Universal Advanced Digital Alternator Regulators

Can be used as Parallel or stand alone regulators

Please note advanced regulators are not suitable for some modern vehicles / boats with integrated engine management systems as they increase the alternator's voltage and this can be interpreted by the management system as a fault on the alternator. Please use an Alternator to Battery Charger or a Battery to Battery charger for these applications.

The Problem with standard systems: Standard alternators are not designed to be good battery chargers; they are designed only to charge an engine start battery sufficiently to start the engine. Due to this inherent weakness, a more advanced regulator is required that, in effect, converts an alternator from a constant voltage battery charger to the latest 4-step progressive constant current battery charger (see battery charger graphs). Because of this improvement in the alternator's control system, these regulators dramatically enhance the alternator's charge rates by between 200-2000% depending on how poor the original system is.
The Sterling Regulator is designed to charge batteries as fast as possible and to their maximum capacity without damage to the batteries or alternators.

What To Expect From An Advanced Regulator:
1) Maintains maximum performance of an alternator's power curve within a preset envelope as defined by battery manufacturers.
2) Batteries charging 4-20 times faster. (depending on original system).
3) Enables 25-35% extra useful power to be stored in batteries. A conventional alternator will only charge the battery to a max of about 75% and, at about 35% remaining capacity, the low voltage level renders it useless. This means that, of 100A of battery capacity, only about 35A are available to be used. An advanced regulator will fully charge the battery giving an extra 25% capacity. This increases the useable available power by about 70 - 80 %.
4) Battery plates kept free from sulphate damage results in longer life.
5) Due to the built in safety features, in the event of incorrect installation the unit will switch itself off.
6) Reduces needless running hours on the main engine.
7) Compensates for voltage drops resulting from long cable runs, ammeters, diodes and other general wiring associated problems.
8) Automatically converts a machine-sensed alternator to a permanent battery sensed alternator.

SAFETY FIRST: The Sterling Advanced Regulator is full of safety features to prevent damage to your system. In the event of incorrect installation or a fault developing on the boat or vehicle, the high voltage trip picks up high voltages at the batteries and the alternator and switches off the advanced regulator (the field circuit is disconnected totally from the control via an internal relay).

The Test: Using a standard 12V, 90A Bosch alternator fitted to our test bench and rotated at a constant speed, the following test was undertaken: 4 x 100A "leisure" batteries were used, they were split into 2 battery banks, one for engine start and three for domestic. The engine start battery was fully charged (to copy that in real life) and the 3 x domestic batteries were discharged until such time as one of our 1800W inverters tripped out on low voltage. To make the test fair we linked 9 batteries together to make one large battery bank then discharged them all to exactly the same level, then, at random, three batteries were selected and used for each test. The idea was to see how many amps could be replaced into a 300A battery bank. Bank discharged to a level one would expect in real life (i.e. about 50-60% empty) over a 3 hour period and to display the results in as simple a way as possible to highlight the difference between all the different options and why an Advanced Regulator is a necessity, not a gimmick.

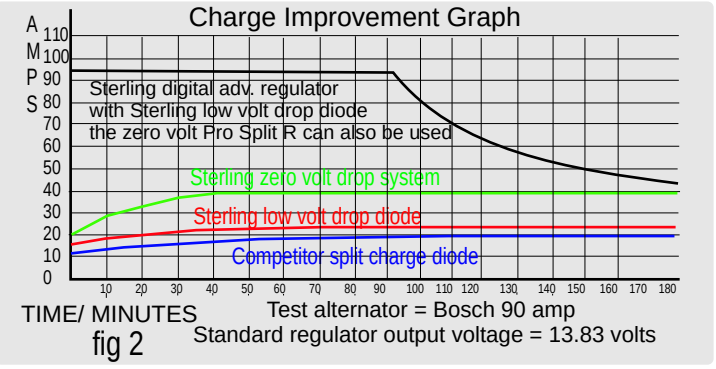
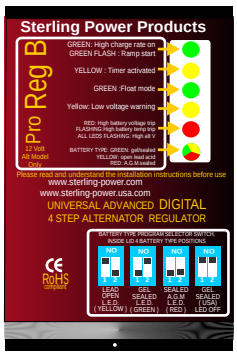


fig 2



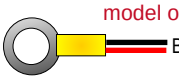
Pro Reg B Advanced alternator regulator			
Voltage DC	Size L x W x D mm	Weight kg	Part nos
12	120 x 70 x 45	0.4	AR12VD

12 v only

new model upgrade can run up to 300% more field current with no heat rise

Pro Reg B

Inc battery temperature sensor and 1 metre of cables.
Please check all the features on this model on next



Pro Reg BW Waterproof Advanced alternator regulator			
Voltage DC	Size L x W x D mm	Weight kg	Part nos
12	120 x 80 x 45	0.4	AR12W

NEW

Pro Reg BW

12V only

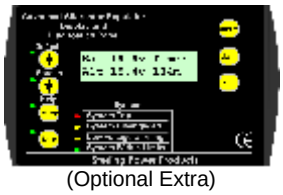
Inc battery temperature sensor and 1 metre of cables.
Please check all the features on this model on next

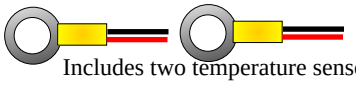
IP 67, Waterproof Ignition protected

Unit actual rating: (the actual device rating) for the Pro Reg B and BW.
Positive field control 8A maximum field current
Negative field control 13A maximum field
Real world rating: (hard to get this information, this is a rule of thumb).
12V alternator with standard regulator fitted, up to approx 350A alternator, more if a negative field control.
12V alternator with no standard regulator, stand alone, about 150A more if a neg field control.

