A Quick Start Guide to using Universal Powerline Bus devices

Introduction

Universal Powerline Bus (UPB) is a state of the art home automation control system that uses the existing AC powerline within your home to carry control signals. Using the existing AC powerline means that you, the user, don't need to add any additional wiring to your home in order to use UPB.

However, UPB is a very sophisticated, very flexible, and very powerful system. Due to the power of the system, users may find the system to be confusing and difficult to setup at first, but after a little experience, the logic of the system's design becomes evident. This document is meant to help the new user get started with UPB quickly.

The Basics

All UPB devices have to be set up with some fundamental information. The items that can be configured include:

- *Unit ID*
- *Network ID*
- *Network Password*
- *Network Name*
- *Links*
- *Other information*

UPB devices all work on a concept called "Links". Many of you are familiar with scenes – links are very similar to scenes. Each UPB device can be associated with multiple links, meaning that the device can participate in multiple scenes. If a device receives a Link Activate UPB command, and the device is associated with that link, the device will take an action based upon its programming. While devices can be controlled via their Unit ID, the real power of UPB is in the Links. We'll come back to links in a minute.

Each UPB device must be programmed with a Unit ID. The unit ID will have a value between 1 and 250. Units out of the box from the factory will have a Unit ID assigned that equals the manufacturer's product ID. For example, all Web Mountain appliance modules out of the box will have a Unit ID of 5. Another example: all Web Mountain lamp modules out of the box will have a Unit ID of 1. In normal operation, a Unit ID will have little meaning, as the device will be used mainly to respond to Links. However, in the event that the user wants to program a specific device with configurations other than the default, the available programming tools (to be discussed later), will need unique Unit IDs. We will discuss programming shortly.

Each UPB product must also have a Network ID. When control signals are sent out on the powerline, part of the signal is the Network ID. Only devices that have that specific Network ID will respond to the signal and take the appropriate action. In real life, it is

expected that a Network ID will correspond to one home. Adjacent homes should use different Network IDs, in order to prevent signals in one home from controlling devices in the next door house. The appropriate range for Network IDs is 1 – 250, with the default Network ID out of the box being FF (hex) or 255 decimal.

Each UPB product must also have a Network Password. In order to program a device or change its programming, you must know the appropriate Network ID, and then the appropriate Network Password. If two homes side by side have the same Network ID, but different passwords, then users in both homes will be able to control devices in each home, but they can't program devices in the other home, only their own. Again, this highlights the importance of using different Network IDs for adjacent homes. The Network Password is a four character alpha-numeric password, with each character allowed to be in the range of 0 – F (hexadecimal). The default Network Password out of the box is 1234 (hex).

While the network name has little importance, it is a means of determining which network is being used, especially in the case of a multi-network system. The default network name out of the box is New Network Name. However, the Network Name is not used as a primary means of identification, and has little importance.

UPB devices are also programmed for a room name, and a device name. The room name is important within various controller environments, as it organizes all devices according to rooms. However, it is not important for manual setup. The device name merely gives the user the ability to name a device so that it is easily understood what the device does. For example, rather than being named New Lamp Module, the module can be named bedside table lamp.

Programming:

UPB Devices provide significant flexibility in features and functionality. These devices have the ability to be programmed for many different capabilities. Programming can be accomplished in many different manners. Some of these methods will provide only basic programming functions, while others allow you to configure all programmable parameters of UPB devices.

The different programming methods are as follows:
- Manual (using the switch and multi-button controller without any computer assistance – this is the most limited programming interface)
- Client PC (using a CD and PC Interface Module – PIM – this provides access to all functionality, but is a very complicated user interface). As an example, the switch can be programmed to be on / off – no dimming. Another example – the dimming ramp up time can be programmed. The default is very fast ramping from no light to full intensity when you tap the rocker once. However, this can be programmed to be multiple minutes, so for instance, you could program a light when pushed to turn off, to be completely dark five minutes later, which would be useful for a "Bedtime" scene.
- WMT NetPlace Server based. This uses the WMT NetPlace dedicated server / controller which is accessed via a web browser on any PC on the local area network. This approach provides access to all functionality from a very easy user interface.

