INITIAL SETUP SPR-203

Version: 1.0

06/10/2020

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1. Introduction

Thank you very much for choosing SLOC.

In this documentation you will learn how to put your product into operation and evaluate the data.

We at SLOC are always trying to make our products as simple and intuitive as possible. However, should you encounter any problems, we are at your disposal.

E-Mail Adress: ***support@sloc.one***

1.1. Commissioning steps

The following steps must be completed to successfully configure the SLOC device:

1. Visit support.sloc.one
2. Download the commissioning documentation
3. Login/registration in the SDM portal (Chapter 2.1)
4. SDM app installation on the Android device (Chapter 2.2)
5. Wake up the SLOC with the magnet (Chapter 3)
6. Configuration of the SLOC with the SDM app (Chapter 4)
7. Check data transmission (Chapter 5)
8. Mounting the SLOC on the vehicle (Chapter 6)
9. Read out the data via BLE (Chapter 7)

1.2. Helpful documents

Download SLOC Software-Manual

2. SLOC Device Management (SDM)

SLOC Device Management consists of a web portal (https://sdm.sloc.one/) and an Android app, which is needed for the configuration.

2.1. First login to the SDM portal

If you purchase your products through SLOC, you have been sent a registration email to register in the SDM portal and assign a password.

If you purchase the product via an external platform, please use the e-mail address with which the order was placed. You will find the password in the product packaging on the enclosed info sheet. You will then receive a registration link and can assign your password.

(Login Screen)

(SDM Portal Homepage)

2.2. App Download & Installation

The app can be downloaded to a smartphone/tablet via the SLOC Support Center (https://support.sloc.one) on a smartphone/tablet by clicking on your product (SPR-203) and then downloading the APK file. This can be done directly from the smartphone/tablet or via a PC and USB cable. Afterwards the app can be installed.

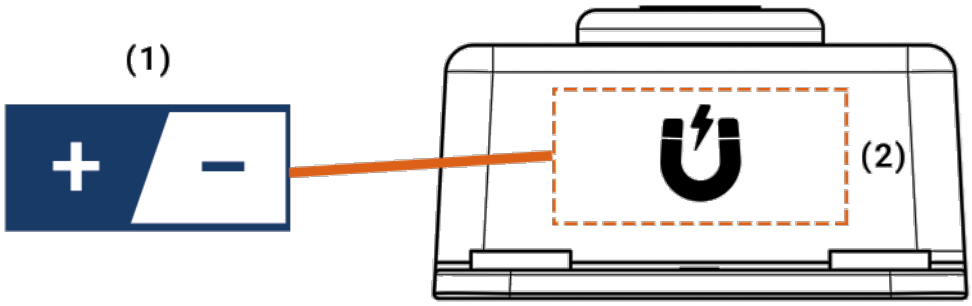
For more information on APK installation, please refer to chapter 3 of the SLOC Software Manuals at support.sloc.one.

3. SLOC activating/deactivating

3.1. Activating:

To configure a SLOC, the transport mode of the SLOC must first be deactivated and/or the BLE visibility must be activated.

To do this, the magnet (included in the scope of delivery) must be placed on that side of the SLOC for at least 2s and, if necessary, moved back and forth on which the magnet symbol is shown (see illustration).



3.2. Deactivating BLE Visibility:

BLE communication is automatically disabled after 60 seconds. After that it can be reactivated with the magnet (see chapter 3.1).

3.3. Transport mode

The transport mode is the mode in which the SLOC is sent (i.e. the SLOC measures and sends no data and consumes no power).

To put an activated SLOC back into transport mode, select the SLOC in the SDM app and click the button "Transportmode on" under "ADVANCE".

4. SLOC Configuration

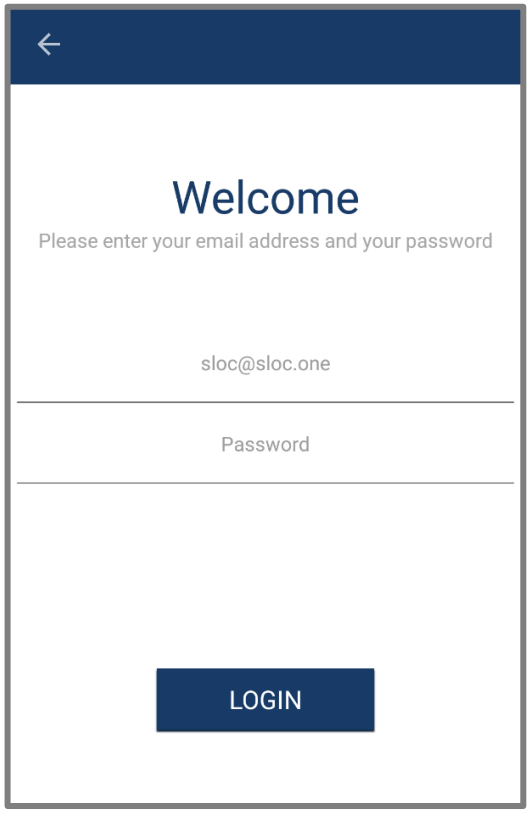
On the following pages the configuration is explained step by step with pictures.

