

Cimetrics, Inc

B6030 BACnet/IP to Utility Meters

User Manual



V.4

March, 2012

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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 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	nfiguration Schneider SquareD PowerLogic PM710	"None" means that polling is disabled for this mete
Meter		"None" means that polling is disabled for this mete
Meter Model		"None" means that polling is disabled for this meter IP Address used by the Modbus/TCP device. Empt IP means Modbus/RTU
Meter Model IP		IP Address used by the Modbus/TCP device. Empt
Meter 4 Con Meter Model IP Modbus ID Polling	Schneider SquareD PowerLogic PM710	IP Address used by the Modbus/TCP device. Empt IP means Modbus/RTU 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

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.

Home			
BACnet/IP Settings	BACnet/IP to 4 ch. E	asyMAP	
-	MAC: 00:20:4A:CC:B8:	25	
Meters Configuration			
BACnet Objects Status	Data Snapshot		
	METER-1/PWR_FACTOR_PCT	-90.93	percent
Change Password	METER-1/PWR_ELEC	91.7	kilowatts
	METER-1/DEMAND	102.6	kilowatts
Error Log and Statistics	METER-1/ENERGY_ELEC_ACCUM_DEL	0	kilowatt-hours
Deset Configuration	METER-2/PWR_FACTOR_PCT	-91. 1 9	percent
Reset Configuration	METER-2/PWR_ELEC	189.89999	kilowatts
Activate Configuration	METER-2/DEMAND	200.10001	kilowatts
-	METER-2/ENERGY_ELEC_ACCUM_DEL	0	kilowatt-hours
	METER-3/PWR_ELEC	121.9	kilowatts
	METER-3/PWR_FACTOR_PCT	-92.5	percent
	METER-3/DEMAND	132	kilowatts
	METER-3/ENERGY_ELEC_ACCUM	738135	kilowatt-hours
	METER-4/ENERGY_ELEC_ACCUM	801374	kilowatt-hours
	METER-4/PWR_ELEC	94.5	kilowatts
	METER-4/PWR_FACTOR_PCT	93.17	percent
	METER-4/DEMAND	106.1	kilowatts

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: <u>http://www.bacnet.org/Bibliography/ES-7-99/IPPART2.HTM</u> <u>http://www.bacnet.org/Tutorial/BACnetIP/sld015.html</u>

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).

. Home	BACnet/IP Settings		
BACnet/IP Settings	This page allows you view current BA	Cnet/IP settings, change BACnet/I	P settings or restore it to factory default.
Meters Configuration	Parameter	Value	Description
BACnet Objects Status	IP address	10.10.1.3	IP address of device. (Default=192.168.0.22)
Change Password	Network mask	255.255.255.0	Subnet mask for given subnet. (Default=255.255.255.0)
Error Log and Statistics	Default gateway	10.10.1.1	IP address of default gateway. (Default=192.168.0.1)
Reset Configuration	BACnet UDP port	47808	BACnet/IP UDP Port (Default = 47808). In some cases, e.g., a situation where it is desirable for two groups of BACnet devices to coexist independenti on the same IP subnet, the UDP port may be configured locally to a different value.
	BACnet Device Number	1416485	Device ID is a numeric code [1-4194303] that is used to identify the BACnet Device. Default = 1416485 generated from MAC
	BBMD IP Address	192.168.33.85	IP address of target BBMD for the Foreign Device register. Entering IP address of target BBMD enables Foreign Device mode.
	BACnet Device Location/Application	Cimetrics B6030 Lab	Location/application string (0-63 characters) to he user find the Device Object Name
	Enable BACnet/IP control object	S	Enable/Disable direct access 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.

- Home	Meters Con	figuration				
BACnet/IP Settings	Settings for s	erial line devices (if ar	<i>y)</i>			
Matara Configuration	Paramete	er Valu	e	Description		
Meters Configuration	Baud rate	9600 💌	The baud rate	of serial port. (Default=9600)		
BACnet Objects Status	Serial Mode	8-N-1 💌	Default mode:	8-N-1 (8 data bits, No parity, 1 stop bit)		
Change Password	Common sett	ings				
Error Log and Statistics	Paramete	er Value		Description		
Reset Configuration	Polling Delay	Polling Delay 30 Idle time(in sec) between the end of one poll and the start of the next. D Range: [5-3600]. The Polling Delay is actual only for meters with "Polling "Periodically"				
Activate Configuration						
	Meter 1 Cont	figuration				
	Meter Model	Schnedier SquareD ION	62x0 💌	"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	62		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	Test 1		Meter description (up to 63 characters)		
	Meter 2 Cont	figuration				

