KIWIZONE PLUS

USER AND MAINTENANCE MANUAL

Document version 1

Purpose of the Operation and Maintenance Manual

This Instruction Manual is an integral part of the KiwiZone Plus system and is intended to provide you with all the information you need:

- The correct installation of the electronic devices (hardware and software) that make up the system;
- A thorough knowledge of its operation and intended use;
- Knowledge of the hazards and risks present when using vehicles on which the KiwiZone Plus system has been installed;
- Proper awareness of security issues among operators;
- Its correct use in safe conditions;

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Target audience

This manual is intended for: the installer, the operator of the vehicles on which it is installed, and qualified personnel authorised to maintain the system.

	The KiwiZone Plus system must be operated by suitably trained and qualified personnel.
	All personnel authorised to install, operate and use the KiwiZone Plus system must have read and understood this user and maintenance manual.

How to read the manual

The Manual has been divided into self-contained chapters, to facilitate the immediate understanding of the text, terms, abbreviations and pictograms are used, the meaning of which is indicated below.

ABBREVIATIONS:

Par. = paragraph
Page = page
Fig= figure
Tab. = table

PITTOGRAMS:

Pitt.	Description
	CAUTION: Pay attention to the text next to this pictogram.
	PROHIBITION: Indicates operations or actions that are not permitted.

Unit of measurement

The units of measurement given in the manual are those of the International System (SI).

Glossary

- **CAN bus:** The Controller Area Network, also known as CAN-bus, is a serial standard for field buses (mainly in the automotive environment), of multicast type, introduced in the 1980s by Robert Bosch GmbH, to connect different electronic control units (ECUs). CAN has been specifically designed to work without problems even in environments strongly disturbed by the presence of electromagnetic waves and can use a balanced potential difference line such as RS-485 as a transmission medium.

Intended use

KiwiZone Plus is designed for use only on self-propelled industrial trucks or industrial vehicles with electric, endothermic or hybrid drive complying with the Machinery Directive 2006/42/EC.

Prohibited use

Any use of the KiwiZone Plus system not expressly described in this manual is not permitted. In particular:

- Installation on vehicles that can travel on public roads is not permitted.
- In bogies crossing tracks unless there is already a self-holding system applied to the starter consent.

	KiwiZone Plus is not a security system.
	KiwiZone Plus is not an explosion-proof device.
	KiwiZone Plus cannot be installed on vehicles with two or more axles powered by an endothermic engine, such as cars, lorries, mopeds, motorbikes and operating machinery licensed for public use.

General safety instructions

	The KiwiZone Plus system **CANNOT** replace the safety devices of the vehicle on which it is installed.

	The KiwiZone Plus system **MUST** be installed in compliance with the general safety regulations.
	It is **forbidden to** install the KiwiZone Plus system to inhibit or alter the operation of the safety systems already present on the vehicle.
	IT IS **FORBIDDEN TO USE** the system to operate power contactors, as opening them while current is flowing would cause an electric arc.
	The management of deceleration **MUST** respect the safety of the machine and the operators. Slowing down a machine **MUST NOT** create potentially dangerous situations.
	When positioning the KiwiZone Plus system, **KEEP A MINIMUM DISTANCE of** 20 cm from the operator.
	Do not use the KiwiZone Plus system in the presence of flammable gases or fumes, near petrol stations, fuel depots, chemical plants or during blasting operations. **Avoid any potentially explosive atmosphere.**

Warnings on the emission of radio waves

- The KiwiZone Plus system receives and emits radio waves.
- The wireless modules used for transmissions meet all safety requirements for high-frequency radio-wave communications.
- The maximum power radiated by the KiwiZone Plus system is below the thresholds imposed by regulations.

- Interference may be generated if used in close proximity to equipment such as TV, radio, computers or any unshielded electrical and/or electronic equipment.

	Observe the restrictions imposed on the use of electronic equipment if the vehicle on which the system is installed is used: • In hospitals or other health facilities. • Near an airport. • In all areas where there are restrictions imposed due to the use of electronic equipment.

Risk assessment

It is the responsibility of the operator (and/or owner of the vehicle) to carry out an environmental risk analysis prior to installation.

- During the installation phase, it is imperative to ensure that any malfunctioning of the device does not compromise either the safety or the productivity of the operators and the plant.
- It is essential to assess the situation if the device malfunctions.
- It is possible for the machine to be slowed down without the programmed conditions having occurred.

Exclusion of liability

Kiwitron s.r.l. holds itself harmless from any liability for damage caused by:

- Improper use of the system.
- Use by unqualified and/or trained personnel.
- Incorrect installation.
- Power supply defects.
- Inadequate maintenance.
- Unauthorised modifications or interventions.
- Incorrect manoeuvres.

- Use of non-original spare parts.
- Use of accessories not foreseen or not authorised in writing.
- Total or partial non-compliance with instructions.
- Exceptional events.
- Not in accordance with the regulations and legislation currently in force in the country of installation.

	WARNING! Kiwitron s.r.l. is relieved of any responsibility in case of installation of the system on vehicles that are also authorised to circulate on public roads. • In this case it is the responsibility of the operator to decide to install and use the system on the vehicle. • In this case, it is ABSOLUTELY MANDATORY to disable the slowdown function to avoid creating situations of hindrance or danger (e.g. blocking the vehicle when crossing railway tracks).

Manufacturer's warranty

Kiwitron s.r.l. as manufacturer of the KiwiZone Plus system acknowledges the following warranty periods on the following components:

- KiwiZone Plus system devices: 1 year.

The period starts from the date on the delivery note. The guarantee does not apply to breakages and/or defects caused by:

- Improper use of the system.
- Use by unqualified and/or trained personnel.
- Incorrect installation.
- Power supply defects.
- Inadequate maintenance.
- Unauthorised modifications or interventions.

- Incorrect manoeuvres.
- Use of non-original spare parts.
- Use of accessories not planned or not authorised in writing
- Total or partial non-compliance with instructions
- Exceptional events
- Not in accordance with the regulations and legislation currently in force in the country of installation.

The warranty does not extend to parts that wear out as a result of normal use such as:

- Case.
- Electrical cables and connectors.

