TRS-80®
COLOR COMPUTER
CAT. NO. 26-3142
**APPLIANCE AND
LIGHT CONTROLLER**

plug 'n power

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TRS-80 Color Computer
Plug 'n Power
Appliance/Light
Controller

Radio Shack ®

Important Information

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, you should try to correct the interference by one or more of the following measures:

- Reorient the antenna of the receiver experiencing the interference.
- Relocate the controller with respect to the receiver.
- Move the controller away from the receiver.
- Plug the controller into a different outlet so that controller and receiver experiencing the interference are on different branch circuits.

If necessary, consult the dealer or an experienced radio/television technician for additional suggestions. You may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the United States Government Printing Office, Washington, DC 20402, Stock No. 004-000-0035-4.

TABLE OF CONTENTS

10 REQUIRED EQUIPMENT

- TRS-80 16K Color Computer
- Television (color for best results)
- One Joystick
- Modules (quantity and type are dependent upon which appliances and lamps you wish to control)
- A 9 volt alkaline battery

BEFORE YOU BEGIN

At this point you need to do the following:

- Decide which units (lamps and appliances) you wish to control.
- Make a list of the units, where they are located, and specify any times to come on or go off.
- Purchase the correct type and quantity of modules necessary to control these units. See Appendix A under "Diagram of the Plug 'n Power System" for types available.

INTRODUCTION

Figure 1 shows the components of the Color Computer Plug 'n Power System. The complete system allows the Color Computer to control lights and appliances throughout the home and gives a detailed graphical representation of the home under control.

One of the main features of the system is the ability to transfer all data and times that are programmed, from the computer to the Controller.

The Controller is capable of storing all the data necessary to control the home, leaving the computer free for other uses. Battery backup is available to prevent loss of stored information in the event of a power failure. The keyboard on the Controller also allows manual control of up to 4 modules.

HOUSE WIRING

GAME/TV SWITCH

CASS PORT

ROM PACK

BATTERY COMPARTMENT

CONTROLLER

JOYSTICK

COLOR COMPUTER

PLUG 'N POWER LAMP MODULE
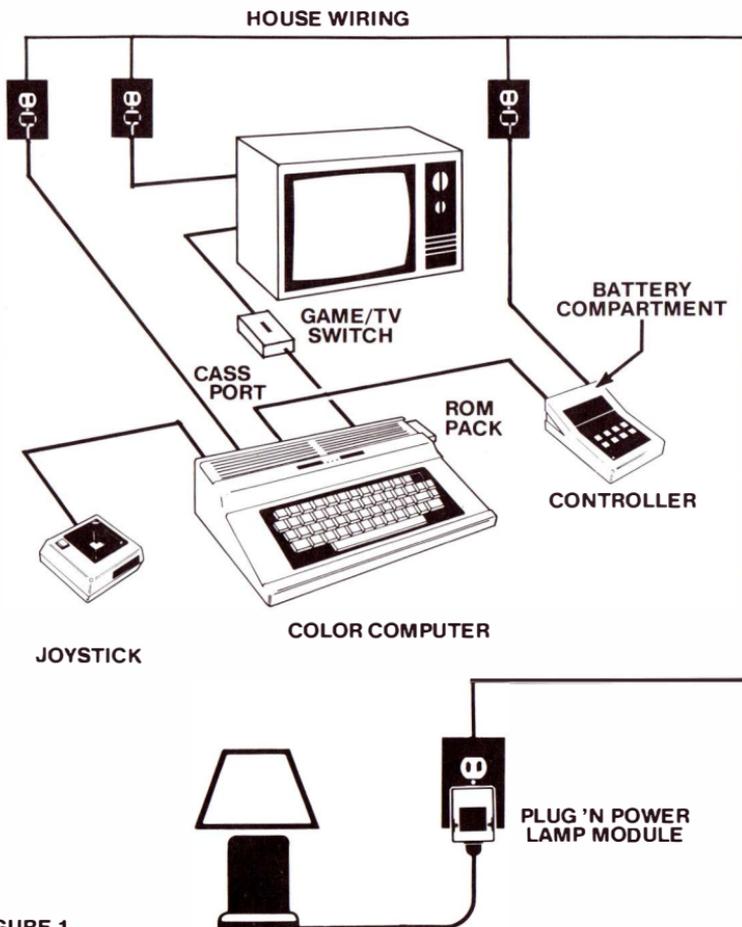
FIGURE 1

Before operating your Plug 'n Power Controller with the Color Computer, you should first check each Plug 'n Power module manually to assure they work correctly. The four main types of modules which you will use to control your home are:

Lamp Dimmer Module (Catalog Number 61-2682): This should be used to control incandescent lights rated up to 300 watts. Lights can be brightened and dimmed with this module.

Appliance Module (Catalog Number 61-2681): This will operate appliances rated up to 15 amps for resistive load or a motor load of ⅓ HP. It can also be used for incandescent lights up to 500 watts, but these lamps cannot be dimmed or brightened.

Universal Appliance Module (Catalog Number 61-2684): This is for appliances with a 3-prong grounded plug. Ratings are the same as the appliance module above except that the wattage used with a television should be up to 400 watts ONLY.

Wall Switch Module (Catalog Number 61-2683): Replaces existing wall switch to control outside or ceiling lights of up to 500 watts, incandescent only.

Appendix A under "Diagram of The Plug 'n Power System" has diagrams of other components which can be used with the Controller.

To begin the manual testing of a module, first plug the power cord of the Controller into a 120 volt outlet where you intend to leave it. When you first plug in your Controller it is set to housecode A.

TO CONTROL LAMPS

Make sure the lamp is turned on and plug the lamp into the Lamp Module (incandescent lamps only). Set the housecode on the Lamp Module to A and the unit code to 1. Plug the Lamp Module into a 120 volt outlet where you intend to leave it.

SET HOUSECODE TO A → ← **SET UNIT CODE TO 1**
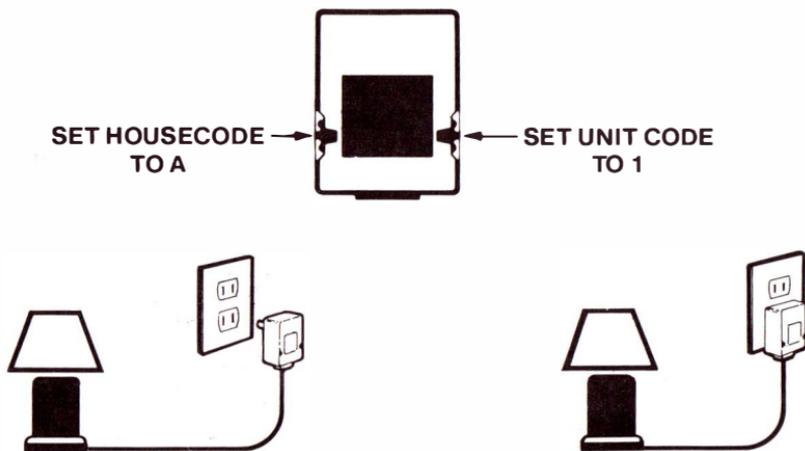
Press the top "1" button (for unit code 1) on the Controller and the lamp will go on. Press the bottom "1" button (for unit code 1) and the lamp will go off. Refer to Appendix B, Troubleshooting, if this does not happen.

Continue this process for any other Lamp Modules by setting the housecode to A and a different unit code (between 1 and 4). If two or more modules are set with the same unit code, pressing the top number on the Controller will cause these lamps to turn on simultaneously. The number pressed must correspond to the unit code set on the modules.

NOTE: The red light on the Controller lights up when it sends a signal.

