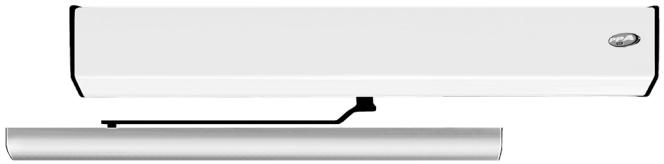
GIRO
OPERATOR FOR SWING DOOR

Technical Manual



Made by: **Motoppar Indústria e Comércio de Automatizadores Ltda**
Av. Dr. Labieno da Costa Machado, 3526 - Distrito Industrial - Garça - SP - CEP 17406-200 - Brasil
CNPJ: 52.605.821/0001-55
www.ppa.com.br | +55 14 3407 1000

CAUTION:
Do not operate the equipment without first reading the instruction manual.

P09692 - 09/2021
Rev. 0

INDEX

IMPORTANT SAFETY INSTRUCTIONS

Recommendation:
For the installation of the equipment, it is important that the specialized installer follow all instructions given in this TECHNICAL MANUAL and USER MANUAL.

With the USER MANUAL, the installer must provide all the information, and uses the user equipment safety items.

Before using the GIRO SOCIAL DOOR OPERATOR, read and follow all instructions contained in this manual carefully.

- Before installing the operator system, make sure that the local electrical network is compatible with the one required on the equipment identification label. Connect the power cord only into outlets connected to the ground network;

- Do not connect the mains until installation / maintenance is complete. Make the electrical connections of the board always turning off the electrical network;

- After installation, make sure that the door parts do not extend through the roads and public walkway;

- Under no circumstances, remove the grounding pin from the power plug. Do not use adapters that eliminate this ground connection. It is mandatory to use the ground pin.

- The equipment is intended to be installed at a height of at least 2.5m above the floor or other access level.

TOOLS NEEDED FOR INSTALLATION

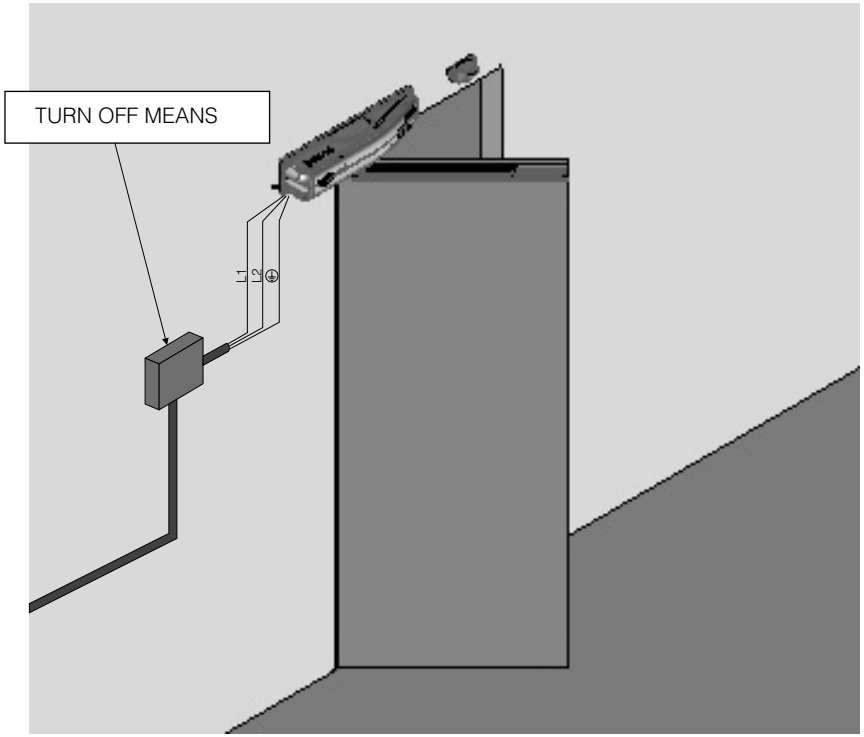
Here are some tools needed to install the operator:

ELECTRICAL INSTALLATION

For electrical installation, the network shall contain the following characteristics:
- Electric network 127V or 220V;
- Have 5A circuit breakers in the electrical distribution box;
- 3/4 "diameter conduit between the electrical distribution box and the total disconnect device;
- 3/4 "diameter conduit between the total turn off device and the operator connection point;
- Conduits 1/2 "in diameter and optional external buttonhole;
- 1/2 "diameter conduit for safety photocells (required).

CARE WITH THE ELECTRICAL INSTALLATION

To avoid damage to the wiring, it is important that all conductors are secured properly to the operator. Wiring must be done through conduits, passing internally through the base of the floor, ensuring that none of the wiring conductors are trapped and damaged.



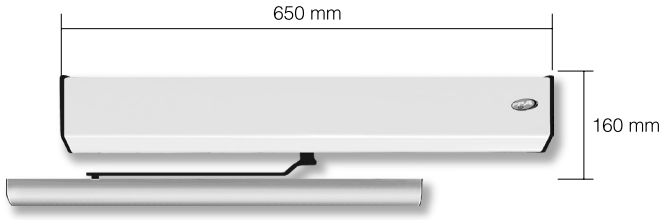
IMPORTANT

The device must be powered by a residual current device (RCD) with a nominal residual operating current of more than 30 mA

TECHNICAL CHARACTERISTICS

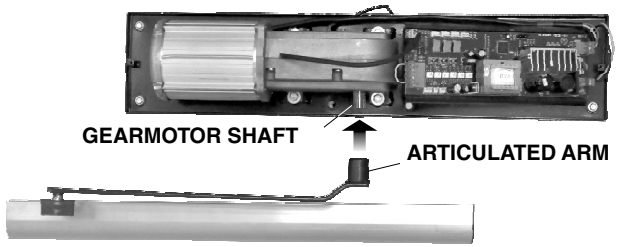
PARAMETERS AND TECHNICAL FEATURES				
OPERATOR TYPE	SWING	SWING	SWING	SWING
MODEL	SINGLE-PHASE	SINGLE-PHASE	SINGLE-PHASE	BRUSHLESS 24V
POWER SUPPLY	220 V	220 V	127 V	127 - 220 V
RATED FREQUENCY	60 Hz	50 Hz	60 Hz	60 Hz
RATED POWER	200 W	330 W	360 W	35 W
MOTOR RPM	3492	2910	3492	1200
RATED CURRENT	1,7 A	2,4 A	3,4 A	0,5 A
REDUCTION RATIO	1:111,5	1:111,5	1:111,5	1:111,5
LINEAR SPEED	1,6 meter/minute	1,3 meter/minute	1,6 meter/minute	0,6 meter/minute
CYCLES/HOUR	240	240	240	Heavy-duty
PROTECTION RATING	IPX 0	IPX 0	IPX 0	IPX 0
C-CHANNEL (MATERIAL)	Aluminum	Aluminum	Aluminum	Aluminum
OPERATING TEMPERATURE	-5°C (+23°F) +50°C (+122°F)	-5°C (+23°F) +50°C (+122°F)	-5°C (+23°F) +50°C (+122°F)	-5°C (+23°F) +50°C (+122°F)
INSULATION SYSTEM	Class B, 130 ° C	Class B, 130 ° C	Class B, 130 ° C	Class B, 130 ° C

INSTALLING AND FIXING THE OPERATOR



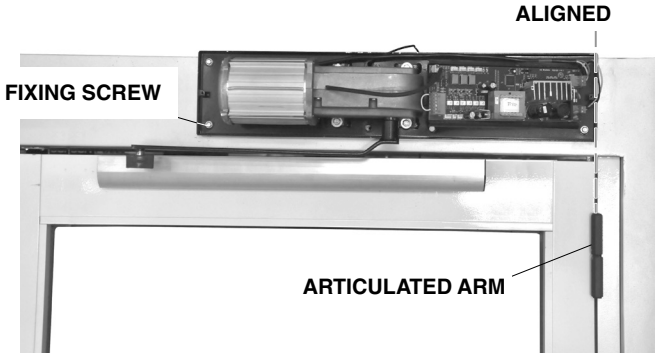
ARM FIXING

Fix the articulated arm to the gear motor shaft and, using an Allen wrench, secure with the screw that comes with the kit.

