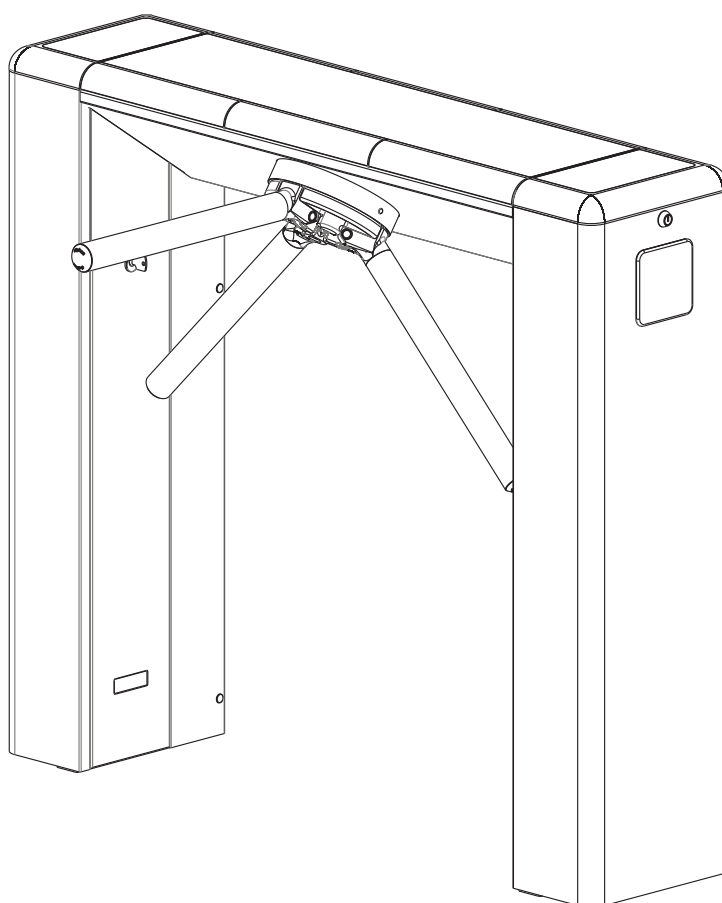


catrax

master



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Electronic Control for Mechanics – 2018

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"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 Master**.

CATRAX Master serves most technologies of access control currently available, becoming the best option in the market for access control.

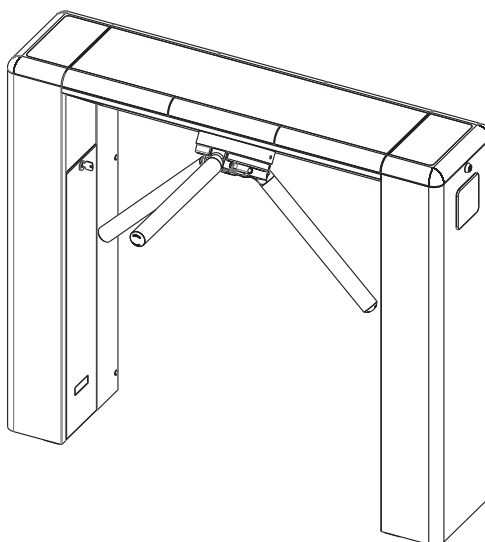
This manual presents a detailed description of the components and working of **CATRAX Master**.

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



4. Features of Catrax Master

CATRAX Master, an access controller in the model blockage, presents three bidirectional, equidistant arms at 120 degrees with brushed stainless steel (AISI 304) finishing.



The structure of **CATRAX Master** 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 Master** 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 operational pictogram (on top), orientation pictogram (side), collecting box inlet, display kit or a combination of these items.

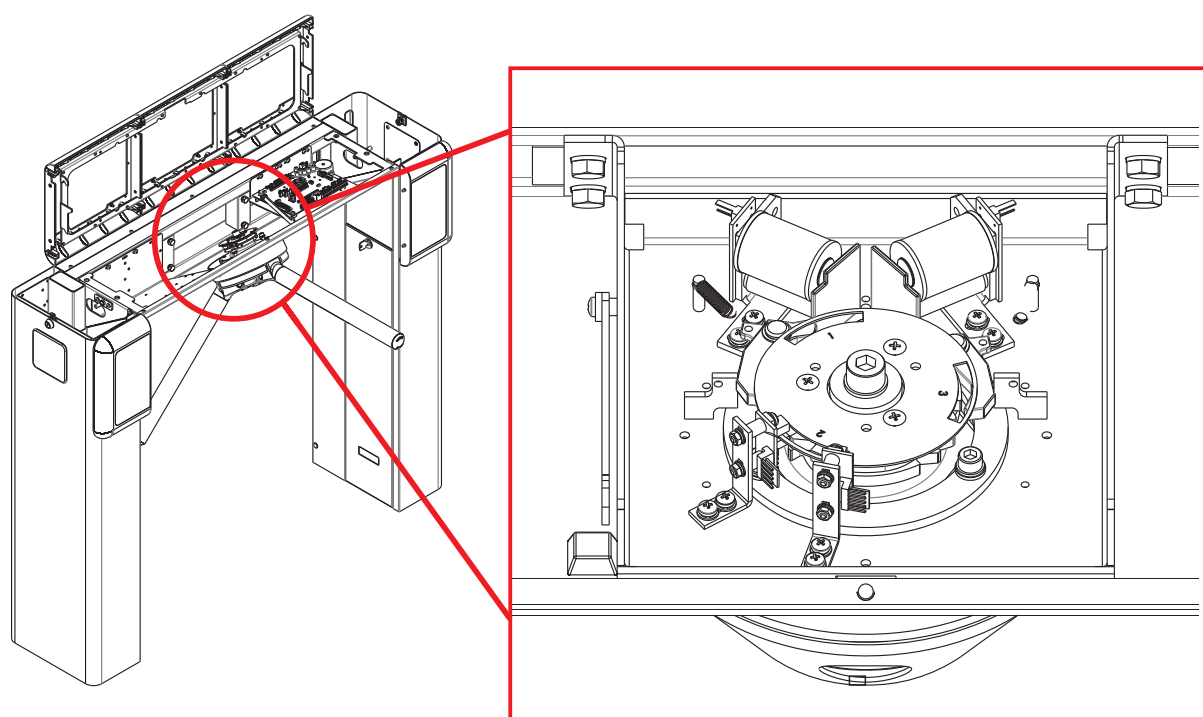
Besides compatibility with most available technologies, Digicon can provide the following optional items: collecting kit with box, pictogram kit, counter kit, power supply, and display kit.

4.1 Catrax Master operation

In the basic mechanism, **CATRAX Master** has a two-dimensional rotation system with two 12 Vcc 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 Master**. 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 Master** 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.



