# MC104P Trouble Shooting Guide

**PC104 Single board computer**



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**Problem: Power LED does not light on the MC104P**

1. Use a voltmeter to check the voltage on the power pins of the MC104P. Verify that the voltage is +5 volts (±0.20 volts).

**Problem: Outputs on the MC104P do not work**

1. Verify there is voltage applied to the Vos pins on the MC104P. Vos should be connected to the supply voltage used to drive the outputs.
2. Verify there is a load between Vos and the output. The outputs are open collector and will not drive a load. The outputs sink current. See the MC104P manual for typical output connections.
3. Verify that the pins used for outputs are properly configured. The *init_MC104P()* function included with the *Calmotion_MC104.lib* library will properly initialize all of the port pins. Alternatively, the user may manually configure the outputs by setting TRISF = 0x00.
4. If the output ports have been configured manually, check the settings of ADCON1 for a conflict. Adjust accordingly.

**Problem: printf() gives *Warning [2066] type qualifier mismatch in assignment***

1. The compiler needs to be set to use the large memory model. Change the project settings to use the large memory model.

**Problem: MC104P stays in reset.**

1. Check the level of the 5 volts supply with an oscilloscope. Most voltmeters will not capture transients that could reset the MC104P. An on board voltage supervisor will reset the circuit if the voltage level falls below 4.6 volts.
2. If the MC104P outputs are driving inductive loads (opto-couplers, relays,..) , check to see if Vos is properly connected. Highly inductive loads connected to the output of the MC104P can cause voltage transients that in turn will reset the unit. Additional filtering may need to be provided.

**Problem: printf() does not display text on the screen**

1. Be certain that `stdout` has not been changed. In order to use printf() on a VGA screen, the `stdout` needs be set to `_H_USER.` `(i.e. stdout = _H_USER;)`
2. Double-check that the color combination selected for printing text is visible. Try the color function color(7,0) to set the font color to white text on a black background.
3. Make sure the cursor position is on the visible screen. Use locate(1,1) function to place the cursor in the upper left portion of the screen.

**Problem: External memory or PC104 cards do not work**

1. The compiler needs to be selected for the large memory model. Change the project settings to use the large memory model.
2. Use the *init_MC104P()* function included with the *Calmotion_MC104.lib* library. This function will initialize the peripherals on the board to the correct setting.
3. Make sure the PC104 board supports the 8-bit bus supported by the MC104P. The MC104P will not support 16-bit PC104 buses.
4. Check the configuration bits for your project. Extended Microcontroller Mode, 8 bit bus, and 20 bit wide address must be selected. Attempt to write to and then read from the same location of the on board SRAM.

**Problem: Video card does not work**

1. Use the *init_cirrus_video()* function included with the *Calmotion_video.lib* library. This function will initialize the VGA video card that uses the Cirrus Logic GD542X chip set. Other chipsets may not work correctly.
2. The compiler needs to be set to use the large memory model. Change the project settings to use the large memory model.
3. Use the *init_MC104P()* function included with the *Calmotion_MC104.lib* library. This function will initialize the peripherals on the board to the correct setting.
4. Make sure the PC104 board supports the 8-bit bus supported by the MC104P. The MC104P will not support 16-bit PC104 buses.
5. Check the configuration bits for your project. Extended Microcontroller Mode, 8 bit bus, and 20 bit wide address must be selected.

**Problem: MC104P not communicating to Windows Utility**

If problems occur with communications between the MC104P and a PC, the following steps should be followed to correct the problem:

1. Verify that a **null modem** cable is being used between the PC and MC104P devices. A null modem cable is a standard RS-232 cable that crosses the RXD and TXD signals.
2. Check that the MC104P has a +5 volt supply going to it. Use a voltmeter to check the power on the MC104P board.
3. Verify that the null modem cable is connected from the PC's COM port to the J5 or J6 ports on the MC104P. Make sure the MC104P serial port jumpers (COM1 only) and USART peripherals have been configured properly.
4. Verify that no other Windows application is running that may also be using the COM port, i.e. Hyper Terminal.

**Problem: MC104P not communicating to Palm Utility, "Searching for MC104P" message persists on Palm screen.**

If problems occur with communications between the MC104P and a Palm, the following steps should be followed to correct the problem:

1. Verify that the correct serial cable is being used between the Palm device and MC104P devices. There is usually a specific cable designed for each Palm unit.
2. Make sure a USB to Serial converter is not being used. A Palm is a slave device and will not work with a USB to serial converter. A true serial cable for the Palm device can only be used.
3. Verify that the MC104 drive has a +5 volt supply. Use a voltmeter to check power on the CPU board.
4. Verify that the cable is connected from the Palm to the J6 connection on the MC104P CPU.
5. Hotsync your Palm device to a PC using the same serial cable. If it does not hotsync using the serial cable then the Palm or cable is not working. Note: some Hotsync settings must be changed to use the PC COMM port to Hotsync over the serial cable.

**Problem: Palm Treo 650 or T5 doesn't communicate**

The Treo 650 and the T5 serial cables from Palm need to be powered. They typically are parasitic by getting power from the RTS (pin 4 on 10 pin IDC and pin 7 on the DB9). The MC104P does not use the RTS. If power is need on the RTS, the MC104P can provide this with a jumper located at JP8. Adding a jumper at JP8 will provide Vcc at pin 4, RTS for the RS-232 port. Do not add the jumper on JP8 unless it is safe to provide power at the Pin 4 on COM2 on the MC104P.

Another solution is to purchase a Palm serial cable that is powered from the Palm device side. These cables are designed to plug into the Power_Out pins on the Palm Athena connector. When using this cable type, JP8 jumper is needed.