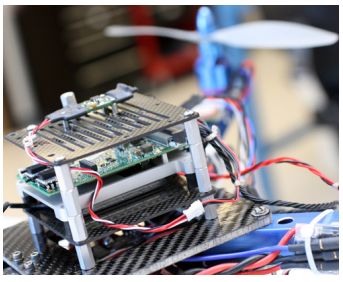
Piccolo Autopilot

Unmanned Flight Management Systems

UTC Aerospace Systems

Cloud Cap Technology
Complete Autopilot Solutions

Piccolo highly integrated autopilots are a leap forward over other unmanned avionics systems. They provide 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.



Feature Rich Software

Limited Feature Set Lower cost option for Piccolo Nano. Includes limited I/O, and servo based pan-tilt gimbal support. Launch and land options include catapult or hand tossed launch, and belly land.

Economy Feature Set Ideal for university programs, target drones or for vehicles with simple payload support requirements.

Standard Feature Set Adds new support for servo driven pan-tilt cameras, Microair transponders, Iridium satellite communications and external magnetometers.

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

RTK Improves the GPS performance by using RTK 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.

Cloud Cap Technology 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. 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. The PGS is also available with an Ethernet option.

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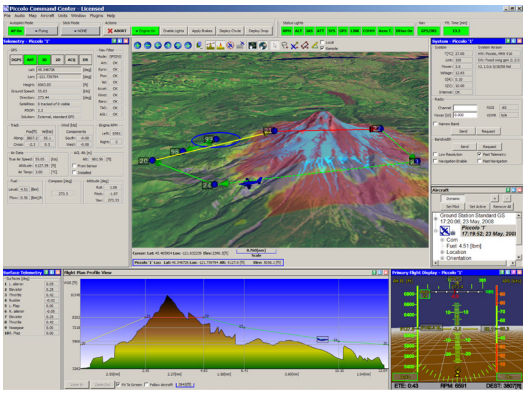
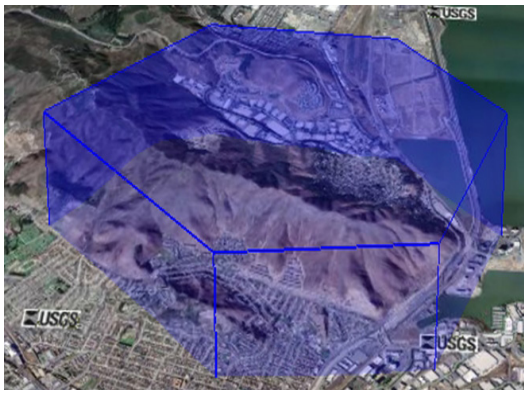
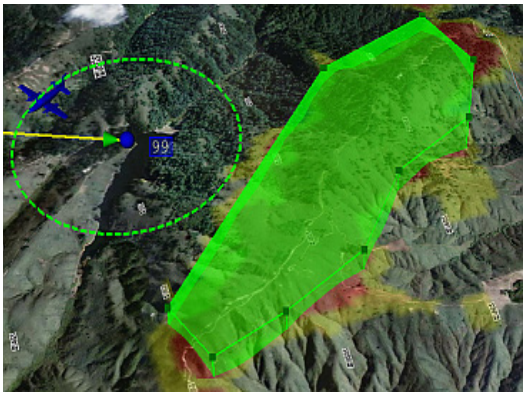
Piccolo Command Center Advanced User Interface

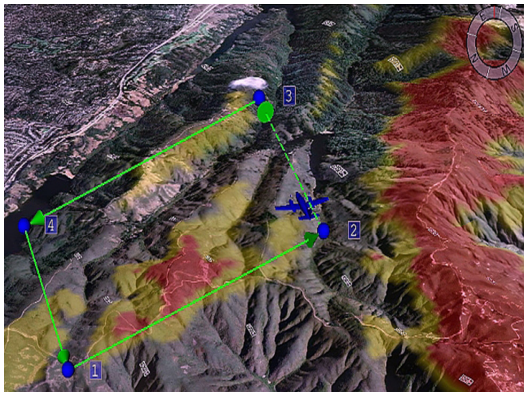




Intuitive Primary Flight Display, graphical EFIS, and customizable dockable windows integrate all flight parameters into one optimized display.

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.

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.

The Basic Feature Set includes the following features at no cost:

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 imagery data.

View multiple aircraft on single map. Route copy between aircraft.

The Full Feature Set includes the following additional features with purchased license:

Terrain aware flight planning and warning system. 3-D views, high performance mapping with the profile viewer. Terrain database supporting DTED and SRTM.

