CCT Product List

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1 Introduction

This document provides a complete list of Cloud Cap Technology, Inc. (CCT) products. For technical support, a formal quotation, or pricing please call (541) 387-2120 or email us at sales.cct@utas.utc.com.

Flight Management Systems	Stabilized Camera Systems	Inertial Measurement Sensors

CCT is constantly developing new products that improve and expand on our current set of successful autopilots, payloads, and sensors. The latest development news, data sheets, and document downloads for all of our products are posted on our web site at www.cloudcaptech.com.

Because of regular changes in our product list, updates of this list are periodically released to ensure that the latest information is provided to our customers.

2 Piccolo Family of Autopilots

2.1 Piccolo Export Regulations

Piccolo avionics and support items are export controlled under the regulations of the US Dept of State. Domestic customers do have export compliance responsibilities.

2.2 Piccolo System Kit Overview

Everything needed to build a Piccolo system is included in five basic items:

1) **Piccolo Autopilot**	With integrated radio data link, GPS, Piccolo operating environment and autopilot software. Configurations available support a range of advanced capabilities **Advanced Feature Upgrades** (For existing Piccolo Customers) Existing Piccolo avionics units can be upgraded to higher levels of advanced feature capabilities
2) **Piccolo Ground Station Kit**	Kits include the Ground Station assembly and all the required cables, antennas, and accessories for system operation
3) **Piccolo Developer's Kit**	The Developer's Kit provides items required to complete the HWIL simulation environment, update firmware, etc.
4) **Piccolo Command Center Licensing**	The Piccolo Command Center has advanced control and operational support features that are available for licensing
5) **Integration Items**	CCT will work with customers to identify elements needed to support Piccolo integration into their UAS.

Need help defining a complete Piccolo autopilot system? Use the Piccolo Configuration Wizard, which will help you define a full avionics solution, complete with an autopilot, ground station, and developer's kit customized to your particular application. The Wizard is linked from the Piccolo Products pages on our web site.

2.3 Piccolo Autopilot Options

Piccolo Autopilots provide a complete off-the-shelf avionics system solution in a small, highly integrated and inexpensive package. All of the configuration options include the basic autopilot, integrated radio datalink frequency band and advanced software features. The Piccolo II option provides maximum payload interface I/O and is optimal for complex vehicles whereas the Piccolo SL is much smaller to meet the reduced size and weight requirements of smaller UAVs while providing full Piccolo features.

Piccolo II

Additional flexibility with a higher rate GPS, and more serial, analog and general I/O for payload support - 16 GPIO lines.

- 16 GPIO lines
- 4 analog inputs
- 5 payload serial ports

Piccolo SL

Replaces both the Piccolo LT and Piccolo Plus with improved design and expanded I/O - 14 GPIO lines, four configurable for analog inputs. Compatible with the Piccolo Plus & Piccolo II ground stations.

- Weight: 233g
- Dimensions: 5.6 x 3.0 x 2.4 in

Piccolo Nano

Unenclosed distributed autopilot system to provide maximum installation flexibility and minimum weight. Includes avionics board, GPS board and radio (components available separately.)

- 14 GPIO lines, four configurable for analog inputs
- 3 payload serial ports

2.4 Piccolo Autopilot Advanced Software Features

	Feature Set						
Autopilot Advanced Features Supported	**Limited Feature Set (Nano only)**	**Reduced Payload (Nano and Piccolo SL only)**	**Standard**	**Laser Altimeter Autoland**	**DGPS Autoland**	**DGPS Autoland + Moving Net Capture**	**VTOL Vehicle Support**
Advanced flight planning. Allows updates during flight, drag and drop, definition of lost com plan, and automatic landing plans	✓	✓	✓	✓	✓	✓	✓
Supported by full HW-in-the-Loop and Software Simulators	✓	✓	✓	✓	✓	✓	✓
Support of TASE stabilized gimbal	✓	✓					
1000 waypoints supported	12 waypoints supported	✓	✓	✓	✓	✓	✓
Support of full range of launch and landing modes: catapult launch, hand tossed, car-top launch, belly land, parachute, wheel landing, net capture	Catapult or hand tossed and belly land only	Catapult, hand tossed, car-top and belly land only	✓	✓	✓	✓	✓
Support for DGPS and WAAS corrections for built-in GPS			✓	✓	✓	✓	✓
Gimbal stabilization control for servo based pan-tilt cameras			✓	✓	✓	✓	✓
Support of MicroAir transponders			✓	✓	✓	✓	✓
Support of Iridium satellite communications			✓	✓	✓	✓	✓
Support of external magnetometer to support dead-reckoning in lost-GPS environment			✓	✓	✓	✓	✓
Support of Autoland using Latitude Engineering Laser Above Ground Sensor				✓	✓	✓	✓
Added Autoland accuracy using external Novatel RTK 2cm DGPS. Allows precision rolling takeoff and rolling or net capture					✓	✓	✓
Support of moving baseline capture using external Novatel DGPS						✓	
Helicopter Support. Tech support provided by CCT partner GST.							✓

