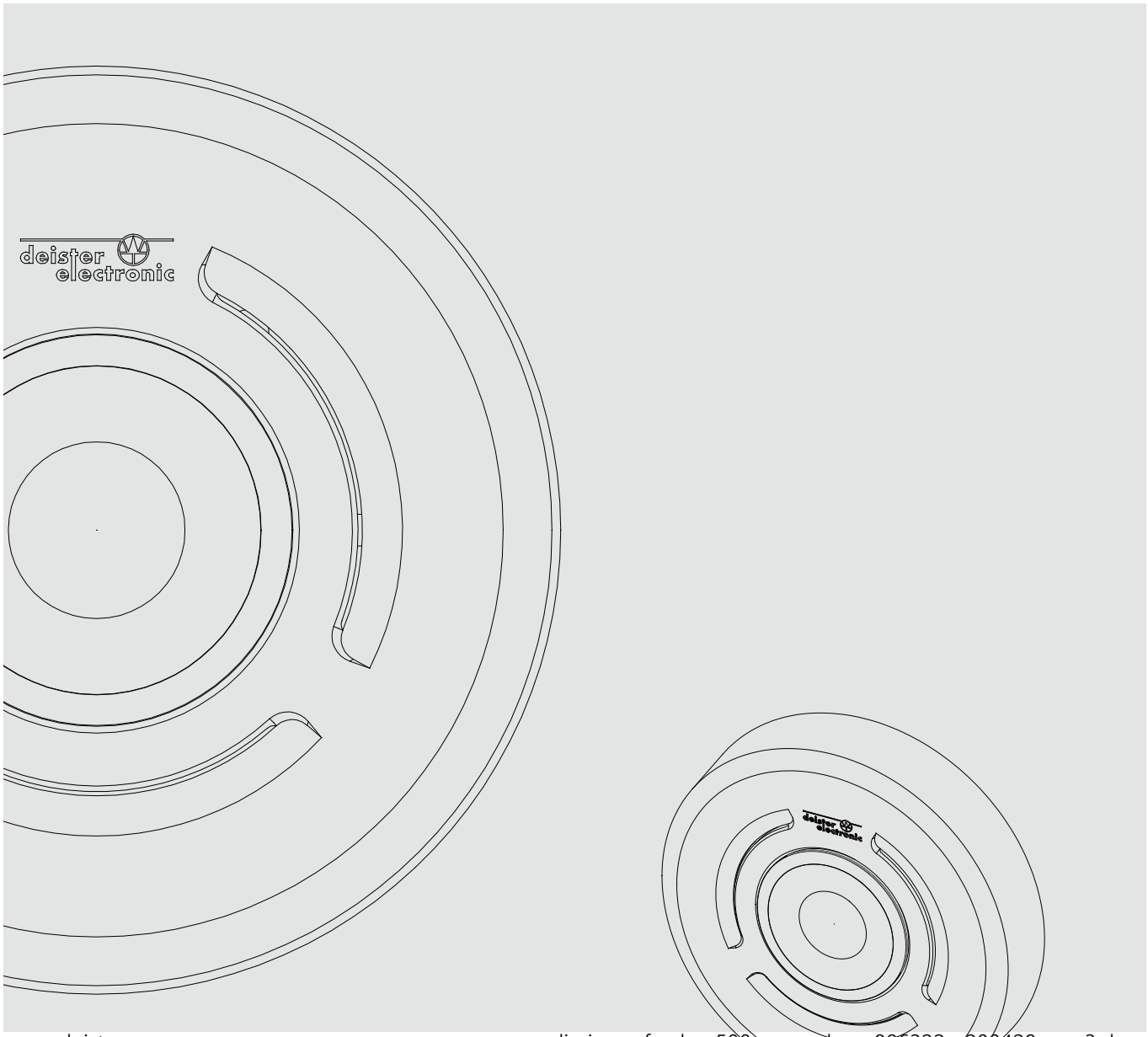
LCA 500

Wiring and Installation Instructions



Regulatory Notices

Hereby, deister electronic declares that the radio equipment type LCA 500 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: http://go.deister.com/ce

CE

Approved for use in all European countries.

FCC 15.105 Statement:

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

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

Changes or modifications not expressly approved by Deister could void the user's authority to operation the equipment under FCC 15.21 requirements.

Industry Canada Statement:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

The safe distance for nerve stimulation is 2 inches.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

La distance de sécurité pour la stimulation nerveuse est de 5 cm.

Disclaimer

deister electronic GmbH is not able to supervise the observance of the instructions given in this manual as well as the conditions and methods used during installation, operation and maintenance of the electronic devices and components respectively. Therefore we disclaim liability and reject responsibility for any losses, damages or costs that are caused by misap- plication, installation, handling errors or faulty operation or related to the above in any other way. All our products are subject to current advancement, therefore we reserve the right for modifications without prior notice.

deister electronic GmbH reserves the right to make changes to any and all parts of this documentation without obligation to notify any person or entity of such changes.

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Content

1. General Information

The locator LCA 500 is a major component in the amanTag Human and Asset-Protection System. It simultaneously receives and processes the signals of the amanTag Transponders. It transmits a constant wake-up signal with a location code up to a range of 5 m.

