CelloTrack Container Lock Product Overview

Cellocator Division
Pointer Telocation Ltd.

POINTER

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1 Introduction

1.1 About this document

The document describes the CelloTrack Container Lock and is targeted at fleet managers and technical personnel. It includes sections describing the highlights, setting up and installation of the Container Lock.

1.2 Overview

The Container Lock has been specially designed to take advantage of the CelloTrack Power unit and is based on a rugged, strong, weather-resistant enclosure that secures the CelloTrack unit from harsh blows and enables it to be quickly and easily installed on container doors. This enables the tracking and monitoring through strategically located sensors of any tampering or unauthorized attempts to open the container doors.

Working together with a CelloTrack unit, its main purpose is to monitor and control cargo containers throughout the whole supply chain without interfering with logistic operations, such as authorities inspections, transport, loading and unloading, and so on. Because anyone can easily and quickly install or uninstall the Container Lock outside the container, there is no need to open the container for that purpose.

The Container Lock enables AVL and security service companies to offer a whole new set of innovative services, since it enables the customer (Cargo Owner) to control and monitor its own cargo independently from the vehicle that transports it (ship, truck, train, etc). It also ensures there is tracing and evidence throughout the whole supply chain (in warehouses, routes, ports, parking lots, etc), helping identify bottlenecks and cost-saving opportunities, as well as effectively securing their cargo from thieves and drug smuggling.

1.3 Highlights

◆ Supports the rich functionality of the CelloTrack Power unit, such as movement detection, controlling transmission rate, three year battery life, IP67, and more.

◆ Strong, rugged design enclosure that protects the CelloTrack from harsh blows.

◆ Opening/closing lock detection.

◆ Quick and easy installation process without the need to open the container.

◆ Battery charged via an external connector, without a need to open the lock.

1.4 Abbreviations

Abbreviation	Description
GPS	Global Positioning System
ISO	International Organization for Standardization
GSM	Global System for Mobile Communications

1.5 References

#	Reference	Description
1.	CelloTrack T Installation Guide	
2.	CelloTrack T Family Overview	

1.6 Revision History

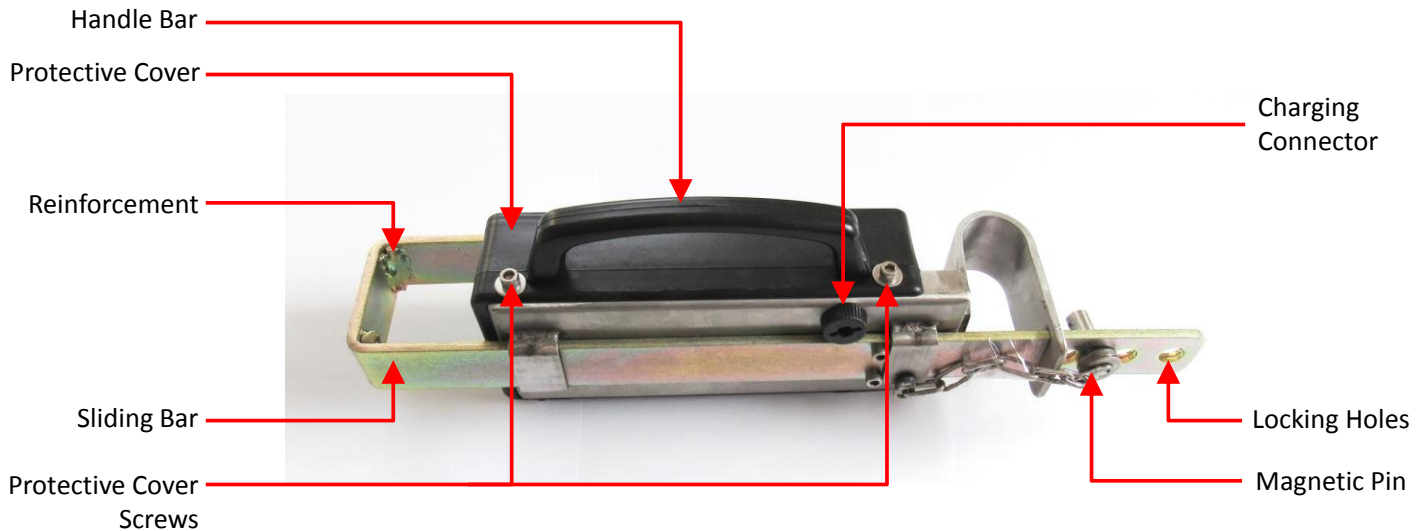| Version	Date	Description
1.0	25/10/2010	Preliminary draft.
1.1	01/11/2010	Adding the Connection Scheme chapter and editing.
1.2	13/12/2010	Add installation pictures. Define charger requirements. Add product PN.
1.3	11/08/2015	Updated for Container Lock V4

2   Product Description

2.1   Container Lock

Figure 1: The CelloTrack Container Lock

♦ **Sliding Bar:** This bar slides to lock / unlock the Container Lock on the container doors. When the bar slides to the "closed" position, the Container Lock detects that it is locked. When the bar slides to its "open" position, the sensors trigger to indicate that the Container Lock has been unlocked.

