

- ① Series name
- ② Output wattage
- ③ Universal input
- ④ Output voltage
- ⑤ Optional
  - 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 externaly

Specification is changed at option. Please consult us details.

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 optionally available *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	83typ
		ACIN 200V	76typ	82typ	81typ	82typ	83typ	84typ	85typ	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)									
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 +50C *1	80max	80max	120max	120max	120max	120max	150max	150max
		-10 - 0C *1	140max	140max	160max	160max	160max	160max	200max	200max
	RIPPLE NOISE[mVp-p]	0 to +50C *1	120max	120max	150max	150max	150max	150max	250max	250max
		-10 - 0C *1	160max	160max	180max	180max	180max	180max	300max	300max
	TEMPERATURE REGULATION[mV]	0 to +50C	50max	50max	90max	120max	150max	240max	360max	480max
		-10 to +50C	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 4.90 - 5.20 8.70 - 9.30 11.5 - 12.5 14.5 - 15.5 23.5 - 24.5 35.5 - 36.5 47.0 - 49.0									
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°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) 3,000m (10,000feet) max								
	VIBRATION	19.6m/s <sup>2</sup> (2G), 10 - 55Hz, 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	UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN (At only AC input)								
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B								
	CE MARKING	Low Voltage Directive, EMC Directive								
	HARMONIC ATTENUATOR	Complies with IEC61000-3-2								
OTHERS	CASE SIZE/WEIGHT	31 X 82 X 120mm (without terminal block) (W X H X D) / 280g max (without cover)								
	COOLING METHOD	Convection								

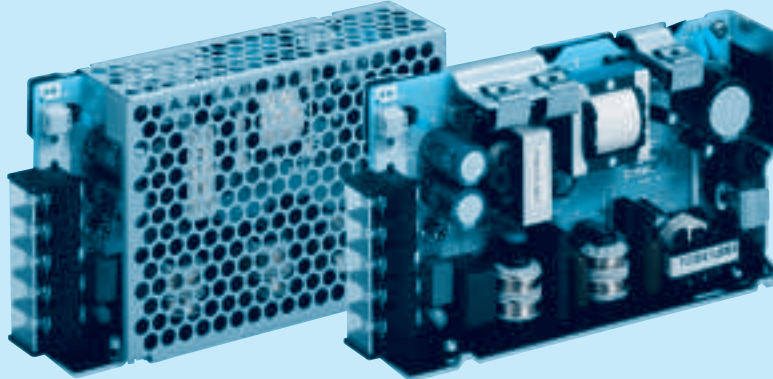
\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN : RM101).  
 \*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.  
 \*3 Applicable when Remote ON/OFF (optional) is added. RC is insulated with input, output and FG.  
 \*4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

\* 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.

# PBA75F

PBA 75 F -5 -□

① ② ③ ④ ⑤



- ① Series name
- ② Output wattage
- ③ Universal input
- ④ Output voltage
- ⑤ Optional
  - 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

Specification is changed at option. Please consult us details.

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 optionally available *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	84typ
		ACIN 200V	78typ	83typ	82typ	83typ	84typ	85typ	86typ	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)									
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 +50C *1	80max	80max	120max	120max	120max	120max	150max	150max
		-10 - 0C *1	140max	140max	160max	160max	160max	160max	200max	200max
	RIPPLE NOISE[mVp-p]	0 to +50C *1	120max	120max	150max	150max	150max	150max	250max	250max
		-10 - 0C *1	160max	160max	180max	180max	180max	180max	300max	300max
	TEMPERATURE REGULATION[mV]	0 to +50C	50max	50max	90max	120max	150max	240max	360max	480max
		-10 to +50C	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    4.90 - 5.20    8.70 - 9.30    11.5 - 12.5    14.5 - 15.5    23.5 - 24.5    35.5 - 36.5    47.0 - 49.0									
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°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) 3,000m (10,000feet) max								
	VIBRATION	19.6m/s <sup>2</sup> (2G), 10 - 55Hz, 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	UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN (At only AC input)								
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B								
	CE MARKING	Low Voltage Directive, EMC Directive								
	HARMONIC ATTENUATOR	Complies with IEC61000-3-2								
OTHERS	CASE SIZE/WEIGHT	32 X 82 X 135mm (without terminal block) (W X H X D) / 350g max (without cover)								
	COOLING METHOD	Convection								

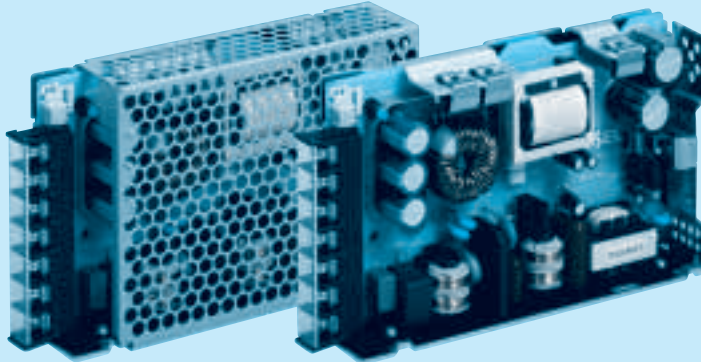
\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter(equivalent to KEISOKU-GIKEN : RM101).  
 \*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.  
 \*3 Applicable when Remote ON/OFF(optional) is added. RC is insulated with input, output and FG.  
 \*4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

\* 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.

# PBA100F

PBA 100 F -5 -□

① ② ③ ④ ⑤



- ① Series name
- ② Output wattage
- ③ Universal input
- ④ Output voltage
- ⑤ Optional
  - 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 externaly

Specification is changed at option. Please consult us details.

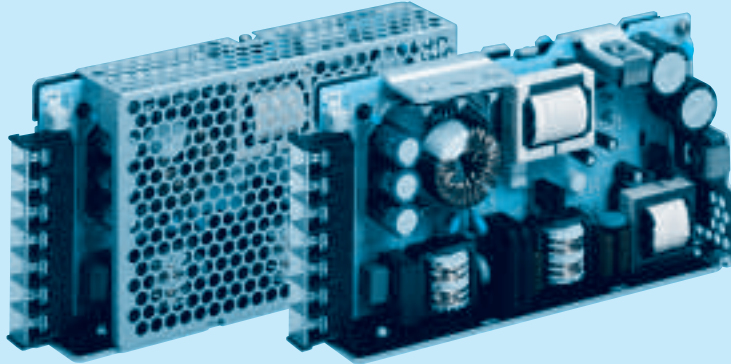
MODEL	PBA100F-3R3	PBA100F-5	PBA100F-9	PBA100F-12	PBA100F-15	PBA100F-24	PBA100F-36	PBA100F-48
MAX OUTPUT WATTAGE[W]	66	100	94.5	102	105	108	100.8	100.8
DC OUTPUT	3.3V 20A	5V 20A	9V 10.5A	12V 8.5A	15V 7A	24V 4.5A	36V 2.8A	48V 2.1A

## SPECIFICATIONS

	MODEL	PBA100F-3R3	PBA100F-5	PBA100F-9	PBA100F-12	PBA100F-15	PBA100F-24	PBA100F-36	PBA100F-48	
INPUT	VOLTAGE[V]	AC85 - 264 1φ or DC120 - 370 (AC50 or DC70 optionally available *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)									
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 +50C *1	80max	80max	120max	120max	120max	120max	150max	150max
		-10 - 0C *1	140max	140max	160max	160max	160max	160max	200max	200max
	RIPPLE NOISE[mVp-p]	0 to +50C *1	120max	120max	150max	150max	150max	150max	250max	250max
		-10 - 0C *1	160max	160max	180max	180max	180max	180max	300max	300max
	TEMPERATURE REGULATION[mV]	0 to +50C	50max	50max	90max	120max	150max	240max	360max	480max
		-10 to +50C	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	4.90 - 5.20	8.70 - 9.30	11.5 - 12.5	14.5 - 15.5	23.5 - 24.5	35.5 - 36.5	47.0 - 49.0		
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) 3,000m (10,000feet) max								
	VIBRATION	19.6m/s <sup>2</sup> (2G), 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis								
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis								
	AGENCY APPROVALS	UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN (At only AC input)								
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B								
	CE MARKING	Low Voltage Directive, EMC Directive								
OTHERS	HARMONIC ATTENUATOR	Complies with IEC61000-3-2								
	CASE SIZE/WEIGHT	32 X 93 X 147mm (without terminal block) (W X H X 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°C.  
 \*3 Applicable when Remote ON/OFF(optional) is added. RC is insulated with input, output and FG.  
 \*4 Derating is required.Consult us for details.

\* 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.



- ① Series name
- ② Output wattage
- ③ Universal input
- ④ Output voltage
- ⑤ Optional
  - 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 externaly

Specification is changed at option. Please consult us details.

