

# PMA15F

① PM ② A ③ 15 ④ F ⑤ -□ ⑥ -□



Horizontal terminal block (option : -T1)    Vertical terminal block (option : -T)    Standard type    with Cover (option : -N)

Recommended EMI/EMC Filter  
NAM-04-000



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 \*5
- T : Vertical terminal block
- T1 : Horizontal terminal block
- N : with Cover
- J1 : VH(J.S.T.)connector type

Specification is changed at option, refer to Instruction Manual.

| MODEL                 | PMA15F-3R3 | PMA15F-5 | PMA15F-12 | PMA15F-15 | PMA15F-24 |
|-----------------------|------------|----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 9.9        | 15       | 15.6      | 15        | 16.8      |
| DC OUTPUT             | 3.3V 3A    | 5V 3A    | 12V 1.3A  | 15V 1A    | 24V 0.7A  |

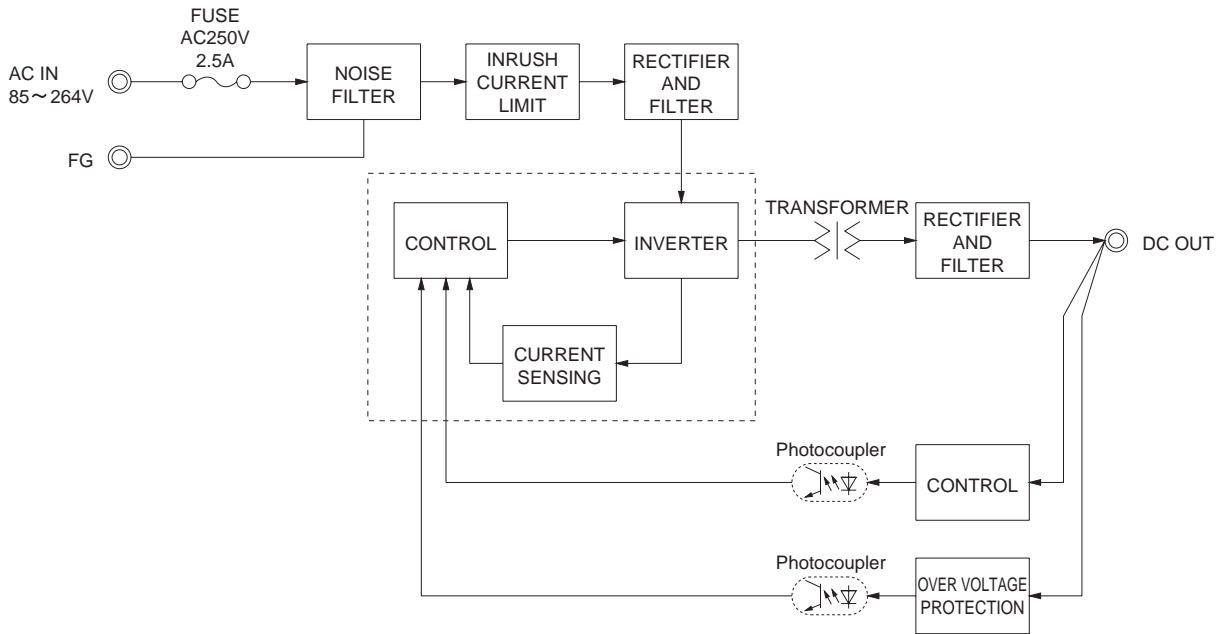
## SPECIFICATIONS

|                                    | MODEL   | PMA15F-3R3  | PMA15F-5          | PMA15F-12         | PMA15F-15      | PMA15F-24      |        |
|------------------------------------|---|---|-------------------|-------------------|----------------|----------------|--------|
| INPUT                              | VOLTAGE[V]  | AC85 - 264 1φ (Refer to the Instruction Manual 1.1 and 3.2) *3                              |                   |                   |                |                |        |
|                                    | CURRENT[A]  | ACIN 100V   | 0.30typ (Io=100%) | 0.40typ (Io=100%) |                |                |        |
|                                    |   | ACIN 200V   | 0.15typ (Io=100%) | 0.20typ (Io=100%) |                |                |        |
|                                    | FREQUENCY[Hz]   | 50 / 60 (47 - 440)  |                   |                   |                |                |        |
|                                    | EFFICIENCY[%]   | ACIN 100V   | 66typ             | 70typ             | 74typ          | 76typ          | 76typ  |
|                                    |   | ACIN 200V   | 67typ             | 74typ             | 78typ          | 79typ          | 79typ  |
| INRUSH CURRENT[A]                  | ACIN 100V   | 15typ (Io=100%) (At cold start)   |                   |                   |                |                |        |
|                                    | ACIN 200V   | 30typ (Io=100%) (At cold start)   |                   |                   |                |                |        |
| LEAKAGE CURRENT[ma]                | 0.05/0.10max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1)  |   |                   |                   |                |                |        |
| OUTPUT                             | VOLTAGE[V]  | 3.3   | 5                 | 12                | 15             | 24             |        |
|                                    | CURRENT[A]  | 3.0   | 3.0               | 1.3               | 1.0            | 0.7            |        |
|                                    | LINE REGULATION[mV]   | 20max   | 20max             | 48max             | 60max          | 96max          |        |
|                                    | LOAD REGULATION[mV]   | 40max   | 40max             | 100max            | 120max         | 150max         |        |
|                                    | RIPPLE[mVp-p]   | *1  | 0 to +50°C        | 80max             | 80max          | 120max         | 120max |
|                                    |   |   | -10 - 0°C         | 140max            | 140max         | 160max         | 160max |
|                                    | RIPPLE NOISE[mVp-p]   | *1  | 0 to +50°C        | 120max            | 120max         | 150max         | 150max |
|                                    |   |   | -10 - 0°C         | 160max            | 160max         | 180max         | 180max |
|                                    | TEMPERATURE REGULATION[mV]  | *1  | 0 to +50°C        | 50max             | 50max          | 120max         | 150max |
|                                    |   |   | -10 to +50°C      | 60max             | 60max          | 150max         | 180max |
|                                    | DRIFT[mV]   | *2  | 20max             | 20max             | 48max          | 60max          | 96max  |
| START-UP TIME[ms]                  | 200typ (ACIN 100V, Io=100%) *Start-up time is 700ms typ for less than 1minute of applying input again from turning off the input voltage. |   |                   |                   |                |                |        |
| HOLD-UP TIME[ms]                   | 20typ (ACIN 100V, Io=100%)  |   |                   |                   |                |                |        |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | 2.85 to 3.60  |   | 4.50 to 5.50      |                   | 10.00 to 13.20 | 13.20 to 18.00 |        |
| OUTPUT VOLTAGE SETTING[V]          | 3.30 to 3.40  |   | 5.00 to 5.15      |                   | 12.00 to 12.48 | 15.00 to 15.60 |        |
| PROTECTION CIRCUIT AND OTHERS      | OVERCURRENT PROTECTION  | Works over 105% of rating and recovers automatically  |                   |                   |                |                |        |
