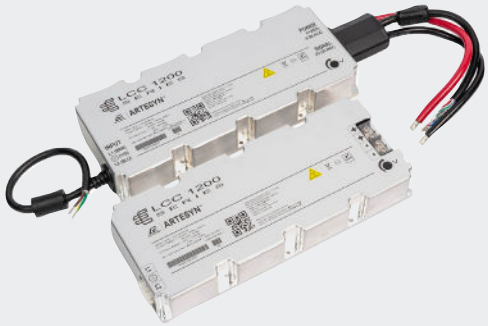
ARTESYN LCC1200

1200 Watts Conduction Cooling



Advanced Energy's Artesyn LCC1200 series of fully enclosed conduction cooled AC-DC power supplies comprises four models, offering main output voltages of 24 V, 28 V, 36 V or 48 V. Each model also provides a 5 VDC standby output that can supply up to 1.5 A. Rated at 1200 W, these power supplies incorporate a thermal baseplate and are capable of delivering full output power over a wide operating baseplate temperature range of -40 to 85°C. For maximum applications flexibility, the main output is adjustable. The 28 V model, for example, can be adjusted from 24 to 30 V and has a maximum current rating of 42.9 A.

AT A GLANCE

Total Power

1200 W

# of Outputs

Single

Outputs

24, 28, 36, 48 VDC

SPECIAL FEATURES

- 1200 W full power at elevated temperatures
- Wide operating temperature range (-40°C to 85°C baseplate)
- Adjustable output
- Remote output On/Off
- AC_OK; DC_OK signals
- 5 V standby voltage
- Active current share
- Conduction-cooled/fanless
- I^2C / PMBus
- ITE Safety
- Active power factor correction
- Optional IP65 variant

COMPLIANCE

- EMI Class B
- EN61000 Immunity

SAFETY

- UL + CSA: IEC 62368-1
- Demko: IEC 62368-1
- CB Scheme: IEC 60950-1
  IEC 62368-1
- CCC
- CE Mark
- UKCA Mark

PMBus® Power Management. Defined.

ELECTRICAL SPECIFICATIONS

Input	
Input range	90 to 264 VAC (Safety rating: 100 to 240 VAC) 127 to 374 VDC[1] 1200 W at 180 to 264 VAC 700 W at 90 to 132 VAC (24 V / 28 V) 800 W at 90 to 132 VAC (48 V)
Frequency	47 to 63 / 440 Hz (Safety rating: 50/60 Hz)
Input fusing	Single Fuse
EMI/RFI[2]	FCC Class B, CISPR22/EN55022 Class B
Inrush current	≤ 25 A peak at 264 VAC, 25°C ambient temperature, cold start, excluding X caps
Power factor	0.99 typical
Harmonics	Meets EN61000-3-2 Class A and Class C[3]
Input current	< 8 Arms @ 180 VAC
Hold up time	20 mS min for Main Output (230 VAC) @ 100% Load
Efficiency	Typical @ 230 VAC; 100% Load; 28 VDC 93.5% Efficiency at 25°C baseplate temperature (35°C ambient)
Leakage current	< 3.5 mA max per IEC 62368-1 Standard
Isolation voltage	PRI-SEC: 3,000 VAC PRI-Chassis: 1,500 VAC SEC-Chassis: 500 VDC

[1] DC input rating not part of product's Safety approval.
[2] On the -9P units, it is recommended to use a snap-on ferrite Wurth pn 74271222 (or equivalent) on the AC input cable to comply with EMI radiated spec.
[3] Meets Class C at 100% load.

ELECTRICAL SPECIFICATIONS (CONTINUED)