Guidelines and standards

The system and its components have been designed and manufactured in particular in accordance with:

- EC Directive 89/336 (electromagnetic compatibility).
- Directives 86663, 89240.
- Harmonised standards 1726-1, 1726-2.
- EN1175-1-2-3.
- EN12895:2015 (Electromagnetic compatibility testing).
- CEI EN 60240-1.
- ETSI EN 300 328 V2.2.2 (2019-07).
- ETSI EN 303 413 V1.1.1 (2017-06).
- ETSI EN 301 511 V12.5.1 (2017-03).
- ETSI EN 301 908-1 V11.1.1 (2016-07).
- ETSI EN 300 330 V2.1.1 (2017-02).
- ETSI EN 301 489-1 V2.2.3 (2019-11).
- ETSI EN 301 489-3 V2.1.1 (2019-03).
- ETSI EN 301 489-17 V3.2.2 (2019-12).

- ETSI EN 301 489-52 V1.1.0 (2016-11).

Description and purpose of the system

KiwiZone Plus allows you to manage truck access and activity to increase security in areas bordered by electronic gates.

When the truck enters the "SAFE" areas, KiwiZone Plus activates the automatic slowdown of the truck and any acoustic and/or visual signals.

Thanks to radio technology, the system immediately recognises the trolley when it enters the relevant area.

KiwiZone Plus can deny access to hazardous areas of the company to unauthorised vehicles (e.g. Atex zones).

KiwiZone Plus can be installed on trucks and industrial vehicles with drivers on board and/or ground or driverless vehicles such as:

- Forklift trucks with front lift powered by electric or thermal motors.
- Lifts with covering forks, retractable, with forks between the side members.
- Electric company vehicles (caddy, motor scooters, toy trains, etc.).

KiwiZone Plus consists of a control unit with an integrated directional antenna.

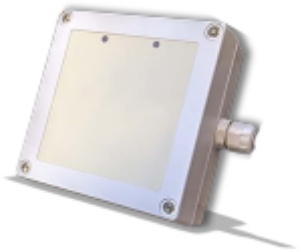


Fig. 1 KiwiZone Plus

System functionality

It is a system for managing access and activities of the trolley to increase security in areas bordered by electronic gates with the following features:

- Opening/Closing Doors

- Lighting
- Activation of alerts
- Automatic slowdown
- Limitation on lifting
- Switching on working lights
- Etc.

	As this is a fully customisable system in terms of versions and functionality, there may be functions on the systems that are not currently included in this version of the manual.

Technical Data

KiwiZone - Gate

Dimensions	180x130x100 mm
Power supply	From 110/220 VAC
Directive Antenna	2 Modules (internal and external)
Protection	IP67
Interfaces	CAN BUS for expansions and configurations (2A & 2B)
Operating temperature	-25 to +70°C

KiwiZone - Mobile

Dimensions	130x130x50 mm
Power supply	5 to 140 VDC
Directive Antenna	1 Integrated module
Protection	IP67
Interfaces	CAN BUS for expansions and configurations (2A & 2B)
Operating temperature	-25 to +70°C
Absorption	200mA max.
Exits	2 (opto-isolated 5kV contact). Load current 400mA max.
Inputs	2 (non-insulated activation min 1.5V max 60V)

Operating principle

The system needs to be installed on the vehicle by connecting it to the power source (battery) and to one or more signals provided on the machine.
A software configuration of the system is then carried out during installation.

All settings can be made with the help of a PC configuration software (downloadable from www.kiwitron.it in the download section).

KiwiZone - Gate

The KiwiZone - Gate system detects KiwiZone - Mobile devices and operates relays on the vehicle and gate as required.
It is installed on automatic doors and/or gates in order to delimit sensitive areas of the workplace.
The KiwiZone - Gate device consists of 2 directional antennas and an interface box.

Main functions:

- Detection of KiwiZone - Mobile devices and consequent activation of exits on the vehicle and/or door.

Examples of Use:

- Activate an output linked to slowing down the vehicle when the input gate is passed, and remove the speed lock on exit.
- Activate an output connected to the gate opening to open the gate when the vehicle passes.

KiwiZone - Mobile

The KiwiZone - Mobile system allows you to detect KiwiZone - Gate devices and receive/set the output configuration on the KiwiZone - Gate.
It is installed on electric vehicles and/or vehicles in general in order to act on the vehicle according to the sensitive areas of the workplace.

Main functions:

- Detection of KiwiZone - Gate devices and consequent activation of the outputs on the vehicle and/or gate.

Examples of Use:

- To be detected by the KiwiZone - Gate in order to activate/deactivate the outputs of the medium.

Assembly instructions

The devices must be installed in the areas shown in Fig.2 and Fig.3 below, namely:

- A Zone for KiwiZone devices - Mobile
- B Zone for KiwiZone devices - Gate (internal)
- C Zone for KiwiZone devices - Gate (external)
- D Zone for KiwiZone devices - Gate (panel)

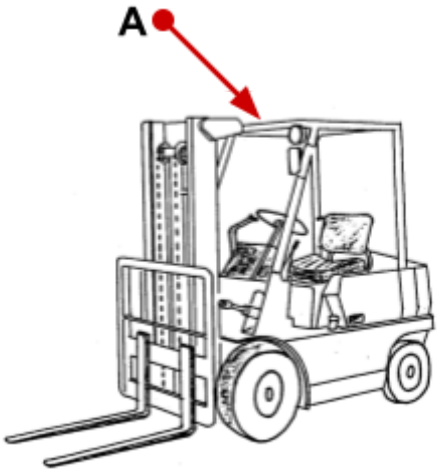


Fig.2

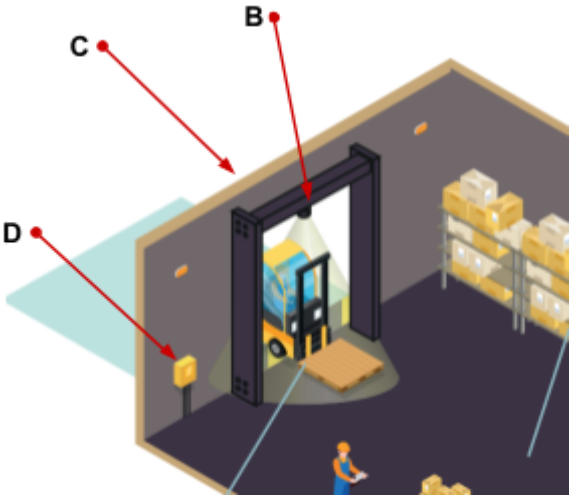


Fig.3

KiwiZone Installation - Mobile

The KiwiZone - Mobile must be installed on the roof of the trolley as its directional antenna must be directed upwards.

