Chipkin™ IRISYS PEOPLE COUNTER USER MANUAL
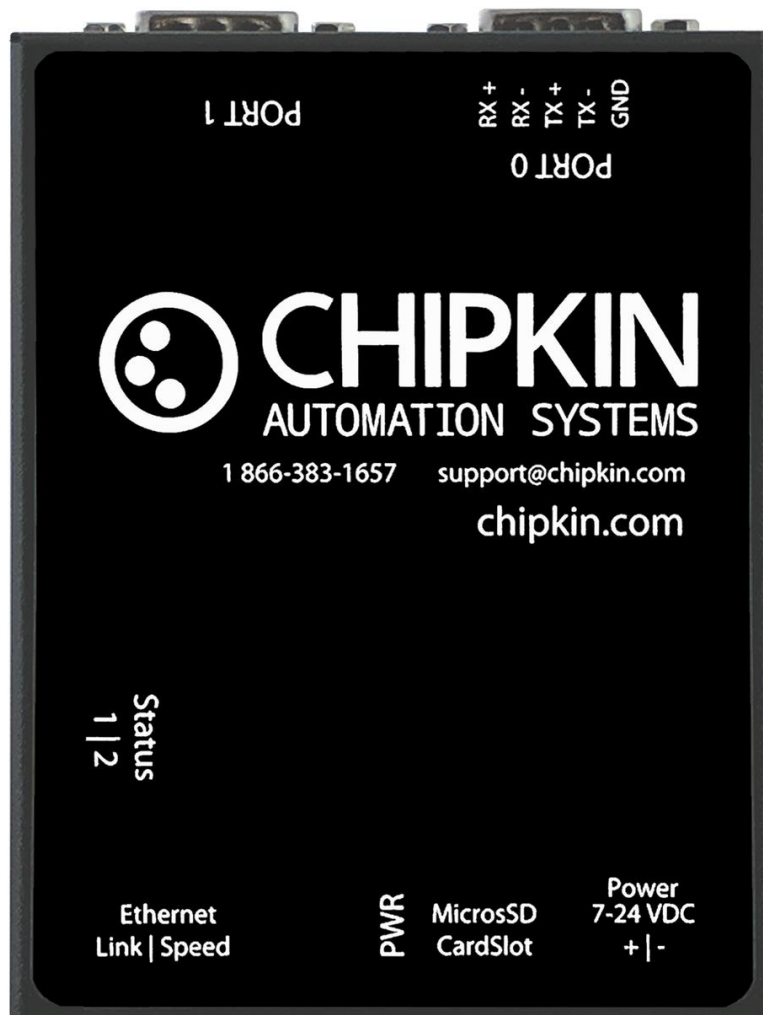

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PRODUCT NUMBER: CAS-2700-16
DOCUMENT REVISION: 1

TABLE OF CONTENTS

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LIST OF FIGURES

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DOCUMENT REVISION HISTORY

REVISION	DATE	AUTHOR	NOTE
1	2018-Feb-20	SWS	Created

Table 1 - Document Revision History

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1. PREFACE

1.1 WELCOME

As a new owner of Chipkin Automation Systems'™ (CAS) Gateway you have joined thousands of satisfied customers who use Chipkin's protocol gateways, data clients and integration services to meet their building and industrial automation requirements. Our configuration expertise in this field combined with free BACnet and other tools ensure your success; and our customer support via phone, email and remote desktop tools means that we're there when you need us. Thank you for choosing Chipkin's products.

1.2 CHIPKIN

Chipkin offers expert solutions for your building and industrial automation requirements. We develop, configure, install and support gateways (protocol converters), data loggers, and remote monitor and controlling applications. Founded in October 2000, Chipkin provides expert solutions for converting BACnet®, Modbus®, and Lonworks®—to name just a few—and enabling interfaces for HVAC, fire, siren, intercom, lighting, transportation and fuel systems. The high-quality products we offer (including those from other vendors) interface with Simplex™, Notifier™, McQuay™, GE™ and many others—so you can rest assured that Chipkin will select the most appropriate solution for your application.

1.3 SAFETY WARNINGS

The CAS Gateway User Manual provides information on how to install and configure the gateway and is intended for engineers, project management consultants and building management services. Before you install the device, please observe the safety warnings described in in this manual.

1.4 PRODUCT SUMMARY

The CAS Gateway connects to one or more Irisys people counter devices and reads the current occupation data from the device into a internal database. The extracted values then can be read by various other protocols including BACnet IP, Modbus TCP, Modbus RTU.

1.5 CUSTOMER SUPPORT

Chipkin is a small responsive company, and we live or die by the quality of our service—and with offices in two time-zones—we can provide support when you need it. For information on sales, service, obtaining documentation or submitting a service request, please call us toll free at 1-866-383-1657. Thanks for choosing Chipkin's protocol gateways, data clients and integration services to meet your building and industrial automation requirements.

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2. OVERVIEW

2.1 SYSTEM OVERVIEW

The CAS Gateway 2700-16 Irisys people counter is a protocol converter that converts data from one protocol and makes it available to devices that support a different protocol. The gateway typically sends polling messages, extracts any data values, and stores the values in an internal database. The data is then made available via other protocol specific formats.

2.2 REQUIRED HARDWARE

The CAS 2700-16 requires the Irisys people counter thermal imaging cameras to be connected to a local network that is accessible by the CAS Gateway.

2.3 INSTALLATION AND CONFIGURATION SUMMARY

For more information on how to install and setup the CAS 2700-16 please refer to the CAS Gateway Quick Start Guide. For instructions on configuring this device, please refer to Configuration and Settings Section of this document. Configuration of the device is completed primarily through a web interface.

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3. CONNECTIONS

3.1 NETWORK CONNECTIONS

This block diagram lists common network connections that the CAS-2700-16 request data from and serve data to. Many other protocols are supported.
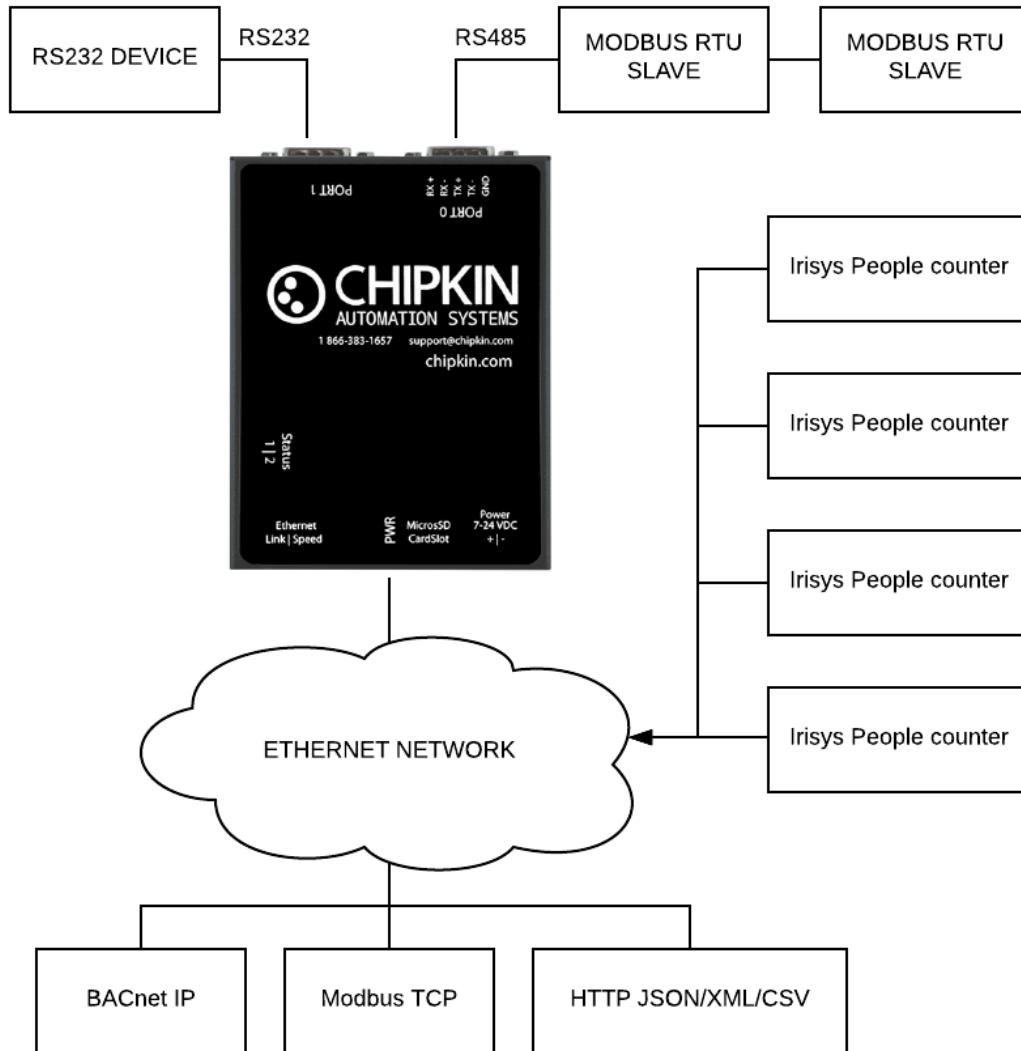
Figure 3.1-1. Network Connections Block Diagram

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4. CONFIGURATION AND SETTINGS
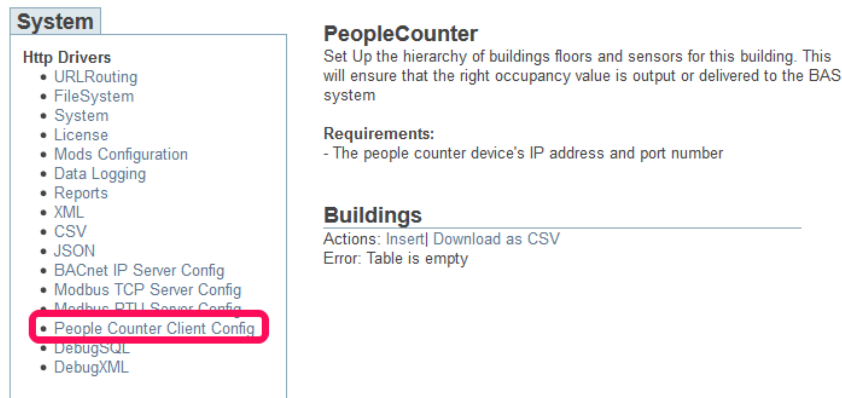
This section contains instructions and screenshots on how to configure this device

4.1 **Irisys people counter Configuration**

To add a new Irisys people counter device to the CAS Gateway
1. Goto the "People Counter Client Config" page
   http://{IPAddress}/bin/PeopleCounter/ where {IPAddress} is the IP Address of the gateway.

