

## Modular Room Control Smart Infrared Transceiver (MRC19-SIRx) and Central Electronic Lock System (CELS)

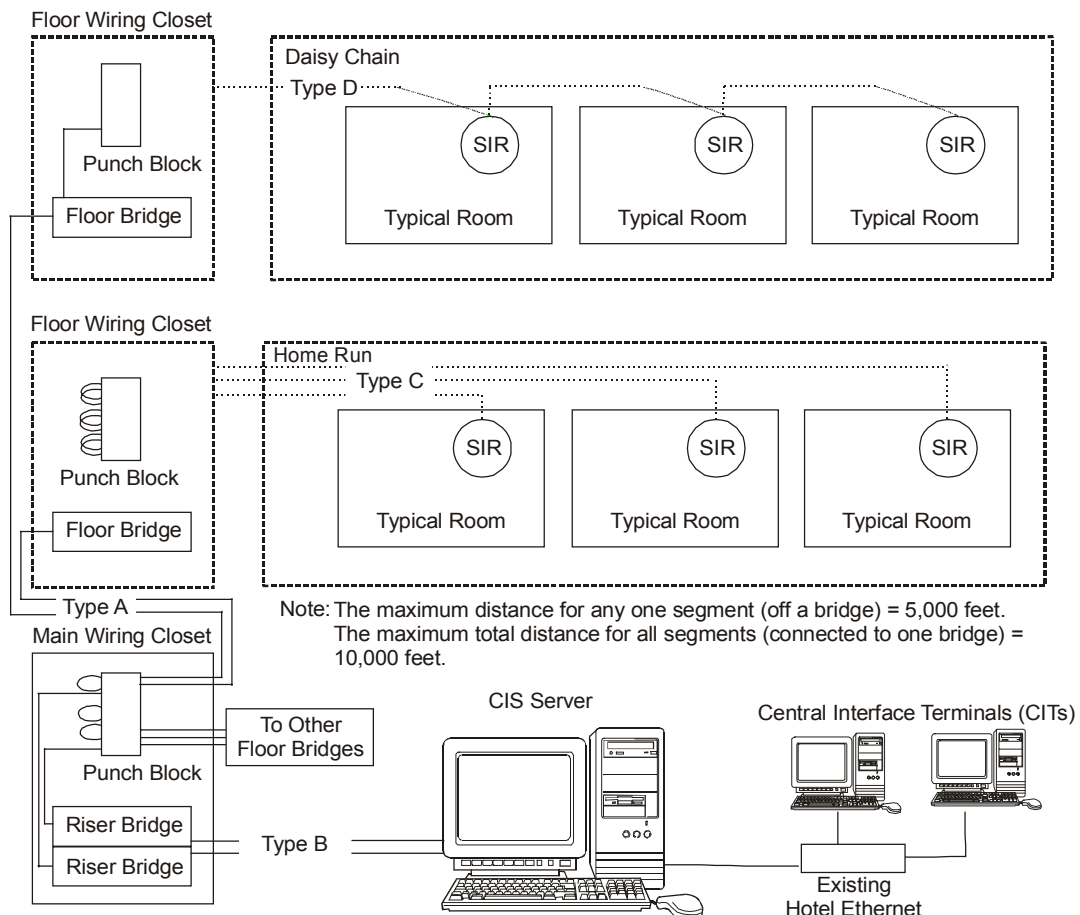
### Application

The MRC19-SIR Smart Infrared (SIR) transceiver provides a wireless link between the battery-operated electronic door lock in the guest room and the Central Interface Server (CIS). The CIS is interfaced with the lock control Central Interface Terminal (CIT), and a powerful, fail-safe central lock control system is established. The benefits are many, including:

- elimination of incorrect key card issuance
- simplified guest check-in procedures
- centralized staff and guest card cancellation
- real-time tracking of hotel employees
- detailed, unlimited access audit trail

- automatic time synchronization of all locks
- door ajar and forced entry alarms
- card cancellation upon check-out
- remote late check-out card extension
- greater guest security

**IMPORTANT:** This capability requires the addition of an IR Transceiver to be added to the lock mechanism by the lock manufacturer. SafeLoc and TimeLox are the two companies that have integrated with this system.



Refer to Table 1 for wiring type descriptions.  
Refer to Table 2 for device voltage requirements.

