



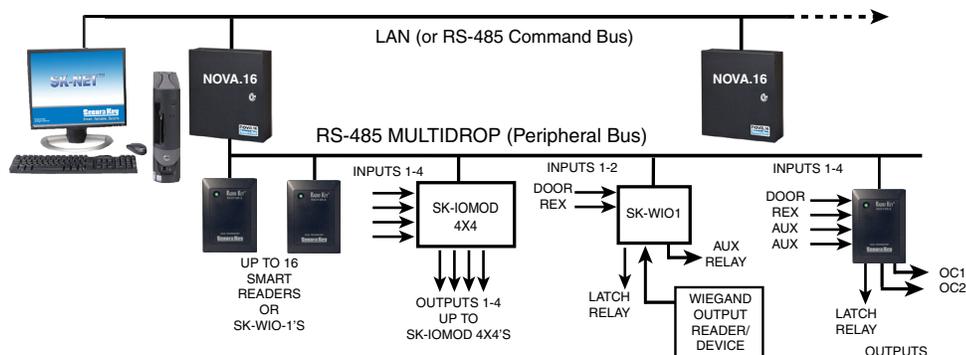
Secura Key's NOVA.16 - Something New for Small Systems

TOPICS COVERED

- Something Old, Something New...
- Processing Power - Where it is Needed
- Obsolescence Creates New Development
- The "Smart Reader" Control Panel
- Why RS-485...Why not POE?
- Installation Savings
- Retrofit Scenarios
- A Powerful Platform for Future Enhancements
- Communications and Power Improvements

Something Old, Something New...

To large Access Control System Integrators, the system architecture of NOVA.16 is very familiar – it is a scaled-down and much less expensive version of classic enterprise-level control panels like the Software House APC or i-Star and the CASI Micro-5. Basically it is a control panel which processes access control decisions for up to 16 readers, connected to the panel via RS-485, where each reader has all the inputs and outputs to control and monitor each door, with no cable home runs back to the control panel from the door locations. To most access control dealers and integrators currently installing 2, 4, or 8-door Wiegand input control panels, NOVA.16 is a fresh new idea that will save them time and money.



Processing Power - Where it is Needed

The beauty of the NOVA.16 system architecture is that the processing power is concentrated where it will be the most effective. Instead of using one control panel with a processor and full system database and transaction storage for every two readers, the processing power and database is consolidated into one panel for up to sixteen readers. Rarely are multiple readers used simultaneously, so the control panel will never be overwhelmed by data traffic. Since every access control panel consumes several square feet of utility room space, and requires its own enclosure, power supply, conduit connections, etc., reducing a 16 door system from eight panels to one panel results in a significant savings in installation cost.

Obsolescence Creates New Development

Secura Key has long offered the SK-ACP 2-door control panel, but the processor became obsolete, forcing Secura Key to undertake a new development project, resulting in two new access control panels – one was

a replacement for the current 2-door panel (SK-ACPE), and another was a new control panel (SK-MRCP/NOVA.16) that worked with Secura Key's existing RS-485 Smart Readers.

The "Smart Reader" Control Panel

The original RK-XRM RS-485 Smart Reader was designed to be an OEM product, and it eventually became an important component of a major Enterprise Level System. Secura Key sold thousands of RK-XRM Smart Readers to this particular OEM, which allowed Secura Key to test and improve the reader until it was a robust product. The OEM did not use a control panel – they connected the readers directly to their PC software.

When Secura Key considered building a system based on Smart Readers, a Control Panel seemed the logical way to go. The panel, once programmed, could control its readers as a standalone device, even if the PC was disconnected from the LAN, or if the PC locked up or experienced a hard drive failure.

The "smart reader panel" was an entirely new design with no Wiegand inputs, alarm inputs or output relays, and an RS-485 peripheral bus which would handle up to 16 readers - more than enough to handle the average initial installation, and to allow for expansion. A 3-amp thermally-fused dual-output power supply provides reader power for two circuits of up to eight evenly-spaced smart readers, with each circuit extending up to 2000 feet from the panel, using 18/2 cabling, plus CAT5 for data.



