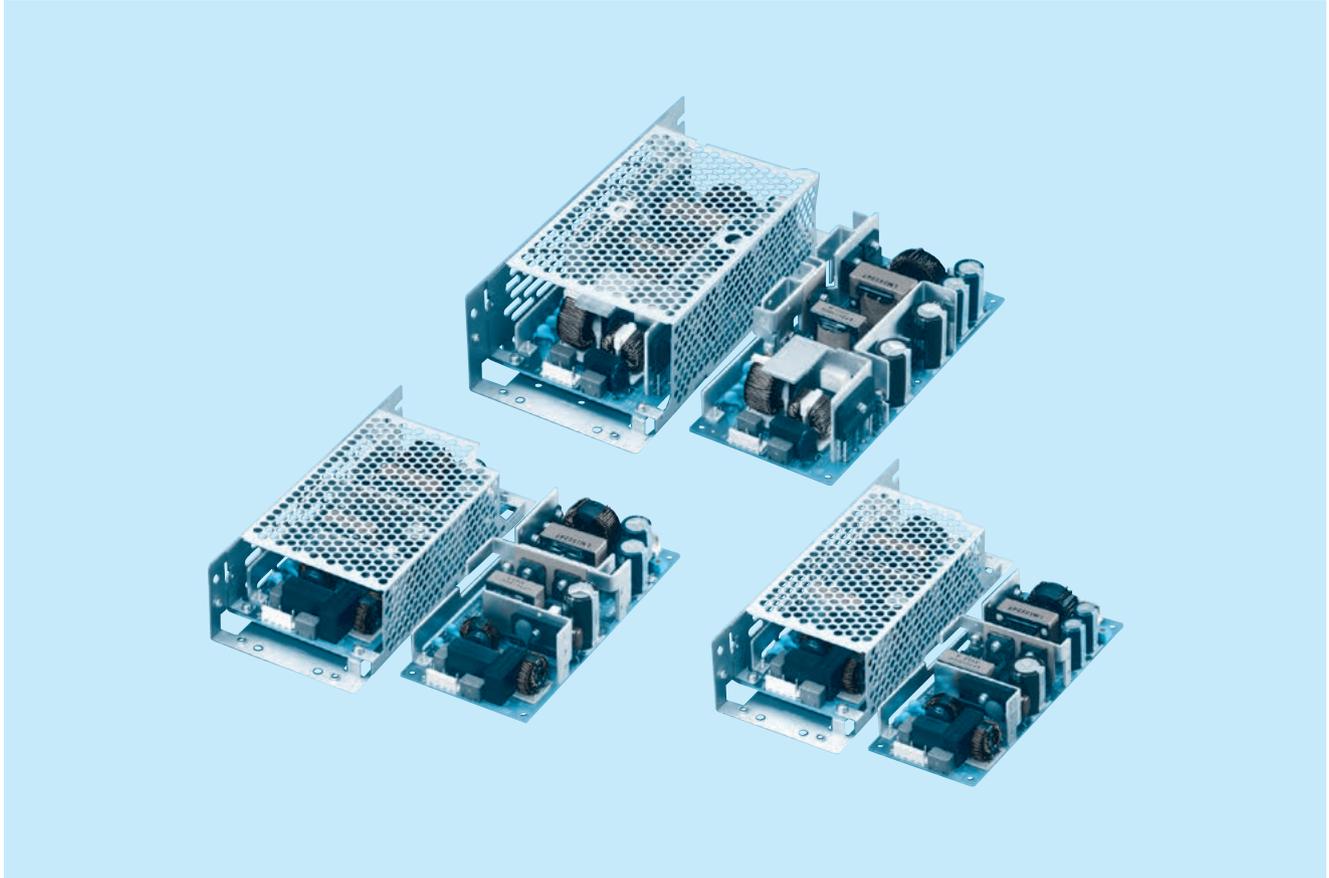




LMA-series



Feature

- For medical electric equipment
- Internal dual fuses
- Low leakage current
- High power & peak power (option)
- Small and compact PCB construction
- Built-in inrush current, overcurrent and overvoltage protection circuits
- Harmonic attenuator (Complies with IEC61000-3-2 class A)
- Universal input (AC85-264V)
- Power factor correction

