

### Data Sheet

**Total Power:** 600 W  
**# of Outputs:** Single  
**Outputs:** 12, 28, 36, 48 Vdc

### SPECIAL FEATURES

- 600 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<sup>2</sup>C / PMBus
- Medical and ITE Safety<sup>3</sup>
- Suited for BF-type applications
- Active power factor correction
- Optional IP65 variant
- Optional 277 Vac input variant

### COMPLIANCE

- EMI Class B
- EN61000 Immunity

### SAFETY

- UL + CSA: 60950-1 2<sup>nd</sup> Ed.  
ANSI ES60601-1<sup>3</sup>  
UL 8750<sup>5</sup>  
CSA-C22.2 No. 250.13<sup>5</sup>
- TÜV: 60950-1 2<sup>nd</sup> Ed.  
60601-1 3<sup>rd</sup> Ed.<sup>3</sup>  
EN 61347-1; -2-13<sup>5</sup>
- CB Scheme: IEC 60950-1  
IEC 60601-1  
IEC 61347-1; -2-13<sup>5</sup>
- China CCC
- CE Mark



### Electrical Specifications

| Input                         |                                                                                                                                                                                                                            |           |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Input range                   | U Suffix: 90 - 264 Vac (Safety rating: 100 - 240 Vac)<br>127 - 374 Vdc <sup>4</sup><br>H Suffix: 180 - 305 Vac (Safety rating: 200 - 277 Vac)<br>254 - 420 Vdc <sup>4</sup>                                                |           |
| Frequency                     | 47 - 63 / 440 Hz (Safety rating: 50/60 Hz)                                                                                                                                                                                 |           |
| Input fusing                  | Internal fuse on both L and N lines (12.5 A - U suffix; 7 A - H suffix)                                                                                                                                                    |           |
| EMI/RFI                       | FCC Class B, CISPR22/EN55022 Class B                                                                                                                                                                                       |           |
| MIL-STD-461F EMI <sup>1</sup> | Compliance to CE101, 102; CS101, 114, 115, 116 (with external filter <sup>1</sup> )                                                                                                                                        |           |
| Inrush current                | ≤ 25 A peak                                                                                                                                                                                                                |           |
| Power factor                  | 0.99 typical                                                                                                                                                                                                               |           |
| Harmonics                     | Meets EN61000-3-2 Class A and Class C <sup>2</sup>                                                                                                                                                                         |           |
| Input current                 | < 10 Arms @ 100 Vac                                                                                                                                                                                                        |           |
| Hold up time                  | 20 ms min for Main Output (230 Vac) @ 100% Load                                                                                                                                                                            |           |
| Efficiency                    | 93.3% typical @ 230 Vac; 100% Load; 28 Vdc                                                                                                                                                                                 |           |
| Leakage current <sup>3</sup>  | U Suffix: 115 µA typical (< 200 µA max per ANSI/ES60601-1 264 Vac split-phase / 60 Hz)<br>387 µA typical (< 500 µA max per IEC60601-1; 264 Vac / 50Hz)<br>H Suffix: 0.2 mA typical (< 3.5 mA max per ITE 60950-1 Standard) |           |
| Isolation voltage             | U Suffix                                                                                                                                                                                                                   | H Suffix  |
|                               | PRI-SEC: 4,000 Vac (2X MOPP)                                                                                                                                                                                               | 3,000 Vac |
|                               | PRI-Chassis: 1,500 Vac (1X MOPP)                                                                                                                                                                                           | 2,000 Vac |
|                               | SEC-Chassis: 1,500 Vac (1X MOPP)                                                                                                                                                                                           | 1,500 Vac |

<sup>1</sup>Artesyn Filter PN: 700-014447-0000 (Zhongguang PN: ZGLPG-10-02M).

<sup>2</sup>Meets Class C ≥ 50% load.

<sup>3</sup>U suffix have both ITE and Medical Safeties. H suffix carries ITE approval only.

