120 WATTS

SINGLE/MULTI OUTPUT AC-DC

ELS-120

FEATURES:

- **Compact Size 8" x 4" x 2"**
- **3 Year Warranty**
- **Universal 85-264VAC Input**
- **Single, Dual or Triple Outputs**
- **>90% Peak Efficiency**
- **Meets CoC Tier I Efficiency(6)**
- **IEC 60601-1 3rd ed. Medical Cert.**
- **IEC 62368-1 2nd ed. Certification**
- **IEC 60601-1-2 4th ed. EMC**
- **Class B Emissions per CISPR 11/32**
- **-20 to +70°C Operating Temperature**
- **RoHS Compliant**

SAFETY SPECIFICATIONS

c UL us	UL-Listed File E137708	UL 62368-1:2014, 2nd Edition CAN/CSA C22.2 No. 62368-1-14
c TÜV us	UL Recognition File E140259	AAMI/ANSI ES60601-1:2005/(R) 2012 CAN/CSA-C22.2 No. 60601-1:2014
IECEE CB SCHEME	CB Reports/Certificates (including all National and Group Deviations)	IEC 62368-1:2014, 2nd Edition IEC 60601-1:2005/A1:2012
TÜV SÜD	TUV SUD America	EN 62368-1:2014, 2nd Edition EN 60601-1:2006/A1:2013
CE	Low Voltage Directive RoHS Directive (Recast) EMC Directive	(2014/35/EU of February 2014) (2015/863/EU of March 2015) (2014/30/EU of March 2014)
UK CA	Electrical Equipment (Safety) Regulations 2016 SI No. 1101 Restriction of the Use of Certain Hazardous Substances in EEE Regulations 2012 SI No. 3032 + 2019 SI No.492 Electromagnetic Compatibility Regulations 2016 SI No. 1091	

MODEL LISTING

MODEL	OUTPUT 1	OUTPUT 2	OUTPUT 3	POWER OUT (MAX)
ELS-120-3001	+5V/12A	+24V/3A	-12V/1A	120 W
ELS-120-3002	+5V/12A	+24V/3A	-15V/1A	120 W
ELS-120-3003	+5V/12A	+12V/3A	-12V/2A	120 W
ELS-120-3004	+5V/12A	+15V/2A	-15V/2A	120 W
ELS-120-3005	+5V/12A	+24V/3A	-24V/1A	120 W
ELS-120-3006	+12V/7A	+24V/1A	-5V/2A	120 W
ELS-120-3007	+24V/4A	+5V/2A	-12V/1A	120 W
ELS-120-3008	+24V/4A	+5V/2A	-15V/1A	120 W
ELS-120-2001	+5V/12A	+12V/5A		120 W
ELS-120-2002	+5V/12A	+15V/4A		120 W
ELS-120-2003	+5V/12A	+24V/3A		120 W
ELS-120-2004	+12V/9A	+5V/3A		120 W
ELS-120-2005	+12V/8A	-12V/2A		120 W
ELS-120-2006	+12V/8A	+15V/2A		120 W
ELS-120-2007	+12V/8A	+24V/1A		120 W
ELS-120-2008	+15V/8A	-15V/2A		120 W
ELS-120-2009	+24V/4A	+12V/2A		120 W
ELS-120-2010	+24V/4A	+15V/2A		120 W
ELS-120-1001(6)	12V/12.5A			150 W
ELS-120-1002(6)	15V/10.0A			150 W
ELS-120-1003(6)	24V/6.3A			150 W

ORDERING INFORMATION

Consult factory for alternate output configurations.
Please specify the following features when ordering:
C14 – AC Input, IEC320-C14, Standard
C6 – AC Input, IEC320-C6, Option
IO – Isolated Outputs, Option

All specifications are maximum at 25°C, 120W unless otherwise stated, may vary by model and are subject to change without notice.