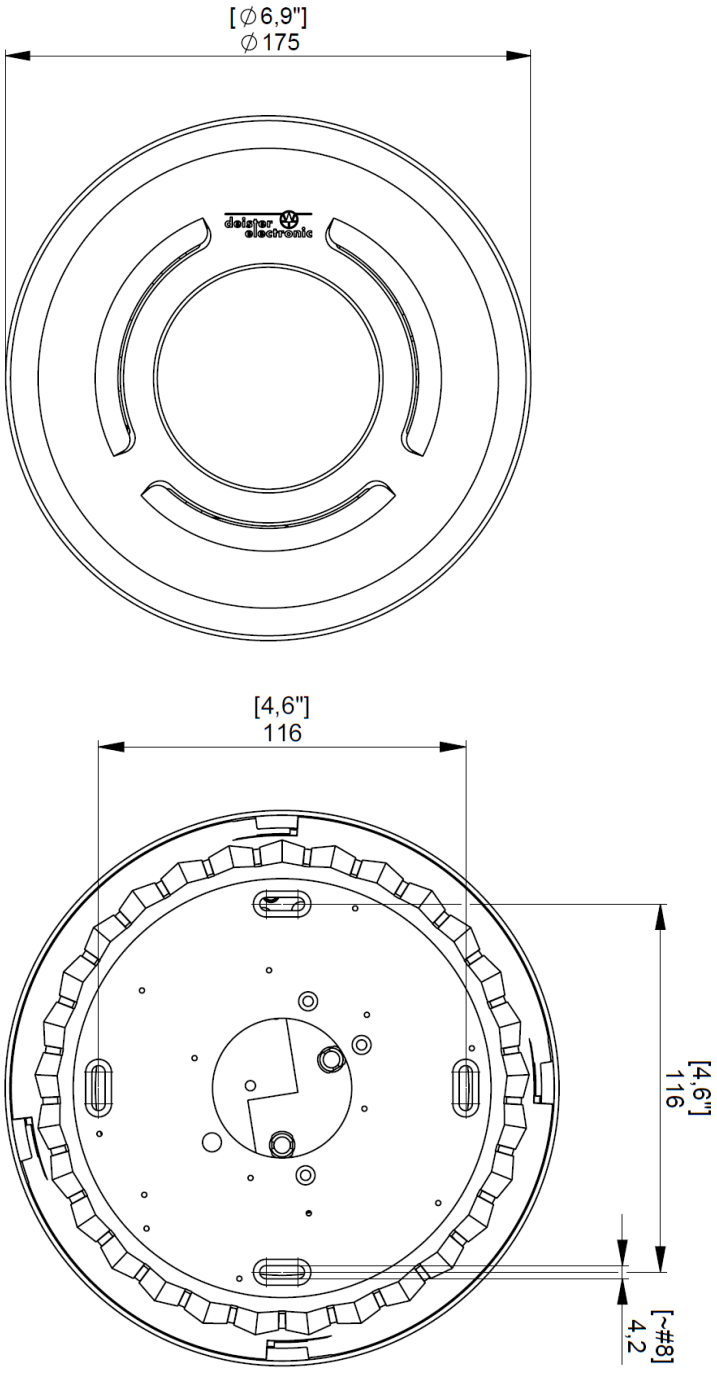
2. Technical Data

Dimensions ØxH:	175 x 53 mm
Material:	ASA
Protection class:	IP40
Operating temperature:	+5...+50°C
Relative humidity:	5...95%, non-condensing
Power supply:	24 VDC / 0.5 A
Frequencies:	
Wake-up frequency:	125 kHz
Working frequency:	868 MHz (EU) 916-921 MHz (US)
Wake-up range:	Up to 5 m
Interfaces:	RS-485 1x TCP/IP (optional)
Switching outputs/inputs:	1x input 2x isolated relay outputs, 30 VDC / 1A

3. Mechanical Dimensions

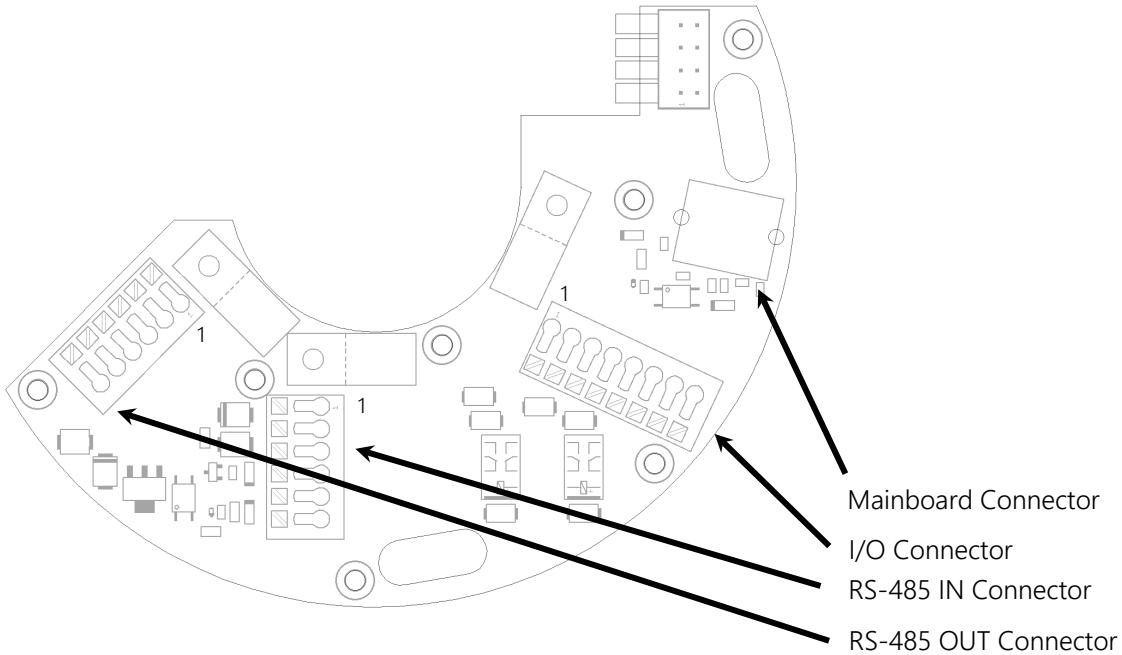
3.1 LCA 500

All dimensions in mm [inch]