2.5 Piccolo Autopilot Advanced Features List - Piccolo SL and Piccolo II

Piccolo SL and Piccolo II with Advanced Features						
Autopilots with Radio Options	**Reduced Payload**	**Standard**	**Laser Altimeter Autoland**	**DGPS Autoland**	**DGPS Autoland + Moving Baseline Capture**	**VTOL Vehicle Support**
Piccolo SL						
900 MHz Unlicensed ISM	900-90023-00-A	900-90023-00-B	900-90023-00-C	900-90023-00-D	900-90023-00-E	900-90023-00-I
2.4 GHz Unlicensed ISM	900-90023-01-A	900-90023-01-B	900-90023-01-C	900-90023-01-D	900-90023-01-E	900-90023-0
310-390 MHz Licensed	900-90023-02-A	900-90023-02-B	900-90023-02-C	900-90023-02-D	900-90023-02-E	900-90023-02-I
1350-1390 MHz Licensed	Call for details	Call for details	Call for details	Call for details	Call for details	Call for details
1670-1700 MHz Licensed	Call for details	Call for details	Call for details	Call for details	Call for details	Call for details
Piccolo II						
900 MHz Unlicensed ISM	N/A	900-90010-00-A	900-90010-00-B	900-90010-00-C	900-90010-00-D	900-90010-00-H
2.4 GHz Unlicensed ISM	N/A	900-90010-01-A	900-90010-01-B	900-90010-01-C	900-90010-01-D	900-90010-01-H
310-390 MHz Licensed	N/A	900-90010-02-A	900-90010-02-B	900-90010-02-C	900-90010-02-D	900-90010-02-H
1350-1390 MHz Licensed	N/A	900-90010-05-A	900-90010-05-B	900-90010-05-C	900-90010-05-D	900-90010-05-H
1670-1700 MHz Licensed	N/A	Call for details	Call for details	Call for details	Call for details	Call for details

2.6 Piccolo Nano Components

Piccolo Nano Avionics Board*						
Feature Set						
Limited Feature Set	**Reduced**	**Standard**	**Laser Altimeter Autoland**	**DGPS Autoland**	**DGPS Autoland + Moving Baseline Capture**	**VTOL Vehicle Support**
900-90042-00-0	900-90042-00-A	900-90042-00-B	900-90042-00-C	900-90042-00-D	900-90042-00-E	900-90042-00-I
*Includes horizontal connector on avionics board. Vertical connectors available. Call for details.						

Piccolo Nano Radio Board	
900 MHz Unlicensed ISM	900-90043-00
2.4 GHz Unlicensed ISM	900-90043-01
310-390 MHz Licensed	900-90043-02
1350-1390 MHz Licensed	900-90043-05
1670-1700 MHz Licensed	Call for details
Piccolo Nano GPS Module	
Piccolo Nano GPS module	500-03837-00

2.7 Piccolo Autopilot Advanced Feature Upgrades (*For Existing Piccolo Customers*)

For customers with existing Piccolo avionics hardware, units can be upgraded to higher levels of advanced feature capabilities. Customers can purchase an upgrade license that is downloadable to an avionics through the PCC interface. Piccolo Advanced Feature Upgrades are licensed on a per-avionics serial number basis.

Feature Sets							
Autopilots	**Limited Feature Set**	**Reduced Payload**	**Standard**	**Laser Altimeter Autoland**	**DGPS Autoland**	**DGPS Autoland + Moving Baseline Capture**	**VTOL Vehicle Support**
Piccolo II	NA	N/A	Standard Configuration	900-01321-00-B	900-01319-00-C	900-01581-00-D	900-01320-01-H
Piccolo SL	NA	Base Configuration	900-01580-01-B	900-01321-01-C	900-01319-01-D	900-01581-01-E	900-01320-01-I
Piccolo Nano	Base Configuration	900-01467-02-A	900-01580-02-B	900-01321-02-C	900-01319-02-D	900-01581-02-E	900-01320-02-I

2.8 Piccolo Ground Station Kit Options

All Ground Station (GS) Kits include a ground station with integrated radio data link, cables, antennas and other items required to set up the GS and connect to a computer. There are alternate hardware solutions that minimize the physical size requirements of the Piccolo GS available for customers who are developing a project specific Ground Station assembly. The Desktop Ground Station is a limited-performance version and does not include options for military band radios, secondary links, or Iridium control.

Ground Stations		
Radio Options	**Portable**	**Portable w/ DGPS**
Piccolo SL / Piccolo II / Piccolo Nano		
900 MHz Unlicensed ISM	900-90015-00	900-90015-40
2.4 GHz Unlicensed ISM	900-90015-01	900-90015-41
310-390 MHz Licensed	900-90015-02	900-90015-42
1350-1390 MHz Licensed	900-90015-05	900-90015-45
1670-1700 MHz Licensed	Call for details	Call for details

2.9 Piccolo DGPS Upgrade Kits

Novatel's Advance RTK engine provides Added 2cm auto-land accuracy using external DGPS. The OEM V2 board from Novatel allows precision rolling takeoff, rolling landing and net capture.