Geo-Fence: Airspace boundary definition and warning system.

PCC Software supports a growing number of plug-in applications that can be purchased separately.

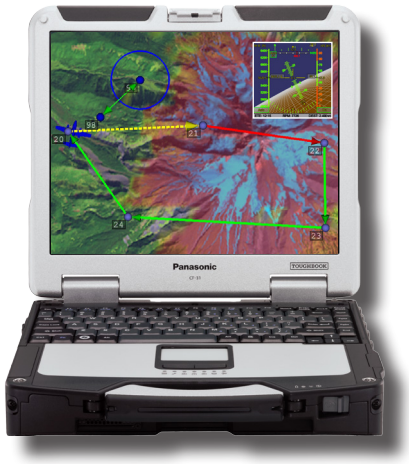
TASE Gimbal plug-in for TASE or servo pan/tilt cameras.

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.

Panasonic Toughbook ®



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, call for details.

Piccolo Autopilot Key Features

RS232 Payload interface

Up to (16) configurable GPIO lines (autopilot specific). 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
- 1670-1700 MHz discrete

GPS: 5 Hz Navisys GM-601 module GPS receiver, 5 volt

Pressure sensors: Ported static. 15-115 KPa-ported pitot. 6 KPa differential. 155 / 192 kts max indicated airspeed (autopilot specific)

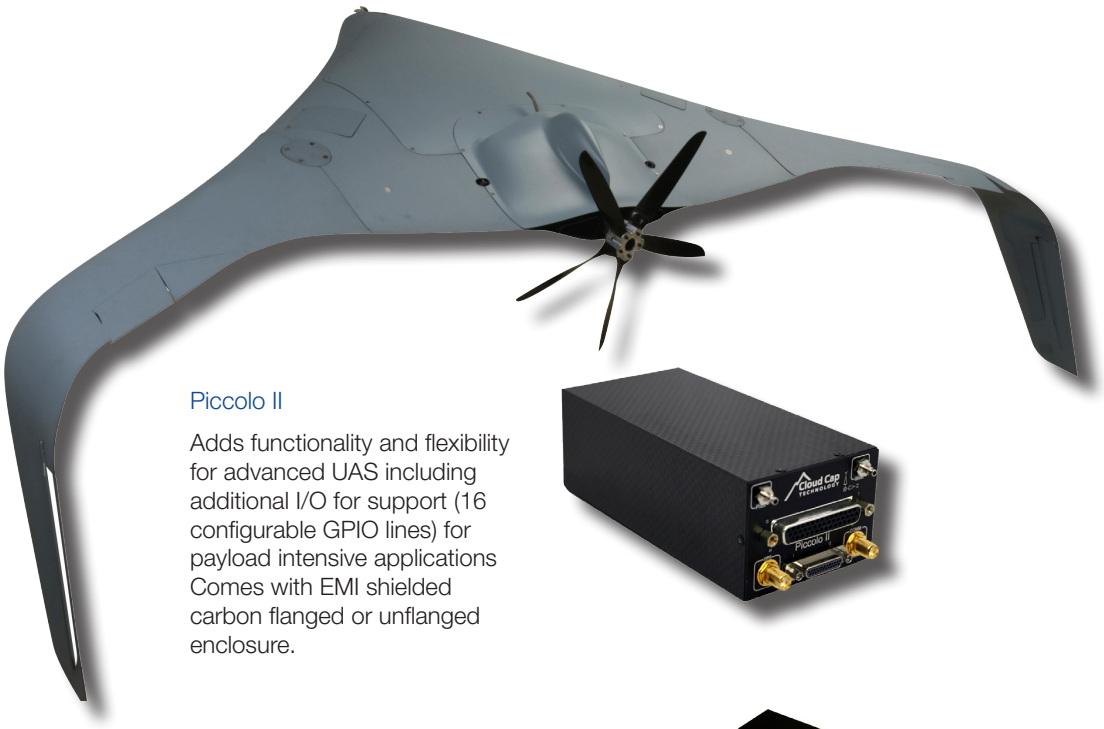
Waypoint navigation: 1000 waypoints saved in autopilot*

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

Power: 4 W (typical including 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.

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.

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.

*Multiple versions of the Piccolo Nano are available that provide different levels of functionality.

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OSR approval nos. 13-S-1507, 13-S-1150. This document does not contain EAR technology or ITAR technical data. Due to our continued efforts in product improvement, all product specifications are subject to change without notice. March 2014