Hirschmann BAT450-F
Industrial Wireless LAN Access Points

The BAT450-F family of industrial WLAN access points offers a complete, cost-effective solution for deploying reliable, customizable wireless infrastructure.

**Reliably deploy in harsh environments** and mounting areas due to ruggedized, compact design

**Ensure maximum network availability and data security** across wireless connections with secure HiLCOS operating software

**Increase efficiency and resiliency** in rail applications with option of direct 110 V DC power supply

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**Key Features**

- Configurable design for maximum flexibility and modular network interfaces
- WLAN radio versions comply with the IEEE 802.11 a/b/g/n WLAN standard
- Enables data rates up to 450 Mbit/s in both the 2.4 GHz and 5 GHz bands via 3 x 3 MIMO antenna technology
- WWAN/Cellular radio version supporting LTE (up to 100 Mbit/s), 3G, 2G and GPS/GLONASS
- Gigabit Ethernet ports, including X-coded M12 connector technology
- Automatic mesh connections through Automatic Wireless Distribution System (AutoWDS) functions
- Operates at an extended temperature range (-40 °C to +70 °C)
- Adheres to IP65/IP67 protection ratings
- Power input via 24 V DC, 110 V DC and Power over Ethernet (PoE); connectivity options for WLAN and/or LTE with two SIM cards

The BAT450-F family of WLAN access points features a ruggedized, compact design for industrial needs and can be customized to support a variety of wireless and wired connections.
Flexible Deployment and Modular Interfaces
The Hirschmann BAT450-F family of industrial access points provides a complete wireless solution offering WLAN, Ethernet and Wireless Wide Area Network (WWAN) interfaces. These wireless devices can operate as an Access Client (STA), Access Point or managed Access Point – with the option to combine with the BAT-Controllers.

The Hirschmann BAT450-F access points are designed to support Industrial IoT (IIoT) and wide area network (WAN) functionality through its modular/extension interface. The family includes an option specifically optimized for onboard and trackside rail applications: the BAT450-F 110 V DC. These specific access points are equipped with a 110 V DC power supply that allows engineers to connect directly to a train’s power network without needing a 24 V converter. This means cost effective, resilient and easily retrofitted passenger WiFi.

The Hirschmann BAT450-F core access point configurations include:
• 1xWLAN / 1xETH / 1x serial interface (V.24)
• 1xWLAN / 2xETH / 1x serial interface (V.24)
• 2xWLAN / 1xETH / 1x serial interface (V.24)
• 2xWLAN / 2xETH / 1x serial interface (V.24)
• 1xWLAN / 1xETH / 1xLTE / 1x serial interface (V.24)

Applications
The Hirschmann BAT450-F family of access points are ideal for use by industrial engineers across a variety of sectors where space and operating conditions are primary concerns.

The main application of the option equipped with the 110 V DC power supply is onboard rail cars and offers the following configurations and benefits:
• 110 V DC + WLAN + LTE: retrofit passenger WiFi onto trains in a single box
• 110 V DC + WLAN + WLAN: connect train redundantly to trackside with Parallel Redundancy Protocol (PRP) or Virtual Router Redundancy Protocol (VRRP) and provide passenger WiFi
• Coach-to-coach coupling: connect coaches automatically or control via serial connection

Markets
Ideal for use in transportation network environments, as well as in process automation areas. Additional applications can include: power transmission and distribution, machine building, water and wastewater, food and beverage, mining, solar and wind power, and oil and gas.
## Technical Information

### Product Description

**Type**: BAT450-F  
**Description**: Dual Band Ruggedized Industrial Wireless LAN Access Point/Client with IEEE 802.11n for installation in harsh environment.  
**Port Type and Quantity**: Up to 2 x Radio interfaces, up to 2 x LAN ports 10/100/1000BASE-TX, Power over Ethernet according to IEEE 802.3af, 1 x V.24/ACA11