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

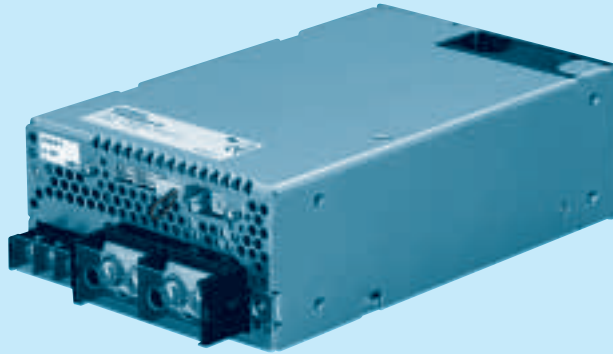
SPECIFICATIONS

	MODEL	PBA150F-3R3	PBA150F-5	PBA150F-9	PBA150F-12	PBA150F-15	PBA150F-24	PBA150F-36	PBA150F-48	
INPUT	VOLTAGE[V]	AC85 - 264 1φ or DC120 - 370 (AC50 or DC70 optionally available *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)									
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 +50C *1	80max	80max	120max	120max	120max	120max	150max	150max
		-10 - 0C *1	140max	140max	160max	160max	160max	160max	200max	200max
	RIPPLE NOISE[mVp-p]	0 to +50C *1	120max	120max	150max	150max	150max	150max	250max	250max
		-10 - 0C *1	160max	160max	180max	180max	180max	180max	300max	300max
	TEMPERATURE REGULATION[mV]	0 to +50C	50max	50max	90max	120max	150max	240max	360max	480max
		-10 to +50C	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	4.90 - 5.20	8.70 - 9.30	11.5 - 12.5	14.5 - 15.5	23.5 - 24.5	35.5 - 36.5	47.0 - 49.0	
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) 3,000m (10,000feet) max								
	VIBRATION	19.6m/s <sup>2</sup> (2G), 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis								
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis								
	AGENCY APPROVALS	UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN (At only AC input)								
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B								
	CE MARKING	Low Voltage Directive, EMC Directive								
OTHERS	HARMONIC ATTENUATOR	Complies with IEC61000-3-2								
	CASE SIZE/WEIGHT	34×93×168mm (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°C.  
 \*3 Applicable when Remote ON/OFF(optional) is added. RC is insulated with input, output and FG.  
 \*4 Derating is required.Consult us for details.

\* 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.





- ① Series name
- ② Output wattage
- ③ Universal input
- ④ Output voltage
- ⑤ Optional
  - C :with Coating
  - G :Low leakage current
  - U :Operation stop voltage is set at a lower value
  - F1 :With Long-Life fan
  - F3 :Reverse air exhaust type
  - F4 :Low speed fan

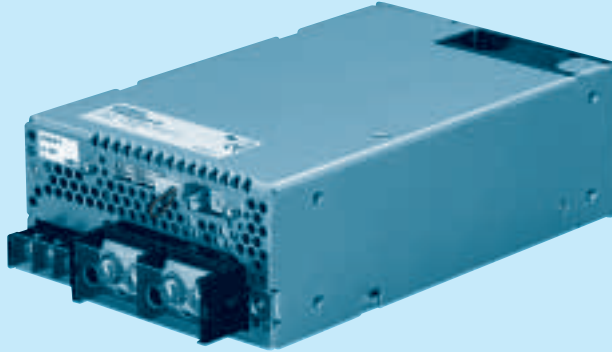
Refer to instruction manual 7.1

MODEL	PBA600F-3R3	PBA600F-5	PBA600F-7R5	PBA600F-12	PBA600F-15	PBA600F-24	PBA600F-36	PBA600F-48
MAX OUTPUT WATTAGE[W]	396	600	600	636	645	648	648	624
DC OUTPUT	ACIN 100V	3.3V 120A	5V 120A	7.5V 80A	12V 53A	15V 43A	24V 27A	36V 18A
	ACIN 200V *3	3.3V 120A	5V 120A	7.5V 80A	12V 53A	15V 43A	24V 27(31)A	36V 18A

SPECIFICATIONS

MODEL	PBA600F-3R3	PBA600F-5	PBA600F-7R5	PBA600F-12	PBA600F-15	PBA600F-24	PBA600F-36	PBA600F-48		
INPUT	VOLTAGE[V]	AC85 - 264 1φ or DC120 - 350 (AC50 or DC70 optionally available *5)								
	CURRENT[A]	ACIN 100V	5.8typ	8.2typ						
		ACIN 200V	3typ	4.1typ						
	FREQUENCY[Hz]	50/60 (47 - 63)								
	EFFICIENCY[%]	ACIN 100V	70typ	75typ	76typ	79typ	79typ	81typ	82typ	
		ACIN 200V	72typ	77typ	79typ	82typ	82typ	84typ	83typ	
	POWER FACTOR	ACIN 100V	0.98typ (Io=100%)							
ACIN 200V		0.95typ (Io=100%)								
INRUSH CURRENT[A]	ACIN 100V	20/40typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 3 sec. to re-start)								
	ACIN 200V	40/40typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 3 sec. to re-start)								
LEAKAGE CURRENT[mA]	0.45/0.75max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1)									
OUTPUT	VOLTAGE[V]	3.3	5	7.5	12	15	24	36	48	
	CURRENT[A]	ACIN 100V	120	120	80	53	43	27	18	13
		ACIN 200V *3	120	120	80	53	43	27(31)	18	13
	LINE REGULATION[mV]	20max	20max	36max	48max	60max	96max	144max	192max	
	LOAD REGULATION[mV]	40max	40max	60max	100max	120max	150max	150max	300max	
	RIPPLE[mVp-p]	0 to +50°C *1	80max	80max	120max	120max	120max	120max	150max	150max
		-20 - 0°C *1	140max	140max	160max	160max	160max	160max	160max	400max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1	120max	120max	150max	150max	150max	150max	200max	200max
		-20 - 0°C *1	160max	160max	180max	180max	180max	180max	240max	500max
	TEMPERATURE REGULATION[mV]	0 to +50°C *1	40max	50max	75max	120max	150max	240max	360max	480max
		-20 to +50°C *1	60max	75max	120max	180max	180max	290max	440max	600max
	DRIFT[mV]	*2	12max	20max	30max	48max	60max	96max	144max	192max
	START-UP TIME[ms]	400typ(ACIN 100/200V, Io=100%) Start-up time is 500ms typ for less than 1minute of applying input again from turning off the input voltage.								
HOLD-UP TIME[ms]	20typ (ACIN 100/200V, Io=100%)									
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	2.64 - 3.96	3.96 - 6.00	5.25 - 8.25	8.25 - 13.20	10.50 - 16.50	16.50 - 26.40	25.20 - 39.60	38.40 - 56.00		
OUTPUT VOLTAGE SETTING[V]	3.30 - 3.40	5.00 - 5.15	7.50 - 7.80	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 or 101% of peak current and recovers automatically								
	OVERVOLTAGE PROTECTION[V] *4	Vo+0.66 - 1.32	Vo+1.0 - 2.0	Vo+1.5 - 3.0	Vo+2.4 - 4.8	Vo+3.0 - 6.0	Vo+4.8 - 9.6	Vo+7.2 - 14.4	Vo+4.8 - 12.0	
	OPERATING INDICATION	LED (Green)								
	REMOTE SENSING	Provided								
REMOTE ON/OFF	Provided									
ISOLATION	INPUT-OUTPUT · RC	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 · AUX-FG	AC500V 1minute. Cutoff current = 100mA, DC500V 50MΩmin (At Room Temperature)								
	OUTPUT-RC · AUX	AC100V 1minute. Cutoff current = 100mA, DC100V 50MΩmin (At Room Temperature)								
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-20 to +71°C, 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	STORAGE TEMP.,HUMID.AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	VIBRATION	19.6m/s <sup>2</sup> (2G), 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis								
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis								
	AGENCY APPROVALS	UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN (At only AC input)								
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B								
	CE MARKING	Low Voltage Directive, EMC Directive								
OTHERS	HARMONIC ATTENUATOR	Complies with IEC61000-3-2								
	CASE SIZE/WEIGHT	120×61×190mm (without terminal block and screw) (W×H×D) /1.6kg max								
	COOLING METHOD	Forced cooling (internal fan)								

\*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 () means peak current. Peak loading for 10s. And Duty 35% max, refer to instruction manual in detail.  
 \*4 Overvoltage protection circuit to follow to output voltage setting.  
 \*5 Derating is required.Consult us for details.  
 \* A sound may occur from power supply at pulse loading.



- ① Series name
- ② Output wattage
- ③ Universal input
- ④ Output voltage
- ⑤ Optional
  - C :with Coating
  - G :Low leakage current
  - U :Operation stop voltage is set at a lower value
  - F1 :With Long-Life fan
  - F3 :Reverse air exhaust type
  - F4 :Low speed fan

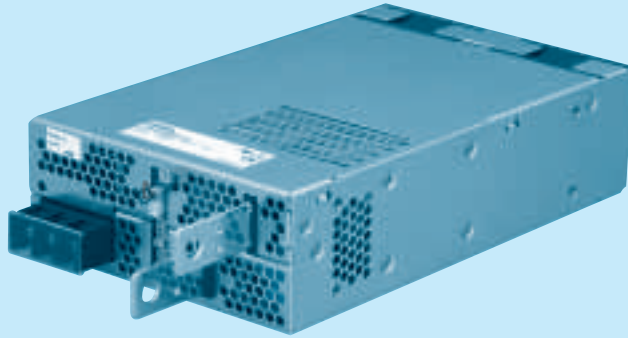
Refer to instruction manual 7.1

MODEL	PBA600F-3R3	PBA600F-5	PBA600F-7R5	PBA600F-12	PBA600F-15	PBA600F-24	PBA600F-36	PBA600F-48	
MAX OUTPUT WATTAGE[W]	396	600	600	636	645	648	648	624	
DC OUTPUT	ACIN 100V	3.3V 120A	5V 120A	7.5V 80A	12V 53A	15V 43A	24V 27A	36V 18A	48V 13A
	ACIN 200V *3	3.3V 120A	5V 120A	7.5V 80A	12V 53A	15V 43A	24V 27(31)A	36V 18A	48V 13A

