



- Digital software control Yes
- 3 isolated outputs Yes
- Automatic 110/230 volt selector Yes
- Power pack mode Yes
- Multiple input frequency from 40-400 hz Yes
- Thermostatically controlled fan cooling Yes
- 4 step constant current charging curves Yes
- High ambient temperature rated Yes
- 4 Battery type charging curve selector Yes
- Automatic battery bank size and state sensing Yes
- Automatic High charger time calculated every time Yes
- Automatic 7 day de - sulphation cycle Yes
- 3 stage R.F.I .filter Yes
- Battery temperature sensing and compensation Yes
- High battery voltage trip Yes
- High battery temperature trip Yes
- High heat sink temperature trip Yes
- Auto power reduction in event of high temperature Yes
- 24 kt gold plated output terminal post Yes
- Negative fused externally (A.B.Y.C. Requirement) Yes
- Reverse polarity protected Yes
- Over load protected Yes
- Short circuit protected Yes
- Remote control socket Yes
- Sturdy construction Yes
- Small foot print, low profile Yes
- Extra features offered with the remote optional , a optional extra with the medium chargers and standard with the large Yes
- Remote switch on/off Yes
- L.C.D. display screen Yes
- High charge rate timer countdown Yes
- Displays all alarm functions Yes
- Surface mounted or recessed box Yes
- Safety time out circuit Yes

Digital software control(see below) and accuracy beyond the ability of the analogue version.

3 isolated outputs:
The charger has 3 outputs enabling 3 different battery banks to be monitored and charged at the same time.

Automatic 110/230 volt selector:
The in built system enables the charger to be automatically used on a wide voltage range from 80-300 volts A/C. This covers all the possibilities encountered on any marine in the world.

Multiple input frequencies from 40-400 Hz:
Self-explanatory, the unit is able to work on all worldwide A/C input frequencies.

Thermostatically controlled fan cooling:
The digital software monitors the unit temperature and controls the fans; this reduces any unnecessary fan noise from the charger and prolongs the fans life for many years.

High ambient temperature rated:
Many boat builders expect the chargers to work at full power continuously at 40 deg ambient, few chargers in the world meet this specification - we do.

4 battery type charging curve selector:
There is more than one battery type; most chargers do not offer different programs for different battery types. Failure to offer an option will result in either overcharging some battery types and sulphating others. The Sterling offers charging curves for open lead acid batteries, traction batteries, sealed batteries, gel batteries and A.G.M batteries.

Automatic battery bank size and state:
No need to program in the battery bank size as the digital software can work that out itself.

Automatic High Charge timer calculated every time:
Most chargers have a fixed high charger timer, which works regardless of battery size and state or even load on the boat. The digital

new 10/20/30 amp digital charger design concept
1) the unit must be design in a way that all the control parts are grouped together, so that the only difference between the 10 20 and 30 amp chargers is simply the length of the extrusion, all the L.e.d screens/ control layout must be the same
the only difference between the chargers should be the main transformer , power transistors, and the out put diodes
it the cost is little then the 10 and 20 amp could be the same charger.
for example at present our 10 and 20 amp are the same except the 20 amp has 2 x fans in it, other than that they are the same

i would like to see the 10 and 20 amp the same unit (except for fans, but the 30 amp a longer unit with larger transformer and 3 fans
unit must be 110/230 volt (we will send you the new digital charger with a triac /relay design for the 110/230 v crossover

also we require a 3 stage r.f.i. filter to comply with the toughest r.f.i. specification. we can send the design on our digital chargers

L.c.d. display (must be larger than your display with back light on all the time the charger is switched on , and show the insormation as per 6.

a second L.e.d display must be provided on a remote control panel, with a on/off switch for the system. the remote control socket should be on the end of the p.c.b. in position 7

battery temperature sensing should be external off the p.c.b and the connection should be about position 8. the temperature sensor used must be the same as the ones already in use on our products, a sample of which will be in the digital charger we send you, these can either be purchased from the source used by alitech or wenchi.
the temperature sensing will default to a 20 deg setting if the temperature sensor is not fitted

battery type selector switch. a x dip switch giving 4 options for battery type, different software charging parameters will be used for the different battery types, the type selected will be displayed on the L.c.d. screen
reverse polarity protection
tis can only be achieved with a diode and the fuse, on a 10 amp charger the fuse should be 14 amps, one a 20 amp then 30 amps and on the 30 amp 40 amps is enough, this will protect the charger and allow it to be used as a power pack and charger flat batteries
trips in the software and displayed on the L.c.d. screen
fault 1} high battery temperatur trip, if the temperature compensation sensor measures in excess of 50 deg c then the trip switches off the

processor is able to discern the battery bank size, what state it is in and even take into consideration the power used by the boat. It then calculates the ideal equalizing charger time; this will be different every time and will be from 1-6 hrs

Automatic 7 day de-sulphation cycle:
The good thing about a constant current charger is that it de-sulphates the battery plates ensuring maximum life from the batteries. However, this only works if the charger is switched on/off regularly (i.e. every time you disconnect and reconnect the charger the plates are subjected to a de-sulphation cycle). The problem is some boats or standby equipment may be rarely used, for example; a boat could be moored all year and never leave the pontoon, or a stand by generator with the charger on all the time. In these cases the de-sulphation cycle would only happen once and the batteries would eventually sulphate causing premature destruction. However the Sterling software has a 7 day timer which in the event of inactivity will automatically run a de-sulphation cycle keeping your plates clean.

