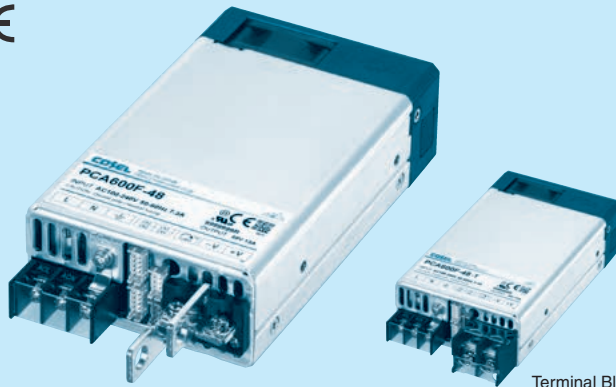


# PCA600F

PC A 600 F -5 -□

① ② ③ ④ ⑤ ⑥



Example recommended EMI/EMC filter  
NAC-16-472



High voltage pulse noise type : NAP series  
Low leakage current type : NAM series  
Low profile type : EAC series

\*A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Optional \*7
- C : with Coating
- G : Low leakage current
- T : Terminal Block Style (Only 12V, 15V, 24V, 32V and 48V)
- I : with PMBus interface
- F2 : Reverse air exhaust type
- P3 : Master-slave Operation
- W1 : Alarm function

For option details, refer to instruction manual 6.1.

\*Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	PCA600F-5	PCA600F-12	PCA600F-15	PCA600F-24	PCA600F-32	PCA600F-48
MAX OUTPUT WATTAGE[W]	600	636	645	648	640	624
DC OUTPUT	5V 120A	12V 53A	15V 43A	24V 27A	32V 20A	48V 13A

## SPECIFICATIONS

	MODEL	PCA600F-5	PCA600F-12	PCA600F-15	PCA600F-24	PCA600F-32	PCA600F-48		
INPUT	VOLTAGE	[VAC]	85 - 264 1 φ (Output derating is required at less than 90V. Refer to "Derating")						
		[VDC] *1	88 - 370 (Output derating is required at less than 110V. Refer to "Derating")						
	CURRENT[A]	ACIN 100V	7.3typ						
		ACIN 230V	3.2typ						
	FREQUENCY[Hz]		50/60 (45 - 66)						
	EFFICIENCY[%]	ACIN 100V	(Io=50%)	90typ	91typ	91typ	91typ	91typ	91typ
			(Io=100%)	89typ	90typ	90typ	91typ	91typ	91typ
		ACIN 230V	(Io=50%)	92typ	92typ	92typ	93typ	93typ	93typ
			(Io=100%)	91typ	92typ	92typ	93typ	93typ	93typ
	POWER FACTOR	ACIN 100V	0.98typ (Io=100%)						
ACIN 230V		0.95typ (Io=100%)							
INRUSH CURRENT[A]	ACIN 100V*2	20/40 typ (Io=100%) (Primary inrush current / Secondary inrush current) (More than 3 sec. to re-start)							
	ACIN 230V*2	40/40 typ (Io=100%) (Primary inrush current / Secondary inrush current) (More than 3 sec. to re-start)							
LEAKAGE CURRENT[ma]		0.5max (ACIN 240V 60Hz, Io=100%, According to IEC60601-1)							
OUTPUT	VOLTAGE[V]	5	12	15	24	32	48		
	CURRENT[A]	120	53	43	27	20	13		
	LINE REGULATION[mV]	20max	48max	60max	96max	128max	192max		
	LOAD REGULATION[mV]	40max	100max	120max	150max	150max	480max		
	RIPPLE[mVp-p]	0 to +50°C *3*4	160max	240max	240max	240max	320max	480max	
		-20 to 0°C *3	280max	320max	320max	320max	420max	640max	
	RIPPLE NOISE[mVp-p]	0 to +50°C *3*4	240max	300max	300max	300max	400max	600max	
		-20 to 0°C *3	320max	360max	360max	360max	480max	720max	
	TEMPERATURE REGULATION[mV]	0 to +50°C *4	50max	120max	150max	240max	320max	480max	
		-20 to +50°C *4	75max	180max	180max	290max	400max	600max	
	DRIFT[mV]	*5	20max	48max	60max	96max	128max	192max	
	START-UP TIME[ms]		700typ (ACIN 100/230V Io=100%)						
	HOLD-UP TIME[ms]		20typ (ACIN 230V Io=80%) / 16typ (ACIN 230V Io=100%)						
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		3.00 to 6.00	7.20 to 14.40	9.00 to 18.00	14.40 to 28.80	19.20 to 38.40	28.80 to 57.60		
OUTPUT VOLTAGE SETTING[V]		5.00 to 5.05	12.00 to 12.12	15.00 to 15.15	24.00 to 24.24	32.00 to 32.32	48.00 to 48.48		
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 105% of rating (Recovers automatically, Hiccup overcurrent)							
	OVERVOLTAGE PROTECTION[V]	6.25 to 7.00	15.00 to 16.80	18.75 to 21.00	30.00 to 33.60	40.00 to 44.80	60.00 to 67.20		
	REMOTE SENSING	Provided							
	REMOTE ON/OFF (RC)	Provided							
	DC_OK LAMP	LED (Blue)							
	ALARM LAMP	LED (Orange)							
COMMUNICATION FUNCTION	Provided (Extended UART)								
ISOLATION	INPUT-OUTPUT	AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 2MOPP							
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 1MOPP							
	OUTPUT-FG	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)							
	OUTPUT - AUX · RC · PG · INFO · DS · ADDR0 · ADDR1 · ADDR2	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)							
ENVIRONMENT	OPERATING TEMP., HUMIDITY AND ALTITUDE	-20 to +70°C, 20 - 90%RH (Non condensing)							
	STORAGE TEMP., HUMIDITY AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing)							
	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	UL62368-1, EN62368-1, C-UL (equivalent to CAN/CSA-C22.2 No.62368-1), ANSI/AAMI ES60601-1, EN60601-1 3rd, C-UL (equivalent to CAN/CSA-C22.2 No.60601-1), Complies with IEC60601-1-2 4th Ed.							
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR32-B, EN55011-B, EN55032-B							
	HARMONIC ATTENUATOR *6	Complies with IEC61000-3-2 (class A)							