2. Click "Insert" under the building section.
3. Fill in the building name, that the people counter device in installed in, and click the "Insert" button. For this example, we will be using West Building.

4. Click "Insert" under the floors section.

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5. Fill in the floors name and select the building that this floor in located in. Click the "Insert" button. For this example, we will be using Ground floor, in the West Building.

Buildings

Actions: Insert| Download as CSV
Displaying 30 records from 0-1 of a total 1

Action	ID	Building	Reset hour
Edit	Delete	1	West Building	0

Insert new record in to 'Floors'

Name	Value	Description
Floor	Ground floor	This is the name of the floor in the building.
Building	West Building ⌄	The name of the building that this floor is in

insert

6. Click "Insert" under the sensor section.

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7. Fill in the IP address of the people counter sensor and give the sensor a name. For this example, we will be using main entrance as the sensor name.

Buildings

Actions: Insert| Download as CSV
Displaying 30 records from 0-1 of a total 1

Action	ID	Building	Reset hour
Edit	Delete	1	West Building	0

Floors

Actions: Insert| Download as CSV
Displaying 30 records from 0-1 of a total 1

Action	ID	Floor	Building
Edit	Delete	1	Ground floor	West Building

Insert new record in to 'Sensors'

Name	Value	Description
Floor	West Building: Ground floor ⌄	This is the name of the floor that this sensor is on.
IP Address	192.168.1.100	IP address for the sensor.
Name	Main entrance	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	900	How often in seconds to run this task. (Seconds)
Y Factor	0.05	Y factor

insert

The sensor is now configured in the CAS Gateway. A series of BACnet objects will be created based on the sensor configuration.

4.2 **BACnet configuration**

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A series of BACnet objects will be created when you add a new sensor to the CAS Gateway.

- device: 389001 (PeopleCounter)
    - analog_input: 1 (West Building - Occupancy)
    - analog_input: 2 (West Building:Ground floor - Occupancy)
    - analog_input: 3 (West Building:Ground floor:Main Entrance - Count In)
    - analog_input: 4 (West Building:Ground floor:Main Entrance - Count Out)
    - analog_input: 5 (West Building:Ground floor:Main Entrance - Occupancy)
    - analog_input: 6 (West Building:Ground floor:Main Entrance - Normalized Occupancy)
    - analog_input: 7 (West Building:Ground floor:Main Entrance - Device In)
    - analog_input: 8 (West Building:Ground floor:Main Entrance - Device Out)
    - analog_input: 9 (West Building:Ground floor:Main Entrance - Reset)

Each building will have its own BACnet occupancy object that is a sum of all the floors' occupancy values.
Each floor will have its own BACnet occupancy object that is a sum of all the sensor's occupancy values on that floor.

Each sensor will have several objects created
- **Count In** – The change in {device in} since the last reset hour.
- **Count Out** – The change in {device out} since the last reset hour.
- **Occupancy** – The difference between {count in} and {count out}
- **Normalized Occupancy** – The difference between {count in} and {count out} using the slope algorithm.
- **Device In** – The raw values read from the people counter device for the "in" line.
- **Device Out** – The raw values read from the people counter device for the "out" line.
- **Reset –** The difference between {Device in} and {Device out} at the time of the reset hour.

4.3 Completing the Configuration

Once the configuration process has finished, either using the Standard or Advanced configuration, you will need to reboot the system for the new configuration to take effect.

First, return to the main system page by typing in the follow URL into a web browser:
- http://{ipAddress}/bin/system/ where {ipAddress} is the IP Address of the gateway.

From this page, under the System actions, first click the "Save Database" link to save all changes.

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System Actions

This page is for system wide actions that effect all the drivers.

System

- Reboot System - Use this link to send a reboot REST request to the system.
- Save Database - Use this link to send a save database REST request to the system.
- Delete Database - Use this link to send a delete database REST request to the system.
- Generate Configuration File - Use this link to generate a configuration file.

Figure 4.3-1 - Save Database Link

Click "Ok" when prompted and you will see the following XML, check that the response status is OK.

```
▼<HttpXML rest_version="0.20" version="0.09">
  ▼<query>
    ▼<Accept>
        text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8
    </Accept>
    <Accept-Encoding>gzip, deflate</Accept-Encoding>
    <Accept-Language>en-US,en;q=0.9</Accept-Language>
    <Connection>keep-alive</Connection>
    <Host>192.168.1.202</Host>
    <Referer>http://192.168.1.202/bin/system/</Referer>
    <Upgrade-Insecure-Requests>1</Upgrade-Insecure-Requests>
    ▼<User-Agent>
        Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/63.0.3239.132 Safari/537.36
    </User-Agent>
    <act>set</act>
    <query_string>act=set&save=1</query_string>
    <save>1</save>
    <uri>bin/xml/</uri>
  </query>
  ▼<response status="OK" count="1">
    <save>OK</save>
  </response>
</HttpXML>
```

Figure 4.3-2 - Save Database Successful

Click the back button in your web browser and then click the "Reboot System" link:

System Actions

This page is for system wide actions that effect all the drivers.

System

- Reboot System - Use this link to send a reboot REST request to the system.
- Save Database - Use this link to send a save database REST request to the system.
- Delete Database - Use this link to send a delete database REST request to the system.
- Generate Configuration File - Use this link to generate a configuration file.

Figure 4.3-3 - Reboot System Link

Click "Ok" when prompted and you will see the following screen with a timer counting up:

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Restarting device

The device is restarting, this may take a few minutes.
Status: Checking ... 2

Figure 4.3-4 - Reboot System Count

The system page will refresh once the device has been properly rebooted.

4.4   Resetting the Gateway or Deleting the Configuration

Sometimes you want to delete the entire configuration and begin again. To do this, return to the system page as described in the Completing the Configuration section above. Then click on the "Delete Database" Link:

System Actions

This page is for system wide actions that effect all the drivers.

System

- Reboot System - Use this link to send a reboot REST request to the system.
- Save Database - Use this link to send a save database REST request to the system.
- Delete Database - Use this link to send a delete database REST request to the system.
- Generate Configuration File - Use this link to generate a configuration file.

Figure 4.4-1 - Delete Database Link

Click "Ok" when prompted and verify that the result XML has a response status of OK:

```
▼<HttpXML rest_version="0.20" version="0.09">
  ▼<query>
    ▼<Accept>
        text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8
      </Accept>
      <Accept-Encoding>gzip, deflate</Accept-Encoding>
      <Accept-Language>en-US,en;q=0.9</Accept-Language>
      <Connection>keep-alive</Connection>
      <Host>192.168.1.202</Host>
      <Referer>http://192.168.1.202/bin/system/</Referer>
      <Upgrade-Insecure-Requests>1</Upgrade-Insecure-Requests>
    ▼<User-Agent>
        Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/63.0.3239.132 Safari/537.36
      </User-Agent>
      <act>set</act>
      <delete_database>1</delete_database>
      <query_string>act=set&delete_database=1</query_string>
      <uri>bin/xml/</uri>
    </query>
  ▼<response status="OK" count="1">
      <delete_database>OK</delete_database>
    </response>
  </HttpXML>
```

Figure 4.4-2 - Delete Database Successful

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Click the back button in the web browser and then follow the instructions in the Completing the Configuration section.

4.5   Exporting the Configuration

To save a copy of the configuration, return to the system page as described in the Completing the Configuration section above. Then click on the "Generate Configuration File" Link:

System Actions

This page is for system wide actions that effect all the drivers.

System

- Reboot System - Use this link to send a reboot REST request to the system.
- Save Database - Use this link to send a save database REST request to the system.
- Delete Database - Use this link to send a delete database REST request to the system.
- Generate Configuration File - Use this link to generate a configuration file.

Figure 4.5-1 - Generate Configuration File Link

After a while, a link to "Export Configuration" will appear. Click on the link to download the config.csv file which is the configuration of the gateway.

4.6   Importing the Configuration

Sometimes Chipkin will send you a configuration file to load onto the Gateway, or you would like to load an older configuration file that you may have saved. To do this, return to the system page as described in the Completing the Configuration section above.

