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2. Introduction

2.1. Overview

CUE, a.s. unveils the ipCUE controllers as a new generation of Ethernet IP enabled controllers. These controllers are well suited for single-room applications as well as huge multi-room, multi-floor distributed control applications. The ipCUE controllers come with multiple control ports well suited for home applications as well as commercial. The control ports include bi-directional serial ports RS-232, bi-directional serial ports configurable as RS-232, RS-422, or RS-485, infrared outputs up to 1.2 MHz that can be configured to control up to three pieces of equipment, general I/O ports that can also be configured as analog inputs and 24 volts relay outputs. The Ethernet port allows for bi-directional IP control of any manufacturer IP enabled products. The ipCUE controllers are compatible with CUE’s existing range of button panels and touch panels through and come equipped with a CUEwire port. For convenience there has also been a +5 VDC output added to the design for powering external low-voltage equipment (except ipCUE-gamma). The units are equipped with internal IR sensor (except ipCUE-gamma). The sensor allows to capture IR codes and links IR wireless control panels. Convenient for testing and troubleshooting the ipCUE controllers also come with indicator LEDs on the front panel, which indicates the status of all of the control ports. The ipCUE controllers keep perfect time with its onboard real time clock (RTC), thus allowing for a wide variety of distributed intelligence scheduling applications. The ipCUE controllers come complete with a web-server and allow for setup, configuration, and testing through a standard web browser. This web-based interface allows for the graphical monitoring and control of all ports, which provides a truly timesaving method for testing and troubleshooting.

2.2. Models and Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Product code</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>ipCUE-alpha</td>
<td>CS0251</td>
<td>IP based controller</td>
<td></td>
</tr>
<tr>
<td>ipCUE-beta</td>
<td>CS0252</td>
<td>IP based controller</td>
<td></td>
</tr>
<tr>
<td>ipCUE-gamma</td>
<td>CS0253</td>
<td>IP based controller, DIN rail mounting</td>
<td></td>
</tr>
<tr>
<td>ipCUE-delta</td>
<td>CS0267</td>
<td>IP based controller</td>
<td></td>
</tr>
<tr>
<td>ipCUE-epsilon</td>
<td>CS0268</td>
<td>IP based controller</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS0251-MR</td>
<td>Rack 19” mounting kit (sold separately)</td>
<td></td>
</tr>
</tbody>
</table>

2.3. Features

The main features of the controllers are

- Based on the Motorola ColdFire® processor
- Ethernet IP enabled
- Fully compatible with current CUE communication buses – CUEnet, CUEwire, CUEring and PEbus
- Standard control ports - bi-directional serial, IR/serial, general I/O, analog and relay ports.
- Web server complete with Admin Web pages for setup and diagnostics
- XPL Inside, fully compatible with CUE programming tools
- Front panel indicators for each control port
- Unified enclosure design for desktop, rack, DIN rail and wall installation - no special models required
- DIN rail, wall installation and 19” rack installation available with accessories

2.4. Programming

The ipCUE controllers are programmed using **Cue Director** programming tools.
## 3. Box Contents

