CYBOX GW 2-P

MOBILE WIRELESS GATEWAY WITH 5G AND WI-FI 5 / WAVE 2

ELTEC systems

MADE IN GERMANY

Picture may be subject to change

KEY FEATURES

- Up to two 5G interfaces for channel-bundled WAN access
- Up to 4 SIM cards for each 5G interface
- Optional Wave 2 interface with 4x4 MU-MIMO with up to 1733 Mbps
- Dual 1 Gigabit Ethernet on M12 X-coded connectors
- Simultaneous Wi-Fi operation on 2.4 GHz and 5 GHz bands
- Up to 2 sockets for expansions (CAN, MVB, RS232 and more)
- Optional internal SSD storage up to 960 GB
- Ultra-wide-range power supply 24 to 110 VDC
- Integrated GNSS
- Built-in cyber security
- Maintenance-free design
- -40 °C to +70 °C operating temperature
- EN 50155 compliant

TYPICAL APPLICATIONS

- Passenger Wi-Fi
- Passenger Entertainment
- Passenger Information
- Train-to-Ground Communication

HIGH-END WIRELESS COMMUNICATION

The CyBox GW 2-P is a robust wireless communication gateway for railway applications. It offers stable, secure, and broadband 5G/LTE connections for train-to-ground communication and high-speed internet. The device hosts multiple 5G/LTE interfaces for parallel channel use and thus maximized throughput, multiple Wi-Fi interfaces to connect to client devices such as mobile phones, as well as dual Gigabit Ethernet ports to attach the device to a backbone network. Country-specific 5G/LTE/Wi-Fi standards are adopted for worldwide use in every type of train.

MULTIPLE RADIOS

There is mounting space for up to 4 radio modules within the CyBox GW 2-P. Each 5G/LTE module can be provided with up to four SIM cards for an optimal net coverage and maximum provider flexibility. The Wi-Fi interfaces allow for connecting clients at high data rates on each interface. The gateway can be equipped with either two 11ac modules or one Wave 2 module with multi-user MIMO (MU-MIMO) support to boost network efficiency and maximize data throughput.

MEDIA SERVER

To enhance the CyBox GW 2-P media server capabilities with internal storage, mounting space for a M.2 solid state drive is supplied. It is attached to the CPU's dedicated SATA port and can be used for streaming local, on-vehicle video and audio data.

USER-INTERFACE AND SECURITY FEATURES

The CyBox GW 2-P firmware provides a convenient management interface via a web service. Besides global setup parameters the open source software OpenWrt allows the configuration of the radio interfaces, including provider information and the login dialog, as well as the setup of the stateful firewall. The access point and router configurations as well as the management firmware can be updated remotely. Furthermore the built-in fully configurable stateful firewall and multi-VPN support with hardware-accelerated encryption ensures communication security.

BLOCK DIAGRAM
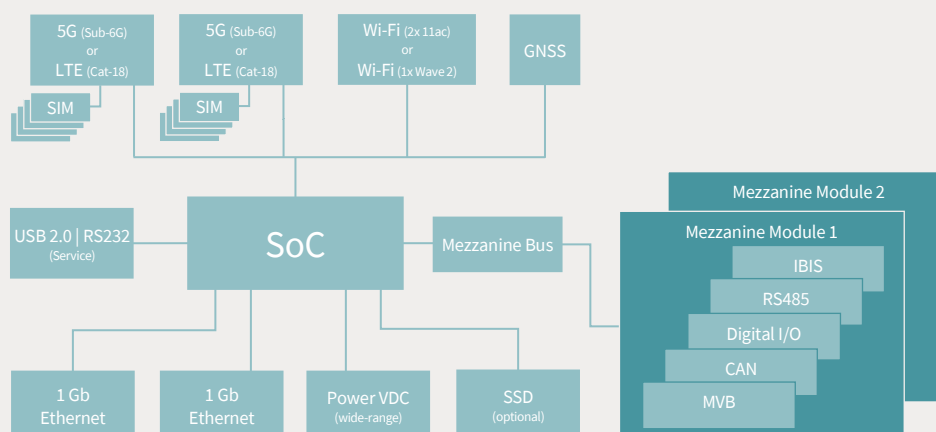
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TECHNICAL DATA