Then find the section titled "Import Configuration":

Import Configuration

Import the configuration to the device.

| Choose File | No file chosen

| Import |

Figure 4.6-1 - Import Configuration

Click the "Choose File" button to open a file browser. Browse to the csv configuration file you wish to import and Click "Open".

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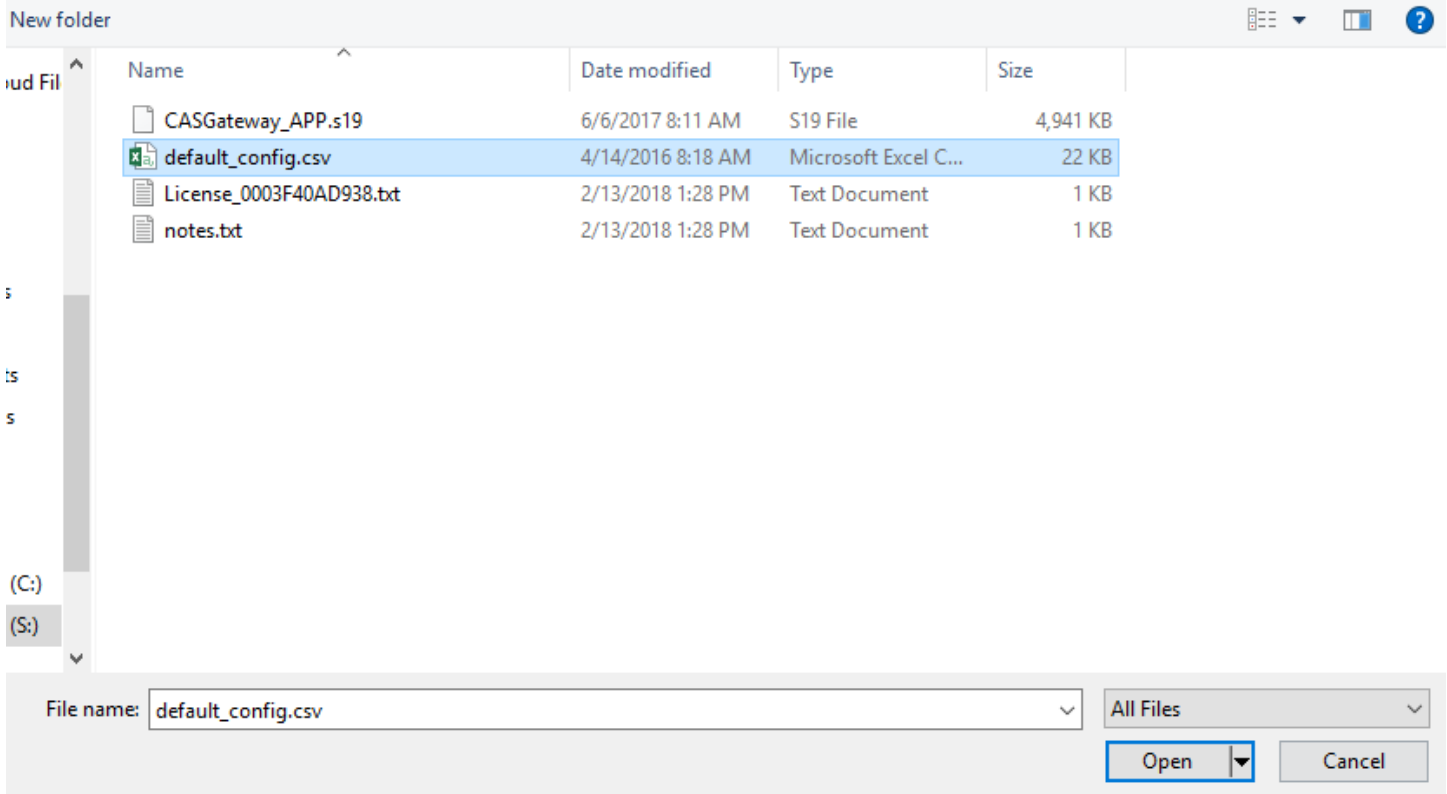
Figure 4.6-2 - Import File Browser

The file should now be displayed next to the "Choose File" button.

Figure 4.6-3 - Configuration File Ready for Import

Finally, click the "Import" Button. The file will be parse and the output will be displayed. Here is an example of the output:

Figure 4.6-4 - Importing the Configuration File

Scroll to the bottom of the page to see the if the Import was successful. You should see the following:

Figure 4.6-5 - Import Successful

After this, return to the system page and follow the instruction in the <u>Completing the Configuration</u> section to finish and apply the new configuration.

Figure 4.6-6 - Export Configuration

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5. READING DATA AND TEST PROCEDURE

5.1 READING DATA USING HTML / WEB Browser

To view the data on the device's webpage, enter the following URL into a web browser:
http://{ipaddress}/bin/reports

The link will open a web page containing a table of the stored values as well as the tasks that are acting upon that data value

5.2 READING MODBUS DATA

You can access Modbus register data from the gateway by using a Modbus RTU or TCP client. To find out what registers exist on the device, please refer to the Modbus Register Map. For some guides on Modbus, please refer to the following links:

- Modbus For Field Technicians
- Modbus FAQ
- What is Modbus?
- Testing Modbus Communication

5.2.1 Interpreting Modbus Data

Modbus does not have a mechanism for reporting the validity of data. If the gateway loses its connection to the device (or a data point cannot be read), it will disregard previous data as unreliable.

Unreliable data will be tagged with the value 65535 (-1, configurable) in the registers.

Some values have been encoded as IEEE754 format floating point numbers. These values use 2x16-bit registers and are clearly identified in the Modbus map. Since Modbus does not support floating point numbers, all values are served as whole numbers.

5.2.2 Modbus Functions Supported (RTU and TCP)

This device supports the following functions:

- 01 (0x01) Read Coils
- 02 (0x02) Read Discrete Inputs
- 03 (0x03) Read Holding Registers
- 04 (0x04) Read Input Registers

Most masters should be configured to use function 3, read holding registers.

This device also supports write throughs and supports the following Modbus write functions:

- 05 (0x05) Write Single Coil

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- 06 (0x06) Write Single Register
- 15 (0x0F) Write Multiple Coils
- 16 (0x10) Write Multiple Registers

5.2.3 Test Procedure Using the CAS Modbus Scanner

You can test the Modbus TCP data using the free test software provided by Chipkin Automation Software. The software can be downloaded at http://www.chipkin.com/cas-modbus-scanner.

To Configure the CAS Modbus Scanner:

1. Add a connection (specify the IP address of the gateway)
2. Add a device to the connection (specify the configured slave ID)
3. Add a request to the device (read holding register offset=1 Length=100)
4. Click the Poll button
5. Use the values found in the int16 column and the data map table to review the data.
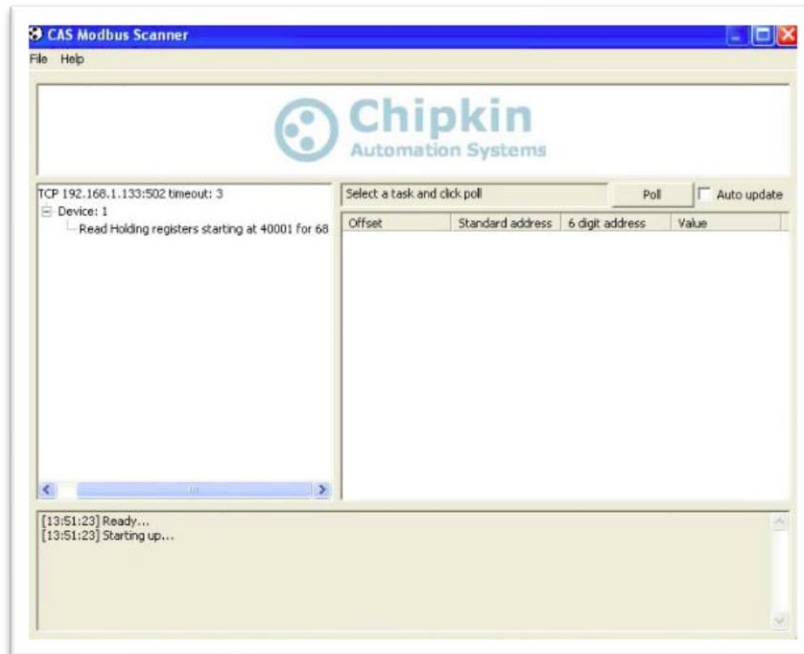
Figure 5.2-1 - Configuring the CAS Modbus Scanner
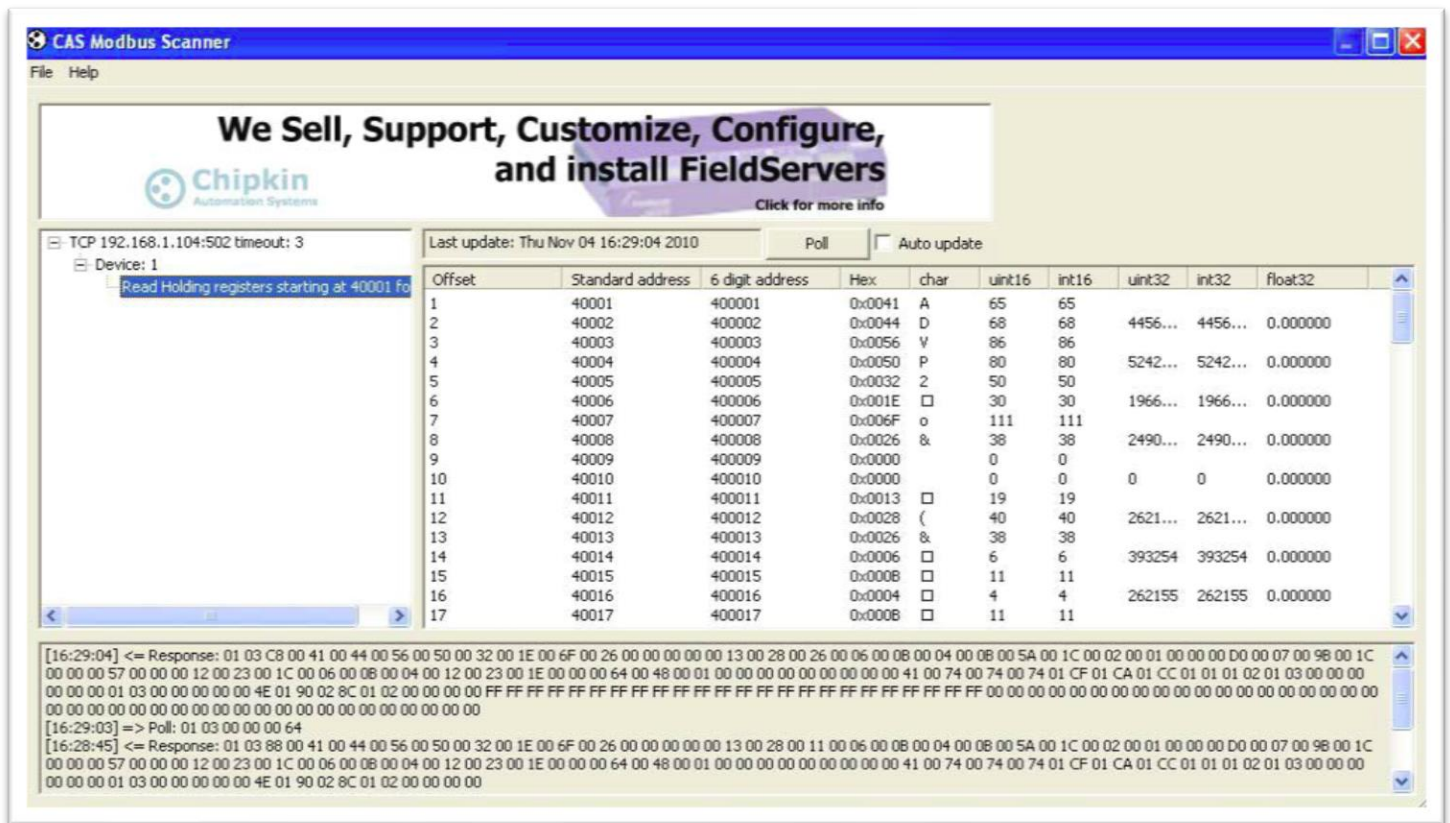
Figure 5.2-2 - Reviewing Data with the CAS Modbus Scanner

