



ACAS Solutions for DAA and Collision Avoidance

CIVIL GOVERNMENT | DEFENSE & NATIONAL SECURITY | COMMERCIAL INDUSTRIES

LAST UPDATE: JUNE 2022



FLY SAFER WITH SAGETECH



ACAS Processors and Transponders

ACAS Xu DAA PROCESSOR



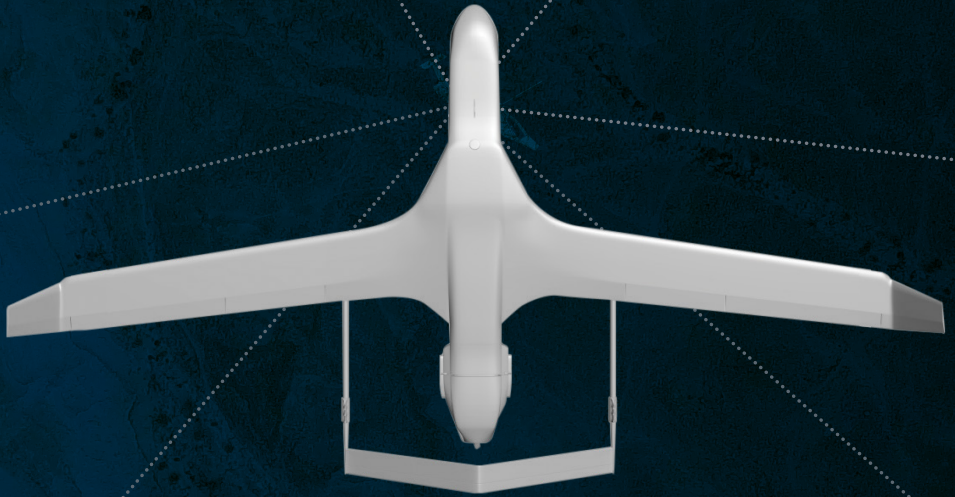
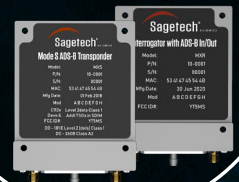
ACAS sXu DAA PROCESSOR



ACAS Xr PROCESSOR



TRANSPONDERS & INTERROGATORS



**CUSTOM
ENGINEERING**



SOFTWARE



**Achieve Type Certification.
Achieve BVLOS UAS Flight.
Improve Pilot Situational
Awareness.**

Sagotech's ACAS Solutions Help You Take Flight.

Sagotech supports both DAA in uncrewed vehicles, as well as Collision Avoidance in crewed and optionally crewed rotary aircraft. Whether you are flying for civil beyond-visual-line-of-sight (BVLOS) industrial applications or coming on line with new Urban Air Mobility/Advanced Air Mobility (UAM/AAM) platforms, Sagotech can assist you with proven situational awareness solutions.

Tiny SWaP-C. Plug and play integration. Certifiable. Our technology is proven on uncrewed platforms for more than a decade.



AIRSPACE INTEGRATION SOLUTIONS

60,000 FEET MSL

ACAS Xu

400 FT AGL

ACAS Xr

ACAS Xu

ACAS Xr

SURFACE

ACAS sXu

ACAS Xr

ACAS Systems Capabilities

	ACAS Systems		
	ACAS Xu	ACAS Xr	ACAS sXu
Aircraft			
sUAS <55lbs			✓
Fixed wing UAS >55lbs	✓		
Rotary UAS		✓	
Crewed Helicopters		✓	
Integrated features			
Cooperative Sensors			
1090 ADS-B In & Out	✓	✓	
ADS-B Validator	✓	✓	
Mode S Transponder	✓	✓	
Dual Band ADS-B			✓
Vehicle-to-Vehicle (V2V) Link			
		✓	✓
Ground Station Software			
	✓	✓	✓

Key Integration Capabilities

Non-Cooperative Sensors

- Radar
- EO/IR
- Acoustic
- Ground-Based

Command and Control Link

- Terrestrial
- Satellites

✓ Required and included in Sagetech's solutions

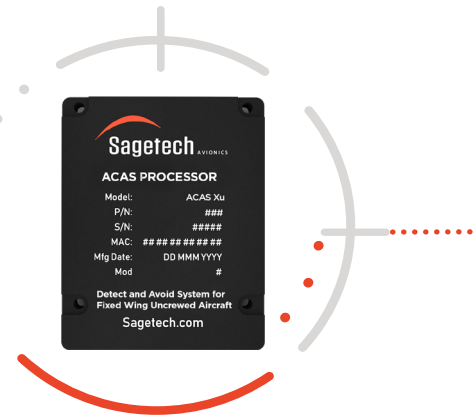
ACAS Xu DAA Processor

FOR FIXED WING UNCREWED AIRCRAFT, >55 POUNDS, >400 AGL

Navigate BVLOS safely through all airspace with this certifiable, ACAS-based, all-in-one detect and avoid system. Featuring low-SWaP and easy integration, this product serves larger fixed wing UAS greater than 55 lbs.

