



*Building a Connected World*

*i series e & i series Quad*

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*Dimmer Racks*

*Users Guide*

Software Version #1.50

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## ***0.1 New Features***

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This software release is a bug fix and feature upgrade release. The new features added were added based on market demand and end user requirements. The specific features added with this software release are as follows:

1. Luma-Net 3 Support
2. Additional Fluorescent Dimming Ballast Support
  - a. Advance Mark X
  - b. Lutron Tu-Wire
  - c. Lutron Hi-Lume/Eco-10
  - d. Low Voltage, Magnetic Transformer
3. Configuration Security Features & Password system

This revised users manual includes configuration and usage information for all of the previous, modified and new features.

## 1.0 *i series e Overview*

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The *i series e* and *i series Quad* dimmer racks are composed of three main modular components:

1. **The dimmer rack chassis**
2. **The dimmer modules**
3. **The control module**

**The dimmer rack chassis** defines the number of dimmer modules that may be installed, the power feed line voltage, and power feed configuration of the installation.

- *i series e* racks are available in 96,48, and 24 dimmer channel configurations, for either 90-135 VAC or 190-260VAC power feeds, in either 3 phase - 4 wire Y plus ground or single phase 3 wire plus ground power feed configurations, with an alternating current line frequency in the range of 47 to 63 hertz. *i series e* racks have a number of bussing configurations that allow racks to be bussed together with ratings between 10,000 and 100,000 AIC capacity depending on the configuration.
- *i series quad* racks are available in 48 channel and 48 or 96 channel portable dimmer configurations, for either 90-135 VAC or 190-260VAC power feeds, in either 3 phase - 4 wire Y plus ground or single phase 3 wire plus ground power feed configurations, with an alternating current line frequency in the range of 47 to 63 hertz.

**The dimmer modules** define the power and filtering levels of the individual branch circuits to be controlled. Dimmer modules of different power capacities are mechanically keyed so that dimmer modules of higher ampacities may not be inserted in to dimmer slots wired for lower ampacities. A wide variety of dimmer and are available.

- For 120VAC systems, *i series e* dimmer modules come in either dual or single channel module configurations, with either 500micro second or 800 micro second rise times.
- For 240VAC applications, *i series e* dimmer modules come in either dual or single channel module configurations, with either 350micro second or 500 micro second rise times.
- For 120VAC systems, *i series quad* dimmers are only available in 4 circuit 2.4KW or 1.8KW configurations with 350 microsecond rise times.
- For 240VAC systems, *i series quad* dimmers are only available in 4 circuit 4.0KW configurations with 270 microsecond rise times.

It should be noted that **in order for the dimmer modules to cool properly, the rack must have all the dimmer module positions installed in the rack with either a dimmer module or airflow module.**

**The control module** contains nearly all of the control electronics and generates the necessary control signals and power necessary to control the dimmers in the rack. There are 2 different control modules for *i series e* and *i series quad*.

- The i96/48 control module (CTP-0311e) controls i96e, i48e or i48Quad dimmer racks in all configurations.
- The i24 control module (CTP-0313e) controls i24 dimmer racks in all configurations.

Control modules are completely interchangeable within the *i series e* and *i series quad* system, as long as they are the same type of control module as detailed above. The only selection that makes a control module unique is the thumbwheel address setting on the front of the control module. All other individual parameters for the rack are stored in the socketed serial EEPROM chips on the *i series e* backplane. On power up, the control module automatically loads all the unique information from the serial EEPROMS on the

backplane, determines the line frequency, and phase angle firing assignments. The top pair of chips in a 16 pin DIP socket (P5) permanently store all the unique information for the upper control module position. The bottom pair of chips in a 16 pin DIP socket (P6) permanently store all the unique information for the lower control module position. The unique information that is stored is the configuration parameters of the control module itself, backup looks, analog submaster scenes, the panic scene, and the custom patch. Standard patches are available by setting the address number in the range of '1' to '15'. Setting the thumbwheel to '0' invokes the custom patch stored in the EEPROMS on the backplane. The thumbwheel address positions for standard patches are the following:

**Patch Assignments (DMX-512 & Luma-Net Channel Numbers)**

<u>Address #</u>	<u>i96e / i96Quad</u>	<u>i48e/i48Quad</u>	<u>i24e w/JP1 In</u>	<u>i24e w/JP1 Out</u>
0	Custom Patch	Custom Patch	Custom Patch	Custom Patch
1	1-96	1-48	1-24	361-384
2	97-192	49-96	25-48	385-408
3	193-288	97-144	49-72	409-432
4	289-384	145-192	73-96	433-456
5	385-480	193-240	97-120	456-480
6	481-512	241-288	121-144	481-504
7	LED solid on	289-336	145-168	505-512
8	LED solid on	337-384	169-192	LED solid on
9	LED solid on	385-432	193-216	LED solid on
10	LED solid on	433-480	217-240	LED solid on
11	LED solid on	481-512	241-264	LED solid on
12	LED solid on	LED solid on	265-288	LED solid on
13	LED solid on	LED solid on	289-312	LED solid on
14	LED solid on	LED solid on	313-336	LED solid on
15	LED solid on	LED solid on	337-360	LED solid on

In each column is given an address range. This the range of address patched from the control source (DMX-512 or Luma-Net) to the dimmer number. Dimmer numbers are either sequential or phase balanced.

## Dimmer Numbering – Sequential vs. Phase Balanced

---

Regardless of configuration, dimmer slots are always numbered sequentially from the top to the bottom of the rack. However, the default patch can be altered based on the setting of JP6. When in sequential mode, dimmers are patched from the top to the bottom of the rack, the top dimmer module with dimmer slot positions 1 & 2 being patched to control input numbers 1 & 2. The second module, dimmer positions 3 & 4 are patched to control input channels 3 & 4. This sequence continues until you reach the end of the rack. In a phase balanced configuration, the dimmer slot number remains the same, however, the default patch is that dimmer positions 1 & 2 are patched to control channels 1 & 2, 1/3 of the way down the rack where at the top module of phase B is located, are control channels 3 & 4. 2/3 of the way down the rack where the top module of phase C is located, you find patched control channels 5 & 6. The goal of a phase balanced system is to better distribute sequential loading across all three phases. To further illustrate this point, see the chart based on an i24e cabinet below:

Dimmer Slot	Sequential Patch	Phase-Balanced Patch	Phase
1,2	1,2	1,2	A
3,4	3,4	7,8	A
5,6	5,6	13,14	A
7,8	7,8	19,20	A
9,10	9,10	3,4	B
11,12	11,12	9,10	B
13,14	13,14	15,16	B
15,16	15,16	21,22	B
17,18	17,18	5,6	C
19,20	19,20	11,12	C
21,22	21,22	17,18	C
23,24	23,24	23,24	C

With jumper JP6 on the backplane removed, the rack responds as a **sequential rack**, and with JP6 installed, the rack responds as a **phase balanced rack** for all standard patches. The upper and lower control modules are completely independent of each other, with completely different custom patches and configuration information, which allows them to be connected redundantly, or to two completely different control sources. The outputs of both control modules pile onto each other in a highest takes precedence or HTP fashion.

The remainder of this manual details the specific functions of the various indicators on the control module(s), dimmer modules and features that are accessible with the hand held terminal option.

### 1.1 Violet *i* Light indicator (not on i24)

---

The violet *i* Light indicates the current operating status of the rack. The indications are as follows

<b><i>i</i> LIGHT ON :</b>	A dimmer is on in the rack. The fan is on medium speed.
<b><i>i</i> LIGHT OFF :</b>	All dimmers are off in the rack. The fan is off.
<b><i>i</i> LIGHT FLASHING :</b>	At least one dimmer in the rack is in an over-temp or other warning condition. The fan is operating at full speed.

## 1.2 Dimmer Module Indicators – i Series e

---

On the front of each dimmer module are several indicators which indicate the current operating condition of the dimmer module.

