

Pulse-40 IMU

Product Change Notice

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This Product Change Notice describes the Pulse-40 OEM hardware revision 2. It summarizes the functional changes, integration impacts, mechanical and electrical considerations, and part-number transition for existing and future orders.

Pulse-40 hardware revision 1 remains in full production and continues to be available for existing customers and ongoing programs. **Migration to Pulse-40 OEM hardware revision 2 is optional.**

This change does not affect Pulse-40 IMUs integrated into OEM INS solutions, such as Navsight.

1. Description of the change

SBG Systems is introducing a new hardware revision of the Pulse-40 OEM. This revision includes the following changes:

- Updated manufacturing process supporting higher volume and shorter lead times
- Updated gyroscope architecture with improved inertial performance.
- Extended gyroscope input range up to $\pm 4000^\circ/\text{s}$.
- Integrated 3-axis magnetometer.
- Updated EMC design to increase immunity to electromagnetic disturbances.
- Updated mechanical and electronic design for improved operation under vibration.
- Gyroscope motion to output latency reduced to 1.5 ms.
- Locating pin interfaces added for mounting repeatability.
- Embedded vibration analysis with FFT spectrum up to 8 kHz.

The mechanical envelope remains unchanged. The product mass increases by approximately 7 g compared with the previous hardware revision.

2. Performance update

The main specifications are listed below:

	Accelerometer	Gyroscope
	±40 g	±4000 °/s
Scale factor error	500 ppm	500 ppm
Non-linearity (ppm of FS)	25 ppm	25 ppm
Long-term bias repeatability	1250 µg	150 °/h
In-run bias instability	6 µg	0.5 °/h
Random walk	0.02 m/s/√h	0.08 °/√h
Noise spectral density	40 µg/√Hz	5.0 °/h/√Hz
Misalignment	1 mrad	1 mrad
Orthogonality	0.07 mrad	0.07 mrad
Vibration Rectification Coefficient (VRC)	0.03 mg/g ²	0.02 °/h/g ²
Bandwidth	250 Hz	250 Hz

A 499°/s gyroscope range variant is also available and is not export controlled.

Specifications are preliminary and based on initial qualification results. They may be revised as additional ageing data and larger sample statistics become available.

3. Impact of change

The new hardware revision was designed to minimize integration changes for existing Pulse-40 users. Customers migrating from Pulse-40 hardware revision 1 to Pulse-40 OEM hardware revision 2 shall review the points below.

Electrical or mechanical adaptations may be required depending on the existing host design.

3.1 Change of the center of measurement

The center of measurement has slightly shifted. Integrators should account for this offset when processing IMU data.

3.2 Power supply

The Pulse-40 OEM hardware revision 2 is specified for operation from a 3.3 VDC supply. Pulse-40 hardware revision 1 supported a 3.3 VDC to 5.0 VDC supply range.

Revision 2 tolerates 5 VDC for transition purposes. Operation at 5 VDC increases internal power dissipation and shall be assessed against the integrator's thermal design. For new integrations, use a 3.3 VDC supply.

3.3 Mounting interfaces

The Pulse-40 OEM hardware revision 2 uses two customer-accessible screws for attachment to the host mechanical interface. The two remaining screws close the IMU cover and are sealed; they shall not be used for customer mounting.

Pulse-40 hardware revision 1 used four mounting screws. On revision 2, the two removed mounting positions may be left unused or used as locating-pin interfaces to improve mounting repeatability and alignment with the host reference frame.

3.4 Connector update

The recommended board-to-board mating connector has been updated. The change is limited to the connector height variant. The Pulse-40 OEM hardware integration documentation, available on the SBG Support Center, provides the recommended mating connector reference.

3.5 Contact underneath

Pulse-40 hardware revision 1 included mechanical stand-off features to maintain clearance between the unit and the surface underneath.

Pulse-40 OEM hardware revision 2 does not include the same stand-off geometry. As a result, no electrical contact shall be made with components or conductive surfaces located underneath the unit, except for authorized ground contact.

If the host interface includes conductive surfaces below the IMU, an insulating layer shall be used to prevent unintended contact.

3.6 Weight change

Pulse-40 OEM hardware revision 2 weighs 18.7 g, approximately 7 g more than hardware revision 1. This increase is outside the previous mass tolerance and should be assessed by the integrator.

4. Part-number transition

4.1 Part-number equivalence table

The following table lists the Pulse-40 OEM hardware revision 2 variants that can be used as alternatives to the current hardware revision 1 references:

Old P/N	Old Product name	HW rev.	New P/N	New Product Name	HW rev.
100-2618	Pulse-40 V1 - Standard Range	1	100-4726	Pulse-40 OEM Standard Range	2
100-2619	Pulse-40 V1 - High Range	1	100-4708	Pulse-40 OEM High Range	2

4.2 Pulse-40 hardware revision 1 life status

Pulse-40 hardware revision 1 remains in full production and continues to be available for existing customers and ongoing programs. It is **not recommended for new designs**.

Customers are encouraged to migrate to Pulse-40 OEM hardware revision 2 for new integrations and production ramp-up.

4.3 Pulse-40 OEM hardware revision 2 availability

Pulse-40 OEM hardware revision 2 is already available for orders.

5. Impact on Pulse accessories

Pulse-40 hardware revision 1 accessories remain compatible and can be used as-is: both the development board and the serial interface board are compatible with Pulse-40 OEM hardware revision 2.



The Pulse-40 OEM should not be screwed directly onto the development board, as this may create mechanical stress and damage the connector. If screw mounting is required, washers should be used as additional stand-offs. Refer to the SBG Support Center for details.

6. Point of contact

For questions related to electrical integration, mechanical mounting, qualification scope, or order transition, please contact SBG Systems support.

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