880046_A:
RDE300 Series PCB Replacement

1 Overview

This document provides instructions for field replacement of the printed circuit board (PCB) in RDE300 series units.

2 Scope

This document applies to the following part numbers:

Enclosure	PCB
810172-01	710335-01
810172-02	710335-02
810172-03	710335-03
810198-01	710395-01
810198-02	710395-02
810198-04	710395-04
810198-05	710395-05
810198-11	710395-11
810198-12	710395-12
810198-14	710395-14
810198-15	710395-15

NOTE: For any other part numbers, consult Atonometrics before proceeding.

3 Tools and Equipment

- Screwdriver, #2 Phillips
- Screwdriver, 1/8” Flat
- Handheld digital voltmeter
- Electrical tape

4 Safety

WARNING: For models supplied with external AC power (including part numbers ending in -11, -12, -14, and -15) hazardous voltages are present inside the RDE enclosure. These voltages present the risk of electric shock which may cause injury or death. The equipment should be serviced only by qualified personnel.

WARNING: Connected PV modules may generate live voltages inside the RDE enclosure, even when the equipment is powered off. Follow instructions and exercise caution.

WARNING: Do not touch exposed conductors on the PCB using any metallic tools while the PV modules are still connected.

WARNING: For PV modules with open-circuit voltages exceeding 45 V, disconnect the PV cables externally before proceeding, and re-connect the PV cables at the completion of this procedure, in order to reduce the risk of electric shock when working inside the enclosure. Alternatively, completely cover the PV modules with an opaque covering, such as a blanket, and secure the covering so it will remain in place during the work.

5 Disconnect External Power Source

Turn off the external power source which supplies power to the RDE enclosure.

WARNING: For models supplied with external AC power (including part numbers ending in -11, -12, -14, and -15), the external power MUST be disconnected prior to replacing the PCB in order to prevent the risk of electric shock which may cause injury or death.

Note: For models supplied with external 10-30 VDC power, failure to disconnect the power prior to replacing the PCB may result in damage to the PCB and/or other equipment.

6 Disconnect PV Cables

For installations employing PV modules with open-circuit voltages greater than 45 V: Disconnect the PV cables outside the RDE enclosure, in order to reduce the risk of electric shock when working inside the enclosure.

7 Open the RDE Enclosure

Open the latch securing the RDE enclosure. Open the door.

Note: Models supplied with AC power (including part numbers ending -11, -12, -14, and -15) may have the latch secured with a safety lock.

8 Confirm External Power Source is Disconnected

8.1 Indicator

Confirm that the “Power” LED indicator on the lower part of the PCB is off.

8.2 Test Probe

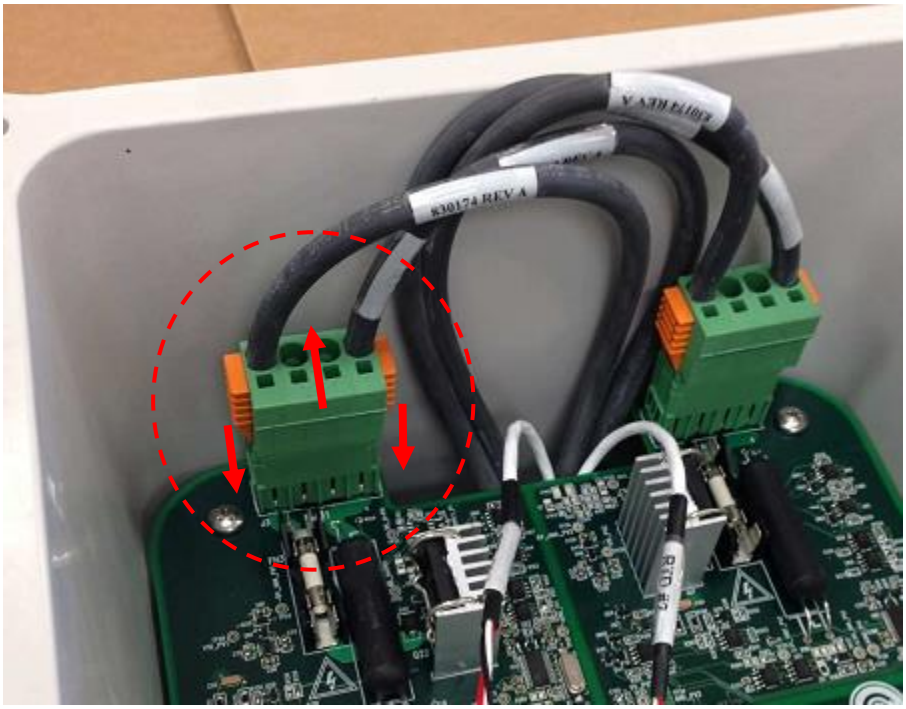
For models supplied with external AC power (including part numbers ending in -11, -12, -14, and -15):
Use a non-contact AC voltage probe to verify that there is no AC voltage present on the power cables at the Power In (J1) input.

