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Phantom Triggering

Triggering is a feature of the Phantom system used to improve recording accuracy by collecting sensor data only when a machine is in operation. This reduces the amount of unwanted database entries resulting from collections taken when a machine is not running. This spurious data also skews trending values.

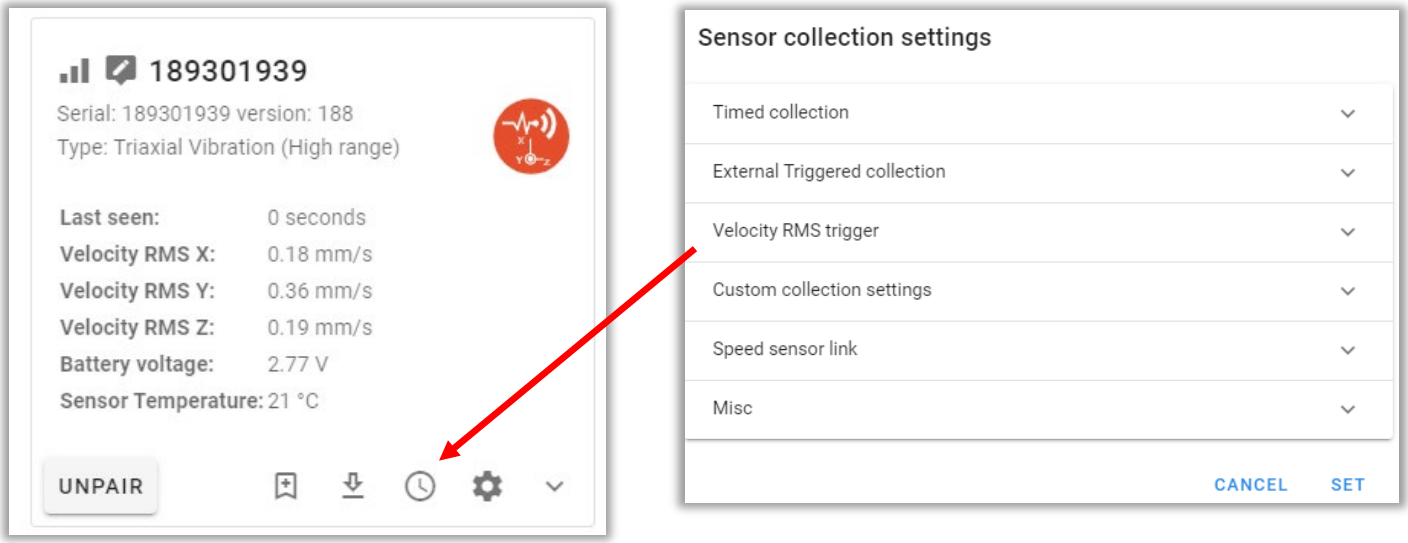
- All triggering is controlled by the Phantom Gateway.
- All Phantom sensors involved with a triggering setup must be connected to the same Gateway or Gateway network (Main or Sub-ordinate), i.e. Inter-Gateway triggering between Main GW's is not supported.
- Multiple Phantoms may be configured to be triggered by the same source sensor, there is no practical limit, it is dependent only on gateway traffic.
- There are two types of triggers – **Internal** and **External**.

Internal Triggering only when a machine is operating

Phantom vibration sensors (V10, V11 , ATEX) provide periodic RMS velocity measurements to the Gateway, which can be configured to trigger the sensor to collect a waveform and send it to the database(local or EI-Analytic). Optionally, it can also be set to trigger an Email/push notification when a threshold is reached. (EI-Analytic databases only).

This is formerly known as "RMS Velocity alarms"

Velocity RMS trigger setup is found in the Sensor Collection settings:



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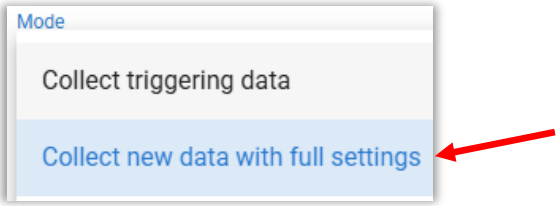
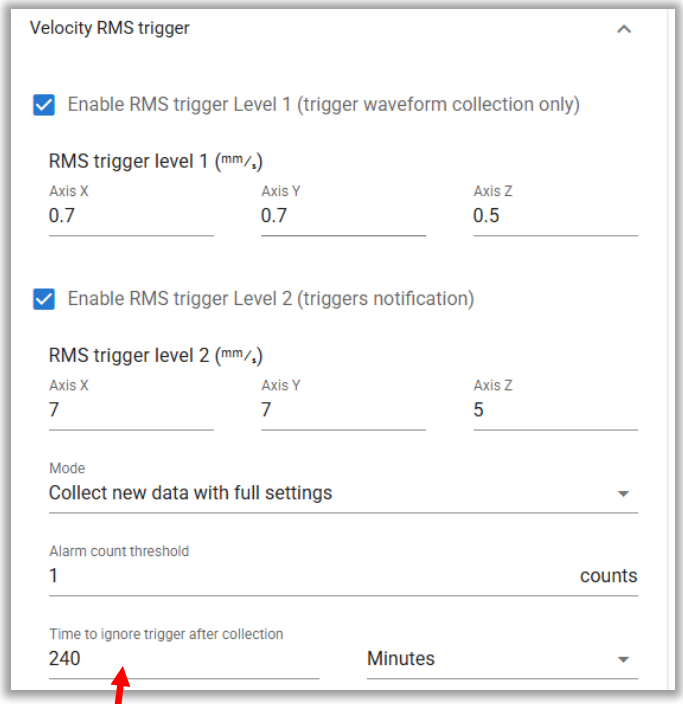
RMS trigger level 1 will cause the sensor to send a waveform collection if the RMS velocity threshold is exceeded on any of the measured axes (updates the Gateway using the Sensor Update interval – see below). Set this to a relatively low value if you want to use this threshold to determine if a machine is operational or idle at the time of the Sensor update.

RMS trigger level 2 will trigger an email/push notification if the RMS velocity threshold is exceeded on any of the measured axes. Emails are sent to the address associated with the EI-Analytic account profile. Push notifications are sent to Wiser Vibe mobile App users. This feature is not supported with local databases.

Note – Level 1 and 2 triggers may be set independently, level 1 is not a pre-requisite to use level 2.

The **Mode** field determines whether to use the original data that caused the trigger (RMS), or take **new** data:





Data collection Interval

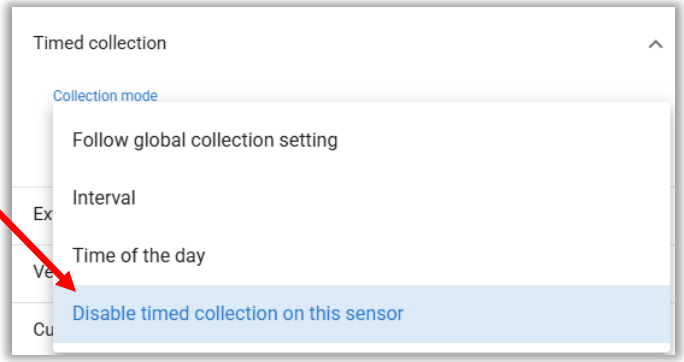
Count threshold: This parameter defines number of consecutive *counts* for which the thresholds are exceeded before triggering. A *count* is the amount of time defined by the **Sensor Update Interval** , which is set via the **In-Sensor Settings**. Leave this set this to the default of 1.

