



CMS MARINE  
SonicShield II  
SonicShield III

# Manual



Issue 6



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## *Welcome*

Thank you for choosing CMS Marine to supply your SonicShield Product.

**Please ensure you read this installation guide fully before proceeding as correct installation is critical to the overall success of your Ultrasonic system**

If you have any questions or require any help please either contact us on +44 (0) 1452 380100 or [info@cmsmarine.co.uk](mailto:info@cmsmarine.co.uk)

### *Safety Considerations*

#### **WARNING**

**You MUST install this product in accordance with this installation guide, failure to follow the information enclosed could result in damage to your vessel or personal injury**

**You MUST ensure you protect the permanent live connection with a 10 amp Inline fuse. Incorrect electrical installation could cause irreparable damage to the product or other electrical equipment and could result in personal injury or damage to the vessel.**

If you are not competent working with a 12V or 24V supply please contact a qualified Marine Electronics installer or contact CMS Marine to discuss installation.

**You MUST also be qualified to make any alterations or additions to your 110V – 240V AC supply if necessary. Modifications to your AC system are outside of the scope of this guide.**

**PLEASE ENSURE ALL POWER IS SWITCHED OFF WHEN CONNECTING OR REMOVING CABLES FROM THE INTELLIGENT CONTROL UNIT.**

## **IF IN DOUBT PLEASE SEEK PROFESSIONAL ADVICE.**

## *Installation*

The installation of your SonicShield product is easy if you follow this guide correctly. By following the steps below in order, you will ensure most efficient use of your time.

- Plan the location of your transducers
- Plan the location of your control box
- Fit the transducer rings
- Fit the control box
- Run the power and transducer cables
- Switch ON.

PLUS Customers will also have to install the alarm system covered in the separate installation guide.

### **SonicShield PLUS Installation and Operation Manual**



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## Planning - Transducers

Planning the location of the transducers is the MOST important consideration. Incorrect positioning or installation will result in inefficient cleaning.

Please see images below for advised installation positions.

You MUST ensure you are installing onto the outer skin of your boat. Modern boats have many false floors (especially motor vessels). Installation on anything other than the outer skin will severely limit the units effectiveness.

If you do not think that the Silicon H05RN Transducer cables are long enough to reach your transducers please contact us to arrange an extension cable.

DO NOT COMPROMISE THE LOCATION OF YOUR TRANSDUCERS BASED ON THE LENGTH OF CABLE.

DO NOT TIGHTLY COIL ANY UNUSED CABLE. – As this could cause interference with other on-board electronics. If you need to coil the cable we would recommend large, loose coils.

The below is only a **rough indication of position**. If you would like advice on the optimum position please call our technical team, as we have experience with many types of boats.

For boats with waterline length <10M



The transducers should be located towards the stern between the propeller and the rudder. One should be placed to port and the other to starboard approximately 30cm from the centre line.

For boats with waterline length >10M < 20M



The transducers should be located towards the stern between the propeller and the rudder. One should be placed to port and the other to starboard approximately 30cm from the centre line.

The additional transducer should be located towards the bow. It can be located either port or starboard of the centre line.

## *Planning – Control Unit*

When planning the location for your intelligent control unit you must take into account the following restrictions.

You Intelligent Control Unit MUST

- Be installed above the water line in a dry area  
*Cabin locker or in the engine bay of a motor launch is ideal*
- Be located where ALL of your transducer cables can reach
- Be located where your battery power cable can reach
- Be located near a spare Mains / Shore power socket (110-240v)  
*Note :- Extension cables can be ordered from us for all cabling.*



*The unit above was installed in the aft port cabin on the outside of a locker, this gave good access to the main control panel, battery and also the Aft transducers*

## Fitting – Transducers

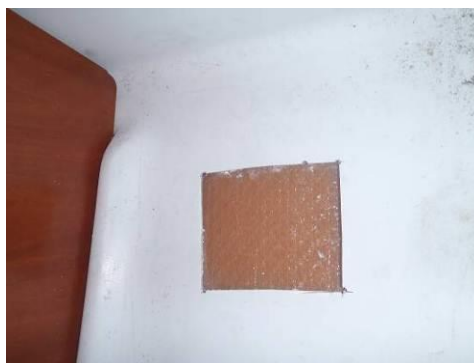
Remove the transducer from its packaging and place the transducer (with the nut attached) in the area you plan to install it.

Prepare the surface of the hull using the 80 Grit sandpaper supplied. For best results an orbital sander / Mutli-tool can be used. Remove gel coat / paint and ensure a smooth flat surface is made in preparation for the transducer.

