



# Navigation-grade MEMS Accelerometers

**TAA-308EC**

**TAA-315EC**

**TAA-340EC**



The **Inertial Labs MEMS TAA-308EC, TAA-315EC and TAA-340EC** are the third generation of the Inertial Labs MEMS, three-axis high-precision accelerometers released in a stand-alone design. The **TAA-308EC, TAA-315EC and TAA-340EC** are revolutionary, compact, self-contained, strapdown, Navigation-grade Accelerometers that measure linear accelerations with high precision due to their unique design and developed by Inertial Labs over last 20 years several significant know-know and technics in calibrations of inertial sensors. Measured by TAA Accelerometers accelerations are determined with low noise and very good repeatability for both motionless and dynamic applications.



The **Inertial Labs TAA-308EC, TAA-315EC and TAA-340EC** models are the breakthrough, fully integrated inertial sensors that combines the latest MEMS sensor technologies and can measure accelerations with  $\pm 8g$ ,  $\pm 15g$  or  $\pm 40g$  measurement ranges.

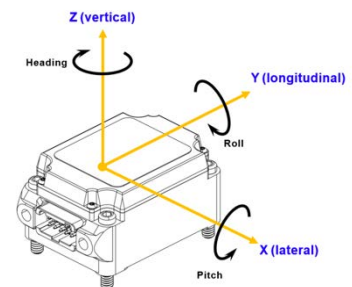
Fully calibrated, temperature compensated, mathematically aligned to an orthogonal coordinate system, the TAA accelerometer's Bias in-run stability is up to 0.005 mg at  $\pm 8g$  dynamic range with very low noise and high reliability.

Continuous Built-in Test (BIT), configurable communications protocols and flexible input power requirements make the **Inertial Labs TAA Accelerometers** easy to use in a wide range of higher order integrated system applications.



The **Inertial Labs TAA Accelerometers** models were designed for applications, like:

- ❖ Autonomous vehicles
- ❖ Antenna and Line of Sight Pointing systems
- ❖ Passengers trains acceleration / deceleration and jerking systems
- ❖ Motion Reference Units (MRU) and Motion Control Sensors (MCS)
- ❖ Gimbals, EOC/IR, platforms orientation and stabilization
- ❖ GPS-Aided Inertial Navigation Systems (INS)
- ❖ Attitude and Heading Reference Systems (AHRS)
- ❖ Guidance and Navigation
- ❖ UAV & AUV/ROV navigation and control



| Parameter                                        | TAA-308EC      | TAA-315EC      | TAA-340EC      |
|--------------------------------------------------|----------------|----------------|----------------|
| Measurement range                                | $\pm 8g$       | $\pm 15g$      | $\pm 40g$      |
| Accelerometers Bias in-run stability             | 0.003 mg       | 0.005 mg       | 0.01 mg        |
| Accelerometers Bias error over temperature range | 0.2 mg         | 0.3 mg         | 0.5 mg         |
| Accelerometers Bias One Year repeatability       | 0.35 mg        | 0.45 mg        | 0.55 mg        |
| Accelerometers Noise (Velocity Random Walk)      | 0.01 m/sec/Vhr | 0.02 m/sec/Vhr | 0.03 m/sec/Vhr |