Time to ignore trigger after collection indicates how much time must pass before the sensor can be triggered again (applies to both Level 1 and 2).

For Internal triggering applications this becomes the waveform collection interval for the sensor.

Note – A Triggered collection setting is <u>independent</u> of the normal **Timed collection** setting for the V10/V11 vibration sensor.

Set the Timed collection to **disabled**. Only triggered collections will now be be provided.



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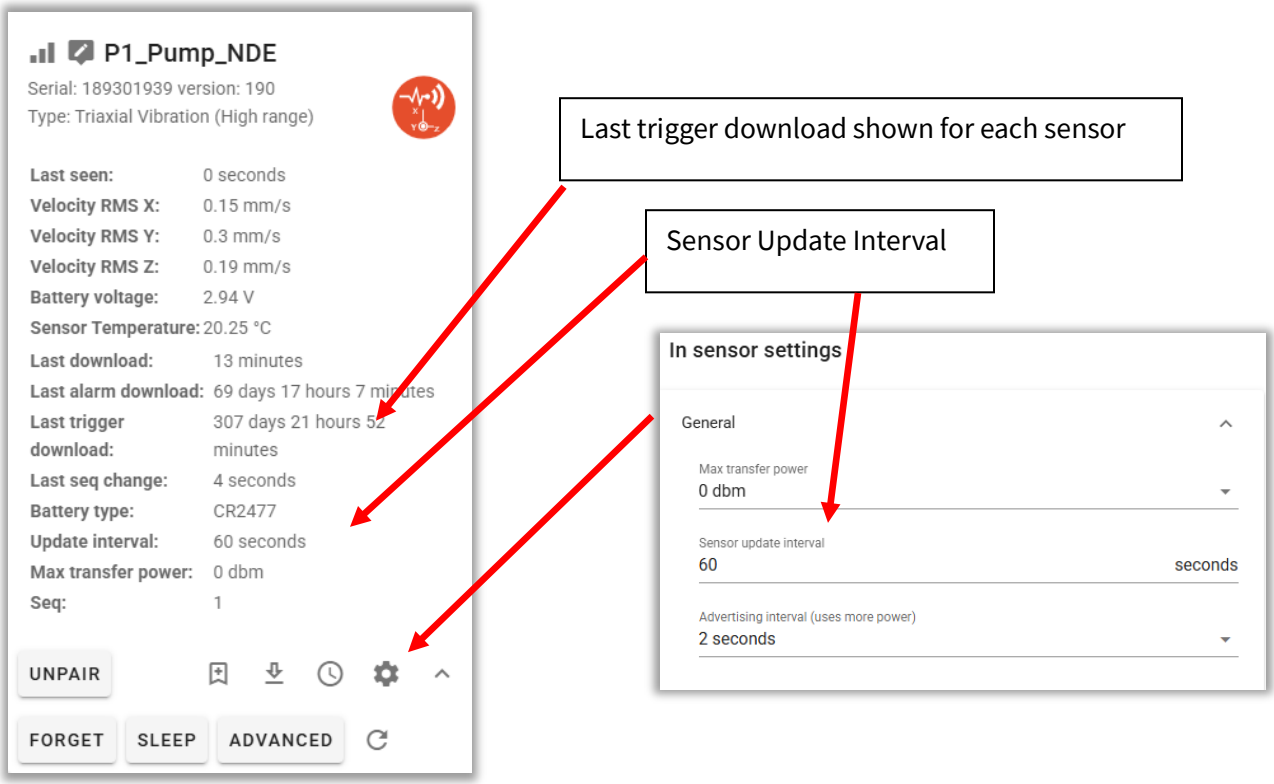

Managing the Sensor Update Interval

When the Sensor Update Interval elapses, a Phantom sensor will transmit a small packet of information to the Gateway, based on the sensor model. This includes:

1. Velocity RMS for each axis
2. Internal Temperature
3. Signal Strength
4. Battery voltage
5. Firmware version

This information is automatically sent by the Gateway to the database (EI-Analytic or local).

Since the Sensor Update Interval also serves as the Trigger check interval for RMS Velocity thresholds, it is sometimes desirable to set this to a low value, for example one minute. While having the desired effect of providing a frequent RMS update to the Gateway, it unfortunately **also** results in an RMS entry added to the database every minute. Even though RMS data is extremely small in size, it requires action to periodically delete the unwanted entries. Setting the Sensor Update Interval to one minute will create 1440 database entries per sensor, per day!

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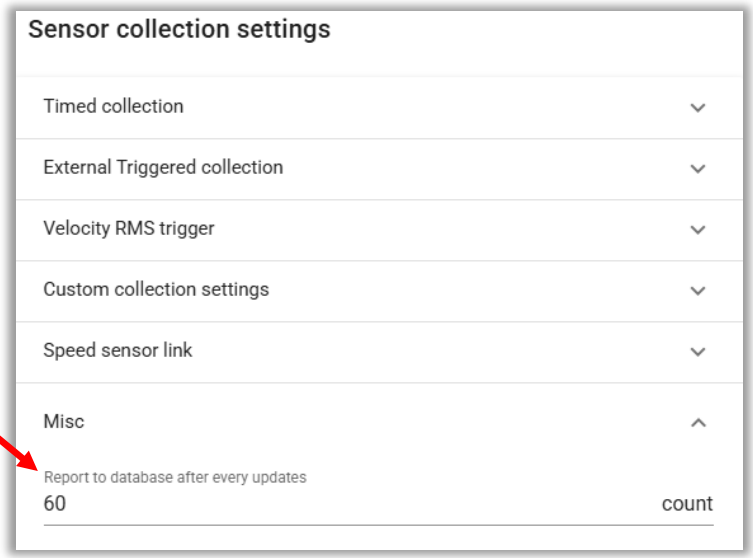
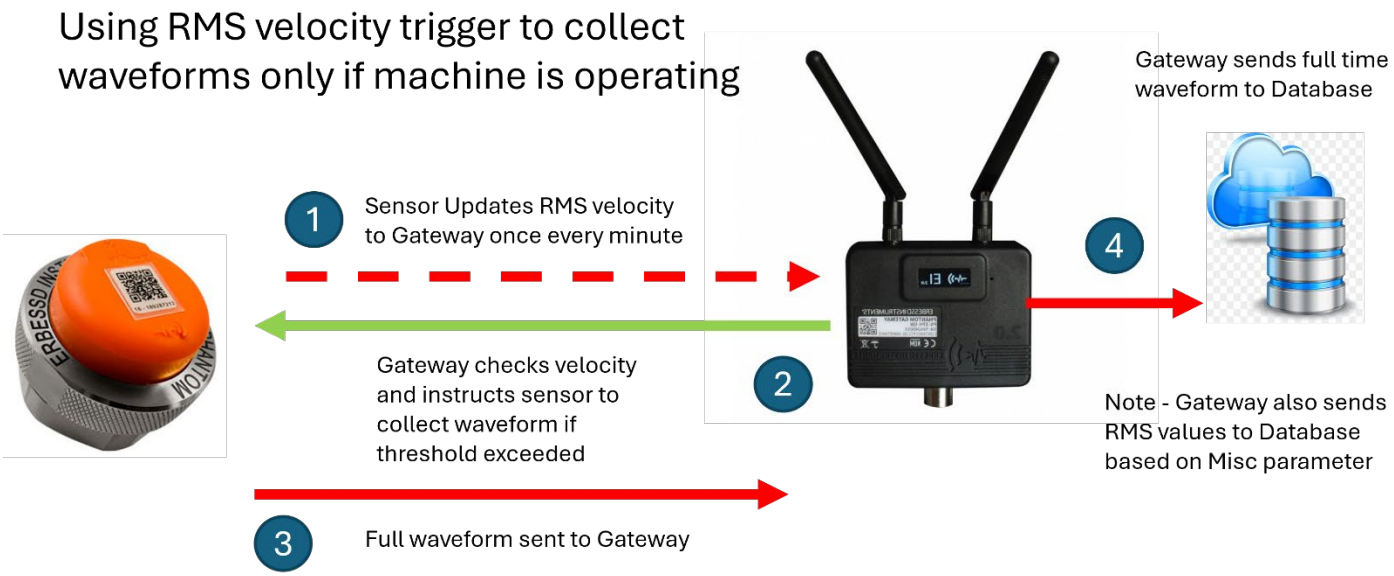
The **Misc** parameter can be set for each sensor to determine how often the Gateway will send RMS information to the database, based on the Sensor Update Interval.

