

# DRJ15-100 Series

## Instruction Manual

### BEFORE USING THE POWER SUPPLY UNIT

Be sure to read this instruction manual thoroughly before using this product. Pay attention to all cautions and warnings before using this product. Incorrect usage could lead to an electrical shock, damage to the unit or a fire hazard.

#### **DANGER**

Never use this product in locations where flammable gas or ignitable substances are present. There are risks of igniting these substances and exploding by an arcing.

#### **INSTALLATION WARNING**

- When installing, ensure that work is done in accordance with the instruction manual. When installation is improper, there is risk of electric shock and fire.
- Installation shall be done by Service personnel with necessary and appropriate technical training and experience. There is a risk of electric shock and fire.
- Do not cover the product with cloth or paper etc. Do not place anything flammable around. This might cause damage, electric shock or fire.

#### **WARNING on USE**

- Do not touch this product or its internal components while circuit in operation, or shortly after shutdown. There may be high voltage or high temperature present and you may receive an electric shock or burn.
- While this product is operating, keep your hands and face away from it as you may be injured by an unexpected situation.
- Do not drop or insert anything into this product. It might cause a failure, fire and electric shock.
- Do not use this product under unusual condition such as emission of smoke or abnormal smell and sound etc. It might lead to fire and electric shock. In such cases, please contact us. Do not attempt repair by yourself, as it is dangerous for the user.
- There are cases where high voltage charge remains inside the product. Therefore, do not touch even if they are not in operation as you might get injured due to high voltage and high temperature. You might also get electric shock or burn.
- Do not use this product under unusual condition such as emission of smoke or abnormal smell and sound etc. Please stop using it immediately and shut off the product. It might lead to fire and electric shock. In such cases, please contact us. Do not attempt repair by yourself, as it is dangerous for the user.
- Do not operate and store these products in environments where condensation occurs due to moisture and humidity. It might lead fire and electric shock.
- Do not drop or apply shock to this product. It might cause failure. Do not operate these products mechanical stress is applied.

#### **CAUTION on MOUNTING**

- Confirm connections to input/output terminals are correct as indicated in the instruction manual before switching on.
- Input voltage, Output current, Output power, ambient temperature and ambient humidity should be kept within specifications, otherwise the product will be damaged.
- Input line, please use the wires as short and thick as possible.
- Do not use this product in special environment with strong electromagnetic field, corrosive gas or conductive substances and direct sunlight, or places where product is exposed to water or rain.
- Mount this product properly in accordance with the instruction manual, mounting direction and shall be properly be ventilated.
- Please shut down the input when connecting input and output of the product.
- When installing in environment where conductive foreign, dust and liquid may be present, please consider penetration of above foreign material in the power supply by installing filter, to prevent trouble or malfunction.

#### **CAUTION on USE**

- Product individual notes are shown in the instruction manual. If there is any difference with common notes individual notes shall have priority.
- Before using this product, be sure to read the catalog and instruction manual. There is risk of electric shock or damage to the product or fire due to improper use.
- If the built-in fuse is blown, do not use the product even after replacing the fuse, as there is risk of abnormality inside. Be sure to request repair to our company.
- For externally mounted fuse do not use other fuses aside from our specified and recommended fuse.

- For products without built-in protection circuit (element, fuse, etc.), insert fuse at the input to prevent smoke, fire during abnormal operation.  
As for products with built-in protection circuit, depending on usage conditions, built-in protection circuit might not work. It is recommended to provide separate proper protection circuit.
- This product was made for general purpose electronic equipment use and is not designed for applications requiring high safety (such as extremely high reliability and safety requirements. Even though high reliability and safety are not required, this product should not be used directly for applications that have serious risk for life and physical safety. Take sufficient consideration in fail-safe design (such as providing protective circuit or protective device inside the system, providing redundant circuit to ensure no instability when single device failure occurs).
- When used in environments with strong electromagnetic field, there is possibility of product damage due to malfunction.
- Provide countermeasure for prevention of lightning surge voltage as there is risk of damage due to abnormal voltage.
- Connect together the frame ground terminal of the product and the ground terminal of the equipment for safety and noise reduction. If these ground is not connected together, there is risk of electric shock.
- Parts with lifetime specifications (built-in fan electrolytic capacitor) are required to be replaced periodically. Set the overhaul period depending on the environment of usage and perform maintenance. Also, note that there are cases when EOL products cannot be overhauled.
- Take care not to apply external abnormal voltage to the output. Especially, applying reverse voltage or overvoltage more than the rated voltage to the output might cause failure, electric shock or fire.

### Note

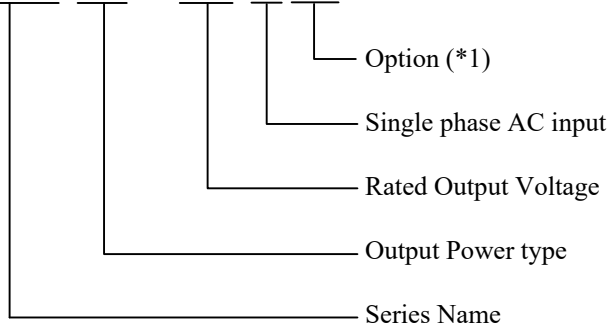
- Take note that traces of sheet metal processing be left in our power supplies.
- When disposing product, follow disposal laws of each municipality.
- Published EMI (CE, RE) or immunity is the result when measured in our standard measurement conditions and might not satisfy specification when mounted and wired inside end-user equipment.  
Use the product after sufficiently evaluating at actual end-user equipment.
- When exporting our products, apply for necessary permissions as required by rules and regulations of Foreign Exchange and Foreign Trade Control Act.
- Catalogue, contents of the instruction manual may be changed without a prior notice. Refer to latest catalogue or instruction manual.
- Reproduction or reprinting the instruction manual or its portion is forbidden without our permission.

