

	Turnstile access controller User's Guide /TC-1U-R07/	Revision: 01.07 Date: 31.07.2026
	Code:	
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Introduction

The integrated turnstile access controller is an electronic access control device that is integrated into any type of turnstile. The device manages the turnstile mechanism based on an opening decision, which is determined by a remote ticketing server. The controller includes a combined Barcode, QR code, NFC and RFID scanner attached to it as a whole unit.

Transportation requirements and storage instructions

The controller is manufactured and transported with its accessories, each placed in an individual polyethylene bag that provides protection against mechanical impacts. Ordering codes for the controller and accessories are provided at the end of the document. Air, sea, and land transport are permissible. The device does not contain a battery and no special transport measures related to batteries are required.

The device must be stored in compliance with the specified ambient temperature and humidity conditions. Storing the device with power and signal cables connected is not permitted. Permissible values for ambient temperature and relative humidity:

Parameter	Minimum Value	Default Value	Maximum Value
Temperature, °C	-25	+25	+80
Relative humidity, %Rh	0	40	90

SAFETY REQUIREMENTS

-  The installation of the device must be performed solely by qualified personnel, in accordance with the installation requirements described in this guide, as well as the applicable general rules and electrical safety standards;
-  During installation, the conditions for protecting the device from external influences must be observed, including the permissible ambient temperature range, relative humidity, and the degree of contamination (dust).
-  During installation and electrical connection, the device must be disconnected from the supply voltage. Connection while the power is on is not permitted;

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1. Main components

The main view of the device is shown in Fig. 1. All main components are labeled.

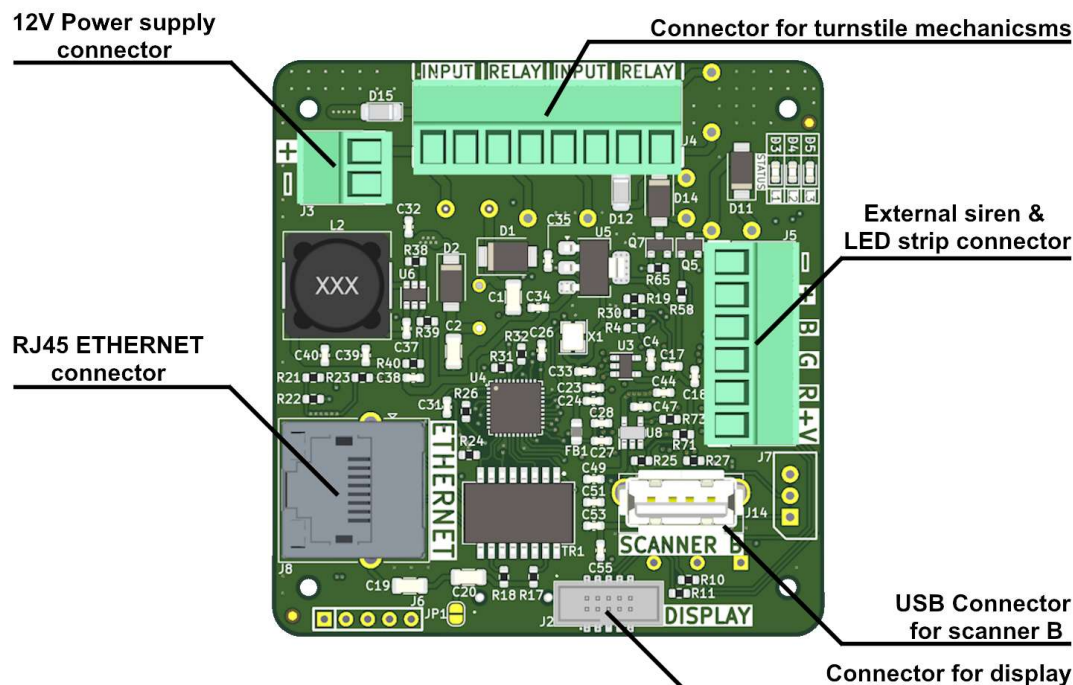


Fig. 1

1.1. 12V Power supply connector

Connector used to connect a 12VDC power supply to the controller.

