CAS-2700-01
Hobart Ground Power
Modbus (RTU and TCP) / BACnet / HTML Gateway

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1. Hobart Ground Power Gateway Description

The Hobart Ground Power (HGP) Gateway serves data from a HGP controller as Modbus, BACnet or Web data. **The gateway supports all these options simultaneously**. Use the data you want and ignore the other.

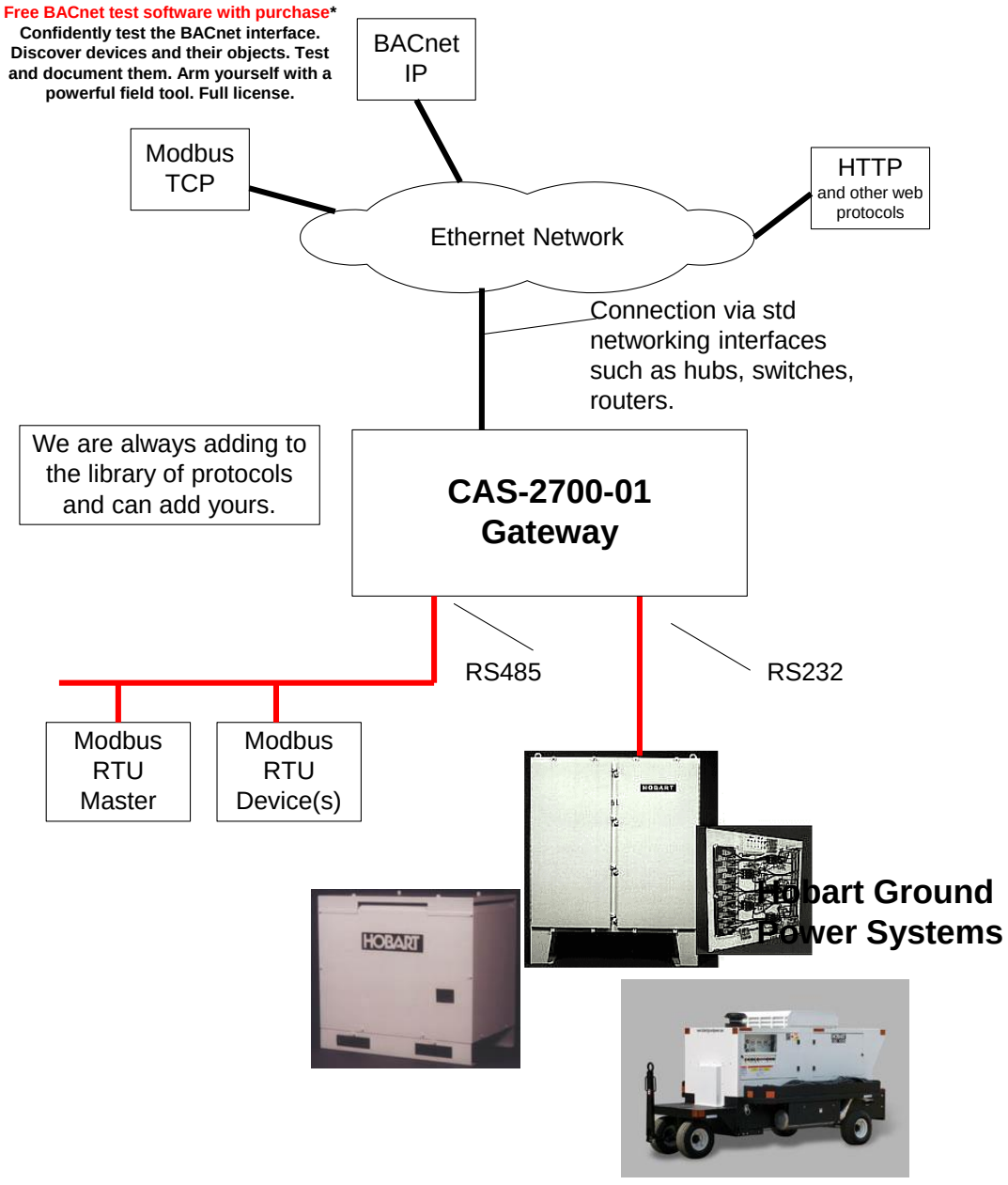
The Gateway connects to the HGP controller, reads data and stores it internally. When a remote system requests data, this data is served in a form that is appropriate to the protocol. In the event that the connection to the HGP controller is lost, or data cannot be read, the gateway can signal this to the remote data client.

The gateway requires minimal configuration and can be considered a plug and play component of a system, in that it is ready to operate out of the box with the default configuration.

2. Connections

2.1. Block Diagram

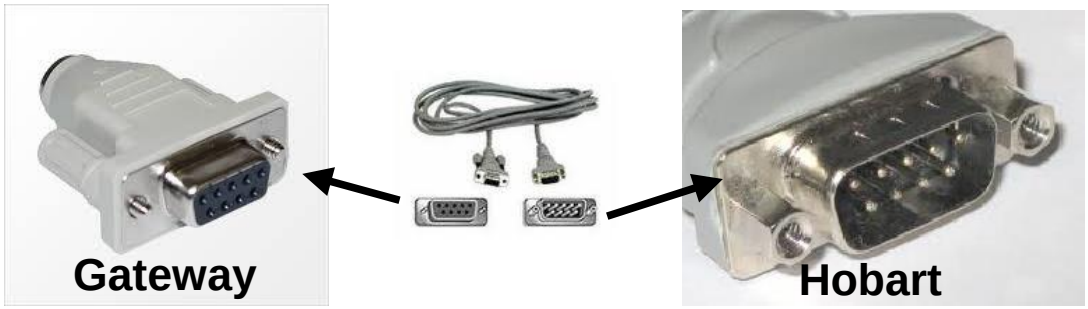
Monitor and Control Hobart Ground Power using BACnet, Modbus or Web



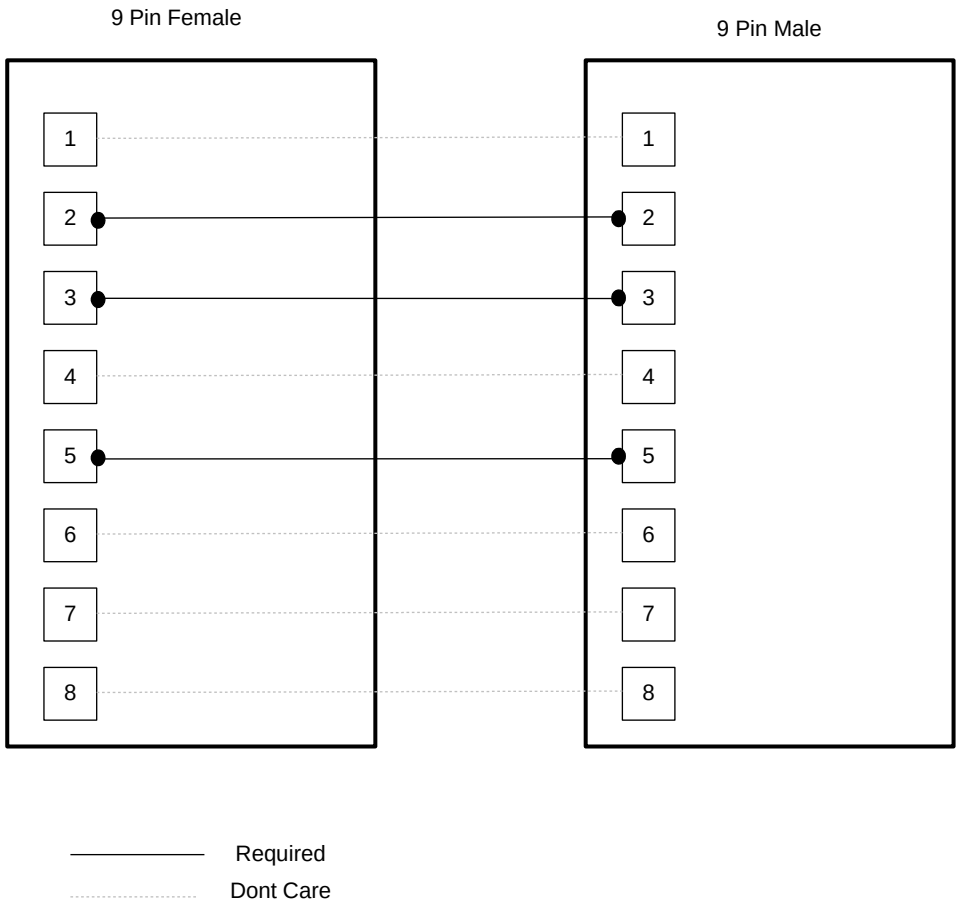
2.2. Wiring / Connections

2.2.1. Hobart Connections

A Serial Extender Cable is suitable. This is **NOT** a Null Modem cable.



