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challenging limits

### Kapsch TrafficCom

## **OBU-4040-2xA, -3xA**

### *On Board Unit for Heavy Goods Vehicles Multi-Protocol.*

The OBU-4040 is a compact DSRC On Board Unit intended for use in road tolling schemes for heavy vehicles where the driver shall be able to check the status of the unit and also declare the current vehicle axles configuration or class. The unit supports DSRC functionality according to European standards and specifications.

The OBU-4040 is compliant with harmonized EFC specifications and standards such as A1, CESARE/ PISTA, CARDME and EN 15509, and it also supports other ITS applications such as AVI, parking and access.

The unit supports communication with overhead mounted roadside units, and it furthermore also fulfills the demanding requirements for communication with enforcement vehicles or side-mounted enforcement stations.

The OBU support the multi-protocol functionality for both CEN and Italian DSRC and will automatically switch to the proper protocol, based on the type of roadside system

The user memory can be structured in several DSRC applications, and data security and integrity is ensured by the high degree of integration in combination



with efficient cryptographic functions based on the DES and AES algorithms.

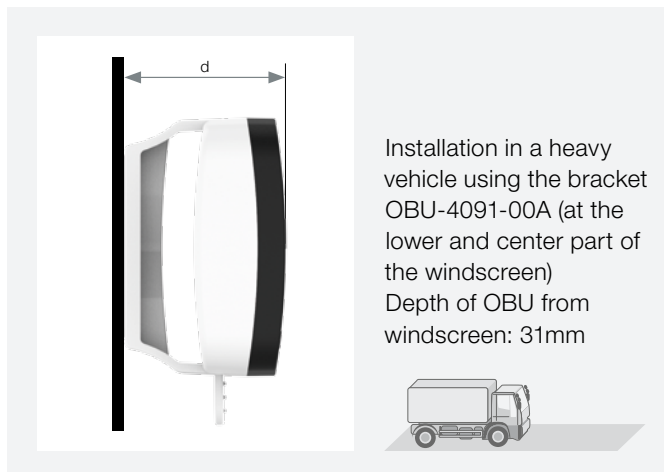
The user interface, comprising a push button and four LEDs, enables the user to declare the current vehicle axles configuration. It also provides a possibility to check the functional status of the unit.

Further feed-back to the driver is provided by the built-in buzzer with pre-configured buzzer sounds that can be activated by the DSRC roadside system.

The OBU-4040 is installed in a snap-in bracket that is mounted by the user to the inside of the vehicle windscreen.

The unit can be customized with a pad printed logotype, and further information, such as serial or account numbers, is laser printed on the casing.

Optionally, the unit includes functionality to detect when the unit is opened or tampered with.



## Features.

- > Product Range:
  - > OBU-4040-20A, with LED symbol "X", multi-protocol
  - > OBU-4040-21A, with LED symbol "X", multi-protocol, tamper detection
  - > OBU-4040-30A, with LED symbol "S", multi-protocol
- > Fully proven in demanding communication scenarios including mobile and fixed enforcement stations
- > Compliant with CEN/Italian DSRC standards/specification
- > Compliant with EFC interoperability specifications and standards
- > User interface for status check and declaration of vehicle class / no of vehicle axles
- > Optional branding by pad print

## Technical features.

### Casing

- > Plastic material PC/ASA
- > Colour windscreen side: White
- > Colour cabin side: Black, Grey or White

### Weight

- > 35g

### Size

- > 70 x 48 x 17 mm (excluding bracket)

### Enclosure

- > IP40, Ref: IEC 60529

### Power supply

- > 3V Lithium battery
- > Typical lifetime: more than 6 years

### User memory

- > RAM/Flash
- > Capacity: 4Kbytes

### MMI

- > Buzzer (sound level: 55 dBA @ 1m)
- > Configurable buzzer tunes
- > Push button
- > 3 green LEDs "2", "3", "4"
- > 1 green/red LED "X" or "S"
- > Push button and LEDs can be configured to declare vehicle class/no of vehicle axles

### Accessories

- > Snap-in bracket OBU-4091-00A with pre-mounted adhesive
- > Bracket colour: White
- > The OBU can be supplied in a customised package including e.g; bracket, cleaning tissue and user manual

### Customisation of casing

- > Optional pad-print on cabin and/or windscreen side
- > Laser printed serial number in text and barcode on windscreen side.

### DSRC compliance

In accordance with:

- > EN 12253, physical layer
- > EN 12795, data link layer
- > EN 12834, application layer
- > EN 13372, DSRC profiles 0/1 L1-B
- > ISO 14906, EFC Application Interface
- > ISO 17264, AVI Application Interface
- > EN 15509, EFC Interoperable Application Profile
- > EN 16312, AVI Interoperable Application Profile
- > ISO 21719, personalisation of OBE
- > GSS 3.2 global specification for short range communication
- > ETSI ES 200 674-1, Italian DSRC specification

### Mean Time Between Failure (MTBF)

- > 600,000 hours
- Ref: Bellcore Issue 6 Method I Case 3

### Environmental conditions

- > Temperature range, storage: +5 °C to +40 °C  
Ref: IEC 60721-3-1, class 1K21
- > Temperature range, operation: -25 °C to +70 °C  
Ref: IEC 60721-3-5, class 5K2  
(Tested in +85 °C due to impact from solar radiation)
- > Humidity: Max 95 % relative humidity, non condensing  
Ref: IEC 60721-3-5, class 5K2

### Vibration

- > Random: 3 m<sup>2</sup>/s<sup>3</sup> 10–200Hz, 1 m<sup>2</sup>/s<sup>3</sup> 200–500Hz  
Ref: IEC 60721-3-5, class 5M3

### Shock

- > Half-sine 300 m/s<sup>2</sup>, duration 6ms  
Ref: IEC 60721-3-5, class 5M3

### Free fall

- > 1,000mm, each face

### Conformance

- Compliant with the following EU directives
- > RED 2014/53/EU
  - > RoHS 2011/65/EU
  - > WEEE 2012/19/EU