

V1200 系列

基於 Arm 架構的輕巧型軌道電腦，可選配擴充無線和行動通訊



特色與優點

- Arm Cortex-A53 四核心 1.6 GHz 處理器
- 纖薄輕巧型設計，提供多種安裝選項
- 整合式雙 SIM 卡 5G Sub-6GHz NR 模組和 Wi-Fi 6 模組
- 內建 TPM 2.0 模組
- 內建 Moxa Industrial Linux，提供長期 Linux 支援
- 隔離式電源，電源供應範圍為 24 至 110 VDC
- 符合所有 EN 50155 規範強制性測試項目¹

認證



簡介

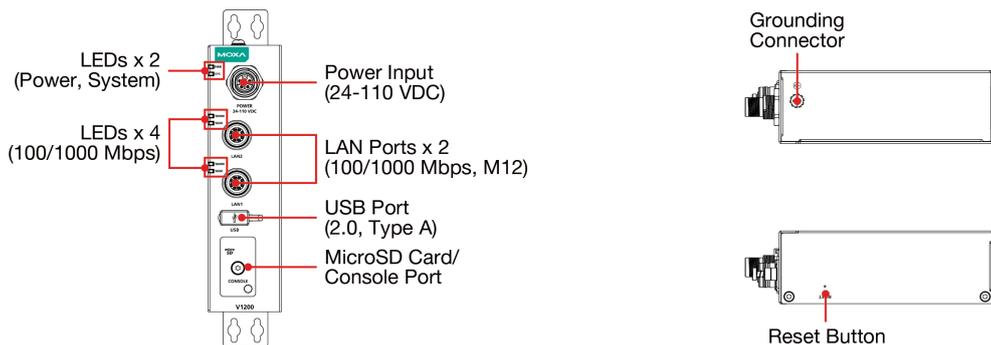
V1200 運算平台專為鐵路 TCMS 資料擷取和列車對地應用所設計。該電腦配備雙 M12 10/100/1000 Mbps 乙太網路埠、內建 5G 和 Wi-Fi 6 模組及雙 RS-232/422/485 串列埠。纖薄輕巧型設計，提供多種安裝選項，減少了安裝空間，並可彈性安裝在各種機櫃或車載位置。

V1200 搭載 Moxa Industrial Linux (MIL)，並提供長期 Linux 支援和安全漏洞修補服務。提供網頁式介面，無需程控即可輕鬆配置乙太網路和無線網路設定。

V1200 無線型號在試驗室中經過全面測試，保證其符合 EN 50155 強制性要求和 OT4 操作溫度（於啟用行動通訊與 Wi-Fi 模組時，操作溫度範圍為 -40 至 70°C）要求，使其適用於寬溫度應用。

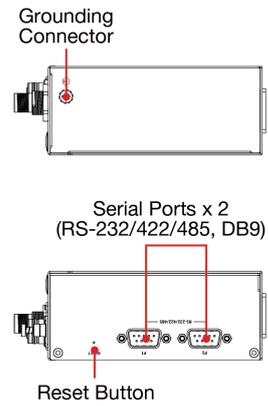
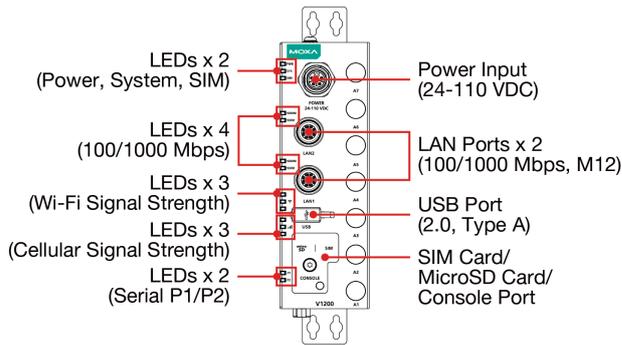
外觀

