

# Ample Power Company

## Next Step 2 Regulator



### A Fast Full Charge

A fast full charge is the name of the game, and the Next Step Regulator, Version 2, makes it a reality through the use of the latest microcomputer technology. With all of its features the NS2 is the choice for most systems.

### Features at a Glance

- Fast, Full, Multi-Step Charging
- Automatic Compensation for Battery Temperature with Battery Temperature Sensor
- Adjustable Absorption Setpoint
- Adjustable Float Setpoint
- Adjustable Absorption Time
- *Smart* Error Lamp Output Identifies Problems
- Precision Reference Control Over Time and Temperature

### Improved Performance

The NS2 improves on earlier design performance with these important improvements:

- The same Regulator works for 12 or 24 Volts
- Compatible with Liquid, AGM or Gel Batteries
- Twice the resolution for a more precise and stable voltage
- Smaller size
- Simpler to adjust
- Easy Installation with pluggable terminal block
- A Battery Combiner output to drive a parallel solenoid which connects the house and starter batteries during charge even when the engine is not running

### Most Cost Effective Regulator/Combiner

The NS2 is the most cost effective of any performance regulator offered on the market. Bulk, absorption, and float charges are done automatically. Absorption time is adjustable as are the absorption and float voltages.

Part of the NS2 circuits stay alive at all times to allow the NS2 to function as a battery combiner, maintaining the starter battery from all charge sources. (Requires additional parallel solenoid)

### One Regulator for 12 or 24 Volts

The same NS2 can be used in either 12 or 24 Volts systems. Just hook it up and adjust it to the desired setpoints! There is no longer a cost penalty for 24V systems.

Setpoint adjustments can be made without waiting for the regulator to charge the batteries. Test points are provided to measure the setpoint potentiometer. For 12/24 Volt units, battery voltage is exactly 10 times the voltage measured on the test point.

### Smart Overload Detection

What if the regulator is in float, and the alternator can't keep up with demand? The NS2 is smart enough to sense this condition and go into the absorption state so that a full charge will be returned when the load demand lessens and the alternator can once again keep up with the load.

### Charge State Indicator

An LED keeps the user informed about the progress of charging. The green LED flashes on/off codes indicating the charge step at the moment.

### Error Indicator

A red LED only flashes when faults are detected, such as loss of sense input, or overvoltage on the battery. Errors are identified by the duration of on and off times for the red LED. This mechanism permits rapid troubleshooting of the charging system.

An error indicator can be remotely mounted if the second plug-in terminal block is ordered. Order Accessory: **#NS2-TBL**

Note: A second terminal block is included with any of the Factory Installed Options.

### Parallel Solenoid Indicator

An amber LED illuminates anytime the parallel output signal is active, signalling that the battery combiner solenoid should be closed.

### Field Output Indicator

A green LED indicates when the field output is being driven positive, making it easy to see when the alternator should be producing.

### Simple Adjustments

The NS2 is very easy to adjust, and adjustments can be made without the engine running.

Absorption voltage and time can be set, and there is an independent adjustment for float voltage. The adjustment procedure has been greatly simplified. Test points are provided which measure exactly 1/10 of the desired battery voltage. For instance a voltage of 1.35 Volts on the float test point will yield 13.50 Volts at the battery.

To make absorption time easy to adjust, a test point is provided that indicates the time setpoint. Just measure the test point with a meter, and convert the voltage to time by multiplying the voltage by 100 to arrive at minutes. For instance, a 1 Volt reading indicates absorption time of 100 minutes.

This exclusive Ample Power feature means that the NS2 can be installed and adjusted without waiting for the unit to trip to float. This can save you an hour or two of labor charges if you have the unit professionally installed!

## Temperature Sensing

To provide an ideal charge regimen, the NS2 senses battery temperature and compensates the various setpoints. Temperature compensation corrects the output voltages from -4 to 140° Fahrenheit ( -20 to 60°C). The NS2 continues to operate below -4°F, but does not continue to increase battery voltage. At the cold limit, battery voltage is raised as much as 1.5 Volts over the 77°F value, that is 15.9 Volts for absorption of a 12-Volt battery. At the hot extreme, voltage is reduced by about one Volt, that is absorption of a 12-Volt battery is only 13.5.

The NS2 now includes a #2018 temperature sensor.

Order accessory #2018-WIRE for twisted pair temperature sensor wiring.

## What you won't see

You won't see the NS2 overshoot the absorption setpoint by several hundred milli-Volts, as done by one highly advertised regulator. They use this technique in an attempt to prevent current tapering as battery voltage approaches the absorption setpoint. Your batteries pay the price for their overshoots.

We also sense battery voltage rather than the power feed to the regulator. Yes, they save a wire in the harness, but a regulator which doesn't sense battery voltage using a dedicated wire for that purpose can not charge batteries properly.

## Battery Combiner Feature

The NS2 has also been designed to provide a new level of system integration. The unit drives a parallel solenoid to charge a starter battery at the same time a house battery is charged. This feature is active 24/7 . . . whether the engine is running or not. Thus it works with any other charge sources such as AC powered battery chargers, as well as the alternator.

With the parallel solenoid driver, the NS2 is ideal for vessels, motorhomes and fifth-wheel homes. The loads which are normally drawn from the

starter battery can stay connected as wired. The same parallel solenoid can even be used with a manual parallel switch to connect the house and starter batteries.

Order an appropriate solenoid below to use with the battery combiner signal.

## Dimensions and Mounting

The unit is approximately 2.7 inches (68mm) long, 5.5 inches (138mm) wide, and 1.9 inches (48mm) high.

The NS2 can be mounted in any orientation. The housing is marine grade aluminum which has been clear anodized and silkscreened.

## Ordering Information

### NS2 Regulators

NS2, 12/24-Volt, P-type . . . . . #NS2-12/24

## NS2 . . . Pricing Information

| Description          | Model  | List Price (\$) | Add to Cart |
|----------------------|--------|-----------------|-------------|
| Alternator Regulator | #NS2   | 299.00          |             |
| Serial Port Option   | #NS2SP | 100.00          |             |

## Regulator Accessories . . . Pricing Information

| Description                | Part Number | List Price (\$) |  |
|----------------------------|-------------|-----------------|--|
| Parallel Solenoid          | #SOL12-100  | 38.00           |  |
| Parallel Solenoid          | #SOL12-200  | 84.00           |  |
| Parallel Solenoid          | #SOL24-100  | 48.00           |  |
| Parallel Solenoid          | #SOL24-200  | 97.00           |  |
| Dual Alternator Controller | #DAC12      | 160.00          |  |
| Dual Alternator Controller | #DAC24      | 195.00          |  |
| Battery Temperature Sensor | #2018       | 44.00           |  |
| Twisted Pair Wire          | #2018-WIRE  | 24.00           |  |