Cimetrics, Inc

B6030 BACnet/IP to Utility Meters

User Manual

V.4

March, 2012

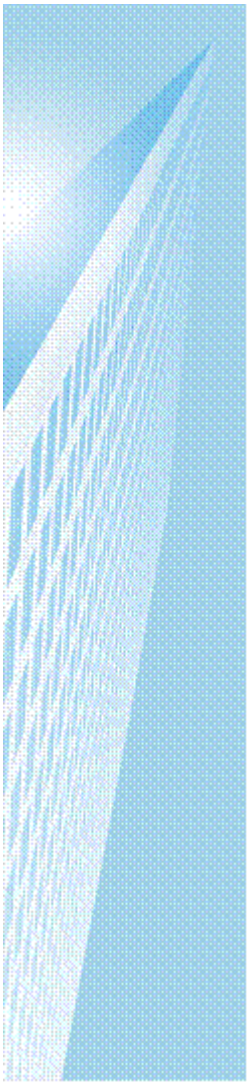


Table of Contents

Contents

Introduction

The B6030 enables integrating four Modbus TCP or RTU Steam, BTU or Electrical Meters with an existing BACnet Compliant Building Automation System. Using this, you can offer solutions which save money and improve building comfort. The B6030 supports the following list of meters.

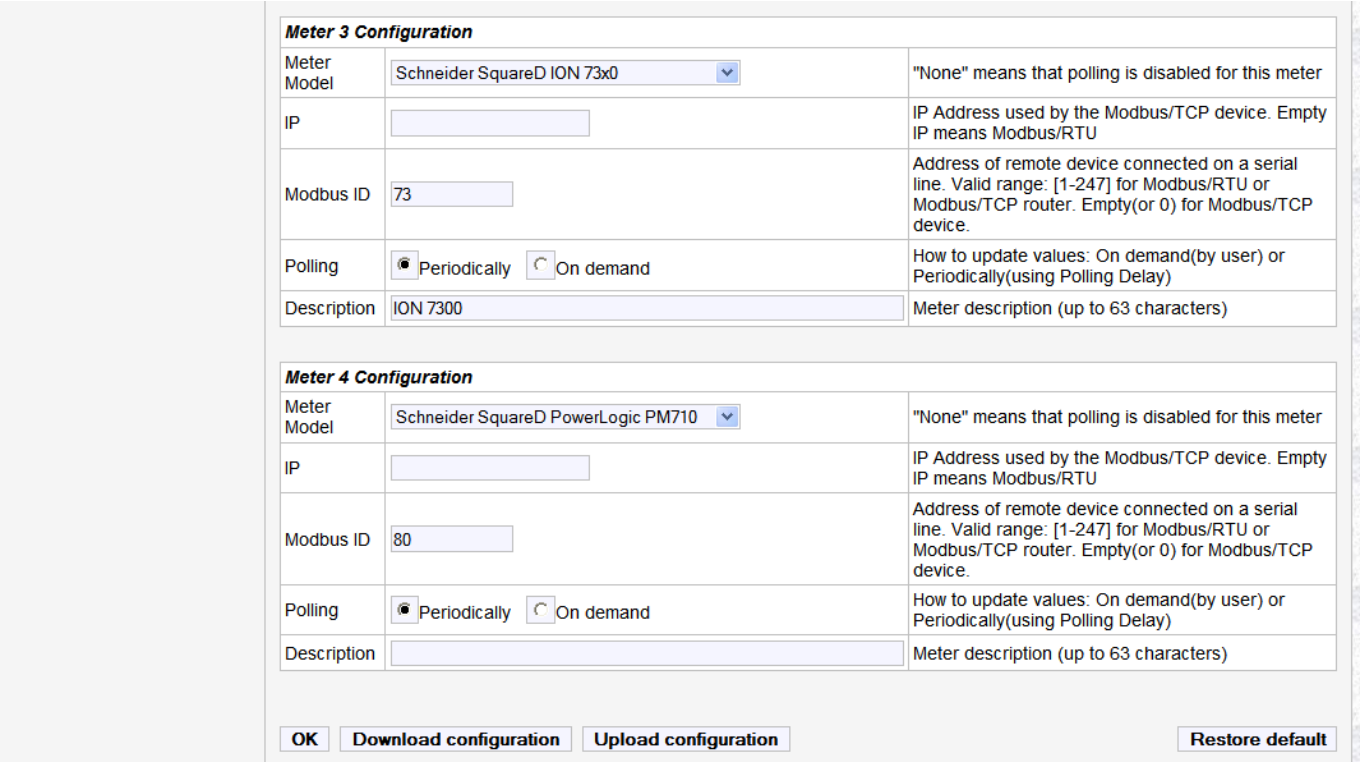
- Controlotron 1010 with 1015N COMM
- Conzerv Power Max EM6400
- Cutler Hammer IQ 230M
- Danfoss Magflo 6000
- EIG Nexus 1260
- EIG Shark 100-S
- EIG Shark 200
- Emco FP-93 Flow Processor
- Emco Magflo 6000
- Emon 3000
- GE EPM ION 73x0
- GE EPM ION 75x0
- GE EPM ION 7700
- KEP SUPERtrol Flow Computer ST-II
- Onicon F-2500
- Power Measurement ION 73x0
- Power Measurement ION 75x0
- Power Measurement ION 7700
- Power Measurement ION 83x0
- Eaton Power Xpert Gateway + DigiTrip 810
- Eaton Power Xpert Gateway + DigiTrip MV
- Eaton Power Xpert Gateway + IQ Analyzer 6x00
- Schneider SquareD Energy-Monitor EMxx

