

LMA100F

LM A 100 F -□ -□
 ① ② ③ ④ ⑤ ⑥



Recommended EMI/EMC Filter
NAM-04-101



High voltage pulse noise type : NAP series
 Low leakage current type : NAM series
 *The EMI/EMC Filter is recommended to connect with several devices.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Optional *1
- C : with Coating
- G : Low leakage current
- H : with the function to be acceptable to output peak current
- J1 : VH(J.S.T.)connector type
- R : with Remote ON/OFF
- S : with Chassis
- SN : with Chassis & cover
- P : Setting in the overcurrent protection rating

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

MODEL	LMA100F-24-Y	LMA100F-24-HY
MAX OUTPUT WATTAGE[W]	103.2	103.2 (206.4) *2
DC OUTPUT	24V 4.3A	24V 4.3A (8.6A) *2

SPECIFICATIONS

	MODEL	LMA100F-24-Y	LMA100F-24-HY	
INPUT	VOLTAGE[V]	AC85 - 264 1 φ		
	CURRENT[A]	ACIN 100V	1.4typ (Io=100%)	
		ACIN 200V	0.7typ (Io=100%)	
	FREQUENCY[Hz]	50 / 60 (47 - 63)		
	EFFICIENCY[%]	ACIN 100V	84.0typ (Io=100%)	
		ACIN 200V	86.0typ (Io=100%)	
	POWER FACTOR	ACIN 100V	0.99typ (Io=100%)	
		ACIN 200V	0.95typ (Io=100%)	
INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%) (At cold start) (Ta=25°C)		
	ACIN 200V	30typ (Io=100%) (At cold start) (Ta=25°C)		
LEAKAGE CURRENT[ma]	0.10 / 0.25max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1)			
OUTPUT	VOLTAGE[V]	24		
	CURRENT[A]	4.3		
	LINE REGULATION[mV] *7	96max		
	LOAD REGULATION[mV] *7	150max		
	RIPPLE[mVp-p] *3	0 to +50°C	120max	
		-10 - 0°C	160max	
	RIPPLE NOISE[mVp-p]*3	0 to +50°C	150max	
		-10 - 0°C	180max	
	TEMPERATURE REGULATION[mV]	0 to +50°C	240max	
		-10 to +50°C	290max	
	DRIFT[mV] *4	96max		
	START-UP TIME[ms]	350typ (ACIN 100V, Io=100%)		
	HOLD-UP TIME[ms]	20typ (ACIN 100V, Io=100%)		
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	19.20 to 27.50			
OUTPUT VOLTAGE SETTING[V]	24.00 to 24.96			
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 105% of rating (works over 101% of peak current at option -H) and recovers automatically		
	OVERVOLTAGE PROTECTION[V]	27.60 to 33.60		
	OPERATING INDICATION	Not provided		
	REMOTE SENSING	Not provided		
REMOTE ON/OFF	Option (Required external power source.)			
ISOLATION	INPUT-OUTPUT-RC *6	AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 2MOOP		
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 1MOOP		
	OUTPUT-RC-FG *6	AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT-RC *6	AC100V 1minute, Cutoff current = 25mA, DC100V 10MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE *5	-10 to +70°C, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max		
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max		
	VIBRATION	10 - 55Hz, 19.6m/s ² (2G), 3minutes period, 60minutes each along X, Y and Z axis		
	IMPACT	196.1m/s ² (20G), 11ms, once each X, Y and Z axis		
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (AT ONLY AC input)	ANSI/AAMI ES60601-1, EN60601-1 3rd		
	CONDUCTED NOISE	Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B		
	HARMONIC ATTENUATOR	Complies with IEC61000-3-2 (Class A) *8		
OTHERS	CASE SIZE/WEIGHT	62 X 33 X 155mm [2.44 X 1.30 X 6.10 inches] (W X H X D) / 290g max (with chassis & cover : 470g max)		
	COOLING METHOD	Convection *5		

*1 Specification is changed at option, refer to Instruction Manual.

*2 Peak loading for 10sec. And Duty 40% max.

() means peak current. There is a possibility that an internal device is damaged when the specification is exceeded.

*3 This is the value that measured on measuring board with capacitor of 22 μF at 150mm from output terminal. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103).

*4 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.

*5 Derating is required.

*6 Applicable when remote control (optional) is added.

*7 Please contact us about dynamic load and input response.

