

picoScan150 - Firmware release information V1.x.x



Document published 23 Aug 2024

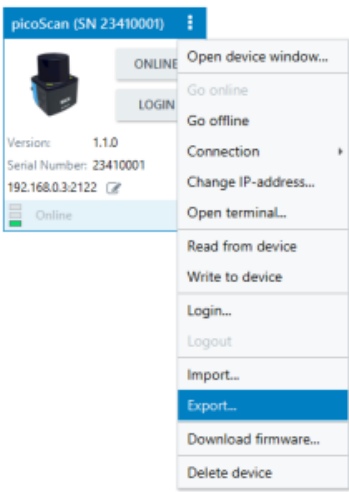
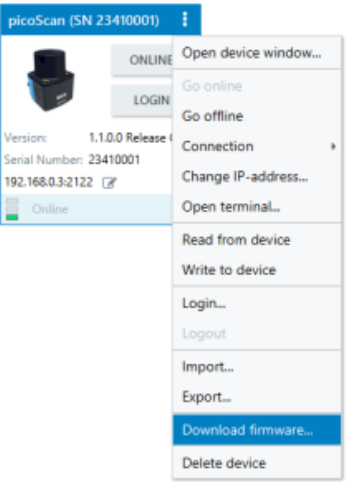
- 1 [General information](#)
- 2 [Firmware V1.4.1](#)
 - 2.1 [Improvements and fixes](#)
 - 2.1.1 [Browser compatibility](#)
 - 2.2 [Known Issues](#)
 - 2.2.1 [Object detection](#)
 - 2.2.2 [Detection history](#)
 - 2.2.3 [Description online help "ignore missing echo"](#)
 - 2.2.4 [Contamination indication](#)
 - 2.2.5 [Possible file error when executing system diagnosis on high load](#)
 - 2.2.6 [Scan range filter \(LMDscandata\)](#)
 - 2.2.7 [Reset to factory settings](#)
- 3 [Firmware V1.4.0](#)
 - 3.1 [New Features](#)
 - 3.1.1 [Firmware-Update via HTTP \(REST\)](#)
 - 3.2 [Improvements and fixes](#)
 - 3.2.1 [2D Object Detection functionality inactive](#)
 - 3.2.2 [GUI optimizations](#)
 - 3.2.3 [API changes](#)
 - 3.3 [Known Issues](#)
 - 3.3.1 [Object detection](#)
 - 3.3.2 [Detection history](#)
 - 3.3.3 [Description online help "ignore missing echo"](#)
 - 3.3.4 [Contamination indication](#)
 - 3.3.5 [Possible file error when executing system diagnosis on high load](#)
 - 3.3.6 [Scan range filter \(LMDscandata\)](#)
 - 3.3.7 [Reset to factory settings](#)
- 4 [Firmware V1.3.0](#)
 - 4.1 [New Features](#)
 - 4.1.1 [2D Object Detection](#)
 - 4.1.2 [Contamination indication](#)
 - 4.1.3 [New scan configuration with 15Hz scanning frequency 1° angular resolution \(profile number 11\)](#)
 - 4.2 [Improvements and fixes](#)
 - 4.2.1 [Multi-Echo available for scan configuration 40Hz/0,125°](#)
 - 4.2.2 [Time stamps in measurement data match the system time for Compact and MSGPACK](#)
 - 4.2.3 [IMU data streaming time out fixed](#)
 - 4.2.4 [LMDscandata improvements](#)
 - 4.2.5 [Interval filter](#)
 - 4.2.6 [Reset output counter telegram](#)
 - 4.2.7 [GUI optimizations](#)
 - 4.2.8 [LED behavior](#)
 - 4.3 [Known Issues](#)
 - 4.3.1 [Object detection](#)
 - 4.3.2 [Detection history](#)
 - 4.3.3 [Description online help "ignore missing echo"](#)
 - 4.3.4 [Contamination indication](#)
 - 4.3.5 [Possible file error when executing system diagnosis on high load](#)
 - 4.3.6 [Scan range filter \(LMDscandata\)](#)
 - 4.3.7 [Reset to factory settings](#)
- 5 [Firmware V1.2.0](#)
 - 5.1 [New Features](#)
 - 5.1.1 [Precision Time Protocol \(PTP\) support](#)
 - 5.1.2 [Native ROS2 \(digital add-on with license\)](#)
 - 5.1.3 [License Manager Support](#)

