

Anex

FSP Technology Hydro G Pro 1200W

Lab ID#: FS12002357
 Receipt Date: Jan 23, 2024
 Test Date: Feb 15, 2024

Report: 24PS2357A
 Report Date: Feb 16, 2024

DUT INFORMATION		DUT SPECIFICATIONS	
Brand	FSP Technology	Rated Voltage (Vrms)	100-240
Manufacturer (OEM)	FSP	Rated Current (Arms)	15-8
Series	Hydro G Pro	Rated Frequency (Hz)	50-60
Model Number	HG2-1200	Rated Power (W)	1200
Serial Number	S3281000035	Type	ATX12V
DUT Notes		Cooling	120mm Fluid Dynamic Bearing Fan (MGA12012XF-O25)
		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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FSP Technology Hydro G Pro 1200W

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	88.240%
Efficiency With 10W (≤500W) or 2% (>500W)	63.321
Average Efficiency 5VSB	84.577%
Standby Power Consumption (W)	0.1130000
Average PF	0.989
Avg Noise Output	29.83 dB(A)
Efficiency Rating (ETA)	GOLD
Noise Rating (LAMBDA)	A-

230V

Average Efficiency	90.644%
Average Efficiency 5VSB	82.965%
Standby Power Consumption (W)	0.2018000
Average PF	0.962
Avg Noise Output	26.76 dB(A)
Efficiency Rating (ETA)	SILVER
Noise Rating (LAMBDA)	A-

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	100	3	0.3
	Watts	120		1200	15	3.6
Total Max. Power (W)		1200				

HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	21.1
AC Loss to PWR_OK Hold Up Time (ms)	20.4
PWR_OK Inactive to DC Loss Delay (ms)	0.7

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CABLES AND CONNECTORS

Modular Cables

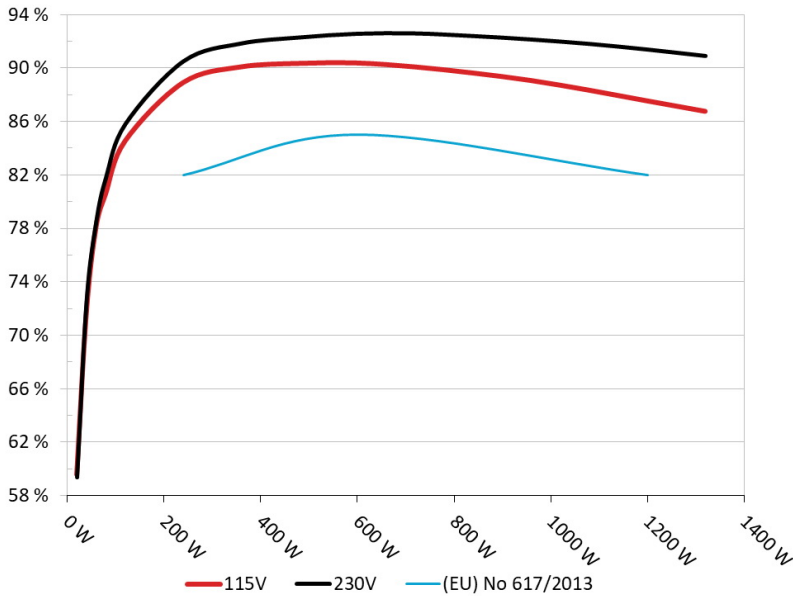
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (600mm)	1	1	16-22AWG	No
4+4 pin EPS12V (700mm)	2	2	18AWG	No
6+2 pin PCIe (650mm)	3	3	16AWG	No
12+4 pin PCIe (700mm) (600W)	1	1	16-28AWG	No
SATA (500mm+155mm+155mm+155mm)	2	8	18AWG	No
SATA (500mm+150mm) / 4-pin Molex (+150mm+100mm)	2	4 / 4	18AWG	No
SATA (350mm+100mm+100mm) / 4-pin Molex (+100mm)	1	3 / 1	18AWG	No
AC Power Cord (1390mm) - C13 coupler	1	1	14AWG	-

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EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: FSP Hydro G Pro 1200W
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