Features:

- ACAS Xu DAA processor
- Accepts input from Airborne and Ground-Based Non-Cooperative surveillance sensors
- Non-Cooperative sensor interface
- Turn-key autopilot integration
- Ground Control Station GUI application for control, status monitoring, traffic display, and display of alerting and guidance
- Designed to comply with TSO C211a
- Small size and weight: 3.4" x 2.5" x 1", 6.7 ounces (190 grams)



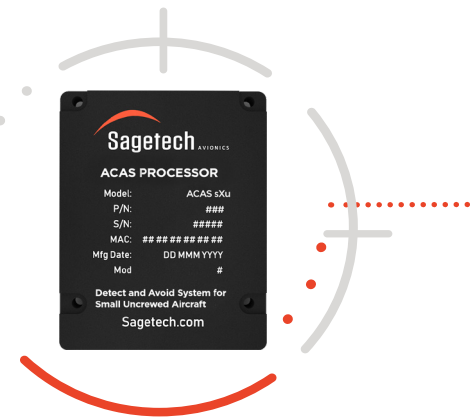
ACAS sXu DAA Processor

FOR SMALL UNCREWED AIRCRAFT, <55 POUNDS, <400 AGL

Navigate BVLOS safely through all airspace with this certifiable, ACAS-based, all-in-one detect and avoid system. Featuring low-SWaP and easy integration, this product serves smaller UAS approx. 55 lbs and below and flying at 400 ft and below.

Features:

- ACAS sXu DAA processor
- 1090/978 MHz ADS-B passive reception
- Accepts input from Airborne and Ground-Based Non-Cooperative surveillance sensors
- Turn-key autopilot integration
- Ground Control Station GUI application for control, status monitoring, traffic display, and display of alerting and guidance
- Provisioned for developing V2V/V2X functionality
- Small size and weight: 3.2" x 2.5" x .5", 2 ounces (60 grams)



** Specifications may be subject to change, please confirm prior to order.*

ACAS Xr ACAS Processor

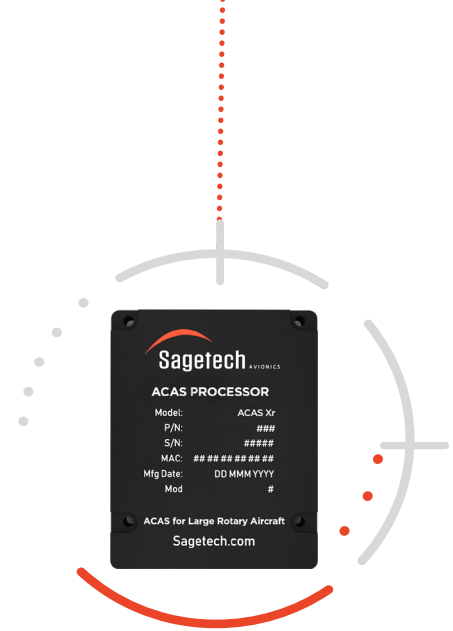
FOR ROTARY WING AIRCRAFT, >55 POUNDS, >400 AGL

Detection and Avoidance

Our ACAS Xr Processor is the critical linchpin for supporting both DAA in uncrewed vehicles, as well as Collision Avoidance in crewed and optionally crewed rotary aircraft.

Features:

- ACAS Xr Processor
- Accepts input from Airborne and Ground-Based Non-Cooperative surveillance sensors
- Integrated cooperative traffic surveillance and ADS-B validation
- Turn-key autopilot integration
- Ground Control Station GUI application for control, status monitoring, traffic display, and display of alerting and guidance
- Provisioned for developing V2V/V2X functionality
- Built rugged for rotorcraft shock and vibration requirements



MXS MODE S TRANSPONDER WITH ADS-B IN AND OUT

Sagetech's next-gen MXS miniature transponder provides Mode S and 1090 MHz ADS-B In/Out for worldwide compliance of your uncrewed system, all integrated in a single tiny package.

