
Title:

Technical Manual

Voltage Adjustments in CHS Power Supplies

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Abstract:

This technical manual describes how to adjust the different DC power modules contained in the different CHS chassis of RC manufacture.

Safety measures and tools are also described.

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Safety Measures.

The supply voltage to the chassis is 220V AC. With a well grounded cabinet and perhaps a grounded floor as well, this voltage is extremely dangerous and may easily cause death or severe burns.

Only authorized personnel may open the back cover, and this should be replaced as soon as the work is finished. Never leave it open and unguarded, even for a few minutes.

Switch off the power when working inside the chassis, when it is not needed. Pulling out the power cable is the safest way.

When the back cover is removed, note that all the black cooling fins are at a potential of 320V DC. After the power has been switched off, there remains a high voltage there until the capacitors have drained off their energy through resistors. It takes at least 30 seconds to drain off the energy, which amounts to about 17 Joules. In unfavourable conditions this amount can cause death.

Tools

Oscilloscope

Digital voltmeter

Insulated screwdriver "Bourns Trimpot" RESA No. 3-9601

Variable transformer 220V 600 VA

Insulated "Polygrip" tongs (for pulling out modules)

POW719/722/728 Control Modules.

Can only work in the top left position. Check that the correct module is installed:

POW 719 in CHS 701 with 2 fans

POW 722 in CHS 702, 801 and 802 with 3 fans

POW 728 in CHS 705 to CHS 713, CHS 803-804-805, and MCH 804

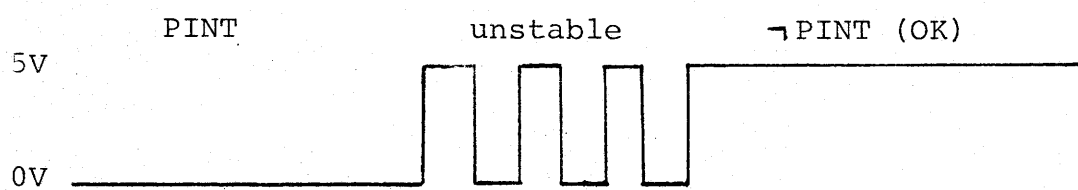
POW 719 and POW 722:

Check the AC voltage: should be 220V +/- 20V.

As the optocoupler slowly degrades, the PINT function should be checked and adjusted once a year.

Connect the power cable to a variable transformer and a voltmeter. Connect the oscilloscope between testpoint -,PINT and chassis (DC signal 5 Volts).

Adjust the AC voltage to 175 Volts. Adjust -PINT until the voltage is just stabilized at 4 to 5 volts.



This adjustment can be done with a full load or no load at all.

POW728:

PINT is preset at the factory and cannot be adjusted.

POW716 +5V Module

Chassis with 1 +5V module: remove the main chassis top cover and connect the voltmeter to 0 and +5V, preferable on the middle of the top PCB. Otherwise measure at the 0 and 5V terminals on top of the I/O bus. Turn on power. Adjust the voltage so that it is inside the limits 4.9 - 5.1 Volts.

Chassis with 2 or more +5V modules: Place one PCB in the top position as a load. BTU 801+BCU 801, CPU 708 minus MEM, AMX 701/702, FDC 703 or any controller with a power consumption from 3 to 6 amps can be used. Pull out all other PCB's. Connect voltmeter. Pull out all +5V modules except one. Turn on power and adjust the voltage to 4.95V. Turn power off, exchange adjusted power module with the next one, and repeat the adjustment. Repeat until all 5V modules has been adjusted. Refit all power modules and PCB's and check the voltage. At full load the voltage should rise to 5.0 Volts. If outside the limits the procedure should be repeated.

NOTE: NEVER ADJUST WITH 2 OR MORE 5V MODULES CONNECTED AND A FULL LOAD (all PCB's connected).

A more sophisticated method: Only one load as before, but the 5 Volt modules remains in place. Screw all adjustmentscrews counterclockwise until the voltmeter shows 4.9 Volts. Adjust the first one until the voltmeter shows 4.95 - 5.00 Volts. Adjust the next one until the voltage just starts to rise, screw 1/4 turn down again. Repeat on all 5V modules. This adjustment demands a little feeling. Sign of overload: A hissing or clicking noise can clearly be heard, adjustment is needed.

POW721 -18V Module.

Voltage limits: 17.7 to 18.3 Volts.

Adjustment procedure liek 5V mocules, except that the modules should be preset at 18.1 Volts to end up with 18.0 Volts at full load.

Load: CPU + one of: MEM709, 711, 717 or 718. Run test program Checkerboard IV.

Measuring point: 0 and -18V on top of MEM-bus.

POW 717 +12V Module

Used only singly, so adjust with all PCB's and power modules in place. Limits: 11.8 to 12.2 Volts.

Measuring point: 0 and +12V on top of I/O bus.

POW 718 -12V Module

Exactly like POW 717.

POW 708 +/-12V Module

No adjustment possible.

POW 727 +/-12V Module

No adjustment possible

This module is a serial regulator fed directly from the AC mains. Can only be used in certain CHS's, and then only in the lefthand positions.

Max. current: 0.55A.

POW 728 Control ModulePOW 729 +5V ModulePOW 730 -18V ModulePOW 731 +12V ModulePOW 732 -12V Module

In these modules the voltage adjustment is centralized, and the only adjustment potmeter is situated on the control module board.

Measure the voltage +5V on top of the I/O bus-mother-board and adjust to 5.0 Volts. All the other voltages should then be correct.

These modules must only be installed in the power chassis PCH 701!

If any of the "old" modules are present, these have to be adjusted individually.

For further information of the new modules, see RCSL 44-RT1692.