LSP-160 series is a 160W single-output slim type power supply with 20mm of low profile design. Adopting the full range 100~264VAC input, the entire series provides an output voltage line of 3.3V, 4.2V, 5V, 12V, 24V, 36V and 48V. In addition to the high efficiency up to 93.5%, the whole series operates from -30°C ~ 70°C under air convection without fan. LSP-160 has the complete protection functions and 5G anti-vibration capability; it is complied with the international safety regulations such as TUV EN62368, UL62368 and GB4943. LSP-160 series serves as a high performance power supply solution for various industrial applications.

**Features**
- Slim width and low profile (20mm)
- Fanless design for no noise environment
- Withstand 300VAC surge input for 5 seconds
- DC OK active signal function
- Semi-Potting for high moisture environment
- Protections: Short circuit / Over load / Over voltage / Over temperature
- Current sharing for redundant function (5V/4.2V/3.3V only)
- Operating altitude up to 5000 meter (Note.5)
- LED indicator for power on
- 3 years warranty

**Description**
LSP-160 series is a 160W single-output slim type power supply with 20mm of low profile design. Adopting the full range 100~264VAC input, the entire series provides an output voltage line of 3.3V, 4.2V, 5V, 12V, 24V, 36V and 48V. In addition to the high efficiency up to 93.5%, the whole series operates from -30°C ~ 70°C under air convection without fan. LSP-160 has the complete protection functions and 5G anti-vibration capability; it is complied with the international safety regulations such as TUV EN62368, UL62368 and GB4943. LSP-160 series serves as a high performance power supply solution for various industrial applications.

**Applications**
- Industrial automation machinery
- Industrial control system
- Mechanical and electrical equipment
- Electronic instruments, equipments or apparatus
- Household appliances
- LED display application

**Model Encoding**

```
LSP - 160 [□ - □ - □]
```

- **T**: for Terminal block connector
- **W**: for Wafer connector (By Request)
- Output Voltage
- Function options
- Rated wattage
- Series name

<table>
<thead>
<tr>
<th>Type</th>
<th>Function</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank</td>
<td>Enclosed (DC voltage output) &amp; Built-in DC OK active signal.</td>
<td>In Stock</td>
</tr>
<tr>
<td>R</td>
<td>Built-in DC OK active signal and current sharing function (3.3/4.2/5V).</td>
<td>In Stock</td>
</tr>
</tbody>
</table>
## SPECIFICATION

<table>
<thead>
<tr>
<th>MODEL</th>
<th>DC VOLTAGE</th>
<th>RATED CURRENT</th>
<th>RATED POWER (max.)</th>
<th>RIPPLE &amp; NOISE (max.)</th>
<th>VOLTAGE ADJ. RANGE</th>
<th>VOLTAGE TOLERANCE</th>
<th>LINE REGULATION</th>
<th>LOAD REGULATION</th>
<th>SETUP, RISE TIME</th>
<th>HOLD UP TIME (Typ.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSP-160-3.3</td>
<td>3.3V</td>
<td>32A</td>
<td>105.6W</td>
<td>200mVpp</td>
<td>3.2~3.5V</td>
<td>±2.0%</td>
<td>±0.5%</td>
<td>±1.0%</td>
<td>2000ms</td>
<td>10ms/230VAC</td>
</tr>
<tr>
<td>LSP-160-4.2</td>
<td>4.2V</td>
<td>32A</td>
<td>134.4W</td>
<td>200mVpp</td>
<td>4~4.5V</td>
<td>±2.0%</td>
<td>±0.5%</td>
<td>±1.0%</td>
<td>2000ms</td>
<td>10ms/115VAC</td>
</tr>
<tr>
<td>LSP-160-5.5</td>
<td>5V</td>
<td>32A</td>
<td>160W</td>
<td>240mVpp</td>
<td>4.7~5.3V</td>
<td>±2.0%</td>
<td>±1.0%</td>
<td>±0.5%</td>
<td>2000ms</td>
<td>10ms/230VAC</td>
</tr>
<tr>
<td>LSP-160-12</td>
<td>12V</td>
<td>13.5A</td>
<td>162W</td>
<td>240mVpp</td>
<td>11.4~12.6V</td>
<td>±1.0%</td>
<td>±1.0%</td>
<td>±1.0%</td>
<td>3000ms</td>
<td>80ms/115VAC at full load</td>
</tr>
<tr>
<td>LSP-160-24</td>
<td>24V</td>
<td>6.75A</td>
<td>162W</td>
<td>240mVpp</td>
<td>22.8~25.2V</td>
<td>±1.0%</td>
<td>±1.0%</td>
<td>±1.0%</td>
<td>3000ms</td>
<td>80ms/115VAC at full load</td>
</tr>
<tr>
<td>LSP-160-36</td>
<td>36V</td>
<td>4.5A</td>
<td>163.2W</td>
<td>300mVpp</td>
<td>34.2~37.8V</td>
<td>±1.0%</td>
<td>±1.0%</td>
<td>±1.0%</td>
<td>3000ms</td>
<td>80ms/115VAC at full load</td>
</tr>
<tr>
<td>LSP-160-48</td>
<td>48V</td>
<td>3.4A</td>
<td>163.2W</td>
<td>300mVpp</td>
<td>45.6~50.4V</td>
<td>±1.0%</td>
<td>±1.0%</td>
<td>±1.0%</td>
<td>3000ms</td>
<td>80ms/115VAC at full load</td>
</tr>
</tbody>
</table>