	Special Velcro-type adhesives are available on request for installation, making installation simple, quick and non-invasive.

	To protect the health of operators, place the device at least half a metre away from the driver's seat to limit exposure to electromagnetic waves emitted by wireless devices.
	It is forbidden to place the devices near sources of strong heat or exposed to the weather.
	It is forbidden to install the devices in positions which restrict the driver's view or which may hinder his movements.
	Avoid placing the device with metal parts covering its top, as this may cause malfunctions in wireless devices.
	It is strictly forbidden to drill holes in the vehicle structure in order to install the devices. Only use brackets or fastening systems that do not compromise the structure of the vehicle.

KiwiZone installation - Gate

Place KiwiZone -Gates in the centre of the entrance to the area; one on the inside and one on the outside, with the top of the device pointing downwards at an angle of 30° to the horizon (60° to the vertical) so that the radio signal radiation cone projects the door activation area onto the ground.

Fig.4

Pinout

KiwiZone - Mobile

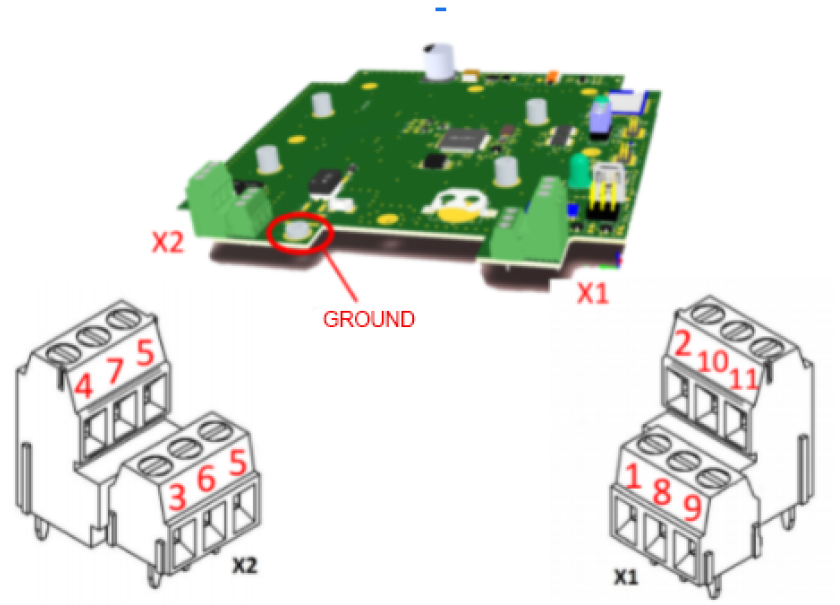


Fig. 5

X1 and X2 pinouts

PIN 1-> Vin= Vmin 5V ÷ Vmax 140V
(Maximum consumption 200mA@5VDC - 50mA@24VDC)
PIN2-> GND
PIN3-> IP1 Positive input (activation threshold > 1.5 Volt - 60 VMax)
PIN4-> IP2 Positive Input (activation threshold > 1.5 Volt - 60 VMax)
PIN5-> Contact Rel1 and Relay 2 (Common)
PIN6-> Relay contact 1 (VOFF = 200 V - Io = 200 mA)
PIN7-> Relay Contact 2 (VOFF = 200 V - Io = 200 mA)
PIN8-> CAN signal H 0
PIN9-> CAN signal L 0
PIN10-> CAN signal H 1
PIN11-> CAN signal L 1
GROUND-> Wire To be connected with the bolt (position marked in the figure)

	Make sure you make a good earth connection

KiwiZone - Gate

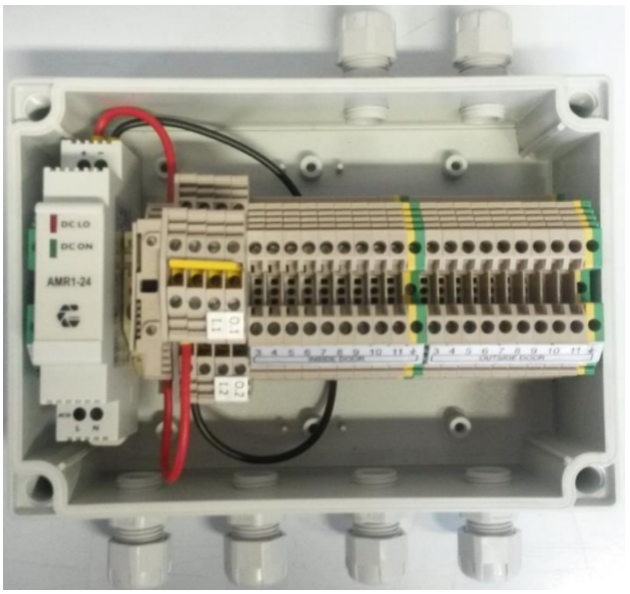


Fig. 6

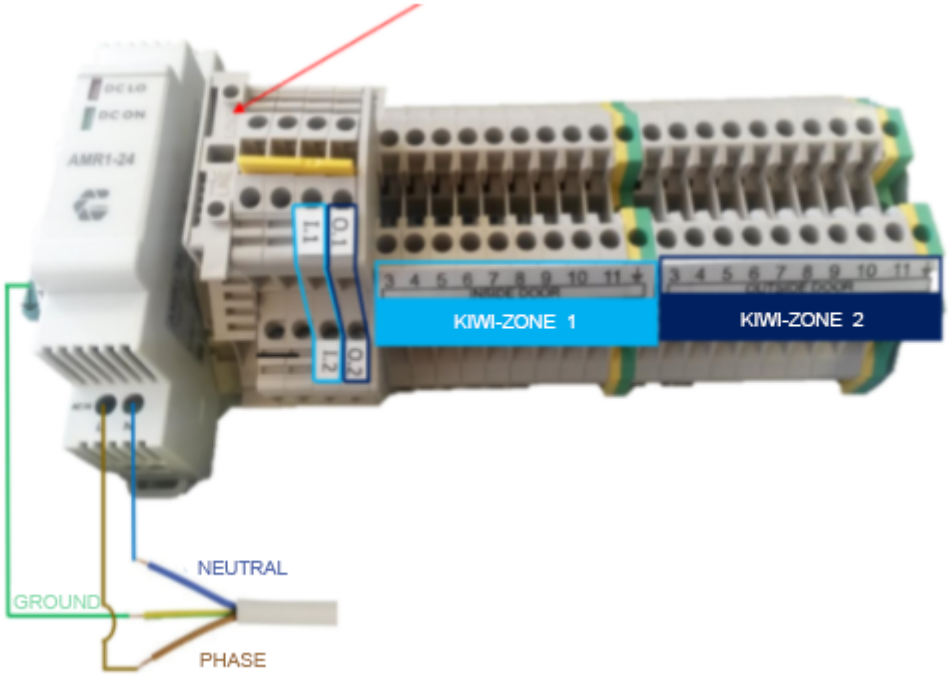


Fig. 7

A pair of KiwiZones (one inside and one outside) of the door is connected to the 'Door control panel' in accordance with the pinout indicated on the nameplates.

