

AKD Fault and Warning Messages

When a fault occurs, the drive fault contact is opened, the output stage is switched off (motor loses all torque), and the holding brake is activated. The LED display on the front panel of the drive shows the number of the fault that occurred. If a warning is issued prior to the fault, the warning is shown on the LED and has the same number as the associated fault. The left side of the LED displays **F** for a fault or **n** for a warning. The right side displays the fault or warning number as follows: 1-0-1-[break].

Fault	Message/Warning	Cause	Remedy
0		Reserved.	
101	Firmware incompatible.	Installed firmware is not compatible with the drive hardware.	Load compatible firmware into the drive.
102	Resident firmware failed.	Software failure detected.	Restart drive. If issue persists, contact technical support.
103	Resident FPGA failed.	Software failure detected. Load resident FPGA failure occurred (several cases according to flowchart, including incompatible image to FPGA type and fieldbus type).	Restart drive. If issue persists, contact technical support.
104	Operational FPGA failed.	Software failure detected. Load operational FPGA failure occurred (several cases according to flowchart).	Restart drive. If issue persists, contact technical support.
105	NV memory stamp invalid.	NV memory stamp is corrupted or invalid.	Reset the drive to default memory values using Parameter Load in WorkBench.
106	NV memory data invalid.	NV memory data is corrupted or invalid.	Reset the drive to default memory values using Parameter Load in WorkBench.
107	Clockwise switch limit exceeded. Warning issued prior to fault.	Clockwise software position limit is exceeded.	Move the load away from the limits.
108	Counterclockwise switch limit exceeded. Warning issued prior to fault.	Counterclockwise software position limit is exceeded.	Move the load away from the limits.
121	Homing error.	Drive did not finish homing sequence.	Check homing sensor.

Fault	Message/Warning	Cause	Remedy
123	Invalid motion task. Warning issued prior to fault.	Invalid motion task.	Make sure that motion task parameters will calculate to a possible profile.
125	Synchronization lost. Warning issued prior to fault.	The fieldbus lost synchronization.	Check fieldbus connection (X11), settings, and control unit.
126	Too much movement. Warning issued prior to fault.	Too much movement was created during a Bode Plot. Motor is unstable and is not following drive instructions.	Check that the system is closed loop stable. Refer to the system tuning guide.
127	Incomplete emergency stop procedure.	Incomplete emergency stop procedure (problem with the emergency stop motion task).	Disconnect power from drive and check emergency stop procedure.
128	MPOLES/FPOLES not an integer.	Ratio of motor poles to feedback poles must be a whole number.	Change to a compatible feedback device.
129	Heartbeat lost.	Heartbeat lost.	Check CANopen cabling. Reduce bus load or increase the heartbeat update time.
130	Secondary feedback supply over current.	Problem in secondary feedback detected.	Check secondary feedback (X9 connection).
131	Emulated encoder line break.	Problem in secondary feedback detected.	Check secondary feedback (X9 connection).
132	Emulated encoder Z break.	Problem in secondary feedback detected.	Check secondary feedback (X9 connection).
134	Secondary feedback illegal state.	Problem in secondary feedback detected.	Check secondary feedback (X9 connection).
201	Internal RAM failed.	Hardware failure detected.	Restart drive. If issue persists, contact technical support.
202	External RAM failed.	Hardware failure detected.	Restart drive. If issue persists, contact technical support.
203	Code integrity failed.	Software failure detected. FPGA register access failure occurred.	Restart drive. If issue persists, contact technical support.
204-232	EEPROM failures (multiple)	EEPROM failure detected. See installation manual for details.	Restart drive. If issue persists, exchange drive.
234	Control temperature sensor 1 high. Warning issued prior to fault.	High temperature limit reached.	Check cabinet ventilation system.

