

# MC-1100 Series

## Quad-core fanless DIN-rail automation computer



- > Intel Atom Quad-core E3845 processor
- > Dual-storage (SD and CFast slots)
- > Dual-independent displays (VGA + display port)
- > Variety of interfaces: 2 serial ports, 4 Giga LANs, 4 DIs, 4 DOs, 2 USB 2.0 ports
- > Mini-PCIe sockets for WiFi, 3G, LTE, GPS
- > 12 to 36 VDC, wide range isolated power
- > -40 to 70°C system operating temperature range
- > Moxa SmartRecovery utility to recover system from boot failure (W7E only)
- > Marine-grade and Zone 2 compliance



### Overview

The Moxa MC-1100 series DIN-rail, fanless, x86 embedded computers use the Intel® Atom™ E3800 series processor, feature the most reliable I/O design to maximize connectivity, and support wireless modules (WiFi/3G/LTE), making them suitable for a diverse range of communication applications.

The MC-1100's wide operating temperature range (-40 to 70°C) and Safety/EMI/EMS compliances makes it ideal for intelligent computing and communication solutions in critical environments, including marine communication, oil & gas field site monitoring, and transportation.

The MC-1100 series supports "Moxa Proactive Monitoring" for device I/O status monitoring and alerts, system temperature monitoring and

alerts, and system power management. Close monitoring of the system status makes it easier to recover from errors and provides the most reliable platform for your applications.

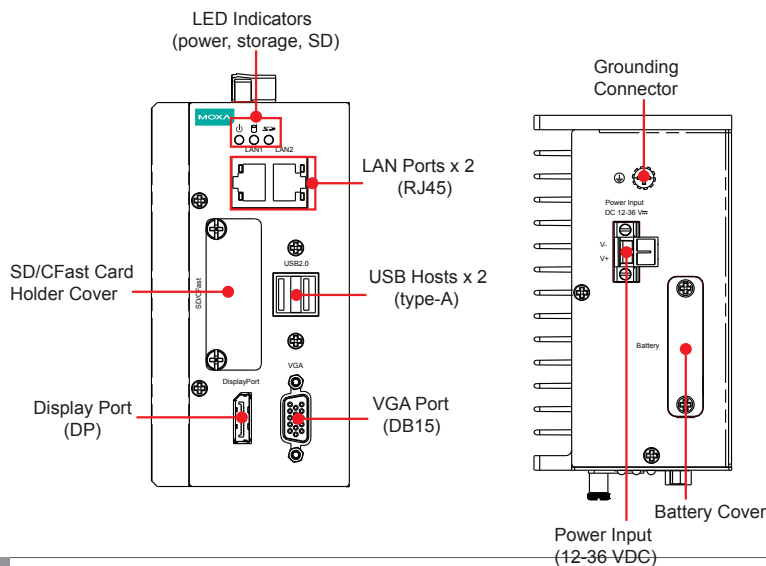
The MC-1100 series is Microsoft Azure Certified for IoT. It can leverage the Microsoft reference configuration and has been tested to work with Microsoft Azure IOT services for industrial IoT applications.

For more information on the Azure Certified for IOT program, visit: <https://catalog.azureiotsuite.com/>

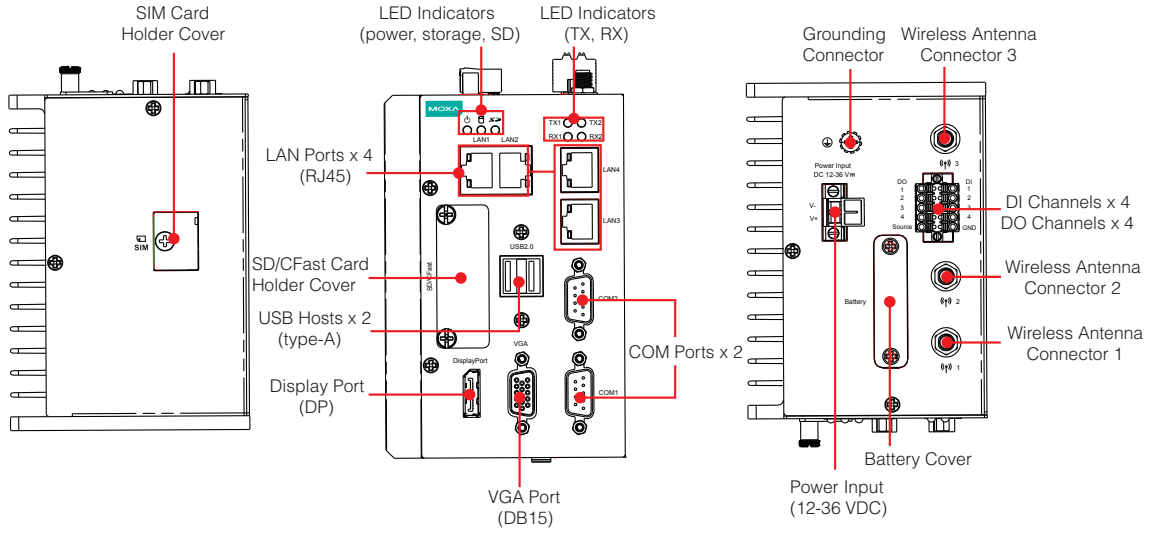
A complete list of Moxa's Azure Certified for IoT products is available at: <https://catalog.azureiotsuite.com/?q=moxa>