- Schneider SquareD ION 62x0
- Schneider SquareD ION 73x0
- Schneider SquareD ION 75x0
- Schneider SquareD ION 7700
- Schneider SquareD ION 83x0/8600
- Schneider SquareD PowerLogic PM710
- Schneider SquareD PowerLogic PM750
- Schneider SquareD PowerLogic PM800
- Schneider SquareD PowerLogic PM820
- Schneider SquareD PowerLogic PM850
- Schneider SquareD PowerLogic CM3000
- Siemens ION 83x0/8600
- Siemens ION 92x0
- Siemens ION 93x0
- Siemens ION 95x0
- Siemens ION 9700
- Siemens Magflo MAG 6000
- Siemens Sitrans FUS 1010 with 1015N
- Siemens Static Trip III
- Siemens 4720
- Spirax Sarco FP-93
- Temco Tstat5 (thermostat)
- Veris Commercial H8163
- Veris Hawkeye H8036
- Generic meter: 16-bit Integers
- Generic meter: 32-bit Floats
- Generic meter: 32-bit Integers

The Ethernet connection conforms to the BACnet/IP standard which is complemented by many network

friendly features such as Foreign Device support to connect to multiple networks and password protected browser based setup screens. The B6030 has a built in web server that allows users to log in using a web browser. Once a user is logged in, configuration is easy and very self explanatory.

Once configuration of the B6030 is complete and connected to the Building Automation Network, using a BACnet client like the Cimetrics BACnert Explorer, a user can look at the newly configured meters as BACnet Devices. Meter data exposed to the BACnet network includes Power, Energy, Demand, MaxDemand, Power_Factor, Flow, Consumption, and more. Current, Voltage, and Phase are also represented if this is supported by the meter. Permanently available meter templates can be selected during the setup procedure using a drop down menu.



Meter 3 Configuration

Meter Model	Schneider SquareD ION 73x0	"None" means that polling is disabled for this meter
IP		IP Address used by the Modbus/TCP device. Empty IP means Modbus/RTU
Modbus ID	73	Address of remote device connected on a serial line. Valid range: [1-247] for Modbus/RTU or Modbus/TCP router. Empty(or 0) for Modbus/TCP device.
Polling	Periodically / On demand	How to update values: On demand(by user) or Periodically(using Polling Delay)
Description	ION 7300	Meter description (up to 63 characters)

Meter 4 Configuration

Meter Model	Schneider SquareD PowerLogic PM710	"None" means that polling is disabled for this meter
IP		IP Address used by the Modbus/TCP device. Empty IP means Modbus/RTU
Modbus ID	80	Address of remote device connected on a serial line. Valid range: [1-247] for Modbus/RTU or Modbus/TCP router. Empty(or 0) for Modbus/TCP device.
Polling	Periodically / On demand	How to update values: On demand(by user) or Periodically(using Polling Delay)
Description		Meter description (up to 63 characters)

OK | Download configuration | Upload configuration | Restore default

Logging in

Connect the B6030 Ethernet connector to an Ethernet hub, and run another Ethernet cable (patch able) from that hub to your laptop or PC. Make sure that the laptop or PC is the *only* other unit in this small LAN.

NOTE: If you do not have a hub, you can use a "crossover cable" to connect between the B6030 and your laptop.

Set your PC's IP address to **192.168.88.90** with a subnet mask of **255.255.255.252**

Open your browser and enter the following URL: http://192.168.88.89

You will be prompted to login: The username is = admin and the password = admin

From within the browser interface you can change all settings in the entry fields to configure your router

For improved access security, you should change your password from the default values. **Make sure you SAVE your new password!** When you click on "Activate Configuration" and "confirm" then the configuration process is completed.

Please Note:

