

# CYBOX AP-W

## Wireless Access Point for Mobile Rail Applications

- Access Point for train-based Wi-Fi connectivity
- EN 50155 compliant
- Wall mount solution

### III Main Features

- IEEE802.11a/b/g/n/ac radio module with 3x3 MIMO
- Simultaneous operation on 2.4 GHz and 5 GHz frequencies possible
- Maximum bandwidth up to 1300 Mbps
- Integrated 2-port Gigabit Ethernet switch
- Ultra-wide-range power supply supports all voltage ranges worldwide
- Maintenance free design for ruggedized mobile applications
- Easy-to-use web interface for management and configuration
- Configurable firewall to ensure communication security
- Optimized CPU for high-speed network communication
- Integrated navigation module supporting all standards
- Lowest power consumption supporting green IT

### III Description

The CyBox AP-W is a member of the CyBox family of robust wireless communication devices for wall mounting. It is particularly designed to meet requirements of rolling stock applications. The device hosts two Wi-Fi radios to provide broadband routing functionality to connected clients via the local Ethernet interfaces for broadband communication on board a passenger or freight train, tramway, or the subway for example. The built-in fully configurable firewall ensures communication security.

The Wi-Fi radios can operate in 2.4 GHz or 5 GHz and is fully compliant to IEEE 802.11a/b/g/n/ac, allowing a maximum wireless transmission rate of 1300 Mbps on the interface. On the fixed network side, the CyBox AP-W features two 10/100/1000 Mbps Ethernet ports with auto-negotiation and TX-crossover. The ports are internally connected to an unmanaged switch and can be used either for redundancy to increase the availability of service, or to connect a second CyBox AP-W for instance. The switch works independently from the CyBox AP-W CPU, so that internal failures do not influence the packet forwarding between the two Ethernet ports.

The CyBox AP-W provides very flexible powering options. It can be supplied by a local 24 to 110 VDC power source. As a second source it provides an IEEE802.3af compliant PoE input. Its capability to supply power to a second CyBox AP-W, if it is connected to the downlink port, is a unique feature. This setup allows providing wireless connectivity with two CyBox AP-W using just one CAT-X cable; a noticeable cost saving factor especially in retrofit programs.

The CyBox AP-W firmware provides a comfortable management interface through http service. Besides global setup parameters the open source software OpenWrt allows complete configuration of all of the interfaces. The OpenWrt configuration can be up- and downloaded and the complete management firmware can be upgraded. Furthermore it provides remote update capability.

III Standards and Specifications

Interoperability of the rail system – Directive 2008/57/EC

- EN 50155
- EN 45545-2 (HL 1 to HL 3)
- EN 61373 (Category 1, Class B)

RED – 2014/53/EU

- EMC
- Radio spectrum
- Health & Safety

III Modules

WI-FI Interface IEEE 802.11 a/b/g/n/ac

Transmission Rates	up to 1300 Mbps
Frequency Range	2.412 GHz to 2.472 GHz, or 5.180 GHz to 5.825 GHz, selectable band
RF	3 RF signal inputs, 3T3R MIMO technology
Encryption	AES, TKIP, WEP
Security	Visible / invisible SSID 64-bit and 128-bit WEP encryption, WPA / WPA2-personal and enterprise Firewall

**III Technical Data**

**Physical Interfaces**

Antenna	QLS connectors supporting QLS or QMA
LAN	10/100/1000BaseT(X), M12 X-coded
USB Port	M12 4-pin female A-coded
Power Input	M12 4 pin male A-coded
Reset Switch	available on the front panel

**Mechanical Specifications**

Dimensions	130 mm x 55 mm x 205,2 mm (w h d)
Weight	up to 1250 g
Housing	IP40, aluminum, prepared for wall-mounting

**Electrical Specifications**

Local supply voltage	24 to 110 VDC nominal, wide-range power supply
Interruptions of voltage supply	compliant to EN 50155, Class S2
Supply change over	compliant to EN 50155, Class C1
Power over Ethernet	Class-3 powered device, IEEE 802.3af
Power consumption	8 W typ., 12 W max

**Environmental Conditions**

Ambient temperature (operation)	Class TX, -40..+70 °C (85 °C for 10 min)
Ambient temperature (storage)	-40..+85 °C
Relative humidity (operation)	max 90 % non-condensing
Relative humidity (storage)	max 90 % non-condensing
Altitude	Class AX, up to +2000 m
PCB protection	conformal coating

**MTBF**

MTBF	approx. ~220.000 h
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EN 50155 COMPLIANT

**III Options**

- GPS on request
- SMA antenna connectors

**III Standard Configuration**

ARTICLE NO.	WLAN	NETWORK	802.11	GPS
CYAPW-1023Vo	2	2 ETH (M12X)	ac	-
CYAPW-1024Vo	2	2 ETH (M12A)	ac	-