v3.0.1 Changelog

Firmware v3.0.1 for all Ouster sensors

Ouster

Feb 09, 2023

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1 Supported Products

The current firmware is supported on the following Ouster products:

- Rev 7 - P/N 860-105xxx-07
  - OS0,
  - OS1,
  - OSDome

2 Firmware Changelog

Version v3.0.1
Date 2023-02-08
Description

"Updated"

- `beam_to_lidar_transform` for Rev7 OS0 and OS1 sensors.
- `lidar_to_sensor_transform` for Rev7 OSDOME sensors.

"Added"

- New HTTP Command to configure speed override (Refer to API User Manual)

Version v3.0.0
Date 2023-01-26
Description

```
This firmware version is only compatible on OS0/OS1/OSDome Hardware versions Rev7 and later. Please refer to FW 2.x or prior if you have OS0/OS1/OS2 Hardware versions Rev 6 and prior generation sensors.
```

"Fixed"

- Bug Fix in High Input Voltage Alert behavior.
- Bug in keep-alive behavior for HTTP 1.1.
- Bug fix in get_lidar_data_format.

"Improvements"

- Improved point cloud behavior due to enhanced retro-reflector range accuracy improvement.

"Changed"

- Default value of udp_profile_lidar will be set to single return profile. For more information refer to Single Return Profile.

"Added"

- 1024x20 and 2048x10 lidar modes with dual returns.
- Shot limiting status flags and thermal shutdown.
- Azimuth laser masking.
- Two new Signal multiplier modes - 0.25 and 0.5 Mode.
- New alerts, refer to alerts-error-table.

Version v2.4.0

Date 2022-08-31

Description

"Fixed"

- Bug Fix in High Input Voltage Alert behavior.
- Range aliasing improvement.
- Bug in keep-alive behavior for HTTP 1.1.
- **Critical bug fix:** Heavy vibration can trigger the sensor to reset without any alerts, causing an interruption to the data stream. The data stream will resume in approximately 60s. Note: Only affects FW version 2.3 and later.

"Changed"

- pixel_shift_by_row value updated.
- Refer to **alerts-and-errors** table, this has been updated to provide more information on each individual alert.

"Added"

- Add the following HTTP Commands to help configure and read the sensor config parameters (Refer to **sensor-commands** for more information): 1. GET /api/v1/sensor/config. 2. POST /api/v1/sensor/config.
- New optional argument for both TCP/HTTP commands "summary" for `get_alerts` command.

  Note: Valid uses of get_alerts:

  - get_alerts 1 (1 is the value of the cursor).
  - get_alerts summary.
  - get_alerts 2 summary (2 is the value of the cursor).

Invalid uses of get_alerts:

- get_alerts summary 2.

"Removed"

- `auto_start_flag` has been deprecated.
- `udp_ip` has been deprecated.
- `base_pn`, `base_sn` and `proto_rev` have been deprecated.

Version v2.3.1

Date 2022-06-03

Description

"Fixed"

- Bug Fix in RNG19_RFL8_SIG16_NIR16 mode.

"Added"

- Add support for new PN's.

Version v2.3.0

Date 2022-04-15

Description

"Added"

- Additional Channel Data Profiles (*single-return*, *low-return*) were added as part of the Configurable Data Packet Format, refer to *configurable-data-packet-format*.
- Additional options for config parameter udp_profile_lidar, refer to *commands-get_config_param*.
- New TCP command get_telemetry, refer to TCP Section of the firmware or the API user manual.

"Changed"

- Reflectivity and Signal value is now from 1 to 255. 0 correspond to an invalid reflectivity and Signal value (similar as Range).

"Fixed"

- Fixed startup packet drop behavior (5b alert).

Version v2.2.1

Date 2022-02-17

Description

"Fixed"

- Fixed point cloud detection on a subset of sensors

Version v2.2.0

Date 2021-12-18

Description

"Added"

- Add support for Configurable Data Packet Format
- Add support for Dual Returns mode

"Changed"

- Update Sensor Web UI
- Update TCP command get_lidar_data_format
- Update TCP command get_sensor_info

Version v2.1.3

Date 2021-10-22

Description

"Added"

- Added PN support

Version v2.1.2

Date 2021-07-16

Description

"Added"

- Add support for minor hardware revisions

Version v2.1.1

Date 2021-06-21

Description

"Added"

- Add support for Calibrated Reflectivity
- Add Config UI to sensor web page (Beta)
- Add signal multiplier modes to increase signal strength in the enabled azimuth window for gen2 sensors only
- Add alerts for motor speed
- Add alerts for unexpected sensor state transition
- Improve OS2 cold start to -20˚C
- Improve OS2 signal strength by 16%

