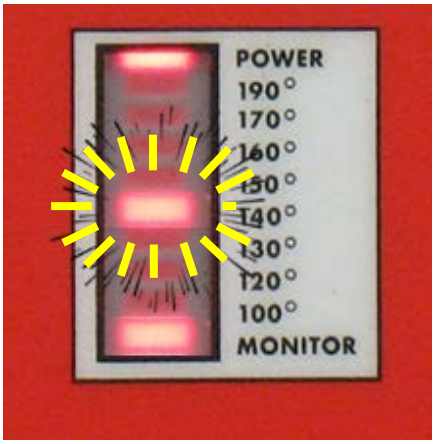
Digital Energy Manager
140° Flash Troubleshooting Guide



Meaning

The 140° Flash on the Digital Manager indicates the boiler return temperature has not heated above 120°F in 15 minutes for oilheat systems, or in 75 minutes for gas systems with option switch #1 in the ON position. After 5 more minutes, the manager will latch into this mode and turn ON the monitor light, turn OFF the B-B dry contact (which connects to T-T on the burner), and open all zone valves except hot water.

Possible Causes

The 140°F Flash can be caused by issues such as a burner primary control lockout (the manager CANNOT cause a burner lockout), zone valves failed in the open position or bypassing (typically in high water volume systems), or by a main circulator failure or a blocked or shut off bypass that prevents flow.

Fixes

The steps to fix the 140° Flash depend on what is preventing the return from heating quickly, see troubleshooting below. Briefly cycle the power to reset the manager and clear the 140°F Flash code. If the problem is not corrected, the 140°F Flash code will return.

Troubleshooting

1) **Remove the air box cover**
   If the burner primary control is in lockout (flashing red light on Beckett, screen displays "lockout" on Carlin), reset the primary control and continue troubleshooting as a standard burner lockout. Check fuel supply, puff switch, sidewall vent inducer if present, etc. Sometimes a homeowner will reset the primary control, clearing the lockout, but not recycling power to clear the 140° Flash. Check with the homeowner to ensure the primary was not reset before you arrived.

2) **Cycle the power and check that the circulator is functioning**
   Turn the power (switch on left side of the manager) OFF and then ON again. When the power is turned on and the digital manager performs a self-check and it will pulse power to the circulator. Watch the T&P gauge. When the circulator pulses, the pressure gauge should move slightly, indicating the circulator is receiving power and generating pressure. If there is no pulse, troubleshoot the circulator: Check for power at the circulator, ensure it is not air-bound, confirm the circulator relay functions. Replace or rebuild the circulator if it has failed. Repeatedly cycling the power (10+ times) can help uncover an intermittent circulator problem, wiring, or an intermittent relay.
   Cycling the power will clear the 140°F Flash, although it will return if the root cause was not corrected.

3) **Ensure the bypass is open and not plugged**
Procedure:

Ensure the ball valve in the bypass is at least ½ open. Assuming the bypass was at least partially open, create a thermostat call by turning up a thermostat (or open a hot water faucet), or carefully place a jumper between A1 and T1 (or other thermostat connection on the manager). The burner should fire and begin preheating. If the bypass is plugged (a plate exchanger is often located in the bypass for domestic hot water), the boiler will fire to temperature high limit, but the temperature display on the manager will remain low. No flow may cause steaming or banging noises in fouled pressure vessels. Cleaning the plate exchanger and/or pressure vessel (with Sizzle or Haymaker scale cleaners) will open up a moderately plugged plate or scaled vessel. No hot water will be produced with a completely plugged plate heat exchanger, which may require replacement if it cannot be cleaned and flushed.

4) **Ensure the zone valves are functioning**
Procedure:

In high mass systems (high water volume, cast iron radiators, converted steam systems, etc), a zone valve failed open can provide a large quantity of cold return water to the boiler, preventing it from heating. The boiler will function as expected, except the return temperature will remain below 120°F for 20 minutes or more. You should be able to feel the heat bleed past the zone valves into the supply piping to the house. Alternatively, temporarily close a ball valve to isolate the boiler from the system to see if it reaches operating temperature (this should only take 2-3 minutes). Repair or replace any zone valves which do not function properly. If the system has primary/secondary piping with no isolation/injection zone valve (not recommended), throttle the zone return ball valve to allow the boiler to properly preheat through the bypass while the zone is open.

5) **Check wiring**
Procedure:

Ensure the right hand quick connect is tight (squeeze connectors slightly with pliers). Check for frayed wires, shorts, or loose connections. Check continuity of B1-B2 with a burner call (the burner light ON) and trace this to the burners T-T. Confirm the burner service switch is ON (switch on right side of the manager) and that the burner has line voltage power. Check the 24 VAC input and the 120VAC output of the relay board inducer, and burner/main circulator connections. Check the limit aquastat for continuity and confirm it is set for 215°F with a 10°F differential and confirm proper operation at this set point temperature.

For more assistance, contact Energy Kinetics' Technical Support at 800-323-2066