

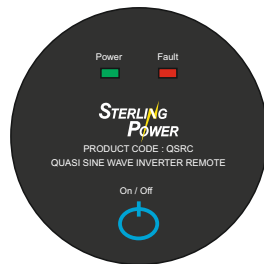
Part No:  
QS Series



instructions



Remote control  
with 5 meter  
cable - optional  
(Part No **QSRC**)



# STERLING POWER

EN55032:2012  
EN60950-1 : 2006+A11  
2009+A1  
2010+A12  
2011+A2:2013

## Sterling Power Products Quasi Sine (QS Series) AC/DC Inverter Handbook



[www.sterling-power.com](http://www.sterling-power.com)  
[www.sterling-power-usa.com](http://www.sterling-power-usa.com)

**Warranty (2 years return to factory)**

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## INTRODUCTION WELCOME

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**Welcome** Welcome to the Sterling Power Products Owners Handbook for the product series 'QS', shorthand for Quasi Sine'.

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.

Thank you for choosing Sterling and we hope to serve your travels well.

**Using this Handbook** 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 the Sterling Power website. 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.

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.



## SAFETY AND LEGAL LEGAL GUIDELINES

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### 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](http://www.sterling-power.com) or [www.sterling-power-usa.com](http://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 © 2023 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.



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## SAFETY AND LEGAL SAFETY GUIDELINES

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**Product Guidelines** Your Sterling Power product should only be utilised for its designated purpose. Use the Sterling Power PS Inverter ONLY :

- For DC to AC power conversion
- With fuses protecting both the AC/DC cables
- In a well ventilated, dry, dust-free and condensation free environment
- When the Owners Handbook has been read and wholly understood

**Transport and Storage** 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  $-20^{\circ}\text{C}$  to  $60^{\circ}\text{C}$ .

Refer to the battery manufacturer's manual for information on transportation, stowage, charge rates, recharging and battery disposal for your battery care.

**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.

**Safety Precautions** Inverters can be heavy, do not lift unassisted.  
Ensure that your model is correct for your intent. 110V/240V, 12V/24V/48V. Incorrect use can lead to damage.  
Orientation is not critical to unit function, however may affect water ingress rating.  
Place as close to the house/leisure bank in use as possible.  
Ensure inverter is off during install.  
Disconnect AC wires during install.  
Connect AC output to a Residual Circuit Breaker (RCD) and current overload trips.  
When installing DC cables, connect to the inverter first and then, via a fuse on the positive line, connect both cables to the battery terminals in use.  
Sterling recommend Multi Core Tri Rated AC cable  
Install device in a well ventilated space for cooling purposes.  
Do not expose the unit to snow, rain, water, spray, condensation, pollution etc.  
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 and AC 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.  
Turn the unit on before turning on the AC appliances connected to it.  
Keep out of reach of children

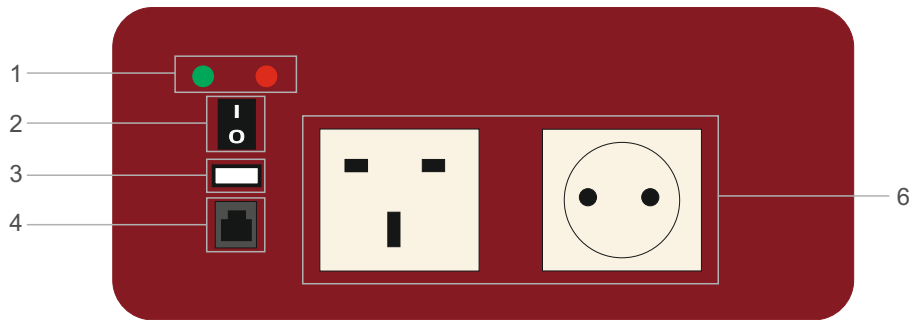
**WARNING :** All electrical appliances carry the risk of electrical shock. This equipment is designed to be used in combination with a permanent energy source (the battery). Always turn the AC power off and disconnect the battery before performing any maintenance or inspection.

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.