<sup>4</sup>DC input rating not part of product's Safety approval.

<sup>5</sup>LED Lighting approvals apply to all 48 V output variants.

## Electrical Specifications

| 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%<br>5 Vsb: ± 5%                                                | Combined Line / Load / Temperature                                                                                                                                                                      |
| Rated load                    | 600 W maximum                                                                     | 600 W from -40 °C to 85 °C Baseplate Temp. Derate output to 28 W @ 95 °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 600 W                                                                                                                                                                              |
| Output noise                  | Main Output: 1.0% max p-p<br>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 - 130% of full load current                                                   | Default is Shutdown mode with Auto-retry every 2~4 sec. Output latches after 20 sec of continuous OCP fault presence. Restart after latch possible through AC recycle, Inhibit toggle or through PMBus. |
| Overvoltage protection        | 125 - 145% Vo, nom Main Output<br>125 - 130% 5 Vsb                                | Latching / AC Recycle 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 5 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;<br>0-100 kOhm external resistance                      | Consult with productsupport.ep@artesy.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)                                                       |
| Shock                       | MIL-STD-810F 516.5 Procedure I, VI                                                                      |
| Vibration                   | MIL-STD-810F 514.5 Cat. 4, 10                                                                           |
| 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); EN60601-1-2 and EN55024 |
|                             | For H suffix, Level 4 for EN61000-4-5                                                                   |

## Ordering Information

| Model Number*   | AC Input  | Output Setpoint | Setpoint Tolerance | Adjustment Range | Output Current [A] |       | Max O/P   | Typical Efficiency** | Standby Output | Combined Line/Load Regulation | Output Ripple |
|-----------------|-----------|-----------------|--------------------|------------------|--------------------|-------|-----------|----------------------|----------------|-------------------------------|---------------|
|                 |           |                 |                    |                  | Min                | Max   | Power [W] |                      |                |                               |               |
| LCC600-48U-9P   | 90 - 264  | 48 V            | ±0.5%              | 44 - 54          | 0                  | 12.5  | 600       | 93.0%                | 5 Vdc @ 1.5 A  | 2%                            | 1%            |
| LCC600-48H-9P   | 180 - 305 |                 |                    |                  |                    |       |           |                      |                |                               |               |
| LCC600-36U-9P   | 90 - 264  | 36 V            | ±0.5%              | 32 - 38          | 0                  | 16.7  | 600       | 92.0%                | 5 Vdc @ 1.5 A  | 2%                            | 1%            |
| LCC600-36H-9P   | 180 - 305 |                 |                    |                  |                    |       |           |                      |                |                               |               |
| LCC600-28U-9P24 | 90 - 264  | 24 V            | ±0.5%              | 24 - 30          | 0                  | 25    | 600       | 93.0%                | 5 Vdc @ 1.5 A  | 2%                            | 1%            |
| LCC600-28U-9P   | 90 - 264  | 28 V            | ±0.5%              | 24 - 30          | 0                  | 25*** | 600       | 93.5%                | 5 Vdc @ 1.5 A  | 2%                            | 1%            |
| LCC600-28H-9P   | 180 - 305 |                 |                    |                  |                    |       |           |                      |                |                               |               |
| LCC600-12U-9P   | 90 - 264  | 12 V            | ±0.5%              | 12 - 15          | 0                  | 50    | 600       | 92.3%                | 5 Vdc @ 1.5 A  | 2%                            | 1%            |
| LCC600-12H-9P   | 180 - 305 |                 |                    |                  |                    |       |           |                      |                |                               |               |

\*Change suffix "-9P" to "-4P" for IP65 rated enclosure with fly lead wires

\*Change suffix "-4P" to "-4PR" for IP65 rated enclosure with right angle fly lead wires (applies to 28, 36, 48 Vdc)

