

User Manual

KCU20 – KION Connect Unit

Comnovo Product No.: 3903701674

Hardware Rev.: 1.0



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1 Introduction

KION Communication Unit (KCU20) is the standard telematics unit for all products of KION AG and its subsidiaries, including Linde Material Handling, STILL, Fenwick-Linde Operations, and STILL SpA.

The KCU20 is used exclusively as an integral part of KION products, such as industrial trucks and high-bay warehouse systems. The KCU20 may only be installed and maintained in these products by trained specialists and in accordance with the factory assembly instructions. In the event of a failure, the KCU20 may only be replaced by trained specialist personnel.

Therefore, the KCU20 is supplied only as an original manufacturer part or as a manufacturer spare part. Selling the KCU20 as a single part to end customers is prohibited.

The KCU20 has no user controls and can be regarded as a “black box” control unit. No interaction with the operator is required for KCU20 operation. A single LED is visible through the housing and is intended only as an indicator during the first start-up. During normal operation it is not visible (concealed installation) and is not relevant for the operator.

On the vehicle or device side, the KCU20 communicates via CAN, Ethernet, digital input, and digital output. Which data is exchanged via which channel depends on the application and is not KCU20-specific.

On the WAN and LAN side, depending on the equipment, the KCU20 can communicate via mobile radio or via WIFI and Bluetooth. In addition, depending on the application, UWB may be used for short-range communication with other vehicles or devices. Which data is exchanged via which channel depends on the application and is not KCU20-specific. Only data is transmitted; voice transmission is not possible.

2 Common characteristics

Characteristic	Value
Power supply	12/24 V DC, 2 A
Ingress protection	IP67
Temperature range	-40°C to +85°C
Hardware Revision	1.0
Vehicle-side interfaces	CAN, Ethernet, digital input/output
Wireless interfaces	LTE, Wi-Fi, BLE, GNSS, UWB
Antenna	Integrated antenna(s) (not user-accessible)
Indicator	1 status LED
CPU	i.MX93 Single ARM Cortex-A55 Applications Processors
Memory	1GB LPDDR4 SDRAM with inline ECC 8GB eMMC Flash
Analog Input	0...24V
Digital Output	Max - Current 600mA; typ. 200mA

3 Cellular (LTE) characteristics

Technology: LTE Cat 1 bis

Frequency bands: LTE E-UTRA band 1 / 3 / 7 / 8 / 20 / 28 / 34 / 38 / 41

Module: Quectel EG916Q-GL

Maximum transmit power: UE Power Class 3 (maximum conducted power 23 dBm).

4 Wifi / BLE characteristics

Wifi 2.4 GHz (EN 300 328 V2.2.2): maximum EIRP 19.0 dBm (b-mode, middle channel).

BLE 2.4 GHz (EN 300 328 V2.2.2): maximum EIRP 8.06 dBm (LE 1 Msps, low channel).

Wifi 5 GHz (EN 301 893 V2.2.1): maximum mean EIRP 19.2 dBm (a-mode, 5180 MHz).

5 GNSS characteristics

Technology: GNSS receiver (receive-only)

Frequency band: 1559 MHz to 1610 MHz

Tested against: ETSI EN 303 413 V1.2.1

6 UWB characteristics

Frequency band: 3100 MHz to 10600 MHz

Channels: CH1 / CH2 / CH5

Technology: pulse-based UWB

Antenna: Integrated antenna

Maximum e.i.r.p. (power spectral density): -43.1 dBm/MHz (CH5 @ 6.490 GHz).

Peak e.i.r.p. (50 MHz): -5.2 dBm/50 MHz (CH5 @ 6.490 GHz).

7 Country-specific / regulatory information

European Union (EU)

Simplified EU Declaration of Conformity (RED 2014/53/EU):

Hereby, Comnovo GmbH declares that the radio equipment type KCU20 – KION Connect Unit is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available from Comnovo GmbH upon request.

RF Exposure advise: Always ensure that the distance between a KCU20 and a human body is always more than 20cm.

United States (FCC)

FCC ID: 2BUWNKCU203908089219

FCC Part 15.19: "This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

§15.521 (a): UWB devices may not be employed for the operation of toys. Operation onboard an aircraft, a ship or a satellite is prohibited.

FCC Part 15.21: "Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment."

RF Exposure advise: Always ensure that the distance between a KCU20 and a human body is always more than 20cm (7,87 inch).

Contains FCC ID: XMR2023EG916QGL

Contains FCC ID: XMR25FCS962NLP

Contains FCC ID: XMR2023HCM511S

FCC ID: 2BUWNKCU3908089219

ISED (Canada)

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Contains IC: 10224A-023EG916QGL

Contains IC: 10224A-25FCS962NLP

Contains IC: 10224A-2023HCM511S

IC: 35233-3908089219

RF Exposure advise: Always ensure that the distance between a KCU20 and a human body is always more than 20cm (7,87 inch).

