Crestron **C2N-MNETGW**
infiNET™ Gateway/Transceiver
Operations Guide

CRESTRON®

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Contents

infiNET™ Gateway/Transceiver: C2N-MNETGW

Introduction

The C2N-MNETGW is a 2-way RF gateway/transceiver designed to enable communications and management for a complete infiNET wireless network of dimmers, thermostats, and other devices. The C2N-MNETGW links the infiNET network to the Cresnet® wired network to enable communications with a 2-Series control system.

Features and Functions

- Two-way radio frequency (RF) wireless transceiver/gateway

- infiNET™ mesh network technology

- Dynamic discovery for fast, easy setup

- "Wi-Fi friendly" channel selection for trouble-free operation

- Up to 150 foot range indoors, 250 feet outdoors

- Supports up to 30 infiNET devices

infiNET™

Crestron's groundbreaking infiNET wireless technology provides reliable 2-way communications throughout a home or office structure without the need for physical control wiring. Employing a 2.4 GHz mesh network topology, most infiNET devices function as an RF repeater, increasing effective range and reinforcing the complete network by providing

multiple redundant signal paths within the mesh network. Adding more infiNET devices or repeaters to the network effectively increases the range, strength, and reliability of the network.

Up to 30 infiNET dimmers, switches, and other devices can be linked to a control system via a single C2N-MNETGW gateway. Additional gateways may be installed to support additional devices, with up to 16 gateways possible in a complete system (RF conditions allowing).

Easy Setup

Setting up a complete infiNET network is simple, utilizing dynamic discovery to locate and acquire each RF device automatically. Most infiNET devices also function as repeaters. These devices are capable of automatically repeating messages for any other infiNET devices within range (approximately 150 feet indoors) that operate on the same infiNET RF channel, thereby strengthening the mesh network and increasing its effective range. At all times, the C2N-MNETGW monitors each device on the network, ignoring any other 2.4 GHz signals, and reconfiguring the entire network automatically in response to new sources of interference and other changes in RF conditions.

Applications

The following diagram shows a C2N-MNETGW in an infiNET application with infiNET dimmers and a C2N-MNETRPT infiNET repeater.

C2N-MNETGW in an infiNET Application
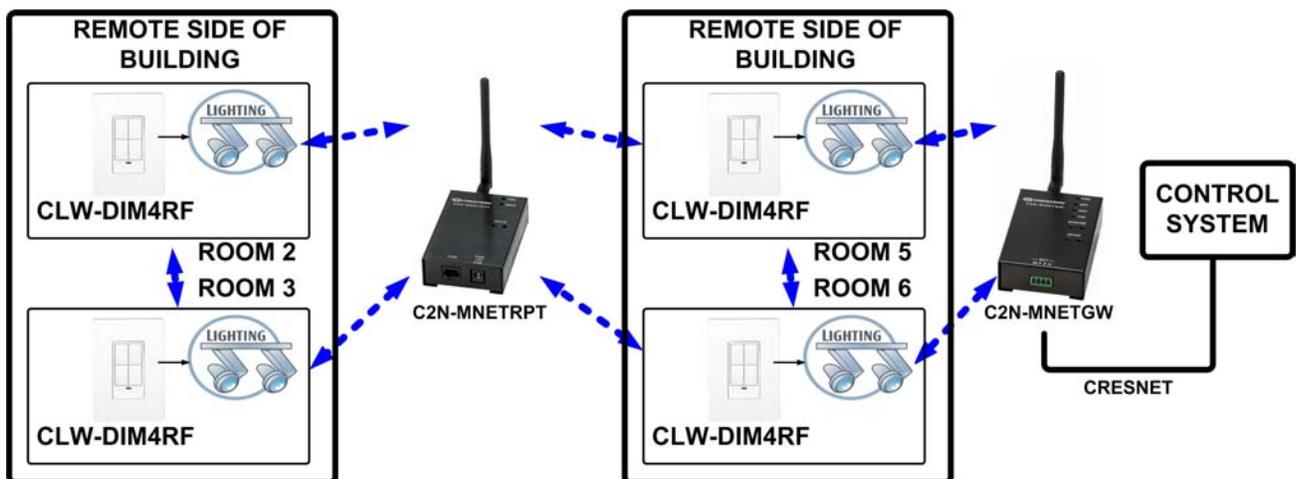
Specifications

Specifications for the C2N-MNETGW are listed in the following table.

C2N-MNETGW Specifications

SPECIFICATION	DETAILS
Wireless	
RF Transceiver	Two-way RF, 2.4 GHz ISM Channels 11-26 (2400 to 2483.6 MHz), IEEE 802.15.4 compliant
RF Transmitting Power	10 mW
Range (typical)	150 feet indoor, 250 feet outdoor, subject to site-specific conditions; Range is increased by adding additional devices or C2N-MNETRPT infiNET repeater
Power Requirements	
Cresnet® Power Usage	3 Watts (0.125 Amps @ 24 Volts DC)
Default NET ID	0F
Minimum 2-Series Control System Update File[1, 2]	Version 3.154 or later
Enclosure	Black metal, freestanding
Environmental	
Temperature	32º to 104ºF (0º to 40ºC)
Humidity	10% to 90% RH (non-condensing)
Dimensions (without antenna)	
Height	1.24 in (3.15 cm)
Width	2.47 in (6.28 cm)
Depth	3.88 in (9.85 cm)
Weight	8.3 oz (0.24 kg)

(Continued on following page)

C2N-MNETGW Specifications (Continued)

SPECIFICATION	DETAILS
Available Accessories	C2N-MNETRPT infiNET Repeater

1. The latest software versions can be obtained from the Crestron® website. Refer to the NOTE following these footnotes.
2. Crestron 2-Series control systems include the AV2 and PRO2. Consult the latest Crestron Product Catalog for a complete list of 2-Series control systems.

NOTE: Crestron software and any files on the website are for authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIP) only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).

Physical Description

This section provides information on the connections, controls and indicators available on your C2N-MNETGW.

