



ABS601 Series

600 W AC-DC Power Supplies

Sealed IP66/67/68



The ABS601 Series of AC-DC power supplies provides up to 600 W of regulated output power through a wide input voltage range 85 – 305 VAC in a single output of 24 VDC or 48 VDC.

The ABS601 Series comes in a 4.92 x 9.86 x 2.36 inch form factor with a full set of protection features.

The ABS601 Series is available in an aluminium extruded chassis having fins for an optimal heat dispersion via natural convection. The input / output connections are fixed to the chassis through water tight glands, which combined with the sealed enclosure, give the power supply an IP66/67/68 ingress protection grade.

The -SL option offers a 5 V_{DC} stand-by output and a set of control signals: +/- remote sense, remote On/Off (-PS_Inhibit), power good (PS_Ok), I-share (ISHARE1+V_SLOGIC).

The ABS601 Series complies with the latest international safety standards and displays the CE-Mark for the European Low Voltage Directive (LVD).

Key Features & Benefits

- Sealed enclosure, IP66/67/68 Ingress Protection grade
- High efficiency up to 94% (50% to 100% load)
- Low stand-by power consumption (< 0.35 W)
- Universal input voltage range 85 – 305 VAC
- Input inrush current limiting <30 A
- 800 W peak power (up to 10 s)
- Single 24, 48 VDC voltages
- Active PFC, EN61000-3-2 compliant (Class C, >25% load)
- Low earth leakage current (typ. <400 μ A, 264 VAC, 60 Hz)
- Over temperature, OV, OC and SC protections.
- Stand by +5 V, 1.5 A output.
- Remote On / Off signal
- IT approval to IEC/EN 60950-1 and IEC/EN 62368-1
- LED lighting approval to UL 8750
- UV resistant input / output cables
- Overall dimensions 125.0 x 250.5 x 60.0 mm (4.92 x 9.86 x 2.36 in)
- RoHS 3 compliant (Directive 2015/863/EU)

Applications

- Video Wall Display and SSL Lighting
- Industrial Process Control and Automation
- Telecommunications / Broadcasting
- Harsh environment supply



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1. MODEL SELECTION

| MODEL NUMBER | PACKAGE & COOLING | INPUT VOLTAGE RANGE [VAC] | NOM. OUTPUT VOLTAGE [VDC] | MAX. OUTPUT POWER [W] | MAX. OUTPUT CURRENT [A] | DIMENSIONS |
|----------------|---|---------------------------|---------------------------|-----------------------|-------------------------|--|
| ABS601-1T24 | Sealed Chassis Natural Convection | 85 - 305 | 24 | 600 | 25 | 125.0 x 250.5 x 60.0 mm 4.92 x 9.86 x 2.36 in |
| ABS601-1T24-SL | Sealed Chassis Natural Convection + Control Signals | 85 - 305 | 24 | 600 | 25 | |
| ABS601-1T48 | Sealed Chassis Natural Convection | 85 - 305 | 48 | 600 | 12.5 | |
| ABS601-1T48-SL | Sealed Chassis Natural Convection + Control Signals | 85 - 305 | 48 | 600 | 12.5 | |