V1202-CT-T 型號

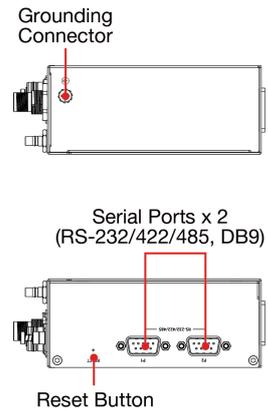
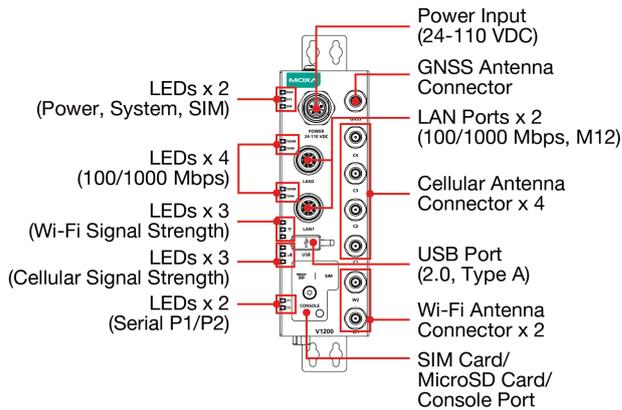


1. 此產品適用於符合 EN 50155 標準所定義的所有軌道車輛應用。若需更詳細的說明，請參照：www.moxa.com/doc/specs/EN_50155_Compliance.pdf

V1222-CT-T 型號



V1222-W-CT-T 型號



規格

Computer

CPU	Arm Cortex-A53 quad-core 1.6 GHz
DRAM	4 GB LPDDR4
Supported OS	Moxa Industrial Linux 3 (Debian 11, kernel 5.10), 2031 EOL See www.moxa.com/MIL
Storage Pre-installed	16 GB eMMC
Expansion Slots	microSD socket x 1

Computer Interface

Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (M12 X-coded) x 2
Serial Ports	V1222-CT-T, V1222-W-CT-T: RS-232/422/485 ports x 2 (software-selectable, DB9 male connector)
USB 2.0	USB 2.0 hosts x 1, type-A connectors
Wi-Fi Antenna Connector	V1222-CT-T, V1222-W-CT-T: QMA x 2
Cellular Antenna Connector	V1222-CT-T, V1222-W-CT-T: QMA x 4
GPS Antenna Connector	V1222-CT-T, V1222-W-CT-T: QMA x 1
Console Port	RS-232 (TxD, RxD, GND), 3-pin header output (115200, n, 8, 1)
Expansion Slots	M.2 E-key slot x1 (for Wi-Fi 6) M.2 B-key slot x1 (for 5G)

	mPCIe slot x1 (for LTE) Note: 5G and LTE cannot be operated at the same time. Note: 5G and LTE cannot be operated at the same time.
SIM Format	V1222-CT-T, V1222-W-CT-T: Nano
Number of SIMs	V1222-CT-T: 2 for 5G or 2 for LTE V1222-W-CT-T: 2 for 5G
Buttons	Reset button
TPM	TPM v2.0

Serial Interface

No. of Ports	V1222-CT-T, V1222-W-CT-T: 2
Baudrate	50 bps to 115.20 kbps
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 RTS Toggle (RS-232 only)
Isolation	N/A

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w	Data+, Data-, GND
RS-485-4w	Tx+, Tx-, Rx+, Rx-, GND

Cellular Interface

LTE Bands (LTE module)	Band 1 (2100 MHz), Band 2 (1900 MHz), Band 3 (1800 MHz), Band 4 (1700 MHz), Band 5 (850 MHz), Band 7 (2600 MHz), Band 8 (900 MHz), Band 9 (1800 MHz), Band 12 (700 MHz), Band 13 (700 MHz), Band 14 (700 MHz), Band 18 (850 MHz), Band 19 (850 MHz), Band 20 (800 MHz), Band 25 (1900 MHz), Band 26 (850 MHz), Band 28 (700 MHz)
5G NR Bands (5G module)	NSA and SA bands: n1 (2100 MHz), n2 (1900 MHz), n3 (1800 MHz), n5 (850 MHz), n7 (2600 MHz), n8 (900 MHz), n12 (700 MHz), n13 (700 MHz), n14 (700 MHz), n18 (800 MHz), n20 (800 MHz), n25 (1900 MHz), n26 (850 MHz), n28 (700 MHz), n29 (700 MHz), n30 (2300 MHz), n38 (2600 MHz), n40 (2300 MHz), n41 (2500 MHz), n48 (3600 MHz), n66 (1700 MHz), n71 (600 MHz), n75 (1500 MHz), n77 (3700 MHz), n78 (3500 MHz), n79 (4500 MHz)
UMTS/HSPA Bands (LTE module)	Band 1 (2100 MHz), Band 2 (1900 MHz), Band 4 (1700 MHz), Band 5 (850 MHz), Band 6 (850 MHz), Band 8 (900 MHz), Band 19 (850 MHz)
UMTS/HSPA Bands (5G module)	Band 1 (2100 MHz), Band 2 (1900 MHz), Band 4 (1700 MHz), Band 5 (850 MHz), Band 6 (850 MHz), Band 8 (900 MHz), Band 19 (850 MHz)
LTE Bands (5G module)	B1 (2100 MHz), B2 (1900 MHz), B3 (1800 MHz), B4 (1700 MHz), B5 (850 MHz), B7 (2600 MHz), B8 (900 MHz), B12 (700 MHz), B13 (700 MHz), B14 (700 MHz), B17 (700 MHz), B18 (800 MHz), B19 (800 MHz), B20 (800 MHz), B25 (1900 MHz), B26 (850 MHz), B28 (700 MHz), B29 (700 MHz), B30 (2300 MHz), B32 (1500 MHz), B34 (2000 MHz), B38 (2600 MHz), B39 (1900 MHz), B40 (2300 MHz), B41 (2500 MHz), B42 (3500 MHz), B43 (3600 MHz), B46 (5200 MHz), B48 (3600 MHz), B66 (1700 MHz), B71 (600 MHz)