Output		
Output rating	See Ordering Information table	
Standby output	5.0 VDC @ 1.5 A Max	
Set point	± 0.5%	Factory set point
Total regulation	Main Output: ± 2.0% 5 VSB: ± 5%	Combined Line / Load / Temperature
Rated load	1200 W maximum	1200 W from -40°C to 85°C Baseplate Temp.
Minimum load	0 A	For both Main and 5 VSB Outputs
Output voltage adjust range	See Ordering Information table	Max power limited to 1200 W
Output noise	Main Output: 1.0% max p-p 5 VSB: 60 mV max p-p	Measured with 0.1 µF Ceramic and 10 µF Tantalum Cap, 20 MHz BW
Remote sense	Compensation up to 500 mV	Pin 10: +Vout_RS / Pin4: -Vout_RS
Overcurrent protection	105 to 130% of full load current	The DC outputs shall be internally protected against output overload or short circuit applied to its output. Recovery must be automatic when the overload is removed. No damage shall result to the supply as the result of either short term or long term overloads of the outputs. To be measured under all line and load conditions. In case of continued Overload, main output will retry for 20 secs. After 20 secs retry, output will latch. Optional Constant Current mode supported up to the lowest output trim range.
Overvoltage protection	105 to 145% of Vo, nom Main Output 120 to 155% of 5 VSB	Latching / AC recyle or inhibit toggle required for PSU restart
Overtemperature protection	> 95°C Baseplate temperature	Output shutdown / Auto-recovery
AC_OK	Open Collector; 0.8 VDC max / 10 mA	Active low when AC is present
DC_OK	Open Collector; 0.8 VDC max / 10 mA	Active low when Main Output is within regulation
Remote inhibit	Contact closure	Pin 19: Open/Float = ON; Close/Ground = OFF
# Units in parallel operation	Qualified up to 3 units in parallel. Consult factory if more than 5 are required.	Pin 5: IShare pin for main output only.
Output dimming	0-10 VDC external voltage; 0-100 kOhm external resistance	Consult with productsupport.ep@aei.com

ENVIRONMENTAL SPECIFICATIONS

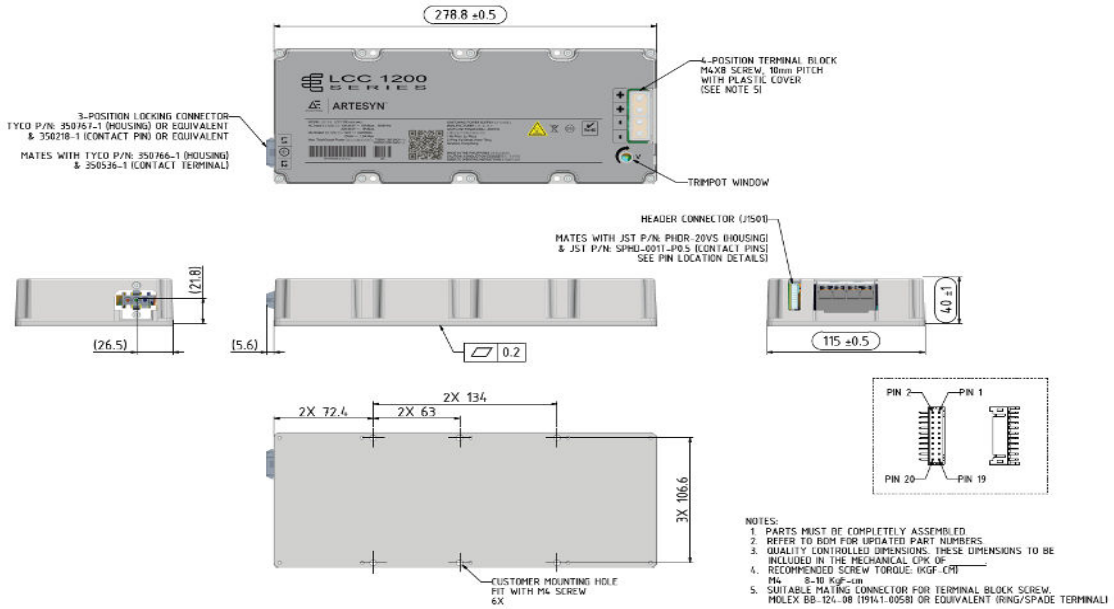
Operating temperature range	-40°C to +85°C Baseplate temperature
Storage temperature	-40°C to +85°C
Humidity	10% to 95%
Altitude	16,402 ft (Operating) / 50,000 ft (Non-Operating)
Ingress protection	IP65 (for suffix "-4P")
MTBF (calculated)	>2M Hrs, 25°C per SR-332 Issue 3
Electromagnetic immunity	Designed to meet EN61000-4-3, -4, -5, -8, -11 (Level 3); EN61000-4-2 (Level 4); EN55035