2. INPUT SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITION | MIN | NOM | MAX | UNIT | |
|--|--|-----------------|--|------------|------------------|---|
| AC Input Voltage | PS starts and operates at 85 V _{AC} at all load conditions | 85 | 100-277 | 305 | V _{RMS} | |
| DC Input Voltage | | 170 | - | 300 | V _{DC} | |
| Input Frequency | 440 Hz with reduced PFC and output power rating. Consult factory for details. | 47 | 50/60 | 63 | Hz | |
| Input Current | RMS at 180 V _{AC} , maximum load, 50 / 60 Hz RMS at 85 V _{AC} , maximum load, 50 / 60 Hz Cold start, 25 °C ambient, full load | - | - | 4.0 8.5 | A | |
| Inrush Current | | | 115 V _{AC} 230 V _{AC} | 20 30 | A | |
| Fusing | High breaking, 10 A, 250 V on each AC lines. | - | - | 10 | A | |
| Efficiency | At 115 V _{AC} | 20% rated load | 89 | - | - | % |
| | | 50% rated load | 93 | - | - | |
| | | 100% rated load | 92 | - | - | |
| | At 230 / 277 V _{AC} | 20% rated load | 90 | - | - | |
| | 50% rated load | 94 | - | - | | |
| | 100% rated load | 94 | - | - | | |
| Input Power Consumption | Power on, 115 V _{AC} , no load | - | - | 5 | W | |
| | Power on, 230 V _{AC} , no load | - | - | 4 | | |
| | Stand by, 115, 230 V _{AC} , no load | - | - | 0.35 | | |
| Power Factor | From 50 to 100% of rated load, 230, 115 V _{AC} , 50 / 60 Hz input voltages. | 0.90 | - | - | - | |
| THDi | From 50 to 100% rated load, 115, 230, 277 V _{AC} 50 / 60 Hz. | - | - | 20 | % | |
| Harmonic Current Fluctuations and Flicker | Complies with EN 61000-3-2 at 230 V _{AC} , 50/60 Hz, Class A, D. Complies with EN 61000-3-2 Class C at 230 V _{AC} , 50/60 Hz, >150 W load. Complies with EN 61000-3-3 at nominal voltages and full load. | | | | | |
| Earth Leakage Current | Normal conditions | | | | | |
| | 115 V _{RMS} , 60 Hz | - | 170 | - | μA | |
| | 230 V _{RMS} , 50 Hz | - | 290 | - | | |
| | 264 V _{RMS} , 60 Hz | - | - | 460 | | |
| 277 V _{RMS} , 60 Hz (worst case) | - | - | 490 | | | |

3. OUTPUT SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITION | MIN | NOM | MAX | UNIT | |
|--|--|--|----------|---------------------|-------------------------|----|
| V1 Output Voltages | ±0.5% set point accuracy RS+ closed on +V1, RS- closed on V1 RTN, at 20% load (-SL option). | - | 24 48 | - | V | |
| V1 Output Power Rating * | Convection cooling (Refer to the de-rating curves below) Peak (less than 10 s, after P_OK high) | | | 600 800 | W | |
| V1 Output Current * | V1: 24 V _{DC} V1: 48 V _{DC} | | | 25.0 12.5 | A | |
| V1 Voltage Adjustment Range | Manually by push up and down buttons | - | ±5 | - | %V1 | |
| V1 Line Regulation | V _{AC} : 85 – 305 V _{RMS} | - | - | ±0.1 | %V1 | |
| V1 Load-Line-Cross Regulation | V _{AC} : 85 – 305 V _{RMS} ; I ₁ : 0 – 100% | - | - | ±2 | %V1 | |
| V1 Ripple and Noise | Rated load, Peak-to-peak, 20 MHz BW. (100 nF ceramic, 10 µF tantalum at load) | - | - | 1 | %V1 | |
| Transient Response: V1, 5V _{SB} Voltage Deviation | 25% load changes at 1 A/µs 24 V at 1000 µF load / I _{OUT} > 2.5 A 48 V at 560 µF load / I _{OUT} > 1.25 A 5 V _{SB} at 560 µF load / I _{OUT} > 0.1 A | - | - | ±5 | %V1 %V _{SB} | |
| V1 Start-up Rise Time | 85 < V _{IN} < 305, any load conditions. | 10 | - | 100 | ms | |
| V1 Hold-up Time | At nominal V _{IN} , full load | 16 | - | - | ms | |
| V1 Current Sharing Accuracy | Two units in parallel at I1 rated load. VS-Logic and I-Share signals connected together. RS+, RS- signals connected together and to the load | 45.5 | - | 54.5 | %I1 | |
| Start-up Delay | V1 in regulation after de-asserting PS_Inhibit V1 in regulation after AC is applied (worst case: 85 V _{AC}) 5V _{SB} in regulation after AC is applied (worst case: 85 V _{AC}) | - | - | 450 2050 1500 | ms | |
| Turn-on Overshoot | | - | - | 10 10 | %V1 %V _{SB} | |
| Minimum Load | V1, 5V _{SB} | 0 | - | - | A | |
| Maximum Load Capacitance | | V1: 24 V _{DC} V1: 48 V _{DC} | - | - | 16000 8000 | µF |
| 5 V _{SB} Output Voltage | ±3% set point accuracy, 20% load. | - | 5 | - | V | |
| 5 V _{SB} Output Current | | - | - | 1.5 | A | |
| 5 V _{SB} Load, line cross Regulation | V _{AC} : 85 – 305 V _{RMS} ; I _{SB} : 0 – 100% | - | - | ±5 | %V _{SB} | |

* Rated currents and combined power are referred to 55 °C ambient and V_{AC} ≥ 180 V_{RMS}.