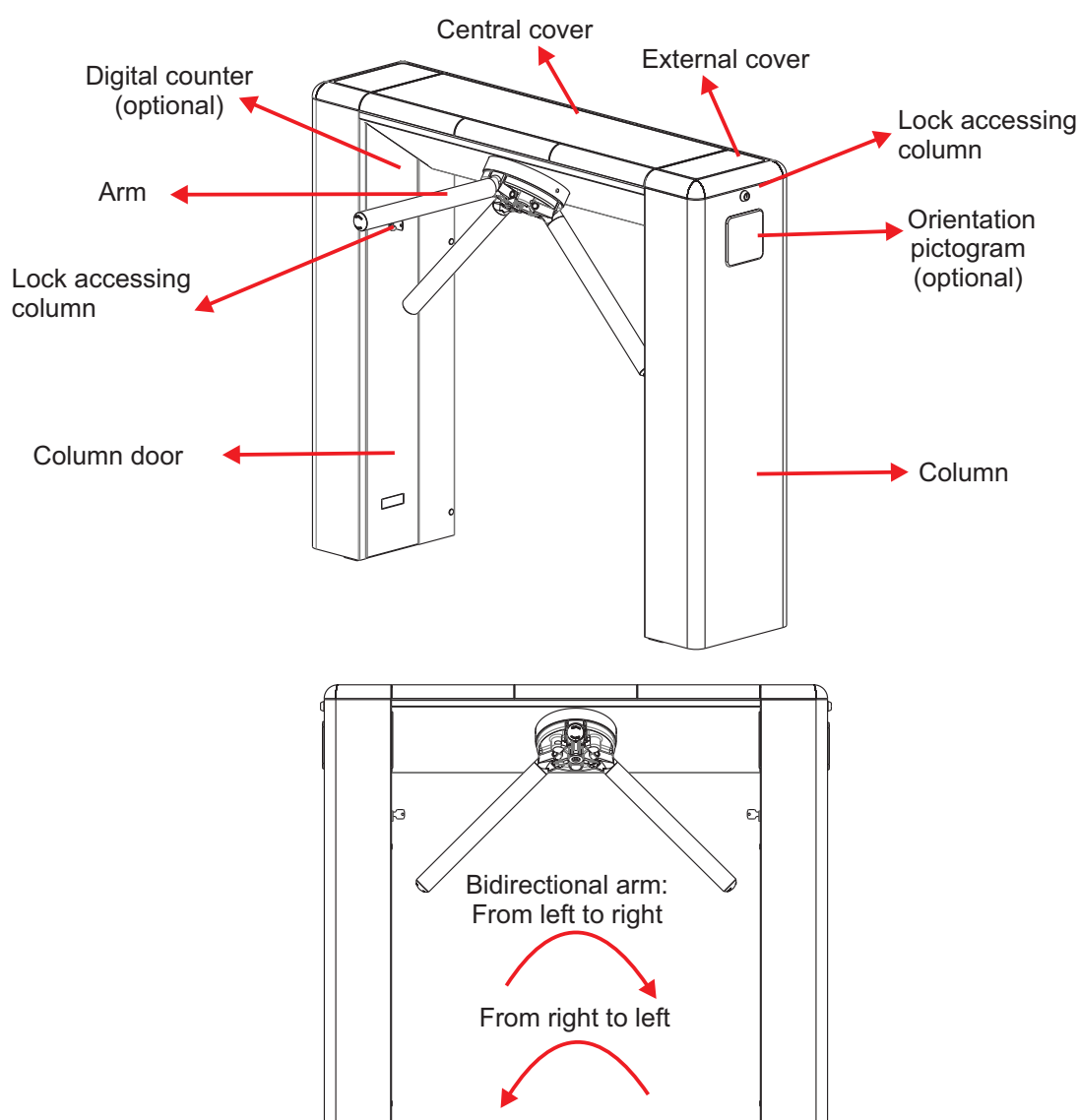
5. Installing / Assembling Catrax Master

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 Master** 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.



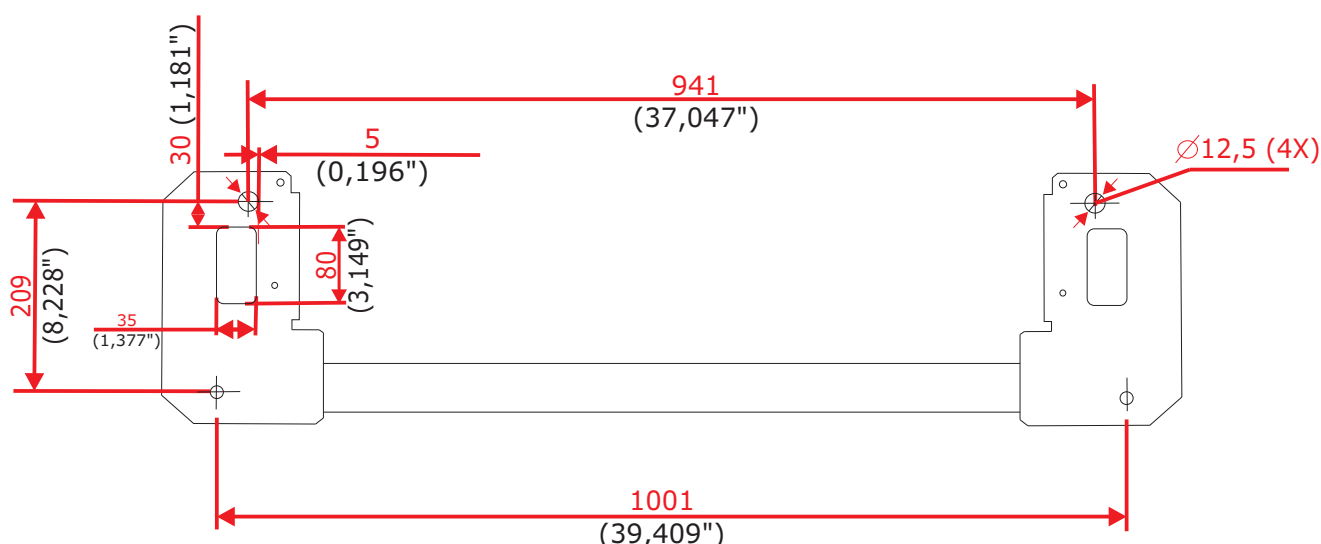
5.2 Floor drilling and column fixation

Before installing **CATRAX Master**, 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 access to the the **CATRAX Master's** locks is clear.
5. If there will be enough space for the arms after **CATRAX Master** is assembled. For more details on the equipment's dimensions, see item 8. Technical characteristics.
6. If the floor is in conditions to receive anchor bolts (minimum of 4 cm of FCK15 M.P.A. concrete or equivalent).

Once you observe these recommendations, proceed to the installation:

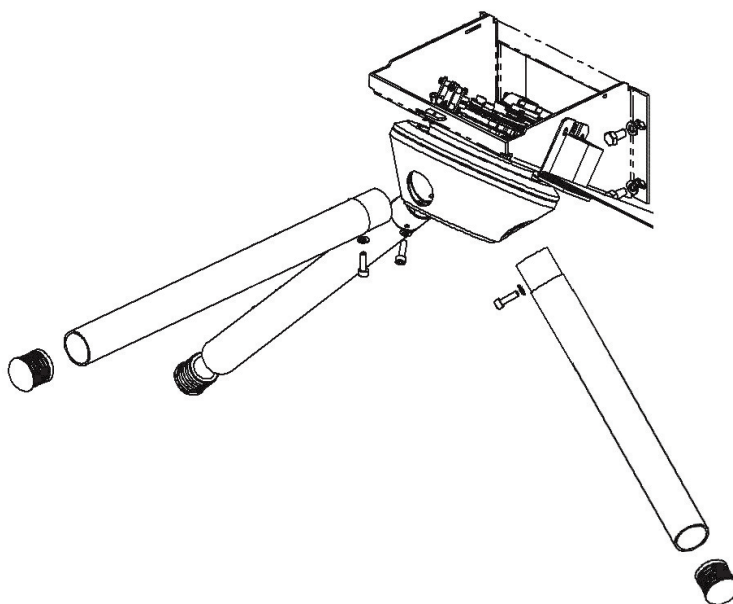
1. Drill the floor with 3/8" drills (then use a 12mm or the 1/2" drill). Make two holes in each column of **CATRAX Master**, according to the measures indicated in the image below:
2. Clean the holes, removing any debris from drilling.
3. Place the external part of the bolts in the holes. Leave about 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.



