

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 Dual output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Optional \*10
- 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  
N1 : with DIN rail  
V : Output voltage setting potentiometer externally

Cover is optional

MODEL	PBW15F-12	PBW15F-15
MAX OUTPUT WATTAGE[W]	16.8	15.0
VOLTAGE[V]	±12 ( +24 )	±15 ( +30 )
DC OUTPUT	CURRENT1[A] 0.7	0.5
	CURRENT2[A] 1.4	1.0

## SPECIFICATIONS

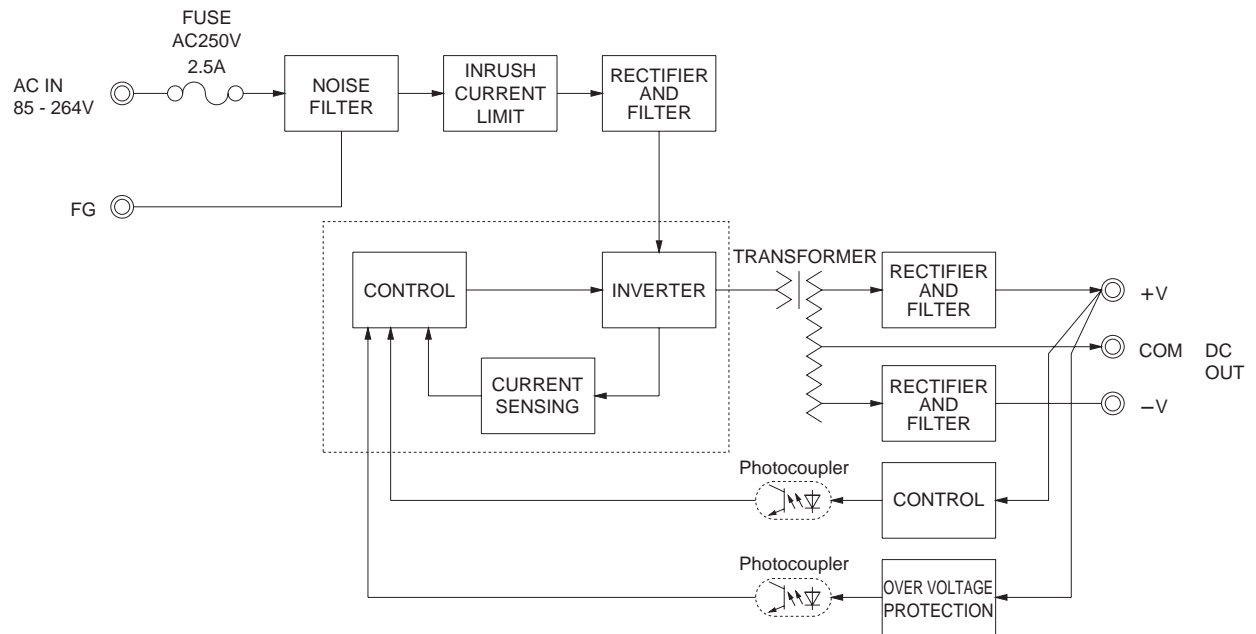
MODEL	PBW15F-12	PBW15F-15
VOLTAGE[V]	AC85 - 264 1 φ or DC110 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *8)	
CURRENT[A]	ACIN 100V 0.40typ (CURRENT1)	
	ACIN 200V 0.20typ (CURRENT1)	
FREQUENCY[Hz]	50/60 (47 - 440) or DC	
EFFICIENCY[%]	ACIN 100V 74typ (CURRENT1)	78typ (CURRENT1)
	ACIN 200V 77typ (CURRENT1)	80typ (CURRENT1)
INRUSH CURRENT[A]	ACIN 100V 15typ (CURRENT1) (At cold start)	
	ACIN 200V 30typ (CURRENT1) (At cold start)	
LEAKAGE CURRENT[mA]	0.15/0.30max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1.DENAN)	
VOLTAGE[V]	±12	±15
CURRENT1[A]	0.7	0.5
CURRENT2[A]	1.4	1.0
LINE REGULATION[mV]	60max	60max
LOAD REGULATION 1[mV]	600max	600max
LOAD REGULATION 2[mV]	750max	750max
RIPPLE[mVp-p]	0 to +50°C *1 120max	120max
	-10 - 0°C *1 160max	160max
RIPPLE NOISE[mVp-p]	0 to +50°C *1 150max	150max
	-10 - 0°C *1 180max	180max
TEMPERATURE REGULATION[mV]	0 to +50°C 120max	150max
	-10 to +50°C 150max	180max
DRIFT[mV]	48max	60max
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]	9.60 - 13.2 (+V and -V are simultaneously adjusted)	13.2 - 16.5 (+V and -V are simultaneously adjusted)
OUTPUT VOLTAGE SETTING[V]	11.5 - 12.5 (+V and -V CURRENT1)	14.4 - 15.6 (+V and -V CURRENT1)
OVERCURRENT PROTECTION	Works over 105% of rated current and recovers automatically	
OVERVOLTAGE PROTECTION[V]	16.8 - 24.0	20.0 - 29.0
OPERATING INDICATION	LED (Green)	
REMOTE ON/OFF	None	
INPUT-OUTPUT	AC3.000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)	
INPUT-FG	AC2.000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)	
OUTPUT-FG	AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)	
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/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	
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 *7) *12	
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 (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 Figures for 0 to rated current 1. The current not measured side is fixed.
- \*4 Figures for 0 to rated current 2. The current not measured