**ENSURE YOU ARE INSTALLING THE TRANSDUCER IN A SOLID AND FLAT AREA OF YOUR HULL. IT IS VITALLY IMPORTANT THAT 100% SURFACE CONTACT OF THE TRANSDUCER FACE IS IN CONTACT WITH THE HULL**



*This area was prepared for the bow transducer using a sander. The more paint you remove the better the adhesion will be.*



*This area had a false floor in the starboard aft cabin and so required cutting to access the GRP hull. We used a Fein Multimaster tool with the saw attachment that was ideal.*

It is advised to clean the prepared area of the hull and the transducer ring with an alcohol based solvent i.e Acetone (Not supplied). **PLEASE ENSURE YOU TAKE NOTE OF THE MANUFACTURERS SAFETY INSTRUCTIONS WHEN USING THESE PRODUCTS.**

Place the transducer assembly on this newly prepared area and draw around the ring to give you a guide for the epoxy later in the assembly.



*After preparing the hull area, place the transducer and nut in the proposed position and draw around the outside of the nut to give you a guide.*

Once you have prepared the hull you are now ready to apply the adhesive plastic disc. Screw the transducer into the ring until it sits slightly proud of the nut. Peel off the white backing paper and fix the plastic disc to the centre of the transducer face. Smooth the edges of the disc so that they are touching the solid black ring of the transducer nut as show below.



The purpose of the plastic disc is to ensure you have a solid contact to the hull of the boat. Later in this guide you will be applying epoxy resin to the boats hull and this plastic disc will protect the transducer face from the epoxy resin.

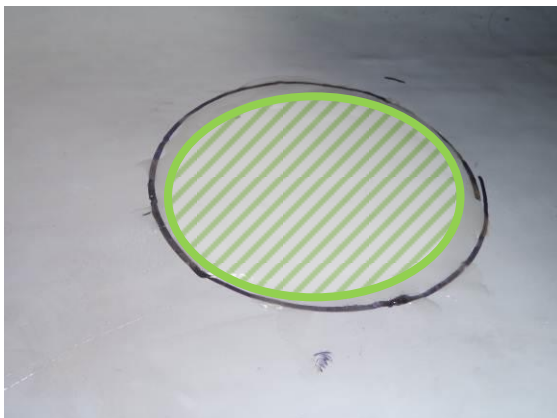
Using the epoxy resin supplied you will now need to apply epoxy to the transducer ring **ONLY**, ensuring you **DO NOT** apply any epoxy to the plastic covering, applying epoxy to the plastic covering will create bubbling / rippling which will decrease effectiveness. Be aware of the rapid setting time of the epoxy resin and only mix enough for immediate use.



*Apply epoxy to the ring area only  
(highlighted Green), avoiding contact with  
the plastic covering (highlighted red below)*



Once you have applied the epoxy to the ring you can now apply the epoxy to the hull area (as shown on the next page). Using the guide you drew earlier apply a generous amount of the epoxy ensuring you cover the entire area of the hull where the transducer and nut will be located. Try to ensure the epoxy resin is as level as possible.



*Apply glue generously to the hull area ensuring you cover an area large enough to accept the ring and transducer face.*

*You are aiming to get a good even covering over the whole transducer area to ensure the transducer face has good contact with the hull through the epoxy resin.*

Once you have a good covering of epoxy on the hull and the nut you will now need to carefully place the transducer onto the hull.

It is important at this stage that you do not move (twist, lift, etc) the transducer once the plastic covering over the transducer face has made contact with the epoxy on the hull.

Place the transducer assembly onto the prepared hull surface, apply direct pressure to the transducer and if possible apply some weight that can be left in place during the curing process.

You **DO NOT** need to remove the plastic disc from the assembly after the epoxy has cured.

Repeat this process from the rest of the transducers supplied with your kit.

THIS IS THE MOST IMPORTANT PROCESS YOU WILL UNDERTAKE TODAY AND SO YOU MUST ENSURE YOU GET IT RIGHT. IF YOU HAVE ANY QUESTIONS OR REQUIRE ANY SUPPORT CALL US ON +44 1452 380100.



*Example of a transducer that has been left in place to cure. This is how your transducer should look before you move to the next transducer.*

## *Fitting – Control Unit*

Using the template provided in your installation kit, carefully make pilot holes using a 2mm drill bit.

Using the x4 screw provided, mount the control box to your chosen location.

NOTE : When drilling / screwing into boat surfaces check that there are no cables or pipes on the opposite side of the surface. Check that once installed the screws will not protrude through the surface.

Remember that you should ensure that the control box is mounted above the waterline.

PLEASE ENSURE YOU HAVE ACCESS TO THE UNDERSIDE OF YOUR CONTROL UNIT TO ALLOW FITMENT OF THE CONNECTORS.

