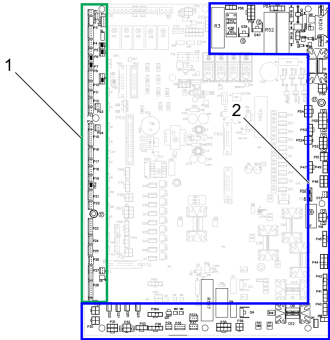




## I/O PCB - Troubleshooting Guide - CHC

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## Introduction



The I/O PCB is the interface between the control and the all of switches, motors, sensors, solenoids etc.

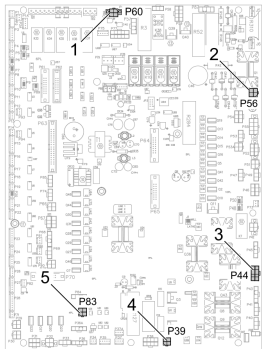
The I/O PCB is split into two parts, inputs [1] and outputs [2]. Most are independent from one another.

## Symptom Table

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
VMC Alarm <b>163</b> Z-AXIS DRIVE FAULT  HMC Alarm <b>162</b> Y-AXIS DRIVE FAULT  Lathe Alarm <b>161</b> X-AXIS DRIVE FAULT  Alarm <b>992</b> AMPLIFIER OVERCURRENT  Alarm <b>994</b> AMPLIFIER OVERLOAD	There is a problem with the axis brake voltage output or the cable to the axis brake.	Check the axis brake cable from I/O PCB to axis motor and also the axis brake voltage output.
Alarm <b>858</b> ATC CAROUSEL MOTOR ELECTRICAL FAULT	There is a problem with one of the tool changer relays.	Swap the I/O PCB tool changer relays.
There is no voltage output.	There is a faulty supply voltage to I/O PCB or a Circuit Breaker on the Power Distribution PCB is tripped.	Check the voltages to I/O PCB. Also check for a tripped circuit breaker or blown fuse on the Power Distribution PCB.
	There is a faulty connection.	Make sure all connections and cables are securely connected and are not damaged.
	There is a possible I/O PCB failure.	Check all voltages, cables going to I/O PCB, Also check for burnt components or traces on the I/O PCB.

<p>Multiple alarms are generated.</p> <p>On the DIAGNOSTICS page all inputs showing 1.</p> <p>On the DIAGNOSTICS page one or more Inputs do not change state when the switches or sensors are triggered.</p>	<p>There is a faulty supply voltage to I/O PCB or a Circuit Breaker on the Power Distribution PCB is tripped.</p>	<p>Check the voltages to I/O PCB. Also check for a tripped circuit breaker or blown fuse on the Power Distribution PCB.</p>
	<p>There is a faulty connection.</p>	<p>Make sure all connections and cables are securely connected and are not damaged.</p>
	<p>There is a possible I/O PCB failure.</p>	<p>Check all voltages, cables going to I/O PCB, Also check for burnt components or traces on the I/O PCB.</p>

Voltages to I/O PCB



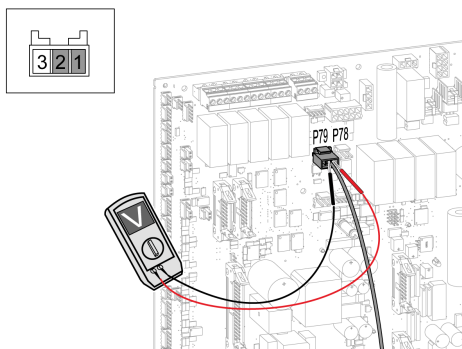
Corrective Action:

Check Voltages to I/O PCB

**Note:** The plug numbers listed below apply to **Classic Haas Control I/O PCB rev S or higher**. Measure the voltage on the backside of the corresponding connector on the I/O PCB. Use a volt meter equipped with needle tip probes.

