

HWS 50A-150A/E_A Series

UL508 Instruction Manual

BEFORE USING THE POWER SUPPLY UNIT (Common)

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.

⚠ 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. You may receive a burn.
- While this product is operating, keep your hands and face away from it as you may be injured by an unexpected situation.
- 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 make unauthorized changes to this product nor remove the cover as you might get an electric shock or might damage the product. We will not be held responsible after the product has been modified, changed or dis-assembled.
- 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 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.
- Input voltage, Output current, Output power, ambient temperature and ambient humidity should be kept within specifications, otherwise the product will be damaged, or cause electric shock or fire.
- 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 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.

- For externally mounted fuse do not use other fuses aside from our specified and recommended fuse.
- 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.
- When used in environment with corrosive gas (hydrogen sulfide, sulfur dioxide, etc.) , there is possibility that they might penetrate the product and lead to failure.
- When used in environments where there is conductive foreign matter or dust, there is possibility of product failure or 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 (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

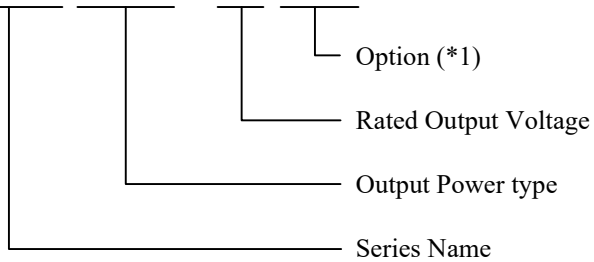
- Take note that traces of sheet metal processing be left in our power supplies.
- When disposing product, follow disposal laws of each municipality.
- Published EMI (CE, RE) or immunity is the result when measured in our standard measurement conditions and might not satisfy specification when mounted 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.
- Use Environment
For use in pollution Degree 2 environment.

⚠ LONG-TERM STORAGE METHOD AND 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.
- 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. There is tendency that the leakage current of an aluminum 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

HWS 50A - 24 /E□

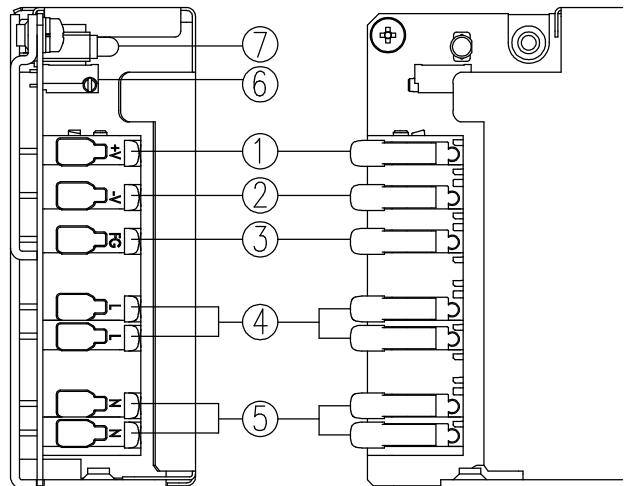


(*1)
 /EHA : Horizontal terminal type with cover
 /EVA : Vertical terminal type with cover

2. Terminal Explanation

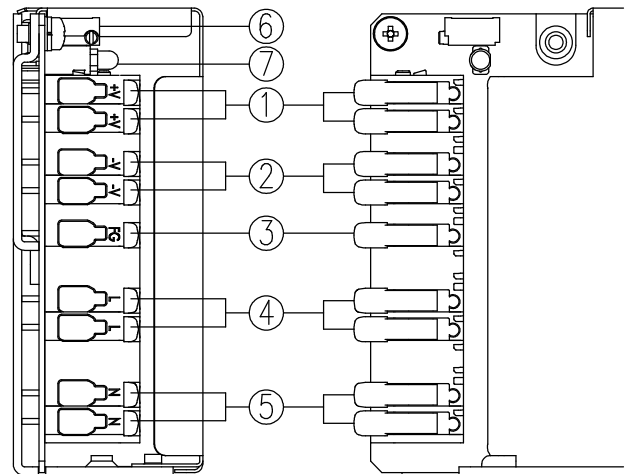
HWS50A/E_A

- ① +V : + Output terminal
- ② -V : - Output terminal
- ③ FG : Protective bonding terminal
- ④ L : Input terminal Live line (Fuse in line)
- ⑤ N : Input terminal Neutral line
- ⑥ Output voltage adjustment trimmer
- ⑦ Output monitoring indicator (Green LED)



