CYBOX AP 3-W

Industrial and Mobile IEEE 802.11ac Dual Wave 2 Radio

Wireless Access Point

- ↪ Designed for harsh Industrial and Mobile Applications
- ↪ EN50155 Compliant
- ↪ Wall Mount Solution

Main Features

- IEEE802.11ac compliant with 2 x 2 MU-MIMO wave 2
- IEEE802.11n compliant with 4 x 4 MU-MIMO wave 2
- Backwards compatible with 802.11a/n
- Simultaneous operation on 2.4 GHz and 5 GHz frequencies possible
- Dual Core CPU @ 1.200 MHz
- Wide range power supply 24 – 110 VDC
- Designed for harsh industrial and mobile applications
- -40 to +70 °C operating temperature
- EN 50155 compliant
- Integrated firmware for management and configuration

Description

The CyBox AP 3-W is a member of the CyBox family of robust industrial Ethernet access points for wall mounting. It is particularly designed to meet requirements of rolling stock and automotive applications. With the assistance of the access point, multiple mobile WLAN compatible devices in a passenger train, long distance bus or subway have the possibility to communicate with the Internet or access local data, such as time table information, videos, etc. The built-in configurable firewall ensures that mobile clients cannot gain access to other clients in the WLAN. Another important use case is the construction of wireless network backbones in train retrofit programs.

The CyBox AP 3-W uses QorIQ of the latest generation. This provides sufficient power reserves even with an evolution of WLAN standards to achieve enough throughput. The SoC has two independent Gigabit Ethernet MACs, both connected to robust M12 sockets – one of them supporting up to 10 Gigabit Ethernet. A Small Form Pluggable Transceiver (SFP) pioneering high speed backbone configurations are supported, this in copper as well as fiber optical based infrastructures.

The CyBox AP 3-W supports maximum data rates in current and future versions of IEEE802.11ac wave 2 standards. Therefore, a version with a 2.5 Gigabit Ethernet interface as well as a version with 10 Gigabit optical interface will be available. While the first option is ideal for retrofit programs with existing cabling (CAT 6 or better), the optical version mainly addresses new infrastructures.

Mechanically and electrically the CyBox AP 3-W is compatible with its predecessors, so that a migration in existing programs is easily possible.

The CyBox AP 3-W hosts two independent WLAN radios, allowing the operation of flexible wireless network configurations, including different frequency bands. The Wi-Fi interfaces are fully compliant to IEEE 802.11ac wave 2, allowing to connect clients at high data rates up to 1.7 Gbps and IEEE 802.11n wave 2 with data rates up to 600 Mbps.

The CyBox AP 3-W provides very flexible powering options. It can be supplied by a local 24 to 110 VDC power source; the power input supply is fully compliant to EN 50155, Class S2 and tolerates interruptions up to 10ms.

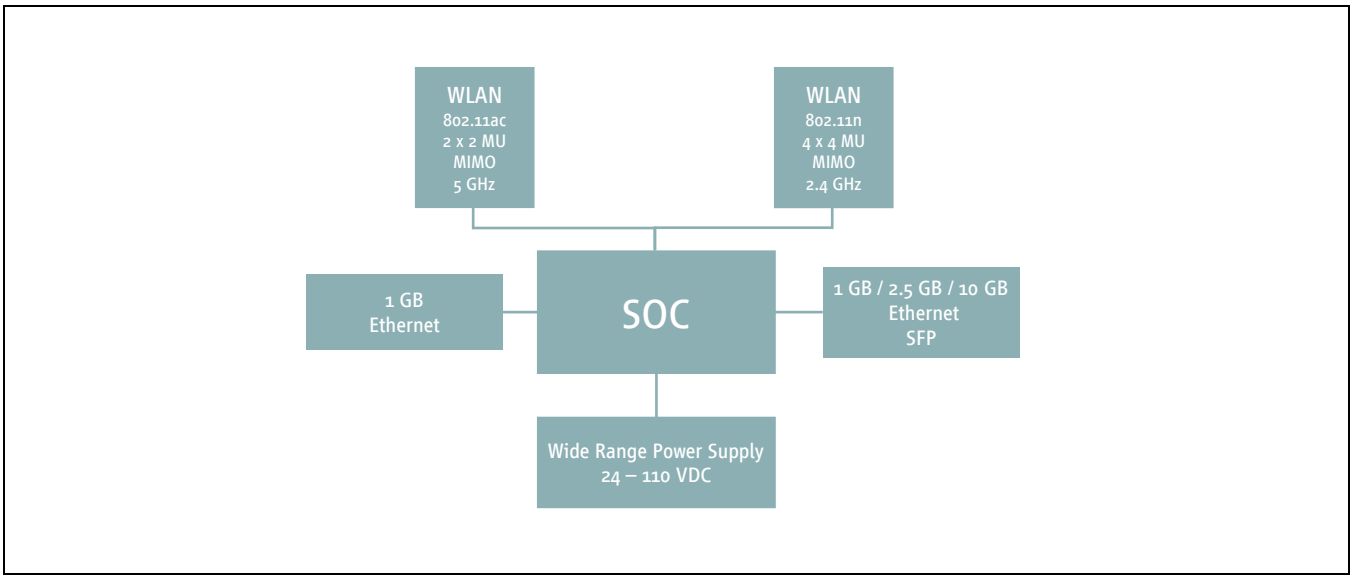
The robust IP40 aluminium housing can be deployed in industrial and mobile environments; it does not require forced air cooling in temperature ranges between -40 and +70 °C (EN 50155, Class TX) and has no maintainable parts inside. The housing is especially suited for use in rugged environments with regard to shock and vibration according to applicable DIN, EN or IEC industry standards. Its electrical and mechanical robustness is supported by industry standard M12 connectors for Ethernet and QLS connectors for the RF interfaces.

