USER GUIDE

GU_GASKYL_V1_02EN

Supervision of hazardous work area

SKY LASER TEMPLATE

CAUTION: Read this manual before using the device

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FQ 47B-EN - V1.11 - 28/10/2019

MODIFICATION'S DIRECTORY

Rév.	Subject of Amendments	Date and Author
1.00	CRÉATION	05/2019 C.Polge
1.01	Booklet format	12/2019 T HUBERT
1.02	Warning label for Laser	01/2020 T HUBERT

This manual is important for your safety. Read it carefully in its entirety before using the equipment and keep it for future reference.

SUMMARY

This document is the user guide for the **SKY LASER TEMPLATE (*GASKYL)*** product. It describes how to commission the device as well as the different running modes to facilitate its use.

1.SAFETY INFORMATION

1.1.Safety recommendations

Please read this manual carefully before configuring or using the device.
Be careful of all the hazard notices and warnings.
Failing to respect the instructions could lead to serious injuries to the operator or damage the device.
To guarantee the suitable protection of this device, do not use or install it in conditions other than those described in this manual.

1.2.Following the safety recommendations

HAZARD: Indicates an immediate or potential hazard which, if not avoided, would lead to serious or fatal injuries.

WARNING: Indicates a potentially hazardous situation that could lead to superficial or moderate injuries.

Note: Information that needs to be highlighted.

1.3.**Warning labels**

Read all the labels and statements fixed to the instrument. If the instructions are not respected, physical injury or damage to the instrument may occur.

	Symbol requiring reference to the instruction manual for instructions concerning operation or safety recommendations.
	Dangerous Voltage
	Ac current
IP 65	IP standard – Protection against dust and water
	Do not throw away with household waste
	laser radiation **class 1**

2.OVERVIEW

This product is designed to **monitor boundaries and objects**.

It is **complementary** to classic signage around a works zone near structures considered to be hazardous (HVA/HVB lines in sub-stations, live transformers, SNCF HV lines, etc.).

The purpose is to create:

- Either a horizontal plane to monitor,

- Or a virtual wall that is not to be crossed.

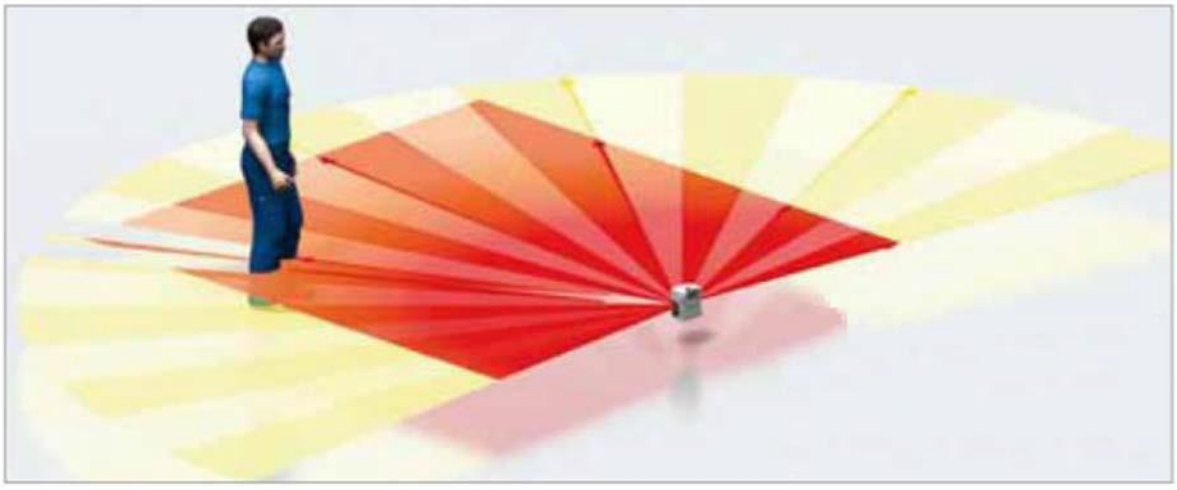
This monitoring is provided using a **laser scanner**

The principle is to create a template (plan) created using LIDAR technology (laser).

2.1.Operating principle

The active laser scanner is a two-dimensional, contactless detection system that sweeps a freely programmable zone. Using an invisible infrared laser beam, the detection is immune to parasite light, even in total darkness.
As soon as a person enters the detection zone, the laser scanner sends a signal that can be used to trigger audible and visual alarms.

This laser detection solution runs effectively in all weather (masking of all ambient factors (fog, rain, etc.), lighting, size and type of object)
.

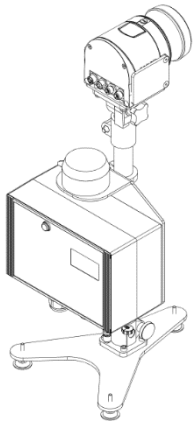


3.CONNECTION.

Power supply:

- Internal battery (7 hours autonomy)
- Mains, using the external specific **SKY LASER TEMPLATE** power supply.

4.INSTALLATION.



- Mount the SKY Laser template on its stand.
The LIDAR must be at the edge of the zone.

- Start the device by pressing the  key.
Wait for initialisation to complete (20 seconds).

- Select the “zone selection” menu.
Validate the required zone: configuration 1 to 4
(Refer to the device configuration sheet).

- Select the “teach-in” menu.
Wait for auto teach-in to complete (10 seconds)

CAUTION: keep the zone free of all obstacles during this phase.

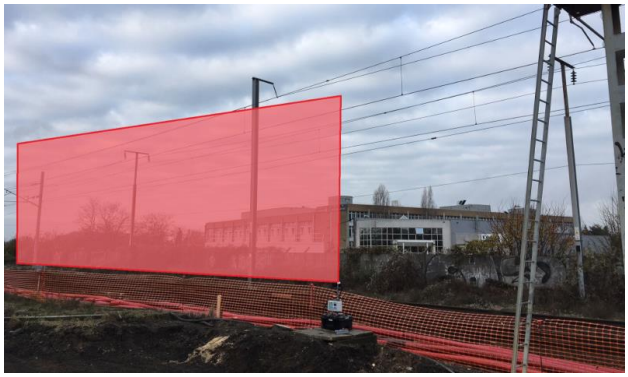
- Carry out a detection test in the required zone to check the correct choice of configuration.

Note:
The system is operational when the red rotating light turns off.
If the zone is entered, the system triggers its audible (buzzer) and visual (rotating light) alarms.