### Appearance

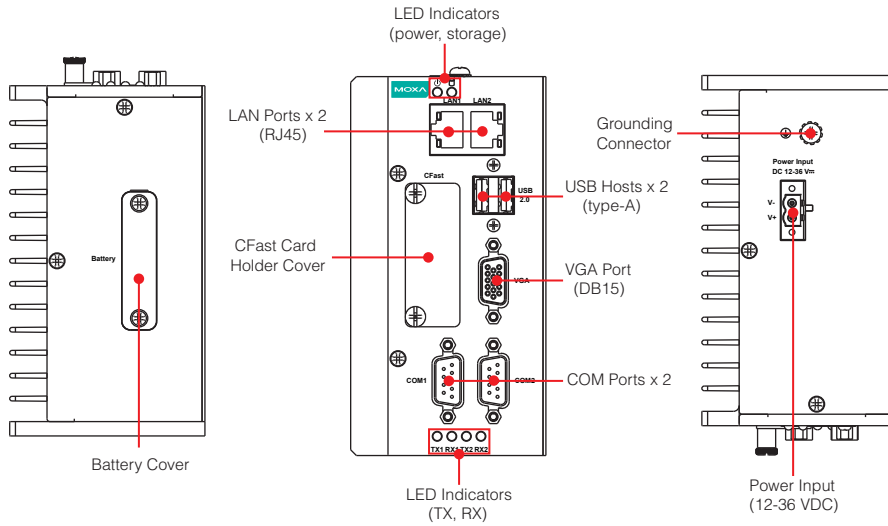
#### MC-1111



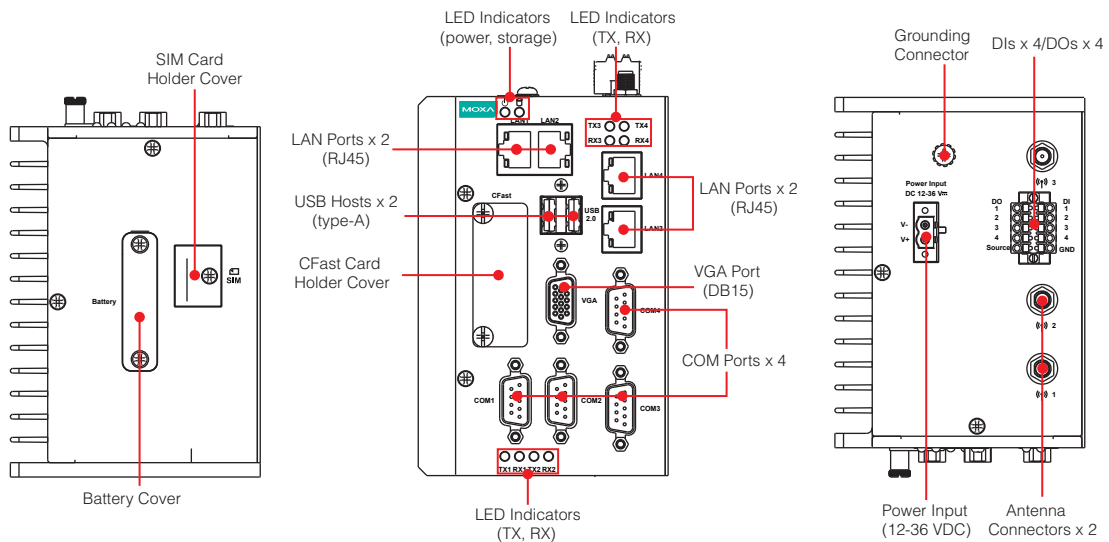
MC-1121



