

Feedback Solutions

CNG-1000 Counter Network Gateway

Installation Manual

Introduction

The CNG-1000 is a 'BACnet Device' that offers seamless integration of 'Occupancy Data' from a 'People Counter' with any 'Building Automation System' (BAS).

Using accurate IP based '**People Counting Sensors**', as the source for capturing the flow of people into a building the CNG-1000 Gateway converts '**Occupancy Data**' and makes it available in real-time on BACnet so that it can be discovered by any BAS system.



System Requirement:

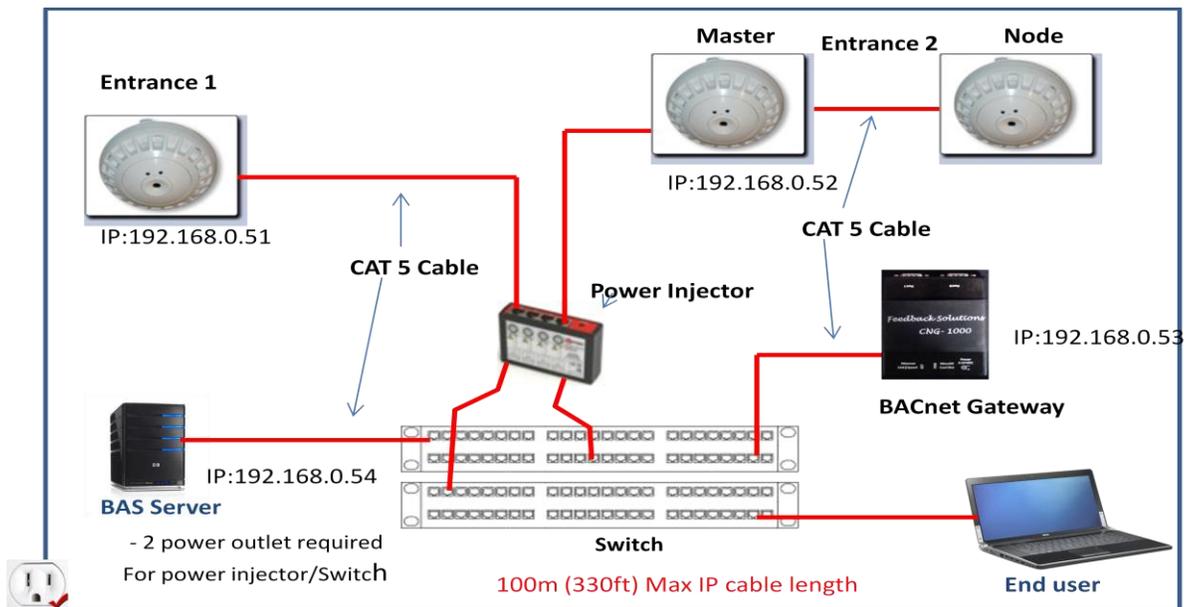
1. **People Counter:** Thermal Imaging Sensors are used to count the number of people entering and exiting a building.
2. **CNG-1000 Gateway:** The gateway reads data from the thermal sensors. calculates occupancy and makes it available to BACnet IP. These values are 'served' as BACnet IP data.
3. **BAS System:** Industry standard BAS system that will read the data values from the CNG 1000 gateway for further use.
4. **Networking Requirement:** The sensors, gateway and BAS system will reside on the same local area network subnet and be able to communicate with each other. .

Prerequisites

People Counter: The gateway presently works with only Thermal Imaging Sensors. Before the gateway is configured ensure that the thermal sensors are installed and configured to count in both direction and able to deliver maximum accuracy.

CNG-1000 Gateway: Install the CNG-1000 on the same local area network as the 'People Counter' and 'BAS System' are installed, so that they are able to communicate with each other. Once the connectivity is established we are ready to configure the gateway.

