

# Excalibur<sup>®</sup> ISX<sup>™</sup> 5312/5314

## *T-1/E-1 Multiplexers with SNMP*

- Full and fractional T-1/E-1 compatibility
- Two or four N by 56/64 Kbps DTE ports (64 Kbps only for E-1 models)
- Integral drop-and-insert capability
- Protection-switching capability
- External dial backup
- T-1/E-1 circuit performance monitoring
- SNMP management via direct Ethernet (10Base-T) port connection
- Custom management application available for CMS<sup>®</sup> 400
- Telnet client support
- Flash memory for field upgrades

# Excalibur<sup>®</sup> ISX<sup>™</sup> 5312/5314

## *T-1/E-1 Multiplexers with SNMP*

Milgo offers Excalibur<sup>®</sup> ISX<sup>™</sup> (Integrated Services Express) 5312 and 5314 intelligent T-1 and E-1 multiplexers in a variety of models to meet your specific network requirements. The ISX 5312 provides two DTE ports and the ISX 5314 provides four ports, allowing you to run more data applications on one unit. For maximum application flexibility, the DTE ports each support N by 56 or N by 64 Kbps applications (64 Kbps only for E-1 models).

The ISX 5312/5314 is available with one or two T-1/E-1 network interfaces. It includes an asynchronous PPP/SLIP and an Ethernet (10Base-T) SNMP interface. The Ethernet interface provides a direct connection to the LAN for SNMP management purposes. With a direct LAN connection, you save the expense of dedicating an expensive router port or providing an additional LAN server to route your SNMP traffic. You can also select Milgo's proprietary management protocol for management by CMS<sup>®</sup> 400.

### **Application Flexibility**

The ISX 5312/5314 is designed to transport LAN, PBX, voice, ISX 5010 subrate multiplexer, and other data applications over a full or fractional T-1/E-1 link.

Fractional T-1/E-1 services allow you to purchase bandwidth in 64 Kbps increments instead of purchasing a full T-1 (1.544 MHz) or E-1 (2.048 MHz) circuit. You pay only for the bandwidth you need.

The ISX 5312/5314 also operates as a Digital Access Cross-Connect System (DACS) for "groom and fill" functionality. This feature enables maximum utilization of available bandwidth in dynamic network environments. Depending on the model selected, up to five separate applications with underutilized bandwidth (e.g., PBX, channel bank, video, and LAN) can be easily routed to one ISX 5312/5314 T-1/E-1 circuit. This eliminates the need for four fractional T-1/E-1 circuits.

### **Central Site and Standalone Models**

Designed for your central locations, the central site model installs in the high-density Excalibur Card Carrier or ISX 5010 chassis. An Excalibur Card Carrier can hold up to 16 units.

An ISX 5010 chassis holds up to 3, 6, or 16 units, depending on the model. A master control panel on the Excalibur Card Carrier provides single-point control over any installed unit.

Ideal for remote site applications, the standalone model comes in a compact, plastic case that fits wherever your needs dictate.

### **Protection Switching**

Integral protection-switching capabilities automate restoral of T-1/E-1 networks. If the primary link fails, the timeslots or DS0s assigned to the primary link can be automatically switched to a backup link.

### **Dial Backup Minimizes Downtime**

External Dial Backup support, available in models with one network interface and a V.35 DTE interface, restores high-speed, mission-critical applications in the event of network outage. When the T-1/E-1 line fails (based on user-selectable criteria), the ISX 5312/5314 automatically switches data to an external backup device, such as an ISDN modem.

### **Full Management via SNMP**

The ISX 5312/5314 can be fully managed via SNMP. Its integral MIB-II-compliant SNMP agent provides a standards-based management interface, allowing you to manage your entire network with any SNMP-based management application. Telnet client support is included.

An optional Windows<sup>™</sup>-based front panel emulation software package is available. This package provides another management access method should you not have access to an SNMP application.

### **ISX 5300 Manager Graphical Interface Simplifies Management**

To simplify network management, Milgo offers the ISX 5300 Manager for CMS 400. This SNMP-based application has an intuitive graphical interface tailored for ISX 5300 series products. You can use this application to configure the ISX 5312/5314, monitor performance, display statistics, and conduct tests, without sending individual Set and Get commands.

### **ASCII Console Interface Enables Economical Level of Management**

An ASCII Console interface lets users connect to the ISX 5312/5314 using a VT100-compatible terminal for economical management and troubleshooting.