- Check the 5 VDC and 12 VDC at P60 [1] from the Low Voltage Power Supply (LVPS).
- Check the 3-phase 120 VAC at P56 [2] these voltages drive the solenoids, oil pump, fans and other 120 VAC devices. If no voltage present. Check the CB6 circuit breaker on the Power Distribution PCB.
- Check the 1-phase 120 VAC at P83 [5] this voltage drives the worklight and the high intensity lights. If no voltage present. Check the GFCI outlet on the side of the machine to make sure is not tripped. Also check the GFI/Worklight circuit breakers on the Power Distribution PCB.
- Check the 3-phase 240 VAC at P44 [3] these voltages drive the coolant pump, TSC motor, hydraulic power unit on a lathe. If no voltage present. Check the Coolant and TSC circuit breakers on the Power Distribution PCB.
- Check the 3-phase 240 VAC at P39 [4] these voltages drive the chip auger or conveyor. If no voltage present. Check the Conveyor circuit breaker on the Power Distribution PCB.
- If there is voltage present. Check cables and connections see section 2.

## Axis Brake Voltage

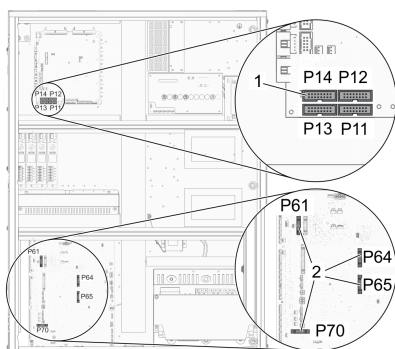


### Corrective Action:

1. Release **[EMERGENCY STOP]**.
2. Press **[RESET]**. This clears the alarm and applies power to the servo motors.
3. Use a multimeter with needle-tip test probes to measure the voltage across pins 1 and 2 on the P79 or P78 connector on the I/O PCB. The voltage should be between 18 and 30 VDC.

**Note:** Do not measure the voltage with the axis brake cable disconnected from the P79 or P78 connector on the I/O PCB.

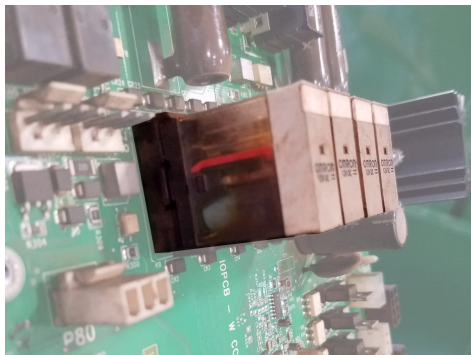
## Cable Connections



### Corrective Action:

- Make sure the power cable or cables for the system from Section 1 are seated properly and are secure in place.
- Make sure the connector pins are seated properly and are secure in the housing.
- Clean contaminated connectors. Re-seat the connectors and make sure they are secure.
- Perform a visual inspection on the cables. Look for signs of damage or puncture. Replace cables if there is visible damage.
- Check the cable connections between P64, P65, P70, and P61 [2] on the I/O PCB and P11, P12, P13, P14 [1] on the Mocon/Maincon. These cables are the same and can be interchanged with each other for testing.
- For some systems the power to the worklight is protected by a GFCI outlet on the side of the machine, make sure the GFCI is not tripped and that it is functioning properly.

## Relays



### Corrective Action:

- Verify on the DIAGNOSTICS screen that the output was commanded.
- Look for burned contacts in the relays. Replace the K9 - K12 relays as needed. (Only for Tool changer, APC motor, Servo Bar 300 carriage motor issues only)
- Look for burnt components or traces on the I/O PCB.
- Perform all tests measurements and inspections listed in sections 1 to 3.
- If all voltages are OK, cables are OK and have no signs of visual damage, motors have checked OK, sensors have tested OK, and the problem still reoccurs, then the I/O PCB may have failed.
- Replace the I/O PCB.

## Electrical Diagram

