



## **LC331IC**

**(Includes LC331IC-C and LC331IC-W)**

# **INTEGRATED COMMUNICATIONS MODULE**

Installation Instructions

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## INTRODUCTION

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The LC3311C Integrated Communications Module is an integral part of the IED LANcom SCS that provides basic program distribution and intercom communication functions. The LC3311C uses a single CAT5e or better (with RJ45 connector) Ethernet connection for power, control data and digital audio signals In and Out. It receives its power from an IED LANcom SCS Power Injector, typically located in the telecommunications closet. Peripheral devices, such as call switches and loudspeakers are connected using RJ-45 or Phoenix/Euro block terminal connectors.

The built-in microphone and on-board 2 Watt, 25V amplifier provides a single-point solution for room program distribution, bells, and paging as well as full-duplex intercom. Program selection and audio levels are controlled using a web interface on a classroom or staff computer.

The LC3311C has two Form C relays. Relay 1 default configuration is for clock synchronization while Relay 2 may be programmed for other functions.

Call-in switches may be connected to provide up to four different functions including normal call, emergency call, and others. Call switches are available with one or two push buttons on a one-gang plate.

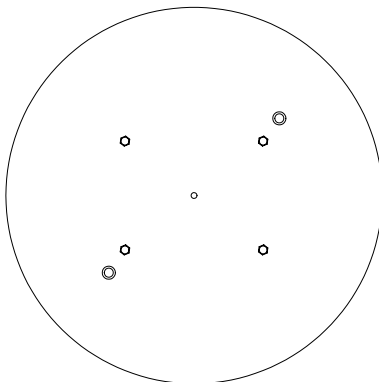
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## Mounting Options

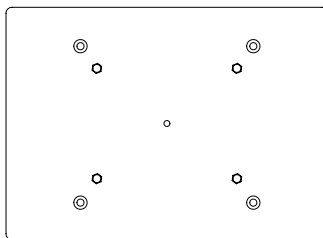
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The LC3311C is available in two styles – wall mount and ceiling. Both fit in deep 3-gang wall boxes. The wall mount version fits in a rectangular oversize 3-gang plate and the ceiling version comes with an 8-inch diameter circular plate to cover the box and its cutout while hiding any off-square irregularities from the installation.

**LC3311C-C**  
**Ceiling Mount**





**LC3311C-W**  
**Wall Mount**



**Figure 1 - LC3311C Mounting Options**

# IMPORTANT SAFETY INSTRUCTIONS

<ol style="list-style-type: none"> <li>1. Read these instructions.</li> <li>2. Keep these instructions.</li> <li>3. Heed all warnings.</li> <li>4. Follow all instructions.</li> <li>5. Do not use this apparatus near water.</li> <li>6. Clean only with dry cloth.</li> <li>7. Install in accordance with the manufacturer's instructions.</li> <li>8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.</li> <li>9. Only use attachments/accessories specified by the manufacturer.</li> <li>10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.</li> </ol>	<h2>SAFETY SYMBOLS</h2> <p>Labeling on products and the <i>Installation Instructions &amp; User Manual</i> may use safety related graphical symbols as shown below to note safety requirements.</p> <p> <b>Lightning Bolt:</b> The lightning flash with arrowhead symbol, within an equilateral triangle, WARNING symbol, is intended to alert the user to the presence of un-insulated <b>dangerous voltage</b> within the product's enclosure that may be sufficient in magnitude to constitute a risk of electric shock to persons or domestic animals.</p> <p> <b>Exclamation Point:</b> The exclamation point within an equilateral triangle, CAUTION symbol, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions, or a hazard that can damage equipment.</p> <p>Do not proceed beyond a WARNING or CAUTION notice until you have understood the hazardous condition and have taken appropriate steps.</p>
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# SPECIFICATIONS