1.2. RJ45 ETHERNET connector

Standard RJ45 ETHERNET connector used to establish a connection between the controller and the local network.

1.3. Connector for turnstile mechanisms

Connectors used to connect the exit/entry gate mechanisms to the controller.

*See chapter 2 to connect the controller correctly.

1.4. External siren & LED strip connector

Connector used to connect an external siren and an RGB LED strip to the controller.

1.5. USB Connector for scanner B

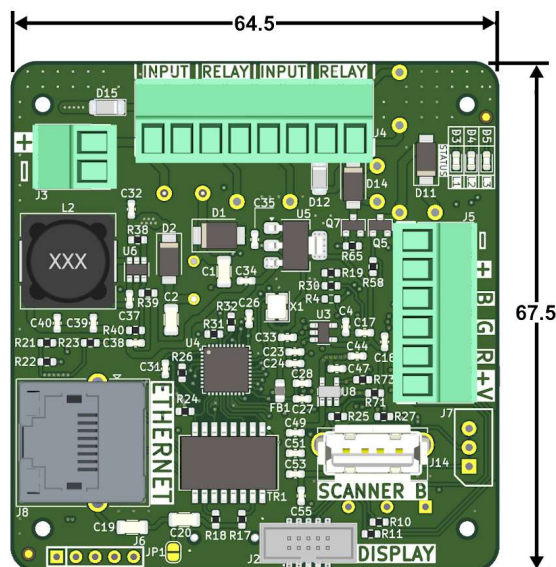
Connector used to connect a second Barcode/QR code/NFC/RFID scanner to the controller.

1.6. Connector for display

Connector used to connect a display to the controller.

2. Installation

2.1. Controller PCB dimensions

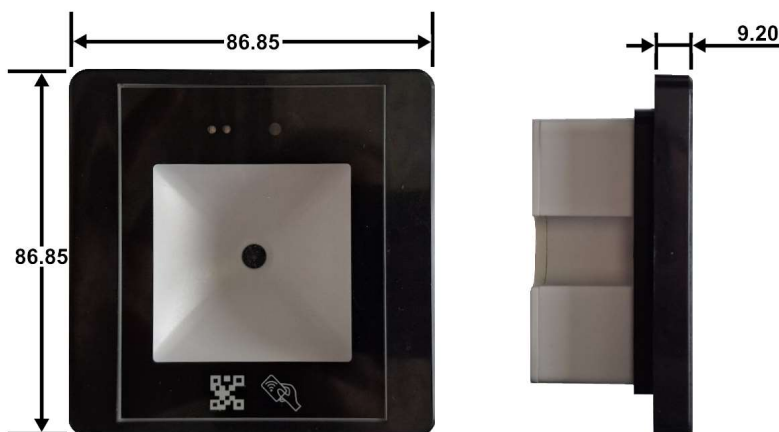


*Dimensions are in mm

Fig. 2

2.2. Scanner dimensions

These are the dimensions of the part of the scanner that protrudes out of the turnstile body.



*Dimensions are in mm

Fig. 3

2.3. Mechanical installation of the unit

To install the controller and scanner into the turnstile assembly the following steps must be performed

1. Carefully remove the rim of the scanner, which is attached by two clips on the left and right sides (by inserting a pair of tweezers between the plastics it becomes much easier).

*The scanner with it's rim removed is shown in Fig. 4

2. Insert the unit into the opening in the turnstile unit.

**The size of the opening in the turnstile body needed for the unit is shown in Fig. 5*

**The depth of the entire unit is shown in Fig. 6*

3. Screw in four $\varnothing 3.5\text{mm}$ mounting screws into the mounting holes of the scanners.

4. Snap the rim of the scanner back on by pressing it onto the scanner.

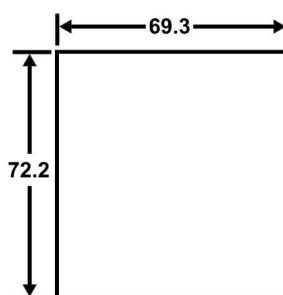
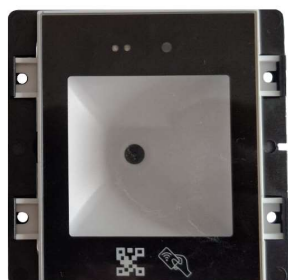


