



E-Star Power Development Co., Ltd. (E-STAR)  
 1F., No.40, Juren Ln., Sec. 2, Sanmin Rd., Banciao Dist., New Taipei City  
 22069, Taiwan (R.O.C.)  
 Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

**160W Enclosed type single output power supply > LSP-160**



**■ 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

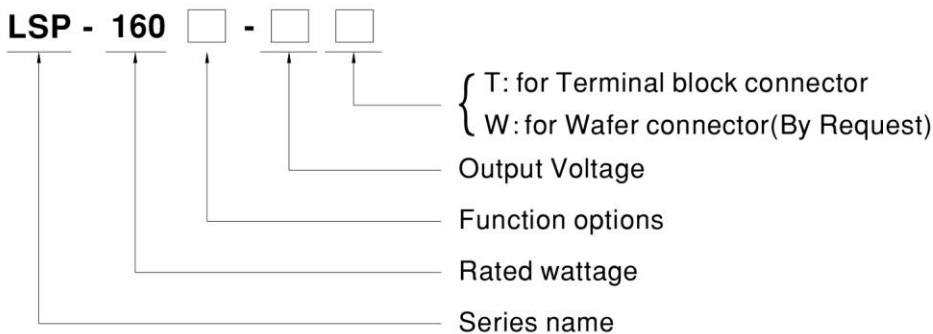
**■ Applications**

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

**■ 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%, that 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.

**■ Model Encoding**



Type	Function	Note
Blank	Enclosed(DC voltage output)& Built-in DC OK active signal.	In Stock
R	Built-in DC OK active signal and current sharing function(3.3/4.2/5V).	In Stock



