Allen-Bradley

Kinetix 6000 Multi-Axis Servo Drive

(Catalog Numbers
2094-AC05-MP5, -AC05-M01, -AC09-M02
-AC16-M03, -AC32-M05
2094-BC01-MP5, -BC01-M01, -BC02-M02
-BC04-M03, -BC07-M05

2094-BC01-MP5-S, -BC01-M01-S,
-BC02-M02-S, -BC04-M03-S, -BC07-M05-S

2094-AMP5, -AM01, -AM02, -AM03, -AM05
2094-BMP5, -BM01, -BM02, -BM03, -BM05

2094-PRS1, -PRS2, -PRS3, -PRS4, -PRS5,
-PRS6, -PRS7, -PRS8
2094-PR1, -PR2, -PR4, -PR6, -PR8

2094-PRF

2094-AL09, -AL75S
2094-BL02, -BL75S
2094-XL75S-C1
2094-XL75S-C2

2094-BSP2)

Integration Manual

Rockwell Automation

Error Codes

The following list of problematic symptoms (no error code shown) and problems with assigned error codes is designed to help you resolve problems.

When a fault is detected, the 7-segment LED will display an E followed by the flashing of the two-digit error code, one digit at a time. This is repeated until the problem is cleared.

Error Code	Fault Message **RSLogix** (HIM)	Problem or Symptom is	Potential Cause is	Possible Resolution is
		Power (PWR) indicator not ON	No AC power or auxiliary logic power.	Verify AC control power is applied to the Kinetix 6000.
			Internal power supply malfunction.	Call your Allen-Bradley representative to return module for repair.
		Motor jumps when first enabled	Motor wiring error.	• Check motor wiring. • Run Hookup test in RSLogix 5000.
			Incorrect motor chosen.	Verify the proper motor is selected.
		Digital I/O not working correctly	I/O power supply disconnected.	Verify connections and I/O power source.
E00	**BusUndervoltage Fault** (Blown fuse)	A blown fuse was detected on the inverter PCB	Blown fuse.	Call your Allen-Bradley representative to return module for repair.
E04	**MotorOvertemp Fault** (Motor Overtemp)	Motor thermal switch tripped	• High motor ambient temperature and/or • Excessive current	• Operate within (not above) the continuous torque rating for the ambient temperature 40 °C (104 °F) maximum. • Lower ambient temperature, increase motor cooling.
			Motor wiring error.	Check motor wiring at MF connector on the IAM/AM.
			Incorrect motor selection.	Verify the proper motor has been selected.
E05	**DriveOvercurrent Fault** (Power Fault)	Self-protection of the Intelligent Power Module (IPM) is indicating a major power related fault condition.	Motor cables shorted.	Verify continuity of motor power cable and connector.
			Motor winding shorted internally.	Disconnect motor power cables from the motor. If the motor is difficult to turn by hand, it may need to be replaced.
			Kinetix 6000 temperature too high.	• Check for clogged vents or defective fan. • Ensure cooling is not restricted by insufficient space around the unit.
			Operation above continuous power rating and/or product environmental ratings.	• Verify ambient temperature is not too high. • Operate within the continuous power rating. • Reduce acceleration rates.
			Kinetix 6000 has a short circuit, overcurrent, or failed component.	Remove all power and motor connections, and preform a continuity check from the DC bus to the U, V, and W motor outputs. If a continuity exists, check for wire fibers between terminals, or send drive in for repair.

Error Code	Fault Message **RSLogix** (HIM)	Problem or Symptom is	Potential Cause is	Possible Resolution is
E06	**HardOvertravel Fault** (+/- Hard Overtravel)	Axis moved beyond the physical travel limits in the positive/negative direction.	Dedicated overtravel input is inactive.	• Check wiring. • Verify motion profile. • Verify axis configuration in software.
E07	**MotFeedbackFault** (Motor Feedback Loss)	The feedback wiring is open, shorted, or missing.		• Check motor encoder wiring. • Run Hookup test in RSLogix 5000.
E09	**BusUndervoltage Fault** (Bus Undervoltage)	With three-phase power present, the DC bus voltage is below limits.	• DC bus voltage for 460V system is below 275V • DC bus voltage for 230V system is below 137V	• Verify voltage level of the incoming AC power. • Check AC power source for glitches or line drop. • Install an uninterruptible power supply (UPS) on your AC input.
		DC bus voltage fell below the undervoltage limit while an axis on the follower power rail was enabled.		Disable follower axis before removing power.
E10	**DriveOvervoltage Fault** (Bus Overvoltage)	The DC bus voltage is above limits.	Excessive regeneration of power. When the motor is driven by an external mechanical power source, it may regenerate too much peak energy through the Kinetix 6000's power supply. The system faults to save itself from an overload.	• Change the deceleration or motion profile. • Use a larger system (motor and Kinetix 6000). • Install shunt module.
			• DC bus voltage for 460V system is over 820V • DC bus voltage for 230V system is over 410V	Verify input is within specifications.
E11	**MotFeedbackFault** (Illegal Hall State)	State of Hall feedback inputs is incorrect.	Bad connections.	• Verify the Hall wiring at the MF connector on the IAM/AM. • Verify 5V power supply to the encoder.
E16	**Softovertravel Fault** (+/- Software Overtravel)	Axis position exceeded maximum software setting.		• Verify motion profile. • Verify overtravel settings are appropriate.
E18	**OverSpeedFault** (Overspeed Fault)	Motor speed has exceeded 150% of maximum rated speed. The 100% trip point is dictated by the lesser of the user velocity limits or the motor rated base speed.		• Check cables for noise. • Check tuning.
E19	**PositionErrorFault** (Follow Error)	Position error limit was exceeded.		• Increase the feed forward gain. • Increase following error limit or time. • Check position loop tuning. • Verify sizing of system. • Verify mechanical integrity of system within specification limits.
E20	**MotFeedbackFault** (Mtr Fdbk AQB)	Motor Encoder State Error	The motor encoder encountered an illegal transition.	• Use shielded cables with twisted pair wires. • Route the feedback away from potential noise sources. • Check the system grounds. • Replace the motor/encoder.
E21	**AuxFeedbackFault** (Aux Feedback Comm)	Communication was not established with an intelligent encoder.		Verify auxiliary encoder wiring.

