

User's Manual


CB

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



TPCT004



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 93%
- -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-200 series is a 200W AC/DC power supply with PFC function, designed for high reliability and suitable for multiple industries. Key features include: compact size (159*97*30 mm) for better space utilization in system installations, ultra-wide input range of 85~305Vac for global compatibility, up to 93% 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 -200- 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>



200W AC/DC High Reliable Multi-Industries Enclosed Type Power Supply

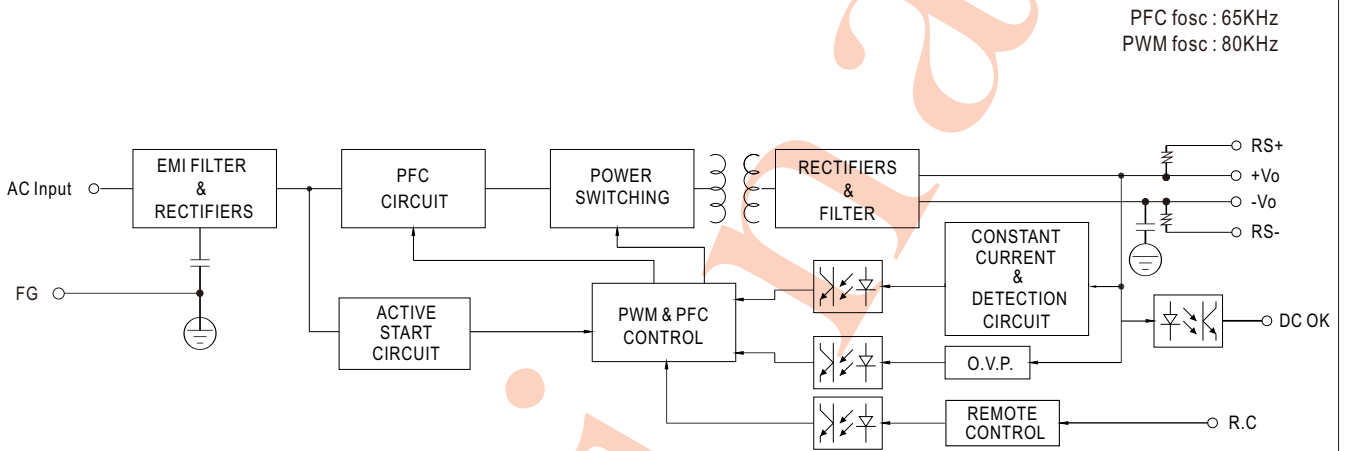
NSP-200 series

SPECIFICATION

MODEL		NSP-200-5	NSP-200-7.5	NSP-200-12	NSP-200-15	NSP-200-24	NSP-200-27	NSP-200-36	NSP-200-48	NSP-200-60	
OUTPUT	DC VOLTAGE	5V	7.5V	12V	15V	24V	27V	36V	48V	60V	
	RATED CURRENT	40A	26.8A	16.7A	13.4A	8.4A	7.4A	5.6A	4.2A	3.36A	
	CURRENT RANGE	0 ~ 40A	0 ~ 26.8A	0 ~ 16.7A	0 ~ 13.4A	0 ~ 8.4A	0 ~ 7.4A	0 ~ 5.6A	0 ~ 4.2A	0 ~ 3.36A	
	RATED POWER	200W	201W	200.4W	201W	201.6W	199.8W	201.6W	201.6W	201.6W	
	PEAK	CURRENT(5 sec.)	N/A	N/A	33.4A	26.7A	16.7A	14.8A	11.2A	8.4A	6.7A
		POWER(5 sec.)	N/A	N/A	400W	400W	400W	400W	400W	400W	400W
	RIPPLE & NOISE (max.) Note.2		200mVp-p	200mVp-p	200mVp-p	200mVp-p	240mVp-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%	93%	93%	93%	93%	93%
	AC CURRENT (Typ.)		2.5A/115Vac	1.3A/230Vac	1.1A/277Vac						
	INRUSH CURRENT (Typ.)		COLD START	23A/115Vac	40A/230Vac	50A/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.								
	WORKING TEMP.		-40 ~ +85°C (Refer to "Derating Curve")								
ENVIRONMENT	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								

