

d Tower

Product Manual



Revision	Date	Reviser	History
09	July 2,2019	<ul style="list-style-type: none"> • Anderson Silva • Vinícius Duarte • Gustavo EneDir • Leandro Dandolini • Nicholas Reis • Luisandro Braga 	<ul style="list-style-type: none"> • New connection system of electrical panel; • DIP table update; • Software update; • Dimensions; • Preventive Maintenance
10	Setember 18, 2019	<ul style="list-style-type: none"> • Nicholas Hahn 	<p>General revision:</p> <ul style="list-style-type: none"> • Addition of explanatory texts, passage by disk emulation, and passage by pulse; • Exclusion of energy meter drawing; • DIP table update; • Alteration of pulse time.
11	March 10, 2020	<ul style="list-style-type: none"> • Leandro Dandolini • Vinícius Duarte • Jorge Grass 	<ul style="list-style-type: none"> • Layout alteration and removal of non-standard icons; • Alteration of figures to facilitate installation and fixation of doors; • Alteration of position of some chapters to enhance task scheduling; • Addition of new figures to facilitate interconnection between R, T, and RT equipment; • Chapter about cleaning polycarbonate doors; • Preventive maintenance update.

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1. Introduction

Read this manual carefully because it contains important information that will help you understand the processes of installation, operations, maintenance, and unboxing. Correct installation and maintenance ensure equipment operation and increase the useful life of its components.

Correct equipment installation and operation guarantee proper functioning according to specifications.

2. Safety Instructions

2.1 Symbols

	<p>You may find this symbol in the product manual. It indicates important instructions concerning operation or maintenance.</p>
	<p>You may find this symbol attached to the product. It indicates a powered terminal where dangerous voltage may be present.</p>
	<p>You may find this symbol attached to the product. It indicates a protective ground wire.</p>



- **Read and keep the instructions:** Carefully read the safety and operation instructions before using this equipment and keep them for future reference.
- **Carefully follow instructions and warnings:** Follow the instructions of operation and use. Pay attention to warnings and cautions present in the operation instructions as well as those affixed to the equipment.
- **Terminology: the terms defined below are used in this document. The definitions are based on those found in safety regulations**

Technical professional – the term technical professional applies to trained or qualified people who have permission to install or replace technical equipment or to offer technical support. It is recommended that the technical professional use his experience and technical abilities to avoid possible injuries regarding himself and others due to the risks in areas of restricted access.

User and operator – the terms user and operator apply to people who are not technical professionals.

Risk of electrical shock.

This equipment meets the applicable safety standards.

	<p>WARNING To reduce the risk of electric shock, follow the guidelines included in the installation and operation instructions. Leave all maintenance services to qualified technical professionals.</p>
	<p>WARNING To reduce the risk of electric shock, before maintenance, turn off the power of the equipment by moving the circuit breaker key to the position OFF. Leave all maintenance services to qualified technical professionals.</p>

Electric shock can cause personal injuries or even death. Avoid direct contact with dangerous voltages at all times. The protective grounding connection, when offered, is essential for a safe operation and must be checked before connecting the equipment to the power grid.

Know the following warnings and safety guidelines:

Dangerous voltages

- Only qualified technical professionals can install or replace the equipment.
- Only qualified technical professionals can remove equipment doors and access any components, except for the card-collecting box and the circuit breaker.
- Before performing any maintenance, turn off the power of the equipment by moving the circuit breaker key to the position OFF

Grounding

- Do not violate the protective grounding by using an extension cable, a feeding cable, or an autotransformer without protective earth conductor.
- Be careful to maintain the protective grounding of this equipment during maintenance or repair and to reestablish the protective grounding before putting the equipment in operation again.


2.2 Installation site

When selecting the installation site, meet the following standards:

Protective grounding - The protective grounding of the building's electrical installation must meet national and local regulations.


Environmental conditions - The installation site must be dry, clean, and ventilated. Do not use this equipment where it can get in contact with water. Make sure that this equipment is operational in an environment that meets the requirements established in the equipment's technical specifications found in this manual.

• **Installation requirements**

	<p>WARNING Only allow qualified personnel to install this equipment. The installation must be in accordance with all local standards and regulations.</p>
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• **Overload of electrical network**

Know the effects of overload before connecting this equipment to the electrical network.

	<p>CAUTION Consider the connection of this equipment to the electrical network and the effect that an overload can have on the overcurrent protection and the electrical wiring. Check the consumption information in this manual.</p>
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An easily accessible shutdown device must be installed on the external of the equipment or set of equipment.

2.3 General maintenance precautions

	<p>WARNING Avoid electric shock! Opening or removing the doors of this equipment can expose it to dangerous voltages.</p>
	<p>WARNING To reduce the risk of electric shock, before maintenance, turn off the power of the equipment by moving the circuit breaker key to the position OFF. Leave all maintenance services to qualified technical professionals.</p>
	<p>CAUTION These maintenance precautions are only guidelines to qualified technical professionals. To reduce the risk of electric shock, do not perform any maintenance not specified in the operation instructions, unless you are qualified to do so. Leave all maintenance services to qualified technical professionals.</p>

Be aware of the following general precautions and guidelines:

- **Maintenance** – Maintenance is necessary when this equipment is damaged in any way, such as damaged feeding cable or plug; liquid has been spilled or objects fell onto this equipment; this equipment was exposed to rain or humidity; this equipment is not working properly or suffered a fall. Before maintenance, turn off the power of the equipment by moving the circuit breaker key to the position OFF. Leave all maintenance services to qualified technical professionals.
- **Wristwatch and jewelry** – to ensure personal safety and to avoid amages to this equipment, do not wear electrically conductive objects during aintenance, such as wristwatches or jewelry.
- **Atmospheric discharges** – Do not work on the equipment neither connect nor disconnect cables during periods of atmospheric discharges
- **Labels** – Do not remove warning labels. Replace any labels that are damaged or illegible by new ones.
- **Doors** – Do not open the doors of this equipment to perform maintenance unless the product manual requires so. Leave all maintenance services to qualified technical professionals.
- **Humidity** – Do not allow humidity to enter this equipment.
- **Safety checks** – After performing maintenance, assemble the equipment and perform safety checks to ensure safe use before operation.

Electrostatic discharge

The electrostatic discharge (ESD) results from the accumulation of static electricity in the human body and other objects. This electric discharge can degrade components and cause failures.

Take the following precautions against electrostatic discharge:

- Maintain the components in their antistatic packages until installation.
- Avoid touching the electronic components when installing a module or board.

3. Guidelines

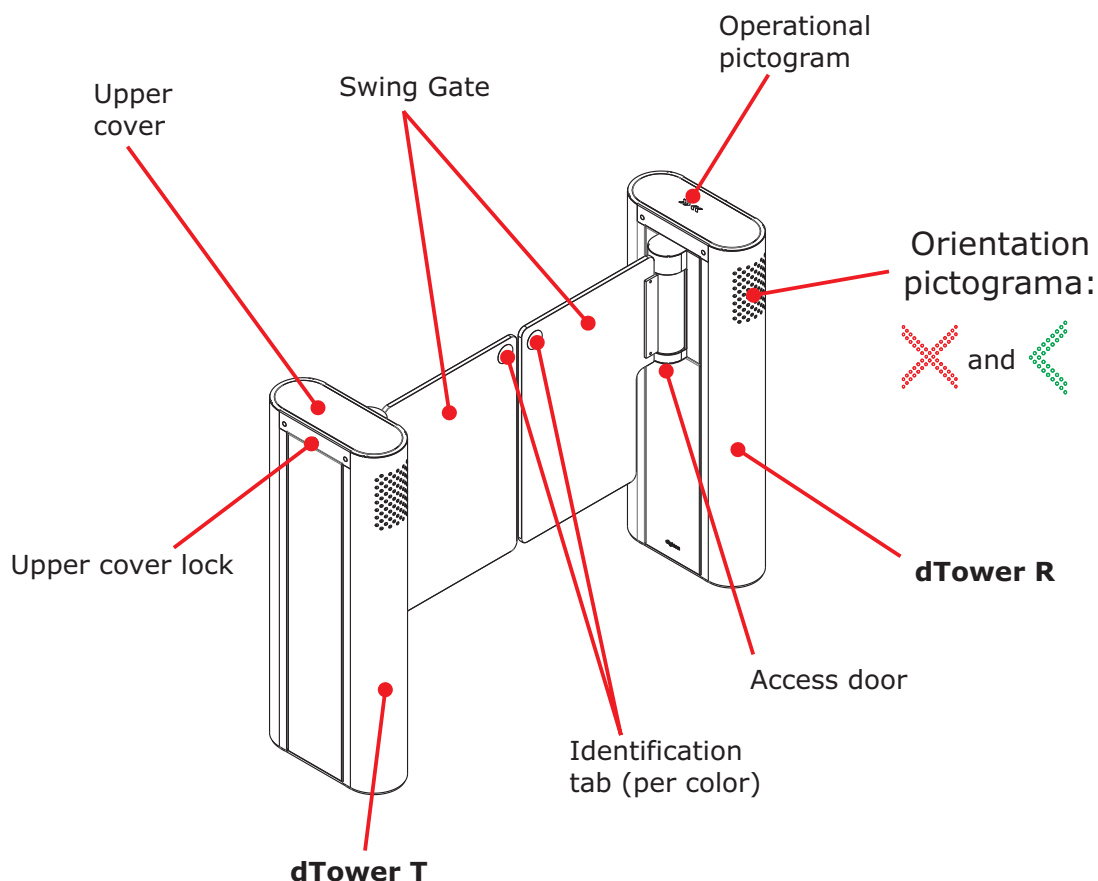
- Read the information carefully before using the product. This ensures the correct use of the equipment and maximum use of its technical features as well as prolonged service life.
- This product does not present sealing against rain, that is, it is designed to be used indoors.
- Keep this manual for future consultations.
- This product has moving parts that expose the user to injuries if safety and operation instructions are not observed.
- For safety reasons, children near the unit, and during passage through the equipment, should always be under adult supervision.
- We Recommend using the maximum-security level whenever children use the equipment.
- Manufacturer reserves its right to alter its products at any moment to adapt them to more recent technological advancements.
- Manufacturer maintains its right to alter the information contained in this manual without previous notice.
- Manufacturer does not provide any contractual warranty concerning the information in this manual and cannot be held responsible for errors it may contain and problems due to its use.
- The information contained in this manual is exclusive property of Manufacturer and is protected by copyright laws.
- This manual cannot be reproduced, photocopied or translated, in its entirety or in part, into any kind of medium, without written consent.
- The equipment described here is customizable, that is, this manual describes all possible models and they may not reflect, necessarily, the model purchased by the customer.

4. Walkthrough

Blockage line especially developed for access control solutions that operate in small spaces. Using the comfort and safety of swing gate doors, the **dTower** line offers maximum flexibility with minimum use of space.

5.dTower features

- _ Innovative design, alongside the dGate and dFlow lines;
- _ Robust solution, with motorized system and control with proprietary technology;
- _ Reinforced structure for fixing it to the ground;
- _ Available in stainless steel and carbon steel painted in powdered epoxy;
- _ Available with doors in 12mm polymer;
- _ Customizable door movement speed;
- _ Offers operational pictogram (top) – clear/blocked access;
- _ Offers orientation pictograms (front) for both directions;
- _ Offers sound signal (beep) for customizable access control;
- _ Doors with bidirectional movement;
- _ Inputs for activation sensors that open or close the doors;
- _ Optional card collecting box;
- _ Allows installation of proximity reader on the edges;
- _ Available with optional 2D barcode reader;
- _ Easy integration with access controllers available in the market;
- _ Easy integration between blockages "R" and "T";
- _ Customizable modes for controlling passage time;
- _ Customizable safety mode.



5.1 pictograms

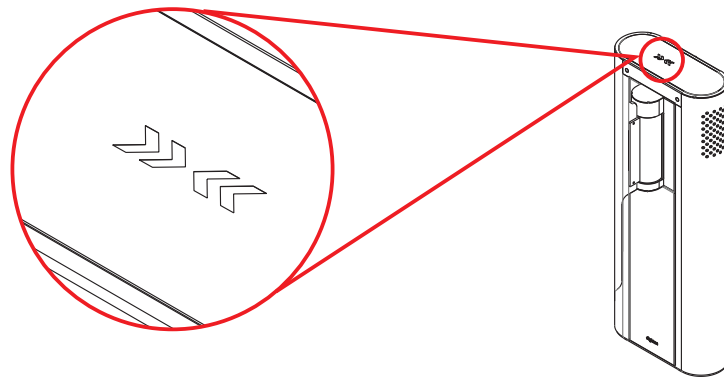
O **dTower** has two pictograms: direction and operation.