|                                    | OVERVOLTAGE PROTECTION[V]   | 4.00 to 5.25  | 5.75 to 7.00      | 15.00 to 18.00    | 20.00 to 25.00 | 30.00 to 37.00 |        |
|                                    | OPERATING INDICATION  | LED (Green)   |                   |                   |                |                |        |
|                                    | REMOTE ON/OFF   | Not provided  |                   |                   |                |                |        |
| ISOLATION                          | INPUT-OUTPUT  | AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)              |                   |                   |                |                |        |
|                                    | INPUT-FG  | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)              |                   |                   |                |                |        |
|                                    | OUTPUT-FG   | AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)                |                   |                   |                |                |        |
| ENVIRONMENT                        | OPERATING TEMP., HUMID. AND ALTITUDE  | -10 to +70°C, 20 - 90%RH (Non condensing), 3,000m (10,000 feet) max *3                      |                   |                   |                |                |        |
|                                    | STORAGE TEMP., HUMID. AND ALTITUDE  | -20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000 feet) max                         |                   |                   |                |                |        |
|                                    | VIBRATION   | 10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis |                   |                   |                |                |        |
|                                    | IMPACT  | 196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis                                |                   |                   |                |                |        |
| SAFETY AND NOISE REGULATIONS       | AGENCY APPROVALS  | UL60601-1, C-UL (CSA-C22.2 No.601.1), EN60601-1   |                   |                   |                |                |        |
|                                    | CONDUCTED NOISE   | Complies with FCC-B, VCCI-B, CISPR11-B, CISPR22-B, EN55011-B, EN55022-B                     |                   |                   |                |                |        |
|                                    | HARMONIC ATTENUATOR   | Complies with IEC61000-3-2 (Class A) *6 (Not built-in to active filter *4)                  |                   |                   |                |                |        |
| OTHERS                             | CASE SIZE/WEIGHT  | 31 X 78 X 103mm [1.22 X 3.07 X 4.06 inches] (W X H X D) / 230g max (with cover : 265g max)  |                   |                   |                |                |        |
|                                    | COOLING METHOD  | Convection  |                   |                   |                |                |        |

\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN: RM101).  
 \*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.  
 \*3 Derating is required.  
 \*4 When two or more units are used, they may not comply with the harmonic attenuator. Please contact us for details.

\*5 Please contact us about safety approvals for the model with option.  
 \*6 Please contact us about another class.  
 \* Parallel operation with other model is not possible.  
 \* Derating is required when operated with cover.  
 \* A sound may occur from power supply at peak loading.

Block diagram



External view

※ External size of option T,T1 and N is different from standard model and refer to 4 Option of instruction manual for details.



※ Point A,Point B are thermometry points. Please refer to Instruction Manual 3.

| I/O Connector | Mating Connector | Terminal        |
|---------------|------------------|-----------------|
| CN1           | 1-1123722-5      | Chain 1123721-1 |
|               |                  | Loose 1318912-1 |
| CN2           | 1-1123722-4      | Chain 1123721-1 |
|               |                  | Loose 1318912-1 |

(Mfr : Tyco Electronics AMP)

※ I/O Connector is Mfr.Tyco Electronics AMP  
 ※ Option : -J1 : (J.S.T) connector type  
 -T : Vertical terminal block type  
 -T1 : Horizontal terminal block type  
 Refer to Instruction Manual 4.

<PIN CONNECTION>

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

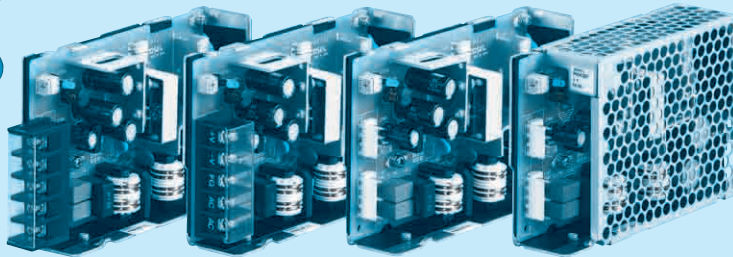
※ Tolerance : ±1 [±0.04]  
 ※ Weight : 230g max (with cover : 265g max)  
 ※ PCB Material/thickness : CEM-3 / 1.6mm [0.06inches]  
 ※ Chassis material : Electric galvanizing steel board  
 ※ Keep drawing current per pin below 5A of CN2.  
 ※ Dimensions in mm, [ ]=inches  
 ※ Mounting torque : 0.6N · m (6.3kgf · cm) max  
 ※ Please connect safety ground to the unit in 2-M3 holes.