Fig. 4

Fig. 5

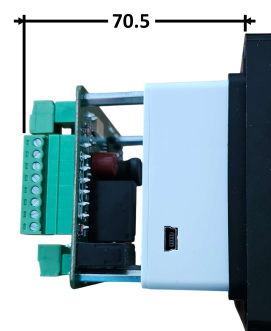


Fig. 6

The depth needed for the scanner and controller to go into the turnstile's body is **ATLEAST 70mm**

2.4. Connecting a second accessory scanner



Fig. 7

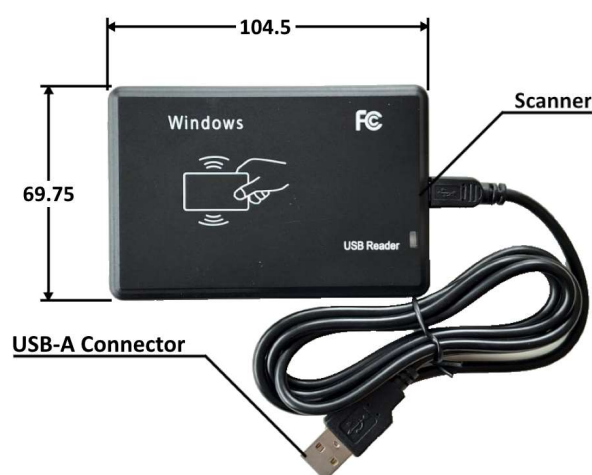


Fig. 8

A second accessory scanner is connected to the controller via USB-A connector, respectively labeled "SCANNER B". It can be used as second scan source in either ENTRY or EXIT direction.

* The direction (which scanner is for Entering and which is for Exiting) can be configured, see chapter 4.

Parameter	Barcode scanner (Fig. 7)	NFC/RID scanner (Fig. 8)	Note
Cable length, mm	1600	1400	-
Connector type	USB-A	USB-A	-
Tested scan distance range, mm	60÷200 (Barcode) 25÷220 (QR)	0÷80	Depends on the size of the code

*These scanners can be ordered, see ordering codes in chapter 8.

2.5. Connecting the RGB LED Indication strip



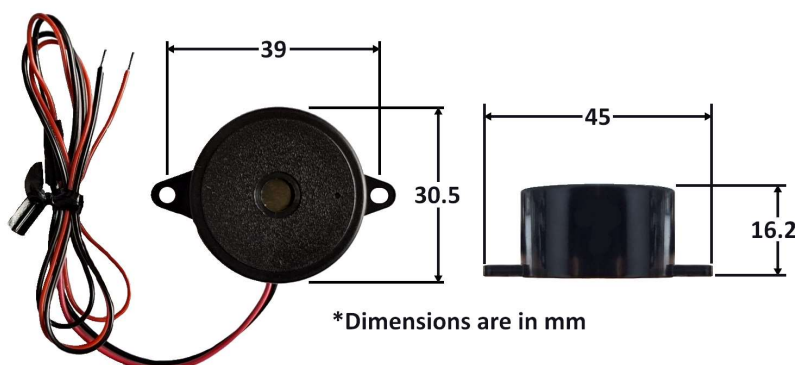
Fig. 9

Terminal	Connection
"RGB LEDS +V"	Connect the positive lead (white lead) of the LED strip.
"RGB LEDS R"	Connect the orange lead of the LED strip.
"RGB LEDS G"	Connect the green lead of the LED strip.
"RGB LEDS B"	Connect the blue lead of the LED strip.

Parameter	Value
LEDs per strip	x9 RGB
Strip length, mm	150
Cable length, mm	350

*LED Strip can be placed anywhere in the turnstile assembly (it has an adhesive side).

2.6. Connecting the external siren



*Dimensions are in mm

Fig. 10

Terminal	Connection
"SIREN +"	Connect the positive (red) lead of the external siren.
"SIREN -"	Connect the negative (black) lead of the external siren.

