P-DUKE POWER

Innovative Power for your Visions.

XTBF500 Series
AC/DC Power Supplies

Industry

Highly Reliable AC/DC Power Supplies are Suitable for Diverse and Stringent Industrial Applications.

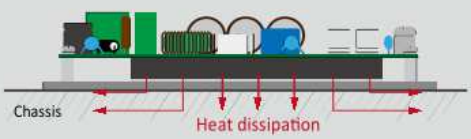
Rugged 500W AC/DC Power Supplies Utilizing Conduction Cooling are dedicated to Harsh Environments.

P-DUKE has announced the launch of the new XTBF500 AC/DC power supply series, available in open frame or enclosed form. The XTBF500 integrates the TBF500 full brick 500W AC/DC power supply and its peripheral circuits, such as EMC filters, start-up current limiters, large capacity capacitors, and aluminum substrates, to achieve the concept of "easy to use."

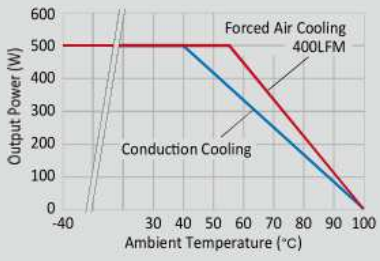
The XTBF500 series features a universal input voltage range of 85-264Vac. The output voltage is 12, 15, 24, 28, 48, and 54VDC, adjustable within a range of +10%/-10% via potentiometer. It also features slope current sharing to provide over 500W of power by paralleling multiple modules, as well as complete protection functions, including overcurrent protection (hiccup mode), short circuit protection (auto-recovery), and output overvoltage protection (latch).

To simplify the design, the XTBF500 has integrated all peripheral devices together to combine the advantages of a full brick module and a complete AC/DC power supply, in compliance with EMC standard EN/IEC 50032 Class B (CE Class B, RE Class A), start-up inrush current limiter function, and OVC III (overvoltage category). By conducting cooling on the system chassis, it can operate at full load up to 40 degrees to cope with harsh applications and demanding environments.

The XTBF500 is designed for challenging operating conditions and provides high reliability for various applications such as 5G communication, ESS, defense, robotics, and factory automation.



Conduction cooling by mounting on the system's chassis.



Derating curve; Vin= 230Vac

Features

- 500W Output Power
- Universal Input Range from 85 to 264 VAC
- Output Voltage: 12, 15, 24, 28, 48, and 54 VDC
- Up to 93% Conversion Efficiency
- 0.6W Power Consumption at No Load
- Power Good Signal
- Current Share Function
- OVC III
- 5000m Operating Altitude
- IEC/UL/EN 62368-1 Safety Approval

Applications

- 5G communication
- Industrial printers
- ESS
- Defense
- Robotics
- Factory automation

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P-DUKE POWER

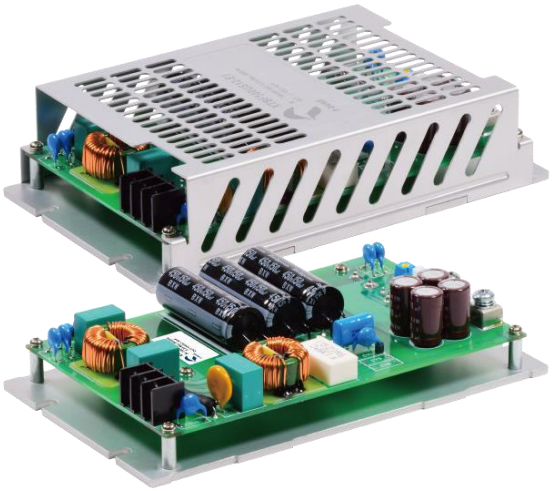
XTBF500 Series

AC-DC Power Supplies
Up to 500 Watts

3 YEARS WARRANTY

RoHS COMPLIANT

REACH COMPLIANT



Automation | Datacom | IPC

Industry | Measurement | Telecom

Automobile | Boat | Charger

Medical | PV | Railway

PFC Integrated | POWER SAVE

3000 VAC Reinforced Insulation | NO Min. Load Required | POWER GOOD | REMOTE ON OFF | Active Droop Current Share | LOW Standby Power | OCP | OTP | OVP | SCP | OVCIII

PART NUMBER STRUCTURE

XTBF	500	U	S	12	-	□	S
Series Name	**Output Power (W)**	**Input Voltage (VAC)**	**Output Quantity**	**Output Voltage (VDC)**		**Package Options**	**Load Share Options**
		U: Universal 85 ~ 264	**S:**Single	**12:**12 **15:**15 **24:**24 **28:**28 **48:**48 **54:**54		□: Open type **E1:** Enclosed type	□: None **S:** Load Share

TECHNICAL SPECIFICATION All specifications are typical at 230VAC input, full load and 25℃ unless otherwise noted