A) Operational pictogram (top):

The operational pictogram is installed on the upper part of the equipment and is represented by a sequence of LED lights in two colors, depending on the direction of the operational flow and validation group, if it exists.

LED lights flashing red or flowing only in the opposite direction represent passage not cleared.

LED lights flashing green indicating the direction of passage represent passage cleared.

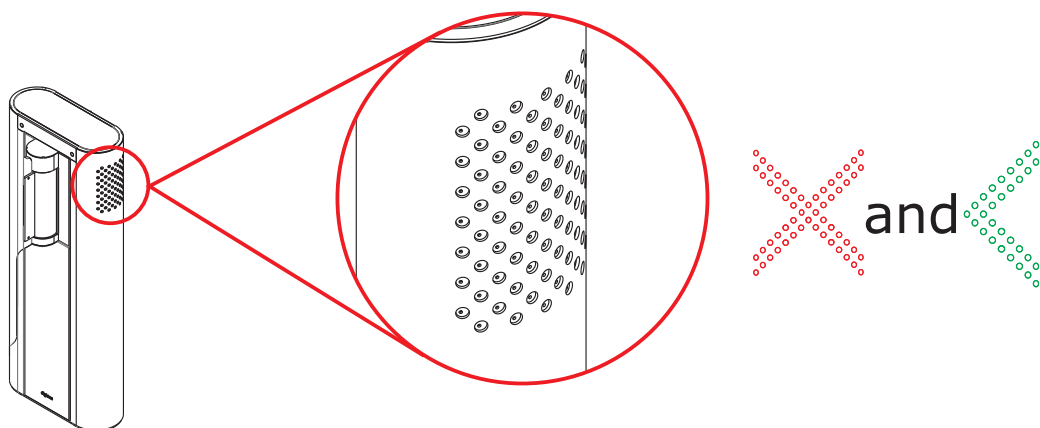


B) Orientation pictogram (front):

The orientation pictogram is installed on the edges of the equipment and is represented by a green arrow \leftarrow or red \times .

The red pictogram informs the user that **dTower** is not operating in the indicated direction or that passage is not allowed, or even that it is busy.

The green pictogram informs the user that **dTower** is free or controlled for passage in the indicated direction.



6. Installing and assembling



WARNING
Allow only qualified personnel to install this equipment. The installation must meet all the local standards and regulations.

6.1 Unboxing

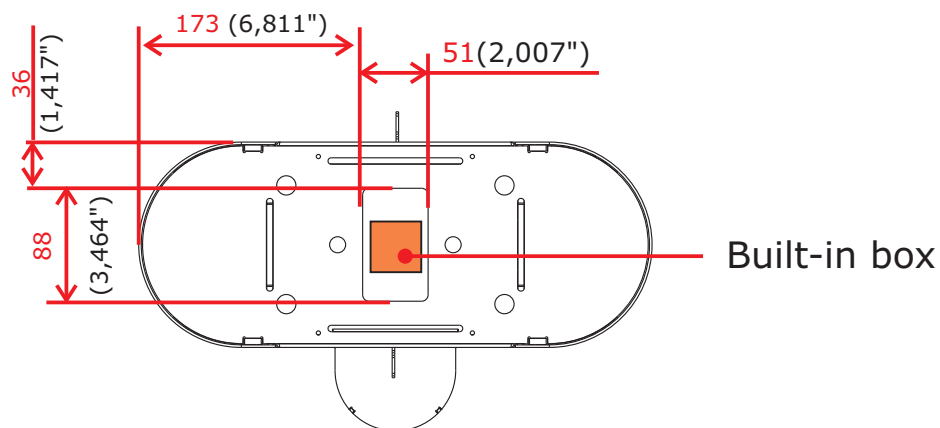
As **dTower** is customizable, it is important to perform a cautious visual inspection before the installing and assembling processes. In case of missing pieces, immediately contact the representative responsible for the sale.

- Two people are necessary to remove the equipment from the box;
- The top flaps of the box can be folded in the middle, facilitating access to the equipment;
- Be careful when removing the equipment from its box not to damage it

6.2 Pre-installation

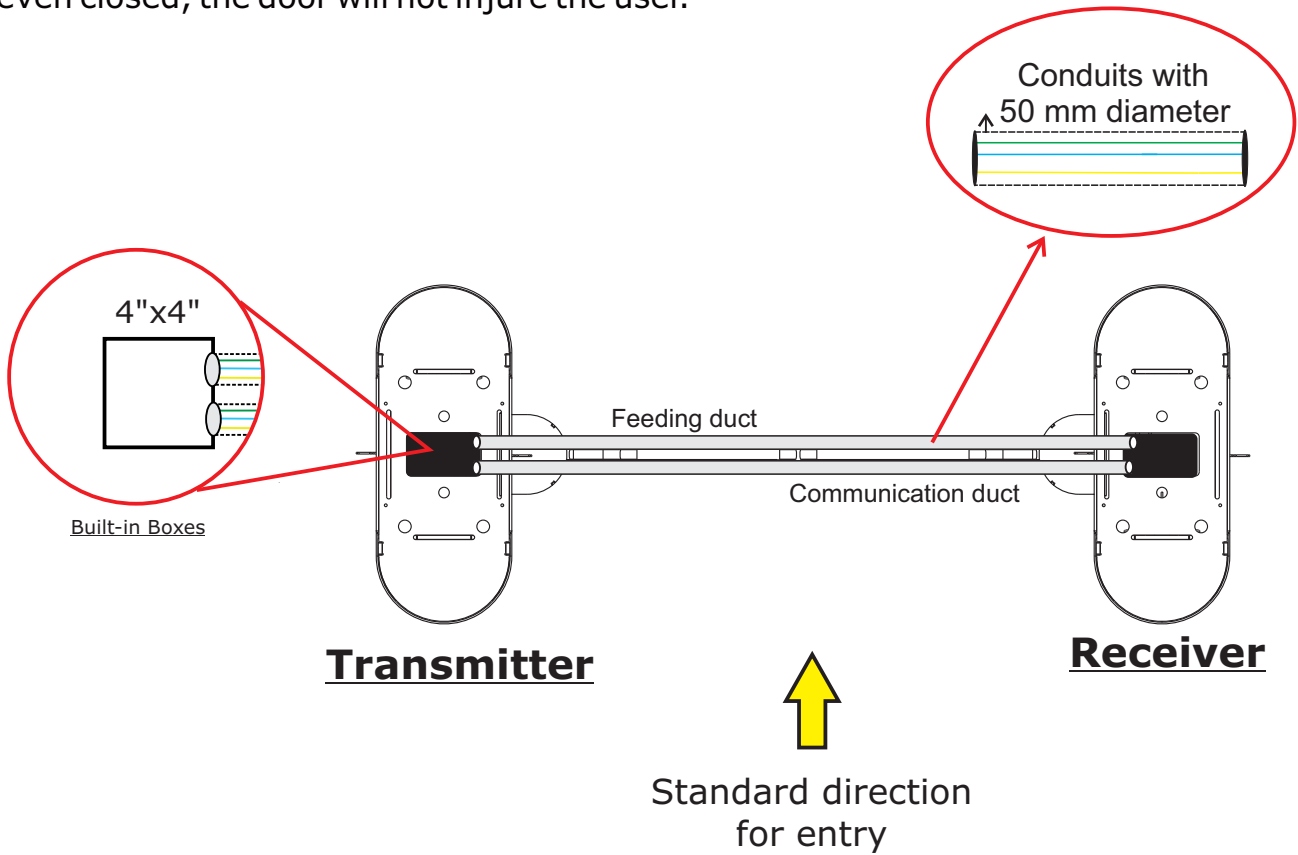
Before starting installation of **dTower**, the floor where the equipment will be installed must be ready. The built-in boxes must be installed before affixing the **dTower**. There is an opening underneath the equipment and the built-in boxes must be centered on it.

The floor must be steady and levelled to ensure good performance of the equipment.



NOTE - Measurements are illustrated in millimeters and (inches).

The distance between doors depends on their sizes. Doors must be adjusted so to have a small space between them of about 30mm. Such space is important to ensure that, even closed, the door will not injure the user.



6.3 Fixation to the floor

The image below indicates the points for fixing the product to the floor.

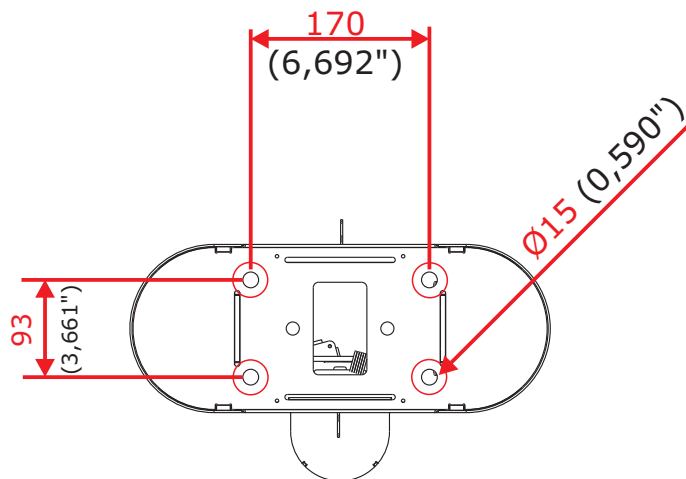
The surface must be steady and leveled to ensure good performance for the passage-controlling sensor and to maintain the doors aligned.

Fixing can be done through mechanical bolts, also known as parabolts, or through chemical anchorage.

- For mechanical bolts, minimum floors thickness should be 100mm.
- In case of floors with less than 100mm thickness or special floors, use chemical anchorage.

NOTE – *To facilitate tightening the screws, use a long extensor.*

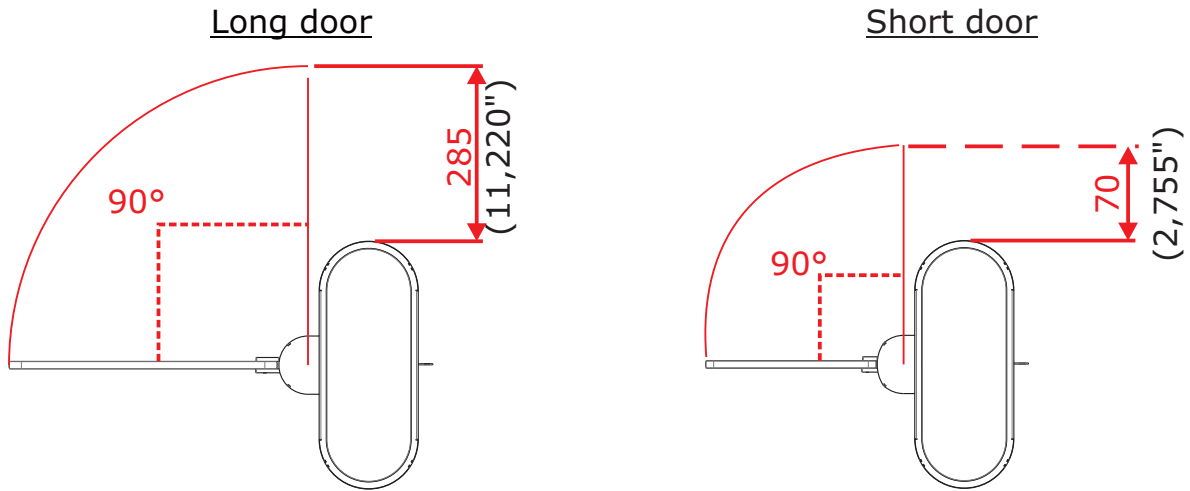
○ - Fixing points



NOTE - *Measurements are illustrated in millimeters and (inches).*

It is very important to check, upon installation, the alignment of the doors in the closed position. The distance, from top to bottom, must be the same.

