



QUICK START GUIDE

SPARROW



Sparrow quick start guide

DOC3192 - December 2023

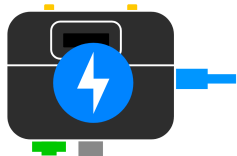
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The Sparrow cheat sheet



Prerequisites

NEST (network/cloud, $\geq 2.3.14$)
SPARROW Licence
Sparrow user



Get started with the gateway

Power with green connector 9-24VDC - 15W or USB connector 5V-2A
Connect Cat. 5e ethernet cable



Wake up some sensors by placing a magnet $\approx 5s$ in front of the led



With a web browser, **connect to the gateway web interface** by entering the IP address that appears on the gateway's screen.



From each sensor tile in the live state view, **Pair some sensors** to the gateway.



From the sensor tile

In **sensor settings**, set the "Sensor update interval" and the overall vibration settings.

In **sensor collection** settings, set the timed collection to "Follow global collection settings"



From the "Collection" menu

Set the "Waveform collection interval" and the time waveform settings



Setup an MQTT server

mqtt:// PC hostname or the IP address of your computer
port: 1883, Username: use the domain\user from Nest Administration (d1\Sparrow), Publish topic: "Sparrow", Publish QoS: 1, Check "Append gateway" and Check "Publish waveforms" and SAVE.



Add a gateway to NEST from the "Instrument module" (to show up, it requires that the MQTT server received some data previously!)



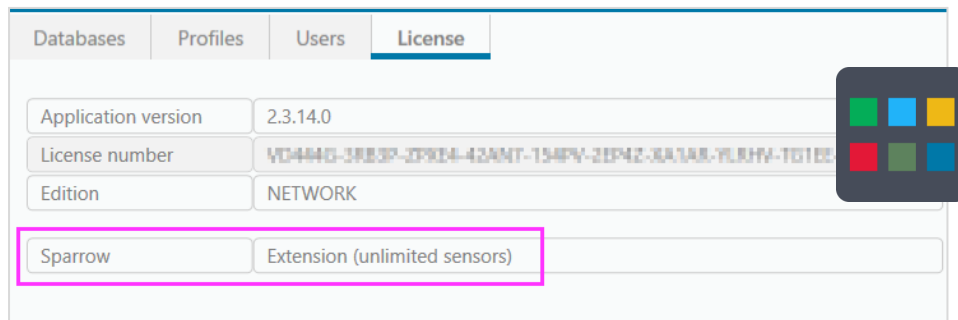
Create a "Sparrow machine" in NEST Machine setup module and follow the process up to connecting Sparrow sensors to Machine locations and START the monitoring.

Nesti4.0 prerequisites

Requires a valid sparrow license

NEST software must

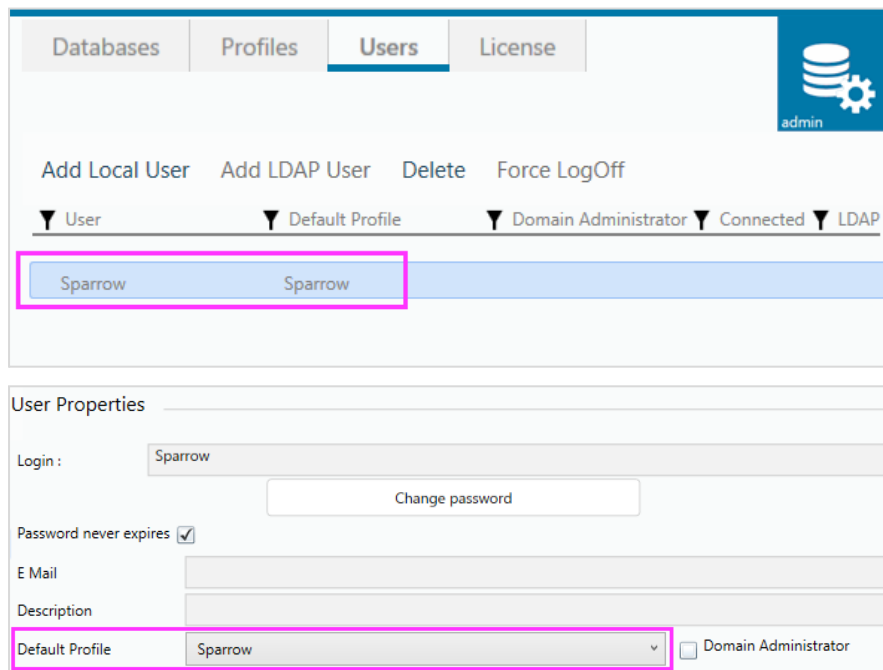
- be **NETWORK** or **Cloud** version greater than 2.3.14.0
- have a valid **Sparrow License** (activation or extension)