OUTPUT SPECIFICATIONS

Output Power at 40°C(1)	120W	Internal Fan Cooled
Voltage Centering	Output 1:	± 0.5% (all outputs at 50% load)
	Outputs 2 & 3:	± 5.0% (all outputs at 50% load)
Load Regulation	Output 1:	± 0.5% (0-100% load change)
	Outputs 2 & 3:	±5.0% (10-100% load change)
	Output 2:	± 6.0% (2004, 20-100% load change)
	Output 3:	± 6.0% (3006-3008, 20-100% load change)
Source Regulation	Outputs 1-3:	0.5%
Cross Regulation	Outputs 2 & 3:	5.0%
Ripple & Noise(3)	Outputs 1-3:	1.0% or 100mV p-p, 20MHz BW
Turn on Overshoot	None	
Transient Response	Output recovers to within 1% of initial set point due to a 50-100-50% step load change, 500µs maximum, 4% maximum deviation.	
Overvoltage Protection	Latching, between 110% and 150% of rated output voltage.	
Overpower Protection	110-150% rated P_{OUT}, cycle on/off, auto recovery	
Overtemperature Protection	Latching	
Hold-Up Time	25ms minimum, full power	
Start-Up Time	<1 sec., 115/230V Input	
Output Rise Time	25ms typical	
Minimum Load (2)	No minimum load required	

INPUT SPECIFICATIONS

Protection Class	I
Ingress Protection	IP30
Source Voltage	85 – 264 VAC (see Derating Chart)
Source Frequency	47 – 63 Hz
Input Protection	Dual internal 5A time-delay fuses, 1,500A breaking capacity
Peak Inrush Current	40A max.
Peak Efficiency	Up to 90%
Average Efficiency	>86% Multi's., >88% Singles DoE Level VI (115/230VAC) >89% Singles, CoC Tier I (230VAC)
No-Load Input Power	<300mW, Multi's., DoE Level VI 115/230VAC <210mW, Singles., DoE Level VI 115/230VAC

ENVIRONMENTAL SPECIFICATIONS

Ambient Operating Temp. Range	-20 to +70°C, Derating (see derating requirements)
Ambient Storage Temp. Range	-40 to +85°C
Operating Relative Humidity Range	20-90% non-condensing
Altitude	3,000m ASL - Operating 12,192m ASL – Non-Operating
Temperature Coefficient	0.02%/°C
Vibration (MIL-STD-810G)	2.5G swept sine, 10-2,000Hz, 1 octave/min., 3 axis, 1 hour each
Shock (MIL-STD-810G)	20G, 11ms, 3 axis.

GENERAL SPECIFICATIONS

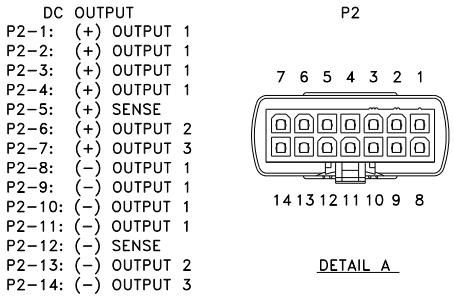
Means of Protection	
Primary to Secondary	2MOPP (Means of Patient Protection)
Primary to Ground	1MOPP (Means of Patient Protection)
Secondary to Ground	Operational Insulation
Dielectric Strength(4, 5)	
Reinforced Insulation	5,656 VDC (4,000VAC)
Basic Insulation	2,121 VDC (1,500VAC)
Operational Insulation	707 VDC (500VAC)
Leakage Current	
Earth Leakage	<300µA NC, <1,000µA SFC
Touch Current	<100µA NC, <500µA SFC
Patient Leakage Current	<100µA NC, <500µA SFC
Switching Frequency	PWM:65KHz/PFC:Variable
Mean-Time Between Failures	>165,000 hours, MIL-HDBK-217F, 25° C, GB
Weight	2.33 lbs.

