

Work Instruction

WI276 – MK Box PSU PCBA Replacement



WORK INSTRUCTION – MK Box PSU PCBA Replacement	
Document No.: WI276	Revision: 1
Date: 15/03/21	Number of Pages: 11

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REVISION HISTORY				
Revision	Description of Change	Page(s)	ECN	Date
1	Initial release	-	1222	18/03/2021

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Work Instruction

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1. PURPOSE

The purpose of this procedure is to ensure that the PSU PCBA is correctly installed in the Mk Box 10.

2. SCOPE

This work instruction refers to the replacement of a PSU PCBA in the Mk Box 10.

3. REFERENCES

This document incorporates the no other references.

4. DEFINITIONS

The following acronyms, abbreviations and terms are defined here within the context of this work instruction.

ECN	Engineering Change Notification
PSU	Power Supply Unit
PCBA	Printed Circuit Board Assembly
PPE	Personal Protective Equipment
QTY	Quantity
WI	Work Instruction
ZBM	Zinc Bromine Module

5. RESPONSIBILITIES

All personnel involved in the installation of PSU PCBAs in Mk Boxes shall be responsible for compliance to this procedure.

6. TRAINING

All personnel involved in the installation of PSU PCBAs in Mk Boxes shall be trained according to this procedure.

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7. EQUIPMENT REQUIRED

Prepare the following equipment prior to fitting a PSU PCBA to a Mk Box.

PPE



Safety Boots

TOOLS

Item name	Quantity
Multimeter	1
10mm socket and torque ratchet	1
Small flat screwdriver	1
M5 socket and ratchet	1
Permanent Marker	1

8. PARTS LIST

- New Pre-charge/Pump PSU board

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STEP 1



System Shutdown

Before fitting the PSU PCBA, ensure that the system is shutdown, the ZBM is stripped and discharged.

Disconnect the ZBM from the system by turning off the external circuit breaker.

For safety it is important that the ZBM has no charge.

STEP 2



Remove the Mk Box Cover

Remove the cover of the Mk Box by unscrewing the 4 plastic flat screws using a Flathead Screwdriver.

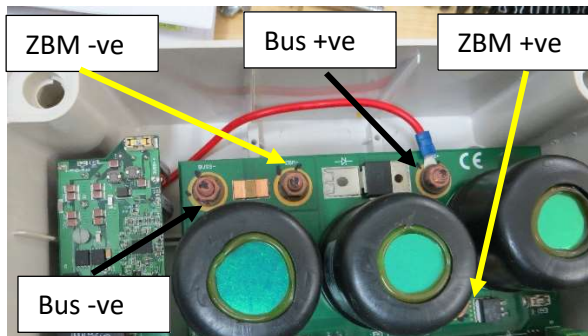
Keep these screws in a safe place as they will be needed in STEP 17 to replace the Mk Box Cover.

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STEP 3



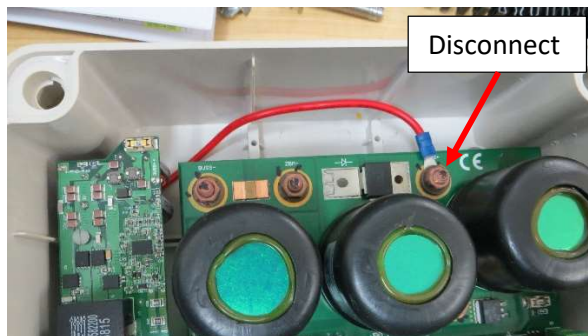
Check the ZBM & Buss Voltages

With a multimeter, check that the ZBM voltage is 0 to 2V. This is measured between ZBM +ve and ZBM -ve.

Check the Bus voltage is 0 to 2V by measuring between Bus +ve and Buss -ve.

If either of these voltages is above 2V – DO NOT PROCEED and contact Redflow.

STEP 4



Disconnect the Bus +ve Connection

If the ZBM voltage is between 0 and 2V, AND the Bus voltage is between 0 and 2V – proceed.

Disconnect the PSU PCBA to Bus +ve connection using a 10mm socket and ratchet.

Note: nut has been secured with Loctite. To remove without damaging the nut, gently work back and forth until the Loctite seal is broken, then remove as normal.



Keep the brass nut and bronze Belleville washer in a safe place as they will be needed in STEP 12.