Databases	Profiles	Users	License
Application version	2.3.14.0		
License number	YD444G-3J83P-2P9M-424NT-154PV-2DP4Z-XA7AB-YL8HY-1010E		
Edition	NETWORK		
Sparrow	Extension (unlimited sensors)		

Requires a Sparrow user

In the Administrator module, below users tab, create a “hardware” user for Sparrow gateway (let’s call it “Sparrow”) and give it the Sparrow profile and a password in the user properties on the right of the screen..



Databases	Profiles	Users	License
admin			
Add Local User Add LDAP User Delete Force LogOff			
▼ User ▼ Default Profile ▼ Domain Administrator ▼ Connected ▼ LDAP			
Sparrow Sparrow			

User Properties

Login : Sparrow

Change password

Password never expires ☒

E Mail

Description

Default Profile Sparrow ☐ Domain Administrator

Getting started with the hardware

Power up the gateway

Connect the gateway to a computer using an ethernet cable Cat.5e

Power up with one of the 2 following options



9- 24VDC - 15W using the green connector

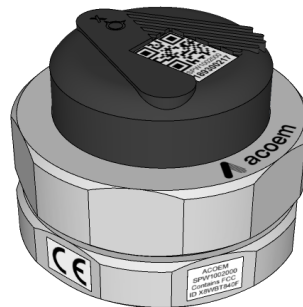
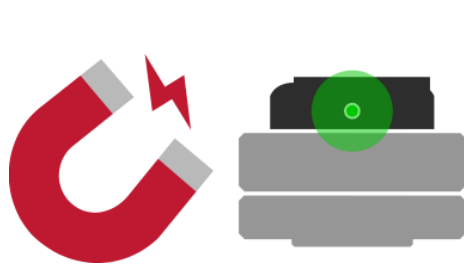


USB 5VDC - 2A using the 4-pin connector to USB.
Requires a USB -A charger ($\geq 11W$). Not provided.