*8 Please contact us about another class.

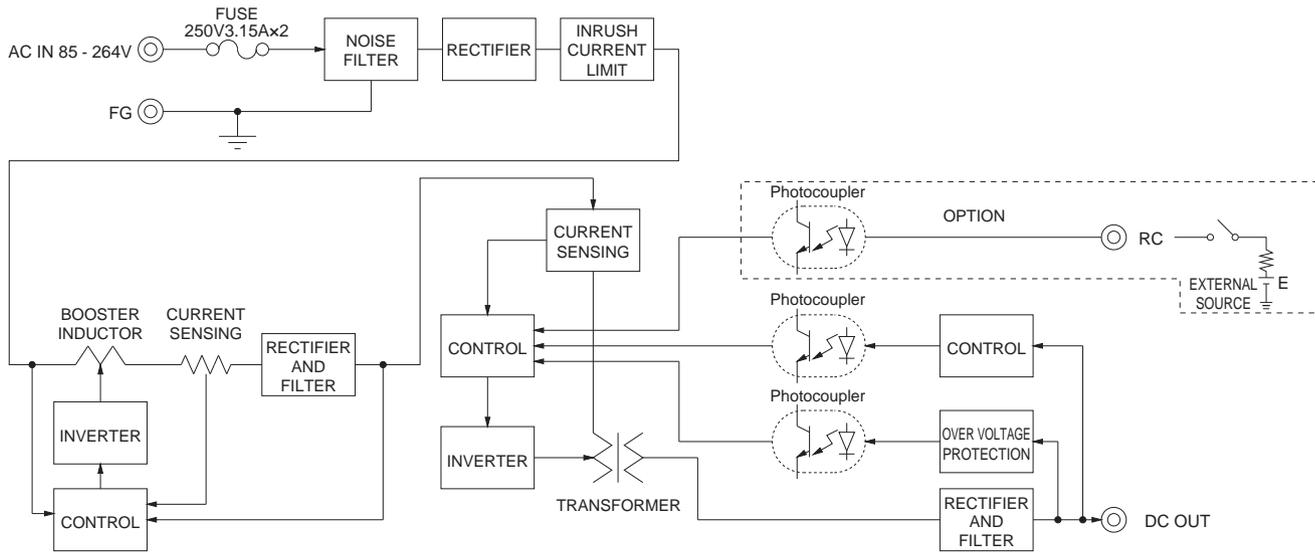
* To meet the specifications. Do not operate over-loaded condition.

* Parallel operation is not possible.

* Derating is required when operated with chassis and cover.

* Sound noise may be generated by power supply in case of pulse load.