### LONG-TERM STORAGE METHOD AND LONG-TERM STORAGE PERIOD

- Please keep the product in carton box.
- Please do not apply excessive vibration, shock or mechanical stress applied directly to the product.
- Please keep away from direct sunlight.
- Please keep away from direct sunlight.
- For long-term storage temperature and humidity, the following conditions shall be used as a guideline :  
Temperature range : 5°C~30°C  
Humidity range : 40%~60%RH  
Please keep away from the places where temperature and humidity can change drastically. It can cause condensation on the product or deterioration.
- For long-term storage period, we recommend to use within 2 years after receiving the product.  
<The product is used an aluminium electrolytic capacitor>  
There is tendency that the leakage current of an aluminium electrolytic capacitor may increase when stored without using for a long time. This phenomenon can be improved by applying voltage to the aluminum electrolytic capacitor to reduce the increased leakage current through the self-recovery effect of the electrolyte. For reference, before using products that have been stored for a very long time, please warm-up first for 30 minutes or more without taking load.  
<Criterion of warm up voltage condition>  
(1)Implementation period : 1 year or above after the delivery  
(2)Electrical continuity condition  
Input voltage : Rating  
Load : 0A  
Ambient temperature : Normal temperature  
Time : 30 minutes or more

## 1. Model name identification method

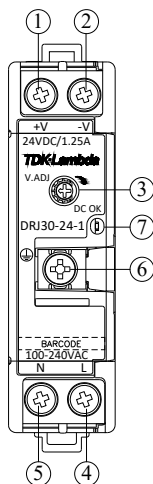
**DRJ 15 - 24-1 / □**



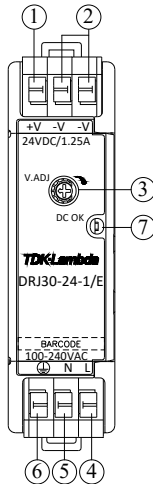
- (\*1) Blank : Block terminal type  
 /E : European terminal type  
 /C2 : Block terminal type  
 Comply with Class 2 output per UL1310(\*2)  
 /C2E : European terminal type  
 Comply with Class 2 output per UL1310(\*2)  
 (\*2) Option of DRJ100

## 2. Terminal Explanation

**DRJ15, DRJ30**



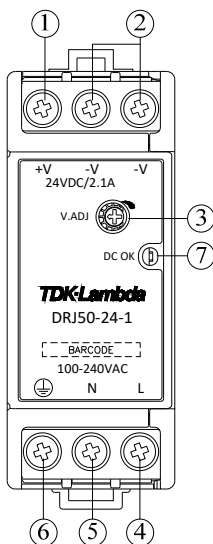
**DRJ15/E, DRJ30/E**



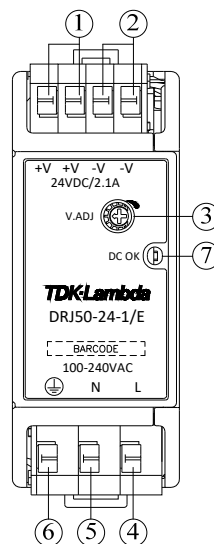
- ① +V : +Output terminal
- ② -V : -Output terminal
- ③ Output voltage adjustment trimmer (DRJ100/C2 and /C2E do not have.)
- ④ L : Input terminal Live line (Fuse in line)
- ⑤ N : Input terminal Neutral line
- ⑥ ⊕ : PE (Protective earthing) terminal
- ⑦ Output monitoring indicator (Green LED)

