

TM2

Installation, Technical Specifications
and Mounting



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1 Introduction

The TM2 box is developed for a system called ID-Lock Smart.

It is designed for ease of use, flexibility and low cost of installation. The purpose of the system is to prevent accidental access, for example for internal doors in a nursing home. The ID-Lock Smart system and the TM2 box are not suitable for external doors to a residence, home or office that require high security and burglary prevention.

The TM2 box does not have any physical user interface apart from a status LED. To configure the TM2 box, a dedicated configuration application from Tunstall is needed. This guide will only cover the functionality and installation requirements of the TM2 box, not the specifics about the configuration application.

1.1 Safety

Before using this unit:

Read this manual completely and gather all information on the unit. Make sure that you understand it fully. Check that your application does not exceed the safe operating specifications for this unit.

Hazardous voltage may occur within this unit when connected to power supply or TNV circuits.

Prevent access to hazardous voltage by disconnecting the unit from power supply and all other electrical connections.

Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap).

Before installation:

This unit should only be installed by qualified personnel.

1.2 Compliance

Hereby, "TUNSTALL NORDIC AB", declare that this "TM2-box" is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

This "TM2-box" can be used in the following countries: Sweden, Denmark, Finland, Norway, UK, France, Belgium, Netherlands, Luxembourg, Germany, Spain, Portugal, and Italy.

1.3 EU Declaration of Conformity

EU DECLARATION OF CONFORMITY

- 1 **TM2 ID lock** (product name)
- 2 TUNSTALL NORDIC AB, located in Agnesfridsvägen 113A, SE 212 30 Malmö, Sweden (manufacturer, address)
- 3 This declaration of conformity is issued under the sole responsibility of the manufacturer
- 4 Gateway including Bluetooth Low Energy and SRD (868 MHz) RF interfaces
Object of the declaration (identification of product allowing traceability. It may include a photograph, where appropriate):
(picture may be included)
- 5 The object of the declaration described above is in conformity with the relevant Community harmonisation: European Directive 2014/53/EU (RED)
- 6 The conformity with the essential requirements of the 2014/53/EU has been demonstrated against the following standards:

Standard reference	Article of Directive 2014/53/EU
EN 60950-1:2006+A11:2009+A1:2010+A12:2011+AC:2011	3.1 (a): Health and Safety of the User
EN 62311:2008	3.1(a):EMF exposure
EN 301 489-1 v2.1.1 EN 301 489-17 V3.1.1	3.1 (b): Electromagnetic Compatibility
EN 300 328 V1.9.1 EN 300 220-1 v2.4.1 EN 300 220-2 v2.4.1	3.2 : Effective use of spectrum allocated

- 7 **(Only if EU-Type Certificate is issued by Dekra Testing and Certification NB:)**

The conformity assessment procedure referred to in Directive 2014/53/EU has been followed with the involvement of the following Notified Body:

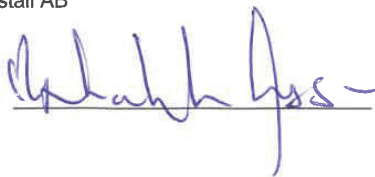
DEKRA Testing and Certification, S.A.U., Parque Tecnológico de Andalucía, C/ Severo Ochoa nº 2, 29590 Campanillas - Malaga
Spain, Notified Body No: 1909

Thus,  is placed on the product

- 8 The Technical Documentation (TD) relevant to the product described above and which supports this Declaration of Conformity, is held at: Tunstall AB, Agnesfridsvägen 113 A, SE-212 37 Malmö