4.1. Device position to monitor a “virtual wall”.

Wall monitoring zone

Right and left monitoring zone

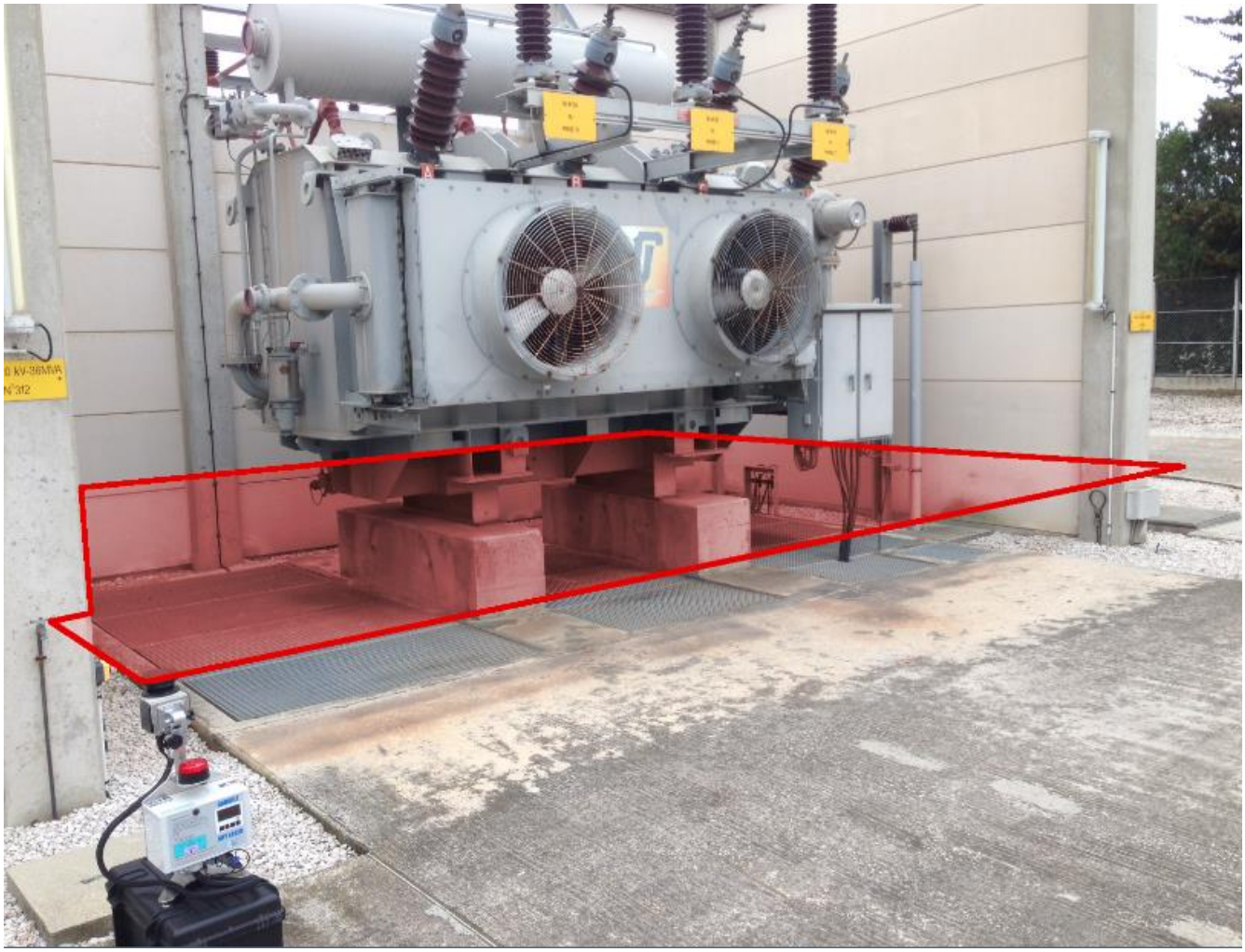


Left monitoring zone

Left monitoring zone

Example of use by Eurotunnel to secure the platform.

4.2.System position for horizontal monitoring.



Right monitoring zone

Left monitoring zone

Example of use on the TIGF work site fitted to the top of a 6m high mast, 20 x 25 metre zone. Alarms triggered in the cabin

4.3.System position for corner zone monitoring.

Corner monitoring zone

The principle is to place the device in a corner (vertical laser position) and it will monitor a corner zone (from the left, front view of the device)

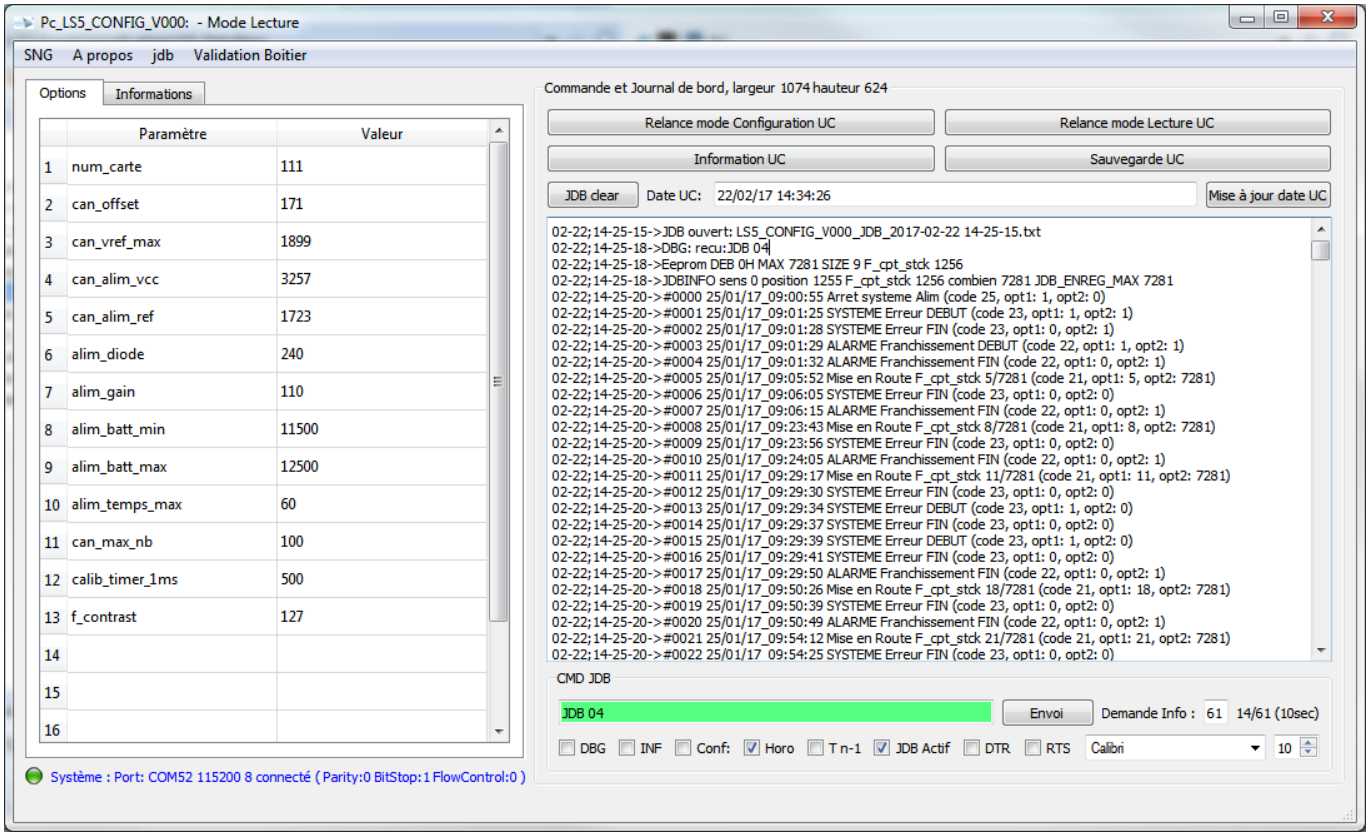
5.LOG.

