



ping200XR

User and Installation Guide



© 2020 uAvionix Corporation. All rights reserved.

uAvionix Corporation
300 Pine Needle Lane
Bigfork, MT 59911

<http://www.uavionix.com>

<http://www.uavionix.com/support>

Except as expressly provided herein, no part of this guide may be reproduced, transmitted, disseminated, downloaded or stored in any storage medium, for any purpose without the express written permission of uAvionix. uAvionix grants permissions to download a single copy of this guide onto an electronic storage medium to be viewed for personal use, provided that the complete text of this copyright notice is retained. Unauthorized commercial distribution of this manual or any revision hereto is strictly prohibited.

uAvionix® and Ping® are registered trademarks of uAvionix Corporation and may not be used without express permission of uAvionix.

1 Revision History


Revision	Date	Comments
A	5/14/2020	Initial Release




2 Warnings / Disclaimers

All device operational procedures must be learned on the ground.

uAvionix is not liable for damages arising from the use or misuse of this product.

-  **This equipment has received a FAA transmit license for manned aircraft and a license for unmanned aircraft operating above 500ft AGL.**

-  **The antenna used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons.**

This equipment is classified by the United States Department of Commerce's Bureau of Industry and Security (BIS) as Export Control Classification Number (ECCN) 7A994.

These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. government or as otherwise authorized by U.S. law and regulations.

3 Limited Warranty

uAvionix products are warranted to be free from defects in material and workmanship for one year from purchase. For the duration of the warranty period, uAvionix, at its sole option, will repair or replace any product which fails in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost.

Restrictions: This warranty does not apply to cosmetic damage, consumable parts, damage caused by accident, abuse, misuse, fire or flood, theft, damage caused by unauthorized servicing, or product that has been modified or altered.

Disclaimer of Warranty: IN NO EVENT, SHALL UAVIONIX BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

Warranty Service: Warranty repair service shall be provided directly by uAvionix. Proof of purchase for the product from uAvionix or authorized reseller is required to obtain and better expedite warranty service.

Please contact uAvionix support with a description of the problem you are experiencing. Also, please provide the model, serial number, shipping address and a daytime contact number.

You will be promptly contacted with further troubleshooting steps or return instructions. It is recommended to use a shipping method with tracking and insurance.

4 Contents

1	Revision History.....	3
2	Warnings / Disclaimers	4
3	Limited Warranty.....	5
4	Contents	6
5	System Information.....	8
5.1	Certification Applicability	8
5.2	TSO Performance	8
5.3	Applicable P/Ns	9
5.4	System Functions	9
5.5	Intended TSO Deviations	9
5.6	FCC ID.....	10
5.7	Device Marking	11
5.8	Environmental Qualification Form	11
5.9	Continued Airworthiness	12
5.10	System Limitations.....	12
6	System Specifications.....	13
6.1	Specifications.....	13
6.2	nano Control Head.....	14
6.2.1	nano Control Head Operation.....	16
6.2.2	Thumb Wheel Selection	16
6.3	Interfaces	17
6.4	Serial Data Interfaces	17
7	Installation	18
7.1	Part Numbers.....	18
7.2	Unpacking and Inspecting.....	18
7.3	Mounting.....	18

UAV-1004178-001 Rev A

7.4	Connections.....	19
7.5	Wiring Diagram	19
7.6	Cooling Requirements	20
7.7	Antenna Installation	20
8	Configuration	22
8.1	ICAO Address.....	24
8.2	Aircraft Maximum Speed.....	24
8.3	Aircraft Stall Speed	24
8.4	Aircraft Length / Width	24
8.5	Aircraft Registration	25
8.6	GPS Antenna Lateral / Longitudinal Offset.....	25
8.7	Aircraft Emitter Type	25
8.8	ADS-B In Capability	26
8.9	Baro Altitude Source	26
8.10	Serial Port Baud Rate	26
8.11	SIL / SDA.....	26
8.12	Default Control Mode	26
8.13	Default Squawk.....	26
8.14	Baro Altitude Resolution.....	27
8.15	In / Out Protocols	27
8.16	Control	27
9	Post Installation Checks.....	28
10	Support.....	28

5 System Information

5.1 Certification Applicability

This installation manual provides mechanical and electrical information necessary to install ping200XR. It is not equivalent to a regulator approved, airframe-specific maintenance manual, installation design drawing, or installation data package. The content of this manual assumes use by competent and qualified personnel using standard maintenance procedures in accordance with Title 14 of the Code of Federal Regulation and other related accepted procedures. The conditions and tests required for approval of this article are minimum performance standards. Those installing this article either on or within a specific type or class of aircraft must determine that the aircraft installation conditions are within the standards which include any accepted integrated functions not specified by the standards.

5.2 TSO Performance

The ping200XR is designed to meet the performance requirements of the applicable Technical Standard Orders (TSOs) and Minimum Operational Performance Specifications (MOPS) outlined below.

The ping200XR does not currently hold any TSOs. This manual will be updated accordingly upon TSO Authorizations.

