IG21, IG21R and IG31R Hardware Installation Guide

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Organization

This guide includes the following sections:

Cautions and Warnings, page 2	Summary of relevant cautions or warnings to adhere to when installing and using the product.
Conventions, page 2	Details on style conventions used in the guide.
Before You Begin, page 3	Provides a general overview of the IG21, IG21R and IG31R Gateways. It also provides important site preparation and safety measures to follow before installing the system.s
IG21, IG21R and IG31R Part Numbers, page 3	Provides a summary of the systems and part numbers.
DIN Rail Mounting Instructions for IG21, IG21R and IG31R, page 4	Provides instructions on how to attach a DIN rail for horizontal and vertical mounting.
Mounting the Router on a Wall Using Mounting Brackets, page 7	Provides instructions on how to attach a mounting bracket to the IG21, IG21R and IG31R for horizontal and vertical mounting.
Mounting the Router on a Wall Using Two KeyHoles, page 8	Info Pending

Front Panel and LED Definition, page 10	Provides an overview of key components on the front panel and LEDs.
IG21R and IG31R Overview, page 13	Provides an overview of the feature set of the IG systems and LED definitions.
FCC and ISED Interference Statement, page 16	Please review this statement regarding Radio Frequency

Cautions and Warnings

Here are some common warnings for hardware products. Please review and let me know if you want me to ADD or REMOVE any.

CAUTION : Do not place anything on top of the router that weighs more than 10 pounds (4.5 kilograms), and do not stack routers on a desktop. Excessive weight on top of the router could damage the chassis.

CAUTION : Do not install the router or power supplies next to a heat source of any kind, including heating vents.

WARNING : Read the installation instructions before connecting the system to the power source. Statement 1004

WARNING : This product relies on the building's installation for short-circuit (over current) protection. Ensure that the protective device is rated not greater than: 5 Amps. Statement 1005

*WARNING :*This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. Statement 1017

*WARNING :*This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

WARNING : Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

WARNING : Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040

Need additional statement to one below as IG21 only operates in 0-40C range.

*WARNING :*To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 60C Statement 1047 (excludes IG21 which operates at 0-40C)

WARNING : No user-serviceable parts inside. Do not open. Statement 1073

WARNING : This product is not intended to be directly connected to the Cable Distribution System. Additional regulatory compliance and legal requirements may apply for direct connection to the Cable Distribution System. This product may connect to the Cable Distribution System ONLY through a device that is approved for direct connection. Statement 1078

Conventions

This document uses the following conventions.

Conventions	Indication
bold font	Commands and keywords and user-entered text appear in **bold** font.
italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* font.
[ ]	Elements in square brackets are optional.
{x	y	z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[x	y	z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

Conventions	Indication
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
courier font	Terminal sessions and information the system displays appear in courier font.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Note: Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

CAUTION: Means reader be careful. In this situation, you might perform an action that could result in equipment damage or loss of data.

WARNING: IMPORTANT SAFETY INSTRUCTIONS

Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

CAUTION: Cable distribution system should be grounded (earthed) in accordance with ANSI/NFPA 70, the National Electrical Code (NEC), article 800, Grounding of Outer Conductive Shield of a Coaxial Cable.

Warning: Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

SAVE THESE INSTRUCTIONS

Regulatory: Provided for additional information and to comply with regulatory and customer requirements.

Before You Begin

Because the IG21, IG21R and IG31R are radio devices, they are susceptible to common causes of interference that can reduce throughput and range. Follow these basic guidelines to ensure the best possible performance:

- Review the FCC guidelines for installing and operating outdoor wireless LAN devices at:
  https://www.cisco.com/c/en/us/products/collateral/routers/3200-series-rugged-integrated-services-routers-isr/data_sheet_c78-647116.html

- Perform a site survey before beginning the installation.

- Install the IG21, IG21R, and IG31R in an area where structures, trees, or hills do not obstruct radio signals to and from the devices.