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

5.3. Assembling the arms

After drilling the floor and installing the column, it is possible to assemble the arms, as shown below:



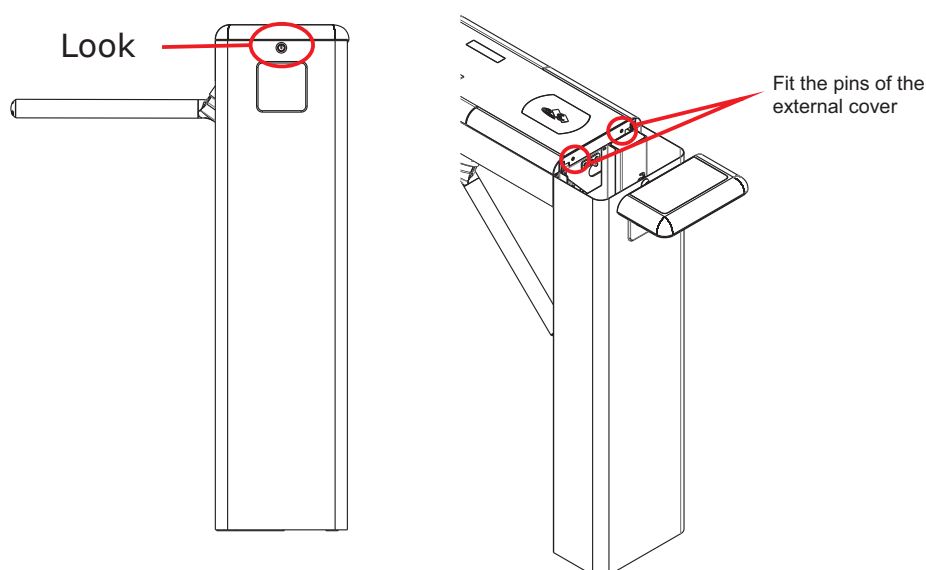
INFORMATION:

- The cover to access the screws is open/closed by pressure (fitting).
- To assemble the **CATRAX Master** arms, use an Allen n.5 wrench.

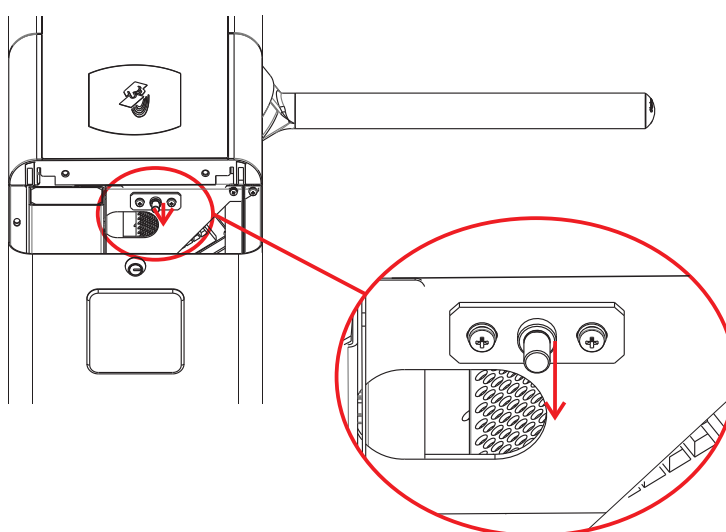
5.4 Accessing Catrax Master after assembly

After **CATRAX Master** is installed and assembled, access to the interior of the equipment can be done with the key that accompanies the equipment, in three ways: external covers, central covers, or column door. See now the instructions for opening **CATRAX Master** after assembly:

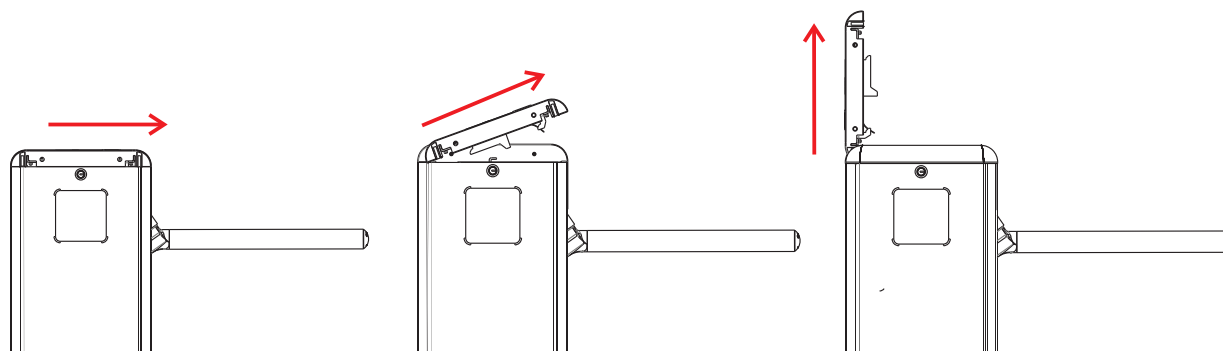
1. Unlock the two extremities of the **CATRAX Master**, using the key provided alongside the product. Remove the external covers, which are pressed into place. The covers feature small internal couplings that support them in the column during operation, as can be seen in the image to the right.



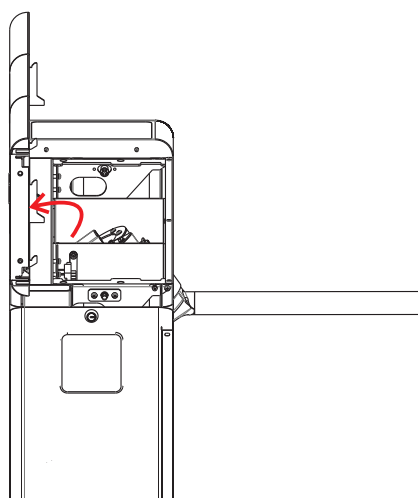
2. Before opening the central cover, deactivate the security pins located on each side of the cover.



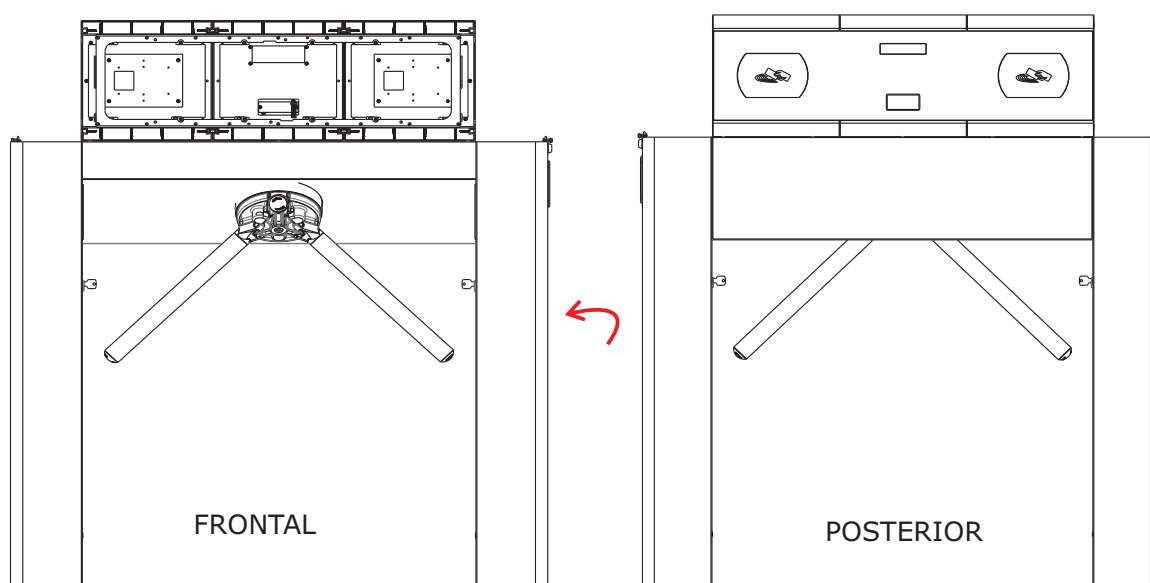
3. Open the cover according to the following images:



Note that the equipment structure contains a device that maintains the cover in the vertical position (see detail).