Block diagram

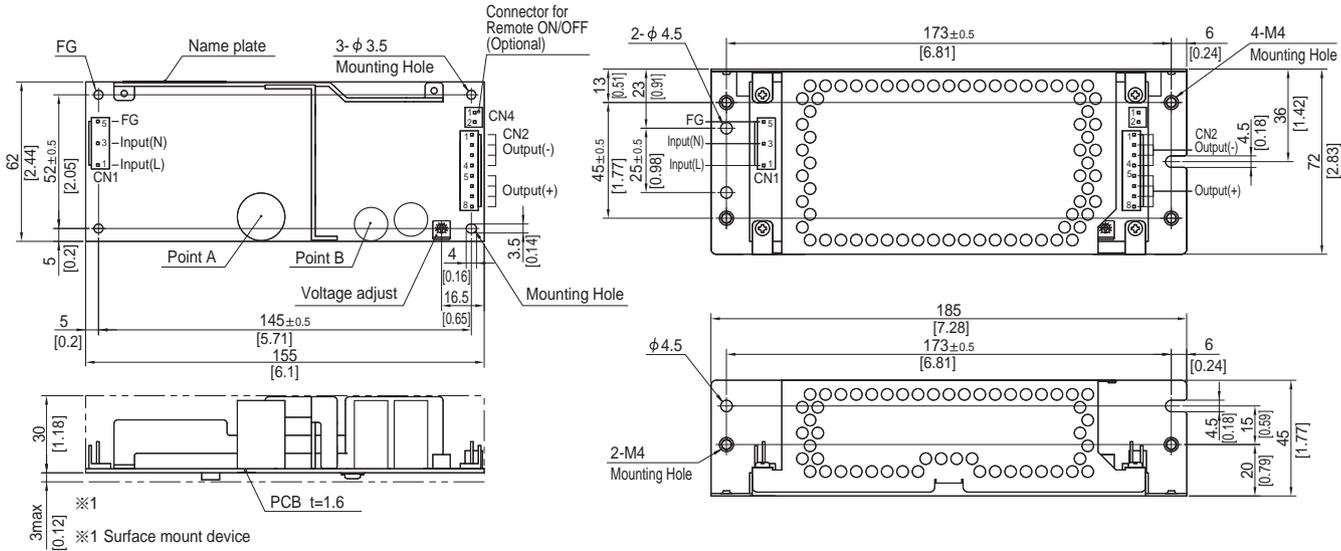


External view

※ External size of option is different from standard model.

Standard type

Chassis and cover type



- ※ 4 Mounting holes are existing.
- ※ The back side of P.C.B. of the power supply is assembled some SMDs.
Be attention not to bump against the attached area by vibration.
- ※ Use the spacer of 8mm length or more regarding insulation.
And do not use press-fitting bush.
- ※ Point A, Point B are thermometry points.

I/O Connector	Mating connector	Terminal
CN1	1-1123724-3	Chain 1123721-1 Loose 1318912-1
CN2	1-1123723-8	Chain 1123721-1 Loose 1318912-1

(Mfr:Tyco Electronics)

- ※ I/O Connector is Mfr. Tyco Electronics
- ※ Option:-J1:VH(J.S.T) connector type.

<PIN CONNECTION>

CN1		CN2	
Pin No.	Input	Pin No.	Output
1	AC(L)	1 to 4	-V
2		5 to 8	+V
3	AC(N)		
4			
5	FG		

※ Keep drawing current per pin below 5A for CN2.

- ※ Tolerance : ± 1 [± 0.04]
- ※ Weight : 290g max (with chassis & cover : 470g max)
- ※ PCB material : CEM3
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- ※ Dimensions in mm, []=inches
- ※ Mounting torque (Mounting hole of chassis) : $1.5N \cdot m$ (16kgf · cm) max

Connector type

CN4 Option (Mfr:J.S.T)

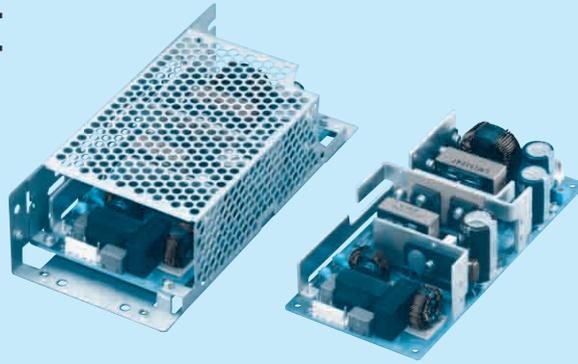
PIN No.	Contents
1	RC(+)
2	RC(-)

Barrier strip type

Model B2B-XH-A
Mating Connector (Terminal)
XHP-2
(BXH-001T-P0.6
or SXH-001T-P0.6)

LMA150F

① LM ② A ③ 150 ④ F ⑤ -□ ⑥ -□



Recommended EMI/EMC Filter
NAM-04-101



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*The EMI/EMC Filter is recommended to connect with several devices.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Optional *1
- C : with Coating
- G : Low leakage current
- H : with the function to be acceptable to output peak current
- J1 : VH(J.S.T.)connector type
- R : with Remote ON/OFF
- S : with Chassis
- SN : with Chassis & cover
- P : Setting in the overcurrent protection rating

