IG04 BACnet Gateway / Vaisala WXT/WMT

INSTALLATION INSTRUCTIONS

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Contents

Overview

This document provides instructions to connect a Vaisala device to the IG04 BACnet Gateway, and configuring the Vaisala device and IG04 using the embedded web server and the FusionLIVE Java application.

Detailed instructions are provided to help you access the embedded web server, and easily configure the IG04 and Vaisala device. It is recommended that installation personnel familiarise themselves with the information contained in this document.

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- *Unless specified, the Vaisala devices referred to in this document are the WXT520 & WXT530 series Weather Transmitters and WMT52 & WXT532 series Ultrasonic Wind Sensors.*
- *With regard to the WXT530 series, please note that the IG04 is compatible with the WXT532 & 536 models only.*

Supported Vaisala Device Models

The IG04 BACnet Gateway communicates directly with the Vaisala device using a dedicated RS-485 channel. The IG04 BACnet Gateway is designed to communicate with the Vaisala Weather Transmitter or Ultrasonic Wind Sensor.

For 'plug and play' communications, ensure to use one of the following order codes when ordering a Vaisala device:
- WXT520-AACxxxxxx0 (where "x" refers to optional extras)
- WXT536-C1XXXXXXXXX (where "x" refers to factory options)
- WMT52-AACxxxxxx0 (where "x" refers to optional extras)
- WXT532-C1XXXXXXXXX   (where "x" refers to factory options)

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If a different order code is required, ensure that the Vaisala device is configured to communicate using the NMEA protocol on RS-485 at 19200 baud 8, N, 1.

Connecting the Vaisala Device and the IG04 BACnet Gateway

A Vaisala device can be connected to the IG04 BACnet Gateway using either the 8-Pin M12 connector or by wiring directly to the Screw Terminals. Both the 8-Pin M12 Connector and Screw Terminals can be accessed from the bottom of the Vaisala device.

The Vaisala device and the IG04 BACnet Gateway can be powered using a 24 V to 32 V DC power supply. If heating is required, it is recommended to provide independent cabling from the power supply to ensure robust operation and minimal interference. If this is not possible, a single cable run can be used to provide power for both the Vaisala device and optional heating accessory. Ensure to use high capacity cable suitable for carrying such a current load over the distance required.

Refer to the following wiring guides for the most suitable option for your installation.

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Please refer to the appropriate Vaisala technical documentation for more details at www.vaisala.com. Refer to the relevant datasheets for complete power supply details for the IG04 and Vaisala products.

Wiring Using The 8-Pin M12 Connector With Independent Cabling For Heating

The wiring example provided below at Figure 1 is recommended for most installations, providing a separate cabling run of high quality cable for the Vaisala device heating current (if required). The pin connections for the 8-Pin M12 and wire colours are listed in Table 1 on page 7.

For installations that do require the optional heating accessory, ensure a high capacity cable between the DC Power supply and the Vaisala device is used.

ℹ The 8-Pin M12 connector is located on the bottom of the Vaisala device.

IG04 Default Settings	
IP Address	192.168.2.100 (Static)
Subnet Mask	255.255.255.0
HTTP Port	80
Innotech Port	20000

BACnet/IP	
BACnet Port	47808
BACnet Instance	1509
Baud Rate	19200
Fault Timeout	30 seconds

Figure 1: Wiring guide for Vaisala device M12 Connector with independent cabling for heating

ℹ The 16mm² Copper Cable to Earth Ground cable is a critical component for the correct operation of the surge protector. Ensure this is installed correctly.

Wiring Using The 8-Pin M12 Connector With Split Cabling For Heating

The wiring example provided below at Figure 2 is an alternative M12 connector wiring guide, providing a shared cabling run of suitable high capacity cable for the Vaisala device and heating accessory (if required). The pin connections for the 8-Pin M12 and wire colours are listed in Table 1 on .

For installations that do require the optional heating accessory, ensure a high capacity cable between the DC Power supply and the Vaisala device is used.

ℹ️ *The 8-Pin M12 connector is located on the bottom of the Vaisala device.*

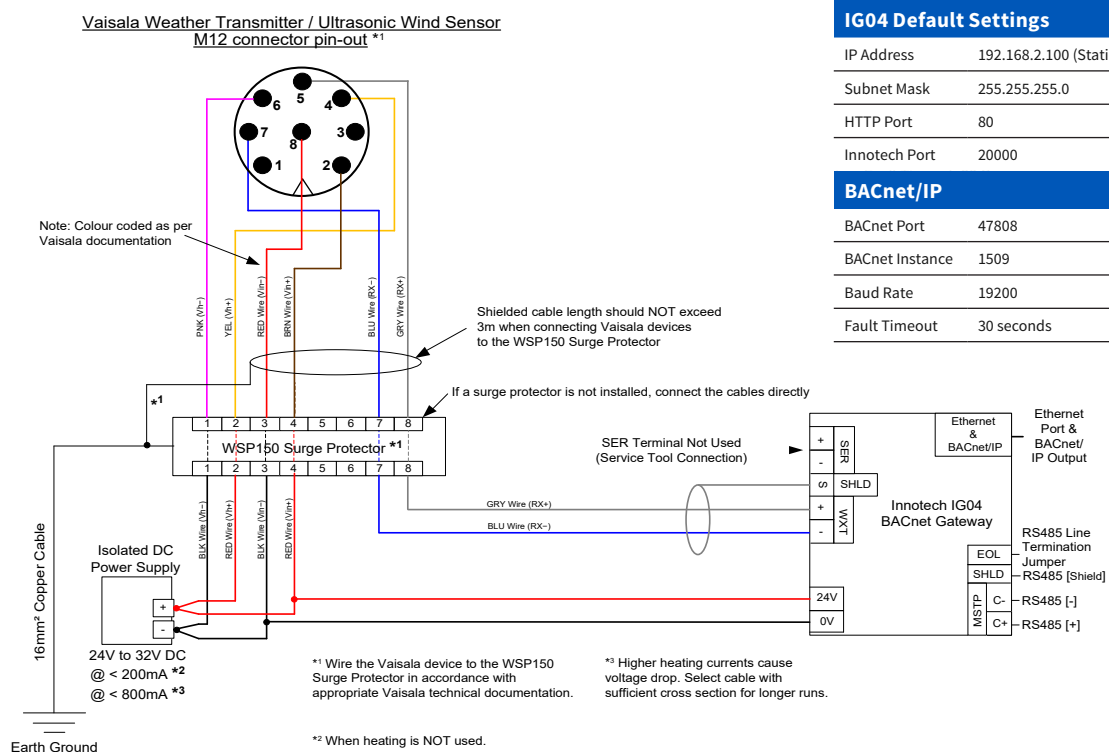**Figure 2:** Wiring guide for Vaisala device M12 Connector with split cabling for heating

