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www.sterling-power.com
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Warranty (2 years return to factory)

Sterling Power Products

THERM : Air Conditioner Range

Handbook

THERM3300



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There are some requirements that I need to place at the start.
The THERM3300 can ONLY be installed horizontally on top of a vessel, vehicle or install.
The minimum spacing between rafters and joists on the roof structure is 400mm.
The minimum thickness of the roof is 26mm, and the maximum thickness is 100mm.

Sterling use of language You'll note throughout the reading of this manual that a lot of the text may be considered cordial and more friendly than perhaps is the norm for technical manuals. We have attempted to balance accessible writing with technical accuracy. We believe this will allow it to be most easily read and understood- as some overly technical manuals can be opaque, unreadable and painfully boring to installers- who may then just end up ignoring them entirely.

Manual preface Please take your time to read and fully understand the contents of this Handbook. These guidelines are developed with your safety and the products performance in mind and failure to follow or understand these guidelines may lead to voiding the product warranty or even leading to damage or injury for you or your setup.

If you are unsure of any step or guideline then please consider reaching out to Sterling via our web contact form or our phone service and we shall offer our support.

THERM Air Conditioning Summary This item is an air conditioning/thermal control unit designed to fit on the roof of motorhomes or boats. Unlike the 2200 and 2800, the 3300 is an AC 240V powered item. You will need good and sustained power to support this item. It is also far heavier - and with far more features. We advise not doing this install alone, due to the weight and the 240V nature.

How to use this manual This manual must be read throughout before installing this electronic device. Do not lose these instructions - keep them safe. The most up to date instructions can be found on sterling-power.com. Please refer to the latest instruction manual before contacting Sterling. At Sterling, we endeavour to include all of the product information that we can think of into the manual.

To easily browse the manual, you'll find 'chapters' or rough page summaries at the top of each page and at the bottom right of each page. Then, down the left hand side of each page you will find individual sections of each page- followed by the actual paragraph writing to the right of each section. If you are looking for explicit information and don't know where to find it, flick through until the bottom right 'section' lines up with what you want to find, scan the left hand summary to find the relevant area- then read to the right.

Being safe Installation of the electronic device must be carried out by qualified and trained personnel only. The personnel must be familiar with the locally accepted guidelines and safety measures. Your safety is Sterling's top priority. Please follow all precautions to keep yourself safe. If you believe your unit requires repair then please contact Sterling or your distributor. Do not attempt to service the unit yourself.



SAFETY AND LEGAL LEGAL GUIDELINES

Warranty and Terms

Your 100 % satisfaction is our goal. We realise that every customer and circumstance is unique. If you have a problem, question, or comment please do not hesitate to contact us. We welcome you to contact us even after the warranty and return time has passed.

Each product manufactured by Sterling Power comes with at least a 2 year limited factory warranty. Certain Products have a warranty period of time greater than 2 years. Each product is guaranteed against defects in material or workmanship from the date of purchase. At our discretion, we will repair or replace free of charge any defects in material or workmanship that fall within the warranty period of the Sterling Power product. The following conditions do apply:

- The original receipt or proof of purchase must be submitted to claim warranty. If proof cannot be located a warranty is calculated from the date of manufacture.
- Our warranty covers manufacture and material defects. Damages caused by abuse, neglect, accident, alterations and improper use are not covered under our warranty.
- Warranty is null and void if damage occurs due to negligent repairs.
- Customer is responsible for inbound shipping costs of the product to Sterling Power either in the USA or England.
- Sterling Power will ship the repaired or warranty replacement product back to the purchaser at their cost.

If your order was damaged in transit or arrives with an error, please contact us ASAP so we may take care of the matter promptly and at no expense to you. This only applies for shipping which was undertaken by our company and does not apply for shipping organised by yourself. Please do not throw out any shipping or packaging materials. All returns for any reason will require a proof of purchase with the purchase date. The proof of purchase must be sent with the returned shipment. If you have no proof of purchase call the vendor who supplied you and acquire the appropriate documentation.

To make a claim under warranty, call our customer care check telephone numbers on www.sterling-power.com or www.sterling-power-usa.com. We will make the best effort to repair or replace the product, if found to be defective within the terms of the warranty. Sterling Power will ship the repaired or warranty replacement product back to the purchaser, if purchased from us.

Please review the documentation included with your purchase. Our warranty only covers orders purchased from Sterling Power. We cannot accept warranty claims from any other Sterling Power distributor. Purchase or other acceptance of the product shall be on the condition and agreement that Sterling Power USA LLC and Sterling Power LTD shall not be liable for incidental or consequential damages of any kind. Some states may not allow the exclusion or limitation of consequential damages, so, the above limitations may not apply to you. Additionally, Sterling Power USA and Sterling Power LTD neither assumes nor authorizes any person for any obligation or liability in connection with the sale of this product. This warranty is made in lieu of all other obligations or liabilities. This warranty provides you specific legal rights and you may also have other rights, which vary from state to state. This warranty is in lieu of all other, expressed or implied.

Copyright and Plagiarism

Copyright © 2024 Sterling Power. All rights reserved. Reproduction, transfer, distribution or storage of part or all of the contents of this document is strictly prohibited. If you wish to use all of this document, or excerpts from it, Sterling Power must be contacted.

Liability

Sterling Power can not accept liability for:

- consequential damage due to use of this device
- possible errors in the manuals and the results thereof

Device Modification

Please do not modify the device unless you have been instructed to do so by Sterling Power directly. Product modification shall be done at Sterling when needed. Warranty shall be voided if personal attempts are made to modify the device without Sterling's approval.