# PMA30F

① PM ② A ③ 30 ④ F ⑤ -□ ⑥ -□



RoHS



Horizontal terminal block (option : -T1)    Vertical terminal block (option : -T)    Standard type    with Cover (option : -N)

Recommended EMI/EMC Filter  
NAM-04-000



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 \*5
- T : Vertical terminal block
- T1 : Horizontal terminal block
- N : with Cover
- J1 : VH(J.S.T.)connector type

Specification is changed at option, refer to Instruction Manual.

| MODEL                 | PMA30F-3R3 | PMA30F-5 | PMA30F-12 | PMA30F-15 | PMA30F-24 |
|-----------------------|------------|----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 19.8       | 30       | 30        | 30        | 31.2      |
| DC OUTPUT             | 3.3V 6A    | 5V 6A    | 12V 2.5A  | 15V 2A    | 24V 1.3A  |

## SPECIFICATIONS

|                                    | MODEL   | PMA30F-3R3  | PMA30F-5          | PMA30F-12         | PMA30F-15      | PMA30F-24      |        |
|------------------------------------|---|---|-------------------|-------------------|----------------|----------------|--------|
| INPUT                              | VOLTAGE[V]  | AC85 - 264 1φ (Refer to the Instruction Manual 1.1 and 3.2) *3                              |                   |                   |                |                |        |
|                                    | CURRENT[A]  | ACIN 100V   | 0.50typ (Io=100%) | 0.70typ (Io=100%) |                |                |        |
|                                    |   | ACIN 200V   | 0.30typ (Io=100%) | 0.40typ (Io=100%) |                |                |        |
|                                    | FREQUENCY[Hz]   | 50 / 60 (47 - 440)  |                   |                   |                |                |        |
|                                    | EFFICIENCY[%]   | ACIN 100V   | 67typ             | 71typ             | 76typ          | 77typ          | 77typ  |
|                                    |   | ACIN 200V   | 69typ             | 74typ             | 78typ          | 80typ          | 80typ  |
| INRUSH CURRENT[A]                  | ACIN 100V   | 15typ (Io=100%) (At cold start)   |                   |                   |                |                |        |
|                                    | ACIN 200V   | 30typ (Io=100%) (At cold start)   |                   |                   |                |                |        |
| LEAKAGE CURRENT[mA]                | 0.05 / 0.10max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1)  |   |                   |                   |                |                |        |
| OUTPUT                             | VOLTAGE[V]  | 3.3   | 5                 | 12                | 15             | 24             |        |
|                                    | CURRENT[A]  | 6.0   | 6.0               | 2.5               | 2.0            | 1.3            |        |
|                                    | LINE REGULATION[mV]   | 20max   | 20max             | 48max             | 60max          | 96max          |        |
|                                    | LOAD REGULATION[mV]   | 40max   | 40max             | 100max            | 120max         | 150max         |        |
|                                    | RIPPLE[mVp-p]   | *1  | 0 to +50°C        | 80max             | 80max          | 120max         | 120max |
|                                    |   |   | -10 - 0°C         | 140max            | 140max         | 160max         | 160max |
|                                    | RIPPLE NOISE[mVp-p]   | *1  | 0 to +50°C        | 120max            | 120max         | 150max         | 150max |
|                                    |   |   | -10 - 0°C         | 160max            | 160max         | 180max         | 180max |
|                                    | TEMPERATURE REGULATION[mV]  | *1  | 0 to +50°C        | 50max             | 50max          | 120max         | 150max |
|                                    |   |   | -10 to +50°C      | 60max             | 60max          | 150max         | 180max |
| DRIFT[mV]                          | *2  | 20max   | 20max             | 48max             | 60max          | 96max          |        |
| START-UP TIME[ms]                  | 200typ (ACIN 100V, Io=100%) *Start-up time is 700ms typ for less than 1minute of applying input again from turning off the input voltage. |   |                   |                   |                |                |        |
| HOLD-UP TIME[ms]                   | 20typ (ACIN 100V, Io=100%)  |   |                   |                   |                |                |        |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | 2.85 to 3.60  |   | 4.50 to 5.50      |                   | 10.00 to 13.20 | 13.20 to 18.00 |        |
| OUTPUT VOLTAGE SETTING[V]          | 3.30 to 3.40  |   | 5.00 to 5.15      |                   | 12.00 to 12.48 | 15.00 to 15.60 |        |
| PROTECTION CIRCUIT AND OTHERS      | OVERCURRENT PROTECTION  | Works over 105% of rating and recovers automatically  |                   |                   |                |                |        |
|                                    | OVERVOLTAGE PROTECTION[V]   | 4.00 to 5.25  | 5.75 to 7.00      | 15.00 to 18.00    | 20.00 to 25.00 | 30.00 to 37.00 |        |
|                                    | OPERATING INDICATION  | LED (Green)   |                   |                   |                |                |        |
|                                    | REMOTE ON/OFF   | Not provided  |                   |                   |                |                |        |
| ISOLATION                          | INPUT-OUTPUT  | AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)              |                   |                   |                |                |        |
|                                    | INPUT-FG  | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)              |                   |                   |                |                |        |
|                                    | OUTPUT-FG   | AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)                |                   |                   |                |                |        |
| ENVIRONMENT                        | OPERATING TEMP., HUMID. AND ALTITUDE  | -10 to +70°C, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max *3                       |                   |                   |                |                |        |
|                                    | 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 <sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis |                   |                   |                |                |        |
|                                    | IMPACT  | 196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis                                |                   |                   |                |                |        |
| SAFETY AND NOISE REGULATIONS       | AGENCY APPROVALS  | UL60601-1, C-UL (CSA-C22.2 No.601.1), EN60601-1   |                   |                   |                |                |        |
|                                    | CONDUCTED NOISE   | Complies with FCC-B, VCCI-B, CISPR11-B, CISPR22-B, EN55011-B, EN55022-B                     |                   |                   |                |                |        |
|                                    | HARMONIC ATTENUATOR   | Complies with IEC61000-3-2 (Class A) *6 (Not built-in to active filter *4)                  |                   |                   |                |                |        |
| OTHERS                             | CASE SIZE/WEIGHT  | 31 X 82 X 120mm [1.22 X 3.23 X 4.72 inches] (W X H X D) / 240g max (with cover : 280g max)  |                   |                   |                |                |        |
|                                    | COOLING METHOD  | Convection  |                   |                   |                |                |        |

\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN: RM101).  
 \*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.  
 \*3 Derating is required.  
 \*4 When two or more units are used, they may not comply with the harmonic attenuator. Please contact us for details.