- side is fixed.
- \*5 The sum of +power -power must be less than output power.
- \*6 ±12, ±15 can be used as +24 and +30.
- \*7 When two or more units are used, they may not comply with the harmonic attenuator. Please contact us for details.
- \*8 Derating is required.
- \*9 Figures to rated current 1.

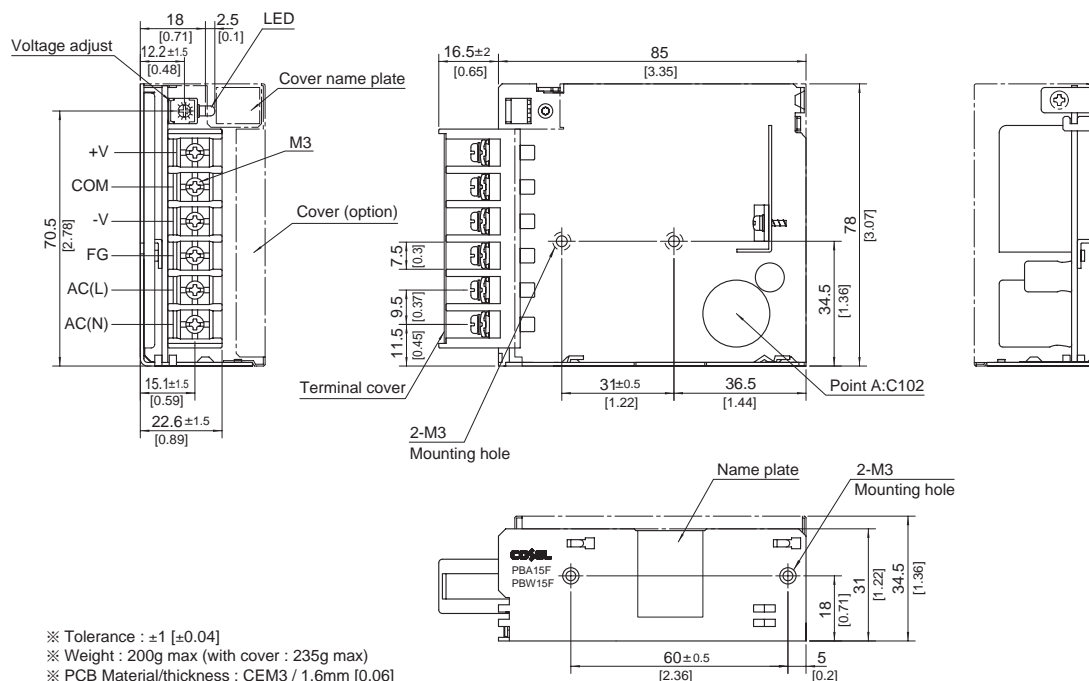
- \*10 Please contact us about safety approvals for the model with option.
- \*11 Please contact us about dynamic load and input response.
- \*12 Please contact us about class C.
- \* Parallel operation with other model is not possible.
- \* Derating is required when operated with cover.
- \* A sound 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.