Error Code	Fault Message **RSLogix** (HIM)	Problem or Symptom is	Potential Cause is	Possible Resolution is
E30	**MotFeedbackFault** (Motor Feedback Comm)	Communication was not established with an intelligent encoder.		• Verify motor selection. • Verify the motor supports automatic identification. • Verify motor encoder wiring.
E34	**GroundShortFault** (Ground Fault)	Excessive ground current in the converter was detected.	Wiring error.	• Check motor power wiring. • Check input power wiring (refer to *Kinetix 6000 Installation Manual*, publication 2094-IN001).
			Motor internal ground short.	Replace motor.
			Internal malfunction.	Disconnect motor power cable from drive and enable drive with current limit set to 0. If fault clears, then a wiring error or motor internal problem exists. If fault remains, call your A-B representative.
			Grounded control power terminal (applies to 230V systems only)	• Remove ground from control power input. • Wire control power to use main power as shown in Figure A.3. • Add isolation transformer for control power.
E35	**DriveUndervoltage Fault** (Pre-charge Fault)	Converter pre-charge cycle failed.	Low AC input voltage.	Check input AC voltage on all phases.
			Internal malfunction.	Call your A-B representative.
E36	**DriveOvertemp Fault** (System Overtemperature)	Converter thermal switch tripped.	Excessive heat exists in the power circuitry.	• Reduce acceleration rates. • Reduce duty cycle (ON/OFF) of commanded motion. • Increase time permitted for motion. • Use larger Kinetix 6000 converter. • Check for clogged vents or defective fan. • Ensure cooling is not restricted by insufficient space around the unit.
E37	**PowerPhaseLoss Fault** (Phase Loss Flt)	• One or more phases of the input AC power is missing. • Axis was enabled when main (3-phase) power was removed. • Common bus follower axis was enabled when DC bus power was removed.		• Check input AC voltage on all phases. • Disable axis before removing power.
E38	**SERCOSFault** (SERCOS Ring Flt)	The SERCOS ring is not active after being active and operational.	Cable disconnected.	Check that fiber-optic cable is present and connected properly.
E39	**DriveHardFault** (Self Sense Flt)	Self-sensing Commutation Startup Error	Motion required for self-sensing startup commutation was obstructed.	• Verify that there are no impediments to motion at startup, such as hard limits. • Increase self-sensing current if high friction or load conditions exist. • Check motor or encoder wiring using wiring diagnostics.
E43	**DriveEnableInput Fault** (Drive Enable Flt)	Missing Drive Enable Input Signal	• An attempt was made to enable the axis through software while the Drive Enable hardware input was inactive. • The Drive Enable input transitioned from active to inactive while the axis was enabled.	• Disable the Drive Enable Input fault. • Verify that Drive Enable hardware input is active whenever the drive is enabled through software.

