OPERATORS GUIDE

FOR

DETECT LINE

Compact

M A D E

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Detection of overhead power lines from 20000 Volts .

For low voltage electric lines (380V), the system does not function.
The system does not function with direct current electric lines.

The operator must maintain a maximum of VIGILANCE and AWARENESS when approaching powered electric lines.

DIRECTORY OF CHANGES

Rév.	Objet des modifications	Date et Auteur
1.00	CRÉATION	12/01/2017 C. POLGE

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1. PRÉSENTATION

Ce document constitue le guide d'utilisation et d'installation du DETECT LINE Compact, version filaire et détection volumétrique. Il décrit la mise en service de l'appareil, ainsi que les différents modes de fonctionnement pour faciliter son utilisation.

2. SAFETY INFORMATION

2.1. Safety advice

Please read this manual carefully before unpacking, configuring or using this equipment. Note all indications of danger and other warnings. The failure to observe these recommendations could result in serious injury to the operator or could damage the equipment. To ensure that the protection provided by this equipment is appropriate, do not use or install it other than in accordance with the conditions indicated in this manual.

Dismantling the cases is forbidden. This operation is limited exclusively to personnel qualified by MADE.

2.2. Using these security notes

DANGER : Indicates a dangerous or potentially dangerous situation which, if not avoided, could cause serious or deadly injuries.

NOTE : Indicates a potentially dangerous situation which could cause superficial to moderate injuries.

Remark *:* Information that merits mention.

2.3. Warning labels

Read all labels and wordings shown on the instrument. Bodily injury or equipment damage could occur if these instructions are not respected.

	Symbol requiring reference to the instruction manual for instructions concerning operation or safety recommendations
	Class II - double and increased insulation
Cat. II	Catégorie of overvoltage or installation
IP 65	Degree of protection against dust and water

2.4. Dangerous situations

DANGER :

Even though some of the systems supplied by MADE are designed and certified for installation in dangerous environments, several MADE systems are not intended for use in such environments. It is incumbent upon those who install these systems in dangerous environments to determine the acceptability of the system for its environment. Additionally, to guarantee safety, the installation of systems in dangerous environments must be compliant to the order specification of the manufacturer. Any modification of systems or their installation is not recommended and could cause deadly injuries and/or damage to facilities.

2.5. Reminder

OPERATIONAL AID SYSTEM

Detection of overhead power lines
from 20000 Volts ~.

For low voltage electric lines (380V), the system does not function.
The system does not function with direct current electric lines.

The operator must maintain a maximum of VIGILANCE and AWARENESS when approaching powered electric lines.
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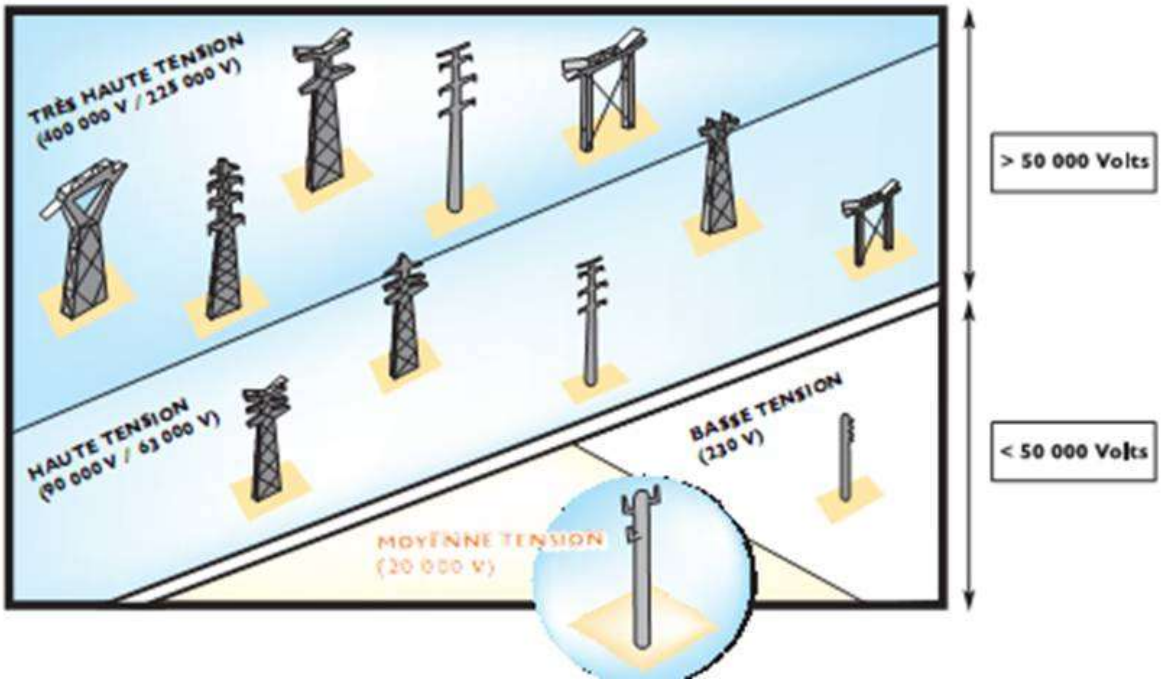
Important:
In order to ensure the proper functioning of the system, preventive maintenance must be carried out every 24 months
Please contact MADE for the establishment of a maintenance contract

Rappel sur les lignes Haute Tension



3. OVERVIEW

DETECT LINE C is composed of a central unit, coupled to a single sensor placed on the roof of the vehicle, for the detection of the electric field.
The two modules, central unit and single sensor are connected by a 3-conductor connection cable.
The central unit is powered by 12-24V.
The central unit housing is installed on the dashboard. It is used to signal and acknowledge the alarm.
DETECT LINE C is a DRIVING HELP that detects the proximity of a power line HTA and HTB under voltage in FREE AREA.
DETECT LINE C equips the trucks and forms a detection bubble around it from 10 m to more than 52 m depending on the model.
It warns the user by an audible signal and a warning light when the machine enters an area of detection of the electric field.