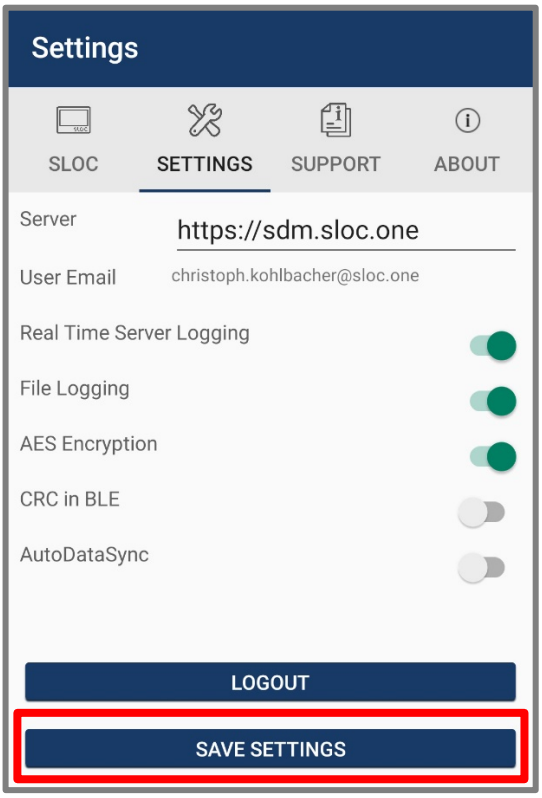
IMPORTANT:

Be sure to configure the SLOC before assembly (see Chapter 5) and check the data transmission (see Chapter 4).

NOTE:

The BLE of the SLOC is deactivated after 60 seconds. If a SLOC is no longer accessible while using the app, wake it up again with the magnet (see chapter 2.1.).

	**Registration in the SDM App:** Use SLOC Device Management login data (see Chapter 1).

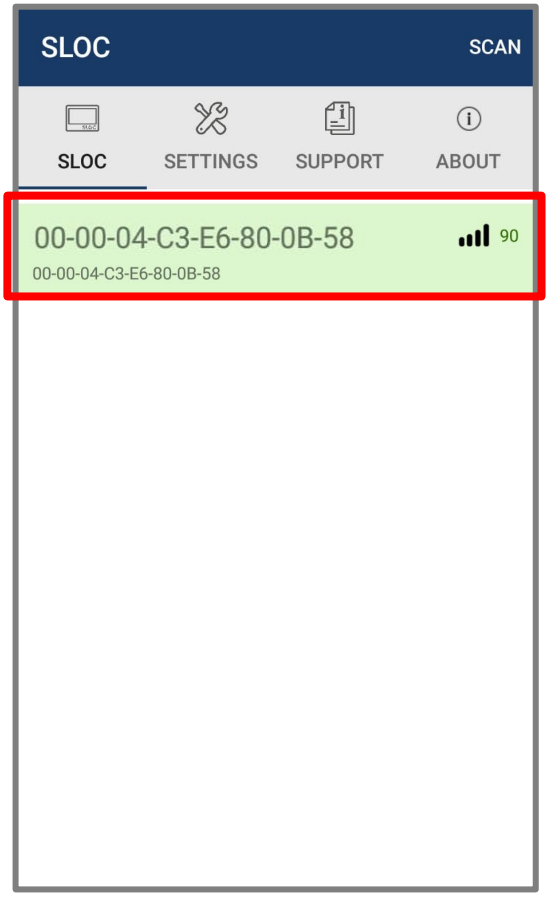


1. SETTINGS:

- Server must be https://sdm.sloc.one
- Other settings as in the picture on the left
- API Key, Organization UUID, Organization and Privileges vary depending on the app token used

