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Deepcool PX1000P

Lab ID#: DC10002178
Receipt Date: May 9, 2023
Test Date: May 15, 2023

Report: 23PS2178A
Report Date: May 15, 2023

DUT INFORMATION

Brand	Deepcool
Manufacturer (OEM)	CWT
Series	PXP
Model Number	PXA000P-FC
Serial Number	2023000011
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13-6.5
Rated Frequency (Hz)	50-60
Rated Power (W)	1000
Type	ATX12V
Cooling	120mm Fluid Dynamic Bearing Fan (HA1225H12SF-Z)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P
Power Analyzers	RS HMC8015, N4L PPA1530, N4L PPA5530
Oscilloscopes	Picoscope 4444, Rigol DS7014, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A, Keithley 2015 - THD
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Isolation Transformer	4kVA

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RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.0 PSU Power Excursion	✓

115V	
Average Efficiency	90.308%
Efficiency With 10W (≤500W) or 2% (>500W)	66.638
Average Efficiency 5VSB	78.242%
Standby Power Consumption (W)	0.0251000
Average PF	0.991
Avg Noise Output	32.75 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS						
Rail		**3.3V**	**5V**	**12V**	**5VSB**	**-12V**
Max. Power	Amps	22	22	83.3	3	0.3
	Watts	120		1000	15	3.6
Total Max. Power (W)		1000				

HOLD-UP TIME & POWER OK SIGNAL (230V)	
Hold-Up Time (ms)	19.9
AC Loss to PWR_OK Hold Up Time (ms)	17.4
PWR_OK Inactive to DC Loss Delay (ms)	2.5

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	16AWG	No
4+4 pin EPS12V (700mm)	2	2	18AWG	No
6+2 pin PCIe (650mm)	5	5	16AWG	No
12+4 pin PCIe (650mm) (600W)	1	1	16-24AWG	No
SATA (500mm+150mm+150mm+150mm)	2	8	18AWG	No
4-pin Molex (500mm+150mm+150mm+150mm)	1	4	18AWG	No

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General Data	-
Manufacturer (OEM)	CWT
Platform	CTT
PCB Type	Double Sided
Primary Side	-
Transient Filter	6x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor SCK-0510 (5 Ohm) & Relay
Bridge Rectifier(s)	2x GBJ2506 (600V, 25A @ 100°C)
APFC MOSFETs	2x Infineon IPA60R099P6 (600V, 24A @ 100°C, Rds(on): 0.099Ohm) & 1x SYNC Power SPN5003 (to reduce no load consumption)
APFC Boost Diode	2x CREE C3D08060A (600V, 8A @ 150°C)
Bulk Cap(s)	1x Rubycon (420V, 680uF, 2,000h @ 105°C, MXE) & 1x Nippon Chemi-Con (420V, 560uF, 2,000h @ 105°C, KMR)
Main Switchers	4x Alpha & Omega AOTF29S50 (500V, 18A @ 100°C, Rds(on): 0.15Ohm)
IC Drivers	2x Novosense NSi6602 & 1x Infineon 2EDN752x
Digital APFC Controller	Texas Instruments UCD3138RMH
Digital Resonant Controller	Texas Instruments UCD3138A
Topology	Primary side: Semi-Digital, Interleaved PFC, Full-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	6x Infineon BSC014N06NS (60V, 152A @ 100°C, Rds(on): 1.45mOhm)
5V & 3.3V	DC-DC Converters: 3x UBIQ QN3107M6N (30V, 70A @ 100°C, Rds(on): 2.6mOhm) & 2x UBIQ QM3054M6 (30V, 61A @ 100°C, Rds(on): 4.8mOhm) PWM Controller(s): uPIsemi uP3861P
Filtering Capacitors	Electrolytic: 6x Nippon Chemi-Con (105°C, W), 2x Nippon Chemi-Con (4-10,000h @ 105°C, KY), 1x Rubycon (4-10,000h @ 105°C, YXJ), 3x Rubycon (4-10,000h @ 105°C, YXF), 1x Nichicon (4-10,000h @ 105°C, HE) Polymer: 7x Nippon Chemi-Con, 23x FPCAP, 4x NIC
Supervisor IC	Weltrend WT7502R (OVP, UVP, SCP, PG)
Fan Model	Hong Hua HA1225H12SF-Z (120mm, 12V, 0.58A, Fluid Dynamic Bearing Fan)
5VSB Circuit	-
Rectifier(s)	1x PS1045L SBR (45V, 10A) & 1x UBIQ QM3016D FET (30V, 68A @ 100°C, Rds(on): 4mOhm)
Standby PWM Controller	On Bright OB2365T