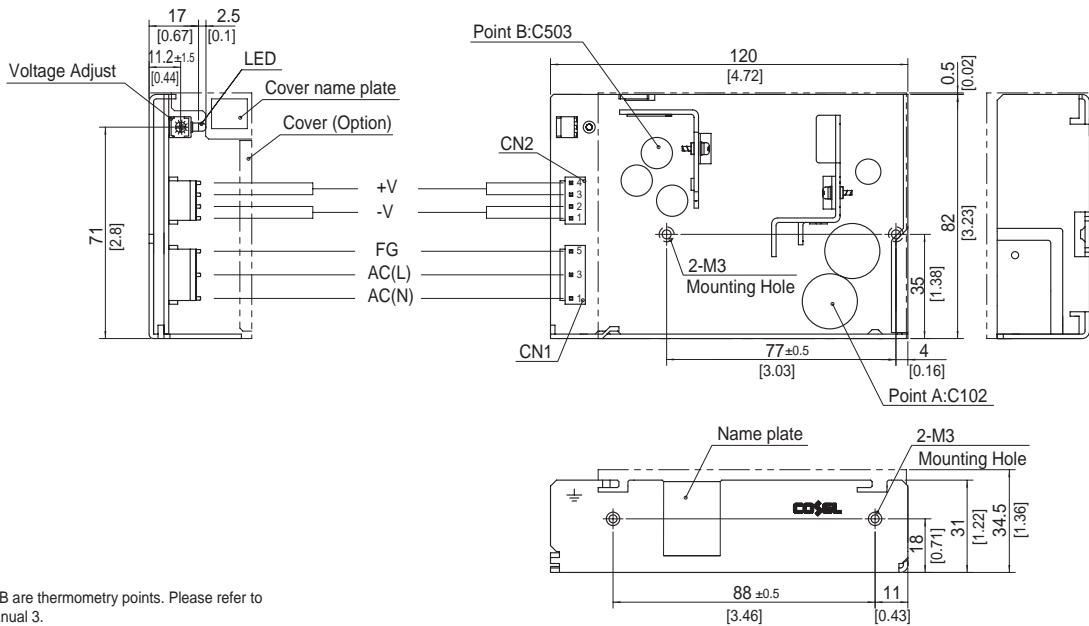
\*5 Please contact us about safety approvals for the model with option.  
 \*6 Please contact us about another class.  
 \* Parallel operation with other model is not possible.  
 \* Derating is required when operated with cover.  
 \* A sound may occur from power supply at peak loading.

Block diagram



External view

※ External size of option T, T1 and N is different from standard model and refer to 4 Option of instruction manual for details.



※ Point A, Point B are thermometry points. Please refer to Instruction Manual 3.

| I/O Connector | Mating Connector | Terminal        |
|---------------|------------------|-----------------|
| CN1           | 1-1123724-3      | Chain 1123721-1 |
|               |                  | Loose 1318912-1 |
| CN2           | 1-1123723-4      | Chain 1123721-1 |
|               |                  | Loose 1318912-1 |

(Mfr: Tyco Electronics AMP)

※ I/O Connector is Mfr. Tyco Electronics AMP  
 ※ Option : -J1 : (J.S.T) connector type  
 -T : Vertical terminal block type  
 -T1 : Horizontal terminal block type  
 Refer to Instruction Manual 4.

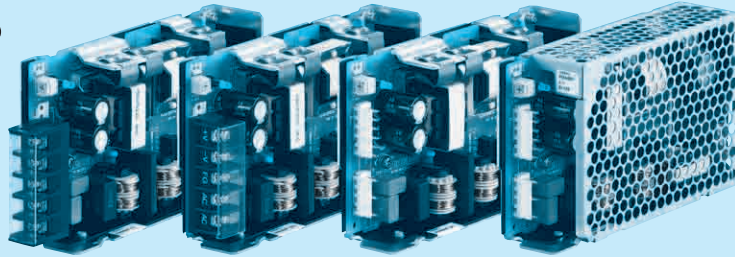
<PIN CONNECTION>

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

※ Tolerance : ±1 [±0.04]  
 ※ Weight : 240g max (with cover : 280g max)  
 ※ PCB Material/thickness : CEM-3 / 1.6mm [0.06inches]  
 ※ Chassis material : Aluminum  
 ※ Keep drawing current per pin below 5A of CN2.  
 ※ Dimensions in mm, [ ] =inches  
 ※ Mounting torque : 0.49N · m (5kgf · cm) max  
 ※ Please connect safety ground to the unit in 2-M3 holes.

# PMA60F

① PM ② A ③ 60 ④ F ⑤ -□ ⑥ -□



Horizontal terminal block (option : -T1)    Vertical terminal block (option : -T)    Standard type    with Cover (option : -N)

Recommended EMI/EMC Filter  
NAM-04-000



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 \*5
- T : Vertical terminal block
- T1 : Horizontal terminal block
- N : with Cover
- J1 : VH(J.S.T.)connector type
- R : with Remote ON/OFF

Specification is changed at option, refer to Instruction Manual.

| MODEL                 | PMA60F-3R3 | PMA60F-5 | PMA60F-12 | PMA60F-15 | PMA60F-24 |
|-----------------------|------------|----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 39.6       | 60       | 60        | 60        | 60        |
| DC OUTPUT             | 3.3V 12A   | 5V 12A   | 12V 5A    | 15V 4A    | 24V 2.5A  |