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

MODEL	LMA150F-24-Y	LMA150F-24-HY
MAX OUTPUT WATTAGE[W]	151.2	151.2 (302.4) *2
DC OUTPUT	24V 6.3A	24V 6.3A (12.6A) *2

SPECIFICATIONS

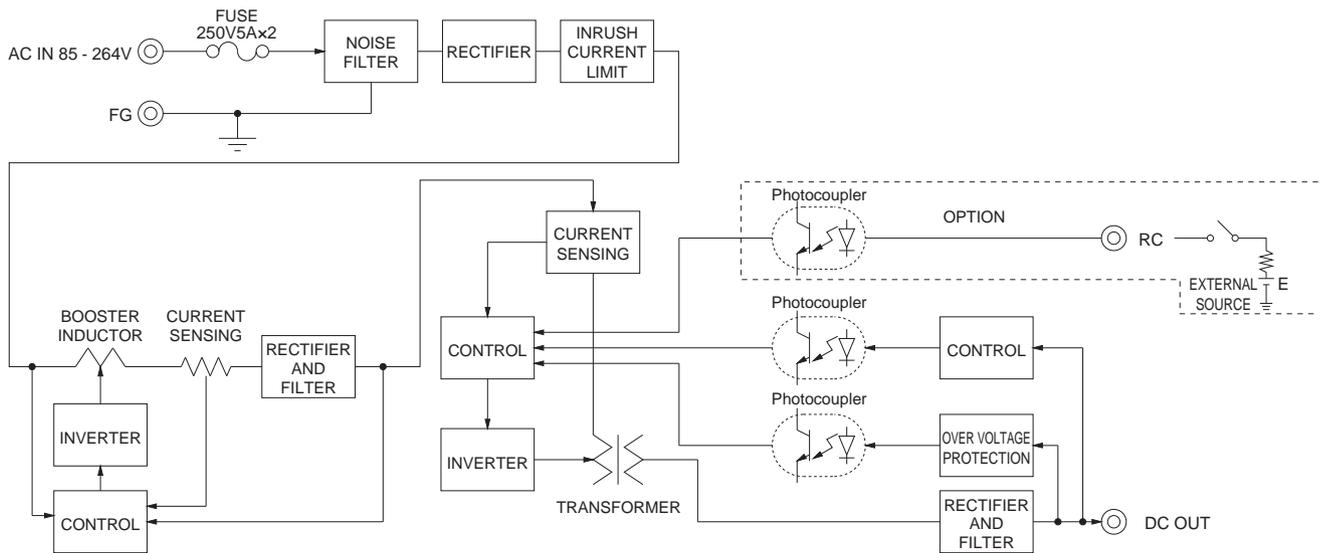
	MODEL	LMA150F-24-Y	LMA150F-24-HY	
INPUT	VOLTAGE[V]	AC85 - 264 1 φ		
	CURRENT[A]	ACIN 100V	2.0typ (Io=100%)	
		ACIN 200V	1.0typ (Io=100%)	
	FREQUENCY[Hz]	50 / 60 (47 - 63)		
	EFFICIENCY[%]	ACIN 100V	85.0typ (Io=100%)	
		ACIN 200V	87.0typ (Io=100%)	
	POWER FACTOR	ACIN 100V	0.99typ (Io=100%)	
		ACIN 200V	0.95typ (Io=100%)	
INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%) (At cold start) (Ta=25°C)		
	ACIN 200V	30typ (Io=100%) (At cold start) (Ta=25°C)		
LEAKAGE CURRENT[ma]	0.10 / 0.25max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1)			
OUTPUT	VOLTAGE[V]	24		
	CURRENT[A]	6.3		
	LINE REGULATION[mV] *7	96max		
	LOAD REGULATION[mV] *7	150max		
	RIPPLE[mVp-p] *3	0 to +50°C	120max	
		-10 - 0°C	160max	
	RIPPLE NOISE[mVp-p]*3	0 to +50°C	150max	
		-10 - 0°C	180max	
	TEMPERATURE REGULATION[mV]	0 to +50°C	240max	
		-10 to +50°C	290max	
	DRIFT[mV] *4	96max		
	START-UP TIME[ms]	350typ (ACIN 100V, Io=100%)		
	HOLD-UP TIME[ms]	20typ (ACIN 100V, Io=100%)		
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	19.20 to 27.50			
OUTPUT VOLTAGE SETTING[V]	24.00 to 24.96			
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 105% of rating (works over 101% of peak current at option -H) and recovers automatically		
	OVERVOLTAGE PROTECTION[V]	27.60 to 33.60		
	OPERATING INDICATION	Not provided		
	REMOTE SENSING	Not provided		
REMOTE ON/OFF	Option (Required external power source.)			
ISOLATION	INPUT-OUTPUT-RC *6	AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 2MOOP		
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 1MOOP		
	OUTPUT-RC-FG *6	AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT-RC *6	AC100V 1minute, Cutoff current = 25mA, DC100V 10MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE *5	-10 to +70°C, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max		
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max		
	VIBRATION	10 - 55Hz, 19.6m/s ² (2G), 3minutes period, 60minutes each along X, Y and Z axis		
	IMPACT	196.1m/s ² (20G), 11ms, once each X, Y and Z axis		
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (AT ONLY AC input)	ANSI/AAMI ES60601-1, EN60601-1 3rd		
	CONDUCTED NOISE	Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B		
	HARMONIC ATTENUATOR	Complies with IEC61000-3-2 (Class A) *8		
OTHERS	CASE SIZE/WEIGHT	75 X 36.5 X 160mm [2.95 X 1.44 X 6.30 inches] (W X H X D) / 370g max (with chassis & cover : 600g max)		
	COOLING METHOD	Convection *5		

