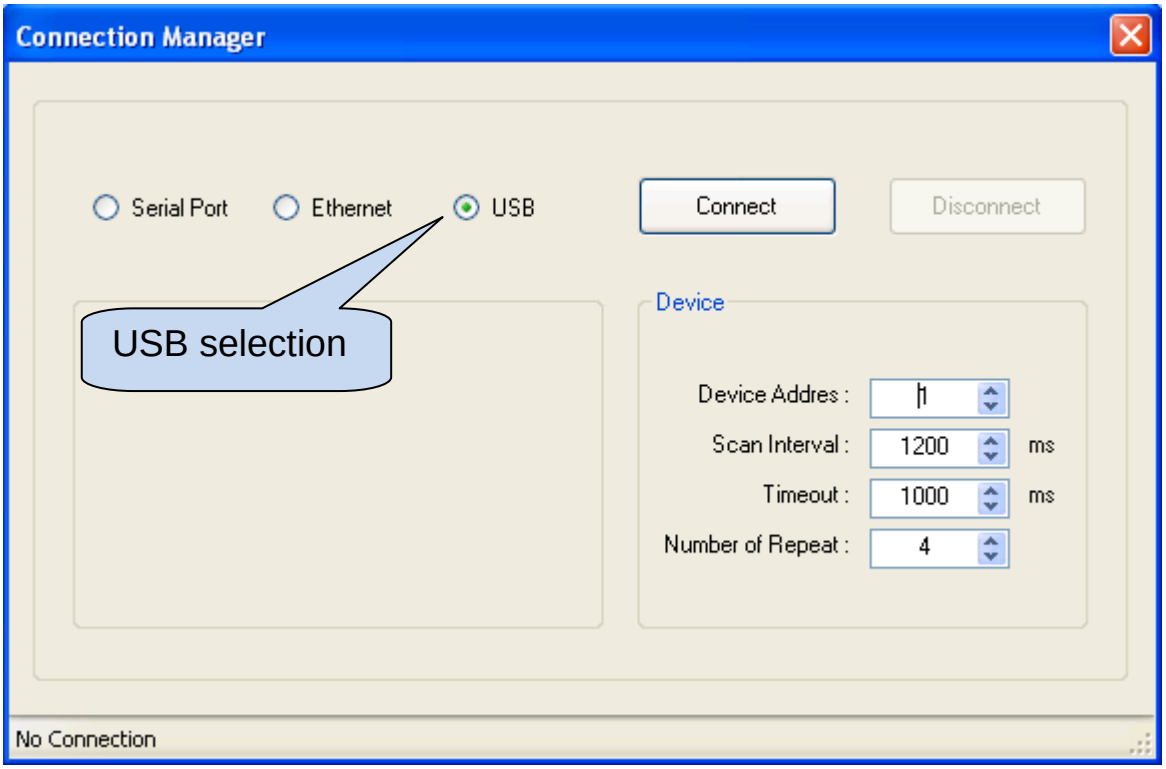
The RainbowPlus icon is on your desktop.
Double click this icon in order to start the RainbowPlus program

The splash screen will come prior to program execution.