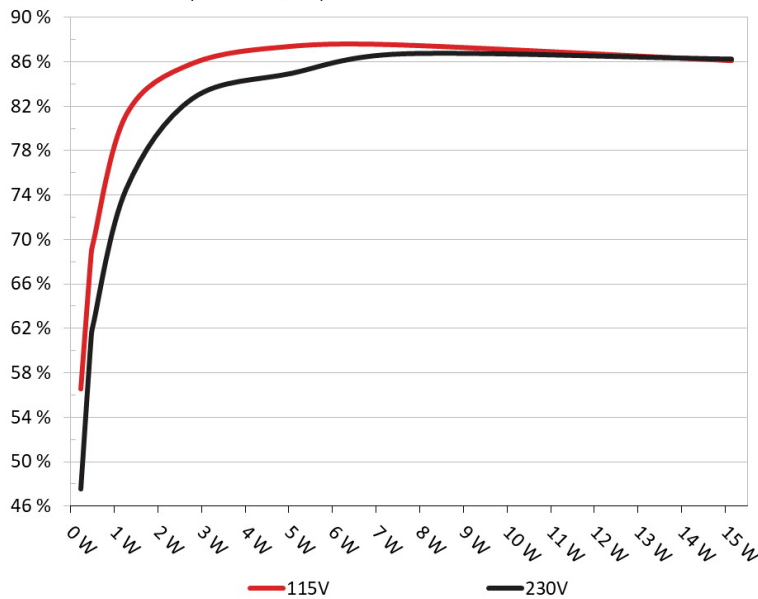


INFO

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

5VSB Efficiency: FSP Hydro G Pro 1200W
Ambient: 34°C - 36°C (93.2°F - 96.8°F)



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	0.229W	56.03%	0.039
	5.082V	0.409W		114.92V
2	0.09A	0.457W	67.765%	0.063
	5.081V	0.674W		114.92V
3	0.55A	2.791W	85.368%	0.248
	5.075V	3.269W		114.92V
4	1A	5.07W	86.912%	0.346
	5.07V	5.834W		114.92V
5	1.5A	7.596W	87.016%	0.392
	5.063V	8.73W		114.91V
6	3A	15.134W	85.612%	0.473
	5.045V	17.678W		114.91V

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

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.229W	47.033%	0.014
	5.082V	0.489W		229.88V
2	0.09A	0.457W	60.197%	0.022
	5.081V	0.76W		229.88V
3	0.55A	2.792W	82.209%	0.093
	5.076V	3.397W		229.88V
4	1A	5.07W	84.476%	0.154
	5.07V	6.002W		229.88V
5	1.5A	7.596W	86.222%	0.19
	5.063V	8.812W		229.88V
6	3A	15.139W	85.747%	0.28
	5.046V	17.615W		229.88V

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115V

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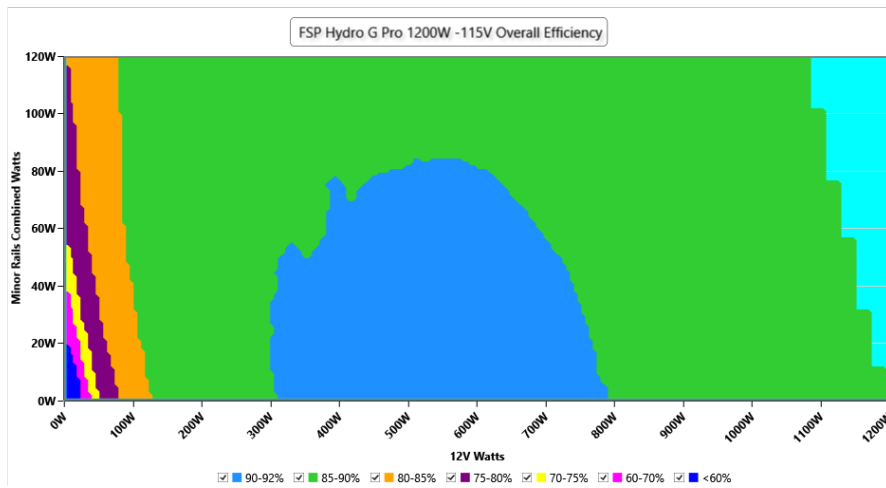
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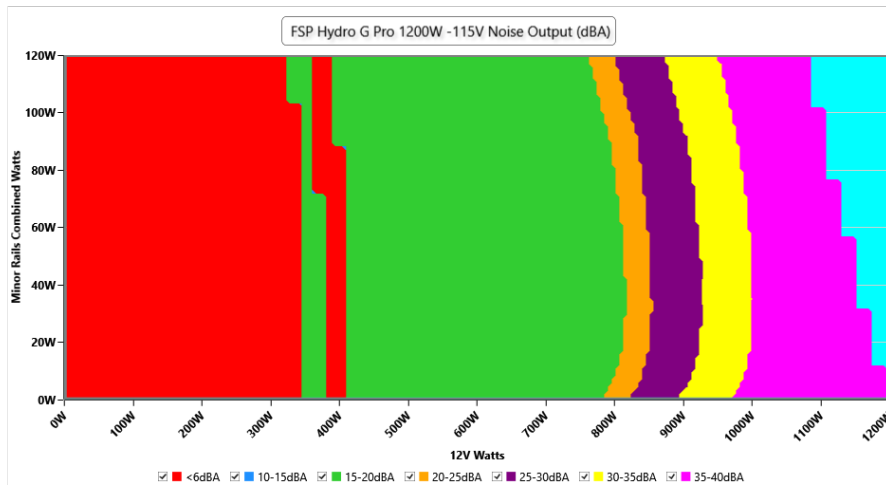
EFFICIENCY GRAPH 115V