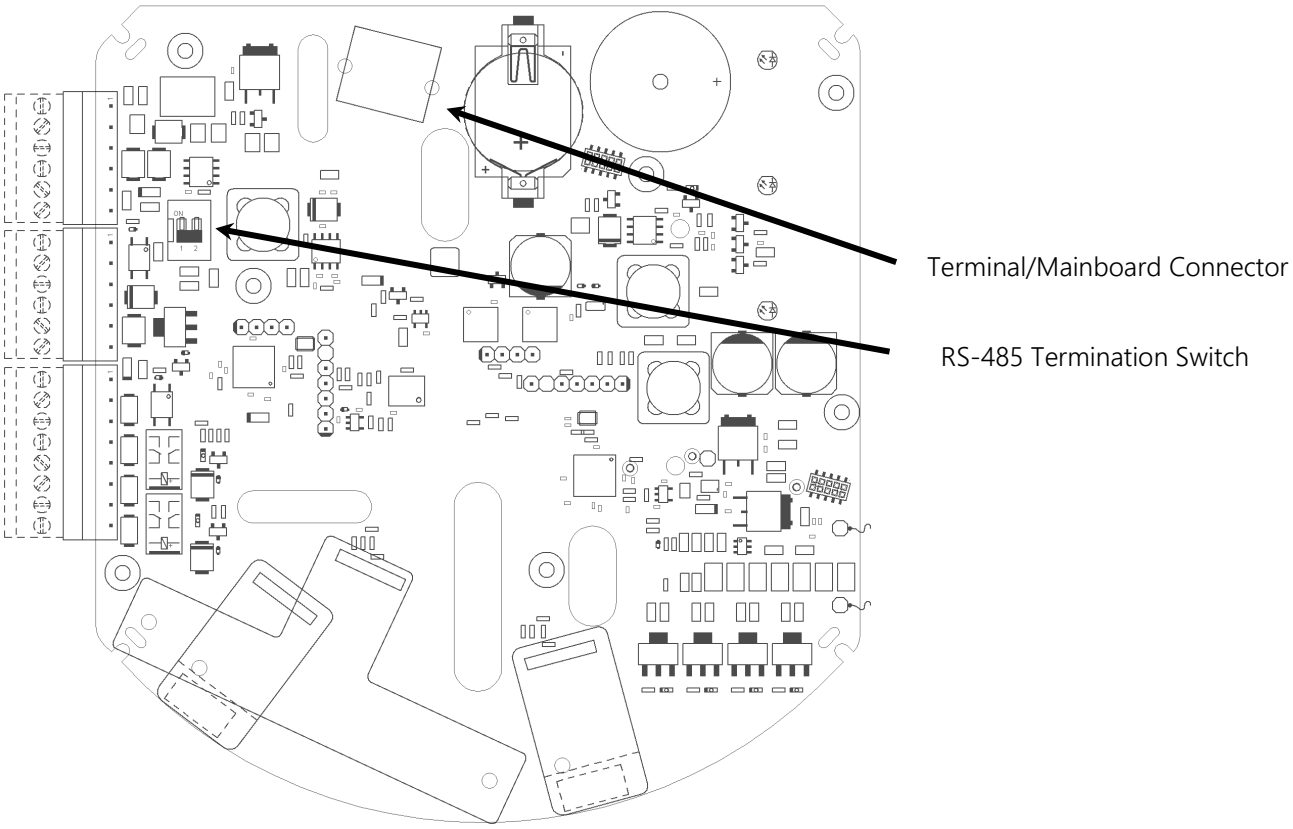


For LED explanation, see chapter 6.

4. Connectors



Terminal-Board LCA 500



Mainboard LCA 500

5. Description of Connectors and Switches

5.1 I/O Connector

Pin	Symbol	Description
1	I+	Input: positive contact
2	I-	Input: negative contact
3	$K2_{NO}$	Relay 2 normal open contact
4	$K2_{COMMON}$	Relay 2 common contact
5	$K2_{NC}$	Relay 2 normal close contact
6	$K1_{NO}$	Relay 1 normal open contact
7	$K1_{COMMON}$	Relay 1 common contact
8	$K1_{NC}$	Relay 1 normal close contact

5.2 RS-485 IN Connector

Pin	Symbol	Description
1	+V	Positive Power Supply
2	GND	Ground
3	A	RS-485 A (non-inverted Data Line)
4	B	RS-485 B (inverted Data Line)
5	$SYNC_{IN}$	Positive Sync Input
6	$/SYNC_{IN}$	Negative Sync Input

5.3 RS-485 OUT Connector

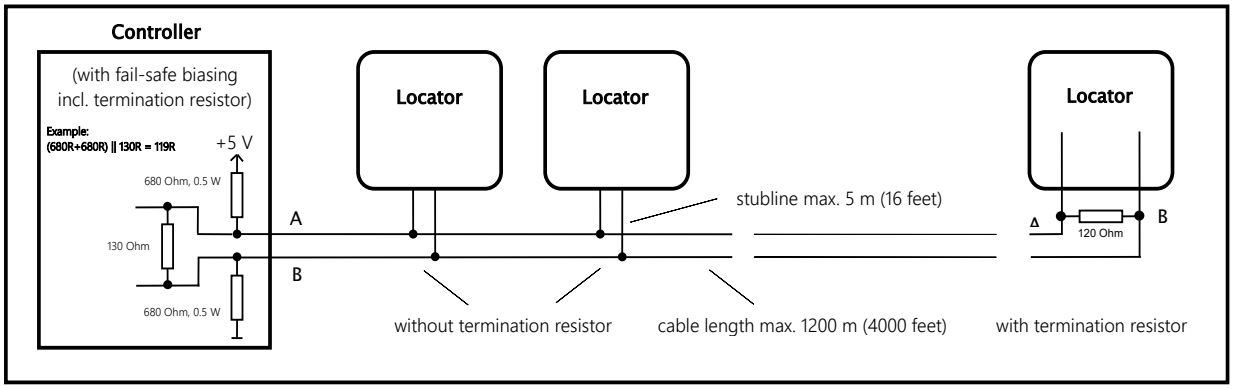
Pin	Symbol	Description
1	+V	Positive Power Supply
2	GND	Ground
3	A	RS-485 A (non-inverted Data Line)
4	B	RS-485 B (inverted Data Line)
5	$SYNC_{OUT}$	Positive Sync Output
6	GND	Negative Sync Output

5.4 Mainboard/Terminal Connector

Use these RJ45-Connectors to connect the mainboard to the terminal board with the provided RJ45-Cable.

