Wall Industries, Inc.

# PSRL0603D SERIES

## Up to 250 Watts
## 90~132 / 180~264VAC Auto-Selectable Input
## Dual Output
## AC/DC Switching Power Supply

### FEATURES

LEVEL3

- Dual Output
- Remote On/Off
- 3 Mechanical Options Available
- Approved to UL/cUL, TUV, CE, and CB
- Power Factor Corrected to EN61000-3-2 Class A
- Low Leakage Current 500µA @ 240VAC/300µA @ 120VAC
- Auto-Selectable AC Input Range (90~132VAC / 180~264VAC)
- Smallest 250W with 1U Height Power Density: 10.4 Watts/cu in

### DESCRIPTION

The PSRL0603D series of AC/DC switching power supplies offers up to 250 Watts of output power. This series has dual output models with a 90~132/180~264VAC auto-selectable input voltage range. These supplies also have over voltage, short circuit, over temperature, and over power protection. Models are available in U-Chassis (Type U), U-Chassis with top cover (Type C), and enclosed with top built-in fan (Type F) designs. Output connectors are Howder terminal block design; optional Mating Molex outputs are also available. These supplies meet UL60950-1, TUV EN60950-1, CSA C 22.2 No. 60950-1, and CB safety regulations. For single output models see the PSRL0603 series.


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| **SPECIFICATIONS: *PSRL0603D Series*** | |
|---|---|
| All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.<br>We reserve the right to change specifications based on technological advances. | |
| **INPUT SPECIFICATIONS** | |
| Input Voltage | 90 ~ 132 / 180 ~ 264 VAC, Auto-Selectable |
| Input Frequency | 47 ~ 63Hz |
| Input Current | 6 / 3A at 110 ~ 120 / 200 ~ 240 VAC. |
| Inrush Current | Max. 35A @ 115VAC and 70A @ 230VAC; cold start. |
| Remote On/Off | Designated as **RMSW** on the CN1, requires a low signal to inhibit output. Hiccup mode. |
| PFC | Power factor corrected to EN61000-3-2 Class A. |
| **OUTPUT SPECIFICATIONS** | |
| Output Voltage | See Table |
| Output Power *(See Note 2)* | 250 Watts max with airflow. |
| Output Adjustability | Output adjustable ±5% minimum. |
| Regulation | ±5% |
| Output Current | See Table |
| Ripple & Noise *(See Note 3)* | See Table |
| Transient Response | Output voltage returns to within 1% in less than 2.5ms for a 50% load change, peak does not excess 5%. |
| Hold-up Time | 20ms min. at 80% of full load. |
| Overshoot | Turn-On & Off overshoot < 5% over nominal voltage. |
| Turn-on Delay | 1 second maximum at 120VAC. |
| **PROTECTION** | |
| Over Voltage Protection | Unit latching down when output exceeds 130% and recycle AC input to reset. |
| Short Circuit Protection | Trip without damage and auto-recovery. |
| Over-Temperature Protection | Unit protected of excessive operating ambient 110°C and automatic recovery. |
| Over Power Protection | Fold back mode 110 ~ 140%; Auto-recovery. |
| Input Fusing Protection | One T6A/250V fuse inserted in primary. |
| **GENERAL SPECIFICATIONS** | |
| Switching Frequency | 25KHz fixed frequency. |
| Efficiency | 70% minimum (measuring at 230VAC and full load) |
| Withstand Voltage | 1500 VAC input line to chassis for 3 sec. (10mA DC cut-off current).<br>Isolating 3000VAC primary to secondary windings for 3 sec.<br>1500VAC primary to core for 3 sec. |
| Leakage Current | Regular type 1.5mA @240VAC. (Optional: 300µA max. at 120VAC and 500µA max. at 240VAC input). |
| Burn In | 45 ±5°C for 1 hour @ 230VAC with full load. |
| Power Good | Designated as **PG** on the CN1 will go high 100 ~ 500ms after regulation and goes low 1ms before loss of regulation. |
| Power Supply On | Green LED designated as **LED1** on the PCB. |
| Grounding Test | Apply 25A from ground pin of the three prong plug to the far most earth. Max. allowable resistance is 0.1Ω |
| **ENVIRONMENTAL SPECIFICATIONS** | |
| Operating Temperature | 0°C to +50°C ambient |
| Storage Temperature | -20°C to +85°C |
| Operating Humidity (non-condensing) | 5% to 90% RH |
| Storage Humidity (non-condensing) | 5% to 95% RH |
| Vibration | 5 ~ 50Hz, acceleration 7.35 m/(s x s) on X, Y, and Z axis. |
| Cooling ***(See Note 2)*** | **U Type** (U-Chassis): 250W max. with forced airflow or 135W under convection cooling.<br>**C Type** (U-chassis with top cover): 250W max. with forced airflow or 135W under convection cooling.<br>**F Type** (Enclosed with top built-in fan): 250W max. with fan flow. |
| Fan Drive | 12VDC/300mA is available to drive an external fan. |
| MTBF | 100,000 hours (according to MIL-HBK-217F) at 30°C. |
| **PHYSICAL SPECIFICATIONS** | |
| Weight | **U Type** (U-Chassis): 15.87oz (450g)<br>**C Type** (U-chassis with top cover): 16.58oz (470g)<br>**F Type** (Enclosed with top built-in fan): 19.4oz (550g) |
| Dimensions (L x W x H) | **U Type** (U-Chassis): 5 x 3.2 x 1.5 inches (127.00 x 81.28 x 38.1 mm)<br>**C Type** (U-chassis with top cover): 5 x 3.2 x 1.56 inches (127.00 x 81.28 x 39.60 mm)<br>**F Type** (Enclosed with top built-in fan): 5 x 3.2 x 2 inches (127.00 x 81.28 x 50.80 mm) |
| **SAFETY** | |
| EMC Standards | CISPR 22 / EN55022 class B, EN61000-3-2,3, EN61000-4-2,3,4,5,6,8,11, EN55024 CE Marked (LVD). |
| Safety Regulations | Approved to UL60950-1[(8)], CSA C22.2 No. 60950-1, TUV EN60950-1, and CB certificate available. |

