TRC-2190 Series

18-slot rackmount chassis managed media converter

> 19-inch chassis for rackmount use
> 18 slots for high density applications
> Supports dual power input with redundancy
> Fanless chassis design reduces servicing costs
> SNMP/web console for easy management
> -20 to 55°C operating temperature range

Introduction

The TRC-2190 Series provides 18 slots for media converter modules from the CSM-400 series of Ethernet-to-fiber management modules. It also supports SNMP/web console for remote management and monitoring. A TRC-2190 chassis comes with one AC or DC power input, with an optional redundant power expansion module available for greater reliability. The TRC-2190 Series' power input module supports a fanless chassis design, as well as a -20 to 55°C operating temperature range.

Specifications

Ethernet Interface
Number of Ports: 2
Speed: 10/100 Mbps, auto MDI/MDIX
Connector: 8-pin RJ45
Magnetic Isolation Protection: 1.5 kV built-in

USB Interface
Number of Ports: 1
USB Standard: USB 1.1/2.0 standard
Connector: USB Type B

Software
Network Protocols: ICMP, IP, TCP, DHCP, Telnet, DNS, SNMP V1/V2c/V3, HTTP, SMTP
Configuration Options: SNMP/HTTP/Telnet/USB/SSH/HTTPS

Physical Characteristics
Housing: SECC (1.2 mm)
Dimensions: 440 x 260 x 77 mm (18.6 x 11 x 3.3 in)
Weight: 5.2 kg (11.4 lbs), with one power module installed
Number of Slots: 18 slots on the front for slide-in modules, 2 slots on the back for power supply modules

Environmental Limits
Operating Temperature: -20 to 55°C (-4 to 131°F)
Storage Temperature: -40 to 85°C (-40 to 185°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:
Max. Output: 3.2A @ 36VDC

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 (DIPS)
Green Product: RoHS, CRoHS, WEEE

MTBF (mean time between failures)
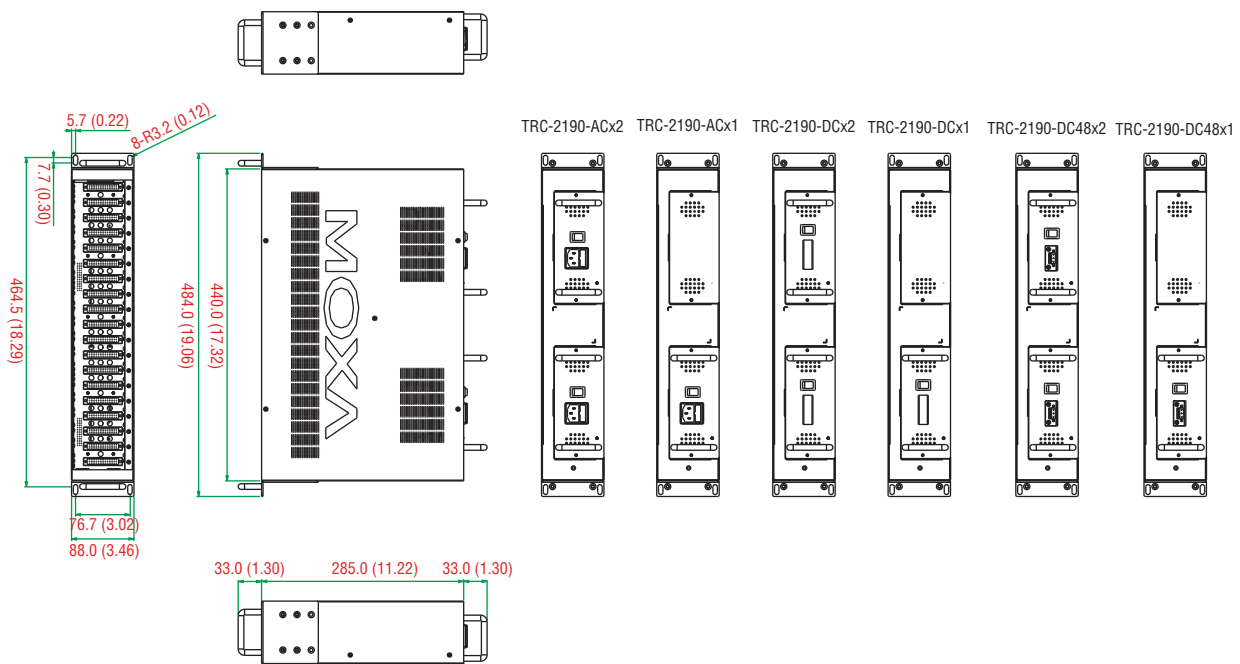**Time:** 1,055,112 hrs
Standard: Telcordia (Bellcore), GB