The system has a real time clock combined with non-volatile memory which it uses to record its events.

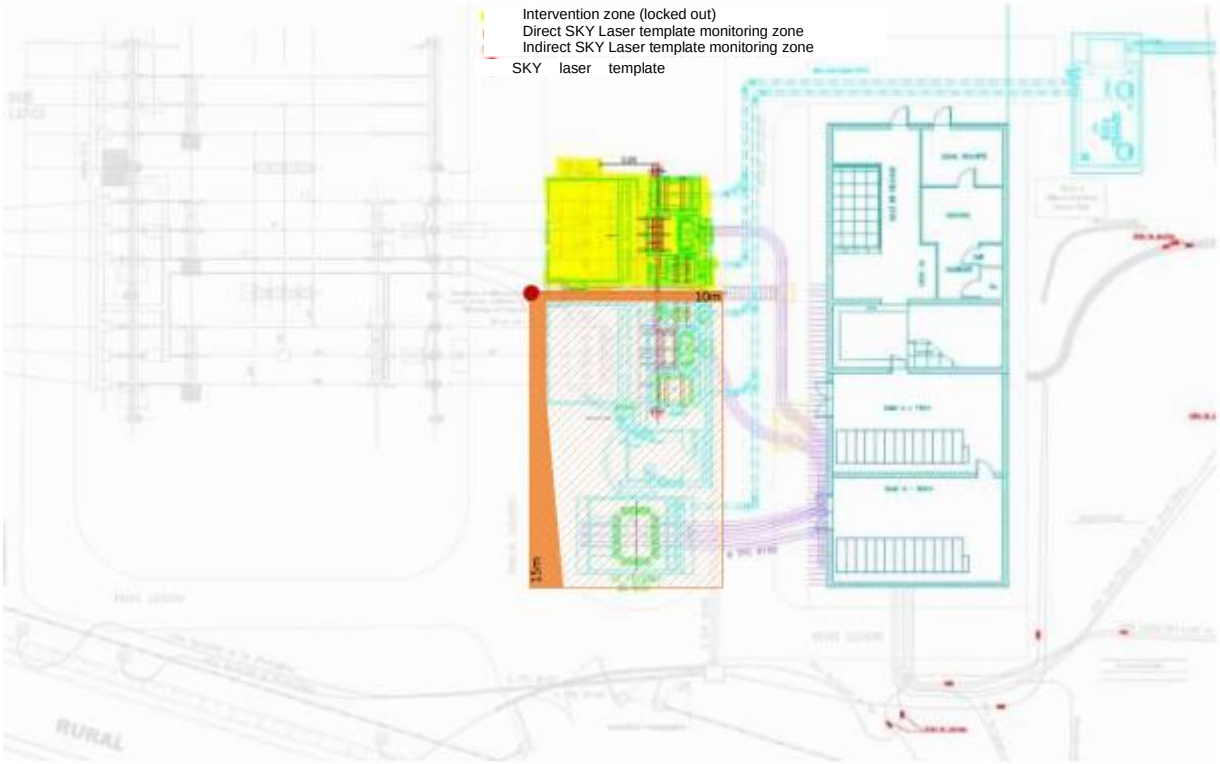
Examples of information, from the log:

02-22;14-25-28->#1236 22/02/17_11:08:39 Start up F_cpt_stck 1236/7281 (code 21, opt1: 1236, opt2: 7281)
02-22;14-25-28->#1237 22/02/17_11:08:52 SYSTEM Error START (code 23, opt1: 1, opt2: 0)
02-22;14-25-28->#1238 22/02/17_11:08:58 SYSTEM Error END (code 23, opt1: 0, opt2: 0)
02-22;14-25-28->#1239 22/02/17_11:09:02 ALARM Entry END (code 22, opt1: 0, opt2: 1)
02-22;14-25-28->#1240 22/02/17_11:11:32 ALARM Entry START (code 22, opt1: 1, opt2: 1)
02-22;14-25-28->#1241 22/02/17_11:11:36 ALARM Entry END (code 22, opt1: 0, opt2: 1)
02-22;14-25-28->#1242 22/02/17_11:11:50 ALARM Entry START (code 22, opt1: 1, opt2: 1)
02-22;14-25-28->#1243 22/02/17_11:11:53 ALARM Entry END (code 22, opt1: 0, opt2: 1)
02-22;14-25-28->#1244 22/02/17_14:24:59 ALARM Entry START (code 22, opt1: 1, opt2: 1)
02-22;14-25-28->#1245 22/02/17_14:25:03 ALARM Entry END (code 22, opt1: 0, opt2: 1)
02-22;14-25-28->#1246 22/02/17_14:25:12 ALARM Entry START (code 22, opt1: 1, opt2: 1)
02-22;14-25-28->#1247 22/02/17_14:25:27 ALARM Entry END (code 22, opt1: 0, opt2: 1)
02-22;14-25-28->#1248 22/02/17_14:25:52 ALARM Entry START (code 22, opt1: 1, opt2: 1)
02-22;14-25-28->#1249 22/02/17_14:25:57 ALARM Entry END (code 22, opt1: 0, opt2: 1)
02-22;14-25-28->#1250 22/02/17_14:26:25 ALARM Entry START (code 22, opt1: 1, opt2: 1)
02-22;14-25-28->#1251 22/02/17_14:26:32 ALARM Entry END (code 22, opt1: 0, opt2: 1)
02-22;14-25-28->#1252 22/02/17_14:26:36 ALARM Entry START (code 22, opt1: 1, opt2: 1)
02-22;14-25-28->#1253 22/02/17_14:26:48 ALARM Entry END (code 22, opt1: 0, opt2: 1)
02-22;14-25-28->#1254 22/02/17_14:28:35 ALARM Entry START (code 22, opt1: 1, opt2: 1)
02-22;14-25-28->#1255 22/02/17_14:28:55 ALARM Entry END (code 22, opt1: 0, opt2: 1)

Associated software can be used to read this data:



6.EXAMPLE OF USE.



7.SKYLASER TEMPLATE OPERATING SOFTWARE.