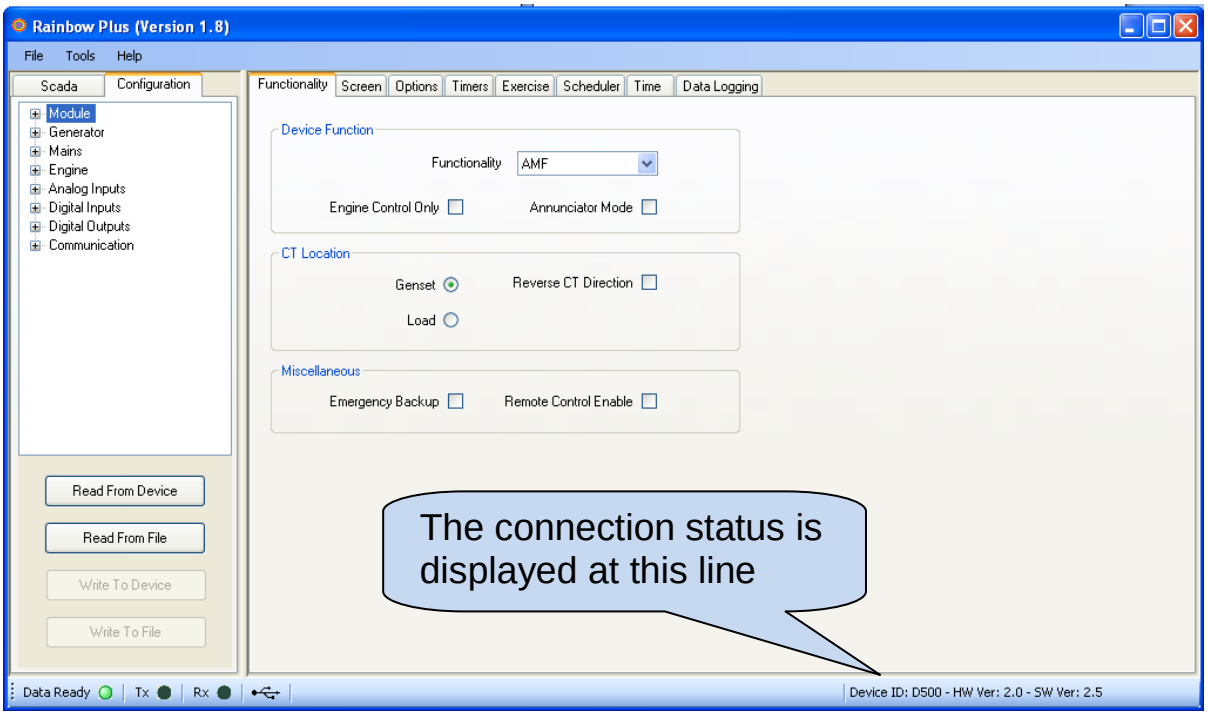
Below screen will open.
Select ***Tools>Connections*** menu.



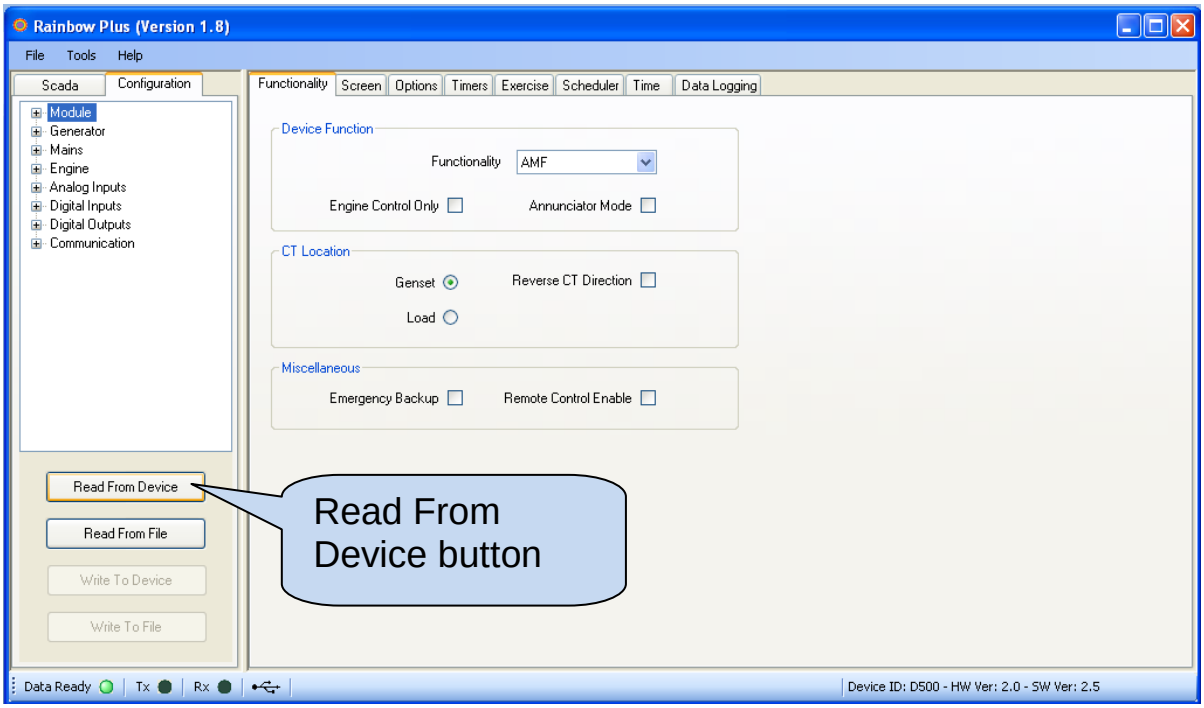
From the Connection Manager screen select ***USB***.
Then click ***Connect***.



