

Crestron **CEN-IDOC**  
Interface for Apple® iPod®  

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Operations Guide



This document was prepared and written by the Technical Documentation department at:



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# Interface for Apple® iPod®: CEN-IDOC

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## Introduction

### Features and Functions

- Interface module for the Apple® iPod® personal music player
- Supports 4<sup>th</sup> generation and later iPods including iPod with Click Wheel, iPod mini, iPod Nano, iPod Photo, and iPod Video\*
- Connects to the iPod's dock connector with the included 8 foot (2.44 meter), 30 pin cable or the included CEN-IDOC-DS docking station
- Charges iPod battery when connected
- Compact design; installs out of view
- Buffered unbalanced (RCA) and CAT5 balanced stereo outputs
- High-speed Ethernet communications for control system communications
- Plug-and-play integration with Adagio™ systems
- International version (CENI-IDOC) available

\* For a complete list of compatible iPod models, go to [www.crestron.com/ipodcompatibility](http://www.crestron.com/ipodcompatibility).

## Specifications

Specifications for the CEN-IDOC are listed in the following table.

### *CEN-IDOC Specifications*

SPECIFICATION	DETAILS
Power Requirements Included Power Supply	1.5 Amps @ 12 Volts DC PW-1215 (CEN-IDOC) PWI-1215 (CENI-IDOC)
Minimum 2-Series Control System Update File	Version C2-V3.093.CUZ or later
Interface Cable	Included 8-foot (2.44 meter) cable to connect CEN-IDOC to iPod or CEN-IDOC-DS. Cannot be extended.
Compatible Docking Station	CEN-IDOC-DS (included)
Compatible iPod Models	4 <sup>th</sup> generation and later iPods including iPod with Click Wheel, iPod mini, iPod Nano, iPod Photo, and iPod Video; Refer to <a href="http://www.crestron.com/ipodcompatibility">www.crestron.com/ipodcompatibility</a> for a complete list of compatible iPod models
Output Levels	2 V <sub>RMS</sub> unbalanced via RCA output 4 V <sub>RMS</sub> balanced via CAT5 output
Environmental Temperature Humidity	41° to 104°F (5° to 40°C) 10% to 90% RH (non-condensing)
Enclosure	Black metal, surface mount box with (2) integral mounting flanges
Dimensions Height Width Depth	1.44 in (3.66 cm) 7.30 in (18.54 cm) 4.03 in (10.23 cm)
Weight	0.61 lb (0.28 kg)

## Physical Description

This section provides information on the connections, controls, and indicators available on your CEN-IDOC.

