



Hirschmann BAT-NG


DAP847 -Wi-Fi 6 (802.11ax)

Industrial Wireless LAN Access Points

The ruggedized, IP67 rated and railway certified BAT-NG WiFi 6 access point offers hi-performing, ultra reliable train-to-ground communication over WiFi technology for any type of communication service.

 **Faster data rate**, lower latency with Wi-Fi 6 technology the over all throughput improved by 37%, latency reduced by 75%

 **IEEE802.11ax** technology enhance throughput-per-area in high-density scenarios

 **Fast Roaming** . Advanced active and standby link configuration ensures short roaming latency

Key Features

- Railway certified WiFi 6 device for trackside and on-board deployments
- Dual 802.11ax Radio – 5 GHz 4 x 4 MIMO and 2.4 GHz 2 x 2 MIMO
- Access Point and Client modes of operation
- Active and standby link ensures fast roaming for mission critical train-to-ground communication (typical <50 ms @80 km/h train speed)
- Access Point management using DAP Virtual Controller(DAC)
- 2.5 Gbit/s Ethernet M12 X-coded
- Parallel Redundancy Protocol (PRP): Maintain trailer
- PoE and/or 24-110 VDC PSU powered
- Operating temperature -40°C to 70°C / -40°F to 158°F
- IP67 housing
- One solution - trackside access point and onboard client - same hardware



Boost your train-to-ground communication to WiFi 6 performance without compromising reliability.

THE BAT-NG family of wireless access points features a rugged and compact design for train to ground wireless communication needs and can be customized to support variety of wireless and wired connections,



BAT-NG series wireless access points for mobility applications

Device supports a maximum concurrent data rate of 2.975Gbps (2.402Gbps in 5GHz and 573Mbps in 2.4GHz), six spatial streams (2SS in 2.4GHz and 4SS in 5GHz), 160(80+80)MHz channels (HE80), and Wi-Fi 6 (802.11ax) features, such as UL/DL MU-MIMO, UL/DL OFDMA, BSS color, etc. All these features ensure the speed, capacity, and efficient airtime allocation for clients on both 2.4Ghz and 5Ghz Wi-Fi bands.



Featuring enhanced WLAN technology with RF Radio Dynamic Adjustment, a distributed control Wi-Fi architecture with unified access secure network admission control, built in application intelligence and analytics, making it ideal for connected train solutions.



Wi-Fi 6 (802.11ax) Features

Wi-Fi 6 (802.11ax) allows mobility applications to deliver high performance wireless LAN services with increased throughput, enabling more clients in dense environments. Furthermore, it provides high power efficiency for Internet of Things (IoT) devices, while it remains fully backward compatible with existing 802.11 a/b/g/n/ac deployments. Some of the key features enabled on BAT-NG SERIES are:



Orthogonal frequency division multiple access (OFDMA) enables more clients to simultaneously operate in the same channel, therefore improved efficiency, latency, and throughput. OFDMA can simultaneously address multiple clients in both directions downlink (DL) and uplink (UL). OFDMA is extremely effective for lower latency applications with mass clients such as voice and video transmission.



Multi-user multiple input, multiple output (MU-MIMO) allows more data to be transferred at once and enables a single access point to handle a larger number of concurrent clients.

1024 quadrature amplitude modulation mode (1024-QAM) boosting peak data-rates by as much as 25 %.



BSS Coloring improves spatial reuse in dense environments by providing a mechanism for color coding different overlapping BSS's, allowing more simultaneous transmissions.

Extended Range (ER) provides increased coverage in scenarios where receiving side encounters high path loss and channel delay spread, especially in outdoor environments.

Target wake time (TWT) improves power efficiency for Wi-Fi 6 devices. This capability lets client devices to sleep much longer, and wake up to less contention, extending the battery life of smart phones, IoT sensors, and other devices.