4. Setting Up

The system connects to the 12-24V after contact and the alarm is made either directly or by detecting the PTO engagement (or other means).
Commissioning is automatic, no adjustment is necessary for the user.
When the power is turned on, the **DETECT LINE C** performs an automatic check. It emits a beep (2 beeps) and activates all its LEDs.
In the event of an alert, he informs the driver by a buzzer and visual alarm (danger indicator).

5. OPERATION

When the power is turned on, the **DETECT LINE C** beeps 2 times and then polls its sensor.
On startup all visual and audible alarms are activated twice.

-When the green LED is flashing slowly, the **DETECT LINE C** is waiting for the "Activate alarms" command
-When the green LED is lit steady, the DETECT LINE C is ready to activate its alarms on detection of electric field.

If the ambient electric field exceeds the set threshold:

- The DETECT LINE C operates its "Buzzer".
- The DETECT LINE C operates its "Visual Alarm" (red LED).

- The **DETECT LINE C** actuates the relay "Switch-off" of the dry contact (CRT) which can be coupled to a motion blocking command (Temporary blocking until the Acknowledge button is pressed).

- The user must activate the "Acknowledge" button to unblock the movement (Relay) and switch the system to "carry mode".

This ensures that the presence of the line is well known to the user.

After this phase, if the ambient electric field is still present, the system switches to the carry mode.Le mode report

If the ambient electric field is always present and after pressing the acknowledgment button:

- The DETECT LINE C operates its DANGER light.

- The DETECT LINE C switches off the "Motion break" relay to unlock the machine.

- The DETECT LINE C will sound a reminder on the buzzer: 2 moves every 30 seconds.

At the end of the delay time (20 minutes) the system returns to the alarm position until the acknowledgment button is pressed again.

Note :

If the system is near a 220 kV line, the detection distances may be too large. As a result, the use of the machine may be disrupted due to the loss of movement and noise generated by the external sound alarm. In this case, the user can activate the carry-over button.

6. CENTRAL UNITY

6.1.1. Description

Non contractual photo

- 3 LEDs and a push button make up the user interface.

- The USB input is used for parameterizing or reading the logbook.

- The "Coupure mouvement" (Motion break) indicator corresponds to the status of the output relay P7.

This relay generally controls the movement blocking control by opening the electrical circuit.
On RC Contact (P7-1.2):
a- light on = contact RC open
b- indicator off = contact RC closed

- The "On" indicator corresponds to the system status:

  - LED flashes slowly, the system is waiting for alarm activation. (eg PTO information)
  - LED is on, the system is active (alarm active if voltage is present).
  - LED blinks 2 short flash, system is in fault

- The "DANGER" indicator corresponds to a system alarm:

  - Red light "DANGER" is off, system is idle.
  - Red light "DANGER" on or flashing, system in alarm.

- The system has an internal buzzer that can be acknowledged (see audible alarm)

7. INSTALLATION

7.1. Sensor Installation

The position of the sensor must be chosen so that it is in the **open field**, preferably **towards the front of the cab**

The sensor must always be in the open field (free area)

The sensor holder is a mounting accessory of the sensor which may be different depending on the equipment to be fitted.

7.2. Connection of the sensor to the central unit

The sensor must be connected to P5.
The wiring must be in the following order: 1 = White (+ 5V), 2 = Blue (Signal), 3 = Braid (Ground).

7.3. Installing the CPU

Installation advice:
The central unit is installed in the cab and is positioned on the dashboard.
The "Acknowledge" button must be accessible by the driver in the maneuvering position.

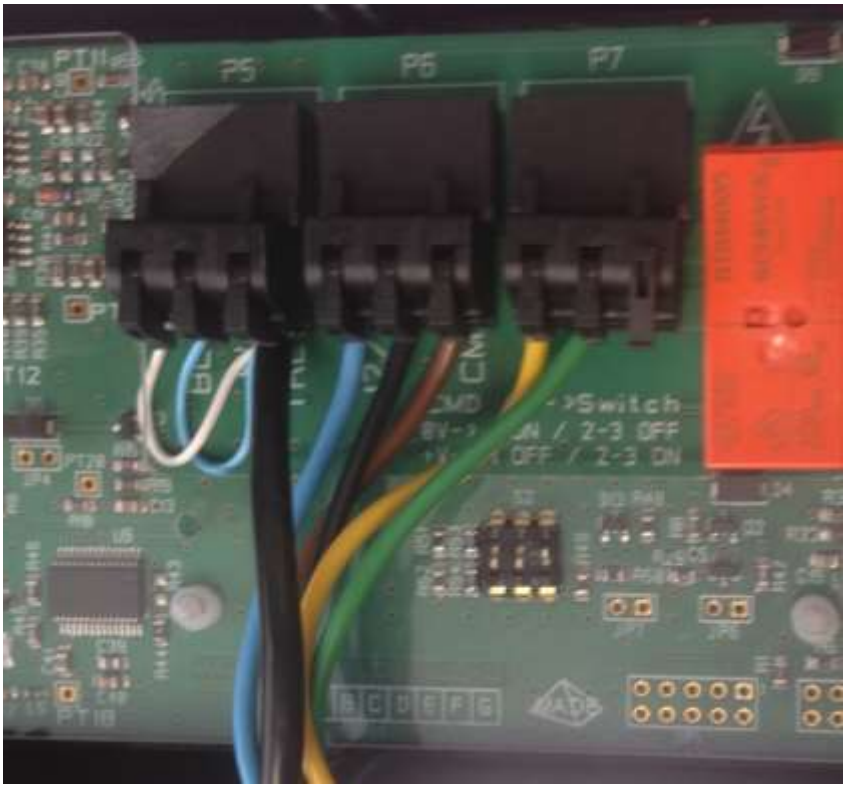
Make the following connections:

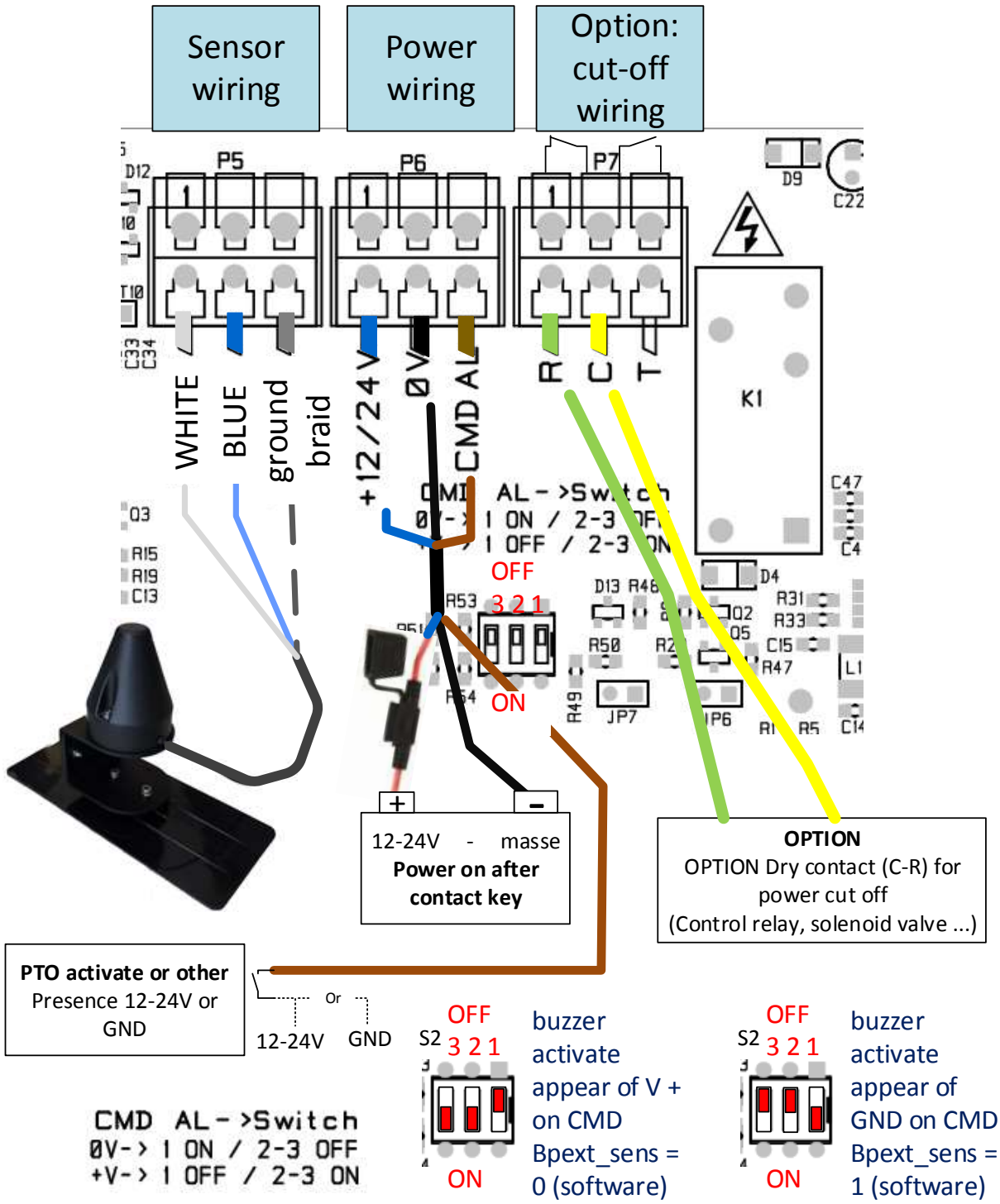
- Bring a 12-24V supply to terminal block P6 1-2 (+ V on terminal 1, and ground to terminal 2).
- Connect the sensor connection cable to the P5 connector 1-2-3 (see § above).
- If necessary, connect the cut-off option (dry loop) to the connector P7 1-2.

7.4. Wiring the central unit

7.4.1. Continuous power wiring

The central unit is powered after the ignition key and the activation of the alarm occurs when the user performs a maneuver (for example: PTO).



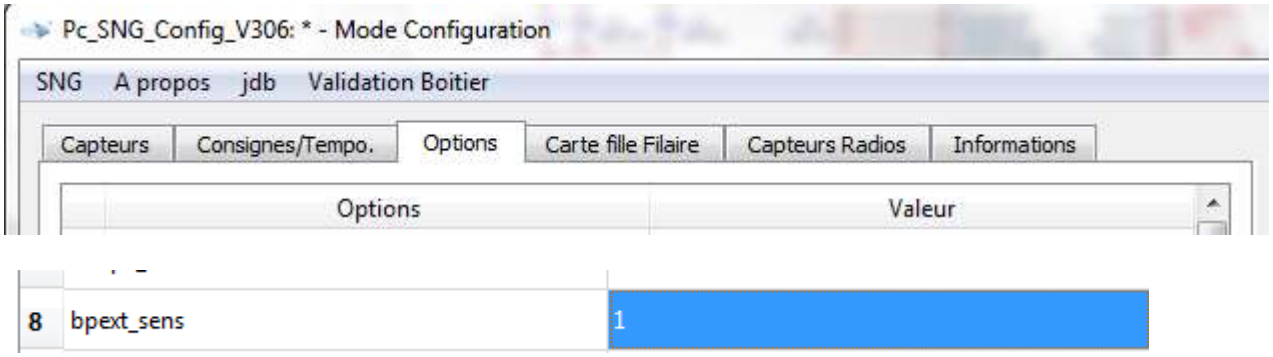


To activate the alarm monitoring mode, the control input must therefore be activated at ground potential (GND) or V + (12-24V). To do this, you must also configure the BPEXT_SENS option in the central unit (using the "Pc_SNG_Config_Vxxx" software).