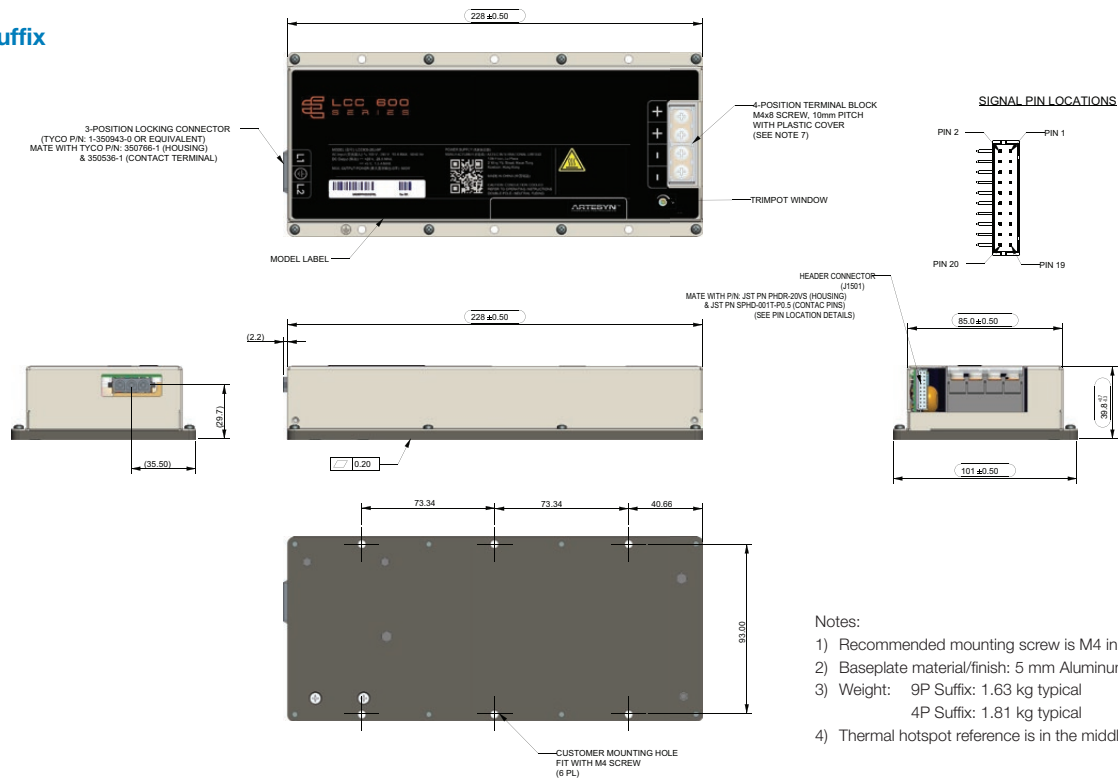
\*Change suffix "-4P" to "-4PV" to omit the control cable (applies to 28, 36, 48 Vdc)

\*\*Typical efficiency at high line, factory default voltage and full load

\*\*\*When Vout is adjusted down to 24 V, the supply can deliver 25 A max (600 W max). At 28 V default output setting, max lout is 21.43 A (600 W max).