Free span for passage:



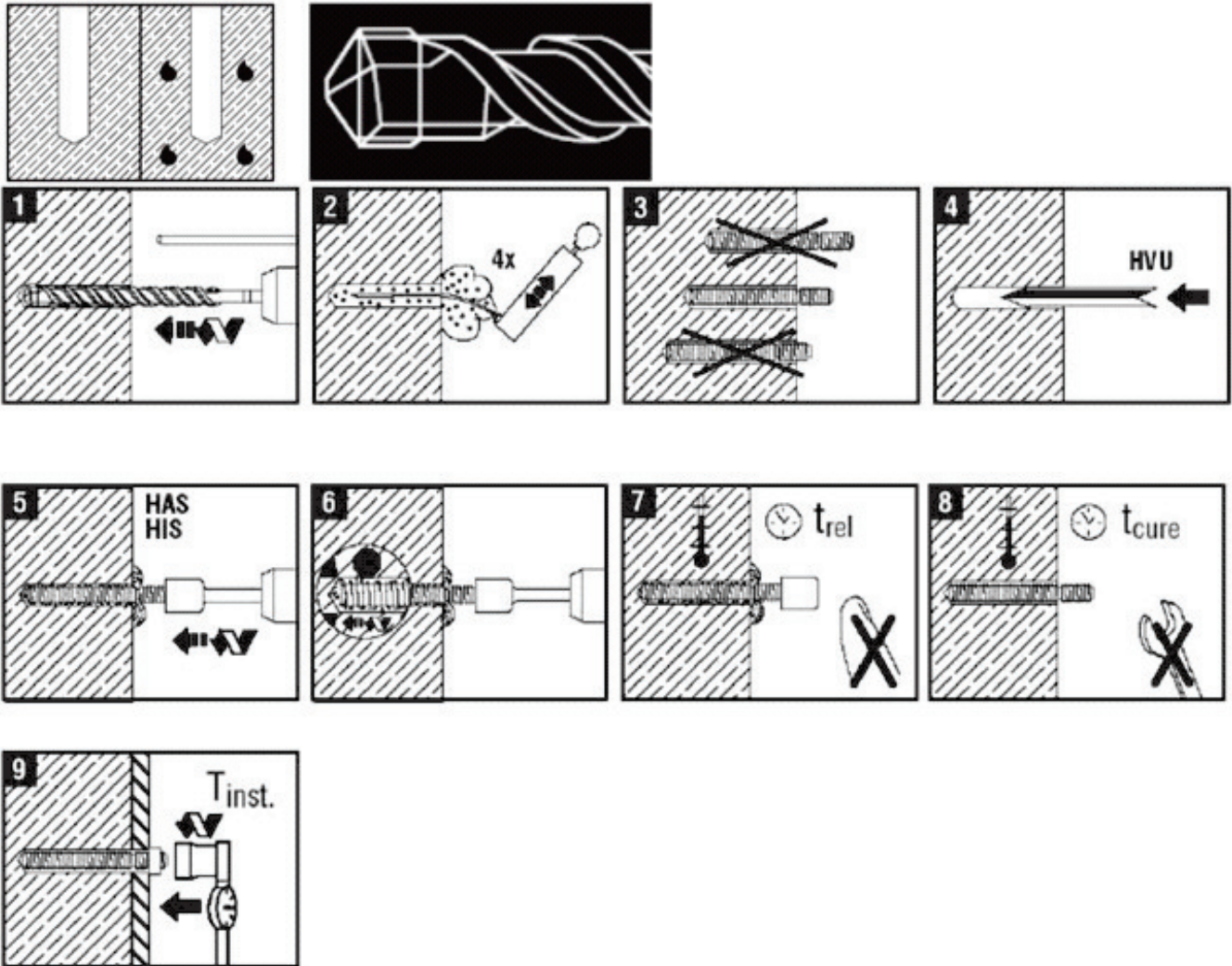
NOTE - meets the norm ABNT NBR 9050: Accessibility to buildings, furniture, space, and urban equipment.

Step-by-step:

1. Use the 12mm (0,47") drill to drill the hole with depth of 90mm (Threaded bar M10);
2. Clean the hole with an air blower or a vacuum to remove any debris.
3. Place the threaded bar inside the hole and measure the depth. The bar has a mark that must be leveled with the ground;
4. Place the HVU capsule inside the hole;
5. Attach the threaded bar to the drill and screw it until it reaches the bottom of the hole or until the mark of the threaded bar is leveled with the ground;
6. Apply the drill until the chemical material rises to the surface;
7. Do not touch the threaded bar until the chemical reaction is over (10min);
8. Curing time according to the table:

Data according to ETA 05/0255/0256/0257, edition 2010-03-01 / 2006-01-20	
Base material temperature	Curing time necessary for the fixing to receive total load t_{cure}
20°C to 40°C	20min
10°C to 19°C	30min
0°C to 9°C	1h
-5°C to -1°C	5h

NOTE - We recommend using chemical anchorage; however, if you prefer parabolts, make sure the floor is adequate.

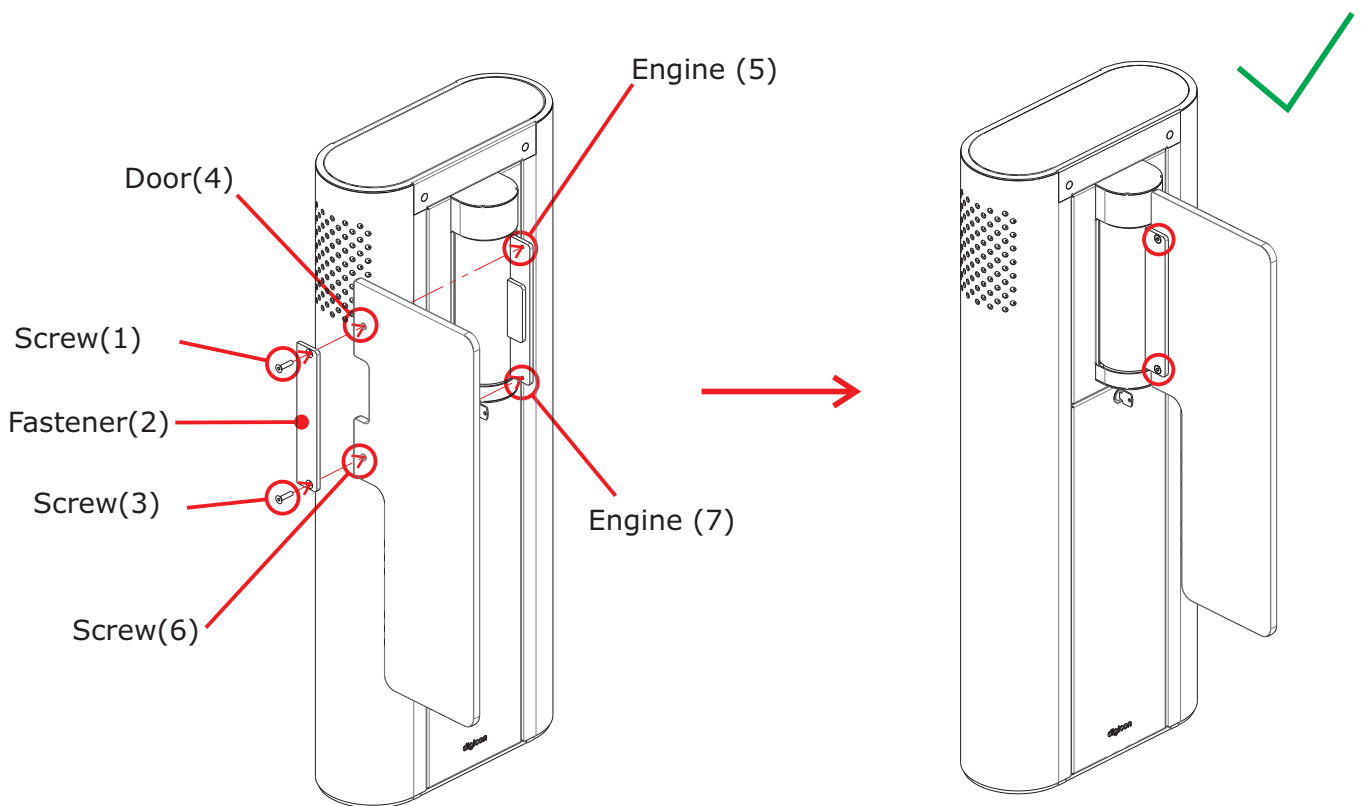


6.4 Fixation of doors

dTower is packaged with the doors unassembled, that is, they accompany the equipment separately in order to avoid damage.

To install/fixate the doors, follow the step-by-step below:

- 1°** Place the screw (1) only in the upper part, in the fastener hole (2);
- 2°** With the screw inside the fastener hole (2), place it in the door hole (4);
- 3°** With the three parts fitted, fix them to the equipment engine (5);
- 4°** With the upper part fixed, place the screw (3) on the lower part, going through the fastener (2), the door (6) and the engine (7);
- 5°** With the door suspended, before tightening the screws all the way, align the door;
- 6°** With a torque meter, the recommended torque is 20Nm when tightening the screws in place.



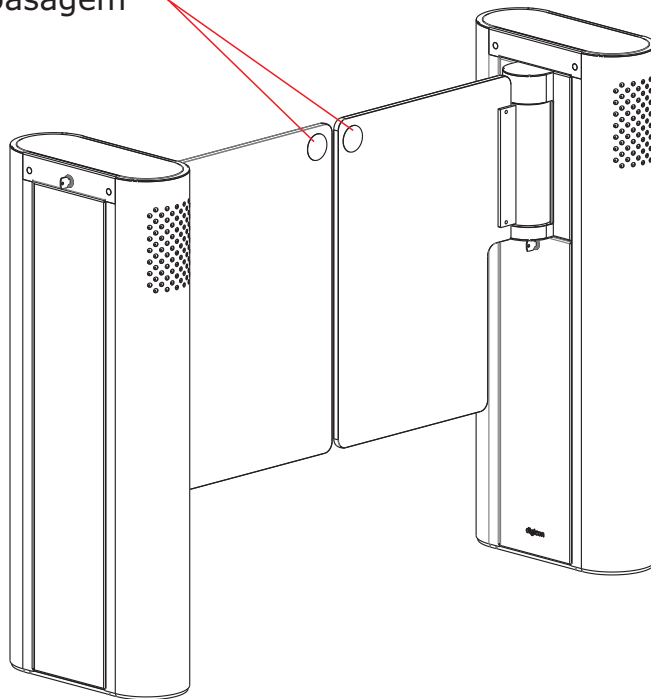
6.4.1 Labels

Alongside the equipment, there are identification labels for passage, which are blue and yellow circles:

Blue: Identify passage for people with special needs (PNE), with a passage space of 920mm.



Yellow: Identify passage for people with special needs, with a passage space of 520mm.

Identification labels for
pasagem



NOTE – *Using the identification labels for passage is optional.*

6.5 Accessing dTower after assembly

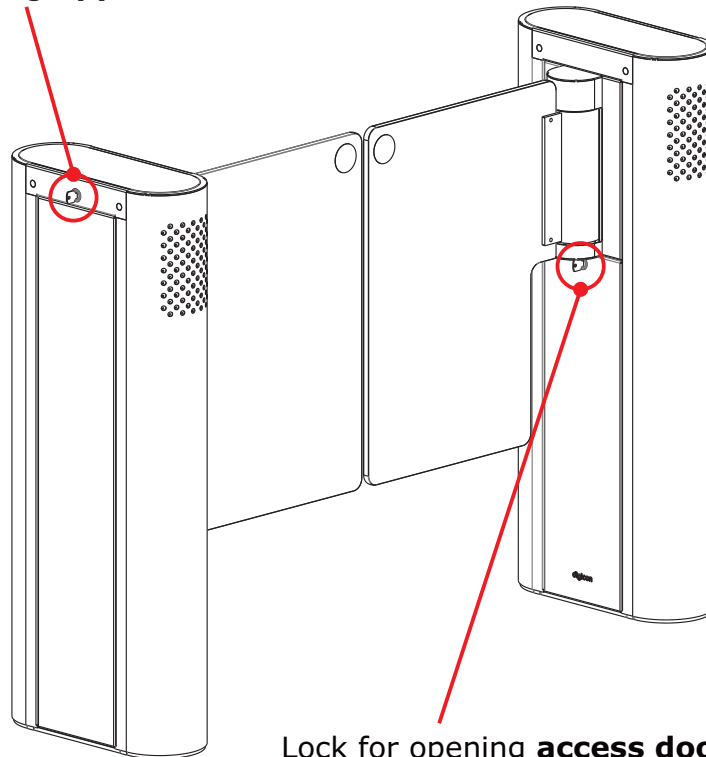
	<p>WARNING Avoid electric shock! Opening or removing the doors of this equipment can expose it to dangerous voltages.</p>
	<p>WARNING To reduce the risk of electric shock, before maintenance, turn off the power of the equipment by moving the circuit breaker key to the position OFF. Leave all maintenance services to qualified technical professionals.</p>

After **dTower** is installed and assembled, access to the interior of the equipment can be done with the key that accompanies the equipment, in 2 ways:

1° Via upper cover: access to readers, pictograms and engine board;

2° Via access door: access to controller board, connection terminals, AC terminals, circuit breaker, and power supply.

