

2 Wire E&M Circuit to Packet



- **2 Wire E&M PTT Voice and Signaling Circuit Emulation**

2 Wire E&M Signaling and Voice over Packet Networks

The **IP•Tube 2W VF E&M** has balanced 2-Wire 600 ohm Voice Frequency interfaces that utilize a PCM CODEC to convert Analog Voice Band into Digital for transport over Ethernet packet services. This conversion facilitates the interconnection of Voice Band communications over cost effective and ubiquitous Ethernet based LAN/WAN/MAN wired and wireless network services such as MPLS, xDSL, Cable Modem and 4G/LTE.

The **IP•Tube 2W VF E&M** has one to four E&M balanced 2-Wire 600 ohm Voice Frequency interfaces with signaling such as Push to Talk Relay transfer. A PCM CODEC converts Analog Voice Band into Digital for transport over Ethernet packet services.

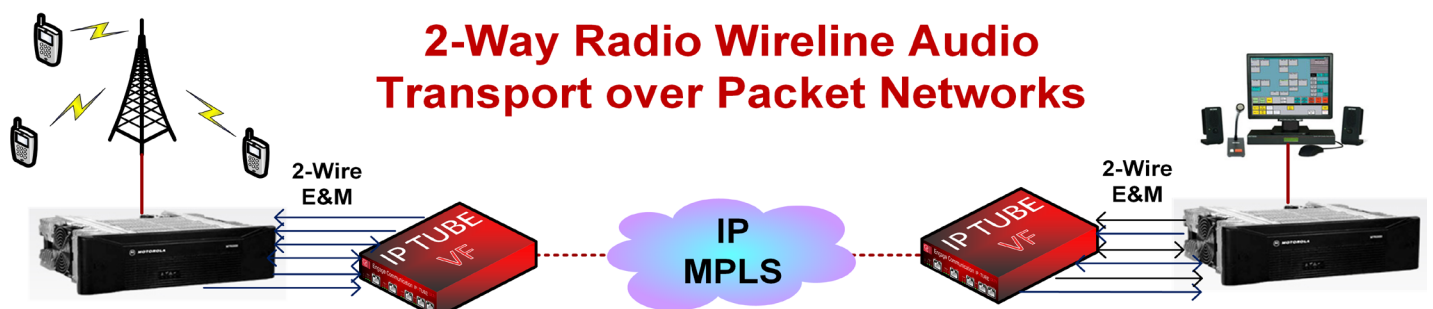


Public Safety Radio Tower Wireline Audio over Packet Networks

A primary application for the **IP•Tube 2W VF E&M** is the conversion of Voice Grade circuit interfaces with Push to Talk, that connect Public Safety Radio Base Stations to concentrator hubs, into packets. The **IP•Tube 2W VF E&M** employs high resolution Analog to Digital circuitry that maintains the quality of the original audio signal.

The packetized Voice Band communication can be transported over Ethernet Packet services such as:

- xDSL • Cable • Cellular 2/3/4G LTE • MPLS • WiFi



IP•Tube VF E&M Standard Features

Dual LAN Interfaces

All IP•Tube VF 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 networks with intermittent or noisy performance, such as Wireless, the IP•Tube VF 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 VF E&M Optional Features

Protector OPTION -PRO

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

Technical Specifications

LAN Network Interface:

- Two 10/100 BaseT Ethernet interfaces

LAN Network Protocols Supported:

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

VF Voice Grade Interface:

- One to Four: 2-Wire Full Duplex Voice with PTT Relay Support
- 600 Ohm Balanced • Frequency 200 to 3400 Hertz

VF Over IP Protocol:

- 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 Public and Private MIB support with configured traps

TFTP Online Upgrade Capable (FLASH ROMs)

- IPTube is fully operational during upgrade

Dimensions:

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

Environmental:

- -10° to 50°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 VF

Part No.	Description	Notes
020-VFEM-0x	IP•Tube VF 2-Wire E&M Analog Over IP	Specify # of Voice Frequency Ports (1-4)
CH-020-VFEM-0x	Chassis Slot Card: IP•Tube VF 2-Wire E&M	Specify # of Voice Frequency 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 12-26 VDC Supply	Wire to Screw Terminal Removable Connector
-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