C2N-MNETGW Physical View

C2N-MNETGW Overall Dimensions (antenna not shown)
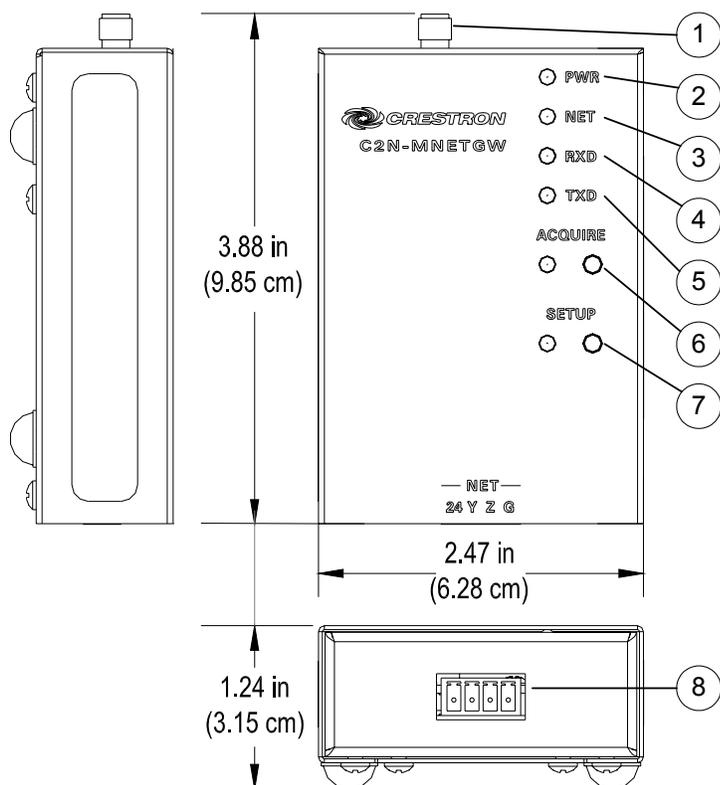
Connectors, Controls & Indicators

#	CONNECTORS*, CONTROLS & INDICATORS	DESCRIPTION
1	ANTENNA	Reverse SMA, female; Dipole antenna included. **NOTE:** Only the included antenna should be used.
2	PWR LED	Indicates DC power supplied from Cresnet network.
3	NET LED	Indicates communication with Cresnet system.
4	RXD LED	Indicates data is being received from wireless network devices.

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS*, CONTROLS & INDICATORS	DESCRIPTION
5	TXD LED	Indicates data is being transmitted to wireless network devices.
6	ACQUIRE (LED and button)	Recessed pushbutton with red LED; Used to configure the wireless network.
7	SETUP (LED and button)	Recessed pushbutton with red LED; Used for touch-settable ID (TSID).

8	NET
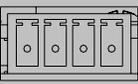	
	 — NET —
	 24 Y Z G
		Four-position terminal block connector for data and power. Connects to Cresnet control network.
		     Pin 1 (24) Power
		     Pin 2 (Y) Data
		     Pin 3 (Z) Data
		     Pin 4 (G) Ground

*   Interface connector for the **NET** port is provided with the unit.

Industry Compliance

As of the date of manufacture the C2N-MNETGW has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.

$$CE \quad C$$

Contains FCC ID: EROCWD1012

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.

Setup

Network Wiring

When wiring the Cresnet network, consider the following:

- Use Crestron Certified Wire.

- Provide sufficient power to the system.

  CAUTION: Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (http://www.crestron.com/calculators).

- For larger networks, use a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality.

For more details, refer to "Check Network Wiring" on page 24.

Identity Code

The Net ID of the C2N-MNETGW has been factory set to **0F**. The Net IDs of multiple C2N-MNETGW devices in the same system must be unique. Net IDs are changed from a personal computer (PC) via Crestron Toolbox™ (refer to "Establishing Communication" on page 15).

When setting the Net ID, consider the following:

- The Net ID of each unit must match an ID code specified in the SIMPL Windows program.

- Each network device must have a unique Net ID.

For more details, refer to the Crestron Toolbox help file.

Installation Tips

NOTE: Additional information can also be found in the latest revision of the document titled "Best Practices for Installation and Setup of Crestron RF Products" (Doc. 6689), which is available from the Crestron website (www.crestron.com/manuals).

When installing a C2N-MNETGW near other C2N-MNETGWs, keep in mind the following for optimum performance:

- Do not place multiple gateways on the same channel. Refer to "Operating Channel" on page 17 for more information.

- Gateways on adjacent channels should be at least 12 feet apart.

- Gateways on non-adjacent channels should be at least three feet apart.

When installing a C2N-MNETGW near a Wi-Fi access point, keep in mind the following for optimum performance:

- Gateways on infiNET channels adjacent to operating Wi-Fi channels should be placed at least 12 feet from the nearest Wi-Fi access point.

- Gateways on infiNET channels that are non-adjacent to Wi-Fi bands should be located at least six feet from the nearest Wi-Fi access point.

For more information on infiNET channels and their interaction with the Wi-Fi spectrum, refer to "Appendix A: The infiNET Spectrum" on page 28. Information on optimal gateway placement can be found in "Appendix B: Optimum RF Reception Guidelines" on page 29.

Hardware Hookup

Make the necessary connections as called out in the illustration that follows this paragraph. Refer to "Network Wiring" on page 8 before attaching the 4-position terminal block connector. Apply power after all connections have been made.

