

Ample Power Company

3-Step Regulator to Next Step Upgrade

Introduction

The original 3-Step Regulator was introduced in 1987 with a novel feature of battery temperature compensation. Temperature compensation is still an Ample Power exclusive feature, and the reason that many owners who purchased the 3-Step Regulator in 1987 are still using the same batteries.

With nearly 10,000 3-Step Regulators cruising the seven seas, it not unexpected to get a few in for repair from time to time. When they are beyond repair from water damage or other catastrophic accident a replacement is necessary. Because the original 3-Step Regulator is no longer manufactured, we recommend the Next Step Regulator, #NEXT-12P as a replacement.

3-Step Models

The first 3-Step Regulator had the part number, #1021. Later, the #1021 was replaced with the #1021A. On the #1021A, Pins 1 and 2 were swapped. See the tables below for the functions of each pin and their correlation to Next Step signals.

Pin Number	Signal Name	NEXT Signal
1	Ignition	IGN(2)
2	Sense	BAT. V(8)
3	Ground	GRND(3)
4	Alt. Ground	GND(6)
5	Field	FLD(5)
6	Power	B ⁺ (4)

Wiring of Model #1021

Pin Number	Signal Name	NEXT Signal
1	Sense	BAT. V(8)
2	Ignition	IGN(2)
3	Ground	GRND(3)
4	Alt. Ground	GND(6)
5	Field	FLD(5)
6	Power	B ⁺ (4)

Wiring of Model #1021A

Terminals on the 3-Step Regulators are counted from the left when looking into the wire receptacle on the terminal block. Given in the tables under the Next Step signal column is both

the signal name, and the terminal lug number, when counting from the left. The lug number is shown within parenthesis. For instance, the Ignition input is called IGN and is the second lug from the left . . . IGN(2).

Temperature Sensing

The 3-Step Regulator sensed battery voltage and temperature using the single sense input from one or more #1018 sensors attached to the batteries. While this served the function well, it was easy to make a mistake during installation or removal and destroy the sensor. The sensor on the 3-Step attached to the positive post of the battery, and if the regulator end of the wire was shorted to ground, even momentarily, the sensor would be destroyed. While the instruction manual explained that connecting the sensor to the battery was the last installation step, and the first step to removing a regulator, many people managed to do otherwise.

Other than failure from installation or removal errors, the temperature sensors for the 3-Step have proven to be very reliable. However, the Next Step Regulator was designed to accept a different temperature sensor so that installation problems can be minimized. This sensor, part number #2018, uses two wires and only transmits temperature information to the regulator. The lug that houses the sensor is not electrically connected to the temperature sensor. Voltage is sensed by a separate wire.

Wire the Next Step temperature sensor, #2018, to the T⁺ and T⁻ lugs on the regulator. Follow instructions in the Next Step manual.

Temperature Sensor Placement

The 3-Step Regulator permitted multiple sensors to be used, where the highest voltage and highest temperature ruled the regulator. Each bank to be sensed could be fitted with a temperature sensor.

The Next Step Regulator only accepts a single sensor. It should be placed on the positive post of the house bank. If all the batteries in the bank will not be operating at the same temperature, then the battery likely to be the hottest should be sensed.