## MODEL SELECTION TABLE

| Model | Input Voltage Range | Output Voltage [5] | Output Current | | Output Power [2] | | Ripple & Noise [3] |
|---|---|---|---|---|---|---|---|
| | | | Types U & C (Convection) | Types U, C, & F (forced air) | Types U & C (Convection) | Types U, C, & F (forced air) | |
| **PSRL0603Dx-0312** | 90 ~ 132VAC/ 180 ~ 264VAC Auto-selectable | $V_1$: +3.3 VDC | 12A | 24A | 100W | 200W | 50mV |
| | | $V_2$: +12 VDC | 7A | 12A | | | 1% |
| **PSRL0603Dx-0324** | | $V_1$: +3.3 VDC | 12A | 24A | 100W | 200W | 50mV |
| | | $V_2$: +24 VDC | 4A | 6A | | | 1% |
| **PSRL0603Dx-0512** | | $V_1$: +5 VDC | 12A | 24A | 100W | 200W | 1% |
| | | $V_2$: +12 VDC | 7A | 12A | | | 1% |
| **PSRL0603Dx-0524** | | $V_1$: +5 VDC | 12A | 24A | 100W | 200W | 1% |
| | | $V_2$: +24 VDC | 4A | 6A | | | 1% |
| **PSRL0603Dx-0548** | | $V_1$: +5 VDC | 12A | 24A | 100W | 200W | 1% |
| | | $V_2$: +48 VDC | 2A | 3A | | | 1% |
| **PSRL0603Dx-1224** | | $V_1$: +12 VDC | 7A | 12A | 135W | 250W | 1% |
| | | $V_2$: +24 VDC | 4A | 6A | | | 1% |

## NOTES

1. The PSRL0603D series is designated as PSRL0603Dx-y where "**x"** can be "**U"** for U-chassis type, "**C"** for U-chassis with top cover, or "**F"** for enclosed type with top side built-in fan; y can be 0312, 0324, 0512, 0524, 0548, or 1224 for output voltage.