## SPECIFICATIONS

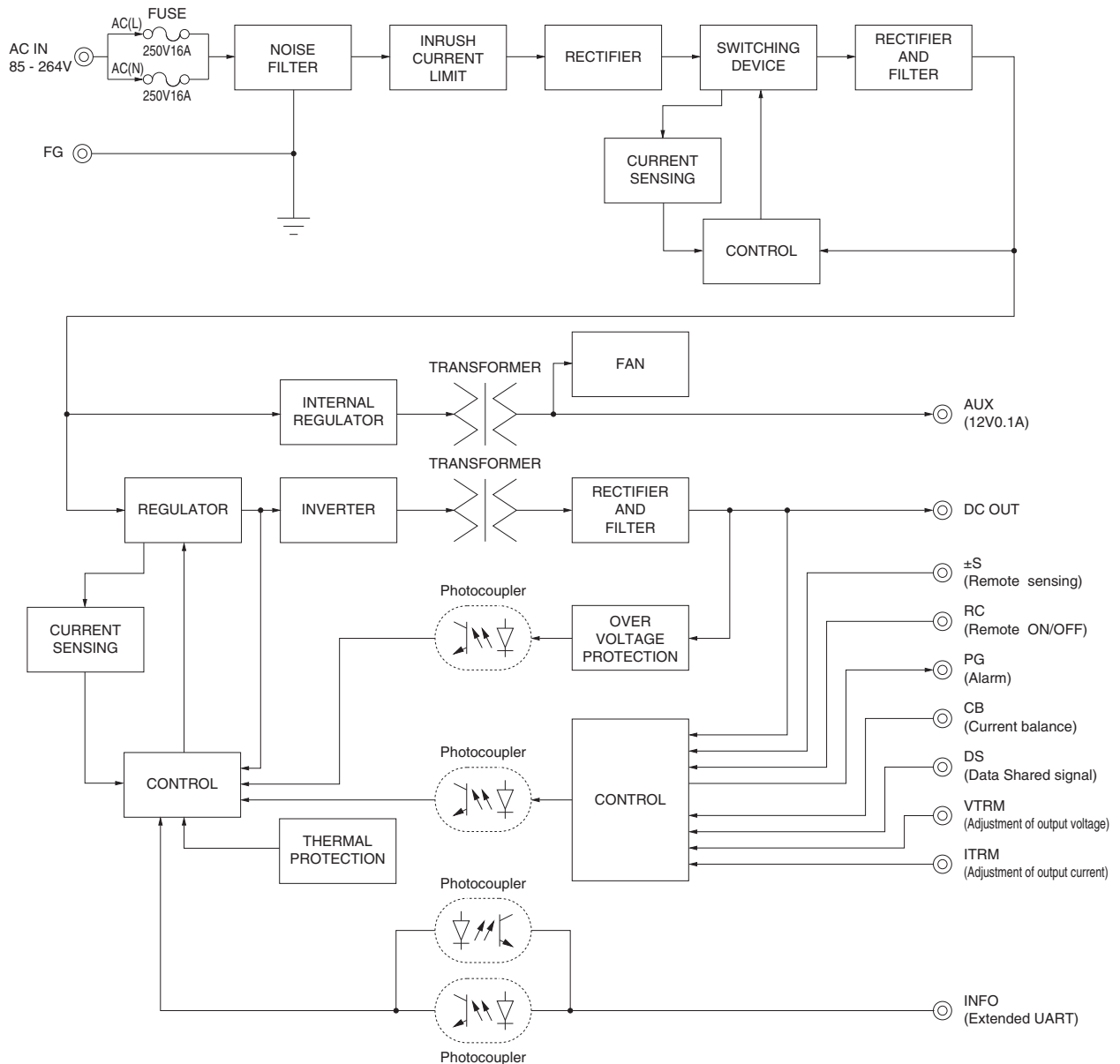
OTHERS	CASE SIZE/WEIGHT	89 X 41 X 152mm [3.50 X 1.61 X 5.98 inches] (without terminal block and screw) (W X H X D) / 840g max
	COOLING METHOD	Forced cooling (internal fan)