5.3 READING BACNET DATA

You can access BACnet report data from the device by using discover to detect gateway objects and their properties. Although each BACnet device (including the gateway) needs to have a unique instance number, discovery does not require the number to be known in advance. Discovery will not occur if the device or application reading the data is on another subnet. This can be resolved by changing the gateway's IP address to match the subnet or by installing BBMD. It's the responsibility of the company installing the BAS system to provide BBMD. For more information about reading BACnet data or installing BBMD, please refer to these guides:

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

You can discover the device and poll for values using the CAS BACnet Explorer. For more information about the CAS BACnet Explorer, please visit: http://store.chipkin.com/products/tools/cas-bacnet-explorer

5.3.1 Interpreting BACnet Data

BACnet has a mechanism for reporting the validity of data. If the gateway loses its connection to the Veeder-Root device (or a data point cannot be read), the data object's out of service property is set to true and it will disregard previous data as unreliable. The value of the present value property is not changed, so the last good value will be shown.

5.3.2 BACnet Object List

A series of BACnet objects will be created when you add a new sensor to the CAS Gateway.

- device: 389001 (PeopleCounter)
    - analog_input: 1 (West Building - Occupancy)
    - analog_input: 2 (West Building:Ground floor - Occupancy)
    - analog_input: 3 (West Building:Ground floor:Main Entrance - Count In)
    - analog_input: 4 (West Building:Ground floor:Main Entrance - Count Out)
    - analog_input: 5 (West Building:Ground floor:Main Entrance - Occupancy)
    - analog_input: 6 (West Building:Ground floor:Main Entrance - Normalized Occupancy)
    - analog_input: 7 (West Building:Ground floor:Main Entrance - Device In)
    - analog_input: 8 (West Building:Ground floor:Main Entrance - Device Out)
    - analog_input: 9 (West Building:Ground floor:Main Entrance - Reset)

5.3.3 BACnet Test Procedure

CAS BACnet Explorer is a software application that can discover, test and document objects and properties on a network system. You can download the software at http://www.chipkin.com/files/resources/Installer_CAS%20BACnet%20Explorer.exe and use the USB key to activate the application. If you don't have a key, the software can also be activated through an internet connection.

Perform the set-up procedure below, or refer to the video and these articles for more information:
- http://store.chipkin.com/articles/cas-bacnet-explorer-software-activation
- http://store.chipkin.com/articles/bacnet-how-to-overcome-cas-bacnet-explorer-usbsoftware-activation-problems
- http://store.chipkin.com/products/tools/cas-bacnet-explorer/license-agreement

To Set-up BACnet Explorer:
1. Start the application
2. Click **Settings**
3. Check **IP** and uncheck **MSTP and Ethernet**
4. Click on the network card you will use
5. Click **OK**
6. Click **Discover**

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7. Click **Send**
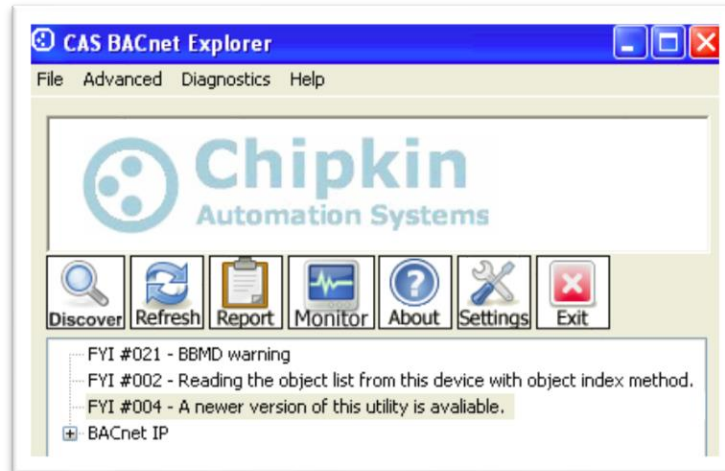
Figure 5.3-1 – CAS BACnet Explorer - Devices were discovered.

8. Click on the '**+**' icon to see the list of discovered devices.

Figure 5.3-2- CAS BACnet Explorer – Device Selection

9. Select the device you wish to further discover and click the **Discover** button.

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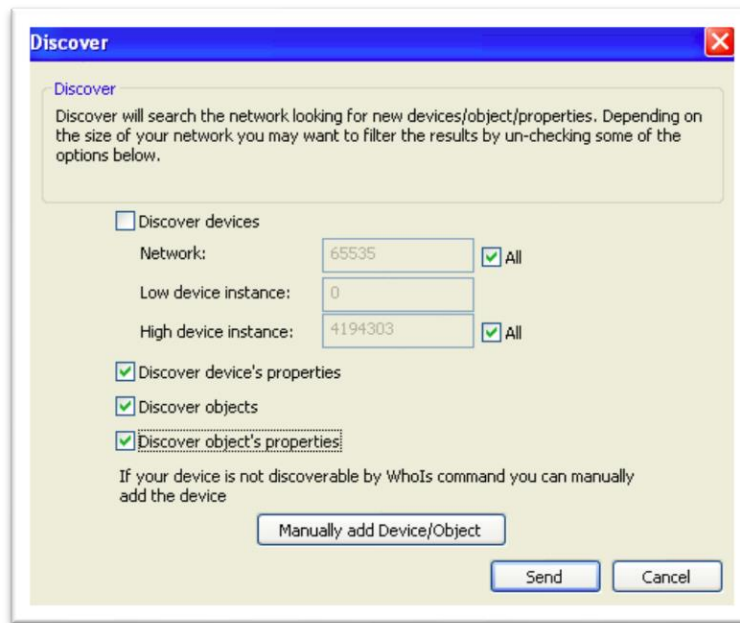
Figure 5.3-3 - CAS BACnet Explorer - Discover Dialogue

