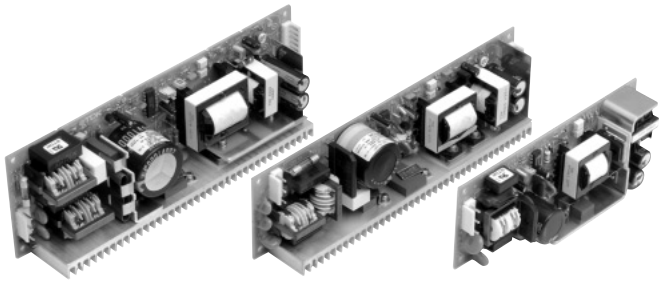
Power Supplies

AC Input
Single Output, General-Purpose

J Series JAK(50 to 150W)

UL Recognized

The J series JAK products are device-embedded type power supplies characterized by the compact size of 19 to 40mm in thickness and low price. They satisfy various requirements such as low price, safety standards, and EMI countermeasures as well as the compact configuration. TDK answers the customer needs with 10 models covering three types of 50W to 150W.



FEATURES

- AC.100V input thin-type single output power supply.
- Compact open frame.
- Low price.
- Low conductive noise (FCC class B meet).

PART NUMBERS AND RATINGS

Output	50W Type		100W Type		150W Type	
voltage(V)	Current(A)	Part No.	Current(A)	Part No.	Current(A)	Part No.
5	10	JAK05-10R	20	JAK05-20R	30	JAK05-30R
12	4.2	JAK12-4R2	8.4	JAK12-8R4	12.5	JAK12-13R
15	3.4	JAK15-3R4				
24	2.1	JAK24-2R1	4.2	JAK24-4R2	6.3	JAK24-6R3

Power Supplies

J Series JAK(50 to 150W)

AC Input

Single Output, General-Purpose

UL Recognized

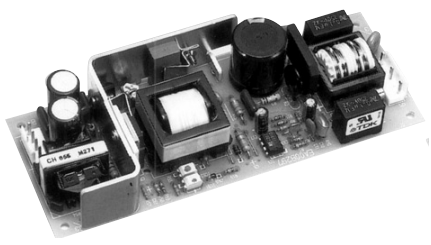
JAK50W TYPE

SPECIFICATIONS AND STANDARDS

Part No.			JAK05-10R	JAK12-4R2	JAK15-3R4	JAK24-2R1
Rated output voltage and current*1			5V • 10A	12V • 4.2A	15V • 3.4A	24V • 2.1A
Maximum output power		W	50	50.4	51	50.4
Input conditions						
Input voltage*2 Eac		V	85 to 132[Rating: 100 to 120]			
Input frequency		Hz	47 to 66[Rating: 50 to 60](Single phase)			
Input current		A	1.3max.[Input and output ratings]			
Fuse rating		A	3.15[Built-in]			
Surge current		A	40max.[Input and output ratings, 25°C, cold start]			
Leakage current		mA	0.5max.[Input and output ratings]			
Efficiency		%	77typ.	79typ.	79typ.	81typ.
Output characteristics						
Output voltage Edc		V	5	12	15	24
Voltage variable range Edc		V	4.5 to 5.5	10.8 to 13.2	13.5 to 16.5	21.6 to 26.4
Maximum output current		A	10	4.2	3.4	2.1
Overvoltage threshold Edc		V	5.6 to 6.9	13.4 to 15.7	16.7 to 19	26.7 to 30.5
Overcurrent threshold		A	10.5min.	4.4min.	3.5min.	2.2min.
Voltage stability	Source effect	%	2max.(1typ.)[Within the input voltage range]		Total effect ±3max.(±1typ.)	
	Load effect	%	2max.(1typ.)[10 to 100% load]			
	Temperature effect	%	2max.(1typ.)[Ambient temperature: 0 to +40°C]			
	Drift(Time effect)	%	0.5max.(0.1typ.)[After input voltage ON for 30min to 8h]			
	Recovery	%/ms	±4max./1max.[50 to 100% sudden load change]			
Ripple noise Ep-p		mV	120max.	190max.	220max.	310max.
Start up time		ms	500max.[Input and output ratings]			
Hold up time		ms	15min.(17typ.)[Input and output ratings]			
Auxiliary functions						
Indicator display			No			
Overvoltage protection			Voltage shut-down type, recovers upon reset(interval approx. 40s).			
Overcurrent protection			Rectangular type, automatic recovery. Overcurrent time is longer than 1s, output going shut-down.			
Remote ON-OFF			No			
Remote sensing			No			
Output voltage external variable function			No			
Standards						
Safety standards			UL1950-3 recognized, Electrical Appliance and Material Safety Law (“DENAN”) meet.			
Noise terminal voltage			VCCI class B, FCC class B meet.			
Constructions						
External dimensions		mm	30×60×156[H×W×L]			
Weight		g	220max.			
Mounting method			1 side(Open frame)			

*1 Current rating(maximum output current) is determined for –10 to +40°C. Derating is required when used outside this temperature range.

