


HIRSCHMANN

 A **BELDEN** BRAND

Wireless LAN Access Point/Clients



OpenBAT Series

The access points and clients in the OpenBAT family can be mounted on DIN rails (BAT-R) or installed on walls or masts in indoor and outdoor (BAT-F) areas. Available with or without conformal coating, the devices have an operating temperature range of 0 °C to +60 °C or -40 °C to +70 °C. All versions support the IEEE 802.11n transmission standard and have Public Spot and VPN Gateway as options. Each access point has one or two wireless modules and Gigabit Ethernet ports with tried and tested M12 connection technology (IP67 version), one of which is configurable as a combo port (fiber optic/twisted pair). A serial M12-RS232 interface and a USB port are also provided. For redundant power supply using potential-free relay contacts, a choice of freely combinable PoE power packs for IEEE 802.3af, 24/48 V DC, 60/120/250 V DC or 110/230 V AC is available.



Clear Space Wireless

The application of bandpass filters helps to eliminate all interference caused by competing radio signals. The resulting Clear Space wireless delivers greater transmission stability over longer distances without interruptions. The highest performance speed of 450 Mbit/s facilitates new applications such as HD video streaming.



Product Features

- Clear Space guarantees stable wireless connections
- ESD protection and robust hardware ensure access points with high reliability and long operational lifetimes
- High- and low-voltage power supply for AC/DC, plus PoE power pack
- Various industry certifications (e.g. Train on track and along the track EN 50155/50124, Fire protection EN45545, Vehicles E1/e1, Substation EN 61850/IEEE 1613, UL, FCC, NEMA and new: HazLoc ISA12.12. Class I Div II, ATEX Zone 2)
- Various country approvals for OpenBAT-F and OpenBAT-R (e.g. USA/Canada, Europe, China, Australia, Singapore and Brazil)
- Data rates of up to 450 Mbit/s in both 5 GHz and 2.4 GHz bands (IEEE 802.11n)
- Interference-proof MIMO antenna technology
- Mountable on DIN rails (BAT-R) or on walls or masts indoors or outdoors (BAT-F)
- Versions with an extended operating temperature range (-40 °C to +70 °C) and conformal coating
- Tried-and-tested M12 connection technology
- A platform concept with more than 8,000 variations – boasts maximum flexibility and cost effectiveness
- Ideal for use with all Industrial Ethernet switches, routers and Industrial HiVision from Hirschmann



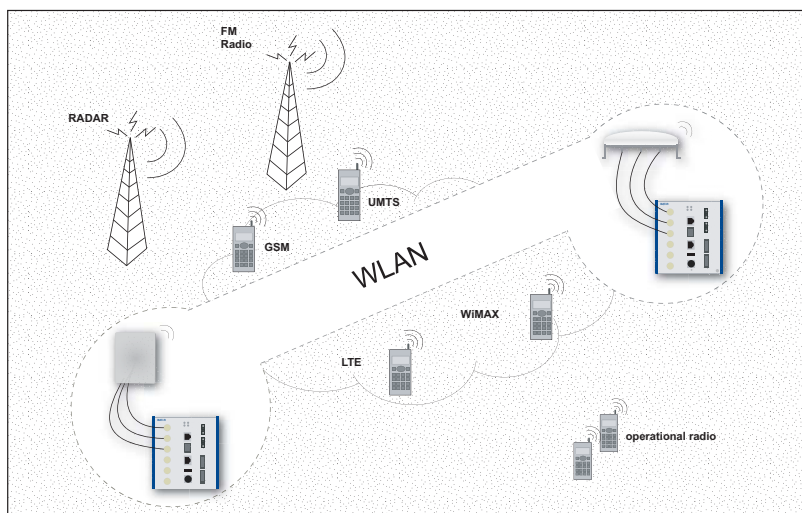
WLAN-Software HiLCOS for Hirschmann OpenBAT

HiLCOS is the software version for Hirschmann's OpenBAT industrial WLAN devices. It can be used to set up Wide Area Network (WAN) connections and hardware-encrypted Virtual Private Network (VPN) tunnels. The software offers features well beyond basic WLAN functions, and the latest updates are based on more than 20 years of continuous development and improvement by Belden and Hirschmann experts.

