

# PAH-S48 SERIES

# HANDBOOK

***TDK-Lambda***

## POWER MODULE

DRAWING NO. : PA548-39-01F		
TLS R&D		
PREPARED	CHECKED	APPROVED
<i>Hsin</i>	<i>Jay 2012/09</i>	<i>Ramona</i>
DATE ISSUE : 24. Dec. 09		

**TDK-Lambda**

**BEFORE USING THE POWER SUPPLY UNIT**

Pay attention to all warnings and cautions before using the unit. Incorrect usage could lead to an electrical shock, damage to the unit, or a fire hazard.

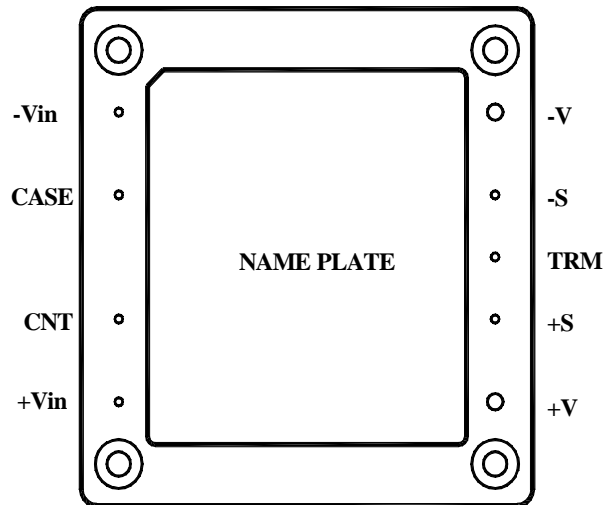
**WARNING**

- Do not touch heatsinks and case which may be hot.
- Confirm connections to input/output terminals and signal terminals are correct as indicated in instruction manual.
- Attach a fast blow type external fuse to each module to ensure safety operation and to acquire each safety standard approval.
- This power supply is designed for professional installation within an end user equipment.
- The output from this power supply must be considered as an energy hazard (> 240VA power and 2V voltage) and must not be accessible to a user. End equipment manufacturers must provide protection against inadvertent contact with the output terminals on this product by a service engineer or by the service engineer dropping a tool into them.
- Use isolated voltage by reinforced insulation at primary power supply or double insulation as input power source.

**NOTE : CE MARKING**

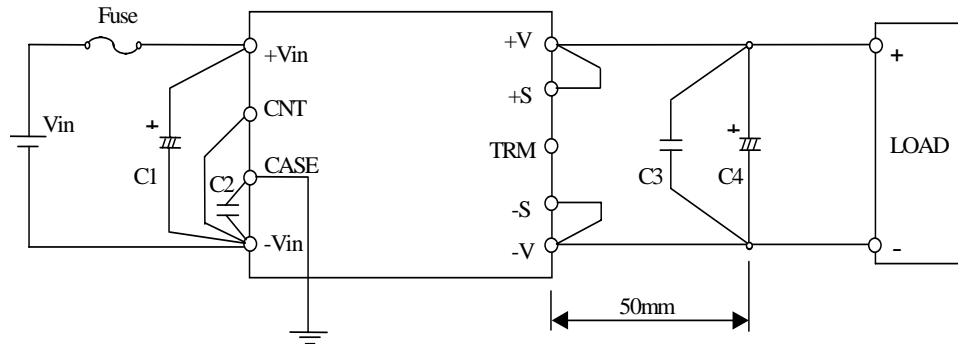
CE marking, when applied to a product covered by this handbook indicates compliance with the low voltage directive (73/23/EEC) as modified by the CE Marking Directive (93/68/EEC) in that it complies with EN60950.