IG21, IG21R and IG31R Part Numbers

The IG21 is a gateway that connects Smart Devices and Sensors to a Customer Network or Cloud applications.

Table 1   IG21, IG21R and IG31R IoT Gateways

	IoT Gateway Interface		Rugged IoT Gateway	
Carrier	LTE	LTE + WiFi	LTE	LTE+WiFi+CAN-bus + Ignition
Verizon	IG21-VZ-K9	IG21-VZ-B-K9	IG21R-VZ-K9	IG31R-VZ-B-K9
North America	IG21-NA-K9	IG21-NA-B-K9	IG21R-NA-K9	IG31R-NA-B-K9
Europe	IG21-EU-K9	IG21-EU-E-K9	IG21R-EU-K9	IG31R-EU-E-K9

DIN Rail Mounting Instructions for IG21, IG21R and IG31R

The DIN Rail Mounting Kit supports either a horizontal or vertical mounting of the IG21, IG21R and IG31R.

Figure 1   DIN Rail Mounting Bracket on IG21, IG21R or IG31R (IG21 is shown in the illustration below)

Mounting Kit Contents

- Adapter plate (1) [part number: pending]

- DIN Rail Bracket (1) [part number: pending]

- Screws (4) - Type [part number: pending]

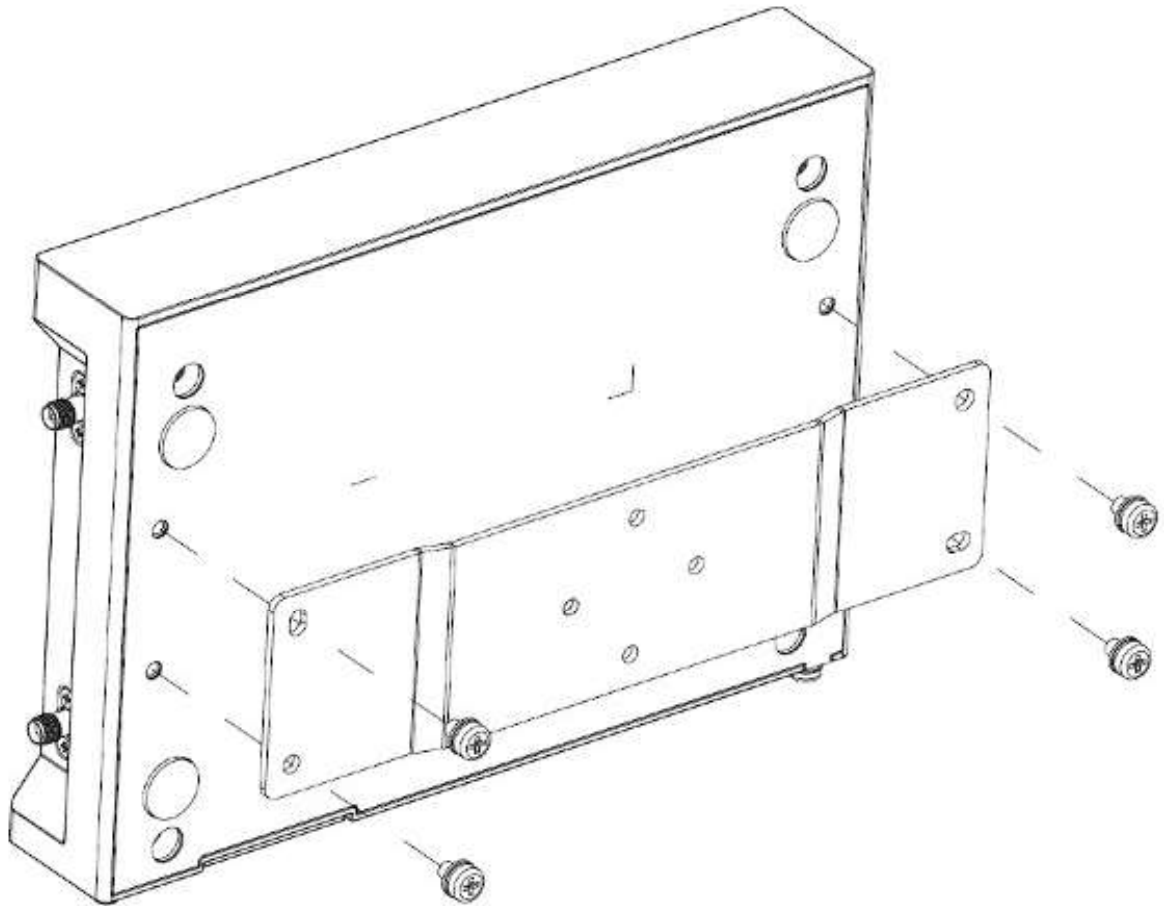## Attaching the Adapter Plate

To attach the Adapter Plate to the IG21, IG21R or IG31R, follow the steps noted below:

1. Position the Adapter Plate over the four mounting holes as shown in Figure 2.