For enhanced security, the firmware features PMF to secure sensitive management frames and protect the network from outside attacks. The WIDS quickly identifies unauthorized behavior, enabling a quick reaction to attacks and ensuring these attacks don't go undetected. The new Layer 2 firewall adds stateful packet inspection for bridged traffic to provide additional protection from inside attacks or mistakes. In addition, the Opportunistic Key Caching (OKC) for access point and client modes reduces transfer times for 802.1x-based authentication, allowing centralized management of WLAN client credentials.



- Simple deployment through Automatic Wireless Distribution System (AutoWDS)
- Enhanced security via Wireless Intrusion Detection System (WIDS), Protected Management Frames (PMF), Layer 2 firewall with stateful packet inspection and Wi-Fi Protected Access (WPA)
- Zero network failover with Parallel Redundancy Protocol (PRP)
- Opportunistic Key Caching (OKC) reduces roaming times with WPA2 Enterprise
- Extensive management functions via LANconfig, LANmonitor, WLANmonitor and Industrial HiVision
- Frequency analysis identifies potential disruptions in the 2.4 GHz and 5 GHz band
- Ideal for all access points and WLAN clients of the OpenBAT platform, as well as for BAT controllers
- Free download from www.hirschmann.com



Clear Space technology delivers reliable radio connections, even in locations such as ports, where many competing radio technologies are used. The new patented Hirschmann radios will not be affected, so that for instance a video transmission over WLAN supervising the building of a ship will remain stable and high quality. Overall, video installation costs are lower and less complex. This also applies to installations in trains. Hirschmann BAT devices can withstand electrical discharges.

**HIRSCHMANN**A **BELDEN** BRAND**Wireless LAN Access Point/Clients (continued)****Technical Information**

Product Description	
Type	OpenBAT
Description	Rugged wireless LAN access point and/or client for use in industrial environments. Robust metal housing for mounting
Available Ports	1 or 2 WLAN interfaces, IEEE 802.11n/a/b/g/h/i, 1 or 2 Gigabit LAN ports, Power over Ethernet, Gigabit Combo Port
Construction	
Mounting	DIN Rail (BAT-R), Wall and Mast (BAT-F)
Protection Class	IP30, IP67
Dimensions (WxHxD)	120/150 x 136 x 120 mm (BAT-R), ~ 311 x 322 x 75 mm (BAT-F)
Ambient Conditions	
Operating Temperature	0 °C to +60 °C, -40 °C to +70 °C (with and without conformal coating) selectable
Storage/Transport Temperature	-40 °C to +85 °C
Relative Humidity (non-condensing)	10% to 95%
Radio Technology	
Antenna Connector	3 x MiMo antenna connectors per radio modul, reverse SMA socket (BAT-R), N-socket (BAT-F)
Frequency Band	Supports 2.4 GHz and 5 GHz: 2400 to 2483.5 MHz (ISM) and 5170 to 5850 MHz
Power Requirements	
Operating Voltage	Different types of power supplies selectable, 24 V DC, 48 V DC, 90 to 230 V AC, 48 to 320 V DC
Current Consumption at 24 V DC	up to 17 W, depending on number of radio modules and connections
Regulatory Approvals	
Safety of Industrial Control Equipment	BAT-F: EN 60950-1, EN 60950-22, UL 60950-1; BAT-R: EN 60950-1, UL 60950-1
Radio/EMC	EN 300 328 (2.4 GHz), EN 301 893 (5 GHz), EN 301 489-1, EN 301 489-17, EN 61000-6-2
Environmental	EN 50155, EN 50121-4, EN 45545, EN 61850-3, IEEE 1613, Atex Zone II, Class 1 Div 2
For Use in Vehicles and Cars	E1/e1
Reliability	
Warranty	5 years standard

NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com



Configurator



OpenBAT Configurations

BAT-R DIN Rail Mountable/BAT-F IP65/67 Housing

	B	A	T	-	R	-	E	U	W	9	9	A	W	W	9	9	A	O	7	T	1	T	9	9	9	H	H	X	X	.	X	X	.	X	X	X	X
Design/Models																																					
BAT-R = DIN rail mountable																																					
BAT-F = IP65/67 housing																																					
Country-Approval*																																					
EU = Europe (CE)																																					
US = USA/Canada (FCC/IC)																																					
Many other country certifications available. Please refer to the online configurator at: www.hirschmann.com																																					
Slot 1																																					
W = WLAN module																																					
Slot 2																																					
W = WLAN module																																					
9 = Not mounted																																					
Slot 3																																					
9 = Not mounted																																					
Client/AP																																					
A = Access Point																																					
C = Client																																					
Voltage Range 1																																					
C = 18 to 60 V DC																																					
W = 24 V DC, PoE																																					
K = 48 to 320 V DC, 90 to 265 V AC																																					
Voltage Range 2																																					
C = 18 to 60 V DC																																					
K = 48 to 320 V DC, 90 to 265 V AC																																					
W = 24 V DC, PoE																																					
9 = Not assembled																																					
Approvals 1																																					
F = ANSI/ISA 61010-1 + Class 1 Div2																																					
G = ATEX Zone 2																																					
I = Substation (EN 61850)																																					
K = Train (EN 50155)																																					
M = Vehicles, E1																																					
9 = No additional approval																																					
Approvals 2																																					
M = Vehicles, E1																																					
9 = No additional approval																																					
Montage																																					
A = Operator access area indoors																																					
B = Service access area indoors																																					
D = Outdoors																																					
E = Sea water proof																																					
Gigabit Ethernet 1																																					
O7 = Combo Gigabit Ethernet																																					
O5 = Combo Gigabit M12/SFP																																					
Gigabit Ethernet 2																																					
T1 = Twisted Pair/RJ45																																					
T6 = Twisted Pair/M12 x-coded																																					
99 = Not assembled																																					
Temperature Range																																					
S = 0 °C to + 60 °C																																					
T = -40 °C to +70 °C																																					
E = -40 °C to +70 °C, inclusive Conformal Coating																																					
K = -40 °C to +55 °C																																					
SW-options 1																																					
A = VPN-5																																					
9 = None																																					
B = VPN-50																																					
C = VPN-100																																					
SW-options 2																																					
F = PROFINET																																					
9 = None																																					
E = EtherNet/IP																																					
SW-options 3																																					
D = Public Spot																																					
9 = None																																					
P = PRP																																					
A = AutoWDS																																					
Configuration																																					
H = Standard																																					
OEM Type																																					
H = Standard																																					
Software Release																																					
XX.XX.XXXX = SW Release XX.XX.XXXX																																					

**HIRSCHMANN**A **BELDEN** BRAND

Wireless LAN Controllers









Wireless Local Area Network (WLAN) applications are becoming more prevalent in the field of industrial automation. The new IEEE 802.11n standard enables data rates of up to 450 Mbit/s while simultaneously extending the range and stability of wireless transmissions. Centralized management guarantees secure operation in a network and provides the necessary overview. The new Hirschmann BAT-Controller Wireless LAN Controller (WLC) was especially developed for this purpose.

Product Features

- Automatic configuration and central management of all the access points in the WLAN
- Compatible with all Hirschmann access points in the BAT families BAT-R and F
- Full throughput of payload data as per IEEE 802.11n for each access point
- Integrated IP router with firewall
- User authentication compliant with IEEE 802.1x, RADIUS and LEPS
- Roaming possible across a number of subnetworks
- Automatic frequency management in the 2.4 and 5 GHz waveband
- High availability achieved through redundancy and backup mechanisms
- A number of WLAN networks can be linked using the VPN gateway function
- 19" unit for use in control rooms

Technical Information

Product Description						
						
Type	BAT-Controller WLC25	BAT-Controller WLC50	BAT-Controller WLC100	BAT-Controller WLC200	BAT-Controller WLC500	BAT-Controller WLC1000
Order Number	942 034-001	942 034-002	942 034-003	942 034-004	942 034-005	942 034-006
Smart Controller Technology	The WLAN Controller uses wireless cell or SSID to support a number of ways of transmitting user data: <ul style="list-style-type: none"> • Bridged directly to the LAN (maximum performance e.g. for 802.11n-based access points) • Strictly separated from the LAN via VLAN (e.g. for WLAN guest access) • Tunnelled centrally to the controller (layer 3 tunneling across IP networks) 					
Supported Access Points	BAT54, BAT300, and OpenBAT					
Interfaces	4 individual ports, 10/100/1000 Mbit/s Ethernet					
USB 2.0 Host Port	USB 2.0 high-speed host port for connecting USB printers (USB print server) or serial devices (COM port server) Bidirectional data exchange is also possible (max. 480 Mbit /s)					
Serial Interface	Serial configuration interface/COM port (8 pole mini-DIN): 9,600 to 115,000 Baud, can be used to connect an analog/GPRS modem					