*2 When under load, output is cut off if the input voltage is below the minimum input voltage continuously for more than 1s.



Power Supplies

J Series JAK(50 to 150W)

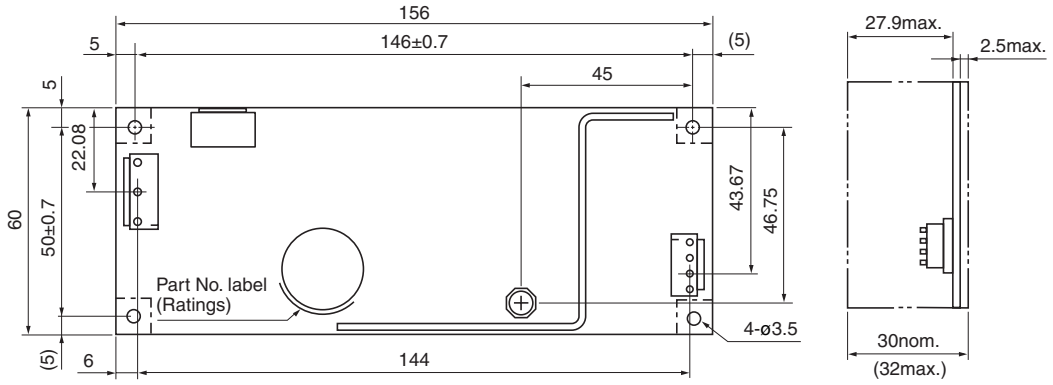
AC Input

Single Output, General-Purpose

UL Recognized

JAK50W TYPE

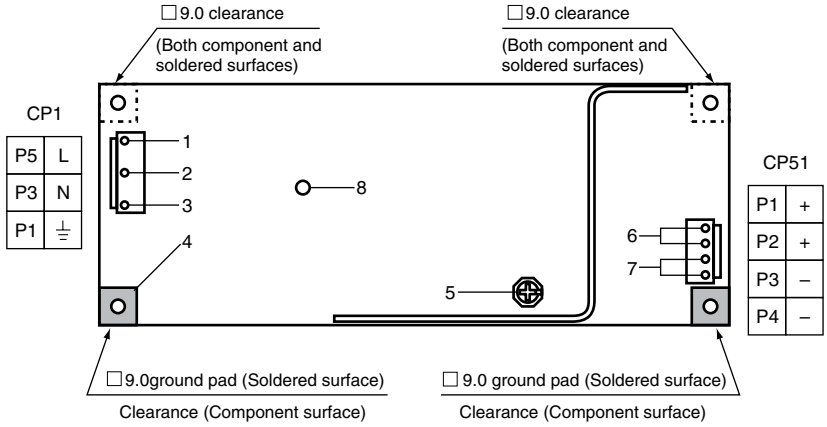
SHAPES AND DIMENSIONS



Dimensions in mm

±1mm : without specified dimensions

TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions	
1	Input terminal (CP1 pin 5)	Live line (Fuse contained)
2	Input terminal (CP1 pin 3)	Neutral line
3	Input terminal (CP1 pin 1)	Ground
4	Ground	Connected to an input terminal (CP1 pin 1). To conduct to the device with spacers or the like, use spacers made of conductive material (Mounting surface of spacer: ø6mm max.).
5	Output voltage adjustment volume control	Clockwise rotation of this control increases an output voltage.
6	+Output terminal(CP51 pin 1 and pin 2)	
7	–Output terminal (CP51 pin 3 and pin 4)	
8	Spacer mounting hole	Use insulator as for material of the spacer.