Hardware Connections for the C2N-MNETGW

ANTENNA:
COMMUNICATION WITH
OTHER INFINET DEVICES

CRESNET:
CONNECT TO THE CRESNET
CONTROL NETWORK
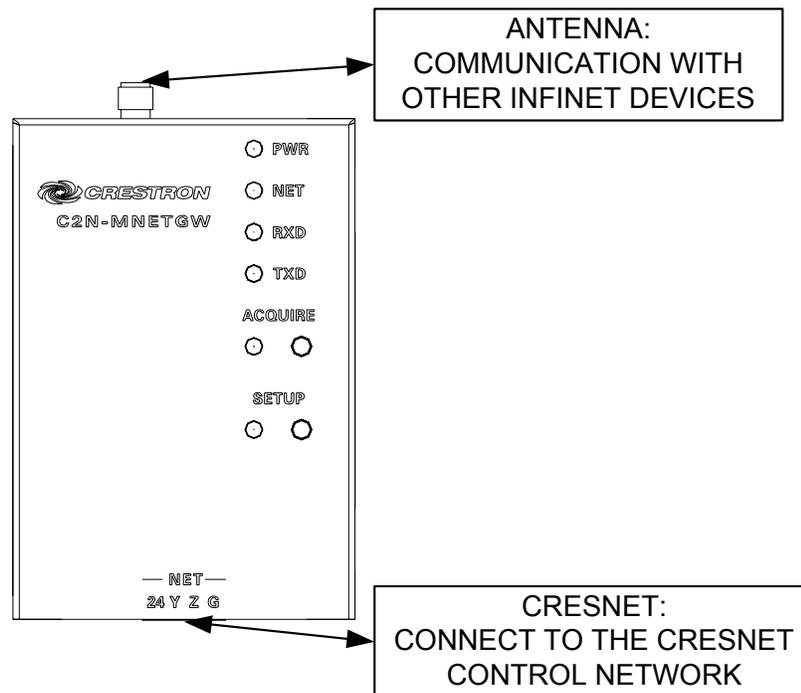
NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be colocated or operating in conjunction with any other antenna or transmitter.

For information of obtaining optimum reception, refer to "Appendix B: Optimum RF Reception Guidelines" on page 29. Additional information can also be found in the latest revision of the document titled "Best Practices for Installation and Setup of Crestron RF Products" (Doc. 6689).

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 controlled system. You can create a program to control the C2N-MNETGW using the Crestron programming tools Crestron SystemBuilder, D3 Pro™, or SIMPL Windows. Customers whose focus is on lighting systems may prefer to use the D3 Pro software since it is designed especially for creating lighting and environmental system control applications. Customers already familiar with SIMPL Windows who are including a lighting system as part of an overall control system project may prefer to continue using SIMPL Windows. For the minimum recommended software versions, visit the Version Tracker page of the Crestron website (www.crestron.com/versiontracker).

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 D3 Pro

Crestron's D3 Pro lighting software provides all the tools necessary to create a complete Crestron lighting system for residential applications. The lighting system includes the control system logic program, touchpanel projects and keypad programming, documentation and real-time lighting adjustment capabilities.

As with all Crestron software, D3 Pro provides extensive right-click and drag-and-drop functionality in addition to convenient keyboard shortcuts for frequently used functions and commands.

Programming is organized into six system **Views** of the lighting system, each providing a moveable toolbox of devices such as interfaces, fixtures and control modules. You can add a device to your system simply by selecting it from one of the toolboxes and dragging it to a room. The available toolboxes differ depending on the View but all Views include a "General" toolbox that allows you to add areas and rooms at any time.

Programming with SIMPL Windows

NOTE: While SIMPL Windows can be used to program the C2N-MNETGW, it is recommended to use SystemBuilder or D3 Pro.

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 C2N-MNETGW into the system, drag the C2N-MNETGW from the Wireless Receivers | Wireless Receivers (RF) folder of the *Device Library* and drop it in the *System Views*.

Locating the C2N-MNETGW in the Device Library

```
Crestron Devices (DvcLib 434)
  Control Systems
  Wired Keypads
  Wireless Receivers
      Wireless Receivers (IR)
      Wireless Receivers (RF)
          C2N-MNETGW  ←
          CNRFGWA
          CNRFGWA-418
          CNRFGWX
          STRFGWX
          TPS-RFGWX
  Wireless Remotes
  User Devices
```
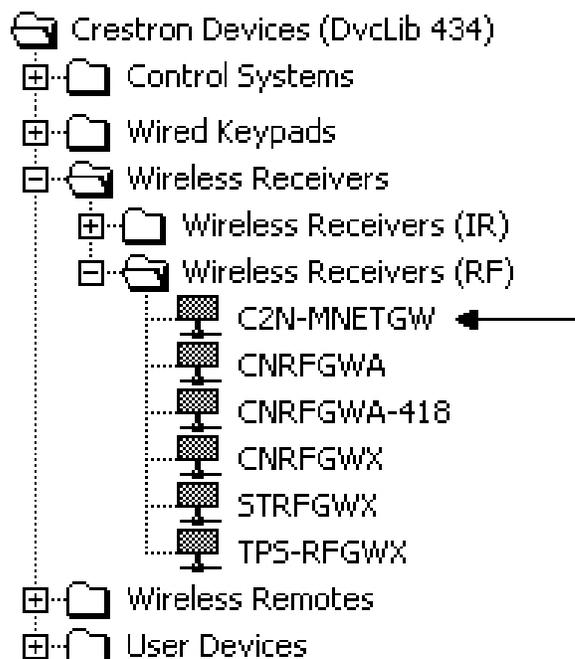
- The system tree of the control system displays the device in the appropriate slot with a default Net ID as shown in the following illustration.
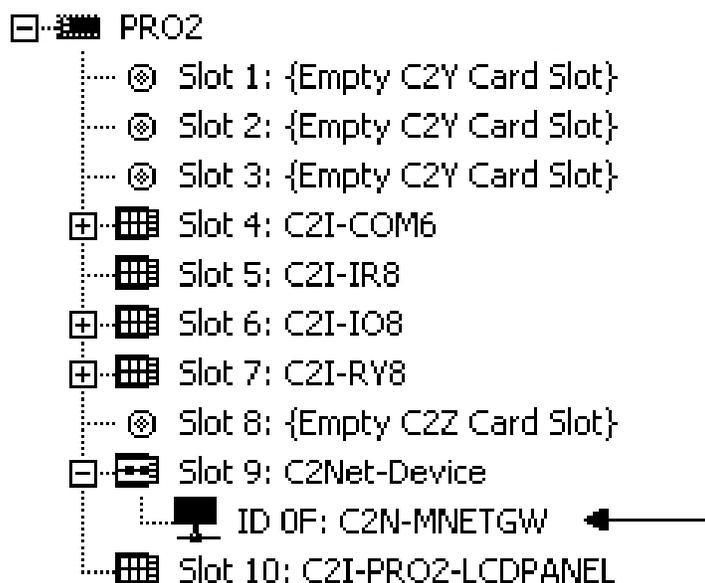
C2Net Device, Slot 9

```
PRO2
      Slot 1: {Empty C2Y Card Slot}
      Slot 2: {Empty C2Y Card Slot}
      Slot 3: {Empty C2Y Card Slot}
      Slot 4: C2I-COM6
      Slot 5: C2I-IR8
      Slot 6: C2I-IO8
      Slot 7: C2I-RY8
      Slot 8: {Empty C2Z Card Slot}
      Slot 9: C2Net-Device
          ID 0F: C2N-MNETGW  ←
      Slot 10: C2I-PRO2-LCDPANEL
```

- Additional C2N-MNETGW devices are assigned different Net ID numbers as they are added.