*1 Specification is changed at option, refer to Instruction Manual.
 *2 Peak loading for 10sec. And Duty 40% max.
 () means peak current. There is a possibility that an internal device is damaged when the specification is exceeded.
 *3 This is the value that measured on measuring board with capacitor of 22 μF at 150mm from output terminal.
 Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103).

*4 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
 *5 Derating is required.
 *6 Applicable when remote control (optional) is added.
 *7 Please contact us about dynamic load and input response.
 *8 Please contact us about another class.

* To meet the specifications. Do not operate over-loaded condition.
 * Parallel operation is not possible.
 * Derating is required when operated with chassis and cover.
 * Sound noise may be generated by power supply in case of pulse load.

Block diagram

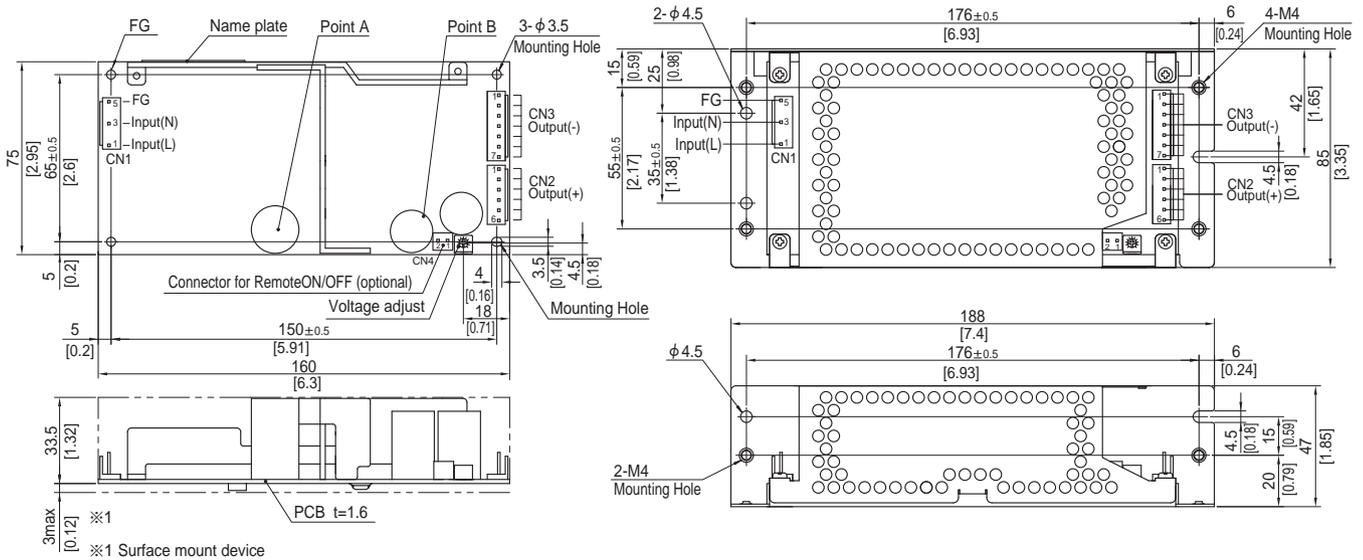


External view

※ External size of option is different from standard model.

Standard type

Chassis and cover type



- ※ 1 Surface mount device
- ※ 4 Mounting holes are existing.
- ※ The back side of P.C.B. of the power supply is assembled some SMDs.
Be attention not to bump against the attached area by vibration.
- ※ Use the spacer of 8mm length or more regarding insulation.
And do not use press-fitting bush.
- ※ Point A, Point B are thermometry points.

