

TAP-323 Series

Railway trackside dual radio 802.11n IP68 wireless AP



Feature and Benefits

- 2 dual-band radios, IEEE 802.11a/b/g/n compliant
- Rugged IP68-rated housing and -40 to 75°C operating temperature
- Controller-based Turbo Roaming
- 2 fiber SFP slots and 4 PoE ports with M12 LAN connectors
- Complies with all EN 50155 mandatory test items¹
- Complies with EN 50121-4
- Wireless network redundancy with AeroLink Protection
- High transmission power for extended reach

Certifications



Introduction

The TAP-323 trackside wireless unit is designed for train-to-ground wireless communication. The TAP-323 is a highly compact and rugged wireless unit that integrates two access points, a managed fiber switch, and a wide-range AC/DC power supply into one box. The IP68 housing allows the unit to withstand harsh weather conditions, and the M12 connectors make the unit shock and vibration resistant. The TAP-323 supports advanced controller-based Turbo Roaming technology for train-to-ground wireless applications such as communication-based train control (CBTC) and CCTV. The unit can supply power to up to 4 PoE devices while providing reliable LAN communication with Moxa's Turbo Chain technology.

Advanced Mobility and Reliability

- Controller-based L3 Turbo Roaming
- Mobile IP support
- 2 dual-band radios: 2.4 GHz and 5 GHz
- Turbo Chain support (100 ms recovery time)
- WPA/WPA2 and 802.11i supported
- IEEE 802.1X/RADIUS supported

Built for Transportation Applications

- Isolated 110 to 220 VDC/VAC power input
- High transmission power, 400 mW (max)
- Supplies power through 4 PoE ports
- 2 fiber SFP ports for backbone installation
- Wide temperature (-40 to 75°C) range and IP68-rated housing

Specifications

WLAN Interface

Channel Bandwidth	5 MHz, 10 MHz, 20 MHz, 40 MHz
Frequency Band	5 GHz 2.4 GHz
Frequency Band for EU (20 MHz operating channels)	2.412 to 2.472 GHz (13 channels) 5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels) 5.500 to 5.700 GHz (11 channels)
Frequency Band for JP (20 MHz operating channels)	2.412 to 2.484 GHz (14 channels)

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: www.moxa.com/doc/specs/EN_50155_Compliance.pdf

	5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels) 5.500 to 5.700 GHz (11 channels)
Frequency Band for US (20 MHz operating channels)	2.412 to 2.462 GHz (11 channels) 5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels) ² 5.500 to 5.700 GHz (8 channels) Excludes 5.600 to 5.640 ² 5.745 to 5.825 GHz (5 channels)
Receiver Sensitivity for 802.11a	-90 dBm @ 6 Mbps -88 dBm @ 9 Mbps -88 dBm @ 12 Mbps -85 dBm @ 18 Mbps -81 dBm @ 24 Mbps -78 dBm @ 36 Mbps -74 dBm @ 48 Mbps -74 dBm @ 54 Mbps
Receiver Sensitivity for 802.11b	-93 dBm @ 1 Mbps -93 dBm @ 2 Mbps -93 dBm @ 5.5 Mbps -88 dBm @ 11 Mbps
Receiver Sensitivity for 802.11g	-88 dBm @ 6 Mbps -86 dBm @ 9 Mbps -85 dBm @ 12 Mbps -85 dBm @ 18 Mbps -85 dBm @ 24 Mbps -82 dBm @ 36 Mbps -78 dBm @ 48 Mbps -74 dBm @ 54 Mbps
Receiver Sensitivity for 802.11n (2.4 GHz)	-89 dBm @ MCS0 20 MHz -85 dBm @ MCS1 20 MHz -85 dBm @ MCS2 20 MHz -82 dBm @ MCS3 20 MHz -78 dBm @ MCS4 20 MHz -74 dBm @ MCS5 20 MHz -72 dBm @ MCS6 20 MHz -70 dBm @ MCS7 20 MHz -95 dBm @ MCS8 20 MHz -90 dBm @ MCS9 20 MHz -87 dBm @ MCS10 20 MHz -83 dBm @ MCS11 20 MHz -80 dBm @ MCS12 20 MHz -74 dBm @ MCS13 20 MHz -71 dBm @ MCS14 20 MHz -69 dBm @ MCS15 20 MHz -87 dBm @ MCS0 40 MHz -83 dBm @ MCS1 40 MHz -83 dBm @ MCS2 40 MHz -80 dBm @ MCS3 40 MHz -76 dBm @ MCS4 40 MHz -73 dBm @ MCS5 40 MHz -69 dBm @ MCS6 40 MHz -67 dBm @ MCS7 40 MHz -93 dBm @ MCS8 40 MHz -88 dBm @ MCS9 40 MHz -85 dBm @ MCS10 40 MHz -82 dBm @ MCS11 40 MHz -78 dBm @ MCS12 40 MHz -73 dBm @ MCS13 40 MHz -69 dBm @ MCS14 40 MHz -67 dBm @ MCS15 40 MHz
Receiver Sensitivity for 802.11n (5 GHz)	-88 dBm @ MCS0 20 MHz -85 dBm @ MCS1 20 MHz -82 dBm @ MCS2 20 MHz -79 dBm @ MCS3 20 MHz