## SPECIFICATIONS

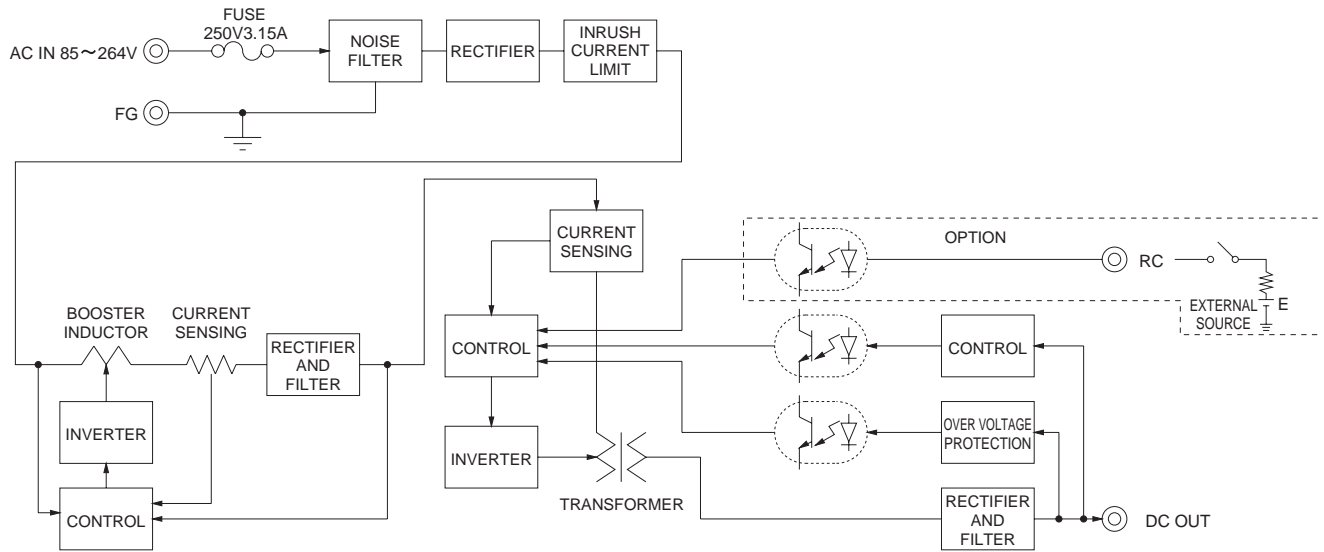
|                                    | MODEL  | PMA60F-3R3  | PMA60F-5         | PMA60F-12        | PMA60F-15      | PMA60F-24      |        |
|------------------------------------|--|---|------------------|------------------|----------------|----------------|--------|
| INPUT                              | VOLTAGE[V]   | AC85 - 264 1 φ (Refer to the Instruction Manual 1.1)  |                  |                  |                |                |        |
|                                    | CURRENT[A]   | ACIN 100V   | 0.7typ (Io=100%) | 0.8typ (Io=100%) |                |                |        |
|                                    |  | ACIN 200V   | 0.4typ (Io=100%) | 0.5typ (Io=100%) |                |                |        |
|                                    | FREQUENCY[Hz]  | 50 / 60 (47 - 63)   |                  |                  |                |                |        |
|                                    | EFFICIENCY[%]  | ACIN 100V   | 77typ            | 80typ            | 80typ          | 81typ          | 81typ  |
|                                    |  | ACIN 200V   | 78typ            | 83typ            | 82typ          | 83typ          | 83typ  |
|                                    | POWER FACTOR (Io=100%)   | ACIN 100V   | 0.98typ          |                  |                |                |        |
|                                    |  | ACIN 200V   | 0.85typ          |                  | 0.90typ        |                |        |
| INRUSH CURRENT[A]                  | ACIN 100V  | 15typ (Io=100%) (At cold start)   |                  |                  |                |                |        |
|                                    | ACIN 200V  | 30typ (Io=100%) (At cold start)   |                  |                  |                |                |        |
| LEAKAGE CURRENT[ma]                | 0.09 / 0.18max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1) |   |                  |                  |                |                |        |
| OUTPUT                             | VOLTAGE[V]   | 3.3   | 5                | 12               | 15             | 24             |        |
|                                    | CURRENT[A]   | 12.0  | 12.0             | 5.0              | 4.0            | 2.5            |        |
|                                    | LINE REGULATION[mV]  | 20max   |                  |                  |                |                |        |
|                                    | LOAD REGULATION[mV]  | 40max   |                  |                  |                |                |        |
|                                    | RIPPLE[mVp-p]  | *1  | 0 to +50°C       | 80max            | 80max          | 120max         | 120max |
|                                    |  |   | -10 - 0°C        | 140max           | 140max         | 160max         | 160max |
|                                    | RIPPLE NOISE[mVp-p]  | *1  | 0 to +50°C       | 120max           | 120max         | 150max         | 150max |
|                                    |  |   | -10 - 0°C        | 160max           | 160max         | 180max         | 180max |
|                                    | TEMPERATURE REGULATION[mV]   | *1  | 0 to +50°C       | 50max            | 50max          | 120max         | 240max |
|                                    |  |   | -10 to +50°C     | 60max            | 60max          | 150max         | 180max |
|                                    | DRIFT[mV]  | *2  | 20max            | 20max            | 48max          | 60max          | 96max  |
|                                    | START-UP TIME[ms]  | 250typ (ACIN 100V, Io=100%)   |                  |                  |                |                |        |
| HOLD-UP TIME[ms]                   | 20typ (ACIN 100V, Io=100%)   |   |                  |                  |                |                |        |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | 2.85 to 3.60   |   | 4.50 to 5.50     |                  | 10.00 to 13.20 |                |        |
| OUTPUT VOLTAGE SETTING[V]          | 3.30 to 3.40   |   | 5.00 to 5.15     |                  | 12.00 to 12.48 |                |        |
| PROTECTION CIRCUIT AND OTHERS      | OVERCURRENT PROTECTION   | Works over 105% of rating and recovers automatically  |                  |                  |                |                |        |
|                                    | OVERVOLTAGE PROTECTION[V]  | 4.00 to 5.25  | 5.75 to 7.00     | 15.00 to 18.00   | 20.00 to 25.00 | 30.00 to 37.00 |        |
|                                    | OPERATING INDICATION   | LED (Green)   |                  |                  |                |                |        |
|                                    | REMOTE ON/OFF  | Optional (Required external power source)   |                  |                  |                |                |        |
| ISOLATION                          | INPUT-OUTPUT-RC  | *3 AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)           |                  |                  |                |                |        |
|                                    | INPUT-FG   | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)              |                  |                  |                |                |        |
|                                    | OUTPUT-RC-FG   | *3 AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)             |                  |                  |                |                |        |
| ENVIRONMENT                        | OPERATING TEMP.,HUMID.AND ALTIITUDE                                      | -10 to +70°C, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max *4                       |                  |                  |                |                |        |
|                                    | STORAGE TEMP.,HUMID.AND ALTIITUDE  | -20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max                          |                  |                  |                |                |        |
|                                    | VIBRATION  | 10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis |                  |                  |                |                |        |
|                                    | IMPACT   | 196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis                                |                  |                  |                |                |        |
| SAFETY AND NOISE REGULATIONS       | AGENCY APPROVALS   | UL60601-1, C-UL (CSA-C22.2 No.601.1), EN60601-1   |                  |                  |                |                |        |
|                                    | CONDUCTED NOISE  | Complies with FCC-B, VCCI-B, CISPR11-B, CISPR22-B, EN55011-B, EN55022-B                     |                  |                  |                |                |        |
|                                    | HARMONIC ATTENUATOR  | Complies with IEC61000-3-2 *6   |                  |                  |                |                |        |
| OTHERS                             | CASE SIZE/WEIGHT   | 32 X 82 X 135mm [1.26 X 3.23 X 5.31 inches] (W X H X D) / 350g max (with cover : 395g max)  |                  |                  |                |                |        |
|                                    | COOLING METHOD   | Convection  |                  |                  |                |                |        |

\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN: RM101).  
 \*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.  
 \*3 Applicable when Remote ON/OFF (optional) is added. RC is insulated with input, output and FG.  
 \*4 Derating is required.  
 \*5 Please contact us about safety approvals for the model with option.