9 Disconnect the PV Input Cables

9.1 PV#1

Disconnect the PV input cable connected to the PV#1 input (J3) on the PCB, as follows:

- Push the orange slider on either side of the connector towards the PCB to release the latch.
- Grasp the green body of the cable-side connector and pull away from the PCB.
- Put a piece of electrical tape over the pins on the cable-side connector to prevent inadvertent electrical contact during the rest of the procedure.



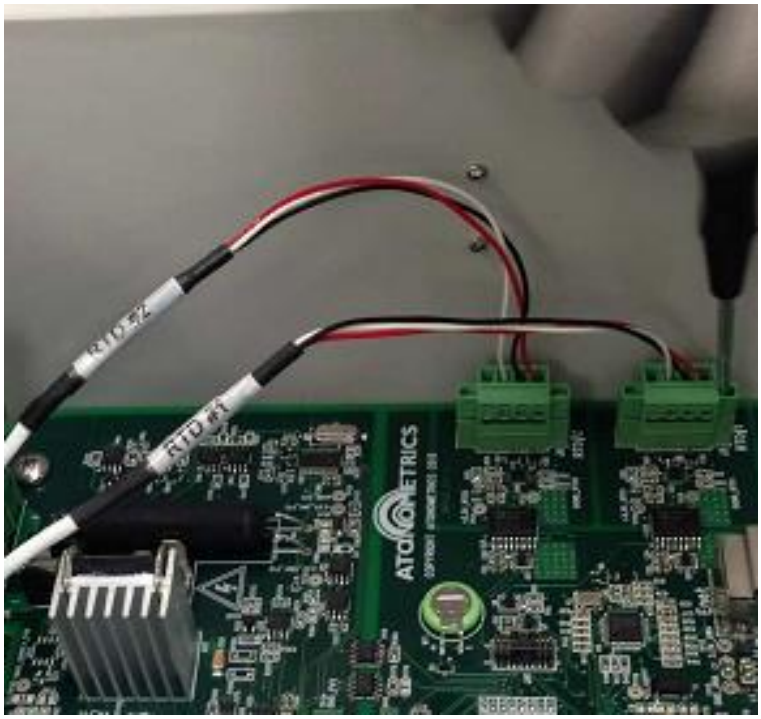
9.2 PV#2

Disconnect the PV input cable connected to the PV#2 input (J4) on the PCB, following the same procedure as for PV#1 above, and cover the pins of the cable-side connector with electrical tape.

10 Disconnect the RTD Input Cables

Disconnect the RTD #1 and RTD #2 input cables from the J5 and J6 connectors, as follows:

- Loosen the screw on either side of the connector using the 1/8” Flat screwdriver.
- Grasp the cable-side connector and pull it away from the PCB.