SPECIFICATIONS

MODEL	PBA600F-3R3	PBA600F-5	PBA600F-7R5	PBA600F-12	PBA600F-15	PBA600F-24	PBA600F-36	PBA600F-48		
INPUT	VOLTAGE[V]	AC85 - 264 1φ or DC120 - 350 (AC50 or DC70 optionally available *5)								
	CURRENT[A]	ACIN 100V	5.8typ	8.2typ						
		ACIN 200V	3typ	4.1typ						
	FREQUENCY[Hz]	50/60 (47 - 63)								
	EFFICIENCY[%]	ACIN 100V	70typ	75typ	76typ	79typ	79typ	81typ	82typ	
		ACIN 200V	72typ	77typ	79typ	82typ	82typ	84typ	83typ	
	POWER FACTOR	ACIN 100V	0.98typ (Io=100%)							
ACIN 200V		0.95typ (Io=100%)								
INRUSH CURRENT[A]	ACIN 100V	20/40typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 3 sec. to re-start)								
	ACIN 200V	40/40typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 3 sec. to re-start)								
LEAKAGE CURRENT[mA]	0.45/0.75max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1)									
OUTPUT	VOLTAGE[V]	3.3	5	7.5	12	15	24	36	48	
	CURRENT[A]	ACIN 100V	120	120	80	53	43	27	18	13
		ACIN 200V *3	120	120	80	53	43	27(31)	18	13
	LINE REGULATION[mV]	20max	20max	36max	48max	60max	96max	144max	192max	
	LOAD REGULATION[mV]	40max	40max	60max	100max	120max	150max	150max	300max	
	RIPPLE[mVp-p]	0 to +50°C *1	80max	80max	120max	120max	120max	120max	150max	150max
		-20 - 0°C *1	140max	140max	160max	160max	160max	160max	160max	400max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1	120max	120max	150max	150max	150max	150max	200max	200max
		-20 - 0°C *1	160max	160max	180max	180max	180max	180max	240max	500max
	TEMPERATURE REGULATION[mV]	0 to +50°C *1	40max	50max	75max	120max	150max	240max	360max	480max
		-20 to +50°C *1	60max	75max	120max	180max	180max	290max	440max	600max
	DRIFT[mV]	*2	12max	20max	30max	48max	60max	96max	144max	192max
	START-UP TIME[ms]	400typ(ACIN 100/200V, Io=100%) Start-up time is 500ms typ for less than 1minute of applying input again from turning off the input voltage.								
HOLD-UP TIME[ms]	20typ (ACIN 100/200V, Io=100%)									
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	2.64 - 3.96	3.96 - 6.00	5.25 - 8.25	8.25 - 13.20	10.50 - 16.50	16.50 - 26.40	25.20 - 39.60	38.40 - 56.00		
OUTPUT VOLTAGE SETTING[V]	3.30 - 3.40	5.00 - 5.15	7.50 - 7.80	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 or 101% of peak current and recovers automatically								
	OVERVOLTAGE PROTECTION[V] *4	Vo+0.66 - 1.32	Vo+1.0 - 2.0	Vo+1.5 - 3.0	Vo+2.4 - 4.8	Vo+3.0 - 6.0	Vo+4.8 - 9.6	Vo+7.2 - 14.4	Vo+4.8 - 12.0	
	OPERATING INDICATION	LED (Green)								
	REMOTE SENSING	Provided								
REMOTE ON/OFF	Provided									
ISOLATION	INPUT-OUTPUT · RC	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 · AUX-FG	AC500V 1minute. Cutoff current = 100mA, DC500V 50MΩmin (At Room Temperature)								
	OUTPUT-RC · AUX	AC100V 1minute. Cutoff current = 100mA, DC100V 50MΩmin (At Room Temperature)								
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-20 to +71°C, 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	STORAGE TEMP.,HUMID.AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	VIBRATION	19.6m/s <sup>2</sup> (2G), 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis								
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis								
	AGENCY APPROVALS	UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN (At only AC input)								
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B								
	CE MARKING	Low Voltage Directive, EMC Directive								
	HARMONIC ATTENUATOR	Complies with IEC61000-3-2								
OTHERS	CASE SIZE/WEIGHT	120×61×190mm (without terminal block and screw) (W×H×D) /1.6kg max								
	COOLING METHOD	Forced cooling (internal fan)								

\*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 () means peak current. Peak loading for 10s. And Duty 35% max, refer to instruction manual in detail.  
 \*4 Overvoltage protection circuit to follow to output voltage setting.  
 \*5 Derating is required.Consult us for details.  
 \* A sound may occur from power supply at pulse loading.



- ① Series name
- ② Output wattage
- ③ Universal input
- ④ Output voltage
- ⑤ Optional
  - C :with Coating
  - G :Low leakage current
  - U :Operation stop voltage is set at a lower value
  - F1 :With Long-Life fan
  - F3 :Reverse air exhaust type
  - F4 :Low speed fan

Refer to instruction manual 7.1

MODEL	PBA1000F-3R3	PBA1000F-5	PBA1000F-7R5	PBA1000F-12	PBA1000F-15	PBA1000F-24	PBA1000F-36	PBA1000F-48	
MAX OUTPUT WATTAGE[W]	660	1000	1005	1056	1050	1056	1044	1056	
DC OUTPUT	ACIN 100V	3.3V 200A	5V 200A	7.5V 134A	12V 88A	15V 70A	24V 44A	36V 29A	48V 22A
	ACIN 200V *3	3.3V 200A	5V 200A	7.5V 134A	12V 88A	15V 70A	24V 44(51)A	36V 29A	48V 22A

## SPECIFICATIONS

MODEL	PBA1000F-3R3	PBA1000F-5	PBA1000F-7R5	PBA1000F-12	PBA1000F-15	PBA1000F-24	PBA1000F-36	PBA1000F-48		
INPUT	VOLTAGE[V]	AC85 - 264 1φ or DC120 - 350 (AC50 or DC70 optionally available *6)								
	CURRENT[A]	ACIN 100V	9typ	13typ						
		ACIN 200V	5typ	7typ						
	FREQUENCY[Hz]	50/60 (47 - 63)								
	EFFICIENCY[%]	ACIN 100V	74typ	79typ	80typ	82typ	82typ	84typ	84typ	
		ACIN 200V	76typ	81typ	83typ	84typ	84typ	86typ	86typ	
	POWER FACTOR	ACIN 100V	0.98typ (Io=100%)							
ACIN 200V		0.95typ (Io=100%)								
INRUSH CURRENT[A]	ACIN 100V	20/40typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 10 sec. to re-start)								
	ACIN 200V	40/40typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 10 sec. to re-start)								
LEAKAGE CURRENT[mA]	0.5/1.0max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1)									
OUTPUT	VOLTAGE[V]	3.3	5	7.5	12	15	24	36	48	
	CURRENT[A]	ACIN 100V	200	200	134	88	70	44	29	22
		ACIN 200V *3	200	200	134	88	70	44(51)	29	22
	LINE REGULATION[mV]	20max	20max	36max	48max	60max	96max	144max	192max	
	LOAD REGULATION[mV]	40max	40max	60max	100max	120max	150max	150max	300max	
	RIPPLE[mVp-p]	0 to +50°C *1	80max	80max	120max	120max	120max	120max	150max	150max
		-20 - 0°C *1	140max	140max	160max	160max	160max	160max	160max	400max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1	120max	120max	150max	150max	150max	150max	200max	200max
		-20 - 0°C *1	160max	160max	180max	180max	180max	180max	240max	500max
	TEMPERATURE REGULATION[mV]	0 to +50°C *1	40max	50max	75max	120max	150max	240max	360max	480max
-20 to +50°C *1		60max	75max	120max	180max	180max	290max	440max	600max	
DRIFT[mV]	*2	12max	20max	30max	48max	60max	96max	144max	192max	
START-UP TIME[ms]	400typ(ACIN 100/200V, Io=100%) Start-up time is 500ms typ for less than 1minute of applying input again from turning off the input voltage.									
HOLD-UP TIME[ms]	20typ (ACIN 100/200V, Io=100%)									
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	2.64 - 3.96	3.96 - 6.00	5.25 - 8.25	8.25 - 13.20	10.50 - 16.50	16.50 - 26.40	25.20 - 39.60	38.40 - 56.00		
OUTPUT VOLTAGE SETTING[V]	3.30 - 3.40	5.00 - 5.15	7.50 - 7.80	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 *5	Works over 105% of rated current or 101% of peak current and recovers automatically								
	OVERVOLTAGE PROTECTION[V] *4	Vo+0.66 - 1.32	Vo+1.0 - 2.0	Vo+1.5 - 3.0	Vo+2.4 - 4.8	Vo+3.0 - 6.0	Vo+4.8 - 9.6	Vo+7.2 - 14.4	Vo+4.8 - 12.0	
	OPERATING INDICATION	LED (Green)								
	REMOTE SENSING	Provided								
REMOTE ON/OFF	Provided									
ISOLATION	INPUT-OUTPUT · RC	AC3.000V 1minute, Cutoff current = 25mA, DC500V 50MΩmin (At Room Temperature)								
	INPUT-FG	AC2.000V 1minute, Cutoff current = 25mA, DC500V 50MΩmin (At Room Temperature)								
	OUTPUT · RC · AUX-FG	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩmin (At Room Temperature)								
	OUTPUT-RC · AUX	AC100V 1minute, Cutoff current = 100mA, DC100V 50MΩmin (At Room Temperature)								
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-20 to +71°C, 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	STORAGE TEMP.,HUMID.AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	VIBRATION	19.6m/s <sup>2</sup> (2G), 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis								
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis								
	AGENCY APPROVALS	UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN (At only AC input)								
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B								
	CE MARKING	Low Voltage Directive, EMC Directive								
OTHERS	HARMONIC ATTENUATOR	Complies with IEC61000-3-2								
	CASE SIZE/WEIGHT	150×61×240mm (without terminal block and screw) (W×H×D) /2.2kg max								
COOLING METHOD	Forced cooling (internal fan)									

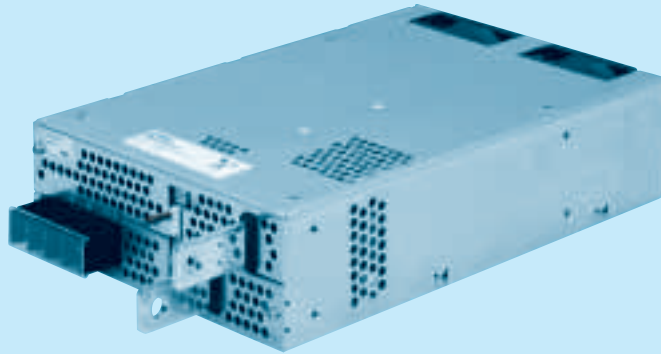
\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter(equivalent to KEISOKU-GIKEN : RM101).  
 Ripple and ripple noise is measured on measuring board with capacitor of 22 μF within 150mm from the output terminal.  
 \*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.  
 \*3 ( ) means peak current. Peak loading for 10s. And Duty 35% max, refer to Instruction manual

in detail.  
 \*4 Overvoltage protection circuit to follow to output voltage setting.  
 \*5 The output voltage is shutted down the over current protection circuit operates continuously for about 5 sec.  
 \*6 Derating is required.Consult us for details.  
 \* A sound may occur from power supply at pulse loading.

