user guide

MADE

High voltage detection system

DETECT LINE LDS

READ THIS MANUAL BEFORE USING THE DEVICE

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MODIFICATION'S DIRECTORY

Rév.	Subject of Amendments	Date	Author
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1.02	modify paragraph use	29/07/24	O Goeury
1.10	page layout	31/07/24	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 DETECT LINE LDS User's Guide. It describes the implementation of the device, as well as the different modes of operation to facilitate its use.

1. SAFETY INFORMATION

1.1. Safety recommendations

Please read this guide carefully before unpacking, configuring or using this equipment. Note all indications of danger and other warnings. Failing 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.

1.2. Following the safety recommendations

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

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

Remark*:* Information requiring particular attention.

1.3.Warning labels

Read all labels and wordings shown on the instrument. Injuries 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.
	Dangerous Voltage
	Ac current
IP XX	IP standard – Protection against dust and water : TRANSMITTER
IP XX	IP standard – Protection against dust and water : SENSOR
	Do not throw away with household waste

1.4.Information

DEVICE FOR DRIVING ASSISTANCE

Detection Overhead Power Lines AC Voltage from 10,000 volts ~.

Warning :

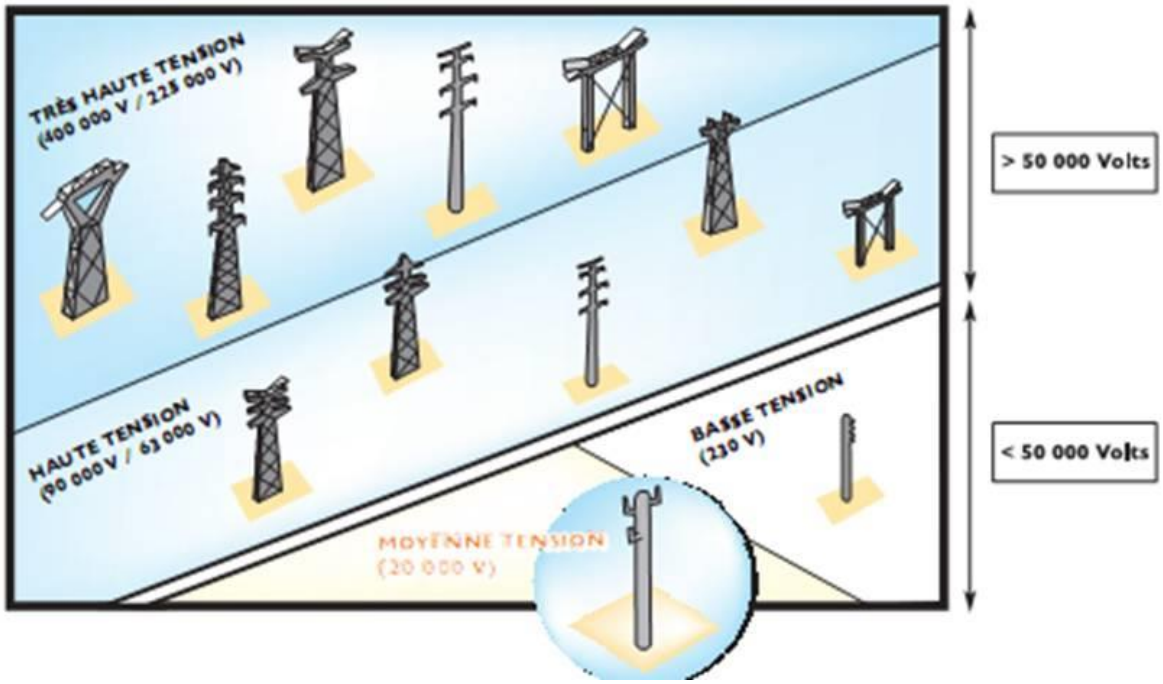
The system is inoperative on :

- Overhead power lines Low Voltage (380V)

- Overhead power lines Medium Voltage Direct Current (tram power, railways in general ..)

The VIGILANCE and the operator must remain CAUTION maximum to approach energized electrical lines.

Reminder of high voltage lines:



REMARK : As the electric field detection threshold is 20 meters at 20 KV, for 380 V low-voltage lines, the device reacts at a distance of less than 10cm.
Thus, the device will not warn of DC lines.

2.1. Working Principle

DLDS warns the user with an audible alarm when the lifting device enters a hazardous area.

The sensor is constantly interrogated by the processing module, in order to check that they are in good working order, and to avoid any failure of the system, which would be dangerous for the work of the personnel (sound and light signaling a failure of the sensor).