This allows the Update interval to be set to a lower value, but not impact the database. For example, setting it to 60 counts for a 60 second Sensor Update interval (default) would cause the Velocity RMS thresholds to be checked by the Gateway every minute, but an RMS data packet would only be sent to the database every hour. The first 60 RMS data packets are discarded by the Gateway. The 61st is sent to the database, and the Gateway's counter resets to 0 for that sensor.



Note – The Sensor Update Interval has a direct impact on sensor battery life! Setting to a very low value such as 1 min will also impact Gateway traffic. It is recommended to only use an Update interval of less than 10 minutes for brief periods of time, and set to higher values under normal conditions.



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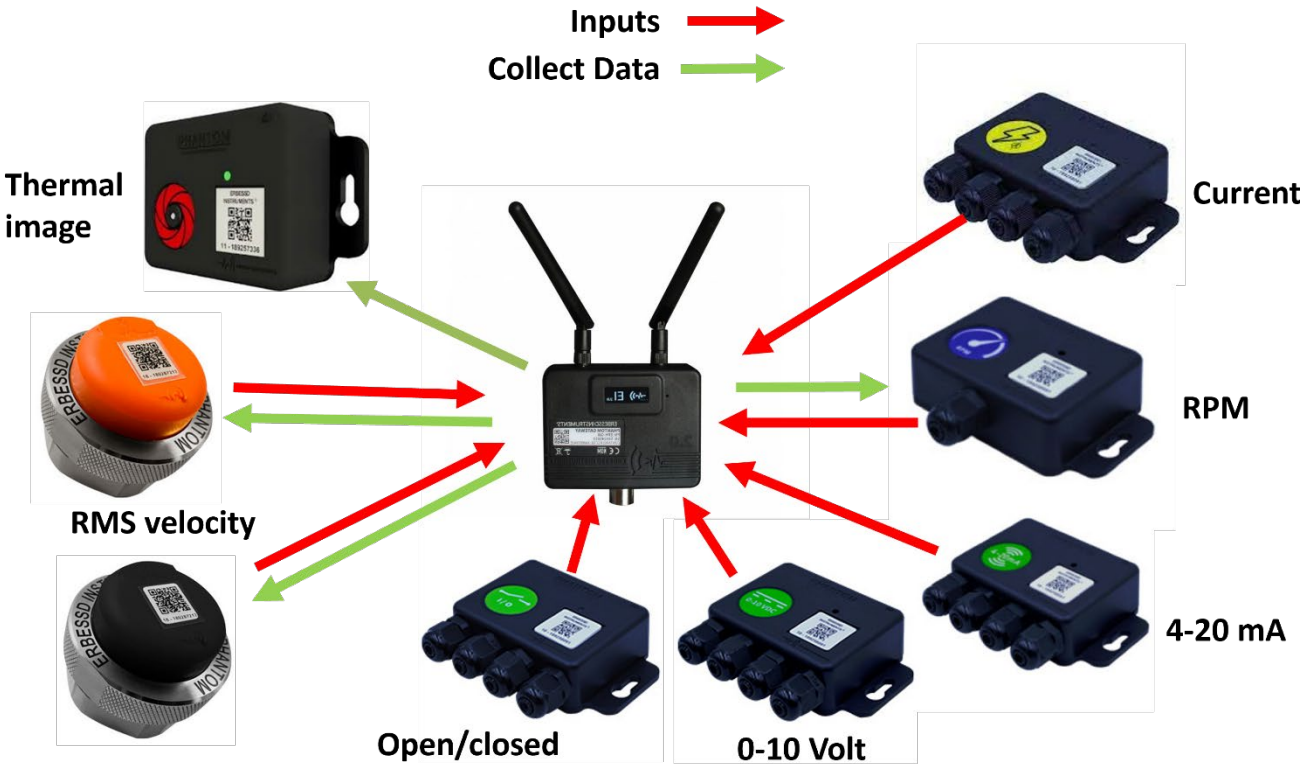
External Triggering

Several models of Erbessd Instruments Phantom sensors can be used to **trigger** other Phantom triaxial vibration sensors or thermographic cameras to collect data. This helps ensure vibration/thermographic measurements are taken when a machine is running in a desired state, e.g., RPM or current draw are within a specific range, Five models of Phantom sensor can be used to trigger:

1. EPH-S40 Speed Phantom for RPM
2. EPH-C31 Current Phantom for Amperage
3. EPH-G62 Dry Contact Phantom for manual or automatic contact-closure
4. EPH-G61 4-20 mA General Purpose I/O (requires gateway Firmware version 58 or higher)
5. EPH-G63 0-10 Volt GPIO (requires gateway Firmware version 58 or higher)

These Phantom sensor models update their associated Gateway with information (RPM, current, etc.) at varying intervals, some are pre-set, others are configurable. When triggering conditions are met, the gateway initiates measurement(s) to begin within a few seconds, depending on the gateway traffic load.



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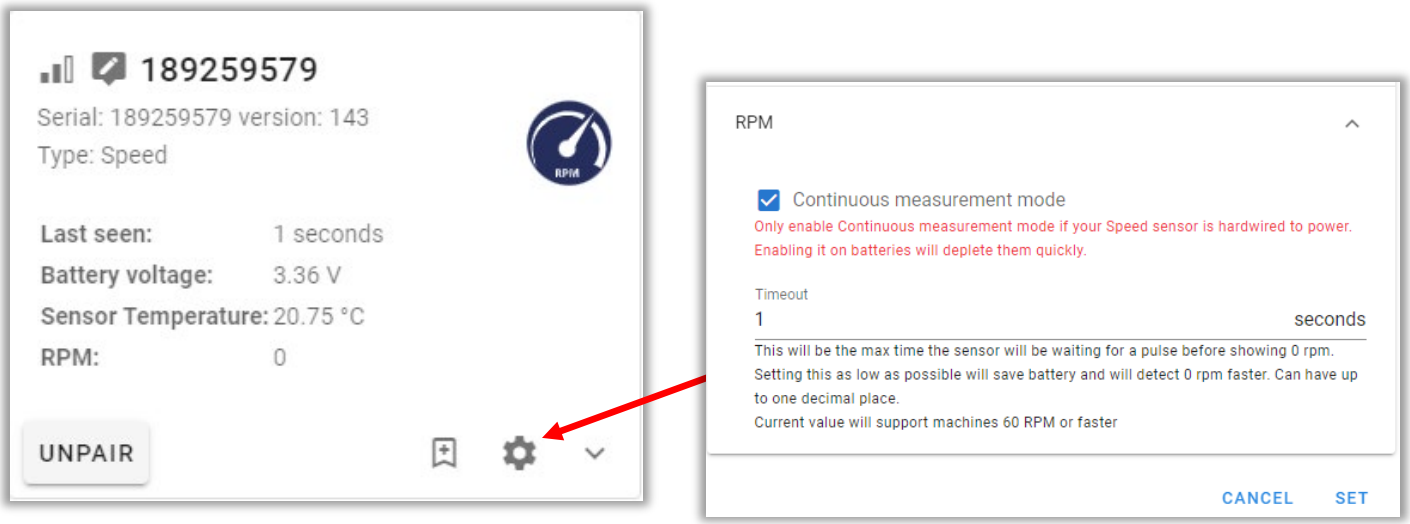
RPM Trigger