Pro Reg D

Pro Reg D Advanced alternator regulator			
Voltage DC	Size L x W x D mm	Weight kg	Part nos
12 & 24	180 x 90 x 55	0.5	PDAR
Remote control	170 x 90 x 40	0.25	PDARR


(Optional Extra)


Includes two temperature sensors

new model upgrade can run up to 300% more field current with no heat rise

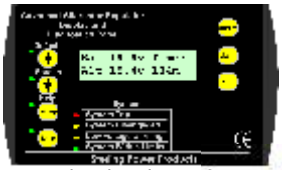
1 model 12V and 24V

Unit actual rating (the actual device rating) for the Pro Reg D
By far the most powerful regulator around due to its fan cooling.
Positive field control 25A max field current.
Negative field control 30A max field.
Real world rating: (hard to get this information , this is a rule of thumb)
12/24V alternator with standard regulator fitted. Up to approx 600A alternator, more if a negative field control.
400A if stand alone, without existing regulator fitted.

Pro Reg DW

IP 67, Waterproof Ignition protected

Pro Reg DW Advanced alternator regulator			
Voltage DC	Size L x W x D mm	Weight kg	Part nos
12 & 24	160 x 96 x 55	0.58	PDARW
Remote control	170 x 90 x 40	0.25	PDARR


(Optional Extra)

NEW

Includes: 2 x temperature sensors

1 model 12V and 24V

Unit actual rating (the actual device rating) for the Pro Reg DW
By far the most powerful regulator around due to its fan cooling.
Positive field control 12A max field current.
Negative field control 18A max field.
Real world rating: (hard to get this information , this is a rule of thumb)
12/24V alt with std reg fitted, up to approx 400A alternator. More if a negative field control
12/24V alt with no standard regulator. Stand alone, about 200A more if a neg field control

Pro Reg	B	BW	D	DW
Digital software control with slow start	●	●	●	●
Dynamic Progressive battery charging	●	●	●	●
Can be used in parallel (recommended) or stand alone regulator	●	●	●	●
Programable for different battery types	●	●	●	●
Single unit fits 99% of alternators and all battery types	●	●	●	●
Charges to 4 step progressive constant current charging curves	●	●	●	●
Self diagnosing fault system	●	●	●	●
Totally isolates the advanced regulator in fault condition	●	●	●	●
Information 6 LED display one tri coloured	●			
Information 8 LED display (B only)		●		
Battery Temperature sensing	●	●	●	●
High battery temp trip	●	●	●	●
High battery voltage trip	●	●	●	●
High alternator voltage trip	●	●	●	●
De-sulphation ability on open lead acid batteries	●	●	●	●
In event of failure auto return to standard alternator regulator	●	●	●	●
Can be used with or without the temperature sensor	●	●	●	●
Monitors for excessive neg voltage drop and trips	●	●	●	●
Protects batteries if temperature sensor open circuited	●	●	●	●
Protects batteries if split charge relay/diode fails open	●	●	●	●
Protects batteries if advanced reg fails closed	●	●	●	●
Protects batteries if battery sense wire falls off or broken	●	●	●	●
10 LED display			●	
13 LED display				●
12 or 24 v operation, selectable			●	●
Remote control option			●	●
Alternator temperature sensor and boost disengage			●	●
Unit thermostatically controlled fan cooling for max performance			●	
IP 67 waterproof & ignition protected for W options		●		●

Advanced Regulator features explained in more depth:

Digital software control with slow start:
Digital control (software) uses lines of computer code, digitally burned into a memory processor in the Advanced Regulator. This means that very complex information and mathematical algorithms can be processed that would not be possible with an analogue hardware system. The unit ramps up the current over a short period of time to reduce the chance of alternator belt slip.

Dynamic progressive battery charging: this is a term used to explain that the internal software calculates a different charging regime every time it is used as the battery state etc. is never the same. Older systems simply used fixed trimmers which were not able to distinguish different battery types or sizes.

Can be used in parallel or a stand alone reg: This unit can be used as a stand-alone regulator as well as in parallel with the original regulator. Sterling believes that, where possible, to leave the existing regulator in place this offers the Sterling Reg a fall back safety position in the event of it failing.

Programmable for different battery types:
Most other manufacturers fail to recognize the fact that the world has more than one type of battery. There are now four main groups, open lead acid/traction, sealed /gel, gel (Europe) and AGM To optimise charging for each of these battery types there are four totally different charging curves, temperature curves and safety criteria with each battery type.

