Full Height Turnstiles

ARCHITECTURAL & ENGINEERING SPECIFICATIONS

NOTE for the Specifier:

- Text in **Black**, is standard and valid for all product range described by this document
- Text in **Red** is for peculiarities ref to a Product model or version specific, and the specifier must remove what not relevant and remove also the references to the product name.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This section covers the furnishing and installation of a complete Full Height Turnstile system for pedestrian access control. Provide complete system that has been fabricated and tested for proper operation at the factory. The system includes moving (manually operated drive) rotor, casework, cabinet housing the mechanism and logic, power supply unit, and options/accessories (if included in the object of supply).

1.2 QUALITY ASSURANCE AND REFERENCES

A. Manufacturer shall be a company specializing in the supply of automatic security pedestrian access control systems, with a minimum of 10 (Ten) years of experience.

B. Manufacturer with well-proven experience in public transportation is recommended

C. Manufacturer shall have a Quality Management System compliant with ISO 9001:2015 and ISO 14001:2015 and OHSAS 18001:2007 or ISO 45001:2018

D. The Full Height Turnstile system shall be in compliance with EC standards

1.3 APPLICATIONS

A. Entrance/exit to/from sensitive facilities and premises, with need for separation of the secure area from the non-secure area, for security management and regulation of the pedestrian flow between them and egress monitoring.

B. Typical applications include:

- Office buildings,
- Government buildings,
- Retail,
- Finance, Banking,
- Telecommunications, IT,
- Publishing, Leisure, Education,
- Petrochemical, Industrial sites,
- as well as other sensitive facilities

1.4 SYSTEM REQUIREMENTS

A. The pedestrian Full Height Turnstile shall control and be able to restrict pedestrian flow between non-secure and secure areas.

B. Shall use the building access control system to grant or deny access to the facility and operate with a variety of user authorization devices.

C. On receiving the signal from the access control system, or push button, this allows the passage of one person at a time.

D. Shall be manually driven operated and bi-directional, to allow passage flow in both directions. Each direction shall be independently programmable, in one of the following states:

- Free:
  all persons are authorized to pass, and authentication means are ignored
- Controlled:
  each person must present a valid credential to the authentication means before to pass. Only people with authorized credentials are then authorized to transit
- Blocked:
  no person is authorized to pass, and authentication means are ignored

E. In case of emergency, the rotor freely rotates to allow an easier exit. Passage in both directions is electronically controlled.

F. The Full Turnstile is available in Normally Closed (N/C) configuration to lock the mechanism until a valid authorisation signal is received.

G. The status is shown on the LED way-mode indicators, in entry and exit side if traffic light option is selected.

H. Shall feature normally closed, so the movable barrier in the aisle blocks the pedestrian's path and prevents access to restricted areas without a valid authorization.

I. For security and safety reasons, children must be supervised by an adult at all times, in the vicinity of an active lane. Any children being escorted through the lane must always precede the accompanying adult during passage

1.5 SUBMITTALS

A. Submit product data for Full Height Turnstile: equipment description, dimensions, material and finishes, electrical diagrams for installation, manufacturer's manual for each product showing:

- danger, warnings, cautions and risk assessment notes
- good practice, storage and handling of the equipment
- product description (dimensions, general construction, finishes)
- technical specifications
- instruction for use
- installation (unpacking, site preparation, environmental conditions, power supply characteristics, cabling, mounting details, unit positioning, anchorage and floor drilling, electrical connections, Emergency/Fire alarm connections, I/O connections)
- operation and maintenance
- recommended spare parts

B. CAD drawing product layout showing overall dimensions, anchorage and cable entry details

C. BIM object in compliance and accredited according to Cobie level 2 specifications, delivered in both Autodesk Revit software and also in the neutral Industry Foundation Classes (IFC) software formats for exchange and interoperability between AEC software applications.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to job site in manufacturer's packaging undamaged, complete with installation instructions. Instruction shall be available in a digital file, pdf format.

B. Store off ground, under cover, protected from weather and construction activities and debris.

C. Storage and transportation temperature -25°C to +55°C (Relative Humidity 80% not condensing)

1.7 PROJECT/SITE CONDITIONS

A. Installation suitable for finished floor. Floor must be flat and level ± 5mm (value will need to be verified product family by product family. Here highlighted as a reminder in the master document) at all locations within the footprint of the product/system.

1.8 WARRANTY

A. The manufacturer shall warrant its products against defects in material and workmanship for a period of one (1) year from the date of substantial completion, and no longer than two (2) years from the date of invoicing of the delivered products from the factory. (To be revised by Sales Company as per local policies)

B. This warranty excludes glass breakage, normal wear on finishes or damage that occurs due to abuse, misuse or acts of God.

