# Overview

ping200X is a TSO-C112e Mode-S transponder with TSO-C166b Extended Squitter for operating an Unmanned Aircraft (UA) in controlled airspace.

The system replies to Mode A, Mode C, and Mode S interrogations and squitters 1090Mhz ADS-B messages, all in accordance with RTCA performance standards. Together, they provide ATC and nearby aircraft equipped with a TCAS or ADS-B receiver full knowledge of the UA's 3-D whereabouts. Heightened situational awareness leads to timely maneuvering, adequate separation, and enhanced airspace safety that benefits everyone.
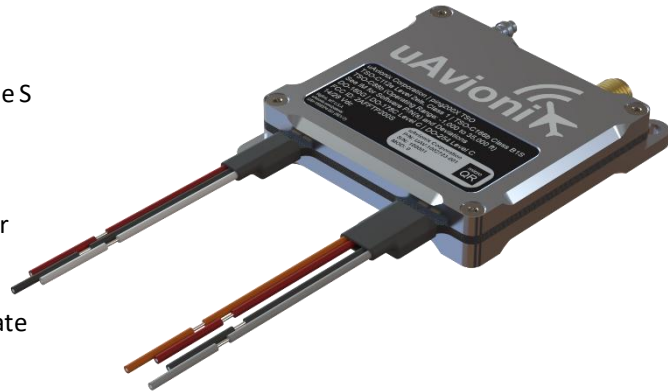
Also integrated into ping200X is a TSO-C88b pressure altitude sensor and encoder.

TSO Authorized Equipment

- TSO-C88b internal altitude encoder
- TSO-C112e Level 2els, Class 1 Mode S transponder
- TSO-C166b Class B1S Extended Squitter transmitter
- Configurable, non-TSO variant available as Modes A/C only, Mode S only, ES only, Modes A/C + ES, Mode S + ES, and Modes A/C, S + ES
- Meets the U.S. ADS-B Out equipment performance requirements of 14 CFR 91.227
- Static pressure with TSO accuracy to 35,000 ft
- GDL90+ Ownship and altitude packets
- SMA 1030/1090 MHz Antenna Connector

Conformity

- DO-181E Level 2els, Class 1 (TSO-C112e)
- DO-260B Class B1S (TSO-C166b)
- AS 8003 Pressure Alt (TSO-C88b)
- DO-178C Level C
- DO-254 Level C
- DO-160G

Regulatory

- FCC 47 CFR Part 87 ID 2AFFTP200S

Technical Specifications

Specification	Value
Input Power	9-30.3VDC (3S-8S LiPo) 1.5W Continuous On/Alt. 4W Peak (8ms maximum)
Size	47 x 54 x 9 mm
Weight	50 grams
SIL/SDA	3/2
Operating Temperature	-45 to 70°C with internal altitude encoder -35 to 70°C with external altitude encoder
Hardware P/N	UAV-1002723-()
Software P/N	UAV-1002393-()
Transponder	
MTL 1030MHz	-74dBm ±3dB
1090MHz Transmit Power	250W Nominal
Altitude Encoder	
Range	-1000 to 35,000ft – TSO-C88b compliant 35,000 to 50,000ft – ±1% accuracy
Interfaces	
Control	
Baudrate	1,200-115,200 bps
Protocol	uAvionix UCP Protocol/GDL90+
Position	
Baudrate	115,200 bps
Protocol	uAvionix UCP Protocol/Mavlink

Electrical Specification

Control Interface

Pin	Type	Physical	Protocol
Black	24AWG	Aircraft Ground	
Red	24AWG	Aircraft Power	
Orange	24AWG	AP RXD	UCP
Gray	24AWG	AP TXD	UCP

Environmental

Condition	DO-160G	Category
Temperature	4.0	B2 / C4
Temperature Variation	5.0	B
Humidity	6.0	A
Operational Shock	7.0	B
Vibration	8.0	S (Curve M)
Magnetic Field	15.0	Y
Power Input	16.0	BX
Voltage Spike	17.0	B
AF Conducted Susceptibility	18.0	B
Induced Signal Susceptibility	19.0	AC
RF Susceptibility	20.0	TT
RF Emissions	21.0	B
Lightning Induced Transient Susceptibility	22.0	A2XXXX
ESD	25.0	A

Mechanical Specification
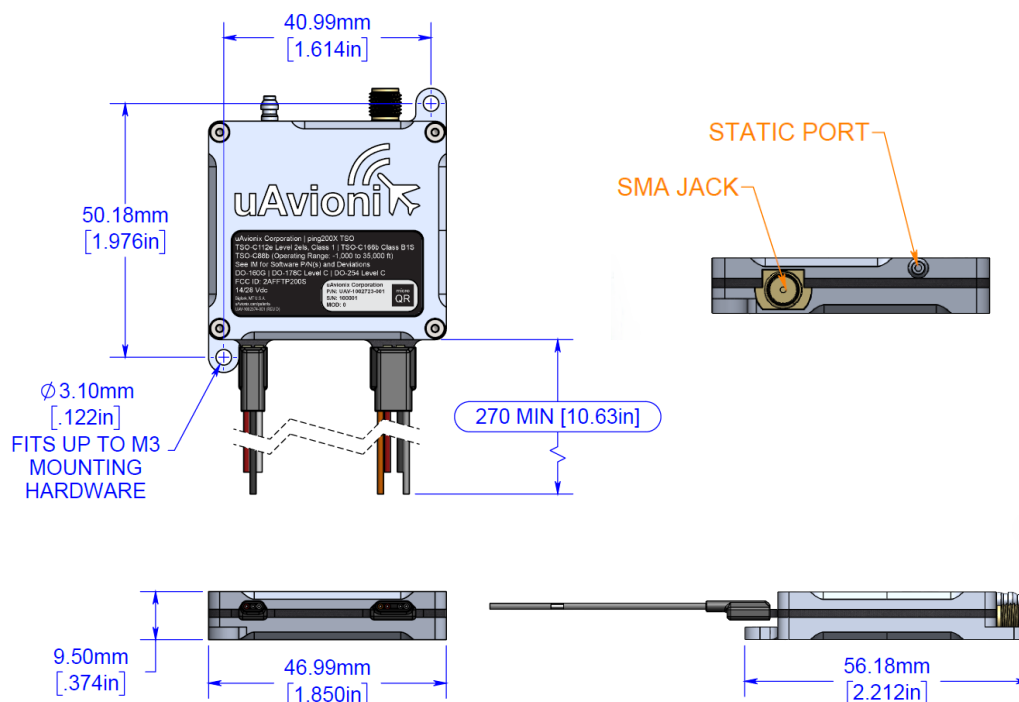
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