

SMOS- II Integrated Elevator Monitoring System (Page 1 & 2)

SMOS- II Integrated Elevator Monitoring System, researched and developed by Shanghai Mitsubishi itself, is an integrated system, aiming at centralized monitoring and management of various elevator series produced by our company. It is similar to the nerve system inside human's body. And it can carry out centralized monitoring of elevators distributed in buildings and housing estates, know the running condition of each elevator, and monitor the operation of elevators by means of advanced data collection, transmission, and processing technology. Moreover, remote monitoring of elevators' running condition in our company is accessible due to the optional function of remote monitoring. The system adopts the latest LONWORKS fieldbus technology. Every spare part in the system (including the top-computer) is a node of the LONWORKS network, and any two of the nodes can achieve data exchange.

SMOS- II system utilizes the modern information technology that several elevators can be monitored and controlled by a computer at the same time. Therefore complicated elevator management has been changed into easy operation, and the management efficiency will be increasingly improved. Besides, SMOS- II's strong capability of data processing makes users know the using and running condition of every elevator at the moment, eliminates the hidden danger in time, and provides reliable data references for regular maintenance and trouble shooting in order to increase the using frequency of elevators and prolong the service life of elevators.

* Node refers to any device applied in LONWORKS network, which consists of LONWORKS' unique neuron chip, transceiver and the other peripheral circuit, and follows LONTALK protocol.

System Diagram (Page 3)

System Diagram

Monitoring Room 监控室

UPS

Printer 打印机

HUB

Digital video recorder (DVR) 硬盘录像机

Computer 计算机

Cable 网线

Video cable 视频线

Terminal box 接线盒

Modem

PSTN/Public telephone network 公共电话网

Remote Monitoring (Branch) Center 远程监视（分）中心

STP (shielded twisted-pair wires) 屏蔽双绞线

Control cabinet 控制柜

Spare part for data collection(node) 数据采集部件（节点）

Elevator travelling cable 电梯随行电缆

Video camera 摄像机

Car 轿厢

Single pair of UTP(unshielded twisted-pair wires) 单对非屏蔽双绞线

Technology Features

LONWORKS fieldbus technology is the most important feature of this system, which provides a reliable and united information platform for the monitoring and management of elevators.

1. Multi-master mode of data transmission

The data transmission of LONWORKS network adopts a multi-master mode, that is, every node in the network can take initiative to send data to the network. Compared with the polling mode of serial network, the multi-master mode greatly promotes the efficiency of information transmission.

2. Supporting many kinds of network topology ways

LONWORKS network supports both bus way and free topology way. The networking of the whole system is very flexible, which can decrease the use of cables at most and reduce the cost.

3. Data processing with high efficiency

The system utilizes LONWORKS' unique FT3150 neuron chip including three microprocessors, which improve the efficiency of data processing. Thus the running condition of elevators and the elevator faults can be reflected in time.

4. Adopting transformer isolation technology

LONWORKS network adopts transformer isolation technology for data transmission, which improves the anti-interference ability of the whole system and the operation stability.

5. United communication platform

LONWORKS provides us with a united communication platform. We can avoid rewiring and enhance the extensibility of the system for every system of LONWORKS can share one network. The integrated elevator monitoring system developed by Shanghai Mitsubishi and the elevator IC card system can share a same wiring system, thus we can avoid rewiring from elevator machine room to monitoring room, and reduce users' wiring cost.

6. Stronger capability of monitoring elevator

Compared with the SMOS system before, SMOS- II system achieves further improvement in system capacity, quality of data transmission, etc.

Monitoring of Elevator's Running Condition

Shanghai Mitsubishi's SMOS- II Integrated Monitoring System of Elevator can monitor and control elevators with different interfaces by providing all different kinds of monitoring interfaces.

