

SBSC11Q Four channel SLA Battery Charger Operator Manual



SBSC11Q BATTERY CHARGER OPERATORS MANUAL



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1 Manual Revision History

Rev	Date	Description
0	22-08-2011	First write.
1	12-09-2011	Proof read.
2	21-07-2015	Formatting changes.

2 General Information

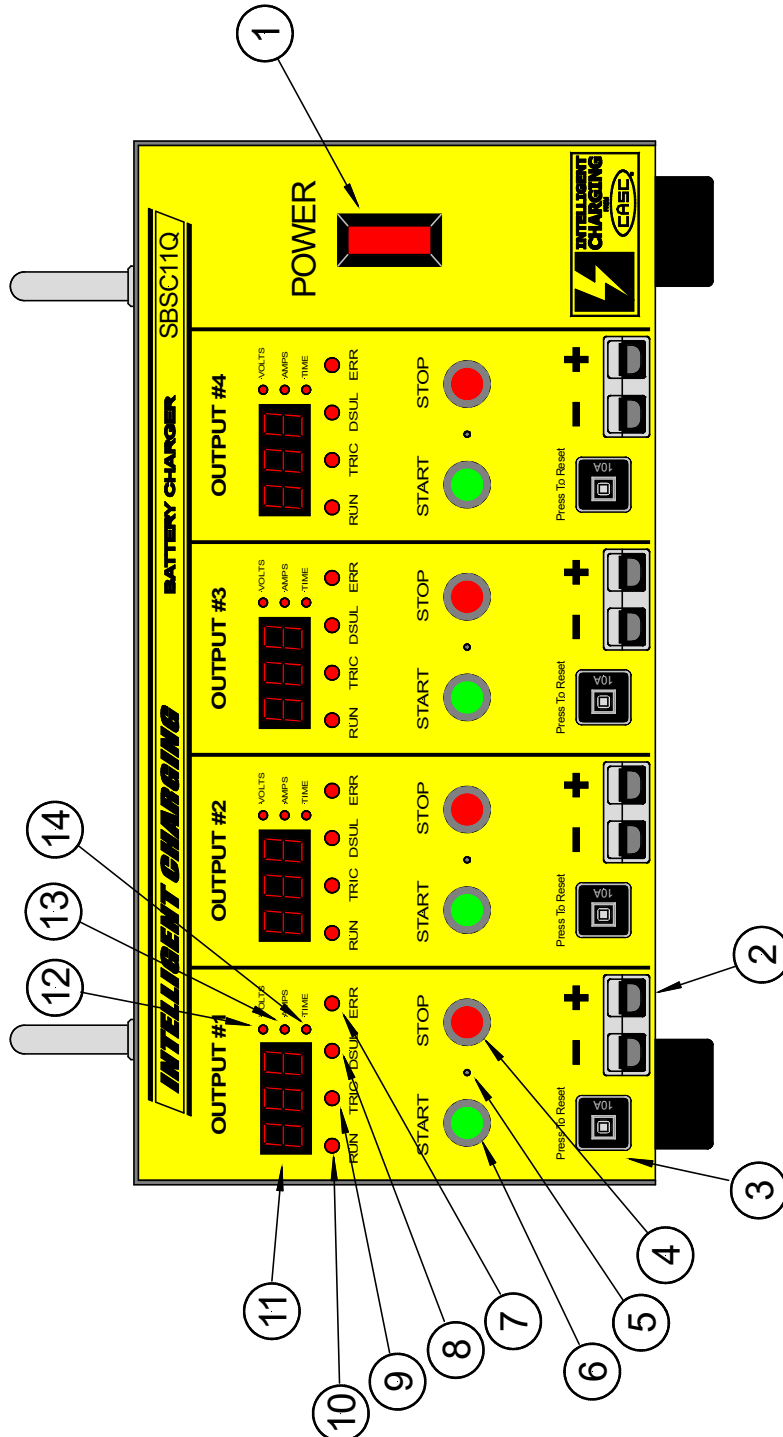
- The SBSC11Q is a battery charger designed to simultaneously charge up to four SBSC11 sealed lead acid batteries or other SBS type batteries having a nominal voltage of 12.0V.
- It is housed in a metal enclosure designed for bench mounting.
- Battery charge control is simply via STOP/START push buttons, allowing battery interchange without the need to remove power from the unit or connecting/disconnecting live output.
- The battery connecting lead is made via a non reversible 2 pin 50A connector.
- The unit is supplied with two lead sets per channel one set will be fitted with two crocodile or alligator clamps the second set will be fitted with 8.0mm crimp terminals for connection to the SBSC11 battery.
- The unit is reverse connection protected and will show an error condition if START is pressed while battery reverse connection is made.
- The unit detects non battery connection and will show an error if less than 0.8V is detected at the battery terminals.
- The unit will automatically perform a desulphation charge if a battery connected exhibits a terminal voltage less than 9.0V
- Field calibration possible, no need to return the unit back to factory for calibration.
- 10.0A Resettable circuit breakers are fitted to each battery connection to protect both the battery and the unit from short circuits or faults.
- The unit accepts a universal mains input of 80-264 VAC/47-63 Hz.
- Battery volts / amps and time is displayed on a three digit red 7 segment display.
- Display and Indicators brightness can be controlled from dim to very bright so display can be seen in daylight conditions.
- Clear indication of Bulk Charge, Trickle Charge, Desulphation Charge and Error conditions.