Function	TSO/RTCA	Class
AIR TRAFFIC CONTROL RADAR BEACON SYSTEM/MODE SELECT (ATCRBS / MODE S) AIRBORNE EQUIPMENT	TSO-C112e INCOMP RTCA/DO-181E	Level 2els Class 1
1090MHz EXTENDED SQUITTER AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B)	TSO-C166b RTCA/DO-260B	Class B1S
AUTOMATIC PRESSURE ALTITUDE CODE-GENERATING EQUIPMENT	TSO-C88b	

Function	TSO/RTCA	Class
AIRBORNE NAVIGATION SENSORS USING THE GLOBAL POSITIONING SYSTEM AUGMENTED BY THE SATELLITE BASED AUGMENTATION SYSTEM (SBAS)	TSO-C145e INCOMP RTCA/DO-229E	Beta 1

5.3 Applicable P/Ns

Description	P/Ns
skyBeacon PF007 Boot Program Firmware	UAV-1001758-001
ping200X PF007 Operating Program Firmware	UAV-1002393-001
ping200X FPGA	UAV-1002392-001

5.4 System Functions

System Function	DO-178C DAL	DO-254 DAL
Mode S Transponder	C	C
GPS/SBAS	C	C
Altitude Encoder	C	C

5.5 Intended TSO Deviations

The following deviations from TSO requirements, on this non-TSO device, are noted. These deviations will be applied for on the TSO-certified ping200XR.

TSO	Deviation
C112e	From TSO-C112e paragraphs 3.e and 6.f to use DO-178C instead of DO-178B
C112e	Anticipating DO-181F for a Level 2 “Basic Transponder”, UM field support is not implemented
C112e	Anticipating DO-181F for a Level 2 “Basic Transponder”, Comm-A is not supported
C112e	Anticipating DO-181F for a Level 2 “Basic Transponder”, broadcast interrogations are not supported

TSO	Deviation
C112e	Anticipating DO-181F for a Level 2 “Basic Transponder”, multisite message protocols, as they apply to Comm-B and Level 2 transponders, are not supported
C112e	Anticipating DO-181F for a Level 2 “Basic Transponder”, Air-Initiated Comm-B is not supported
C112e	Anticipating DO-181F, and in compliance with ICAO Annex 10 Volume IV requirements for equipment certified after January 1, 2020, ATCRBS/Mode S All-Calls interrogations (Long P4) are not replied to
C166b	From TSO-C166b paragraph 3.e and 6.h to use DO-178C instead of DO-178B.
C166b	Anticipating DO-260C, Airborne Velocity subtypes 3 and 4 are not supported
C88b	From TSO-C88b paragraph 3.e and 6.h to use DO-178C instead of DO-178B.
C88b	From TSO-C88b paragraph 3.d to use DO-150G instead of DO-160E.
C145e	From RTCA/DO-229E section 2.1.1.10 to use a GPS antenna that meets uAvionix minimum performance specifications instead of DO-301 qualified antennas.
C145e	From TSO-C145e Paragraph 3.g to use RTCA/DO-160G in place of RTCA/DO-160E.

TSO-C145e Class Beta 1 functionality is incomplete. ping200XR does not implement LNAV approach mode, instead operating in En Route/Terminal mode only, as appropriate for ADS-B Out applications.


5.6 FCC ID

Model	FCC ID
ping200XR	2AFFTP200S

5.7 Device Marking

uAvionix Corporation | ping200XR
 RTCA/DO-181E Level 2els, Class 1, RTCA/DO-260B
 Class B1S, SAE/AS 8003, See IM for Configuration
 Max. Operating Altitude 25,000ft. MSL, 14/28 VDC
 DO-160G / DO-178C Level C / DO-254 Level C
 FCC ID: 2AFFTP200S

uAvionix.com
 Bigfork, MT U.S.A.
 UAV-1003958-001 (REV A)



P/N: UAV-1003772-001
MOD: 0
S/N: 1000001

5.8 Environmental Qualification Form

Conditions	160G	Description of Conducted Tests
Temperature and Altitude	4.0	Equipment tested to Category B2
Low temperature ground survival	4.5.1	-55°C
Low Temperature Short-Time Operating	4.5.1	-45°C
Low Temperature Operating	4.5.2	-45°C
High Temperature Operating	4.5.4	+70°C
High Temperature Short-Time Operating	4.5.3	+70°C
High Temperature Ground Survival	4.5.3	+85°C
Loss of Cooling	4.5.5	Cooling air not required (+55°C operating without cooling)
Altitude	4.6.1	60,000feet
Decompression	4.6.2	Equipment identified as Category B2 – no test
Overpressure	4.6.3	Equipment identified as Category B2 – no test
Temperature Variation	5.0	Equipment tested to Category B
Humidity	6.0	Equipment tested to Category A
Operation Shock and Crash Safety	7.0	Equipment tested to Category B
Vibration	8.0	Aircraft zone 2: type 5 Category S level M
Explosion	9.0	Equipment identified as Category X – no test
Waterproofness	10.0	Equipment identified as Category S
Fluids Susceptibility	11.0	Equipment identified as Category X – no test
Sand and Dust	12.0	Equipment identified as Category X – no test
Fungus	13.0	Equipment identified as Category X – no test
Salt Spray	14.0	Equipment identified as Category X – no test
Magnetic Field	15.0	Equipment identified as Category Z

UAV-1004178-001 Rev A

Conditions	160G	Description of Conducted Tests
Power Input	16.0	Equipment identified as Category BX
Voltage Spike	17.0	Equipment identified as Category B
AF Conducted Susceptibility	18.0	Equipment identified as Category B
Induced Signal Susceptibility	19.0	Equipment identified as Category AC
RF Susceptibility	20.0	Equipment identified as Category TT
RF Emissions	21.0	Equipment identified as Category B
Lightening Induced Transient Susceptibility	22.0	Equipment identified as Category A2G2L2
Lightening Direct Effects	23.0	Equipment identified as Category X – no test
Icing	24.0	Equipment identified as Category X – no test
Electrostatic Discharge	25.0	Equipment identified as Category A
Fire, Flammability	26.0	Equipment identified as Category X – no test

5.9 Continued Airworthiness

Maintenance of the ping200XR is "on condition" only. For regulatory periodic functional checks, refer to the approved aircraft maintenance manuals or manual supplements. The aircraft must be returned to service in a means acceptable to the appropriate aviation authority.

