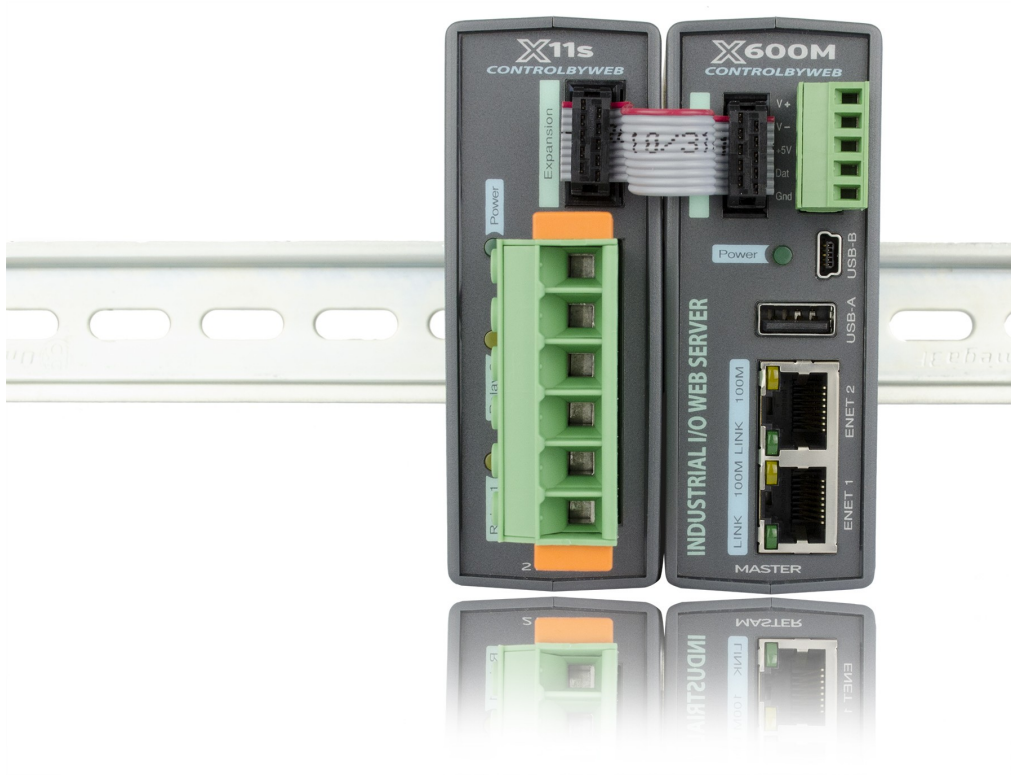


Automatic Reboot Controller

Using the X-600 Modular Series

Version 1.0



CONTENTS

AUTOMATIC REBOOT INTRODUCTION.....	2
EQUIPMENT REQUIRED.....	2
INSTRUCTIONS.....	2
Basic Setup and Wiring.....	2
Custom Web Pages.....	2
Adding/Configuring Devices.....	3
Adding/Configuring I/O.....	3
Scripts.....	4
Setup Page.....	4
View Reboot Page	7

AUTOMATIC REBOOT INTRODUCTION

This application allows you to configure your X-600M to periodically confirm that another device (such as a server, computer, router, etc.) is working by sending ping requests to the device. If a preset number of ping requests fail, it is assumed that the device is not functioning properly. The X-600M will then attempt to restore the device to normal operation by rebooting the device.

With the automatic reboot mode, users also have the ability to manually reboot the device from a remote location over the network.

EQUIPMENT REQUIRED

- 1 – X-600M
- 1 – X-11s 2 Relay Module
- 1 – Automatic Reboot Software Package
- 1 – Expansion Bus Cable (For one expansion module)
- 1 – Ethernet cable
- 1 – 9-28V Power Supply (24V recommended)

INSTRUCTIONS

Basic Setup and Wiring

Begin by connecting a 9-28 VDC power supply (24V power supply recommended) to the **Vin+** and **Vin-** terminals on the X-600M (A regulated power supply is recommended). Verify that the power supply is rated for the operating current of the X-600M. (For more information see **Section 2.3.2** of the X-600M User's Manual).

Connect one of the Ethernet ports to a 10 Base-T or 10/100 Base-T Ethernet connection. Typically an Ethernet hub, switch, or router. (For more information see **Section 2.3.6** of the X-600M User's Manual).

Attach the X-11s to the X-600M using the Expansion Bus Cable.

This application works similar to the WebRelay automatic reboot feature, and can be wired in the same manner. For wiring methods, please see Methods 1-3 in the Setup Page section below.

Note: Be sure that all the connections to any of the devices are clean and don't have the possibility of shorting out, and that all the screws are tight.

