

# TRC-190 Series

## Rackmount chassis for the NRack System™



- > 19-inch chassis for rackmount use
- > 19 slots for high density applications
- > Supports dual power input with redundancy
- > Fanless chassis design reduces servicing costs



### Introduction

The TRC-190 series provides 19 slots for media converter modules from the CSM-200 series of Ethernet-to-fiber modules and TCF-142-RM series of serial-to-fiber modules. A TRC-190 chassis comes with one AC or DC power input, with an optional redundant power

expansion AC or DC module available for greater reliability. The PWR-190-AC and PWR-190-DC-48 power modules can be installed at the same time.

### Specifications

#### Physical Characteristics

**Housing:** SECC (1.2 mm)  
**Dimensions:** 440 x 260 x 88 mm (17.32 x 10.24 x 3.46 in)  
**Weight:** 5.2 kg (11.4 lb), with one power module installed  
**Number of Slots:** 19 slots on the front for slide-in modules, 2 slots at the back for power supply modules

#### Environmental Limits

**Operating Temperature:** 0 to 60°C (32 to 140°F)  
**Storage Temperature:** -20 to 75°C (-4 to 167°F)  
**Ambient Relative Humidity:** 5 to 95% (non-condensing)

#### Power Requirements

**Input Voltage:** Universal 100 to 240 VAC (47 to 63 Hz) or ±48 VDC (36 to 53 VDC and -36 to -53 VDC)  
**Power Consumption:**  
 75 W max. (when all slots are occupied and in use)

#### Standards and Certifications

**Safety:** UL 60950-1, EN 60950-1  
**EMC:** CE, FCC  
**EMI:** EN 55032 Class A, FCC Part 15 Subpart B Class A  
**EMS:**  
 EN 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV  
 EN 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m  
 EN 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV  
 EN 61000-4-5 Surge: Power: 1 kV; Signal: 0.5 kV  
 EN 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m  
 EN 61000-4-8 PFMF  
 EN 61000-4-11  
**Green Product:** RoHS, CRoHS, WEEE

#### MTBF (mean time between failures)

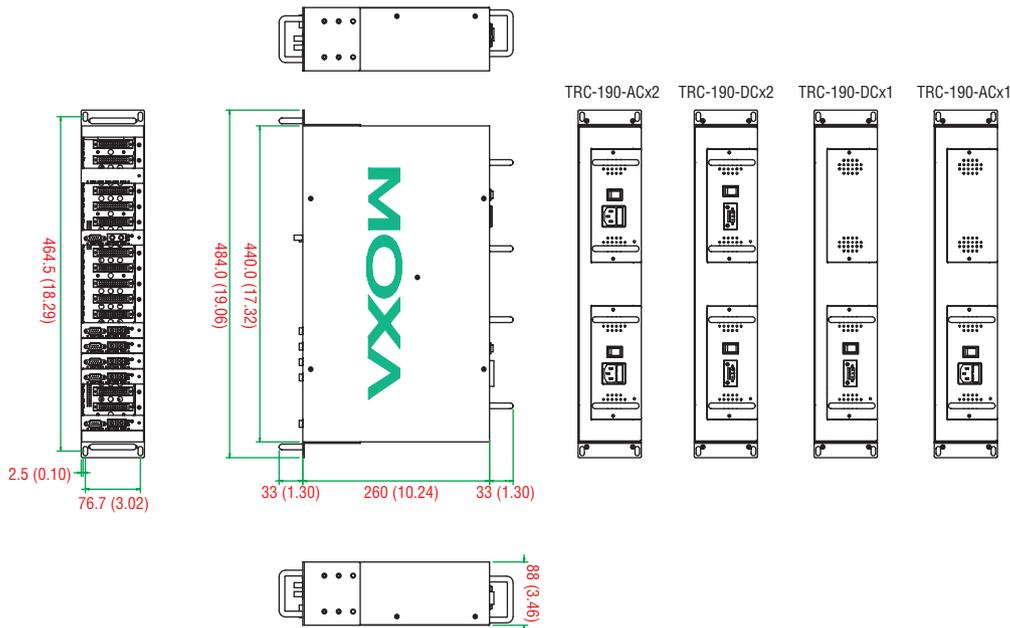
**Time:** 1,055,112 hrs  
**Standard:** Telcordia (Bellcore), GB

#### Warranty

**Warranty Period:** 5 years  
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Dimensions

Unit: mm (inch)