2. DFS (Dynamic Frequency Selection) channel support: In AP mode, when a radar signal is detected, the device will automatically switch to another channel. However, according to regulations, after switching channels, a 60-second availability check period is required before starting the service.

	<p>-76 dBm @ MCS4 20 MHz -71 dBm @ MCS5 20 MHz -70 dBm @ MCS6 20 MHz -69 dBm @ MCS7 20 MHz -95 dBm @ MCS8 20 MHz -91 dBm @ MCS9 20 MHz -87 dBm @ MCS10 20 MHz -80 dBm @ MCS11 20 MHz -78 dBm @ MCS12 20 MHz -74 dBm @ MCS13 20 MHz -72 dBm @ MCS14 20 MHz -71 dBm @ MCS15 20 MHz -84 dBm @ MCS0 40 MHz -81 dBm @ MCS1 40 MHz -77 dBm @ MCS2 40 MHz -75 dBm @ MCS3 40 MHz -71 dBm @ MCS4 40 MHz -67 dBm @ MCS5 40 MHz -64 dBm @ MCS6 40 MHz -63 dBm @ MCS7 40 MHz -90 dBm @ MCS8 40 MHz -85 dBm @ MCS9 40 MHz -82 dBm @ MCS10 40 MHz -81 dBm @ MCS11 40 MHz -77 dBm @ MCS12 40 MHz -73 dBm @ MCS13 40 MHz -71 dBm @ MCS14 40 MHz -68 dBm @ MCS15 40 MHz</p>
Modulation Type	DSSS OFDM
Transmission Rate	802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11n HT40: 13.5 to 300 Mbps (MCS0 to MCS15)
Transmitter Power for 802.11a	23±1.5 dBm @ 6 Mbps 23±1.5 dBm @ 12 Mbps 23±1.5 dBm @ 24 Mbps 21±1.5 dBm @ 36 Mbps 20±1.5 dBm @ 48 Mbps 18±1.5 dBm @ 54 Mbps
Transmitter Power for 802.11b	26±1.5 dBm @ 1 Mbps 26±1.5 dBm @ 2 Mbps 26±1.5 dBm @ 5.5 Mbps 25±1.5 dBm @ 11 Mbps
Transmitter Power for 802.11g	23±1.5 dBm @ 6 Mbps 23±1.5 dBm @ 12 Mbps 23±1.5 dBm @ 24 Mbps 21±1.5 dBm @ 36 Mbps 20±1.5 dBm @ 48 Mbps 18±1.5 dBm @ 54 Mbps
Transmitter Power for 802.11n (2.4 GHz)	23±1.5 dBm @ MCS0 20 MHz 21±1.5 dBm @ MCS1 20 MHz 21±1.5 dBm @ MCS2 20 MHz 21±1.5 dBm @ MCS3 20 MHz 20±1.5 dBm @ MCS4 20 MHz 19±1.5 dBm @ MCS5 20 MHz 18±1.5 dBm @ MCS6 20 MHz 18±1.5 dBm @ MCS7 20 MHz 23±1.5 dBm @ MCS8 20 MHz 21±1.5 dBm @ MCS9 20 MHz 21±1.5 dBm @ MCS10 20 MHz 21±1.5 dBm @ MCS11 20 MHz 20±1.5 dBm @ MCS12 20 MHz 19±1.5 dBm @ MCS13 20 MHz 18±1.5 dBm @ MCS14 20 MHz 18±1.5 dBm @ MCS15 20 MHz 23±1.5 dBm @ MCS0 40 MHz 20±1.5 dBm @ MCS1 40 MHz