The central controller is powered via a two-core cable with 12-24V, turned on by the engagement of the vehicle power take-off.

DLDS is a DRIVING ASSISTANCE system that detects the proximity of a high-voltage line.

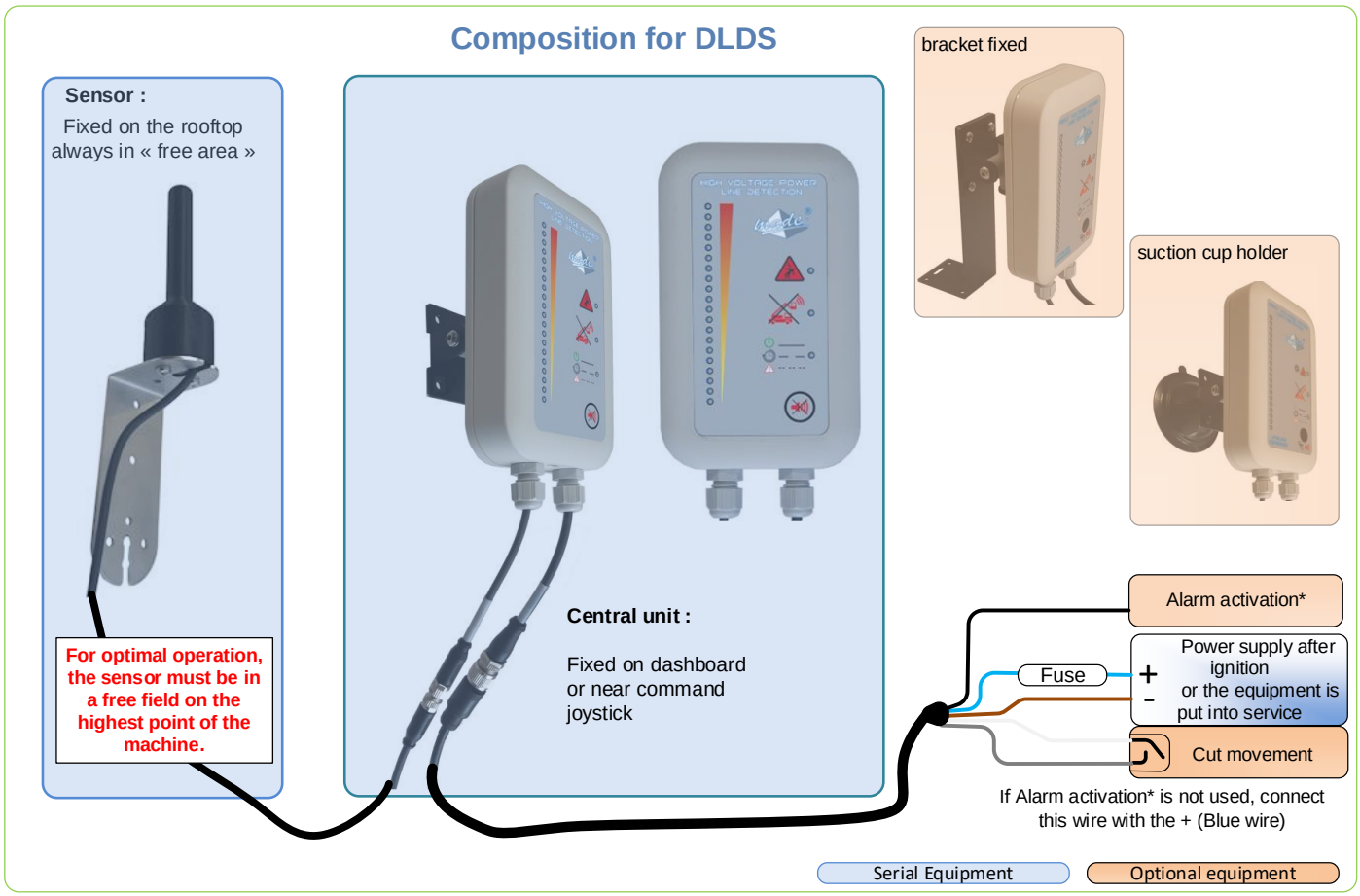
It alerts the user with an audible signal and a warning light when the vehicle enters an electric field detection zone.

The driver can stop the external audible alarm and the mute movement (if connected) by pressing the "Mute" button on the central unit.

The buzzer sounds two times every 2 minutes.

After one hour, the system will reboot.

2.2.Composition



2.2.1.Central unit

Sensor management and control unit, generation of audible and visual alarms, management of machine movement blocking (optional).

2.2.2.Sensor

The sensor is attached using the bracket.

The position of the sensor must be chosen so that it is in an open field.