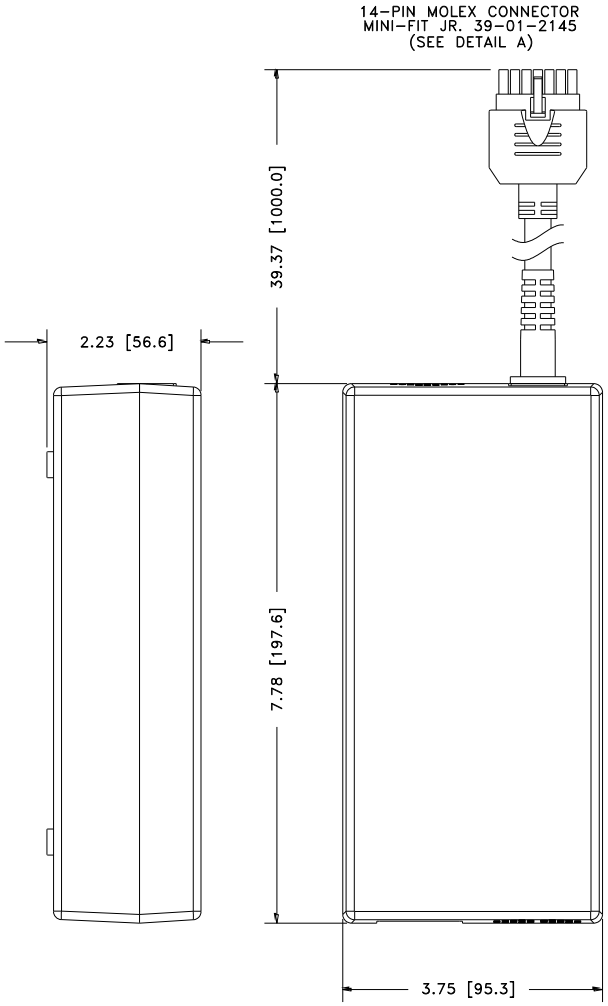
EMC SPECIFICATIONS (IEC 60601-1-2:2014, 4TH ed./EN 55024:2010)

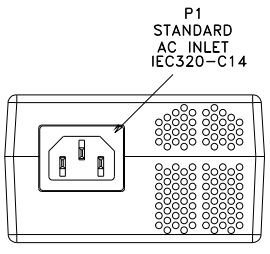
Electrostatic Discharge	EN 61000-4-2	±8KV contact / ±15KV air discharge	A
Radiated Electromagnetic Field	EN 61000-4-3	80MHz-2.7GHz, 10V/m, 80% AM	A
Electrical Fast Transients/Bursts	EN 61000-4-4	±2 KV, 5KHz/100KHz	A
Surges	EN 61000-4-5	±2 KV line to earth / ±1 KV line to line	A
Conducted Immunity	EN 61000-4-6	0.15 to 80MHz, 10V, 80% AM	A
Magnetic Field Immunity	EN 61000-4-8	30A/m, 60 Hz	A
Voltage Dips	EN 61000-4-11	0% U_T, 0.5 cycles@0-315°	100/240V A/A
		0% U_T, 1 cycle, 0°	100/240V A/A
		40% U_T, 12 cycles, 0°	100/240V B/A
		70% U_T, 30 cycles, 0°	100/240V B/A
Voltage Interruptions	EN 61000-4-11	0% U_T, 300 cycles, 0°	100/240V B/B
Radiated Emissions	EN 55011/32, FCC Part 15		Class B
Conducted Emissions	EN 55011/32, FCC Part 15		Class B
Harmonic Current Emissions	EN 61000-3-2		Class A
Voltage Fluctuations/Flicker	EN 61000-3-3		Complies

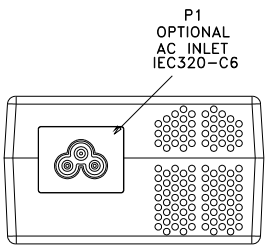
INTEGRATED POWER DESIGNS 300 Stewart Road ■ Wilkes-Barre, PA 18706 ■ Phone: (570) 824-4666 ■ Fax: (570) 824-4843 ■ Email: sales@ipdpower.com ■ Web: www.ipdpower.com