TO CONTROL APPLIANCES

Make sure the appliance is turned on and plug the appliance into the Appliance Module. Check the ratings for the appliance to assure you are using the appropriate module. Set the housecode on the Appliance Module to A and the unit code to 2. Plug the Appliance Module into a 120 volt outlet where you intend to leave it.

SET HOUSECODE → TO A   **← SET UNIT CODE TO 2**
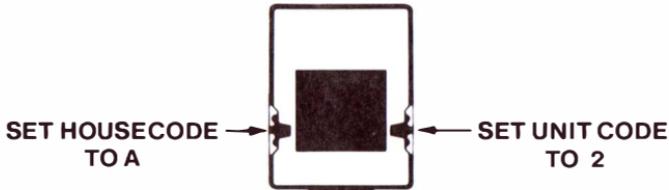
Pressing the top "2" button (for unit code 2) on the Controller will turn on the appliance. Pressing the bottom "2" will turn the appliance off. Refer to Appendix B, Troubleshooting, if this does not happen.

Continue this process for any other Appliance Modules by setting the housecode to A and a different unit code (between 1 and 4). If two or more modules are set with the same unit code, pressing the top number on the Controller will cause these appliances to turn on simultaneously. The number pressed must correspond to the unit code set on the modules.

NOTE: After verifying that the modules work manually from the Controller, in their desired locations, you are now ready to program these modules from your Color Computer. You may first wish to refer to Appendix A for information on other types of modules you could control.

1. Connect the Color Computer to the TV and move the antenna switch-box control to COMPUTER (or GAME).
2. Install a 9 volt alkaline battery in the battery compartment of the Controller. This compartment is located at the top and can be opened by sliding it upward.
3. Plug the Controller into a 120 volt outlet, where you intend to leave it.
4. Connect the Controller to the computer via the computer's cassette port.
5. Plug the joystick into the right jack located at the back of the computer.
6. Before inserting or removing the program pak make sure the computer is OFF. Failure to do so could result in damage to the program pak. Insert the program pak, label side up, into the slot on the right side of the computer. Press firmly until it securely engages, but do not force it.
7. Turn on the TV and tune it to channel 3 or 4. Be sure the switch at the back of the computer corresponds to the TV channel selected.
8. Turn on the computer.

NOTE: If you completed step number 2 above, then you have a battery backup system. If a power failure should occur, the Controller will run on the battery backup. This will be indicated by the flashing of the red light approximately every 5 seconds. If the Controller is without power for more than approximately 100 hours you will lose all the program times you have entered. It is a good practice to remove the battery if the Controller is not used for a long period of time. Replace the battery at least once a year.

The first screen asks you to choose between the joystick or the keyboard. Operation of the program is expected to be mainly with the joystick, but the four arrow keys and the ENTER key may be used as an alternative. The joystick will be used during this tutorial.

The program is divided into three broad sections:

Install: This deals with the setting up of the relevant graphics of your home. The time and base housecode are set here.

Operate: Allows you to choose any part of the home followed by a particular unit to operate. The unit chosen may then be turned on or off immediately (now), or programmed to turn on or off later.

Demo: Automatically steps through several screens showing typical rooms already set up to show lamps and appliances. You can stop at any screen and practice at controlling lamps/appliances without actually sending signals to Plug 'n Power modules.
It is recommended that you choose this "Demo" mode first to familiarize yourself with the system.

DEMO MODE

At this point press "D" on the keyboard for a demonstration of the system. After pressing "D" on the keyboard, the screen looks like that shown in Figure 2.

After pressing the joystick button, the screen changes to that shown in Figure 3.

This is a graphical representation of a house layout showing various rooms and asking you to **PLEASE WAIT**. If you watch the screen for a few seconds you will see that it changes to show the outside of the house and various rooms labeled as Kitchen, Living Room, Master (Bedroom) and then back to the Multi-Room screen. The screens will continue to cycle like this until you press the joystick button. See Figures 4 thru 7.
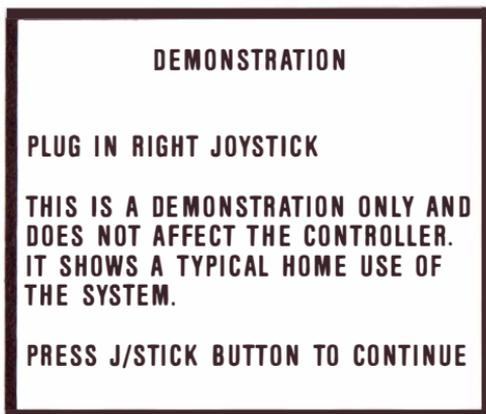
FIGURE 2
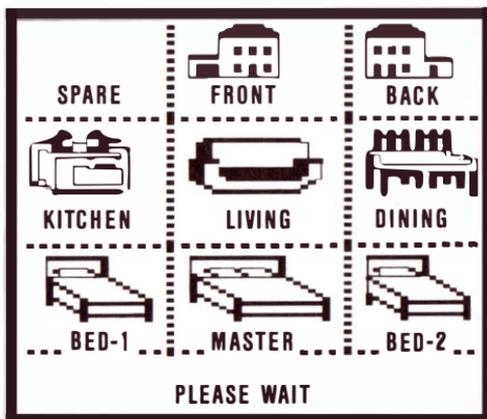
FIGURE 3

FIGURE 4

FIGURE 5

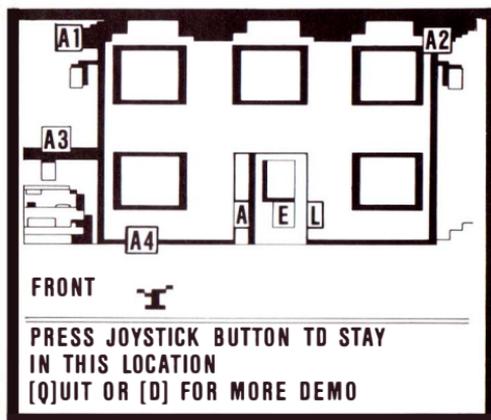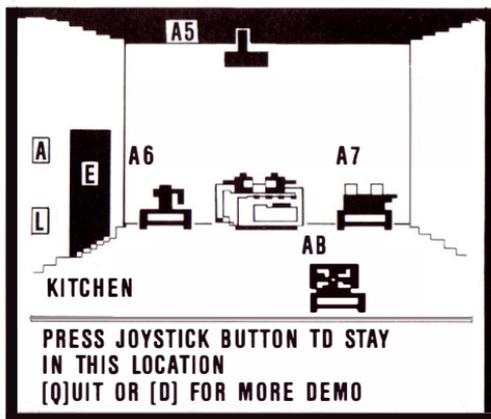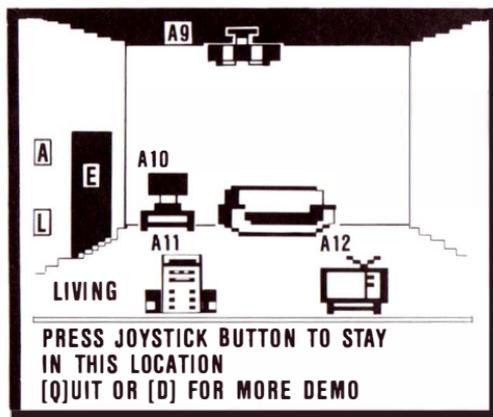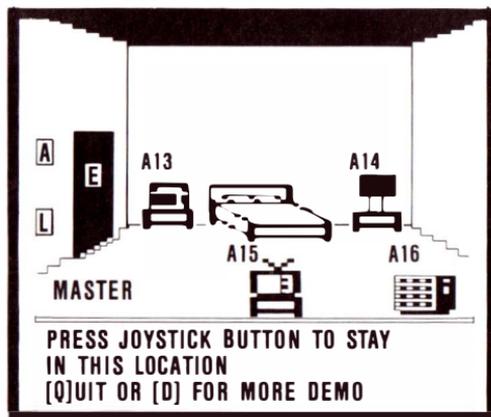
FIGURE 6

