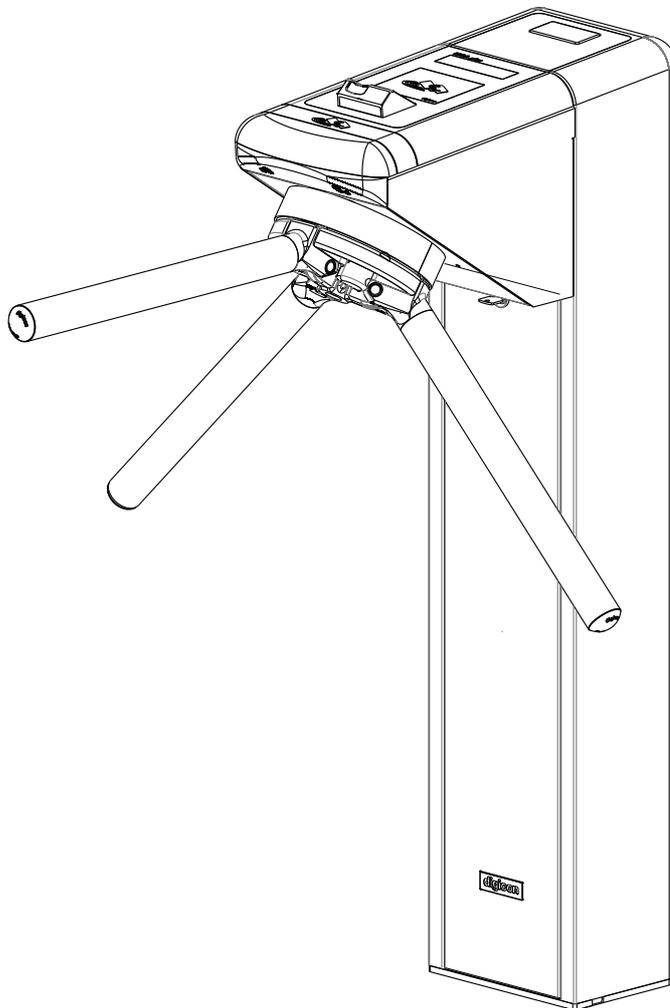


catrax

plus



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Controle eletrônico para Mecânica – 2018

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Documentation Sector - EDS



"At the end of a product's life cycle dispose according with local policy" .

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1. Important instructions

You can see, below, the symbols that will appear in this manual, signaling important moments. It is essential to pay attention to them.



TIP: Indicates something Digicon considers important.



CAUTION: Indicates a moment of extreme caution when handling the equipment/product.



ATTENTION: Indicates a moment when your observation skills should be extremely productive.



INFORMATION: Presents interesting facts about the purchased product.



QR CODE: Presents additional information or links with more details about the presented text.

2. Orientations

- Read the information and instructions of this manual carefully, before using the product. This ensures the correct use of the equipment and maximum use of its technical features as well as a prolonged service life.
- This product does not present sealing against the rain, that is, it is designed to be used indoors.
- Keep this manual for future consultations.
- Digicon reserves its right to alter its products at any moment to adapt them to more recent technical advancements.
- Digicon maintains its right to alter the information contained in this manual without previous notice.
- Digicon 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.
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3. Introduction

Following a new technological concept focused on solidity and reliability and counting with innovative design elements, with color variety and widely curved lines, Digicon has launched the line **CATRAX Plus**.

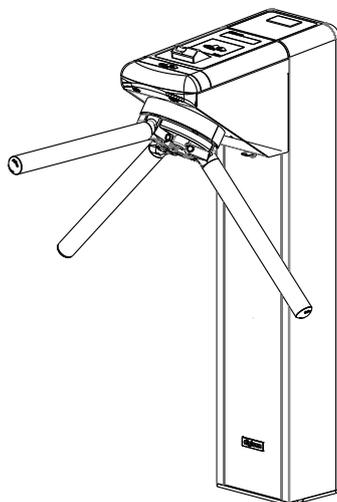
CATRAX Plus serves most technologies of access control currently available, becoming the best option in the market for access control. This manual presents a detailed description of the components and working of **CATRAX Plus**.

To see our complete catalogue, visit www.digicon.com.br.



4. Features of Catrax Plus

CATRAX Plus, an access controller in the model mini turnstile (column type), presents three bidirectional, equidistant arms at 120 degrees with brushed stainless steel (AISI 304) finishing.



The column can present external finishing in brushed stainless steel (AISI 304) or 1020 carbon steel with electrostatic painting in black epoxy powder.

It has reinforced structure, fully rounded corners, and non-exposed screws, offering space and comfort for any access control solution. It also has room for no-break and collecting box (optional items)

Aiming at facilitating assembly and maintenance, the column **CATRAX Plus** presents a U-shaped internal support (mounting rack) with standard holes for the fixation of additional electronic boards. Moreover, the clients, according to their needs, can add additional holes. Access to the mounting rack is done through a key with secret, whose removal and insertion are extremely easy.

A plastic cover and a stainless steel sheet compose the upper panel. The cover, made of injected plastic, can be purchased in the colors green, burgundy, or black or in any other color desired, on demand. Optionally, the cover can present a slot for the reading of magnetic cards/badges and barcodes.

The upper cover in stainless steel allows easy configuration and low-cost customization of the product. The sheet can also present slots for optional items, such as pictogram, collecting box input, display kit (separate manual), or a combination of these items. The following images show some of the options.

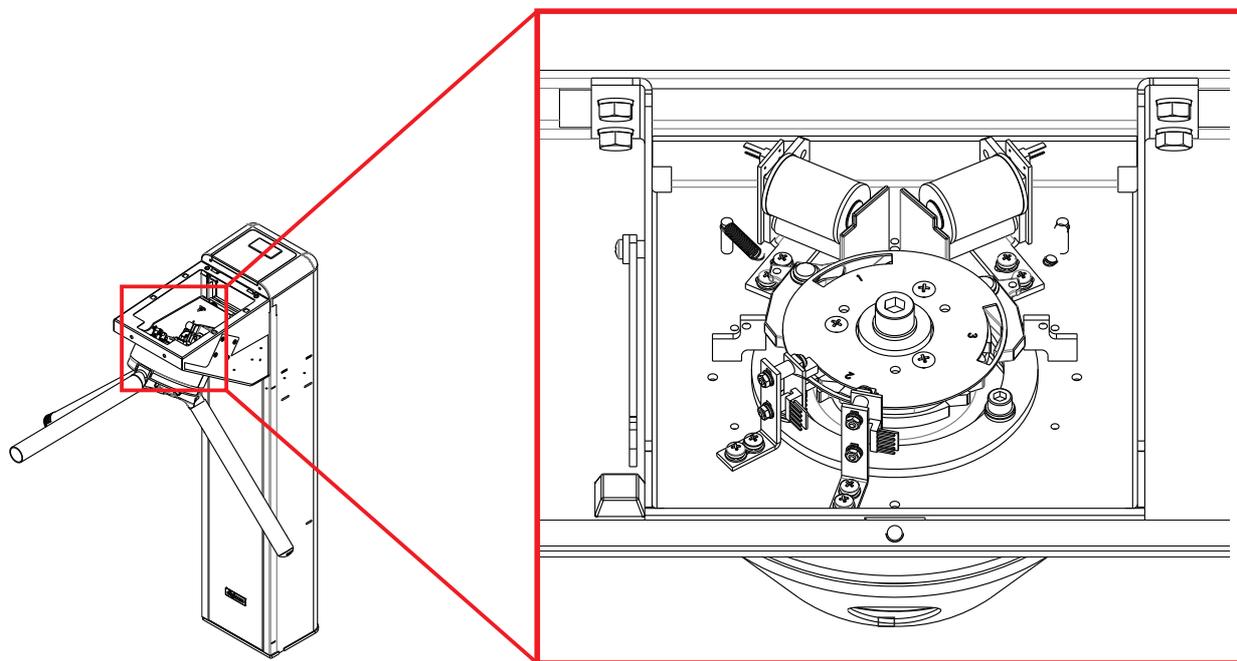
Besides compatibility with most available technologies, Digicon can provide the following optional items: collecting kit with box, pictogram kit, counter kit, power supply, and control board, no-break, and display kit (separate manual). These items are better described in section 6.1 Installing/Assembling optional items.

4.1 Catrax Plus operation

In the basic mechanism, **CATRAX Plus** has a two-dimensional rotation system with two 12 V electromagnets for activating the locks and two optical sensors that can provide the signal for the activation of the electromagnets and passage clearance.

In the electronic model, which includes a microprocessor control board (optional), a signal enabling passage is sent through one of the inputs, depending on the passage direction. If this signal is recognized, the equipment will allow the turning of the arm of **CATRAX Plus**. After half of the turning is complete (60 degrees), a 400 milliseconds returning signal will be sent, informing the passage direction. After the signal, the arm cannot be returned to the previous position.