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3 Controls and Indicators



- (1) Mains Power Switch. Operating this switch applies mains power to the unit. This switch is also a circuit breaker rated at 7.0A.

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- (2) Output Battery Connector. This is where the battery lead is connected.
- (3) Circuit Breaker. This is a resettable thermal 10.0A circuit breaker designed to protect the equipment in event of overload.
- (4) STOP Push button. This button has to be pressed to stop a battery charge.
- (5) FUNCTION access. A hidden button behind this hole is used to gain access to the internal functions like calibration.
- (6) START Push Button. Pressing this with a correct battery connected starts the charge process. While the RUN lamp is illuminated repeated pressing of the start button will change the display to show Volts, Amps and Time.
- (7) ERROR Indicator. This indicator will indicate if the charge detects a problem with the battery or charge. When illuminated the display will show the error number.
- (8) DSUL Indicator. This indicator will illuminate if the charger is working in desulphation mode.
- (9) TRICKLE Indicator. This indicator will illuminate when the charger is in trickle charge mode.
- (10) RUN Indicator. This indicator will illuminate when the charger is operating, if the other three indicators are extinguished then the charger is operating in bulk charge mode.
- (11) Seven Segment Display. This is the three digit display which will display battery voltage, charge current, and elapsed time.
- (12) Volts Indicator. This indicator will be illuminated if the display is showing battery volts.
- (13) Amps Indicator. This indicator will be illuminated if the display is showing charge amps.
- (14) Time Indicator. This indicator will be illuminated if the display is showing the elapsed charge time.

4 Connecting A Battery

For all methods of use of the battery charger the battery to be charged must only be connected when the charger is either:

Not powered up,

or

Powered up and not executing a charge function. Doing so would damage the equipment, and possibly draw an electrical arc that, may cause an explosion from the venting gases being emitted from the battery.

Care must also be executed in ensuring that the bared ends of the battery leads do not come in contact with the metalwork of the charger as this may also cause electrical arcing and or explosion risk.

