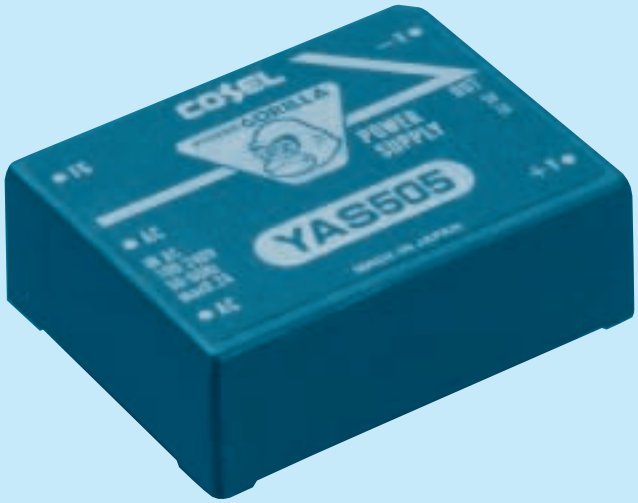
COSEL **On-board type**

YA

Ordering information

YA	S	5	05	E	
①	②	③	④	⑤	

(LVD)



①Series name
②Single output
③Output wattage
④Output voltage
⑤UL recognized,TÜV approved CSA certified:E

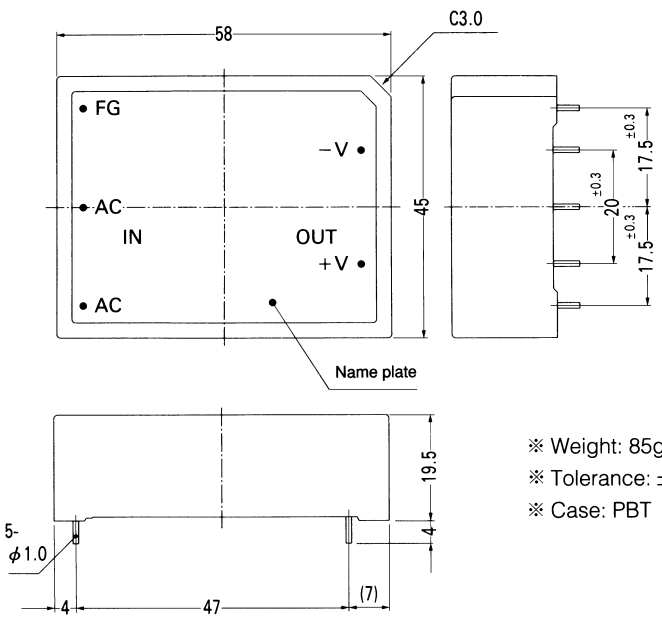
MODEL	YAS505	YAS512
MAX OUTPUT WATTAGE[W]	5.0	5.4
DC OUTPUT	5V 1.0A	12V 0.45A