### Radio Technology (WLAN)

**Radio Standard**: IEEE 802.11a/b/g/h/n WLAN interface as per IEEE 802.11n, 3 x MIMO up to 450 Mbit/s gross bandwidth.  
**Antenna Connector**: For each WLAN module: 3 x N socket  
**Range**: Depending on type of antenna, frequency range and data rate  
**Frequency Band**: 2.4 GHz and 5 GHz: 2400 to 2483.5 MHz (ISM) and 5170 to 5850 MHz  
**Modulation**: 20M0F7D (DSSS/OFDM) @ 2.4 GHz, 20M0G7D (OFDM) @ 5 GHz, MCS 0 - MCS23  
**Radio Topology**: WLAN access point, bridge, router, point-to-point, client, client-bridge mode, AutoWDS, fixed mesh with RSTP  
**Encryption**: IEEE 802.11i/WPA2 with passphrase or 802.1x and hardware-accelerated AES, closed network, WEP64, WEP128, WEP152, user authentication, 802.1x/EAP, LEPS, WPA1/TKIP, fast roaming with Opportunistic Key Caching. Please refer to the HiLCOS data sheet for further information.

### Option: Radio Technology (Cellular)

**Antenna Connector**: 3 x N socket  
**Antenna Configuration**: Main + Aux (Div. for 2G/3G and MIMO 2x2 for LTE) + GNSS  
**Frequency Band**: Quad Band EDGE/GSM/GPRS (2G): 1900 /1800/900/850 MHz  
**Transfer Rate (max) / Data Speed**: LTE Cat.3: 100 Mbit/s Download, 50 Mbit/s Upload  
**GNSS/Location Solution**: Satellite Systems: GPS, GLONASS  
**Interfaces**: Ethernet M12, X-coded, 10/100/1000 Mbit/s, V.24/ACA11 M12, A-coded, configuration interface or for automatic P2P connections verified over V.24 (train carriage coupling)

### Power Requirements

**Operating Voltage**: Option: 24 V DC and Power over Ethernet (PoE)  
**Power Consumption**: Up to 12.95 W, depending on number of radio modules

### Ambient Conditions

**Operation Temperature**: -40 °C to +70 °C  
**Storage/Transport Temperature**: -40 °C to +85 °C  
**Relative Humidity (non-condensing)**: 10 % to 95 %

### Mechanical Construction

**Dimensions (W x H x D)**: 261 x 189 x 55 mm  
**Mounting**: Wall and mast  
**Protection Class**: IP65/IP67

### Approvals

**Safety of Industrial Control Equipment**: EN 60950  
**Radio**: EN 300328, EN 301893, UL60950  
**Environmental**: EN 61000-6-2, EN 61131, E1 and EN 50155

**NOTE**: These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)
### Configurations

| BAT450-F | EU | W | A | M | B | K | A | T6 | V4 | T | C | D | A | Z | H | XX | XX | XXX | XXX |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

**Product**
- BAT450-F = IP65-/67-housing

**Country-Certification**
- EU = Europe (CE)
  - Many other country certifications available.
  - Please refer to the online configurator at: [www.hirschmann.com](http://www.hirschmann.com)

**Slot 1**
- W = WLAN module

**Slot 2**
- W = WLAN modules
  - 9 = Not installed

**Slot 3**
- L = LTE
  - 9 = Not installed

**Client/AP**
- A = Access Point
- C = Client

**Voltage Range 1**
- W = 24 V DC and PoE
  - N = 110 V DC

**Voltage Range 2**
- 9 = Not installed

**Approvals 1**
- K = Train (EN 50155)
  - 9 = No additional approval

**Approvals 2**
- 9 = No additional approval

**Mounting**
- A = Standard

**Interface 1**
- T6 = 10/100/1000 Mbit/s M12

**Interface 2**
- V4 = V.24/ACA 11
  - T6 = 10/100/1000 Mbit/s M12
  - T7 = 10/100/1000 Mbit/s M12+V.24/ACA 11
  - 99 = Not installed

**Temperature Range**
- T = -40 °C to +70 °C

**Software Option 1**
- A = VPN-5
- C = VPN-100
  - B = VPN-50
- 9 = None

**Software Option 2**
- 9 = None

**Software Option 3**
- D = Public Spot
- A = AutoWDS
  - P = PRP
- 9 = None

**Configuration**
- Z = Accessory package
  - 9 = No Accessories

**Type**
- H = Standard Hirschmann

**Software Release**
- XX.XX.XXXX = Current Software Release

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**NOTE:** The part number categories (Configuration and Software Release) are optional.