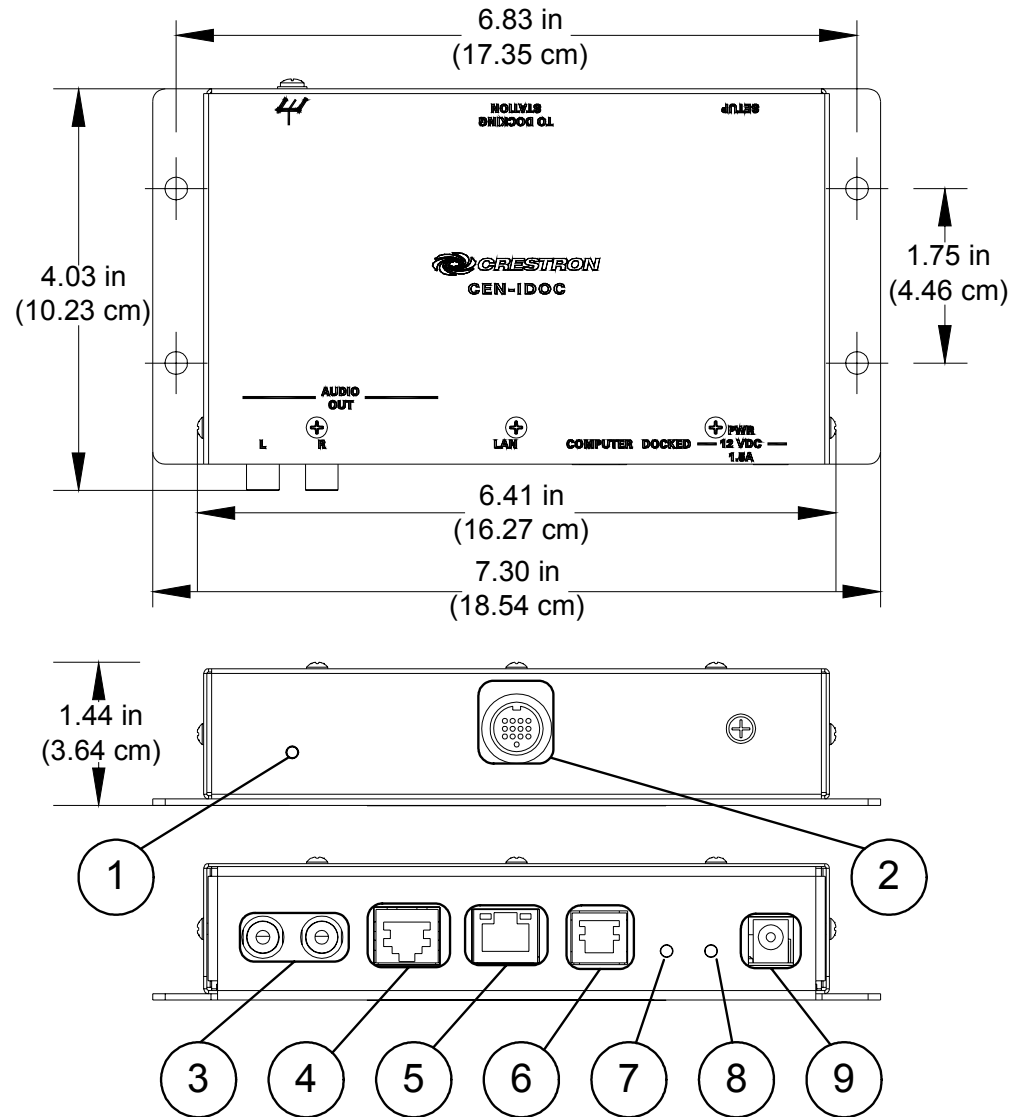
*CEN-IDOC Physical View*



*CEN-IDOC Physical View (rear), Shown with Included Interface Cable*



*CEN-IDOC Overall Dimensions*



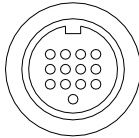
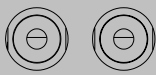
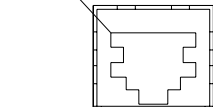
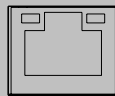


*Connectors, Controls, & Indicators*

#	CONNECTORS, CONTROLS, & INDICATORS	DESCRIPTION
1	<p>SETUP SETUP ○</p>	One recessed miniature pushbutton used to set unit's IP ID in conjunction with Crestron Toolbox.

*(Continued on following page)*



*Connectors, Controls, & Indicators (Continued)*

#	CONNECTORS, CONTROLS, & INDICATORS	DESCRIPTION
2	<p>TO DOCKING STATION TO DOCKING STATION</p> 	<p>One 13-pin female connector connects to the CEN-IDOC-DS iPod docking station (included) or Apple iPod (not included) via an included 30-pin cable. Provides two-way communications, audio, and power link to the iPod.</p>
3	<p>AUDIO OUT L-R</p> <p>AUDIO OUT</p> <p>L R</p> 	<p>Two RCA female connectors. Provide unbalanced stereo line-level audio output.</p>
4	<p>AUDIO OUT CAT 5</p> <p>AUDIO OUT</p> <p>PIN 1</p> 	<p>One 8-wire, RJ-45 female connector provides balanced stereo audio output over CAT5 for connection to Crestron CAT5 audio products such as the CNX-BIPAD8.</p> <p>Pin 1: LEFT (+) Pin 2: LEFT (-) Pin 3: RIGHT (+) Pin 4: N/A Pin 5: N/A Pin 6: RIGHT (-) Pin 7: N/A Pin 8: N/A</p>
5	<p>LAN</p> <p>LAN</p> 	<p>One 8-wire, RJ-45 female connector with two LED indicators. The green LED indicates link status while the yellow LED indicates Ethernet activity. The port supports 10BaseT/100BaseTX Ethernet communications.</p>
6	<p>COMPUTER</p> <p>PIN 1 COMPUTER</p> 	<p>One 6-pin RJ-11 female, computer console port. Use with included serial cable.</p> <p>Pin 1: CTS Pin 2: GND Pin 3: RXD Pin 4: TXD Pin 5: RTS Pin 6: N/C (Not connected)</p>
7	<p>DOCKED LED</p>	<p>Indicates communication with the connected iPod.</p>
8	<p>PWR LED</p>	<p>Indicates power to the CEN-IDOC received from the included AC adapter.</p>
9	<p>PWR-12 VDC, 1.5 A</p> <p>PWR 12 VDC 1.5A</p> 	<p>One 2.5mm DC barrel jack for 12 VDC power input from included AC adapter.</p>

