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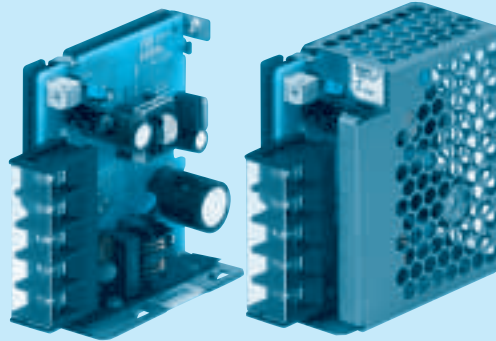
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Recommended EMI/EMC Filter
NAC-06-472

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
V : Output voltage setting
potentiometer external-
ly

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	77typ
		ACIN 200V	74typ	77typ
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%)	
OUTPUT		ACIN 200V	30typ (Io=100%)	
	LEAKAGE CURRENT[ma]	0.15/0.30max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1.DENAN)		
	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
		-10 - 0°C *1	140max	160max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1	120max	150max
		-10 - 0°C *1	160max	180max
	TEMPERATURE REGULATION[mV]	0 to +50°C	50max	120max
		-10 to +50°C	60max	150max
	DRIFT[mV] *2	20max	48max	96max
	START-UP TIME[ms]	20typ (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 50M Ω min (At Room Temperature)		
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)		
	OUTPUT-FG	AC500V 1minute, Cutoff current = 25mA, DC500V 50M Ω min (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 ² (2G), 3minutes period, 60minutes each along X, Y and Z axis		
	IMPACT	196.1m/s ² (20G), 11ms, once each X, Y and Z axis		
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)	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 (without cover)		
	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.

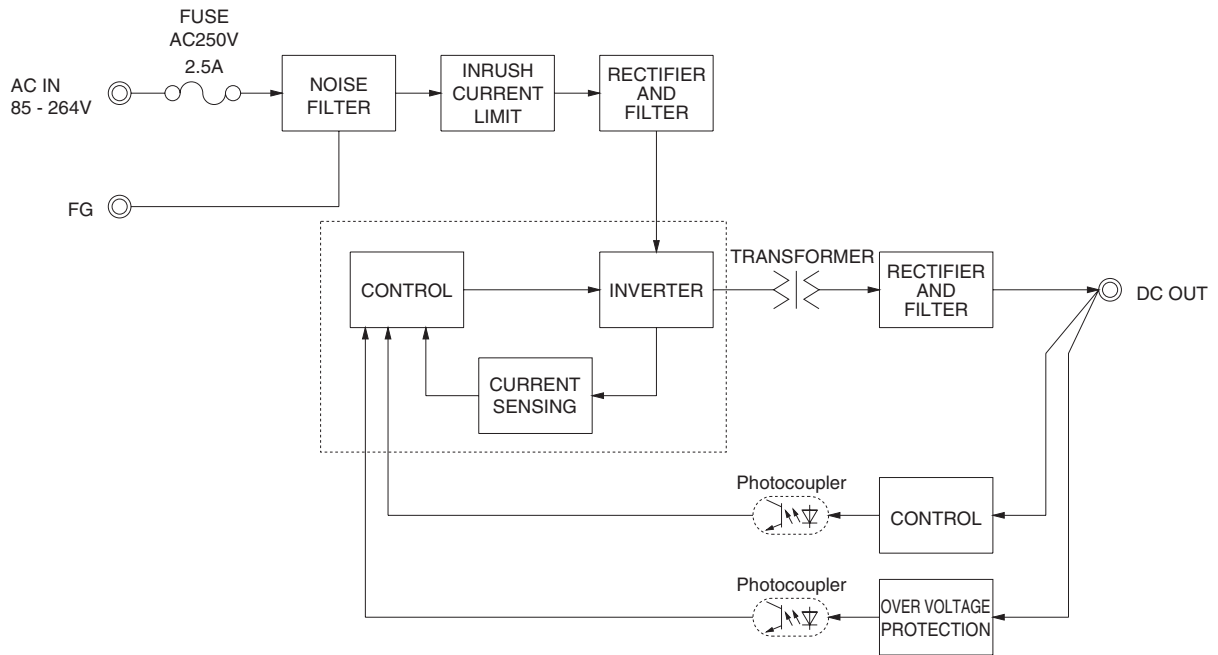
* Parallel operation with other model is not possible.

* Derating is required when operated with cover.

* A sound may occur from power supply at peak loading.

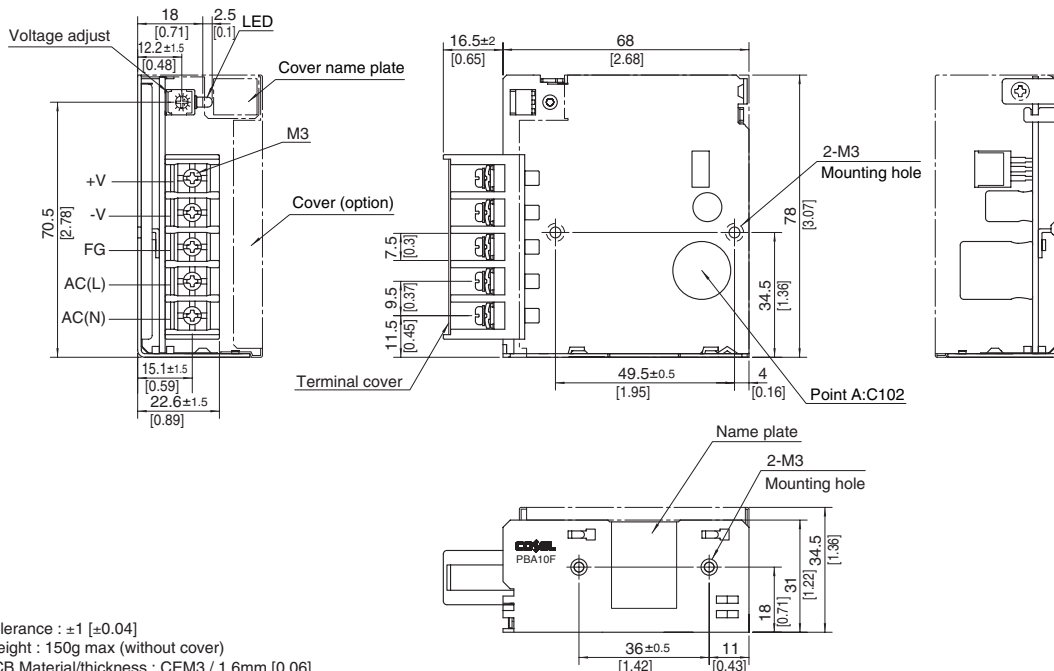
Block diagram

PBA/PBW



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 : ± 1 [± 0.04]
- ※ Weight : 150g max (without cover)
- ※ 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.