2. **U Type Models** (U-Chassis): 250W max. combined power of $V_1$ and $V_2$ with 16CFM min. forced air for PSRL0603Dx-1224 and 200W for all other models. 135W max. combined power of $V_1$ and $V_2$ for PSRL0603Dx-1224 and 100W for all other models with convection cooling.
   **C Type Models** (U-Chassis with top cover): 250W max. combined power of $V_1$ and $V_2$ with 16CFM min. forced air for PSRL0603Dx-1224 and 200W for all other models. 135W max. combined power of $V_1$ and $V_2$ for PSRL0603Dx-1224 and 100W for all other models with convection cooling.
   **F Type Models** (Enclosed with top built-in fan): 250W max. combined power of $V_1$ and $V_2$ with 16CFM min. forced air for PSRL0603Dx-1224 and 200W for all other models.

3. Ripple and noise is measured from 10KHZ to 20MHz bandwidth at output with 0.1µF ceramic and 22µF electrolytic capacitors in parallel.

4. Provides peak power to 600W within 500µs for all models; for longer duty duration must contact manufacturer.

5. 10% minimum load is required for all outputs to maintain the ripple and regulation specifications.

6. Output is fully isolated.

7. For single output models see the PSRL0603 series.

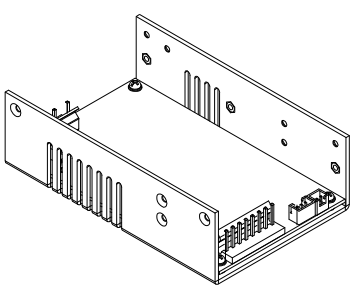
8. This product is Listed to applicable standards and requirements by UL.

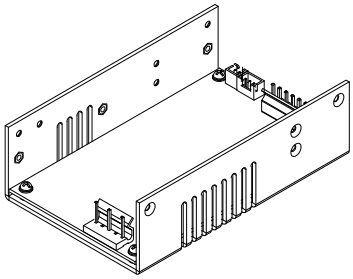
**Due to advances in technology, specifications subject to change without notice.*

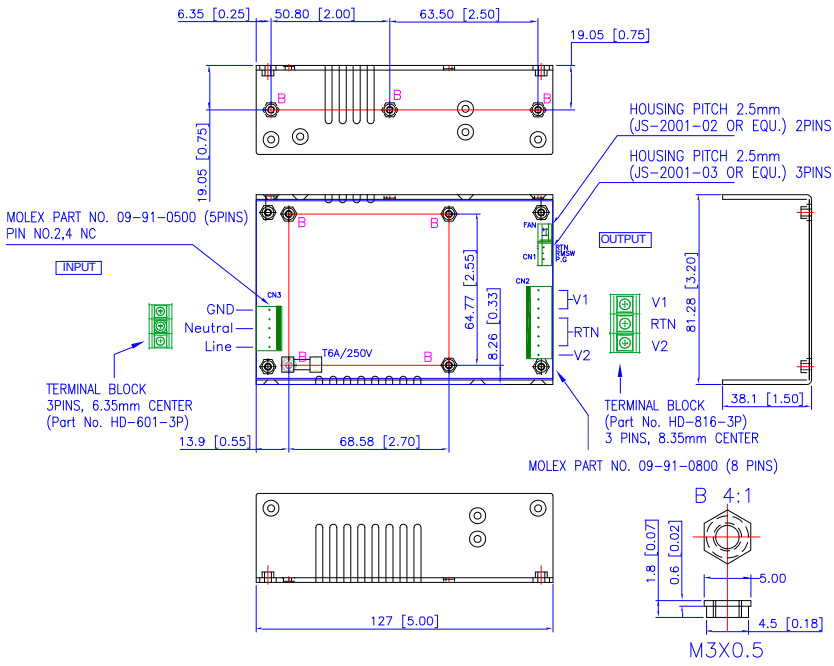
# MECHANICAL DRAWINGS

## Type "U" Models (U-Chassis Type only): 5(L) x 3.2(W) x 1.5(H) inches; Weight: 15.87oz

Unit: mm [inches]