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

TRC-2190-ACx2   TRC-2190-ACx1   TRC-2190-DCx2   TRC-2190-DCx1   TRC-2190-DC48x2   TRC-2190-DC48x1

5.7 (0.22)   8-R3.2 (0.12)
7.7 (0.30)
464.5 (18.29)
484.0 (19.06)
440.0 (17.32)
76.7 (3.02)
88.0 (3.46)
33.0 (1.30)   285.0 (11.22)   33.0 (1.30)

: Ordering Information

Available Models

TRC-2190-AC: 2U rackmount chassis, with a single 110 to 240 VAC input, 18 slots on the front panel, and CSM-MN01 managed module

TRC-2190-DC-48V: 2U rackmount chassis, with a single 36 to 53 VDC input, 18 slots on the front panel, and CSM-MN01 managed module

Note: You must purchase at least one slide-in module for use with the TRC-2190 18-slot rackmount chassis

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

CSM-400-1213: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, multi-mode ST connector, -20 to 55°C

CSM-400-1213-T: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, multi-mode ST connector, -40 to 75°C

CSM-400-1214: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, multi-mode SC connector, -20 to 55°C

CSM-400-1214-T: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, multi-mode SC connector, -40 to 75°C

CSM-400-1218: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, single-mode SC connector, -20 to 55°C

CSM-400-1218-T: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, single-mode SC connector, -40 to 75°C

CSM-400-1224: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, WDM-A single-mode SC connector, -20 to 55°C

CSM-400-1224-T: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, WDM-A single-mode SC connector, -40 to 75°C

CSM-400-1225: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, WDM-B single-mode SC connector, -20 to 55°C

CSM-400-1225-T: 10/100BaseT(X) to 100BaseFX slide-in managed module converter, WDM-B single-mode SC connector, -40 to 75°C

Optional Accessories (can be purchased separately)

PWR-2190-AC: Redundant power supply, 110 to 240 VAC

PWR-2190-DC48V: Redundant power supply, 36 to 53 VDC

ME-10-T: Standalone 1-slot chassis with redundant 12 to 48 VDC power inputs

Note: You must purchase at least one slide-in module for use with the ME-10-T 1-slot standalone chassis.

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

Package Checklist

- 1 TRC-2190 with single power input
- Power cord (for TRC-2190-AC only)
- 18 face plates
- User's manual (printed)
- Warranty card

PWR-2190-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: -20 to 55°C (-4 to 131°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Power Requirements
Input Voltage: Universal 100 to 240 VAC 47-63 Hz
Max. Power Output: 3.5 A @ 12 VDC

PWR-2190-DC-48V
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: -20 to 55°C (-4 to 131°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
Max. Power Output: 5.4 A @ 12 VDC

ME-10-T
Standalone 1-slot chassis with redundant 12 to 48 VDC power inputs

Physical Characteristics
Dimensions: 180.1 x 89.4 x 28.5 mm (7.09 x 3.52 x 1.12 in)
Gross Weight: 0.7 kg (1.54 lb)
Environmental Limits
Operating Temperature: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Power Requirements
Input Voltage: 12 to 48 VDC
Max. Power Output: 0.43 A @ 12 VDC

