Piccolo flight management systems

THE INDUSTRY STANDARD IN UAV FLIGHT MANAGEMENT

A complete solution for autopilot, navigation, flight management and ground control
Piccolo flight management systems are a leap forward, providing a complete, off-the-shelf solution including the core autopilot, flight sensors, navigation, wireless communication and payload interfaces, all in a small, highly integrated and inexpensive package.

**Complete Autopilot Solutions**

**Feature Rich Software**

**Standard feature set** Support for Iridium satellite communication, transponders, external magnetometers, TASE Gimbals, engine monitoring, antenna trackers and servo driven pan/tilt gimbals. Advanced mission-limit monitoring includes autonomous flight termination based on operator-defined criteria. User-configurable I/O allows for custom integration of a variety of payloads, sensors, and datalinks.

**Laser altimeter** Provides accurate altitude information allowing the vehicle to perform a soft, flared landing.

**RTK** Improves the GPS performance by using real-time kinematic (RTK) differential GPS (DGPS). Enables precision landing on fixed runways or into nets, as well as more accurate position information.

**RTK and moving platform recovery** Adds support of precision moving platform recovery, needed for shipboard, moving net and other moving capture applications.

**Helicopter operations** Includes autonomous take-off and landing, precision hover and automated path following, along with autopilot-assisted manual steering modes.

**Portable Ground Stations**

Portable ground stations (PGS) are responsible for managing the wireless link to one or more Piccolo avionics, supplying differential GPS corrections and serving as a bridge to the operator interface. The ruggedized case provides complete ground station, including storage for harnesses, antennas, etc. It supports the full range of primary radio frequency options, and adds provisions for optional integration of secondary links. The PGS can be updated to include Iridium SatComm radio, and RTK GPS receiver for precision and moving baseline capture applications.
**Piccolo Command Center Advanced User Interface**

![Image](image_url)

**POWERFUL FLIGHT MANAGEMENT SUPPORT**

Piccolo Command Center is the user interface for the Piccolo autopilot including flight planning and access to all of the Piccolo features. The PCC software can be used as a fully functional free software download, or a license can be purchased to enable many advanced features.

- Dockable windows, context menus for common functions.
- Complete support for all Piccolo-controlled vehicles.
- Primary flight display and graphical EFIS with the ability to change airspeed, altitude and heading.
- Real-time flight planning. Flexible drag and drop flight plan generation and updates.
- Integration with web mapping servers for elevation and imagery data.
- View multiple aircraft on single map. Route copy between aircraft.
- Terrain aware flight planning and warning system. 3D views, high-performance mapping with the profile viewer. Terrain database supporting DTED.

- **Geo-fence**: Airspace boundary definition and warning system.
- PCC software supports a growing number of plug-in applications that can be purchased separately.
- TASE Gimbal plug-in for TASE or servo pan/tilt cameras.
- TASE Gimbal Object Tracker (Requires ViewPoint software).
- Strip Chart displays plug-in adds graphical display of telemetry data.
- Directional antenna steering control plug-in supports longer UAV ranges.

**Intuitive primary flight display**, graphical EFIS and customizable dockable windows (left) integrate all flight parameters into one optimized display.

Geo-fence (right) sets hard limits on where the aircraft can be commanded to go.

Airspace boundary (left) allows the user to draw three-dimensional regions on the map interface typically used to mark boundaries in an available air space.

Map terrain warning layer (right) visually displays the areas on the map in yellow and/or red where the aircraft is in danger of impacting the terrain in relation to the current altitude.

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Accelerate your time to unmanned success! The Piccolo Command Center (PCC) overview course helps customers understand the basics of operating a Piccolo Autopilot through the standard interface. Flight training at a desired flight facility can also be accommodated and supported.
PICCOLO NANO

Designed to meet the requirements of the smallest UAVs where the vehicle structure provides the enclosure and the autopilot components need to be distributed within the airframe’s available space.

