



# X10 Master Control

V1.0

for OS-9/48000 and K-Windows

# **X10 Master Control**

**V1.0**

# Introduction

## Minimum System Requirements:

- MM/1 Extended with at least 3M of Memory
- OS-9/68000 V2.4 or greater
- K-Windows Edition #51 or greater
- X10 Home Control Interface

I am not sure if 3M is required, if any owner has the capability of testing this program on a 1M MM/1 I would appreciate hearing the results of that test. Additionally, X10 Master Control may work on previous Editions of K-Windows, but you should upgrade to the latest version, available from Blackhawk Enterprises. The X10 Home Control Interface communicates via a 600 bps serial connection. Since the device /t0 on a 68070 based MM/1 does not support this baud rate and most users use /t2 for the mouse, you will either have to have a standard Serial Paddle on device /t1 on the Main Board, or on either device /t3 or /t4 supported by the I/O Board. On a 68340 based MM/1a, any serial device from /t0 to /t5 will work just fine.

You will also need remote control modules. Standard *Plug 'n' Power* modules from your local Radio Shack will work just nicely. Or you can order X10 modules from various sources. See the references at the end of this document.

This version does not have all of the functionality I had originally planned for it to have, I wanted to make sure there was a version to release at the 3rd Annual "Last" CoCoFest in Chicago. For this reason, any purchaser of V1.0 of X10 Master Control will automatically receive a FREE upgrade to V1.1 as soon as it is ready. I hope to have something ready by the end of June, 1994.

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## The X10 Home Control Interface

This software package was designed to allow the MM/1 owner (and later any OSK user) to communicate with an X10 Home Control Interface (X10 HCI) using their computer. The X10 HCI is an intelligent remote device controller which sends commands to remote modules using your standard house AC wiring. These remote modules can then activate or deactivate various AC powered devices, lights, etc. The X10 *piggy-backs* a harmless signal on the downwave of the AC modulation which can then be detected by remote modules.

The X10 HCI has a face panel which has eight rocker arm switches numbered 1-8. These switches can be used to manually turn ON or OFF remote X10 Unit ID's 1-8 of the current *Base Housecode* contained in the X10 HCI's memory. These are called *manual direct commands*. You can also use direct commands issued to the X10 HCI via a serial communications port on your computer and the appropriate software. These commands act just like the rocker arm commands do but are more powerful as any or all of the 16 possible Unit Ids can be acted on in any of the 16 possible HouseCodes. And not only does this method support ON and OFF commands to remote modules, it can also send a DIM command which will be acted on by those remote modules which support the DIM function.<sup>1</sup>

Using this connection you can also download to the X10 HCI's memory events known as *Timer Events*. These are events which are to take place some time in the future. They can be performed a single time or on a repetitive basis. There's even a *security mode* which turns remote modules on or off at a schedule which varies slightly to give the illusion of non-computer control. These Timer Events can act on the same set of remote modules the computer originated Direct Commands do, that is a total of 256 possible modules.

Once you have downloaded your Timer Events, the MM/1 can be disconnected from the X10 HCI. The X10 HCI, of course, has to remain connected to the AC line as that is where it sends its commands out! The X10 HCI supports a 9V battery for battery backup of Timer Events in case of power outages.

There is a wide assortment of remote modules available for virtually any purpose. You can completely automate your entire house with a single X10 HCI and the X10 Master Control program from ColorSystems.

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<sup>1</sup> Some modules like the heavy appliance modules do not support the DIM function and will ignore it.

## Installation

Copy the binary x10 to your CMDS directory. The following command which does this assumes that the floppy device descriptor which you use for Universal Format is drive /u0 and your hard drive is device /dd.

```
$ copy /u0/cmds/x10 /dd/cmds/X10
```

This is the only file on the installation disk required to use X10 Master Control. There are two other files provided for the convenience of *Desktop from Hyper-Tech Software* users, an AIF file and an Icon file. Copy these to the locations you prefer that these files reside in.

## User Configuration

Define the following environment variables:

**X10\_PORT** - Device name where X10 is connected, e.g., /t4. If you do not define this environment variable, the device /t3 will be attempted to be used. You can override the device with the "-l" (lower case L) command line option, discussed later.

