

# Plus-X AC-8

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*User Guide*



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## Introduction

The Plus-X AC-8 Remote Outlet controller manages power to 120V equipment at remote locations. The unit may be operated via the Burk Technology ARC Plus, AutoPilot® Plus software, stand-alone web server, or via contact closures from any source (including the Burk Technology ARC-16, GSC3000 and VRC2500).

## Network Requirements

A static IP address is required for initial configuration and for controlling outlets using the onboard web server. If IP connectivity is not available at the remote site, it is possible to configure the unit on the bench and operate it via contact closures from a remote control.

## Surge Protection

Each of 8 outlets is rated to 15A. Total load for the entire unit is 15A, with circuit-breaker protection. The rear panel RESET button resets the circuit breaker.

## Setup and Configuration

Configuration of the Plus-X AC-8 involves three steps: setting the network parameters, defining outlet behavior, and assigning users and passwords.

If you are using the Plus-X AC-8 with an ARC Plus, you will also need to add the Plus-X AC-8 device to the ARC Plus using AutoLoad Plus software.

**Before you start**, you will need to use a standard Cat5 cable (included) to connect the Plus-X AC-8 to your network.

## Initial Connection Using DHCP

Plus-X AC-8 units running firmware 1.0.16 or higher support Dynamic Host Configuration Protocol (DHCP) as an easy way to do initial setup. Connect the Plus-X AC-8 to your LAN and apply power. If this is the first power-up for a new unit or the first network connection after execution of a master-initialization, the Plus-X AC-8 will issue a DHCP request for an IP

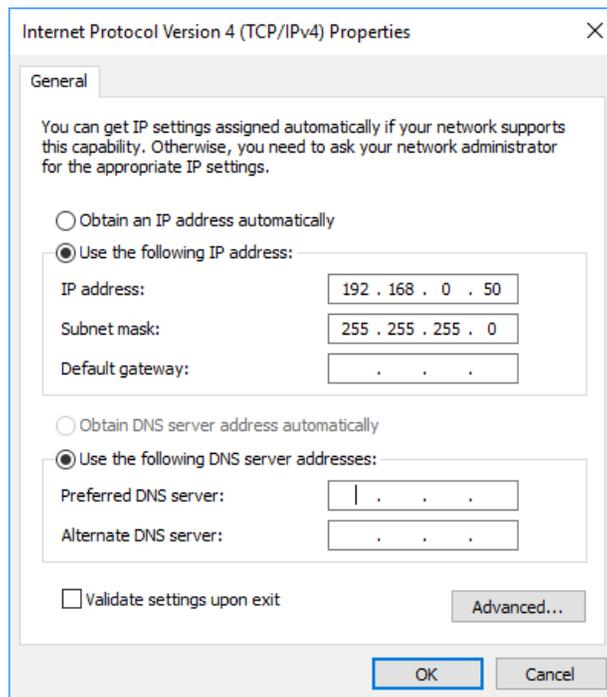
address. If the network supports DHCP functionality, a dynamic IP address will be assigned to the unit. To access the Plus-X AC-8, launch a web browser and enter the hostname “PLUSXAC8/” in the browser’s address field. (Be sure to include the forward-slash symbol at the end of the hostname.)

Note: If the login page is not displayed or the browser indicates that the page cannot be found, it is possible the connected network does not support DHCP. In this case follow the steps outlined below for “Initial Connection Without DHCP”. Otherwise, continue to “Set a Static IP Address”.

### Initial Connection Without DHCP

If your network does not support the DHCP protocol, the Plus-X AC-8’s request for a dynamic IP address will fail. If this happens, the Plus-X AC-8 will assign itself the default static IP address of 192.168.0.100. To access the unit, it will be necessary to connect your PC directly to the Plus-X AC-8 using a crossover LAN cable or using a simple Ethernet switch.

In addition, your PC’s internal network interface must be set to a static IP address of the form 192.168.0.x. In the Windows Control Panel, search for *Network Connections*, then select *View network connections* then *Local Area Connection*. Navigate to the Internet Protocol Version 4 (TCP/IPv4) Properties dialog box as displayed below.



To configure the Plus-X AC-8, start by logging in to the unit by entering the IP address in your web browser and entering the username and password. The default IP address is 192.168.0.100. The default username is **admin** and the default password is **password**.

## Set a Static IP Address

Select the *Network* menu option to display this page showing the current IP address.

Current DHCP IP address: 192.168.0.197

IP Address:	<input type="text"/>
<input type="button" value="Save"/>	

Enter a static IP address for this unit as assigned by your network administrator in the *IP Address* box and click *Save*.