Signed for and on behalf of Tunstall AB

Malmö 2017-06-30



Kristoffer Axelsson

Notified Body No.: 1909

Technical Documentation: xxxxxxxxxxxxxxxxxxxxxxx






2 TM2 components

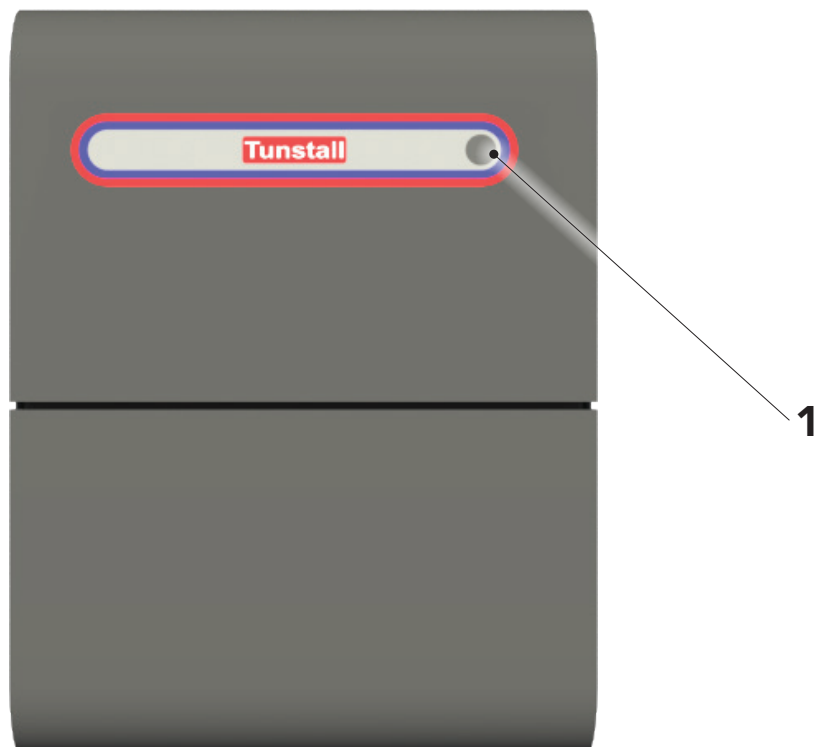
The TM2 unit consists of the following components:

Front:

- a) LED light for status (1)

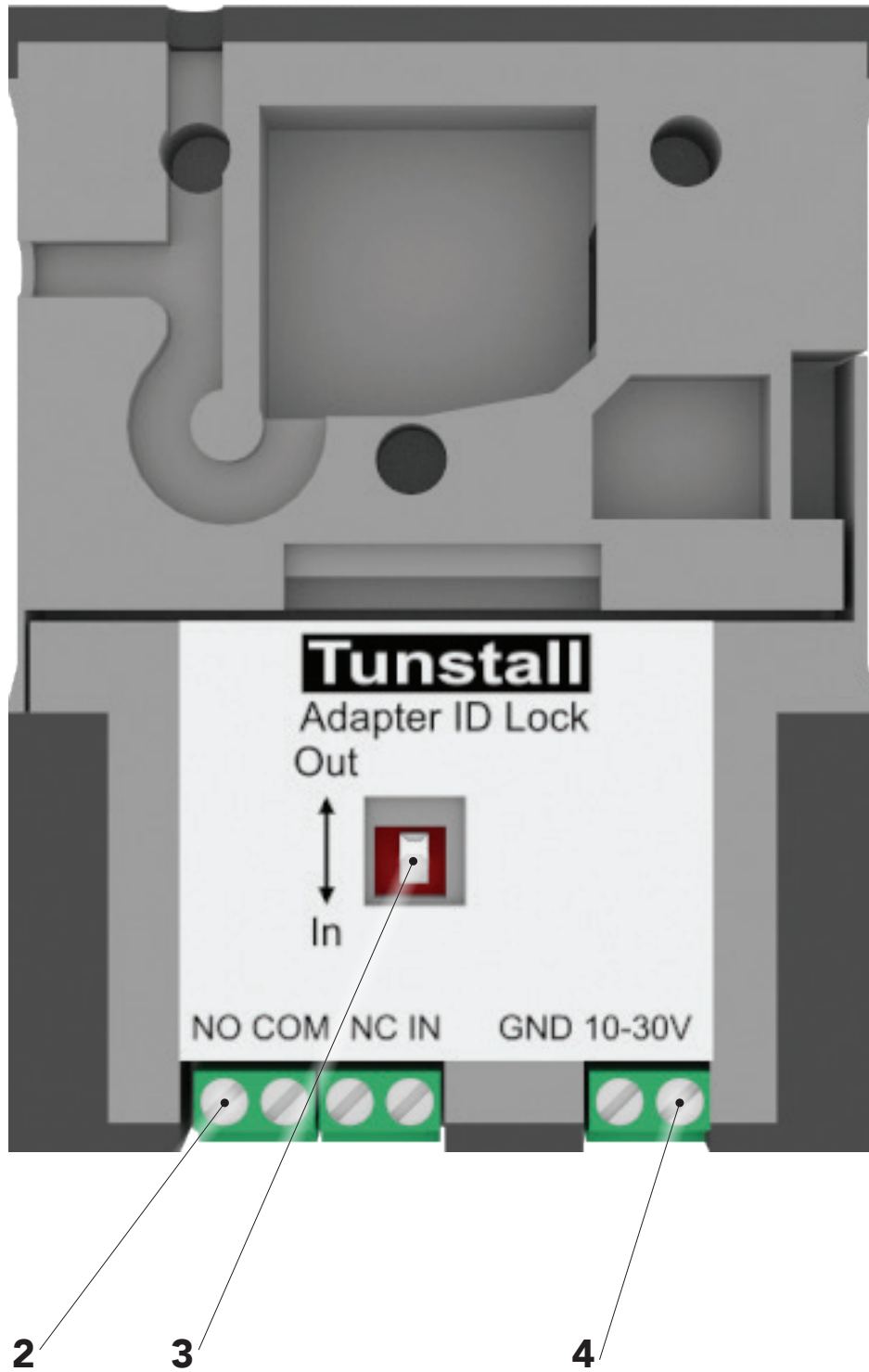
The colour and the display of the LED light indicates the status of the TM2 according to the following:

Colour	Light	Status
GREEN	flashing 	Fast green flash shows TM2 searching for a paired Carelock ACE lock
GREEN	steady 	Connected to a paired Carelock ACE lock or receiving new firmware
ORANGE	flashing 	Slow orange flashing shows TM2 is not connected and not paired to a Carelock ACE lock
ORANGE	steady 	Program mode, connected to a phone in set-up-mode
RED	steady 	Shows the TM2 is in DFU-mode, ready to receive new firmware.



Back:

- b) I/O ports terminal (2)
- c) I/O switch (3)
- d) Power supply terminal (4)



3 Functionality

The TM2 box acts as a bridge between a paired Carelock ACE lock and other Bluetooth devices. It can also send “open” commands to a connected Carelock ACE lock upon receiving a signal from a Tx75 transmitter or a pulse from its wired input connector. The TM2 box can also be used for transforming a Tx75 signal into a wired signal, for example to open an electric strike lock.

3.1 Bluetooth

Once a Carelock ACE lock is paired with the TM2 box (over Bluetooth), the two devices are constantly connected to each other until the pairing is removed. If the connection is broken (e.g. due to power outage or Bluetooth signal out of range), it is restored as soon as both devices are powered on and close to each other again.

The Carelock ACE lock can only be connected to one Bluetooth device at a time. A controlling Bluetooth device, such as a phone running the TES App or a Bluetooth remote control transmitter, will therefore not be able to communicate directly with the lock when it is connected to the TM2 box. Any Bluetooth communication must go through the TM2 box.

3.2 Tx75 and IDT

The TM2 box recognizes two different types of Tx75 messages; auto-alarms and push-button alarms.

In a typical ID-Lock Smart installation in a nursing home for elderly, you would have two types of Tx75 transmitters. One for the residents that automatically transmits an auto-alarm as they approach an IDT position transmitter, and another type of Tx75 transmitters for the staff that transmits a push-button alarm when they press the transmit button near an IDT.

The Tx75 alarms include information about the ID of the transmitter itself, the transmitter’s domain and the ID of the IDT. The TM2 box can be configured to recognize a specific combination of these three parameters, allowing a precise combination to open the connected Carelock ACE lock.

There are 5 memory positions for resident transmitter IDs (resident auto-alarms) and 5 positions for different staff transmitter IDs (staff push-button alarms). Each memory position accepts a range of IDs, and the ranges can be overlapping.

There is only one memory position that can be configured for the domain and one memory position for the IDT’s ID.

4 Specifications

4.1 Electrical specifications

TM2 is designed to be used in an installation with long cables attached.

Power supply: 10 – 30 V DC, < 350 mA

Output:

Relay (COM, NO, NC) which can withstand 10 – 30 V DC, 1A

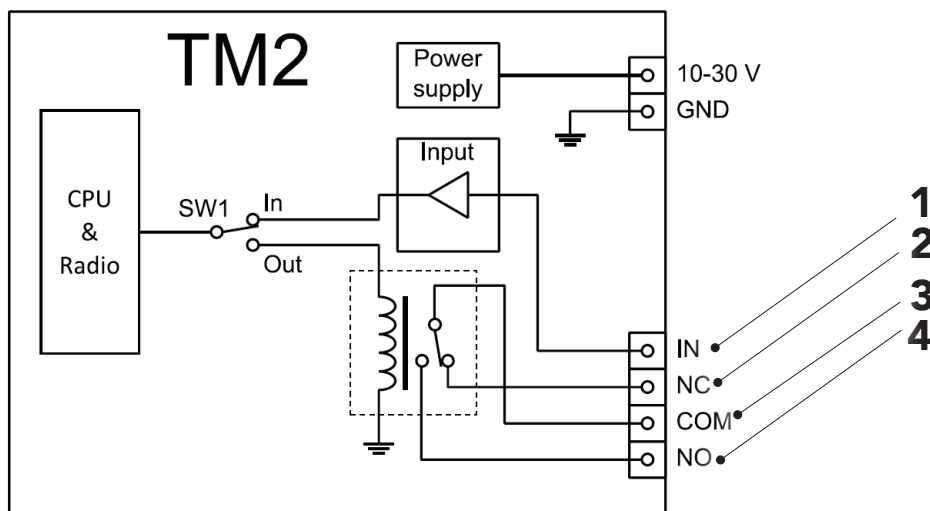
Input:

10 – 30 V DC or float / not connected corresponds to high signal

0 – 3 V DC corresponds to low signal

Electrical wiring diagram:

- a) Input (1)
- b) Normally Connected (2)
- c) Common (3)
- d) Normally Open (4)



4.2 I/O ports

Inside the TM2 box, there is one pin for switching I/O operations. You can set it to *Input* or *Output*.

The I/O operation is set with the physical switch located on the back of the TM2-box (see chapter 2 *TM2 Components*) and through software in a configuration application.

To set the I/O functionality in the software, you need to use the dedicated configuration application from Tunstall. The functionality can be set as *Input*, *Output* or *Disabled* in the application.

4.3 Input

You can choose between two types of input modes for the I/O port: *Trigger* or *PIR*.

Input mode Trigger means that TM2 will send an "open" command to the lock when the input is activated. Example of usage is attaching a keypad or card-reader to open the lock.

Input mode PIR means that the input will disable TM2's "open" command while the input is active. Example of usage is to attach a PIR detector on the inside of the door in order to avoid any accidental opening of the door by a resident transmitter ID (auto-alarm) from inside the room. Note that the "open" commands from TM2 triggered by a staff transmitter ID (push-button alarm) will not be disabled, only those triggered by a resident transmitter ID.

The input can be set in the configuration application to be activated either by a high or a low signal. In the application, select:

- a) "Normally Closed" if the input should be activated by a high signal (10 – 30 V DC or not connected).
- b) "Normally Open" if the input should be activated by a low signal (0 – 3 V DC).

4.4 Output

If the I/O operation is set to *Output*, the output relay will be activated every time an "open" command is sent from the TM2. You can set the hold time for the relay in the configuration application, setting how long the relay will be active after each "open" command. The relay can either break or close a connected circuit. Example of usage is to connect an electric strike lock instead of the Carelock ACE lock.

4.5 Power supply

The TM2 box must be powered by a stable and limited DC voltage, typically 12 V or 24 V, capable of delivering at least 350 mA. The power source must have a current limitation of maximum 5 A.

If the TM2 unit is going to be used with a Carelock ACE Split lock, you may want to connect the TM2 box to a power source that will be cut off by the fire alarm.

Carelock ACE Split has the optional feature that it will unlock the door 10 seconds after it loses its Bluetooth connection to the TM2 box, which it will do if the power to the TM2 box is cut off. This feature in the Carelock ACE Split functions as a security measure in case of fire. The feature is enabled by default.

For more information and detailed requirements of the power source, see clause 2.5 of the international standard IEC 60950-1.