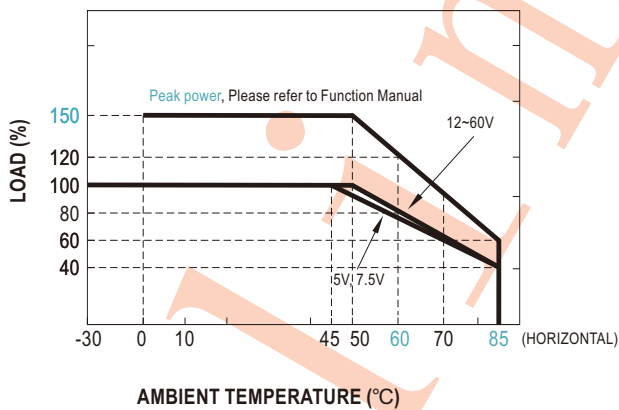
SAFETY & EMC (Note 6)	SAFETY STANDARDS	CB IEC62368-1, IEC60335-1, IEC61558-1/-2-16, IEC61010-1/-2-201, IEC60601-1; IEC62477-1, DEKRA BS EN/EN62368-1, BS EN/EN60335-1, BS EN/EN61558-1/-2-16, BS EN/EN61010-1/-2-201, BS EN/EN60601-1(3.2 Version);BS EN/EN62477-1 UL UL62368-1, ANSI/AAMI ES60601-1(3.2 Version),UL61010-1/-2-201 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	
Voltage Dips and Interruptions	BS EN/EN61000-4-11	>95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods		
OTHERS	MTBF	xx K hrs min. Telcordia SR-332 (Bellcore) ; xx K hrs min. MIL-HDBK-217F (25℃)		
	DIMENSION (L*W*H)	159*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



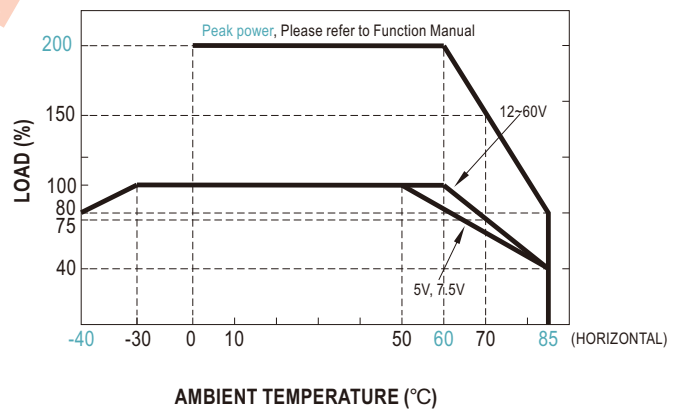
Derating Curve

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

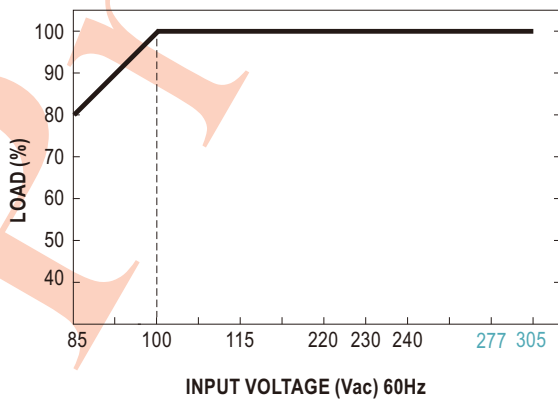


Note: Below 100Vac @-30°C there may be a restart situation within 3 seconds after power-on

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



Output Derating vs Input Voltage



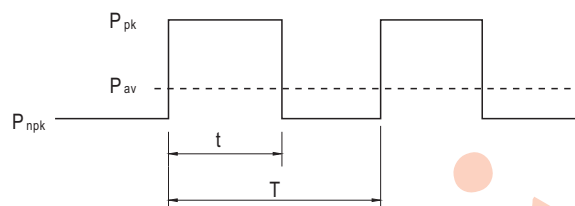
Function Manual

1. Peak Power

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

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

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



P_{av} : Average output power (W)

