TS2X020 TWIN CHANNEL BATTERY CHARGER OPERATORS MANUAL



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1 Manual Revision History

Rev	Date	Description
1	11-10-2000	First Written
2	22-02-2010	Written for new operational modes.

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2 Equipment Description

2.1 General

The TS2X020 Twin Channel Battery Charger is designed as a lightweight portable unit having a wide ranging input supply and two channels capable of charging either 12V or 24V lead acid batteries.

Equipment is simply controlled by pressing a START button and stopped by pressing the STOP button to ensure that arc free contact to a battery can be made. Charge current and voltage is indicated by two analogue panel meters.

Charging is performed by a constant current mode with the output voltage fixed at 14.0V with a boost mode available which increases output voltage by 0.4V.

Output is inhibited if no battery is connected, but can be overridden for very low voltage batteries (<6.0V) or manual switching to 24V mode for batteries exhibiting less than 18.0V.

The TS2X020 can: -

Charge 12V batteries at either 14.0V or 14.4V at a maximum of 40A.

Charge 24V batteries at either 28.0V or 28.8V at a maximum of 20A.

The unit contains four high efficiency switch mode power supplies to provide charging current with very little internal heat generation.

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2.2 Component Parts

Upon receipt of your new battery charger unpack and check that all items are present in the containing box.

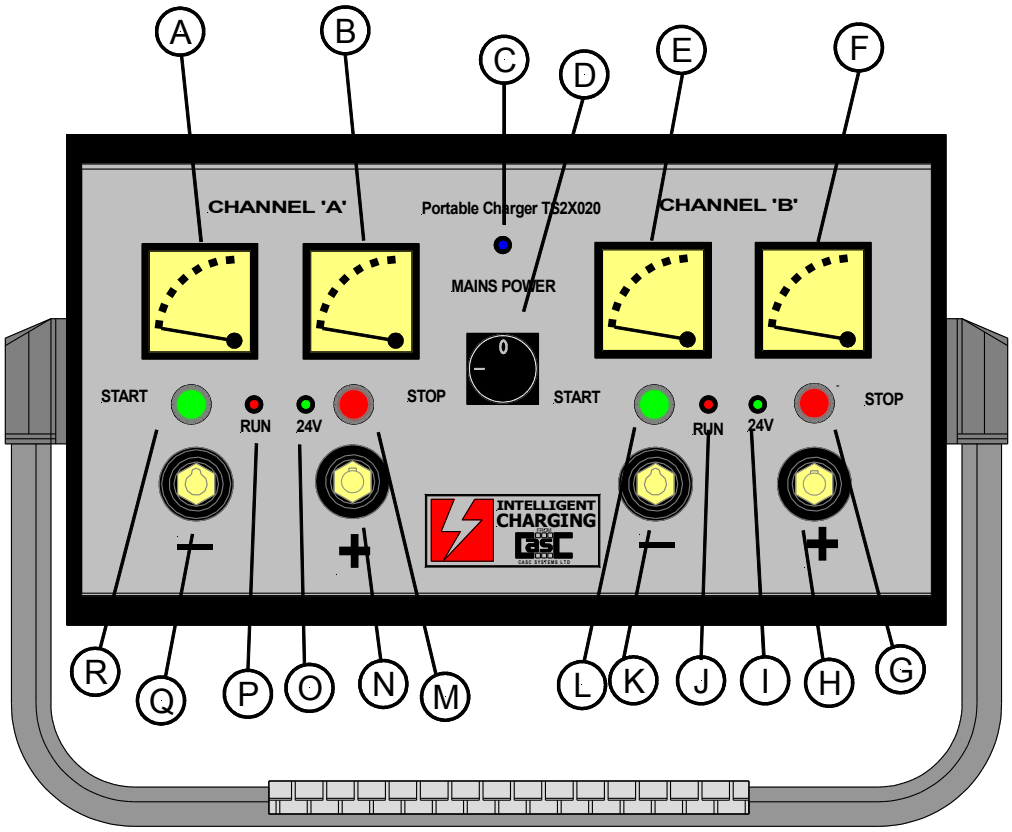
STANDARD ITEMS

- One TS2X020 Battery Charger
- Two Sets (+ve & -ve) battery leads with brass clamps.
- One paper Copy Operators Manual
- Certificate Of Conformity
- Calibration Certificate

2.3 Installation

The Battery Charger should be placed on a level surface with at least 10cm of space at the rear for ventilation.

2.4 Controls And Indicators



(A) – CHANNEL A AMPS

The amount of amps being delivered to the battery for channel A will be displayed on

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this meter.