**Figure 1: Central Interface Network (CINET) Wiring with SIR Transceivers**

**Table 1: CINET Wiring Type Information (See Figure 1.)**

Type	Description
A	Cat 3 or 5 Unshielded Twisted Pair (UTP)
B	Shielded 3-conductor 24 gage or heavier
C	Two pairs of Cat 3 or 5 UTP (home run type)
D	A pair of Cat 3 or 5 for CINET UTP. A pair of 24 gage for 24 V/GND UTP (daisy chain type). Maximum of 80 units, 0.5 mile range.

**Table 2: Primary Voltage Requirements**

Device	Voltage
Floor Bridge	110 or 220 VAC
Riser Bridge	110 or 220 VAC
CIS	110 VAC
CIT	110 VAC
SIR	24 VAC

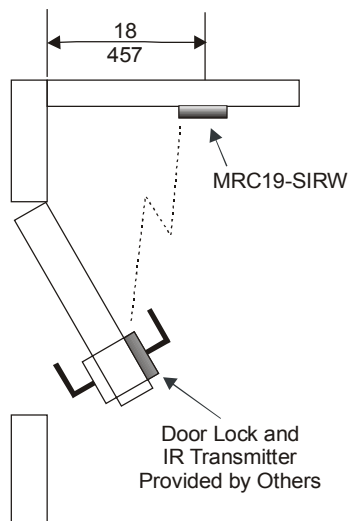
## Mounting

### Location Considerations

#### *MRC19-SIRW (Wall Mount) Hardware*

Mount the SIR in a single-gang electrical box on the wall that shares the hinge with the door, parallel to the door when it is wide open. Ensure an uninterrupted line of sight between the SIR and the door lock.

Mark the location for the single gang wallbox at least 18 in. (457 mm) from the door hinge and 6 to 9 ft (1.83 to 2.74 m) above the floor.



**Figure 2: Wall Mount SIR Location, in. (mm)**



#### **CAUTION: Risk of Electrical Shock.**

Disconnect the power supply before installing the SIR to prevent electrical shock or possible damage to the equipment.

**IMPORTANT:** Make all wiring connections in accordance with the National Electrical Code (NEC) and all local regulations.

To install the SIRW:

1. Cut an opening to accept the single gang wallbox and mount the wallbox into the wall (see Figure 2).
2. Feed the cable that provides power and CINET communication wiring to the SIR through the opening in the wallbox.
3. Connect the appropriate wires on the SIR pigtail to the 24 V, Common, CINET A and B wires using wire nuts or appropriate connectors (see Figure 4).
4. Plug the 6-position connector on the pigtail into the mating connector from the SIR.
5. Mount the SIR into the wallbox with the dark lens positioned on the bottom half.
6. Insert and tighten the mounting screws.
7. Apply power.

### MRC19-SIRC (Ceiling Mount) Hardware



**CAUTION: Risk of Electrical Shock.**

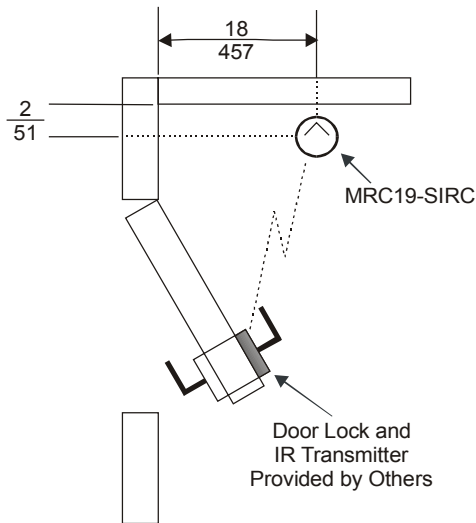
Disconnect the power supply before installing the SIR to prevent electrical shock or possible damage to the equipment.

**IMPORTANT:** Make all wiring connections in accordance with the National Electrical Code (NEC) and all local regulations.

Where local codes allow, mount the SIRC directly in the drop-ceiling sheet rock or tile without an electrical box in the ceiling. Where local codes do not allow, mount a 4 x 4 x 2-1/2 in. (102 x 102 x 63.5 mm) electrical box, with a cover plate containing a 2.625 in. (67 mm) hole, in the ceiling prior to mounting the SIR.

To install the SIRC:

1. Mark the center for a hole in the ceiling 18 in. (457 mm) from the door hinge, and 2 in. (51 mm) from the wall (see Figure 3).



**Figure 3: Ceiling Mount SIR Location, in. (mm)**

**Note:** Studs in the ceiling may affect the distance from the wall. Try to keep the eye as close to the wall as possible in order to guarantee a direct line of sight between the lock top and the eye, even when the door is wide open.