Feed the KiwiZone wiring through the two cable glands at the top of the picture, and connect all wires to the terminal block even if they are not going to be used.

Connect the numbered wires to the corresponding pin number on the KiwiZone connectors

	Make sure you make a good earth connection

Connection diagram - example

Some possible connection examples are shown in Fig. 19A and 19B below.

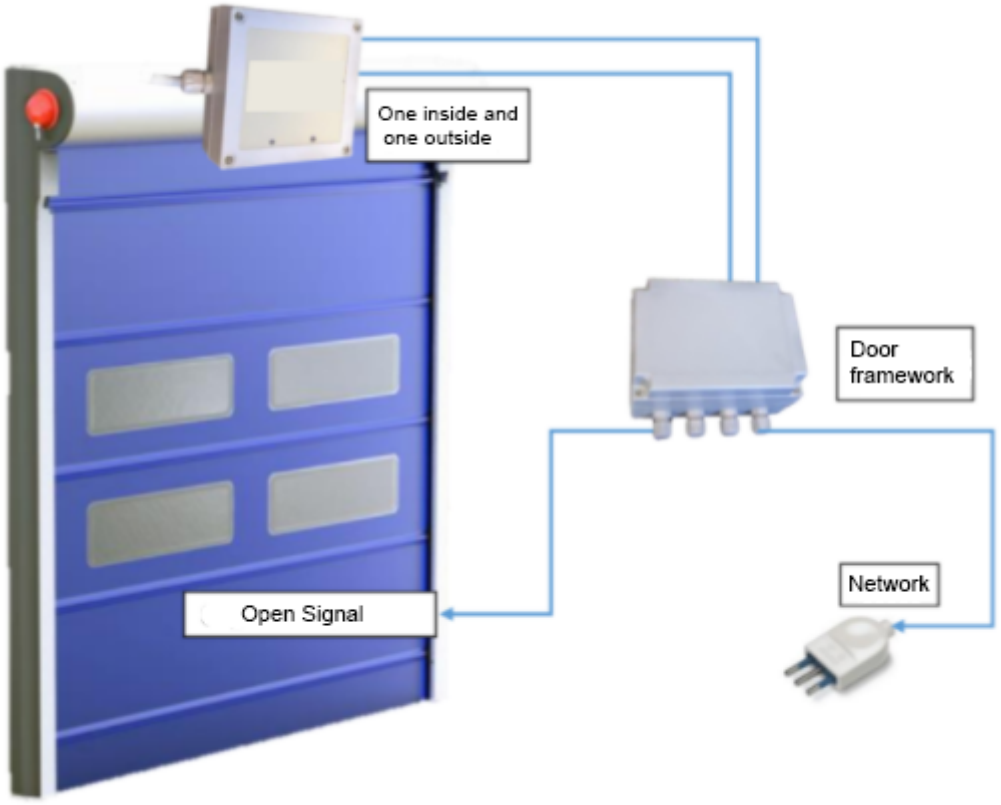


Fig. 8

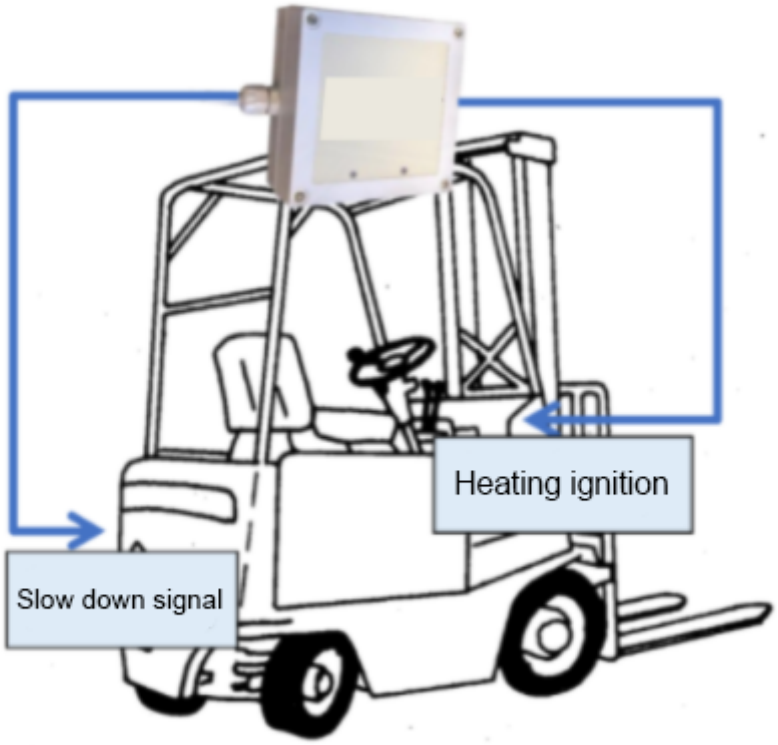


Fig. 9

Typical connection examples

Typically the system is interfaced with the machine so that performance can be reduced (e.g. speed limitation).

Minimum essential links

In order to operate, the device only requires a power supply (5-140 VDC) and a connection to a deceleration signal. In this case only the functions of:

- Temporary or permanent slowdown of the machine when passing near a KiwiZone - Gate.

It is necessary to connect the contact (normally closed or normally open) so that it gives the machine the speed reduction signal.

Use

Depending on the installation, the use of the KiwiZone system may vary. In this chapter we refer to the ideal situation in which there are two KiwiZones mounted on an entrance door to an area (one outside and one inside) and one on a forklift truck.

The carriage is configured to activate the "open" function of doors with a signal within a preset threshold.
The inner door activates the slow-down function at the carriage, while the outer door deactivates it.