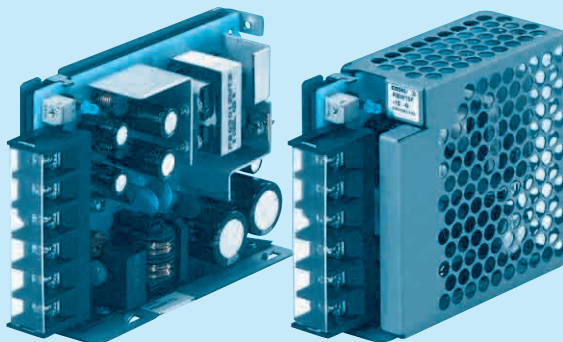
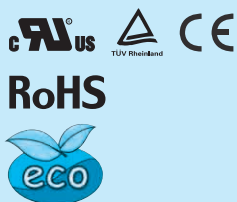


- ※ Tolerance :  $\pm 1$  [ $\pm 0.04$ ]
- ※ Weight : 200g max (with cover : 235g max)
- ※ PCB Material/thickness : CEM3 / 1.6mm [0.06]
- ※ Chassis material : Electric galvanizing steel board
- ※ Dimensions in mm, [ ] = inches
- ※ Mounting torque : 0.6N • m (6.3kgf • cm) max
- ※ Screw tightening torque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

## PBW30F

PB W 30 F -□ -□

① ② ③ ④ ⑤ ⑥

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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 Dual output  
③ Output wattage  
④ Universal input  
⑤ Output voltage  
⑥ Optional \*10  
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  
Nt : with DIN rail  
V : Output voltage setting  
potentiometer external-  
ly

Cover is optional

MODEL	PBW30F-5	PBW30F-12	PBW30F-15
MAX OUTPUT WATTAGE[W]	15	31.2	30.0
DC OUTPUT	VOLTAGE[V] *6	±5 ( +10 )	±12 ( +24 )
	CURRENT1[A]	1.5	1.3
	CURRENT2[A] *5	2.0	1.7