♦ **Protective Cover:** Highly resistant design and materials protect the CelloTrack device from harsh blows.

♦ **Handle Bar:** Helps to easily maneuver the Container Lock.

♦ **Charging Connector:** Enables charging of the CelloTrack battery without the need to open the Container Lock.

♦ **Magnetic Pin:** When placed into the locking holes, this pin secures the sliding bar in its "closed" position.

♦ **Locking Holes:** There are three different locking holes available to place the magnetic pin and tightly secure the sliding bar in its locked position.

♦ **Protective Cover Screws:** Opens the cover to provide access to the CelloTrack unit.

♦ **Reinforcements:** Provides additional strength to the sliding bar to prevent it being bent.

2.2   Power Adapter

The power adapter, which can be found inside the Container Lock, is used for charging the CelloTrack battery. It utilizes a connector which fits the Container Lock charging connector; the red wire connects to the charger V+ and the black wire connects to the charger GND.
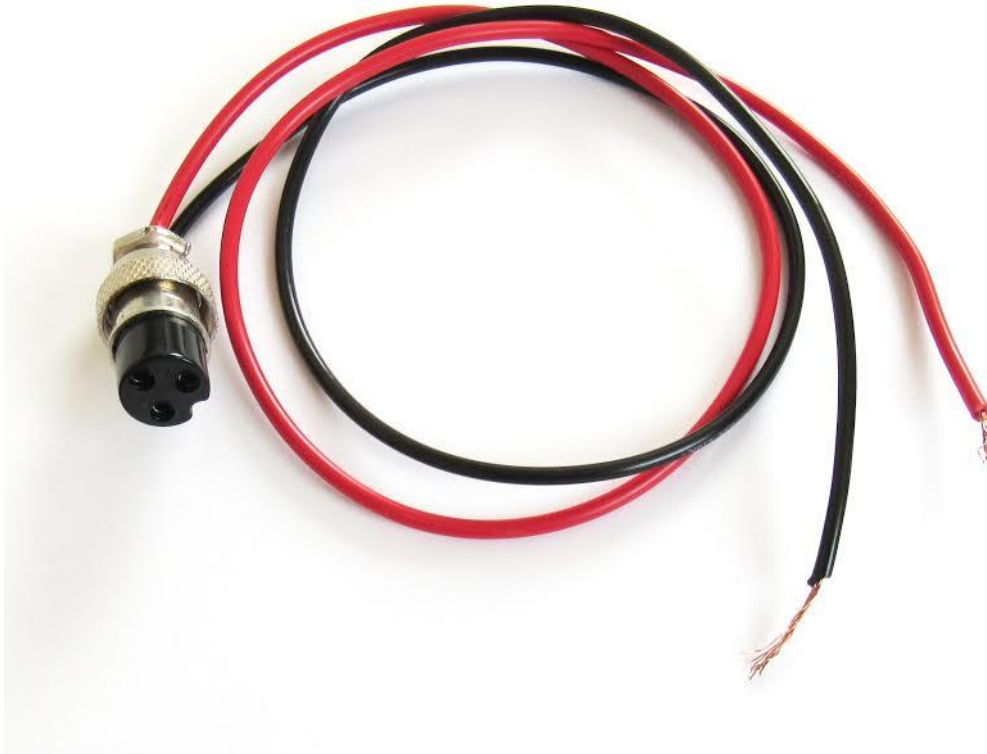

Figure 2: Power Adapter

2.3   Cable Ties and Screws

Two cable ties and several screws, which are located inside the Container Lock, are needed for the Container Lock set up, as described in the *Setting up the Container Lock* section.

3   Specifications

- ◆ CelloTrack Power unit, supporting rich functionality such as movement detection, controlling transmission rate, a three year battery life, IP67, and more.

- ◆ Strong, rugged design enclosure.

- ◆ Reinforced sliding and locking bar to prevent it from bending and being manipulated.

- ◆ Reed sensor switch used for opening/closing lock detection.

- ◆ 3 pin connector with plastic cap for charging the CelloTrack battery.

- ◆ Materials:

  - • Main structure: Stainless steel

  - • Sliding bar: Reinforced HR steel, 6mm thick x 38mm wide

  - • Protective cover: High impact polyethylene

- ◆ Weight with CelloTrack Power unit: 3.5kg

- ◆ Designed to support dry van types of ISO6346 containers.

NOTE: For containers that do not comply with ISO6346, the lock may be less optimal or even not functional.
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4   Setting up the Container Lock

To setup the CelloTrack Power unit, perform the steps in the following procedure.

NOTE: The unit set up should be conducted under lab conditions.
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1. Loosen the lock's four protective cover screws and remove it.

Figure 3: Removing the Protective Cover

The open Container Lock is shown in the picture below.

Figure 4: Container Lock Opened

2. Carefully remove the CelloTrack from its cradle.

3. Loosen the CelloTrack unit screws and remove the back cover of the CelloTrack unit.

NOTE: Make sure the SIM card is not PIN protected.
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4. Prepare the SIM card. If the SIM is PIN protected, first insert it into a cellphone and disable the PIN code.

