PointGrab

CogniPoint™

Quick Start Guide

September 2017

**

FCC Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Contains FCC ID: W7OMRF24J40MDME

Contains transmitter module IC: 7693A-24J40MDME

The Federal Communications Commission warns that changes or modifications of the unit not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

"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.

1. Introduction

1.1. About This Guide

This guide describes how to install the CogniPoint™ sensors, using various mounting and power options, and how to configure and activate them using the CogniPoint™ Management System (also known as “commissioning” the sensors).

> **Safety Warning:** Work on the AC power supply system may only be performed by a licensed professional. Failure to observe installation and operating instructions may result in fire and other hazards.

1.2. Packing List

When you unpack this product package, you will find the items listed below. Please inspect the contents, and report any apparent damage or missing items immediately to your authorized reseller.

1) CogniPoint Sensor
2) User’s Manual

1.3. Introduction to the CogniPoint™ Sensor

CogniPoint™ is an innovative sensor for smart buildings. CogniPoint™ uses computer vision algorithms to generate data and analytics that enable more efficient, convenient and cost-effective building management, by providing notifications, alerts and analytics to building management and control systems.

1.4. Overview: Installation and Commissioning

These are the steps you’ll perform in order to plan your installation, and install and commission the CogniPoint™ sensors:

- ***Planning the Installation***:
  - Determine the CogniPoint™ usage scenario (managing meeting rooms, “hot-desking”, etc.).
  - Obtain floor plans, ceiling and lighting plans.
  - Identify Areas of Interest (AoIs) on each floor.
  - Plan the device layout (number and placement of sensors).
- ***Performing a Site Survey***:
  - Validate the floorplan layout and measurements (changes may have been made since the original plan such as new dry wall being installed, changes in furniture placement and so on).
  - Validate the planned device positions (make sure the sensor view is not occluded, check the ceiling height, air vents, wiring/connectivity).
- ***Updating the Installation Plan***:
  - If necessary, correct the device positions and AoIs according to the information gathered during the site survey.
  - Determine required accessories (for example, adapters for cement ceilings, leg adapters for high ceilings, IT and electrical requirements, and so on).
  - Update the floorplan in the CogniPoint™ Management System.

- ***Installing the CogniPoint™*** Sensors: Install the CogniPoint™ devices in the ceilings and connect them to power sources.
- ***Activating the CogniPoint™*** Sensors: In the CogniPoint™ Management System, link the physical devices to their logical representation in the system using an IR remote.
- ***Performing Sanity Testing***:
  - ❖ Verify that each device is installed in the correct position and that you can view its AoIs.
  - ❖ Verify that each device is connected to the right logical device.
  - ❖ Verify that each device is providing the expected input to the system.

1.5. Hardware Components

The CogniPoint™ installation kit contains the following hardware components:

- CogniPoint™ sensor module
- Dropped ceiling adapter – Do we still have in the Box??
- Flat ceiling adapter (with attached metal mounting plate)
- Leg adapter for very high ceilings