Installation Laws

The installer and the user are liable for ensuring the item is properly and legally installed and suitable for use in whatever territories and conditions it is expected to operate in. Improper use of the item, improper understanding of the item, improper installation of the item etcetera do not reflect on Sterling or make Sterling liable.



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SAFETY AND LEGAL SAFETY GUIDELINES

Product Guidelines

Your Sterling Power product should only be utilised for its designated purpose. If you do not feel capable to install an AC item correctly - DO NOT. If there are any doubts about the install - get it professionally installed.

Ensure that the mains supply and battery leads are disconnected before transporting or moving the unit. No liability can be accepted for damage in transit once equipment has been unpackaged. Store the product in a dry environment, between -20°C to 60°C .

Transport and Storage

Refer to the battery manufacturer's manual for information on transportation, stowage, charge rates, recharging and battery disposal for your batteries. Sterling cannot be considered an authority on your batteries.

General Maintenance

The device must be switched off during maintenance and all cables removed from the direct feed to or from the unit. It must also be protected against unexpected switching off. Remove battery connections and ensure unit is off. If repair is required, only use original parts. Unauthorised attempts to repair Sterling units will lead to the warranty being voided. Only someone with adequate understanding of electronics and the unit itself should attempt a repair. Ensure your connections are good and clean and aim to protect your unit from humidity and water ingress. All contacts should be checked intermittently. Damage that occurs from improperly maintained contacts are at fault of the user.

Safety Precautions

Electrical appliances can be heavy. Please do not lift heavy units unassisted. Ensure that your product is correct for your system, voltage thresholds are crucial. Orientation is not critical to unit function, however may affect water ingress rating. Install device in a well ventilated space for cooling purposes. Do not expose the unit to snow, rain, water, spray, condensation, pollution etc, unless it is a waterproof unit. If it is a waterproof unit, only expose it to situations it is correctly rated for. Do not cover or obstruct the ventilation. Device connects to common negative. Common negatives must be earthed. In case of fire, use fire extinguisher equipment suitable for electrical fires. Avoid all possibilities of reverse polarity or short circuiting. Check cabling and connections frequently and ensure the connections are sufficient. Always protect DC cabling with the appropriate fusing. Ensure the unit is adequately and safely mounted to prevent displacement and damage. Always use a professional to install electrical products. Ensure the product is correctly set up for your battery. Keep out of reach of children

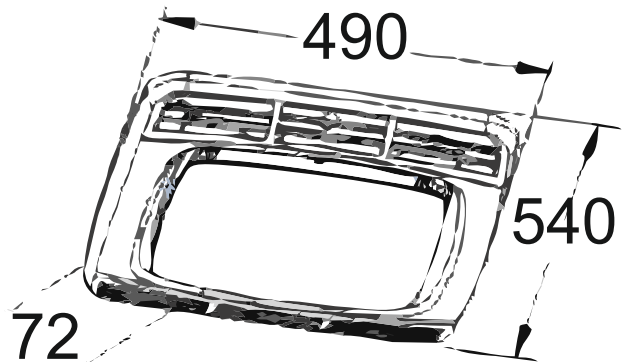
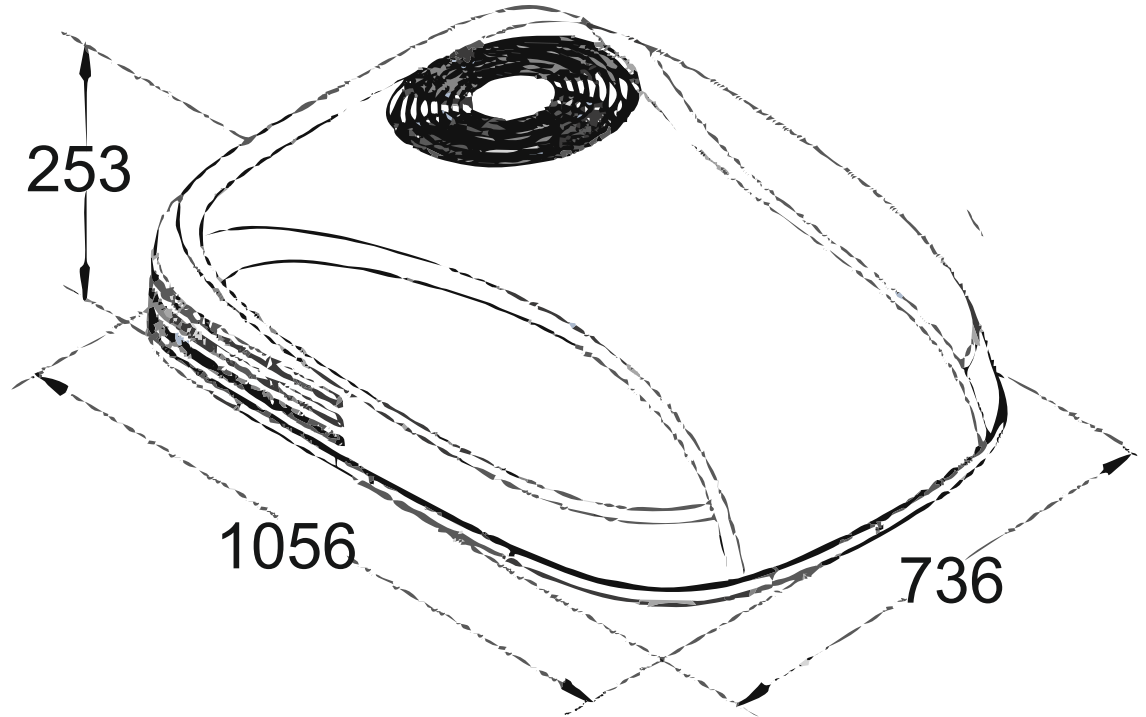
WARNING : Do NOT remove the panelling to inspect the internals unless expressly told to by Sterling. This is not a product designed to be user-serviced.