Model Number	Input Range	Output Voltage	Output Current @ 230VAC Conduction Cooling	Input Power @ No Load	Efficiency	Maximum Capacitor Load
	VAC	VDC	A	W	%	μF
XTBF500US12	85 ~ 264	12	42	0.8	91	16000
XTBF500US15	85 ~ 264	15	33.5	0.8	91	10000
XTBF500US24	85 ~ 264	24	21	0.8	93	2000
XTBF500US28	85 ~ 264	28	18	0.8	93	1000
XTBF500US48	85 ~ 264	48	10.5	0.8	93	470
XTBF500US54	85 ~ 264	54	9.4	0.8	93	470

INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	AC input DC input	85 88		264 370	VAC VDC
Input frequency	AC input	47		63	Hz
Input current	100VAC and full load 240VAC and full load			6.3 2.7	A
No load input power	230VAC		0.8		Watts
Power factor	230VAC and full load	0.9			
Start up time				2000	ms
Rise time			20		ms
Hold up time	115VAC and full load		16		ms
Input inrush current	230VAC and full load		30		A
Input protection			T10A/250VAC		

OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Output power	Conduction cooling @ 230VAC *Please refer to the derating curve for detailed rating.				500	Watts
Voltage accuracy	230VAC and full load		-1.0		+1.0	%
Line regulation	Low line to high line at full load		-0.2		+0.2	%
Load regulation	No load to full load 10% load to 90% load		-0.5 -0.4		+0.5 +0.4	%
Voltage adjustability	Maximum output deviation is inclusive of remote sense Only for load share models (-S suffix)		-10 -5		+10 +5	%
Remote sense	% of Vout(nom) If remote sense is not being used, sense pins should be connected to corresponding polarity OUTPUT pins.				10	%
Minimum load				0		%
Ripple and noise	Measured by 20MHz bandwidth					
	With a 1μF/50V 1206 X7R MLCC	12Vout 15Vout 24Vout 28Vout		200 200 240 280		mVp-p
	With a 1μF/100V 1206 X7R MLCC	48Vout 54Vout		480 540		mVp-p
Temperature coefficient			-0.02		+0.02	%/℃
Transient response	Load step from 50 ~ 75% change at 2.5A/μs Recovery within 1% Vout	Peak deviation Recovery time		3 600		% Vout μs
Over voltage protection	% of Vout(nom); Latch mode		115		135	%
Over load protection	% of maximum Iout rated; Hiccup mode			140		%
Short circuit protection				Continuous, automatics recovery		
Remote ON/OFF	External power supply is required Between +Ctrl and -Ctrl	Output ON Output OFF		0 ~ 0.8 VDC or Open 4.5 ~ 12.5 VDC		
		Input current			20	mA
Main output power good signal	Referenced to “-Vout”	Power good Power off				Low Open collector
Load share (-S suffix)	The converter can parallel to increase output current. It has internal load share function in this converter.			Active droop current share models		
Droop rate (-S suffix)	No load to full load			4		%
Load share accuracy (-S suffix)	Full load			20		%

GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute (Reinforced insulation)	Input to Output Input (Output) to F.G.	3000 2000			VAC
Isolation resistance	500VDC		0.1			GΩ
Switching frequency	230VAC, full load			180		kHz
Safety meets					IEC/ EN/ UL 62368-1	
Weight		Open type Enclosed type				580g (20.45oz) 640g (22.56oz)
MTBF	MIL-HDBK-217F, full load					2.500×10^5 hrs

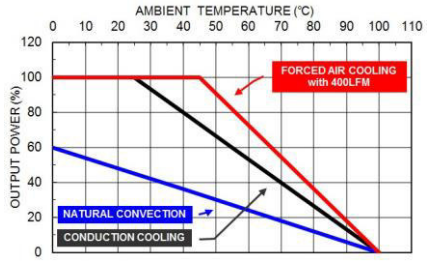
ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	With derating	-40		+100	℃
Storage temperature range		-55		+105	℃
Over temperature protection	Internal thermistor ; automatics recovery		115		℃
Operating altitude				5000	m
Shock					IEC60068-2-27
Vibration					IEC60068-2-6
Relative humidity					5% to 95% RH

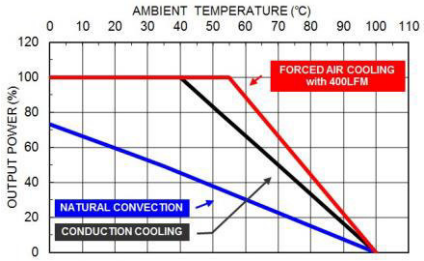
EMC SPECIFICATIONS

Parameter	Conditions		Level
EMI	EN55032 and FCC Part 15		Conducted Class B Radiated Class A
Harmonic currents	EN61000-3-2	Full Load	Class D
Voltage flicker	EN61000-3-3		
EMS	EN55035		
ESD	EN61000-4-2		Perf. Criteria A
Radiated immunity	EN61000-4-3	20 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	± 2kV	Perf. Criteria A
Surge	EN61000-4-5	DM ± 1kV and CM ± 2kV	Perf. Criteria A
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8	30 A/m	Perf. Criteria A
Dip and interruptions	EN61000-4-11		

