

# INSTALLATION AND OPERATION MANUAL



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**SONIHULL8**  
ULTRASONIC ANTI-FOULING SYSTEM



## INSTALLING A SONIHULL SYSTEM

Congratulations on your purchase of the Sonihull8 Ultrasonic Anti-foul System.

This manual provides simple installation instructions for your Sonihull8 control panel and Sonihull8 transducers. 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 Sonihull8 sales representative or email us at [info@nrgmarine.com](mailto:info@nrgmarine.com).

Sonihull8 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 material that you are protecting. If your vessel construction is a FRP or GRP sandwich (two rigid surfaces with a foam core), we strongly recommend using the services of a professional marine technician, as fitting a transducer to the outer skin will involve cutting through the inner skin and removing some of the sandwich core filling to bond with the dry side of the outer skin.

Please note that the Sonihull8 system is not suitable for wooden vessels, because wood is a poor transmitter of ultrasonic sound frequencies. For ferro-cement hulls it is recommended that you double the number of transducers required compared to the illustration in this brochure to achieve the best results.

## SAFETY INSTRUCTIONS



We recommend that the electrical installation of this system is carried out by a qualified marine electrician.



When mounting the control box, please find a suitable dry position, above the waterline where possible. Connect all AC connections in accordance with IEC wiring regulations, ensuring the correct plug and socket are used. If connecting to a DC supply, ensure the device is wired directly via a 10 Amp breaker.



Colour codes for mains cable are as follows;

Brown = Live

Blue = Neutral

Green and Yellow = Earth

(If connected to DC supply please ensure that an in-line 10 Amp fuse is used)



**IF IN DOUBT, CONTACT A PROFESSIONAL MARINE ELECTRICIAN**





## SONIHULL8 AT A GLANCE



Transducers x8

Transducer Rings x8

Cables x8



## WHAT'S IN THE BOX?

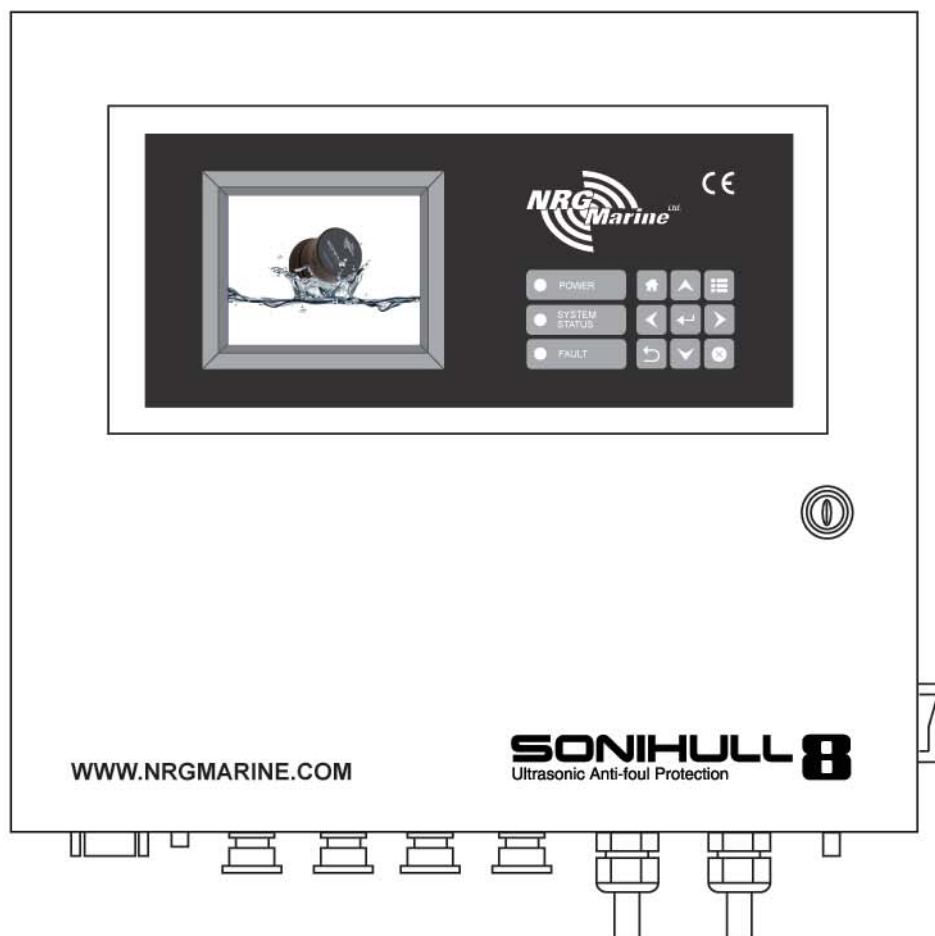


- 1x Sonihull8 ultrasonic pulse generator control unit with eight transducer outputs
- 8x Ultrasonic transducers, each with 8 metres of cable. (Extendable up to 80 metres)
- 8x Ultrasonic transducer rings
- Mains cable with UK standard 3-pin fused plug
- Marine grade epoxy glue
- Transducer gel