Wake up the sensors with a magnet

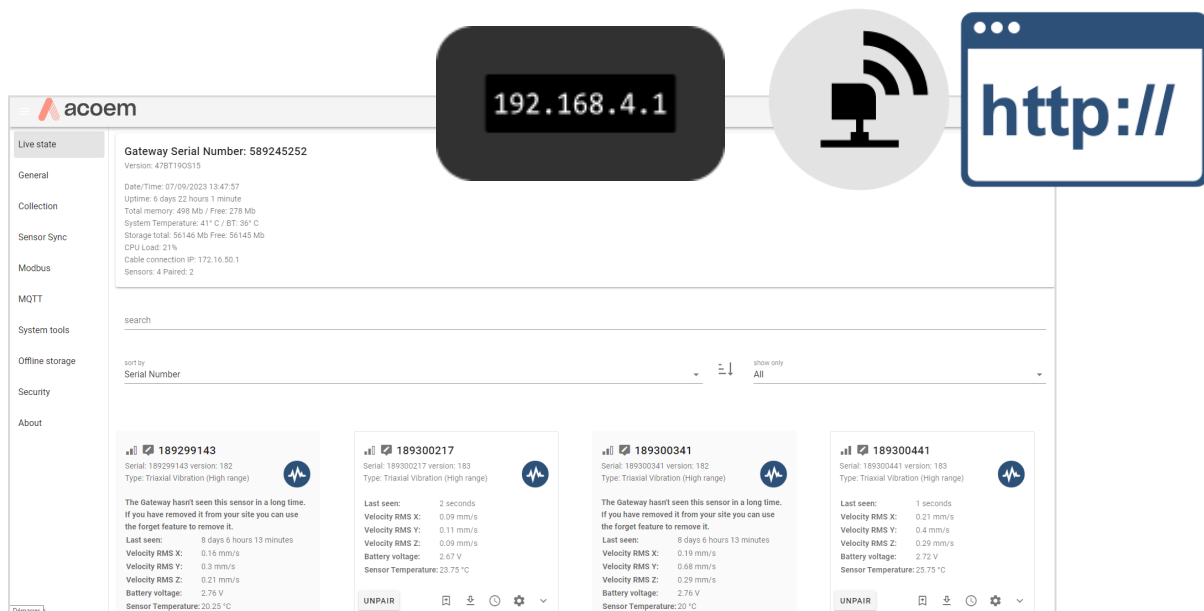
Place the magnet (provided with every gateway) slightly on the left of the LED and move it slowly to the right, until it lights up. Check that the sensors appear in the Live State Menu of the Gateway.



Connect to the gateway web interface

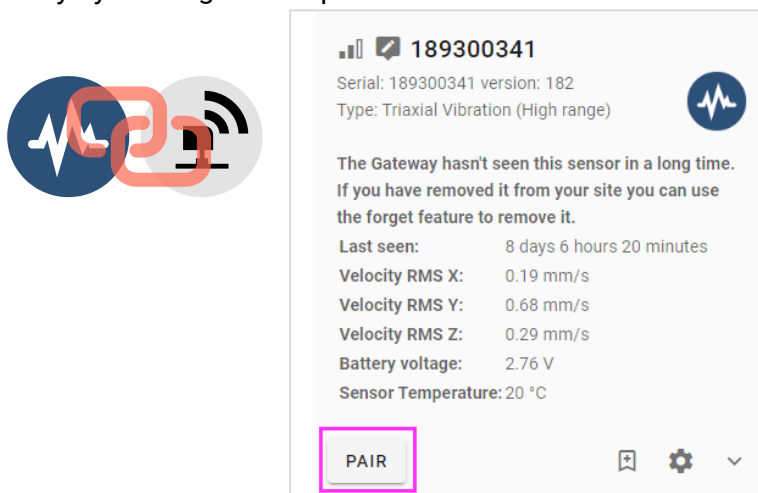
With the help of any web browser, go to the device's configuration page by entering the IP address that appears on the gateway's screen.

NOTE. Unsure that both computer and gateway are on the same network



Pair sensors with the gateway

In the Live State Menu of the web interface, Pair the sensors you want to connect to the gateway by clicking on the “pair” button on each sensor tile.