Connector made by Japan Solderless Terminal Co., Ltd. VH Series	Power supply side connector	Load cable side	
		Housing	Terminal
Input connector(CP1)	B3P5-VH	VHR-5N	SVH-21T-P1.1
Output connector(CP51)	B4P-VH	VHR-4N	SVH-21T-P1.1

Power Supplies

J Series JAK(50 to 150W)

AC Input

Single Output, General-Purpose

UL Recognized

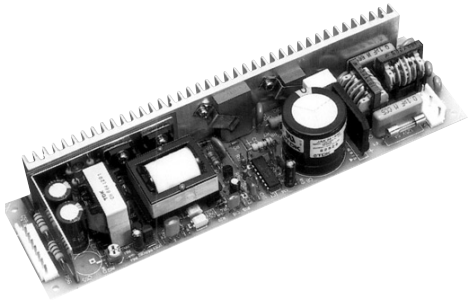
JAK100W TYPE

SPECIFICATIONS AND STANDARDS

Part No.			JAK05-20R	JAK12-8R4	JAK24-4R2
Rated output voltage and current*1			5V • 20A	12V • 8.4A	24V • 4.2A
Maximum output power		W	100	100.8	100.8
Input conditions					
Input voltage Eac		V	85 to 132[Rating: 100 to 120]		
Input frequency		Hz	47 to 66[Rating: 50 to 60](Single phase)		
Input current		A	2.5max.[Input and output ratings]		
Fuse rating		A	5[Built-in]		
Surge current		A	25max.[Input and output ratings, 1st surge current, reset after 10s minimum.]		
Leakage current		mA	0.5max.[Input and output ratings]		
Efficiency		%	81typ.	83typ.	85typ.
Output characteristics					
Output voltage Edc		V	5	12	24
Voltage variable range Edc		V	4.5 to 5.5	10.8 to 13.2	21.6 to 26.4
Maximum output current		A	20	8.4	4.2
Overvoltage threshold Edc		V	5.6 to 6.9	13.4 to 15.7	26.7 to 30.5
Overcurrent threshold		A	21min.	8.9min.	4.5min.
Voltage stability	Source effect	%	2max.(1typ.)[Within the input voltage range]		Total effect ±3max.(±1typ.)
	Load effect	%	2max.(1typ.)[10 to 100% load]		
	Temperature effect	%	2max.(1typ.)[Ambient temperature: 0 to +40°C]		
	Drift(Time effect)	%	0.5max.(0.1typ.)[After input voltage ON for 30min to 8h]		
	Recovery	%/ms	±4max./1max.[50 to 100% sudden load change]		
Ripple noise Ep-p		mV	120max.	190max.	310max.
Start up time		ms	500max.[Input and output ratings]		
Hold up time		ms	15min.(23typ.)[Input and output ratings]		
Auxiliary functions					
Indicator display			No		
Overvoltage protection			Voltage shut-down type, recovers upon reset(interval approx. 40s).		
Overcurrent protection*2			Rectangular type, automatic recovery. Overcurrent time is longer than 1s, output going shut-down.		
Remote ON-OFF			No		
Remote sensing			No		
Output voltage external variable function			No		
Standards					
Safety standards			UL1950-3 recognized, Electrical Appliance and Material Safety Law (“DENAN”) meet.		
Noise terminal voltage			VCCI class B, FCC class B meet.		
Constructions					
External dimensions		mm	35×60×222[H×W×L]		
Weight		g	550max.		
Mounting method			1 side(Open frame)		

*1 Current rating(maximum output current) is determined for –10 to +40°C. Derating is required when used outside this temperature range.

*2 Output can stop if input voltage drops below the minimum value continuously for over 1min during supply of power to load.



Power Supplies

J Series JAK(50 to 150W)