Safety agency approvals

ANSI/AAMI ES60601, EN60601-1 3rd

EMI

Complies with FCC-B, CISPR22-B, EN55011-B, EN55022-B, VCCI-B

5-year warranty

CE marking

Low Voltage Directive
RoHS Directive

UKCA marking

Electrical Equipment Safety Regulations
RoHS Regulations

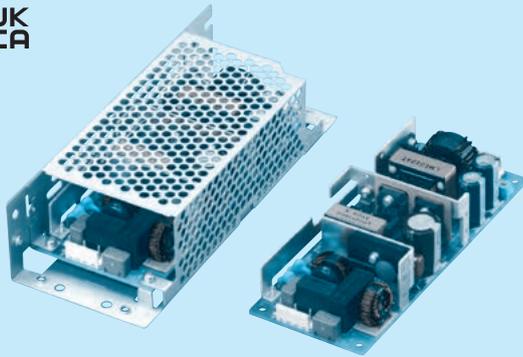
EMS Compliance

: EN61204-3, EN61000-6-2
IEC60601-1-2 (2014), EN60601-1-2 (2015)

- EN61000-4-2
- EN61000-4-3
- EN61000-4-4
- EN61000-4-5
- EN61000-4-6
- EN61000-4-8
- EN61000-4-11

LMA100F

LM A 100 F -□ -□
 ① ② ③ ④ ⑤ ⑥



Example recommended EMI/EMC filter
NAM-04-101



High voltage pulse noise type : NAP series
 Low leakage current type : NAM series
 * A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

- 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.
 *Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

| | | |
|-----------------------|--------------|--------------------|
| 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 1φ (Refer to "Derating", Instruction Manual 1 and 3) | | |
| | 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%) | |
| 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 | 24 | |
| | CURRENT[A] | 4.3 | 4.3 (Peak 8.6) *2 | |
| | LINE REGULATION[mV] | *7 96max | 96max | |
| | LOAD REGULATION[mV] | *7 150max | 150max | |
| | RIPPLE[mVp-p] | *3 0 to +50°C | 120max | 120max |
| | | -10 - 0°C | 160max | 160max |
| | RIPPLE NOISE[mVp-p]*3 | 0 to +50°C | 150max | 150max |
| | | -10 - 0°C | 180max | 180max |
| | TEMPERATURE REGULATION[mV] | 0 to +50°C | 240max | 240max |
| | | -10 to +50°C | 290max | 290max |
| | DRIFT[mV] | *4 96max | 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 | 27.60 to 33.60 | |
| | OPERATING INDICATION | Not provided | | |
| | REMOTE SENSING | Not provided | | |
| ISOLATION | REMOTE ON/OFF | Option (Required external power source.) | | |
| | 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), (Refer to "Derating", Instruction Manual 3) 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 ONLY AC input) | ANSI/AAMI ES60601-1, EN60601-1 3rd, Complies with IEC60601-1-2 4th Ed. | | |
| | CONDUCTED NOISE | Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B | | |
| OTHERS | HARMONIC ATTENUATOR | Complies with IEC61000-3-2 (Class A) *8 | | |
| | 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 (Refer to "Derating", Instruction Manual 3) *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 22μF 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.

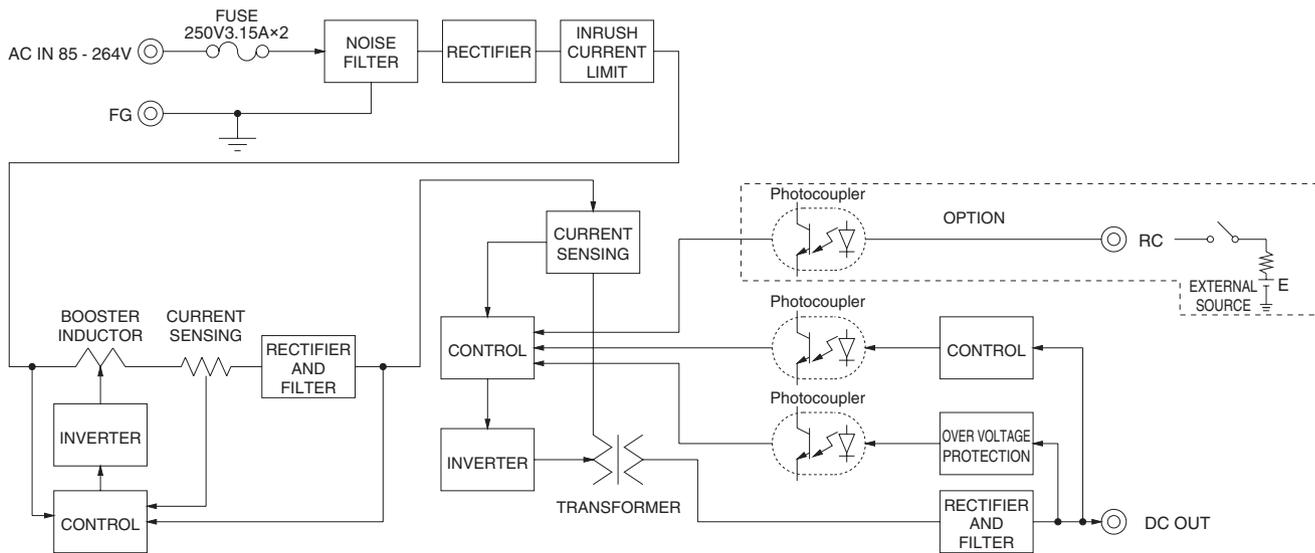
* To meet the specifications. Do not operate over-loaded condition.

