

MP2x28

Family of UAV Autopilots

MicroPilot is the world's leading manufacturer of professional autopilots for unmanned aerial vehicles (UAV) and micro aerial vehicles (MAV). We serve 850 customers in more than 70 countries.

MicroPilot flies a wide variety of aircraft (helicopter, small fixed-wing, jets, etc.). The MP2x28 family of autopilots is the world's smallest full featured family of UAV autopilots. Capabilities include airspeed hold, altitude hold, turn coordination, GPS navigation, vertical takeoff and landing (VTOL), plus autonomous operation from launch to recovery.

- Single Board Autopilots
- Enclosed Autopilots
- Triple Redundant Autopilots
- Fixed-Wing Autopilots
- Multi-Rotor Autopilots
- Helicopter Autopilots
- Airship Autopilots
- Surface Vehicle Autopilots



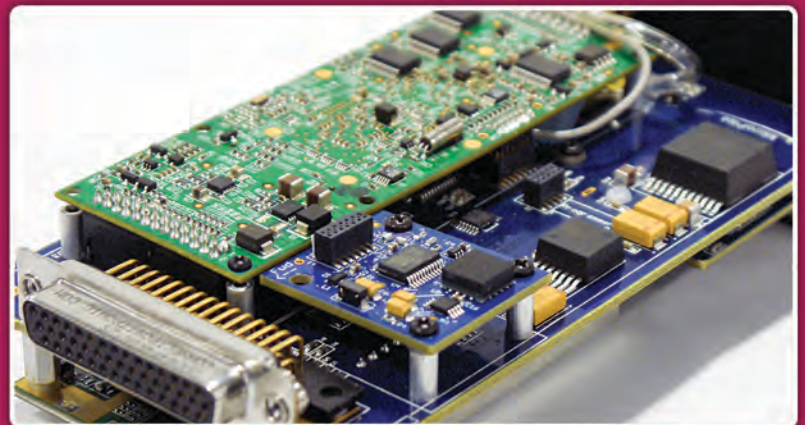
MicroPilot

The choice of over 850 clients in 70 countries

HORIZON^{mp}



Included at NO EXTRA CHARGE



Enclosed Autopilots



Triple Redundant



Specifications

Servos

	MP1028 ^{g2*}	MP2028 ^{g2*}	MP2128 ^{g2}	MP2128 ^{HELI2}
Eleven, flaperons, 4 servo flap/aileron	Yes	Yes	Yes	Yes
Separate flaps, split flaperons, y-tail, x-tail, split rudders, no rudder, differential thrust	Yes	Yes	Yes	Yes
3 servo mechanical, 3 servo 90° Cyclic/Collective Pitch Mixing (CCPM)	No	No	No	Yes
4 servo 90° CCPM, 3 servo 120° CCPM, 4 servo 4 corner CCPM	No	No	No	Yes
Max number of servos	8	16	24	24
Servos update rate	50 to 400 Hz	50 to 400 Hz	50 to 400 Hz	50 to 400 Hz
Pegasus / Volz actuators protocols	No	No	Yes	Yes
Configurable I/O channels	No	No	Yes	Yes
CAN bus	No	No	Yes	Yes
CAN open	No	No	No	Yes

Control System

Gain scheduling for optimum performance	Yes	Yes	Yes	Yes
Inner loop update rates	30 to 400 Hz	30 to 400 Hz	30 to 400 Hz	30 to 400 Hz
Autonomous takeoff and landing supported	Yes	Yes	Yes	Yes
User definable PID feedback loops	0	8	8	8
User definable table lookup functions	0	8	8	8
Plug-in compatible with XTENDER ^{mp} software developer's kit	No	Yes	Yes	Yes
Surface vehicle control	Yes	Yes	Yes	Yes
Fixed wing aircraft and blimp control	Yes	Yes	Yes	Yes
Helicopter control	No	No	No	Yes
Multi-rotor (3, 4, 5, 6, or 8 rotors) control	Yes	Yes	Yes	Yes
Tumble recovery / autorotation	No	No	No	Yes
Stall recovery	No	No	Yes	Yes
Calculations blocks	No	No	No	Yes
Vision system input	No	No	Yes	Yes