4. The following image shows **CATRAX Master** with all covers open.



INFORMATION: To access the column door, remove the external cover on the appropriate side.

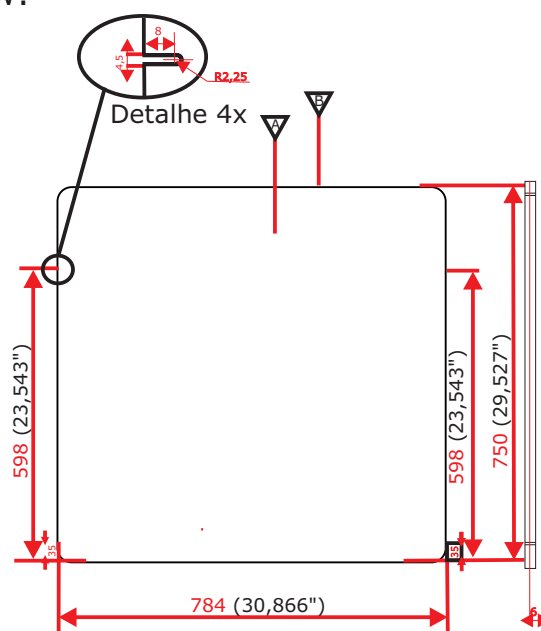
6. Optional Items

CATRAX Master 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 Rear closure kit

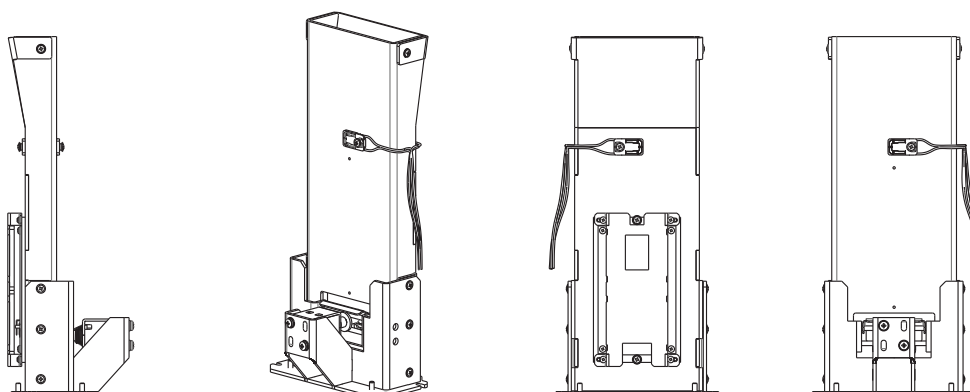
The **CATRAX Master** can be provided with a panel to close the rear space between the columns. The sheet can be of 6 mm tempered glass, 6 mm acrylic, or and 1.2 mm stainless steel, as the client sees fit. Besides closing the rear space, the panel allows simple customization with low cost.

The rear closure kit is mounted has four fasteners that secure the sheet to the side columns, as shown below:

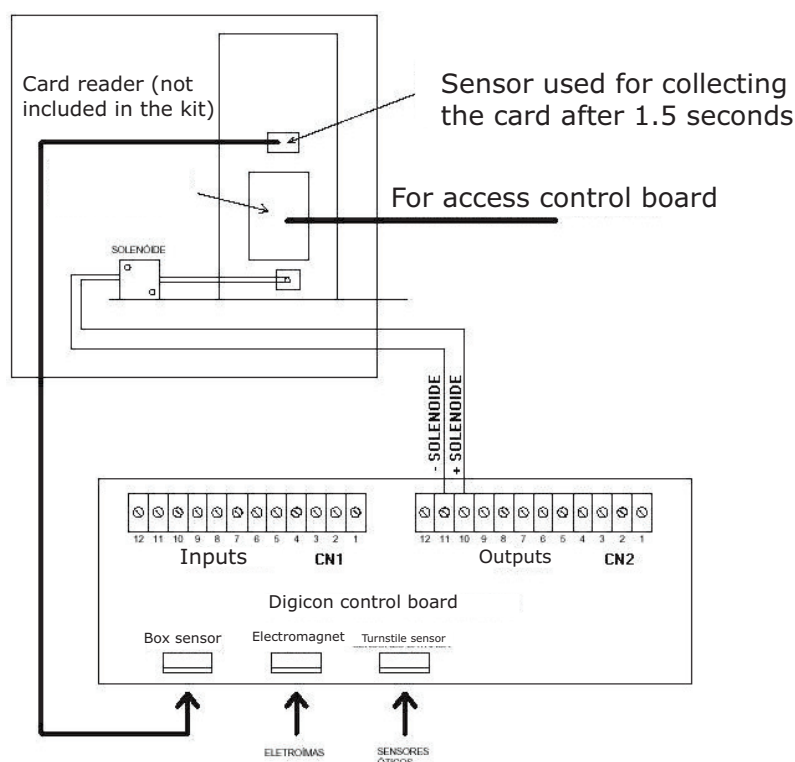


6.2 Collecting box kit

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:



6.2.1 Connection of collecting kit to control board

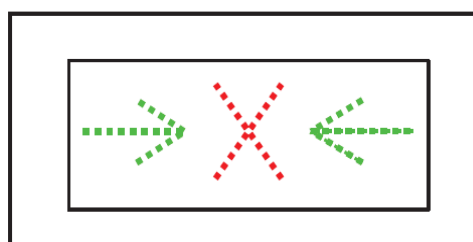


INFORMATION:

- 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.

6.3 Operational Pictogram Kit

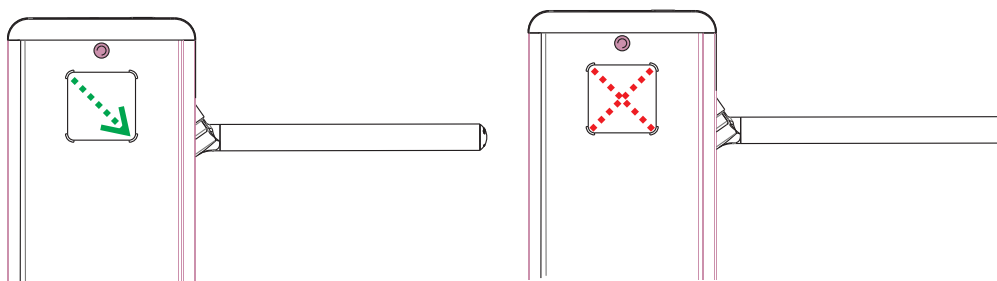
The operational pictogram kit visually signals the direction of passage (green arrows) or the blocking (red X) on the upper part of **CATRAX Master**.



ATTENTION: The power supply has no ground wire connection. Grounding is done directly in the turnstile's casing, using the board-mounting bolt.

6.4 Orientation pictogram kit

The orientation pictogram kit also visually signals the direction of passage (green arrows) or the blocking (red X), but on the front/side part of **CATRAX Master**.

