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# TDK·Lambda SWS600/1000L Series

## 600-1000W Single Output Power Supplies

https://product.tdk.com/en/power/sws-l
www.emea.lambda.tdk.com/sws600-1000l



Medical Industrial Test LED COMM

The SWS-L series of AC-DC power supplies comprises of two models with output voltages from 3.3V to 60V. Rated at 600W and 1000W, the SWS600L is certified to IEC62368-1 and IEC 61010-1 with the SWS1000L certified to IEC62368-1 and IEC60601-1-(medical). These products meet both class B radiated and conduction EMI standards and can operate with derating in up to 74°C ambient temperatures. Features include a 12V 0.1A auxiliary voltage, remote on/off, an output-low/fan-fail signal and have been tested to the MIL-STD-810-F shock and vibration standard. Up to five units can be connected in parallel for additional power. The 3.3V, 15V, 48V and 60V outputs can be remotely programmed over a wide range using an external voltage. In addition, the 24V and 48V outputs have the capability to support peak loads.

| Features | Benefits |
|---|---|
| • - 20 to + 74°C Temperature Range | • Withstands Higher Ambient Temperatures |
| • Variable Speed Fan | • Lower Audible Noise |
| • Long E-Capacitor Life (Up to 10 years @ 40°C, 80% Load) | • Longer Field Life |
| • Output Voltage Programming | • Remote Adjustment |
| • Peak Power Capability (24V & 48V models) | • Supports Capacitive and Inductive Loads |
| • MIL-STD-810F Shock and Vibration | • Suitable for Harsh Environments |

## Model Selector

| Model | Output Voltage (V) | Adjustment Range (V) | Maximum Current (A) | Maximum Power Continuous (W) | Load Reg (mV) | Line Reg (mV) | Efficiency (%) (115 / 230Vac) |
|---|---|---|---|---|---|---|---|
| SWS600L-3 | 3.3 | 2.64 - 3.96 | 120 | 396 | 30 | 20 | 70 /72 |
| SWS1000L-3 | 3.3 | 2.64 - 3.96 | 200 | 660 | 30 | 20 | 74 / 76 |
| SWS600L-5 | 5 | 4 - 6 | 120 | 600 | 30 | 20 | 75 / 77 |
| SWS1000L-5 | 5 | 4 - 6 | 200 | 1000 | 30 | 20 | 79 / 81 |
| SWS600L-12 | 12 | 9.6 - 14.4 | 53 | 636 | 72 | 48 | 79 / 82 |
| SWS1000L-12 | 12 | 9.6 - 14.4 | 88 | 1056 | 72 | 48 | 82 / 84 |
| SWS600L-15 | 15 | 12 - 19.5 | 43 | 645 | 90 | 60 | 79 / 82 |
| SWS1000L-15 | 15 | 12 - 19.5 | 70 | 1050 | 90 | 60 | 82 / 84 |
| SWS600L-24 | 24 | 19.2 - 28.8 | 27, 31 peak(1) | 648 | 144 | 96 | 81 / 84 |
| SWS1000L-24 | 24 | 19.2 - 28.8 | 44, 51 peak(1) | 1056 | 144 | 96 | 84 / 86 |
| SWS600L-36 | 36 | 28.8 - 43.2 | 18 | 648 | 216 | 144 | 82 / 84 |
| SWS1000L-36 | 36 | 28.8 - 43.2 | 29 | 1044 | 216 | 144 | 84 / 86 |
| SWS600L-48 | 48 | 38.4 - 56 | 13, 15 peak(1) | 624 | 288 | 192 | 82 / 84 |
| SWS1000L-48 | 48 | 38.4 - 56 | 22, 25 peak(1) | 1056 | 288 | 192 | 84 / 86 |
| SWS600L-60 | 60 | 48 - 66 | 10 | 600 | 360 | 240 | 82 / 84 |
| SWS1000L-60 | 60 | 48 - 66 | 17 | 1020 | 360 | 240 | 84 / 86 |

## Related Products

| Type | Part Number | Description |
|---|---|---|
| Newer generation product series | CUS600M | 600W open frame and enclosed power supplies |
| Newer generation product series | RWSB | 50W to 1500W power supplies (1000-1500W medical) |
| Newer generation product series | CUS1500M | 1500W power supplies (Industrial & medical) |