NovAtel DGPS Upgrades	
Novatel - RTK GPS Upgrade Kits for PGS	**CCT P/N**
Upgrade, Portable Ground Station to add L1/L2 Novatel DGPS	800-01287-00
Novatel - RTK GPS Upgrade Kits for Avionics	**CCT P/N**
Integration Kit, Includes Novatel DGPS, antenna, and cables	800-01299-00

2.10 AGL Upgrades

The Above Ground Laser (AGL) Sensor is a small, lightweight laser rangefinder with integrated power and communications interfaces for easy integration into UAV systems. It is designed to work with the Piccolo line of autopilots, running Piccolo software version 2.0 or greater.

AGL Upgrades	
Laser Altimeter	**CCT P/N**
AGL Sensor, Laser, 1Hz, RS232, 30cm accuracy	500-01377-00
AGL – N Sensor, Laser, 10Hz, RS232 + CAN	500-02738-00

2.11 Piccolo Developer Kit Options

The Developer's Kit provides the Futaba controller, cables, antennas and other items required to configure the Piccolo system in a Hardware-In-the-Loop setup. The also kit includes licenses for Advanced Piccolo Command Center (PCC) and the Strip-Chart Plugin that is critical to initial system test engineering support.

Developer's Kit	
Options	**Advanced PCC + Strip Chart Plug-In**
Piccolo Nano	
900 MHz Unlicensed ISM	900-04017-10
2.4 GHz Unlicensed ISM	900-04017-11
310-390 MHz Licensed	900-04017-12
1350-1390 MHz Licensed	900-04017-15
1670-1700 MHz Licensed	Call for details
Piccolo SL	**CCT P/N**
900 MHz Unlicensed ISM	900-02111-10
2.4 GHz Unlicensed ISM	900-02111-11
310-390 MHz Licensed	900-02111-12
1350-1390 MHz Licensed	Call for details
1670-1700 MHz Licensed	Call for details
Piccolo II	**CCT P/N**
900 MHz Unlicensed ISM	900-90003-10
2.4 GHz Unlicensed ISM	900-90003-11
310-390 MHz Licensed	900-90003-12
1350-1390 MHz Licensed	900-90003-15
1670-1700 MHz Licensed	Call for details

Typical Piccolo Developer's Kit Items		
USB to CAN Module with USB Cable	Piccolo Radio Antenna	Piccolo System Software and Documentation
Piccolo to CAN Cable	Piccolo Interface Power Adapter Cable	Power Supply
Programming Cable	Futaba Pilot Console with Case	
GPS Antenna 114 inches long	Piccolo Interface Cable	

2.12 Piccolo Command Center Licensing

The advanced user interface for the Piccolo system (Piccolo Command Center (PCC)) requires a seat license for access to the full set of interface features. Standard PCC software can still be downloaded at no cost from the web site and is fully operational without an advanced features license, but does not provide full access to a range of user interface features. Advanced PCC is enabled through entry of a user name and key number provided by Cloud Cap Technology at the time of purchase. For details about features enabled with the added Advanced Piccolo Command Center Licenses, visit www.cloudcaptech.com

Advanced PCC Licenses	
Advanced Capability Licenses	**CCT P/N**
Software License, Per Seat, **Advanced Piccolo Command Center** (PCC)	900-01434-00
Software License, Per Seat, PCC Plug-In for **Tracking Antenna Control**	900-01568-00
Software License, Per Seat, TASE Gimbal **ViewPoint Pro**: Can be used for TASE Gimbal Plug-In for PCC or stand alone ViewPoint	900-01208-00

! *PCC features are licensed on a per-seat basis. Distribution of the software license User Name and Key Number to additional seats or any other organization is expressly prohibited without procuring a seat license(s) for the new seats / operator/owner.*

2.13 Software Maintenance Agreements

The software warranty provides for free updates 90 days from the date of purchase, bug fixes for one year. We offer SMA programs to keep your software up to the latest revision level. These maintenance agreements must be renewed on an annual basis to support perpetual new software version support.

Advanced PCC Software Maintenance Agreements (SMAs)	
Advanced Capability Licenses	**CCT P/N**
SMA, Piccolo Command Center	900-01434-00-S
SMA, Tracking Antenna Control	900-01568-00-S
SMA, ViewPoint Pro	900-01208-00-S

2.14 Integration and Accessories

The following are examples of integration items available from Cloud Cap Technology. A purchased set of integration items should be determined based on the specifics of each system. Cloud Cap will assist in the definition of a custom integration items or in self-sourcing integration items.