## SPECIFICATIONS

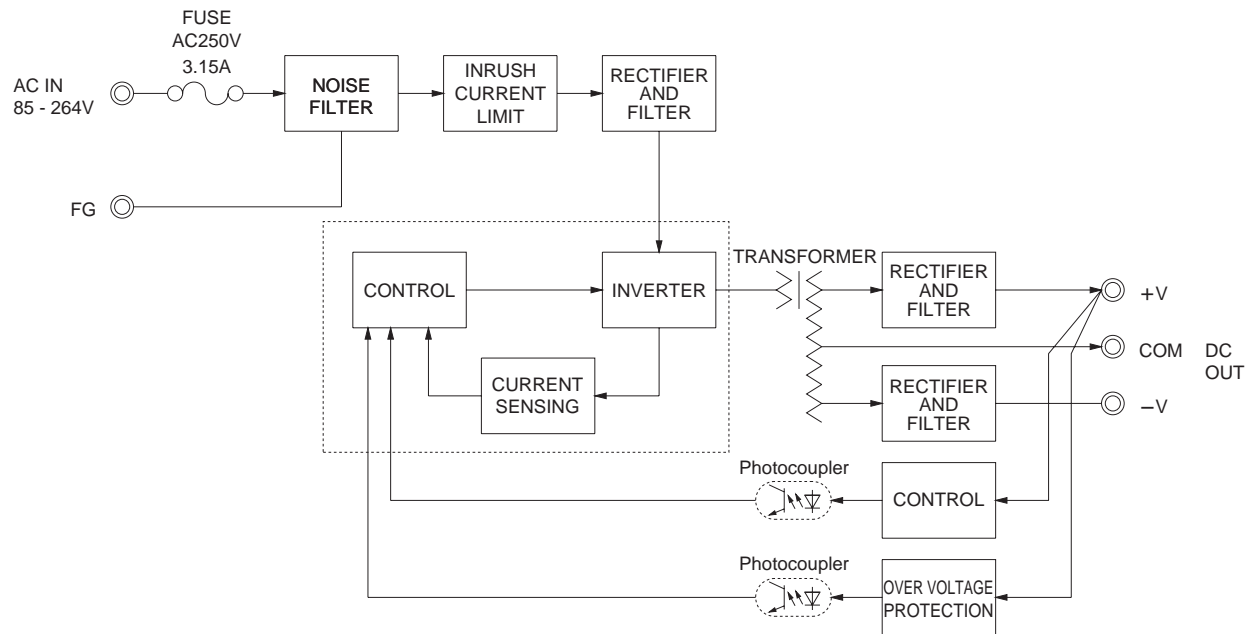
MODEL	PBW30F-5	PBW30F-12	PBW30F-15
INPUT	VOLTAGE[V]	AC85 - 264 1 φ or DC110 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *8)	
	CURRENT[A]	0.4typ (CURRENT1)	0.7typ (CURRENT1)
	FREQUENCY[Hz]	50/60 (47 - 440) or DC	0.4typ (CURRENT1)
	EFFICIENCY[%]	75typ (CURRENT1)	77typ (CURRENT1)
	INRUSH CURRENT[A]	15typ (CURRENT1) (At cold start)	78typ (CURRENT1)
	LEAKAGE CURRENT[ma]	0.30/0.65max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1.DENAN)	81typ (CURRENT1)
OUTPUT	VOLTAGE[V]	±5 / ( +10V reference number )	±12 / ( +24V reference number )
	CURRENT1[A]	1.5 / 1.5	1.3 / 1.3
	CURRENT2[A] *5	2.0 / -	1.7 / -
	LINE REGULATION[mV]	20max / 36max	60max / 96max
	LOAD REGULATION 1[mV]	250max / 100max	600max / 150max
	LOAD REGULATION 2[mV]	500max / -	750max / -
	RIPPLE[mVp-p]	0 to +50°C *1 -10 - 0°C *1	80max / 240max 120max / 320max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1 -10 - 0°C *1	120max / 300max 160max / 360max
	TEMPERATURE REGULATION[mV]	0 to +50°C -10 to +50°C	50max 60max
	DRIFT[mV]	20max	48max
	START-UP TIME[ms]	200typ (ACIN 100V, Io=100%)	200typ (ACIN 100V, Io=100%)
	HOLD-UP TIME[ms]	20typ (ACIN 100V, Io=100%)	20typ (ACIN 100V, Io=100%)
PROTECTION CIRCUIT AND OTHERS	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	4.99 - 6.00 (+V and -V are simultaneously adjusted)	9.60 - 13.2 (+V and -V are simultaneously adjusted)
	OUTPUT VOLTAGE SETTING[V]	4.99 - 5.30 (+V and -V CURRENT1)	11.5 - 12.5 (+V and -V CURRENT1)
	OVERCURRENT PROTECTION	Works over 105% of rated current and recovers automatically	13.2 - 16.5 (+V and -V are simultaneously adjusted)
	OVERVOLTAGE PROTECTION[V]	6.90 - 10.0	16.8 - 24.0
ISOLATION	OPERATING INDICATION	LED (Green)	20.0 - 29.0
	REMOTE ON/OFF	None	
	INPUT-OUTPUT	AC3.000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)	
ENVIRONMENT	INPUT-FG	AC2.000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)	
	OUTPUT-FG	AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)	
	OPERATING TEMP., HUMID. AND ALTITUDE	-10 to +71°C (Required Derating), 20 - 90%RH (Non condensing) 3,000m (10,000feet) max	
SAFETY AND NOISE REGULATIONS	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	
OTHERS	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 *7) *12	
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 Figures for 0 to rated current 1. The current not measured side is fixed.  
\*4 Figures for 0 to rated current 2. The current not measured