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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])
NI : with DIN rail
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	77typ	75typ	75typ
		ACIN 200V	68typ	75typ	77typ	80typ	78typ	78typ
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%) (At cold start)					
OUTPUT		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)						
	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	150max
		-10 - 0°C *1	140max	140max	160max	160max	160max	200max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1	120max	120max	150max	150max	150max	250max
		-10 - 0°C *1	160max	160max	180max	180max	180max	300max
	TEMPERATURE REGULATION[mV]	0 to +50°C	50max	50max	90max	120max	150max	480max
		-10 to +50°C	60max	60max	120max	150max	290max	600max
	DRIFT[mV] *2	20max	20max	36max	48max	60max	96max	192max
	START-UP TIME[ms]	20typ (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 ² (2G), 3minutes period, 60minutes each along X, Y and Z axis						
	IMPACT	196.1m/s ² (20G), 11ms, once each X, Y and Z axis						
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)	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 85mm [1.22 x 3.07 x 3.35 inches] (without terminal block) (W x H x D) / 200g max (without cover)						
	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.

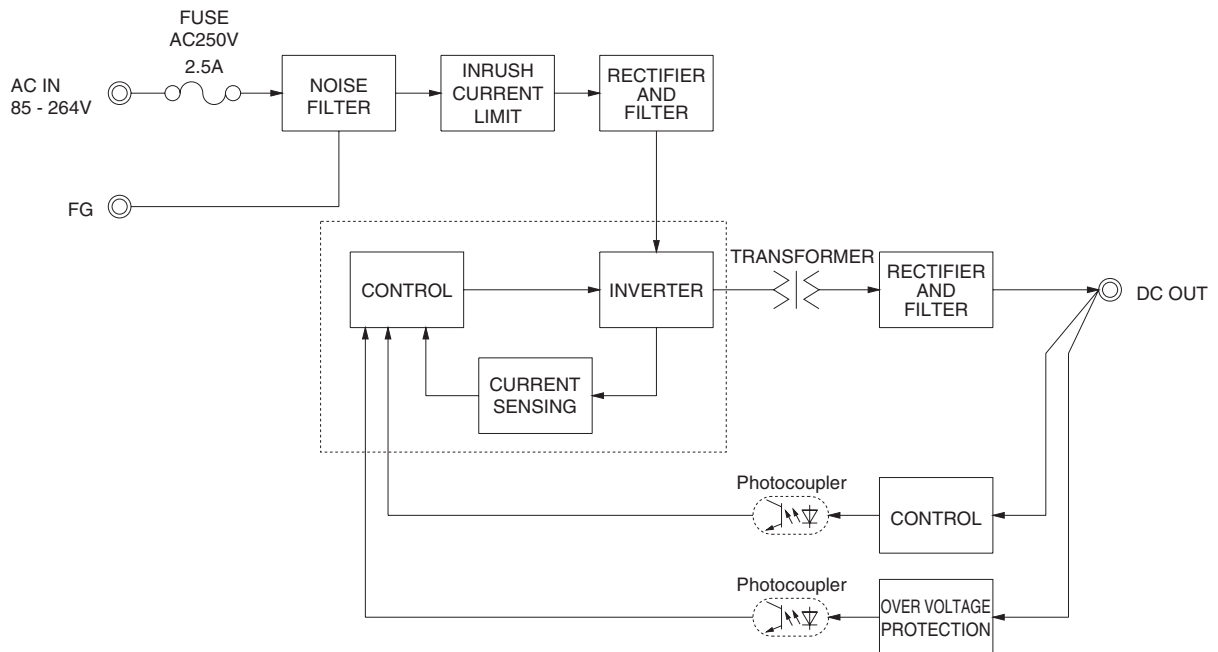
* Parallel operation with other model is not possible.

* Derating is required when operated with cover.

* A sound may occur from power supply at peak loading.

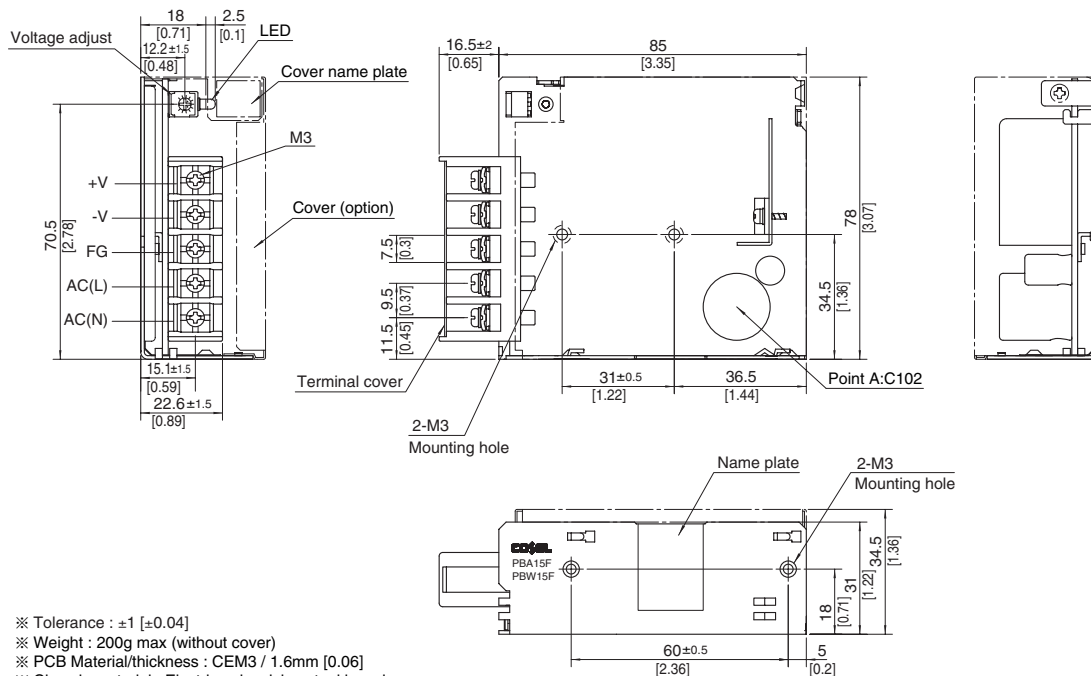
Block diagram

PBA/PBW



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 : ± 1 [± 0.04]
- ※ Weight : 200g max (without cover)
- ※ 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.