# PBA1500F

PBA 1500 F -5 -□

① ② ③ ④ ⑤



- ① Series name
- ② Output wattage
- ③ Universal input
- ④ Output voltage
- ⑤ Optional
  - C :with Coating
  - G :Low leakage current
  - U :Operation stop voltage is set at a lower value
  - F1 :With Long-Life fan
  - F3 :Reverse air exhaust type
  - F4 :Low speed fan

MODEL	PBA1500F-3R3	PBA1500F-5	PBA1500F-7R5	PBA1500F-12	PBA1500F-15	PBA1500F-24	PBA1500F-36	PBA1500F-48
MAX OUTPUT WATTAGE[W]	990	1500	1500	1500	1500	1680	1692	1680
DC OUTPUT	ACIN 100V	3.3V 300A	5V 300A	7.5V 200A	12V 125A	15V 100A	24V 65A	36V 42A
	ACIN 200V *3	3.3V 300A	5V 300A	7.5V 200A	12V 125A	15V 100A	24V 70(105)A	36V 47(70)A

## SPECIFICATIONS

	MODEL	PBA1500F-3R3	PBA1500F-5	PBA1500F-7R5	PBA1500F-12	PBA1500F-15	PBA1500F-24	PBA1500F-36	PBA1500F-48	
INPUT	VOLTAGE[V]	AC85 - 264 1φ or DC120 - 370 (AC50 or DC70 optionally available *5)								
	CURRENT[A]	ACIN 100V	15typ	19typ						
		ACIN 200V	8typ	10typ						
	FREQUENCY[Hz]	50/60 (47 - 63)								
	EFFICIENCY[%]	ACIN 100V	72typ	77typ	81typ	81typ	83typ	84typ	84typ	84typ
		ACIN 200V	75typ	81typ	83typ	84typ	86typ	87typ	87typ	87typ
	POWER FACTOR	ACIN 100V	0.98typ (Io=100%)							
ACIN 200V		0.95typ (Io=100%)								
INRUSH CURRENT[A]	ACIN 100V	20/40typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 10 sec. to re-start)								
	ACIN 200V	40/40typ (Io=100%) (Primary inrush current /Secondary inrush current) (More than 10 sec. to re-start)								
LEAKAGE CURRENT[mA]	0.9/1.5max (ACIN 100V/240V 60Hz, Io=100%, According to IEC60950-1)									
OUTPUT	VOLTAGE[V]	3.3	5	7.5	12	15	24	36	48	
	CURRENT[A]	ACIN 100V	300	300	200	125	100	65	42	32
		ACIN 200V *3	300	300	200	125	100	70(105)	47(70)	35
	LINE REGULATION[mV]	20max	20max	36max	48max	60max	96max	144max	192max	
	LOAD REGULATION[mV]	40max	40max	60max	100max	120max	150max	150max	300max	
	RIPPLE[mVp-p]	0 to +50°C *1	80max	80max	120max	120max	120max	120max	150max	150max
		-20 - 0°C *1	140max	140max	160max	160max	160max	160max	160max	400max
	RIPPLE NOISE[mVp-p]	0 to +50°C *1	120max	120max	150max	150max	150max	150max	200max	200max
		-20 - 0°C *1	160max	160max	180max	180max	180max	180max	240max	500max
	TEMPERATURE REGULATION[mV]	0 to +50°C *1	40max	50max	75max	120max	150max	240max	360max	480max
		-20 to +50°C *1	60max	75max	120max	180max	180max	290max	440max	600max
DRIFT[mV]	*2	12max	20max	30max	48max	60max	96max	144max	192max	
START-UP TIME[ms]	600typ(ACIN 100/200V, Io=100%) Start-up time is 500ms typ for less than 1minute of applying input again from turning off the input voltage.									
HOLD-UP TIME[ms]	20typ (ACIN 100/200V, Io=100%)									
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	2.64 - 3.96	3.96 - 6.00	5.25 - 8.25	8.25 - 13.20	10.50 - 16.50	16.50 - 26.40	25.20 - 39.60	38.40 - 56.00		
OUTPUT VOLTAGE SETTING[V]	3.30 - 3.40	5.00 - 5.15	7.50 - 7.80	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 or 101% of peak current and recovers automatically								
	OVERVOLTAGE PROTECTION[V] *4	Vo+0.66 - 1.32	Vo+1.0 - 2.0	Vo+1.5 - 3.0	Vo+2.4 - 4.8	Vo+3.0 - 6.0	Vo+4.8 - 9.6	Vo+7.2 - 14.4	Vo+4.8 - 12.0	
	OPERATING INDICATION	LED (Green)								
	REMOTE SENSING	Provided								
ISOLATION	REMOTE ON/OFF	Provided								
	INPUT-OUTPUT · RC	AC3.000V 1minute, Cutoff current = 25mA, DC500V 50MΩmin (At Room Temperature)								
	INPUT-FG	AC2.000V 1minute, Cutoff current = 25mA, DC500V 50MΩmin (At Room Temperature)								
	OUTPUT · RC · AUX-FG	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩmin (At Room Temperature)								
ENVIRONMENT	OUTPUT-RC · AUX	AC100V 1minute, Cutoff current = 100mA, DC100V 50MΩmin (At Room Temperature)								
	OPERATING TEMP.,HUMID.AND ALTITUDE	-20 to +71°C, 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	STORAGE TEMP.,HUMID.AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing) 3,000m (10,000feet) max								
	VIBRATION	19.6m/s <sup>2</sup> (2G), 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis								
SAFETY AND NOISE REGULATIONS	IMPACT	196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis								
	AGENCY APPROVALS	UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN (At only AC input)								
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B, additional noise filter required for meeting class B.								
	CE MARKING	Low Voltage Directive, EMC Directive								
OTHERS	HARMONIC ATTENUATOR	Complies with IEC61000-3-2								
	CASE SIZE/WEIGHT	178×61×268mm (without terminal block and screw) (W×H×D) /3.4kg max								
	COOLING METHOD	Forced cooling (internal fan)								

\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter(equivalent to KEISOKU-GIKEN : RM101).  
 Ripple and ripple noise is measured on measuring board with capacitor of 22 μF within 150mm from the output terminal.  
 \*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.  
 \*3 ( ) means peak current. Peak loading for 10s. And Duty 35% max, refer to Instruction manual

in detail.  
 \*4 Overvoltage protection circuit to follow to output voltage setting.  
 \*5 Derating is required.Consult us for details.  
 \* A sound may occur from power supply at pulse loading.



## Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current [A]	Rated input fuse	Inrush current protection circuit	PCB/Pattern			Series/Parallel operation availability	
						Material	Single sided	Double sided	Series operation	Parallel operation
PBA50F	Active filter	60-550	0.7	250V 2A	Thermistor	CEM-3	Yes		Yes	*1
	Forward converter	130								
PBA75F	Active filter	60-550	1.0	250V 3.15A	Thermistor	CEM-3	Yes		Yes	*1
	Forward converter	120								
PBA100F	Active filter	60-550	1.3	250V 3.15A	Thermistor	CEM-3	Yes		Yes	*1
	Forward converter	120								
PBA150F	Active filter	60-550	2.0	250V 4A	Thermistor	CEM-3	Yes		Yes	*1
	Forward converter	120								
PBA300F	Active filter	230	4.1	250V 10A	SCR	FR-4		Yes	Yes	Yes
	Forward converter	330								
PBA600F	Active filter	130	8.2	250V 15A	SCR	FR-4		Yes	Yes	Yes
	Forward converter	330								
PBA1000F	Active filter	130	13	250V 30A	SCR	FR-4		Yes	Yes	Yes
	Forward converter	280								
PBA1500F	Active filter	130	19	250V 30A	SCR	FR-4		Yes	Yes	Yes
	Forward converter	200								

\*1 Refer to Series/Parallel Operation of Instruction Manual.

\* The value of input current is at ACIN 100V and rated load.

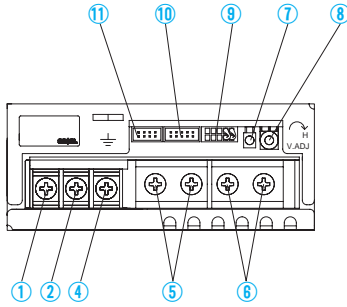
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# 1 Terminal Block

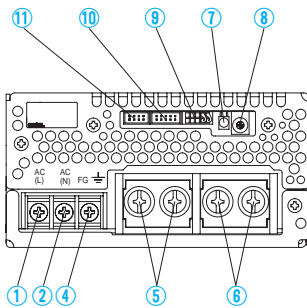
\* This content describes PBA300F - 1500F.