WARNING : Do NOT use the device in situations where there is danger of gas / dust / vapour explosions, or around potentially flammable produce.

The THERM is a heavy unit. Do not install alone, and do not install if you do not feel comfortable with the full install process. Do not lift unassisted.

SPECIFICATIONS FOOTPRINT AND SPEC SHEET

Dimensions (mm)



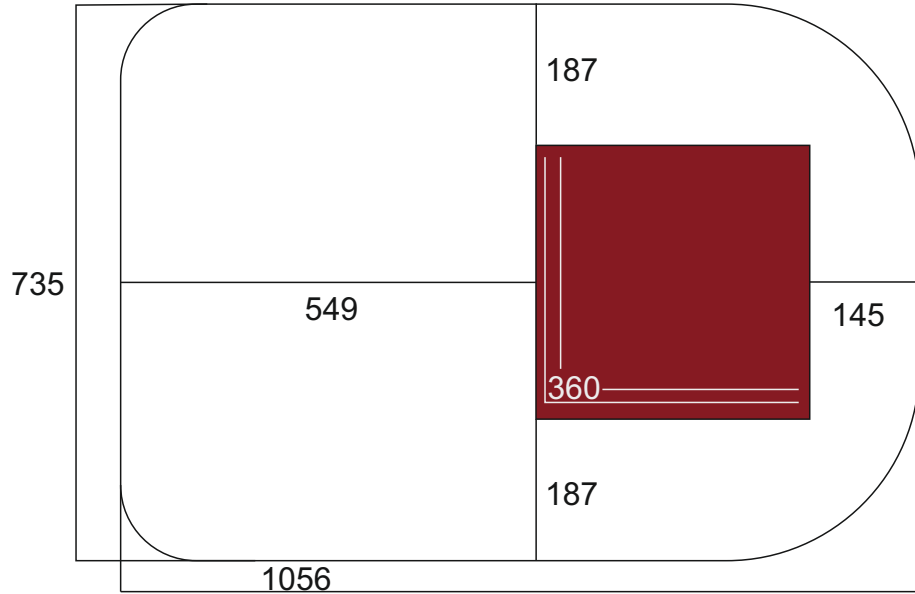
Specifications and technical data

Rated Cooling Capacity	Up to 3300W. 12000BTU
Rated Heating Capacity	12500BTU
Operating Voltage	220-240VAC 50Hz
Compressor current draw	5.5A
Locked rotor current	28A
Cooling power / Heating power	1300W / 1060W
Volume of air moved	480m3/h
Operating modes	Fan mode / Eco mode / Hi-Power mode
Noise	<60 dBa
Refrigerant	R410A---740g
Dimensions	On diagrams
Air outlet plate height	40mm
Weight	50kg
Intended use	General use within trucks, solar homes, recreational vehicles and boats. Due to its high power nature it will often only be suitable on larger installs. Designed for a 362*362mm vent.
Recommended protections	20A AC RCD breaker
Minimum recommended battery capacity	Very hard to definitively gauge. We would recommend 48V battery systems here with 48V inverters, so as to make the best use of efficiency. A 16S LiFePO4 battery bank of capacity ~200Ah would be a great place to start, giving a massive amount of power and the full capabilities of this item

SPECIFICATIONS SKYLIGHT/VENT GUIDANCE

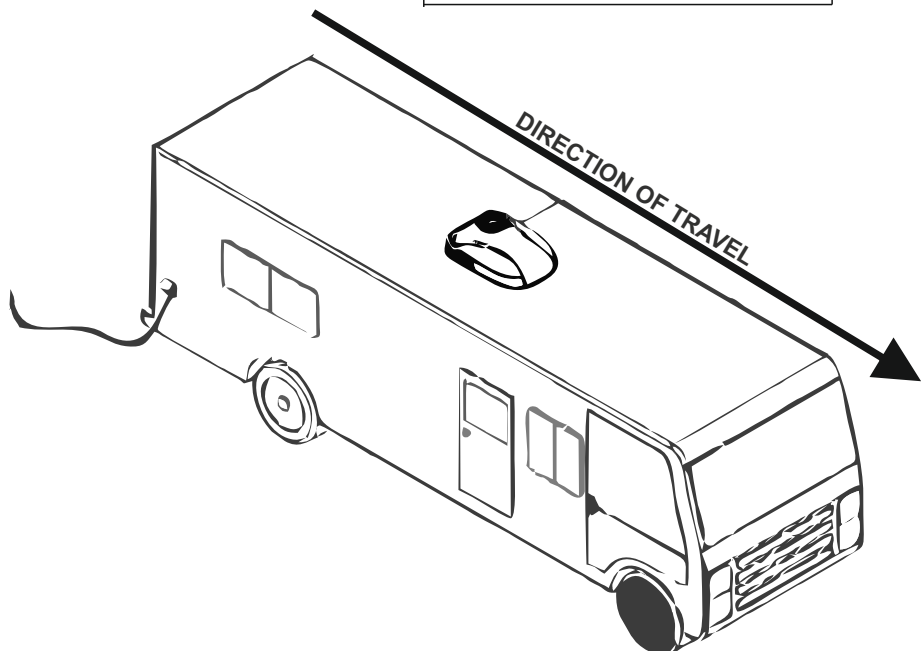
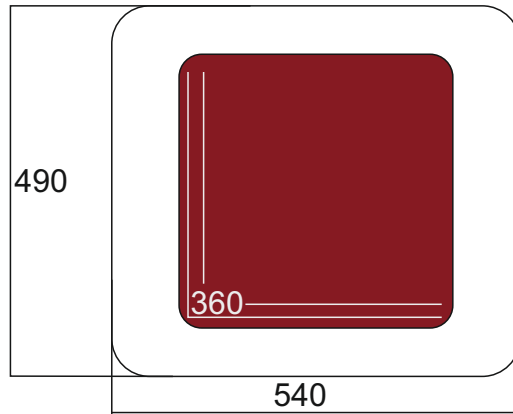
Underside dimensions