Manual Programming:

The Wall Switches will work with the 6 button Multi-Button Controllers "right out of the box" using the default settings.

The ON Button will fade all of the Wall Switches to 100% (full intensity).

The A Button will fade all of the Wall Switches to 80%...

The B Button will fade all of the Wall Switches to 60%...

The C Button will fade all of the Wall Switches to 40%...

The D Button will fade all of the Wall Switches to 20%...

The OFF Button will fade all of the Wall Switches to 0% (off).

The UP Button will brighten all of the Wall Switches...

The DOWN Button will dim all of the Wall Switches...

These are the default "scenes".

The User can override the defaults and create individual "scenes" by setting each of the Wall Switches to the desired Levels for the scene and then pressing the desired Button (A,B,C, or D) five times quickly...

The lights should flash and the Button should blink to indicate that all devices "learned" the new scene.

The User can remove a Wall Switch from a particular "scene" as follows: Tap its Rocker Switch five times quickly... The Wall Switch should blink green...
Tap the Button on the Multi-Button Controller ten times quickly... The
Light should flash and the Button should blink to indicate that the Wall Switch was removed from that "scene"...

The user can add a Wall Switch to a particular "scene" as follows: Tap its Rocker Switch five times quickly... The Wall Switch should blink green... Tap the Button on the Multi-Button Controller five times quickly... The lights should flash and the Button should blink to indicate that the device has been added to the scene...

Client PC Based Programming:

To do client PC Based programming, the user plugs a Personal Computer Interface Module (SPIM) into a wall outlet, then connects it to the PC serial port using a serial cable. Then, the user runs the Upstart Tool (which can be downloaded from www.webmtn.com), which then brings up the user interface. Individual modules are put into program mode, the Tool recognizes them, and allows the user to program them. This user interface has not been designed for the average consumer, rather for professional installers. A user's manual for the Upstart tool can also be downloaded.
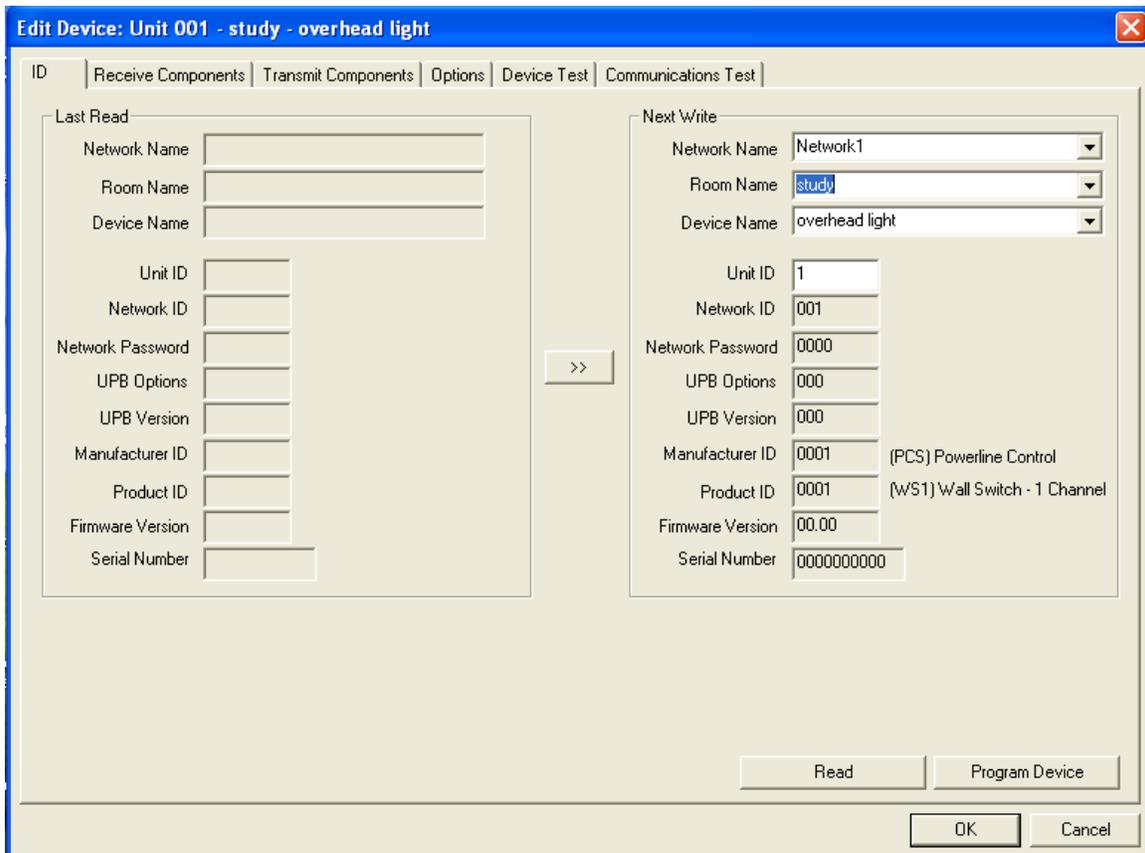
Screen shot of Upstart showing details of a programmed wall dimming switch