## Industry Compliance

As of the date of manufacture, the CEN-IDOC has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



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**NOTE:** This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
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## Setup

### Network Wiring

The CEN-IDOC requires the use of a high-speed Ethernet connection for control system communications.

For information on connecting Ethernet devices in a Crestron system, refer to the latest version of the Crestron e-Control® Reference Guide (Doc. 6052), which is available for download from the Crestron website ([www.crestron.com/manuals](http://www.crestron.com/manuals)).

### CAT5 Wiring

In addition to Ethernet applications, Category 5 (CAT5) wiring is used by Crestron for a variety of audio applications.

Crestron recommends using CresCAT-IM wire or other high-quality CAT5 cable for transmitting CAT5 audio signals.

When using a Crestron wiring solution, the CEN-IDOC can transmit audio signals up to 500 feet. For more information, refer to the latest version of the Crestron CAT5 Wiring Guide (Doc. 6137), which is available for download from the Crestron website ([www.crestron.com/manuals](http://www.crestron.com/manuals)).

### Identity Code

The IP ID is set within the CEN-IDOC's IP table using Crestron Toolbox. For information on setting an IP table, refer to the Crestron Toolbox help file.

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**NOTE:** If using with an Adagio AES or AADS with out-of-the-box functionality, the IP ID does not need to be set. The Installer Tools utility is used to configure a CEN-IDOC to work with an AES or AADS running the out-of-the-box configuration. For more information, refer to the latest revision of the AES guide (Doc. 6456) or AADS guide (Doc. 6458).

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The IP IDs of multiple CEN-IDOC devices in the same system must be unique. When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the SIMPL Windows program.
- Each device using IP to communicate with a control system must have a unique IP ID.

### Installation

The CEN-IDOC can be mounted in a rack or to any surface using the integral mounting flanges. Mounting hardware is not provided.

## Hardware Hookup

### Ventilation

To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consideration must be given if installed in a closed or multi-unit rack assembly since the operating ambient temperature of the rack environment may be greater than the room ambient. Contact with thermal insulating materials should be avoided on all sides of the unit.