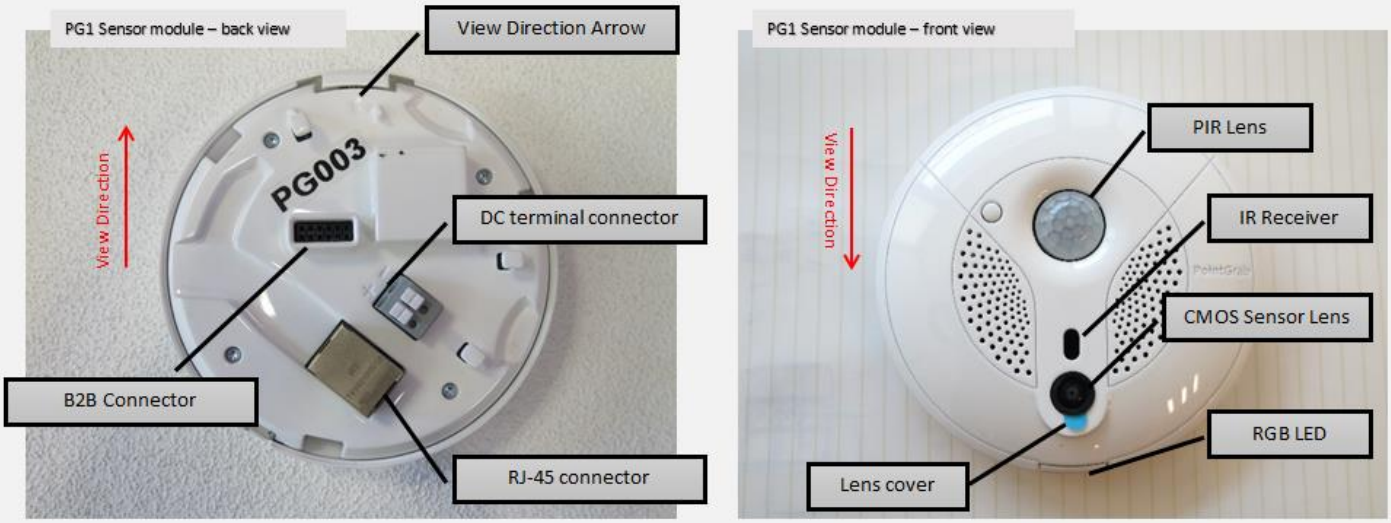


Figure 1. Back and Front Views of the CogniPoint™ Sensor Module

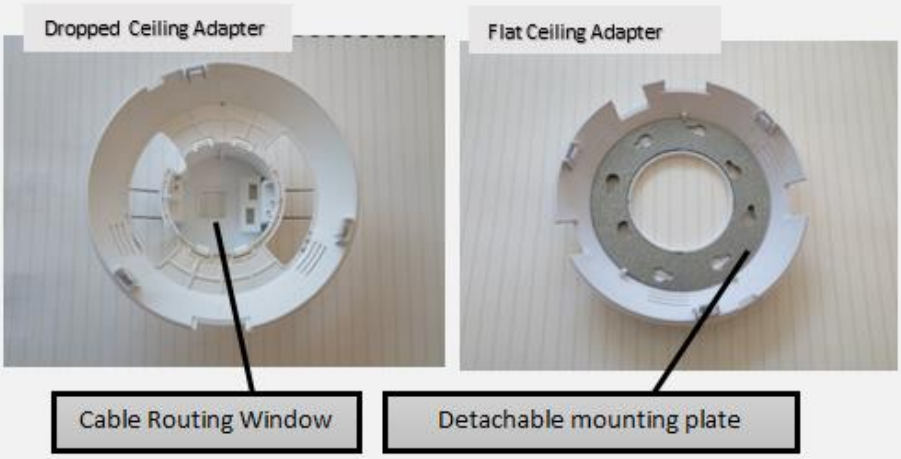


Figure 2. Flat Ceiling Adapters

Figure 3. Leg Ceiling Adapter

1.6. CogniPoint™ Sensor Dimensions

Dimension	Inches	Centimeters
Front diameter	4.72”	12cm
Back flat adapter diameter	3.54”	9cm
Width	1.37”	3.5cm

Figure 4. Front View

Figure 5. Back View with Flat Adapter

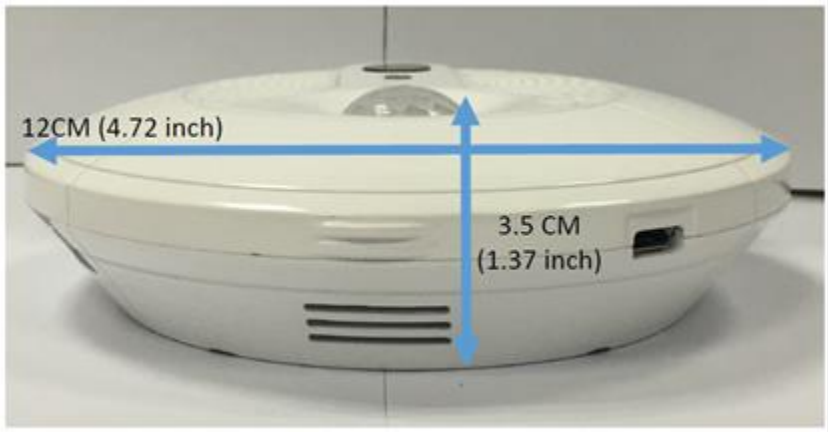


Figure 6. Side View

2. Planning the Installation

2.1. Determining the CogniPoint™ Usage Scenario

Before you can proceed to other planning stages, you must first understand the usage scenario for the CogniPoint™ system. This is usually determined by an integrated 3rd-party application that you're deploying in your building. The specific application dictates the requirements in terms of number and placement of CogniPoint™ sensors. For instance, if the application manages meeting rooms, you'll need to install sensors in meeting rooms; if the application is "hot-desking", you'll need to install sensors above workstations.

2.2. Obtaining Building Plans

In order to plan sensor placing and power sources, you'll need to obtain the building's floor plans, ceiling, network and electrical plans.

