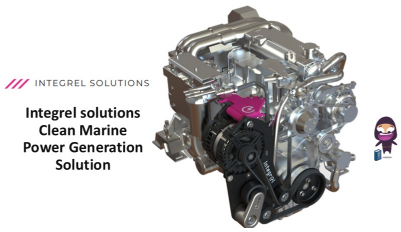
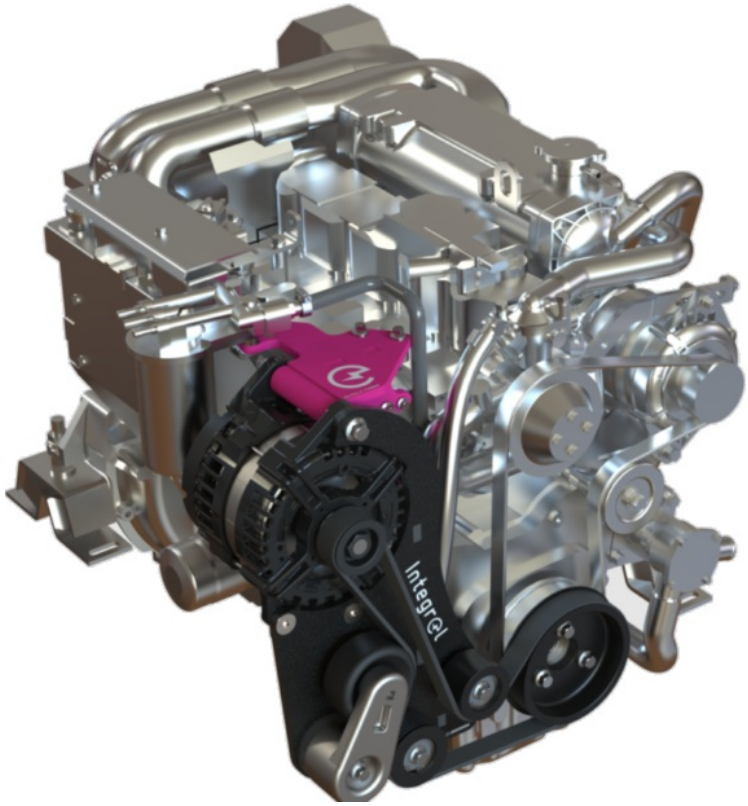


Integrel solutions Clean Marine Power Generation Solution User Guide

Contents

INTEGREL SOLUTIONS

Integrel solutions Clean Marine Power Generation Solution



Product Specifications

- Product Name: Integrel Solutions
- Power Generation System for Yachts and Recreational Boats
- Operates at 48V
- Autonomous Operation with Minimal User Input
- Produces Power without the Need for Additional Genset
- Efficient and Quiet Operation

Product Usage Instructions

Step Aboard and Go!

1. Ensure the Integrel System and 48V battery banks are turned on when boarding your vessel.
2. Use your vessel as normal and monitor the battery state periodically.
3. If batteries are low or a warning sounds, charge the batteries using one of the following methods.
4. To wake up the Integrel System if it goes to sleep, simply tap the screen.

The Integrel Touchscreen
The Integrel user interface is designed to be simple and easy to understand. Menu buttons on the right provide access to different pages:

- Generator Status and Information
- Battery Status and Information
- Engine Status and Information
- System Summary
- System Settings

Generator Status
The Generator Status page displays key information about power generation, including percentage output. You can switch between digital and analogue displays by tapping the screen.

Battery Status
The Battery Status page provides details about each battery bank in the system. You can view information for different battery banks by scrolling and tapping the screen for additional details.

Engine Status
The Engine Status page shows engine RPM and temperature information. The RPM figure may be controller-measured or obtained via the J1939 interface. Engine temperature is monitored through a sensor installed on the engine or via the J1939 interface.

Frequently Asked Questions (FAQ)

- **Q: How do I charge the batteries using the Integrel System?**
  A: You can charge the batteries at anchor or while motoring. Refer to the specific sections in the user manual for detailed instructions on each charging method.
- **Q: What should I do if the battery low warning sounds?**
  A: When the battery low warning sounds, it's recommended to charge the batteries promptly using one of the charging methods outlined in the user manual to ensure continuous power supply on board.

INTRODUCTION

Using an Integrel system is an easy and carefree way of generating, distributing and using power on board any yacht or recreational boat. The system operates autonomously with minimal user input.
Integrel produces power without the need for an additional genset.
It operates seamlessly, quietly and efficiently, producing a massive amount of useable power to make living onboard and off-grid as comfortable as living at home, albeit with much better views!

STEP ABOARD AND GO
When you step aboard, ensure the Integrel System and 48V battery banks are turned on.
Use your vessel as normal and check the battery state from time to time. If you notice the batteries are low, or if a battery low warning sounds, charge the batteries using one of the following methods.

- Run your engine(s), either in-gear or out-of-gear
- Connect a shore power supply
- Turn on your solar power or wind generator

Finally, if the Integrel System goes to sleep to save power, simply tap the screen to wake it up.

THE INTEGREL TOUCHSCREEN

The Integrel touchscreen provides a convenient way to view the state of the electrical power on your boat. It shows information about the main storage batteries, as well as other battery systems that are connected to the Integrel System including house banks and engine start batteries (if configured).

Various pages indicate how much power the Integrel generator is producing, together with engine speed, energy usage by other systems as well as energy cycled into and out of the batteries. This information can be used to understand how much you are using the battery banks.

In addition, the screen advises when it is time to recharge your main batteries by sounding an alarm and showing a warning icon. When the warning appears, connect to shore power or start your main engine(s) to charge the batteries.

MENU SYSTEM

The Integrel user interface is designed to be simple and easy to understand. Menu buttons are available to the right of the screen to provide access to each page of information.

The menu button associated with a page is greyed out when the page corresponding to the button is displayed.

Each menu button, together with a description of the corresponding page is shown below.

