

... a significant advance in marine safety!

ECHOMAX

Active-XS-Dual Band

Radar Target Enhancer

OPERATION MANUAL



Active-XS is a mandatory fit on all Golden Globe 2022 Race Yachts.



FCC CERTIFICATION ID: XZMACTIVE-XS

CE 0191 !

NATO STOCK NO.5841-99-269-3512

TURKISH PERMISSION REP: B.62.0.BTK.0.11.244.02/17595/8059



Echomax Products in the UK. Email: reflectors@echomax.co.uk www.echomax.co.uk

ECHOMAX

Active-XS-Dual Band

IMPORTANT PLEASE READ BEFORE INSTALLING YOUR ACTIVE RTE

CONTENTS

Echomax Active-XS antenna,
24 meters of 3 core cable.
Control Box.
Operation Manual

ECHOMAX ACTIVE-XS COMPONENTS,

CONSTRUCTION, USE AND INSTALLATION If you are not able to safely install the unit yourself you are advised to seek the services of a competent person or company to install the RTE

MOUNTING BASE MOUNTED UNIT

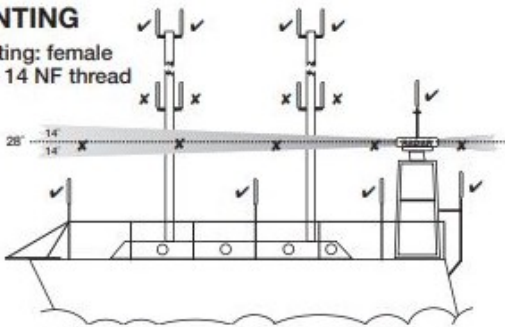
The antenna has provisions in the base for 1x1/14" TPI female thread mast fitting or deck mount bracket. To ensure a permanent fixing 'LOCTITE' or PTFE or plumber's tape should be used and the RTE must be screwed down tightly. **CARE MUST BE TAKEN TO ENSURE THAT AS THE ACTIVE-XS IS TIGHTENED ON THE BASE THE CABLE IS ALLOWED TO TURN FREELY**

MOUNTING SUSPENDED UNIT

Free suspension from the two back stays in most cases allows compensation by the bottom attachment from heel, thus retaining most of the 112m² stated performance level whilst the vessel is at heel. The RTE must not be subjected to winch pressure and cable secured to avoid chafing. Each RTE is supplied with 24M of cable as standard. Careful consideration should be given to evaluate if this mounting option is suitable for your rig and use.

MOUNTING

Base fitting: female
1 inch - 14 NF thread



RTE Mast top –horizon (not response) +/- 25 miles
Pushpit—horizon (not response) +/- 2-3 miles.
Lower installations may require trial and error to find the best location and may be subject to slight shadowing.

Please note that mast top mounting may result in frequent activation due to a large horizon. Lower installation may be preferred.

For mast fitting the Active XS should be fitted vertically at masthead or as illustrated. The transmit antennas are positioned 70mm from the base of the Active XS and need a clear 360° azimuth. When fitted at mast head keep as far away as possible from other fittings to reduce shadowing using the Echomax mast bracket. The antenna will not interfere electrically with other mast head fittings. It should not be on a back stay or where its vision is obscured or is close to any metal object otherwise performance could be significantly impaired.

The Active XS unit must never be painted as this will seriously impair performance. The Active XS must not be fitted in or close to the vessels radar transmitting beam width of 28° as this may seriously damage the PCB. The Active XS can be fitted below or preferably above the radar. It is possible to shorten or extend the cable by a further 25 meters without affecting the performance using extension cable rated at 3A at 300V.

ACTIVATION BY VESSELS OWN RADAR

It is to be expected that use of the vessels own radar will illuminate the green and possibly the yellow LED. The RTE will treat this as a third party radar and will continue to receive and respond to all other radar.



ECHOMAX CONTROL BOX for Surface fitting or flush mount fitting with optional flush mount kit.

The control box must be fitted internally as it is not waterproof. The control box can be wired from the base or the back as required. A 12v fused or circuit breaker supply of 3-5A is required. The control box has a quadruple alarm facility.

CONTROL BOX FUNCTION Turn on the red power switch.

Once the red power switch is turned on the unit is in the quiescent mode and will consume up to 23mA. When interrogated by an X Band radar the green LED light will flash every 2.4 seconds. If the flash lengthens then this indicates that more than one radar is painting the antenna. If painted by a high speed radar which rotates every 1.5 seconds then the LED light will flash quicker. When painted by an S Band radar the yellow light will flash. It should be borne in the mind that vessels with S Band radar are very large and in most cases over 3000GT and can neither stop nor change course quickly. Turning on the green switch will mobilize the internal buzzer, which is set to actuate for approximately half a second intervals. The control box also has facilities for a 8A external volt free alarm. THIS IS NOT A POWER SOURCE and must be initialised as shown in the wiring diagram. The control box has an externally replaceable 0.5A fuse and is surge and cross polarity protected

NB—ISOLATE POWER SUPPLY during installation, alteration or repair of wiring.

