



The ideal optical networking solution
for electric utility, transportation, pipeline
and industrial applications

KEY BENEFITS

- Functions as an STM-1/STM-4 drop-and-insert multiplexer with up to 252 VC-12 drop capability
- Robust environmental design
- Utility hardened
- Supports two fibre linear applications, self-healing D-P rings, multiple rings and rings plus spurs
- Supports multiple STM-1 or STM-4 rings interconnected through synchronous TIE links
- Extremely fast path protection switching (<3 ms)
- 1310 nm and 1550 nm optical interfaces available
- Economically scalable for all sizes of networks and sites with varying service requirements
- System expansion, reconfiguration and maintenance are easily performed with a minimum of system downtime, travel expense and equipment
- Improves reliability through integration of all network requirements into a common package
- NMS allows visibility of network traffic down to each individual 64 kb/s channel
- Optional video control system package
- Optional SNMP Network Management System (NMS) interface

APPLICATION MODULES

- Ethernet WAN
- Video, voice, data and teleprotection
- Channelized E1
- Digital telemetry and orderwire

SDH Network Access

The robust design of the TN1Ue SDH Multiplexer makes it the ideal fibre optic telecommunications and security services solution for the utility, transportation, pipeline and industrial sectors. The enclosed shelf design provides additional security in harsh Electromagnetic Interference (EMI) environments. The GE Multilin TN1Ue SDH system's modular packaging is economically scalable for both large and small sites. Interchangeable STM-1 and STM-4 plug-in units allow system growth as traffic needs dictate.



System Technology

This powerful fibre optic multiplexer has a modular design for ease of maintenance, configuration flexibility, and expandability.

The TN1Ue delivers the benefits of ITU-T SDH telecommunications standards to applications previously serviced by a mix of proprietary and legacy standards based equipment.

The multiplexer provides redundancy for critical modules, with guaranteed performance over an extended ambient temperature range of -10°C to +60°C. It meets IEC/IEEE Surge Withstand Capability (SWC), Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI) specifications providing secure performance in harsh environments.

The TN1Ue is powered by a 48 VDC source. Its built-in test capabilities can save the cost of purchasing SDH test equipment.

The TN1Ue can be customized to the user's requirements by equipping each site with specific modules as needed. New modules are continually under design.

Operations, Administration, Maintenance and Provisioning (OAM&P)

The TN1Ue takes advantage of the inherent network management capabilities provided by the SDH telecommunications standards.

The TN1Ue OAM&P system provides network visibility down to the individual 64 Kb/s channel level at all nodes. This facilitates

remote provisioning, monitoring and alarm logging of the network from any node. The OAM&P GUI based software operates on a Windows®-based personal computer. An optional SNMP Network Management System (NMS) interface is available. The OAM&P GUI is also used for system diagnostics and troubleshooting.

Visibility of all TN1Ue equipment, including the 64 Kb/s tributary units, improves maintenance response time and saves the operator money.

SDH System Integration

The TN1Ue STM-1/STM-4 system has the flexibility to integrate with third party SDH microwave radios and higher capacity STM-n multiplexers.

Video Interface

In the past, separate telecommunication networks were used to obtain quality video, requiring additional infrastructure.

TN1Ue networks support both 48 Mb/s and 12 Mb/s video wide area networks (WANs). Each analog video source (camera, VCR, DVD, etc) is digitized with a user configurable compression algorithm for bit-rate bandwidth management and then integrated into a shared video WAN.

For incident detection in surveillance applications, intelligent bandwidth allocation allows more bandwidth to be instantly assigned to specific cameras, permitting a higher resolution and more frames per second. When required, audio and data channels may be transported with the video.

The TN1Ue video interface addresses the issues of quality versus bandwidth by efficiently transporting video signals.

An optional remote video interface accessory is also available, which cost effectively extends the video capability up to 40 km from a TN1Ue node via fibre optic cable.

Customer Applications

Electric Power Utilities

Originally designed for the unique needs of electric power utilities, the TN1Ue system supports a wide range of specialty traffic, including teleprotection (direct transfer trip, pilot wire, and IEEE C37.94 optical interface to protection relays), surveillance video, substation automation, Ethernet WAN/IP and telephony.

High system availability is provided through redundant common equipment and compliance with SDH ITU-T standards for path switched ring protection architecture.

But TN1Ue goes beyond SDH standards, offering the industry's fastest path protection switching (<3 ms), and incorporating special design characteristics that allow it to meet IEC/IEEE RFI, SWC, and EMC standards for operation in harsh utility environments.

Transportation Corridors

For highway, roadway, bridge, tunnel, rail transit, freight railway, and airport applications the TN1Ue system cost effectively integrates services previously provided by proprietary and legacy standards based equipment. Now these services can be combined to receive the full benefits of an SDH network.

For applications such as video surveillance, toll collection, traffic monitoring and control, VMS, emergency voice, SCADA, signalling and loop detection, the TN1Ue is the optical communications product of choice.



Pipelines and Industrial Facilities

The rugged design, compact size and low power consumption of the TN1Ue SDH Multiplexer also makes it the ideal optical communications solution for: oil, gas, refined products, water and slurry pipelines. Field proven industrial applications include electrical distribution protection and control for mines, as well as oil or gas production field SCADA.

The TN1Ue fibre optic multiplexer creates greater value for its user by carrying a multitude of services such as low speed polling data, SCADA, power measurement data, video surveillance, Ethernet WAN/IP and PBX phone drop extensions over a single network.

Visit www.GEMultilin.com/TN1Ue to:



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