### OUTPUT

- **DC VOLTAGE**: 3.3V, 4.2V, 5V, 12V, 24V, 36V, 48V
- **RATED CURRENT**: 32A, 32A, 32A, 13.5A, 6.75A, 4.5A, 3.4A
- **RATED POWER (max.)**: 105.6W, 134.4W, 160W, 162W, 162W, 163.2W
- **RIPPLE & NOISE (max.)**: 200mVpp, 200mVpp, 240mVpp, 240mVpp, 240mVpp, 300mVpp
- **VOLTAGE ADJ. RANGE**: 3.2~3.5V, 4~4.5V, 4.7~5.3V, 5.75~6.75V, 6.2~7.56V, 7.62~8.56V
- **VOLTAGE TOLERANCE**: ±2.0%, ±2.0%, ±2.0%, ±2.0%, ±1.0%, ±1.0%
- **LINE REGULATION**: ±0.5%, ±0.5%, ±1.0%, ±1.0%, ±1.5%, ±1.5%
- **LOAD REGULATION**: ±1.0%, ±1.0%, ±1.0%, ±1.0%, ±1.0%, ±1.0%
- **SETUP, RISE TIME**: 2000ms, 80ms/230VAC, 3000ms, 80ms/115VAC at full load
- **HOLD UP TIME (Typ.)**: 10ms/230VAC, 10ms/115VAC

### INPUT

- **VOLTAGE RANGE**: 100~264VAC, 141~370VDC
- **FREQUENCY RANGE**: 47~63Hz
- **POWER FACTOR (Typ.)**: PF ≥ 0.94/230VAC, PF ≥ 0.98/115VAC at full load
- **EFFICIENCY (Typ.)**: 87.5%, 88.5%, 89.5%, 92.5%, 93.5%, 93.5%
- **AC CURRENT (Typ.)**: 2.2A/115VAC, 1.1A/230VAC
- **INRUSH CURRENT (Typ.)**: Cold start 45A/115VAC, 85A/230VAC
- **LEAKAGE CURRENT**: <0.75mA/240VAC

### PROTECTION

- **SHORT CIRCUIT**: Hiccup protection, recovers automatically after fault condition is removed
- **OVERLOAD**: 110~140% rated output power
- **OVER VOLTAGE**: 3.8~4.6V, 4.6~5.46V, 5.75~6.75V, 7.52~8.52V, 13.2~15.6V, 26.4~31.2V, 39.6~46.8V
- **OVER TEMPERATURE**: Shut down O/P voltage, re-power on to recover after temperature goes down

### FUNCTION

- **CURRENT SHARING**: Please refer to the Functional Manual
- **DC OK SIGNAL**: Contact rating (max.) 15 Vdc/10 mA resistive load

### ENVIRONMENT

- **WORKING TEMP.**: -30~+70°C (Refer to “Derating Curve”)
- **WORKING HUMIDITY**: 20 ~ 90% RH non-condensing
- **STORAGE TEMP., HUMIDITY**: -40 ~ +85°C, 10 ~ 95% RH non-condensing
- **TEMP. COEFFICIENT**: ±0.03%/°C (0 ~ 50°C)
- **VIBRATION**: 10 ~ 500Hz, 5G 10min./cycle, 60min. each along X, Y, Z axes

### SAFETY & EMC (Note.6)

- **SAFETY STANDARDS**: UL62368, TUV EN62368, CCC GB4943, EAC TP TC 004, BSMI CNS14336-1 approved, Design refer to EN60335-1
- **WITHSTAND VOLTAGE**: IP-0/IP; 3.75kVAC, IP-0/F; 2kVAC, IP-1/F; 1.25kVAC
- **ISOLATION RESISTANCE**: IP-0/IP; IP-0/F; IP-1/F; IP-100M Ohms/500VDC/25°C / 70%RH
- **EMC EMISSION**: Compliance to EN55032, GB9254, Class B, EN55014, EN61000-3-2, 3, EAC TP TC 020, BSMI CNS13438
- **EMC IMMUNITY**: Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11, EN50082-2), heavy industry level cientral A, EAC TP TC 020

### OTHERS

- **MTBF**: 699.54K hrs min. Telcordia TR/SR-332(Bellcore) 282.71K hrs min. MIL-HDBK-217F (25°C)
- **DIMENSION**: 194x55x20mm (L*W*H)
- **PACKING**: 0.3568kg:30pcs/11.68kg:0.3CUFT

### NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
3. Tolerance: includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
5. The ambient temperature derating of 5°C/1000m is needed for operating altitude greater than 2000m (6500ft)
6. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-certified that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.”