1. **The operator on the forklift truck is about to enter through the front door**
    a. The KiwiZone on the door sends out an opening signal

2. **The operator crosses the threshold and enters**
    b. KiwiZone on the trolley activates the slowdown function

3. **The operator, having finished his work inside, goes to the door to leave.**
    c. The KiwiZone on the door sends out an opening signal

4. **The operator crosses the threshold and exits**
    d. KiwiZone on the trolley deactivates the slowdown function

Visual signals

There are two lamps on each KiwiZone Plus antenna to indicate the status of the system.

Fig. 10

The following table shows the different possibilities of visual alerts and their descriptions.

LED	IGNITION TYPE	SIGNIFICANCE
Red	Single flash	The device is active and is transmitting the radio signal
Green	Single flash	The device is talking to another KiwiZone

Software

Introduction

The KiwiZone Plus software is the main tool for initialising and configuring a new device.

Software setup

It only takes a few steps to configure the device. Download and install the software for your PC at http://www.kiwitron.it/it/download/.

Once you have downloaded the setup file (in .exe format) to your PC, launch the installation of this executable file by following all the required steps.

	ATTENTION: During the start-up phase, a pop-up window may appear, such as the following (Fig. 11), informing the user that a newer version of the control software exists and listing the various updates since the previous version.

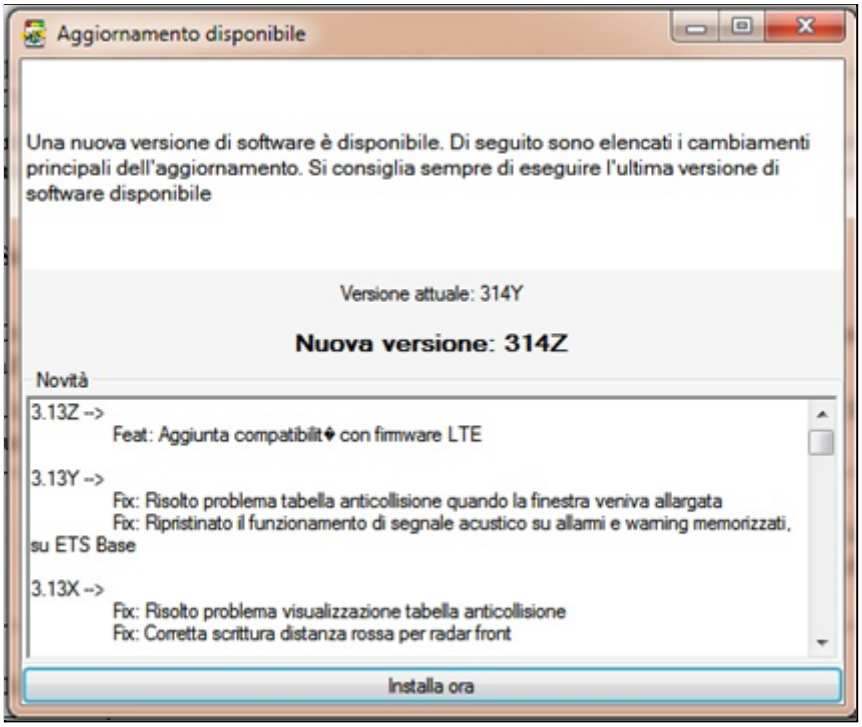


Fig. 11

	It is therefore advisable to click on the bottom button of the "Install now" pop-up to proceed with the installation of the latest version of the control software.

Language

It is possible to change the language of the graphical interface via the "Edit - Language" drop-down menu:

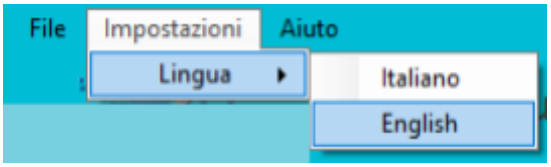


Fig. 12

Connecting to the device

IT IS POSSIBLE TO CONNECT TO THE DEVICE VIA SEVERAL CHANNELS:

- Via USB in local connection with a USB-A to USB Mini-B cable
- Via CAN BUS via a USB->CAN Peak® adapter

USB connection

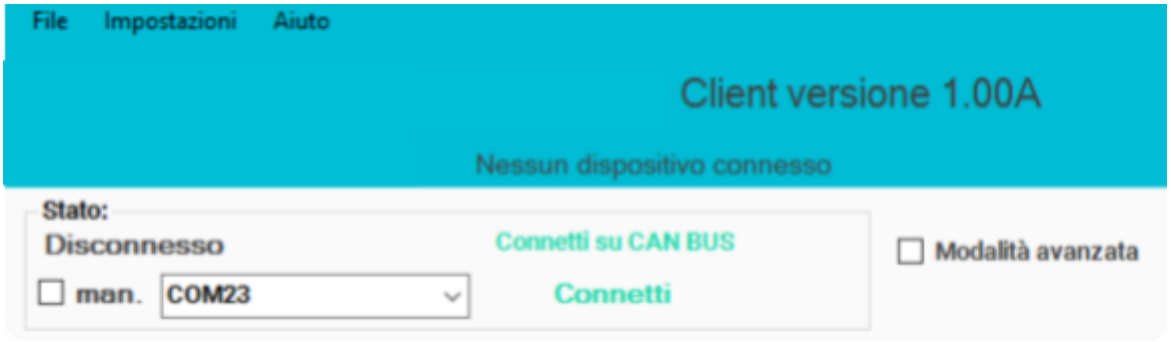


Fig. 13

Connect the PC to the device via the USB cable and start the software. The first COM port detected automatically appears in the drop-down menu (if several COM ports are present on the PC in use, the correct one must be selected).

If no port is detected, make sure that the cable used is suitable for data exchange and that the device drivers are correctly installed; to update the list of available COM ports, make a single click on the box in the drop-down menu.

Once the correct port has been selected, click on the "Connect" button.