2. Scan environment for SLOCs:

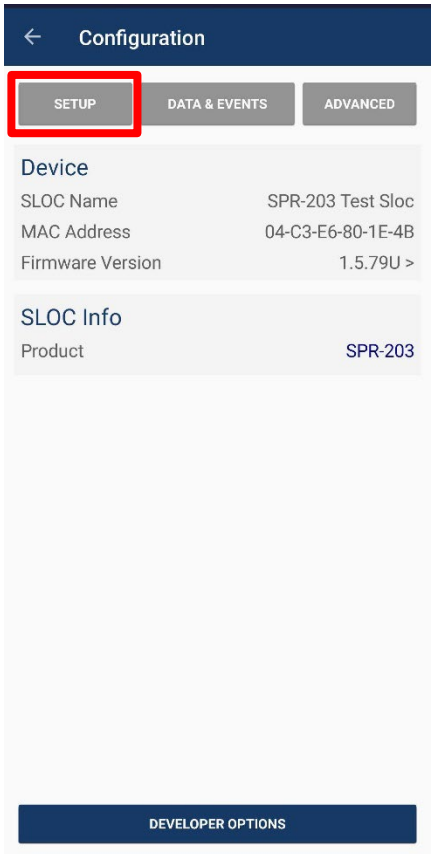
Wake up SLOC (see Chapter 2)
Then → **Click on SCAN**



3. SLOC selection:

→ **Selection of the SLOCs**
→ using the MAC address
(see sticker on SLOC)

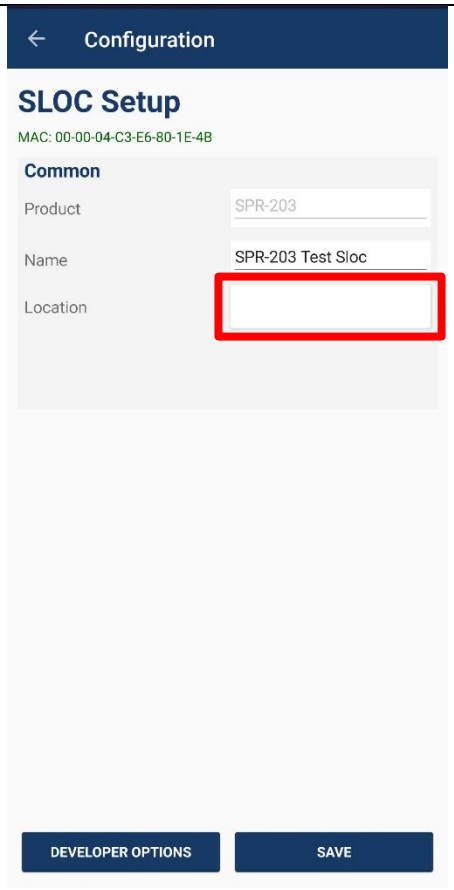
Note:
The BLE of the SLOC is deactivated after 60 seconds. If the app cannot establish a connection, the SLOC must be reactivated with the magnet.



4. HOMEPAGE - SLOC

→ **Click SETUP**

Note:
If the SLOC has never been configured before, step 5 (setup page 1/2) is displayed directly.

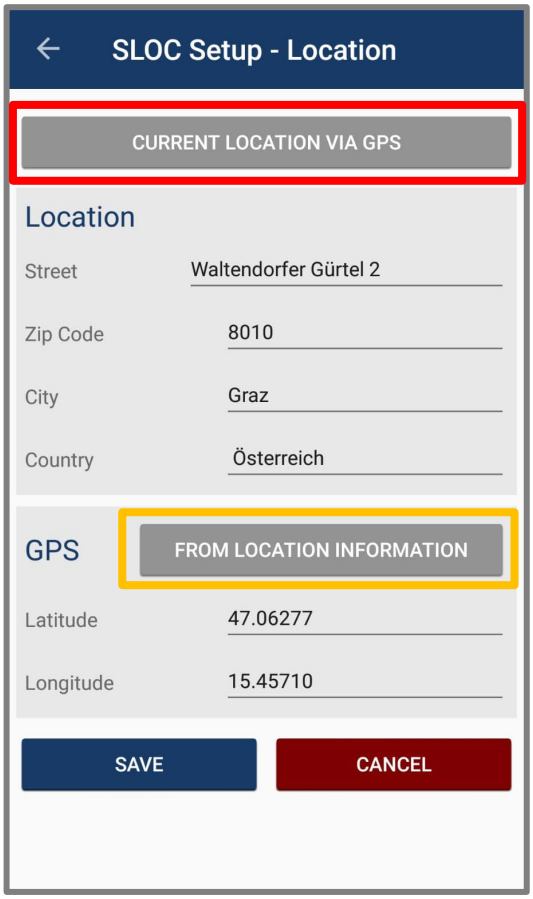


5. SETUP 1/2:

Product:
SPR-203 (cannot be changed)

Name:
Can be changed as desired

Location:
Optionally a location can be entered
→ **Click next to LOCATION**



Note: Steps 6-7 are only displayed when clicking next to LOCATION and can be skipped if no location is desired.