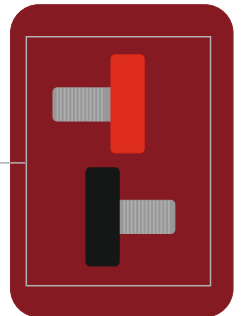
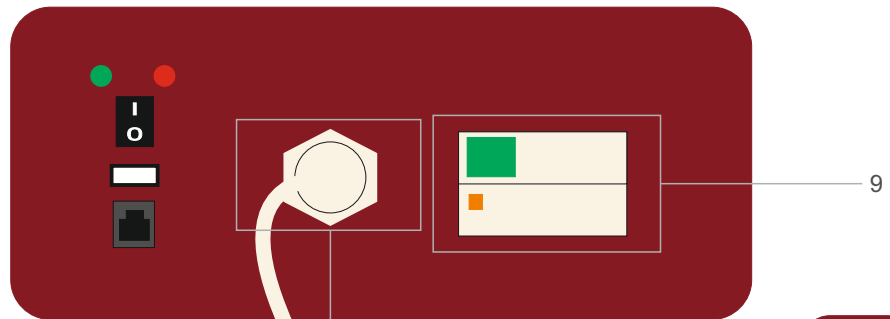
Do NOT use the device in situations where there is danger of gas / dust / vapour explosions, or around potentially flammable produce.

PRODUCT INFORMATION Front Panels

Twin Socket Model



RCD + hard wired model



Rear side / DC side

1) Green LED means unit on and working. Red LED means fault.

2) Simple toggle on/off switch

3) 5V 2.1A USB port

4) Remote port.

6) Twin socket - UK socket and Schuko Euro socket.

7) AC cable connection point - with AC cable extension

8) Live Earth Neutral - cable to be connected to AC distribution / sockets

9) RCD - Residual Current Device - a protection device designed to trip if there is leak in the neutral.

10) DC terminals - 8mm bolts. Red positive | Black Negative



## PRODUCT INFORMATION FUNCTIONS AND FEATURES

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<b>Introduction</b>	<p>Ensure you have read the manual completely before using this device. A full understanding of the capabilities of the Sterling Power product is crucial to its continued performance and your safety.</p> <p>This inverter converts a 12V or 24V or a 48V DC voltage into a usable AC voltage with a pure sine wave (100-127V/220-240VAC). This inverter allows you to utilise a battery power source to supply power to equipment that would require mains supply. The voltage for the input and the voltage for the output is dependent on the model.</p> <p>Be aware that some products have power surges on initial engagement. Ensure that these start-up peaks are within the inverters operatable range. Some peaks can be up to as much as 5 times the continuous power consumption of an electrical product.</p>
<b>Notes of Use</b>	<p>Prior to using the inverter ensure that all cables are mounted correctly and are secure. Never use the inverter when cables are damaged. Ensure the inverter is [ON].</p> <p>It is normal for the housing to get warm during operation. The fan will keep operation within a safe and efficient range.</p> <p>If you will not be using the inverter for a significant length of time you will benefit from disconnecting it from your battery over the period.</p>
<b>LED Indicators</b>	<p>POWER - GREEN - Battery connected and the switch is in the ON position.</p> <p>FAULT - RED - Fault on the DC input or internal temperature</p> <p>FAULT - RED BLINKING - Fault on the AC output</p> <p>Cross reference with trouble shooting page for solution</p>
<b>USB Output</b>	<p>All Sterling Power QS inverters have a 5V USB port. Maximum load is 2,1 amps.</p>
<b>Remote Control</b>	<p>QSRC is the product code for the Sterling Power Pure Sine Remote Control, the round-remote control intended for use with the QS series of products. When it is connected it is important that the main switch on the inverter is in the OFF position. When the inverter is in the OFF position the remote control can toggle power on and off.</p>
<b>LCD Display</b>	<p>The LCD screen displays the battery voltage (V), output power (W), battery state of charge, low voltage protection alarm, over voltage protection alarm, overload protection alarm and the over temperature protection.</p>
<b>Cooling Fan</b>	<p>The fan is temperature and load influenced. At a certain load, dependent on model, the fan will engage automatically. As internal temperature increases the fan will gradually increase in power.</p>

**PRODUCT INFORMATION    INSTALLATION**

**Mounting**    Ensure, if you are choosing to wall mount, that your mounting points are secure and sufficient to hold the weight with the mounts you choose to use. Ensure that there is space for ventilation (minimum 10cm) to allow air circulation. Ensure at least 2 of the available mounting supports are screwed in for install.