<b>STATUS LED OFF :</b>	There is no DC power getting from the control module (s) to the dimmer module.
<b>STATUS LED GREEN :</b>	Normal Operation
<b>STATUS LED YELLOW :</b>	This dimmer module is in Overtemp Warning.
<b>STATUS LED RED :</b>	This dimmer module is in Overtemp Shutdown. The Overtemp warning to control module is still active.
<b>LOAD LED ON :</b>	The dimmer is on at some level. This led dims up and down proportionally with the dimmer control level.
<b>LOAD LED OFF :</b>	The control to this dimmer is off. The dimmer is off.

## 1.3 Dimmer Module Indicators – i Series quad

---

<b>LOAD LED ON (GREEN):</b>	The dimmer is on at some level. This led dims up and down proportionally with the dimmer control level.
<b>LOAD LED OFF :</b>	The control to this dimmer is off. The dimmer is off.
<b>LOAD LED's YELLOW :</b>	Over temperature Warning
<b>LOAD LED's RED :</b>	Over temperature Shutdown

## 1.4 Control Module -- Normal LED BOOT Sequence

---

The LED's on the front of the control module can be used to determine the status of the dimmer rack "boot" process.

- |                                       |   |
|---------------------------------------|---|
| 1.) <b>PHASE A LED On</b>             | - Main processor has booted, & made it though the ram check.  |
| 2.) <b>Diagnostics LED On</b>         | - Starting the boot sequence  |
| 3.) <b>Analog LED Blinking</b>        | - Main processor waking up B processor (U19).   |
| 4.) <b>Phase B LED turns on.</b>      | - B Processor has booted & is OK  |
| 5.) <b>Analog LED Blinking.</b>       | - Main processor waking up C processor (U28).   |
| 6.) <b>Phase C LED turns on.</b>      | - C Processor has booted & is OK  |
| 7.) <b>Analog LED Blinking.</b>       | - Main processor is reading backplane configuration and is initializing dimmer control for main loop. |
| 8.) <b>Reset LED turns off.</b>       | - Main processor has completed its initializations.   |
| 9.) <b>Diagnostics LED turns off.</b> | - Boot Sequence Complete.   |



## 1.5 Control Module -- Power LED's

---

The Phase A, B, & C LED's indicate the status of the power feed to the rack. The possible conditions are as follows:

<b>Phase LED ON</b>	The indicated phase is within the specified operating voltage of between 90-135V or 200-260V.
<b>Phase LED OFF</b>	The power source on the indicated Phase is either too low, or non-existent.
<b>Phase LED FLASHING</b>	The power source on the indicated Phase is too high (above either 135V or 260V)

## 1.6 Control Module -- Over Temp LED

---

<b>OVERTEMP LED ON :</b>	At least one dimmer in the rack is in an overtemp warning condition. The fan has been switched to maximum speed. The Light should be blinking.
<b>OVERTEMP LED OFF:</b>	All dimmers in the rack are operating within the normal operating temperature specifications.

## 1.7 Control Module -- Control Source LED's

---

The control source LED's on the front of the module indicate the status of the DMX & Analog control sources.

### **DMX OK**

#### **LED OFF:**

A valid DMX signal is not being received.

#### **LED STUCK ON:**

A valid DMX signal is being received but the thumbwheel Address is set too high to decode any dimmers. For default patches, the thumbwheel address starts at 1, and increments in 96 channel blocks for a 96 rack, and 48 channel blocks for a 48 rack.

#### **LED BLINKING :**

Valid DMX-512 signal is being received.

##### **VERY FAST ... (1/10<sup>th</sup> second):**

Default sequential thumbwheel patch

( DMX dimmer 1 starts at thumbwheel position 1 )

JP6 jumper removed on backplane forces sequential patch

##### **FAST & BRIGHT, ( 1/2 second):**

Default phase balanced thumbwheel patch

( DMX dimmer 1 starts at thumbwheel position 1 )

JP6 installed on backplane forces phase balanced patch.

##### **SLOW ..... (2 seconds):** Custom Patch read from backplane. Thumbwheel set to 0.

### **ANALOG LED**

#### **LED OFF :**

All analog levels are off. (below 6%)

#### **LED ON :**

At least one analog input is above 6%.

### **BACKUP LED**

#### **LED OFF :**

All backup scenes are off.

#### **LED ON :**

A backup scene is active.

### **PANIC LED**

#### **LED OFF :**

The panic scene is off.

#### **LED ON:**

The panic scene is active.

#### **FLASHING ALTERNATE WITH :**

Control Module is in Emergency Mode. This is

THE DIAGNOSTIC, LED

caused by a +12VDC source driving JPE1 (+) and JPE2 (-).  
Emergency mode causes only the panic scene to be activated.  
All other input control sources are disabled.

**DIAGNOSTIC LED**

LED ON :

For Version 1.2 software, the diagnostic led only comes on:  
\*During the boot sequence  
\*When a button has been pressed on the Hand Held Remote.  
When the control module is in DMX snapshot record mode and searching the analog inputs and the panic input to snapshot the DMX scene. During this mode, light levels drop to ½ of their previous intensity.  
\*When the control module is in Emergency Mode. In Emergency mode the diagnostic LED flashes alternate the Panic LED.

LED OFF :

Normal operating mode

**RESET LED**

LED ON :

One of the 3 processors is in a reset condition.

LED OFF :

All 3 processors have initialized and are running code.

## 1.8 Control Module – Abnormal LED Diagnostics

---

There are several other Led conditions which the control module LED's will indicate which are not directly indicated by their nomenclature. They are as follows:

LED's won't light at all :	No power to rack, or no power to control module. Pull the control module. This will turn on the fan to full if there is power to the rack. Check the 3 phase power harness that connects the control module drawer to the side of the rack.
The 3 Phase LED's chase.	The Line frequency is out of specification. Displayed on HHR. Line power frequency has to be between 47-63hz.
LED's blink briefly, then nothing. [Repeats]	Main Processor (U5)not getting through RAM check.
LED's blink briefly, then RED Phase A LED comes on. [Repeats]	Main Processor (U5)not booting properly.
LED's blink briefly, then RED Phase A LED comes on. Analog Led Blinks at least once. [Repeats]	Main Processor booting properly B Processor (U19) not booting properly.
LED's blink briefly, then RED Phase A LED comes on. Analog Led blinks. Phase B LED comes on. Analog LED blinks at least once. [Repeats]	Main Processor booting properly B Processor booting properly  C Processor (U28) not booting properly
After All three processors boot, One or more of the power led's flash.	Feeder Line voltage is too high. [above 135VAC for a 120VAC system] [above 260VAC for a 240VAC system]
After All three processors boot, One or more of the power led's turn off.	Feeder Line voltage is too low or off. [below 90VAC for a 120VAC system] [below 190VAC for a 240VAC system]
After All 3 processors boot, the Diagnostics led stays lit, along with the 3 Power LED's, but the control module runs a circular chase pattern between DMX OK,ANALOG, PANIC, AND BACKUP for about 30 seconds then operates normally.	The main processor can't get the configuration from the backplane. It will try to read the backplane for about 30 seconds, then it will give up and will process normally the default thumbwheel DMX-512 patch settings [1-15]. Custom patches and snapshot scenes will not be available.

## 2.0 DMX-512 Input Snapshot Procedure

---

The *i series e* Control Module has the ability to store scenes in the rack itself. The scenes are saved from a snapshot picture taken of the levels coming in on the DMX-512 control line. When the record sequence is triggered, the Scene is copied from the DMX-512 input and stored in the EEPROM on the backplane of the control module. This means that scenes always remain with the rack, even if you swap control modules. The three different types of scenes pile-onto each other with the DMX-512 input in a Highest Takes Precedence [HTP] fashion. There are 3 types of scenes:

### 2.1 The Panic Scene

---

The procedure to record and activate the panic scene is to connect a *Remembrance* Panic Station (CTP-8-1022) or *Remembrance* Entry Station (CTP-8-1021) to the panic circuitry on the *i series e* control module backplane. Connect as described below. These signals should be Daisy-chained between racks.