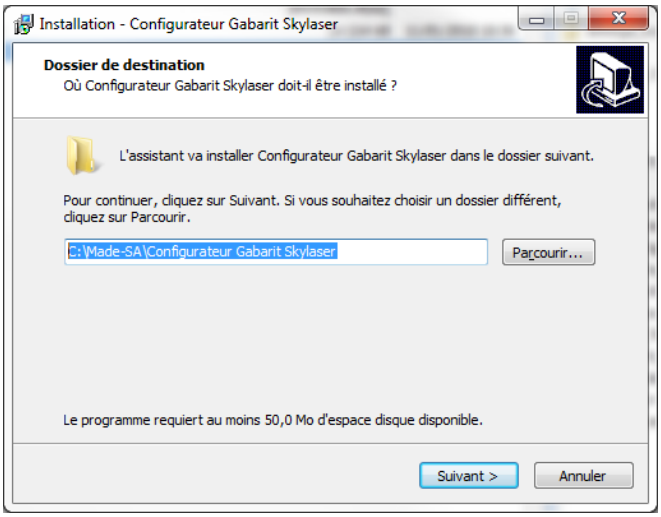
The software is supplied free of charge on a USB thumb drive.
“Configurateur Gabarit Skylaser VX.XX .exe”

If communication with the scanner is needed, first connect the supplied Ethernet cable between the scanner and the PC.
Note that for laptops without an Ethernet port, there is an adapter available contact us.

To recover the log, connect a USB cord between the Skylaser Template CPU and the PC.

7.1.Installation.

By default, the software installs in “C:\Made-SA\Configurateur Gabarit Skylaser”



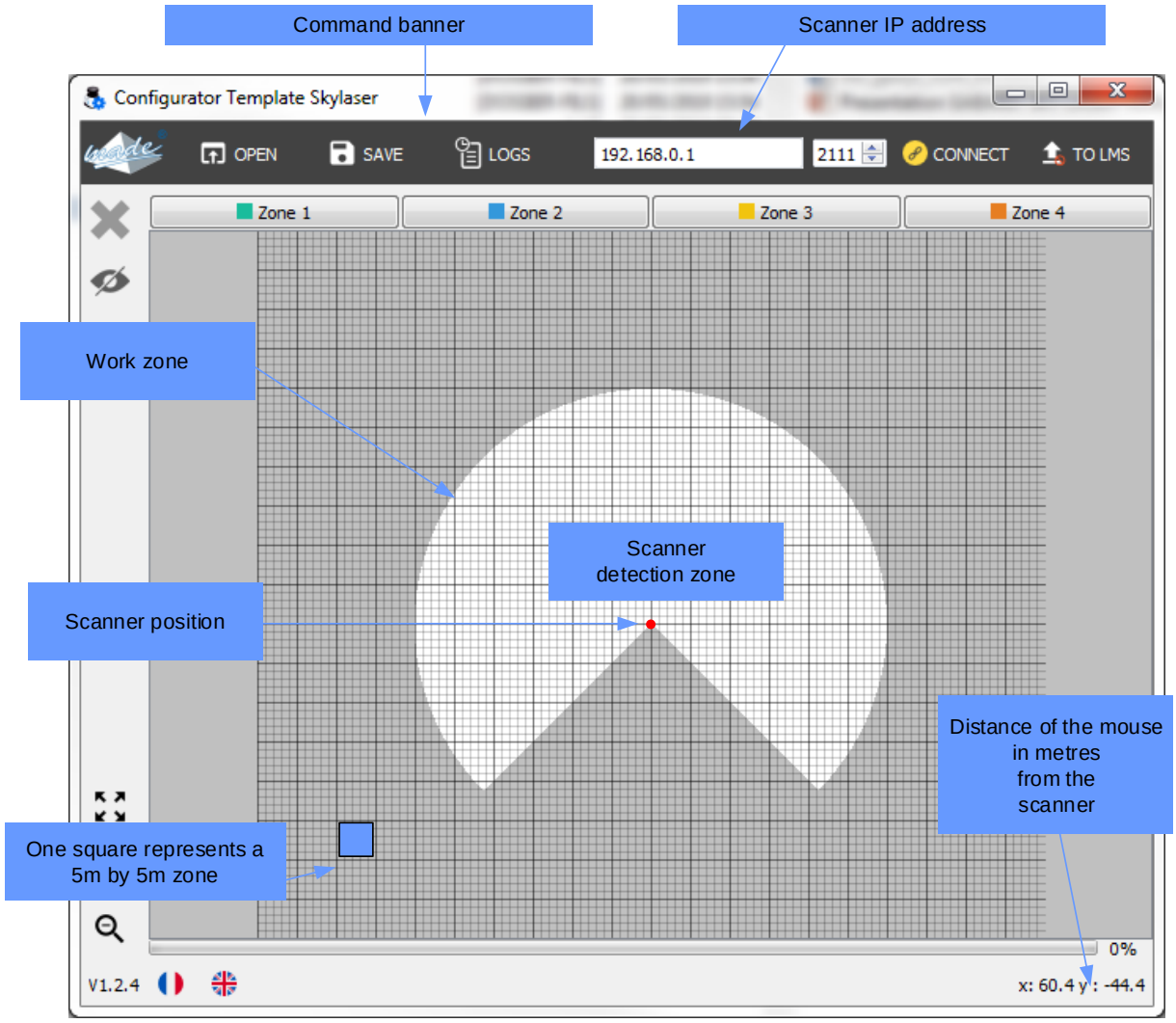
Caution: the scanner has a static IP address of 192.168.0.1
You therefore need to adapt your PC configuration to this address range

Note: for some PCs, you first need to disable WIFI access in order to avoid conflicts with the existing network

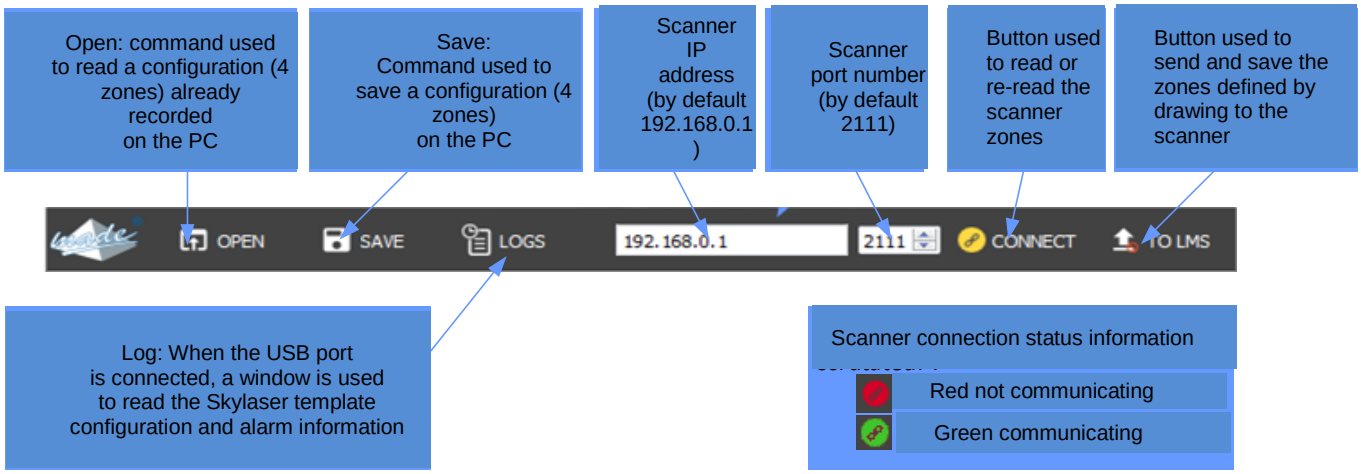
See PC configuration in the appendix

7.2.**Principle.**

The Skylaser Template Configuration software is composed of a page and a banner.