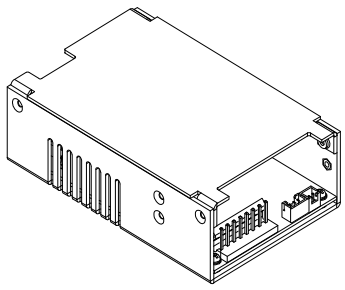


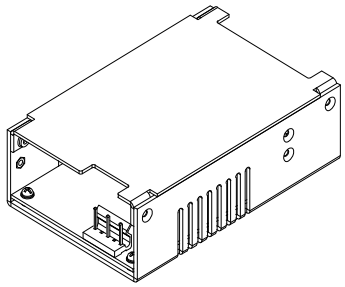


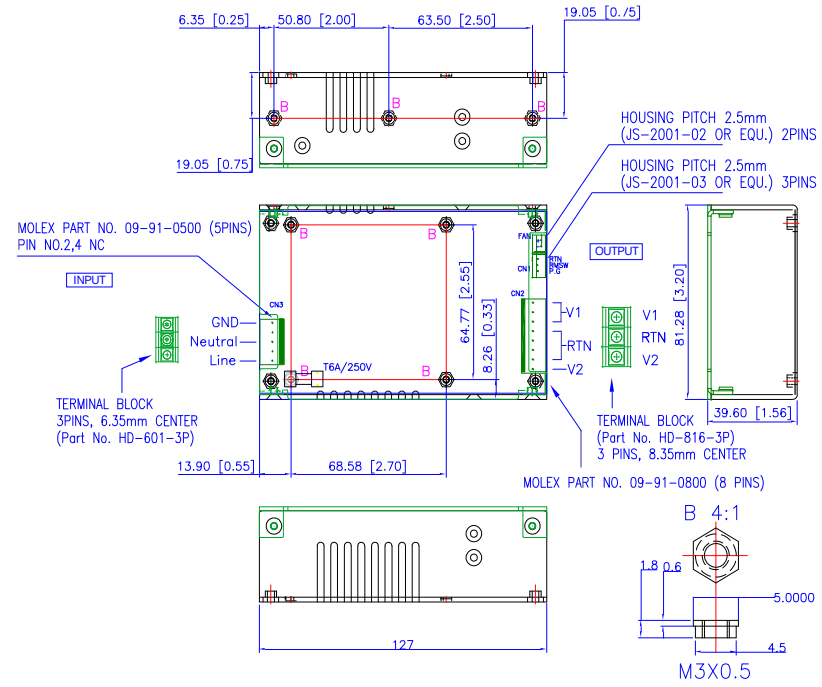

| PIN ASSIGNMENT | |
|---|---|
| **Molex** | **Howder** |
| Pin 1: V2 | Pin 1: V2 |
| Pins 2-5: RTN | Pin 2: RTN |
| Pins: 6-8: V1 | Pin 3: V1 |

## Type "C" Models (U-Chassis with Top Cover): 5(L) x 3.2(W) x 1.56(H) inches; Weight: 16.58oz

Unit: mm [inches]