<table>
<thead>
<tr>
<th>Item</th>
<th>ipCUE-alpha</th>
<th>ipCUE-beta</th>
<th>ipCUE-gamma</th>
<th>ipCUE-delta</th>
<th>ipCUE-epsilon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector Set</td>
<td>1 set</td>
<td>1 set</td>
<td>1 set</td>
<td>1 set</td>
<td>1 set</td>
</tr>
<tr>
<td>IR Adapter /i</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Ethernet cable straight-through</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ethernet cable crossed-over</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CUEadapter /30W</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Power Cable</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CE declaration</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>RoHS declaration</td>
<td>1</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Controller data sheet</td>
<td>1</td>
<td>1</td>
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<td>1</td>
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<tr>
<td>Cue System Connector Wiring</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CUE Application CD</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
## 4. Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>ipCUE-alpha</th>
<th>ipCUE-beta</th>
<th>ipCUE-gamma</th>
<th>ipCUE-delta</th>
<th>ipCUE-epsilon</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ethernet connection</strong></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/100 BaseT LAN, RJ-45 connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>System connection</strong></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CUEwire (RS-485) for control panels, dedicated 4-pin connector 5 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CUEring (RS-232) for interfaces, bi-directional serial channel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1*</td>
</tr>
<tr>
<td>PEBus (RS-485) for power and lighting control, bi-directional serial channel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1*</td>
</tr>
<tr>
<td><strong>Control ports</strong></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bi-directional serial RS-232, 5-pin connector 3.5 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bi-directional serial RS-232/422/485, 5-pin connector 3.5 mm</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>IR/serial output, IR output up to 1.2 MHz, 2-pin connector 3.5 mm</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>General I/O input (analog 0 - 5 V) or output (open collector max. 80 mA), 2-pin connector 3.5 mm</td>
<td>8</td>
<td>-</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Relay 24 V / 0.5 A, 3-pin connector 3.5 mm</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Analog output 0 – 10 V, 2-pin connector 3.5 mm</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Power output 5 VDC (max. 1 A), 2-pin connector 3.5 mm</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Internal IR sensor for IR code capture and for IR wireless control panel link</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>LED indicators</strong></td>
<td>PWR, LINK, ACT, CPU, All control ports</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Button Factory default settings</strong></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Real time and date - RTC with battery backup</strong></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>Internal RAM 16 MB, Flash 4 MB (16 MB from 2007)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td>XPL Runtime, Admin web</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power supply, 2-pin connector 5 mm</strong></td>
<td>24 VDC (+/-20%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>12 W</td>
<td>10 W</td>
<td>10 W</td>
<td>18 W</td>
<td>15 W</td>
</tr>
<tr>
<td><strong>Enclosure</strong></td>
<td>Metal</td>
<td>Metal</td>
<td>Plastic</td>
<td>Metal</td>
<td>Metal</td>
</tr>
<tr>
<td><strong>Dimensions (WxHxD) in mm</strong></td>
<td>210 x 43.5 x 92</td>
<td>210 x 43.5 x 92</td>
<td>106 x 90 x 68</td>
<td>422 x 43.5 x 92</td>
<td>210 x 43.5 x 92</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>0.6 kg</td>
<td>0.5 kg</td>
<td>0.4 kg</td>
<td>0.9 kg</td>
<td>0.6 kg</td>
</tr>
</tbody>
</table>

* Shared with S1 bi-directional serial RS-232 port
5. Quick Start

5.1. Powering Up

Every ipCUE controller requires power from an external power supply. The standard CUEadapter /30W is delivered with the unit. Attach the 2-pin connector of the power supply unit to the PWR IN connector located on the rear panel of ipCUE controller and attach power cable to a power outlet. The LED labeled PWR will light up when the unit is powered on.

5.2. PC Connection

Using LAN Directly to PC

Attach one end of an RJ-45 Ethernet crossed-over cable to the ipCUE controller CUEnet (LAN) port and attach the other end of the RJ-45 Ethernet cable to your computer.

Ethernet Crossed-Over Cable

This cable can be used to cascade hubs, or for connecting two Ethernet stations back-to-back without a hub. It works with 10Base-T, 100Base-TX, 100Base-T4 and 1000Base-T. Use a good enough cable, if you are confused about categories of cables then use Category 5 (enhanced) and you'll be fine even at 1000Base-T.

<table>
<thead>
<tr>
<th>NIC 1</th>
<th>NIC 2</th>
<th>Name</th>
<th>Color</th>
<th>NIC 1</th>
<th>NIC 2</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX+ (BL_DA+)</td>
<td>RX+ (BL_DB+)</td>
<td>1</td>
<td>White/Orange</td>
<td>3</td>
<td>1</td>
<td>TX+ (BL_DA+)</td>
</tr>
<tr>
<td>TX- (BL_DA-)</td>
<td>RX- (BL_DB-)</td>
<td>2</td>
<td>Orange</td>
<td>6</td>
<td>2</td>
<td>TX- (BL_DA-)</td>
</tr>
<tr>
<td>RX+ (BL_DB+)</td>
<td>TX+ (BL_DA+)</td>
<td>3</td>
<td>White/Green</td>
<td>1</td>
<td>3</td>
<td>RX+ (BL_DB+)</td>
</tr>
<tr>
<td>- (BL_DC+)</td>
<td>- (BL-DD+)</td>
<td>4</td>
<td>Blue</td>
<td>7</td>
<td>4</td>
<td>- (BL_DC+)</td>
</tr>
<tr>
<td>- (BL_DC-)</td>
<td>- (BL-DD-)</td>
<td>5</td>
<td>White/Blue</td>
<td>8</td>
<td>5</td>
<td>- (BL_DC-)</td>
</tr>
<tr>
<td>RX- (BL_DB-)</td>
<td>TX- (BL_DA-)</td>
<td>6</td>
<td>Green</td>
<td>2</td>
<td>6</td>
<td>RX- (BL_DB-)</td>
</tr>
<tr>
<td>- (BL_DD+)</td>
<td>- (BL_DC+)</td>
<td>7</td>
<td>White/Brown</td>
<td>4</td>
<td>7</td>
<td>- (BL_DD+)</td>
</tr>
<tr>
<td>- (BL_DD-)</td>
<td>- (BL_DC-)</td>
<td>8</td>
<td>Brown</td>
<td>5</td>
<td>8</td>
<td>- (BL_DD-)</td>
</tr>
</tbody>
</table>

That means that the White/Orange cable connected to NIC 1 pin 1 should go to NIC 2 pin 3 and NIC 1 pin 2 to NIC 2 pin 6 etc.
Notes

1. 1000Base-T names are in parentheses.