2G Bands (LTE module)	Band 2 (PCS_1900), Band 3 (DCS_1800), Band 5 (GSM_850), Band 8 (EGSM_900)
Cables	5G module: IPEX MHF4 to QMA cables x 5 (4 for data transition, 1 for GNSS) LTE Module: IPEX MHF to QMA cables x 3 (2 for data transition, 1 for GNSS)

GPS Interface

Frequency Range	5G module: Wide-band GNSS: 1559 to 1606 MHz (recommended) GPS: BW NB GPS 2.046 MHz (centered at 1575.42 MHz) GLONASS: BW 8.3 MHz approx. (1597.05 to 1606 MHz) BeiDou: 4.092 MHz BW (1559.05 to 1563.14 MHz) Galileo: 4.092 MHz BW (centered at 1575.42 MHz) LTE module: Wide-band GNSS: 1559 to 1606 MHz (recommended) State-of-the-art GNSS solution with GPS/GLONASS/BeiDou/Galileo/QZSS
Antenna Types Supported	5G module: Active antenna (default) 7.5 dB < Gain < 26 dB for nominal performance 1.5 dB < Gain < 7.5 dB for nominal performance Configured via AT command Passive antenna: 1.5 dBi < Gain < 3dBi LTE module: Typ. 14 dBi < Gain < 17 dBi (external active antenna with a GNSS pre-filter)
Time to First Fix (TTFF)	5G module: Hot start: 1 s Warm start: 27 s Cold start: 28 s Open Sky, mean TTFF LTE module: Hot start: 1.1s Warm start: 22.1s Cold start: 29.9s GPS + GLONASS simulator test
Sensitivity	5G module: Cold starts: -146 dBm Tracking: -161 dBm Acquisition: -148 dBm LTE module: Cold starts: -145 dBm Tracking: -160 dBm Acquisition: -147 dBm
Update Rate	Minimum 1 Hz

WLAN Interface

WLAN Standards	802.11a/b/g/n/ac/ax
Frequency Band	2.4 GHz / 6 GHz 2.4 GHz / 5 GHz

LED Indicators

System	Power x 1 System x 1 SIM card indicator x 1
LAN	2 ports, 1 per port (10/100/1000 Mbps)
Serial	V1222-CT-T, V1222-W-CT-T: 1 LED per port for 2 serial ports
Wireless Signal Strength	Cellular x 3 Wi-Fi x 3

Power Parameters

No. of Power Inputs	1
Input Voltage	24 to 110 VDC
Input Current	V1202-CT-T: 0.4 A @ 24 VDC, 0.1A @ 110 VDC V1222-CT-T: 0.6 A @ 24 VDC, 0.13A @ 110 VDC V1222-W-CT-T: 0.6 A @ 24 VDC, 0.13A @ 110 VDC
Power Consumption	V1202-CT-T: 7.4 W at 95% CPU loading V1222-W-CT-T: 13.7 W (with 5G & Wi-Fi) at 95% CPU loading
Power Connector	M12 K-code power connector
Reverse Polarity Protection	Supported