## TAA-308EC, TAA-315EC, TAA-340EC Specifications

| Parameter                                   | Units     | TAA-308EC                                    | TAA-315EC          | TAA-340EC          |
|---------------------------------------------|-----------|----------------------------------------------|--------------------|--------------------|
| Output signals                              |           | Three-axis Accelerations, Temperature, Synch |                    |                    |
| Color of Enclosure                          |           | Gold                                         |                    |                    |
| Update rate                                 | Hz        | 4000                                         |                    |                    |
| Output data rate                            | Hz        | 4000                                         |                    |                    |
| Start-up time                               | sec       | <0.2                                         |                    |                    |
| Full Accuracy Data (Warm-up Time)           | sec       | <1                                           |                    |                    |
| Latency*                                    | milli sec | <0.25                                        |                    |                    |
| Performance                                 | Units     | TAA-308EC                                    | TAA-315EC          | TAA-340EC          |
| Measurement range                           | g         | ±8                                           | ±15                | ±40                |
| Bandwidth (-3dB)                            | Hz        | 260                                          | 260                | 260                |
| Data update rate                            | Hz        | 4000                                         | 4000               | 4000               |
| Bias in-run stability (Allan Variance)      | mg        | 0.003                                        | 0.005              | 0.01               |
| Bias residual error (in temp. range, RMS)   | mg        | 0.2                                          | 0.3                | 0.5                |
| Bias one-year repeatability                 | mg        | 0.35                                         | 0.45               | 0.55               |
| SF accuracy (over temperature range)        | ppm       | 50                                           | 100                | 200                |
| SF one-year repeatability                   | ppm       | 200                                          | 400                | 550                |
| Noise. Velocity Random Walk (VRW)           | m/sec/vhr | 0.01                                         | 0.02               | 0.03               |
| Non-linearity                               | ppm       | 100                                          | 100                | 100                |
| Axis misalignment (STD)                     | mrad      | 0.2                                          | 0.2                | 0.2                |
| Environment                                 | Units     | TAA-308EC                                    | TAA-315EC          | TAA-340EC          |
| Mechanical shock                            | g, msec   | 40 g, 11 ms                                  |                    |                    |
| Vibration                                   | g RMS, Hz | 8, 10 – 2000                                 |                    |                    |
| Operating temperature                       | deg C     | -40 to +85                                   |                    |                    |
| Storage temperature                         | deg C     | -50 to +90                                   |                    |                    |
| Low pressure                                | Pa, min   | 1750, 30                                     |                    |                    |
| Humidity                                    | %         | up to 95                                     |                    |                    |
| MTBF (G <sub>M</sub> @+65degC, operational) | hours     | 100,000                                      |                    |                    |
| Life time (operational)                     | years     | 10                                           |                    |                    |
| Life time (storage)                         | years     | 17                                           |                    |                    |
| Electrical                                  | Units     | TAA-308EC                                    | TAA-315EC          | TAA-340EC          |
| Supply voltage                              | V DC      | 4.5 - 36                                     |                    |                    |
| Power consumption                           | Watts     | 0.3                                          |                    |                    |
| Output Interface                            | -         | RS-422 + discrete IOs                        |                    |                    |
| Output data format                          | -         | Binary, ASCII, KERNEL                        |                    |                    |
| Physical                                    | Units     | TAA-308EC                                    | TAA-315EC          | TAA-340EC          |
| Size                                        | mm        | 28.5 x 19.5 x 13.6                           | 28.5 x 19.5 x 13.6 | 28.5 x 19.5 x 13.6 |
| Weight                                      | grams     | 13                                           | 13                 | 13                 |