RED: Install area



DIRECTION OF TRAVEL →

Foam seal dimensions
RED: Inside seal dimensions



FIRST OPENING ITEM INVENTORY

The THERM3300 unboxing

The THERM3300 comes in two boxes. If you have only received one, reach out to your distributor or salesperson.

Box one holds the upper body of the THERM3300 (and that's it-)

Box two holds the accessories and the inside plate.

1) THERM3300

2) INTERIOR PANEL

3) BOX-2

4) FOAM AND PANEL SCREWS

5) MOUNTING BOLTS

6) LED CABLE

7) REMOTE CONTROL





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INSTALL INSTALLATION PREP

Install preface As I've mentioned a few times- the THERM3300 is a heavy and bulky unit. Please ensure that you have assistance with getting this item into place. Dropping it and breaking it - or indeed making a new skylight by dropping it through the roof - is not going to be helpful for anyone.

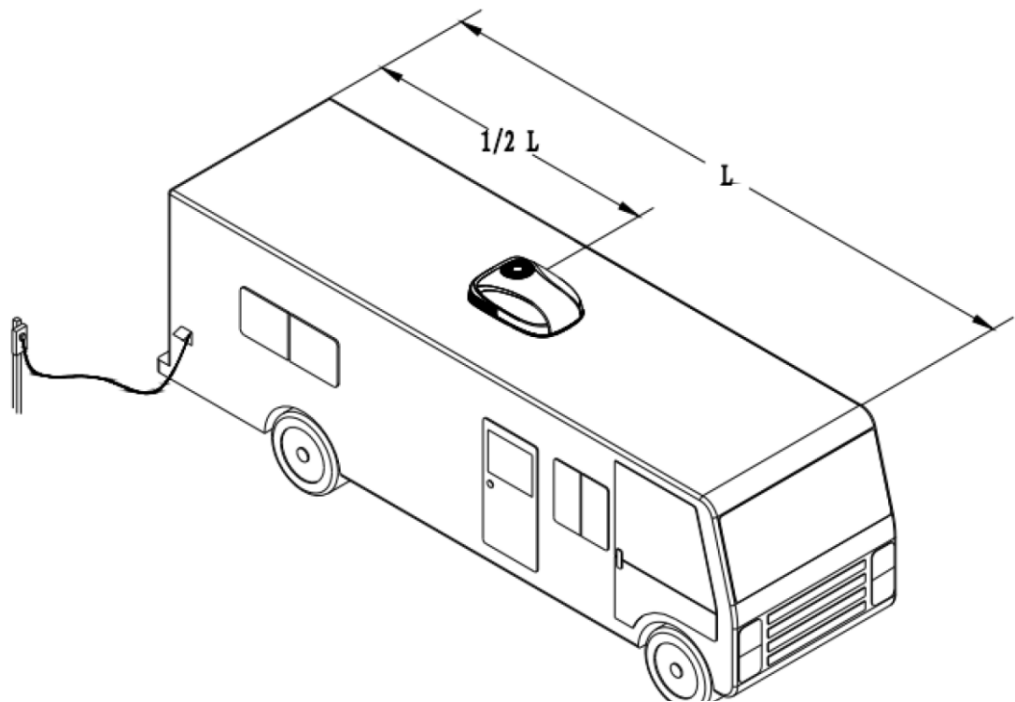
Roof-only This item is designed for installations on the roof of a vehicle or boat. When determining the ideal install position, consider the following. (The size of the vehicle // The size of the skylight, or the cutting of one if there is not one // The thickness and insulation of the vehicle hull).

Vent requirements The product should be installed on an existing 360*360 vent OR a 360*360 vent will need to be cut. Holes smaller than 360*360 will need to be expanded- holes larger than 360*360 will need to be part-filled or gasketed.

Roof thickness MINIMUM thickness of the roof is 26mm, MAXIMUM thickness is 100mm. Rooves thicker than 100mm will require additional airducting.

Vessel insulation It's also sensible to now look at how your vehicle can be insulated further- so you have the air-con running less. Open windows, thin windows, holes, leaving doors open... All of these will affect the heat retention of the vessel/vehicle.

Most installs will only require one THERM unit. Where possible, this should be installed centrally on the vehicle.



Load-bearing Please also ensure that your vehicle has a static-load support capacity of at least 100kg. This will mean that the active-support (IE while driving) will meet our 60kg limit.

Hole-prep With all that done- we can begin with the hole-prep.

360*360 existing vent If you have a roof-vent that meets the dimensions already (360*360), great. All you will need to do at this stage is unscrew the vent and remove it, remove the joint fillers- seal the screw holes and joints... and you have a suitable duct.

Cutting a 360*360 vent if you do not have a suitable roof-vent and you need to cut a new one- Cut a 362*362/+3mm opening in the room of the vessel/vehicle. It must not go through your roof reinforcements (for hopefully obvious reasons) and must pass all the way through.

Ensure that you're not cutting through electrical cables in the vehicle- if you're not sure, at least make sure the power supply into the vehicle is OFF/ISOLATED.

