

Tec lock

TL85 Smart Bicycle Lock



Product Manual

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Product Name	TL85 Smart Bicycle Lock
Model and Specification	TL85 MODEL1-2023
Name of Registrant and Manufacturer	Tec-Lock
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01 Introduction

1.1 About the TL85 smart bicycle lock

This manual describes the specifications and user instructions of the TL85 smart bicycle lock.

The TL85 smart bicycle lock (TL85 for short) is a digital lock that can be installed on bicycles and electric moped. It features remote unlocking, RFID card unlocking, Bluetooth unlocking, vehicle positioning, vehicle tracking, sound and light notification, motion detection, OTA firmware updates, fast charging and other functions.

■ Product Appearance



TL85 smart bicycle lock appearance 

■ Function Description

Function	Description
UART Communication	For communication with cabled peripheral devices
Network communication	The TL85 uses the network connection to exchange information (unlock instruction, report location, battery power status, riding status,, ...) with the server
Bluetooth communication	Supports unlocking, debugging mode, iBeacon detection, OTA upgrade
Positioning	It can be set in single positioning and continuous positioning mode. Supports GPS, GLONASS, BD, and A-GNSS
RFID reader	Supports ISO14443-A, ISO14443-B, MIFARE standards
Unlock	RFID unlocking via RFID, network and Bluetooth
Charging	Charge the TL85 with the supplied magnetic charging cable or hook up a Tec-Lock solar panel or an external 5V power supply to the external connector
Firmware updates	The firmware can be updated over-the-air via the network connection or locally via Bluetooth
Motion detection	The TL85 has a built-in acceleration sensor that detects movement. It is used for detecting unauthorised movement (theft)
LED indicator	The different states of the lock are indicated by the LED indicator on the side of the lock
Sound indicator	The lock has a built-in buzzer

1.2 Table of contents

Chapter 2 - instructions on how to use the TL85 lock.

Chapter 3 - overview of the technical specifications.

Chapter 4 - installation and training of TL85 lock.

Chapter 5 - describes the system labels.

Chapter 6 - Provides transportation and storage conditions.

1.3 Important Information

Before using the TL85 lock, you must read this manual in its entirety and pay particular attention to the Notes, Caution and Warning messages.



Note

Important information for the user.



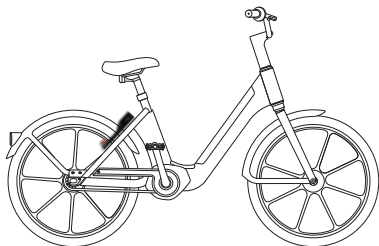
Caution

Please follow these instructions carefully, otherwise the device may be damaged or the environment may be polluted.

02 Instructions for Using the TL85 Lock

2.1 Application

The TL85 smart lock is designed for use on bicycles with tires of up to 80mm wide.



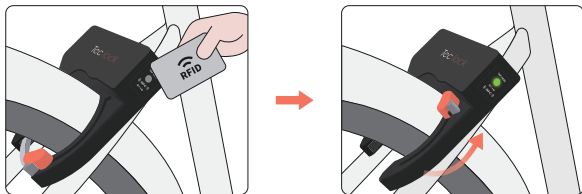
2.2 TL85 lock operations

■ Unlock

The lock can be opened in several ways: with a registered RFID card or with the Tec-Lock app.

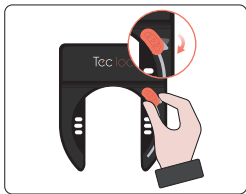
- RFID card unlocking

Hold an authorized RFID card close (<1cm) to the NFC reading area of the lock. When the card is read successfully you will hear a short beep and the LED indicator will light up green. The lock will open instantaneously.