Navigation

GPS update rate	4 Hz	4 Hz	4 Hz	4 Hz
Position update rate	30 - 200 Hz	30 - 200 Hz	30 - 200 Hz	30 - 200 Hz
User definable holding patterns	Yes	Yes	Yes	Yes
User definable error handlers	Yes	Yes	Yes	Yes
UAV, RPV and arcade modes	Yes	Yes	Yes	Yes
Dead Reckoning if GPS is lost ¹	No	Yes	Yes	Yes
1000 commands command buffer	Yes	Yes	Yes	Yes
Trimble RTK GPS support	No	No	Yes	Yes
NovAtel Dual Frequency RTK, NovAtel ALIGN Heading, NovAtel Relative Positioning	No	No	Yes	Yes
Hemisphere VS101 GPS support	No	No	Yes	Yes
User defined threads	4	8	16	24
Draping	No	No	Yes	Yes
Backtrack	No	No	Yes	Yes

Ground Control Station HORIZON^{mp}

HORIZON ^{mp} ground control software included with system	Yes	Yes	Yes	Yes
MP2x28 ^{g2} SWIL simulator for operator training	Yes	Yes	Yes	Yes
In-flight adjustable gains	Yes	Yes	Yes	Yes
Add & delete waypoints in flight	No	No	Yes	Yes
Move waypoints, reprogram all waypoints in flight	Yes	Yes	Yes	Yes
Multi-UAV support / Multi-GCS support / Ownership / Binding	No	No	Yes	Yes
Point and click waypoint editor	Yes	Yes	Yes	Yes
Second GCS port / Serial port pass through	No	No	Yes	Yes

¹ MP-Compass is required

* Available only to previous customers



Telemetry, Datalog and Video

MP1028^{g2*} MP2028^{g2*} MP2128^{g2} MP2128^{HELI2}

Telemetry (100 user definable fields transmitted in five groups of 20)	Yes	Yes	Yes	Yes
Telemetry update rate	5 Hz	5 Hz	5/30 Hz	5/30 Hz
5.5 MB onboard datalog containing 47 plus fields	Yes	Yes	Yes	Yes
Datalog update rate	5 Hz	5 Hz	5/30 Hz	5/30 Hz
User definable datalog fields	0	0	24	24
Ability to log feedback loop P/I/D term contributions in datalog	No	No	Yes	Yes
Autopilot version and model override	No	No	Yes	Yes

Other Features

Iridium satellite modem support	No	No	Yes	Yes
Transponder support	No	No	Yes	Yes
Renishaw ILM laser altimeter/Roke Manor radar altimeter support	No	No	Yes	Yes
Programmable I/O pins (Digital input/output, Pulse measurements, PWM output, Edge detect, PPM Input)	No	No	Yes	Yes
VRS locking	Yes	Yes	Yes	Yes
trueHWIL available	No	No	Yes	Yes
Support duration	3 Months	6 Months	12 Months	12 Months
Support service level	Basic	Basic	Premium	Premium
Warranty	3 Months	6 Months	12 Months	12 Months

Sensors

Max altitude	1,000 m	12,000 m	12,000 m	12,000 m
Max airspeed	150 kph	500 kph	500 kph	500 kph
Accelerometers	5G, 3-axis	5G, 3-axis	5G, 3-axis	5G, 3-axis
3-axis rate gyro	Yes	Yes	Yes	Yes
Gyro max angular rate of 300° per second	Yes	Yes	Yes	Yes
Attitude update rate	200 Hz	200 Hz	200 Hz	200 Hz
Attitude accuracy	<3°	<3°	<2°	<1°
Reverse filter to improve attitude estimate	No	No	No	Yes
MP-Compass	Option	Option	Option	Included

Camera

Stabilize and control servo based cameras	Yes	Yes	Yes	Yes
Fly/loiter by camera	No	No	Yes	Yes
Look here feature	Yes	Yes	Yes	Yes
Video overlay (16 user definable fields)	Yes	Yes	Yes	Yes
DST / DRS / Controp / UAV Vision camera support	No	No	Yes	Yes
NextVision camera support	No	Yes	Yes	Yes
SightLine Applications onboard video processor support	No	No	Yes	Yes
High rate camera telemetry	No	No	Yes	Yes

