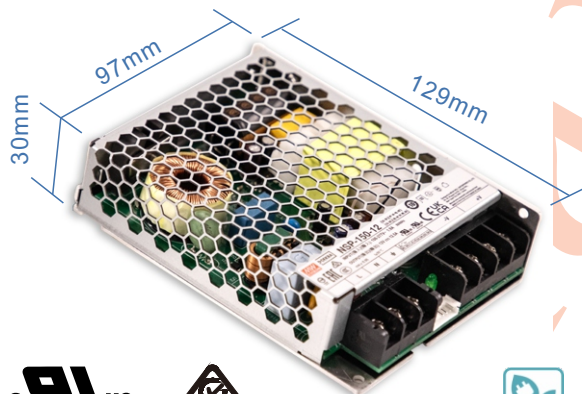




150W AC/DC High Reliable Multi-Industries Enclosed Type Power Supply **NSP-150** series



User's Manual



IEC62368-1
IEC61558-1/-2-16
IEC61010-1/-2-201
IEC60601-1
IEC60335-1
IEC62477-1



BS EN/EN62368-1
BS EN/EN61558-1/-2-16
BS EN/EN61010-1/-2-201
BS EN/EN60601-1
BS EN/EN60335-1
BS EN/EN62477-1



UL62368-1
UL61010-1/-2-201
ANSI/AAMI ES60601-1



AS/NZS61558-1/-2-16
AS/NZS62368-1



GB4943.1



CNS15598-1



KC62368-1
(By request)



IS13252



TPTC004



Features

- 85~305Vac input with PFC(277Vac available)
- No load power consumption <0.75W by R.C.
- Global certificates in multi-fields
(ITE 62368-1, Medical 60601-1, Household 60335-1, Industrial 61558-1/2-16/61010-1, Energy converter 62477-1)
- 200% peak power capability(12~60V models)
- High efficiency up to 92.5%
- -40~85°C wide range operation temperature(> +60°C derating)
- Extremely low leakage current<350μA, 2 x MOPP, suitable for BF medical applications
- Built-in constant current limiting circuit
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Fanless design for noise sensitive applications
- Built-in remote ON/OFF control
- Over voltage category III (OVC III)
- Operating altitude up to 5000 meters
- Conformal coating
- 5 years warranty

Description

The NSP-150 series is a 150W AC/DC power supply with PFC function, designed for high reliability and suitable for multiple industries. Key features include: compact size (129*97*30 mm) for better space utilization in system installations, ultra-wide input range of 85~305Vac for global compatibility, up to 92.5% efficiency and low standby power consumption (<0.75W) for energy-saving and carbon reduction, constant current design with 200% peak power capability, fanless design, wide operating temperature range from -40 to +85°C (+60°C at full load), compliance with OVCIII, built-in Remote Control /Remote Sense/DC OK signal, internal PCB coating, complete protections, certifications for multiple safety standards including 62368-1, 60601-1, 61558-1, 60335-1, 62477-1, and 61010-1, as well as 2 X MOPP compliance and extremely low leakage current (<350μA). It is suitable for BF-rated medical equipment and comes with a 5-years warranty, making it a highly cost-effective solution for industrial power supply needs.

Model Encoding

NSP -150 - 24

Output voltage (5V/7.5V/12V/15V/24V/27V/36V/48V/60V)

Output wattage

Series name

Applications

- Industrial automation machinery/ control system
- Security system
- Mechanical and electrical equipment
- Electronic instruments, equipments or apparatus
- Network equipment
- Telecom devices
- Power sourcing equipment of PoE
- Home automation
- Medical devices

