



TECHNICAL DATA

Troubleshooting Tips for DC to DC Converter

V1.0 August 2016

When power supplies do not function properly, please check the following troubleshooting table before returning a unit. If the power supply still has a problem, please contact the designated distributors or our customer service desk for information about how to return the power supply to us.

1. Possible Causes, In case of No Output

Input Side

- ◆Wrong DC voltage is applied.
- ◆DC voltage is not applied to power supply correctly.

Output Side

- ◆Wrong connection
- ◆Loosened terminal screws.
- ◆Overvoltage protection has been active.
- ◆Overcurrent protection has been active.
- ◆Remote ON/OFF is off.
- ◆Power supplies used in series operation.
- ◆Power supplies used in parallel operation.

Others

- ◆Thermal protection has been active.

2. Possible Causes, In case of Abnormal Output Voltage (Too High, Too Low, Unstable)

When output voltage is too high.

- ◆Output voltage is set too high.

When output voltage is too low.

- ◆Output voltage is set too low.
- ◆There is a voltage drop caused by output wires.
- ◆Overcurrent protection has been active.

When output voltage is unstable.

- ◆There is oscillation caused by remote sense.
- ◆Minimum output current required is not drawn.



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1. Possible Causes, In case of No Output

Input Side

Possible Causes	Check Points	Corrective Action
Wrong DC voltage is applied.	Wrong input voltage? For example, input voltage is lower or higher than specified.	Make sure the input voltage at input terminal is within specification. Check input voltage to the system. Check the excessive wire drop from power source to input terminal. Tighten all terminal screws for minimizing voltage drop so that input voltage is available within specified.
DC voltage is not applied to power supply correctly. - 1	Wrong input connection? For example, +Vin and -Vin are connected reversely.	Correct the connection.
DC voltage is not applied to power supply correctly. - 2	Is external fuse blown?	Change the external fuse to one that can withstand the inrush current of the power module.

Output Side

Possible Causes	Check Points	Corrective Action
Wrong connection. -1	Is the wiring to the load correct? (For example, +V and -V are connected reversely).	Check and Correct the connection.
Wrong connection. -2	If the wiring to the load shorted together accidentally.	Check the wiring isolation.
Loosened terminal screws.	Terminal screws have loosened?	Tighten the terminal screws.
Overvoltage protection has been active. - 1	Is output voltage adjusted (trim up) too high?	Check external trim circuit.
Overvoltage protection has been active. - 2	Have the remote sense terminal screw loosened?	Tighten the screws.
Overvoltage protection has been active. - 3	Is remote sense wiring correct?	Connect the remote sense wires according to the application note.
Overvoltage protection has been active. - 4	Are remote sense wires disconnected?	Re-connected.



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Overcurrent protection has been active. -1	Is the drawing current greater than the rated output current?	Check the rated output current of the power module used and measure the current actually drawn from power module.
Overcurrent protection has been active. -2	Is output voltage adjusted (trim) up?	Check the rated output power of the power module used.
Remote ON/OFF is off.	Is Remote (On/Off) terminal connected properly?	Connect Remote (On/Off) terminal according to application note.
Power supplies used in series operation.	Are the power supplies used allowed series operation?	Change the power modules to those allowed series operation. Please refer to application note.
Power supplies used in parallel operation.	Are the power supplies used allowed parallel operation?	Change the power modules to those allowed parallel operation. Please refer to application note.

Others

Possible Causes	Check Points	Corrective Action
Thermal protection has been active.	Is the ambient (case) temperature higher than the specified maximum operating temperature?	Switch off the power supply and cool it down before switching on again.



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2. Possible Causes, In case of Abnormal Output Voltage (Too High, Too Low, Unstable)

When output voltage is too high.

Possible Causes	Check Points	Corrective Action
Output voltage is set too high. - 1	Is output voltage adjusted (trim up) too high?	Check external trim circuit.
Output voltage is set too high. - 2	Is there any external voltage from another source applied to the same load?	Check and correct the load circuit so that there will be no external voltage applied through the load to the power module.
Output voltage is set too high. - 3	Have the remote sense terminal screw loosened?	Tighten the screws.
Output voltage is set too high. - 4	Is remote sense wiring correct?	Connect the sense wires according to the application note.
Output voltage is set too high. - 5	Are remote sense wires disconnected?	Re-connected.

When output voltage is too low.

Possible Causes	Check Points	Corrective Action
Input voltage is too low. - 1	Is input voltage lower than the minimum specified?	Measure the input voltage at input terminal. Check input voltage to the system. Check the excessive wire drop from module power source to input terminal. Tighten all terminal screws for minimizing voltage drop so that input voltage is available within specified.
Input voltage is too low. - 2	Is input voltage unstable?	Check source impedance. Please refer to application note.
Output voltage is set too low.	Is output voltage adjusted (trim down) too low?	Check external trim circuit.
There is a voltage drop caused by output wires. - 1	Is voltage drop caused by long output wires (include PCB trace) to the load?	Make the output wires (include PCB trace) shorter.
There is a voltage drop caused by output wires. - 2	Is voltage drop caused by thin (high-AWG) output wires (include PCB trace) to the load?	Use thicker (low-AWG) wires (include PCB trace).



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There is a voltage drop caused by output wires. - 3	Is there any bad connection?	Check the connection.
There is a voltage drop caused by output wires. - 4	Have the terminal screws loosened?	Tighten the screws.
Overcurrent protection has been active. -1	Is the drawing current greater than the rated output current?	Check the rated output current of the power module used and measure the current actually drawn from power module.
Overcurrent protection has been active. -2	Is output voltage adjusted (trim) up?	Check the rated output power of the power module used.

When output voltage is unstable.

Possible Causes	Check Points	Corrective Action
There is oscillation caused by remote sense. - 1	Are the remote sense wires too long?	Use electrolytic capacitor between output terminal ($\pm V_o$) and remote sense terminal ($\pm \text{Sense}$).
There is oscillation caused by remote sense. - 2	Are the remote sense wires twisted?	Twist the wires.
Minimum output current required is not drawn. -1	Some Multiple output type power module, a minimum load is required on output.	Check to see if there is minimum load requirement for the power supply. Draw a minimum current required on output. Please refer to application.
Minimum output current required is not drawn. -2	Some type power module, a minimum load is required on output.	Check to see if there is minimum load requirement for the power supply. Draw a minimum current required on output. Please refer to application.



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Revision History:

Revision Version	Date	Change Description	Signature
V1.0	2016/8/30	Original Release	Jacky