10. Check the **Discover device's properties**, **Discover object**, and **Discover object's properties** check boxes and click the **Send** button.
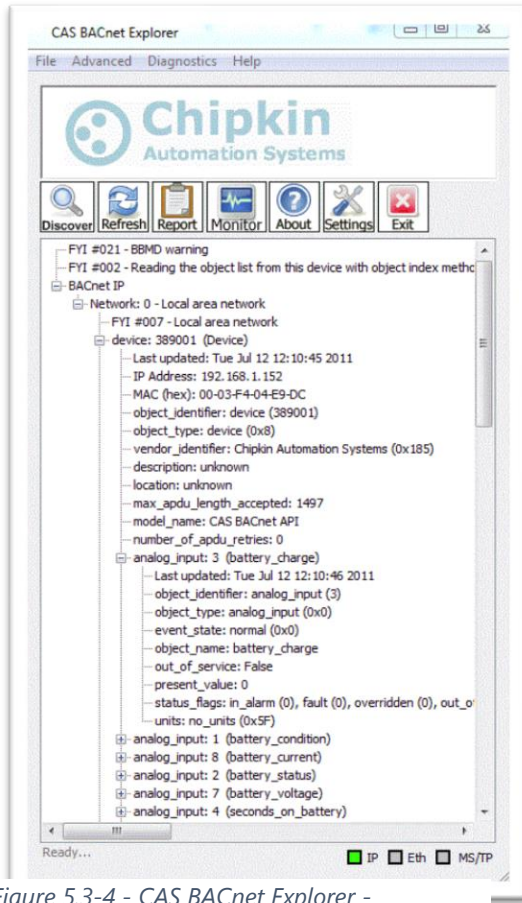
Figure 5.3-4 - CAS BACnet Explorer -
Discovered Objects
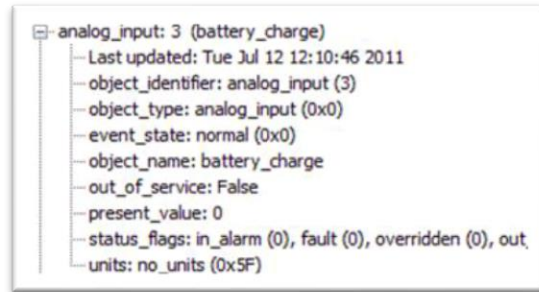
Figure 5.3-5 - CAS BACnet Explorer - Single Object

11. **Read** the BACnet object properties Present-Value is the current value of the data point.
Here is a list of some the important properties:

- **Present Value:** The current value of the object
- **Reliability:** On the CAS Gateway or Data Client, represents the validity of the data
- **Status Flags:** Various flags that show the state of the object.
- **Units:** If the object has units, this will show the unit type.

6. COMMISIONING, DIAGNOSTICS, AND TROUBLE-SHOOTING

6.1 WHAT TO TAKE TO SITE FOR COMMISSIONING

Below is a list of software and hardware tools that should be taken to site for the install installation. Some of these tools are depend on the type of installation and drivers on the gateway. Most of the software tools can be found on the included USB drive.

6.1.1 Software

- **IP Setup Tool** - Used to update the IP address of the CAS Gateway. Free http://www.chipkin.com/cas-gateway-ip-address-tool
- **Auto Update Tool** - Used to update the firmware on the CAS Gateway. Free http://www.chipkin.com/cas-gateway-firmware-download-tool/
- **Wirehark** - Used to capture and log network traffic. Free https://www.wireshark.org/
- **CAS BACnet Explorer** – Used to test BACnet IP configurations. Trial http://www.chipkin.com/products/software/bacnet-software/cas-bacnet-explorer/
- **CAS Modbus Scanner** – Used to test Modbus TCP and Modbus RTU configurations. Free http://store.chipkin.com/articles/modbus-scanner-what-is-the-cas-modbus-scanner

6.1.2 Hardware

- **A laptop** –Used to configure and diagnose the gateway. The laptop should include a ethernet port.
- **RS232 to USB converter** – Used when communicating with drivers that use RS232 such as VeederRoot serial.
- **RS485 to USB converter** – Used when communicating with drivers that use RS485 such as Modbus RTU or BACnet MSTP.
- **Ethernet patch cable** – Useful for connecting the gateway to your laptop or into a local switch. Included in the accessory kit.
- **Micro screw driver set** – Useful for securing wires into screw terminals. Included in the accessory kit.
- **Ethernet hub -** Use a hub (and not a switch) as a last resort for troubleshooting problems with Modbus TCP or BACnet IP. A **hub is not a switch**, that most switches are not supervised and that only a supervised switch can be used as an alternative. For more information about hubs and switches, please refer to this article: http://www.chipkin.com/articles/hubs-vs-switches-using-wireshark-to-sniff-networkpackets
- **Db9 gender changer -** Connector make-up kits are always useful but not required if you have tested your cable prior to attending the site.

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Figure 6.1-1 - DB9 Gender Changers

- **Serial RS232 mini-tester** – Useful for testing to ensure that a serial cable has the correct pinout.

Figure 6.1-2 - RS232 Mini-Tester

- **Serial cable** – A Null modem or crossover serial cable can be useful when communicating with drives that use serial connections such as Modbus RTU and VeederRoot serial

6.2 DISCOVER GATEWAY'S IP ADDRESS

By default, the gateway is shipped with an IP address of 192.168.1.113. The IP address may have been changed since being installed on site. The following techniques can be used to discover the new gateways IP address.

6.2.1 Setup reference card

By default, the gateways are shipped with a setup reference card attached to the bottom of the gateway. This setup reference card will show the configured IP address as well as the job reference number.

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Figure 6.2-1 Setup reference card

6.2.2 **Using the IP Setup tool**

1. Download the IP Setup tool from chipkin's website http://www.chipkin.com/cas-gateway-ip-address-tool
2. Run the IP Setup Tool application and you will see the following window
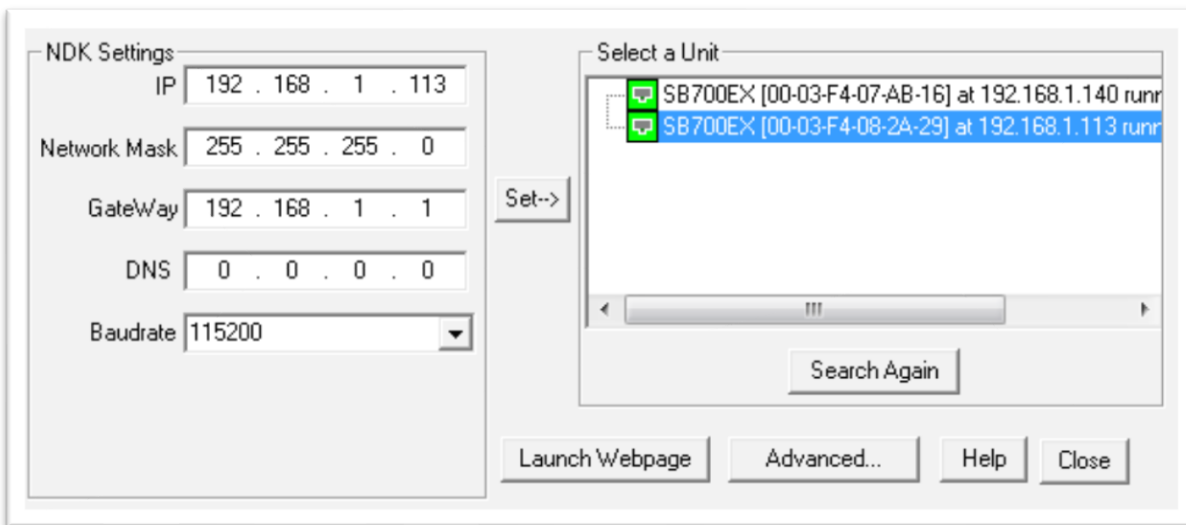

Figure 6.2-2 IP Setup tool

3. The IP address of the CAS Gateway will be shown on the right-hand side.

6.3   **DEFAULT USERNAME AND PASSWORD**

To view or change the settings on the gateway, a username and password will need to be entered. By default, the username and passwords are

Username: admin
Password: admin

The default password can be changed on the system page. http://<IPAddress>/bin/system

6.4 DEBUG LOG OR WIRESHARK LOG

If a problem is discovered on site, you may be asked to take a debug log, or a Wireshark log.

6.4.1 Debug logging
By default, the gateway has a debug logging level of 10 (important messages only) and logs messages to the syslog port (514). These settings can be changed on the system page.
http://<IPAddress>/bin/system

Settings
- **Log to file** - Logs the system and driver messages to a log file on the SD card of the gateway. This log file can be viewed and downloaded by going to "log messages" page http://<IPAddress>/bin/system/log. The log file will automatically be disabled if the free space on the SD card is less than 10% of the total. **Default:** Disabled.
- **Log to Syslog** – Sends syslog (UDP 514) message for each system and driver log message. These log messages can be viewed by taking a Wireshark log. **Default:** Enabled.
- **Logging level** – The logging level that messages will be created. The higher the number the more messages that will be created. Logging levels higher than NORMAL (50) may impact the performance of the gateway. **Default:** IMPORTANT (10)

6.4.2 Wireshark log
Wireshark is a free utility used for capturing and logging network traffic. This tool can be instrumental in resolving local network issues. Wireshark can be downloaded for free from
https://www.wireshark.org/

6.5 CHANGE THE GATEWAY IP ADDRESS

By default, the gateway is shipped with a static IP address of 192.168.1.113. The default IP address can be changed using the IP setup tool.

