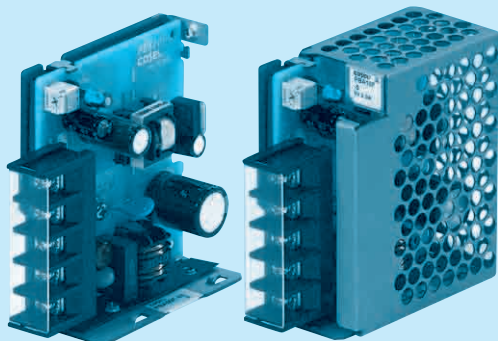
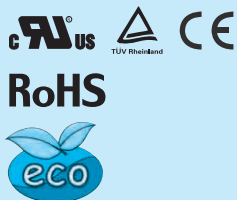


# PBA10F

PB A 10 F - □ - □  
 ① ② ③ ④ ⑤ ⑥



Recommended EMI/EMC Filter  
 NAC-06-472



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 \*5
- C :with Coating
- G :Low leakage current
- E :Low leakage current and EMI class A
- T :Vertical terminal block
- J :Connector type
- N :with Cover (UL508 is acquired)
- N1 :with DIN rail and Cover
- V :Output voltage setting potentiometer externally

Cover is optional

| MODEL                 | PBA10F-5 | PBA10F-12 | PBA10F-24 |
|-----------------------|----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 10       | 10.8      | 12        |
| DC OUTPUT             | 5V 2A    | 12V 0.9A  | 24V 0.5A  |

## SPECIFICATIONS

|                                    | MODEL  | PBA10F-5  | PBA10F-12         | PBA10F-24   |        |
|------------------------------------|--|---|-------------------|-------------|--------|
| INPUT                              | VOLTAGE[V]   | AC85 - 264 1 φ or DC110 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *3)                                  |                   |             |        |
|                                    | CURRENT[A]   | ACIN 100V   | 0.30typ (Io=100%) |             |        |
|                                    |  | ACIN 200V   | 0.20typ (Io=100%) |             |        |
|                                    | FREQUENCY[Hz]  | 50/60 (47 - 440) or DC  |                   |             |        |
|                                    | EFFICIENCY[%]  | ACIN 100V   | 74typ             | 76typ       | 77typ  |
|                                    |  | ACIN 200V   | 74typ             | 76typ       | 77typ  |
|                                    | INRUSH CURRENT[A]  | ACIN 100V   | 15typ (Io=100%)   |             |        |
|                                    | ACIN 200V  | 30typ (Io=100%)   |                   |             |        |
| LEAKAGE CURRENT[ma]                | 0.15/0.30max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1.DENAN) |   |                   |             |        |
| OUTPUT                             | VOLTAGE[V]   | 5   | 12                | 24          |        |
|                                    | CURRENT[A]   | 2   | 0.9               | 0.5         |        |
|                                    | LINE REGULATION[mV] *6   | 20max   | 48max             | 96max       |        |
|                                    | LOAD REGULATION[mV] *6   | 40max   | 100max            | 150max      |        |
|                                    | RIPPLE[mVp-p]  | 0 to +50°C *1   | 80max             | 120max      | 120max |
|                                    |  | -10 - 0°C *1  | 140max            | 160max      | 160max |
|                                    | RIPPLE NOISE[mVp-p]  | 0 to +50°C *1   | 120max            | 150max      | 150max |
|                                    |  | -10 - 0°C *1  | 160max            | 180max      | 180max |
|                                    | TEMPERATURE REGULATION[mV]   | 0 to +50°C  | 50max             | 120max      | 240max |
|                                    |  | -10 to +50°C  | 60max             | 150max      | 290max |
|                                    | DRIFT[mV] *2   | 20max   | 48max             | 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] | 4.50 - 5.50  | 10.0 - 13.2   | 19.2 - 27.0       |             |        |
| OUTPUT VOLTAGE SETTING[V]          | 5.00 - 5.15  | 12.00 - 12.48   | 24.00 - 24.96     |             |        |
| PROTECTION CIRCUIT AND OTHERS      | OVERCURRENT PROTECTION   | Works over 105% of rated current and recovers automatically   |                   |             |        |
|                                    | OVERVOLTAGE PROTECTION[V]  | 5.75 - 7.00   | 15.0 - 18.0       | 30.0 - 37.0 |        |
|                                    | OPERATING INDICATION   | LED (Green)   |                   |             |        |
|                                    | REMOTE ON/OFF  | None  |                   |             |        |
| ISOLATION                          | INPUT-OUTPUT   | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)   |                   |             |        |
|                                    | INPUT-FG   | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)   |                   |             |        |
|                                    | OUTPUT-FG  | AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩmin (At Room Temperature)   |                   |             |        |
| ENVIRONMENT                        | OPERATING TEMP.,HUMID.AND ALTITUDE   | -10 to +71°C (Required Derating), 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 <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 (At only AC input)  | UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN  |                   |             |        |
|                                    | CONDUCTED NOISE  | Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B  |                   |             |        |
|                                    | HARMONIC ATTENUATOR  | Complies with IEC61000-3-2 (Not built-in to active filter *4) *7  |                   |             |        |
| OTHERS                             | CASE SIZE/WEIGHT   | 31 x 78 x 68mm [1.22 x 3.07 x 2.68 inches] (without terminal block) (W x H x D) / 150g max (with cover : 180g 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 dynamic load and input response.  
 \*7 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

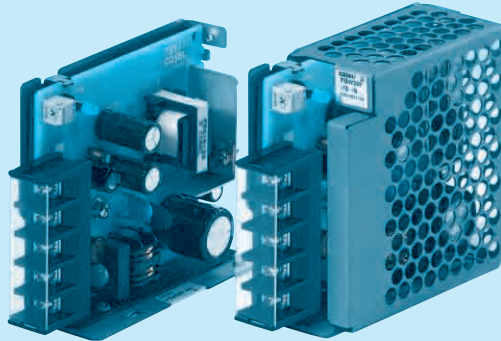
※ External size of option T,J,N,N1 and V is different from standard model and refer to 7 Option of instruction manual for details.



- ※ Tolerance :  $\pm 1$  [ $\pm 0.04$ ]
- ※ Weight : 150g max (with cover : 180g max)
- ※ PCB Material/thickness : CEM3 / 1.6mm [0.06]
- ※ Chassis material : Electric galvanizing steel board
- ※ Dimensions in mm, [ ] = inches
- ※ Mounting torque :  $0.6\text{N} \cdot \text{m}$  (6.3kgf  $\cdot$  cm)max
- ※ Screw tightening torque :  $M3\ 0.8\text{N} \cdot \text{m}$  (8.5kgf  $\cdot$  cm)max
- ※ Please connect safety ground to the unit in 2-M3 holes.