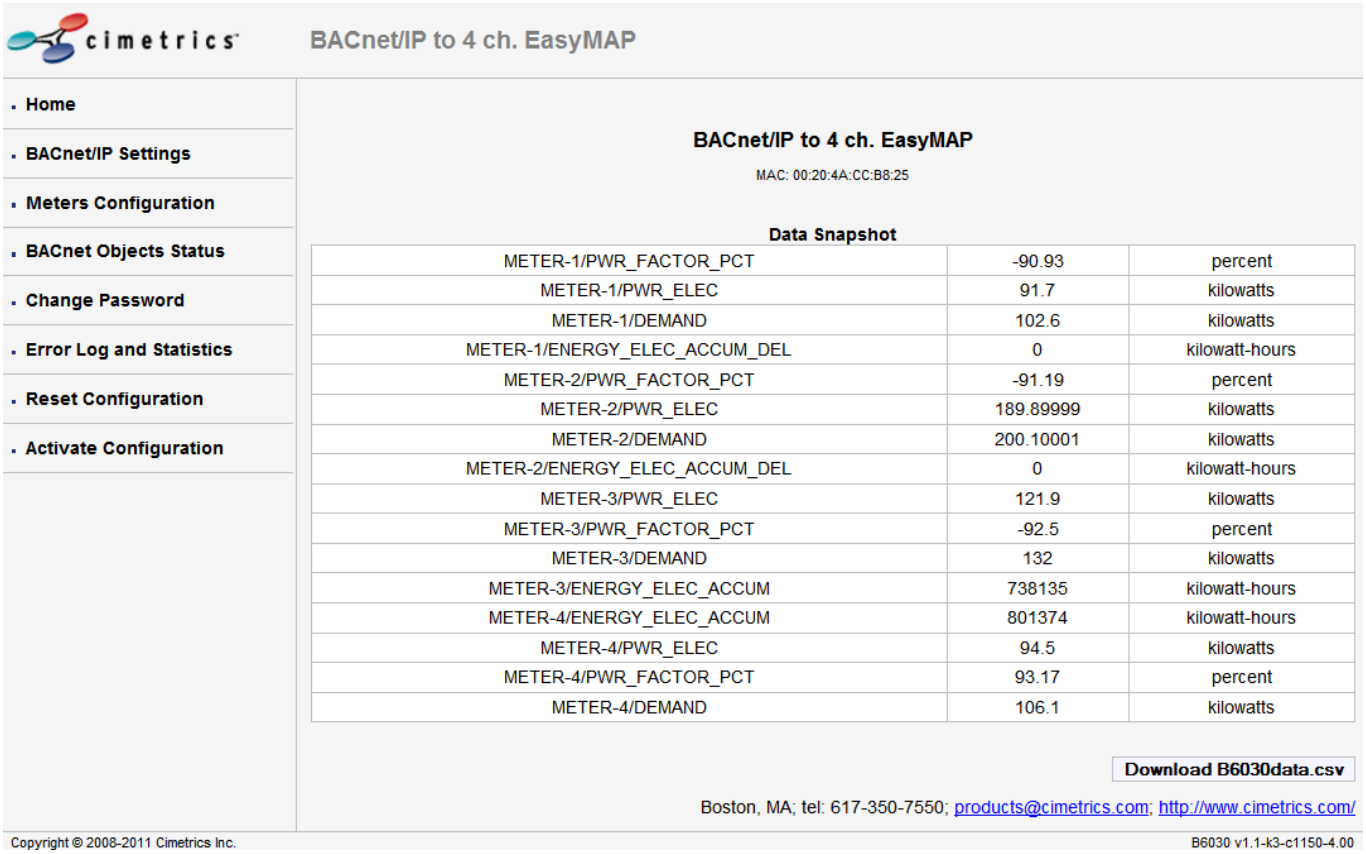
A user will be able to access the B6030 using the above mentioned IP address at ALL TIMES (even if you have changed the IP address under BACnet/IP settings)

Note! We strongly recommend that the power be recycled on the unit at least once every six months

B6030 Home Page

The Home Page displays four important Objects of each meter that has been configured. The example below shows that this B6030 is connected to four different meters and four important objects from each of those meters. This is not user configurable as it is only a snapshot of the meters configured.

Using the **Download B6030data** feature, a user can export all the information into a comma separated value format file.



BACnet/IP Settings

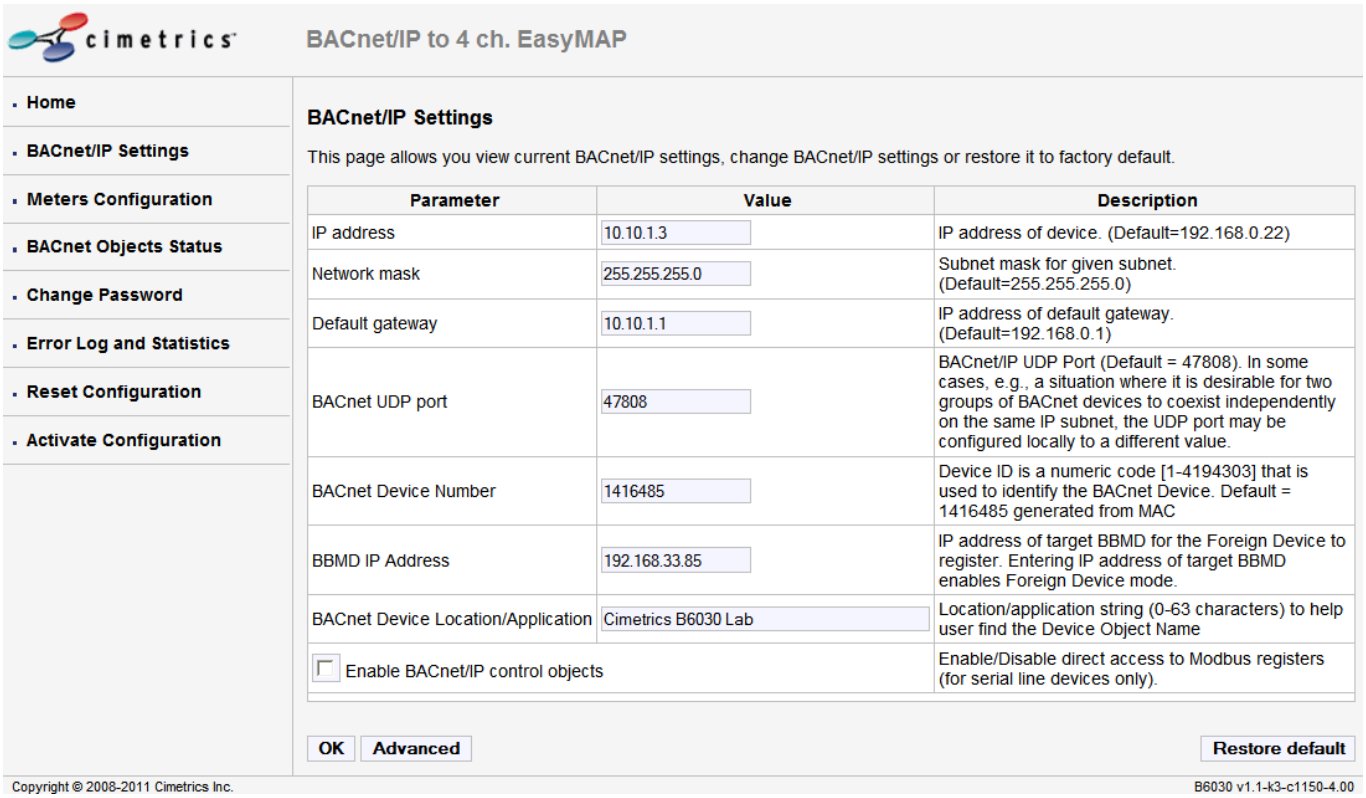
On this screen, a user can configure the following parameters