2. Drill a 2-1/2 inch diameter hole in the ceiling centered on the mark.
3. Feed the cable that provides power and CINET communication wiring to the SIR through the hole.
4. Connect the appropriate wire on the SIR pigtail to the 24 V, Common, CINET A and B wires using wire nuts or appropriate connectors (see Figure 4).
5. Insert the mounting sleeve of the SIR into the hole from the room side while feeding the eye pigtail through the hole in the top of the mounting sleeve.
6. Press the four levers inside the sleeve until they snap into place. The sleeve should now be securely attached to the ceiling with the pigtail hanging down through the hole in the mounting sleeve.
7. Plug the SIR connector into the pigtail's mating connector. Orient the SIR so that the tip of the arrow on the face of the SIR points at the wall (see Figure 3). Snap the SIR into the sleeve.
8. Apply power.

## Wiring

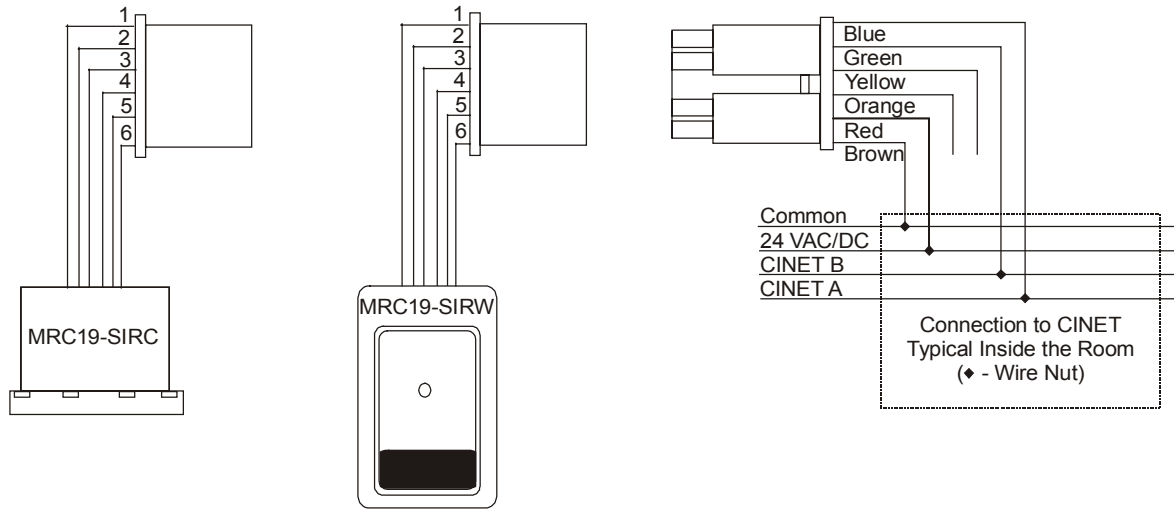


Figure 4: Wall Mount/Ceiling Mount SIR Wiring

Table 3: Pin Number Wire Color and Function

Pin Number	Wire Color	Function
1	Brown	Common
2	Red	24 VAC/VDC
3	Orange	12 VDC Output
4	Yellow	Input/SW
5	Green	CINET B
6	Blue	CINET A

## Setup and Adjustments

### MRC19-SIR Addressing

Central Interface Network (CINET) wiring is required for the SIR to communicate with the CIS (see Figure 1). Any room device connected to the CINET has a unique CINET address defined by the following:

- the riser bridge to which the associated floor bridge is connected
- the floor bridge to which the room device is connected
- the **device address** assigned to the device. Used to distinguish among multiple devices of the same type on the same floor bridge.
- a **software address** that is specific to the particular device. Used to tell the Central Interface (CI) what kind of device it is. The MRC19-SIR uses a **software address** of 5 (default).

The complete address consists of 4 digits:

(Riser Bridge #) : (Floor Bridge #) : (Device Address) : (Software Address)

Example: A device with address “2 : 9 : 15 : 5” is an MRC19-SIR with a software address of 5 and a device address of 15. It is connected to a Floor Bridge with address 9 and Riser Bridge with address 2.

Important MRC19-SIR addressing notes:

- the MRC19-SIR is provided from the factory with a default device address of 11. The MRC19-SIR must be programmed with its correct device address (1 to 199) that distinguishes it from other MRC19-SIR devices on the same Floor Bridge. The MRC19-SIR automatically uses a software address of 5.