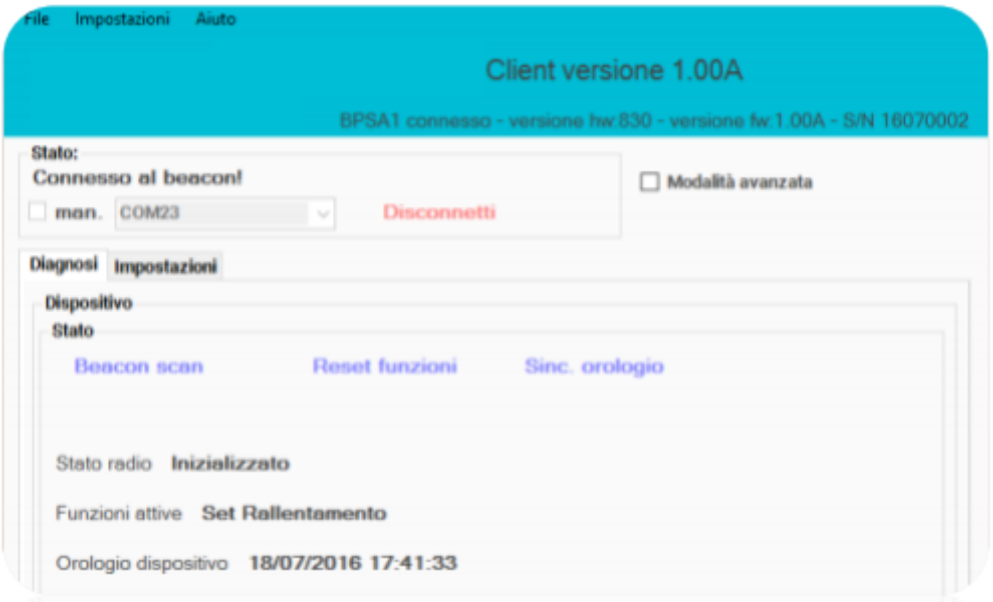


Fig. 14

When the connection is complete, the main window is activated and real-time device status information is displayed.

	Once you have finished working with the software, click on the "Disconnect" button before disconnecting the USB cable.

CAN BUS connection via Peak

Connect the Peak® CAN BUS interface to the PC via the USB cable. Connect the CAN interface to the CAN BUS network of the KiwiZone device and click on the button "Connect on CAN BUS".
If the interface in use supports several CAN BUS channels, or if several interfaces are connected at the same time, you will be asked which channel to connect to.

It will start searching for connected nodes (several devices can be on the same network) and, if more than one device is found, it will ask which node to connect to:

	If there is only one node in the network, the software will will automatically connect.

If the connection is successful, an indication of the connected node will appear at the bottom of the main window.

Configuring the device

	The meanings of the various configuration items in the software are explained below. At the bottom right are two buttons, "Read" and "Write". These keys must be used when you want to act on the displayed data. To find out the current configuration of the connected device click "Read"; once the desired changes have been made click "Save" to apply them to the device.

Status display

In the "Diagnosis" section, real-time data concerning the device status are shown, such as the status of the radio part, the active functions on the device and the set date/time.

Fig. 15

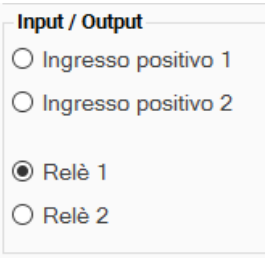
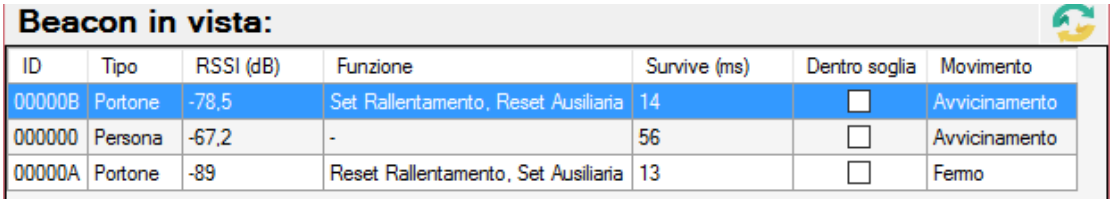


Fig. 16

In the "Input/Output" part, the states of the two positive inputs and the two relays are displayed.

There are a number of buttons in the Diagnosis section:

- **Beacon scan**, which will open a new window containing data about other KiwiZone Plus currently detected by the connected device:



ID	Tipo	RSSI (dB)	Funzione	Survive (ms)	Dentro soglia	Movimento
00000B	Portone	-78,5	Set Rallentamento, Reset Ausiliaria	14	☐	Avvicinamento
000000	Persona	-67,2	-	56	☐	Avvicinamento
00000A	Portone	-89	Reset Rallentamento, Set Ausiliaria	13	☐	Fermo

Fig. 17

- **Reset functions**, used to disable the functions currently active on the device. This function is usually used during the first calibration phase.

- **Sync. Clock**, is used to synchronise the date and time of the device with the connected PC. If the time or date of the KiwiZone is wrong, use this function and make sure that the time of the PC you are using is correct.

- **Locate**, only available when connecting on a CAN BUS network. It serves to identify the device with which it is communicating. The two LEDs will flash 20 times.

Settings

The "Settings" section allows you to configure the behaviour of the KiwiZone and the activation thresholds for the various functions available.

In the "Device" section, select the intended use of the device from the "Type" drop-down menu (refer to the label on the box).

Depending on the configuration of 'Type', different settings are available.