Version Pto activate by groung signal

buzzer activate appear of GND on CMD Bpext_sens = 1 (software)

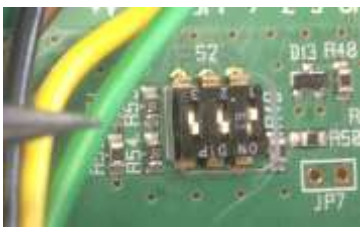
- - 2 actions for configuration are to be performed:
  - Position the switches on the CPU board
  - Configure option with software

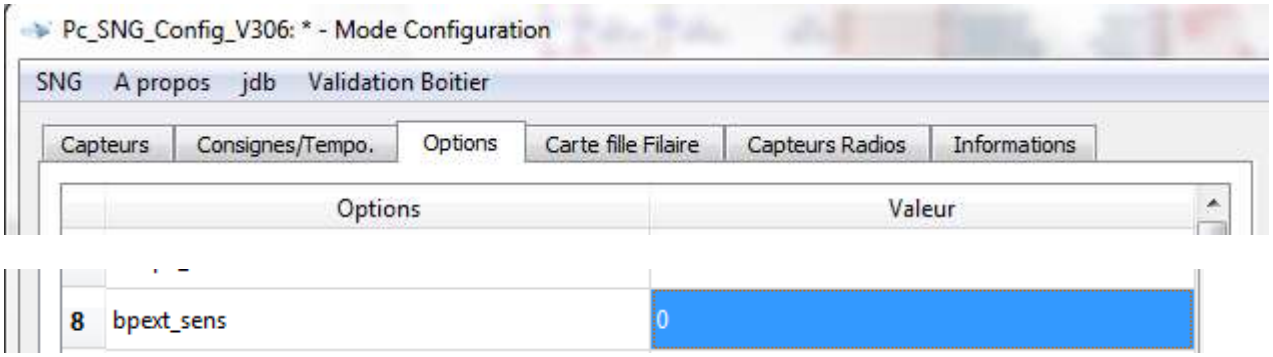


Version Pto activate by 12-24V

buzzer activate appear of V + on CMD Bpext_sens = 0 (software)

- 2 actions for configuration are to be performed:
  - Position the switches on the CPU board
  - Configure option with software





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8. EXAMPLE OF SENSOR CABLING

9. EXAMPLE OF WIRING OF THE POWER SUPPLY CABLE (AND POSSIBLE MOVEMENT CUT)

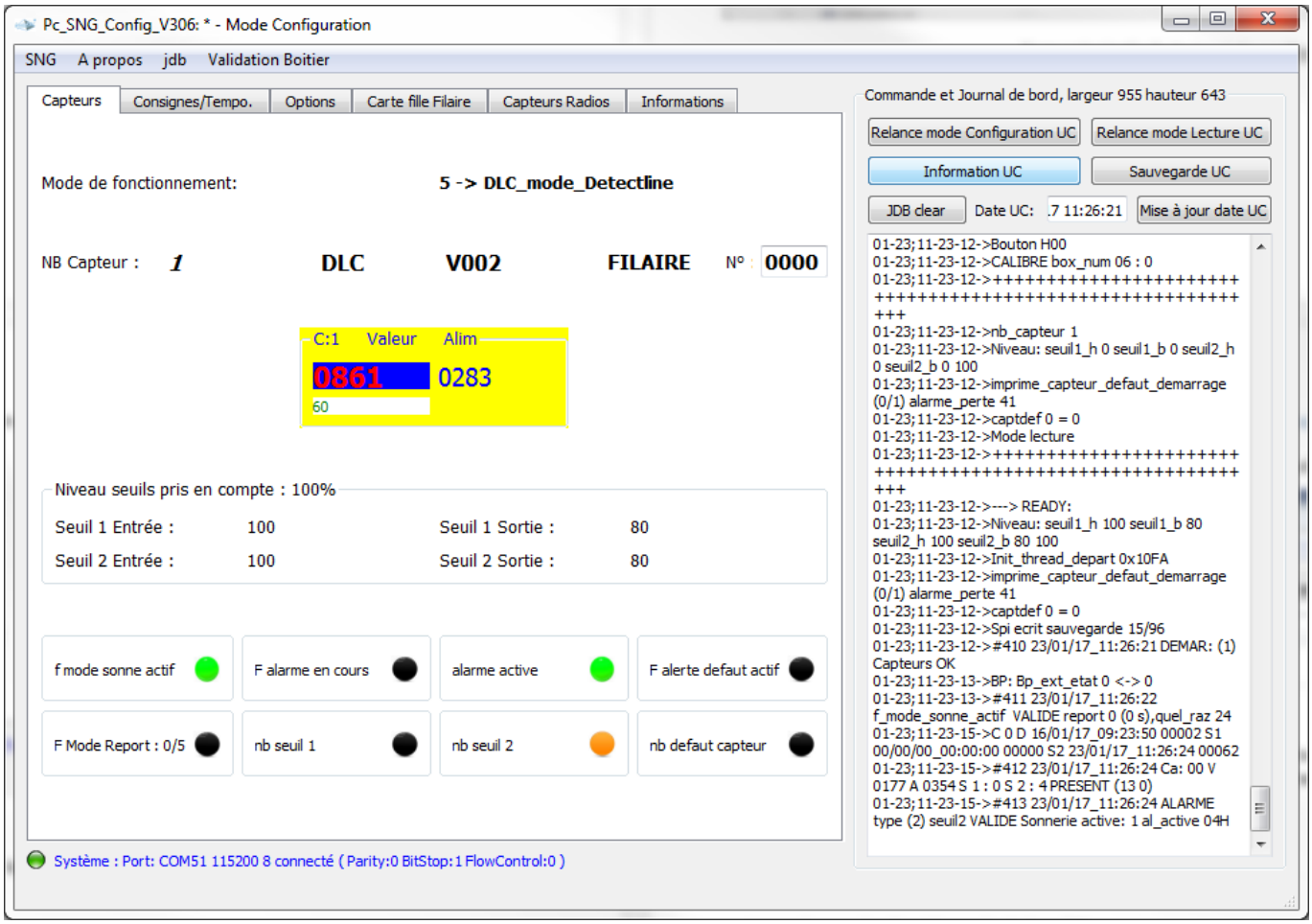
The 2 wires (yellow green) for switching off are optional..