Parameter	Value
Sound pressure level, dB	95 @ 30cm
Frequency, hz	3500
Cable length, mm	350

*The external siren can be placed anywhere in the turnstile assembly and fastened to the assembly using two Ø3mm screws.

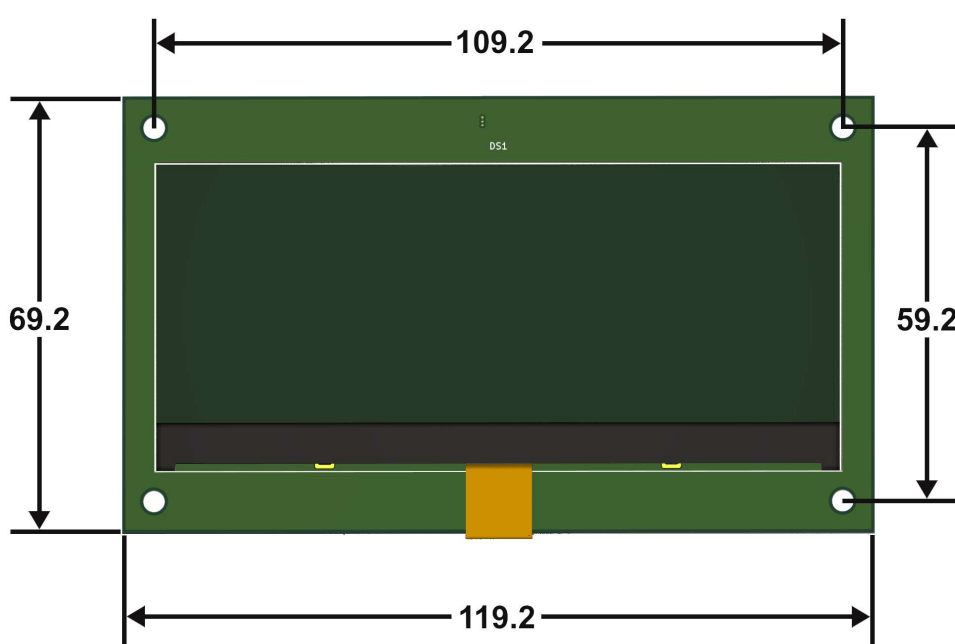
2.7. Connecting the display

A 192x64 4-inch dot matrix LCD display can be connected to the controller to display messages when access is granted or denied and when the controller is waiting to scan.

The display can be mounted with the use of four mounting bolts. The openings for the bolts are $\varnothing 3.45\text{mm}$.

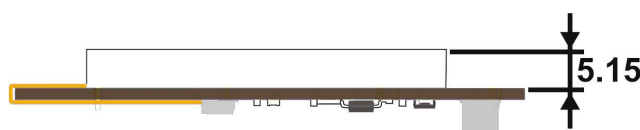
The dimensions of the display board as well as the spacing of the mounting openings are shown in Fig. 11, and the height of the display relative to its board is shown in Fig. 12

*For the ordering code refer to chapter 8.2



*Dimensions are in mm.

Fig. 11



*Dimensions are in mm

Fig. 12

The display board comes with a 1m cable to connect to the controller via the connector labeled **"DISPLAY"** the length of the cable allows for it to be mounted freely in the turnstile body.

The dimensions of the display's matrix are **97.5 x 32.45 mm**.

