# RTD-16 Full height rotor turnstile

PERCo

+55
-40
temperature range

24V
operating voltage

W
105 W
power consumption

2
passage directions

20
persons/min

mechanical unlocking

M
motor drive

## Application

The RTD-16 Full height rotor turnstile is a normally closed electromechanical turnstile designed for both indoor and outdoor operation.

The following turnstile modifications are available:

- RTD-16.1 with a motor drive. Its motor is activated at the beginning of passage through the turnstile once the rotor sections have turned about 12° and starts their automatic rotation in the passage direction to reset them to the initial (closed) position.
- RTD-16.2 with a mechanical drive. In this case, during passage through the turnstile, after the rotor sections have turned more than 60°, the operating mechanism automatically resets them to their initial (closed) position.

The RTD-16.1S and RTD-16.2S turnstiles are outfitted with a stainless steel rotor.

The delivery set includes an RC panel. The orientation of its buttons relative to passage directions is set when connecting the panel to the turnstile.

RC panel

It is recommended to install the turnstiles assuming that the peak load totals 20 persons/minute per passage zone. The turnstiles can come complete with a security gate and railings produced in the same design

## Operation modes

The turnstile ensures access control in two directions; the turnstile operation mode can be set independently for each passage direction. Available operation modes:

- passage denial in both directions
- single passage in one direction and passage denial in the other direction
- single passage in both directions
- free passage in one direction and passage denial in the other direction
- free passage in one direction and single passage in the other direction
- free passage in both directions
- lock-chamber mode (two-phase mode with a stop for checking incoming persons, to be set during the installation process)

# RTD-16 Full height rotor turnstile

PERCo

## Main features

- operation of the turnstile via its RC panel, WRC, or ACS
- electronic board integrated into the turnstile housing
- possibility of setting the lock-chamber mode for the turnstile
- power and control cables can be routed to the turnstiles both from below, through the barrier section, and from above, through the top channel
- the turnstiles can be installed in the same row without gaps and transitional elements, including if canopies are used
- the reverse rotation of the rotor is blocked upon turning the rotor sections more than 60°
- the Fire Alarm control input enables connection of a device sending an emergency unlocking command (e.g., from the fire alarm system)
- the turnstile can be mechanically unlocked with a key in each passage direction, which ensures free rotation of the rotor sections in this direction
- built-in ultra-bright LED indicators of passage permission / denial
- built-in walkway downlights (two 4 W LED lamps)
- the device can be additionally protected against precipitation and attempts to climb over its top by installing an optional canopy, which forms a single structure jointly with the turnstile
- the turnstile can be installed even on soft ground by applying a dedicated foundation frame
- high corrosion resistance of the entire structure is achieved through the combined use of galvanization and powder coating for all its parts, which guarantees its long service life under adverse environmental conditions. Modifications with the S index are equipped with a rotor completely made of stainless steel
- high-strength polymer-based powder coating, which keeps the appearance intact during long-term operation
- two control modes – pulse and potential
- possibility of connecting an intrusion detector and siren to the turnstile

Mechanical unlocking with a key

LED indication

## Operating conditions

In terms of resistance to environmental exposure, the turnstile complies with GOST 15150-69, category N2 (outdoor application). Its operation is allowed at an ambient air temperature from -40°C to +55°C and relative air humidity of up to 98% at +25°C. The protection rating of the top channel is IP56.

The RC panel, with regard to resistance to environmental exposure, complies with GOST 15150-69, category NF4 (operation in rooms with climate control). It may be operated at an ambient air temperature from +1°C to +55°C and relative air humidity of up to 80% at +25°C.

## Design

Housing – powder-coated galvanized steel; the S modification features a stainless steel rotor. Housing color – blue. Upon request, the turnstile can be painted in other colors according to the RAL color chart.

The RTD-16 turnstile is serially produced and has a TR CU Certificate of Conformity (EAC).

