

ATEX APPROVED ULTRASONIC ANTI-FOULING SYSTEMS

ATEX MANUAL



NRG MARINE LTD.
1 & 2 Mercia Village, Torwood Close, Westwood
Business Park, Coventry, CV4 8HX, Great Britain
Tel : +44 (0)845 900 2171
Fax : +44 (0)845 900 2197
Email : info@nrgmarine.com
Web : www.nrgmarine.com



SONIHULL
ULTRASONIC ANTI-FOULING SYSTEM



ATEX APPROVED ULTRASONIC BIO-FOULING PREVENTION

PART NO. NRG-TR-Ex

CE 440045 Ex II 1G II 2G II 3G

Compliant with the following Standards

ATEX	IECEX
EN 60079-0:2018	IEC 60079-0:2017 Ed. 7
EN 60079-18:2015+A1:2017	IEC 60079-18:2017 Ed. 4.1

ONLY Compatible with the following Sonihull control panels.

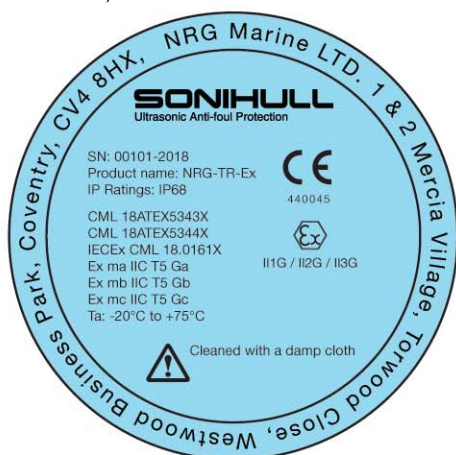
Installation environment:

SAFE ZONE: Sonihull Mono
Sonihull Duo
Sonihull8

Zone 1: Sonihull-Ex1
Sonihull-Ex2
Sonihull-Ex8

(Please Note: Control panel installation is not covered in this document).

ITEM	DETAIL
Manufacturer's name or registered trade mark	NRG Marine Ltd.
Address	1 & 2 Mercia Village, Torwood Close, Westwood Business Park, Coventry, CV4 8HX, Great Britain
Type identification	Sonihull Anti-foul Protection NRG-TR-Ex
Certificate number	CML18ATEX5343X CML18ATEX5344X
IECEX Certificate Number	IECEX cml 18.0161X
CE mark Notified Body No.	CE 440045
ATEX marking	Ex ii 1G II 2G III 3G
Code	Ex ma IIC T5 Ga Ex mb IIC T5 Gb Ex mc IIC T5 Gc
Ambient	-20°C to +75°C
Rating	IP68



TRANSDUCER CABLE

All transducers are built to order to match the clients specific cable specification and lengths, the minimum criteria is: 2 core 0.75mm CSA / 600v /temp rating 90°C.

SAFETY INSTRUCTIONS

In full compliance with the vessel's Electrical and Safety Standards, isolate the power supply before carrying out any works.

Training Requirements

We recommended that the electrical installation of this system is only carried out by a qualified Electrical / Mechanical Technicians.

ENVIRONMENTAL CONDITIONS

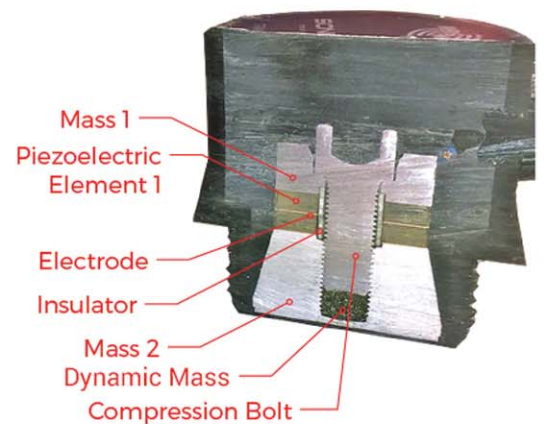
- Ambient temperatures -20°C to +75°C.
- Suitable for installation in wet areas. Including water, salt, and oil.
- Do not expose to harsh corrosive atmospheres.
- Keep out of contact of harmful chemicals that are not suitable for fibreglass, nylon or ABS plastics.

