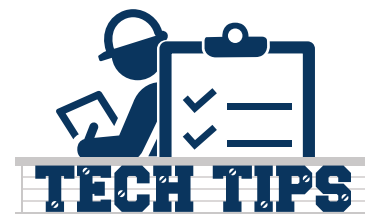




## POWER-STEALING THERMOSTATS AND MODERN HVAC SYSTEMS

Today's HVAC systems increasingly incorporate solid-state electronics, from Integrated Furnace Controls (IFC) to the latest Mitigation Control Boards (MCB) and Refrigerant Detection Systems (RDS) designed for A2L refrigerants. While these advancements improve system performance and safety, they also create challenges when paired with power-stealing thermostats, which may prevent the system from operating correctly.



Modern thermostats—particularly those with high-resolution displays, Wi-Fi connectivity and smart features—can draw significant power. Though many store backup energy in batteries or supercapacitors to preserve memory during power loss, these storage methods are not intended to sustain full thermostat functionality. Instead, a dedicated common wire (“C wire”) is required to reliably power these devices. This wire delivers power between the R/RH/RC (+24VAC) and B/C (-24VAC) terminals, transferring the electrical load from the thermostat's batteries to the HVAC equipment's transformer.

However, IFCs and MCBs use solid-state electronics to detect heating or cooling calls from the thermostat. These circuits often do not provide sufficient electrical load for power-stealing thermostats to function reliably. With the introduction of A2L refrigerant requirements and MCBs supplying power to outdoor components, we've received increasing reports of erratic operation. In these configurations, the contactor coil is no longer part of the power path, eliminating the thermostat's indirect connection to common. As a result, the MCB may misinterpret voltage at Y/Y1 as a call to activate the outdoor unit—even during gas heating—leading to unintended operation.

The solution is straightforward: a dedicated common wire. Once a common wire is connected, the thermostat no longer attempts to steal power through the MCB, resolving the operational issues.

To ensure reliable, full-featured HVAC performance over the life of the system, always provide a common wire to the thermostat. If your existing wiring lacks a spare conductor, consider one of the following options:

- Run a new wire bundle that includes a common conductor.
- Install a thermostat that does not require a common wire or power stealing.
- Use accessories such as common wire adapters, Fast-Stat extenders, Equipment Interface Modules (EIMs) or relay panels to free up an existing conductor.

Refer to the thermostat manufacturer's documentation to determine wiring requirements and system compatibility. Above all, choose a solution that prioritizes long-term system reliability and performance.