

# BitWise controls

TM

## BC4 Users Guide



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[www.bitwisecontrols.com](http://www.bitwisecontrols.com)

Phone: 866-932-2BWC

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# Introduction

## Overview

The BC4 is a network-enabled enclosure which houses one of our available [BCX series](#) expansion modules. The BC4 has a built-in web server for easy setup from any browser, and supports network communications via TCP or UDP sockets. It supports PoE (Power over Ethernet) and can also be powered via an available 12VDC wall adapter. The on-board temperature sensor allows you to monitor and respond to temperature changes in equipment racks, plasma displays, projectors, or anything else.

When you plug one of our BCX series expansion modules into the BC4, the BC4 automatically senses which module was installed, and configures itself accordingly. That's when the unique power of our command protocol comes into play.

We've spent considerable time and energy ensuring that our two-way command protocol is as complete and robust as we can make it, while maintaining ease of use. Our protocol includes get/set commands for all device settings and hardware control, as well as polled and asynchronous status reporting. Download our communication protocol document to see how complete and easy to use our protocol truly is. And since the BC4 has field-upgradeable firmware, you'll always have access to the most recent features and updates.

## Features

- IEEE 802.3af compliant Power-over-Ethernet Powered Device (PD)
- Alternate power by 12VDC external supply
- 10-base-T Ethernet, compatible with all 10/100 switches
- Rugged metal enclosure
- Web-based configuration
- Supports TCP and UDP protocols for communication with single or multiple host systems
- Built-in temperature sensor
- Accepts and automatically configures itself for BitWise Controls BCX-series expansion modules

### Front Panel



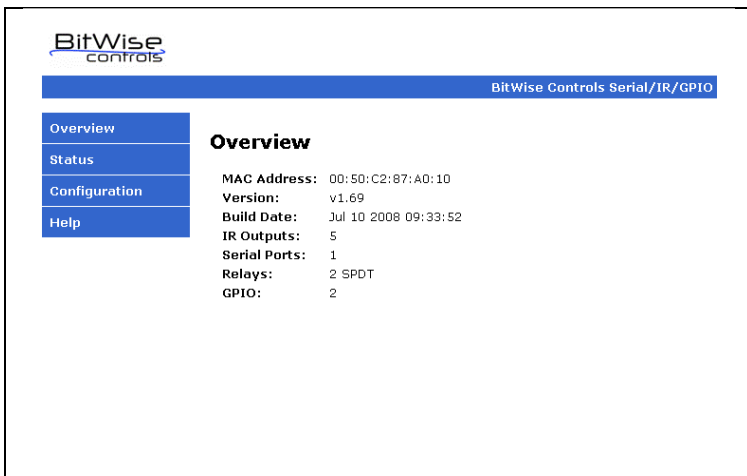
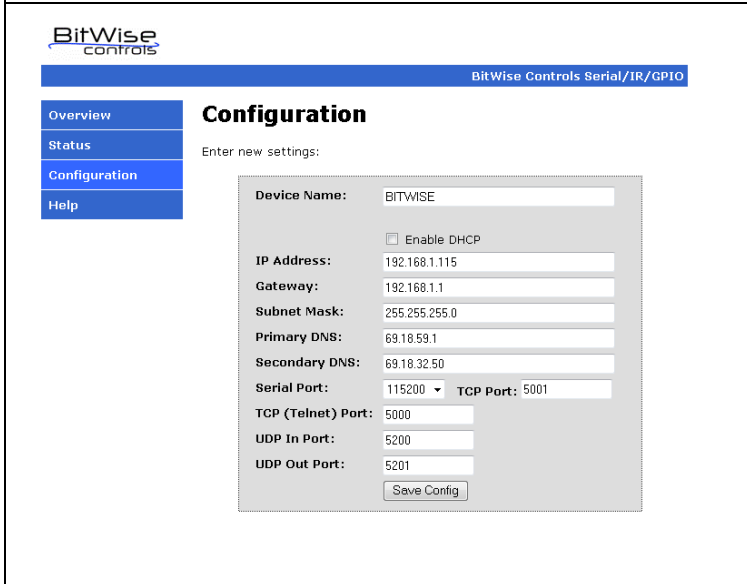
1. Power Connector: If the BC4 is not being powered via PoE (Power over Ethernet), you must use a 12VDC wall adapter, available from [www.bitwisecontrols.com](http://www.bitwisecontrols.com)
2. Reset: The reset button provides a couple of functions
  - A quick press/release simply resets the device, much like removing and reconnecting power would.
  - Pressing and holding until the red Status LED goes out will remove all previously stored Network settings.
  - Continuing to hold the reset button until the red LED comes back on will default all device IO settings.
3. Ethernet Connection: Connect to LAN, supports PoE.
4. Status LED: Is solid red during normal operation, will flash during activity such as IR emitting.