\*6 Please contact us about class C.  
 \* Parallel operation with other model is not possible.  
 \* Derating is required when operated with cover.  
 \* A sound may occur from power supply at peak loading.

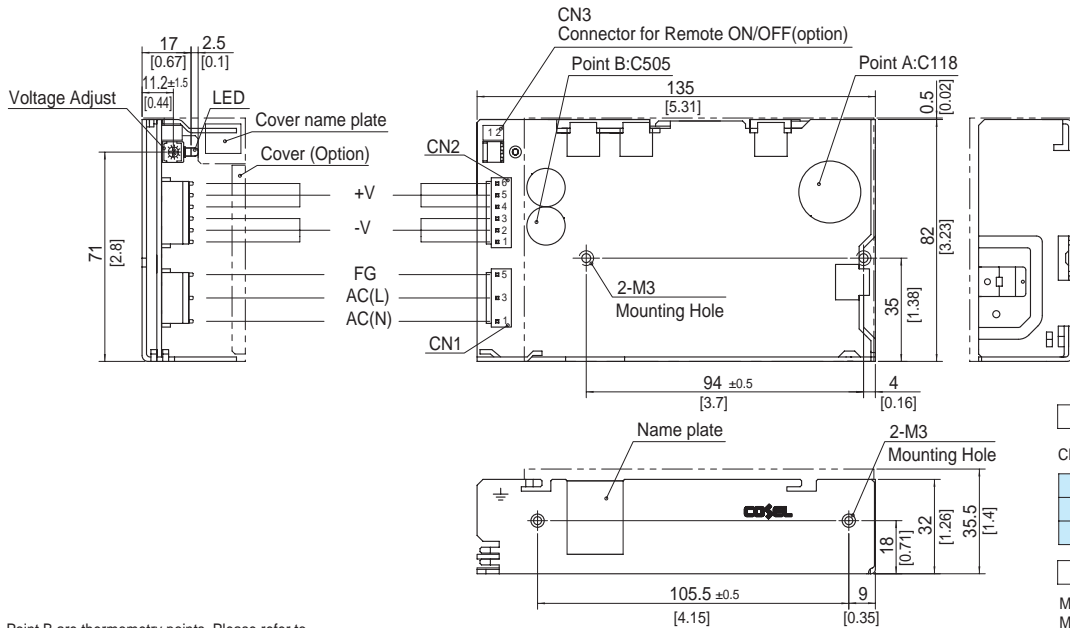


## Block diagram



## External view

※ External size of option T,T1,R and N is different from standard model and refer to 4 Option of instruction manual for details.



※ Point A, Point B are thermometry points. Please refer to Instruction Manual 3.

| I/O Connector | Mating Connector | 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             |

(Mfr: Tyco Electronics AMP)

※ I/O Connector is Mfr. Tyco Electronics AMP  
 ※ Option: -J1: (J.S.T) connector type  
 -T: Vertical terminal block type  
 -T1: Horizontal terminal block type  
 Refer to Instruction Manual 4.

### <PIN CONNECTION>

| Pin No. | Input |
|---------|-------|
| 1       | AC(N) |
| 2       |       |
| 3       | AC(L) |
| 4       |       |
| 5       | FG    |

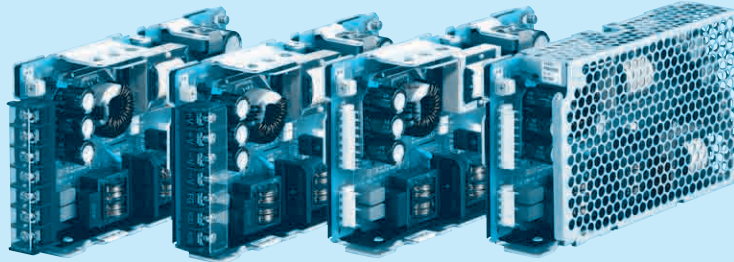
| Pin No. | Output |
|---------|--------|
| 1 - 3   | -V     |
| 4 - 6   | +V     |

- ※ Tolerance :  $\pm 1$  [ $\pm 0.04$ ]
- ※ Weight : 350g max (with cover : 395g max)
- ※ PCB Material/thickness : CEM-3 / 1.6mm [0.06inches]
- ※ Chassis material : Aluminum
- ※ Keep drawing current per pin below 5A of CN2.
- ※ Dimensions in mm, [ ]=inches
- ※ Mounting torque : 0.49N · m (5kgf · cm) max
- ※ Please connect safety ground to the unit in 2-M3 holes.

| Connector type                   |          |
|----------------------------------|----------|
| CN3 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) |          |

# PMA100F

① PM ② A ③ 100 ④ F ⑤ -□ ⑥ -□



Horizontal terminal block (option : -T)    Vertical terminal block (option : -T)    Standard type    with Cover (option : -N)

Recommended EMI/EMC Filter  
NAM-06-000



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 \*5
- T : Vertical terminal block
- T1 : Horizontal terminal block
- N : with Cover
- J1 : VH(J.S.T.)connector type
- R : with Remote ON/OFF

Specification is changed at option, refer to Instruction Manual.

| MODEL                 | PMA100F-3R3 | PMA100F-5 | PMA100F-12 | PMA100F-24 | PMA100F-48 |
|-----------------------|-------------|-----------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 66          | 100       | 102        | 108        | 100.8      |
| DC OUTPUT             | 3.3V 20A    | 5V 20A    | 12V 8.5A   | 24V 4.5A   | 48V 2.1A   |