ℹ️ *The 16mm^2 Copper Cable to Earth Ground cable is a critical component for the correct operation of the surge protector. Ensure this is installed correctly.*

Vaisala Device 8-Pin M12 Connector Pin-Outs

ℹ *Please take extreme care to ensure when installing and wiring that the wire colours and terminals correctly match as illustrated in Figure 1 or Figure 2, and described below in Table 1. Refer to the appropriate Vaisala technical documentation for more details at www.vaisala.com.*

Table 1: M12 Pin-outs for WXT / WMT

Wire Colour	M12 Pin#	RS-485
Blue	7	RX-
Grey	5	RX+
White	1	
Green	3	
Pink	6	Vh- (heating GND)
Yellow	4	Vh+ (heating supply voltage)
Red	8	Vin- (operating GND)
Brown	2	Vin+ (operating supply voltage)

ℹ *Exact minimum cable specifications for the power supply will vary, and are installation specific. Ensure to select the correct cable to carry the current load as required.*

Wiring Using The Screw Terminal Connector With Independent Cabling For Heating

The wiring example provided below at Figure 3 is recommended for most installations, providing a separate cabling run of high quality cable for the heating current (if required). The pin connections for the screw terminal connector and wire colours are listed in Table 2 on page 10.

For installations that do require the optional heating accessory, ensure a high capacity cable between the DC Power supply and the Vaisala device is used.

The screw terminal connector can be accessed from the bottom of the Vaisala device by unscrewing the three screws on the Vaisala device's chassis, and carefully revealing the terminals. Cable runs can be fed through the small pluggable holes in the base of the unit. Ensure to fully seal the Vaisala device once wiring is complete.

Figure 3: Wiring guide for Vaisala device screw terminal connector with independent cabling for heating

The 16mm² Copper Cable to Earth Ground cable is a critical component for the correct operation of the surge protector. Ensure this is installed correctly.

Wiring Using The Screw Terminal Connector With Split Cabling For Heating

The wiring example provided below at Figure 4 is an alternative screw terminal wiring guide, providing a shared cabling run of suitable high capacity cable for the Vaisala device and heating accessory (if required). The pin connections for the screw terminal connector and wire colours are listed in Table 2 on .

For installations that do require the optional heating accessory, ensure a high capacity cable between the DC Power supply and the Vaisala device is used.

The screw terminal connector can be accessed from the bottom of the Vaisala device by unscrewing the three screws on the Vaisala device's chassis, and carefully revealing the terminals. Cable runs can be fed through the small pluggable holes in the base of the unit. Ensure to fully seal the Vaisala device once wiring is complete.
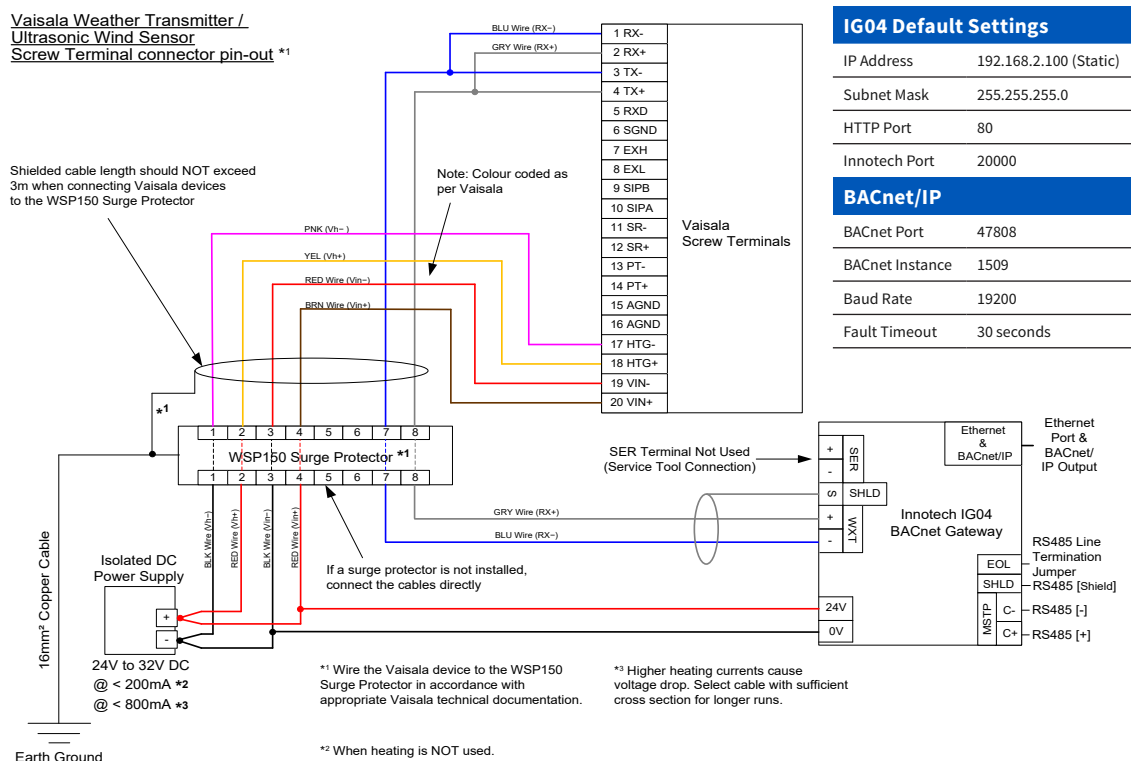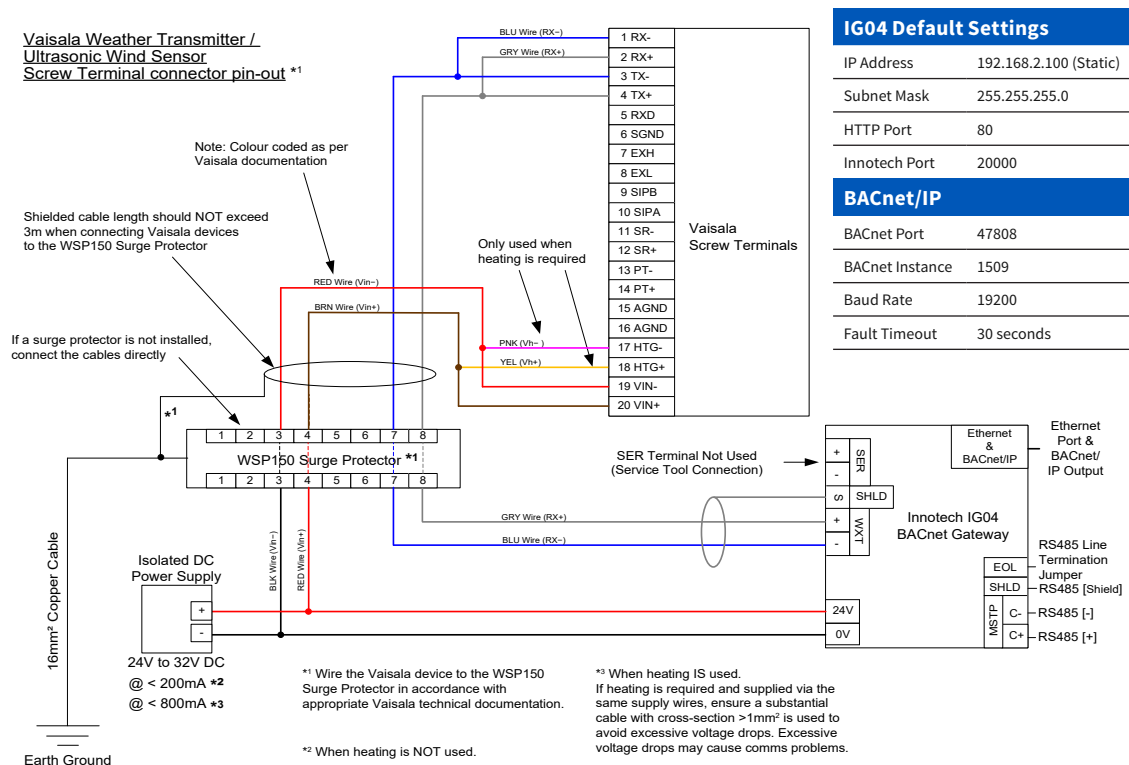

