650W/1200W Modular Power

NMP series





TAIWAN EXCELLENCE 2018 (NMP1K2)

ANSI/AAMI ES60601-1 UL62368-1 EN60601-1 EN62368-1 IEC60950-1/IEC62368-1/IEC60601-1

Medical 2xMOPP Industrial Automate

Features

- Medical (2x MOPP) ITE safety approvals
- Suitable for BF application with appropriate system consideration (Touch current < 100uA/264VAC)
- 1U low profile
- Universal AC input / Full range
- Output voltage and current programmable
- Built-in parallel function / output programmable / global enable / remote local ON-OFF / auxiliary DC output / over temperature alarm / DC OK
- Cooling by thermostatically controlled fan with fan alarm function
- Protections: Short circuit / Overload / Over voltage / Over temperature for all output modules
- 5 years warranty

Applications

- Medical equipment
- Diagnostic or biological facilities
- MRI, CT and PET scanners
- Test or measurement systems
- Telecommunication equipment
- Factory automation and aging equipment
- Laser equipment

Description

NMP family is a 1U low profile modular and configurable type power supply from MEAN WELL. This family comprises two power wattage for the line-up, 650W and 1200W, and the output modules deliver up to 240W with adjustable options for the major working voltages used in the industries 5V, 12V, 24V, 48V, Dual Output. NMP family complies with safety approval, the medical (2x MOPP between primary to secondary) and ITE standards. Offering the best flexibility for various types of applications.

Output Configuration Guide

NMP □□□-□ □ □ □ □ □ □-□□

SLOT 1 SLOT 2 SLOT 3 SLOT 4 SLOT 5 SLOT 6

650/ 1K2 (650W/ 1200W)

Parallel or option code (See Table 1.)

Example: NMP 1K2-C E H K # D-□□

SLOT 1 O/P: 5V@ 36A

SLOT 2 O/P: 12V@ 20A

SLOT 3 O/P: 24V@ 10A

SLOT 4 O/P: 48V@ 5A

SLOT 5 Blank slot
(with BLANK-NMS240)

SLOT 6 O/P: V1 30V@ 5A
V2 30V@ 5A
(Combined 240W max.)

※650W (4 SLOTS)、1200W (6 SLOTS)

Table 1. Parallel or option code

Code	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6
00	-----	-----	-----	-----	-----	-----
01	◎	◎	-----	-----	-----	-----
02	-----	◎	◎	-----	-----	-----
03	-----	-----	◎	◎	-----	-----
04	-----	-----	-----	◎	◎	-----
05	-----	-----	-----	-----	◎	◎
06	◎	◎	◎	-----	-----	-----
07	-----	◎	◎	◎	-----	-----
08	-----	-----	◎	◎	◎	-----
09	-----	-----	-----	◎	◎	◎
10	◎	◎	◎	◎	-----	-----
11	-----	◎	◎	◎	◎	-----
12	-----	-----	◎	◎	◎	◎
13	◎	◎	◎	◎	◎	-----
14	-----	◎	◎	◎	◎	◎
15	◎	◎	◎	◎	◎	◎

Code	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6
16	◎——◎		◎——◎		-----	-----
17	-----	◎——◎		◎——◎		-----
18	-----	-----	◎——◎		◎——◎	
19	◎——◎		-----	◎——◎		-----
20	◎——◎		-----	-----	◎——◎	
21	-----	◎——◎		-----	◎——◎	
22	◎——◎		◎——◎		◎——◎	
23	◎——◎		◎——◎——◎			-----
24	◎——◎		-----	◎——◎——◎		
25	-----	◎——◎		◎——◎——◎		
26	◎——◎——◎			◎——◎		-----
27	◎——◎——◎			-----	◎——◎	
28	-----	◎——◎——◎			◎——◎	
29	◎——◎——◎			◎——◎——◎		
30	◎——◎		◎——◎——◎——◎			
31	◎——◎——◎——◎				◎——◎	

※Code 00, 01, 02, 03, 06, 07, 10, 16 for NMP650
※Code 00~31 for NMP1K2

SPECIFICATION

Front-End

MODEL		NMP650 (4 Slots)	NMP1K2 (6 Slots)
INPUT	VOLTAGE RANGE Note.6	90 ~ 264VAC 120 ~370VDC	
	FREQUENCY RANGE	47 ~ 63Hz	
	POWER FACTOR	PF>0.95/230VAC PF>0.98/115VAC at full load	
	EFFICIENCY(Typ.) Note.4	91%, full case load with H / K module at nominal 24V / 48V only	90.5%, full case load with H / K module at nominal 24V / 48V only
		88.5%, full case load with each type of module at nominal voltage	
	AC CURRENT	3.5A/230VAC 7.5A/115VAC	6.7A/230VAC 13.5A/115VAC
	INRUSH CURRENT	40A/230VAC 25A/115VAC	40A/230VAC 25A/115VAC
	LEAKAGE CURRENT	Earth leakage current <400uA / 264VAC, Touch current <100uA/264VAC	
OUTPUT	TOTAL OUTPUT POWER	650W max.	1200W max.
PROTECTION	OVER TEMPERATURE	Shut down o/p voltage, recovers automatically after temperature goes down	
FUNCTION	REMOTE CONTROL	RC+/RC-: Short, Power ON RC+/RC-: Open, Power OFF	
	ALARM SIGNAL	TTL signal output for over temperature alarm. Please refer to the Function Manual.	
	AUXILIARY POWER(AUX)	5V @ 1.5A ; tolerance ±10%; ripple: 50mVp-p (max.)	5V @ 2A; tolerance ±10%; ripple: 50mVp-p(max.)
ENVIRONMENT	WORKING TEMP.	-30 ~ +70℃ (Derate at 50℃, refer to "Derating Curve")	
	WORKING HUMIDITY	20 ~ 90% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH non-condensing	
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)	
	VIBRATION	10~500Hz, 2G 10min./1 cycle, 60 min. each along X, Y, Z axes.	
SAFETY & EMC (Note 5)	SAFETY STANDARDS	ANSI/AAMI ES60601-1, Ed. 3.1,UL62368-1; TUV EN60601-1, Ed. 3.1, TUV EN62368-1; IEC 60601-1, Ed. 3.1, IEC 62368-1, IEC60950-1; EAC TP TC 004 approved	
	ISOLATION LEVEL	Primary-Secondary: 2x MOPP, Primary-Earth: 1x MOPP	
	WITHSTAND VOLTAGE	I/P-O/P: 4KVAC I/P-FG: 2KVAC O/P-FG: 0.5KVAC	
	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	EN55032 (CISPR32) / EN55011 (CISPR11)	Class B
		Radiated	EN55032 (CISPR32) / EN55011 (CISPR11)	Class B
		Harmonic Current	EN61000-3-2	Class A
		Voltage Flicker	EN61000-3-3	-----
	EMC IMMUNITY	EN60601-1-2, EN55024, SEMI F47		
		Parameter	**Standard**	**Test Level / Note**
		ESD	EN61000-4-2	Level 4, 15KV air; Level 4, 8KV contact
		RF field	EN61000-4-3	Level 3, 10V/m
		EFT/ Burst	EN61000-4-4	Level 3, 2KV
		Surge	EN61000-4-5	Level 4, 4KV/Line-FG; 2KV/Line-Line
		Conducted	EN61000-4-6	Level 2, 3V
		Magnetic Field	EN61000-4-8	Level 4, 30A/m
		Voltage Dips and Interruptions	EN61000-4-11	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods
OTHERS	DIMENSION	250*89*41mm (L*W*H)	250*127*41mm (L*W*H)
	PACKING	1.45Kg (typ.); 9pcs / 14Kg / 0.98CUFT	2Kg (typ.); 6pcs / 13Kg / 0.88CUFT