Generator Status and Information

Battery Status and Information

Engine Status and Information

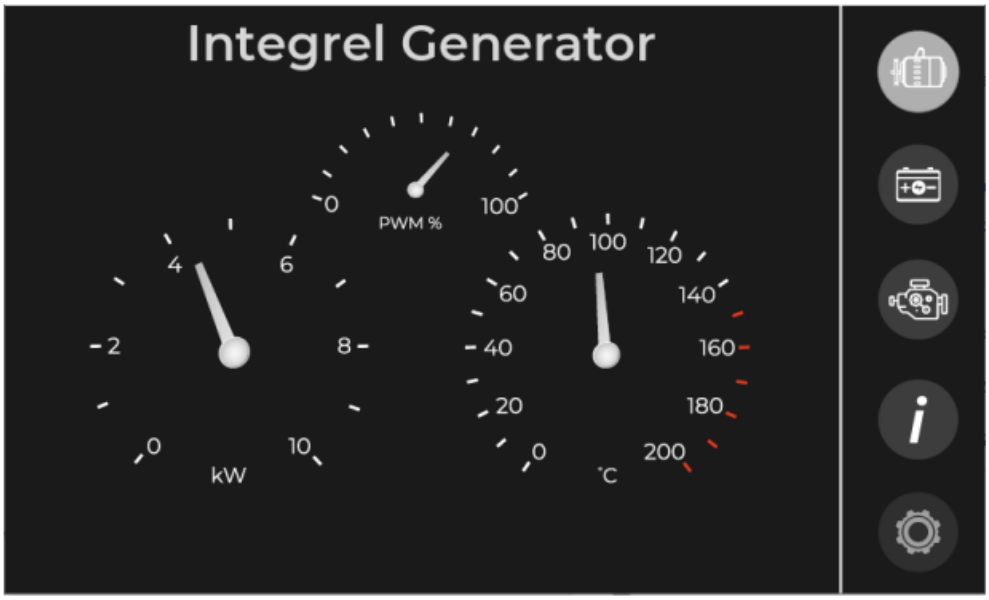
System Summary

System Settings

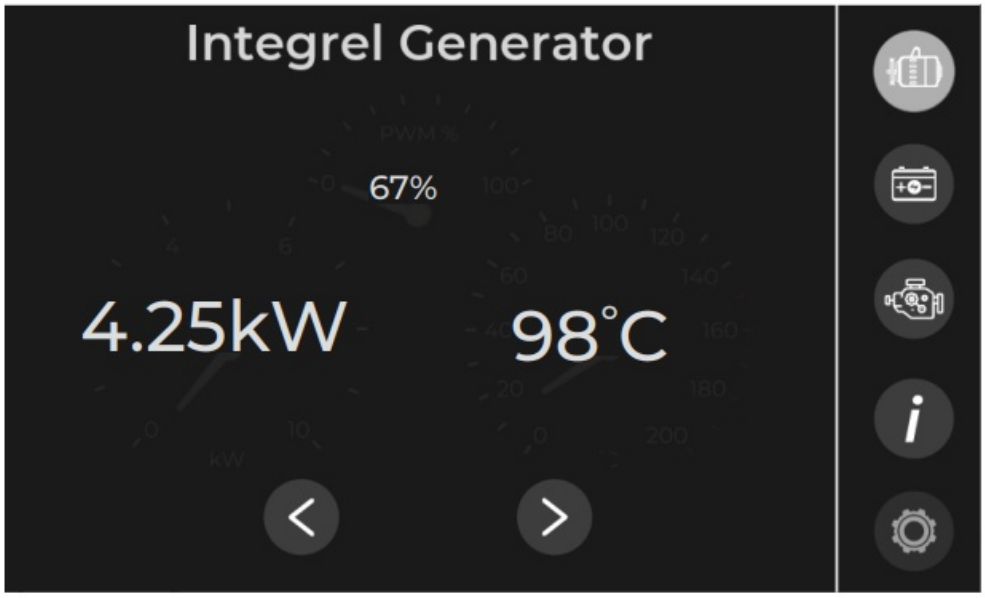
GENERATOR STATUS

Pressing the Generator button displays the Generator Status and Information page. This page shows:

- Power output in kilowatts (kW)
- Generator temperature in degrees Celsius
- Generator load (PWM)*



Tap the centre of the screen to show a digital version of the same information; tap again to return to the analogue display.
For a dual system, touch the arrows at the bottom of the screen to jump between each Integrel generator information page.

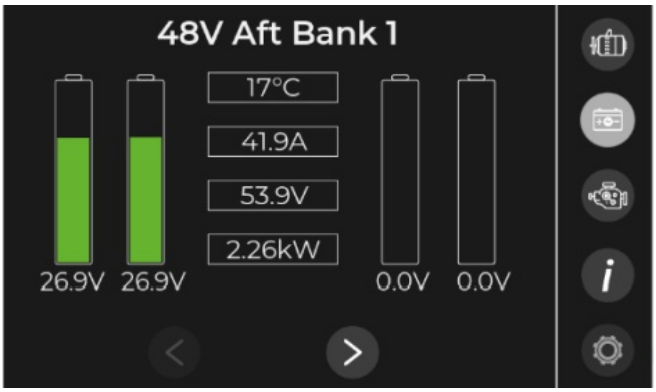


BATTERY STATUS

The Battery Status page provides information about each of the battery banks in the system. A separate page is available for each Integrel battery bank sensor installed. Depending on your battery configuration, the Battery Status page shows:

- Overall battery bank temperature
- Total bank voltage and individual battery voltage
- Instantaneous current flowing into/out of the battery bank
- Instantaneous power flowing into/out of the battery bank

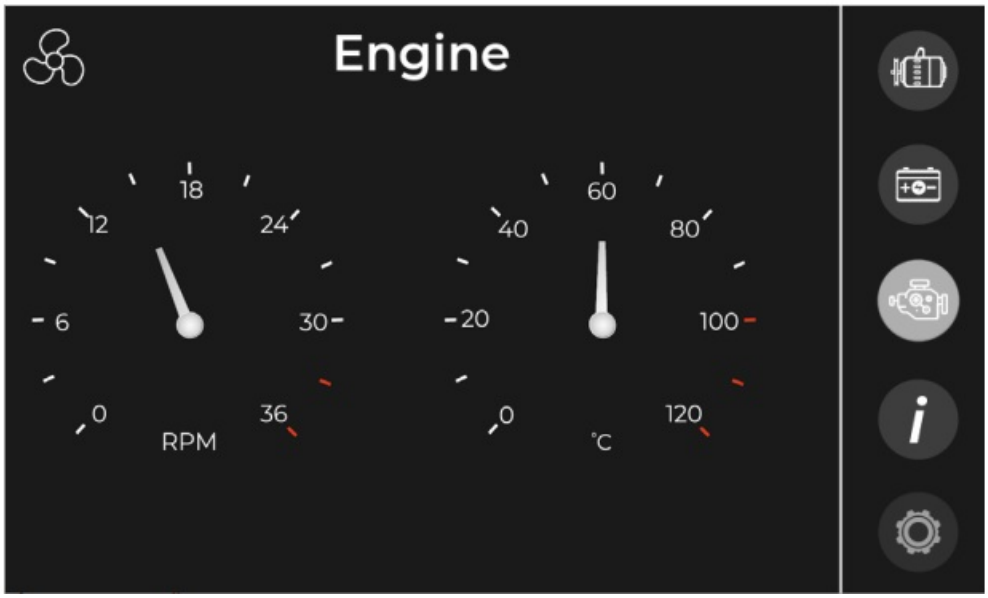
The arrows at the bottom of the page allow you to scroll between each of the installed battery banks monitored with an Integrel battery bank sensor, including 48V, 24V and 12V banks.



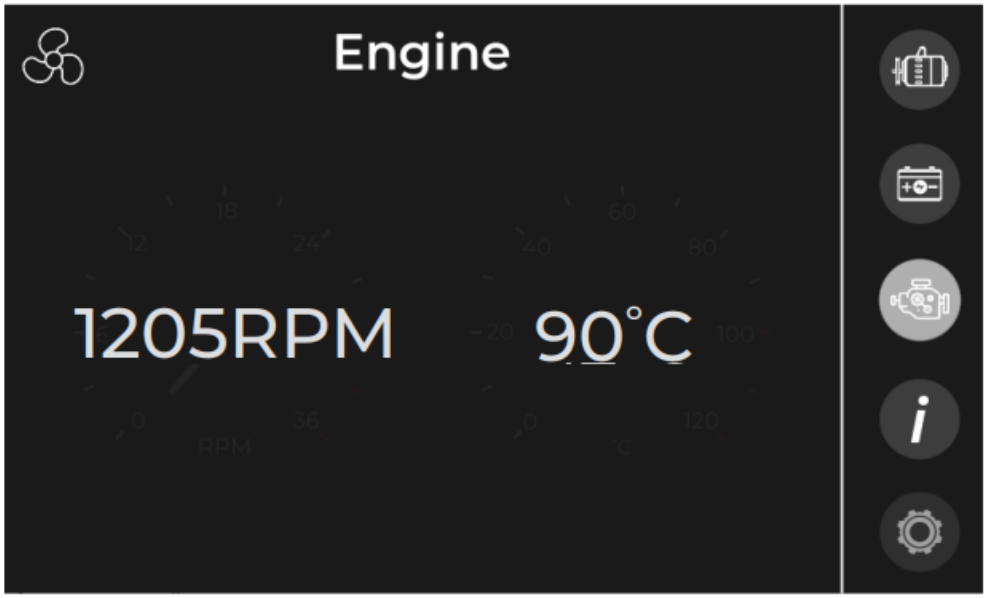
Tap the center of the screen to see a text version of the page showing additional information.