PART 2 PRODUCTS

2.2 FUNCTIONS AND MODE OF OPERATION

A. Operation modes

The Full Height Turnstile is an access control barrier system designed for facilities requiring bidirectional or unidirectional control of pedestrian passage and access flow between a secure area and a non-secure area. Passage is programmable and controllable independently in each direction, in the following modes/states:

- Controlled mode: access is granted to persons with a valid authorization mean only.
- Free mode: any person is allowed to pass and the authorization mean is ignored.
- Blocked mode: any person is not allowed to pass and the authorization mean is ignored.

Further modes are available as follow:

B. Security Features

- The rotor arms in rest position blocks the passageway
- The four sets of arms form sectors spaced at 90° from each other, to ensure single-user throughput.
- The three sets of arms form sectors spaced at 120° from each other, to ensure single-user throughput.
- Anti-backup device to prevent reverse rotation once the mechanism has moved 60° from home position
- The Improper Transit Control (ITC) feature will raise an alarm in case an authorization is received, the rotor is rotated, but no user passes through the Turnstile by use of an intelligent IR photoelectric sensor system. Local alarms are generated and programmable outputs are available for remote monitoring.

C. Emergency / Fire Alarm

- In the case of emergency / fire alarm signal is triggered, the gate behaves as follow:

a) The rotor arms are allowed to be manually pushed and freely rotate

- Emergency / fire alarm input facility available for free voltage contact to effect fail-state.
- The Full Height Turnstiles is not certified as an emergency egress device.
- Mechanism Fail-Safe /Fail-Lock configurable as follow:

a) Fail-Safe: in the case of power off event, the rotor head is released and the rotor arms can freely rotate. Fail Safe is the by-default configuration from factory.

b) Fail-Lock: in the case of power off event, the rotor head is hold in home position and the rotor arms can not rotate. Fail Lock is available if requested on order.

- Either one or both directions can be fail-safe (standard), i.e. rotates freely, or fail lock, i.e. locks in the home position independently.

D. Alarm outputs

- A local audible alarm is generated when alarms occur. Buzzer sounds.
- A local visible alarm is generated when alarms occur. Flashing red cross with optional traffic lights
- Dry contact and serial protocol, digital programmable outputs are available for e.g. strobe, CCTV, voice prompts, remote monitoring or other security integration responses.
- An audible and visible alarm as well as dry contacts and digital serial protocol alarm signal are programmable and enabled for the Improper Transit Control (ITC) feature

2.3 DESIGN, CONSTRUCTION AND FINISHES

A. Shape

- Curved Casework (EV version with additional infils on the non-passage side), with overhead cabinet housing the mechanism, logic and power supply unit.

B. Materials

- Casework: Mild Steel painted grey RAL7004 or 304 grade stainless steel or 316 grade stainless steel.
- Rotor: 304 grade stainless steel or 316 grade stainless steel with plastic end caps.

C. Mechanism

- Shall provide three (3) or four (4) rotor locking positions, spaced at 120 or 90 degrees to assure:

a) in the rest position, the rotor arms block the passageway and ensure single-user throughput

- Electro-mechanical full height head mechanism configurable as:

a) Normally Locked (Controlled access mode): the mechanism is kept permanently locked until a valid authorization signal is received

b) Normally Un Locked (Free access mode): the mechanism is permanently un locked and is free to move to allow passage without authorization.

- Positive locking action for one passage at a time
- Self-centering mechanism to ensure complete rotation into the rotor column rest position
- Optional hyrdraulic damper to enhance smooth operation
- Anti-back device to prevent reverse rotation once the mechanism has moved 60° from the rotor column rest position
- Mechanism Fail-Safe /Fail-Lock configurable as follow:

a) Fail-Safe: in the case of power off event, the rotor column is released and can freely rotate. Fail Safe is the by-default configuration from factory.

b) Fail-Lock: in the case of power off event, the rotor column is held and cannot rotate.

D. Electronics Interface

- Low voltage LL2001 microprocessor control logic
- One input for opening/locking in each direction
- Two outputs controlling opening/locking
- Four open collector NPN outputs, piloting way-mode indicators
- Two open collector NPN outputs, counting passage in either direction
- Two 0V output relays indicating availability of use or counting passage in either direction
- One 0V output relay for alarm signalling
- Two open collector NPN outputs, to count passage or to indicate availability of use in either direction
- Serial Port - RS485
- Four inputs for Improper Transit Control (ITC) feature
- Remote control connectivity: inputs are provided for external control of the modes by remote

E. Visual and audible Signalization

- Buzzer alarm sound for Improper Transit Control (ITC) feature
- Traffic light indicators (option) flush mounted in roof box, with red cross and green arrow symbols to provide the status of the lane to users approaching from distance to the gate
- Pictograms (option) flush mounted in optional card reader box, to provide with red cross and green arrow as well as yellow badge symbols, providing the status of the lane to a user at the gate.