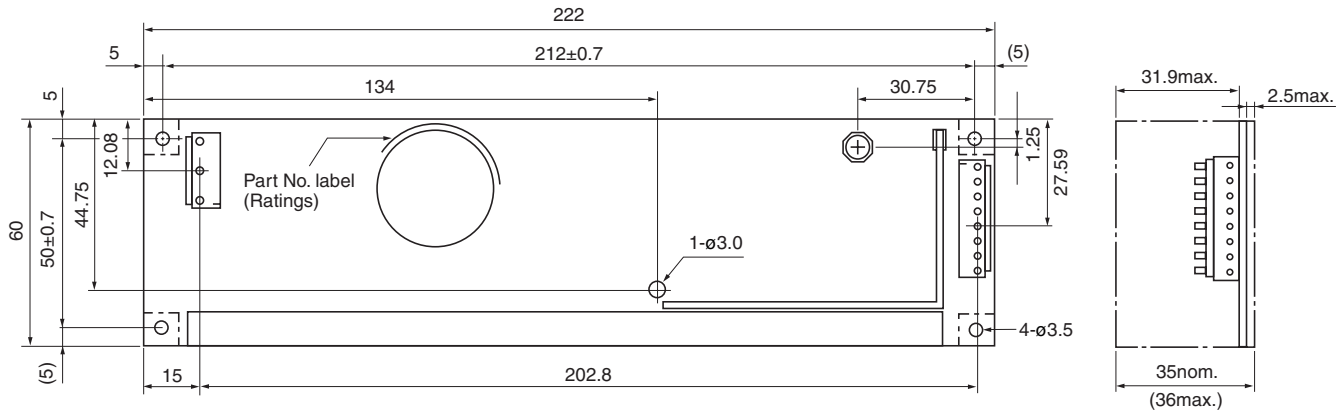
AC Input

Single Output, General-Purpose

UL Recognized

JAK100W TYPE

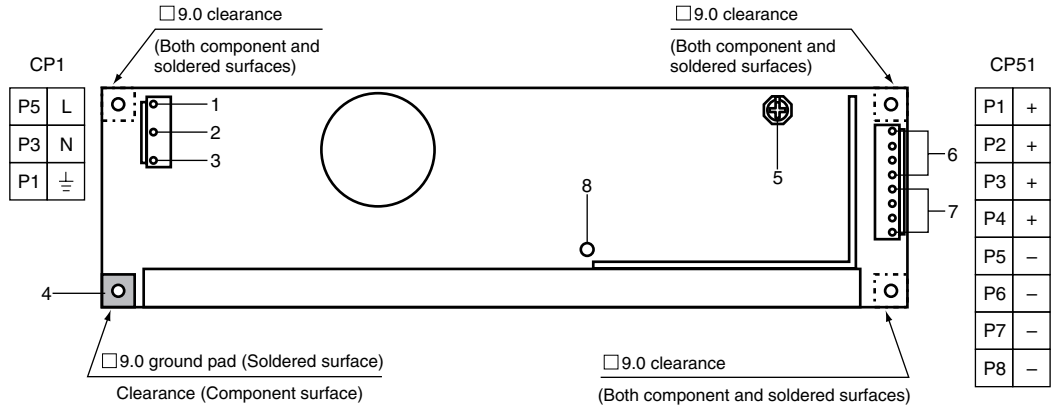
SHAPES AND DIMENSIONS



Dimensions in mm

±1mm : without specified dimensions

TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions	
1	Input terminal (CP1 pin 5)	Live line (Fuse contained)
2	Input terminal (CP1 pin 3)	Neutral line
3	Input terminal (CP1 pin 1)	Ground
4	Ground	Connected to an input terminal (CP1 pin 1). To conduct to the device with spacers or the like, use spacers made of conductive material (Mounting surface of spacer:ø6mm max.).
5	Output voltage adjustment volume control	Clockwise rotation of this control increases an output voltage.
6	+Output terminal(CP51 pin 1 to pin 4)	
7	–Output terminal (CP51 pin 5 to pin 8)	
8	Spacer mounting hole	Use insulator as for material of the spacer(Mounting surface of spacer: ø6mm max.).

Connector made by Japan Solderless Terminal Co., Ltd. VH Series	Power supply side connector	Load cable side	
		Housing	Terminal
Input connector(CP1)	B3P5-VH	VHR-5N	SVH-21T-P1.1
Output connector(CP51)	B8P-VH	VHR-8N	SVH-21T-P1.1

Power Supplies

J Series JAK(50 to 150W)