# PBA15F

① PB ② A ③ 15 ④ F ⑤ -□ ⑥ -□



Recommended EMI/EMC Filter  
NAC-06-472



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 \*5
- C :with Coating
- G :Low leakage current
- E :Low leakage current and EMI class A
- T :Vertical terminal block
- J :Connector type
- N :with Cover (UL508 is acquired [5V, 12V, 24V])
- Nt :with DIN rail and Cover
- V :Output voltage setting potentiometer externally

Cover is optional

| MODEL                 | PBA15F-3R3 | PBA15F-5 | PBA15F-9 | PBA15F-12 | PBA15F-15 | PBA15F-24 | PBA15F-48 |
|-----------------------|------------|----------|----------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 9.9        | 15       | 15.3     | 15.6      | 15        | 16.8      | 16.8      |
| DC OUTPUT             | 3.3V 3A    | 5V 3A    | 9V 1.7A  | 12V 1.3A  | 15V 1A    | 24V 0.7A  | 48V 0.35A |

## SPECIFICATIONS

|                                    | MODEL   | PBA15F-3R3   | PBA15F-5                        | PBA15F-9         | PBA15F-12     | PBA15F-15     | PBA15F-24     | PBA15F-48   |        |
|------------------------------------|---|--|---------------------------------|------------------|---------------|---------------|---------------|-------------|--------|
| INPUT                              | VOLTAGE[V]  | AC85 - 264 1 φ or DC110 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *3)       |                                 |                  |               |               |               |             |        |
|                                    | CURRENT[A]  | ACIN 100V  | 0.30typ (Io=100%)               | 0.4typ (Io=100%) |               |               |               |             |        |
|                                    |   | ACIN 200V  | 0.15typ (Io=100%)               | 0.2typ (Io=100%) |               |               |               |             |        |
|                                    | FREQUENCY[Hz]   | 50/60 (47 - 440) or DC   |                                 |                  |               |               |               |             |        |
|                                    | EFFICIENCY[%]   | ACIN 100V  | 68typ                           | 74typ            | 75typ         | 75typ         | 77typ         | 75typ       | 75typ  |
|                                    |   | ACIN 200V  | 68typ                           | 75typ            | 77typ         | 78typ         | 80typ         | 78typ       | 78typ  |
|                                    | INRUSH CURRENT[A]   | ACIN 100V  | 15typ (Io=100%) (At cold start) |                  |               |               |               |             |        |
|                                    | ACIN 200V   | 30typ (Io=100%) (At cold start)  |                                 |                  |               |               |               |             |        |
| LEAKAGE CURRENT[ma]                | 0.15/0.30max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1.DENAN)  |  |                                 |                  |               |               |               |             |        |
| OUTPUT                             | VOLTAGE[V]  | 3.3  | 5                               | 9                | 12            | 15            | 24            | 48          |        |
|                                    | CURRENT[A]  | 3  | 3                               | 1.7              | 1.3           | 1             | 0.7           | 0.35        |        |
|                                    | LINE REGULATION[mV] *6  | 20max  | 20max                           | 36max            | 48max         | 60max         | 96max         | 192max      |        |
|                                    | LOAD REGULATION[mV] *6  | 40max  | 40max                           | 100max           | 100max        | 120max        | 150max        | 240max      |        |
|                                    | RIPPLE[mVp-p]   | 0 to +50°C *1  | 80max                           | 80max            | 120max        | 120max        | 120max        | 120max      | 150max |
|                                    |   | -10 - 0°C *1   | 140max                          | 140max           | 160max        | 160max        | 160max        | 160max      | 200max |
|                                    | RIPPLE NOISE[mVp-p]   | 0 to +50°C *1  | 120max                          | 120max           | 150max        | 150max        | 150max        | 150max      | 250max |
|                                    |   | -10 - 0°C *1   | 160max                          | 160max           | 180max        | 180max        | 180max        | 180max      | 300max |
|                                    | TEMPERATURE REGULATION[mV]  | 0 to +50°C   | 50max                           | 50max            | 90max         | 120max        | 150max        | 240max      | 480max |
|                                    |   | -10 to +50°C   | 60max                           | 60max            | 120max        | 150max        | 180max        | 290max      | 600max |
|                                    | DRIFT[mV] *2  | 20max  | 20max                           | 36max            | 48max         | 60max         | 96max         | 192max      |        |
| 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 - 3.60   | 4.50 - 5.50  | 7.50 - 10.0                     | 10.0 - 13.2      | 13.2 - 18.0   | 19.2 - 27.0   | 39.0 - 53.0   |             |        |
| OUTPUT VOLTAGE SETTING[V]          | 3.30 - 3.40   | 5.00 - 5.15  | 9.00 - 9.36                     | 12.00 - 12.48    | 15.00 - 15.60 | 24.00 - 24.96 | 48.00 - 49.92 |             |        |
| PROTECTION CIRCUIT AND OTHERS      | OVERCURRENT PROTECTION  | Works over 105% of rated current and recovers automatically  |                                 |                  |               |               |               |             |        |
|                                    | OVERVOLTAGE PROTECTION[V]   | 4.00 - 5.25  | 5.75 - 7.00                     | 11.5 - 14.0      | 15.0 - 18.0   | 20.0 - 25.0   | 30.0 - 37.0   | 58.0 - 65.0 |        |
|                                    | OPERATING INDICATION  | LED (Green)  |                                 |                  |               |               |               |             |        |
|                                    | REMOTE ON/OFF   | None   |                                 |                  |               |               |               |             |        |
| ISOLATION                          | INPUT-OUTPUT  | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)                                  |                                 |                  |               |               |               |             |        |
|                                    | INPUT-FG  | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)                                  |                                 |                  |               |               |               |             |        |
|                                    | OUTPUT-FG   | AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩmin (At Room Temperature)                                    |                                 |                  |               |               |               |             |        |
| ENVIRONMENT                        | OPERATING TEMP.,HUMID.AND ALTITUDE  | -10 to +71°C (Required Derating), 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 <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 (At only AC input)   | UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN   |                                 |                  |               |               |               |             |        |
|                                    | CONDUCTED NOISE   | Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B                                       |                                 |                  |               |               |               |             |        |
|                                    | HARMONIC ATTENUATOR   | Complies with IEC61000-3-2 (Not built-in to active filter *4) *7   |                                 |                  |               |               |               |             |        |
| OTHERS                             | CASE SIZE/WEIGHT  | 31 × 78 × 85mm [1.22 × 3.07 × 3.35 inches] (without terminal block) (W×H×D) / 200g max (with cover : 235g 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 dynamic load and input response.  
 \*7 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

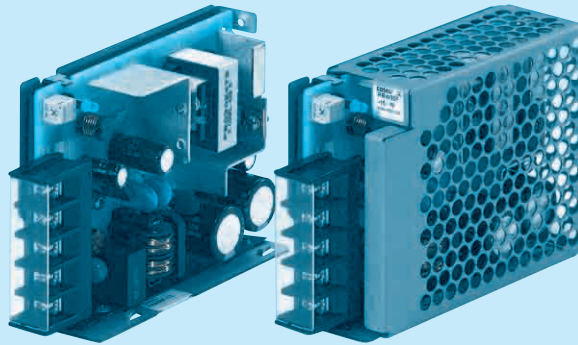
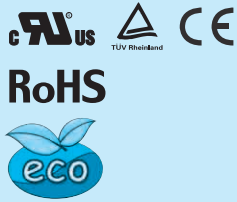
※ External size of option T,J,N,N1 and V is different from standard model and refer to 7 Option of instruction manual for details.



- ※ Tolerance :  $\pm 1$  [ $\pm 0.04$ ]
- ※ Weight : 200g max (with cover : 235g max)
- ※ PCB Material/thickness : CEM3 / 1.6mm [0.06]
- ※ Chassis material : Electric galvanizing steel board
- ※ Dimensions in mm, [ ] = inches
- ※ Mounting torque : 0.6N · m (6.3kgf · cm)max
- ※ Screw tightening torque : M3 0.8N · m (8.5kgf · cm)max
- ※ Please connect safety ground to the unit in 2-M3 holes.

