



HIKOB WISE COW

User Documentation

Version 1.1-2466

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1 Introduction

When using HIKOB WISE COW, safety precautions must be taken to avoid injury and damages. Please read this guide before installing, using the product, or performing any maintenance operation. Failure to read, understand and follow herein instructions may result in personal injury. In no event shall HIKOB be held liable for any damages arising out of or related to misunderstanding instructions detailed in this manual.

1.1 Symbols and conventions used in this guide



Read entirely this guide before using the product HIKOB WISE COW and keep it handy for reference.



Caution – Indicates a potentially hazardous situation which, if instructions are not followed, may result in damage to the equipment.



Electrical Hazard – Indicates a dangerous condition such that, if instructions are not followed may result in electric shock and physical injury.

- Carefully follow instructions and warnings given in this guide, as well as instructions indicated on the product.
- Make sure you understand all instructions: refer to symbols definitions and conventions used in the documentation.
- Should you have questions on using the product HIKOB WISE COW once you have completely read this guide, contact the HIKOB support or your vendor.

1.2 Safety instructions



Do not disassemble or attempt to open the product. It does not contain any serviceable parts inside. Only qualified staff is allowed to perform maintenance operations on the HIKOB WISE COW product. Opening a HIKOB WISE COW will void the warranty.



Do not attempt to change or recharge the batteries. HIKOB WISE COW batteries are not replaceable nor rechargeable.



Do not overheat, do not dispose in fire, do not crush. Do not heat above 80°C, incinerate, or expose content to water. HIKOB WISE COW uses lithium batteries, such improper use may lead to leakage, explosion or fire.



Modifications or changes on the product is stricly prohibited if it is not expressly approved by HIKOB. Modifications or changes performed on HIKOB WISE COW will void the user's authority to operate the equipment.

1.3 Compliance and conformity

1.3.1 Europe



The HIKOB WISE COW product is certified to be compliant with the R&TTE 1999/5/CE directive.

Electromagnetic compatibility and radio spectrum

The product HIKOB WISE COW is certified to be compliant with the following standards:

- ETSI EN 301 489-1 V1.9.2 (2011-09) et ETSI EN 301 489-17 V2.2.1 (2012-09)
- ETSI EN 300 328 V1.8.1 et EN 62311 (2008)

Electrical safety:

The product HIKOB WISE COW is certified to be compliant with the following normalized standards:

- IEC 60950-1:2005 + A1:2010 + A2:2013
- EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013

The HIKOB WISE COW is certified to follow the IEC 60 950-22 Am2 outdoor safety standard. With exception for Finland, Norway and Sweden, countries where environment temperature can be far lower than the limit for operating and safety assurance temperatures for the HIKOB WISE COW. Don't install the HIKOB WISE COW outdoors in these areas.

1.3.2 Electromagnetic compatibility Japan



The HIKOB WISE COW product is certified to be compliant with Japan Radio Law - Article 2 paragraph 1 Item 19.

1.3.3 USA

Information to user 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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RF exposure This device complies with FCC RF radiation exposure limits set forth for general population. This device must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

1.3.4 Canada

Transmitter Antenna Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Licence-Exempt Radio Appartus This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

RF Exposure This device complies with Industry Canada RF radiation exposure limits set forth for general population. This device must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

1.4 WEEE

Information on disposal for users of waste electrical and electronic equipment:



This symbol on the product(s) and / or accompanying documents means that used electrical and electronic products should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge. Alternatively, in some countries you may be able to return your products to your local retailer upon purchase of an equivalent new product. Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

1.5 Technical Support

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2 General description

The HIKOB WISE COW is a wireless magneto resistive sensor, ultra-compact, and energy autonomous. This is one of the acquisition nodes composing the HIKOB wireless radio network aimed at instantaneously transfer information on presence of vehicles in parking lots, or passing vehicles on traffic lines.

The HIKOB WISE COW Parking detects parked vehicles, and the HIKOB WISE COW Traffic detects passing vehicles. Both detections are based on the earth's magnetic field variations measurements. Measures are broadcasted through the HIKOB radio network, possibly using routers, and are treated by the HIKOB GATEWAY, platform supplying and managing data, allowing monitoring.