2. It's important that each pair is kept as a pair. TX+ & TX- must be in the pair and RX+ & RX- must together in another pair. Just as the table above shows.

3. While 10Base-T and 100Base-TX only uses 2 pairs, please connect all four since 100Base-T4 and 1000Base-T needs them and save you some future debugging.

4. The colors originate from the numbering and name on NIC 1.


Using LAN Network

Attach one end of an RJ-45 Ethernet straight-through cable to the ipCUE controller CUEnet (LAN) port and attach the other end of the RJ-45 Ethernet cable to your computer.
5.3. **Windows XP Local Area Connection Settings**

Steps are:

1. Start Windows XP.
2. Click Start, then click Control Panel choose the option to switch to Classic View.
3. Double-click Network Connections, select the Local Area Connection and then right-click and select Properties.
4. Select Internet Protocol (TCP/IP) and click Properties button.
5. Select Use the following IP address option. Set IP address to 192.168.1.1 (or other address different from 192.168.1.127) and Subnet mask to 255.255.255.0. Leave other options unchanged and click OK.

5.4. **Access Admin Web Server**

Run the Internet browser on your PC and type in the ipCUE factory default IP address **192.168.1.127**. The Admin login web page will be displayed. The password is set to default.
6. Front Panels

The ipCUE-alpha, ipCUE-beta, ipCUE-delta and ipCUE-epsilon front panels are made of aluminum plate. The ipCUE-gamma front panel is made of plastic. It should be cleaned with a soft/non-abrasive cloth. The indication LEDs and infrared sensors are behind the front panel.
7. Indicators

7.1. PWR Indicator
Off ............................................. No power presented.
On ............................................. Power 24 V is presented. The unit is ready.

7.2. LINK Indicator
Off ............................................. Network is not detected.
On ............................................. Network detected.

7.3. ACT Indicator
Off ............................................. No data transmitted or received through the CUEnet (LAN) port.
On or Flashing .......................... Data is being transmitted or received through the CUEnet (LAN) port.

7.4. CPU Indicator
This LED indicates the end of the operating system boot up by flashing OK in Morse code. Operating system is booted after the unit has either been reset or switched on. The booting time is approx. 26 seconds.

7.5. IR SENSOR
The window marked by IR SENSOR (not applied in ipCUE-gamma), covers two IR sensors and one LED indication.

1. The first built-in IR sensor carries the same functionality as irCUE Receiver or irCUE Receiver 485. This means that ipCUE can receive IR signal from CUE wireless IR control panels without the need to use any external IR receiver.

2. The second built-in IR sensor allows IR codes capture directly by ipCUE unit. The flashing Yellow LED indicates the received infra-red signal and serves for optimum distance setup between the receiver and captured IR remoter.
7.6. **SERIAL Port Indicator**

- **Off**: No data transmitted or received through the serial port.
- **Green On or Flashing**: Data is being transmitted through the serial port.
- **Red On or Flashing**: Data is being received through the serial port.

Note: The S1 serial channel is used as **CUer**ing port for interfaces and power and lighting control units.

7.7. **IR/SERIAL Output Indicator**

- **Off**: No data or IR code transmitted through the IR/serial port.
- **On or Flashing**: Data or IR code is being transmitted through the IR/serial port.

7.8. **GENERAL I/O Indicator**

- **Off**: Output is switched OFF.
- **On**: Output is switched ON.

7.9. **AUX Indicator**

- **Off**: AUX (relay) is switched OFF.
- **On**: AUX (relay) is switched ON.