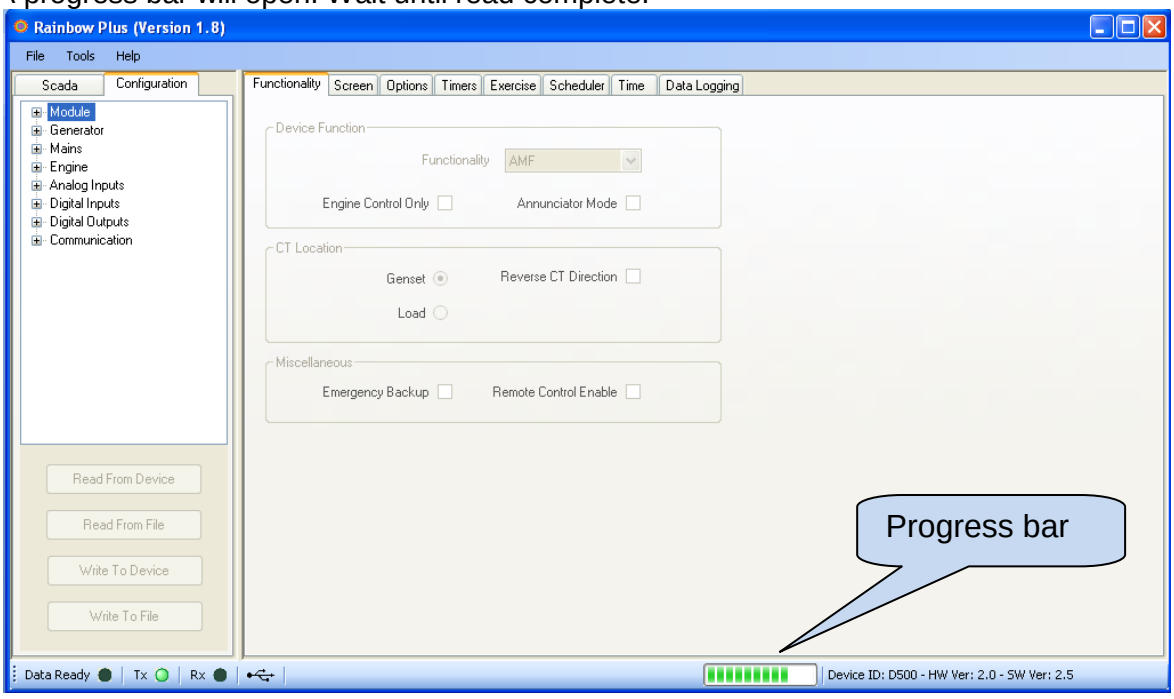
The connection status is announced in the bottom line.
If a controller is connected through the ***USB port***, the connection will be detected and device id and version will appear.