5.5 RS-485 Terminator Switches

Termination can be activated by flipping the termination switch to the "ON" position. This must be done if the device is on either end of the bus. Most RS-485-buses require termination resistors across the conductor pair. The need for termination has to be checked for each installation. Especially for high data rates or long cables, the resistors are absolutely necessary. Only the ends of the main cable require termination resistors, additional resistors load the driver excessively. The resistor value matches the cable's differential-mode characteristic impedance (100-120 Ohm). On the RS-485-bus you need a controller with fail-safe biasing, meaning a pull-up and a pull-down resistor on the cable. The fail-safe biasing provides a known state in case there is no active driver on the bus and therefore it is essential, independent from data rates and length of the cable.



Technical data (for baud rates up to 115 kBaud):

Max. cable length: 1200m (4000 feet)

Recommendation for the cable: twisted pair, cable-cross-section at least 0,22mm² (AWG 24)
Differential-mode characteristic impedance 100-120 Ohm

6. Signalization (Factory settings)

1) Yellow LED: Line voltage indicator

After connecting the power supply, the device shows that it is ready to operate by permanently activating the yellow LED.
The yellow LED is off for 200ms, when a transponder has been read.
The yellow LED is off during configuration via DeisterConfig.
The yellow LED is off during a firmware update.

2) Green LED: Read indicator

The green LED activates after connecting the power supply during initialization phase.
The green LED is permanently off in operating mode.
The green LED is on for 200ms, when a transponder has been read.
The green LED is flashing during configuration via DeisterConfig.

3) Red LED: Status indicator

The red LED activates after connecting the power supply during the initialization phase.
The red LED is permanently off in operating mode.
The red LED is flashing during configuration via DeisterConfig.
The red LED is on during a firmware update.

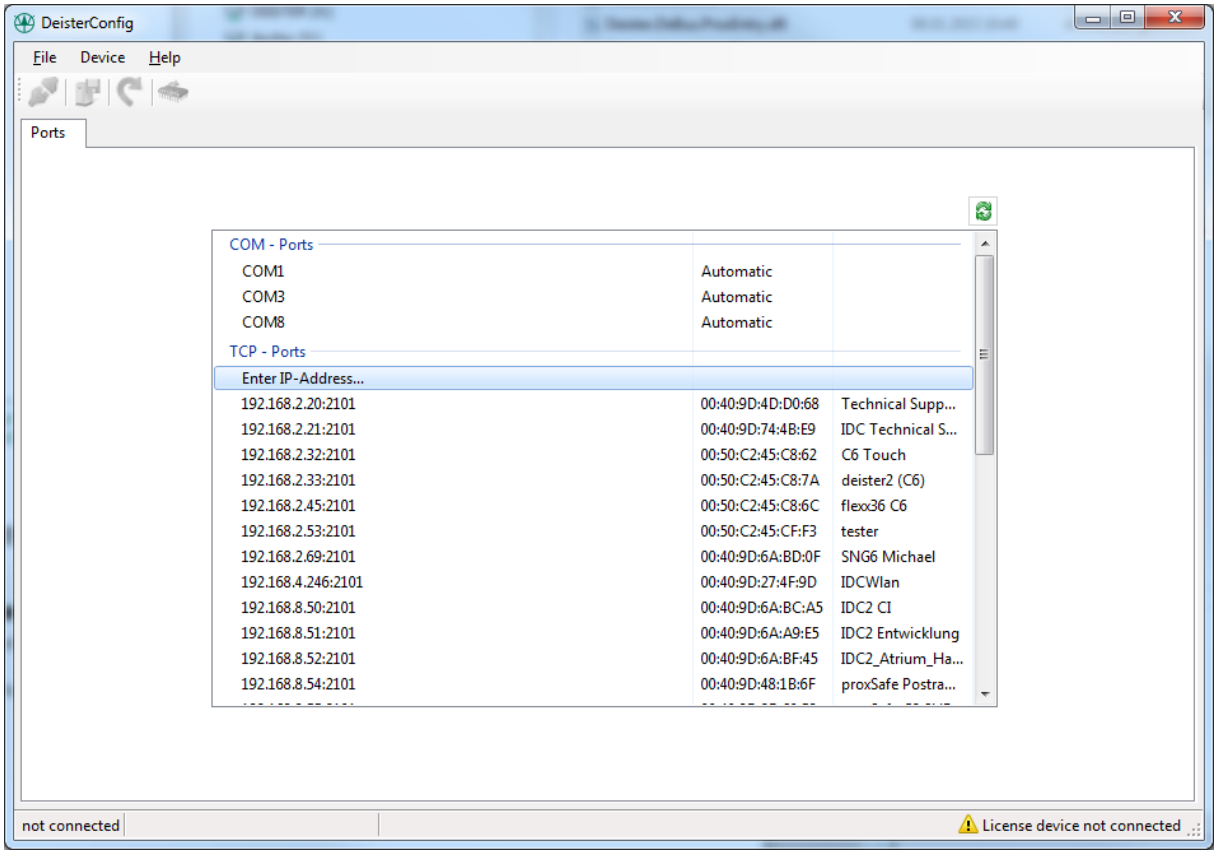
4) Beeper

After connecting the power supply, the beeper gives a 30ms beep when operational mode is reached. The beeper is on for 200ms, when a transponder has been read (this may be changed in configuration).
All signalization devices are configurable.