■ Single Output Module (240W)

OUTPUT (NMS-240)	MODEL	NMS-240-05	NMS-240-12	NMS-240-24	NMS-240-48
	CONFIGURATION CODE	C	E	H	K
	DC VOLTAGE	5V	12V	24V	48V
	RATED CURRENT	36A	20A	10A	5A
	CURRENT RANGE	0 ~ 36A	0 ~ 20A	0 ~ 10A	0 ~ 5A
	RATED POWER	180W	240W	240W	240W
	RIPPLE & NOISE (max.) Note.2	100mVp-p	150mVp-p	150mVp-p	250mVp-p
	VOLTAGE ADJ. RANGE	3 ~ 6V	6~15V	15~30V	30~55V
	VOLTAGE TOLERANCE Note.3	±2.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.3%	±0.2%	±0.2%
	LOAD REGULATION	±1.0%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	1500ms, 60ms at full load			
	HOLD UP TIME (Typ.)	16ms/230VAC @ 75% total output power 10ms/230VAC @ total output power			
PROTECTION	OVERLOAD	105 ~ 125% rated output power			
		Protection type: constant current limiting protection			
	OVER VOLTAGE	6.3 ~ 8V	15.5 ~ 20V	31 ~ 37V	57 ~ 66V
		Protection type : Shut down o/p voltage, re-power on to recover			
	OVER TEMPERATURE	Shut down o/p voltage, recovers automatically after temperature goes down			
FUNCTION	REMOTE ON/OFF CONTROL	RC+/RC-: Open, Power ON RC+/RC-: Short, Power OFF			
	REMOTE SENSE	Compensate voltage drop on the load wiring up to 0.5V.			
	OUTPUT VOLTAGE PROGRAMMABLE(PV)	3 ~ 6V	6 ~ 15V	15 ~ 30V	30 ~ 55V
		Adjustment of output voltage is allowable. Please refer to the Function Manual.			
	OUTPUT CURRENT PROGRAMMABLE(PC)	Adjustment of constant current level is allowable. Please refer to the Function Manual.			
	AUXILIARY POWER(AUX)	5V@10mA; tolerance ±10%, ripple: 50mVp-p (max.)			
	CURRENT SHARING(CS)	Please refer to the Function Manual.			
	DC OK SIGNAL	Output modules turn on=4.5 ~ 5.5V, turn off=0 ~ 0.5V. Please refer to the Function Manual.			
OTHERS	DIMENSION	118.5*37.9*18mm (L*W*H)			
	PACKING	0.142Kg (typ.); 72pcs / 11.2Kg / 1.04CUFT			

NOTE

1. All parameters NOT specifically 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. NMP650: The efficiency changes by installing different output modules. The following combination is chosen when fitting different types of module:
   5V (Voltage code C)*1, 12V (Voltage code E)*1, 24V (Voltage code H)*1, 48V (Voltage code K)*1. (650W max.)
   NMP1K2: The efficiency changes by installing different output modules. The following combination is chosen when fitting different types of module:
   5V (Voltage code C)*1, 12V (Voltage code E)*1, 24V (Voltage code H)*2, 48V (Voltage code K)*2. (1200W max.)
   The hold up time of the combination above is 16ms/230vac @ 75% total output power、10ms/230VAC @ total output power.
5. The power supply is considered a component which will be installed into a final equipment. All the EMC tests have been executed by mounting the unit on a 360mm*720mm metal plate with 1mm of thickness. 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 http://www.meanwell.com)
6. De-rating may be needed under low input voltages. Please check the derating curve for more details.
7. Under parallel operation ripple of the output voltage may be higher than the SPEC at light load condition.
8. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m (6500ft).

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■ Dual Output Module (240W)

OUTPUT (NMD-240)	MODEL	NMD-240	
	CONFIGURATION CODE	D	
	OUTPUT NUMBER	V1	V2
	DC VOLTAGE	30V	30V
	RATED CURRENT (max.)	5A	5A
	CURRENT RANGE	0 ~ 5A	0 ~ 5A
	RATED POWER (max.)	150W	150W
	COMBINED POWER (max.)	240W	
	RIPPLE & NOISE (max.) Note.2	250mVp-p	250mVp-p
	VOLTAGE ADJ. RANGE	3 ~ 30V	3 ~ 30V
	VOLTAGE TOLERANCE (max.) Note.3	±2.0%	±2.0%
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
	SETUP, RISE TIME	1500ms, 60ms at full load	
	HOLD UP TIME (Typ.)	16ms/230VAC @ 75% total output power 10ms/230VAC @ total output power	
PROTECTION	OVERLOAD(V1,V2)	105 ~ 125% rated output power	
		Protection type: constant current limiting protection	
	OVER VOLTAGE(V1,V2)	31 ~ 37V	31 ~ 37V
		Protection type : Shut down o/p voltage, re-power on to recover	
	OVER TEMPERATURE(V1,V2)	Shut down o/p voltage, recovers automatically after temperature goes down	
FUNCTION	REMOTE ON/OFF CONTROL(V1,V2)	RC+/RC-: Open, Power ON RC+/RC-: Short, Power OFF	
	DC OK SIGNAL(V1,V2)	Output modules turn on=4.5 ~ 5.5V, turn off=0 ~ 0.5V. Please refer to the Function Manual.	
OTHERS	DIMENSION	118.5*37.9*18mm (L*W*H)	
	PACKING	0.152Kg (typ.); 72pcs / 11.9Kg / 1.04CUFT	