Elevator: up, down, car button registration, hall call registration, display of elevators' landing floor, door open/close, operation mode (automatic, hand, independent, fireman's emergency, and earthquake emergency operation)

Escalator, automatic pavement: run/stop, up, down

Monitoring and Automatic Alarm of Elevators' Fault and Abnormal Condition

Elevator: the system is able to monitor dozens of faults and abnormal conditions of elevators, which includes not only the fault causing elevators' sudden stop but also the abnormal factor which may have an effect on normal operation of elevators.

Escalator, automatic pavement: it can monitor comprehensive faults of escalators and automatic pavements.

Control Functions Meeting Various Needs (Optional) (Page 6)

Control functions are included in SMOS- II system (elevators that are monitored should be equipped with these functions, and provide the relevant I/O output interface):

NS1: Non-Service to Specific Floor 1

NS2: Non-Service to Specific Floor 2

RCS: Remote Control Stop

TFS: Main Floor Change over Operation

RET: Return

VIP: Very Important People

ESO: Energy Saving Operation

EER: Earthquake Emergency Return

SMOS- II can achieve at most the 6 of the functions above(arbitrary configuration). The function selected must be listed in the contract. If timing control is required, it should be set on the spot according to the requirement. .

More Choices for Functions (Page 7 & 8)

Inquiry and Printing about Elevators' Records

Once when there is an elevator fault, it will be recorded at the moment for inquiry and analysis of future faults. It can collect, display and print the records separately according to the elevator number or the moment when the fault appears.

Statistics of Elevators' Operation

Calculating the total running period and operation times at the moment

Reply Function (optional)

The running condition of elevators which are under control in a certain period can be replayed.

Analysis of Traffic Flow (optional)

The hall call times, the longest waiting period, and the average waiting time of the elevators which are under control in a certain period can be analyzed.

Remote Monitoring Function (optional)

When there is trouble with the elevators monitored, information about elevators' fault will be sent at the moment by the public telephone web and displayed on the computer of the company's remote monitoring center. Moreover, it is accessible to register any elevator under control, and check the current condition accordingly.

BA Interface Function (optional)

SMOS- II system can send the information about the elevators under control to BA system according to customers' needs by the web interface (RJ-45) on basis of communication agreement enacted by the company.

Video Monitoring Function (optional) (equipped on elevators)

By selecting and equipping the function of video surveillance, it can implement real-time monitoring of the elevator's condition in car, and snapshot or replay the video according to customers' needs. After choosing the remote monitoring function, it can send monitoring picture to the remote monitoring (branch) center in order to carry out the remote video surveillance.

Basic Specific and Equipment Configuration Requirement in Monitoring Room
(Page 9)

Basic Specific

1. the maximum node capacity in system:63
2. system wiring:

	Distribution way	Basic parameters	
Transmission Cable of System Network	Bus way	Maximum length of bus*: 2700m	Maximum length of branching cable: 3m
	Free topology way	Maximum length of cable*(accumulated): 500m	Maximum length of cable between nodes: 400m
Video Transmission Cable (equipping function of video monitoring)	Star-like way	Maximum length of cable from machine room to monitoring room: 1000m	

*the length can be extended by the repeater.

3. system transmission rate: 78kbps

Equipment Configuration Requirement in Monitoring Room

	System Standard Configuration	System Optional Video Monitoring
	Top-computer	Digital video recorder (DVR)
Operating System	WIN XP (above SP1)	WIN2000 (above SP3)
CPU	Above P4 2.8 GHz	Above PIII1GHz
Internal Storage	More than 512M	More than 512M
Hard Disk	A hard disk (More than 40G)	A hard disk (More than 10G), each time a audio-video card is added, a 240G hard disk will be added
Monitor	Color monitor (above 17 inches)	Color monitor (above 17 inches)
Peripheral Equipment	UPS, windows compatible printer	UPS, windows compatible printer
Operation Desk	Self-prepared by customer, accepting a standard PC	Self-prepared by customer, accepting a standard PC and a terminal box (50cm*40cm*20cm)