Please see External view about PBA50F - 150F.

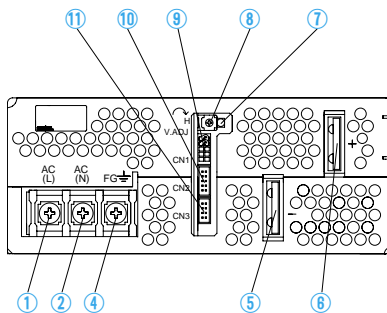
## ● PBA300F



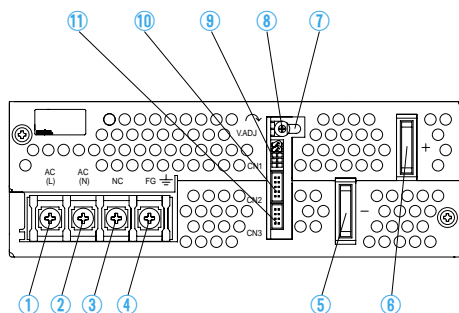
## ● PBA600F



## ● PBA1000F



## ● PBA1500F



- ① AC (L)
- ② AC (N)
- ③ N.C.
- ④ Frame Ground
- ⑤ -Output
- ⑥ +Output
- ⑦ LED
- ⑧ Output voltage adjustable potentiometer
- ⑨ CN1 } Connector for functions
- ⑩ CN2 }
- ⑪ CN3 }

Pin connection and function of CN1

Pin No.	Function
1	+M : +Output voltage monitoring
2	+S : +Remote sensing
3	-M : -Output voltage monitoring
4	-S : -Remote sensing
5	VB : Voltage balance
6	CB : Current balance
7	TRM : Adjustment of output voltage
8	-S : -Remote sensing
9	RC2 : Remote ON / OFF
10	RCG : Remote ON / OFF ground

Pin connection and function of CN2

Pin No.	Function
1	+M : +Output voltage monitoring
2	+S : +Remote sensing
3	-M : -Output voltage monitoring
4	-S : -Remote sensing
5	VB : Voltage balance
6	CB : Current balance
7	TRM : Adjustment of output voltage
8	-S : -Remote sensing
9	RC2 : Remote ON / OFF
10	RCG : Remote ON / OFF ground

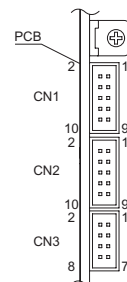
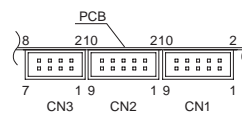
Pin connection and function of CN3

Pin No.	Function
1	-S : -Remote sensing
2	-S : -Remote sensing
3	AUX : Auxiliary output (12V 0.1A)
4	RC1 : Remote ON / OFF
5	AUXG : AUX ground
6	N.C. : No connection
7	PG : Power good signal
8	PGG : Power good ground

\* The common signs in CN1, CN2 and CN3 as -S are same potential.

Mating connector and terminal of CN1, CN2 and CN3

Connector	Mating Connector	Terminal	Mfr.
CN1 CN2	S10B-PHDSS PHDR-10VS	Reel : SPHD-002T-P0.5 Loose : BPHD-001T-P0.5	J.S.T
CN3	S8B-PHDSS PHDR-8VS		



● PBA300F/600F

● PBA1000F / 1500F

The pin No. of CN1 to CN3

## 2 Function

### 2.1 Input voltage range

■The range is from AC85 - 264V or DC(Refer to SPECIFICATIONS).

Only AC input is available to comply with agency approval.

■A low input potential can correspond more than AC85V and DC120V by the option (Refer to 7 Option).

The decrease of load factor is needed, and consult us detailed.

■If the wrong input is applied, the unit will not operate properly and / or may be damaged. Avoid the followings to cause failure of the unit to apply square wave form input voltage, which is commonly used in UPS and inverters.

### 2.2 Inrush current limiting

■Inrush current limiting is built-in.

■If a switch on the input side is installed, it has to be the one handling the input inrush current.

#### ● PBA50F, 75F, 100F, 150F

■The thermistor is used for protection from inrush current. When power is turned ON / OFF repeatedly within a short period of time, it is necessary to have enough time for power supply to cool down.

#### ● PBA300F, 600F, 1000F, 1500F

■The thyristor technique is used for protection from inrush current. If power is turned ON / OFF repeatedly within a short period of time, that may cause failure. It is necessary to have enough time between power ON and OFF.

■When the switch of the input is turned on, the primary inrush current and secondary inrush current are generated.

### 2.3 Overcurrent protection

■Overcurrent protection is built-in and activated at 105% of the rated current or 101% of the peak current.

Overcurrent protection protects the unit from short circuit and overcurrent condition. The unit automatically recovers when the fault condition is removed.

■If the output voltage drops more than 50% of the rated voltage in an overcurrent protection mode, the average current will also be reduced by the intermittent operation.

#### ● PBA1000F, 1500F

■The output voltage is shut down when the overcurrent protection circuit operates continuously for 5 sec in PBA1000F, PBA1500F. The minimum interval of AC recycling for recovery is 3 minutes. The recovery time varies depending on input voltage and load condition.

### 2.4 Overvoltage protection

#### ● PBA50F, 75F, 100F, 150F, 300F

■The overvoltage protection circuit is built-in. The AC input should be shut down if overvoltage protection is in operation. The minimum interval of AC recycling for recovery is 3 minutes.

\*The recovery time varies depending on input voltage.

#### ● PBA600F, 1000F, 1500F

■Overvoltage protection circuit to follow to output voltage is built-in. The AC input should be shut down if overvoltage protection is activated. The minimum interval of AC recycling for recovery is more than 3 minutes. The recovery time varies depending on input voltage.

\*Overvoltage protection circuit to follow to output voltage is not built into PBA300F. It corresponds by the option. Please consult us detailed.

Remarks :

Please avoid applying the over-rated voltage to the output terminal. Power supply may operate incorrectly or fail. In case of operating a motor etc. , please install an external diode on the output terminal to protect the unit.

### 2.5 Thermal protection

#### ● PBA300F, 600F, 1000F, 1500F

■Thermal protection circuit is built-in and shut down under following condition.

- ①When the current and the temperature which exceed from the derating curve.
- ②The case FAN stops or air flow is interrupted and the amount of the wind decreases.

After cut off input voltage and cooling down inside of power supply, turns on the input of the power supply again.

### 2.6 Output voltage adjustment

■Output voltage is increased by turning potentiometer clockwise and is decreased by turning potentiometer counterclockwise.

#### ● PBA50F, 75F, 100F, 150F

■A built-in potentiometer is lost, and there is an option : -V to be able to do a changeable output voltage in the potentiometer put on the outside (Refer to 7 Option).



● PBA300F, 600F, 1000F, 1500F

- The external output voltage control function is provided. Adjustment of output voltage is possible in 110% from almost 0V of the rated output voltage by following.
  - Applying the voltage externally between TRM and -S on CN1 or CN2
- The output voltage level is able to be calculated by ①. However external voltage should not be less than -0.7V and more than 3.0V.

$$\text{Output voltage} = \frac{\text{The voltage between TRM and -S}}{2.5 [\text{V}]} \times \text{rated output voltage} \cdots \textcircled{1}$$

- The output voltage decrease when sourcing current from TRM.
- When the output voltage is decreased to about 0V, the fans may stop, ripple may increase and the PG signal may turn to be "High".

2.7 Remote ON / OFF

● PBA50F, 75F, 100F, 150F

- Option "-R" is available for remote ON / OFF (Refer to 7 Option).

● PBA300F, 600F, 1000F, 1500F

- Remote ON / OFF control becomes available by applying voltage in CN1. Remote ON / OFF circuit (RC2, RCG) is isolated from input, output, FG and AUX.

Table 2.1 shows the specification of remote ON / OFF. Fig.2.1 shows the example to connect remote ON / OFF control, and followings are notes when you use the remote control.

- ① The output stops when the current is sank in RC2.
- ② The current sinking RC2 is 5mA typ and less than 12mA max.
- ③ Built-in fans stop if the output is turned off with remote ON / OFF circuit.
  - The fans of PBA300F become low speed when the output voltage is turned off with remote ON / OFF circuit.
- ④ The PG signal is turns to be "High" when the output voltage is turned off with remote ON / OFF.
- ⑤ In parallel operation and several use, please note a necessary voltage and current because the content of Table 2.1 description is a value at only one use.
- ⑥ When the voltage or the current other than showing in Table 2.1 between RC2-RCG are applied, the output voltage might not be normally output.

Table 2.1 Specifications of remote ON / OFF

Connection method		Fig.2.1 (a)	Fig.2.1 (b)	Fig.2.2 (c)
SW Logic	Output on	SW open (0.1mA max)	SW open (0.1mA max)	SW close (0.5V min)
	Output off	SW close (3mA min)	SW close (3mA min)	SW open (0.1mA max)
pin		RCG	AUXG	RCG, AUXG

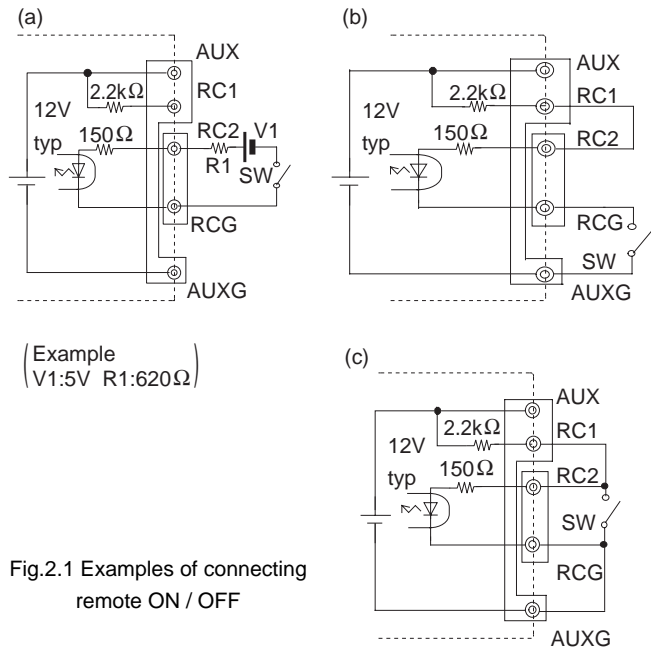


Fig.2.1 Examples of connecting remote ON / OFF

2.8 Remote sensing

(It is not in PBA50F and PBA75F.)