## Delivery set

| | |
|---|---|
| Rotor section | 3 |
| Barrier section with upper half-couplings and a bottom rotary group | 1 |
| Section of the guide barrier set, assembled with an indication block and cable | 2 |
| Top channel | 1 |
| Supporting girder | 1 |
| Mounting hardware required for assembly of turnstile parts | 1 set |
| RC panel (with a 6.6 m long cable) | 1 |
| Key to mechanical release locks (2 pcs per lock) | 4 |
| Documentation set | 1 |
| Spare parts kit | 1 |
| Installation leaflet with a QR code | 1 |

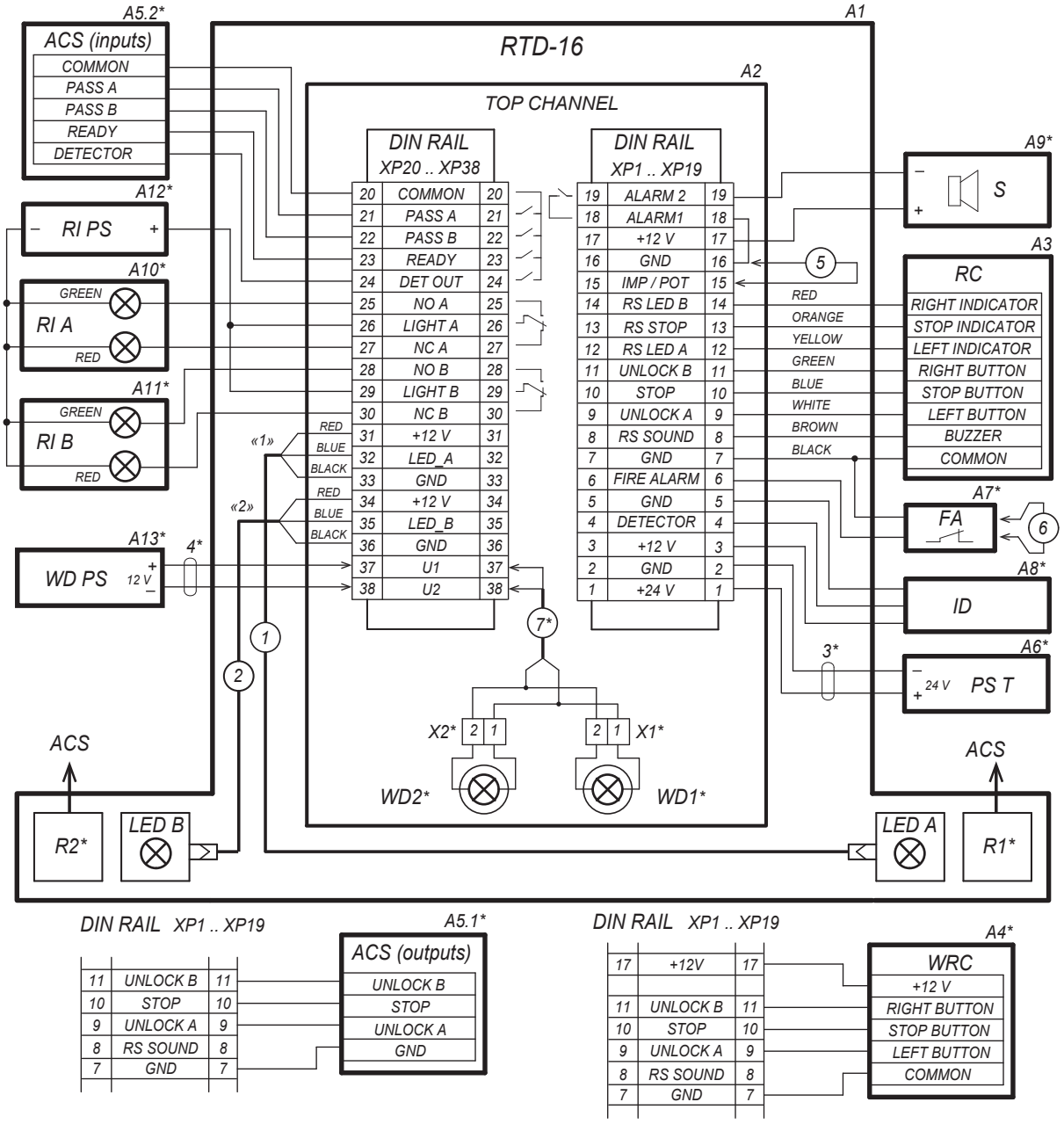
| Additional equipment (upon request) | |
|---|---|
| RF-16 Foundation frame | 1 |
| RTC-16 Protective canopy | 1 set |
| WHD-16 Full height security gate | 1 set |
| Full height railing sections (MB-16 main section, MB-16D additional section) | |
| Jointing plates and brackets for connecting turnstile parts, railing sections, a canopy, or a security gate | |
| WRC (includes a receiver and two transmitters designed as radio fobs) with an operating range of up to 40 m | 1 |
| M10 anchor with a bolt and washers | 12 |
| M16 anchor with a bolt and washers | 1 |