FIGURE 7

Wait until the display shows one of the rooms (e.g. Living Room) and then press the joystick button. The screen will then look like that shown in Figure 8. This is a typical Living Room with lamps and appliances installed for the purpose of this demo. In practice you can install your own graphic symbols to represent what you want to control. (More will be said of this once we have finished the Demo Mode.)
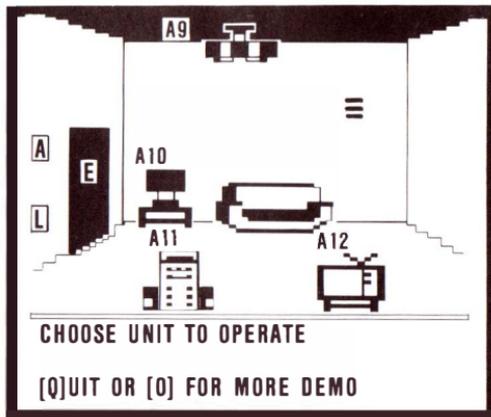
FIGURE 8

The picture in Figure 8 asks you to choose the unit to operate. This gives you the opportunity to practice at controlling lights and appliances without actually sending out signals to the Plug 'n Power modules. Use the joystick to position the cursor over the lamp or appliance you wish to operate. You don't have to be too accurate; notice that the unit # changes to reverse video when you get close. Once you have selected a unit (e.g. Lamp A10) press the joystick button. Notice the choices at the bottom of the screen. Choose **SKIP** if you chose the wrong unit to operate. Otherwise use the joystick to place the cursor under the word **ON**. Press the joystick button. You are then asked **DO YOU**

WANT THE LIGHT ON FULL/DIMMED. Use the joystick to place the cursor under **FULL** and then press the joystick button.

Place the cursor under **NOW** and press the joystick button. Notice that lamp A10 is now on. Practice turning on and off other lamps and appliances this way. (Remember you're not actually turning anything on or off while you're in the Demo Mode).

If you choose something other than **NOW** (e.g. **TODAY, TOMORROW, EVERYDAY, SPECIFIC-DAYS**) you will be asked to choose the time and the days. You are now programming the time that you want something to happen. More will be said on this in the section which deals specifically with operation.

If you now use the joystick to choose **E** for exit, the screen changes to that shown in Figure 9.

```
DEMONSTRATION


THE LOCATION YOU HAVE JUST LEFT
WAS PRE-INSTALLED WITH LAMPS AND
APPLIANCES FOR THE DEMONSTRATION

IN REALITY YOUR HOME MAY BE
CUSTOMIZED FROM A SELECTION OF
THE FOLLOWING:

PRESS J/STICK BUTTON TO CONTINUE
```
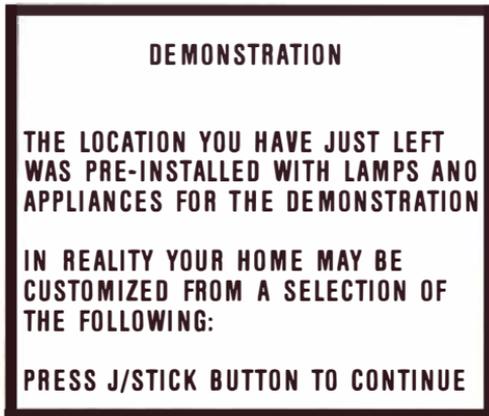
FIGURE 9

After pressing the joystick button the display shows you a selection of graphic symbols; representing lamps which you could install into the various rooms. See Figure 10.

Notice that you may choose different colored graphical symbols to represent your light.
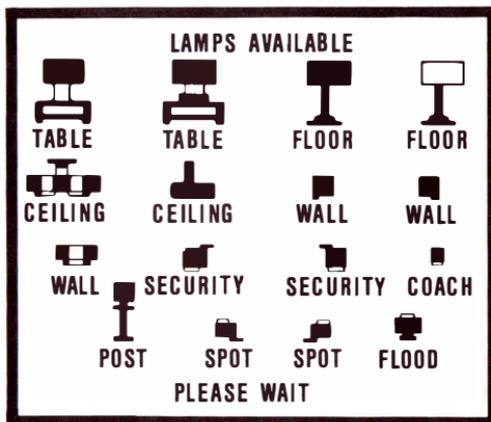
FIGURE 10

The display reads **PLEASE WAIT** and then displays various appliances which could be installed. See Figure 11.

After another pause the display changes to that shown in Figure 12, which shows a typical empty room containing 14 "tabs". These tabs represent the positions in which lamps and appliances may be placed when in the "Install Mode". More will be said about this later under the heading of "Install Mode".

FIGURE 11

THE LAMPS AND APPLIANCES MAY BE INSTALLED IN ANY OF THE MARKED LOCATIONS
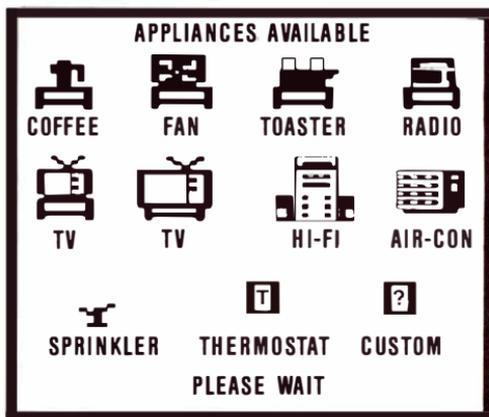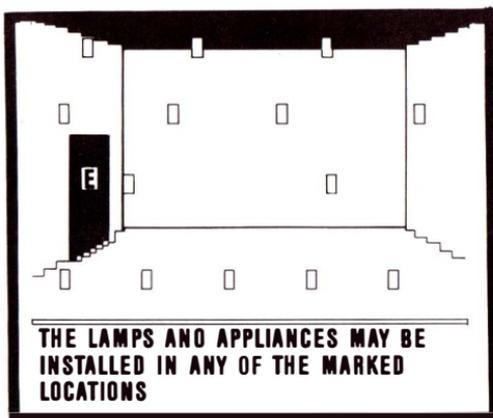
FIGURE 12

When you have seen enough of the demonstration press the "Q" button on your Color Computer keyboard. This will take you back to the screen giving you the choice of joystick, keyboard or demo.

NOTE: You may press "Q" at anytime to go back to this screen.

INSTALL MODE

Note that when using the joystick, any reference to **ENTER** on the screen means enter using the joystick button.

Press the button on the joystick, and the screen briefly flashes up a message **LOADING DATA FROM CONTROLLER PLEASE WAIT**. If there has not previously been anything stored in the Controller, the display then warns you that there is **NO DATA STORED IN CONTROLLER [ENTER] TO CONTINUE**. Press the joystick button to continue.

The screen shown in Figure 13 asks you to choose **OPERATE** or **INSTALL**. You have to install something before you can operate it, therefore, use the joystick to choose **INSTALL** mode.

You are told what the actual time of day is set to, and asked if you want to change it. See Figure 14.

Let's assume you do and choose **YES**.

The computer responds with the following series of timeset prompts.

At each screen make a choice with the joystick, and confirm this choice by pressing the button.