Lock for opening **upper cover**

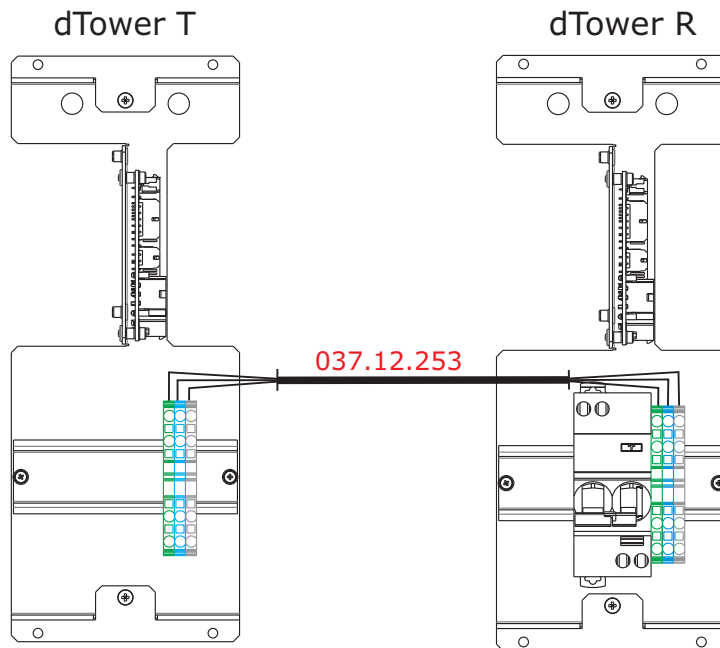


Lock for opening **access door**

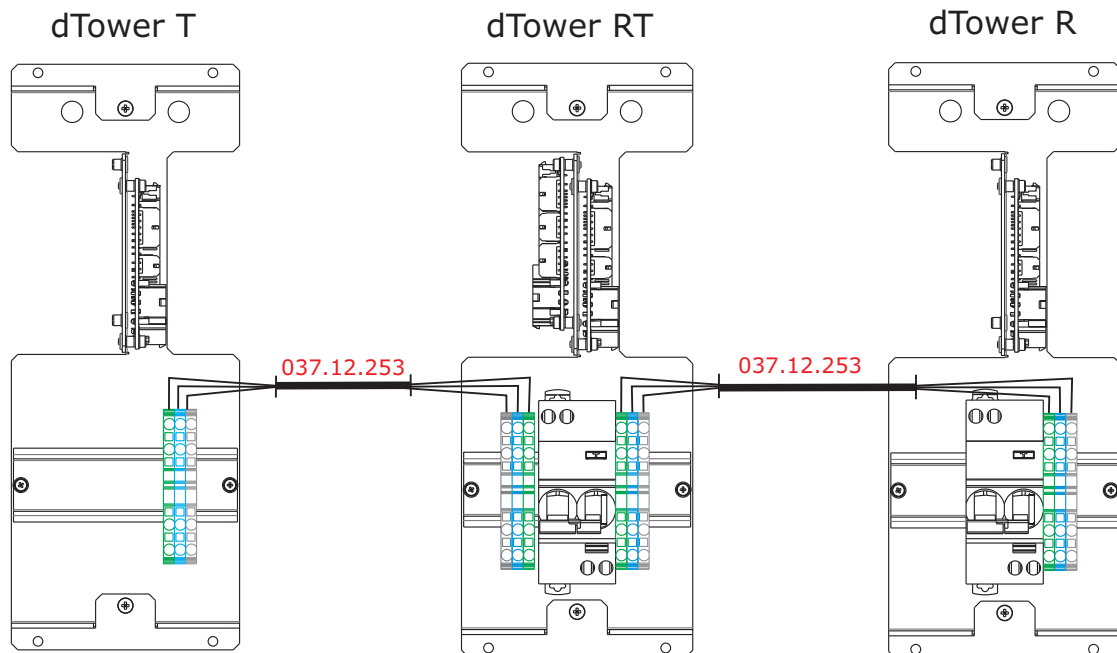
Interconnection duct for AC cable

- 037.12.253 - AC power cable

Layout 1:



Layout 2:



NOTE - On the cable itself there are rings identifying where each cable must be connected.

NOTE - Separate the electric network from the logical network.

NOTE -

- Manufacturer provides interconnection cables with 3 meters of length.
- The depth of the ducts must be sized so that the cables are enough.

7.2 Connection to power network:



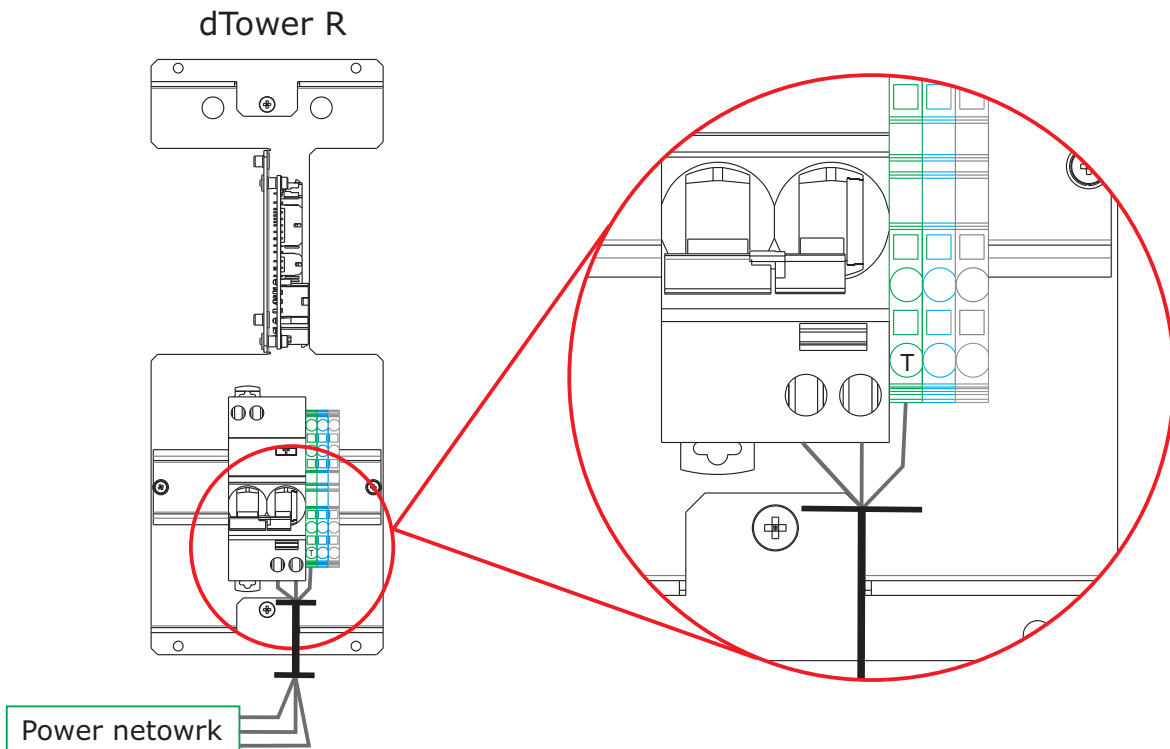
WARNING

To reduce the risk of electric shock, before maintenance, turn off the power of the equipment by moving the circuit breaker key to the position OFF. Leave all maintenance services to qualified technical professionals.

The connection must follow the figure below:

We recommend using the norm NBR 5410 as reference for electrical installations of equipment pieces.

Power cables of power supply must be connected to the circuit breaker and the ground cable in yellow/green terminal.



NOTE - Power connections must be performed by qualified professionals.

NOTE - We recommend using quality AC and grounding cables, with dimensions compatible to the distance to the switchboard. The data cable must be CAT5E.