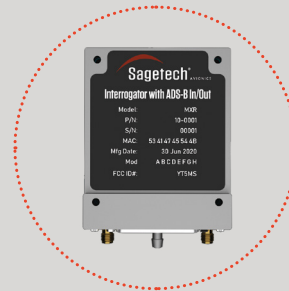


- Compliant to FAA TSO standards: TSO-C112e | TSO-C166b | TSO-C88b
- Integrated ADS-B In/Out
- Antenna diversity for full visibility
- Integrated altitude encoder
- Plug and play with common autopilots
- Small size and weight: 3.4" x 2.5" x 1", 6.7 ounces (190 grams)
- Intuitive command and control software included

MXR INTERROGATOR MICRO INTERROGATOR WITH ADS-B IN AND OUT

For R&D lab use only

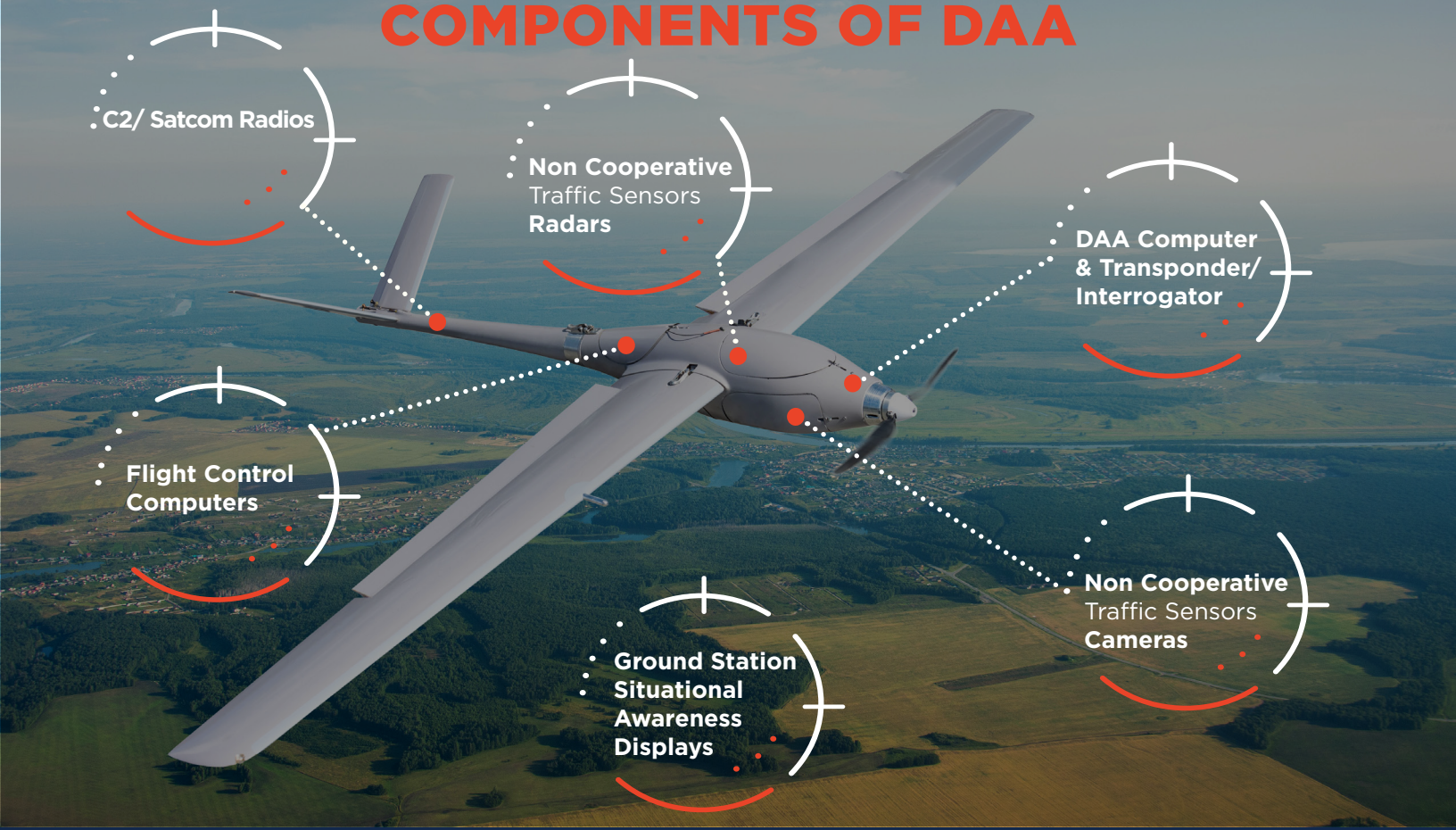
Sagetech's MXR Mode S interrogator delivers omnidirectional active surveillance and ADS-B track validation from a single miniature SWaP solution.