2.8. Connecting to the gate mechanisms

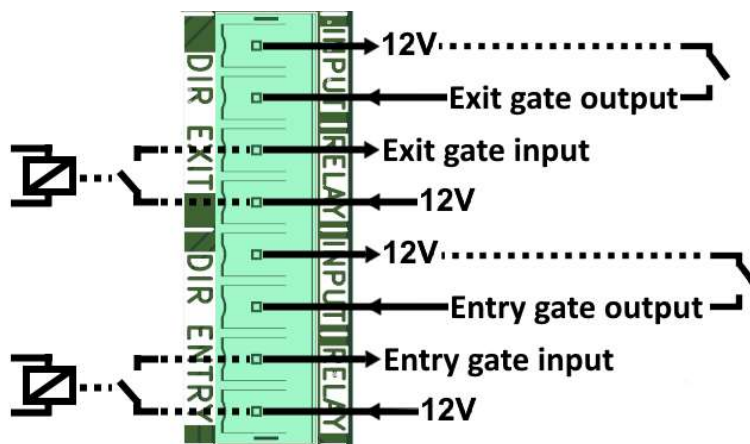


Fig.13

Terminal	Connection	Mechanism direction
"DIRECTION ENTRY RELAY"	Connect the <i>input</i> of the entry gate mechanism.	Entry (IN)
"DIRECTION ENTRY INPUT"	Connect the <i>output</i> of the entry gate mechanism.	
"DIRECTION EXIT RELAY"	Connect the <i>input</i> of the exit gate mechanism.	Exit (OUT)
"DIRECTION EXIT INPUT"	Connect the <i>output</i> of the exit gate mechanism.	

2.9. Connecting the controller to the local network

The connection between the controller and the local network is achieved by the means of a standard FTP RJ45 Ethernet connector labeled "ETHERNET".

The device supports speeds of 10/100Mbps, so a network cable that supports at least 100Mbps is required, if it cannot support that speed, the device will lower the speed to 10Mbps. The device supports both MDI and MDI-X wiring.



Fig. 14

*The use of an FTP Ethernet cable (shown in Fig. 14) is recommended, but not mandatory.

**To configure the network settings, see chapter 4.2.

2.10. Connecting to the supply voltage

Terminal	Connection
"POWER IN +"	Connect the positive lead of the supply.
"POWER IN -"	Connect the negative lead of the supply.

Input voltage (DC)	Power consumption
12V	<5W@12V

3. Operation

In standby the device displays the message "Please scan Ticket". When a ticket is scanned the controller sends the code to the dedicated server as well as the requested direction of passage (either entering or exiting). The controller then waits for a response from the server. After receiving a response, the turnstile gate control relay is engaged for 100ms (can be changed, see chapter 4) after which the device waits until the turnstile gate rotation count input detects a contact and release event (see chapter 4).

*The communication sequence is described in chapter 5.

**If the gate has not been engaged in the span of 10 seconds the device timeouts the request.

***The relays control separate gate mechanisms.

4. Configuring the device

The configuration of the device is carried out by scanning different barcodes, QR codes or with the use of a standard keyboard instead of a scanner.

*** The full contents of this chapter will be given after signing an NDA ***

5. Ticket server communication protocol and device-server integration

The device to server communication is based on a HTTPS protocol with additional device-side verification of the server identity.

*** The full contents of this chapter will be given after signing an NDA ***

6. Firmware update (FOTA)

Firmware updates are carried out via the use of a micro SD card that should be inserted in the micro SD card push holder, which is located on the back side of the controller, shown in Fig. 17.