3.1. Start system

The system will connect to 24V after switching on the PTO or key ignition.
Commissioning is automatic, no adjustments are required for the user.

3.2. Operation

A powered DLDS 2 beeps and then interrogates its sensors.

At startup, all visual and audible alarms are activated 2 times.

<u>If the measured electric field exceeds the threshold:</u>

- The **DLDS** operates its "Alarms Sound" (Buzzer).
- The **DLDS** operates its "Visual Alarm" (red LED).
- The **DLDS** activates the "motion stop" relay that can be coupled to the hydraulic leak to control the radio harness (or other means to shut off the movement of the arm).
- The user must press the acknowledge button "  " to unlock the cut motion (Relay) and switch the system to "unlock mode". This ensures that the presence of the high-voltage line is well known to the user.

<u>After this phase, if the ambient electric field is still present:</u>

- The **DLDS** operates the buzzer all the time of detection to remind the danger to the driver.
- The **DLDS** is in “unlock mode" to unlock the machine.
- The **DLDS** makes a sound return on the buzzer of the outer casing 2 times every 30 seconds.

After the "unlock mode" delay (20 minutes), the system returns to position alarm.

IMPORTANT:
In practical, the electric field is not exactly spherical, it doesn’t have a definitive shape, as it depends on weather conditions, and other parameters.

In addition, for all the announced detection distances, other parameters must be taken into account, such as, but not limited to, the speed of approach of the arm, the angle of approach, the weather conditions, and other parameters that do not allow the application of a mathematical formula on the detection distance.

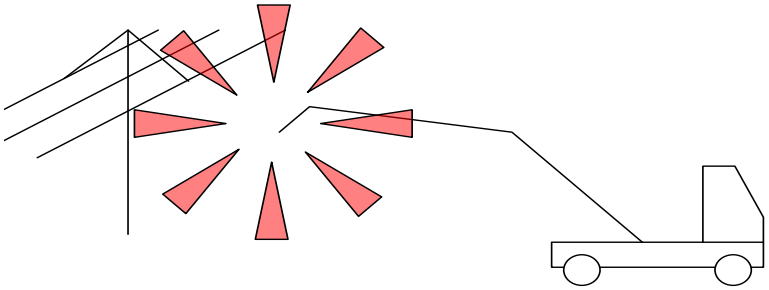
3.3.The «unlock mode»

If the system is located near a 220Kv HVB power line, the detection distances may be too great. As a result, the use of the machine may be disrupted due to the switching of movement and the noise generated by the external alarm. In this case, the user can activate the "unlock mode".

- The **DLDS** is in “unlock mode" to unlock the machine.
- The **DLDS** makes a sound return on the buzzer 2 times every 30 seconds.

After the "unlock mode" delay (1 hour), the system returns to position alarm.

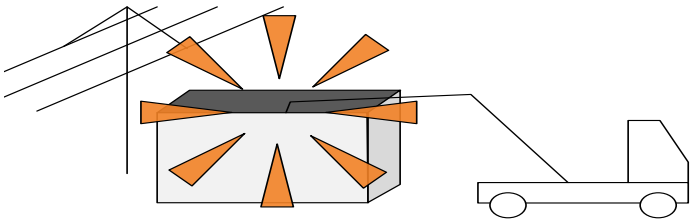
3.4.Summary of operational conditions



DLDS works on 11KV cables from 20 meters; the alarm distance is measured in free field (unobstructed).

DLDS does not work on power lines less than 11 kV.

DLDS does not work on insulated cables and the cables 380V (3+ 1 wires).



The presence of obstacles disturbs the measurement and may generate false alarms.

3.5.Central unit

Sensor management and control sensors, generation of audible and visual alarms, movement blocking management (optional). Lamp « power on »

System in working order	Electric field present	Breakdown
 - Lamp "Audible alarm" off - Lamp "Movement cut" off   - Lamp "Visual alarm" off. - Lamp "On work" light on steady.  * slow flash: system waiting for alarm activation	 - Lamp "Audible alarm" flashing*. - Lamp "Movement cut" light on steady*   -Lamp "Visual alarm" light on steady -Lamp "On work" light on steady.  - Buzzer on*.	- Lamp "On work" off: power off  - slow flash: system waiting for alarm activation  - flashing fast: equipment fault. 

* Until press "Alarm Report" button located on the central unit.

4. INSTALLATION

4.1. Mounting sensor

The sensor must always be installed in free field.