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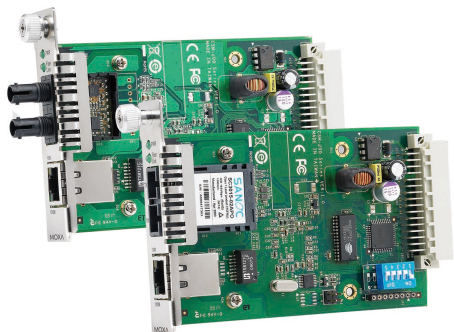Face plate to cover unused front panel slots (required for all unused slots)

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

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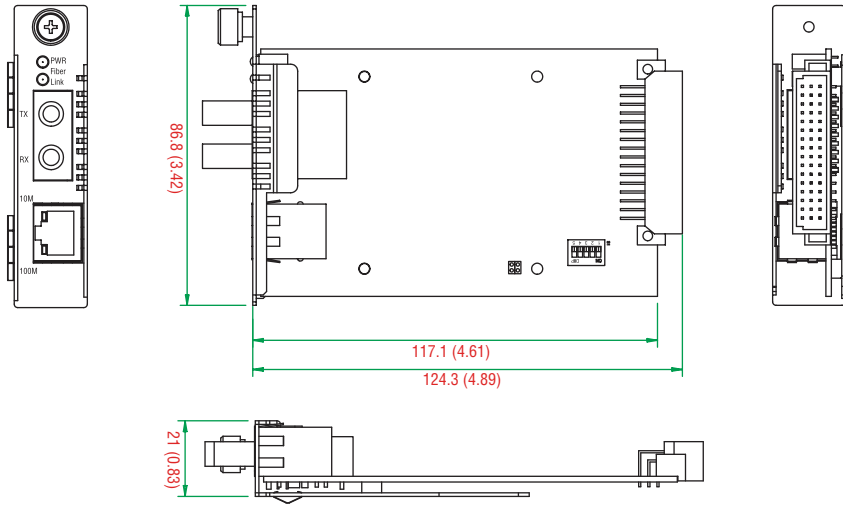Note: Compute the "typical distance" of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).
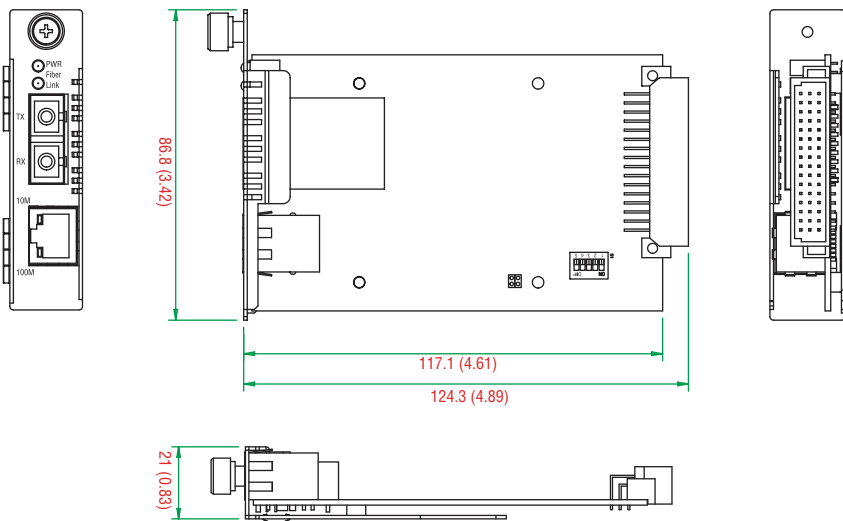
Physical Characteristics

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

Dimensions

Unit: mm (inch)

CSM-200-1213

86.8 (3.42)

117.1 (4.61)

124.3 (4.89)

21 (0.83)

CSM-200-1214/CSM-200-1218

86.8 (3.42)

117.1 (4.61)

124.3 (4.89)

21 (0.83)