- \*1 DC input safety agency approvals deleted.
- \*2 The value is primary surge. The current of input surge to a built-in EMI/EMS Filter(0.2ms or less) is excluded.
- \*3 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN:RM103). Please refer to the instruction manual 1.2.
- \*4 5V output product, the maximum temperature of 40°C.
- \*5 Drift is the change in DC output for an eight hours period after a half-hour warm-up at 25°C.
- \*6 Please contact us about another class.
- \*7 The listed options may affect the published standard specifications. Please contact us for detailed product specifications and safety approvals.
- \* A sound may occur from power supply at pulse loading.

### Features

- Low profile (41mm, 1.61 inch = meet 1U height)
- Universal input 85 - 264VAC (Refer to “Derating”, when using at 85 - 90VAC)
- DC input 88 - 370VDC possible (Refer to when using at 88 - 110VDC)
- For medical electric equipment (ANSI/AAMI ES60601-1, EN60601-1 3rd, IEC60601-1-2 4th Ed.)
- Medical Isolation Grade 2MOPP
- With AUX output 12V 0.1A (Voltage adjustable range 5 - 12V)
- Constant current function
- Output voltage can be adjusted to near 0V (the item 2.6 on Instruction Manual)
- With various alarms
- Parallel Operation / N+1 Parallel Redundancy Operation possible
- Monitoring function and various setting values can be changed by communication (the item 2.11 on Instruction Manual)
- Complies with SEMI F47 (the item 2.1 on Instruction Manual)

