MAS/2 Power Supply Replacement

Disclaimer: This is not an official repair document. The methods and parts laid out below are what worked for us at this time. You are responsible for any modification you make to your own equipment.

Problem: The mains input fuses on the MAS/2 were blowing whenever the system was turned on. This happened even when the output from the internal power supply was removed. After pulling out and investigating the power supply an electrolytic capacitor was bulging and there were burn marks on the back of the board around that same capacitor.

Solution: Find a new replacement power supply

The original power supply (Cosel LEA50F-30Y) has been discontinued, but old/used stock can be found on eBay for ~$100. This is a nominal DC30V 50W (1.7A) output power supply that has a variable voltage output, modified by an onboard potentiometer.

> Note: On the two MAS/2 units I checked Bruker had set the output at 28.1V. This may be the same for all MAS/2 units, but should be verified by a sticker that Bruker attached to the old power supply in manufacturing.

A very similar and cost effective power supply was found: PMT-30V50W2BA (https://www.digikey.ca/en/products/detail/delta-electronics/PMT-30V50W2BA/18109729)

Installing the new power supply:

> Note: Differences in Bruker manufacturing could lead to different wire colours used inside your MAS/2 compared to what is described below. Verify your wire colours by comparing them to the connections of the old (LEA) power supply. The PCB will be labelled (L, N, G(↓) on input side and V+, V- on output side).

The new (PMT) power supply uses screws and flat washers for the electrical connections. Crimp ring connectors onto each of the input wires (L - brown, N - blue, G – yellow/green). Crimp the two V+ (orange wires) together in one ring connector and the two V- (yellow wires) together in another ring connector.

Find a place for the new power supply to lay in the MAS/2 where all the wires can reach their terminals neatly and clear of the other components (see picture). Mark the location and drill a hole in the bottom of the MAS/2 to attach a screw and washer through the power supply. The screw hole on the power supply will fit an M3 screw perfectly, but a 6-32 screw will require the power supply hole to be drilled out slightly. Secure the power supply to the bottom of the MAS/2 with a screw and nut. A better connection between the MAS/2 frame and the power supply frame will ensure better grounding capabilities.

Connect the input wires: Line (L – Brown), Neutral (N – Blue), Ground (⏚ - Yellow/Green)

Keeping the V+ and V- wires far from the power supply, plug in and turn on the MAS/2. The green light on the power supply should turn on. Using a multimeter set the voltage to 28.1V (or whichever voltage Bruker has written on your old power supply).

Turn off and remove power to the MAS/2. The power supply light will stay lit for a while as there is no load. Wait for the light to go out before proceeding.

Connect the output wires: V+ (orange wires), V- (yellow wires)

The new power supply is installed and the MAS/2 should now function properly.