Error Code	Fault Message **RSLogix** (HIM)	Problem or Symptom is	Potential Cause is	Possible Resolution is
E49	**DriveHardFault** (Safe-Off HW Flt)	For symptom, cause, and resolution of this error code, refer to the *Kinetix Safe-Off Feature Safety Reference Manual* (publication GMC-RM002). Applies to IAM (2094-*x*C*xx*-M*xx*-S) and AM (2094-*x*M*xx*-S) with Safe-Off feature.		
E50	**SERCOSFault** (SERCOS Same ADDR)	Duplicate node address detected on SERCOS ring.		Verify that each SERCOS drive is assigned a unique node address.
E54	**DriveHardFault** (Ifbk HW Fault)	Current feedback hardware fault detected.		Replace the module
E60	**DriveHardFault** (Unknown Axis)	Illegal ID bits detected		Replace the module
E61	**AuxFeedbackFault** (Aux Fdbk AQB)	Auxiliary Encoder State Error	The auxiliary encoder encountered an illegal transition.	• Use shielded cables with twisted pair wires. • Route the feedback away from potential noise sources. • Check the system grounds. • Replace the motor/encoder.
E62	**AuxFeedbackFault** (Aux Fdbk Loss)	The feedback wiring is open, shorted, or missing.		Check the motor feedback cable connectors/wiring to the IAM/AM and motor.
E63	**AuxFeedbackNoise** (Aux Fdbk Noise)	Noise on auxiliary feedback cable.	Recommended grounding, per installation instructions, has not been followed.	• Verify grounding. • Route feedback cable away from noise sources. • Refer to *System Design for Control of Electrical Noise Reference Manual* (publication GMC-RM001).
E64	**MotorFeedbackNoise** (Mtr Fdbk Noise)	Noise on motor feedback cable.		
E65	**No Fault Message (condition indicated by on-screen message)** (Hookup Fault)	Hookup procedure failed	Motor or feedback device malfunction.	• Check motor power/feedback wiring. • Refer to on-screen message for resolution.
E66	**No Fault Message (condition indicated by on-screen message)** (Atune Flt)	Autotune procedure failed	Motor or feedback device malfunction.	• Check motor power/feedback wiring. • Refer to on-screen message for resolution. • Perform Hookup in RSLogix 5000. • Consult RSLogix 5000 help screen.
E67	**DriveHardFault** (Task init)	Operating system failed	Software initialization fault detected due to hardware failure.	• Cycle power. • If fault persists, replace module.
E68	**DriveHardFault** (SCANport Comm)	DPI communication failed	The DPI device or cable is faulty.	Check DPI connections.
E69	**DriveHardFault** (Objects Init)	Non-volatile memory is corrupt due to control board hardware failure.		Load default parameters, save to non-volatile memory, and recycle power or reset the drive.
E70	**DriveHardFault** (NV Mem Init)	Non-volatile memory is corrupt due to control board software error.		Load default parameters, save to non-volatile memory, and recycle power or reset the drive.
E71	**DriveHardFault** (Memory Init)	RAM or Flash memory validation failure		• Cycle power. • If fault persists, replace module.

Error Code	Fault Message **RSLogix** (HIM)	Problem or Symptom is	Potential Cause is	Possible Resolution is
E72	**DriveOvertemp Fault** (Drive Overtemp)	Inverter thermal switch tripped	The fan on the IAM or an AM failed.	Replace the failed module.
			The cabinet ambient temperature is above rating.	Check the cabinet temperature.
			The machine duty cycle requires an RMS current exceeding the continuous rating of the controller.	Change the command profile to reduce speed or increase time.
			The airflow access to the Kinetix 6000 is limited or blocked.	Check airflow and re-route cables away from the Kinetix 6000.
E73	**Communicate** (Backplane Comm)	Power rail CAN communications failed.		Check module for proper mount.
		Power rail connection shorted or open.		Check power rail and module for foreign objects.
E74	**DriveOvercurrent Fault** (Bus OverCurrent)	DC link current exceeds rating.	Motor or transmission malfunction.	• Check for proper motor sizing. • Check/replace transmission device. • Check/replace motor.
			IAM not properly sized.	• Check for proper IAM sizing. • Install larger kW rated IAM.
E75	**DriveOvervoltage Fault** (Shunt Time Out)	The IAM, AM, or SM has exceeded its shunt resistor continuous rating.		• Use a properly sized shunt or modify duty cycle of the application. • System uses internal shunt and requires external shunt for additional capacity.
E76	**DriveHardFault** (Can Init)	DPI hardware initialization fault detected.	Control board hardware failure.	• Reset System. • If fault persists, replace system module.
E77	**DriveHardFault** (Module Mismatch)	Either 230V AM is installed on power rail with 460V IAM, or 460V AM is installed on power rail with 230V IAM.		Replace mismatched module.
E78	**DriveHardFault** (SERCOS Init)	Control hardware fault detected.		• Cycle power. • If fault persists, replace module.
E79	**DriveOvervoltage Fault** (Shunt Module Flt)	SM Temperature Fault LED status is Steady Red	Refer to *Temperature Fault LED* on page 2-11.	
		SM Shunt Fault LED status is Steady Red	Refer to *Shunt Fault LED* on page 2-11.	
		Module missing from power rail.		• Install missing module on power rail. • Fill empty slot with slot filler module.
E80	**DriveHardFault** (CPLD FLT)	Control hardware fault detected.		Replace module.
E81	**DriveHardFault** (Common Bus FLT)	Follower IAM detected AC input power being applied.		Remove AC input power connections from Follower IAM.
E90	**DriveHardFault** (Pre-charge Timeout FLT)	Pre-charge resistor power exceeds the resistor rating.		Allow resistor to cool.
All others	RESERVED			Call your local Allen-Bradley representative.