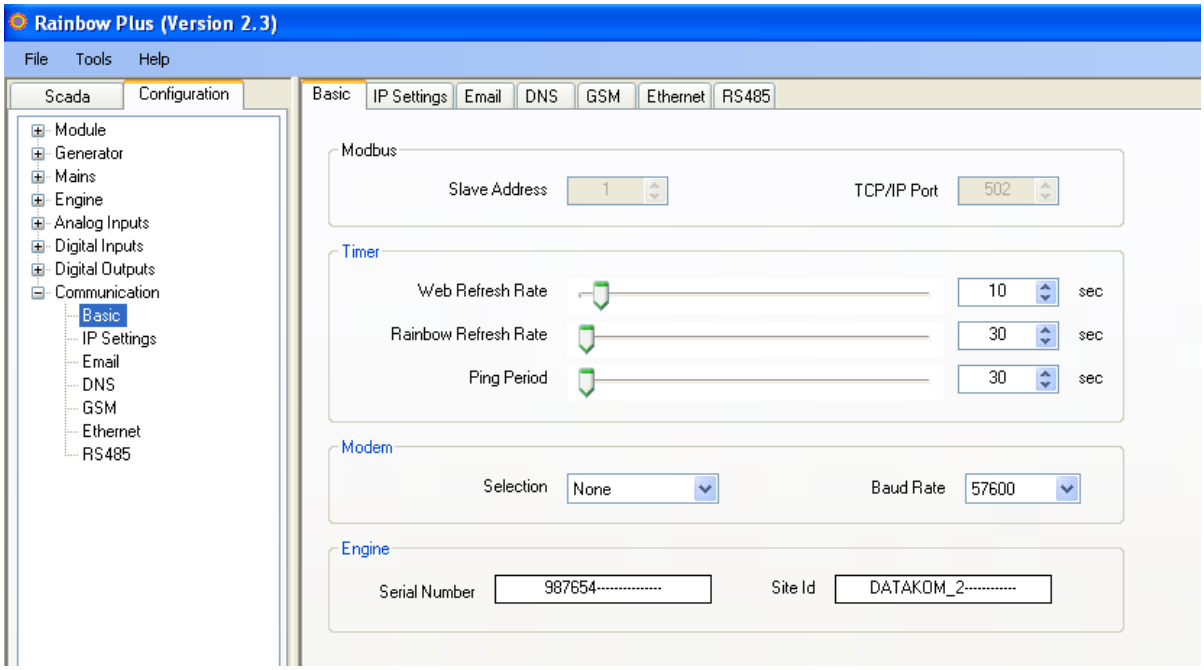
From below screen click ***Read From Device***



A progress bar will open. Wait until read complete.



Select ***Communication>Basic*** tab.



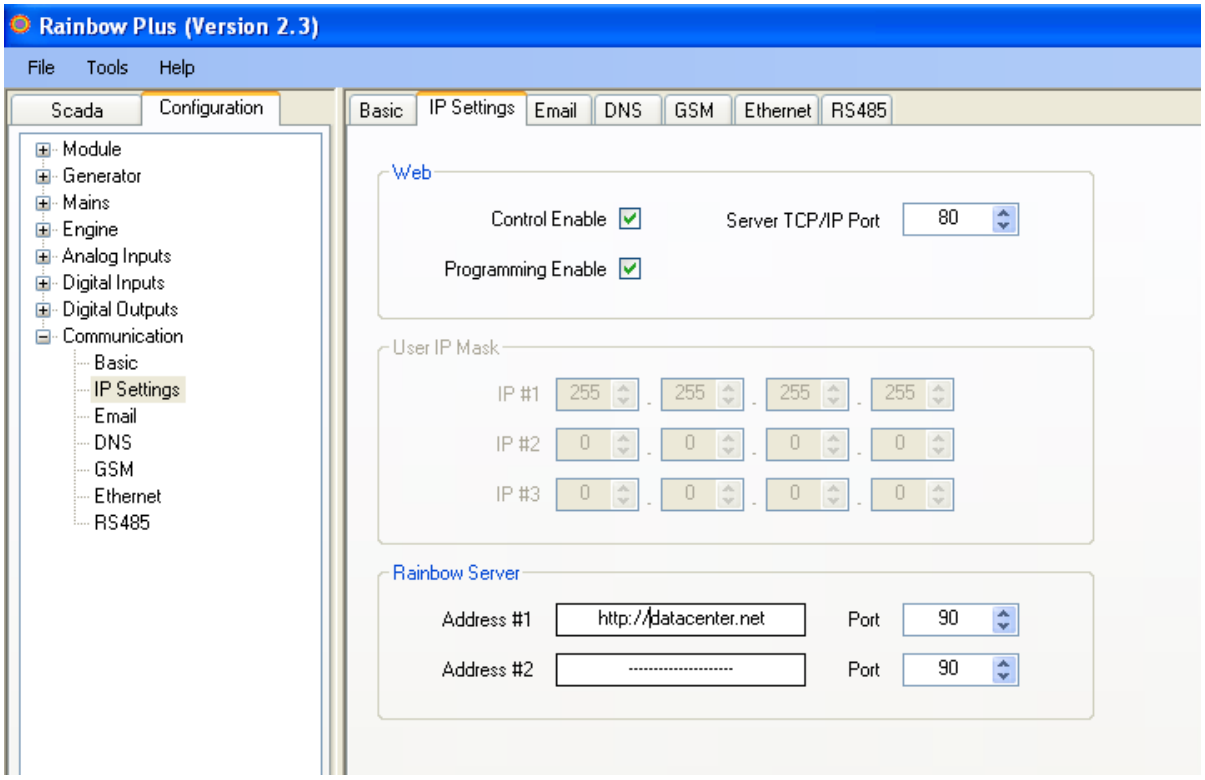
Adjust the ***Rainbow Refresh Rate*** parameter as required. The minimum advised refresh rate is 30 seconds.