2. Attach the Adapter plate to the back of the IG21, IG21R or IG31R using the four screws provided using a torque 13-15 inches pounds of torque to sonnc

   You are now ready to attach the DIN rail bracket to support either a Vertical or Horizontal mounting of the IG21R or IG31R. Refer to the appropriate section noted below:

- Attaching the DIN Rail Bracket to Support Vertical Mounting, page 5

- Attaching the DIN Rail Bracket to Support Horizontal Mounting, page 6

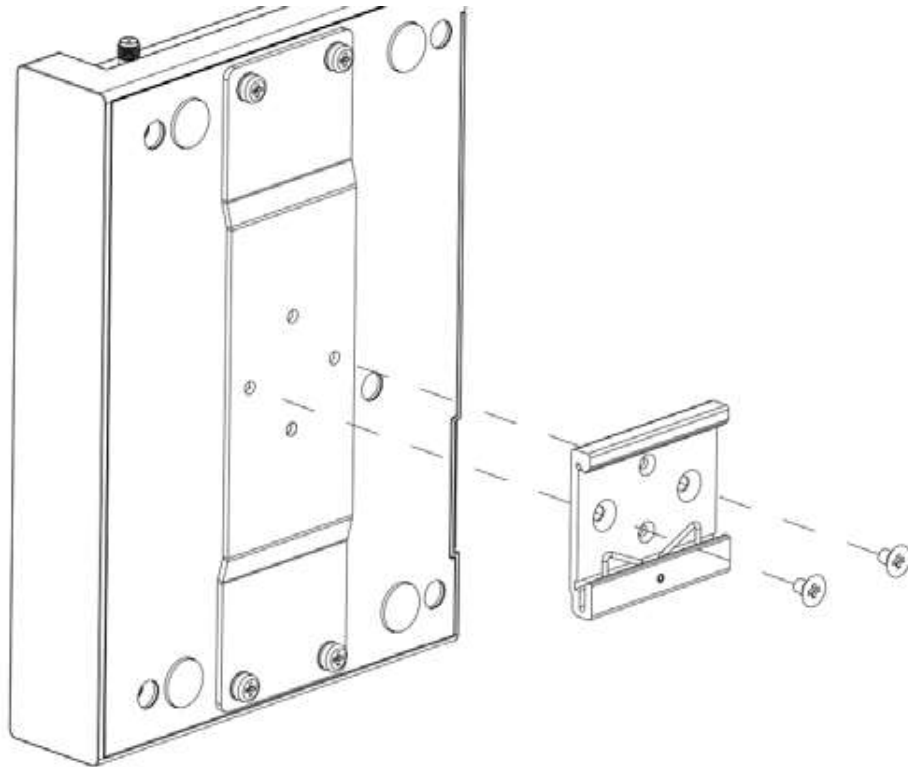**Figure 2   Attaching Adapter Plate to the IG21R or IG31R**

Attaching the DIN Rail Bracket to Support Vertical Mounting

After you attach the DIN Rail (as shown in Figure 3), do the following:

1. Position the bracket over the four mounting holes as shown in Figure 3.

2. Attach the Adapter plate to the back of the IG21R or IG31R using the four screws provided and applying 13-15 torque.

3. Attach the Din Rail Bracket using two screws as shown in Figure 3.

Will all of the screws noted throughout this guide be shipped with the mounting kits?