## Ordering Information

### Available Models

**TRC-190-AC:** Rack chassis, 2U, single 110 to 240 VAC input, with 19 slots on front panel

**TRC-190-DC-48:** Rack chassis, 2U, single 36 to 53 VDC input, with 19 slots on front panel

### Available Slide-in Modules

**CSM-200-1213:** 10/100BaseT(X) to 100BaseFX slide-in module media converter, multi-mode ST connector

**CSM-200-1214:** 10/100BaseT(X) to 100BaseFX slide-in module media converter, multi-mode SC connector

**CSM-200-1218:** 10/100BaseT(X) to 100BaseFX slide-in module media converter, single-mode SC connector

**TCF-142-M-SC-RM:** RS-232/422/485 to multi-mode fiber slide-in module converter, SC connector

**TCF-142-M-ST-RM:** RS-232/422/485 to multi-mode fiber slide-in module converter, ST connector

**TCF-142-S-SC-RM:** RS-232/422/485 to single-mode fiber slide-in module converter, SC connector

**TCF-142-S-ST-RM:** RS-232/422/485 to single-mode fiber slide-in module converter, ST connector

### Optional Accessories (can be purchased separately)

**PWR-190-AC:** 110 to 240 VAC power supply for the TRC-190-AC

**PWR-190-DC-48:** 36 to 53 VDC power supply for the TRC-190-DC-48

**Plate-1:** Face plate to cover unused front panel slots (required for all unused slots)

### Package Checklist

- 1 TRC-190 with single power input
- Power cord (for the TRC-190-AC only)
- 18 units of face plate and screws
- Rackmount kit
- Quick installation guide (printed)
- Warranty card

### PWR-190-AC

Redundant power supply, 110 to 240 VAC



#### Physical Characteristics

**Dimensions:** 157.4 x 123.3 x 70 mm (18.6 x 11 x 3.3 in.)

**Gross Weight:** 0.5 kg (1.1 lb)

#### Environmental Limits

**Operating Temperature:** 0 to 60°C (32 to 140°F)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

#### Power Requirements

**Input Voltage:** 110 to 240 VAC (100 to 240 VAC max.) @ 47-63 Hz

**Max. Input Current:** 0.31 A @ 240 VAC (when all slots are occupied and in use)

### PWR-190-DC-48

Redundant power supply, 48 VDC



#### Physical Characteristics

**Dimensions:** 157.4 x 123.3 x 70 mm (18.6 x 11 x 3.3 in.)

**Gross Weight:** 0.5 kg (1.1 lb)

#### Environmental Limits

**Operating Temperature:** 0 to 60°C (32 to 140°F)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

#### Power Requirements

**Input Voltage:** 48 VDC (36 to 53 VDC max.)

**Max. Input Current:** 1.5 A @ 48 VDC (when all slots are occupied and in use)

### Plate-1

Face plate to cover unused front panel slots (required for all unused slots)



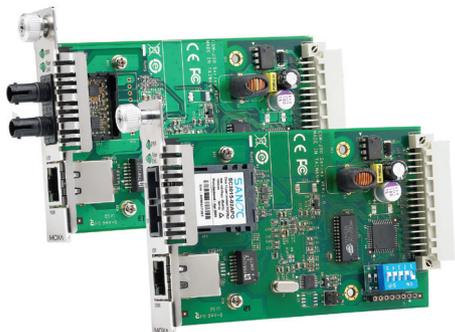
#### Physical Characteristics

**Dimensions:** 180.1 x 89.4 x 28.5 mm (7.09 x 3.52 x 1.12 in)

**Gross Weight:** 0.2 kg (0.44 lb)

# CSM-200 Series

**10/100BaseT(X) to 100BaseFX slide-in modules for the NRack System™**



- > LFP (Link Fault Pass-through) and FEF (Far End Fault)
- > Two different operation modes
  - Store-and-Forward
  - Pass Through
- > Auto Negotiation
- > Plug and Play
- > Hot-swap



## Introduction

The CSM-200/400 modules are slide-in Ethernet-to-fiber media converters for the NRack System™. The modules provide media

conversion from 10/100BaseT(X) to 100BaseFX (SC/ST connectors), and can be installed in any NRack System™ chassis.

## Specifications

### Technology

#### Standards:

IEEE 802.3 for 10BaseT

IEEE 802.3u for 100BaseT(X), 100BaseFX

#### Interface

**RJ45 Ports:** 10/100BaseT(X)

**Fiber Ports:** 100BaseFX (SC/ST connectors)

**LED Indicators:** PWR, Fiber Link, 10/100M (TP port)

**DIP Switches:**

DIP	Function	ON	OFF
1	Auto Negotiation	Enable	Disable
2	Force TP Speed	100 Mbps	10 Mbps
3	Force TP Duplex	Full Duplex	Half Duplex
4	Link Fault Pass Through	Enable	Disable
5	Operating Mode	Store-and-Forward	Pass Through

### Physical Characteristics

**Dimensions:** 86.8 x 124.3 x 21 mm (3.42 x 4.89 x 0.83 in)

#### Weight:

Product only:

CSM-200-1213: 115 g (0.25 lb)

CSM-200-1214/1218: 125 g (0.28 lb)

Packaged:

CSM-200-1213: 170 g (0.37 lb)

CSM-200-1214/1218: 180 g (0.40 lb)