- **Amps** is the instantaneous current flowing into/out of the bank; a negative number means current is flowing out of the bank.
- **Volts** is the battery bank voltage.
- **Time** to go is the time remaining until the battery bank is empty or charged; see the System Summary page for more information. Cycle in / Cycle out is the amount of energy the battery bank has received (Cycle in) or provided (Cycle out).
- **Target** Bulk / Target Float is the target bulk voltage and target float voltage, see How Does Integrel Work?
- **Bank Capacity** is the battery bank capacity in Amp hours (Ah). Temperature is the temperature of the battery bank.

ENGINE STATUS
The Engine Status page shows the speed of the engine in RPM (revolutions per minute) and the temperature of the engine.
The RPM figure may be measured by the controller or read from engine data via the J1939 interface depending on system configuration.
Engine temperature is measured using a temperature sensor installed on the engine or directly from engine data via the J1939 interface.



Tap the center of the screen to show a numerical version of the same information; tap again to return to the gauge display



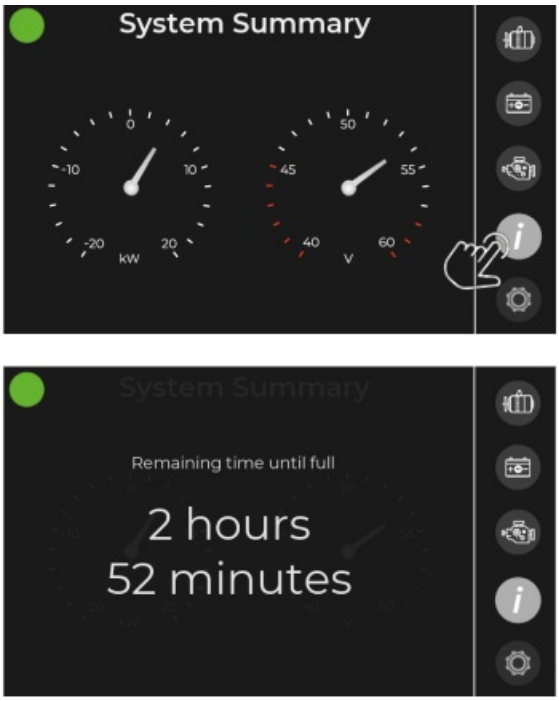
The system indicates if the engine is in or out of gear. The gear status is displayed at the top left with a propeller symbol.

SYSTEM SUMMARY

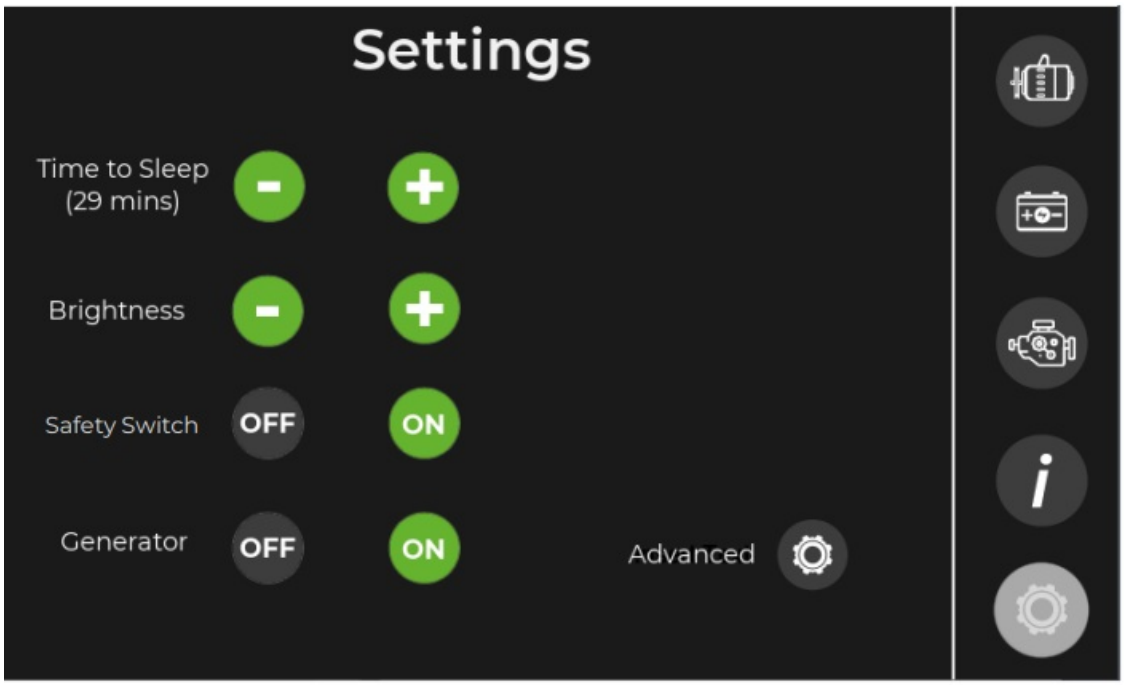
When the system powers up, the System Summary page is displayed by default, however the System Summary page can be accessed at any time by pressing the menu button.
The System Summary page shows:

- Power being produced (or used) in kW
- Voltage of the 48V battery banks.
- Estimate of battery State of Charge (SoC)*

Tap the screen to show ‘Remaining time until full’, which is an estimate of how long the batteries will take to reach ‘full charge’ if charging, or to reach the ‘disconnect voltage’ if discharging. The estimate is calculated based on the level of power flowing into or out of the battery banks; tap again to return to the analogue display.



SETTINGS
Press the Settings menu item to open the Settings page.
The information on the Settings page varies to match the hardware installed on your boat.



- Time to Sleep. Activity timeout until the screen goes to sleep Brightness. Adjusts the screen brightness
- Safety Switch (& 24V Safety Switch). Controls the Integrel Smart Switch
  - ON = Switch Closed (batteries connected)
  - OFF = Switch Open (batteries disconnected)

Note: If ‘Safety Switch’ is not shown, your boat may not have a switch installed.

Generator. Turns the Integrel Generator ON or OFF

Advanced. Access to System Diagnostics, BMS Diagnostics and Wi-Fi.

ADVANCED

Diagnostics

The diagnostics page can be used by the Integrel support team or an Installer to diagnose any issues with the Integrel system if necessary.

BMS

The BMS page displays information and diagnostic data from the battery BMS; Integrel supports the following BMS brands.

Wi-Fi

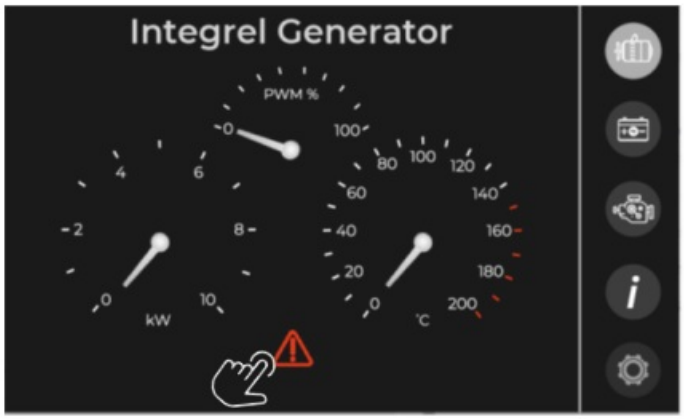
Wi-Fi is used to update Integrel software (available only on Integrel Touchscreens from 2023 onwards).