THE BATTERY SHOULD NEVER BE CONNECTED OR DISCONNECTED FROM THE UNIT WHEN A CHARGE IS IN PROGRESS AS ARCING CAN OCCUR CAUSING AN EXPLOSION FROM GASSES VENTING FROM BATTERIES BEING PROCESSED

THE BATTERY SHOULD ALWAYS BE ISOLATED FROM ANY EQUIPMENT BEFORE BEING CONNECTED

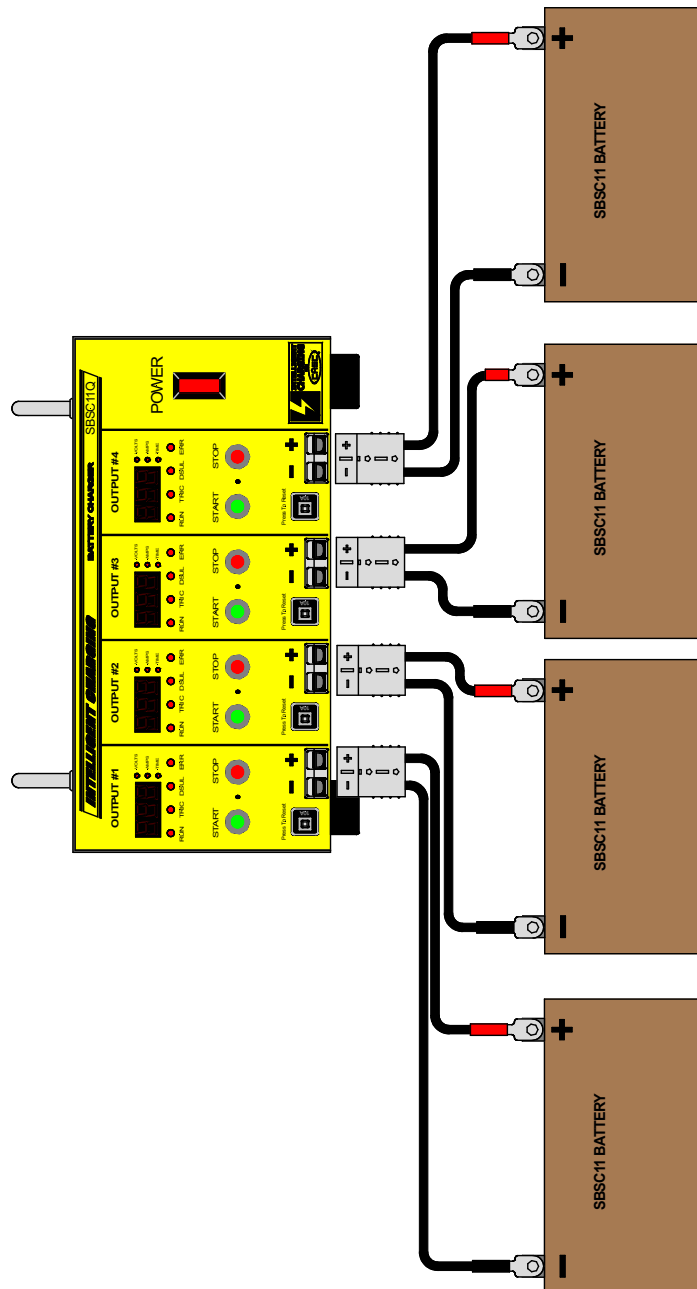
Stray ground loops between the attached equipment and the Battery Charger could cause catastrophic damage to the unit and the attached equipment.

Provided with the unit is two sets of leads. One set terminated with 8mm Ring Crimp Connectors designed to mate directly to batteries fitted with 8.0mm threaded posts. The other set is fitted with crocodile or alligator clamps designed for batteries which are not fitted with 8.0mm threaded posts.

Always connect the battery leads as shown in the following figure to the battery first before attempting to connect the charging lead to the battery charger.

4.1 Battery Lead Connection

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When charging has completed the battery plug must be removed from the charger before being removed from the battery.

Specialist lead sets are available by request to suit many battery types.
Please contact Intelligent Charging Limited for prices and availability.

5 Operating The Unit

- The battery to be charged must be connected to the unit in the correct manner and must not under any circumstances still be connected to any other equipment.