Feedback Solutions



Log into your Gateway by using the default IP address and using the login ID and Password -

Setting up on Gateway:

You log into the gateway using any web browser by using its default IP address:

IP address: 192.168.1.113

Once you enter the IP address you will be taken to the Gateway welcome screen where you would have to select - **Option 3 "Browse to system information page".....**

192.168.1.113/docs/starthere.htm

Welcome

Start here to configure the CAS Gateway

Start Here

1. Connect power and an Ethernet cable to the device.
The power LED should illuminate and the Ethernet LEDs should periodically blink.
2. Determine the devices IP address.
See: [What is the device's IP address and how do I change it?](#)
3. Browse to the **system information page** with a internet browser (Microsoft's Internet explorer, Mozilla's FireFox, current system and will allow for configuration. This page may be password protected depending on the installa

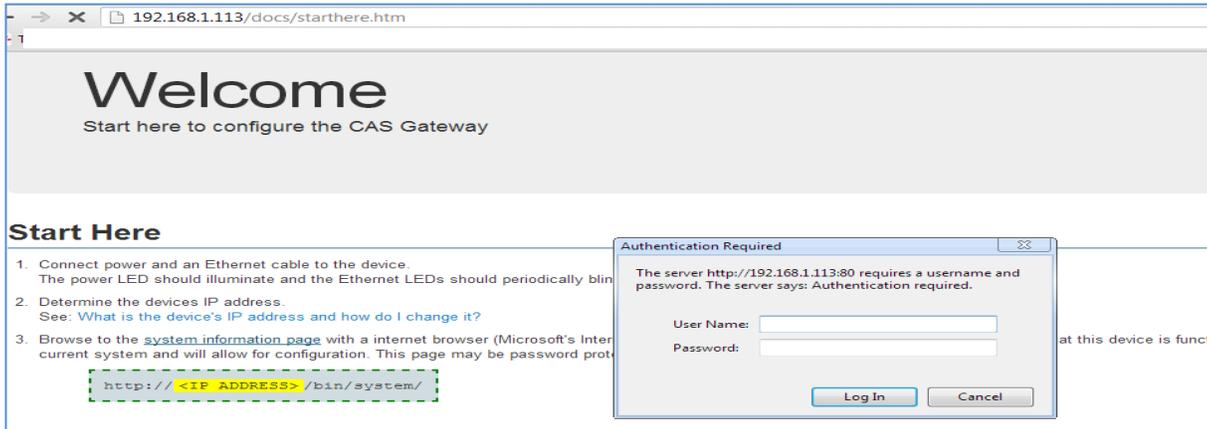
```
http://<IP ADDRESS>/bin/system/
```

Feedback Solutions

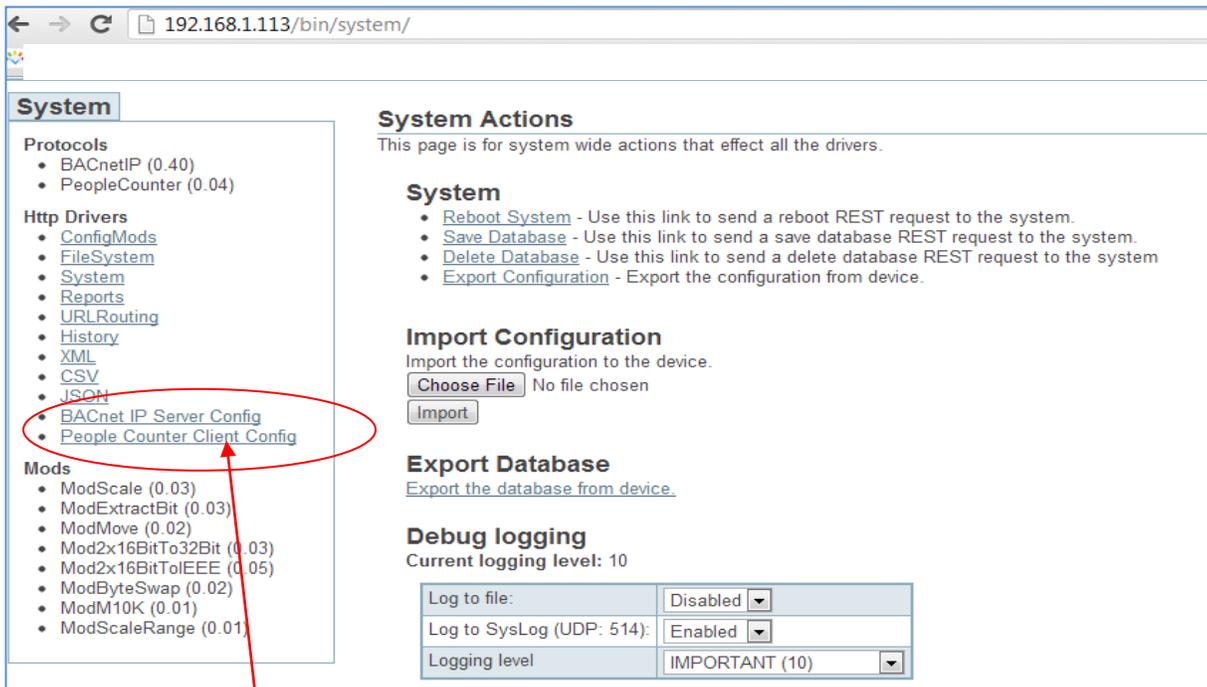
Once you click on **option 3** you will be prompted to enter your Login ID and Password:

The default login ID is: admin

The default password is: admin



This will take you to the **System configuration** screen where you define the settings for the 'People Counter' and the 'Bacnet Server'



Select '**People Counter Client Config**' to define the installed sensors as well as define the hierarchy for the building. This will ensure that the right occupancy value is output or delivered to the BAS system (Building or Floor) as required.

Feedback Solutions

Assuming you are installing in two entrances in a particular building with only one floor you would configure the people counter as given below. This will output one occupancy value for the BAS System :-