* 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

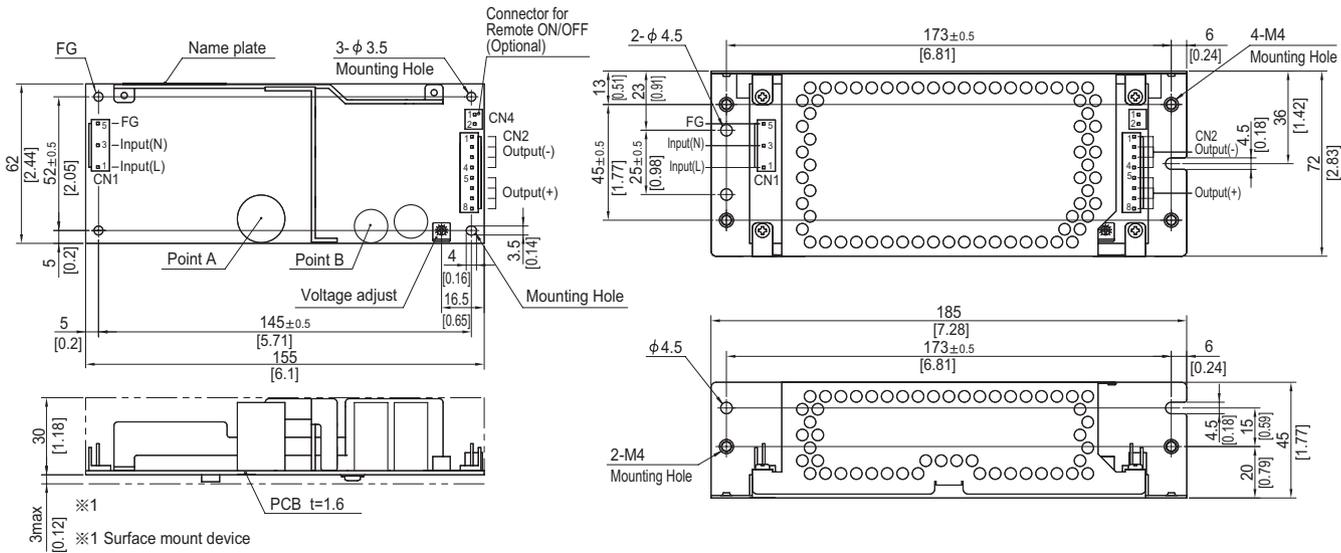


External view

※ 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 · m (16kgf · cm) max

Connector type

CN4 Option (Mfr:J.S.T)

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

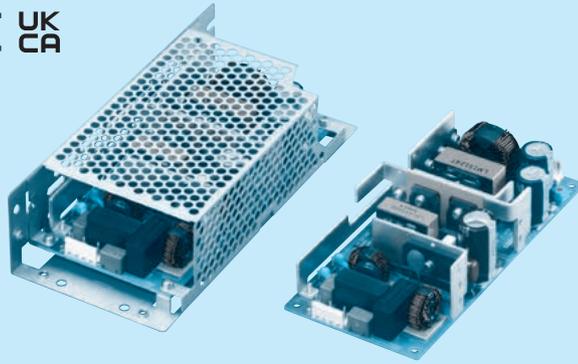
Barrier strip type

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

LMA150F

LM A 150 F -□ -□

① ② ③ ④ ⑤ ⑥



Example recommended EMI/EMC filter
NAM-04-101



High voltage pulse noise type : NAP series
Low leakage current type : NAM series
* A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

- 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.
*Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

| | | |
|-----------------------|--------------|---------------------|
| 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