Secura Key developed four new smart readers to replace the RK-XRM. The RKDT-SR M/S reads Secura Key Radio Key® or HID® Proximity Cards and key fobs, and it has two additional logic outputs for auxiliary functions and a total of four inputs for monitoring devices such as magnetic reed switches (door contacts), PIRs, Request-to-Exit pushbuttons, etc. It is available in both Mullion-mount and Switchplate configurations. E*Tag® Contactless Smart Readers are also available – ET8-SR-X-M/D reads Secura Key e*Tag® ISO 15693 Contactless Smart Cards and Tags, and has the same number of inputs and outputs as the RKDT model. It is also available in Mullion-mount or Decora® Wallswitch configurations.

The new panel was dubbed NOVA.16, indicating its newness and capacity, and it was installed in a textured black housing (with a standard lock and

tamper switch) to differentiate it from the putty-colored housings used for the 2-door panels. To connect to the PC software, the panel has an Ethernet port, as well as RS232 and RS485 ports for the ultimate in flexibility.

A Wiegand interface adaptor, SK-WIO-1, was developed, allowing non-Secura Key reader types, biometric readers, keypads, long range readers and other Wiegand Output devices to be connected to the NOVA.16 peripheral bus, functioning just like one of the Smart Readers.

Why RS-485...Why not POE?

Some have asked: why do the Smart Readers use RS485 – why not connect them to the NOVA.16 over the network using POE (Power over Ethernet)? The main reason is to keep the cost of Smart Readers down. Readers need a more powerful processor to support TCP/IP, and the additional hardware required for POE also adds cost. The most popular edge-type readers actually have a 100MHz processor running the Linux operating system, and the entire system database is stored at every door – this design overkill makes the system unnecessarily expensive.

A key advantage of RS485 is cable distance – RS-485 has inherent noise cancellation, which allows longer cable distances. You can run RS485 data up to 4000 cable feet from the control panel, but Ethernet has a limit of 300 feet between devices, meaning that you can only locate an edge reader within 300' of the nearest hub, switch or router. This can be a problem if your entrance gate is located 500 feet away from the nearest building, and there is no nearby LAN connection. Another issue is the added cost of the LAN infrastructure to support the access control system and POE. If the customer's routers and switches do not have POE, they either need to upgrade their hardware or add POE injectors. They may also have to add additional POE switches or hubs to support the access control system in areas where they currently do not have LAN infrastructure. IP readers cannot safely be installed in high-risk or outdoor locations, because they literally provide intruders with a direct connection into the corporate network. Of course, IP readers also have their advantages, so we are looking at them as a future possibility.

System Software – Backwards Compatible

Because Secura Key has an existing, mature Windows-based software product, SK-NET™, with a large installed base and many dealers who are familiar with how to program and configure systems, Secura Key decided to leverage SK-NET™, by adding NOVA.16 to the system as a new controller type. Dealers who are familiar with SK-NET™ will find the same conventions are used for reader configuration, and for creating time zones and access groups. A new utility allows easy setup of panel IP addresses over the network, without having to individually connect each panel to a PC or laptop. Control Panel firmware upgrades can be done over the network. Secura Key plans to add popular features such as Elevator Control, Facility Lockdown, and input/output control. Additional Features are planned for the SK-NET™ software, such as mobile applications and additional DVR Integrations.

Installation Savings

NOVA.16 provides tremendous installation savings! Elimination of home run cabling from each door to the control panel could save as much as 50% in installation costs, depending on the layout of the facility. The following