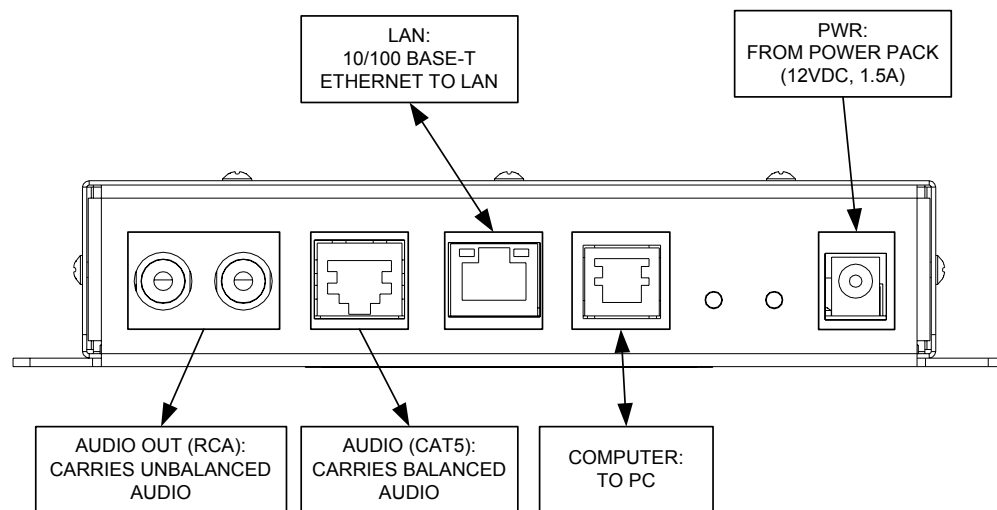
### Connecting the CEN-IDOC

Make the necessary connections as called out in the illustration that follows this paragraph. Apply power after all connections have been made.

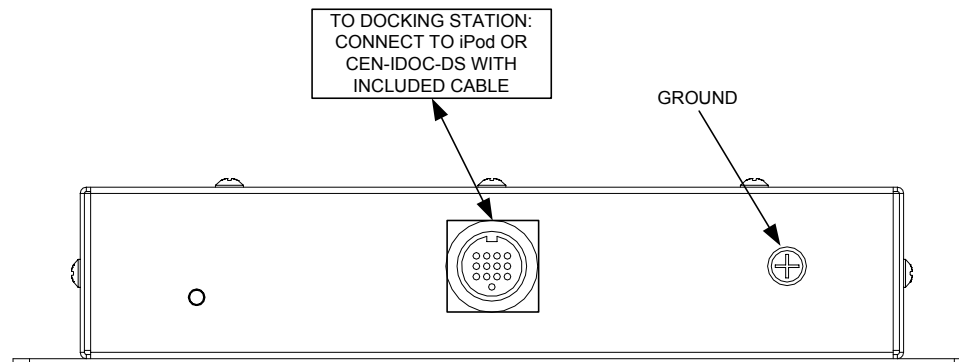
When making connections to the CEN-IDOC, consider the following:

- Use Crestron power supplies for Crestron equipment.
- The CEN-IDOC-DS is the only docking station that can be used with the CEN-IDOC.
- The included 8 foot (2.44 meter) cable cannot be extended.

#### Hardware Connections for the CEN-IDOC (Front)



#### Hardware Connections for the CEN-IDOC (Rear)



***Plug & Play Use with Adagio Systems***

If the CEN-IDOC is used with an Adagio Audio Entertainment System (AES) or Adagio Audio Distribution System (AADS) operating with the out-of-the-box functionality, the LAN ports of the CEN-IDOC and the AES/AADS must be connected to the same DHCP router.

The RCA outputs must be connected to source input 5 on the rear of the AES or source input 1 of the AADS.

Refer to the latest revision of the AES guide (Doc. 6456) or the AADS guide (Doc. 6458) for more information.

## Operation

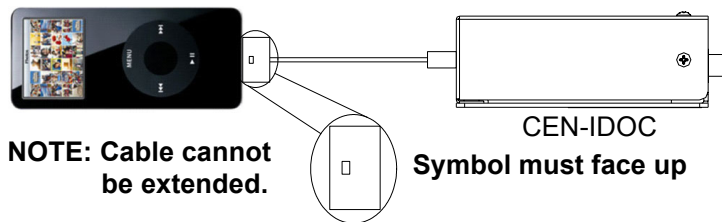
### Connecting the iPod

Once connected as described in “Setup” on page 7, an iPod can be connected to the CEN-IDOC using the included cable or the included docking station (CEN-IDOC-DS).

When connecting an iPod, consider the following:

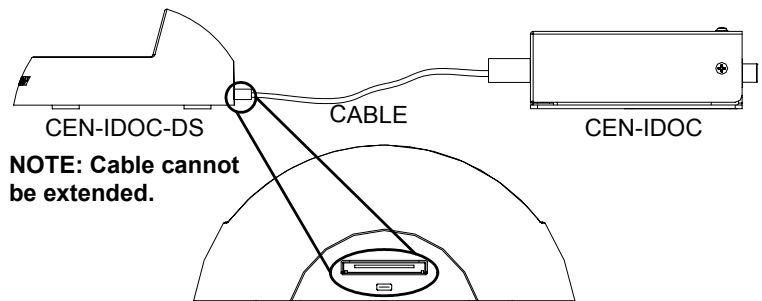
- When connecting the interface cable to an iPod, the symbol on the connector must face up.