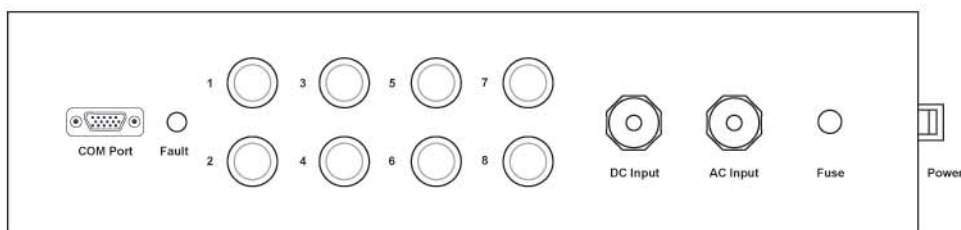
### Items required but not supplied with the kit.

- 4 x screws for mounting control unit.

## TECHNICAL SPECIFICATION



## TRANSDUCERS CONNECTORS



**Brand**  
NRG Marine Ltd.

**Product name**  
Sonihull8

**Product code**  
SH08

**PSU approval**  
CE and UL

**Voltage**  
AC 110-240V 50/60Hz  
(DC range 22-36V)

**DC supply cable 2 core**  
1.5m

**Mains supply cable 3 core**  
1.5m

**Transducer**  
8 pcs.

**Average power consumption**  
<30watts

**Transducer rating**  
IP68

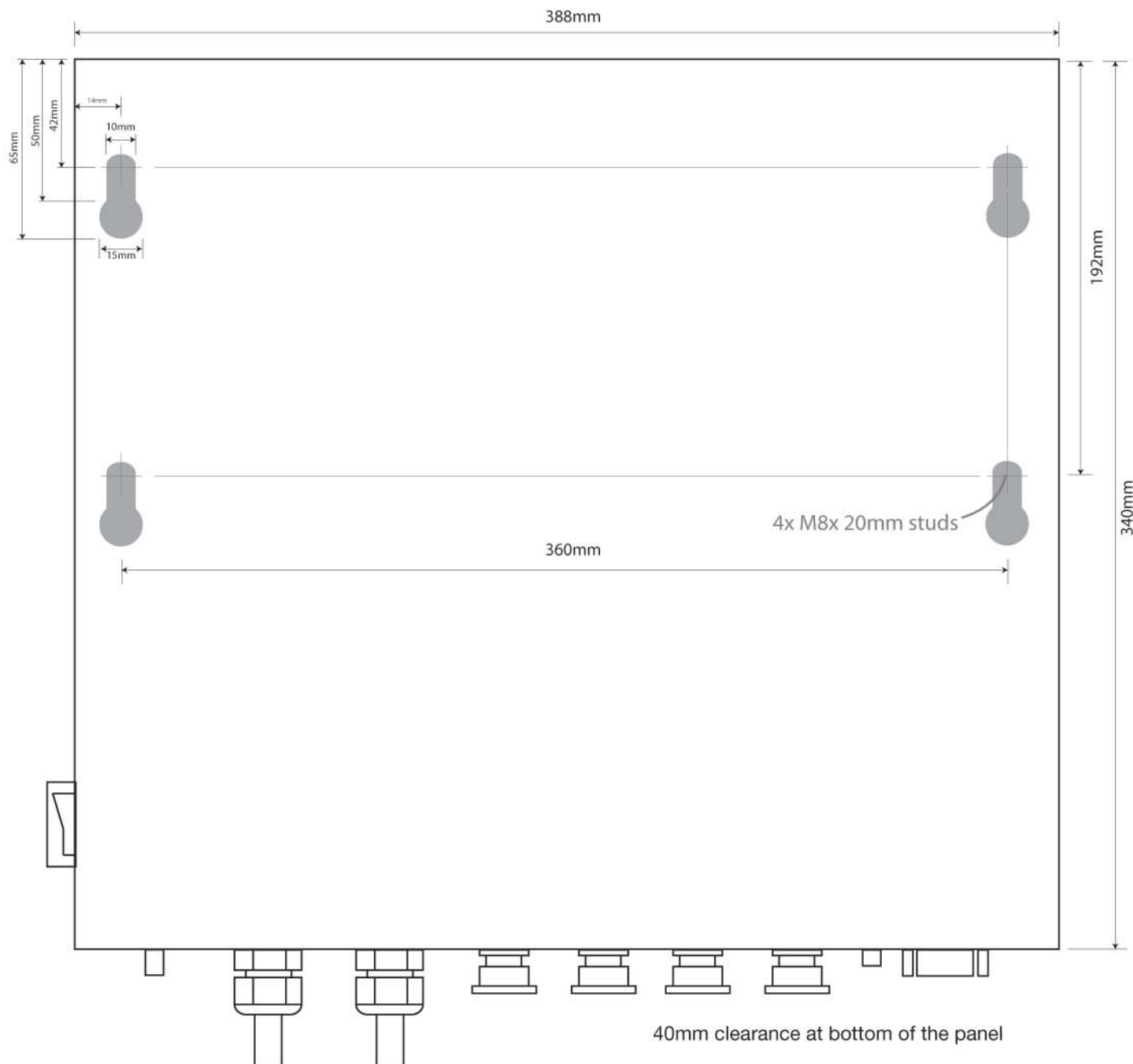
**Transducer Cable**  
8m. in length

**Weight**  
18 kg. (Total weight)  
5.2 kg. (Control box)  
1.2 kg. per Transducer (x8)

**Dimensions**  
388mm x 340mm x 100mm

**Warranty**  
2 years

## MOUNTING FRAME



**NOTE:**

Box hinged on left (Allow 5mm from any obstruction that could interfere with the door opening).

## LCD SCREEN CONFIGURATION

The keypad allows the operator to navigate through the complete operation of the Sonihull8 system following the on-screen prompts.

## KEYPAD OPERATIONS



## SYSTEM BOOT SCREEN

When powering-up the Sonihull8 system the Boot Screen will be displayed. Once the system is ready the boot screen will change to the Home Screen display.




## HOME SCREEN

The Home Screen provides an overview of the Sonihull8 system status. Use the keypad to navigate to other functions. *(Note, Power AC reading refers to the DC voltage output of power supply)*




