

Recommended EM/EMC Filter  
NAC-06-472



High voltage pulse noise type : NAP series  
Low leakage current type : NAM series  
\*The EM/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 externaly

Cover is optional

MODEL	PBW15F-12	PBW15F-15
MAX OUTPUT WATTAGE[W]	*5 16.8	15.0
DC OUTPUT	VOLTAGE[V] *6 ±12 ( +24 )	±15 ( +30 )
	CURRENT1[A]	0.7
	CURRENT2[A] *5	1.4

## SPECIFICATIONS

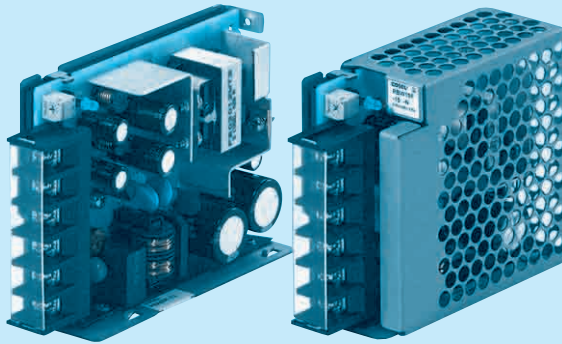
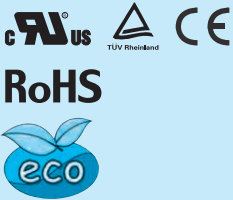
	MODEL	PBW15F-12	PBW15F-15	
INPUT	VOLTAGE[V]	AC85 - 264 1 φ or DC110 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *8)		
	CURRENT[A]	ACIN 100V	0.40typ (CURRENT1)	
		ACIN 200V	0.20typ (CURRENT1)	
	FREQUENCY[Hz]	50/60 (47 - 440) or DC		
	EFFICIENCY[%]	ACIN 100V	74typ (CURRENT1)	
		ACIN 200V	77typ (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)			
OUTPUT	VOLTAGE[V]	±12 / ( +24V reference number )	±15 / ( +30V reference number )	
	CURRENT1[A]	0.7	0.5	
	CURRENT2[A]	1.4	1.0	
	LINE REGULATION[mV]	60max / 96max	60max / 96max	
	LOAD REGULATION 1[mV]	600max / 150max	600max / 150max	
	LOAD REGULATION 2[mV]	750max / -	750max / -	
	RIPPLE[mVp-p]	0 to +50C *1	120max / 240max	120max / 240max
		-10 - 0C *1	160max / 320max	160max / 320max
	RIPPLE NOISE[mVp-p]	0 to +50C *1	150max / 300max	150max / 300max
		-10 - 0C *1	180max / 360max	180max / 360max
	TEMPERATURE REGULATION[mV]	0 to +50C	120max	150max
		-10 to +50C	150max	180max
	DRIFT[mV]	*2 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)	
PROTECTION CIRCUIT AND OTHERS	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			
ISOLATION	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)		
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 *7) *12		
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 (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.





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- ① Series name
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- 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 externaly

Cover is optional

MODEL	PBW30F-5	PBW30F-12	PBW30F-15
MAX OUTPUT WATTAGE[W]	*5 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