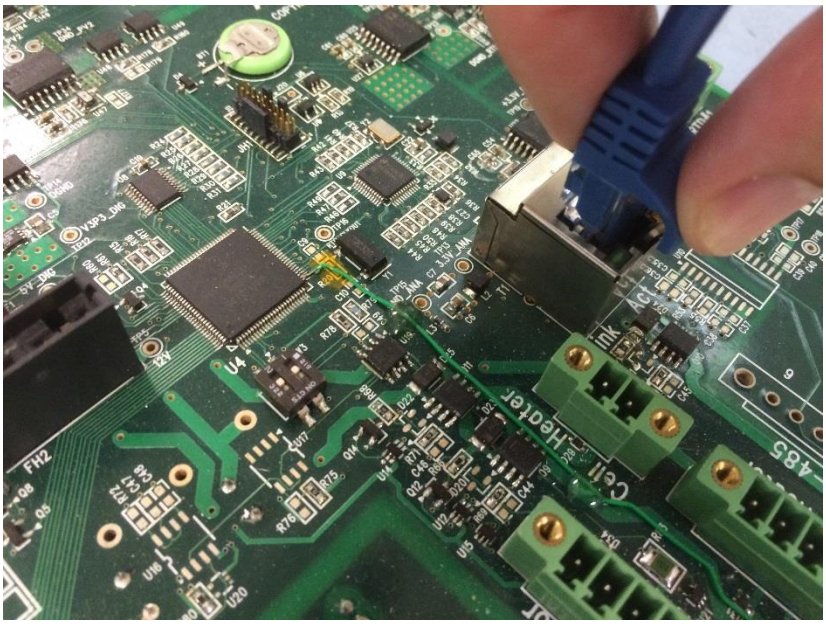
11 Disconnect the Washer Cables

For units with the automatic washing system option (part numbers ending in -01 or -04): Disconnect the cables at the Washer Connector (J2), Tank Heater (J13), and Cell Heater (J12), following a similar procedure as in step 10.

12 Disconnect the Ethernet Cable

Disconnect the Ethernet cable from the ENET input (T1), as follows:

- Grasp the cable as shown below.
- Depress the latch on the bottom side of the cable.
- Pull the cable away from the PCB.



13 Disconnect the Power Cables

13.1 Note the Power Cable Wiring

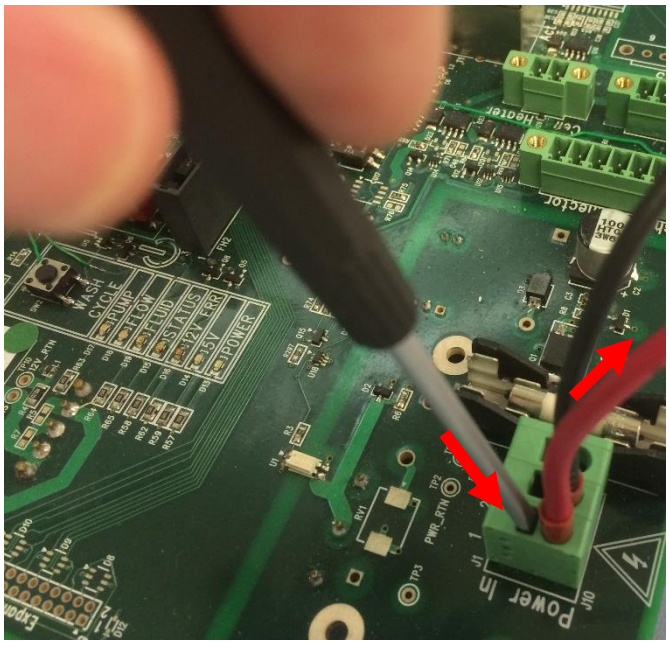
Carefully note the power wiring in your system prior to disconnection. Take a photograph or label each wire at the Power In (J1) input to allow reconnection at the end of the procedure.

Note: Power cables are installed by customers and may have a variety of wire colors and/or labels.

13.2 Disconnect

Disconnect each of the power cables from the Power In (J1) input, as follows:

- Press the tip of the 1/8” Flat screwdriver into the slot above each terminal to release the cable, while simultaneously gently pulling the cable out of the terminal.



14 Remove the Mounting Screws

Remove each of the four mounting screws at the corner of the PCB, as follows:

- Use the #2 Phillips screwdriver to loosen the screw.
- Remove the screw from the enclosure and keep it for use in installing the replacement PCB.

15 Remove the PCB from the Enclosure

Remove the PCB from the RDE enclosure.

16 Insert the New PCB into the Enclosure

Insert the new PCB into the RDE enclosure.

17 Secure the PCB

Use the four mounting screws removed in step 14 to secure the PCB the enclosure. Tighten each screw using the #2 Phillips screwdriver.