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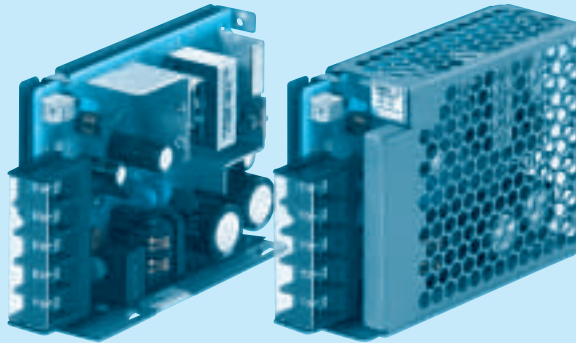
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Recommended EMI/EMC Filter
NAC-06-472



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])
NI : with DIN rail
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	79typ
		ACIN 200V	69typ	77typ	77typ	78typ	81typ	81typ
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%) (At cold start)					
OUTPUT		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)						
	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	150max
		-10 - 0°C *1	140max	140max	160max	160max	160max	200max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1	120max	120max	150max	150max	150max	250max
		-10 - 0°C *1	160max	160max	180max	180max	180max	300max
	TEMPERATURE REGULATION[mV]	0 to +50°C	50max	50max	90max	120max	150max	240max
		-10 to +50°C	60max	60max	120max	150max	180max	290max
	DRIFT[mV] *2	20max	20max	36max	48max	60max	96max	192max
	START-UP TIME[ms]	20typ (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 50M Ω min (At Room Temperature)						
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)						
	OUTPUT-FG	AC500V 1minute, Cutoff current = 25mA, DC500V 50M Ω min (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 ² (2G), 3minutes period, 60minutes each along X, Y and Z axis						
	IMPACT	196.1m/s ² (20G), 11ms, once each X, Y and Z axis						
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)	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 (without cover)						
	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.

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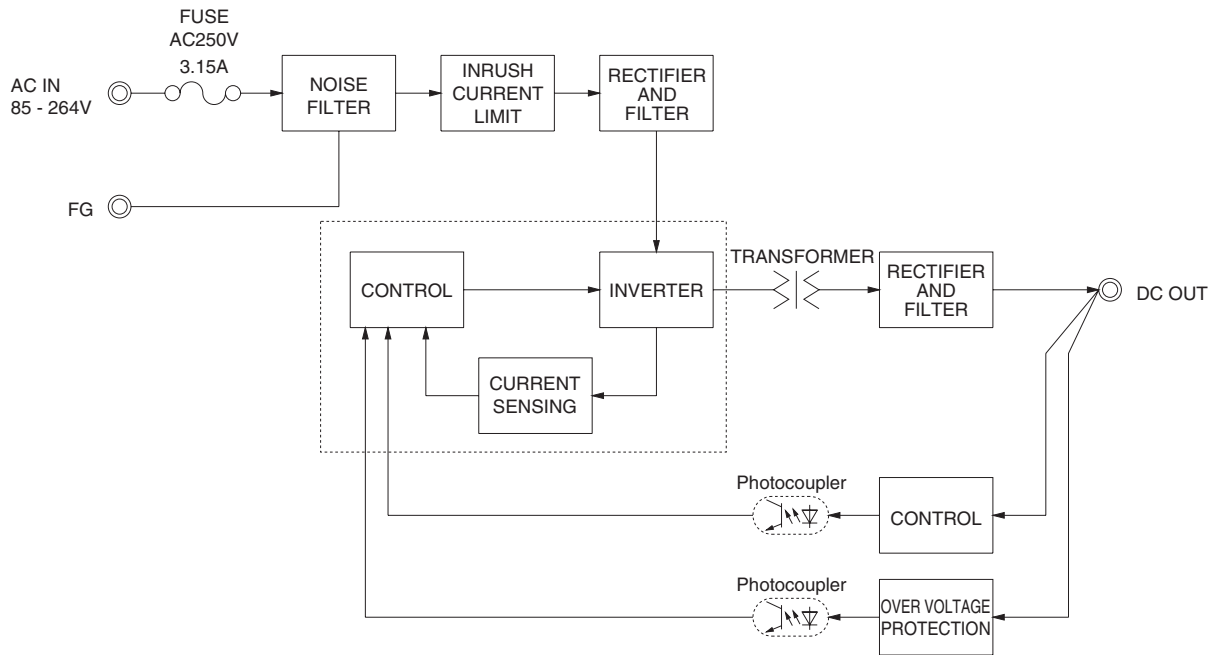
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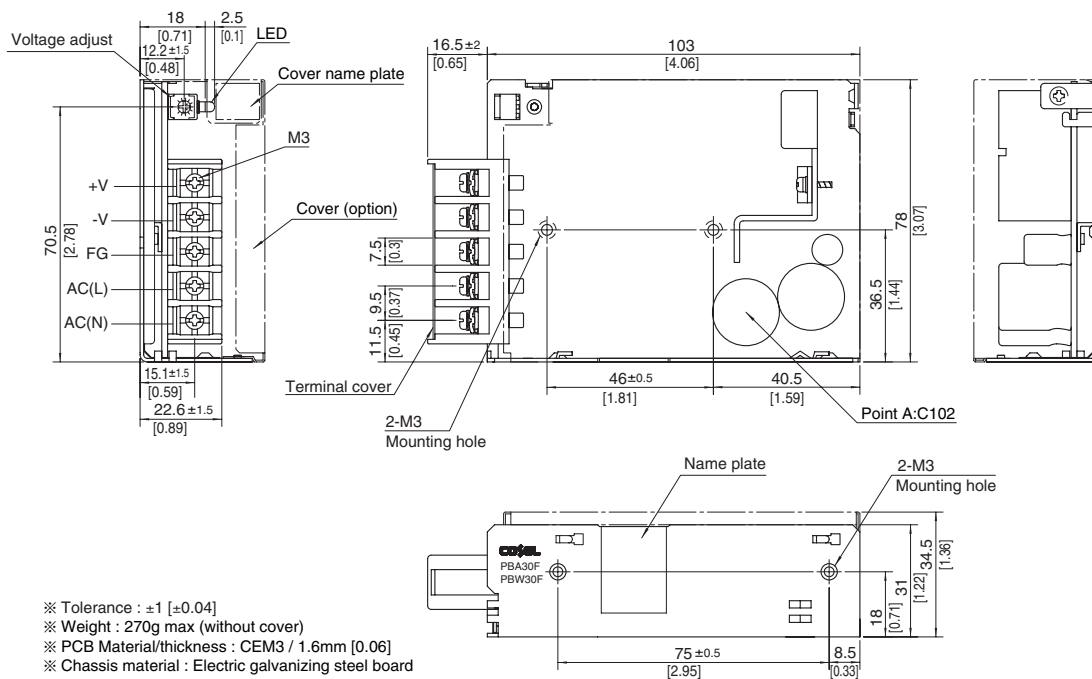
Block diagram

PBA/PBW



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 : ± 1 [± 0.04]
- ※ Weight : 270g max (without cover)
- ※ 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 · cm) max
- ※ Screw tightening torque : $\text{M3 } 0.8\text{N} \cdot \text{m}$ (8.5kgf · cm) max
- ※ Please connect safety ground to the unit in 2-M3 holes.