6.1 Configuration via DeisterConfig

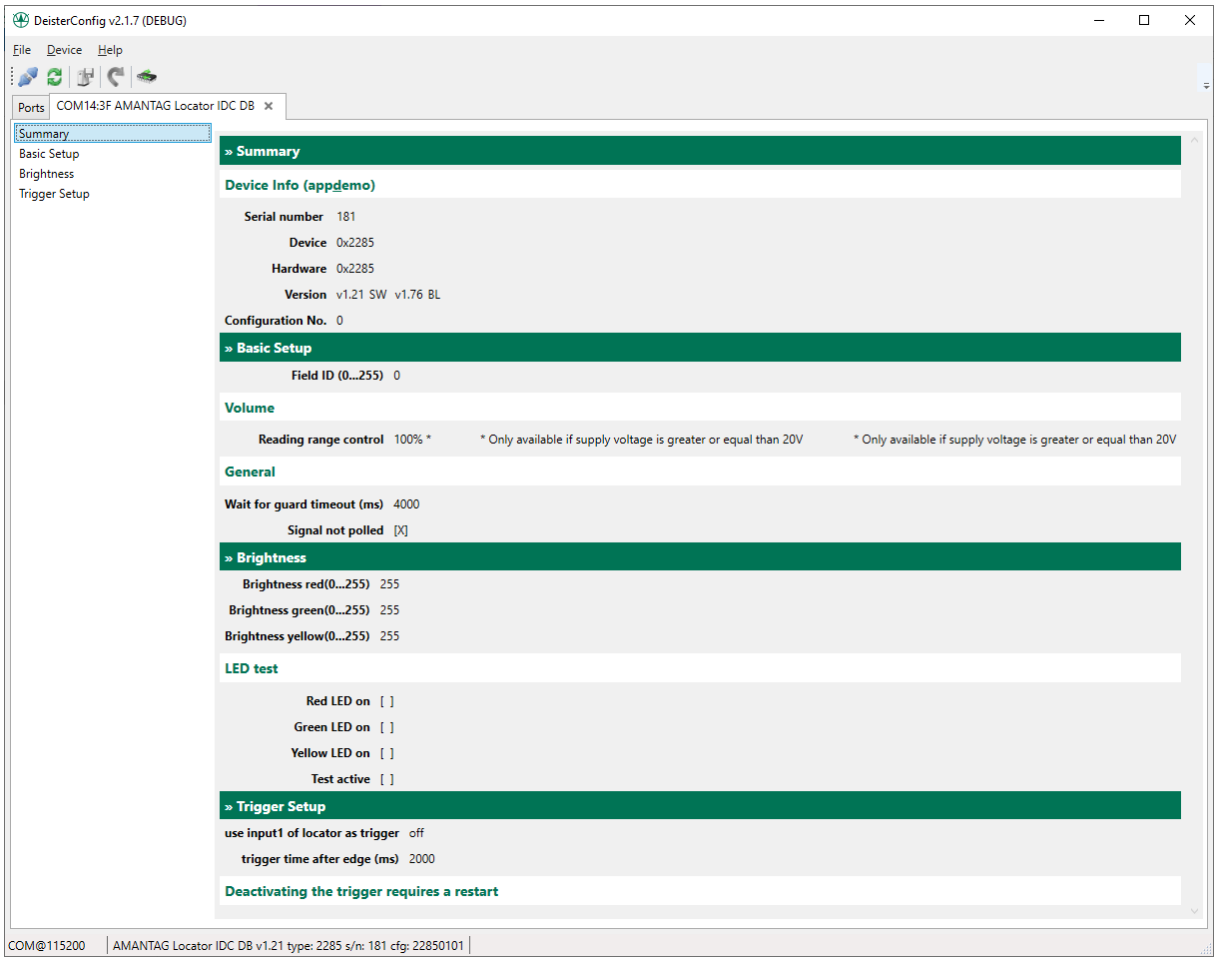
Autotrim is automatically triggered on every startup of the reader.

- Connect the LCA 500 to a communication adapter (e.g.: SNG 3).
- Connect the communication adapter to a PC.
- Supply LCA 500 with DC Voltage 12...24V.
- Launch *DeisterConfig.exe*
- The following start screen appears:



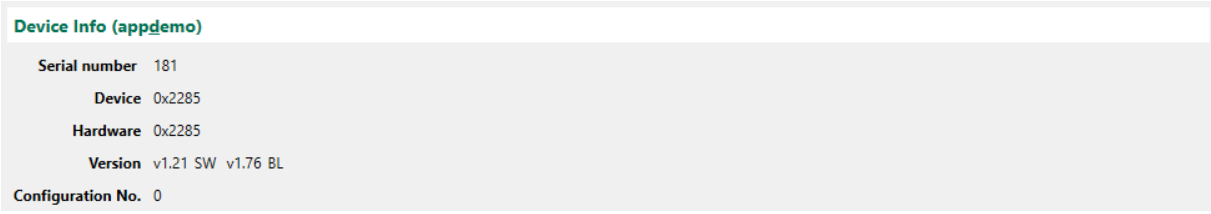
- The content of the start screen depends on the connected devices.
- In this example the LCA 500 is connected to COM8.
- Double click with left mouse button on corresponding COM PORT.

The configuration data of the device is loaded from the device and will be displayed:

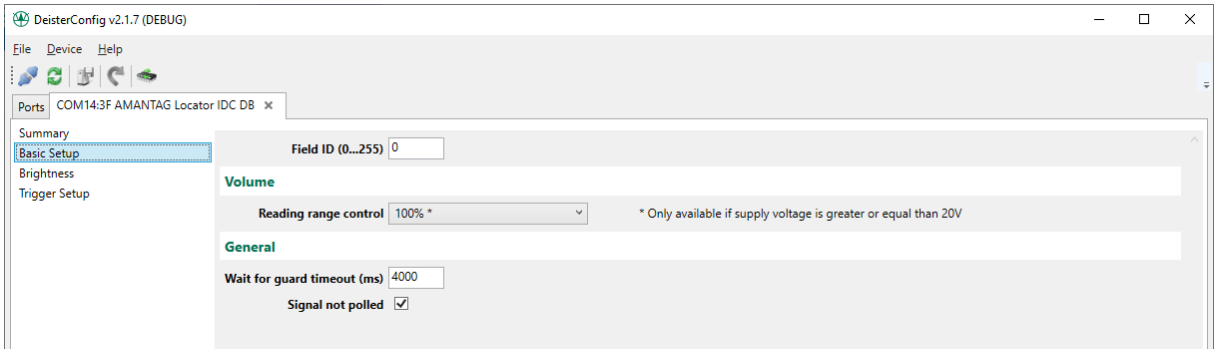


6.2 Device Info

Field Device Info contains information about the device:



6.3 Basic Setup



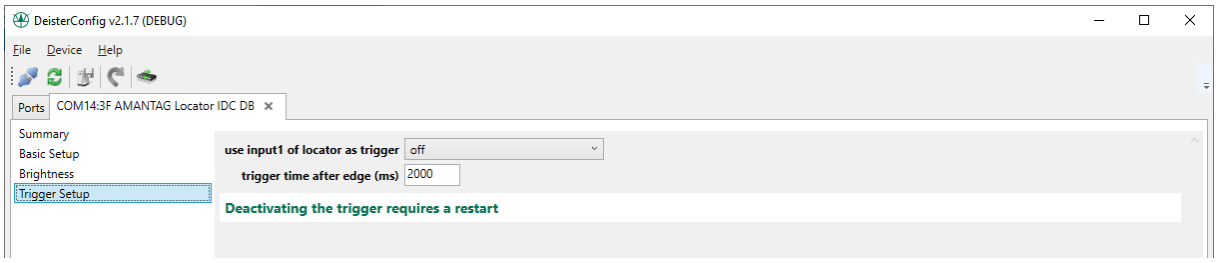
The following parameters may be changed from the Basic Setup panel:

- Field ID: Changing the Field ID is only necessary, if more than one device is mounted within the Radio Range of the transponders. This requires the field ID to be unique.
- Reading range control: This will adjust the read range from 10% to 100%
- Wait for guard timeout (ms): This is the time it takes for the locator to respond when a "Need Guard" transponder enters the field without its "Guard".
- Signal not polled: If this option is activated, the locator signals by flashing yellow when it is not polled.

6.4 Brightness

The brightness of the individual LED colours can be adjusted. LED test can be used to check (first click on test, then the color).

6.5 Trigger Setup



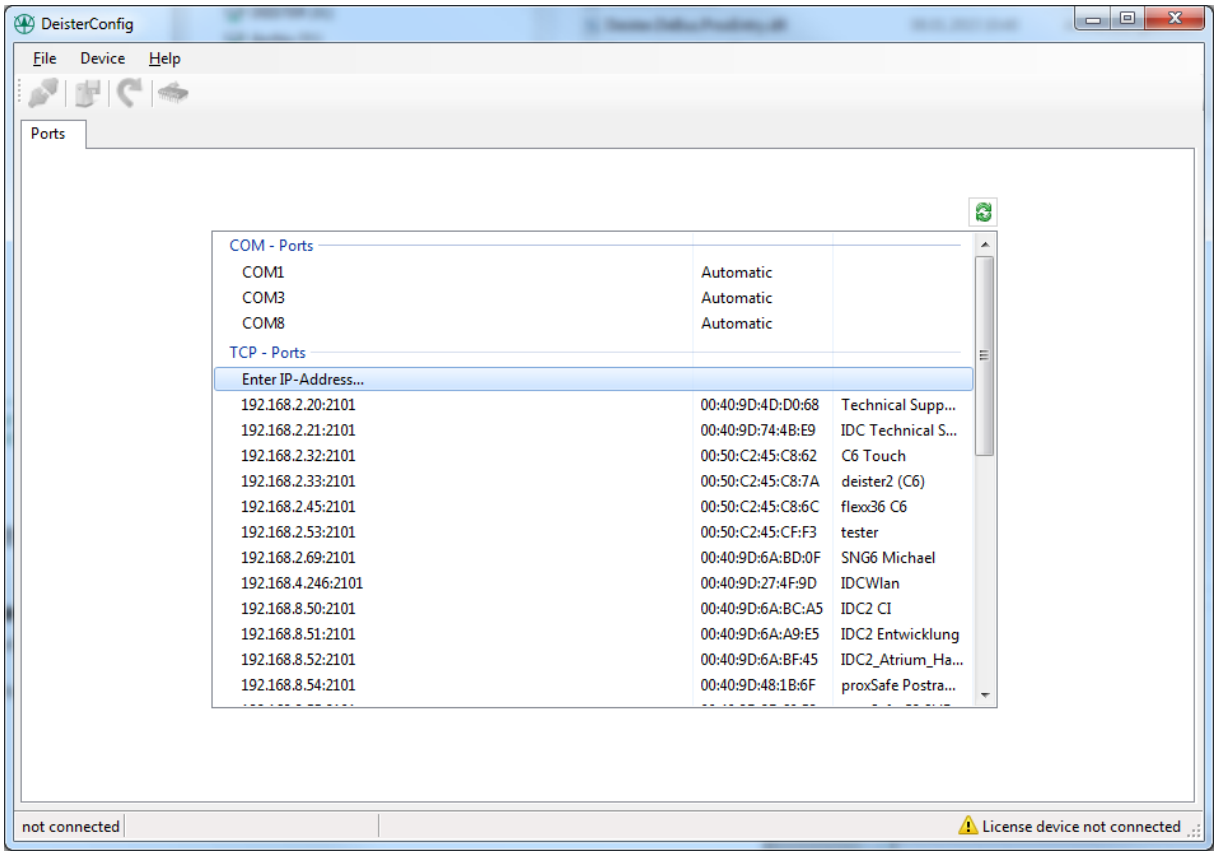
- Use input 1 of locator as trigger: The locator field can be triggered by an external signal on input 1.
- Trigger time after edge (ms): For edge controlled triggering, the time has to be specified.

If the external triggering is deactivated again, the locator must be restarted after saving in order for the option to be accepted.