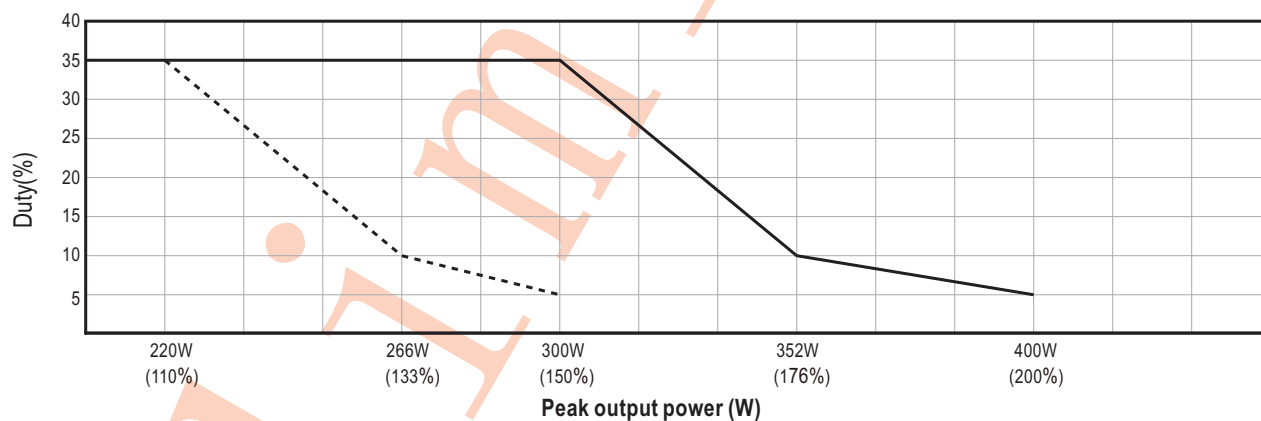
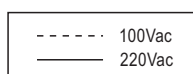
P_{pk} : Peak output power (W)

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) :

$V_{in} = 200Vac$ $Duty_{max} = 5\%$

$P_{av} = P_{rated} = 200W$

$P_{pk} = 400W$

$t \leq 5 \text{ sec}$

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

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

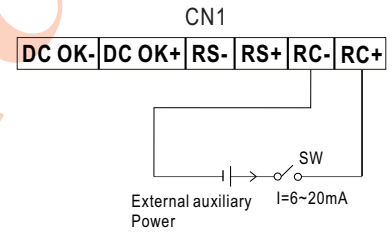
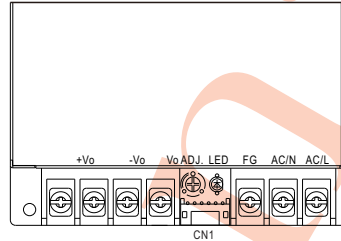
$$P_{npk} \leq 189W$$

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

2.Remote Control

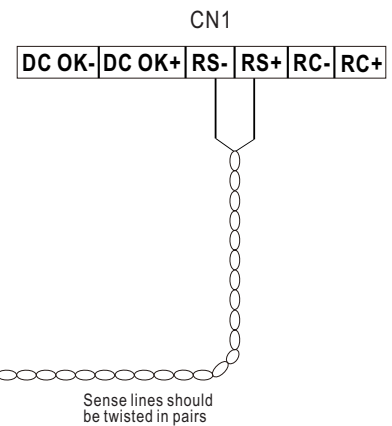
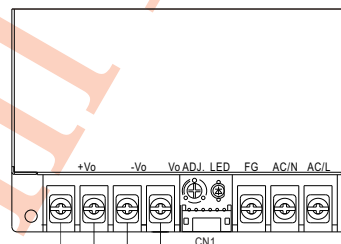
The PSU can be turned ON/OFF by using the "Remote Control" function with external switch and auxiliary power

PSU Vo Status	Between RC-(pin5) and RC+(pin6) on CN1
POWER ON	SW open or keep 0~0.8Vdc
POWER OFF	SW short or keep 3.3~10Vdc