5. Gently insert the SIM card into the SIM holder on top of the modem.

6. Close the unit and make sure not to damage the battery wires while closing it.

7. Insert the eight screws. First, tighten the central screws and then the remaining screws. Tighten screws to a torque of 4 kgf-cm (kilogram force per centimeter) which is approximately 0.4 Nm (Newton per Meter).

8. Replace the CelloTrack device securely back in the cradle, as shown in Figure 4. Make sure that the plastic brackets correctly secure the CelloTrack in its cradle; the unit should "click" into place.

9. Activate the CelloTrack by pressing the Front Button (FB) and holding it for more than 3 seconds. Please refer to the CelloTrack T Installation Guide for more information regarding activating and deactivating the CelloTrack unit.

10. Secure the CelloTrack to the cradle using cable ties, avoiding undesired lock switch activation due to vibrations or harsh strikes.

11. Make sure to arrange the wires according to Figure 4. The Reed sensor wires should be arranged alongside the CelloTrack unit, under the cradle brackets, (and not above the CelloTrack unit).

12. Close the protective cover and tighten its screws.

5   Installation Instructions

The section describes the procedure for installing the Container Lock on a container.

The image below indicates three possible places for installing the Container Lock.

Figure 5: Possible Container Lock Installation Options

To install the Container Lock on a container, perform the following steps:

1. Remove the magnetic pin and move the sliding bar to its "open" position.

Figure 6: Sliding Bar in Open Position

2. Install the Container Lock on the right of the two central container bars, as shown in the following image, and then place the Container Lock between both the central container bars, as shown in Figure 8.

Figure 7: Installing the Container Lock on the Central Container Bars

Figure 8: Installing the Container Lock on the Central Container Bars (II)

3. Move the sliding bar to its "closed" position. Then place the magnetic pin in the locking hole to ensure the sliding bar cannot move, as shown in Figure 10.

Figure 9: Closing the Sliding Bar

Figure 10: Inserting the Magnetic Pin

NOTE: The magnetic pin should **NEVER** be placed in the last hole (fourth on the right). In this position, the Container Lock gives an "open" signal, as this hole is reserved for installing an optional bottle seal, as described in the next step.
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4. As an additional security measure, it is possible to install a bottle seal, as shown in the images below.

Figure 11: Installing a Bottle Seal
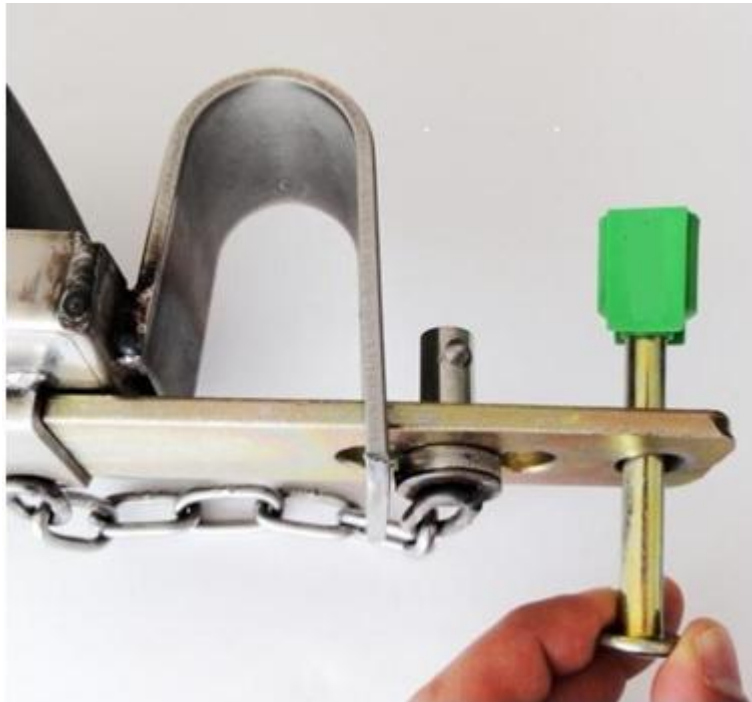
Figure 12: Installing a Bottle Seal (II)

For additional installation instructions and tips, please review the following installation movies:

◆ https://www.youtube.com/watch?v=OkV9S21kIsQ

◆ https://www.youtube.com/watch?v=m9qX5nHH81M

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6   CelloTrack Battery Charging

6.1   Charger Requirements

The power supply for charging the Container Lock battery should be an off-the-shelf charger supporting 12v / 24v and at least 1A. It is recommended that the charger utilizes a LED that indicates when charging is complete.

6.2   Charging Instructions

To recharge the CelloTrack battery, remove the rubber cap of the Container Lock charging connector. Connect the power adapter to the charging connector and connect the power adapter wires to the charger.

To guarantee a full charge, leave the charger connected for at least 24 hours or until the charger LED indicates that charging is completed.