*Note: It is important that the assigned static IP address be outside the DHCP address range used by the router to avoid potential conflicts with other DHCP devices.*

If your initial connection was made without DHCP, your PC should now be restored to its prior network settings, and both the PC and the Plus-X AC-8 should be connected to the normal LAN.

## Network Configuration

Click the **Network** link toward the top of the page to establish network settings. Enter the IP address, subnet, gateway and HTTP port for the Plus-X AC-8 to use. It is also a good idea to change the hostname from the default value so conflicts will not occur if multiple Plus-X AC-8 units are installed on the network.

If you are using the Plus-X AC-8 in conjunction with an ARC Plus remote control, also enter the Plus-X port (the default port of 45000 is appropriate in most cases) and the IP address of the parent ARC Plus. These settings enable the ARC Plus to view and control the Plus-X AC-8 control channels.

The Plus-X AC-8 can also operate in stand-alone mode without an ARC Plus. When in stand-alone mode you can uncheck the “Reinitialize if ARC Plus is not connected” setting. This will prevent the Plus-X AC-8 from trying to re-initialize communications with the ARC Plus.

The ARC Plus link indicator at the bottom of the page indicates whether the Plus-X AC-8 is connected to an ARC Plus.

If an ARC Plus is not installed, set the **ARC Plus IP Address** field to “127.0.0.1”.

Press **Update Settings** to save your changes. After changing the network configuration, the Plus-X AC-8 will redirect the web browser to the new network address.

**Plus-X AC-8**  
User **admin** is logged in.

[Outlets](#) [Config](#) [Users](#) [Network](#) [Update Firmware](#) [Refresh](#)

Hostname:	AC8CS
IP Address: *	10.0.0.101
Subnet Mask: *	255.255.255.0
Gateway: *	10.0.0.1
ARC Plus IP Address: *	10.0.0.100
HTTP Port: *	80
Plus-X Port: *	45000
Reinitialize if ARC Plus is not connected:	<input checked="" type="checkbox"/>
<input type="button" value="Save"/>	

\* Indicates required field

ARC Plus Link: 

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Ver 1.0.20

## Outlet Configuration

To configure the unit name and individual outlet behavior, click the **Config** link toward the top of the page.

In the **Name** field below the navigation links, enter an identifier for the Plus-X AC-8 unit (i.e. *IT Gear*). Press **Update Unit Name** to save changes. Each outlet can also be assigned a name to identify the equipment connected to it.

Next, configure the pulse/latching behavior and control input behavior for each outlet. All fields for each outlet must be configured and saved before going on to the next outlet.

In the **Type** field, choose whether a command originating from the front panel, ARC Plus or web browser results in the outlet pulsing on/off or latching on/off.

The screenshot shows the configuration page for a Plus-X AC-8 unit. At the top, it says 'Plus-X AC-8' and 'User admin is logged in.' with a 'Logout' button. Below this are navigation links: 'Outlets', 'Config' (highlighted), 'Users', 'Network', 'Update Firmware', and 'Refresh'. The main configuration area has a 'Name' field containing 'Plus-X AC-8' and an 'Update Unit Name' button. Below this is a section for 'Outlet 1' with a table of configuration options:

Outlet 1	
Name	Network
Type	<input type="radio"/> Pulse on for 6 seconds <input checked="" type="radio"/> Pulse off for 6 seconds <input type="radio"/> Latching
Control Input	<input type="radio"/> Match closure duration <input checked="" type="radio"/> Use outlet configuration
Update Outlet 1	

**Pulse On** means the outlet will turn on for the specified duration before automatically turning off. This can be used to periodically cycle equipment on, such as a cooling fan.

**Pulse Off** means the outlet will turn off and automatically turn back on after the specified duration. This is useful for rebooting or power-cycling equipment.

**Latching** means the outlet will turn on until the outlet is manually turned back off (or vice versa).

The **Control Input** field determines how the outlet responds to contact closures received from external equipment, such as a remote control. The outlet will either match the duration of the contact closure or will use the behavior already configured in the **Type** field.

For example, if an external remote control relay is connected to the **ON** control input for Outlet 1 and the outlet is configured to *match closure duration*, a five-second pulse from the remote control results in the outlet turning on for five seconds before turning off.

If the outlet is configured for *use outlet configuration*, the same five-second pulse from the remote control will result in the outlet pulsing on, pulsing off, or latching, depending on how the outlet is configured in the **Type** field.