# PBA30F

PB A 30 F - □ - □  
 ① ② ③ ④ ⑤ ⑥



Recommended EMI/EMC Filter  
 NAC-06-472



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 \*5
- C :with Coating
- G :Low leakage current
- E :Low leakage current and EMI class A
- T :Vertical terminal block
- J :Connector type
- N :with Cover (UL508 is acquired [5V, 12V, 24V])
- Nt :with DIN rail and Cover
- V :Output voltage setting potentiometer externally

Cover is optional

| MODEL                 | PBA30F-3R3 | PBA30F-5 | PBA30F-9 | PBA30F-12 | PBA30F-15 | PBA30F-24 | PBA30F-48 |
|-----------------------|------------|----------|----------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 19.8       | 30       | 30.6     | 30        | 30        | 31.2      | 31.2      |
| DC OUTPUT             | 3.3V 6A    | 5V 6A    | 9V 3.4A  | 12V 2.5A  | 15V 2A    | 24V 1.3A  | 48V 0.65A |

## SPECIFICATIONS

|                                    | MODEL   | PBA30F-3R3  | PBA30F-5                        | PBA30F-9          | PBA30F-12     | PBA30F-15     | PBA30F-24     | PBA30F-48   |        |
|------------------------------------|---|---|---------------------------------|-------------------|---------------|---------------|---------------|-------------|--------|
| INPUT                              | VOLTAGE[V]  | AC85 - 264 1 φ or DC110 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *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) or DC  |                                 |                   |               |               |               |             |        |
|                                    | EFFICIENCY[%]   | ACIN 100V   | 68typ                           | 74typ             | 75typ         | 76typ         | 78typ         | 78typ       | 79typ  |
|                                    |   | ACIN 200V   | 69typ                           | 77typ             | 77typ         | 78typ         | 81typ         | 81typ       | 81typ  |
|                                    | INRUSH CURRENT[A]   | ACIN 100V   | 15typ (Io=100%) (At cold start) |                   |               |               |               |             |        |
| ACIN 200V                          |   | 30typ (Io=100%) (At cold start)   |                                 |                   |               |               |               |             |        |
| LEAKAGE CURRENT[ma]                | 0.30/0.65max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1.DENAN)  |   |                                 |                   |               |               |               |             |        |
| OUTPUT                             | VOLTAGE[V]  | 3.3   | 5                               | 9                 | 12            | 15            | 24            | 48          |        |
|                                    | CURRENT[A]  | 6   | 6                               | 3.4               | 2.5           | 2             | 1.3           | 0.65        |        |
|                                    | LINE REGULATION[mV] *6  | 20max   | 20max                           | 36max             | 48max         | 60max         | 96max         | 192max      |        |
|                                    | LOAD REGULATION[mV] *6  | 40max   | 40max                           | 100max            | 100max        | 120max        | 150max        | 240max      |        |
|                                    | RIPPLE[mVp-p]   | 0 to +50°C *1   | 80max                           | 80max             | 120max        | 120max        | 120max        | 120max      | 150max |
|                                    |   | -10 - 0°C *1  | 140max                          | 140max            | 160max        | 160max        | 160max        | 160max      | 200max |
|                                    | RIPPLE NOISE[mVp-p]   | 0 to +50°C *1   | 120max                          | 120max            | 150max        | 150max        | 150max        | 150max      | 250max |
|                                    |   | -10 - 0°C *1  | 160max                          | 160max            | 180max        | 180max        | 180max        | 180max      | 300max |
|                                    | TEMPERATURE REGULATION[mV]  | 0 to +50°C  | 50max                           | 50max             | 90max         | 120max        | 150max        | 240max      | 480max |
|                                    |   | -10 to +50°C  | 60max                           | 60max             | 120max        | 150max        | 180max        | 290max      | 600max |
|                                    | DRIFT[mV] *2  | 20max   | 20max                           | 36max             | 48max         | 60max         | 96max         | 192max      |        |
| 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 - 3.60   | 4.50 - 5.50   | 7.50 - 10.0                     | 10.0 - 13.2       | 13.2 - 18.0   | 19.2 - 27.0   | 39.0 - 53.0   |             |        |
| OUTPUT VOLTAGE SETTING[V]          | 3.30 - 3.40   | 5.00 - 5.15   | 9.00 - 9.36                     | 12.00 - 12.48     | 15.00 - 15.60 | 24.00 - 24.96 | 48.00 - 49.92 |             |        |
| PROTECTION CIRCUIT AND OTHERS      | OVERCURRENT PROTECTION  | Works over 105% of rated current and recovers automatically   |                                 |                   |               |               |               |             |        |
|                                    | OVERVOLTAGE PROTECTION[V]   | 4.00 - 5.25   | 5.75 - 7.00                     | 11.5 - 14.0       | 15.0 - 18.0   | 20.0 - 25.0   | 30.0 - 37.0   | 58.0 - 65.0 |        |
|                                    | OPERATING INDICATION  | LED (Green)   |                                 |                   |               |               |               |             |        |
|                                    | REMOTE ON/OFF   | None  |                                 |                   |               |               |               |             |        |
| ISOLATION                          | INPUT-OUTPUT  | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)                                       |                                 |                   |               |               |               |             |        |
|                                    | INPUT-FG  | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)                                       |                                 |                   |               |               |               |             |        |
|                                    | OUTPUT-FG   | AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩmin (At Room Temperature)   |                                 |                   |               |               |               |             |        |
| ENVIRONMENT                        | OPERATING TEMP.,HUMID.AND ALTITUDE  | -10 to +71°C (Required Derating), 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 <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 (At only AC input)   | UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN  |                                 |                   |               |               |               |             |        |
|                                    | CONDUCTED NOISE   | Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B  |                                 |                   |               |               |               |             |        |
|                                    | HARMONIC ATTENUATOR   | Complies with IEC61000-3-2 (Not built-in to active filter *4) *7  |                                 |                   |               |               |               |             |        |
| OTHERS                             | CASE SIZE/WEIGHT  | 31 x 78 x 103mm [1.22 x 3.07 x 4.06 inches] (without terminal block) (W x H x D) / 270g max (with cover : 310g 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 dynamic load and input response.  
 \*7 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,J,N,N1 and V is different from standard model and refer to 7 Option of instruction manual for details.



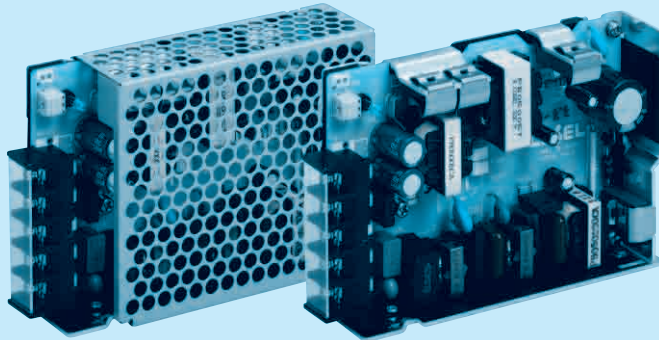
- ※ Tolerance :  $\pm 1 [\pm 0.04]$
- ※ Weight : 270g max (with cover : 310g max)
- ※ PCB Material/thickness : CEM3 / 1.6mm [0.06]
- ※ Chassis material : Electric galvanizing steel board
- ※ Dimensions in mm, [ ] = inches
- ※ Mounting torque :  $0.6N \cdot m (6.3kgf \cdot cm)$  max
- ※ Screw tightening torque :  $M3 0.8N \cdot m (8.5kgf \cdot cm)$  max
- ※ Please connect safety ground to the unit in 2-M3 holes.