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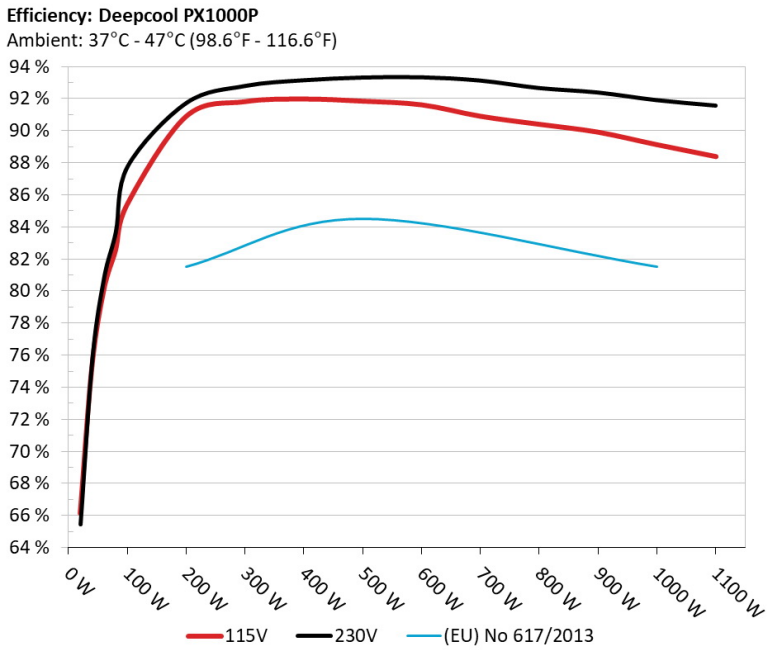
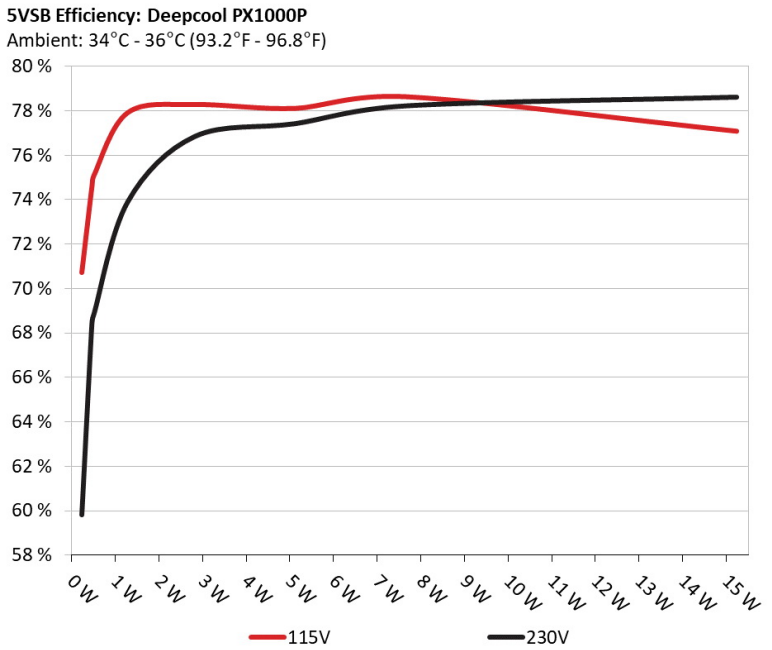
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



INFO

The PSU`s efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used

5VSB EFFICIENCY



INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	70.709%	0.025
	5.138V	0.327W		114.93V
2	0.09A	0.462W	74.571%	0.048
	5.137V	0.619W		114.92V
3	0.55A	2.82W	78.263%	0.233
	5.127V	3.604W		114.92V
4	1A	5.118W	78.09%	0.339
	5.118V	6.554W		114.91V
5	1.5A	7.661W	78.614%	0.395
	5.107V	9.744W		114.91V
6	3A	15.227W	77.065%	0.479
	5.076V	19.76W		114.92V

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.231W	59.823%	0.009
	5.136V	0.388W		229.88V
2	0.09A	0.462W	68.434%	0.015
	5.136V	0.676W		229.88V
3	0.55A	2.82W	76.844%	0.079
	5.127V	3.668W		229.88V
4	1A	5.117W	77.418%	0.136
	5.117V	6.61W		229.88V
5	1.5A	7.66W	78.219%	0.19
	5.107V	9.792W		229.88V
6	3A	15.227W	78.609%	0.301
	5.076V	19.371W		229.88V

