



VP ELECTRONIQUE

EA-0124

J DK) \$\$\$!6&

500Watts Medical and ITE
Single Output

Open Frame Type Switching Power Supply

FEATURES

- Both ITE & Medical Approvals.
- High Power density, 500W in 5" x 3" footprint.
- Medical safety approved (2 x MOPP between primary to secondary.)
- Altitude during operation: ITE up to 5000m ,Medical Below 3000m.
- Meet Medical BF rated.
- 3 years warranty.

ELECTRICAL SPECIFICATIONS

- Input range : 90 - 264VAC (Refer to derating curve).
- Frequency : 47 - 63Hz.
- Power Factor : > 0.95 @115VAC; > 0.90 @230VAC @full load.
- Inrush current : <40A peak @115VAC; <80A peak @230VAC cold start @25°C.
- Input current (rms) : 6.3A @115VAC; 3A @230VAC max.
- Efficiency : > 93% typical @70% full load, 230VAC.
- Touch current < 100uA @264VAC.
- Maximum output power : 500Watts forced air cooling.
- Hold-up time : > 16ms typical @80% full load, 115VAC.
- Short circuit protection : Auto-recovery.
- Over load protection : Auto-recovery.
- Over voltage protection : Latch off type. AC Recycle.
- Over temperature protection : Latch off type. AC Recycle.



B-Type
open frame
L127xW76.2xH34mm
Weight: 420g



E-Type
U Channel with cover
L143xW87.2xH46.5mm
Weight: 550g

SAFETY STANDARDS

UL60601-1 3.1st Edition
TUV EN60601-1 3.1st Edition
CB IEC60601-1 3.1st Edition
UL/c-UL UL62368-1
TUV EN62368-1
CB IEC62368-1

EMC STANDARDS

EN60601-1-2
EN55011 Class B
EN55032 Class B
EN55035
FCC Part 15 Class B
FCC Part 18 Class B
CE

ENVIRONMENTAL

- Operating temperature : -20 to +70°C (Refer to derating curve).
- Operating Humidity: 10% to 95%, non-condensing.
- Storage temperature: -20°C to +85°C.
- Storage Humidity: 0% to 95%, non-condensing.
- MTBF : > 240,000 hours@full load and 25°C ambient temperature per Telcordia(Bellcore).

DC OUTPUT & FEATURES

Model No.		Main Output (V1)				Output (V2)	Convection total power (100-120Vac)	Convection total power (200-264Vac)	25CFM Forced air total power
		Output Voltage	Convection (100-120Vac)	Convection (200-264Vac)	Forced air	12VFAN			
B-Type	VPW-500B2-1Y120Z	+12V	18.33A	23.33A	41.6A	12V/0.3A	220W	280W	500W
	VPW-500B2-1Y240Z	+24V	9.16A	11.66A	20.8A				
	VPW-500B2-1Y480Z	+48V	4.58A	5.83A	10.4A				
E-Type	VPW-500B2-1Y120Z	+12V	17.5A	23.33A	41.6A	12V/0.3A	210W	280W	500W
	VPW-500B2-1Y240Z	+24V	8.75A	11.66A	20.8A				
	VPW-500B2-1Y480Z	+48V	4.37A	5.83A	10.4A				

- Note:**
- Output connector options: **Z=T** (Terminal block type) , **Z=M** (Mini Fit type) or **Z=C** (Connector type)
 - Output voltage regulation 12V \pm 3% , 24V and 48V \pm 2% , With ripple and noise \leq 1% for all models.
(-1~-20°C ambient temperature and EMS immunity output voltage regulation worst case \leq 5%)
 - Ripple and noise are measured at oscilloscope 20MHz bandwidth by a 100uF electrolytic capacitor and a 0.1uF ceramic capacitor in parallel at output wire 300mm length connector.
 - Convection total Power, B-Type 220W or E-Type 210W (input 100-120Vac) or 280W (Input 200-264Vac) and 500W forced air cooling.
 - Output derating refer operating derating curve.
 - The switching frequency of this series is set 60~90KHz at full load.