1. **IP Address** – IP address of device.
2. **Network Mask** – Subnet mask for the subnet your device is on.
3. **Default Gateway** – IP address of default gateway
4. **BACnet UDP Port** – BACnet UDP port (Default is 47808. In some cases e.g. a situation where it is desirable for two groups of BACnet devices to coexist independently on the same IP subnet, the UDP port may be configured locally to a different value.
5. **BACnet Device Number** – Or Device ID. It is a numeric code that is used to identify the BACnet Device. Default ID is generated from the MAC address of B6030.
6. **BBMD IP Address** – If you want B6030 to be a foreign device then here you specify IP address of target BBMD. It will enable Foreign Device mode.

To find out more about Foreign device and BBMD visit:
http://www.bacnet.org/Bibliography/ES-7-99/IPPART2.HTM
http://www.bacnet.org/Tutorial/BACnetIP/sld015.html

7. **A Description for the Device** – Location/application string (0-63 characters) to help user find the Device Object Name.

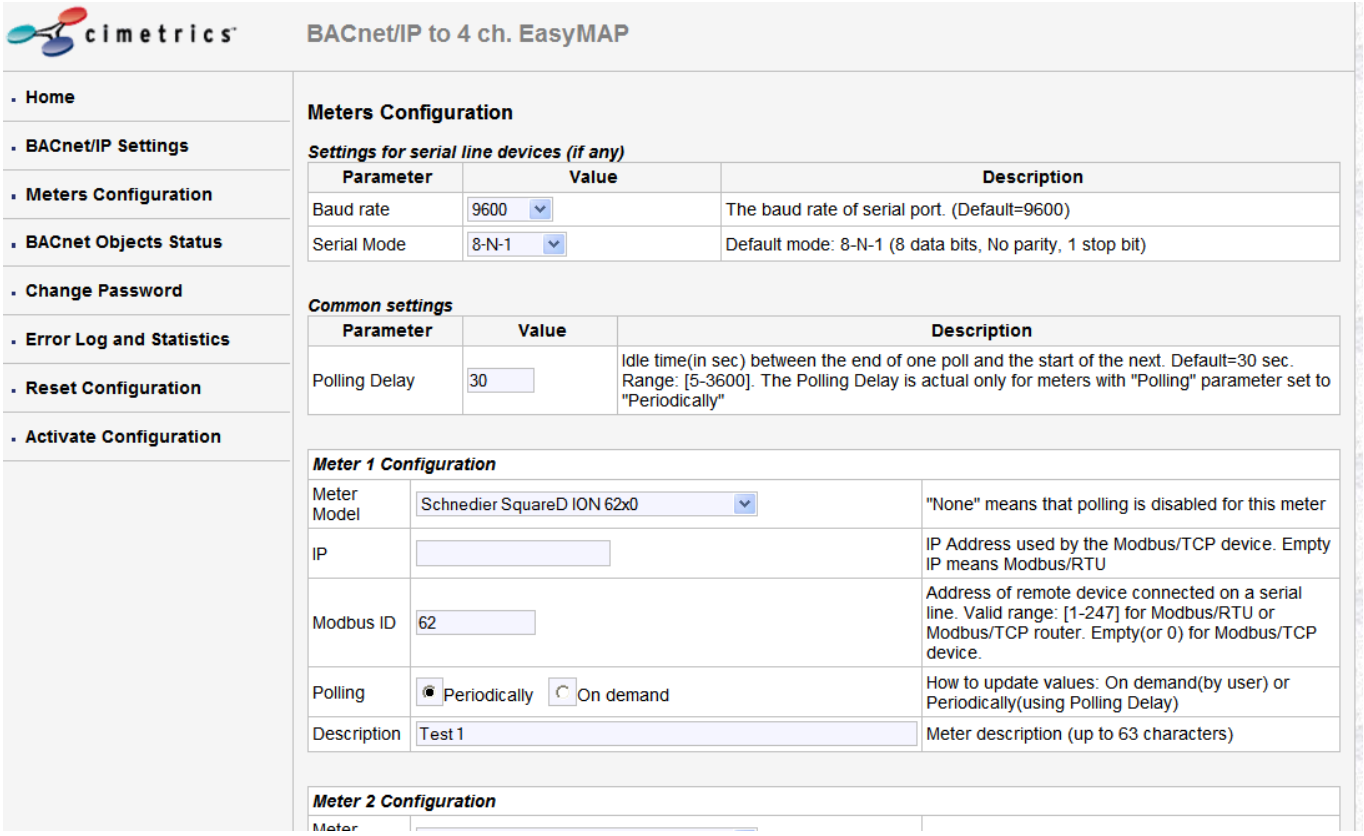
By checking **Enable BACnet/IP control objects** box you can write to Modbus registers (for serial line devices only).