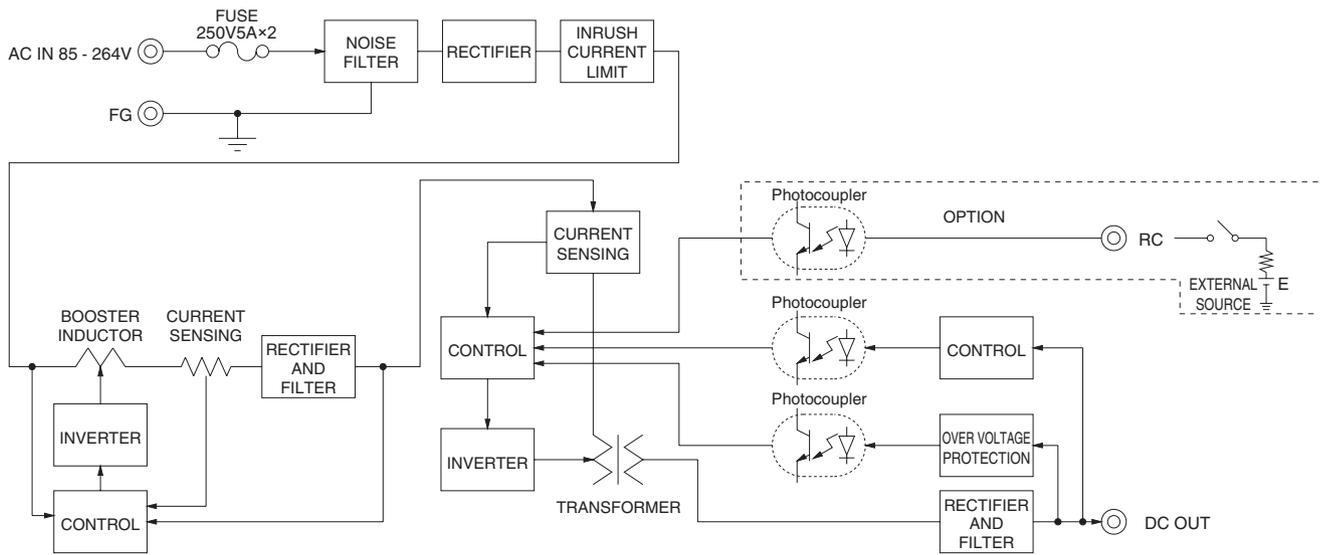
| | MODEL | LMA150F-24-Y | LMA150F-24-HY | |
|------------------------------------|--|--|-------------------|--|
| INPUT | VOLTAGE[V] | AC85 - 264 1 φ (Refer to "Derating", Instruction Manual 1 and 3) | | |
| | CURRENT[A] | ACIN 100V | 2.0typ (Io=100%) | |
| | | ACIN 200V | 1.0typ (Io=100%) | |
| | FREQUENCY[Hz] | 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%) | |
| 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 | | |
| ISOLATION | REMOTE ON/OFF | Option (Required external power source.) | | |
| | 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) | | |
| ENVIRONMENT | OUTPUT-RC | *6 AC100V 1minute, Cutoff current = 25mA, DC100V 10MΩ min (At Room Temperature) | | |
| | OPERATING TEMP., HUMID. AND ALTITUDE *5 | -10 to +70°C, 20 - 90%RH (Non condensing), (Refer to "Derating", Instruction Manual 3) 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 ONLY AC input) | ANSI/AAMI ES60601-1, EN60601-1 3rd, Complies with IEC60601-1-2 4th Ed. | | |
| | CONDUCTED NOISE | Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B | | |
| OTHERS | HARMONIC ATTENUATOR | Complies with IEC61000-3-2 (Class A) *8 | | |
| | 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 (Refer to "Derating", Instruction Manual 3) *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