REV. 1.0



SAFETY AGENCY CERTIFICATIONS

Safety and EMC Performance

Description	Safety	EMC
Medical equipment	IEC 60601-1:2005+A1 Third Edition (IEC 60601-1:2012 reprint) EN 60601-1:2006+A11+A1+A12 ANSI/AAMI ES60601-1:2012 + A1+ A2 CAN/CSA C22.2 No. 60601-1:14 - Edition 3	EC/EN 60601-1-2 Ed4:2014 & EN55011 and FCC Part 18
Audio/video, ITE equipment	IEC 62368-1:2014 (Second Edition) EN 62368-1:2014+A11:2017 UL 62368-1, 2nd Edition, CAN/CSA C22.2 No. 62368-1-14, 2nd Edition	EN55032 & EN55035 & FCC part 15 (*) and ICES-003

Tests for conformance to this requirement will be performed with final system

(*) FCC PART15 compliance information and warnings:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and**
- (2) this device must accept any interference received, including interference that may cause undesired operation.**

Insulation level and dielectric withstand (HI-POT)

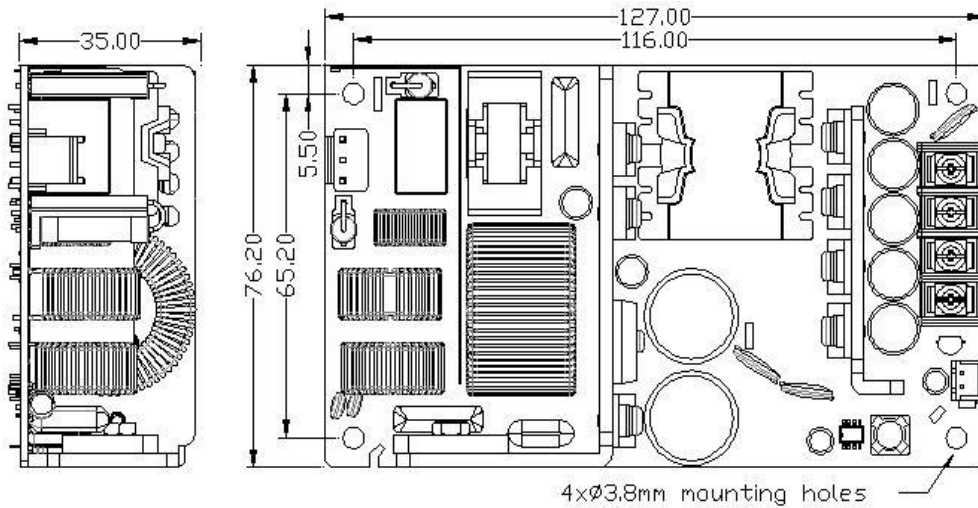
Medical equipment	Isolation voltage	Means of patient protection
Primary circuits to secondary circuits	5656Vdc	2MOPP
Primary circuits to earth ground	2121Vdc	1MOPP
Secondary circuits to earth ground	2121Vdc	1MOPP

Audio/video, ITE equipment	Isolation voltage	Grade insulation
Primary circuits to secondary circuits	4242Vdc	Reinforced
Primary circuits to earth ground	2121Vdc	Basic
Secondary circuits to earth ground	2121Vdc	Basic

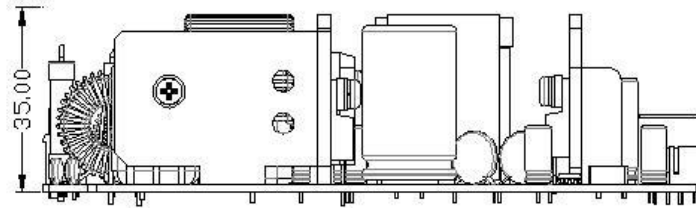
Note: Production testing use DC voltage test 4 Sec.

