RS232 Over IP

• RS232 Circuit Extension Over Ethernet, HDLC Over IP

Flexible Serial Data Extensions over IP Packet or MPLS Networks

The IP•Tube SER RS232 converts RS232 serial data connections into IP packets, extending the serial data over very cost effective Ethernet or MPLS based LAN/WAN/MAN wired and wireless networks. Synchronous, Asynchronous, Isochronous or HDLC serial data is encapsulated into IP packets. This facilitates the interconnection of Serial Data over IP between Serial Bulk Encryptors (KIV7/OMNI), Data Terminals, Data Acquisition Systems, WAN Routers and Bridges, SCADA RTUs....

Layer 1 with Isochronous Support

In Layer 1 operating mode every bit is encapsulated into an IP packet. The size and frequency of the IP packets can be set with data bit rates from 75 bits to 256 kilobits per second. Isochronous serial protocols, such as Conitel, are transported synchronously to maintain message alignment. A configured number of incoming packets are buffered in order to compensate for the packet delivery jitter introduced by the network. The size of the Tube bit buffer is configurable to accommodate the peak amount of jitter.

Asynchronous Over IP

Asynchronous characters from the RS232 interface with 5 to 8 data bits, baud rates from 1.2 to 38.4 kilobits, 1 or 2 stop bits that are with or without parity are efficiently encapsulated into IP packets. The encapsulation supports block mode transfers to minimize the bandwidth required. Additionally the latency is controlled by setting the Tube Bytes per packet.

HDLC Over IP

In Layer 2 operating mode HDLC Data frames, such as those used by Wide Area Networking protocols PPP and Frame Relay or proprietary Data Links, are transported within IP packets as HDLC over IP. The Serial to Packet conversion only occurs when HDLC frames are active.

Packetized Synchronous Serial Data

IP•Tube SER RS232 Standard Features

Dual LAN Interfaces

All IP•Tube SER RS232 models ship with dual 10/100BaseT Ethernet LAN ports. The dual Ethernet interfaces provide for:

- Management interface on LAN port 2 when LAN port 1 is connected to a VPN tunnel
- Protector Option for Redundant Packet Path connections with Constant or Switch Over Criteria

Assured Delivery Protocol

In order to assure high quality communications over links with intermittent or noisy performance, such as Wireless, the IP•Tube SER RS232 employs Engage's robust Assured Delivery Protocol with the following benefits:

- Packet out of sequence detection and re-sequencing
- Duplicate skipping
- Lost packet retransmissions with configured delay

IP•Tube SER RS232 Optional Features

Protector OPTION -PRO

The protector option utilizes the second LAN interface as a redundant path for the interconnection of the IP encapsulated SER RS232 data. The extension of the SER RS232 has a fault tolerant link that is configured to always on, or with switch over criteria.

Serial Redundancy OPTION -Y

The Serial Redundancy option is used to switch the RS232 connection to a secondary IPTube in the case of a network or equipment failure maximizing network availability by providing complete hardware redundancy for mission critical applications.
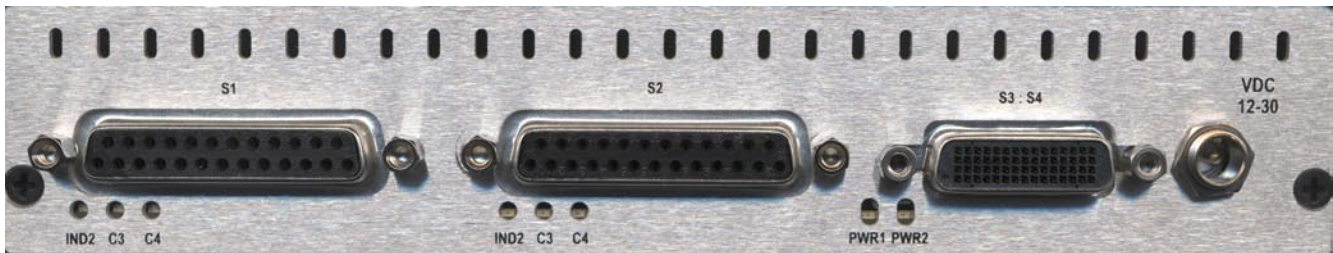
Technical Specifications

LAN Network Interface:
• Two 10/100 Base T

LAN Network Protocols Supported:
• IP, TCP, UDP, ICMP, Telnet, DHCP, DDNS, SSH

RS232 Interfaces:
• 1-4 DCE/DTE RS232: 2 DB25F Connectors;
  1 DB60F connector: Requires an adaptor cable- DB60M to 2 DB25M

RS232 Interface Clocking:
• Synchronous: 75 bits to 256 kilobits per seconds
• Asynchronous, Isochronous : 75/300/600 bits per second
        1.2/2.4/4.8/9.6/19.2/38.4 Kilobits per second

RS232 Interface Control Signal Extension:
• Comprehensive DTR/DSR/RTS/CTS/DCD State Processing and Extension
• DTR & RTS Enveloped Transmission • CD Reception

RS232 Over IP Protocol:
• Serial Over IP • Circuit Extension Services Over IP • HDLC Over IP

Protocols Supported:
• HDLC, SDLC, PPP, Frame Relay
• Conitel, Modbus, DNP

Quality of Service Support:
• IP Type of Service (TOS) CLI configured • IANA Registered UDP Port 3175
• 802.1p/q mac level prioritization

Regulatory:
• CE • Safety -IEC60950 • EMC - CFR 47 Part 15 Sub Part B:2002, EN55022:1994+A1&A2, EN55024, ICES-003 1997, CISPR 22 Level A

Management:
• Secure Socket Shell - SSH V2
• Telnet support with Edit and Paste Template Files
• Console Port for Out of Band Management
• SNMP Public and Private MIB support with configured traps

Dimensions:
• Dimensions: 9" (L) x 7.3" (W) x 1.50" (H)

Environmental:
• 0° to 132° F (-10° to 50°C) operating temperature
• Up to 90% operating humidity (non-condensing)
• Optional Extended Temperature Range available

Power:
• 12-30 VDC, 1.0A. • Screw Locking Connector
• Universal Adapter 100/240 VAC 50/60 Hz
• Optional -48V 0.25 Amp • Hot Standby

How to Order — IP•Tube SER RS232

Part No.	Description	Notes
040-2232-0x	IP•Tube SER RS232	Specify # of RS232 Ports Enabled (1 to 4)
CH-040-2232-0x	Chassis Slot Card: IP•Tube SER RS232	Specify # of RS232 Ports Enabled (1 to 4)
Base Option		Specify as suffix
-PRO	Protector Option	Fault Tolerant Network Interconnect
-Y	Serial Redundancy	Complete hardware redundancy
Power Options	Specify as suffix	Hot Standby Configuration 2nd Power Suffix
-HSPDC	Connector for Dual DC Supply	
-WIREDC	Power Supply Module 12/26 VDC Screw Term	
-N48VDC	Power Supply Module Negative 48 Volt DC	Isolated Negative 48 Volt Power
Rack Mount Option		Specify as suffix
-RACKMNT	19" Wide Rack Mount Brackets	Enclosure Nut Serts Installed