2.14.1 Recommended Integration Kits

Recommended Integration Kits		
Integration Items	**Piccolo II**	**Piccolo SL and Nano**
Comm Antenna (Select one)		
900 MHz ¼ Wave, Aircraft, BNC	500-00311-00	500-00311-00
2.4 GHz ¼ Wave, Aircraft	500-00349-00	500-00349-00
350-390 MHz ¼ Wave, Aircraft, BNC	500-00863-00	500-00863-00
Comm Antenna Ground Plane (Select one)		
900 MHz	620-00561-00	620-00561-00
2.4 GHz	620-00630-00	620-00630-00
Additional Items		
Antenna, Cable Avionics Comms to BNC F, 20-inch	500-00312-00	500-01154-00
Antenna, GPS, Avionics to Antenna, 20-inch	500-00313-00	500-01153-00
GPS Ground Plane	620-00562-00	620-00562-00
Battery Pack, 4.8V 2700ma 4-Acell NIMH – Servo	790-00290-00	790-00290-00
Battery Pack, 12V 2700ma 10-Acell NIMH – Piccolo	790-00291-00	790-00291-00
Cable, Typical Piccolo Flight Harness	500-01045-00	500-02163-00
Mounting Kit, Generic Piccolo Soft-mount	900-02269-00	900-02269-00
Board, Deadman/Tach Engine Interface– 5V CDI	900-00590-00	900-00590-00
Cable Set, Deadman Interface – CDI	800-01179-00	800-01179-00
Air Data Kit, Carbon Fiber, Combined Pitot/Static Tube with 2 Port Hub	800-00593-00	800-00593-00

2.14.2 Integration Items

The following is a complete list of the integration items available from Cloud Cap.

Integration Items	
Communication Antennas, Ground Planes and Coaxial Cables - Coax cable lengths can be customized on request. Please call for details	**CCT P/N**
Antenna, 900 MHz ¼ Wave, Aircraft, BNC	500-00311-00
Antenna, 2.4 GHz ¼ Wave, Aircraft, SMA, 12-inch	500-00349-00
Antenna, UHF Aircraft 310-390 MHz ¼ Wave, BNC	500-00863-00
Ground Plane for 900 MHz Aircraft	620-00561-00
Ground Plane for 2.4 GHz Aircraft	620-00630-00
Antenna, Cable, Piccolo Plus and II, SMA M to BNC F, 20-inch	500-00312-00
Antenna, Cable, Piccolo Plus and II, SMA M to BNC F, 45-inch	500-00312-45

Antenna Cable, SL / LT, SSMA M to BNC Bulkhead F, 20-inch	500-01154-00
Antenna Cable, SL / LT, SSMA M to BNC Bulkhead F, 45-inch	500-01154-45
Antenna Cable, SL / LT, SSMA M to SMA Bulkhead F, 20-inch	500-01155-00
BNC F to MMCX, 20-inch	500-04243-00
GPS Antennas and Ground Plane – GPS coax cable lengths can be customized on request. Please call for details	**CCT P/N**
Antenna, Plus or II GPS, 20-inch with SMA Connector	500-00313-00
Antenna , Plus or II GPS, 45-inch with SMA Connector	500-00313-45
Antenna, SL / LT GPS, 20-inch with SSMA Connector	500-01153-00
Antenna, GPS L1/L2, Aircraft (for use with Novatel DGPS options)	500-01297-00
GPS Ground Plane	620-00562-00
GPS Antenna mounting screw (2.6mm x 5mm pan head)	620-00631-00
Power	**CCT P/N**
Battery Pack, 4.8V 2700ma 4-Acell NIMH – Servo	790-00290-00
Battery Pack, 12V 2700ma 10-Acell NIMH – Piccolo	790-00291-00
Power Board, Iridium 4.4V with Inhibit function and 6 inch pigtails	800-00928-02
Piccolo Flight Harness – Custom harness designs available. Please call for details	**CCT P/N**
Cable, Piccolo Plus or II, Typical Piccolo Flight Harness	500-01045-00
Cable, Piccolo SL, Interface, Flight Harness	500-02163-00
Cable, Piccolo II, 25 pin un-terminated micro-D pigtail	760-00636-00
Cable, Piccolo SL, 51 pin un-terminated micro-D pigtail	760-01937-00
Cable, Piccolo Nano Interface	500-03829-00
Piccolo Mounting	**CCT P/N**
Mounting Kit, Generic Soft Mount, Piccolo / Navigator – New style with threaded isolators	900-02269-00
Mounting Kit, Generic Soft-mount, Piccolo Plus, II – Old style with foam isolator and inserts on plate (Includes carbon fiber mounting rails)	900-00493-00
Mounting Rails, Carbon Fiber Only (need two)	500-00491-00
Mounting Kit, Generic Piccolo Nano	800-04018-00

2.14.3 Piccolo System Accessories

Piccolo System Accessories	
Deadman/Tach – Cable sets include external kill switch harness and generic engine interface for deadman and tachometer interface to typical electronic ignition	**CCT P/N**
Board, Deadman/Tach Engine Interface – 5V CDI	900-00590-00
Cable Set, Deadman Interface – CDI	800-01179-00
Board, Deadman/Tach Engine Interface– Magneto	900-00591-00
Cable Set, Deadman Interface – Magneto	800-01180-00
Air Data System Kits (tube, reducer fittings, mounting hardware)	**CCT P/N**
Air Data Kit, Carbon Fiber Pitot Tube	800-00569-00