GTIN CODE

MW Search: <https://www.meanwell.com/serviceGTIN.aspx>



150W AC/DC High Reliable Multi-Industries Enclosed Type Power Supply

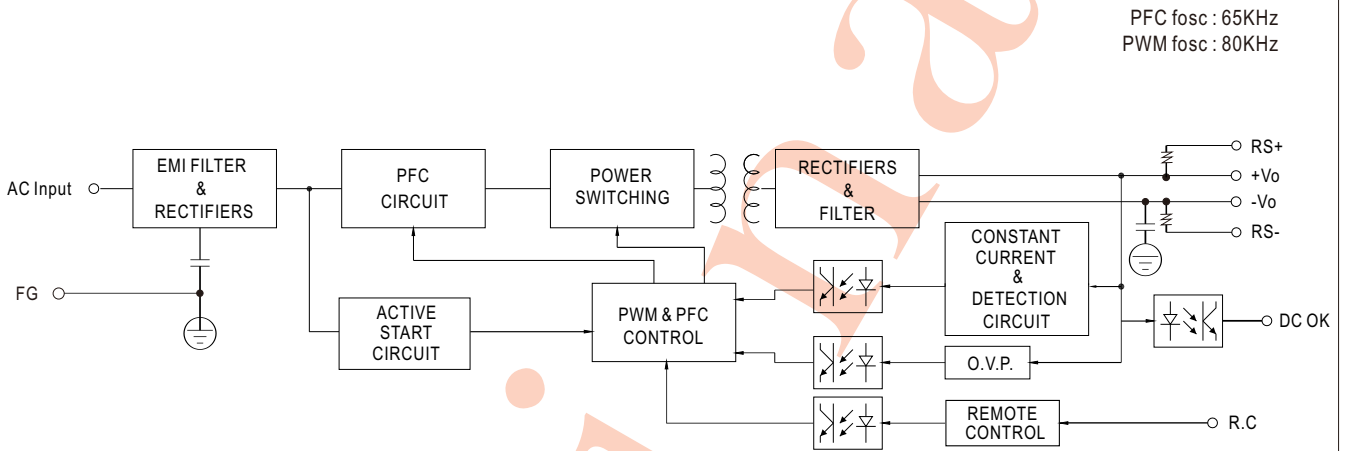
NSP-150 series

SPECIFICATION

MODEL		NSP-150-5	NSP-150-7.5	NSP-150-12	NSP-150-15	NSP-150-24	NSP-150-27	NSP-150-36	NSP-150-48	NSP-150-60	
OUTPUT	DC VOLTAGE	5V	7.5V	12V	15V	24V	27V	36V	48V	60V	
	RATED CURRENT	30A	20A	12.5A	10A	6.3A	5.6A	4.2A	3.2A	2.55A	
	CURRENT RANGE	0 ~ 30A	0 ~ 20A	0 ~ 12.5A	0 ~ 10A	0 ~ 6.3A	0 ~ 5.6A	0 ~ 4.2A	0 ~ 3.15A	0 ~ 2.55A	
	RATED POWER	150W	150W	150W	150W	151.2W	151.2W	151.2W	151.2W	153W	
	PEAK	CURRENT(5 sec.)	N/A	N/A	25A	20A	12.5A	11.2A	8.4A	6.3A	5A
		POWER(5 sec.)	N/A	N/A	300W	300W	300W	300W	300W	300W	300W
	RIPPLE & NOISE (max.)	Note.2 150mVp-p	150mVp-p	150mVp-p	150mVp-p	200mVp-p	240mVp-p	240mVp-p	240mVp-p	300mVp-p	
	VOLTAGE ADJ. RANGE	4.7 ~ 5.5V	6.8 ~ 9V	10.8 ~ 14V	15 ~ 19V	21 ~ 26V	26 ~ 32V	32 ~ 43V	44 ~ 57V	54 ~ 72V	
	VOLTAGE TOLERANCE	Note.3 ±2.0%	±2.0%	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	LOAD REGULATION	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	SETUP, RISE TIME	1500ms, 80ms/115Vac 1000ms, 80ms/230Vac 1000ms, 80ms/277Vac									
	HOLD UP TIME (Typ.)	16ms at full load									
INPUT	VOLTAGE RANGE	Note.4 85 ~ 305Vac	120 ~ 431Vdc								
	NO LOAD POWER CONSUMPTION(Typ.)	Remote Power OFF	0.75W/115Vac 0.75W/230Vac 0.75W/277Vac								
		Remote Power ON	3W/115Vac 3W/230Vac 3W/277Vac								
	FREQUENCY RANGE	47 ~ 63Hz									
	POWER FACTOR (Typ.)	PF>0.98/115Vac, PF>0.93/230Vac, PF>0.9/277Vac at full load									
	EFFICIENCY (Typ.)	90%	90%	91%	91%	92%	92%	92%	92.5%	92.5%	
	AC CURRENT (Typ.)	1.6A/115Vac 0.8A/230Vac 0.66A/277Vac									