Figure 4: Wiring guide for Vaisala device screw terminal connector with split cabling for heating

The 16mm² Copper Cable to Earth Ground cable is a critical component for the correct operation of the surge protector. Ensure this is installed correctly.

Vaisala Device Screw Terminal Pin-Outs

ℹ️ *Please take extreme care to ensure when installing and wiring that the wire colours and terminals correctly match as illustrated in Figure 1 or Figure 2, and described below in Table 2. Refer to the appropriate Vaisala technical documentation for more details at www.vaisala.com.*

Table 2: Screw Terminal Pin-outs for Vaisala Devices

Screw Terminal Pin	RS-485
1 RX-	RX-
2 RX+	RX+
3 TX-	RX-
4 TX+	RX+
5 RXD	
6 SGND	
7 EXH	
8 EXL	
9 SIPB	
10 SIPA	
11 SR-	
12 SR+	
13 PT-	
14 PT+	
15 AGND	
16 AGND	
17 HTG-	Vh- (heating GND)
18 HTG+	Vh+ (heating supply voltage)
19 VIN-	Vin- (operating GND)
20 VIN+	Vin+ (operating supply voltage)

ℹ️ *Exact minimum cable specifications for power supply will vary, and are installation specific. Ensure to select the correct cable to carry the current load as required.*

Accessing Embedded Web Server and FusionLIVE

The Vaisala device and IG04 BACnet Gateway can be configured using the embedded web server and the FusionLIVE Java application on the IG04. However before you can access the embedded web server, your computer must be configured to be on the same network range as the IG04 BACnet Gateway. The default Ethernet settings for the IG04 BACnet Gateway are shown in Table 3 below.

Table 3: IG04 BACnet Gateway Default Ethernet Settings

IP address	Gateway	Subnet mask	Port Number
192.168.2.100	0.0.0.0	255.255.255.0	80

Please note that the Java Runtime Environment (JRE) must be installed on your computer in order to access the embedded web server and the FusionLIVE application. The latest version of JRE can be downloaded from http:// java.com/en/.

Since the default IP address of the IG04 BACnet Gateway is *192.168.2.100*, your computer must be configured with an IP address in the range of *192.168.2.xxx*, and the subnet mask must be configured to *255.255.255.0*. When you have configured the IP address and subnet mask of your computer, you can access the web server using Microsoft Internet Explorer® Web Browser Version 8 or greater. Follow the instructions below to connect to the IG04 BACnet Gateway and access the embedded web server.

Launch Internet Explorer and enter the default IP address of the IG04 BACnet Gateway in the address bar and press **Enter**, as illustrated in Figure 5 below.

Figure 5: Access embedded web server using default IP address

If you changed the port number in the Ethernet Settings, you must specify the port number with the IP address when entered into the address bar, as illustrated in Figure 6 below.

Figure 6: Access embedded web server using IP address with a different port

For more information on configuring your computer network settings and configuring the IG04 BACnet Gateway, refer to DS99.05 Ethernet Setup Manual for Device Communications.

Home Page of Embedded Web Server

If your network settings are configured correctly, the home page of the embedded web server should be displayed. There are two different versions of the home page, configured to suit the two different models of supported Vaisala device. The embedded web server identifies which model of Vaisala devic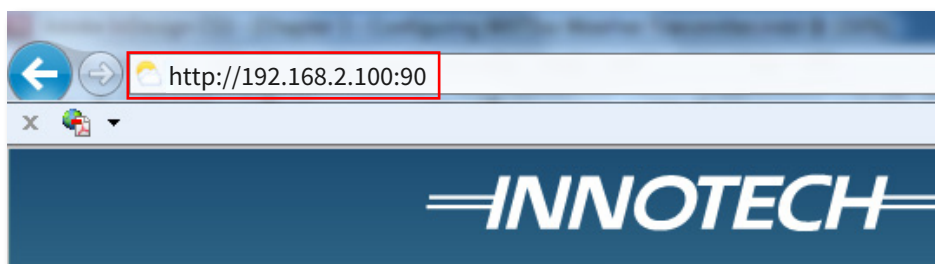e is connected before loading the appropriate home page. Actual live data on the home page will not be present until the connection between the IG04 BACnet Gateway and Vaisala device has been properly configured.