Air Data Kit, Stainless Steel Static Tube	800-00568-00
Air Data Kit, Carbon Fiber, Combined Pitot/Static Tube with 2 Port Hub	800-00593-00
Air Data Harness, Piccolo Nano	500-03828-00
UAV Transponder	**CCT P/N**
Transponder, MicroAir T2000 UAV-L with BNC	500-01231-00
Antenna, Transponder	500-01232-00
Cable Kit, Transponder Coax 50 cm	500-01233-00
NovAtel RTK DGPS Integration	**CCT P/N**
DGPS FlightPak Integration Kit, Includes DGPS FlightPak, antenna, and cables	800-01299-00
DGPS FlightPak	900-90041-00
Laser Altimeter	**CCT P/N**
AGL Sensor, Laser, 1Hz, RS232, 30cm accuracy	500-01377-00
AGL - N Sensor, Laser, 10Hz, RS232 + CAN,	500-02738-00
Outside Air Temperature	**CCT P/N**
Outside Air Temperature (OAT) board interfaces with Piccolo	900-01952-00
JR Radio Interface Board	**CCT P/N**
JR board allows alternate manual flight control using new JR 2.4G digital transmitter	900-02838-00

2.14.4 Ground Station and HiL Simulation Items

All of the items in this Ground Station and Hardware-in-Loop (HiL) support list are included as part of the Ground Station Kit and Developer's Kit. Individual items may be purchased as spare or replacement parts.

Ground Station & HiL Support Items	
Ground Station Assembly	**CCT P/N**
Power Cord, AC (US)	500-00251-00
Antenna, 900MHz Ground Station 5dB, BNC	500-00253-00
Antenna, 2.4 GHz Ground Station 5dB, BNC	500-00350-00
Antenna, UHF (310-390 MHz) Ground Station, BNC	500-00830-00
Antenna, Desk –Top GPS , 114-inch, SMB	500-00229-00
Antenna, GPS L1/L2, Ground Station	500-01292-00
Antenna, Portable Ground Station GPS 114-inch, SMA	500-00260-00
Cable, Serial DB9M/DB9F	500-00250-00
Power Supply, Desk-Top Ground Station	500-00254-00
Cable Kit, Portable Ground Station DC Input	800-01177-00
Cable, USB To Serial	500-01332-00
HiL Setup	**CCT P/N**
Cable, Phytec USB to CAN Module	500-00252-00
Cable, CAN to USB Module	500-00259-00
Cable, Piccolo Plus or II Interface – Bench Test	500-00304-00
Cable, Piccolo Interface – Bench Test Power	500-00303-00

Antenna, 900MHz Avionics SMA for Bench HWIL Testing	500-00261-00
Antenna, 2.4 GHz Avionics SMA for Bench HWIL Testing	500-00351-00
Antenna, UHF (310-390 MHz) BNC for Bench HWIL Testing	500-00830-00
RF Adapter, BNC Female to SMA Male	760-01885-00
RF Adapter, Piccolo SL / LT, SSMA to SMA for HWIL setup	760-01178-00
Power Supply, 12V Avionics HWIL Power, Sermos Conn	500-01468-00
Manual Flight Console	**CCT P/N**
Console, Piccolo Pilot, (Futaba 10 Channel with Case)	500-00639-00
Cable, Pilot Console, (New Futaba to Desk Top GS), 24 feet	500-00640-00
Cable, Pilot Console, PGS, (New Futaba to PGS), 24 feet	500-00892-00
Cable, Pilot Console, PGS, (New Futaba to PGS), 90 feet	500-00892-90
Piccolo Programming	**CCT P/N**
Cable, Piccolo Programming	500-00257-00

3 TASE Family of Stabilized Gimbals

3.1 TASE Gimbal Export Regulations

TASE gimbals and accessories are export controlled under the regulations of the US Dept of State. Domestic customers do have export control responsibilities.

3.2 Gimbal Camera Options

All gimbals include integrated GPS, inertial sensors, gimbal operating environment and software. The currently supported list of gimbal options are presented below. Contact Cloud Cap Technology for custom payload integration details.