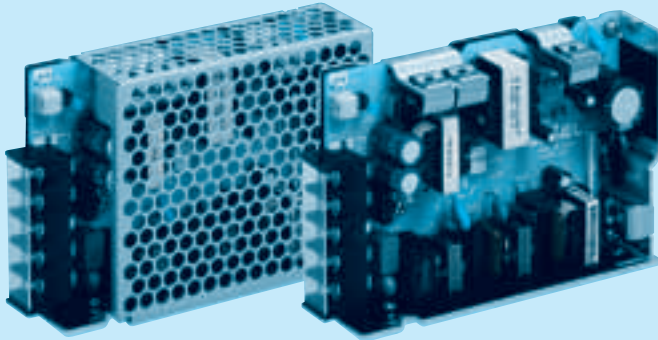
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RoHS

Recommended EMI/EMC Filter
NAC-06-472High 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)
N1 : with DIN rail
V : Output voltage setting potentiometer external-ly

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	
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	0.5typ	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)									
OUTPUT	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℃ *1	80max	80max	120max	120max	120max	120max	150max	150max
		-10 - 0℃ *1	140max	140max	160max	160max	160max	160max	200max	200max
	RIPPLE NOISE[mVp-p]	0 to +50℃ *1	120max	120max	150max	150max	150max	150max	250max	250max
		-10 - 0℃ *1	160max	160max	180max	180max	180max	180max	300max	300max
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	90max	120max	150max	240max	360max	480max
		-10 to +50℃	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	35.00 - 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 ON/OFF	Optional (Required external power source)									
ISOLATION	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)							
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-10 to +71℃ (Required Derating), 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	STORAGE TEMP.,HUMID.AND ALTITUDE	-20 to +75℃, 20 - 90%RH (Non condensing) 9,000m (30,000feet) max								
	VIBRATION	10 - 55Hz, 19.6m/s ² (2G), 3minutes period, 60minutes each along X, Y and Z axis								
	IMPACT	196.1m/s ² (20G), 11ms, once each X, Y and Z axis								
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)	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								
OTHERS	CASE SIZE/WEIGHT	31×82×120mm [1.22×3.23×4.72 inches] (without terminal block) (W×H×D) / 280g max (without cover)								
	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.

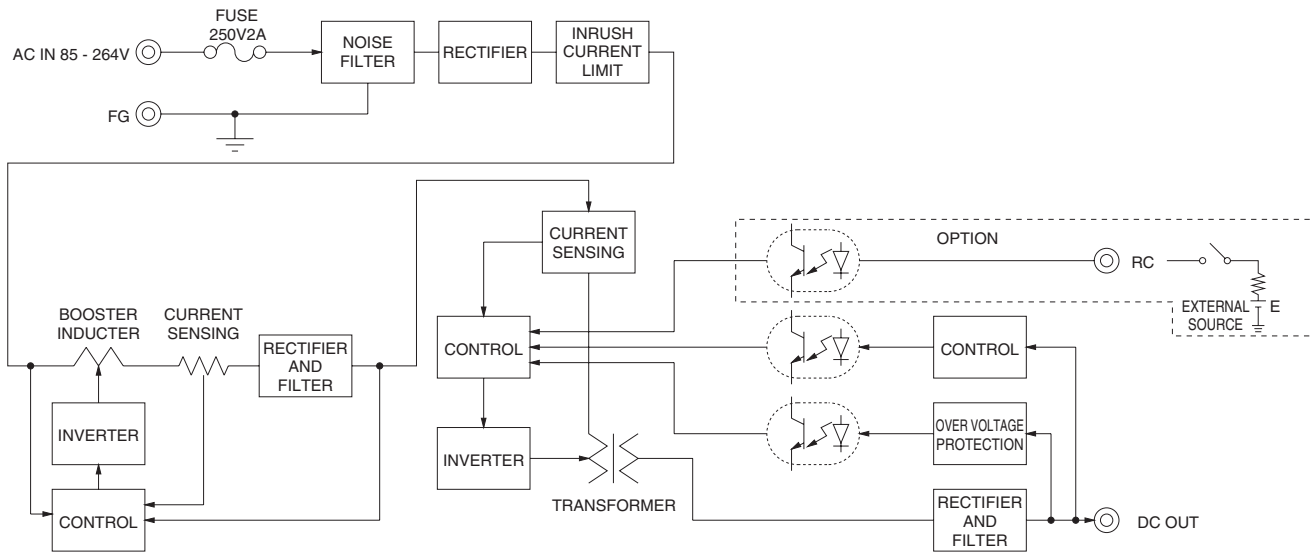
* Parallel operation with other model is not possible.

* Derating is required when operated with cover.

* A sound may occur from power supply at peak loading.