Meter Model	nfiguration 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	nfiguration Schneider SquareD PowerLogic PM710	"None" means that polling is disabled for this meter
Meter Model		
Meter Model		
Meter 4 Cor Meter Model IP Modbus ID		"None" means that polling is disabled for this meter IP Address used by the Modbus/TCP device. Empt IP means Modbus/RTU 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.
Meter Model IP	Schneider SquareD PowerLogic PM710	IP Address used by the Modbus/TCP device. Emp IP means Modbus/RTU 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

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 Ml Polling=Periodically Ml 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_Mode1=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

Home	BACnet Objects Status					
BACnet/IP Settings	Configuration: IP=10.10.1.3/255.255.255 Meter-1=Modbus/RTU; Meter-2=Modbus					
Meters Configuration	Name	Object	Value	Units	ок	Description
BACnet Objects Status	Cimetrics B6030 Lab-B6030-1416485	1416485	-	-	-	1=Test 1:ION62x0,(62); 2=Test 2:ION62x0 (63); 3=ION 7300:ION73x0,(73); 4=:PM710 (80)
Change Password	POLL_DELAY	AV-1	30	seconds	yes	Polling Delay
Error Log and Statistics	METER-1/VOLTAGE_LN-A	Al- 140100	123.9	volts	yes	Test 1:Vin a
Reset Configuration	METER-1/VOLTAGE_LN-B	Al- 140101	119.3	volts	yes	Test 1:Vin b
Activate Configuration	METER-1/VOLTAGE_LN-C	Al- 140102	118.2	volts	yes	Test 1:Vin c
	METER-1/VOLTAGE_LN	Al- 140103	120.4	volts	yes	Test 1:Vin avg
	METER-1/VOLTAGE_LL-AB	Al- 140104	211.89999	volts	yes	Test 1:VII ab
	METER-1/VOLTAGE_LL-BC	Al- 140105	207	volts	yes	Test 1:VII bc
	METER-1/VOLTAGE_LL-CA	Al- 140106	205.89999	volts	yes	Test 1:VII ca
	METER-1/VOLTAGE_LL	Al- 140107	208.2	volts	yes	Test 1:VII avg
	METER-1/CURRENT_LN-A	Al- 140108	705.90002	amperes	yes	Test 1:la
	METER-1/CURRENT_LN-B	Al- 140109	673	amperes	yes	Test 1:lb

Error Log and Statistics

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

	Error Log and S	tatistics		
BACnet/IP Settings			mes the box has restarted	
Meters Configuration	Error Log (Up to 40		al only for Periodically pollo , most recent first)	ed meters)
g	Timestamp(sec)	N meter	Starting Register	Message
BACnet Objects Status	35	4	3999	No response
Change Password	30	4	4104	No response
Change Fassword	28	3	58	No response
Error Log and Statistics	23	3	10	No response
	18	2	99	No response
Reset Configuration	13	2	4011	No response
Activate Configuration	11	1	99	No response
Activate configuration	6	1	4011	No response

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.

Cimetrics BACnet/IP to 4 ch. EasyMAP	
Home Restore all settings to factory default	
- BACnet/IP Settings Restore default	
• Meters Configuration Or	
BACnet Objects Status Discard all changes and revert to active configuration	
Change Password Discard changes	
Error Log and Statistics	
Reset Configuration	
Activate Configuration	
Copyright @ 2008-2011 Cimetrics Inc.	B6030 v1.1-k3-c1150-4.00

Change Password

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

∽ € cimetrics [−]	BACnet/IP to 4 ch	. EasyMAP					
- Home	Change Administrate	or Login and Password					
- BACnet/IP Settings	Parameter	Value	Description				
 Meters Configuration 	Login:	admin	Login to access this WebSetup (up to 15 symbols)				
BACnet Objects Status	Old password:		Current administrator password				
BACHELODJECIS Status	New password: New administrator password (up to 15 symbols)						
Change Password	Confirm new password:		The same password				
Error Log and Statistics	ОК						
Reset Configuration							
Activate Configuration							
Copyright © 2008-2011 Cimetrics Inc.			B6030 v1.1-k3-c11	50-4.00			

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.

- Cimetrics	BACnet/IP to 4 ch. EasyMAP	
• Home	Activate Configuration	
- BACnet/IP Settings	Press "Confirm" button if you are sure you want to activate changes and reboot the device.	
 Meters Configuration 	Rebooting may take up to 10 seconds.	
BACnet Objects Status		
Change Password		
Error Log and Statistics		
Reset Configuration		
Activate Configuration		
Copyright © 2008-2011 Cimetrics Inc.	B6030 v1.	1-k3-c1150-4.00