**X10\_LOGFILE** - Pathlist to log file, e.g., /dd/usr/zack/sys/x10.log. If this environment variable is not defined, the pathlist /dd/SYS/X10/logfile will be used. If the /dd/SYS/X10 directory does not exist, in this case, or you do not have write access to the file X10 Master Control will exit with either a 216 or 214 OS-9 error depending on the specific situation.

If you have your system set up to use the Time Sharing Monitor controlling your System Console, then you will probably want to define these environment variables in your *.login* procedure file. If you do not have your system set up this way, that is, when your MM/1 boots up it goes straight to the "\$" Shell prompt on the /TERM device then you will want to define these environment variables in your */dd/startup* procedure file.

The following two commands will set up your X10 configurations such that device /t5 will be used to communicate with the X10 Home Control Interface and that the logfile used will be /dd/usr/joe/sys/x10.log:

```
setenv X10_PORT /t5
setenv X10_LOGFILE /dd/usr/joe/sys/x10.log
```

## **Starting X10 Master Control**

To run X10 Master Control in normal KWindows Menu mode just make sure the x10 program file is either already in memory via a load or link command or the program binary is available in the process's current execution directory. Start up the program by entering the following Shell command:

```
$ x10
```

To specify an alternate device other than the X10\_PORT device or the default /t3 device, specify the device like the following example:

```
$ x10 -l /t4
```

## **Hardware Configuration**

You will need a cable to connect the X10 to the MM/1 (or other OSK system after non-KWindows Interface version is completed). The cable must be in place and connected with the X10 plugged into the AC power outlet in order for the X10 Master Control program to function properly. The cable currently being shipped by Radio Shack with the X10 Home Control Interface is perfect for the MM/1, having a female DB9 connector for the computer side. It is a little short, just a couple of feet, but if the X10 HCI is close to the MM/1 no problem.

## Using the Program

V1.0 of the X10 Master Control program (X10) uses the “standard” K-Windows menu window, a la Mike Haaland’s cgfx.l for MM/1 and K-Windows. The menu bar contains a Close Icon and the menus *Files*, *View*, *Commands* and *Configure*. Clicking on the CLOSE icon will bring up a dialog box asking you if you are sure. Clicking in the Yes button will exit X10. Clicking anywhere else will close the dialog box and return to the program.

Under the Title Bar for the window is a ***Toolbar*** of fast action buttons. These are labeled *On*, *Off*, *Dim*, *Unit: n*, *House: X* and *Program*.

The rest of the window is an area labeled as the *Activity Log*. When the program first starts, an automatic log message indicating the *System Startup* event is logged and displayed in the Activity Log. As long as the program is running and the physical connection between the MM/1 and the X10 HCl stays in place, any rocker switch, direct command or timer event will be reported back to the Activity Log window. *(Log messages also get appended to the logfile specified by the X10\_LOGFILE environment variable.)*

## Menus

Here are the definitions of the menus and the items they contain.

### Files Menu

The Files Menu contains items which relate to various aspects of file access X10 supports. These items are as follows. The Menu items on the Files Menu are *Open*, *Save*, *Save As ...*, *About* and *Exit*.

#### Open

The function of this item is to load a list of X10 Timer Events from a disk file and download these Timer Events to the X10. It opens up a ***file picker*** window which lists all files in the current directory which have an “.x10” extension. Clicking on one of the filenames will cause the program to ask if you are sure you want to do this, as after the file is loaded, the current timer configuration in the

X10 will be automatically CLEARed and the timer events defined in the saved file will be downloaded to the X10 HCl.

This command also selects the config file as the current configuration. The name of the current configuration is displayed in the Title Bar area of the window next to the name of the program.

If you decide against selecting a file while the file picker window is being displayed, click in the file picker window's Close Icon to not select a file.

## Save

If there is a current selected configuration (*either by a successful Open or Save As ...*) the current timer configuration is saved to that file. The previous version of the file will be *silently overwritten*. If there is no current selected configuration, the *Save As ...* function is automatically called.