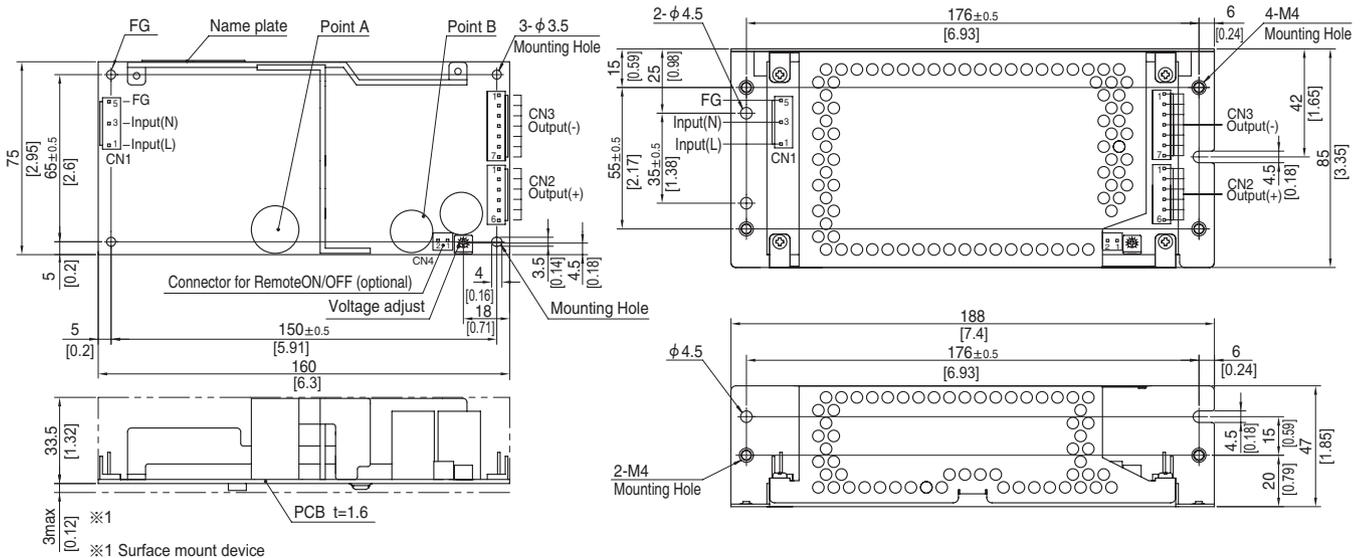


External view

※ 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.

<PIN CONNECTION>

| I/O Connector | Mating connector | Terminal | Terminal |
|---------------|------------------|-------------|-----------------|
| CN1 | 1-1123724-3 | 1-1123722-5 | Chain 1123721-1 |
| | | | Loose 1318912-1 |
| CN2 | 1-1123723-6 | 1-1123722-6 | Chain 1123721-1 |
| | | | Loose 1318912-1 |
| CN3 | 1-1123723-7 | 1-1123722-7 | Chain 1123721-1 |
| | | | Loose 1318912-1 |

(Mfr: Tyco Electronics)

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

| 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) : $1.5N \cdot m$ (16kgf · cm) max

Connector type

CN4 Option (Mfr:J.S.T)

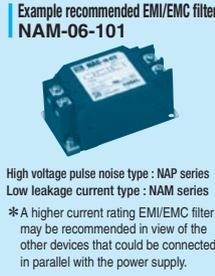
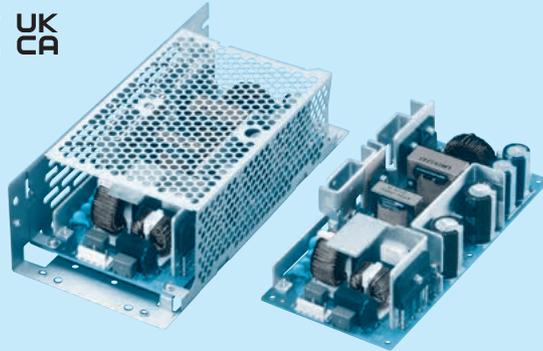
| PIN No. | Contents |
|---------|----------|
| 1 | RC(+) |
| 2 | RC(-) |

Barrier strip type

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

LMA240F

LM A 240 F -□ -□
 ① ② ③ ④ ⑤ ⑥



- 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.
 *Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

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

SPECIFICATIONS

| | MODEL | LMA240F-24-Y | LMA240F-24-HY | |
|------------------------------------|--|--|--|-------------------|
| INPUT | VOLTAGE[V] | AC85 - 264 1 φ (Refer to "Derating", Instruction Manual 1 and 3) | | |
| | 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 | 24 | |
| | CURRENT[A] | Convection | 10 | 10 (Peak 20) *2 |
| | | Forced air | 12.5 | 12.5 (Peak 20) *2 |
| | LINE REGULATION[mV] *7 | 96max | | |
| | LOAD REGULATION[mV] *7 | 150max | | |
| | RIPPLE[mVp-p] *3 | 0 to +50°C | 120max | 120max |
| | | -10 - 0°C | 160max | 160max |
| | RIPPLE NOISE[mVp-p]*3 | 0 to +50°C | 150max | 150max |
| | | -10 - 0°C | 180max | 180max |
| | TEMPERATURE REGULATION[mV] | 0 to +50°C | 240max | 240max |
| | | -10 to +50°C | 290max | 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), (Refer to "Derating", Instruction Manual 3) 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 ONLY AC input) | ANSI/AAMI ES60601-1, EN60601-1 3rd, Complies with IEC60601-1-2 4th Ed. | | |
| | CONDUCTED NOISE | Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B | | |
| OTHERS | HARMONIC ATTENUATOR | Complies with IEC61000-3-2 (Class A) *8 | | |
| | 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 (Refer to "Derating", Instruction Manual 3) *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.