The embedded web server's home page for the Vaisala WXT Weather Transmitter is illustrated in Figure 7 below, while the home page for the Vaisala WMT Ultrasonic Wind Sensor can be seen at Figure 8.

From the embedded web server's home page, you can click on the [Configure] button to launch the FusionLIVE Java application to modify the Vaisala device or the IG04 BACnet Gateway settings.

The IG04 embedded web server uses HTML and port 80 by default.
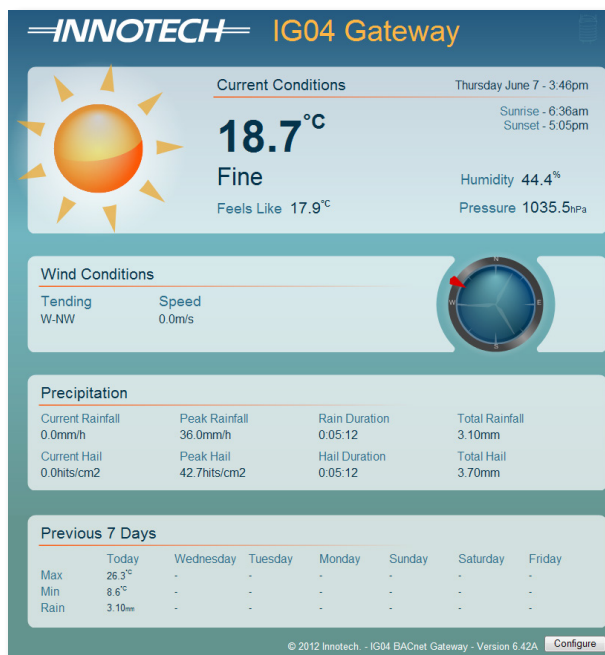

Figure 7: Home page when connected to Vaisala WXT Weather Transmitter

The historical data presented at the bottom of the home page, in the Previous 7 Days field, will initially be blank until enough time has passed to generate historical data.

Figure 8: Home page when connected to a Vaisala Ultrasonic Wind Sensor

Animated Graphics on the Home Page

The home page provides animated graphical representations of live weather conditions when connected to a Vaisala Weather Transmitter. The range of graphics and their meanings are illustrated in below in Figure 9.

The home page can automatically cycle through day/night display mode when the Sunrise / Sunset feature has been enabled, and the IG04 BACnet Gateway's clock is programmed correctly.

Day / Night Fine

Day / Night Fresh Breeze

Day / Night Strong Winds

Day / Night Drizzle

Day / Night Showers

Day / Night Rain

Day / Night Hail

Figure 9: Animated graphics for home page

When the **Configure** button on the home page is clicked, the FusionLIVE window will be displayed. Refer to the illustration and table below for more detailed information. Actual live data in FusionLIVE will not be present until the connection between the IG04 BACnet Gateway and Vaisala device has been properly configured.
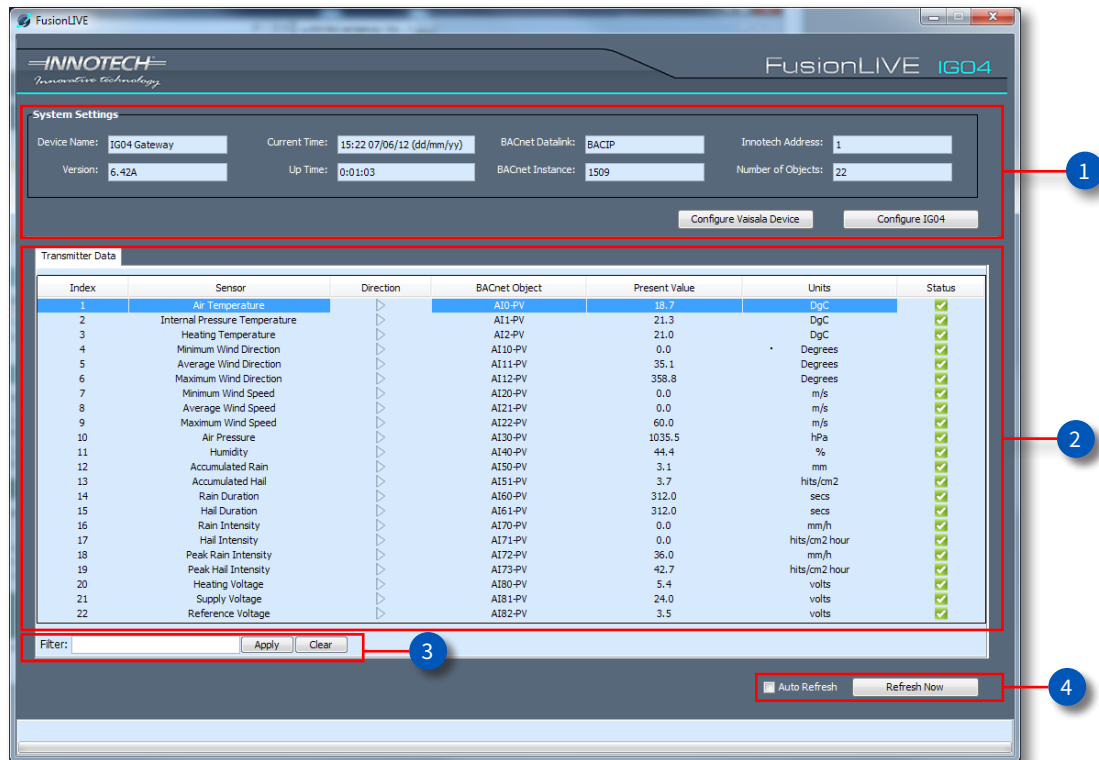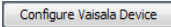

Figure 10: FusionLIVE home screen

Table 4: FusionLIVE screen feature description

Callout	FusionLIVE Screen Feature	Description
1	System Settings	This pane of the FusionLIVE window displays device information such as Device Name, Firmware Version, BACnet Instance ID, and Device Address. Click on the **Configure Vaisala Device** button to modify or configure the Vaisala device settings. Click on the **Configure IG04** button to modify or configure the IG04 BACnet Gateway settings.
2	Transmitter Data	This pane of the window displays all relevant sensor data from the Vaisala device. If the IG04 BACnet Gateway is communicating correctly with the Vaisala device then you should see the Present Value data, and a green check mark box under Status. If data from an object is not received by the IG04 BACnet Gateway, a red cross will appear. The units displayed here are configured automatically to match the units configured for the Vaisala device.
3	Filter	Here you can enter keywords, such as the Sensor Name, to filter through the information to quickly view only the necessary information.
4	Auto Refresh / Refresh Now	Click the **Refresh Now** button to manually refresh data as required (recommended). Select Auto Refresh for FusionLIVE to periodically refresh all data (reduces performance for multiple connections)