7. Firmware update via DeisterConfig

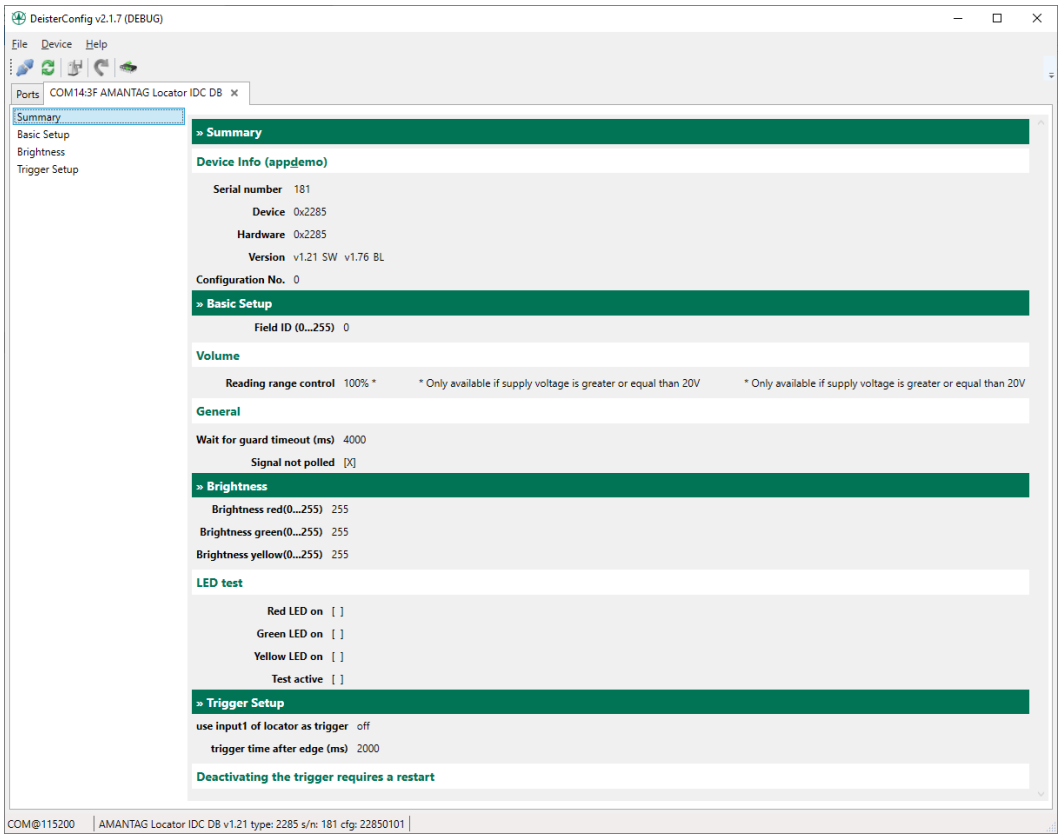
- Connect the locator to a communication adapter (e.g.: SNG 3).
- Connect communication adapter to a PC.
- Supply locator with DC Voltage in the range of 12...24V.
- Launch DeisterConfig.exe.

The following start screen appears:

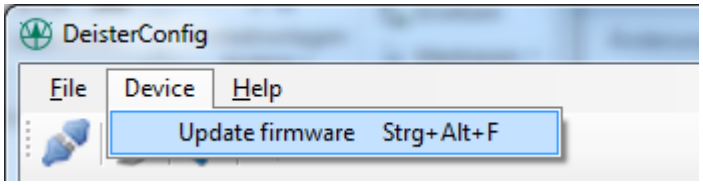


- The content of the start screen depends on the connected devices.
- In this example the locator is connected to COM8.
- Double click with left mouse button on corresponding COM PORT.

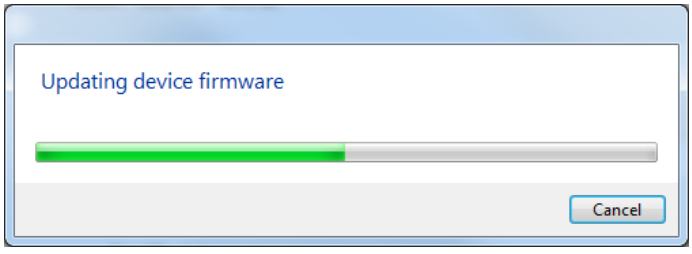
The configuration data of the device is loaded from the device and will be displayed:



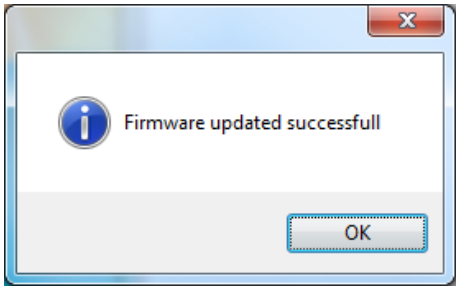
In order to update the firmware of the device, select Update firmware from the menu Device.



Select the folder where the firmware is stored. After double clicking on the file, the update process starts:



After the firmware is updated successfully, the following dialog appears:



8. Installation Instructions

8.1 Possible interference sources

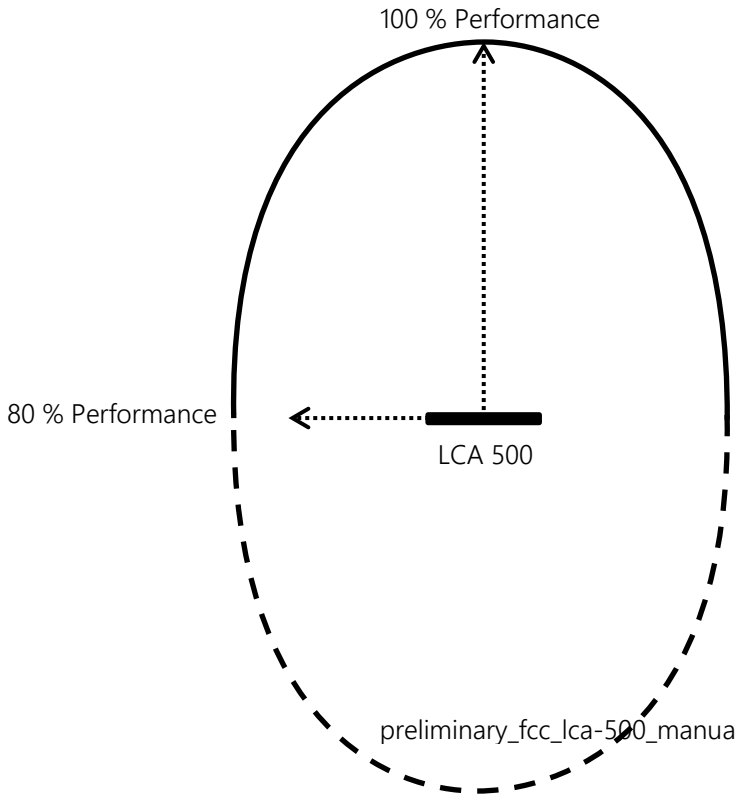
It is possible that external interference sources will influence the read range, e.g. CRT monitors, switching power supplies, power cables parallel to data cables, mounting on metal etc.