## SHUT DOWN


This function switches off all the transducers. In the home menu press  to display shut down prompt.

Follow the prompts on screen to complete the shut down process.

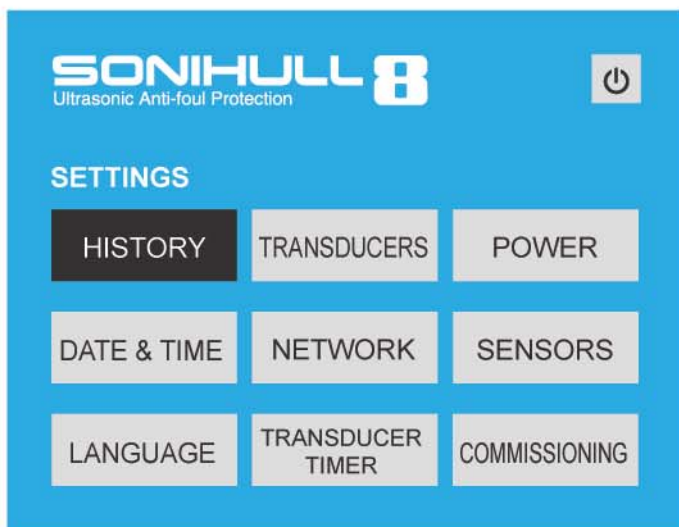


To restart the Transducers: Go to Menu  transducers and select the transducers you wish to be switched back on.

## MAIN MENU

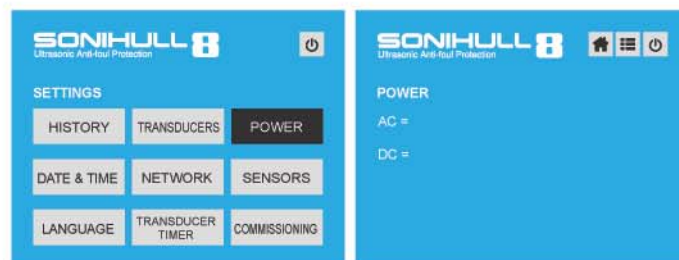
Press the  Menu key. Use the directional arrow keys to navigate through the menu to highlight the desired function.

To select, press the  Enter key.



## POWER

The power menu shows the DC voltage output of the AC Mains power supply and the voltage of the DC supply (if DC is not connected expect to see 1-2 volt residual voltage in the display).



## DATE & TIME

Changing Date & Time requires the Pass Code. Use the directional and Enter keys to navigate through the prompts to set the Date & Time.

The Clear Run Time function will reset the transducer run time records to zero. (Normally only used once commissioning has been completed and the system is ready for hand-over.)

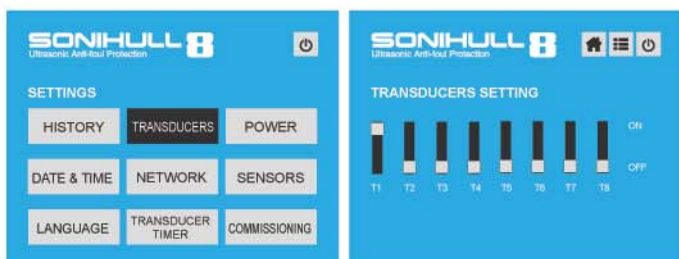
## HISTORY

History displays the operational History Log. To clear the history use the keypad to highlight Clear History and follow the prompts on screen. (The pass code is required to complete this task.)