	INRUSH CURRENT (Typ.)	COLD START 23A/115Vac 45A/230Vac 55A/277Vac									
LEAKAGE CURRENT	Earth leakage current <350μA(rms)@277Vac, touch current<100μA(rms) @ 277Vac										
PROTECTION	SHORT CIRCUIT	Constant current limiting for more than 5 seconds (Vout<30%) and then shut down o/p voltage, AC re-power on to recover									
	OVERLOAD	5V, 7.5V	105%~150% rated output power; Constant current limiting for more than 5 seconds and then shut down o/p voltage, AC re-power on to recover								
		12V ~ 60V	Normally works within 105 ~ 200% rated output power for more than 5 seconds and then constant current limiting without shutdown(Vout>30%), recovers automatically after fault condition is removed, or shut down o/p voltage when Vout<30%,AC re-power on to recover								
			>200% rated power, constant current limiting (Vout>30%)with auto-recovery after fault condition is removed, or shut down o/p voltage when Vout<30%,AC re-power on to recover								
	OVER VOLTAGE	5.8 ~ 7.5V	9 ~ 13V	15 ~ 19V	20 ~ 25V	28 ~ 36V	33~ 42V	44 ~ 54V	58~ 70V	73~ 86V	
		Protection type : Shut down o/p voltage, re-power on to recover									
OVER TEMPERATURE	Shut down o/p voltage, re-power on to recover										
FUNCTION	REMOTE CONTROL	POWER ON: RC+~RC- 0~0.8Vdc or open POWER OFF: RC+~RC- 3.3~10Vdc by external voltage									
	REMOTE SENSE	Compensate voltage drop on the load wiring up to 0.3V. Please refer to the Function Manual									
	DC OK SIGNAL	By phototransistor, contact rating(max.):15Vdc/10mA resistive load. Please refer to the Function Manual.									
ENVIRONMENT	WORKING TEMP.	-40 ~ +85°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	±0.05%/°C (0 ~ 60°C)									
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes									