Custom Web Pages

We have created some customized web pages for this application that make it easier to setup and use once it has been configured. We will need to load those pages onto the X-600M.

Navigate to the **System** menu tab, and then choose **Custom Web Pages** in the drop down menu.

In the upper right hand corner click the **Choose Files** button. This will open a dialog box, where you can navigate to the folder on your computer where you have saved the custom web pages.

Select all of the pages and graphics for the Automatic Reboot Mode, and click open.

Then click the **Upload File(s)** button. The X-600M will update the list of custom pages, and you will be able to see the files that you have just added.

Adding/Configuring Devices

Access the X-600M setup pages by typing its IP address into the address bar of your internet browser followed by /setup.html (i.e., 192.168.1.2/setup.html). Log into the setup pages and navigate to the **Devices** menu tab. (For more information see **Section 3.3** of the X-600M User's Manual).

Click the **Find New Devices** button, and wait while the X-600M locates your devices.

Add/register the X-11s to the X-600M. Be sure that you add both relays.

***Note:** As you add the I/O from each device, you will want to change the name, and description of each one to make them easier to configure.*

Adding/Configuring I/O

Now navigate to the **I/O** tab and then choose the **Registers** tab.

Click **Add New Register**. We are going to add a register to hold each of the 4 parts of the IP address.

Give the register the *Name* ip1a, set the *Type* to *Constant*, the *Decimal Places* to 0, and the *Initial Value* of 0.

Repeat the process adding registers ip1b, ip1c, ip1d, ip2a, ip2b, ip2c, and ip2d.

We will also need to add registers to hold important values used in the rebooting process.

Add the following registers: failedPings, maxAttempts, pingDelay, rebootOptions, sPingPeriod, uPingPeriod, x, y, and z. With each register, use the same properties as before (*Type: Constant, Decimal Places: 0, Initial Value: 0*).

We will now add a few more registers with different properties.

Add new registers called `pingFailures1` and `pingFailures2`. These registers will count the number of times the ping attempts fail on the IP addresses.

Set the *Type* to *Float*, *Decimal Places* to 0, and the *Initial Value* to 0.

Add new registers called `rebootAttempts1` and `rebootAttempts2`. These registers will count the number of times the reboot sequence is performed.

Set the *Type* to *Float*, *Decimal Places* to 0, and the *Initial Value* to 0.

Add new registers called `pinging1` and `pinging2`. These registers will be turned on when the device is successfully being pinged.

Set the *Type* to *Boolean*, and the *Initial Value* to 0.

Finally add new registers called `reboot1On` and `reboot2On`. These registers will be turned on when the device is successfully being pinged.

Set the *Type* to *Boolean*, and the *Initial Value* to 1.

Scripts

To finish up the setup we will need to add two scripts. Each script will perform the pinging actions for one of the IP addresses. It begins by resetting the main register values, and then running an infinite loop. It checks to see if auto reboot is enabled, and then it loops until ping failures are higher than the max allowed. It then goes through and checks what reboot sequence is required, and then performs it according to the user selection.

Add the two scripts by clicking on the **Control/Logic** menu tab, and then the **Scripts** sub-menu.

Click **Add New Script**, and then copy and paste `script1` from the “Automatic Reboot Software Package.”

Repeat these steps for `script2` of the package.

Now that all of the settings have been added be sure to click the **Commit Settings** button in the upper right-hand corner of the screen to activate your new automatic rebooting functionality. Once this is done your unit will begin to ping the IP address 0.0.0.0.

Setup Page

You will now need to navigate to the Auto-Reboot Setup page, which can be accessed by adding `autoreboot.html` after the IP address in your browser (i.e., `192.168.1.2/autoreboot.html`)

In the Auto-Reboot Setup page, enter the correct IP addresses, times, and descriptions as

described below:

Relay 1 Description & Relay 2 Description

This text is used to describe the function of the relays on the control page. This field can be up to 60 characters in length.

Ping IP Address Relay 1 & Ping IP Address Relay 2

This is the IP address that the X-600M will ping. This is typically the IP address of the device that will be re-booted upon failure (such as a server, router, computer, etc.). It could however, be the address of a device on the opposite side of a communications link. This is useful to auto reboot communications devices such as CSU/DSUs, satellite modems, routers, etc.

Successful Ping Period

This is the time interval (in seconds) between successful ping requests. This time can be set from 1 to 60000 seconds (1000 minutes or 16.666 hours).

Unsuccessful Ping Period

When ping requests fail (no response from device), it may be desirable to begin pinging at a shorter time interval. This allows the X-600M to determine in less time that the device is not functioning. After each unsuccessful ping, the X-600M will wait this time interval (in seconds) before the next ping attempt. This time can be set from 1 to 60000 seconds (1000 minutes or 16.666 hours).