#### Connecting CEN-IDOC to iPod



- When connecting the interface cable to a CEN-IDOC-DS, align the symbol on the connector with the symbol on the CEN-IDOC-DS.

#### Connecting CEN-IDOC to CEN-IDOC-DS



**Align symbol on interface cable with symbol on CEN-IDOC-DS.**

- When properly connected, the DOCKED LED on the CEN-IDOC will light and the iPod's display will show the Crestron logo shown below.

#### Crestron Logo



OK to disconnect.

For information on using an iPod with the CEN-IDOC-DS, refer to the latest revision of the CEN-IDOC-DS guide (Doc. 6454) which is available for download from the Crestron website.

An iPod connected to a CEN-IDOC can be easily controlled from the front panel of an Adagio Entertainment System (AES) or Adagio Audio Distribution System (AADS). For instructions, refer to the latest revision of the AES guide (Doc. 6456) or AADS guide (Doc. 6458).

## Programming Software

### Have a question or comment about Crestron software?

Answers to frequently asked questions (FAQs) can be viewed in the Online Help section of the Crestron website. To post a question or view questions you have submitted to Crestron's True Blue Support, log in at <http://support.crestron.com>. First-time users will need to establish a user account.

### Earliest Version Software Requirements for the PC

**NOTE:** Crestron recommends that you use the latest software to take advantage of the most recently released features. The latest software is available from the Crestron website.

Crestron has developed an assortment of Windows®-based software tools to develop a Crestron control system. The following are the minimum recommended software versions for the PC:

#### Software

TASK	REQUIRED SOFTWARE VERSION
Program control system to operate CEN-IDOC.	SIMPL Windows version 2.06.20 or later with SIMPL+ Cross Compiler version 1.1 or later and Library update 372 or later; Also requires Crestron Database version 18.0.0 or later.
Upload program and firmware.	Crestron Toolbox 1.01.14 or later.
Program with simple wizards for systems using a CEN-IDOC (optional but recommended).	Crestron SystemBuilder™ version 3.0 (expected July 2006) or later with SystemBuilder Templates version 3.0 or later. Refer to software release notes or Crestron website for other required Crestron software packages.

### Programming with Crestron SystemBuilder

Crestron SystemBuilder is the easiest method of programming, but does not offer as much flexibility as SIMPL Windows. For additional details, download SystemBuilder from the Crestron website and examine the extensive help file.

### Programming with SIMPL Windows

**NOTE:** While SIMPL Windows can be used to program the CEN-IDOC, it is recommended to use SystemBuilder for configuring system.

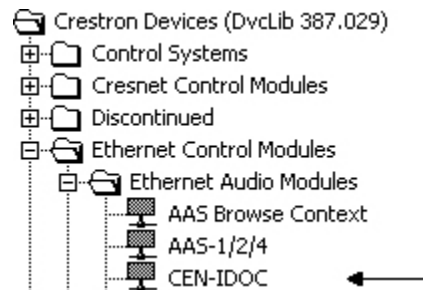
SIMPL Windows is Crestron's premier software for programming Crestron control systems. It is organized into two separate, but equally important "Managers".

#### Configuration Manager

Configuration Manager is the view where programmers "build" a Crestron control system by selecting hardware from the *Device Library*.

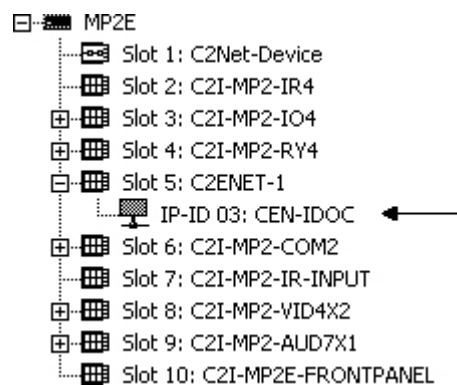
- To incorporate the CEN-IDOC into the system, drag the CEN-IDOC from the Ethernet Control Modules | Ethernet Audio Modules folder of the *Device Library* and drop it in the *System Views*.