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## Specifications

| Model | | SWS600L | SWS1000L |
|---|---|---|---|
| **Input** | | | |
| AC Input Voltage Range (Operating) | Vac | 85 - 265 | |
| Nominal Input Voltage Range | Vac | 100 - 240 (Note: Safety certified for 90-264Vac only) | |
| Input Frequency | Hz | 47 - 63 | |
| DC Input Voltage Range | Vdc | 120 - 350 (Note: Safety certified for AC input only) | |
| Input Current (115 / 230Vac) | A | 3.3V model: 5 / 2.5, 5 to 60V models: 7.1 / 3.66 | 3.3V model: 8 / 4, 5 to 60V models: 12 / 6 |
| Inrush Current 115 / 230Vac (typ) (Cold Start) | A | 20 / 40 | |
| Leakage Current (264Vac, 63Hz) | mA | <0.75 | <0.3 |
| Power Factor (115 / 230Vac) | - | 0.98 / 0.95 | |
| Harmonic Compliance | - | Meets IEC61000-3-2 Class A | |
| Hold Up Time (typ) (115 / 230Vac) | ms | 20 | |
| Efficiency | - | See Model Selector Table | |
| Conducted & Radiated EMI | - | EN55011-B / EN55032-B, FCC Class B | |
| Immunity | - | See immunity table | |
| Insulation Class | - | Class I | |
| Safety Certifications and Markings | - | IEC/UL/CSA/EN62368-1, 60950-1, IEC/ES/CSA/EN 60601-1 (SWS1000L), IEC61010-1 (SWS600L), EN50178, CE Mark, CE Mark and UKCA Mark | |

## Immunity

| Test | Standard | Test Level | Criteria | Notes |
|---|---|---|---|---|
| ESD | EN61000-4-2 | Air ± 8kV and contact ± 6kV | A | See IEC61000 immunity test reports on website |
| Radiated Susceptibility | EN61000-4-3 | 80M -1GHz: 10V/m<br>1.4 - 2.0GHz: 3V/m<br>2.0 - 2.7GHz: 1V/m | A | |
| Electrical Fast Transient Burst | EN61000-4-4 | ± 2kV | A | |
| Surge | EN61000-4-5 | Normal ± 2kV<br>Common ± 4kV | A | |
| Conducted Susceptibility | EN61000-4-6 | 10Vrms | A | |
| Magnetic Fields | EN61000-4-8 | 30A/m | A | |
| Voltage Dips | EN61000-4-11 | 30% 10ms<br>60% 100ms<br>100% 5000ms | A<br>A<br>A | |
| SEMI F47 Line Dip | SEMI F47 | - | - | >200Vac input |

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## Specifications

| Model | | SWS600L | SWS1000L |
|---|---|---|---|
| **Output** | | | |
| Output Voltage Adjustment | - | See model selector | |
| Output Voltage Programming | % | 1-6V program voltage to adjust output 20-120% (typical) of nominal<br>See instruction manual for details & models with this feature. | |
| Switching Frequency | kHz | 330 | 200, 60V model 240 |
| Line Regulation | - | See model selector | |
| Load Regulation | - | See model selector | |
| External Load Capacitance | uF | - | |
| Ripple & Noise | mV | 3.3, 5V: 120, 12, 15, 24V: 150, 36, 48, 60V: 200 | |
| Temperature Coefficient | %/°C | 0.02 | |
| Minimum Load | - | No minimum load required | |
| Overcurrent Protection | % | >105%, Constant current style | |
| Overvoltage Protection | % | 125 -145 | |
| Overtemperature Protection | - | Yes, cycle AC or Remote On/Off to reset | |
| Remote Sense | - | Yes | |
| Remote On/Off | | Optocoupler isolated. Closed contact = OFF, Open = ON | |
| Output Good (ALM) | - | Senses if power supply output is bad or a fan failure has occurred | |
| Auxiliary Output | - | 12V 0.1A | |
| Indicators | - | LED indicates DC is OK | |
| Parallel Operation | - | Up to 5 units, see instruction manual | |
| **Environmental** | | | |
| Operating Temperature (-40°C start-up) | °C | -20 to 74, derating linearly to 50% load above 50 | |
| Storage Temperature | °C | -40 to +85 | |
| Humidity (non condensing) | %RH | 20 - 90 operating, 10 - 95 non operating | |
| Pollution Degree | - | PD2 | |
| Cooling | - | Variable speed internal fan | |
| Altitude | m | 3,000 | |
| Withstand Voltage (For 1 minute) | Vac | Input to Ground 2,000, Input to Output 3,000<br>Output to Ground 500 | Input to Ground 2,000, Input to Output 4,000 (2xMOPP), Output to Ground 500 |
| Output to Ground 500 | | Input to Ground 2,000, Input to Output 4,000 (2xMOPP), Output to Ground 500 | |
| Isolation Resistance | MΩ | >100 at 25°C, 70%RH & 500Vdc | |
| Vibration (Non operating) | - | MIL-STD-810F 514.5 Cat. 4,10 | |
| Shock | - | MIL-STD-810F 516.5 Procedure I, VI | |
| **Other** | | | |
| Weight (Typ) | g | 1600 | 2300 |
| Size (LxWxH) | mm | 190 x 120 x 61 | 240 x 150 x 61 |
| Size (LxWxH) | Inches | 7.48 x 4.72 x 2.4 | 9.45 x 5.91 x 2.4 |
| Connectors | - | Screw terminals | |
| Case Material | -- | Metal | |
| MTBF - Telcordia SR-332 issue 3* | Hours | 1,444,923 | 1,348,293 |
| Warranty | Years | 3 | |