side is fixed.  
\*5 The sum of +power -power must be less than output power.  
\*6 ±5, ±12, ±15 can be used as +10, +24 and +30.  
\*7 When two or more units are used, they may not comply with the harmonic attenuator. Please contact us for details.  
\*8 Derating is required.  
\*9 Figures to rated current 1.

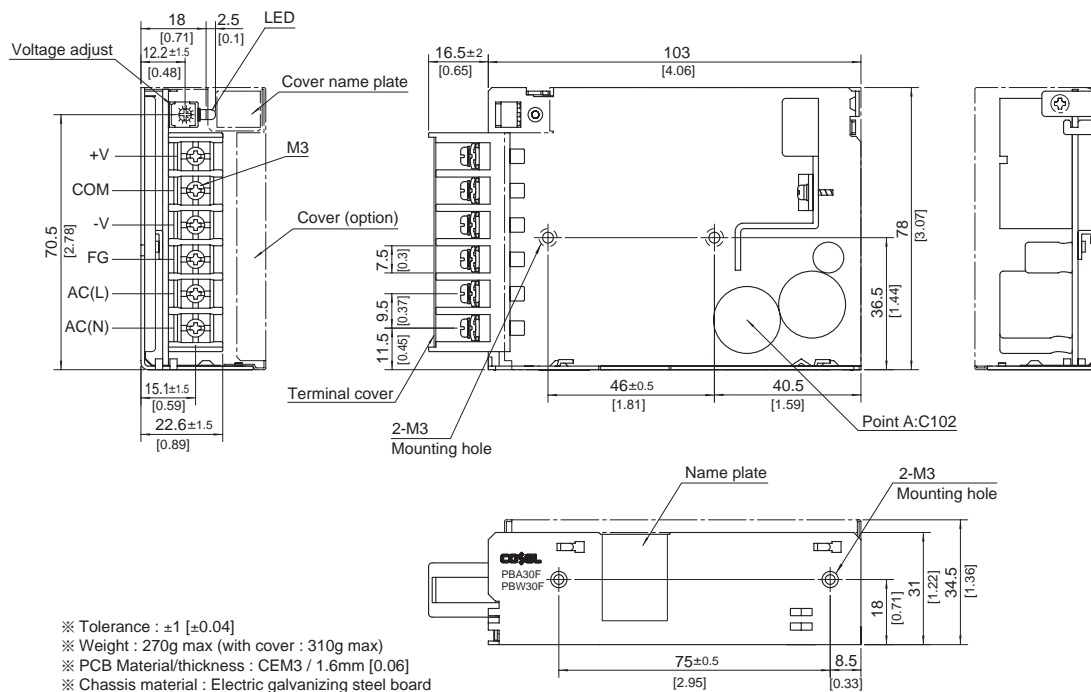
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\*11 Please contact us about dynamic load and input response.  
\*12 Please contact us about class C.  
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## Block diagram