I/O Connector	Mating connector	Terminal
CN1	1-1123724-3	Chain 1123721-1
		Loose 1318912-1
CN2	1-1123723-6	Chain 1123721-1
		Loose 1318912-1
CN3	1-1123723-7	Chain 1123721-1
		Loose 1318912-1

(Mfr: Tyco Electronics)

- ※ I/O Connector is Mfr. Tyco Electronics
- ※ Option: -J1:VH(J.S.T) connector type.

<PIN CONNECTION>

CN1		CN2		CN3	
Pin No.	Input	Pin No.	Output	Pin No.	Output
1	AC(L)	1 to 6	+V	1 to 7	-V
2					
3	AC(N)				
4					
5	FG				

※ Keep drawing current per pin below 5A for CN2,CN3.

- ※ Tolerance : ±1 [±0.04]
- ※ Weight : 370g max (with chassis & cover : 600g max)
- ※ PCB material : CEM3
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- ※ Dimensions in mm, []=inches
- ※ Mounting torque (Mounting hole of chassis) :1.5N · m (16kgf · cm) max

Connector type

CN4 Option (Mfr:J.S.T)

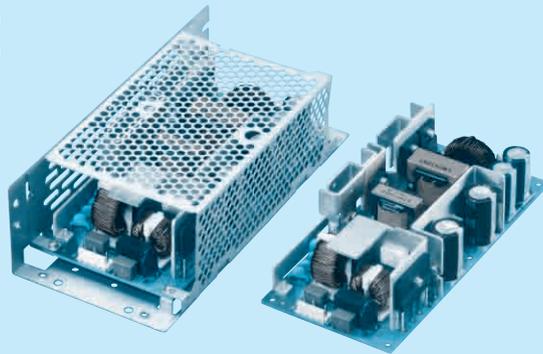
PIN No.	Contents
1	RC(+)
2	RC(-)

Barrier strip type

Model B2B-XH-A
Mating Connector (Terminal)
XHP-2
(BXH-001T-P0.6
or SXH-001T-P0.6)

LMA240F

LM A 240 F -□ -□
 ① ② ③ ④ ⑤ ⑥



Recommended EMI/EMC Filter
NAM-06-101



High voltage pulse noise type : NAP series
 Low leakage current type : NAM series

- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Optional *1
- C : with Coating
- G : Low leakage current
- H : with the function to be acceptable to output peak current
- J1 : VH(J.S.T.)connector type
- R : with Remote ON/OFF
- R2 : with Remote ON/OFF
- S : with Chassis
- SN : with Chassis & cover
- P : Setting in the overcurrent protection rating

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

MODEL	LMA240F-24-Y	LMA240F-24-HY
MAX OUTPUT WATTAGE[W]	300	300 (480) *2
DC OUTPUT	Convection	24V 10A
	Forced air	24V 12.5A
		24V 10A (20A) *2
		24V 12.5A (20A) *2