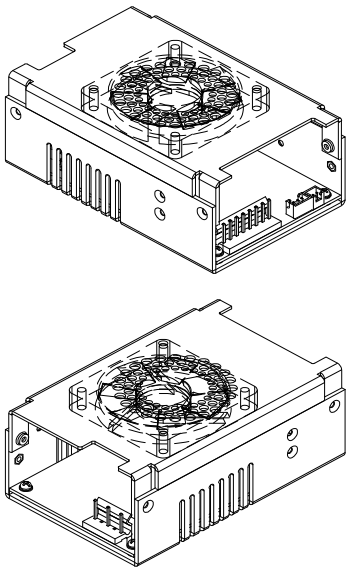


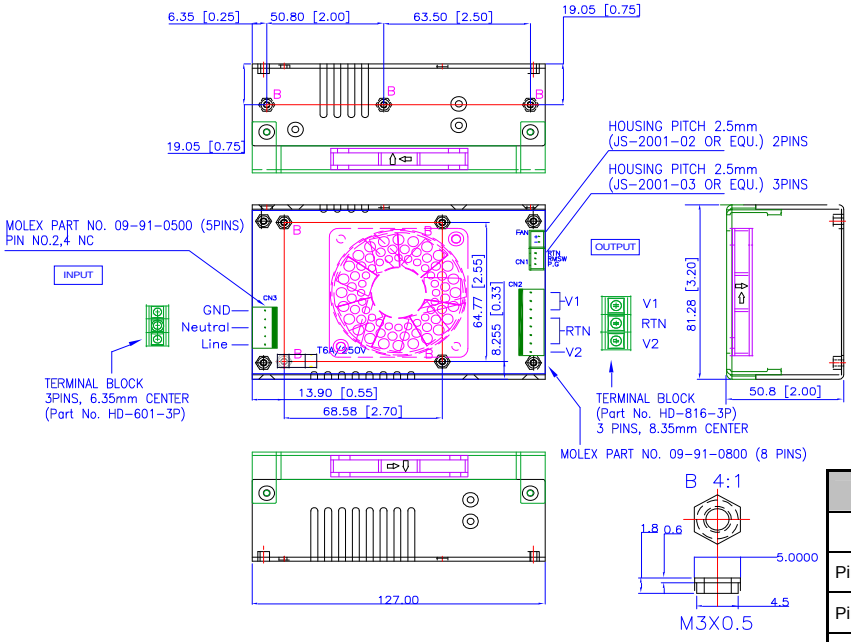



| PIN ASSIGNMENT | |
|---|---|
| **Molex** | **Howder** |
| Pin 1: V2 | Pin 1: V2 |
| Pins 2-5: RTN | Pin 2: RTN |
| Pins: 6-8: V1 | Pin 3: V1 |

**Type "F" Models (Enclosed with Top built-in Fan Type): 5(L) x 3.2(W) x 2(H) inches; Weight: 19.4oz**

Unit: mm [inches]






| PIN ASSIGNMENT | |
|---|---|
| **Molex** | **Howder** |
| Pin 1: V2 | Pin 1: V2 |
| Pins 2-5: RTN | Pin 2: RTN |
| Pins: 6-8: V1 | Pin 3: V1 |

## I/O CONNECTOR PIN ASSIGNMENT

**Input Connector (CN3):** Mating Molex Part No. 09-91-0500 or equivalent (5pin, 3 used) PCB is Labeled: L = Line; N = Neutral; G = Chassis Ground; Molex Engineering Series 2478, 2578, 8818 or Howder M3. 3 pin Terminal block 6.35MM Center (HD-601-3P).

**Output Connector (CN2):** Mating Molex Part No. 09-91-0600. Mating Pins: Molex Engineering Series 2478, 2578, 8818. Howder M3. 3 pin Terminal block 8.25MM Center (HD-601-4P) Mating JST Part No. XHP-2 or equivalent (CHYAO SHIUNN JS-4001-06).

**Connector Pin Assignment:**

| PIN ASSIGNMENT | |
|---|---|
| **Molex** | **Howder** |
| Pin 1: V2 | Pin 1: V2 |
| Pins 2-5: RTN | Pin 2: RTN |
| Pins: 6-8: V1 | Pin 3: V1 |

**Power Good, Remote On/Off Mating Connectors (CN1):** Mating JST Part No. XHP-3 or equivalent (CHYAO SHIUNN JS-2001-03). Mating Pins: JST SXH-002T-P0.6 for AWG 30 to 26.

**Signal Pin Assignment:**
Pins 1: Power good
Pins 2: Remote Switch
Pins 3: RTN

**Fan Drive:** Mating JST Part No. XHP-2 or equivalent (CHYAO SHIUNN JS-2001-02).

**Mounting Inserts:** 7 Places M3. Maximum Penetration 3.8mm see outline drawings for location.

## COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact Wall Industries for further information:

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|---|---|
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