REMOVAL OF FUSE Gently push fuse in and turn anti-clockwise and then remove. Failure to do this will damage the aluminium connections.

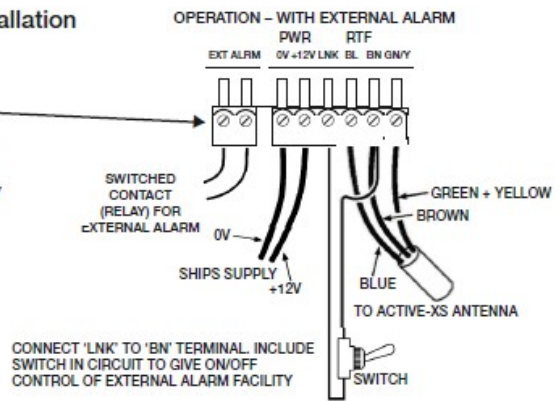
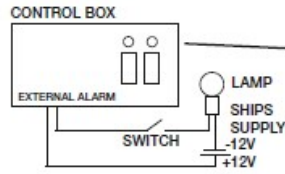
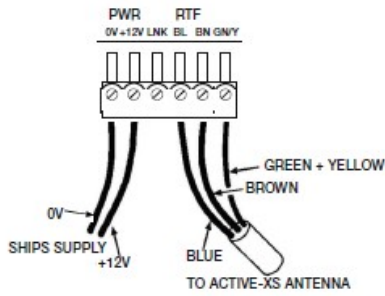
IMPORTANT The XS may be saturated by a close large vessels radar within + or - 500 meters. The fitting of the Active XS does not exclude you from exercising safe navigational procedures or having at all times a proper look out by sight and hearing or comply with the collision regulations.

LICENSING REQUIREMENTS

Many countries and administrations require a ships radio license or modification of your existing ships radio licence before the Active-XS can be used for maritime use. Contact your local administration for details.

RTE CONNECTIONS The diagrams show the correct wiring installation

BASIC OPERATION – NO EXTERNAL ALARM



PERFORMANCE CHECK

As the RCS of your vessel may exceed the RCS of the Active XS, the trail is best carried out at 0.5nm as the target can be easily identified. The range should then be increased at intervals of 0.5nm turning the Active XS on and off at intervals noting the change in response. Increase the distance between the Active XS and the base, so that the test target can be seen at all times. In busy waters to avoid confusion with other vessels the target vessel can be acquired by turning the Active-XS on and off, then watching the display for change in target response. In normal weather and sea conditions, with the Active XS mounted at four meters above sea level the Active XS should appear on the interrogating radar screen.

If the mounting heights, including that of the interrogating radar vary so will the response due to curvature of the earth. These figures are for guidance only and should not be relied upon. 2KW radar up to 4nm: 5KW radar up to 10nm: 10-25KW radar up to 15-30+ nm.

For restricted response to FMWC-Broadband Radar Please see FAQ section on website.

DO NOT EXPECT to always see with the naked eye the vessel or land based interrogating radar which may be +/-30 miles away and principally below the horizon. Reports of 60 miles reception have been recorded.

FAULT FINDING CHART

No Red LED light when red switch is turned on	Check fuse or circuit breaker Check polarity of wiring Check power supply at control box	Damaged cable or wrong connection Cable cut with power on check fuse
Unit switched on and continuous green LED light shows, in harbour or when saturating RTE	Local radar on , or radar operation moored nearby (<15M) Moored close to large metal object Relocate vessel to more suitable position	Check polarity of Active XS wiring Installed too close to other metal objects
Unit on and buzzer on and unit fails to operate when it clearly is interrogated.	Check all above faults. Is RTE in shadow of interrogation radar as it will not operate if masked	
Buzzer switched on but does not sound when painted by radar	Buzzer faulty—return control box to Echomax for inspection	

TECHNICAL SPECIFICATION

Reception frequency: X Band Radar 9.3—9.5 GHz
S Band Radar 2.9—3.1 GHz
Operating Temperature: -20 to + 60°C
Voltage: 12V DC—+ 30% - 10% (voltage surge and cross polarity protected)
Current consumption
In quiescent state: <23mA
Current consumption X Band Radar 190mA (typically)
When transmitting S Band Radar 155mA (typically)
Position accuracy: Within 1 meter
EIRP: 1W (typically)