**Neutral Earth Bonding**    These units are neutral earth bonded, tying the neutral to the earth terminal. This gives 230V across the live and neutral terminals but also from live to earth. This allows an RCD to operate safely as intended and is compliant with hard wire installation requirements on vehicle installs.

**Install Preface**    All electrical installations should be carried out by a professional electrician. High voltages are a reality when utilising an inverter and do have the potential to kill you. Ensure your input and output voltage needs are correct for the model you have before continuing.

Sterling do not provide, by default, the cable necessary for your installation. We are of the belief that every install is unique to the client and as such we cannot presume. Ensure that your cable thickness is sufficient and safe for the current we can expect to move through it and ensure that you fuse your cable when connecting to a battery.

**Installation Instructions**    Red cable refers to the cable on the positive DC line. Black cable refers to the cable on the negative DC line.

1. Ensure all instructions have been adequately understood and you have ensured your personal safety.
2. Connect one side of the red cable to the positive DC terminals at the back of the inverter and one side of the black cable to the negative DC terminals at the back of the inverter.
3. Tighten all connections firmly
4. Connect the remaining ends of cable to the battery. The red positive cable connects to the positive terminal on the battery. The black negative cable connects to the negative terminal on the battery. These cables should be correctly fused and the connection itself must be firm, tight and sufficient.

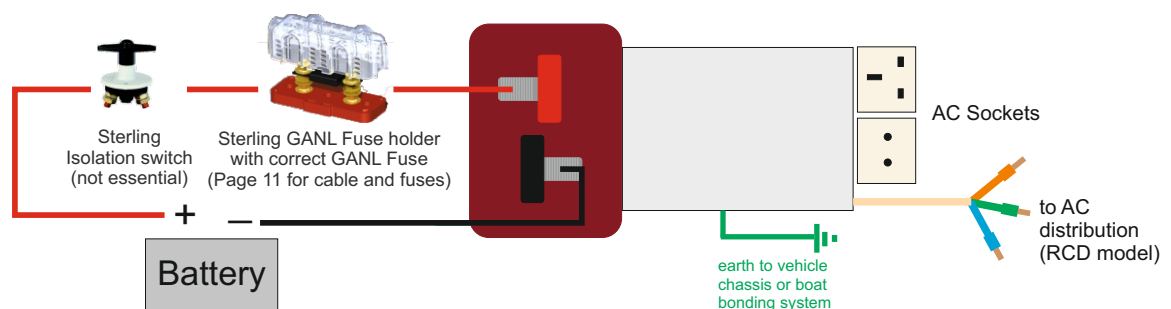
Do NOT reverse polarity the inverter (Positive to negative, negative to positive). This can destroy the inverter and would not be covered under warranty.

**Grounding**    The AC output ground must be connected with the grounding point for the connected equipment. The ground connection on the inverter itself should be connected to the ground chassis on the vehicle with 6mm<sup>2</sup> cable.

**AC Equipment**    All Sterling PS inverters have two plug sockets. One Schuko (Euro) plug and one UK mains plug. Ensure that your AC equipment does not exceed the power rating of the inverter. The inverter is at risk of becoming damaged in the instance of power surges. This damage is not covered within the warranty as it constitutes invalid use.

**Other AC Power Supplies**    Some users may wish to run this inverter in conjunction with other AC power supplies such as a mains supply or a generator. This is NOT suitable. Having the inverter involved with other AC power supplies in a circuit will damage the inverter and this is not covered by warranty. You must utilise a cross-over switch for use in these situations.

**Legal Obligations**    An inverter MUST be safe for use. It may sometimes be difficult to obtain a good grounding/earth connection however this is important to it's safe operation. In some circumstances it is obligatory by law to have these units safely grounded. To determine cable size / fuse size, refer to page 11.