7.10. **ANALOG Output Indicator**

- **Off**: Analog output is set to 0 V.
- **On**: Analog output is set to 10 V.
8. Rear Panels

Connectors and button are located on the rear panel of the device. All connectors are labeled incl. pin out.

ipCUE-alpha

ipCUE-beta

ipCUE-epsilon

ipCUE-delta

ipCUE-gamma
9. Connection

9.1. CUEnet (LAN)

The CUEnet is a standard network connection 10/100 BaseT LAN using RJ-45 connector. There is no auto sense, which means it does not recognize straight through cable to cross-over cable. For the direct PC connection it is necessary to use cross-over cable; for the connection to Ethernet switch straight through cable. The length of the Ethernet cable connecting ipCUE controller to the network must not exceed 100 meters.

Connector pin out

<table>
<thead>
<tr>
<th>RJ-45</th>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
<th>Cat5 Cable Color</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>TX_D1+</td>
<td></td>
<td>White / Orange</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>TX_D1-</td>
<td></td>
<td>Orange</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>RX_D2+</td>
<td></td>
<td>White / Green</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td>Blue</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td>White / Blue</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>RX-D2-</td>
<td></td>
<td>Green</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>G</td>
<td>Ground</td>
<td>White / Brown</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>G</td>
<td>Ground</td>
<td>Brown</td>
</tr>
</tbody>
</table>
9.2. PWR IN

Warning: Use any ipCUE controller only with the power adapter supplied in the product package. Using another power supply may damage the unit.

Connector pin out

<table>
<thead>
<tr>
<th>PWR IN</th>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-pin 5 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>Power +24 VDC</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Ground</td>
<td></td>
</tr>
</tbody>
</table>

9.3. CUEwire

Connector pin out

<table>
<thead>
<tr>
<th>CUEwire</th>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-pin 5 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>+24</td>
<td>Power +24 VDC</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>G</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A+</td>
<td>RS-485 Data +</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>B-</td>
<td>RS-485 Data -</td>
<td></td>
</tr>
</tbody>
</table>

9.4. OUT 5 V

Connector pin out (not applied in ipCUE-gamma)

<table>
<thead>
<tr>
<th>OUT 5 V</th>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-pin 3.5 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>Output +5 VDC, max. 1 A</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Ground</td>
<td></td>
</tr>
</tbody>
</table>
9.5. SERIAL 1 – 2

These two bi-directional serial channels are used for RS-232 communication. Maximum speed is 115 200 Bd (bps). Transmission levels for RS-232 output are in the -12 V to +12 V.

Connector pin out

<table>
<thead>
<tr>
<th>5-pin 3.5 mm</th>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>TxD</td>
<td>RS-232 Transmitted Data</td>
<td>From ipCUE</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>RTS</td>
<td>RS-232 Request to Send</td>
<td>From ipCUE</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>GND</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>RxD</td>
<td>RS-232 Received Data</td>
<td>To ipCUE</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>CTS</td>
<td>RS-232 Clear to Send</td>
<td>To ipCUE</td>
</tr>
</tbody>
</table>

Note: The S1 serial channel is used as CUEring port for interfaces and power and lighting control units.
9.6. SERIAL 3 – 6

Overview

These four bi-directional serial channels (ipCUE-alpha, ipCUE-delta only) are used for RS-232, RS-422 and RS-485 communication. Maximum speed is 115 200 Baud (bps). Default mode for all channels is RS-232, other modes must be set in programming application or by Admin Web. For more details about Admin Web see in the chapter Admin Web Server.

Channel Mode Setting

It is important to set channel mode in the programming application. The mode is selected by part of mode string in the command CommunicationSet.

Command example in XPL language for 9600 bd, non parity and 1 stop bit is as follows

- `ipCUE_alpha.S3.CommunicationSet ("0096008n1m232")` for RS-232 mode (default)
- `ipCUE_alpha.S3.CommunicationSet ("0096008n1m422")` for RS-422 mode
- `ipCUE_alpha.S3.CommunicationSet ("0096008n1m485")` for RS-485 mode

For more details see programming manuals.

RS-232 Mode

Transmission levels for RS-232 output are in the -10 V to +10 V.

This is default mode for all channels. If a channel was set to other mode, it is possible to use XPL command `ipCUE_alpha.S3.CommunicationSet ("0096008n1m232")`.

Connector pin out

<table>
<thead>
<tr>
<th>RS-232</th>
<th>5-pin 3.5 mm</th>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td>1</td>
<td>TxD</td>
<td>RS-232 Transmitted Data</td>
<td>From ipCUE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>RTS</td>
<td>RS-232 Request to Send</td>
<td>From ipCUE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>GND</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>RxD</td>
<td>RS-232 Received Data</td>
<td>To ipCUE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>CTS</td>
<td>RS-232 Clear to Send</td>
<td>To ipCUE</td>
</tr>
</tbody>
</table>
**RS-422 Mode**

Only channels S3 – S6 can be used in the RS-422 mode.