<b>Mechanical</b>	<b>LC3311C-W</b>
	Dimensions ..... 6.75" W x 4.875" H 2.45" D (171.5mm W x 123.8mm H 62.2mm D) Mounting Depth ..... 2.38" (60.2mm)
	<b>LC3311C-C</b>
	Dimensions ..... 8" Diameter x 2.45" D (203mm Diameter x 62.2mm D) Mounting Depth ..... 2.38" (60.2mm)
<b>Connectors</b>	Ethernet/Power ..... RJ-45 CAT-5e or better Call Switch ..... RJ-45 (x2) CAT-5 or better Intercom Handset ..... RJ-45 CAT-5 or better Speaker Out, Mute In ..... 4-pin Euroblock Relay Outputs ..... 6-pin Euroblock
<b>Mounting Methods</b>	Wall Installation ..... Oversized 3-gang plate Ceiling Installation ..... 8" diameter plate Mounting Box ..... 3-Gang Deep Box Recommended Electrical Box ..... Steel City H3BD 3/4 1 box with 3-GC cover
<b>Electrical</b>	Power ..... 48 VDC, 1.4A max, provided via Ethernet data cable
	<b>Speaker Output</b> Power ..... 2 watts @ 25 volts Frequency Response ..... 22Hz – 22kHz S/N ..... 97dB
	<b>Handset Output</b> Maximum Output Level ..... +6dBu Frequency Response ..... 22Hz – 22kHz S/N ..... 102 dB
	<b>Relay Outputs</b> Contacts ..... Form C Nominal Switching Capacity (resistive load) ..... 2A@ 30VDC 0.5A@125VAC

CONNECTIONS

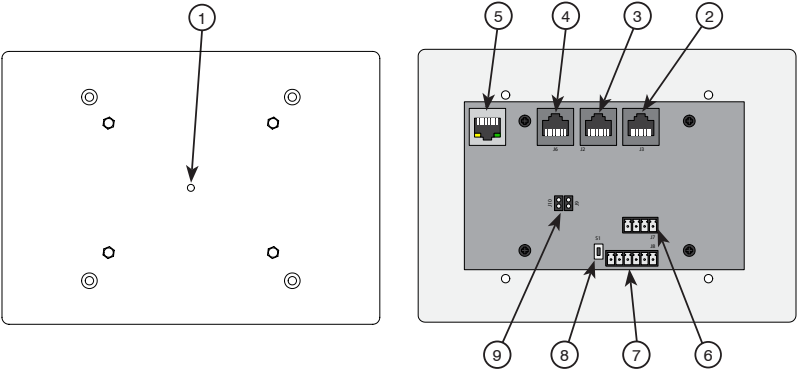


Figure 2 - LC3311C-W Rear View

1. Microphone

The small hole located in the center of the plate is the opening for the intercom microphone. Care must be taken to ensure that this hole is free of any obstructions in order for the unit to operate.



**CAUTION** – Do not paint over the unit as this could result in rendering the microphone inoperative. If the plate must be painted, the unit should be uninstalled and disassembled to allow the plate to be painted individually. Remove the electronics when painting, then reassemble once the paint is dry. When painting place material through the microphone hole to prevent any paint from altering the size of the hole.

2. Call Switch RJ45 Port A (J3)

This port is used to connect remote call switches (LC11CS or LC12DCS) or remote microphone modules (LC372M) to the unit. This port provides access to the four (4) control lines available for the call switches. The jumpers for each call switch determine which control line will be activated for each button. The four (4) control lines are shared (wired in parallel) with Port B. The microphone input is a buffered input, allowing simultaneous usage with the built-in microphone and a remote microphone module connected to Port B. All three microphones are mixed to provide a single combined audio signal.

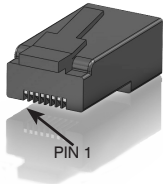


Figure 3 - RJ45 Male Connector

Pin	Function	Cat5 Color Code
1	Audio +	Orange /W
2	Audio -	Orange
3	Switch out *	Green /W
4	Switch out *	Blue
5	Switch out *	Blue/W
6	Switch out *	Green
7	+48 VDC	Brown /W
8	Ground	Brown
* Signal pin is determined by jumper setting on call switch plates.		

Table 1 - Call Switch and Remote Microphone RJ45 Connector Wiring

### 3. Call Switch RJ45 Port B (J2)

The function of this port is identical to that of Port A. It provides a second input port for remote call switches and a remote microphone module. The microphone input is buffered to allow simultaneous usage with the built-in microphone and a remote microphone module connected to Port A.

### 4. Handset RJ45 Port (J5)

This port is used to connect an LC21HS Intercom Handset. When the LC21HS is lifted off its cradle switch, the intercom call switches into a private mode and disconnects the room microphone(s) and speaker and uses the microphone and speaker in the handset for a private intercom conversation. Once the handset is returned to the cradle switch, the room microphone(s) and speaker are restored.

Pin	Function	Cat5 Color Code
1	Handset Mic Output +	Orange /W
2	Handset Mic Output –	Orange
3	Hookswitch Out	Green /W
4	Handset Earphone Input +	Blue
5	Handset Earphone Input –	Blue/W
6	Hookswitch Out	Green
7	+48 VDC	Brown /W
8	Ground	Brown

Table 2 - Handset RJ45 Connector Wiring

### 5. Power and Network RJ45 Port (J1)

This port is used to connect the LC3311C to the system network. It connects to the network through either an LC41PI or LC48MPI Power Injector that provides 48VDC power to the device. Note that power is provided only using the LC41PI or LC48MPI. This device is not compliant with PoE switches.