WMT NetPlace Server Based Programming:

In this situation, the user has installed a Web Mountain Technologies NetPlace server. The user has again plugged a PIM module into a nearby receptacle, and has connected it to the serial port on the NetPlace server. Once this is accomplished, the user goes to a client PC (any device with an IP connection and a browser), accesses the NetPlace server using their web browser (IE, Netscape, etc), and navigates to the programming section under Control Panel called Home Control. This user friendly, simple to use interface then walks the user through the programming of the selected device. Each NetPlace server is shipped with a User's Manual on CD – refer to this User's Manual for more details.
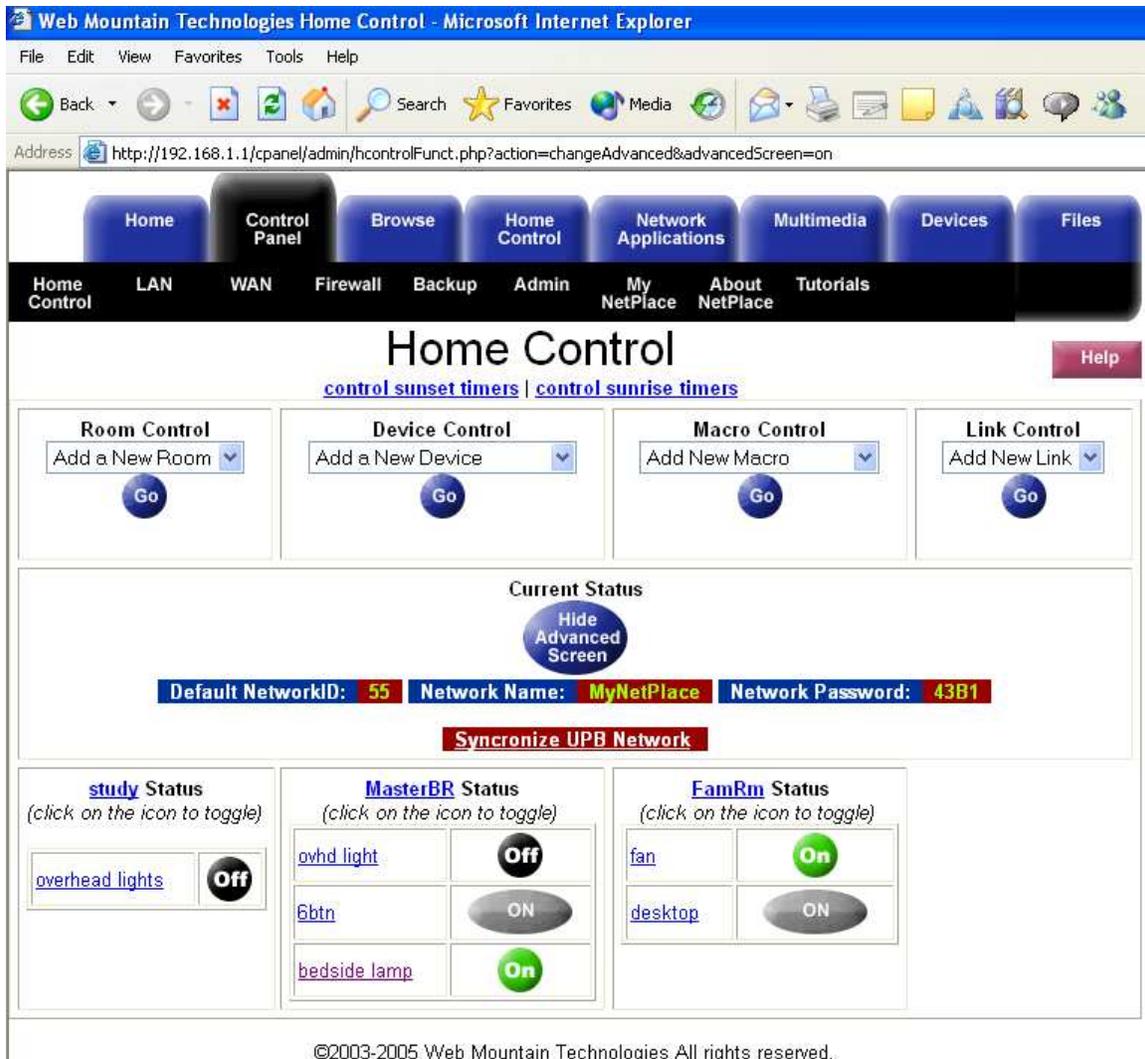
A screenshot showing the NetPlace user interface with multiple devices installed.