Single unit fits 99% of alternators:
The reason for this is very simple, if you check other makes, you can find 12-15 different models to cover what the Sterling will do with 1. The problem with this is the public must supply correct information about their alternator and batteries to ensure they receive the correct Advanced Regulator.

Charges to 4 step constant current progressive charging curves:
All good battery chargers are constant current with 3 - 4 step charging curves. This method is recognized as the best charging type so why expect anything less from your alternator- in most cases the primary battery charging source. The Sterling Advanced Regulator converts your basic constant voltage alternator into a modern 4 step constant current battery charger, it's that simple.

Self diagnosing fault findings:
The performance and benefits of an Advanced Regulator are beyond dispute, however, an Advanced Regulator which has been incorrectly installed or fails, can have devastating effects on a boat. It will destroy the batteries and could easily set fire to cables.
Sterling takes all this into account and recognizes that some boats on which these regulators are used have poor wiring and other faults. Because of this we scan the system every two seconds and if all the parameters are not within our pre-set values then the unit will switch 'off' and signal a fault. This, in my opinion, is the most important aspect of this type of device, a point not shared by our competitors.

Totally isolates the regulator in a fault condition:
This is very important and not fully understood by the public. All regulators can fail for different reasons. If an Advanced Regulator fails closed then the alternator will work at full power and destroy everything around itself. Simply turning the regulator 'off' will have no effect, so in the event of a Sterling system failing or tripping, for whatever reason, we physically break the field wire guaranteeing that the Advanced Regulator will stop working

Information LED display:
Most Advanced Regulators have no real information being transmitted to the operator and as a result one has no idea what is going on. Depending on the model we give the operator as much information as possible as to what is happening with the product and the installation system in general.

Battery temperature sensing:
One battery temperature sensor is supplied with the unit. This will adjust the output charging curves with the ambient battery temperature.

High battery temperature trip:
Most Advanced Regulators monitor the battery temperature to perform the task as explained above, but what is the point of monitoring the temperature if in the event of a battery going over temperature you do nothing about it? Sterling software will pick up the high temperature and in the worst case of a battery exceeding 50 deg C, will switch 'off' the regulator and display a warning.

High battery voltage trip:
In the event of the battery voltage going too high the unit will switch the regulator 'off' and display a warning.

High alternator voltage trip:
This is the most common trip used. In the event of poor wiring, incorrect installation, or any fault in the system, the alternator voltage will rise too high; the unit will trip out and display a warning.

De-sulphation ability on open lead acid batteries:
In order to prevent and even de-sulphate lead acid batteries a regular charge cycle exceeding 14.4V (x 2 for 24V) will remove the sulphate from a battery bank and so prolong its life expectancy.

In event of failure auto return to standard regulator:
There are many good reasons to leave the standard regulator in place, one of them being that, in the event of a Sterling failure or any trip condition of the advanced regulator, your standard regulator will automatically take over and allow the journey to continue but at a lower charge rate. If your Advanced Regulators does not offer this feature then you will lose the use of the boat during any failure.

Can be used with or without temperature sensing:
Some people don't want to fit temperature sensors, the choice is yours, the software will pick up if you use it or not and control accordingly. Most other makes insist a temperature sensor be fitted.

Protects batteries if temperature sensor open circuited:
A big problem with temperature sensors (why people don't like fitting them) is that they are on a battery. If someone changes the batteries and breaks or open circuits the temperature sensor wire, most Advanced Regulators will destroy your batteries by over charging them. Not so with a Sterling. In the event of a failure of a cable break the Sterling software will pick it up within 2 seconds and return to the default settings and carry on safely. It will also protect batteries if split charge relay/diode fails open circuit.
A common fault when fitting an Advanced Regulator is the old split charge diode or relay that is not up to handling the new performance, resulting in a regulator to fail. This will result in the destruction of the other battery bank, as the battery sense wire will be isolated from the alternator (but not with a Sterling, again our software jumps in and saves the day).

Protects batteries if advanced regulator fails:
In the unlikely event of the Advanced Regulator failing then most regulators will fail closed and destroy all your batteries (would it surprise you to know that the Sterling software will jump in and save the day again?).

Alternator temp monitoring and disengagement:
This unit can monitor the alternator temperature and switch off the control unit in the event of high alternator temperature. The Advanced Regulator will automatically re-engage when the alternator cools down.

Thermostatically controlled fan cooling: Pro Reg D only
This is the only fan cooled regulator on the market (as per 2013) and offers the ability to connect this device to massive alternators if required, this unit can deliver field currents up to 20 amps plus , allowing use on alts way up to 600 amps plus or work in extremely high ambient temperatures, we are unable to correctly advise on the maximum performance of this regulator against any large alternators as we have simply been unable to stretch it to its maximum with any alternators we have found to date to run with it.

Pro Reg Alternator max sizes

Pro Reg B up to 250A with standard reg /130A stand alone
Pro Reg BW up to 350A with standard reg /150A stand alone
Pro Reg DW up to 450A with standard reg /200A stand alone
Pro Reg D up to 600A with standard reg /400A stand alone