## Technical specifications

| | | |
|---|---|---|
| Operating voltage | Turnstile | 24±2.4 V DC |
| | Walkway downlights | 12 V DC |
| Consumption current | RTD-16.1 turnstile (excluding walkway downlights) | max. 4.5 A |
| | RTD-16.2 turnstile (excluding walkway downlights) | max. 1.2 A |
| | Walkway downlights | max. 0.8 A |
| Power consumption | RTD-16.1 turnstile (excluding walkway downlights) | max. 105 W |
| | RTD-16.2 turnstile (excluding walkway downlights) | max. 30 W |
| | Walkway downlights | max. 10 W |
| Overall dimensions (LxWxH) | without a canopy | 160x165x231cm |
| | with the RTC-16 canopy | 242x166x256 cm |
| Passageway width | | 630 mm |
| Turnstile weight | RTD-16.1 | max. 191 kg |
| | RTD-16.2 | max. 193 kg |
| Packaging dimensions (LxWxH) | box 1 | 180x40x34 cm |
| | box 2 | 221x21x98 cm |
| | box 3 | 225x2x98 cm |
| | box 4 | 225x21x98 cm |
| | box 5 | 224x27x98 cm |
| Throughput rate | in the single passage mode | 20 persons/min |
| | in the free passage mode | 30 persons/min |
| Mean time to failure | | min. 2 000 000 passages |

## Connection

The turnstile control unit is placed in the top channel, which is located in the upper part of the turnstile. External cables are connected to a DIN rail located inside the top channel. All cables are routed to the DIN rail through the lower hole in the barrier section on the flange side, then up along the post to the top channel or through holes in the front end of the top channel (see the Installation section).




Layout of external connections to the RTD-16 turnstile

| Layout elements | |
|---|---|
| **Item** | **Description** |
| A1 | RTD-16 turnstile |
| A2 | Top channel |
| A3, A4* | RC panel, WRC device |

| | |
|---|---|
| A5* | ACS controller |
| A6* | Power supply unit of the turnstile (24 V / 5 A) |
| A7* | Device for sending an emergency unlocking command |
| A8* | Intrusion detector |
| A9* | 12 V DC siren |
| A10*, A11* | Remote indicators |
| A12* | Power supply unit for remote indication |
| A13* | Power supply unit for walkway downlights |
| WD* | Walkway downlights |
| LED | Indication blocks |
| R1*, R2* | ACS readers |
| 1, 2 | Indication cables |
| 3 | Turnstile power cable |
| 4*, 7* | Power cables for walkway downlights |
| 5 | Jumper for switching the Imp. / Pot. mode |
| 6 | FA jumper, installed if there is no Fire Alarm (A7) device |

* Not included in the standard delivery set

| Description of DIN-rail contacts | | |
|---|---|---|
| **Contact** | **Electrical circuit** | **Function** |
| 1, 2 | +24 V, GND | Connection of the power supply unit |
| 3-5 | +12 V, Detector, GND | Connection of the intrusion detector |
| 6, 7 | Fire Alarm, GND | Emergency unlocking input |
| 8 | RC Sound | Sound indication output of the RC panel |
| 9-11 | Unlock A, Stop, Unlock B | Turnstile control inputs |
| 12-14 | RS LedA, RS LedStop, RS LedB | RC panel indication outputs |
| 15, 16 | IMP / POT | Selection of the turnstile control mode |
| 17 | +12 V | Output for power supply of additional devices |
| 18, 19 | Alarm 1, Alarm 2 | Siren connection outputs |
| 20 | Common | Common contact for the PASS A, PASS B, Ready, and Det Out signals |
| 21 | PASS A | PASS A relay contact (passage in direction A) |
| 22 | PASS B | PASS B relay contact (passage in direction B) |
| 23 | Ready | Ready relay contact |
| 24 | Det Out | Det Out relay contact |
| 25-30 | NO, Light, NC | Relay contacts for connecting remote indicators |
| 31-36 | +12 V, LED, GND | Contacts for connecting indication blocks located on the guide barrier set's sections |
| 37, 38 | U1, U2 | Connection of the power supply unit of walkway downlights |

## Operation algorithm

The turnstile can be operated via its RC panel (included in the delivery set), WRC, or ACS controller.