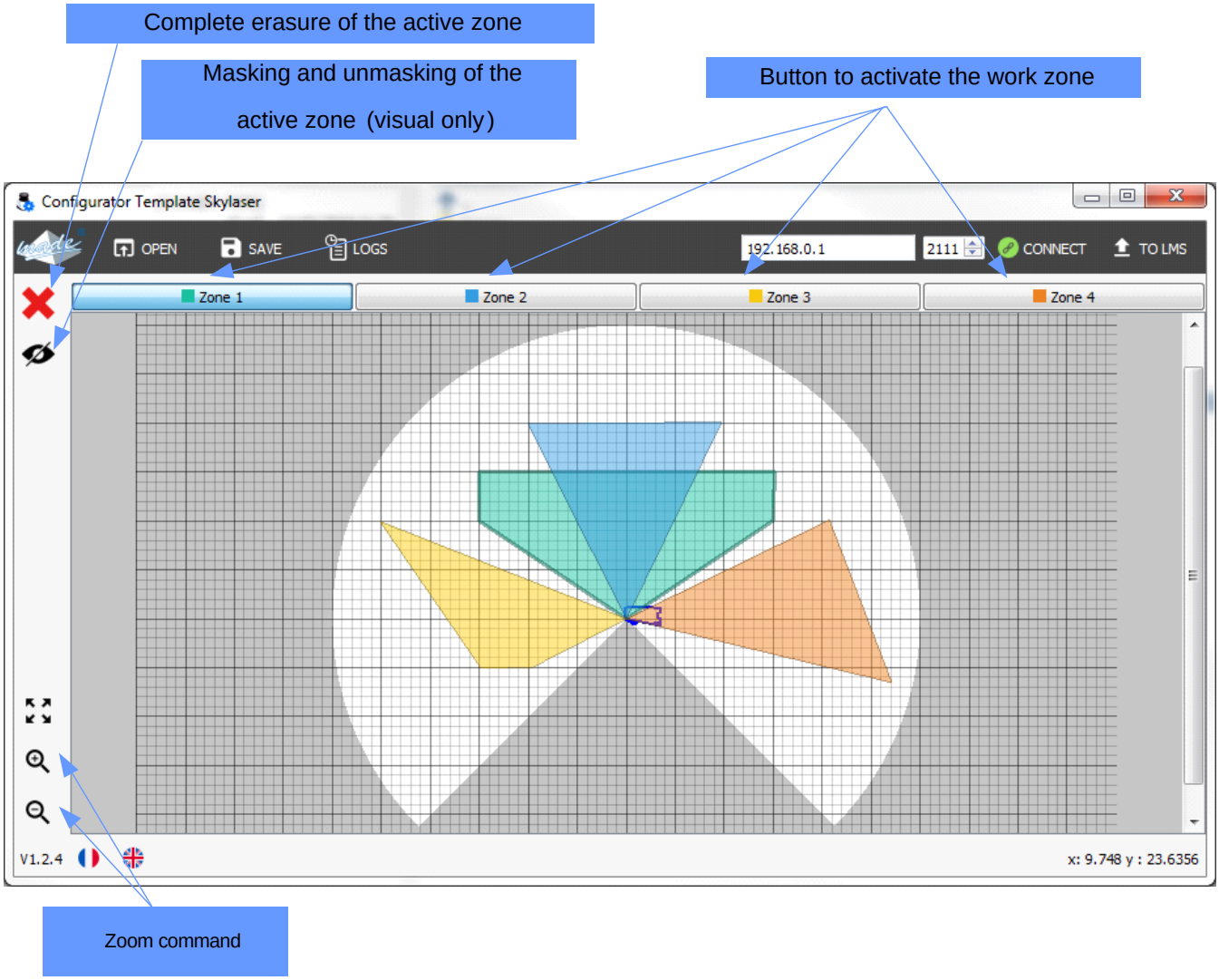


7.3.**Banner function definition.**



7.4.Creating the 4 detection zones.

Each zone must be drawn for the required detection configuration.



8.REMOTE ALARM MODULE.

8.1. Remote radio module.

Optionally the **SKY LASER TEMPLATE** can be fitted with 1 or more radio modules (up to 9) for remote alarms.

The radio modules have a range of about 100m.

Each radio module is standalone running on rechargeable batteries.

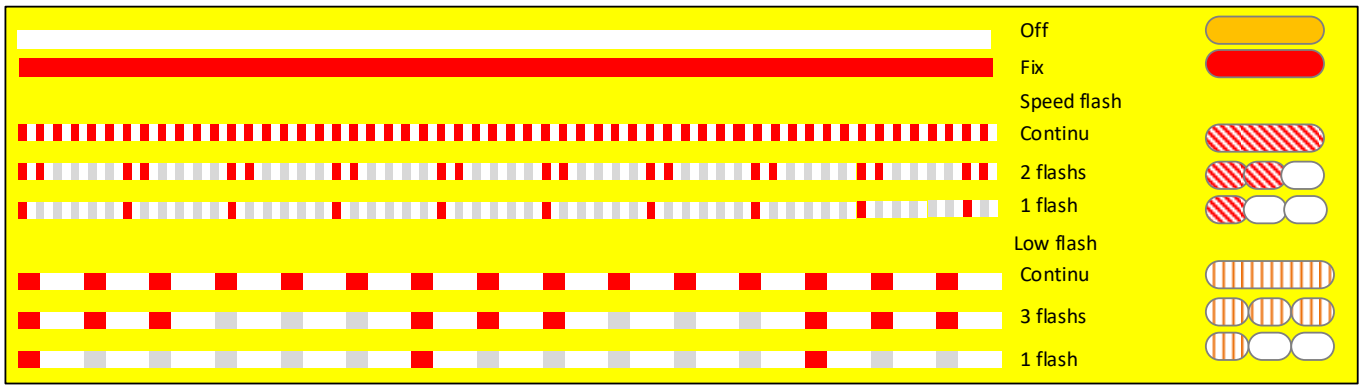
Radio monitoring and the power supply are permanent.