- If necessary, double click a device to open the "Device Settings" window and change the Net ID as shown in the following figure.

"C2N-MNETGW Device Settings" Window
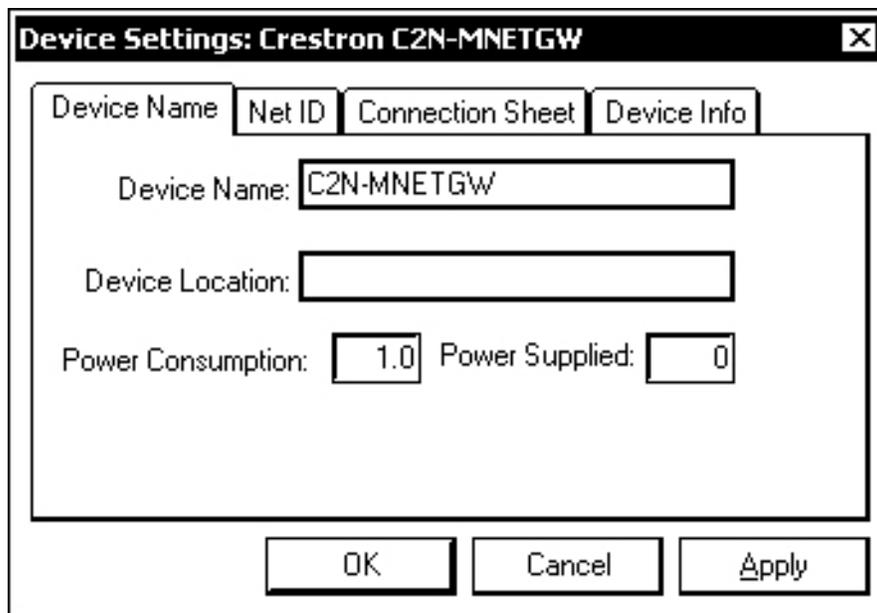
- The ID code specified in the SIMPL Windows program must match the Net ID of each unit. Refer to "Identity Code" on page 8.

Program Manager

Program 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*. Each signal in the symbol is described in the SIMPL Windows help file (**F1**).

The C2N-MNETGW does not require any specific programming other than being included in the SIMPL Windows program.

Example Program

An example program for the C2N-MNETGW 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. Once communication has been established, files (for example, programs, projects or firmware) can be transferred to the control system (and/or device). Finally, program checks can be performed (such as changing the device ID) to ensure proper functioning.

Establishing Communication

Use Crestron Toolbox for communicating with the C2N-MNETGW; refer to the Crestron Toolbox help file for details. Indirect communication via a control system is the sole method of communicating with the C2N-MNETGW.

Indirect Communication

| PC RUNNING CRESTRON TOOLBOX | ←— SERIAL, ETHERNET OR USB —→ | CONTROL SYSTEM | ←—CRESNET—→ | C2N-MNETGW |

- C2N-MNETGW connects to control system via Cresnet.

- Establish communications between the PC and the control system as described in the latest version of the 2-Series Control Systems Reference Guide (Doc. 6256).

- Use the Address Book in Crestron Toolbox to create an entry for the C2N-MNETGW using the expected communication protocol (Indirect). Select the Cresnet ID of the C2N-MNETGW and the address book entry of the control system that is connected to the C2N-MNETGW.

- Display the C2N-MNETGW's "System Info" window (click the ⓘ icon); communications are confirmed when the device information is displayed.

Programs and Firmware

Program and firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron website as new features are developed after product releases. One has the option to upload programs and projects via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the SIMPL Windows help file or the Crestron Toolbox help file.

SIMPL Windows If a SIMPL Windows program is provided, it can be uploaded to the control system using SIMPL Windows or Crestron Toolbox.

Firmware Check the Crestron website to find the latest firmware. (New users may be required to register to obtain access to certain areas of the site, including the FTP site.)

- Upgrade C2N-MNETGW firmware via Crestron Toolbox.

- Establish indirect communications with the C2N-MNETGW and display the "System Info" window.

- Select **Functions | Firmware…** to upgrade the C2N-MNETGW firmware.

Program Checks

Display the network device tree (**Tools | Network Device Tree**) to show all network devices connected to the control system and all infiNET devices that have been acquired by the C2N-MNETGW. Right-click on the C2N-MNETGW to display actions that can be performed on the C2N-MNETGW.

The function **MNET Gateway…** is used to set the operating channel mode of the C2N-MNETGW and can also be used to acquire infiNET devices to the C2N-MNETGW.

For information on setting the operating channel and acquiring devices, refer to "Operation" on page 17.

Operation

Operating
Channel

The RF channel mode of the C2N-MNETGW must be set prior to operation using Crestron Toolbox. The C2N-MNETGW can operate on a fixed channel that is set by the installer or it can automatically set itself to the clearest channel. The C2N-MNETGW can operate on one of 16 channels.

1. Establish communication with the C2N-MNETGW as described in "Establishing Communication" on page 15.

2. Select **Functions | MNET Gateway...** to open the C2N-MNETGW's controls.

   C2N-MNETGW Controls

3. Set the RF channel mode and the RF channel (if operating in the *Fixed* mode).

For systems using multiple gateways or systems operating in environments containing other devices that use similar frequencies, Crestron recommends setting the C2N-MNETGW to operate on a fixed channel to avoid RF interference with other devices in the vicinity. Ideally, each gateway should operate on its own channel to avoid interfering with other gateways operating in the vicinity. The infiNET signal protocol prevents data intended for one gateway and its devices from being received by another gateway and its devices.