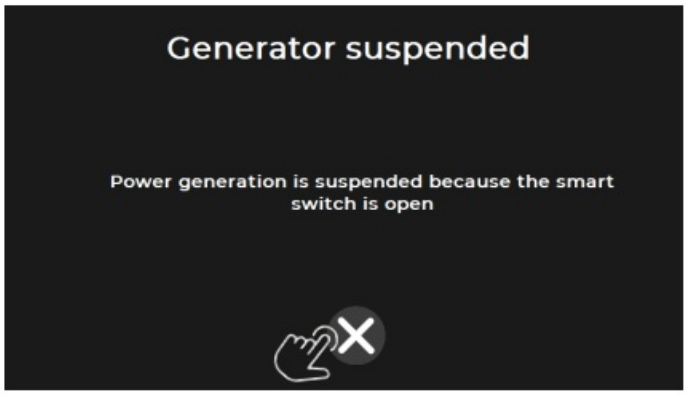
WARNINGS

Charge Inhibit Warnings

If the system fails to charge the batteries, the generator page shows warnings to indicate why the system is not charging.
Press the warning symbol to display a description of the warning.

To return to the summary page press 





SYSTEM BATTERY LOW WARNINGS
If the battery voltage level drops below the ‘disconnect voltage’, a battery low warning shows and an alert sounds.

System Warnings
The system constantly monitors for faults. If a fault occurs, a warning is displayed. To view warnings, tap the icon and a summary page shows. Tap the center of the screen to cycle between System Warnings and System Summary.
An example of Active Warnings is shown below.

NOTE
For additional troubleshooting information, see the Installation Guide.

CHARGING THE BATTERIES

The Integrel system charges the main 48V bank of storage batteries whenever the propulsion engine(s) are running and the batteries are not fully charged, charging occurs automatically. Assuming 48-12V DC-DC converter(s) were installed with your system, the main battery bank also charges other batteries connected to the system such as 12V house batteries, again completely automatically.
The only time you need to take any action is if the system notifies you that the storage batteries are running low, at which time the engine needs to be started, or another source of power must be supplied (such as shore power, solar or wind).

CHARGING AT ANCHOR

After being at anchor for 1-2 days, the battery charge may become low; the Integrel Touchscreen shows a battery low warning and sounds an alert. Simply start your engine(s) to charge the batteries.
If you do not plan to leave anchor, leave the engine(s) in neutral and adjust the revs to a fast idle between 1200 – 1400 RPM. This engine speed typically generates between 6.0 – 7.5 kW of power. Dual systems generate twice this amount of power assuming both engines are run simultaneously.

Charging Time

A 10 kWh Lithium battery bank charges from below 20% to above 90% in about an hour from a single Integrel system.
A 30 kWh Lithium battery bank charges from below 20% to above 90% in about two and a half hours from a dual Integrel system.
Quite apart from a large rate of charge (up to 18kW), a dual system has the advantage of redundancy in case of a single engine failure or a system fault.

CHARGING WHILE MOTORING

When you are ready to move to the next anchorage, motoring for around two hours will typically charge the battery bank to above 80% depending on the size of your battery bank.

Lithium Battery Life

To extend the life of Lithium-based batteries, Integrel recommends avoiding fully charging the batteries to 100% on every charge-cycle.
If you need to run the engine(s) to charge the batteries with the propeller disengaged, we recommend charging the batteries until
the combined power being produced by the Integrel system drops to around 1-2 kW, at this point the battery State of Charge is typically above 80%. Fuel usage is also less efficient at this point because the system is unable to fully utilize the power being produced by the engine.

WARNINGS AND CUT-OFFS

As power is used from the batteries, the battery voltage begins to drop. It is CRITICAL that the terminal voltage of lithium-based batteries does not drop below the manufacturer's specified minimum voltage and does not exceed the specified maximum voltage. To prevent this occurrence, the Integrel system includes a Smart Switch as a safeguard to protect the batteries.
If the battery voltage drops too low, a warning is shown on the Integrel display and an alert sounds. The alert indicates that the batteries need to be charged. If the warning is missed or ignored, the voltage continues to drop until it reaches the low disconnection voltage. When this occurs, the Smart Switch disconnects the batteries from any charging devices or loads to safeguard against potential battery damage.

Low-Voltage Event

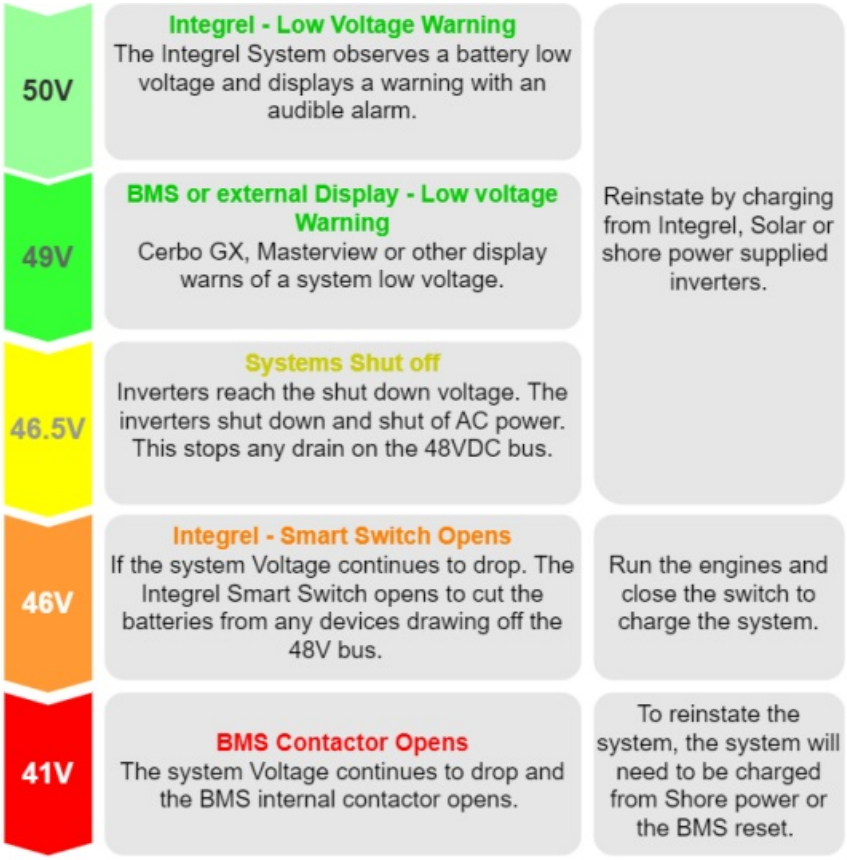
The system is usually able to maintain a system voltage above 48V through motoring and solar charging, however it is important to regularly check the system voltage. If the system voltage drops too far, alerts inform you that the batteries need to be charged. If alerts are missed, or you are off the vessel, safety features ensure the batteries are protected.

Low-Voltage cut off

A minimum safe working voltage must be maintained for lithium batteries. Unlike gel and flooded batteries, the

cells must be kept above a minimum critical voltage.
The battery system on your boat should be wired to ensure safety system cut-offs are present and the battery bank can be isolated to prevent the battery voltage dropping too low.
The graphic below illustrates how the system behaves as the battery voltage begins to drop.