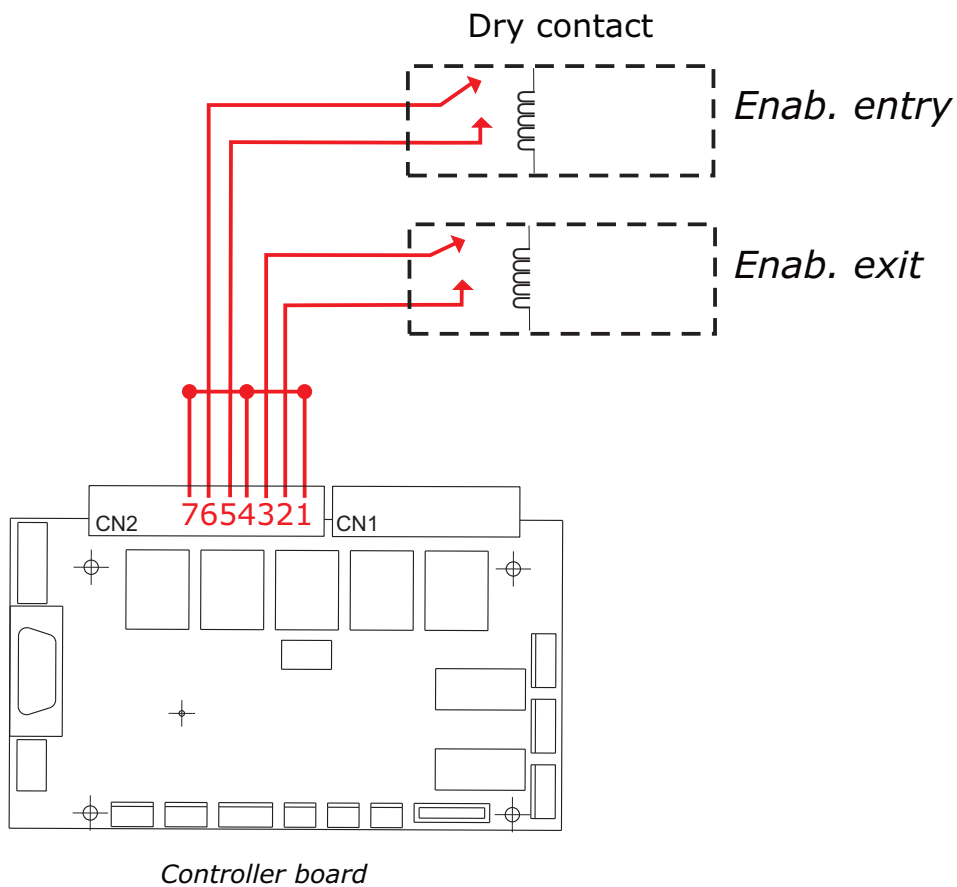
7.3 Connection of control signals



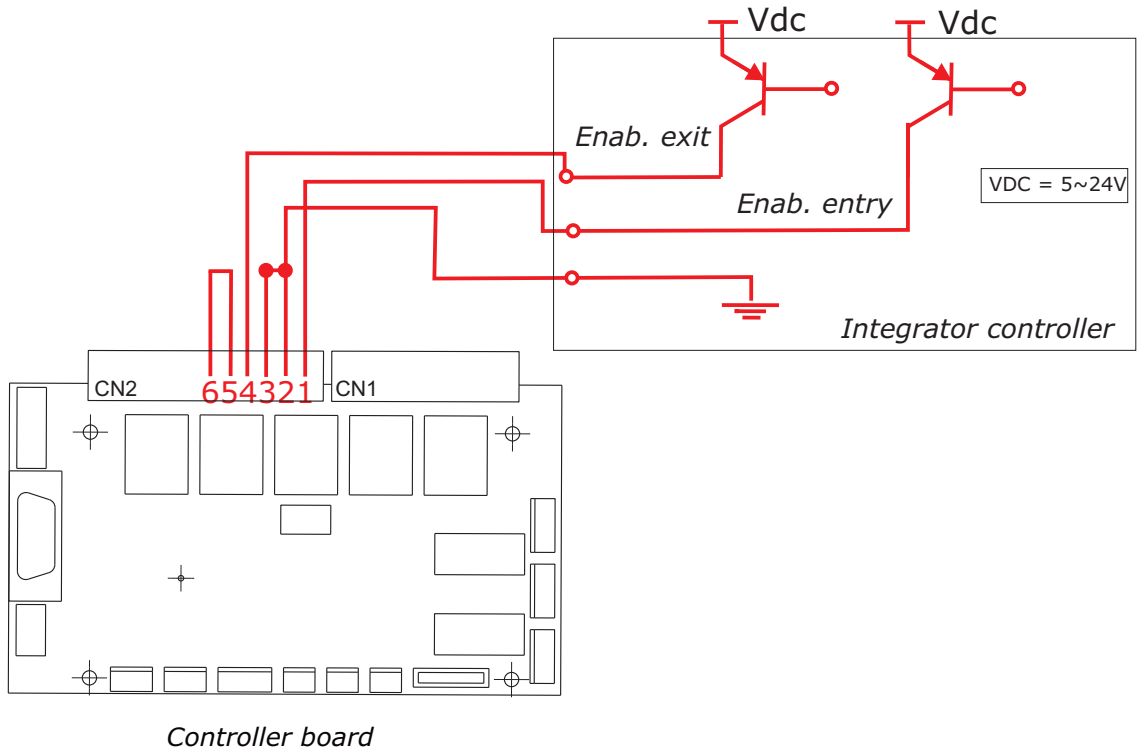
WARNING

To reduce the risk of electric shock, before maintenance, turn off the power of the equipment by moving the circuit breaker key to the position OFF. Leave all maintenance services to qualified technical professionals.

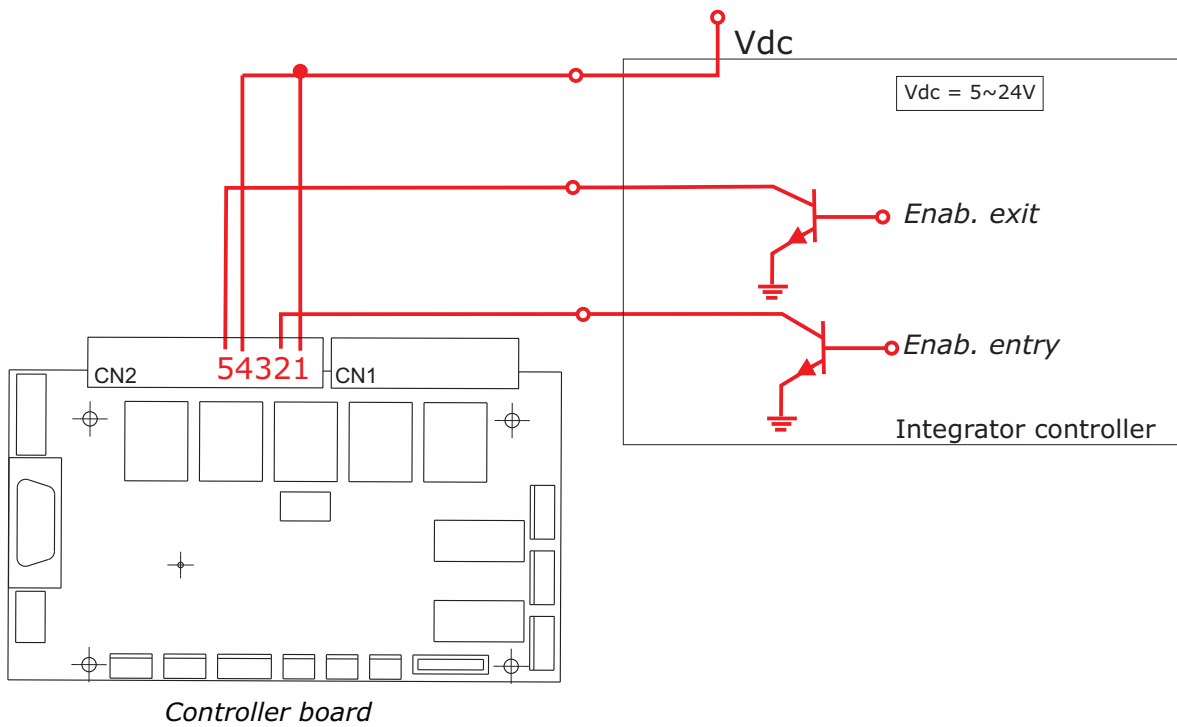
Enabling dry contact with 2 relays:



Enabling by solid state (positive, positive voltage):

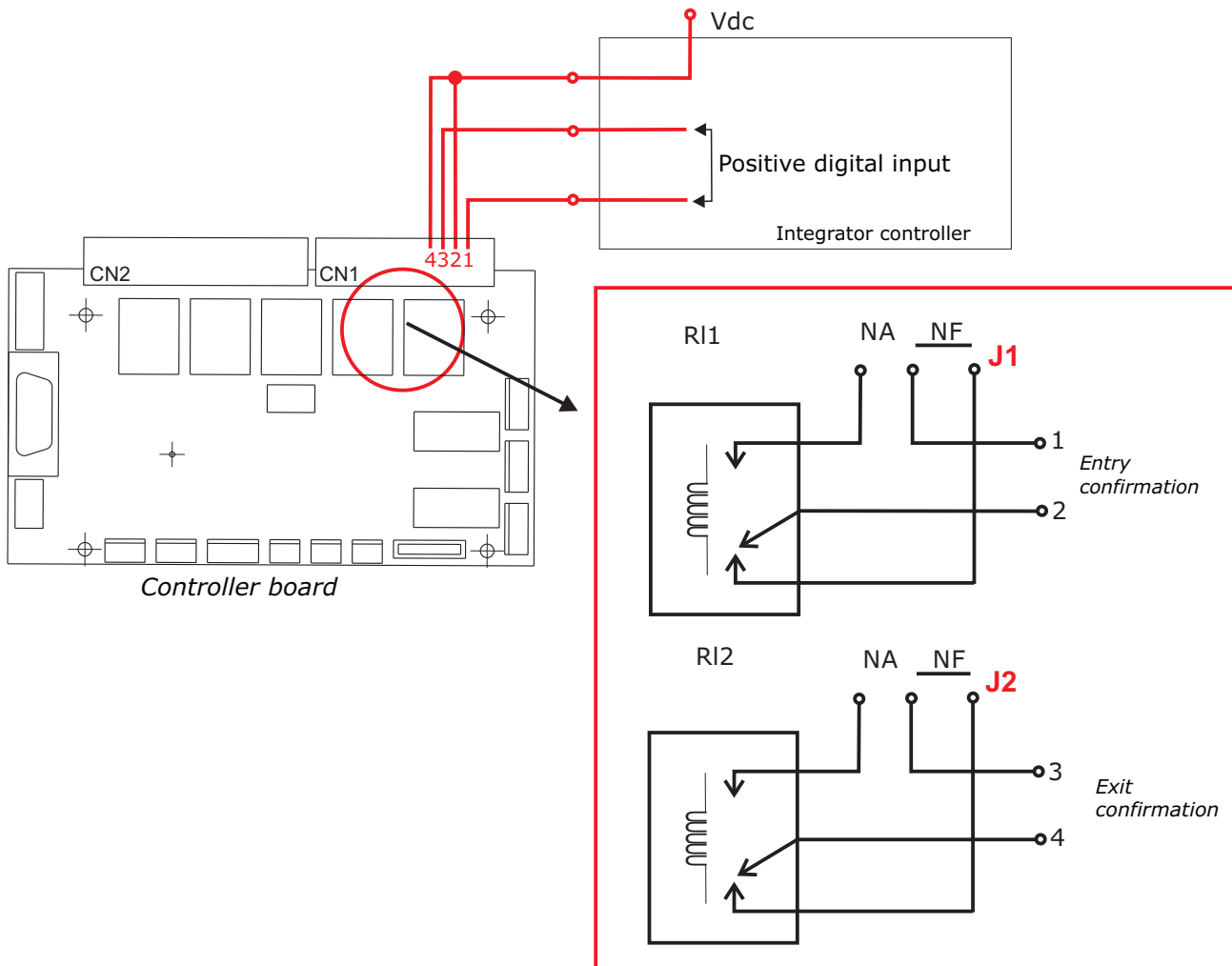


Enabling solid state (negative):

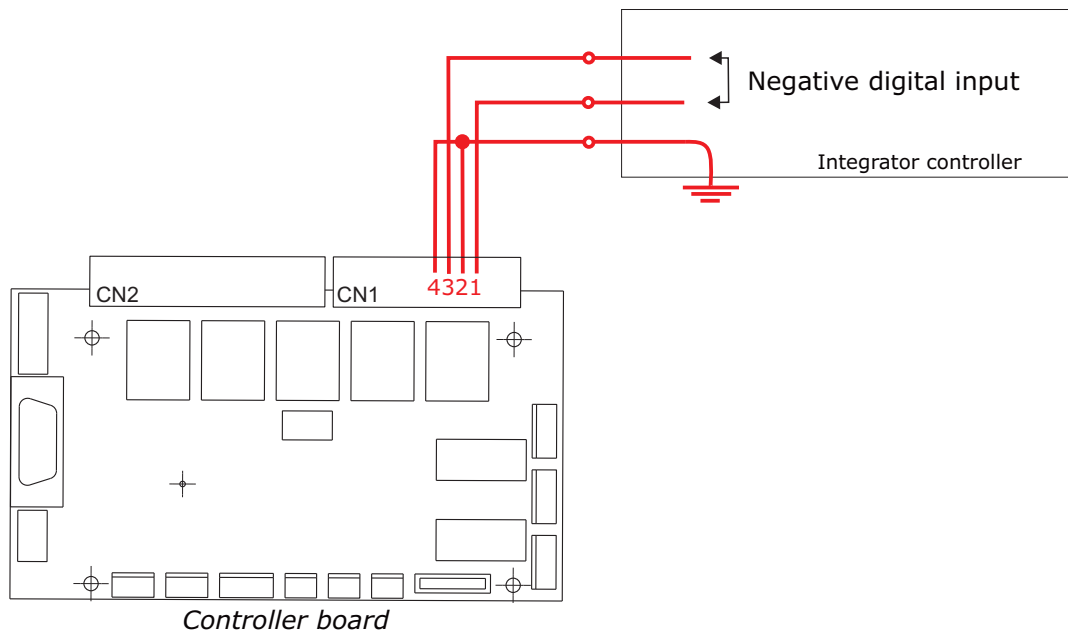


Confirming passage

Vdc - True logical level, configured in "disk emulation" DIP Ds2 n.7 in ON.



Confirming passage - Negative



Confirming passage by disk emulation:



In this operation mode, any of the passage confirmation outputs – output RI1 or RI2 – can be used to activate an electromechanical counter in order to count the passage flow in both directions of the equipment.

Confirmação de passagem por pulsos



In this operation mode, the output RI1 can be used to activate an electromechanical counter in order to count the passage flow in the direction of entry of the equipment. Similarly, the output RI2 can be used to count the passage flow in the direction of exit.

Confirmation of passage by pulse or "disk emulation" can be configured through the dipswitch Ds2 n.7; if it is at the ON position, disk emulation will be enabled; if it is at the OFF position, a confirmation pulse will be generated for the passage.

7.4 dTower operation



WARNING

To reduce the risk of electric shock, before maintenance, turn off the power of the equipment by moving the circuit breaker key to the position OFF. Leave all maintenance services to qualified technical professionals.

dTower R will always be the master module in the blockage. In this module the controller board is installed – it is responsible for controlling the operation of the blockage.

7.4.1 Controller board

The controller board has the function of controlling user passage, pictogram, sensors, and all system logic, receiving signals from the access controller board.