Port 1



2.2.2. Modbus RTU Connections

Port 0 – RS485 Mode Terminals

DB9 - Terminal 3	RS485 – Positive
DB9 – Terminal 2	RS485 – Negative
DB9 – Terminal 5	RS485 - Common

2.3. Limitations and Best Practices

Maximum Number of HGP controllers per Gateway

Only 1 HGP controller can be connected to a single gateway. This is a limitation of RS232 and of the Hobart protocol.

RS232 Best Practices

We recommend a maximum of 30ft for the RS232 cable. A well made cable in a clean environment can easily run to 100ft and provide satisfactory performance.

3. Configuration and Settings

3.1. Hobart Connection Settings

These settings are hard coded since they cannot be changed in the Hobart controller.

Baud=9600

Parity=None

Data Bits=8

Stop Bits=1

Handshaking = None

3.2. ModbusTCP Settings

To connect using ModbusTCP you need to know the IP address of the gateway and the Modbus 'Station' number (also known as 'Device Address' or 'Node ID')

Modbus Station Number = 1 (This parameter is configurable).

Review section *7.6 Another Method for Changing the IP* Address - DHCP to see the default IP Address settings and how to change them.

3.3. ModbusRTU Settings

To connect using ModbusRTU you need to set the connection correctly and the Modbus 'Station' number (also known as 'Device Address' or 'Node ID')

Modbus Station Number = 1 (This parameter is configurable – shared with ModusTCP).

Connection Settings : 9600 (or 19200) Baud , 8 Data Bits, 1 Stop Bit, No Parity. The Baud Rate is configurable. The device is a ModbusRTU slave.

3.4. BACnet IP Settings

BACnet supports discovery. Thus any BACnet tool will discover the gateway and report its properties. Each gateway must be allocated a unique device instance number and thus this is a configurable setting.

The Default BACnet Settings are

Device Instance Number = 389001 (This parameter is configurable)

It is important to note that BACnet messages cannot pass from one subnet to another without a BACnet technology called BBMD installed. The easiest installation and the best way to avoid this complication is to set the gateway's IP address so that it is on the same subnet as the BACnet data client (usually the BAS / Scada system).

Review section *7.6 Another Method for Changing the IP* Address - DHCP to see the default IP Address settings and how to change them.

3.5. Other Settings

Timeout :

If the gateway loses it connection to the controller it will mark the data as unreliable after some time has passed. The same is true if one particular data item cannot be read – that data item will be marked as unrealizable. This will affect how remote Modbus or BACnet clients will see the data.

Timeout = 120 seconds (Default)

This setting can be changed.

3.6. Configuration Settings

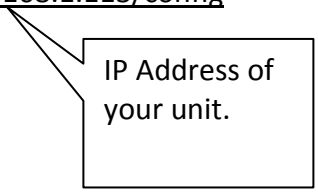
Use a Browser and browse to the IP address of the Gateway. The following information is provided as illustrated by this sample screen.

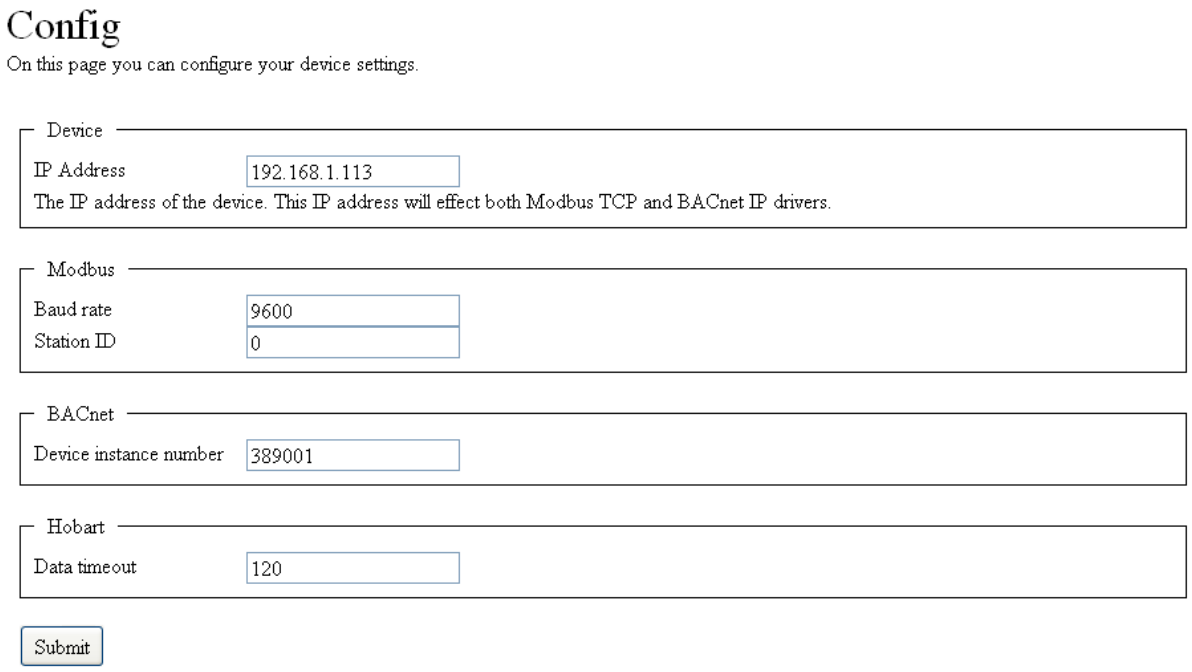
- **Device**:
  - **IP Address**: 192.168.1.113
- **Modbus**:
  - **Baud rate**: 9600
  - **Station ID**: 0
- **BACnet**:
  - **Device instance number**: 389001
- **Hobart**:
  - **Data timeout**: 120

3.7. Change Configuration Settings

Use a Web Browser and type the following into the address bar:

http://192.168.1.113/config





Change the Settings and click Submit to save them. TO cancel changes simply close the page without submitting.

The Modbus Station ID is shared between ModbusRTU and ModbusTCP

Note on IP Addresses: Another method is provided to change the Netmask and Gateway address.

Change don't take effect until the device restarts. Use the Reset button the web page or recycle the power.

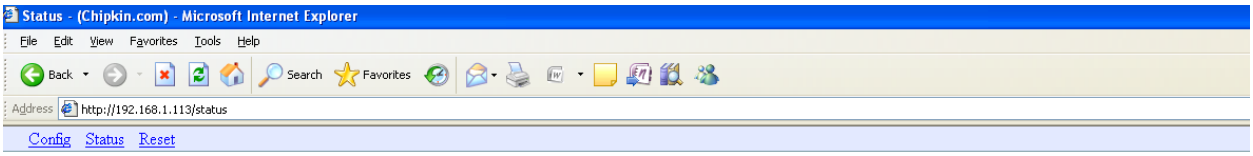
4. Reading Data using HTML / Web Browser

Use a Web Browser to browse to this page.

http://192.168.1.113/status

This is the IP address of your gateway

You are presented with a screen similar to this one. (Status and Age are explained in the section 'Gateway Status' of this manual)



Status

Current data.

Name	Value	Status	Data Age
C00_DEVICE IDENTIFIER 0	65 no_units	Good	1 secs
C01_DEVICE IDENTIFIER 1	68 no_units	Good	1 secs
C02_DEVICE IDENTIFIER 2	86 no_units	Good	1 secs
C03_RECORD POINTER	80 no_units	Good	1 secs
C04_MAN VOLT ADJUST ADJUST VALUE	50 volts	Good	1 secs
C05_LINE DROP COMP ADJUST VALUE	30 volts	Good	1 secs
C06_TOTAL ACCUM KILOWATTS 0	33 kilowatts	Good	1 secs
C07_TOTAL ACCUM KILOWATTS 1	38 kilowatts	Good	1 secs
C08_TOTAL ACCUM KILOWATTS 2	0 kilowatts	Good	1 secs
C09_TOTAL ACCUM KILOWATTS 3	0 kilowatts	Good	1 secs

5. Reading Modbus Data

Need to know more about Modbus ? Read this guide.
http://www.chipkin.com/september-2010-newsletter

5.1. Modbus Function Supported (RTU and TCP)

The Gateway supports functions 1,2,3 and 4. Most masters should be configured to use function 3 (Read Holding Registers). However it will respond to polls that use the other functions with offset equal to zero. Ie. You can read this data as 3xxxx, 1xxxx, 0xxxx or 4xxxx data.