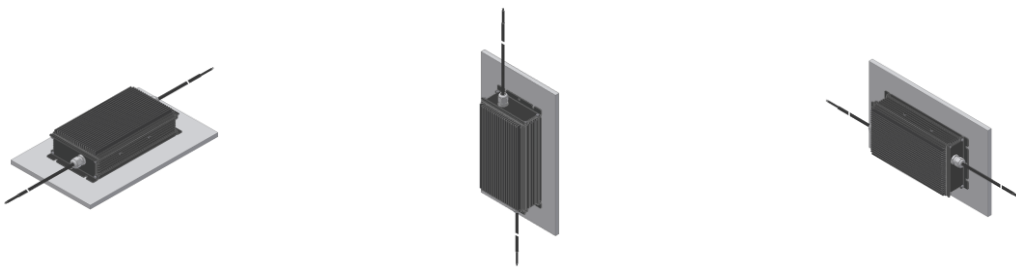


Figure 1. Mounting Orientation

3.1 OUTPUT POWER DE-RATING CURVES

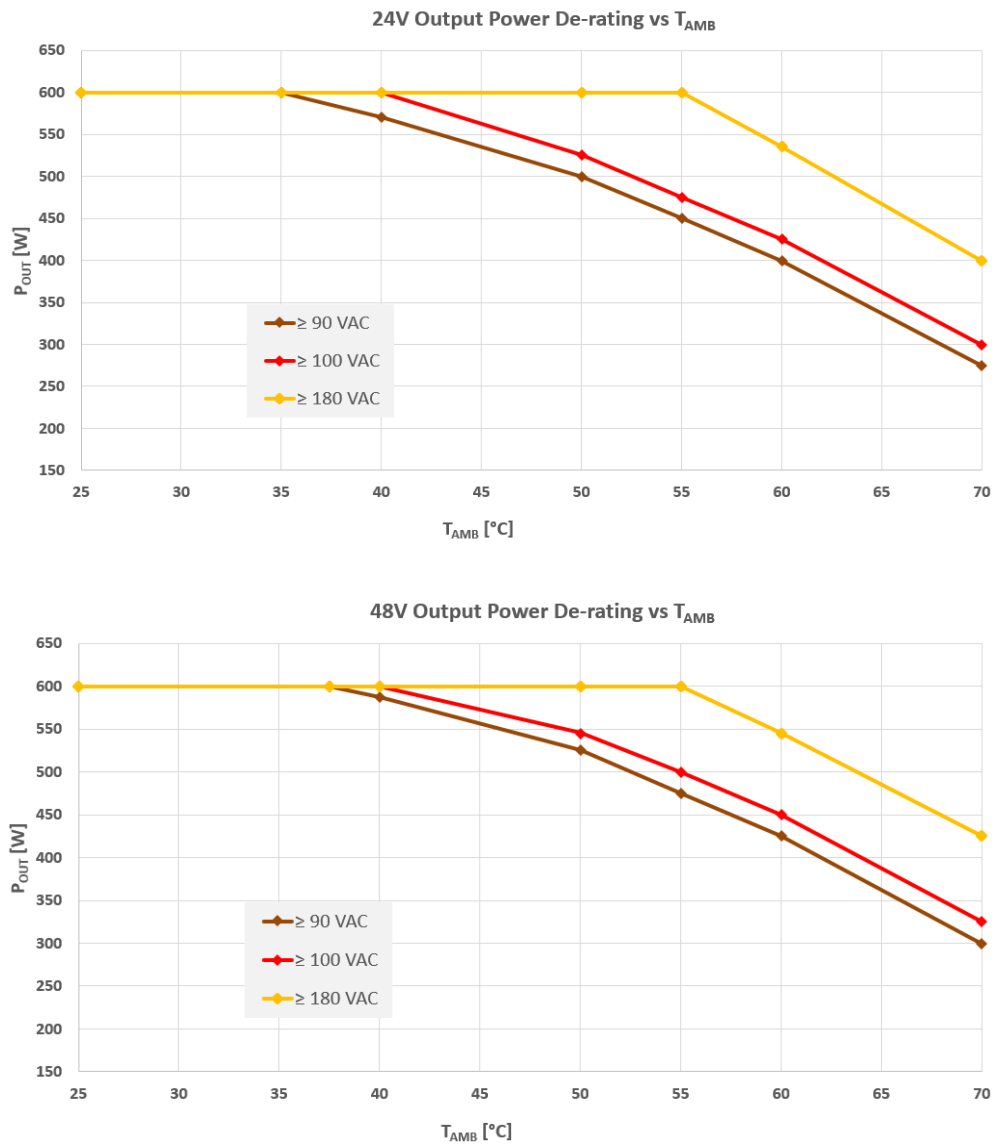


Figure 2. Power Derating Curves of ABS601 Series V1 P_{OUT} to T_{AMB}

Note: The de-rating curves are effective regardless mounting orientation

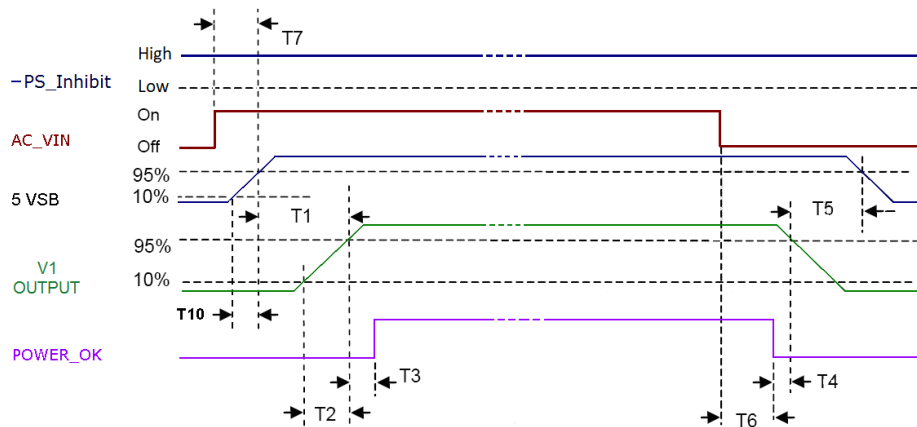
4. SIGNALS, CONTROLS & TIMING SPECIFICATIONS

Base signals and controls are accessible from signal connector P204.

| SIGNAL | DESCRIPTION / CONDITION | MIN | NOM | MAX | UNIT |
|-------------------------|---|-----|-----|------|------|
| -PS_Inhibit | Active low. Input low voltage | 0 | - | 1.5 | V |
| | Input high voltage ($I_{IN}= 300 \mu A$) | 3.5 | - | 5.5 | V |
| | V1 disabled when -PS_Inhibit is pulled low | | | | |
| | 5V _{SB} not affected by -PS_Inhibit | | | | |
| P_OK* | V1 enabled when -PS_Inhibit is floating or high | | | | |
| | Logic level low (<10 mA sinking) | - | - | 0.7 | V |
| | Logic level high (100 μA sourcing) | 2.4 | - | 5.5 | V |
| | Low to high time after V1 in regulation | 40 | - | 350 | ms |
| 5V _{SB} Output | Power down warning time | 1 | - | - | ms |
| | Active and in regulation after a $85 < V_{AC} < 264$ is applied | - | - | 1500 | ms |
| | 5V _{SB} not affected by PS_Inhibit | | | | |