### **Telnet Aids Remote Troubleshooting**

Through the industry-standard Telnet protocol, the ISX 5312/5314 can be accessed from anywhere on the network by any workstation that has a TCP/IP stack and a Telnet application. With this capability, a technician can monitor operation and initiate diagnostics. In addition, a password routine prevents unauthorized access.

### **Fast, Easy Fault Isolation**

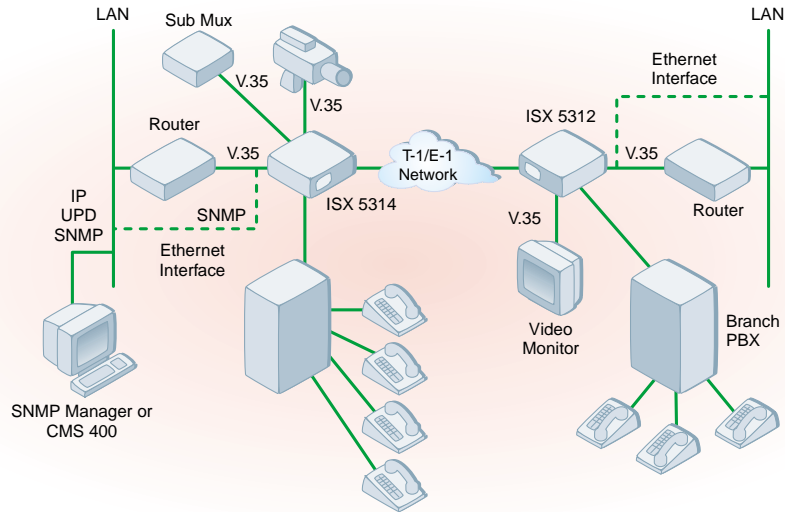
Extensive diagnostic testing capability helps to isolate the source of network malfunctions. You can perform CSU loopbacks, local and remote DTE digital loopbacks, and bidirectional local channel and local link loopbacks.

Single, contiguous, or all channels on a T-1/E-1 link can be looped. Also, all channels assigned to two T-1/E-1 links in a connection can be looped. All models have a built-in QRSS test pattern generator. The E-1 models also have a PRBS test pattern generator. The generators eliminate the need for separate BERT test equipment.

The ISX 5312/5314 provides circuit performance monitoring without interrupting normal operation. Several alarm conditions can be viewed from the front panel or the CMS management system. Alarms are recorded for later inspection.

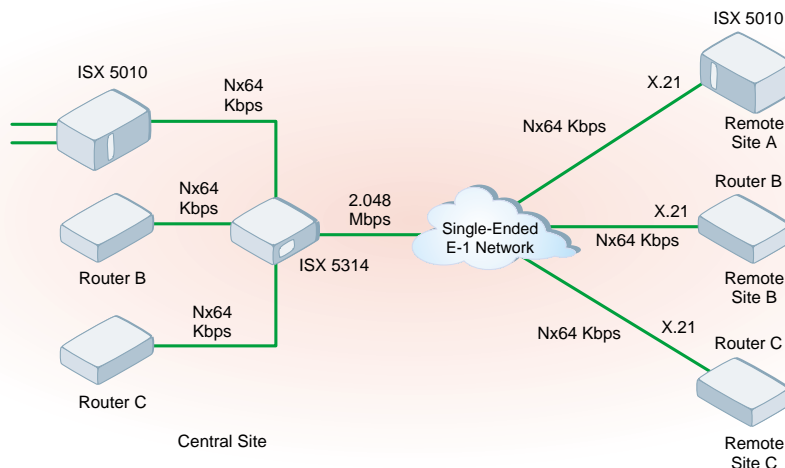
### **Channel Signaling**

For E-1 models, you can select timeslot 16 to provide Channel Associated Signaling (CAS) format, or you can use it as an additional data channel. When used for signaling, the ISX 5312/5314 generates the appropriate framing format. E-1 models also support unstructured framing format, which allows you to use all 2.048 Mbps for data.