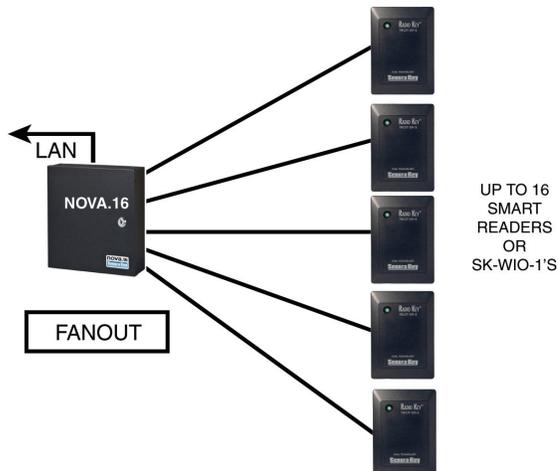
table compares cable requirements for 2 doors with NOVA.16 vs. the typical 2-door Wiegand input panel. One reader is 250 feet away from the panel and the second is 500 feet away. Assume 8 cable feet for each local connection:

Cable Function	NOVA.16	Ft.	2-Door Wiegand Panel	Ft.
Wiegand (data, power, control)	NA		6-conductor, home run	750
Door Monitor	2-cond shield., local to reader	16	2-cond shield, home run	750
Latch	18/2 local to reader	16	18/2, home run	750
REX	2-cond shield., local to reader	16	2-cond shield, home run	750
Alarm Shunt	2-cond shield., local to reader	16	2-cond shield, home run	750
Data	CAT 5 to previous reader/panel	500	NA	
Power	18/2 to previous reader/panel	500	NA	
Total cable length	814'	1064	1500'	5000

The 2-door Wiegand Panel typically uses one 6-conductor Wiegand cable and four cables to handle strike, door monitor REX and alarm shunt. Although each Smart Reader requires data and power from the control panel, these cables are daisy chained, so a home run is not required. The NOVA.16 has two separately fused DC outputs for reader power, and each output can support up to 8 evenly-spaced smart readers on CAT-5 (data) plus 18/2 (power) over a total distance of up to 2000 ft.

Retrofit Scenarios

Many times, an existing access control system needs to be replaced, and the building is already wired for Wiegand output readers with home run connections for Strike, Door Monitor, REX, etc., and the cost of running new cables for Smart Readers is prohibitive from a cost or time standpoint. NOVA.16 will allow RS-485 communications to be fanned-out, such that the existing Wiegand wire could be used to pull the RS-485 cable through the conduit or plenum from the NOVA.16 to the door locations. Door connections can be rewired locally to the Smart Reader. Alternatively, customers with Wiegand input control panels can replace their existing 2-door panels with a pair of SK-WIO-1 wiegand interface boards. The Wiegand readers and field wiring can be left in place, the old controller PCBA can be discarded and two SK-WIO-1's can be installed in each old 2-door panel housing. The SK-WIO-1's can be daisy chained back to the NOVA.16 controller, and the existing field wiring can be connected directly to the SK-WIO-1's.



Fan-out configuration for connecting RS-485 Smart Readers

A Powerful Platform for Future Enhancements

The NOVA.16 is based on a 70 MHz 32-bit ARM Cortex M3 processor with built-in flash, SRAM and Ethernet support. The speed and processing capability of this new chip will enable complex functions, and it will help speed the development of future product enhancements planned for this control panel, which were virtually impossible with the previous platform.

Communications and Power Improvements

NOVA.16 features highly improved input power filtering and a robust power supply to run the Peripheral Bus. The panel can be run on a 40VA AC transformer, and it is virtually immune to brownouts and power failures if the rechargeable backup battery is used. The two thermally-fused power outputs for the smart readers can provide up to 3 amps at 12VDC. NOVA.16 also includes serious transient protection on the peripheral bus. Two gas-discharge tubes, ideal for lightning surge protection, are connected to the RS-485 bus. A heavy duty ground terminal is also provided to help direct surges away from the PC board.

Conclusions

NOVA.16 is designed to save you money, with its revolutionary new and efficient system architecture. It is a state of the art platform, designed to take you into the future. It puts the processing power where it is needed, and its flexibility and range lets you solve almost any configuration challenge. It allows the small-to-midrange system integrator the opportunity to get into larger systems and bid competitively by dramatically reducing installation labor costs.



Contact Info

Secura Key
20301 Nordhoff St.
Chatsworth, CA 91311
www.securakey.com