(B) - CHANNEL A VOLTS

The battery voltage for channel A will be displayed on this meter.

(C) - POWER INDICATOR

This blue LED indicator will be illuminated when power is applied and the power switch is set to the "ON" position.

(D) - POWER SWITCH

Rotate clockwise to apply power and anti-clockwise to remove power from the unit.

(E) – CHANNEL B AMPS

The amount of amps being delivered to the battery for channel A will be displayed on this meter.

(F) - CHANNEL B VOLTS

The battery voltage for channel A will be displayed on this meter.

(G) - CHANNEL B STOP BUTTON

Press this button to stop channel B charge.

(H) - CHANNEL B POSITIVE BATTERY LEAD CONNECTOR

The battery positive lead is connected here.

(I) - CHANNEL B 24V INDICATOR

This illuminated when a 24V battery is detected.

(J) - CHANNEL B RUN INDICATOR

This is illuminated when the battery is being charged.

(K) - CHANNEL B NEGATIVE BATTERY LEAD CONNECTOR

The battery negative lead is connected here.

(L) - CHANNEL B START PUSHBUTTON

Press this to start the charge operation.

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(M) - CHANNEL A STOP BUTTON

Press this button to stop channel A charge.

(N) - CHANNEL A POSITIVE BATTERY LEAD CONNECTOR

The battery positive lead is connected here.

(O) - CHANNEL A 24V INDICATOR

This illuminated when a 24V battery is detected.

(P) - CHANNEL A RUN INDICATOR

This is illuminated when the battery is being charged.

(Q) - CHANNEL A NEGATIVE BATTERY LEAD CONNECTOR

The battery negative lead is connected here.

(R) - CHANNEL A START PUSH BUTTON

Press this to start the charge operation.

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3 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 the RUN lamp extinguished for the appropriate channel.

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 unit 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

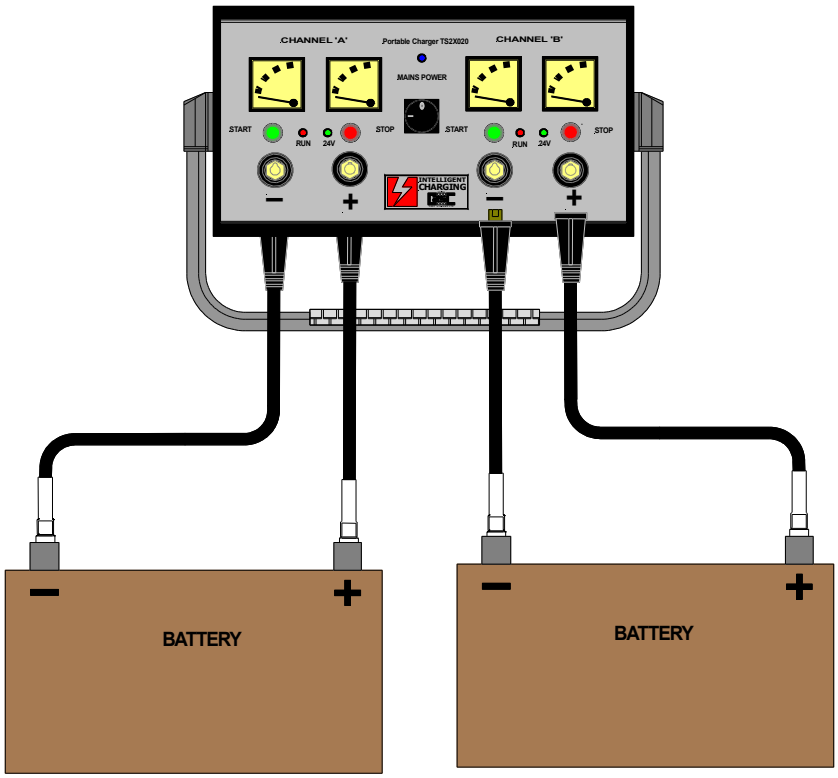
Stray ground loops between the attached equipment and the Battery Charger could cause catastrophic damage to the unit and the attached equipment.

Provided with the unit are two sets of leads terminated with brass battery clamps.

