

# 4U Rack Mount Card Cage

## 4U (TCRM19BR)

- Holds up to 9 JumboSwitch® Family Hot-Swappable Cards
- Built-In Power Redundancy
- Various AC & DC Power Ranges
- Power Supplies Remote Manageable via WebUI, SNMP, or CLI
- Industry Standard 19" Wide
- Ruggedized Design for Harsh Environments
- Extreme Temperature (-40°C to +80°C) Optional
- Member of the JumboSwitch® Product Family



JumboSwitch® 4U Card Cage

The JumboSwitch® 4U rack mount cages are designed to hold JumboSwitch® family hot-swappable cards. The 4U cage holds one Main+Management combo card, one Ethernet expansion card, and up to seven Interface cards.

TCRM19BR 4U card cage comes standard with dual load-sharing power supplies. AC and DC power supplies can be mixed in the same unit with the following options:

- 12VDC, 24VDC, -48VDC and 125VDC
- 115VAC/230VAC or 260VAC (50-60Hz)

See page 3 for details.

The universal AC power supply automatically adjusts for 90 to 264VAC input and 47 to 63 Hz operation.

The dual load-sharing power supplies automatically switch over in the event of a power failure. And through the Management card, the power supply can be remotely managed via WebUI, SNMP, or CLI.

The standard operating temperature is -20°C to +70°C, and the extreme temperature version is -40°C to +80°C.

See page 4 for dimensions.

## Applications

Sturdy and durable, JumboSwitch® 4U card cages house hot-swappable JumboSwitch family cards in a standard 19" rack. Power supplies can be remotely managed and dual load sharing power supplies automatically switch over in the event of a power failure.

## Slot Configuration

- 1 Management Card\*
- 1 Ethernet Expansion Card
- 7 Interface Cards

\*TC3840-5 or TC3850-3

## Environmental & EMC 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.

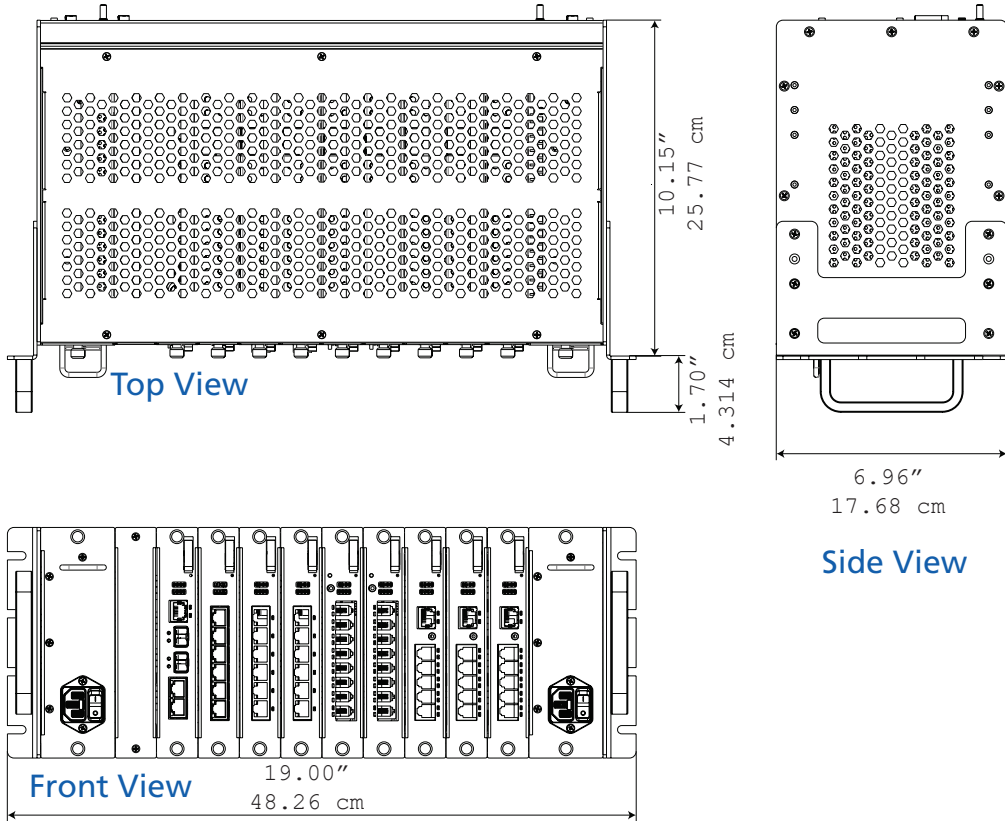
|  | Test                                       | Industrial Standards              | JumboSwitch TC3850 Series Type Test and Levels  |   |
|--|--|-----------------------------------|---|---|
|  |  |                                   | Power Supply Unit (PSU)   | RJ-45 & Signal                                      |
| Temperature/Humidity                           | Low Temperature Use                        | IEC 61850-3, IEEE 1613, NEMA TS-2 | IEC 60068-2-1; Ae; -40°C; 16 hour<br>IEC 60068-2-2; Be; +80°C; 16 hour<br>IEC 60068-2-2; Bd; +85°C; 16 hour<br>IEC 60068-2-30; Db; +55°C; 95%; 96 hours |   |
|  | Low Temperature Storage                    | IEC 61850-3, IEEE 1613, NEMA TS-2 |   |   |
|  | High Temperature Use                       | IEC 61850-3, IEEE 1613, NEMA TS-2 |   |   |
|  | High Temperature Storage                   | IEC 61850-3, IEEE 1613, NEMA TS-2 |   |   |
|  | Damp Heat                                  | IEC 61850-3, IEEE 1613, NEMA TS-2 |   |   |
| 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   |   |
|  | Free Fall                                  | IEC 61850-3, IEEE 1613            | 25 cm   |   |
| ElectroMagnetic Compatibility                  | Electrostatic Discharge Immunity           | IEC 61850-3, IEEE 1613 (C37.90.3) | IEC 61000-4-2; 8kV contact; 15 kV air   |   |
|  | Radiated RF Immunity                       | IEC 61850-3, IEEE 1613 (C37.90.2) | IEC 61000-4-3; 80 MHz - 1000 MHz; 35 V/m (Peak); AM 80% at 1 kHz  |   |
|  | EFT/Burst Immunity                         | IEC 61850-3, IEEE 1613 (C37.90.1) | IEC 61000-4-4; 4 kV CM; TM  | IEC 61000-4-4; 4 kV CM; TM                          |
|  | Surge 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                     |
|  | Conducted RF immunity                      | IEC 61850-3, IEEE 1613            | 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, IEEE 1613            | IEC 61000-4-8; 50 Hz; 100 A/m cont.; 1000 A/m 1 second  |   |
|  | Damped Oscillatory Magnetic Field Immunity | IEEE 1613                         | IEC 61000-4-10; 100 kHz; 30 A/m   |   |
|  | Damped Oscillatory Magnetic Field Immunity | IEEE 1613                         | IEC 61000-4-10; 1 MHz; 30 A/m   |   |
| Power Supply Unit (PSU) Variations & Emissions | 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  |
|  | Ripple on DC Power Supply                  | IEC 61850-3                       | IEC 61000-4-17; 10% Un  | NA  |
|  | Conducted PF CM Voltage                    | IEC 61850-3, IEEE 1613            | 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/CISPR32 class A  | CE/FCC/CISPR32 class A                              |
|  | Radiated Emission                          | IEC 61850-3                       | CE/FCC/CISPR32 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                                   |