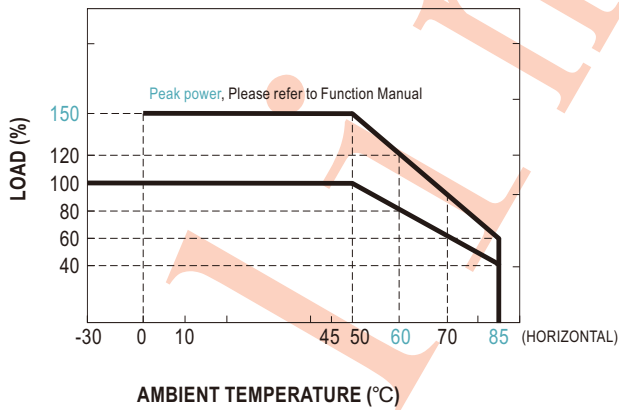
SAFETY & EMC (Note 6)	SAFETY STANDARDS	CB IEC62368-1, IEC60335-1, IEC61558-1/-2-16, IEC61010-1/-2-201, IEC60601-1; IEC62477-1 DEKRA BS EN/EN62368-1, BS EN/EN60335-1, BS EN/EN61558-1/-2-16, BS EN/EN61010-1/-2-201, BS EN/EN60601-1(3.2 Version);BS EN/EN62477-1 UL UL62368-1, ANSI/AAMI ES60601-1(3.2 Version),UL61010-1/-2-201 RCM AS/NES 62368-1, AS/NES61558-1/-2-16 CCC GB4943.1 BSMI CNS15598-1,BIS IS13252(Part1): 2010/IEC 60950-1 : 2005(except for 48V/60V) EAC TP TC 004 approved; KC KC62368-1 certified, no stock, contact sale for inquiries		
	ISOLATION RESISTANCE	Primary-Secondary: 2xMOPP, Primary-Earth: 1xMOPP, Secondary-Earth: 1xMOPP		
	OVER VOLTAGE CATEGORY	IEC/EN 61558-1/-2-16 (OVC III, altitude up to 2000M) IEC/EN/UL 62368-1 (OVC II, altitude up to 5000M) IEC/EN 60335-1 (OVC II, altitude up to 5000M) IEC/EN 60601-1 (OVC II, altitude up to 4000M) IEC/EN 61010-1/-2-201 (OVC II, altitude up to 5000M)		
	SAFETY EXTRA-LOW VOLTAGE(SELV)	IEC/EN 61558-2-16 (SELV, 5 ~ 36V) IEC/EN 60335-1 (SELV, 5 ~ 36V) IEC/EN/UL 62368-1 (SELV/ES1, 5 ~ 36V)		
	WITHSTAND VOLTAGE	I/P-O/P:4KVac I/P-FG:2KVac O/P-FG:1.5KVac		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃ / 70% RH		
	EMC EMISSION	Parameter	Standard	Test Level / Note
		Conducted	BS EN/EN55032(CISPR32),CNS 15936	Class B
			BS EN/EN55014-1(CISPR14-1)	
			BS EN/EN55011(CISPR11)	Class B
Radiated		BS EN/EN55032(CISPR32),CNS 15936	Class B	
		BS EN/EN55014-1(CISPR14-1)		
		BS EN/EN55011(CISPR11)	Class B	
Harmonic Current		BS EN/EN61000-3-2(IEC61000-3-2)	Class A	
Voltage Flicker	BS EN/EN61000-3-3(IEC61000-3-3)	-----		
EMC IMMUNITY	BS EN/EN55035(CISPR35),BS EN/EN61000-6-2(IEC61000-6-2),BS EN/EN60601-1-2(IEC60601-1-2), BS EN/EN55014-2(CISPR14-2)			
	Parameter	Standard	Test Level / Note	
	ESD	BS EN/EN61000-4-2	Level 4, 15KV air ; Level 4, 8KV contact	
	Radiated	BS EN/EN61000-4-3	Level 3, 10V/m(80MHz~2.7GHz) Table 9, 9~28V/m(385MHz~5.78GHz)	
	EFT / Burst	BS EN/EN61000-4-4	Level 3, 2KV	
	Surge	BS EN/EN61000-4-5	Level 4, 2KV/Line-Line 4KV/Line-Earth	
	Conducted	BS EN/EN61000-4-6	Level 3, 10V	
	Magnetic Field	BS EN/EN61000-4-8	Level 4, 30A/m	
OTHERS	MTBF	xx K hrs min. Telcordia SR-332 (Bellcore) ; xx K hrs min. MIL-HDBK-217F (25℃)		
	DIMENSION (L*W*H)	129*97*30mm		
	PACKING	xx.xxKg;xxpcs/xxx*xxKg/xx CUFT		
NOTE	1. All parameters NOT specially mentioned are measured at 230Vac input, rated load and 25℃ 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 need under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details. 5. The ambient temperature derating of 3.5℃/1000m with fanless models and 5℃/1000m with fan models for operating altitude higher 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-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." (as available on https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf) 7. RCM is on voluntary basis and meets relevant IEC or AS/NZS standards complying with AS/NZS 4417.1. ※ Product Liability Disclaimer: For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx			

■ Block Diagram

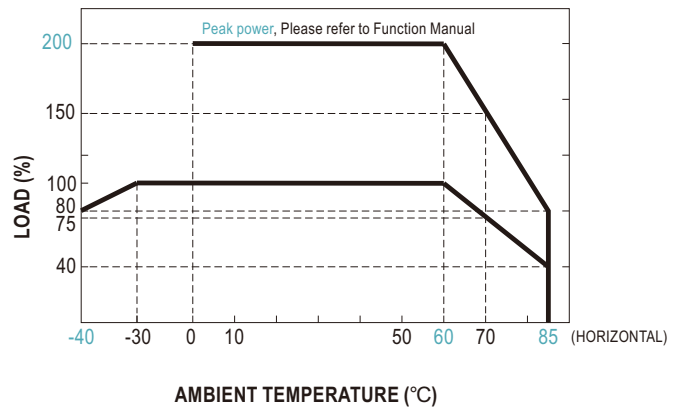


■ Derating Curve

Suitable for 100/110/115/120Vac System
(85~135Vac)