PLUG 'N POWER

OPERATION OF THIS PROGRAM ONLY
REQUIRES THE USE OF THE JOYSTICK
AND JOYSTICK BUTTON

[Q]UIT RETURNS THE PROGRAM TO
THIS SCREEN WITHOUT LOSS OF DATA

CHOOSE   OPERATE/INSTALL

FIGURE 13

PLUG 'N POWER

THE TIME IS SET TO 12:00 AM MON
WANT TO CHANGE?   YES/NO
[Q]UIT
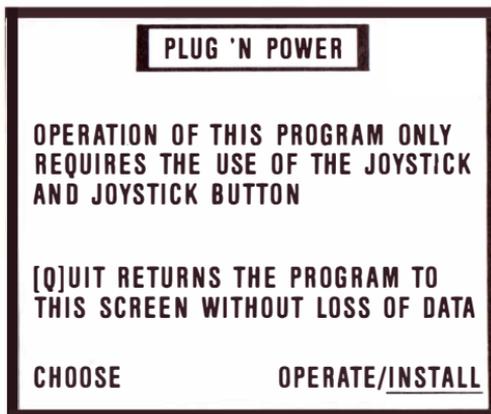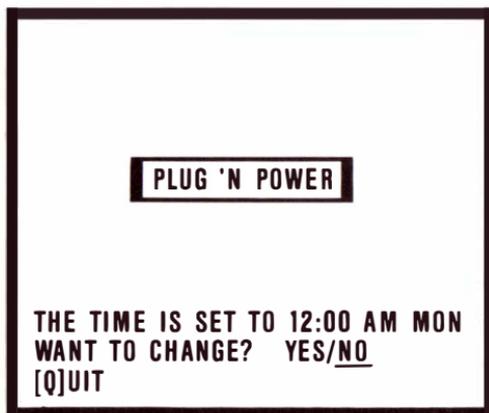
FIGURE 14

(The following example assumes setting of Wednesday 11:52 p.m.)

Screen at each step:

Choose day	<u>S</u> M T W T F S
	S M T <u>W</u> T F S
Choose AM/<u>PM</u>	S M T ⬚W⬚ T F S
Choose hour	S M T ⬚W⬚ T F S
	11: PM
Choose mins	S M T ⬚W⬚ T F S
	11:5 PM
Choose mins	S M T ⬚W⬚ T F S
	11:52 PM
Is this time correct <u>Yes</u>/No	S M T ⬚W⬚ T F S
	11:52 PM

Note that the screen update of the clock occurs only once every 30 seconds approximately. Thus although the Controller clock is accurate, the time on screen can appear to be off by 30 seconds.

NOTE: After *completing* an operation (such as setting the time, choosing a housecode, turning something on, programming a time, etc.), your completed operation is "down-loaded" to the Controller and is now stored in its memory. A "down-load" is *not* performed by pressing "Q" or exiting a room.

After correctly setting the time you are then asked for a housecode change.

See Figure 15.

```
                    ┌─────────────────┐
                    │  PLUG 'N POWER  │
                    └─────────────────┘

          YOUR HOUSECODE IS SET TO A
          WANT TO CHANGE?   YES/NO
          [Q]UIT
```
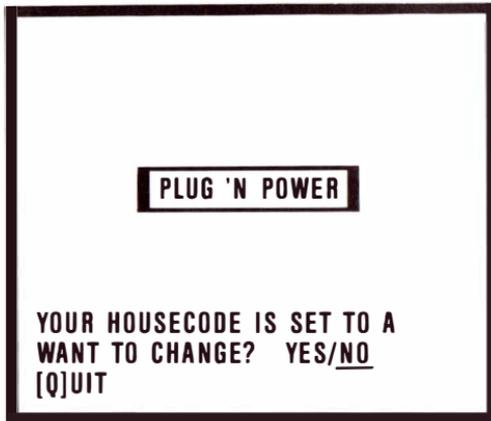
FIGURE 15

You may just want to leave it on "A" as you have previously checked the operation of your Plug 'n Power modules set to "A". However if you wish to change it, select **YES** and press the joystick button. You are then warned that changing the housecode will clear all the data in the Controller (but you presumably don't have any at this point, so continue with the change).

You then choose the housecode you want by placing the cursor over it and pressing the joystick button.

You are now informed that you should set all of your Plug 'n Power modules to the same housecode letter as the code you have chosen. Then press the joystick button to continue.

The housecode that is programmed during **INSTALL** is stored in the Controller and becomes the **base** housecode of the system. This means that the four ON/OFF keys will control modules 1, 2, 3 and 4 of that housecode.

e.g. During **INSTALL** housecode "C" was programmed.

Then the ON/OFF keys will control: C1, C2, C3 and C4.

For larger systems that require control of more than 16 unit codes the computer will offer the next housecode in the sequence. However, the Controller still stores the original **base** housecode to retain manual control of four modules from the buttons on the Controller.

e.g. During **INSTALL** housecode "C" was programmed and all 16 codes were used (C1 thru C16).

The next code offered would be: D1, D2, etc.

The Controller keys would manually control: C1, C2, C3 and C4.

The system can send 256 different codes (16 unit codes x 16 house-codes) and 128 "events" can be stored.

An "event" is any number of modules (1 thru 14) in a room, on the same housecode, programmed to go on *or* off, at a particular time, on any number of days.

e.g. A1, A4, A7 and A16 **on** at 7:00 p.m. Tuesday, Thursday and Saturday. This is only *one* "event".

After time and housecode have been set the first graphic screen of **INSTALL** is figure 16.

1. Use the joystick to make a location choice. Choose the Living Room.
2. Confirm this choice with the joystick button.

   As an example the choice shown is the Living Room. Figure 17. The "tabs" indicate the positions where lamps or appliances may be installed.
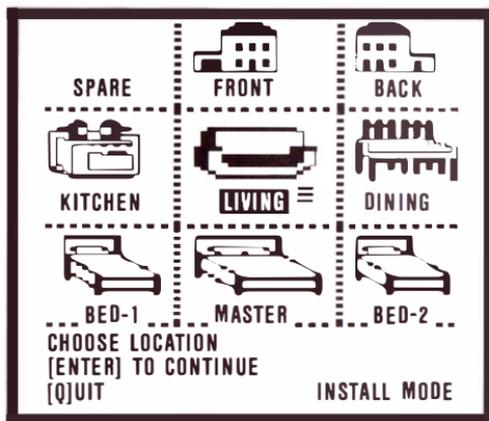
FIGURE 16
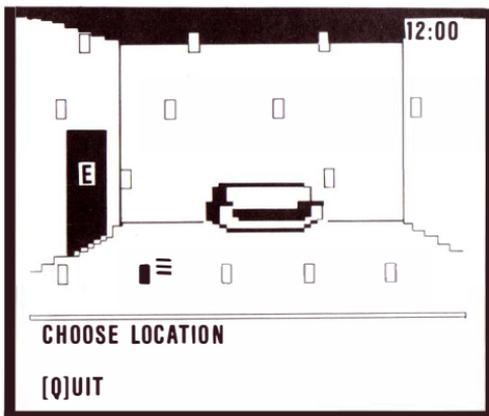
FIGURE 17

Note that the screen update of the clock occurs only once every 30 seconds approximately. Thus although the Controller clock is accurate, the time on screen can appear to be off by 30 seconds.

1. Use the joystick to make a location choice. Choose the 2nd tab from the left on the bottom row.
2. Confirm this choice with the joystick button.

   Prompt line changes to:

   CHOOSE LAMP APPLIANCE SKIP

   SKIP—allows you to change your mind and choose a new location.