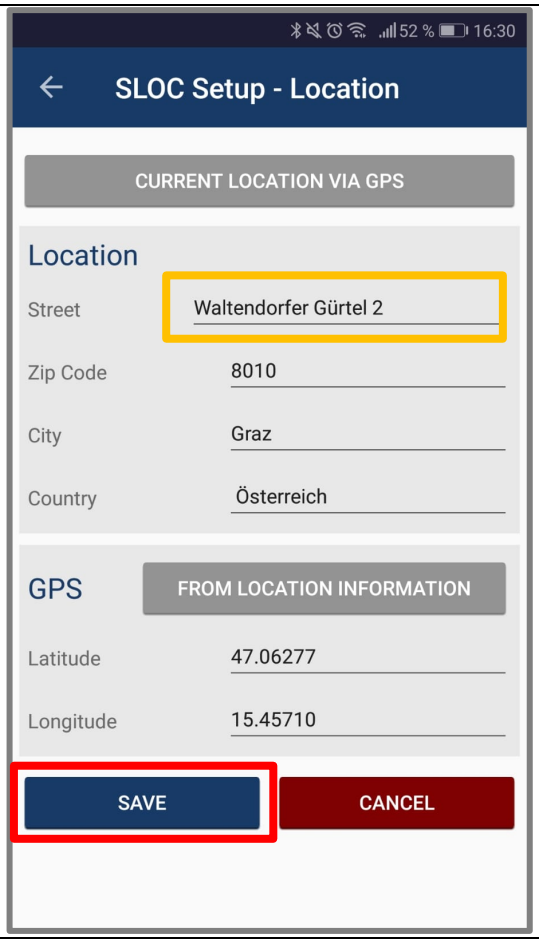
6. LOCATION 1/2:

Variant 1 (directly at the location):

→ Switch on GPS
→ **Click on CURRENT LOCATION VIA GPS**
→ Wait - GPS needs some seconds

Variant 2 (in preparation):

→ Enter address
→ exactly according to the following scheme: address: house number, postal code, city, country
→ **Click on FROM LOCATION INFORMATION**
→ wait until GPS coordinates are loaded

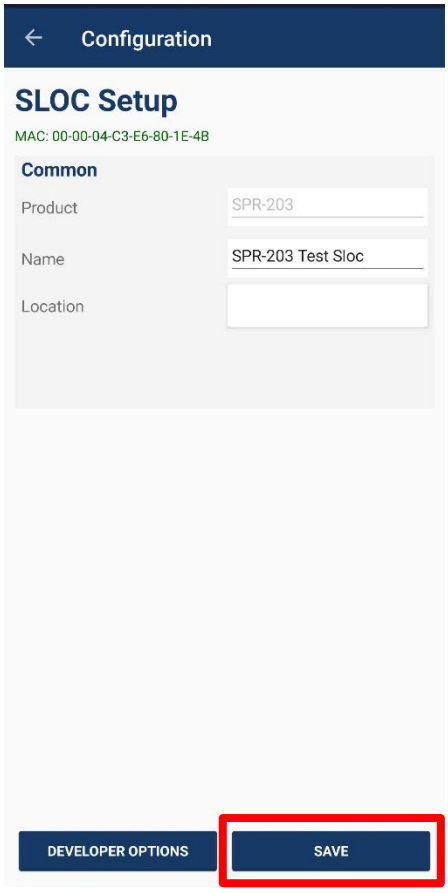


7. LOCATION 2/2:

→ Check the address for "Current Location via GPS"