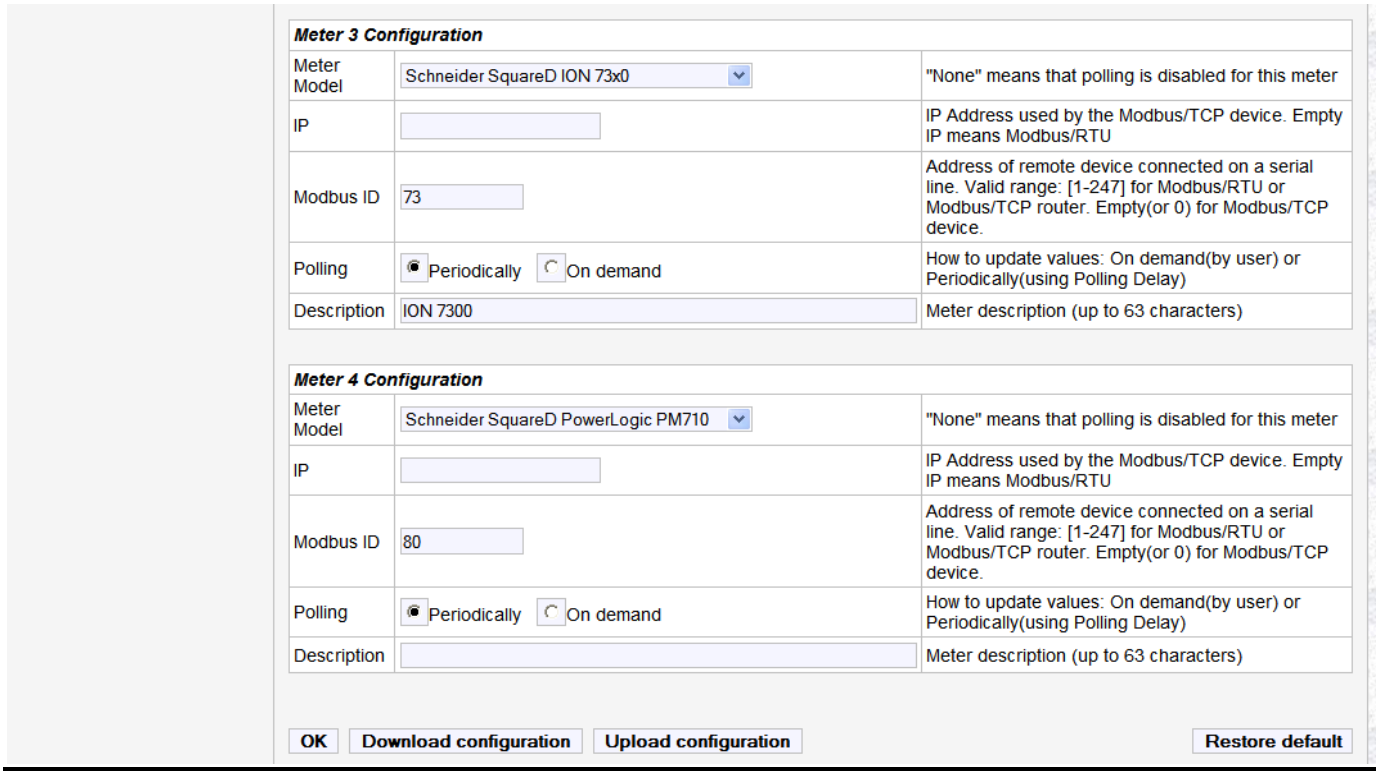


Meters Configuration

On this screen, a user can configure the four meters that will be integrated into the BACnet/IP network. If the configuration involves a Modbus RTU meter, the user will need to choose the appropriate baud rate and the serial mode. Please note that if you intend to configure multiple Modbus RTU meters, their baud rates need to be the same.

The meter to be integrated is selected from the drop down list provided. Once the selection is made, the IP address is entered. This value can be omitted if the meter is a Modbus RTU meter. The Modbus ID along with the option of polling and a description is entered. Once this process is completed for the four meters, the configuration is complete.





