Kapsch TrafficCom

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Kapsch CBX-9260

V2X Dual-Mode Onboard Communication Unit

CBX-9260 is a 5.9GHz Dual-Mode onboard unit from Kapsch. It provides IEEE 802.11p™ DSRC and 3GPP C-V2X (LTE-V2X) wireless communication for both the ETSI ITS G5 or IEEE WAVE standards for applications within the Cooperative ITS (C-ITS) environment and ITS applications based on communication technology in general. The CBX-9260 provides fast data exchange between vehicles and the infra-structure e. g. Traffic Management Center or Signal Controllers to enable full capabilities of cooperative systems.

The Dual-Mode Onboard Communication Unit supports 5.9GHz radio channels compliant to IEEE 802.11p™ and also 3GPP Rel.14 L-V2X PC5 sidelink standards. They come with the capability to switch between both technologies to exclusively use either C-V2X or DSRC. CBX-9260 is based on a high performance Linux driven dual-core 64 Bit single board computer platform utilizing extensive interface capabilities. To operate the CBX-9260 it provides standard 12/24V power supply.

The versatile platform comes with standard compliant communication stack as needed for deployment in IEEE WAVE™ or ETSI ITS G5 based cooperative systems.

The CBX-9260 is ready for a complete integration within the C-ITS environ-ment. Additionally the design is pre-pared to cover also Bluetooth capabili-ties to stay fully connected to a desig-nated HMI and cellular (LTE) integration (optional) to connect to a dedicated management center or SCMS / PKI. Further physical interfaces like Gigabit Ethernet, GPIOs enable customer and applications specific adaptions and communication possibilities.

As mobile unit it completes the full end-to-end Connected Vehicle solution from Kapsch, consisting of V2X Roadside Units and the dedicated Connected Mobility Control Center (CMCC) central Software.

Independently if it is used in emergency vehicles to ensure traffic light preemption, on public transport means to keep the bus on schedule, to increase safety while creating awareness of service vehicles or in different pilots, demonstrating the current and future possibilities of Connected Vehicles, the CBX-9260 covers all these opportunities in one unit.

CBX-9260 comes with 802.11p ™ DSRC and C V2X LTE V2X PC5 side-link radio capabilities.

Technical features

ITS communication standards
- C-V2X 3GPP Rel.14
- IEEE 802.11p™/IEEE 802.11™
- SAE J2735 2016 / 2020
- ETSI ITS-G5 standard set [1)]
- IEEE WAVE™ standard set [1)]

DSRC radio characteristics
- IEEE 802.11p™ radio
- Freq. band: 5.850 to 5.925 GHz [2)]
- 10 MHz channel spacing
- Sensitivity: typ. -92 dBm @ 6 Mbps
- Antenna 1 (or 2, 2nd radio chann.)

C-V2X radio characteristics
- 3GPP LTE-V2X Rel. 14 radio
- Freq. band: 5.850 to 5.925 GHz [2)]
- 10/20 MHz channel spacing
- LTE-V2X PC5 sidelink
- Sensitivity: typ.-95 dBm
- 2nd antenna for diversity

Wireless communication
- Bluetooth module
- Cellular modem module (3G/LTE) [3)]

Positioning and timing
- Multi-GNSS (GPS, GLONASS[2)], Galileo, BeiDou[2)])

Computer platform
- 1,33 GHz, 64 Bit, dual core
- x86 CPU architecture
- 1GB RAM ECC
- 4GB Flash
- uSD memory extension [3)]

Power supply
- 12/24V DC

Enclosure
- IP31, , IEC 60529

External interfaces
- 3x GP input & 3x GP output
- 4x 5.9 GHz antenna (Fakra Z)
- 2x GNSS antenna (Fakra C)
- 1x BT antenna (Fakra I)
- 2x LTE antenna (Fakra D) [3)]
- 1x GbE (RJ45)

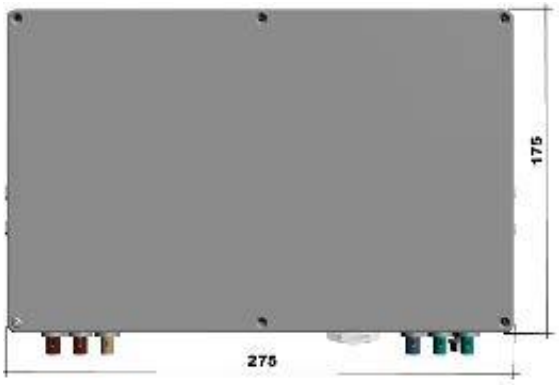
Environmental conditions
- Operation: -40°C to 74°C
- Storage: -40°C to 85°C

Security
- Hardware Security Module, ECC
- FIPS 140-2 level 3 compliant, CC EAL4+

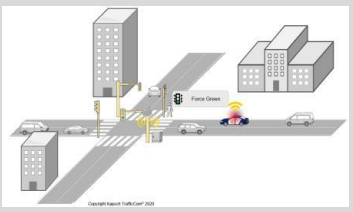
Mechanical
- Aluminum base
- Dimensions: 275x175x70 mm)

General conformity
- FCC [2)], CE [2)]

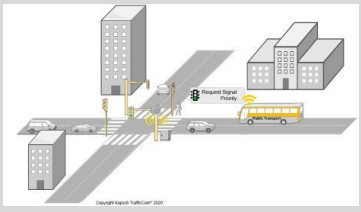
1) Alternative
2) Subject to local regulations.
3) Option.



The CBX-9260 can be used in a variety of applications to enable vehicles to receive traffic signal phase and timing and requesting traffic light prioritization and others to increase safety and efficiency at once. Few examples are listed below.

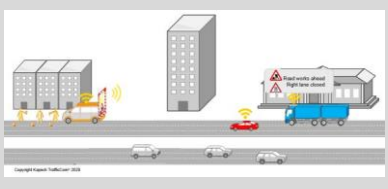


Emergency Vehicle Preemption



Transit Signal Priority

Stationary (Emergency) Vehicle



Roadworks Warning / Slow Traffic