**PRODUCT INFORMATION INTEGRATED PROTECTIONS**

**Protections** The QS series inverter has a number of protections dependant on the model.

**Low Voltage Warning** In the instance of low DC voltage on the input an acoustic signal will engage.

	Engage at	Disengage at
12V Models :	10.5V +/-0.5V	11.5V +/-0.2V
24V Models :	21V +/-0.5V	23V +/-0.2V
48V Models :	42V +/-0.5V	46V +/-0.2V

**Low Voltage Protection** If the input voltage continues to drop after the alarm signals the low voltage protection will engage. AC output is shut down and the red fault indicator will trigger. The alarm will continue to sound. The inverter will automatically restart when the voltage has risen sufficiently.

	Shut down at	Restart at
12V Models :	10V +/-0.5V	12.6V +/-0.2V
24V Models :	20V +/-0.5V	25.2V +/-0.2V
48V Models :	40V +/-0.5V	50.4V +/-0.2V

**Over Voltage Protection** If the input voltage rises outside of safe parameters then the PS inverter will trigger its over-voltage protection. The AC output will be shut down and the red fault indicator will trigger. When the input voltage has dropped to safe levels the inverter will restart.

	Shut down at	Restart at
12V Models :	16V +/-0.5V	12.6V +/-0.2V
24V Models :	32V +/-0.5V	25.2V +/-0.2V
48V Models :	64V +/-0.5V	50.4V +/-0.2V

**Temperature Protection** In rare instances the internal cooling provided by the fan may be insufficient. In these instances the temperature protection feature will engage. This disables the AC output and the red fault indicator will engage. Once the inverter has cooled again it will restart automatically.

**Short Circuit on Output** The inverter will switch off the AC output if it detects a short circuit on the output side. The red fault indicator will flash intermittently. Inverter will restart automatically when the fault is resolved

**Overload Protection** If the AC output is demanding power that is greater than the inverter is rated to safely provide the overload protection will disconnect the output. The red fault indicator will flash intermittently. Once the problem is resolved the inverter will restart.

**Warranty Note** In the instance that the protection is not quick enough to engage and you manage to damage the unit (either through overload, over voltage, etc) this is not at fault of Sterling and the unit will not be liable for warranty.

Sterling Power is not liable for the potential degradation of your batteries. This may occur if you continually and repeatedly drain your batteries down past their preferred guidelines.



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## PRODUCT INFORMATION TROUBLESHOOTING

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Buzzer Alarm	The acoustic warning implies low DC voltage on the input. Please charge your battery or supplement the load by charging your battery while running the inverter.
Solid Red Fault Light	<p>A solid red fault light implies there is either an input fault or the temperature protection is active.</p> <p>In the instance of an input fault you will likely register the input voltages from your battery as being too low or too high. When the voltages return to normal levels the inverter will engage.</p> <p>In the instance of the temperature protection causing the fault, please verify that the fan is working and that the inverter has sufficient ventilation. If the inverter is located in an area of high ambient temperature and frequently seems to have temperature trips, please consider relocating it into a cooler area.</p>
Blinking Red Fault Light	A blinking red fault light implies there is an output fault. This will likely either be a short circuit or an overload. Please safely attempt to check your AC appliances for a fault. When the fault is resolved the inverter will restart automatically.
Green LED But No Output	This can imply a number of potential faults and is largely due to using improper equipment. Please verify that your battery capacity is sufficient to supply the requested load. Please verify that all of the connections between the inverter and the battery are sufficient. Please verify that the cables in use are sufficient for your demand. Please verify that the power being requested is within the rating of the inverter.
No LEDs, No Function	<p>In the instance that all LEDs are off, please verify that you are receiving a valid voltage at the DC input terminals. Please verify this with an independent voltmeter as read off of the terminals themselves. If you are getting a 0V reading at these rear terminals then it is likely that a fuse has blown or your battery, if lithium, may have tripped. There could be a connection failure somewhere between the inverter and your battery.</p> <p>If you are getting your battery voltage at the DC terminals please verify that any fuses have not blown. Some fuses allow a continuity reading even after they have blown. If you are getting a higher voltage than the inverter is rated to, this could also explain the fault.</p> <p>In the instance that none of the above seems to explain the problem and you are getting a valid voltage at the inverter please verify that the inverter is turned ON. If the inverter is turned ON and you have valid voltages at the terminals and the inverter is still not functioning or providing any feedback then please contact Sterling with voltage readings ready to provide.</p>



