

# Disruptive Technologies Sensor Configuration Guide

**Document Revision 01** 

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# Terminology

Term	Definition
Cloud Connector (Gateway)	The Cloud Connector is the gateway that relays sensor data to the Cloud via cellular or Ethernet connection.
Desk Occupancy Sensor	An occupancy detection device that accurately monitors desk usage, while maintaining employee privacy.
Motion Sensor	A sensor device that accurately detects the presence of people in a space while maintaining privacy.



# CHAPTER 1. Introduction

## **Disruptive Technologies Overview**

The goal of Disruptive Technologies (DT) is to simplify the process of collecting vast amounts of data. New events from the wireless sensors are transmitted to a Cloud Connector, which then broadcasts them to an IoT cloud. From there, you can use DT Studio or a variety of APIs to retrieve the data. There is no need for setup or pairing because the sensors securely connect to any available Cloud Connectors within range.

In this document, we only concentrate in 2 types of Sensor which are Desk Occupancy Sensor and Motion Sensor. The following diagram describes the overall interaction of these Sensors with other stakeholders:



Figure 1. Disruptive Technologies Data Flow Chart

Admin users can log in to the Disruptive Technologies Studio interface to observe the real-time Signal/State as well as historical data/connectivity of integrated Sensors and Cloud Connectors.



#### CHAPTER 2.

# **Disruptive Technologies Sensor Configuration**

For this configuration, you need to set up your Disruptive Technologies account, organization, claim and install devices.

### Set up Studio account and Studio Organization

To view and manage your devices, you need both a Studio account and a Studio Organization. Once you have registered a new account, you will be able to establish an Organization within Studio.

#### Sign up Studio account

Open the browser and navigate to the address of the web server where <u>Disruptive Technologies Studio</u> is hosted. It will display the Login screen as below:

<b>DISRUPTIVE</b> TECHNOLOGIES
Email address:
Password:
Continue
Forgot your password?
Use single sign-on (SSO) instead Don't have an account? Sign up

Figure 2. Login Screen

In case you have not had an account yet, click [Sign up] to register.

First name	Last name		
Email			
		E	
Password	Confirm password		
Your password can't be too similar to	Enter the same password, for		
your other personal information.  • Your password must contain at least	verification.		
8 characters.			
used password.			
<ul> <li>Your password can't be entirely numeric.</li> </ul>			
I accept the terms of service and I've re	ad the privacy statement		
Yes I want to receive emails from Disr	untive Technologies		

Figure 3. Create Account



The fields in *Figure 3* will now be visible in your browser. Fill in your information and click the agreement boxes to accept the platform's terms and conditions as well as to receive important emails from Disruptive Technologies. Press [**Create Account**]. A confirmation pop-up will request your permission to verify your email:

TECHNOL	DGIES
Almost there!	
An email has been sent to complete the registration.	with instructions on how to
For bold and questions visits	upport d21s com

Figure 4. Email Verification

You will then receive an email to activate your account by clicking [Verify your email address]. If you do not get the email in your inbox within a few minutes - please verify the mail is not in your spam/junk folder.



Figure 5. Email Verification

Following the link sent in your email will take you to the below screen notifying that your account has been activated.



Figure 6. Create Studio account successfully



#### **Create Studio organization**

The organization represents the legal entity that owns the sensors and receives device subscription invoices. This might refer to an organization, a department within an organization, or an individual.

You'll be up and running shortly Setting up your first kit? You'll need an organization to manage and control access to your sensors & Cloud Connectors. Create New Organization →
Setting up your first kit? You'll need an organization to manage and control access to your sensors & Cloud Connectors. Create New Organization →
You'll need an organization to manage and control access to your sensors & Cloud Connectors. Create New Organization →
You'll need an organization to manage and control access to your sensors & Cloud Connectors. Create New Organization →
Create New Organization →
Create New Organization 7
Already using sensors from Disruptive?
If your company already has live sensors, ask an
administrator to add you to the existing organization. Learn more $\rightarrow$

Log in to Disruptive Technologies Studio with your new account and select [**Create New Organization**] to manage and control access to your Sensors and Cloud Connectors.

Figure 7. Create New Organization

	2	3
ompany Info	Billing Info	Review & Save
Company name - L Company name	Jsed as organization n	ame in Studio
Company name - L Company name Country - Where is	Jsed as organization n your company located	ame in Studio
Company name - L Company name Country - Where is Select country	Jsed as organization n your company located	ame in Studio d? ⑦

Figure 8. Fill in Organzation information

To establish a new organization, enter Company and Billing information, then click [**Next**] to proceed to the "Review & Save" phase.



1	2	3
Company Info	Billing Info	Review & Sav
Billing address	, D	enmark
Billing contact Sam Smith @gn	nail.com	

In this step, check the Company and Billing Information again. Click [**Go back**] to adjust the previous information. Finally, press [**Create Organization**] to complete.