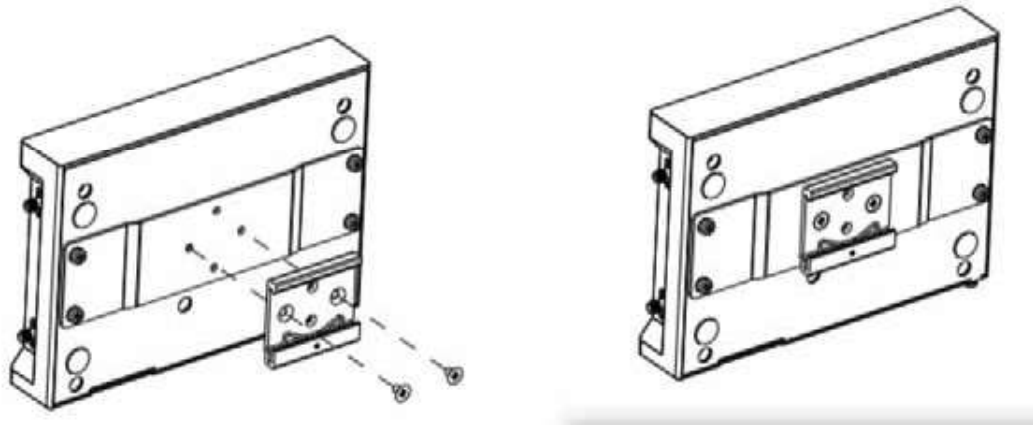**Figure 3   Attaching the DIN Rail Bracket for Vertical Installation of IG21, IG21R or IG31R**

Attaching the DIN Rail Bracket to Support Horizontal Mounting

After you attach the Adapter plate as detailed in the Attaching the Adapter Plate, page 4 section and shown in Figure 4, do the following:

1. Position the DIN rail bracket over the four mounting holes as shown in the left illustration in Figure 4. You will attach the bracket using only the two horizontal holes.

2. Attach the Adapter plate by using the two screws supplied in the kit and apply 13-15 torque to tighten the plate to the router.

Figure 4   Attach the DIN Rail Bracket for Horizontal Installations for IG21, IG21R or IG31R

Mounting the Router on a Wall Using Mounting Brackets

The IG21, IG21R or IG31R router can be mounted on a wall using the two molded mounting brackets and screws shipped with the router. These brackets are attached to the bottom of the router (Figure 5)

CAUTION: If you are mounting the router on drywall, use four hollow wall anchors to secure the unit to the wall using the four screws included in the kit.

1. Measure the horizontal distance between the two sets of holes on the mounting brackets and the vertical height of the router to determine placement on the wall. Mark the location of on the wall where the mounting screws will be anchored.

2. Use a drill bit that matches the size of the hollow wall anchors and screw.

3. Attach the IG21, IG21R or IG31R to the wall ensuring the front panel as seen in Figure 10 faces upward.

Day Zero Default Configuration

By default, the radio of the IG21 is turned on. The radio automatically scans to identify and select the least utilized frequency channels.