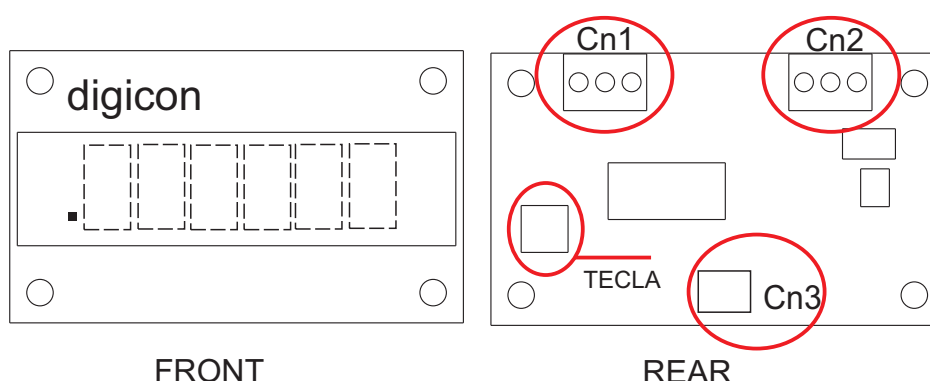


6.5 Electronic counter kit

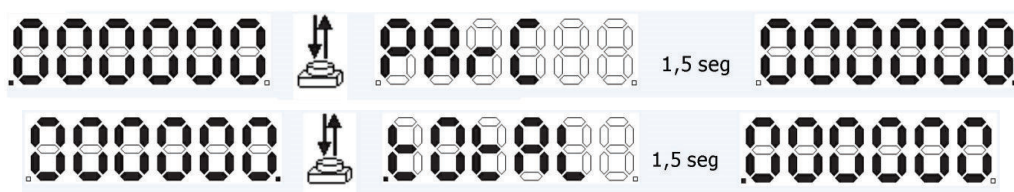
The electronic counter kit of pulses or rotations is digital, has six digits and has been developed for access control applications that employ Catrax Master turnstiles, and can also be employed in other projects that require this type of device. The counter is located in the same place (side slot) as the mechanical counter.

The electronic counter offers inputs for two sensors allowing it to be configured for sequential sensing, making it possible to detect turnstile rotations in a given direction. The device is also capable of counting single pulses (as other counters available on the market).

Digicon electronic counter is operated by means of a single button/key that gives access to all of its functions. Optionally, a key-operated button can be installed on the front panel.



Signal	Name/Description
CN1	
1	Ground wire
2	Input sensor 1
3	Input sensor 2
CN2	
1	External supply of 5 Vcc (battery eliminator)
2	Ground wire
3	Input for clearance key of frontal key
CN3	
1	Ground wire
2	Powered by batteries of 3Vcc (two AA batteries of 1.5 Vcc)



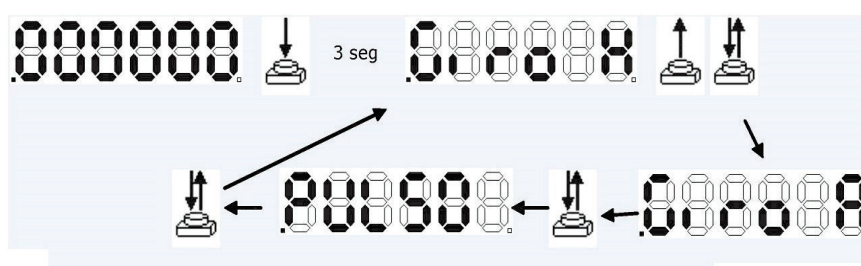
Resetting the partial totalizer

To reset the partial totalizer, it is necessary to access the partial visualization mode and then press the function key for about 3 seconds (or until all the digits are zero).



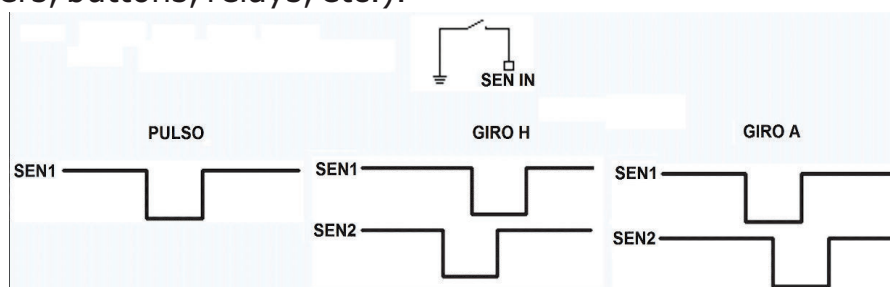
Configuration of operation mode:

The counter can be configured to count pulses or turns clockwise or anti-clockwise (the denomination "clockwise" and "anti-clockwise" only serves to distinguish the two tuning directions). To configure the counter, it is necessary to access the total visualization mode and proceed as shown:



Sensors:

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



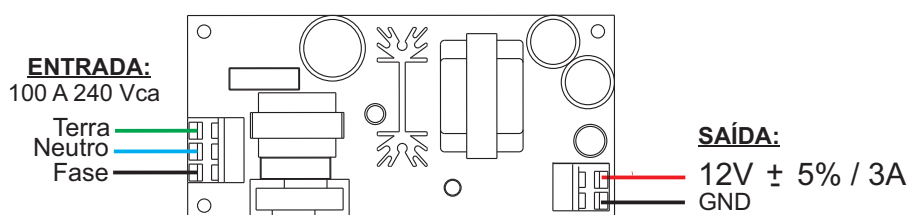
Power characteristics:

Power	2 batteries AA (3Vcc) 5V (battery eliminator)
Battery life	1,5 year or over 3.000.000 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)

6.6 Power supply

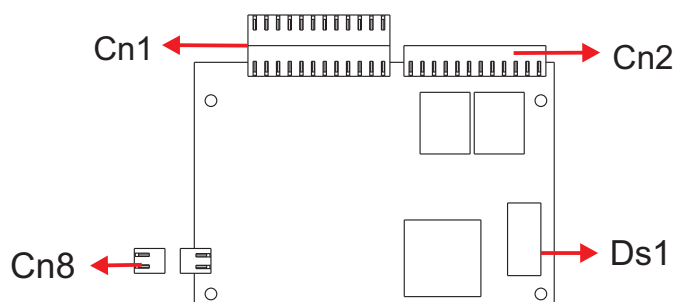
This power supply was especially designed for the CATRAX line. Among the main advantages of this optional item, is its adaptation capability to the voltage variations often found in installation sites – the input voltage can vary between 100 and 240 Vca.

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 Master**.

6.7 Control board



CATRAX Master 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 Master** needs and it is one of the best options for the equipment's operation.

The following images show the control board with its straps, connectors, and dipswitch, as well as the location of the power supply and the control board in **CATRAX Master**.

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

Signal	Name/Description
CN1	INPUTS
1	+Vext1 (enables turn through voltage)
2	HAB1 (enables turn through dry contact – 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
13	PROG1 (programs direction)
14	PROG2 (programs direction)
15	PIC1 (controls frontal pictogram 1)
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
6	for arrow > (open collector NPN – maximum 500 mA) blue wire
7	Output for arrow < (open collector NPN – maximum 500 mA) green wire
8	+12Vcc (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	SERIAL RS-485
1	DATE -
2	DATE +
3	GND
CN4	SIDE PICTOGRAM 2
1	+12Vcc (indicative arrows' power)
2	Output for indicative X (open collector NPN – maximum 500 mA)
3	Output for arrow > (open collector NPN – maximum 500 mA)
4	GND (indicative arrows' power)
CN5	SIDE PICTOGRAM 1
1	+12Vcc (indicative arrows' power)
2	Output for indicative X (open collector NPN – maximum 500 mA)
3	Output for arrow < (open collector NPN – maximum 500 mA)
4	GND ((open collector NPN – maximum 500 mA))
CN6	INPUT/OUTPUTS
1	input or output 1 – configure at S4 (IN or OUT)
2	input or output 2 - configure at S5 (IN or OUT)
3	GND
4	+12Vcc
CN7	SERIAL RS-232
2	TX
3	RX
5	GND
CN8	POWER – POWER INPUT
1	+12Vcc power input
2	GND power input
CN9	BOX SENSOR
1	LED anode
2	box signal
3	GND
4	GND
CN10	ELECTROMAGNETS
1	+ electromagnet 1
2	- electromagnet 1
3	+ electromagnet 2
4	- electromagnet 2
CN11	OPTICAL SENSORS
1	sensor 1 signal
2	LED 1 anode
3	sensor 2 signal
4	GND
5	LED2 anode