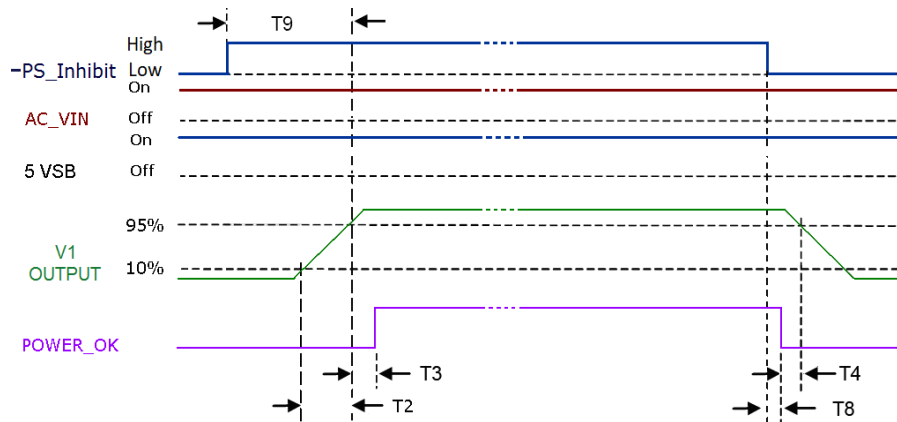
* When V1 is On, a P_OK low may indicates V1 under voltage condition. When two ABS601 operate in parallel, P_OK low in one unit indicates that it is not sharing the expected amount of current (current sharing fault). A 10 k Ω internal pull up to 5V_{SB} is used; do not add any other external pull up.

AC/DC INPUT OFF-TO-ON AND ON-TO-OFF TIMINGS



| | |
|---------------------------------------|-----------------------------|
| 5V _{SB} On – V1 On | 250 ms ≤ T1 ≤ 550 ms |
| V1 rise time | 10 ms ≤ T2 ≤ 100 ms |
| 5V _{SB} rise time | 3 ms ≤ T10 ≤ 40 ms |
| V1 On – POWER_OK delay | 200 ms ≤ T3 ≤ 350 ms |
| Power down warning | T4 ≥ 1 ms |
| V1 Off – 5V _{SB} Off | T5 ≥ 0.5 s (V1 load > 25 W) |
| AC Off – POWER_OK low | T6 ≥ 15 ms |
| AC_On – 5V _{SB} turn on time | T7 ≤ 1.5 s |

PS_INHIBIT OFF-TO-ON AND ON-TO-OFF TIMINGS



| | |
|----------------------------------|--|
| V1 rise time | $10 \text{ ms} \leq T2 \leq 100 \text{ ms}$ |
| V1 On – POWER_OK delay | $200 \text{ ms} \leq T3 \leq 350 \text{ ms}$ |
| Power down warning | $T4 \geq 1 \text{ ms}$ |
| PS_Inhibit – POWER_OK low timing | $T8 \leq 2 \text{ ms}$ |
| PS_Inhibit – V1 On delay | $T9 \leq 450 \text{ ms}$ |

5. PROTECTION SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITION | MIN | NOM | MAX | UNIT |
|--------------------------------------|--|------|-----|-----|----------------------|
| Input Under Voltage | Auto-recovering | 58 | 75 | 82 | V _{AC} |
| Input Fuse | High breaking, 10 A, 250 V on L and L1. | - | - | 10 | A |
| Over Current | At nominal input voltages | | | | |
| | V1: Hiccup mode, auto-recovering (>10 s) | 108 | - | 132 | %I _{1Rated} |
| | V1: Hiccup mode, auto-recovering (<10 s) | 135 | - | 163 | %I _{1Rated} |
| Short Circuit | 5 V _{SB} : Hiccup mode, auto-recovering: | 1.6 | - | 3.6 | A |
| | At nominal input voltages | | | | |
| Over Voltage | V1: Hiccup mode, auto-recovering. | - | - | - | |
| | 5V _{SB} : Hiccup mode, auto-recovering. | - | - | - | |
| Over Voltage | V1, Power shut down, latch off. | 120 | - | 145 | %V _{NOM} |
| Over Temperature (on primary stage) | Shut down, latch off. | - | - | - | °C |
| Over Temperature (on secondary side) | Hiccup mode, auto-recovering. | - | - | - | °C |
| Isolation: Primary-to-Secondary | Reinforced | 5660 | - | - | V _{DC} |
| | Basic | 4000 | - | - | V _{AC} |
| Isolation: Input-to-Earth | Basic | 2121 | - | - | V _{DC} |
| | Production tested at 2121 V _{DC} | 1500 | - | - | V _{AC} |
| Isolation: V1-to-5V _{SB} | Basic | 100 | - | - | V _{AC} |
| Isolation: Output-to-Earth | Basic | 1500 | - | - | V _{AC} |
| Equipment Protection Class | Class I, compatible with BF (Body Floating) ME (Medical Equipment) | | | | |