- if both the MRC19-SIR and MRC19-xxxxx thermostat are installed in a room, the first three digits of the CINET addresses must match. The MRC19-xxxxx is provided from the factory with a default device address of 11. Before the MRC19-xxxxx can be used in combination with the MRC19-SIR, the first three digits of the CINET addresses must match. The MRC19-xxxxx automatically uses a software address of 8.
- the maximum number of devices connected to any Floor Bridge is 50. Therefore the total number of MRC19-SIR and MRC thermostat pairs is limited to 25 on a single Floor Bridge.

Example: An MRC19-SIR and MRC19-xxxxx are installed in a room. The Riser Bridge address is 2, the Floor Bridge address is 9 and the MRC19-SIR and MRC19-xxxxx device addresses are 15.

The MRC19-xxxxx has a CINET address: 2 : 9 : 15 : 8

The MRC19-SIR has a CINET address: 2 : 9 : 15 : 5

### MRC19-SIR Software

The MRC19-SIR software consists of two parts:

- a **seed** that provides the core functionality (operating system) of the device
- an **application** that provides property and installation specific data

The MRC19-SIR has the following status when shipped from the factory:

- the seed software is loaded, and a simple application software is loaded to provide basic functionality for production testing
- the device address is set to 11

Prior to using the MRC19-SIR at a property, the device address must be changed to the required address and the customer application software must be loaded into the MRC19-SIR.

### Set the MRC19-SIR Address

Each MRC19-SIR connected to the same floor bridge must have a unique address. Using a Programmer-Diagnostic Communicator (PDC) Handheld Programmer, address each MRC19-SIR device:

1. Verify the device has power and is running its seed program. The green Light-Emitting Diode (LED) will blink rapidly.
2. Turn on the PDC by pressing the red **F4** button.
3. Press the **+** button repeatedly until the **K492** menu appears (Menu 8).

4. Press the **F3** button under **EXE** to open the **K492 Get Version** (Menu 8.1).
5. Press the **+** button to scroll upward to the **K492 Set Address** menu (Menu 8.2).
6. Press **F3** to open the **K492 Addr:** menu.
7. Use the **+** and **-** to select the device address and press the **EXE** button to send the new address to the MRC19-SIR.

**Note:** If the new address was sent and received by the device, the PDC beeps and the LED stops blinking momentarily.

If **Test Failed** appears and a double beep is heard, the PDC could not communicate with the device. Press **F3** to go back to the **Set Address** menu and repeat Step 7. If **Test Failed** shows again, you may be too far away from the device, not in clear line of sight between the PDC and the device, more than one device is located within view of the PDC, or the PDC batteries are weak.

8. Reset the device using the PDC so the new address becomes active. Press the red **F4** button to back out of the previous menu and then press **+** to select the **RESET** menu (Menu 8.3).
9. Press the **F3** button to reset the device.

**Note:** The device LED flashes quickly six times then turns off, indicating the reset is complete. After several seconds the LED begins to blink rapidly again.

10. Verify the device address using the PDC. Back out of the **RESET** menu (press the red **F4** button) and select the **Get Address** menu.
11. Press **F3** to get the device address. If the address is not correct, repeat Steps 1 through 12.

### Load the Application Software

If currently not installed on the CIS computer, obtain the required MRC19-CEL application software from Johnson Controls. The software is typically provided on a disk or as an e-mail attachment.

To install the software using CIT Application Loader, place the software (SLF File) in the **SLF** folder of CIS5. There are two methods to do this:

1. Use My Computer or Windows® Explorer to copy the desired SLF files to the **CIS5 SLF** folder. This folder will usually be located at:

C:\Inncom\Cis5\SLF

or

D:\Inncom\Cis5\SLF

2. From the CIS5 menu bar, select **Setup>Install SLF File....** The **Install SLF File** window appears. Open a standard Windows **Open File** window by clicking on the button next to the new SLF File. Select the location and name of the file by browsing to the correct location. Once you have selected the correct file, click **Open**. The **Open File** window closes and the file you have selected appears in the **New SLF File** box. Click **OK** to install the new SLF file and to close the **Install SLF File** window.

To load the software into the MRC19-SIR devices using the CIT5 Application Loader:

1. Start the CIT5 software if it is currently not already running.
2. Log on using your assigned user name and password.
3. Open the CIT5 **Application Loader** window.
4. Create an Application Loader **Job** to load the MRC19-SIR software. Use the following settings:
  - a. **Device Type:** MRC19-SIR Doorlock Bridge
  - b. **Broadcast:**
    - one device single cast. Load a single MRC19-SIR.
    - room broadcast on a floor. Load all MRC19-SIR devices on a single Floor Bridge.
    - floor broadcast on a riser. Load all MRC19-SIR devices on a single Riser Bridge.
    - riser broadcast in entire hotel. Load all MRC19-SIR devices in the hotel.
  - c. **Address:** (Riser Bridge #) : (Floor Bridge #) : (MRC19-SIR Address) : 5
 

**Note:** The last digit is automatically set to 5. This is the MRC19-SIR device address.
  - d. **SLF Filename:** Select the proper MRC19-SIR software from the listbox.
 