Technical Information

Delivery information	
Availability	Q4 2023
Product description	
Description	Outdoor, dual radio, 5 GHz 802.11ax 4x4:4 and 2.4 GHz 802.11ax 2x2:2, external antenna; scanning and security function
Port type and quantity	<ul style="list-style-type: none"> • 1 × 10/100/1000/2500Mbps M12 X-code, Eth0, PoE PD (IEEE 802.3bt) • 1 × Reset button
Radio protocol	IEEE 802.11b; 802.11a/g/n/ac; 802.11ax; up to 2.975Gbps (2.402Gbps in 5GHz and 573Mbps in 2.4GHz) data rate
Type	Track side access point / On board client
Order No.	
Radio technology	
Antenna connector	External antennas, 2x2:2 @ 2.4GHz, 4x4:4 @ 5GHz, 6 × N femal connectors, built in 6KA antenna feeder lightning /port; ANT1-ANT4 are 5GHz band, ANT5-ANT6 support 2.4GHz band; Integrated BLE antenna
Frequency band	<ul style="list-style-type: none"> • 2.400 to 2.4835 GHz • 5.150 to 5.250 GHz • 5.250 to 5.350 GHz • 5.470 to 5.725 GHz • 5.725 to 5.850 GHz *available channels: Dependent on configured regulatory domain
Modulation	<ul style="list-style-type: none"> • 802.11b: BPSK, QPSK, CCK • 802.11a/g/n/ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM • 802.11ax: BPSK,QPSK,CCK,16-QAM,64-QAM,256-QAM,1024-QAM
Additional radio feature	Scanning and security function antenna
Mechanical construction	
Dimensions (WxDxH)	284 mm × 200 mm × 57mm
Weight	2.5 KG
Mounting	Wall mounting
Power requirement	
Operating voltage	24V - 110V DC PSU
Ambient conditions	
Operating temperature	-40°C...70°C, with conformal coating
Storage/transport temperature	-40°C...70°C
Relative humidity(non-condensing)	10%...95%
Protection class	IP67
Software	
Software features	Auto channel selection; Auto transmit power control; Dynamic bandwidth selection; L2 roaming; Band steering; Client smart load balance; DFS; NTP server client; Wireless MESH P2P/P2MP; Dynamic EDCA based on WMM
Management	Cluster and DAC mode management; Internal User Database; Zero-touch provisioning (ZTP); System log report; SNMP; SNMP Trap Notification
Security	Captive Portal; Radius Client; Wireless QoS; Client sticky avoidance; User behavior tracking; White / black list; ACL; Rogue AP location and containment; Wireless Attack Detection
Authentication & Encryption	<ul style="list-style-type: none"> • 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA, WPA3 (WPA3-Personal, WPA3 -Enterprise) • 802.1X • Portal page authentication • Advanced Encryption Standard (AES), Temporal Key Integrity Protocol (TKIP)
Management software	DAC Software, Industrial HiVision
Compliance	
IEEE standard	<ul style="list-style-type: none"> • IEEE 802.11a/b/g/n/ac/ax • IEEE 802.11e WMM • IEEE 802.11h, 802.11i, 802.11e QoS • IEEE 802.11k Radio Resource Management • IEEE 802.11v BSS Transition Management • IEEE 802.11r Fast roaming
Basic standard	CE, FCC, UL
Safety	EN61131-2, EN62368-1, EN60950-22
Radio	EN 300 328 (2.4 GHz), EN 301 893 (5 GHz)
Transportation	EN 50155 (2017), EN50121-3-2 (2016, EMC), EN 50121-4 (2016), EN45545-2 (2015, Fire Protection Railway)
Medical electrical equipment	EN 60601-1-1, EN 60601-1-2
RoHS	RoHS((EU) 2015/863) and RoHS(GB/T26572-2011) compliant
Wi-Fi Alliance	Wi-Fi 6 certified, Passpoint

RF Performance Table

Rate	Receive sensitivity (per chain)		Maximum transmit power (per chain)*	
	2.4 GHz	5 GHz	2.4 GHz	5 GHz
1 Mb/s	-99		22 dBm	
11 Mb/s	-89		22 dBm	
6 Mb/s	-93	-91	22 dBm	21 dBm
54 Mb/s	-76	-74	21 dBm	20 dBm
HT20 (MCS0/8)	-92	-90	22 dBm	21 dBm
HT20 (MCS7/15)	-74	-72	21 dBm	19 dBm
HT40 (MCS0/8)	-91	-88	22 dBm	21 dBm
HT40 (MCS7/15)	-74	-70	21 dBm	18 dBm
VHT20 (MCS0)	-92	-90	22 dBm	21 dBm
VHT20 (MCS8)	-70	-68	20 dBm	18 dBm
VHT40 (MCS0)	-91	-88	22 dBm	21 dBm
VHT40 (MCS9)	-68	-64	20 dBm	18 dBm
VHT80 (MCS0)		-86		21 dBm
VHT80 (MCS9)		-61		18 dBm
HE20 (MCS0)	-94	-92	22 dBm	21 dBm
HE20 (MCS11)	-63	-62	20 dBm	17 dBm
HE40 (MCS0)	-91	-89	22 dBm	21 dBm
HE40 (MCS11)	-62	-60	20 dBm	17 dBm
HE80 (MCS0)		-87		21 dBm
HE80 (MCS11)		-58		17 dBm

Product Selection table

Product Name		Product Description
9AA 101 001	BAT-NG DAP847-RWAPKT899THH	BAT-NG Wi-Fi 6 (802.11ax) Access Point, PoE PD only, Extended Temp
9AA 101 002	BAT-NG DAP847-RWAPKT899EHH	BAT-NG Wi-Fi 6 (802.11ax) Access Point, PoE PD only, Extended Temp with Conf. Coating
9AA 101 003	BAT-NG DAP847-RWAKKT899THH	BAT-NG Wi-Fi 6 (802.11ax) Access Point, PoE PD and 24V-110VDC, Extended Temp
9AA 101 004	BAT-NG DAP847-RWAKKT899EHH	BAT-NG Wi-Fi 6 (802.11ax) Access Point, PoE PD and 24V-110VDC, Extended Temp with Conf. Coating
9AA 101 005	BAT-NG DAP847-RWCPKT899THH	BAT-NG Wi-Fi 6 (802.11ax) Client, PoE PD only Extended Temp
9AA 101 006	BAT-NG DAP847-RWCPKT899EHH	BAT-NG Wi-Fi 6 (802.11ax) Client, PoE PD only Extended Temp with Conf. Coating
9AA 101 007	BAT-NG DAP847-RWCKKT899THH	BAT-NG Wi-Fi 6 (802.11ax) Client, PoE PD and 24V-110VDC, Extended Temp
9AA 101 008	BAT-NG DAP847-RWCKKT899EHH	BAT-NG Wi-Fi 6 (802.11ax) Client, PoE PD and 24V-110VDC, Extended Temp with Conf. Coating