1. Choose either lamp or appliance with the joystick and press the button. In this case choose lamp. A screen of lamps will be shown, Figure 18. Names only appear under those units suitable for the location you have chosen. You cannot choose a chandelier if you have chosen a floor position. Select one of the lamps shown and press the joystick button. Later you may wish to select an **APPLIANCE** instead of a **LAMP** in step 1. In which case you will be shown a screen of appliances to choose from. And again you will not be able to choose say a T.V. if you had chosen a ceiling position.

After the choice of lamp (or appliance) has been made, the program returns with it installed in its chosen location.   See Figure 19.
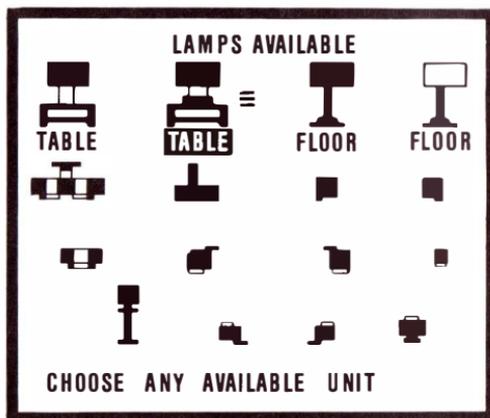
FIGURE 18
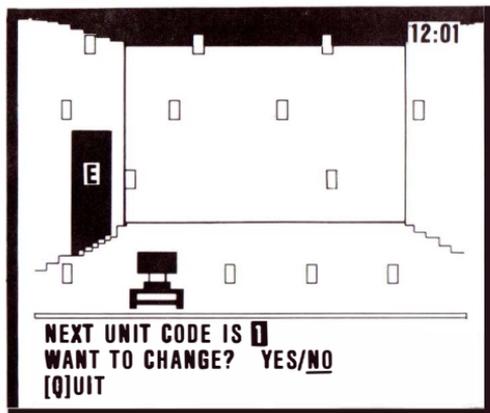
FIGURE 19

The prompt line now offers the next unit code available, together with an option to change. Accepting the code offered results in that code displayed against the unit, and the program back in the mode ready to choose the next location. (You are first told to set the unit code of the module which controls this lamp to the number you have chosen.) See Figures 20 and 21.

Alternatively, if you choose to change the unit code, you are offered 16 numbers to choose from. Select one and press the joystick button. Note, you may install two or more lights and set them to the same (or different) codes. If you set them to the same code, any ON/OFF operation of the program for one unit code will affect both units.


```
SET LAMP MODULE TO CODE     A1
[ENTER] TO CONTINUE
[Q]UIT
```
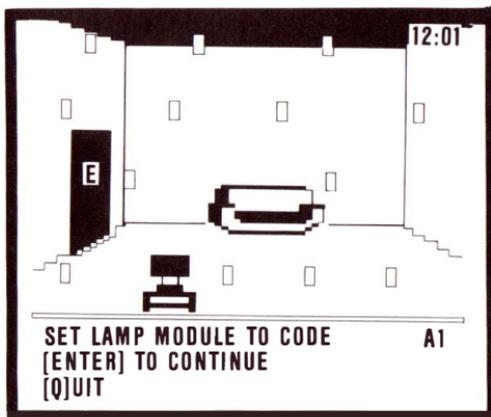
FIGURE 20

At this point in the program the door marked **E** (Exit) may be chosen using the joystick to exit this screen and return to the Multi-Room screen.

An intermediate step to the Multi-Room screen allows the choice of remaining in the **INSTALL** mode, to install more rooms or going on to the **OPERATE** mode. See Figure 22.
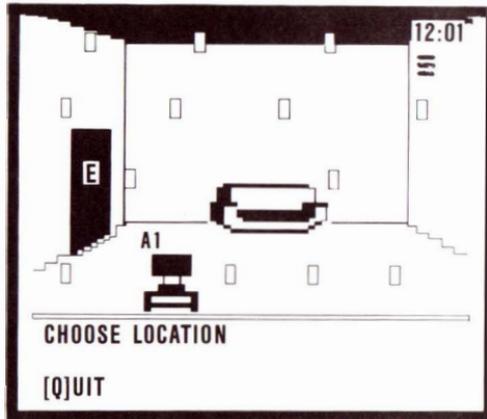
FIGURE 21
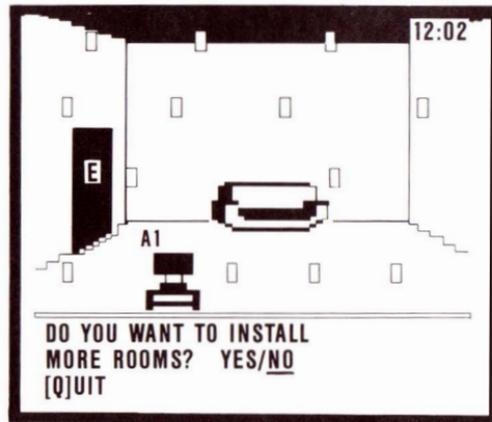
FIGURE 22

Let's choose **OPERATE**, by choosing **NO**. This will take you back to the Multi-Room screen in the **OPERATE** mode.

When in the **OPERATE** mode you will see the screen shown in Figure 23.
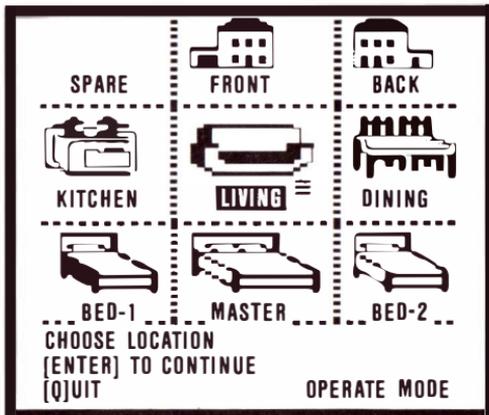
FIGURE 23

You choose an area in which you have previously installed graphic symbols, using the joystick and the joystick button. Say you choose the Living Room, the room may look like that shown in Figure 24.
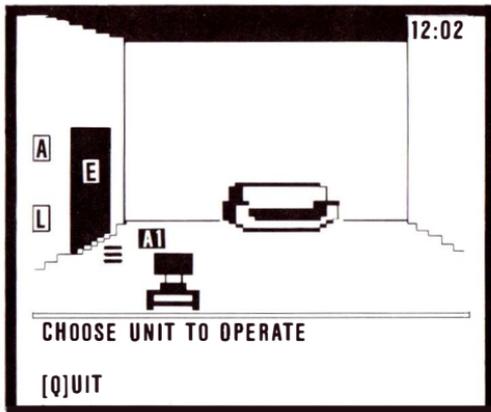
FIGURE 24

This shows the graphic symbol which you previously installed and asks you to choose the one you want to operate.

1. You choose one of them using the joystick and pressing the button. You are then asked to choose **ON**, **OFF**, or **SKIP**.   See Figure 25.
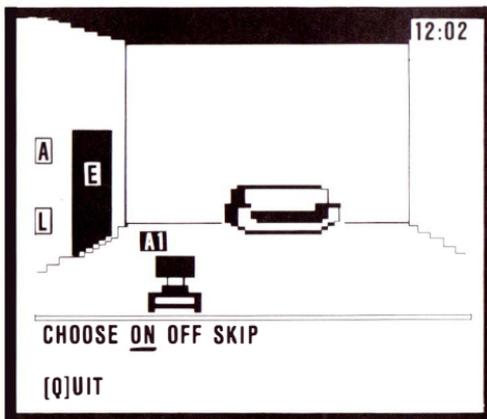
2. Choose **SKIP** if the graphic symbol you selected was selected unintentionally.