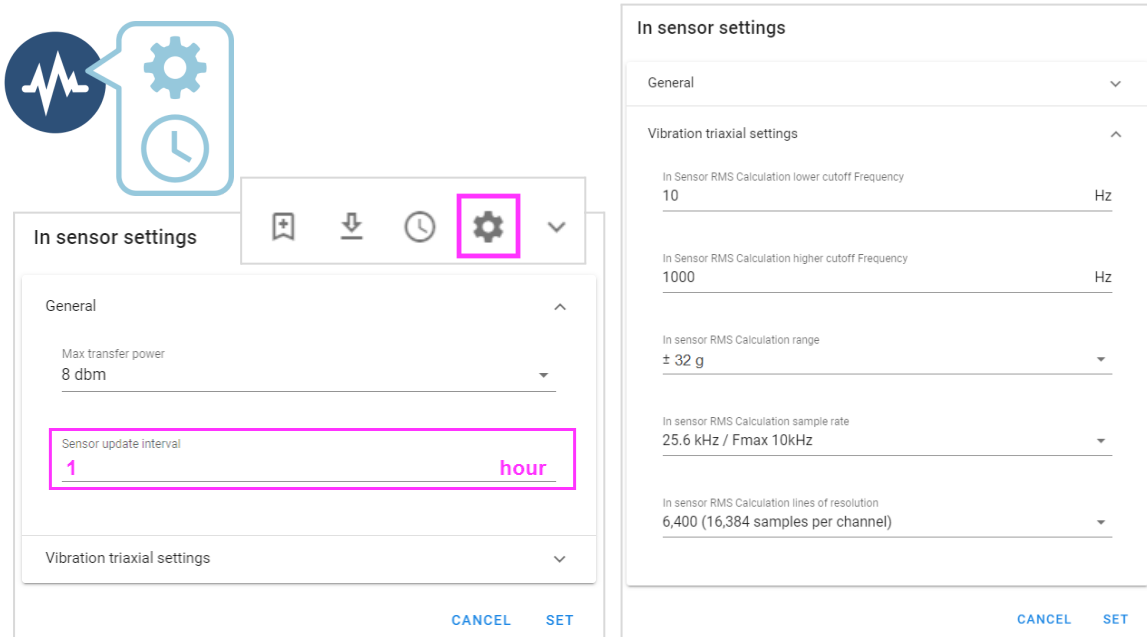


Setup the sensor monitoring

Setup the Overall velocity monitoring

In sensor tile, select the “In sensor settings” icon:

- **General:** define the sensor update interval (example : 1 hour)
- **Vibration triaxial settings:** define the overall velocity settings (example 10-1000Hz, 32g, 25.6kHz - Fmax 10kHz)