ORDERING INFORMATION

SERIES	Nominal Output Voltage	Trimming Range		Setpoint	Pout, Max	Iout, Max	Output Ripple	Line/Load/ Temp Regulation	IP Rating
		Minimum	Maximum						
LCC1200-28U-4P	28 V	24 V	30 V	±0.5%	1200 W	42.9 A	1.0%	2.0%	IP65
LCC1200-28U-9P	28 V	24 V	30 V	±0.5%	1200 W	42.9 A	1.0%	2.0%	IP20
LCC1200-28U-4P24	24 V	24 V	24 V	±0.5%	1200 W	50.0 A	1.0%	2.0%	IP65
LCC1200-28U-9P24	24 V	24 V	24 V	±0.5%	1200 W	50.0 A	1.0%	2.0%	IP20
Future Models									
LCC1200-36U-xxxx	36 V	32 V	38 V	±0.5%	1200 W	33.3 A	1.0%	2.0%	IP20 or IP65
LCC1200-48U-xxxx	48 V	42 V	57.6 V	±0.5%	1200 W	25.0 A	1.0%	2.0%	IP20 or IP65

MECHANICAL DRAWINGS

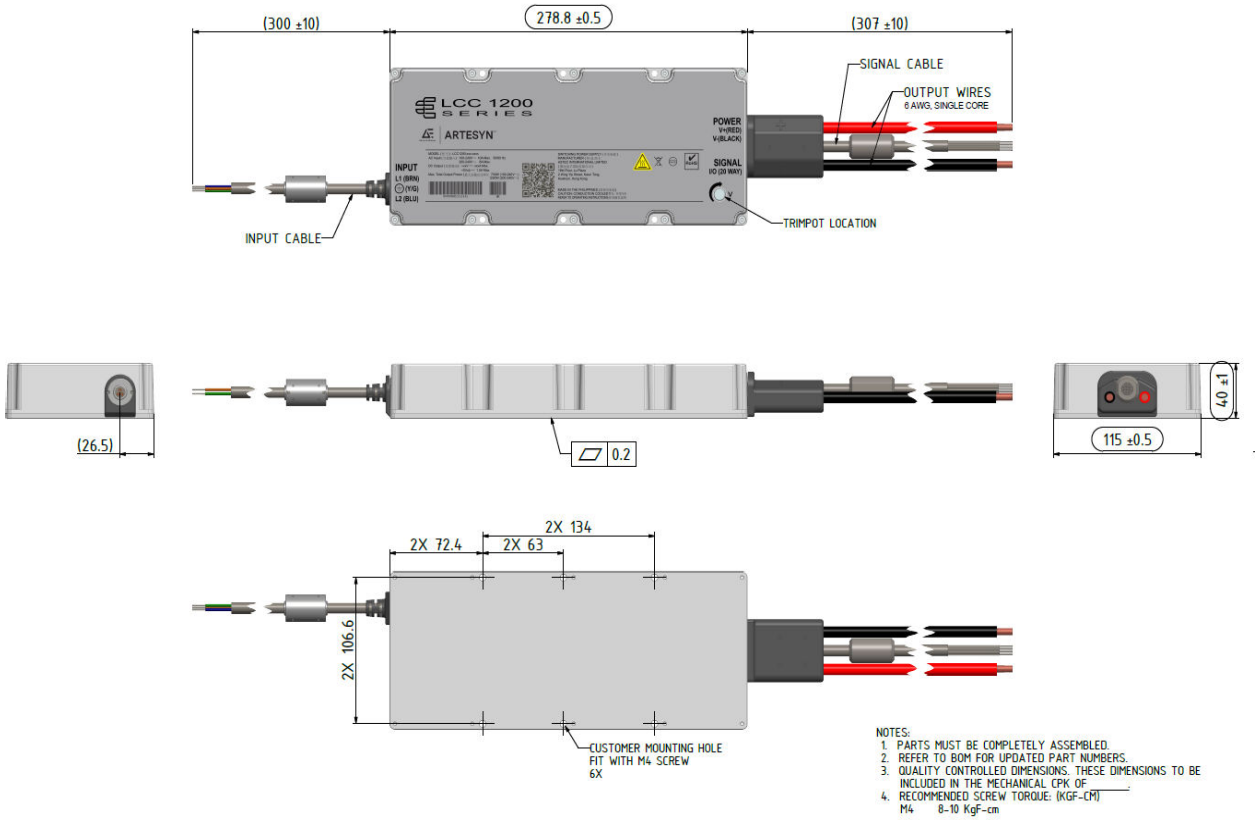
-9P Suffix



*Weight: 9P Suffix: 1.8 kg typical
4P Suffix: 2.2 kg typical

MECHANICAL DRAWINGS (CONTINUED)