2.3. Defining AoIs

Depending on the CogniPoint™ application, you'll need to identify Areas of Interest (AoIs) on each floor. AoIs are the areas in which the CogniPoint™ sensors must detect person presence and counts in order to enable the application's operation. For example, for a hot-desking application, the AoIs need to cover all the workstations that must be managed as part of the application (one AoI for each workstation).

2.4. Planning Device Layout

You will need to plan the CogniPoint™ device layout on each floor, according to the building plans you obtained previously. The number and placing of the sensor devices depends on the application and on the physical attributes of the installation space. You will need to install enough sensors to cover all the AoIs defined in the previous step.

See ***Installation Position and Detection Area*** to learn more about how a sensor's height affects its detection area.

3. Performing a Site Survey

Even though you have obtained the building plans, you will need to perform a physical site survey in order to validate the floorplan layout and measurements. This is because changes may have been made in the building since the original plan, such as a new dry wall being installed, furniture being moved and so on.

For each CogniPoint™ device you plan to install, make sure that the planned placement and adapters are compatible with the ceiling height, air vent locations, wiring and Wi-Fi connectivity. Check for any occlusions of the sensor's detection area.

4. Updating the Installation Plan

According to the information you gathered during the physical site survey, correct the planned device positions and AoIs if necessary. Determine which accessories you'll need in order to perform the installation (for example, flat adapters for cement ceilings, leg adapters for high ceilings, IT and electrical requirements, and so on).

In the CogniPoint™ Management System's web UI, upload images of each floor plan. These images allow you to visualize sensor placement and AoIs, and display the sensors' statuses in real-time.

5. Installing the CogniPoint™ Sensors

5.1. Installation Position and Detection Area

The CogniPoint™ sensor is a ceiling mounted device. For optimal performance, the CogniPoint™ installation height above the floor should be between 2.5m (8.2ft) and 3.5m (11.48ft).

The CogniPoint™ detection area is a rectangle with dimensions that vary according to the mounting height. The location of this rectangle is determined by the sensor placement and orientation. The specific orientation at which you install the sensor determines the rotation of the rectangle. The sensor's orientation direction is defined as the positive Y axis direction of the detection area rectangle (see drawing below). There is a view direction marker on the back of the sensor module and on the inside of the adapters.

Mounting Height (Z)	Z=2.5m (8.2ft)	Z>=3m (9.84ft)
Detection Area	X=6m, Y=4.5m (X=19.69ft, Y=14.76ft)	X=8m, Y=6m (X=26.25ft, Y=19.69ft)

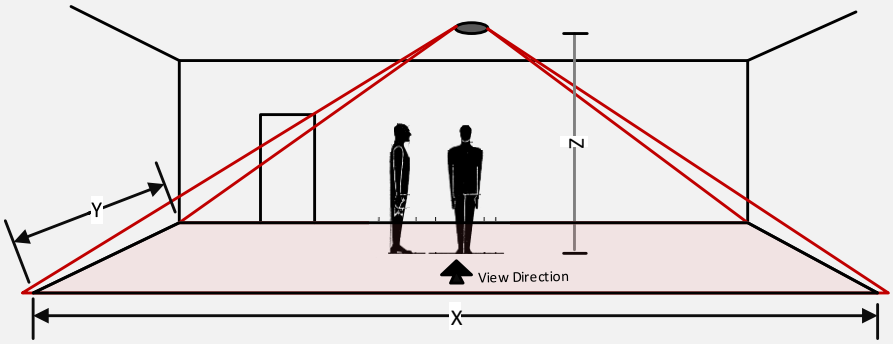


Figure 7. CogniPoint™ detection area example with viewing direction marker

When selecting an installation position and direction, and make sure that the sensor's detection area contains the area of interest.

5.2. Power and Network Specifications

5.2.1. Power

The PG1 sensor supports the following power options:

Power Option	Connector/Cable Type	Power Rating
DC input	2x Terminal Connector, 12-22AWG (Wire gauge 1.5 mm^2 / 15AWG)	12V-24V
PoE	RJ-45 (Cat 5e cable or better)	Conforms with 802.3af Class 2

5.2.2. Networking Connectivity

CogniPoint™ supports the following network connectivity options (which are independent of the power options):

Network Option	Connector/Cable Type	Specification
WiFi	N/A	802.11n
Ethernet	RJ-45 (Use Cat 5e or better cable)	100BASE-TX

5.2.3. Network Requirements

Supported communication protocols: IPv4, IPv6

If there's a firewall configured on the network, the following outbound ports must be opened for PointGrab use:

Outbound Port	Description
MQTT/TLS 8883	Configuration, Control and Telemetry
HTTPS 443	OTA Updates

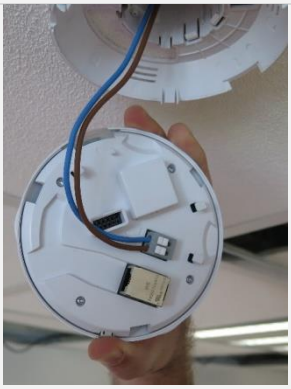
> **Note**: No inbound ports are required.