[ COM of *Remembrance* station ] connects to [ GND of TB1 on *i series e* Backplane ]  
[ V+ of *Remembrance* station ] connects to [ +12VUR of TB1 on *i series e* Backplane ]  
[ T/C of *Remembrance* station ] connects to [ T/C of TB2 on *i series e* Backplane ]  
[ VOUT of *Remembrance* station ] connects to [ PANICB (MAINT) of TB1 on *i series e* Backplane ]

#### **DMX Snapshot Record Mode for the Panic input - Procedure:**

- Activate the scene to be recorded on the DMX-512 input port.
- De-activate the Analog Inputs and any Backup Scenes to make sure the scene is correct.
- Push and hold the Panic or ON/OFF button in the on position [ the led will light] for about **2 minutes**.
- When the control module enters the snapshot mode, the lights will dim proportionally by 50%, and the Diagnostics LED on the control module will light.
- Continue holding the Panic or ON/OFF button until the lights return to their original intensity.
- Wait 10 more seconds for all control modules to exit record mode.
- Release the button.
- Test the record sequence by placing a blackout scene on the DMX-512 input port. Press the Panic or ON/OFF button. The scene will activate.
- To disable the scene from being re-recorded accidentally, disconnect the T/C termination between the Entry or Panic station(s) and the dimmer rack(s). The wire can be moved from T/C to the blank termination next to T/C.

When the panic scene is active, the PANIC LED on the control module will light up.

## 2.2 The 12 Analog Scenes

---

The procedure to record and activate one or more of the analog scenes is to connect a *Remembrance* Analog Station (CTP-8-1001 through CTP-8-1012) to the input circuitry on the i series e control module backplane. Connect as described below. These signals should be Daisy-chained between racks.

[ COM of *Remembrance* station ] connects to [ COM of TB4 on i series e Backplane ]

[ V+ of *Remembrance* station ] connects to [ +V of TB4 on i series e Backplane ]

[ T/C of *Remembrance* station ] connects to [ T/C of TB2 on i series e Backplane ]

[ A1 through A12 of *Remembrance* station ] connects to [ A1 through A12 of TB4 ] on i series e Backplane

### **DMX Snapshot Record Mode:**

- Activate the scene to be recorded on the DMX-512 input port. (usually from the control console).
- De-activate the Panic Input and any Backup Scenes to make sure the scene is right.
- If you desire a programmable fade time to be associated to the analog input, then patch DMX-512 dimmer channels 511 & 512 to the same control channel source (like the last channel on your console), and set the fade time according to table below. A 10% level difference between DMX-512 channels 511 and 512 will cause the control module to treat the 2 levels as lighting levels as opposed to fade times. Each analog input scene has its own fade time associated with it. Fade times operate as a damping factor for analog pot station inputs, but operate as a fade time when connected to the VOUT of an entry station.

### **Approximate Fade Times**

Full = 100 seconds

98% = 30 seconds

95% = 30 seconds

93% = 20 seconds

90% = 9 seconds

80% = 8 seconds

70% = 7 seconds

60% = 6 seconds

50% = 5 seconds

40% = 4 seconds

30% = 3 seconds

20% = 2 seconds

10% = 1 second

0% = instantaneous

- Go to the Analog Station. Slide all the channel faders to off. Slide the master fader to full. Push and hold the ON/OFF button in the on position with the led will lit, for about 5 seconds.
- When the control module enters DMX snapshot mode, the lights will dim proportionally by 50%, and the Diagnostics LED on the control module will light.
- Slide up the channel fader that is to save the current live scene.
- Continue holding the ON/OFF button while the lights return to their original intensity.
- Wait 2 more seconds for all control modules to exit record mode.
- Release the ON/OFF button.
- Test the record sequence by placing a blackout scene on the DMX-512 input port. Fade up the newly recorded scene on the channel fader (the ON/OFF LED should be lit and the Master fader set at full) The scene will activate.

- To disable the scene from being re-recorded accidentally, disconnect the T/C termination between the analog station(s) and the dimmer rack(s). The wire can be moved from T/C to the blank termination next to T/C. It's a good idea to put a T/C label on the wire.

When any analog input is active [ above 6% ], the ANALOG LED on the control module will light up.

## 2.3 *The Backup Scenes*

---

Recording and Activating backup scenes requires a Hand Held Remote. 100 timed backup scenes (00 through 99) can be recorded and activated using the Hand Held Remote connected to the HHR remote port on TB2 of the backplane. Refer to section 4 for more HHT remote mode operational details.

### **To record backup looks:**

- All 6 of the HHR connections on TB2 (HHTXD,HHTXD-,HHRXD,HHRXD-,HH+12V,GND) need to be daisy chained between racks before they are run to the remote receptacle location(s). Only one HHR may be plugged into the system at a time.
- Each of the control modules first needs to have a unique rack and control module position identity assigned to it. This is accomplished by plugging into each control module, which places the control module in LOCAL mode. Then press [CONFIG RACK],[RACK],[CONFIG RACK], and enter in the associated rack and control module locations in the system. Rack #'s must begin at rack 1 upper (^) control module. The [UP] keyswitch selects the upper or “^” control module and the [DOWN] keyswitch selects the lower or “v” control module.
- You must have a rack 1 upper control module assigned in the system as this is the module that does most of the talking in the REMOTE mode.
- It is a good idea at this point to check and/or edit the other parameters within the Rack Configuration menu like the DMX dropout hold time.
- When all the settings have been completed, plug into a remote receptacle location. The best location would be at the control booth.
- Bring up the desired scene on the console.
- Press [REC LOOK] twice on the HHR.
- Enter the look number and fade time for the true dipless cross fade.
- Press [ENTER] twice.
- The [UP] key will increment to the next look #.
- The [DOWN] will decrement to the previous look #.
- The [ENTER] key will step through entry fields.
- The [BACK] softkey will escape back to the previous entry field or menu.
- Press the [BACK] softkey as many times as necessary to return to the main menu when complete.

### **To play backup looks:**

- Plug the HHR into a remote receptacle location.
- From the main menu, or after plugging the HHR into the receptacle station and after HHR boot, press the [GO TO LOOK] key twice.
- Enter the # of the desired look you wish to fade to. Note that the backup looks will HTP pile-onto all the active analog scenes, the panic scene if activated, and the active DMX-512 scene.
- Press [GO] to begin the true dipless crossfade sequence.
- During the crossfade, if the [STOP/REV] is pressed once, the cross fade will pause (stop).
- To continue the crossfade press [GO].
- To reverse the crossfade press [STOP/REV].
- The control modules will auto-increment to the next scene on completion of the cross fade.
- Press [GO] to execute the next crossfade, or [ENTER] to change the next scenes fade time, or completely change the next backup look # .

### ***3.0 i series e Hand Held Terminal***

---

There are two operating modes for the i series e Hand Held Terminal (HHT):

**Local Mode** (HHT plugged into the front connector of the control module)

**Remote Mode** ( HHT connected through the Backplane Terminal Block TB2 )

**Local Mode** is used for the following purposes:

#### **Rack Configuration**

- To view the software version of the control module.
- To configure and view the control module position and rack number
- For remote mode operation (this is not the thumbwheel setting)
- To view the line frequency setting
- To configure and view the incoming line power voltages,
- To configure and view the DMX hold time setting
- To configure and view the line regulation mode.
- To manage security features
- To configure or reset to factory default configuration
- To set global parameters (applies to all dimmer positions)

#### **Dimmer Configuration**

- To view and edit the control module custom patch
- To softpatch any DMX-512 dimmer channel to any dimmer position in the rack.
- To softpatch any Luma-Net control channel to any dimmer position in the rack.
- To view dimmer control levels and HTP source on a dimmer per dimmer basis.
- To view and edit maximum and minimum levels
- To view and set unregulated non-dims.
- To force a dimmer to a control level and bypass all other control inputs (dimmer check)
- To view and setup fluorescent dimming

#### **Control Module Status**

- To view control module status (OK, emergency, overtemp warning, backplane error)
- To view the DMX-512 input status
- To view the analog inputs status
- To view the backup input status
- To view the panic input status
- To view the Luma-Net input status

**Remote Mode** is used for the following purposes:

- Recording backup looks from the DMX-512 signal input
- Playing backup looks

**Important Note:** Only one HHT may be plugged into the HHT wiring system at a time.

### 3.1 *i series e Hand Held Terminal – Local Mode*

---

**Getting Started.** To get started using your Hand Held Terminal (HHT), go to a powered up *i series e* dimmer rack and plug your Hand Held Terminal into the front of a control module. Please note that only one HHT may be plugged into the HHT wiring system at a time. After the control module powers up and beeps, press any key.