**1. TERMINAL EXPLANATION**



- Vin : Negative Input Terminal
- CASE : Baseplate Terminal
- CNT : ON/OFF Control Terminal
- +Vin : Positive Input Terminal
- V : Negative Output Terminal
- S : Negative Remote Sensing
- TRM : Output Voltage Adjustment Terminal
- +S : Positive Remote Sensing
- +V : Positive Output Terminal

## 2. BASIC CONNECTION



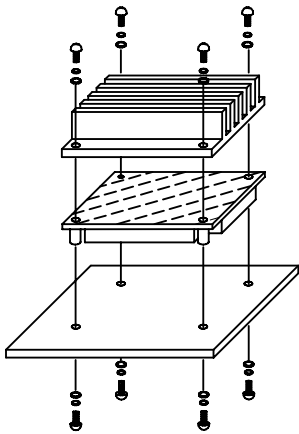
Fuse : External Fuse      C3 : Film/Ceramic Capacitor  
 C1 : Electrolytic Capacitor      C4 : Electrolytic Capacitor  
 C2 : High Withstand Voltage Ceramic Capacitor  
 Note : Above Basic Connection is for Control ON/OFF Negative Logic.

## 3. WITHSTAND VOLTAGE

This power module is designed to withstand 1.5kVAC input-output and 1.5kVAC input-baseplate for each 1 minute.

## 4. MOUNTING DIRECTION

### 4-1. Circuit Board Mounting



- 1) The power module is fixed to printed circuit board by 4 positions through the M3 tapped holes in the resin case side. Recommended torque is 5.5kgcm.
- 2) The M3 mounting tapped holes of the power module are connected to the baseplate. FG (Frame Ground) can be taken by these tapped holes.
- 3) Mounting Holes on Printed Circuit Board
  - Input/Signal/Output Terminal Pin ( $\phi 1.0\text{mm}$ )
    - Hole Diameter :  $\phi 1.5\text{mm}$
    - Land Diameter :  $\phi 3.5\text{mm}$
  - Output Terminal Pin ( $\phi 2.0\text{mm}$ )
    - Hole Diameter :  $\phi 2.5\text{mm}$
    - Land Diameter :  $\phi 5.0\text{mm}$
  - M3 Mounting Tap (FG)
    - Hole Diameter :  $\phi 3.5\text{mm}$
    - Land Diameter :  $\phi 7.0\text{mm}$
- 4) Recommended Printed Circuit Board is a double sided glass epoxy ( $t=1.6\text{mm}$ ) with through holes.
- 5) The standard power module lead length is 5.08mm.

#### 4-2. Recommended Soldering Condition

Recommended soldering temperature is as follows.

- (1) Soldering dip : 260°C within 10 seconds  
Pre-heat condition : 110°C 30~40 seconds
- (2) Soldering iron : 350°C within 3 seconds

#### 4-3. Recommended Cleaning Condition

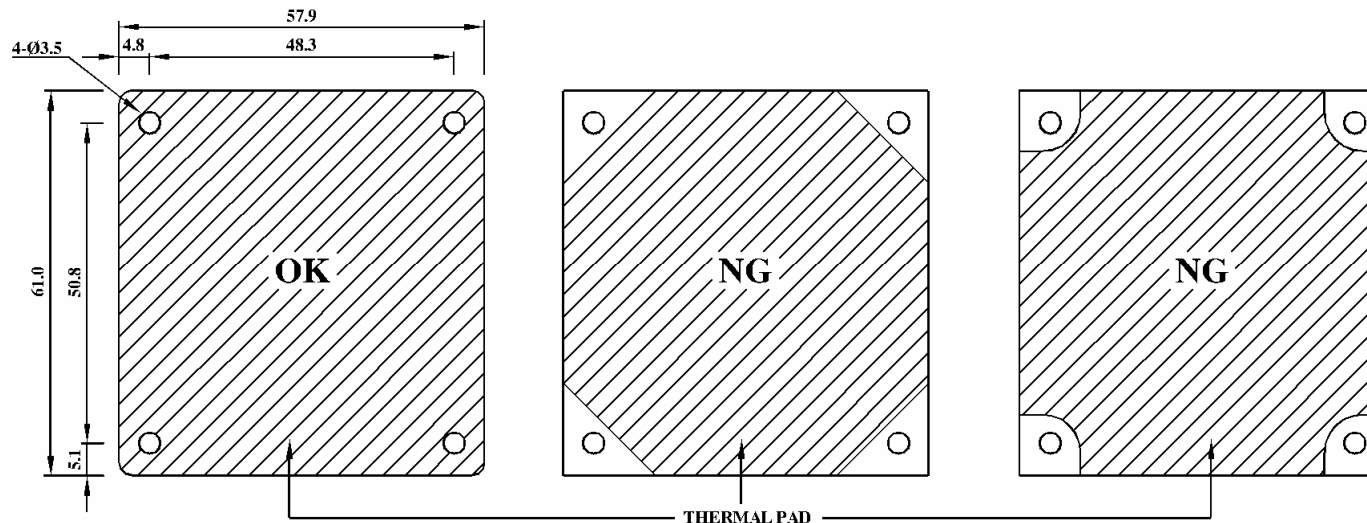
Recommended cleaning condition after soldering is as follows.