"Removed"

- Delete TCP command set_data_dst_ip
- Delete TCP command get_data_dst_ip
- Delete TCP command set_udp_port_lidarAdded PN support for new turntable boards
- Delete TCP command set_udp_port_imu
- Delete TCP command get_lidar_mode
- Delete TCP command set_lidar_mode
- Delete TCP command get_config_file_path
- Delete TCP command set_auto_start_flag
- Delete TCP command get_auto_start_flag
- Delete TCP command get_watchdog_status

"Changed"

- Change the Reflectivity values in the packets from 16-bit to 8-bit

"Fixed"

- Fixed phase locked motor control to handle out-of-bounds motor velocity
- Slow time sync on initial boot with PTP
- Fixed azimuth_window parameter logic behavior

3 API Changelog

Version v3.0.1

Date 2023-02-08

Description

"Added"

- New HTTP Command to configure speed override (Refer to API User Manual)

Version v3.0.0

Date 2023-01-26

Description

"Fixed"

- Bug in keep-alive behavior for HTTP 1.1.

Version v2.4.0

Date 2022-08-31

Description

"Added"

- New HTTP Commands to help configure and read sensor config parameters (Refer HTTP Guide for more information).
  - GET /api/v1/sensor/config
  - POST /api/v1/sensor/config
- New optional argument for both TCP/HTTP commands <MODE> = "summary" (Refer to HTTP Guide for more information).

"Removed"

- Previously deprecated parameters that have now been removed:
  - `auto_start_flag`
  - `udp_ip`
  - `base_pn`, `base_sn` and `proto_rev`

"Fixed"

- Pixel shift by row has been updated. Please refer to (Refer HTTP Guide.
- Bug in keep-alive behavior for HTTP 1.1.

Version v2.3.0

Date 2022-04-15

Description

"Added" Refer to HTTP Guide.

- Add additional options for config parameter udp_profile_lidar.
- Add new TCP command get_telemetry.
- Add the following GET HTTP Commands:
  - /api/v1/sensor/metadata/sensor_info
  - /api/v1/sensor/metadata/lidar_data_format
  - /api/v1/sensor/metadata/beam_intrinsics
  - /api/v1/sensor/metadata/imu_intrinsics
  - /api/v1/sensor/metadata/lidar_intrinsics
  - /api/v1/sensor/metadata/calibration_status
  - /api/v1/sensor/metadata
  - /api/v1/sensor/telemetry
  - /api/v1/time/sensor
  - /api/v1/sensor/alerts

Version v2.2.0

Date 2021-12-18

Description

"Added"

- Add config parameter udp_profile_lidar, udp_profile_imu and their documentation
- Add initialization_id to get_sensor_info TCP command
- Add columns_per_packet to get_config_param TCP command

"Changed"

- The fields base_pn, base_sn, and proto_rev in get_sensor_info TCP command have been cleared

Version v2.1.3

Date 2021-10-22

Description

"Added"

- Added PN support

Version v2.1.2

Date 2021-07-16

Description

"Added"

- Add support for minor hardware revisions

Version v2.1.1

Date 2021-06-21

Description

"Added"

- Add configuration parameter `signal_multiplier` and its documentation

"Removed"

- Remove deprecated TCP command `set_data_dst_ip`
- Remove deprecated TCP command `get_data_dst_ip`
- Remove deprecated TCP command `set_udp_port_lidar`
- Remove deprecated TCP command `set_udp_port_imu`
- Remove deprecated TCP command `get_lidar_mode`
- Remove deprecated TCP command `set_lidar_mode`
- Remove deprecated TCP command `get_config_file_path`
- Remove deprecated TCP command `set_auto_start_flag`
- Remove deprecated TCP command `get_auto_start_flag`
- Remove deprecated TCP command `get_watchdog_status`

"Changed"

- Fixed azimuth_window parameter logic behavior. Notable changes:
- [0,0] now outputs only a single column instead of all columns.
- [1,2] results in sensor startup failure and an alert because there are no valid output columns.