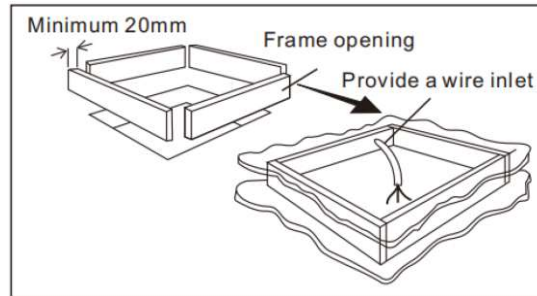
Ensure your wiring will meet your local national wiring regulations- we recommend fusing/adding a 20A circuit breaker and using at least 2.5mm² copper cabling and that it extends into the vessel by at least 380mm.

INSTALL INSTALLATION

Treating the vent

The opening that the air-con is going to sit on must be adequately supported, and where possible, the inter-layer (between the air-con and the interior of the vessel) is insulated.

To really optimise the install, we recommend sealing the area around the vent-hole with insulated battons, of about 20mm thickness or more. You will need to ensure that the power cabling can still pass in/out of the install area.



To begin with the actual install, you'll need to unbox the aircon units and manoeuvre it onto the roof. You will need to lift the item rather than dragging it to ensure that you do not damage the underside. Place it over the hole that you have cut/prepared, with the smooth front facing the direction of travel (as outlined on p7).

Bring the second box with the paneling and other tools into the inside of the vessel, as this contains most of your required tooling.

The fine-positioning of the air-con can be adjusted from inside the vehicle, or with collaboration of someone on top of the vehicle. The underside sponge must align with the square hole.

From the inside of the vehicle, reach up into the air-con and release/pull down the wire harness and other cabling so you can access it.

Foam selection (For air-duct)

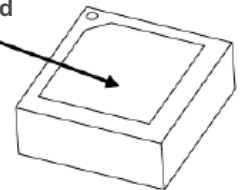
From here, we advise you to measure the thickness from the outside roof to the inside ceiling so you can choose the correct support foam.

26-30MM : 15MM FOAM
30-40MM : 30MM FOAM
40-60MM : 45MM FOAM

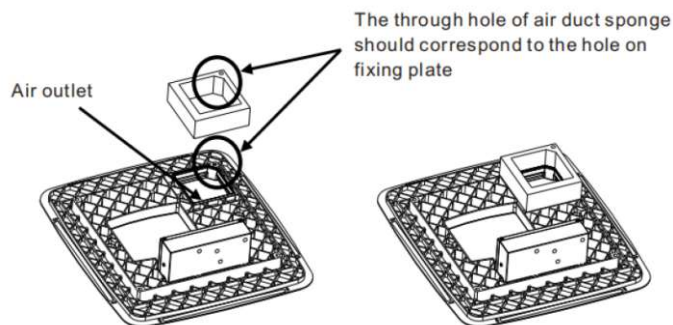
>60MM : COMBINATION OF FOAM (45+15, 45+30, 45+30+15...)

>100MM : Custom pipe joints will be needed.

Air duct foam : Centre should be removed for use (airflow)



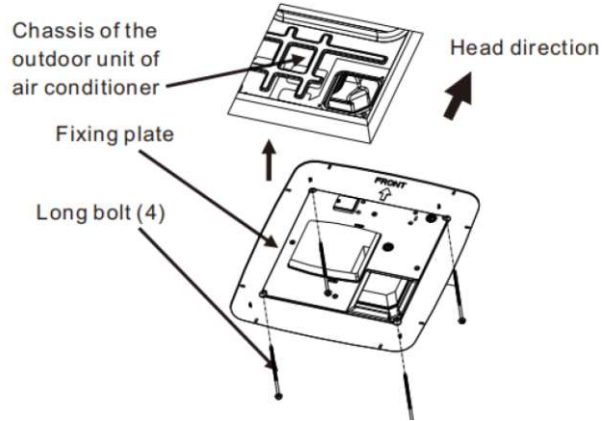
Select the correct foam (or foam arrangement) and pop out the middle part. Install it into the fixing plate by the air outlet (the inside of the foam should align with the fixing plate/panel correctly)



INSTALL INSTALLATION

Installing the fixing plate

With the fixing plate prepped for install, install the fixing plate into the 360*360 ceiling opening, fixing the plate into position with the outdoor unit by using the long bolts found in the smaller secondary pack.



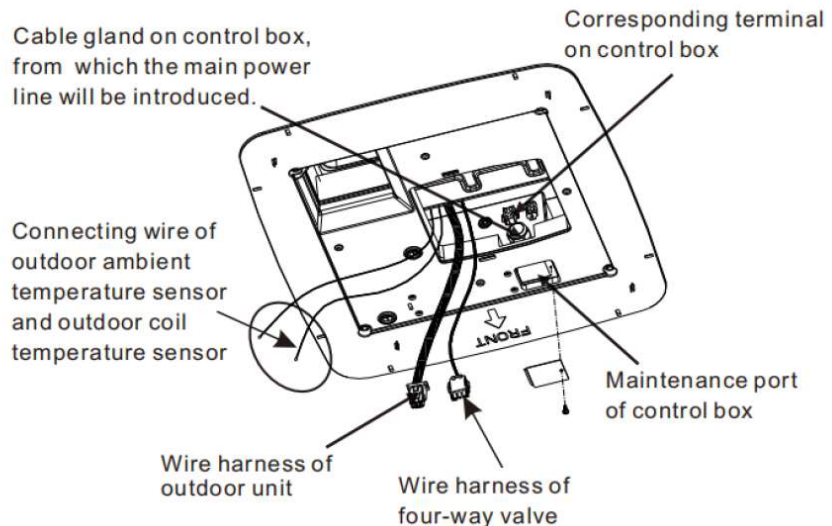
Tightening the plate into position

It's advisable to tighten the bolts by hand at first, ensuring everything is in position correctly instead of shearing anything - either the bolt or the housing. You'll find the receiving rivet nuts in each corner of the air-con body. Tighten them evenly one by one and then tighten again with a torque of ~4.5N.m until the roof/box sponge under the air-con has been compressed down by 10-13mm.

