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

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:
- 1 x WLAN / 1 x ETH / 1 x serial interface (V.24)
- 1 x WLAN / 2 x ETH / 1 x serial interface (V.24)
- 2 x WLAN / 1 x ETH / 1 x serial interface (V.24)
- 2 x WLAN / 2 x ETH / 1 x serial interface (V.24)
- 1 x WLAN / 1 x ETH / 1 x LTE / 1 x 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

<table>
<thead>
<tr>
<th>Type</th>
<th>BAT450-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Dual Band Ruggedized Industrial Wireless LAN Access Point/Client with IEEE 802.11n for installation in harsh environment.</td>
</tr>
<tr>
<td>Port Type and Quantity</td>
<td>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</td>
</tr>
</tbody>
</table>

### Radio Technology (WLAN)

| Radio Standard | IEEE 802.11a/b/g/n WLAN interface as per IEEE 802.11n, 3 x 3 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 | Supporting 2.4 GHz and 5 GHz: 2400 to 2483.5 MHz (ISM) and 5170 to 5850 MHz |
| Modulation | 20MHz (QPSK/OFDM) @ 2.4 GHz, 20MHz (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, 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 |
| Frequency Band | Main + Aux (Div. for 2G/3G and MIMO 2x2 for LTE) + GNSS |
| SIM-cards/Slots | Two SIM card holders/slots, Dual-SIM fail over functionality |
| 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) | Option: 110 V DC |
| 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 +65 °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, EN 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 | M | B | X | D | A | T6 | V4 | V7 | C | D | E | E | F | G | H | XX.XX.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

### 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

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