

Integrated Monitoring System of Qinghai-Tibet Railway



Project Introduction

The Qinghai-Tibet railway is a high-elevation railway that connects Xining, Qinghai Province, to Lhasa, Tibet Province, in China. The railway includes the Tanggula Pass, which, at 5,072m (16,640 feet) above sea level, is the world's highest rail track. The harsh environments bring enormous challenges to the stability of the devices operating in the integrated monitoring system.

System Requirements

- Ability to function properly under -40°C (-40°F) with high MTBF
- EMC level 4, be immune to frequent electromagnetic interference due to electrical storms
- Easy and reliable management for unmanned stations
- Industrial grade devices with low failover rate are required due to huge maintenance expenses for the entire project

Kyland Solution

The total length of Qinghai-Tibet railway is 1,956 km (1,215 miles) of which more than 960 km, or over 80% of the Golmud-Lhasa section, is at an elevation of greater than 4,000 m (13,123 feet). There are more than 90 thunderstorms per year and the railway passes through an earthquake zone in the Kunlun Mountains.

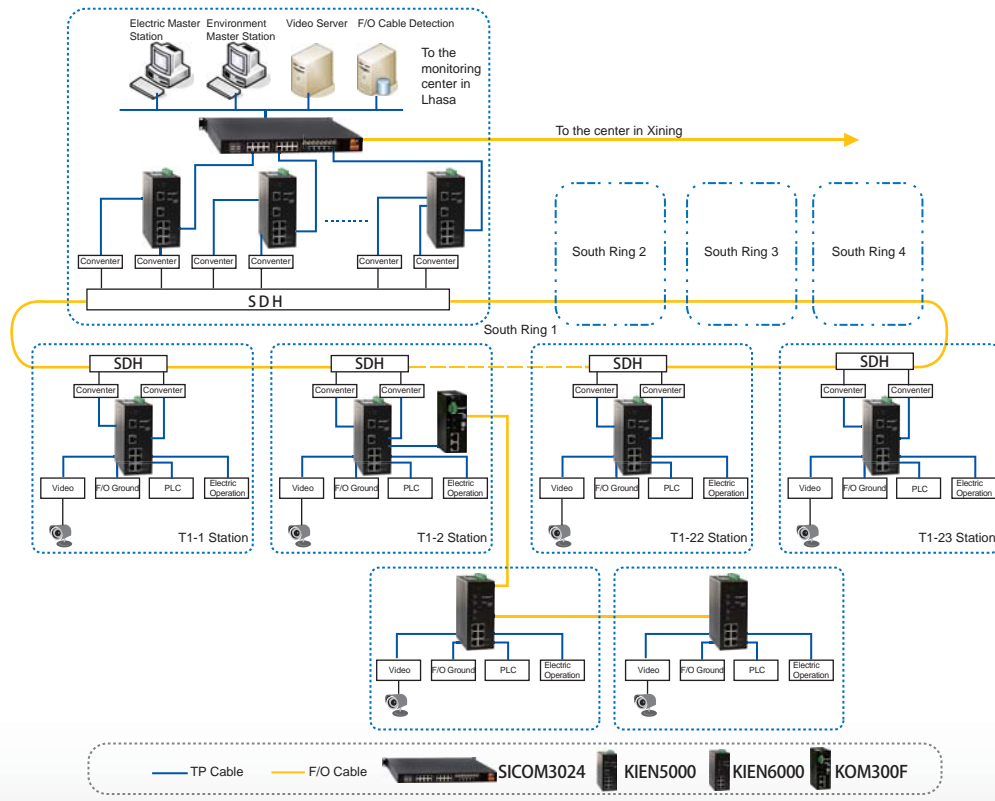
The integrated monitoring system contains an environmental monitoring system, DCC (Data Communication Channels) data monitoring system, and video surveillance monitoring system. The entire system is composed of field monitoring terminals, communication network and the control center.

The industrial Ethernet switch in the communication network collects the information from the field monitoring terminals and transfers it to each station communication center, where the information will be forwarded to the control center through SDH.

Kyland KIEN5000 industrial Ethernet switch with 8 10/100Base-TX copper ports works in each station communication center while Kyland KIEN6000 with 2 100Base-FX fiber ports and 6 10/100Base-TX ports works in each outdoor cabinet along the rail track. Kyland KOM300F media convertors connect outdoor cabinets and station centers through fiber. There are a total of 800 Kyland Ethernet switches and media convertors operating in the entire system. All the devices can function properly under -40 to 85°C (-40 to 185°F) with 35 years MTBF. All the devices work flawlessly under such extreme harsh environment since it was completed in

Company: Hollysys
Location: Qinghai to Tibet, China

System Diagram



Why Kyland?

Kyland industrial Ethernet switches are chosen for their outstanding performance under the extreme cold and huge electromagnetic interference environments

Wide working temperature range from -40 to 85°C (-40 to 185°F)

EMC level 4, high electromagnetic interference resistance



KIEN5000

- Layer 2 8 Port Simple Web Managed Din-Rail Switch
- 8 10/100Base-TX ports



KIEN6000

- Layer 2 8 Port Simple Web Managed Din-Rail Switch
- 2 100Base-FX ports + 6 10/100Base-TX ports



KOM300F

- 3 Port Unmanaged Din-Rail Copper to Fiber Media Convertor
- 2 10/100Base-TX ports + 1 100Base-FX port

► Please refer to www.kyland.com for more details