Building



Sensor Layout

Insert new record in to 'Buildings'

Name	Value	Description
Building	<input type="text"/>	This is the name of the building.

Floors

Actions: [Insert](#)
Error: Table is empty

Sensors

Actions: [Insert](#)
Reading 30 records from 0-3 of a total 3
No records

1. **First you select Building:** Click on [Insert](#): - This will prompt you to enter the building name. Enter the building name and click on insert to add the building name.

Sensor Layout

- Main

Buildings

Actions: [Insert](#)
Reading 30 records from 0-1 of a total 1

Action	Id	Building
Edit Delete	1	Main

Insert new record in to 'Floors'

Name	Value	Description
Floor	<input type="text"/>	This is the name of the floor in the building.
Building	Main <input type="button" value="v"/>	The name of the building that this floor is in

Sensors

Actions: [Insert](#)
Reading 30 records from 0-3 of a total 3
No records

2. **Second you select Floors:** Click on [Insert](#): - This will prompt you to enter the floors. Enter the floor name(s) and click on insert to add the floors.

Feedback Solutions

3. **Third you select Sensors: Click on [Insert](#):** - This will prompt you to enter entrances where the sensors are installed. In addition you would also have to define the following for each sensor or group of sensors that are installed across each entrance.
- IP address of sensor:** Single sensor or Master-Node sensor
 - Name of entrance:**
 - Scan interval:** (the down load time frequency). Default will be **5 minutes**. So every 5 minutes the gateway will output the occupancy value to the BACnet network to be picked up by any BAS system.

Once completed click on insert to save the same.