! *All gimbal options are available with PAL video format at same gimbal cost. Call for details. Custom camera integrations are available. Call for options. When comparing camera options, please contact the camera manufacturers directly to get latest information to support your analysis.*





TASE150	TASE200	TASE310	TASE350	TASE400 Series
Single EO camera, 4.4 inch diameter, <1 kg	Dual cameras, EO, LWIR, 5 inch diameter 1.06 kg	Single HD camera, 7 inch diameter, 2.6 kg	Dual camera, EO, LWIR, 7 inch diameter 3.2 kg, laser options, HD camera option	Three camera gimbal, multiple camera configurations, EO, EO spotter, HD, LWIR, MWIR, 7 inch diameter, 3.4> kg,. laser options, LWIR options

3.2.1 TASE150 Gimbal Configuration

Cameras	Image Resolution	Lens	HFOV	NTSC	PAL
Daylight Camera					
Sony FCB-EX1020	380K pixels	36x Optical	1.94˚- 55.7˚	900-90012-12	900-90012-02

3.2.2 TASE200 Gimbal Configuration

Cameras	Image Resolution	Lens	HFOV	NTSC	PAL
EO: Sony FCB-EX1020	380K pixels	36x Optical	1.94˚- 55.7˚	900-90022-17	900-90022-18
LWIR: FLIR TAU 640	640 x 480	59mm	10.5°		

3.2.3 TASE310 and TASE350 Gimbal Configuration Options

Cameras	Image Resolution	Lens	HFOV	Laser Options	NTSC	PAL
TASE310						
Sony FCB-EH6500 daylight HD Camera	1280 x 720	20x Optical	39.7°- 1.4°	NONE	900-90048-01-B	Call for details
TASE350						
Sony FCB-EX1020 FLIR TAU 640 LWIR	380K pixels 640 x 480	20.8x Optical Zoom Dual Field of View	55.7°- 1.94° 15.5° - 6.2°	NONE	900-90046-00-B	Call for details
				Illuminator	900-90046-01-B	Call for details
				Laser Range Finder	900-90046-02-B	Call for details
				Laser Range Finder / Illuminator	900-90046-03-B	Call for details
Sony FCB-EH6500 Daylight HD Camera* FLIR TAU 640 LWIR	1280 x 720 640 x 480	20x Optical Zoom Dual Field of View	39.7°- 1.4° 15.5° - 6.2°	NONE	900-90046-20-B	Call for details
				Illuminator	900-90046-21-B	Call for details
				Laser Range Finder	900-90046-22-B	Call for details
				Laser Range Finder / Illuminator	900-90046-23-B	Call for details

**With purchase of VITEC HD Encoder. See gimbal accessories.*

3.2.4 TASE400 Gimbal Configuration Options

Cameras	Image Resolution	Lens	HFOV	Laser Options	NTSC	PAL
TASE400						
EO: Sony FCB-EX1020 MWIR: FLIR Photon HRC	380K pixels 640 x 480	36x Optical Continuous Zoom	55.7°- 1.94° 22° - 2.2 °	NONE	900-90030-00-B	900-90030-10-B
				Illuminator	900-90030-01-B	900-90030-11-B
				Laser Range Finder / Illuminator	900-90030-13-B	900-90030-33-B
TASE400D						
Sony FCB-EX1020 Daylight Spotter Camera	380K pixels	36x Optical 1.6x Optical	55.7°- 1.94° 7.2°- 1.2°	NA	900-90030-99-B	900-90030-98-B
TASE400LWIR						
Sony FCB-EX1020 MWIR – FLIR Photon HRC FLIR TAU 640 LWIR Camera	380K pixels 640 x 480	36x Optical Continuous Zoom 35 mm lens	55.7°- 1.94° 22° - 2.2 15.5° - 6.2°	NONE	900-90030-46-B	Call for details
				Illuminator	900-90030-45-B	900-90030-44-B

TASE400HD						
Sony FCB-EH6500 Daylight HD Camera* MWIR – FLIR Photon HRC	1280 x 720 640 x 480	20.8 x Optical Zoom Continuous Zoom	39.7°- 1.4° 22° - 2.2	NONE	900-90030-80-B	Call for details
Sony FCB-EH6500 Daylight HD Camera* MWIR – FLIR Photon HRC	1280 x 720 640 x 480	20.8 x Optical Zoom Continuous Zoom	39.7°- 1.4° 22° - 2.2	Illuminator	900-90030-82-B	Call for details

**With purchase of VITEC HD Encoder. See gimbal accessories.*

3.3 Gimbal Developer's Kit

The Gimbal Developer's Kit includes all the support items needed to operate the gimbal in a lab bench environment "out of the box" plus a seat license of ViewPoint software. The Developer's Kit supports the PCMCIA PC interface and is required with an initial gimbal purchase. Gimbal Developer's Kits are specific to the type of Gimbal. Custom options available. Developer's Kits are available with EXPRESS cards, call for details.

Gimbal Developer's Kit	**CCT P/N**
TASE150 / 200 Gimbal Developer's Kit with ViewPoint Pro	900-90019-01
TASE300 Gimbal Developer's Kit with ViewPoint Pro	900-90025-01
TASE310/350/400 Gimbal Developer's Kit with ViewPoint Pro	900-90035-01

Typical Gimbal Developer's Kit Items		
9-Pin Serial Cable	DB9 Gender Changer Null-Modem	USB to Serial Adapter
Programming Cable	PCMCIA Video Card	Power Supply
Piccolo Avionics GPS Antenna	PCMCIA to PCI Adapter Board	Gimbal Interface Cable
Piccolo Interface Power Adapter Cable	SSMA to SMA Adapter	GPS Ground Plane
Gimbal Programming Cable	PCMCIA Video Card Cable	Gimbal Control Video Software
USB Game Controller	AC Power Cord	Aircraft Integration Kit

3.4 Gimbal Advanced Feature Software Applications

The ViewPoint Pro application and advanced feature plug-in software are available for license on a per-seat basis.

