THE POWER OF REDARC®

A BCDC Solution For All Vehicles

It is well known that the Redarc BCDC In-Vehicle Battery Charger is the best solution to charge auxiliary battery banks to 100%state of charge while on the move. The BCDC will overcome voltage drop when the auxiliary or house batteries are a considerable distance from the charging source, and boosts low output voltages from ECU Controlled Temperature Compensating Alternators to your auxiliary battery. Temperature Compensating Alternators have been used primarily in the Toyota range of vehicles fitted with D4D common rail diesels since early 2000's.

A number of vehicles on the market now have charging systems that are taking ECU controlled charging to a new level. Alternators that are part of the vehicle CAN Bus give vehicle manufacturers the ability to continuously adjust the output voltage while driving to suit the operating conditions at the time. We refer to these alternators as ECU Controlled Variable Voltage Alternators. Engine performance and fuel economy are the driving forces behind these developments by vehicle manufacturers. Electrical load and engine load are the main determining factors of the voltage level to which the alternator output will be regulated. Current sensing in the vehicle's electrical system means that all additional electrical accessories must be grounded to the vehicle chassis or body, not to the main battery negative terminal, in order to be taken into account by the ECU. This type of alternator is even less capable of fully charging auxiliary batteries, and the use of the BCDC in these vehicles is imperative.

The BCDC utilises voltage sensing of the main battery to determine when to turn on and off (charge and isolate). These voltages are researched by Redarc and selected to suit a wide range of vehicles, and for this reason there is the need to have a range of BCDC to best suit all vehicle manufacturer charging system variations. The standard BCDC range will operate on voltage sensing alone in vehicles that the alternator voltages does not regulate lower than 12.7V at any time, such as standard Fixed Voltage Alternators and ECU Controlled Temperature Compensating Alternators. The wider range of BCDC variants are applied in vehicles fitted with ECU Controlled Variable Voltage Alternators. The turn on and off voltages are sensed at different levels along with an ignition input to the charger, ensuring that the BCDC will charge the auxiliary battery to 100% while effectively protecting the main battery from over-discharge. The BCDC In-Vehicle battery chargers are available in 6A, 20A, 25A and 40A outputs. These current output options ensure there is a BCDC for all load and battery charging requirements.

This table helps identify the BCDC you require.

Fixed Voltage (always 14V or more from alternator during driving)	**Temperature Compensating** (always 13.2V or more from alternator during driving)	**Variable Voltage Alternator** (12.7V or less from alternator at any time during driving)
SBI or BCDC1206	BCDC1206	BCDC1206
SBI or BCDC1220	BCDC1220	BCDC1220-IGN
SBI or BCDC1225	BCDC1225	BCDC1225-LV
SBI or BCDC1240	BCDC1240	BCDC1240-LV

Typically vehicles released from late 2011 onwards with common rail diesel motors are fitted with ECU Controlled Variable Voltage Alternators such as the Nissan Pathfinder and Navara, Ford Ranger and various Range Rovers. The best way to determine your alternators characteristics is to go for a drive with a voltmeter on the main battery. Put the vehicle through varied driving conditions and record the minimum voltage found. Driving condition variations should include:

- Engine temperature, cold and operating temperature
- Vary engine load
- Vary electrical load

It is important to ensure that the correct BCDC is selected for your vehicle, application, and battery charging requirements. Below is a quick reference chart of the vehicles that have been identified to date. If you have any questions or require help choosing the right BCDC for your vehicle, please call our technical helpline to discuss on (08) 8322 4848.

Further information, please contact REDARC: Ph (08) 83224848, Fax (08) 83872889
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Fixed Voltage Alternators	Temperature Compensating Alternators	Variable Voltage Alternators
Generally most Pre 2000 Vehicles have fixed Voltage Alternators that will provide a sufficient state of charge to an auxiliary battery, depending on the battery chemistry type and the fixed voltage level of the alternator. For these vehicles, the SBI can be used successfully for dual or multi auxiliary battery systems. An advantage of using the BCDC in these vehicles is when there is a long cable run from the main battery to the auxiliary battery, the BCDC will overcome voltage drop and provide a boosted voltage.	Some Post 2000 Vehicles have Temperature Compensating Alternators. Mainly vehicles fitted with Common Rail Diesel engines utilise this style of alternator. The Temperature Compensating Alternator will charge at approximately 14V when the engine is cold, and decreases to as low as 13.2V when the engine reaches operating temperature. For this reason, the alternator may only charge a dual or multi auxiliary battery system to 60-70% state of charge at best, depending on the battery chemistry type used.	Some Vehicles released in late 2010 onwards with Common Rail Diesel and Petrol engines have Variable Voltage Alternators that are on the vehicle CANBUS. These alternators vary output based on driving conditions at the time. The range of voltage can be between 12.3V and 15V. For this reason, the alternator may not charge a dual or multi auxiliary battery bank at all at times, and may apply too high a voltage for the auxiliary battery chemistry type at other times.
Known Vehicle with Fixed Voltage Alternators	**Known Vehicles with Temperature Compensating Alternators**	**Known Vehicles with Variable Voltage Alternators**
Most Pre 2000 Vehicle	Toyota Hilux D4D Common Rail Diesel	VE Commodore onwards
VW Amarok up to 2014	Toyota Prado D4D Common Rail Diesel	Nissan D40 Navara 2011 onwards
Isuzu Dmax up to 2014	Toyota L/C 200 Series D4D Common Rail Diesel	Nissan R51 Pathfinder 2011 onwards
Holden Colorado up to 2014	Toyota L/C 76/79 Series D4D Common Rail Diesel	Hyundai Santa Fe 2010 onwards
Mitsubishi Triton up to 2014	Toyota Kluger 2010 onwards	Range Rover 4 2011 onwards
	BF Falcon onwards	BMW X5 2010 onwards
		Ford Ranger 2011 onwards
		Mitsubishi Pajero 2012 onwards
		Mazda Spirit 2012 onwards
		Mazda BT50 2011 onwards – some models
		Land Rover Disco 4
		Subaru Forester 2012 onwards
		Nissan Patrol V8 2012 onwards
		Jeep Grand Cherokee 2013 onwards