The HHT is used by viewing a sequence of screens. These screens allows you to view and in some circumstance change the configuration of the dimmer racks.

The first screen you see after the control module is activated and through it's boot sequence are two help screens. These screens are designed to give you some basic information about the use of the HHT....just enough to get you going.

#### Help Screen 1

```
T e x t   i n   '   Q U O T E S   '
r e f e r s   t o   k e y   p a d
s w i t c h e s .   T o   c o n t i n u e
p r e s s   a n y   k e y .
```

The Hand Held Terminal (HHT) utilizes a convention called soft keys. There are three softkeys, and they are buttons [S1], [S2], and [S3] on the top of the keypad. The function of the softkeys is defined by the bottom row of LCD text that is in brackets above each of the softkeys. If there is no text in brackets on the bottom LCD row above the softkey, then that softkey does not have a function for that particular menu.

#### Help Screen 2

```
L o w e r   r o w   [   L C D   t e x t   ]
d e f i n e s   f u n c t i o n   o f
[   S 1   ]           [   S 2   ]           [   S 3   ]
P r e s s   a n y   k e y .
```

All text in the square brackets [ ] within the LCD menus refer to a key or softkey [S1] [S2] [S3] entry.

Additionally, throughout this users guide, the convention is that any button press on the keypad is referenced by the name of the button within brackets. For example, if you were being directed to press the config rack button, it would be so indicated as [CONFIG RACK], where the label on the button is within square brackets.

If we're instructing you to activate one of the three soft key buttons as discussed in help screen #2, they will be so indicated as (STAT) which from the main rack information screen is available from [S2]. Pressing the button labeled [S2] activates the soft key (STAT) which actually shows you the current operating status of the rack.

To skip these 2 help screens the next time you use the HHT, press [CONFIG RACK] as soon as the HHT powers up. This will cause the HHT to jump to the main display menu.

#### Hand Held Operation Test & Verification

Next, lets check to see if your HHT is configured properly. Press and hold the [2] key switch. When a control module receives a valid keyswitch entry from the HHT, it turns on the diagnostic LED. Look at the



diagnostic LED on the control module. Does the LED flicker very rapidly ? If so, then your hand held terminal is configured properly, therefore skip down to the next paragraph. If it blinks slowly (about once per second) then your hand-held remote is not configured properly for operating with version 1.2 or later software, so please call (503) 404-5500 and ask to speak to a tech services representative. They will walk you through the i series e HHT configuration procedure.

You should now be at the main local menu which is:

**Main Local Menu**

i	S	E	R	I	E	S	E	1	.	5	L	O	C	A	L		
R	A	C	K	0	1	^	C	M			6	0	H	Z			
V	A	=	1	2	4	V	B	=	1	2	5	V	C	=	1	2	2
[	R	A	C	K	]	[	S	T	A	T	]	[	D	I	M	S	]

Maybe the control module's not configured as expected. Parameters like the rack number, control module position, and line voltage range are set later in this manual. The following outline details the display values and their functional descriptions.

**Display**                      **Description**

<b>i series e</b>	Product Identification.
<b>V1.5</b>	Current software version. If it reads V1.0 or V1.1, then you need a software upgrade before proceeding further.
<b>Rack//</b>	Default rack number. If no one has set up the HHT configuration before, then this is what you'll see. Don't worry. It's only really applicable in remote mode for the HHT to operate properly. If someone has already configured the rack it will probably display <b>RACK 01</b> , <b>RACK 02</b> or something with a logical number association.
<b>^CM or vCM</b>	Upper Control Module Lower Control Module
<b>50hz or 60hz</b>	Power Line Frequency. Determined by software.
<b>VA=124V VB=125V VC=122V</b>	Don't worry if the line voltage setting is displayed in the wrong range for now. It won't hurt anything. The control module doesn't care if it is operating within the range of 90-135VAC or 190-260VAC. The Voltage display range is set by a bit that is read in from the eeprom on the backplane.
<b>[RACK]</b>	[S1]softkey function. Go to rack configuration menu
<b>[STAT]</b>	[S2]softkey function. Go to status Menu
<b>[DIMS]</b>	[S3]softkey function. Go to dimmer configuration menu

## 3.2 *i series e HHT – Local Mode -- Display Rack View*

---

Press **(RACK)** or **[S1]** from the main menu. The LCD screen will then display the following:

### Display Rack – Main Screen

D	I	S	P	L	A	Y	R	A	C	K	#	0	1						
U	P	P	E	R	C	O	N	T	R	O	L	M	O	D	U	L	E		
1	2	0	V	O	L	T	A	C	S	Y	S	T	E	M					
[	M	O	R	E	]		[	H	E	L	P	]		[	B	A	C	K	]

This screen is showing you the current global settings of the control module:

### Display Rack #01

Default rack number. If no one has set up the HHT configuration before, then this is probably what you'll see. If someone has already configured the rack it will probably display 01, 02 or something with a logical number association.

### Upper Control Module

Indicates that you are viewing configuration of either the “upper” or “lower” control module. If the displayed value is incorrect, it should be changed in configuration mode.

### 120 Volt System

Indicates the current system voltage, either 120V or 240V.

Pressing the **(MORE)** soft key gives you the next screen which shows the following rack settings:

### DMX Hold Time = 0 min

This is the amount of time the control module will hold the last DMX packet it received before fading to black. A [0] hold time will cause the control module to hold the last packet for about five seconds and then fade to black. A [5] minute hold time will cause the control module to save the last dmX packet for 5 minutes and then fade to black. A [ 9] minute hold time will cause the control module to save the last dmX packet for 9 minutes and then fade to black. An [i] minute(infinite) fade time is set by the [FL] key when in configuration mode, and will cause the control module to hold the last dmX packet forever. Valid values are 0-9 minutes, or i for infinite.

### Line Regulation=SLOW

The choices are **[FAST]**, **[SLOW]** and **[OFF]**. Line regulation is a feature that attempts to compensate for incoming power feeder fluctuations. The control module monitors the voltage of the incoming line and compensates for line surges and sags over the course of several dozen cycles. Examples of the normal application for line regulation:

**Brown Out.** Lets say during the course of your show, the incoming power line drifts down from 120VAC to 113VAC. Lights that are under dimmer control under 109 Volts will automatically "dim up"to compensate for the power line sagging down. This will cause your lights at half intensity, or about 84VAC RMS, to remain at 84VAC. If the line goes back up, even higher perhaps, the output at half intensity should remain at about 84VAC. The lights that are on at full however, will dim down as the power line sags because the are already dimmed up as far as they can be.

**Boosted Power Feed.** Some installations feed the dimmer racks with a "Hot" power feed of about 125 to 130VAC RMS. This is done so that if the power feed is hot enough to

compensate for the voltage drop across the dimmer (most stage dimmers have about 5 VAC RMS across them at full) and any sags the feeders may experience during the course of a show. The Control Module will use this extra voltage to its advantage to maintain 115VAC at full intensity. If the line surges up from 126 to 133VAC the control module will dim down the dimmer level at full intensity so the output stays at 115VAC.