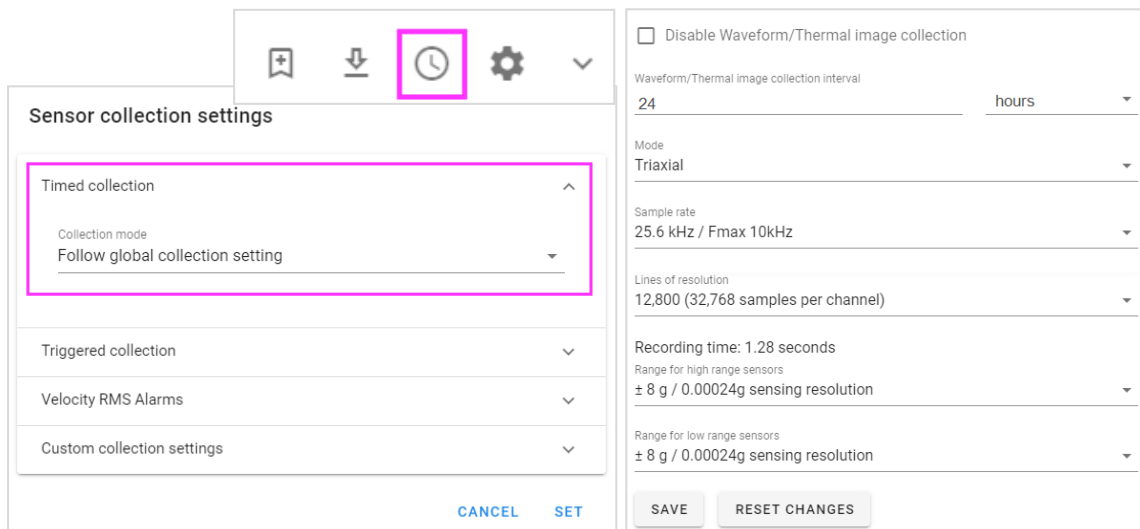


The diagram illustrates the process of accessing the 'In sensor settings' menu. It shows a top navigation bar with icons for a plus sign, download, clock, and a gear (highlighted with a pink box). Below this, the 'In sensor settings' panel is shown with two sections: 'General' and 'Vibration triaxial settings'. In the 'General' section, the 'Sensor update interval' is set to '1 hour' (highlighted with a pink box). The 'Vibration triaxial settings' section is expanded, showing various parameters like 'In Sensor RMS Calculation lower cutoff Frequency' (10 Hz), 'In Sensor RMS Calculation higher cutoff Frequency' (1000 Hz), 'In sensor RMS Calculation range' (± 32 g), 'In sensor RMS Calculation sample rate' (25.6 kHz / Fmax 10kHz), and 'In sensor RMS Calculation lines of resolution' (6,400 (16,384 samples per channel)).

Setup the Collection of Time waveform

In sensor tile, select the “Sensor collection settings” icon

- In Timed collection mode ensure that “Follow global collection setting” is selected



The diagram illustrates the process of accessing the 'Sensor collection settings' menu. It shows a top navigation bar with icons for a plus sign, download, clock (highlighted with a pink box), gear, and a dropdown arrow. Below this, the 'Sensor collection settings' panel is shown with four sections: 'Timed collection', 'Triggered collection', 'Velocity RMS Alarms', and 'Custom collection settings'. The 'Timed collection' section is expanded, showing 'Collection mode' set to 'Follow global collection setting' (highlighted with a pink box). The right panel shows the 'Waveform/Thermal image collection interval' set to '24 hours', 'Mode' set to 'Triaxial', 'Sample rate' set to '25.6 kHz / Fmax 10kHz', 'Lines of resolution' set to '12,800 (32,768 samples per channel)', and 'Recording time' set to '1.28 seconds'. There are also 'SAVE' and 'RESET CHANGES' buttons at the bottom.

In Collection Menu set the time waveform parameters. This time waveform will be used by NEST to post process FFT and other parameters.

Setup an MQTT server

In the MQTT server menu, enable the MQTT connection

- Define the protocol: mqtt://
- Set the MQTT server: enter your PC hostname or the IP address of your computer

WARNING. When using simultaneously wifi, ethernet and other network connections on your computer, ensure to set the appropriate IP address in the same network as per the Gateway

- Port: 1883
- Username: use the domain\user you have previously set up in the Nest Administration module ([see prerequisites](#)). Example d1\Sparrow, and enter the password.
- Publish topic: any text to name the MQTT topic. Example: Sparrow
- Publish QoS: 1
- Check Append gateway
- Check Publish waveforms
- SAVE, the gateway will reboot (Caution the IP address can change)
-

Live state	MQTT Status: connected	
General	☒ Enable MQTT Connection	
Collection	protocol mqtt://	MQTT server hostname or IP address
Sensor Sync	port 1883	
Modbus	Username d1\Sparrow	
MQTT	Password *****	
System tools	Publish Topic sparrow	
Offline storage	Publish QoS 1	
Security		
About		