-4P Suffix



*Weight: 9P Suffix: 1.8 kg typical
4P Suffix: 2.2 kg typical

PIN ASSIGNMENT (INPUT)

	-9Px Suffix		-4Px Suffix	
DESCRIPTION	DESIGNATION	NOTES	DESIGNATION	NOTES
Live	L1	Mating Connector: 350766-1 (Housing); 350536-1 (Contact Terminals)	Brown	SJTW 18AWGX3C; PVC jacket; 105°C / 300 V
Neutral	L2		Blue	
Ground	G		Y/GR	

PIN ASSIGNMENT (MAIN OUTPUT)

	-9Px Suffix		-4Px Suffix (36, 48 VDC)		-4Px Suffix (28 VDC)	
DESCRIPTION	DESIGNATION	NOTES	DESIGNATION	NOTES	DESIGNATION	NOTES
Main Output	+Vout	4 Position Terminal Block: M4 Screw/10mm Pitch; 12kgf-cm Torque; Accepts 14-16AWG Ring Tongue - Spade Terminals MOLEX BB-124-08 (19141-0058) or EQUIVALENT	Red	12AWGX2C; PVC jacket; 105°C / 300 V	Red	6AWG Multi-Strand; PVC jacket; 105°C / 600 V
			Red			
Main Output Return GND	-Vout		Black		Black	
			Black			

PIN ASSIGNMENT

J1501 - Signal & Control		-9Px Suffix		-4Px Suffix	
SIGNALS	DESCRIPTION	PIN #	NOTES	WIRE COLOR	NOTES
CC_CV_SELECT	Select between CC and CV Mode: CC Mode - 0 V (Pull Low/Close) CV Mode - 3.3 V (Pull High/Open)	1	J1501 Mating Connector: JST PN PHDR-20VS Contact Pins: JST PN SPHD-001T-P0.5	BLACK	26AWGX20C+AL; PVC Jacket; 105°C / 300 V
GND	Ground	2		BROWN	
A1	I²C Bit Address	3		RED	
-VOUT_RS	Remote Sense Return (Main O/P)	4		ORANGE	
ISHARE	Load Share Voltage	5		YELLOW	
A0	I²C Bit Address	6		GREEN	
SDA	Serial Data Signal (I^2C)	7		BLUE	
CC_SET_POINT	Constant Current Level Adjust	8		VIOLET	
SCL	Serial clock Signal (I^2C)	9		GRAY	
+VOUT_RS	Remote Sense Positive (Main O/P)	10		WHITE	
5VSB	5 V Standby (1.5 A Maximum)	11		PINK	
5VSB_RET	5 V Standby Return	12		LIGHT BLUE	
5VSB_SENSE	For Factory Use	13		WHITE/VIOLET	
G_DCOK_C	Global DC_OK Collector	14		WHITE/YELLOW	
RESERVE	RESERVE	15		WHITE/ORANGE	
G_DCOK_E	Global DCOK Emitter (GND)	16		WHITE/BLACK	
GND	Return Ground (for the output signal and I²C communication)	17		WHITE/RED	
G_ACOK_C	Global AC_OK Collector	18		WHITE/BROWN	
INH_EN #	Output Inhibit_Enable Pin (turns output off)	19		WHITE/GREEN	
RESERVE	RESERVE	20		WHITE/BLUE	

POWER DERATING CURVES

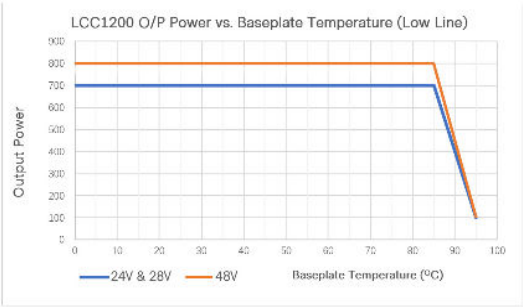


Figure 1. Output Power vs. Baseplate Temperature (90VAC to 179VAC)

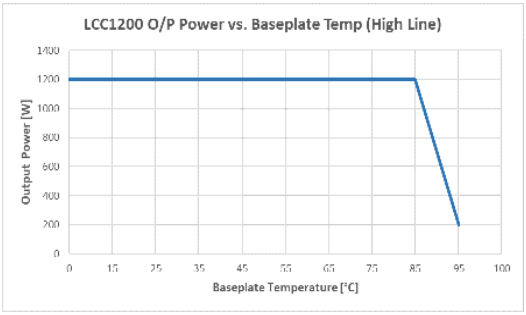


Figure 2. Output Power vs. Baseplate Temperature (180VAC to 264VAC)