## Mechanical Drawings

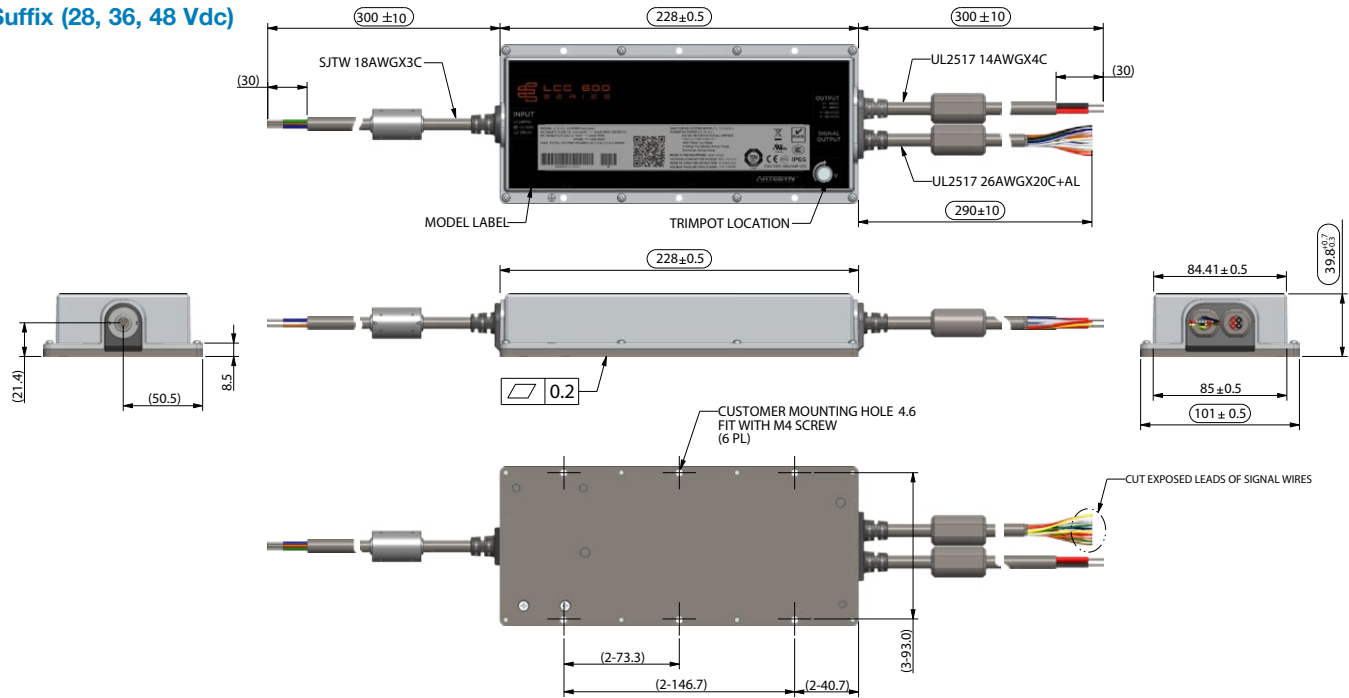
