

CLIMATE CONTROL WITHOUT WIRES

With increased demand for intelligent climate control systems, more and more HVAC installations deploy VAV/VAQ terminals that allow temperature control in such centralised air conditioning systems. However, installation of these VAV terminals with thermostats and sensors pose numerous challenges.

Consider a scenario where we require climate control in a building with nearly 200 occupants. Depending on the zoning of the building, upto 80 VAV/VAQ stations may need to be installed at supply air with thermostats in their respective zones. Given this scenario, here are some of the most common challenges faced during installation, commissioning, & operation of this VAV/VAQ based cooling system.

CONNECTING VAV/VAQ TO THERMOSTAT

The amount of 4C X 1.5 sq. mm cable & conduit required for connecting the VAV/VAQs with their respective thermostats will be approximately 2,000 metres with 450 terminations, consuming almost 400 electrician hours.

BMS INTEGRATION OF VAV/VAQs

In addition to above another 2C X 1.5 sq. mm, cabling will be required for upto 4,000 metres of cable & conduit for BMS integration of VAV/VAQs, accounting for another 400 electrician hours with 100 BMS engineer hours.

FAULT DETECTION DURING COMMISSIONING

Once the installation is complete, the entire system will require testing and troubleshooting. This will lead to additional man hours. Furthermore, fault detection and rectification may also result in damage to costly controllers involved in the wiring.

Reworks in tight ceiling space often with no suitable access may lead to complicated wiring mesh above the ceiling further compounding the problem of operation and maintenance.

Need may arise for thermostat relocation due to change in interior plans or previous location may simply be incorrect.

CHALLENGE OF COMPLETION DEADLINES

During the completion, all the agencies (Fire, HVAC, & BMS) could be found stuck in the maze above the ceiling in a hurry to finish their jobs, getting in each other's way and adding to each other's problems

OPERATIONS AND MAINTENANCE

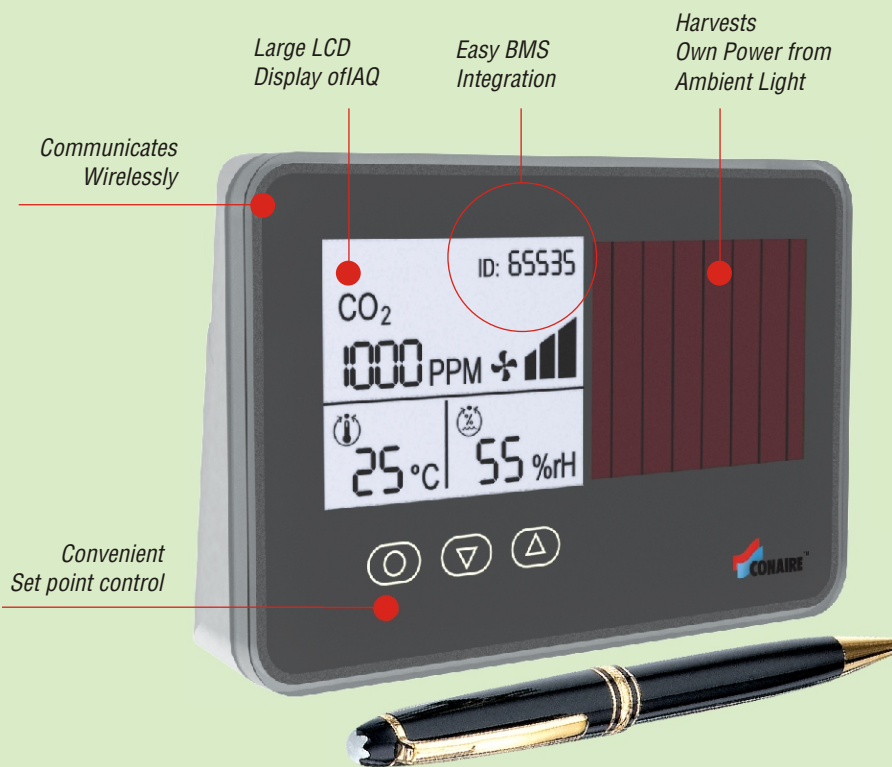
An uphill task for such system, because hurry to complete the project often leaves behind complicated wiring in confined ceiling spaces. Ideally it will require presence of trained engineer familiar with the installation. However most of the time, O&M agency is different from installation agency and moves in after the commissioning and is not familiar with the layout.

To sum up, the wiring and connection of VAV/VAQs with thermostats and their integration with the BMS system is a challenge in terms of both time and money. Bulk of this wired system resides in confined spaces (typically over the ceiling) with difficult access, posing hurdles in trouble shooting, modification and eventually in operation and maintenance.

WIRE FREE SOLAR IAQ CONTROLLER

Conaire present a solution that not only addresses all these issues but offers more in terms of flexibility and ease of use.

A nifty innovation called the Wire Free Solar IAQ from Conaire, is a compact and portable unit that communicates with the VAV/VAQs controller without wires. It also harvests its own energy from the ambient interior lighting, thus eliminating the need for any wiring at all.



Compact & Portable, can be wall mounted or self standing on desktop

A compact unit complete with highly efficient and reliable CO₂, Temperature and Humidity sensors with set-point adjustments and a large display screen.

It has a Wire-free advanced application specific control for VAV/VAQ stations allowing easy integration. Additionally a customised BMS monitoring system is also available, that works seamlessly with this unit, again without any requirement for wiring or custom installation.

An optional smoke detector can also be connected with

this controller to provide early warning in case of fire and at the same time strategise and control VAV/VAQ stations, fire smoke dampers and other smoke exhaust systems using Intelligent Damper Control and Monitoring System.

The astonishing features of this path breaking control solution were acknowledged at ACREX 2014, the biggest industrial showing in India for HVAC industry. It was adjudged the best innovation in the green product category.