NOTE

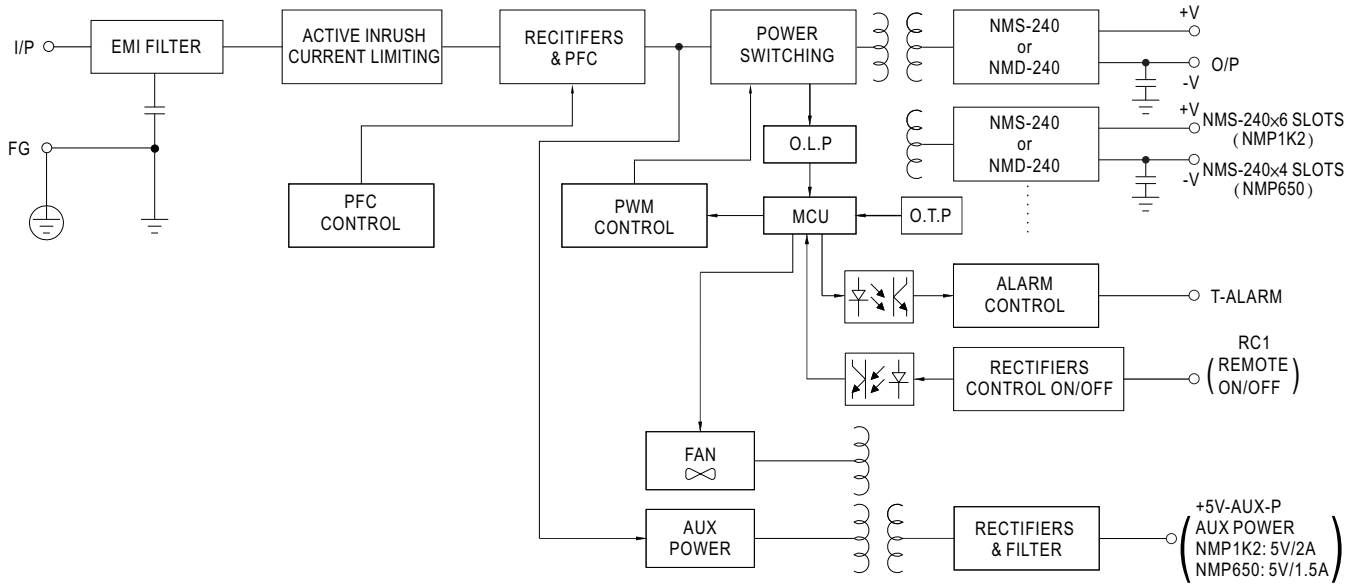
1. All parameters NOT specifically mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
3. Tolerance: includes set up tolerance, line regulation and load regulation.
4. NMP650: The efficiency changes by installing different output modules. The following combination is chosen when fitting different types of module:
   5V (Voltage code C)*1, 12V (Voltage code E)*1, 24V (Voltage code H)*1, 48V (Voltage code K)*1. (650W max.)
   NMP1K2: The efficiency changes by installing different output modules. The following combination is chosen when fitting different types of module:
   5V (Voltage code C)*1, 12V (Voltage code E)*1, 24V (Voltage code H)*2, 48V (Voltage code K)*2. (1200W max.)
   The hold up time of the combination above is 16ms/230vac @ 75% total output power、10ms/230VAC @ total output power.
5. The power supply is considered a component which will be installed into a final equipment. All the EMC tests have been executed by mounting the unit on a 360mm*720mm metal plate with 1mm of thickness. 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 http://www.meanwell.com)
6. De-rating may be needed under low input voltages. Please check the derating curve for more details.
7. Under parallel operation ripple of the output voltage may be higher than the SPEC at light load condition.
8. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m (6500ft).

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■ Block Diagram

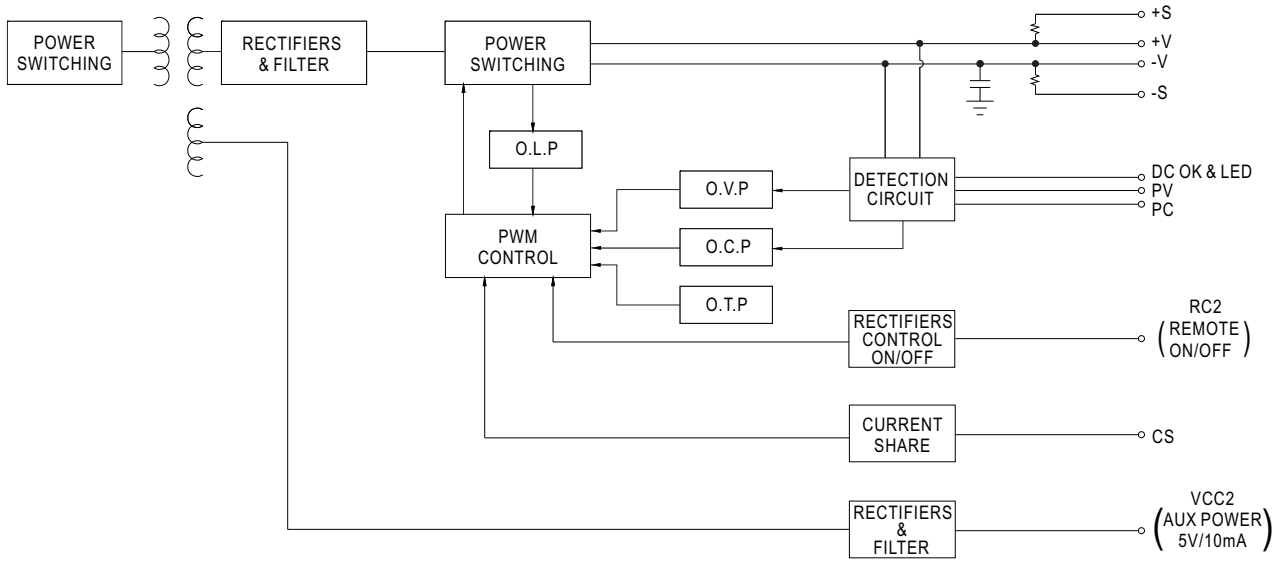
NMP1K2 & NMP650 (Front - End)

PFC fosc : 85KHz(NMP1K2)
70KHz(NMP650)
PWM fosc : 100KHz



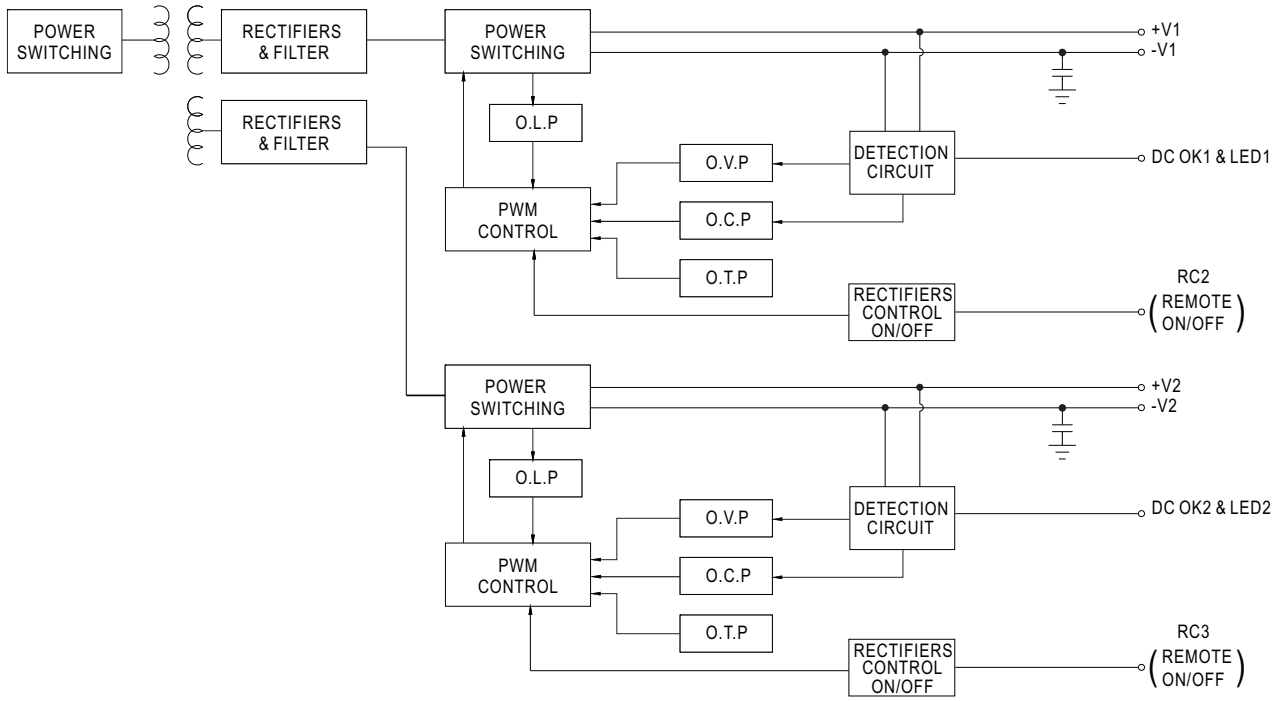
NMS-240 (Single Output Module)