SPECIFICATIONS

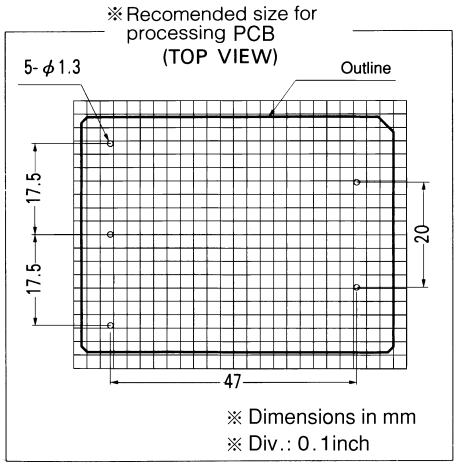
	MODEL		YAS505	YAS512
INPUT	VOLTAGE[V]		AC85 - 264 1φ or DC110 - 370	
	CURRENT[A]	ACIN 200V	0.07typ (Io=100%)	
	FREQUENCY[Hz]		47 - 440 or DC	
	EFFICIENCY[%]		65typ	67typ
	INRUSH CURRENT[A]	ACIN 100V	20typ (Io=100%)	
		ACIN 200V	40typ (Io=100%)	
OUTPUT	VOLTAGE[V]		5	12
	CURRENT[A]		1	0.45
	LINE REGULATION[mV]		20max	48max
	LOAD REGULATION[mV]		40max	100max
	RIPPLE[mVp-p]	※1	80max	120max
	RIPPLE NOISE[mVp-p]	※1	120max	150max
	TEMPERATURE REGULATION[mV]	0 to +55℃	50max	150max
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		Fixed	
	OUTPUT VOLTAGE SETTING[%]		±5max (Rated input/output, Ta=25℃)	
	HOLD-UP TIME[ms]		10typ (ACIN 85V, Io=100%)	
PROTECTION CIRCUIT	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically	
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 15mA, DC500V 50MΩmin (At Room Temperature)	
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)	
	OUTPUT-FG		AC500V 1minute, Cutoff current=100mA, DC500V 50MΩmin (At Room Temperature)	
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-10 to +70℃, 20 - 95%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max	
	STORAGE TEMP.,HUMID.AND ALTITUDE		-20 to +75℃, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max	
	VIBRATION		10 - 55Hz, 98.0m/s² (10G), 3minutes period, 60minutes each along X, Y and Z axis	
	IMPACT		490.3m/s² (50G), 11ms, once each X, Y and Z axis	
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS		UL1950, EN60950, VDE0160, CSA C22.2 No.234 Complies with IEC60950	
	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, Additional capacitors required for meeting VDE-B (External Fuse is required)	

※1 Measured by 20MHz oscilloscope.
※ Parallel operation with other model is not possible.

External view

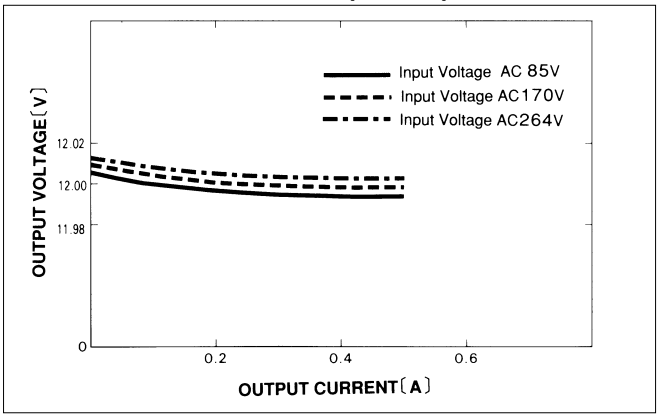


※ Weight: 85g or less
※ Tolerance: ±0.5
※ Case: PBT

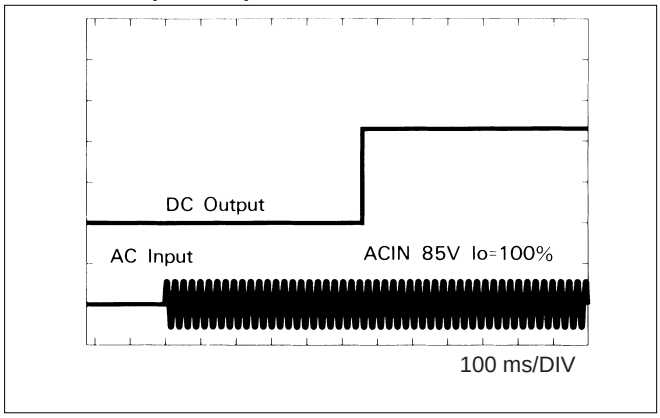


Performance data

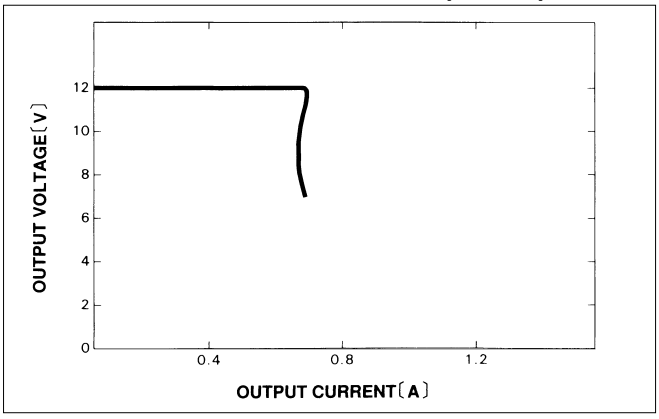
■STATIC CHARACTERISTICS (YAS512)



