Demag Crane Error Codes

Understanding Demag Crane Error Codes: A Comprehensive Guide for Operators and Technicians

Demag cranes are renowned worldwide for their reliability, precision, and heavy-duty performance in industrial settings. However, like all sophisticated machinery, they rely on complex electronic control systems that communicate operational status through a series of diagnostic signals. When something goes wrong, the crane's control panel displays specific **Demag crane error codes** that serve as the first line of defense in troubleshooting. Understanding these codes is essential for minimizing downtime, ensuring safety, and maintaining productivity on the factory floor or in the warehouse. This article provides an in-depth look at Demag crane error codes, their meanings, and practical steps for diagnosis and resolution.

What Are Demag Crane Error Codes?

Demag crane error codes are alphanumeric or numeric signals generated by the crane's control system—typically the frequency inverter, the Demag DC drive, or the crane's programmable logic controller (PLC)—when a fault or abnormal condition is detected. These codes appear on the pendant display, the control cabinet display, or a handheld diagnostic tool. They indicate issues ranging from simple operator errors to critical mechanical failures. Recognizing and interpreting these codes promptly allows maintenance teams to address problems before they escalate into costly repairs or safety hazards.

The error code system is designed to be universal across many Demag crane models, including the Demag DK series, Demag DH hoists, and Demag overhead traveling cranes. However, depending on the specific model and the version of the control software, the exact code format and description may vary slightly. Always consult the crane's service manual for the most accurate interpretation.

Common Demag Crane Error Codes and Their Meanings

Below is a breakdown of some of the most frequently encountered Demag crane error codes. These are grouped by category to help you quickly identify the nature of the problem.

Frequency Inverter Faults

The frequency inverter is the heart of the crane's variable speed control. Errors here often relate to electrical supply, motor load, or internal component failures.

- **E01** – *Overcurrent Fault*: This indicates that the current drawn by the motor has exceeded the inverter's maximum rating. Common causes include a seized gearbox, a locked rotor, or a short circuit in the motor windings. Immediate inspection of the mechanical drive train is recommended.
- **E02** – *Overvoltage Fault*: The DC bus voltage inside the inverter has risen above the safe threshold. This often occurs during rapid deceleration when regenerative energy from the motor feeds back into the inverter. Check the braking resistor and the deceleration ramp settings.
- **E03** – *Undervoltage Fault*: The input voltage has dropped below the inverter's operating range. This can be caused by a weak power supply, loose connections, or a blown fuse. Inspect the main power feed and the contactors.
- **E04** – *Inverter Overtemperature*: The inverter's internal heatsink has exceeded its temperature limit. Ensure that cooling fans are operational and that the inverter cabinet is not obstructed by dust or debris.
- **E05** – *Motor Overtemperature*: The motor's thermal protection has been triggered. Allow the motor to cool and check for excessive load, high ambient temperature, or a faulty cooling fan.

Encoder and Feedback Errors

These codes indicate problems with the speed or position feedback devices, which are critical for smooth and accurate crane movements.

- **E06** – *Encoder Signal Loss*: The inverter has lost the signal from the motor encoder. Check the encoder cable for damage, loose connectors, or interference. The encoder itself may be faulty.
- **E07** – *Encoder Phase Error*: The phase relationship between the encoder channels (A and B) is incorrect. This may indicate a misaligned encoder or a wiring issue.
- **E08** – *Speed Feedback Mismatch*: The actual motor speed as reported by the encoder does not match the commanded speed. This can be a sign of a slipping motor brake, a mechanical overload, or an encoder calibration error.

Brake and Safety Circuit Faults

Given the critical nature of crane safety, faults in the brake system and safety circuits are displayed prominently.

- **E09** – *Brake Open Fault*: The brake has failed to open when the motor was commanded to move. Check the brake

coil, the brake rectifier, and the mechanical linkage for sticking or wear.
- **E10** – *Brake Close Fault*: The brake has failed to engage when the motor was stopped. This is a serious safety hazard. Inspect the brake lining thickness, the spring tension, and the electrical supply to the brake.
- **E11** – *Limit Switch Activated*: One of the travel limit switches has been triggered. This is a normal protective function, but if it occurs unexpectedly, check for misadjustment, mechanical obstruction, or a faulty switch.
- **E12** – *Emergency Stop Circuit Open*: The emergency stop chain has been interrupted. This could be due to a pressed E-stop button on the pendant, a remote control, or a control cabinet door switch. Reset the E-stop devices and verify the circuit continuity.

Communication and Control System Errors

Modern Demag cranes use fieldbus systems like CANopen, PROFIBUS, or EtherNet/IP for communication between components.