PWM fosc : 175KHz

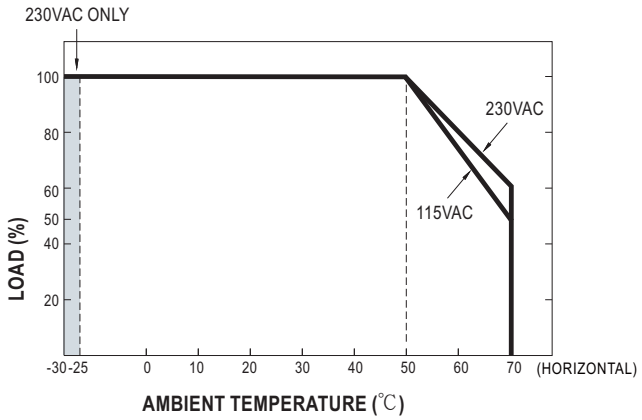


NMD-240 (Dual Output Module)

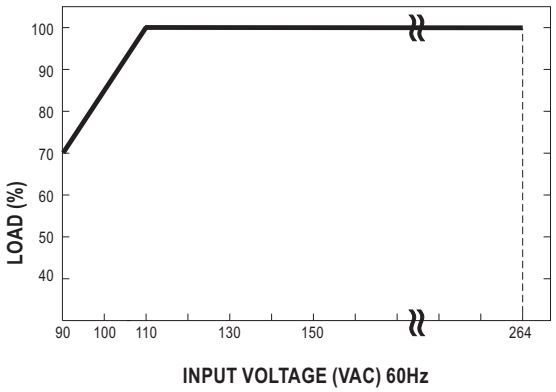
PWM fosc : 175KHz



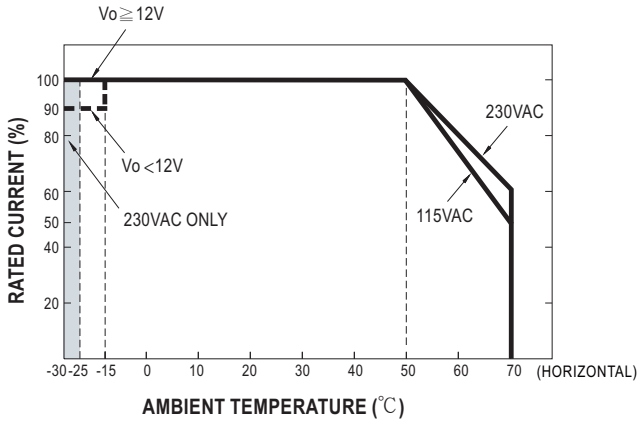
■ Derating Curve



■ Static Characteristics



■ Derating Curve (NMD-240)

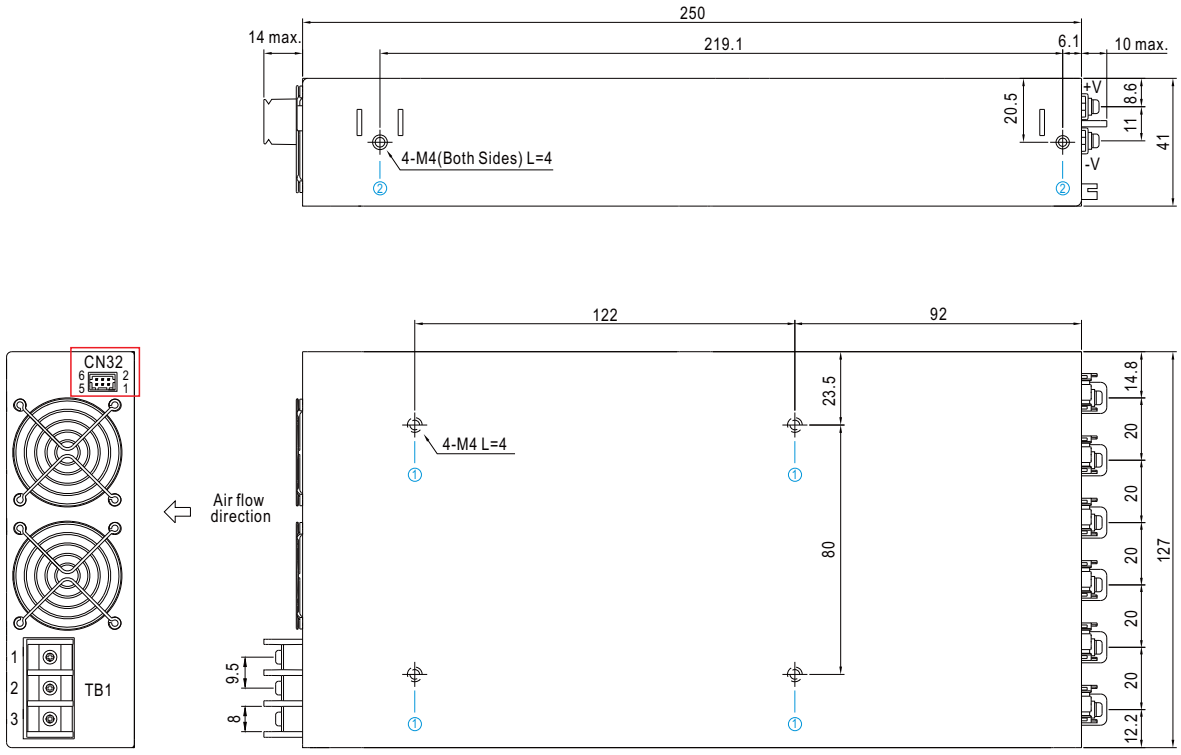


Note:When output voltage is below 12V and ambient temperature is between -15℃ to -30℃, output current should be de-rated to 90% of rated current.