● PBA100F, 150F

- It corresponds by the option : -K. The correspondence model is -3R3 and -5. Please refer to 7 Option.

● PBA300F, 600F, 1000F, 1500F

- Remote sensing circuit is built-in.
  - Wiring method without using remote sensing is shown in Fig.2.2. When you do not use the remote sensing, connect between +S and +M and between -S and -M with CN1.
  - When the power supply is shipped from a factory, a special harness (H-SN-19) is mounted on CN1.
- Wiring method with remote sensing is shown in Fig.2.3.
  - When you use the remote sensing, follow instruction as below.
    - ① Note connecting wires enough because the load current flows to sensing line and an internal circuit of power supply is damaged occasionally, when defective contact of the screw such as loosening happens in the load line.
    - ② Confirm line drop should be at 0.3V or less using a thick wire from the power supply to the load.
    - ③ Do not draw the output current from ±M at CN2.
    - ④ When remote sensing is used, output voltage might become unstable because of a impedance of wiring and load condition. And the power supply should be evaluated enough.
      - Following are examples to improve it.
        - -S sensing wire is removed and terminals between -M and -S are shorted.
        - C1, R1 and R2 are connected as below figure. Please ask details to us.

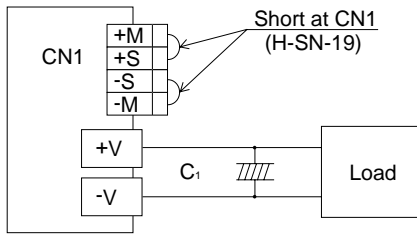


Fig.2.2 When not using remote sensing function

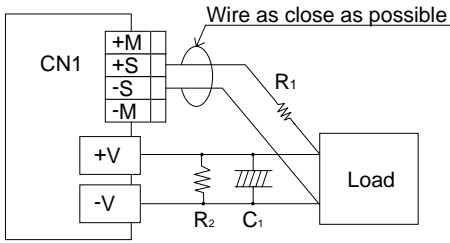


Fig.2.3 When using remote sensing function

2.9 Alarm

● PBA300F, 600F, 1000F, 1500F

■ Table 2.2 shows the alarm function built-in the power supply. Please note that the alarm signal might take several seconds and be output.

Table 2.2 Explanation of alarm

Alarm	Output of alarm
PG	The PG signal is "Low" when the power supply operates correctly.
	The signal turns to be "High" when the fan stops or the power supply stops.
	Open collector method
	Good: Low (0.5V max at 10mA)
	Bad : High or Open 50V 10mA max

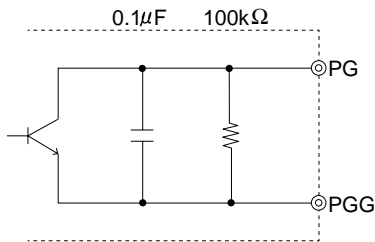


Fig.2.4 Internal circuit of PG

- Notes when you use PG signal are shown below.
  - ① The PG signal turns to be "High" when the output voltage is turned off with remote ON / OFF.
  - ② The PG signal may turn to be "High" when the output current becomes 10% or less of the ratings current in parallel operation. Then, the fans, too, stop.
  - ③ The PG signal may turn to be "High" when the output voltage is varied to about 0V and varied rapidly by external adjustment at few output current.
- The PG signal circuit (PG, PGG) is isolated from input, output, FG, RC and AUX.

3 Peak Current

● PBA300F-24, PBA600F-24, PBA1000F-24, PBA1500F-24 / 36 (There is not setting in other models.)

■ Peak current can output by the following conditions.

- AC170 - 264V
- $t1 \leq 10$  [sec]
- $I_p \leq$  Rated peak current
- $I_{ave} \leq$  Rated current
- $Duty = \frac{t1}{t1+t2} \times 100$  [%]  $\leq 35\%$

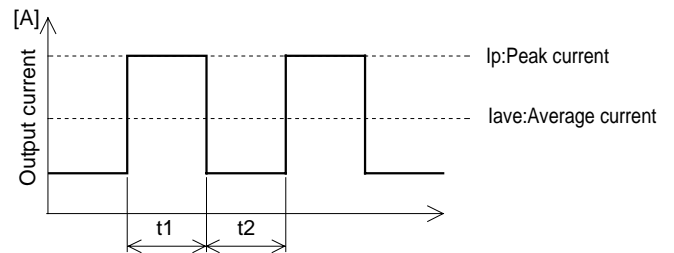


Fig.3.1 Peak current

4 Series / Parallel Operation

4.1 Series operation

■ Series operation is possible by connecting as shown in Fig.4.1. Output current in series connection should be lower than the lowest rated current in each unit.

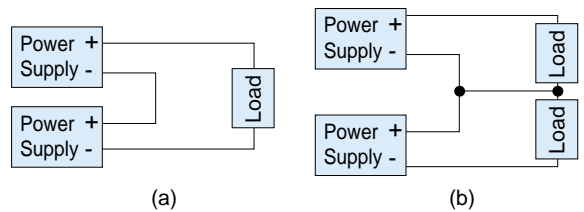


Fig.4.1 Examples of connecting in series operation

## 4.2 Parallel operation / Master-slave operation

### ● PBA50F, 75F, 100F, 150F

■ Parallel redundancy operation is available by connecting the units as shown below.

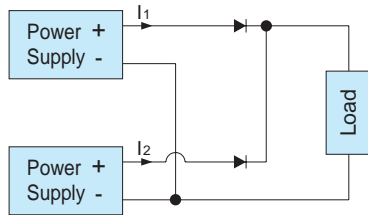


Fig.4.2 Example of connecting in parallel operation

#### Remarks :

This product is not good at parallel operation by which the OR diode is not put because the synchronous rectification method is used.

■ Values of  $I_1$  and  $I_2$  become unbalanced by a slight difference of the output voltage. Make sure that the output voltage of units is of equal value and the output current from each power supply does not exceed the rated current.

$$I_1, I_2 \leq \text{the rated current value}$$

### ● PBA300F, 600F, 1000F, 1500F

■ Parallel operation is available by connecting the units as shown in Fig.4.3.

$\pm S$ , VB and CB are connected mutually in parallel, and  $\pm S$  and  $\pm M$  are connected with CN1 of the master power supply.

When the power supply is shipped out of a factory, special harness (H-SN-19) mounts on CN1 of each power supply.

Remove special harness (H-SN-19) mounted on CN1 of the slave power supply. Please use optional harness : H-PA-3 to connect  $\pm S$ , VB and CB in parallel.

As variance of output current drew from each power supply is maximum 10%, the total output current must not exceed the value determined by the following equation.

$$\begin{aligned} & \text{(Output current at parallel operation)} \\ & = (\text{the rated current per unit}) \times (\text{number of unit}) \times 0.9 \end{aligned}$$

■ When the number of units in parallel operation increases, input current increases at the same time.

Adequate wiring design for input circuitry is required, such as circuit pattern, wiring and current capacity for equipment.

■ In parallel operation, the maximum operative number of units is 5.

■ Please consult us the harness for a parallel operation.

■ The wiring impedance of the load from each power supply must become even so that the output current balance circuit may operate normally.

■ Output voltage in parallel operation is adjustable by using the potentiometer of the "master" unit. Select one power supply to be the master, and turn the potentiometer of the other, slave power supplies, clockwise to the end.

Then use the potentiometer of the mater to adjust output voltage.

■ When remote sensing is used in parallel operation, the sensing wire must be connected only to master.

Terminals +S and -S of slave power supplies must be connected to master.

■ It is impossible parallel operation with the other model.

■ The output voltage changes by about 5% in a parallel operation when one stops by the fail of input side.

■ When the output current becomes less than 10% of the rated current, the PG signal may become High and the fans may stop.

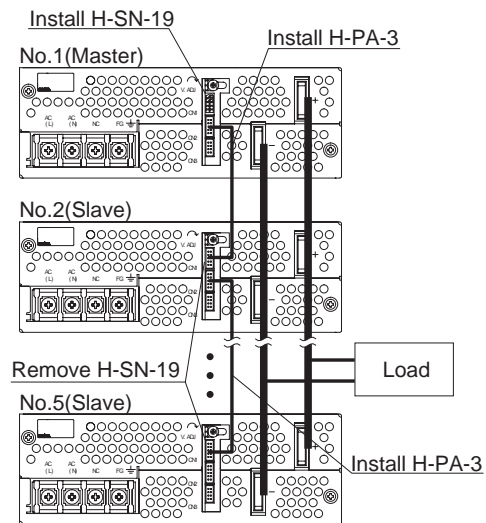


Fig.4.3 Examples of connecting parallel operation  
(The case of PBA1500F)

## 4.3 Parallel redundancy operation

### ● PBA300F, 600F, 1000F, 1500F

■ N+1 redundancy is possible for reliability.

■ The system can be operated in a normal power supply even if one of power supplies breaks down when using in parallel by power supply number +1 necessary for the system.