AC Input

Single Output, General-Purpose

UL Recognized

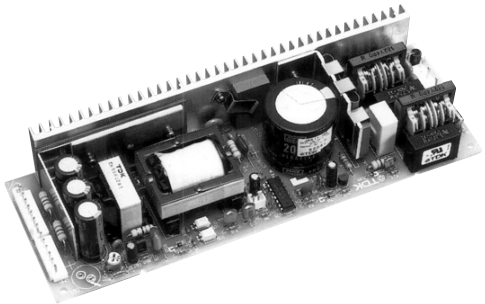
JAK150W TYPE

SPECIFICATIONS AND STANDARDS

Part No.			JAK05-30R	JAK12-13R	JAK24-6R3
Rated output voltage and current*1			5V • 30A	12V • 12.5A	24V • 6.3A
Maximum output power		W	150	150	151.2
Input conditions					
Input voltage Eac		V	85 to 132[Rating: 100 to 120]		
Input frequency		Hz	47 to 66[Rating: 50 to 60](Single phase)		
Input current		A	3.5max.[Input and output ratings]		
Fuse rating		A	6.3[Built-in]		
Surge current		A	25max.[Input and output ratings, 1st surge current, reset after 10s minimum.]		
Leakage current		mA	0.5max.[Input and output ratings]		
Efficiency		%	80typ.	83typ.	85typ.
Output characteristics					
Output voltage Edc		V	5	12	24
Voltage variable range Edc		V	4.5 to 5.5	10.8 to 13.2	21.6 to 26.4
Maximum output current		A	30	12.5	6.3
Overvoltage threshold Edc		V	5.6 to 6.9	13.4 to 15.7	26.7 to 30.5
Overcurrent threshold		A	31.5min.	13.2min.	6.7min.
Voltage stability	Source effect	%	2max.(1typ.)[Within the input voltage range]		Total effect ±3max.(±1typ.)
	Load effect	%	2max.(1typ.)[10 to 100% load]		
	Temperature effect	%	2max.(1typ.)[Ambient temperature: 0 to +40°C]		
	Drift(Time effect)	%	0.5max.(0.1typ.)[After input voltage ON for 30min to 8h]		
	Recovery	%/ms	±4max./1max.[50 to 100% sudden load change]		
Ripple noise Ep-p		mV	120max.	190max.	310max.
Start up time		ms	500max.[Input and output ratings]		
Hold up time		ms	15min.(23typ.)[Input and output ratings]		
Auxiliary functions					
Indicator display			No		
Overvoltage protection			Voltage shut-down type, recovers upon reset(interval approx. 60s).		
Overcurrent protection*2			Rectangular type, automatic recovery. Overcurrent time is longer than 1s, output going shut-down.		
Remote ON-OFF			No		
Remote sensing			No		
Output voltage external variable function			No		
Standards					
Safety standards			UL1950-3 recognized, Electrical Appliance and Material Safety Law (“DENAN”) meet.		
Noise terminal voltage			VCCI class B, FCC class B meet.		
Constructions					
External dimensions		mm	40×75×222[H×W×L]		
Weight		g	700max.		
Mounting method			1 side(Open frame)		

*1 Current rating(maximum output current) is determined for –10 to +40°C. Derating is required when used outside this temperature range.

*2 Output can stop if input voltage drops below the minimum value continuously for over 1min during supply of power to load.



Power Supplies

J Series JAK(50 to 150W)