## TRANSDUCERS

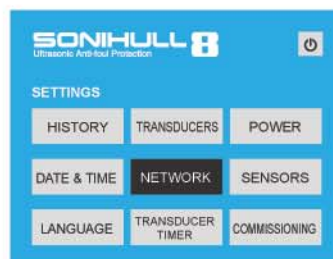
The 'Transducers Setting' screen allows each transducer to be activated or de-activated. Use the Left and Right arrow keys to select the transducer. Then use the Up and Down arrow keys to switch the transducer ON or OFF.



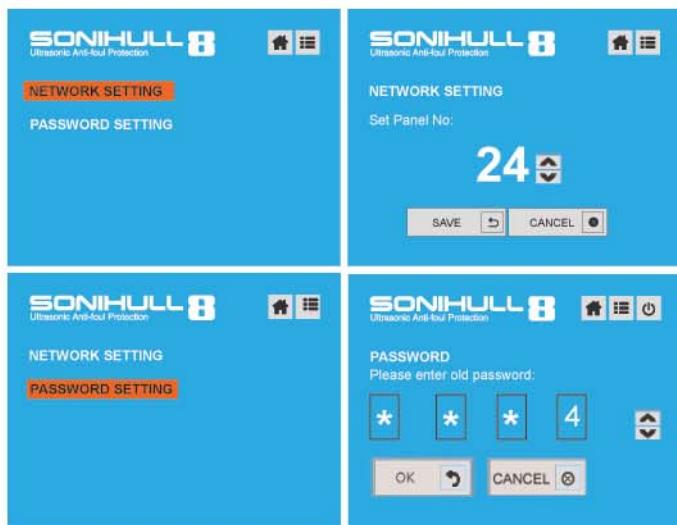
## NETWORK

The Network setting enables the Sonihull8 panels to be assigned a network number from 1-32. For details on network and communications please refer to the Network and Remote Function manual.

From this screen you can set up the network node and change the system pass code. Use directional keys and enter to navigate through on-screen prompts.

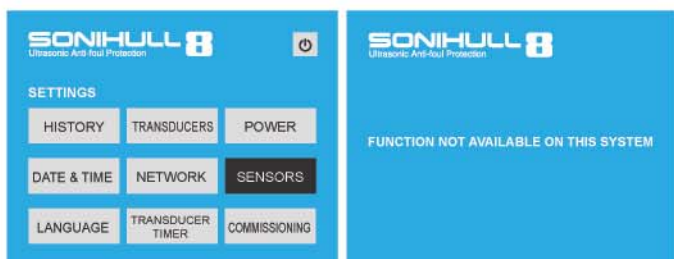






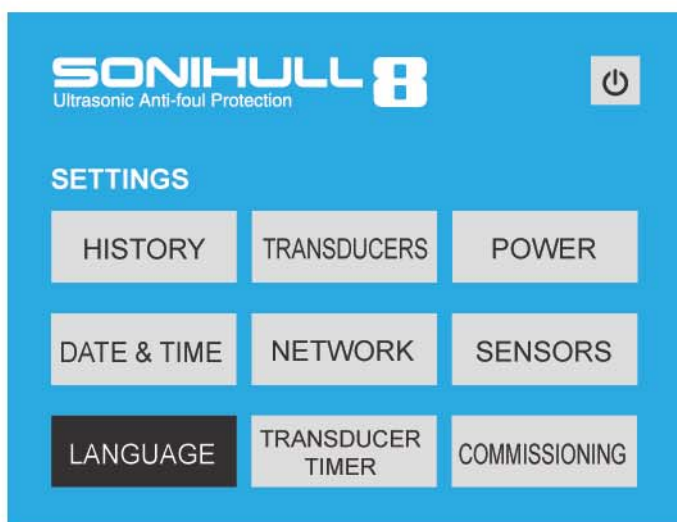
## SENSORS

(This section has been reserved for future expansion of the Sonihull8 system.)



## LANGUAGE

(This section has been reserved for future expansion of the Sonihull8 system.)



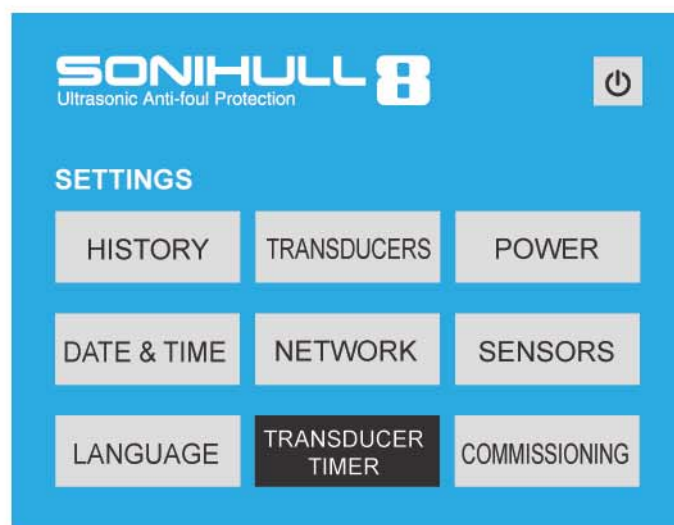
## TRANSDUCER TIMER

Assign timers by selecting individual groups or all transducers.