# Configuration

The BC4 can be configured for initial use by navigating to the device's built-in configuration web-page from any browser, or from the BC4 ControlCenter test program available at [www.bitwisecontrols.com](http://www.bitwisecontrols.com)

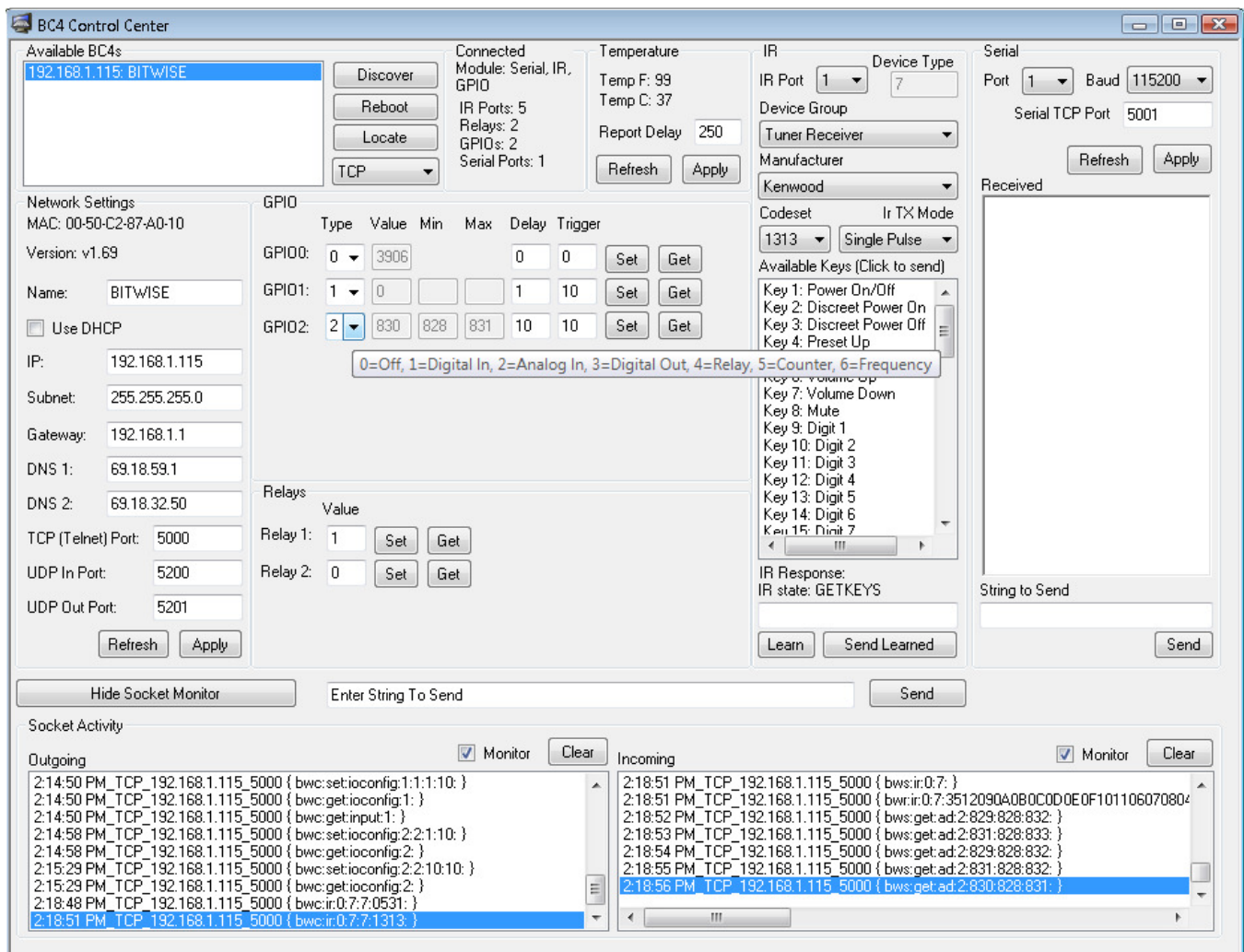
The BC4 comes from the factory with DHCP enabled. It will attempt to automatically assign itself an IP address. This is simply to facilitate easy first-time setup. We recommend that you assign the device a static IP address outside your router's DHCP range. This is important for reliable performance, since it ensures that your device will always be available at the same IP address.