Adjust ***Ping Period*** parameter. Advised range is 30 seconds to 3 minutes.

If GPRS modem is used, then adjust ***Modem Selection*** parameter accordingly.

Fill ***Engine Serial Number*** and ***Site Id*** definitions. These strings will let you identify this controller from the data center.

Select ***Communication>IP Settings*** tab



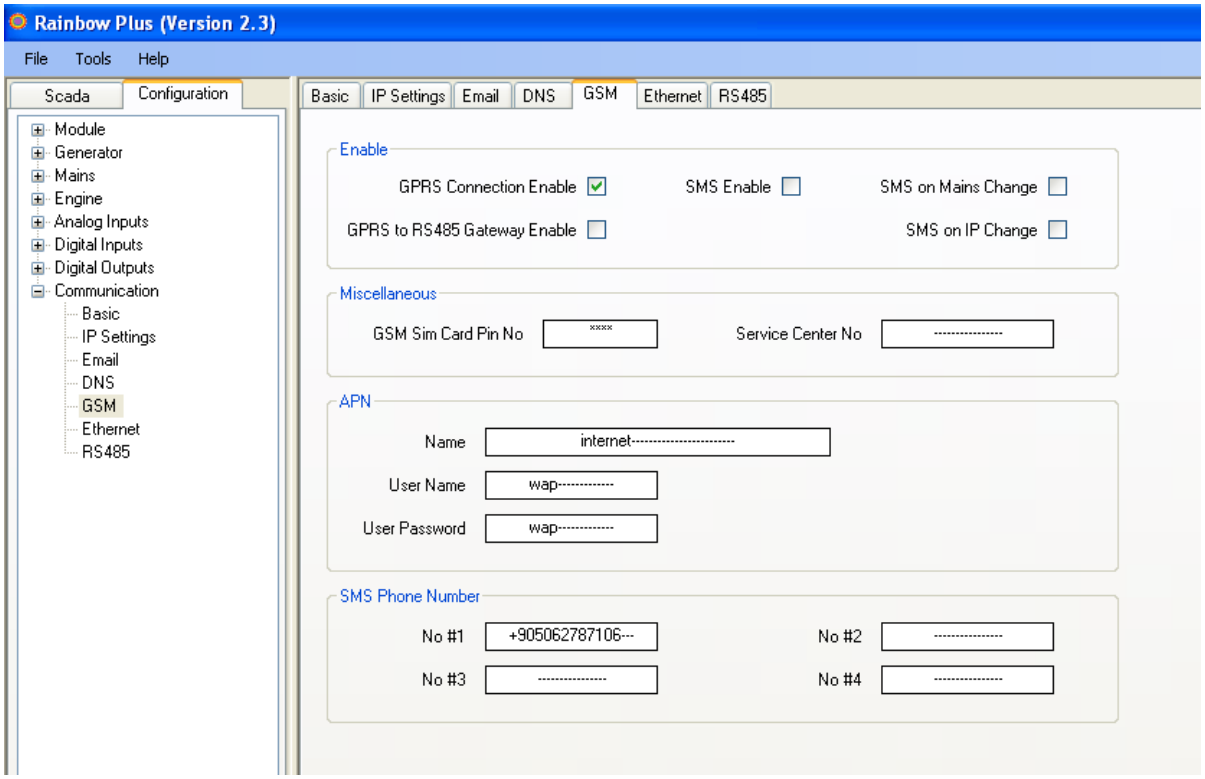
Fill ***Rainbow Server Address #1*** parameter. If a second data center is required to be updated, then fill also the ***Rainbow Server Address #2*** parameter.