The bolts are self locking, so excessive tightening is unnecessary.

We're nearly there! Now we just need to wire it in. Make sure all the electrical supply is isolated and that you don't accidentally shock yourself. It's less funny in real life than it is in the cartoons.

Important: electrical installation must be carried out by professionals, and wiring must be conducted in accordance with national electrical codes and industry standards.



Gain access to the 'maintenance port' near the front of the control panel so you can feed the main power line into it- you'll want a bit of excess, up to about 150mm, from the cable gland to the control area. You'll want to secure this when you are done to ensure that nothing is pulled to allow a loose connection.

Connecting to the AC supply (ISOLATED)

Connect the white wire in the control box to the blue wire of your AC line (the 'Common' 0V line), then connect the black wire to your brown wire (the 'Live' line), and the yellow/green wire to the yellow/green wire (the 'Ground' wire). We recommend connecting these with actual AC contacts rather than just the cowboy method of coiling them together. Wago connectors are awesome. (free advertising, Wago).

Put all the wires back into the maintenance port section and fix the maintenance port back in place.

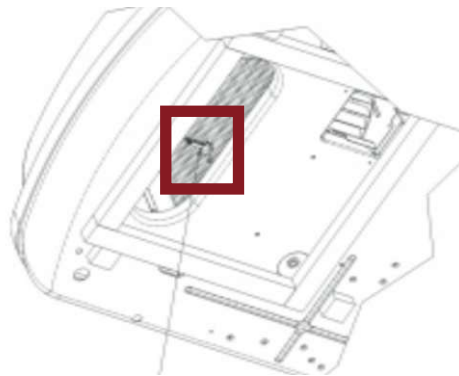
INSTALL INSTALLATION

Feeding the cabling through

With the AC power now connected (not LIVE!) you can install the control cables. The plug-in harness from the outdoor unit can be pulled through and plug it into the corresponding terminal plugs in the control box. Any loose wires will have a housing (other than the temperature sensors-) so check the plug ends for where they may go.

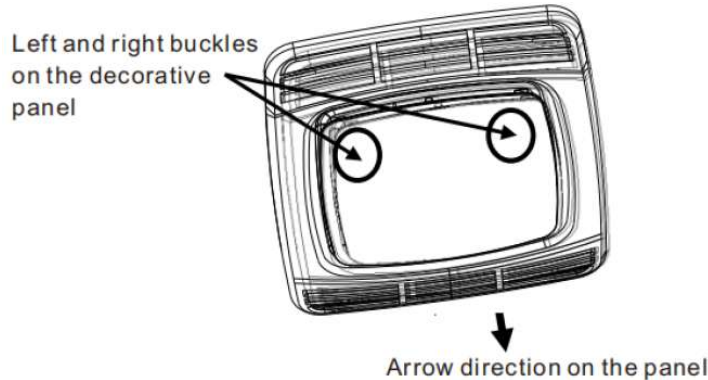
The white two-core cable is the optional LED connector, for those who like pretty lights.

The long black cable is the freeze-sensor, and fits into a frame on the Air-con itself.



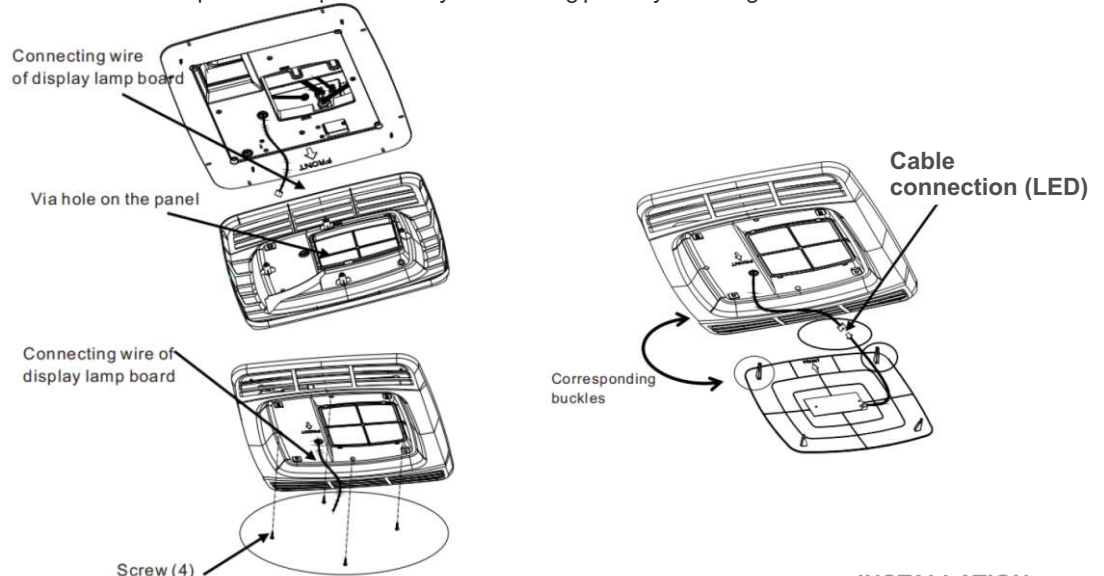
Decorative panel install

To install the interior decorative panel, you'll need to gain access to the inside of it. To open up the panel, press the left and right buckles at the same time and pop the cover off.