■ MECHANICAL SPECIFICATION

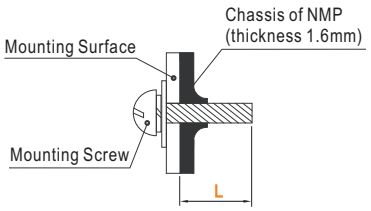
※ **NMP1K2 (Front - End)**

Case No.260A Unit:mm

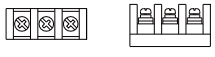


※ Mounting Instruction

Hole No.	Recommended Screw Size	MAX. Penetration Depth L	Recommended mounting torque
①	M4	4mm	7~10Kgf-cm
②	M4	4mm	7~10Kgf-cm



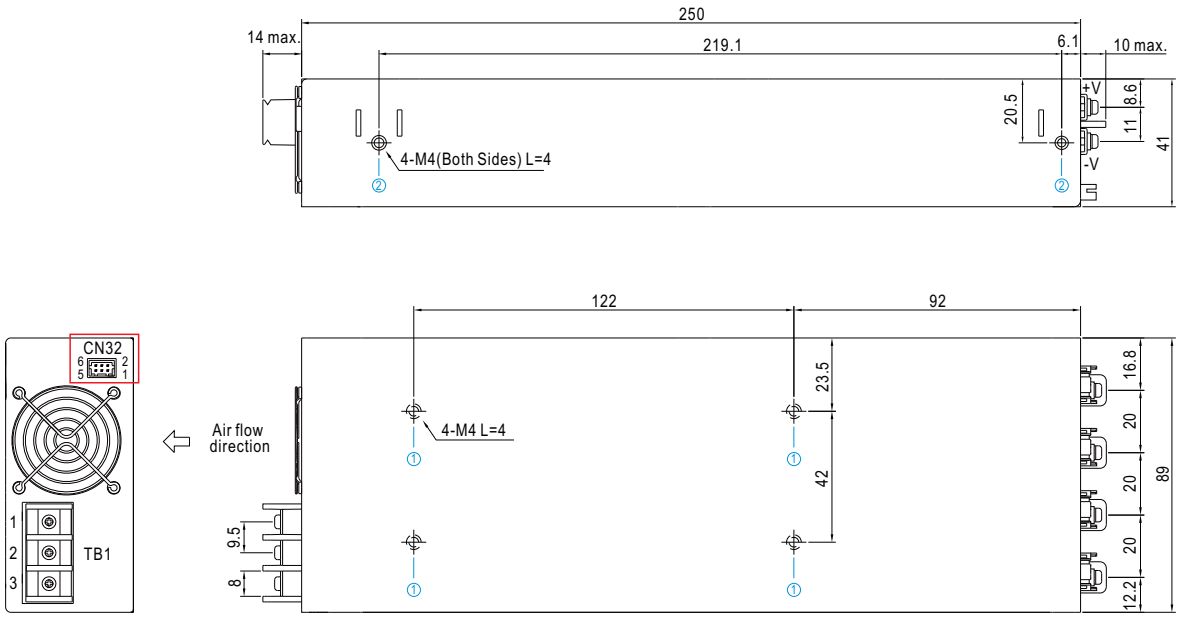
※ AC Input Terminal Pin No. Assignment

Pin No.	Assignment	Diagram	Maximum mounting torque
1	FG ⏚		12Kgf-cm
2	AC/N		
3	AC/L		

■ MECHANICAL SPECIFICATION

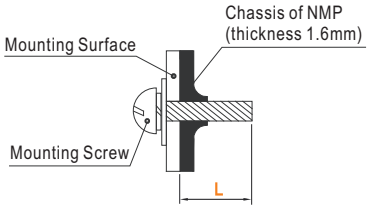
※ **NMP650 (Front - End)**

Case No.259A Unit:mm

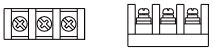


※ Mounting Instruction

Hole No.	Recommended Screw Size	MAX. Penetration Depth L	Recommended mounting torque
①	M4	4mm	7~10Kgf-cm
②	M4	4mm	7~10Kgf-cm

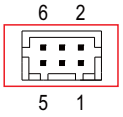


※ AC Input Terminal Pin No. Assignment

Pin No.	Assignment	Diagram	Maximum mounting torque
1	FG ⏚		12Kgf-cm
2	AC/N		
3	AC/L		

■ Function Description of CN32

※ Control Pin No. Assignment (CN32) : HRS DF11-6DP-2DS or equivalent

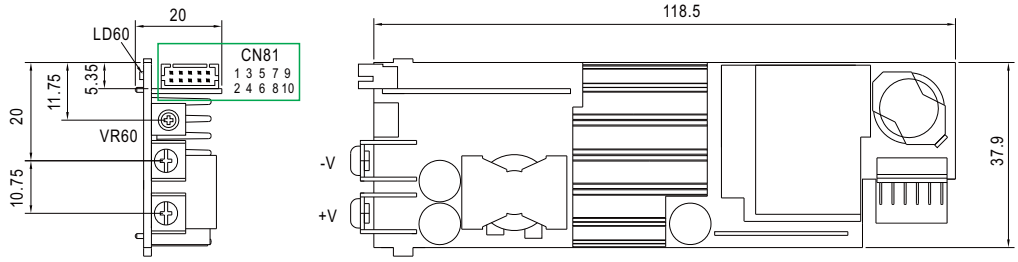


Mating Housing	HRS DF11-6DS or equivalent
Terminal	HRS DF11-**SC or equivalent

Pin No.	Function	Description
1, 2	+5V-AUX_P	Auxiliary voltage output, 4.5~5.5V, referenced to pin 3 & 4 (GND-P).The maximum load current is 2A (NMP1K2) or 1.5A (NMP650).
3, 4	GND-P	Ground.
5	T-Alarm	TTL signal output for over temperature alarm. The maximum sourcing current is 10mA. High(4.5~5.5V): When the internal temperature exceeds the limit & "safe limit" of temperature alarm. Low(0~0.5V): When the internal temperature is normal.
6	RC1	Turns the output on and off by electrical or dry contact between pin 6 (RC1) and pin 3 & 4 (GND-P). Short: Power ON; Open: Power OFF.

■ MECHANICAL SPECIFICATION

※ **NMS-240 Single Output Module**



※ **Blank slot**

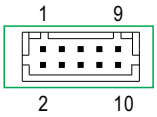
Blank slot should be assembled with BLANK-NMS240, Please contact MEAN WELL for details.