General

When programming devices using Upstart or Netplace, a specific process should be followed:

1. Select a Network ID, Network Password, and Network Name. Enter into the programming tool (Upstart or NetPlace).
2. The programming tool, whether it is Upstart or NetPlace, will use the above settings to start the programming process for individual devices.
3. When a device is added to the existing UPB network, it must first be put into Setup Mode. The following describes how to put devices into the setup mode:
    a. Dimming switches – tap either the bottom or top rocker five times rapidly – the LED on the unit will start flashing green and the load that is connected to the switch will flash on then back off
    b. Plug in modules (Lamp, appliance, IO, etc) – using a sharp instrument such as a pencil, tap the pushbutton switch on the side of the unit five times rapidly. The

LED on the unit will start flashing green. Lamp modules will cause their lighting load to flash on, then go back off.

c. Six and eight button controllers – push and hold the top and bottom switches (On & Off for the six button and E and L on the 8 button controller) until the LEDs start to flash.

4. When a device is added to the existing UPB network by the programming tool, the UPB device will be assigned a Unit ID, and will also be programmed with the selected NID (Network ID), Network Password, and Network Name.

5. The programming tool will then provide you the opportunity to modify the settings of the device, for example, fade rates on lighting control devices, such as lamp modules and wall switches.

Links

Links are the cornerstone of the UPB system. Most receiver devices can be members of 16 different links. A receiver would be a dimming wall switch, or lamp module. Transmitting devices, such as multi-button controllers, will have one link associated with one button or action. Links are programmed into each receiver device such that the receiver knows what action it is to take when it receives a Link command. The most common Link commands are activate and deactivate. Link numbers can range anywhere from 1 – 250.

The Link table for our test device in Upstart.

Example:

A wall switch is programmed to respond to Link 35 Activate by turning on to an intensity of 75% with a fade rate of 10 seconds. A 6 button controller has its button "A" programmed to send Link 35 activate when it is pressed once. Pressing the A button once will cause the wall switch to go to 75% intensity in 10 seconds. In addition to the single tap operation, Button A could also be programmed to send out Link 35 Go to 100% when it is double-tapped. In this case, double tapping Button A would cause the wall switch to go to full intensity at the default fade rate.

Summary

With this brief introduction, you are now ready to start using and enjoying the reliability and performance of UPB. If you need further help, please go to www.webmtn.com or contact us at info@webmtn.com.