: 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

CSM-400 Series

10/100BaseT(X) to 100BaseFX slide-in modules for the NRack System™
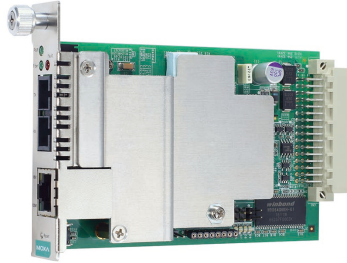
> LFP (Link Fault Pass-through) and FEF (Far End Fault)
> Supports Store-and-Forward mode and Pass Through mode
> Auto Negotiation
> Supports IEEE 802.3AH OAM protocol
> Plug and Play
> Hot-swap
> IP-based remote management
> Supports WDM type modules

: Introduction

The CSM-400 modules are slide-in Ethernet-to-fiber managed media converters for the NRack System™. The modules provide media conversion from 10/100BaseT(X) to 100BaseFX (with SC/ST connectors), and can be installed in any NRack System™ chassis. The

CSM-400 modules support LFP and FEF for easily tracing network link failures, and support store-and-forward and pass through modes, 802.3AM OAM for remote management and monitoring, as well as WDM-type fiber modules to reduce fiber cable cost.

: 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)

Optical Fiber

		100BaseFX		
		Multi-Mode		Single-Mode
Fiber Cable Type		OM1	50/125 μm	G.652
			800 MHz*km	
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

		100BaseFX WDM-A	100BaseFX WDM-A
		Single-Mode	Single-Mode
Fiber Cable Type		G.652	G.652
Typical Distance		20 km	20 km
Wave-length	Typical (nm)	1310/1550 nm	1550/1310 nm
	TX Range (nm)	1280 to 1340	1480 to 1600
	RX Range (nm)	1480 to 1600	1280 to 1340
Optical Power	TX Range (dBm)	-5 to -15	-5 to -15
	RX Range (dBm)	-3 to -32	-3 to -32
	Link Budget (dB)	17	17
	Dispersion Penalty (dB)	1	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).

MOXA®

Physical Characteristics

Dimensions: 86.8 x 124.3 x 21 mm (3.42 x 4.89 x 0.83 in)
Weight:
Product only:
 CSM-400-1213/1214/1218: 115 g (0.25 lb)
 CSM-400-1224/1225: 125 g (0.28 lb)
Packaged:
 CSM-400-1213/1214/1218: 170 g (0.37 lb)
 CSM-400-1224/1225: 180 g (0.40 lb)

Environmental Limits

Operating Temperature:
Standard Models: -20 to 55°C (-4 to 131°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Input Voltage: 12 VDC
Input Current: 220 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
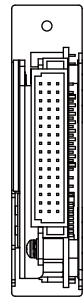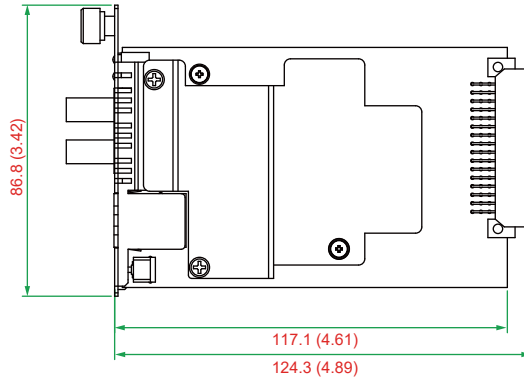**Standard:** Telcordia (Bellcore), GB

Warranty

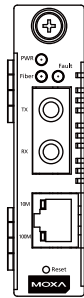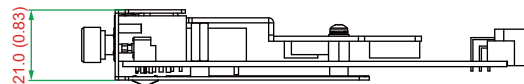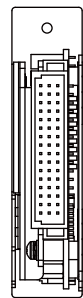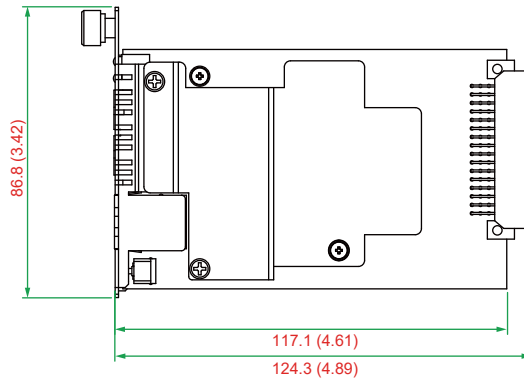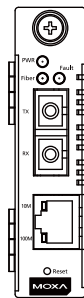**Warranty Period:** 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

