

## DIGITAL VOLTAGE REGULATOR

Rev: 00, March 2015, [www.variturn.com](http://www.variturn.com)

0 to 6V, 12A, 72W



### Description:

Digital Voltage Regulator (DVR) is a variable regulator, which regulates DC from 27V typical (18-33V) to 0 to 6V in 42 steps by rotating Knob on front panel to regulate the intensity of illumination of aircraft instruments internal light and placed on instrument panel. This has two independent channels with 27 VDC (typ) as input to each channel. The input 18 to 33 V (Nominal 27V) is regulated to 6V DC and varied from 0 to V to control the intensity of illumination.

By rotating knob on front panel in clock wise direction, the voltage increases from 0 to 6 V DC and as well as in counter clock wise direction, the voltage decreases from 6 to 0V DC. Knob on front panel with no extreme limit positions. Rotation of regulator knob with the power supply off does not change the last stored value of output voltage.

When knob in clock wise direction, and with the maximum output voltage value attained within a maximum of one turn of the knob and further rotation of the knob not resulting in any voltage increase. As well as when knob in counter clock wise direction, and with the minimum output voltage value attained within a maximum of one turn of the knob and further rotation of the knob not resulting in any voltage decrease.

### Applications:

- Intensity control of LEDs or display.
- Time Critical Projects
- Adjustable 'CV' mode.
- DC—DC conversion.

### Key Features:

- Efficiency up to 90%
- Two channel input and output.
- Wide input range : 18 - 33VDC per channel
- Variable output from 0 to 6V in 42 steps per channel.
- Output current maximum of 6A per channel.
- 72W maximum output power.
- 100W max output power if heat sink added.
- Stand by Mode: 0 to 1.2V.
- YELLOW indication in stand by mode.
- Operation Mode: 1.2 to 6V.
- GREEN indication in operation mode
- Over current protection.
- RED indication in Over current protection mode
- Indication of non-presence of input voltage.
- Rotation of regulator knob with the power supply 'OFF' does not change the last stored value of output voltage.
- Knob is multiple turn with no extreme position limits.
- Small in size.
- -40 to +65°C.

### VARITURN ELECTRO PRODUCTS (P) LTD.

196, Phase-II, IDA, Charalapally, Hyderabad-500051, Telangana, INDIA.  
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## Electrical Specifications:

Parameter	Specification
Input voltage	18-33 VDC (Nominal: 27VDC)
Output voltage	0-6VDC (Variable in steps)
Number of input channels	2
Number of output channels	2
Total steps	42
Step 1 to 2 (Standby mode)	0 to 1 V
Step 3 to 3 (Standby mode)	1 to 1.2V
Step 3 to 38 (Operation mode)	1.2V to 6V
Fuse at input side in both channels	2A
Maximum Load current	6A per channel
Continuous operating time	24 h (min)
Warm up time upon power application	10 s max
Time between failures	50000 h min

## Special Features:

Parameter	Specification
Rotation of regulator knob with the power supply off does not change the last stored value of output voltage	
Knob is multiple turn with no extreme position limits	
Standby mode	LEDs K and <input type="checkbox"/> illuminates continuous YELLOW.
Operation mode	LEDs K and <input type="checkbox"/> illuminates continuous GREEN.
To increase the output voltage from 0 to 6V	Clock wise direction in one full rotation.
To decrease the output voltage 6 to 0V	Counter clock wise direction in one full rotation.

## Mechanical Specifications:

	Length (mm)	Width (mm)	Height (mm)
Excluding Front panel knob	109 ±0.2	48 ±0.1	48 ±0.1
Including Front panel knob	135 ±0.2	48 ±0.1	48 ±0.1

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## Environmental Specifications:

Parameter	Specification
Vibration	Loads in the frequency range of 5 through 2KHz
Displacement amplitude	2.5mm max
Impact loads with acceleration	Up to 78.4 m/ s <sup>2</sup>
Linear acceleration	Up to 10 g , Up to 15 g – for attachment fittings
Reduced atmospheric pressure	Up to 2.3 kPa (17 mm Hg)
High ambient operating temp	+65°C
Low operating temp	-40°C
Short time High operating temp	+85°C
Limit High temp	+65°C
Limit Low operating temp	-40°C
Relative humidity	96 % max at +40°C
Sea water spray with water content	3 g/ m <sup>3</sup> dispersion of 20 um max at +35°C
Dew and internal icing	---
Radiation solar	---
Acoustic noise	<130 dB
1Static dust (sand)	Humidity of 50 %, circulation rate of 1.0 m/s, and concentration of 3 g/m <sup>3</sup>

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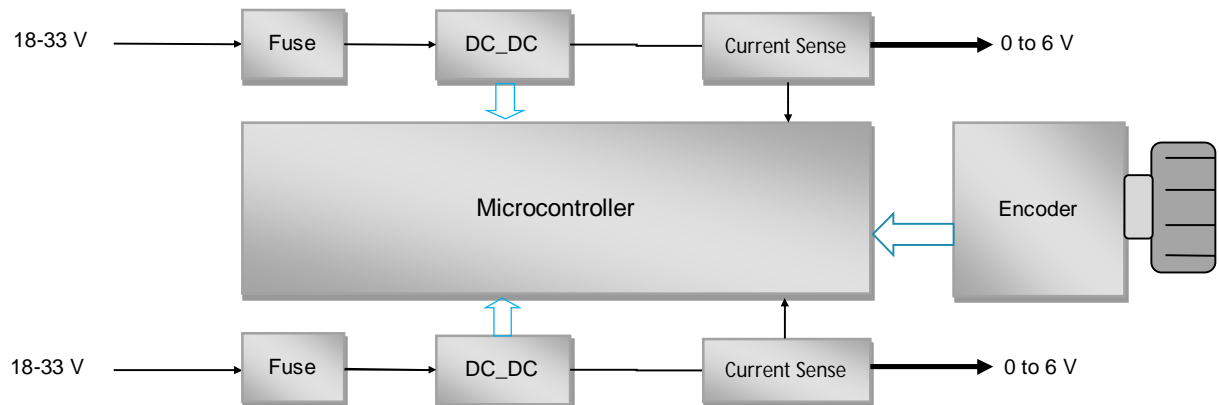
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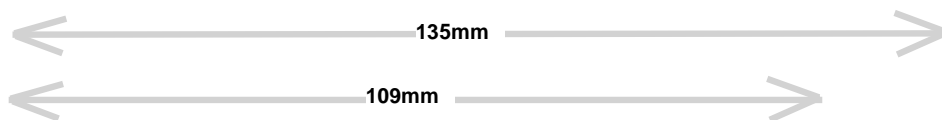
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### Functional Block Diagram:



### Mechanical Outline:



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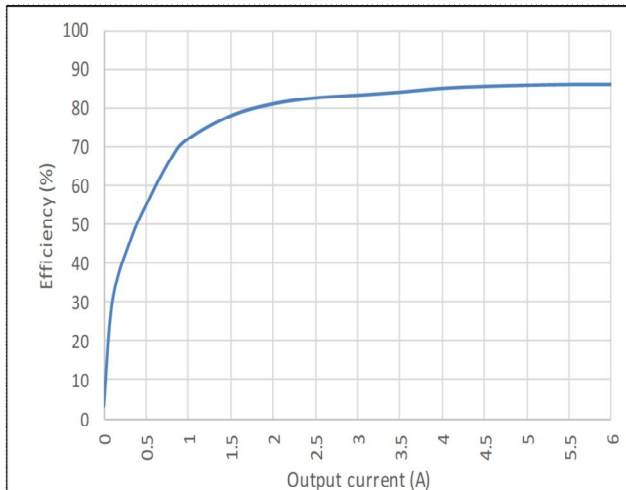
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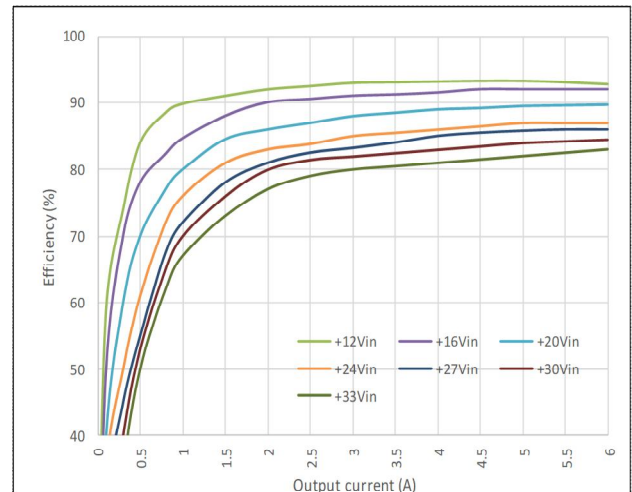
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### Performance Graphs:

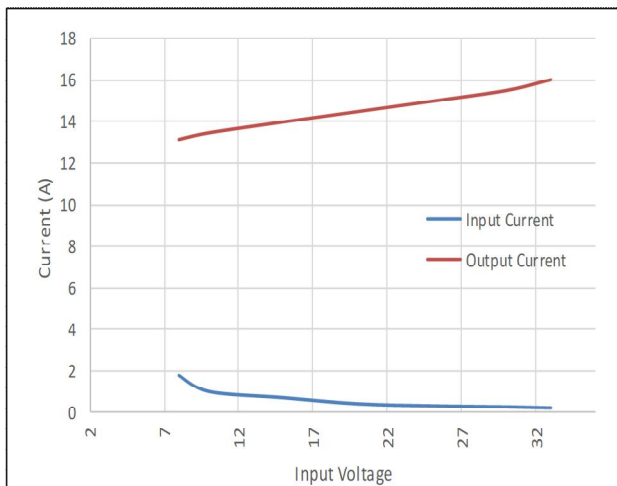
Efficiency:  $V_{IN} = 27V$ ,  $V_{OUT} = 6V$



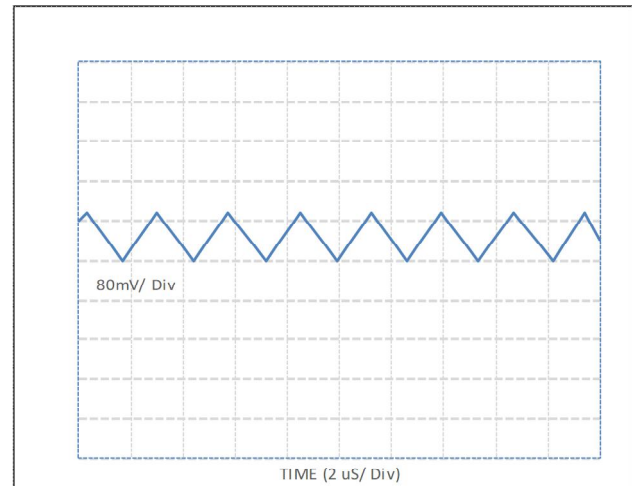
Efficiency:  $V_{OUT} = 6V_{DC}$  @  $25^{\circ}C$



Short circuit current



12VIN, 6VOUT @ Full Load, BW = 20 MHz



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## Interface details:

Location	Connector Type	Description	Input/Output	From/ To	Signal Type	Signal value		
						Min	Typ	Max
Rear Panel	CH1	3 pin Terminal block	Interface for Channel-1	Input	From System	DC	18 V	27 V
				Output	To System		0	--
	CH2	3 pin Terminal block	Interface for Channel-2	Input	From System	DC	18 V	27 V
				Output	To System		0	--
	K	Multi-color LED	Indication for Channel-1	Output	Indication	Light	--	--
	Π	Multi-color LED	Indication for Channel-2	Output	Indication	Light	--	--
Front Panel	---	Knob	To change the output voltage	Input	Manual	Manual	--	--