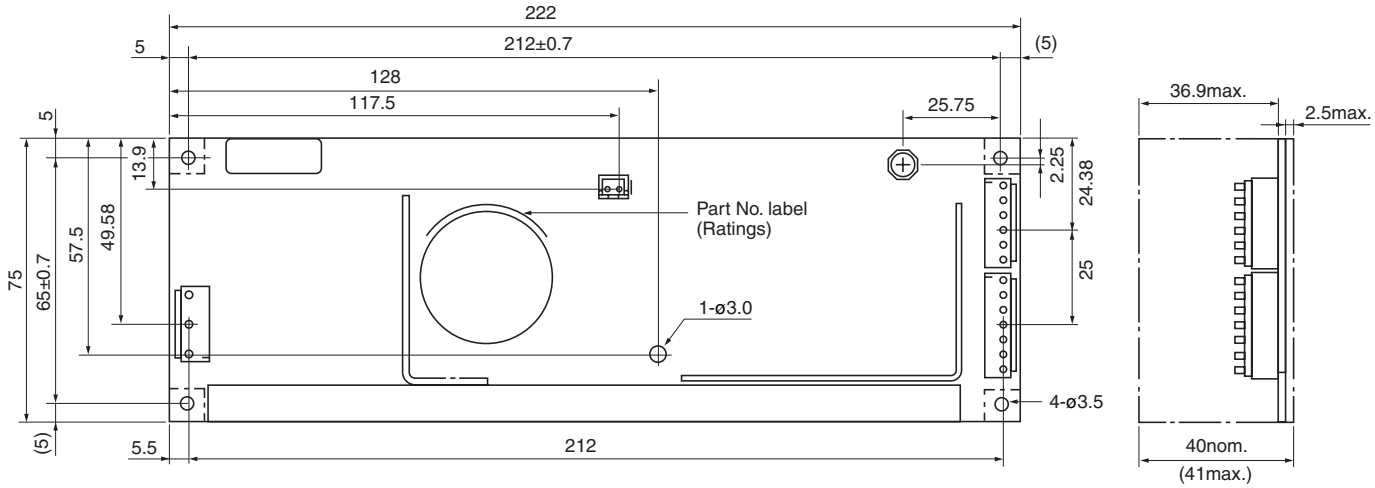
AC Input

Single Output, General-Purpose

UL Recognized

JAK150W TYPE

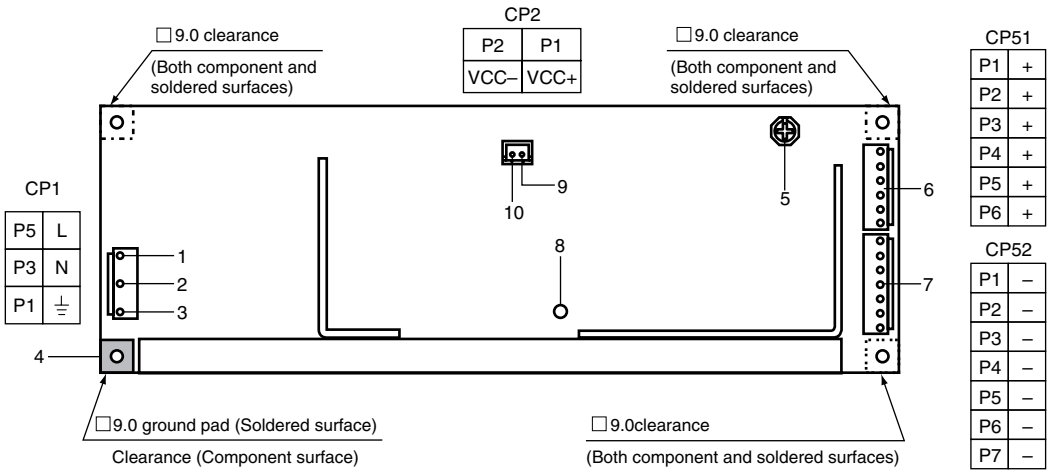
SHAPES AND DIMENSIONS



Dimensions in mm

±1mm : without specified dimensions

TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions	
1	Input terminal (CP1 pin 5)	Live line (Fuse contained)
2	Input terminal (CP1 pin 3)	Neutral line
3	Input terminal (CP1 pin 1)	Ground
4	Ground	Connected to an input terminal (CP1 pin 1). To conduct to the device with spacers or the like, use spacers made of conductive material (Mounting surface of spacer: ø6mm max.).
5	Output voltage adjustment volume control	Clockwise rotation of this control increases an output voltage.
6	+Output terminal(CP51 pin 1 to pin 6)	
7	–Output terminal (CP52 pin 1 to pin 7)	
8	Spacer mounting hole	Use insulator as for material of the spacer(Mounting surface of spacer: ø6mm max.).
9	VCC terminal (CP2 pin 1) VCC+	
10	VCC terminal (CP2 pin 2) VCC–	Externally apply 15±2V in the parallel operation (Use an insulated DC power supply for VCC).

Connector made by Japan Solderless Terminal Co., Ltd. VH Series	Power supply side connector	Load cable side	
		Housing	Terminal
Input connector(CP1)	B3P5-VH	VHR-5N	SVH-21T-P1.1
Output connector(CP51)	B6P-VH	VHR-6N	SVH-21T-P1.1
Output connector(CP52)	B7P-VH	VHR-7N	SVH-21T-P1.1
VCC(CP2) application*	B2B-XH-A	XHP-2	SXH-001T-P0.6

* Apply DC.15V from an external power supply in the parallel operation.