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4. Download the IP Setup tool from chipkin's website http://www.chipkin.com/cas-gateway-ip-address-tool
5. Run the IP Setup Tool application and you will see the following window
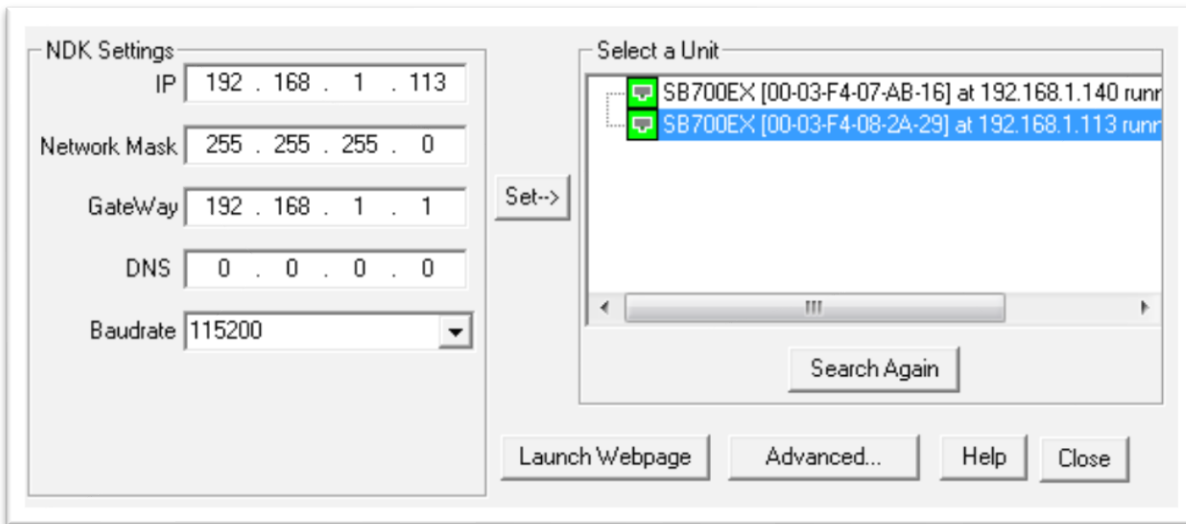
Figure 6.5-1 IP Setup tool

6. Select the Gateway from the list on the left.
7. Change the "NDK Settings" as required.
   Note: Please do **NOT** change the Baudrate value.
8. Click the "Set -->" button to apply the new changes to the CAS Gateway. The gateway will automatically reboot with the new assigned IP address.

6.6   UPDATE FIRMWARE

This document assumes that you have successfully connected to the gateway and can see the gateway in the IP Setup Tool.

Note: Usually, the firmware is already loaded on the CAS Gateway when it is shipped. However, if there was a specific requirement that was developed or a bug fix, you may have to download an updated firmware which you will receive from Chipkin Automation Systems (CAS). All updated firmware files should come from CAS.

Do Not upload any other firmware files with this tool unless CAS specifically advices to do so.

To download the firmware to the gateway, follow the steps below:

1. Download the CAS Gateway AutoUpdate tool from the following link:
http://www.chipkin.com/cas-gateway-firmware-download-tool/

2. Running the AutoUpdate application will display the following window:
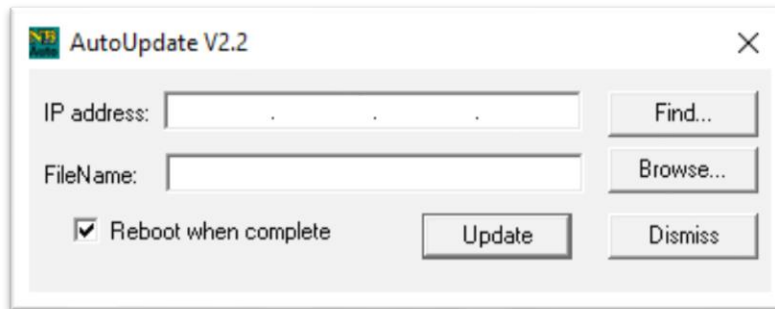
Figure 6.6-1 AutoUpdate tool window

The IP Address of the gateway should be filled out in the "**IP address**" section. If not, or if the IP address is wrong, then click the "**Find**" button and it will display the IP addresses of gateways on the network. Select the IP address of the gateway to download the firmware.

3. Click the "**Browse...**" button. This will open a file explorer. Navigate to the firmware file and click the "**Open**" button. The file path will be inserted into the "**FileName**" field.
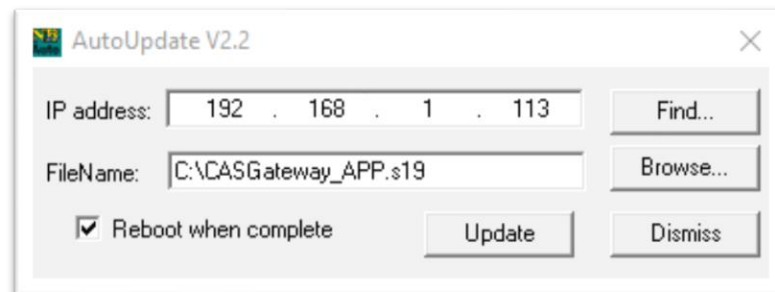
Figure 6.6-2 AutoUpdate tool window

Image 2 – AutoUpdate tool with firmware file name

4. Verify that "**Reboot when complete**" is checked, as shown above.

5. **Before** pressing the "**Update**", disconnect the Power from the gateway. Then reconnect the power.

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6. As the gateway is booting, press the "**Update**" button. You will see a progress bar begin to fill up.

Note: If the progress bar does not fill after 60 seconds, there may be an issue with other Network adapters being enabled. Go to the Network and Sharing Center and disable all network adapters except for the Local Area Connection.

7. If the update was successful, you will see the following message:
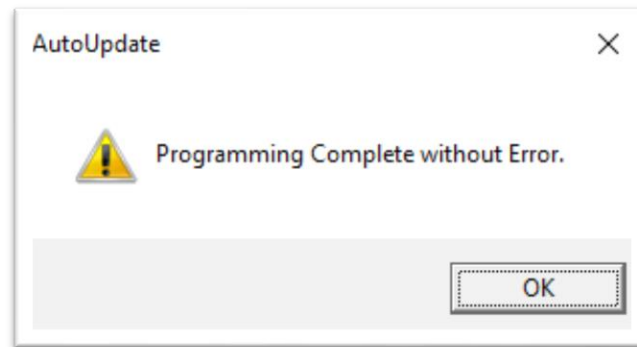
Figure 6.6-3 Firmware update success

If the update fails, you will see either "Update Failed" or "Updated Timeout". If either of these messages appear, please contact us for support.

If a message appears stating that "The Gateway does not have enough RAM", please return to step 5 and repeat.

LIMITATIONS AND BEST PRACTICES

The CAS-2700-16 has the following limitations:

Important: The gateway can only be connected to one Veeder-Root panel**.** This is a limitation of RS232 and of the TLS protocol.

CAS-2700-16 best practices:

Tip: We recommend a 10 m. maximum length for the RS232 cable (a well-made cable in a clean environment can run up to 30 m. and provide satisfactory performance).

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APPENDIX A: SAFETY WARNINGS

BEFORE YOU INSTALL THE DEVICE, OBSERVE THE IMPORTANT SAFETY INSTRUCTIONS IN THIS SECTION.

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Save these instructions.

WARNING: Ultimate disposal of this product should be handled according to all national laws and regulations

WARNING: Read and understand all instructions in the documentation that comes with the gateway before connecting it to a power source.

WARNING: Do not install or use this gateway near water or when you are wet

WARNING: Install the gateway securely on a stable surface.

WARNING: Install the gateway in a protected location where no one can step or trip over the connecting cables or power cords.

WARNING: Install the Gateway where the cables and power cords can't be damaged.

WARNING: There are no user serviceable parts inside. Refer servicing to qualified servicing personnel.

IMPORTANT: If the gateway doesn't operate normally, please contact Chipkin's Engineer Services, Development and Support

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APPENDIX B: HARDWARE SPECIFICATIONS

The following specifications for the CAS gateway are common to all Chipkin Gateways.

- UL, C/UL, CE, FCC approved
- 10/100BASE-T with RJ-45 connector
- 1x RS232 port
- 1x RS485 port (different models have additional ports)
- Power: 7 – 24 VDC @90 mA
- Operating temperature: 0 – 70 °C (32 – 158 °F)
- LEDs: link, speed/data, power
- Dimensions (LxWxH): 107 x 83 x 25 mm (4.2 x 3.25 x 1 in.)

MECHANICAL DRAWINGS

Applies to all CAS2500 and CAS2700 products.