**160W Enclosed type single output power supply > LSP-160**

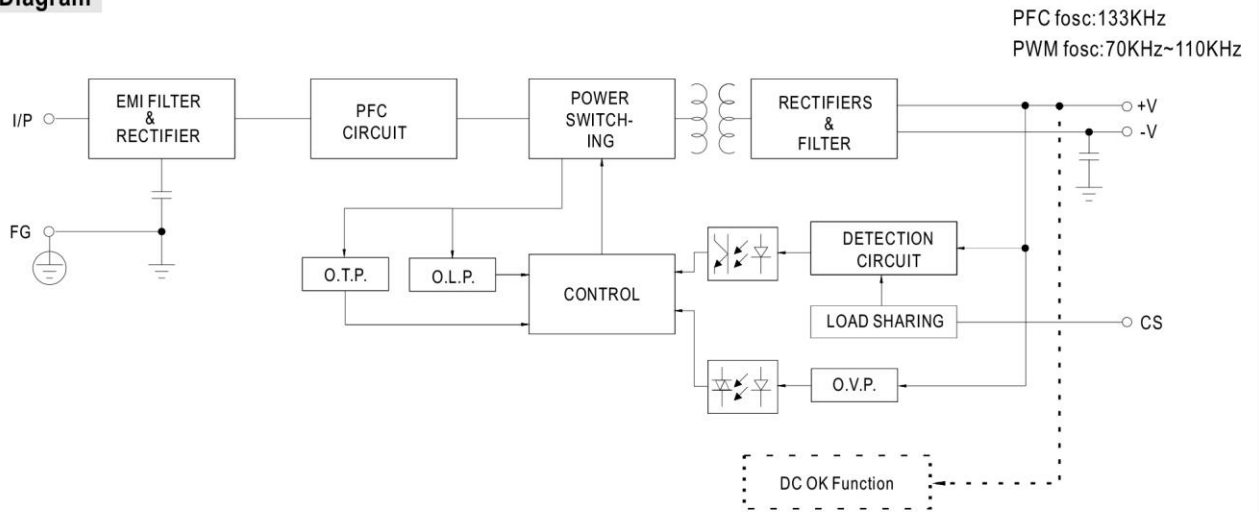
**SPECIFICATION**

MODEL		LSP-160□-3.3□	LSP-160□-4.2□	LSP-160□-5□	LSP-160-12□	LSP-160-24□	LSP-160-36□	LSP-160-48□
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(convection)	105.6W	134.4W	160W	162W	162W	162W	163.2W
	RIPPLE & NOISE (max.) Note.2	200mVp-p	200mVp-p	200mVp-p	240mVp-p	240mVp-p	240mVp-p	300mVp-p
	VOLTAGE ADJ. RANGE	3.2~3.5V	4~4.5V	4.7~5.3V	11.4~12.6V	22.8~25.2V	34.2~37.8V	45.6~50.4V
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.3%	±0.3%	±0.3%	±0.3%
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	2000ms, 80ms/230VAC      3000ms, 80ms/115VAC at full load						
	HOLD UP TIME (Typ.)	10ms/230VAC      10ms/115VAC						
INPUT	VOLTAGE RANGE Note.4	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%	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 Protection type : Constant current limiting, continuous increase of load will be hiccup protection, recovers automatically after fault condition is removed						
	OVER VOLTAGE	3.8~ 4.6V	4.62 ~ 5.46V	5.75 ~ 6.75V	13.2 ~ 15.6V	26.4 ~ 31.2V	39.6 ~46.8V	52.8 ~ 62.4V
	OVER TEMPERATURE	Shut down O/P voltage, re-power on to recover after temperature goes down						
FUNCTION	CURRENT SHARING	Please refer to the Function Manual						
	DC OK SIGNAL	Contact rating(max.):15Vdc/10mA 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./1cycle, 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	I/P-O/P:3.75KVAC      I/P-FG:2KVAC      O/P-FG:1.25KVAC						
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: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; EN61000-6-2 (EN50082-2), heavy industry level, criterial 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	194*55*20mm (L*W*H)						
	PACKING	0.356kg; 30pcs/11.68kg/0.6CUFT						
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor.</li> <li>Tolerance: includes set up tolerance, line regulation and load regulation.</li> <li>Derating may be needed under low input voltages. Please check the derating curve for more details.</li> <li>The ambient temperature derating of 5°C/1000m is needed for operating altitude greater than 2000m(6500ft)</li> <li>The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies."</li> </ol>							

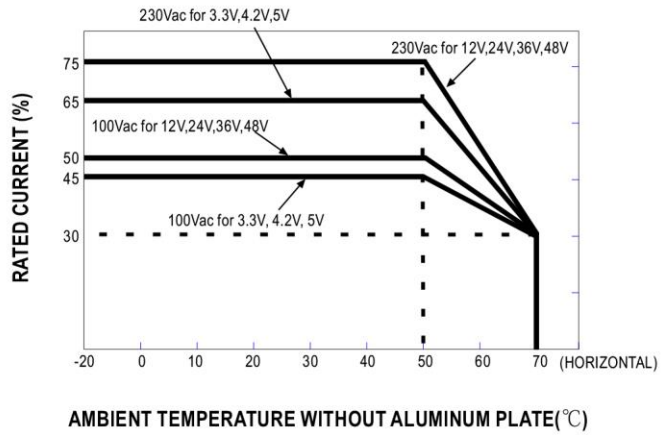
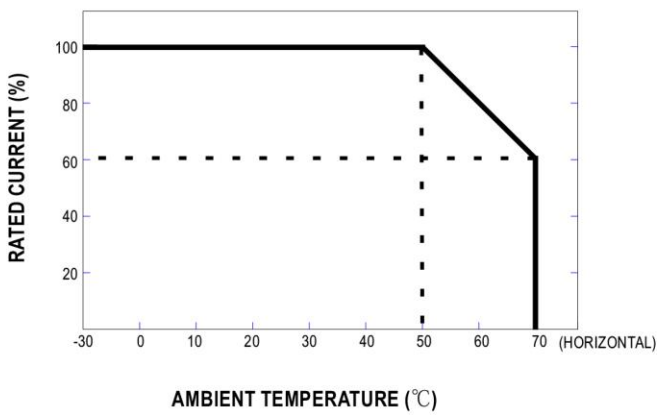


**160W Enclosed type single output power supply > LSP-160**

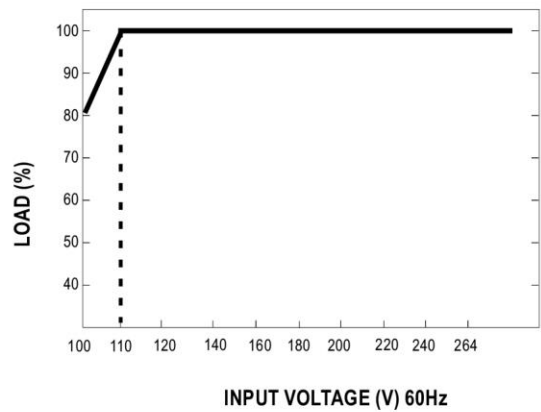
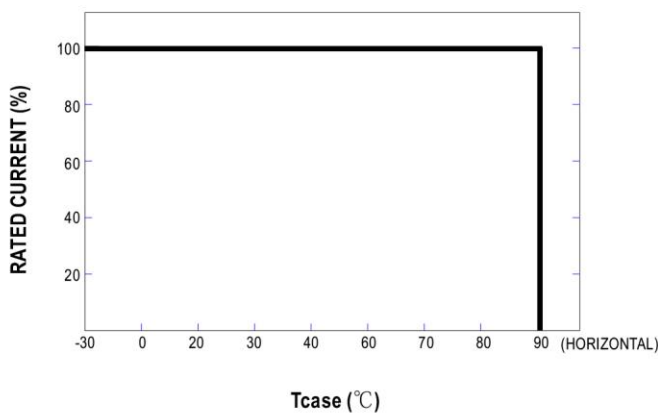
**Block Diagram**