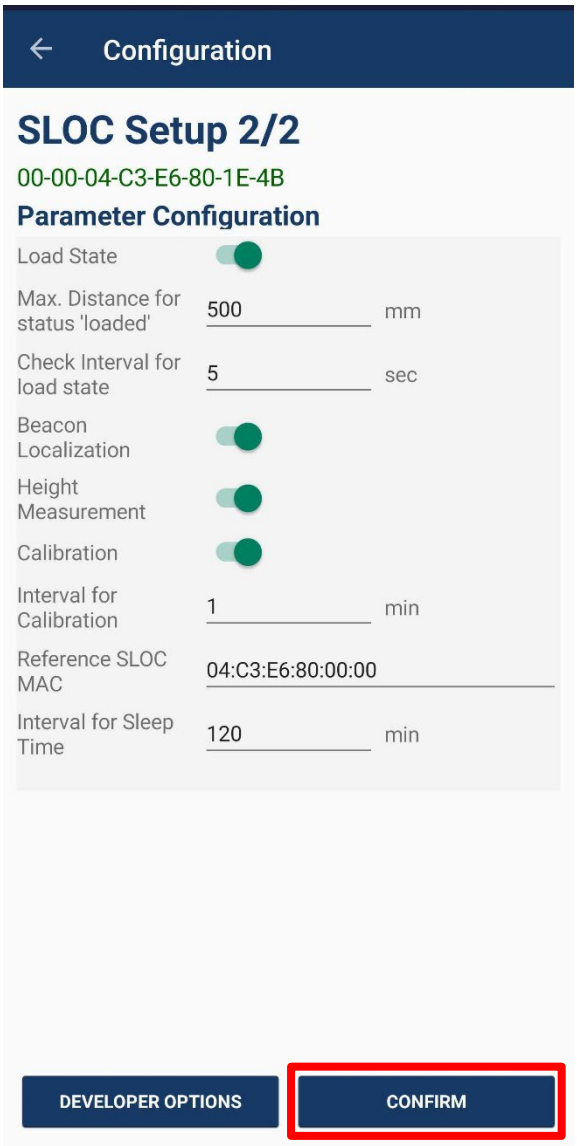
→ **if the address is not correct, change it manually**

→ **Click on SAVE**



8. SETUP 1/2

→ **Click on SAVE**



Load State:
Enabled: Load state is measured and determined in intervals

Max. Distance for status “loaded”
Distance (in mm) from SLOC at which the condition is considered loaded

Check Interval for load state:
Time interval (in sec) in which the load state is redefined

Beacon Localization:
Activated: SLOC permanently scans for SPR-203 reference near the position determination

Height Measurement:
Activated: SLOC measures and advertises its lifting height when moving

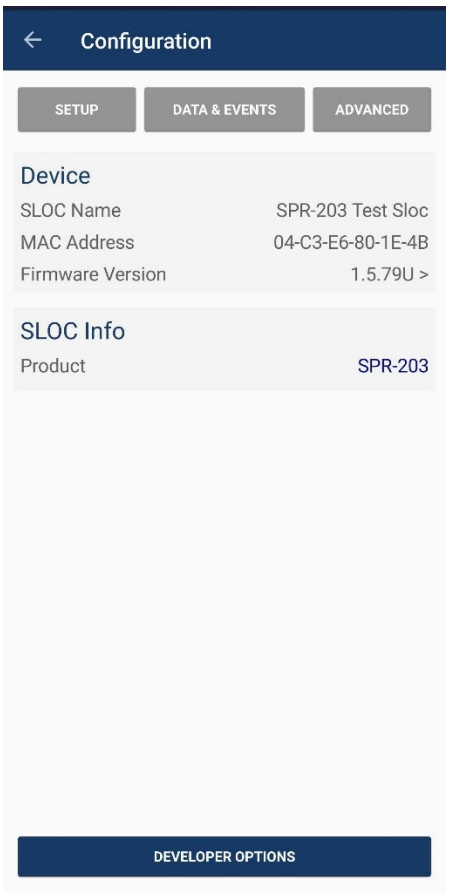
Calibration:
Active: SLOC calibrates its current height to 0mm after some downtime

Interval for Calibration:
Time in minutes, which the SLOC must stand still to calibrate to 0mm. (If the actual measured lift height is more than 500mm, the double time is waited until calibration)

Reference SLOC MAC:
MAC address of the corresponding SPR-203 reference.

Interval for Sleep Time
Time in minutes, which the Sloc must be immobilized to enter the energy saving sleep mode. (must be greater than twice the Calibration Time!)

→ Click on Confirm



16. CONFIGURATION COMPLETED

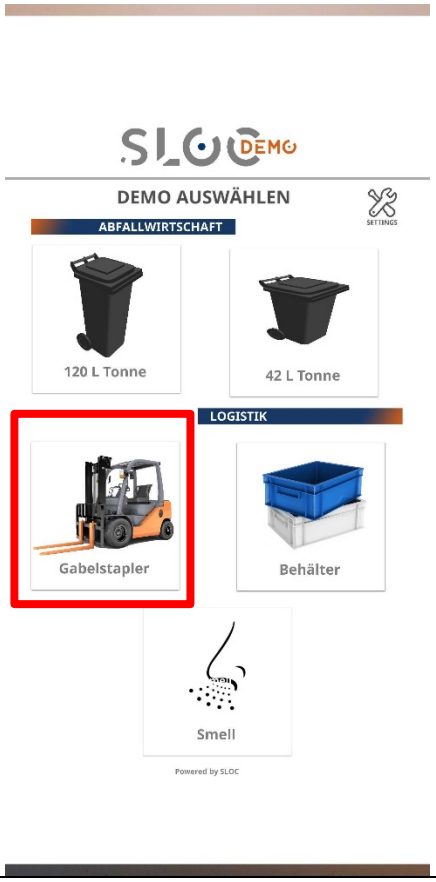
Before assembly (see Chapter 5), the data transmission should be checked (see Chapter 4).