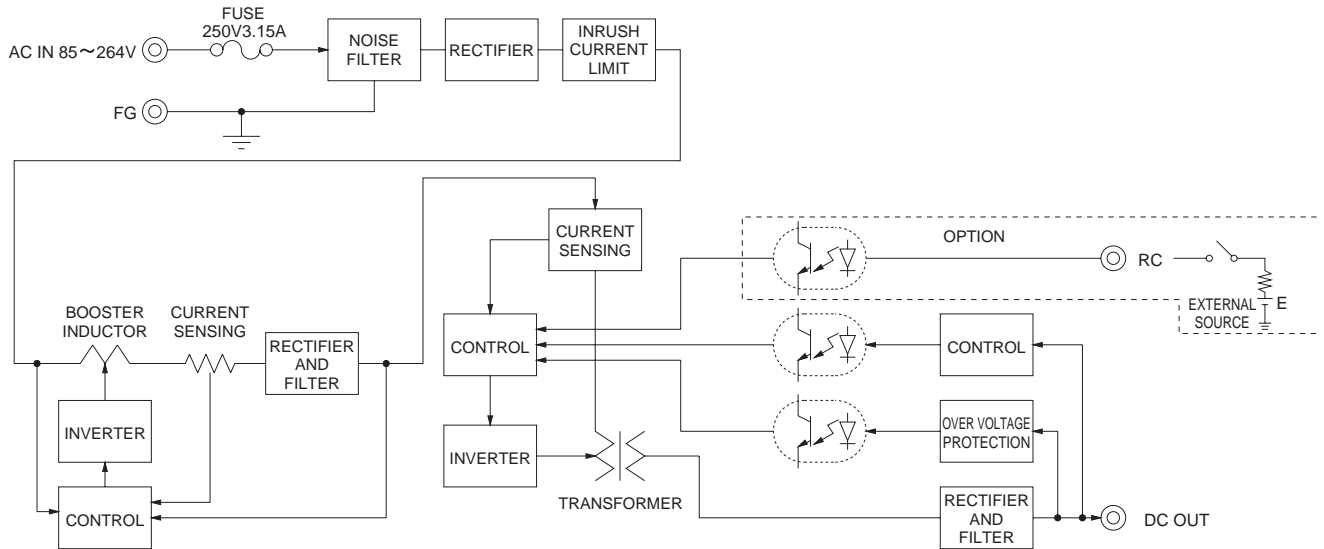
## SPECIFICATIONS

|                                    | MODEL  | PMA100F-3R3   | PMA100F-5        | PMA100F-12       | PMA100F-24     | PMA100F-48     |        |
|------------------------------------|--|---|------------------|------------------|----------------|----------------|--------|
| INPUT                              | VOLTAGE[V]   | AC85 - 264 1 φ (Refer to the Instruction Manual 1.1)  |                  |                  |                |                |        |
|                                    | CURRENT[A]   | ACIN 100V   | 0.9typ (Io=100%) | 1.3typ (Io=100%) |                |                |        |
|                                    |  | ACIN 200V   | 0.5typ (Io=100%) | 0.7typ (Io=100%) |                |                |        |
|                                    | FREQUENCY[Hz]  | 50 / 60 (47 - 63)   |                  |                  |                |                |        |
|                                    | EFFICIENCY[%]  | ACIN 100V   | 77typ            | 81typ            | 82typ          | 84typ          | 84typ  |
|                                    |  | ACIN 200V   | 78typ            | 83typ            | 83typ          | 86typ          | 86typ  |
|                                    | POWER FACTOR (Io=100%)   | ACIN 100V   | 0.98typ          |                  | 0.90typ        |                |        |
|                                    |  | ACIN 200V   | 0.85typ          |                  | 0.90typ        |                |        |
| INRUSH CURRENT[A]                  | ACIN 100V  | 20typ (Io=100%) (At cold start)   |                  |                  |                |                |        |
|                                    | ACIN 200V  | 40typ (Io=100%) (At cold start)   |                  |                  |                |                |        |
| LEAKAGE CURRENT[mA]                | 0.09 / 0.18max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1) |   |                  |                  |                |                |        |
| OUTPUT                             | VOLTAGE[V]   | 3.3   | 5                | 12               | 24             | 48             |        |
|                                    | CURRENT[A]   | 20.0  | 20.0             | 8.5              | 4.5            | 2.1            |        |
|                                    | LINE REGULATION[mV]  | 20max   | 20max            | 48max            | 96max          | 192max         |        |
|                                    | LOAD REGULATION[mV]  | 40max   | 40max            | 100max           | 150max         | 240max         |        |
|                                    | RIPPLE[mVp-p]  | 0 to +50°C  | 80max            | 80max            | 120max         | 150max         | 150max |
|                                    |  | -10 - 0°C   | 140max           | 140max           | 160max         | 160max         | 200max |
|                                    | RIPPLE NOISE[mVp-p]  | 0 to +50°C  | 120max           | 120max           | 150max         | 150max         | 250max |
|                                    |  | -10 - 0°C   | 160max           | 160max           | 180max         | 180max         | 300max |
|                                    | TEMPERATURE REGULATION[mV]   | 0 to +50°C  | 50max            | 50max            | 120max         | 240max         | 480max |
|                                    |  | -10 to +50°C  | 60max            | 60max            | 150max         | 290max         | 600max |
|                                    | DRIFT[mV]  | 20max   |                  | 20max            | 48max          | 96max          | 192max |
|                                    | START-UP TIME[ms]  | 250typ (ACIN 100V, Io=100%)   |                  |                  |                |                |        |
|                                    | HOLD-UP TIME[ms]   | 20typ (ACIN 100V, Io=100%)  |                  |                  |                |                |        |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | 2.85 to 3.60   | 4.50 to 5.50  | 10.00 to 13.20   | 19.20 to 27.00   | 39.00 to 53.00 |                |        |
| OUTPUT VOLTAGE SETTING[V]          | 3.30 to 3.40   | 5.00 to 5.15  | 12.00 to 12.48   | 24.00 to 24.96   | 48.00 to 49.92 |                |        |
| PROTECTION CIRCUIT AND OTHERS      | OVERCURRENT PROTECTION   | Works over 105% of rating and recovers automatically  |                  |                  |                |                |        |
|                                    | OVERVOLTAGE PROTECTION[V]  | 4.00 to 5.25  | 5.75 to 7.00     | 15.00 to 18.00   | 30.00 to 37.00 | 58.00 to 65.00 |        |
|                                    | OPERATING INDICATION   | LED (Green)   |                  |                  |                |                |        |
|                                    | REMOTE ON/OFF  | Optional (Required external power source)   |                  |                  |                |                |        |
| ISOLATION                          | INPUT-OUTPUT-RC  | *3 AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)           |                  |                  |                |                |        |
|                                    | INPUT-FG   | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)              |                  |                  |                |                |        |
|                                    | OUTPUT-RC-FG   | *3 AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)             |                  |                  |                |                |        |
| ENVIRONMENT                        | OPERATING TEMP.,HUMID.AND ALTITUDE                                       | -10 to +70°C, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max *4                       |                  |                  |                |                |        |
|                                    | 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 <sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis |                  |                  |                |                |        |
|                                    | IMPACT   | 196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis                                |                  |                  |                |                |        |
| SAFETY AND NOISE REGULATIONS       | AGENCY APPROVALS   | UL60601-1, C-UL (CSA-C22.2 No.601.1), EN60601-1   |                  |                  |                |                |        |
|                                    | CONDUCTED NOISE  | Complies with FCC-B, VCCI-B, CISPR11-B, CISPR22-B, EN55011-B, EN55022-B                     |                  |                  |                |                |        |
|                                    | HARMONIC ATTENUATOR  | Complies with IEC61000-3-2 *6   |                  |                  |                |                |        |
| OTHERS                             | CASE SIZE/WEIGHT   | 34 X 93 X 168mm [1.34 X 3.66 X 6.61 inches] (W X H X D) / 560g max (with cover : 625g max)  |                  |                  |                |                |        |
|                                    | COOLING METHOD   | Convection  |                  |                  |                |                |        |