## Configuration via Web-Browser

	<p>Open a new browser window and type in the IP address of the BC4 you wish to configure such as "192.168.1.100". The <b>BC4 Overview page</b> should appear. This page contains information such as the device's MAC address, current firmware revision, and any information regarding the installed BCX module.</p>
	<p>The Configuration button on the menu bar takes you to the <b>Configuration Page</b>. Here you can make changes to all of the BC4's network settings. Note that there are also "Serial Port" settings. These settings apply to a RS232 interface which may be present on an installed BCX module. <b>The configuration page is password protected using the username: "admin" and the password "bitwise"</b></p>

## Configuration via ControlCenter

While the BC4's internal web pages are useful for setting up the BC4, the ControlCenter software is even more powerful. It allows you to identify and configure any BC4 present on your network. ControlCenter also lets you test all BC4/BCX functionality, including Serial, IR, GPIO, and Relay control. It even logs all socket communications, so you can see exactly what information is being sent to and from the BC4 over the network. This makes it easy to set up and debug third party scripts, plugins, and other software host controllers for our hardware. Visit [www.bitwisecontrols.com](http://www.bitwisecontrols.com) to download ControlCenter.



### ***Configuration via Other Means***

Since the BC4's command protocol provides the means to get/set all of the internal settings, including the settings for the installed BCX module, the BC4 can be completely configured via any TCP or UDP client program, including standard telnet applications.

Default ports numbers are:

- 5000 TCP commands to and from BC4
- 5001 TCP to Serial #1 (not available in all configurations)
- 5002 TCP to Serial #2 (not available in all configurations)
- 5003 TCP to Serial #3 (not available in all configurations)
- 5004 TCP to Serial #4 (not available in all configurations)
- 5200 UDP commands to BC4
- 5201 UDP data from BC4

When using the TCP protocol, commands are not processed until a CR is received. This means that you may simply open a telnet session to the device using HyperTerminal or the Windows Telnet client and type commands or your application may send the command as one packet terminated by a CR.

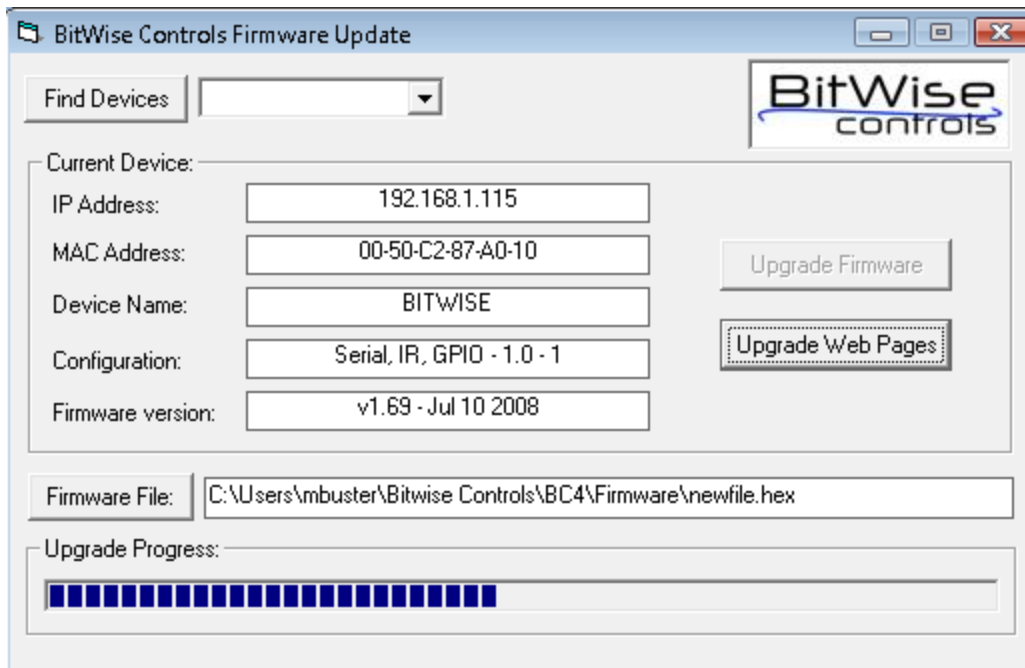
Commands sent via UDP must be sent as one continuous packet. By default, command responses over the UDP port will be broadcast to all devices on the current subnet. You may specify a specific machine to receive UDP packets with the "bwc:udpsendto:" command. Check out the Command Protocol documentation at [www.bitwisecontrols.com](http://www.bitwisecontrols.com) for a complete listing of all BC4 commands.