5. Check data transmission

5.1. Download and install demo app

The app can be downloaded to a smartphone/tablet via the SLOC Support Center (https://support.sloc.one) on a smartphone/tablet by clicking on your product (SPR-203) and then downloading the APK file. This can be done directly from the smartphone/tablet or via a PC and USB cable. Afterwards the app can be installed.

5.2. Reading SPR-203 data with demo app

	**1. Forklift** → **Click on forklift**

2. Select SPR-203 MAC

→ **Click on MAC address of SPR-203**
(queries the advertising of this sloc)

3. Close connection window

→ **Click on SLOC symbol**

4. Verify data

Here now all data are shown, which are advertised.

(Lifting height is only displayed if SPR-203 is within reach and correctly set in setup)

(To calibrate lifting height at current height to 0mm, hold a magnet at the side of the magnet symbol of the Sloc for about 3 seconds)

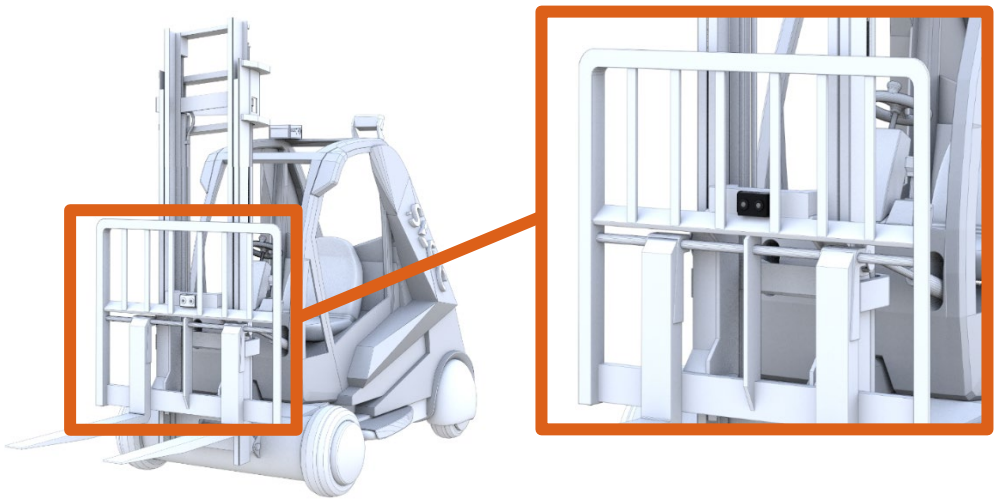
6. Mounting

6.1. SPR-203

The SLOC is mounted in the center of the fork using SLOC Easy Mount brackets (see chapter 6.2) or cable ties (see illustrations).

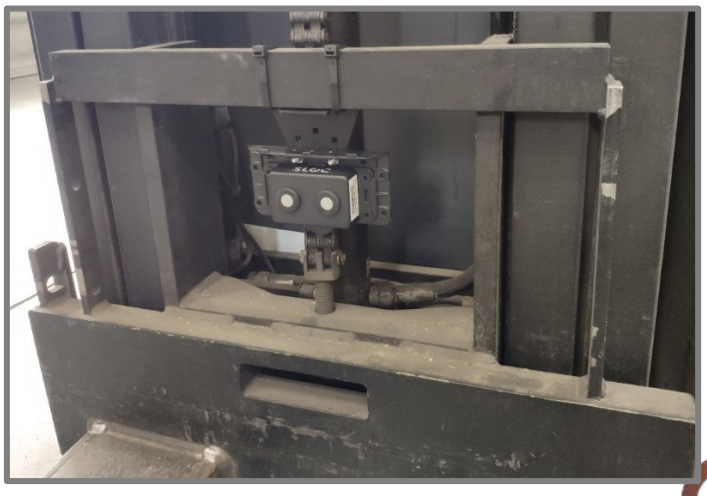
Mounting instructions:

- The SLOC must be mounted with the logo visible at the top
- Distance between sensor and pallet / container should be at least 5cm
- The measuring range of the ultrasound must not be blocked by an object