Put the interior panel up against the ceiling, with the 'front' of the panel facing the 'front' (direction of travel) of the vessel, and pass the connecting wires from the AC control box down into the holes on the control/decorative panel.

You can then install the panel more permanently on the fixing plate by securing it with the four screws.



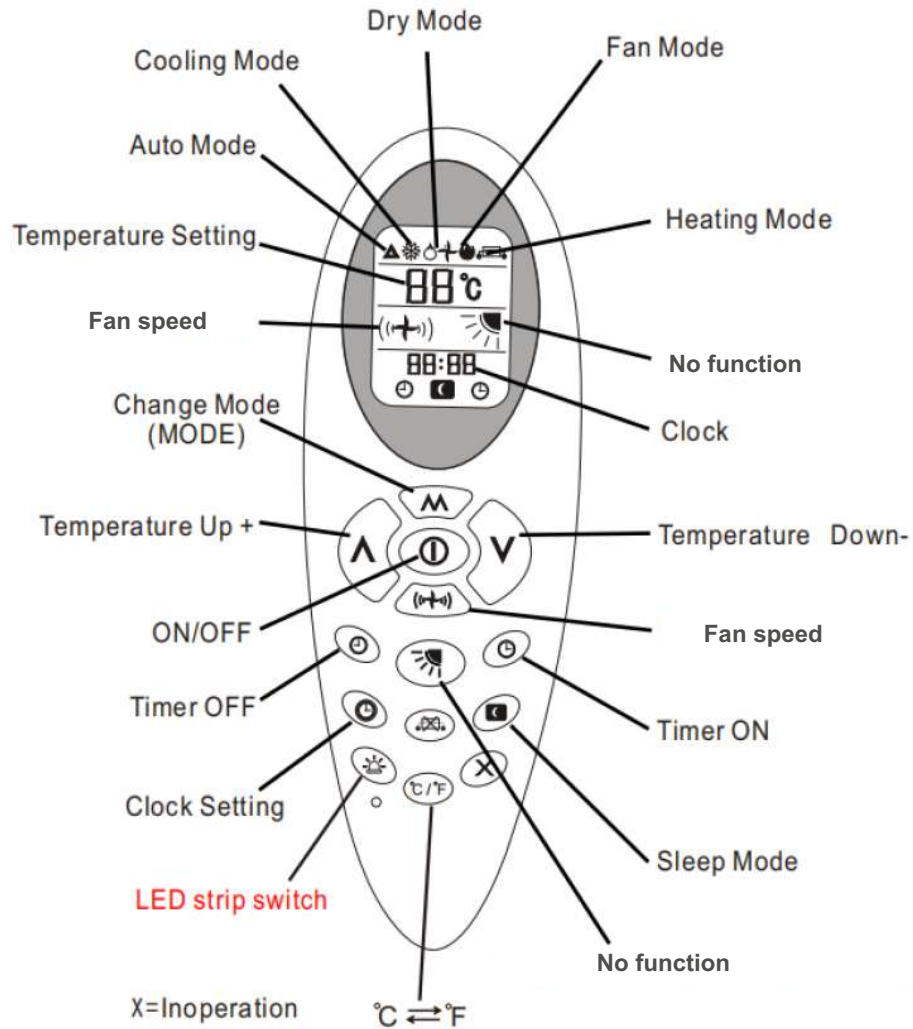
OPERATION UNDERSTANDING THE REMOTE

You're there! You can now look at powering the item up! You might benefit from looking at the following instructions first, so we can ensure you know what's going on. You may also benefit from adding a physical switch to the AC IN line to the Air-Con so you can turn it on/off more definitively.

After you finally give the THERM some power, the compressor will engage after a few minutes.. You can now start giving it some proper use.

Remote understanding In order to do anything with the THERM, you will need to use the remote. Unlike the lower power items (2200, 2800) there is no manual control panel. Everything is dictated from the remote.