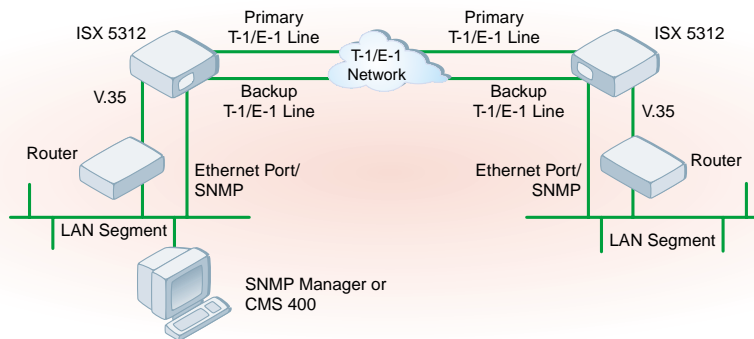
### Typical ISX 5312/5314 Application

The ISX 5312/5314 facilitates the connection of routers and other high-speed DTE equipment to Telco/PTO facilities, while providing advanced features and capabilities beyond those found in traditional multiplexers. The second network interface can be used as a second local interface. Because neither the PBX nor the data application requires a full T-1/E-1 bandwidth, the ISX 5312/5314 allows both applications to be supported via a single network, providing maximum utilization of available bandwidth.



### Single-Ended E-1 Application

A central site ISX 5312/5314 E-1 combines multiple data and voice applications for transport via a single E-1 circuit. The PTO/PTT splits the E-1 bandwidth and delivers each segment to the appropriate remote location. This ability reduces the number of circuits required at the central site.



### Protection Switching Application

Access Protection Capability (APC) for T-1 models — Accunet's T1.5 APC service function provides the automatic transfer between two Accunet T1.5 access facilities when one T-1 line fails.  
Hot Spare — The ISX 5312/5314 provides the automatic transfer to a backup T-1/E-1 line when the primary T-1/E-1 line fails, or from the backup line to the primary line when the primary line returns to good state.

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## *Technical Specifications*

Line Rate	T-1: 1.544 MHz $\pm$ 50 Hz	
	E-1: 2.048 MHz $\pm$ 50 ppm	
Network Interface	Compatibility	T-1: AT&T 62411, 54016, 54017A1, ANSI T1.403, and TR-NLP-000054 E-1: CTR 12 2M unstructured, CTR 13 2M structured, G.703, G.704
	Format	T-1: Super Frame (SF) or Extended Super Frame (ESF) E-1: Basic FAS, 16 frame CRC-4 multiframe structure, unstructured
	Line Coding	T-1: AMI or B8ZS E-1: AMI or HDB3
	Clock Source	Internal, recovered line clock (CSU), external DTE clock
	One's Density	T-1: B8ZS, AMI (none), AMIB7, AMIZS (zero suppression) E-1: AMI (none), HDB3
Channel Interface	Compatibility	T-1: Two or four V.35 ports E-1: Two or four V.35 or X.21 (V.11) ports
	Data Rates	T-1: N x 56 Kbps and N x 64 Kbps, where N = 1 to 24 E-1: N x 64 Kbps, where N = 1 to 30 (N = 1 to 31 when signaling is disabled)
	Bundling	Independently selectable, alternate, or contiguous
	Clocks	Transmit and receive bit clocks
Management Interfaces	NMI Interface	10-position modular jack, 75 bps - 19.2 Kbps
	SNMP Interface	10-position modular jack, asynchronous PPP/SLIP interface at rates from 75 bps to 19.2 Kbps and RJ45 (10Base-T) COM port interface
Distance	T-1: 3000 feet (915 meters) with 22-AWG twisted-pair cable. Up to 6000 feet (1830 meters) in LDM mode	
	E-1: 1148 feet (350 meters) with 22-AWG twisted-pair cable	
Tests	T-1: Line loopback; payload loopback; PN127 loopback; multiplexer, DTE, link, and channel loop backs; link and DTE QRSS pattern tests	
	E-1: PN127 loopback; multiplexer, DTE, link, and channel loopbacks; link and DTE QRSS and PRBS pattern tests	
Network Diagnostics	T-1: ESF diagnostics, 24-hour registers, and 1-second reports per ANSI T1.403 and AT&T 54016 E-1: Local 24-hour registers	
Error Statistics	Percentage of line availability, Errored Seconds (ES), Controlled Slip Seconds (CSS), Loss of Frame Count (LOFC), CRC-4 (T-1) or CRC-6 (E-1) Errors, Bipolar Violations (BPV), Frame Bit Error (FBE), Change of Frame Alignment (COFA), Severely Errored Seconds (SES), Bursty Errored Seconds (BES)	
Approvals	T-1: FCC Part 15 and Part 68, Industry Canada, CSA, UL approved E-1: EN60950, EN41003, IEC 950, TS001, EN550022B (Class A), EN550082-1, EN61000-3-2, AS3548-1, and CE approved	
Physical Specifications	Height	3" (7.6 cm)
	Width	8" (20.3 cm)
	Depth	12" (30.5 cm)

Our policy of continuous development may cause the information and specifications contained herein to change without notice.

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