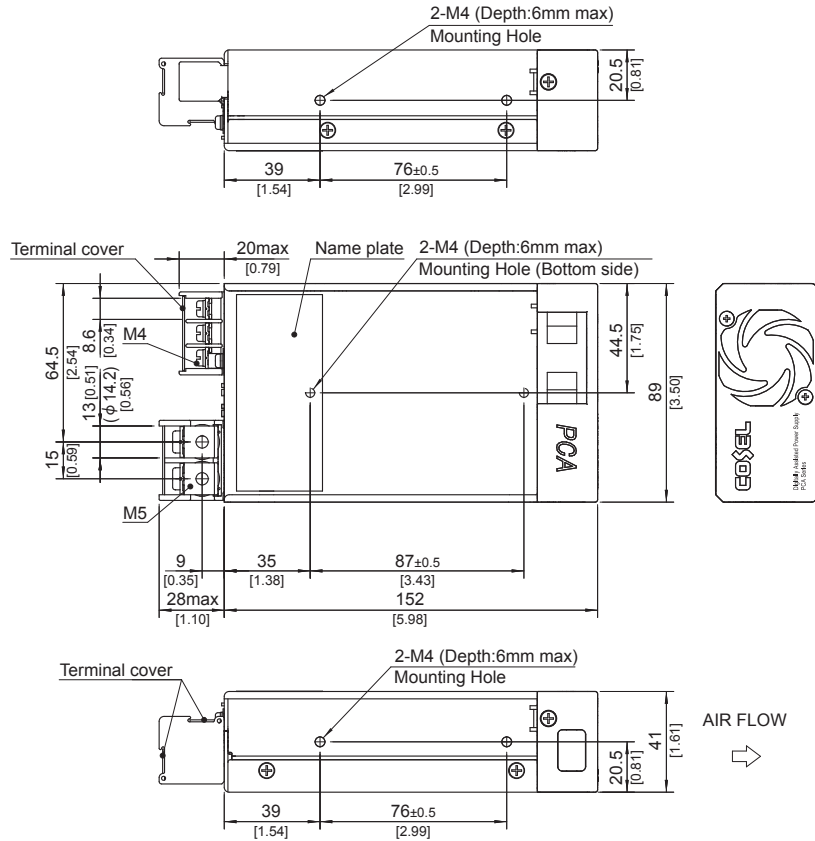
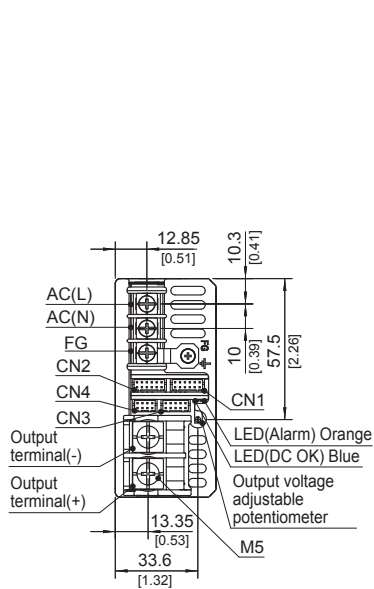
### Block diagram





## External view

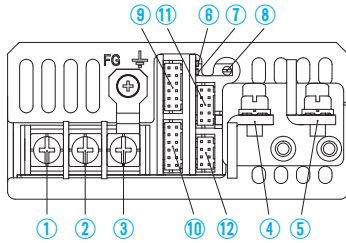
<PCA600F-□-T (Terminal Block Style) >



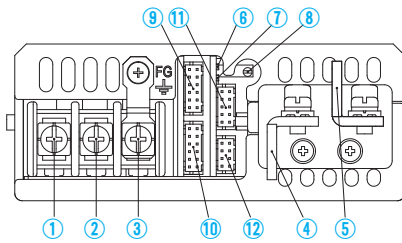
- ※ Tolerance : ±1 [±0.04]
- ※ Weight : 840g max
- ※ PCB Material / thickness : FR-4 / 1.6mm [0.06]
- ※ Chassis Material : Aluminum
- ※ Fan cover Material : PBT
- ※ Dimensions in mm, [ ] = inches
- ※ Mounting torque : 1.2N·m max
- ※ Input and output terminal screw tightening torque
  - M4 1.6N·m max
  - M5 2.5N·m max
- ※ Please connect safety ground to FG terminal on the unit.

## Terminal Blocks

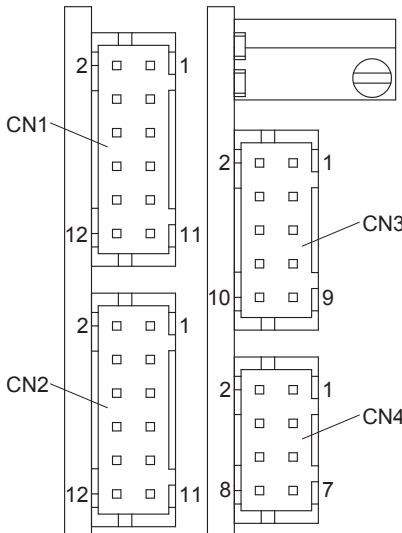
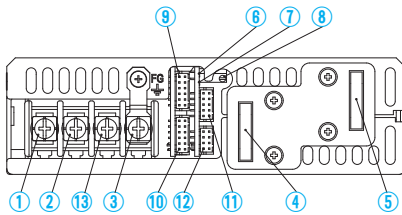
### ● PCA300F, PCA600F