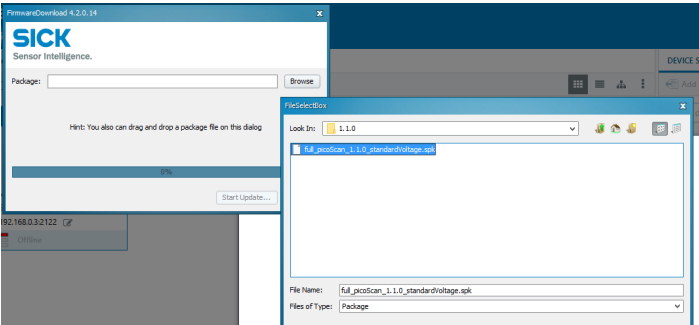
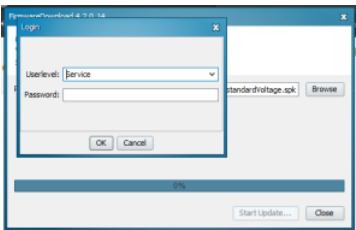

- 5.2 [Improvements and fixes](#)
 - 5.2.1 [Boot time improvement](#)
 - 5.2.2 [Digital output behavior during startup improved](#)
 - 5.2.3 [Improved reflector detection](#)
 - 5.2.4 [Input settings extended](#)
 - 5.2.5 [Known issue "Possible incorrect distance data when using range extension mode" fixed](#)
 - 5.2.6 [Known issue "IMU data streaming does not use system time" fixed](#)
 - 5.2.7 [GUI optimizations](#)
 - 5.2.8 [Removed redundant method "SaveParameters"](#)
- 5.3 [Known Issues](#)
 - 5.3.1 [Possible file error when executing system diagnosis on high load](#)
 - 5.3.2 [IMU data streaming time out](#)
 - 5.3.3 [Reset to factory settings](#)
- 6 [Firmware V1.1.0](#)
 - 6.1 [New Features](#)
 - 6.1.1 [IMU \(inertial measurement unit support\)](#)
 - 6.1.2 [Cloning of communication parameters](#)
 - 6.2 [Improvements and Fixes](#)
 - 6.2.1 [Reflector detection improved](#)
 - 6.2.2 [Lock-up of measurement core in complex measurement scenarios fixed](#)
 - 6.2.3 [Angular error improved](#)
 - 6.2.4 [Bootup time optimization](#)
 - 6.2.5 [Scan segment latency fixed](#)
 - 6.2.6 [Sending command answer on reboot/loading factory defaults](#)
 - 6.2.7 [Input validation of ethernet configuration](#)
 - 6.2.8 [DHCP on static fallback](#)
 - 6.2.9 [GUI optimizations](#)
 - 6.3 [Known Issues](#)
 - 6.3.1 [Possible incorrect distance data when using range extension mode](#)
 - 6.3.2 [Web browser error \(SOPASair\)](#)
 - 6.3.3 [Possible file error when executing system diagnosis on high load](#)
 - 6.3.4 [IMU data streaming time out](#)
 - 6.3.5 [IMU data streaming does not use system time](#)
- 7 [Contact us](#)
 - 7.1 [Product website](#)
 - 7.2 [Support Portal](#)

General information

- V1.xx is a standard firmware for all picoScan150 variants.
- Downgrades to older firmware versions are not possible.
- Purchased features (licenses) are not affected by firmware upgrades.
- A firmware update typically does not affect the active parameter settings.

Update instructions

1	Save and unpack the files on your local hard disk (please use full admin rights on your PC).	
2	Make sure the picoScan150 is connected via Ethernet to your PC and booted up. Power supply must remain stable during the update process.	
3	Use SOPAS ET or AppManager for firmware updates. The following instructions refer to SOPAS ET only.	
4	<p>Search for the connected picoScan150 and drag and drop the device into the SOPAS project.</p> <p>(Recommendation: Save your parameter file (.sopas file) before you start the update.)</p>	
5	Open the settings and choose Download firmware.	