## Connector (CH1) details:

Sl.no	Pin Number	Description
1	1	27 VDC (Typ)
2	2	GND
3	3	Variable from 0 to 6V

## Connector (CH2) details:

Sl.no	Pin Number	Description
1	4	27 VDC (Typ)
2	5	GND
3	6	Variable from 0 to 6V

## Indicator ('K' LED) details:

Sl.no	Indication	Description
1	Continuous YELLOW	Channel-1 Standby mode
2	Continuous GREEN	Channel-1 Operating mode
3	RED (max of 1 sec)	Channel-1 Output short
4	YELLOW/ GREEN blinking 500msec 'ON' and 500msec 'OFF'	Channel-1 fine and Channel-2 input not present
5	YELLOW/ GREEN blinking 200msec 'ON' and 200msec 'OFF'	Channel-1 fine and Channel-2 input not present and Knob is rotating
6	OFF	Channel-1 and 2 input not present or Channel-1 indication problem

## Indicator ('Π' LED) details:

Sl.no	Indication	Description
1	Continuous YELLOW	Channel-2 Standby mode
2	Continuous GREEN	Channel-2 Operating mode
3	RED (max of 1 sec)	Channel-2 Output short
4	YELLOW/ GREEN blinking 500msec 'ON' and 500msec 'OFF'	Channel-2 fine and Channel-1 input not present
5	YELLOW/ GREEN blinking 200msec 'ON' and 200msec 'OFF'	Channel-2 fine and Channel-1 input not present and Knob is rotating
6	OFF	Channel-1 and 2 input not present or Channel-2 indication problem

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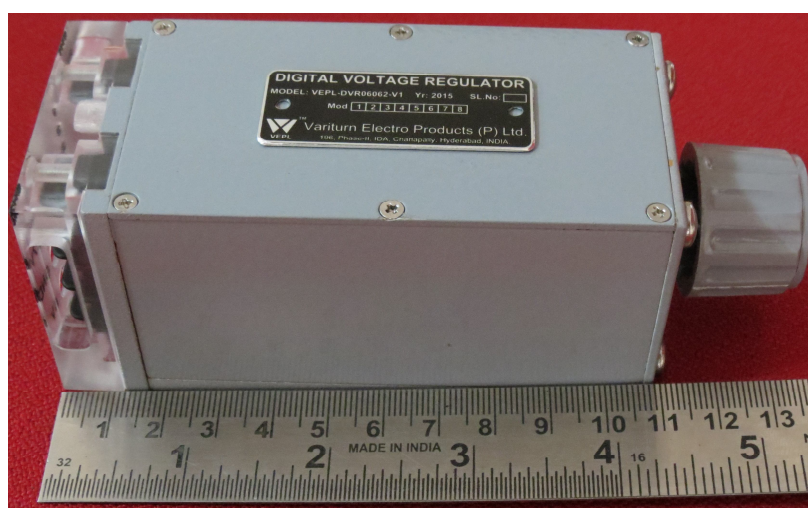
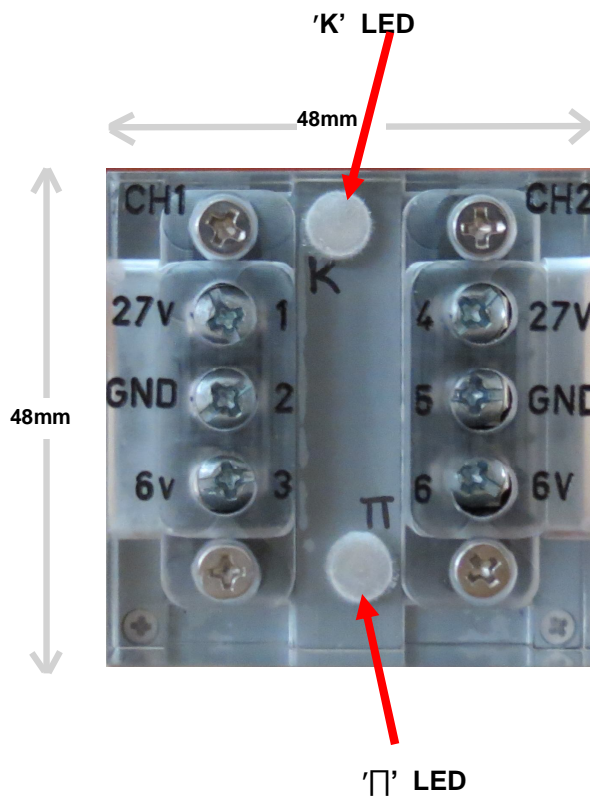


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Rear panel details:



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