Version v2.0.0

Date 2020-11-20

Description

"Added"

- Add TCP command `get_lidar_data_format`.
- Add in `azimuth_window` documentation.
- Add in commands `phase_lock_enable` and `phase_lock_offset` and their documentation.
- Add in verbose responses to parameter validation for TCP commands.
- Add in command `save_config_params` which supersedes the deprecated command `write_config_txt`, which will be deleted in future firmware.
- Add in command `get_config_param active` in favor of the deprecated command `get_config_txt`, which will be deleted in future firmware.
- Add in new STANDBY and WARMUP statuses.
- Add in parameter `operating_mode` in favor of the deprecated parameter `auto_start_flag`, which will be deleted in future firmware.
- Add in parameter `udp_dest` in favor of the deprecated parameter `udp_ip`, which will be deleted in future firmware. This is to be consistent with the `set_udp_dest_auto` parameter and to reflect that valid values can be hostnames in addition to ip addresses.
- Add in HTTP GET `api/v1/diagnostic/dump` endpoint.

"Removed"

- Remove deprecated TCP command `set_udp_ip`.

"Changed"

- TCP command `get_beam_intrinsics` now returns: 1) `lidar_origin_to_beam_origin_mm`, distance between the lidar origin and the beam origin in millimeters; and 2) beam altitude and azimuth angle arrays with padded zeros removed.
- `azimuth_window` parameter now in terms of millidegrees and implemented CCW.
- Deprecate `api/v1/system/time/` HTTP API and its sub-APIs and replace with `api/v1/time/`

Version v1.13.0

Date

Description

"Added"

- Add TCP command `set_udp_dest_auto`
- TCP command `get_alerts`, includes more descriptive errors for troubleshooting

"Changes"

- Packet Status now called Azimuth Data Block Status and is calculated differently
- Packets with bad CRC are now dropped upstream and replaced with `0` padded packets to ensure all packets are sent for each frame.
- Return format of TCP command `get_time_info` updated

"Removed"

- Removed reference to window_rejection_enable

Version v1.12.0

Date

Description

"Changes"

- Corrected IMU axis directions to match Sensor Coordinate Frame.
- Sensor Coordinate Frame section of sensor user manual for details on sensor coordinate frame. This change inverts IMU X, Y, and Z axis relative to v1.11.0.

Version v1.11.0

Date 2019-03-25

Description

- Add section on HTTP API commands.
- TCP Port now hard-coded to 7501; port is no longer configurable.
- Update to SYNC_PULSE_IN and MULTIPURPOSE_IO interface and configuration parameters (see details below).

Configuration parameters name changes:

- `pps_in_polarity` changed to `sync_pulse_in_polarity`
- `pps_out_mode` changed to `multipurpose_io_mode`
- `pps_out_polarity` changed to `sync_pulse_out_polarity`
- `pps_rate` changed to `sync_pulse_out_frequency`
- `pps_angle` changed to `sync_pulse_out_angle`
- `pps_pulse_width` changed to `sync_pulse_out_pulse_width`

New configuration parameters:

- `nmea_in_polarity`
- `nmea_ignore_valid_char`
- `nmea_baud_rate`
- `nmea_leap_seconds`

Configuration parameters option changes:

- timestamp_mode - `TIME_FROM_PPS` changed to `TIME_FROM_SYNC_PULSE_IN`

- multipurpose_io_mode (formerly pps_out_mode) - `OUTPUT_PPS_OFF` changed to `OFF` - `OUTPUT_FROM_PPS_IN_SYNCED` changed to `OUTPUT_FROM_SYNC_PULSE_IN` - Removed `OUTPUT_FROM_PPS_DEFINED_RATE` - Added `INPUT_NMEA_UART`

TCP command changes:

- **Added commands:**
  - `get_time_info`
- **Changed commands:**
  - `get_config_txt` (returned dictionary keys match parameter changes)
- **Removed commands:**
  - `set_pps_in_polarity`
  - `get_pps_out_mode`
  - `set_pps_out_mode`
  - `get_timestamp_mode`
  - `set_timestamp_mode`

Polarity changes: * `sync_pulse_in_polarity` was corrected to match parameter naming. * `sync_pulse_out_polarity` was corrected to match parameter naming.

Version v1.10.0

Date 2018-12-11

Description

"Added"

- Add `get_alerts`, `pps_rate` and `pps_angle` usage commands and expected output.

"Removed"

- Remove all references of `pulse_mode`.
- Remove TCP commands prior to v1.5.1.

Version v1.9.0

Date 2018-10-24

Description

"Changes"

- No TCP command change.

Version v1.8.0

Date 2018-10-11

Description

- `get_sensor_info` command gives `INITIALIZING`, `UPDATING`, `RUNNING`, `ERROR` and `UNCONFIGURED` status.

Version v1.7.0

Date 2018-09-05

Description

"Changes"

- No TCP command change.

Version v1.6.0

Date 2018-08-16

Description

"Added"

- Add `get_sensor_info` command gives `prod_line` info.