



Twin Engine Split Charging Unit, ALT02

9th January, 2006

Overview

The **ABEL TRONICS** Twin Engine Split Charging Unit is designed to allow charging of two banks of batteries from two engines with the alternators connected in parallel. The unit also has an internal relay for the control of ventilation fans. The unit monitors the ignition lines and the alternator outputs of both engines and switches the internal solenoid when both ignitions are on AND when both alternator lights are out. Therefore, when both engines are running, the solenoid connects both battery banks together and allows the alternators to charge them both simultaneously. In this condition, the internal ventilation fan relay is also actuated.

The unit itself is powered from the ignition lines, with a separate input for the solenoid power. The unit is fully sealed in a waterproof ABS enclosure with the electronics potted in epoxy potting compound. This ensures a high level of sealing against the elements while allowing both the main solenoid and the ventilation fan relay to be replaced if required.

The unit also features a circuit designed to extend the life of the solenoid by preventing ohmic heating of the coil; a condition caused when the solenoid is actuated for long periods of time. If ALT02 is properly mounted (see bottom of page) the solenoid will last approximately 50% longer than if this circuit were not present.

Specifications

	Parameter	ALT02	Unit	Comment
Electrical	Nominal Operating Voltage	14.4	V DC	
	Sustained Operating Voltage Range	9 – 18	V DC	All Inputs
	Alternator Input Threshold Voltage ¹	7	V DC	Max
	Alternator Input Current	5	mA	At 14.4V
	Operating Current (Ignition Input)	100	mA	Total, At 14.4V
	Solenoid Supply Current	800mA continuous, 2A peak		At 14.4V
	Solenoid Switching Current	150	A	Continuous Rating of Solenoid
	Ventilation Fan Switching Current	70	A	Continuous Rating of Relay
Mechanical	Operating Temperature Range	-5 – 70 (23 – 160)	°C (°F)	
	Dimensions	198×160×83 (7.8×6.3×3.3)	mm (in)	L×W×H, excl. connection protrusion
	Mechanical Fixing	4× 4.5mm		Remove top cover for access
	Electrical Connections	2× M8 thread, 2× M6 thread, 7× M4 thread		See below for connection details

Notes: 1. The Alternator input threshold voltage is the voltage above which the unit will actuate the solenoid. It is internally set to half the nominal supply voltage to allow headroom for voltage drops and spikes in the electrical system.

Mounting and Connection Guidelines

An electrical connection diagram of the ALT02 module, viewed from below, is shown in Figure 1. Electrical connections are as follows:

1. Solenoid Supply (M4 thread)
2. Battery Parallel Switch (M4 thread)
3. Earth (M4 thread)
4. Ignition – Engine 1 (M4 thread)
5. Ignition – Engine 2 (M4 thread)
6. Alternator Light – Engine 1 (M4 thread)
7. Alternator Light – Engine 2 (M4 thread)
8. Engine Battery Bank (M8 thread)
9. Ventilation Fan Supply (M6 thread)
10. Ventilation Fan Relay Output (M6 thread)
11. Domestic Battery Bank (M8 thread)

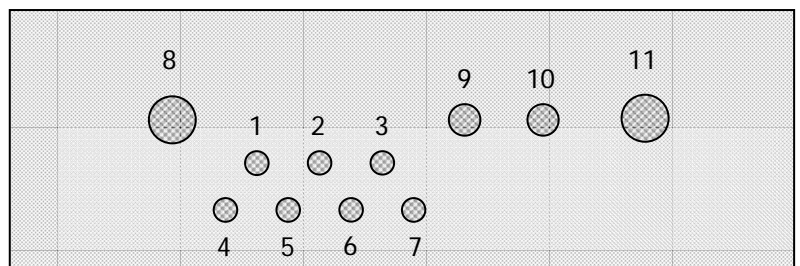


Figure 1 – ALT02 Viewed from below

The solenoid supply (1) should ideally come from a source capable of supplying at least 2A and should be fused accordingly. The battery parallel input (2) is included for battery boost applications where a vessel needs to be started from the domestic battery bank in the case of a flat engine battery. Care should be taken with this input because during starting on battery boost, full starter current flows through the internal solenoid and it may be overloaded. Exercise caution. The current drawn from this input is equal to the solenoid supply current: 2A initially for less than half a second, thereafter 800mA.

ALT02 should always be mounted upright (with all the connections pointing downwards and the removable lid facing you) to ensure the longevity of the switching solenoid. The manufacturer of the solenoid (Durite) recommends this configuration.

Access to the solenoid and ventilation fan relay can be gained by removing the lid of the enclosure. This is to allow these components to be replaced if required.