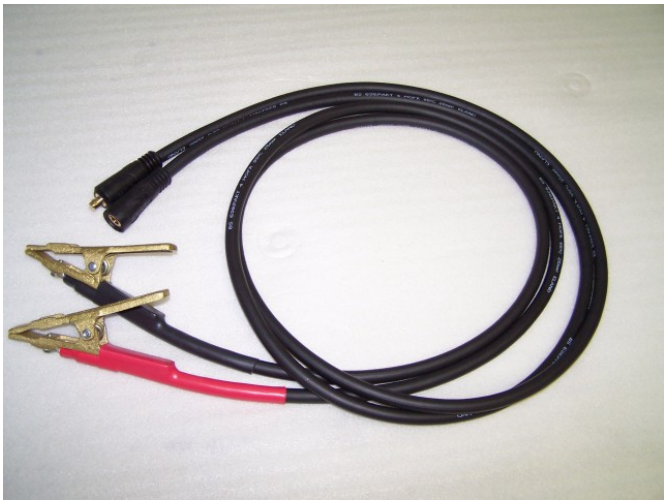
Always connect the battery leads as shown in the following figure to the unit before attempting to connect the battery to be charged. Once the leads are connected to the unit then the battery can be connected.

BATTERY LEAD CONNECTION

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STANDARD LEAD SET



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

4 Charging A Single Battery

To charge a single battery the following sequence must be followed.

- Check that the TS2X020 charger is switched OFF.
- Check that the trip switches fitted to the rear of the equipment are in the ON position.

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- Disconnect the battery from its host equipment.
- Connect one end of the Negative (-) lead to the charger and connect the other end to the battery.
- Connect one end of the Positive (+) lead to the charger and connect the other end to the battery. The battery voltage can be monitored at this time on the charger voltmeter for that channel.
- If the charger detects that a 24v battery has been connected, the '24v' lamp will light.
- Switch ON the TS2X020 Battery charger. For the respective channel being used press the START button. If a battery is connected the 'RUN' lamp will light and charging will commence.
- Note that the current being delivered to the battery will be about 20A for 24V battery and 40A for a 12V battery. This current will eventually drop down to an insignificant amount once the battery has reached its full capacity.
- If the additional 0.4V/0.8V output voltage is required press and hold the START button for two seconds.
- If the battery is partially charged the current may be less than that stated above.
- Once a satisfactory charge has been achieved, press the STOP button on the respective channel being used.
- Switch OFF the TS2X020 battery charger.
- Disconnect the Positive (+) lead from the battery first and then from the charger.
- Disconnect the Negative (-) lead from the battery first and then from the charger.
- Connect the battery to it's host equipment in accordance with the procedures laid down for that equipment.

CAUTION! This charger is not intended or designed for unattended maintenance charging, and will not protect the battery against over overcharging or overheating.

5 Charging Two Batteries Simultaneously

To charge two batteries the following sequence must be followed.

- Check that the TS2X020 charger is switched OFF.
- Check that the trip switches fitted to the rear of the equipment are in the ON position.
- Disconnect both batteries from their host equipment.
- Connect one end of the Negative (-) lead to the charger and connect the other end to the first battery.
- Connect one end of the Positive (+) lead to the charger and connect the other end to the first battery.
- Repeat this for the second battery.

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- Switch ON the TS2X020 Battery charger. The battery voltages can be monitored at this time.
- If the charger detects that a 24v battery has been connected, the '24v' lamp will light.
- For each channel being used press the START button.
- Note that the current being delivered to the batteries will be about 20A for 24V battery and 40A for a 12V battery. This current will eventually drop down to an insignificant amount once the batteries have reached their full capacity.
- If the additional 0.4V/0.8V output voltage is required press and hold the START button for two seconds.
- Once a satisfactory charge has been achieved, press the STOP button on each channel.
- Switch OFF the TS2X020 battery charger.
- Disconnect the Positive (+) lead from the battery first and then from the charger.
- Disconnect the Negative (-) lead from the battery first and then from the charger.
- Repeat this for the second battery.
- Connect the batteries to their host equipment in accordance with the procedures laid down for that equipment.

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6 Hints And Tips

My 12V battery is less than 6V how do I start a 12V charge.

The TS2X020 has a voltage detector which detects when the battery connected is less than 6v and will not operate as It assumes that a wrong battery or no battery has been connected. This can be overridden by the following procedure.

- Connect battery in accordance with the charging instructions.
- Press and hold the START button.
- While holding the START button momentarily press the STOP button
- After two seconds release the START button.
- The unit should go into RUN mode immediately.
- Note the RUN lamp will flash to indicate that the START operation was overridden.

My 24V Battery is less than 18V How do I start a 24V charge.

The TS2X020 has a voltage detector which detects when the battery connected is less than 18V and treats this as a 12V battery. This can be overridden by the following procedure.

- Connect battery in accordance with the charging instructions.
- Press and hold the START button.
- While holding the START button momentarily press the STOP button
- After four seconds the unit should go into RUN mode immediately.
- Release the START button immediately as a further two seconds will go to boost mode.
- Note the RUN lamp will flash to indicate that the START operation was overridden.

