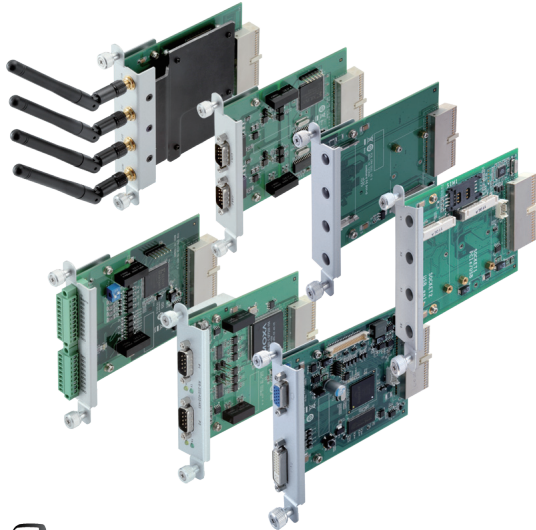


V2400 Series Expansion Modules

Expansion peripheral modules (EPM) for the V2400 series



- > PCI slots for interface expansion
- > EPM-3032: 2 isolated RS-232/422/485 ports with DB9 connectors
- > EPM-3112: 2 isolated CAN ports with DB9 connectors
- > EPM-3337: HSDPA, GPS, WLAN (11a/b/g/n)
- > EPM-3438: 8+8 DI/DO with 3 KV digital isolation protection, 2 KHz counter
- > EPM-3552: VGA or DVI-I display module
- > EPM-DK01: mini PCI and mini PCIe expansion modules
- > EPM-DK02: 2-slot mini PCIe expansion module



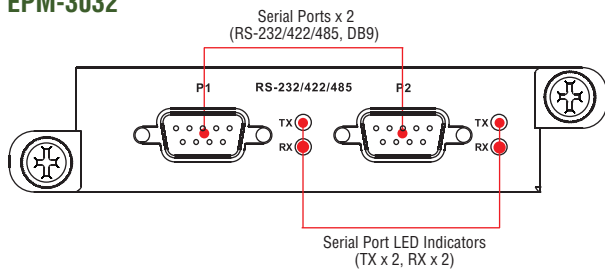
Introduction

Moxa's V2400 series expansion modules, which come with serial ports, CAN ports, wireless and GPS cards, digital input/output channel cards, mini PCI and PCIe modules, a 2-slot mini-PCIe module, and

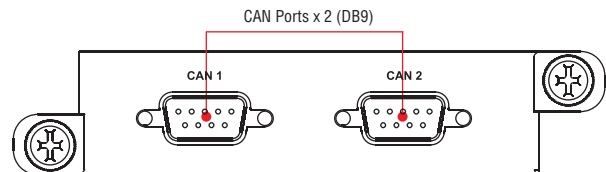
VGA or DVI-I display connectors, can be used with Moxa's V2422 and V2426 embedded computers, and give end-users the best flexibility for setting up and expanding a variety of industrial applications.