Gate

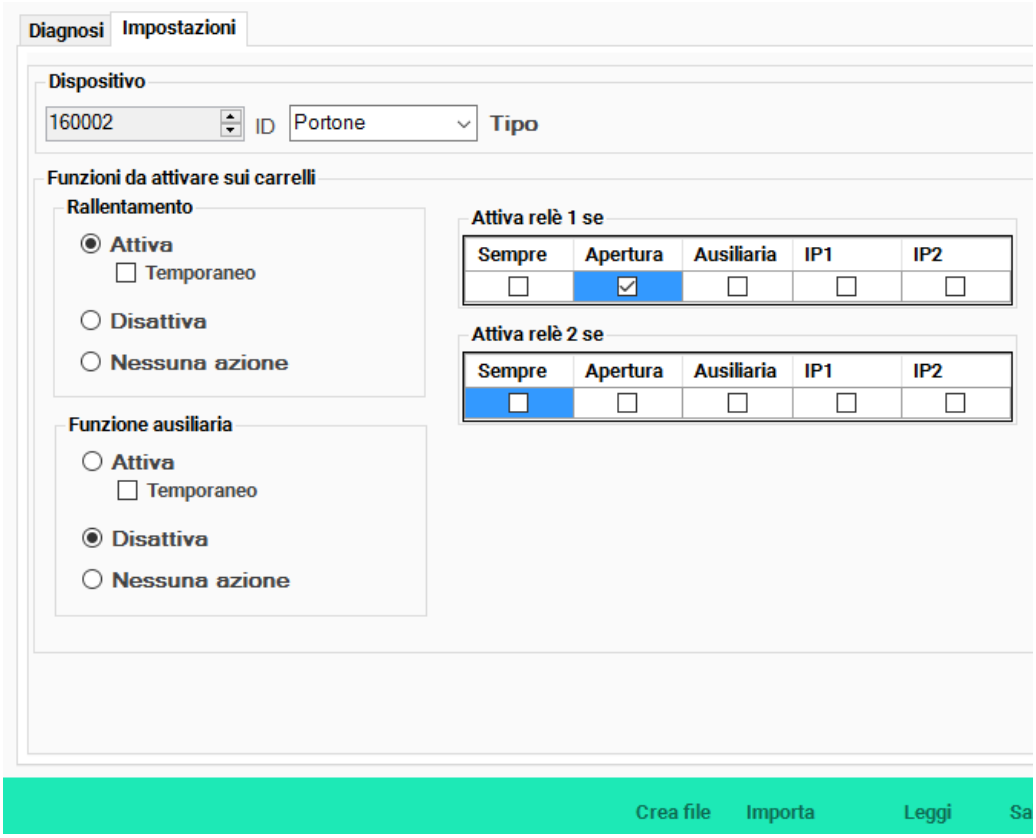


Fig. 18

A KiwiZone of type "door" can activate the "slowdown" function and/or another "auxiliary" function on the other KiwiZones.

In fig. 18 the door is configured to activate the "slow down" function permanently. It will therefore be necessary for the KiwiZone installed in the opposite position to be configured to deactivate the function;

If the "Temporary" box is checked, the function will only be active as long as the KiwiZone receiving the activation remains within the set area.

The right-hand side defines when the two relays of the connected KiwiZone are activated.

Trolley

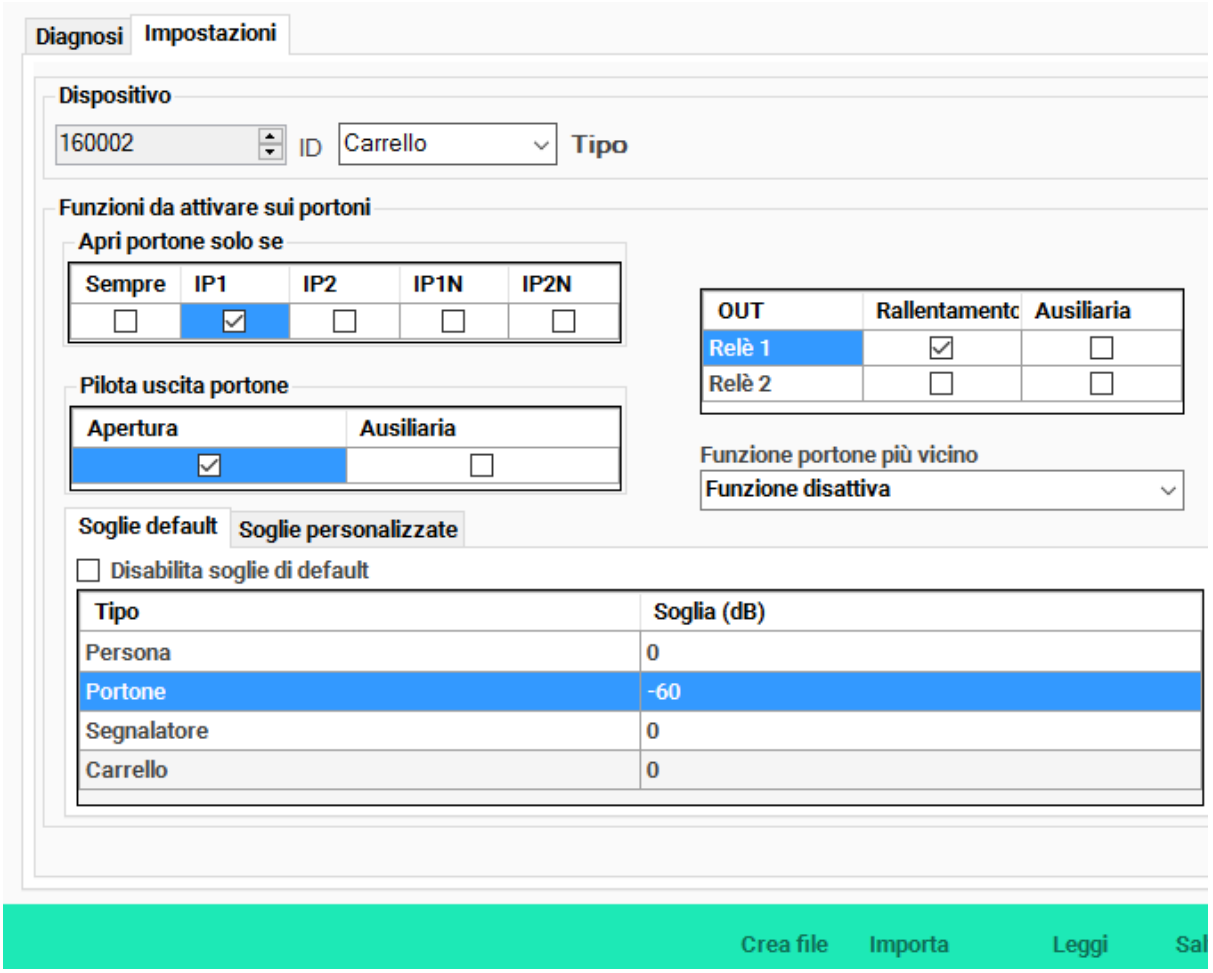


Fig. 19

A KiwiZone of type "Trolley" can be able to activate the "Opening" function of another KiwiZone of type "Door" (setting "Pilot door exit").

With the "Open door only if" section, it is possible to ensure that the carriage only opens the door if the set condition occurs. In the example above, to ensure that the door opens when the carriage is sufficiently close, positive input 1 must be active on the KiwiZone "Carriage".

In the same way, it is possible to connect the slow-down function and the auxiliary function to one of the two relays of the KiwiZone trolley (table "OUT" at top right. The deceleration or auxiliary functions are activated by a specially configured "gate" and within the activation threshold set on the "trolley").

The "thresholds" section is used to define the range according to the type of KiwiZone. In the example, the "trolley" activates the "open" function at all "gates" with a signal below -60dB (use the "Beacon scan" function to calibrate this value.