The EPH-S40 Phantom Speed sensor reports RPM to the Gateway using the **Sensor Update** interval as configured in the **In-sensor Settings**. It is beneficial to set this value to a minimum so there is no delay in triggering. However, the negative impact on battery life makes this undesirable. Therefore, it is highly recommended to install the Speed Phantom in **Continuous measurement mode**. This requires hard-wired 5-24VDC power in place of batteries.



When **Continuous Mode** is enabled, the sensor will update the RPM value to the Gateway **every 2 seconds**.

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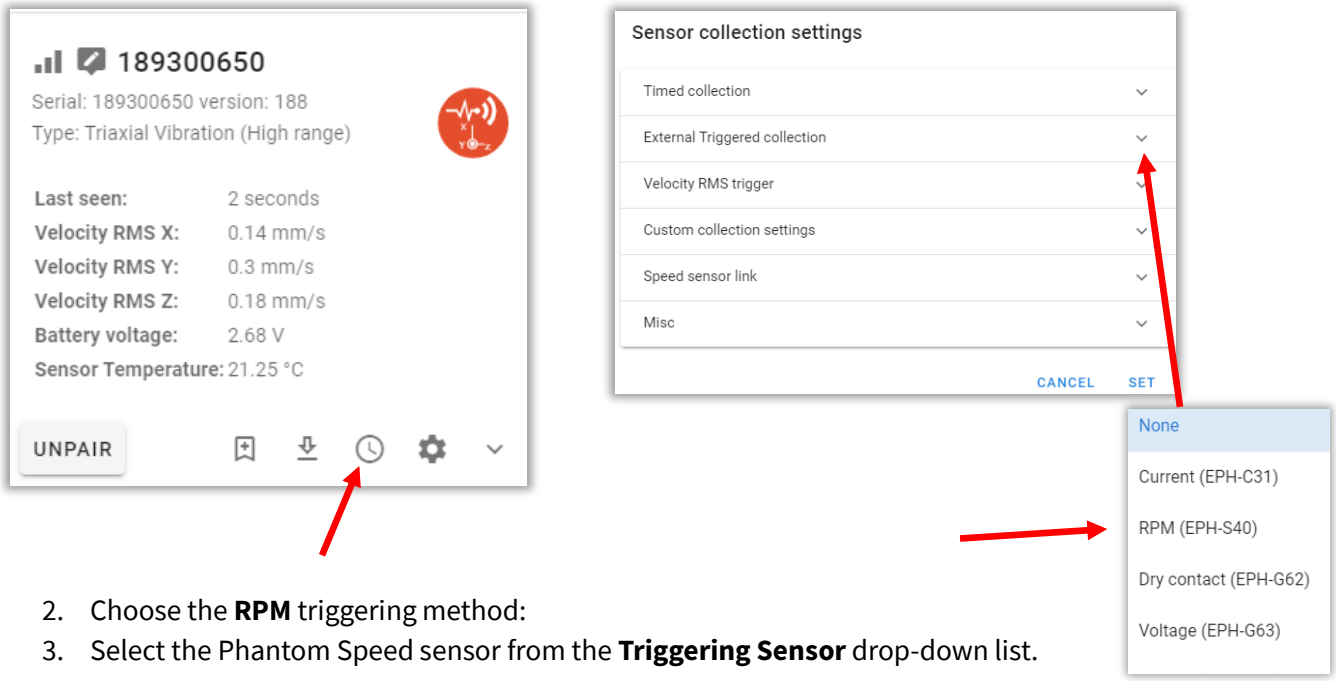
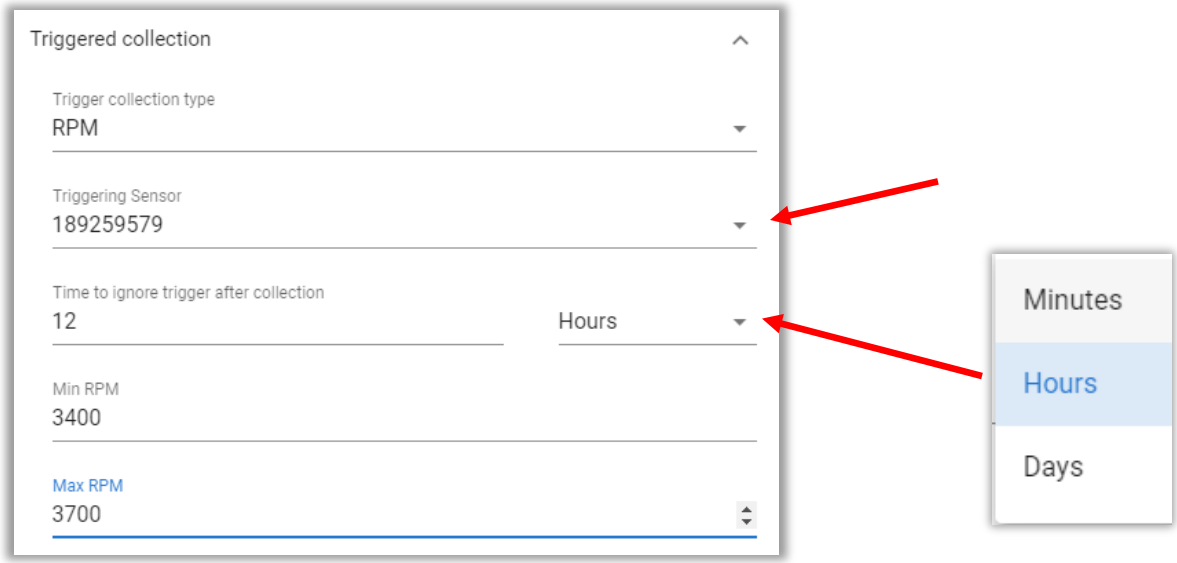
With an EPH-S40 Phantom Speed sensor installed to provide RPM information, the steps to set up triggering of Phantom vibration sensors(V10 or V11) or a Thermographic camera are as follows:

1. In the Live State screen of the Phantom Gateway Admin Console, locate each V10/V11 or T70 sensor to be triggered. For EACH sensor, click on the **Collection Settings** icon, and select **External Triggered collection**



2. Choose the **RPM** triggering method:
3. Select the Phantom Speed sensor from the **Triggering Sensor** drop-down list.



4. Set the **Time to ignore trigger after collection** value. This sets an interval between triggered events. Once the timer has elapsed, and the RPM Min/Max conditions are met, a new trigger can occur.