\*All terminal screw are M3.5

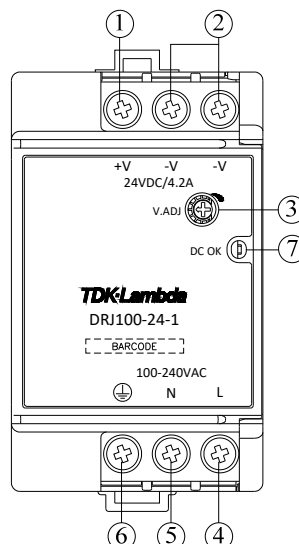
**DRJ50**



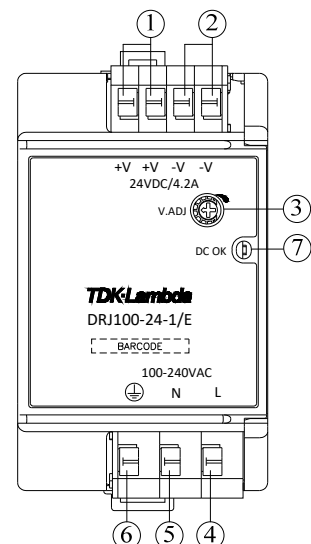
**DRJ50/E**



**DRJ100, DRJ100/C2**

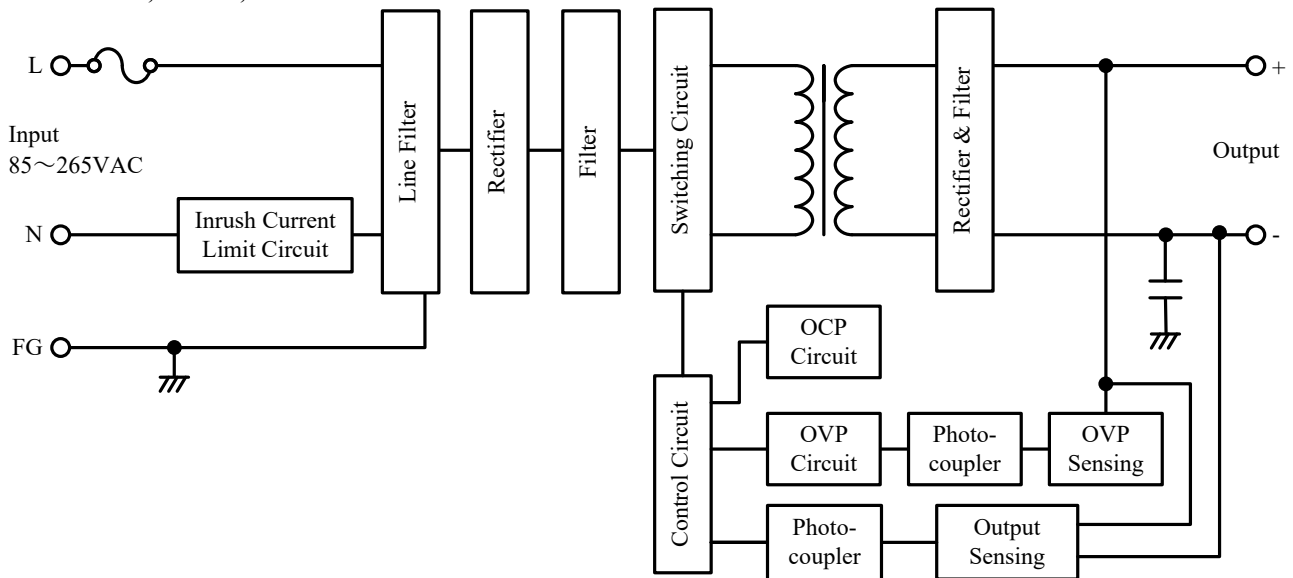


**DRJ100/E, DRJ100/C2E**

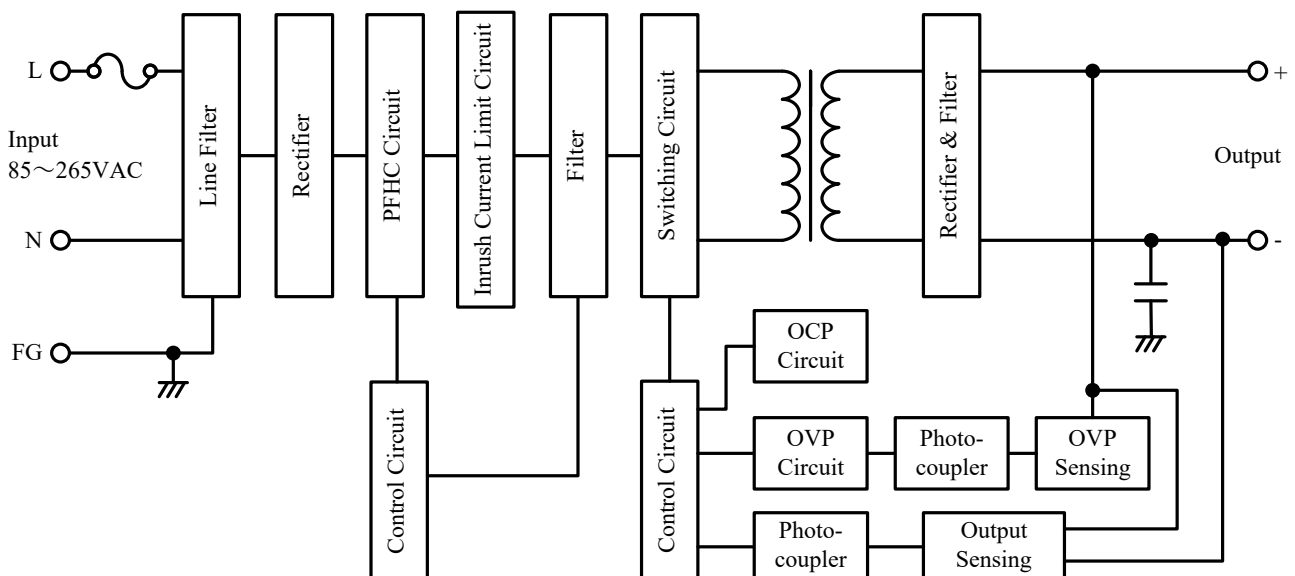


### 3. Block Diagram

**DRJ15, DRJ30, DRJ50**

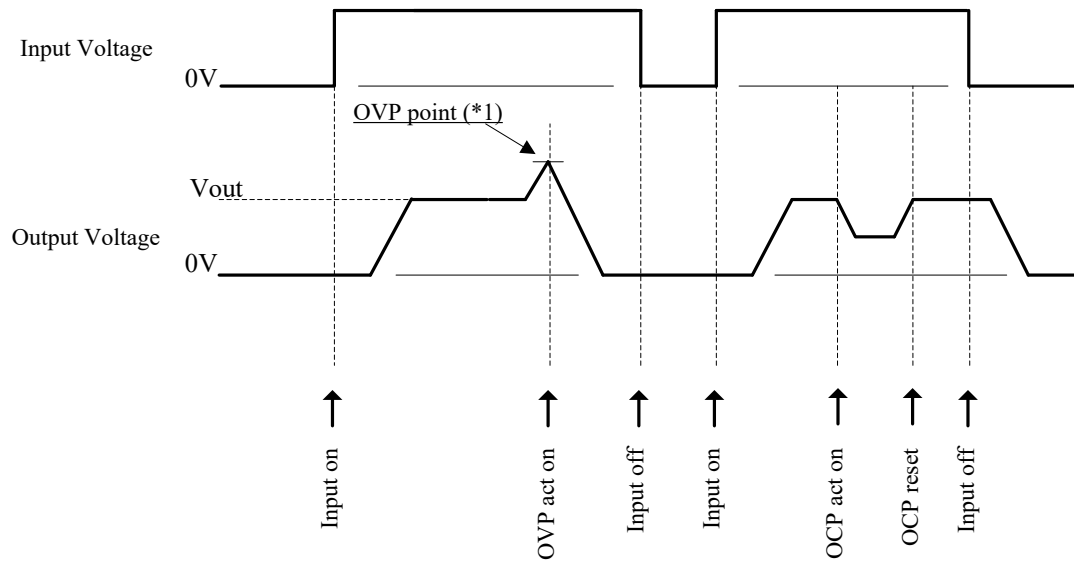


**DRJ100**



- Circuit topology, switching frequency
  - Fly back converter
    - DRJ15, DRJ30 : 100kHz
    - DRJ50 : 40-120kHz
    - DRJ100 : 110kHz
  - PFHC circuit : active filter (Only DRJ100)
    - 50-300kHz
- Fuse rating
  - DRJ15, DRJ30 : 2.5A
  - DRJ50, DRJ100 : 3.15A

#### 4. Sequence time chart



(\*1) OVP point

5V : 124%~146% (DRJ30)

12V : 133%~157% (DRJ30, DRJ50)

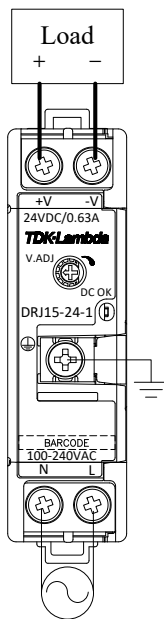
24V : 125%~145% (DRJ15- DRJ100)

## 5. Connecting method

Pay attention to the input wiring. If it is connected to wrong terminal, the power supply will be damaged.

- Input must be off when making connections.
- Connect ⊕ terminal to earth (frame ground of the equipment etc.) by thick wire for safety and improvement of noise sensitivity.

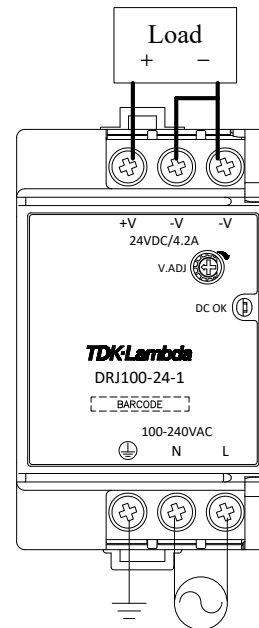
**DRJ15, DRJ30**



**DRJ50**

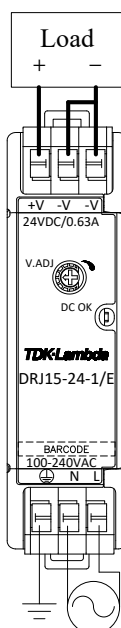


**DRJ100, DRJ100/C2**



Recommended torque : DRJ15, DRJ30 Input, Output terminal 1.0N·m (10.2kgf·cm) ~ 1.4N·m (14.2kgf·cm)  
 DRJ15, DRJ30 ⊕ terminal 1.0N·m (10.2kgf·cm)  
 DRJ50, DRJ100 Input, Output terminal, ⊕ terminal  
 1.0N·m (10.2kgf·cm) ~ 1.4N·m (14.2kgf·cm)