(As available on http://www.meanwell.com)

※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/service/disclaimer.aspx

File Name: LSP-160-SPEC 2020-10-14
AC/DC Power Supply • 160W
MEAN WELL LSP-160

**Block Diagram**

- EMI FILTER & RECTIFIER
- PFC CIRCUIT
- POWER SWITCHING
- RECTIFIERS & FILTER
- DETECTION CIRCUIT
- LOAD SHARING
- O.V.P.
- O.T.P.
- O.L.P.
- FG
- DC OK Function
- CS

**Derating Curve**

- AMBIENT TEMPERATURE (℃)
- AMBIENT TEMPERATURE WITHOUT ALUMINUM PLATE (℃)

**Static Characteristic**

- 230Vac for 3.3V/4.2V/5V
- 230Vac for 12V/24V/36V/48V
- 100Vac for 12V/24V/36V/48V
- 100Vac for 3.3V, 4.2V, 5V

**Notes:**
- Tc measurement point, please refer page 5 mechanical specification.
1. DC_OK Signal

DC_OK is a collector shorted signal. It is used by an optocoupler in the power supply which indicates the output status of the power supply as exhibited below.

| Optocoupler C-E Pin Conduction | PSU turns on | DC ok |
| Optocoupler C-E Pin Open | PSU turns off | DC fail |
| Optocoupler Rating(max.) | 15Vdc/10mA resistive load |

Power Status | DC_OK signal
--- | ---
Normal | Low
Short circuit/OLP | Hiccup
OVP/OTP/Breakingdown | High

2. Redundant function (Current sharing):

LSP-160 has built-in active current sharing function and can be connected in parallel, up to 2 units, to provide higher output power as exhibited below:

- The power supplies should be paralleled using short and large diameter wiring then connected to the load.
- Difference of output voltages among parallel units should be less than 0.2V (Can Fine tune by SVR1).
- When in parallel operation the maximum load should not be greater than 90% of load from each unit.
- When out current<(30% rate current)×(Number of unit), the current shared among units may not be fully balanced.
  And the LED indicator maybe flash of one of them, but not effecting normal working.

CS+/CS- on CN1 are connected mutually in parallel (Note: CS+/CS- do not reverse connection).
**Mechanical Specification**

- **T-type (Terminal block)**

**AC Input Connector (TB1) pin NO. Assignment**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Assignment</th>
<th>Terminal</th>
<th>Max mounting torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC/L</td>
<td>(DEGSON) DG28C-B-03P</td>
<td>5Kgf-cm</td>
</tr>
<tr>
<td>3</td>
<td>AC/N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DC Output Connector (TB2/TB3) pin NO. Assignment**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Assignment</th>
<th>Terminal</th>
<th>Max mounting torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2</td>
<td>+V</td>
<td>(MW)</td>
<td>8Kgf-cm</td>
</tr>
<tr>
<td>3,4</td>
<td>-V</td>
<td>TB-HTP-200-40A</td>
<td></td>
</tr>
</tbody>
</table>

**DC OK Connector (CN2): JST B2B-PH-K-S or equivalent**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Assignment</th>
<th>Mating Housing</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DC OK +V</td>
<td>JST SPH-002T-P0.5S</td>
<td>JST PHR-2</td>
</tr>
<tr>
<td>2</td>
<td>DC COM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CS+/CS- Connector (CN1): JST B2B-PH-K-S or equivalent**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Assignment</th>
<th>Mating Housing</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CS+</td>
<td>JST PHR-2</td>
<td>JST SPH-002T-P0.5S</td>
</tr>
<tr>
<td>2</td>
<td>CS-</td>
<td></td>
<td>or equivalent</td>
</tr>
</tbody>
</table>

◎ CN1 and CN2 mating cable by request, please consult MEANWELL for details
AC Input Connector(TB1) pin NO. Assignment

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Assignment</th>
<th>Mating housing</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC/L</td>
<td>JS-1391-05</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>AC/N</td>
<td>JS-1390-05 and JS-2420-TL</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DC OK Connector(CN2): JST B2B-PH-K-S or equivalent

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Assignment</th>
<th>Mating Housing</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DC OK +V</td>
<td>JST SPH-002T-P0.5S or equivalent</td>
<td>JST PHR-2 or equivalent</td>
</tr>
<tr>
<td>2</td>
<td>DC COM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CS+/CS- Connector(CN1): JST B2B-PH-K-S or equivalent

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Assignment</th>
<th>Mating Housing</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CS+</td>
<td>JST PHR-2 or equivalent</td>
<td>JST SPH-002T-P0.5S or equivalent</td>
</tr>
<tr>
<td>2</td>
<td>CS-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

※ W-Type (Wafer connector type optional)

※ CN1 and CN2 mating cable by request, please consult MEANWELL for details.
1. Operate with additional aluminum plate

In order to meet the "Derating Curve" and the "Static Characteristics", LSP-160 series must be installed onto an aluminum plate (or the cabinet of the same size) on the bottom. The size of the suggested aluminum plate is shown below. And for optimizing thermal performance, the aluminum plate must have an even and smooth surface (or coated with thermal grease), and LSP-160 series must be firmly mounted at the center of the aluminum plate.

unit: mm