## 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.

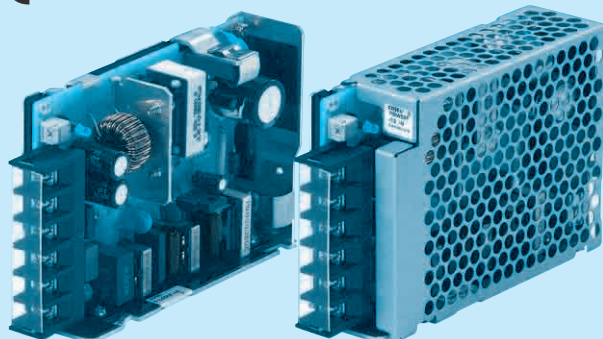
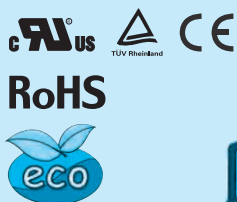


- ※ Tolerance :  $\pm 1$  [ $\pm 0.04$ ]
- ※ Weight : 270g max (with cover : 310g max)
- ※ PCB Material/thickness : CEM3 / 1.6mm [0.06]
- ※ Chassis material : Electric galvanizing steel board
- ※ Dimensions in mm, [ ] = inches
- ※ Mounting torque :  $0.6\text{N} \cdot \text{m}$  (6.3kgf  $\cdot$  cm) 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.

## PBW50F

PB W 50 F - -

① ② ③ ④ ⑤ ⑥

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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 Dual output  
③ Output wattage  
④ Universal input  
⑤ Output voltage  
⑥ Optional \*9  
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  
Nt : with DIN rail  
V : Output voltage setting  
potentiometer external-  
ly

Cover is optional

MODEL	PBW50F-5	PBW50F-12	PBW50F-15
MAX OUTPUT WATTAGE[W]	30	50.4	51
VOLTAGE[V]	±5 ( +10 )	±12 ( +24 )	±15 ( +30 )
DC OUTPUT	CURRENT1[A]	2.1	1.7
	CURRENT2[A]	2.7	2.4

## SPECIFICATIONS

	MODEL	PBW50F-5	PBW50F-12	PBW50F-15
INPUT	VOLTAGE[V]	AC85 - 264 1 φ or DC120 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *3)		
	CURRENT[A]	ACIN 100V 0.45typ (CURRENT1)	0.70typ (CURRENT1)	
		ACIN 200V 0.30typ (CURRENT1)	0.40typ (CURRENT1)	
	FREQUENCY[Hz]	50/60 (47 - 63)		
	EFFICIENCY[%]	ACIN 100V 76typ (CURRENT1)	81typ (CURRENT1)	81typ (CURRENT1)
		ACIN 200V 77typ (CURRENT1)	83typ (CURRENT1)	83typ (CURRENT1)
	POWER FACTOR(Io=100%)	ACIN 100V 0.98typ	0.99typ	
OUTPUT		ACIN 200V 0.87typ	0.93typ	
	INRUSH CURRENT[A]	ACIN 100V 15typ (CURRENT1) (At cold start)		
		ACIN 200V 30typ (CURRENT1) (At cold start)		
	LEAKAGE CURRENT[mA]	0.40/0.75max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1.DENAN)		
	VOLTAGE[V]	±5 / ( +10V reference number )	±12 / ( +24V reference number )	±15 / ( +30V reference number )
	CURRENT1[A]	3.0 / 3.0	2.1 / 2.1	1.7 / 1.7
	CURRENT2[A]	4.0 / -	2.7 / -	2.4 / -
PROTECTION CIRCUIT AND OTHERS	LINE REGULATION[mV]	20max / 36max	48max / 96max	60max / 96max
	LOAD REGULATION 1[mV]	250max / 100max	600max / 150max	600max / 150max
	LOAD REGULATION 2[mV]	500max / -	750max / -	750max / -
	RIPPLE[mVp-p]	0 to +50°C *1 80max / 240max	120max / 240max	120max / 240max
		-10 - 0°C *1 140max / 320max	160max / 320max	160max / 320max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1 120max / 300max	150max / 300max	150max / 300max
		-10 - 0°C *1 160max / 360max	180max / 360max	180max / 360max
ISOLATION	TEMPERATURE REGULATION[mV]	0 to +50°C 50max	120max	150max
		-10 to +50°C 60max	150max	180max
	DRIFT[mV]	*2 20max	48max	60max
	START-UP TIME[ms]	350typ (ACIN 100V, Io=100%)		
	HOLD-UP TIME[ms]	20typ (ACIN 100V, Io=100%)		
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	4.99 - 6.00 (+V and -V are simultaneously adjusted)	9.60 - 13.2 (+V and -V are simultaneously adjusted)	13.2 - 16.5 (+V and -V are simultaneously adjusted)
	OUTPUT VOLTAGE SETTING[V]	4.99 - 5.30 (+V and -V CURRENT1)	11.5 - 12.5 (+V and -V CURRENT1)	14.4 - 15.6 (+V and -V CURRENT1)
ENVIRONMENT	OVERCURRENT PROTECTION	Works over 105% of rated current and recovers automatically		
	OVERVOLTAGE PROTECTION[V]	6.90 - 10.0	16.8 - 24.0	20.0 - 29.0
	OPERATING INDICATION	LED (Green)		
	REMOTE ON/OFF	Optional (Required external power source)		
	INPUT-OUTPUT · RC	*7 AC3.000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	INPUT-FG	AC2.000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT · RC-FG	*7 AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)		
SAFETY AND NOISE REGULATIONS	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 *10		
OTHERS	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 Derating is required.