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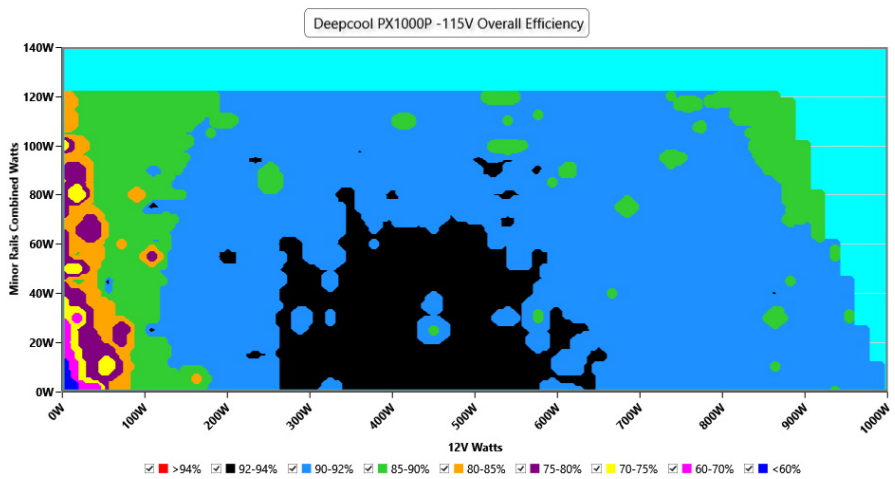
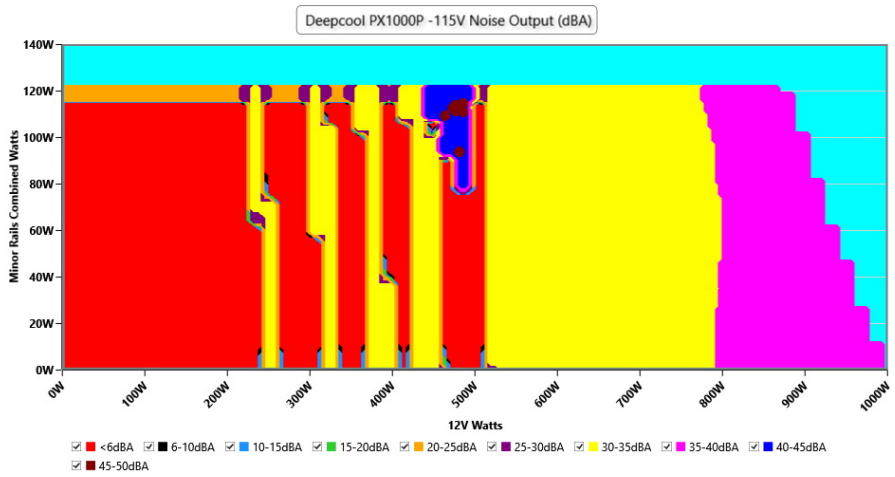
EFFICIENCY GRAPH 115V



INFO

This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

NOISE GRAPH 115V



INFO

The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.93 V	114.88 V	113.85 V	114.97 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.98 Hz	59.40 Hz	60.02 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.14 %	0.12 %	N/A	0.20 %	2.00 %	PASS
Real Power:	0.025 W	0.023 W	N/A	0.027 W	N/A	N/A
Apparent Power:	12.791 W	12.765 W	N/A	12.816 W	N/A	N/A
Power Factor:	0.002	N/A	N/A	N/A	N/A	N/A

INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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10-110% LOAD TESTS 115V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	6.479A	1.995A	2.011A	1.001A	99.98	85.9%	0	<6.0	44.63°C	0.969
	12.098V	5.011V	3.282V	4.996V	113.782				40.45°C	114.92V
20%	13.981A	2.993A	3.018A	1.201A	199.923	91.365%	0	<6.0	45.39°C	0.99
	12.090V	5.011V	3.28V	4.994V	218.835				40.86°C	114.88V
30%	21.845A	3.491A	3.523A	1.403A	299.978	92.289%	0	<6.0	45.91°C	0.994
	12.082V	5.012V	3.278V	4.991V	324.913				41.11°C	114.87V
40%	29.672A	3.99A	4.03A	1.604A	399.47	92.447%	1213	31.1	41.94°C	0.996
	12.074V	5.012V	3.275V	4.987V	432.023				46.97°C	114.83V
50%	37.179A	4.989A	5.041A	1.806A	499.205	92.318%	1212	31.1	42.55°C	0.997
	12.069V	5.011V	3.273V	4.983V	540.767				47.99°C	114.81V
60%	44.768A	5.988A	6.054A	2A	599.713	92.09%	1306	32.8	42.96°C	0.997
	12.061V	5.01V	3.27V	4.979V	651.358				48.99°C	114.79V
70%	52.308A	6.987A	7.068A	2.211A	699.493	91.379%	1526	37.6	43.85°C	0.997
	12.051V	5.01V	3.269V	4.976V	765.454				50.91°C	114.76V
80%	59.932A	7.985A	8.081A	2.312A	799.492	90.877%	1702	40.0	43.9°C	0.998
	12.041V	5.009V	3.266V	4.973V	879.87				51.94°C	114.73V
90%	67.885A	8.487A	8.578A	2.415A	899.284	90.387%	1874	43.5	44.62°C	0.998
	12.032V	5.008V	3.263V	4.97V	994.853				53.68°C	114.71V
100%	75.650A	8.989A	9.108A	3.026A	999.322	89.607%	2058	45.2	45.39°C	0.999
	12.025V	5.007V	3.26V	4.958V	1115.249				55.41°C	114.68V
110%	83.358A	9.991A	10.222A	3.027A	1099.933	88.866%	2058	45.2	46.57°C	0.999
	12.016V	5.005V	3.257V	4.956V	1237.748				57.44°C	114.66V
CL1	0.116A	14.416A	14.514A	0A	121.292	83.819%	1216	31.0	42.28°C	0.982
	12.087V	5.009V	3.285V	5.034V	144.816				47.77°C	114.88V
CL2	0.115A	21.937A	0A	0A	111.41	82.115%	1211	31.1	41.28°C	0.98
	12.094V	5.015V	3.294V	5.06V	135.614				48.33°C	114.89V
CL3	0.115A	0A	22.062A	0A	73.975	73.134%	997	24.4	41.81°C	0.888
	12.089V	5.032V	3.29V	5.025V	101.161				50.89°C	114.94V
CL4	83.139A	0A	0A	0A	1000.08	89.881%	2056	45.2	46.62°C	0.999
	12.029V	5.029V	3.269V	5.016V	1112.685				57.61°C	114.68V

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20-80W LOAD TESTS 115V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	1.226A	0.498A	0.501A	0.199A	19.987	66.658%	0	<6.0	40.01°C	0.792
	12.104V	5.024V	3.291V	5.021V	29.943				36.96°C	114.93V
40W	2.700A	0.698A	0.703A	0.299A	39.987	75.815%	0	<6.0	40.62°C	0.87
	12.100V	5.016V	3.287V	5.011V	52.251				37.32°C	114.93V
60W	4.175A	0.898A	0.905A	0.4A	59.987	80.562%	0	<6.0	41.27°C	0.877
	12.101V	5.009V	3.282V	5.003V	74.1				37.49°C	114.94V
80W	5.645A	1.097A	1.106A	0.5A	79.928	83.026%	0	<6.0	43.76°C	0.894
	12.100V	5.01V	3.282V	5.002V	96.302				39.82°C	114.95V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	8.29mV	5.82mV	7.62mV	4.66mV	Pass
20% Load	9.92mV	5.01mV	6.90mV	3.99mV	Pass
30% Load	11.16mV	5.37mV	7.06mV	3.84mV	Pass
40% Load	13.51mV	5.72mV	7.87mV	4.40mV	Pass
50% Load	13.61mV	6.38mV	7.62mV	4.56mV	Pass
60% Load	15.91mV	6.23mV	7.88mV	4.91mV	Pass
70% Load	14.99mV	6.59mV	8.44mV	4.91mV	Pass
80% Load	17.25mV	7.20mV	9.77mV	5.48mV	Pass
90% Load	19.75mV	7.76mV	9.92mV	5.68mV	Pass
100% Load	24.16mV	8.08mV	10.86mV	6.60mV	Pass
110% Load	26.77mV	9.18mV	12.00mV	6.44mV	Pass
Crossload1	11.24mV	7.67mV	9.35mV	5.57mV	Pass
Crossload2	9.47mV	6.49mV	6.90mV	3.84mV	Pass
Crossload3	10.03mV	4.80mV	11.40mV	3.79mV	Pass
Crossload4	23.07mV	7.43mV	9.54mV	5.37mV	Pass

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Top side

Power specifications label

CERTIFICATIONS 115V

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