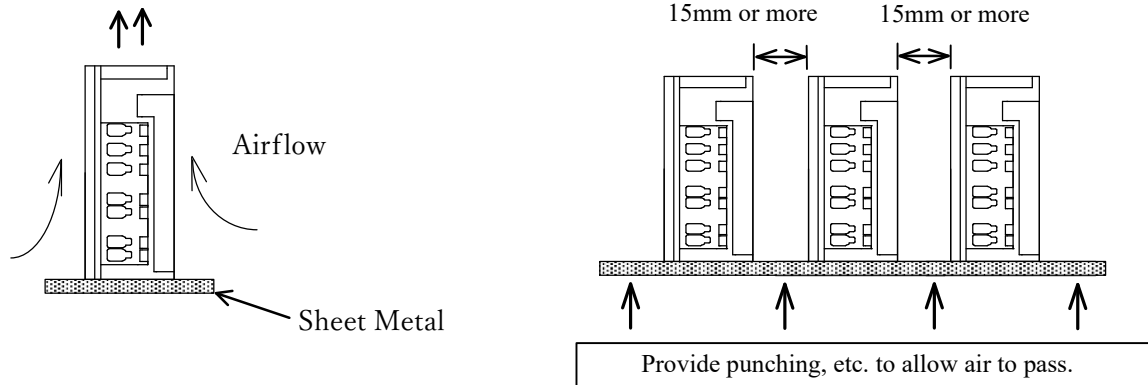
HWS100A/E_A, HWS150A/E_A

- ① +V : + Output terminal
- ② -V : - Output terminal
- ③ FG : Protective bonding terminal
- ④ L : Input terminal Live line (Fuse in line)
- ⑤ N : Input terminal Neutral line
- ⑥ Output voltage adjustment trimmer
- ⑦ Output monitoring indicator (Green LED)



3. Mounting Method

- 1) This is convection cooling type power supply. In the consideration for the heat radiation and safety. Please take a distance more than 15mm between the power supply and the peripheral parts. When lining up multiple units, please make sure to place them 15mm or more apart from each other.
- 2) The maximum allowable penetration of mounting screws is 6mm.
- 3) Recommended torque for mounting screw
HWS50A/E_A-150A/E_A (M3 screw) : 0.49 Nm (5.0 kgf•cm)



4. Wiring Method

- 1) Input line shall be separated and twisted to improve noise sensitivity.
- 2) Use all lines as thick and short as possible to make lower impedance.
- 3) Noise can be eliminated by attaching a capacitor to the load terminals.
- 4) For safety and EMI considerations, connect the FG terminal of HWS50A/E_A-150A/E_A to mounting set ground terminal.
- 5) The recommended wire type :

Model	Recommended Wire	Wire stripping length
HWS50A/E_A HWS100A/E_A HWS150A/E_A	AWG12-24	9~11mm

Note 1 : Select the wire diameter in consideration of the rated current and the current during OCP operation.

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

Note 2 : Use wires rating at least 90°C(CSA) / 75°C(UL) and copper conductor only.

5. External Over Current Protection

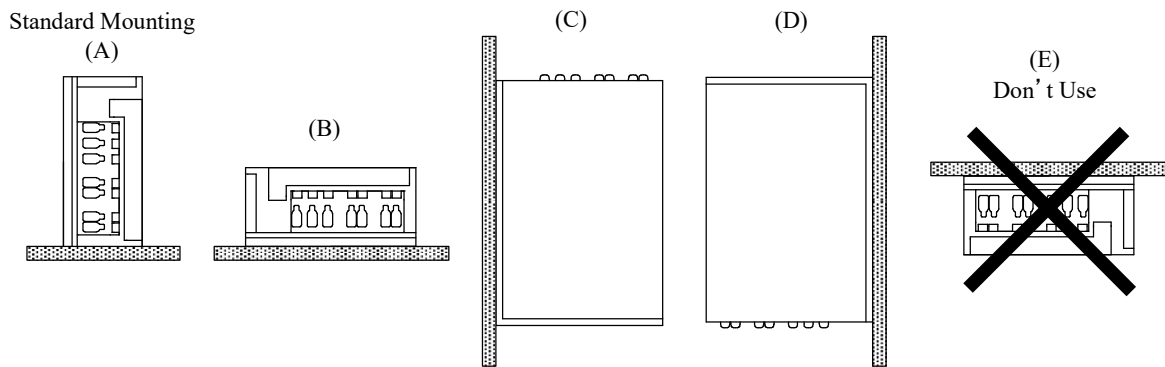
The following types of fuses that 1.5 times or less the rated current should be connected to the output of the power supply. And also select to wire diameter according to Note 1 of "4. Wiring Method".

cUL Listed or UL Listed with CSA Certificated fuse Class : C, CA, CB, CC, G, H, J, K, L, R, T, CF

6. Output Derating according to the Mounting Directions

Recommend standard mounting is method (A). Method (B), (C) and (D) are also possible. Refer to the derating below. Please do not use installation method (E), where the PCB will be on the topside and heat will be trapped inside the unit. Load(%) such as below derating curve indicates output power.

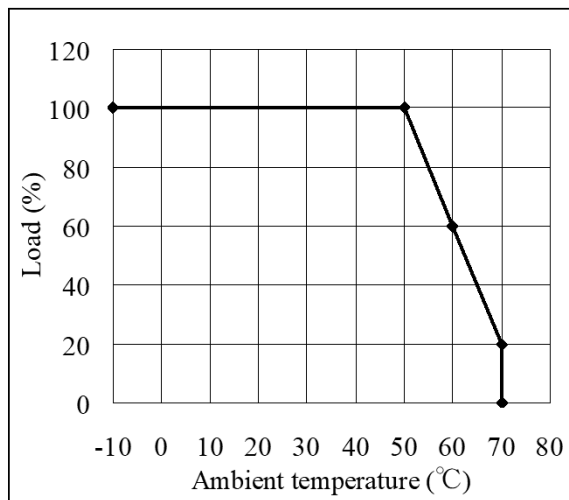
■ Mounting Directions



■ Output Derating

Standard Mounting (A)

HWS50A/E_A



HWS100A/E_A, HWS150A/E_A