# PBA50F

PB A 50 F -5 -□

① ② ③ ④ ⑤ ⑥



Recommended EMI/EMC Filter  
NAC-06-472



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 \*5
- C :with Coating
- G :Low leakage current (0.15mA max / ACIN 240V)
- E :Low leakage current and EMI class A (0.5mA max / ACIN 240V)
- T :Vertical terminal block
- J :Connector type
- R :with Remote ON/OFF
- N :with Cover (Only 24V UL508 is acquired)
- Nt :with DIN rail and Cover
- V :Output voltage setting potentiometer externaly

Cover is optional

| MODEL                 | PBA50F-3R3 | PBA50F-5 | PBA50F-9 | PBA50F-12 | PBA50F-15 | PBA50F-24 | PBA50F-36 | PBA50F-48 |
|-----------------------|------------|----------|----------|-----------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 33         | 50       | 50.4     | 51.6      | 52.5      | 52.8      | 50.4      | 52.8      |
| DC OUTPUT             | 3.3V 10A   | 5V 10A   | 9V 5.6A  | 12V 4.3A  | 15V 3.5A  | 24V 2.2A  | 36V 1.4A  | 48V 1.1A  |

## SPECIFICATIONS

| MODEL                               | PBA50F-3R3  | PBA50F-5  | PBA50F-9    | PBA50F-12     | PBA50F-15     | PBA50F-24     | PBA50F-36     | PBA50F-48     |
|-------------------------------------|---|---|-------------|---------------|---------------|---------------|---------------|---------------|
| VOLTAGE[V]                          | AC85 - 264 1 φ or DC120 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *4)            |   |             |               |               |               |               |               |
| CURRENT[A]                          | ACIN 100V   | 0.5typ  | 0.7typ      |               |               |               |               |               |
|                                     | ACIN 200V   | 0.3typ  | 0.4typ      |               |               |               |               |               |
| FREQUENCY[Hz]                       | 50/60 (47 - 63)   |   |             |               |               |               |               |               |
| EFFICIENCY[%]                       | ACIN 100V   | 75typ   | 80typ       | 79typ         | 80typ         | 81typ         | 82typ         | 83typ         |
|                                     | ACIN 200V   | 76typ   | 82typ       | 81typ         | 82typ         | 83typ         | 84typ         | 85typ         |
| POWER FACTOR(lo=100%)               | ACIN 100V   | 0.98typ   | 0.99typ     |               |               |               |               |               |
|                                     | ACIN 200V   | 0.87typ   | 0.93typ     |               |               |               |               |               |
| INRUSH CURRENT[A]                   | ACIN 100V   | 15typ (lo=100%) (At cold start)   |             |               |               |               |               |               |
|                                     | ACIN 200V   | 30typ (lo=100%) (At cold start)   |             |               |               |               |               |               |
| LEAKAGE CURRENT[mA]                 | 0.4/0.75max (ACIN 100V/240V 60Hz, lo=100%, According to IEC60950-1,DENAN)   |   |             |               |               |               |               |               |
| VOLTAGE[V]                          | 3.3   | 5   | 9           | 12            | 15            | 24            | 36            | 48            |
| CURRENT[A]                          | 10  | 10  | 5.6         | 4.3           | 3.5           | 2.2           | 1.4           | 1.1           |
| LINE REGULATION[mV]                 | 20max   | 20max   | 36max       | 48max         | 60max         | 96max         | 144max        | 192max        |
| LOAD REGULATION[mV]                 | 40max   | 40max   | 100max      | 100max        | 120max        | 150max        | 240max        | 240max        |
| RIPPLE[mVp-p]                       | 0 to +50°C *1   | 80max   | 80max       | 120max        | 120max        | 120max        | 120max        | 150max        |
|                                     | -10 - 0°C *1  | 140max  | 140max      | 160max        | 160max        | 160max        | 160max        | 200max        |
| RIPPLE NOISE[mVp-p]                 | 0 to +50°C *1   | 120max  | 120max      | 150max        | 150max        | 150max        | 150max        | 250max        |
|                                     | -10 - 0°C *1  | 160max  | 160max      | 180max        | 180max        | 180max        | 180max        | 300max        |
| TEMPERATURE REGULATION[mV]          | 0 to +50°C  | 50max   | 50max       | 90max         | 120max        | 150max        | 240max        | 360max        |
|                                     | -10 to +50°C  | 60max   | 60max       | 120max        | 150max        | 180max        | 290max        | 450max        |
| DRIFT[mV]                           | *2  | 20max   | 20max       | 36max         | 48max         | 60max         | 96max         | 144max        |
| START-UP TIME[ms]                   | 350typ (ACIN 100V, lo=100%)   |   |             |               |               |               |               |               |
| HOLD-UP TIME[ms]                    | 20typ (ACIN 100V, lo=100%)  |   |             |               |               |               |               |               |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V]  | 2.85 - 3.63   | 4.00 - 5.50   | 7.50 - 10.0 | 10.0 - 13.2   | 13.2 - 18.0   | 19.2 - 27.0   | 28.8 - 39.6   | 39.0 - 53.0   |
| OUTPUT VOLTAGE SETTING[V]           | 3.30 - 3.40   | 5.00 - 5.15   | 9.00 - 9.36 | 12.00 - 12.48 | 15.00 - 15.60 | 24.00 - 24.96 | 35.00 - 37.44 | 48.00 - 49.92 |
| OVERCURRENT PROTECTION              | Works over 105% of rated current and recovers automatically   |   |             |               |               |               |               |               |
| OVERVOLTAGE PROTECTION[V]           | 4.00 - 5.25   | 5.75 - 7.00   | 11.5 - 14.0 | 15.0 - 18.0   | 20.0 - 25.0   | 30.0 - 37.0   | 43.0 - 50.0   | 58.0 - 65.0   |
| OPERATING INDICATION                | LED (Green)   |   |             |               |               |               |               |               |
| REMOTE ON/OFF                       | Optional (Required external power source)   |   |             |               |               |               |               |               |
| INPUT-OUTPUT · RC                   | *3  | AC3.000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature) |             |               |               |               |               |               |
| INPUT-FG                            |   | AC2.000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature) |             |               |               |               |               |               |
| OUTPUT · RC-FG                      | *3  | AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩmin (At Room Temperature)  |             |               |               |               |               |               |
| OPERATING TEMP.,HUMID.AND ALTITUDE  | -10 to +71°C (Required Derating), 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 <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  |   |             |               |               |               |               |               |
| AGENCY APPROVALS (At only AC input) | UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN  |   |             |               |               |               |               |               |
| CONDUCTED NOISE                     | Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B  |   |             |               |               |               |               |               |
| HARMONIC ATTENUATOR                 | Complies with IEC61000-3-2 *6   |   |             |               |               |               |               |               |
| CASE SIZE/WEIGHT                    | 31 x 82 x 120mm [1.22 x 3.23 x 4.72 inches] (without terminal block) (W x H x D) / 280g max (with cover : 325g 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,J,R,N,N1 and V is different from standard model and refer to 7 Option of instruction manual for details.





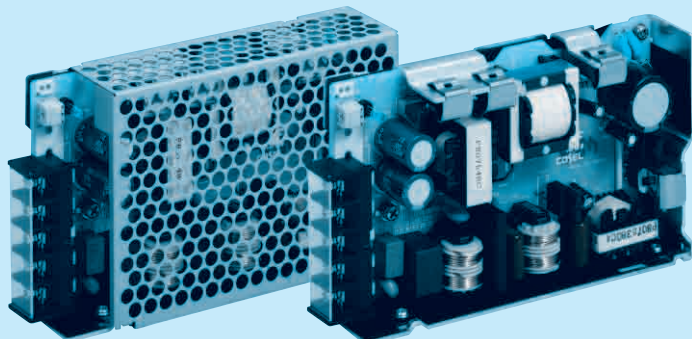
# PBA75F

PB A 75 F -5 -□

① ② ③ ④ ⑤ ⑥



RoHS



Recommended EMI/EMC Filter  
NAC-06-472



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 \*5
- C :with Coating  
G :Low leakage current (0.15mA max / ACIN 240V)  
E :Low leakage current and EMI class A (0.5mA max / ACIN 240V)  
T :Vertical terminal block  
J :Connector type  
R :with Remote ON/OFF  
N :with Cover (Only 24V UL508 is acquired)  
Nt :with DIN rail and Cover  
V :Output voltage setting potentiometer externaly

Cover is optional

| MODEL                 | PBA75F-3R3 | PBA75F-5 | PBA75F-9 | PBA75F-12 | PBA75F-15 | PBA75F-24 | PBA75F-36 | PBA75F-48 |
|-----------------------|------------|----------|----------|-----------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 49.5       | 75       | 75.6     | 75.6      | 75        | 76.8      | 75.6      | 76.8      |
| DC OUTPUT             | 3.3V 15A   | 5V 15A   | 9V 8.4A  | 12V 6.3A  | 15V 5A    | 24V 3.2A  | 36V 2.1A  | 48V 1.6A  |

