

# IP-over-T3/E3 Gateway

## TC3844-3

- **Fast Ethernet Transport over Framed & Unframed T3 or E3**
- **IEEE 801.p QoS with four queues**
- **Ethernet and T3/E3 Statistics Monitoring**
- **VLAN Tagging and Priority Labeling**
- **Manage Via Web, SNMP, Serial Console, Telnet**
- **Temperature & Power Consumption Monitoring**
- **Extreme Temp (-40°C to +80°C) Optional**
- **Meets or Exceeds IEC 61850-3, IEEE1613 & NEMA TS-2 Standards**
- **Member of the JumboSwitch® Product Family**



TC3844-3 - IP-over-T3/E3 Gateway

The TC3844-3 Ethernet-over-T3/E3 Gateway allows the user to extend Ethernet backhaul applications to remote locations over existing TDM Telecom infrastructure. It converts the Ethernet data into framed or unframed T3/E3 format for transmission over T3/E3 links, and the modules are used in pairs.

The TC3844-3 performs store-and-forward of frames with Ethernet traffic conditioning and bridging functions at wire speed, fully utilizing the TDM circuit. The internal bridge supports VLAN tagging and priority labeling which enables the user to define different QoS levels according to the application requirements.

A variety of important features are included such as fault management, auto-negotiation with flow control, Statistics Monitoring, Network Time Protocol, Remote Firmware Upgrade and Temperature and Power Monitoring.

In-band and out-of-band management are accessed via Web, SNMP, Console and Telnet. Diagnostic tools include LEDs, dry contact alarms and local and remote loop-back

The TC3844-3 interface card can fit into any available JumboSwitch housing option including 2S Standalone chassis and 1U/2U/4U card cages. Power Redundancy is standard and power supply options available for standalone version are 90-260VAC, 12VDC, 24VDC and -48VDC. Standard operating temperature is -20°C to +70°C and the extreme temperature version is -40°C to +80°C.

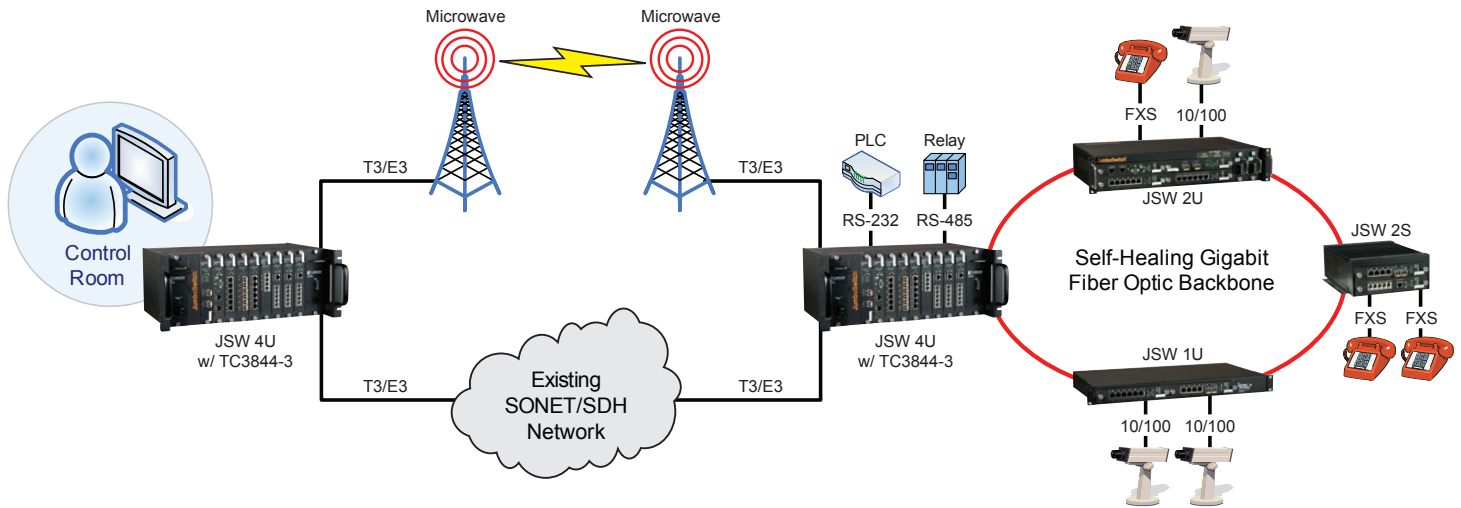
## Applications

- Bridging Ethernet LANs over Existing T3/E3 Telecom Network
- Extending Ethernet Networks by Utilizing TDM Telecom Infrastructure (i.e. T3/E3 Landline, or T3/E3s/PDH/SDH Microwave Carrying T3/E3)
- Demarcation Between the Carrier's and Customer's Networks
- Bonded Transparent LAN Service

## Environmental & EMI Compliance

The JumboSwitch product family meets all pertinent industry-specific standards for environmental, performance and security requirements including IEC 61850-3, IEEE 1613, NEMA TS-2 and NERC CIP. Furthermore, future JumboSwitch family products will continue to be compliant with both existing and emerging industry standards and requirements, including developing Ethernet standards. Please refer to the charts below for specific standards compliance information.