5.2. Modbus Data Map

Modbus Holding Register	Modbus Register	Description	Engineering Units
40001	30001	C00_DEVICE IDENTIFIER 0	None
40002	30002	C01_DEVICE IDENTIFIER 1	None
40003	30003	C02_DEVICE IDENTIFIER 2	None
40004	30004	C03_RECORD POINTER	None
40005	30005	C04_MAN VOLT ADJUST ADJUST VALUE	Volts
40006	30006	C05_LINE DROP COMP ADJUST VALUE	Volts
40007	30007	C06_TOTAL ACCUM KILOWATTS 0	kW
40008	30008	C07_TOTAL ACCUM KILOWATTS 1	kW
40009	30009	C08_TOTAL ACCUM KILOWATTS 2	kW
40010	30010	C09_TOTAL ACCUM KILOWATTS 3	kW
40011	30011	C10_CURRENT TIME HOURS	Hours
40012	30012	C11_CURRENT TIME MINUTES	Minutes
40013	30013	C12_CURRENT TIME SECONDS	Seconds
40014	30014	C13_CURRENT DATE YEAR	Years
40015	30015	C14_CURRENT DATE MONTH	Months
40016	30016	C15_CURRENT DATE DAY	Days
40017	30017	C16_PREVIOUS DATE MONTH	Months
40018	30018	C17_KVA RATING	kVA
40019	30019	C18_TRANSFORMER 12 PULSE PRESENT	None
40020	30020	C19_CONTACTOR SENSE NUMBER	None
40021	30021	C20_RECORD OVERFLOW FLAG	None
40022	30022	C21_SPARE 8 BIT 1 CONFIG	None
40023	30023	C22_CURRENT LIMIT ADJUST VALUE 0	Amps
40024	30024	C23_CURRENT LIMIT ADJUST VALUE 1	Amps

40025	30025	C24_DC MAN VOLT ADJUST VALUE	Volts
40026	30026	C25_TR CONFIGURATION	None
40027	30027	D00_EVENT DESCRIPTION	None
40028	30028	D01_ADVCOMM COMMAND	None
40029	30029	D02_ADV FAULT	None
40030	30030	D03_START TIME HOURS	Hours
40031	30031	D04_START TIME MINUTES	MInutes
40032	30032	D05_START TIME SECONDS	Seconds
40033	30033	D06_START DATE YEAR	Years
40034	30034	D07_START DATE MONTH	Months
40035	30035	D08_START DATE DAY	Days
40036	30036	D09_MAX CURRENT TIME HOURS	Hours
40037	30037	D10_MAX CURRENT TIME MINUTES	Minutes
40038	30038	D11_MAX CURRENT TIME SECONDS	Seconds
40039	30039	D12_EF WARNING	None
40040	30040	D13_FRONT PANEL STATUS	None
40041	30041	D14_KILOWATTS	kW
40042	30042	D15_OUTPUT STATUS	None
40043	30043	D16_SPARE 8 BIT 4 DATA	None
40044	30044	D17_SPARE 8 BIT 3 DATA	None
40045	30045	D18_SPARE 8 BIT 2 DATA	None
40046	30046	D19_SPARE 8 BIT 1 DATA	None
40047	30047	E00_ELAPSED TIME MINUTES TIMER	Minutes
40048	30048	E01_PHASE A VOLTS	Volts
40049	30049	E02_PHASE B VOLTS	Volts
40050	30050	E03_PHASE C VOLTS	Volts
40051	30051	E04_PHASE A B VOLTS INPUT	Volts
40052	30052	E05_PHASE B C VOLTS INPUT	Volts
40053	30053	E06_PHASE C A VOLTS INPUT	Volts
40054	30054	E07_PHASE 1A AMPS	Amps
40055	30055	E08_PHASE 1B AMPS	Amps
40056	30056	E09_PHASE 1C AMPS	Amps
40057	30057	E10_PHASE 2A AMPS	Amps
40058	30058	E11_PHASE 2B AMPS	Amps
40059	30059	E12_PHASE 2C AMPS	Amps
40060	30060	E13_HIGHEST OUTPUT AVE AMPS	Amps
40061	30061	E14_NEUTRAL AMPS	Amps
40062	30062	E15_DC OUTPUT CURRENT	Amps
40063	30063	E16_KILOWATT HOURS	kwH
40064	30064	E17_OUTPUT FREQUENCY	Hz
40065	30065	E18_BUS VOLTAGE	Volts
40066	30066	E19_MAX CURRENT	Amps
40067	30067	E20_DC OUTPUT VOLTAGE	Volts
40068	30068	E21_SPARE 16 BIT 1 DATA	None
40069	30069	Spare	None

40070	30070	Spare	None
40071	30071	kVA being delivered (E07+E08+E09+E10+E11+E12)* (E01+E02+E03)/3	
40072	30072	IEEE754 Floating Point Number	kVA
40073	30073	kW being delivered. It comes from E16.	
40074	30074	IEEE754 Floating Point Number	kW
40075	30075	Average Output Voltage (E01+E02+E03) / 3	
40076	30076	IEEE754 Floating Point Number	Volts
40077	30077	This will report a 1 if the ADV State (D01) is greater than 86, and no fault greater than 6 is present. Otherwise, it reports 0. If (D01 > 86 and D02 < 7) Then = 1 Else = 0	None
40078	30078	This will report a 1 if a fault greater than 6 is present. Otherwise, it reports 0. If (D02 > 6) then =1 else = 0	None
40079	30079	Average Output Current (E07+E08+E09) / 3 +	
40080	30080	(E10+E11+E12) / 3 IEEE754 Floating Point Number	Amps
40081	30081	Average Input Voltage (E04+E05+E06) / 3	
40082	30082	IEEE754 Floating Point Number	Volts

5.3. Interpreting Modbus Data

Modbus does not have a mechanism for reporting the validity of data. What happens if the gateway loses its connection to the Hobart controller ? After a timeout period has elapsed the gateway will regard the data it had read previously, as unreliable.

The remote data client will see the value 65535 (-1) in the registers that contain unreliable data. In other words, rather than serve the old (possibly obsolete) data, the gateway serves a value that clearly identifies that the data is invalid.

Some values have been encoded as IEEE754 format floating point numbers. These values use 2x 16bit registers. They are clearly identified in the Modbus Map. Since Modbus does not support floating point numbers so all other values are served as whole numbers.

5.4. Test Procedure – Use CAS Modbus Scanner

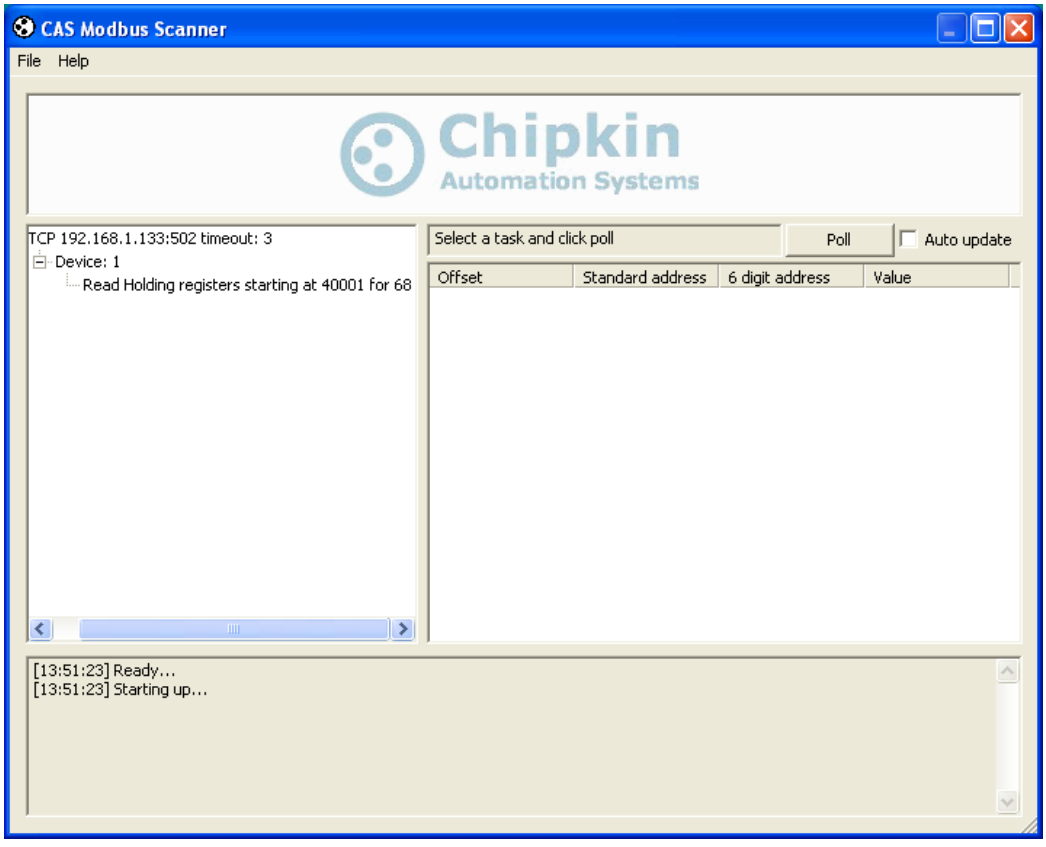
You can test the ModbusTCP data using free test software provided by Chipkin Automation Software.