Method 1. for one-off timer, use the key pad to step through & assign a time and date for the selected transducers to switch off and when you would like the transducers to restart.

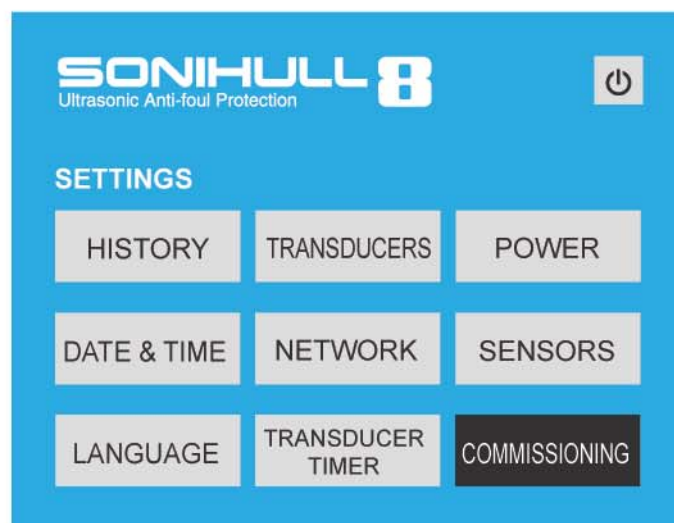
Method 2. for repeat timers, select start time and stop time and what days of the week you would like the timer to operate.

Note for repeat function date setting is required.



## COMMISSIONING

Note: due to system advancement and automation, this mode is no longer required.



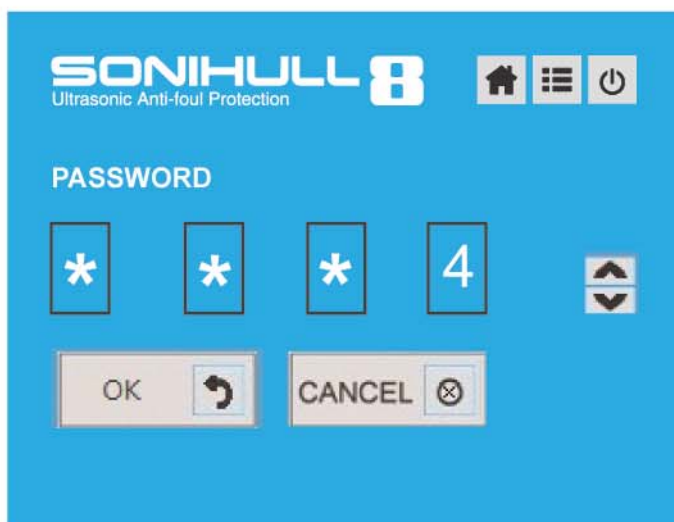


## PASSWORD

To enter a password (4-digit number) follow the on-screen prompts, use the Up, Down, Left and Right keys to navigate the screen.

Default Password: 1234

To change password please refer to NETWORK settings in main menu.



## SONIHULL CONTROL UNIT

### LOCATION & INSTALLATION

Find a suitable dry location above the water line, with suitable access to either mains or DC power.

Please also consider that the location should be suitable for cable access to the transducers.

Mains AC supply 110-240 Volts AC, 50/60 Hz. DC supply, 24 Volts DC. (Note for 115v adjust selector switch on power supply unit.)

(Ensure correct polarity. Ensure cables are supplied via a 10 amp in-line fuse.)

To mount the control unit, open the panel door to expose the four mounting holes and screw into place.

Close the door and plug the control unit into a suitable AC socket.

If a socket is not available, please consult a competent marine electrician to carry out the electrical installation.

Once installed, the system should be periodically checked to ensure that it is powered and working correctly.

## SONIHULL TRANSDUCER LOCATION

Once you have found a suitable location for the mounting of the transducer, ensure that there will be enough clearance above the transducer to replace any floor or access panels and that there is suitable access for running the cables back to the Sonihull8 control unit.

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 and the transducer surfaces are flat and clean to ensure the best possible surface-to-surface contact and ultrasonic signal transmission.

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

Transducers are to be mounted directly to the dry side of the surface being protected.

If the vessel is of a sandwich construction (two rigid surfaces with a foam core) please consult a professional marine technician, as fitting a transducer to the outer skin will involve cutting through the inner skin and removing some of the sandwich core filling to bond with the dry side of the outer skin.

