Main & Management Plug-In Cards for the 2U JumboSwitch®

TC3840-4(Main) TC3840-2(MGMT)

- **Provides Layer 2 Switching Functionality**
- **Fully Managed via Web, CLI, Telnet & SNMP**
- **2-Port SFP + 4-Port 10/100/1000 Gigabit for the Main Card**
- **1-Management Port and 1-Console Port for the Management Card**
- **Built-In Power/Temperature Sensors**
- **Industrial Hardened & IEC 61850-3, IEEE 1613 & NEMA TS-2**

Main MGMT

JumboSwitch 2U

Main & Mgmt Cards for the JumboSwitch 2U Chassis

Designed specifically for 2U chassis options, the JumboSwitch Main (TC3840-4) and Management (TC3840-2) plug-in cards provide layer 2 switching functionalities and the central switching fabric for JumboSwitch interface cards. Each 2U chassis must include both a Main and a Management card to function properly.

Optional interface cards communicate with the Main and Management Cards through the backplane, which contain both Data & Control buses. Together, the Main and Management cards provide the "intelligence" for the entire JumboSwitch network platform and serve as both the JumboSwitch's central processing unit and as the control bus access point for JumboSwitch management.

The JumboSwitch is fully compliant with pertinent IEEE standards such as 802.1x, 802.1w, 802.1s, 802.3x, 802.1D, 802.1p, 802.1Q, 802.3, 802.3u, 802.3z, 802.3ab, 802.3ad and 802.3ah. It also supports pertinent Protocols such as TFTP, SNTP, RMON, Telnet, SSH/SSL, Syslog and SNMPv1/v2c/v3, etc.

Diagnostics include unique features such as built-in Power and Temperature monitoring sensors and remote optical measurements for Launch Power and Sensitivity. Additional diagnostics include monitoring traffic statistics, fiber ring status, alarm conditions, etc. Security features include Password Protection.

Management is accessed via, Web, SNMP, Telnet or Serial Console. Configuration settings can be saved and loaded to simplify network administration, and firmware upgrades can be remotely uploaded. Virtual LAN (VLAN), QoS and Network Time Protocol (SNTP) are supported.

Optical and Power redundancy with automatic switchover are standard. Power options include 12VDC, 24VDC, -48VDC, 125VDC or 115/230VAC.

Applications

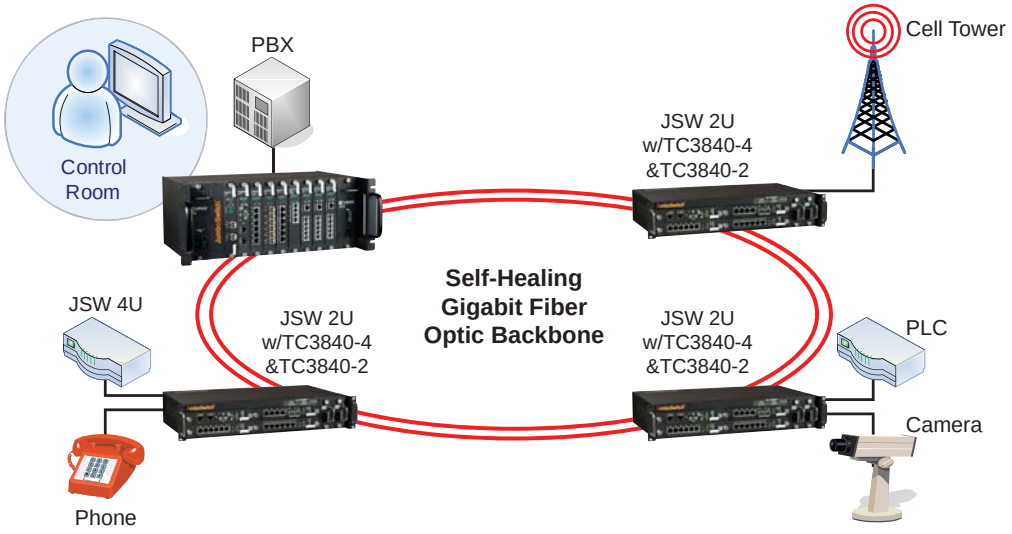
All JumboSwitches must include Main and Management plug-in cards to operate properly. The Management Card functions as the JumboSwitch's central processing unit and the Main Card is the control bus access point for JumboSwitch management. Together, these cards provide the "intelligence" for the entire JumboSwitch network platform.