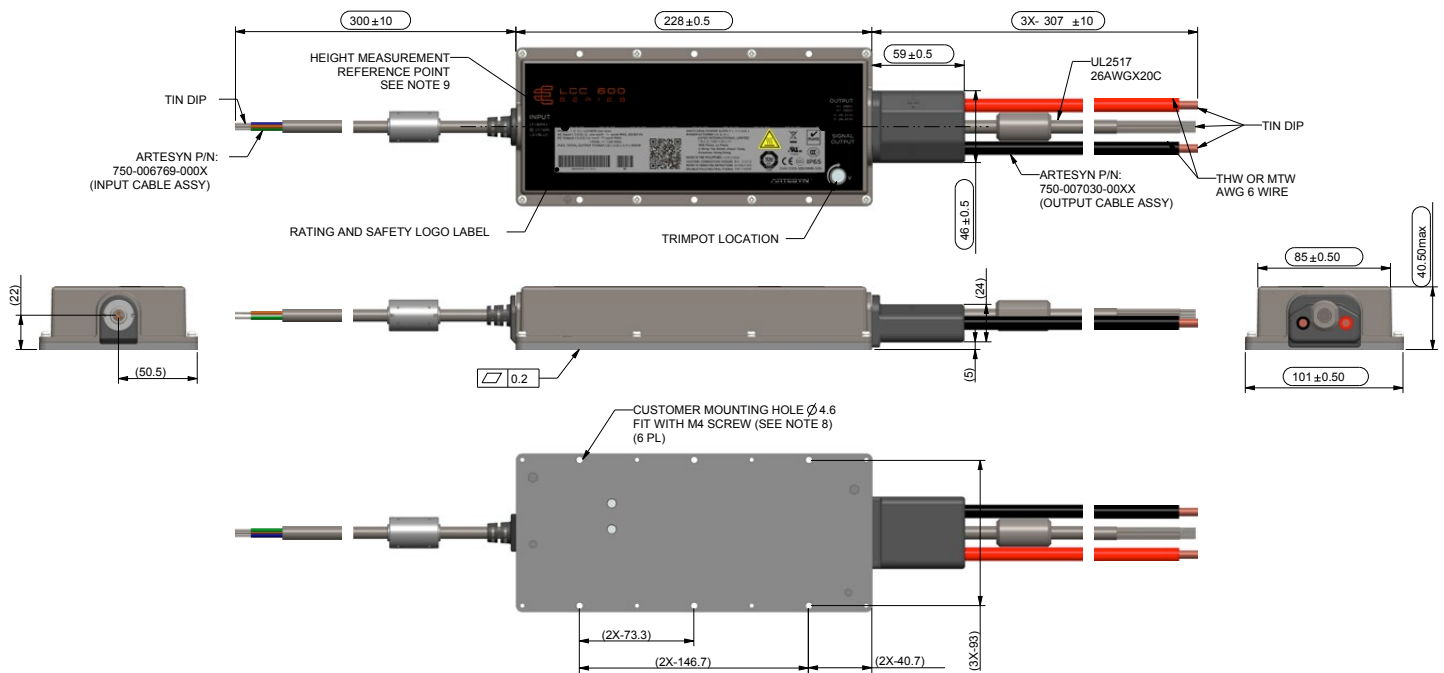
### -9P Suffix