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:	115.04 V	115.00 V	113.85 V	115.07 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.13 %	0.09 %	N/A	0.19 %	2.00 %	PASS
Real Power:	0.113 W	0.012 W	N/A	0.164 W	N/A	N/A
Apparent Power:	10.161 W	10.122 W	N/A	10.203 W	N/A	N/A
Power Factor:	0.015	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%	8.010A	1.941A	1.947A	0.989A	120	84.519%	0	<6.0	44.59°C	0.975
	12.284V	5.153V	3.39V	5.054V	141.983				40.34°C	114.87V
20%	17.023A	2.914A	2.924A	1.19A	239.964	88.889%	0	<6.0	45.11°C	0.984
	12.281V	5.148V	3.386V	5.044V	269.959				40.55°C	114.83V
30%	26.329A	3.395A	3.41A	1.391A	359.254	90.063%	0	<6.0	46.41°C	0.987
	12.275V	5.156V	3.388V	5.034V	398.892				41.33°C	114.8V
40%	35.730A	3.874A	3.894A	1.592A	479.622	90.323%	765	15.5	41.7°C	0.989
	12.270V	5.163V	3.39V	5.025V	531.021				47.21°C	114.75V
50%	44.749A	4.843A	4.871A	1.795A	599.361	90.356%	764	15.5	42.38°C	0.992
	12.265V	5.163V	3.388V	5.016V	663.329				48.38°C	114.7V
60%	53.833A	5.818A	5.853A	1.998A	719.91	90.062%	767	15.6	42.75°C	0.994
	12.262V	5.158V	3.383V	5.006V	799.355				49.33°C	114.66V
70%	62.862A	6.79A	6.835A	2.202A	839.619	89.607%	1025	24.4	43.18°C	0.995
	12.257V	5.155V	3.38V	4.997V	937.004				50.24°C	114.62V
80%	71.970A	7.758A	7.815A	2.305A	959.578	89.045%	1283	31.1	43.77°C	0.996
	12.252V	5.155V	3.378V	4.989V	1077.637				52.01°C	114.56V
90%	81.396A	8.245A	8.293A	2.409A	1079.396	88.323%	1612	38.0	44.48°C	0.996
	12.248V	5.154V	3.376V	4.981V	1222.102				53.58°C	114.51V
100%	90.645A	8.733A	8.803A	3.021A	1199.421	87.526%	1915	43.7	46.46°C	0.996
	12.243V	5.152V	3.374V	4.966V	1370.362				56.49°C	114.46V
110%	99.836A	9.709A	9.88A	3.025A	1320.019	86.741%	2096	46.2	46.89°C	0.996
	12.237V	5.149V	3.371V	4.959V	1521.795				57.81°C	114.41V
CL1	0.114A	14.024A	14.154A	0A	121.305	78.779%	764	15.5	41.48°C	0.979
	12.288V	5.148V	3.37V	5.059V	153.98				46.98°C	114.85V
CL2	0.114A	19.456A	0A	0A	101.376	77.84%	757	15.2	39.86°C	0.976
	12.285V	5.138V	3.385V	5.064V	130.237				47.01°C	114.87V
CL3	0.113A	0A	19.652A	0A	67.403	71.045%	0	<6.0	47.98°C	0.963
	12.280V	5.141V	3.359V	5.064V	94.878				38.88°C	114.88V
CL4	98.036A	0A	0A	0.002A	1200.048	88.034%	1801	40.4	44.29°C	0.996
	12.241V	5.162V	3.392V	5.007V	1363.138				55.25°C	114.45V