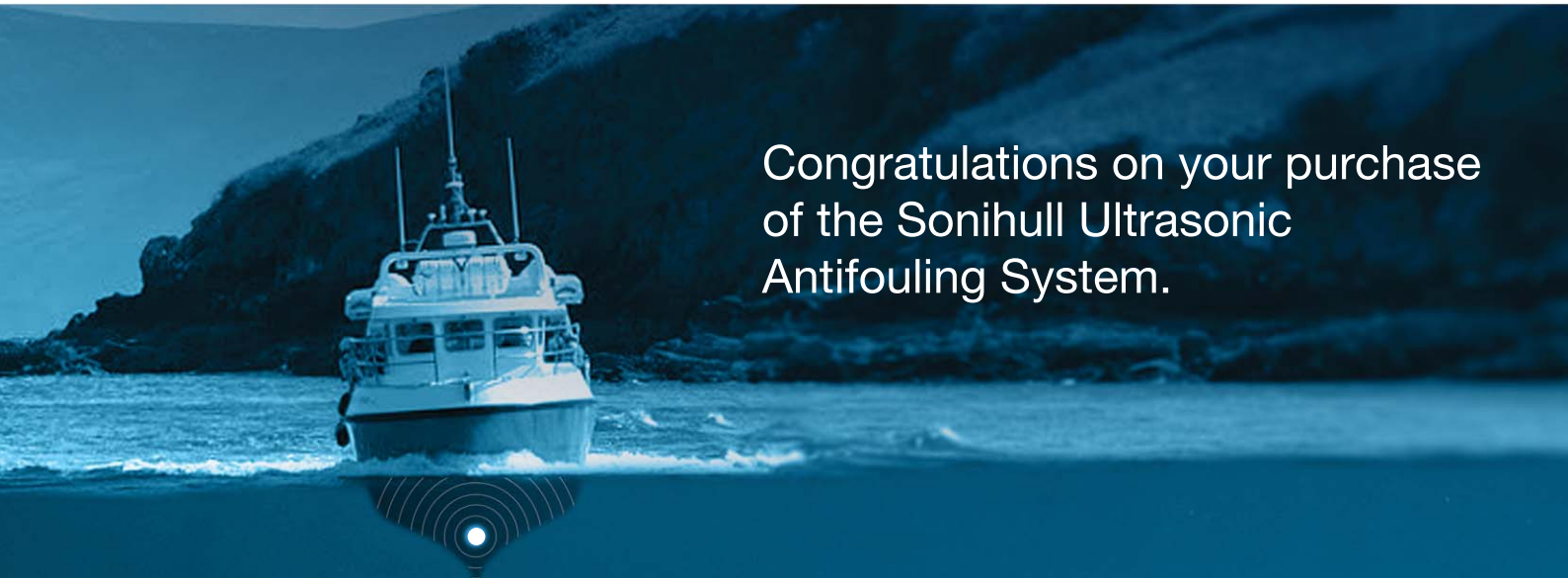
SPECIAL CONDITIONS FOR SAFE USE

- The equipment should also be protected from UV light.
- Due to the risk of electrostatic charging, the equipment should only be cleaned with a damp cloth.
- The transducer face should be suitably protected during installation and not be exposed to impact.

CONSTRUCTION MATERIAL

- Transducer outer shell casing, composite of fibreglass nylon ABS plastic.
- Potting compound flame retardant 2 part polymer compound.
- Mounting ring, composite of fibreglass nylon ABS plastic, also available in mild steel and aluminium.
- Pipe adaptors – marine grade aluminium.