Typical performance—QinetiQ Funtington Anechoic Chamber March 2010

X BAND RADAR SPL (ISO Standard 7.5m ²)	S BAND RADAR SPL (ISO Standard 0.5m ²)
Zero degrees: 118.33m ²	Zero degrees: 6.26m ²
+/- 10 degrees: 65.07m ²	+/- 10 degrees: 6.44m ²
+/- 20 degrees: 19.49m ²	+/- 20 degrees: 5.36m ²

NB. Production units have the following S Band SPL.
Zero degrees: 15.75m²
+/-10 degrees : 16.20m²
+/-20 degrees: 13.40m²

DIMENSIONS and WEIGHTS

Antenna length:	685mm
Antenna width:	40.5mm
Antenna weight:	573gms (excluding cable)
Control Box width:	92mm
Control Box height:	51mm
Control Box depth:	38mm
Control box weight:	99gms
Cable length:	24m 3 core 0.5mm ²
Cable weight:	967gms

STATED PERFORMANCE LEVEL (SPL)

Exceeds ISO 8729-2 effective July 09—X Band Radar 7.5m² and S Band radar 0.5m² at Zero, +/-10 and 20° of heel maintained over a total angle of 280°

OPTIONAL EXTRAS

FLUSH MOUNT KIT FOR CONTROL BOX

Length: 111mm Height: 70mm



STAINLESS STEEL MOUNTING BRACKETS

- 100mm Base fitting: male 1x1/14" TPI thread
- 200mm Base fitting; male 1x1/14" TPI thread
- 300mm Base fitting: male 1x1/14" TPI Thread
- 300mm Stainless Steel Extension Pole: female/male 1x1/4" TPI
- 600mm Stainless Steel Extension Pole: female/male 1x1/4" TPI
- 1000mm Stainless Steel Extension Pole: female/male 1x1/14" TPI
- Active-XS Ocean mast bracket: 26cm reach with male 1x1/14" TPI



FLUSHMOUNT WATERPROOF CONTROL BOX

- New slim line flush mount waterproof control box features:
- Keypad operation: X or X & S Band LED to match your single or dual band RTE
- Selectable audio alarm sensitivity
- Selectable day or night time illumination brightness
- Extension alarm facility

DIMENSIONS

- Control Box width: 90mm
- Control Box height: 72mm
- Control Box depth: 50mm (excluding provision for cables)
- Cut out diameter is 57mm
- Free standing Bracket as below



Declaration of Conformity

(As required by Article 6.3 of Directive 1999/5/EC-RTTE Directive)
 Declares under the sole responsibility that the active radar target enhancer manufactured by :

AQUAMATE PRODUCTS LTD, also trading as
 ECHOMAX
 Email: reflectors@echomax.co.uk

Intended for Worldwide use as an S and X Band active radar target enhancer aboard non SOLAS vessels and identified by the type number Active-XS to which this declaration refers has been tested to the essential radio, EMC & safety test suites required by the notified body and is in conformity with the standards.

EN 302 752 V1.1.1 (2009-02)
 EN60945:2002 (Clauses 9, 10 & 12)

And complies with the essential requirements of Directive 1999/5/EC. CE 0191 : Performance requirements of ISO 8729-2 XS Band Radar.

Conformity procedure under Annex IV of 1999/5/EC (Technical Construction File) has been undertaken by QinetiQ (0191) of Cody Technology Park, Ively road, Farnborough GU14 0LX UK.

The Technical Construction File is held by :-
 John H Simpson
 AQUAMATE PRODUCTS LTD, also trading as ECHOMAX.
 Email: reflectors@echomax.co.uk

Signed 

J.H. Simpson Managing Director July 2021

GUARANTEE

The Echomax Active-XS—Dual Band RTE is guaranteed for 12 months from the date of purchase and provides for the replacement at our discretion of the complete unit or any of the components providing failure is attributed to component failure or defect which is not attributed to accidents or misuse, fair wear or tear or neglect.

The guarantee is invalidated by any attempt whatsoever to open up or interfere in any way with the unit.

It is the users responsibility to return the unit at his expense to us to inspect and report on the reason for failure.

No exchange unit will be given until a full inspection and report is issued.

This guarantee does not affect your statutory consumer rights or those governed by local Law.

Check Active XS Choice and observations after 10 years use see:
www.echomax.co.uk/actives

AT	BE	BG	CY	CZ	DK
EE	FI	FR	DE	GR	HU
IS	IE	IT	LV	LT	LU
MT	NL	NO	PL	RO	SK
SI	ES	SE	CH	LI	GB