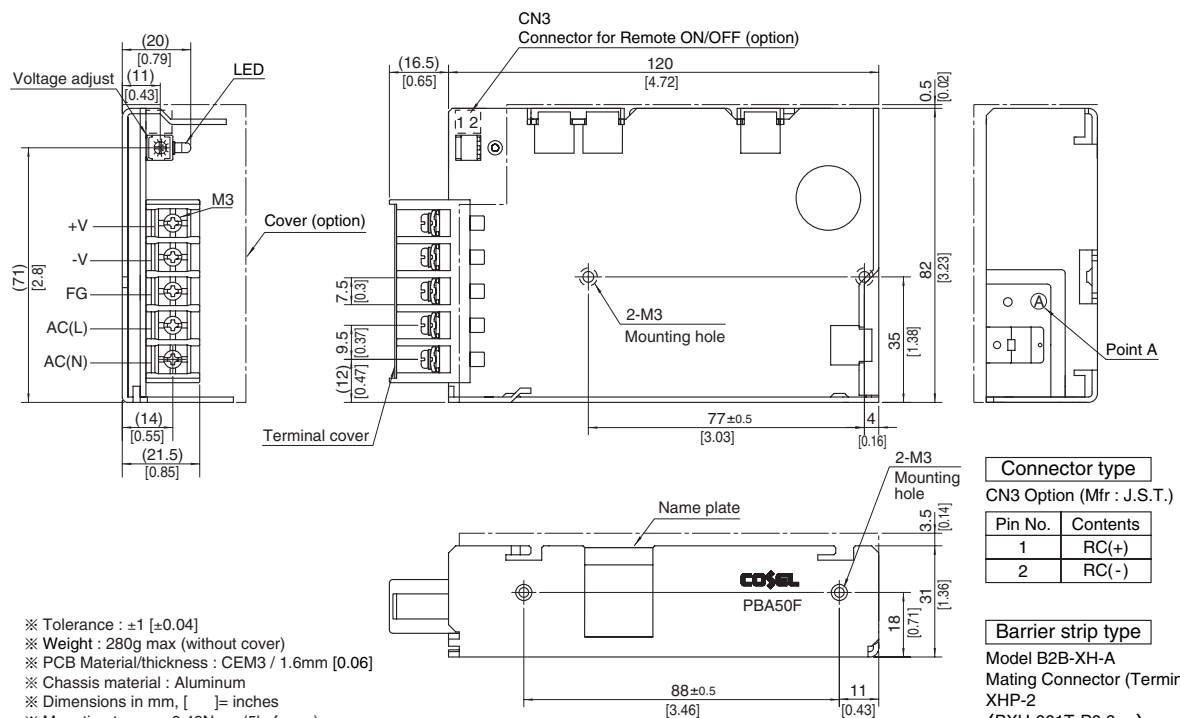
Block diagram

PBA/PBW



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

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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)
N1 : with DIN rail
V : Output voltage setting potentiometer externally

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	
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	0.7typ	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)									
OUTPUT	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℃ *1	80max	80max	120max	120max	120max	120max	150max	150max
		-10 - 0℃ *1	140max	140max	160max	160max	160max	160max	200max	200max
	RIPPLE NOISE[mVp-p]	0 to +50℃ *1	120max	120max	150max	150max	150max	150max	250max	250max
		-10 - 0℃ *1	160max	160max	180max	180max	180max	180max	300max	300max
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	90max	120max	150max	240max	360max	480max
		-10 to +50℃	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 ON/OFF	Optional (Required external power source)									
ISOLATION	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)							
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE	-10 to +71℃ (Required Derating), 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75℃, 20 - 90%RH (Non condensing) 9,000m (30,000feet) max								
	VIBRATION	10 - 55Hz, 19.6m/s ² (2G), 3minutes period, 60minutes each along X, Y and Z axis								
	IMPACT	196.1m/s ² (20G), 11ms, once each X, Y and Z axis								
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)	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								
OTHERS	CASE SIZE/WEIGHT	32×82×135mm [1.26×3.23×5.31 inches] (without terminal block) (W×H×D) / 350g max (without cover)								
	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.

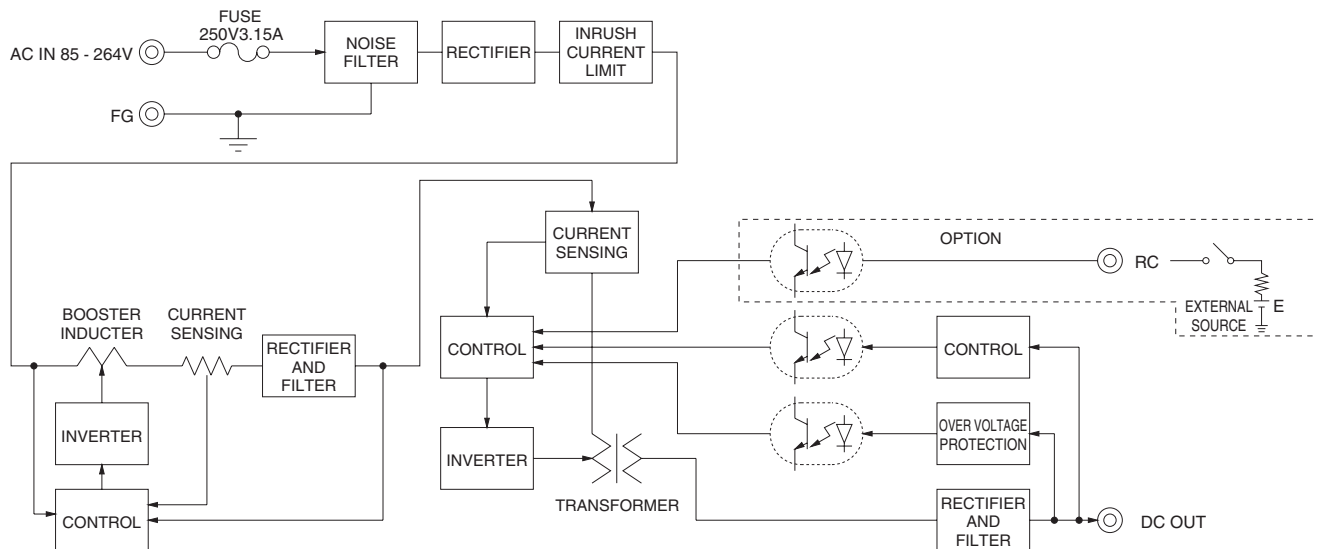
* Parallel operation with other model is not possible.

* Derating is required when operated with cover.

* A sound may occur from power supply at peak loading.