Depending on the **CATRAX Plus** model and configuration, if the passage is forced without the enabling signal, an electromagnet will be activated to prevent turn. In addition, the equipment can emit a signal for a sound alarm and/or the exhibition of a red X on the upper panel display (models with pictogram). In this case, a return signal will be sent, indicating that the turnstile was forced, informing the direction of turn.



5. Installing/Assembling Catrax Plus

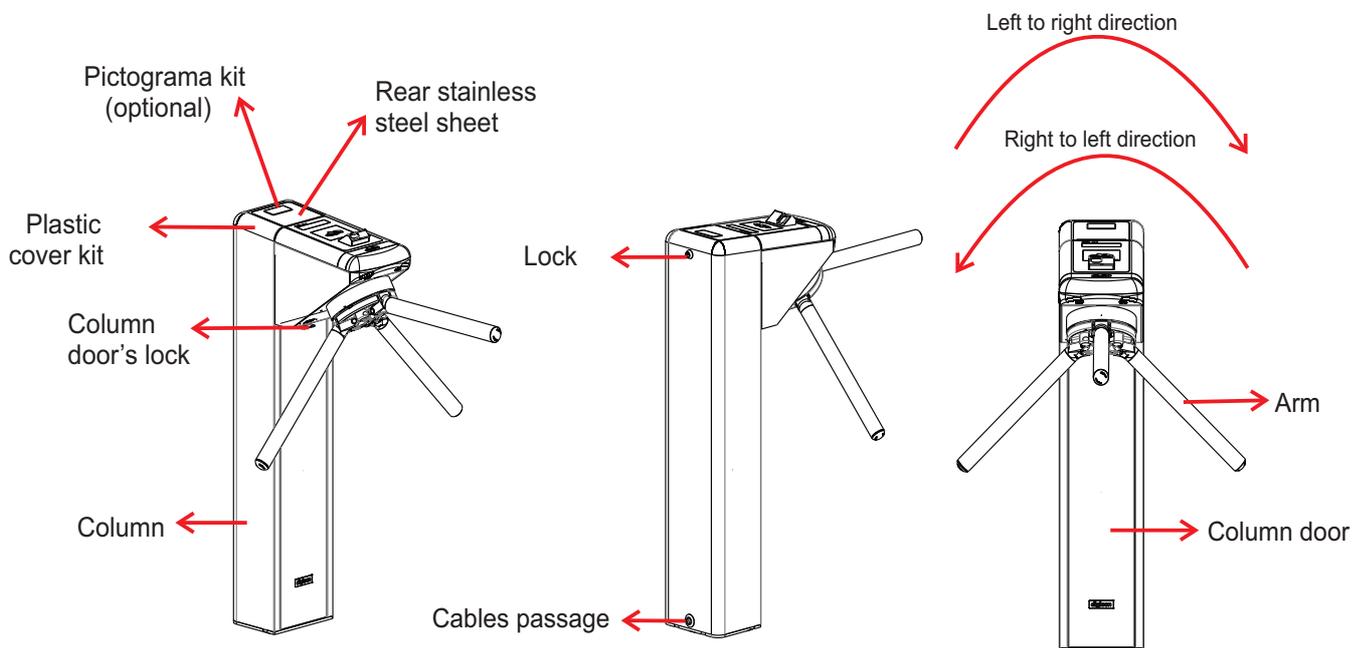
5.1 Unboxing

As the items inside the package can vary (depending on the client's requests), it is important to perform a cautious visual inspection before installing and assembling the turnstile. A checklist that works as a guide during inspection accompanies all Digicon packages.



ATTENTION: To avoid losses, the screws and the wrenches used for assembling the **CATRAX Plus** are attached to the box containing the arms. Before discarding the packing materials (cardboard and plastics), make sure all the items in the checklist are accounted for.

See below the parts that can compose **CATRAX Plus**:



5.2 Floor drilling

Before installing **CATRAX Plus**, check:

1. The place chosen for the installation.
2. If there is a power source or electric socket nearby (ducts for connection).
3. If the place chosen is adequate for the installation of the access controller (indoors).
4. If there will be enough space (minimum 5 cm) between the rear of the CATRAX Plus column and the wall. This space is important in order to provide access to the upper panel and plug's locks for the cables passage.
5. If there will be enough space for the arms after CATRAX Plus is assembled.
6. If the floor is in conditions to receive anchor bolts (minimum of 4 cm of FCK15 M.P.A. concrete or equivalent).

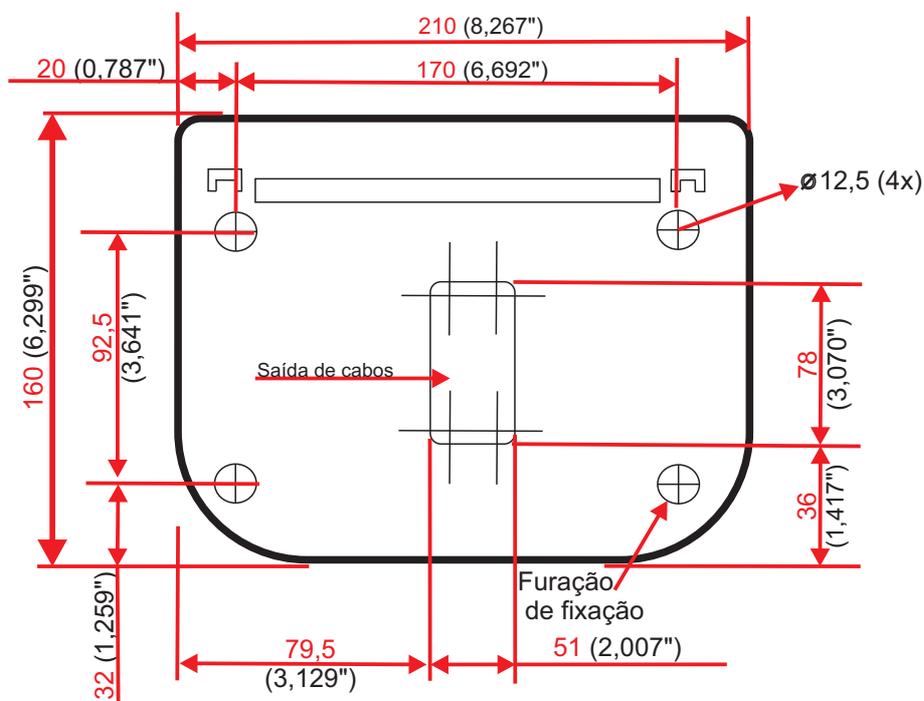


ATTENTION: Since the **CATRAX Plus** installation requires floor drilling, it is important that the location be chosen carefully.

5.3 Column fixation

To fixate the column to the floor, observe the following steps and the indicated images:

1. drill the floor with 3/8" drills (then use a 12mm or the 1/2" drill). Make four external holes, according to the measures indicated in the image below:



INFORMATION: The measures presented in this manual are in millimeters and inches.



ATTENTION: in the central slot, destined to the passage of cables, it is necessary to measure the cables according to the opening's size.



TIP:

- As an optional item, Digicon can provide a steel template for the fixation of CATRAX Plus, containing the exact demarcations of the necessary holes.

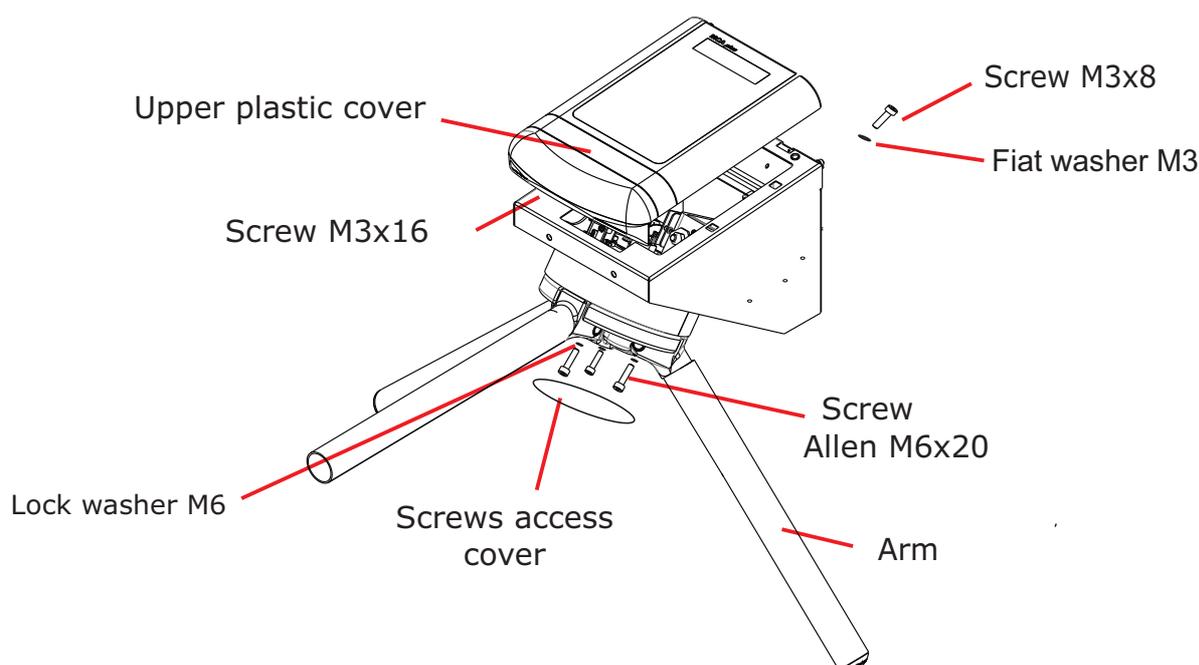
-TIP: We recommend the bolts by the brand Tecnat, model AF38110, 3/8x4".