## SPECIFICATIONS

| MODEL                               | PBA75F-3R3   | PBA75F-5  | PBA75F-9    | PBA75F-12     | PBA75F-15     | PBA75F-24     | PBA75F-36     | PBA75F-48     |
|-------------------------------------|--|---|-------------|---------------|---------------|---------------|---------------|---------------|
| VOLTAGE[V]                          | AC85 - 264 1 φ or DC120 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *4) |   |             |               |               |               |               |               |
| CURRENT[A]                          | ACIN 100V  | 0.7typ  | 1.0typ      |               |               |               |               |               |
|                                     | ACIN 200V  | 0.4typ  | 0.5typ      |               |               |               |               |               |
| FREQUENCY[Hz]                       | 50/60 (47 - 63)  |   |             |               |               |               |               |               |
| EFFICIENCY[%]                       | ACIN 100V  | 77typ   | 81typ       | 80typ         | 81typ         | 82typ         | 83typ         | 84typ         |
|                                     | ACIN 200V  | 78typ   | 83typ       | 82typ         | 83typ         | 84typ         | 85typ         | 86typ         |
| POWER FACTOR(lo=100%)               | ACIN 100V  | 0.98typ   | 0.99typ     |               |               |               |               |               |
|                                     | ACIN 200V  | 0.87typ   | 0.93typ     |               |               |               |               |               |
| INRUSH CURRENT[A]                   | ACIN 100V  | 15typ (lo=100%) (At cold start)   |             |               |               |               |               |               |
|                                     | ACIN 200V  | 30typ (lo=100%) (At cold start)   |             |               |               |               |               |               |
| LEAKAGE CURRENT[mA]                 | 0.4/0.75max (ACIN 100V/240V 60Hz, lo=100%, According to IEC60950-1,DENAN)                                |   |             |               |               |               |               |               |
| VOLTAGE[V]                          | 3.3  | 5   | 9           | 12            | 15            | 24            | 36            | 48            |
| CURRENT[A]                          | 15   | 15  | 8.4         | 6.3           | 5             | 3.2           | 2.1           | 1.6           |
| LINE REGULATION[mV]                 | 20max  | 20max   | 36max       | 48max         | 60max         | 96max         | 144max        | 192max        |
| LOAD REGULATION[mV]                 | 40max  | 40max   | 100max      | 100max        | 120max        | 150max        | 240max        | 240max        |
| RIPPLE[mVp-p]                       | 0 to +50°C *1  | 80max   | 80max       | 120max        | 120max        | 120max        | 120max        | 150max        |
|                                     | -10 - 0°C *1   | 140max  | 140max      | 160max        | 160max        | 160max        | 160max        | 200max        |
| RIPPLE NOISE[mVp-p]                 | 0 to +50°C *1  | 120max  | 120max      | 150max        | 150max        | 150max        | 150max        | 250max        |
|                                     | -10 - 0°C *1   | 160max  | 160max      | 180max        | 180max        | 180max        | 180max        | 300max        |
| TEMPERATURE REGULATION[mV]          | 0 to +50°C   | 50max   | 50max       | 90max         | 120max        | 150max        | 240max        | 360max        |
|                                     | -10 to +50°C   | 60max   | 60max       | 120max        | 150max        | 180max        | 290max        | 450max        |
| DRIFT[mV]                           | *2   | 20max   | 20max       | 36max         | 48max         | 60max         | 96max         | 144max        |
| START-UP TIME[ms]                   | 350typ (ACIN 100V, lo=100%)  |   |             |               |               |               |               |               |
| HOLD-UP TIME[ms]                    | 20typ (ACIN 100V, lo=100%)   |   |             |               |               |               |               |               |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V]  | 2.85 - 3.63  | 4.00 - 5.50   | 7.50 - 10.0 | 10.0 - 13.2   | 13.2 - 18.0   | 19.2 - 27.0   | 28.8 - 39.6   | 39.0 - 53.0   |
| OUTPUT VOLTAGE SETTING[V]           | 3.30 - 3.40  | 5.00 - 5.15   | 9.00 - 9.36 | 12.00 - 12.48 | 15.00 - 15.60 | 24.00 - 24.96 | 36.00 - 37.44 | 48.00 - 49.92 |
| OVERCURRENT PROTECTION              | Works over 105% of rated current and recovers automatically  |   |             |               |               |               |               |               |
| OVERVOLTAGE PROTECTION[V]           | 4.00 - 5.25  | 5.75 - 7.00   | 11.5 - 14.0 | 15.0 - 18.0   | 20.0 - 25.0   | 30.0 - 37.0   | 43.0 - 50.0   | 58.0 - 65.0   |
| OPERATING INDICATION                | LED (Green)  |   |             |               |               |               |               |               |
| REMOTE ON/OFF                       | Optional (Required external power source)  |   |             |               |               |               |               |               |
| INPUT-OUTPUT · RC                   | *3   | AC3.000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature) |             |               |               |               |               |               |
| INPUT-FG                            | AC2.000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)                            |   |             |               |               |               |               |               |
| OUTPUT · RC-FG                      | *3   | AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩmin (At Room Temperature)  |             |               |               |               |               |               |
| OPERATING TEMP.,HUMID.AND ALTITUDE  | -10 to +71°C (Required Derating), 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 <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   |   |             |               |               |               |               |               |
| AGENCY APPROVALS (At only AC input) | UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN                                     |   |             |               |               |               |               |               |
| CONDUCTED NOISE                     | Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B                                 |   |             |               |               |               |               |               |
| HARMONIC ATTENUATOR                 | Complies with IEC61000-3-2 *6  |   |             |               |               |               |               |               |
| CASE SIZE/WEIGHT                    | 32×82×135mm [1.26×3.23×5.31 inches] (without terminal block) (W×H×D) / 350g max (with cover : 400g 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,J,R,N,N1 and V is different from standard model and refer to 7 Option of instruction manual for details.

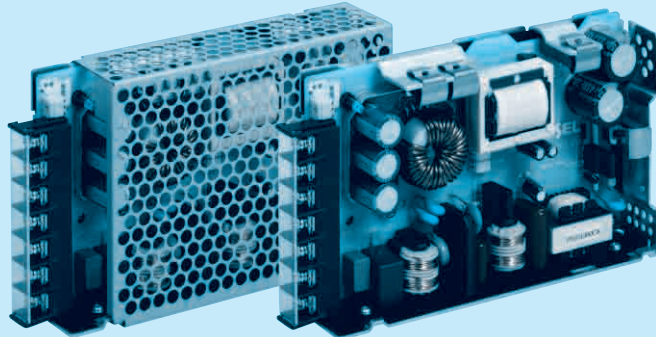


- ※ Tolerance : ±1 [±0.04]
- ※ Weight : 350g max (with cover : 400g max)
- ※ PCB Material/thickness : CEM3 / 1.6mm [0.06]
- ※ Chassis material : Aluminum
- ※ Dimensions in mm, [ ] = inches
- ※ Mounting torque : 0.49N • m(5kgf • cm)max
- ※ Screw tightening torque : M3 0.8N • m(8.5kgf • cm)max
- ※ Please connect safety ground to the unit in 2-M3 holes.