This is a link to the download page. http://www.chipkin.com/cas-modbus-scanner

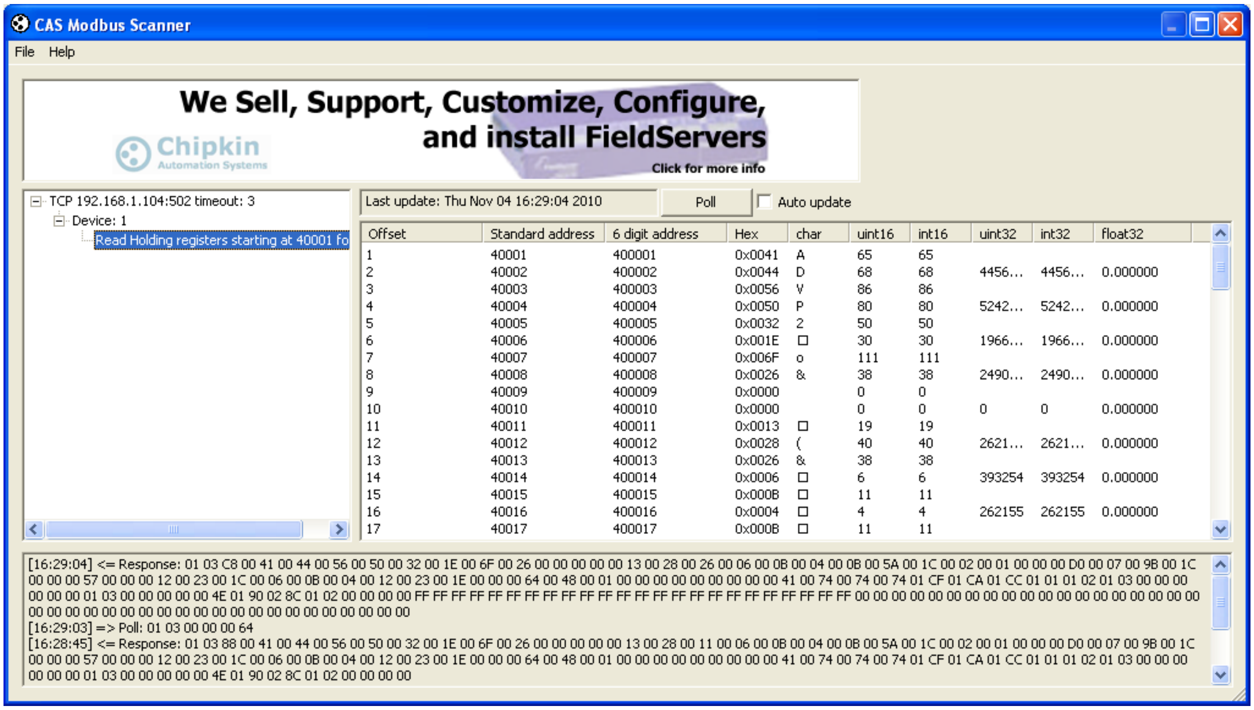
Configure the scanner as follows

1. Add a connection – specify the IP address of the gateway
2. Add a device to the connection. Set the device=1
3. Add a Request to the device: Read Holding register offset=1 Length=68

The result should be like this.



4. Click the Poll Button
5. Use the values found in the ‘int16 column and the data map table to review the data.


CAS Modbus Scanner
File Help
We Sell, Support, Customize, Configure, and install FieldServers
Chipkin Automation Systems
Click for more info
TCP 192.168.1.104:502 timeout: 3
Device: 1
Read Holding registers starting at 40001 fo
Last update: Thu Nov 04 16:29:04 2010
Poll
Auto update
Offset Standard address 6 digit address Hex char uint16 int16 uint32 int32 float32
1 40001 400001 0x0041 A 65 65
2 40002 400002 0x0044 D 68 68 4456… 4456… 0.000000
3 40003 400003 0x0056 V 86 86
4 40004 400004 0x0050 P 80 80 5242… 5242… 0.000000
5 40005 400005 0x0032 2 50 50
6 40006 400006 0x001E □ 30 30 1966… 1966… 0.000000
7 40007 400007 0x006F o 111 111
8 40008 400008 0x0026 & 38 38 2490… 2490… 0.000000
9 40009 400009 0x0000 0 0
10 40010 400010 0x0000 0 0 0 0 0.000000
11 40011 400011 0x0013 □ 19 19
12 40012 400012 0x0028 (40 40 2621… 2621… 0.000000
13 40013 400013 0x0026 & 38 38
14 40014 400014 0x0006 □ 6 6 393254 393254 0.000000
15 40015 400015 0x000B □ 11 11
16 40016 400016 0x0004 □ 4 4 262155 262155 0.000000
17 40017 400017 0x000B □ 11 11
[16:29:04] <= Response: 01 03 C8 00 41 00 44 00 56 00 50 00 32 00 1E 00 6F 00 26 00 00 00 00 00 13 00 28 00 26 00 06 00 0B 00 04 00 0B 00 5A 00 1C 00 02 00 01 00 00 00 D0 00 07 00 9B 00 1C
00 00 00 57 00 00 00 12 00 23 00 1C 00 06 00 0B 00 04 00 12 00 23 00 1E 00 00 00 64 00 48 00 01 00 00 00 00 00 00 00 00 00 41 00 74 00 74 00 74 01 CF 01 CA 01 CC 01 01 01 02 01 03 00 00 00
00 00 00 01 03 00 00 00 00 00 4E 01 90 02 8C 01 02 00 00 00 00 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
[16:29:03] => Poll: 01 03 00 00 00 64
[16:28:45] <= Response: 01 03 88 00 41 00 44 00 56 00 50 00 32 00 1E 00 6F 00 26 00 00 00 00 00 13 00 28 00 11 00 06 00 0B 00 04 00 0B 00 5A 00 1C 00 02 00 01 00 00 00 D0 00 07 00 9B 00 1C
00 00 00 57 00 00 00 12 00 23 00 1C 00 06 00 0B 00 04 00 12 00 23 00 1E 00 00 00 64 00 48 00 01 00 00 00 00 00 00 00 00 00 41 00 74 00 74 00 74 01 CF 01 CA 01 CC 01 01 01 02 01 03 00 00 00
00 00 00 01 03 00 00 00 00 00 4E 01 90 02 8C 01 02 00 00 00 00

6. Reading BACnet Data

BACnet supports discovery. When you discover the gateway, objects and properties you will find appropriately named objects that report data from the Hobart Controller. Because BACnet supports discovery, usually knowledge of the BACnet Device Instance Number does not need to be known in advance.

Each BACnet device (like the gateway) needs to have a unique instance number. Therefore it may be necessary for you to change the instance number.

Need to learn some BACnet basics ? Read this guide.

http://www.chipkin.com/bacnet-solutions

6.1. Most Common BACnet Problem

If the device or application that is reading the BACnet data is on another subnet then it will not discover or be able to talk to the gateway. This can be resolved two ways. 1. Change the IP address of the gateway to be on the same subnet – a simple task. 2. Install BBMD – a non trivial task – but a task you can often pass the buck on – it is the responsibility of the company installing the BAS system to provide BBMD. You can read more about it at this link. http://www.chipkin.com/articles/bacnet-bbmd

6.2. Interpreting BACnet Data

If the gateway loses communications with the Hobart controller or if a data point cannot be read from the controller, the 'Out of Service' property of the data object is set true once the timeout has expired. The value of the 'Present Value' property is not changed, thus the last good value will be shown.