2. Clean the holes, removing any debris from drilling.
3. Place the external part of the bolts in the holes. Leave about 25mm of the bolt out of the hole.
4. Position the column and fasten it to the floor with the four screws that accompany the bolts. Use a flex-head socket wrench with 3/4" or an articulated socket wrench.

5.4 Assembling arms and covers

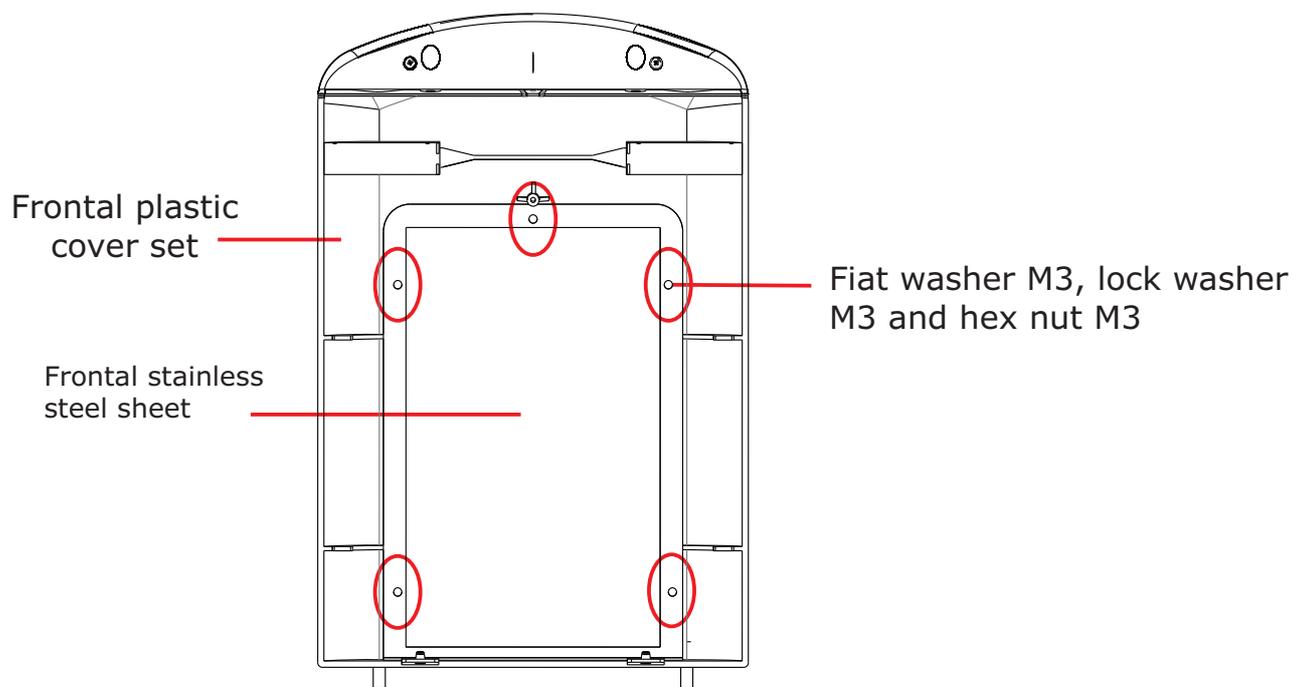
After drilling the floor and assembling the column, it is possible to assemble the arms and plastic covers.

The image below shows the specific parts of **CATRAX Plus's** arms and upper frontal cover with assembling instructions.

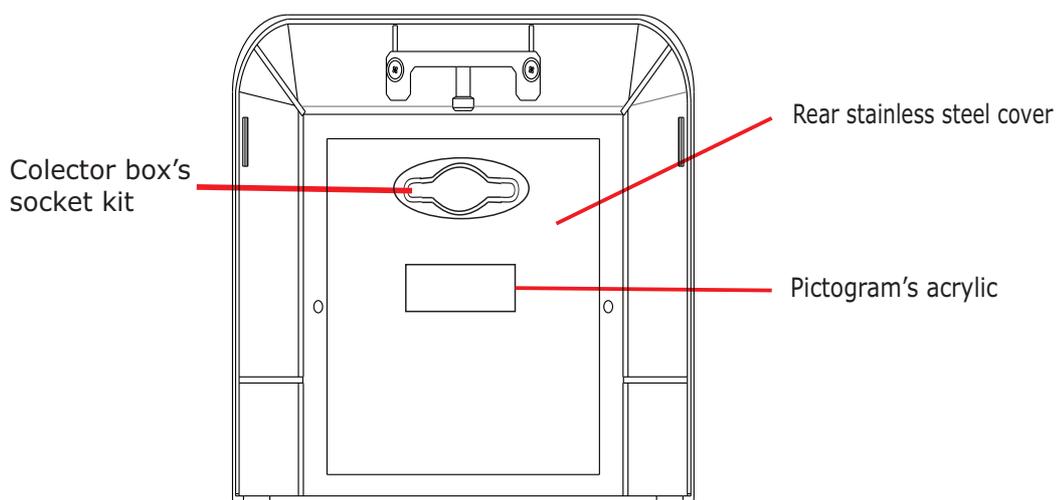


Then, assemble the upper panel's rear cover. The image below shows the parts corresponding to each phase.

Frontal cover



Rear cover



5.5 Access to CATRAX Plus after assembly

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

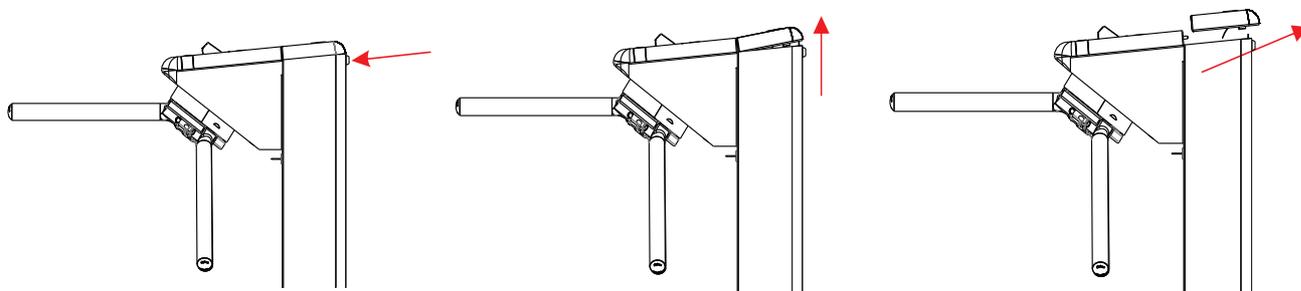
5.5.1 Rear cover

1° Open the lock with the smaller key (clockwise)

2° Carefully raise the cover

3° Brag the cover backwards

As shown below:



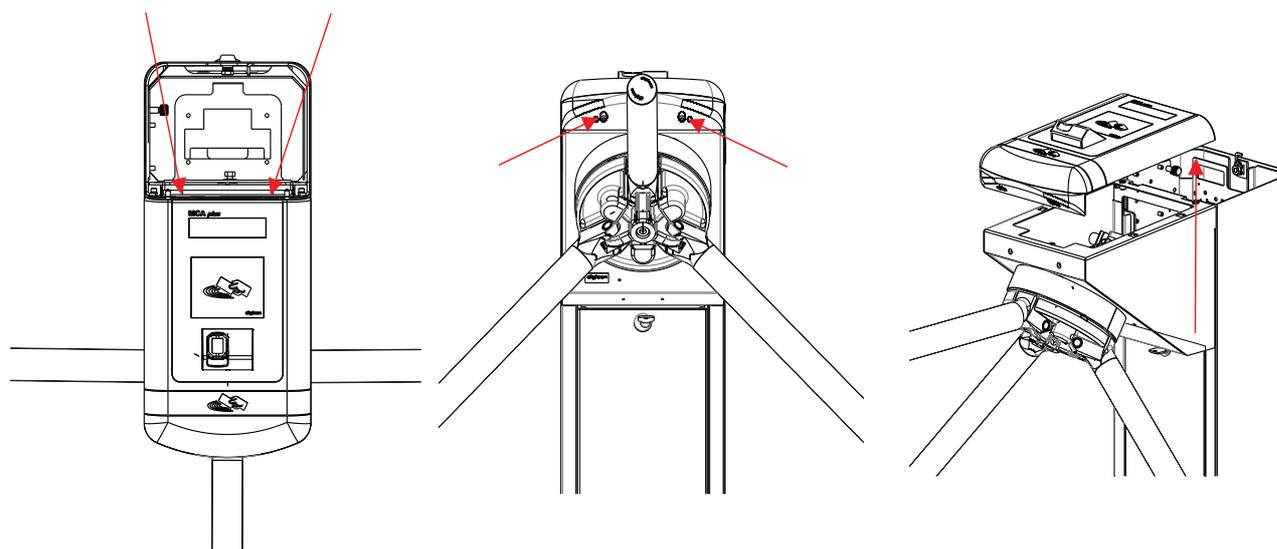
5.5.2 Frontal cover

1° Unscrew the screws inside the turnstile that hold the cover

2° Unscrew the screws out of the cover

3° Pull the cover upwards

As shown below:



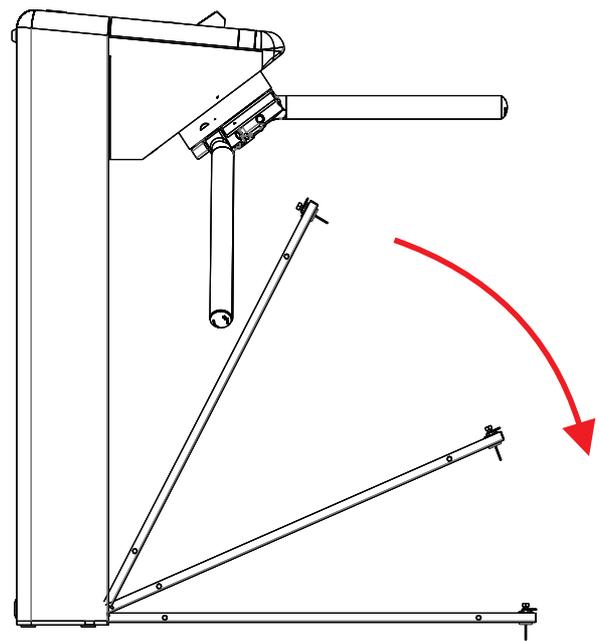
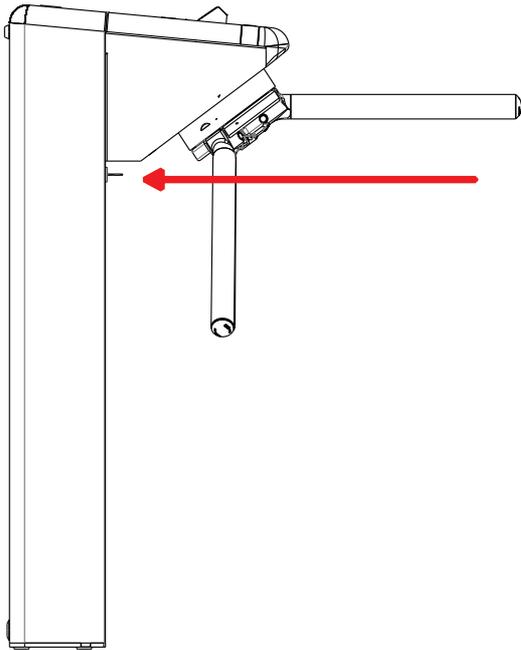
5.5.3 Column cover

1° Open the lock with the smaller key (clockwise)

2° Pull the cover forward

3° The cover will be loose

As shown below:

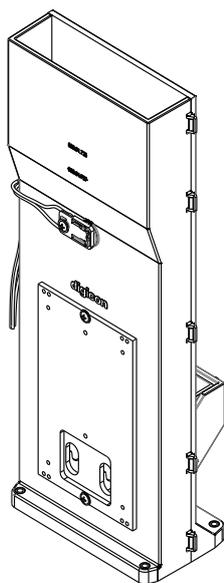


6. Optional Items

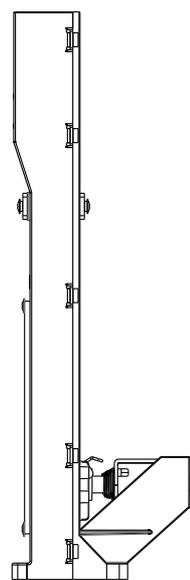
CATRAX Plus is compatible with most access control technologies in the market today; however, Digicon offers a range of optional items that allow enhancing and matching the equipment's performance to the client's needs. See the description of each of these items:

6.1 Collecting box kit

The collecting box kit has a device for collecting, retaining, and gathering cards or badges. It is ideal for places with eventual visitors or users. The kit is composed of a socket, a retention device activated by a solenoid, and a storage box. The image below shows the items that accompany the collecting box kit and may work as a guide for its assembling:

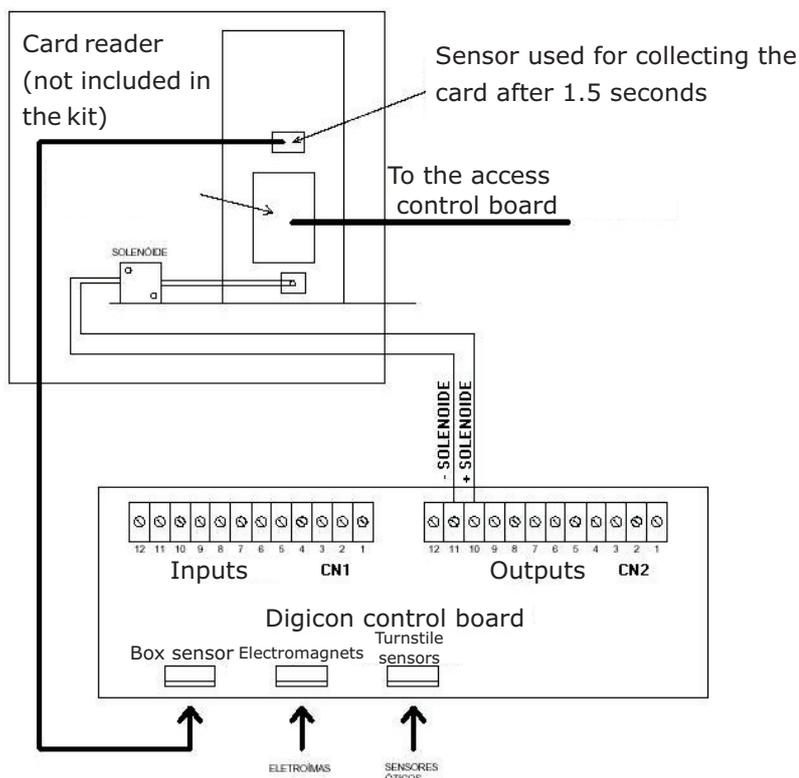


Isometric view



Side view

Connection of collecting box kit to the control board:

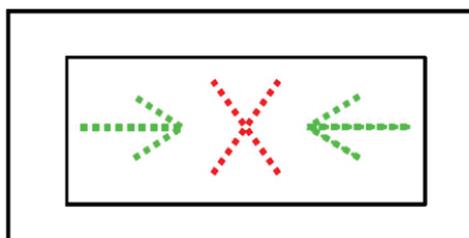


INFORMATION:

- The box for cards is part of the kit and is positioned under the collecting kit.
- The badge reader is not part of the kit.

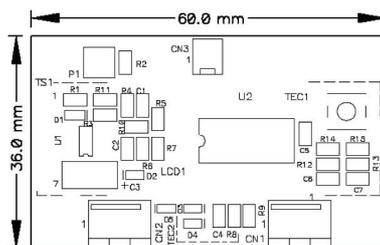
6.2 Pictogram Kit

The pictogram kit visually signals the direction of passage (green arrows) or the passage blocking (red X).



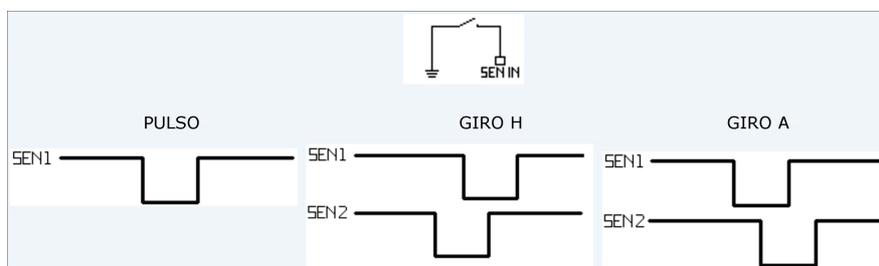
Sensors:

The sensors must connect the sensor's input to the counter's ground wire (switches, optical couplers, buttons, relays, etc.).