Pin	Function	CAT5 Color Code
1	Data Rx +	Orange /W
2	Data RX –	Orange
3	Data TX +	Green /W
4	+48V DC	Blue
5	+48V DC	Blue/W
6	Data TX –	Green
7	–48V DC (Ground)	Brown /W
8	–48V DC (Ground)	Brown

Table 3 - Power and Network RJ45 Connector Wiring

### 6. Speaker Output and Mute Input Jack (J7)

Pins 1 and 2 of this connector are the outputs of the power amplifier and used to connect to the local room speaker. Pins 3 and 4 are available to attach an external mute switch to the device. When a closure is present between pins 3 and 4, all messages, live announcements, intercom calls, and bells will be muted in the room. Emergency messages will override the mute if it is active. This function is to give teachers the ability to place the system into a **do not disturb** mode for student testing or other special situations.

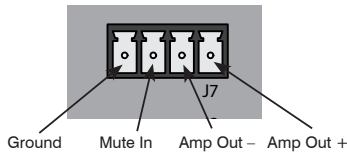


Figure 4 - Speaker and Mute Input Jack

### 7. Relay Output Jack (J8)

The LC3311C has two Form C relays that are terminated at this connector. Relay 1 provides a momentary contact closure used to synchronize the clock in the room to the system time. The exact time and duration for this closure is globally configured in the control software at the headend. The function of Relay 2 is configured in the software.

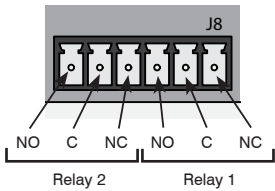


Figure 5 - Relay Connector

8. Reset Button (S1)

Momentarily pressing this button will reset the device. This allows a reset to be performed without disconnecting power from the unit.

9. Mic Gain Jumpers (J9 & J10)

The microphone gain can be increased using jumpers J9 and J10. If the unit is not transmitting intercom calls at a level where they can be heard clearly at the control console, then the gain can be increased in the increments shown in the figure below.



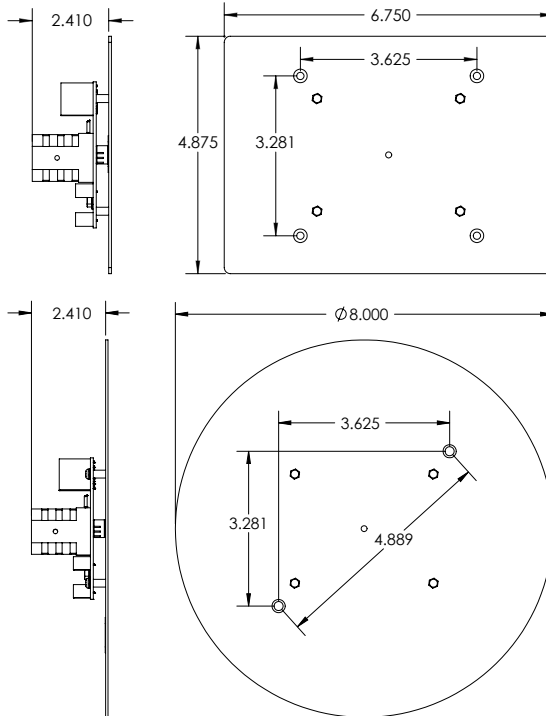
Jumper Settings		Gain
	No Jumpers	+6 dB
	J9 Only	+26 dB
	J10 Only	+50 dB
	J9 + J10	<b>WARNING</b> <b>DO NOT USE</b>

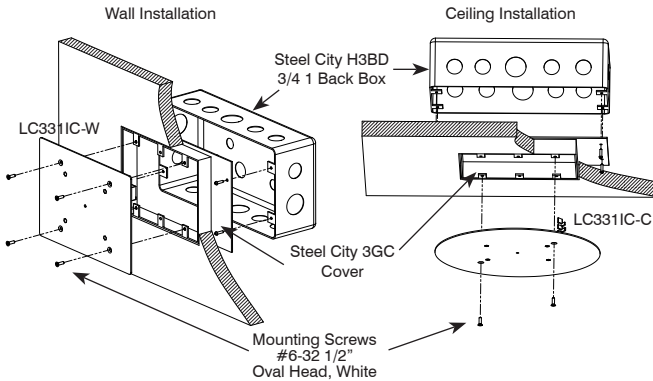
Table 4 - Mic Gain Jumper Settings

# INSTALLATION

The LC331IC is available in either wall or ceiling mounting configurations. The device must be installed in an appropriate mounting box that meets all applicable local codes. The unit will fit in a 3-gang box with a minimum depth of 2.4". The recommended box is a Steel City H3BD 3/4 1 with the 3GC cover plate as shown in Figure 7. The additional space provided by this box will allow sufficient space for the required cabling and proper heat dissipation.