Figure 5   Wall Mounting Bracket and Two Keyhole Mounting Options for IG21, IG21R or IG31R
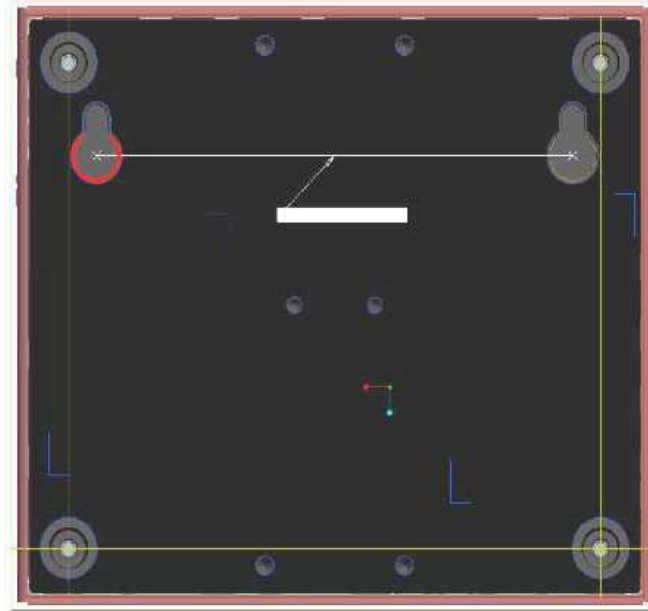

Mounting the Router on a Wall Using Two KeyHoles

CAUTION: If you are mounting the router on drywall, use two hollow wall anchors to secure the unit to the wall using the two screws included in the kit.

1. Reserve a minimum of 4.5mm distance between the screw heads and the wall. The screw diameter is 9.8mm and the screw head thickness is 1.5mm (see Figure 7 and Figure 7)
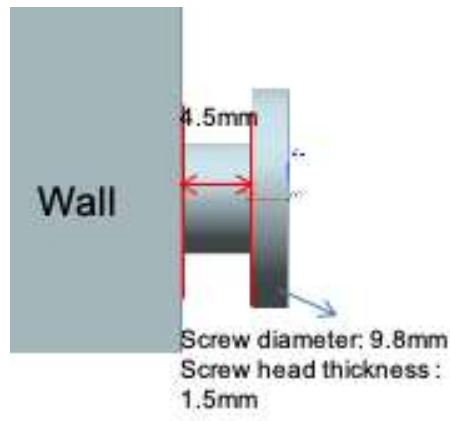
Mounting the Router on a Wall Using Two KeyHoles

Figure 6   Back of Router Showing the Two Keyholes for Mounting

2. Attach the router by placing the two keyholes over the two screws mounted on the wall (Figure 7).

Figure 7   Measurements for Attaching Two Screws for Keyhole Mounting to Wall
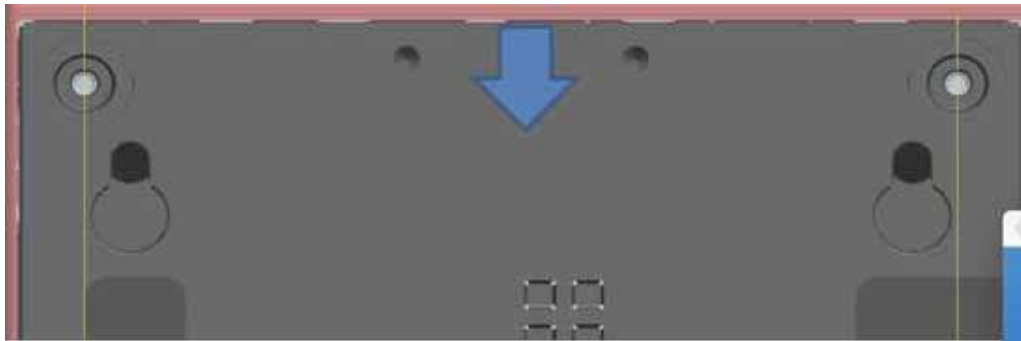