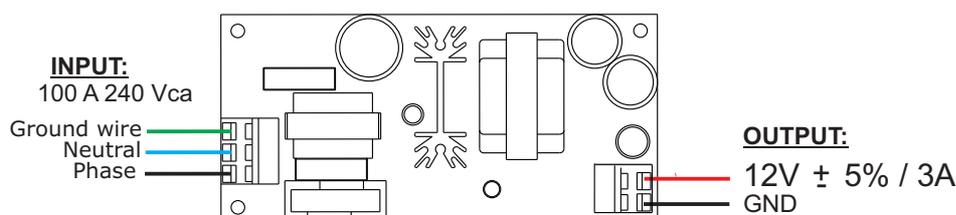
Power characteristics:

POWER	2 batteries AA (3V) 5V (battery eliminator)
BATTERY LIFE	1,5 ano ou mais de 3.000.000 de cycles(alkaline batteries, with sensors and open buttons)
NUMBER OF DIGITS	6
PERIOD OF DATA RETENTION	1 min 30 secs (to replace batteries without losing count)
DIGITS SIZE	8 x 4 mm (height x width)



6.3 Power supply

This power supply was especially designed for the CATRAX line. Among the main advantages of this optional item, is its adaptation capability to the voltage variations often found in installation sites – the input voltage can vary between 100 and 240 Vca. The supply's specific technical features, protections and dimensions were carefully tested and approved in hostile temperature and environmental conditions, which ensures the adequate power supply to the equipment's performance. Besides the input and output voltages indicated in the image below, the supply has a short-circuit and overheating protection.

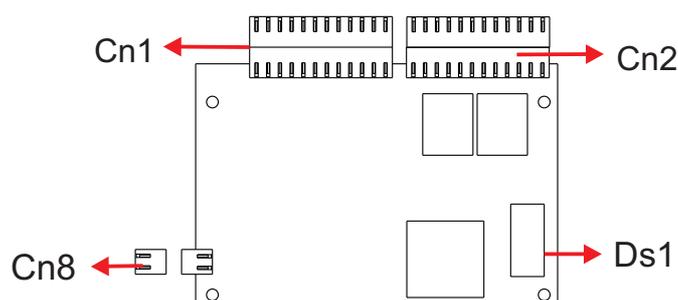


TIP: The power supply can be mounted to the board's support that accompanies **CATRAX Plus**.

6.4 Control board

CATRAX Plus's control board was designed to meet most technologies of access control terminals in the market. The controller have mechanical features and layout perfectly suited for the CATRAX Plus's needs and it is one of the best options for the equipment's operation.

The following image shows the control board with its straps, connectors, and dipswitch, as well as the location of the power supply and the control board.



The table below describes the functions of the control board's connectors:

Sinal	Nome/Descrição
CN1	INPUTS
1	(+) vext1 (enables turn through voltage)
2	HAB1 (from right to left)
3	GND
4	Vext2 (enables turn through voltage)
5	HAB2 (enables turn through dry contact - from left to right)
6	GND
7	(+) 12Vcc (available to auxiliary - maximum 500 mA)
8	CLOCK1 (input for reader from left to right)
9	DATA1 (input for reader from left to right)
10	CLOCK2 (input for reader from right to left)
11	DATA2 (input for reader from right to left)
12	GND
CN2	OUTPUTS
1	NO or NC Contact (HAB1 return)
2	Contact C (HAB1 return)
3	NO or NC Contact (HAB2 return)
4	Contact C (HAB2 return)
5	Output for indicative X (open collector NPN - maximum 500 mA) orange wire Output
6	Output for arrow < (open collector NPN - maximum 500 mA) green wire
7	for arrow > (open collector NPN - maximum 500 mA) blue wire
8	(+) 24Vcc (indicative arrows' power) red wire
9	GND (indicative arrows' power) black wire
10	(+) solenoid of badge collector box
11	(-)solenoid of badge collector box
12	Sound signal (open collector - NPN)
CN3	POWER - POWER INPUT
1	Power input +12Vca
2	Power input GND
3	GND

CN4	BOX SENSOR
	1 LED anode
	2 Box signal
	3 GND
	4 GND
CN5	ELECTROMAGNETS
	(+) Electromagnet 1
	(-) Electromagnet 1
	(+) Electromagnet 2
	(-) Electromagnet 2
CN6	OPTICAL SENSORS
	Sensor 1 signal
	LED 1 anode
	Sensor 2 signal
	GND
	LED 2 anode



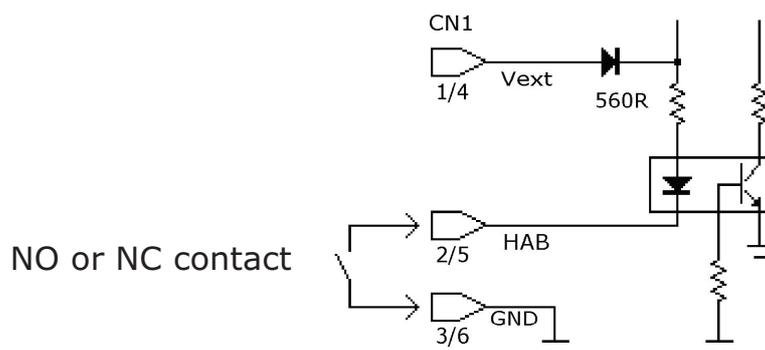
INFORMATION:

-The cables of the optical sensors (CN6) and the electromagnets (CN5) are provided alongside CATRAX Plus.

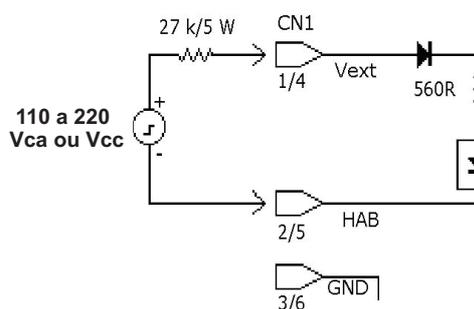
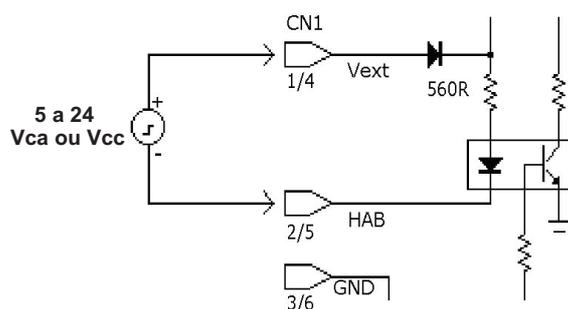
-The cable of the box sensor (CN4) is provided alongside the collecting box kit (optional)

6.4.1 Inputs

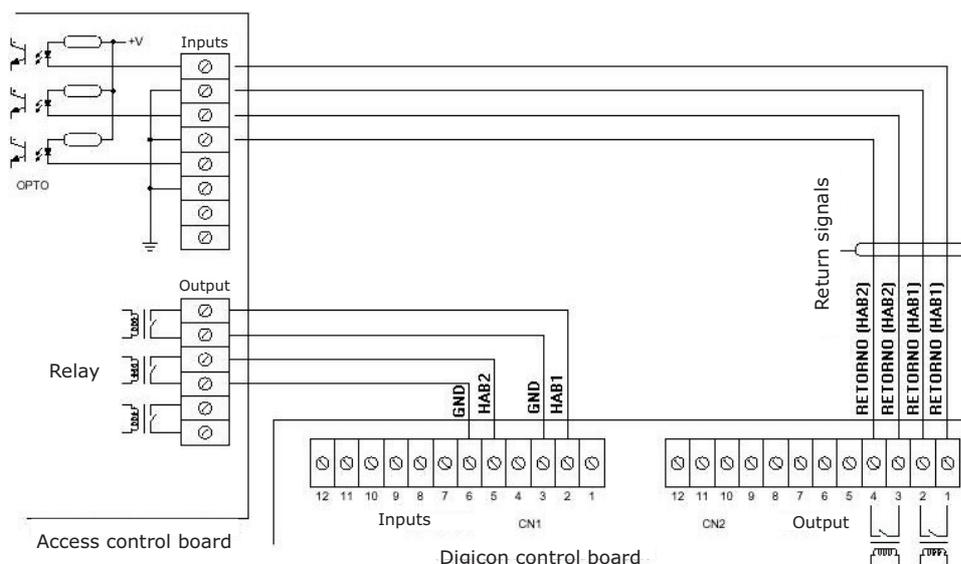
The input signals or passage clearance (HAB1 and HAB2) can be originated by a relay contact, pushbutton contact, tension from 5 to 24 Vca/cc, from 110 to 220 Vca/cc. To enable passage through relay contact or pushbutton, make the connection as shown below:



Enabling passage through tension pulse is shown in the image below. It is necessary to observe the polarity of the Vcc voltages and to use an external resistor for high voltages (110V and 220V).