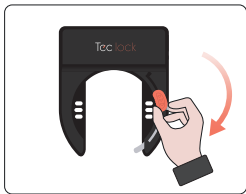


■ Lock

1. Press the button on the handle to release the safety mechanism;



2. Slide the locking bar all the way down to close the lock;



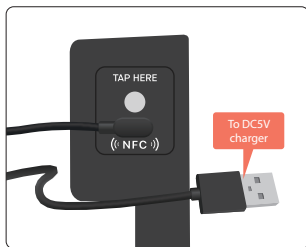
3. You will hear a “click” when the lock is fully closed. The locking bar should stay in the closed position after you release the handle.

■ Charging

The TL85 lock can be charged in 2 ways; with the magnetic connector port at the side of the lock or via the external connector port when connected to a solar panel.

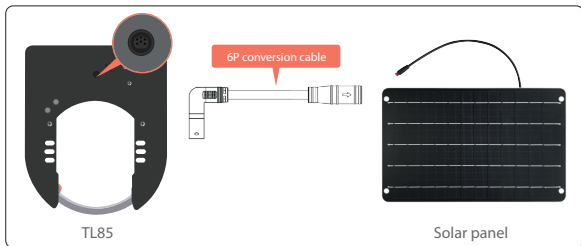
- Magnetic connector charging

Connect the magnetic connector of the dedicated USB cable to the magnetic connector at the side of the lock and plug the USB connector in to a (mobile phone) DC5V charger.



- Cable charging

Cable charging is done by connecting a dedicated 6P conversion cable to the solar panel (DC5V stabilized output) or connecting a dedicated USB charging cable to charge the lock with a DC5V charger.



■ Sound indicator

Status	Beep Action
RFID card read	Beep twice
Received an OTA	Beep twice
Unlock CMD received	Beep once
Report unlocking success	Beep once
Alarm	Parameters can be configured

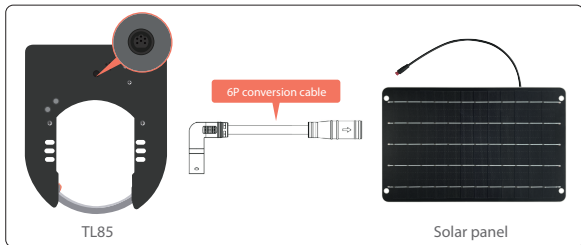
■ LED indicator

Status	LED indicator
Report GPS While riding	Blue - blink twice
Net connection	Yellow-Green - steady
RFID card read	Green - blink twice
During OTA	Red - steady
Received OTA	White - blink twice
OTA success	Blue - steady for 3 seconds
OTA failed	Blue & red - alternating for 3
Receive unlock CMD	Green - blink once
Report unlocking success	Green - blink once
Enter sleep mode	Blue - steady for 2 seconds

External Connection Port

The TL85 lock has a 6 pin port for external connections at the back of the lock. It can be used for charging.

- Connecting a solar panel
 1. Insert the male head of the special 6P conversion cable into the 6P connector on the back of the lock and plug tightly
 2. Connect the solar panel cable with the female head of the 6P conversion cable and plug tightly

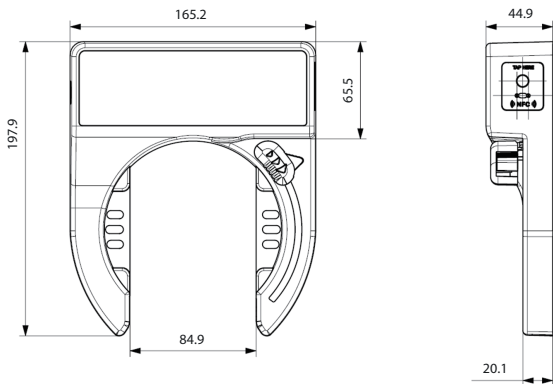


2.3 Disposal

When the TL85 lock is discarded, it should be disposed of according to the local laws and regulations.