MECHANICAL SPECIFICATION

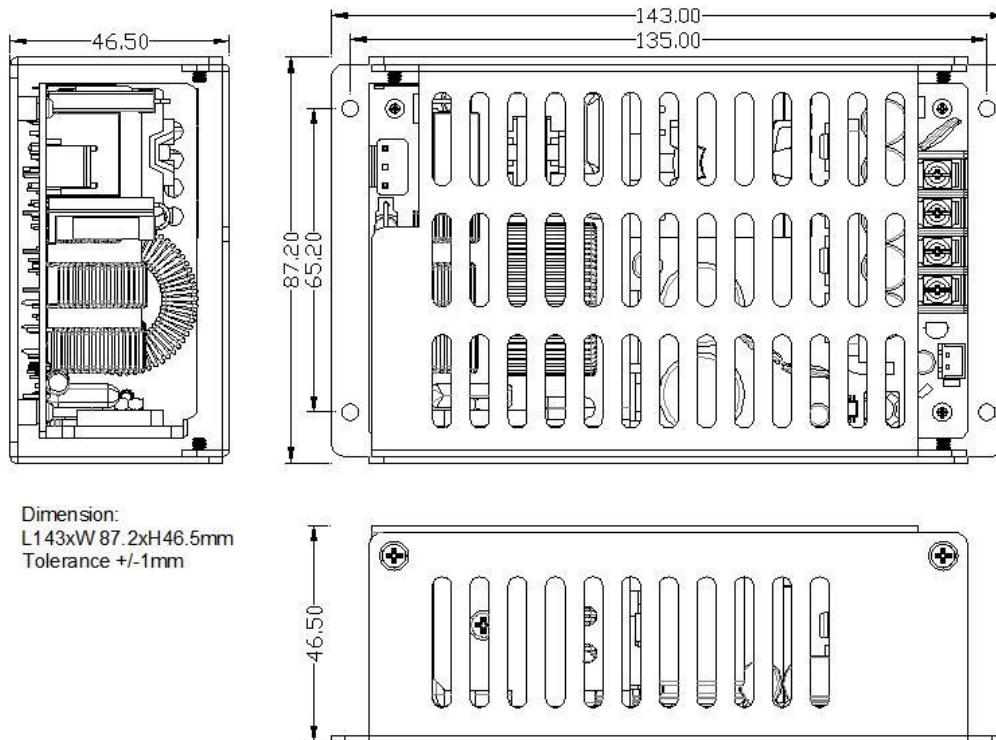
B-Type (open PCB)



Dimension:
L127xW76.2xH35mm
Tolerance +/-1mm



E-Type (U Channel with cover)

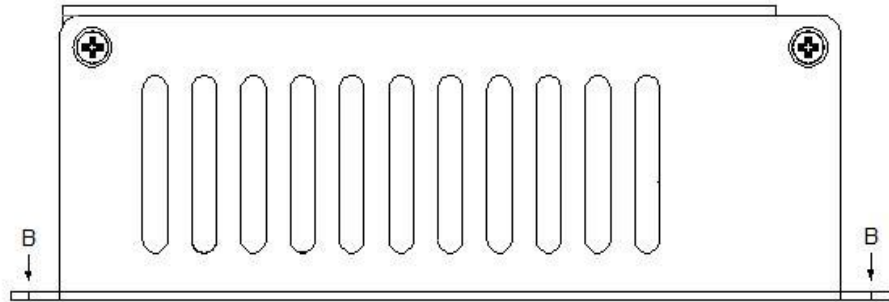
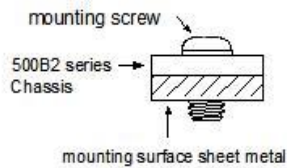


Dimension:
L143xW 87.2xH46.5mm
Tolerance +/-1mm

B-Type four positions of mounting holes and E-Type chassis must be securely connected to protective earth ground in the final system assembly for optimum SAFETY and EMI performance.