Advanced Feature Software Licenses	
Gimbal Software Application	**CCT P/N**
Software License, Per Seat, **ViewPoint Pro**: Enables all advanced features of gimbal control and video display interface, which also records video and associated gimbal metadata, provides moving map interfaces etc.	900-01208-00
Software License, Per Seat, **Path Track**: Autonomous following of pre-loaded GPS coordinate-based path.	900-02411-00
Software License, Per Seat, **Real-Time Mosaicing**: Real-time frame-to-frame video mosaicing for enhanced operational situational awareness.	900-02413-00
Software License, Per Seat, **Video On Map**: Live video geo-located and terrain warped over moving map.	900-02412-00
Software License, **Red Hen Systems File Output** support	900-02788-00
Software License, **Target Localization**	900-03320-00
Software, **Kestral** plug-in	900-04114-00

! *ViewPoint software features are licensed on a per-seat basis. Distribution of the software license User Name and Key Number to additional seats or any other organization is expressly prohibited without procuring a seat license(s) for the new seats / operator/owner.*

3.5 Software Maintenance Agreements

The software warranty provides for free updates 90 days from the date of purchase, bug fixes for one year. We offer SMA programs to keep your software up to the latest revision level. These maintenance agreements must be renewed on an annual basis to support perpetual new software version support.

Advanced Feature Software Maintenance Licenses (SMLs)	
Gimbal Software Application	**CCT P/N**
SMA, ViewPoint Pro	900-01208-00-S
SMA, Path Track	900-02411-00-S
SMA, Mosaicing	900-02413-00-S
SMA, Video on Map	900-02412-00-S
SMA, Target Localization	900-03320-00-S
SMA, Red Hen Systems File Output support	900-02788-00-S
SMA, Kestral support plug-in	900-04114-00-S

3.6 Integration

3.6.1 Integration Items

Firmware programming and bench interface items in this this list are included as part of the Gimbal Developer's Kit. Individual items may be purchased as spare or replacement parts.

UAS Integration	**CCT P/N**
Antenna, GPS 20-inch, SSMA	500-01153-00
GPS Ground Plane	620-00562-00
Cable, 25 pin micro-D pigtail – Primary Gimbal I/O	760-00636-00
Cable, 37 pin micro-D pigtail – Secondary Gimbal I/O	760-01085-00
Cable, SMA M to BNC F, 20-inch Coax	500-00312-00
Cable, SMA M to BNC F, 45-inch Coax	500-00312-45
Gimbal Firmware Programming	**CCT P/N**
Cable, Piccolo Programming (needed in conjunction with the gimbal programming cable)	500-00257-00
Cable, Gimbal Programming	500-01202-00
Cable, TASE400 51 position Programming	500-03165-00
Bench Interface	**CCT P/N**
Antenna, GPS 114-inch, SMA	500-00260-00
GPS Ground Plane	620-00562-00
Cable, Gimbal Interface TASE150 / TASE200	500-01201-00
Cable, Gimbal Interface TASE300	500-01744-00
Power Supply, TASE150/ TASE200 bench test, 12V, 1.5A	500-01468-00
Power Supply, TASE300/400 bench test, 18V, 12.2A	500-03600-00
Cable, Bench Test Power Adaptor, Sermos to Banana	500-00303-00
Cable, Serial DB9M/DB9F	500-00250-00
Controller, USB Game	500-01203-00
Changer, DB9 Gender, Null Modem for Piccolo HWIL	500-01206-00
Antenna, RF adaptor SMA to SSMA for GPS	760-01178-00
Adaptor, USB to Serial	500-01332-00
Video Interface	**CCT P/N**
Video Card, Frame Grabber – PCMCIA	500-01209-00
Video Card, Frame-Grabber - EXPRESS	500-02328-00
Adapter, PCMCIA to PCI	500-01294-00
Cable, SMA to BNC-F Gimbal Video Out	500-01210-00
Adaptor, S-Video to BNC-Male (optional connection)	500-01211-00
Cable, PCMCIA Video Capture Card	500-01250-00
HD Encoder, VITEC	500-04248-00
Cable, Ethernet	500-04246-00
Cable, BNC-M to SMA-M 3ft	500-04247-00
Gimbal Soft Mounts	**CCT P/N**
TASE300 Soft Mount Kit	800-01832-00
TASE150 / TASE200 Generic Soft Mount Kit	800-01686-00

3.7 Accessories

3.7.1 TASE Gimbal Retraction Mechanism

The 3AX Deployment Mechanism and Soft Mount Kit are compatible with TASE150 or TASE200. This mechanism is necessary for applications that require the gimbal to retract into the airframe.