\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN: RM101).  
 \*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.  
 \*3 Applicable when Remote ON/OFF (optional) is added. RC is insulated with input, output and FG.  
 \*4 Derating is required.  
 \*5 Please contact us about safety approvals for the model with option.

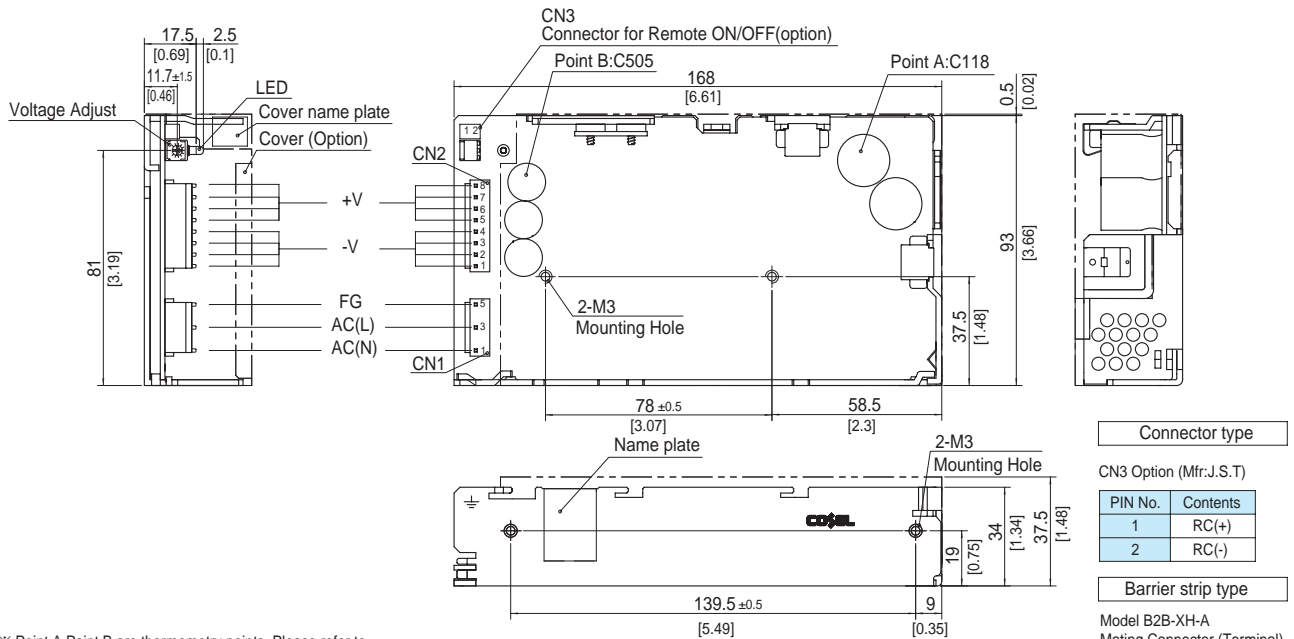
\*6 Please contact us about class C.  
 \* Parallel operation with other model is not possible.  
 \* Derating is required when operated with cover.  
 \* A sound may occur from power supply at peak loading.

## Block diagram



## External view

※ External size of option T, T1, R and N is different from standard model and refer to 4 Option of instruction manual for details.



| Connector type          |          |
|-------------------------|----------|
| CN3 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) |  |

※ Point A, Point B are thermometry points. Please refer to Instruction Manual 3.

| I/O Connector | Mating Connector | Terminal        |
|---------------|------------------|-----------------|
| CN1           | 1-1123724-3      | 1-1123722-5     |
|               |                  | Chain 1123721-1 |
|               |                  | Loose 1318912-1 |
| CN2           | 1-1123723-8      | 1-1123722-8     |
|               |                  | Chain 1123721-1 |
|               |                  | Loose 1318912-1 |

(Mfr: Tyco Electronics AMP)

※ I/O Connector is Mfr. Tyco Electronics AMP  
 ※ Option : -J1 : (J.S.T) connector type  
 -T : Vertical terminal block type  
 -T1 : Horizontal terminal block type  
 Refer to Instruction Manual 4.

### <PIN CONNECTION>

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

※ Tolerance :  $\pm 1$  [ $\pm 0.04$ ]  
 ※ Weight : 560g max (with cover : 625g max)  
 ※ PCB Material/thickness : CEM-3 / 1.6mm [0.06inches]  
 ※ Chassis material : Aluminum  
 ※ Keep drawing current per pin below 5A of CN2.  
 ※ Dimensions in mm, [ ] =inches  
 ※ Mounting torque : 0.49N · m (5kgf · cm) max  
 ※ Please connect safety ground to the unit in 2-M3 holes.



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