Congratulations on your purchase
of the Sonihull Ultrasonic
Antifouling System.



This manual provides simple installation instructions for the Sonihull ATEX approved transducer.

The number of units you require will depend on the size and construction of the vessel or equipment that you are protecting from marine biofouling.

For advice about your specific installation please contact your local Sonihull technical representative or email us at **info@nrgmarine.com**.

Sonihull is suitable for use on all materials that transmit ultrasound well, including FRP, GRP, aluminium, steel, stainless-steel, titanium and rigid plastic constructions, where the transducer can be bonded to the dry side of the equipment you are protecting.



SONIHULL TRANSDUCER LOCATION

Once you have found a suitable location for the mounting of the transducer, ensure that there will be enough clearance around the transducer so that it can be screwed in leaving enough clearance for the cable gland and cable when being rotated. Also ensure there is sufficient clearance to replace any floor or access panels and that there is suitable access for running the cables back to the Sonihull control unit.

(Control Unit Installation is covered in a separate document, control units depending on model can only be installed in Zone 1, Zone 2 or Safe Zones).

Prepare the surface for the transducer by sanding down the area to ensure a smooth, flat, clean surface. It is important that both the surface being protected and the transducer surfaces are flat and clean to ensure the best possible surface-to-surface contact for ultrasonic signal transmission.

Clean the transducer face and contact surface to ensure there is no dust or grease.

Please also read our SONIHULL INSTALLATION TIPS on the following pages, for more advice about transducer location and installation.



SONIHULL TRANSDUCER INSTALLATION

Apply a thin layer of petroleum jelly to the thread of the mounting ring, ensuring to keep the bonding surface of the ring free from any grease (this will stop any epoxy from accidentally getting stuck in the thread).

Prepare the marine epoxy as per the manufacturer's instructions. You will note that a gutter has been incorporated into the design of the mounting ring to help prevent any stray epoxy being squeezed into the thread.

Apply the epoxy to the face of the mounting ring, on the outside of the gutter and press firmly into place. It is important to epoxy the full 'circle' of the transducer to make a complete seal with the surface once set.

Allow the epoxy to set fully prior to attaching the transducer.

ATTACHING THE TRANSDUCER

- Prior to screwing in the transducer to the mounting ring, the face of the transducer should be covered with a thin (1mm) layer of petroleum jelly.
- This will allow better contact between transducer and surface and better transmission of ultrasound.
- Screw the transducer fully into the mounting ring, ensuring that the mounting ring has bonded correctly onto the mounting surface.
- Do not over tighten as this could cause the epoxy to break.
- Run cables back to the Sonihull control unit and connect.
- If you have already run the transducer cables, please rotate the transducer anti-clockwise about 8 rotations before screwing it in. This will ensure that the cable is not twisted once the transducer is screwed clockwise into the mounting ring.
- Please also read our SONIHULL INSTALLATION TIPS, for more advice about transducer location and installation.



SONIHULL INSTALLATION TIPS

To get the best performance from the system there are 3 main considerations.
For hull and static structure bio-fouling protection.



1. LOCATION

The transducer needs to be mounted on an obstruction-free area below the water line and on the inside of the external skin. (for static structures the transducer can be mounted externally up to depths of 30 metres). To enable the transducer to create resonance it must be away from any bulkheads, bracing and ribs etc, ideally in the centre of a panel and not closer than 300mm from any obstruction. Compare this to the skin of a drum, to make the best noise you would hit in the middle, not at the edges, ultrasound transducers need the same consideration.



2. INSTALLING THE TRANSDUCER MOUNTING RING

The transducer needs complete face-to-face contact for good transmission, and that means flat, not curved, bowed or rough. Only flat contact will work. Also, ensure that there are no drips of glue inside the ring. A little pimple of hard glue or weld spatter can hold the transducer off the surface and will prevent correct transmission of ultrasound. If there are any concerns that the surface is not flat, follow the manual for using the aluminium contact disk as a problem solver.