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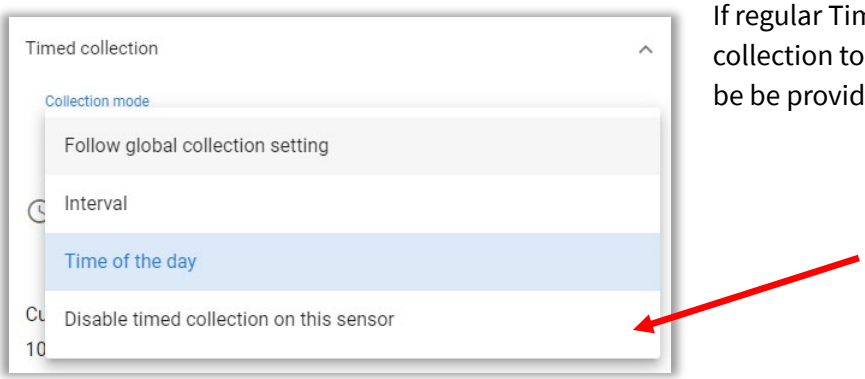
5. Set **Min and Max RPM** to define the RPM range to cause a trigger event.
6. Press **SET** to save changes.

Note – A Triggered collection setting is independent of the normal **Timed collection** setting for the V10/V11 vibration sensor.



If regular Timed collections are not desired, set the Timed collection to **disabled**. Only triggered collections will now be be provided.

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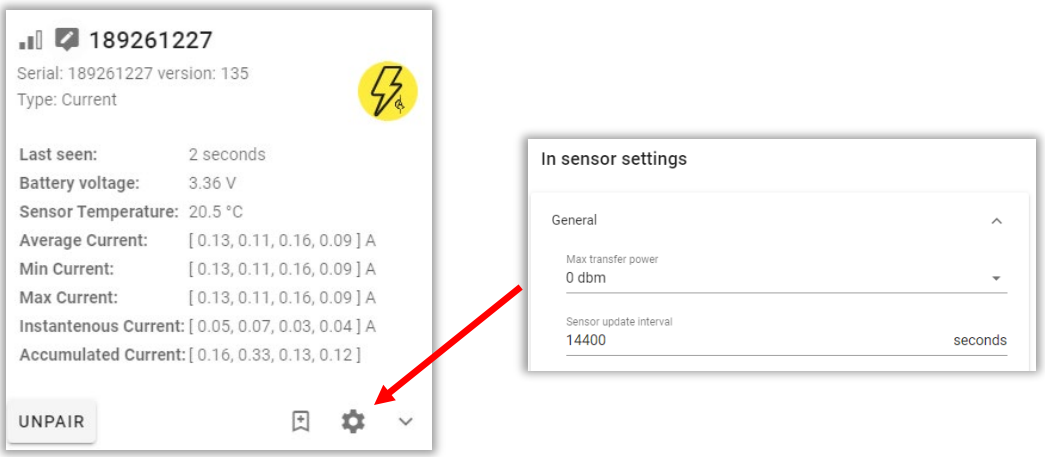
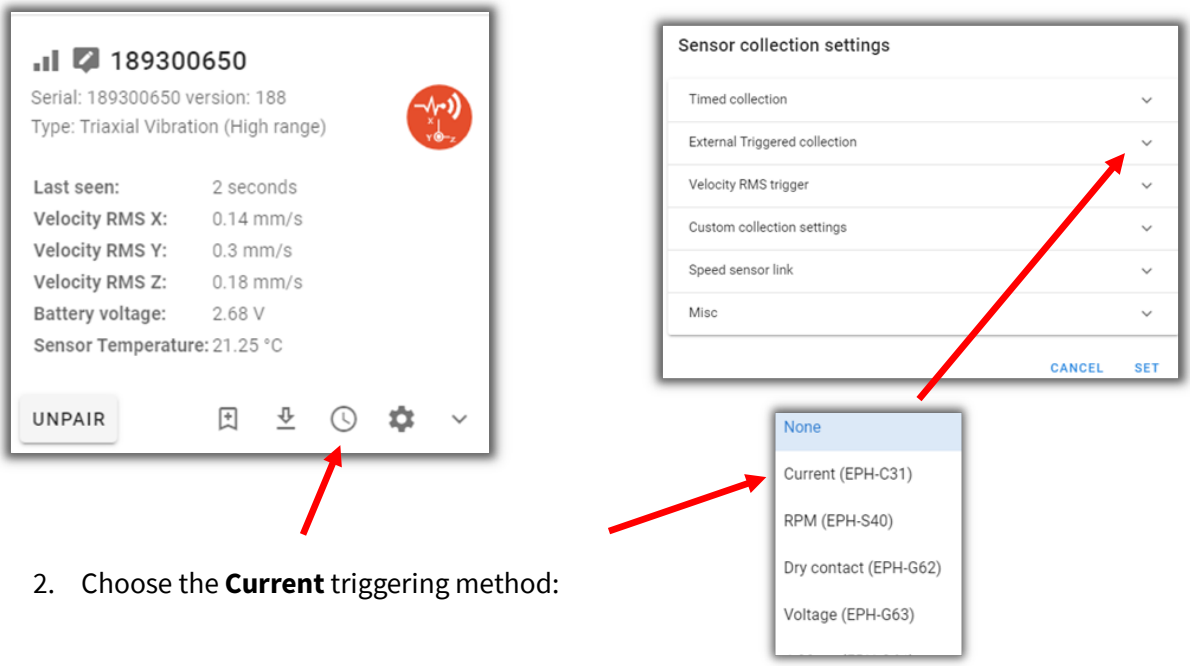
Current Trigger

The EPH-C31 Current sensor updates the Amperage values from all 4 channels to the Gateway **every 5 seconds** regardless of the **Sensor Update** interval, which defines how often data is sent to the database.



With an EPH-C31 Current Phantom sensor installed, any of the channels can be used to trigger a V10 /V11 vibration sensor or Thermographic camera. The steps to set this up are:

1. In the Live State screen of the Phantom Gateway Admin Console, locate each V10/V11 sensor to be triggered. For EACH sensor, click on the **Collection Settings** icon, and select **External Triggered collection**



