

## CTI-M-DigSpd Error Code Definition and Problem Resolution

When the CTI speed control encounters a problem with a Middleby conveyor drive system, the control will generate an error message. For most error conditions the controller will also shut down the conveyor system. There is one exception being a high ambient condition, which will allow the oven conveyor to continue to operate. All error conditions will display an error message and also log the error to memory. The error codes are defined below

**“High Crn LOAD”** This indicates that the motor is drawing too much current or there is a mechanical problem in the oven drive system causing the motor to stall. This error is logged as error code “1”.

**“HALL SEnS”** This indicates that the controller is not receiving pulses from the hall-effect speed sensor or excess electrical noise is being generated on the sensor leads, due to bad grounding. This error is logged as error code “2”.

**“Hot nnnF Bad FAn xxxF”** This indicates the temperature (x = temperature) inside the control compartment is greater than 170 deg F. The electronic controls / wiring are being damaged by heat. Replace/ cooling fans or repair exhausts hood. The control compartment temperature can be obtained under normal operating temperatures by simultaneously pressing the up and down buttons on the speed control display. This error is logged as error code “3”.

**“DISP BUTn”** This indicates that the display overlay covering the switches is damaged, causing a switch to stay down. This error is logged as error code “4”.

**“OPEn LOAd”** This indicates that the motor wiring, motor winding or motor brushes are open. Logged as error code “5”

Logged error codes are visible for the first second of power up. To clear a logged error from memory: enter test mode. Test Mode is described on page 2 of the speed control operating manual Table 1.

For all error conditions, remove power, correct the problem and re-apply power. See the table below for more information.

### Trouble shooting guide:

Oven Symptom	Speed control LED Display	Fault Condition	Likely Source of Problem in Order
Conveyor is stopped	<b>HIGH Crn LOAD</b> or <b>HHHH</b>	Over Current	<ol style="list-style-type: none"> <li>1. Conveyor is catching, dragging or is misadjusted</li> <li>2. Motor is bad</li> <li>3. Short in oven terminal block</li> <li>4. Wiring problem</li> </ol>
Conveyor is stopped	<b>HALL SPd SEnS</b>	Speed sensor pulse was not received by controller  <b>Motor is not turning at start-up</b>  Stalled motor (PS200 oven)  Unshielded sensor wiring inside oven (PS350). Change to shielded wire and connect shield to ground.  Oven is missing the dedicated ground	<ol style="list-style-type: none"> <li>1. Sensor is not connected to speed control</li> <li>2. Sensor wiring error (red = 5v, Black=ground, white=sense)</li> <li>3. Bad speed sensor</li> <li>4. <b>Earth Ground to oven frame is missing.</b></li> <li>5. Short in oven terminal block</li> <li>6. Sensor ground shield not connected to oven chassis (Do not use unshielded sensor wire)</li> </ol> <p><b>If problem is still not found, use Test Mode to derive additional information as follows:</b></p> <ul style="list-style-type: none"> <li>• Remove power and select test mode using dip switches (all down)</li> <li>• Re-apply power</li> </ul> <p><b>Display should read 22 (+- 5) (for Middleby 360 oven).</b> <b>If display is = 0 (and motor is turning) then problem is bad hall sensor or wiring.</b> <b>Else if display is less than 15 then there is a heavy motor load.</b> <b>Else if display is greater then 30 then there is excess noise on sensor cable or bad connections in the junction box.</b> <b>If motor and speed sensor have been replaced, try bypassing the oven's speed sensor wiring by connecting the speed sensor directly to speed board (this will require 8 ft of shielded 3 conductor cable). The metal shield braid must be connected to chassis ground.</b></p> <p><b>Open wire to motor, open motor winding or worn motor brushes</b></p>
No Symptoms	<b>Err Hot n Bad FAn n</b> <b>n = temperature degrees F</b>	<b>Speed control temperature &gt; 170F due to bad cooling fan</b>	<ol style="list-style-type: none"> <li>1. Check oven cooling fans and exhaust hood.</li> <li>2. Verify fans are blowing in correct direction (both inward).</li> <li>3. Press up and down buttons simultaneously to obtain temperature</li> </ol>
Conveyor runs slow and/or changes speed/stops on its own	Display is normal and does not display any error messages.	Electrical noise generated from bad oven grounds or oven speed sensor wiring is damaged.	<ol style="list-style-type: none"> <li>1. Connect hall speed sensor directly to speed board, bypassing oven junction box and wiring inside oven with 8' of shielded wire</li> <li>2. Verify that the oven has a dedicated ground from the building's breaker box. Verify motor shield wire and sensor shield is connected to oven's chassis ground lugs.</li> <li>3. Set speed control's dip switches to test mode to obtain more data. A high reading indicates an electrical noise problem.</li> </ol>
Conveyor is stopped	No display (not lit)	Missing 110Vac,  Motor short to chassis ground,	<ol style="list-style-type: none"> <li>1. Missing 110VAC input to control</li> <li>2. Bad motor. With motor disconnected, check resistance of each of the motor + / - leads to motor chassis ground wire (should be &gt; 10k ohm). If low resistance then the motor is shorted and the internal 2 amp fuse in the speed control has blown. Call for service information (wrong fuse voids warranty) .</li> </ol>
Speed changes itself or can't be changed	<b>“DISP BUTn”</b>	Overlay decal Display cable	<ol style="list-style-type: none"> <li>1. Pressing Up or down arrow does not change speed, but instead, changes display to read temperature in degrees F.</li> <li>2. Display decal or cable is damaged. Replace decal or display</li> </ol>