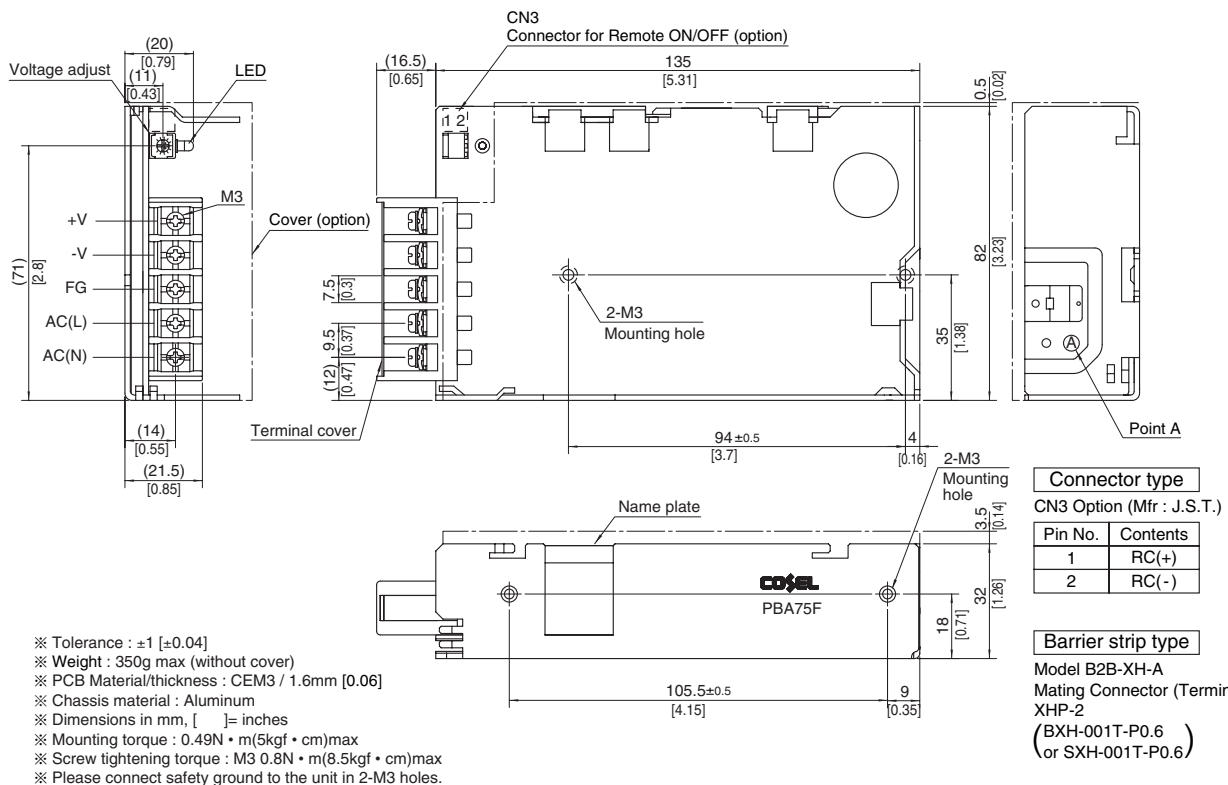
Block diagram

PBA/PBW



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.



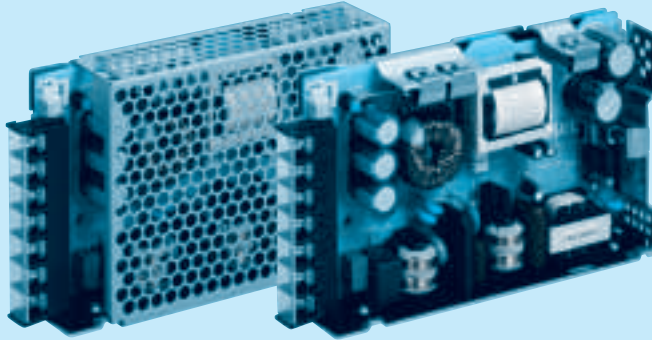
PBA100F

PB A 100 F -5 -□

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RoHS

Recommended EMI/EMC Filter
NAC-06-472High 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)
NI : with DIN rail
V : Output voltage setting
potentiometer external-
ly

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			
		ACIN 200V	79typ	84typ	82typ	83typ	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℃ *1	80max	80max	120max	120max	120max	150max	150max			
		-10 - 0℃ *1	140max	140max	160max	160max	160max	200max	200max			
	RIPPLE NOISE[mVp-p]	0 to +50℃ *1	120max	120max	150max	150max	150max	250max	250max			
		-10 - 0℃ *1	160max	160max	180max	180max	180max	300max	300max			
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	90max	120max	150max	240max	360max			
		-10 to +50℃	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]	3.20 - 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)										
	REMOTE ON/OFF	Optional (Required external power source)										
ISOLATION	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)									
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-10 to +71℃ (Required Derating), 20 - 90%RH (Non condensing) 3,000m (10,000feet) max										
	STORAGE TEMP.,HUMID.AND ALTITUDE	-20 to +75℃, 20 - 90%RH (Non condensing) 9,000m (30,000feet) max										
	VIBRATION	10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis										
	IMPACT	196.1m/s² (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 *6										
OTHERS	CASE SIZE/WEIGHT	32×93×147mm [1.26×3.66×5.79 inches] (without terminal block) (W×H×D) / 440g max (without cover)										
	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℃.

*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.

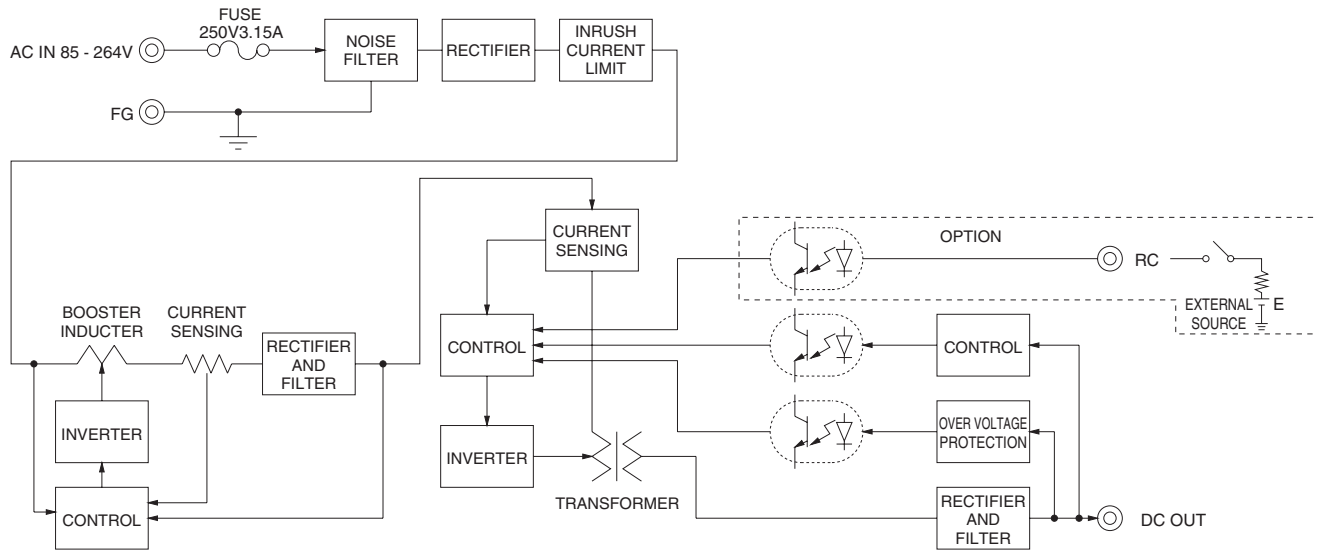
*6 Please contact us about class C.