2. Choose the **Current** triggering method:

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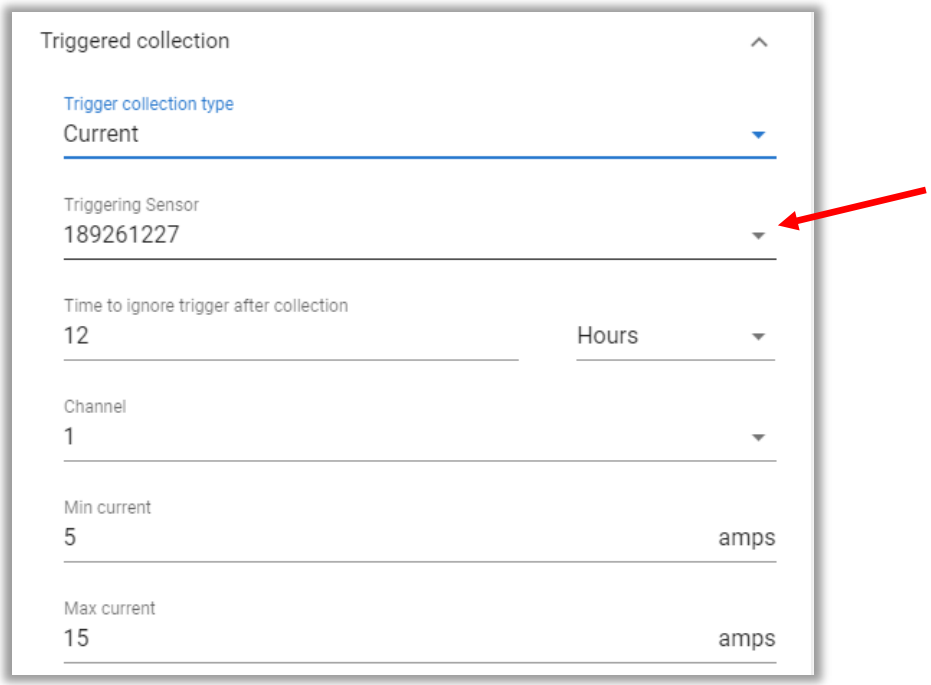
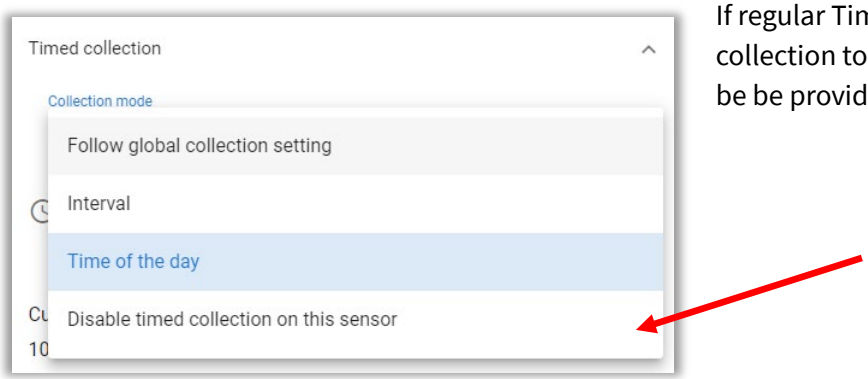
3. Select the Phantom Current sensor ID from the Triggering Sensor drop-down list.



4. Set **theTime to ignore trigger after collection** value. This sets an interval between triggered events. Once the timer has elapsed, and the current Min/Max conditions are met, a new trigger can occur.
5. Choose the **Channel** (1-4)
6. Set **Min and Max current** to define the range in which the current must fall to cause a trigger event.
7. Press **SET** to save changes.

Note – A Triggered collection setting is <u>independent</u> of the normal **Timed collection** for the V10/V11 vibration sensor.



If regular Timed collections are not desired, set the Timed collection to **disabled**. Only triggered collections will now be be provided.

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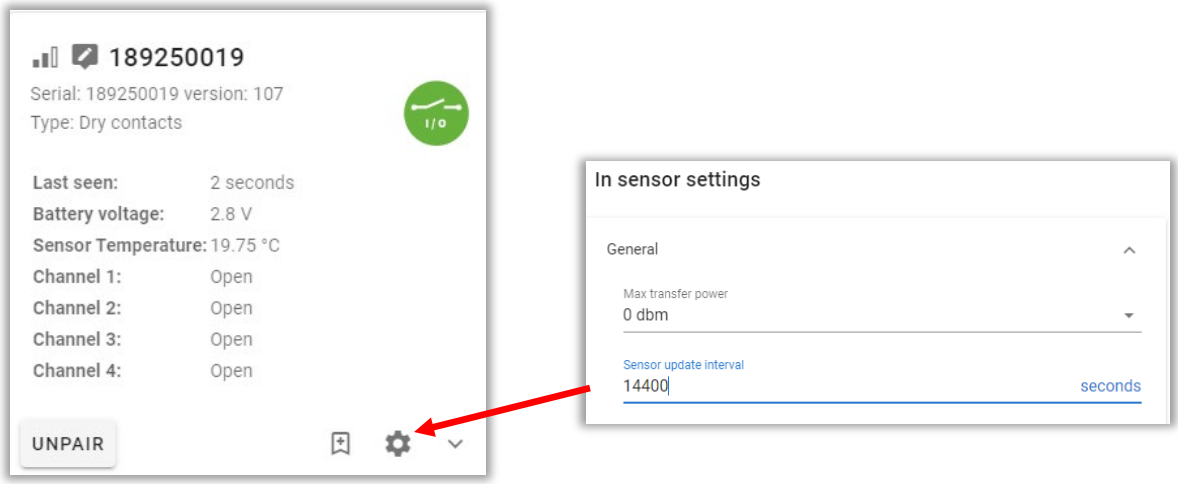
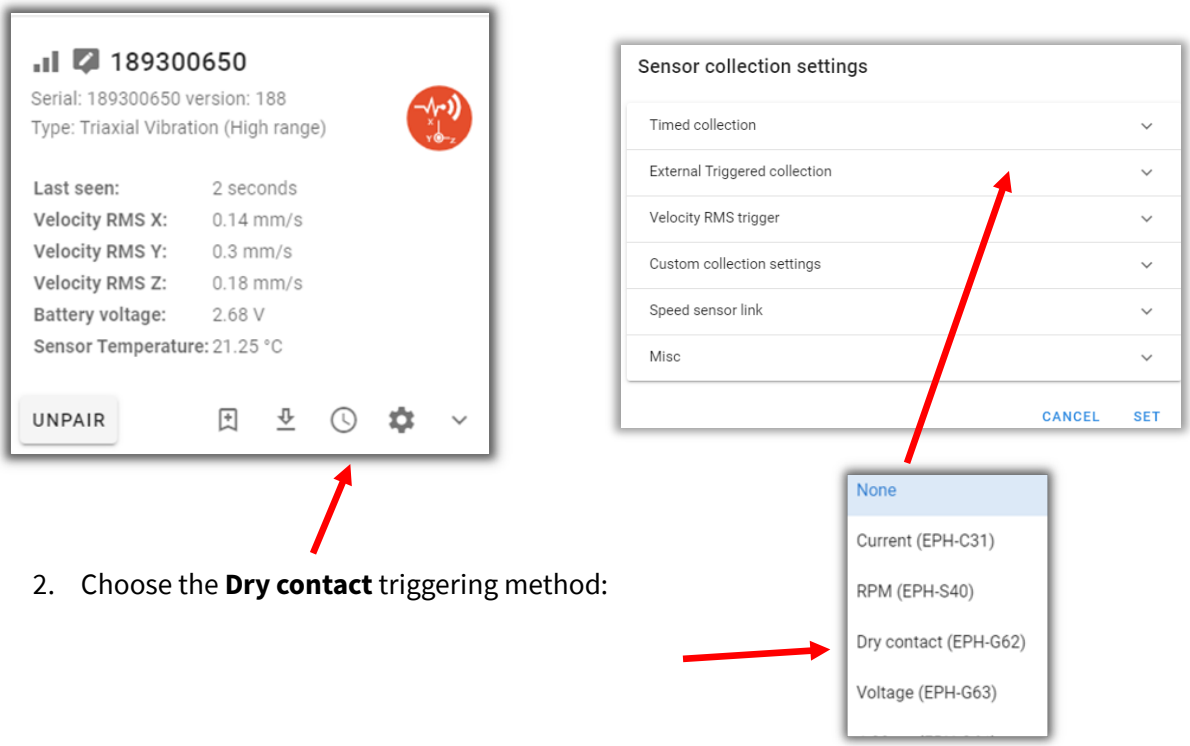
Dry Contact Trigger

An EPH-G62 Dry contact Phantom sensor can be used to tigger V10/11 vibration sensors or Thermographic cameras. This Phantom Specialty sensor updates the open/closed state of each channel every 5 seconds or less to the Gateway. The state information is sent to the database using the **Sensor Update** interval.