6	Select the firmware package (.spk) and start the update process.	
7	Log-in to the picoScan with user level: Service and password: servicelevel The update procedure may take up to 2 minutes.	
8	Wait until the reboot is completed and the device LED turns green.	
9	Check the SOPAS window for the correct firmware version. Depending on the firmware update, the SOPAS ET device driver may need to be reinstalled by pressing "install device driver".	
10	Before the picoScan150 is used for operation, ensure the device works as expected and that all parameters are set as intended.	
11	In case of uncertainty: <ul style="list-style-type: none"> Set factory defaults in the device (user level "Service") Load your parameter file (.sopas) in the device 	
12	Done	

Firmware V1.4.1

Compatible for: picoScan150

Release date: cw 34/2024

Effective from: S/N 2435xxxx

Improvements and fixes

Browser compatibility

To ensure continued compatibility with browsers based on Chromium version 128 or higher, minor adaptations have been implemented.

Known Issues

Object detection

If the output properties within the field evaluation application are changed then the selected output is assigned correctly. If the field is then deleted, the previously selected output is not reset and still holds the previous configuration.

Detection history

Refresh button only works once. It updates the 'Last Updated' time, but not the table. When you open the page for the first time, the 'Last Updated' time has a default value.

If evaluations are deleted, renamed or newly created with the same names, the current configuration will be inconsistent with the saved detection history and displayed statistics.

Description online help "ignore missing echo"

The online help description for the function "ignore missing echo" is incorrect and describes the behavior if the function is deactivated.

Contamination indication

- The contamination indication segments show "clean", if the measurement is stopped or the device is in stand-by mode.
- Sector dropdown can be used and has no effect, when Accessories is set to "None" or "Weather protection hood".

Possible file error when executing system diagnosis on high load

When the system diagnosis gets called on a device where Particle filter, Moving average filter and Streaming is active an file error could occur. Recommendations: Please deactivate those filter bevor executing the system diagnosis.

Scan range filter (LMDscandata)

When the scan range filter is enabled, the first output beam has a distance value of "0". For example, if 50 beams are output, the first beam shows a distance value of "0," while the remaining 49 beams display the correct distance and RSSI values.

Reset to factory settings

When a device is reset to factory settings, the "IMU Queue Overflow" error may occur but can be safely ignored.

Firmware V1.4.0

Compatible for: picoScan150

Release date: cw 31/2024

Effective from: S/N 2432xxxx

New Features

Firmware-Update via HTTP (REST)

A firmware update can be performed without a graphical user interface (e.g. SOPAS ET or AppManger). This is possible via the REST interface (HTTP). The firmware update takes place in two steps:

1. Transfer the firmware file (.spk) to the device via HTTP (PUT, <ip>/api/update)
2. Triggering the update via HTTP (POST, <ip>/api/RunFirmwareUpdate)
3. The current status of the update can be monitored via (GET, <ip>/api/UpdateState).

Further information can be found in the OpenAPI description.

Improvements and fixes

2D Object Detection functionality inactive

The 2D Object detection function was inactive on some devices with the previous firmware V1.3.0. This behavior is fixed with V1.4.0.

GUI optimizations

The PTP feature was visible in the user interface even on devices that did not have it included in the feature scope.

API changes

The 2D Object Detection application state information (/FieldEvaluationApplicationState) is removed from the API. This information can still be monitored by using /DeviceStatus.

Known Issues

Object detection

If the output properties within the field evaluation application are changed then the selected output is assigned correctly. If the field is then deleted, the previously selected output is not reset and still holds the previous configuration.

Detection history

Refresh button only works once. It updates the 'Last Updated' time, but not the table. When you open the page for the first time, the 'Last Updated' time has a default value.

If evaluations are deleted, renamed or newly created with the same names, the current configuration will be inconsistent with the saved detection history and displayed statistics.

Description online help "ignore missing echo"

The online help description for the function "ignore missing echo" is incorrect and describes the behavior if the function is deactivated.

Contamination indication

- The contamination indication segments show "clean", if the measurement is stopped or the device is in stand-by mode.
- Sector dropdown can be used and has no effect, when Accessories is set to "None" or "Weather protection hood".

Possible file error when executing system diagnosis on high load

When the system diagnosis gets called on a device where Particle filter, Moving average filter and Streaming is active an file error could occur. Recommendations: Please deactivate those filter bevor executing the system diagnosis.

Scan range filter (LMDscandata)

When the scan range filter is enabled, the first output beam has a distance value of "0". For example, if 50 beams are output, the first beam shows a distance value of "0," while the remaining 49 beams display the correct distance and RSSI values.