For systems where three or more gateways are present, or where there is considerable interference present from other devices, Crestron recommends locating a quiet channel and setting the C2N-MNETGW to operate in the fixed channel mode. For assistance in locating available channels, Crestron recommends the "Wi-Spy" spectrum analyzer, (available at www.metageek.net) or other spectrum analyzer capable of analyzing the 2.4 GHz band.

For optimum performance when installing a C2N-MNETGW in a Wi-Fi environment, do not set the C2N-MNETGW to a channel within a Wi-Fi channel band.

- Gateway channels 11-14 are within Wi-Fi channel 1 band.

- Gateway channel 15 is adjacent to Wi-Fi channels 1 and 6.

- Gateway channels 16-19 are within Wi-Fi channel 6 band.

- Gateway channel 20 is adjacent to Wi-Fi channels 6 and 11.

- Gateway channels 21-24 are within Wi-Fi channel 11 band.

- Gateway channel 25 is adjacent to Wi-Fi channel 11.

- Gateway channel 26 is neither within nor adjacent to any Wi-Fi band.

For detailed information on infiNET channels, refer to "Appendix A: The infiNET Spectrum" on page 28.

For systems with one or two gateways and minimal interference from other devices that use similar frequencies, Crestron recommends setting the C2N-MNETGW to automatically select the operating channel.

NOTE: When using the C2N-MNETGW with devices that may not be configured to support automatic channel selection (e.g. CHV-TSTATRF when set to a fixed channel, or HTT-B10X when running from battery power), the C2N-MNETGW **must** be set to operate in fixed channel mode.

For more information, refer to the latest revision of the document titled "Best Practices for Installation and Setup of Crestron RF Products" (Doc. 6689).

Acquire Devices

Crestron's infiNET devices can communicate with a C2N-MNETGW only if they have been acquired by that C2N-MNETGW (even if the C2N-MNETGW and the device are operating on the same channel). To add infiNET devices to the infiNET network, the C2N-MNETGW must be in the *Acquire* mode. The *Acquire* mode can be activated from Crestron Toolbox (recommended) or with the **ACQUIRE** button on the C2N-MNETGW.

NOTE: The *Acquire* mode can be activated approximately 15 seconds after applying power to the C2N-MNETGW.

NOTE: In an environment with multiple gateways, only one gateway should be in the *Acquire* mode at a time.

NOTE: The C2N-MNETGW must be placed in the *Acquire* mode before an *infiNET* device is placed in the *Acquire* mode.

Via Crestron Toolbox:

Using Crestron Toolbox to enter the *Acquire* mode provides the installer with a visual account of devices as they are acquired.

1. Establish communication with the C2N-MNETGW as described in "Establishing Communication" on page 15.

2. Select **Functions | MNET Gateway...** to open the C2N-MNETGW's controls.

C2N-MNETGW Controls

```
MNET Gateway - tcp 172.30.168.17:cresnet FE          ☒
┌─ RF Channel ──────────────────────────┐
│  ○ Auto  ◉ Fixed  │26│  ▼             │
└───────────────────────────────────────┘

Acquired Devices:                    1 device(s) found
┌──────┬───────────┬────────┬──────────────────────────┐
│ New  │ Ser No.   │ MNET...│ Device                   │
├──────┼───────────┼────────┼──────────────────────────┤
│      │ ZF157321..│  03    │ CLW-DIM1RF [v1.053.331, #D6F00DD9]│
│      │           │        │                          │
│      │           │        │                          │
└──────┴───────────┴────────┴──────────────────────────┘
◄ │                                              │ ►

* Devices acquired since last refresh shown in blue.
┌─────────────┬─┐ ┌─────────────────┐   ┌──────────┐
│ Start Acquire│▼│ │ Release Selected │   │ Refresh  │
└─────────────┴─┘ └─────────────────┘   └──────────┘

                                        ┌──────────┐
                                        │  Close   │
                                        └──────────┘
```
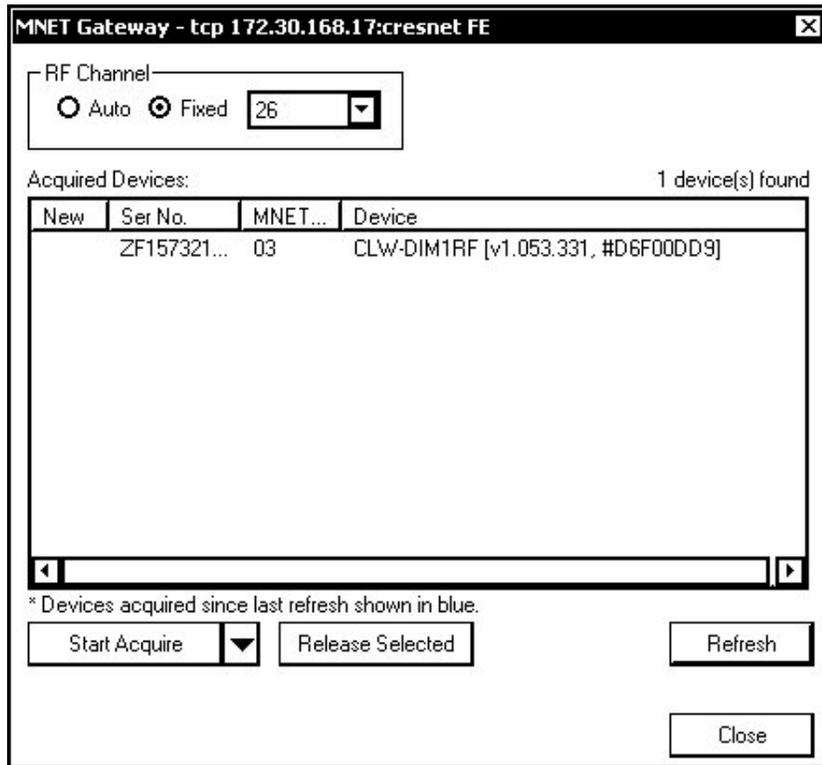
NOTE: If the C2N-MNETGW is already in the *Acquire* mode, a message indicating the status will be displayed.

