

CHAPTER THREE

# Troubleshooting

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## TROUBLESHOOTING BASICS

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When your system does not function properly (or as you expect it to operate), the first thing that you must do is identify and isolate the problem. When you have accomplished this, you can effectively begin to resolve the problem.

The first step is to isolate each system component and ensure that each component functions properly when it is run independently. You may have to dismantle your system and put it back together piece by piece to detect the problem. If you have additional units available, you may want to exchange them with existing components in your system to help identify the source of the problem.

Determine if the problem is mechanical, electrical, or software-related. Can you repeat or recreate the problem? Random events may appear to be related, but they are not necessarily contributing factors to your problem.

You may be experiencing more than one problem. You must isolate and solve one problem at a time. Log (document) all testing and problem isolation procedures. You may need to review and consult these notes later. This will also prevent you from duplicating your testing efforts.

Once you have isolated a problem, take the necessary steps to resolve it. Refer to the problem solutions contained in this chapter. If the problem persists, contact your local technical support resource.

## DIAGNOSTIC LEDs

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The ZETA4-240 Drive has four LEDs on its front panel. The following summary of LED functions may help you isolate problems.

<u>LED Name</u>	<u>Color</u>	<u>Function</u>
POWER	Green	Illuminates when AC power is applied Off if AC power is under voltage (<95VAC)
STEP	Green Red/Green	Illuminates with each applied step pulse Alternates red & green during Auto Test
OVER TEMP	Red	Indicates drive has exceeded temperature limit
MOTOR FAULT	Red	Indicates short circuit in motor or cabling Indicates open interlock

## PROTECTIVE CIRCUITS

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The ZETA4-240 Drive has several protective circuits, some of which can indicate fault conditions by illuminating one of the above LEDs.

### OVERTEMPERATURE PROTECTION

To protect against damage from high temperatures, the ZETA4-240 Drive has an internal temperature sensor. If the sensor reaches 55°C (131°F) it will trigger an overtemperature fault. The red **OVER TEMP** LED will illuminate, and the drive will shut down. This is a latched fault. To restart the

drive, first allow it to cool, then cycle power or toggle the reset input.

## SHORT CIRCUIT PROTECTION

The ZETA4-240 Drive has short circuit protection. When the drive detects a short circuit in the motor or motor cabling, it illuminates the **MOTOR FAULT LED**, and stops producing motor current. This is a latched condition. To restart the drive, first fix the short in the motor or cable, then cycle power.

## REGENERATION

The ZETA4-240 Drive has an internal regeneration resistor. If the motor *regenerates*—produces excess energy during deceleration—the drive will automatically dissipate the excess energy in its regeneration resistor. If the motor regenerates an excess amount of energy on a continuous basis, the drive's internal temperature may rise and trigger an overtemperature fault (see above).

## AUTOMATIC TEST

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Often in diagnosing a problem, it is helpful to rule out possible causes. If you disconnect the load and indexer from the drive, four components remain—the drive, motor, motor cable, and power cable.

You can then configure the drive to run its automatic test. See instructions near the beginning of *Chapter 2 Installation*, under *Quick Test*. If the motor turns as expected—counterclockwise at approximately one rps—then the drive, motor, and cables are probably not the cause of the problem. The cause may lie with the indexer, limit switches, mechanics, etc.

## ANTI-RESONANCE DISABLE

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If your mechanical system is highly resonant at precisely the *wrong* frequency, anti-resonance might interpret the mechanical vibrations as rotor position error. You would notice greater torque ripple, increased audible noise, and possibly even stalling. To solve these problems, try adjusting the anti-resonance phase and gain (SW2-#3 & #4), or try disabling anti-resonance (SW2-#2 on), and see if the problems improve.

You can also turn on and use active damping. The drive automatically disables anti-resonance when active damping is turned on.

## TECHNICAL SUPPORT

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If you cannot solve your system problems using this user guide, contact your local Automation Technology Center (ATC) or distributor for assistance. If you need to talk to our in-house application engineers, contact Parker Compumotor's Applications Department at (800) 358-9070, from 6:00 AM to 5:00 PM Pacific time.

## PRODUCT RETURN PROCEDURE

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If you must return your ZETA4-240 Drive for repairs, use the following steps:

1. Get the serial number and the model number of the defective unit, and a purchase order number to cover repair costs in the event the unit is determined to be out of warranty.
2. Before you return the unit, have someone from your organization with a technical understanding of the ZETA4-240 Drive and its application include answers to the following questions:
  - What is the extent of the failure/reason for return?
  - How long did the unit operate?
  - Did any other items fail at the same time?
  - What was happening when the unit failed (e.g., installing the unit, cycling power, starting other equipment, etc.)?
  - How was the unit configured (in detail)?
  - What, if any, cables were modified and how?
  - With what equipment is the unit interfaced?
  - What was the application?
  - What was the system environment (temperature, enclosure, spacing, unit orientation, contaminants, etc.)?
  - What upgrades, if any, are required (hardware, cables, user guide)?
3. In the USA, call your Automation Technology Center (ATC) for a Return Material Authorization (RMA) number. Returned products cannot be accepted without an RMA number. If you cannot obtain an RMA number from your ATC, call Parker Compumotor's Customer Service Department at (800) 722-2282.

Ship the unit to:      Parker Hannifin Corporation  
                                 Compumotor Division  
                                 5500 Business Park Drive, Suite D  
                                 Rohnert Park, CA 94928  
                                 Attn: RMA # xxxxxxxx

4. In the UK, call Parker Digiplan for a GRA (Goods Returned Authorization) number. Returned products cannot be accepted without a GRA number. The phone number for Parker Digiplan Repair Department is 0202-690911. The phone number for Parker Digiplan Service/Applications Department is 0202-699000.

Ship the unit to:      Parker Digiplan Ltd.,  
                                 21, Balena Close,  
                                 Poole, Dorset,  
                                 England. BH17 7DX

5. Elsewhere: Contact the distributor who supplied the equipment.