

TAP-323 Series

Wi-Fi 4 (802.11n) railway train-to-ground wayside IP68 dual-radio wireless APs



Features and Benefits

- Redundant dual AC or DC power inputs for flexible wayside deployments
- Dual radios for different train-to-ground applications
- 2 integrated fiber ports for wayside network redundancy with Turbo Chain
- Seamless train-to-ground communication with sub-50 ms controller-based Turbo Roaming

Certifications



EN 50155



Introduction

The TAP-323 Series Wi-Fi 4 (802.11n) railway train-to-ground wayside IP68-rated dual-radio wireless APs are built for CBTC, CCTV, and BBRS communications, supporting seamless controller-based Turbo Roaming with handover times under 50 ms. They are highly compact and rugged wireless units combining two access points, a managed fiber switch, and a wide-range AC/DC power supply into a single box. The TAP-323 Series can supply power to up to four PoE devices while providing reliable LAN communications powered by Moxa's Turbo Chain technology.

Specifications

WLAN Interface

WLAN Standards	2.4 GHz: 802.11b/g/n with 64 QAM support, 20/40 MHz 5 GHz: 802.11a/n with 64 QAM support, 20/40 MHz
Frequency Band for US (20 MHz operating channels)	TAP-323-US models only: 2.412 to 2.462 GHz (11 channels) 5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels) ¹ 5.500 to 5.700 GHz (8 channels) Excludes 5.600 to 5.640 ¹ 5.745 to 5.825 GHz (5 channels)
Frequency Band for EU (20 MHz operating channels)	TAP-323-EU models only: 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)	TAP-323-JP models only: 2.412 to 2.484 GHz (14 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)
Receiver Sensitivity for 802.11a (measured at 5.680 GHz)	Typ. -90 @ 6 Mbps Typ. -88 @ 9 Mbps Typ. -88 @ 12 Mbps Typ. -85 @ 18 Mbps Typ. -81 @ 24 Mbps Typ. -78 @ 36 Mbps Typ. -74 @ 48 Mbps