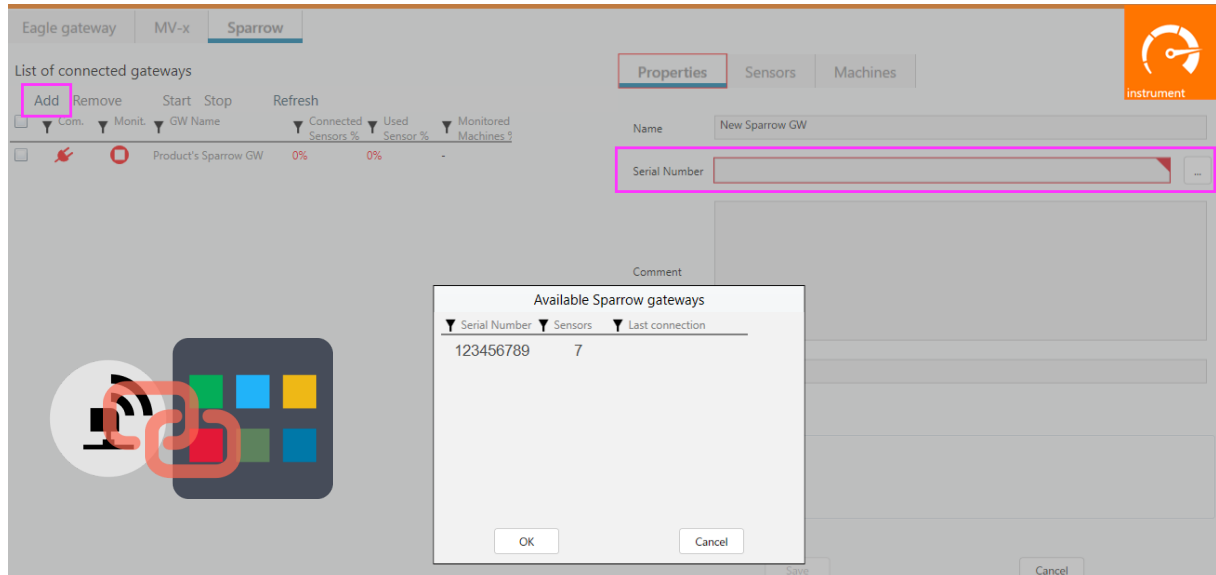
☒ Append GW and sensor serial number as subtopics (i.e. topic/gwserial/sensorserial)
☒ Publish waveforms
☐ Compress (gzip) payload
☐ Allow Gateway management through MQTT



Add a gateway to NEST

In NEST instrument module add a new Sparrow gateway

- Select the gateway from the list (...)
- Click OK and do not forget to SAVE



POP UP IS EMPTY?. NEST is a MQTT broker. As long as MQTT data is not published by the gateway, the pop-up window does not display a gateway. Which may explain why your window is empty. This can happen when you have just configured long intervals in the sensors and you want to associate a gateway very soon after. Allow time for the first data to be published (= the interval).

Before adding a new gateway into this list, please follow the following steps:

- Connect the gateway to your network
- Open the gateway web page from any web browser - ex GW URL : <http://gateway-ip-address>
- Click on MQTT tab
- Enable MQTT connection
- Select "MQTT" or "MQTT-S" protocol according to the security level of NESTi4 server
- Enter MQTT server = NESTi4 server ip address. Note : **LAC02407** is your current server ip address
- enter MQTT port = NESTi4 server MQTT listening port. Note : **1883** is your current MQTT listening port
- enter Username with the syntax *Domain\Login* . ex: d1w1
- enter an optional "Topic" if you want to read the gateway raw MQTT data from an external MQTT client, using NESTi4 as a broker.



WARNING. The information given by NEST regarding the IP address is the first active connection. If you are using multiple network connections such as ethernet, wifi... with your computer, this address can be wrong. Ensure that both gateway and computer are sharing the same network mask.

Setup a monitoring in NEST

Create a new Sparrow machine

In the setup module - Add a New machine (Sparrow)

Draw the schematic and fill up the required information



Identity (Sparrow) | **Schematic** | Strategy | Measurements | Connection | Photo | Docu

Machine properties

Property	Value
Setup mode	Custom Templates
Machine Type	Fixed Speed
Speed unit	RPM
Power Unit	kW
Main direction (verti	

Component properties
please select a component to view its properties

Drivers | **Couplings** | **Transmissions** | **Driven**

(M) | [Coupling Icon] | [Transmission Icon] | [Driven Icon]

Add Delete Set as photo

Set the recording strategy

In the strategy tab

- Set the “due date periodicity” to 1 hour and the “periodic recording duration” to 100%
- Define the overalls storage, for example to “average value on the period”
- Store timewave “on each due date period”