6.3. BACnet Objects

- analog_input 0 (C00_DEVICE IDENTIFIER 0)
- analog_input 1 (C01_DEVICE IDENTIFIER 1)
- analog_input 2 (C02_DEVICE IDENTIFIER 2)
- analog_input 3 (C03_RECORD POINTER)
- analog_input 4 (C04_MAN VOLT ADJUST ADJUST VALUE)

- analog_input 5 (C05_LINE DROP COMP ADJUST VALUE)
- analog_input 6 (C06_TOTAL ACCUM KILOWATTS 0)
- analog_input 7 (C07_TOTAL ACCUM KILOWATTS 1)
- analog_input 8 (C08_TOTAL ACCUM KILOWATTS 2)
- analog_input 9 (C09_TOTAL ACCUM KILOWATTS 3)
- analog_input 10 (C10_CURRENT TIME HOURS)
- analog_input 11 (C11_CURRENT TIME MINUTES)
- analog_input 12 (C12_CURRENT TIME SECONDS)
- analog_input 13 (C13_CURRENT DATE YEAR)
- analog_input 14 (C14_CURRENT DATE MONTH)
- analog_input 15 (C15_CURRENT DATE DAY)
- analog_input 16 (C16_PREVIOUS DATE MONTH)
- analog_input 17 (C17_KVA RATING)
- analog_input 18 (C18_TRANSFORMER 12 PULSE PRESENT)
- analog_input 19 (C19_CONTACTOR SENSE NUMBER)
- analog_input 20 (C20_RECORD OVERFLOW FLAG)
- analog_input 21 (C21_SPARE 8 BIT 1 CONFIG)
- analog_input 22 (C22_CURRENT LIMIT ADJUST VALUE 0)
- analog_input 23 (C23_CURRENT LIMIT ADJUST VALUE 1)
- analog_input 24 (C24_DC MAN VOLT ADJUST VALUE)
- analog_input 25 (C25_TR CONFIGURATION)
- analog_input 26 (D00_EVENT DESCRIPTION)
- analog_input 27 (D01_ADVCOMM COMMAND)
- analog_input 28 (D02_ADV FAULT)
- analog_input 29 (D03_START TIME HOURS)
- analog_input 30 (D04_START TIME MINUTES)

- analog_input 31 (D05_START TIME SECONDS)
- analog_input 32 (D06_START DATE YEAR)
- analog_input 33 (D07_START DATE MONTH)
- analog_input 34 (D08_START DATE DAY)
- analog_input 35 (D09_MAX CURRENT TIME HOURS)
- analog_input 36 (D10_MAX CURRENT TIME MINUTES)
- analog_input 37 (D11_MAX CURRENT TIME SECONDS)
- analog_input 38 (D12_EF WARNING)
- analog_input 39 (D13_FRONT PANEL STATUS)
- analog_input 40 (D14_KILOWATTS)
- analog_input 41 (D15_OUTPUT STATUS)
- analog_input 42 (D16_SPARE 8 BIT 4 DATA)
- analog_input 43 (D17_SPARE 8 BIT 3 DATA)
- analog_input 44 (D18_SPARE 8 BIT 2 DATA)
- analog_input 45 (D19_SPARE 8 BIT 1 DATA)
- analog_input 46 (E00_ELAPSED TIME MINUTES TIMER)
- analog_input 47 (E01_PHASE A VOLTS)
- analog_input 48 (E02_PHASE B VOLTS)
- analog_input 49 (E03_PHASE C VOLTS)
- analog_input 50 (E04_PHASE A B VOLTS INPUT)
- analog_input 51 (E05_PHASE B C VOLTS INPUT)
- analog_input 52 (E06_PHASE C A VOLTS INPUT)
- analog_input 53 (E07_PHASE 1A AMPS)
- analog_input 54 (E08_PHASE 1B AMPS)
- analog_input 55 (E09_PHASE 1C AMPS)
- analog_input 56 (E10_PHASE 2A AMPS)

- analog_input 57 (E11_PHASE 2B AMPS)
- analog_input 58 (E12_PHASE 2C AMPS)
- analog_input 59 (E13_HIGHEST OUTPUT AVE AMPS)
- analog_input 60 (E14_NEUTRAL AMPS)
- analog_input 61 (E15_DC OUTPUT CURRENT)
- analog_input 62 (E16_KILOWATT HOURS)
- analog_input 63 (E17_OUTPUT FREQUENCY)
- analog_input 64 (E18_BUS VOLTAGE)
- analog_input 65 (E19_MAX CURRENT)
- analog_input 66 (E20_DC OUTPUT VOLTAGE)
- analog_input 67 (E21_SPARE 16 BIT 1 DATA)
- analog_input:71 (kVA being delivered)
- analog_input:73 (kW being delivered)
- analog_input:75 (Average Output Voltage)
- analog_input:77 (fault 1)
- analog_input:78 (fault 2)
- analog_input:79 (Average Output Current)
- analog_input:81 (Average Input Voltage)

6.4. BACnet Test Procedure

You have been provided with a USB key to the CAS BACnet Explorer. This key activates the software. It cannot run without it. If you don't have your USB key, you can still activate the application – it requires an internet connection. A video provides help.

http://www.chipkin.com/articles/cas-bacnet-explorer-software-activation-video

You might also want to refer to these articles.

http://www.chipkin.com/articles/cas-bacnet-explorer-usbsoftware-activation-problems

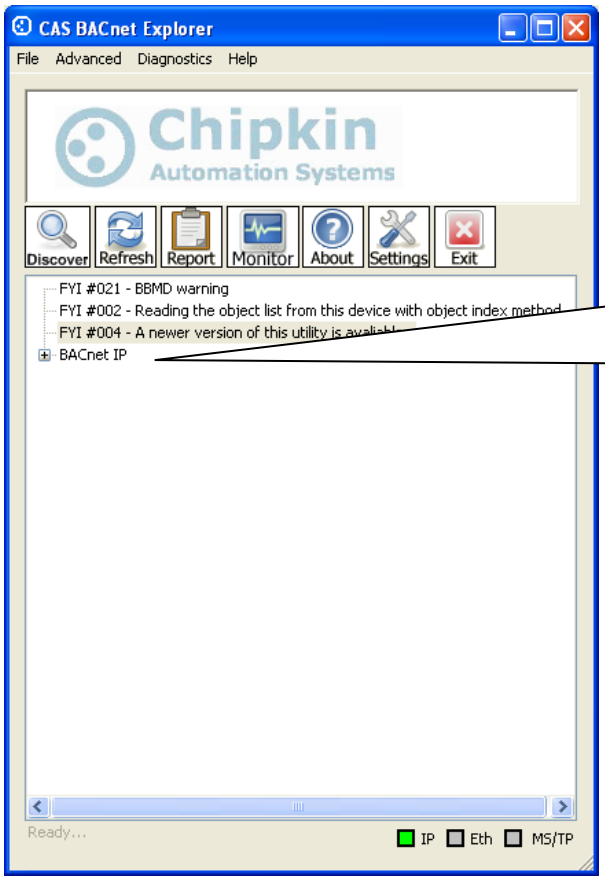
http://www.chipkin.com/cas-bacnet-explorer-licenses-faq

Install and activate the application. Download from here.

http://www.chipkin.com/cas-bacnet-explorer/

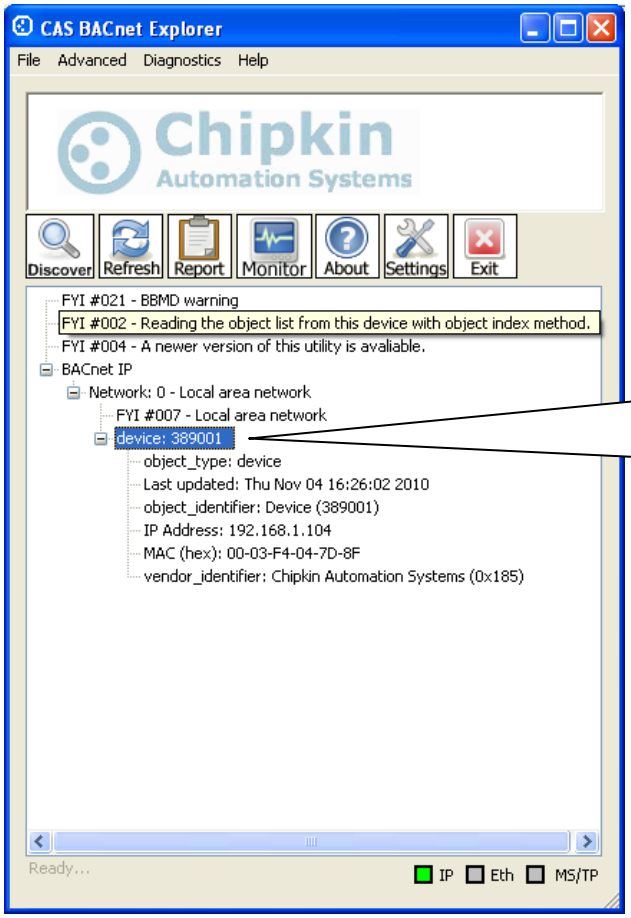
Procedure

1. Start the application
2. Click Settings
3. Check IP – uncheck MSTP and Ethernet
4. Click on the network card you will use.
5. Click Ok.
6. Now click discover
7. Click Send