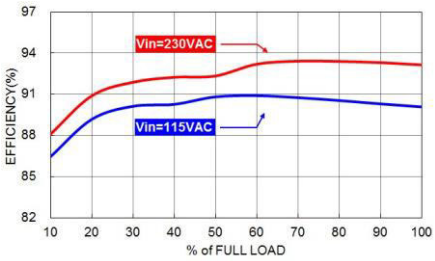
CHARACTERISTIC CURVE



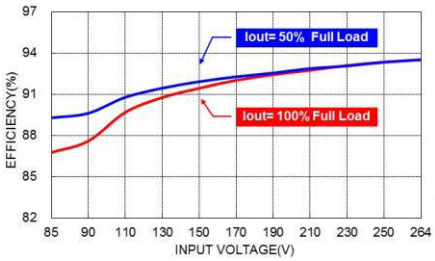
Derating Curve vs. Ambient Temperature
Vin=115VAC Open type / Enclosed type
conduction cooling tested by 482.6x222.2x2mm plate



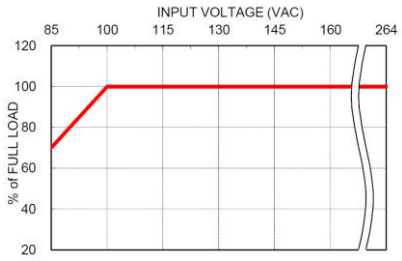
Derating Curve vs. Ambient Temperature
Vin=230VAC Open type / Enclosed type
conduction cooling tested by 482.6x222.2x2mm plate



XTBF500US24 Efficiency vs. Output Load



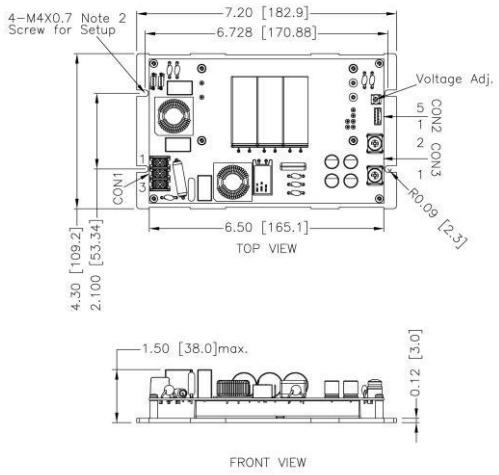
XTBF500US24 Efficiency vs. Input Voltage



Derating Curve vs. Input Voltage

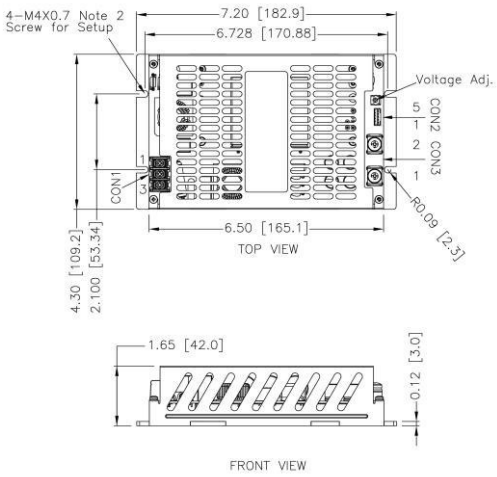
MECHANICAL DRAWING

Open type



1.All dimensions in inch [mm]
Tolerance: x.xx±0.02 [x.x±0.5]
x.xxx±0.01 [x.xx±0.25]
2.The screw locked torque: MAX 10.4Kgf.cm/1.02N.m

Enclosed type



1.All dimensions in inch [mm]
Tolerance: x.xx±0.02 [x.x±0.5]
x.xxx±0.01 [x.xx±0.25]
2.The screw locked torque: MAX 10.4Kgf.cm/1.02N.m

CONNECTORS CONNECTIONS

CON1 – Input Connector

Pin 1	Line
Pin 2	Neutral
Pin 3	FG

Mates with
KST ring terminal: **RV1-3.2**
Screw locked torque:MAX 8.1Kgf.cm/0.8N.m

CON2 –Aux Connector

Pin 1	+PG
Pin 2	+V Sense
Pin 3	-V Sense
Pin 4	+Control
Pin 5	-Control

Mates with
Landwin housing: **2001S**
Landwin crimp terminals: **2005T**

CON3 – Output Connector

Pin 1	+Vout
Pin 2	-Vout

Mates with
KST ring terminal: **RV5-5**
Screw locked torque: MAX 16.8Kgf.cm/1.65N.m

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