**[FAST]** line regulation averages 64 power cycle measurements and compensates the firing angles (turn on times) of the dimmers as a result of the running average.

**[SLOW]** line regulation averages 256 power cycle measurements and compensates the firing angles (turn on times) of the dimmers as a result of the running average. SLOW line regulation is recommended for installations with highly erratic power fluctuations, because there have been cases where fast line regulation compensates too quickly, and affects the incoming line voltage, which causes another dimmer compensation, which causes the feeder voltage to change, which all ends up as dimmer flickering.

**[OFF]** this will turn off the line regulation feedback. The control module will dim as if the power were set at 120VAC. The firing angles will not be affected by voltage fluctuations in the incoming line.

Press (BACK) or (MORE) allows you navigate through the remainder of the rack setting screens. The additional status options on the rest of the screens are as follows:

**System MAX Level or System MIN Level**

Shows the currently set maximum/minimum output level (in percent) of all dimmers in the rack.

**Non-Dim Cutoff Lvl**

Shows the currently set level for dimmers defined with the “non-dim” curve. (See dimmer curves later on in this manual) When the control channel is below the cutoff level, the dimmer will shut off. For example, by default the non-dim cutoff level is set to 40 or 40%. If the control channel is at 41% -100%, the dimmer will be on. If the control channel is at 0% -40%, the dimmer will be off

**HiLume Cutoff Lvl**

**Mark X Cutoff Lvl**

**TuWire Cutoff Lvl**

**LV Mag Cutoff Lvl**

Shows cutoff levels for all of the above source types, HiLume, Mark X & Tu-Wire Fluorescent dimming ballasts, and low voltage circuits run through a magnetic transformer. All of these loads have unique operating characteristics which require a low end cutoff.

**Luma-Net Restore**

Shows whether or not the Luma-Net restore option is activated (ON) or disabled (OFF).

**DMX512 START**

**LUMA-NET START**

Shows the current start address for the DMX512 and Luma-Net input sources

### 3.3 *i series e HHT – Local Mode – Edit Config Rack*

---

To change rack configuration options for this control module, you first enter configuration mode and then page through the screens and make your changes. The configuration screens are laid out the same as the display rack screens as discussed in chapter 3.2. To enter rack configuration mode, follow the following procedure:

1. From the main local menu, press the (RACK) softkey  
(if you are not at the main local menu, either use the (BACK) button to return, or simply unplug and re-plug in the HHT)
2. Press (RACK)
3. Press [CONFIG RACK]

E D I T	R A C K	C O N F I G
E n t e r	S e t u p	C o d e
	X X X X	
		[ B A C K ]

4. Enter the password / setup code (factory default is 0000)

The Config Rack menu should now be visible on the LCD Display.

#### **Config Rack – Main Menu**

E D I T	R A C K	#	# 0 1
U P P E R	C O N T R O L	M O D U L E	
1 2 0	V O L T	A C	S Y S T E M
[ M O R E ]	[ H E L P ]	[ B A C K ]	

The difference between configuration mode and display mode is that in configuration mode you have a cursor which is blinking at it's current location. To move from field to field within the configuration screens, press the [ENTER] button. To change values, either use the [UP][DOWN] buttons to select from a list or enter the numeric value with the number pad.

Using the (MORE) and (BACK) buttons you toggle through the same menu's as when in display mode, however, you're able to change values using the [ENTER] button to move between fields, and [UP][DOWN] or the keypad to change values.

When in configuration mode, if you make a mistake when entering a value, press the (BACK) soft key. This works like an 'undo' and will not save your changes. Alternatively, pressing the enter or (MORE) key will save your changes.

Two additional screens are available when in rack configuration mode which are not available in rack display mode. These screens are accessed by pressing the (MORE) button past the cutoff level screens.

### Config Rack – Change Rack Password

To change the rack security/setup password, follow this procedure:

1. Enter rack configuration mode as discussed above.
2. Press the (MORE) soft key until you get to the setup code screen.
3. Enter the new password.

```
E D I T      R A C K      #          0      1
E n t e r      N E W      S e t u p      C o d e
                0 0 0 0
[ M O R E ]                                [ B A C K ]
```

### Return to Default Settings

The second screen which is available in config mode which is not available in display mode is the “return to factory default” settings screen.

The factory default looks at the phase-balanced jumper on the backplane (JP6 – in = phase balanced, out = sequential) and loads DMX and Luma-Net channel numbers for the entire rack based on the global start addresses of 1. Other factory default components are indicated above and below. Unlike current software all configuration elements are set to some default.

To return to factory default settings:

1. Enter rack configuration mode as discussed above.
2. Press the (MORE) soft key until you get to the factory default setup screen
3. Press the (FACTORY) softkey

```
I n i t i a l i z e      E E p r o m
F A C T O R Y      f o r      d e f a u l t
s y s t e m      s e t t i n g s
                [ F A C T O R Y ] [ B A C K ]
```

4. You will now see the following screen

If you chose FACTORY the HHT will display the following.

```
E E p r o m      w i l l      b e      s e t
t o      F A C T O R Y      d e f a u l t ! !
‘ E N T E R ’      t o      p r o c e e d
A n y      o t h e r      k e y      E X I T
```

EXIT will return to the previous screen. ENTER will cause the EEPROM to be erased and the factory default values to be loaded. During this time nothing appears to be happening and then after several seconds the HHT screen goes blank. The default is now loaded. Proceed as if you had just plugged in the HHT by pressing any key.

## 3.4 *i series e HHT – Local Mode –Help*

---

Several help screens are available to walk users through setting the rack configuration parameters and give you additional basic information. The screens are enabled by pressing the (HELP) soft-key when navigating through the displays.

### 3.5 *i series e HHT – Local Mode – Dimmer View*

---

Go to the main local menu. Assuming this control module has been set for rack 01 upper control module , 120VAC system, on a 60hz line, you will see the following:

To enter the dimmer view:

1. From the main local menu, select (DIMS)

You will see the screen below:

#### Dimmer View Menu

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]
    
```

Here is a description of the items on this display and their meanings:

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]
    
```

This is the dimmer slot position in the rack to which the information shown on this screen applies. Dimmer slot positions are numbered sequentially from top to bottom in the rack. **DIMMER = 01** is the top load lug position in the rack. **DIMMER = 96** is the bottom load lug position in a *i96e* rack; or **DIMMER = 48** is the bottom load lug position in a *i48e* rack; or **DIMMER = 24** is the bottom load lug position in an *i24e* rack

---

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]
    
```

This is the current level that the dimmer is at (0 to 100%). 100% is indicated by FL for FULL.

---

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]
    
```

This indicator field shows where the controlling source is coming from for a particular dimmer. Please note that all the control source inputs (except Luma-Net) pile-onto each other in a highest takes precedence fashion. Luma-Net is a last action process including when transferring to Luma-Net from other control sources. The following display fields are possible:

- DMX** The control level from the DMX-512 input has created the highest level.
- LUM** The control level from the Luma-Net input has created the last action level
- A1** The control level from analog input submaster 1 has created the highest level.
- A2** The control level from analog input submaster 2 has created the highest level.
- A3** The control level from analog input submaster 3 has created the highest level.
- A4** The control level from analog input submaster 4 has created the highest level.
- A5** The control level from analog input submaster 5 has created the highest level.
- A6** The control level from analog input submaster 6 has created the highest level.
- A7** The control level from analog input submaster 7 has created the highest level.

- A8** The control level from analog input submaster 8 has created the highest level.
- A9** The control level from analog input submaster 9 has created the highest level.
- A10** The control level from analog input submaster 10 has created the highest level.
- A11** The control level from analog input submaster 11 has created the highest level.
- A12** The control level from analog input submaster 12 has created the highest level.
- PAN** The control level from the active panic scene has created the highest level.
- BKP** The control level from the active backup scene has created the highest level.