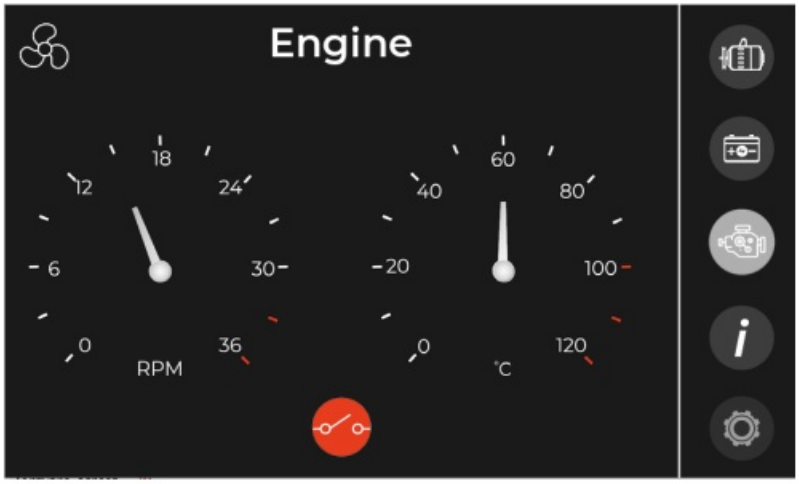
As described, the Integrel Smart Switch protects the batteries from discharging below a critical voltage threshold after which shore power is required to reinstate operation!
Some systems may not be fitted with a Safety Switch; contact your electrical installer for instructions to recover your system after a low-voltage event.

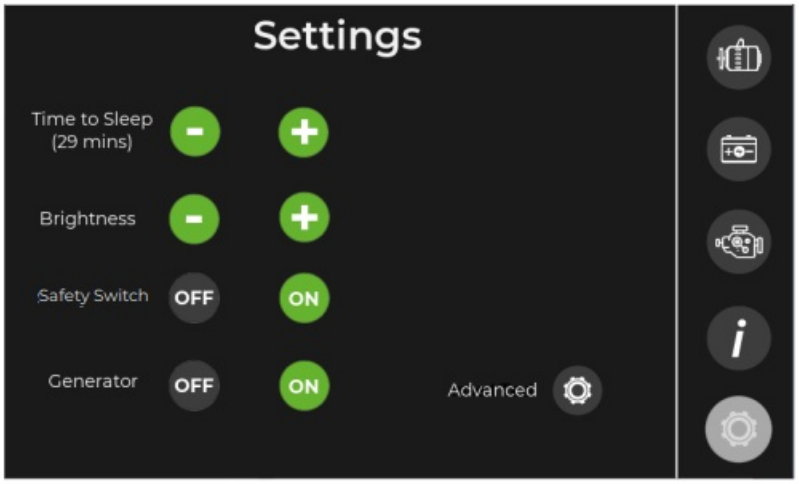


Operating the Integrel Smart Switch

- Navigate to the Generator page by pressing the generator icon 
- If the switch is open, the red switch icon  is shown.

The switch can be activated (turned on) by pressing the Safety Switch ON button on the Settings page, shown on the right.





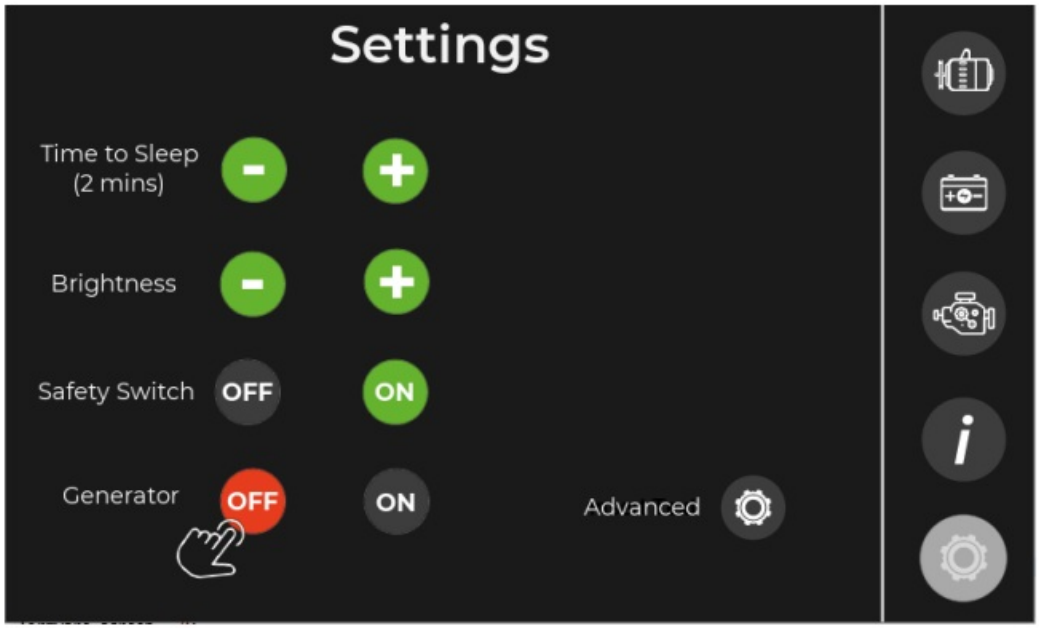
Manually Activating the Switch

To manually engage or disengage the switch, use the switch knob (highlighted in the image to the right).
To close the switch (ON) push down.
To open the switch (OFF) pull up.

Locking the Switch OFF (open)

The switch can be locked in the OFF position which is useful during maintenance or wintering. Locking the switch OFF ensures the 48V supply is not accidentally re-connected.
To lock the switch in the off position, pull up and rotate the knob ninety degrees in a clockwise direction.

Manually Stop Generation
To stop the Integrel system generating power, navigate to the Settings page and tap the Generator OFF button.



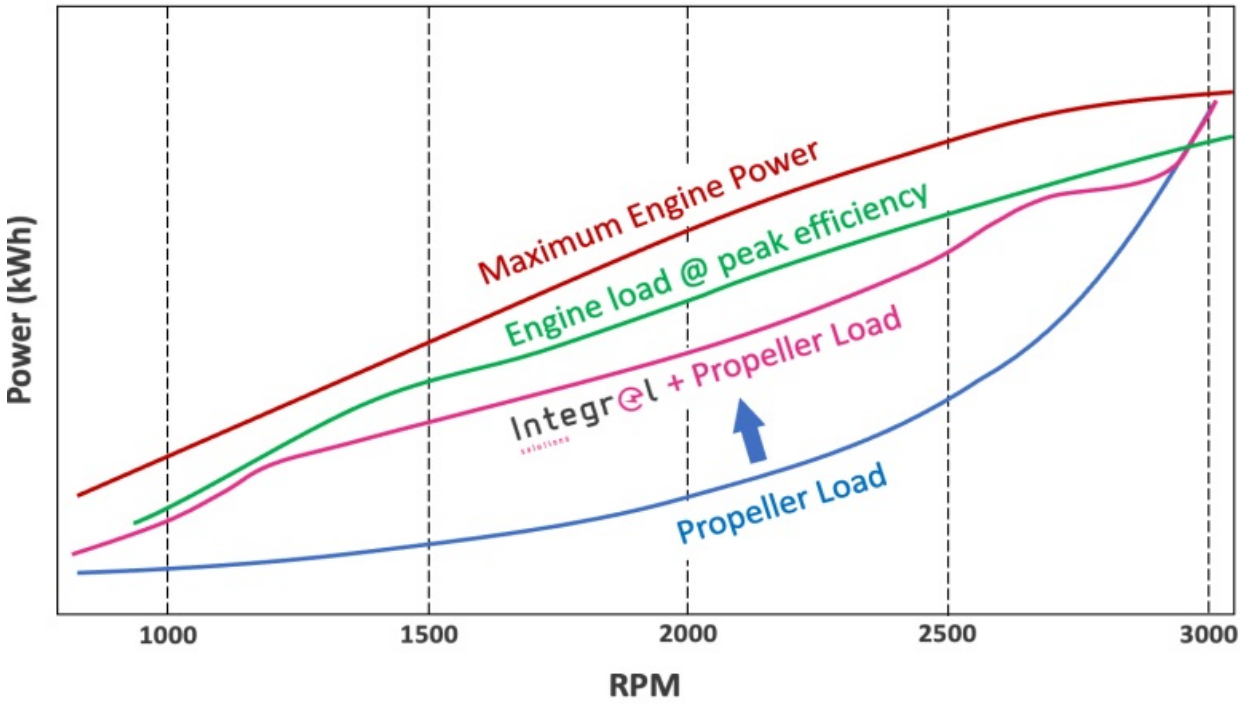
HOW DOES INTEGREL WORK?