INFORMATION:

- Side pictogram 1 and 2 refer to the devices located on each side of the equipment.
- The cables of the optical sensors (CN11) and the electromagnets (CN10) are provided alongside CATRAX Plus.
- The cable of the box sensor (CN9) is provided alongside the collecting box kit (optional)

Particularly about the CN11 connector, pins 13 and 14: **CATRAX Master** can be configured as follows to determine direction passage:

Passage direction	PROG1 (pino 13)	PROG2 (pino 14)
Free in both directions	open	open
Controlled from left to right	GND	open
Controlled right to left	open	GND
Controlled on both sides	GND	GND

Pins 15 and 16, which control the side pictograms, must be configured thusly:

PIC1 (pino 15)	PIC2 (pino 16)	Pictogram 1	Pictogram 2
Open	Open	↗	↗
Open	GND	↗	X
GND	Open	X	↗
GND	GND	X	X

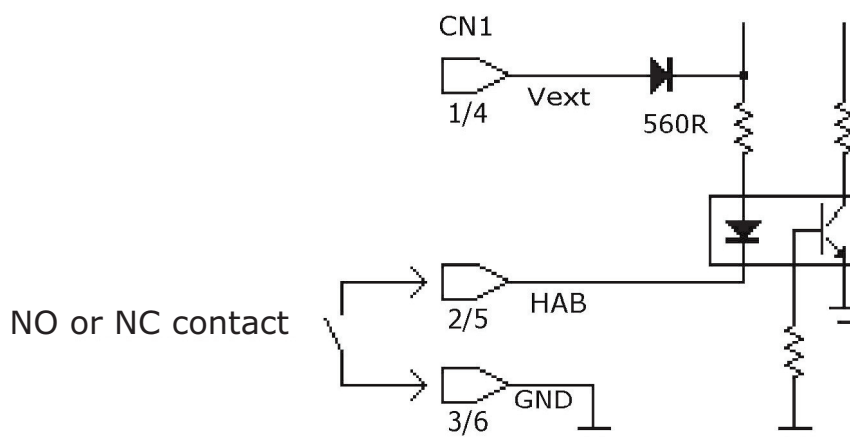


INFORMATION: : PIC1 and PIC2 refer to the pictograms located on each side of the equipment.

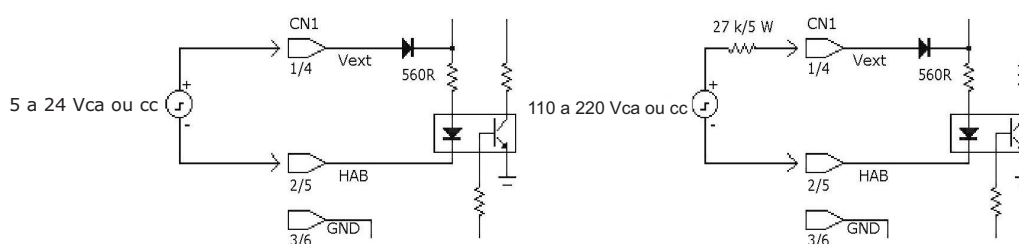
The following sections concern important aspects of **CATRAX Master** control board configuration and connections.

6.7.1 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).



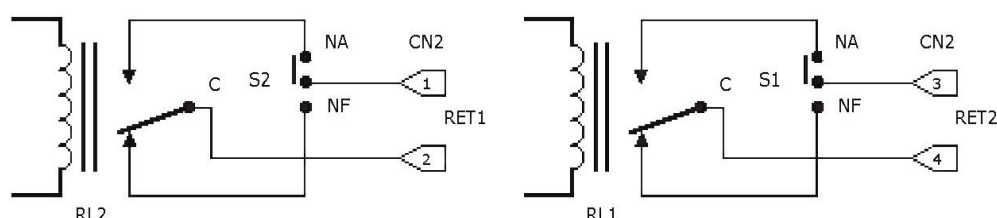
The control board also has inputs for optical sensors (CN11) that monitor rotation without mechanical wear, and two opto-isolated inputs to clear the **CATRAX Master** if required.

6.7.2 Outputs

CATRAX Master's board has outputs for return signals, electromagnets, pictogram, collecting box, and sound alarm.

6.7.2.1 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:



6.7.2.2 Electromagnets

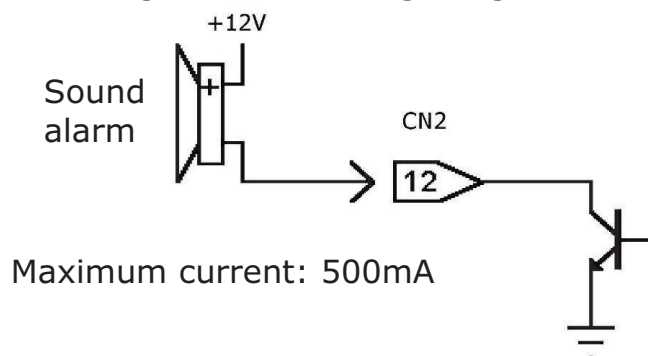
Electromagnets are activated for blocking the turnstile. Opposite to the traditional solenoids, electromagnets do not cause abrasion between the coil and the locking device, avoiding malfunctions. Moreover, the activation is done through a transistor, and not a relay, avoiding the electromagnet to be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

6.7.2.3 Sound alarm

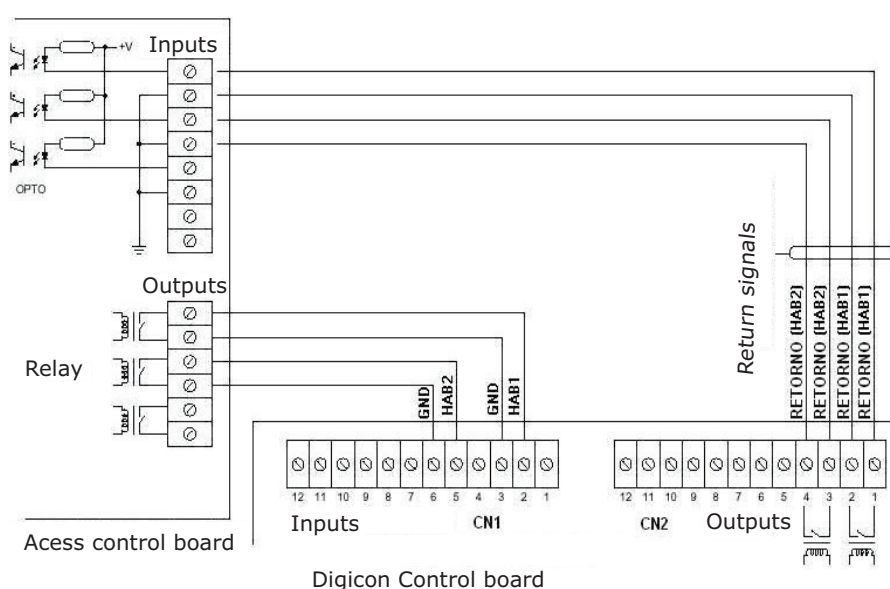
The sound alarm output is activated by a NPN transistor (maximum 500 mA) every time that **CATRAX Master**:

- 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:



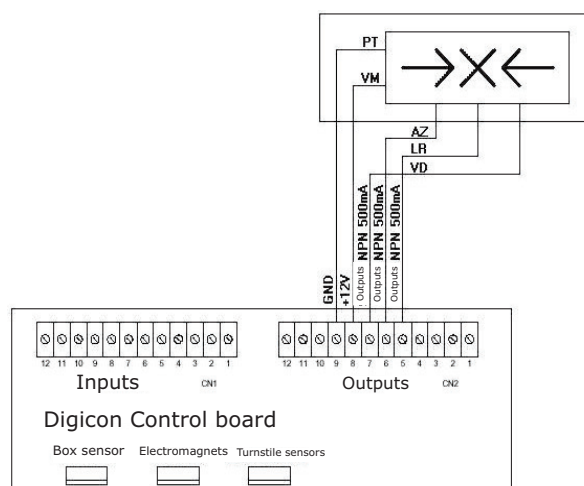
6.7.2.4 Connection scheme



6.7.2.5 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.