MC-1112



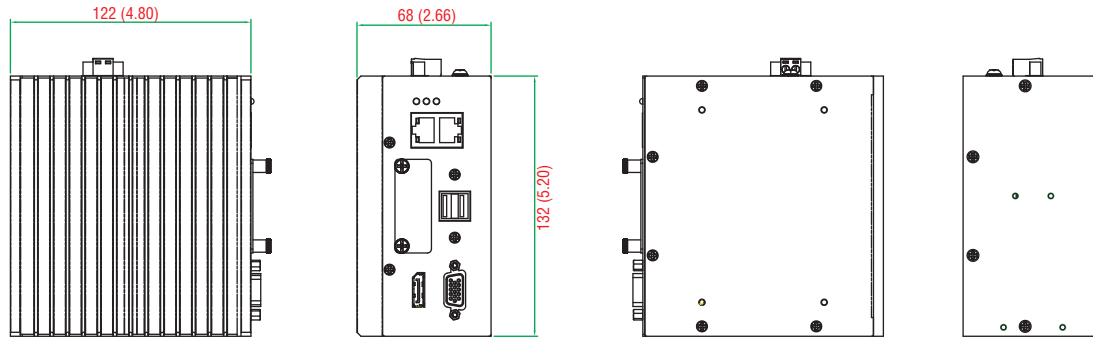
MC-1122



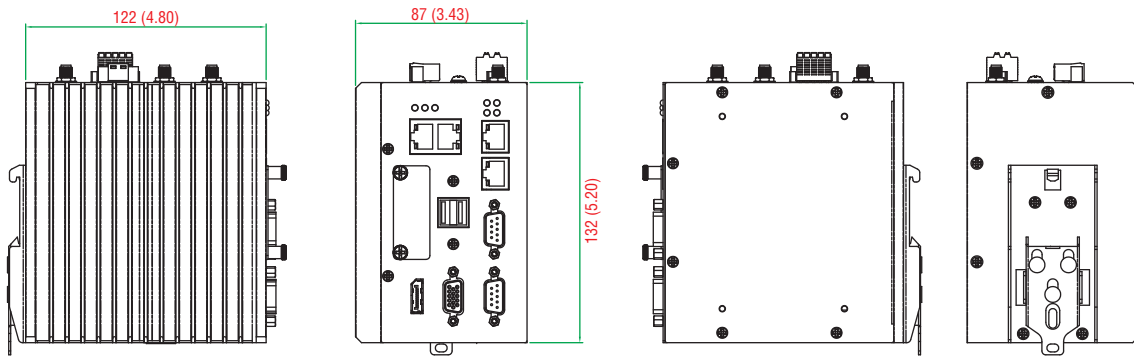
Dimensions

Unit: mm (inch)