8 Service, maintenance and disposal

Maintenance: No user-serviceable parts. Service actions may only be performed by trained personnel.

Firmware updates: FOTA may be available; no operator interaction required.

Replacement: The KCU20 is replaceable at vehicle level by authorized service personnel only.

Disposal: Dispose of the unit as electronic waste in accordance with local regulations.

Battery: No battery (N/A).

9 Mechanical dimensions and connector pin assignment

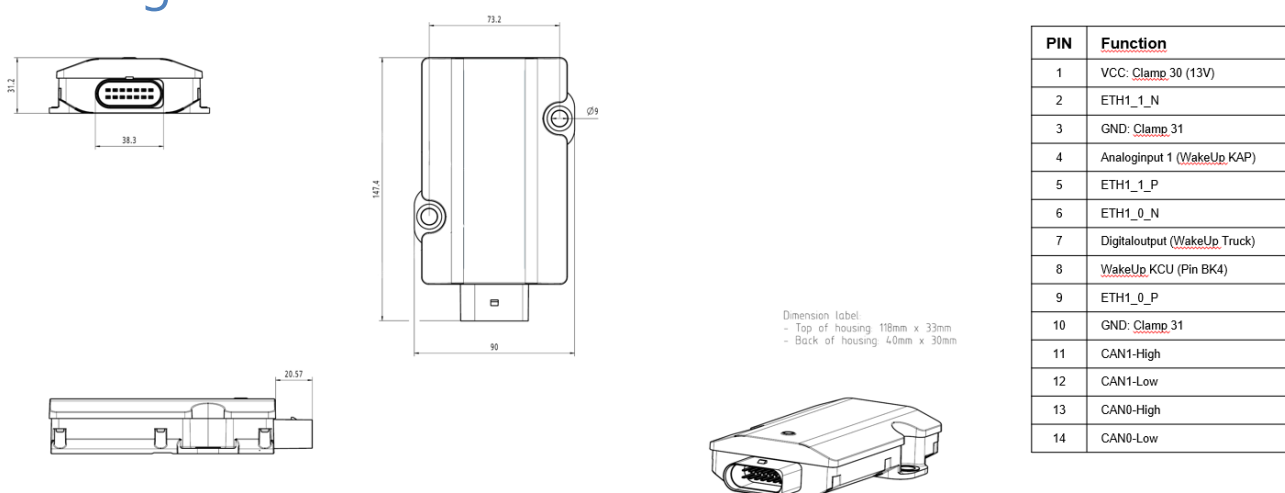


Figure 1—Outline dimensions and connector pin assignment (reference drawing).

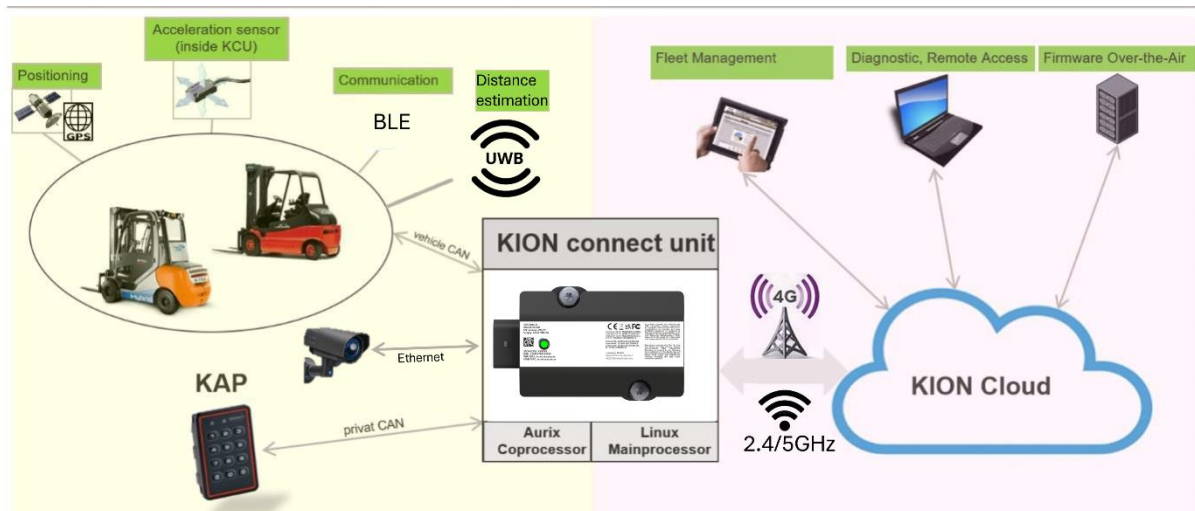


Figure 2 —Interface overview (vehicle ↔ cloud).