### Environmental Limits

**Operating Temperature:** 0 to 55°C (32 to 131°F)

**Storage Temperature:** -20 to 75°C (-4 to 167°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

### Power Requirements

**Input Voltage:** 12 VDC

**Input Current:** 180 mA @ 12 VDC max.

### Standards and Certifications

**Safety:** UL 60950-1

**EMC:** EN 55032/24

**EMI:** CISPR 32, FCC Part 15B Class A

**EMS:**

EN 61000-4-2 (ESD): Contact: 4 kV; Air: 8 kV

EN 61000-4-3 (RS): 80 MHz to 1 GHz: 3 V/m

EN 61000-4-4 (EFT): Power: 1 kV; Signal: 0.5 kV

EN 61000-4-5 (Surge): Power: 1 kV; Signal: 0.5 kV

EN 61000-4-6 (CS): 150 kHz to 80 MHz: 3 V/m

EN 61000-4-8 (PFMF)

EN 61000-4-11

**Freefall:** IEC 60068-2-32

### MTBF (mean time between failures)

**Time:** 1,454,560 hrs

**Standard:** Telcordia (Bellcore), GB

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Optical Fiber

		100BaseFX		
		Multi-Mode		Single-Mode
Fiber Cable Type		OM1	50/125 μm 800 MHz*km	G.652
Typical Distance		4 km	5 km	40 km
Wave-length	Typical (nm)	1300		1310
	TX Range (nm)	1260 to 1360	1280 to 1340	
	RX Range (nm)	1100 to 1600	1100 to 1600	
Optical Power	TX Range (dBm)	-10 to -20	0 to -5	
	RX Range (dBm)	-3 to -32	-3 to -34	
	Link Budget (dB)	12	29	
	Dispersion Penalty (dB)	3	1	

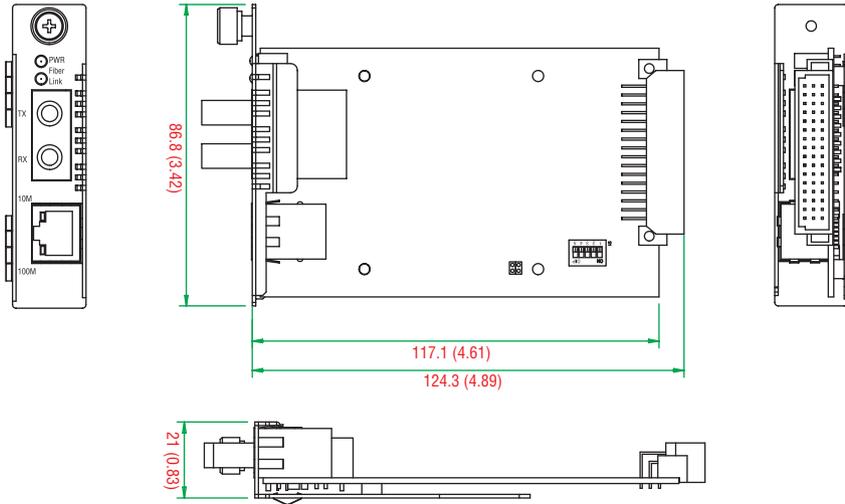
Note: When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power.

Note: Compute the "typical distance" of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).

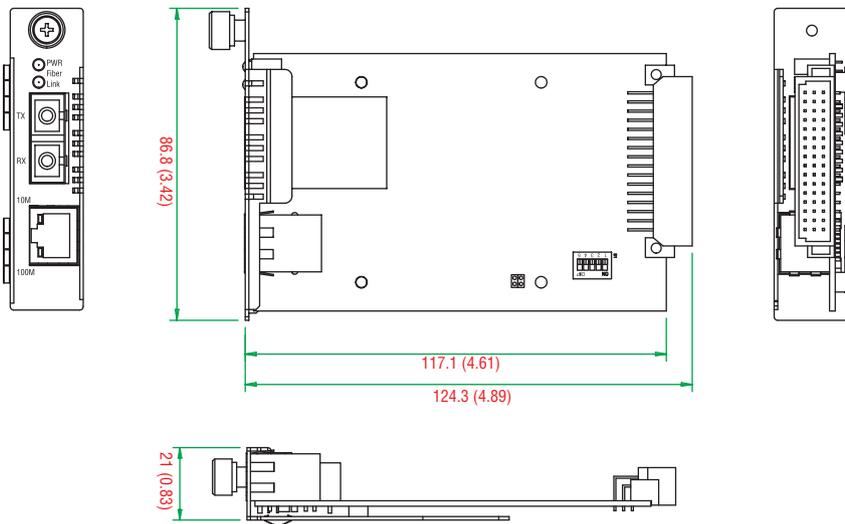
**Dimensions**

Unit: mm (inch)

**CSM-200-1213**



**CSM-200-1214/CSM-200-1218**



**: Ordering Information**

**Available Models**

- CSM-200-1213:** 10/100BaseT(X) to 100BaseFX slide-in module media converter, multi-mode ST connector
- CSM-200-1214:** 10/100BaseT(X) to 100BaseFX slide-in module media converter, multi-mode SC connector
- CSM-200-1218:** 10/100BaseT(X) to 100BaseFX slide-in module media converter, single-mode SC connector

**Package Checklist**

- 1 CSM-200 media converter
- Quick installation guide (printed)
- Warranty card