For cases where the **SKY LASER TEMPLATE** is in the high or other positions, the N°1 remote radio alarm box is used to calibrate. (Identical operation to the Select “teach-in environment” menu.)

Wait for “self teach-in” to complete

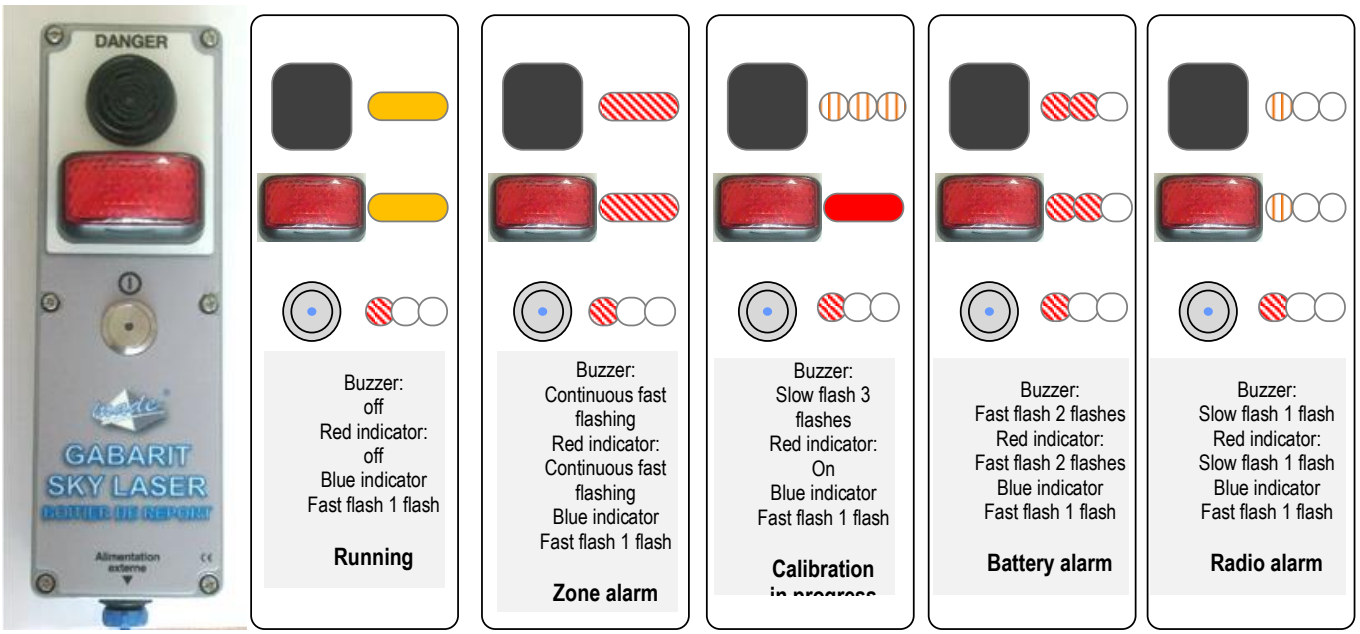
CAUTION: keep the zone free of all obstacles during this phase.

8.2.Buzzer and indicator meanings.



8.3.View of alarms on the remote radio box.

Signage available on the remote radio alarm



9.TECHNICAL FEATURES

9.1.SKY Laser template

Characteristic	
Transport case dimensions	546*347*247 mm (l*w*h)
Total SKY LASER dimensions	300*300*500 mm (l*w*h)
Weight of the loaded transport case	15 kg
Weight of the SKY LASER alone	3 kg
Protection rating	IP65
Power supply voltage	14 - 19 Vdc
Consumption	10 Watt max
Battery autonomy	7h
Maximum range	Radius 30 Meters
Operating temperature	25°C to +60°C
Sound level	90 dB
Presence of fog and particle filters	
Laser scanner status monitoring	alarm if out of order or if cells obstructed
Option	Addition of a reset to stop the alarms when the zone is entered

9.2.Remote alarm module

Characteristic	
dimensions	230*77*85 mm (l*w*h)
weight	0.4 kg
Power supply voltage	5 Vdc
Consumption	average 10mAh (500mA on load)
Response time	1 second

9.3.Radio module specifications

LE50-868 Functional Characteristics

ERC/REC70-03 Frequency (MHz)	Band g 863.000 - 870.000	Band g1 868.000 -868.600	Band g2 868.700 - 869.200	Band g3 869.400 - 869.650	Band g4 869.700 -870.000
Global					
RF data rate	(1): 4.8 kbps (2): 9.6 kbps				
Numbers of channels	60 (1) 60 (2)	12 (1) 12 (2)	10 (1) 10 (2)	1 (1) 1 (2)	6 (1) 6 (2)
Channel width	50 kHz	50 kHz	50 kHz	250 kHz	50 kHz
Channel 0	865.025 MHz	868.025 MHz	868.725 MHz	869.525 MHz	869.725 MHz
Total Bandwidth	3 MHz	600 kHz	500 kHz	250 kHz	300 kHz
Transmission					
Duty cycle	≤ 1%	≤ 1%	≤ 0.1%	≤ 10%	No requirement
Modulation	GFSK with ±7 kHz deviation (1) GFSK with ±7 kHz deviation (2)				
Max permitted e.r.p	25 mW	25 mW	25 mW	500 mW	5 mW
e.r.p	8 levels from -8dBm to +14dBm (except for g4 band, 6 levels from -8dBm to 7dBm)				
	25 mW	25 mW	25 mW	25 mW	5 mW
Reception					
Sensitivity for PER < 10^{-3}	(1): Max - 109 dBm (2): Max - 108 dBm				
Remaining PER	< 1.10-6				
Saturation for PER < 10^{-3}	Up to - 10 dBm				

9.4.Emission in the ISM 868Mhz band.

