Scenarios involving end user applications that require more and more electrical equipment in large cabinets are leading to increasing cooling capacity requirements. This is having a significant impact on the way air conditioners are being used and controlled. With the advent of more sophisticated digital controllers, customers have moved from previously having to carefully monitor single, isolated devices to monitoring and controlling multiple devices remotely. Even with these additional highly sophisticated monitoring and control features, there is still the issue of high costs, setup time, more IP addresses and network connectivity.

Emerging technologies are beginning to integrate air conditioners with master-slave applications that are dramatically increasing the cooling capacity for small, medium, and larger size cabinets. Master-slave applications are suitable and applicable to nVent air conditioners of all sizes. nVent air conditioners that are used in a master-slave application have the capability to

- Provide more cooling capacity to a cabinet when more cooling is required
- Use one unit, the master (leading unit), to lead the group in electrical functions such as turning the compressors ON/OFF
- Enter standalone mode if a lost communication alarm occurs and automatically reset after the alarm has cleared
- Utilize the master unit to detect any alarm that has occurred to the slave or neighboring units and automatically reset after the alarm has cleared

**OPERATING FUNCTIONS**

- No cycle power is required for the units after established master-slave selection
- Operate up to four air conditioners included the master unit.

With this innovation, the air conditioners communicate through a TLAN communication port on the controller as shown in Figure 2. Any alarm that occurred to the slave unit will be output to the master unit.

At the same time, the master-slave application also provides the ability to remotely monitor the air conditioners from anywhere, at any time, securely, and looks at devices on a system as all are interconnected. The master-slave application provides a low cost solution with remote access capability with only a single Remote Access Communication board required for one group in a single cabinet as shown in Figure 3.

The advantage of using a single remote access communication board is to
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• Reduce the network connectivity by just using one single network port
• Eliminate the IP address
• Reduce network configuration times
• Reduce materials and labor cost

• Provide the ability to overseeing the temperature setpoint, differential, alarms of the master and slave units remotely
• Have the ability to setup the temperature setpoint and differential to the master and slave units remotely.

It is one of the very first generation of the technologies that integrates with industrial air conditioners.