The turnstile is controlled by applying a low-level signal to the Unlock A, Stop, and Unlock B

contacts relative to the GND contact. The response to these signals depends on the control mode selected by the user by installing or removing the IMP /POT jumper on the DIN rail.

In the pulse control mode, a pulse is applied to the Unlock A/B input so that the turnstile automatically unlocks for a single passage in the selected direction. The passage waiting time does not depend on the control pulse duration and amounts to 5 seconds. A pulse sent to the Stop input blocks both passage directions. Pulses sent simultaneously to the Unlock A/B and Stop inputs switch the turnstile to the *Free passage* operation mode in the selected direction.

The pulse mode is recommended for operation from the RC panel.

In the potential control mode, a control signal is applied to the Unlock A/B input, and the turnstile remains unlocked in the selected direction all the time while the signal is held. The control signal sent to the Stop input blocks both passage directions regardless of signals at the Unlock A/B inputs.

The potential mode is recommended for operation from the ACS controller.

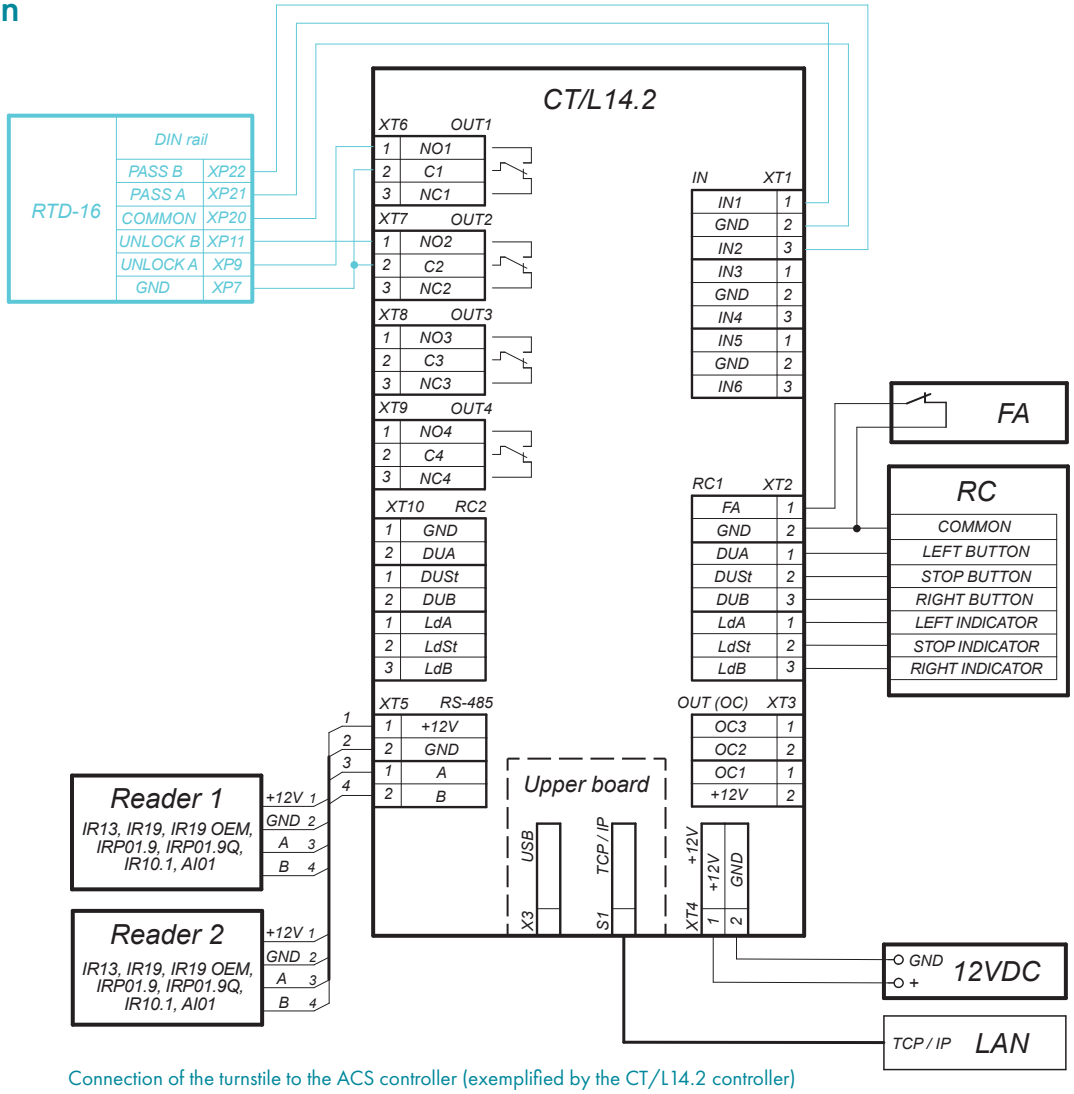
Regardless of the selected control mode, passage signals are generated when rotating the turnstile's rotor sections in either direction – Pass A or Pass B respectively. These signals can inform the ACS controller of the fact of passage in a particular direction.