6. ENVIRONMENTAL SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITION | MIN | NOM | MAX | UNIT |
|---|--|--------|-----|----------|--------|
| Operating Temperature Range | No de-rating up to 55°C, at $\geq 180 V_{AC}$ | -30 | - | 55 | °C |
| Operating Temperature Range with Derating | See derating curves and conditions in the Output Specifications section | - | - | 70 | °C |
| Storage Temperature | As per IEC/EN 60721-3-1 Class 1K4 | -40 | - | 85 | °C |
| Transportation Temperature | As per IEC/EN 60721-3-2 Class 2K4 | | | | |
| Humidity | RH, Non-condensing Operating. Non-operating | - | - | 90 95 | % % |
| Operating Altitude | | - | - | 5000 | m |
| Shock | EN 60068-2-27 Operating: Half sine, 30 g, 18 ms, 3 axes, 6x each (3 positive and 3 negative). Non-Operating: Half sine, 50 g, 11 ms, 3 axes, 6x each (3 positive and 3 negative). | | | | |
| Vibration | EN 60068-2-64 Operating: Sine, 10 – 500 Hz, 1 g, 3 axes, 1 oct/min., 60 min. Random, 5 – 500 Hz, 0.02 g ² /Hz, 1 g _{RMS} , 3 axes, 30 min. Non-Operating: 5 – 500 Hz, 2.46 g _{RMS} (0.0122 g ² /Hz), 3 axes, 30 min. | | | | |
| MTBF | Full Load, 40 °C ambient 80% Duty cycle, Telcordia SR-332 Issue 2 | 200000 | - | - | Hours |
| Useful Life | Nominal V_{IN} , 80% load, 40 °C ambient (IPC9592) | - | 10 | - | Years |

7. ELECTROMAGNETIC COMPATIBILITY (EMC) – EMISSIONS

| PARAMETER | DESCRIPTION / CONDITION | STANDARD | PERFORMANCE CLASS |
|------------------------------------|---|---|-------------------|
| Conducted | 115, 230, 277 V _{RMS} , Maximum load | EN 55032 (ITE) EN 55011 (ISM) FCC Part 15 | B |
| Radiated | The “SL” variant compliance to the Class B is conditioned by the use of a common ground plane between the power supply and its load | EN 55032 (ITE) EN 55011 (ISM) FCC Part 15 | B |
| Line Voltage Fluctuation & Flicker | At 20%, 50% and 100% maximum load Nominal input voltages | EN 61000-3-3 | |
| Harmonic Current Emission | 230 VAC input voltage, 50 / 60 Hz 230 VAC 50 / 60 Hz, >150 W load | EN 61000-3-2 EN 61000-3-2 | A, D C |