5.3. Installation Procedures

5.3.1. Installing on a Dropped (Drywall) Ceiling

The recommended installation method for a dropped ceiling is to use the dropped ceiling adapter. The adapter requires drilling a 60mm (2.36”) circular opening in the ceiling tile.

To install a CogniPoint™ sensor using a dropped ceiling adapter and a DC or PoE power source:

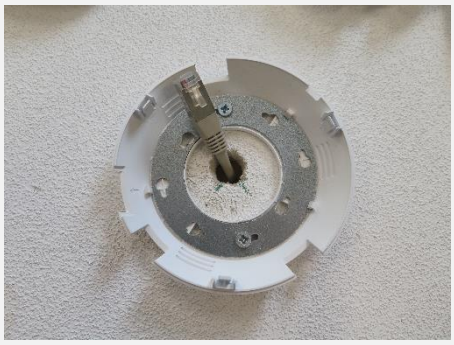
1.	Drill a 60mm (2.36”) opening in the ceiling, at the required position.	
2.	Make sure the power is disconnected. Route the DC power wires or Ethernet cable through the ceiling opening.	
3.	Thread the power wires or Ethernet cable through the adapter’s top opening.	
4.	Connect the CogniPoint™ device in one of the following ways: a. If connecting DC input, connect the two wires to the corresponding DC wire terminals. Make sure the polarity is correct. b. If connecting PoE or Ethernet, connect the RJ-45 plug, and route the Ethernet cable through the cable lead clips.	 

5.	Mount the adapter into the ceiling opening, using the spring flaps. Make sure the view direction arrow is pointing in the desired direction. Make sure the device is secured to the adapter.	 
6.	Use a leveling sticker to make sure the device is leveled.	
7.	If present, remove the lens cover.	

5.3.2. Installing on a Structural Ceiling

The recommended installation method for a structural ceiling (for example, for a concrete ceiling) is to use the flat ceiling adapter. You can also use this method may for a dropped ceiling, if you prefer not to drill a 60mm (2.36”) hole in the ceiling. The flat ceiling adapter attaches using wall plugs (6mm/0.24” plugs are recommended).

To install a PG1 sensor using a flat ceiling adapter and a DC or PoE power source:

1.	Secure the flat ceiling adapter to the ceiling, using two wall plugs and two screws. When marking the screws’ positions, note the view direction arrow marker on the adapter and make sure it aligns with the required view direction (small adjustments can be made by rotating the adapter relative to the metal plate, before tightening the screws).	
2.	Route the PoE or DC power wires in one of the following ways: a. Into the ceiling. b. In parallel to the ceiling through the adapter side openings.	 
3.	Connect the power wires to the sensor module (see ***Step 4***. in the previous procedure for details).	

4.	Mount the adapter into the ceiling opening, using the spring flaps. Make sure the view direction arrow is pointing in the desired direction. Make sure the device is secured to the adapter.	 
5.	Use a leveling sticker to make sure the device is leveled.	
6.	If present, remove the lens cover.	

6. Activating the CogniPoint™ Sensors

In the CogniPoint™ Management System, link the physical devices to their logical representation in the system using an infra-red (IR) remote control device supplied by CogniPoint™.

To do this:

1. In the CPMS UI, select the logical device for pairing. The CPMS generates a One-Time Code (OTC).
2. Enter the OTC in the IR remote control and transmit it to the device. The device and CPMS complete a handshake that links the physical device with its logical representation within the CPMS.

7. Performing Sanity Testing

After installation and commissioning of all the devices, we recommend a sanity test for each device in order to ensure that:

- The device is connected to the right logical device.
- The device is installed in the correct position and you can view its AoIs.
- The device is providing the expected input to the system.

To perform a sanity test on a device, physically enter the device's AoI and verify that the area's person count is increased, using the CPMS UI. Exit the AoI and verify that its person count is decreased.