Figure 9. Review and Save Organization

### Claim your Sensors and Cloud Connectors in Studio

To claim Sensors and Cloud Connectors, you must first have a Project. You can utilize the default project (Inventory) that is made available for you right after you have created an Organization, or you can build a new project as guided below:

#### **Create new Project**

Click the dropdown [Select Project] in the header and click [+ New Project] button.

Studio Select Project 🗘 📳			New Feature
Sensors & Cloud Connectors			Î
Project Dashboard	Projects ≎ Search Projects	• New Project	
Notifications	PROJECT NAME	CLOUD CONNECTORS SENSORS	
لع File Export	AOD Inventory Inventory	0 0	<b>^</b>
Project Settings	AOD		
> API Integrations			
			ect

Figure 10. Create new project



Name the new project (maximum 64 characters) and click [ADD] to finish the creation.

Project name * Project 01			
Project name * Project 01			
Project 01			
			10 / 64
Organization			
AOD			
	CANC	EL	ADD

Figure 11. Name the project

#### **Claim devices**

After selecting a project, the following step is to register your devices (Sensors and Cloud Connectors) in Studio, which is referred to as "claiming" by clicking [**Claim Devices**].



You can accomplish this by either scanning the Kit ID found on the packaging or by scanning individual Device IDs. Claiming essentially associates these devices with your Organization in Studio.



Claim devices to This will activate the p	project AOD Inventory prepaid device subscription and	set ownership to your organization AOD	
ළම Scan QR Code	or Kit ID Device ID E.	g. ABC-42-DEF	Add Kit to list
IDENTIFIER	ТҮРЕ	DEVICES	REMOVE
-wia		6	۵
Cancel		Claim 6 devices to	AOD Inventory

Figure 12. Claim devices in Studio

After adding the Kit/Devices to the list, click [Claim ... devices to (your project)] to complete.

### Install Cloud Connectors



Figure 13. Cloud Connector

#### **Mount Cloud Connectors**

An optimal Cloud Connector placement ensures a stable connection to sensors and may avoid the need for additional Cloud Connectors.

• Cloud Connectors should be mounted at an elevated position (wall or ceiling mounting or drop ceiling mounting) using screws, tape, or zip ties.





- Placement in the center of the installation area gives effective coverage, whereas a corner placement limits sensor coverage. Install the Cloud Connector avoiding obstructions, typically high on the wall or ceiling.
- A Cloud Connector can cover sensors within 40 m in a typical office setting. However, it may diminish in areas with thick walls, metal structures, or other elements that prevent radio waves from passing freely.

#### **Connect Cloud Connectors**

With the placement ready, ensure that the Cloud Connectors can be mounted robustly at each installation location, including an internet connection and a power source.

- Plug the Ethernet cable (local network) into the LAN port of the Cloud Connector.
- Then, connect the other port of the Cloud Connector to the electrical Outlet.

Wait for the Cloud Connectors to start. Then, if the Cloud Connectors is properly connected, its LED light will be SOLID WHITE.

**NOTE**: If your organization has restricted MAC addresses from external devices, please add the addresses of those Cloud Connectors to the company's MAC list.

#### Verify if Cloud Connectors are online

On Studio, under **Sensors & Cloud Connectors** section, you can see all Cloud Connectors (represented by icon ) with their **SIGNAL** state. If the SIGNAL indicates green "Ethernet", the Cloud Connector is online.

	Studio Add-On Products	AOP 🗘 (語)	i 🕃 Feedback?
	Sensors & Cloud Connectors	Sensors & Cloud Connectors Project overview and devices	Claim New Devices
	Notifications	Identify Sensor by touch	•
⊎	File Export	Set Labels 🛛 Move Devices	
Ä	Project Settings	TYPE NAME A STATE	LAST SEEN 🗘 SIGNAL 🗘
$\diamond$	API Integrations 👻	Add-On Products Ethernet Only Model	C Ethernet

Figure 14. Cloud Connectors network signal



### **Install Sensors**

#### **Mount Sensors**



Figure 15. Desk Occupancy Sensor

• **Desk Occupancy Sensor**: The sensor should be installed under the desk, approximately 2 to 4 cm from the edge of the desk, at the center where a person often sits. Clean the installation surface, peel the protective film from the back of the sensor, stick the sensor to the table, and press it firmly for a few seconds to ensure good adhesion. Plan to use clay glue or similar for temporary installations for easier removal and repositioning as the sensor has strong tape on the back and sticks permanently on dry and clean surfaces.

**NOTE**: If sensors are placed directly onto metal surfaces, the signal strength will suffer. In this situation, consider placing a Cloud Connector next to the sensors.