3. Move the router downward so that the router hangs from the screws (see Figure 9 and Figure 9.)

Figure 8   Place Router Keyholes Over Screws Mounted in Wall

Figure 9   Router Mounted to Wall Using Keyhole s

Front Panel and LED Definition

Figure 10   IoT Gateway IG21 Front Panel

Figure 11   IG21 Front and Side View with 12V and USB Connector

Table 2   IG21 Front Panel Components (left to right) in Figure 6

Item	Description
LED	Indicates whether system is on or off.
12V=	12V connector for power input only
1G	Two Gigabit Ethernet ports: LAN (top port) and WAN port (bottom port)
Serial port icon	Serial port
LTE	Cellular connectivity (green indicates connectivity)

Table 3   Feature Set for IG21

Feature	Supported
Software Subscription	Yes
LTE	Yes - Category 1
Gigabit Ethernet LAN and WAN port (Quantity of 2)	Yes
Serial RS232	Yes
WiFi	Yes (IG21-xx-B-K9 only)
USB	No
IP30 rating	No
CAN bus	No

Table 3   Feature Set for IG21

2 GPIO	No
Ignition Power Management	No
Operating Temperature	0C to 40C

Table 4   LED States on the IoT Gateway (IG21) <LED Assignment and Definitions Below May Change>

LED No	LED Name	Description	Status	Customer Action
LED 1	System Status RGA LED	Normal system operating status	Green	-------
		System is starting up or power cycling and loading system software, including BIOS and operating system	Flashing Amber	-------
		System receiving power but there is an error condition	Amber	Power cycle the device and then press factory reset
		System failure, RMA	Red	Persistent Red - RMA
		System not receiving power	Off	Persistent Off - RMA
LED 2	Cloud Status LED	Not connected to Cloud, Network issue, NMS (Kinetic) is down, PnP issue	Off	(Before Shipping) MFG to verify configuration that you can ping to PNP and Kinetic server.
		Operating status (Fully provisioned)	Green	---
		Gateway is trying to connect to Cloud	Flashing Green	---
LED 3	Cellular LED	No SIM, SIM not properly inserted, No Signal, SIM not activated, Data Plan not assigned	Off	---
		Online and Attached, Cellular Signal Weak (RSSI > 90dBi)	Flashing Green	---
		Online and Attached, Cellular Signal Good (RSSI < 90dBi)	Green	---

IG21R and IG31R Overview

Table 5   Feature Set for IG21R and IG31R in Figure 6

Feature	Supported
Software Subscription	Yes
IG21R and IG31R power input is a nominal 12 or 24VDC (DUT) with a rated maximum range of 9-36VDC (no AC option).	Yes
LTE	Yes - Category 4
Gigabit Ethernet LAN and WAN port (Quantity of 2)	Yes
Serial port RS232 or RS232/RS485	Yes
WiFi client/WGB: -B region for US/Canada and -E region for Europe	Yes (IG21-xx-B-K9 only)
12 V connector	Yes
USB (1)	No
Antenna	Yes (IG21R and IG31R series external)

Table 5   **Feature Set for IG21R and IG31R in Figure 6**

IP30 rating	Yes (all PIDs)
CAN bus	IG31R only
2 GPIO	One (1) on IG21R and Two (2) on IG31R
Ignition Power Management	No
Operating temperature	-20C to 60 C

Figure 12   **IG21R Front and Side View**

Table 6   **Front and Side Panel (left to right)**

Front Panel
Digital I/O connector
12/24V power input
USB port
1 WAN, 1 LAN Ethernet Port
1 Gigabit Ethernet Port
Side Panel
LTE

Figure 13   Rugged IoT Gateway IG31R

Table 7   Front and Side Panel (left to right)

Front Panel
Digital I/O connector
12/24V power input
USB port
1 Gigabit Ethernet Port
1 WAN, 1 LAN Ethernet Port
CAN bus
Door panel (far right): Provides access to a reset button, SIM slot 0 and SIM slot 1
Side Panel
LTE port
WiFi port