### Firmware

BitWise Controls is constantly working to enhance the functionality of our products. Since the BC4 has field-upgradeable firmware, you can always ensure that you are up to date with the latest version. Times when we might release a firmware update include:

- A new BCX module has been released
- New features have been added
- Performance has been improved

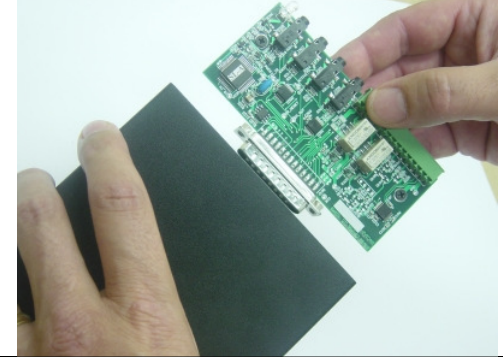
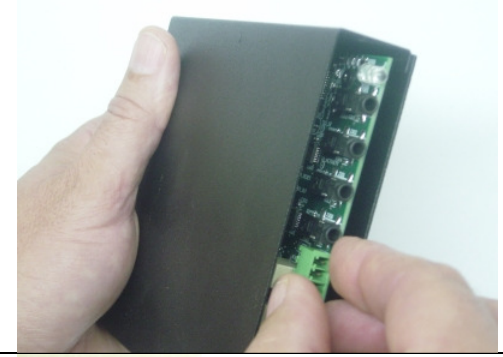

The Firmware Updater utility can be downloaded from [www.bitwisecontrols.com](http://www.bitwisecontrols.com)





## Installing a BCX- series Expansion Module

The BC4 Is meant to house a BCX-series Expansion Module from BitWise Controls. Before installing or removing a BCX module from the BC4 enclosure, make sure that all power, network, and device connections have been disconnected.

	<p>Module Installation is accomplished by simply sliding the BCX module into the open end of the BC4 enclosure.</p>
	<p>Keep pushing until the DB25 connectors on both circuit boards mate firmly together, and the screw holes in the bottom of the BC4 enclosure align with the stand-offs already screwed into to BCX module.</p>
	<p>Now slide the BCX faceplate into position. Make sure to install all necessary screws into the faceplate sides, as well as the bottom of the enclosure.</p>

When finished, you can reconnect Ethernet and power cables. The BC4 will automatically sense which BCX module was installed, and adapt itself accordingly. Please note that it is possible that a newly released BCX module may require a BC4 firmware update to operate properly.

### Resources

There are many support resources available in our support section at [www.bitwisecontrols.com](http://www.bitwisecontrols.com). Be sure to check in there for product news, software downloads and updates, and much more.

### Contact Information

We want to hear any questions and comments you may have about our company and products.

Please feel free to contact us.

#### **BitWise Controls, LLC**

1020 Hoosier Dr.

Larkspur, CO 80118

Phone: 866.932.1BWC (2292)

Fax: 866.932.2292