Configuring Vaisala Device with FusionLIVE

When you have accessed the FusionLIVE Java application as described in the Accessing Embedded Server and FusionLIVE section, you can modify the configuration settings of the Vaisala device by clicking on the `Configure Vaisala Device` button from the *FusionLIVE* window. The *Configure Vaisala Device Settings* window will be displayed, as illustrated in Figure 11 below.
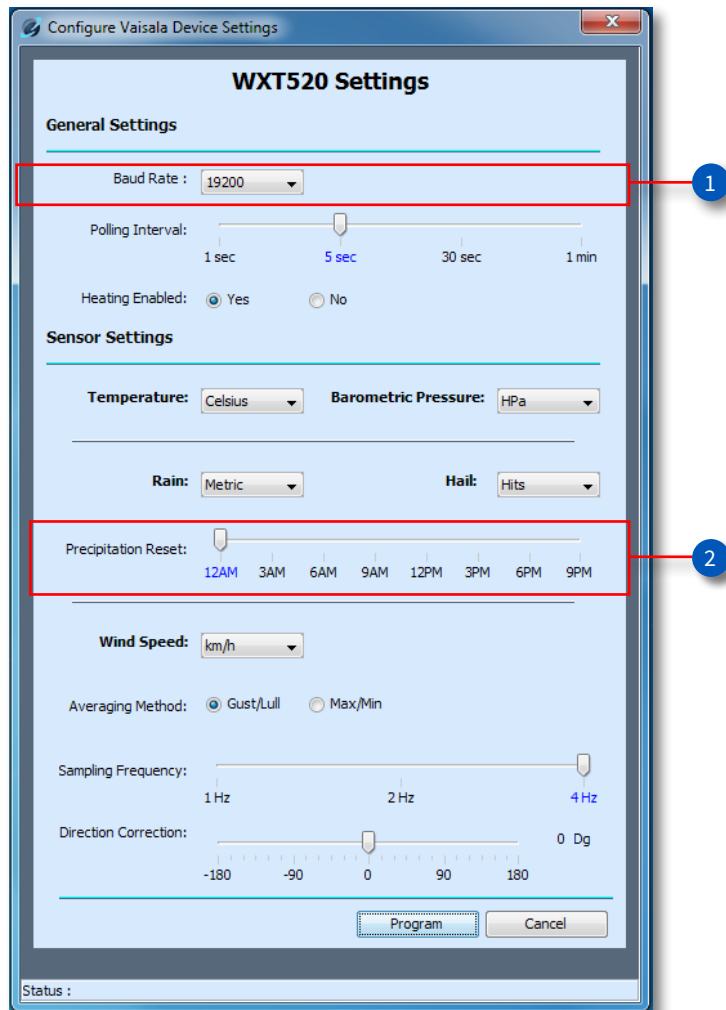

Figure 11: Vaisala device configuration settings window

Table 5: Vaisala device parameter description

Callout	Vaisala device parameter	Description
1	Baud Rate	The baud rate at which the Vaisala device will communicate with the IG04 BACnet Gateway. If the baud rate of the Vaisala device is changed, the IG04 baud rate will be updated automatically to match the baud rate of the Vaisala device.
2	Precipitation Reset	This is the time of the day when the rain and hail counters will reset to zero. The default setting is 12:00AM.

For an explanation of all other Vaisala device settings, refer to the appropriate Vaisala technical documentation at www.vaisala.com.

Disabling the Rain, Wind, or Hail settings on the Vaisala device will disable the BACnet objects for those objects on the IG04 BACnet Gateway.

Configuring IG04 BACnet Gateway with FusionLIVE

When you have accessed the FusionLIVE Java application by following the instructions described in the Accessing Embedded Server and FusionLIVE section, you can modify the configuration settings of the IG04 BACnet Gateway by clicking on the Configure IG04 button from the *FusionLIVE* window.

The *Configure Innotech IG04 BACnet Gateway Settings* window will be displayed with different tabbed options you can select to configure the IG04 BACnet Gateway. Each of these tabs is described in detail in the subsequent sections.

It is recommended that the Ethernet settings be configured as the last step since this will require you to modify the TCP/IP address of your computer to be on the same network range as the IG04 BACnet Gateway in order to access the embedded web server.

System Tab

Under the System tab you can configure or modify the following settings:
- BACnet device name
- Device password

There is no password configured by default, but if a password is configured then you can only view the data; you cannot make any changes. In cases where you forget the configured password, you will need to contact Innotech to reset your password. Contact details are shown on the last page of this document.

To configure or change the password, enter the current password, and then enter the new password. Click on **Change Password** to save the new password. If you modify the device name, click on **Apply** to save your current settings, as illustrated in Figure 12 below.
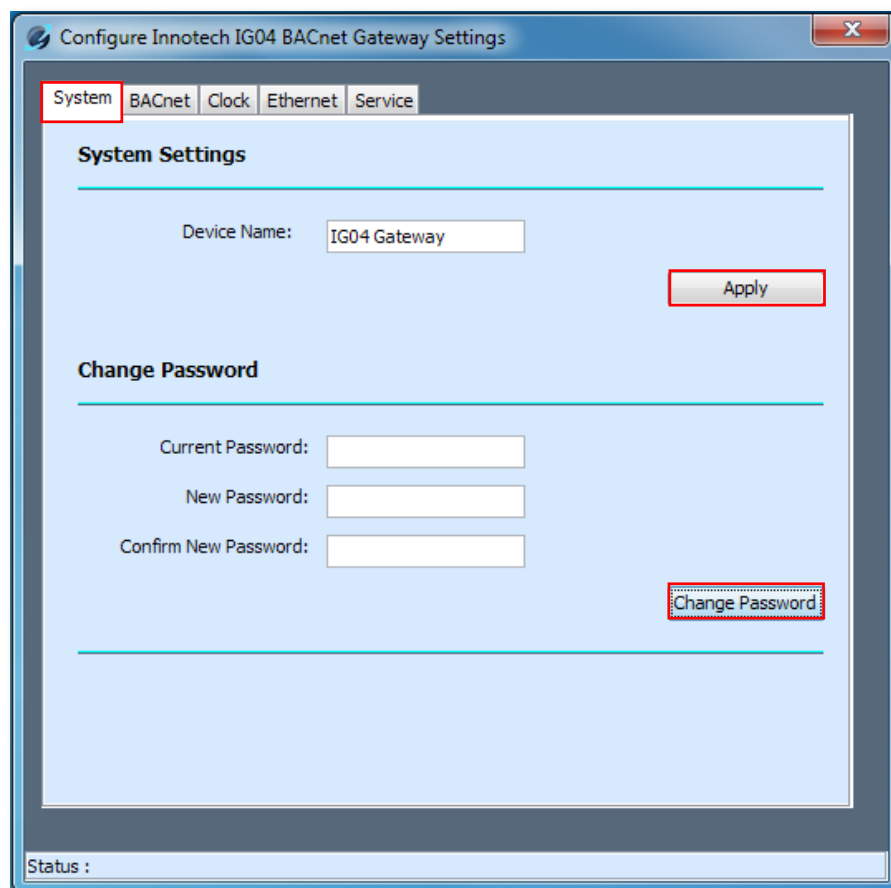

