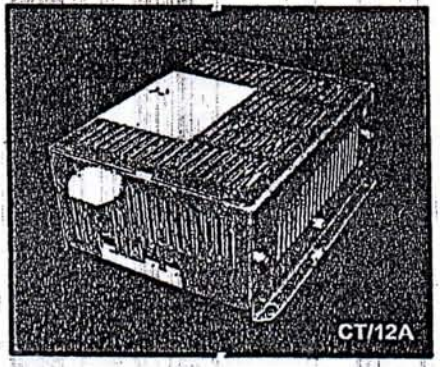
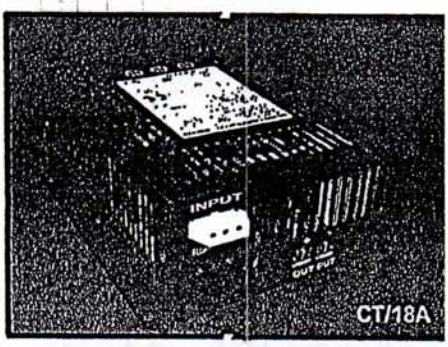
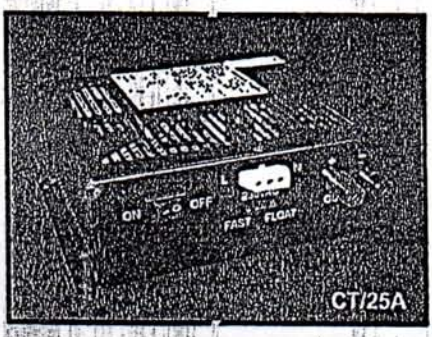
PLUG-IN-POWER SYSTEMS

LEISURE BATTERY CHARGER

INSTALLATION & USER INSTRUCTIONS
CT/12A, CT/18A, CT/25A







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Are the RCD & MCB devices switched on?
Are the 12V output connections secure?
Are any 12V fuses blown?

Fast/Float Charging

On models CT/18A and CT/25A there is a selectable fast/float charge feature. This allows a battery to be more fully and more quickly charged when the 'fast charge' mode is used. To select the required mode, use a screwdriver to set the switch to the relevant position. The output voltages will then be as follows:-

Float charge	-	13.8 volts
Fast charge	-	14.5 volts (above 3 amps)
	-	13.8 volts (below 2 amps)

Noise:- Once set this switch should not be adjusted after installation.
The factory default setting is 'float charge'

Electrical & Thermal Protection

The battery charger is fitted with circuitry, which will protect it in the event of electrical or thermal overload. Should the current draw exceed the rated output of the unit, then it will begin to shut down. This will probably be noticed as a dimming of the 12V lighting. On removal of the excessive load the charger will automatically recover.
On models CT/18A and CT/25A there is also an electronic thermal protection circuit, which will operate should the temperature of the unit rise above a safe level. If this happens then the output will shut-off until the temperature has dropped back to a safe level. This protection should only operate if the unit is not installed correctly or the venting slots have become covered.
Also fitted to the CT/18A and CT/25A is a fan which will operate when necessary to cool the unit. To reduce the noise level to a minimum the fan will only operate at loads in excess of 12 amps. The fan will normally only operate if a battery is heavily discharged or when other large loads are being drawn from the battery during charging.

Using a generator

When using a generator in conjunction with the battery charger the following must be observed, failure to do so may result in damage to the unit:

1. Always start the generator with the mains isolator in the caravan turned off.
2. Allow the generator to warm up for a few minutes before energising power in the caravan, as the output voltage can be higher when cold.
3. Check the generator output voltage regularly to ensure it is within the specification of the battery charger (see specification section)

Specifications

CT/12A

Input Voltage	230V AC +15%, -20%
Input Frequency	47Hz to 63Hz
Input Power	195W
Output Voltage	13.5V DC +/- 1%
Load Range	0 – 12A
Output Power	165W
Standby Current	0.65 mA
Protection	Current limit @ 12.5A Short circuit protection Overvoltage protection
Operating Temperature	-25°C to 50°C
Storage Temperature	-40°C to 85°C
Dimensions Length:	175mm
Width:	132mm
Height:	74mm
Weight	1.25 Kg
Approvals Safety:	EN60335-2-29:1996 EN60950:92/A11:97
Emissions:	EN61000-3-2/3 EN55014-1
Immunity:	EN55014-2

CT/18A

Input Voltage	230V AC +15%, -20%
Input Frequency	47Hz to 63Hz
Input Power	337W
Output Voltage	13.5V DC +/- 1% (below 2A) 14.5V DC +/- 1% (above 3A)
Load Range	0 – 18A
Output Power	262W
Standby Current	0.5 mA
Protection	Current limit @ 18.5A Short circuit protection Overvoltage protection Thermal protection
Operating Temperature	-25°C to 50°C
Storage Temperature	-40°C to 85°C
Dimensions Length:	175mm
Width:	132mm
Height:	74mm
Weight	1.69 Kg
Approvals Safety:	EN60335-2-29:1996
Emissions:	EN61000-3-2/3 EN55014-1
Immunity:	EN55014-2