---

3. Click **Start Acquire** to place the C2N-MNETGW in the *Acquire* mode.

   The default time that the C2N-MNETGW remains in the *Acquire* mode (when starting the Acquire mode from Toolbox) is one hour. Other times can be specified from the drop down button located next to the **Start Acquire** button. The **ACQUIRE** LED on the C2N-MNETGW will illuminate and the **Start Acquire** button will change to read **STOP Acquire**.

NOTE: While the "C2N-MNETGW Controls" window is open and the device is in the *Acquire* mode, the control system is in *passto* mode. The program in the control system is paused and will resume after leaving the *Acquire* mode.

---

4. Place new infiNET devices in the *Acquire* mode as described in their respective manuals. Devices will be automatically acquired by the gateway approximately five minutes after they enter the *Acquire* mode.

NOTE: If the acquired devices have never had an MNET ID assigned, they will be acquired with the default MNET ID 01.

5. At any time, click **STOP Acquire** to exit the *Acquire* mode. The **Acquire** LED will turn off. Newly acquired devices will be shown in addition to any existing devices.

Via the ACQUIRE Button:

1. Press **ACQUIRE** on the C2N-MNETGW to enter the *Acquire* mode. The accompanying LED will illuminate indicating that it is ready to link to infiNET devices.

NOTE: The *Acquire* mode will automatically deactivate after 30 minutes.

2. Place the closest infiNET device in the *Acquire* mode as described in its respective manual. (Once each device acquires the gateway, it will function as a repeater to reinforce the infiNET network.) The device will be automatically acquired by the gateway within five minutes after it enters the *Acquire* mode.

3. Repeat step 2 for each device to be acquired.

4. Press **ACQUIRE** on the C2N-MNETGW to exit the *Acquire* mode. The LED will turn off.

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.

C2N-MNETGW Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Device does not function.	Device is not communicating with the network.	Use Crestron Toolbox to poll the network. Verify network connection to the device.
	Device is not receiving sufficient power.	Use the Crestron Power Calculator to help calculate how much power is needed for the system.
NET LED does not illuminate.	C2N-MNETGW Net ID is not set to match the Net ID of the SIMPL Windows program.	Using Crestron Toolbox, poll the network. Verify that the Net ID for the C2N-MNETGW is set to match the ID specified in the SIMPL Windows program.

(Continued on following page)

C2N-MNETGW Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
RXD LED does not flash when an infiNET device is transmitting.	C2N-MNETGW is not receiving data from infiNET device.	Open Crestron Toolbox and select the Network Device Tree. Expand the Network Device Tree until the gateway to be managed is selected. Right-click the Net ID of the selected gateway to open the sub-menu and select **Functions | MNET Gateway…**. If devices are not listed, add devices by putting the C2N-MNETGW and infiNET device in *Acquire* mode.
	C2N-MNETGW is out of range.	Reposition or relocate the C2N-MNETGW to specification or add C2N-MNETRPT repeaters.

(Continued on following page)

C2N-MNETGW Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
TXD LED does not illuminate.	C2N-MNETGW is not transmitting data to infiNET devices.	Open Crestron Toolbox and select the Network Device Tree. Expand the Network Device Tree till the gateway to be managed is selected. Right-click the Net ID of the selected gateway to open the sub-menu and select **Functions	MNET Gateway….** If devices are not listed, add devices by putting the C2N-MNETGW and infiNET device in *Acquire* mode.
ACQUIRE LED does not illuminate when requested.	C2N-MNETGW has just rebooted.	Wait approximately 15 seconds after device has rebooted, then press **ACQUIRE**.
Intermittent response from C2N-MNETGW during communication with infiNET devices.	C2N-MNETGW is in vicinity of metal obstruction.	Verify that large amount of metal is not in vicinity of transmission.

Check Network Wiring

Use the Right Wire

In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire and only Crestron Certified Wire may be used. Failure to do so may incur additional charges if

support is required to identify performance deficiencies because of using improper wire.

Calculate Power

CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

CAUTION: Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy-chained on the run, the Cresnet power usage of each network unit to be daisy-chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is home-run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

Cable Length Equation

$$L < \frac{40,000}{R \times P}$$

Where: L = Length of run (or chain) in feet
R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 MM^2))
or 1.6 Ohms (Cresnet HP: 12 AWG (4 MM^2))
P = Cresnet power usage of entire run (or chain)

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run using 18 AWG Crestron Certified Wire and drawing 20 watts should not have a length of run more than 333 feet. If Cresnet HP is used for the same run, its length could extend to 1250 feet.

NOTE: All Crestron certified Cresnet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor and the other twisted pair is the Y conductor and the Z conductor.

Strip and Tin Wire

When daisy-chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up the wires or the end becomes brittle. Insert the tinned connection into the Cresnet connector and tighten the retaining screw. Repeat the procedure for the other three conductors.

Add Hubs

For larger networks (i.e., greater than 28 network devices), it may become necessary to add a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality throughout the network. Also, for networks with lengthy cable runs it may be necessary to add a Hub/Repeater after only 20 devices.

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
2-Series Control Systems Reference Guide
Best Practices for Installation and Setup of Crestron RF Products

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 Crestron at 1-888-CRESTRON [1-888-273-7876].

You can also log onto the online help section of the Crestron website (www.crestron.com/onlinehelp) 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 C2N-MNETGW, 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.

Appendix A: The infiNET Spectrum

Crestron's infiNET network provides 16 RF channels in the 2.4GHz ISM band, specifically IEEE 802.15.4 channels 11 through 26. The 16 channels define the frequencies at which the infiNET device will communicate.

Crestron's infiNET devices on different channels will not communicate nor interfere with each other. However, since some of the channels are in the 2.4GHz ISM band (as shown in the following diagram), interference can occur with other devices using this band, such as 802.11b/g Wi-Fi devices, Crestron TPS-XTXRF devices, or Zigbee devices. However, the differing protocols will not allow a link to be established or data to be transferred. Wireless 2.4GHz telephones and microwave ovens may also cause interference with the network.