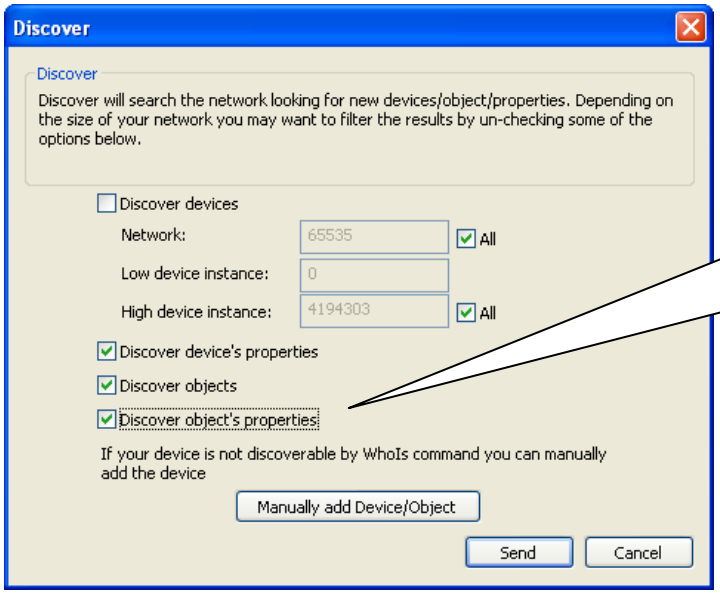


Device(s) were discovered.

Click the + to open up.

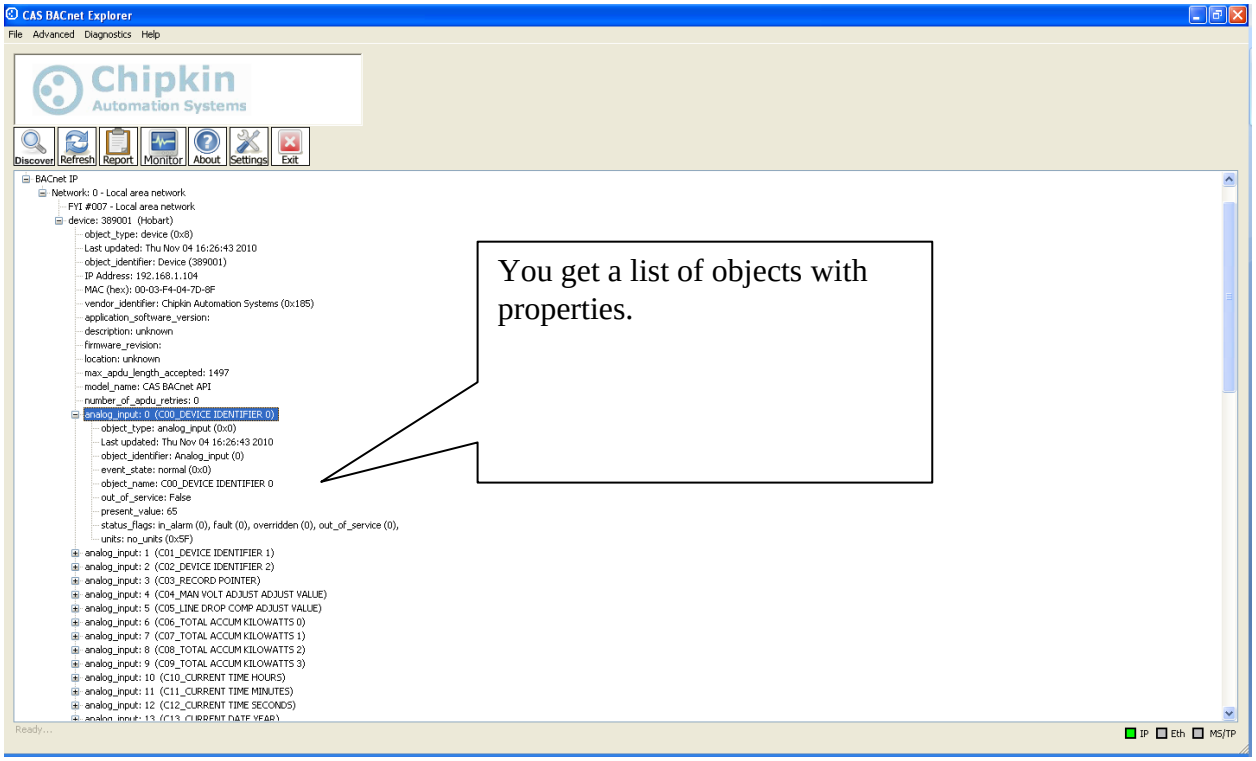


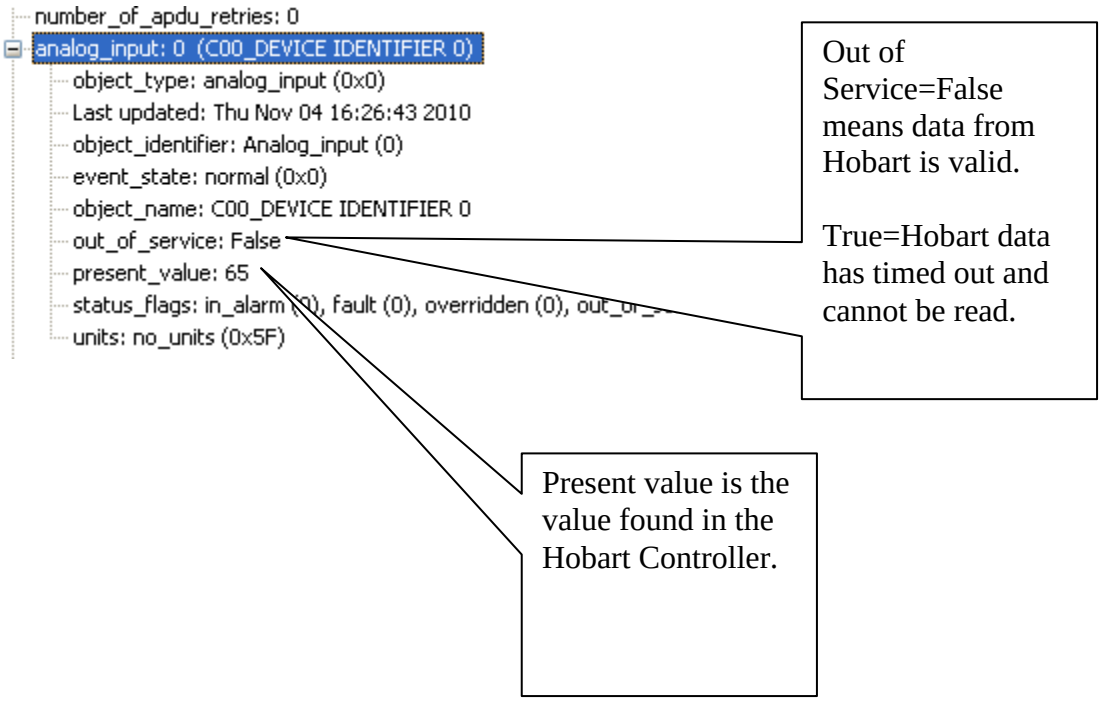
Select the device and click discover again.



Check the 'Discover properties' box.

Click the Send button.