■ Consult us about parallel redundancy.

# 5 Assembling and Installation Method

## 5.1 Installation method

■ The screw should be inserted up to 6mm max from outside of the power supply to keep a distance between inside parts and an isolation.

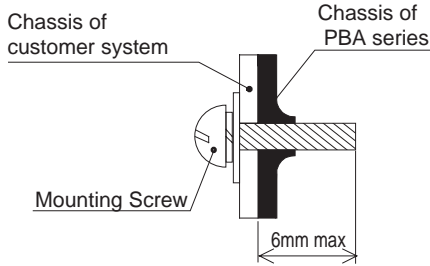


Fig.5.1 Mounting screw

### ● PBA50F, 75F, 100F, 150F

■ When two or more power supplies are used by side, position them with proper intervals to allow enough air ventilation. Ambient temperature around each power supply should not exceed the temperature range shown in derating curve.

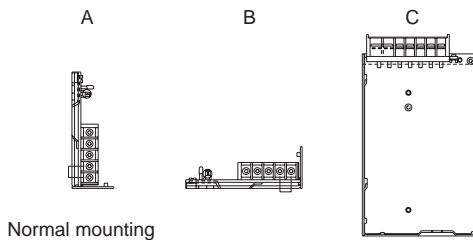
### ● PBA300F, 600F, 1000F, 1500F

- Fans for forced cooling are built-in.  
Do not block the ventilation at suction side (terminal block side) and its opposite side.  
Fix firmly, considering weight, though it can be used by the installation.
- Install the air filter so that the effect of cooling by the fan does not decrease when the power supply is used in a dusty place.

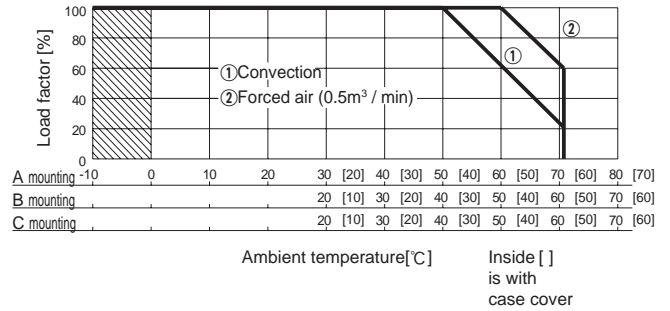
## 5.2 Derating

### ● PBA50F, 75F, 100F, 150F

(1) Mounting method



(2) Derating curve



■ Specifications inside the hatched area, Ripple · Ripple Noise is changed.

■ Standard of cooling

Please use do to become below the temperature which the temperature of Point A shows in Table 5. Point A is displayed on the chassis (Refer to External view).

Table 5

	Point A	
	Ambient temperature:50°C	Ambient temperature:71°C
PBA50F	72°C or less	82°C or less
PBA75F	83°C or less	84°C or less
PBA100F	87°C or less	83°C or less
PBA150F	89°C or less	85°C or less

### ● PBA300F, 600F, 1000F, 1500F

■ Derating curve depending on ambient temperature is shown in Fig.5.2.

In the hatched area, the specifications of Ripple and Ripple Noise are different from other, refer to specifications.

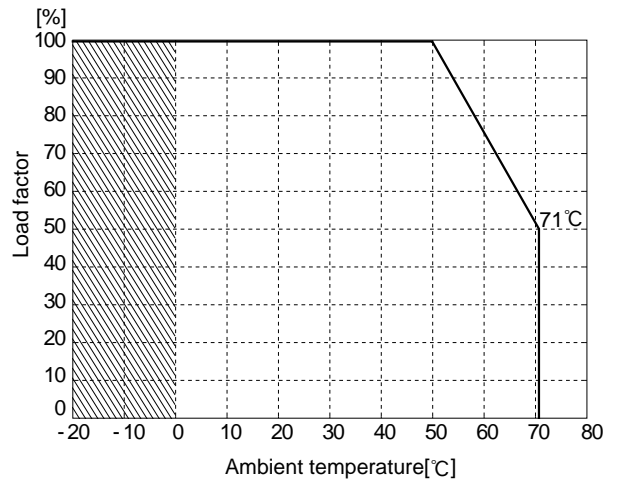


Fig.5.2 Derating curve depending on ambient temperature



Derating curve depending on input voltage of PBA1500F is shown in Fig.5.3.

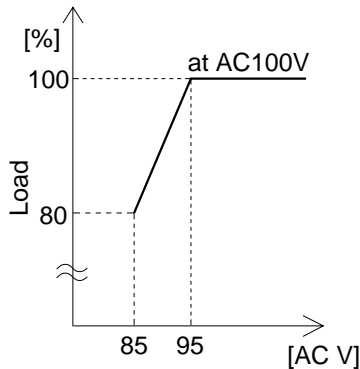


Fig.5.3 Derating curve depending on input voltage (PBA1500F)

### 5.3 Expectancy life and warranty

**Expectancy life**

The expectancy life is as follows.

Installation condition	Average ambient temperature(year)	Load factor	
		50%	100%
PBA50F - 150F (Installation A)	Ta=30°C	More than 10 years	More than 10 years
	Ta=40°C	More than 10 years	6 years
	Ta=50°C	5 years	3 years
PBA300F - 1500F	Ta=40°C	7 years*	7 years*
	Ta=50°C	6 years*	5 years

\*It is a value to which the maintenance of the fan is required.

**PBA300F, 600F, 1000F, 1500F**

Regular exchange is necessary for the fan, because the life expectancy (R (t) =90%) of the fan depending on the use condition is shown in Fig.5.4.

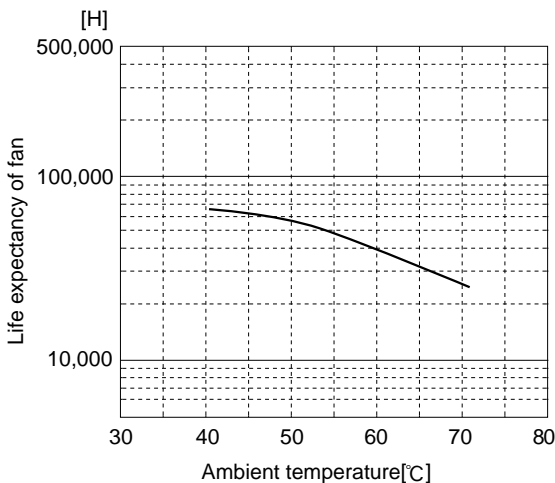


Fig.5.4 Life expectancy of fan

**Warranty**

PBA50 - 150F :

The warranty is 5 years when average ambient temperature of year is Ta=40°C or less and load factor is average 50% or less.

However, the warranty is 3 years when average ambient temperature of year is Ta=50°C or less and load factor is series 100%.

PBA300 - 1500F :

The warranty is 5 years if it is derating curve.

## 6 Others

### 6.1 Output current monitor

**PBA300F, 600F, 1000F, 1500F**

It is possible to know the output current to measure the voltage between CB to -S in CN1 or CN2.

The relation between CB voltage and load current is shown in Fig.6.1.

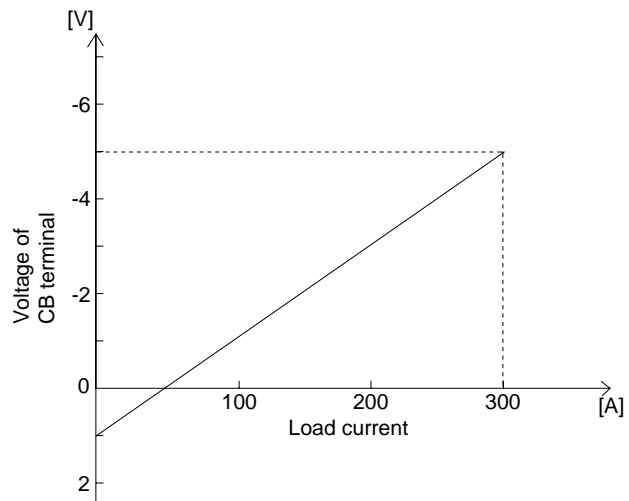


Fig.6.1 Load current conversion graph(PBA1500F-5)

**Remarks :**

Fig.6.1 is nominally, not guarantee.

Please ask to us if the characteristic of the other model is necessary.

Note the following when you measure the voltage of CB terminal.

- Please note wiring so as not to malfunction because of the noise.
- Please use the input impedance of measurement equipment must be 500kΩ or more.
- Please note internal parts might be damaged when CB terminal and -S terminal are short circuit.

## 6.2 Isolation

- For a receiving inspection, such as Hi-Pot test, gradually increase (decrease) the voltage for start (shut down). Avoid using Hi-Pot tester with the timer because it may generate voltage a few times higher than the applied voltage, at ON / OFF of a timer. If the unit is tested on the isolation between input & output and output & FG must be shorted output, RCG, PGG and AUXG.

## 6.3 Auxiliary power (AUX)

### ● PBA300F, 600F, 1000F, 1500F

- Auxiliary power (AUX : 12V0.1A) is possible for remote ON / OFF and its attached circuit from CN3.
- AUX circuit (AUX, AUXG) is isolated from input, output, FG, PG and RC.
- Please do not take out the current which exceeds 0.1A from AUX to avoid the breakdown of the power supply and the malfunction. Do not exceed 0.1A on starting up when you connect the DC-DC converter with AUX.

## 6.4 External components (PBA1500F)

- This power supply complies with FCC Part15 class B and EN55022-B in connecting a noise filter with the external.