\*4 Figures for 0 to rated current 1. The current not measured side is fixed.

\*5 Figures for 0 to rated current 2. The current not measured side is fixed.

\*6 The sum of +power -power must be less than output power.

\*7 RC is applied to remote ON/OFF option. RC is isolated with input/output and FG.

\*8 ±5, ±12, ±15 can be used as +10, +24 and +30.

\*9 Please contact us about safety approvals for the model with option.

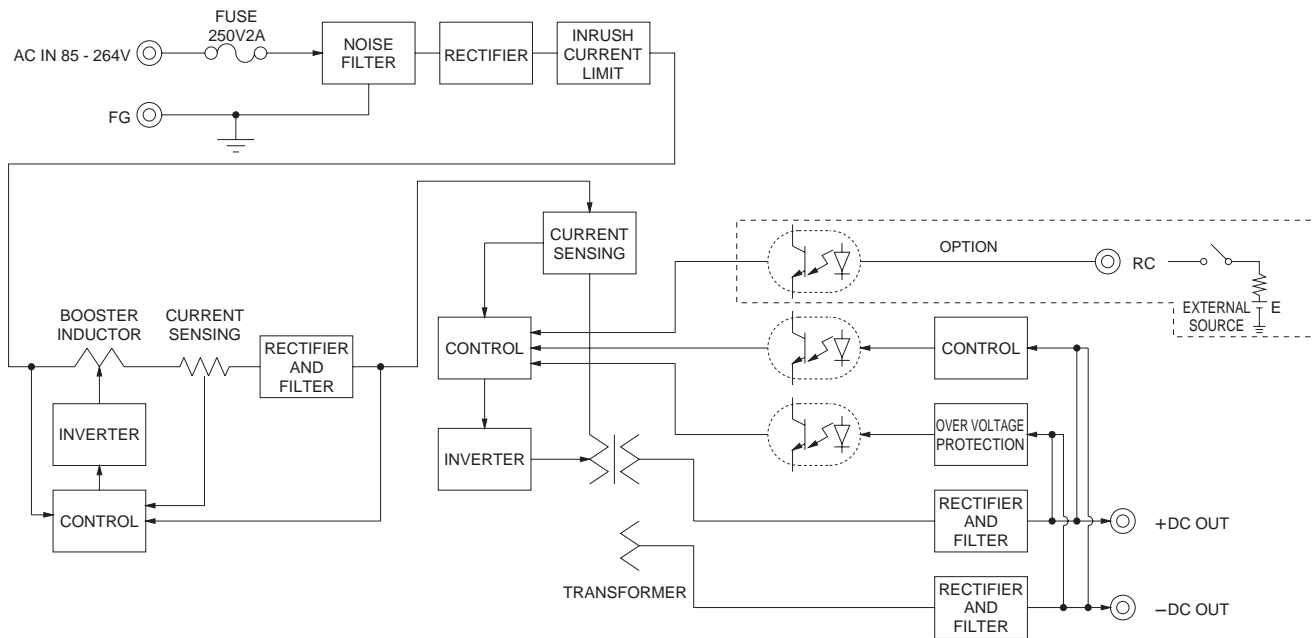
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\* Derating is required when operated with cover.