- Integrated ADS-B In/Out
- Flexible I/O including Ethernet
- Integrated altitude encoder
- Optional integration kit available
- Small size and weight: 3.4" x 2.5" x 1", 6.7 ounces (190 grams)
- Programmable range-finding interrogator

* Specifications may be subject to change, please confirm prior to order.

COMPONENTS OF DAA



FAA'S Anticipated DAA Requirements Release Dates

Certification Documents	Phase 1 DAA		Phase 2 DAA		Phase 3 DAA	
	Rev -	Date	Rev A	Date	Rev C	Date
DO-365 DAA MOPS	Rev -	5/31/2017	Rev A	3/30/2020	Rev C	October 2022
			Rev B	9/16/2021		TBD
TSO-C211	Rev -	9/25/2017	Rev A	March 2022	Rev C	No Revision Needed
DO-366 ATAR MOPS	Rev -	5/24/2017	Rev A	9/10/2020	Rev A	No Revision Needed
TSO-C212	Rev -	9/22/2017	Rev -	No Revision	Rev A	July 2022
DO-362 C2 Link (Terrestrial) MOPS	Rev -	9/22/2016	Rev A	12/17/2020	Rev B	TBD
TSO-C213	Rev -	3/9/2018	Rev A	TBD	Rev B	TBD
DO-381 GBSS MOPS			Rev -	3/30/2020	Rev A	TBD
TSO=Cxxx			Rev -	January 2022	Rev A	No Revision Needed
DO-XXX Airborne EO/IR Sensor MOPS			Rev -	6/17/2021	Rev -	No Revision Needed
TSO-Cxxx			Rev -	May 2021	Rev -	No Revision Needed
DO-386 ACAS Xu MOPS			Rev -	12/27/2020	Rev -	No Revision Needed
TSO-C211a			Rev -	May 2022	Rev -	No Revision Needed
DO-181 ATCRBS/Mode S MOPS	Rev E	3/17/2011	Rev F	12/17/2020	Rev F Chg 1	March 2022
TSO-C112	Rev E	9/16/2013	Rev F	TBD	Rev F	No Revision Needed
DO-260 ADS-B 1090ES MOPS	Rev B	12/2/2009	Rev C	12/17/2020	Rev C Chg 1	March 2022
TSO-C166	Rev B	12/2/2009	Rev C	TBD	Rev C	No Revision Needed
DO-304 Guidance Material (GM) for UAS	Rev -	3/22/2007	Rev -	No Revision	Rev A	6/17/2021
DO-XXX C2 Link for LTE Networks MOPS					Rev -	January 2023
DO-XXX ACAS sXu MOPS					Rev -	June 2022
DO-XXX ACAS Xr MOPS					Rev -	September 2024
DO-XXX GM for UAS Lost Link Behavior					Rev -	April 2022
DO-XXX GM for UAS Navigation Systems					Rev -	April 2022

EARLY SYSTEMS TAKING FLIGHT

Sagetech's certifiable DAA and Collision Avoidance solutions are taking flight around the world in beta release trials. Ask us about our early adopter program.



INCLUDED SOFTWARE

All included software is offered as either a standalone package or as a module for integration into your ground control station.

INTEGRATION MADE EASY

Select from a variety of antennas, cables, and test boxes to quickly integrate our ACAS solution into your aircraft.

CUSTOM ENGINEERING

We often work with our customers to optimize a solution for a particular program or develop something new. Just contact us for details.



Sagetech is an aerospace technology company, empowering safe flight with the world's most reliable UAV transponders. Experience serving military and civil duty on most small to medium UAVs, Sagetech solutions are mission-proven and offer decades of program experience, certifications, and millions of flight hours to deliver maximum value over the life of an uncrewed platform. Today Sagetech is expanding its technology platform to create comprehensive situational awareness systems, such as detect and avoid solutions for uncrewed aircraft as well as collision avoidance for crewed and optionally crewed rotorcraft. Sagetech works in concert with its extensive ecosystem of OEM customers, technology partners, and resellers to ensure aircraft fly safer with Sagetech on board.

FOLLOW US ON: [in](#) [twitter](#) [youtube](#)

E: sales@sagetech.com

317 W. Steuben St.,
Bingen, WA 98605 USA

Sagetech.com

Cage Code 8FG94
© 2022 Sagetech Avionics Inc.