1. 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>Typ. -74 @ 54 Mbps</p> <p>Note: Due to a limitation in the receiver sensitivity performance for channels 153 and 161, it is recommended to avoid using these channels in your critical applications.</p>
Receiver Sensitivity for 802.11n (5 GHz; measured at 5.680 GHz)	<p>Typ. -88 dBm @ MCS0 20 MHz</p> <p>Typ. -85 dBm @ MCS1 20 MHz</p> <p>Typ. -82 dBm @ MCS2 20 MHz</p> <p>Typ. -79 dBm @ MCS3 20 MHz</p> <p>Typ. -76 dBm @ MCS4 20 MHz</p> <p>Typ. -71 dBm @ MCS5 20 MHz</p> <p>Typ. -70 dBm @ MCS6 20 MHz</p> <p>Typ. -69 dBm @ MCS7 20 MHz</p> <p>Typ. -95 dBm @ MCS8 20 MHz</p> <p>Typ. -91 dBm @ MCS9 20 MHz</p> <p>Typ. -87 dBm @ MCS10 20 MHz</p> <p>Typ. -80 dBm @ MCS11 20 MHz</p> <p>Typ. -78 dBm @ MCS12 20 MHz</p> <p>Typ. -74 dBm @ MCS13 20 MHz</p> <p>Typ. -72 dBm @ MCS14 20 MHz</p> <p>Typ. -71 dBm @ MCS15 20 MHz</p> <p>Typ. -84 dBm @ MCS0 40 MHz</p> <p>Typ. -81 dBm @ MCS1 40 MHz</p> <p>Typ. -77 dBm @ MCS2 40 MHz</p> <p>Typ. -75 dBm @ MCS3 40 MHz</p> <p>Typ. -71 dBm @ MCS4 40 MHz</p> <p>Typ. -67 dBm @ MCS5 40 MHz</p> <p>Typ. -64 dBm @ MCS6 40 MHz</p> <p>Typ. -63 dBm @ MCS7 40 MHz</p> <p>Typ. -90 dBm @ MCS8 40 MHz</p> <p>Typ. -85 dBm @ MCS9 40 MHz</p> <p>Typ. -82 dBm @ MCS10 40 MHz</p> <p>Typ. -81 dBm @ MCS11 40 MHz</p> <p>Typ. -77 dBm @ MCS12 40 MHz</p> <p>Typ. -73 dBm @ MCS13 40 MHz</p> <p>Typ. -71 dBm @ MCS14 40 MHz</p> <p>Typ. -68 dBm @ MCS15 40 MHz</p> <p>Note: Due to a limitation in the receiver sensitivity performance for channels 153 and 161, it is recommended to avoid using these channels in your critical applications.</p>
Receiver Sensitivity for 802.11b (measured at 2.437 GHz)	<p>Typ. -93 dBm @ 1 Mbps</p> <p>Typ. -93 dBm @ 2 Mbps</p> <p>Typ. -93 dBm @ 5.5 Mbps</p> <p>Typ. -88 dBm @ 11 Mbps</p>
Receiver Sensitivity for 802.11g (measured at 2.437 GHz)	<p>Typ. -88 dBm @ 6 Mbps</p> <p>Typ. -86 dBm @ 9 Mbps</p> <p>Typ. -85 dBm @ 12 Mbps</p> <p>Typ. -85 dBm @ 18 Mbps</p> <p>Typ. -85 dBm @ 24 Mbps</p> <p>Typ. -82 dBm @ 36 Mbps</p> <p>Typ. -78 dBm @ 48 Mbps</p> <p>Typ. -74 dBm @ 54 Mbps</p>
Receiver Sensitivity for 802.11n (2.4 GHz; measured at 2.437 GHz)	<p>Typ. -89 dBm @ MCS0 20 MHz</p> <p>Typ. -85 dBm @ MCS1 20 MHz</p> <p>Typ. -85 dBm @ MCS2 20 MHz</p> <p>Typ. -82 dBm @ MCS3 20 MHz</p> <p>Typ. -78 dBm @ MCS4 20 MHz</p> <p>Typ. -74 dBm @ MCS5 20 MHz</p> <p>Typ. -72 dBm @ MCS6 20 MHz</p> <p>Typ. -70 dBm @ MCS7 20 MHz</p> <p>Typ. -95 dBm @ MCS8 20 MHz</p> <p>Typ. -90 dBm @ MCS9 20 MHz</p> <p>Typ. -87 dBm @ MCS10 20 MHz</p> <p>Typ. -83 dBm @ MCS11 20 MHz</p> <p>Typ. -80 dBm @ MCS12 20 MHz</p> <p>Typ. -74 dBm @ MCS13 20 MHz</p> <p>Typ. -71 dBm @ MCS14 20 MHz</p> <p>Typ. -69 dBm @ MCS15 20 MHz</p> <p>Typ. -87 dBm @ MCS0 40 MHz</p> <p>Typ. -83 dBm @ MCS1 40 MHz</p> <p>Typ. -83 dBm @ MCS2 40 MHz</p> <p>Typ. -80 dBm @ MCS3 40 MHz</p>

	<p>Typ. -76 dBm @ MCS4 40 MHz Typ. -73 dBm @ MCS5 40 MHz Typ. -69 dBm @ MCS6 40 MHz Typ. -67 dBm @ MCS7 40 MHz Typ. -93 dBm @ MCS8 40 MHz Typ. -88 dBm @ MCS9 40 MHz Typ. -85 dBm @ MCS10 40 MHz Typ. -82 dBm @ MCS11 40 MHz Typ. -78 dBm @ MCS12 40 MHz Typ. -73 dBm @ MCS13 40 MHz Typ. -69 dBm @ MCS14 40 MHz Typ. -67 dBm @ MCS15 40 MHz</p>
Transmission Rate	<p>802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11n HT20: 6.5 to 144.4 Mbps (MCS0 to MCS15) 802.11n HT40: 13.5 to 300 Mbps (MCS0 to MCS15)</p>
Transmitter Power for 802.11a	<p>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</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>
Transmitter Power for 802.11b	<p>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</p>
Transmitter Power for 802.11g	<p>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</p>
Transmitter Power for 802.11n (2.4 GHz)	<p>23±1.5 dBm @ MCS0 20 MHz 21±1.5 dBm @ MCS1 20 MHz 21±1.5 dBm @ MCS2 20 MHz</p>