3. If you choose **ON** and the symbol you chose represents a light, you will be asked **DO YOU WANT THE LIGHT ON FULL/DIMMED**. See Figure 26.
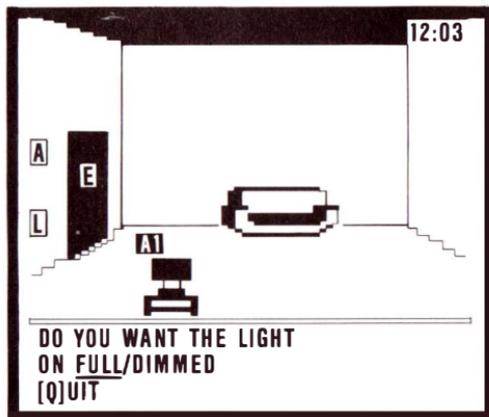
FIGURE 26

4. If you choose **DIMMED** you will be asked to select the intensity you require (between 10% and 90% of full brightness). Select with the joystick and press the button. Note: Lamps are always restored to **FULL** brightness before sending a **DIM** command. This is because your Controller does not know how bright the lamp is at the moment. (It may have been previously dimmed by someone else; even from another type of controller.)

5. After choosing **OFF**, **ON**, and the intensity, the prompt line will say: **CHOOSE NOW, TODAY, TOMORROW, EVERYDAY, SPECIFIC-DAYS**. See Figure 27.
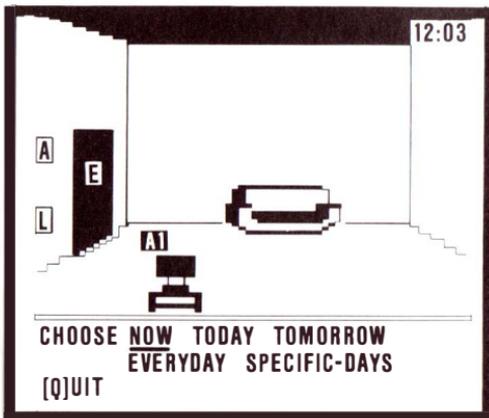
FIGURE 27

You may choose any one of these, and the descriptions below are what will happen in each case.

NOW:

If you select **NOW** the light or appliance you selected will go **ON** or **OFF** immediately, and the graphical symbol on the screen will change color to indicate this.

TODAY:

If you select **TODAY**, you will be asked to select a.m./p.m. and then the time later today at which you want that particular light/appliance to go **ON**. After selecting hours, tens of minutes and minutes, you will be asked if the time you entered is correct. If you choose **YES**, then you will be asked if you want to set an **OFF** time. (Assuming you just set an **ON** time.) You will be asked if you want to set an **ON** time if you have just set an **OFF** time. After setting this, (or answering **NO**), you will be back to the prompt saying **CHOOSE UNIT TO OPERATE**. You may choose another and again select **ON**. Say this time you choose an appliance, then you won't be asked **FULL/DIMMED?**, but will go straight to **NOW, TODAY, TOMORROW, EVERYDAY, SPECIFIC-DAYS**.

TOMORROW:

This time say you select **TOMORROW**, the sequence of prompts will be the same as with **TODAY**, but in this mode you can set an **ON** and **OFF** time which will occur at a specific time tomorrow instead of today. (Both **TODAY** and **TOMORROW** are once only events and will be cleared from memory at midnight of that day.)

EVERYDAY:

In this mode the sequence of prompts when setting is the same as for **TODAY** or **TOMORROW**, but any event programmed in this mode will occur *every day* of *every week* continuously. In the **EVERYDAY** mode, you will then be asked after setting the times, the question, **REGULAR/ SECURITY**. If you select **REGULAR** then events will happen at exactly the time you program them **EVERY** day of **EVERY** week. If you choose **SECURITY** these events will happen within the hour of your programmed time, but will be at a slightly different time each day.

e.g. Programmed time = 8:17, actual time of event is at 8:17 the first day and anytime between 8:00 and 9:00 the rest of the days. Security is only available in **EVERYDAY** and **SPECIFIC-DAYS** modes.

SPECIFIC-DAYS:

If you choose this mode, you will first be asked to **CHOOSE DAY**. You choose from one of the 7 days with the joystick and then press the button. The prompt asks you **WANT MORE DAYS? YES/NO**. If you choose **YES** select the next day you want with the joystick then press the button. Finally you answer **NO** to **WANT MORE DAYS?**.

The display will then show you which days you have selected and ask you to choose a.m. or p.m. You may choose either, and then set the hours, tens of minutes, and minutes, as in previous modes. You then select **REGULAR/SECURITY**. That particular lamp/appliance will then go on at the specified time on each of your chosen days, every week, (slightly different time each day if you choose **SECURITY**). You are then asked if this is correct, and confirm this by choosing **YES**. You are then asked if you want an **OFF** time, and you can set this to happen in any mode. For example, the porch light could go on today at 6:00 p.m., and off tomorrow at 5:00 a.m., or hi-fi on Monday, Tuesday, Wednesday, Thursday, Friday, at 7:00 a.m. and off everyday at 10:00 p.m.

NOTE: You may program **ON** times and **OFF** times in different modes e.g., on everyday and off on Mondays. You may also program multiple **ON** and/or **OFF** times, e.g., on at 7:00 p.m. off at 8:00 p.m. and off again at 11:00 p.m.

40 REVIEW

Let's say you now choose a lamp/appliance for which you have already set a timed event. These are indicated by a letter **T** next to the unit code number, above the graphic symbol or a letter **S** which means timed in the **SECURITY** mode. See Figure 28.
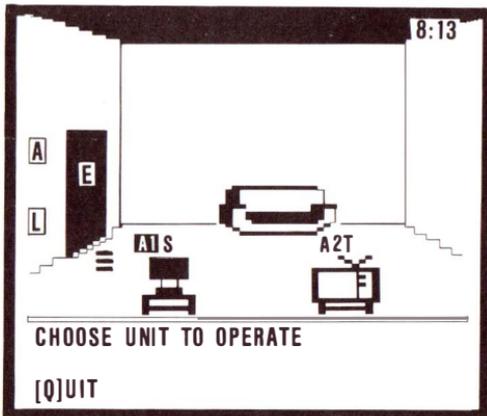
FIGURE 28

'T' FOR TIMED
'S' FOR SECURITY

Now when you press the joystick button the prompt line will say **CHOOSE ON, OFF, SKIP** and **REVIEW**. The word **REVIEW** does not appear if you select an "untimed" symbol (without the letter **T** or **S**). If you now select **REVIEW** with the joystick and press the button, the prompt line will say **CHOOSE REVIEW, CANCEL,** or **END**. See Figure 29.
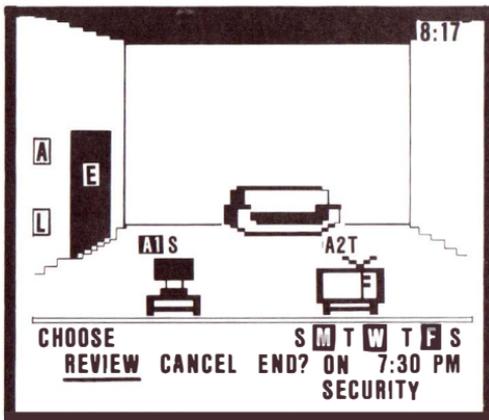
FIGURE 29

At the right-hand side of the screen the first event for your selected unit will be displayed. Pressing the joystick button with the blue line under the word **REVIEW** will show any further events there might be. If you see an event you want to delete, use the joystick to choose **CANCEL**, then press the button. When you have finished reviewing or cancelling, select **END** with the joystick and press the button. This will take you back to the prompt **CHOOSE UNIT TO OPERATE**.