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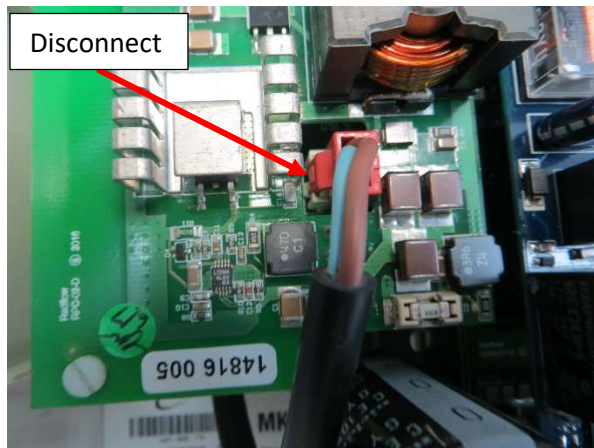
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STEP 5



Disconnect the Pre-charge Cable

Disconnect the Pre-charge cable connector (red connector). It may be necessary to use a small flathead screwdriver to access the connector's clip.

STEP 6



Remove the Pre-charge PCBA

Using a 10mm socket and extension remove the nylon screw and washer that secures the PSU PCBA to the main board.

Note: nut has been secured with Loctite. To remove without damaging the nut, gently work back and forth until the Loctite seal is broken, then remove as normal.

Keep the nylon screw and washer in a safe place as they will be needed in STEP 10.

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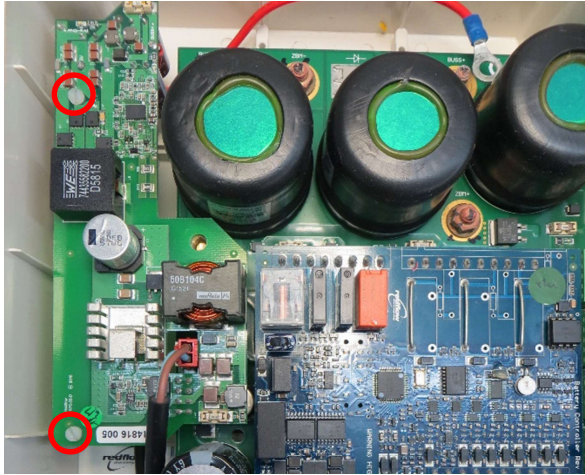
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STEP 7



Remove the Pre-charge PCBA

Using a small flathead screwdriver, remove the two nylon screws that secure the PSU PCBA to the stand-offs (circled in red and located on the left edge of the PCBA).

Keep the nylon screws in a safe place as they will be needed in STEP 10.

STEP 8



Remove the Pre-charge PCBA

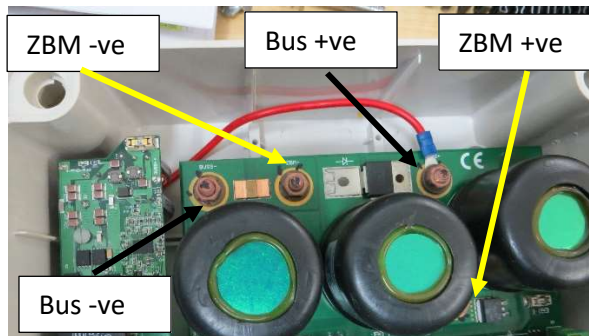
Lift the Pre-charge PCBA out of the Mk Box.

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STEP 9



Check the ZBM & Buss Voltages

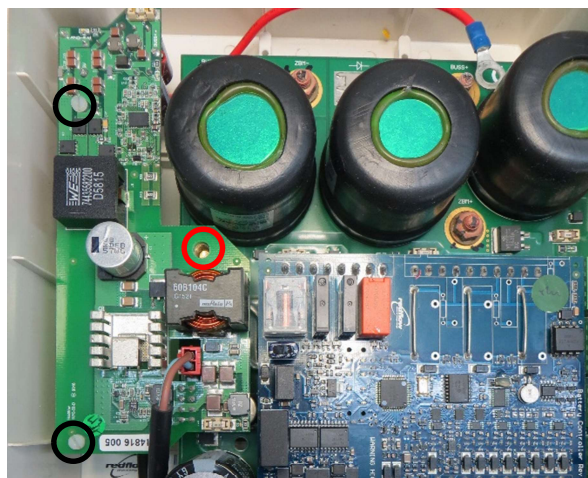
BEFORE installing the PSU PCBA, re-check the ZBM and Bus voltages.

With a multimeter, check that the ZBM voltage is 0 to 2V. This is measured between ZBM +ve and ZBM -ve.

Check the Bus voltage is 0 to 2V by measuring between Bus +ve and Bus -ve.