Figure 12: Configure IG04 settings in FusionLIVE – System Tab

BACnet Tab

Under the BACnet tab you can configure or modify the following settings:
- BACnet Instance number
- BACnet Datalink protocol
- BACnet MS/TP Settings

Please note that the MS/TP settings can only be modified if the *BACnet Datalink* is selected as MSTP. Otherwise these settings cannot be modified and will be unaccessible.

It is recommended to leave these settings at the default values, as illustrated in Figure 13 below.
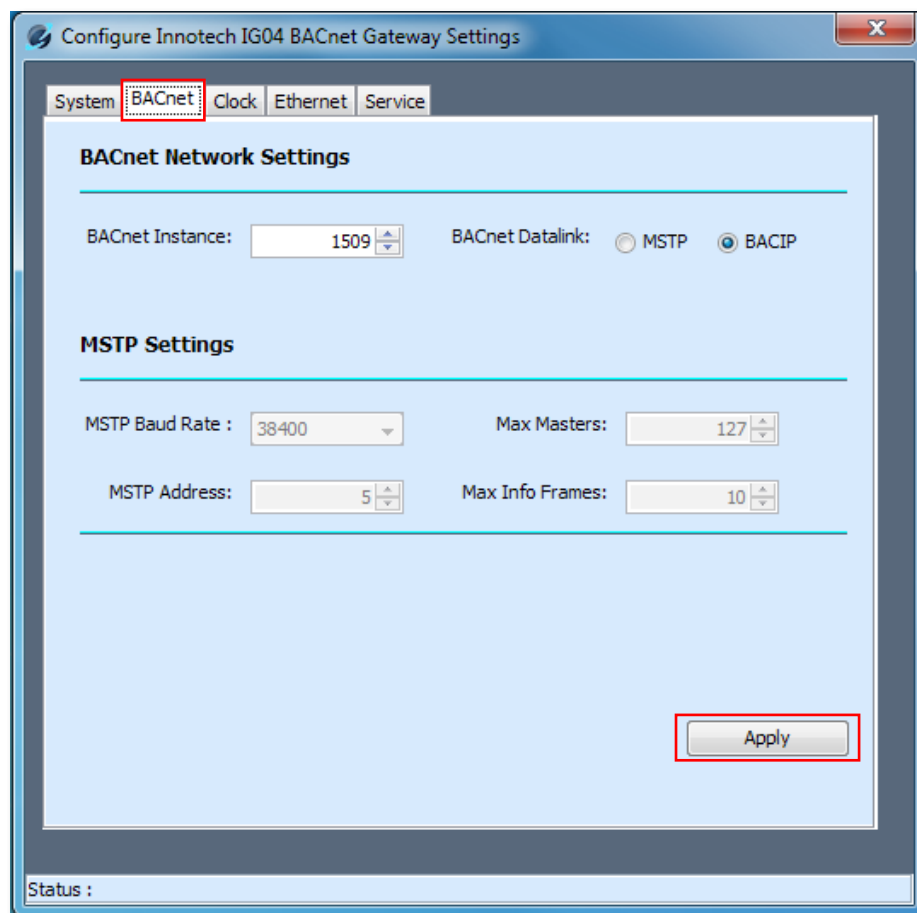

Figure 13: Configure IG04 settings in FusionLIVE – BACnet tab

The default BACnet Instance number for the IG04 BACnet Gateway is 1509.

Clock Tab

Under the Clock tab you can configure or modify the following settings:
- Current date and time – used for the Precipitation Reset setting
- Daylight Savings time
- Location – used to create Sunrise / Sunset data on the home page, along with day / night indication

In order to adjust the Daylight Savings time, you must first enable it by turning the *Operation* to **ON**. You can then adjust the Start and Stop dates for Daylight Savings time. Click on **Apply** to save your changes, as illustrated in Figure 14 below.
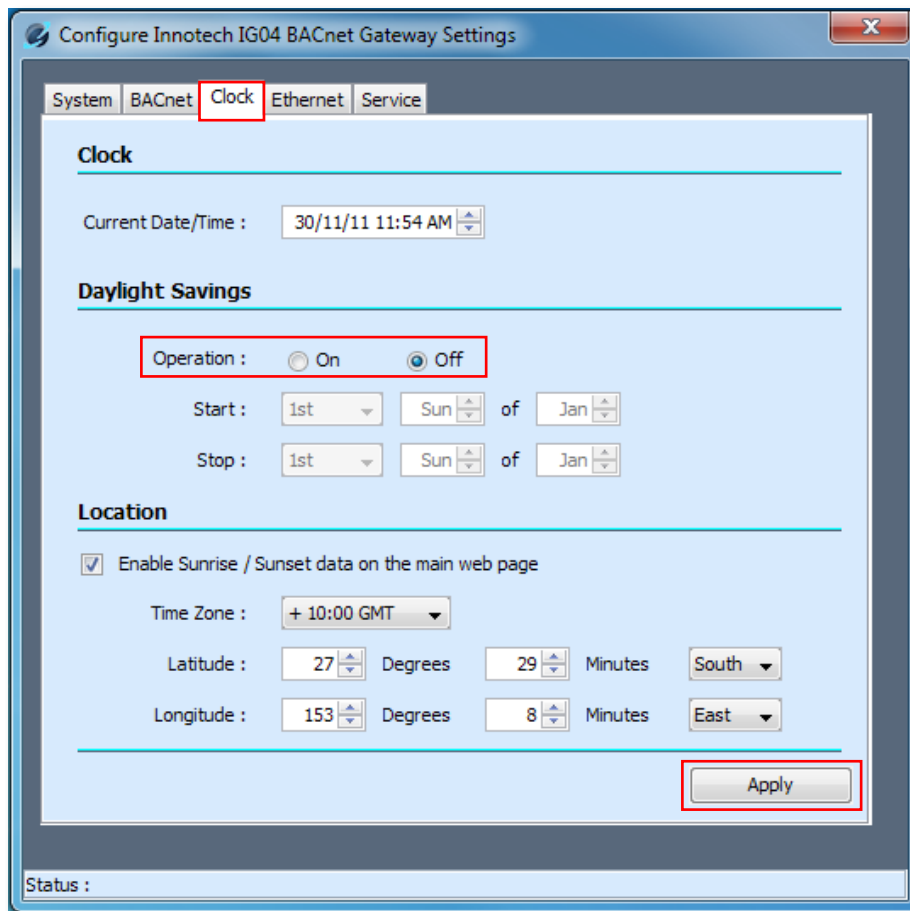