CAS BACnet Explorer
File Advanced Diagnostics Help
Chipkin
Automation Systems
Discover Refresh Report Monitor About Settings Exit
BACnet IP
Network: 0 - Local area network
FYI #007 - Local area network
device: 389001 (Hobart)
object_type: device (0x8)
Last updated: Thu Nov 04 16:26:43 2010
object_identifier: Device (389001)
IP Address: 192.168.1.104
MAC (hex): 00-03-F4-04-7D-8F
vendor_identifier: Chipkin Automation Systems (0x185)
application_software_version:
description: unknown
firmware_revision:
location: unknown
max_apdu_length_accepted: 1497
model_name: CAS BACnet API
number_of_apdu_retries: 0
analog_input: 0 (C00_DEVICE IDENTIFIER 0)
object_type: analog_input (0x0)
Last updated: Thu Nov 04 16:26:43 2010
object_identifier: Analog_input (0)
event_state: normal (0x0)
object_name: C00_DEVICE IDENTIFIER 0
out_of_service: False
present_value: 65
status_flags: in_alarm (0), fault (0), overridden (0), out_of_service (0),
units: no_units (0x5F)
analog_input: 1 (C01_DEVICE IDENTIFIER 1)
analog_input: 2 (C02_DEVICE IDENTIFIER 2)
analog_input: 3 (C03_RECORD POINTER)
analog_input: 4 (C04_MAN VOLT ADJUST ADJUST VALUE)
analog_input: 5 (C05_LINE DROP COMP ADJUST VALUE)
analog_input: 6 (C06_TOTAL ACCUM KILOWATTS 0)
analog_input: 7 (C07_TOTAL ACCUM KILOWATTS 1)
analog_input: 8 (C08_TOTAL ACCUM KILOWATTS 2)
analog_input: 9 (C09_TOTAL ACCUM KILOWATTS 3)
analog_input: 10 (C10_CURRENT TIME HOURS)
analog_input: 11 (C11_CURRENT TIME MINUTES)
analog_input: 12 (C12_CURRENT TIME SECONDS)
Ready...
IP Eth MS/TP
You get a list of objects with properties.


number_of_apdu_retries: 0
analog_input: 0 (C00_DEVICE IDENTIFIER 0)
object_type: analog_input (0x0)
Last updated: Thu Nov 04 16:26:43 2010
object_identifier: Analog_input (0)
event_state: normal (0x0)
object_name: C00_DEVICE IDENTIFIER 0
out_of_service: False
present_value: 65
units: no_units (0x5F)
Out of Service=False means data from Hobart is valid.
True=Hobart data has timed out and cannot be read.
Present value is the value found in the Hobart Controller.

7. Commissioning, Diagnostics and Trouble Shooting

7.1. What to Take to Site for Commissioning

1. The gateway and other supplied components.
2. USB->232 Converter

   Any will do. This will allow you to run the Hobart Software. Contact Hobart for a copy. You will only use this, if there is some doubt about the Hobart controller's serial port or the validity of data.
3. Serial Cables

   A Null Modem cable is used to connect to the gateway diagnostic port. Take one with you. A serial extender cable is used to connect the Hobart to the Gateway.
4. Laptop
5. Gateway IP Address Allocation Tool

   Download from
   http://www.chipkin.com/articles/cas-gateway-ip-address-tool
6. Wireshark packet sniffer software – free download

   http://www.wireshark.org/download.html
7. CAS Modbus Scanner – free download

   CAS Modbus Scanner is a utility to retrieve coils, inputs, holding registers, and input registers from a Modbus enabled device. Values retrieved from the device can be viewed in many different formats including Binary, HEX, Uint16, Int16, Uint32, Int32, and Float32.
   http://www.chipkin.com/cas-modbus-scanner

8. Serial Mini Tester

9. DB9 and DB25 make and female connector make-up kits (Solder free)

   Always useful but not required if you have tested your cable prior to attending the site.

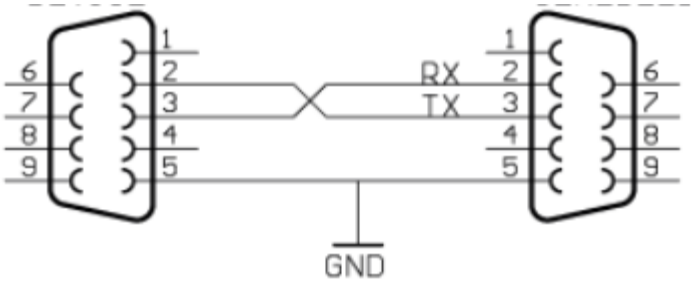
10. Rx / TX cross over.

    Always useful but not required if you have tested your cable prior to attending the site.

    Its useful to be able to swap the conductors connected to pins 2 and 3. Take a module with you. Its easier than changing eh wires.

    EG. Ziotek Null Modem Adapter DB25

    http://www.cyberguys.com/product-details/?productid=751&rtn=750&core_cross=SEARCH_DETAIL_SIMILAR#page=page-1



11. Gender Benders

    Always useful but not required if you have tested your cable prior to attending the site.

12. Ethernet Patch cables

13. Hub

    Used as a last resort if there are problems on Modbus or BACnet

A hub is not a switch. A hub can be used for trouble shooting whereas only as 'supervised' switch can. Most switches are not supervised.

http://www.chipkin.com/articles/hubs-vs-switches-using-wireshark-to-sniff-network-packets

7.2. Gateway Status

Browse to http://192.168.1.113/status and you will be the values of data, data age and data quality information.

The "data age" is now long it has been in seconds since the data was last updated. This value should be less then ~10 as it only takes 1-2 sec to poll every point on the Hobart device. The status is based off the data age, when the data age reaches [Hobart data timeout] {default: 120 sec} the status will change to "BAD" and be highlighted in red.

You must manually refresh this page to get updated values.

7.3. Gateway Diagnostics

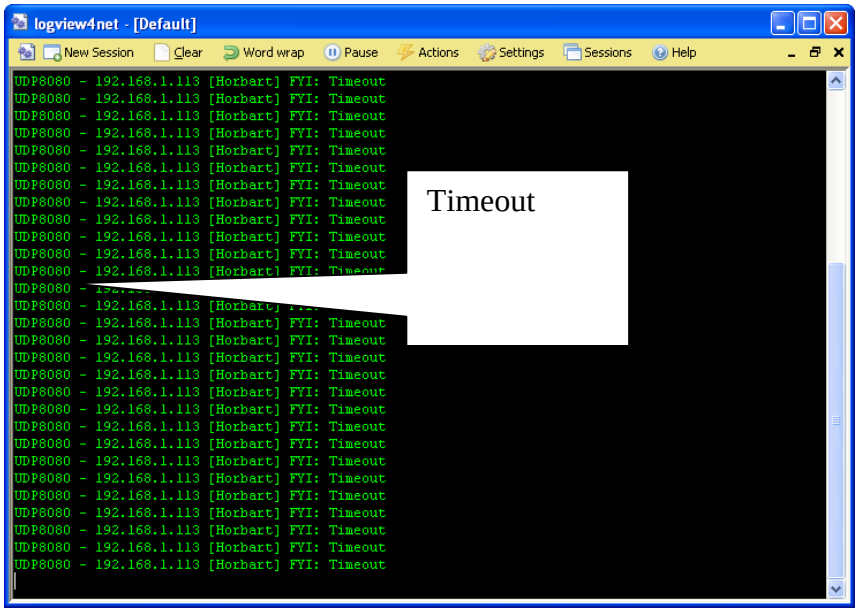
Power Led: Green Solid = Normal Condition.

RJ45 LED: Green to show link.

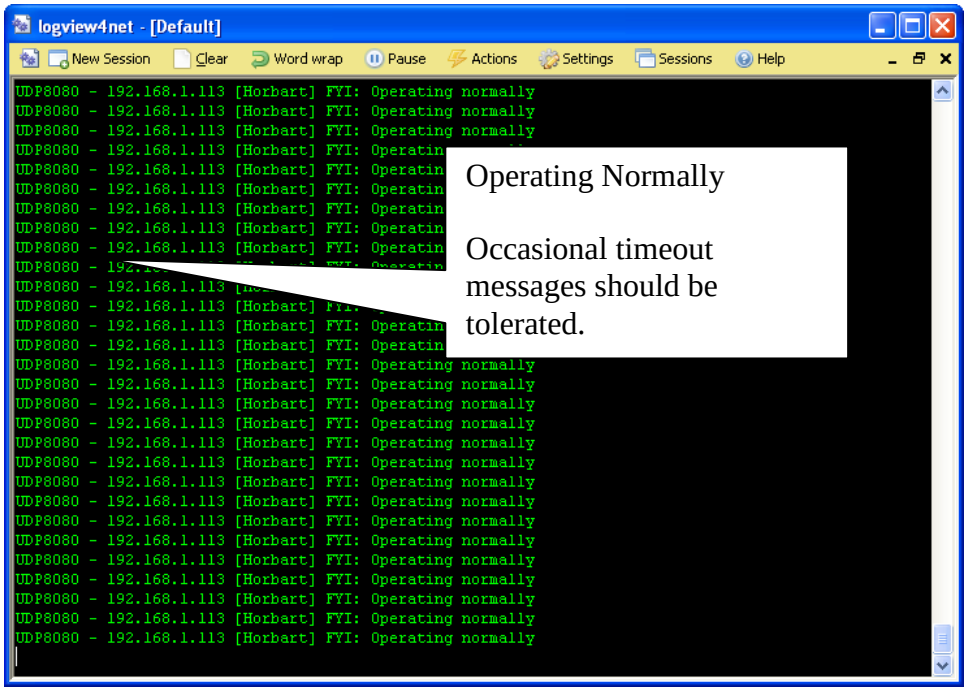
7.4. Debug log.