Meter 3 Configuration

Meter Model	Schneider SquareD ION 73x0	"None" means that polling is disabled for this meter
IP		IP Address used by the Modbus/TCP device. Empty IP means Modbus/RTU
Modbus ID	73	Address of remote device connected on a serial line. Valid range: [1-247] for Modbus/RTU or Modbus/TCP router. Empty(or 0) for Modbus/TCP device.
Polling	Periodically / On demand	How to update values: On demand(by user) or Periodically(using Polling Delay)
Description	ION 7300	Meter description (up to 63 characters)

Meter 4 Configuration

Meter Model	Schneider SquareD PowerLogic PM710	"None" means that polling is disabled for this meter
IP		IP Address used by the Modbus/TCP device. Empty IP means Modbus/RTU
Modbus ID	80	Address of remote device connected on a serial line. Valid range: [1-247] for Modbus/RTU or Modbus/TCP router. Empty(or 0) for Modbus/TCP device.
Polling	Periodically / On demand	How to update values: On demand(by user) or Periodically(using Polling Delay)
Description		Meter description (up to 63 characters)

OK | Download configuration | Upload configuration | Restore default

Download configuration :

Clicking on this button will initiate a download of the existing configuration. This will be downloaded as a text file. This file can be saved for uploading (without any edits) in the future to restore a previous configuration.

An example of the configuration file that is downloaded is shown below:

```
B6030 configuration:
DeviceNameTag=Cimetrics B6030 Lab
BaudRate=9600
SerialMode=8-N-1
PollingInterval=30
M1_Model=22 (ION62x0)
M1_Protocol=RTU
M1_ID=62
M1_Polling=Periodically
M1_Description=Test 1
M2_Model=22 (ION62x0)
M2_Protocol=RTU
M2_ID=63
M2_Polling=Periodically
M2_Description=Test 2
M3_Model=23 (ION73x0)
M3_Protocol=RTU
M3_ID=73
M3_Polling=Periodically
M3_Description=ION 7300
M4_Model=27 (PM710)
M4_Protocol=RTU
M4_ID=80
M4_Polling=Periodically
M4_Description=
```

Upload Configuration :

By Clicking on this button, a user can upload a previously saved configuration file (text). This will restore the configurations in the uploaded file.

Restore Default:

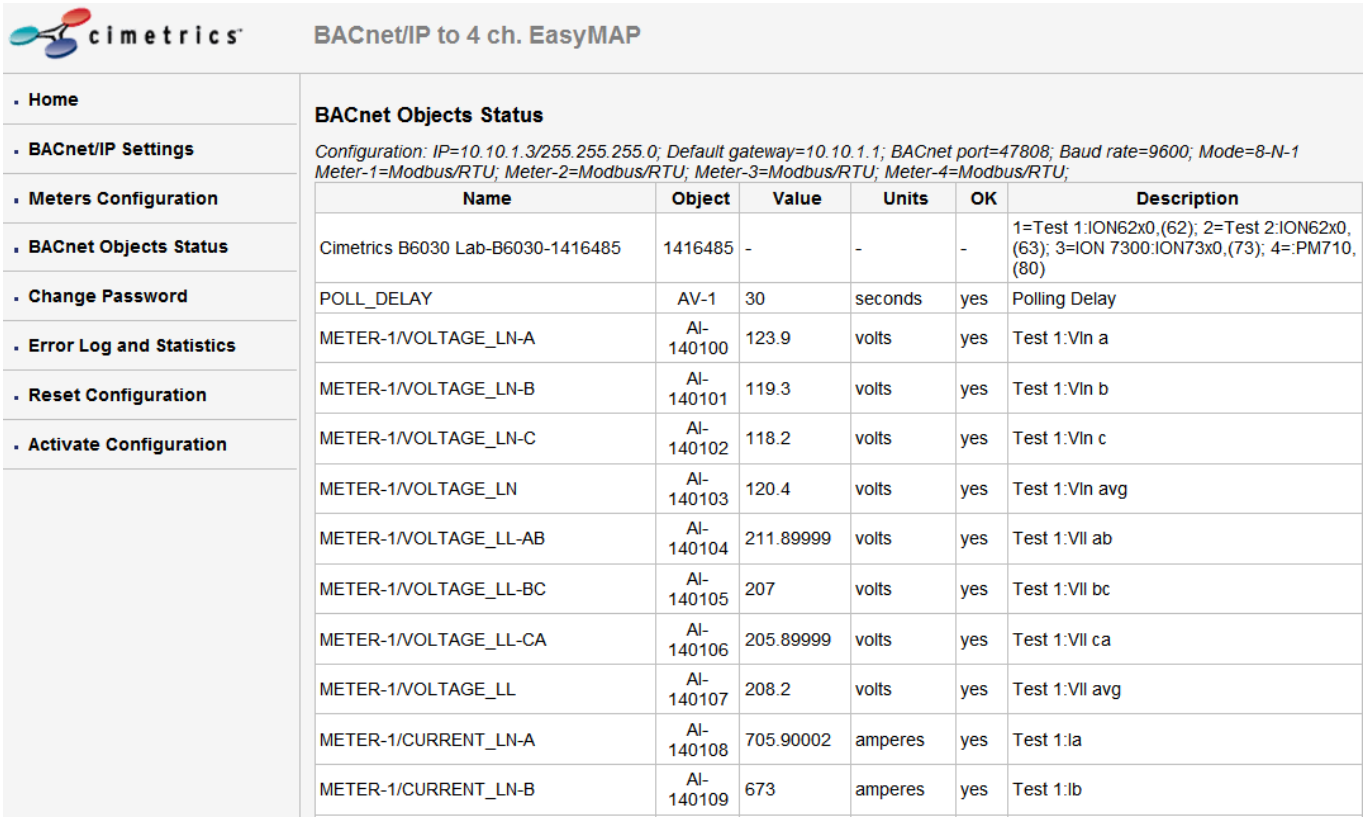
Clicking on this button will reset the page to factory default.

