

## MICRO-MINIATURE INERTIAL NAVIGATION SYSTEM

### FEATURES

- Extended Kalman Filter
- Shock Survival up to 40 g
- Low Power and Cost Effective
- High performance MEMS gyro
- Multi Constellation RTK GNSS
- CAN Interface
- Miniature size
- Weight: 80 gms
- MIL-STD-810 compliant

### APPLICATIONS

- Autonomous Ground Vehicles (AGV)
- Unmanned Ground Vehicles (UGV)
- Driverless Tractors
- Autonomous Control and ADAS
- Precision Agriculture
- Smart off-road Vehicles
- Autonomous Navigation and Tracking

### DESCRIPTION

Aeron's Micro-miniature Pollux 2 INS is a family of extremely compact Inertial Navigation Systems. The systems run extended kalman filter offering near tactical performance providing best estimates of navigation parameters including position, velocities, attitude, and heading. Pollux 2 features tri-axial MEMS solid state accelerometers, tri-axial gyroscopes, magnetometer for heading measurement and an integrated multi-constellation GNSS.

Pollux 2 has a compact size, high performance and comes with CAN interface making it suitable for autonomous ground vehicles, driverless tractors, robots and UGV applications. The PLX2-NS40 model (Product Code: 17007) offers centimeter level (2.5 cm) position accuracy in RTK mode and 0.2 m/s velocity accuracy.

PLX2 - NS40



MADE IN INDIA

Datasheet Ver. 1.0.2, Apr 2020

**TECHNICAL SPECIFICATIONS**

| Parameter Name                      | Parameter Value  |
|-------------------------------------|--|
|                                     | PLX2 NS40  |
| <b>Acceleration</b>                 |  |
| Range                               | ±16 g  |
| <b>Angular Rate</b>                 |  |
| Range                               | ±450 °/s   |
| <b>Magnetometer</b>                 |  |
| Range                               | ±8 gauss   |
| <b>Position / Velocity Accuracy</b> |  |
| Horizontal Position <sup>1</sup>    | 2.5 cm CEP with L1 RTK,<br>2 m CEP with L1 GNSS  |
| Vertical Position <sup>1</sup>      | 5 m (1σ) with GNSS   |
| Velocity <sup>1</sup>               | 0.2 m/s RMS  |
| <b>Attitude</b>                     |  |
| Roll Range                          | ±180°  |
| Pitch Range                         | ±90°   |
| Roll, Pitch Accuracy                | 0.1° RMS (static), 0.2° RMS (dynamic)  |
| Heading Range                       | ±180°  |
| Heading Accuracy                    | <0.3° RMS with GNSS in dynamic conditions <sup>1</sup><br><0.5° RMS with magnetometer <sup>2,3</sup>           |
| Angle Resolution                    | 0.01°  |
| <b>GPS / GNSS</b>                   |  |
| Type                                | 72 Channels - GPS/QZSS L1, GLONASS L1OF, BeiDou B1   |
| Diff. Correction Type <sup>4</sup>  | RTCMv3 (for RTK mode)  |
| Cold Start                          | 26 s   |
| <b>Barometer</b>                    |  |
| Range                               | 300 - 1200 hPa   |
| Accuracy                            | ±0.5 hPa   |
| <b>Electrical</b>                   |  |
| Input Voltage                       | 5 V to 28 V DC   |
| Power Consumption                   | <2 W   |
| <b>Communication</b>                |  |
| Update rate                         | Up to 50 Hz (Navigation Data)<br>Up to 200 Hz (IMU Data)   |
| Outputs                             | Euler Angles (Yaw, Pitch, Roll), Quaternion, Position, Velocity,<br>Linear Acceleration, Angular Rate and Time |
| Interface                           | RS232 (CH1), RS232 (CH2) <sup>5</sup> , CAN (CAN Open), USB and 1PPS   |
| Serial Protocol                     | ASCII NMEA, Binary   |
| <b>Physical and Environmental</b>   |  |
| Weight                              | ~ 80 gms   |
| Size                                | 45 mm (L) x 45 mm (W) x 20 mm (H)  |
| Operating Temperature               | -40 °C to +85 °C   |
| Storage Temperature                 | -40 °C to +85 °C   |
| Survival Shock                      | 40 g   |
| Operating Vibration                 | 0.04 g <sup>2</sup> /Hz  |
| IP Protection                       | IP65   |

1 - Under good GNSS availability

2 - Accuracy after magnetic calibration and setting correct declination / offset angle

3 - After magnetic calibration for Hard Iron and Soft Iron disturbances, and in static magnetic field

4 - RTK mode of operation requires differential corrections from RTK base station in RTCMv3 format

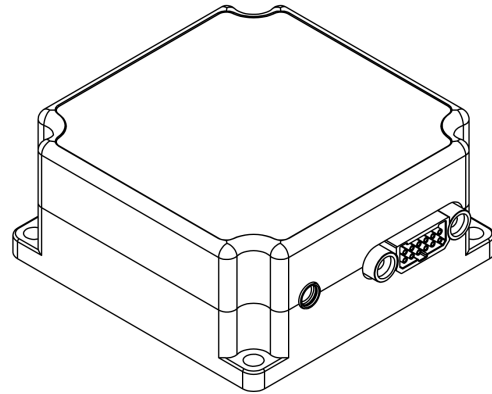
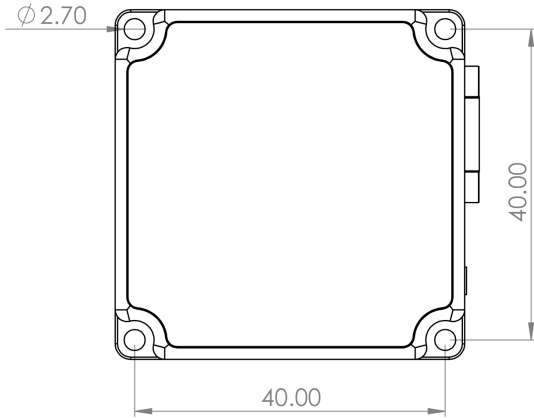
5 - RS232 (CH2) interface is dedicated for receiving differential corrections from RTK base station

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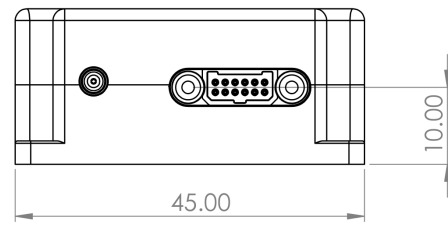
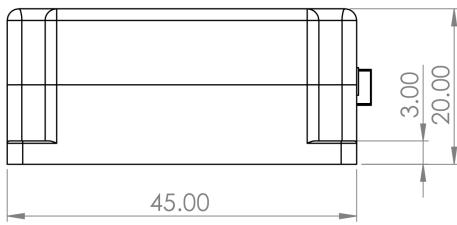
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## MECHANICAL DIMENSIONS

All dimensions in mm.



ISOMETRIC VIEW FOR REFERENCE



## ORDERING INFORMATION

PLX2 - NS40 (Product code: 17007)