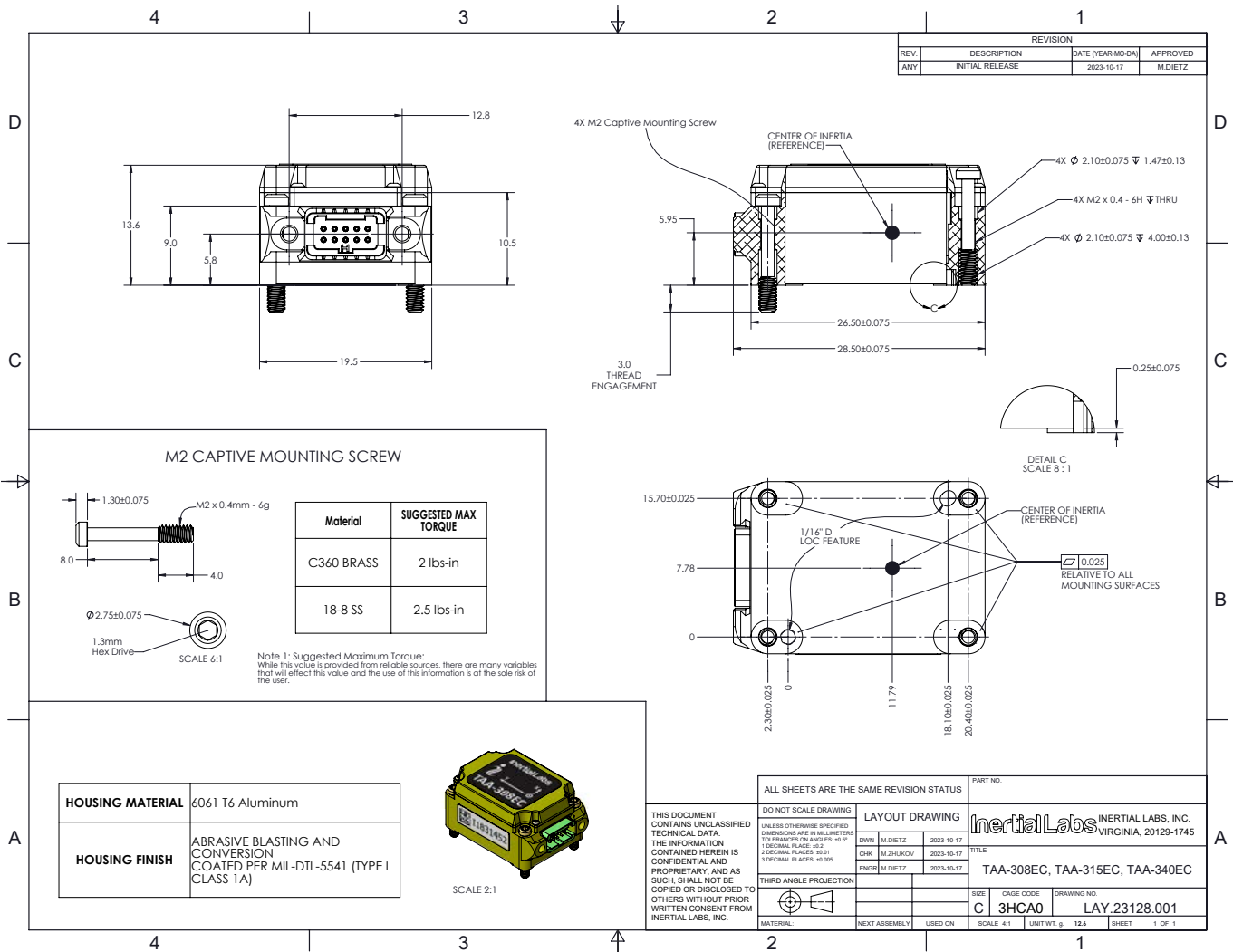
\*Note: Data latency is the time between the moment the sensors are sampled and the moment the IMU starts transmitting the frame with those sensor data. This time does not include the transmission time.

### TAA accelerometers Product Code structure

| Model     | Measurement range | Calibration | Connector | Color | Version | Interface |
|-----------|-------------------|-------------|-----------|-------|---------|-----------|
| TAA-308EC | A8                | TA          | C20       | A     | V1      | 2         |
| TAA-315EC | A15               |             |           |       |         |           |
| TAA-340EC | A40               |             |           |       |         |           |

Example: TAA-308EC-A8-TA-C20-A-V1.2 or TAA-315EC-A15-TA-C20-A-V1.2 or TAA-340EC-A40-TA-C20-A-V1.2

- TAA-308EC/315EC/340EC: model of the three-axis accelerometers (EAR export-controlled version)
- A8: Accelerometers measurement range = ±8 g
- A15: Accelerometers measurement range = ±15 g
- A40: Accelerometers measurement range = ±40 g
- TA: Accelerometers are calibrated over operational temperature range
- C20: Aluminum case (Captive screws; reference mechanical drawing)
- A: Color of enclosure: Aurum (Gold)
- V1: version 1
- .2: RS-422 interface

**TAA accelerometers Mechanical Interface Description**


**DISCLAIMER:** Specifications are subject to change without notice. Inertial Labs Inc. reserves the right to make changes to any product or technology herein to improve reliability, function or design. Honeywell does not assume any liability arising out of the application or use of the product.

TAA-308EC, TAA-315EC, TAA-340EC Accelerometers exported from the United States must be done in accordance with the Export Administration Regulations (EAR).