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

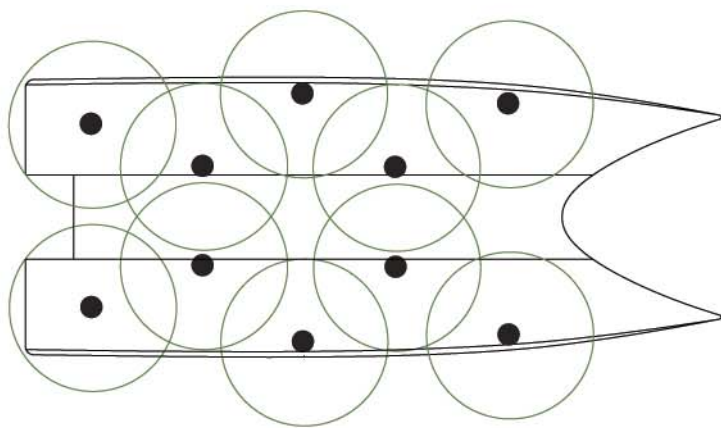


## TRANSDUCER POSITIONING (HULL PROTECTION)

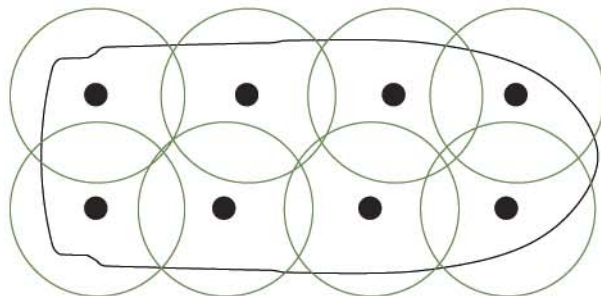
The following is meant as a guideline to the many different applications installations will vary. If you require more information please contact [info@NRGMarine.com](mailto:info@NRGMarine.com).