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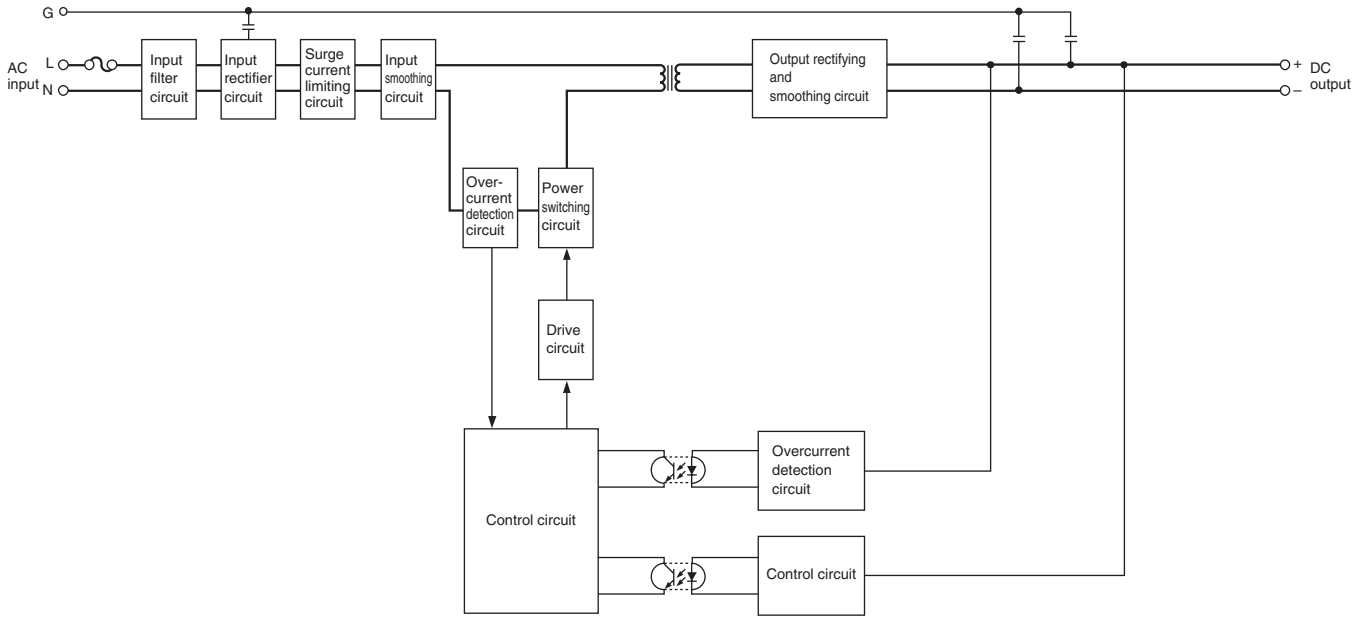
BLOCK DIAGRAM



COMMON SPECIFICATIONS

Temperature and humidity		
Temperature range	Operating(°C)	–10 to +60[Derating is necessary when operating environment temperature exceed 40°C.]
	Storage(°C)	–25 to +75
Humidity range	Operating(%)RH	20 to 95[Maximum wet-bulb temperature: 35°C, without dewing]
	Storage(%)RH	
Vibration and shock		
Vibration	5 to 10Hz	All amplitude 10mm[3 directions, each 1h]
	10 to 200Hz	Acceleration 29.4m/s^2 (3G)[3 directions, each 1h]
Shock	Acceleration	588m/s^2 (60G)[3 directions, each 3 times]
	Pulse duration	11±5ms
Withstand voltage and insulation resistance		
Withstand voltage	Input terminal to ground terminal	Eac: 2kV, 1min[Normal temperature, normal humidity, cutout current 10mA]
	Input terminal to output terminal	
Insulation resistance	Input terminal to ground terminal	Edc: 500V, 100MΩ min. [Normal temperature, normal humidity]
	Input terminal to output terminal	
	Output terminal to ground terminal	

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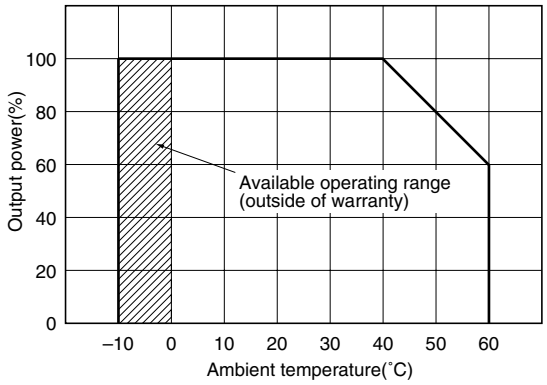
OUTPUT POWER-AMBIENT TEMPERATURE(DERATINGS)