Figure 16. Motion Sensor

• Motion Sensor: It can cover a huge area of up to 14 meters in diameter and should be mounted on the ceiling in the center of the room to monitor the entire room's motion. The sensor also contains strong adhesive on the back that adheres firmly to dry and clean surfaces. For temporary installations, consider using clay glue or something similar to make removal and repositioning easier.

**IMPORTANT NOTE**: Both sensor types determine the wireless range which can vary up to 40 meters, so please position these Sensors and Cloud Connectors within this range for optimal transmission.

#### **Check Cloud Connectors coverage**

When the Cloud Connector is online, nearby sensors will automatically send encrypted data to your account in the cloud. A Cloud Connector will cover sensors within 40 meters in a typical office environment. However, it can diminish in areas with thick walls, metal constructions, or other elements that limit radio waves from traveling freely so ensuring that each sensor connects reliably to Cloud Connectors for data transmission during installation is essential.



Insors & Cloud Connectors oject overview and devices		G	Claim New Devi
Identify Sensor by touch			-
🖍 Set Labels 🛛 🖬 Move Devices			
TYPE NAME A	STATE	LAST SEEN 🗘	SIGNAL 🗘
Add-On Products     Ethernet Only Model			S Ethernet
Hanoi Room	NO MOTION DETECTED	29 minutes ago	hr.
□ □ □ John's Desk	OCCUPIED	2 minutes ago	
TRT Peter's Desk	NOT OCCUPIED	3 minutes ago	.al
☐ T <sup>C</sup> / <sub>2</sub> T Alan's Desk	OCCUPIED	4 minutes ago	
□ □ □ Sam's Desk	OCCUPIED	4 minutes ago	
TRT Jane's Desk	NOT OCCUPIED	4 minutes ago	.at

The **SIGNAL** column represents the Cloud Connectors' coverage level for the Sensors. Thanks to this signal presentation, you can adjust the Cloud Connector's placement in order to ensure its best coverage to the sensors.

#### Note:

• If a Sensor is in High Power Boost Mode (represented by icon 🗐), the battery life will be reduced because the sensor is consuming more energy to reach the Cloud Connector. Either move the Cloud Connector or consider using a Range extender accessory to amplify the sensor range.

• If the sensor is not reporting data (represented by icon 🕌 ), the sensor is outside the range of the Cloud Connector. Install another Cloud Connector to extend the coverage.

#### Manage Sensors data

On Studio, you can access Sensors data management by clicking on each Sensor icon.

1. For **Desk Occupancy Sensor**, you can view the product's information, Signal strength, Historical connectivity with Cloud Connectors, and Historical Data (Occupied/Unoccupied chart) of the Sensor.

Sensor ID	Name		
ci9u4n5vbhng00c2s3gg			
Product Number	Description		
102553	Description		
Battery Level (17 hours ago)			(
100%	Label Key 🕐	Value	Edit 🖊
Heartbeat Interval	kit	imv-41-gkn	
5 Minutes 💿			
Warranty			
Covered until Dec 6, 2024 ③			
Show Less			

Figure 17. Desk Occupancy Sensor - Sensor's information



• De:	sk Occupancy Sensor							
	ot occupied day at 17:15:32					Move	Hide Connectivity	•
ress the Sensor	r to detect network conne	ectivity.						
ast seen:	17:15:3	2 rd power usage						
een by these C	loud Connectors	ru power usage						
	Add-On Products							
	ck4klfio0001au0b2lf0	6						
listorical conn	ectivity							
listorical conn unday, Apr 14,	ectivity 18:30:39							
listorical conn Junday, Apr 14, Add-On Produ	nectivity 18:30:39 Jucts 63%							
Historical conn Sunday, Apr 14, Add-On Produ	nectivity 18:30:39 <sub>Jucts</sub> 63% <b>!</b>							
listorical conn Junday, Apr 14, Add-On Produ	aectivity 18:30:39 <sub>Jucts</sub> 63% <b>"11</b>							
Add-On Produ	activity 18:30:39 Jucts 63%							
distorical conn unday, Apr 14, Add-On Produ	activity 18:30:39 Jucts 63%					Lauffur-war		Hw
listorical conn runday, Apr 14, Add-On Produ	ectivity 18:30:39 Jucts 63%			-		WWW.~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<del>an a</del> afaithe ann	
Add-On Produ Add-On Produ	ectivity 18:30:39 Jucts 63%	WW				WWW		
tistorical conn funday, Apr 14, Add-On Produ 100% 50% 25% 0%	ectivity 18:30:39 Jucts 63%	12 Apr 12, 12:00 Sat, Aj	or 13 Apr 13, 12:00	Sun, Apr 14 Apr 14, 12:00	Mon. Apr 15 Apr 15.	12:00 Tue, Apr 16 (	Apr 16, 12:00 Wed, Apr 1	7 Apr 17, 124
tistorical conn funday, Apr 14, Add-On Produ 100% 25% 0% Thu, Ar	ectivity 18:30:39 Jucts 63%	12 Apr 12, 12:00 Sat. Ay	or 13 Apr 13, 12:00	царана Уша, Арт 14, 12:00		12:00 Tue, Apr 16	Apr16, 12:00 Wed, Apr1	7 Apr 17, 124
tistorical conn funday, Apr 14, Add-On Produ 100% 75% 25% 0%	ectivity 18:30:39 Jucts 63%	12 Apr 12, 12:00 Sat, Ap	or 13 Apr 13, 12:00	Sun, Apr 14 Apr 14, 12:00	Mon. Apr 15 Apr 15,	12:00 Tue, Apr 16	Apr 16, 12:00 Wed, Apr 1	7 Apr 17, 12:

Figure 18. Desk Occupancy Sensor - Historical connectivity

listo	orical Data											🖬 Day
Occupied												
Not occupied	ш											
s of Occupancy					Zoom o	out to see aggreg	gated desk occup	ancy data				
Hour	Apr 15, 18:00	Apr 15, 20:00	Apr 15, 22:00	Tue, Apr 16	Apr 16, 02:00	Apr 16, 04:00	Apr 16, 06:00	Apr 16, 08:00	Apr 16, 10:00	Apr 16, 12:00	Apr 16, 14:00	Apr 16, 16:00

Figure 19. Desk Occupancy Sensor - Historical data

2. For **Motion Sensor**, you can view the same data management as Desk Occupancy Sensor. Additionally, you can adjust Motion Sensitivity, Motion Activity Timer, and Heartbeat Interval for Motion Sensor under **Sensor Configuration** section.



		Motio	n Activity Ti	mer		
High Sensitivity (default)	•	5	Minutes	<b>0</b> S	econds	(5 minutes is default for new sensors) Min: 1 minute, max: 60 minutes
ne sensitivity determines how close a person has to be to the sensor, as well as how long th erson has to stay within a zone before a detection event is triggered.	ne	How I	ong a zone is	s conside	red occup	pied after the sensor no longer detects motion. Show example 🕥
leartbeat Interval $\odot$ low often should the sensor report signal strength?		Con	figuration			
20 minutes	0					
so minutes	· )					

Figure 20. Motion Sensor – Sensor Configuration

Field	Description
Motion Sensitivity	<ul> <li>Determines how close a person has to be to the sensor, as well as how long the person has to stay within a zone before a detection event is triggered. It is devided into 4 levels, which are listed below: <ul> <li>Low Sensitivity: Only large movements in front of the sensor will trigger a sensor event.</li> <li>Medium Sensitivity: Small movements in front of the sensor will trigger a sensor event.</li> <li>High Sensitivity: Minimal movement in front of the sensor will trigger a sensor event.</li> <li>Very High Sensitivity: The highest sensitivity available. Experimental, can in very rare cases cause false positive motion events.</li> </ul> </li> <li>Note: It is recommended that High Sensitivity be selected because of its accuracy and battery saving.</li> </ul>
Motion Activity Timer	Determines how long a zone is considered occupied after the sensor no longer detects motion. When the sensor detects the presence of people, it will send a MOTION_DETECTED event to the cloud and start a pre-set Activity Timer. If the sensor continues to detect the presence of people before the Activity Timer expires the timer will restart. When the Activity Timer
	expires, the sensor will send a NO_MOTION_DETECTED event to the cloud.





	-					-
		Motion Detected			No Motion Detected	
		1			<b>↑</b>	
	Sensor Events –				•	$\rightarrow$
	Activity Timeline —	Uncomple Activity Tir	ted Uncompleted her Activity Timer	Completed Activity T (E.g. 2 minutes)	imer	$\rightarrow$
		People detected Started	People People detected detected Restarted Restarted		No people detected Completed	
		Activity Timer	Activity Timer Activity Time	er	Activity Timer	_
	The value of this the event is sent	field can vary betwo	een 1 and 60 minu	ites. The small	er the value is, th	e faster
	<mark>Nоте</mark> : The durat sensor.	ion of the Activity T	imer will not impa	ct the 10 year	battery life of the	Motion
	Determines how minutes, 45 min	often the sensor often the sensor of the sensor.	should report sig	anal strength.	The value could	be 30
	Configuration			_		٦
Heartbeat Interval	O   Heartbeat	30 minutes	O   Heartbeat	30 minutes	) Heartbear	-
	<b>Note</b> : This is a tr sensor data is se	igger-based sensor ent, but it will affect	, adjusting the He how often the sigr	artbeat Interva nal strength is	I won't change ho reported.	w often

To save the configurations, click [Update Sensor Configuration] at the end of the section.