BACnet Object Status

On this screen, a user can view the BACnet Objects of each of the configured Meters. The following parameters of each BACnet Object are viewable

- Name
- Object
- Value
- Units
- Status
- Reliability
- Description

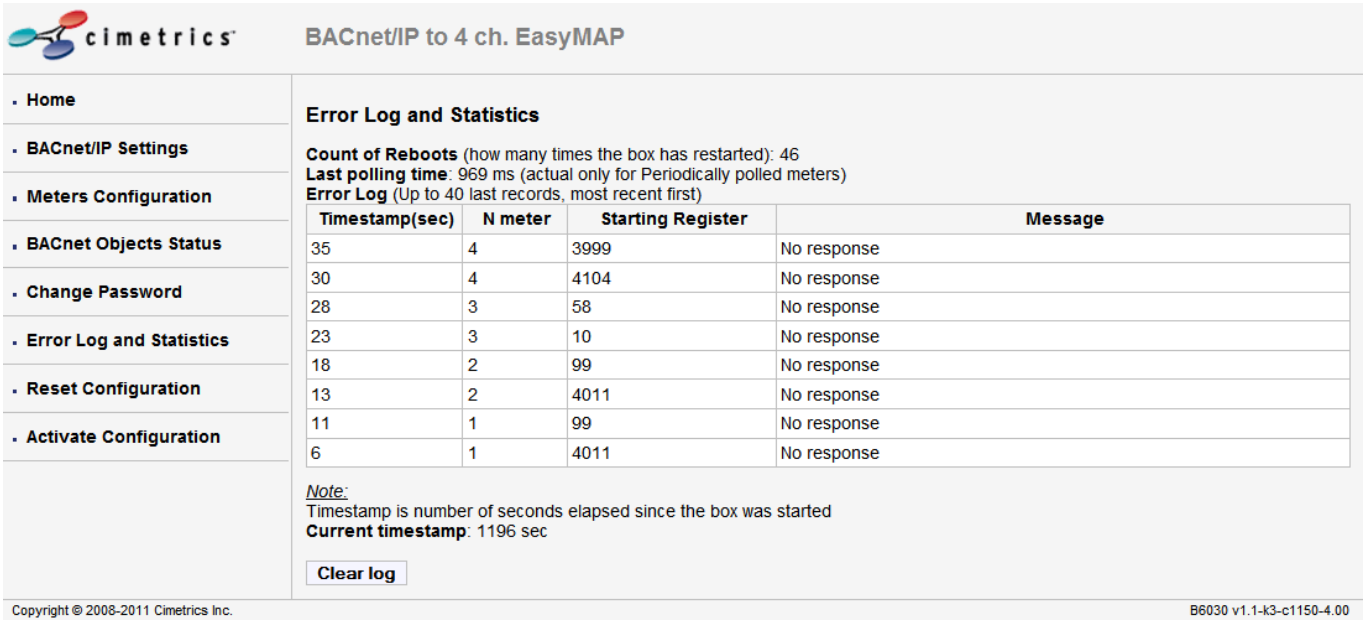
The information on the page gives the user a snapshot of the entire configuration



Name	Object	Value	Units	OK	Description
Cimetrics B6030 Lab-B6030-1416485	1416485	-	-	-	1=Test 1:ION62x0,(62); 2=Test 2:ION62x0,(63); 3=ION 7300:ION73x0,(73); 4=:PM710,(80)
POLL_DELAY	AV-1	30	seconds	yes	Polling Delay
METER-1/VOLTAGE_LN-A	AI-140100	123.9	volts	yes	Test 1:Vln a
METER-1/VOLTAGE_LN-B	AI-140101	119.3	volts	yes	Test 1:Vln b
METER-1/VOLTAGE_LN-C	AI-140102	118.2	volts	yes	Test 1:Vln c
METER-1/VOLTAGE_LN	AI-140103	120.4	volts	yes	Test 1:Vln avg
METER-1/VOLTAGE_LL-AB	AI-140104	211.89999	volts	yes	Test 1:Vll ab
METER-1/VOLTAGE_LL-BC	AI-140105	207	volts	yes	Test 1:Vll bc
METER-1/VOLTAGE_LL-CA	AI-140106	205.89999	volts	yes	Test 1:Vll ca
METER-1/VOLTAGE_LL	AI-140107	208.2	volts	yes	Test 1:Vll avg
METER-1/CURRENT_LN-A	AI-140108	705.90002	amperes	yes	Test 1:Ia
METER-1/CURRENT_LN-B	AI-140109	673	amperes	yes	Test 1:Ib