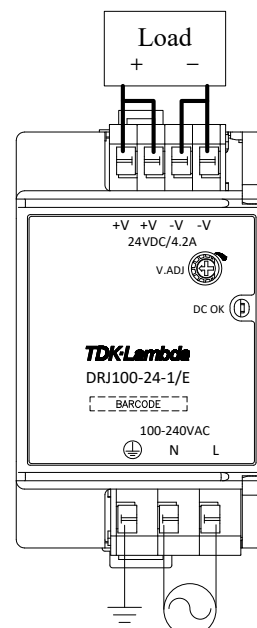
**DRJ15/E, DRJ30/E**



**DRJ50/E**



**DRJ100/E, DRJ100/C2E**



## 6. Explanation of Functions and Precautions

### 6-1. Input Voltage Range

Input voltage range is single phase 85-264VAC (47-63Hz) or 120-370VDC.

Input voltage, which is out of specification, might lead unit damage. For cases where conformance to various safeties required, described as 100-240VAC (50-60Hz).

In case of using input voltage, which is less than specification, output voltage might repeat start and stop.

Output derating is required for AC input voltage less than 90VAC (less than 100VAC for /C2 and /C2E).

Regarding the output derating, please see at “5-3. Output Derating according to Input Voltage”.

### 6-2. Output Voltage Range

Output voltage is set the rated value at shipment. Output voltage within +18%/-10% (5V : +20%/-10%, 12V : +25%/-10%) can be adjusted by V.ADJ trimmer (except for /C2 and /C2E).

Turning the trimmer clockwise, the output voltage will be increased. Take note when the output voltage is increased excessively, over voltage protection (OVP) function may trigger and voltage will be shut down. Furthermore, when increasing the output voltage, reduce the output current as not to exceed the maximum output power.

When the trimmer turns quickly at no load condition, the output voltage might not change quickly. In this case, flow the output current, or wait until the output voltage is stable, and then re-input. Please turn the trimmer slowly during the output voltage adjustment.

### 6-3. Inrush Current

This series equipped Power thermistor to limit the inrush current. The higher current will flow at higher ambient temperature or re-input condition. Please select input switch and fuse carefully with the high temperature and re-input the power condition. The inrush current value is under cold start at 25°C in the specification. Regarding the external fuse, please see at “9. External Fuse Rating”.

### 6-4. Over Voltage Protection (OVP)

The OVP function is inverter shut down method and manual reset type. OVP function operates within 125-145% (5V : 124-146%, 12V : 133-156%) of nominal output voltage.

When OVP triggers, the output will be shut down. To reset OVP, remove the input of power supply for a few minutes, and then re-input. In addition, the setting value of OVP is fixed and not adjustable. Pay attention not to apply voltage externally to the output terminal to avoid unit failure. In case of inductive load, put protective diode in series to the output power line.

### 6-5. Over Current Protection (OCP)

This series is hiccup mode with automatic recovery.

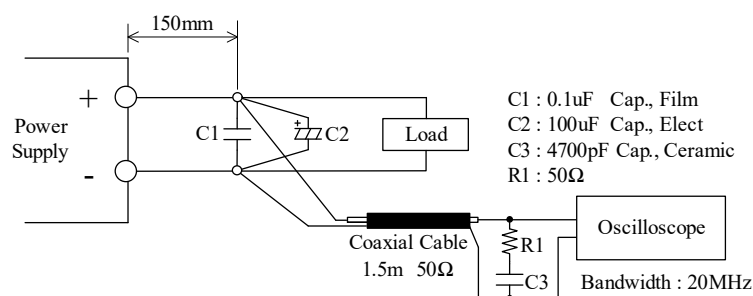
OCP function operates when the output current exceeds 105% of maximum DC output current of specification.

The outputs will be automatically recovered when the overload condition is removed. Never operate the unit under over current or shorted conditions, which may lead unit damage. OCP setting is fixed and cannot be adjusted externally.

### 6-6. Output Ripple & Noise

The standard specification for maximum ripple value is measured according to measurement circuit specified by JEITA RC-9131B. When load lines are longer, ripple will becomes larger. In this case, electrolytic capacitor, film capacitor, etc. might be necessary to use across the load terminal.

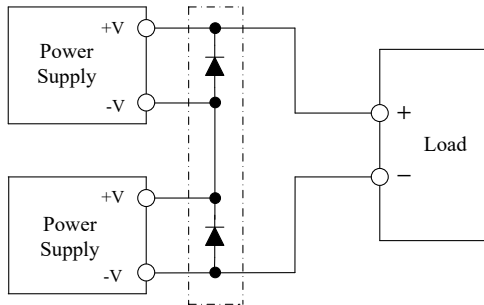
The output ripple cannot be measure accurately if the probe ground lead of oscilloscope is too long.



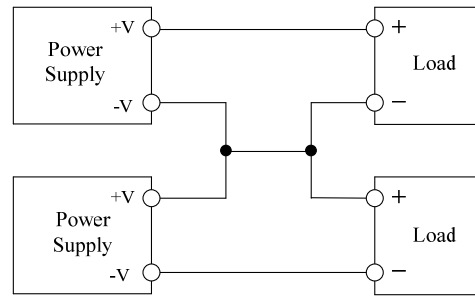
### 6-7. Series Operation

For series operation, either method (A) or (B) is possible.

Method (A)



Method (B)



Note :In case of (A), please connect bypass diodes to prevent reverse voltage.

Please select a bypass diode with maximum forward current rating more than output load current.

And maximum reverse voltage must withstand each power supply output voltage.

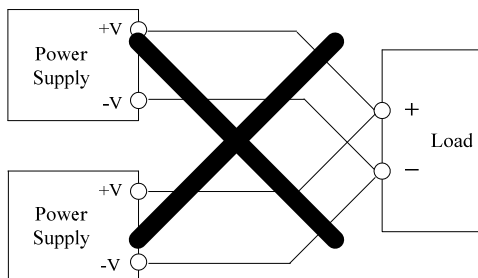
### 6-8. Parallel Operation

(A) Operation to increase the Output Current is not possible.

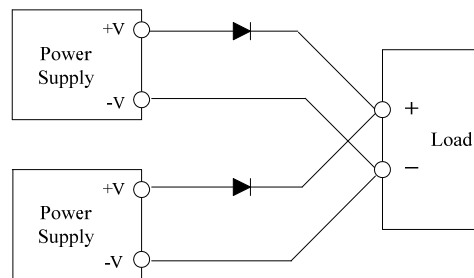
(B) Operation as a Backup Power Supply is possible as follows.