Top View

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Bottom View

Front Panel

Back Panel

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Connection Specifications
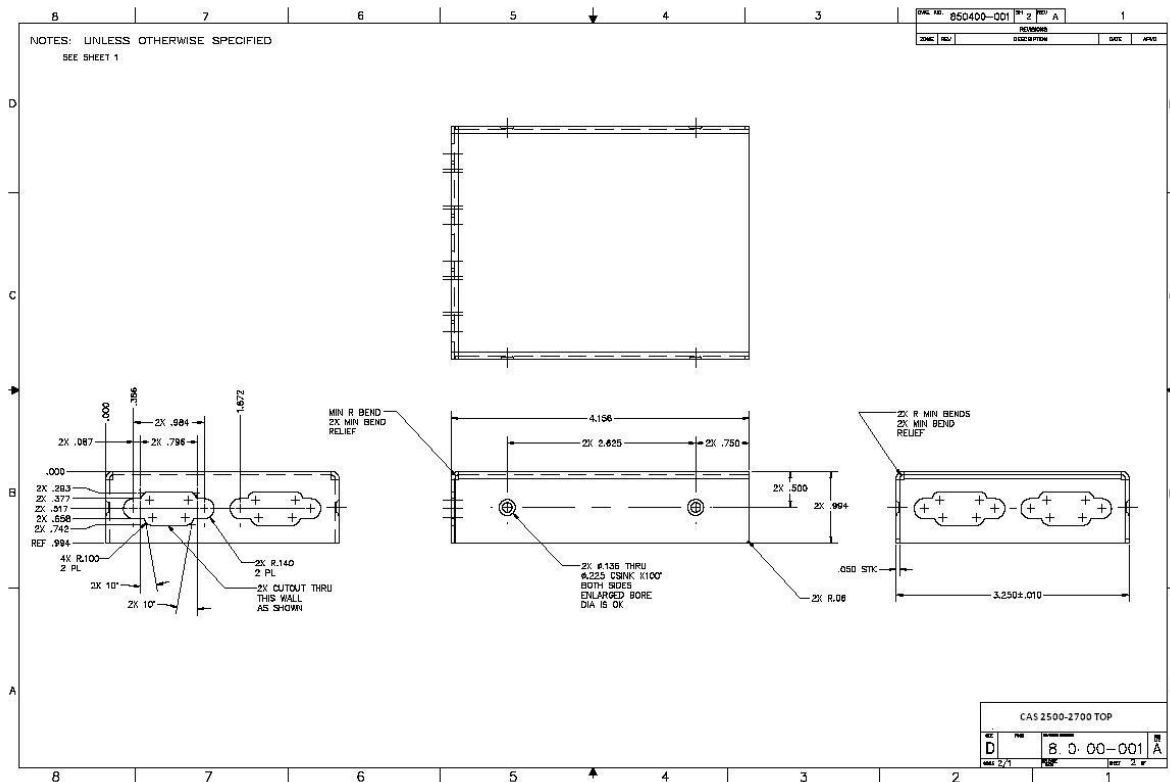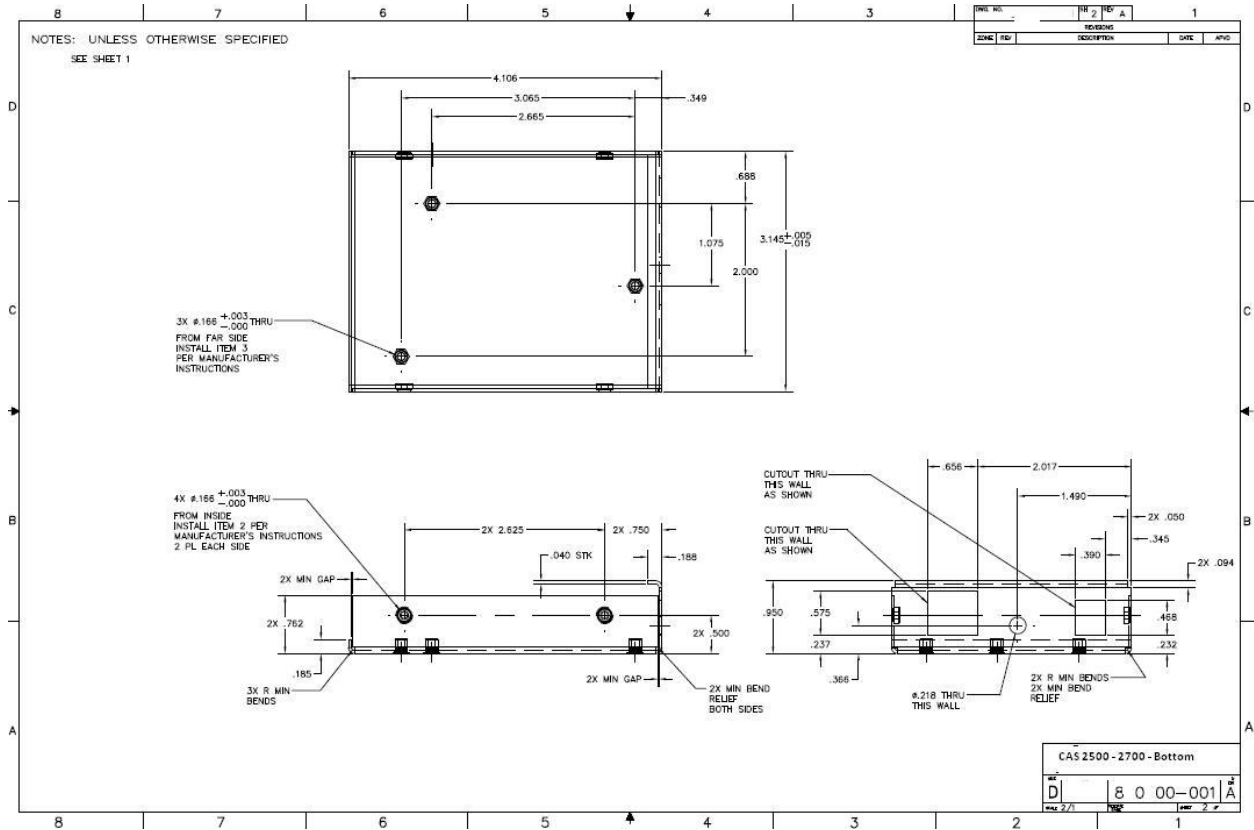
Serial Protocols Supported

RS-232, RS-422, and RS-485

Serial Configurations

The two UARTs can be configured in the following ways:

- Two RS-232 ports
- One RS-232 port, one RS-485/422 port

DB9 Pinout

RS232- 3 Wire [No Handshaking]
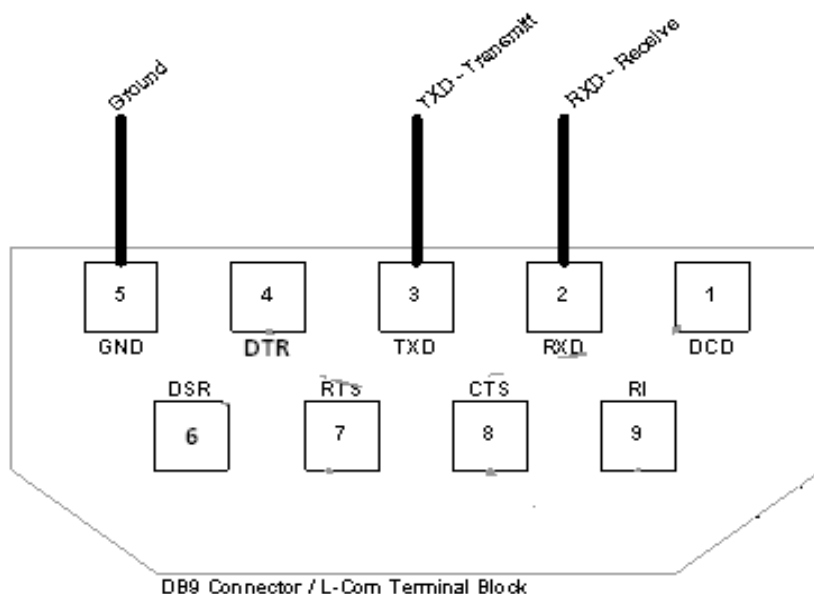
RS485 – Half Duplex also known as 2 Wire

All 4 jumpers required for 2 wire operation.
CAS recommends the use of 3 conductors for so called 2-Wire RS485.
The signal common is there for purpose.

DB9 Connector / L-Com Terminal Block

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APPENDIX C: LIMITED WARRANTY

LIMITED WARRANTY

Chipkin Automation Systems provides a 30-Day Return Window (see Return of Non-Defective Products below) and the following limited warranty. This limited warranty extends only to the original purchaser.

Please note that any warranty services or questions must be accompanied by the order number from the transaction through which the warranted product was purchased. ***The order number serves as your warranty number and must be retained.*** Chipkin Automation Systems will offer no warranty service without this number.

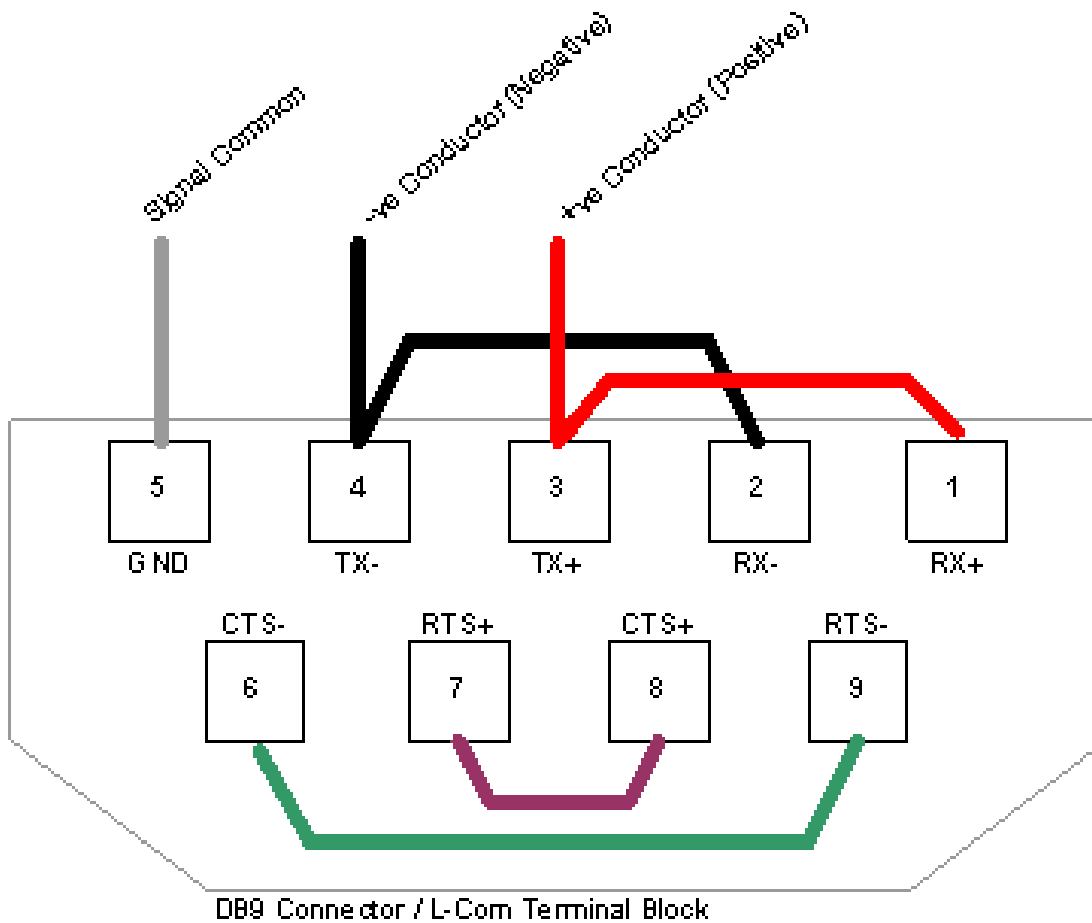Chipkin Automation Systems warrants this product and its parts against defects in materials or workmanship for *three years labor and one year parts* from the original ship date. During this period, Chipkin Automation Systems will repair or replace defective parts with new or reconditioned parts at Chipkin Automations Systems option, without charge to you. Shipping fees incurred from returns for under-warranty service in the first 30-days will be paid by Chipkin Automation Systems. All shipping fees both to and from Chipkin Automation Systems following this 30-day period must be paid by the customer. All returns, both during and following the 30-day period, must be affected via the Procedures for Obtaining Warranty Service described below.