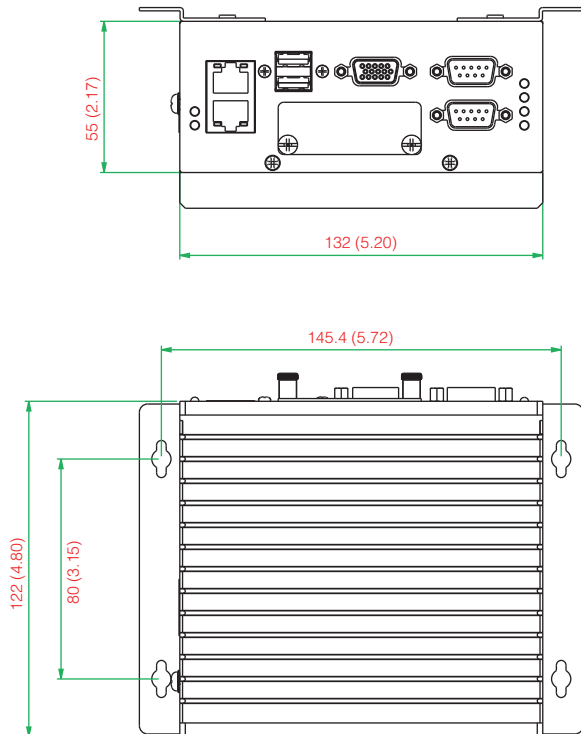
MC-1111



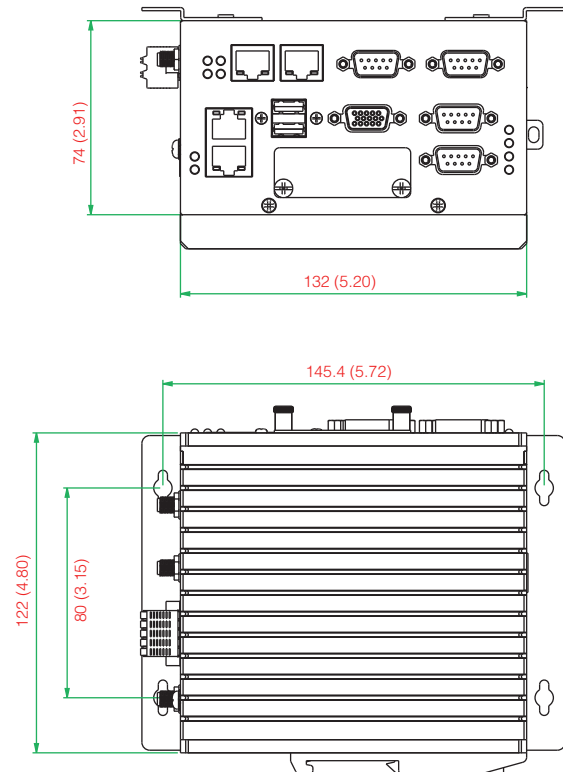
MC-1121



MC-1112



MC-1122



## Hardware Specifications

### Computer

#### CPU:

- MC-1100-E4 Series: Intel® Atom™ processor E3845 (quad-core, 1M cache, 1.91 GHz)
- MC-1100-E2 Series: Intel® Atom™ processor E3826 (dual-core, 1M cache, 1.46 GHz)

**Operating System:** Supports Windows 10 IoT, 64-bit Windows 7 Embedded, and Linux Debian 8

**System Memory:** 1 DDR3L SO-DIMM slot, 4 GB pre-installed, supports up to 8 GB

**USB:** USB 2.0 hosts x 2, Type A connectors

#### Storage:

- CFast: 1 CFast socket for OS storage; CFast supports 16 GB, 32 GB, 64 GB and 128 GB
- SD: 1 SD 3.0 (SDHC/SDXC) socket for storage expansion; SD supports 16 GB, 32 GB, 64 GB, and 128 GB (only for the MC-1111 and MC-1121 series)

### Other Peripherals

**USB:** 2 bootable USB 2.0 ports (type A)

**TPM:** TPM1.2 (only for the MC-1112 and MC-1122 series)

**Expansion Slot:** 1 MiniPCIe socket; USB signal for wireless Wifi/3G/LTE modules

**USIM Slots:** 1

### Display

**Graphics Controller:** Intel® HD Graphics 4000

#### Display Interface:

- VGA interface x 1: 15-pin D-Sub connector (female), with resolution up to 1920 x 1200 pixels at 75 Hz
- Display port interface x 1: Display port connector, with resolution up to 2560 x 1600 pixels at 60 Hz (only for the MC-1111 and MC-1121 series)

### Ethernet Interface

**LAN:** 2 or 4 auto-sensing 10/100/1000 Mbps ports (RJ45)

**Magnetic Isolation Protection:** 1.5 kV built in

### Serial Interface

**Serial Standards:** 2 or 4 RS-232/422/485 ports, software-selectable (DB9 male)

### Serial Communication Parameters

**Data Bits:** 5, 6, 7, 8

**Stop Bits:** 1, 1.5, 2

**Parity:** None, Even, Odd, Space, Mark

**Flow Control:** RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485

**Baudrate:** 50 bps to 115.2 kbps

### Serial Signals

**RS-232:** TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND

**RS-422:** TxD+, TxD-, RxD+, RxD-, GND

**RS-485-4w:** TxD+, TxD-, RxD+, RxD-, GND

**RS-485-2w:** Data+, Data-, GND

### Digital Input

**Input Channels:** DI x 4 (non-isolation)

#### Input Voltage:

Logic level 0: Close to GND

Logic level 1: Open

### Digital Output

**Output Channels:** DO x 4 (Non-Isolation)

#### Output Voltage:

Logic level 0: 0 to 0.55 V

Logic level 1: 5 VDC (4.7 to 5 V)