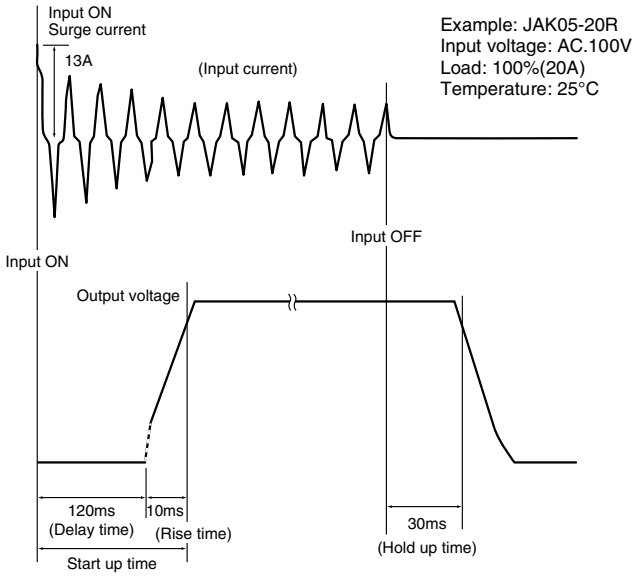
The values in this catalog result in the following with the –10 to 0°C temperature range:

Ripple: Doubled

Start up time: Doubled

Hold up time: 0.8 times

SURGE CURRENT, START UP/RISE/HOLD UP TIMES



OPTIONS

Input or output cable kits are sold separately.

Cable kit

Cable length: 1m in all types (15mm at cable end soldered)

Line color

Input	Output	Parallel use
Black(L) White (N) Green/yellow(G)	Red(+) Black(–)	Red(+) Black(–)

Details of content

50W	Part No.	4EU50B297
	Input:	AWG20,UL1015
	Output:	AWG18,UL1007
100W	Part No.	4EU30B298
	Input:	AWG20,UL1015
	Output:	AWG18,UL1007
150W	Part No.	4EU70B299
	Input:	AWG20,UL1015
	Output:	AWG18,UL1007
	Parallel use:	AWG22,UL1007

• Place an order with a part No. in the above.

PARALLEL USE

50, 100W	Disabled
150W	Enabled(Voltage of 15±2V can be externally applied to the connector CP2 (for VCC) on the PC board.)

Power Supplies

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J Series JAK(50 to 150W)

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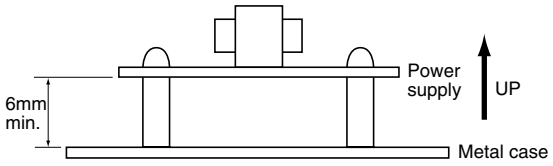
INSTALLATIONS

- Mounting the power supply at the four corners with metal spacers.
- Mounting holes for spacers are provided in the central portion of the PC board. Use insulating spacers for the mounting.
- Lay an insulating sheet under the power supply in case a 6mm installation space cannot be secured.

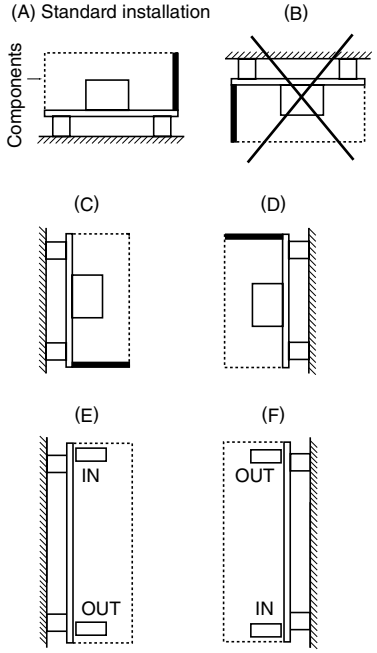
STANDARD INSTALLATION DIRECTION



OTHER INSTALLATION DIRECTION

There are installation directions (B) to (F) as shown below in addition to the standard installation direction (A) for mounting the power supply on an apparatus. The installation (B), however, is inhibited because it will cause heat to be trapped inside the power supply.

Derating of the output voltage and the ambient temperature for the installation directions (C) to (F) are not the same as for the direction (A). Please consult us if you need.



OTHER CONDITIONS

- Unless conditions are otherwise specified in the specifications or standards, 25°C and rated input-output should be applied.
- Ripple and noise(250MHz max.) should be specified at a temperature within a range of 0 to +40°C.

RIPPLE NOISE MEASUREMENT CONDITIONS