## JumboSwitch® 4U Power Supply

| Power Supply Type                            | 12V DC                         | 24V DC                        | 48V DC                        | 125V DC                        | AC                                       |
|--|--------------------------------|-------------------------------|-------------------------------|--------------------------------|--|
| TC P/N<br>R: Regular Temp<br>Y: Extreme Temp | TCRMPS3-R-12 TCRM-<br>PS3-Y-12 | TCRMPS3-R-24<br>TCRMPS3-Y-24  | TCRMPS3-R-48<br>TCRMPS3-Y-48  | TCRMPS3-R-25 TCRM-<br>PS3-Y-25 | TCRMPS3-R-01<br>TCRMPS3-Y-01             |
| Product Input Voltage Range                  | 9-18V DC                       | 18-36V DC                     | 36-64V DC                     | 100-135V DC                    | 90-264V AC                               |
| Maximum Output Power                         | 175W                           | 120W                          | 120W                          | 150W                           | 135W                                     |
| Input frequency AC                           | N/A                            | N/A                           | N/A                           | N/A                            | 47-63Hz                                  |
| Input Inrush Current Protection              | No                             | No                            | No                            | <10Amp @ 125VDC                | 30Amp max@ 115VAC,<br>60Amp max @ 230VAC |
| Efficiency                                   | 78.6% Typical                  | Up to 91%                     | Up to 91%                     | 84.8% Typical                  | 80% Typical                              |
| Overload Protection                          | Up to 125% of Max Output Load  | Up to 140% of Max Output Load | Up to 140% of Max Output Load | Up to 125% of Max Output Load  | Up to 150% of Max Output Load            |
| Short Circuit Protection                     | Continous, automatic recovery  | Continous, automatic recovery | Continous, automatic recovery | Continous, automatic recovery  | Auto-recovery                            |
| Over Voltage Protection                      | Yes, up to 110% of Vout max    | Yes, up to 130% of Vout max   | Yes, up to 130% of Vout max   | Yes, up to 110% Vout max       | Latch-off                                |

# JumboSwitch® 4U Card Cage Dimensions (TCRM19BR)



SAI GLOBAL  
 ISO 9001  
 Quality

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



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