Identity (Sparrow) | Schematic | **Strategy** | Measurements | Connection

Use the following diagram to set:

- The period for storage of incoming measurements (eg, creation of measurement dates)
- The size of the window around each measurement date during which incoming measures are considered valid (expressed as percentage of the periodicity)

Due date periodicity: 1 Hr

Periodic recording duration: 100 % 1 h(s) 0 min(s) 0 sec(s)

Recording options: Choose which value to store during the recording window

Overalls storage: Average value on the period
If several global level values are received during the recording duration, then the AVERAGE value is kept

Store timewave: On each due date period
A timewave signal is requested for each due date in order to have at least one signal per due date

Add some post processings

The Sparrow sensor provides an overall temperature, an overall velocity and a time waveform. In order to make an expert vibration analysis just add some post treatments like FFTs, narrow bands, energy bands, kurtosis ...

In the measurement tab, click "Add" and customize your health matrix.

Vibration Data							
Setup input	Use Template	Add	Modify	Delete			
		1MT-NDE			2MT-DE		
		1Ax	1RH	1RV	2Ax	2RH	2RV
Temperature	⋮		●			●	
Velocity	⋮	●	●	●	●	●	●
Time Signal	⋮	~	~	~	~	~	~
FFT 12800 lines	⋮	⏏	⏏	⏏	⏏	⏏	⏏

Connect sensors to location

Connect real sensors to each measurement point of the machine

- using the (...) button select the sensor to connect
- Define the orientation of the sensor on the machine using the icons



Identity (Sparrow)

Schematic

Strategy

Measurements

Connection

Photo

Documents

Start

Stop

export to csv

Disconnect all sensors

Abbreviated	Bearing name	Tag	Use this pGateway	Sensor	Com.	Monit.	Batt.	Signal	Position	
1MT-NDE	1-Electric Motor-NDE		☒	Product's Sparrow GW 472230002	...					
2MT-DE	2-Electric Motor-DE		☒		...					

Search...

Gateway	Sensor SN	Linked To
Product's Sparrow GW	472230561	

Start the monitoring

The last step is to start the monitoring.

- Go to the Instrument module. Under Sparrow tab, select the gateway
- Under Machines tab select the machine(s) to monitor and click on “Start” button
- Check that data is populating the database at the interval you selected. For a large interval such as 1h or 1 day, wait this time prior to checking.

The screenshot displays the Sparrow gateway monitoring interface. At the top, there are tabs for 'Eagle gateway', 'MV-x', and 'Sparrow', with 'Sparrow' being the active tab. An 'instrument' logo is visible in the top right corner. Below the tabs, the section is titled 'List of connected gateways'. It includes a toolbar with 'Add', 'Remove', 'Start', 'Stop', and 'Refresh' buttons. A table lists the connected gateways with columns for selection, communication status, monitoring status, gateway name, connected sensors percentage, used sensor percentage, and monitored machines percentage. One gateway, 'Product's Sparrow GW', is listed with 100% connected sensors, 50% used sensors, and 0% monitored machines. Below this, there are tabs for 'Properties', 'Sensors', and 'Machines', with 'Machines' being the active tab. The 'Machines' tab has a 'Start' button highlighted. It contains a table with columns for selection, monitoring status, machine name, connected sensors percentage, used sensors, monitored bearings percentage, and last measure. One machine, 'sparrow-triax32k', is listed with 100% connected sensors, 1 used sensor, 50% monitored bearings, and a last measure of '8/31/2023 5:42:27 PM'.

	Com.	Monit.	GW Name	Connected Sensors %	Used Sensor %	Monitored Machines %
☒			Product's Sparrow GW	100%	50%	0%

	Monit.	Machine	Connected Sensors %	Used sensors	Monitored Bearings %	Last measure
☒		sparrow-triax32k	100%	1	50%	8/31/2023 5:42:27 PM