*(Note Transducers to be mounted on the inside of the hulls outer skin)*

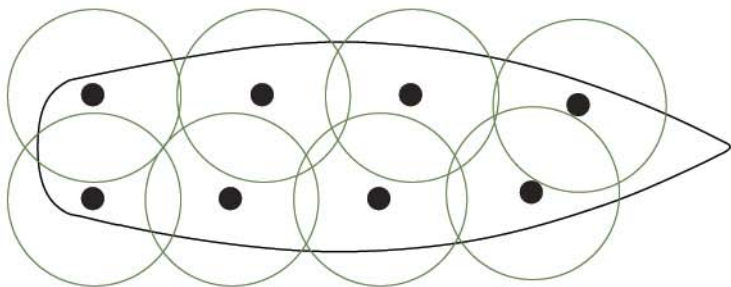
### CATAMARAN



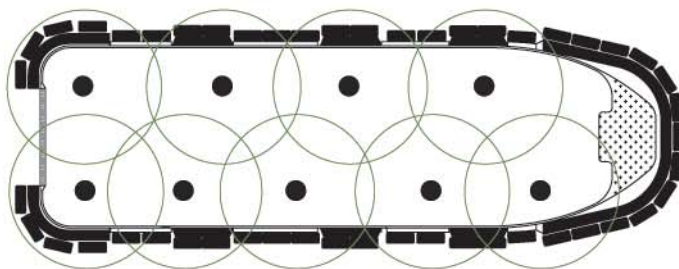
### SUPERYACHTS



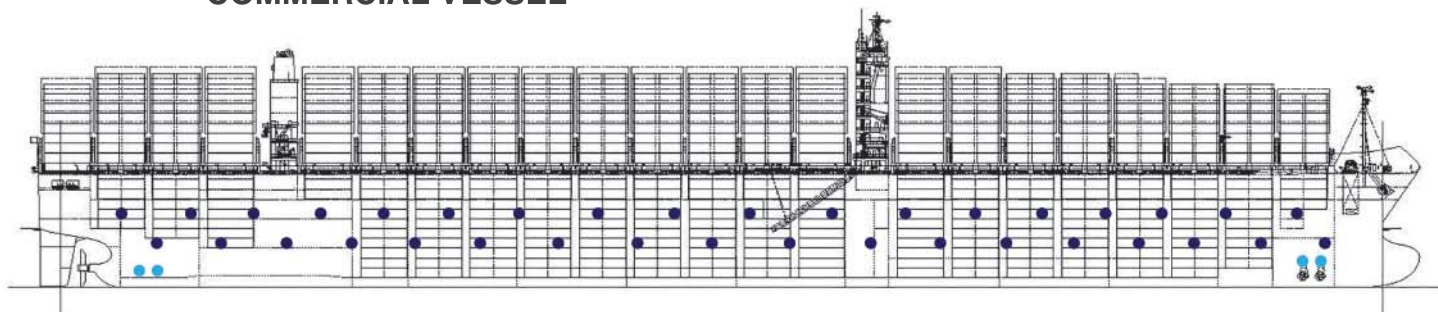
### SAILING YACHTS



### TUG BOAT



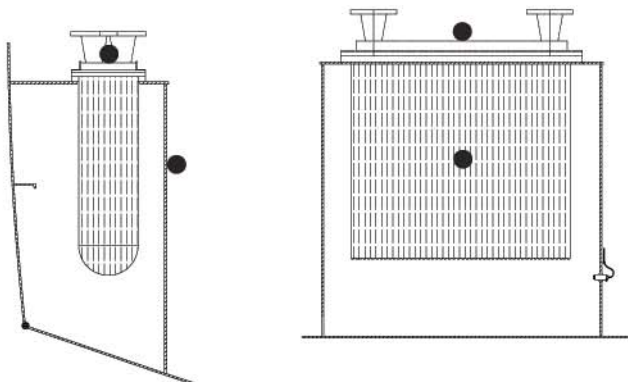
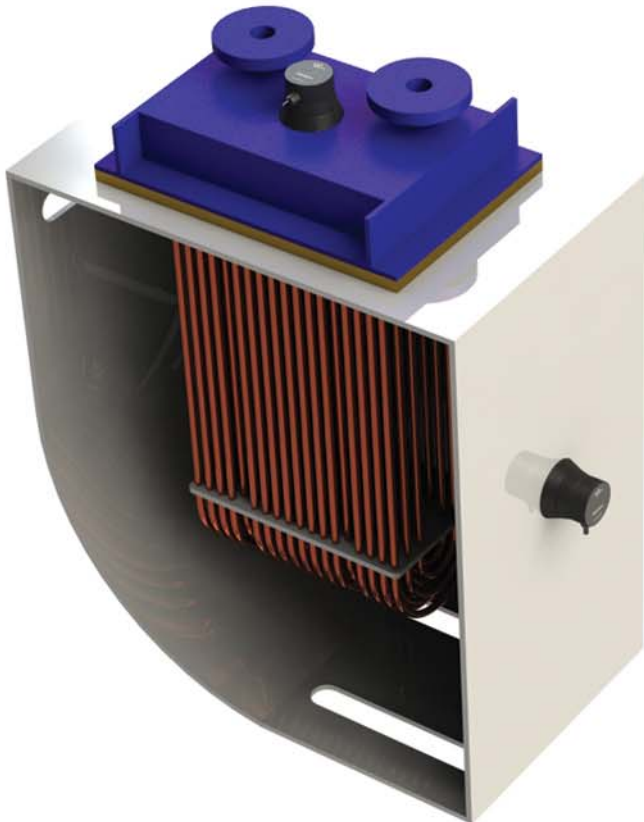
### COMMERCIAL VESSEL



## TRANSDUCER POSITIONING FOR BOX COOLERS

The following is meant as a guideline to the many different applications. Installations will vary.

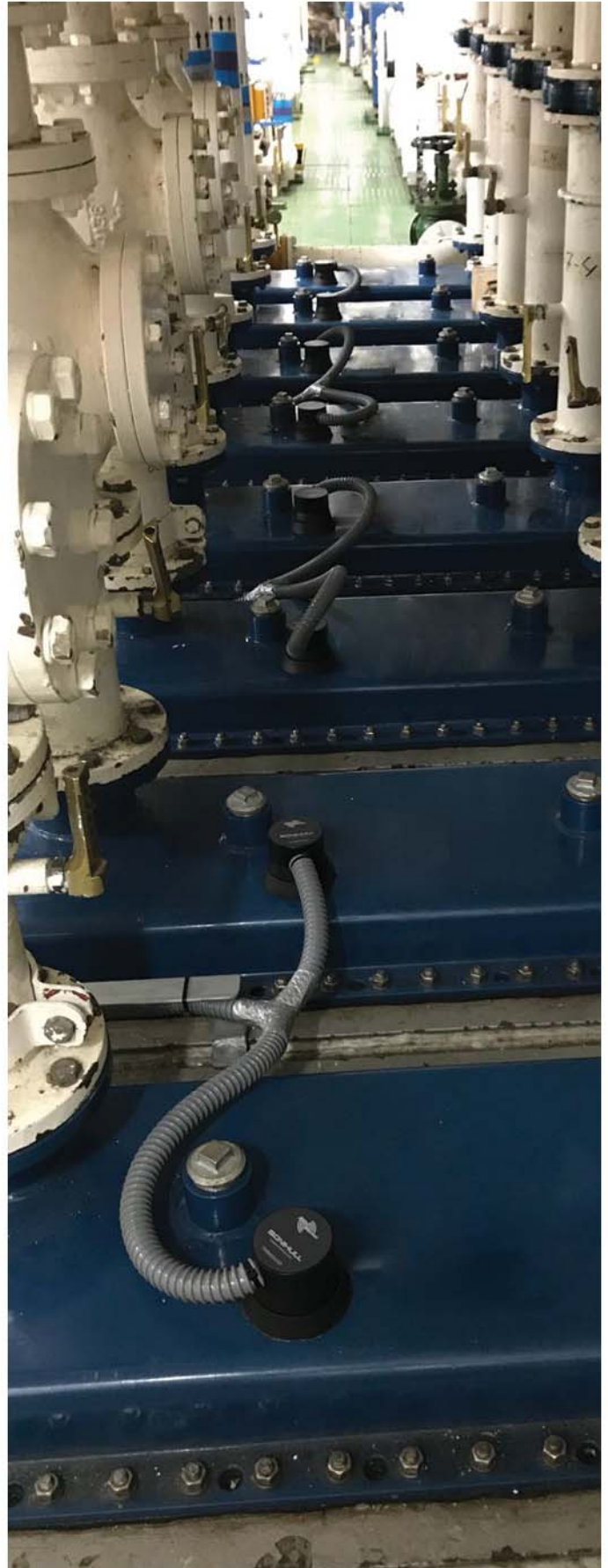
If you require more information please contact us at [info@NRGMarine.com](mailto:info@NRGMarine.com).