NE50-868 Functional Characteristics

ERC/REC70-03 Frequency (MHz)	Band g 863.000 - 870.000	Band g1 868.000 -868.600	Band g2 868.700 - 869.200	Band g3 869.400 - 869.650	Band g4 869.700 - 870.000
Global					
RF data rate	38.4 kbps				
Numbers of channels	10	1	1	1	0
Channel width	200kHz	250kHz	250kHz	250kHz	-
Channel 0	865.6 MHz	868.300 MHz	869.000 MHz	869.525 MHz	-
Total Bandwidth	7 MHz	600 kHz	500 kHz	250 kHz	-
Transmission					
Duty cycle	≤ 1%	≤ 1%	≤ 0.1%	≤ 10%	-
Modulation	GFSK with ± 40 kHz deviation				
Max permitted e.r.p	-	25 mW	25 mW	500 mW	-
e.r.p	8 levels from -8dBm to +14dBm				
	25 mW	25 mW	25 mW	25 mW	5 mW
Reception					
Sensitivity for PER < 10^{-3}	Max - 101 dBm				
Remaining PER	< 1.10^{-6}				
Saturation for PER < 10^{-3}	Up to - 10 dBm				

9.5.Wave propagation reduction

Examples of propagation attenuation

Factor	433 MHz	868 MHz	2.4 GHz
	Attenuation	Attenuation	Attenuation
Open office	0 dB	0 dB	0 dB
Window	< 1 dB	1 – 2 dB	3 dB
Thin wall (plaster)	3 dB	3 – 4 dB	5 – 8 dB
Medium wall (wood)	4 – 6 dB	5 – 8 dB	10 – 12 dB
Thick wall (concrete)	5 – 8 dB	9 – 11 dB	15 – 20 dB
Armoured wall (reinforced concrete)	10 – 12 dB	12 – 15 dB	20 – 25 dB
Floor or ceiling	5 – 8 dB	9 – 11 dB	15 – 20 dB
Armoured floor or ceiling	10 – 12 dB	12 – 15 dB	20 – 25 dB
Rain and/or Fog	20 – 25 dB	25 – 30 dB	*

* = *Attenuations increase along with the frequency. In some cases, it is therefore difficult to determine loss and attenuation value.*

Note = The table above is only indicative. The real values will depend on the installation environment itself.

9.6.Authorisation to emit in the 868Mhz band.

868 MHz band Requirements

The "ERC recommendation 70-03" describes also the different usable sub-bands in the 868 MHz license free band, in terms of bandwidth, maximum power, duty cycle and channel spacing. LE50-868 can operate on Annex 1 bands where "ERC recommendation 70-03" gives the following limitations.

ERC recommendation 70-03				
Band	***Frequency band (MHz)***	***Maximum radiated power (mW)***	***Channel spacing (kHz)***	***Duty cycle (%)***
Annex1 g	863.0 – 870.0	25	=< 100 for 47 or more channels	100
Annex1 g1	868.0 – 868.6	25	No channel spacing specified	1
Annex1 g2	868.7 - 869.2	25	No channel spacing specified	0,1
Annex1 g3	869.4 - 869.65	500	25 (for 1 or more channels)	10
Annex1 g4	869.7 – 870.0	5	No channel spacing specified	100

These bands are free to use but the module and the user must respect some limitations. Most of these restrictions are integrated in the conception of the module, except the duty cycle. For example, the 869.400 to 869.650 MHz band is limited to a 10% duty cycle. This means that each module is limited to a total transmit time of 6 minutes per hour. It is the responsibility of the user to respect the duty cycle.

9.7.**TELIT module declaration of conformity.**

Telit
Communications S.p.A.

EC DECLARATION OF CONFORMITY

1. **ME50-868, NE50-868, LE50-868** (products name)
2. Telit Communications SpA – loc. Sa Illetta, S.S. 195, Km 2.300, – 09122 - Cagliari - Italy (manufacturer)
3. This declaration of conformity is issued under the sole responsibility of the manufacturer
4. Radio Module for Application in 868MHz ISM band

5. The object of the declaration described above is in conformity with the relevant Community harmonisation: European Directive 1999/05/EC (R&TTE)
6. The conformity with the essential requirements of the 1999/05/EC has been demonstrated against the following harmonized standards:

EN 300 220-2 v2.3.1	RF spectrum efficiency (R&TTE art. 3.2)
EN 301489-1 v1.8.1 EN 301489-3 v1.4.1	EMC (R&TTE art. 3.1b)
EN 62311:2008	EMF exposure restrictions (R&TTE art.3.1a)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011	Electrical Safety (R&TTE art.3.1a)

7. The conformity assessment procedure referred to in Article 10 and detailed in Annex V of Directive 1999/05/EC has been followed with the involvement of the following Notified Body:
   CETECOM ICT SERVICES GMBH Untertürkheimer Straße 6-10 66117 Saarbrücken Country: Germany
   Notified Body Number 0682

   Thus, CE 0682 marking is placed on the product.
8. The Technical Construction File (TCF) relevant to the product described above and which support this Declaration of Conformity, is held at: Telit Communications S.p.A. Via Stazione di Prosecco, 5/b - 34010 - Sgonico (TRIESTE) - ITALY

Signed for and on behalf of Telit Communications SpA

Trieste, ***2012-09-28***

R&D Manager
Giampiero Pilu

Quality Director
Guido Walcher

Technical Construction File: 30363TCP0019A
Mod. 0211 2011-11 Rev.1 - This declaration of conformity is issued in compliance with 768/2008/EC

10.MAINTENANCE, RECYCLING AND WARANTY

10.1.Maintenance.

Opening the devices is only authorized in the specific context of the operations described in this user guide.
Otherwise, it is strictly reserved to qualified staff approved by MADE.
An annual inspection can be carried out on our premises.
Never use solvent or solvent-based products to clean the device and/or its accessories.

10.2.Recycling.

In compliance with French decree n° 2005-829 of 20 July 2005 covering the elimination of electric and electronic equipment (WEEE), the user is in charge of the collection and elimination of WEEE in the conditions provided for in articles 21 and 22 of this decree.

10.3.Warranty.

MADE SA guarantees the product for the initial buyer against all equipment or manufacturing defects for one year from the delivery date, unless otherwise indicated in the product manual.
If such a fault were to be discovered during the warranty period, MADE may decide to repair or replace the defective product, excluding handling and initial delivery costs. Products repaired or replaced under this warranty will only remain guaranteed for the remainder of the initial warranty period.

10.4.Limitation.

This warranty does not cover:

- Damage caused by force majeure events, natural disasters, strikes, wars (whether declared or not), terrorism, industrial action or the actions of all government jurisdictions.
- Damage caused by incorrect use, negligence, an accident or incorrect application or installation.

- Damage caused by repairs or attempted repairs not authorised by MADE SA.
- Products that are not used in compliance with the instructions provided by MADE SA.
- The transport costs for goods returned to MADE SA.
- The transport costs for express delivery or fast pack delivery of guaranteed parts or products.
- Mission costs relating to on site repairs under the warranty.

This warranty is the only explicit warranty provided by MADE SA for its products. All implicit warranties, including but not limited to, guarantees on the commercial value of the product and its adaptation to a specific use are formally rejected.
This warranty gives certain rights: the laws in the country or jurisdiction may give you other rights. This warranty is the final, complete and exclusive declaration of the warranty terms and conditions and the issue of other warranties or representations on behalf of MADE SA are not authorised.

10.5.**Limitation of claims.**

Claims for the repair or replacement are the only possible claims if this warranty comes into play.

MADE SA cannot be held liable, whether based on strict liability or any other legal theory, for any incident or consecutive damage resulting from a breach of the warranty or negligence.