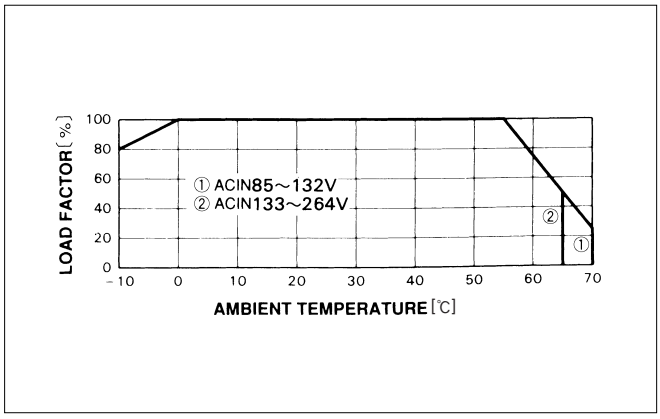
■RISE TIME (YAS512)



■OVERCURRENT CHARACTERISTICS (YAS512)



■DERATING CURVE



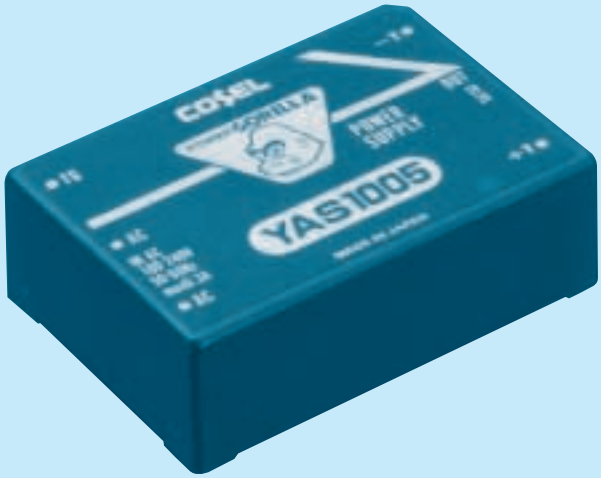
COSEL **On-board type**

YA 1

Ordering information

YA	S	10	05	E	
①	②	③	④	⑤	

(LVD)



①Series name
②Single output
③Output wattage
④Output voltage
⑤UL recognized,TÜV approved CSA certified:E

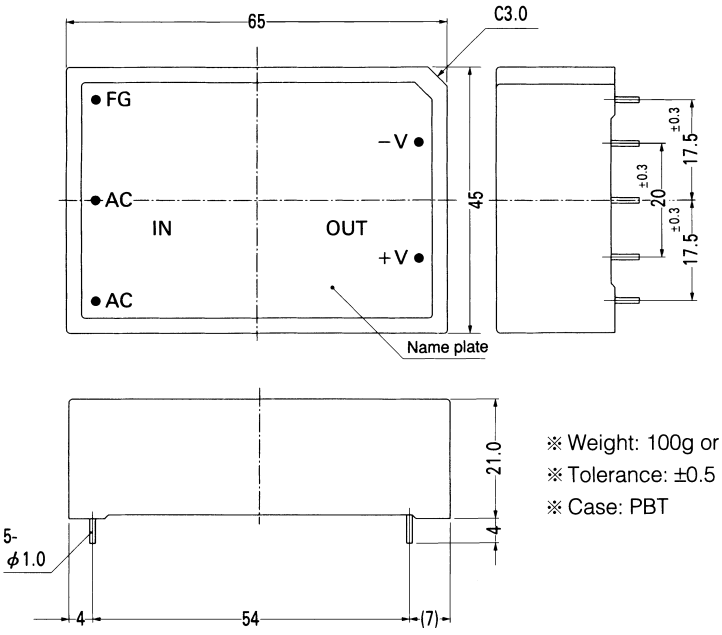
MODEL	YAS1005	YAS1012
MAX OUTPUT WATTAGE[W]	10.0	10.8
DC OUTPUT	5V 2.0A	12V 0.9A