	<p>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 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>
Wireless Security	<p>WEP encryption (64-bit and 128-bit) WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES) WPA/WPA2-Personal</p>
WLAN Operation Mode	Access point
Antenna Connectors	5 x N-type female
Ethernet Interface	
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>
1000BaseSFP Slots	2
10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)	4
Total Port Count	6
Ethernet Software Features	
Management	<p>SNMPv1/v2c/v3 DHCP Server/Client IPv4 Syslog TCP/IP Telnet TFTP UDP Web Console Wireless Search Utility</p>
Routing	Port forwarding

Security	HTTPS/SSL RADIUS SSH																														
Time Management	SNTP																														
Firewall																															
Filter	IP protocol MAC address Port-based																														
USB Interface																															
M12 Connector	M12 A-coded 5-pin female (for ABC-02 USB storage)																														
Serial Interface																															
Console Port	USB-M12 console (M12 B-coded 5-pin female connector)																														
Parity	None, Even, Odd, Space, Mark																														
LED Interface																															
LED Indicators	PWR1, PWR2, FAULT1, FAULT2, STATUS, HEAD, TAIL, LAN1-LAN6, PoE1-PoE4, WLAN1, WLAN2																														
Input/Output Interface																															
Buttons	Reset button																														
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	110/220 VDC/VAC Redundant dual inputs																														
Power Connector	M23 6-pin male connector																														
Power Consumption	85 W (max.) <table border="1"> <thead> <tr> <th>PSE/Voltage</th> <th>110 VDC</th> <th>110 VAC</th> <th>220 VDC</th> <th>220 VAC</th> </tr> </thead> <tbody> <tr> <td>0 PSE port in use</td> <td>17.4 W</td> <td>16.2 W</td> <td>17.6 W</td> <td>17.5 W</td> </tr> <tr> <td>1 PSE port in use</td> <td>34.15 W</td> <td>32.6 W</td> <td>33.8 W</td> <td>33.55 W</td> </tr> <tr> <td>2 PSE ports in use</td> <td>50.9 W</td> <td>49 W</td> <td>49.9 W</td> <td>49.6 W</td> </tr> <tr> <td>3 PSE ports in use</td> <td>67.65 W</td> <td>65.4 W</td> <td>66 W</td> <td>65.65 W</td> </tr> <tr> <td>4 PSE ports in use</td> <td>84.4 W</td> <td>81.8 W</td> <td>82.1 W</td> <td>81.7 W</td> </tr> </tbody> </table>	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
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Reverse Polarity Protection	Supported																														
Source of Input Power	PoE (IEEE 802.3af)																														
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)																														