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- Connect the RED battery lead to the +ve battery terminal and the BLACK battery lead to the -ve battery terminal.
- Insert the two pole battery lead connector into the mating socket on the battery charger on any unused channel.
- If the battery charger is not powered on, apply mains power by operating the power switch.
- On the channel that has been connected press START.
- If the battery terminal voltage is above 9.0V the battery charger will perform a bulk charge of 9.0A until the battery terminal voltage reaches 14.4V. During bulk charge the RUN indicator will be on continuously. Once the set point has been reached the charger will switch to trickle charge whereby it will maintain battery terminal voltage of 13.74V. During the trickle charge stage the TRICKLE indicator will be on continuously.
- If the battery terminal voltage is below 9.0V the charger will automatically go into desulphation charge mode. It will float charge the battery at 13.74V until the charge current stabilises at 20mA, whereby the charge will then switch into normal RUN mode. Note this process may take several days. While the desulphation mode is active the DESULPHATION indicator will be on continuously.
- If the START button is pressed and the battery terminal voltage is less than 0.8V the RED indicator will illuminate and the display will show "E01".
- At the end of the charge cycle or at any point during a charge cycle the STOP button can be pressed to terminate charge mode.
- If an error occurs during the charge cycle the charge will automatically stop and the ERROR indicator will be illuminated and the display will show an error code. To clear the error display the STOP button must be pressed.

6 Display Brightness

The equipment has the facility to increase or decrease the intensity of each display from dim to extremely bright. The following procedure has to be followed to perform this operation.

- Ensure the the channel to be changed is not in RUN mode.
- Using a small non metallic probe smaller than 2.0mm insert this into the small hole between the START and STOP buttons, about 10mm of travel will take place before an obstruction is met, apply a small amount of force to operate the internal switch, while pressed the display will appear to freeze, this is normal.
- Keep the pressure applied until the display shows "FUNC", (about 5 seconds) at this point release the pressure.
- The display will then show "**GLV**".
- Press the FUNC button two times so the the display goes from "**GLV**" to "**CLA**" to "**DSP**".
- With the display showing "**DSP**" press the START button.
- The display will show "**XXX**".
- Use the START button and STOP button to either increase or decrease the display brightness.
- Once the correct brightness has been achieved press the FUNC button to store the setting.
- The display will then show "**GLV**" again.
- Press the STOP button to return to normal operation mode.
- This procedure has to be performed individually on each channel.

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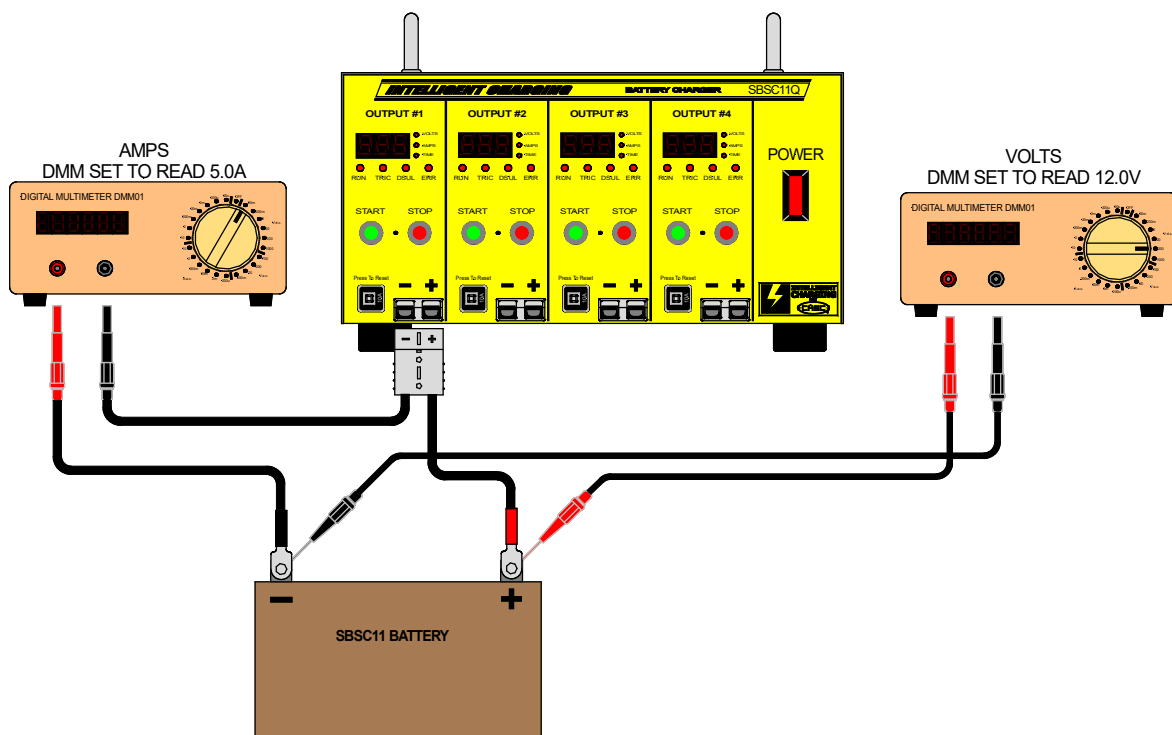
7 Performing calibration.