10.6.**Copyright.**

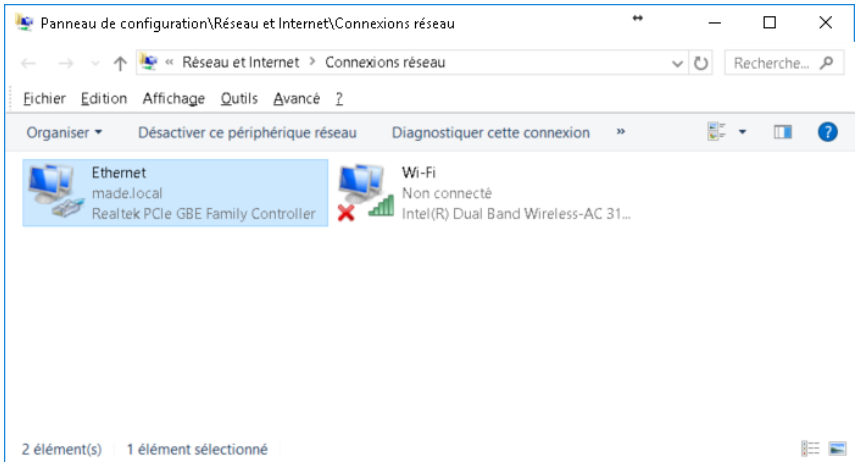
The contents of this document are intended for purely informative use. It may be modified without notice and must not be considered as binding on MADE SA.

MADE SA declines any liability for any errors or inaccuracies this document may contain.

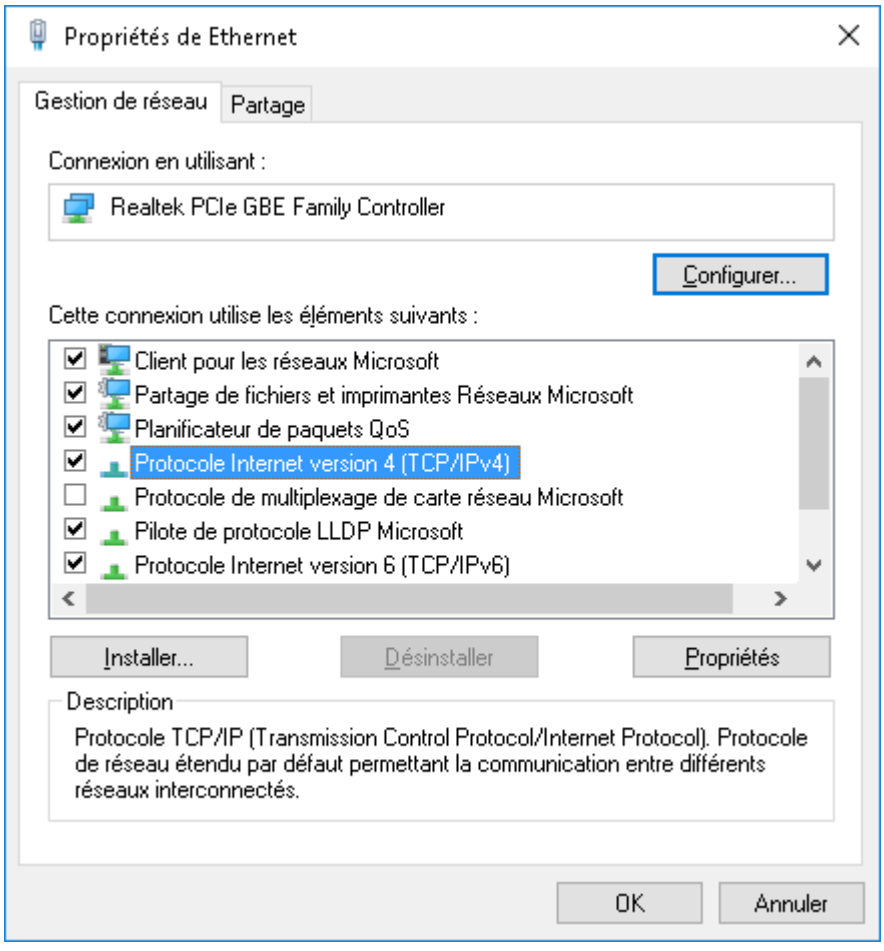
11.APPENDIX

11.1.IP address configuration

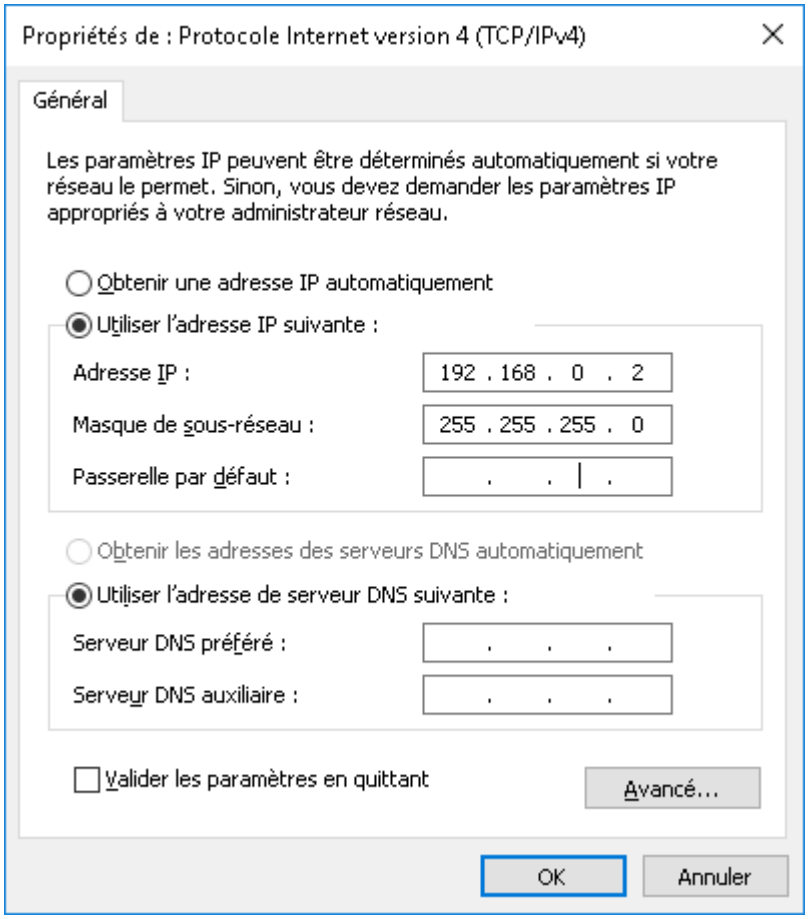
Configuration panel\Network and Internet\Network connections



Go to properties using the right mouse button.



Click on Internet protocol version 4 and click on Properties



Modify and fix a static IP address, for example: 192.168.0.2

Validate using OK.

You can then launch the software