** Note: the Port is set to 4505, this cannot be changed.*

Sensor Layout

- Main
 - Floor 1

Buildings

Actions: [Insert](#)
Reading 30 records from 0-1 of a total 1

Action	Id	Building
Edit Delete	1	Main

Floors

Actions: [Insert](#)
Reading 30 records from 0-1 of a total 1

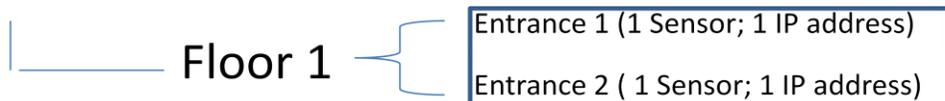
Action	Id	Floor	Building
Edit Delete	1	Floor 1	1

Insert new record in to 'Sensors'

Name	Value	Description
Floor	Main: Floor 1 ▾	This is the name of the floor that this sensor is on.
IP Address	<input type="text"/>	IP address for the sensor.
Name	<input type="text"/>	The name of this sensor. This can be anything and is used to help identify the task.
Port	4505	UDP Port for the sensor. Default: 4505
Scan	300	How often in seconds to run this task.

Once completed the 'People Counter Config' screen will display the following:

Building



Feedback Solutions

Sensor Layout

- Main
 - Floor 1
 - Main:Floor 1:Main Entrance

Buildings

Actions: [Insert](#)
Reading 30 records from 0-1 of a total 1

Action	Id	Building
Edit Delete	1	Main

Floors

Actions: [Insert](#)
Reading 30 records from 0-1 of a total 1

Action	Id	Floor	Building
Edit Delete	1	Floor 1	1

Success, Record #8 has been added

Sensors

Actions: [Insert](#)
Reading 30 records from 0-6 of a total 6

Action	Id	Floor	IP Address	Name	Port	Scan
Edit Delete	7	1	192.168.1.10	Main:Floor 1:Main Entrance	4505	300
Edit Delete	8	1	192.168.1.11	Main:Floor 1:Rear Entrance	4505	300

If you want to configure multiple floors for the building than you just need to add the floors and the corresponding sensors for each entrance to the floor.

This completes the setup of the people counters. Next we need to configure the BACnet Gateway so that any BAS system will be able to discover the Gateway on BACnet IP and be able to read the data from the People Counters.

Select '**BACnet IP Server Config**' option from the menu

System

Protocols

- BACnetIP (0.40)
- PeopleCounter (0.04)

Http Drivers

- ConfigMods
- FileSystem
- System
- Reports
- URL Routing
- History
- XML
- CSV
- JSON
- **BACnet IP Server Config**
- People Counter Client Config

Mods

- ModScale (0.03)
- ModExtractBit (0.03)
- ModMove (0.02)
- Mod2x16BitTo32Bit (0.03)
- Mod2x16BitToIEEE (0.05)
- ModByteSwap (0.02)
- ModM10K (0.01)
- ModScaleRange (0.01)

Sensor Layout

- Main
 - Floor 1
 - Main:Floor 1:Main Entrance

Buildings

Actions: [Insert](#)
Reading 30 records from 0-1 of a total 1

Action	Id	Building
Edit Delete	1	Main

Floors

Actions: [Insert](#)
Reading 30 records from 0-1 of a total 1

Action	Id	Floor	Building
Edit Delete	1	Floor 1	1

Success, Record #8 has been added

Sensors

Actions: [Insert](#)
Reading 30 records from 0-6 of a total 6

Action	Id	Floor	IP Address	Name	Port	Scan
Edit Delete	7	1	192.168.1.10	Main:Floor 1:Main Entrance	4505	300
Edit Delete	8	1	192.168.1.11	Main:Floor 1:Rear Entrance	4505	300

Feedback Solutions

This will take you to the BACnet configuration screen.