CT/25A

Input Voltage	230V AC +15%, -20%
Input Frequency	47Hz to 63Hz
Input Power	491W
Output Voltage	13.5V DC +/- 1% (below 2A) 14.5V DC +/- 1% (above 3A)
Load Range	0 – 25A
Output Power	356W
Standby Current	1.5 mA
Protection	Current limit @ 26A Short circuit protection Overvoltage protection Thermal protection
Operating Temperature	-25°C to 50°C
Storage Temperature	-40°C to 85°C
Dimensions Length:	148mm
Width:	181mm
Height:	68mm
Weight	2.05 Kg
Approvals Safety:	EN60335-2-29:1996
Emissions:	EN61000-3-2/3 EN55014-1
Immunity:	EN55014-2

Product Support

On factory fitted equipment within warranty, Plug-In-Systems offer the customer an on-site repair service (on the Plug-In-Systems range of equipment only). If you would like to take advantage of this service then please contact us direct and ask for the Sales & Service Department.
For equipment that is non-factory fitted or out of warranty, please contact our Sales & Service Department for advice.

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Installation & User Instructions
Leisure Battery Charger – CT/12A, CT/18A, CT/25A

Overview

The CT Leisure Battery Chargers from the Plug-In Power Systems range are a light weight and efficient unit, combining power and safety to provide the ultimate in battery chargers. It is especially designed for caravan and motorhome installations, simple to install and requiring minimal attention in use.
The units incorporate the following main features:

12A, 18A or 25A OUTPUTS
FAST CHARGE MODE (CT/18A & CT/25A)
OVERCURRENT PROTECTION
SHORT CIRCUIT PROTECTION
THERMAL OVERLOAD PROTECTION (CT/18A & CT/25A)
FAN PROTECTION (CT/18A & CT/25A)
WIDE INPUT VOLTAGE RANGE
LOW TEMPERATURE OPERATION

The battery chargers will work with or without a battery in circuit but for optimum performance a good quality leisure type battery is recommended.
With the unit connected to a protected 240 volt mains supply and 12 volt electrics, its operation is fully automatic once switched on. The units are capable of providing upto 12, 18 or 25 amps but should these loads be exceeded then the charger will enter current limit mode to prevent damage to itself and associated 12 volt installations. The unit will, if necessary, operate on a low mains input (making it ideal for low continental voltages) and still provide a stable (regulated) dc output voltage.

Installation Instructions

Location & Ventilation

1. For maximum ventilation, please choose a position that will not allow any objects to obstruct the units air vents.
2. The compartment in which the charger is mounted should have a minimum volume as follows:-

CT/12A	-	25 x 50 x 50cm
CT/18A	-	37.5 x 50 x 50cm
CT/25A	-	50 x 50 x 50cm

3. The compartment in which the charger is mounted should be vented below and above the unit to allow free passage of air. Minimum input and output vent area should be as follows:-

CT/12A	-	40cm²
CT/18A	-	60cm²
CT/25A	-	90cm²

4. The unit should be sited in a compartment separate to the battery due to the possibility of explosive gasses being produced whilst charging.
5. Mount the unit in an easily accessible position.
6. To ensure the voltage drop along the 12V cables is kept to a minimum, do not mount the charger a large distance from the battery. If the cable run is too long, the charging voltage at the battery will be reduced.
7. To reduce the possibility of interference, consideration should be given to the location of the charger in relation to the TV, radio, signal amplifier and associated cabling.

Fitting & Wiring

1. Mount the unit vertically or horizontally and fix using the four corner holes. Recommended screw type is No.6 x ¼" pan head.
2. This unit is designed to be installed as a permanent fitting within a caravan / motorhome. Do not attach to a 13-amp plug for portable use.
3. The unit should be hard-wired to a protected mains supply (such as a Miniature Circuit Breaker) rated no higher than 6 amps, using the 1 metre plug-in loom provided. Connect the cable as follows:-

Brown -	Live Output from MCB
Blue -	Neutral Output from MCB
Green/Yellow -	Earth

If it is necessary to extend the mains lead then ensure this is only done via the use of an insulated junction box, designed specifically for this purpose.