# PBA100F

PB A 100 F -5 -□

① ② ③ ④ ⑤ ⑥



Recommended EMI/EMC Filter  
NAC-06-472



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 \*5
- C :with Coating
- G :Low leakage current (0.15mA max / ACIN 240V)
- E :Low leakage current and EMI class A (0.5mA max / ACIN 240V)
- T :Vertical terminal block
- J :Connector type (Only -12,-15,-24,-36,-48)
- R :with Remote ON/OFF
- N :with Cover (Only 24V UL508 is acquired)
- N1 :with DIN rail and Cover
- V :Output voltage setting potentiometer externaly

Cover is optional

| MODEL                 | PBA100F-3R3 | PBA100F-5 | PBA100F-9 | PBA100F-12 | PBA100F-15 | PBA100F-24 | PBA100F-36 | PBA100F-48 |
|-----------------------|-------------|-----------|-----------|------------|------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 66          | 100       | 94.5      | 102        | 105        | 108        | 100.8      | 100.8      |
| DC OUTPUT             | 3.3V 20A    | 5V 20A    | 9V 10.5A  | 12V 8.5A   | 15V 7A     | 24V 4.5A   | 36V 2.8A   | 48V 2.1A   |

## SPECIFICATIONS

|                                    | MODEL   | PBA100F-3R3  | PBA100F-5   | PBA100F-9     | PBA100F-12    | PBA100F-15    | PBA100F-24    | PBA100F-36    | PBA100F-48  |        |
|------------------------------------|---|--|---|---------------|---------------|---------------|---------------|---------------|-------------|--------|
| INPUT                              | VOLTAGE[V]  | AC85 - 264 1 φ or DC120 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *4) |   |               |               |               |               |               |             |        |
|                                    | CURRENT[A]  | ACIN 100V  | 0.9typ  | 1.3typ        |               |               |               |               |             |        |
|                                    |   | ACIN 200V  | 0.5typ  | 0.7typ        |               |               |               |               |             |        |
|                                    | FREQUENCY[Hz]   | 50/60 (47 - 63)  |   |               |               |               |               |               |             |        |
|                                    | EFFICIENCY[%]   | ACIN 100V  | 77typ   | 82typ         | 80typ         | 81typ         | 83typ         | 84typ         | 84typ       | 84typ  |
|                                    |   | ACIN 200V  | 79typ   | 84typ         | 82typ         | 83typ         | 86typ         | 86typ         | 86typ       | 86typ  |
|                                    | POWER FACTOR(lo=100%)   | ACIN 100V  | 0.98typ   | 0.99typ       |               |               |               |               |             |        |
|                                    |   | ACIN 200V  | 0.87typ   | 0.93typ       |               |               |               |               |             |        |
|                                    | INRUSH CURRENT[A]   | ACIN 100V  | 20typ (lo=100%) (At cold start)   |               |               |               |               |               |             |        |
|                                    |   | ACIN 200V  | 40typ (lo=100%) (At cold start)   |               |               |               |               |               |             |        |
| LEAKAGE CURRENT[mA]                | 0.4/0.75max (ACIN 100V/240V 60Hz, lo=100%, According to IEC60950-1.DENAN) |  |   |               |               |               |               |               |             |        |
| OUTPUT                             | VOLTAGE[V]  | 3.3  | 5   | 9             | 12            | 15            | 24            | 36            | 48          |        |
|                                    | CURRENT[A]  | 20   | 20  | 10.5          | 8.5           | 7             | 4.5           | 2.8           | 2.1         |        |
|                                    | LINE REGULATION[mV]   | 20max  | 20max   | 36max         | 48max         | 60max         | 96max         | 144max        | 192max      |        |
|                                    | LOAD REGULATION[mV]   | 40max  | 40max   | 100max        | 100max        | 120max        | 150max        | 240max        | 240max      |        |
|                                    | RIPPLE[mVp-p]   | 0 to +50°C *1  | 80max   | 80max         | 120max        | 120max        | 120max        | 120max        | 150max      | 150max |
|                                    |   | -10 - 0°C *1   | 140max  | 140max        | 160max        | 160max        | 160max        | 160max        | 200max      | 200max |
|                                    | RIPPLE NOISE[mVp-p]   | 0 to +50°C *1  | 120max  | 120max        | 150max        | 150max        | 150max        | 150max        | 250max      | 250max |
|                                    |   | -10 - 0°C *1   | 160max  | 160max        | 180max        | 180max        | 180max        | 180max        | 300max      | 300max |
|                                    | TEMPERATURE REGULATION[mV]  | 0 to +50°C   | 50max   | 50max         | 90max         | 120max        | 150max        | 240max        | 360max      | 480max |
|                                    |   | -10 to +50°C   | 60max   | 60max         | 120max        | 150max        | 180max        | 290max        | 450max      | 600max |
|                                    | DRIFT[mV]   | *2   | 20max   | 20max         | 36max         | 48max         | 60max         | 96max         | 144max      | 192max |
|                                    | START-UP TIME[ms]   | 350typ(ACIN 100V, lo=100%)   |   |               |               |               |               |               |             |        |
|                                    | HOLD-UP TIME[ms]  | 20typ (ACIN 100V, lo=100%)   |   |               |               |               |               |               |             |        |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | 2.85 - 3.63   | 4.00 - 5.50  | 7.50 - 10.0   | 10.0 - 13.2   | 13.2 - 18.0   | 19.2 - 27.0   | 28.8 - 39.6   | 39.0 - 53.0   |             |        |
| OUTPUT VOLTAGE SETTING[V]          | 3.20 - 3.40   | 5.00 - 5.15  | 9.00 - 9.36   | 12.00 - 12.48 | 15.00 - 15.60 | 24.00 - 24.96 | 36.00 - 37.44 | 48.00 - 49.92 |             |        |
| PROTECTION CIRCUIT AND OTHERS      | OVERCURRENT PROTECTION  | Works over 105% of rated current and recovers automatically  |   |               |               |               |               |               |             |        |
|                                    | OVERVOLTAGE PROTECTION[V]   | 4.00 - 5.25  | 5.75 - 7.00   | 11.5 - 14.0   | 15.0 - 18.0   | 20.0 - 25.0   | 30.0 - 37.0   | 43.0 - 50.0   | 58.0 - 65.0 |        |
|                                    | OPERATING INDICATION  | LED (Green)  |   |               |               |               |               |               |             |        |
|                                    | REMOTE SENSING  | Optional (Only -3R3, -5 Option -K)   |   |               |               |               |               |               |             |        |
| ISOLATION                          | REMOTE ON/OFF   | Optional (Required external power source)  |   |               |               |               |               |               |             |        |
|                                    | INPUT-OUTPUT · RC   | *3   | AC3.000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature) |               |               |               |               |               |             |        |
|                                    | INPUT-FG  | AC2.000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)                            |   |               |               |               |               |               |             |        |
| ENVIRONMENT                        | OUTPUT · RC-FG  | *3   | AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩmin (At Room Temperature)  |               |               |               |               |               |             |        |
|                                    | OPERATING TEMP.,HUMID.AND ALTITUDE  | -10 to +71°C (Required Derating), 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  |   |               |               |               |               |               |             |        |
| SAFETY AND NOISE REGULATIONS       | 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   |   |               |               |               |               |               |             |        |
|                                    | AGENCY APPROVALS (At only AC input)                                       | UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN                                     |   |               |               |               |               |               |             |        |
| OTHERS                             | CONDUCTED NOISE   | Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B                                 |   |               |               |               |               |               |             |        |
|                                    | HARMONIC ATTENUATOR   | Complies with IEC61000-3-2 *6  |   |               |               |               |               |               |             |        |
| OTHERS                             | CASE SIZE/WEIGHT  | 32×93×147mm [1.26×3.66×5.79 inches] (without terminal block) (W×H×D) / 440g max (with cover : 500g 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,J,R,N,N1,V and K is different from standard model and refer to 7 Option of instruction manual for details.



| Connector type            |          |
|---------------------------|----------|
| CN3 Option (Mfr : J.S.T.) |          |
| Pin No.                   | Contents |
| 1                         | RC(+)    |
| 2                         | RC(-)    |