03 Technical Specifications

3.1 Product specifications



(Unit: mm)

3.2 Performance parameters

Lock Parameters

Size	165.2 * 197.9 * 44.9mm
Weight	1.1kg
Shell material	ABS
Shell color	Black
6P connector specification	Female, diameter: 8.1mm
Built-in battery	Rechargeable Li-ion, 3.7V
Charging	DC5.0±0.5V / 2A
Waterproof class	IP66
Operation temperature	-10 C ~ +55 C
Working humidity	10% ~ 85%
Storage temperature	-20 C ~ +80 C
SIM card type	Nano SIM

Network performance

GSM	GPRS/EDGE 850/900/1800/1900MHz
CAT-M	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B28 LTE TDD: B39
CAT-NB	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20
CAT-1	LTE FDD: B1/B3/B5/B7/B8/B20/B28 LTE TDD: B38/B40/B41

RFID Performance

Frequency	13.56MHz
Communication protocol	ISO/IEC14443A, ISO/IEC14443B
Card reading distance	< 1CM

■ GNSS performance

Position Type	Support GPS, GLONASS, IRNSS, BeiDou, Galileo, QZSS
Frequency band	GPS L1/L5, GLONASS L1, QZSS L1/L5
Sensitivity	-163dBm (Tracking)
Start-up time	Cold start < 34 seconds, hot start < 2 seconds (Open land, sunny day without shelter)
Accuracy	< 1.5m (Open land, sunny day without shelter)

■ Bluetooth performance

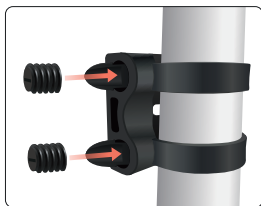
Frequency	2402-2483.5MHz
Communication protocol	BLE4.0
Communication distance	≥8m

04 Installation of the TL85 Lock

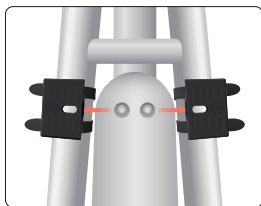
4.1 Installation with mounting set

The Tec-Lock mounting set makes it easy to mount the TL85 Smart Lock on any bike frame.

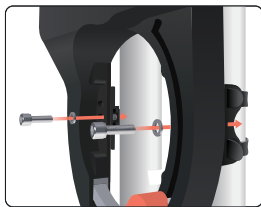
- 1 Wrap the cable ties around the bicycle frame and fix them with black plastic screws



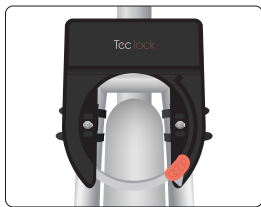
- 2 Put the cable ties behind the lock, align the screw holes, and fix them with screws



- 3 Put the TL85 lock on the cable ties, align with the screw holes and fix them with screws














- 4 Cover the plastic cap and the lock installation is complete



05 System Labels

The following table lists the component labels in the system:

IP66 Waterproofing class	 Production Lot number	 Production date	 Warning or Notice
 See instructions	 Attention to moisture	 Sun protection	 Stacking tier limit
 Handle lightly	 Humidity limit	 Temperature limit	 Pressure limit

06 Transportation and Storage Conditions

6.1 Transportation conditions

- Keep dry during transport.
- Do not ship together with inflammable, explosive or corrosive materials.
- Do not transport together with objects with magnetic field sources.

6.2 Storage conditions

- Temperature $-10 \sim +55^{\circ}\text{C}$, relative humidity $\leq 85\%$, no corrosive gas, well-ventilated and clean environment.
- The TL85 lock should be stored in a dry place away from magnetic field sources.

07 Testing and Certifications

7.1 Testing

- We tested the TL85 lock for continuous lock opening and closing. The test life reached up to 15k times or more. Based on the average frequency of a lock being used 5 times a day, the mechanical life span of a lock is over 8 years or more.
- The TL85 lock passed a continuous 24 hours vibration test.
- TL85 passed the IK10 test.
- TL85 passed the IP66 waterproof test.
- TL85 lock passed the 120H salt spray test (ISO 9227-2012).

7.2 Certifications





www.tec-lock.com