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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	1.210A	0.484A	0.485A	0.197A	20	59.585%	0	<6.0	39.65°C	0.879
	12.274V	5.166V	3.4V	5.072V	33.572				36.57°C	114.91V
40W	2.664A	0.678A	0.68A	0.296A	39.999	71.734%	0	<6.0	40.36°C	0.934
	12.274V	5.16V	3.397V	5.069V	55.758				37.06°C	114.9V
60W	4.116A	0.872A	0.875A	0.395A	59.999	78.111%	0	<6.0	41.98°C	0.956
	12.275V	5.159V	3.396V	5.066V	76.813				38.29°C	114.89V
80W	5.565A	1.067A	1.07A	0.494A	79.945	80.595%	0	<6.0	43.05°C	0.963
	12.275V	5.156V	3.394V	5.064V	99.195				39.09°C	114.88V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	17.14mV	14.36mV	15.91mV	16.88mV	Pass
20% Load	20.11mV	13.84mV	16.73mV	17.34mV	Pass
30% Load	22.77mV	18.70mV	20.15mV	19.49mV	Pass
40% Load	24.39mV	15.33mV	17.85mV	20.92mV	Pass
50% Load	25.39mV	16.35mV	18.06mV	17.91mV	Pass
60% Load	21.93mV	15.07mV	17.29mV	35.29mV	Pass
70% Load	24.10mV	17.68mV	19.03mV	37.44mV	Pass
80% Load	23.94mV	17.73mV	19.85mV	24.09mV	Pass
90% Load	23.64mV	17.27mV	20.26mV	23.78mV	Pass
100% Load	32.74mV	16.45mV	18.18mV	23.45mV	Pass
110% Load	32.93mV	17.21mV	18.70mV	23.77mV	Pass
Crossload1	20.41mV	11.74mV	14.93mV	17.66mV	Pass
Crossload2	18.31mV	16.09mV	15.81mV	20.20mV	Pass
Crossload3	15.60mV	13.90mV	17.96mV	20.26mV	Pass
Crossload4	32.88mV	15.86mV	16.87mV	27.26mV	Pass

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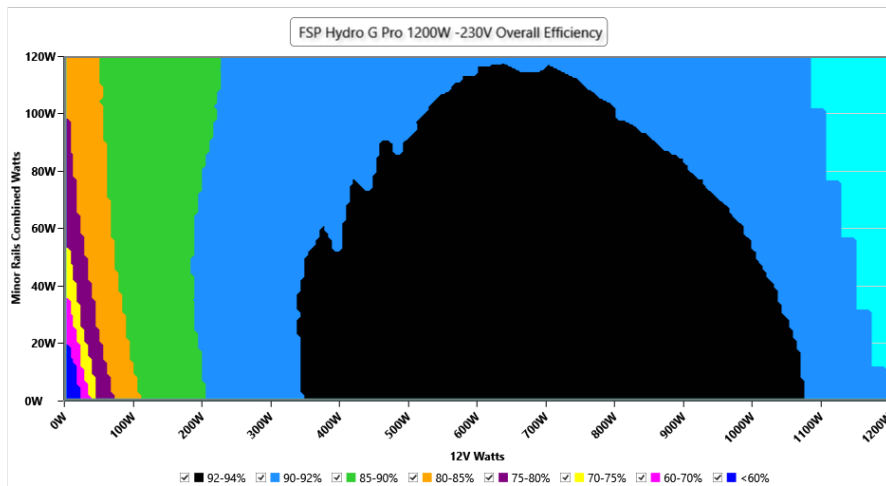
230V