On the 'Custom Thresholds' page you can set activation thresholds for individual KiwiZones (based on ID):

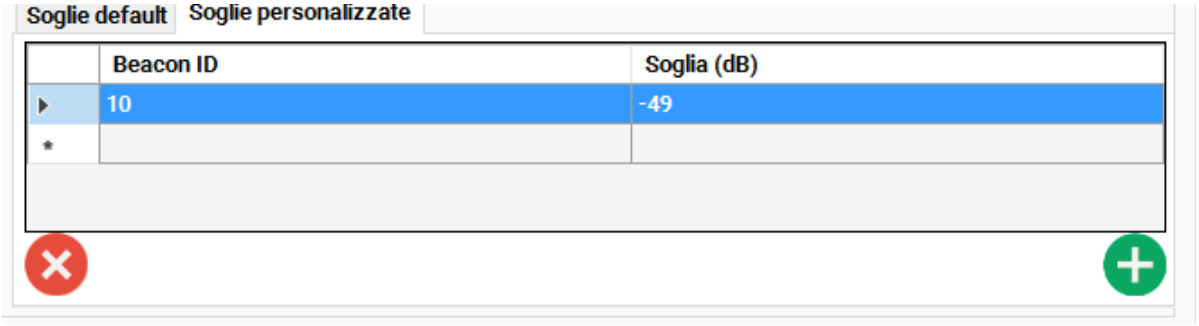


Fig. 20

In the example in fig.20 above, the custom threshold will ensure that the "trolley" currently connected to the PC, will activate the "Open" function to the KiwiZone with ID "10" only if the signal received by the latter is below -49dB, even if the default threshold of the "gates" is set to -60dB.

Create a configuration file

You may find yourself in the situation of having to configure several devices in the same way. To facilitate installation in such cases, a function has been created to create a configuration file containing all the parameters set.

Once all the desired configurations have been made, click on the "Create file" button to start the procedure for creating the configuration file.
This file can be imported to new devices via the "Import" button.

Firmware update

You must be connected to the device to update the firmware.

This procedure is relatively delicate and risky, so we recommend that you only update your devices if it is really necessary.

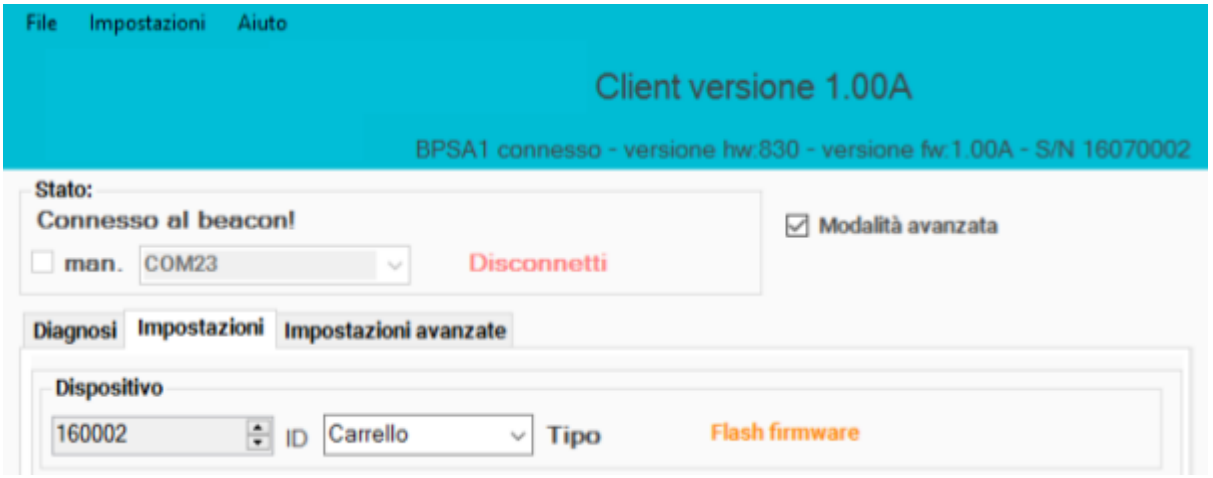


Fig. 21

To begin with, enter the Settings section and activate "Advanced Mode". The "Flash firmware" button will appear.

Select the firmware file you wish to upload; the software will automatically detect the type of firmware and the target device. If you do not have any firmware to upload, see the next section.
The automatic update procedure will start, follow the on-screen instructions to continue.

Downloading updates

The software is capable of downloading updates via the internet. Software and firmware updates are downloaded automatically in the background, without disturbing the work being done.

If you want to start searching for updates manually, simply click on Help Search for Updates in the top bar.

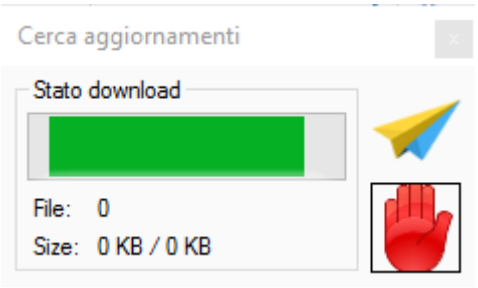


Fig. 22

A window will open that will download new versions of software and firmware for the devices (if a newer version than the installed one is found).

The newly downloaded firmware is saved in the installation folder of the programme, in the firmware folder.

Commissioning (threshold calibration)

It is essential to calibrate the activation thresholds correctly and precisely in order to allow the KiwiZone system to operate to its full capacity.

Once the devices have been physically installed on the gates and trolleys, stand comfortably and safely on one of the trolleys with a PC connected to the KiwiZone device.

Open the "Diagnosis" section and start the "Beacon scan" function
Position the carriage in front of the door at the desired distance and set the door activation threshold accordingly.

Once the configuration has been saved, make several tests by changing the angle of arrival at the door. If necessary, change the threshold value.

Maintenance

It is advisable to periodically check the physical condition of the various components such as control units, connection cables and external sensors.

Firmware update

You must be connected to the device to update the firmware.

Depending on the firmware you wish to load (boot or main) and the target device, a USB cable connection may be required.

	**ATTENTION:** **this procedure is relatively delicate and risky, so it is advisable to always update devices via USB connection.**

Follow the procedures in the previous chapters for details of the firmware upgrade.

Document update details

	The technical information contained in this document is provided for information purposes only and does not constitute acontractualcommitmentKiwitron SRL reserves the right to make any graphic or functional changes to the devices and/or software withoutprior notice

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