1. Set the power supply output voltage higher by the amount of forward voltage drop (VF) of the diode.
2. Please adjust the output voltage of each power supply to be the same.
3. Please use within the specifications for output voltage and output power.
4. Please select a reverse current prevention diode with maximum forward current rating more than output load current. And maximum reverse voltage must withstand each power supply output voltage.

(A)



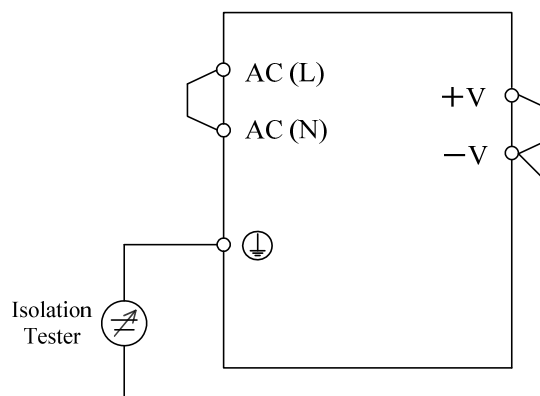
(B)



### 6-9. Isolation Test

Isolation resistance between Output - ⊥ terminal is more than 100MΩ at 500VDC. For safety operation, voltage setting of DC isolation tester must be done before the test. Ensure that the unit is fully discharged after the test.

- Output - ⊥ terminal : 500VDC More than 100MΩ

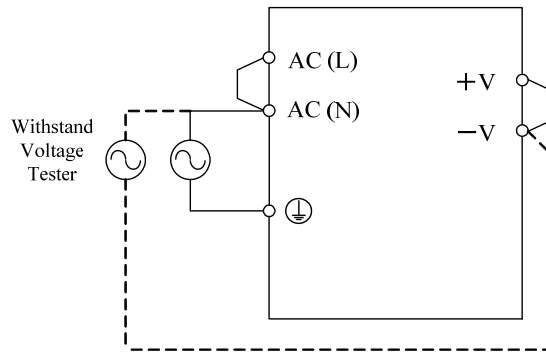




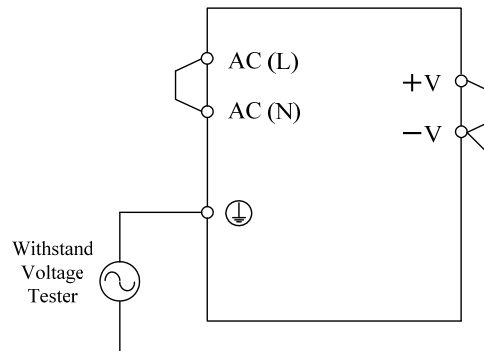
**6-10. Withstand Voltage**

This series is designed to withstand 3.0kVAC between input and output, 2.0kVAC between input and ⊥ terminal and 500VAC between output and ⊥ terminal each for 1 minute. When testing withstand voltage, set current limit of withstand voltage test equipment at 20mA (Output - ⊥ terminal : 50mA). The applied voltage must be gradually increased from zero to testing value and then gradually decreased for shut down. When timer is used, the power supply may be damaged by high impulse voltage at timer switch on and off timing. Connect input and output as follows.

- Input - Output (dotted line) : 3.0kVAC, 1min (20mA)
- Input - ⊥ terminal (solid line) : 2.0kVAC, 1min (20mA)



- Output - ⊥ terminal : 500VAC, 1min (50mA)



Note 1 : DRJ15, DRJ30 have monolithic ceramic capacitor in secondary circuit to ⊥.

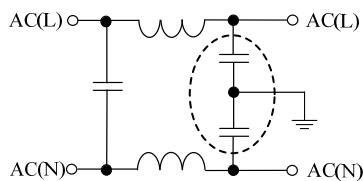
Some of the withstand voltage tester may generate high voltage at the matching with monolithic ceramic capacitor and may cause the unit damage.  
 So, please check the waveform of applied voltage.

Note 2 : In case of using external noise filter, capacitance between "Input and ⊥" might be increased.

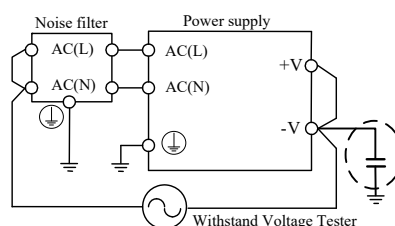
When testing withstand voltage between "Input and Output", there is a possibility exceeding withstand voltage between "Output and ⊥" (500VAC). Please check the voltage between "Output and ⊥".

If the voltage exceeding withstand voltage, please add external capacitor to "Output and ⊥". It can decrease the voltage.

On the other hand, no need to check the voltage in case of "Output and ⊥" is shorted.



The example of noise filter circuit that may increase capacitance value between "Input and ⊥".  
 (Capacitance value in dashed line is added.)



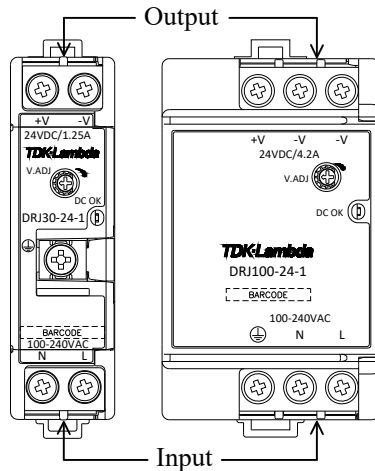
External capacitor adding point or short point.  
 Even in the case of "+V and ⊥", there is a similar effect.

## 7. Mounting Directions

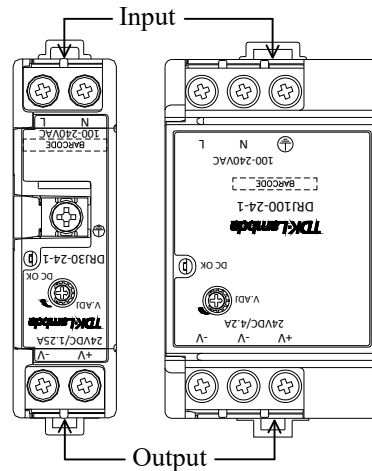
### 7-1. Mounting Directions

The standard mounting is direction (A). Direction (B) is also possible.