**Figure 6 - LC331IC Dimensions**



**Figure 7 - LC331IC Installation**

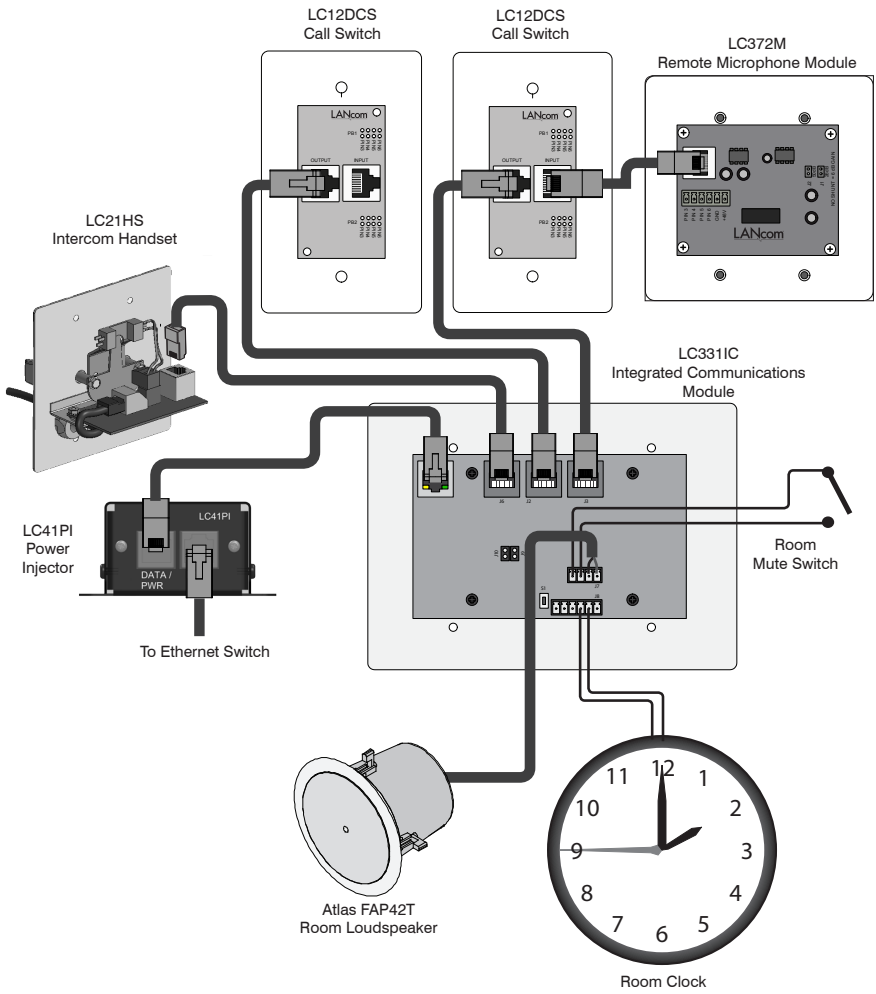


Figure 8 - Installation Example



# CONFIGURATION

The *SCS Endpoint Configurator* application provides access to additional setup features, such as EQ, that are configured upon installation and not adjusted as part of normal system operation. This section covers the steps required to run the tool and use it for basic diagnostics and is not intended to provide comprehensive coverage of the *SCS Endpoint Configurator* tool. Refer to the application help file for additional information on the *Configurator*.

## Start the SCS Endpoint Configurator Application

First, locate the *SCS Endpoint Configurator* on your computer. If you are using the system server, it should be located on the desktop or available and appear as the icon shown in Figure 9. If a shortcut is not present on the desktop, go to Explorer and look for **SCS Endpoint Configurator.exe** in the C:\IED\SRMIMC Config Utility directory.