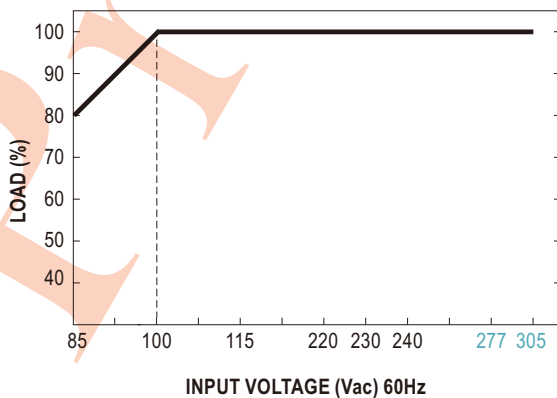


Suitable for 220/230/240/277Vac System
(180~305Vac)



Note: Below 100Vac @ -30°C there may be a restart situation within 3 seconds after power-on

■ Output Derating vs Input Voltage



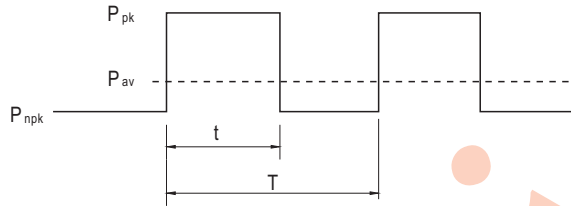
Function Manual

1. Peak Power

$$P_{av} = \frac{P_{pk} \times t + P_{npk} \times (T-t)}{T} \leq P_{rated}$$

$$\text{Duty} = \frac{t}{T} \times 100\% \leq 35\%$$

$$t \leq 5 \text{ sec}$$



P_{av} : Average output power (W)

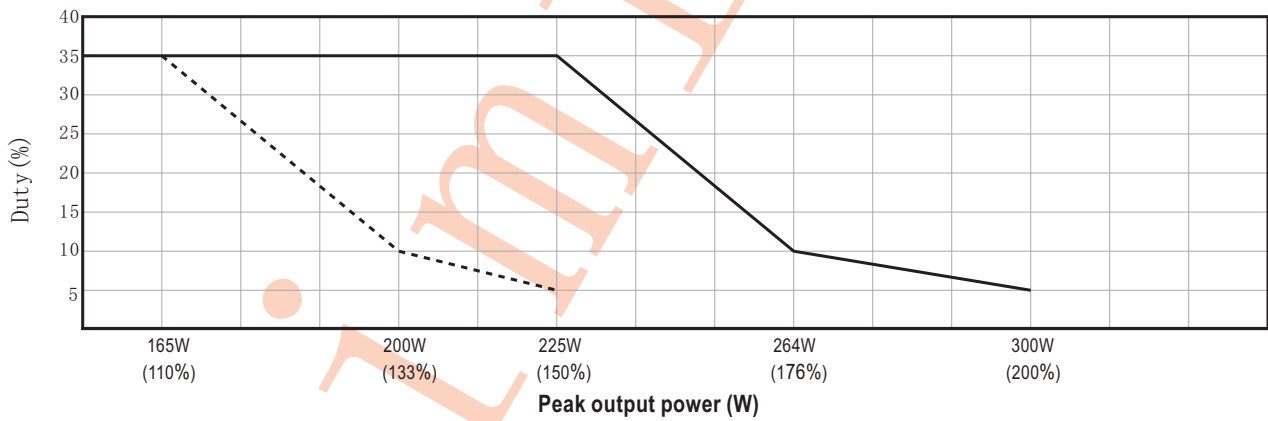
P_{pk} : Peak output power (W)

P_{npk} : Non-peak output power (W)

P_{rated} : Rated output power (W)

t : Peak power width (sec)