3 stage R.F.I filter:
In order to meet C.E. requirements for Radio Frequency Interference a three-stage filter is used to ensure that not only is the standard reached but also that we fall well above the standard legally required.

Battery temperature sensing and compensation:
The Sterling Digital comes complete with a battery temperature sensor, which is automatically set to one of the temperature compensation set by your battery type selector switch.

3 battery temperature sensors: The larger battery charger range comes complete with 3 temperature sensors, which monitor and display and react to the 3 different battery banks, including 3 high temp trips

Independent unlimited high battery temp trip circuit: This unit has a trip circuit which can be connected to any trip device such as temperature trips or any trip which results in an open circuit. The problem is that a charger could be attached to 10 batteries but only monitoring 3, however if you wish you can put a standard temperature trip on every battery and link them together into a common trip circuit, if any of these batteries exceed a pre determined value the charger will switch off.

High battery voltage trip:
Things do go wrong no matter how hard we try so in the event of the regulator control failing, then any voltage above what the software is expecting will shut the battery charger down and display the fault.

High battery temperature trip:
It always amazes me how many companies sense battery temperature and compensate the charger voltage against temperature, but in the extreme event of total battery failure and the battery is going to boil the battery charger will not switch off the charger. The Sterling processor not only senses the temperature but will shut down the charger in event of total failure and display the fault condition.

High heat sink temp trip:
In the event of extreme temperature or cooling fan failure the battery charger will switch off at 70 deg C

Auto Power reduction in event of high temperature.
Because it is best to get as much power as possible at high temperature, in extreme high temperature or cooling fan failure, if the heat sink reaches 65 deg C then the output current of the unit will be systematically reduced to prevent the high temperature trip being activated at 70 deg C, its better getting something than nothing.

24kt gold plated output terminal posts:
Over a period of time brass corrodes in salt air making poor connectors, we have all seen the green paste that forms around battery terminals etc. All Sterling connection posts are solid brass and are 24kt gold plated to eliminate this for life.

Negative Fused externally (A.B.Y.C requirement):
Because the largest market for our products is in the USA, it is important to conform to European and USA standards. This is a requirement for the USA A.B.Y.C boat building code of practice, as a result some electricians were receiving electric shocks because they thought they were on the D/C negative system when they were on the 110V A/C system (guaranteed to waken you up first thing in the morning) as a result international regulation bodies are attempting to change the colour of the D/C negative cables (which have been black) to yellow, this is already the case in the U.S.A. for A.B.Y.C. and is under review in the U.K. The negative cable in the new digital range comes as yellow and a gold fuse is supplied.

Reverse polarity protected:
The supplied fuse blocks offers a good reverse polarity protection system.

Overload protected:
As stated the unit cannot be overloaded.

Short circuit protected:
As stated the cant can be short-circuited with no adverse results.

Remote control socket:
The unit has the ability to be connected to a digital L.C.D. information and control panel.

Sturdy construction:
The unit is made from extruded aluminium and extremely sturdy, with extra thick 2.4 mm printed circuit board.

Small footprint:
A modern requirement even on the largest boats is the requirement for a small foot print size, check our size out.

Extra features when connected to the Digital remote control
Remote switch on/off:
Self-explanatory (I hope).

L.C.D. display screen:
As described above a large information screen is use which as an on/off switch for the background light.

Surface mount or recess box:
The remote control design means the box can either be surface mounted , bulkhead or flush mounted.
Saefty time out circuit, in the event of defective batteries , and the charger is unable to complete its charger cycle, the unit will drop to a low float volatage after 10 hrs to reduce the effect of damaged batteries

charger, this will not auto reset, and can only be reset when the charger is switched on/off
fault 2) high battery voltage trip we need a secondary voltage sensor to the output of the 3 diodes, this sensor must not be on the same track or use any of the same parts which the charger regulator will use, if this sensor picks up a voltage in excess of 15.5 volts (for a 12 v charger) the charger switches off
fault 3 charger over temperature trip. there should be a temperature sensor on both sides of the heat sink, if either side exceeds 70 deg c then the charger will switch off and auto reset at 60 deg c
fault 4: blown fuse , the charger should be able to recognize that the fuse is blown (if possible)
fault 5 charger failure: the charger should be able to know that it has 110/230 v input and a 12 v a/c output on the main transformer, if the charger has the 230 a/c input but no 12 v a/c output on the main transformer than the charger has suffered a fatale fault and is broken

width of p.c.b. because there are 3 outputs on the battery charger then the p.c.b. should be about 100-120 mm wide to enable the outputs to be spaced saefley

p.c.b material, because the outputs are directly connected to the p.c.b then we need 2.4 mm p.c.b

fan cooling for the 10 amp , no fan.....for the 20 amp one fan in the lid.....for the 30 amp 1 fan in lid and 2 on heatsink

fan control (software) fan comes on when either heat sink reaches 50 deg c , off at 40 deg c

high temperature control, the high charger heatsink trip is 70 deg c, however at 66 degree c the charger should drop power by 25%, at 68 deg c the charger should drop power by 50%, so in theory the high heatsink trip should never be reached