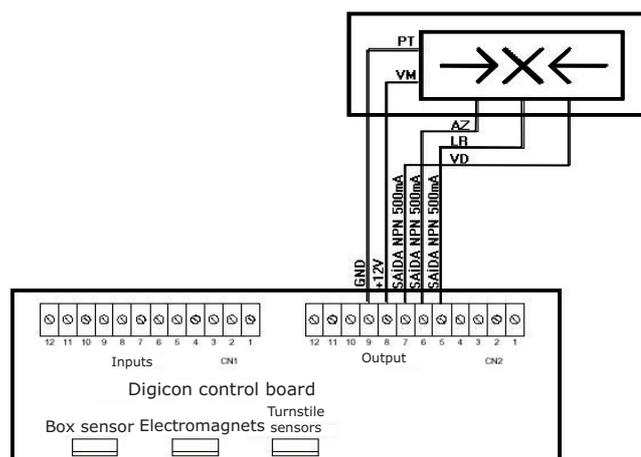
6.4.1.1 Connection scheme



6.4.1.2 Pictogram

The pictogram's outputs are activated by NPN transistors (maximum 500 mA) at the moment of activation, the GND is sent through a corresponding output.

6.4.1.3 Pictogram connections



6.4.2 Configuration of control board – Switch Ds1

The switch (or dip-switch) DS1 allows programming the following actions:

- passage direction
- Maximum time for turns
- NO inputs (relay or pushbutton contact normally open and without input voltage), enabling passage in face of these signals; or NC inputs (relay or pushbutton contact usually closed and with input voltage), enabling passage in the absence of these signals.
- enabling of a signal for a sound alarm if the access control remains at mid turn for more than 2 seconds.

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

	01	02	03	04	05	06	07	08
Cleared in both directions	-	-	-	OFF OFF	-	-	-	-
Blocked from left to right	-	-	-	ON OFF	-	-	-	-
Blocked form right to left	-	-	-	OFF ON	-	-	-	-
Blocked in both directions	-	-	-	ON ON	-	-	-	-
NO inputs	-	ON	-	-	-	-	-	-
NC inputs	-	OFF	-	-	-	-	-	-
Enables return from the start	ON	-	-	-	-	-	-	-
Disables return from the start	OFF	-	-	-	-	-	-	-
Enables sound signal in mid-turn	-	-	-	-	-	ON	-	-
Disables sound signal in mid-turn	-	-	-	-	-	OFF	-	-
Wait until first turn	-	-	-	-	-	-	ON ON	-
Wait for 5 seconds	-	-	-	-	-	-	OFF ON	-
Wait for 10 seconds	-	-	-	-	-	-	ON OFF	-
Wait for 15 seconds	-	-	-	-	-	-	OFF OFF	-
Habilitation per border	-	-	OFF	-	-	-	-	-
Habilitation per level	-	-	ON	-	-	-	-	-



INFORMATION: The control board can be mounted to the support that accompanies **CATRAX Plus**. The shadowed area indicates the factory configuration of Digicon's board.

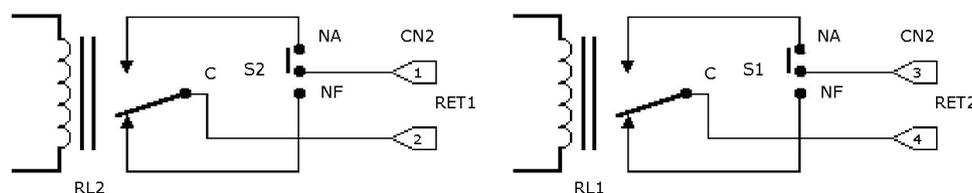
The control board also has inputs for optical controllers (Cn6), which monitor the **CATRAX Plus's** turning (there is no mechanical wear) and two opto-isolated inputs for liberating **CATRAX Plus** if necessary.

6.4.3 Outputs

CATRAX Plus presents outputs for return signals, electromagnets, pictogram, one collecting box, and sound alarm.

6.4.3.1 Return signals

Return signals indicate the moment and direction of passage and are originated at the relay – normally open contact (NO) or normally closed contact (NC). Connect the outputs according to the image below:



6.4.3.2 Electromagnets

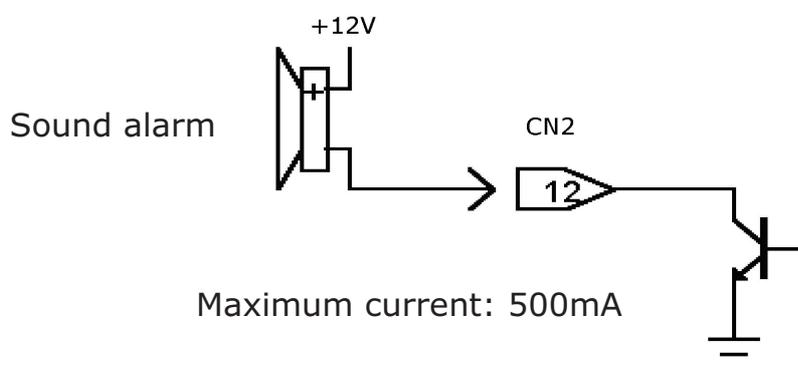
Electromagnets are activated for blocking the turnstile. Opposite to the traditional solenoids, electromagnets do not cause abrasion between the coil and the locking device, avoiding malfunctions. Moreover, the activation is done through a transistor, and not a relay, avoiding the electromagnet to be blown due to the "contact welding" (there is no mechanical wear).

6.4.3.3 Sound alarm

The sound alarm output is activated by a NPN transistor (maximum 500 mA) every time that **CATRAX Plus**:

- receives a clearance signal (two short rings)
- is not cleared and is forced during 1 second (1-second rings)
- is stuck mid-turn for over 2 seconds (1-second rings)

Connect the outputs according to the following image:



6.4.4 Examples of some configurations

1 - Configuration of controller to receive a relay pulse (normally open contact), clear the turning and wait to turn for 10 seconds

2 - Configuration of controller to leave the clockwise direction always cleared and, when the HAB2 (anti-clockwise) clearance signal is received, clear passage for undetermined period

3 - Configuration of controller to clear the turning while the relay has the contact closed and, as soon as the relay contact is open, remove clearance

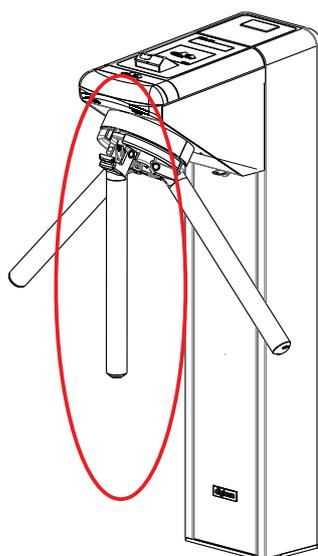
	1	2	3	4	5	6	7	8
Configuration	-	ON	OFF	ON	ON	-	ON	OFF

	1	2	3	4	5	6	7	8
Configuration	-	ON	OFF	OFF	ON	-	ON	ON

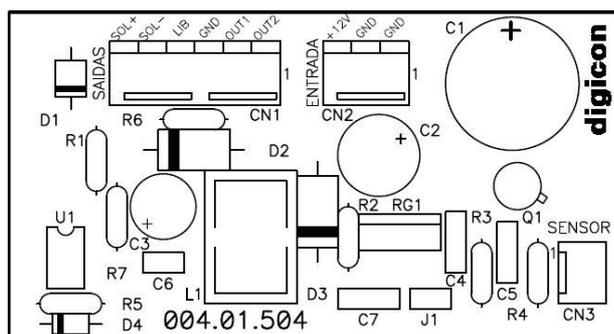
	1	2	3	4	5	6	7	8
Configuration	-	ON	ON	ON	ON	-	ON	ON

6.5 Anti-Panic System

The **CATRAX** Plus has an electromechanical device for anti-panic system (also called drop-arm device). The mechanism is composed by a mechanical set activated by high-performance solenoid, maintaining the arm raised during normal operation. In case of power outage (when the installation has no no-break), or through a command sent via system, or the activation of an emergency button in the control room, the electromechanical device is deactivated, dropping the arm that prevents turn, clearing the entrance of any barrier. This device can be connected in series, allowing the clearance of all turnstiles at once from one single point.



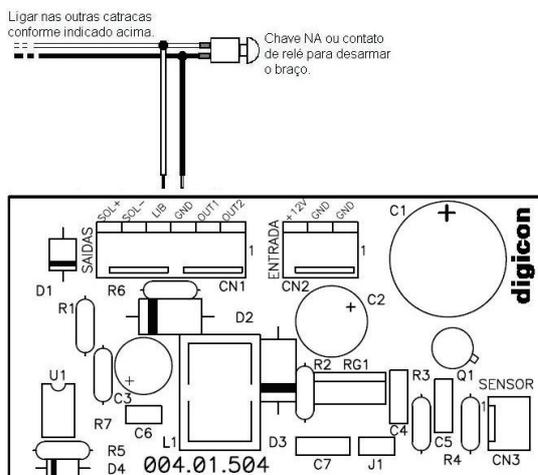
The control board and monitoring that integrates the device is presented below.