## *Fitting – Transducer Cables*

The transducer cables supplied are made from marine based silicon and will withstand any water or temperature fluctuations during normal operation.

It is suggested that where possible you follow any current cabling or trunking to aid your installation of cables.

Starting at your transducer work the cable back to control unit.

**DO NOT CONNECT ANY OF THE CABLES TO YOUR UNIT AT THIS STAGE.**

**DO NOT COIL ANY TIGHTLY UNUSED CABLE, LARGE LOOSE COILS ARE OK.**

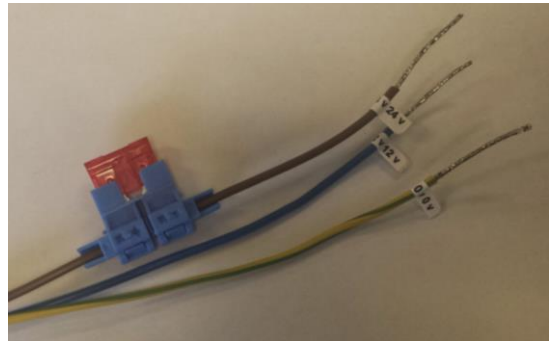
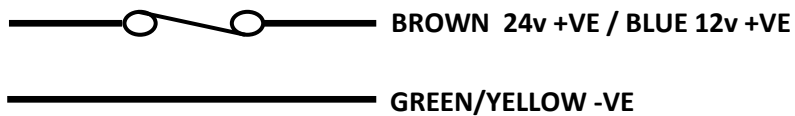
**IF YOU REQUIRE LONGER CABLES TO REACH YOUR CONTROL UNIT PLEASE CONTACT US FOR EXTENSION CABLES**

If you need to drill through any watertight bulk heads or lockers ensure you use a cable gland to ensure they remain watertight. If you require any support or advice at this stage please contact our technical team who will be more than happy to offer some advice.

## *Fitting – 12V / 24V Battery supply.*

You will need to ensure a permanently live supply from your battery to the control unit.

CMS Marine advise making a direct connection to your battery. YOU MUST install a 10 AMP inline fuse as close to the battery on the live supply as possible. Failure to install the fuse could result in damage to your control unit and will invalidate your warranty.



We supply 3 Core cable to allow installation on either 12v or 24v DC. Please ensure you use the correct wires for your boats DC configuration.

**PLEASE ENSURE THAT YOU ALSO CONNECT THE 'BARE' END OF THE BATTERY CABLE TO THE CORRECT POLARITY ON YOUR BATTERY. CROSS POLARITY WILL CAUSE DAMAGE TO YOUR UNIT.**

**BROWN 24v +VE**

**BLUE 12v +VE**

**GREEN/YELLOW 0v -VE**

## *Fitting – Power Supply Unit.*

All SonicShield units are supplied with a Mains / Shore 110-240V Power supply unit. Also included is an EU and UK Power lead.



Select the correct lead for your boat type and plug the Fig 8 end into the Power Supply Unit.

Using the supplied Velcro, attach the power supply unit to a solid surface, ensuring this is located in an area above your boats water line.



### **Note**

The control unit is intelligently controlled and is able to accept both the 12V/24V supply from your battery and the shore power supply at the same time. It will detect which power supply to use and will only draw current from one source at any time.

For example if shore power is available it will always use this supply. It will only switch to the 12V/24V battery supply if the shore power is removed. If you intend to only use the shore power then there is no need to install the 12V/24V battery supply, we do not advise running from only AC as if shore power is removed you will not have any cleaning.

It is not necessary to install the AC for the system to run.

## *Fitting – Cable to transducer*

Once the epoxy resin has fully cured (approx 24 Hours) you will be able to unscrew the transducer from the ring. This should be possible by hand only.

If however you are unable to loosen the transducer by hand you may need to give the transducer a slight tap with a mallet to loosen any epoxy resin excess. **EXCESS FORCE IS NOT REQUIRED TO REMOVE THE TRANSDUCER. IF YOU ARE HAVING PROBLEMS PLEASE CONTACT US FOR FURTHER ADVICE.**

Apply a small amount of silicon grease to the face of the transducer. You will only need a light skin approx 1mm thick. The silicon grease is used to aid acoustic coupling of the transducer unit to your boats hull. **Too much grease will decrease the effectiveness of the unit.**



Screw the transducer into the ring until hand tight.