**PRODUCT INFORMATION SPECIFICATIONS AND CABLE THICKNESS AND FUSE RATING**

**Overload** All QS inverters have a 120-150% overload for up to 3 minutes. They have a 200% overload for 3 seconds.

**Efficiency** All QS inverters are 90% efficient at full load, 95% efficient at 1/3 load.

**Temperature** All QS inverters have an operational ambient range of -10°C to +50°C

**AC Output** All QS inverters have an AC output voltage of 200~240VAC, 50/60Hz

	Rated Power	DC Voltage	Current	DC Cable Sizes	DC Fuses
QS121500	1500W	12V	~150A	35mm <sup>2</sup>	200A
QS122000	2000W	12V	~200A	50mm <sup>2</sup>	250A
QS123000	3000W	12V	~300A	70mm <sup>2</sup>	350A
QS124000	4000W	12V	~400A	95mm <sup>2</sup>	450A
QS241500	1500W	24V	~70A	25mm <sup>2</sup>	100A
QS242000	2000W	24V	~100A	25mm <sup>2</sup>	140A
QS243000	3000W	24V	~150A	50mm <sup>2</sup>	200A
QS244000	4000W	24V	~200A	70mm <sup>2</sup>	250A
QS482000	2000W	48V	~50A	16mm <sup>2</sup>	80A
QS484000	4000W	48V	~100A	25mm <sup>2</sup>	120A

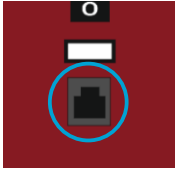
	Rated Power	DC Voltage	Current	DC Cable Sizes	DC Fuses
QSRCD121500	1500W	12V	~150A	35mm <sup>2</sup>	200A
QSRCD122000	2000W	12V	~200A	50mm <sup>2</sup>	250A
QSRCD123000	3000W	12V	~300A	70mm <sup>2</sup>	350A
QSRCD124000	4000W	12V	~400A	95mm <sup>2</sup>	450A
QSRCD244000	4000W	24V	~200A	70mm <sup>2</sup>	250A

**REMOTE CONTROL** Remote Control Use with QS Series inverters

Remote Control

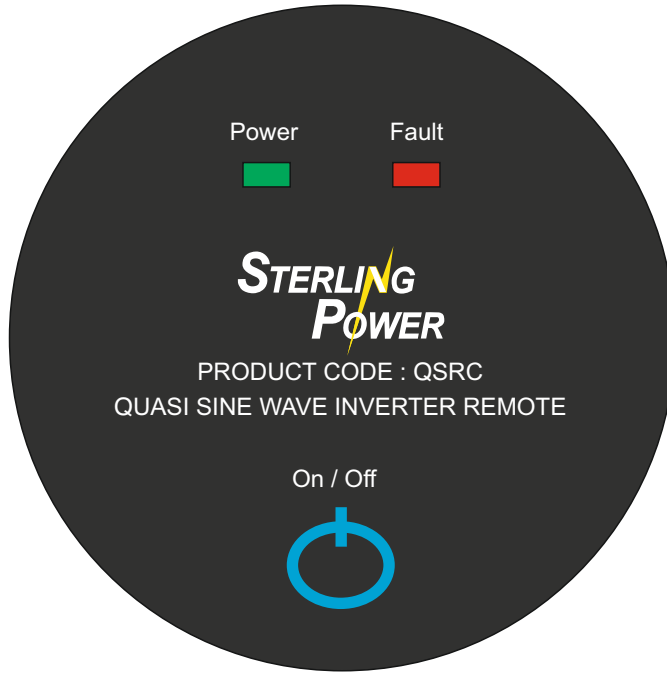
**QSRC - optional**

The QSRC comes with 10m of cable and connects here.



If the inverter is powered up, the green / yellow back light on the remote shall illuminate displaying voltage <-> power.

If the back light illuminates but there is no display, try turning your inverter off and on again.



On and off toggle switch - this button simply switches the inverter on and off. In order to engage the on/off function of the remote the Inverter switch position needs to be 'O' - off.



Remote control dimensions  
to scale