7.1.1 Functions

dTower has many features, some of them customizable through switches DS1 and DS2 located on the controller board.

To program DS1, put each pin in the desired position, according to the table below:

DIP SWITCH DS1								
Switch	1	2	3	4	5	6	7	8
Enables sound signal for invasion	ON							
Disables sound signal for invasion	OFF							
Entry signal for enabling: NO contact		ON						
Entry signal for enabling: NC contact		OFF						
Allows invasion			ON					
Does not allow invasion			OFF					
Enables clear access for entry (keep in OFF)				ON				
Disables clear access for entry (keep in OFF)				OFF				
Enables clear access for exit (keep in OFF)					ON			
Disables clear access for exit (keep in OFF)					OFF			
Sound alarm 2s before closing						ON		
Disables sound alarm 2s before closing						OFF		
No maximum time – waits for valid passage							ON	ON
Maximum time of 5 seconds							OFF	ON
Maximum time of 10 seconds							ON	OFF
Maximum time of 15 seconds							OFF	OFF

NOTE - The grey squares (in bold) in the table above show the standard configuration, that is, factory settings.

To program DS2, put each pin in the desired position, according to the table below:

DIP SWITCH DS2								
Switch	1	2	3	4	5	6	7	8
Final time to close door: 0,50s	ON	ON						
Final time to close door: 1,25s	OFF	ON						
Final time to close door: 2,00s	ON	OFF						
Final time to close door: SMART SPEED*	OFF	OFF						
Enables credit accumulation			ON					
Disables credit accumulation			OFF					
Speed of door movement: LOW				ON				
Speed of door movement: HIGH				OFF				
Enables Safety Mode (does not close door with sensors blocked)					ON			
Disables Safe Mode (closes the doors even with sensors blocked)					OFF			
Retention time of card in the box for reading: 1s						ON		
Retention time of card in the box for reading: 2s						OFF		
Confirming passage by disk emulation							ON	
Confirming passage by pulse							OFF	
dTower operational mode								ON
CLIP operational mode								OFF

NOTE - The grey squares (in bold) in the tables above show the standard configuration, that is, factory settings.

The detection of user passage is very thorough; these events need to take place, in this order:

- 1- Obstruction of first sensor;
- 2- Obstruction of second sensor (without clearing the first). In this moment, both sensors must be obstructed;
- 3- Clearing first sensor;
- 4- Clearing second sensor;

If the events above do not occur in the indicated order, the system may interpret the alteration as invasion, hitchhiking, or withdrawal and will signal it according to its interpretation.

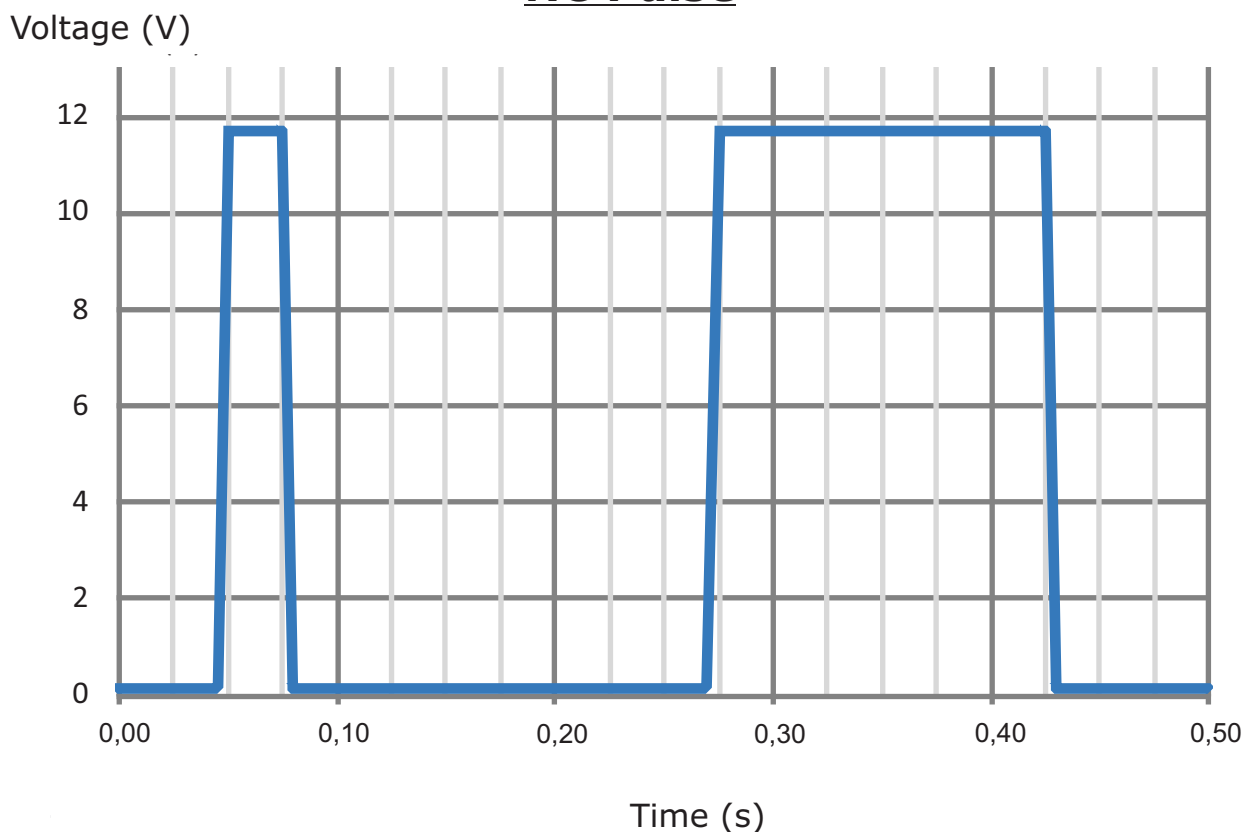
a) Enabling pulse:

The enabling pulse is a signal (dry contact with relay) sent by the access control system indicating that the user has been identified and cleared for passage. Passage enabling occurs via the voltage level of the enabling pulse, which should last at least 20ms and should respect the minimal interval of 20ms between pulses. If the pulse does not respect such intervals, the enabling will be ignored. If the pulse lasts longer than the passage cycle, a new passage will not be cleared, that is, the signal needs to be turned off during 20ms.

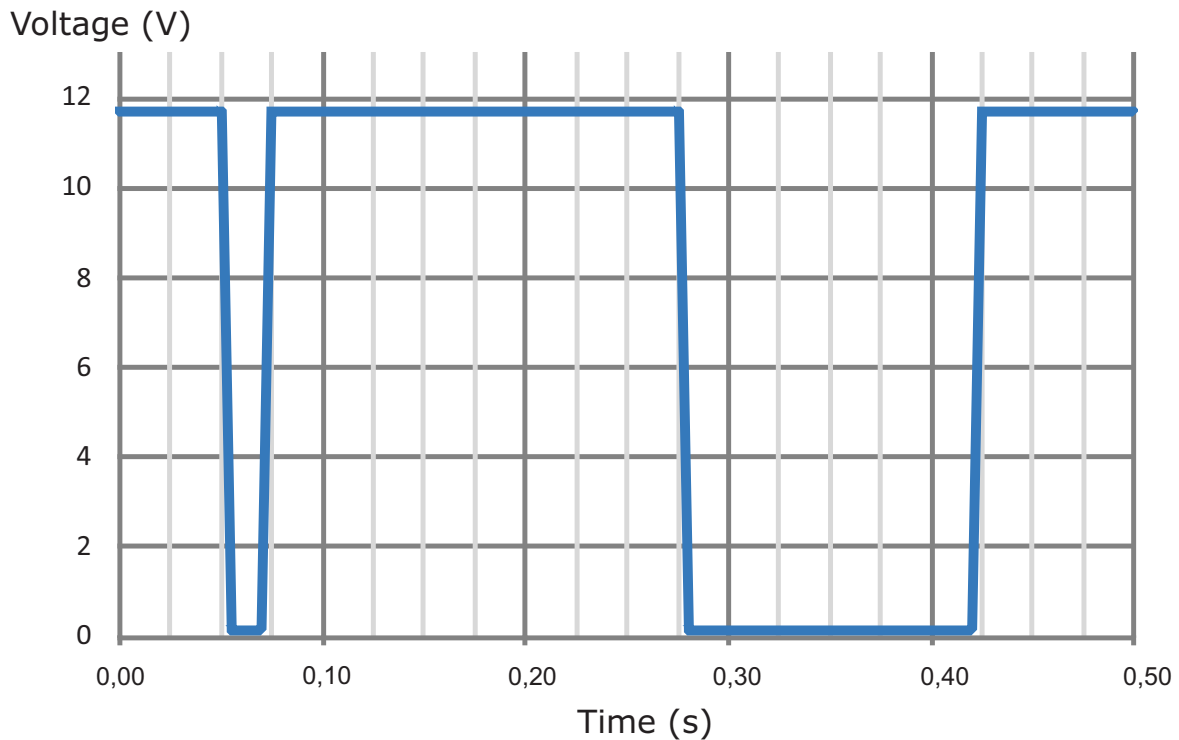
NOTE - *This feature also depends on the ability of the access management system to support a queue for consecutive access.*

In the images below, NC and NO contacts, respectively, each image illustrates two examples of valid pulses, one of 20ms and another of 150ms with interval of 200ms between them. In this situation, the **dTower** would count two accesses, allowing two people to pass in sequence without closing the door.

NC Pulse



No Pulse



7.4.2.1 Configurable functions (via inputs)

a) Free pass:

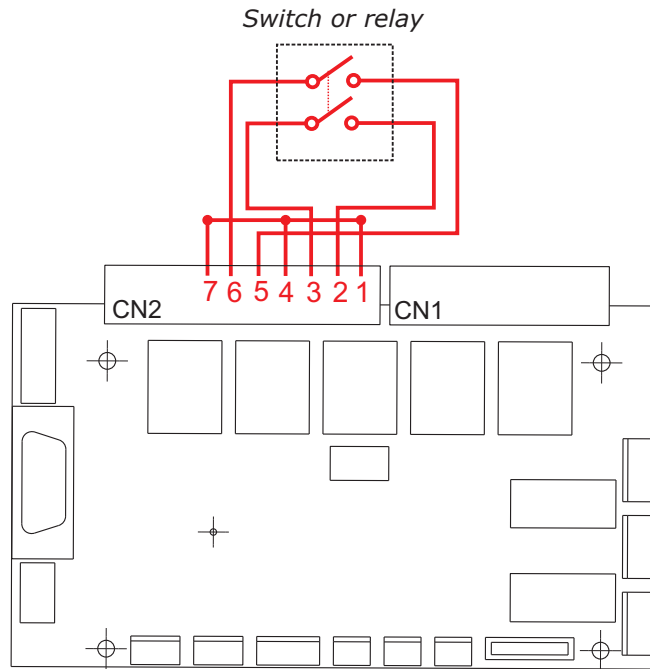
Activation: send entry and exit commands at the same time and keep them active. The free pass mode is appropriate for situations that demand that the system remains cleared for an indeterminate amount of time and without passage control. It can be used as an emergency mode where legislation allows simple control for clearing; where the legislation is more demanding, a general switch must be used to turn off the power to the system, leaving the door free.

During the free pass mode, the door remains open for the exit and the upper pictograms blink indefinitely. This mode remains active while the enabling signals for entry and exit are present.

b) Bidirectional clearance:

In this mode, the equipment waits for user interaction to know in which direction it should clear the passage and, thus, open the door correctly. This interaction happens when the user pushes slightly on the door in the direction of passage after the equipment indicated clearance. This type of clearance is useful especially for passages that share the same reader for both directions.

Activate the bidirectional clearance by sending the entry and exit command at the same time during the minimum enabling time of 20ms.



NOTE - Switch or relay with two poles and one activation

7.4.2.1 Configurable functions (via DS1)

a) Sound signal for invasion:

Activation: DS1-P1 at ON.

This feature, when activated, emits sound signals when the following events occur:

- Invasion by any side of the blocked area with the door closed;
- Invasion contrary to the direction cleared for passage with the door open;
- Hitchhiker user.

b) NO and NC contact:

Selection: DS1-P2 at ON for NO contacts, at OFF for NC contacts.