6.7.2.6. Pictogram connections



6.7.3 Configuration of control board – Switch Ds1

The switch (or dipswitch) 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 5 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 from right to left	-	-	-	OFF ON	-	-	-	-
Blocked in both directions	-	-	-	ON ON	-	-	-	-
NO inputs	-	ON	-	-	-	-	-	-
NC inputs	-	OFF	-	-	-	-	-	-
Enables sound signal	ON	-	-	-	-	-	-	-
Disables sound signal	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	-	-	-	-	-

* "Habilitation per border" means that **CATRAX Master** will be enabled by a pulse at the entry border (NC inputs) or exit border (NO inputs).

** "Habilitation per level" means that **CATRAX Master** will remain free as long as there is an input signal.

6.7.4 Examples of some configurations

1 – To receive a relay pulse (NO contact), clear the turning and wait to turn for 10 seconds:

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

2 – To leave the clockwise direction Always cleared and, when the HAB2 (anti-clockwise) clearance signal is received, clear passage for undetermined period:

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

3 – 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	ON	ON	ON	-	ON	ON

6.7.5 Serial configuration

CATRAX Master's control board allows serial configuration of the equipment. The communication protocol used is as follows:

STX	Size (LSB)	Size (MSB)	Commands	BCC
-----	------------	------------	----------	-----

Where:

- STX represents beginning of transmission (0x02)
- Size(LSB) is the byte with the least significant size component
- Size(MSB) is the byte with the most significant size component
- Commands is the information sent to the equipment (one or two bytes);
- BCC is the XOR operation for all bytes sent, from STX to Commands



ATTENTION:

- Size corresponds to the number of bytes sent (total command bytes: 1).
- The protocol communication rate is 115,200 bps.

The following table shows the enabling commands that can be sent to **CATRAX Master**:

HEXA	ASCII	FUNCTION
0x48	H	Clears direction from right to left
0x41	A	t Clears direction from left to right
0x44	D	Clears both directions
0x43	C	Back to controlling (command used to leave free state)
0x4C	L	Turnstile free (include free direction <0x4C> + <0x48>)
0x53	S	Direction programming (include direction to be programmed <0x53> + <0x48>)

The following table shows the return commands that can be sent by the equipment:

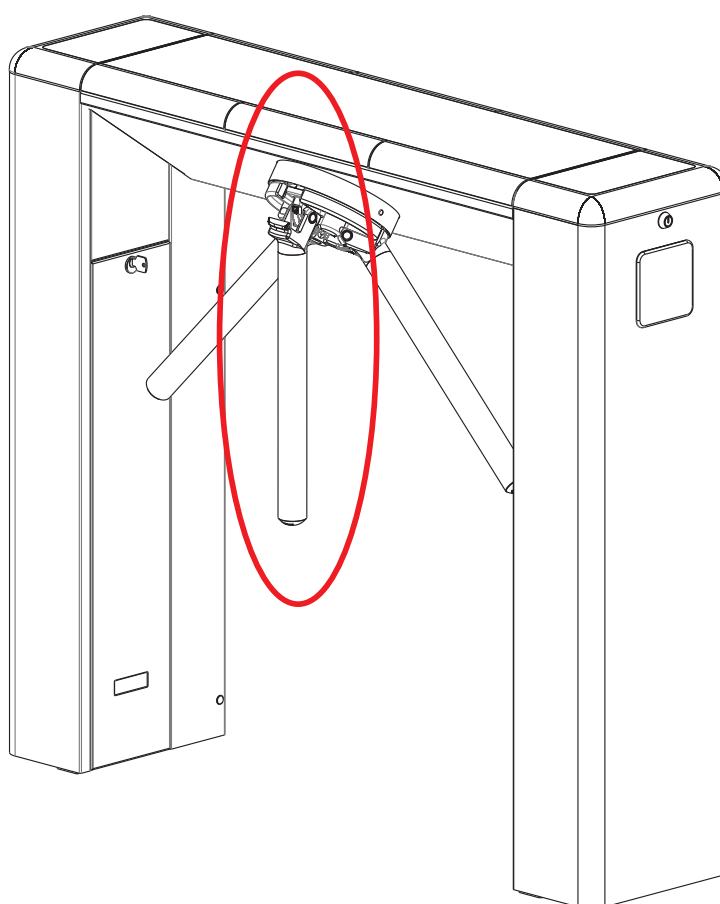
HEXA	ASCII	FUNCTION
0x48	H	free from right to left
0x06	□	ACK, indicates command OK
0x15	§	NACK, indicates invalid command
0x1A	□	Return command form right to left (RET1)
0x1B	□	Return command from left to right (RET2)

The following table shows some examples of command:

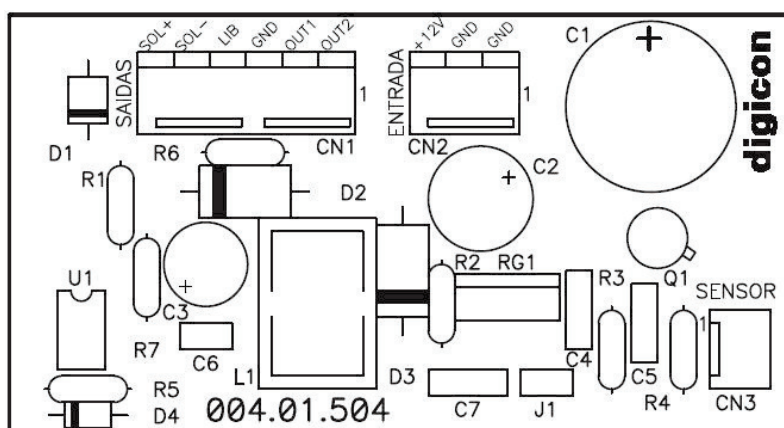
Free from left to right (1 passage):				
0x02	0x02	0x00	0x48	0x48
Configure from left to right as Always free:				
0x02	0x03	0x00	0x4C	0x48
				0x05
Return OK command:				
0x02	0x02	0x00	0x06	0x06

6.8 Anti-panic system

The **CATRAX Master** 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.



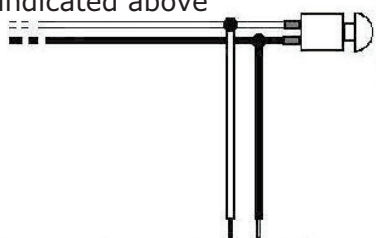
The anti-panic system requires a power of 12Vcc 2A. Optionally, Digicon also provides a switched-mode power supply (code 019.01.334).

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 turned on. One disassembled, the arm should be placed manually back into position.