If either of these voltages is above 2V – DO NOT PROCEED and contact Redflow.

STEP 10



Fit the SPSB Pre-Charge PCBA

If the ZBM voltage is between 0 and 2V, AND the Bus voltage is between 0 and 2V, proceed.

Insert the PSU PCBA into the Mk Box aligning the screw holes (circled) and ensuring the cables are not trapped or damaged.

Secure the PSU PCBA to the main board with the M6 Hex Head Nylon Screw (Part No. S212B069) and M6 Flat Nylon Washer (Part No. S212B070) which were kept from STEP 6 – circled in red.

Secure the PSU PCBA to the standoffs using 2 x M3 Cheesehead Nylon Screws (Part No. S212B113) which were kept from STEP 7 – circled in black.

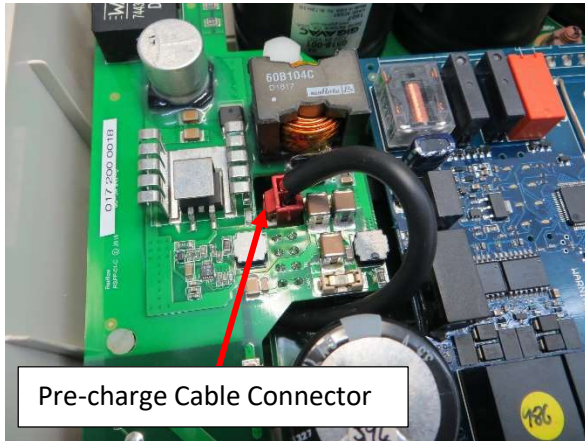
All screws should be firm but not over-tightened.

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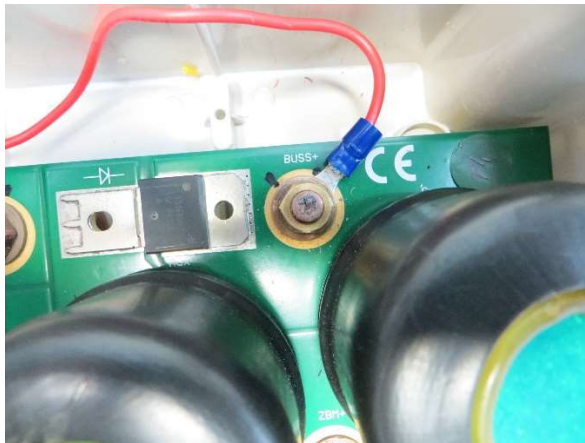
STEP 11



Connect the Pre-charge Cable Connection

Connect the Pre-charge Cable's red connector into the socket as shown. Ensure the connector clicks into its socket.

STEP 12



Connect the PSU PCBA to Bus +ve

Using the M6 Belleville washer (Part No. S212B064) and M6 nut (Part No. S212B037) kept from STEP 4, secure the PSU PCBA to the Bus +ve, as shown.

The Belleville washer must be fitted with the concave side towards the board.

Using a 10mm socket and torque ratchet, tighten the nut to 7Nm.

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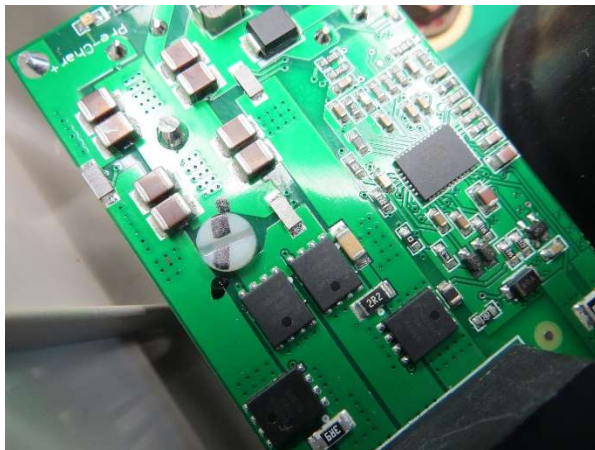
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STEP 13



Mark Screws

With a permanent marker, mark each of the screws and nuts.

This is to ensure that there is evidence should they be tampered with after fitting.

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STEP 14



Replace Mk Box Cover

Secure the Mk Box cover with the 4 flat plastic screws (removed in STEP 2) using a Flathead Screwdriver so the lid is secure.

These screws do not need to be tightened to a specific torque but check that the Mk Box lid is securely fastened to the Mk Box.

END OF WORK INSTRUCTION

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