	Tests	Industrial Standards	TC Communications - JumboSwitch Type Test and Levels	
			Power Supply Unit (PSU)	RJ-45 & Signal
Temperature/Humidity	Low Temperature Use	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-1; Ae; -40°C; 16 hour	
	Low Temperature Storage	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-2; Be; +80°C; 16 hour	
	High Temperature Use	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-2; Bd; +85°C; 16 hour	
	High Temperature Storage	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-30; Db; +55°C; 95%; 96 hours	
	Damp Heat	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-6; Fc; 3 - 150 Hz; 7.5 mm; 2 g; 10 sweeps per axis	
Mechanical	Vibration	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-27; Ea; 30g; 11ms	
	Shock	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 61000-4-2; 8kV contact; 15 kV air	
ElectroMagnetic Compatibility	Electrostatic Discharge Immunity	IEEE 1613	IEC 61000-4-3; 80 MHz - 1000 MHz; 20 V/m; AM 80% 1 kHz	
	Radiated RF Immunity	IEC 61850-3, IEEE 1613	IEC 61000-4-4; 4 kV CM	IEC 61000-4-4; 4 kV CM
	EFT/Burst Immunity	IEC 61850-3, IEEE 1613	IEC 61000-4-5; 4 kV LG; 2 kV LL	IEC 61000-4-5; 4 kV LG; 2 kV LL
	Surge Immunity	IEC 61850-3	IEC 61000-4-6; 150 kHz - 80 MHz; 10 V; AM 80% 1 kHz	IEC 61000-4-6; 150 kHz - 80 MHz; 10 V; AM 80% 1 kHz
	Conducted RF immunity	IEC 61850-3	IEC 61000-4-8; 50 Hz; 100 A/m cont.; 1000 A/m 1 s	
	Magnetic Field Immunity	IEC 61850-3	IEC 61000-4-10; 100 kHz; 30 A/m	
	Damped Oscillatory Magnetic Field Immunity	IEC 61850-3	IEC 61000-4-10; 1 MHz; 30 A/m	
	Damped Oscillatory Magnetic Field Immunity	IEC 61850-3		
Power Supply Unit (PSU) Variations	AC Voltage Dips	IEC 61850-3	IEC 61000-4-11; 30% & 100%, 0.5s	NA
	DC Voltage Dips	IEC 61850-3	IEC 61000-4-29; 40% & 70%, 0.1s	NA
	Damped Oscillatory Wave	IEC 61850-3	IEC 61000-4-12; 2.5 kV CM, 1.0 kV DM @1MHz	IEC 61000-4-12; 2.5 kV CM, 1.0 kV DM @ 1MHz
	Conducted PF CM Voltage	IEC 61850-3	IEC 61000-4-16; 50 Hz; 30 V cont.; 300 V 1s	IEC 61000-4-16; 50 Hz; 30 V cont.; 300 V 1s
	Conducted Emission	IEC 61850-3	CE/FCC/CISPR22 class A	CE/FCC/CISPR22 class A
	Conducted emission	IEC 61850-3	CE/FCC/CISPR22 class A	CE/FCC/CISPR22 class A
	Radiated emission	IEC 61850-3	CE/FCC/CISPR22 class A	
Dielectric	Dielectric 50 Hz Test	IEEE 1613	IEC 60255-5; 2 kV	IEC 60255-5; 0.5 kV
	Impulse Voltage Test	IEEE 1613	IEC60255-5; 5 kV	IEC 60255-5; 5 kV



Typical Application using TC3844-3 IP-over-T3/E3 Gateway

**Electrical**

**T3 Interface**

- Connector.....Co-axial, BNC
- Line Termination.....75Ω,  
.....unbalanced
- Data Rate.....44.736Mbps
- Line Code.....B3ZS
- Framing..... Unframed M23 C-Bit
- Compliance..... GR-499-CORE  
.....ANSI T1.102, 107

**E3 Interface**

- Connector.....Co-axial, BNC
- Line Termination.....75Ω,
- Data Rate.....34.368Mbps
- Line Code.....HDB3 AMI
- Framing.....Unframed  
.....G.751 G.832
- Compliance.....ITU-T G.703

**Ethernet Interface**

- Connector.....Electrical RJ-45
- Type.....10/100Base-T
- Compliance.....IEEE 802.3

**System**

- Bit Error Rate .....1 in 10<sup>9</sup> or Better

**Regulatory Approval**

- CE, FCC Part 15, CISPR (EN55022)
- CLASS A, IEC 61850-3, IEEE 1613,  
NEMA TS-2

**LEDs**

- ALM, RLB, MGM, D (Duplex),  
L (Link), PWR A, PWR B, BP, LOS,  
B3ZS/HDB3/AMI, AIS, BPV

**Power**

- Standard.....12VDC
- Optional.....24, -48 VDC  
.....90-260 VAC, 50/60Hz
- Power Consumption.....<10W

**Operating Temperature**

- High Temp .....-20°C to 70°C
- Extreme Temp .....-40°C to 80°C

**Storage**

- Temperature.....-40°C to 90°C
- Humidity.....95% non-condensing

**Physical (rack mount card)**

- Height.....(3.15 cm) 1.24"
- Width.....(17.78 cm) 7.0"
- Depth.....(22.86 cm) 9.0"
- Weight.....(0.3kg) 0.75lbs



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Note: Information contained in this data sheet is subject to change without prior notice.



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