Reset to factory settings

When a device is reset to factory settings, the "IMU Queue Overflow" error may occur but can be safely ignored.

Firmware V1.3.0

Compatible for: picoScan150

Release date: cw 18/2024

Effective from: S/N 2418xxxx

New Features

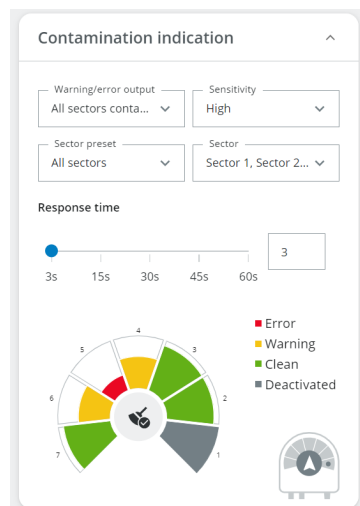
2D Object Detection

The new “Field Evaluation” application allows the definition of up to 48 individual fields (evaluations).

- Fields can be merged into groups
- Groups can be activated by telegram or input signal.
- The field status and application status can be monitored by telegram and output signal.
- Parametrization options:
 - The maximum blanking size and detection time can be individually configured
 - Distance-dependent: Measuring points inside a field are combined depending on distance.
 - Manipulation prevention: Object detection is triggered as soon as monitoring from the device to the field boundary is not sufficiently possible.
 - Ignore missing echo: A missing echo is treated as if it were a measuring point in the field.
 - Evaluation modes:
 - Blanking: Field evaluation reacts to all measurement points
 - Reflector: Field evaluation reacts only to measurement points marked as reflector
- Detection history can be activated with up to 200 entries. The oldest entry will be deleted in case of a new detection.

Contamination indication

The contamination indication evaluates 7 sectors regarding their contamination levels. The result can be monitored in the GUI, via digital outputs or via telegram. The response time can be adjusted.



New scan configuration with 15Hz scanning frequency 1° angular resolution (profile number 11)

This scan configuration can be used to retrofit e.g. TiM351 or TiM551.

Improvements and fixes

Multi-Echo available for scan configuration 40Hz/0,125°

Scan configuration 40Hz/0,125° (profile 10) also provides all available echoes. Until now, only one echo has been supported.

Time stamps in measurement data match the system time for Compact and MSGPACK

The start and stop time stamp of each scan segment in a Compact and MSGPACK match the system time.

IMU data streaming time out fixed

In rare cases, the IMU data streaming paused for ~1 second.

LMDscandata improvements

- An applied scan range filter limits the LMDscandata output (no zero values outside scan range will be transmitted).
- The device status information is added.
- The scanning frequency information is added.

Interval filter

The default and minimum value have been changed from 1 to 2.

Reset output counter telegram

The telegram mResetCounter no longer sets an IO port to default state.

GUI optimizations

Notifications added for better user experience.

LED behavior

Fixed LED indication on device state "RecoverableError".

Known Issues

Object detection

If the output properties within the field evaluation application are changed then the selected output is assigned correctly. If the field is then deleted, the previously selected output is not reset and still holds the previous configuration.

Detection history

Refresh button only works once. It updates the 'Last Updated' time, but not the table. When you open the page for the first time, the 'Last Updated' time has a default value.

If evaluations are deleted, renamed or newly created with the same names, the current configuration will be inconsistent with the saved detection history and displayed statistics.

Description online help "ignore missing echo"

The online help description for the function "ignore missing echo" is incorrect and describes the behavior if the function is deactivated.

Contamination indication

- The contamination indication segments show "clean", if the measurement is stopped or the device is in stand-by mode.
- Sector dropdown can be used and has no effect, when Accessories is set to "None" or "Weather protection hood".

Possible file error when executing system diagnosis on high load

When the system diagnosis gets called on a device where Particle filter, Moving average filter and Streaming is active an file error could occur. Recommendations: Please deactivate those filter bevor executing the system diagnosis.

Scan range filter (LMDscandata)

When the scan range filter is enabled, the first output beam has a distance value of "0". For example, if 50 beams are output, the first beam shows a distance value of "0," while the remaining 49 beams display the correct distance and RSSI values.

Reset to factory settings

When a device is reset to factory settings, the "IMU Queue Overflow" error may occur but can be safely ignored.