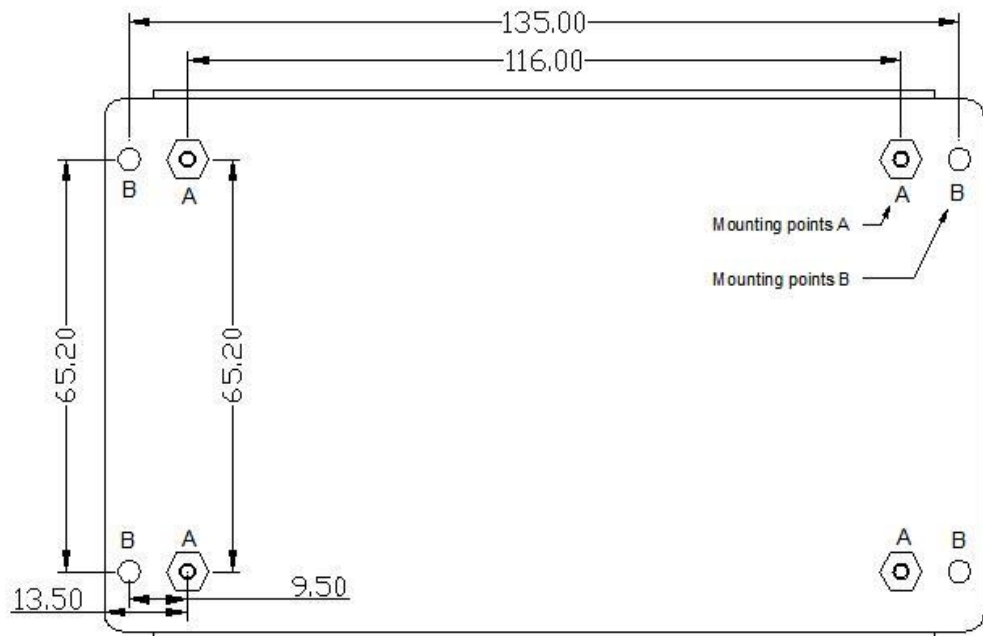
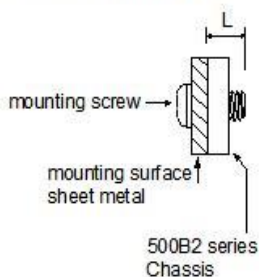
MOUNTING POINTS NOTES AND MOUNTING METHOD

Mounting points B notes



Mounting points A notes

L : max penetration depth



Mounting points A, M3X0.5 thread, Max. Penetration depth (L) 2.5mm.

Mounting points B, Fixing holes $\varnothing 3.5$ mm to accommodate M3 screws. For you design application.

Mounting points A Recommended torque for mounting screw : 1-2 Kgf-cm.

Mounting points B Recommended torque for mounting screw : 2-3 Kgf-cm.

MODEL NUMBERING SCHEME

VPW - 500B2 - 1Y 120 B T ZZZZ

Output Voltage

Any number or Blank

B : B-Type (open PCB)

E : E-Type (U Channel with cover)

T : Screw Terminal Block output

M : 4.2mm pitch Mini-Fit type output

C : 3.96mm pitch Connector type output

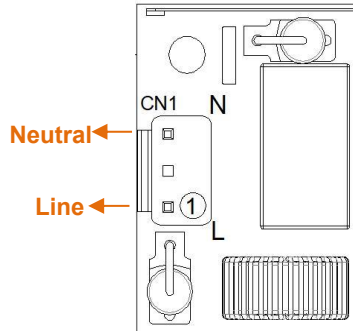
Examples :

VPW-500B2-1Y240BM :

500W / 24Vdc, B-Type (open PCB type),
output connector, 4.2mm Mini-Fit connector.