Fault	Message/Warning	Cause	Remedy
235-237	Power temperature sensor 1, 2, or 3 high. Warning issued prior to fault.	High temperature limit reached. See installation manual for details.	Check cabinet ventilation system.
240	Control temperature sensor 1 low. Warning issued prior to fault.	Low temperature limit reached. See installation manual for details.	Check cabinet ventilation system.
241-243	Control temperature sensor 1, 2, or 3 low. Warning issued prior to fault.	Low temperature limit reached. See installation manual for details.	Check cabinet ventilation system.
301	Motor overheated. Warning issued prior to fault.	Motor overheated.	Check ambient temperature. Check motor mounting heat sink capability.
302	Over speed.	Motor exceeded MOT. OVERSPEED value.	Look for overshoot or lower requested speed.
303	Runaway.	Motor did not follow command values.	Gains are too low; motor is being over driven.
304	Motor foldback. Warning issued prior to fault.	Maximum motor power has been exceeded; the power has been limited to protect the motor	Motion is requiring too much power. Change move profile to reduce load on motor. Check for load jamming or sticking. Check that current limits are set correctly.
305	Brake open circuit.	Motor brake open circuit.	Check cabling and general functionality.
306	Brake short circuit.	Motor brake short circuit.	Check cabling and general functionality.
307	Brake closed during enable state.	Motor brake closed unexpectedly.	Check cabling and general functionality.
401	Failed to set feedback type.	Feedback is not connected or wrong feedback type selected	Check primary feedback (X10 connection).
402	Analog signal amplitude fault.	Analog signal amplitude is too low. Analog fault (resolver signal amplitude or sin/cos amplitude)	Check primary feedback (X10 connection), resolver and sine/cos encoder only.
403	EnDat communication fault.	General communication problem with feedback.	Check primary feedback (X10 connection), EnDat only
404	Hall error.	Hall sensor returns invalid Hall state (111, 000).	Check the feedback wiring.
405-407	BiSS faults (multiple).	Bad communication with the feedback device. See installation manual for details.	Check primary feedback (X10 connection), BiSS only.

Fault	Message/Warning	Cause	Remedy
408-413	SFD faults (multiple).	Bad communication with the feedback device. See installation manual for details.	Internal feedback failure. Return to manufacturer for repair.
414	SFD single corrupted position. Warning issued prior to fault.	Bad communication with the feedback device.	Internal feedback failure. Return to manufacturer for repair.
415	SFD multiple CRC error.	General communication problem with feedback (internal feedback failure).	Check primary feedback (X10 connection). Contact manufacturer for repair.
416	SFD transfer incomplete.	General communication problem with feedback (internal feedback failure).	Check primary feedback (X10 connection), SFD only.
417	Broken wire in primary feedback.	In primary feedback, a broken wire was detected (incremental encoder signal amplitude).	Check feedback cable continuity.
418	Primary feedback power supply.	Power supply fault for primary feedback.	Check primary feedback (X10 connection).
419	Encoder init procedure failed.	Phase find procedure did not complete successfully.	Check encoder wiring. Reduce/balance motor load prior to phase finding.
424	Resolver amplitude low.	Resolver signal amplitude is below minimum level.	Check primary feedback (X10 connection).
425	Resolver amplitude high.	Resolver signal amplitude is above maximum level.	Check primary feedback (X10 connection).
426	Resolver error.	Resolver excitation fault.	Check primary feedback (X10 connection).
427	Analog low.	Analog signal amplitude low.	Check primary feedback (X10 connection).
428	Analog high.	Analog signal amplitude high.	Check primary feedback (X10 connection).
429	Incremental low.	Incremental encoder signal amplitude is below minimum level.	Check primary feedback (X10 connection).
430	Incremental high.	Incremental encoder signal amplitude is above maximum level.	Check primary feedback (X10 connection).
431	Secondary feedback Hall error.	Secondary feedback illegal Hall state (000,111).	Check X9 connection.
432	Communication fault.	General communication problem with secondary feedback.	Check secondary feedback (X10 connection).
437	Close to limit.	Drive or motor over current or over speed warning.	Check for increased load, jamming or sticking. Is position error set too low?