5.10 System Limitations

This article meets the minimum performance and quality control standards required by a TSO. If you are installing this article on or in a specific type or class of aircraft, you must obtain separate approval for installation.

6 System Specifications

ping200XR is a Mode S, Level 2els, Class 1 transponder with support for ADS-B extended squitter, elementary surveillance and SI codes. The ping200XR has a nominal power output of 250W and meets the power output requirements for Class 1. The ADS-B function meets DO-260B class B1S.

This transponder replies to both legacy Mode A/C interrogations and to Mode S interrogations from both ground radar and airborne collision avoidance systems. In all cases, the interrogations are received by the transponder on 1030MHz and replies are transmitted on 1090MHz.

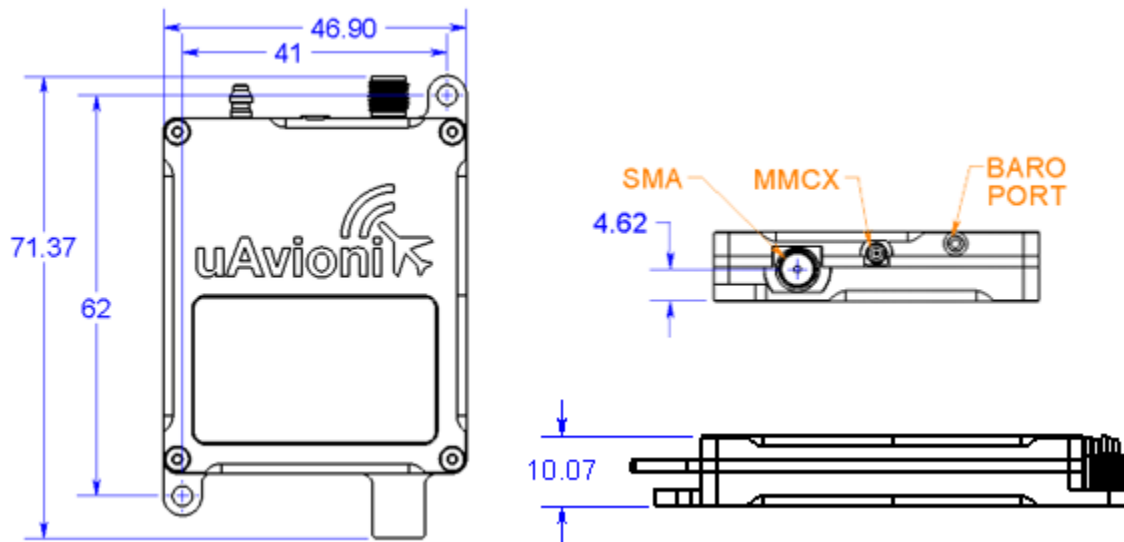
ping200XR integrates a RTCA/DO-229E SBAS GPS receiver.

6.1 Specifications

Specification	Value
Operating Altitude	unrestricted
Max Cruising Speed	unrestricted
Transmit Power (Max)	54dBm, 250W
1030 Receive Sensitivity	-74dBm \pm 3 dBm
RF Impedance	50 Ω
Host Serial Communications	UCP
Export Compliance	ECCN 7A994
Input Voltage	11-34v (3S-8S LiPo)
Inrush Current Limit	1A See Note 1 below
TX Peak Current Limit	See Note 2 Below
Power Consumption (ON & ALT)	1.5W Continuous ON & ALT 4W Peak (8ms maximum)
Power Consumption (STBY)	0.4W
Transponder Performance Standard	RTCA DO-181E
Class	Class 1
Level	2els
ADS-B Performance Standard	RTCA DO-260B
Class	B1S
Certification	N/A
Environmental	RTCA DO-160G
FCC ID	2AFFTP200S
FAA Transmit License	Manned aircraft. Unmanned operating above 500ft AGL.
Software	RTCA DO-178C Level C
Hardware	RTCA DO-254 Level C
Operating Temperature	-45°C to +70°C
Storage Temperature	-55°C to +85°C
Transmitter Modulation	6M75 V1D
Weight	52grams
Height	10mm
Length	72mm
Width	47mm
RF Connector	SMA
GPS Connector	MMCX