Reliability

Automatic Reboot Trigger	External RTC (real-time clock)
Alert Tools	External WDT (watchdog timer)

Physical Characteristics

Housing	Metal SECC
IP Rating	IP40
Dimensions	V1202-CT-T: 150 x 120 x 41 mm (5.90 x 4.72 x 1.61 in) V1222-CT-T / V1222-W-CT-T: 150 x 120 x 50 mm (5.90 x 4.72 x 1.97 in)
Weight	Product only (without mounting ears) V1202-CT-T: 665 g (1.47 lb) V1222-CT-T : 935 g (2.06 lb) V1222-W-CT-T : 1,005 g (2.22 lb)
Installation	Wall mounting (standard) Desk mounting (with optional kit) DIN-rail mounting (with optional kit)

Environmental Limits

Operating Temperature	With Cellular and Wi-Fi: -40 to 70°C (-40 to 158°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 55032/35 EN 61000-6-2/-6-4
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: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: line-to-line 2 kV, Signal: line-to-ground 2 kV IEC 61000-4-6 CS: 150 kHz to 80 MHz; Signal: 10 V IEC 61000-4-8 PFMF
Wireless	EN 301 489-1/-17/-19/-52 EN 62311 EN 300 328 (WLAN 2.4G) EN 301 893 (WLAN 5G) EN 303 687 (WLAN 6 GHz) EN 301 908-1

	EN 303 413 FCC UKCA
International Approval	FCC CE UKCA RCM (V1202-CT-T and V1222-CT-T)
Safety	IEC 62368-1 UL 62368-1
Railway Fire Protection	EN 45545-2 NFPA130
Railway	EN 50155: 2021 EN 50121-4
Shock	IEC 60068-2-27 IEC 61373 EN 50155
Vibration	IEC 60068-2-64 IEC 61373 EN 50155
Green Product	RoHS, CRoHS, WEEE

MTBF

Time	V1202-CT-T: 2,755,789 hrs V1222-CT-T: 1,430,568 hrs V1222-W-CT-T: 1,324,329 hrs
Standards	Telcordia Standard SR332, GB

Warranty

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

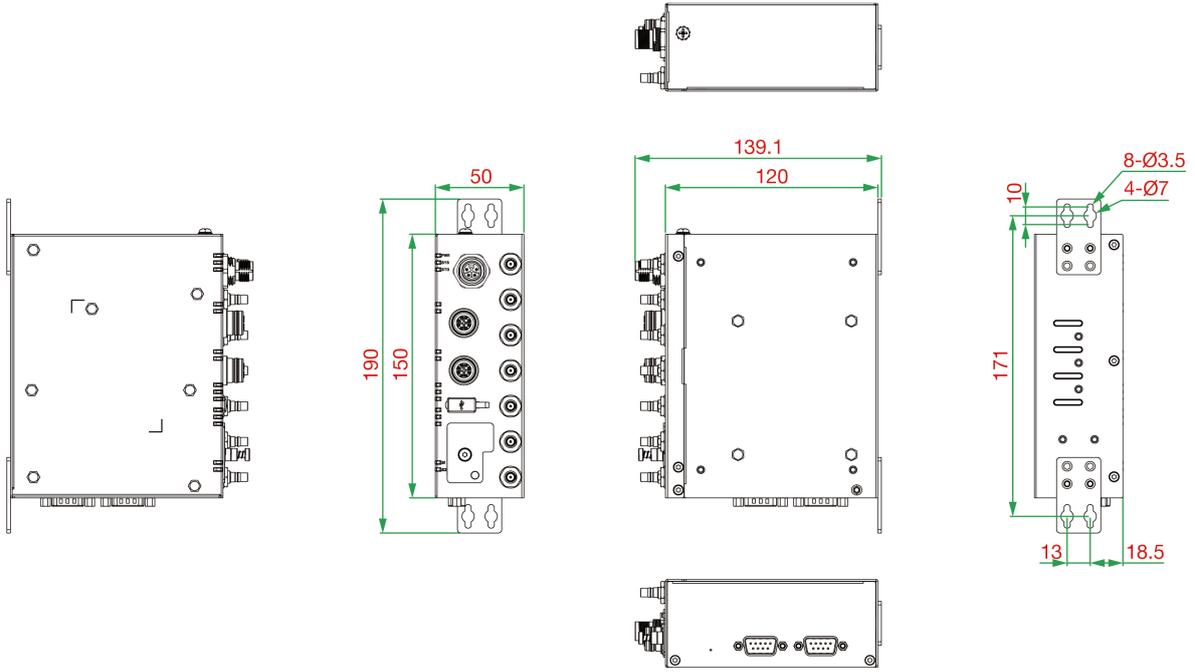
Package Contents

Device	1 x V1200 Series computer
Installation Kit	1 x wall-mounting kit
Documentation	1 x quick installation guide 1 x warranty card