※ DC Output Terminal Pin No. Assignment

Assignment	Diagram	Maximum mounting torque	Recommended screw size	MAX. Penetration Depth L
+V, -V		10Kgf-cm	M3.5	10mm

■ Function Description of CN81(NMS-240)

※ Control Pin No. Assignment (CN81) : HRS DF11-10DP-2DS or equivalent

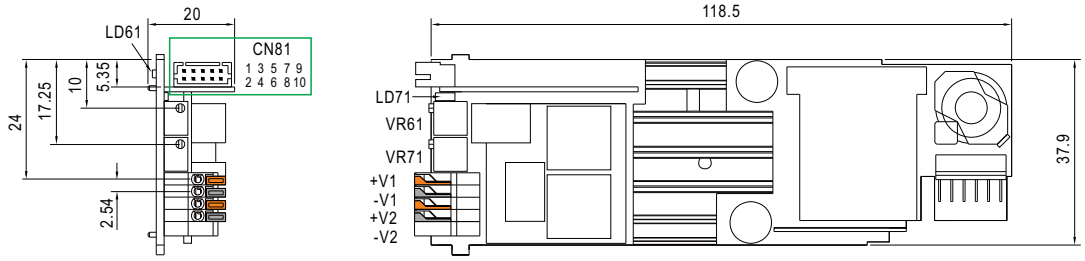


Mating Housing	HRS DF11-10DS or equivalent
Terminal	HRS DF11-**SC or equivalent

Pin No.	Function	Description
1	GND	Ground.
2	GND	Ground.
3	RC2	Turns the output on and off by electrical or dry contact between pin 3 (RC2) and pin 1&2 (GND). Open: Power ON; Short: Power OFF.
4	Vcc 2	Auxiliary voltage output, 4.5~5.5V, referenced to pin 1&2 (GND).The maximum load current is 10mA.
5	DC OK	"DC OK" signal is a TTL level, referenced to pin 1&2 (GND). Output modules turn on=4.5~5.5V, turn off=0~0.5V. The maximum sourcing current is 10mA (4.5~5.5V).
6	CS	Current sharing signal. When units are connected in parallel, the CS pins of the units should be connected to allow current balance between units. Referenced to pin 1&2 (GND)
7	PC	Connection for output current programming, referenced to pin 1&2 (GND)
8	PV	Connection for output voltage programming, referenced to pin 1&2 (GND)
9	+S	Positive sensing for remote sense.
10	-S	Negative sensing for remote sense.

■ MECHANICAL SPECIFICATION

※ **NMD-240 Dual Output Module**



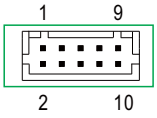
Output number	Output voltage adjustable by SVR	LED display
V1	3~30V by VR61	LD61
V2	3~30V by VR71	LD71

※ DC Output Terminal Pin No. Assignment

Assignment	Color	Diagram	Wire range	Wire strip length
+V1	Orange		20~26AWG	10mm
-V1	Gray			
+V2	Orange			
-V2	Gray			

■ Function Description of CN81(NMD-240)

※ Control Pin No. Assignment (CN81) : HRS DF11-10DP-2DS or equivalent



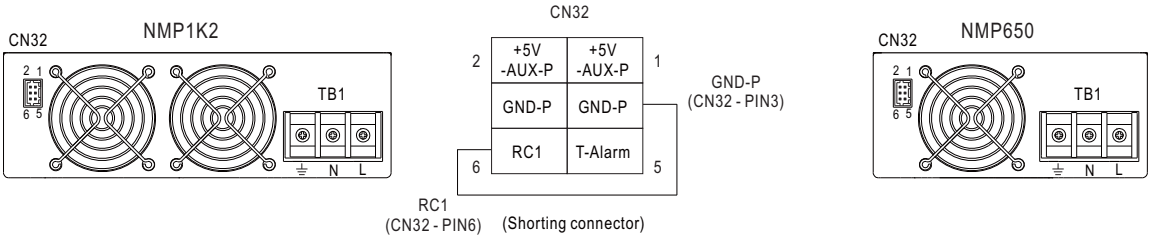
Mating Housing	HRS DF11-10DS or equivalent
Terminal	HRS DF11-**SC or equivalent

Pin No.	Function	Description
1	GND1	Ground(-V1).
2	GND2	Ground(-V2).
3	RC2	Turns the output V1 on and off by electrical or dry contact between pin 3 (RC2) and pin 1 (GND1). Open: Power ON; Short: Power OFF.
4	RC3	Turns the output V2 on and off by electrical or dry contact between pin 4 (RC3) and pin 2 (GND2). Open: Power ON; Short: Power OFF.
5	DC OK1	"DC OK2" signal is a TTL level, referenced to pin 1 (GND1). Output modules V1 turn on=4.5~5.5V, turn off=0~0.5V. The maximum sourcing current is 10mA (4.5~5.5V).
6	DC OK2	"DC OK1" signal is a TTL level, referenced to pin 2 (GND2). Output modules V2 turn on=4.5~5.5V, turn off=0~0.5V. The maximum sourcing current is 10mA (4.5~5.5V).
7,8,9,10	NC	-----

■ Function Manual

1. "Global ON/OFF Control" function is not used

※ The power supply unit will have no output if the shorting connector (accessory comes along with the PSU) is not assembled. It contains one shorting wire: it is from RC1 (CN32 - PIN6) to GND-P (CN32 - PIN3)

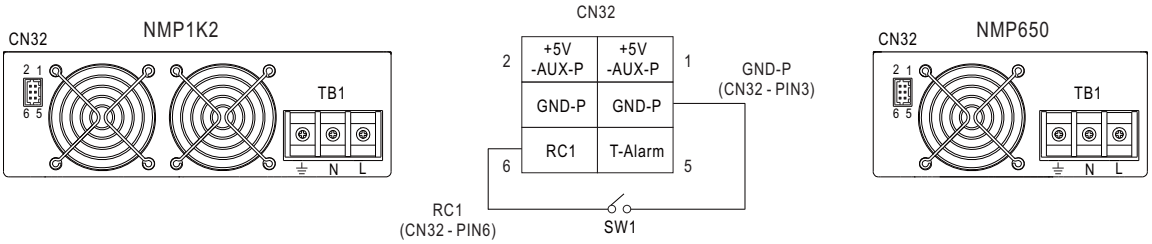


2. Global or Local ON/OFF CONTROL

※ The power supply can be turned ON/OFF for the entire unit, by global enable/inhibit, or for specific modules, by local Remote ON-OFF.

◎ Global ON/OFF

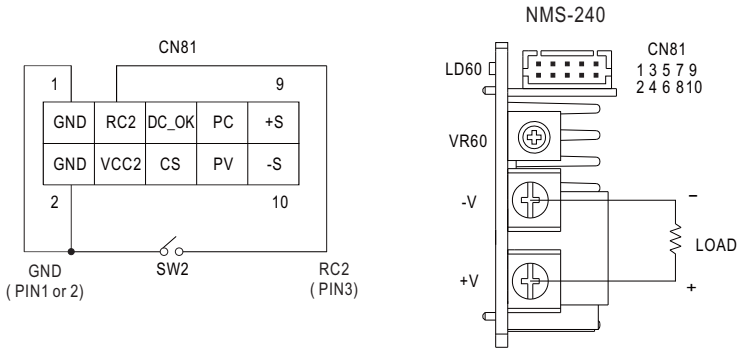
Between RC1 (CN32-PIN6) and GND-P (CN32-PIN3)	Output Status
SW1 ON (short)	ON
SW1 OFF (open)	OFF



◎ Local ON/OFF

The NMS-240 can be turned ON/OFF by using the "local ON/OFF" function.