When you are done configuring the first outlet, press **Update Outlet 1** to save changes. Then continue to configure additional outlets, one at a time.

## Users and Passwords

The Plus-X AC-8 allows for 2 users, with up to 10 simultaneous client connections.

To edit users, click the **Users** link near the top of the page. Change username and passwords as desired. The non-admin user is also assigned a privilege level. The admin user is always a system-level user, with access to configuration settings (in addition to outlet control).

The additional user may be assigned system, operator, or observer privileges:

- Operators can control outlets, but may not modify configuration settings.
- Observers can view outlet status only (no configuration or outlet control).

Configure each user individually and press the **Update Password** or **Update User** button after making the changes.

The screenshot shows the Plus-X AC-8 web interface. At the top, it says "Plus-X AC-8" and "User admin is logged in." with a "Logout" button. Below this are navigation links: "Outlets", "Config", "Users", "Network", "Update Firmware", and "Refresh". The main content area is divided into two sections. The first section is for the "admin" user, with fields for "Password" and "Confirm Password", and an "Update Password" button. The second section is for a "User", with fields for "Username", "Password", and "Confirm Password", and a "Permissions" section with radio buttons for "Observer" (selected), "Operator", and "System". There is an "Update User" button at the bottom of the user section. At the very bottom of the page, it says "©2012-2020 Burk Technology, Inc. Ver 1.0.20".

## Adding Plus-X AC-8 Channels to the ARC Plus

The Plus-X AC-8 integrates easily with the Burk Technology ARC Plus remote control system. Once configured, the ARC Plus will read Plus-X AC-8 status and command channels as if these channels were native to the ARC Plus unit.

To get started, set up and configure the ARC Plus first. Then return to add Plus-X AC-8 channels:

1. Open AutoLoad Plus and connect to the ARC Plus site where the Plus-X AC-8 will be added.
2. From the **Edit** menu, select **Plus-X Devices** to open the Plus-X device configuration dialog.
3. Click **New...**
4. You will be asked to select the device type, which in this case is "Plus-X AC-8" You may optionally change the Description for the device. The description appears in AutoLoad Plus to identify each Plus-X channel.
5. Enter the IP address and port number of the Plus-X AC-8. These should be the same settings you used when you configured the Plus-X AC-8 via its built-in web server.
6. Check the **Map default set of channels** box to automatically add eight status and eight command channels to the ARC Plus. Where prompted, enter the number of the first unused ARC Plus channel you wish to assign to the Plus-X AC-8. There must be eight consecutive, unused channels available, starting with the channel number you enter here. You do not need to have additional Integrated Input Units and Integrated Command Relay Units for these channels.

**Important!** Plus-X channels take the place of normal I/O channels. If a metering input, status input, or command relay is connected to an ARC Plus channel and a Plus-X parameter is subsequently mapped to that channel, the I/O channel will no longer be displayed.

7. Click **OK**.

### Restoring Default Configuration

If at any time you wish to restore the default configuration of the Plus-X AC-8, including the IP address, use a pen or other small object to press the rear panel **Master Init** button three times in 10 seconds. (The button on some units may be labeled **Config**). The power LED blinks to confirm the configuration has been reset.

### Disabling Rear Panel Control Inputs and/or Front Panel Control

The front panel pushbutton controls and the rear panel control inputs can be disabled by disengaging jumpers at J15 and J14. To locate these jumpers, disconnect power from the Plus-X AC-8 and remove the top cover. The jumpers are located near the bottom right corner of the board, directly above the Burk Technology logo.



Rear panel control inputs are enabled when the J15 jumper is engaged (connected to both pins) and disabled when the jumper is removed or connected to only one pin.

Front panel pushbutton control is enabled when the J14 jumper is engaged (connected to both pins) and disabled when the jumper is removed or connected to only one pin.

### Rear Panel Outlet Connections

Site equipment connects to the rear panel 120V outlets as it would to any wall outlet or power strip. Outlet 1 is offset to accommodate AC/DC wall adapters. To connect additional wall adapters to the remaining outlets, Burk Technology recommends using 12" extension cords designed for this purpose.

### Operation

Outlet control is accomplished via any of four methods: front panel pushbuttons, ARC Plus/AutoPilot Plus connectivity, onboard web server, and/or external contract closure signaling.