10.OPERATING SOFTWARE

The central unit needs to be configured with the software SNG_CONFIG_Vxxx.exe.
This configuration software runs on a computer equipped with the operating system: Win 98/2000 / XP / SEVEN, with a USB connection. (FTDI driver)
It is available on the website of the company MADE, under the heading DETECT LINE NG:

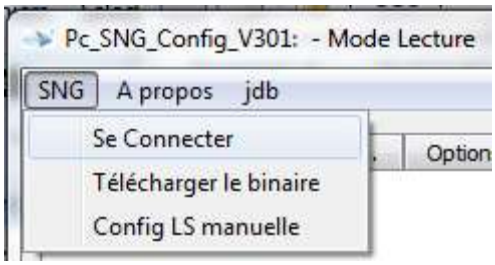
http://www.made-sa.com/fr/detail.htm?_ref=DETECT_LINE_NG_POMPE

The installation is automatic, by executing the file "SNG_instal.exe".
The connection cable is of the type: mini usb

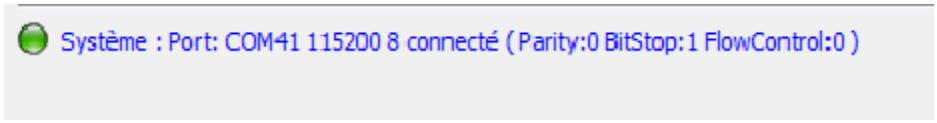


Setup Software Main Page

Once the USB cable is connected, the detection of the card is automatic by clicking in the "SNG" menu "connect":



Verify that the connection is operational:



Once the connection is established, press the "info" button, the program refreshes the information from the central unit.

10.1.System Configuration

10.1.1.Switch to configuration mode

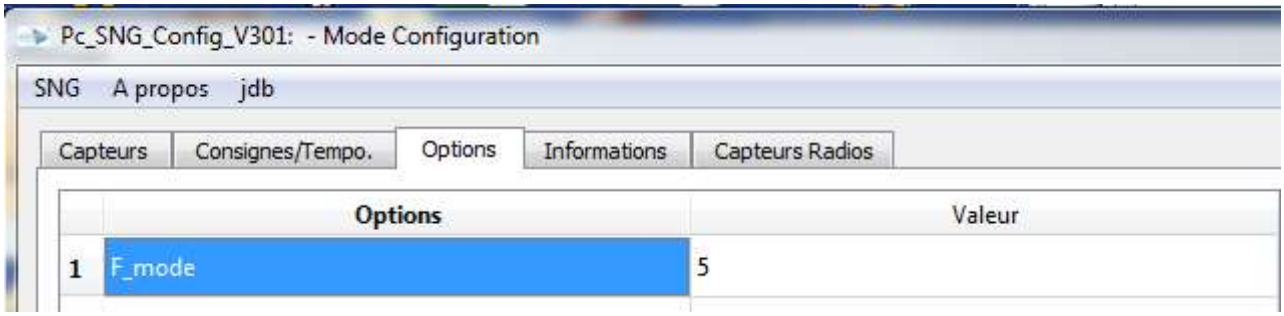
A Press the button "restart in CPU configuration mode". The logbook shows the current configuration and presence of the sensor:

10.2.Search for sensors

The sensor search is automatic when switching to the "configuration" mode:

The sensor search is automatic, the screen refreshes after pressing the "Info" button

Mode specification: set the mode in the window and confirm with the "Mode" button::