## Save As ...

First asks for a filename which it the saves the current timer configuration in. Enter just the name of the file. An ".x10" will be automatically added. The name of this configuration file is then selected as the current configuration.

## About

Displays a brief message along with copyright information for the program. You must click the mouse or press a key for the program to continue.

## Exit

Acts just like you clicked on the CLOSE icon.



## View Menu

The View menu is used to view some of the X10's current configuration. The items on this menu are *Modules*, *Timer Events* and *Clock & Housecode*.

### Modules

Not active yet. To be in V1.1. The intention here is to maintain a database of module *descriptions*, where the modules are located and what type of device they control.

### Timer Events

This Menu item will display, edit, clear and/or add timer events in the X10 HCl's Timer Event memory. See the section later in the manual on how to use this function.

### Clock & House Code

This function interrogates the X10 HCl for the its current time and base housecode and reports the results. Click in the OK button to close the window.

## Commands Menu

The Commands Menu allows you to send Direct Commands to the X10 HCl. The items on this Menu are *On*, *Off* and *Dim*.

### On and Off

The On and Off command look almost identical the only difference being in the title of the window. They display a dialog box which has *Click Boxes* for the 16 possible units. The *current unit* is selected by default. Select others by clicking on the click box or its label. De-select an item by clicking on the click box or its label. Select the HouseCode for the direct command by using the *Spin Box* for the HouseCode.

It displays the current house code to begin with. To advance to a higher HouseCode, click in the Up arrow on the right side of the box. To go down to a lower HouseCode, click in the Down arrow. Once you have selected the Units to turn on or off and what the HouseCode is to be, click on the OK button. To cancel the operation and do nothing, click in the Cancel button. For a quick way to affect ALL lights for the selected HouseCode, click in the All Lights button.<sup>2</sup>

## Dim

The Dim Command is similar to the On and Off commands except with the addition of a ***Slide Bar*** in the overlay window which you use to specify the intensity level of the Dim operation. *Grab* the Slide Bar *knob* with the mouse and *drag* it left or right. All the way to the left is minimum brightness and all the way to the right is maximum brightness. Select the Units and HouseCode as you did with the On and Off commands.

## Configure Menu

The Configure Menu deals with aspects of configuring the X10 HCl. The items on this Menu are *Set Base Housecode*, *Set Clock* and *X10 Diagnostic*.

### Set Base Housecode

Use this function to download a new Base HouseCode to the X10 HCl. A Spin Box is used for you to select which HouseCode to download. Click in the DO IT button to download it. Clicking anywhere in the X10 window ***off of*** the Set Base Housecode overlay window will close the overlay window and do nothing. **WARNING: Downloading a new Base HouseCode wipes out all Timer Events in the X10 HCl's memory!**

### Set Clock

This function will set the X10 HCl clock to the current time on your computer. The X10 HCl only knows what day of the week it is, what the current hour is and

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<sup>2</sup> Be careful with the All Lights button. It does not just turn on all the Click Boxes and waits for an OK, it does it's job as soon as you click on it.

what the current minute is. X10 determines the current system values for these and downloads these values to the X10 HCl.

## X10 Diagnostic

This item will tell the X10 HCl to run an internal diagnostic. **WARNING: Running an X10 internal diagnostic will wipe out the Base HouseCode and all of the Timer Entry's memory.** In fact, it leaves the Timer Event memory as very unpredictable. For this reason, when you perform this function, X10 automatically reprograms all of the Timer Events as being Cleared and resets the Base HouseCode to A, same as what it would be on Power Up.<sup>3</sup>

## Title Bar

Clicking in the Title Bar will display your copy's serial number.

## ToolBar Buttons

The buttons are intended as *quick action* style buttons. Some do not even ask for further information, they just do what you ask. When X10 is started, it asks the X10 HCl what its current Base HouseCode is. If one is not defined, the *Current HouseCode* is set to A. If there is a valid Base HouseCode in the X10 HCl, the Current HouseCode is set to that. The Current HouseCode is always displayed in the button "House: X", where X is the Current HouseCode, a letter from A to P.

There is also a Current Unit. It starts out now at three<sup>4</sup> and is displayed in the "Unit: n" button where n is a number from 1 to 16. The Current Unit and Current HouseCode play important roles in the other ToolBar Button functions.