NOTE: A is a conceptual **ALL OFF** switch and L is a conceptual **LIGHTS SWITCH**. These positions can be selected and either activated NOW or programmed to activate later.

For example, ALL UNITS in the room can be programmed to go off at a specific time, or ALL LIGHTS in the room can be programmed to go ON or OFF at a specific time. Programming procedure is as for individual lamps or appliances. See Figure 30.
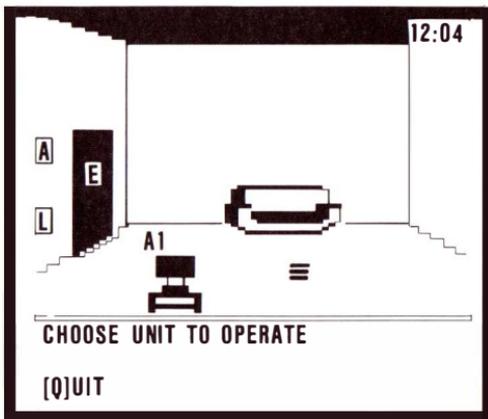
FIGURE 30

'A' IS ALL OFF SWITCH
'L' IS LIGHTS SWITCH
(ON OR OFF)

The introduction screen asks you to press the joystick button for joystick operation and this is the preferred method of operation whether in the operate or install modes. However it is possible to use the system without a joystick. To select this mode, press the "ENTER" key on the computer keyboard. See Figure 31.

```
┌──────────────────────────────────┐
│         ┌──────────────┐         │
│         │ PLUG 'N POWER │        │
│         └──────────────┘         │
│                                  │
│  OPERATION OF THIS PROGRAM ONLY  │
│  REQUIRES THE USE OF THE 4 ARROW │
│  KEYS AND [ENTER]                │
│                                  │
│                                  │
│  [Q]UIT RETURNS THE PROGRAM TO   │
│  THIS SCREEN WITHOUT LOSS OF DATA│
│                                  │
│                                  │
│  CHOOSE          OPERATE/INSTALL │
│                  ─────────────── │
└──────────────────────────────────┘
```
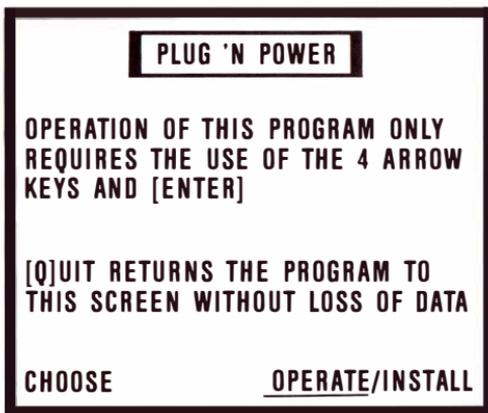
FIGURE 31

The sequence of screens and operation is the same as if using the joystick except that the cursor is moved around the screen using the

keys on the Color Computer keyboard instead of the joystick. Once the cursor is under the desired choice it is confirmed by pressing the "ENTER" key on the computer keyboard rather than the button on the joystick.

When you have installed and operated all modules, set all desired time codes, and are ready to leave the program. press "Q" on the computer keyboard. The **[Q]UIT** prompt must be on the screen at the time you desire to exit. Pressing "Q" will return you to the Plug 'n Power **OPERATE/INSTALL** screen. At this point, turn off the Color Computer, remove the program pak, and remove the cable from the cassette port of the Color Computer. Remember the Controller must remain plugged in. Your Color Computer is now free for any other uses.

APPENDIX A:
The Plug 'n Power System

TO CONTROL OUTSIDE LIGHTS
OR CEILING LIGHTS

You will need a Wall Switch Module to control any light which is presently controlled by a regular wall switch.

Cat. #61-2683: Controls any incandescent lamp up to 500 watts, and can dim and brighten it (remotely). It has a push button which when pressed causes the light to be turned ON or OFF locally and can *always* be controlled remotely. It also has a small slide switch under the push button which removes power from the module for use when changing a light bulb.

The Wall Switch Module should be installed as per instructions supplied with it, remembering to switch off the breaker first. Set each Wall Switch Module to housecode "A", and a unit code between 1 and 4. Pressing this number on the Controller will turn ON and OFF this Wall Switch Module. Other housecodes and unit codes can be used when controlling with the Color Computer.

OTHER CONTROLLERS

Your Controller can be used to manually control up to four lights/appliances from the buttons on the Controller and can control more than this by using the joystick to select **NOW** operation when connected to the computer. The primary use of the Controller however, is to automatically control your home after having been programmed from the computer after which it does not have to be connected to the computer.

If your system is expanded beyond four Plug 'n Power modules, you may find it inconvenient to re-connect the Controller to the computer to manually control your lights/appliances. You may also wish to control your modules manually from several locations. For this reason you may wish to purchase an additional manual controller such as Cat. #61-2680. This can be plugged in anywhere in your house and can control the same modules as your Controller from other locations.

DIAGRAM OF THE PLUG 'N POWER™ SYSTEM

Remote Control Timer Center
Cat. No. 61-2679
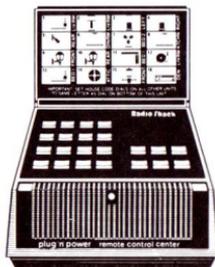
Remote Control Center
Cat. No. 61-2680
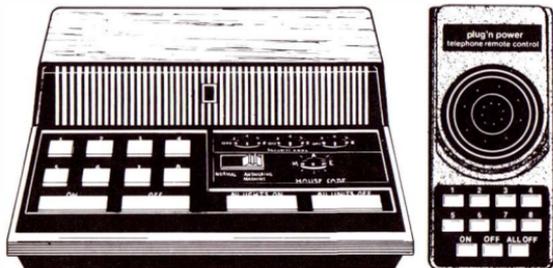
Telephone Remote Control System
Cat. No. 43-151
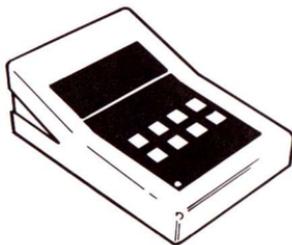
Controller
Cat. No. 26-3142
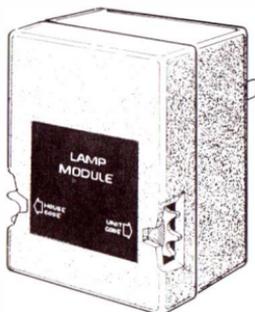
Lamp Dimmer Module
Cat. No. 61-2682
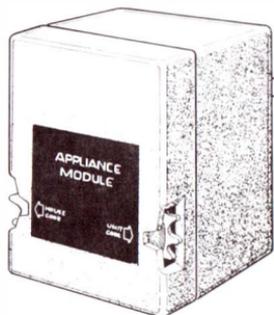
Appliance Module
Cat. No. 61-2681 and 61-2684
(With 3 Prong Plug)
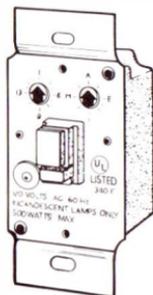
Wall Switch Module
Cat. No. 61-2683

Burglar Alarm Interface
Cat. No. 49-526

1. The module won't go on or off manually from the keys on the Controller: Check that you have power to the outlet controlling the module, and the switch on the light or appliance is in the ON position. Check that the red light on the Controller goes on when you press a button. Check that unit code and housecode on the module are set correctly. The housecode on the Controller will be "A" unless you changed it at the beginning of the program. Try plugging the module and the Controller into the same outlet. If it doesn't work in *any* outlet, not even with the module and Controller in the same duplex receptacle (top and bottom) then replace the module.