The anti-panic system requires a power of 12Vcc 2A. Optionally, Digicon also provides a switched-mode power supply (code 019.01.334). To avoid overheating of the solenoid, the control board has an automatic routine that reduces its voltage to 6Vcc two seconds after the turnstile is tuned on. One disassembled, the arm should be placed manually back into position.

6.5.1 Power connection

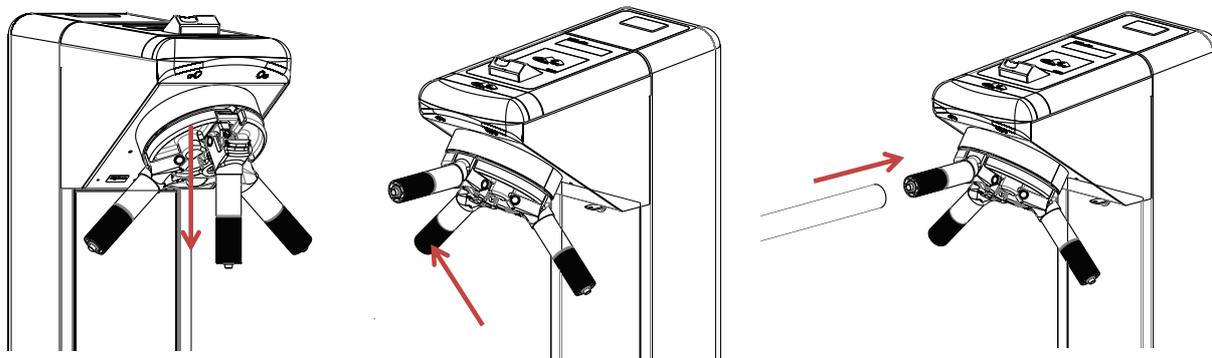
To disassemble the arm, it is necessary to cause a short-circuit between the GND and LIB inputs, as shown below:



6.5.2 Assembling the arms

The arms are provided disassembled. To assemble them, follow the instructions provided below:

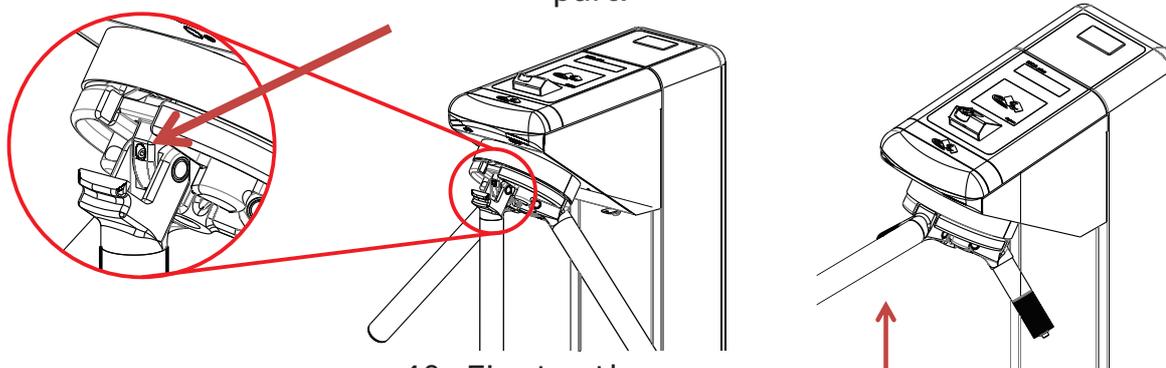
The wrench used for assembling must be an Allen n.8 and the screw must be tightened to the maximum to ensure good fixation. All three arms must be attached to the same central upper point.



1º Let the mini arm drop

2º Make sure the mini arm's plastic part is fitted into the steel part.

3º Fit the stainless steel arm in the mini arm



4º Fixate the screw inside the mini arm using a Allen n.8 wrench

5º Put the arm back into its normal position.

6.5.3 Maintenance test

The anti-panic system (drop-arm) was developed to facilitate the exit of people in emergencies. Thus, as a preventive measure, we recommend regular tests and inspections in this device (at least once a month). We suggest that the card attached to the turnstile be used for recording performed inspections, presenting date, name, and signature of the responsible. If the mechanism presents any defect, request maintenance to a Digicon technician or a qualified company.

Each inspection should carry out the following operational sequence for each of the three arm:

- set the arm on the horizontal position;
- turn the turnstile off;
- check if the arm drops (if the arm does not drop, contact the dealer or Digicon);
- turn the turnstile on;
- raise the arm until it reaches its normal position (the arm must stay in horizontal position without external support; if it does not, contact the dealer or Digicon);
- repeat the procedure three times for each arm.

7. Maintenance

7.1 Preventive and corrective routine maintenance

Sphere base – Periodicity: every 700,000 cycles

The wear of the spheres' track must be checked

Corrective actions:

1. In case of excessive wear (chipping, perforations, fillings or grooves where the sphere turns) replace the part.
2. If the part presents no wear, clean it and grease it using bearing grease.

Optical sensors – Periodicity: Once a year or more (depending on environmental conditions)

This routine maintenance requires the use of a multimeter. To check for the need of corrective actions, you must measure the CN11 with the controller turned on, according to the instructions:

-In the multimeter, select the Vcc measuring voltage of up to 20Vca. Then, place the black pointer on pin 4 and the red pointer on pin 1 of the CN11. Voltage should be lower than 0.8Vcc (non-obstructed sensors). With the pointers at the same position, force the equipment's arms to both directions (in one of the sides, the voltage should be higher than 4.5Vcc).

-Repeat the same operation, this time placing the black pointer on pin 4 and the red pointer on pin 3 of the CN11. The results should be the same obtained with pins 4 and 1.

-Check the sensors for signs of dust.

Corrective actions:

1. If measurements are not according the data above, replace the faulty sensor.
2. Clean the sensors using a clean brush.



TIP: If the environment presents excessive dust, execute this maintenance routine more often.

Electromagnet – Periodicity: ever 7000,000 cycles

This routine maintenance requires the use of a multimeter. To check for the need of corrective actions, disconnect the CN10 from the access control board and check the electromagnets' resistance. The value must be between 12.5 and 13.5 ohms between pins 1 and 2 and 3 and 4 of the electromagnet's connector. After measuring, connect CN10 to the board again.

Corrective actions:

1. if you spot an incorrect resistance, a short-circuit or open electromagnet, replace it.
2. if the electromagnet is not working, check the board or the voltage
3. if the electromagnet is moving, fasten the base screws.

Electromagnets adjustments (if necessary)

1. Force the lock against the sprocket and the equipment's arm until the lock is completely inside the first teeth (until the arm is locked)
2. then, release the fixing screws and press the electromagnet against the lock's frame, so that its area is completely against the electromagnet
3. refasten the screws

Set of locks – Periodicity: every 700,000 cycles

To check for the need of corrective actions, you must:

- check the lock's correct position
- check the wear of the lock's fitting in the sprocket

Corrective actions

1. if the lock's position is incorrect, check the retaining ring and the spring that tightens the set
2. if the lock's fitting to the sprocket is incorrect, replace the lock or the sprocket
3. if lock's end is worn, replace the lock

Sprocket set – Periodicity: every 700,000 cycles

To check for the need of corrective actions, you must:

- check the wear of the sprocket's teeth
- check the gap between the central axis, the sprocket, and the keyway