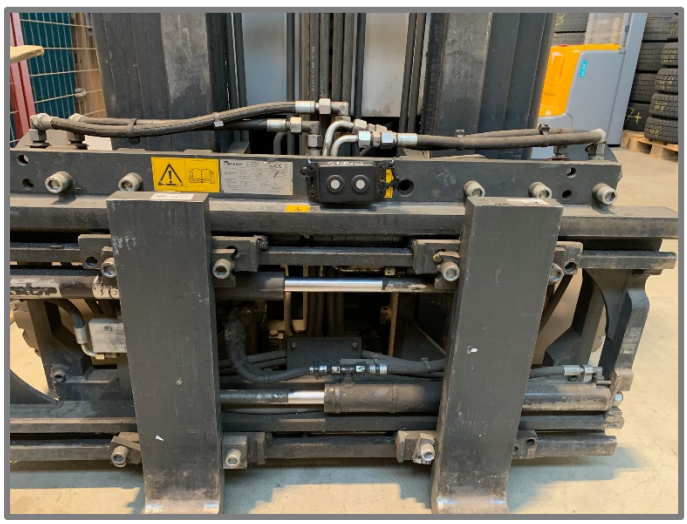


SLOC Easy Mount:

- 2 SLOC Easy Mount brackets are included in delivery.
- With these brackets an easy installation is guaranteed.
- The SLOC can be quickly removed thanks to the clip holder and e.g. batteries can be changed.



Mounting with cable ties:



6.2. SPR-203 Reference

The associated SPR-203 Reference should be mounted as close as possible to and at the same height as the SPR-203 on 0mm.

For this purpose cable ties or the SLOC Easy Mount can be used again. The SPR-203 Reference should be mounted at a non-moving place (no stroke).

7. Read out the data via BLE

In this chapter the structure of the advertisement package, which the SLOC sends via BLE, is described in detail.

7.1. Package structure

Byte	Content
0 bis 6	HEADER
7 bis 12	MAC Adress
13	Type - 0x05
14	Loading condition
15	Motion state
16 bis 17	Lifting height
18 bis 19	Distance
20 bis 23	Acceleration (shock)
24	Battery status in percent
25 bis 30	MAC of the Location Beacon

Except for the own MAC address (Byte 7 to 12) all data types are transmitted in Big Endian format.

Example - Complete BLE package including header:

Adv PDU Type	Adv PDU Header				AdvA	AdvData
	Type	TxAdd	RxAdd	PDU-Length		
ADV_IND	0	0	0	37	0x04C3E68015AF	02 01 05 1B FF FF FF AF 15 80 E6 C3 04 05 01 01 00 00 00 3C 3F 64 77 BE 00 04 C3 E6 8F F0 52

7.2. MAC - Adress

For compatibility reasons with the SLOC configuration - APP the MAC address is also transferred in the payload.

Example – MAC 04:C3:E6:80:15:AF

AdvData

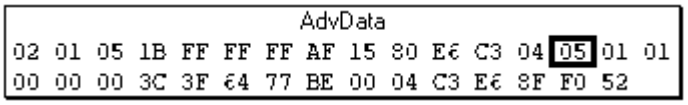
02 01 05 1B FF FF FF **AF 15 80 E6 C3 04** 05 01 01
00 00 00 3C 3F 64 77 BE 00 04 C3 E6 8F F0 52

7.3. Type

The type depends on the SLOC product used. The SPR-203 described in this document uses type 0x05.

Datatype: uint8

Example – Type 0x05:



7.4. Loading status

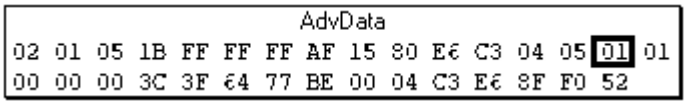
If an object is detected within 30cm, the status changes to Load.

0… Unloaded

1… Loaded

Datatype: uint8

Example – Loaded (0x01):



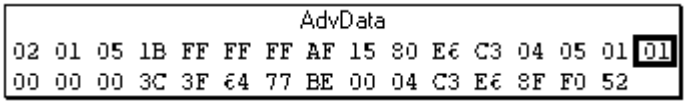
7.5. Motion state

0… Standstill

1… Motion

Datatype: uint8

Example – Moved (0x01):

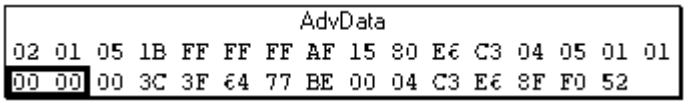


7.6. Lifting height

The lifting height is transmitted in millimeters (mm). If the SLOC does not support lift height measurement, 0x0000 is always transmitted. If the reference SLOC cannot be reached, 0x8000 is transmitted.