The Battery Charger has its own built in automatic calibration procedures which allow for quick adjustment of errors due to component ageing. The calibration check is recommended done yearly and the equipment should be marked accordingly. The scaling factors which are used to calculate the correct voltage and current values as reported by the internal Analogue to Digital converters are saved to non-volatile memory and can be adjusted by the procedure defined here.

7.1 Equipment Required

- 1) Calibrated digital voltmeter capable of measuring 12.0V.
- 2) Calibrated digital ammeter capable of measuring 5.0A.
- 3) A 12.0V test battery not fully charged.

7.2 Calibration Equipment Connection



7.3 Check Procedure

Once per year the following calibration procedure should be applied.

- Connect a good quality 12.0V battery to the Battery Charger.
- Measure battery voltage and verify the Battery Charger display is within tolerance.

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- Press START to begin a charge on the connected battery.
- Measure the current passing into of the battery and verify that the Battery Charger display is within tolerance.

If these parameters are outside of specification then the **Calibration Adjustment** procedure should be followed.

If these checks show that the Battery Charger is within tolerance and no adjustment is necessary then the unit will need to be marked as calibrated for a period of twelve months.

This calibration check must be done individually for each channel.

7.4 **Calibration Adjustment**

If the calibration check has been performed and the unit is out of tolerance then a calibration adjustment will need to be performed. The following procedure needs to be observed in order to perform a calibration adjustment.

The measuring equipment and battery must be connected as shown above.

The calibration parameters are channel independent, so the adjustment must be made on each channel individually.

7.4.1 **Voltage Adjustment**

- Ensure the the channel to be calibrated is not in RUN mode.
- Using a small non metallic probe smaller than 2.0mm insert this into the small hole between the START and STOP buttons, about 10mm of travel will take place before an obstruction is met, apply a small amount of force to operate the internal switch, while pressed the display will appear to freeze, this is normal.
- Keep the pressure applied until the display shows "FUNC", (about 5 seconds) at this point release the pressure.
- The display will then show "**GLV**".
- Press the START button.
- The display will then show the battery voltage.
- Use the START and STOP buttons to either increase or decrease the display voltage to set to the same (or as near as) what is displayed on the voltmeter.
- Once the satisfactory setting has been reached press the FUNC button to save the data.
- The display will then show "**GLV**"

- Either the FUNC button can be pressed again to move to current adjustment or press STOP to return the charger back to normal mode.