**Note:** If the software you want to load is not listed when you open the listbox, the software SLF file has not been added to the **SLF** folder. Install the software, using the steps listed prior to this section.

e. **Mode:**

If loading a single MRC19-SIR:

- SLF Load Repetition – once
- Check **Start download immediately. . . , Overwrite Forced, and Load Application.**

If loading multiple MRC19-SIRs:

- SLF Load Repetition – three times
- Check **Start download immediately. . . , and Load Application.**

## Troubleshooting

1. Verify communication between an individual SIR and the CIS computer.

Using CIT5:

- a. From CIT5 select the room with the desired SIR using the CIT5 **Goto** feature, the Floor Tab or the CINET Tab.
- b. Select the ILAN tab on the CIT5 Room View.

**Note:** The ILAN tab window lists the devices present in the room and shows the communication status of each device. A green check means the device is communicating. A red X means the device is not communicating. This could be because the SIR has lost power, the CINET wiring to the SIR is not connected or broken, or a SIR connected to the same floor bridge has the same address.

Using the PDC:

- a. Go to PDC menu number 8.
- b. Press **EXE** to open menu number 8, then use the **+** or **-** buttons to select menu 8.5 **Where Am I.**
- c. Hold the PDC up to the SIR and press **F3** to execute.

**Note:** If three numbers appear with three beeps, the SIR is communicating with the CIS. Going left to right, the first number is the Riser Bridge address, the second is the Floor Bridge address, and third is the SIR address.

If any of the three numbers is missing and **Test Failed** appears, a communication problem exists. The missing number indicates the device in the path between the SIR and the CIS computer that has a problem.

2. Verify communication between the SIR and Lock (Test SIR to Lock IR link).

Using CIT5:

- a. Open the CIT5 Dialog Window.
- b. In the CINET address field, enter the CINET address of the SIR (Riser : Floor : SIR Address) in the first three spaces, and enter **65** as the last digit (device ID for IR 4 communications).
- c. Select **IR4** as the frame type (middle list box).
- d. Enter **05002B** as the command (Test IR4 Communication).
- e. Click **Exec** to send the command to the SIR.
- f. A response indicates communication between the SIR and the lock.

Using the PDC:

- a. Go to PDC menu number 8.
- b. Press **EXE** to open menu number 8, then use the **+** or **-** buttons to select menu 8.6 **Lock**.
- c. Hold the PDC up to the SIR and press **F3** to execute the lock test.

**Note:** This is a Pass/Fail test. If the SIR communicates with the lock, the PDC beeps once and an asterisk appears under **Pass** on the PDC. If the SIR is unable to communicate with the lock, the PDC beeps twice and an asterisk appears under **Fail**.

3. Get an SIR Address.

Using the PDC:

- a. Go to PDC menu number 8.
- b. Press **EXE** to open menu number 8, then use the **+** or **-** buttons to select menu 8.5 **Where Am I**.
- c. Hold the PDC up to the SIR and press **F3** to execute.

**Note:** If three numbers appear with three beeps, the SIR is communicating with the CIS. The first number is the Riser Bridge address, the second is the Floor Bridge address and the third is the SIR address.

If any of the three numbers is missing and **Test Failed** appears, a communication problem exists. The missing number indicates the device in the path between the SIR and the CIS computer that has a problem.

## Technical Specifications

<b>Product</b>	Central Electronic Lock System (CELS)
<b>Power Requirements</b>	20-35 VAC/VDC, 3.5 W maximum
<b>Agency Listings</b>	FCC UL CSA
<b>Ambient Operating Conditions</b>	41 to 149°F (5 to 65°C) 0-95% RH noncondensing
<b>Ambient Storage Conditions</b>	33 to 149°F (1 to 65°C)
<b>Shipping Weight</b>	MRC19-SIRW: 0.22 lb (0.09 kg) MRC19-SIRC: 0.28 lb (0.13 kg)

*The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.*



**Controls Group**  
507 E. Michigan Street  
P.O. Box 423  
Milwaukee, WI 53201

Published in U.S.A.  
[www.johnsoncontrols.com](http://www.johnsoncontrols.com)