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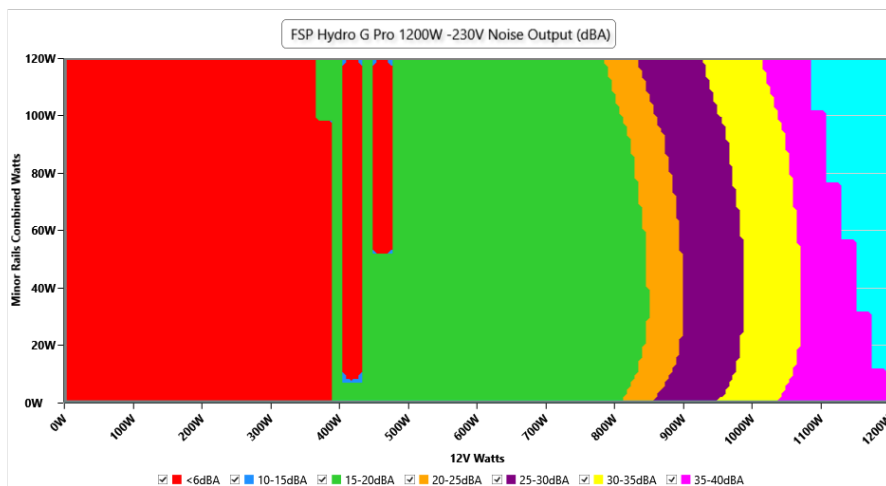
EFFICIENCY GRAPH 230V



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 230V



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 -230V

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.89 V	229.78 V	227.70 V	229.99 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.15 %	0.12 %	N/A	0.20 %	2.00 %	PASS
Real Power:	0.202 W	0.154 W	N/A	0.261 W	N/A	N/A
Apparent Power:	35.208 W	35.173 W	N/A	35.242 W	N/A	N/A
Power Factor:	0.006	N/A	N/A	N/A	N/A	N/A

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10-110% LOAD TESTS 230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	8.012A	1.94A	1.946A	0.989A	119.999	85.787%	0	<6.0	44.51°C	0.887
	12.281V	5.153V	3.391V	5.055V	139.88				40.24°C	229.87V
20%	17.027A	2.913A	2.923A	1.189A	239.96	90.481%	0	<6.0	45.47°C	0.948
	12.278V	5.149V	3.387V	5.045V	265.206				40.88°C	229.85V
30%	26.329A	3.401A	3.414A	1.39A	359.215	91.811%	0	<6.0	46.21°C	0.966
	12.274V	5.145V	3.384V	5.035V	391.254				41.15°C	229.83V
40%	35.729A	3.879A	3.896A	1.592A	479.572	92.263%	764	15.5	41.83°C	0.974
	12.269V	5.157V	3.388V	5.025V	519.785				47.37°C	229.81V
50%	44.751A	4.847A	4.871A	1.794A	599.311	92.542%	765	15.5	42.23°C	0.979
	12.263V	5.158V	3.388V	5.016V	647.611				48.27°C	229.79V
60%	53.842A	5.82A	5.852A	1.997A	719.853	92.566%	768	15.6	42.73°C	0.981
	12.259V	5.155V	3.384V	5.007V	777.661				49.32°C	229.77V
70%	62.865A	6.795A	6.835A	2.201A	839.593	92.372%	1028	24.4	43.15°C	0.984
	12.256V	5.152V	3.38V	4.997V	908.914				50.16°C	229.74V
80%	71.971A	7.764A	7.816A	2.305A	959.557	92.115%	1306	31.7	43.56°C	0.985
	12.251V	5.151V	3.378V	4.989V	1041.693				51.59°C	229.72V
90%	81.410A	8.248A	8.292A	2.409A	1079.371	91.787%	1579	37.1	44.23°C	0.986
	12.245V	5.152V	3.377V	4.981V	1175.955				53.31°C	229.7V
100%	90.662A	8.735A	8.8A	3.02A	1199.399	91.365%	1852	42.5	45.06°C	0.987
	12.240V	5.151V	3.375V	4.967V	1312.742				55.13°C	229.68V
110%	99.857A	9.709A	9.875A	3.025A	1320.011	90.88%	2113	46.1	46.86°C	0.988
	12.235V	5.149V	3.372V	4.959V	1452.473				57.78°C	229.66V
CL1	0.114A	14.023A	14.152A	0A	121.303	79.947%	760	15.3	43.28°C	0.898
	12.286V	5.148V	3.371V	5.06V	151.73				48.8°C	229.86V
CL2	0.113A	19.451A	0A	0A	101.368	78.694%	752	15.1	40.18°C	0.875
	12.283V	5.14V	3.386V	5.064V	128.813				47.24°C	229.87V
CL3	0.113A	0A	19.677A	0A	67.399	72.308%	0	<6.0	51.34°C	0.814
	12.279V	5.132V	3.355V	5.064V	93.209				42.18°C	229.88V
CL4	98.054A	0A	0A	0.002A	1199.977	91.849%	1752	40.5	44.19°C	0.987
	12.238V	5.157V	3.388V	5.007V	1306.461				55.17°C	229.68V