### ● PCA1000F



### ● PCA1500F



Connector pin numbers

- ① AC (L) } Input Terminals 85 - 264VAC 1 φ 45 - 66Hz
- ② AC (N) } (M4) 88 - 370VDC (Excluding PCA1000F PCA1500F)
- ③ Frame ground (M4)
- ④ -Output
- ⑤ +Output
- ⑥ LED for fault condition detection (ALARM) Color : Orange
- ⑦ LED for output voltage confirmation (DC\_OK) Color : Blue
- ⑧ Output voltage adjustable potentiometer
- ⑨ CN1
- ⑩ CN2
- ⑪ CN3
- ⑫ CN4
- ⑬ N.C.

#### Pin Configuration and Functions of CN1, CN2

Pin No.	Function	Ground level	
1	+S	+Remote sensing	COM
2	N.C.	No connection	-
3	N.C.	No connection	-
4	-S	-Remote sensing	COM
5	VTRM	Adjustment of output voltage	COM
6	COM	Common ground (for signal)	COM
7	INFO	Extended UART signal	SGND
8	CB	Current Balance	COM
9	DS	Data Shared signal	SGND
10	SGND	Signal ground	SGND
11	RC2	Remote ON/OFF	RCG
12	RCG	Remote ON/OFF ground	RCG

\* Each terminal of CN1 and CN2 are connected inside the power supply.

#### Pin Configuration and Functions of CN3

Pin No.	Function	Ground level	
1	AUX	Auxiliary output	AUXG
2	AUXG	Auxiliary output ground	AUXG
3	RC1	Remote ON/OFF	AUXG
4	AUXG	Auxiliary output ground	AUXG
5	PG	Alarm	PGG
6	PGG	Alarm ground	PGG
7	ITRM	Adjustment of output current	COM
8	COM	Common ground (for signal)	COM
9	VTRM_EN	Enable Vtrm	COM
10	SLV_EN	Enable Slave mode *1	COM

#### Pin Configuration and Functions of CN4

Pin No.	Function	Ground level	
1	SDA	Serial data *2	SGND
2	SGND	Signal ground	SGND
3	SCL	Serial clock *2	SGND
4	SMBA	SMBAlert *2	SGND
5	ADDR0	Address bit 0	SGND
6	ADDR1	Address bit 1	SGND
7	ADDR2	Address bit 2	SGND
8	SGND	Signal ground	SGND

#### Matching connectors and terminals

Connector	Housing	Terminal	Mfr.
CN1 CN2	S12B-PHDS PHDR-12VS	Reel : SPHD-002T-P0.5 Loose : BPHD-001T-P0.5 *3 BPHD-002T-P0.5 *3	J.S.T
CN3	S10B-PHDS PHDR-10VS		
CN4	S8B-PHDS PHDR-8VS		

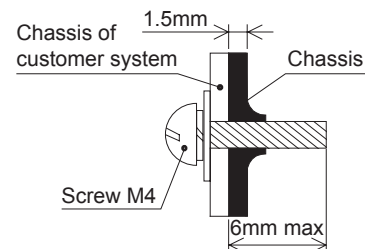
\*1 For -P3 option.

\*2 For -I option.

\*3 The manufacturer prepares only the ratchet hand.

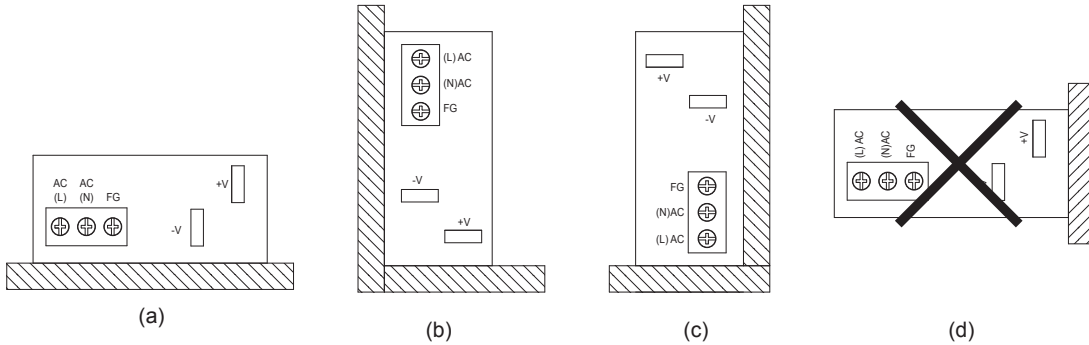
## Assembling and Installation Method

■ Please observe the mounting screw length in right figure to obtain enough isolation between screws and internal components.