#### ■ Standard mounting (A)



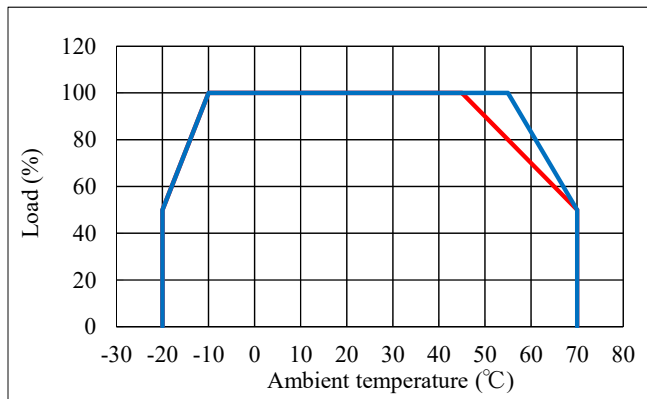
#### ■ mounting (B)



### 7-2. Output Derating

Refer to the derating below. Do not exceed the load deratings. Load (%) is percent of maximum output power or maximum output current, do not exceed its derating of maximum load.

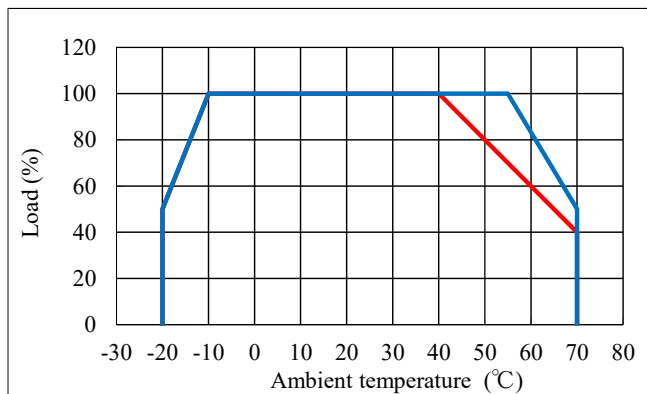
#### DRJ15, DRJ30, DRJ50 ( Include option model /E )



— Mounting (A)  
— Mounting (B)

Ta (°C)	Load (%)	
	Mounting (A)	Mounting (B)
-20	50	50
-10 - +45	100	100
55	100	80
70	50	50

#### DRJ100 ( Include option model /E, /C2, /C2E )

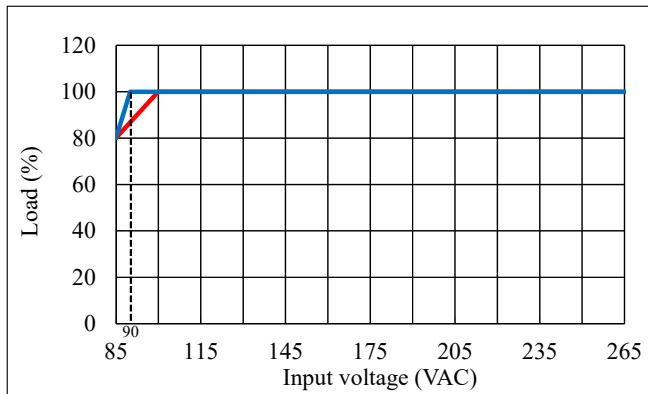


— Mounting (A)  
— Mounting (B)

Ta (°C)	Load (%)	
	Mounting (A)	Mounting (B)
-20	50	50
-10 - +40	100	100
55	100	70
70	50	40

**7-3. Output Derating according to Input Voltage**

Load(%) is percent of maximum output current value in a rated output voltage.



— DRJ15, DRJ30, DRJ50, DRJ100  
 (Include option model /E)  
 — DRJ100/C2, DRJ100/C2E

**DRJ15, DRJ30, DRJ50, DRJ100**  
 ( Include option model /E )

Input Voltage (VAC)	Load (%)
	Mounting (A), (B)
85	80
90 - 264	100

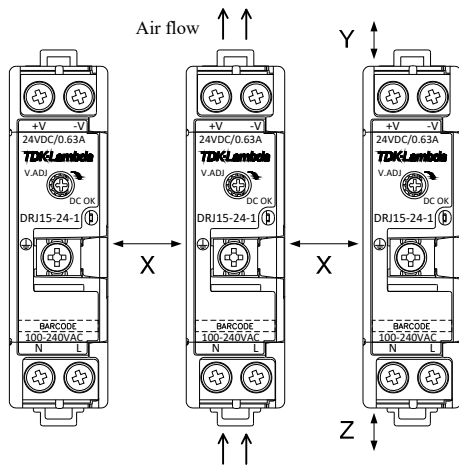
**DRJ100/C2, DRJ100/C2E**

Input Voltage (VAC)	Load (%)
	Mounting (A), (B)
85	80
100 - 264	100

**7-4. Surrounding space**

Refer to below table to provide sufficient distance (X) when unit mounted with other devices at limited top/bottom space (Y,Z).

These models are convection cooling type power supply. In the consideration for the heat radiation and safety.



Surrounding space definition : Mounting (A)

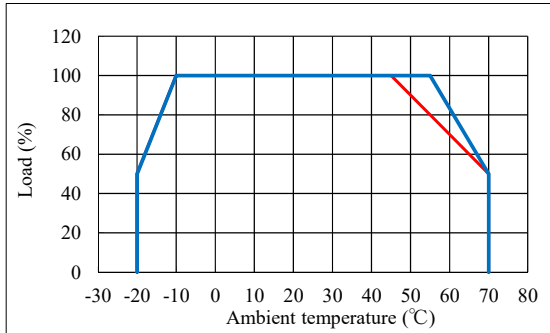
	X	Y	Z
DRJ15	≧ 15mm	≧ 40mm	≧ 40mm
DRJ30	≧ 15mm	≧ 40mm	≧ 40mm
DRJ50	≧ 15mm	≧ 40mm	≧ 40mm
DRJ100	≧ 25mm	≧ 40mm	≧ 40mm

Surrounding space definition : Mounting (B)

	X	Y	Z
DRJ15	≧ 20mm	≧ 40mm	≧ 40mm
DRJ30	≧ 20mm	≧ 40mm	≧ 40mm
DRJ50	≧ 20mm	≧ 40mm	≧ 40mm
DRJ100	≧ 25mm	≧ 40mm	≧ 40mm

DRJ series can be used with contact to the insulating chassis. (not covered by safety standard).  
 However, never use in contact mounting with heat source such as power supply.  
 Refer to the below derating for contact mounting.