#### Locating the CEN-IDOC in the Device Library



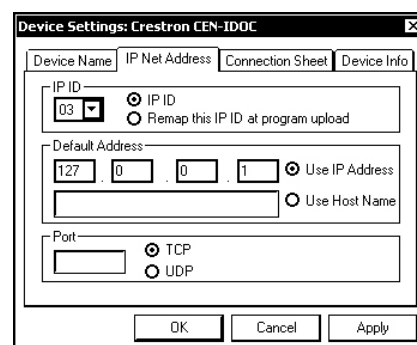
- The system tree of the control system displays the device in the appropriate slot with a default IP ID as shown in the following illustration.

#### C2ENET-1 Device, Slot 5



- Additional CEN-IDOC devices are assigned different IP ID numbers as they are added.
- If necessary, double click a device to open the “Device Settings” window and change the IP ID, as shown in the following figure.

#### “CEN-IDOC Device Settings” Window



- The IP ID specified in the SIMPL Windows program must match the or IP ID of each unit.

### Programming Manager

Programming Manager is the view where programmers "program" a Crestron control system by assigning signals to symbols. The symbol can be viewed by double



clicking on the icon or dragging it into *Detail View*. A description for each signal in the symbol is described in the SIMPL Windows help file (**F1**).

## **Example Program**

An example program for the CEN-IDOC is available from the Crestron website (<http://www.crestron.com/exampleprograms>).

## Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade, it is necessary to establish communication.

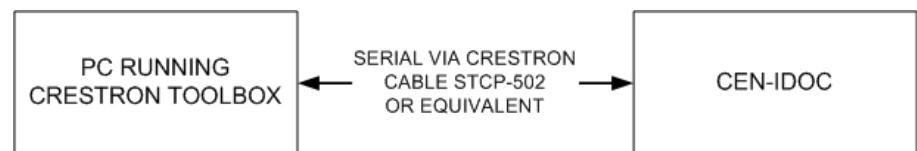
### Establishing Communication


Use Crestron Toolbox for communicating with the CEN-IDOC; refer to the Crestron Toolbox help file for details. There are two methods of communication.

#### Direct Serial Communication

**NOTE:** Required for initial setup of Ethernet parameters.

##### Direct Serial Communication



- The **COMPUTER** port on the CEN-IDOC connects to the serial port on the PC via a serial cable (Crestron STCP-502 or equivalent).
- Use the Address Book in Crestron Toolbox to create an entry using the expected serial communication protocol (RS232, auto-detect baud rate, no parity, 8 data bits, 1 stop bit, XON/XOFF disabled, RTS/CTS enabled).
- Display the CEN-IDOC's "System Info" window (click the  icon); communications are confirmed when the device information is displayed.

#### TCP/IP Communication


**NOTE:** Required for operation with a Crestron control system.

##### Ethernet Communication



Replace CEN-IDOC with correct CEN-IDOC.

- Establish direct serial communication between CEN-IDOC and PC.
- Enter the IP address, IP mask, and default router of the CEN-IDOC via the Crestron Toolbox (**Functions | Ethernet Addressing**); otherwise enable DHCP.
- Confirm Ethernet connections between CEN-IDOC and PC. If connecting through a hub or router, use CAT5 straight through cables with 8-pin RJ-45 connectors. Alternatively, Use a CAT5 crossover cable to connect the two **LAN** ports directly, without using a hub or router.
- Use the Address Book in the Crestron Toolbox to create an entry for the CEN-IDOC with the CEN-IDOC's TCP/IP communication parameters.

- Display the “System Info” window (click the  icon) and select the CEN-IDOC entry.
- Use the Crestron Toolbox to create the CEN-IDOC IP table.
  - ⇒ Select **Functions | IP Table Setup**.
  - ⇒ Either add, modify, or delete entries in the IP table. The CEN-IDOC can have only one IP table entry.
  - ⇒ A defined IP table can be saved to a file or sent to the device.
- Edit the control system’s IP table to include an entry for the CEN-IDOC. The entry should list the CEN-IDOC’s IP ID (specified on the CEN-IDOC’s IP table) and the internal gateway IP address 127.0.0.1.