5 Mounting

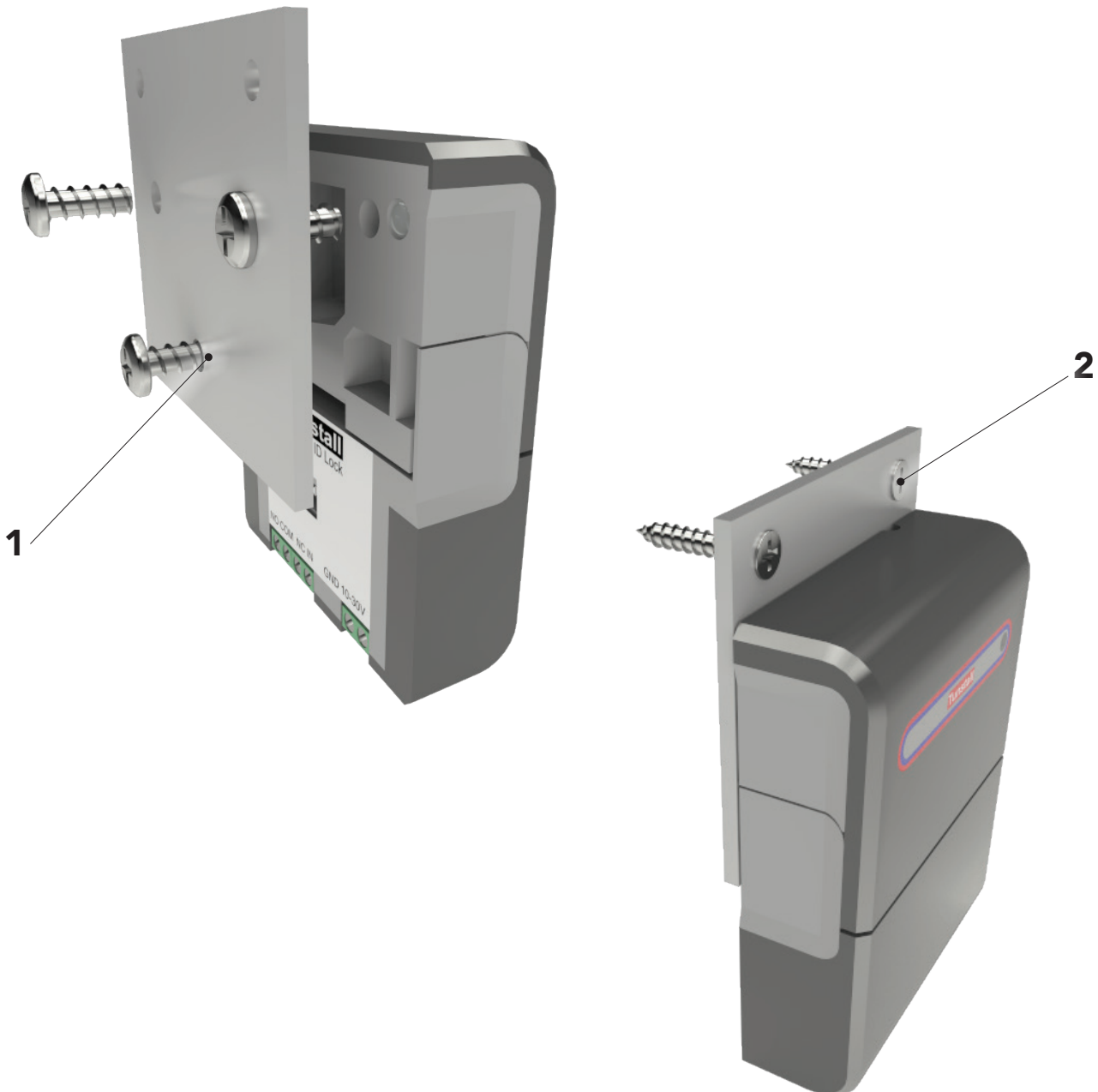
The TM2 box should ideally be placed close to the Carelock ACE lock.

This is particularly important if the lock will be controlled by a Bluetooth device such as a phone or a Bluetooth remote control transmitter, since the user is likely to hold their device close to the lock they are trying to open.

If the TM2 box is going to be controlled by Tx75 transmitters alone, it can be placed anywhere within the Bluetooth range of the Carelock ACE lock. This is typically up to 10 meters in a free line of sight.

The TM2 box should be mounted according to the customer's needs. There are currently no mounting parts included in the TM2 kit due to the great variation of needs and mounting surfaces.

To make a simple mounting plate, use for example a metal or plastic plate that you drill five holes into. Attach the plate to the TM2 box with 7 mm wide screws made for plastic (1). Attach the plate to the designated mounting surface with two screws made for the surface (2).



6 Technical Specifications

Radio Frequency (Tx75 protocol)	
Operating Frequency	868.300 and 869.2125 MHz
Maximum radio-frequency power transmitted	+10.5 dBm EIRP

Radio Frequency (Bluetooth Low Energy)	
Operating Frequency	2400 MHz to 2483.5 MHz
Maximum radio-frequency power transmitted	+4 dBm EIRP

Electrical	
Supply voltage	10-30 V DC
Maximum current drain	350 mA
Output relay maximum ratings	10-30 V DC, 1 A

Operating Temperature	
Operating range	-20°C to +55°C



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Tunstall declare that this radio equipment is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following address: www.tunstall.se/privacy/certifieringar

Tunstall AB
Box 31044
200 49 Malmö
Sweden

Visiting address: Hyllie Boulevard 10B
Tel: +46 20-66 11 11
Email: info@tunstallnordic.com
Twitter: @TunstallSverige