Notes:

See website for detailed specifications, test methods and installation manual

1) Peak current and power possible at 170-265Vac input, 10s max, 35% duty cycle

*24V output model, 25°C ambient, full load, 230Vac input

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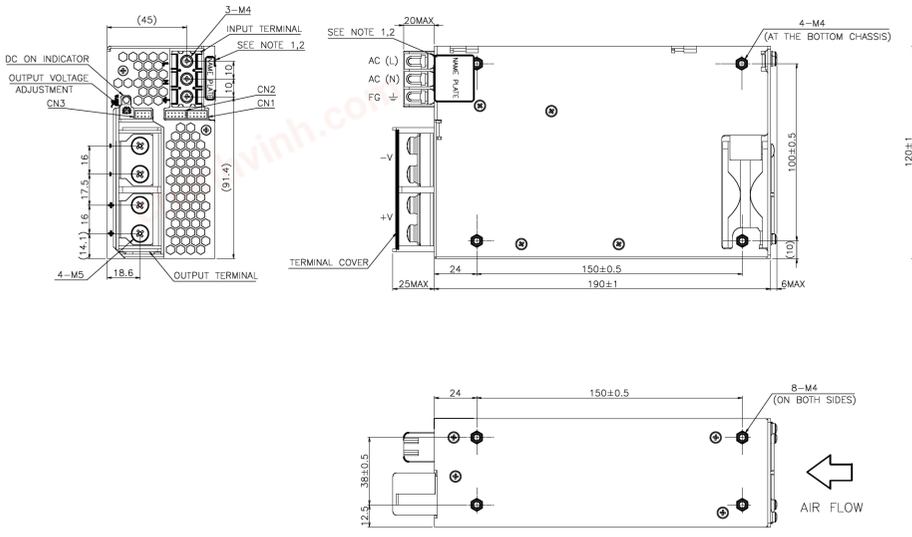
## Mechanical Specification

### SWS600L Outline Drawing



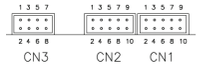

SIGNAL CONNECTOR INFORMATION

PIN CONFIGURATION AND FUNCTIONS OF CN1,CN2

| PIN No. | FUNCTION |
|---|---|
| 1 | +Vm : +OUTPUT VOLTAGE MONITOR |
| 2 | +S : +SENSING |
| 3 | -Vm : -OUTPUT VOLTAGE MONITOR |
| 4 | -S : -SENSING |
| 5 | N.C. : NO CONNECTION |
| 6 | PC : CURRENT BALANCE |
| 7 | PV : ADJUSTMENT OF OUTPUT VOLTAGE |
| 8 | COM : GROUND FOR PC AND PV SIGNAL |
| 9 | CNT2 : REMOTE ON/OFF 2 |
| 10 | TOG : GROUND FOR CNT2 |

PIN CONFIGURATION AND FUNCTIONS OF CN3

| PIN No. | FUNCTION |
|---|---|
| 1 | COM : GROUND FOR PC AND PV SIGNAL |
| 2 | COM : GROUND FOR PC AND PV SIGNAL |
| 3 | AUX : AUXILIARY OUTPUT (12V 0.1A) |
| 4 | CNT1 : REMOTE ON/OFF 1 |
| 5 | G2 : GROUND FOR AUX AND CNT1 |
| 6 | G2 : GROUND FOR AUX AND CNT1 |
| 7 | ALM : ALARM |
| 8 | G1 : ALARM GROUND |