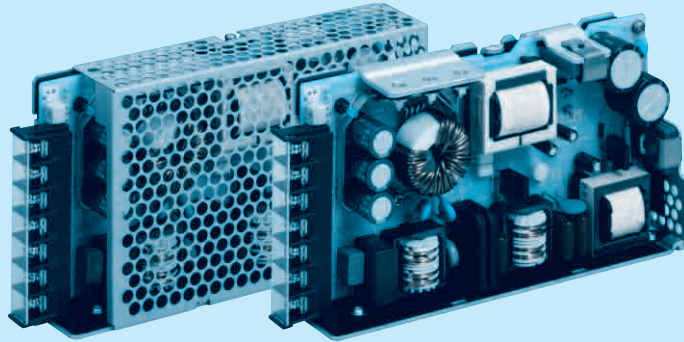
| Barrier strip type          |  |
|-----------------------------|--|
| Model B2B-XH-A              |  |
| Mating Connector (Terminal) |  |
| XHP-2                       |  |
| (BXH-001T-P0.6              |  |
| or SXH-001T-P0.6)           |  |

- ※ Tolerance :  $\pm 1$  [ $\pm 0.04$ ]
- ※ Weight : 440g max (with cover : 500g max)
- ※ PCB Material/thickness : CEM3 / 1.6mm [0.06]
- ※ Chassis material : Aluminum
- ※ Dimensions in mm, [ ] = inches
- ※ Mounting torque : 0.49N • m (5kgf • cm) max
- ※ Mounting torque : M4:1.6N • m (16.9kgf • cm) max
- ※ Please connect safety ground to FG terminal on the unit.

# PBA150F

PB A 150 F -5 -□

① ② ③ ④ ⑤ ⑥



Recommended EMI/EMC Filter  
NAC-06-472



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 \*5
- C :with Coating
- G :Low leakage current (0.15mA max / ACIN 240V)
- E :Low leakage current and EMI class A (0.5mA max / ACIN 240V)
- T :Vertical terminal block
- J :Connector type (Only -12,-15,-24,-36,-48)
- R :with Remote ON/OFF
- N :with Cover (Only 24V UL508 is acquired)
- N1 :with DIN rail and Cover
- V :Output voltage setting potentiometer externaly

Cover is optional

| MODEL                 | PBA150F-3R3 | PBA150F-5 | PBA150F-9 | PBA150F-12 | PBA150F-15 | PBA150F-24 | PBA150F-36 | PBA150F-48 |
|-----------------------|-------------|-----------|-----------|------------|------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 99          | 150       | 150.3     | 156        | 150        | 156        | 154.8      | 158.4      |
| DC OUTPUT             | 3.3V 30A    | 5V 30A    | 9V 16.7A  | 12V 13A    | 15V 10A    | 24V 6.5A   | 36V 4.3A   | 48V 3.3A   |

## SPECIFICATIONS

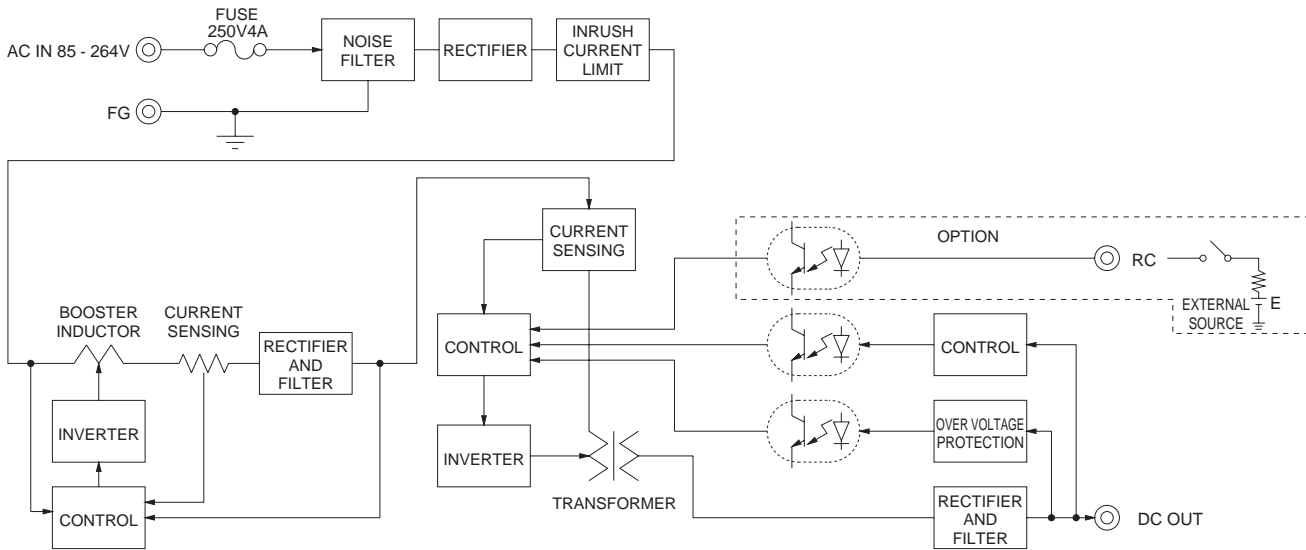
|                                    | MODEL   | PBA150F-3R3  | PBA150F-5   | PBA150F-9     | PBA150F-12    | PBA150F-15    | PBA150F-24    | PBA150F-36    | PBA150F-48  |        |
|------------------------------------|---|--|---|---------------|---------------|---------------|---------------|---------------|-------------|--------|
| INPUT                              | VOLTAGE[V]  | AC85 - 264 1 φ or DC120 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *4) |   |               |               |               |               |               |             |        |
|                                    | CURRENT[A]  | ACIN 100V  | 1.3typ  | 2.0typ        |               |               |               |               |             |        |
|                                    |   | ACIN 200V  | 0.7typ  | 1.0typ        |               |               |               |               |             |        |
|                                    | FREQUENCY[Hz]   | 50/60 (47 - 63)  |   |               |               |               |               |               |             |        |
|                                    | EFFICIENCY[%]   | ACIN 100V  | 80typ   | 83typ         | 82typ         | 83typ         | 84typ         | 85typ         | 85typ       | 85typ  |
|                                    |   | ACIN 200V  | 82typ   | 86typ         | 85typ         | 86typ         | 87typ         | 88typ         | 88typ       | 88typ  |
|                                    | POWER FACTOR(lo=100%)   | ACIN 100V  | 0.98typ   | 0.99typ       |               |               |               |               |             |        |
|                                    |   | ACIN 200V  | 0.87typ   | 0.93typ       |               |               |               |               |             |        |
|                                    | INRUSH CURRENT[A]   | ACIN 100V  | 20typ (lo=100%) (At cold start)   |               |               |               |               |               |             |        |
|                                    |   | ACIN 200V  | 40typ (lo=100%) (At cold start)   |               |               |               |               |               |             |        |
| LEAKAGE CURRENT[mA]                | 0.4/0.75max (ACIN 100V/240V 60Hz, lo=100%, According to IEC60950-1.DENAN) |  |   |               |               |               |               |               |             |        |
| OUTPUT                             | VOLTAGE[V]  | 3.3  | 5   | 9             | 12            | 15            | 24            | 36            | 48          |        |
|                                    | CURRENT[A]  | 30   | 30  | 16.7          | 13            | 10            | 6.5           | 4.3           | 3.3         |        |
|                                    | LINE REGULATION[mV]   | 20max  | 20max   | 36max         | 48max         | 60max         | 96max         | 144max        | 192max      |        |
|                                    | LOAD REGULATION[mV]   | 40max  | 40max   | 100max        | 100max        | 120max        | 150max        | 240max        | 240max      |        |
|                                    | RIPPLE[mVp-p]   | 0 to +50°C *1  | 80max   | 80max         | 120max        | 120max        | 120max        | 120max        | 150max      | 150max |
|                                    |   | -10 - 0°C *1   | 140max  | 140max        | 160max        | 160max        | 160max        | 160max        | 200max      | 200max |
|                                    | RIPPLE NOISE[mVp-p]   | 0 to +50°C *1  | 120max  | 120max        | 150max        | 150max        | 150max        | 150max        | 250max      | 250max |
|                                    |   | -10 - 0°C *1   | 160max  | 160max        | 180max        | 180max        | 180max        | 180max        | 300max      | 300max |
|                                    | TEMPERATURE REGULATION[mV]  | 0 to +50°C   | 50max   | 50max         | 90max         | 120max        | 150max        | 240max        | 360max      | 480max |
|                                    |   | -10 to +50°C   | 60max   | 60max         | 120max        | 150max        | 180max        | 290max        | 450max      | 600max |
|                                    | DRIFT[mV]   | *2   | 20max   | 20max         | 36max         | 48max         | 60max         | 96max         | 144max      | 192max |
|                                    | START-UP TIME[ms]   | 350typ(ACIN 100V, lo=100%)   |   |               |               |               |               |               |             |        |
|                                    | HOLD-UP TIME[ms]  | 20typ (ACIN 100V, lo=100%)   |   |               |               |               |               |               |             |        |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | 2.85 - 3.63   | 4.00 - 5.50  | 7.50 - 10.0   | 10.0 - 13.2   | 13.2 - 18.0   | 19.2 - 27.0   | 28.8 - 39.6   | 39.0 - 53.0   |             |        |
| OUTPUT VOLTAGE SETTING[V]          | 3.30 - 3.40   | 5.00 - 5.15  | 9.00 - 9.36   | 12.00 - 12.48 | 15.00 - 15.60 | 24.00 - 24.96 | 36.00 - 37.44 | 48.00 - 49.92 |             |        |
| PROTECTION CIRCUIT AND OTHERS      | OVERCURRENT PROTECTION  | Works over 105% of rated current and recovers automatically  |   |               |               |               |               |               |             |        |
|                                    | OVERVOLTAGE PROTECTION[V]   | 4.00 - 5.25  | 5.75 - 7.00   | 11.5 - 14.0   | 15.0 - 18.0   | 20.0 - 25.0   | 30.0 - 37.0   | 43.0 - 50.0   | 58.0 - 65.0 |        |
|                                    | OPERATING INDICATION  | LED (Green)  |   |               |               |               |               |               |             |        |
|                                    | REMOTE SENSING  | Optional (Only -3R3, -5 Option -K)   |   |               |               |               |               |               |             |        |
| ISOLATION                          | REMOTE ON/OFF   | Optional (Required external power source)  |   |               |               |               |               |               |             |        |
|                                    | INPUT-OUTPUT · RC   | *3   | AC3.000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature) |               |               |               |               |               |             |        |
|                                    | INPUT-FG  | *3   | AC2.000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature) |               |               |               |               |               |             |        |
| ENVIRONMENT                        | OUTPUT · RC-FG  | *3   | AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩmin (At Room Temperature)  |               |               |               |               |               |             |        |
|                                    | OPERATING TEMP.,HUMID.AND ALTITUDE  | -10 to +71°C (Required Derating), 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  |   |               |               |               |               |               |             |        |
| SAFETY AND NOISE REGULATIONS       | 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   |   |               |               |               |               |               |             |        |
|                                    | AGENCY APPROVALS (At only AC input)                                       | UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN                                     |   |               |               |               |               |               |             |        |
| OTHERS                             | CONDUCTED NOISE   | Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B                                 |   |               |               |               |               |               |             |        |
|                                    | HARMONIC ATTENUATOR   | Complies with IEC61000-3-2 *6  |   |               |               |               |               |               |             |        |
| OTHERS                             | CASE SIZE/WEIGHT  | 34×93×168mm [1.34×3.66×6.61 inches] (without terminal block) (W×H×D) / 560g max (with cover : 630g 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.