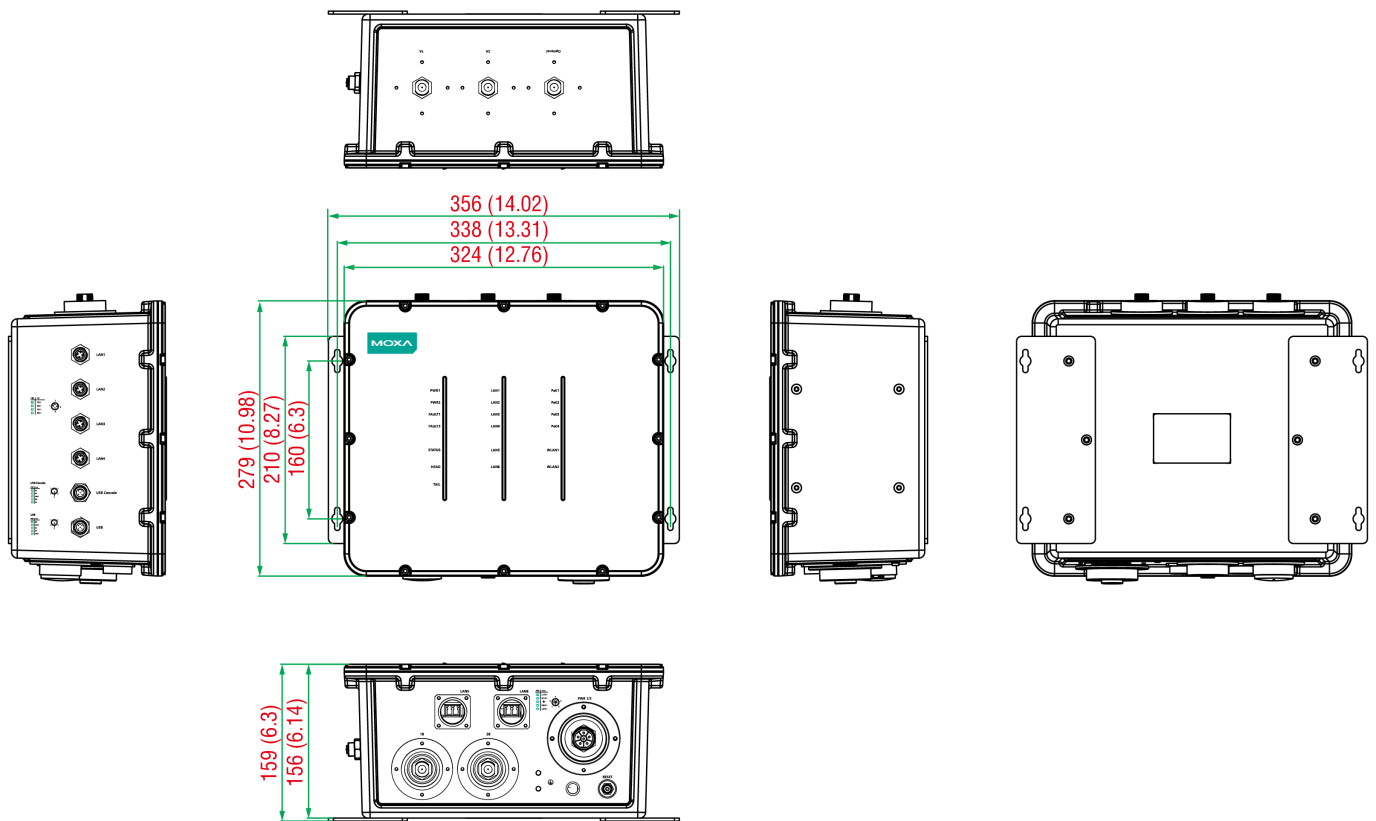
Installation	Wall mounting DIN-rail mounting (with optional kit)
Protection	PCB conformal coating
Environmental Limits	
Operating Temperature	-40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Standards and 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
Safety	EN 60950-1 UL 60950-1 IEC 60950-1
Cybersecurity	EN 18031-1
Radio	FCC MIC IC WPC RED
Railway	EN 50121-4 EN 50155
Railway Fire Protection	EN 45545-2
MTBF	
Time	290,937 hrs
Standards	Telcordia Standard SR-332
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 1km/2km transmission, -40 to 85°C operating temperature
SFP-1FEMLC-T	SFP module with 1 100Base multi-mode, LC connector for 2/4 km transmission, -40 to 85°C operating temperature
SFP-1GLHXLC-T	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 300m/550m transmission, -40 to 85°C operating temperature
SFP-1GLHLC-T	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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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	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, 0 to 60°C operating temperature
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

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