尺寸

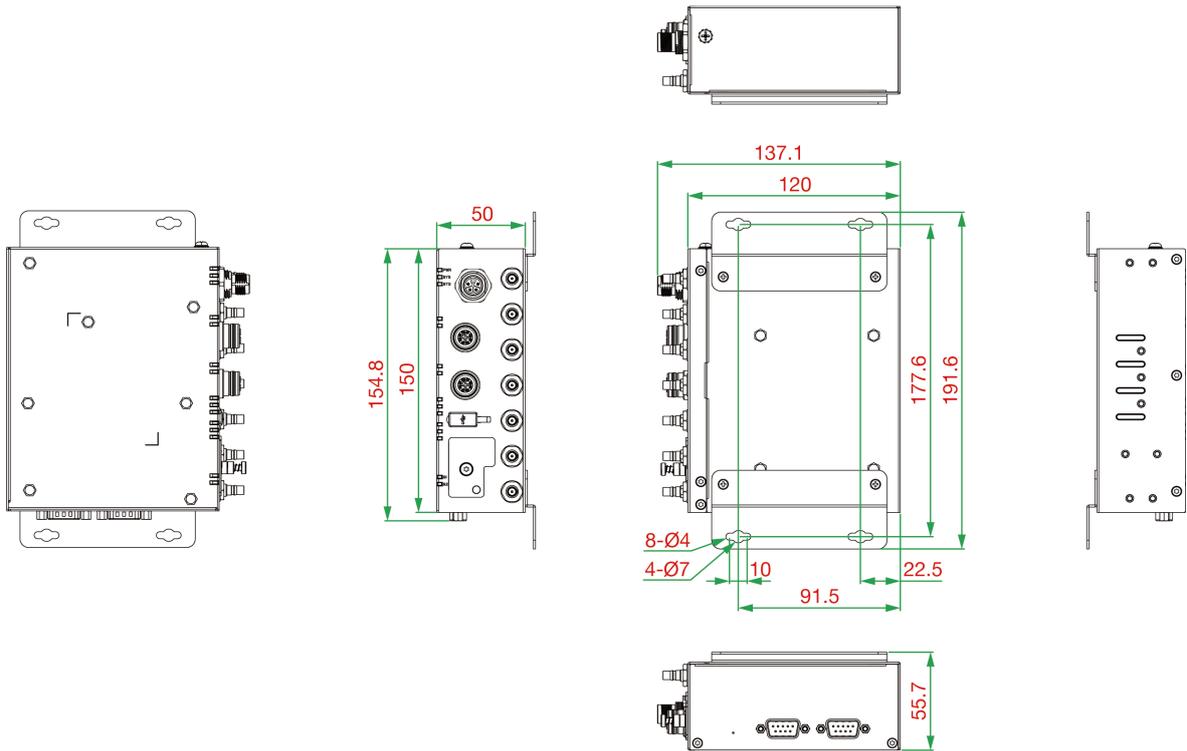
配備標準壁掛安裝套件

單位：公釐



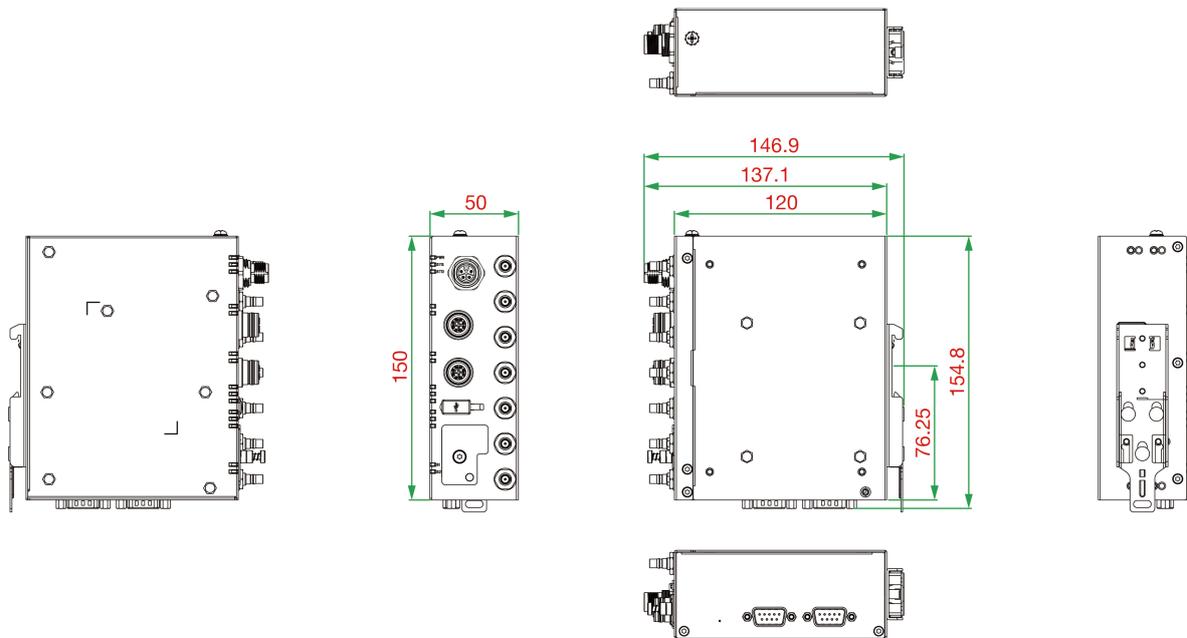
配備選配桌面安裝套件

單位：公釐



配備選配 DIN 導軌安裝套件

單位：公釐



訂購資訊

Model Name	CPU	eMMC	LPDDR4	GbE Ports	Serial Ports	Wireless	Operating Temperature	Conformal Coating
V1202-CT-T	Arm Cortex-A53 quad-core 1.6 GHz	16 GB	4 GB	2	N/A	N/A	-40 to 70° C	P
V1222-CT-T	Arm Cortex-A53 quad-core 16 GHz	16 GB	4 GB	2	2	M.2 Ekey, M.2 Bkey, mPCIe socket reserved for Wi-Fi 6, 5G, or LTE Note: 5G and LTE module can not be enabled simultaneously.	-40 to 70° C	P
V1222-W-CT-T	Arm Cortex-A53 quad-core 16 GHz	16 GB	4 GB	2	2	5G / Wi-Fi 6 Built-in	-40 to 70° C	P

配件 (選購)

Wi-Fi Wireless Modules

V1200-LTECat4-GL	Telit LE910C4 LTE Cat. 4 mPCIe card, 3 coaxial cables (I-PEX MHF male connector to QMA female connector), 2 thermal pads, 1 heat sink for the V1200 Series