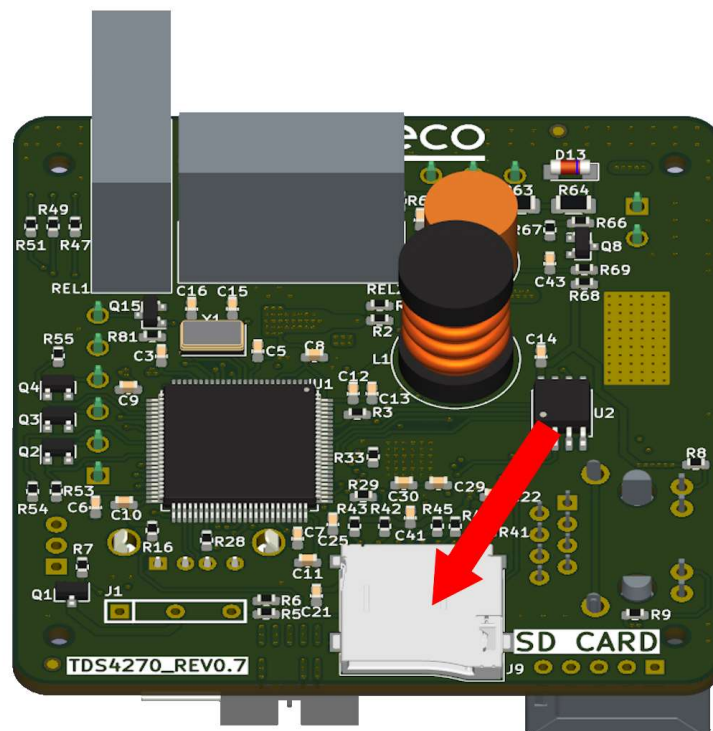


Fig. 17

Parameter	Value
SD card capacity (max)	64GB
Supported SD card format	FAT32
Firmware update file name	TDS4270.bin

Procedure:

To start the procedure the power supply must first be turned **OFF**. Place the SD card that contains the "TDS4270.bin" firmware update file into the SD card holder and turn **ON** the power supply. The device will then read the file and begin to update its firmware. These messages will appear in the following order:

"DEV:XXXXXXXXXXXX FOUND FW UPDATE" → "UPDATE FILE INTEGRITY OK!" → "UPDATING DEVICE FIRMWARE..." → "FIRMWARE UPDATE SUCCESSFUL".

After the firmware has been updated remove the SD card from the holder (Push the SD card to remove it). The device will automatically restart itself and apply the update.

*The firmware update file has to be in the main directory of the SD card.

**The file used to update the firmware can be factory preconfigured to update either a specific device with a specific Serial Number or multiple devices of the same type, depending on the file itself (user's request).

***After a successful update the device will delete the update file from the SD card and create a folder that is named as the device's ID.

7. Encountered errors behavior

Criteria	Error message	Device behavior
Corrupted firmware update file	"UPDATE FILE VERIFICATION FAIL!"	After displaying the message the device will start working normally without updating.
Unsuccessful firmware update	"FIRMWARE UPDATE FAILED!"	
Missing firmware update file	-	The device will work normally and ignore the SD card's contents.
The device can't acquire it's MAC address	"HARDWARE ERROR:1 CONTACT SUPPORT"	The device does NOT work, needs to be restarted after resolving the problem.
General ETHERNET error	"HARDWARE ERROR:2 CONTACT SUPPORT"	
External FLASH not working	"HARDWARE ERROR:3 CONTACT SUPPORT"	

8. Ordering codes

8.1. Controller ordering codes

Controller ordering code	Description
TC-1U-R07	1x Turnstile access controller with combined scanner as a single unit

8.2. Accessories ordering codes

Accessory ordering code	Notes		
	Accessory	Reference	Description
TCA-LS-XX	RGB LED strip	XX	The reference is the number of LEDs, must be divisible by 3. Each segment of 3 LEDs adds +5cm to the length (Cable length stays the same). Example: Strip with 6 LEDs = 10cm. Strip with 12 LEDs = 20cm.
TCA-SI	External siren	-	Frequency: 3.5KHz Sound pressure level: 95db@30cm
TCA-DISP	LCD Display	-	A 192x64px 4-inch Dot matrix LCD + 1m cable
TCA-BQR	Barcode/QR Scanner	-	Supported standards: Code39, Code128, PDF417, Data Matrix, EAN-13, QR
TCA-NFC	NFC Scanner	-	Supported standards: ISO14443 Frequency: 13.56Mhz
TCA-RFID	RFID Scanner	-	Supported standards: EM4100, EM4200 Frequency: 125KHz

Document revision history

Revision	Date	Description
01.01	26.03.2026	Initial revision
01.02	02.04.2026	Corrections to chapters 2.5 & 4.3
01.03	15.04.2026	Corrections to chapters 2.1, 2.2, 2.5, 4.2, 4.3, 5; Addition of chapter 4.4 & chapter 7
01.04	20.04.2026	Corrections to chapter 6; Addition of chapter 7, previous chapter 7 now becomes chapter 8
01.05	02.07.2026	Full document overhaul
01.06	08.07.2026	Chapter 2 revision, the document now describes the mounting of the display. Updates to some of the figures in the document.
01.07	31.07.2026	Additions to chapter 2.3