The remote can be understood as the following-



OPERATION USING THE THERM

Using the remote	<p>There's a few different operating modes built into the THERM. We have AUTO, COOLING, DRY, FAN, HEATING, TIMER OFF and TIMER ON... Which is certainly a few.</p> <p>They have some common features, for example :</p>									
POWER	The central button is the POWER button. This turns the THERM item on and back into the setting it was in last.									
MODE	The M button will begin toggling through the modes (which we get to in a second).									
TEMP CONTROL	The UP and DOWN arrows adjust the temperature up and down to what you require.									
FAN SPEED	The Fan speed button adjusts the fan speed, based on how many 'speed lines' are either side of the fan on screen.									
POWER OFF	Finally, pressing the power button again turns the item off.									
AUTO	In the AUTO mode, the unit will self-dictate what it needs to do. You can adjust the target temperatures and the fan speed to your liking, but the normal operation is									
AUTO TARGETS	<table border="0" style="width: 100%;"> <tr> <td style="width: 40%;">Internal temp <20°C</td> <td style="width: 10%; text-align: center;">=</td> <td>THERM will target 20°C.</td> </tr> <tr> <td>Internal temp between 20°C and 25°C</td> <td style="text-align: center;">=</td> <td>THERM will focus on ensuring ventilation and dry air</td> </tr> <tr> <td>Internal temp >25°C</td> <td style="text-align: center;">=</td> <td>THERM will focus on cooling</td> </tr> </table>	Internal temp <20°C	=	THERM will target 20°C.	Internal temp between 20°C and 25°C	=	THERM will focus on ensuring ventilation and dry air	Internal temp >25°C	=	THERM will focus on cooling
Internal temp <20°C	=	THERM will target 20°C.								
Internal temp between 20°C and 25°C	=	THERM will focus on ensuring ventilation and dry air								
Internal temp >25°C	=	THERM will focus on cooling								
COOLING	In COOLING mode, all settings can be adjusted, but be aware that the THERM will not be able to 'elevate' the temperature inside the vessel, it will only operate by cooling.									
DRY	In DRY mode, similar to above, the unit does not prioritise temperature control (though you can still set temperature and fan speeds-), instead it focuses on making sure humidity is removed.									
FAN	in FAN mode, neither the cooling nor heating aspects run but the fan speed can be controlled.									
HEATING	In HEATING mode, the unit will focus on bringing the heat up to the specified temperature. The cooling aspect is quite inefficient.									
TIMER OFF	<p>With TIMER OFF, you can specify after how-long-of-running you want the THERM to power down. Set the temperature and fan mode settings up to your requirements (using either COOLING, DRY, FAN or HEATING..) and then press the timer OFF button. You can use the UP and DOWN arrows to adjust the hours and minutes you want the THERM to stay on for, and then press the timer OFF button again to confirm.</p> <p>The THERM will automatically shut down when the timer is met.</p>									
TIMER ON	<p>With TIMER ON, you can specify when you want the THERM to kick in. This setting is unique in that it is implemented when the main THERM is turned off. Press the timer ON button and adjust up and down the hours and minutes until you are at a time-from-now that you want the THERM to come online. Once there, press the timer ON button again and it will be set.</p> <p>The THERM will automatically come online when the timer is met, and it will be in the last settings that it was powered via.</p>									
Enjoy!	From there- you're basically done. Just use it and enjoy!									
Maintenance advice	<p>To maintain the THERM, the only thing you need to focus on is keeping things clean and occasionally cleaning the filter. To gain access to the filter screen- pop the decorative panel free and you'll be able to clean the filter screen.</p> <p>To clean it, just run water through it in both directions and then dry it. Do not use the THERM without the filter screen or you may affect the life of the evaporator coil.</p>									

TROUBLESHOOTING TROUBLESHOOTING

Troubleshooting Sometimes faults happen, but hopefully we can narrow things down and fix them from afar.

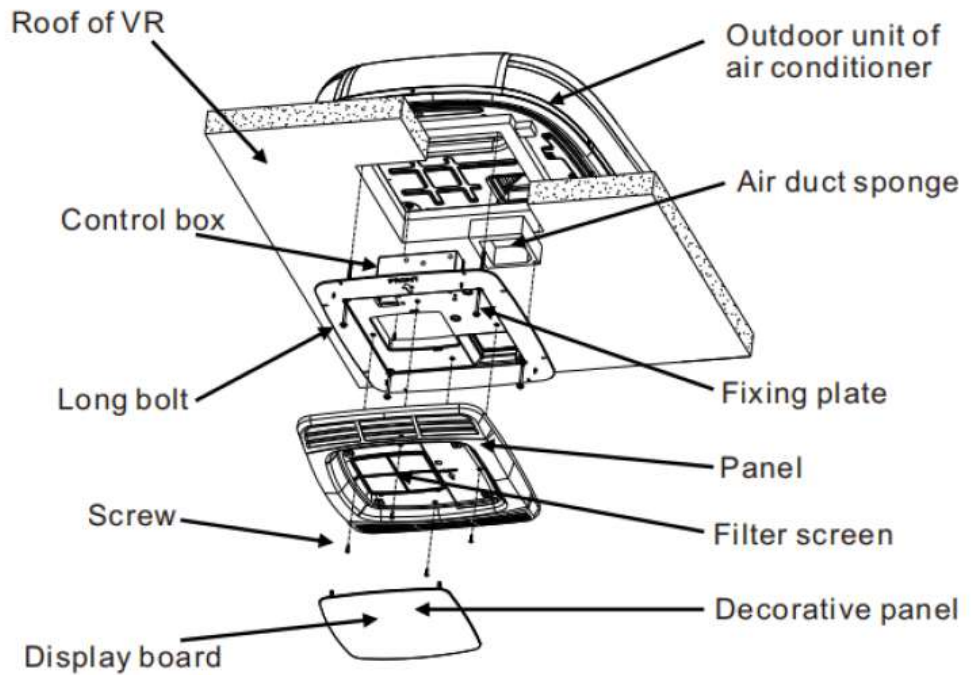
Quick-check If anything is playing up, first check the following basics

- 1) Ensure the remote has batteries in and that the screen is functioning
- 2) Check the AC fuse and plug running in to the THERM unit. If this has blown, further investigation as to 'Why' would be advisable. If after replacing the fuse it blows again there may be an installation issue or an item issue.
- 3) Check the AC voltage and sine wave as it is coming into the THERM - if it is outside of the 220-240VAC required voltage, or if it is Quasi-Sine, then you have a power-supply issue.
- 4) Ensure that all the cables are in place between the air-con and the control/decorative panels.

Error codes There may also be more obvious error codes on the screens.

- E1 Indoor temperature sensor fault : Check the sensor and the wiring
- E2 Indoor coil temperature sensor fault : Check the contact with the THERM itself
- E3 Outdoor coil temperature sensor fault : Check the cabling and the heads of the temperature sensor
- E4 Outdoor ambient temperature fault : Again, check the temperature sensors for any possible damage
- DF If the screen displays DF- there is no fault, but the machine is defrosting so cannot be used.

Linear install diagram





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www.sterling-power.com
www.sterling-power-usa.com
Warranty (2 years return to factory)