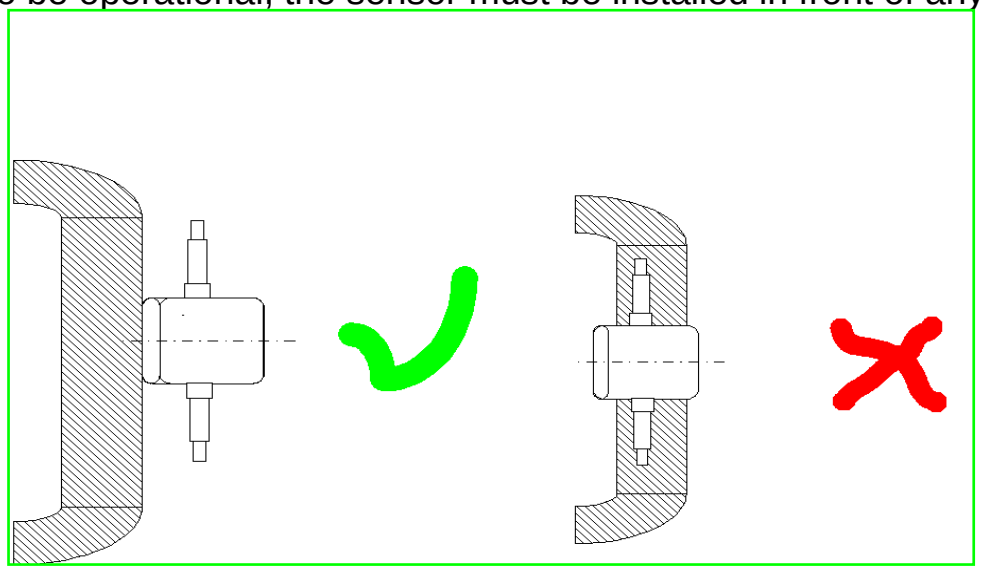
Connect sensor to central unit by plugging the M8 3Pts plug male (sensor) to the female (central unit).

4.2.Fixing the sensor

Positioning sensors on the media:

The sensor is set in open space around the arm to handle or on the vehicle roof.

To be operational, the sensor must be installed in front of any surface,

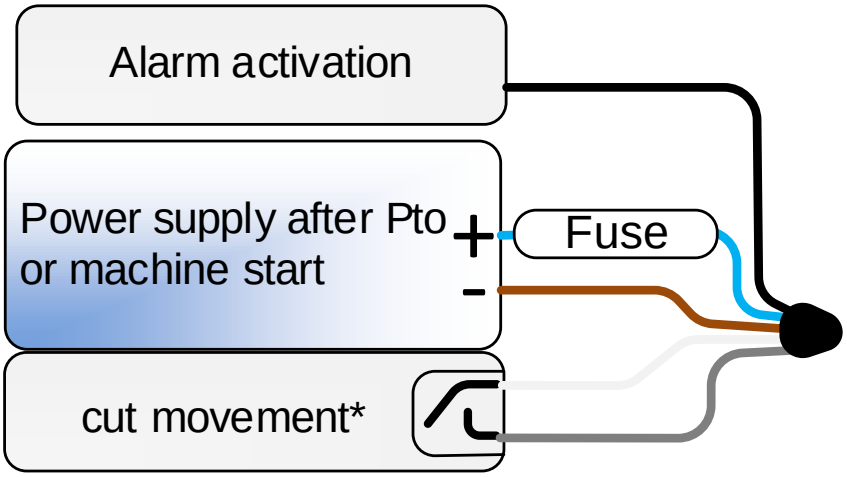


4.3.Installation procedure

Power supply, Cut-off and alarm activation connection:

Connect the central unit by plugging the M12 5Pts.

Pin number	Operation	overmolded connector cable
1	Power 0V	*Brown*
2	Cut movement (in)	*White*
3	Power 12/24V	*Blue*
4	Alarm activation	*Black*
5	Cut movement (out)	*Grey*



Alarm activation: factory configuration in + 12 / 24V

5. TECHNICAL FEATURES

sensor specifications	
Product range	HV Line Detector
Range name	liveline defender
Sensor type	HV line proximity detector
Sensor name	DLDS_CAP_110
Electrical connection	M8 cable, 3-pin
Cable length	5 m
mounting	aluminum bracket
Supply voltage	5V DC with reverse polarity protection
Operating range	10-30 m
Operating ambient temperature	-20...50 °C
Storage ambient temperature	-10...50 °C
Length	110mm
Width	diam 35mm
Product weight (without bracket)	0,15Kg
Product weight (with bracket)	0,20Kg
protection rating	IP65

central unit specifications	
Product range	HV Line Detector
Range name	liveline defender
Sensor type	HV line proximity detector
Sensor name	DLDS_UCE_110
Electrical connection	M12 cable, 5-pin
Cable length	5 m
mounting	suction cup or aluminum bracket
Supply voltage	12/24V DC with reverse polarity protection
visual and audible warning	LED indicator and buzzer 87 dbA
Operating ambient temperature	-20...50 °C
Storage ambient temperature	-10...50 °C
Length	150mm
Width	93mm
Height	35mm
Product weight	0,5 Kg
protection rating	IP54