SPECIFICATIONS

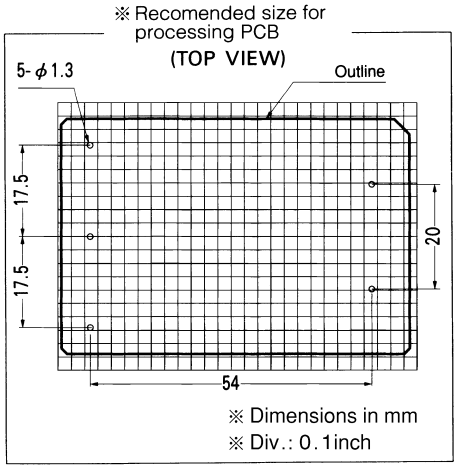
	MODEL		YAS1005	YAS1012
INPUT	VOLTAGE[V]		AC85 - 264 1φ or DC110 - 370	
	CURRENT[A]	ACIN 200V	0.14typ (Io=100%)	
	FREQUENCY[Hz]		47 - 440 or DC	
	EFFICIENCY[%]		70typ	72typ
	INRUSH CURRENT[A]	ACIN 100V	20typ (Io=100%)	
		ACIN 200V	40typ (Io=100%)	
OUTPUT	VOLTAGE[V]		5	12
	CURRENT[A]		2	0.9
	LINE REGULATION[mV]		20max	48max
	LOAD REGULATION[mV]		40max	100max
	RIPPLE[mVp-p]	*1	80max	120max
	RIPPLE NOISE[mVp-p]	*1	120max	150max
	TEMPERATURE REGULATION[mV]	0 to +55℃	50max	150max
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		Fixed	
	OUTPUT VOLTAGE SETTING[%]		±5max (Rated input/output, Ta=25℃)	
	HOLD-UP TIME[ms]		10typ (ACIN 85V, Io=100%)	
PROTECTION CIRCUIT	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically	
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 15mA, DC500V 50MΩmin (At Room Temperature)	
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩmin (At Room Temperature)	
	OUTPUT-FG		AC500V 1minute, Cutoff current=100mA, DC500V 50MΩmin (At Room Temperature)	
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-10 to +70℃, 20 - 95%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max	
	STORAGE TEMP.,HUMID.AND ALTITUDE		-20 to +75℃, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max	
	VIBRATION		10 - 55Hz, 98.0m/s^2 (10G), 3minutes period, 60minutes each along X, Y and Z axis	
	IMPACT		490.3m/s^2 (50G), 11ms, once each X, Y and Z axis	
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS		UL1950, EN60950, VDE0160, CSA C22.2 No.234 Complies with IEC60950	
	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, Additional capacitors required for meeting VDE-B (External Fuse is required)	

*1 Measured by 20MHz oscilloscope.
* Parallel operation with other model is not possible.