Between RC2 (CN81-PIN3) and GND (CN81-PIN1 or 2)	Output Modules Status (NMS-240)
SW2 OFF (open)	ON
SW2 ON (short)	OFF

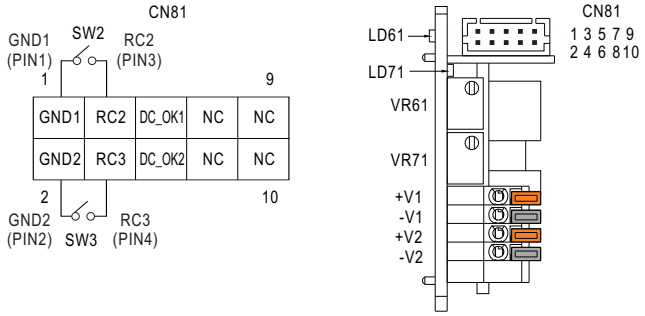


◎ Local ON/OFF

The NMD-240 can be turned ON/OFF by using the "local ON/OFF" function.

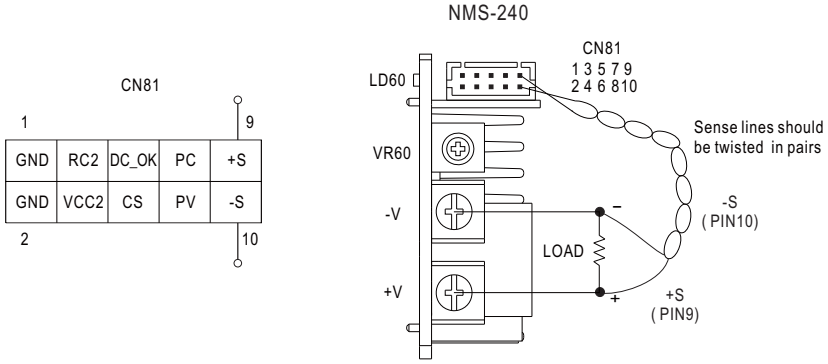
Between RC2 (CN81-PIN3) and GND1 (CN81-PIN1)	Output Modules Status (V1)
SW2 OFF (open)	Output V1 ON
SW2 ON (short)	Output V1 OFF

Between RC3 (CN81-PIN4) and GND1 (CN81-PIN2)	Output Modules Status (V2)
SW3 OFF (open)	Output V2 ON
SW3 ON (short)	Output V2 OFF



3.Remote Sense(NMS-240 only)

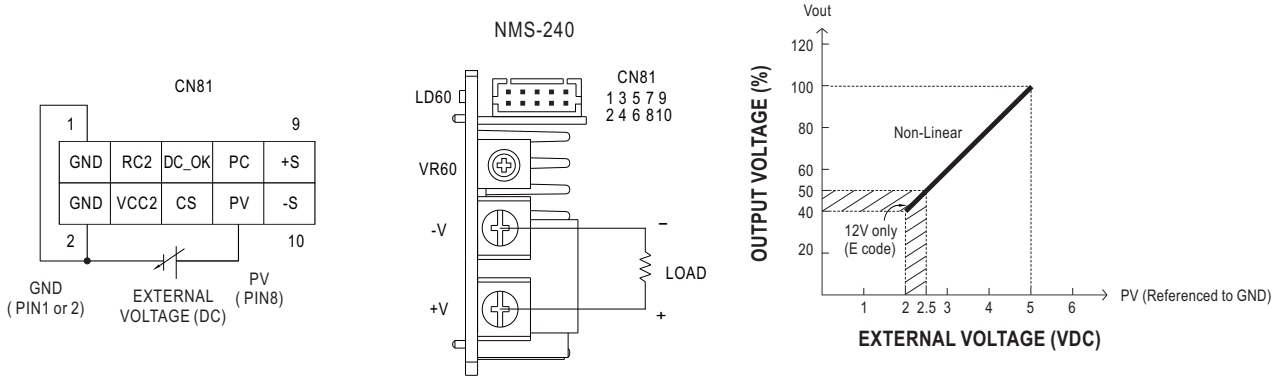
※ The Remote Sense compensates voltage drop on the load wiring up to 0.5V.



4. Output Voltage Programming(PV : NMS-240 only)

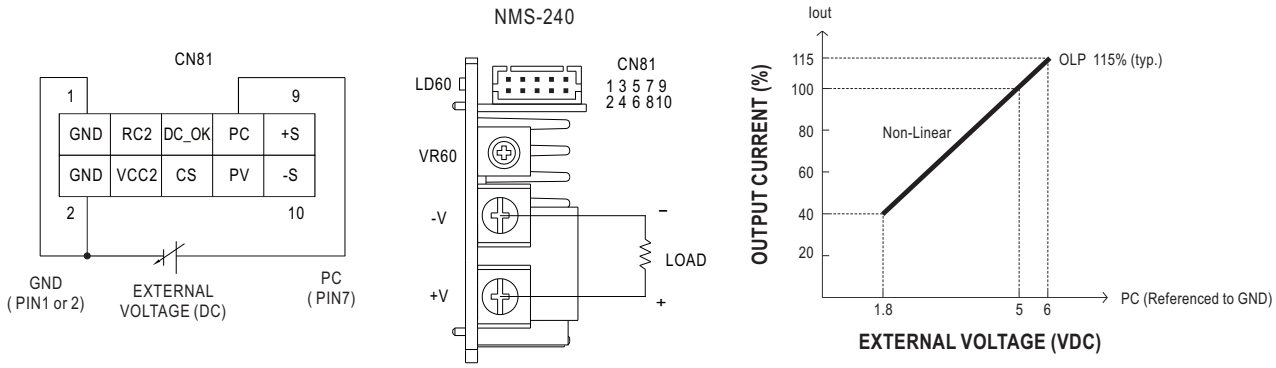
※ In addition to the adjustment via the built-in potentiometer, the output voltage (default voltage set by VR60) can be trimmed by applying "EXTERNAL VOLTAGE".

※ "Output Voltage Programming (PV)" range is the same as "Voltage ADJ. Range (VR60)"



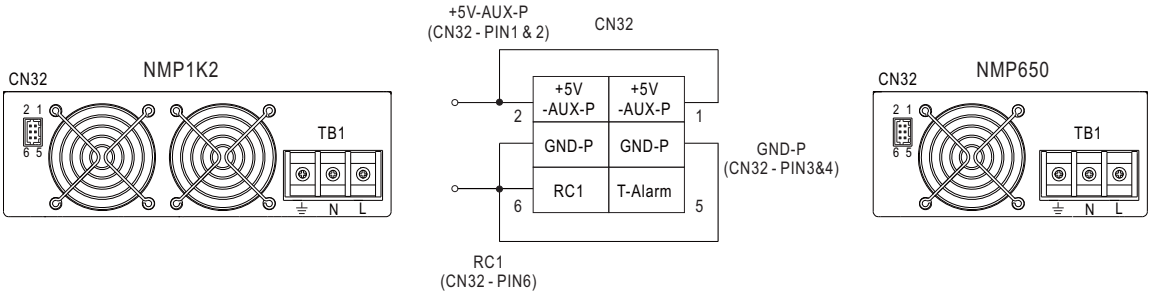
5. Constant Current Level Programming (PC : NMS-240 only)

※ The constant current level can be trimmed to 40~100% of the rated current by applying "EXTERNAL VOLTAGE".