All original parts (parts installed by Chipkin Automation Systems at the original system build) replaced by Chipkin Automation Systems or its authorized service center, become the property of Chipkin Automation Systems. Any after-market additions or modifications will not be warranted. The gateway system owner is responsible for the payment, at current rates, for any service or repair outside the scope of this limited warranty.

Chipkin Automation Systems makes no other warranty, either express or implied, including but not limited to implied warranties of merchantability, fitness for a particular purpose, or conformity to any representation or description, with respect to this computer other than as set forth below. Chipkin Automation Systems makes no warranty or representation, either express or implied, with respect to any other manufacturer's product or documentation, its quality, performance, merchantability, fitness for a particular purpose, or conformity to any representation or description.

Except as provided below, Chipkin Automation Systems is not liable for any loss, cost, expense, inconvenience or damage that may result from use or inability to use the gateway. Under no circumstances shall Chipkin Automation Systems be liable for any loss, cost, expense, inconvenience or damage exceeding the purchase price of the gateway.

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The warranty and remedies set forth below are exclusive and in lieu of all others, oral or written, expressed or implied. No reseller, agent or employee is authorized to make any modification, extension or addition to this warranty.

WARRANTY CONDITIONS
The above Limited Warranty is subject to the following conditions:
1. This warranty extends only to products distributed and/or sold by Chipkin Automation Systems. It is effective only if the products are purchased and operated in Canada or the USA. (Within the USA including US 48 States, Alaska and Hawaii.)
2. This warranty covers only normal use of the gateway. Chipkin Automation Systems shall not be liable under this warranty if any damage or defect results from (i) misuse, abuse, neglect, improper shipping or installation; (ii) disasters such as fire, flood, lightning or improper electric current; or (iii) service or alteration by anyone other than an authorized Chipkin Automation Systems' representative; (iv) damages incurred through irresponsible use, including those resulting from viruses or spyware, overclocking, or other non-recommended practices.
3. You must retain your bill of sale or other proof of purchase to receive warranty service.
4. No warranty extension will be granted for any replacement part(s) furnished to the purchaser in fulfillment of this warranty.
5. Chipkin Automation Systems and its Authorized Service Center accepts no responsibility for any software programs, data or information stored on any media or any parts of any products returned for repair to Chipkin Automation Systems.
6. All pre-installed software programs are licensed to customers under non-Chipkin Automation Systems software vendor's term and conditions provided with the packages.
7. This warranty does not cover any third party software or virus related problems.
8. Chipkin Automation Systems makes no warranty either expressed or implied regarding third-party (non-Chipkin Automation System) software.
9. Thirty-day Return Window does not include opened software, parts, special order merchandise and shipping and handling fees.

RETURN OF NON-DEFECTIVE PRODUCTS
A non-defective product may be returned to Chipkin Automation Systems within thirty (30) days of the invoice date for a refund of the original purchase price with the following amendments/fees:
1. Chipkin Automation Systems will refund neither the original shipping cost nor the shipping and handling fees incurred from the products return. If the original purchase was made under a "Free Shipping" promotion then a standard $40 fee will be deducted from any return in counter to that offer.

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2. No refund will be granted for software which has been opened, used, or tampered with in any way which jeopardized Chipkin Automation Systems ability to remarket or resell the product. Chipkin Automation Systems maintains full discretion in decisions regarding a products fitness for return.
3. Any non-defective returns are subject to a 15% restocking fee, which percentage is taken from the final purchase price less any shipping or handling charges.
4. Quantity purchases of five systems or more are not eligible for return.

To return a defective product, please contact our Customer Service Department for a Return Merchandise Authorization (RMA) number and follow the Return of Products Instructions below. The RMA is valid for 10 days from date of issuance. **Returns will not be accepted without an RMA**. Manufacturer restrictions do apply. Any item missing the UPC on the original packaging may not be returned.

PROCEDURES FOR OBTAINING WARRANTY SERVICE
RMA (Returning Merchandise Authorization) Policy:
If repairs are required, the customer must obtain an RMA number and provide proof of purchase. RMA and services are rendered by Chipkin Automation Systems only. Any shipping costs after 30 days (starting from the original date of purchase) on any item returned for repair is the customers' responsibility. All returned parts must have an
RMA number written clearly on the outside of the package along with a letter detailing the problems and a copy of the original proof of purchase. No COD packages will be accepted. No package will be accepted without an RMA number written on the outside of the package. RMA numbers are only valid for 30 days from the date of issue.

Should you have any problems with your gateway, please follow these procedures to obtain the service:
1. If you have purchased our on-site warranty, please find your warranty# (the order number from the transaction through which the warranted product was originally purchased) and contact Chipkin Automation Systems Customer Service by phone at 1-866-383-1657 (Toll free) or 1-647-557-3330.
2. If the gateway must be repaired, an RMA number (Return Merchandise Authorization Number) will be issued for shipment to our repair department. Please follow the instructions given by Chipkin Automation Systems technical support staff to ship your gateway. Chipkin Automation Systems will not accept any shipments without an RMA number.
3. Pack the gateway in its original box or a well-protected box, as outlined in the Return Shipping Instructions. Chipkin Automation Systems will not be responsible for shipping damage/loss of any product outside the original 30-day Chipkin Automation Systems-paid

service period. It is very important that you write the RMA number clearly on the outside of the package. Ship the gateway with a copy of your bill of sale or other proof of purchase, your name, address, phone number, description of the problem(s), and the RMA number you have obtained to:

> Chipkin Automation Systems RMA#_____
> 3381 Cambie St., #211
> Vancouver, B.C. Canada, V5Z 4R3

4. Upon receiving the gateway, Chipkin Automation Systems will repair or replace your gateway (at Chipkin Automation Systems discretion) and will ship it back to you within 2 weeks (dependent on parts availability) via UPS.
5. Cross-exchange (Parts only): You will need to provide a valid credit card number as a deposit guarantee when the RMA number is issued. Once approval has been obtained on your credit card, the part(s) will be shipped UPS. You will need to ship defective part(s) back to Chipkin Automation Systems within 15 days to avoid charges to your credit card. If such charges are incurred, the shipped part(s) will be billed at the then current price.
6. Chipkin Automation Systems will pay for shipping to and from the customer only within the first thirty days following the original product ship date. Following this 30-day period all shipping fees both for under warranty and post warranty repairs are the sole responsibility of the customer. The customer also assumes full liability for losses or damages resulting from shipping as well as all responsibility to pursue remuneration for such issues with their selected carrier.

AFTER ONE-YEAR WARRANTY – POST WARRANTY REPAIR

For post warranty repair, the procedure is the same as outlined above for RMA and shipping. However, you are responsible for shipping charges both ways, current labor ($75 per hour if not under warranty), and the current price of part(s) used in repair.

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THANK YOU

Thanks for choosing Chipkin's protocol gateways, data clients and integration services to meet your building and industrial automation requirements!

Chipkin Automation Systems™ (Chipkin) is a building and industrial automation protocol expert. We develop, configure, install and support gateways (protocol converters), data loggers and remote monitor and controlling applications.

Founded in October 2000, Chipkin provides expert solutions for converting BACnet®, Modbus®, and Lonworks®—to name just a few—and enabling interfaces for HVAC, fire, siren, intercom, lighting, transportation and fuel systems. The high-quality products we offer (including those from other vendors) interface with Simplex™, Notifier™, McQuay™, GE™ and many others—so you can rest assured that we will select the most appropriate solution for your application.

With Chipkin you are buying a solution. Our configuration expertise in this field combined with free BACnet tools and other tools ensure your success; and our customer support via phone, email and remote desktop tools means that we're there when you need us. Chipkin is a small responsive company, and we live or die by the quality of our service—and with offices in two-time zones—we can provide support when you need it. Give us a call now!

Sales and Customer Service
Toll free: 1-866-383-1657
Email: salesgroup1@chipkin.com

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