### ● Sonihull8 transducer locations

One transducer mounted directly to cooler top plate.

One transducer mounted on side of sea chest, at mid height of the box cooler coils.





## SEA CHESTS

Mount transducers on the side of sea chest, only mount on top of chest if there is no chance of an air gap or an air bleed valve is fitted.



## PIPE ADAPTOR

Pipe adaptors are available in a wide range of sizes for mounting transducers on raw water piping, sea chests and strainers.



## BOX COOLERS

Transducer mounted on cooler lid and sea chest.

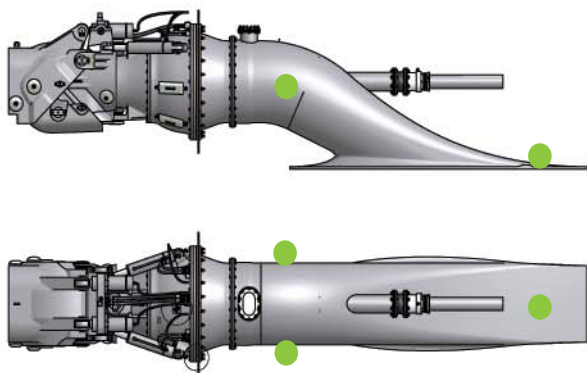


## LARGER COMMERCIAL VESSELS

Please contact us at [info@nrgmarine.com](mailto:info@nrgmarine.com) for more information.



## TRANSDUCER POSITIONING – FOR JETDRIVES



● Indicates Sonihull8 transducer locations:

The number of transducers required depends on the size of the jet;

For jets with impellers up to 360mm use 1 transducer

For jets with impellers >360 <450mm use 2 transducers

For jets with impellers >450mm use 3 transducers

Note Transducers are mounted on the side of the jet to be under the water line when the vessel is at rest. use Sonihull pipe adaptors to mount transducers on the curved surfaces of the jet housing.

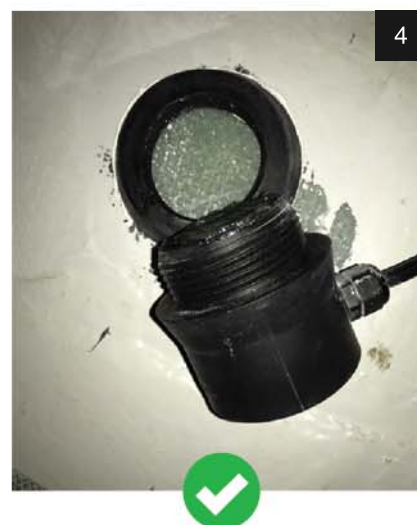
## SONIHULL TRANSDUCER INSTALLATION

Apply a thin layer of transducer gel 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). (See figure 1)

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. (See figure 2)

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 hull once set. (See figure 3)

Allow the epoxy to set fully prior to attaching the transducer. (See figure 4)





## 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 transducer gel.

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.

Leave enough cable slack at the transducer so that it can be unscrewed at a later date.

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 opposite, for more advice about transducer location and installation.**

## SONIHULL INSTALLATION TIPS

To get the best performance from the system there are 3 main considerations.

### 1. LOCATION

For hull fouling protection, the transducer needs to be mounted on an obstruction-free area below the water line and on the inside of the external skin.

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 TRANSDUCER GEL

The transducer needs to have a smear of transducer gel 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 transducer gel 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.

When running the cables, leave enough cable slack at the transducer end in case the transducer needs to be removed at some future date.





## 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 the 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 onto 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.

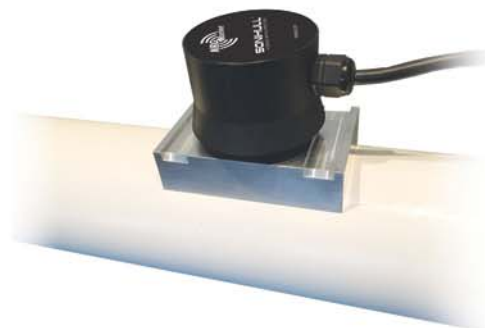
The locating grooves are ideal for holding in place with zip-ties or jubilee clips.

Apply 1-2mm of transducer gel 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.

Suitable for Steel, Aluminium, Titanium, GRP and Rigid Plastics, for all other types of material contact your dealer for advice.



## 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 transducer gel 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](mailto:info@nrgmarine.com).