SPECIFICATIONS

	MODEL	LMA240F-24-Y	LMA240F-24-HY	
INPUT	VOLTAGE[V]	AC85 - 264 1 φ		
	CURRENT[A]	ACIN 100V	3.9typ (Io=100%)	
		ACIN 200V	1.8typ (Io=100%)	
	FREQUENCY[Hz]	50 / 60 (47 - 63)		
	EFFICIENCY[%]	ACIN 100V	86.0typ (Io=100%)	
		ACIN 200V	88.0typ (Io=100%)	
	POWER FACTOR	ACIN 100V	0.99typ (Io=100%)	
		ACIN 200V	0.95typ (Io=100%)	
INRUSH CURRENT[A]	ACIN 100V	15 / 30typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 3 sec. to re-start)		
	ACIN 200V	30 / 30typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 3 sec. to re-start)		
LEAKAGE CURRENT[mA]	0.15 / 0.40max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1)			
OUTPUT	VOLTAGE[V]	24		
	CURRENT[A]	Convection	10	
		Forced air	12.5	
	LINE REGULATION[mV] *7	96max		
	LOAD REGULATION[mV] *7	150max		
	RIPPLE[mVp-p] *3	0 to +50°C	120max	
		-10 - 0°C	160max	
	RIPPLE NOISE[mVp-p] *3	0 to +50°C	150max	
		-10 - 0°C	180max	
	TEMPERATURE REGULATION[mV]	0 to +50°C	240max	
		-10 to +50°C	290max	
	DRIFT[mV] *4	96max		
	START-UP TIME[ms]	350typ (ACIN 100V, Io=100%)		
	HOLD-UP TIME[ms] *9	20typ (ACIN 100V, Io=100%)		
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	19.20 to 27.50			
OUTPUT VOLTAGE SETTING[V]	24.00 to 24.96			
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 105% of rating (works over 101% of peak current at option -H) and recovers automatically		
	OVERVOLTAGE PROTECTION[V]	27.60 to 33.60		
	OPERATING INDICATION	Not provided		
	REMOTE SENSING	Not provided		
REMOTE ON/OFF	Option (Required external power source.)			
ISOLATION	INPUT-OUTPUT-RC *6	AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 2MOOP		
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 1MOOP		
	OUTPUT-RC-FG *6	AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT-RC *6	AC100V 1minute, Cutoff current = 25mA, DC100V 10MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE *5	-10 to +70°C, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max		
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max		
	VIBRATION	10 - 55Hz, 19.6m/s ² (2G), 3minutes period, 60minutes each along X, Y and Z axis		
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s ² (20G), 11ms, once each X, Y and Z axis		
	AGENCY APPROVALS (AT ONIY AC input)	ANSI/AAMI ES60601-1, EN60601-1 3rd		
	CONDUCTED NOISE	Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B		
	HARMONIC ATTENUATOR	Complies with IEC61000-3-2 (Class A) *8		
OTHERS	CASE SIZE/WEIGHT	84 X 46 X 180mm [3.31 X 1.81 X 7.09 inches] (W X H X D) / 540g max (with chassis & cover : 860g max)		
	COOLING METHOD	Convection / Forced air *5		

*1 Specification is changed at option, refer to Instruction Manual.

*2 Peak loading for 10sec. And Duty 40% max.

() means peak current. There is a possibility that an internal device is damaged when the specification is exceeded.

*3 This is the value that measured on measuring board with capacitor of 22 μF at 150mm from output terminal.

Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103).

*4 Drift is the change in DC output for a eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.

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*6 Applicable when remote control (optional) is added.

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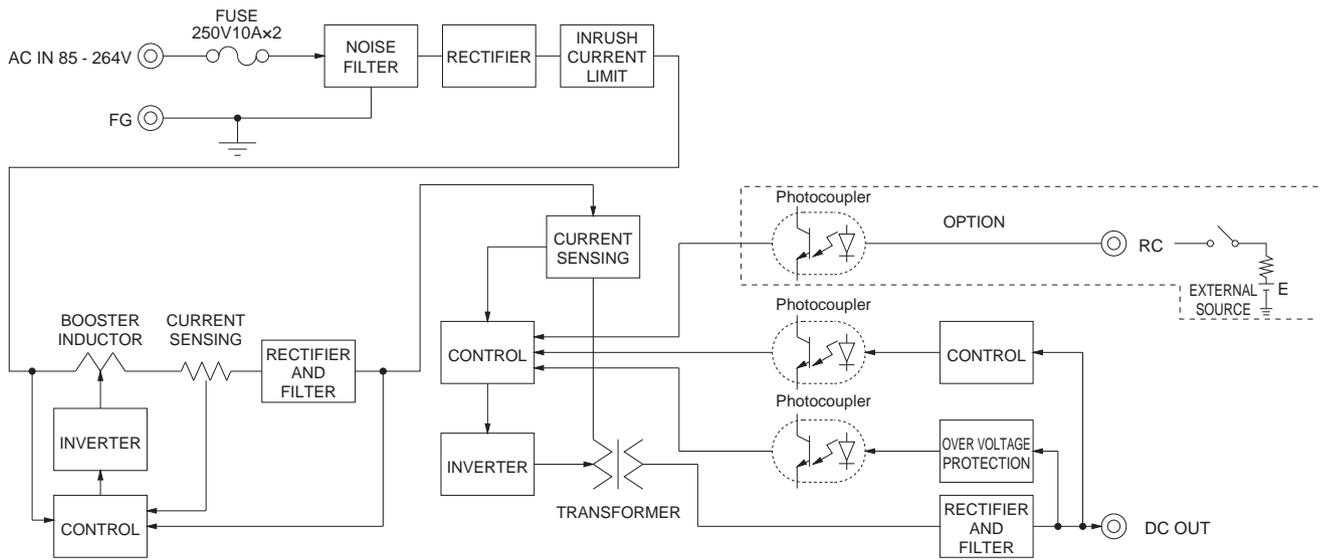
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Block diagram