8. ELECTROMAGNETIC COMPATIBILITY (EMC) – IMMUNITY

| PARAMETER | DESCRIPTION / CONDITION | STANDARD | TEST LEVEL | CRITERIA | |
|-------------------------|--|-----------------------------------|---------------|----------|---------------------|
| | Reference standard for ITE | EN 55024 | | | |
| | Reference standard for Industrial/IMS equipment | EN 61000-6-2 | | | |
| ESD | 15 kV air discharge, 8 kV contact, at any point of the system. | EN 61000-4-2 | 4 | A | |
| Radiated Field | 10 V/m, 20-2700 MHz, 1 KHz, 80% AM. | EN 61000-4-3 | 3 | A | |
| Electric Fast Transient | ± 2 kV on AC power port for 1 minute | EN 61000-4-4 | 3 | A | |
| Surge | ± 2 kV line to line; ± 4 kV line to earth on AC power port | EN 61000-4-5 | 4 | A | |
| Conducted RF Immunity | 10 V _{RMS} , 0.15-80 MHz, 1 kHz, 80% AM | EN 61000-4-6 | 3 | A | |
| Dips and Interruptions | 200 – 277 V _{AC} : | Drop-out to 0% for 10 ms | EN61000-4-11 | A | |
| | | Dip to 40% for 5 cycles (100 ms) | EN61000-4-11 | A | |
| | | Dip to 70% for 25 cycles (500 ms) | EN61000-4-11 | A | |
| | | Drop-out to 0% for 5 s | EN61000-4-11 | B | |
| | 100 – 127 V _{AC} : | Drop-out to 0% for 10 ms | EN 61000-4-11 | | A |
| | | Dip to 40% for 5 cycles (100 ms) | EN 61000-4-11 | | A (derate to 150 W) |
| | | Dip to 70% for 25 cycles (500 ms) | EN 61000-4-11 | | A (derate to 400 W) |
| | | Drop-out to 0% for 5 s | EN 61000-4-11 | | B |



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9. SAFETY AGENCIES APPROVALS

| CERTIFICATION BODY | SAFETY STANDARDS | CATEGORY |
|-------------------------------|---|--|
| CSA / UL | CSA C22.2 No. 60950-1, UL 60950-1, UL 62368-1 | Audio Video and Information Technology Equipment |
| IEC IECEE CB Certification | UL8750, CSA C22.2 No 250.13 IEC/EN 60950-1, IEC/EN 62368-1 | Lighting Audio Video and Information Technology Equipment |
| CE | Directive 2014/35/EU: Electrical Safety: Low Voltage electrical equipment (LVD) Directive 2014/30/EU: Electromagnetic Compatibility (EMC) Directive 2015/863/EU: RoHS 3 | Audio Video and Information Technology Equipment |
| | Designed to meet IEC/EN/UL/CSA 61010-1 2nd edition | |

10. MECHANICAL SPECIFICATIONS

| PARAMETER | DESCRIPTION / CONDITION |
|--------------------|--|
| Weight | 2770 g (6.11 lb) 2850 g (6.28 lb) – SL models |
| Overall Dimensions | 125.0 x 250.5 x 60.0 mm (4.92 x 9.86 x 2.36 in) |

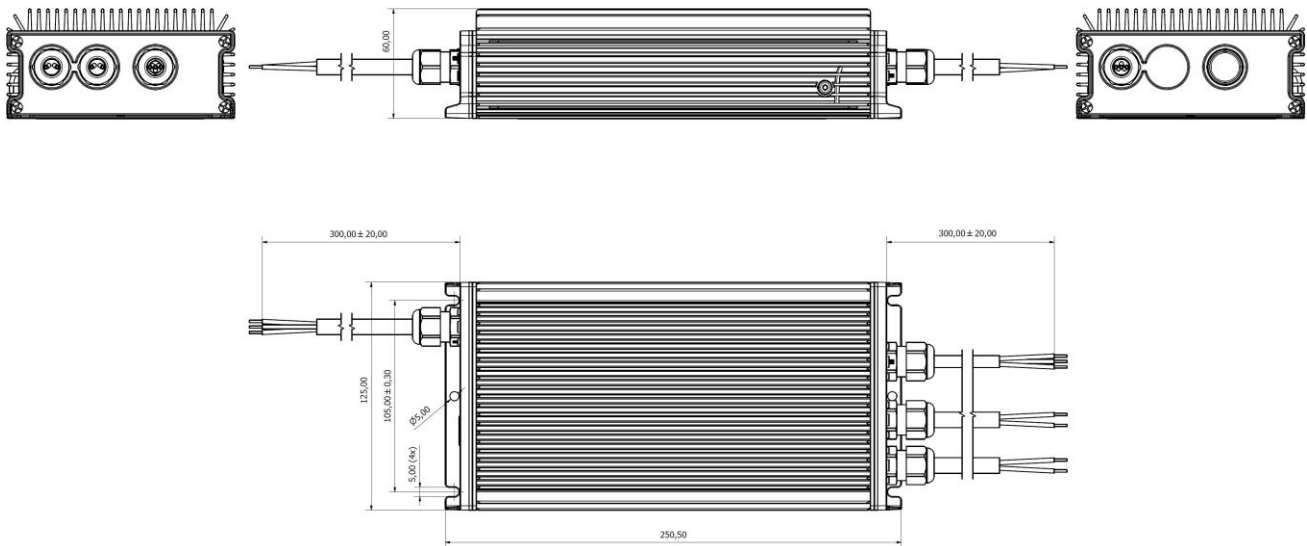
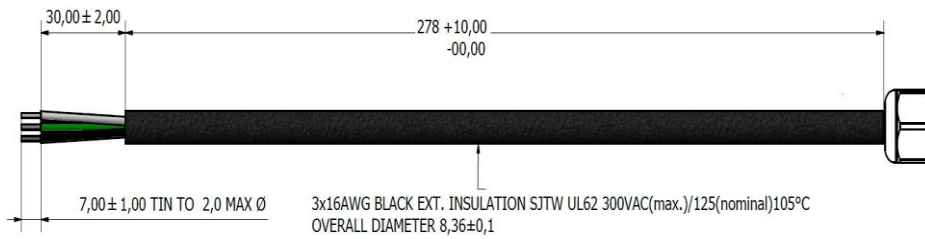