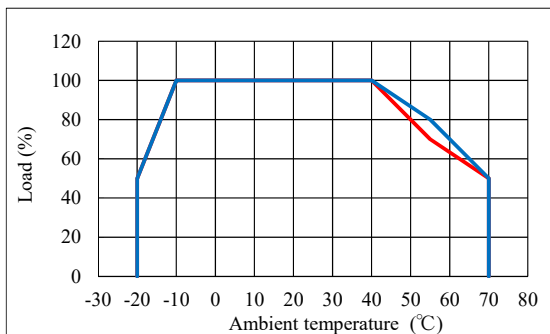
**DRJ15 ( Include option model /E )**



— Mounting (A)  
 — Mounting (B)

Ta (°C)	Load (%)	
	Mounting (A)	Mounting (B)
-20	50	50
-10 - +45	100	100
55	100	80
70	50	50

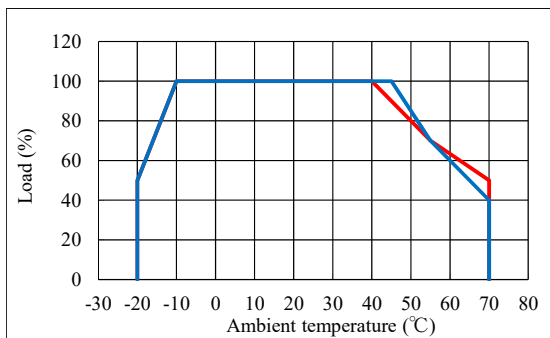
**DRJ30 ( Include option model /E )**



— Mounting (A)  
 — Mounting (B)

Ta (°C)	Load (%)	
	Mounting (A)	Mounting (B)
-20	50	50
-10 - +40	100	100
55	80	70
70	50	50

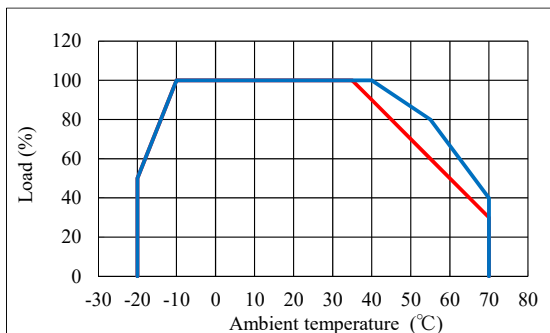
**DRJ50 ( Include option model /E )**



— Mounting (A)  
 — Mounting (B)

Ta (°C)	Load (%)	
	Mounting (A)	Mounting (B)
-20	50	50
-10 - +40	100	100
45	100	90
55	70	70
70	40	50

**DRJ100 ( Include option model /E, /C2, /C2E )**



— Mounting (A)  
 — Mounting (B)

Ta (°C)	Load (%)	
	Mounting (A)	Mounting (B)
-20	50	50
-10 - +35	100	100
40	100	90
55	80	60
70	40	30

## 8. Wiring Method

- (1) The output load line and input line shall be separated, and use all lines as thick and short as possible to make lower impedance. The output load line and input line shall be twisted or use shielded wire to improve noise sensitivity.
- (2) Noise can be eliminated by attaching a capacitor to the load terminals.
- (3) EMI reduction performance by winding the cable around the appropriate ferrite core or clamp core.
- (4) For safety and elimination of noise considerations, connect ⊕ terminal to ground terminal of the equipment.
- (5) The recommended wire type, torque and crimp-type terminal :

### ■ Block terminal type

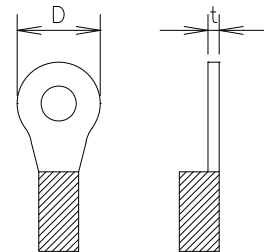
Model	Recommended Wire	Recommended torque	Recommended crimp-type terminal		
			D (MAX)	t (MAX)	Mounting piece (MAX)
DRJ15 DRJ30	AWG16-20	Input, Output terminal M3.5 Screws 1.0-1.4N·m (10.2-14.2kgf·cm) (8.85-12.39lb·in)	6.8mm	1.0mm	1piece
				0.8mm	2pieces
⊕ terminal M3.5 Screw 1.0N·m (10.2kgf·cm, 8.85lb·in)		8.0mm	1.0mm	1piece	
			0.8mm	2pieces	
DRJ50 DRJ100		All terminal M3.5 Screws 1.0-1.4N·m (10.2-14.2kgf·cm) (8.85-12.39lb·in)	6.8mm	1.0mm	1piece
				0.8mm	2pieces

Note 1 : When using separate loads, use of two pcs. of 0.8mm thick crimp-type terminal is recommended.

Note 2 : For recommended diameter, refer to wire maker recommended allowable current and voltage drop.

Note 3 : Use wires rating at least 75°C and copper conductor only.

Note 4 : Use crimp-type terminal for connection to terminal.



### ■ European terminal type (Except using ferrule terminals)

MODEL	Recommended Wire	Recommended Wire to be stripped
DRJ15/E DRJ30/E DRJ50/E DRJ100/E	AWG14-20	8 ~ 10mm

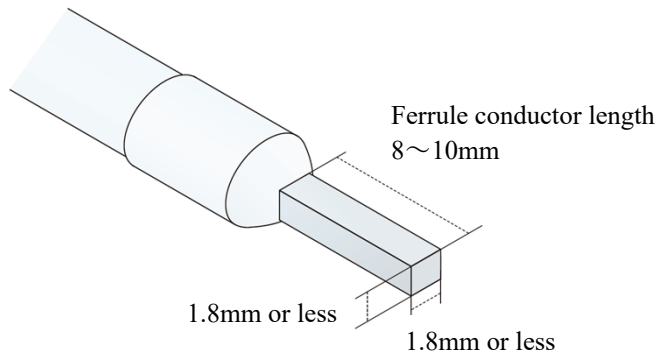
Note 5 : Use wires rating at least 75°C and copper conductor only.

### ■ European terminal type (Using ferrule terminals)

MODEL	Recommended Wire		Ferrule conductor length(mm)	Recommended ferrule terminal	
	(mm <sup>2</sup> )	(AWG)		Phenix contact	WAGO
DRJ15/E DRJ30/E DRJ50/E DRJ100/E	0.5	20	8	AI 0,5-8 WH	FE-0.5-8N-WH
			10	AI 0,5-10 WH	FE-0.5-10N-WH
	0.75	18	8	AI 0,75-8 GY	FE-0.75-8N-GY
			10	AI 0,75-10 GY	FE-0.75-10N-GY
Recommended crimping tool			CRIMPFOX 6 CRIMPFOX 6T-F CRIMPFOX CENTRUS 6S CRIMPFOX 6S-F	Variocrimp 4	

Note 6 : Use wires rating at least 75°C and copper conductor only.

#### Ferrule terminal processing dimensions



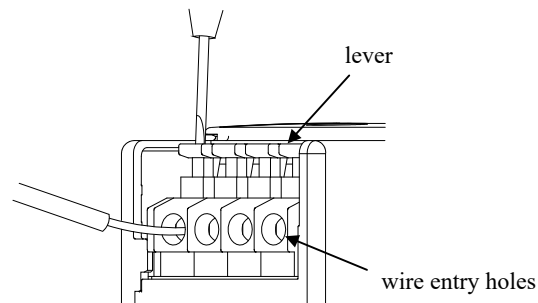
Solid wire and using ferrule terminals are possible to push-in. In case of using stranded wire, connect by the following method.