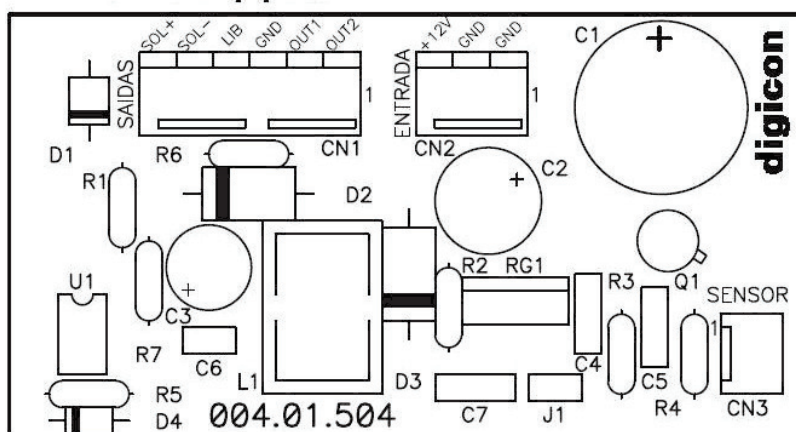
6.8.1 Power connection

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

Connect to other turnstiles
as indicated above



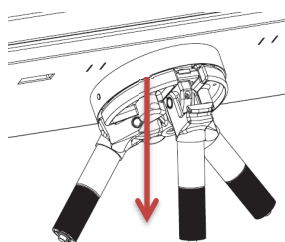
NO key or relay contact to
disassemble the arm



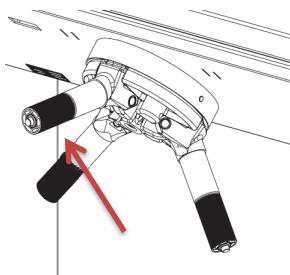
6.8.2 Assembling the arms

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

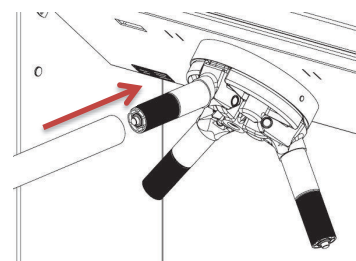
The wrench used for assembling must be an Allen n.8 and the screw must be tightened to the maximum to ensure good fixation. All three arms must be attached to the same central upper point.



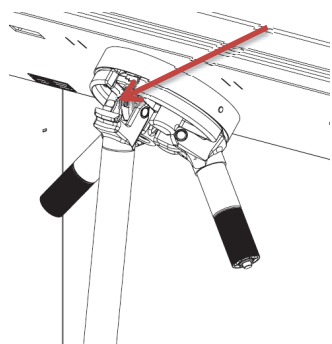
1° Let the mini arm drop.



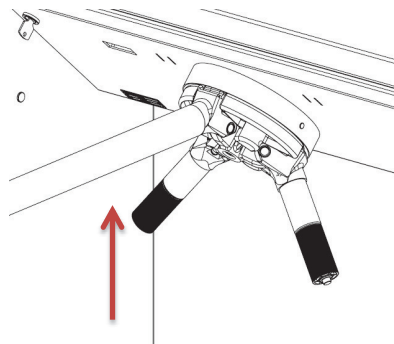
2° Make sure the mini arm's plastic part is fitted in to the steel part.



3° Fit the stainless steel arm in the mini arm.



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



5° Put the arm back in to its normal position.

6.8.3 Maintenance tests

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

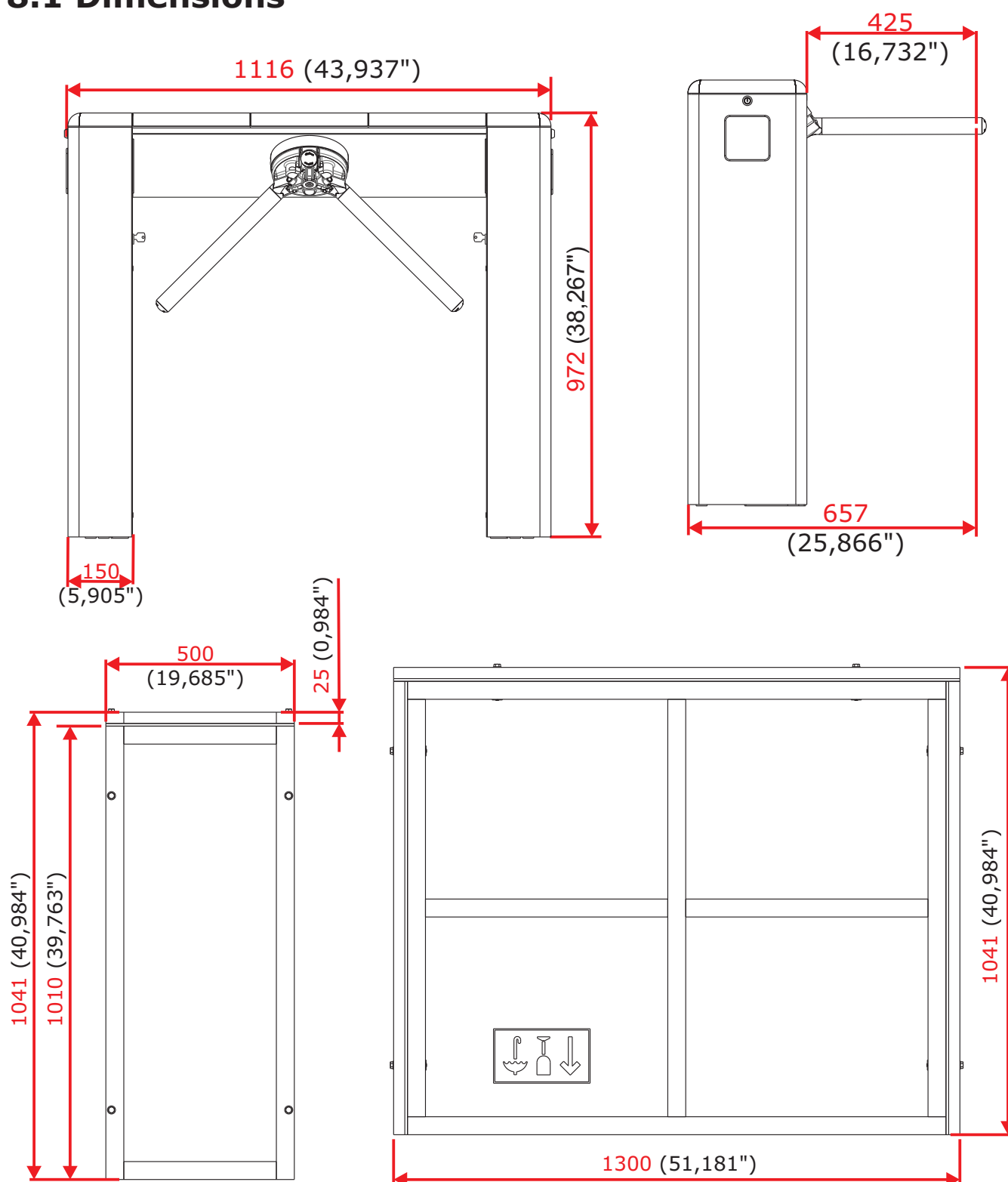
1. if you observe wear on the parts' teeth, replace the parts
2. if you see a gap between the sprocket and the axis/keyway set, replace the sprocket or the keyway (to replace the sprocket, use a pulley puller) a roda dentada ou a chaveta (para trocar a roda dentada, utilize um saca-polias).

7.2 Solving problems

DEFECT	POSSIBLE CAUSES	ACTION
<ul style="list-style-type: none"> CATRAX Master 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 Master is 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"> CATRAX Master 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 Master 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



INFORMAÇÃO: The measures presented in this manual are in millimeters.

Others information	
Gross weight:	Approx. 60 kg (package included)
Distance between arms	120 degrees
Electromagnets power	12 Vcc and 2 A
Sensor's power	5 Vcc and 0,05 A
Power supply (optional)	Input: 100 Vca a 240 Vca Output: 12,0 Vca \pm 5% / 3 A Dimensions: 35 x 51 x 105 mm Distance between holes: 43 x 98 mm Diameter of holes: 3,5 mm
Board with display	Power: 6 a 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 lukewater 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 tow. 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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