Figure 3. Mechanical drawing

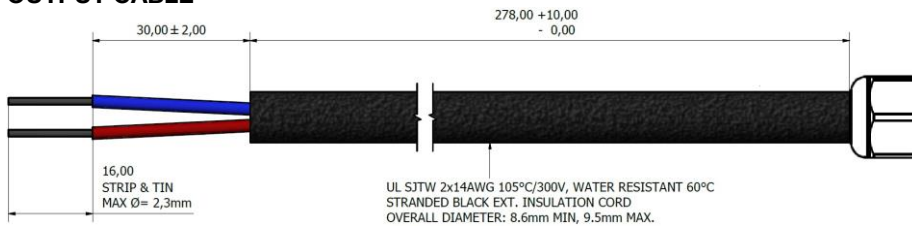
11. CONNECTIONS AND PIN DESCRIPTION

INPUT CABLE

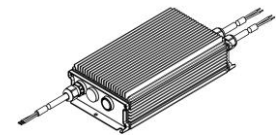


| WIRE COLOR | FUNCTION |
|------------|----------|
| BLACK | Line |
| GREEN | PG |
| WHITE | Neutral |

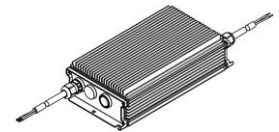
OUTPUT CABLE



| WIRE COLOR | FUNCTION |
|------------|----------|
| RED | +V1 |
| BLUE | V1 RTN |

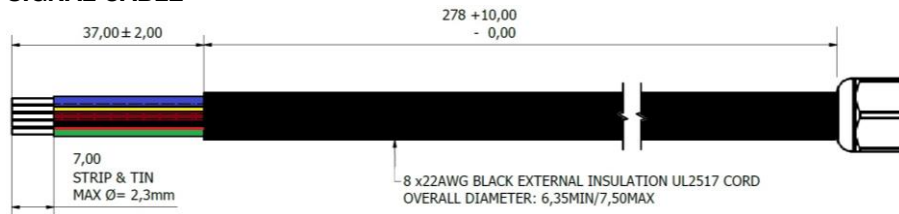


24 V

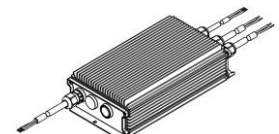


48 V

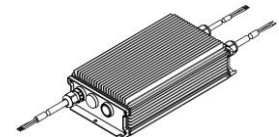
SIGNAL CABLE



| WIRE COLOR | FUNCTION |
|------------|-------------|
| BLACK | RTN |
| RED | +5 VSB |
| BROWN | RS- |
| GREEN | P_OK |
| YELLOW | - PSINHIBIT |
| GREY | VS_LOGIC |
| BLUE | I SHARE 1 |
| WHITE | RS+ |



24 V



48 V

For more information on these products consult: tech.support@psbel.com

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