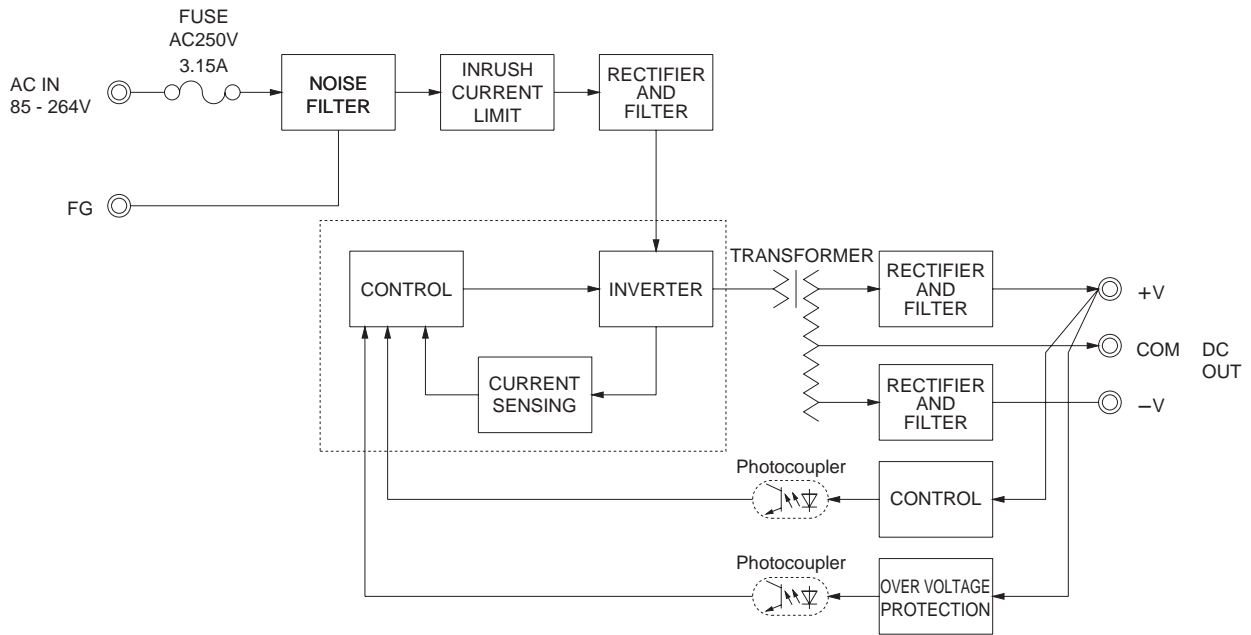
	MODEL	PBW30F-5	PBW30F-12	PBW30F-15	
INPUT	VOLTAGE[V]	AC85 - 264 1 φ or DC110 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *8)			
	CURRENT[A]	ACIN 100V	0.4typ (CURRENT1)	0.7typ (CURRENT1)	
		ACIN 200V	0.25typ (CURRENT1)	0.4typ (CURRENT1)	
	FREQUENCY[Hz]	50/60 (47 - 440) or DC			
	EFFICIENCY[%]	ACIN 100V	75typ (CURRENT1)	77typ (CURRENT1)	78typ (CURRENT1)
		ACIN 200V	75typ (CURRENT1)	81typ (CURRENT1)	79typ (CURRENT1)
INRUSH CURRENT[A]	ACIN 100V	15typ (CURRENT1) (At cold start)			
	ACIN 200V	30typ (CURRENT1) (At cold start)			
LEAKAGE CURRENT[mA]	0.30/0.65max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1.DENAN)				
OUTPUT	VOLTAGE[V]	±5	±12	±15	
	CURRENT1[A]	1.5	1.3	1.0	
	CURRENT2[A]	2.0	1.7	1.4	
	LINE REGULATION[mV]	20max	60max	60max	
	LOAD REGULATION 1[mV]	250max	600max	600max	
	LOAD REGULATION 2[mV]	500max	750max	750max	
	RIPPLE[mVp-p]	0 to +50C *1	80max	120max	120max
		-10 - 0C *1	140max	160max	160max
	RIPPLE NOISE[mVp-p]	0 to +50C *1	120max	150max	150max
		-10 - 0C *1	160max	180max	180max
	TEMPERATURE REGULATION[mV]	0 to +50C	50max	120max	150max
		-10 to +50C	60max	150max	180max
	DRIFT[mV]	20max	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]	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)				
PROTECTION CIRCUIT AND OTHERS	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	None				
ISOLATION	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)			
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 *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.

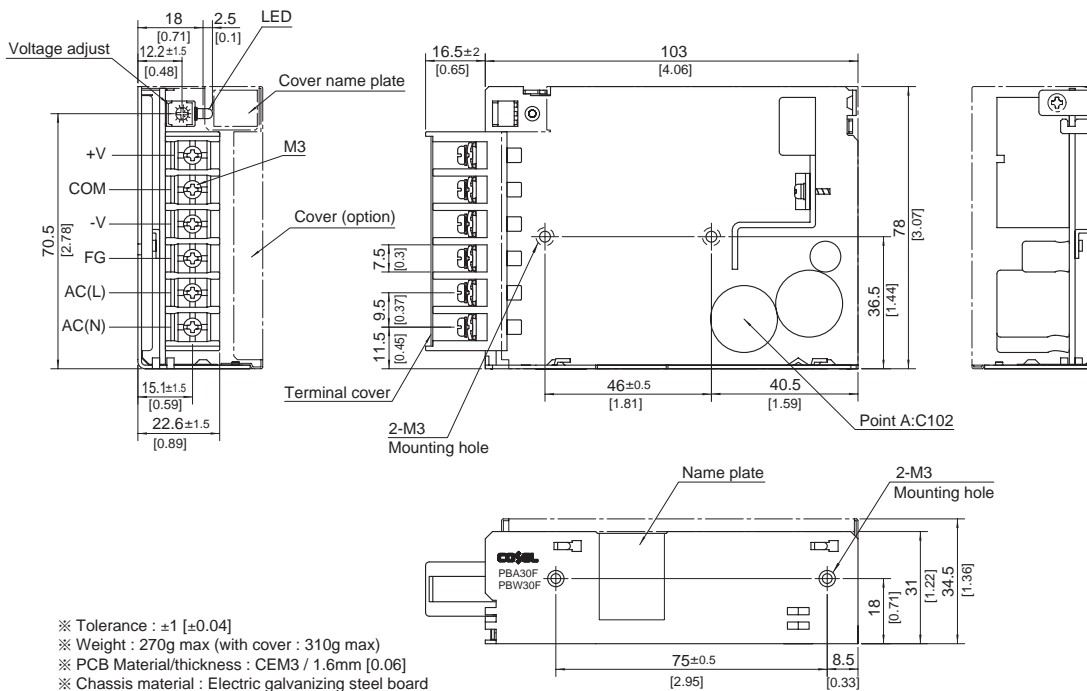
\*10 Please contact us about safety approvals for the model with option.  
\*11 Please contact us about dynamic load and input response.  
\*12 Please contact us about class C.  
\* Parallel operation with other model is not possible.  
\* Derating is required when operated with cover.  
\* A sound may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