CSM-400-1213
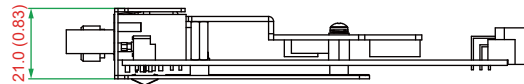
86.8 (3.42)
117.1 (4.61)
124.3 (4.89)
21.0 (0.83)

CSM-400-1214
CSM-400-1218

86.8 (3.42)
117.1 (4.61)
124.3 (4.89)
21.0 (0.83)

CSM-400-1224
CSM-400-1225

86.8 (3.42)

117.1 (4.61)

124.3 (4.89)

21.0 (0.83)
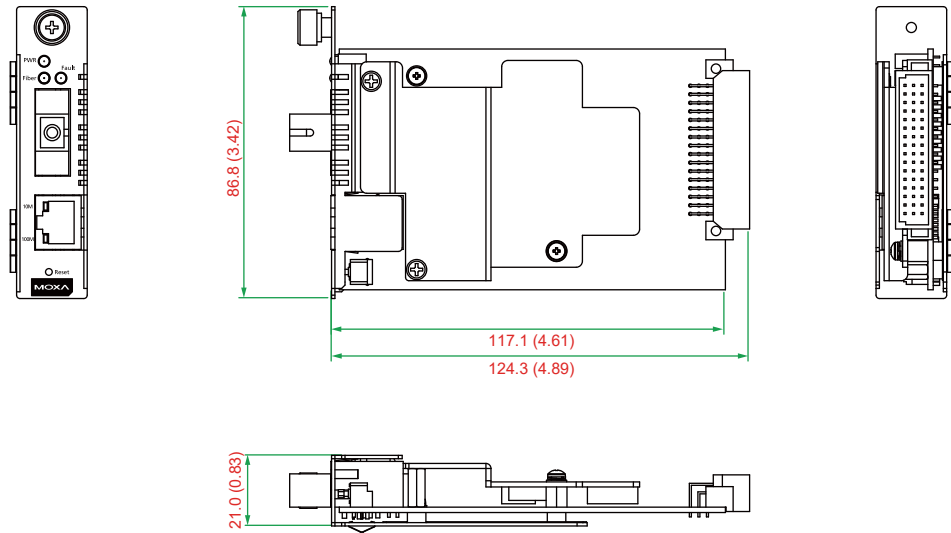
Ordering Information

Available Models

CSM-400-1213: 10/100BaseT(X) to 100BaseFX slide-in management module converter, multi-mode ST connector, -20 to 55°C

CSM-400-1213-T: 10/100BaseT(X) to 100BaseFX slide-in management module converter, multi-mode ST connector, -40 to 75°C

CSM-400-1214: 10/100BaseT(X) to 100BaseFX slide-in management module converter, multi-mode SC connector, -20 to 55°C

CSM-400-1214-T: 10/100BaseT(X) to 100BaseFX slide-in management module converter, multi-mode SC connector, -40 to 75°C

CSM-400-1218: 10/100BaseT(X) to 100BaseFX slide-in management module converter, single-mode SC connector, -20 to 55°C

CSM-400-1218-T: 10/100BaseT(X) to 100BaseFX slide-in management module converter, single-mode SC connector, -40 to 75°C

CSM-400-1224: 10/100BaseT(X) to 100BaseFX slide-in management module converter, WDM-A single-mode SC connector, -20 to 55°C

CSM-400-1224-T: 10/100BaseT(X) to 100BaseFX slide-in management module converter, WDM-A single-mode SC connector, -40 to 75°C

CSM-400-1225: 10/100BaseT(X) to 100BaseFX slide-in management module converter, WDM-B single-mode SC connector, -20 to 55°C

CSM-400-1225-T: 10/100BaseT(X) to 100BaseFX slide-in management module converter, WDM-B single-mode SC connector, -40 to 75°C

Package Checklist

- 1 CSM-400 media converter
- Quick installation guide (printed)
- Warranty card