	<p>20±1.5 dBm @ MCS2 40 MHz 20±1.5 dBm @ MCS3 40 MHz 19±1.5 dBm @ MCS4 40 MHz 19±1.5 dBm @ MCS5 40 MHz 18±1.5 dBm @ MCS6 40 MHz 17±1.5 dBm @ MCS7 40 MHz 23±1.5 dBm @ MCS8 40 MHz 20±1.5 dBm @ MCS9 40 MHz 20±1.5 dBm @ MCS10 40 MHz 20±1.5 dBm @ MCS11 40 MHz 20±1.5 dBm @ MCS12 40 MHz 19±1.5 dBm @ MCS13 40 MHz 18±1.5 dBm @ MCS14 40 MHz 17±1.5 dBm @ MCS15 40 MHz</p>
Transmitter Power for 802.11n (5 GHz)	<p>23±1.5 dBm @ MCS0 20 MHz 20±1.5 dBm @ MCS1 20 MHz 20±1.5 dBm @ MCS2 20 MHz 20±1.5 dBm @ MCS3 20 MHz 19±1.5 dBm @ MCS4 20 MHz 18±1.5 dBm @ MCS5 20 MHz 18±1.5 dBm @ MCS6 20 MHz 18±1.5 dBm @ MCS7 20 MHz 23±1.5 dBm @ MCS8 20 MHz 20±1.5 dBm @ MCS9 20 MHz 20±1.5 dBm @ MCS10 20 MHz 20±1.5 dBm @ MCS11 20 MHz 19±1.5 dBm @ MCS12 20 MHz 19±1.5 dBm @ MCS13 20 MHz 18±1.5 dBm @ MCS14 20 MHz 18±1.5 dBm @ MCS15 20 MHz 23±1.5 dBm @ MCS0 40 MHz 20±1.5 dBm @ MCS1 40 MHz 20±1.5 dBm @ MCS2 40 MHz 20±1.5 dBm @ MCS3 40 MHz 19±1.5 dBm @ MCS4 40 MHz 18±1.5 dBm @ MCS5 40 MHz 18±1.5 dBm @ MCS6 40 MHz 18±1.5 dBm @ MCS7 40 MHz 23±1.5 dBm @ MCS8 40 MHz 20±1.5 dBm @ MCS9 40 MHz 20±1.5 dBm @ MCS10 40 MHz 20±1.5 dBm @ MCS11 40 MHz 19±1.5 dBm @ MCS12 40 MHz 19±1.5 dBm @ MCS13 40 MHz 18±1.5 dBm @ MCS14 40 MHz 18±1.5 dBm @ MCS15 40 MHz</p>
Wireless Security	<p>WEP encryption (64-bit and 128-bit) WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES) WPA/WPA2-Personal</p>
WLAN Antenna Connector	5 N-type female
WLAN Operation Mode	Access point
WLAN Standards	<p>802.11a/b/g/n 802.11i Wireless Security</p>
Ethernet Interface	
1000BaseSFP Slots	2
10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)	4
Standards	<p>IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3af for PoE IEEE 802.3u for 100BaseT(X)</p>

Total Port Count	6
Highest Speed	1G
Connections	PoE M12 Fiber

Ethernet Software Features

Management	SNMPv1/v2c/v3, DHCP Server/Client, IPv4, Syslog, TCP/IP, Telnet, TFTP, UDP, Web Console, Wireless Search Utility
Security	HTTPS/SSL, RADIUS, SSH
Time Management	SNTP

Switch Properties

VLAN ID Range	VID 1 to 4094
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USB Interface