**DO NOT OVERTIGHTEN THE TRANSDUCER AS THIS MAY CAUSE THE EPOXY TO CRACK AND WILL DECREASE THE EFFECTIVENESS OF THE UNIT.**

*Please note that after approximately 24hrs of running the silicon will have settled and your transducers may need a further ¼ turn to ensure they are tight to the hull. If the transducers are not tight they will not be acting at maximum efficiency.*

## Waterproof connections

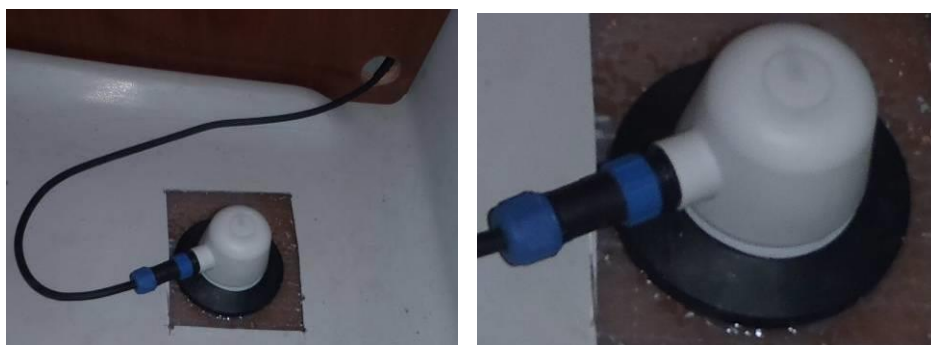
All of the connectors are IP68 rated. To protect against any moisture / condensation build up within connector we advise applying a small amount of silicon grease to ALL of the connectors as detailed below.



Apply only a small amount of silicon grease (approx. ½ pea or 0.5g) to the plug, ensure the grease is evenly spread over the connection. Then connect plug to socket.

We advise checking the silicon grease on the transducer connectors every 6 Months.

Repeat this process from the rest of the transducers supplied with your kit.



## *Fitting – All cables to the control unit*

Please use the picture below to correctly connect the cables to the control unit. N.B If you have purchased a system with the PLUS option you will have more connections and need to refer to the PLUS Installation and Operation Guide.



### **YOU MUST CONNECT THE TRANSDUCER CABLES BEFORE CONNECTING ANY POWER TO THE UNIT**

Firstly connect the transducer cables, ensure the nuts are secure to prevent them from becoming disconnected.

Connect the power supply unit to the control box.

Connect the battery cable to the control box.

Plug the power supply unit into the mains / shore power socket.

The unit will run a test and within 15 seconds you will see the transducer lights start and your unit will be running. The system will then run in 'Learning' mode for between 3-4 minutes. During this time the system will determine the number of transducers connected. If you add a transducer to your system you will need to power the system off at the DC and AC to re-enter the learning mode required to add the transducers.

Your SonicShield Intelligent antifouling unit is now fully installed.

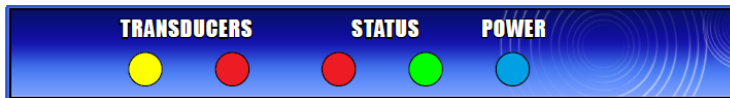
## *Power Control – Sleep Mode*

We advise running the Ultrasonic cleaning at all times. The system is designed to deter the build up of algae and therefore if allowed to build up on your hull the systems effectiveness will be decreased.

If you need to turn the system off then this should only be performed via the On/Off switch on the front of the main control unit. The On/Off switch is on a time delay to protect against prolonged periods of inactivity.

A single press of the switch will 'sleep' the system for 12 hours. The system will automatically turn back on after the 12 hour period. Pressing the switch again at any point during the 12 hour period will cancel the sleep mode and the system will resume running as normal.

## Troubleshooting



### Power Light

Solid Blue = Unit has power

### Status Lights

Solid Green = Mains / Shore power operation

Flashing Green = 12/24V battery operation

Flashing Red = 12/24V battery low

Solid Red = Fault - High Temperature

Solid Red with LDR Fitted = System cleaning Deactivated

### Transducers Lights

Flashing Yellow = Transducers in operation

Yellow Off = Transducers not running.

Flashing Red = Fault – No current or High current detected on Transducer

5 Flashes and 5 Beeps = Fault – System off due to Error – CONTACT CMS MARINE for Advise

If you see any other combination of lights or you do not have any lights, please contact us.

## Maintenance

No regular maintenance of the transducers or system is required.

With all marine electronic installations we advise checking cabling and connections on a periodic basis to ensure no damage has occurred.

Every 6 Months we would advise checking the transducers are tight and if required a fresh layer of silicon grease applied to the transducer face and connector. Please note that if you do reapply the additional silicon that you will need to check the transducers after 24 Hours as a further ¼ turn may be required to ensure the transducers are tight to the hull.

**Thank you**

**CMS Marine**