Pushing the lever by using tool, such as a flat screwdriver, insert wire until stripped part isn't seen any more, and then remove tool. After wiring, confirm that wire is connected to terminal certainly.

Lack insertion of wiring or slack of wiring might cause electric shock, fire or damage of equipment.

Strip the wire by recommended stripping length.

When remove wire, remove them while pushing the lever by using tool, such as a flat screwdriver.



## 9. The life expectancy

The life of the power supply depends on the life of the built-in aluminum electrolytic capacitor. The life is described in reliability data.

The life of the aluminum electrolytic capacitor varies depending on the method of mounting the power supply, the load current, and the ambient temperature. Please refer to "Electrolytic Capacitor Lifetime".

Please do not use the product which passed over the life expectancy. There is a risk of unexpected output shutdown and specifications may not be satisfied.

Please contact us for maintenance or exchange the product which passed over the life expectancy.

## 10. Internal Fuse Rating

Fuse is in Live line.

DRJ series uses time-lug fuse.

DRJ15, DRJ30 : AC250V, 2.5A  
DRJ50, DRJ100 : AC250V, 3.15A

## 11. External Fuse Rating

Refer to the following fuse rating when selecting the external input fuse.

Surge current flows when input turn on. Use slow-blow fuse or time-lug fuse. Fast-blow fuse can not be used.

Fuse rating is specified by inrush current value at input turn on.

Do not select the fuse according to actual input current (rms.) values.

DRJ15, DRJ30 : 2.5A  
DRJ50, DRJ100 : 3.15A

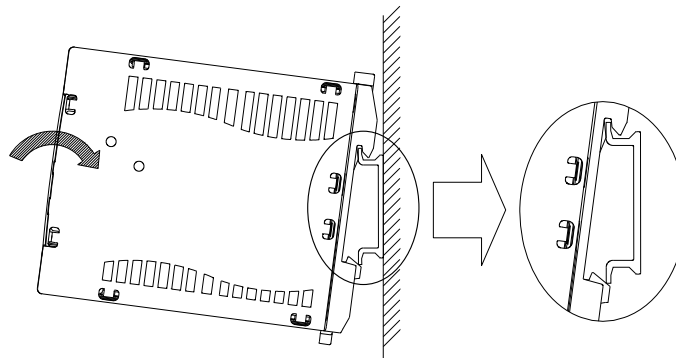
## 12. Power supply mounting on DIN RAIL

DRJ series conforms to TS35 size of DIN standard, the width of mounting rail is 35mm.

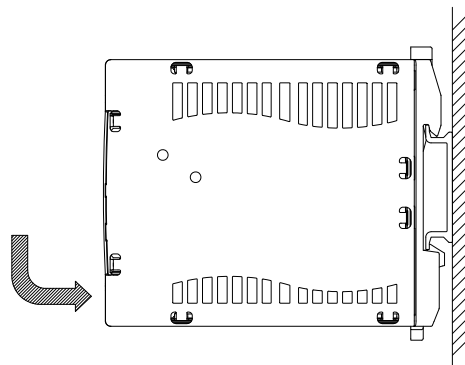
### 12-1. Power supply mounting on DIN RAIL

Make sure input and output wire disconnected when mount power supply onto rail.

(1) Tilt the unit slightly rearwards, fit the unit over top hat rail.

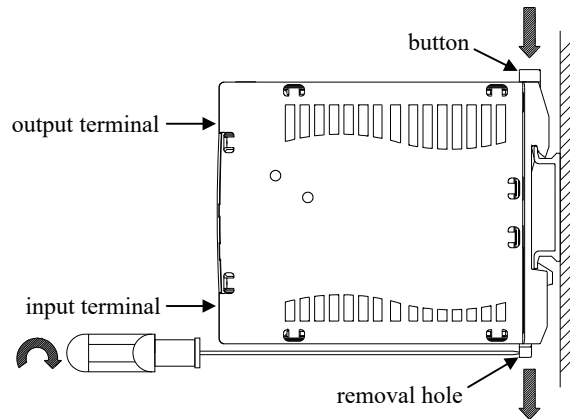


(2) Press against the bottom front side for locking.  
Shake the unit slightly to check the locking action.



### 12-2. Power supply removal from DIN RAIL

Switch main power off and disconnect your system from the supply network. Push the button on the rear upper edge of the unit or move the removal hole on the rear down edge downwards by rotating screw driver. Gently lift lower front edge of the unit (tipping) and remove it. In the case of mounting (B), reverse position from mounting (A).



### 13. Before concluding that the unit is at fault...

- (1) Check if the rated input voltage is connected.
- (2) Check if the wiring of input and output is correct.
- (3) Check if the wire size is not too thin.
- (4) Check if the output voltage control (V.ADJ) is properly adjusted.
- (5) Check if the output current and output power does not over specifications.
- (6) Audible noise can be heard when input voltage waveform is not sine wave.
- (7) Check if Dynamic-Load operation is set.

Audible noise can be heard and output voltage variability might increased during Dynamic-Load operation. Please use based on enough evaluation.

- (8) Ensure that large capacitor is not connected on the output side. Please use within maximum capacitance shown below.

If connecting more than the following capacitance value is required, please contact us for details.

MODEL	Maximum external capacitance		
	5V	12V	24V
DRJ15	-	-	4,400uF
DRJ30	10,000uF	6,000uF	1,200uF
DRJ50	-	1,000uF	1,400uF
DRJ100	-	-	2,600uF
DRJ100/C2	-	-	390uF



#### **14. DRJ series UL508 Listed Condition**

- (1) Wire Requirement  
Use minimum 75°C wire  
Use copper conductor only
- (2) For use in a Pollution degree 2 environment only
- (3) These products are considered for use where maximum surrounding air temperature does not exceed 70°C.  
When installing these products please refer to section 5-2 for deratings.
- (4) Indoor use only

#### **15. Warranty Period**

This product is warranted for a period of 5 years from the date of shipment.  
For damages occurring at normal operation within this warranty period, repair is free of charge.

#### **16. CE MARKING/UKCA MARKING**

##### **CE MARKING**

CE Marking, when applied to a product or packing material for a product covered by this handbook, indicates compliance with the Low Voltage Directive, EMC Directive and RoHS Directive.

##### **UKCA MARKING**

UKCA Marking, when applied to a product or packing material for a product covered by this handbook, indicates compliance with the Electrical Equipment (Safety) Regulations, Electromagnetic Compatibility Regulations and Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment Regulations.