- Cleaning solvent : IPA (isopropyl alcohol)
- Cleaning Procedure : Use brush and dry the solvent completely

Note : For other cleaning methods, contact us.

#### 4-4. Heatsink Installation

- 1) The power module is fixed to the heatsink by 4 position through the M3 mounting tapped holes provided on the baseplate. It is recommended that the sequence to screw the 4 screws is in a diagonally manner and the recommended torque is 5.5kgcm.
- 2) Recommended hole diameter for heatsink = 3.5mm.
- 3) Use thermal grease or thermal sheet in between heatsink and baseplate to minimize the contact thermal resistance. However, make sure that the thermal grease or sheet is evenly applied and using no-warped heatsink in order to avoid any warpage on the baseplate.
- 4) Recommended thermal sheet is as shown below. Cutting the corner of thermal sheet is NOT advisable.

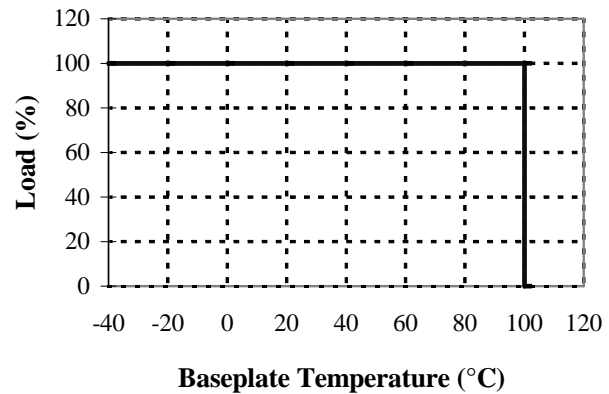


#### 4-5. Input / Output terminal pin

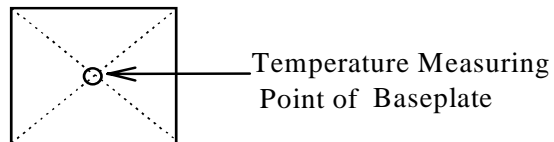
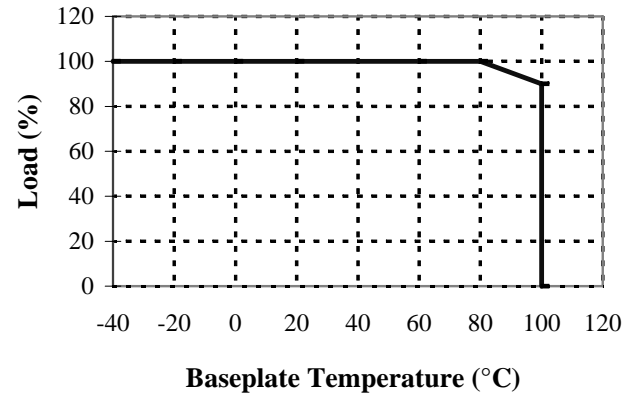
Connect +Vin, -Vin, +V, -V terminals such that contact resistance is minimal. Note that if contact resistance is high, efficiency will drop and power module will be damaged by abnormal heat.

#### 5. OUTPUT DERATING

##### (i) PAH50S48, PAH75S48, PAH100S48 & PAH150S48



##### (ii) PAH200S48



#### 6. EXTERNAL FUSE RATING

Fuse rating : PAH200S48 --- 250V 15A (Fast Blow Type)  
PAH150S48 --- 250V 10A (Fast Blow Type)  
PAH100S48 --- 250V 7A (Fast Blow Type)  
PAH75S48 --- 250V 5A (Fast Blow Type)  
PAH50S48 --- 250V 5A (Fast Blow Type)

#### 7. NOTES

Over Current Protection operates > 105% of maximum DC output current.