MATCHING CONNECTORS

AC input connector (CN1)



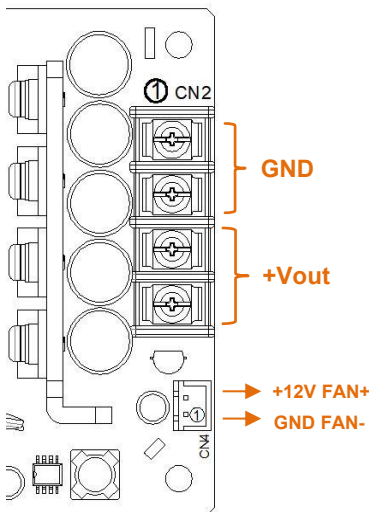
CN1: Input Connector

JST B3P-VH-B pitch: 3.96mm or equivalent,
mates with JST VHR-3N or equivalent

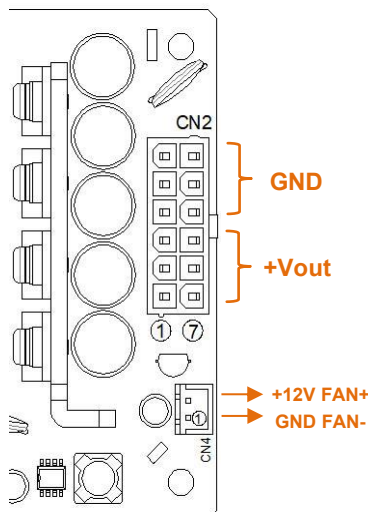
Pin #	Signal
1	AC Line
2	AC Neutral

Main output optional type (CN2)

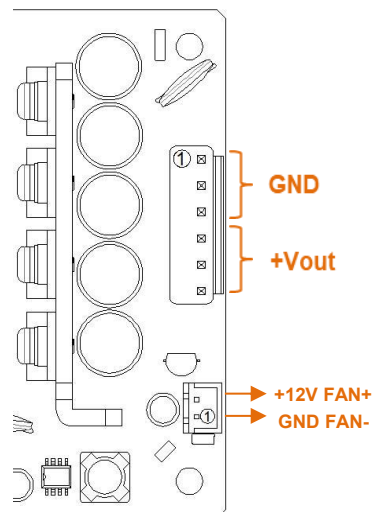
Terminal Block Type



Mini Fit Type



Connector Type



CN2: Main Output Connector

Terminal Block Type

4-Pole Terminal block pitch: 8.25mm ,
rate 20A/300V or equivalent

Pin #	Signal
1	GND
2	GND
3	+Vout
4	+Vout

Connector Type

JST B6P-VH-B pitch: 3.96mm or equivalent,
mates with JST VHR-6N or equivalent

Pin #	Signal	Pin #	Signal
1	GND	4	+Vout
2	GND	5	+Vout
3	GND	6	+Vout

12 PIN Mini-Fit Type

Molex P/N 353171220 Mini-Fit pitch: 4.2mm. or equivalent.
mates with Molex P/N 39012125 or equivalent.

Pin #	Signal	Pin #	Signal
1	+Vout	7	+Vout
2	+Vout	8	+Vout
3	+Vout	9	+Vout
4	GND	10	GND
5	GND	11	GND
6	GND	12	GND