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]
```

The small “f” indicates that Luma-Net is providing readback (feedback) to the control stations. It usually appears at the end of the Luma-Net address as it is a Luma-Net function. In this screen there is no room there so it appears after the controlling signal source.

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]
```

This is the maximum level the dimmer will ever go to, regardless whether any of the control inputs tell it to go higher. This feature is useful for extending lamp life, for chandelier circuits or other places where bulb replacement is awkward. A maximum output setting of 85% will increase the lamp life of most incandescent lamps by a factor of 10. The standard patches (address thumb-wheel positions 1-15) force this value to full. If you wish to change this value, then you must first enter a custom patch for the rack (see section 2.31). When you are finished, select the custom patch using thumb-wheel address 0, which will enable maximum levels, minimum levels, and non-dims

Note: If the selected dimmer curve contains a cutoff value, the MAX=FL & MIN=00 spaces will be replaced with CUTOFF=02 indicating that the cutoff is at 2%.

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]
```

The small “s” indicates that the value assigned to the dimmer displayed is the same as the global (system-wide) value. If the value is changed here the “s” will disappear. If the global value is then changed this value will remain. To re-unite this value with the global value, change this value to match the current global value. The “s” will reappear.

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]
```

This is the minimum level the dimmer will ever go to, regardless whether any of the control inputs tell it to go lower. This feature is useful for extending lamp life by eliminating the shock of cold tungsten inrushes, and

is also excellent for decreasing lamp response delay when using bump buttons on the control console. The standard patches (address thumb-wheel positions 1-15) force this value to off. If you wish to change this value, then you must first enter a custom patch for the rack (see section 2.31). When you are finished, select the custom patch using thumb-wheel address 0, which will enable maximum levels, minimum levels, and non-dims.

Note: If the selected dimmer curve contains a cutoff value, the MAX=FL & MIN=00 spaces will be replaced with CUTOFF=02 indicating that the cutoff is at 2%.

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]

```

This is the DMX control channel that the current dimmer slot is patched to. This value is determined from the thumb-wheel address setting, the phase balanced or sequential jumper setting JP6 on the *i series e BACKPLANE* (installed = phase balanced / removed = sequential), or in the case of thumb-wheel address position 0, the DMX channel is determined from the custom patch stored on the eeprom of the back-plane.

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]

```

This space containing “MKX” indicates the type of dimmer curve assigned to the dimmer indicated, in this case Mark X. If this space is blank the curve is for the NORMAL square-law dimmer. See the section below on dimming curves for more details.

```

D I M = 0 1 * V I E W * L V L = 0 0
D M X f M A X = F L s M I N = 0 0 s
D M X = 0 0 1 M K X L U M = 0 0 0 1
[ E D I T ] [ F O R C E ] [ B A C K ]

```

LUM=0001 setting similar to the DMX=001 setting indicates which Luma-Net control channel that the current dimmer slot is patched to. This value is determined from the thumb-wheel address setting, the phase balanced or sequential jumper setting JP6 on the *i series e BACKPLANE* (installed = phase balanced / removed = sequential), or in the case of thumb-wheel address position 0, the Luma-Net channel is determined from the custom patch stored on the eeprom of the back-plane.

Now that we’ve covered the information which is shown on this screen, let’s take a quick look at the three available Softkeys:



- (EDIT)** Selection of this soft-key enters into the custom patch menu. (See section below on editing dimmer information)
- (FORCE)** Selection of this soft-key enters into the force dimmer (dimmer check) menu. See section 2.40
- (BACK)** Return to main local menu

### Selecting Dimmers in the Dimmer Display

To change the dimmer slot of which you are viewing data, from the view menu type in on the keypad the dimmer slot which you desire. Remember, dimmers are number from the top to the bottom of the rack regardless of the patch. A **[0][5]** entry will show you the levels and settings for dimmer slot 5. A **[9][5]** entry will show you the levels and settings for dimmer 95. You may press the **[UP]** or **[DOWN]** keys to step through the dimmer positions in the rack.

## ***3.6 i series e HHT – Local Mode – Force Dimmer –or- Dimmer Check***

A dimmer check can be used any time you want to “force” the level of a dimmer to a particular point disregarding the instructions of any incoming control signal. To perform a dimmer check, from the dimmer view menu, press the (FORCE) button. You will see the following screen:

```

F O R C E      D I M M E R      # =
                                [ A T ] =
                                [ B A C K ]
```

To force a dimmer to a control level, follow the flashing box cursor:

1. The cursor will first prompt you for the most significant dimmer slot digit. After you enter the ‘tens’ digit, enter the ‘ones’ digit. Remember, these are the dimmer positions within the rack, not the DMX channels they are patched to.

Follow the prompt and enter the control level. As soon as you enter the second control level digit, the dimmer for will go to that level, and the cursor will jump back up to the most significant dimmer slot number digit.

From this point, you can perform the following actions:

- The control level will decrease by approximately 10% each time the **[DOWN]** key is pressed,
- The control level will increased by approximately 10% each time the **[UP]** key is pressed.
- The **[NEXT]** soft key will increment to the next dimmer number, while keeping the current control level active.
- The **[LAST]** soft key will decrement the dimmer slot number, while keeping the current control level active.

The dimmer *will* go to the FORCE level except when:

1. **There is a second control module on line.** If a second control module is plugged in and driving the dimmer circuit you wish to control, the force dimmer level will pile-onto the other control modules’ drive level in a highest takes precedence (HTP) fashion.

2. **Test switch latched on for *i series* Quad dimmers.** If the Quad circuit you wish to control is activated by the latching test switch on the dimmer module itself, then the FORCE dimmer menu will not be able to control this dimmer.

With these functions, one can quickly step through all the dimmers in the rack, or set a specific dimmer to a specific control level. To exit the **FORCE** dimmer menu, press **[BACK]** while the cursor is flashing on the most significant dimmer slot # digit. The active forced dimmer will return to its normal control level. Unplugging the hand-held will also return the forced dimmer back to its normal control level.

### 3.7 *i series e HHT – Local Mode – Dimmer Profile Editing*

---

To edit any of the setting on a per-dimmer slot basis, from the dimmer view screen, you follow the following procedure:

1. From the dimmer view screen, press the (EDIT) softkey.
2. Review the help message, and press any key to continue
3. Enter the setup code/password as requested
4. You now will be in the edit dimmer slot screen, editing dimmer slot #1.
5. Make all desired changes per the information below
6. Press (BACK) to initiate the process of saving changes
7. You will be asked if you want to save all changes to the backplane. You have the following choices:
  - a. **[YES]**, all the custom patch data you created in RAM will be written to the EEPROM on the backplane, which will keep the custom patch you created forever.
  - b. **[NO]**, then the changes you made stay in RAM and are available as long as the control module remains powered up, but as soon as the control module is powered down, the changes are lost. Powering up the module will automatically load in the saved custom patch configuration from the EEPROM on the backplane. If you accidentally entered **[NO]** when you really meant to enter **[YES]**, then just press **[EDIT]** again to get into the edit menu, then **[BACK]** again to exit the edit menu, and this time press **[YES]**. The hand held screen will note that it is saving the changes.

When editing dimmers, you have the following options:

To edit a different dimmer slot, enter the number into the DIM # field

To move between fields, use the [ENTER] key

#### Edit Screen

E D I T	D I M # = 0 1	D M X = 0 0 1
C R V = N O R M A L	L U M = 0 0 0 1 f	
M A X = F L s	M I N = 0 0 s	
[ B A C K ]		

As one steps through the edit screen to CRV (curve) the following soft keys appear.

[ N E X T ]	[ N O R M A L ]	[ B A C K ]
-------------	-----------------	-------------

Pressing the NEXT soft key will scroll through changes to the NORMAL soft key as follows:

**NORMAL** – standard square-law incandescent dimmer curve with fully-adjustable min and max level. Max at 0 locks the dimmer off. Min at FL locks the dimmer on. Max and min equal parks the dimmer at that level. Min above max parks the dimmer at the min value.