It allows selection of activation logic of enabling pulse, which can be via relay with normally open or normally closed contacts.

a) Passage with or without invasion:

Selection: DS1-P3 at ON allows invasion, at OFF it does not. This feature defines if, in standby, the blockage accepts or not the invasion, that is, if it allows or not the obstruction of its sensors.

If the feature is set not to allow invasion, whenever one of the sensors is obstructed, the upper pictograms will indicate invasion and the sound signal, if enabled, will beep. In this case, passage will not be allowed, even if the user is authorized,

On the opposite case, if the feature allows invasion, then no signal will sound and user validation will proceed normally.

b) Access cleared mode:

Selection: DS1-P4 and DS1-P5.

The access cleared mode can be used in special events in which it makes sense to keep the equipment cleared in a certain direction, entry or exit. It can also be used as a test to check on the door operation. When DS1-P4 is active, the door will open for entry and will remain thus until disabled. The same happens when DS1-P5 is active, but the door opens for exit.

By keeping both switches activated, the equipment remains in demo mode, where it executes continuous movements of opening and closing the doors at intervals of about 4 seconds.

c) Closing sound signal:

Selection: DS1-P6 at ON.

This function, when activated, emits a continuous beep for two seconds before finalizing the maximum time for passage and later closing of the door. The selection of maximum time for passage is defined on DS1-P7 and P8.

d) Maximum time for passage:

Selection: DS1-P7 and DS1-P8.

This feature defines the maximum accepted time for usage passage. It is possible to define times of 5s, 10s, 15s, and indefinite (it waits until valid passage occurs).

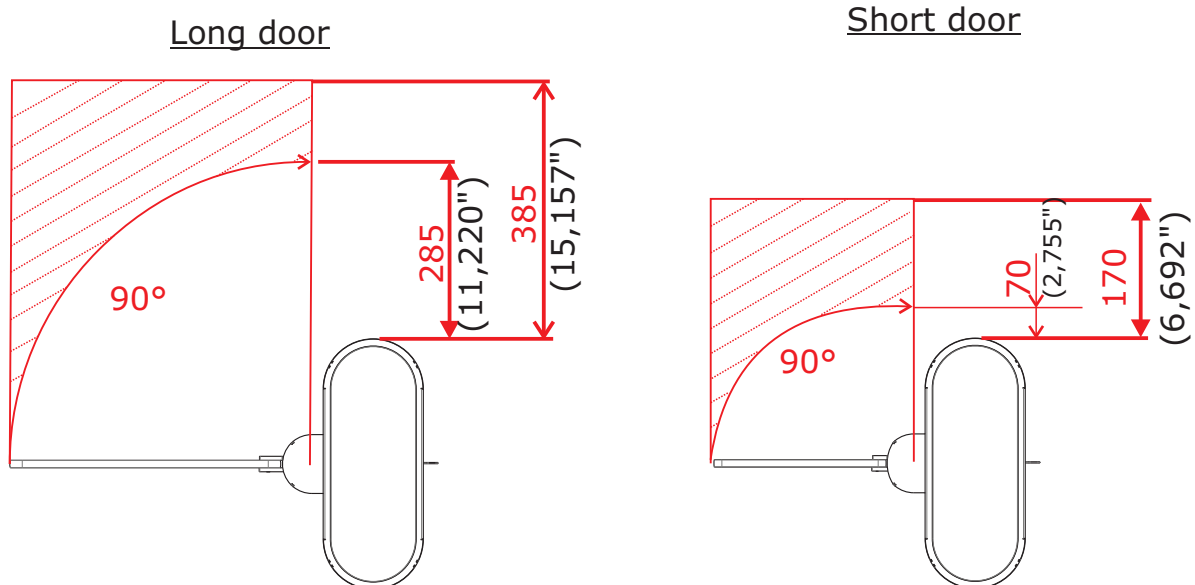
7.4.2.3 Configurable functions (via DS2)

a) Waiting time after passage:

Selection: DS2-P1, DS2-P2.

This feature allows selecting the waiting time before closing the door after a valid passage. Times can be 0.5 seconds, 1.25 seconds, 2 seconds or Smart Speed.

In the Smart Speed option, the system measures the passage speed and calculates the time for a person to go over the blockage in safety. The blockage area goes to the maximum distance that the door can reach plus 100mm, indicated in the hatched area below. In the Smart Speed function, minimum and maximum times are, respectively, 0.5 and 10 seconds. The SmartSpeed function operates correctly since the passage speed is constant.



b) Validation accumulation (Access queue):

Selection: DS2-P3

With this function, it is possible that several clearances in sequence are counted so that a user queue may pass without the door closing. To activate it, the next person in line must clear their passage while the person in front of them is still passing (before door begins closing).

c) Door movement speed

Selection: DS2-P4

Allows configuration of door speed during cycles of opening and closing the passage. Slow speed movement corresponds to 30% of the normal speed.

a) Safe mode:

Selection: DS2-P5

When this setting is active, the equipment doors remain open while the user blocks the sensors present in the equipment. When inactive, the doors close, forcing users to unblock the passage area.

b) Card retention time in collecting box:

Selection: DS2-P6

Setting up of how long the card deposited on the collecting box must remain available for reading before definitive collection.

c) Configuration of passage confirmation:

Selection: DS2-P7

(Configuration only available in the clips)

It allows user passage confirmation through the passage gap.

To identify this event, the equipment generates a small door movement (invitation) and waits for the user to signal their intention of passing by slightly pushing the door.

When passage is identified, the equipment generates confirmation according to the DS2-P7 configuration: passage confirmation by pulse or passage confirmation by disk emulation.

d) Operational mode:

Selection: DS2-P8

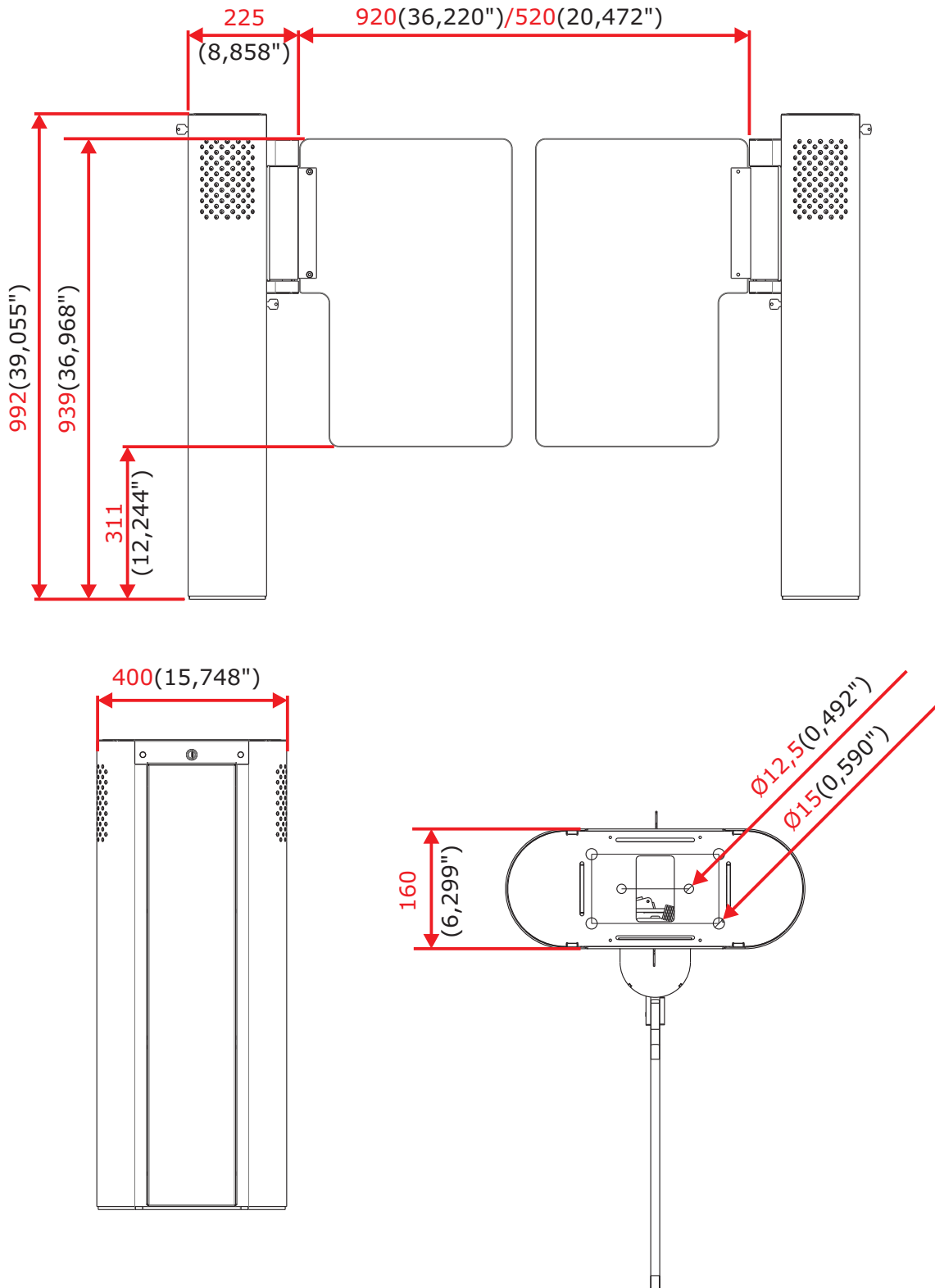
It selects the equipment operational mode:

dTower mode, where the sensors track the user throughout the passage;

Clip mode, which operates without the help of sensors to control passage and is based only on passage timeout for closing the doors.

8. Technical characteristics

8.1 Dimensions



NOTE - Measures are provided in millimeters and (inches).

8.2 Other information

Technical	Characteristics
Power supply (inner source)	100 - 240 VAC; 4,6 – 3,3 A
Power supply (outer source)	24 VDC; 5 A (+/-5%) (one source per module)
Frequency	50/60 Hz
Average time for opening/closing door	According to configuration
Operating temperature	0°C e 50°C
Approx. weight	100 kg per packaged module

	Consumption per module		Consumption per passage	
	127VAC	220VAC	127VAC	220VAC
Standby	22W	32W	33W	53W
Operation	176W	198W	198W	219W

9. Trouble shooting

DEFECT	POSSIBLE CAUSES	ACTION
dTower R will not start.	External dTower R AC powering	Check cables of AC power network are according to the item: (Reference the AC electrical connection, cable 037.12.253)
	Internal dTower R DC powering	Check status LED lights of supply to dTower R interconnection board.
		Check CN1 and CN2 connectors of dTower R interconnection board.
dTower T will not start.	External dTower T AC powering	Check if interconnection cables are properly connected and according to the items (Reference electrical connections of signals and AC supply in manual).
	Internal dTower R DC powering	Check status LED lights of supply to dTower T interconnection board
		Check CN6 connector of dTower R and T interconnection cable.
When dTower turns on, the breaker immediately turns off.	Short-circuit in AC electrical network.	Remove interconnection to isolate dTower T, check if Phase, Neutral, and Ground routes are properly connected, and according to the items (Reference the AC supply electrical connections).
Intermittent sound alarm and side and upper pictograms flash red without blockage obstruction	Emitter sensors are misaligned with receivers.	Check alignment of dTower R and T.
	Supply and signals of dTower R sensors.	Check connection between cable and CN16 on controller board.
	dTower T sensors supply	Check connection between cable and CN10 on interconnection board.