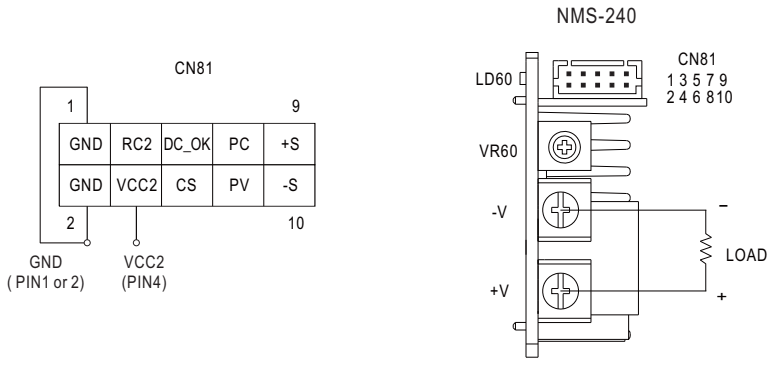


6.Auxiliary Power

※ +5V-Aux_P: Aux. power is 5V/2A (NMP1K2).
Aux. power is 5V/1.5A (NMP650).



※ Vcc2: Aux. Power is 5V/10mA (Output Modules : NMS-240 only)

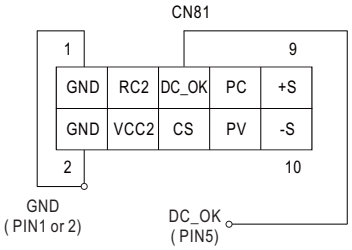


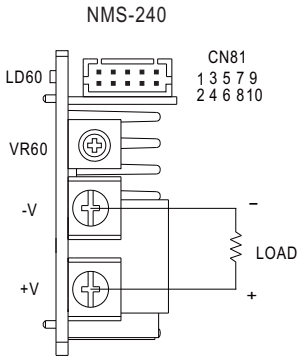
7. DC OK Signal

"DC OK" signal is a TTL level signal. It indicates the output status of the output modules. "High" when module turns on.
The maximum sourcing current is 10mA (4.5~5.5V).

◎ NMS-240

Between DC OK (PIN5) and GND (PIN1 or 2)	Output Modules Status (NMS-240)
4.5~5.5V	ON
0~0.5V	OFF

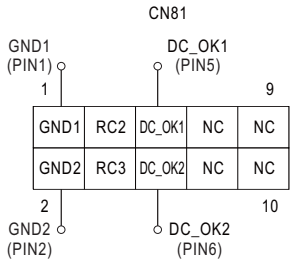


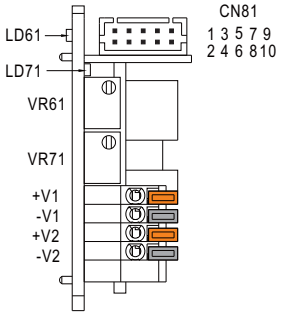


◎ NMD-240

Between DC OK1 (PIN5) and GND1 (PIN2)	Output Modules Status (V1)
4.5~5.5V	Output V1 ON
0~0.5V	Output V1 OFF

Between DC OK2 (PIN6) and GND2 (PIN2)	Output Modules Status (V2)
4.5~5.5V	Output V1 ON
0~0.5V	Output V1 OFF

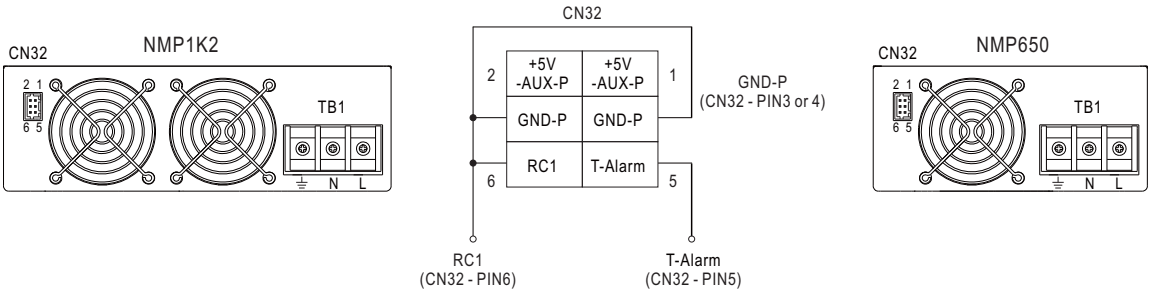




8. T-Alarm Signal

TTL signal output for over temperature alarm. The maximum sourcing current is 10mA.

Between T-Alarm (CN32 PIN 5) and GND-P (CN32 PIN 3 or 4)	Internal temperature (U702)	Output Status
0~0.5V	The internal temperature is normal.	ON
4.5~5.5V	Exceeds the limit of temperature alarm.	ON
4.5~5.5V	Exceeds the "safe limit" of temperature alarm.	OFF



9. CURRENT SHARING (CS : NMS-240 only)

(1) Parallel operation is available by connecting the NMS-240 shown as below (CS, GND are connected mutually in parallel).

(2) Difference of output voltages among parallel NMS-240 should be less than 0.2V.

(3) The total output current must not exceed the value determined by the following equation (Output current at parallel operation)
= (The rated current per NMS-240) x (Number of NMS-240) ≦ TOTAL output power (NMP650 is 650W max.; NMP1K2 is 1200W max.) .

(4) In parallel operation 4 or 6 NMS-240 (NMP650 is 4 SLOTS; NMP1K2 is 6 SLOTS) is the maximum, please consult the manufacturer for other applications.

(5) The power supplies should be paralleled by using short and large diameter wiring and then connected to the load.

(6) In parallel connection, maybe only one NMS-240 (master) operates if the total output load is less than 10% of rated load condition.
The other NMS-240 (slaves) may go into standby mode.

(7) NMS-240 * 6 SLOTS maximum (NMP1K2) 、NMS-240 * 4 SLOTS maximum (NMP650).

(8) The short protection of C module (5V) or E module(12V) for current sharing is Hiccup mode or constant current limiting

(9) Remote control shall simultaneously turn ON/OFF all power modules that are in parallel. Per the same control logic, LED and DC OK signal of power modules in parallel shall turn ON/OFF simultaneously as well.

(10) When power modules are in parallel, output current programmable (PC) function shall NOT be in use.

※ Parallel or series connection accessory, please contact MEAN WELL for details.