Because the Model TC3840-4 Main Card also provides two SFP Gigabit ports and four copper 10/100/1000 Ethernet ports, it benefits users by enabling space for another interface card or eliminating the need for an additional Ethernet card. (The JumboSwitch 2U chassis can hold 1 main, 1 management and up to 2 interface cards).

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		
	High Temperature Use	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-2; Be; +80°C; 16 hour	
	High Temperature Storage	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-2; Bd; +85°C; 16 hour	
	Damp Heat	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-30; Db; +55°C; 95%; 96 hours	
Mechanical	Vibration	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	
	Shock	IEC 61850-3, IEEE 1613, NEMA TS-2	IEC 60068-2-27; Ea; 30g; 11ms	
ElectroMagnetic Compatibility	Electrostatic Discharge Immunity	IEEE 1613	IEC 61000-4-2; 8kV contact; 15 kV air	
	Radiated RF Immunity	IEC 61850-3, IEEE 1613	IEC 61000-4-3; 80 MHz - 1000 MHz; 20 V/m; AM 80% 1 kHz	
	EFT/Burst Immunity	IEC 61850-3, IEEE 1613	IEC 61000-4-4; 4 kV CM	IEC 61000-4-4; 4 kV CM
	Surge Immunity	IEC 61850-3	IEC 61000-4-5; 4 kV LG; 2 kV LL	IEC 61000-4-5; 4 kV LG; 2 kV LL
	Conducted RF 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
	Magnetic Field Immunity	IEC 61850-3	IEC 61000-4-8; 50 Hz; 100 A/m cont.; 1000 A/m 1 s	
	Damped Oscillatory 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	
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 JumboSwitch 4U & 2U to form a Gigabit Fiber Backbone

Data Rates
10/100/1000 Mbps with Rate Control

Main Card
Optical
- Transmitter.....ELED/LASER*
- Receiver.....PIN Diode
- Wavelength
  - SFP.....850nm MM
  - SFP.....1300/1550nm SM
- SFP Optic
  - Connectors.....LC
  - Port.....2
  - Interface.....1000SX/LX

Electrical
- Connectors.....RJ45 Female
- Port.....4
- Interface.....10/100/1000Base-T

MGMT Card
Management Ports
- Connector.....RJ45 Female
- Port.....1

Console Port
- Connector.....RJ45 Female
- Port.....1

System
Bit Error Rate.....1 in 10^{10} or Better

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

Diagnostic Functions
Traffic Statistics, Launch Power/ Sensitivity, Temperature

LEDs
Main
- PWR (A,B), Vcc, ALM, MGM, Speed, Duplex, Link/Act

MGMT
- PWR (A,B), Vcc, BP, ALM, MGM, SHR, MSTR, SYSTEM ALARM, Link/Act, Speed

Power
Standard.....15W

Option.....12, 24, -48, 125VDC or 115/230 VAC, 50/60Hz

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 (Rackmount Card)
Height.....(3.2 cm) 1.25”

Width.....(17.8 cm) 7.0”

Depth.....(23.5 cm) 9.25”

Weight.....(0.5 kg) 1 lbs*

*Contact factory for higher requirements

TC COMMUNICATIONS®
FIBER OPTIC CONNECTIVITY

Certified System™
ISO 9001
QMI-SAI Global
#1045959

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Note - Information contained in this data sheet is subject to change without prior notice. 010B