## On

*Push this button to turn the module specified by the Current HouseCode and the Current Unit. Any X10 module which reacts to a standard On command will be*

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<sup>3</sup> I suppose an option to download the current configuration back to the X10 HCl after the Diagnostic finishes may be useful. Comments?

<sup>4</sup> Why 3? Why that is the module ID for my workroom ceiling light! :-)

turned on. No other question is asked, and any X10 HCl error is ignored. Since this is implemented as a Direct Command to the X10 HCl, the command will be logged in the Activity Log Screen and in the Activity Log File.

## Off

Functions identical to the On button except the X10 HCl command sent is the Off command.

## Dim

This command will send a Dim command to the X10 module addressed by the Current HouseCode and Current Unit. An overlay window with a Slide Bar in it will pop up for you to indicate what intensity you want. Once the level is set, click in the DO IT button. If you decide not to do the DIM function, just click the mouse anywhere *off of* the DIM's Overlay Window.

## Unit: n

Press this button to change the Current Unit. An overlay window will open up with one Spin Box control in it. The Current Unit will be displayed. Click the up or down arrows to move to the selection you wish to change the Current Unit to. Once the new selection has been made, click in the DO IT button. If you do not change the current selection and you click on the DO IT button, nothing happens. Alternatively, if you decide not to change the Current Unit, just click the mouse anywhere *off of* the Change Current Unit's Overlay Window.

## House: X

This button is used to change the Current HouseCode. It works very similar to the Unit button just described, but it is used to select a new Current HouseCode. *(Remember, you can send Direct Commands to an X10 for any of the 16 units for any of the 16 HouseCodes, giving you control over up to 256 modules from your MM/1 monitor screen.)* If you do not change the current selection and you click on the DO IT button, nothing happens. Alternatively, if you decide not to change the Current House Code, just click the mouse anywhere *off of* the Change Current Unit's Overlay Window.

## Program

This button calls the same function as the View Timer Events function calls. A discussion on this function follows.

## Using the Programmed Events Window

This window is displayed when you select either the View Menu's Timer Events item or if you click on the Program quick action button. With this window you can display, edit, clear and/or add timer events in the X10 HCI's Timer Event memory. When you enter this function, you will shown the information for the first timer event. If there are no Timer Events in the X10's memory, there will be an *empty* entry display. At the lower right area of the window are six **action buttons**. If there are no Timer Entries, the Next, Prev, Clear and Edit buttons are *greyed* indicating they will not function (*since there are no events for them to operate on*). Once you have downloaded one or more Timer Entries by clicking on the New button and completing the Download Programmed Even function with an OK, the other buttons will be activated. The functions performed by these action buttons are as follows.

### Next

Cycles the display to show the information on the next timer event in memory. This may or may not be the next sequential number for the Event Number, as events can be removed and these "holes" later re-used. If you click on the Next button while the last entry item is being displayed, the program will cycle back around to the first item in the list.

### Prev

Intended to act as Next, but in the reverse direction. This function is not implemented in V1.0 but planned to be in V1.1.

## Clear

Pushing this button will initiate a process which will clear the currently displayed Timer Entry from the X10 HCl's memory. An overlay window will ask you if you are sure you want to clear the current Timer Entry. If you click on the button labeled Yes, the entry will be cleared from the X10 HCl's memory. If you click anywhere else on the screen, the function will be ignored and not acted upon. BE CAREFUL! IF YOU CLICK IN THE YES BUTTON, THE X10'S MEMORY FOR THAT ITEM IS DELETED THEN AND THERE, YOU CANNOT RETRIEVE IT. If you have the current configuration saved, you can restore it with a Files Open function. Or you can manually re-enter the item with the New button described later.

If the Timer Event being cleared is the last one in the Timer Event memory, the display will show an *empty* event after the clear completes, and the Next, Prev, Clear and Edit buttons will be de-activated.

## Edit

This button allows you to change any and everything about the current displayed Timer Entry. The only thing you cannot change is the entry number. If you do not wish to make any change, even though you may have changed certain items, you can click in the Cancel button. If you click in the OK button, the current item is reset back to what it was before clicking on the Edit button.