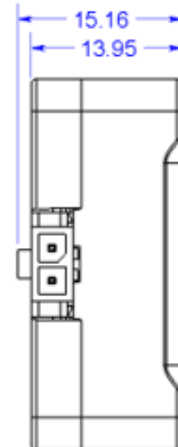
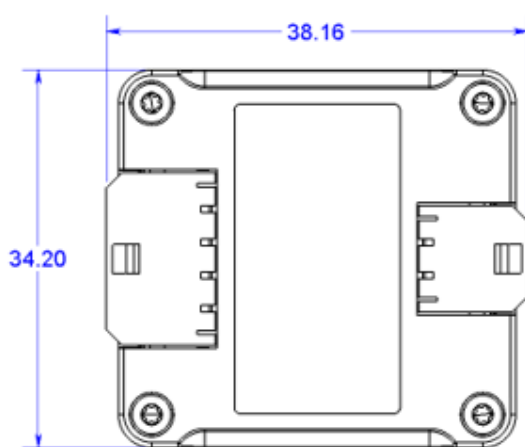
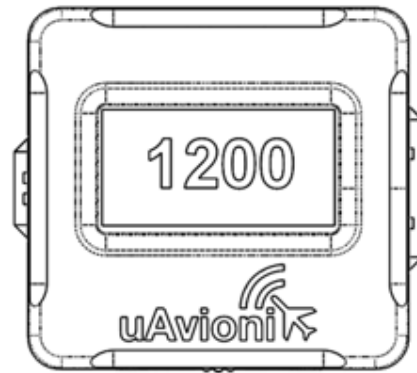
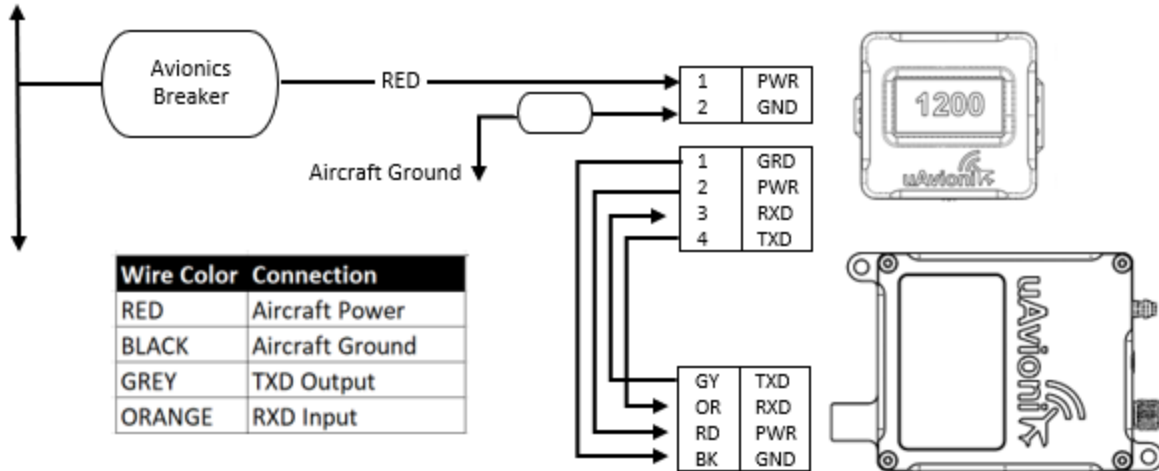
Note 1: Inrush and internal short-circuit protection is internally current limited to 1A. Note 2: Reply Transmission Peak Current

Mode	Incremental Peak Current @ 14V	Recovery
ATCRBS "7777" Reply	70mA	65us
Mode S Short	312mA	5.7ms
Mode S Long	312mA	9.4ms
1090ES DF17	312mA	9.4ms

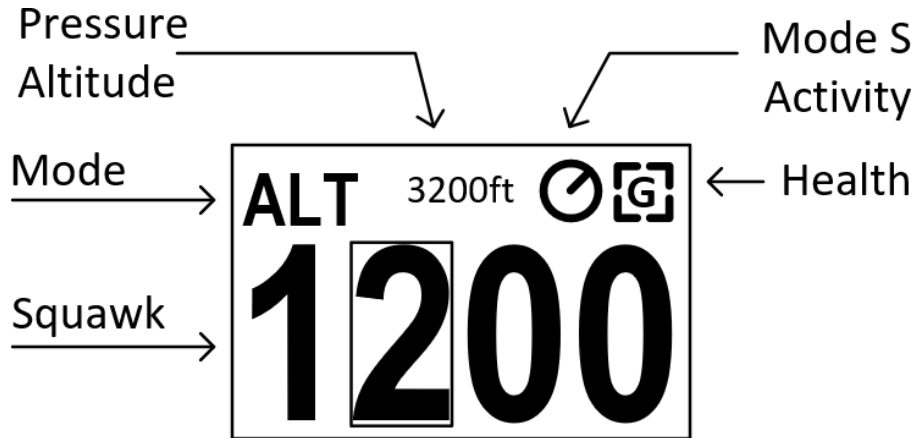





6.2 nano Control Head

An optional nano control head is provided to allow squawk code configuration without connecting to the configuration application.



6.2.1 nano Control Head Operation



MODE	STBY	Standby and Programming Mode
	ON	ADS-B and Mode S Active, altitude (Mode C) reporting disabled
	ALT	ADS-B and Mode S Active, altitude reporting enabled
	ADSB	Mode S disabled, ADS-B active (Development Only)
Mode S Activity		Flashing – Mode S activity
Health		Flashing – Communications Healthy
		Flashing – Communications Healthy and GPS locked