The debug messages are sent on UDP port 65534 to the broadcast IP address: {255.255.255.255} as plain ASCII text. You can use "logview4net" tool to view and recorded the debug messages as they are sent from the device.

Logview4net
Free and open source tool built to viewing and monitoring logs. It works with many different file formats and protocols including UDP. This tool can be download for "free" from the publishers website http://logview4net.com/



Abnormal operation. No communication with device. Perform Hobart Connection Diagnostics.



Normal Operation.

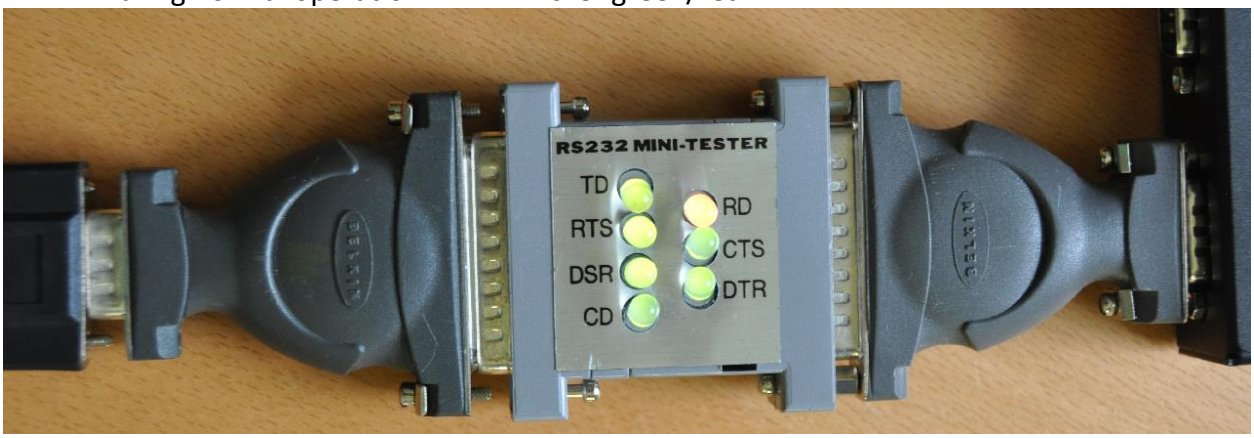
7.5. Hobart Connection

Use a mini tester to check the serial ports.

Connect the cable to the Hobart only – RD should be green. If it isn't this means the cable to the Hobart is wrong or the port isn't working.

Connect the cable to the gateway only – TD should be green. If it isn't this means the cable to the gateway is wrong or the port isn't working.

During normal operation RD will flicker green/red



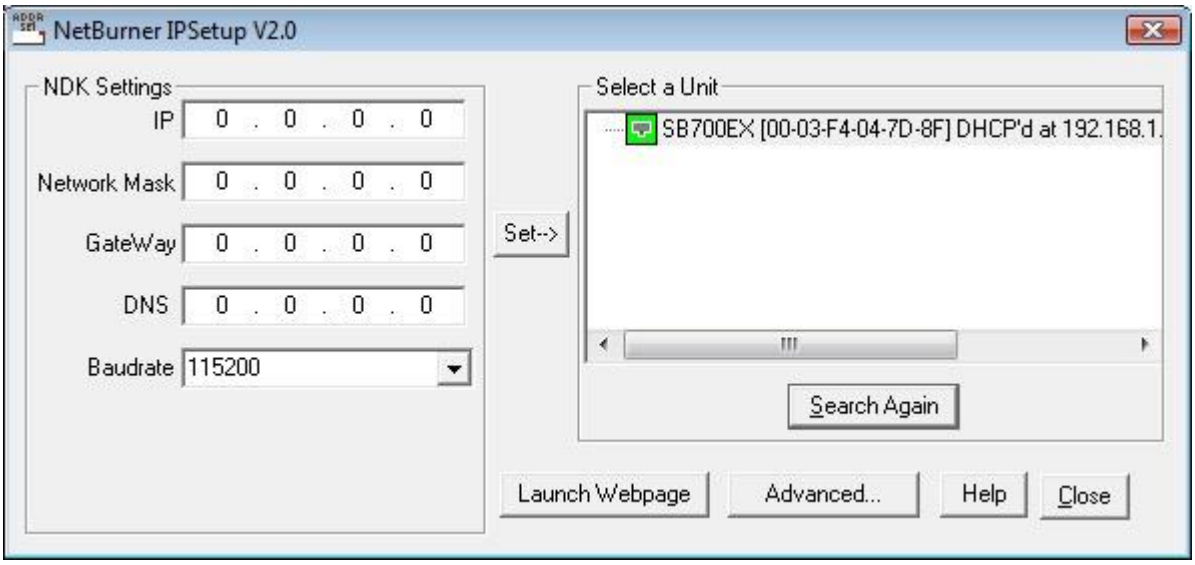
7.6. Another Method for Changing the IP Address - DHCP

This device supports DHCP and DHCP is enabled.
When shipped the device

IP = 192.168.1.x
Mask = 255.255.255.0
Gateway = 192.168.1.1

If you simply want to change the IP address then use the simpler method provided in section 3.7 Change Configuration Settings.
A tool is provided to change the IP address of the gateway. The tool can be downloaded from :
http://www.chipkin.com/articles/cas-gateway-ip-address-tool

When you start this tool it discovers gateways and list them in the right had side 'Select a Unit' area. If the area is blank then click the 'Search Again' button. If it remains blank check that the Ethernet connection is made – is there a green link LED on the RJ45 and on the hub/switch you are connected to.



To change the IP address complete the Fields and click the 'Set' button.

7.7. Discovering the Gateway

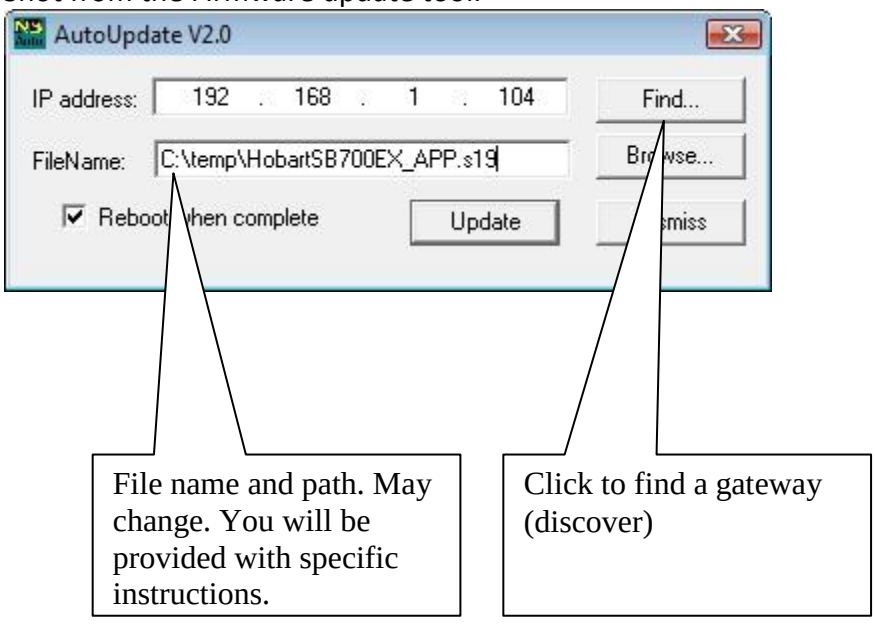
Use the tool provided to change the IP address to discover the gateway and learn what its pre-allocated IP address is. See section 7.6 Another Method for Changing the IP Address

7.8. Downloading New Firmware

If you are sent new firmware you will be provided with specific instructions. These are generic – ie folder and file names may be different.

A tool is provided. It can be downloaded from
http://www.chipkin.com/articles/cas-gateway-firmware-download-tool

Screen Shot from the Firmware update tool.



8. Specifications

- **UL and ULc approved**
- 10/100BaseT with RJ-45 connector
- 1x RS232 Port
- 1x RS485 Port (Different Models have additional ports)
- 2MBytes flash memory, 8MBytes of SDRAM
- Power: 5-24VDC
- Operating Temperature: 0 to 70 C
- Dimensions: 4.2" x 3.25" x 1"
- LEDs: Link, Speed/Data, Power

Revision History

Date	Resp	Format	Driver Ver.	Doc. Rev.	Comment
04 Nov 2010	PMC		1.00a	0	Document Created
13 Dec 2010	PMC		1.00a	1	Updated.
24 Jan 2010	PMC		1.02	2	Added new points (Updated Modbus Map and BACnet Map)