In particular, the reader should be mounted on non-metallic material, such as plastic or wood. Metal screws (M6 - ISO 1207, 4762 or 7045) for mounting the reader have an insignificant influence on the read range and may thus be used.

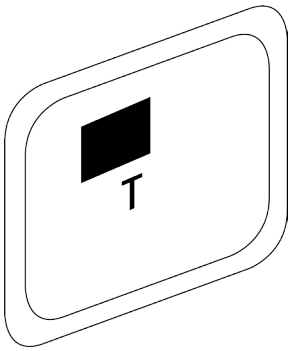
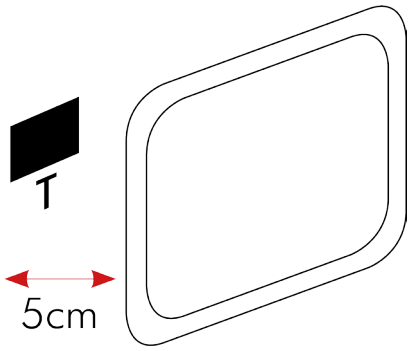
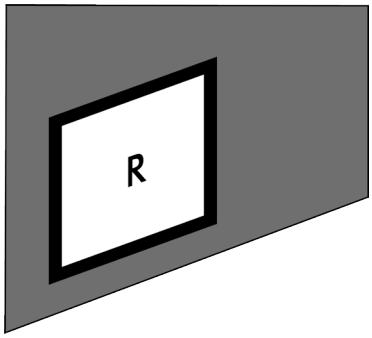
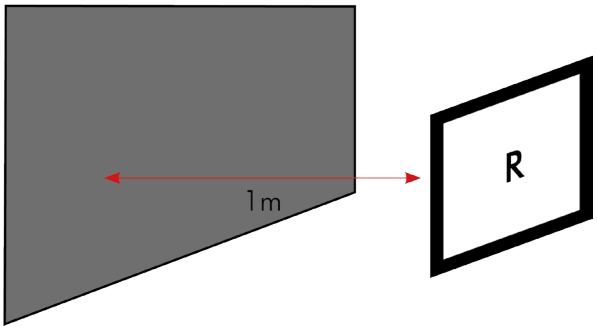
With growing distance between reader and an interference source, the influence decreases. Use only regulated power supplies. deister electronic GmbH offers suitable power supplies. To reduce the influence of external electrical interference, connect the cable shield to ground (GND) of the power supply.

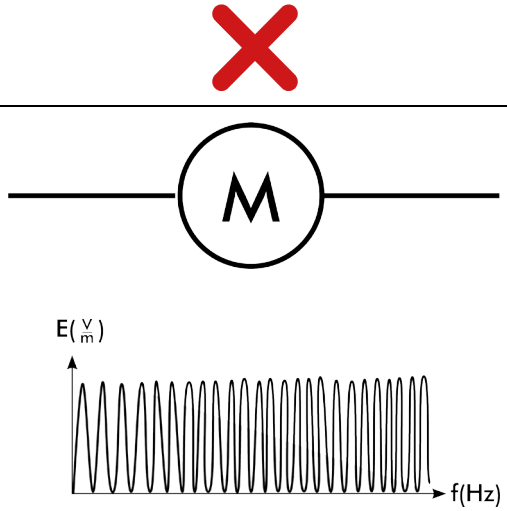
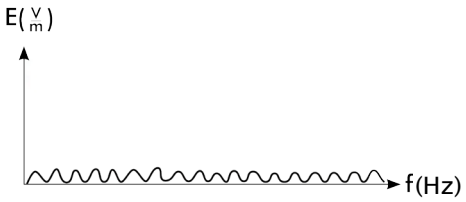
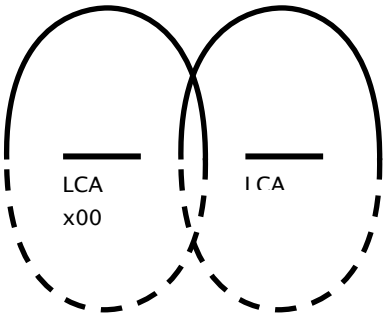
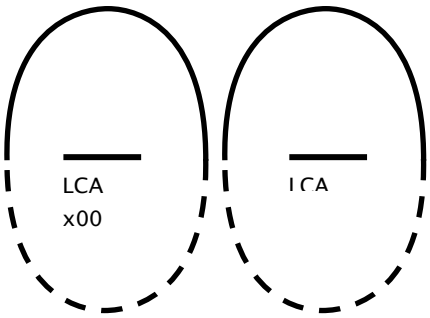
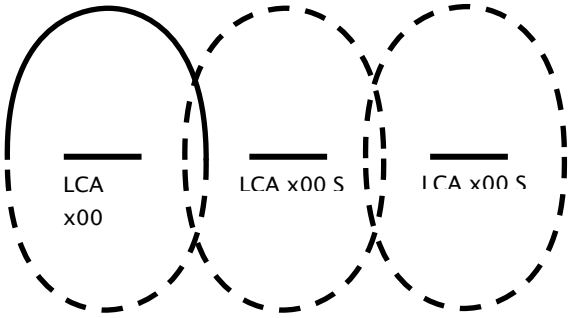
8.2 Field Characteristics

The following diagram shows the read range of the LCA 500. Please note that the read range varies depending on the position of the transponder as shown in the diagram below. The presence of any magnetic material such as steel changes the given shape.



9. Do´s and don'ts

	
Do not place transponder in short circuit coil or in metal frame!	Install transponder in front of or behind the short-circuit coil or metal!
	
Do not install reader directly on metal!	One meter distance to a metal sheet results in a neglectable effect on the field.

	
Do not use near devices that interfere in the range of 125 kHz / 868 MHz (e.g., old forklifts).	No interference in the range of 125 kHz / 868 MHz guarantees optimal performance.
	
The signal energy of one reader interferes with the read/write range of another.	The signal energy from one reader does **not** interfere with the read/write range of the other.
	
	Install LCA x00 Reader and LCA x00 S Active Field Extender as shown if necessary.

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