Physical Characteristics

Weight (including GPS receiver, gyros and all sensors)	24 grams	24 grams	24 grams	24 grams
Supply voltage	6.5v to 30v	6.5v to 30v	6.5v to 30v	6.5v to 30v
Current @ 6.5 VDC	192mA	192mA	192mA	192mA
Dimensions	10 cm in length, 4 cm in width, 1.5 cm in height			
Software upgradeable in the field	Yes	Yes	Yes	Yes
Calibration temperature range	10°C to 30°C	0°C to 45°C	-20°C to 65°C	-40°C to 85°C
Calibration points	3	5	8	10
Accelerometer and gyro alignment compensation	No	No	Yes	Yes
Certificate of conformity	No	No	Yes	Yes
Conformal coated printed circuit board	No	No	No	Yes
Underfilled printed circuit board	No	No	Yes	Yes
Environmental stress screening	None	Random sample	100%	100%
Final check	None	Random sample	Full	Full
MTBF hours at 0°C	-	-	78,135	78,135
MTBF hours at 25°C	-	-	49,915	49,915
MTBF hours at 50°C	-	-	37,215	37,215

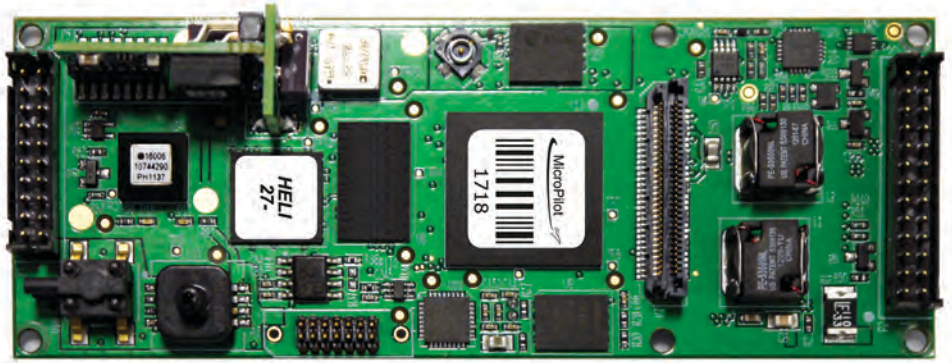
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CONFIGURATION TOOLS

- **Setup Wizard** - Provides a step by step guide to configuring a MicroPilot autopilot for fixed-wing, helicopter or multi-rotor style vehicles.
- **Vibration Analyzer** - Provides frequency analysis of vibration data from both accelerometers and gyros.
- **Datalog** - Powerful post flight analysis tool.
- **qHWIL** - Quasi hardware in the loop simulator allows simulation via serial port.
- **Status Monitor** - Powerful in-flight analysis tool that allows you to see the inner workings of your MicroPilot autopilot in flight. Provides feedback loop configuration graphs of autopilot information.
- **Configuration Analyzer** - Automatically reviews your autopilot configuration for conflicting or incorrect settings.
- **ADC Calibrator** - Calibrate extra ADC channels for higher precision.
- **AVL Editor** - An easy to use setup utility for the open source CFD program AVL. Enter your aircraft, use AVL to generate its linearized stability derivatives and automatically import them into the HORIZON^{mp} simulator.

Four Autopilots, One Learning Curve



MP2128^{HELI2}

- Flies multi-rotor, fixed-wing and helicopter.
- Richest feature set of all MP2x28 autopilots.
- Tumble recovery and autorotation.
- Sophisticated calibration and screening for widest temperature range and highest reliability.
- Upward compatibility with all MP2x28 autopilots.

MP2128^{g2}

- Flies multi-rotor and fixed-wing.
- Expanded feature set for fixed-wing vehicles.
- High quality components and wide temperature range.
- Wide range of communication options.

MP2028^{g2}

- Flies multi-rotor and fixed-wing.
- Offers the flexibility you need to satisfy your customers.
- Excellent price-performance.

MP1028^{g2}

- Flies multi-rotor and fixed-wing.
- Suitable for entry-level applications where cost is the overriding consideration.