Firmware V1.2.0

Compatible for: picoScan150

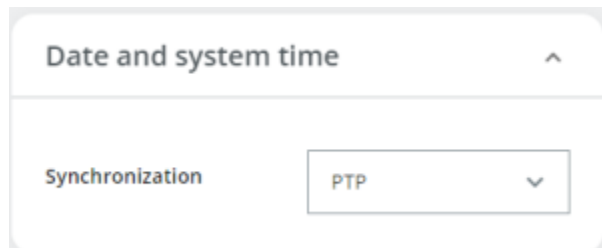
Release date: cw 09/2024

Effective from: S/N 2410xxxx

New Features

Precision Time Protocol (PTP) support

PTP is a synchronization mechanism ensuring precise coordination of data acquisition across multiple LiDAR units or other clients within a network. By synchronizing the internal clocks of devices, PTP enables accurate time-stamping of measurements, crucial for precise spatial mapping and object detection. This synchronization minimizes latency and ensures reliable data fusion in applications like autonomous vehicles or industrial automation.



Native ROS2 (digital add-on with license)

The device offers native ROS2 support using Data Distribution Service (DDS) to enable efficient real-time communication and optimizes interoperability with ROS2 standards. To enable the feature the corresponding license needs to be installed via the License Manager, the data output for MSGPACK, Compact or LMDscandata needs to be disabled and *Native ROS2* needs to be enabled with the telegram "RosConnectEnable".

License Manager Support

The License Manager is integrated and can be accessed via <http://192.168.0.1/#/license>.

SICK LicenseManager

License Overview

Container Serial No.

130-873345501

Firmcode 6001264

(de-)activate

License Name	License Version	Product Code	Unit Counter	Valid Until	License Quantity
PICOSCAN FOG FILTER	0	1060	0	n/a	1

Improvements and fixes

Boot time improvement

The boot time has been optimized. The device is ready (green LED is on and data output is available) after typ. 9.5 seconds.

Digital output behavior during startup improved

All outputs show the same electrical levels during the device startup phase.

Improved reflector detection

Retroreflectors can cause a measurement point at twice the distance. Edge hits with a second target could cause the first target to be incorrectly recognized as a reflector. This behavior has now been improved.

Input settings extended

Maximum debounce time increased to 1000ms.

Known issue "Possible incorrect distance data when using range extension mode" fixed

In rare conditions the scaling factor in the compact format was set wrongly.

Known issue "IMU data streaming does not use system time" fixed

The IMU data stream contains the system time stamp. It does update if a specific system time is set by the user, by an NTP server or by PTP.

GUI optimizations

- Updated picoScan sensor model in the scan view.
- Lowered GUI refresh time after a reboot to 10s.
- Only enabled user level are now shown in the login dropdown.
- Current configured angular resolution is not rounded.
- Fixed some visual flaws and wording.
- Fixed wrong appearance of distance measuring tool.

Removed redundant method "SaveParameters"

Parameters are stored permanently by applying the method "mEEwriteall".

Known Issues

Possible file error when executing system diagnosis on high load

When the system diagnosis gets called on a device where Particle filter, Moving average filter and Streaming is active an file error could occur. Recommendations: Please deactivate those filter bevor executing the system diagnosis.

IMU data streaming time out

In rare cases, the IMU data streaming pauses ~1 second. The data stream continuous afterwards with the latest data.

Reset to factory settings

When a device is reset to factory settings, the "IMU Queue Overflow" error may occur but can be safely ignored.