V1200-5G	Telit FN990A28W 5G module, 5 coaxial cables (I-PEX MHF male connector to QMA female connector), 2 thermal pads, 1 heat sink for the V1200 Series
V1200-WLAN22-AX	Wi-Fi 6 (802.11ax) module, 2 coaxial cables (I-PEX 4 MHF male connector to QMA female connector), 1 thermal pad, 1 heat sink for the V1200 Series

Cables

CBL-M12KFF5POPEN-O-150-IP67	K-coded female M12-to-5-pin open wire power cable, orange, IP67-rated, 1.5 m
CBL-M12XMM8P-Y-300-IP67	X-coded male M12-to-8-pin open wire cable, yellow, IP67-rated, 3 m
CBL-M12XMM8P-Y-100-IP67	X-coded male M12-to-8-pin open wire cable, yellow, IP67-rated, 1 m
CBL-M12XMM8PRJ45-Y-200-IP67	X-coded male M12-to-RJ45 Ethernet cable, yellow, IP67-rated, 2 m

Mounting Kits

V1200 Din-rail Kit	DIN-rail mounting kit with 1 plate, 5 screws (M3 x 4 mm) for the V1200 Series
V1200 Desk-mounting Kit	Desk-mounting kit with 2 plates (44.8 x 99 x 5.7 mm), 4 screws (M3 x 5 mm) for the V1200 Series

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