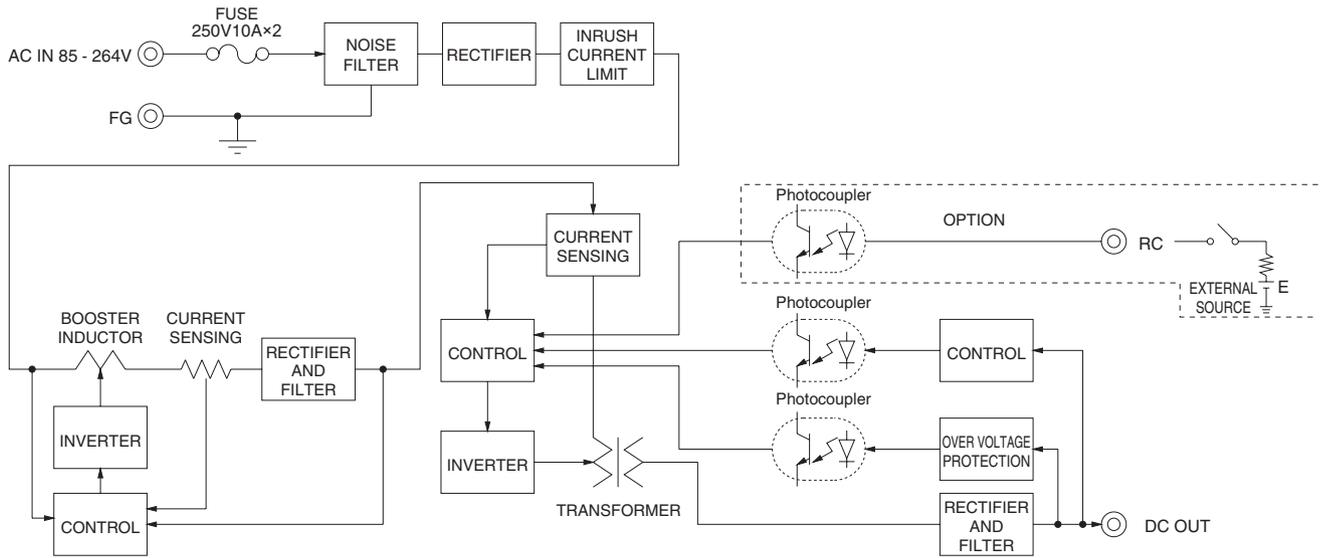
* To meet the specifications. Do not operate over-loaded condition.

* 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

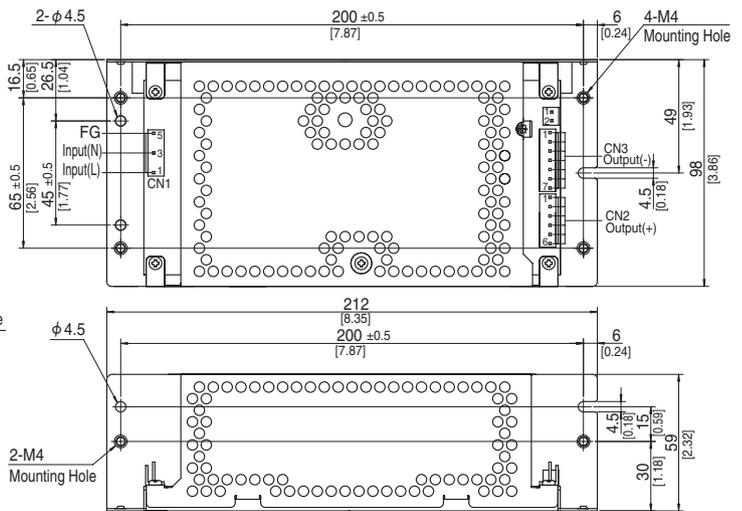
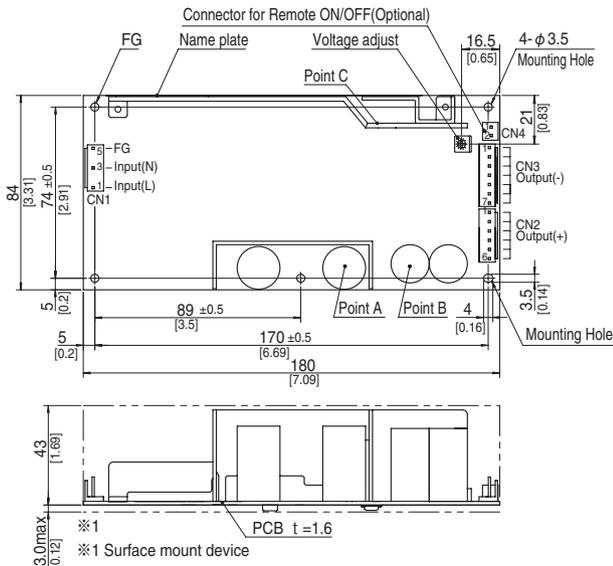