Figure 9 - SCS Endpoint Configurator Icon

Once you have located the application, open it by double-clicking on the icon. If the application is running on the system server, then you will immediately be taken to the discovery page shown in Figure 10

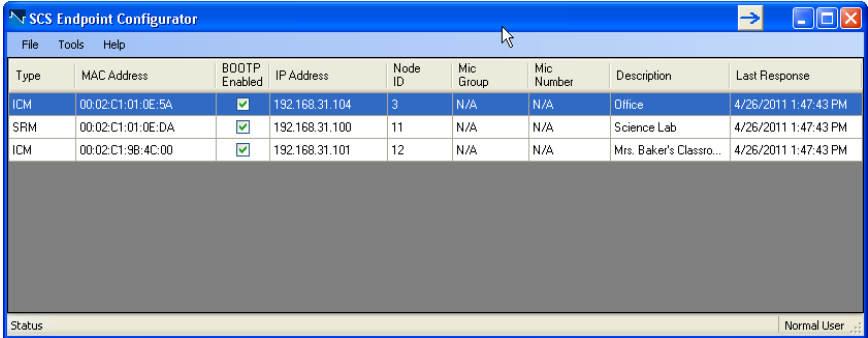


Figure 10 - Discovery Window

It is possible to run the Configurator on a separate laptop or desktop computer to allow you to configure a device before it is installed in the system. The system server computer also maintains a service that is responsible for automatically assigning IP addresses to the devices in the system. If you are using a different computer, then this service will not be running and the Configurator will give you a warning as shown in Figure 11

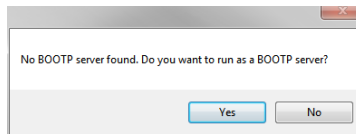


Figure 11 - BOOTP Server Error

Select Yes and the Configurator will run its own BOOTP server to assign IP addresses to the device(s) you will be configuring. After selecting Yes, you will see the BOOTP Options window as shown in Figure 1. Enter the range of IP address that the server will use by typing in a Start and Stop address. You must take care to ensure that this range is safe to use on your network. Enter the appropriate Subnet Mask and click the OK button. Selecting CANCEL at any time will close the window and the application will start without the BOOTP server running.

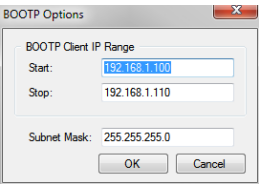


Figure 1 - BOOTP Server Options

Endpoint Device Discovery

Once the application is running, it will scan the network for any LANcom devices and they will appear in the Discovery Window as shown below. The application will poll the devices at an interval that is accessible through the menu bar **Tools -> Options**. The default polling interval is 5 sec. and this is suitable for most circumstances.

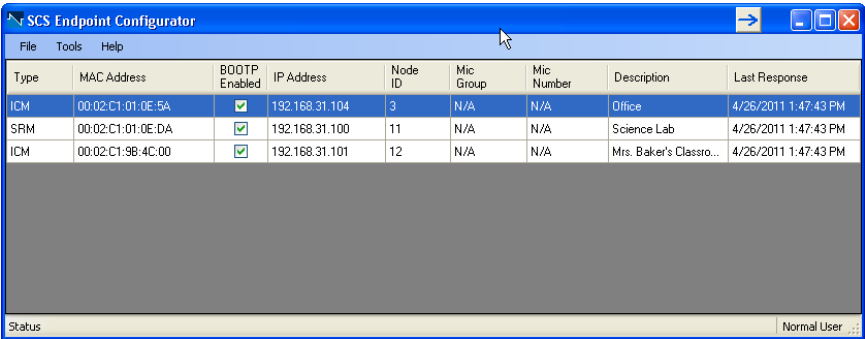


Figure 2 - Discovery Window

The columns in the Discovery Window are described below.

- Type** This displays the type of device that has been detected. LC3311C-x devices will be of type ICM. This is a read-only field and cannot be edited.
- MAC Address** This is the hardware network address of the device. This is a read-only field and cannot be edited.
- BOOTP Enabled** When checked, this device will get its IP Address from the BOOTP server. When not checked, an IP Address must be manually typed in the IP Address field. For most applications, the BOOTP server should be utilized and this item should remain checked.
- IP Address** This is the IP Address assigned to the device. If the BOOTP Enabled checkbox is not checked, an address can be manually typed into this field.
- Node ID** This is the unique identifier for the device. This is the number that will allow the LANcom SCS software to utilize this device. This is also the Zone number that is used to reference this device to program announcements, bells, and intercom calls.
- Mic Group** This corresponds to the group number of the announcement controller that owns the mic station.
- Mic Number** This is a unique mic station ID number used to assign mic stations within a group.
- Description** This is a textual description to aid in identifying the device's location and/or function.
- Last Response** This is a date and time stamp to mark the last receipt of a poll response from the device.

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**NOTES**

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