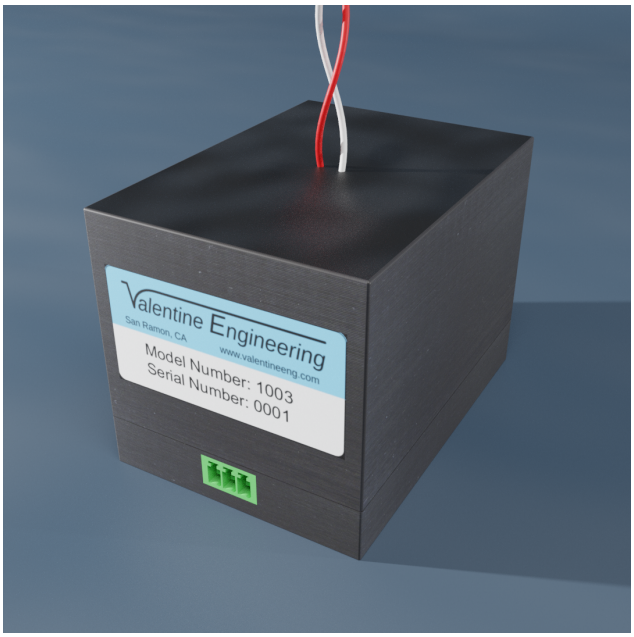
Valentine Engineering

VE-1003

VE-1003 Data Sheet



DESCRIPTION

The **VE-1003** is an isolated DC to DC converter power supply that can withstand up to 20 kVDC across its input/output connections.

The power supply's input accepts 24 VDC. The input is protected against short circuits with a PPTC resettable fuse and against overvoltages with a transient voltage suppressor.

The power supply's output delivers unregulated 15 VDC at 20 W and can support up to 30 W under increased voltage loading (see figure 2). The output can be connected to provide either a positive or negative polarity and is typically followed by a regulator circuit in the end users electronics.

FEATURES

- 24 VDC input
- 15 VDC, 20 W output
- Positive or negative output polarity
- 20 kV high voltage isolation
- Output power on LED indicator
- Input short circuit and transient overvoltage protection
- Pluggable input terminal block
- 18 AWG output wires
- Compact epoxy cast package with separable low voltage and high voltage sections

APPLICATIONS

- High Voltage Electronics
- Triode Electron Gun Drivers

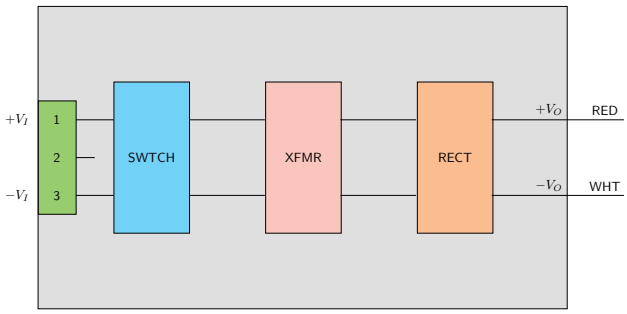


Figure 1: Block Diagram

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit	Notes & Conditions
Input Voltage	$V_{I\,max}$	26.4	V	TVS input protection
Output Power	$P_{O\,max}$	30	W	
Isolation Voltage	$V_{ISO\,max}$	20	kVDC	

Note: Stresses above those listed under Absolute Maximum Ratings can cause permanent damage to the device. This is a stress rating only. Functional operation of the device is not implied in any conditions above those indicated in the Electrical Specifications section.

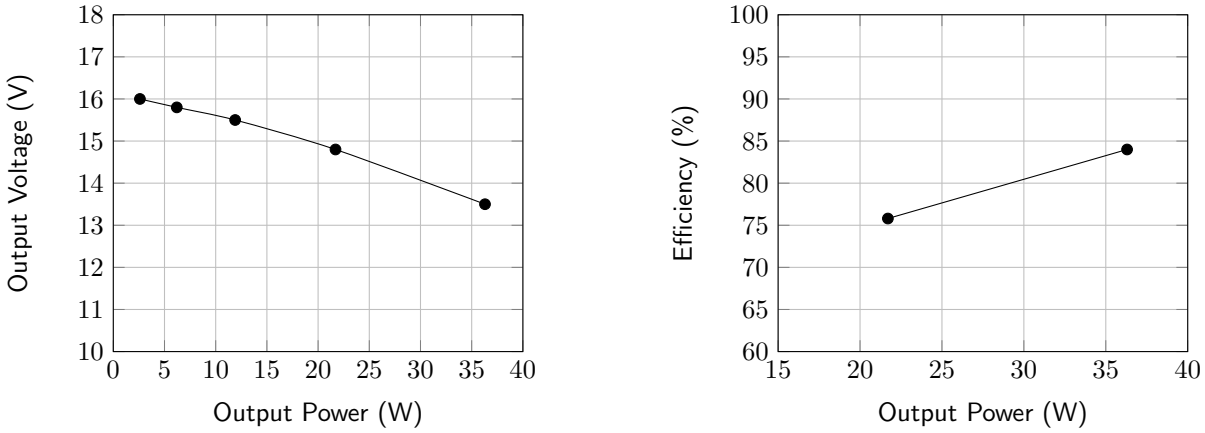
ELECTRICAL SPECIFICATIONS

Electrical Specifications: unless otherwise noted $T_A = +25\,°C$ with $V_{IN} = 24\,V$.