#### Notes:

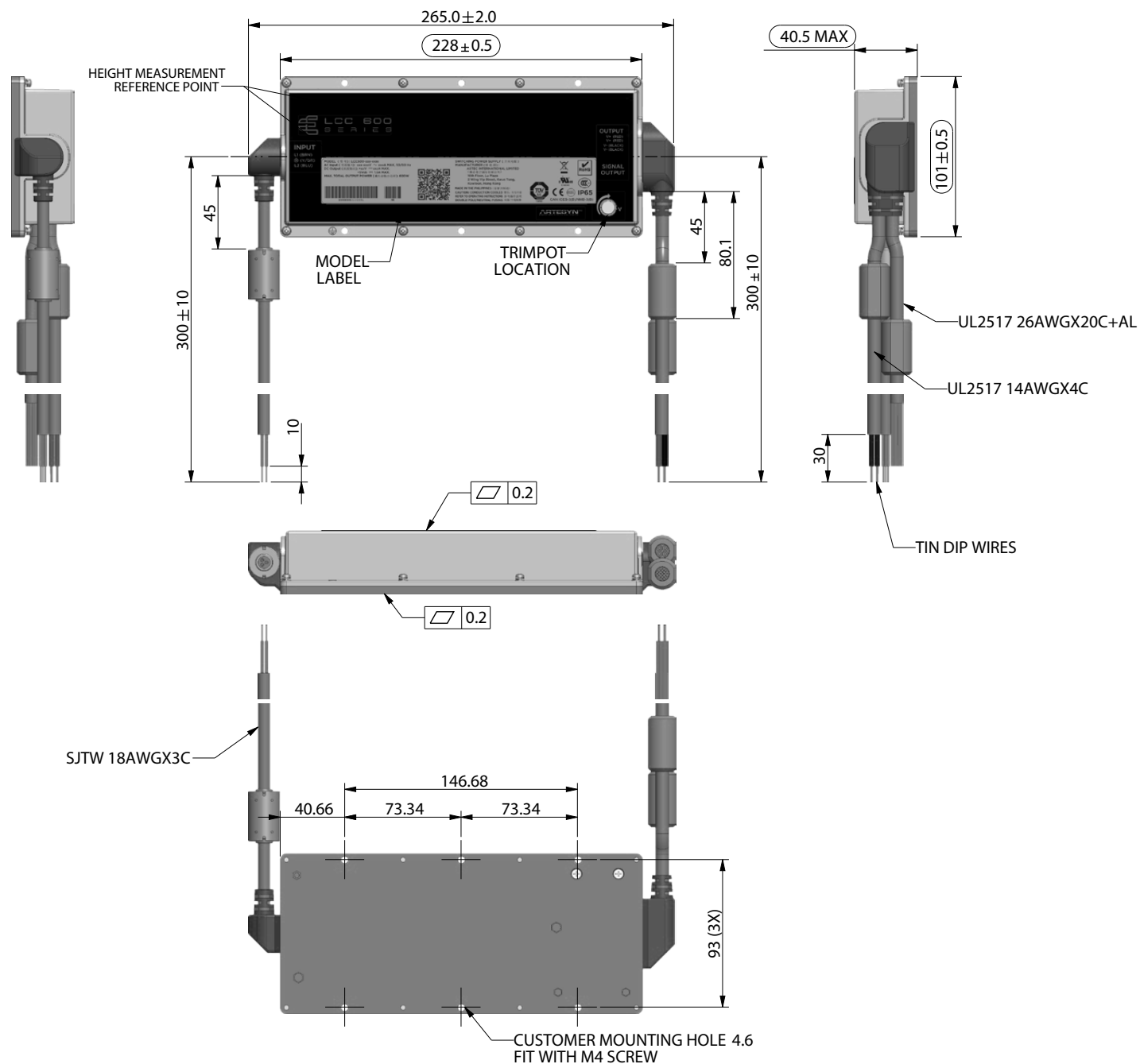
- 1) Recommended mounting screw is M4 in 6 locations; 8-10 kgf-cm torque.
- 2) Baseplate material/finish: 5 mm Aluminum with Black Anodized.
- 3) Weight: 9P Suffix: 1.63 kg typical  
4P Suffix: 1.81 kg typical
- 4) Thermal hotspot reference is in the middle of the baseplate.