CN4: FAN Output Connector

JST B2B-XH-A pitch: 2.5mm or equivalent,
mates with JST XHP-2 or equivalent

Pin #	Signal
1	GND FAN-
2	+12V FAN+



ENVIRONMENTAL

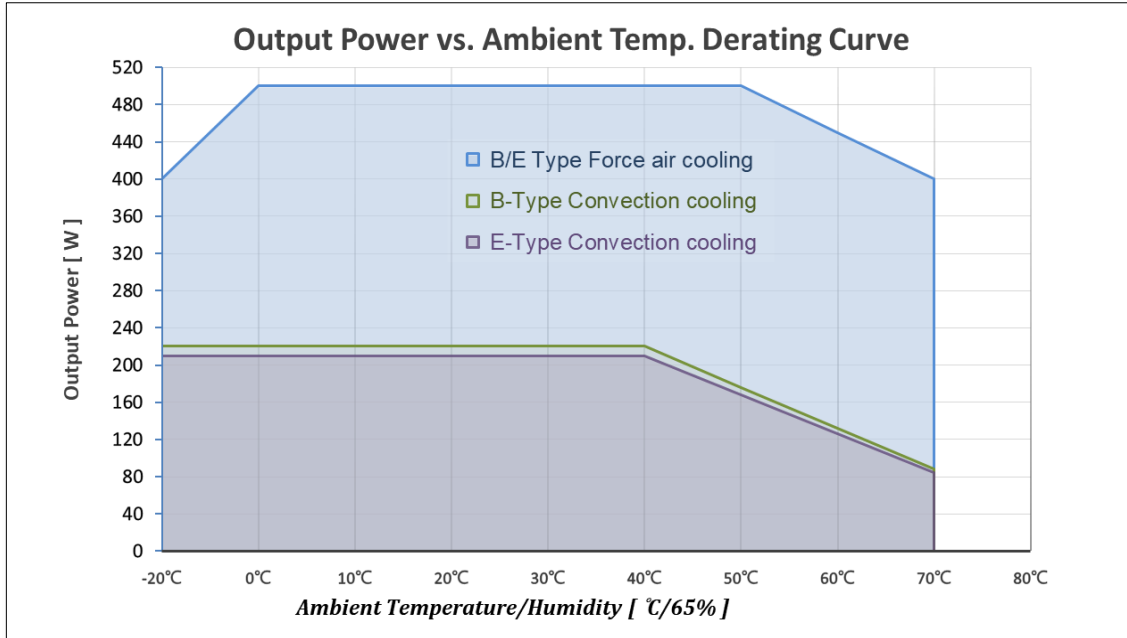
DERATING CURVE

Output power vs. Ambient Temperature.**AC input 100-120Vac Derating Curve**

B-Type Convection cooling 220W max. Derate linearly 2% per °C from 41 to 70°C

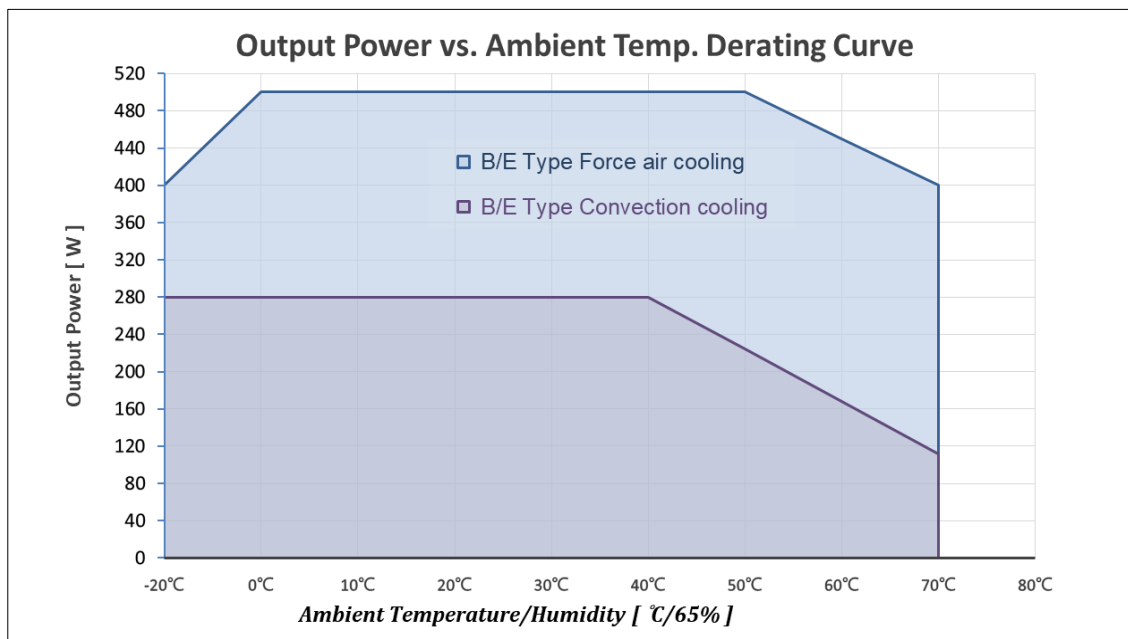
E-Type Convection cooling 210W max. Derate linearly 2% per °C from 41 to 70°C