Appearance

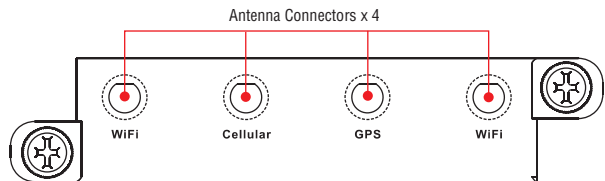
EPM-3032



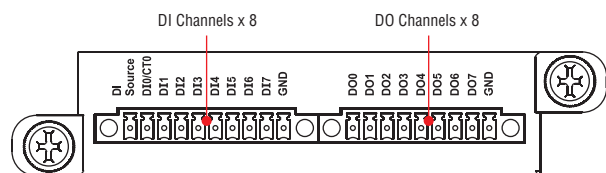
EPM-3112



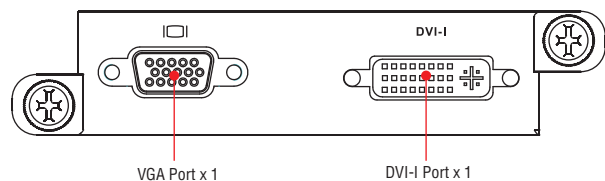
EPM-3337



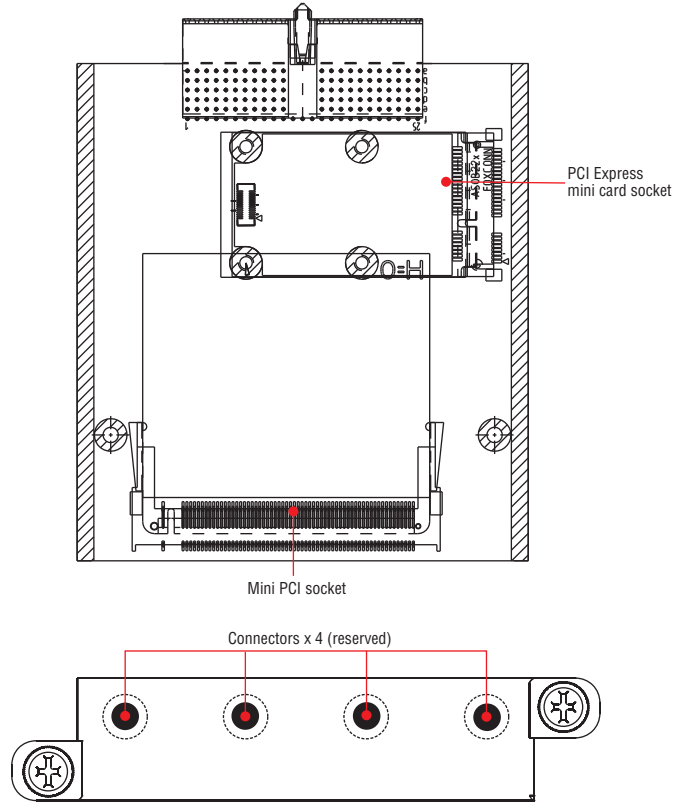
EPM-3438



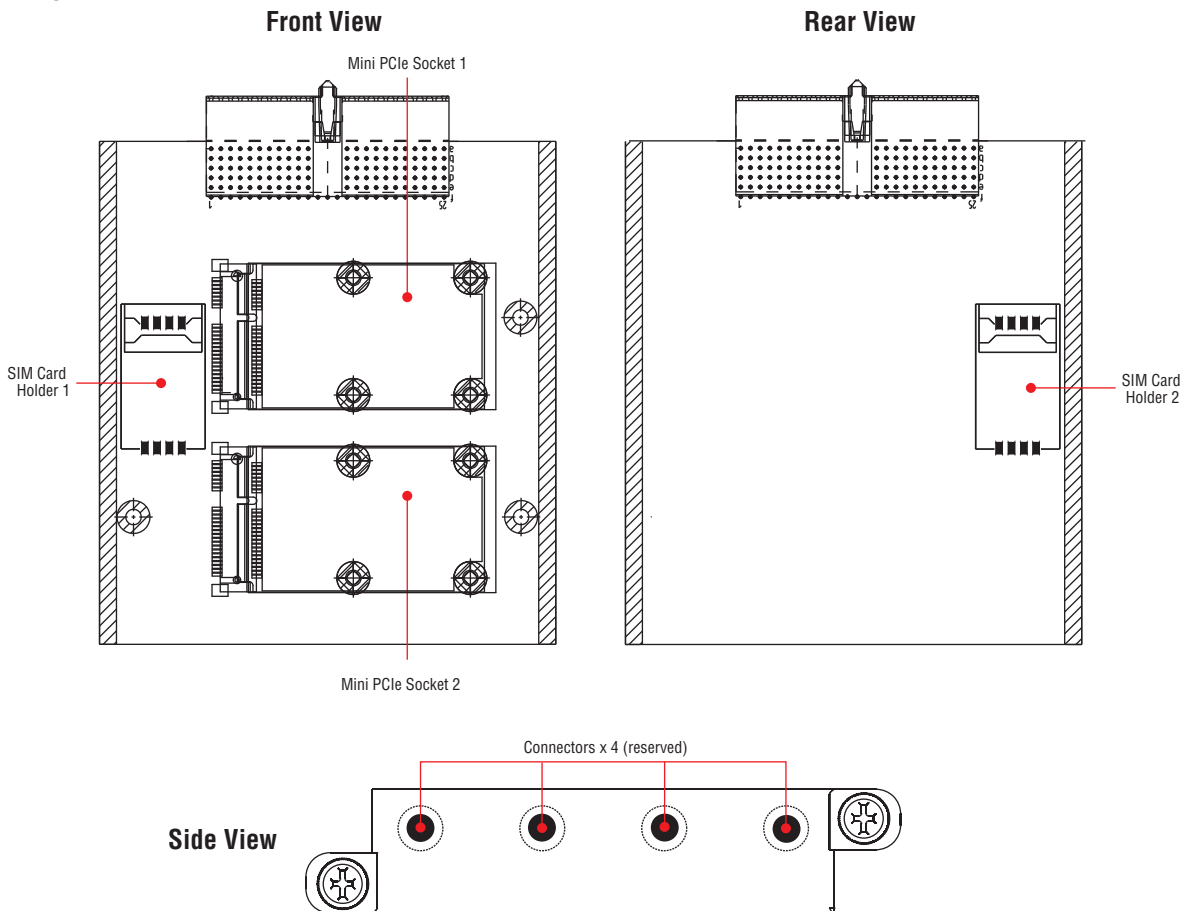
EPM-3552



EPM-DK01



EPM-DK02



⋮ EPM-3032 Specifications

Serial Interface

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

Isolation: 2 KV digital isolation

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 921.6 Kbps (non-standard baudrates supported; see user's manual for details)

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

Physical Characteristics

Weight: 137 g

Dimensions: 104 x 121 x 34 mm (4.09 x 4.76 x 1.34 in)

Environmental Limits

Operating Temperature: -40 to 70°C (-40 to 158°F), EN 50155 Class TX

⋮ EPM-3112 Specifications

CANbus Communication

Interface: 2 optically isolated CAN2.0A/2.0B compliant ports

CAN Controller: Phillips SJA1000T

Signals: CAN-H, CAN-L

Isolation: 2 KV digital isolation

Speed: 1 Mbps

Connector Type: DB9 male

Physical Characteristics

Weight: 127 g

Dimensions: 104 x 121 x 34 mm (4.09 x 4.76 x 1.34 in)

Environmental Limits

Operating Temperature: -25 to 55°C (-13 to 131°F), EN 50155 Class T1

⋮ EPM-3337 Specifications

Cellular Interface

Frequency Bands:

- UMTS/HSDPA: Triple band, 850/1900/1900 MHz
- GSM/GPRS/EDGE: Quad band, 850/900/1800/2100 MHz
- GSM Dsss: Small MS

Output Power:

- Class 4 (2 W) for GSM850/900
- Class 3 (0.25 W) for UMTS/HSDPA
- Class E2 (0.5 W) for EDGE850/900
- Class E2 (0.4 W) for EDGE1800/1900
- Class 1 (1 W) for GSM1800/1900

HSDPA Interface

3GPP Release 5:

- 3.6 Mbps, UL 384 Kbps
- UE CAT. [1-6], 11, 12 supported
- Compressed mode (CM) supported according to 3GPP TS25.212

GPS Interface

Tracking: Tracks up to 13 satellites, L1 1575.42 MHz

Accuracy Position: 2.5 m CEP; 5.0 m SEP

Protocols: NMEA-0183 V2.3, E911 AGPS Control plane, GPS dedicated AT commands, Date WGS-84

Tracking sensitivity: -158 dBm (with active antenna)

Start-up Time:

- Hot start: <3s
- Cold start: 30s
- Warm start: 30s

GPS active antenna supply: 3.3 V

WLAN Interface

Supported Modes:

- IEEE 802.11a/b/g/n for client/bridge mode
- IEEE 802.11b/g/n for AP mode (Linux OS only)

Standards:

- IEEE 802.11a/b/g/n for Wireless LAN
- IEEE 802.11i for Wireless Security

Operating Channels (central frequency):

- US: 2.412 to 2.462 GHz (11 channels), 5.18 to 5.24 GHz (4 channels)
- EU: 2.412 to 2.472 GHz (13 channels), 5.18 to 5.24 GHz (4 channels)
- USA: 1 to 11 (2400 to 2483.5 MHz)
- Europe: 1 to 13 (2400 to 2483.5 MHz)
- Japan: 1 to 14 (2400 to 2497 MHz)

802.11g:

- USA: 1 to 11 (2400 to 2483.5 MHz)
- Europe: 1 to 13 (2400 to 2483.5 MHz)
- Japan: 1 to 13 (2400 to 2497 MHz)

802.11a:

- USA: 36 to 165 (5180 to 5825 MHz)
- Europe: 36 140 (5180 to 5700 MHz)
- Japan: 7 to 11 (5035 to 5055MHz), 183 to 189 (4915 to 4945 MHz)

Security: 64-bit and 128-bit WEP encryption, WPA /WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP and AES)

Transmission Rates:

- 802.11b: 1, 2, 5.5, 11 Mbps
- 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
- 802.11n: 6 to 300 Mbps (multiple rates supported)

TX Transmit Power:

- 802.11b: 1 to 11 Mbps: Typ. 18 dBm (± 1.5 dBm)
- 802.11g: 6 to 24 Mbps: Typ. 18 dBm (± 1.5 dBm); 36 to 48 Mbps: Typ. 17 dBm (± 1.5 dBm); 54 Mbps: Typ. 15 dBm (± 1.5 dBm)
- 802.11a: 6 to 24 Mbps: Typ. 17 dBm (± 1.5 dBm) 36 to 48 Mbps: Typ. 16 dBm (± 1.5 dBm); 54 Mbps: Typ. 14 dBm (± 1.5 dBm)

TX Transmit Power MIMO:

- 802.11a/n (20/40 MHz): MCS15 20 MHz: Typ. 13 dBm (± 1.5 dBm); MCS15 40 MHz: Typ. 12 dBm (± 1.5 dBm)
- 802.11g/n (20/40 MHz): MCS15 20 MHz: Typ. 14 dBm (± 1.5 dBm); MCS15 40 MHz: Typ. 13 dBm (± 1.5 dBm)

RX Sensitivity:

- 802.11b:
-92 dBm @ 1 Mbps, -90 dBm @ 2 Mbps, -88 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps
- 802.11g:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps, -85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps, -80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
- 802.11a:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps, -85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps

RX Sensitivity MIMO:

- 802.11a/n:
-68 dBm @ MCS15 40 MHz, -70 dBm @ MCS7 40 MHz, -69 dBm @ MCS15 20 MHz, -71 dBm @ MCS7 20 MHz
- 802.11g/n:
-68 dBm @ MCS15 40 MHz, -70 dBm @ MCS7 40 MHz, -69 dBm @ MCS15 20 MHz,
-71 dBm @ MCS7 20 MHz

AP-only Protocols: ARP, BOOTP, DHCP, STP/RSTP (IEEE 802.1D/w)
Default Antenna: 2 dBi dual-band omni-directional antenna, RP-SMA (male)

Connector for External Antennas: RP-SMA (female)

Physical Characteristics

Weight: 220 g
Dimensions: 104 x 121 x 34 mm (4.09 x 4.76 x 1.34 in)

Environmental Limits

Operating Temperature: -25 to 55°C (-13 to 131°F), EN 50155 Class T1

EPM-3438 Specifications

Digital Input

Input Channels: 8, source type
Input Voltage: 0 to 5 VDC at 15 Hz

Digital Input Levels:

- Logic level 0: Close to GND
- Logic level 1: Open

Connector Type: Terminal block

Counter Frequency: 2 KHz (DIO only)

Digital Output

Output Channels: 8, sink type, 0 to 5 VDC
Output Current: Max. 20 mA per channel

Output Voltage:

- Logic 0: 0 to 0.55 V
- Logic 1: 4.2 to 5.0 V

Connector Type: Terminal block

Physical Characteristics

Weight: 120 g
Dimensions: 104 x 121 x 34 mm (4.09 x 4.76 x 1.34 in)

Environmental Limits

Operating Temperature: -40 to 70°C (-40 to 158°F), EN 50155 Class TX

EPM-3552 Specifications

Display

Graphics Controller: DisplayLink DL-195
VGA Interface: 15-pin D-sub connector (female)
DVI Interface: 24-pin DVI-I connector (female)
Resolution: Up to 1920 x 1600 (2048 x 1152 for wide screen) resolution

Physical Characteristics

Weight: 130 g
Dimensions: 104 x 121 x 34 mm (4.09 x 4.76 x 1.34 in)

