

ADVANCED ROOFTOP UNIT CONTROLS BEST PRACTICE TIPS

Note for Utilities: The following content may be used in a newsletter, blog post, social media post or website to help facility owners, property managers, and trade allies understand good applications for advanced rooftop unit controls, and best practices for installation. If you choose to cut and paste this content, please delete this intro paragraph.

Good Applications

- Building managers who would find the fault detection and alarming, often available through a remote interface, useful for managing their buildings
- An ideal RTU for ARC has at least five years of useful life remaining; typically, units less than 15 years old are a good fit for ARC installation.
- Units with a capacity of five tons or greater and run hours beyond the traditional 40-hour schedule are excellent candidates.
- Retail spaces, offices, and warehouses present better opportunities because they are often served by multiple large tonnage RTUs with higher than average run hours.

Best Practices

- Ensure there is space in the RTU to install the VFD. If not, find an acceptable mechanical room or weatherproof enclosure nearby to install it. Guaranteeing the VFD will physically fit inside the unit is important to keep your costs in line.
- If you plan to replace the fan motor, depending on the size, you may consider using an ECM motor. Though they cost more, the benefit of upgrading to an ECM is that you not only get a more efficient fan motor, but you also forego the need to install a VFD, saving money on the overall ARC installation.
- For ARC Full solutions, you need to also check the economizer functionality. If the unit has an existing economizer, an actuator should exist. However, it's very common for economizer linkages to be broken, especially on older units, so check that the actuator is functioning properly if you are planning to continue to use it. If ordering a new actuator, consider upgrading to one that has a feedback wire to allow the ARC to know the damper position as well as the ability to alarm if the damper or linkage becomes broken.
- For ARC Full solutions, do not install the outside air sensor against bare sheet metal or in direct sunlight, as that can inflate the temperature readings on sunny days.
- For ARC Full solutions, whenever possible, use a standoff to place the return-air sensor in the midpoint of the air stream. Simply placing the sensor above the return air damper will produce false readings and lead to comfort complaints.

- While default ARC Full solutions typically have preset CO₂ thresholds, it is recommended that installers reference ASHRAE Standard 62.1 to establish appropriate minimum and maximum setpoints for the demand control ventilation algorithm.
- Discuss the setpoints with the building's decision maker or facility manager. A default minimum of 40% fan speed for ventilation mode is typically set; however, lowering the fan speed further can save even more energy.
- For ARC Full solutions, establish the economizer control, consistent with ASHRAE Standard 90.1. Choose an appropriate control type and high-limit shutoff setpoint. Also, though fixed dry bulb is the most broadly applicable economizer control type that ARC solutions allow, using a differential dry bulb sensor control is preferred if possible.
- Some ARC Full installations also have the ability for remote access. If so, train the building operator to use the remote access and control capabilities. At a minimum, they should be able to:
 - Log into the web-based platform
 - Check set-points, schedules and equipment status
 - Be set up to receive fault status and alarms
 - Modify setpoints if needed