* Parallel operation with other model is not possible.

* Derating is required when operated with cover.

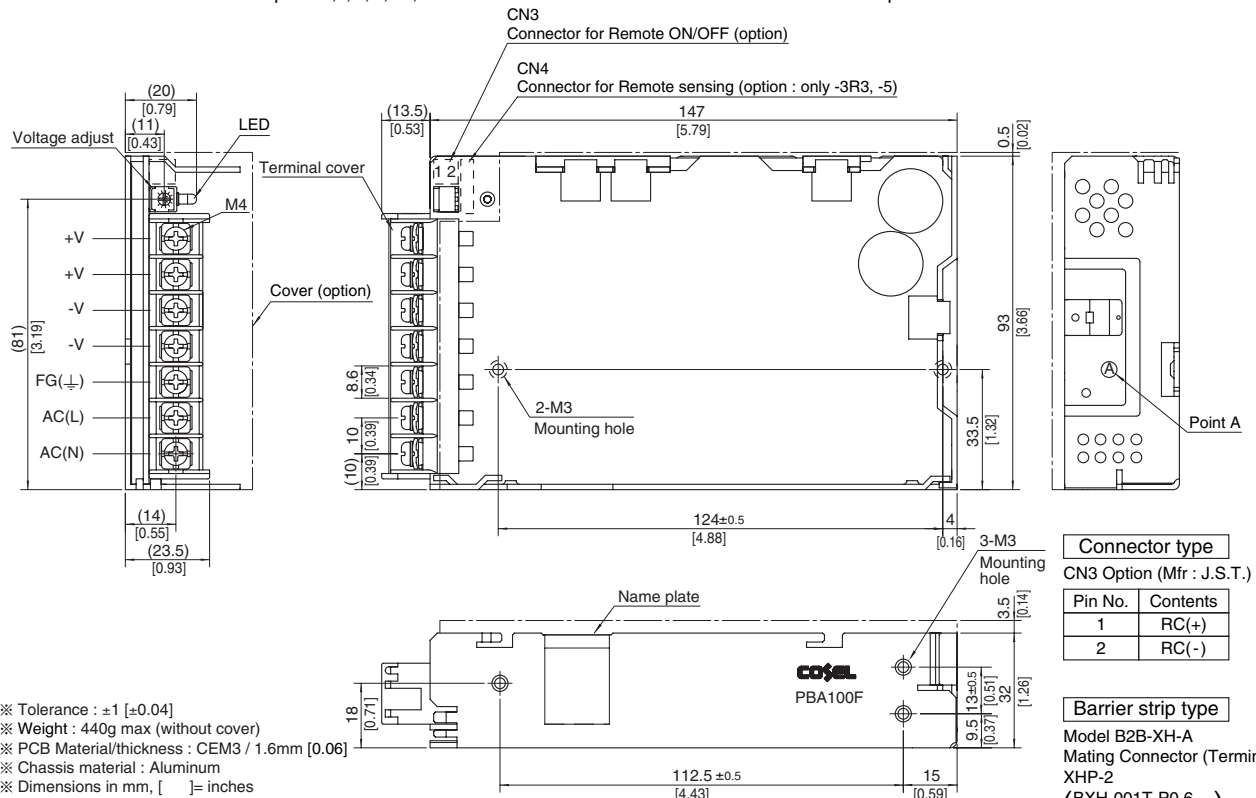
* A sound may occur from power supply at peak loading.

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 : 440g max (without cover)
- ※ 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.

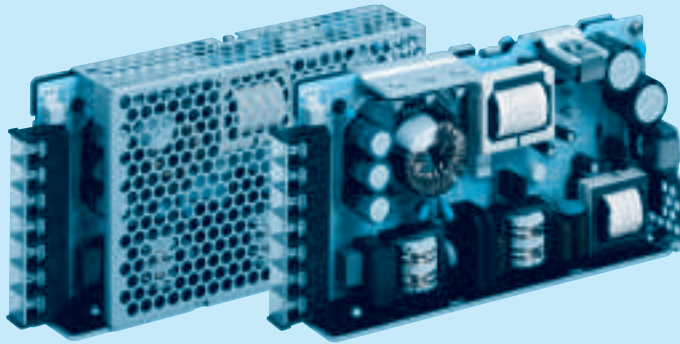
PBA150F

PB A 150 F -5 -□

① ② ③ ④ ⑤ ⑥



RoHS

Recommended EMI/EMC Filter
NAC-06-472High 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
V : Output voltage setting
potentiometer external-
ly

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
		ACIN 200V	82typ	86typ	85typ	86typ	87typ	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℃ *1	80max	80max	120max	120max	120max	150max	150max
		-10 - 0℃ *1	140max	140max	160max	160max	160max	200max	200max
	RIPPLE NOISE[mVp-p]	0 to +50℃ *1	120max	120max	150max	150max	150max	250max	250max
		-10 - 0℃ *1	160max	160max	180max	180max	180max	300max	300max
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	90max	120max	150max	240max	360max
		-10 to +50℃	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
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
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
OPERATING INDICATION	LED (Green)								
REMOTE SENSING	Optional (Only -3R3, -5 Option -K)								
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)							
ENVIRONMENT	OPERATING TEMP.HUMID.AND ALTITUDE	-10 to +71℃ (Required Derating), 20 - 90%RH (Non condensing) 3,000m (10,000feet) max							
	STORAGE TEMP.HUMID.AND ALTITUDE	-20 to +75℃, 20 - 90%RH (Non condensing) 9,000m (30,000feet) max							
	VIBRATION	10 - 55Hz, 19.6m/s ² (2G), 3minutes period, 60minutes each along X, Y and Z axis							
IMPACT	196.1m/s ² (20G), 11ms, once each X, Y and Z axis								
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)	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							
OTHERS	CASE SIZE/WEIGHT	34×93×168mm [1.34×3.66×6.61 inches] (without terminal block) (W×H×D) / 560g max (without cover)							
	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℃.

*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.