THEORY OF OPERATION

Your Integrel System operates automatically and needs minimal input; however, it is useful to understand what to expect from the system so it can be run as efficiently as possible. The system operates in a carefully controlled manner and is constantly monitoring voltages, current
and engine state to produce efficient power generation suited to the conditions. The following overview provides a brief description of how the Integrel system operates.

A Healthy and Efficient Engine
Integrel makes your engine run more efficiently which keeps it healthy. Consider the graph below which shows engine output power and engine loads over the full engine RPM range.
Without Integrel, the propeller (blue line) uses much less energy than the engine (red line) is capable of producing over nearly the entire RPM range; engines have poor fuel efficiency with low loads.
With Integrel, the combined propeller and Integrel generation load bring the overall load on the engine much closer to peak fuel efficiency.
The result? The engine runs more efficiently, is healthier AND generates large amounts of energy with near

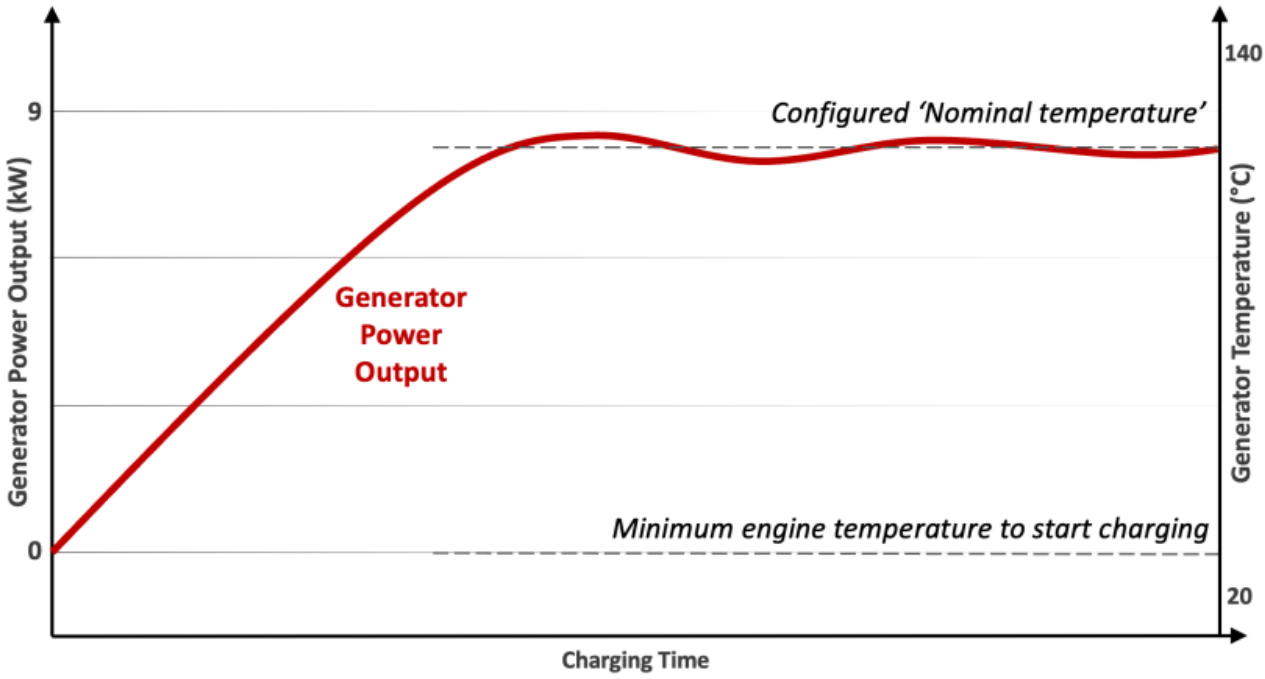
optimal fuel usage!



Power Control with PWM
Pulse Width Modulation (PWM) controls power (in kW) to charge the batteries. Typically, as the engine speed (RPM) increases, the PWM increases; although PWM also depends on various other factors including temperature, battery charge state, in-gear transitions, and rapid changes to engine speed.

Power Generation vs. Engine Speed
As the engine speed (RPM) increases, the amount of charging power also increases. Under ideal conditions (low battery state of charge and cool temperatures) charging power peaks around 9 kW. At peak power output, the Integrel Generator starts to get hot.

Power Generation vs. Temperature
The Integrel Generator is air cooled and gets hotter as it generates more and more power. When the generator reaches about 110°C (230°F), the Integrel system reduces power output to limit the generator maximum temperature to 120-130°C (248-266°F).
When the generator begins to cool, the charging power increases again. This cycle repeats until the batteries are fully charged.



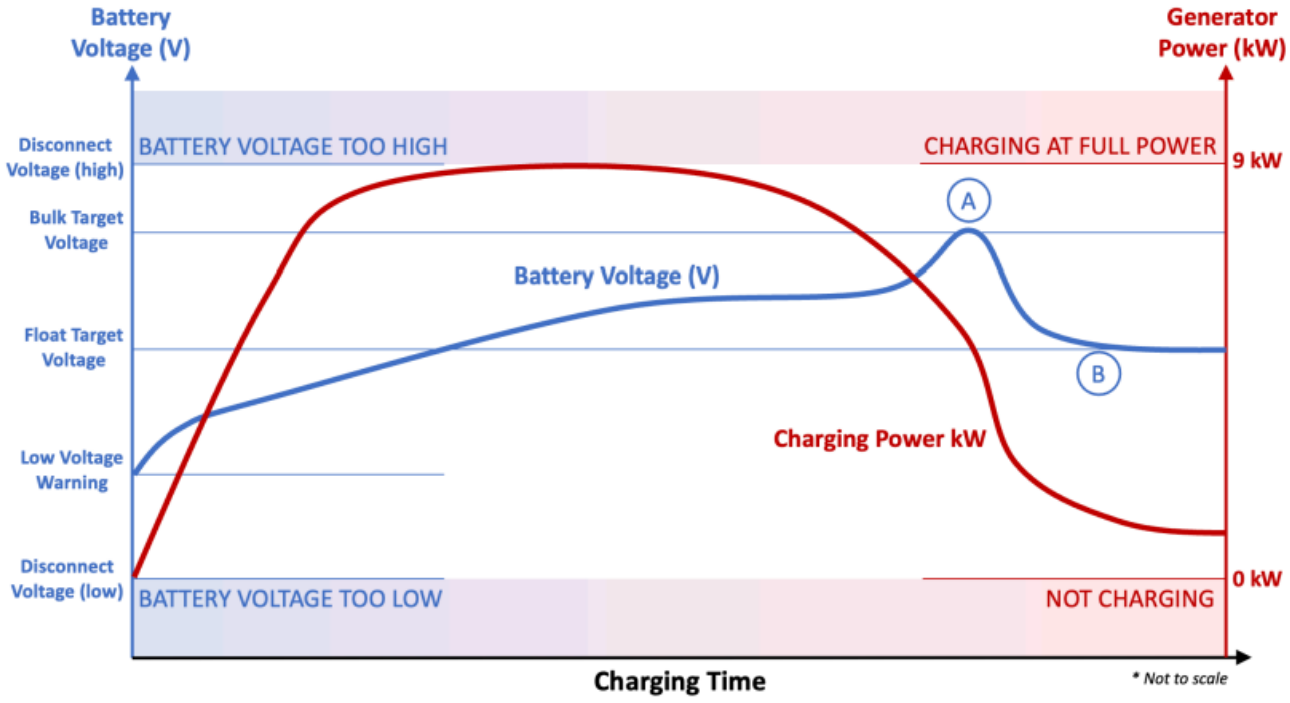
Understanding Battery Charge

The graph below provides an example of the measured battery voltage (V) vs. charging power (kW) by the system over time. While the batteries have a State of Charge (SoC1) less than ~90%, the system attempts to produce the maximum power possible.