**Derating Curve**



**STATIC CHARACTERISTIC**



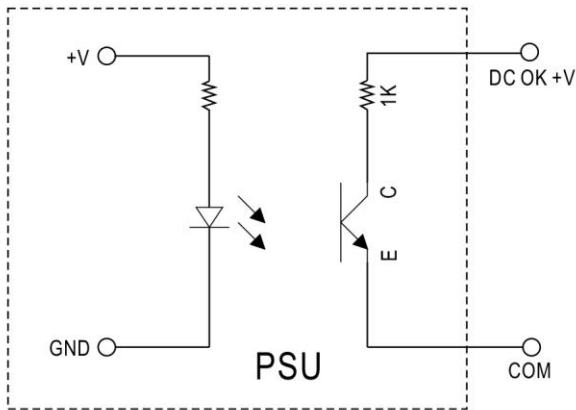
NOTE: Tc measurement point, please refer page 5 mechanical specification.

**160W Enclosed type single output power supply > LSP-160**

**Function Manual**

**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.



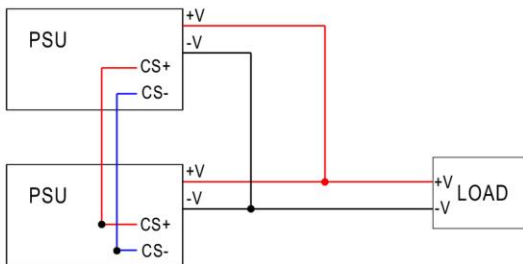
Optocoupler C-E Pin Conduction	PSU turns on	DC ok
Optocoupler C-E Pin Open	PSU turns off	DC fail
Optocoupler Rating(max.)	15Vdc/10mA resistive load	

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 effacting normal working.



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



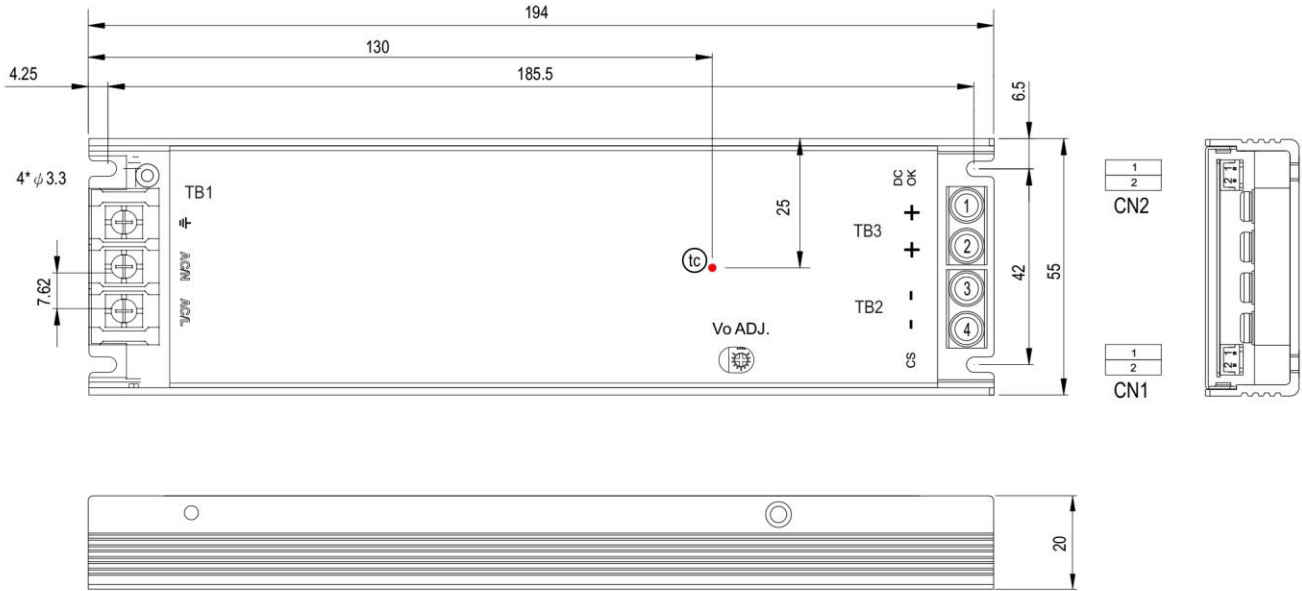
**160W Enclosed type single output power supply > LSP-160**

**■ Mechanical Specification**

CASE NO.:279

Unit:mm

※ T-type(Terminal block)