Block diagram



External view

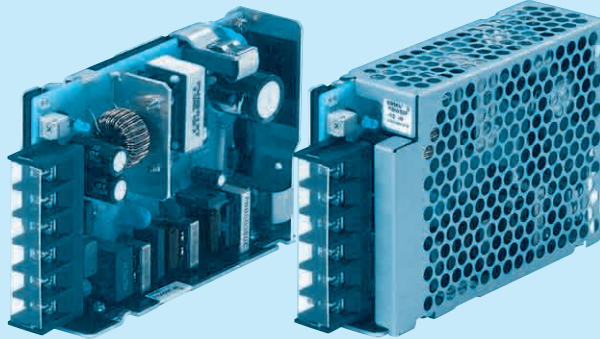
※ External size of option T,J,N,N1 and V is different from standard model and refer to 7 Option of instruction manual for details.



- ※ Tolerance :  $\pm 1$  [±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 • 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.

# PBW50F

① PB ② W ③ 50 ④ F ⑤ -□ ⑥ -□



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- 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

Cover is optional

MODEL	PBW50F-5	PBW50F-12	PBW50F-15
MAX OUTPUT WATTAGE[W]	*6 30	50.4	51
DC OUTPUT	VOLTAGE[V] *8 ±5 ( +10 )	±12 ( +24 )	±15 ( +30 )
	CURRENT1[A]	2.1	1.7
	CURRENT2[A] *6 4.0	2.7	2.4