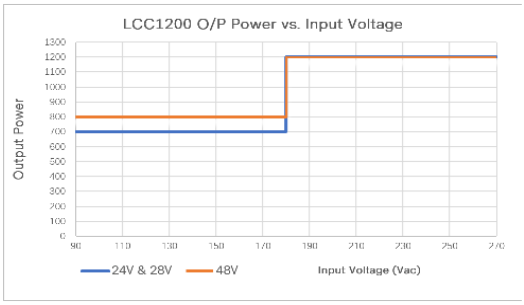


Figure 3. Output Power vs. Input Voltage

EFFICIENCY CURVES

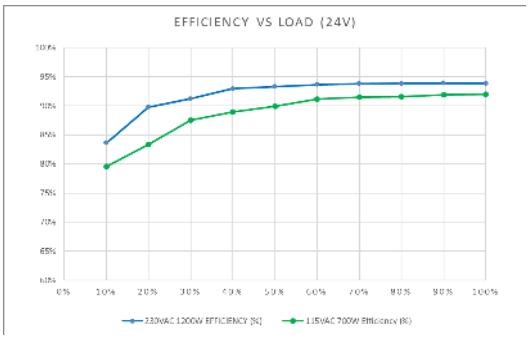


Figure 4. Efficiency Curves at 24V Output Voltage

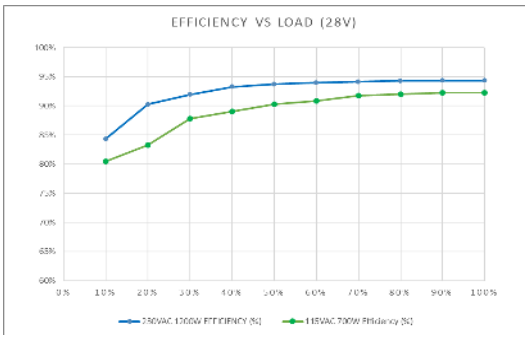


Figure 5. Efficiency Curves at 28V Output Voltage

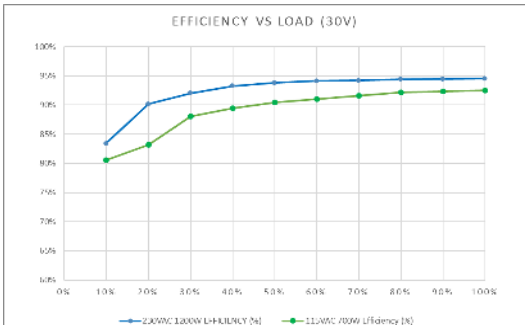
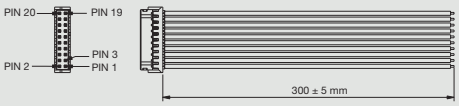
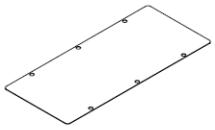
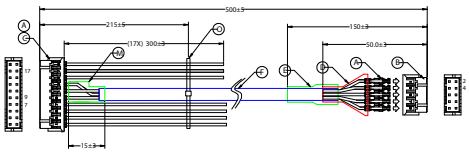
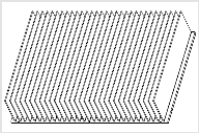


Figure 6. Efficiency Curves at 30V Output Voltage

ACCESSORIES

Orderable Part Number	Description	Diagram/Picture
70-841-030	For Suffix "-9P" AC Input Mating Connector Cable Assembly (w/ 0.3 m wire length)	
73-788-001	J1501 (20 Pin Control Signal) Mating Connector with 0.3 m wires attached for "-9P" suffix	
TBD	Pre-Cut thermal insulator (Laird TFLEX HR220FG)	
73-769-002	USB to I^{2}C High Speed Adaptor for PMBus Communication	
750-007213-0000	J1501 (20 Pin) Mating connector with 10 Pin header termination for use with 73-769-002	
TBD	Test Heatsink for unit characterization. Size: 331 x 220 x 69 mm; Aluminum with natural finish; Weight = 1.7 kgs	

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

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