AC Input Connector(TB1) pin NO. Assignment

Pin No.	Assignment	Terminal	Max mounting torque
1	AC/L	(DEGSON) DG28C-B-03P	5Kgf-cm
3	AC/N		
5	⊥		

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

Pin No.	Assignment	Terminal	Max mounting torque
1,2	+V	(MW)	8Kgf-cm
3,4	-V	TB-HTP-200-40A	

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

Pin No.	Assignment	Mating Housing	Terminal
1	DC OK +V	JST SPH-002T-P0.5S	JST PHR-2
2	DC COM	or equivalent	or equivalent



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

Pin No.	Assignment	Mating Housing	Terminal
1	CS+	JST PHR-2	JST SPH-002T-P0.5S
2	CS-	or equivalent	or equivalent

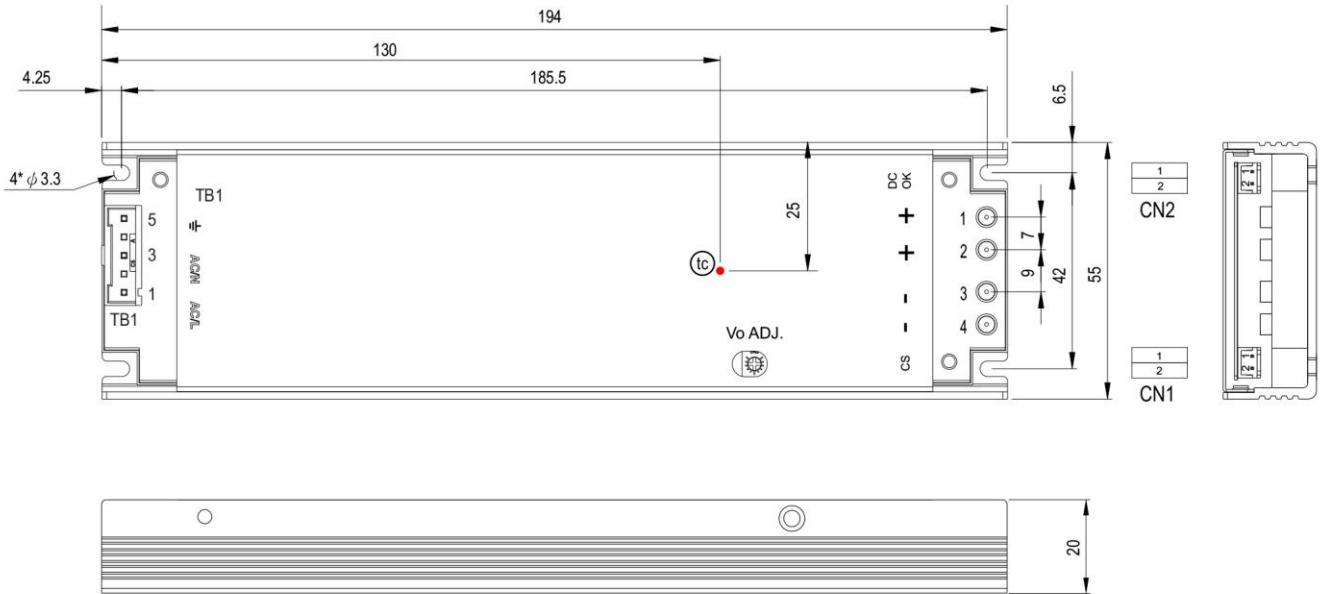
CN mating cable: 1FF5LSP-160-CS(Optional)



**160W Enclosed type single output power supply > LSP-160**

CASE NO.:279 Unit:mm

※ W-Type(Wafer connector type optional)



AC Input Connector(TB1) pin NO. Assignment

Pin No.	Assignment	Mating housing	Terminal
1	AC/L	JS-1391-05	JS-1390-05 and JS-2420-TL
3	AC/N		
5	⊥		

DC Output Connector(+V/-V)pin NO. Assignment

Pin No.	Assignment	Mating housing	Terminal
1,2	+V	1EE4LSP-160F	1EE4LSP-160M
3,4	-V		

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

Pin No.	Assignment	Mating Housing	Terminal
1	DC OK +V	JST SPH-002T-P0.5S or equivalent	JST PHR-2 or equivalent
2	DC COM		



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

Pin No.	Assignment	Mating Housing	Terminal
1	CS+	JST PHR-2 or equivalent	JST SPH-002T-P0.5S or equivalent
2	CS-		

CN mating cable: 1FF5LSP-160-CS(Optional)



E-Star Power Development Co., Ltd. (E-STAR)

1F., No.40, Juren Ln., Sec. 2, Sanmin Rd., Banciao Dist., New Taipei City  
22069, Taiwan (R.O.C.)

Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

**160W Enclosed type single output power supply > LSP-160**

**■ Installation**

**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 as 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