- **E13** – *CAN Bus Communication Error*: Data transmission between the inverter, the crane control module, or the pendant has been lost. Check the bus cables, terminators, and the network node settings.
- **E14** – *Pendant Communication Loss*: The control panel has lost connection to the pendant or remote control. Inspect the pendant cable, connector pins, and the receiver module.
- **E15** – *Configuration Data Error*: The control system has detected a mismatch in its parameter settings. This can happen after a firmware update or a battery failure on the controller. Restore the factory settings or reload the saved parameter file.

Load and Mechanical System Codes

- **E16** – *Overload Fault*: The load cell has measured a weight above the crane's rated capacity. The crane will typically stop all lifting motions. Reduce the load and inspect the load cell and its wiring for damage.
- **E17** – *Load Cell Signal Error*: The signal from the load cell is out of range or unstable. Check the load cell cable and the mechanical mounting for stress or damage.
- **E18** – *Slack Rope Detection*: The rope tension monitoring system has detected slack. This may occur when the hook block is resting on the ground or when the rope has jumped off the drum sheave. Inspect the rope path and the tension sensor.

How to Diagnose Demag Crane Error Codes

When a Demag crane error code appears, follow a systematic diagnostic approach to ensure safety and accuracy:

1. **Record the exact error code**: Write down the full code as displayed. Note any accompanying symbols or numbers.
2. **Check the crane's service manual**: Demag provides detailed error code tables for each model. Use the manual to confirm the code's meaning and the recommended troubleshooting steps.
3. **Perform a visual inspection**: Look for obvious signs of trouble, such as damaged cables, tripped circuit breakers, unusual noises, or overheating components. Pay special attention to the areas indicated by the error code.
4. **Use a diagnostic tool if available**: Many Demag inverters and control systems can be accessed via a laptop or a handheld programmer. Connect the tool to read the fault history, real-time data, and parameter settings. This can provide deeper insight, such as the exact voltage or temperature readings at the time of the fault.
5. **Reset the error and test**: After performing initial checks, clear the error code using the reset procedure specified in the manual. Run the crane at slow speed without a load to see if the code returns. If it does, the problem is still active and requires further investigation.

Troubleshooting Common Demag Crane Error Codes

Here are some practical troubleshooting strategies for the most frequent error scenarios:

For Overcurrent (E01) and Overvoltage (E02) Faults

These often occur together or sequentially. Start by checking the mechanical load. Is the crane trying to lift a heavier load than normal? Is the trolley moving against a jammed rail? If the mechanical side is clear, examine the inverter's acceleration and deceleration settings. Ramp times that are too short can cause current and voltage spikes. Adjust these parameters within the manufacturer's recommended range. Also, inspect the braking resistor for signs of cracking or overheating.

For Encoder Errors (E06, E07, E08)

Begin by wiggling the encoder cable at both ends while the crane is idling. If the error code flickers or changes, the cable is likely damaged. Replace the cable with a shielded, twisted-pair type as specified by Demag. If the cable is intact, remove the encoder and check its coupling. A loose or worn coupling can cause signal dropout. Clean the encoder lens if it is an optical type, and verify that the encoder's supply voltage is within specification.

For Brake Faults (E09, E10)

Safety is paramount. Lock out and tag out the crane before inspecting the brake. Measure the voltage at the brake coil terminals during operation. If voltage is present but the brake does not open, the coil may be burned out. Check the brake rectifier for diode failure. For mechanical sticking, clean and lubricate the brake linkage and check the air gap between the brake disc and the magnet. Replace worn brake linings immediately.

For Communication Errors (E13, E14)

Start by cycling power to the entire crane control system. Sometimes a simple reboot clears a transient communication glitch. If the code returns, check the physical connections. For CAN bus errors, verify that the bus terminators are properly installed at the two ends of the network. For pendant communication errors, swap the pendant with a known working unit if available. If the error follows the pendant, the pendant is faulty. If it stays with the crane, the receiver or the control module may be the issue.

Preventive Maintenance to Avoid Error Codes

Many Demag crane error codes can be prevented through regular maintenance. Here are key practices to keep your crane running smoothly:

- **Keep the control cabinet clean**: Dust buildup on inverters and circuit boards can cause overheating and short circuits. Use compressed air to clean the cabinet at least twice a year.
- **Inspect cables and connectors**: Flexing cables on hoists and trolleys are prone to fatigue. Check for cracks, kinks, and broken strands. Replace any damaged cables immediately.
- **Monitor brake wear**: Check brake lining thickness regularly. Most Demag cranes have wear indicators. Replace linings before they reach the minimum thickness.
- **Test limit switches and safety devices**: Verify that travel limits, overload sensors, and emergency stops function correctly on a weekly basis. Keep a