Firmware V1.1.0

Compatible for: picoScan150

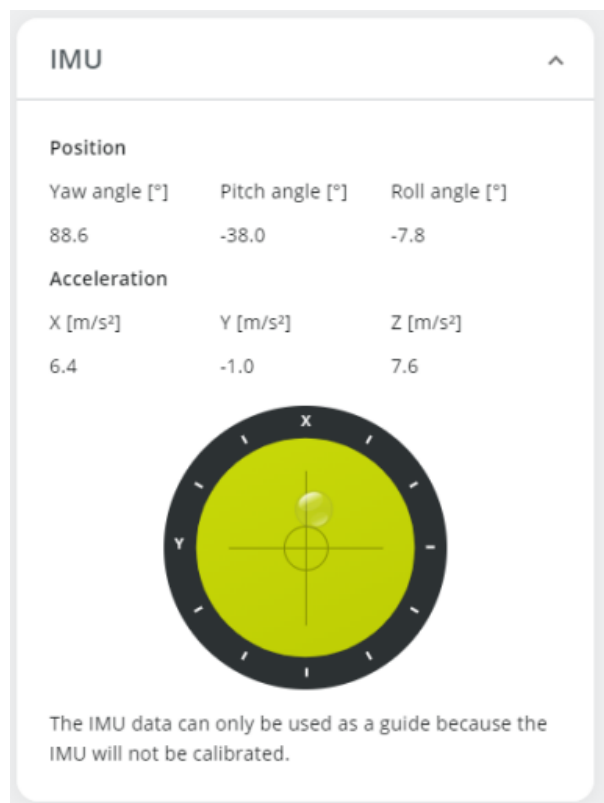
Release date: cw 50/2023

Effective from: S/N 2350****

New Features

IMU (inertial measurement unit support)

IMU data is enabled with this release. IMU data is available in compact format. The following info is shown in the UI.



IMU type: BOSCH BHI160B

Technical data: <https://www.bosch-sensortec.com/products/smart-sensors/bhi160b/>

Cloning of communication parameters

Every system plug has a cloning memory on board. Communication parameters (IP-address, subnet mask, gateway) are stored automatically to the system-plug on saving parameters permanently. Parameters will be loaded on bootup.

This enables a faster device exchange in case the system plug remains within the application as the communication parameters stay the same.

Improvements and Fixes

Reflector detection improved

Detection of reflectors in close ranges has been improved.

- Core: typ. $0.3 \text{ m} \leq x \leq 25 \text{ m}$
- Prime: typ. $0.3 \text{ m} \leq x \leq 60 \text{ m}$

- Pro: typ. **0.3 m** $\leq x \leq 120$ m

Additionally on target edges, no false positive reflector flag occur anymore.

This improvement only applies to devices that have been calibrated in the production line.

Lock-up of measurement core in complex measurement scenarios fixed

In rare cases, complex measurement scenarios with many dynamic targets could lead to a temporary device error.

Angular error improved

Devices showed an angular error depending on the used dynamic sensing profile.

This improvement only applies to devices that have been calibrated in the production line.

Bootup time optimization

Bootup time has been optimized to typ. 11 seconds.

Scan segment latency fixed

Occasionally, scan segments were transmitted with a delay of one segment. This has been fixed.

Sending command answer on reboot/loading factory defaults

When sending a reboot or factory-defaults command to the device, it performed a reboot immediately. It did not send an answer to the command. Now, the device sends an answer before executing those commands.

Input validation of ethernet configuration

It has been possible to set an invalid ethernet configuration. This has been fixed now.

DHCP on static fallback

Static DHCP fallback IP address works as expected.

GUI optimizations

General UI improvements.

Improved user experience with Microsoft Edge and Firefox.

Known Issues

Possible incorrect distance data when using range extension mode

The issues can only occur if the following conditions apply:

- Using a picoScan150 Pro-1 (Part no.: 1134610)
- Use of the Compact output data format
- Range extension setting is active in combination with scan profile 1,2,4,5 or 7
- Measure on a highly reflective target at a distance > 65m

The issue can be triggered by switching the scan configuration (changing the combination of scan frequency and angular resolution) or toggling the range extension mode. However, this effect can not be observed via the web browser, only within the compact data format output.

In general, it is recommended to read the distance scaling factor from the data format and scale the data accordingly.

If the range extension mode is active, the distance scaling factor should be to 2 otherwise it should be 1. If you notice a deviation, the effect can be corrected by toggling the sensitivity mode (Command: SensitivityMode).

Web browser error (SOPASair)

When SOPASair (web browser) is used, the browser tab consumes memory over time. This can lead to an "Out of memory" error of the browser. A restart of the browser will bring up the device window again.

Possible file error when executing system diagnosis on high load

When the system diagnosis gets called on a device where Particle filter, Moving average filter and Streaming is active an file error could occur. Recommendations: Please deactivate those filter bevor executing the system diagnosis.

IMU data streaming time out

In rare cases, the IMU data streaming pauses ~1 second. The data stream continuous afterwards with the latest data.

IMU data streaming does not use system time

The IMU data stream contains a time stamp (counter starts with boot up). It does not update if a specific system time is set by the user or by an NTP server.

Contact us

Product website

- <https://www.sick.com/picoScan100>

Support Portal

- <https://support.sick.com/>