Revision 5

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Two-way Timed Split Charging Unit, ALT12

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Overview

The **ABEL***TRONICS* Two-way Timed Split Charging Unit is designed to actively control the charging of two independent batteries from one alternator. The unit switches the charging voltage, provided by the engine's alternator, to one of two batteries connected to the device, and can switch up to 80A continuous. When the engine is started, the charging voltage from the alternator is supplied to the Starting Battery for 15 minutes. After this delay, the Starting Battery is disconnected, and Accessory Battery is charged until the engine is switched off. Neither of the batteries are ever connected together at any time – both batteries remain completely isolated from each other at all times.

This timed arrangement ensures both batteries in the system is given a charge, with priority given to the Starting Battery. The unit can be used with either Battery Sensed or Machine Sensed alternators, and a sense output is provided on the ALT12 for Battery Sensed systems. (Leave this output unconnected for Machine Sensed alternators). Electrically, the unit possesses reverse polarity protection and transient voltage protection ensuring its reliability in the harshest of marine or automotive electrical environments.

The unit is sealed inside an IP54 rated ABS enclosure, encased fully in epoxy potting compound. This level of sealing ensures ultimate water-proofing and resistance to oils, solvents and salt. Temperature rating is limited by the enclosure itself – the unit can be mounted in the engine bay, but should not be situated near a source of excessive heat, such as an exhaust manifold, engine head/block, water cooling pipes or the radiator. In addition, the module is fully protected against transient voltages and reverse-polarity connection.

Specifications

Notes: **1.** Measured at Ignition Input connection **2.** Rating of internal switching devices.

	Parameter	ALT12	Unit	Comment
Electrical	Nominal Operating Voltage[1]	14.4	V DC	
	Sustained Operating Voltage Range[1]	9 – 18	V DC	
	Peak Operating Voltage	20	V DC	<1min max
	Operating Current[1]	500	mA	Max
	Start Battery Charge Duration	15	Minutes	±3 Minutes
	Accessory Battery Charge Duration	-		Remains connected until engine stops
	Continuous Switching Current	80	A	Max
	Peak Switching Current[2]	120	A	<10msec at nominal operating voltage
Mechanical	Operating Temperature Range	–5 – 70 (23 – 160)	°C (°F)	
	Dimensions	185×120×80 (7.3×4.7×3.2)	mm (in)	L×W×H, excl. connection protrusion
	Mechanical Fixing	4× 4.5mm		Remove top cover for access
	Electrical Connections	3× M6 thread, 3× M4 thread		See below for connection details

Mounting and Connection Guidelines

An electrical connection diagram of the ALT12 module, viewed from above, is shown in Figure 1. Electrical connections are as follows:

1. Starting Battery Output (M6 thread)
2. Alternator Input (M6 thread)
3. Accessory Battery Output (M6 thread)
4. Earth (M4 nickel-plated thread)
5. Battery Sense connection for Battery Sensed alternators (M4 thread)
6. Ignition input (M4 thread)

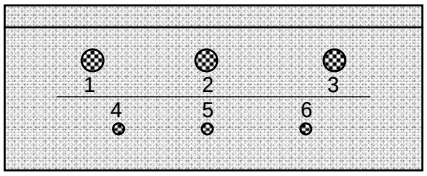

Figure 1 – ALT12 Viewed from top

Pin 1 should be connected directly to the Starting Battery (or to the starter solenoid). Pin 2 should be connected directly to the alternator. Pin 3 should be connected directly to the Accessory Battery. Pin 4 should be connected to chassis Earth. Pin 5 is the Battery Sense connection for Battery Sensed alternators – connect this pin to the sense wire of a Battery Sensed alternator, or leave unconnected for Machine Sensed alternators. Pin 6 should be connected to the ignition feed (preheat on a Diesel engine). This connection can be made to any ignition feed, but be aware that a maximum current of 500mA (see specifications above) is drawn by the module from this connection.

Use good quality thick cable, capable of handling well in excess of the alternator output current, for connections to pins 1 to 3. Pins 4 to 6 are less critical, but use of cable rated at 6A or more is advised for ruggedness.