F. Power Supply unit and consumption

- 230 Volts AC 50 Hz or 115 Volts AC 60 Hz
- Nominal consumption in operation:

a) 50 VA maximum (50+50 for RotaSec EV Double)

G. System Performance

- Operating temperature -5°C to +50°C (Relative Humidity 95% not condensing)
- IP rating 44
- Noise during normal operation less than 55dB

2.4 DIMENSIONS

RotaSec 90 BA / RotaSec 90 EV / RotaSec 120 BA / RotaSec 120 EV / RotaSec 90 EV Double Interlocking / RotaSec 120 EV Double Interlocking

A. OVERALL SYSTEM DIMENSIONS (ONE PASSAGE LANE)

- Overall width: 1603 / 1603 / 1603 / 1603 / 2442 / 2442 mm
- Overall length: 1320 / 1655 / 1160 / 1500 / 1655 / 1600 mm
- Overall height: 2395 mm

B. PASSAGE LANE WIDTH AND BARRIER RELEVANT DIMENSIONS

- Passage width: 692 mm
- Passage entrance width: 547 / 547 / 761 / 761 / 547 / 761 mm
- Passage height: 2100 mm
- Bottom arm distance to floor: 140 / 140 /140 / 140 / 140 & 50 / 140 & 50 mm
- Rotor arm length: 600 mm
- Rotor arm diameter: 38 mm

2.5 OPTIONS AND ACCESSORIES

A. HEATING KIT

- Allows to extend temperature range down to -10°C

B. PICTOGRAM STATUS LIGHT (only available with reader box integration)

- Flush mounted in reader box
- The yellow badge symbol is continuously illuminated until the turnstile receive a valid passage authorization signal, the status light will then change into an illuminated green arrow

C. TRAFFIC LIGHT

- LED Red cross illuminated, indicates the passage is not allowed, depending on status mode selected or alarms
- LED green arrow illuminated, indicates the passage is allowed, depending on status mode selected: free or controlled modes.
- Flashing LED in the case of alarm or indicate the passage way direction

D. HYDRAULIC HEAD DAMPING

- Hydraulic damper for the head mechanism to enhance smooth movement

E. CARD READER MOUTNING

- Flat plate to allow reader mounting

F. READER INTEGRATION BOX

- Stainless steel ox with plastic front to allow housing of optional pictogram and card reader

G. ITC DETECTION

- The Improper Transit Control (ITC) feature will raise an alarm in case an authorization is received, the rotor is rotated, but no user passes through the Turnstile by use of an intelligent IR photoelectric sensor system. Local alarms are generated and programmable outputs are available for remote monitoring.

H. CANOPY

- Canopy with aluminium frame, polycarbonate infil and 304 Stainless Steel (316 upgrade available) brackets.

I. LED DOWNLIGHTS

- Led strips outed in roof to light passageway

J. SAFETY RUBBER HEEL PROTECTION KIT

- Soft safety covering for bottom arms of rotor in foamed nitrile and polymeric covering

K. BASE PLATE

- Metal base plate covered in black rubber matt for mounting RotaSec

L. REMOTE CONTROL UNIT

M. NOTE TO SPECIFIERS: ADD REQUIRED OPTIONS TO THIS PROJECT

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

C. Installer shall examine the location and advise of any site conditions unacceptable for proper installation of product. These conditions include, but are not limited to the following:

- Identification and planning for expansion joints, project access, onsite staging areas, site configuration/temporary construction enclosures, and work hours as related to other activities.
- Recommended floor preparation to be RCK250 type UNI 9858 concrete with minimum thickness of 150mm. Floor must be flat and level +/- 5mm over footprint area.
- The ability for the door system in object to be installed shall be verified prior to installation on any part.
- Power supply and electrical must be installed by licensed electrician and verified to be of the correct local electrical standard.
- Required facility systems such as security, fire interface and electrical power must be ready for connection/termination at time of installation.

3.2 INSTALLATION

D. Installer shall install the system in accordance with manufacturer's provided instructions, and by trained personnel at the manufacturer's facility, to prove a proficient level of knowledge on installation, settings and maintenance on the product object of installation, and capable to train on site the client after installation.

E. System must be set level, plumb, with uniform hairline joints, and anchored securely into place.

F. Confirm and maintain dimensional tolerances, as indicated by the manufacturer recommendations and instructions.

G. Coordinate installation with facility stakeholders such as electrical, security, fire and others as required.

3.3 OPERATIONAL ADJUSTMENTS

A. Operational adjustments in the field shall be achievable with general facility maintenance personnel after being trained.

3.4 CLEANING

A. Clean the product and area carefully after installation to remove excess caulk, dirt and labels

3.5 COMMISSIONING INSTRUCTIONS AND TRAINING

B. Installer shall provide on-site training.

C. Adjust door, hardware, speeds in case of motorized moving elements, settings and sensors in case of detection ability, for smooth operation, compliance with end user expectation (within operational tolerances) and all safety codes and standards.

D. Installer shall demonstrate to stakeholders the proper operation of the door and the necessary service requirements such as lubrication, cleaning, and inspection or components.

3.6 MAINTENANCE

E. Maintain the equipment according to the manufacturer's instructions.

END OF SECTION