When I press START the RUN and 24V lamps flash alternately.

This is an error condition which is shown when START is pressed and no battery or a battery with terminal voltage less than 6V is connected.

When I press START or when running the unit stops and the RUN lamps flashes very fast.

This condition is met when the power supply output has failed. This can be due to malfunction or overheating and the power supplies shut down. If a high charge rate has been operated allow the unit to cool down before re-starting, power will need to cycled to reset the power supplies.

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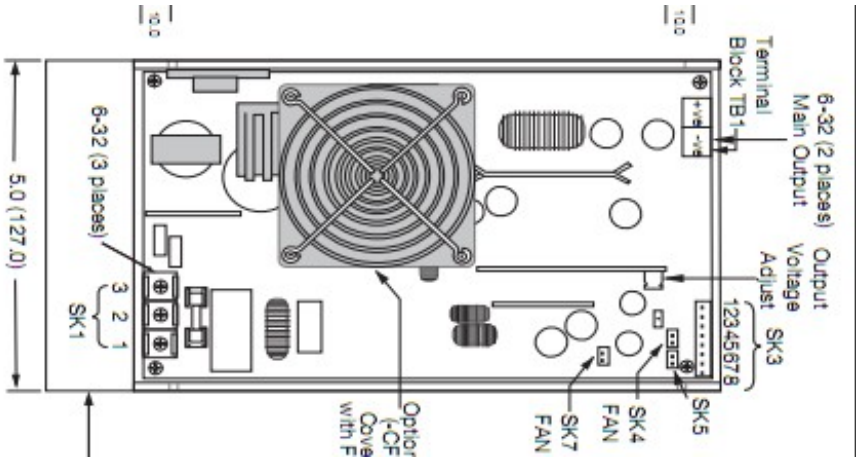
If this happens at the beginning of the charge this could be due to failure of one of the supplies and the unit will need repair.

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7 Service And Maintenance

7.1 Calibration

The Battery Charger Analyser does not require regular calibration and the meter dials must be used for guidance only. A yearly check to see that the unit is still operational can be undertaken. This can be done to verify that the output voltage of the unit is still set to 14.4V in parallel mode and 28.8V in series mode. With Boost ON. The voltage of each internal SMPS can be adjusted by removing the front panel and adjusting the individual supplies to 14.4V each. The position of the adjustment potentiometer is shown thus: -



This adjustment must be carried out in a no load situation and with the unit in the STOPPED mode. Measurements must be taken at the power supply output terminals, marked MAIN OUTPUT on the sketch above.

7.2 Cleaning

At yearly intervals it is advisable to ensure that the airflow for the power supplies are not obstructed by dust and dirt. To clear any dust and debris the unit must be disconnected from the mains and remove the battery leads from the unit. The cover must be removed and the power supplies blown clear by the use of a high pressure air gun. Where this is not available the use of pipe cleaners or similar must be employed to clear the dust built up.

Observe all safety precautions when using high pressure air. Wear ear defenders and safety goggles and do not point high pressure air at people or animals.

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8 Specifications

Supply	TS2X020	85 VAC to 264 VAC 120 to 370 VDC 47-440Hz 1000W Max.

Display Accuracy ± 1 Marker

Minimum Operating Temperature 0°C

Maximum Operating Temperature 50°C*

Humidity 5% to 95% Non condensing

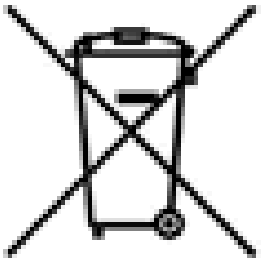
Altitude 0 to 3000 Metres.

Charge Specifications:

	Max Output Volts	Max Output Amps
TS2X020	28.0V/28.8V	20.0A
TS2X020	14.0V/14.4V	40.0A

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9 Product Disposal Instructions



The symbol shown here and on the product means that the product is classed as Electrical or Electronic Equipment and should not be disposed with other household or commercial waste at the end of its working life.

The Waste of Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) has been put in place to recycle products using best available recovery and recycling techniques to minimise the impact on the environment, treat any hazardous substances and avoid the increasing landfill.

Product disposal instructions for residential users.

When you have no further use for it, please remove any batteries and dispose of them and the product as per your local authority's recycling processes. For more information contact your local authority or the retailer where the product was purchased.

Product disposal instructions for business users.

Business users should contact their suppliers and check the terms and conditions of the purchase contract and ensure that this product is not mixed with other commercial waste for disposal.

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10 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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