Datatype: int16

Example – 0mm (0x0000):

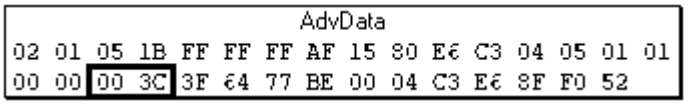


7.7. Distance in mm

The distance measurement to the object is transmitted in millimeters (mm).

Datatype: uint16

Example – 60mm (0x003C):

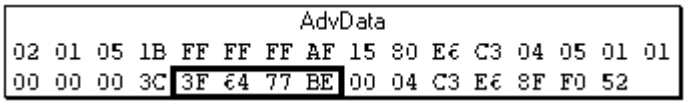


7.8. Acceleration (shock)

The maximum acceleration that has occurred within the last 5 seconds is given in G.

Datatype: float (IEEE-754)

Example – 0.89G (0x3F6477BE):

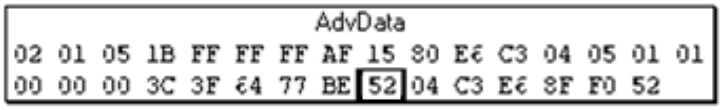


7.9. Battery status in percent

The charge level of SLOC batteries in percent

Datatype: uint8

Example – Battery status 82% (0x52):

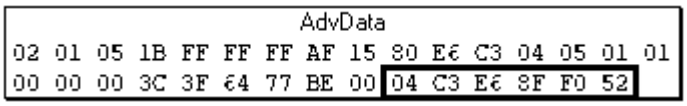


7.10. Current position

MAC address of a recognized SBC-203. If several SLOC - Beacons are recognized at the same time, the one with the largest signal strength is selected. If no SLOC beacon is detected, 00:00:00:00:00:00 is advertised.

Datatype: 6 Byte

Example – Beacon MAC 04:C3:E6:8F:F0:52



8. Legal regulations

8.1. Declaration of conformity

Any changes or modifications not expressly approved by SLOC could void the user's authority to operate this equipment. There are no serviceable parts included.

EC – Konformitätserklärung / EC – Declaration of Conformity

SLOC GmbH Waltendorfer Gürtel 2, 8010 Graz, Austria, +43 316 395 396, office@sloc.one

SLOC GmbH hereby declares that the product

Basic Model:	SLOC-200-1
Hardware Type:	SLOC-200 ALL Components
Series:	200
Side Models:	SWB-200, SSC-200, SPR-200, STR-200, SLC-200, SCT-200, SMO-200

to which this declaration relates is in accordance with the provision of the following directives:

2014/53/EU Radio Equipment Directive-RED
2011/65/EU ROHS Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment and is in conformity with the following standards or other normative documents:

EN 62368-1:2014/AC:2015	Audio/video, information and communication technology equipment — Part 1: Safety requirements Electromagnetic compatibility and radio spectrum Matters (ERM); Part 1: Common technical requirements
EN 62311:2008	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz-300 GHz))
EN 301 489-1 V1.9.2	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V1.6.1	Electromagnetic compatibility and Radio spectrum Matters (ERM), Electromagnetic Compatibility (EMC) standard for radio equipment and services, -- Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz
EN 301 489-52 V1.1.0	Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 52: Specific conditions for Cellular Communication Mobile and portable (UE) radio and ancillary equipment
EN 300 440 V2.1.1	Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range
EN 301 511 V12.5.1	Global System for Mobile communications (GSM); Mobile Stations (MS) equipment; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU
EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

8.2. Copyright

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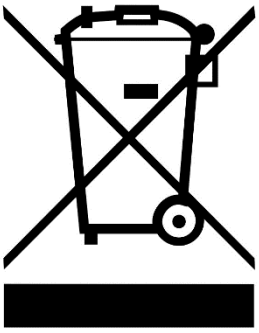
Additionally, SLOC GmbH offers no guarantee nor accepts any liability for damages arising from the improper usage or improper installation of the hardware or software. SLOC GmbH further reserves the right to alter the layout and/or design of the hardware without prior notification and accepts no liability for doing so.

8.3. Disposal



This symbol on the product, the batteries or the packaging means that this product and the batteries it contains must not be disposed of with household waste. Instead, you must dispose of the products and batteries at an appropriate collection point for the recycling of batteries, waste electrical and electronic equipment.

Separate collection and recycling contributes to the preservation of natural resources and prevents harm to human health and the environment from hazardous substances that can be released during the improper disposal of batteries and electrical and electronic equipment.

For more information about collection points for batteries, electrical and electronic equipment, contact your city/municipality administration, waste disposal company, or the dealer from whom you purchased this product.

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