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Anex

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20-80W LOAD TESTS 230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	1.210A	0.484A	0.485A	0.197A	20.007	59.355%	0	<6.0	40.11°C	0.502
	12.269V	5.168V	3.401V	5.072V	33.704				36.99°C	229.88V
40W	2.664A	0.678A	0.68A	0.296A	40.003	72.7%	0	<6.0	40.81°C	0.661
	12.269V	5.164V	3.399V	5.069V	55.029				37.51°C	229.88V
60W	4.118A	0.872A	0.874A	0.395A	60	78.527%	0	<6.0	42.14°C	0.761
	12.270V	5.161V	3.397V	5.067V	76.404				38.63°C	229.88V
80W	5.568A	1.066A	1.069A	0.494A	79.946	81.793%	0	<6.0	43.18°C	0.824
	12.271V	5.158V	3.395V	5.064V	97.743				39.3°C	229.88V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	18.77mV	14.87mV	17.24mV	20.10mV	Pass
20% Load	19.90mV	15.02mV	18.77mV	18.41mV	Pass
30% Load	22.90mV	19.21mV	20.26mV	21.23mV	Pass
40% Load	27.20mV	16.35mV	18.52mV	23.58mV	Pass
50% Load	28.22mV	16.65mV	19.18mV	20.05mV	Pass
60% Load	26.36mV	17.37mV	20.51mV	42.15mV	Pass
70% Load	25.48mV	17.22mV	19.54mV	38.41mV	Pass
80% Load	24.15mV	18.09mV	21.08mV	25.22mV	Pass
90% Load	26.65mV	19.06mV	21.69mV	27.06mV	Pass
100% Load	38.02mV	21.01mV	22.18mV	26.68mV	Pass
110% Load	39.35mV	20.48mV	23.55mV	27.09mV	Pass
Crossload1	23.80mV	15.81mV	19.36mV	21.90mV	Pass
Crossload2	16.93mV	17.98mV	17.24mV	22.86mV	Pass
Crossload3	17.34mV	14.00mV	18.11mV	21.95mV	Pass
Crossload4	38.27mV	19.57mV	21.94mV	29.28mV	Pass

All data and graphs included in this test report can be used by any individual on the following conditions:

- > It should be mentioned that the test results are provided by Cybenetics
- > The link to the original test results document should be provided in any case

Anex

FSP Technology Hydro G Pro 1200W

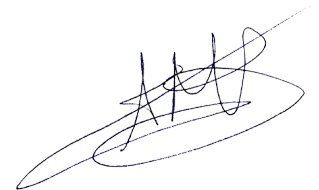


Top side

AC Input		100-240V~ 15-8A 50-60Hz			
交流輸入/交流輸入/정격입력		<small>(Not for China 仅限中国大陆)</small>			
		200-240V~ 8A 50-60Hz			
		<small>(Only for China 仅限中国大陆)</small>			
DC Output	+3.3V	+5V	+12V	-12V	+5Vsb
直流輸出/直流輸出					
Max Output Current	20A	20A	100A	0.3A	3A
最大電流/最大電流/정격출력					
Max Combined Power	120W		1200W	3.6W	15W
最大功率/最大功率					
Total Power	1200W				
額定功率/額定功率					

Power specifications label

CERTIFICATIONS 115V

Aristeidis Bitziopoulos
Lab Director

CERTIFICATIONS 230V



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