This mode must be set in the programming application or by Admin Web. The right command in XPL is `ipCUE_alpha.S3.CommunicationSet ("0096008n1m422")`.

Connector pin out

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tx A+</td>
<td>RS-422 Transmit Data (Idles High)</td>
<td>From ipCUE</td>
</tr>
<tr>
<td>2</td>
<td>Tx B-</td>
<td>RS-422 Transmit Data (Idles Low)</td>
<td>From ipCUE</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rx A+</td>
<td>RS-422 Receive Data (Idles High)</td>
<td>To ipCUE</td>
</tr>
<tr>
<td>5</td>
<td>Rx B-</td>
<td>RS-422 Receive Data (Idles Low)</td>
<td>To ipCUE</td>
</tr>
</tbody>
</table>

**RS-485 Mode**

Only channels S3 – S6 can be used in the RS-485 mode.

This mode must be set in the programming application or by Admin Web. The right command in XPL is `ipCUE_alpha.S3.CommunicationSet ("0096008n1m485")`.

Connector pin out

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A+</td>
<td>RS-485 Data +</td>
</tr>
<tr>
<td>2</td>
<td>B-</td>
<td>RS-485 Data -</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>4</td>
<td>N.C.</td>
<td>Not Connected</td>
</tr>
<tr>
<td>5</td>
<td>N.C.</td>
<td>Not Connected</td>
</tr>
</tbody>
</table>
9.7. IR/SERIAL Output

IR/serial output labeled IR/SERIAL 1 – 8 (ipCUE-alpha, ipCUE-beta, ipCUE-delta, ipCUE-epsilon) or IR/SERIAL 1 – 2 (ipCUE-gamma) provides output for infra-red emitters (IR Adapter /i) or eight RS-232 serial outputs (one way). Maximum IR output rate is 1.2 MHz, maximum serial data rate is 115 200 Bd (bps). Transmission levels for RS-232 output are in the -12 V to +12 V. The IR outputs and RS-232 outputs can be combined on independent outputs (for example three outputs can be used as IR, five outputs can be used as RS-232).

Connector pin out

<table>
<thead>
<tr>
<th>2-pin 3.5 mm</th>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>IR/Serial Signal (Output)</td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>Ground</td>
</tr>
</tbody>
</table>

Note: All pins labeled G are connected together.

Note: Up to three original infra-red emitters IR Adapter /i can be connected to each output in parallel. Finally it allows to control up to 24 IR controlled devices.

Note: It is not suggested to connect more infra-red emitters of various manufacturers in parallel because the output can be either overloaded or damaged.
9.8. GENERAL I/O

General IO labeled **GENERAL I/O 1 - 8** (not applied in ipCUE-beta) provide analog input as well as digital output. Each general I/O port can be used either as input or as output.

Analog input is rated 0 – 5 VDC, digital output offers 80 mA. Pull-up resistor 680 ohms connected to +5 VDC can be switched on and off for each IO independently. Input voltage with pull-up on is approx. 4.3 VDC, because protection diode is connected in series (0.7 V drop-down). Output voltage for output switch on is approx. 0.6 V. Analog to digital (A/D) converter has 10-bits precision (i.e. 1024 levels).

**IO schematic diagram**

![IO schematic diagram](image)

**Connector pin out**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Input/Output Signal</td>
</tr>
<tr>
<td>G</td>
<td>Ground</td>
</tr>
</tbody>
</table>

Note: All pins labeled G are connected together.
9.9. AUX (Low Voltage Relay)

This connector labeled AUX 1 – 2 (ipCUE-alpha, ipCUE-gamma) or AUX 1 – 8 (ipCUE-epsilon) or AUX 1 – 16 (ipCUE-delta) provides one isolated low voltage relay. Normally Close and Normally Open contacts as well as Common contact of each relay can be used. The Normally Close position is the state of the relay when it is not turned on (energized). Each relay contact closure is rated 24 V / 0.5 A.

Connector pin out

<table>
<thead>
<tr>
<th>Aux (Low Voltage Relay)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-pin 3.5 mm</td>
</tr>
<tr>
<td>Pin</td>
</tr>
<tr>
<td>NC</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>NO</td>
</tr>
</tbody>
</table>

9.10. ANALOG Output

Analog output labeled ANALOG 1 - 4 (ipCUE-delta and ipCUE-epsilon only) provides analog output 0 - 10 V. When connecting with another device (e.g. dimmer) it is essential to see to a perfect interconnection with earth. The output voltages generated by the analog output is mutually related to the reference level (ground) on pin labeled G.