In emergencies, the turnstile is unlocked by removing a low-level signal from the Fire Alarm contact relative to the GND contact.

**Note**

When operating the turnstile from the ACS controller, it is recommended to connect the RC panel to the ACS controller.

## ACS connection example

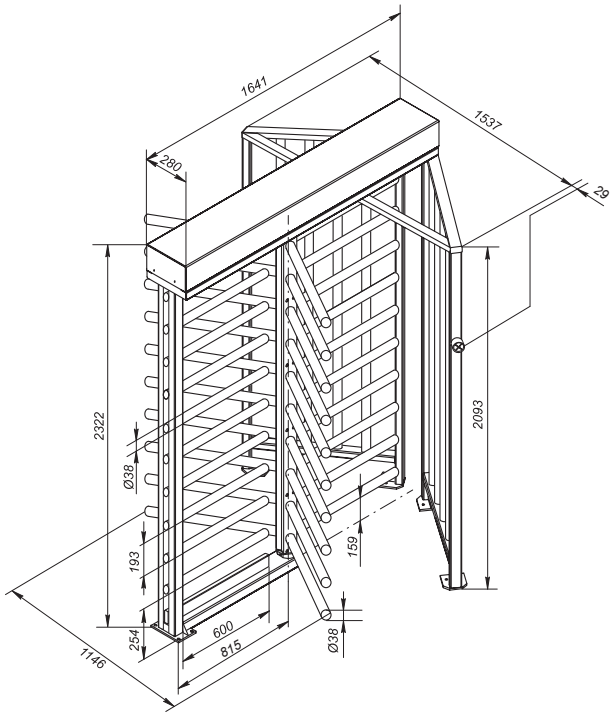



Connection of the turnstile to the ACS controller (exemplified by the CT/L14.2 controller)

The maximum allowable length of the RC-panel (ACS-controller) cable amounts to 40 meters.

The allowable length of the cable from the turnstile's power supply unit depends on its cross-section and must not exceed 10 meters for a 1.5 mm$^2$ cable and 20 meters for a 2.5 mm$^2$ cable.