To configure Dry Contact triggering, follow these steps:

1. In the Live State screen of the Phantom Gateway Admin Console, locate each sensor to be triggered. For EACH sensor, click on the **Collection Settings** icon, and select **External Triggered collection**



2. Choose the **Dry contact** triggering method:

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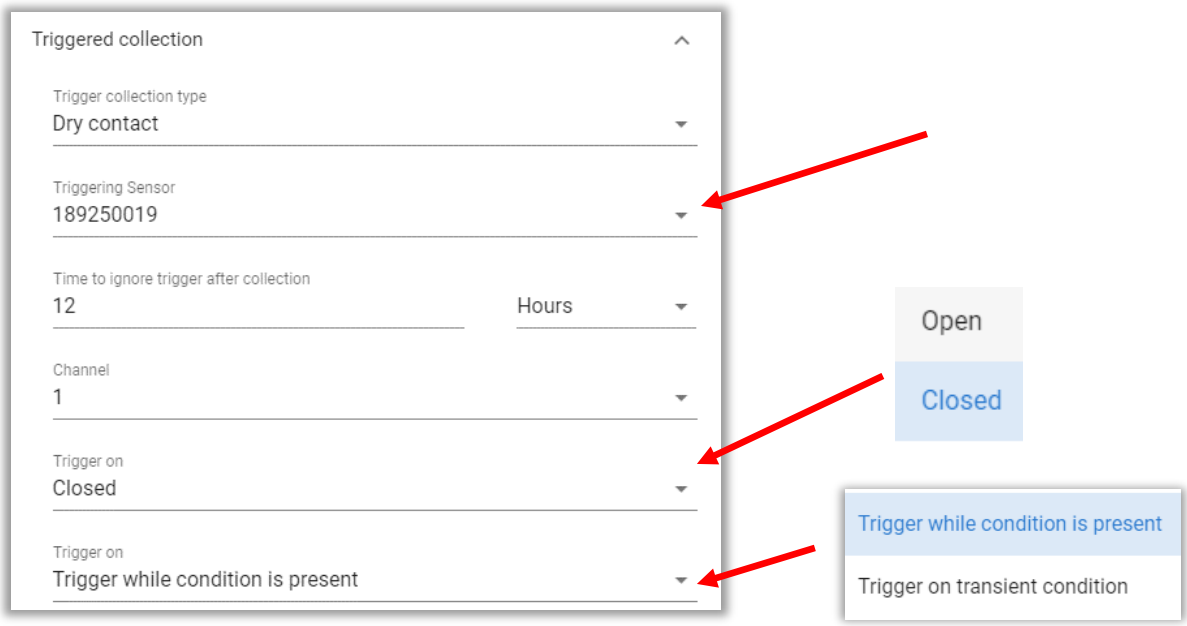
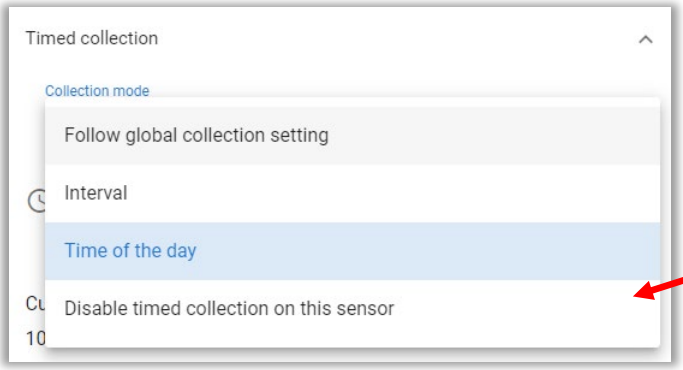
3. Select the Phantom Dry contact sensor ID from the Triggering Sensor drop-down list.



4. Set **theTime to ignore trigger after collection** value. This sets an interval between triggered events. Once the timer has elapsed, and the trigger conditions are met, a new trigger can occur.
5. Choose the Channel (1-4)
6. Set the **Trigger on** parameter to **Closed** or **Open**. When the Sensor Update Interval expires, the sensor reports the contacts as open or closed. Triggering can be done based on either condition.
7. **Trigger while condition is present** uses the open or closed setting above to determine if triggering should take place. Tyically, this is used when a remotely-controlled relay is connected to the sensor, and is closed automatically when a machine is in operation. **Trigger on transient condition** causes triggering to occur whenever the condition changes , which would be used in a case where a button is pressed manually to cause a trigger. Note – the manual button-press method works with either selection of this parameter.
8. Press **SET** to save changes.

Note – A Triggered collection setting is <u>independent</u> of the normal **Timed collection** setting for the sensor.



If regular Timed collections are not desired, set the Timed collection to **disabled**. Only triggered collections will now be be provided.

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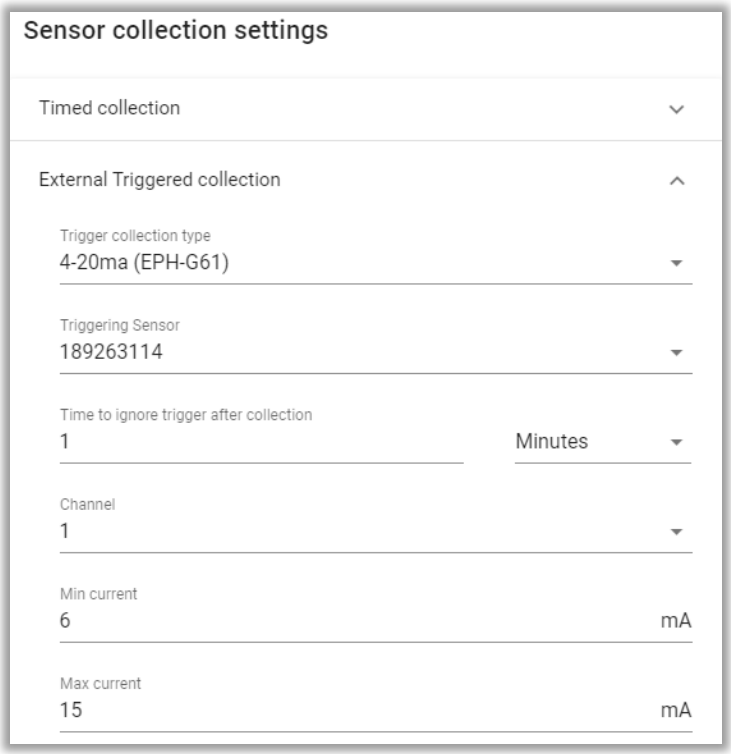
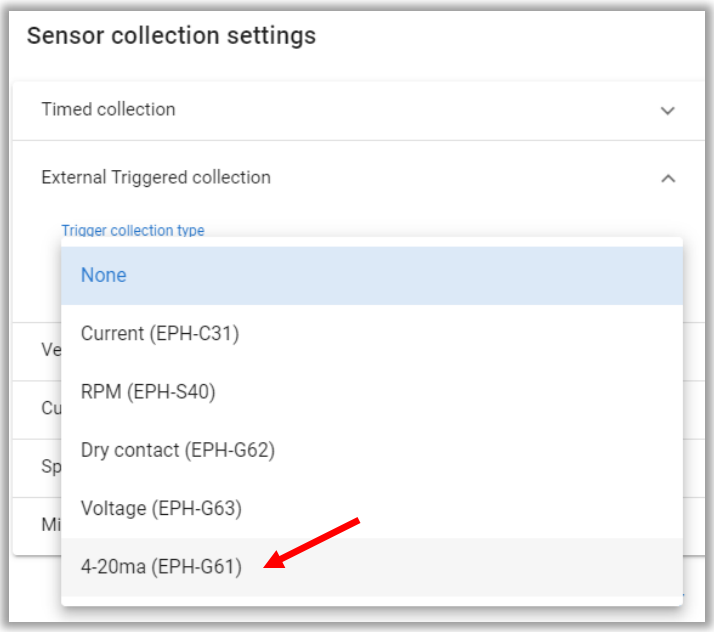
4-20 mA GPIO Trigger

The EPH-G61 4-20mA Phantom sensor can be used to trigger a vibration sensor (EPH-V11E or V10E) or an EPH-T70 Thermographic camera.