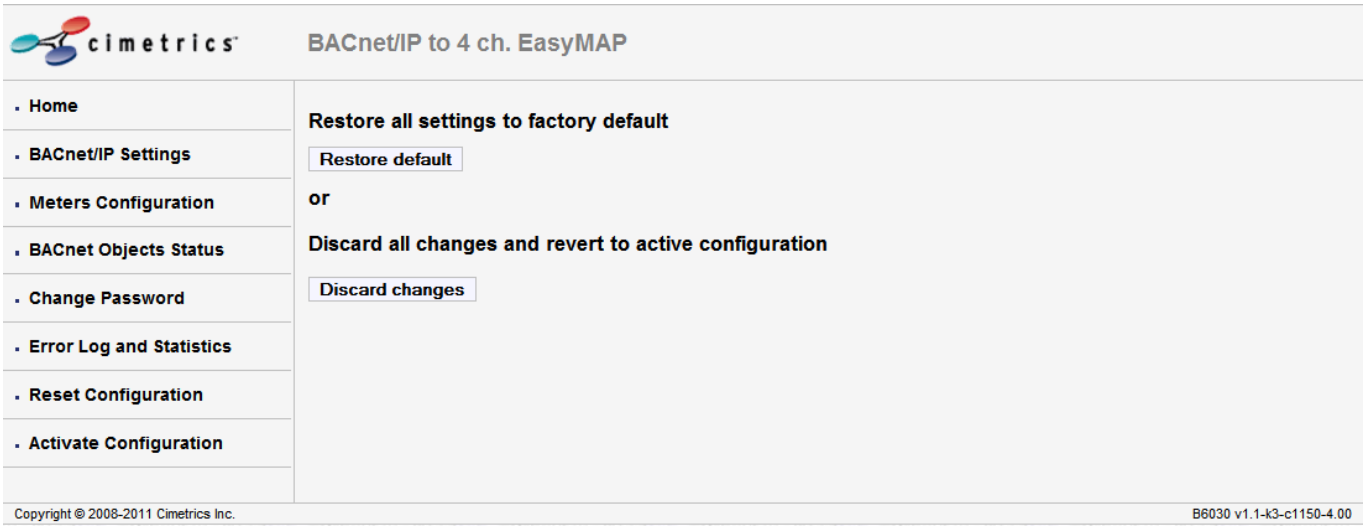
Error Log and Statistics

This page provides Statistics and Error logs on the configured meters.



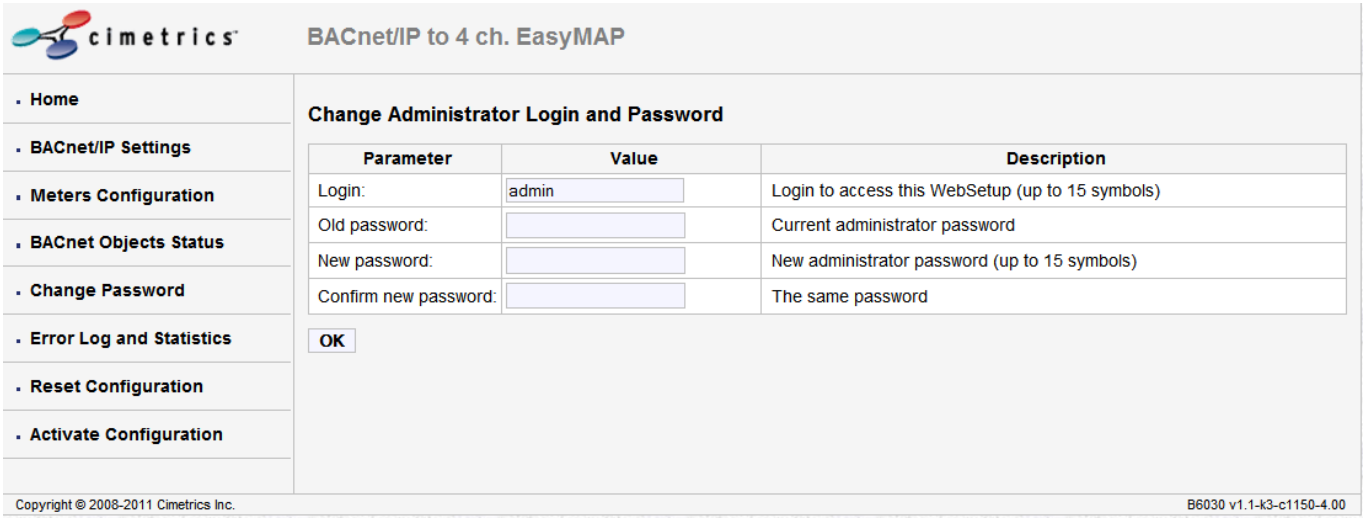
Reset Configuration

Clicking on **Restore default** will reset the entire device's configuration to factory defaults. Clicking on **Discard changes** will discard all changes and revert to active configuration.



Change Password

A user can change the username and password on this screen.



Activate Configuration

Once changes are made to any configuration on the B6030, the changes get saved only after clicking on the "Confirm" button in the **Activate Configuration** screen. Clicking on this will initiate a reboot of the device and will save the changes that have been made.