Figure 1: External view of HIKOB WISE COW

The HIKOB WISE COW sensor is delivered already assembled, ready to be installed. The HIKOB WISE COW casing is water resistant, IP 67 (EN 60529 protocol). The first number 6 identifies protection against complete ingress of dust, the second number 7, identifies protection against the effects of immersion in water under stated conditions of pressure and time. Should you decide to perform cleaning tasks on the HIKOB WISE COW while it's still not buried, don't perform high pressure cleaning, prefer wiping with a dry cloth, or with a neutral agent.



3 Data sheet

Power supply	non-replaceable primary Lithium batteries Li/SOCL2 3.7V, 6Ah
Packaging	IP67 according to EN 60529
Dimensions	cylindrical: height 55mm, diameter 56.5mm
Weight	132g
Temperature	Operating and Storage -40°C +80°C

Radio

Frequency Band	2.4GHz ISM
Protocol	IEEE 802.15.4e
Antenna gain	+3dBi
Input level sensitivity	-101dBm
Output power	+4dBm
Range	30m ¹ to router or gateway

¹Radio range given for a HIKOB WISE COW sensor once installed in the road, see section Installation.

4 Installation

You need one HIKOB WISE COW Parking sensor per parking spot, and two HIKOB WISE COW Traffic sensors per traffic line to measure speed.

Here are HIKOB recommendations to draw your installation map:

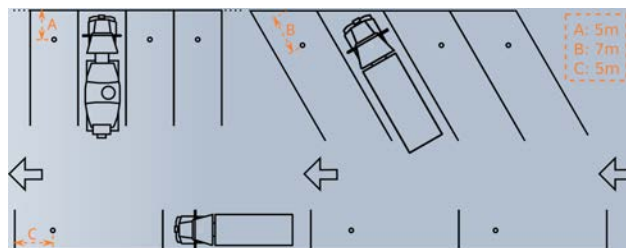


Figure 2: Truck parking

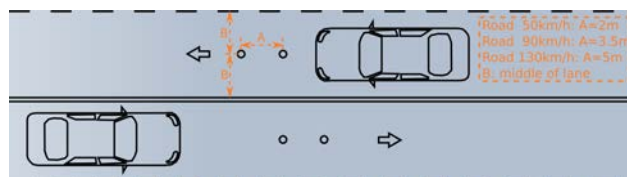


Figure 3: Traffic

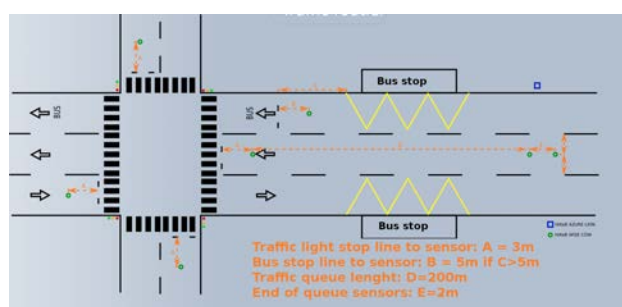


Figure 4: Urban traffic



4.1 Installation Procedure

Installing HIKOB WISE COW sensors requires the use of a specific polyurethane resin provided by HIKOB. For good results in sealing, environment temperatures must not be below +5°C.

4.2 Tools

Here are the tools you need to install HIKOB WISE COW sensors:



Sparay paint



Core drilling machine / rotary hammer



65 mm drill / core drill



Vacuum cleaner



Blowtorch



Glue gun

4.3 Step-by-step installation procedure



1 Mark and protect your working area.



2 Locate the HIKOB WISE COW position on the ground and draw a sign, according to your installation documents.



3 Drill a hole: HIKOB WISE COW sensors are installed in road pavements by core drilling the asphalt 65mm deep, with a 65mm diameter minimum.



4 Clean the holes: they have to be perfectly cleaned out from the hole saw drilling wreckage, preferably vacuum-cleaned.



5 Dry the holes from all water used by wet drilling as well, preferably with a blowtorch to ensure a good grip in the sealing process.



6 Half-fill the hole with the provided HIKOB resin, and note on your installation document the serial number of the HIKOB WISE COW that goes on this hole.



7 Place the sensor in the hole, the side with the HIKOB logo up. Place it so that the top surface of the sensor is about 5mm below the top surface of the road. Don't go below 10mm from the road surface, because it will drastically alter radio transmission performances. Fill the rest of the cavity with resin, up to the road surface level.



8 It takes about 15 minutes for the resin to dry, depending on environment temperatures.