As the batteries reach or exceed 90%2 charge, the system reduces power generation until the battery bank voltage reaches the Bulk Target (A).

Once the Bulk Target is reached, the battery is considered 'full' and

the system drops back to the float level (B) and only produces a small amount of charging power to maintain the float voltage.



1. State of Charge is an estimation only and is used to monitor how much the battery has been charged or depleted.
2. Typically <90%. Depending on the brand of battery, the charge may drop before or after 90%.

PRIORITIZING PROPULSION

The Integrel Generator is limited to a maximum 9kW electrical power output, and typically produces a continuous 7-8kW at cruising speed provided the engine space is well-ventilated. This substantial amount of power must be carefully managed to ensure the engine is correctly loaded and that propulsion is always prioritized.
The Integrel Controller handles load management automatically. As the controller adjusts the amount of power the generator takes from the engine, you may notice a slight change in the sound of the engine. The generator load makes no difference to the boat speed on a modern engine with electronic governing. On older engines with a mechanical governor, the engine RPM may drop slightly.
The generator is shut down completely under the following circumstances:

- When the engine is below minimum operating temperature
- When a gear shift is detected
- When the boat is maneuvering
- If there is a rapid change in engine speed (RPM) typically around 15%
- At approximately 75% of wide-open throttle and above

This behavior ensures that when maneuvering, or in circumstances where you need propulsion quickly, the entire engine power is available to drive the propeller.
When the system senses the engine is in a steady state, or the engine speed is changing slowly, it gradually ramps the electrical load.
The Integrel Controller never allows the electrical load to push the total engine load (propulsion and generation) above 75% of the total available power. This operation is handled automatically.
Where you need propulsion quickly, all the engine's power is available to turn the propeller.
This operation is all handled automatically, and you do not need to do anything at all.

MAINTENANCE

Unlike a standalone generator, Integrel requires virtually no maintenance and the only spare part required is a drive belt. We recommend the belt is changed at every main engine service, typically every 500 hours of operation. The generator itself is a heavy-duty alternator and is designed to operate for many thousands of hours without service.
The primary battery bank requires no maintenance other than to ensure it is charged and powered off for storage during extended idle periods.
Under normal usage conditions, the Integrel system must remain ON to enable it to monitor all energy cycled into and out of the batteries by various charging sources and appliance loads.

PREPARING FOR STORAGE

If your boat will not be used for extended periods, it is CRITICAL that your lithium battery system is disconnected or is able to maintain at least 80% SoC and a safe minimum voltage.

Integrel strongly recommends that you carefully read the battery manufacturer's documentation regarding storage of your batteries during extended idle periods.
Failure to follow these instructions may result in fully discharging your batteries and may result in PERMANENT DAMAGE TO YOUR BATTERIES. The Integrel Warranty statement does NOT cover replacement of batteries damaged in this manner.
If in doubt, consult a Marine Electrician or open a ticket with our support desk at **https://integrelsolutions.com/support/**
If your system has a remote monitoring option, we recommend intermittently checking the state of the battery bank during long idle periods.

RETURN AFTER STORAGE

After a long period of storage, it is important to reverse the storage procedure in order to correctly start the system.
Prior to switching the system on, carefully check the voltage of
each battery with a voltmeter or multimeter. Ensure the voltage of each battery in the system is greater than the minimum voltage recommended by the battery manufacturer.
If one or more batteries are below the minimum recommended voltage, do NOT turn the system on. Contact a marine electrician for advice before proceeding.

REGULAR CHECKS
While the system needs virtually no maintenance, it is advisable to check the system occasionally to ensure the system remains in a good working condition.

Belt Condition
Check the belt is in good working order. If the belt ribs become worn or the belt stretches, the belt should be replaced with an equivalent high-quality EPDM serpentine belt. Integrel generally recommends replacing the belt after 500 hours of operation regardless of obvious wear.
Contact Integrel support if you require a replacement belt.

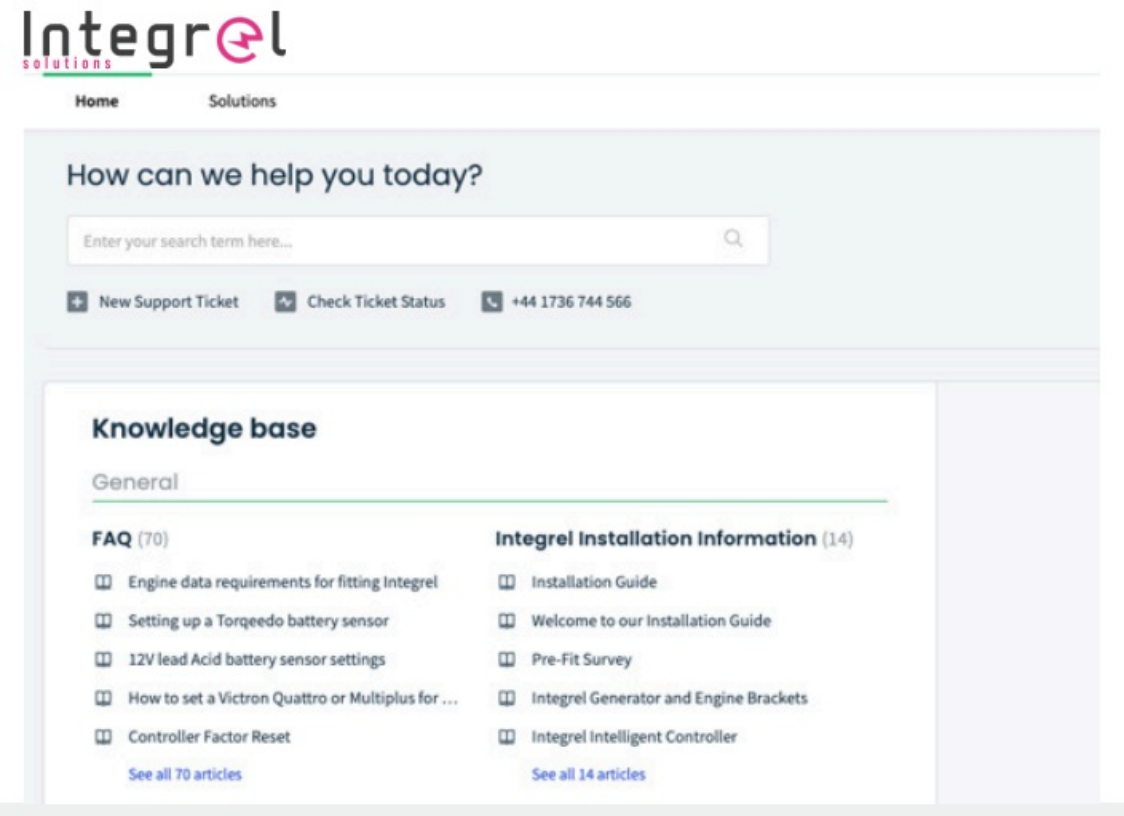
Moisture and Corrosion
The Integrel system has been designed to operate in high moisture environments, however it is important to check that all battery compartments and engine bays are moisture free.
Engine bay seals can often fail and engine hatches need re-tightening. Leaks can result in corrosion to system components and deteriorated connections. Check bilges and check for excess corrosion.