External view

※ External size of option is different from standard model.

Standard type

Chassis and cover type



- ※ 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.

| 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 | 1-1123722-7 | 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 : 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

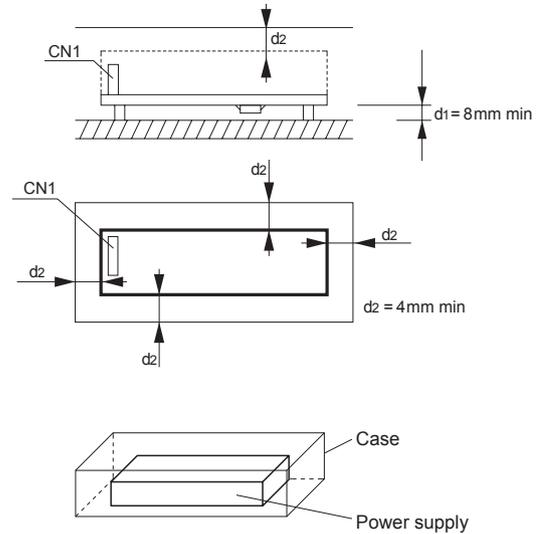
Model B2B-XH-A
Mating Connector (Terminal)
XHP-2
(BXH-001T-P0.6
or SXH-001T-P0.6)

Assembling and Installation Method

Installation method

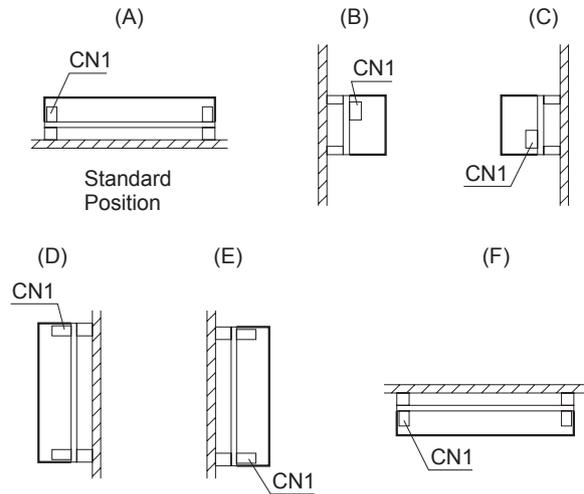
■ This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

■ In case of metal chassis, keep the distance between d1 & d2 for to insulate between lead of component and metal chassis, use the spacer of 8mm or more between d1. If it is less than d1 & d2, insert the insulation sheet between power supply and metal chassis.



■ There is a possibility that it is not possible to cool enough when the power supply is used by the sealing up space as showing in right figure. Please use it after confirming the temperature of point A and point B of Instruction Manual 3.

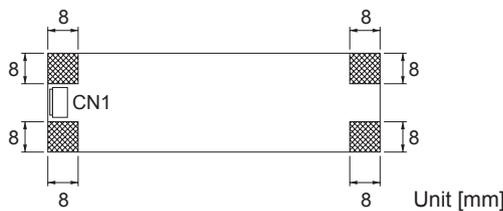
■ (F) mounting is not possible when unit is with case cover, but if need to operate unit by (F) positioning with case cover, temperature / load derating is necessary. For more details, please contact our sales or engineering departments.



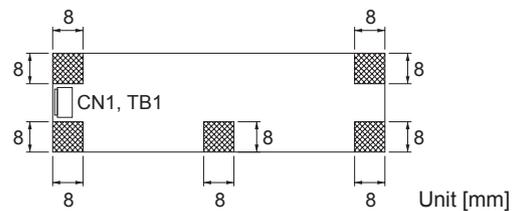
Mounting screw

■ The mounting screw should be M3. The hatched area shows the allowance of metal parts for mounting.