Force air cooling 500W max. Derate linearly 1% per °C from 51 to 70°C and 1% per °C from -1 to -20°C

**AC input 200-264Vac Derating Curve**

B-Type and E-Type Convection cooling 280W max. Derate linearly 2% per °C from 41 to 70°C

Force air cooling 500W max. Derate linearly 1% per °C from 51 to 70°C and 1% per °C from -1 to -20°C





ENVIRONMENTAL

DERATING CURVE

Output power vs. Input voltage Derating Curve:

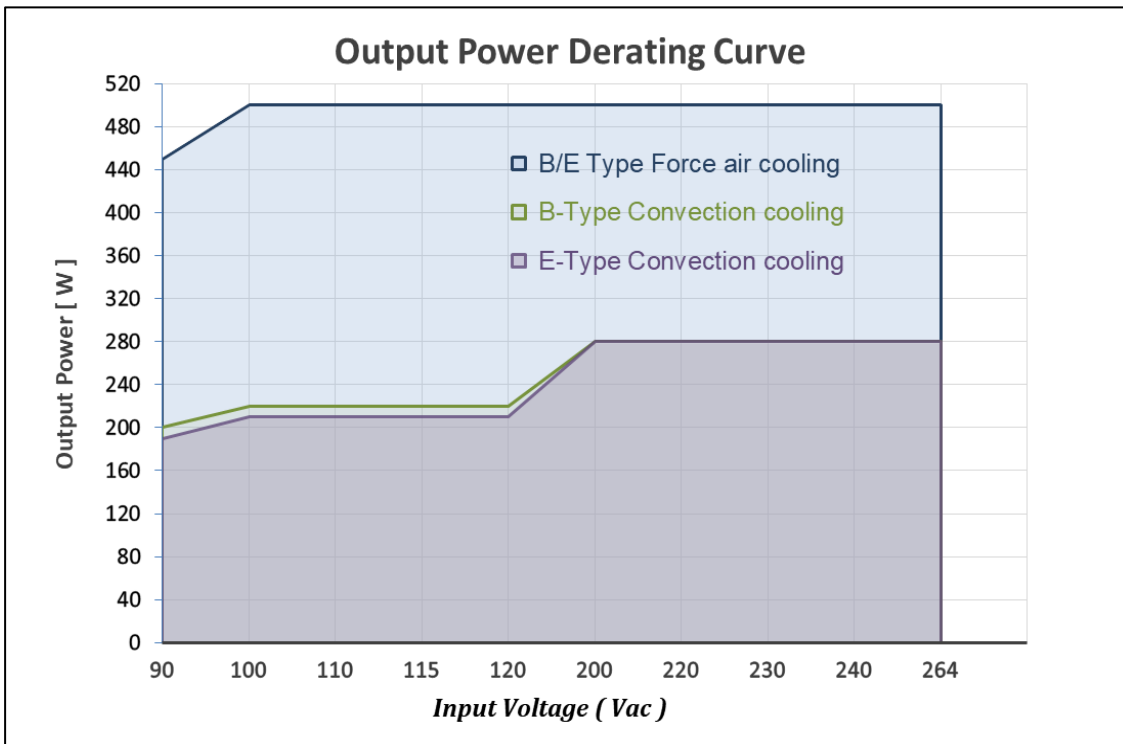
B/E Type Force air cooling 500W Max. Derate linearly 1% per Vac from 100 to 90Vac

B-Type Convection cooling Typical AC input 100-120Vac 220W max. Derate linearly 0.9% per Vac from 100 to 90Vac

E-Type Convection cooling Typical AC input 100-120Vac 210W max. Derate linearly 0.9% per Vac from 100 to 90Vac

B-Type and E-Type Convection cooling Typical AC input 200-264Vac 280W max.