The CyBox AP 3-W firmware provides a comfortable management interface through http service. Besides global setup parameters the software allows complete configuration of the Wi-Fi interfaces, such as channel selection, SSID, encryption keys, and firewall setup. Access point configurations can be up- and downloaded and the complete management firmware can be upgraded.

The CyBox AP 3-W provides the possibility to read its configuration data from a USB memory device that can be attached via M12 connector; a prerequisite for quick and easy installation in the field.

A unique feature of the firmware is provided with the Inter Carriage Connection Protocol, which resembles a bridging algorithm that has been developed by ELTEC to automatically establish and maintain a wireless LAN backbone for trains. Such wireless backbones can be used in retrofit applications, where there is no possibility to add Ethernet cables through the car coupling. The challenge is to establish and maintain such connections in an environment, which is unstable and exposed to external sources of disturbances, such as train re-configuration, connection losses, or other trains on neighbour tracks.

Block Diagram



Standards and Specifications

Standards

- IEEE 802.11a/b/g/n/ac for Wireless LAN
- IEEE 802.11i for Wireless Security
- IEEE 802.3 for 10BaseT
- IEEE 802.3u 100BaseTX and 100Base FX
- IEEE 802.3ab for 1000BaseT
- IEEE 802.3at for Power-over-Ethernet IEEE 802.3af
- IEEE 802.1Q VLAN

Safety

Flammability: compliant to

- EN 45545 (HL 1 to HL 4)
- DIN 5510 (1 to 4) for use in technical cabinets
- BS6853 & GM/RT2130, categories II, Ib Ia, A, B, OC1, OC2, OC3 and OC4
- NFF 16 102, categories B, A2 and A1

EMC (RED - 2014/53/EU)

Tested according to the following railway standards:

- EN 55011 (radio disturbance)
- EN 50121-3-2 (EMC)
- EN 61000-4-2 (ESD)
- EN 61000-4-3 (electromagnetic field immunity)
- EN 61000-4-4 (burst)
- EN 61000-4-5 (surge)

WLAN and LTE radios compliant to:

- ETSI EN 300 328
- ETSI EN 301 893
- ETSI EN 301 502
- ETSI EN 301 489-1
- ETSI EN 301 489-17
- ETSI EN 60950-1
- ETSI EN 62311

Technical Data

Physical Interfaces

Antenna	QLS connectors
LAN	2.5 GBaseT, SFP 1 GBaseT, M12 X-coded
USB Port	M12, X-coded
Power Input	24 to 110 VDC local supply on M12 A-coded
LED Indicators	Power, Fault, LAN 1, LAN 2, WLAN 1, WLAN 2
Reset Switch	Available on the front cover (access protected)

Mechanical Specifications

Dimensions: 105 mm x 55 mm x 205.2 mm
Weight: 1100 g
Aluminium IP40 housing, prepared for wall-mounting

Electrical Specifications

24 to 110 VDC nominal, Compliant to EN 50155, Class S2,
Power consumption: ~15 W typ., ~28 W max.

Environmental Conditions

Temperature range (operation): -40..+ 70 °C (+85 °C for 10 min., according to EN 50155, Class TX)
Temperature range (storage): -40..+ 70 °C
Relative humidity (operation): max. 95 % non-condensing
Relative humidity (storage): max. 90 % non-condensing
Altitude: up to + 2000 m
Climatic tests according to EN 68068
Shock and vibration tested according to EN 61373, Category 1, Class B
Conformal coating

MTBF

↪ Approx. ~260000h

Standard Configurations

Article No.	Description
CYAPW-3000Vo	Wave 2 4x4 MU MIMO 2.4 GHz Wave 2 2x2 MU MIMO 5 GHz, 2,5 Gbit SFP, 1 Gbit Eth
CYAPW-3100Vo	Wave 2 4x4 MU MIMO 2.4 GHz Wave 2 2x2 MU MIMO 5 GHz, 10 Gbit SFP, 1 Gbit Eth

Options

↪ SMA antenna connectors

Accessories

↪ DIN-rail mounting plate

Related Products

↪ CyBox AP 2-W – Wireless Access Point 2nd generation
↪ CyBox LTE 2-W – LTE Router for wall mounting

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