IEEE 802.15.4 channel selection (2400 MHz PHY)
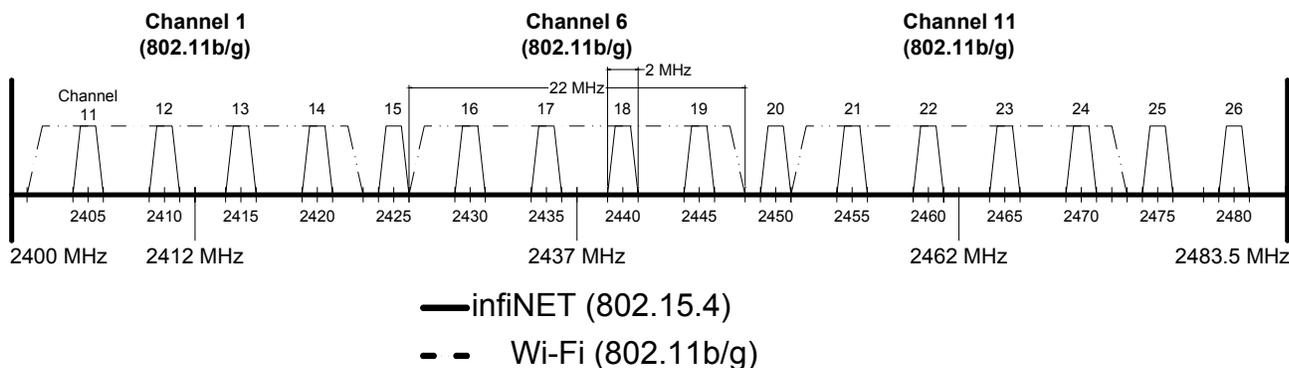
To manage interference that may be present at installation time or may be introduced later, the C2N-MNETGW has the ability to automatically select a channel to operate on based on an evaluation of RF signal levels on each channel. The gateway and devices are therefore designed to be able to track and, if necessary, re-locate to channels with less interference.

For more information, refer to the latest revision of the document titled "Best Practices for Installation and Setup of Crestron RF Products" (Doc. 6689).

Appendix B: Optimum RF Reception Guidelines

Many factors can affect the reliability of RF communication between infiNET gateways, repeaters, and devices. While an effort has been made to determine operating specifications, some specifications are not constant. RF Communication can be limited by several factors including but not limited to electromagnetic interference (EMI), intervening objects, antenna orientation, and device placement. To obtain maximum reliability and performance, some basic rules for installing infiNET gateways are listed below.

Minimize Interference

RF reception range can be hindered by spurious EMI noise that may interfere with or mask the desired frequency thereby reducing useable range. EMI is generated by any electrical device at various RF noise levels depending on the device. Sources of EMI include computers, video equipment, digital processors, lighting dimmers, lighting ballasts, motors or any large AC source. Every effort should be made to separate any RF transceiver from these sources of RF noise including Audio Visual equipment in racks. If a gateway must be installed in an equipment rack, make sure you have ample separation between the equipment and the gateway.

NOTE: Check any 802.11 equipment operating near the Cresnet system to ensure that it is only using channels that are not being used by the C2N-MNETGW. If necessary, change the gateway's channel setting to avoid interference. Refer to "Operating Channel" on page 17 for details. For a description of the infiNET spectrum, refer to "Appendix A: The infiNET Spectrum" on page 28.

Gateway Placement

Optimum reception for any infiNET gateway is obtained by installing the gateway in an open area or shelf with a clear line of sight (no obstructions between gateway, repeaters, and other infiNET devices). Crestron recommends that the gateway be placed at least five to six feet high for best results. Avoid placing gateways at a low height or on the ground. Placing RF equipment near metal objects, walls, corners or metal enclosures will compromise RF propagation and reception. Try to avoid
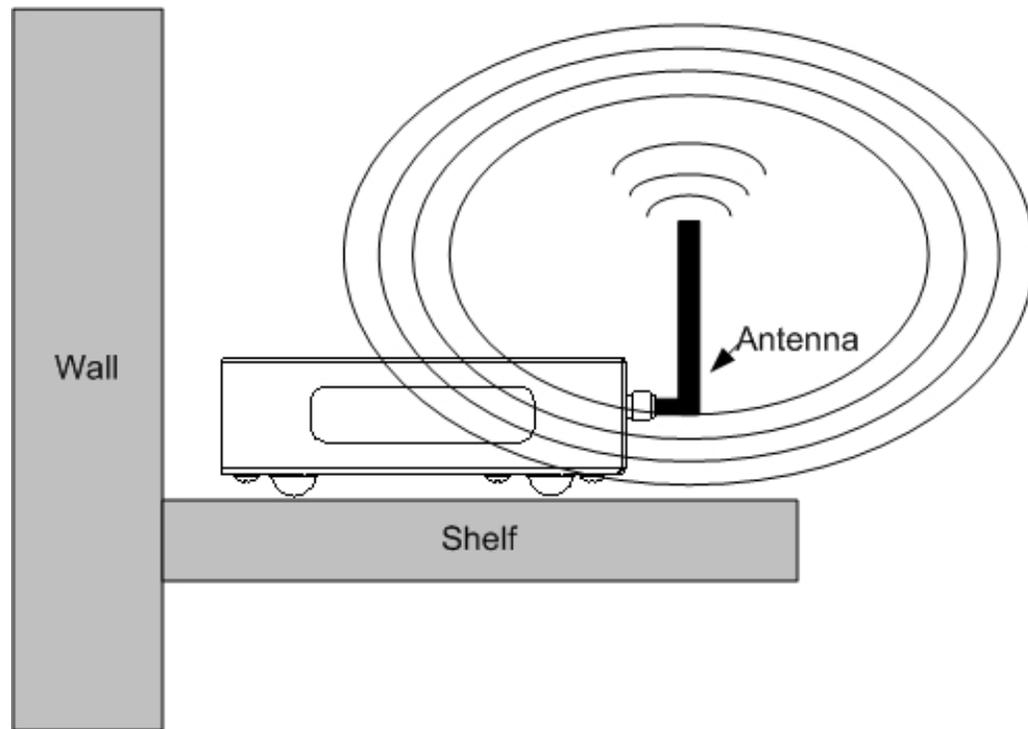
installing gateways in equipment racks, service rooms, or electrical closets.

