DIAGNOSTICS AND FAULT FINDING

The seven-segment display is illuminated when the servo drive is powered-up. It provides information on the state of the drive, active trips, and assists in fault finding.

Remember to remove the protective film covering the display when installing the drive.

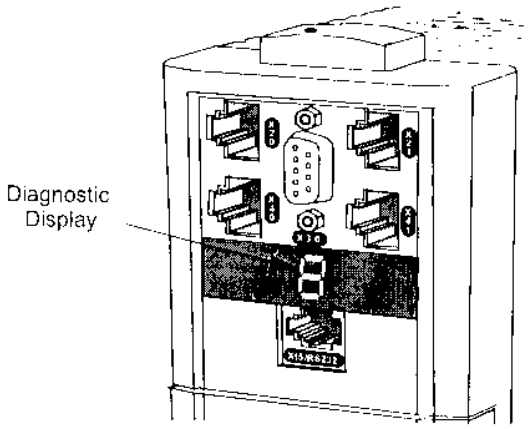


Figure 7-1 Diagnostic Display

Resetting a Trip Condition

There are two options:

1. Switch the supply voltage OFF and ON
2. Use EASYRIDER

Trip Diagnostics

Display	Explanation	Ready * (output X10.5)	Warning * (output X10.6)	Comment
	no display	off	off	Is the supply voltage present? Are the external fuses ok?
	system ready to operate	on	off	regulator ready not active
	system active			output stage active, no interference
	internal stop deactivation via serial interface	off	off	• Re-start the drive or perform a RESET and activate the drive
	Internal stop	-	-	Deactivation via BIAS command
	Active input is activated with switching on	off	off	• Switch ACTIVE X10.7 to Low and then to High

7-2 Diagnostics and Fault Finding

Display	Explanation	Ready * (output X10.5)	Warning * (output X10.6)	Comment
	Supply undervoltage <Ua low threshold	off	off	Is the power supply present? Status signal disappears, if DC-bus voltage over the threshold.
	Fault Supply undervoltage <Ua low threshold	off	off	Is the power supply present? Error signal appears, if DC-bus voltage under the Ua low threshold.
	Fault in resolver system	off	off	Is the encoder system supply present? Is the wiring to the encoder system ok? Is the encoder system ok?
	I^2t overload of the drive	-	-	Does the control loop oscillate? P-amplification too high Mechanics stiff? Requirements too high? Is warning /8/ evaluated?
	overload of the motor I^2t	-	-	Does the control loop oscillate? P-amplification too high Mechanics stiff? Requirements too high? Is warning /8/ evaluated?
	overtemperature of the output stage	-	-	Adequate cooling of the regulator? Is the ambient temperature too high?
	overvoltage DC bus	-	-	Ballast module ok? Adequate ballast module?
	Chassis shorting and short circuit due to hardware	off	off	Is the motor cabling ok? Are the digital loops setup ok? Is there a short circuit to chassis in the motor? Is the braking resistor Ohm value too low? • Apply a toroidal core or choke in motor-cable. • Try to restart • Return the unit for repair
	WARNING! Overload of the regulator or motor. If no reaction within approximately 3 seconds the unit switches off with signals /3/, /4/ or /5/. Signal /8/ clears when there is no more danger or the unit is switched off	on	*	Mechanics stiff? Defective bearings; Cold grease? • Reduce requirements and creep to next possible STOP

Display	Explanation	Ready * (output X10.5)	Warning * (output X10.6)	Comment
	overtemperature motor (NTC/PTC)	off		Check overload of the motor/cooling etc.
	motor temperature warning	on	*	Check overload of the motor/cooling etc.
	ballast active			Brake energy is removed
	warning ballast	on	*	Ballast resistance usage is >90%
	switch off ballast	on	*	Ballast resistance overloaded
	trailing window exceeded			Only in operation mode "position control" • optimise parameters • check mechanics
	trailing error with switch off			Only in operation mode 'position control" • optimise parameters • check mechanics • increase trailing window
	memory checksum error	off	off	• Try to restart • Load new parameters
	internal fault	off	off	• controller fault Return the unit for repair

** Configuration as stated, refer to Chapter 4: "Operating Modes" - Configuring the OPTO Inputs and Outputs (X10)*

The last error signal will be displayed after restart in EASYRIDER L.. - Diagnosis:Menu, (History Status Memory, page 7-5).