PHYSICAL INTERFACES

System Architecture	Quad-Core CPU, 1400 MHz
Software	Linux OS OpenWrt
Antenna	QLS connectors
LAN	2x 10/100/1000BaseT(X), M12 X-coded
USB/Serial Port	M12 8-pin female A-coded, USB 2.0, RS232
Power Input	M12 4-pin male A-coded
Reset Switch	available on the front panel

ELECTRICAL SPECIFICATIONS

Power Supply	24 to 110 VDC, wide-range power supply (16.8 V min. to 154 V max.)
Interruptions of Voltage Supply	compliant to EN 50155, Class S2
Power Consumption	40 W typ., 50 W max.

ENVIRONMENTAL CONDITIONS

Ambient Temperature	Class TX, -40.. +70 °C (85 °C) operating, -40.. +85 °C storage
Humidity	max. 90 % non-condensing operating and storage
Altitude	Class AX, up to +2000 m
PCB Protection	conformal coating

RELIABILITY

MTBF	approx. ~220.000 h

MECHANICAL SPECIFICATIONS

Dimensions	251 (284) mm x 76 mm x 246 mm (w h d), (incl. mounting points)
Weight	up to 4250 g
Housing	IP40, aluminum, wall-mount, conductive cooling

MODULES

5G INTERFACE

Transfer Rates	Up to 2.4 Gbps download / 500 Mbps upload
5G	n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n40, n41, n66, n71, n77, n78, n79
4G (LTE) Bands	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B48, B66, B71
3G Bands	B1, B2, B3, B4, B5, B8
Antenna	4x RF antennas, with Diversity and Massive-MIMO

WI-FI INTERFACE IEEE 802.11 a/b/g/n/ac/ac Wave 2

Transfer Rates	up to 1733 Mbps
Frequency Range	2.412 GHz to 2.484 GHz, or 5.180 GHz to 5.905 GHz, selectable band
RF	4x RF antennas, 4x4 MU-MIMO technology
Encryption	AES, TKIP, WPA, WPA2
Operational Feature	up to 512 clients per radio
Security	stateful firewall with multi-level client isolation

GNSS INTERFACE

Frequency Band	GPS (L1), GLONASS (L1, FDMA), Galileo (E1) ready, Beidou
Protocol Standards	NMEA, RTCM 104
Accuracy	up to 1.5 m
Time To First Fix	cold start < 35 s, warm start 1 s

STANDARDS AND SPECIFICATIONS

Directive 2008/57/EC	EN 50155 (IEC 60571)
	EN 45545-2 (HL 1 to HL 3)
	EN 61373 (Category 1, Class B)
RED – 2014/53/EU	EMC
	radio spectrum
	health & safety
FCC	Title 47 CFR Part 15B

STANDARD CONFIGURATIONS

ORDER NO.	DESCRIPTION
CYGWP-2000	2x LTE CAT-18, 2x Wi-Fi 802.11ac, 2x 1 Gb ETH (M12X), 120 GB SSD, GNSS
CYGWP-2010	2x 5G, 2x Wi-Fi 802.11ac, 2x 1 Gb ETH (M12X), 120 GB SSD, GNSS
CYGWP-2020	2x 5G, 1x Wi-Fi 802.11ac Wave 2, 2x 1 Gb ETH (M12X), 120 GB SSD, GNSS

Further information on www.eltec.com

OPTIONS

Modules	various combinations of Wi-Fi and 5G/LTE modules
Antenna Connectors	QLS to SMA adapter
Interfaces	CAN, MVB (ESD+, EMD)
	IBIS, RS232, RS485, ODB2, digital I/O (future)
Evaluation Kit	soon available

Revision: **1.0** | Date: **04.11.2020**