Adjust ***Rainbow Server Port*** parameters. These ports numbers are the IP ports that the Rainbow Scada program is listening.

These settings must be identical in all units and the Rainbow Scada program.

GSM modem is used for central monitoring

If GSM modem is used for central monitoring, then select ***Communication>GSM*** tab



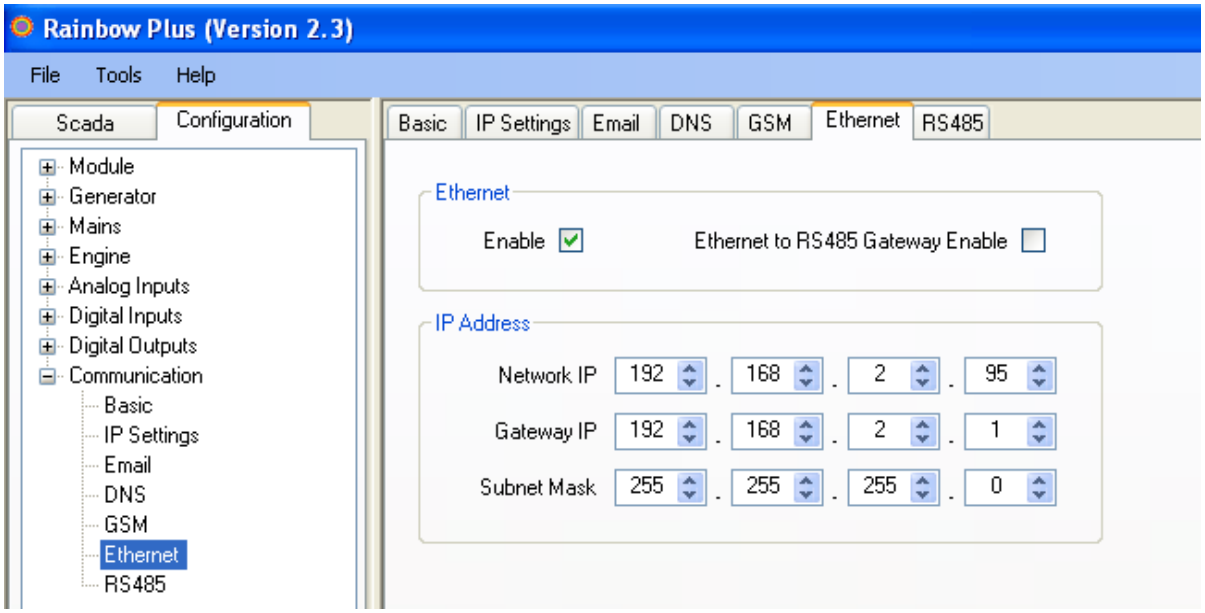
Tick the ***GPRS Connection Enable*** checkbox.

Fill completely the ***Miscellaneous*** and ***APN*** fields.

Correct APN Name, Username and Password are required for successfull GPRS connection. Otherwise GPRS connection cannot be established.

Ethernet port is used for central monitoring

If the ethernet port is used for central monitoring, then select ***Communication>Ethernet*** tab



Tick the ***Ethernet Enable*** checkbox.

Fill ***Network IP***, ***Gateway IP*** and ***Subnet Mask*** fields. These settings are the same on all computers connected to the same LAN (local area network)

If required, get help from your IP responsible.

Saving the setup to the unit

Click ***Write to Device*** button in order to save programmed parameters.

A progress bar will open.

Wait until write complete.