SOFTWARE UPDATE
The Integrel Solutions engineering and support teams are constantly working to improve our products. We intermittently offer software updates to customers as and when required to improve system operation and provide new features such as integration with the latest battery brands.
If you have any questions or issues related to software, open a support case at
https://integrelsolutions.com/support/
A separate guide is provided together with each software update. In general, software updates are achieved by inserting a USB thumb drive into the rear of the Integrel Touchscreen, or wirelessly over-the-air with Wi-Fi on systems sold from 2023 onwards.

SUPPORT
Integrel provides premium customer service and support. If you need help with your Integrel System, we are ready and waiting to help.
General support is available by opening a support ticket or sending an email. The entire support team are notified when a ticket is created ensuring a swift response.

- WEB: **https://integrelsolutions.com/support/**
- EMAIL: **support@integrelsolutions.com**

For urgent help, please call our support number shown below. Phone support is generally limited to business hours in the United Kingdom.
Technical Support: +44 7830 479 089



FAQS AND INSTALLATION TIPS

Our support portal also features lots of frequently asked questions and installation information articles.
Check out our Youtube channel too for how-to videos.

WARRANTY

Integrel Solutions Warranty Policy – September 2, 2020
Triskel Marine (trading as Integrel Solutions) warrants its products to be free from defects in workmanship and materials for a period of two years from the date of purchase by the end-user, with a maximum of 36 months from the Integrel Solutions Limited invoice date.

Integrel Product Warranty Statement
Integrel Solutions provides comprehensive Product Liability cover
for the Integrel System. In the event of any warranty-covered issue with an engine where Integrel has been fitted, Integrel Solutions will cover the repair or replacement of damaged parts in line with your existing engine warranty. This cover is not in addition to any engine warranty but supplements where a warranty is void because of the fitting of an Integrel System. It has identical terms and conditions as the manufacturer's warranty and the cover is like-for-like including the requirements around servicing, length of warranty and identifies how Integrel Solutions, in lieu of the engine manufacturer, will deal with an issue. In the highly unlikely event of any warranty issue arising you will need to contact Integrel Solutions who will take lead responsibility on dealing with a claim. Integrel Solutions will manage any claim directly and will liaise directly with the client to ensure a single point of contact to minimise any delays. The full policy schedule for the Product Liability cover is available upon request.

Integrel Solutions Limited Warranty Policy
Exceptions to this are:
Warranty for 3rd party products such as Power Electronics and Batteries are the responsibility of the manufacturer. The owner is responsible for registering these products and for contacting the manufacturer in case of a warranty claim. The manufacturer is solely responsible for the repair or replacement of the faulty product unless the damage is proven to be a direct result of a fault in the Integrel System, as diagnosed by an authorised representative of the manufacturer and Integrel Solutions.

Lithium-ion batteries supplied by Integrel Solutions are subject to
the manufacturer's warranty or 3 years from date of purchase by the end-user. In addition, a demonstration of correct battery usage is required when making a battery warranty claim. During this period, the manufacturer will, at its discretion, repair or replace the defective product free of charge. The warranty does not include performing or reimbursing de-installation, transportation and re-installation.

Warranty Exclusions
This warranty will be considered void if the unit has suffered any physical damage or alteration, either internally or externally, and does not cover damages arising from improper use or incorrect user installation, or unauthorised modifications to an installation like:

- Reverse of battery polarity.
- Inadequate connection.
- Mechanical shock or deformation.
- Contact with liquid or oxidation by condensation.
- Use in an inappropriate environment that includes, but is not limited to, dust, corrosive vapour, humidity, high temperature, biological infestation.
- Breakage or damage due to lightning.
- Connection terminals and screws destroyed or damaged due to insufficient tightening.

This warranty will not apply where the product has been misused, neglected, improperly installed, or repaired by anyone other than Integrel Solutions Engineers or one of its authorized Certified Installers. In order to qualify for the warranty, the product must not be disassembled or modified.

Warranty Remedies
Repair or replacement are our sole remedies and Integrel Solutions shall not be liable for damages, whether direct, incidental, special, or consequential, even caused by negligence or fault. Integrel Solutions owns all parts removed from repaired products. Integrel Solutions uses new or reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Integrel Solutions repairs or replaces a part of a product, its warranty term is not extended. In the case of replacement, the new component has a warranty of 6 months, without effect on the initial warranty period. All remedies and the measure for damages are limited to the above. Integrel Solutions shall in no event be liable for consequential, incidental, contingent, or special damages, even if having been advised of the probability of such damages. All other warranties expressed or implied arising by law, course of dealing, course of performance, usage of trade or otherwise, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited in duration to a period of two (2) years from the date of purchase.

Severability
If a part of the terms and conditions set out above is held invalid, void or unenforceable due to any particular national or international legislation, it shall not affect other parts of the terms and conditions remaining.

Consumer Law
The relevant consumer law for the country the goods are sold in will apply. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

EXCLUSION OF LIABILITY
TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAWS, WE ON BEHALF OF OUR DIRECTORS, OFFICERS, EMPLOYEES, AGENTS, SUPPLIERS, LICENSOR AND SERVICE PROVIDERS EXCLUDE AND DISCLAIM LIABILITY FOR ANY LOSSES AND EXPENSES OF WHATEVER NATURE AND HOWSOEVER ARISING INCLUDING, WITHOUT LIMITATION, ANY DIRECT, INDIRECT, GENERAL, SPECIAL, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL DAMAGES; LOSS OF USE; LOSS OF DATA; LOSS OF INCOME; LOSS OF PROFIT OR LOSSES OF ANY KIND OR CHARACTER, EVEN IF WE HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR LOSSES, ARISING OUT OF/OR IN CONNECTION WITH OUR

PRODUCTS OR 3RD PARTY PRODUCTS SOLD BY US.

THIRD PARTY WARRANTIES
We partner with selected brands and have tried and tested their products to ensure they work with our system. Each partner provides their own warranty that can be found on the web at the following links.

- Victron Energy **https://www.victronenergy.com**
- MG Energy Systems **https://www.mgenergysystems.eu**
- Mastervolt **https://www.mastervolt.com**

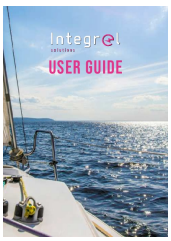
CONTACTING INTEGREL
If you have any questions regarding this warranty statement, please send them in writing to **sales@integrelsolutions.com**

CONTACT
Triskel Marine T/A Integrel Solutions Unit 1, Marine Renewable Energy Park North Quay
Hayle
Cornwall TR27 4DD
United Kingdom

- **T**: +44(0) 1736 755466
- **W**: **www.integrelsolutions.com**
- **E**: **sales@integrelsolutions.com**

V1.3 – APR, 2023 SOFTWARE VERSION 2.0

Documents / Resources

	**Integrel solutions Clean Marine Power Generation Solution** [pdf] User Guide Clean Marine Power Generation Solution, Power Generation Solution, Generation Solution, Sol ution

References

- **Integrel Solutions | Customer Support**
- **MG Energy Systems Lithium-Ion Battery System Solutions**
- **User Manual**