Figure 14: Configure IG04 settings in FusionLIVE – Clock Tab

Configuring Sunrise and Sunset

If you enable the Sunrise / Sunset feature of the IG04, you will need to enter the latitude and longitude coordinates to determine the sunrise and sunset for your particular location. This information can be obtained from http://www.findlatitudeandlongitude.com, using the map to find your location. You will be provided with the latitude and longitude coordinates required for the IG04 BACnet Gateway, as illustrated in Figure 15 below.

Enabling the Sunrise / Sunset feature will alter the embedded web server's home page to display the calculated sunrise and sunset, and display the day / night cycle of the home page, as illustrated below in Figures 16 and 17.

Selected Coordinates
Latitude: S 25° 17' 3.9759"
Longitude: E 151° 28' 46.1719"
Latitude: S 25° 17.066264818981836'
Longitude: E 151° 28.76953125'
Latitude: -25.28443774698303°
Longitude: 151.4794921875°

Figure 15: Example latitude and longitude coordinates for Sunrise / Sunset

Figure 16: Home page day / night cycle when connected to Vaisala Weather Transmitter

Figure 17: Home page day / night cycle when connected to Vaisala Ultrasonic Wind Sensor

Ethernet Tab

Under the Ethernet tab you can configure or modify the following settings:
- Address type, IP address, Default Router, and Net Mask
- HTTP Port Number
- Net Comms Port number (Innotech Service Port number)
- BACnet Port number

As mentioned previously in the Accessing Embedded Server and FusionLIVE section, your computer MUST be on the same network range as the IG04 BACnet Gateway in order to access the embedded web server.

If you change the IP address from the default settings in this step, you will have to modify the IP address of your computer to be on the same network range as this new IP address. Click on **Apply** to save your settings.

If you specify a different HTTP Port to the default (80), you will have to specify the port number when accessing the IG04 BACnet Gateway through a browser. For Example: if the HTTP Port was changed to 90, you need to enter 192.168.2.100:90 in the web browser to access the IG04 BACnet Gateway.
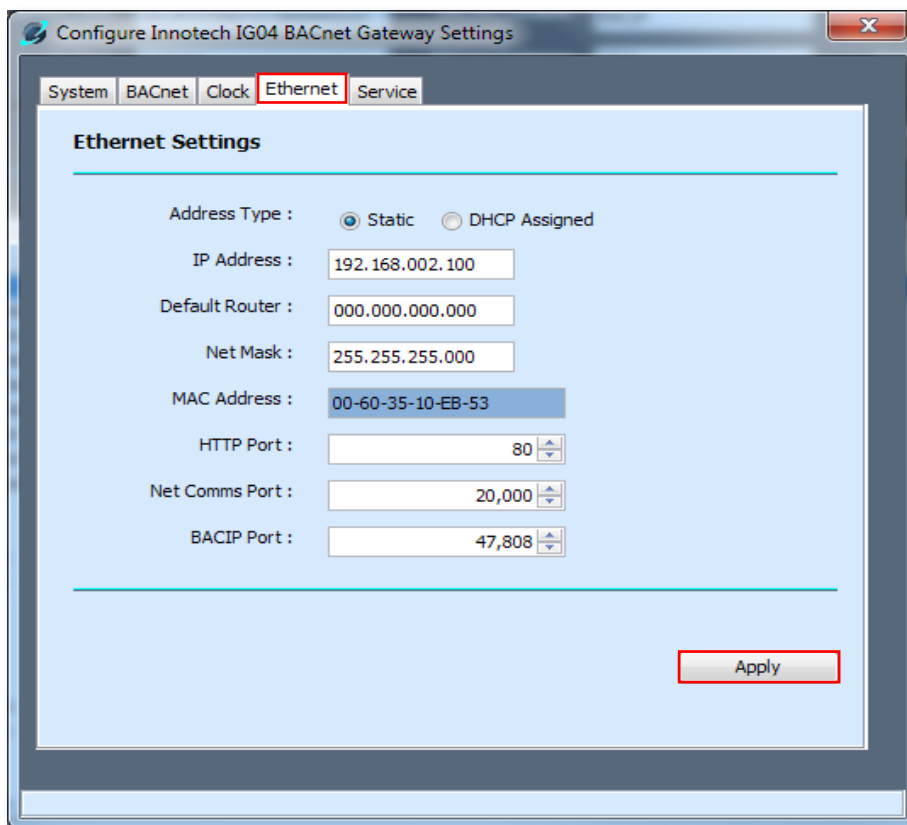

Figure 18:   Configure IG04 settings in FusionLIVE – Ethernet Tab

Services Tab

Under the Service tab you can configure or modify the following settings:
- Maintenance Mode – used for service by Innotech personnel.
- Server IP Address – only used when Maintenance Mode is set to Server or Client.
- Server Port – only used when Maintenance Mode is set to Server or Client.
- Reboot Gateway Now – Reboot the IG04 BACnet Gateway