## SPECIFICATIONS

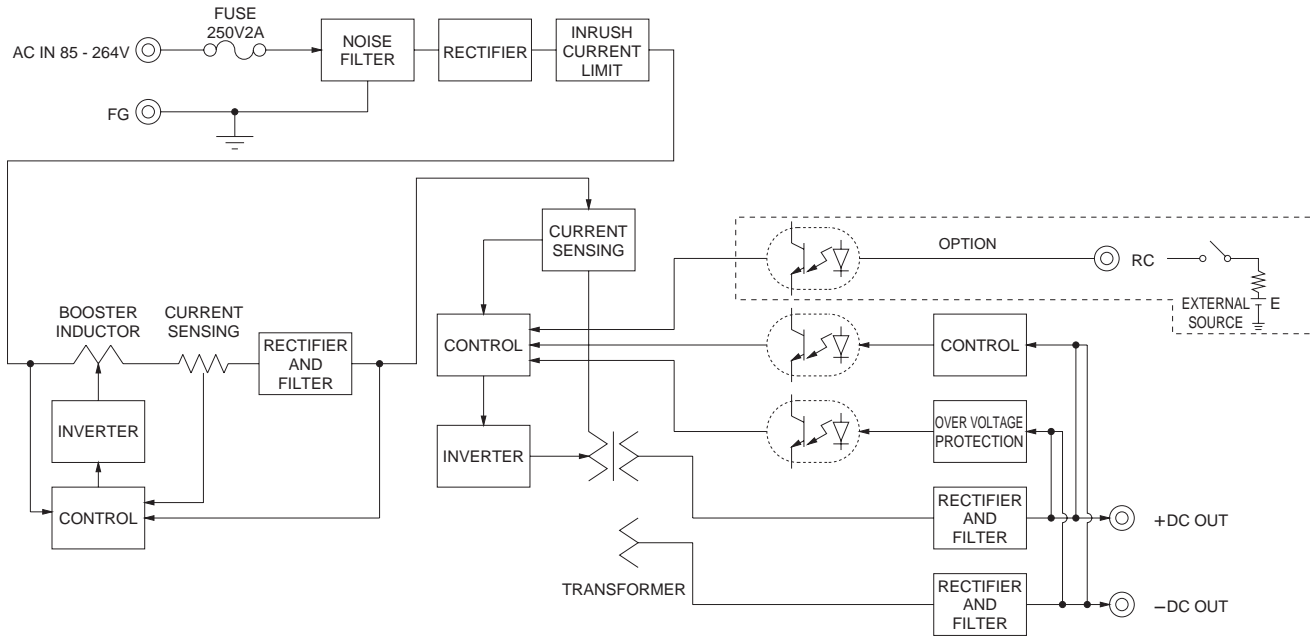
MODEL	PBW50F-5	PBW50F-12	PBW50F-15		
INPUT	VOLTAGE[V]	AC85 - 264 1 φ or DC120 - 370 (AC50 or DC70 Please refer to the instruction manual 2.1 Input voltage *3)			
	CURRENT[A]	ACIN 100V	0.45typ (CURRENT1)	0.70typ (CURRENT1)	
		ACIN 200V	0.30typ (CURRENT1)	0.40typ (CURRENT1)	
	FREQUENCY[Hz]	50/60 (47 - 63)			
	EFFICIENCY[%]	ACIN 100V	76typ (CURRENT1)	81typ (CURRENT1)	
		ACIN 200V	77typ (CURRENT1)	83typ (CURRENT1)	
	POWER FACTOR(Lo=100%)	ACIN 100V	0.98typ	0.99typ	
		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)				
OUTPUT	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] *6	4.0 / -	2.7 / -	2.4 / -	
	LINE REGULATION[mV]	20max / 36max	48max / 96max	60max / 96max	
	LOAD REGULATION 1[mV] *4	250max / 100max	600max / 150max	600max / 150max	
	LOAD REGULATION 2[mV] *5	500max / -	750max / -	750max / -	
	RIPPLE[mVp-p]	0 to +50C *1	80max / 240max	120max / 240max	120max / 240max
		-10 - 0C *1	140max / 320max	160max / 320max	160max / 320max
	RIPPLE NOISE[mVp-p]	0 to +50C *1	120max / 300max	150max / 300max	150max / 300max
		-10 - 0C *1	160max / 360max	180max / 360max	180max / 360max
	TEMPERATURE REGULATION[mV]	0 to +50C	50max	120max	150max
		-10 to +50C	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)		
PROTECTION CIRCUIT AND OTHERS	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)			
ISOLATION	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)			
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 *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).  
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 \*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.

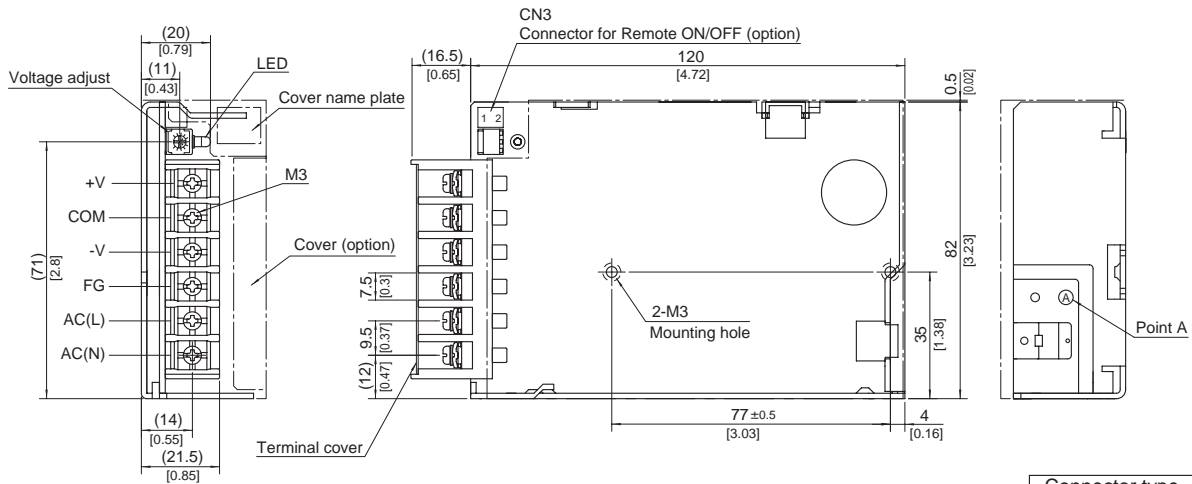
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Block diagram



External view

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**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 : ±1 [±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.