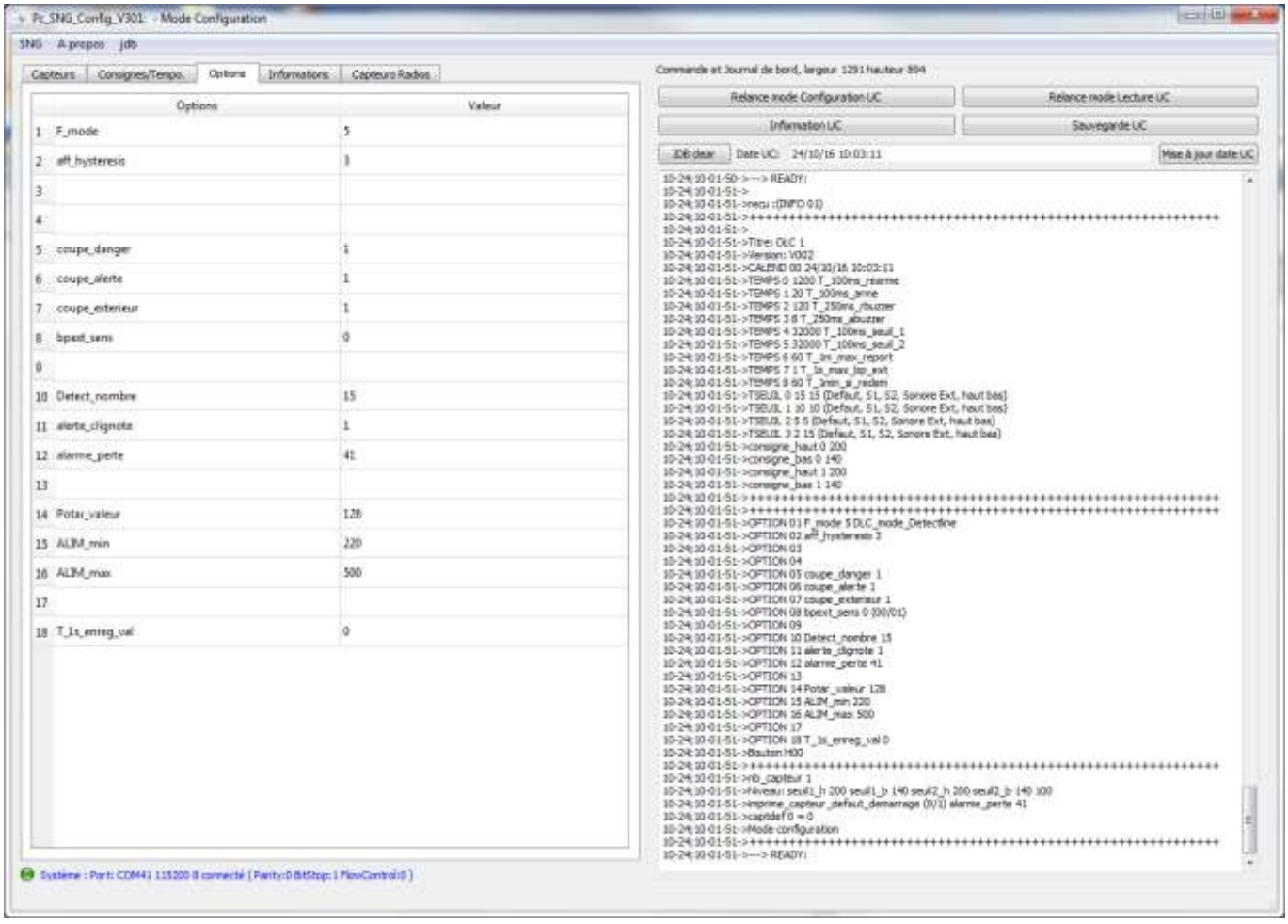


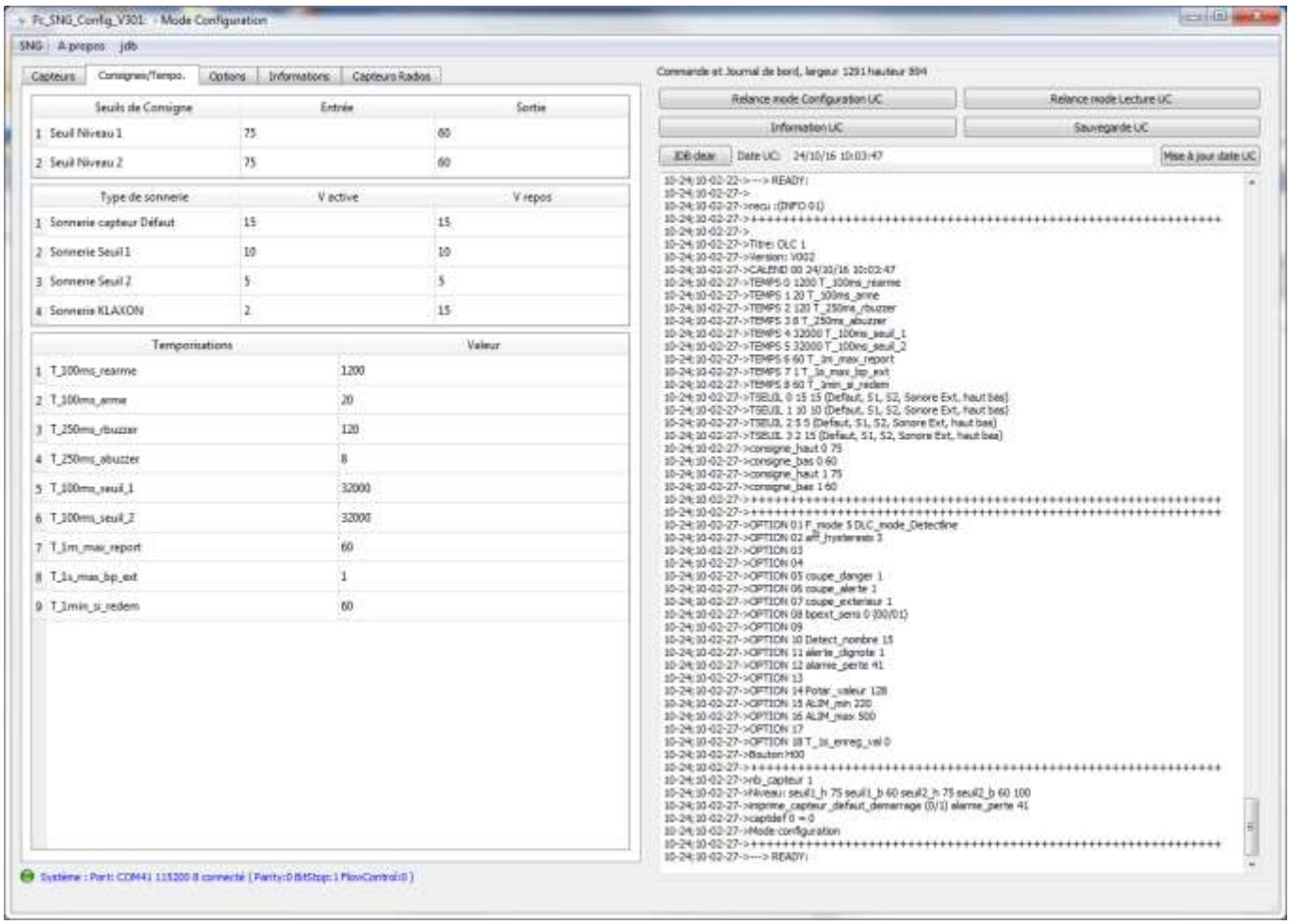
Reminder:

The software embedded in the central unit is identical for all operating modes of the DETECT LINE C, only mode 5 allows to obtain a desired type of operation.

10.3.Basic settings

Mode 5 is the basic mode::





CAUTION:

The "Parameters" tab gives access to the modification of the factory settings (detection thresholds, duration of the alarms, etc.) that there is no need to retouch in normal time.

Any modification may only be made by an authorized person. Consult us.

10.4. Selection of the audible alert type for the defective sensor

By default sensor loss causes the buzzer of the cabin box to sound (alerte_perte=41).

Parameter value “alerte_perte”	Cutting of movement	Internal buzzer
41	YES	YES
31	NO	YES
21	NO	YES
11	NO	YES
1	NO	NO

Detail how the alert works depending on the programmed value

11. ENABLE CONFIGURATION

Once the sensor is found, press the "info" button.
Saving the system: Press the "Save" button.
Once the report is made, the system is operational.