## Overall dimensions



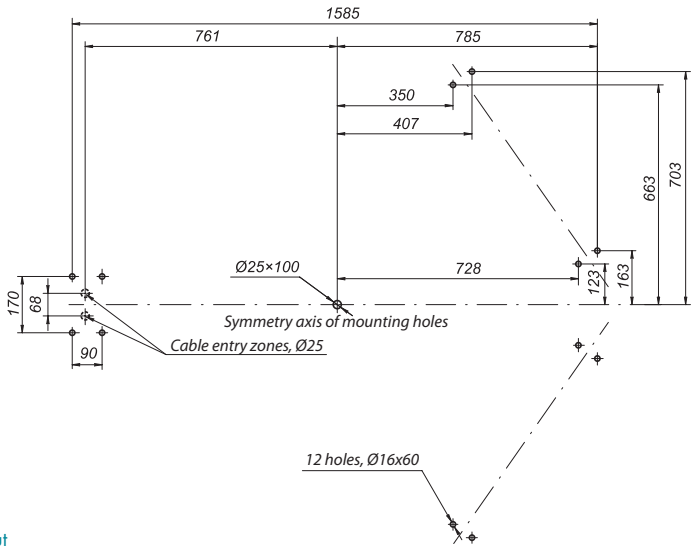

Overall dimensions of the turnstile with no canopy

## Installation

Foundation requirements: smooth concrete (grade 400 or higher), stone, and similar foundations with a thickness of at least 150 mm. When installing the turnstile on a less steady foundation, one should apply embedded reinforcing elements (500x500x500 mm) or the RF-16 Foundation frame.

The use of the foundation frame eliminates the need to mark mounting holes and install anchors, while helping to secure the turnstile in a more reliable manner.

The marking layout of turnstile mounting holes and recommended cable duct positions are shown in the figure below.

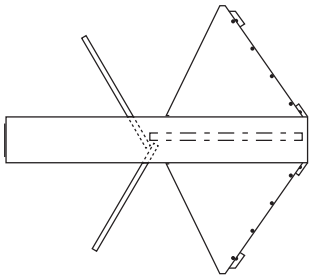



Hole marking layout

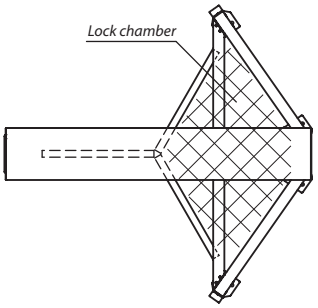
Cables from the power supply unit, walkway downlights, RC panel, ACS, and other equipment are routed to the turnstile, and then up along the barrier section to the top channel, namely, to the DIN-rail contacts.

It is recommended to place ACS readers on the sections of the guide barrier set near the indication blocks.

To enable the turnstile to operate in the lock-chamber mode, the initial position of the rotor sections should be set accordingly in the course of installation.



Operation without the lock-chamber mode




Operation in the lock-chamber mode

## Foundation frame

The RF-16 Foundation frame is designed to improve the installation quality, which, in its turn, enhances the reliability of the RTD-16 turnstile. Its use is recommended for turnstiles intended for outdoor application. Bolts included in the frame delivery set are used to attach the turnstile to the frame.

The frame is made of galvanized sheet steel.

### Delivery set

| | |
|---|---|
| Shell 1, shell 2 | 2 |
| Plates 1 – 4 | 5 |
| Mounting hardware | 1 set |
| Certificate | 1 |

### Technical specifications

| | |
|---|---|
| Overall dimensions (LxWxH) | 1630x1536x65 mm |
| Net weight | max. 23 kg |