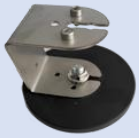
Marks : CE

Standards applied :

NF EN 50082-1: CEM

NF EN 61010-1: Electrical safety

6. OPTIONAL DEVICES

VIEW	REFERENCE	DESIGNATION
	DLDS_STD_100	DETECT LINE LIVELINE DEFENDER
	DLDS_STD_200	DETECT LINE LIVELINE DEFENDER (external version)
	DLDS_AIM_110	DETECT LINE LDS Support aimanté pour capteur
	DLDS_ALI_110	DETECT LINE LDS Allume cigare précablé
	DLDS_ALI_111	DETECT LINE LDS Prise allume cigare à câbler
	DLDS_BUZ_110	DETECT LINE LDS Buzzer extérieur
	DLDS_CAP_110	DETECT LINE LDS Capteur avec support équerre
	DLDS_RAL_110	DETECT LINE LDS Rallonge capteur 5m
	DLDS_SUP_110	DETECT LINE LDS Support equerre pour UC
	DLDS_SUP_111	DETECT LINE LDS ventouse Twist-Lock pour UC

6.1.12V cigar lighter socket power supply

Operation	Sick overmolded connector cable
Power 0V	*Brown*
Power 12/24V	*Blue* *Black*
Not Connected	*Grey* *White*

7. OPERATING RESTRICTION

The DLDS system is an operational aid.

The operator must remain as careful as possible to approach live power lines.

The principle used is the measurement of the electric field radiated by the conductors.

DLDS has been validated for use in open field : no obstacles between the sensor and the power line.

DLDS detects power lines from 11,000 volts.

Low voltage power lines (380V) are not detected.

Special cases (intersecting or parallel power lines) can modify the value of the electric field.

In this case, extra precautions are necessary.

MADE declines all responsibility in the event of use of the material not in accordance with the manufacturer's specifications. MADE cannot be held responsible for an accident due to contact with power lines, given the multitude of special cases encountered in the field.

8. MAINTENANCE, WARRANTY AND COPYRIGHT

8.1. Maintenance

Dismantling systems is forbidden. This operation is limited exclusively to personnel qualified by MADE.
Never use solvent, or a solvent-based product, to clean the system and / or its accessories.
For cleaning and maintenance of DETECT LINE LDS, it is sufficient to:

- Check that the **sensors** are clean: wipe off with a dry cloth
- Do not use corrosive products to clean the instrument faces
- Use only the accessories delivered with the system
- Follow a training programme by a qualified person

The system does not require recalibration.

Nevertheless, regular monitoring of the entire system to verify its operation is necessary.

If the CPU or sensors are changed, the "System Configuration" procedure must be reapplied.

8.2. Warranty

Our warranty and general sales are available and sent by MADE-SA at the customer's request

8.3. Copyright

FQ 58
V 1.1 – 03.08.2020

DECLARATION UE DE CONFORMITE
EU DECLARATION of CONFORMITY

Identification Produits / Products identification :

Type de produits / Type of products :
Détecteur de lignes à haute tensions, Overhead electric lines detector
Modèles / Models : DLDS

Nous, soussignés, MADE SA déclarons sous notre seule responsabilité, que les produits auxquels se réfère cette déclaration, sont conformes aux exigences essentielles des Directives Européennes suivantes

We undersigned MADE SA declare under our sole responsibility, that the products to which this declaration refers, comply with essential Requirements of following European Directives:

Directive Basse tension 2014/35/UE	Low Voltage Directive 2014/35/UE
Directive CEM 2014/30/UE	EMC Directive 2014/30/UE

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 9001/2015, par l'Association Française pour l'Assurance Qualité – AFAQ, certificat : QUAL / 2005 / 24473.5 du : 03 / 08 / 2020.

The designated product has been designed, manufactured and tested in the framework of a Quality Assurance System certified as conforming to the standard : ISO 9001/2015, by the French association for quality assurance (AFAQ), certification : QUAL / 2005 / 24473.5 dated: 03 / 08 / 2020.

Apposition du marquage : CE
Marking :

Date d'émission / Emission date : 05/06/2024 / 2024-06-05

Responsable d'activité Activity manager	Directeur Technique Technical manager
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