No enclosure / distributed components
RS232 Payload interface: 3
Fourteen (14) configurable GPIO lines. Four GPIO lines can be configured as analog inputs, 0-5V input, 10 bit conversion
CAN: Simulation / General interface
Flight termination: Deadman output
RF data link options: 900 MHz unlicensed ISM. 900 MHz Australian band. 2.4 GHz unlicensed ISM. 310-390 MHz discrete. 1350-1390 MHz discrete
GPS: 4 Hz Navisys GM-601 module GPS receiver, 5 volt
Pressure sensors: Ported static. 15-115 KPa-ported pitot. 6 KPa differential. 192 kts max indicated airspeed
Waypoint navigation: 1000 waypoints saved in autopilot
Inertial sensors: 3 axis gyroscopes, 300°/sec. 3 axis acceleration, 6g
Supported peripherals: Transponders, secondary comms radios, Iridium SatComm, TASE gimbals, servo PTZ gimbals, magnetometers, laser altimeters, payload passthrough, RTK GPS
Vin: 6 - 30 volts
Power: 4 W (typical including 900 MHz radio)
Size: Piccolo OEM board w/ air data sensors - 46 x 76 mm (1.8 x 3.0 inches).
Operating temperature: -40C to +80C (calibrated range, no case)

To learn more, go to collinsaerospace.com/piccolo

PICCOLO SL

With its thin form factor and flexible I/O capability (14 configurable GPIO lines) is ideal for small fixed wing and VTOL platforms. Comes standard with EMI shielded aluminum enclosure.

EMI shielded aluminum enclosure
RS232 Payload interface: 3
Fourteen (14) configurable GPIO lines. Four GPIO lines can be configured as analog inputs, 0-5V input, 10 bit conversion
CAN: Simulation / General interface
Flight termination: Deadman output
Integrated RF data link options: 900 MHz unlicensed ISM. 900 MHz Australian band. 2.4 GHz unlicensed ISM. 310-390 MHz discrete. 1350-1390 MHz discrete
GPS: 4 Hz uBlox module GPS receiver, 5 volt
Pressure Sensors: Ported static. 15-115 KPa-ported pitot. 4 KPa differential. 192 kts max indicated airspeed
Waypoint navigation: 1000 waypoints saved in autopilot
Inertial Sensors: 3 axis gyroscopes, 300°/sec. 3 axis acceleration, 6g
Supported peripherals: Transponders, secondary comms radios, Iridium SatComm, TASE gimbals, servo PTZ gimbals, magnetometers, laser altimeters, payload passthrough, RTK GPS
Vin: 5.0 – 30 volts
Power: 4 W (typical including 900 MHz radio)
Size: 130 x 59 x 19 mm (5.1 x 2.34 x 0.76 inches)
Weight: 110 grams (3.9 oz) with 900 MHz radio
Operating temperature: -40C to +80C (calibrated range, no case)

PICCOLO II

Adds functionality and flexibility for advanced UAS including additional I/O for support (16 configurable GPIO lines) for payload intensive applications Comes with EMI shielded carbon flanged or unflanged enclosure.

EMI shielded carbon / flanged / unflanged
RS232 Payload interface: 5
Sixteen (16) configurable GPIO lines. Four GPIO lines can be configured as analog inputs, 0-5V input, 10 bit conversion
CAN: Simulation / General interface
Flight termination: Deadman output
Integrated RF data link options: 900 MHz unlicensed ISM. 900 MHz Australian band. 2.4 GHz unlicensed ISM. 310-390 MHz discrete. 1350-1390 MHz discrete
GPS: 4 Hz uBlox module GPS receiver, 5 volt
Pressure Sensors: Ported static. 15-115 KPa-ported pitot. 4 KPa differential. 155 kts max indicated airspeed
Waypoint navigation: 1000 waypoints saved in autopilot
Inertial Sensors: 3 axis gyroscopes, 300°/sec. 3 axis acceleration, 10g
Supported peripherals: Transponders, secondary comms radios, Iridium SatComm, TASE gimbals, servo PTZ gimbals, magnetometers, laser altimeters, payload passthrough, RTK GPS
Vin: 8 - 20 volts
Power: 4 W (typical including 900 MHz radio)
Size: 142 x 46 x 62 mm unflanged (5.6 x 1.8 x 2.4 inches)
Weight: 220 grams (7.7 oz) with 900 MHz radio
Operating temperature: -40C to +80C (calibrated range, no case)