11.1. System Restart

When the system is started, the "on" indicator flashes and the buzzer sounds twice.
A report is displayed in the following form:

```
10-24;10-14-18->JDB ouvert: SNG_Config_V301_JDB_2016-10-24 10-14-18.txt
10-24;10-14-20->
10-24;10-14-20->recu :(RESET 00)
10-24;10-14-20->Spi ecrit sauvegarde 15/96
10-24;10-14-29->
10-24;10-14-29->PROG...
10-24;10-14-29->------------START-------------
10-24;10-14-29->crc ok
10-24;10-14-29->MCUCSR: 0x00
10-24;10-14-29->RESET 0
10-24;10-14-29->Spi lit sauvegarde 15/96
10-24;10-14-29->POTAR value: 220 ecrit 35
10-24;10-14-32->demarre
10-24;10-14-32->Eeprom DEB 0H MAX 5957 SIZE 11 F_cpt_stck 9
10-24;10-14-32->#009 24/10/16_10:15:52 INIT 0 F_cpt_stck 9/5957 MCUCSR 00H
10-24;10-14-32->
10-24;10-14-32->Titre: DLC 1
10-24;10-14-32->Version: V002
10-24;10-14-32->Wait 1
10-24;10-14-33->Niveau: seuil1_h 75 seuil1_b 60 seuil2_h 75 seuil2_b 60 100
10-24;10-14-33->Init_thread_depart 0x10FA
10-24;10-14-33->Bouton H02
10-24;10-14-33->imprime_capteur_defaut_demarrage (0/1) alarme_perte 41
10-24;10-14-33->captdef 0 = 0
10-24;10-14-33->Spi ecrit sauvegarde 15/96
10-24;10-14-33->#009 24/10/16_10:15:53 DEMAR: (1) Capteurs OK
10-24;10-14-34->BP: Bp_ext_etat 1 <-> 0
10-24;10-14-34->C 0 D 00/00/00_00:00:00 00000 S1 00/00/00_00:00:00 00000 S2 24/10/16_10:15:54 00002
10-24;10-14-34->#010 24/10/16_10:15:54 Ca: 00 V 0235 A 0262 S 1 : 0 S 2 : 4 PRESENT (13 0)
10-24;10-14-34->#011 24/10/16_10:15:54 ALARME type (2) seuil2 VALIDE Sonnerie active: 0 al_active 04H
10-24;10-14-38->
10-24;10-14-38->recu :(INFO 01)
10-24;10-14-38->+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
10-24;10-14-38->
```

12.SYSTEM CONTROL PROCEDURE

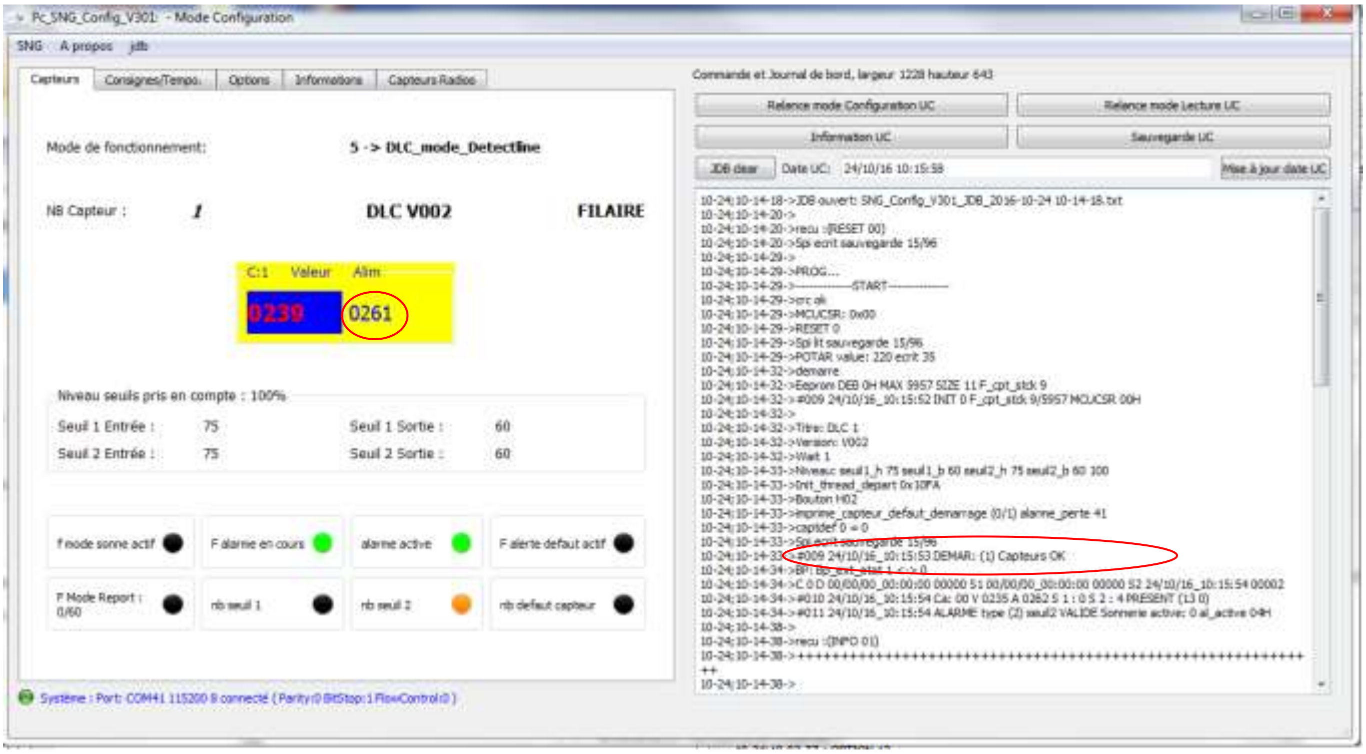
Switch on the system.
Connect the computer via the RS232 serial link to the central unit and then run the software "SNG_CONFIG_Vxxx.exe".
Check the following point:

12.1.Visual control

- Visual inspection must be made of the sensor, the central unit and the wiring.
- The sensor is molded, it must not be subject to blows or cracks.
- The CPU must not be subject to bumps or cracks.
- The "On" indicator must be on

12.2.Software verification

Once the software has been started and the central unit has been recognized (see chapter on connection above), press the "UC INFORMATION" button.
Make sure that the sensor is recognized (red circle in the figure below).



12.3.Sensor Check

The company MADE sells a sensor tester for its range of high voltage line detection products, the HT HT.
Simple to use, it allows to test the correct functioning of the complete system: sensor, transmission of information to the central unit and means of alert:

TC HT generates an electric field simulating the presence of an electrical line. Simply center the TC-HT housing on the sensor and press the button on the front panel

13.MAINTENANCE

Opening of devices is prohibited. It is reserved exclusively for personnel qualified and approved by MADE.