BACnet IP Server

BACnet IP Device Configuration

Setting	Value	Description3
Port	47808	The port for the BACnet IP connection. Default: 47808
Device Instance	389001	The Device instance for this BACnet server object
Device Name	Device (389001)	The Device name this BACnet server object

[Save Device Settings](#)

BACnetIP_tasks

Actions: [Insert](#)
Reading 30 records from 0-4 of a total 4

Action	Id	Data Point	Name	Object_id	Object_type	Object_units	Property
Edit Delete	1	1	Main - Occupancy	1	Analog_input	No_units	Present_value
Edit Delete	2	2	Main:Floor 1 - Occupancy	2	Analog_input	No_units	Present_value
Edit Delete	3	6	Main:Floor 1:Main Entrance - Occupancy	6	Analog_input	No_units	Present_value
Edit Delete	4	10	Main:Floor 1:Rear Entrance - Occupancy	10	Analog_input	No_units	Present_value

Here we need to define **only** the following:

1. **Device Name:** '**People Counter**' - When the BAS system uses the given '**Device Instance**' they will be able to see the People Counter. 389001 is the default value. However, this can be changed if required.
2. **BACnetIP tasks:** Here also you need not do anything.

Everything is now configured on the gateway side for it to collect data from the people counters and calculate occupancy. The occupancy data will also be available for the BAS system to access.

You can see the live system working in real time by selecting Reports from the menu on the left hand side.

System

- Protocols
 - BACnetIP (0.40)
 - PeopleCounter (0.04)
- Http Drivers
 - [ConfigMods](#)
 - [FileSystem](#)
 - [System](#)
 - [Reports](#)
 - [URL_Routing](#)
 - [History](#)
 - [XML](#)
 - [CSV](#)
 - [JSON](#)
 - [BACnet_IP_Server_Config](#)
 - [People_Counter_Client_Config](#)
- Mods
 - ModScale (0.03)
 - ModExtractBit (0.03)
 - ModMove (0.02)
 - Mod2x16BitTo32Bit (0.03)
 - Mod2x16BitToIEEE (0.05)
 - ModByteSwap (0.02)
 - ModM10K (0.01)
 - ModScaleRange (0.01)

Sensor Layout

- Main
 - Floor 1
 - Main:Floor 1:Main Entrance

Buildings

Actions: [Insert](#)
Reading 30 records from 0-1 of a total 1

Action	Id	Building
Edit Delete	1	Main

Floors

Actions: [Insert](#)
Reading 30 records from 0-1 of a total 1

Action	Id	Floor	Building
Edit Delete	1	Floor 1	1

Success, Record #8 has been added

Sensors

Actions: [Insert](#)
Reading 30 records from 0-6 of a total 6

Action	Id	Floor	IP Address	Name	Port	Scan
Edit Delete	7	1	192.168.1.10	Main:Floor 1:Main Entrance	4505	300
Edit Delete	8	1	192.168.1.11	Main:Floor 1:Rear Entrance	4505	300

Feedback Solutions

You will be able to see the values changing as the counter keeps capturing people passing IN and OUT through an entrance.

Protocol information									
Name	Version								
BACnetIP	0.40								
PeopleCounter	0.04								

Database									
Actions	Data Point	Value	Modified	Read from		Served to		Mods	
				Driver	Task	Driver	Task	Read from	Stored here
Edit XML CSV JSON	1	24	0			BACnetIP	Main - Occupancy		
Edit XML CSV JSON	2	0	0			BACnetIP	Main.Floor 1 - Occupancy		
Edit XML CSV JSON	3	10	0	PeopleCounter	Main.Floor 1:Main Entrance (0)				
Edit XML CSV JSON	4	5	0	PeopleCounter	Main.Floor 1:Main Entrance (1)				
Edit XML CSV JSON	5	0	0	PeopleCounter	Main.Floor 1:Main Entrance (2)				
Edit XML CSV JSON	6	0	0	PeopleCounter	Main.Floor 1:Main Entrance (3)	BACnetIP	Main.Floor 1:Main Entrance - Occupancy		
Edit XML CSV JSON	7	30	0	PeopleCounter	Main.Floor 1:Rear Entrance (0)				
Edit XML CSV JSON	8	11	0	PeopleCounter	Main.Floor 1:Rear Entrance (1)				

The system is now setup and operational. You can use any BACnet Explorer to view the data and access the same.