Ping Delay After Reboot

When the X-600M is first powered, it will wait this time interval (in seconds) before beginning to ping the device. This time delay allows the device to boot before being pinged. This time can be set from 0 to 60000 seconds (1000 minutes or 16.666 hours).

Reboot Options

This parameter defines how the device will be re-booted. This is determined by the way X-600M is connected to the device. There are several options for connection. Three reboot methods are discussed here which will help in understanding of how reboot options should be set.

Reboot Method #1: Connect the X-11s in series with the power source of the device. By doing this, the X-600M can switch the device on and off by switching the power to the device on and off.

Reboot Method #2: Connect the X-11s in parallel with the reset switch of the device. With this approach, X-600M re-boots the device by momentarily closing the reset switch. This has the advantage of being less “hard” on the device that is being controlled than switching the power on and off.

Reboot Method #3: Some devices have on/off switches that will remain in the on or off position and other devices have momentary power buttons. Devices with momentary power buttons usually will not turn on after power is applied until a user presses the power button. In this case, simply controlling the power to the device will not work for reboot because once the device is

off, it will not come back on until the power button is pressed (even after power is restored, pressing the button is required). X-11s can be wired in parallel with the power button and can momentarily close the power button to turn the device on or off.

With the above reboot methods explained, each option in the Reboot Options drop-down list will be discussed.

-pulse off X secs- This option is usually used for method #1 described above. In this case the power to the device is wired in series with the relay. Common and Normally Open contacts should be used. When this option is selected, the X-600M will automatically turn on the relay when it is first powered. The Normally Open relay contacts will be closed and the device is powered on. When the device needs to be re-booted, the relay contacts will be pulsed off for the time duration specified in *X* (see above) seconds. This option does not use parameters *Y* or *Z*.

-pulse on X secs- This option is usually used for method #2 described above. In this case the reset button is wired in parallel with the relay. Common and Normally Open contacts are used. When the device needs to be re-booted, the relay will be pulsed on for the time duration specified in *X* (see above) seconds. This option does not use parameters *Y* or *Z*.

-pulse on X secs, off Y secs, on Z secs (without pp)- This option is usually used for method #3 described above. In this case the power button is wired in parallel with the relay. Common and Normally Open contacts are used. When the device needs to be re-booted, the relay will be pulsed on for *X* (see above) seconds. After the first pulse, the relay will stay off for *Y* seconds, and then pulse on for *Z* seconds. The purpose for the first pulse (*X*) is to turn the device off. Usually this requires holding the power switch for 5-10 seconds. Once the device is off, there is a delay before turning the device back on. This delay time is specified in parameter *Y*. Finally the device is turned on once again by applying a second pulse (*Z*) to the power switch. The second pulse usually does not need to be as long as the first. The notation without pp means without power-up pulse. The power-up pulse is explained in the next paragraph.

-pulse on X secs, off Y secs, on Z secs (with pp)- This option is identical to the option above, but with one exception; it pulses at power-up (with pp). If the X-600M loses power, it is assumed that the device which the X-600M controls has also lost power. When the power is restored, the device will not come back on without some help. When this reboot option is selected, the X-600M will automatically power the device on each time power lost and restored. It does this by waiting *Y* seconds after power-up and then pulsing *Z* seconds. After the pulse to turn the device on, the X-600M will allow the device to boot and begin its normal ping algorithm.

X

Pulse Time 1 (in seconds). See “Reboot Options” below for details. This time can be set from 1 to 60000 seconds (1000 minutes or 16.666 hours).

Y

Pulse Time 2 (in seconds). See “Reboot Options” below for details. This time can be set from 1 to 60000 seconds (1000 minutes or 16.666 hours).

Z

Pulse Time 3 (in seconds). See “Reboot Options” below for details. This time can be set from 1 to 60000 seconds (1000 minutes or 16.666 hours).

Failed Pings Before Reboot

The device will be re-booted after this number of consecutive ping failures. This number can be set between 1 and 255.

Max Reboot Attempts

After the device has been re-booted this number of times without any successful pings, it is assumed that there are problems with the device and X-600M will no longer attempt to reboot the device. At this point, the X-600M will leave the device on but will disable the auto reboot feature. The auto reboot feature will remain disabled until a user enables it through the control page or the X-600M is powered down and powered up once again. This number can be set between 1 and 255.

View Reboot Page

Once you have completed these steps, type in the X-600M's IP address (i.e., 192.168.1.2). You can now view the ping failures, reboot attempts, and toggle the auto reboot feature for a device(s). You can also manually reboot a device directly from your reboot page.