Side and upper pictograms are red	Failure in communication between controller board and engine control board.	Addressing of engine control board in dTower R: SW1-01 ON SW1-02 ON SW1-03 ON SW1-04 ON
		Addressing of engine control board in dTower T: SW1-01 ON SW1-02 OFF SW1-03 OFF SW1-04 ON
		Check connection of CN10 on control board, CN3 and CN9 on engine interconnection board, and CN1 on engine control board.
dTower doors will not move.	Supply failure at engine board.	Check connections of CN9 on interconnection board and CN1 on engine control board.
	Connections between engine and engine control board.	Connections between engine and engine control board.
Mechanical brake of dTower door.	Connection of brake activation cable	Check connection of brake coil cable with CN3 on engine control board.
	Dip Switch of engine control board	SW1-01 must be at ON.
dTower doors misaligned.	Door calibration.	Calibrate doors
dTower R side pictograms are turned off	Control or supply cable disconnected.	Check connection of CN12 and CN13 on dTower control board. Check CN3 and CN8 on dTower R interconnection board. Check connection of CN1 on dTower side pictogram.
		Check 5V LED status light on dTower interconnection board.

dTower T side pictograms turned off.	Control or supply cable disconnected	Check connection of CN12 and CN13 on dTower control board. Check CN4 and CN8 on dTower R and T interconnection board. Check connection of CN1 on dTower side pictogram.
		Check 5V LED status light on dTower interconnection board.
dTower R upper pictograms turned off.	Control or supply cable disconnected	Check connection of CN3 on dTower control board. Check CN3 and CN8 on dTower R interconnection board. Check connection of CN1 on dTower upper pictogram.
		Check 5V LED status light on dTower interconnection board.
dTower T upper pictograms turned off.	Control or supply cable disconnected	Check connection of CN3 on dTower control board. Check CN4 and CN8 on dTower R and T interconnection board. Check connection of CN1 on dTower upper pictogram.
		Check 5V LED status light on dTower interconnection board.

10. Preventive maintenance

To estimate the intervals between preventive maintenances, we assumed 1600 passages/day in a 30-day month. These are reference values and can change according to the utilization mode of each customer, who then must make the necessary changes to obtain their own results.

Calculation basis:

Cycles of passage	1600	* estimate of passages in one day
Month (days)	30	
Cycles in one month	48000	
Cycles	Month of maintenance	
300 thousand	6 months	
500 thousand	10 months	
1 million	22 months	
1500 millions	32 months	

Leave all maintenance services for qualified technical professionals.

Action	Frequency
Calibrate doors	1x / 3 months
Analyze door operation, looking for noises, heavy mechanisms, and non-standard activations	1x / 6 months
Analyze side and upper LED lights activation	1x / 6 months
Analyze activation of entry and exit pictogram	1x / 6 months
Analyze activation of buzzer through validations and invalid entries	1x / 6 months
Check 24V voltage in engine supplies	1x / 6 months
Check operation of door mechanical brakes	1x / 6 months
Check operation of biometric reader(s)	1x / 6 months
Check operation of non-contact card reader(s)	1x / 6 months
Check operation of card collecting box	1x / 6 months
Check operation of display	1x / 6 months
Check operation of screws that fixate doors	1x / 6 months
Check operation of bearings	1x / 10 months
Visually check the cotters	1x / 6 months
Check operation of engine	1x / 22 months
Visually check door conditions	1x / 6 months
Check operation of locks	1x / 22 months

11. Cleaning

11.1 Maintenance and preservation of stainless steel:

Do not use chemical products, bleaches, or household cleaning products.

Routine cleaning: The best products to preserve stainless steel are water, soap, mild and neutral detergents and ammonia-based removers diluted in warm water and applied with a soft cloth or a nylon sponge. Then, rinse with plenty of water, preferably warm, and dry with a soft cloth.

Fat, Oil, and Grease: Clean thick deposits with a soft cloth or a paper towel. Then, apply a warm solution of water and detergent or ammonia. After, follow the routine cleaning procedure.

Finger marks: Remove them with a soft cloth or paper towel dampened with isopropyl alcohol (found at manipulation pharmacies) or organic solvent (ether, benzene).

Labels, tags, and films: Remove all that you can. Apply warm water over the piece and scrub it with a soft cloth. If the adhesive remains, dry it and then scrub it again lightly with alcohol or organic solvent. Be careful: never scrape the stainless steel surface with blades, spatulas, or rough abrasives.

Rust stains: with a cotton swab moistened with water and nitric acid (10%), apply topically, maintaining the place humid for 20 or 30 minutes, repeating the operation if necessary.

Stains that are more prominent will demand a vigorous scrub of the stained surface with a paste made of fine domestic abrasive, water and nitric acid (10%) using a polishing loofah.

The treatment with acid must always be followed by rinsing with ammonia or bicarb soda solution and of the routine cleaning.

Light dirt/light stains: When the routine cleaning is not enough, apply a mixture made of plaster or bicarb soda dissolved in domestic alcohol until a paste forms. Use a soft cloth or nylon loofah to spread the mixture on the stainless steel surface. If you prefer, also use a soft brush, being careful not to brush, but processing as lightly as you can, using long and uniform strokes in the direction of the polishing, if there is any. Avoid rubbing in circular movements.

Then, rinse it with plenty of water, preferably warm, and dry it with a soft cloth.

Intense dirt/Prominent stains: Apply warm or hot detergent or an ammonia-based remover (domestic removers) and water solution. If this is not enough to remove burnt food or charred deposits, use more aggressive products, such as caustic soda-based removers used in domestic cleaning.

11.2 Maintenance and preservation of polycarbonate (doors)

Routine cleaning: Choose a dry day (preferably with low humidity) because it will be easier to remove soot that may be on the door.

If possible, remove the polycarbonate item for optimum cleaning.

Wet the polycarbonate doors with water. Add water until you see that excess dirt has come loose. The water must be plenty because cleaning the soot with a cloth without it being properly wet could cause scratches on the door or leave the door blurred and without any shine.

Get a 100% cotton cloth and a neutral detergent with good precedence. Do not use a common broom because it will scratch the polycarbonate.

Add the detergent to water inside a bucket until a lot of foam has formed and lightly spread this solution with cloth in only one direction – the direction of the water flow. Do not make circular movements with the cloth. Rinse well and repeat the process until the result is satisfactory.

Do not let the solution to dry under the sun – it can stain the polycarbonate.

Paint Splatters on the Polycarbonate: It is common, when painting walls, to splatter some of the latex paint over the polycarbonate sheet. Do not use solvents as thinner, gasoline, benzene, or acetone. Isopropyl alcohol or kerosene can solve the problem. Try to remove the paint before it dries and rinse the area with a water and neutral detergent solution.

Frequency of Cleaning the Polycarbonate: There is no determinate period for cleaning. The amount of soot in the air, caused by unpaved streets, factories, and buildings near the installation site can be reason for a more frequent cleaning routine. Clean the polycarbonate once a month and then analyze the situation. You can adapt this period according to your convenience. However, clean without scratching it.

NOTE - *Even when dealing with resistant dirt, start cleaning with the softest method. Be patient and repeat the operation for a number of times before employing methods that are more aggressive*

12. Warranty and Technical Assistance

Digicon is responsible for the project, skilled labor, and quality of the materials used in the manufacturing of our products, ensuring that the equipment and all parts are free of manufacturing defects or problems. Digicon commits itself to replace or repair, as we choose, any part or equipment presenting manufacturing defects without any costs to the buyer, in our factory in Gravataí or our branch office in São Paulo, in the conditions set below:

1. The buyer is responsible for the costs of shipping (return service) of the product to the factory in Gravataí (Rio Grande do Sul) or the branch office in Barueri - São Paulo.

2. The warranty period is counted from the date of emission of the bill of sale and encompasses:

a) 12 (twelve) months for equipment, accessories, parts, and pieces, including the legal warranty period of 90 (ninety) days.

Legal warranty

The customer has the period of 90 (ninety) days, from the date of emission of the bill of sale, to complain about apparent defects (easily observable in the product), such as the items that constitute the product's exterior and any other area accessible to the user, just like appearance parts and general accessories.

b) 90 (ninety) days for repairs or technical assistance

3. Warranty shall be granted to the buyer only in the face of the bill of sale (original or copy)

4. Warranty does not apply in the following cases or conditions:

a) defects and damages caused by accidents, negligence, or reasons of force majeure;

b) defects and damages caused by inappropriate storage or lack of prolonged use;

c) defects and damages caused by improper use of the equipment;

d) defects and damages caused by improper operation or installation of the equipment;

e) vandalism;

f) natural impacts (lightning, flooding, etc.);

g) defects and damages caused by abnormal temperature conditions, voltage/frequency, or humidity out of the levels specified in the installation and operation manual, once proven;

h) reconditioning, chrome plating, nickel plating, and painting.

5. Warranty shall be automatically canceled for equipment that:

a) suffers modifications, adaptations, or any alterations performed by the client or by third parties without written consent

b) goes through maintenance or repairs by people not authorized

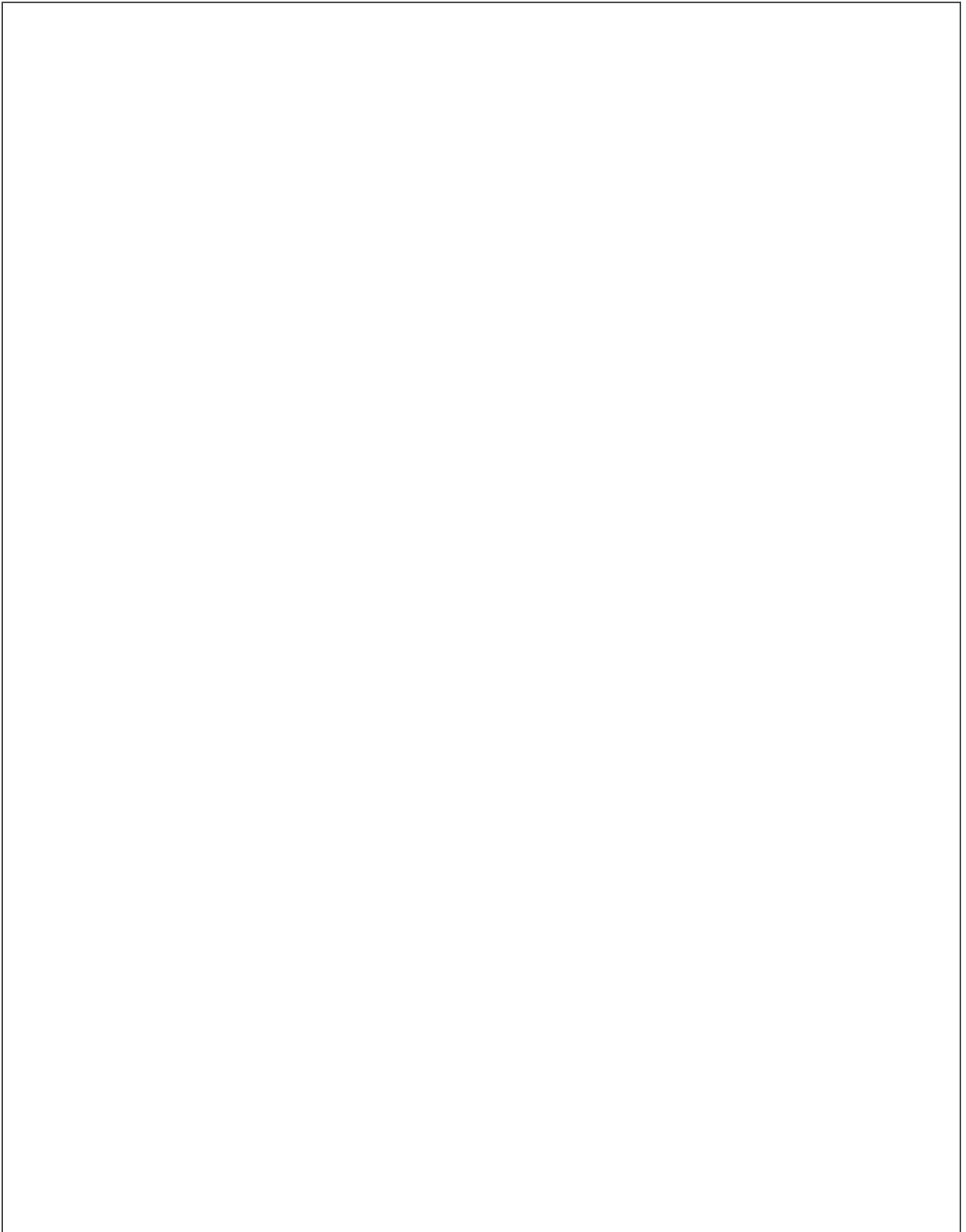
c) suffers alteration of serial number or violation of the identification label

d) is not paid for in the conditions, amounts, and deadlines described in the bill of sale

6. Manufacturer is not responsible for eventual losses suffered by the down time of the equipment.

7. The repair of a warranted product will be performed inside the manufacturer facilities.

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