For any further questions or clarifications or support please call Steven : 1-866-383-1657 x202 or send an email to: smethurst@chipkin.com



BACnet Explorer will display the results as follows once you discover the people counter and look at its properties..... see next page

Feedback Solutions

Steps to use BACnet Explorer:

1. Install BACnet explorer. Connect USB key.

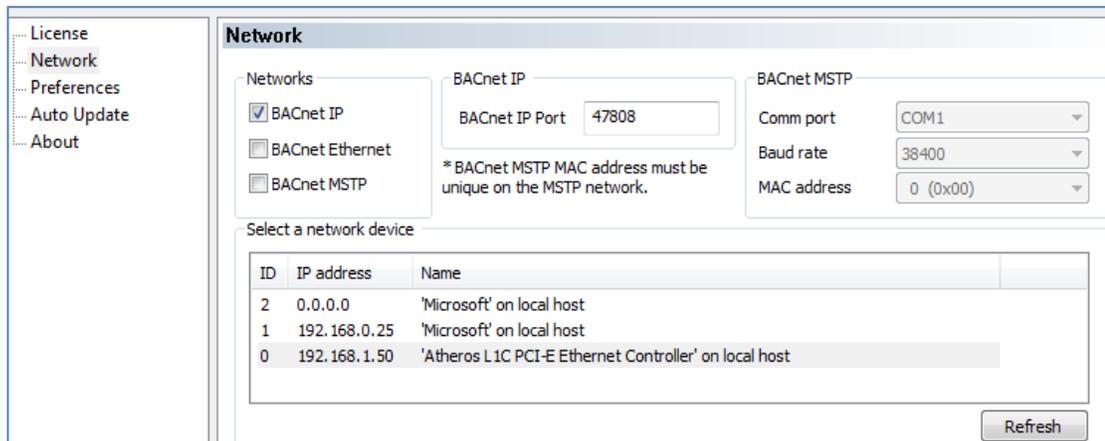


2. Click on the Bacnet icon

3. Select **Settings from the menu** - this will take you to the Network screen where you select the network you're connecting the gateway too and also select the IP address of the computer on which you have installed explorer.



Select **Bacnet IP** and select the **IP address** of the computer on which the explorer is installed. Once this is done you will be able to connect to the device.



The screenshot shows the 'Network' configuration window in BACnet Explorer. On the left is a sidebar with menu items: License, Network, Preferences, Auto Update, and About. The main area is titled 'Network' and contains several sections:

- Networks:** A list of checkboxes for 'BACnet IP' (checked), 'BACnet Ethernet', and 'BACnet MSTP'.
- BACnet IP:** A text field for 'BACnet IP Port' with the value '47808'.
- BACnet MSTP:** Three dropdown menus for 'Comm port' (COM1), 'Baud rate' (38400), and 'MAC address' (0 (0x00)).
- Select a network device:** A table with columns 'ID', 'IP address', and 'Name'. The table contains three rows:

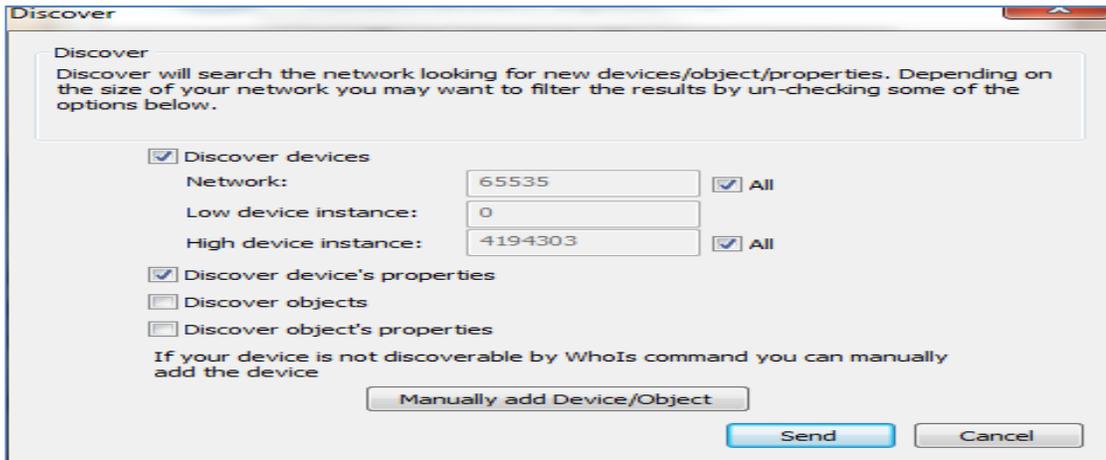
ID	IP address	Name
2	0.0.0.0	'Microsoft' on local host
1	192.168.0.25	'Microsoft' on local host
0	192.168.1.50	'Atheros L1C PCI-E Ethernet Controller' on local host

A 'Refresh' button is located at the bottom right of the window.

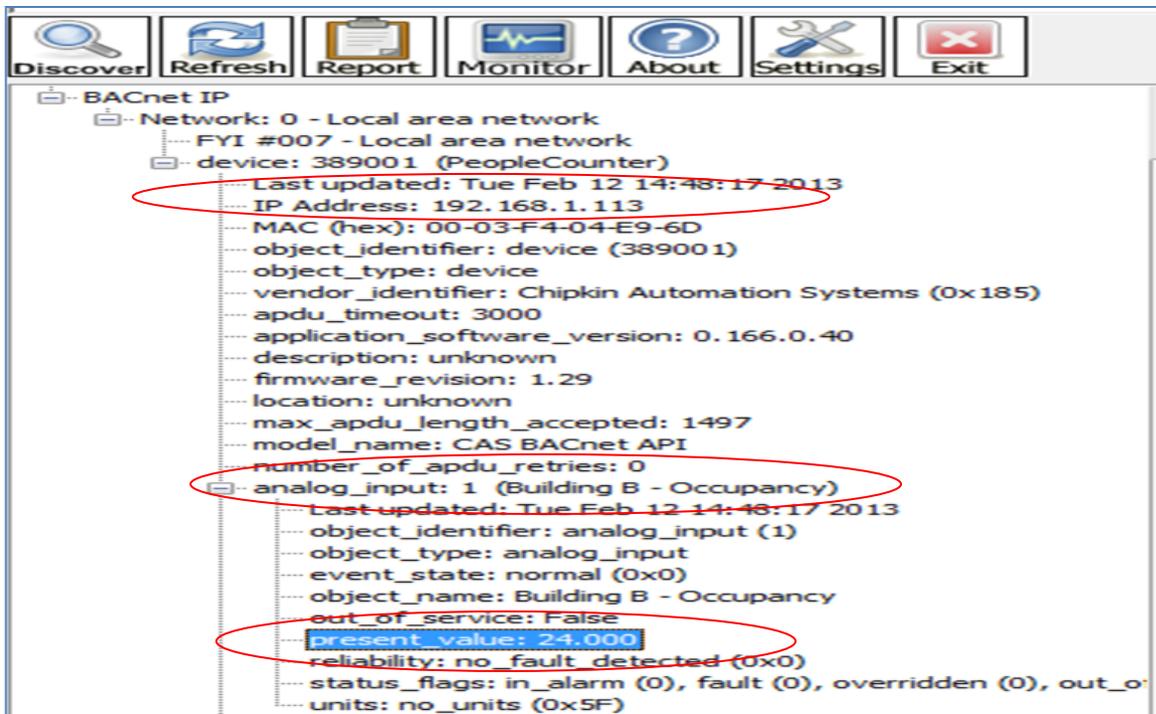
4. Now select **Discover** from the menu - this will take you to the screen where you need to select **Discover device** and **Device properties** and select send:



Feedback Solutions



5. This will show that the **device (people counter)** has been discovered on the network and will also display the properties (Present-value) which is the 'occupancy' value here.