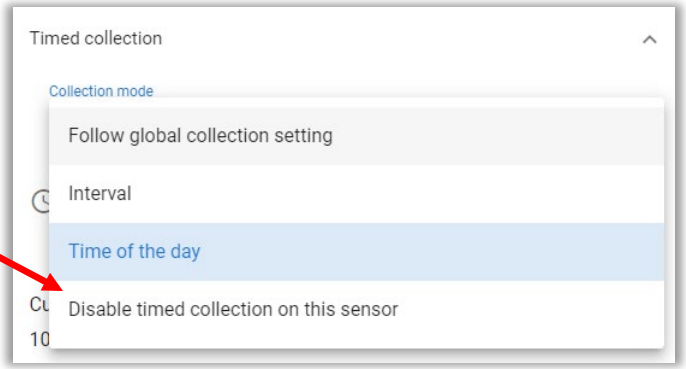
Example of a sensor setting when a 4-20 mA Phantom is used to trigger:





1. Select 4-20ma from the **Type** field
2. Pick the **triggering sensor** from the list of available Phantoms
3. Set the **Time to ignore trigger after collection** value. This sets an interval between triggered events. Once the timer has elapsed, and the Min/Max conditions are met, a new trigger can occur.
4. Set **Min and Max Current** to define the range in which it must fall to cause a trigger event.
5. Press **SET** to save changes.

Note – A Triggered collection setting is <u>independent</u> of the normal **Timed collection** setting for a V10/V11/T70 sensor. If regular Timed collections are <u>not</u> desired, set the Timed collection to **disabled**. Only triggered collections will then be be provided.



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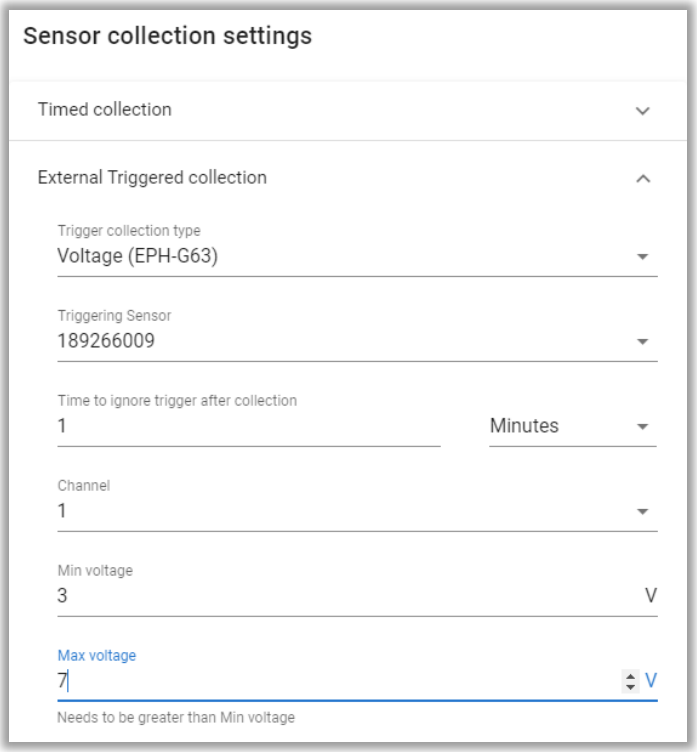
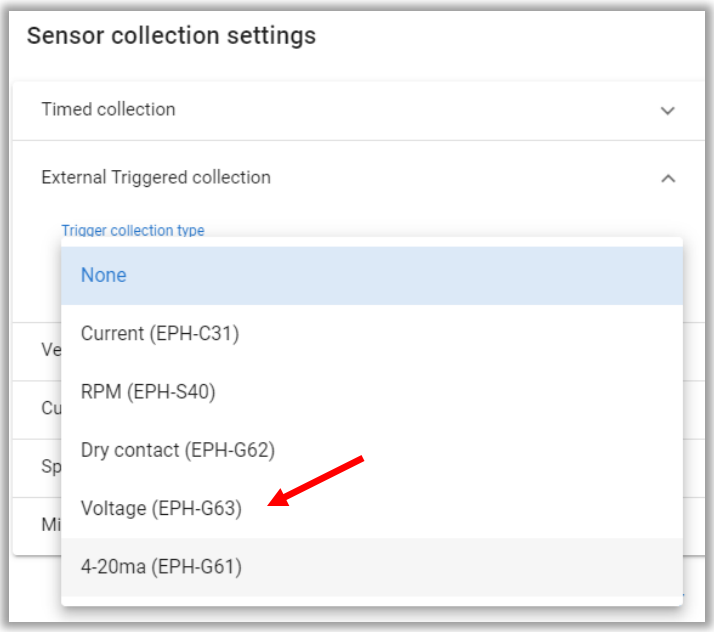
0-10 Volt GPIO Trigger

The EPH-G63 0-10V Phantom sensor can be used to trigger a vibration sensor (EPH-V11E or V10E) or an EPH-T70 Thermographic camera.

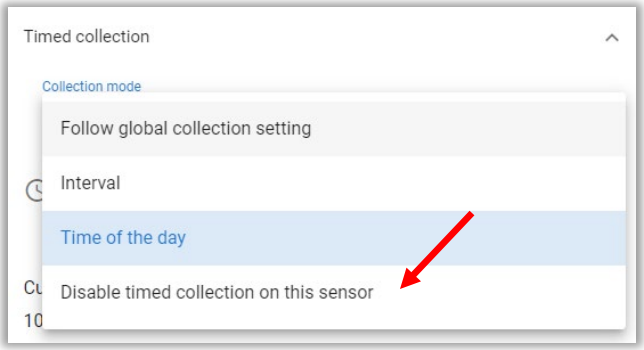
Example of a Sensor setting when a 0-10 Volt sensor is used to trigger:





1. Select Voltage from the **Type** field
2. Pick the **triggering sensor** from the list of available Phantoms
3. Set the **Time to ignore trigger after collection** value. This sets an interval between triggered events. Once the timer has elapsed, and the Min/Max conditions are met, a new trigger can occur.
4. Set **Min and Max voltage** to define the range in which it must fall to cause a trigger event.
5. Press **SET** to save changes.

Note – A Triggered collection setting is <u>independent</u> of the normal **Timed collection** setting for a V10/V11/T70 sensor. If regular Timed collections are <u>not</u> desired, set the Timed collection to **disabled**. Only triggered collections will then be be provided.



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