**NONDIM** – full on/full off function with fully-adjustable cutoff (switch) point. Setting to 0% locks the circuit on. This feature is a full-on function with no voltage regulation.

**MARK10** – curve appropriate for Mark X fluorescent ballasts (60 to 120V) above 2% cutoff point, off below 2% cutoff point. Cutoff point adjustable, curve remains the same. Curve is linear light based on light meter.

**TUWIRE** – similar to Mark X but with a curve appropriate to Lutron TuWire fluorescent ballasts. Currently this is the same as the MARK10.

**HILUME** – odd/even dimmer within a dual module paired as noted above. Variable dimmer with curve appropriate for Lutron HiLime fluorescent ballast above the 2% cutoff. Switched dimmer off below the 2% cutoff. Cutoff point is adjustable, curve remains the same. Standard cutoff should be changed to 1% to match a2000. Again curve is linear light based on light meter. **Note:** Dimmer module must have CTP-4-0307 fluorescent handle tie kit installed. HiLume is not available for quad dimming.

**LVMAG** – standard square-law incandescent dimmer curve with adjustable cutoff in lieu of min and max level.

NOTE: i Series e and QUAD will not control Mark VII fluorescent ballasts because there are no analog output circuits available.

Then pressing that soft key will enter that “curve” into the edit screen and reorganize that screen appropriately. As an example the HILUME screen is as follows.

E	D	I	T	D	I	M	#	=	0	1	D	M	X	=	0	0	1						
C	R	V	=	H	I	L	U	M	E	L	U	M	=	0	0	0	1	f					
C	U	T	O	F	F	=	0	2	s														
																		[	B	A	C	K	]

Stepping further through the EDIT screen to LUM(aNet) causes a special soft key to appear. The default for Luma-Net read back (feedback) is “on” as indicated by the “f” next to the Luma-Net address. In the lower left corner of the screen a soft key labeled [DM-FB OFF] will appear. Pressing this key will turn off feedback, remove the “f” and change the key to [DM-FB ON]. This key will toggle.

### 3.8 *i series e HHT – Local Mode – Custom Patches*

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If one of the default patches is not appropriate for your application, then you can create a custom DMX to dimmer slot position patch and a different Luma-Net channel to dimmer slot position patch.

Note: In order to create custom patches, the thumbwheel must be in position ‘0’.

#### **To create a custom DMX patch:**

1. From the dimmer view screen, press the (EDIT) softkey.
2. Review the help message, and press any key to continue
3. Enter the setup code/password as requested
4. Enter the dimmer slot/position # you need to patch
5. Press the [ENTER] button until you’re at the DMX=xxx field
6. Using the keypad, enter the DMX channel you want associated with this dimmer
7. Repeat this procedure until all changes have been made
8. Press (BACK) to initiate the process of saving changes
9. You will be asked if you want to save all changes to the backplane. Enter (YES) to permanently save the changes, or (NO) to save the changes only per this session.

#### **To create a custom Luma-Net patch:**

1. From the dimmer view screen, press the (EDIT) softkey.
2. Review the help message, and press any key to continue
3. Enter the setup code/password as requested

4. Enter the dimmer slot/position # you need to patch
5. Press the [ENTER] button until you're at the LUM=xxx field
6. Using the keypad, enter the Luma-Net channel you want associated with this dimmer
7. Repeat this procedure until all changes have been made
8. Press (BACK) to initiate the process of saving changes
9. You will be asked if you want to save all changes to the backplane. Enter (YES) to permanently save the changes, or (NO) to save the changes only per this session.

**NOTE:** You can enter from the rack configuration menu a start address for the first dimmer position other than 1. This has the effect of automatically renumbering every dimmer in the rack from the start address you enter. This is a quick way to create a custom “offset” patch.

### ***3.9 i series e HHT – Local Mode – Status***

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From the main local menu, there is a soft key option, [STAT], that mimics the state of the control input LED functions and displays the current control module status condition. This display can be useful in determining the status of the control module as it details these various control states:

- **OK** (normal operating condition)
- **EMERGENCY** (refer to section 1.64 for a functional description of emergency mode)
- **BACKPLANE ERROR** (unable to read serial EEPROMS on backplane, see section 1.7)
- **OVERTEMP** (a dimmer in the rack is in overtemp warning or shutdown)

## 4.0 *i series e HHT – Remote Mode – HHT Connection*

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In order to activate the backup looks on the *i series e* rack (s), the hand held terminal must be plugged into a remote hand port that is wired to terminal block TB2 on the each of the racks. The pin out is as follows:

<u>XLR PIN#</u>	<u>TB2 SIGNAL</u>	<u>Description</u>
1 -----	GND -----	GND
2 -----	HH+12V -----	+12VDC Unregulated Power
3 -----	HHR RXD- (line over the top) -----	HHT → Control Module switch data-
4 -----	HHR RXD+ (no line) -----	HHT → Control Module switch data+
5 -----	HHR TXD- (line over the top) -----	Control module → HHT LCD data-
6 -----	HHR TXD+ (no line) -----	Control module → HHT LCD data+

The control signals should be daisy-chain connected to all racks that are going to respond to the backup looks. In remote mode, rack 1 upper control module is the module that sends the LCD information to the HHT, while all the other control modules just listen. For this reason, if each of the control modules is not set up with its own unique identity, then the system may not respond in remote mode properly.

## 4.1 *i series e HHT – Remote Mode – Record Look*

---

Remote mode is designed for recording and playing backup looks. The most convenient two positions for utilizing backup looks in a theatrical application is at control booth or the stage managers panel.

1. Plug in the hand held terminal to a remote port near the control console. The HHT should beep and display a flashing cursor box after initialization.
2. Press the [REC LOOK] key. The following menu shall be displayed:

### 4.11 Record Look Menu

**RECORD LOOK # = 00**  
**FADE TIME = 003.0**  
**(IN SECONDS)**  
**[BACK]**

3. Bring up the scene that is to be recorded on the control console. All analog control inputs to the racks, and panic to the racks should be disabled at this point, so that the console is the only source driving the lights.
4. On the HHT, enter the look number where this active scene to be recorded. The cursor will prompt for the most significant digit first, and then the least significant digit. Valid scenes range from 00 to 99.
5. Enter the fade time in seconds. This will be a true dipless crossfade into the scene that is about to be recorded. The previous backup look will fade out at the same speed when the [GO] button is pressed during a [GO TO LOOK] playback sequence.
6. After both the look # and the fade time has been selected, the HHT will prompt with “are you sure” in the following screen. Assuming that look #01 with a fade time of 5 seconds were entered, the LCD screen you look like the following:

#### 4.12 Record Look Menu – Are You Sure?

```
RECORD LOOK # = 01
FADE TIME = 005.0
ARE YOU SURE?
[BACK]
```

7. At this point, there are two options: [ENTER] to record the look, or [BACK] , which will return the cursor to the fade time field. An [ENTER] selection will snapshot record the current active scene on the DMX-512 port(s) and write it to the EEPROMS on the backplane.
8. Repeat steps 3 through 7 for each backup look that is to be stored in the racks. The backup looks will auto-increment on playback, so it is recommended that the backup looks are recorded in the sequence they are to be played back. The backup looks may be played out of sequence, but it requires more concentration than just pressing the [GO] key.

Please note that this DMX snapshot procedure is also detailed in section 2.3 of this manual. When you are finished recording all of the backup looks, with the cursor blinking on the most significant look number digit, press the [BACK] soft key. The following main menu will be displayed:

#### 4.13 Main Remote Menu

```
i series e      V1.1
REMOTE MODE
rec / goto look active
```

Please note that “ V1.1 ” is a bug. The display should read “ V1.2 ” for version 1.2 software, but it doesn't. The correct version is displayed, however, on the local mode main menu display on the front port of each control module. This is the menu position that the HHT should be left in, when finished using either the [REC LOOK] or [GO TO LOOK] menus.