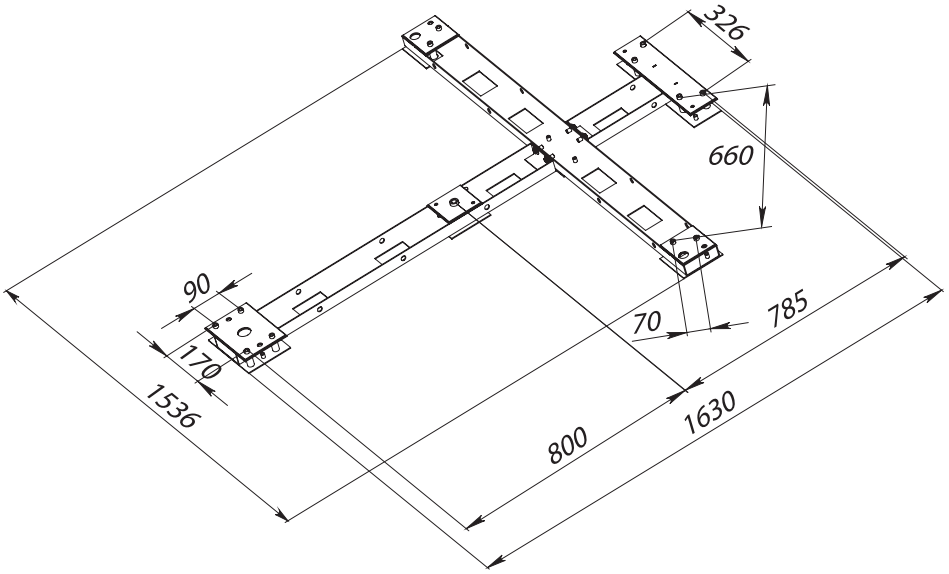
### Installation

The assembled frame is installed on a prepared foundation platform with dimensions of 2000x1700 mm and a depth of 200-250 mm, leveled in the horizontal plane with pins included in the delivery set, and fixed against any possible movements.

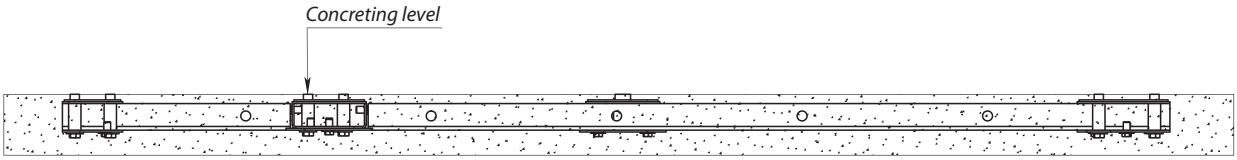
Cable ducts should be laid as required (they can be placed inside the frame).

The frame is filled with concrete of the strength class of B22.5 or higher, up to the upper surface level of threaded bushings for fastening the turnstile.

The recommended total concrete thickness should amount to at least 150 mm.




Frame installation




Concrete pouring for the foundation

## Canopy

The RTC-16 Canopy is designed to be used jointly with the RTD-16 turnstile and to protect the turnstile against direct precipitation and sunlight.

Main features of the product:

- as all its elements are galvanized and powder-coated, the product boasts high corrosion resistance, which guarantees its long service life under adverse environmental conditions
- reduced weight, which simplifies the installation process
- high-strength polymer-based powder coating, which keeps the appearance intact during long-term operation

It is possible to install several turnstiles under the canopies in a row.

## Operating conditions

In terms of resistance to environmental exposure, the canopy complies with GOST 15150-69, category N2 (outdoor application). Its operation is allowed at an ambient air temperature from -40°C to +45°C and relative air humidity of up to 98% at +25°C.

## Delivery set

| | |
|---|---|
| Left / right half-frame | 2 |
| Post with brackets | 4 |
| Jointing plate | 1 |
| Mounting hardware required for assembly of canopy elements | 1 set |
| Operation Manual | 1 |
| **Additional equipment (upon request)** | |
| M10 anchor with a bolt and washers | 16 |