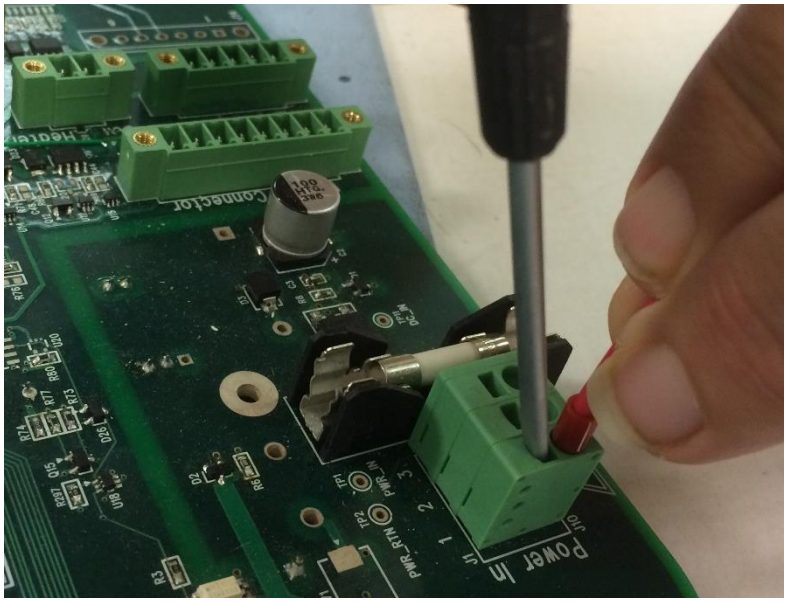
18 Connect the Power Cables

Recall the wiring of the power cables noted in step 13.1. Reconnection should be as listed below:

Power In (J1) Input	DC Models (-01, -02, -03, -04, -05)	AC Models (-11, -12, -14, -15)
Pin 1	Positive (10-30 VDC)	Line (90-250 VAC)
Pin 2	Negative/RTN	Neutral
Pin 3	n/a	GND

Reconnect each of the power wires to the Power In (J1) input, as follows:

- Press the tip of the 1/8” Flat screwdriver into the slot above the terminal to release the latch while simultaneously inserting the cable into the terminal.
- Hold the cable in the terminal while removing the screwdriver until the cable is captured.
- Gently tug on the cable to confirm it is properly captured by the terminal block.



Note: It is important to confirm that the power wiring is secure in order to prevent erratic operation of the equipment.

19 Connect the Ethernet Cable

Connect the Ethernet cable to the ENET input (T1), by pressing the cable into the connector until it snaps into place. Tug gently on the cable to make sure it is captured.

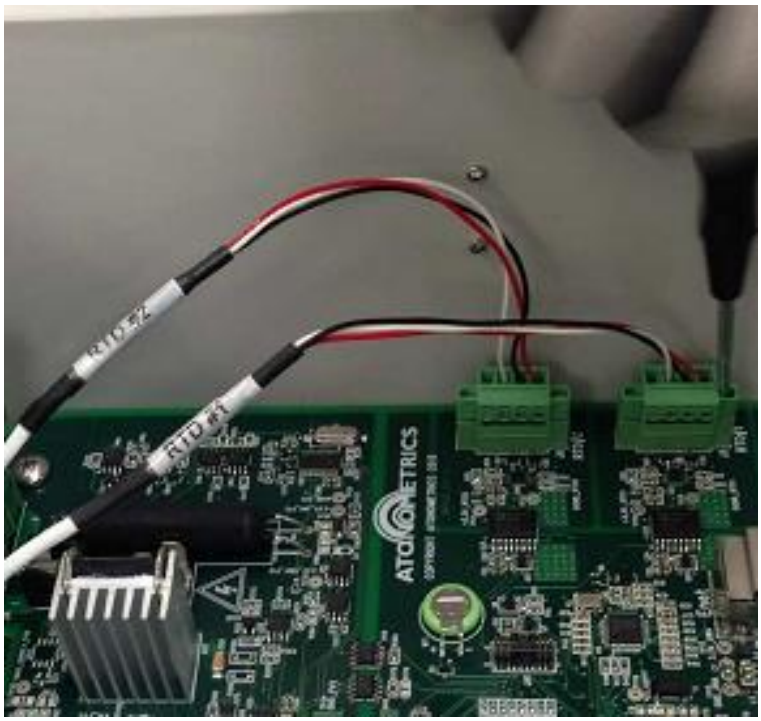
20 Connect the Washer Cables

For units with the automatic washing system option (part numbers ending in -01 or -04): Connect the cables at the Washer Connector (J2), Tank Heater (J13), and Cell Heater (J12), by inserting each cable into the mating connector on the PCB and then tightening the screws on the cable-side connector, using the 1/8” Flat screwdriver.

21 Connect the RTD Cables

Connect the RTD #1 and RTD #2 input cables to the J5 and J6 connectors, by inserting each cable into the mating connector on the PCB and then tightening the screws on the side of the cable-side connector, using the 1/8” Flat screwdriver.

Confirm that the RTD #1 and RTD #2 cables are matched to the correct input on the PCB.

