

4-Ch. 600Ω Analog & 4-Ch. Dry Contact IP Gateway

TC3846-6

- Extends 4 Ch. 2/4-wire 600Ω Analog & 4 Ch. Dry Contact
- 64Kbps/Channel (No Compression)
- Extremely Low Latency
- VLAN & QoS Support
- Temperature & Power Consumption Monitoring
- Extreme Temp (-40°C to +80°C) Optional
- Meets or Exceeds IEC 61850-3, IEEE 1613 & NEMA TS-2 Standards
- Member of JumboSwitch® Product Family



TC3846-6 4-Ch. 600Ω Analog & 4 Ch. Dry Contact IP Gateway

Featuring extremely low latency, the TC3846-6 Analog + Dry Contact IP Gateway links or extends 4 channels of 600Ω 2/4 wire analog and 4 channels of dry contacts across Layer 2/3 Ethernet networks. It is simple to configure and supports point-to-point and point-to-multipoint topologies.

The TC3846-6 supports frequencies from 300Hz to 3.4KH and achieves minimal end-to-end processing delay (latency) by using high performance buffering and forwarding technology. The TC3846-6 is capable of running continuous pilot tones without interruption or quality degradation. This is possible because the usage of proprietary technology that, unlike VoIP, uses a common clock for both ends. The analog signals ride on a 64Kbps channel without compression.

VLAN and QoS for packet prioritization ensure reliable communications. Other key features include Traffic Monitoring and Statistics, Network Time Server (NTP Server), Remote Firmware Upgrade and Temperature and Power Consumption Monitoring. Diagnostics include LED indicators and local and remote loop back.

Setup, diagnostics, and management are accessed via Web, SNMP, Serial Console, and Telnet. An industrial hardened version (-40°C to +80°C) complies with all pertinent industry and environmental standards including IEC 61850-3, IEEE 1613 & NEMA TS-2.

The TC3846-6 fits any JumboSwitch® chassis option including 2S Standalone chassis and 1U/2U/4U card cages. Power supply options are 12VDC, 24VDC, -48VDC, 125VDC (available on 1U/2U/4U card cages only) or 115/230VAC.

Applications

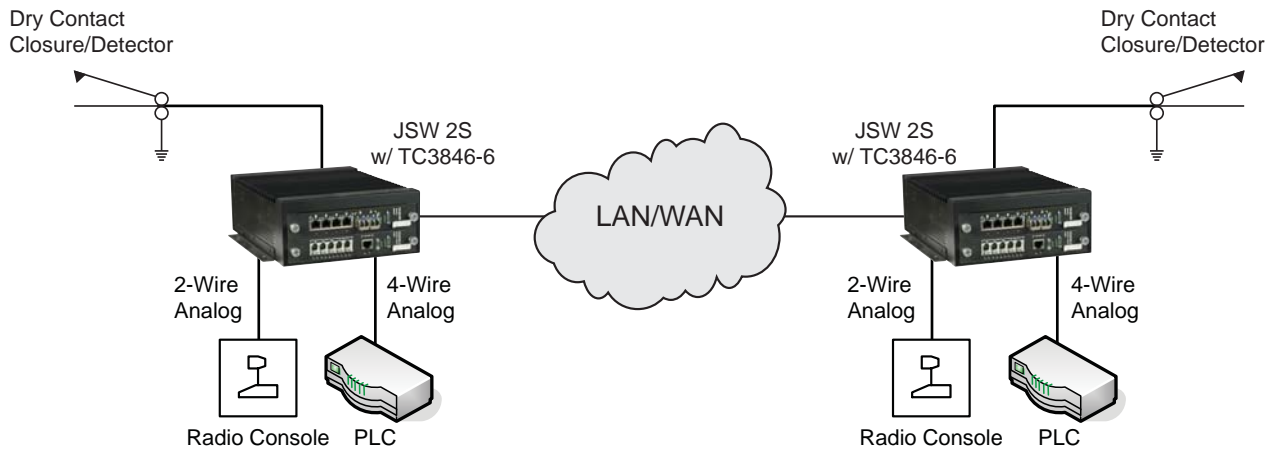
Typical applications include linking or extending various 600Ω analog, audio and intercom devices, (e.g. Frequency Shift Keying [FSK] modems), E&M, teleprotection relay controllers, and dry contacts over Layer 2/3 IP networks.

It is also used to improve voice quality and increase system reliability in harsh environments, to replace unreliable leased phone circuits and to stabilize voice level settings for 600Ω audio channels.

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 the JumboSwitch TC3846-6, 600Ω Analog & Dry Contact IP Gateway

Connection Capacity

600Ω (2/4 Wire).....	4 Ports
Dry Contact.....	4 Ports
Ethernet.....	1 Port

Electrical

Dry Contact Interface

Normal open.....	standard
Normal close.....	optional
Load Voltage (peak AC).....	60V
Load Voltage (DC).....	60V
Continuous load current.....	0.55A
Peak load current.....	1.2A
Max On Resistance.....	2.5 Ω
Output Capacitance.....	150pF
Detector Max input voltage.....	9V
600Ω analog interface	
Impedance.....	600Ω
Max Input.....	3Vp-p
Frequency band.....	300 to 3400Hz

Ethernet Interface

Standards.....	IEEE802.3,802.3u, 802.1p&Q
Connector.....	RJ45
ConsolePort.....	2.5mmAudioJack

Regulatory Approval

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

System

Bit Error Rate.....1 in 10¹⁰ or Better

Diagnostic Functions

Local and Remote Loopback for
Analog and Ethernet

LEDs

Unit Status.....PWR (A, B), Alarm, BU
.....PL, Vcc, BP, MGM
Channel.....Status
Ethernet.....Link/Act

Power

Standard.....12VDC
Optional.....24VDC, -48VDC
.....or 125VDC (1U/2U/4U only)
.....90-260 VAC, 50/60Hz
Power Consumption.....<10W

Operating Temperature

Bit Error Rate1 in 10¹⁰ or Better
Standard 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



ISO 9001
QMI-SAI Global
#1045959

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