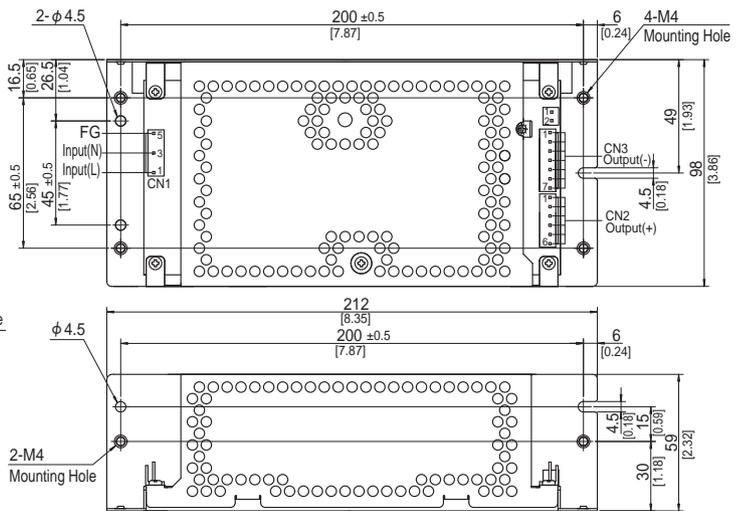
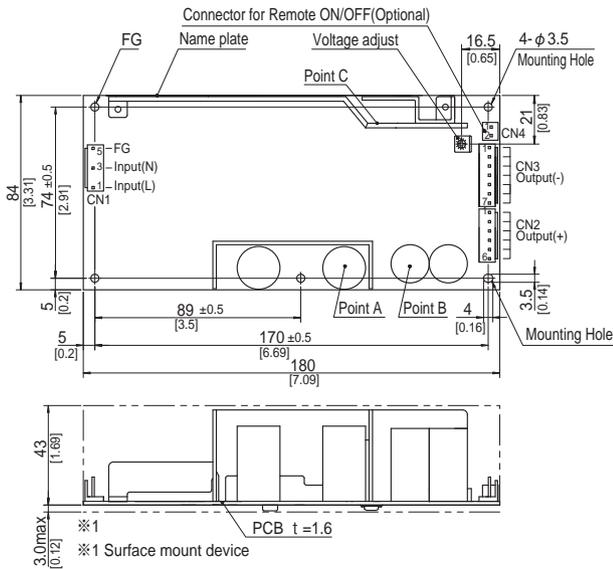


External view

※ External size of option is different from standard model.

Standard type

Chassis and cover type



- ※ 5 Mounting holes are existing.
- ※ The back side of P.C.B. of the power supply is assembled some SMDs.
Be attention not to bump against the attached area by vibration.
- ※ Use the spacer of 8mm length or more regarding insulation.
And do not use press-fitting bush.
- ※ Point A, Point B, Point C are thermometry points.

<PIN CONNECTION>

I/O Connector	Mating connector	Terminal
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		Loose 1318912-1
CN2	1-1123723-6	Chain 1123721-1
		Loose 1318912-1
CN3	1-1123723-7	Chain 1123721-1
		Loose 1318912-1

(Mfr:Tyco Electronics)

CN1		CN2		CN3	
Pin No.	Input	Pin No.	Output	Pin No.	Output
1	AC(L)	1 to 6	+V	1 to 7	-V
2					
3	AC(N)				
4					
5	FG				

※ Keep drawing current per pin below 5A for CN2,CN3.

- ※ Tolerance : ±1 [±0.04]
- ※ Weight : 540g max (with chassis & cover : 860g max)
- ※ PCB material : CEM3
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- ※ Dimensions in mm, [] =inches
- ※ Mounting torque (Mounting hole of chassis) :1.5N · m (16kgf · cm) max

Connector type

CN4 Option (Mfr:J.S.T)

PIN No.	Contents
1	RC(+)
2	RC(-)

Barrier strip type

Model B2B-XH-A
Mating Connector (Terminal)
XHP-2
(BXH-001T-P0.6
or SXH-001T-P0.6)

- ※ I/O Connector is Mfr. Tyco Electronics
- ※ Option:-J1:VH(J.S.T) connector type.