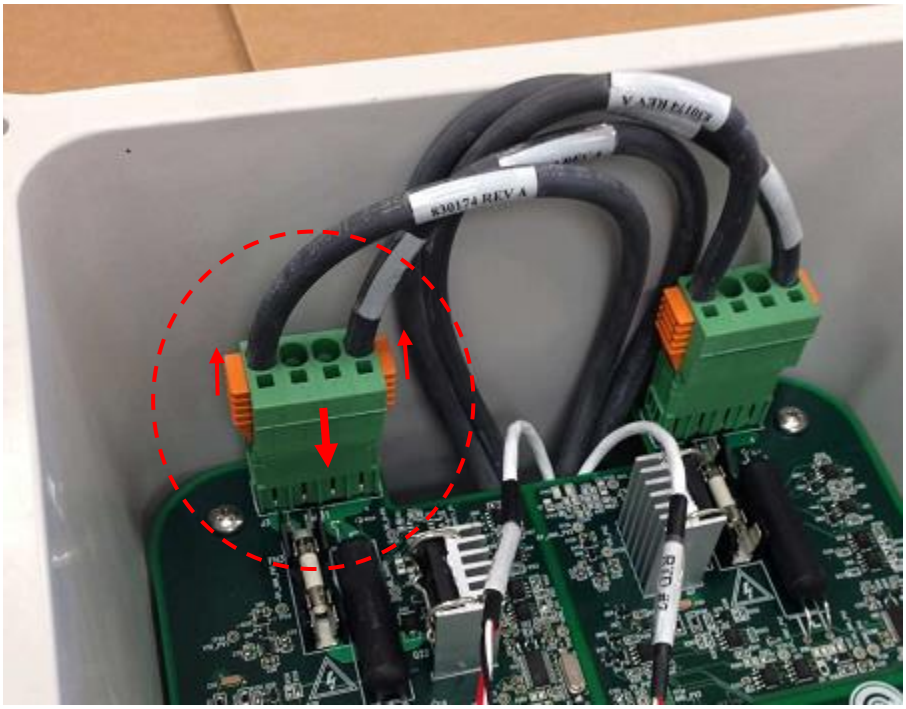


22 Connect the PV Input Cables

22.1 PV#1

Connect the PV#1 input cable to the PV#1 input (J3) on the PCB, as follows:

- Remove the electrical tape previously applied.
- Grasp the cable by the green body of the connector (not by the orange sliders on the sides) and push the cable firmly onto the mating connector on the PCB. (The orange sliders will naturally be pushed out away from the PCB.)
- Gently tug on the green body of the connector to ensure it is properly captured.



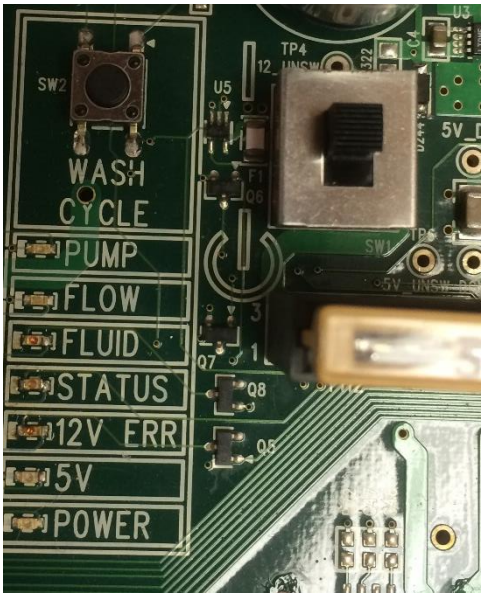
22.2 PV#2

Connect the PV#2 input cable to the PV#2 input (J4) on the PCB, following the same procedure as for PV#1 above.

Confirm that the PV#1 and PV#2 cables are matched to the correct input on the PCB.

23 Turn the RDE Power Switch to the On Position

Confirm that the RDE power switch (SW1) is turned to the ON position, as shown below.



24 Reconnect Power Source to RDE

Reconnect the external power source which supplies the RDE enclosure.

Ensure that the power is applied and the RDE is ON by confirming that both the “POWER” and “5V” LEDs turn on.

If the “POWER” LED does not turn on, confirm that the external power supply is on.

If the “5V” LED does not turn on, confirm that the RDE power switch is in the ON position.

As the board boots up, other LEDs may also become lit.

25 Close the RDE Enclosure

Close the door of the RDE enclosure. Close and secure the latch.

If the unit was installed with a safety lock for the latch, reinstall the lock.

26 Reconnect External PV Module Cables

If the PV Cables were disconnected externally in step 6, reconnect them at this time.

27 RDE Settings

The replacement PCB will normally be pre-programmed with the required settings for your installation. In other cases, consult the 880039 User Guide for detailed instructions, or contact Atonometrics.