4. The 12V DC output connections should be made using push-on crimps or ring terminals as follows:-

CT/12A	-	¼", 6.3mm crimp
CT/18A	-	¼", 6.3mm crimp
CT/25A	-	6mm ID, ring terminal

5. The unit should then be wired to the battery and battery selector switch (if fitted) using cable gauges as follows:-

CT/12A	-	2.5mm² (min)
CT/18A	-	2.5mm² (min)
CT/25A	-	4.0mm² (min)

6. If the 'fast charge' mode is to be used, then the charger must be connected directly to the leisure battery (see Fig 2) In this mode the output voltage may be too high to directly power some 12V circuits, so care must be taken when wiring the unit. If the charger is only to be used in the 'float charge' mode then it may be connected as per Fig 1.
7. If a battery selector switch is not required then the terminals marked 1 & 2 on the connection diagrams should be linked.

Important Notes

1. This charger must not be used to charge non-rechargeable batteries.
2. The minimum capacity of battery that can be used with these chargers is 60Ah. Using a smaller capacity may result in damage to the battery.
3. All wiring connections made to the unit must be in accordance with BS 7671 & BS EN 1648-1/2. If in doubt then use a qualified electrician for connection of 230V mains wiring.
4. Always ensure an in-line battery fuse is fitted (see connection diagrams) which is rated appropriately for the loading within the van.
5. Ensure 12V and 230V cables are segregated and not allowed to come into contact with each other where reasonably practical.
6. If you are upgrading your charging system to one with a larger output, ensure the cabling and electrical equipment is rated to withstand the extra current.

Operation

Charger

1. Connect mains 240 volts ac to the caravan/motorhome via the Mains Inlet Socket
2. Switch the RCD to the on position (upwards).
3. Switch on the MCB to which the charger is connected (this is normally a 6 amp device)
4. Ensure the correct charge mode is selected i.e. 'fast' or 'float' (Models CT/18A & CT/25A only)
5. Switch on the charger (place the switch in the 'I' position, on models CT/18A & CT/25A it should then illuminate)
6. After a brief delay 12V power should be available via the dc output connectors. If this is not the case then check the following:-
   Is the mains supply to the caravan switched on?

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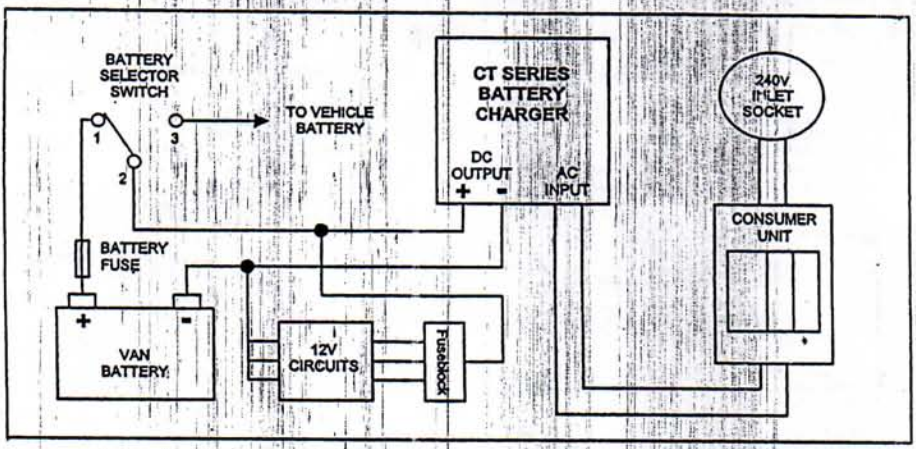

Fig 1 – Connection Diagram (Float Charge Mode)

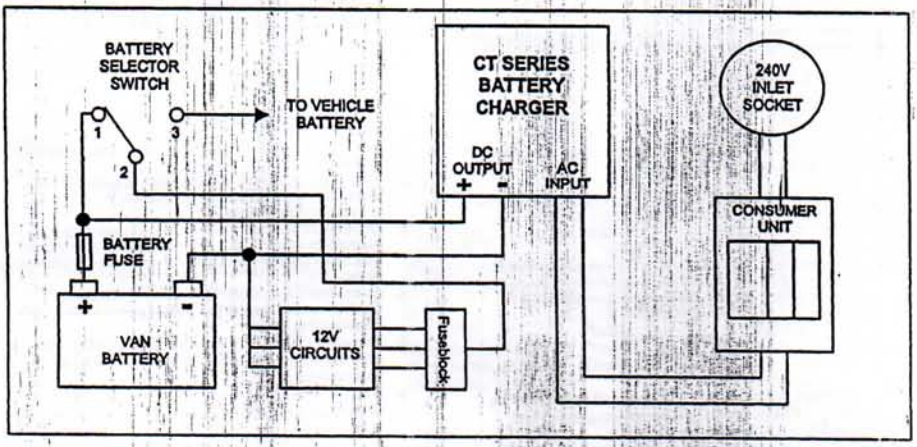

Fig 2 – Connection Diagram (Fast Charge Mode)

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