Antenna Orientation

The antenna orientation on the C2N-MNETGW can have considerable effect on the signal range and reliability. In most applications, the antenna should be set vertically as shown in the following diagrams.

Vertical Orientation
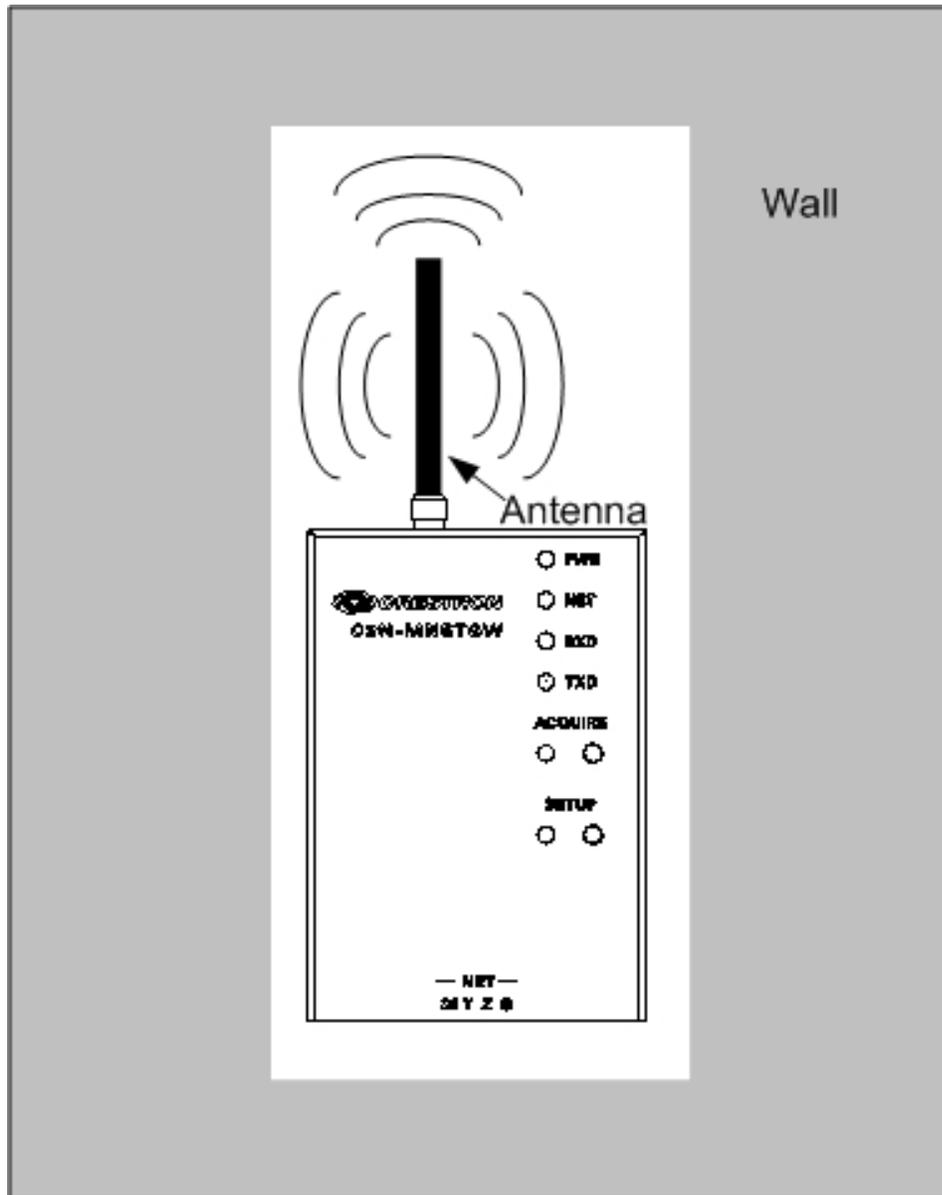
Vertical Orientation

If placing the antenna vertically causes the C2N-MNETGW to lay parallel to a metal surface (i.e. a metal wall), the antenna should be oriented horizontally (perpendicular to the metal surface) as shown in the following diagram.

Horizontal Orientation
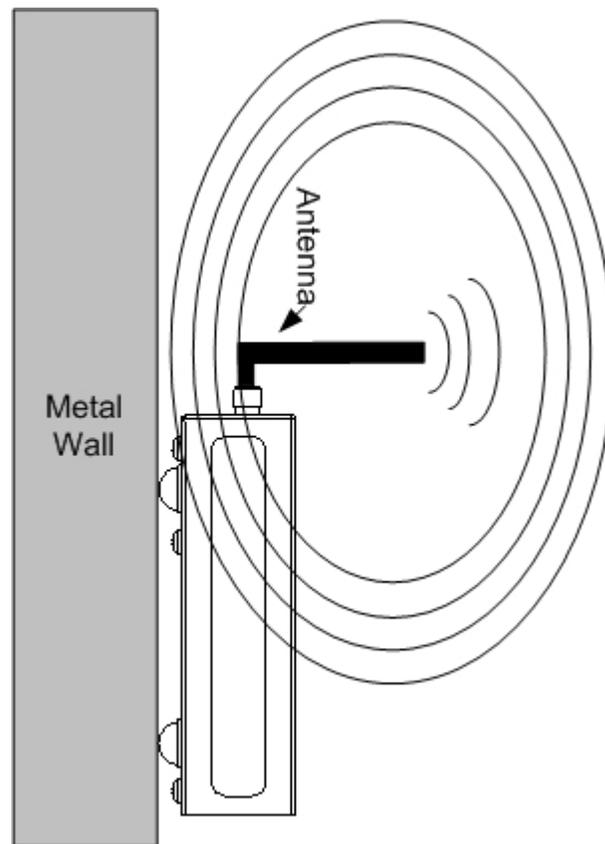
NOTE: RF propagation is best from the sides of the antenna.

For specific information on where to place the C2N-MNETGW, refer to "Gateway Placement" on page 29.

Additional information can also be found in the latest revision of the document titled "Best Practices for Installation and Setup of Crestron RF Products" (Doc. 6689).

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.

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