Application Note AN2009-14

Detention Facility Control Systems

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INTRODUCTION

Detention facility control systems are becoming increasingly complex as more features and design requirements are added. These systems need to allow control from several locations while simultaneously ensuring complete facility security. The setup of a traditional PLC (programmable logic controller) can be overwhelming and time-intensive due to complex network configuration and software programming. Additionally, control hardware must be exceptionally reliable, and communications need to be incredibly robust. Any hardware or communications failures can lead to disastrous consequences.

This application note discusses useful features of the SEL-2440 Discrete Programmable Automation Controller (DPAC) when applied to control doors, lights, alarms, and intercoms in detention facilities as well as its interaction with a SCADA (supervisory control and data acquisition) master.

SEL SOLUTIONS

Robust and Reliable Hardware

SEL robust hardware is built and tested to exceed mission-critical IEEE and IEC protective relay standards. The SEL-2440 DPAC has a combined MTBF (mean time between failures) rating of greater than 300 years.

Easy Remote I/O

Each SEL-2440 DPAC has 48 digital I/O points. Use the free ACSELERATOR QuickSet® SEL-5030 Software to easily add more modules by dragging an SEL-2440 DPAC from the template into your program and addressing the I/O. Another advantage of remote I/O is the reduced cost associated with running a single communications cable instead of 32 or more discrete control wires to each I/O point.

Intuitive Programming

ACSELERATOR QuickSet simplifies device configuration for the SEL-2440 DPAC. For network configuration, ACSELERATOR Architect® SEL-5032 Software is included to quickly connect remote I/O modules and allocate I/O addresses.

Fast and Powerful Communications

Use the utility industry standard communications protocol IEC 61850 to ensure robust and reliable system performance. The IEC 61850 standard was developed to ensure secure, reliable,

and fast communications between IEDs (intelligent electronic devices). The included ACSELERATOR Architect makes network configuration simple and efficient.

Ethernet connectivity allows for easy wiring and network topology—no need to run proprietary, dedicated, and expensive remote I/O wiring. As shown in Figure 1, standard communications protocols provide easy integration into a SCADA host. Built-in Ethernet on each controller minimizes system components.

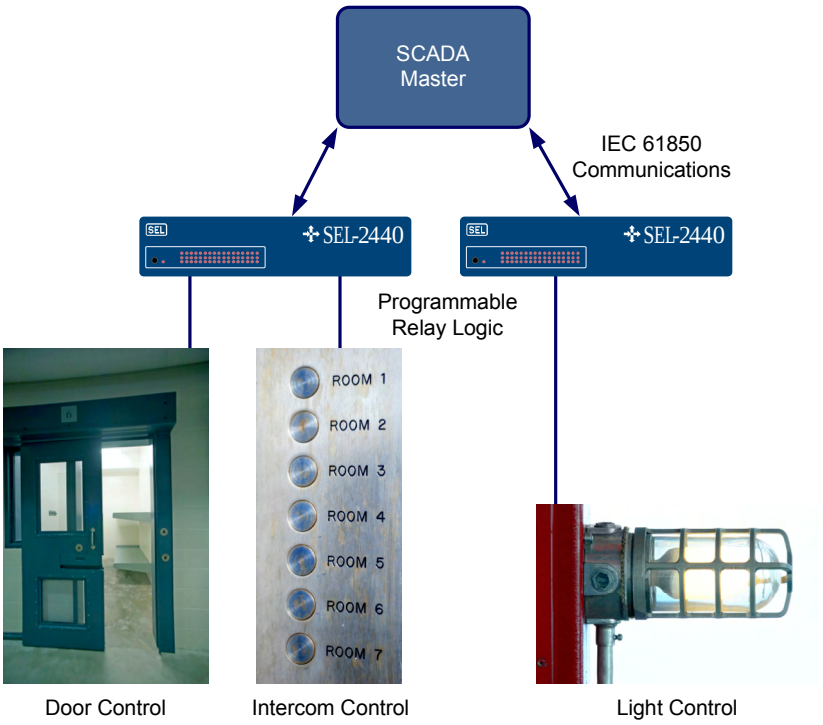

Figure 1 Control Architecture Using the SEL-2440 DPAC for I/O Control

LAN2009-14

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