External view

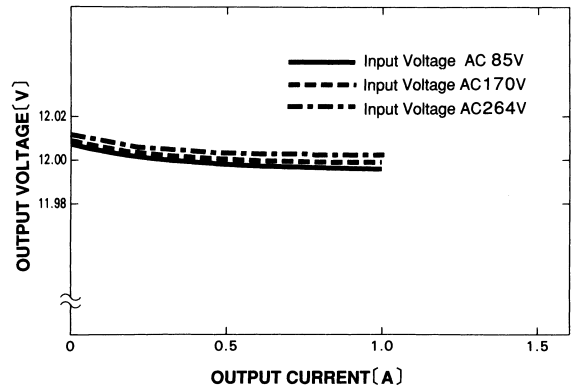


※ Weight: 100g or less
※ Tolerance: ±0.5
※ Case: PBT

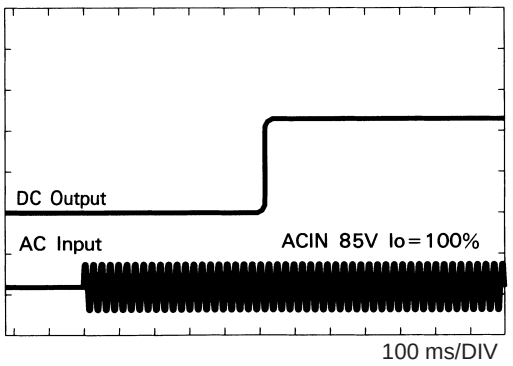


Performance data

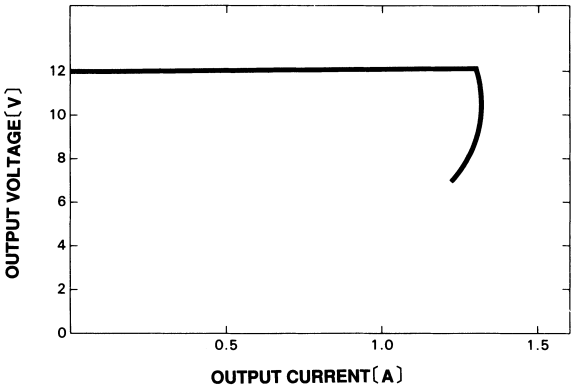
■STATIC CHARACTERISTICS (YAS1012)



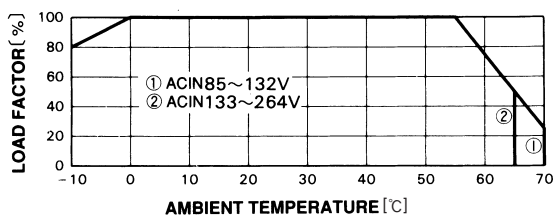
■RISE TIME (YAS1012)



■OVERCURRENT CHARACTERISTICS (YAS1012)



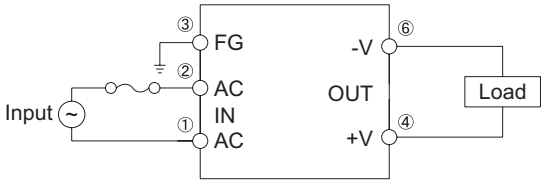
■DERATING CURVE



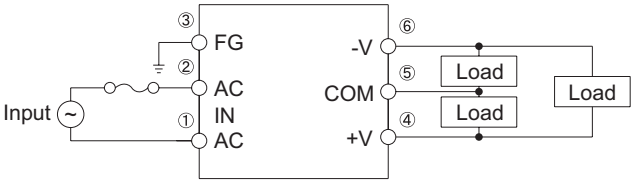
1 Pin Connection

No.	Pin connection		Function
①	AC		Input pin AC85 - 264V 1ϕ
②	AC		47 - 440Hz or DC110 - 370V
③	FG		Frame ground
④	OUT	+V	+Side of output voltage
⑤	OUT	COM	GND of output voltage(Only applicable for Dual output)
⑥	OUT	-V	-Side of output voltage

●Single Output



●Dual (±) Output



2 Function

2.1 Input voltage

■AC input voltage must have a range from AC85V to AC264V for normal operation. If the wrong input is applied, the unit will not operate properly and/or may be damaged.

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 current.

2.3 Overcurrent protection

■Overcurrent protection circuit is built-in and comes into effect at over 105% of the rated current. Overcurrent protection prevents the unit from short circuit and over current condition of less than 20 sec. The unit automatically recovers when the fault condition is cleared.

■If the output voltage drops more than 70% of the rated output voltage in an overcurrent protection mode, the average output current will also be reduced by the intermittent operation.

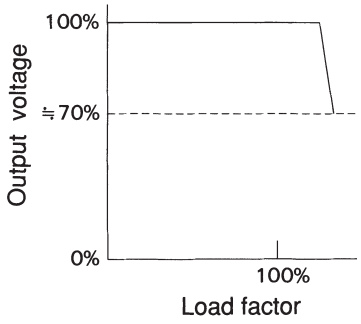
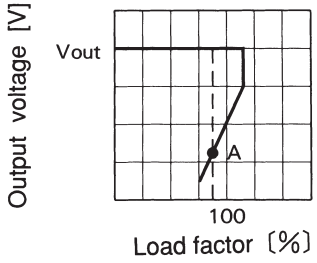


Fig.2.1 Overcurrent protection characteristics

■The power supply which has a current foldback characteristics may not start up when connected to nonlinear load such as lamp, motor or constant current load. See the characteristics below.



——: Load characteristics of power supply.

---------- : Characteristics of load (lamp, motor, constant current load, etc.).

Note: In case of nonlinear load, the output is locked out at A point.