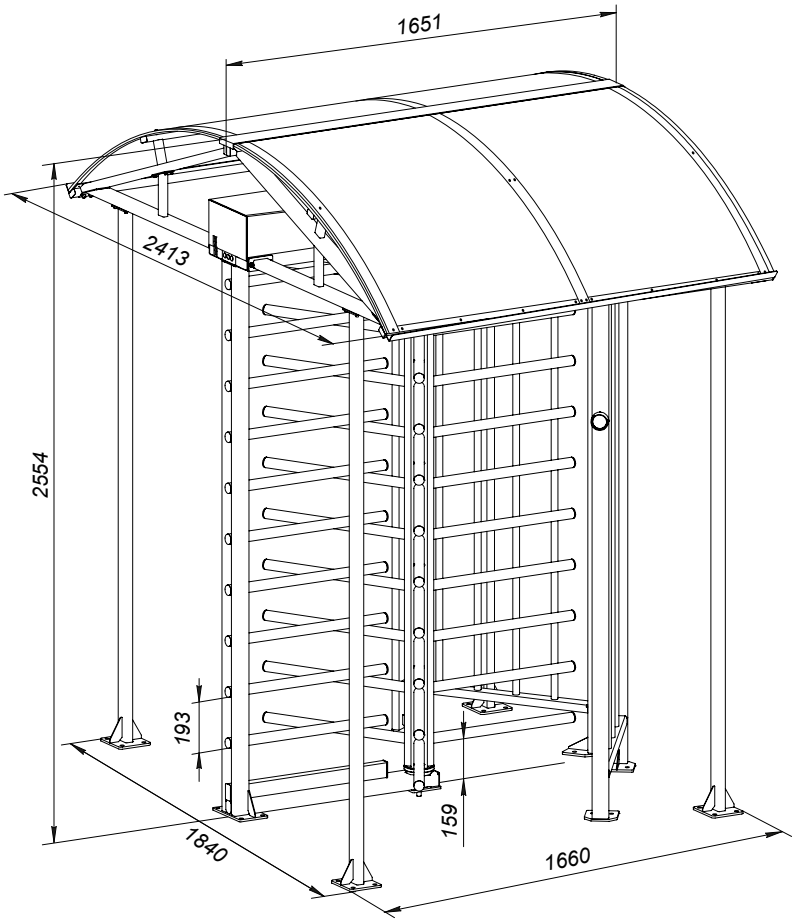
## Technical specifications

| | |
|---|---|
| Overall dimensions (LxWxH) | 2420x1660x2560 mm |
| Net weight | max. 82 kg |
| Mean lifetime | min. 8 years |

| Packaging dimensions (length x width x height) | |
|---|---|
| Box 1 | 1800x1370x620 mm |
| Box 2 | 2220x450x300 mm |

## Overall dimensions with the canopy

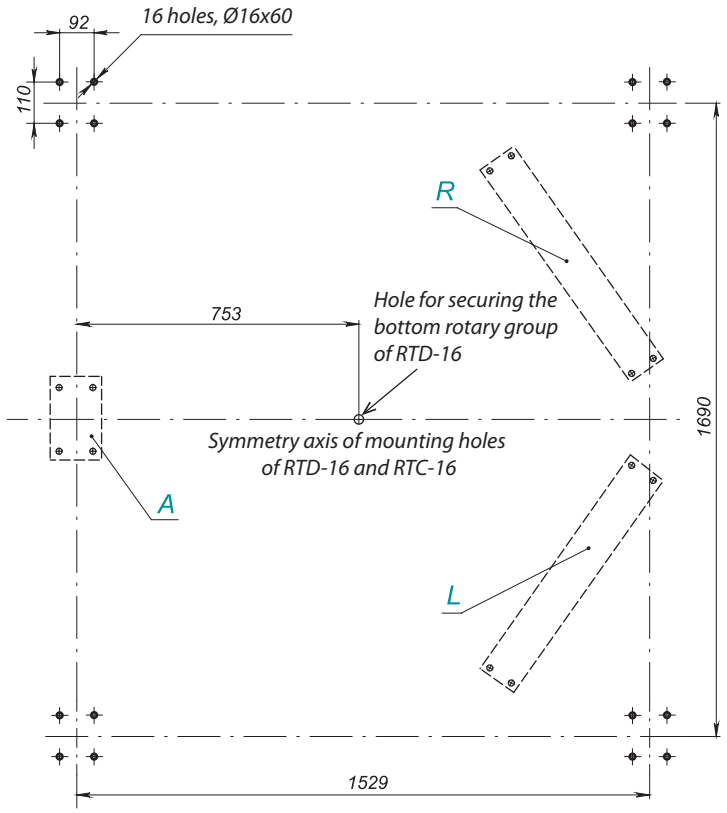
Overall dimensions of the turnstile when used jointly with the canopy are determined by the canopy's external dimensions.




Overall dimensions of the turnstile with the canopy

The foundation requirements for installing the canopy are similar to the requirements for installation of the turnstile.

The symmetry axes of the mounting holes are the same for the turnstile and canopy.




Marking of canopy mounting holes

A — fixing point for the turnstile's barrier section;
L — fixing point for the left section of the guide barrier set;
R — fixing point for the right section of the guide barrier set.

## Warranty

The warranty period amounts to 5 (five) years commencing from the date of sale, unless otherwise stipulated in the product delivery contract. In case of sale and installation of the equipment by authorized PERCo dealers and service centers, the warranty may start from the date of commissioning.

If there is no date of sale in the warranty card, the warranty period shall commence from the date of manufacture specified in the Certificate and on the label of the product.