   If your controller appears to be "completely dead", before returning it, unplug it from the 120V outlet, remove the battery and wait 10 seconds. Then reconnect it to the 120V outlet, re-install the battery and see if it works. Note, you will have lost all of your program by doing this but if the Controller now works this indicates that the microprocessor was "latched up", a rare condition which can occur with CMOS circuitry.

2. The module doesn't turn on or off at programmed times: First check to see if the module works manually from the keys on the Controller. See No. 1 above. Connect the Controller to your Color Computer and select the review mode. Check that you entered time, day and am/pm correctly. If you find **NO PROGRAM**, check the battery in the Controller, you may have had a power outage and lost all your program. Check that the clock (time and day) is set correctly at initial set-up stage. Check that the housecode is set correctly at initial set-up stage.

INTERCOM SYSTEMS

Intercom systems that send voice signals over existing electrical wiring may interfere with your Controller when the intercom is in use. If intercom system has its own separate wiring, it will not interfere with the Controller.

SOME DON'TS

DON'T   Use a Wall Switch Module to control a fluourescent light, fan or any kind of appliance. This could cause damage to the module and/or the light/appliance.

DON'T   Use a Wall Switch Module to control an outlet unless you are absolutely sure that no one will plug an appliance (a vacuum cleaner for example) into the outlet. See above.

DON'T   Use a Lamp Module to control a fluorescent lamp or any kind of appliance.

DON'T   Leave a wireless intercom or baby alarm in the permanent transmit (or talk) mode. Its transmissions could "Block Out" transmissions from your Controller.

DON'T   Use modules to control something which would be dangerous if it were turned on remotely when unattended e.g. an empty coffee pot, an electric fan with poorly protected blades, etc.

DON'T   Exceed the rating of the modules. Lamp Module — 300 watts, Wall Switch Module — 500 watts, Appliance Module — 15 amp resistive (coffee pots, heaters) 500 watts for lamps because of inrush current from a cold lamp, 1/3 H.P. for motors.

DON'T   Leave your Controller unplugged for a long period of time (It can't control your home when it's unplugged and you will lose all your program after approximately 100 hours.)

DON'T   Use a Wall Switch Module for lamps which have a rating of less than 60 watts.

DON'T   Program an OFF time for any unit less than an hour from the ON time when using the Security Mode. For example, a lamp programmed to come ON at 7:05 pm should not be programmed to go OFF before 8:05 pm, as this could cause the lamp to remain ON until the next scheduled OFF time occurs.

FOR SAFETY

When using your Controller you should keep in mind that it will **always** turn lamps and appliances ON and OFF at the times you have selected. That seems obvious — but it can have some unexpected consequences.

For example, an automatic coffee maker can be remotely turned on when it doesn't contain water. If that happens, it can overheat and be damaged. Likewise, if an electric heater is turned on by remote control while clothing is draped over it, a fire could result.

Keep this in mind when using your Controller and be alert for potential problems like those mentioned. This will help you get the most convenience and pleasure from your Controller.

A (LEFT SIDE
OF ROOM):   Conceptual **A̲LL OFF** switch. Allows you to turn off *every* light and appliance in the room, either now or later (programmable).

BASE HOUSECODE: This is the default housecode of your Controller. (Normally "A" unless changed in install mode.) The manual buttons on your Controller operate on the base housecode.

CANCEL: Removes a timed event for a particular light/appliance.

CASSETTE PORT: Socket on back of Color Computer labeled "cass". The Controller is connected to this port for programming.

CURSOR: Blue line or square tab which is moved by the joystick (in the joystick mode) or the four arrow keys (in the keyboard mode) to make a selection.

DATA: Timed events and graphical information stored in your Controller.

DELETE: Removes the graphic symbol representing a light/appliance, when in the install mode. Also removes any timed events for that light/appliance.

DOWN-LOAD: The transfer of data from the computer to the Controller. This occurs after completing an operation, e.g., programming an event.

E (ON ROOM DOOR): Signifies **E**xit. You will leave the room if "E" is selected.

ENTER: This means press the "ENTER" key on the Color Computer keyboard if in the keyboard mode. This means press the joystick button if in the joystick mode, in both cases to confirm selection after moving cursor.

EVENT: Any number of lights/appliances (up to 14) on the same housecode in one particular room can be programmed to go on or off at one particular time, on any number of days. This constitutes one event. 128 such events can be stored in the Controller.

EVERYDAY: Selected after choosing to turn on/off a light/appliance in operate mode. Allows you to program an event to happen everyday at the same time (slightly different each day if Security is chosen).

HOUSECODE: All Plug 'n Power modules and manual controllers are normally set so that their housecode dials are at the same letter. Your Controller is normally set to housecode "A" but it can be changed at the start of the **INSTALL** mode.

INSTALL MODE: In this mode you can set present time and day. Set base housecode, and place graphical symbols representing lights/appliances in each room.

L (LEFT SIDE OF ROOM):   Conceptual ☐ight switch. Allows you to turn on or off the lights in the room either now or later.

NOW: Selected after choosing a light/appliance in operate mode, will turn it on/off immediately.

OPERATE MODE: In this mode you can choose a graphical symbol representing a particular light/appliance and turn it on/off now. Or program it to go on/off later.

PROGRAM PAK: This is a cartridge which plugs into the game slot on the Color Computer and contains the program necessary to operate/program your Controller.

QUIT: Accessed by pressing the "Q" button on your Color Computer. This can be pressed at any time and takes the program back to the screen which allows you to choose operate or install. Lets you start again if you're lost. You will not lose any programmed information.

REVERSE VIDEO: Label changes from black on colored background to colored on a black background indicating that the cursor is close enough to an object to select it.

REVIEW: Allows you to look at each event programmed for a particular light/appliance.

ROM PAK: Same as PROGRAM PAK.

S (NEXT TO LIGHT/APPLIANCE): Means that this light/appliance is timed in the Security mode. Event may be seen by selecting review.

SECURITY: If a light/appliance is programmed to go on/off at 7:42 p.m. in the security mode it will go on/off at 7:42 p.m. the first day and any time between 7:00 p.m. and 8:00 p.m. the rest of the days (different each day). Security is only available in everyday and specific-days modes.

SPECIFIC-DAYS: Selected after choosing to turn on/off a light/appliance in the operate mode. Allows you to specify the days that you want an event to happen, e.g., on Tuesdays and Thursdays only. (Every Tuesday and Thursday.)

T (NEXT TO LIGHT/APPLIANCE):	Means that light/appliance is ⊤imed, i.e., there is a program stored for this light/appliance. This programmed event may be seen by selecting review.
TODAY:	Selected after choosing to turn on/off a light/appliance in operate mode. Allows you to program a time at which that light/appliance will go on/off later today. Will happen only once today and then event will be cleared from memory at midnight today.
TOMORROW:	Selected after choosing to turn on/off a light/appliance in operate mode. Allows you to program a time at which that light/appliance will go on/off tomorrow. Will happen only once tomorrow and then event will be cleared from memory at midnight tomorrow.
UNIT CODE:	When each Plug 'n Power module is set to a different unit code (1 thru 16) then each module will respond when your Controller sends that particular code.
16K:	Refers to amount of memory available in the Color Computer. Any Color Computer with 16K or more can be used to program your Controller.