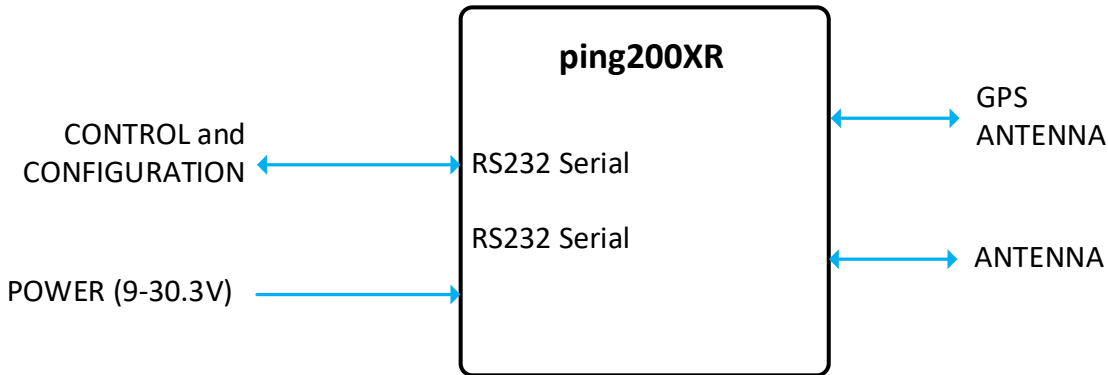
6.2.2 Thumb Wheel Selection

The nanoHead Control unit is controlled and configured via the thumb wheel at the bottom of the device. Move your thumb across the wheel to select the desired character you would like to change. Once you reach the desired character, press the thumb wheel to select the character. Once you have selected the character, move your thumb across the thumb wheel to cycle through character options to choose. Once you have the character you want, click the thumb wheel once more to set the character.



6.3 Interfaces

The ping200XR has a single SMA antenna connection and a 4-wire power and data interface. A MMCX connection provides connectivity to an external GPS antenna, and the baro port provides connection to the pitot-static system if available.



6.4 Serial Data Interfaces

	Protocol	Message Type
CONTROL and CONFIGURATION 2400 - 115200bps	UCP RX	[0x2B] Transponder Configuration [0x2C] Message Request [0x2D] Transponder Control [0x2E] GNSS Data
	UCP TX	[0x00] Heartbeat [0x0A] Ownship [0x25] Identification [0x0B] Geo Alt Ownship [0x28] Sensor, Barometer [0x2B] Transponder Configuration [0x2F] Transponder Status

Note:

Details of the UCP packets can be found in UAV-1002375-001 uAvionix GDL90 Plus Transponder ICD.

7 Installation

7.1 Part Numbers

Part	Part Number	Rev
ping200XR	UAV-1003772-001	A
RS232-USB adapter	UAV-1002374-001	A
ping200XR User and Installation Manual	UAV-1004178-001	A

7.2 Unpacking and Inspecting

Carefully unpack the device and make a visual inspection of the unit for evidence of any damage incurred during shipment. If the unit is damaged, notify the shipping company to file a claim for the damage. To justify your claim, save the original shipping container and all packing materials.

7.3 Mounting

The ping200XR is designed to be mounted in any convenient location in the cockpit, the cabin, or an avionics bay.

The following installation procedure should be followed, taking care to allow adequate space for installation of cables and connectors.

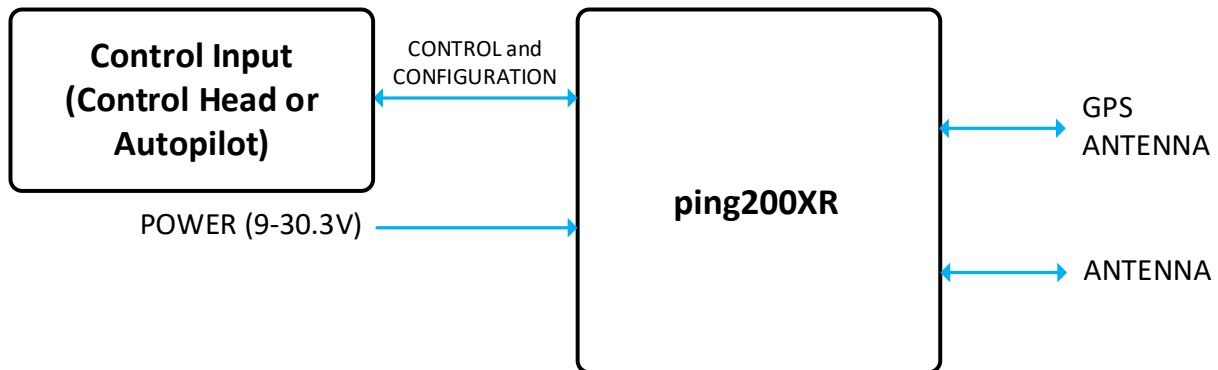
- Select a position in the aircraft that is not too close to any high external heat source. The ping200XR is not a significant heat source itself and does not need to be kept away from other devices for this reason.
- Avoid sharp bends and placing the cables too near to the aircraft control cables.
- Secure the transponder to the aircraft via the three (3) mounting brackets. It should be mounted on a flat surface.

7.4 Connections

! Whenever power is supplied to the transponder, a 50 Ohm load must be provided to the SMA connection. You can use the supplied antenna or a commercially available 50 Ohm load.

Powering the transponder without an attached load will result in damage to the device not covered under warranty.