7.4.2 Current Adjustment

- Ensure the the channel to be calibrated is not in RUN mode.
- Using a small non metallic probe smaller than 2.0mm insert this into the small hole between the START and STOP buttons, about 10mm of travel will take place before an obstruction is met, apply a small amount of force to operate the internal switch, while pressed the display will appear to freeze, this is normal.
- Keep the pressure applied until the display shows "FUNC", (about 5 seconds) at this point release the pressure.
- The display will then show "**CLV**".
- Press the FUNC button so that the display shows "**CLA**".
- Press START button.
- At this point the charger will set a charge of approximately 5.0 amps into the connected battery.
- Use the START and STOP buttons to either increase or decrease the display current to set to the same (or as near as) what is displayed on the ammeter.
- Once a satisfactory reading has been achieved press the FUNC button to save the setting.
- The display will then show "**CLV**".
- Either the START button can be pressed again to move to voltage adjustment mode or press STOP to return the charge back to normal mode.

8 Error Conditions

The charger has built in error checking to ensure that safe charging is always taking place. At the start of a charge or during a charge the ERROR lamp may be lit and an error number shown on the display.

The following error checks are made in the charger and if any conditions are met the following is the list of problems and how they may be resolved.

E01	NO Battery detected or Reverse connected.
Reason	The charger detects the battery voltage at the time of START button being pressed to ensure that the battery voltage is greater than 0.8V. If the measurement is less than 0.8V this error will be reported.
Fix	Check that the battery has not been connected back to front. Check that the leads are in a usable state. Check that the connector has been plugged into the charger.
E02	No Amps
Reason	The charger cannot seem to drive any current into the battery. This is usually because the battery being disconnected during a charge or an internal fault.
Fix	Do not disconnect the battery during a charge cycle. Always press STOP before disconnecting the battery. If this occurs each time START is pressed then it is an indication of an internal fault and the unit will need to be returned for repair.
E03	Over current.
Reason	The charger has detected a charge current greater than 12.0A. This occurs if the charger has developed a fault and is unable to control the charge current or the battery develops an internal short circuit.
Fix	The unit will need to be returned for repair. Check the battery on another channel.

The error display must be cleared before START can be pressed, this is done by pressing the STOP button.

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9 Specifications

Mains Input 80-264 VAC 47-63 Hz
Mains Power 650W Maximum

Minimum Operating Temperature 0°C

Maximum Operating Temperature 50°C

Humidity 5% - 95% Non condensing

Altitude 0 to 3000 Metres.

IP rating IP22

Charge Specifications per channel:

Max Output Volts	Max Output Amps	Max Output Watts
16.0V	9.0A	130W

Accuracy

Voltage +/- 0.1V

Current +/- 0.05A

Weight 12Kg

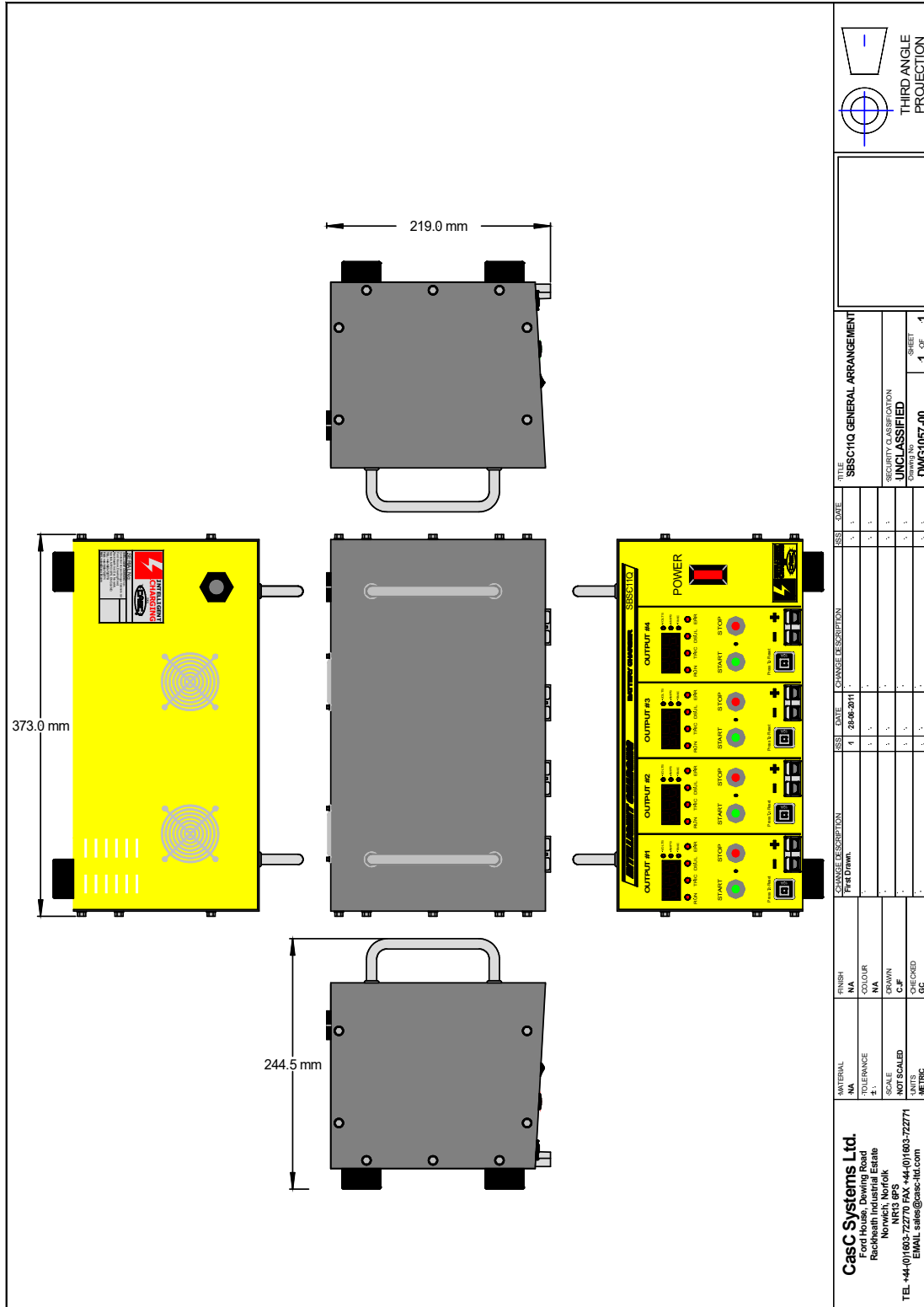
Size 373mm Wide 245mm Height 219mm Depth

All specifications are subject to change.

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10 General Arrangement



11 Product Warranty

Your Intelligent Charging Limited product is guaranteed against faulty workmanship materials and malfunction for a period of 12 months from the date of purchase, unless agreed otherwise by Intelligent Charging Limited. Within this warranty period Intelligent Charging Limited will undertake to repair or replace the product proved to be faulty.

We recommend you keep all packaging for the duration of the 12 month warranty, after which you should dispose of all waste packaging in accordance with your local legislation

Products which have become faulty within the 12 month warranty period must be returned to Intelligent Charging Limited, where Intelligent Charging Limited will then investigate the warranty claim.

Intelligent Charging Limited products, when properly used, will render excellent service. Therefore, users must read the User Manual and any other literature supplied with the product carefully, and fully comply with all procedures shown in the literature and product training / familiarisation sessions, as misuse or failure to follow the instructions may render this warranty void.

This warranty is not transferable and excludes routine maintenance, consumables, parts subject to normal wear and tear, service maintenance kits and damage caused by misuse or negligence. Warranty claims attributable to improper, or careless, use or handling, and to normal wear, are excluded from this warranty.

Intelligent Charging Limited only obligation shall be to repair or replace such products that have proved to be faulty. Intelligent Charging Limited shall not be liable for any injury, loss or damage, direct or consequential, arising out of the use, or the inability to use the product. The customer shall determine the suitability of this product for its intended use, and the customer assumes all risks and liability whatsoever in connection herewith.

Intelligent Charging Limited reserves the right to improve or modify this product without prior notice.

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