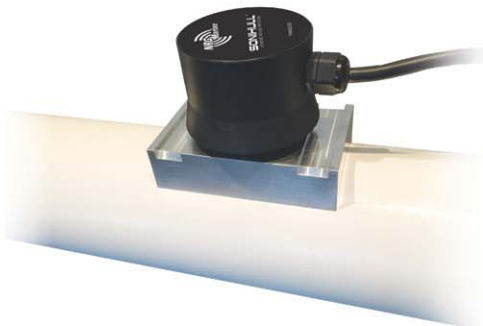
3. APPLYING THE ACOUSTIC COUPLING GEL

The transducer needs to have a smear of coupling gel provided on the face to ensure correct transmission. An even 1mm application will ensure that good contact can be made. Do not apply too much as the transducer face will not get close to the surface and the signal will be insulated. As good practice, when you first screw in the transducer, screw it in finger-tight. Then, remove the transducer and observe the swirl marks in the petroleum jelly on the transducer and look for the corresponding wetting on the surface inside the ring. This will give you a clear indication of the quality of the surface contact.

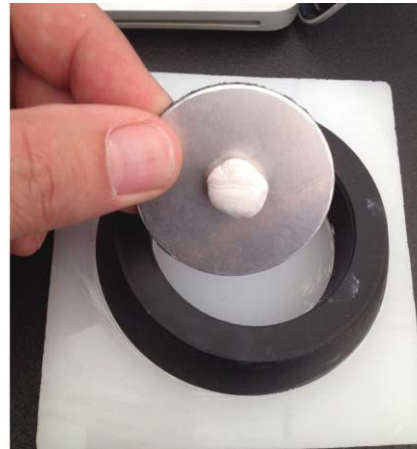


PIPE ADAPTOR INSTALLATION

- Find a suitable location for the pipe adaptor, ideally no closer than 250mm to a flange or bulkhead.
- Take into account accessibility, so the transducer can easily be installed and maintained.
- Prepare the pipe by sanding to remove any surface paint and to create a key for epoxy glue to bond with.
- Apply epoxy glue to the curved surface of the pipe adaptor, paying attention to the Center of the curve, ensuring there are no air bubbles.
- Press the adaptor on to the pipe firmly so that the epoxy glue spreads evenly.
- Hold The pipe adaptor in place so the epoxy glue can dry without the adaptor moving. The locating grooves are ideal for holding in place with Zip-tie or jubilee clips.
- Apply 1-2mm of Vaseline across the face of the transducer.
- Holding the pipe adaptor so it can't move, screw in the transducer fully into the adaptor.
- The transducer should be tightened to ensure good contact, but not over-tightened.



MOUNTING TRANSDUCERS IN CURVED OR ROUGH LOCATIONS USING THE ALUMINIUM CONTACT DISK



The purpose of the aluminium contact disk is to create a flat surface for the transducer to transmit through, by pressing the epoxy on its underside into the gaps & creating a solid contact with the mounting surface.

1. Ensure that the mounting rings are firmly mounted and that the epoxy has cured fully (to prevent the ring coming off once the transducer is screwed into the ring).
2. In preparation for a later stage, apply a very thin layer of petroleum jelly across the face of the transducer.
3. Remove the protective plastic sheet from both sides of the aluminium disk.
4. Depending on how rough or curved the surface inside the mounting ring is, apply a suitably sized quantity of epoxy on the centre of the aluminium disk.
5. Insert the disk into the mounting ring with the epoxy side touching the mounting surface. Screw in the transducer so that the face of the transducer will push down on the disk, which in turn will spread the epoxy evenly across the surface of the disk.
6. Allow the epoxy to cure before switching on the Sonihull.

Should you require any further information or technical assistance please email us at: info@nrgmarine.com.