## Mechanical Drawings

**-4P Suffix (28, 36, 48 Vdc)****-4P Suffix (12 Vdc)**

## Mechanical Drawings

-4PR Suffix (28, 36, 48 Vdc)



## Pin Assignment (INPUT)

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

## Pin Assignment (MAIN OUTPUT)

|                        | -9Px Suffix |                                                                                                                                                            | -4Px Suffix (28, 36, 48 Vdc) |                                      | -4Px Suffix (12 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                          | 14AWGX4C; PVC jacket; 105 °C / 300 V | Red                  | 6AWG Multi-Strand; PVC jacket; 105 °C / 600 V |
|                        |             |                                                                                                                                                            | Red                          |                                      |                      |                                               |
| Main Output Return GND | -Vout       |                                                                                                                                                            | Black                        |                                      |                      |                                               |
|                        |             |                                                                                                                                                            | Black                        |                                      |                      |                                               |

## Pin Assignment

| J1501 - Signal & Control |                                                 |       | -9Px Suffix                                                                               |              | -4Px Suffix                                    |  |
|--------------------------|-------------------------------------------------|-------|-------------------------------------------------------------------------------------------|--------------|------------------------------------------------|--|
| SIGNALS                  | DESCRIPTION                                     | PIN # | NOTES                                                                                     | WIRE COLOR   | NOTES                                          |  |
| A2_OUT                   | EEPROM Address                                  | 1     | J1501 Mating Connector:<br>JST PN PHDR-20VS<br><br>Contact Pins:<br>JST PN SPHD-001T-P0.5 | BLACK        | 26AWGX20C+AL;<br>PVC jacket;<br>105 °C / 300 V |  |
| GND                      | Ground                                          | 2     |                                                                                           | BROWN        |                                                |  |
| A1_OUT                   | EEPROM Address                                  | 3     |                                                                                           | RED          |                                                |  |
| -VOUT_RS                 | Remote Sense Return (Main O/P)                  | 4     |                                                                                           | ORANGE       |                                                |  |
| ISHARE                   | Load Share Voltage                              | 5     |                                                                                           | YELLOW       |                                                |  |
| A0_OUT                   | EEPROM Address                                  | 6     |                                                                                           | GREEN        |                                                |  |
| SDA                      | Serial Data Signal (I²C)                        | 7     |                                                                                           | BLUE         |                                                |  |
| SPARE_1                  | Spare/Unused Pin                                | 8     |                                                                                           | VIOLET       |                                                |  |
| SCL                      | Serial clock Signal (I²C)                       | 9     |                                                                                           | GRAY         |                                                |  |
| +VOUT_RS                 | Remote Sense (Main O/P)                         | 10    |                                                                                           | WHITE        |                                                |  |
| 5VSB                     | 5V Standby (1.5A Max)                           | 11    |                                                                                           | PINK         |                                                |  |
| SGND                     | 5V Standby Return                               | 12    |                                                                                           | LIGHT BLUE   |                                                |  |
| SPARE_2                  | Spare/Unused Pin                                | 13    |                                                                                           | WHITE/VIOLET |                                                |  |
| G_DCOK_C                 | Global DC_OK Collector                          | 14    |                                                                                           | WHITE/YELLOW |                                                |  |
| WP                       | EEPROM Write Protect                            | 15    |                                                                                           | WHITE/ORANGE |                                                |  |
| G_DCOK_E                 | Global DC_OK Emitter (GND)                      | 16    |                                                                                           | WHITE/BLACK  |                                                |  |
| GND                      | Return GND for O/P 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  |                                                |  |
| G_ACOK_E                 | Global AC_OK Emitter (GND)                      | 20    |                                                                                           | WHITE/BLUE   |                                                |  |