**Output Clamping Current:** 24 mA

### LEDs

**System:** Power

**Storage:** CFast, SD

**LAN:** 2 LEDs per port (100/1000 Mbps)

**Serial:** 2 LEDs per port (Tx and Rx)

### Physical Characteristics

**Housing:** Aluminum, sheet metal

#### Weight:

• MC-1111/1112: 1.45 kg (3.20 lb)

• MC-1121/1122: 1.75 g (3.86 lb)

#### Dimensions:

• MC-1111/1112: 132 x 122 x 68 mm (5.20 x 4.81 x 2.68 in)

• MC-1121/1122: 132 x 122 x 87 mm (5.20 x 4.81 x 3.43 in)

**Mounting:** DIN rail, wall (DNV)

### Environmental Limits

**Operating Temperature:** -40 to 70°C (-40 to 158°F)

(DNV: -25 to 70°C)

**Storage Temperature:** -45 to 75°C (-49 to 167°F)

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

#### Anti-Vibration:

• 0.7 g @ DNV GL (Class A), sine wave, 2-100 Hz, 1 Oct./min., 1.5 hr per axis

• 1 g @ DNV GL, random wave, 3-100 Hz, 2.5 hr per axis

**Anti-Shock:** 50g/11ms ±X, ±Y, ±Z, 3 shocks each axis w/ CFast, SD

### Power Requirements

**Input Voltage:** 12/24 VDC typical (11.4 to 36 VDC tolerance, 2-pin terminal block)

(DNV: 24 VDC)

**Power Consumption:** Less than 30 W

### Standards and Certifications

**Safety:** UL 60950-1

**Hazardous Environments:** Class 1 Division 2, ATEX/IECEx Zone 2

**EMC:** EN 55032, EN 55024

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

#### EMS:

IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV

IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m

IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV

IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV

IEC 61000-4-6 CS: 10 V

IEC 61000-4-8

**Marine Standards:** IEC 60945

**Marine Type Approval:** DNV GL

**Green Product:** RoHS, cRoHS, WEEE

### Reliability

**Automatic Reboot Trigger:** Built-in watchdog timer (WDT), configurable for resets following 1-255 second hang intervals; software programmable

### Warranty

**Warranty Period:** 3 years

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

## Software Specifications

### Linux

**OS:** Linux Debian 8 64-bit

**Terminal Server (SSH):** Provides secure encrypted communications between two un-trusted hosts over an insecure network

**File System:** EXT2, EXT3, EXT4

**Internet Protocol Suite:** TCP, UDP, IPv4, IPv6, SNMPv2, ICMP, ARP, HTTP, CHAP, PAP, DHCP, NTP, NFS, SSH, PPP, SFTP, RSYNC, SSL

**Internet Security:** OpenVPN, iptables

**Secure Shell for Remote Access:** SSH allows remote logins to a secure encrypted console from any connected network

**Watchdog:** Features a hardware function to trigger system reset in a user specified time interval (Linux standard API)

**Embedded Self-Health Maintenance Software:** Moxa Proactive Monitoring

### Windows Embedded Standard 7

#### Core OS:

- 64-bit support
- Remote Client
- Remote Procedure Call

#### Applications and Services Development:

- Remote Desktop Protocol 7.1
- COM OLE Application Support
- COM+ Application Support
- MSMQ

#### Internet Services:

- Internet Explorer 8.0
- IIS 7.0

#### Diagnostics:

- Common Diagnostic Tools
- Problem Reports and Solutions

**Fonts:** Western, Middle Eastern, South East Asian, and South Asian Fonts

#### Graphics and Multimedia:

- MPEG Layer-3 Audio Codecs (MP3)
- MPEG4 Decoders
- DirectX and Windows Device Experience

#### Management:

- Group Policy Management
- Windows Management Instrument (WMI)
- Windows Update

#### Networking:

- Extensible Authentication Protocol (EAP)
- Internet Authentication Service
- Telnet Server
- Bluetooth
- Domain Services
- Network Access Protection
- Network and Sharing Center
- Quality of Service
- Remote Access Service (RAS)
- Telephony API Client
- Windows Firewall
- Wireless Networking