M12 Connector	M12 A-coded 5-pin female (for ABC-02 USB storage)
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Firewall

Filter	IP address, MAC address, Ports
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NAT

Features	Port forwarding
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Serial Interface

Console Port	USB-M12 console (M12 B-coded 5-pin female connector)
Parity	None, Even, Odd, Space, Mark

Power Parameters

Input Current	AC input: 110 to 220 VAC, 50 to 60 Hz, 1.1 A (max.) DC input: 110 to 220 VDC, 1.1 A (max.)				
Input Voltage	Redundant dual inputs, 110/220 VAC/VDC (85 to 264 VAC, 88 to 300 VDC)				
Power Connector	M12 A-coded 4-pin male connector				
Power Consumption	85 W (max.)				
	PSE/Voltage	110 VDC	110 VAC	220 VDC	220 VAC
	0 PSE port in use	17.4 W	16.2 W	17.6 W	17.5 W
	1 PSE port in use	34.15 W	32.6 W	33.8 W	33.55 W
	2 PSE ports in use	50.9 W	49 W	49.9 W	49.6 W
	3 PSE ports in use	67.65 W	65.4 W	66 W	65.65 W
	4 PSE ports in use	84.4 W	81.8 W	82.1 W	81.7 W
Reverse Polarity Protection	Supported				
Source of Input Power	PoE (IEEE 802.3af)				
Overload Protection					
Protection Type	Current				

Physical Characteristics

Housing	Metal
IP Rating	IP68
Dimensions	324 x 279 x 156 mm (12.76 x 10.98 x 6.142 in)
Weight	10,000 g (22.22 lb)
Installation	Wall mounting (standard), DIN-rail mounting (optional), Pole mounting (optional)
Protection	PCB conformal coating

Environmental Limits

Operating Temperature	-40 to 75°C (-40 to 167°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 61000-6-2/-6-4, EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 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: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Radio Frequency	FCC, IC, WPC, RED
Radio	MIC
Railway	EN 50121-4, EN 50155
Railway Fire Protection	EN 45545-2
Safety	EN 60950-1, UL 60950-1, IEC 60950-1