*The Maintenance mode is a service tool for Innotech personnel only. It MUST be set to **Normal** in order to view the data from the Vaisala device, unless instructed otherwise, as illustrated in Figure 19 below.*
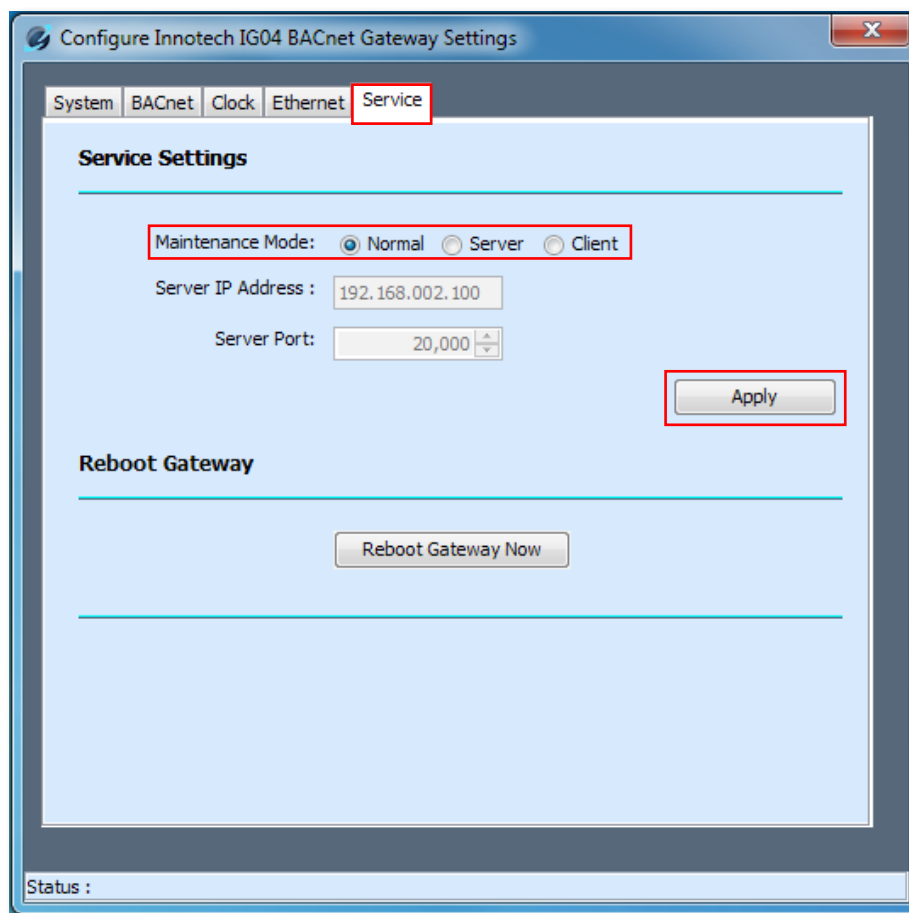

Figure 19: Configure IG04 settings in FusionLIVE – Service Tab

Troubleshooting

The most common issues when connecting to the IG04 BACnet Gateway's embedded web server and FusionLIVE are incorrect proxy settings or inappropriate security levels in Internet Explorer. If you are experiencing a problem that cannot be resolved, try some of the steps outlined below.

Ensure your Internet Explorer proxy settings are correct for the building network by checking with the IT Administrator. Alternatively, you could temporarily disable your Internet Explorer Proxy settings which may help in particular situations.

Cannot Discover A New IG04 BACnet Gateway

- The IG04 BACnet Gateway comes supplied from factory with a Static IP Address. Ensure to follow the steps outlined above at Accessing Embedded Server and FusionLIVE to find and connect to the IG04 BACnet Gateway.
- Try disabling all other Local Area Network connections on your computer through the Control Panel and try to connect again to the IG04 BACnet Gateway.
- Try commissioning the IG04 BACnet Gateway through a direct physical connection. Do the following:
  1. Using a Ethernet Crossover Cable, connect directly between your computer and the IG04 BACnet Gateway.
  2. Set your computer to have a Static IP Address of 192.168.2.99, Subnet Mask 255.255.255.0
  3. Try to connect again to the IG04 BACnet Gateway.
- For additional help configuring your computer network settings and IG04 BACnet Gateway, refer to DS99.05 Ethernet Setup Manual for Device Communications.

Cannot Connect to the Embedded Web Server

- Check that your Internet Explorer proxy settings are correct for the building network. On some networks, Internet Explorer proxy settings may require variations of the same address to operate on a network with a proxy server. For example, if the building network is on the range 192.168.0.x, you may need to enter the following:
- http://192.168.0.*;192.168.0.*;
- Check that access to the embedded web server is not being blocked by elevated Internet Explorer security settings. Consult the IT Administrator before making any changes.
- Check that you have entered the HTTP Port Number correctly if it has been changed from the default (80).
- If you are connecting directly to the IG04 BACnet Gateway without physical network access (offline mode), you may experience Javascript security alerts in Internet Explorer. In this situation, you will need to lower your Internet Explorer security settings to allow access to the embedded web server. Once complete, ensure to reset your security settings to a safe level.

Cannot Launch FusionLIVE

- When first launching FusionLIVE from the IG04 BACnet Gateway's embedded web server, you may encounter a window that asks you to install the Java Runtime Environment (JRE). Ensure to follow the prompts to download the JRE from the internet. If you do not have available internet access, you will not be able to continue until you have downloaded and installed the JRE onto the computer. The latest version of JRE can be downloaded from *http://java.com/en/*.
- If you have received an error message indicating the following, please try restarting FusionLIVE. If that fails to resolve the issue, you may need to restart Internet Explorer. These error messages can appear occasionally on some computers:
- Cannot launch
- Cannot find file
- Missing *.jnlp file
- Check that the JRE proxy settings are correct for the building network, and are switched on. Whilst these should be activated and inherited from Internet Explorer at launch of the JRE, in some instances this field can be blank. Enter the JRE proxy settings exactly as entered into Internet Explorer proxy settings.

Unstable Connection With Embedded Web Server or FusionLIVE

- If you are having stability issues with the embedded web server or FusionLIVE, ensure that you have no more than 5 concurrent computer connections to either of these services.
- Performance and stability may be affected by network connection speed. When multiple computers are connected to the IG04 BACnet Gateway, the slowest connection speed can have an impact on all other connections. Try disconnecting slower connections to see if this helps.

Innotech Support

Innotech provides technical information on the Web to assist you with using its products. At www.innotech.com.au, you can find technical manuals, user instructions, and data sheets for all our products.

For direct product support or product information, contact your local distributor, or an Innotech representative.

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