Corrective actions

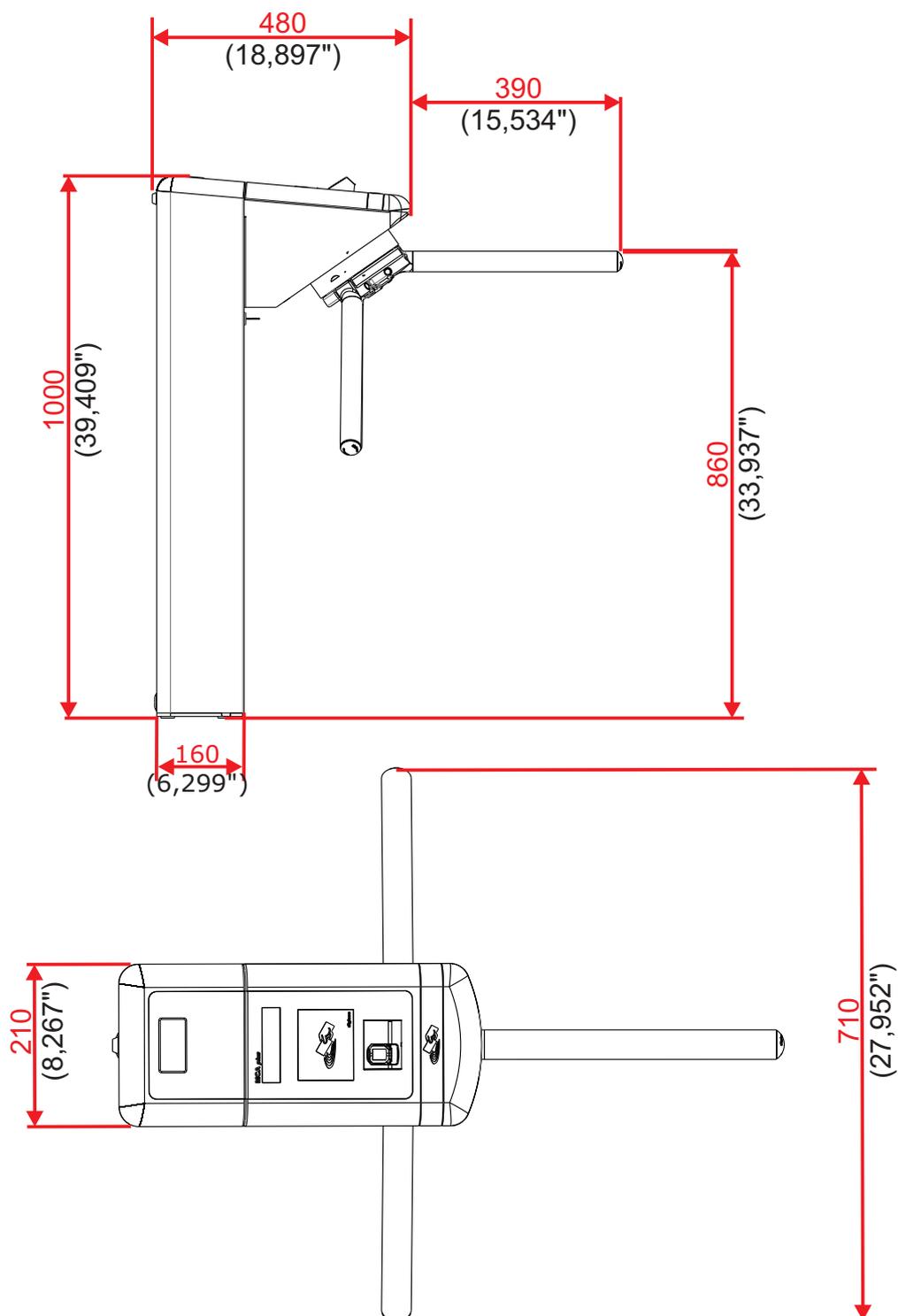
1. if you observe wear on the parts' teeth, replace the parts
2. if you see a gap between the sprocket and the axis/keyway set, replace the sprocket or the keyway (to replace the sprocket, use a pulley puller)

7.2 Defects and possible causes

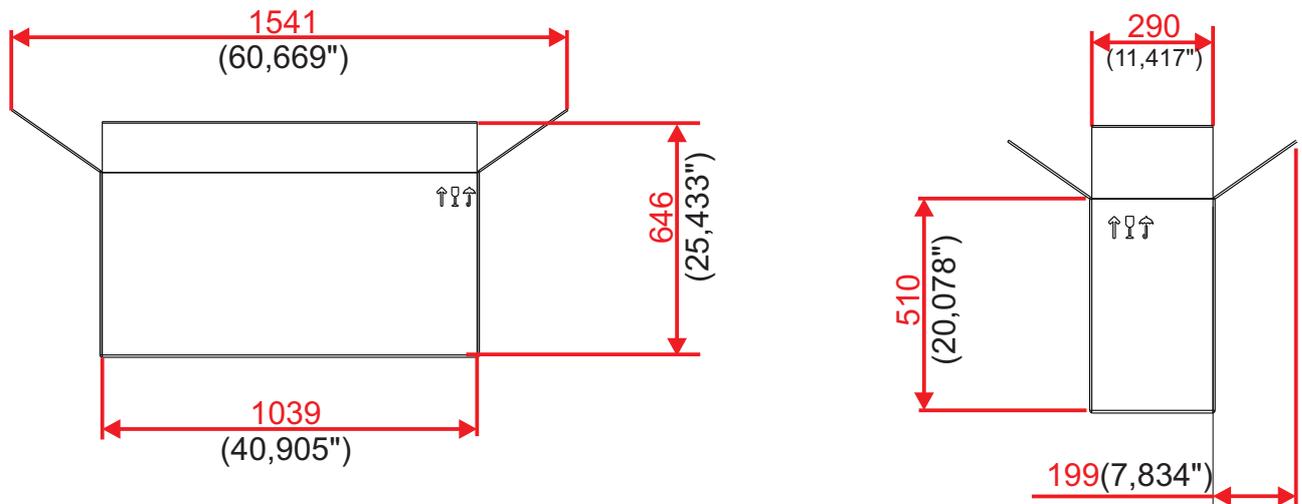
Defect	Possible cause	Action
<ul style="list-style-type: none"> CATRAX Plus will not turn on 	<ul style="list-style-type: none"> The power supply cable is not connected properly The fuse of the power supply is blown 	<ul style="list-style-type: none"> Check the cables and the fuse (fuse: 3 A)
<ul style="list-style-type: none"> CATRAX Plus locked 	<ul style="list-style-type: none"> Optical sensors obstructed or defective 	<ul style="list-style-type: none"> Perform the preventive routine maintenance on the sensors or forward the equipment to the Technical Assistance
<ul style="list-style-type: none"> A CATRAX Plus does not activate the electromagnet (turnstile cannot be locked) 	<ul style="list-style-type: none"> The cable is broken or the distance between the electromagnet and the locking device is maladjusted 	<ul style="list-style-type: none"> Adjust the electromagnet or forward the equipment to the Technical Assistance
<ul style="list-style-type: none"> The arm does not remain in the correct position 	<ul style="list-style-type: none"> There is wear, dirt, a broken spring or lack of lubrication in the sphere base 	<ul style="list-style-type: none"> Request a replacement for the faulty part or forward the equipment to the Technical Assistance
<ul style="list-style-type: none"> CATRAX Fit does not lock in the first tooth 	<ul style="list-style-type: none"> The distance between the electromagnet and the locking device is maladjusted 	<ul style="list-style-type: none"> Adjust the electromagnet or forward the equipment to the Technical Assistance

8. Technical characteristics

8.1 Dimensions



INFORMATION: The measures presented in this manual are in millimeters and inches.



8.2 Other information

Catrax Plus:	
Gross weight	Approxim. 40 kg (including package).
Distance between arms	120 degrees
Electromagnets' power	12 Vcc and 12 A
Sensors' power	5 Vcc and 0.5 A
Power supply (optional)	Input: 100 Vca and 240 Vca Output: 12 Vca +-5% / 3 A Dimensions: 35 x 51 x 105 mm Distance between holes: 43 x 98 cm Diameter of holes: 3.5 mm
Board with display	Power: 6 to 24 Vcc / 100 mA
Turnstile consumption (without anti-panic)	7W (stand-by) 20W (peak/forcing the arm)
Turnstile consumption (with anti-panic)	15W (stand-by) 45W (peak/forcing the arm)

9. Cleaning

9.1 Maintenance and conservation of stainless steel:

Do not use chemicals, bleaches or cleaning products for household use;

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

Fat, Oils and Greases: Clean the thick deposits with a soft cloth or paper towel. Then apply a warm solution of detergent or ammonia. Then follow the routine cleaning procedures.

Fingerprint: Remove with a soft cloth or paper towel moistened with isopropyl alcohol (found in compounding pharmacies or organic solvent (ether, benzene)).

Labels, tags or protective layer: Take off as much as you can. Apply lukewarm to the piece and wipe with a soft cloth. If the adhesive persists, dry and rub gently with alcohol or organic solvent. But be careful: never scrape the surface of stainless steel with thick blades, spatulas or abrasives.

Rust spots: With a cotton swab dipped in water and nitric acid at 10%, make topical applications, keeping the site moist for 20 to 30 minutes, repeating the operation if necessary. More pronounced stains will require vigorous scrubbing of the stained surface with a paste made of fine household abrasive (abrasive cleaners), water, and nitric acid at 10% using a polishing towel. The acid treatment should always be followed by an ammonia or sodium bicarbonate solution rinse and routine cleaning.

Moderate dirt / light spots: When routine cleaning is not enough, apply a mixture made with gypsum or sodium bicarbonate, dissolving it with household alcohol, until it forms a paste. Use a soft cloth or nylon sleeve to pass this mixture onto the surface of the stainless steel. If you prefer, use a soft-bristled brush as well, taking care not to rub it, do it as smoothly as possible, using long, uniform strokes, towards the polished finish, if any. Avoid scrubbing with circular movements. Then rinse with plenty of water, preferably lukewarm, and dry with a soft cloth.

Intense Dirt / Strong Stains: Make an application of warm or hot detergent, or a solution of an ammonia-based remover (household removers) and water. If this is not enough to soften burned foods or charred deposits, use more aggressive products, such as caustic soda removers used in household cleaning.



TIP: *Even in the case of stubborn dirt, try cleaning with the milder method. Be patient and repeat the operation a reasonable number of times before resorting to more severe cleaning methods.*

10. 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 or the branch office in 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 Digicon's written consent
- b) goes through maintenance or repairs by people not authorized by Digicon
- 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. Digicon 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 Digicon facilities.



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