SIGNAL CONNECTOR USED

| PART DESCRIPTION | PART NAME | MANUFACT |
|---|---|---|
| PIN HEADER | S10B-PHDSS (CN1,CN2)<br>S8B-PHDSS (CN3) | JST |

MATCHING HOUSINGS, PIN & TOOL

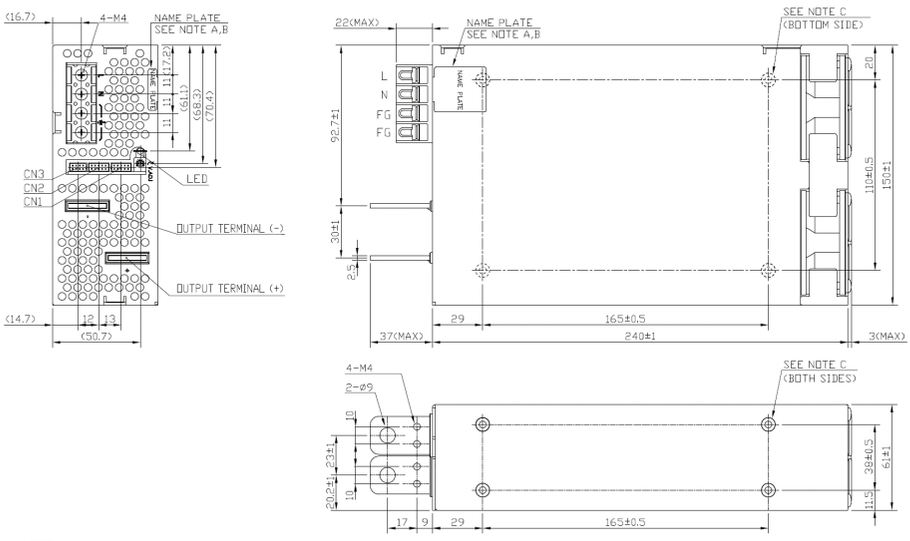
| PART DESCRIPTION | PART NAME | MANUFACT |
|---|---|---|
| SOCKET HOUSING | PHDR-10VS (CN1,CN2)<br>PHDR-8VS (CN3) | JST |
| TERMINAL PINS | SPHD-002T-P05(AWG28~24)<br>SPHD-001T-P05(AWG26~22) | JST |
| HAND CRIMPING TOOL | YRS-620(SPHD-002T-P0.5)<br>YC-610R(SPHD-001T-P0.5) | JST |

NOTE:

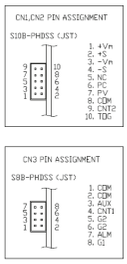
1: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, NOMINAL OUTPUT CURRENT, PEAK OUTPUT CURRENT AND SAFETY MARKING(FOR ONLY APPROVED PRODUCTS) ARE SHOWN ON THE NAME PLATE IN ACCORDANCE WITH THE SPECIFICATIONS.
2: COUNTRY OF MANUFACTURE IS SHOWN ON THE NAME PLATE IN ACCORDANCE WITH THE SPECIFICATIONS.
3: M4 TAPPED HOLES (12) FOR CUSTOMER CHASSIS MOUTING (SCREW PENETRATION DEPTH 6m/m MAX.).
4: RECOMMENDED SCREW TORQUE:
OUTPUT TERMINAL(M5 SCREW) = 2.5N·m
INPUT TERMINAL(M4 SCREW) = 1.27N·m

## Mechanical Specification

### SWS1000L Outline Drawing




SIGNAL CONNECTOR INFORMATION




== ACCESSORIES ==

* SHORT PIECE ----------1
SHORTING +Vm-+S, -Vm--S
(ATTACHED ON CN1 AT SHIPMENT)

== SIGNAL CONNECTOR USED ==

| PART DESCRIPTION | PART NAME | MANUFACT |
|---|---|---|
| PIN HEADER (CN1 & CN2) | S10B-PHDSS | JST |
| PIN HEADER (CN3) | S8B-PHDSS | JST |

== MATCHING HOUSINGS , PINS & TOOL ==

| PART DESCRIPTION | PART NAME | MANUFACT |
|---|---|---|
| SOCKET HOUSING (CN1 & CN2) | PHDR-10VS | JST |
| SOCKET HOUSING (CN3) | PHDR-8VS | JST |
| TERMINAL PINS | SPHD-002T-P0.5(AWG28-24)<br>SPHD-001T-P0.5(AWG26-22) | JST |
| HAND CRIMPING TOOL | YRS-620(SPHD-002T-P0.5)<br>YC-610R(SPHD-001T-P0.5) | JST |

== NOTES ==

A : MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, NOMINAL OUTPUT CURRENT, PEAK OUTPUT CURRENT AND SAFETY MARKING(FOR ONLY APPROVED PRODUCTS) ARE SHOWN ON THE NAME PLATE IN ACCORDANCE WITH THE SPECIFICATIONS.
B : COUNTRY OF MANUFACTURE IS SHOWN HERE.
C : M4 TAPPED HOLES (12) FOR CUSTOMER CHASSIS MOUNTING. (SCREW PENETRATION DEPTH 6m/m MAX.)

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For Additional Information, please visit
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