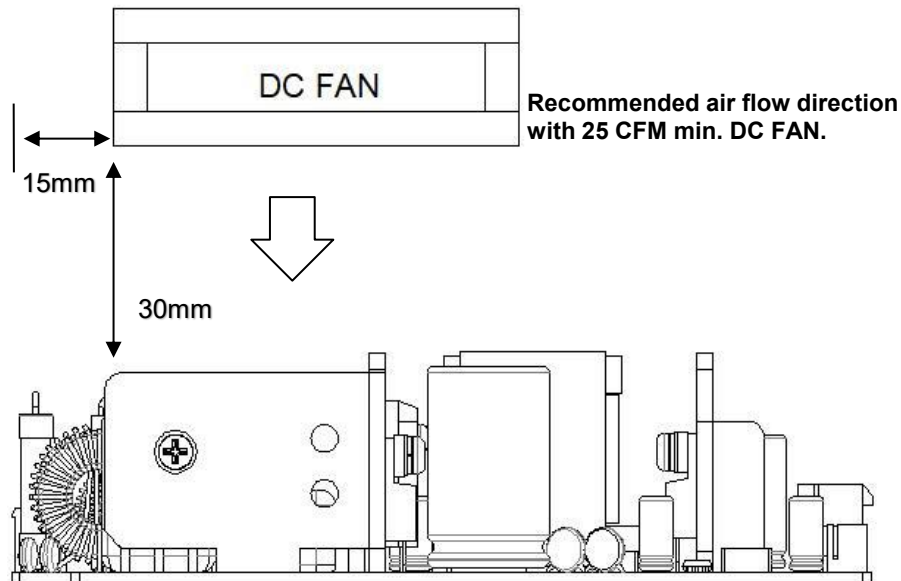
Force air cooling ambient temperature 50°C Max. Convection cooling ambient temperature 40°C . Max



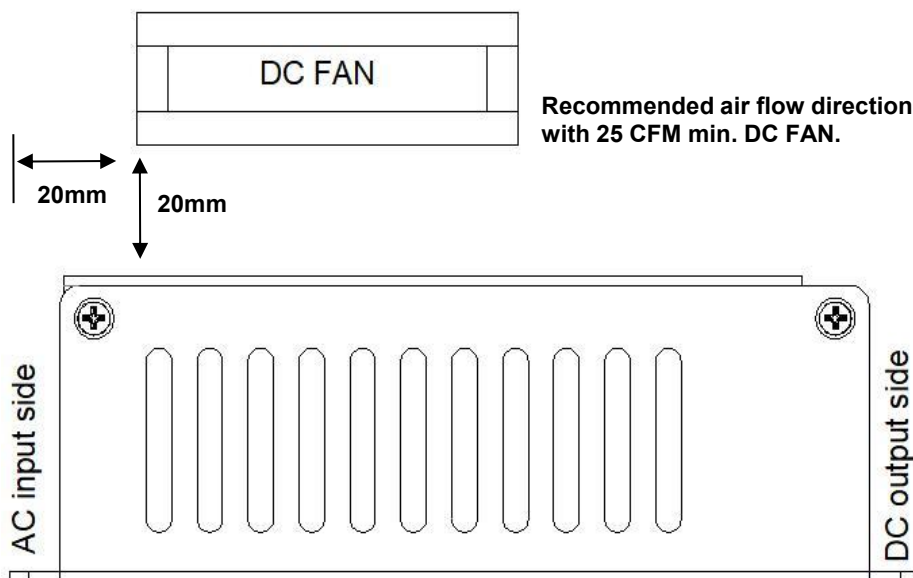
ENVIRONMENTAL

DC FAN Recommended Direction

B-Type



E-Type



Installation orientation and space or airflow conditions will affect the POWER SUPPLY temperature, depending on the final system application.