MTBF

Time	290,937 hrs
Standards	Telcordia SR332

Warranty

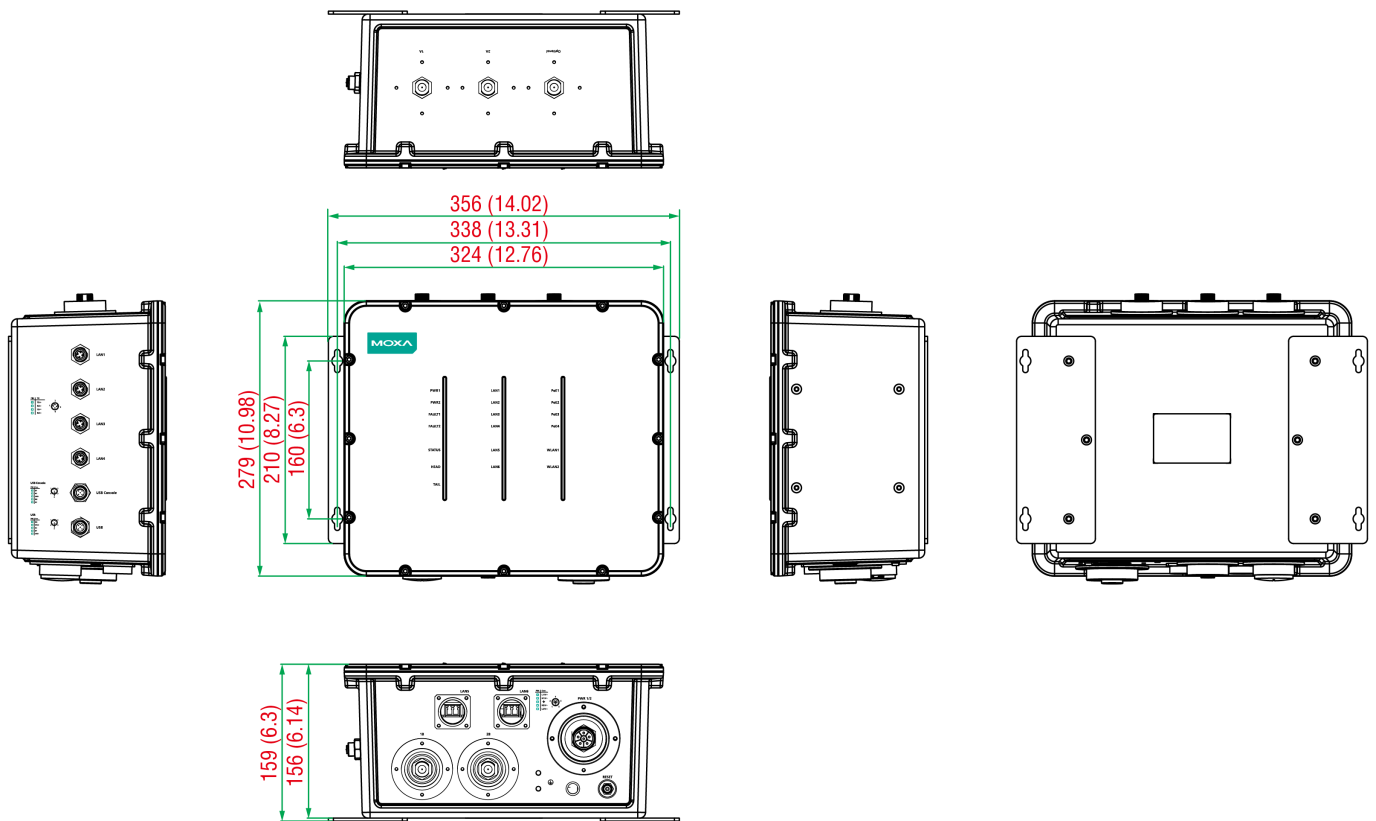
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x TAP-323 Series wireless access point
Installation Kit	1 x cap, metal, for ABC-02 USB storage port 1 x cap, metal, for USB console port 1 x metal M23 male 6-pin crimp 1 x plastic M23 dust cover for power 1 x fiber panel mounting kit 1 x wall-mounting kit 3 x antenna glands for top side antenna 4 x cap, metal, for LAN port 5 x metal protective caps for 4 antenna ports and 1 optional antenna port
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	Band	Standard	Application	Operating Temp.	Indoor/Outdoor, IP Rating	Single/Dual RF
TAP-323-EU-CT-T	EU	802.11a/b/g/n	Railway trackside wireless access point	-40 to 75°C	Outdoor, IP68	Dual RF
TAP-323-US-CT-T	US	802.11a/b/g/n	Railway trackside wireless access point	-40 to 75°C	Outdoor, IP68	Dual RF
TAP-323-JP-CT-T	JP	802.11a/b/g/n	Railway trackside wireless access point	-40 to 75°C	Outdoor, IP68	Dual RF

Accessories (sold separately)

Communication Modules

SFP-1FELLC-T	SFP module with 1 100Base single-mode with LC connector for 80 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, -40 to 85°C operating temperature
SFP-1FEMLC-T	SFP module with 1 100Base multi-mode with LC connector for 4 km transmission, -40 to 85°C operating temperature
SFP-1GLHXLCT	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, -40 to 85°C operating temperature
SFP-1GLHLCT	SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, -40 to 85°C operating temperature
SFP-1FESLC-T	SFP module with 1 100Base single-mode with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLXLC-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°C operating temperature

M12 Connector Caps

A-CAP-M12F-M	Metal cap for M12 female connector
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Connectors

M12D-4P-IP68	M12 D-coded screw-in sensor connector, male, IP68
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Wireless Connector Cap

A-CAP-N-M	Metal cap to cover N-type connector
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Cables

CBL-M12D(MM4P)/RJ45-100 IP67	M12-to-RJ45 cable, IP67-rated, 1 m
CBL-M23(FF6P)/OPEN-BK-100 IP67	M23 to 6-pin power cable, IP67-rated female 6-pin M23 connector, IP67, 1 m

Storage Kits

ABC-02-USB-T	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, -40 to 75°C operating temperature
ABC-02-USB	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, 0 to 60°C operating temperature

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