T : Period (sec)



For example (24V model) :

$V_{in} = 200\text{Vac}$ $\text{Duty}_{max} = 5\%$

$P_{av} = P_{rated} = 150\text{W}$

$P_{pk} = 300\text{W}$

$t \leq 5 \text{ sec}$

$$T \geq \frac{5 \text{ sec}}{5\%} \geq 100\text{sec}$$

$$P_{npk} \leq \frac{TP_{av} - tP_{pk}}{T-t}$$

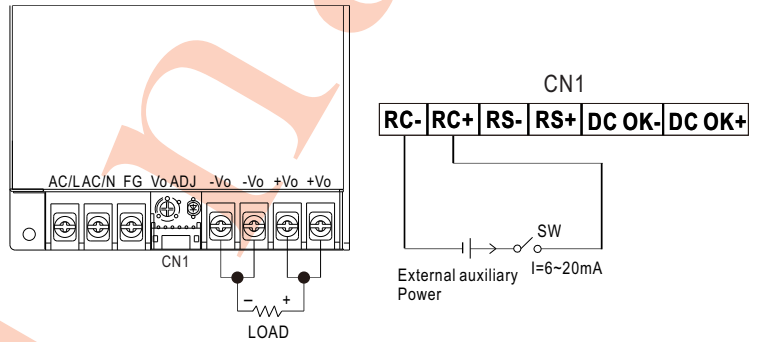
$$P_{npk} \leq 142\text{W}$$

Note: When the output voltage is adjusted to the upper limit, the peak power is 150% rated power

2.Remote Control

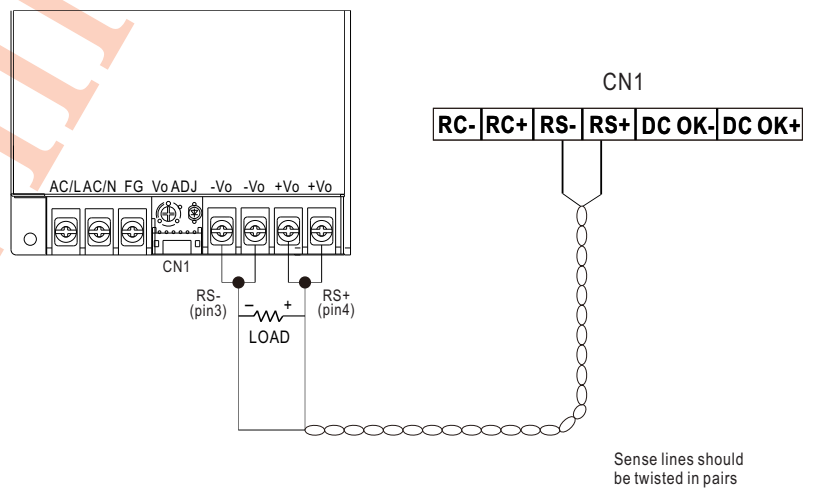
The PSU can be turned ON/OFF by using the "Remote Control" function with external switch and auxiliary power

PSU Vo Status	Between RC-(pin1) and RC+(pin2) on CN1
POWER ON	SW open or keep 0~0.8Vdc
POWER OFF	SW short or keep 3.3~10Vdc



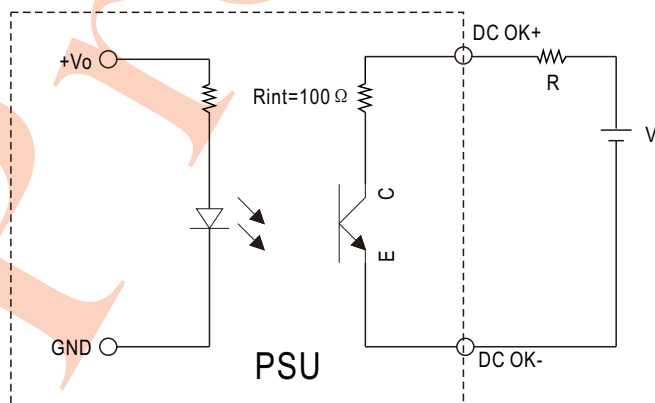
3.Remote Sense

The remote sensing compensates voltage drop on the load wiring up to 0.3Vdc



4.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.



