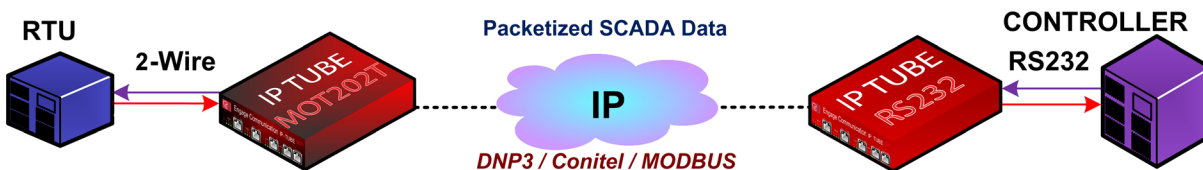# Bell 202T 2-Wire Modem Over IP

Flexible Serial Data Extensions over Packet Networks

The IP•Tube SER 202T has integrated Bell 202T modem interfaces that connect to the Bell 202T 2 Wire modem interface of Data Communication Equipment and transports their serial communication over IP Packet networks. This conversion facilitates a cost effective path for Utility and Pipeline industries to migrate their SCADA communication from end of life analog circuits to Ethernet based LAN/WAN/MAN wired and wireless networks.

Utility and Pipeline industries use 2 wire leased line communication circuits to connect remote SCADA equipment to control centers. A significant number of SCADA Remote Telemetry Units only have integrated 2 wire modem interfaces. The IP•Tube SER 202T extends the life of proven SCADA systems by converting 2 Wire modem interfaces to Ethernet for IP Packet network connectivity.

The IP•Tube SER 202T interfaces directly to the 4 wire analog interface of the RTU, transparently encapsulates SCADA protocols from the RTU into IP packets, and transports those packets onto the IP network. At the control center, the central site SER 202T seamlessly converts the packets back into their original 202T modem data format; or directly to an RS232 DCE interface with an IP•Tube SER RS232.

Asynchronous Serial Over IP
Asynchronous characters with 5 to 8 data bits, a baud rate 1.2 kilobits, 1 or 2 stop bits, and with or without parity are efficiently encapsulated into IP packets. The latency is controlled by setting the maximum number of consecutive async characters per IP packet.

SCADA Protocol Transparency
The IP•Tube SER transports asynchronous SCADA protocols transparently because of its unique TDM circuit emulation capability. RTU transmit data is encapsulated into IP packets at 64,000 samples per second and de-encapsulated at the far end at the same rate, ensuring proper RTU receive data delivery. Multiple RTUs can be IP multiplexed onto T1 circuits for routing to existing cross-connect and channel bank equipment.

IP•Tube SER 202T Standard Features

Dual LAN Interfaces

All IP•Tube SER 202T models ship with dual 10/100 BaseT 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 202T 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 202T 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 202T data. The extension of the SER 202T has a fault tolerant link that is configured to always on, or with switch over criteria.

Technical Specifications

LAN Network Interface:
- Two 10/100BaseT Ethernet interfaces

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

Modem
- Bell 202T 2-Wire; RJ45 Crossed Wire for Straight Cable

Serial Data
- 1200 Baud Asynchronous

Serial Over IP Protocol:
- Async Over IP • TDM Over IP • Circuit Extension Services Over IP

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

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 V3 Public and Private MIB support with configured traps

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

Environmental:
- IEEE-1613
- -40° to 70°C operating temperature
- Up to 90% operating humidity (non-condensing)

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 202T

Part No.	Description	Notes
020-202T-0x	IP•Tube SER 202T 2-Wire	Specify # of MODEMS Ports (1-4)
CH-020-202T-0x	Chassis Slot Card: IP•Tube SER 202T 2-Wire	Specify # of MODEM Ports (2 or 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	
-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