Product Description	
Type	Management Software Included
Physical Characteristics	Serial configuration interface/COM port (8 pole mini-DIN): 9,600 to 115,000 Baud, can be used to connect an analog/GPRS modem
LANconfig	Configuration program for Microsoft Windows, including a convenient Setup Wizard. Possibilities for group configuration, simultaneous remote configuration and management of several devices via an IP connection (HTTPS, HTTP, TFTP). Project-related, user-related or global default settings for the configuration program. Automatic storage of the current configuration prior to every firmware update. Exchange of configuration files between similar devices, e.g. for migrating old configurations to new BAT products.
LANmonitor	Monitoring application for Microsoft Windows for (remote) monitoring and logging of equipment and connection status of BAT devices, including PING diagnostics and TRACE with filters and provision for storing the results in a file. Search and comparison functions for TRACE output. Wizards for standard diagnostics. Export of diagnostic files for support purposes (contain bootlog, system info and device configuration without passwords). Graphical representation of parameters (indicated by appropriate symbols in the LANmonitor view) plus chronological sequence and tabular comparison of minimum, maximum and average values in a separate window, e.g. for transmission and receiving speeds, CPU load, available memory.
WLANmonitor	Monitoring application for Microsoft Windows for visualizing and monitoring BAT WLAN installations, including Rogue AP and Rogue Client visualizations



Wireless Software Tools

Comprehensive collection of software tools to facilitate the deployment and operation of the entire BAT family of WLAN devices.

Wireless Monitoring Software – LANmonitor / WLANmonitor

LANmonitor

SNMP-Based monitoring tool for all BAT devices. It provides a real-time status overview for interface, network, connections, throughput, link quality etc.

- An additional trace tool offers a graphic surface for diagnosis and trouble shooting
- Real-time status of a BAT device
- Time based graphs for throughput and performance

WLANmonitor

Offers additional security for the wireless network: real-time status overview over AP – to – Client association, Rogue AP detection, Rogue Client detection, Support of BAT-Controller etc.

- Scalable overview on all channels scanned by the AP



Wireless Management Software – LANconfig

Windows configuration tool

LANconfig offers more than just configuration of BAT devices:

- Support of BAT-Controller
- Group configuration of multiple devices
- Script up and download
- Scheduled updates
- Firmware management
- Wizard-based easy configuration





HIRSCHMANN

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Wireless LAN Access Client



BAT-C

The BAT-C WLAN Client delivers a cost-effective practical wired to wireless solution for industrial applications. The client was designed for challenging environments and is able to operate within an extended temperature range. Its IP67 housing and 24 V power supply make it suitable for the most challenging industrial environments.

Product Features

- Simple, secure, highly compact 802.11n client
- One integrated antenna
- Dual Band – 2.4 or 5 GHz
- One Button Smart Mode Configuration
- Integrated web interface for additional configurations
- Max. security level WPA2/PSK
- Data rates up to 54 Mbit/s

Technical Information

Product Description	
Type	BAT-C
Description	Industrial Wireless LAN Client for 2.4 GHz and 5 GHz operation
Available Ports	1 x 802.11n/a/b/g/h/i, 1 x 24 V DC, 1 x 100 Mbit/s Ethernet (M12)
Order No.	942 072-001
Construction	
Mounting	Wall or table mounting
Protection Class	IP67
Dimensions (WxHxD)	approx. 11 x 6 x 5 cm
Ambient Conditions	
Operating Temperature	-40 °C to +70 °C
Storage/Transport Temperature	-40 °C to +85 °C
Relative Humidity (non-condensing)	5% to 90%
Radio Technology	
Antenna Connector	N-Type female
Frequency Band	2.4 GHz and 5 GHz
Power Requirements	
Operating Voltage	9 to 30 V
Current Consumption at 24 V DC	max. 81 mA
Regulatory Approvals	
Safety of Industrial Control Equipment	EN 60950-1:2006 and/or IEC 60950-1:2005 (2nd Edition), cUL508
Radio	R&TTE (Europe), FCC/CFR 47 part 15; IC (Industry Canada)
Environmental	R&TTE Directive 1999/5/EC • EN 300 328, EN 301 893 • EMC: EN 301 489-1 V1.8.1, EN 301 489-17, EN 61000-6-2
For Use in Vehicles and Cars	E1/e1
Reliability	
Warranty	5 years standard

NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com



Wireless LAN Antennas

BAT Series

BAT Series, Dual-Frequency Antennas/802.11a/b/g/n (2.4 GHz and 5 GHz)			
Part No.	Order No.	Type	Standards
BAT-ANT-N-6ABG-IP65	943 981-004	Dual Band Omni-Directional	802.11a/b/g
BAT-ANT-N-MiMoDB-5N-IP65	943 981-012	Dual Band Omni-Directional, 2.4 GHz 3.5 dBi, 5 GHz 5.5 dBi, MiMo	802.11a/b/g/n



BAT-ANT-N-6ABG-IP65

BAT Series, Antennas/802.11a/n (5 GHz)			
Part No.	Order No.	Type	Standards
BAT-ANT-N-5A-IP65	943 981-003	5 GHz Omni-Directional, 5 dBi gain	802.11a
BAT-ANT-N-9A-DS-IP65	943 981-010	5 GHz, Directional antenna, 8 dBi gain w/polarization diversity	802.11a/n
BAT-ANT-N-MiMo5-9N-IP65	943 981-013	5 GHz, Directional antenna, 9 dBi gain, MiMo	802.11a/n
BAT-ANT-N-18A-IP65	943 981-006	5 GHz, Directional antenna, 18 dBi gain	802.11a
BAT-ANT-N-23A-V-IP65	943 981-007	5 GHz, Directional antenna, 23 dBi gain	802.11a
BAT-ANT-N-23A-VH-IP65	943 981-008	5 GHz, Directional antenna, 23 dBi gain w/polarization diversity	802.11a/n



BAT-ANT-N-MiMoDB-5N-IP65

BAT Series, Antennas/802.11b/g/n (2.4 GHz)			
Part No.	Order No.	Type	Standards
BAT-ANT-N-6G-IP65	943 981-002	2.4 GHz Omni-Directional, 6 dBi gain	802.11b/g
BAT-ANT-N-8G-DS-IP65	943 981-009	2.4 GHz Directional, 8 dBi gain w/polarization diversity	802.11b/g/n
BAT-ANT-N-14G-IP23	943 981-005	2.4 GHz Directional, 14 dBi gain	802.11b/g
BAT-ANT-N-LC-G-50m-IP65	943 981-001	2.4 GHz Leaky Coax, 50 meter (1 x N connector)	802.11b/g
BAT-ANT-N-LC-G-100m-IP65	943 981-101	2.4 GHz Leaky Coax, 100 meter (2 x N connectors)	802.11b/g



BAT-ANT-N-MiMo5-9N-IP65

BAT Series, Accessories			
Part No.	Order No.	Type	Standards
BAT54-F MAST MOUNT	943 966-001	Mast Mounting Kit for BAT (IP67) products	–
BAT-CLB-2 N m-m	943 903-513	Antenna cable 2 m, N male to N male	802.11a/b/g/n
BAT-CLB-2 N m-f	943 903-514	Antenna cable 2 m, N male to N female	802.11a/b/g/n
BAT-CLB-5 N m-f	943 903-516	Antenna cable 5 m, N male to N female	802.11a/b/g/n
BAT-CLB-15 N m-f	943 903-515	Antenna cable 15 m, N male to N female	802.11a/b/g/n
BAT-PIGTAIL	943 903-360	Used to adapt BAT Rail products to N-style connector	802.11a/b/g/n
BAT-ANT Protector m-f	943 903-373	RF Surge Arrestor, N male to N female	802.11a/b/g/n
BAT-LAN Protector IP68	943 903-374	IP68 RF Surge arrestor, N male to N female	802.11a/b/g/n



BAT-ANT Protector