#### Security:

- Credential Roaming Service
- Credentials and Certificate Management
- Windows Authorization Manager (AZMAN)
- Windows Security Center
- Active Directory Rights Management
- Security Base
- Encrypted File System (EFS)

#### Embedded Features:

- Enhanced Write Filter (EWF)
- File-Based Write Filter (FBWF)
- Registry Filter
- WSDAPI for .NET

#### File Systems and Data Store:

- Windows Data Access Components
- Windows Backup and Restore

**Maintenance:** Moxa Proactive Monitoring & Moxa Smart Recovery

## Ordering Information

Model Name	CPU	RAM (CTO*)	CFast (CTO*)	SD (CTO*)	OS (CTO*)	VGA	DP	LAN	Serial	DI/DO	USB 2.0	USIM slot	Expansion slot	TPM		
MC-1121-E4-T-W7E	E3845	4 GB	32 GB	N/A	W7E 64 bits	1	1	4	2	4/4	2	1	1	-		
MC-1111-E2-T	E3826	Default 4 GB (2 or 8 GB optional)	Default N/A (16, 32, 64, or 128 GB optional)	Default N/A (16, 32, 64, or 128 GB optional)	Default N/A (W7E or Debian 8 optional)	1	1	2	-	-	2	-	-	-		
MC-1111-E4-T	E3845					1	1	2	-	-	2	-	-	-	-	-
MC-1121-E2-T	E3826					1	1	4	2	4/4	2	1	1	-	-	
MC-1121-E4-T	E3845					1	1	4	2	4/4	2	1	1	-	-	
MC-1112-E2-T	E3826			1		-	2	2	-	2	-	-	-	-	-	
MC-1112-E4-T	E3845			1		-	2	2	-	2	-	-	-	-	-	
MC-1122-E2-T	E3826			No SD slot		1	-	4	4	4/4	2	1	1	-	-	
MC-1122-E4-T	E3845			1		-	4	4	4/4	2	1	1	-	-		
MC-1122-E4-TPM-T	E3845			1		-	4	4	4/4	2	1	1	1	1		

Note: Use the Moxa CTOS process to select RAM, storage, and OS options. Please contact your Moxa sales representative for details.

### Package Checklist

- MC-1100 embedded computer
- Terminal block to power jack converter
- Din-rail mounting kit
- Quick installation guide (printed)
- Warranty card

## Optional Accessories

Type	Model Name	Description
<b>Wireless Accessories</b>		
	Cellular Package CELLULAR-LTE-EU(LE910)	Includes: <ul style="list-style-type: none"> <li>• 1 LTE module</li> <li>• 1 antennas with cable and connector</li> <li>• 2 black screws</li> </ul> Note: LTE regions: Asia, Europe, Australia, New Zealand (compatible with LTE/EU, HSPA+, GPRS/GSM, and GPS). LTE: 800 (B20) / 1800 (B3) / 2600 (B7). UMTS/HSPA+: 900, 2100. GNSS (GPS+Glonass).
	WiFi Package Wi-Fi-BGN(252NI)	1 Wi-Fi module 2 antennas with cable and connector 2 black screws
	LTE-EU Antenna ANT-LTE-ASM-02	LTE-EU external antenna with SMA connectors x 1
	LTE-US External Antenna ANT-LTEUS-ASM-01	LTE-US external antenna with SMA connectors x 1
	Wi-Fi Antenna ANT-WDB-ARM-02	2.4/5.5 GHz 2 dBi dual-band antenna, RP-SMA (male) connector
<b>Power Adapters</b>		
	Adapter PWR-24270-DT-S1	Power adapter, input voltage 90 to 264 VAC, output voltage 24 V with 2.5 A DC load
	Power Cord PWC-C7US-2B-183	Power cord with 2-pin connector, USA plug
	Power Cord PWC-C7EU-2B-183	Power cord with 2-pin connector, Europe plug
	Power Cord PWC-C7UK-2B-183	Power cord with 2-pin connector, British plug
	Power Cord PWC-C7AU-2B-183	Power cord with 2-pin connector, Australia plug
	Power Cord PWC-C7CN-2B-183	Power cord with 2-pin connector, China plug
<b>Mounting Kit Accessories</b>		
	Wallmount Kit MC-1100 Wallmount Kit	Wallmount kit x 1, screws x 4
	DIN-Rail Kit MC-1100 DIN-Rail Kit	DIN-rail mounting kit x 1, screws x 4