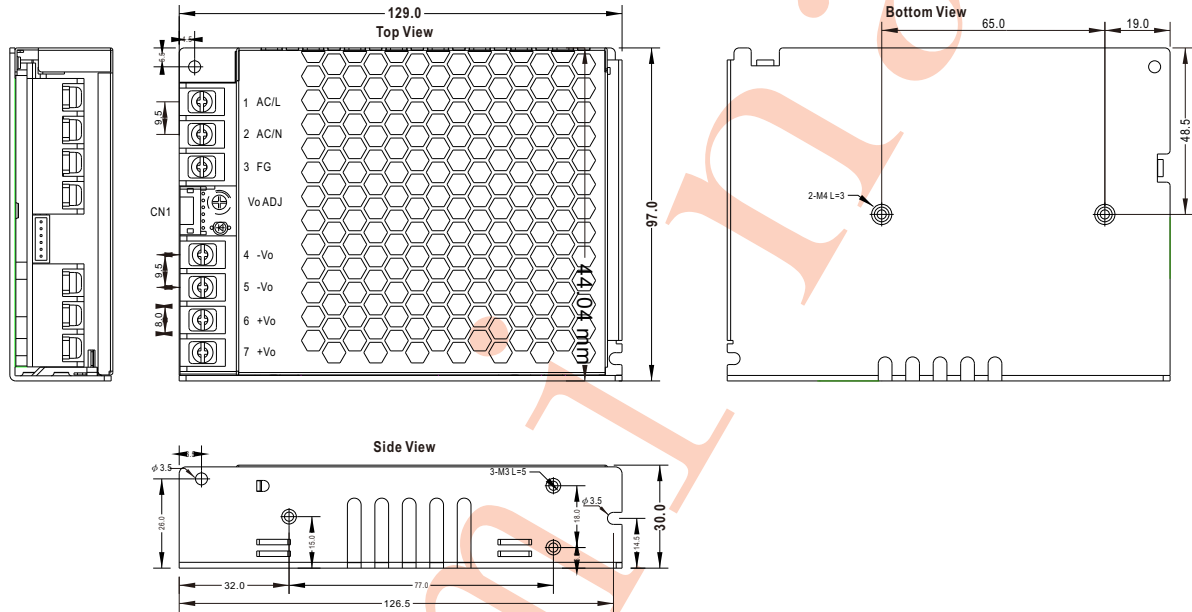
External voltage source (V) and resistor (R)

PSU Vo Status	Photo transistor
POWER ON	Conduct (Low impedance)
POWER OFF	Open (High impedance)

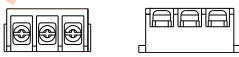
Optocoupler Rating (max.) 15Vdc/10mA resistive load

Mechanical Specification


Case No.240A Unit:mm Tolerance:±1



※ Input Terminal Pin No. Assignment

Pin No.	Assignment	Diagram	Screw thread	Maximum mounting torque
1	AC/L or DC input +Vin		M3.5	14Kgf.cm
2	AC/N or DC input -Vin			
3	FG \perp			

※ DC Output Terminal Pin No. Assignment

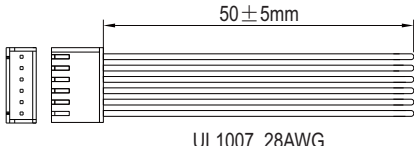
Pin No.	Assignment	Diagram	Screw thread	Maximum mounting torque
4,5	-Vo		M3.5	14Kgf.cm
6,7	+Vo			

Connector Pin No. Assignment (CN1): DJS-1125R-06 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	RC-	JS-11242-06 or equivalent	DJS-1125R-06 or equivalent
2	RC+		
3	RS-		
4	RS+		
5	DC OK-		
6	DC OK+		

Accessory List

Control function interface(CN1) mating wire (standard accessory)

No.	Item	Quantity
1	Mating wire  UL1007 28AWG	1pcs/per model

Installation Manual

Please refer to : <http://www.meanwell.com/manual.html>