

NAME	VR-B3102 Electrical Specification	NO	VR-1-1-1873
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<p style="text-align: center;">Regulation System Connection Wire Diagram</p>	<p>Regulator Features :</p> <ul style="list-style-type: none"> ● Voltage Set Point : 13.8V (Default Vset) ● Voltage Set Point : 14.3 V (L(PWM) 70 % duty cycle) ● Regulation : B – Circuit ● Inactive Lamp ● Soft Start ● Short Circuit Protection ● L Terminal connected to Computer ● F Terminal connected to Computer
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PARAMETERS AND CONDITIONS		SYMBOLS	MIN.	TYP.	MAX.	UNITS
Operating Temperature Range		T_{OP}	-40	---	125	°C
Field		I_F	---	5	---	A
Voltage Set Point (2500 RPM, at 20A load)	@ L = 20% duty cycle	V_{SET}	11.20	11.50	11.80	V
	@ L = 70% duty cycle		14.00	14.30	14.60	
	@ L = 90% duty cycle		15.30	15.60	15.90	
	@ L open (Default)		13.50	13.80	14.10	
Speed Regulation (2000 RPM to 6000 RPM ,at load = 15A)		V_{SR}	---	-0.1	-0.3	V
Load Regulation (10% to 95% ,at Speed = 6000 RPM)		V_{LR}	---	-0.3	-0.5	V
Saturation Voltage @ 5A, 12Volts		V_{SAT}	---	0.4	0.5	V
Standby Current (Key off, VBAT = 12.6V)		I_{SB}	---	---	1.0	mA
Temperature Coefficient		T_C	-6	-3	0	mA/°C
Soft-Start Duty		D_{SS}	10	25	35	%
Cut-in Speed		R_{CIS}	---	---	1600	RPM
Over Current Protection Threshold (@ 25°C)		I_{SD}	12	16	20	A
Thermal Shutdown Threshold		T_{SD}	150	160	170	°C
Regulator Operating frequency		f_{Reg}	100	250	400	Hz
L signal frequency (Suggested best test condition.)		f_L	83	128	173	Hz

Safety Characteristics:

- **Over voltage :** $V_s = 24 V$, 60 sec. from the ignition SW. is turned ON/OFF without failure.
- **Short Circuit Protection :** The regulator shall stand **short circuit on Field** without failure and return normal operation within 2 seconds once short condition is removed.
- **Repetitive Thermal Shock :** The Regulator shall be designed to withstand 500 cycles of -30°C to 125°C in 20 minutes and 125°C to -30°C in 20 minutes.
- **High Temperature Test :** The regulator shall be designed to operate reliably at the load from 80% to 100% of the alternator rated current and at 6000 rpm (shaft speed) for a minimum of 10 hours at 125°C.

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