Parameters of the analog output

- Range of the output voltage: 0 - 10 V
- Max. output current (both source and sink): 10 mA
- Stepping regulation (LSB): 39 mV
- Min. set-up precision: ± 0.08 V (± 2 LSB)

Connector pin out

<table>
<thead>
<tr>
<th>Analog Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-pin 3.5 mm</td>
</tr>
<tr>
<td>Pin</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>G</td>
</tr>
</tbody>
</table>

Note: All pins labeled G are connected together.
10. System Connection

10.1. CUEwire

CUEwire Installation

On the picture you can see a typical connection of CUEwire.

The cable consists of 4 wires. The first pair serves as a signal line. The second pair of wires serves for power distribution. The signal conductors can have minimum 0.25 mm², maximum capacity 100 pF/m. The power distribution cable design depends on the number of control panels to be connected and on the required length of the cable. The maximum voltage loss on the whole power distribution conductors should not exceed 4 V on the ground wire and 4 V on the +24 V wire.

To supply power distribution line the output OUT of the controller can be used. In this case the whole consumption should not exceed 2 A. In case of using more than 2 touchCUEs units or for longer distances it is necessary to use external power supply +24 V for remote panels (see example of the Panel n in the picture above).

Approximate consumption of control panels is

- touchCUE ..................... 1.0 A
- keyboardCUE ............... 0.3 A
- keyboardCUE-S ............ 0.1 A

For the power consumption you can calculate 1 touchCUE = 3 keyboardCUE = 10 keyboardCUE-S.

Table of maximum cable lengths

<table>
<thead>
<tr>
<th>Number of touchCUE</th>
<th>Cable 1 mm²</th>
<th>Cable 2 mm²</th>
<th>Cable 3 mm²</th>
<th>Cable 4 mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>200 m</td>
<td>400 m</td>
<td>600 m</td>
<td>800 m</td>
</tr>
<tr>
<td>2</td>
<td>100 m</td>
<td>200 m</td>
<td>300 m</td>
<td>400 m</td>
</tr>
<tr>
<td>3</td>
<td>60 m</td>
<td>130 m</td>
<td>200 m</td>
<td>260 m</td>
</tr>
<tr>
<td>4</td>
<td>50 m</td>
<td>100 m</td>
<td>150 m</td>
<td>200 m</td>
</tr>
<tr>
<td>5</td>
<td>40 m</td>
<td>80 m</td>
<td>120 m</td>
<td>160 m</td>
</tr>
</tbody>
</table>
Simple control panel connection

![Diagram of control panel connection]

- **Power supply**: 90 - 264 VAC
- **CUE adapter**
- **Control Panel**
Multiple control panels connected to a CUEwire Splitter

ipCUE-alpha

CUE adapter

Panel 1

Panel 2

CUEwire Cable

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www.cuesystem.com
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10.2. CUEring

The S1 serial channel is used as CUEring port for interfaces and power and lighting control units. If no interface or power and lighting control units are used in project, it is possible to use S1 serial channel as standard RS-232 control port.

![Diagram of CUEring connections](image-url)
11. Mounting

11.1. Shelf Placement or Stacking

Rubber feet are provided for shelf placement or stacking. Stick the feet near the corner edges on the bottom side of the ipCUE Controller.

ipCUE-alpha Bottom Side

Four Rubber Feet
11.2. Rack Mounting
12. FACTORY DEFAULT Button

This button carries two functions:

1. When pressed shortly (< 2 seconds) the reset of the unit is performed followed by operating system boot taking approx. 26 seconds.

2. When pressed longer (until The CPU LED indicator will flash three times shortly to confirm), the factory default function is performed. The factory default is setup as follows:

   Identification
   Name................ Empty

   Internet Clock ............... Empty

   Date and Time
   Time zone ........ GMT + 0
   Date and time ... Unchanged

   IP Connection
   Host name .......... Empty
   IP address .......... 192.168.1.127
   Subnet mask ....... 255.255.255.0
   Default gateway Empty
   DNS ................. Empty

   Applications ............... Unchanged, stopped

   Diagnostics
   Serial .............. Mode RS-232
   IR/Serial ............ Unchanged
   IO ..................... All off, pull-up off
   AUX .................. All off

   Firmware .................. Unchanged

   Password .................. Set to empty

   Other settings are cleared (see Admin web).

   Saved applications and files are not deleted.
13. Admin Web Server

13.1. Login

You have to login at first for operating with your ipCUE via these web pages.

Enter your password into the Password box and click the Login button to enter the ipCUE web pages.

