A Centralized Elevator Monitoring System

ADAM-5510 PC-based Programmable Controllers are used by China-Ryoden, an ODM elevator manufacturer. It is a new centralized elevator monitoring system to report alarm functions through the telephone network.

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INTRODUCTION

The popularity of networking concepts and the Internet has spawned a revolution in the building automation industry. This is especially true among system manufacturers and integrators such as elevator manufacturers / contractors, HVAC contractors and security contractors / equipment manufacturers.

China-Ryoden, a joint venture company with Mitsubishi, plans to take advantage of this new technological trend, by building a centralized elevator monitoring system covering a broad region. Using this system, China-Ryoden intends to monitor the operational status of the 25,000 elevators it has installed nationwide. This monitoring system will communicate through the telephone

system, allowing China Ryoden to provide customers with timely maintenance service, reducing the customers' costs.

SYSTEM REQUIREMENTS

The smart elevator alarming system needs to automatically communicate alarm conditions at each elevator installation to a regional control center. This allows the company to dispatch local service personnel to each problem location, cutting response times and aiding the company in manpower allocation. The following three features are required by the centralized monitoring system:

1. Strong and flexible logic process capability

   It is difficult to integrate different systems, such as security, fire alarm, air-conditioning, power, lighting, parking and access control using traditional PLC controls. The flexibility provided by PC-based programming languages makes it easier to develop the complex control logic required to meet the di-fferent con-ditions of the different applications.

2. Modular hardware architecture and expansion

   Because of the huge number of installations and the na-tionwide in-stallation base, the products chosen must be highly modular and easy to maintain, having simple spare parts. Furthermore, the system must be easily expanded.

3. Remote programming of on-site units

   This is a key consideration for reducing the number of local maintenance calls. If local systems can be modified remotely through the telephone lines from a regional center, the cost of servicing a huge number of remote sites decreases dramatically.

SYSTEM DESCRIPTION

Each of China Ryoden's remote sites is composed of three parts. The central unit is an Advantech ADAM-5510 PC-based Programmable Controller with two ADAM-5052 8-channel Digital Input modules and two ADAM-5068 8-channel Relay Output modules. Communications through the telephone system are handled by a modem. The third part is a switching power supply. Each digital input channel of an ADAM-5052 module handles a different input task, such as man-inside-elevator sensors, abnormal door open/close, safety check, elevator running speed/direction, power-shutdown and maintenance notice. Each relay out channel of an ADAM-5068

provides a form A relay output operable at 125 V and 0.5 A (AC), 30V and 1 A (DC) or 110 V and 0.5 A (Relay Output). These outputs control speaker connections, modem resets, and remote reset and sub-unit switching.

Advantech products were selected for this project for the following reasons:

1. Advantech is the leading PC-based automation provider in Taiwan. China-Rydon is assured of first hand support.
2. The cost of ADAM-5510 PC-based control solutions is much less than traditional PLC-based solutions.
3. The PC-based ADAM-5510 is supported by strong and flexible programming software. China-Ryoden also saves money by using inexpensive PC peripherals.

CONCLUSION

China-Ryoden's first Advantech installation confirmed the feasibility of its use in the centralized elevator monitoring system. PC-based control solutions operating in community network systems are proven as a big potential market in the year 2000. Other potential system users are now showing great interest in China-Ryoden's concept, including China-Pacific CATV, Pacific Telecom, Shin-Kwan Security and the Ching - Lin Construction Group. ■