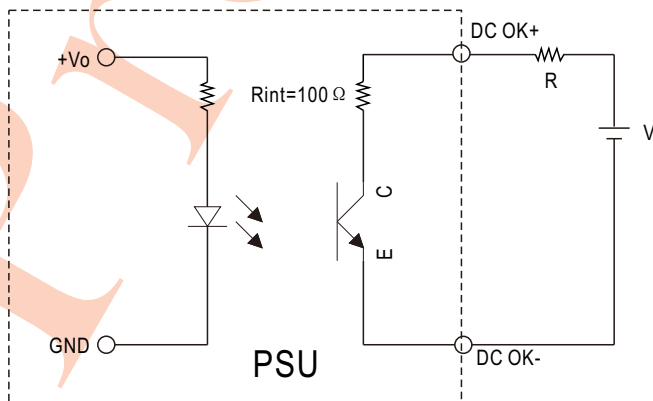
3.Remote Sense

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.



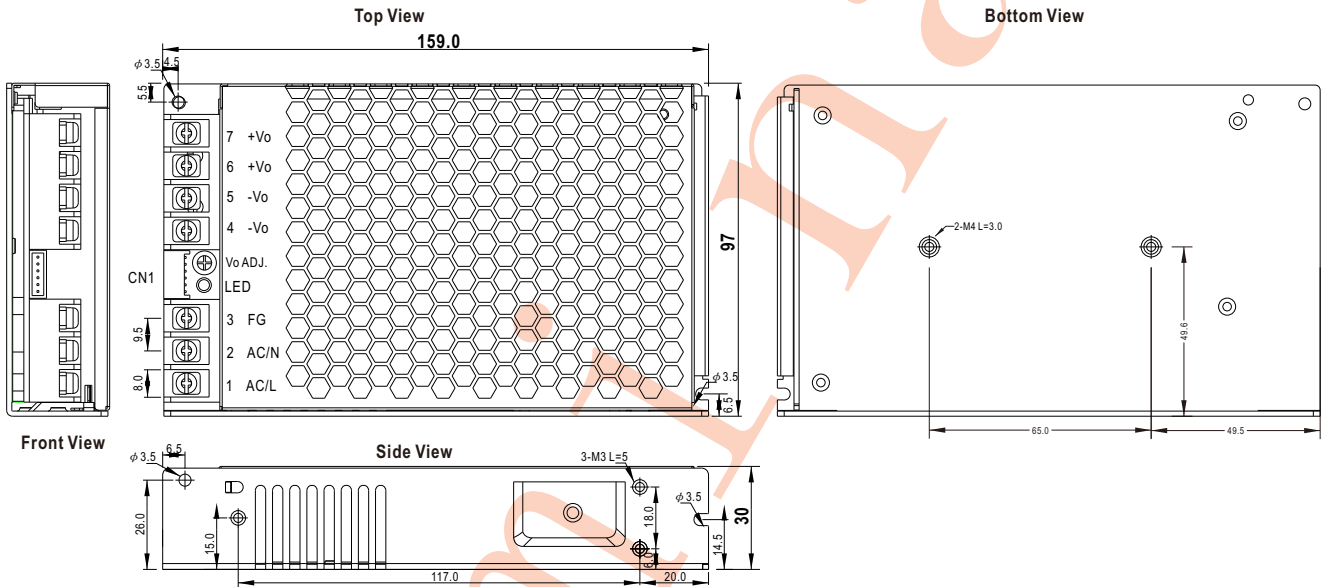
External voltage source(V) and resistor(R)

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

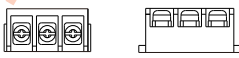
Optocoupler Rating(max.) 15Vdc/10mA resistive load

Mechanical Specification

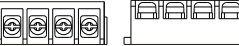
Case No.240A Unit:mm Tolerance:±1



※ 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

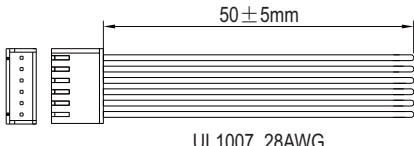
Pin No.	Assignment	Diagram	Screw thread	Maximum mounting torque
4,5	-Vo		M3.5	14Kgf.cm
6,7	+Vo			

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

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

Accessory List

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

No.	Item	Quantity
1	Mating wire 	1pcs/per model

Installation Manual

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