7.5 Wiring Diagram



Control Interface			
Pin	Type	Physical	Rate
Black	Ground		
Red	Aircraft Power	9-30.3V	
Grey	COM TX	RS-232 Out	Programmable
Orange	COM RX	RS-232 In	Programmable

7.6 Cooling Requirements

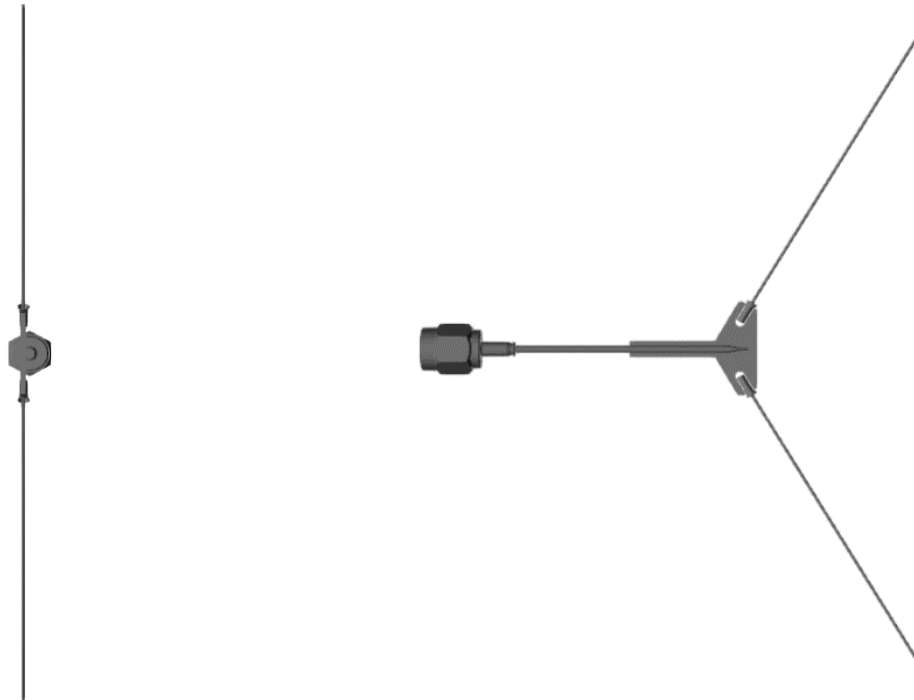
ping200XR is designed to meet all applicable TSO requirements without forced-air cooling.

Attention should, however, be given to the incorporation of cooling provisions to limit the maximum operating temperature if ping200XR is installed in close proximity to other avionics. The reliability of equipment operating in close proximity in an avionics bay can be degraded if adequate cooling is not provided.

7.7 Antenna Installation

The following considerations should be taken into account when siting the antenna.

- The RF antenna should be mounted in a vertical position when the aircraft is in level flight. **See figure below for proper orientation.**



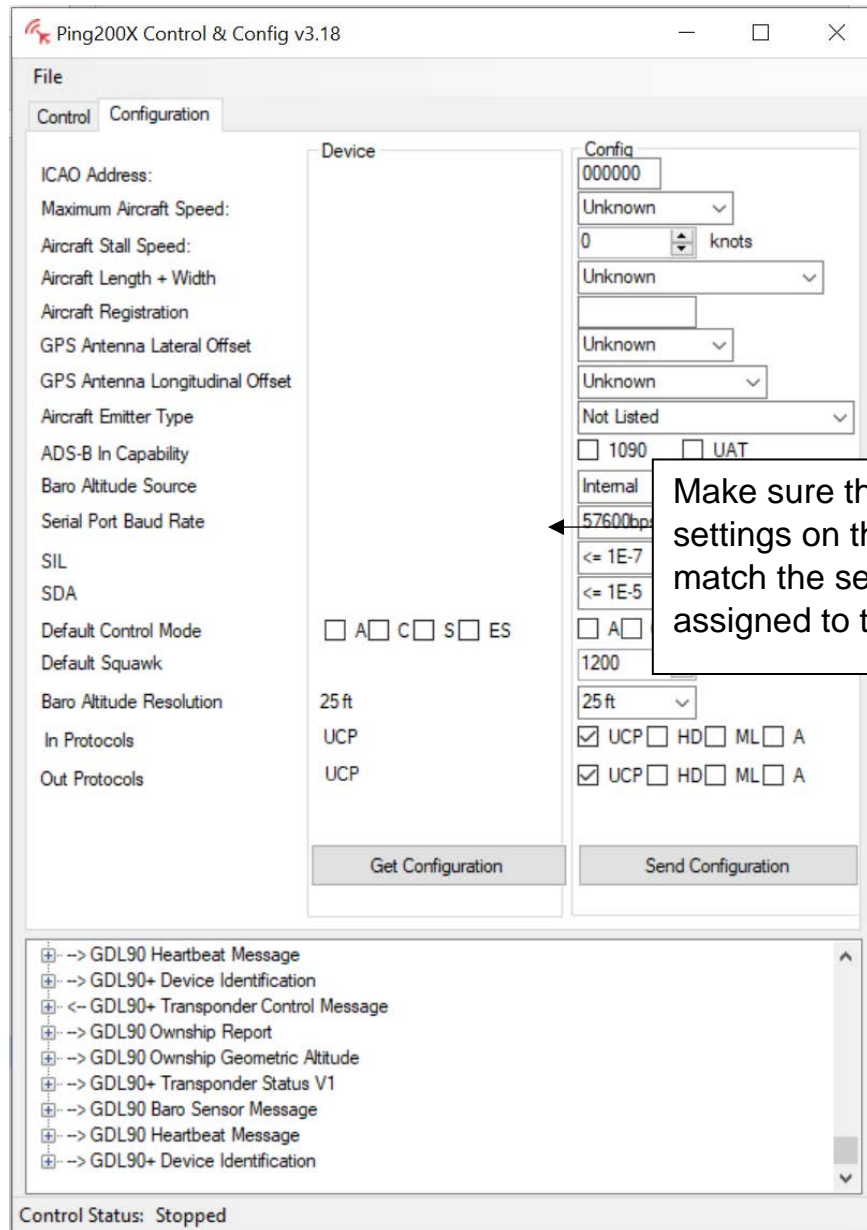
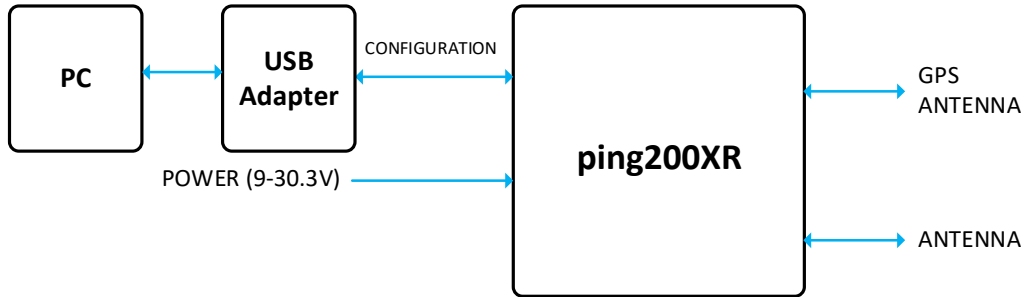
- Where practical, plan the antenna location to keep the cable lengths as short as possible and avoid sharp bends in the cable to minimize the Voltage Standing Wave Ratio (VSWR) (i.e. Return Loss).
- Electrical connection to the antenna should be protected to avoid loss of efficiency due to exposure to liquids and moisture. All antenna feeders shall be installed in such a way that a minimum of RF energy is radiated inside the aircraft.
- The GPS antenna should be mounted with an unobstructed view of the sky for optimal GPS performance.