**Assembling and Installation Method**

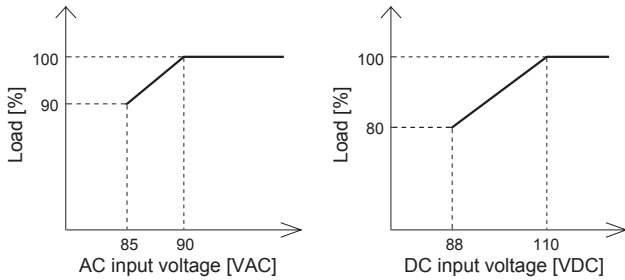
- Please do not block built-in fans and ventilation holes. When the power supply is mounted by screws, please consider its weight and set it in place. (Please see below.)
- Please avoid the D installation method in the following figure because it will cause stress on the mounting holes.
- If power supplies are used in a dusty environment, it might cause a failure. Please consider taking such countermeasures as installing an air filter near the suction area of the system to prevent a failure.



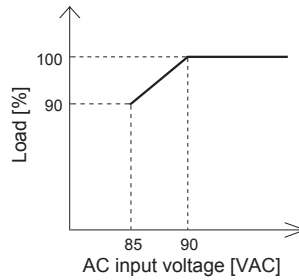
**Derating**

**Input voltage Derating curve**

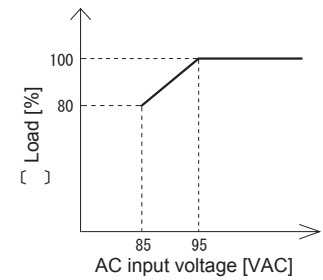
● **PCA600F**



● **PCA1000F**

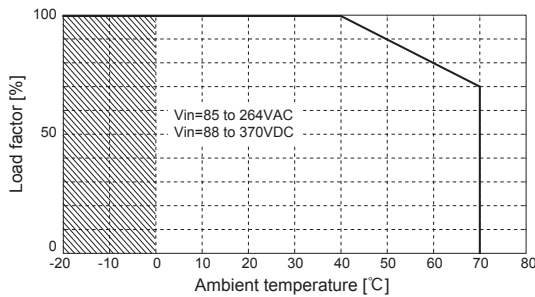


● **PCA1500F**



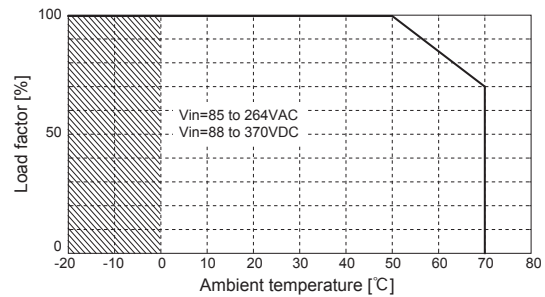
● **PCA300F-5**

**Ambient Temperature Derating Curve**



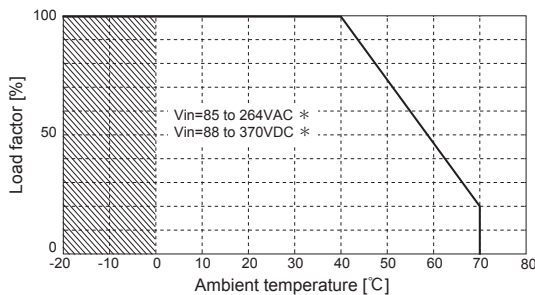
● **PCA300F-12, -15, -24, -32, -48**

**Ambient Temperature Derating Curve**



● **PCA600F-5**

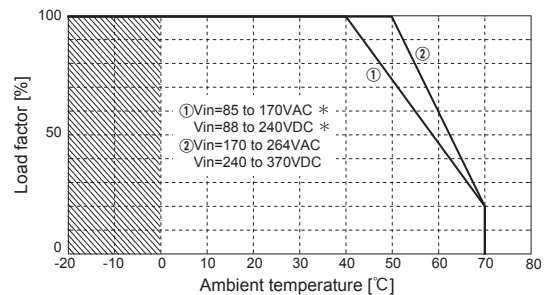
**Ambient Temperature Derating Curve**



\*With derating due to input voltage

● **PCA600F-12, -15, -24, -32, -48**

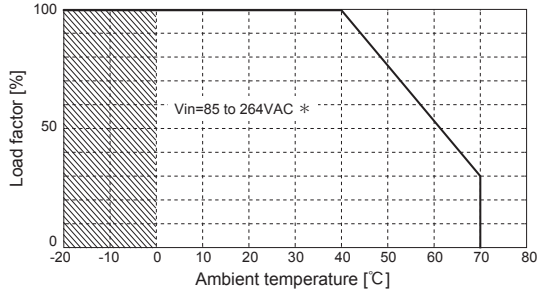
**Ambient Temperature Derating Curve**



\*With derating due to input voltage

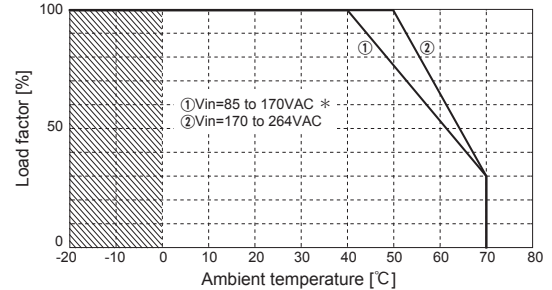
Derating

● PCA1000F-5, -12, -15  
Ambient Temperature Derating Curve



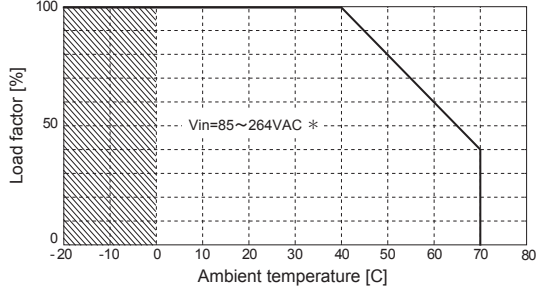