Gimbal Retraction Mechanism	CCT P/N
Deployment Mechanism, TASE150 / TASE200 3AX	900-01431-00
3AX Soft Mount Kit	800-01884-00
3AX Integration – Technical services to install gimbal into 3AX (recommended)	800-02714-XX

3.7.2 Video Processing System

The Video Processing System (VPS) provides the following advanced gimbal image processing functionality: object tracking, scene steering, image stabilization, data overlays, target position overlays, and detail enhancement. The stand-alone unit is available for the TASE150 and TASE200. The TASE300 and TASE400 have built in VPS functionality. Please contact Cloud Cap Technology to discuss the benefits of including a VPS in your gimbal system.

Video Processing System Stand Alone Unit TASE150/200	CCT P/N
VPS II Advanced	900-90029-00-B
VPS II Developer's Kit	900-03178-00
VPS II Interface Harness	
SMA-M to SMA-M Cable	
Power Supply	

3.7.3 TASE Vibration Isolation Collar

The TASE Vibration Isolation Collar is designed for all models of TASE camera gimbal installations on manned-aircraft platforms. This isolation collar actively works to absorb engine and airframe vibration from the aircraft before these vibrations reach the gimbal. This results in significant improvement to image quality and camera life. The isolation collar is lightweight, rugged and comes standard with the Meeker Aviation DT-1 dovetail set.

TASE Vibration Isolation Collar	CCT P/N
TASE Vibration Isolation Collar TASE150 / 200	900-90034-20
TASE Vibration Isolation Collar TASE150 / 200 with Dovetail Assembly	900-90034-20-D
TASE Vibration Isolation Collar TASE300	900-90034-30
TASE Vibration Isolation Collar TASE300 with Dovetail Assembly	900-90034-30-D
TASE Vibration Isolation Collar TASE400	900-90034-40
TASE Vibration Isolation Collar TASE400 with Dovetail Assembly	900-90034-40-D
Developer's Cable Vibration Collar Harness 4ft	500-03344-00

4 Inertial Sensor Products

4.1 Crista & Navigator Export Regulations

Inertial sensor products are export controlled under the regulations of the US Dept of Commerce. Domestic customers do have export control responsibilities.

4.2 Crista Inertial Sensor

Crista IMU products provide raw rate and acceleration data for use in customer applications. Units are calibrated for gain, misalignment and acceleration effects on gyros.

The Developer's Kit includes all the support items needed to operate the IMU in a lab bench environment "out of the box". Includes IMU, bench harness and IMU bench test software.

Crista Inertial Sensor	CCT P/N
Crista Inertial Measurement Unit - Small IMU with RS232 and CAN interfaces. Enclosure with 9 pin Dsub connector. PPS interface for data synchronization.	900-00458-00
Crista Sensor Head - Very small option for OEM applications - IMU with SPI interface to A/D and calibration data EEPROM. Solder (.050 through hole) mounting.	900-00466-00
Crista IMU Developer's Kit. (Includes Crista IMU assembly)	900-90006-00

4.3 Navigator GPS/INS Navigation System

Navigator SL

The Navigator is a GPS/INS navigation system that combines a GPS receiver and a 6 degree-of-freedom IMU in a miniature sensor package. The GPS and IMU measurements are fused by an Extended Kalman Filter (EKF) to provide optimal estimates of the platform's position, velocity, and attitude, regardless of GPS solution availability.

The Developer's Kit includes all the support items needed to operate the Navigator in a lab bench environment "out of the box". Includes Programming Cable, Antenna, and Navigator interface cable.

Navigator GPS/INS Navigation System			**CCT P/N**
Navigator SL Assembly - Includes 3 axis 300 deg/sec, 6g inertial sensors, GPS receiver and GPS/INS algorithm to provide full attitude estimation.			900-90031-00
Navigator SL Developer's Kit			900-02544-00
Programming Cable	Piccolo Interface Power Adapter Cable	SSMA to SMA Adapter	
GPS Antenna 114 inches long	Power Supply	Navigator Interface Cable 51-pin	

4.4 Sensor Accessories

Crista Accessories	**CCT P/N**
Cable, Crista IMU Developer's	500-00474-00
Cable, CAN to USB module	500-00259-00
Cable, Phytec USB to CAN module	500-00252-00
Cable, Serial DB9M/DB9F	500-00250-00
CD with application software and documentation (available on our website)	900-00494-00
Navigator Accessories	**CCT P/N**
Navigator Interface Cable 51-pin	500-02548-00
Antenna, 114" Long Piccolo Avionics GPS w/ screws & washers	500-00260-00
Programming Cable	500-00257-00
Piccolo Interface Power Adapter Cable	500-00303-00
Power Supply	500-01468-00
SSMA Male to SMA Female Adaptor	760-01178-00
Mounting Kit, Generic Soft Mount, Piccolo / Navigator – New style with threaded isolators	900-002269-00

5 Cloud Cap Technology Standard Terms and Conditions

For payment, warranty, returns, shipping and other related information see the Terms and Conditions page.