Example of value of external noise filter

- L1 : 0.45mH    L2 : 0.45mH
- C1 : 0.1 $\mu$ F    C2 : 0.1 $\mu$ F    C3 : 0.1 $\mu$ F
- C4 : 4700pF    C5 : 4700pF
- R1 : 2M $\Omega$     R2 : 2M $\Omega$

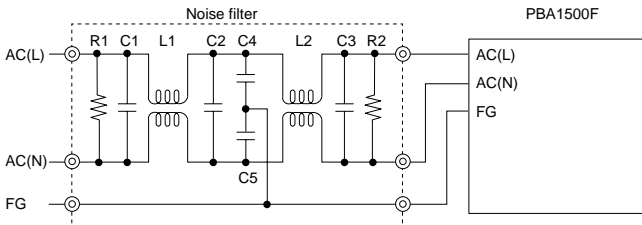


Fig.6.2 External noise filter

Recommendation noise filter : ZRAC2220-11 (TDK)

# 7 Option

## 7.1 Option outline

- Consult us detailed option and delivery before hand.
- It is possible a combination of the option, and consult us that it is not possible to do according to the option for the combination occasionally.

### ●-C

- -C means internal PCB is coated. (Humidity improvement goods)

### ●-E, -G

- Low leakage current type.
- The difference from standard is shown Table 7.1.

Table 7.1 Low leakage type

	-E(PBA50F - 150F)	-G
Leakage current(AC240V)	0.5mA max	0.15mA max
Conducted Noise	Class A	Not available
Ripple Noise	1.5 times standard	2.0 times standard

### ●-U

- Operation stop voltage is set at a lower value than standard version.
- PBA300F / 600F / 1000F / 1500F correspond by option : -U.
- PBA50F / 75F / 100F / 150F correspond by standard.

Use condition

Output

PBA50F	15W (10W)	PBA300F	125W (83W)
PBA75F	35W (20W)	PBA600F	250W (165W)
PBA100F	50W (30W)	PBA1000F	500W (330W)
PBA150F	65W (40W)	PBA1500F	750W (495W)
( ) 3.3V Output			

Input

AC50V (DC70V)

Duty 1s / 30s

- ✳ Avoid continuously operating about 1[sec] and more so that the power supply is broken.

### ●-F1 (PBA600F / 1000F / 1500F)

- Long-lived fan type (PBA300F is not set).
- The difference from standard is shown Fig.7.1.
- Externals change into PBA600F. Please refer to externals chart for details.

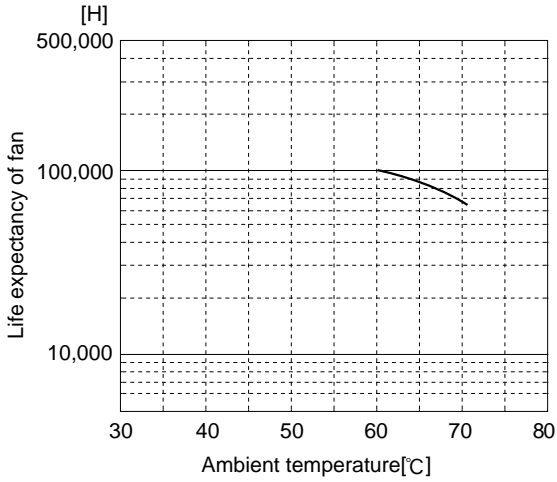


Fig.7.1 Life expectancy of long-lived fan

●-F3 (PBA300F / 600F / 1000F / 1500F)

- Reverse air exhaust type.
- The difference from standard is shown Fig.7.2 and Fig.7.3.



Fig.7.2 Air flow(-F3)

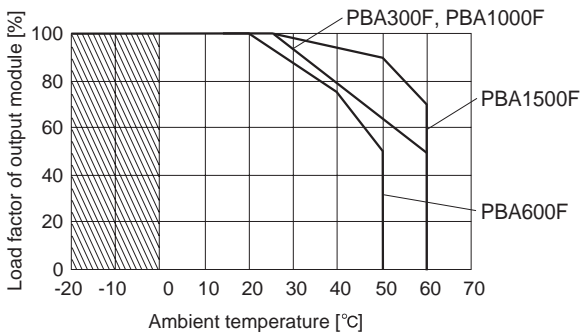


Fig.7.3 Derating curve depending on ambient temperature(-F3)

●-F4 (PBA300F / 600F / 1000F / 1500F)

- Low speed fan for reducing sound.
- The difference from standard is shown Fig.7.4.

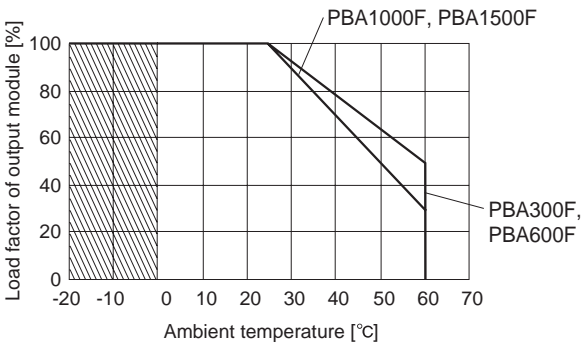


Fig.7.4 Derating curve depending on ambient temperature(-F4)

●-T (PBA50F / 75F / 100F / 150F)

- -T means terminal block is changed from horizontal to vertical position.
- Consult us external view in details.

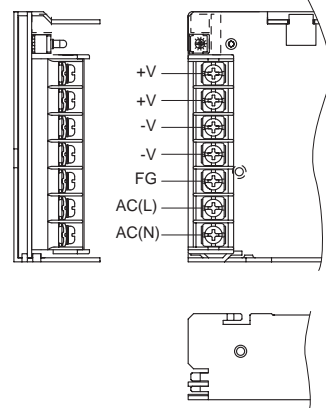


Fig.7.5 Example of option -T (PBA100F)

●-J (PBA50F / 75F / 100F / 150F)

- -J means terminal block is changed to connector.
- Special harness is prepared. Refer to option parts.
- Consult us external view in details.
- PBA100F / 150F corresponds to -12, -15, -24, -36 and -48 models.

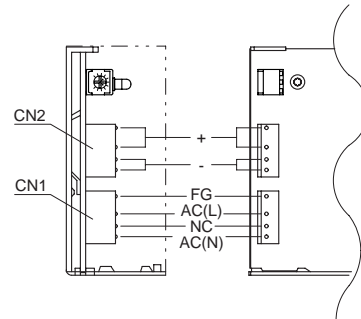


Fig.7.6 Image of option -J

	I / O Connector	Mating Connector	Terminal
CN1	5289-4A	5199-04	Chain : 5194PBT
			Loose : 5194PBTL
CN2	5277-4A (PBA50F)	5196-04 (PBA50F)	Chain : 5194PBT
			Loose : 5194PBTL
	5277-6A (PBA50/100/150F)	5196-06 (PBA75/100/150F)	Chain : 5194PBT
			Loose : 5194PBTL

\* Maximum 5A per pin of CN2 can be applied (Mfr. Molex)

●-R (PBA50F / 75F / 100F / 150F)

■Option "-R" is available for remote ON / OFF.

Between RC (+) and RC (-)	Output
SW ON (4.5 - 12.5V)	ON
SW OFF (0 - 0.5V)	OFF

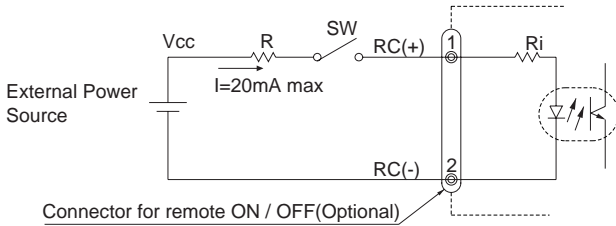


Fig.7.7 Example of using remote ON / OFF

■When external power source is in the range of 4.5 - 12.5V, current limit resistance R is not required. However, when external power source exceeds 12.5V, current limit resistance R must be connected.

To calculate the current limit resistance use following equation :

$$R[\Omega] = \frac{V_{cc} - (1.1 + R_i \times 0.005)}{0.005}$$

Where ;

V<sub>cc</sub>=External Power Source

R<sub>i</sub>=The internal resistance (780Ω)

■A wrong connection may damage the internal components of the unit.

■Remote ON / OFF circuit (RC (+), RC (-) ) is isolated from input, output and FG.

●-N (PBA50F / 75F / 100F / 150F)

- With case cover.
- External size is changed and refer to External view.
- Derating curve changes from the standard (Refer to 5.2).
- Only -24 model is applying for the UL508 standard.

●-N1

- -N1 means DIN rail attachment is attached to standard model.
- Consult us external view in details.
- -N1 becomes a type with case cover.

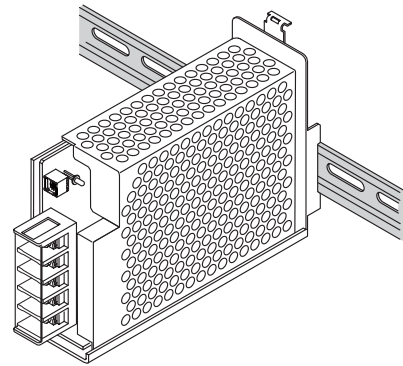


Fig.7.8 Image of installation option -N1

●-V (PBA50F / 75F / 100F / 150F)

- A built-in potentiometer is lost, and connector which can be connected with outside potentiometer is installed.
- Consult us external view in details.
- Please note that the output voltage becomes unstable when CN5 is energized while opened.

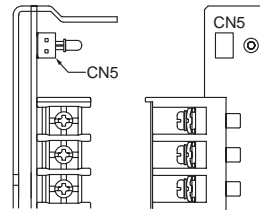


Fig.7.8 Upper view of option -V

●-K (PBA100F / 150F / only -3R3 / -5)

- Remote sensing function can be used for option "-K".
- Please note the correspondence model.
- Consult us details.