Fault Finding

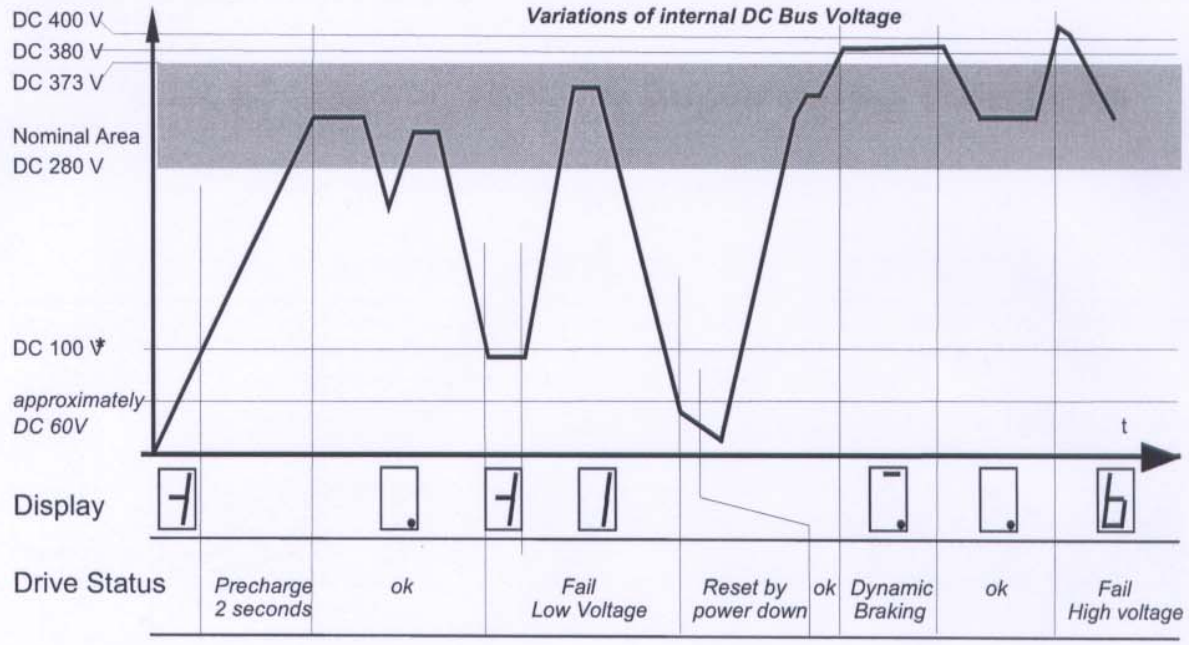
The following list refers to faults which can occur during operation.

	Error	Explanation and remedy
*	Motor does not operate despite current flow	Is the motor mechanically blocked? Is the motor brake released?
	Motor runs unevenly	Check the setpoint wiring. Check grounding and shielding. Inappropriate speed loop values ? • Reduce amplification and/or increase time constant (use EASYRIDER)
	No reaction on setpoint value although torque in stand still	Limit switch - functions activated ? (BIAS)
	No current flow; no torque despite activating the regulator correctly	Motor cables interrupted?
	Interference symptoms with power frequency	Ground loops in setpoint or actual value wiring? Shieldings laid on both sides? Signal cables near high voltage cables?
*	Motor takes up preferred positions after activation	Position encoder or motor cables with reversed poles? Resolver or encoder incorrectly adjusted? Number of motor poles set incorrectly? (config. menu)
*	Motor runs up immediately after activation although there is no setpoint	Motor cables or resolver cables reversed? Resolver incorrectly adjusted?
	Motor reaches, in idling cycle, a very different speed when running right from running left	Resolver incorrectly adjusted

* *Displays /3./ or /4./ for a short time after activating before showing warning /8./*

Re-actions of Supply Voltage Supervising Functions

The following diagram refers to the internal dc bus voltage (rectified from an ac voltage). Note that voltage ripple effects have to be taken in to account, refer to Chapter 11: "Technical Specifications" - Derating of Output Voltage.



* *Default value, may be changed using EASYRIDER*