## Power Derating Curves

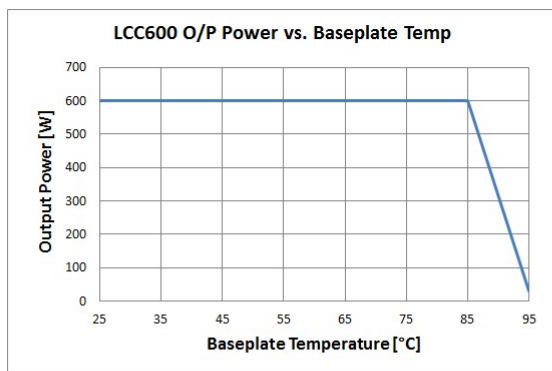


Figure 1. Output Power vs. Baseplate Temperature

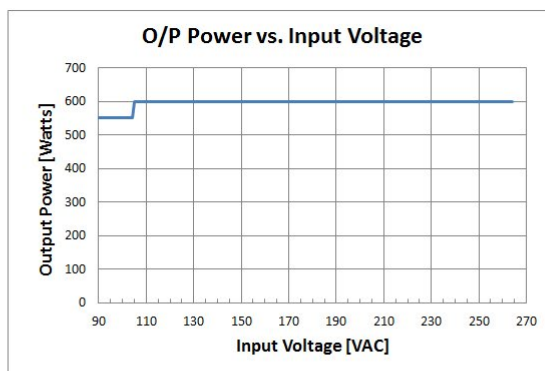


Figure 2. Output Power vs. Input Voltage

## Efficiency Curves

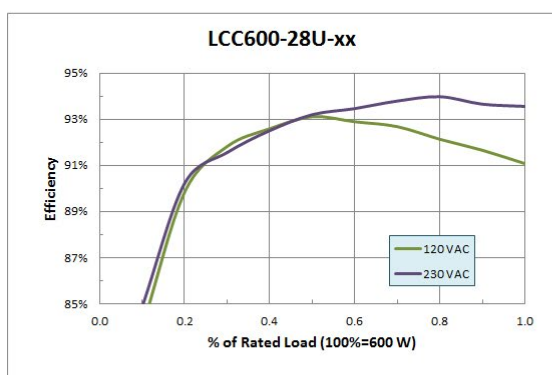


Figure 3. Typical Efficiency for 28 V output

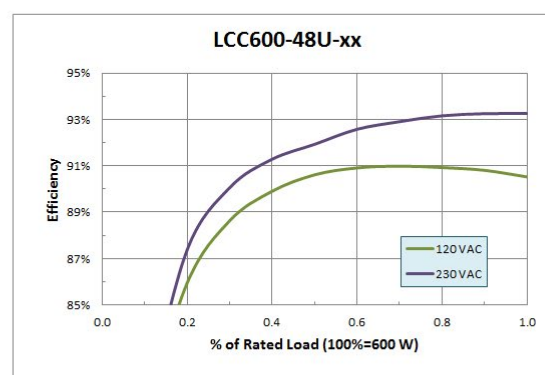


Figure 4. Typical Efficiency for 48 V output

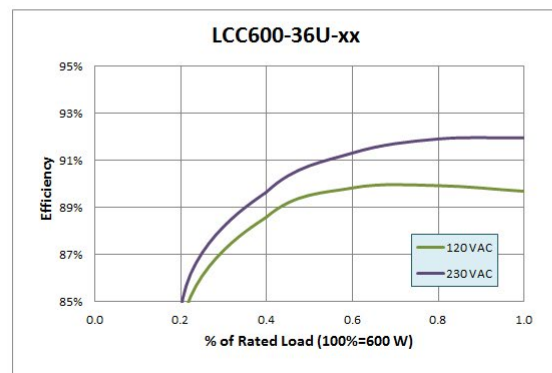


Figure 5. Typical Efficiency for 36 V output

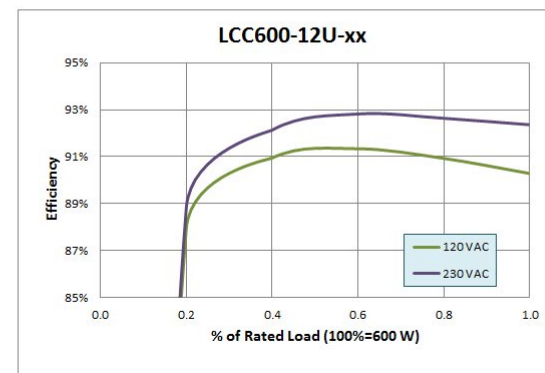
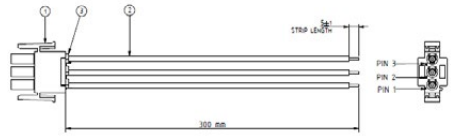
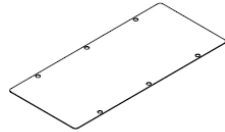
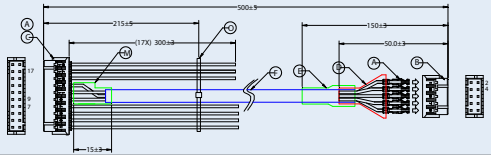
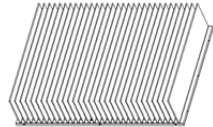


Figure 6. Typical Efficiency for 12 V output

## ACCESSORIES

| Orderable Part Number | Description                                                                                                      | Diagram                                                                               |
|-----------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 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                        |     |
| 70-841-031            | Pre-Cut thermal insulator (Laird TFLEX HR220FG)                                                                  |    |
| 700-014447-0000       | MIL-STD-461F AC input In-line EMI filter (Zhongguang ZGLPG-10-02M)                                               |    |
| 73-769-002            | USB to I²C 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                           |   |
| 466-003103-0000       | Test Heatsink for unit characterization. Size: 331 x 220 x 69 mm; Aluminum with natural finish; Weight = 1.7 kgs |  |

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