## Programs and Firmware

- Display the network device tree (**Tools | Network Device Tree**) to show all network devices connected to the control system. Right-click on the CEN-IDOC to display actions that can be performed on the CEN-IDOC:
  - ⇒ Upgrade firmware
  - ⇒ Change Net ID
- Upload the SIMPL Windows file to the control system using SIMPL Windows or Crestron Toolbox.
- Upgrade CEN-IDOC firmware via Crestron Toolbox.
  - ⇒ Establish serial or TCP/IP communications with the CEN-IDOC and display the “System Info” window.
  - ⇒ Select **Functions | Firmware...** to upgrade the CEN-IDOC firmware.

For details on uploading and upgrading, refer to the SIMPL Windows help file or the Crestron Toolbox help file.

## Problem Solving

### Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

#### *CEN-IDOC Troubleshooting*

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
PWR LED does not illuminate.	CEN-IDOC is not receiving power.	Verify that the correct power supply is connected.
DOCKED LED does not illuminate.	The iPod is not properly connected to the CEN-IDOC.	Verify that an iPod is properly connected to the CEN-IDOC.
Crestron logo is not displayed on iPod when iPod is connected to CEN-IDOC.	The iPod is not properly connected to the CEN-IDOC.	Verify all connections between the iPod and the CEN-IDOC.
		Verify that the correct power supply is connected.
	Incompatible iPod is connected.	Disconnect iPod, wait 10 seconds, and reconnect. Connect a compatible iPod model. Refer to <a href="http://www.crestron.com/ipodcompatibility">www.crestron.com/ipodcompatibility</a> for a list of compatible iPod models.
iPod is not processing commands from the control system.	The CEN-IDOC is not communicating with the control system.	Verify that CEN-IDOC and control system's Ethernet connections are correct.
		Verify that CEN-IDOC's IP table lists the master control system with an IP ID matching the IP ID specified in the SIMPL Windows program.
		Verify that the control system's IP table lists the CEN-IDOC with an IP ID matching the IP ID specified in the SIMPL Windows program. The entry should list the CEN-IDOC's IP ID and the internal gateway IP address 127.0.0.1.
No audio from CEN-IDOC.	CEN-IDOC audio outputs are incorrectly connected.	Correctly connect CEN-IDOC audio outputs.
	Headphones are connected to iPod's headphone jack.	Verify that headphones are not connected to the iPod prior to connecting the iPod to the CEN-IDOC.

## Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website (<http://www.crestron.com/manuals>). This link will provide a list of product manuals arranged in alphabetical order by model number.

### *List of Related Reference Documents*

DOCUMENT TITLE
AES Adagio Entertainment System
AADS Adagio Audio Distribution System
CAT5 Wiring Reference Guide
CEN-IDOC-DS iPod Docking Station
Crestron e-Control Reference Guide

## Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling the Crestron corporate headquarters at 1-888-CRESTRON [1-888-273-7876]. For assistance in your local time zone, refer to the Crestron website (<http://www.crestron.com/>) for a listing of Crestron worldwide offices.

You can also log onto the online help section of the Crestron website to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

## Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the CEN-IDOC, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

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## Return and Warranty Policies

### Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange, or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact an authorized CRESTRON dealer. Only authorized CRESTRON dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number, and return address.
2. Products may be returned for credit, exchange, or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee, plus shipping costs, on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

### CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended, or if it has been subjected to misuse, accidental damage, modification, or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced, or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

#### Trademark Information

All brand names, product names, and trademarks are the sole property of their respective owners. Windows is a registered trademark of Microsoft Corporation. Windows95/98/Me/XP and WindowsNT/2000 are trademarks of Microsoft Corporation. iPod is a trademark of Apple Computer, Inc., registered in the U.S. and other countries.

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Fax: 201.767.7576  
[www.crestron.com](http://www.crestron.com)

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**Operations Guide – DOC. 6404A**  
**(2013794)**  
**07.06**  
Specifications subject to  
change without notice.