Remember that the password is case sensitive.

Note: For changing your password use the Password menu after you are logged in.
13.2. Configuration

Identification
Each ipCUE controller can be identified by a unique identification name. Unique names are most useful in applications requiring more than one ipCUE. This enables programmers and installers to reference controllers with logical, user friendly names, like “boardroom,” “lobby,” etc. To set the ipCUE controller identity, enter the unique name you wish to use in the Name box. Be sure to click the Apply button for changes to the identification to become effective!

IP Settings
This page is used for establishing the communication parameters for your ipCUE. The ipCUE uses standard internet protocol (IP) communication parameters. Certain parameters can be reset by the user. On start up, this page will display the ipCUE’s given Physical address (MAC), Current IP address. Carefully note this addressing information (and any changes you elect to make to the IP address, subnet mask, or default gateway). This information must be entered into the CUE System Director® program written for your specific application. For control systems with more than one ipCUE controllers, a unique IP address must be given to each ipCUE. Some control systems are “stand alone” and not part of a larger network. For such “stand alone” systems, the Host name is optional. However, for control systems that are connected to a larger network, please obtain the Host name from the network administrator, and enter it into the corresponding box. DHCP is not supported in this release. Be sure to click the Apply button for any changes to the IP settings to become effective!

DNS
This page is used for setting parameters of your ipCUE’s DNS server. On start up, this page will display the ipCUE’s given Current primary DNS server, Current secondary DNS server. You can reset the primary DNS server and secondary DNS server manually by entering your changes into the appropriate boxes. DHCP is not supported in this release. Be sure to click the Apply button for any changes to the DNS to become effective!

SMTP
This page is used for setting parameters of SMTP server. Set a name or an address and the port of your SMTP server. The SMTP server and port are used by the XPL commands EmailSend and PresetEmailSend.
13.3. Date and Time

Current date and time
This page is used for setting the time clock on your ipCUE. The current date, time, and time zone are shown on the Current time line. The applicable boxes can be selected to enter changes to the: date: day/month/year, time: hour/minute/second. Be sure to click the Apply button for any changes to the date and time to become effective!

Time zone
This page is used for setting the time zone on your ipCUE. The current date, time, and time zone, are shown on the Current time line. The time zone box can be selected to enter changes to the Time zone. Be sure to click the Apply button for any changes to the time zone to become effective!

Internet clock
This page is used for synchronization of the ipCUE’s date and time with an internet clock. Begin by selecting the check box for Use Internet clock. Next, enter the IP addresses (or complete address name) of the primary and secondary NTP servers. Use the Primary NTP server and Secondary NTP server boxes for this purpose. Be sure to click the Apply button for any changes to the internet clock to become effective!
13.4. Applications

This page is used for uploading compiled CUE System Director® programs to your controller. All uploaded applications are listed on this page, along with their file properties: file name/file size/date. The controller has a generous memory; unused free space is shown at the bottom of this page.

Controller also permits other service functions like deleting files, downloading programs back to a personal computer, and starting/stopping specific applications.

A “running flag” denotes the active application. The running application can be stopped via the Start/Stop button. Likewise, a stopped application can be restarted with the Start/Stop button.

Files are uploaded from a personal computer to the controller by selecting the desired application program, and clicking the Upload button.

Files are downloaded from the controller to a personal computer by clicking the File name.

Files are easily deleted with the Delete button.

The button Total stop stops a running application. This application will not be automatically started after reset.
13.5. File Storage

The ipCUE’s generous memory can be used as an auxiliary file storage device. This is helpful in archiving electronic manuals, pdf files, and other support documentation. File storage is managed via the file storage page.

A list of existing files, folders, and their properties is shown. To delete a file or a folder, click the Delete button on the corresponding line. To delete all files and folders from the current folder, click the Delete All button.

To create a new folder, enter a name for the new folder, and click the Create button. To upload a file, select the desired file, and click the Upload button.

Note: Files are automatically compressed for the ipCUE’s internal file system. Accordingly, the size of your uncompressed file before storing may not match the decrease of free space shown on the ipCUE.
13.6. Web Storage

The ipCUE’s generous memory can be used as an user web pages file storage device. Web storage is managed via the web storage page.

The maximum size of single file with the *.html or *.htm extension is 81 920 bytes. The maximum size of file with another extensions is unlimited.

Click the button Test if you want to show web page in an explorer.

A list of existing files, folders, and their properties is shown. To delete a file or a folder, click the Delete button on the corresponding line. To delete all files and folders from the current folder, click the Delete All button.