## 4.2 *i series e HHT – Remote Mode – Go To Look*

---

To play backup looks, either plug in the HHT into the remote mode port, and press [GO TO LOOK] , or from the following main menu :

#### 4.21 Main Remote Menu

i series e V1.1  
REMOTE MODE  
rec / goto look active

Press **[GO TO LOOK]**. The following information would be displayed, assuming the HHT was last at look 00 with a fade time of 3 seconds:

#### 4.22 Go To Look Menu

GO TO LOOK # = 00  
FADE TIME = 003.0  
(IN SECONDS)  
[BACK]

If you wish to enable backup look 00 at the 3 second fade time, then just press the **[GO]** key. If you wish to change the look number, then enter the two digits (00 to 99) for the look number that is to fade in. Assuming you entered **[0][1]**, the cursor would jump down to the fade time, and the following would be displayed:

#### 4.23 Go To Look Menu

GO TO LOOK # = 01  
FADE TIME = 003.0  
(IN SECONDS)  
[BACK]

At this point, if the **[GO]** button is pressed, the system will fade to look **[0][1]** from blackout in 3 seconds. For the first executed crossfade, the system will take the fade time in the display window, and not the display time recorded in memory. This is done so that scenes may be played back with a different fade time, or out of sequence with a different fade time.

Press the **[GO]** key. The following screen will be displayed:

#### 4.24 Go To Look Menu -- Crossfading

GO TO LOOK # = 01  
FADE TIME = 003.0  
CROSS FADING ...  
[BACK]

- During the crossfade, The **[STOP / REV]** key may be pressed. Pressing the **[STOP / REV]** once will cause the cross fade to pause. At this point there are two options: pressing the **[GO]** button will continue the crossfade, and pressing the **[STOP/ REV]** key again will reverse the crossfade back to the previous active scene.
- At the completion of the crossfade, the system will auto-increment the backup look number. From that point, either the **[GO]** button may be pressed, or a different fade time may be entered by pressing the **[ENTER]** key, or a different look number and fade time may be entered.
- As with all the i series e HHT menu's, the **[ENTER]** key increments cursor through the various selection fields, while the **[BACK]** softkey backs up a position or a field entry.

When you are finished playing backup looks, with the cursor on the most significant GO TO LOOK # digit, press the **[BACK]** key. This will return the system to the main menu where either **[REC LOOK]** or **[GO TO LOOK]** may be selected.



## 5.0 *i series e Maintenance*

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**Caution:** *Do not perform maintenance with the rack energized.*

### **Dust Removal**

Every six months (or more often, if the environment is particularly dusty) any accumulation of dust should be cleaned from the rack. An accumulation of dust can impede proper airflow and lead to overheating of dimmer or control modules. The following areas should be checked and cleaned:

- ◆ door air filters
- ◆ door air vents
- ◆ vents around hand held terminal door enclosure
- ◆ fan grilles
- ◆ dimmer module air intake openings
- ◆ control module air intake openings

The door air filters should be cleaned by washing them. To wash them, first remove them as you would a household window screen: push the bottom of the frame up, then out of the track. Clean the filters by spraying water through them. If the filters are particularly dirty, a soapy, grease-cutting cleaner may be used to remove the dirt, but the filters must then be rinsed with water. The air filters must be completely dry before they are reinstalled in the rack door.

Removal of dust from the vents, grilles and air intake openings can be done with compressed air or a vacuum.

### **Wire Termination Integrity**

Every six months, check wire terminations for tightness: bus to bus, bus to lug, and lug to terminal or wire. Refer to the Installation Manual for the terminal-to-wire torque ratings and for other torque ratings.

## 6.0 *i series e Specifications*

<b>Rack Capacity (96/48)</b>	96/48 Circuits, 20 (120V) or 25A (240V) Amp max. per circuit 48/24 Circuits, 50 Amp max. per circuit
<b>Dimensions</b>	84.5" H x 16.5" W x 24" D 50" H x 16.5" W x 24" D
<b>Weight</b>	i96 rack: 330 lbs (151 kg) Empty 650 lbs (294 kg) Full i48 rack: 175 lbs (80 kg) Empty 340 lbs (155 kg) Full 1,000A Cross Bussing - 29 lbs. per section 2,000A Cross Bussing - 58 lbs. per section 3,000A Cross Bussing - 90 lbs. per section Amp Traps - 31 lbs. per section
<b>Conduit Entry Areas</b>	See section 4
<b>Maximum Fan Noise Rating</b>	71 dBA
<b>Ambient Operating Temperature</b>	0°C (32°F) to 40°C (104°F)
<b>Maximum Operating Humidity</b>	90% without condensation
<b>Maximum Feeder Size</b>	800 Amp (400A for i48 rack)
<b>Nominal Input, 120V Circuits</b>	120/208V, 3Ø, 4W, 50/60Hz or 120/240V, 1Ø, 3W, 50/60Hz
<b>Nominal Input, 240V Circuits (foreign service)</b>	240/415V, 3Ø, 4W, 50/60Hz or 240/480V, 1Ø, 3W, 50/60Hz
<b>Phase-to-Neutral Operating Voltage</b>	100-127V ± 10% or 220-240V ± 10%
<b>Operating Frequency</b>	47-63Hz
<b>Rack Enclosure</b>	NEMA type 1 for indoor use only (utilizer dans un edroit a l'arbi)

### **Specifications: Belden Cable 9829 and 9830**

24 Gage; Stranded Conductors (7x32); Polyethylene Insulated; Beldfoil 100% Shield Coverage; 30V; 80°C; Tinned copper; twisted pairs

Trade No	No. of Pairs	Nominal D.C.R		Nom. Imp. (ohms)	Nom. Vel. of Prop.	Nominal Capacitance	
		Cond.	Shield			* pF/ft.	** pF/ft.
<b>9829</b> NEC CM CSA PCC FT 1	2	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.71Ω/M' 12.17Ω/km	100	66%	15.5	27.5
<b>9830</b> NEC CM CSA PCC FT 1	3	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.86Ω/M' 12.66Ω/km	100	66%	15.5	27.5

**Note: Belden 9830 may be substituted for Belden 9829**

## ***7.0 i series e Limited Warranty***

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Leviton Manufacturing, Colortran Division, warrants new products to be free from defective materials and workmanship for a period of one (1) year from the date of purchase to the original owner when purchased from an authorized Leviton Manufacturing, Colortran Division Dealer or authorized distributor.

The purchaser is responsible for completing and mailing to Leviton Manufacturing, Colortran Division, within 15 days of purchase, the warranty registration card enclosed with each product. Leviton Manufacturing products that have been subject to accident, alteration, abuse or defacing of the serial number are not covered by this warranty. The normal wear and tear of items such as knobs, jacks, and switches are not covered under this warranty.

If your Leviton Manufacturing, Colortran Division product requires service during the warranty period, Leviton Manufacturing will repair or replace at its option, defective materials provided you have identified yourself as the original owner of the product to Leviton Manufacturing or any authorized Colortran dealer. Transportation charges to an authorized dealer or to the Leviton Manufacturing factory for repair shall be the responsibility of the owner. All products returned to Leviton Manufacturing must have factory authorization for return prior to shipping.

Leviton Manufacturing, Colortran Division, is not liable for any incidental or consequential damages resulting from defect or failure other than repairs of the Leviton Manufacturing, Colortran Division product subject to the terms of this warranty. This warranty gives you specific legal rights, and you may have other rights which vary from state to state. This warranty is expressly in lieu of all other agreements and warranties expressed or implied except as may otherwise required by law.

### **Return Policy**

Prior to any return, please call Leviton Manufacturing, Colortran Division Technical Services at (800) 959-6004 for a Merchandise Return Authorization number (MRA#). Leviton Manufacturing is not liable for the loss of any product returned without a proper MRA#.

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