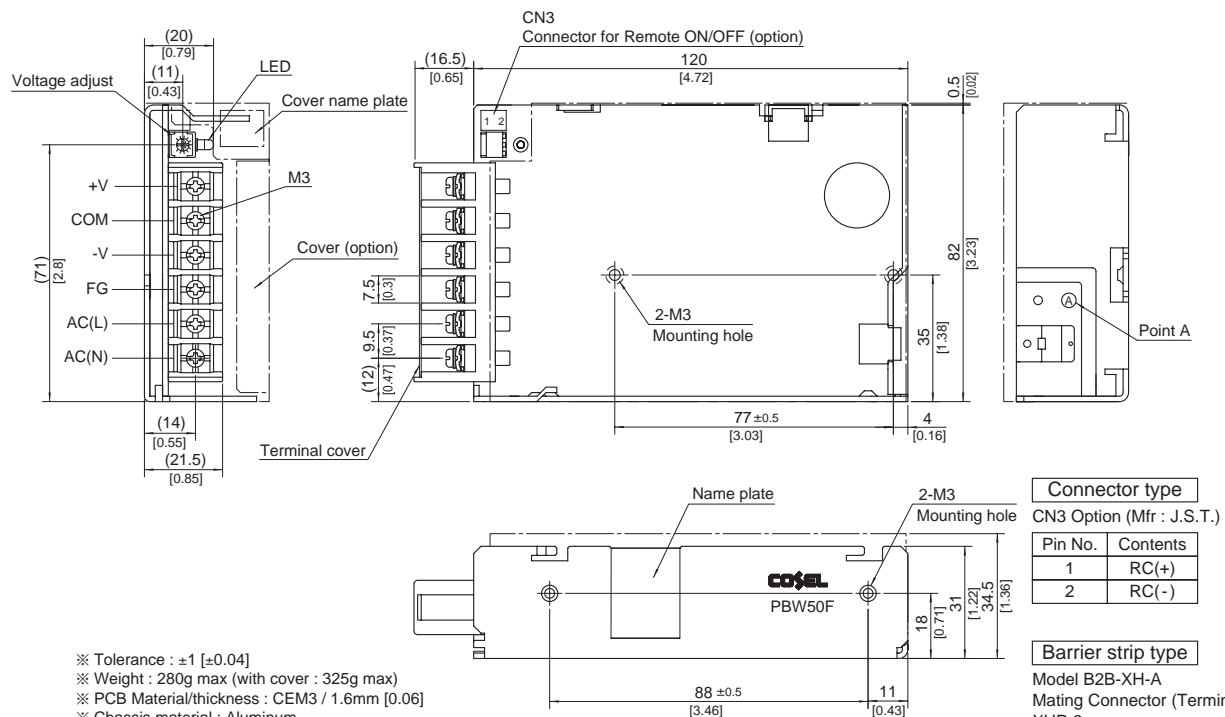
\* A sound may occur from power supply at peak loading.

## 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 :  $\pm 1$  [ $\pm 0.04$ ]
- ※ Weight : 280g max (with cover : 325g 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.