## New

Use this button to download a new timer entry to the X10 HCl. When you push it, the first available timer entry slot in the X10 HCl memory is found and the window is reset to default values. The mode is selected as Normal, no days are selected, the hours and minutes are set to the current system time (not X10 HCl time), the House Code is set to the Current Housecode, the function is set to On, and the Current Unit is the only unit selected. You can then change any or everything. If you click in the Cancel button, nothing is done and the last displayed timer entry is re-displayed. If you click on the OK button, the timer entry is downloaded to the X10 HCl then and there. The last selected timer entry is re-displayed.

## Quit

Use this button to exit the Timer Entries window and return to the menu mode.

## Using the New and Edit Functions

While in the New and Edit function, you can modify any and all items by just clicking the mouse. Items which are related to each other are arranged in groups and surrounded by a black box.

First is the *mode* of the Timer Entry. One and only one of the four possible selections can be made. To select a different one, just click in the item's click box or somewhere on its label. The item which was previously selected will be de-selected and the new one will be selected. The description of the different modes are as follows.

**Normal** - Perform the event on a weekly cycle at the time specified on the days specified.

**Security** - Same as Normal, but the actual time the event occurs is randomized a minute or two before or after the programmed time.

**Today** - Event occurs only today and is cleared after midnight tonight.

**Tomorrow** - Event occurs only tomorrow and is cleared midnight tomorrow night.

Next area is the Days selection. One or more days can be selected. To de-select a selected day just click on it again. To select ALL days, click in the EVERYDAY button. For the Normal and Security modes at least one day **must** be selected.<sup>5</sup>

In the next area are three *Spin Boxes* to select the time of the event, hour and minute, and the Housecode of the event. To increase a value displayed in any Spin Box click in the arrow button pointing up. To decrease a value click in the arrow button pointing down. To change values quickly, just hold the mouse button down.

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<sup>5</sup> Look for two more buttons in the Day Selection box, WEEKDAYs and WEEKENDs.

Values in all of the click boxes will *roll over* when hitting the minimum or maximum. Adjust the values in these Spin Boxes to the value you wish to be downloaded.

Next area is the function to be performed. Only one function may be selected. If you select the Dim function, a ***Slide Bar*** will be displayed for you to select the desired intensity level. Select the Dim intensity by clicking on the slide bar's *knob* and *dragging* it to the left or right. You can alternatively click on the right arrow to increase or the left arrow to decrease the intensity level. Since the X10 HCl only supports 16 discrete levels of intensity a drag operation, when completed, will "snap" to the nearest intensity level. *(When you Dim a light with this command, the intensity level is remembered and the next time you do a Dim command, the Slide Bar starts out at the last intensity level you Dimmed a light to.)*

On the right side is the selection of Units to act on for the Timer Event. Select or de-select units by clicking in the box on the label. Any or all Unit IDs may be selected. To select ALL units, click in the ALL UNITS button.

## Support

If you have problems with X10 Master Control or have some constructive criticism feel free to contact me by whatever means you wish. If you want to call me on the telephone, weekday evenings until around 11PM Eastern or Weekends are the best times to call. Or you can send me electronic mail at any of the addresses listed below. If you have the patience, you can send me a letter via USnail Mail.

**ColorSystems**

**P. O. Box 540**

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**Delphi: COLORSYSTEMS**

**CompuServe: 71532,1555**

**Internet: COLORSYSTEMS@DELPHI.COM**



### References:

For MM/1 Hardware, hardware supplies and System Software contact David Graham at:

Blackhawk Enterprises  
P. O. Box 10552  
Enid, OK 72706-0552  
(405) 234-2347

For a complete line of X10 products call or write for a free catalog at:

Home Automation Laboratories  
5500 Highlands Pkwy, Suite 450  
Symrna, GA 30082-5141  
1-800-HAL-SERV

The X10 Home Control Interface is also available via Tandy Consumer Mail. Go to your nearest Radio Shack and ask to order catalog number 61-2617. (Page 139 in the 1994 catalog.) All Radio Shacks carry a line of remote X10 modules also.

# ***ColorSystems***

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