Fault	Message/Warning	Cause	Remedy
438	Following error (numeric) (Warning issued prior to fault.)	Motor did not follow command values. Motor exceeded maximum position allowed error.	Check for increased load, jamming or sticking. Is position error set too low?
439	Following error (user).	Motor did not follow command values.	Check feedback commutation setup and tuning parameters.
450	Following error (presentation).	Motor did not follow command values.	Check feedback commutation setup and tuning parameters.
501	Bus over voltage.	Bus voltage too high. Usually, this problem is load related.	Reduce load or change motion profile. Check system regen capacity; add capacity if needed. Check mains voltage.
502	Bus under voltage. Warning issued prior to fault.	Bus voltage below threshold value.	Check mains voltage.
503	Bus capacitor overload. Warning issued prior to fault.	Single phase AC input on a drive only rated for three-phase input or excessive single-phase power load.	Check mains voltage.
504	1V2 over voltage	Internal supply voltage fault detected.	Check wiring for electromagnetic compatibility (EMC). If issue persists exchange drive.
505	1V2 under voltage		
506	2V5 over voltage		
507	2V5 under voltage		
508	3V3 over voltage		
509	3V3 under voltage		
510	5V0 over voltage		
512	5V0 under voltage		
513	+12V0 over voltage		
514	+12V0 under voltage		
515	-12V0 over voltage	Regen resistor short circuit.	Regen IGBT short circuit. Contact technical support.
516	-12V0 under voltage		
517	Analog 3V3 over voltage	Regen resistor overload.	Motor is being overhauled or motor is being stopped too quickly.
518	Analog 3V3 under voltage		
519	Regen short circuit.	Regen resistor short circuit.	Regen IGBT short circuit. Contact technical support.
520	Regen overload.	Regen resistor overload.	Motor is being overhauled or motor is being stopped too quickly.
521	Regen over power. Warning issued prior to fault.	Too much power stored in regen resistor.	Increase regen resistor capacity. Use larger regen resistor or use DC bus sharing to dissipate power.

Fault	Message/Warning	Cause	Remedy
523	Bus over voltage FPGA	Bus over voltage hard fault.	Check mains voltage and check system regen capacity.
524	Drive foldback. Warning issued prior to fault.	Maximum drive power has been exceeded. The power has been limited to protect the drive.	Motion requires too much power. Change move to reduce load on drive profile.
525	Output over current.	Current exceeds drive peak.	Check for short or feedback faults.
526	Current sensor short circuit.	Current sensor short circuit.	Restart drive. If issue persists, contact technical support.
527	Iu current AD converter stuck.	Hardware failure detected.	Restart drive. If issue persists, contact technical support.
528	Iv current AD converter stuck.	Hardware failure detected.	Restart drive. If issue persists, contact technical support.
529	Iu current offset limit exceeded.	Hardware failure detected.	Restart drive. If issue persists, contact technical support.
530	Iv current offset limit exceeded.	Hardware failure detected.	Restart drive. If issue persists, contact technical support.
531	Power stage fault.	Hardware failure detected.	Restart drive. If issue persists, replace drive.
602	Safe torque off.	Safe torque off function has been triggered.	Reapply supply voltage to STO if safe to do so.
701	Fieldbus runtime.	Runtime communication fault.	Check fieldbus connections (X11), settings, and control unit.
702	Fieldbus communication lost.	All fieldbus communication was lost.	Check fieldbus connections (X11), settings, and control unit.
703	Emergency timeout occurred during axis disable.	Motor did not stop in the timeout defined.	Change timeout value, change stop parameters, or improve tuning.

Kollmorgen Customer Support:

North America
E-mail: support@kollmorgen.com
Internet: www.kollmorgen.com
Phone: 1-540-633-3545
Fax: 1-540-639-4162

Europe
E-mail: technik@kollmorgen.com
Internet: www.kollmorgen.com
Phone: +49 (0) 203 99 79 0
Fax: +49 (0) 203 99 79 155