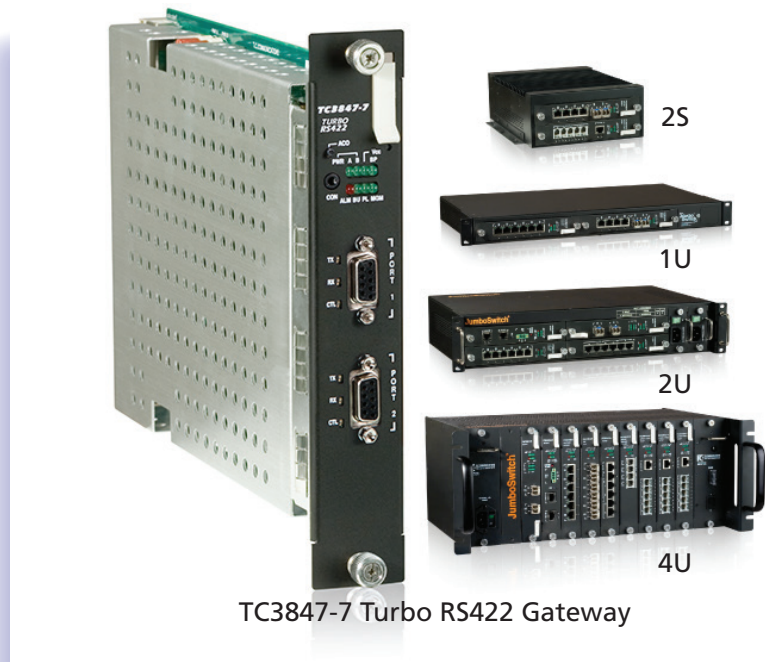


# Turbo RS-422 over IP Gateway

# TC3847-7

- Transport 2 Ch. RS-422 Sync without handshake or Async with handshake RTS/CTS. (Data rates from 1bps to 115Kbps for Async and 1bps to 72Kbps for Sync)
- Two Channels are independent to each other
- Low latency as low as 2msec, over IP network, Ethernet or MPLS.
- Manage via Web, SNMP or Telnet
- Port Password Protection
- Temperature and Power Consumption Monitoring via Web and SNMP
- Operating Temperature from -20C to +70C, or optional -40C to +80C
- Meets or Exceeds IEC 61850-3, IEEE 1613 & NEMA TS-2 Standards
- Member of the JumboSwitch® Product Family



Compact and simple to configure, the TC3847-7 Turbo RS-422 gateway transports two RS-422 sync without handshake or two RS-422 async with handshake signals over existing Layer 2/Layer 3 Ethernet or MPLS networks. The two channels are independent from each other, with the ability to link to different destinations at different baud rates.

Key features include Traffic Monitoring and Statistics, Network Time Server (NTP Server), Remote Firmware Upgrade, Temperature and Power Consumption Monitoring.

Setup, diagnostics, and management are accessed via Web, SNMP, and Telnet. Diagnostics include LED indicators and local/remote loop back to assist with troubleshooting and maintenance.

The TC3847-7 interface card can fit into any available JumboSwitch® housing options including 1S and 2S Standalone chassis and 1U/2U/4U rackmount card cages. Power supply options are 12VDC, 24VDC, -48VDC or 115/230 VAC. Standard operating temperature is -20°C to +70°C and the extreme temperature version is -40°C to + 80°C.

## Applications

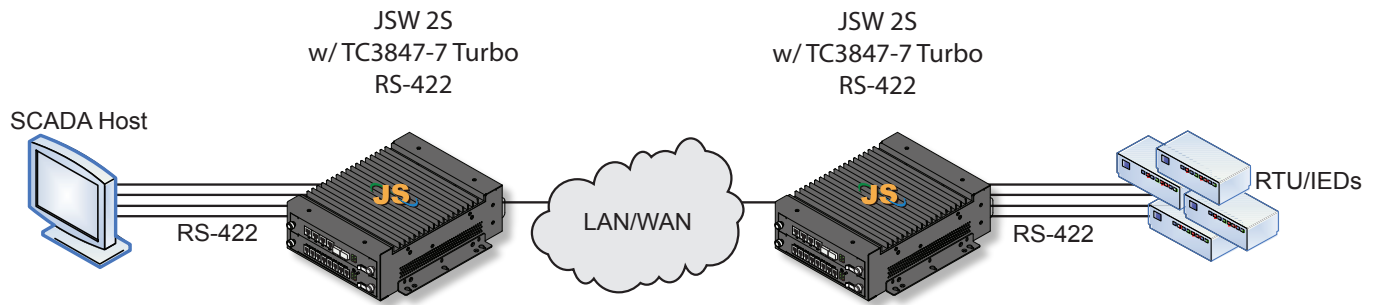
- Railroad Microlock\*
- Airport Digital Radar
- Utility SCADA
- Any RS-422 Communication via IP

\*MicroLok® is a trademark for ANSALDO STS USA, INC.

## 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 "Serial Tunneling" Application Using TC3847-7 Turbo RS-422

**Data Rates**

- RS-422 Async with RTS/CTS ..... 1bps to 115Kbps
- RS-422 Sync without RTS/CTS ..... 1bps to 72Kbps
- Ethernet.....10/100Mbps Full Duplex/Auto negotiation

**Electrical**

- RS-422 Interface
  - Connector.....DB9 Female
  - Port Count..... 2
  - Termination (optional)....100 Ohm
  - ESD Protection.....+/-15KV HBM
- Ethernet Interface
  - Connector.....RJ-45 Female
  - Port Count.....1
  - Standards.....IEEE 802.3
    - .....802.3u, 802.1p&Q

**Regulatory Approval**

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

**System**

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

**Diagnostic Functions**

Local and Remote Loopback for Serial Data

**LEDs**

- Unit Status.....PWR (A, B), Alarm
- .....Vcc, BP, MGM
- Channel.....Rx/Tx/Control
- Ethernet.....Link/Act

**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.....(0.45 kg) 1.0 lbs



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