\*With derating due to input voltage

● PCA1000F-24, -32, -48  
Ambient Temperature Derating Curve



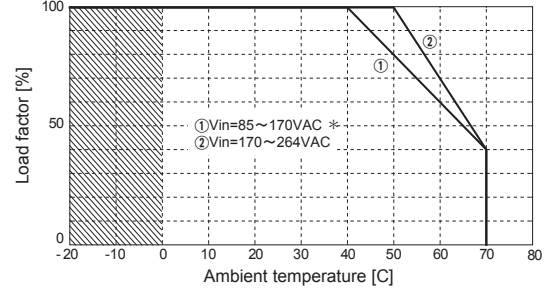
\*With derating due to input voltage

● PCA1500F-5,-12,-15  
Ambient Temperature Derating Curve



\*With derating due to input voltage

● PCA1500F-24,-32,-48  
Ambient Temperature Derating Curve



\*With derating due to input voltage

- Specifications for ripple and ripple noise are different in the hatched area.
- The ambient temperature is defined as the temperature of the air at air-intake side of the power supply.

Instruction Manual

◆ It is necessary to read the "Instruction Manual" and "Before using our product" before you use our product.

Instruction Manual <https://en.cosel.co.jp/product/powersupply/PCA/>  
 Before using our product <https://en.cosel.co.jp/technical/caution/index.html>



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
PCA300F	Active filter	15 - 400	3.8	250V 10A	Relay	FR-4	-	Yes	Yes	Yes
	Buck converter	88								
	Full - bridge converter	44								
PCA600F	Active filter	15 - 400	7.3	250V 16A	Relay	FR-4	-	Yes	Yes	Yes
	Buck converter	88								
	Full - bridge converter	44								
PCA1000F	Active filter	15 - 400	12.0	250V 20A	Relay	FR-4	-	Yes	Yes	Yes
	Buck converter	88								
	Full - bridge converter	44								
PCA1500F	Active filter	15 - 400	18.0	250V 31.5A	Relay	FR-4	-	Yes	Yes	Yes
	Buck converter	88								
	Full - bridge converter	44								

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