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes & Conditions
Input						
Input Voltage	V_I	22.8	24.0	25.2	VDC	
Input Current	I_I	-	1.1	1.2	ADC	Full load (20 W)
Efficiency	η	70	75	-	%	Full load (20 W)
Output						
Output Voltage	V_O	13.5	15.0	16.5	VDC	10% to 150% load[1] (2 W to 30 W)
Output Power	P_O		20		W	30 W with lower output voltage[1]
Ripple Voltage	-	-	2	5	%	Full load
Isolation Voltage	V_{ISO}		20		kVDC	
Regulation						
Load Regulation	-		< 10		%	10% to 100% load (2 W to 20 W)

[1] See figure 2 for typical output loading.

PERFORMANCE CURVES



(a) Output Voltage Loading **(b) Efficiency vs. Output Power**

Figure 2: Typical Performance Curves

MECHANICAL SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes & Conditions
Length	L	-	80	-	mm	
Width	W	-	58	-	mm	
Height	H	-	58	-	mm	
Mounting Length	ML	-	60	-	mm	
Mounting Width	MW	-	40	-	mm	

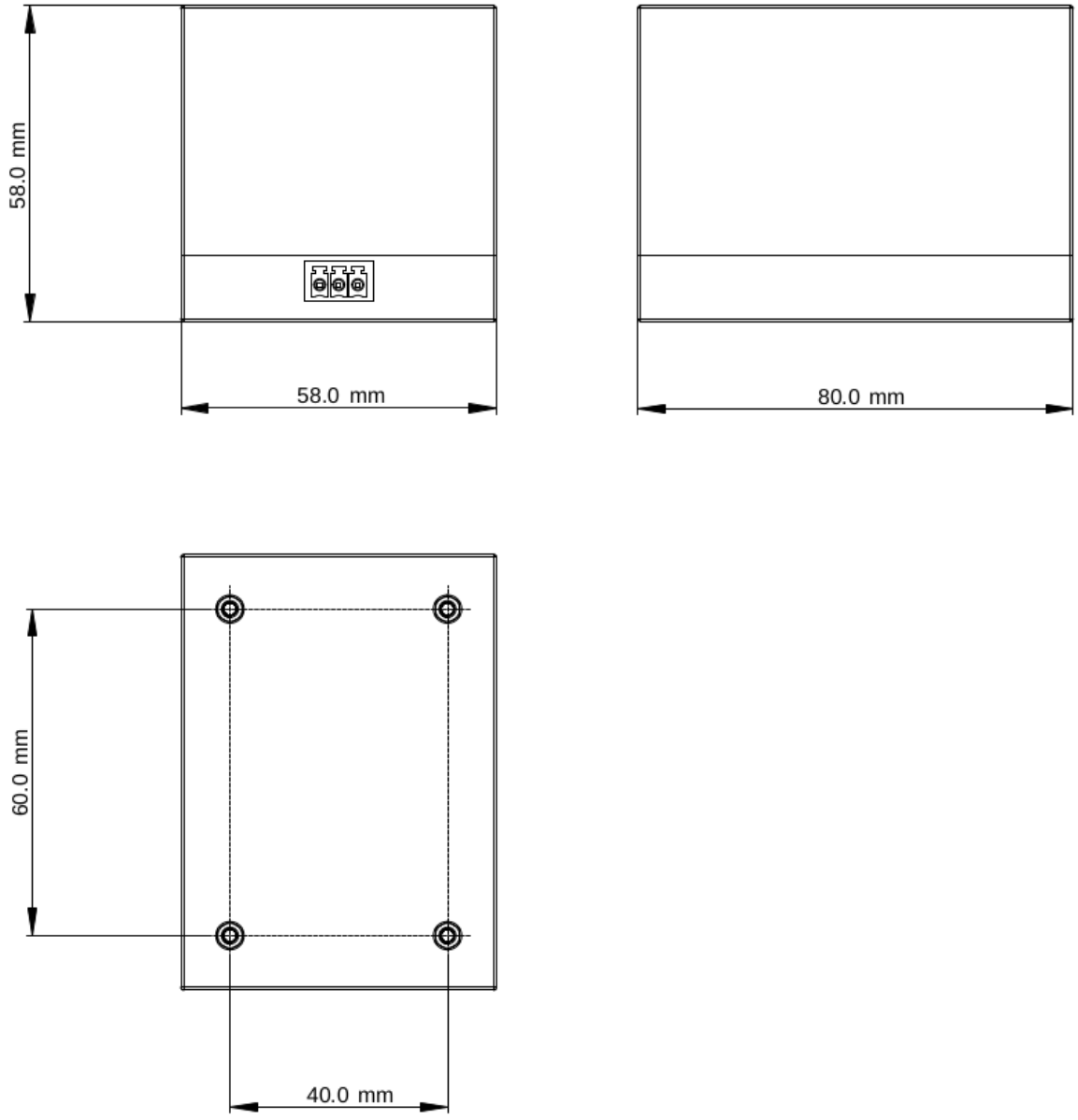


Figure 3: Mechanical Dimensions

ENVIRONMENTAL SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes & Conditions
Operating Temperature	T_A	10	25	40	°C	
Storage Temperature	T_A	-30	-	50	°C	
Operating Humidity	-	30	-	75	%	RH, non-condensing
Storage Humidity	-	10	-	90	%	RH, non-condensing

INTERFACE

Location	Type	ID	Description
Electrical			
Input	Terminal Block[1,2]	1	Input power supply ($+V_I$)
		2	No connection
		3	Input power return ($-V_I$)
Output	18 AWG Wire	RED	Positive output lead ($+V_O$)
		WHT	Negative output lead ($-V_O$)
Mechanical			
Bottom	M3 × 0.5 mm Thread	-	Chassis mounting (4), brass

[1] Mating connector: TE Connectivity 284506-3
[2] **Pin 1** is located on the **left** when facing the front.

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