● LMA100F, LMA150F



● LMA240F



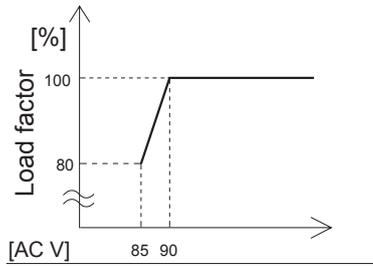
■ If metallic fittings are used on the component side of the board, ensure there is no contact with surface mounted components.

■ This product uses SMD technology. Please avoid the PCB installation method which includes the twisting stress or the bending stress.

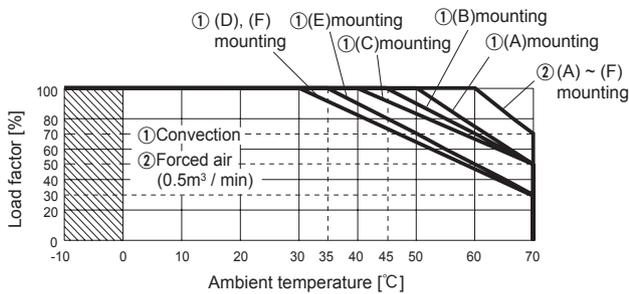
* Recommendation to electrically connect FG to metal chassis for reducing noise.

Derating

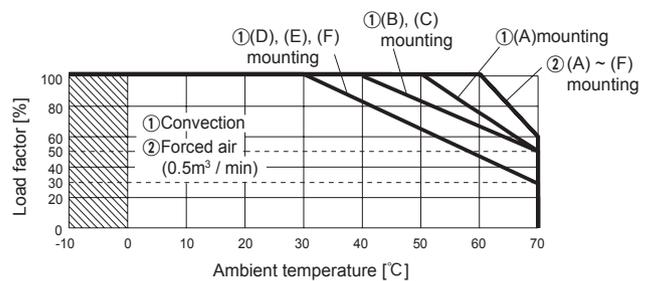
● Derating curve for input voltage



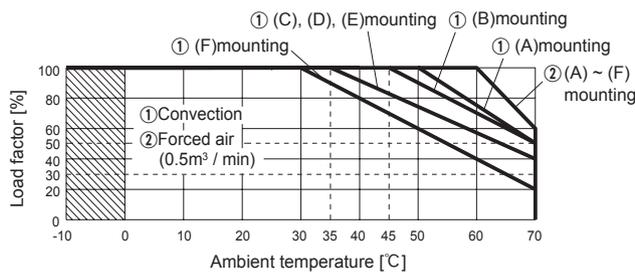
● LMA100F Ambient temperature derating curve (Reference value)



● LMA150F Ambient temperature derating curve (Reference value)



● LMA240F Ambient temperature derating curve (Reference value)



| Output voltage | Output power[W] | |
|----------------|-----------------|-------------|
| | ①Convection | ②Forced air |
| 24V | 240.0 | 300.0 |

- The operative ambient temperature is different by with / without chassis cover or mounting position.
Note: In the hatched area, the specification of Ripple, Ripple Noise is different from other area.
- Make sure the temperature at point A and point B is less than the temperatures shown in Instruction Manual 3.
- The ambient temperature should be measured 5 to 10 cm away from the power supply so that it won't be influenced by the heat from the power supply. Please consult us for more details.

Instruction Manual

◆ It is necessary to read the “Instruction Manual” and “Before using our product” before you use our product.

Basic Characteristics Data

| Model | Circuit method | Switching frequency [kHz] | Input current *1 [A] | Inrush current protection | PCB/Pattern | | | Series/Parallel operation availability | |
|---------|-------------------|---------------------------|----------------------|---------------------------|-------------|--------------|--------------|--|--------------------|
| | | | | | Material | Single sided | Double sided | Series operation | Parallel operation |
| LMA100F | Active filter | 60 | 1.4 | Thermistor | CEM-3 | | Yes | Yes | No |
| | Forward converter | 130 | | | | | | | |
| LMA150F | Active filter | 60 | 2.0 | Thermistor | CEM-3 | | Yes | Yes | No |
| | Forward converter | 130 | | | | | | | |
| LMA240F | Active filter | 60 | 3.9 | SCR | CEM-3 | | Yes | Yes | No |
| | Forward converter | 130 | | | | | | | |

*1 The value of input current is at ACIN 100V and rated load.