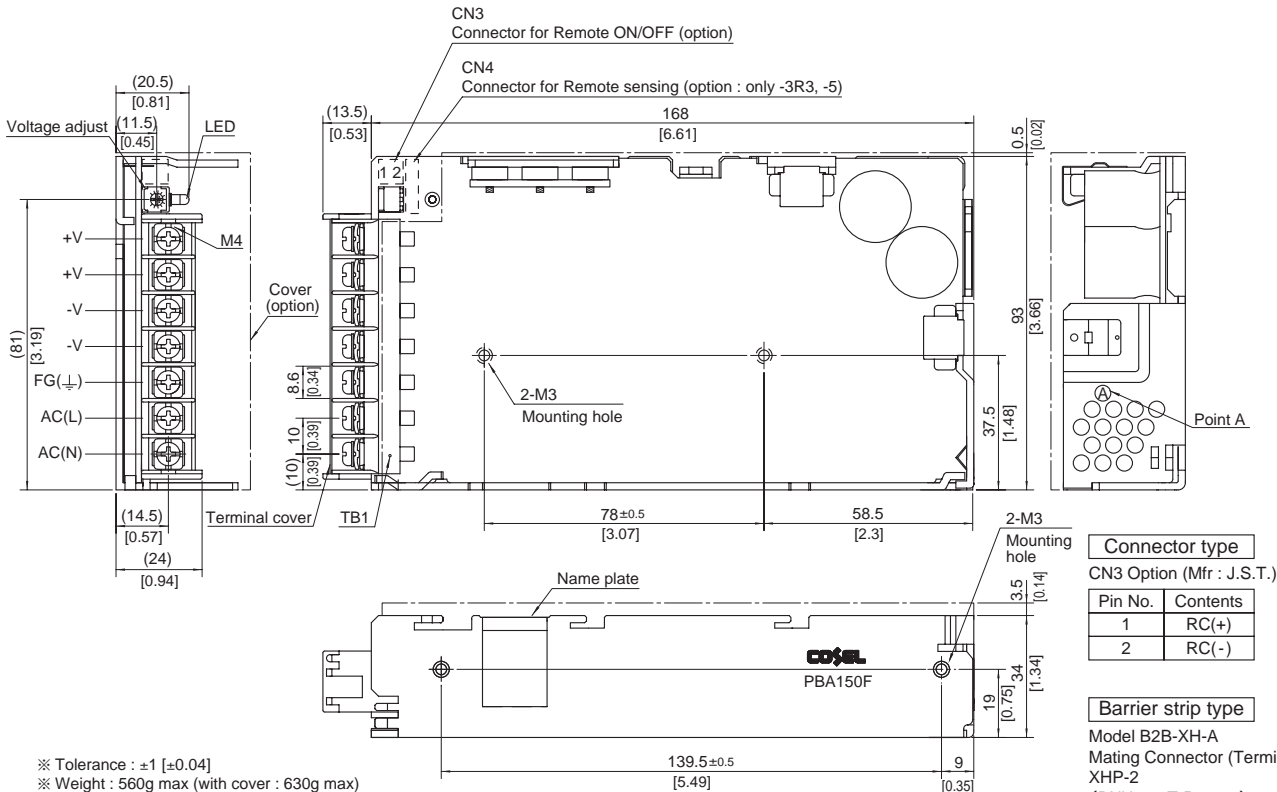


## Block diagram



## External view

※ External size of option T,J,R,N,N1,V and K is different from standard model and refer to 7 Option of instruction manual for details.



- ※ Tolerance : ±1 [±0.04]
- ※ Weight : 560g max (with cover : 630g max)
- ※ PCB Material/thickness : CEM3 / 1.6mm [0.06]
- ※ Chassis material : Aluminum
- ※ Dimensions in mm, [ ] = inches
- ※ Mounting torque : 0.49N • m (5kgf • cm)max
- ※ Mounting torque : M4:1.6N • m (16.9kgf • cm)max
- ※ Keep drawing current per pin below 20A for TB1.