Environmental Limits

Operating Temperature: -25 to 55°C (-13 to 131°F), EN 50155 Class T1

EPM-DK01 Specifications

PCI Express Mini Slot

Interface: PCI-Express V1.0 (one lane)
USB 2.0 Bus SIM Card Holder: Reserved for Cellular applications

Mini PCI Slot

Interface: PCI
Bus Frequency: 32-bit, 33 MHz PCI

Physical Characteristics

Weight: 117 g
Environmental Limits
Operating Temperature: -40 to 70°C (-40 to 158°F)

EPM-DK02 Specifications

PCI Express Mini Slot

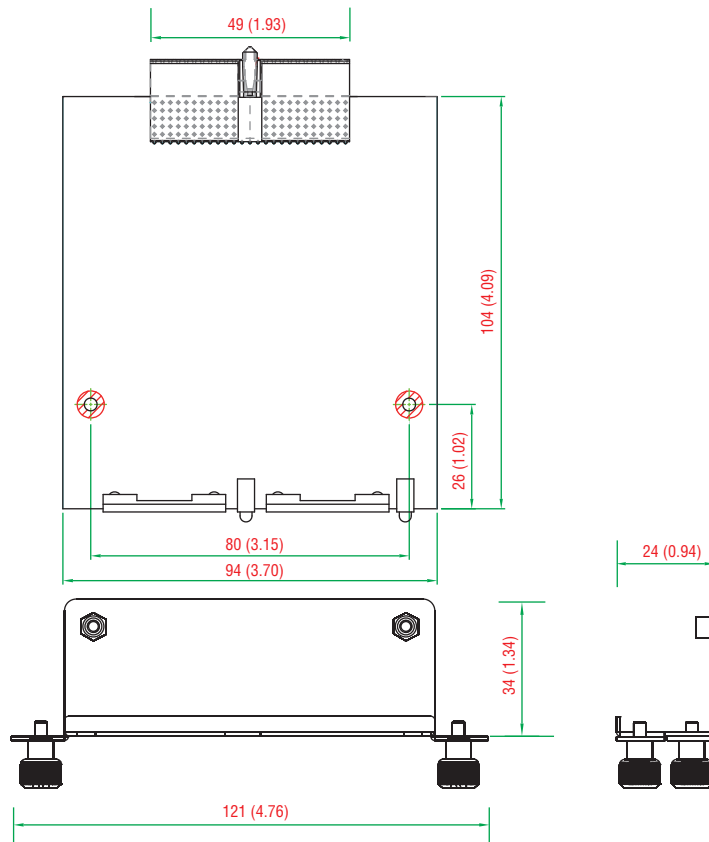
Interface:
Slot 1: PCI-Express V1.0 (one lane) / USB 2.0
Slot 2: USB 2.0
USB 2.0 Bus SIM Card Holder: Reserved for cellular applications

Physical Characteristics

Weight: 125 g
Environmental Limits
Operating Temperature: -25 to 55°C (-13 to 131°F)

Dimensions

Unit: mm (inch)



: Ordering Information

Available Models

- EPM-3032:** 2 isolated RS-232/422/485 ports with DB9 connectors, -40 to 70°C operating temperature
- EPM-3112:** 2 isolated CAN ports with DB9 connectors, -25 to 55°C operating temperature
- EPM-3337:** HSDPA, GPS, WLAN (11a/b/g/n), -25 to 55°C operating temperature
- EPM-3438:** 8+8 DI/DO with 3 KV digital isolation protection, 2 KHz counter, -40 to 70°C operating temperature
- EPM-3552:** VGA or DVI-I display module, -25 to 55°C operating temperature
- EPM-DK01:** Mini PCI and Mini PCIe expansion module, -40 to 70°C operating temperature
- EPM-DK02:** 2-slot mini PCIe expansion module, -25 to 55°C operating temperature

Optional Accessories for the EMP-3337 (can be purchased separately)

- ANT-WDB-ARM-02:** 2.4/5 GHz, dual-band omni-directional antenna, 2 dBi, R-SMA (male), dipole
- ANT-WCDMA-ASM-1.5:** Five-band GSM/GPRS/UMTS/HSDPA, omni-directional antenna, 1.5 dBi, rubber SMA
- ANT-GPS-OSM-05-3M:** GPS antenna

Package Checklist

- EPM expansion module