An annual audit can be carried out by our network of authorized service providers.

Never use a solvent or solvent-based product to service the appliance and / or its accessories.

14.MAINTENANCE

The system itself does not require re-calibration, nor are there any wear parts strictly speaking.
Nevertheless, regular monitoring of the whole system makes it possible to check its operational functioning.
If the central unit and / or the sensor are changed, the procedure "System configuration" must be re-applied.
Maintenance consists in carrying out the “test procedure”.
Tips:

In case of failure:
Check that the central unit is switched on: Green power LEDs.
Check the wiring of the sensors, 80% of the faults come from the wiring between the central unit and the sensor.

15.OPERATING RESTRICTION

The **DETECT LINE C** is a driving aid.

VIGILANCE and ATTENTION of the operator must remain maximum when approaching live power lines.
The principle used is the measurement of the electric field radiated by the conductors.

DETECT LINE C has been validated for use in **FREE FIELD**: without any physical obstacle between the sensor and the power line.
DETECT LINE C detects power lines from 20,000 volts.
Low-voltage power lines (380V) are not detected.
Special cases (secant or parallel electric lines) can modify the value of the electric field.
In this case, increased caution is required..

The company MADE declines all responsibility in case of use of these equipment not according to the specification of the manufacturer. The company MADE could not be held responsible for an accident by contact on power lines, given the multitude of particular cases encountered in the field.

16.RECYCLAGE

Pursuant to Decree 2005-829 of 20 July 2005 on the disposal of waste electrical and electronic equipment (WEEE), the user is responsible for the collection and disposal of WEEE under the conditions laid down in Articles 21 and 22 of the Decree.

17.WARRANTY

ADE warrants this product to the original purchaser to be free from defects in material and workmanship for a period of one year from the date of delivery unless otherwise specified in the product manual. If such a defect is discovered during the warranty period, MADE agrees at its option to repair or replace the defective product, excluding the original handling and delivery costs. Any product repaired or replaced under this agreement will only be warranted for the remainder of the original warranty period of the device.

17.1.Limitations

This warranty does not cover:

- Damage caused by force majeure, natural disasters, strikes, wars (declared or not), terrorism, social conflicts or acts of any governmental jurisdiction.
- Damage due to misuse, negligence, accident, improper application or installation.
- Damage caused by repair or attempted repair not authorized by MADE.
- Any product that is not used in accordance with the instructions provided by MADE.
- Freight costs for goods returned to MADE.
- Shipping costs on express deliveries or expedited parcels of guaranteed parts or products.
- Mission expenses associated with a repair on the site under warranty.
-

This warranty is MADE's sole express warranty for its products. All implied warranties, including but not limited to warranties of merchantability and fitness for a particular purpose are expressly disclaimed.
This warranty gives you certain rights: the laws of the country or jurisdiction may grant you other rights.
This warranty constitutes the final, complete and exclusive declaration of the terms of the warranty and no one is authorized to issue any other warranties or representations on behalf of MADE.

17.2.Restrictions on redress

Remedies for repair or replacement are the only remedies available in case of breach of this warranty.
MADE shall not be liable, either on the basis of strict liability or any other legal theory, for any incidental or consequential damages resulting from a breach of warranty or negligence.

18.COPYRIGHT

The content of this document is intended for informational purposes only. It may be modified without prior notice and should not be considered as a commitment on the part of MADE.

MADE shall not be liable for any errors or inaccuracies in this warranty or negligence document

19.ANNEXE

19.1.EMC Declaration of Conformity

MADE
S.A. au capital de 270 130 €
167, Impasse de la garrigue
F 83210 LA FARLEDE
Tél:+ 33 (0) 494 083 198 - FAX : + 33 (0) 494 082 879
E-mail: contact@made-sa.com - Web : www.made-sa.com

Déclaration CE de conformité

Déclaration n : **CE_DLG_09/2015**

Le fabricant soussigné :

MADE SA

167, Impasse de la Garrigue
F 83210 LA FARLEDE

Déclare que le produit

Nom du produit : **Détecteur de lignes à hautes tensions HTA, HTB**
Référence du modèle : **DETECLINE NG**

Est conforme aux dispositions réglementaires définies par :
Les directives européennes :

- CEM 2004/108/CE relative au « Marquage CE»
- 2006/95/CE relative à la sécurité des matériels électriques destinés à être employés dans certaines limites de tension.

L'équipement référencé ci-dessus est conforme aux normes ci-dessous, suite aux essais :

- EN 61010-1– Partie 1 : Règles de sécurité pour appareils électriques de mesurage.
- normes EN 61000-6-3 (01) et EN 61000-6-1 (01) EMC (Compatibilité Electromagnétique), qui englobent les essais
    - EN 55022 (98) + A2(03) : Mesures champs électriques rayonnés,
    - EN 61000-4-2 : Immunité aux décharges électrostatiques,
    - EN 61000-4-3 : Immunité aux champs électromagnétiques rayonnés,
    - EN 61000-4-4 : Immunité aux transitoires rapides sur ligne téléphonique,
    - EN 61000-4-5 : Immunité aux chocs haute énergie,
    - EN 61000-4-6 : Immunité aux courants HF induits sur ligne téléphonique,
    - EN 61000-4-8 : Immunité aux champs magnétiques,

Par ailleurs, le produit désigné ci-dessus a été conçu, fabriqué et contrôlé, dans le cadre d'un Système d'Assurance Qualité certifié conforme à la norme : ISO 9001/2008, par l'Association Française pour l'Assurance Qualité – AFAQ, certificat : QUAL / 2005 / 24473B du : 05 / 05 / 2011.

Fait à La Farlède, le 07/09/2015

Directeur Génénal Délégué	Directeur Technique	Responsable Qualité
Marc RIVASSEAU	Laurent Zoméro	Jean Yves Creste

R.C. TOULON 381 537 604 (91 B 00 341) – SIRET 381 537 604 (00021) – CODE NAF 6202A
N° TVA Intra communautaire FR 20 381537604