8 Configuration

The transponder system should be configured during initial system installation. The configuration items list below should be used to document the system installation for future reference. The following parameters are permanently stored in the ping200XR.

Configuration Item		Default	Configured
ICAO Address		0x000000	
Aircraft Maximum Speed (kts)		< 75	
Aircraft Stall Speed		0	
Aircraft Length (m)		$L \leq 15$	
Aircraft Width (m)		$W \leq 23$	
Aircraft Registration		“ ”	
GPS Antenna Lateral Offset (m)		0	
GPS Antenna Longitudinal Offset (m)		Applied by sensor	
Aircraft Emitter Type		UAV (14)	
ADS-B In Capability	UAT RX	NO	
	1090ES RX	NO	
Baro Altitude Source		Internal	
Serial Port Baud Rate (bps)		57600	
SIL		3	
SDA		2	
Default Control Mode		None (Off)	
Default Squawk		1200	
Baro Altitude Resolution (ft)		25	
In Protocols		UCP	
Out Protocols		UCP	

Connect the ping200XR to a PC running the Configuration and Control application via the USB COM port adapter.



8.1 ICAO Address

The ICAO address is a 24-bit number issued to the aircraft by the registration authority of the aircraft. These addresses are usually written as a 6-digit hexadecimal number, although you may also encounter one written as an 8-digit octal number. The ping200XR understands the hexadecimal format. An octal number must be converted to hexadecimal format before entering.

Tip: By using the N-Number Look Up function on <https://www.faa.gov>, locate and use the “Mode S Code (base 16 / hex)” value. Applies to U.S. registered aircraft only.

8.2 Aircraft Maximum Speed

Mode S transponders can transmit their maximum airspeed characteristics to aircraft equipped with TCAS. This information is used to identify threats and to plan avoiding action by the TCAS equipped aircraft. The airspeeds are grouped in ranges.

8.3 Aircraft Stall Speed

The default aircraft stall speed is 0.

8.4 Aircraft Length / Width

When on the ground, ADS-B transmits encoded aircraft size information which is used by ATC to identify taxiing routes and potential conflicts. Enter the length and width (wingspan) fields and the appropriate size codes will be calculated for transmission.

Aircraft Length in Meters	Aircraft Width in Meters
$L \leq 15$	$W \leq 23$
$15 < L \leq 25$	$28.5 < W \leq 34$
$25 < L \leq 35$	$33 < W \leq 38$
$35 < L \leq 45$	$39.5 < W \leq 45$
$45 < L \leq 55$	$45 < W \leq 52$
$55 < L \leq 65$	$59.5 < W \leq 67$
$65 < L \leq 75$	$72.5 < W \leq 80$
$75 < L \leq 85$	$W > 80$
$L > 85$	Any

8.5 Aircraft Registration

The Aircraft Registration can be up to an 8 alpha-numeric code that corresponds to the tail number of the aircraft. (0-9, A-F).

Note: This is typically your aircraft N-number, unless otherwise advised by the FAA or ATC.

8.6 GPS Antenna Lateral / Longitudinal Offset

The GPS antenna offset is used in conjunction with the length and width to manage taxiway conflicts. A typical GPS does not report the geographic position of the center of the aircraft, or even the tip of the nose of the aircraft; instead, it usually reports the location of the actual GPS antenna (not the GPS receiver). In normal flight operation, this distinction is of no importance at all, but if ADS-B is used to manage taxiway conflicts, a significant offset in antenna position could mean the aircraft footprint is not in the same place as the ADS-B reported position. Although the GPS Antenna Offset is primarily intended for position correction on large transport aircraft, General Aviation aircraft can also have a significant offset. For example, if the aircraft has a long tail boom and the GPS antenna is on top of the tail, the GPS position could be 4 meters or more from the nose of the aircraft.