To create a new folder, enter a name for the new folder, and click the Create button. To upload a file, select the desired file, and click the Upload button.

Note: Files are automatically compressed for the ipCUEs internal file system. Accordingly, the size of your uncompressed file before storing may not match the decrease of free space shown on the ipCUE.
13.7. Diagnostics

Serial

The page is used for sending strings to the ipCUE outputs and showing its answers. Select the desired Channel and other communication parameters: a Baud rate, a number of Data bits, a Parity, a number of Stop bits and a Flow control. Select a serial communication port Mode. Enter a string to the Macro box and click the Send button. The Received data box will show the answer in the ASCII format on the first line and in the hexadecimal format on the second line.

Important notes

- Remember all channel parameters keep their values which you set via these web pages even if you exit them.
- The channel S1 is by default used as the CUer.
- The channels S1 and S2 can be operated only in RS-232 mode.
- RS-422 and RS-485 can be operated only with the None or Delay flow control modes.
- The answer shown in the Received data box is captured only during the first 2 seconds after pressing the Send button.

IR/Serial

The page is used for sending strings to the ipCUE’s outputs. Select the desired Channel and other communication parameters: a Baud rate, a number of Data bits, a Parity and a number of Stop bits. Enter a string to the Macro box and click the Send button. Important note: Remember all channel parameters keep their values which you set via these web pages even if you exit them.

IO

The page shows a status of ipCUE’s IO channels and enables to set up them. An input voltage of the channels is shown in volts and in a number value. Pull-up resistors and outputs can be set via this page. To do it click the On/Off button. Important note: Remember all channel parameters keep their values which you set via these web pages even if you exit them.

AUX

The page shows a status of ipCUE’s AUX channels and enables to set up them. A status of the channels is shown. To change it click the Close/Open button. Important note: Remember all channel parameters keep their values which you set via these web pages even if you exit them.
13.8. E-mail

This page is used for setting parameters of email parameters and recipients addresses.

The SMTP server must be set. See the Configuration/SMTP setting.

The sender Name and E-mail are addresses of your ipCUE. The sender Name and E-mail are used by the XPL commands EmailSend and PresetEmailSend.

The recipient Names and E-mails are addresses of recipients, where emails will be sent using the XPL command PresetEmailSend.
13.9. System

Firmware

This page is used for updating the ipCUE firmware. The Current version of firmware is shown. To upload new firmware, select the desired version, and click the Upload button.

Information

The page shows basic information about your ipCUE's hardware. The CPU type, CPU frequency, and the flash and RAM memory sizes are shown.
13.10. Password

A case sensitive password is necessary to login to the web pages. Set a new password via the New password box. You must reenter the password in the Confirm new password box (an error message will appear if the confirmation does not match, in which case you should reenter your password again in both boxes). Finally, the new password is implemented by clicking the Apply button.
13.11. Backup

Backup

The page is used for the backup applications, files and folders. The Backup copies all Applications, Application data, File storage and Web storage to the one archive. This archive is saved to the PC. To start the backup process, click the Backup button.

Note: To see the backed-up/restored applications, click the Applications menu. To see backed-up/restored files and folders, click the File Storage menu. The page is used for the backup of all applications, files and folders.

Note: To see the backed-up/restored applications, click the Applications menu. To see backed-up/restored files and folders, click the File Storage menu.

Restore

READ ALL IMPORTANT NOTES THAT FOLLOW BEFORE USING THIS OPERATION!

The page is used for the restoring of all applications, files and folders. Restore copies of all applications, files, and folders from a backup archive on the PC to their corresponding locations on the ipCUE. To start the restore process, select the desired backup archive, then click the Restore button. The restore process can take up to 10 minutes, depending on the size of the files being restored.

If you want ipCUE’s settings will be restored too, check the “Restore configuration” box. The ipCUE’s settings are accessible via the Configuration, Date and time and Password menus. Important note: actual password and IP settings will be restored too.

The restore process takes from 1 to 10 minutes. It depends on the sizes of the restored files.

Important note: When restoring files, the running application will be stopped and all applications, files, and folders currently stored in the ipCUE will be deleted! If you want to retain them, use the Backup command before the Restore command.

Note: To see the backed-up/restored applications, click the Applications menu. To see backed-up/restored files and folders, click the File Storage menu.
13.12. Reset

To restart your ipCUE, click the Reset button.
13.13. Logout

When you are finished working with the ipCUE, click Logout to exit.
13.14. License

License

END USER NOTICE AND LICENSE AGREEMENT FROM CUE, a.k.a.

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