Fig.2.2 Current foldback characteristics

2.4 Isolation

■For a receiving inspection, such as Hi-Pot test, gradually increase (decrease) the voltage for the start (shut-down). Avoid using Hi-Pot tester with the timer because it may generate voltage a few times higher than the applied at ON/OFF of a timer.

3 Wiring to Input/ Output Pin

■To meet with conducted noise VDE class B, connect capacitor Ci which is more than 0.1μF at AC input terminal.

■To decrease the ripple voltage further, install an external capacitor Co at output terminal as shown below.

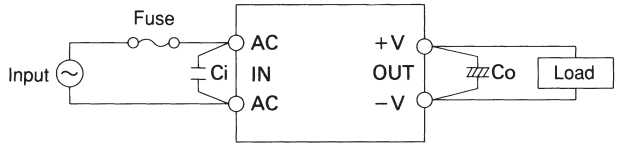


Fig.3.1 Connecting method of external capacitor at output terminal

■When the static capacity of Capacitor Co is high, it may unstabilize the operation of power supply, so please refer to table 3.1 for the value of the external capacitor Co.

Table 3.1 Capacity of external capacitor at output terminal: Co[μF]

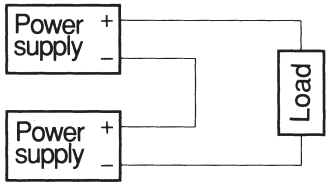
Output voltage / Co	5V	12V	15V
Recommended value	220	100	100
Maximum value	2,200	1,000	1,000

4 Series Operation and Parallel Operation

4.1 Series operation

■Series operation is available by connecting the outputs of two or more power supplies, as show below.
Output current in series connection should be lower than the lowest rated current in each unit.

(a)



(b)

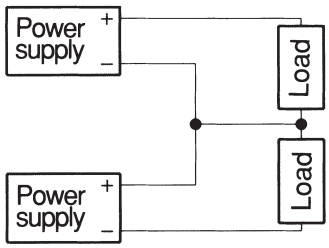


Fig.4.1 Series operation

4.2 Parallel redundancy operation

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

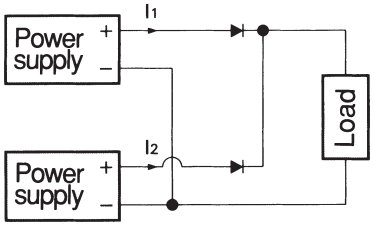


Fig.4.2 Parallel redundancy operation

■I_1, I_2 ≦ the rated current value

5 Assembling and Installation Method

5.1 Installation method

■The unit can be mounted in any direction. 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.

■Avoid placing the AC input line pattern lay out underneath the unit because it will increase the line conducted noise. Make sure to leave an ample distance between the line pattern lay out and the unit. Also, avoid placing the DC output line pattern underneath the unit because it may increase the output noise. Lay out the pattern away from the unit.

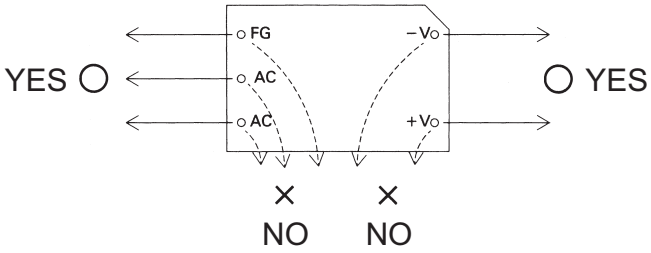


Fig.5.1 Pattern wiring

YA

■When the pattern of DC output line is installed at the same surface of the unit installed, the creepage distance and clearances between primary components of the internal unit does not satisfy the standard of safety, avoid the installation inside the slanted line as below.