ELS-120 SERIES MECHANICAL SPECIFICATIONS





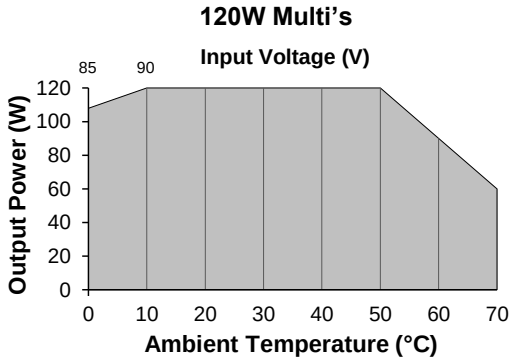


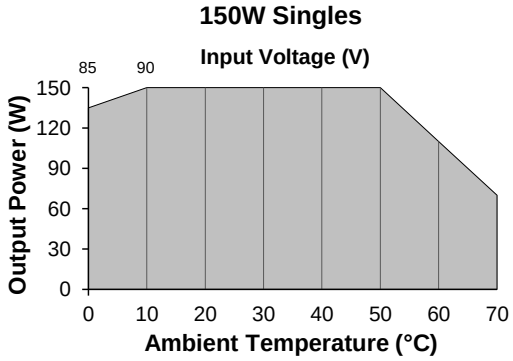


APPLICATIONS INFORMATION

1. Each output can deliver its rated current but Total Output Power must not exceed 120W, unless otherwise stated.
2. Minimum load is not required for reliable operation. However, a 10% load may be required on Output 1 when loading Outputs 2 or 3.
3. Peak-to-Peak Output Ripple and Noise is measured directly at the output terminals of the power cord, without the use of the probe ground lead or retractable tip (tip-and-barrel method), 20MHz bandwidth, with each output terminated with a 0.1µF multilayer ceramic and a 10µF low-ESR electrolytic capacitor.
4. This product was type-tested and safety-certified using the dielectric strength test voltages listed in Table 6 of IEC 60601-1:2005. In consideration of Clause 8.8.3, care must be taken to ensure that the voltage applied to a reinforced insulation does not overstress different types and levels of insulation. Primary and secondary-to-ground capacitors may need to be disconnected prior to performing a dielectric strength test on the power supply or the end product. It is highly recommended that the DC test voltages listed in DVB.1, Annex DVB of UL 60601-1 1st Edition are not exceeded during a production-line dielectric strength test of the assembled end product. Please consult factory for further information.
5. This power supply has been safety-approved and final-tested using a DC dielectric strength test. Please consult factory before performing an AC dielectric strength test.
6. Meets CoC Tier I Efficiency on single output models.
7. Remote-Sense terminals should be terminated to output 1 (+/-) to compensate for cable losses up to 400mV, depending on model. The use of a twisted pair, decoupling capacitors and an appropriately-rated low-impedance capacitor connected across the load will increase noise immunity.
8. Only use an AC line cord with appropriate IEC320 connector and recommended DC output mating connector.
9. Firmly connect AC line cord and DC power cord in place.
10. Unit does not have any user-serviceable components. Do not open the device, or make any attempt to disassemble or modify it.
11. For indoor use only. Avoid placing this product in direct sunlight, or operating in temperatures below -20°C or above 70°C.
12. Position unit in well-ventilated area.
13. Do not rest any object on the unit, or block the ventilation holes during operation.
14. When in use, maintain horizontal position with rubber feet facing down onto a flat surface.
15. Do not operate this product with damaged input/output cords or connectors.
16. Insure that the supply voltage for this external power supply is within safe operating range, as shown in the nameplate data label located on the bottom of the unit.

MAX P_{OUT} vs. AMBIENT TEMPERATURE/INPUT VOLTAGE





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