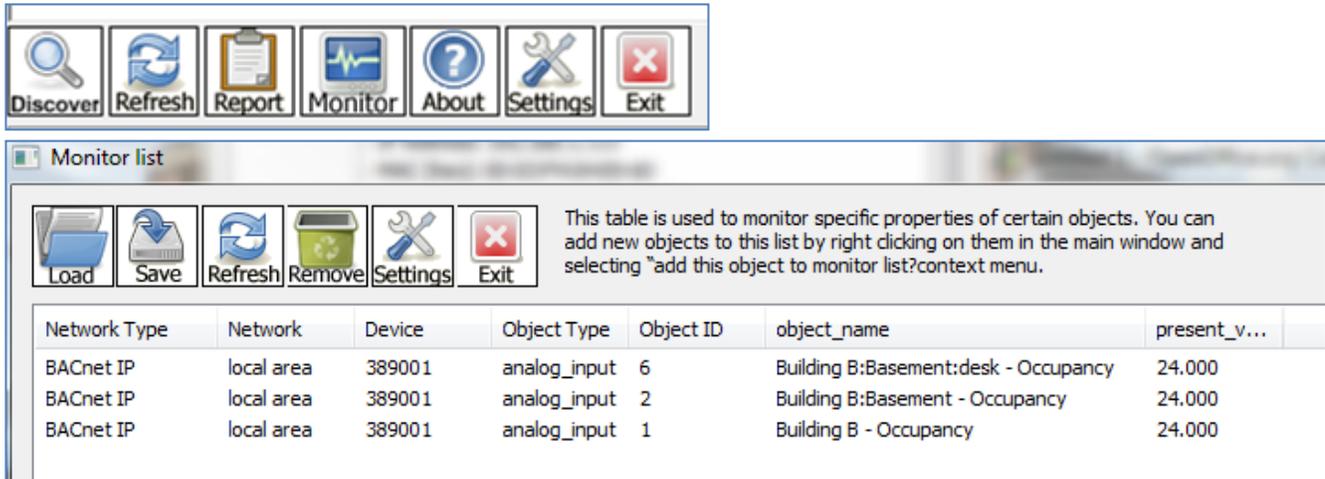


Any BAS System will be able to view the above with their system. The value of 'IN', 'OUT' and 'Occupancy' will be available every 5 minutes. By default the system will only display the occupancy value.

6. The Monitor screen will display the values as it happens in real time. Another way of confirming that the system is working fine.

Feedback Solutions

Select Monitor from the menu and you will be able to see the values changing as the counter keeps capturing people passing IN and OUT.



The screenshot shows the 'Monitor list' application window. At the top is a menu bar with icons for Discover, Refresh, Report, Monitor, About, Settings, and Exit. Below the menu bar is a toolbar with icons for Load, Save, Refresh, Remove, Settings, and Exit. To the right of the toolbar is a text box explaining the table's purpose: 'This table is used to monitor specific properties of certain objects. You can add new objects to this list by right clicking on them in the main window and selecting "add this object to monitor list?context menu.' Below the toolbar and text box is a table with the following data:

Network Type	Network	Device	Object Type	Object ID	object_name	present_v...
BACnet IP	local area	389001	analog_input	6	Building B:Basement:desk - Occupancy	24.000
BACnet IP	local area	389001	analog_input	2	Building B:Basement - Occupancy	24.000
BACnet IP	local area	389001	analog_input	1	Building B - Occupancy	24.000

End of document