GPS Antenna Lateral Offset from roll axis (Meters)	GPS Antenna Longitudinal Offset from aircraft nose (Meters)
0	0 to 60meters in 2meter increments
Left 2	
Left 4	
Left 6	
Right 2	
Right 4	
Right 6	

8.7 Aircraft Emitter Type

To assist ATC tracking of aircraft, an aircraft category can be transmitted. The aircraft emitter type default is UAV (14).

8.8 ADS-B In Capability

The ADS-B transmissions include an indication to the ground stations of whether the aircraft includes a 1090MHz ADS-B receiver, a UAT ADS-B receiver, or both. This data is used to transmit ADS-R or TIS-B broadcasts to your aircraft if conditions indicate. ping200XR does not include an ADS-B receiver. Only select these items if you have a separate ADS-B receiver on-board.

8.9 Baro Altitude Source

If the external control input provides the barometric altitude, set the Baro Altitude Source to external. The ping200XR will use the Baro Altitude reported in the Control Message.

8.10 Serial Port Baud Rate

This setting configures the speed of the control interface serial baud rate in bps.

8.11 SIL / SDA

Set according to the system and design integrity of the GPS source.

8.12 Default Control Mode

Select the desired control type. This setting configures the ping200XR for Mode A, Mode C, Mode S and ADS-B Extended Squitter transmissions.

- None selected disables all modes.
- Mode A - Squawk
- Mode C – Altitude
- Mode S – Addressed Identification and Altitude
- Mode ES – ADS-B Identification and Position reporting

8.13 Default Squawk

The default squawk is 1200. To assist ATC tracking of aircraft, an aircraft category can be transmitted.

8.14 Baro Altitude Resolution

The baro altitude resolution default is 25 (ft).

8.15 In / Out Protocols

The default In/Out protocols are UCP.

8.16 Control

The Control tab allows the installer to exercise and verify the transponder's operation.

The screenshot shows the 'Ping200X Control & Config v3.18' application window. The interface is divided into several functional areas, each highlighted with a red box:

- Serial Port Setup:** Located in the top-left, it includes 'COM Settings' with fields for 'Conn Type' (Serial), 'Port' (COM21), 'App Baud' (57600), and 'Protocol' (UCP).
- Control:** Located in the middle-left, it features 'UCP Control Settings' with fields for 'Flight ID' (PING), 'Mode' (A, C, S, ES), 'Squawk' (1200), 'Emergency' (NONE), 'Baro Altitude' (3200), and 'En' (checked).
- Ownship Display:** A large window on the right showing flight data: ICAO Address (00000A), Latitude (41.2518165°), Longitude (-96.3054029°), Baro Altitude (925 ft), GNSS Altitude (1045 ft), Horizontal Velocity (0 kt), Heading (108°), Vertical Velocity (0 ft/min), Emergency Code (0 No Emergency), NIC (9 < 75m), NACp (9 < 30m), Emitter Category (14 UAV), and Air/Ground State (On Ground). It also shows 'Pks: 662' and 'Errs: 0'.
- Fault Status:** A small box on the right containing status indicators for 'Maint Req', 'GNSS Avail', 'GNSS Fix', 'TX Msg', and 'TX Msg Freq', all with green checkmarks.
- GPS Simulator:** Located in the bottom-left, it contains 'GPS Location Data' with input fields for 'Lat' (48), 'Lon' (-114), 'Alt(ft)' (3200), 'Rate' (0), 'Hdg(°)' (360.000), 'Vel(kn)' (100.000), and various accuracy parameters like HPL, HFOM, NIC, VFOM, GVA, NACp, VelFOM, and NACv.
- Serial Activity Viewer:** Located in the bottom-right, it displays a list of messages such as 'GDL90 Ownship Report', 'GDL90 Ownship Geometric Altitude', and 'GDL90+ Transponder Status V1'.

The 'Control Status' at the bottom of the window is 'Running'.

9 Post Installation Checks

Connect the system as shown in the Post Installation configuration diagram.

STEP	CHECK
Launch the PC Ping20XSCControl application	
Set Port to the USB or serial port connected to the ping200XR	
Set the App Baud to 57600	
Set Protocol to UCP	
Connect the Antenna	
Apply power from a minimum of a 11V, 1A power source	
Confirm that the Green LED comes on after power-up	
'Pkts:' should start counting confirming that the app is talking to the transponder	
Confirm 'ICAO Address' is correctly programmed and not 000000	
Confirm 'Baro Altitude' is correct for your field elevation	
After the GPS has had time to lock, confirm that 'Latitude' and 'Longitude' are correct	
Check the A, C, S and ES Mode boxes	
Observe the Red LED flashing about four times a second. This indicates 1090ES ADS-B transmissions	
If you are in range of Radar, the Green LED will flash during interrogations	
Using an EFB App such as ForeFlight mobile, connect via WiFi to pingUSB powered by a portable USB 5V power supply.	
The separation between the transponder and pingUSB needs to be at least 500ft	
The aircraft will appear as traffic on the EFB application	

10 Support

For additional questions or support please visit:

<https://www.uavionix.com/support/>