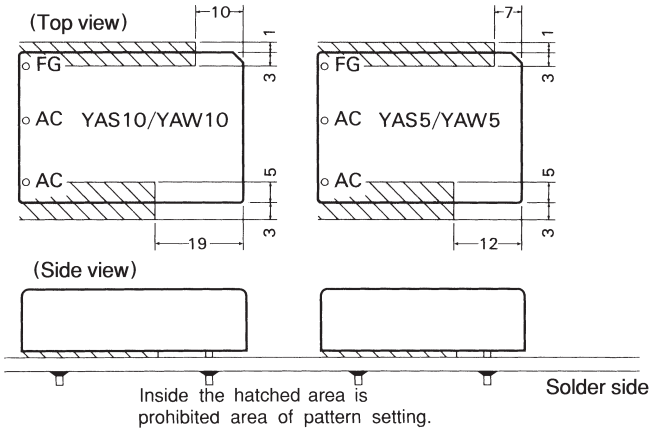


Fig.5.2 Prohibited area of pattern arrangement

5.2 Derating

■By derating the output current, it is possible to operate the unit from -10℃ to +65℃.

■When unit mounted any way other than in drawings below, it is required to consider ventilated environment by forced air cooling or temperature/load derating. For details, please consult our sales or engineering departments.

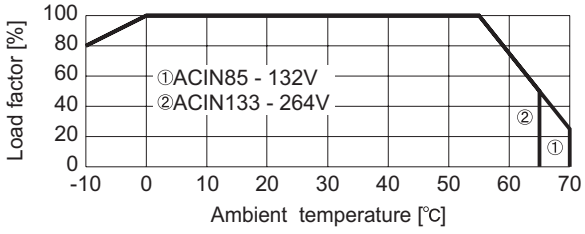


Fig.5.3 Derating curve

■The temperature increase of case surface at full load is shown by below table as referenced data.

Table 5.1 The surface temperature of case increase data

(Unit: deg)

Input voltage	Output voltage	5W	10W
AC100V	5V	35	40
	12V	24	34
	±12V	28	42
	±15V	29	37

6 Cleaning

■Clean it with a brush. Prevent fluid from getting inside the unit.

■Do not apply pressure to the lead and name plate with a brush or scratch it during the cleaning.

■After cleaning, dry them enough.

7 Soldering

■Flow soldering : 260℃ less than 15 seconds.

■Soldering iron (26W) : 450℃ less than 5 seconds.

8 Input/Output Pin

■When too much stress is applied on the input/output pins of the unit, the internal connection may be weakened. As below Fig.8.1, avoid applying stress of more than 9.8N (1kgf) on the pins horizontally and more than 19.6N (2kgf) vertically.

■The input/output pins are soldered on PCB internally, therefore, do not pull or bend them with abnormal forces.

■When additional stress is expected to be put on the input/output pins because of vibration or impacts, fix the unit on PCB (using silicone rubber or fixing fittings) to reduce the stress onto the input/output pins.

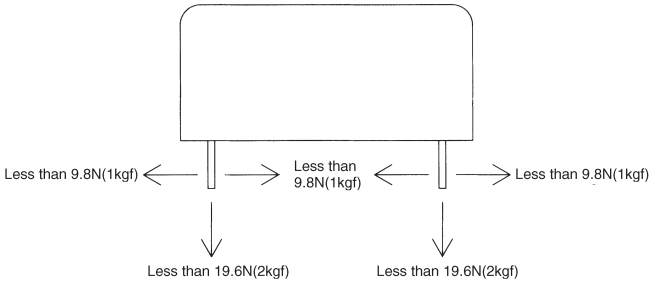


Fig.8.1 Stress onto the pins

9 External Fuse

■Fuse is not built-in on the input side. In order to secure the safety of the unit, install a slow-blow type fuse on the input side.

Table 9.1 The rated current of fuse (Slow-blow type)

Model	YAS 5(E)・YAW 5(E)	YAS10(E)・YAW10(E)
Rated current	2A	2A

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current [A]	Rated input fuse	Inrush current protection	PCB/Pattern			Series/Parallel operation availability	
						Material	Single sided	Double sided	Series operation	Parallel operation
YAS5	Flyback converter	250	0.13	-	Resister	glass fabric base.epoxy resin		Yes	Yes	✻1
YAS10	Flyback converter	200	0.24	-	Resister	glass fabric base.epoxy resin		Yes	Yes	✻1
YAW5	Flyback converter	250	0.13	-	Resister	glass fabric base.epoxy resin		Yes	Yes	✻1
YAW10	Flyback converter	200	0.24	-	Resister	glass fabric base.epoxy resin		Yes	Yes	✻1

✻1 Refer to Instruction Manual.