

DSO Over IP



- **DSO Serial Circuit Extension Over Ethernet: SS7, HDLC Over IP**

Flexible Serial Data Extensions over IP Packet or MPLS Networks

The **IP•Tube SER DSO** converts 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 serial protocols such as: SS7, SDLC or HDLC are encapsulated into IP packets. This facilitates the interconnection of Serial Data over IP between Telecom Switches, Data Terminals, Data Acquisition Systems, WAN Routers and Bridges, SCADA RTUs....

Layer 1

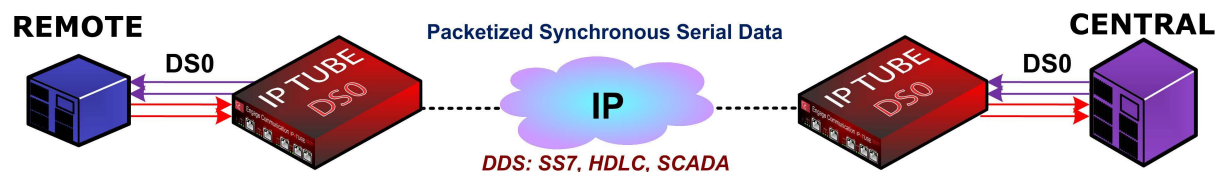
In Layer 1 operating mode every bit is encapsulated into an IP packet. The size and frequency of the IP packets can be set with data rates from 75 bits to 2.048 Megabits per second. Latency minimization is accomplished with FIFO sizing for the low data rate settings. A configured number of incoming packets are buffered in order to compensate for the packet delivery jitter introduced by the Ethernet network. The size of this buffer is configured to accommodate the peak amount of jitter.

SS7 Over IP

SS7 signaling network elements such as local and tandem switches, Mobile Switching Centers, Signal Transfer Points and Home Location Registers that are efficiently interconnected to remote network elements.

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.



IP•Tube SER DSO Standard Features

Dual LAN Interfaces

All **IP•Tube SER DSO** 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 DSO** 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 DSO 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 DSO data. The extension of the SER DSO has a fault tolerant link that is configured to always on, or with switch over criteria.

Technical Specifications

LAN Network Interface:

- Two 10/100 Base T

LAN Network Protocols Supported:

- IP, TCP, UDP, ICMP, Telnet, DHCP, DDNS, SSH

DSO Interfaces:

- 1-4 DSO interface(s) with RJ45 Connectors
- Signal encoding: Bipolar, return to zero
- Terminating Impedance: 135 ohms

Interface Clocking:

- Synchronous: 56 or 64 kilobits per seconds

Serial Over IP Protocol:

- Circuit Extension Services Over IP • HDLC Over IP

Protocols Supported:

- HDLC, SDLC, PPP, Frame Relay
- SS7, 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

Management:

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

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

Dimensions:

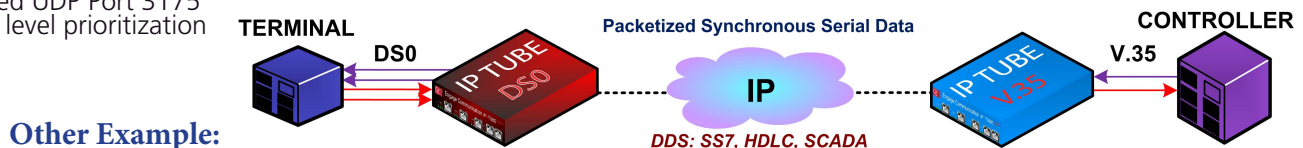
- Dimensions: 9" (L) x 7.3" (W) x 1.50" (H)

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
- Redundant Hot Standby Dual Power Supply



How to Order — IP•Tube SER DSO

Part No.	Description	Notes
040-DS0A-0x	IP•Tube SER DSO	Specify # of DSO Ports Enabled (1 to 4)
CH-040-DS0A-0x	Chassis Slot Card: IP•Tube SER DSO	Specify # of DSO Ports Enabled (1 to 4)
Base Option		Specify as suffix
-PRO	Protector Option	Fault Tolerant Network Interconnect
Power Options	Specify as suffix	Hot Standby Configuration 2nd Power Suffix
-HSPDC	Connector for Dual DC Supply	
-WIRED	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