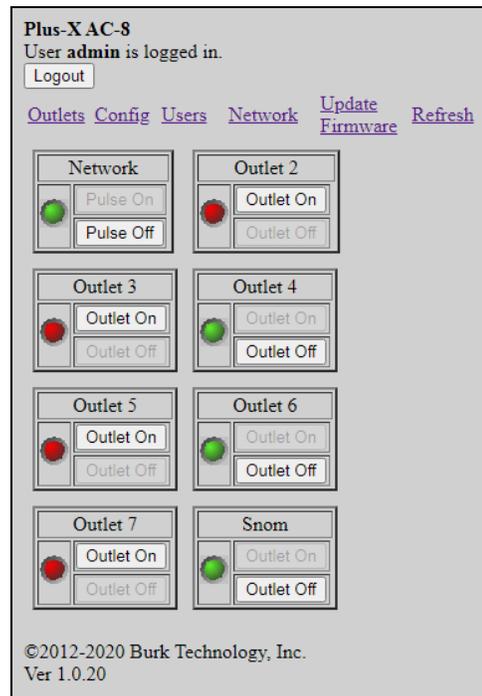
### Pushbutton Actuation

The front panel pushbuttons provide local outlet control with LED indication of whether the outlet is currently powered. Commands issued via pushbutton follow the outlet behavior settings set up during configuration (pulse on, pulse off or latching).

## Control via Web Server

Logging in to the web server, just as you did to configure the unit, provides web-based access to all eight outlets. Click the **Outlets** link to access outlet control.

The HTML interface supports Internet Explorer and the following mobile web platforms: Apple iPhone, Palm OS, Windows Mobile, Windows Mobile PC, and BlackBerry. Other browsers may work, but factory support is limited to those listed here.



## Control via ARC Plus and/or AutoPilot® Plus software

Once the Plus-X AC-8 channels have been added to the ARC Plus, they are available for control using the ARC Plus front panel, web interface, AutoPilot Plus software and ESI Plus telephone interface, just as if these channels were native to the ARC Plus.

You can also incorporate Plus-X AC-8 channels in ARC Plus macros to allow more complex control of the connected equipment. For example, an ARC Plus macro can remove power from non-critical equipment if the remote site is on generator power.

## Control via Contact Closures

To connect an external remote control, such as the Burk ARC-16, GSC3000 or VRC2500 to the Plus-X AC-8, simply connect a pair of command relays from the remote control to the rear panel control input associated with the desired outlet. Typically “raise” relays would connect to the ON pins on the Plus-X AC-8 and “lower” relays would connect to the OFF pins on the Plus-X AC-8. A common ground pin is provided. Wiring is to the included screw-down Phoenix connector.

Commands issued via external control input can either follow the relay duration or match the pre-programmed outlet configuration. For details, see “Outlet Configuration” under Setup and Configuration.

## Uploading Firmware

To upload firmware to the Plus-X AC-8 go to [www.burk.com/downloads](http://www.burk.com/downloads) and select the Burk Firmware Loader support page. Download the Burk Firmware Loader Manual and follow the instructions outlined to update your Plus-X AC-8 firmware.

## Getting Help

For technical support, please email [support@burk.com](mailto:support@burk.com) or call our direct technical support line at 978-486-3711. We will be glad to assist you. The technical support office is open Monday – Friday, 9AM to 5PM Eastern time.

## Warranty

Burk Technology, Inc. warrants the Plus-X 600 to be free of defects in materials and workmanship for a period of 24 months from the date of purchase. Equipment will be repaired or replaced at the option of Burk Technology and returned freight prepaid to the customer. Damage due to abuse or improper operation or installation of the equipment or caused by fire or flood or harsh environment is not to be covered by this warranty. Damage in shipping is not the responsibility of Burk Technology. A return authorization must be obtained before returning any equipment. Materials returned under this warranty must be shipped freight prepaid and insured in the original shipping carton or suitable substitute to Burk Technology, Inc., 7 Beaver Brook Road, Littleton, MA 01460. Repairs not covered under this warranty will be made at prevailing shop rates established by Burk Technology.

THE WARRANTY SET FORTH ABOVE IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. BURK TECHNOLOGY, INC. SHALL NOT BE LIABLE TO ANY PARTY FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF THIS EQUIPMENT.

## Appendix A: Specifications

### Dimensions:

1.75" (4.45cm) H

19" (48.26cm) W

10" (25.4cm) D

### Operating Temperature:

0° to 50°C

### Power Requirements:

100 to 132VAC, 50-60Hz, 8' attached 14/13 grounded power cord; 15A circuit breaker with reset button

### Outlet Specifications:

Eight (8) 15A straight-blade AC outlets; latching, plus-on or plus-off configuration for each outlet

### Control Inputs:

>0 to 5VDC or switch closure; latching relays not required