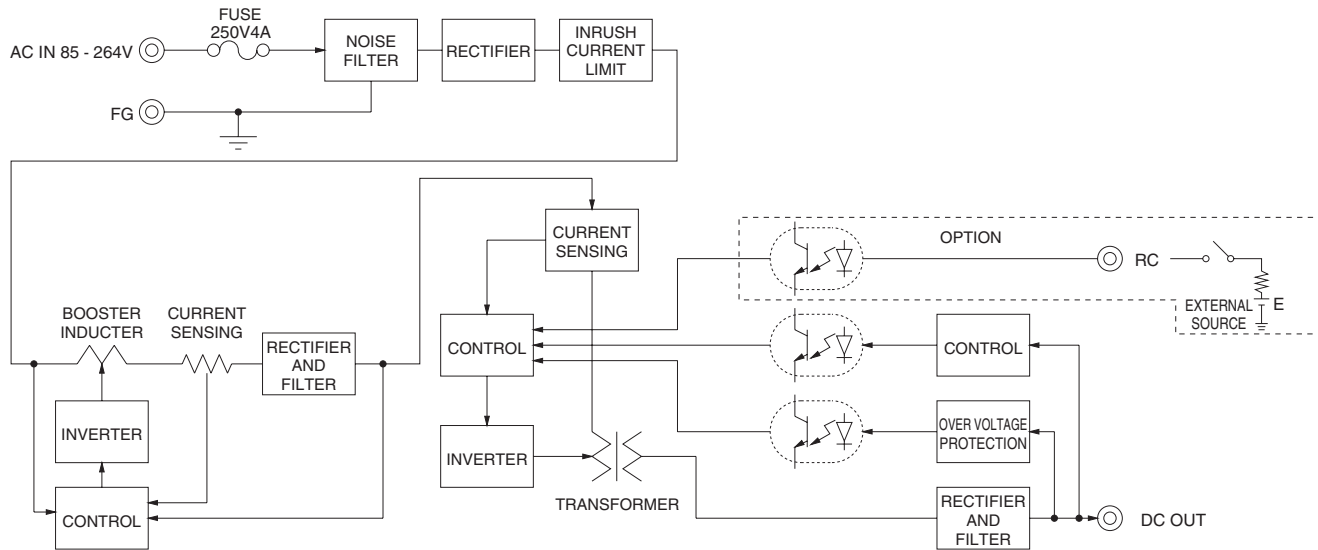
* Parallel operation with other model is not possible.

* Derating is required when operated with cover.

* A sound may occur from power supply at peak loading.

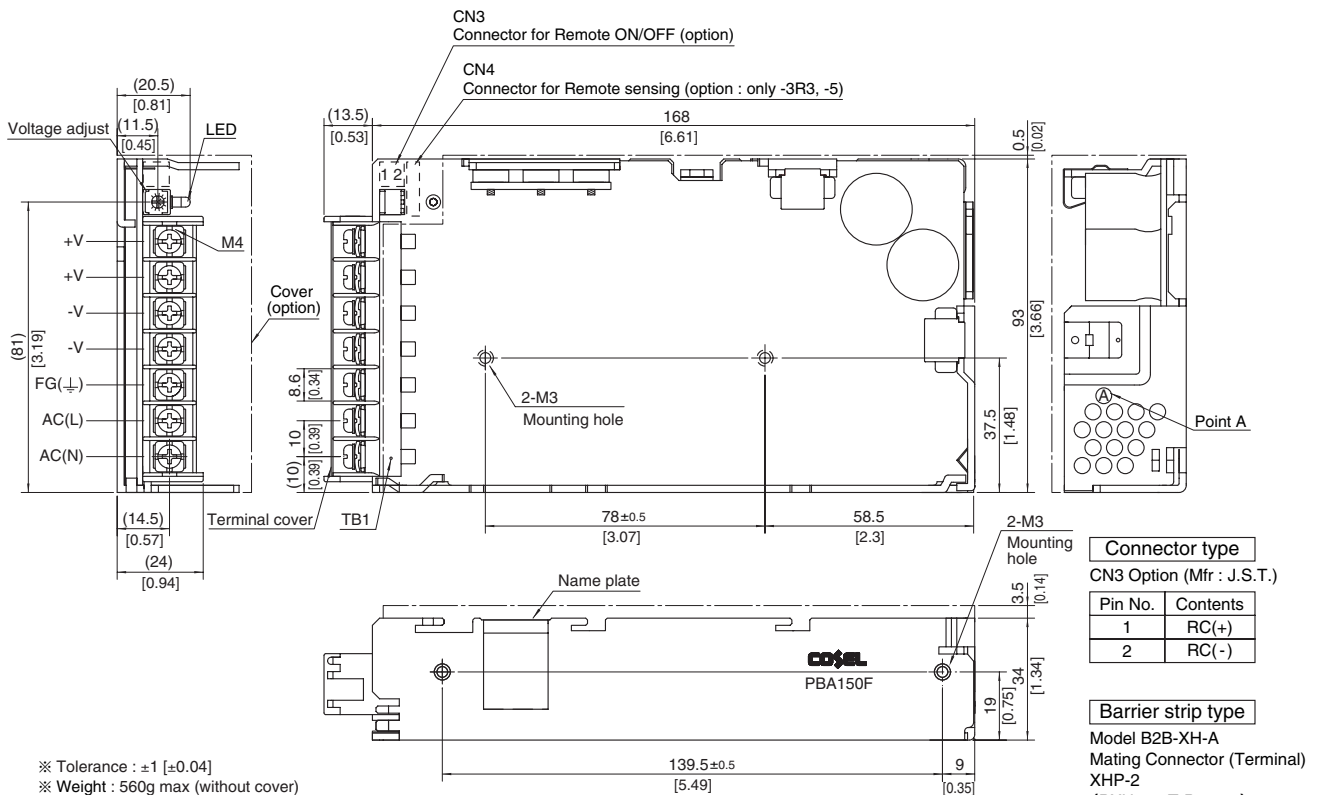
Block diagram

PBA/PBW



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 (without cover)
- ※ PCB Material/thickness : CEM3 / 1.6mm [0.06]
- ※ Chassis material : Aluminum
- ※ Dimensions in mm, [] = inches
- ※ Mounting torque : $0.49\text{N} \cdot \text{m}$ (5kgf $\cdot$ cm) max
- ※ Mounting torque : $M4:1.6\text{N} \cdot \text{m}$ (16.9kgf $\cdot$ cm) max
- ※ Keep drawing current per pin below 20A for TB1.
- ※ Please connect safety ground to FG terminal on the unit.