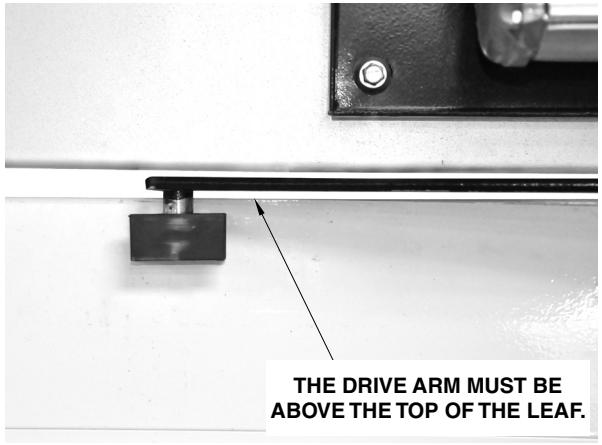


FIXING THE OPERATOR TO THE WALL

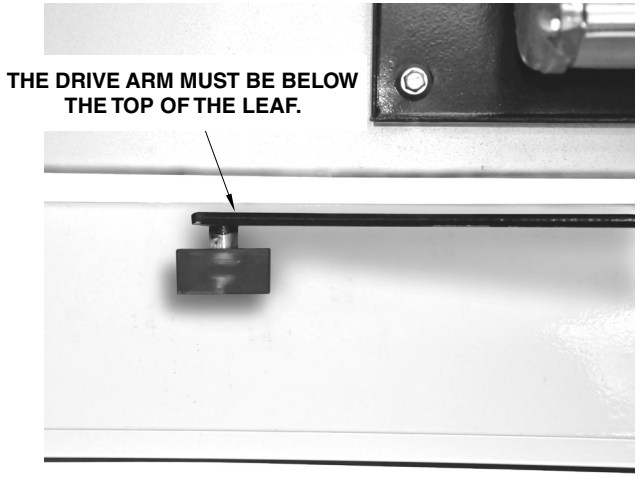
Secure the operator so that the steel base is aligned with the door hinge.



If the door is an internal opening type, secure the operator so that the drive arm is slightly above the top of the door leaf.

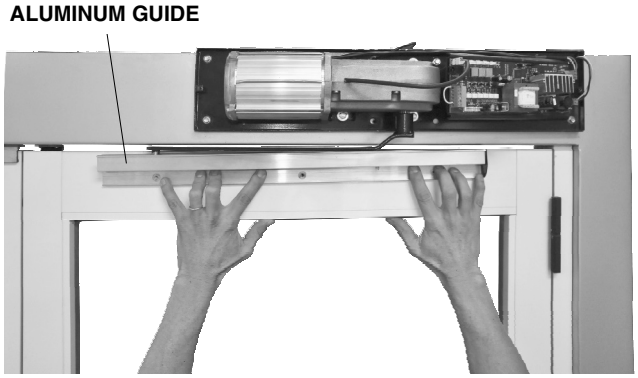


If the door is an external opening type, secure the operator so that the drive arm is below the top of the door leaf.



FIXING THE GUIDE TO THE DOOR

After fixing the operator to the drive arm, secure the aluminum guide to the door so that the drive arm does not extend beyond the limit and do not move off the guide (fixe the aluminum guide in the center of the door).



NOTE: Check manually whether the door opens and closes properly without friction.

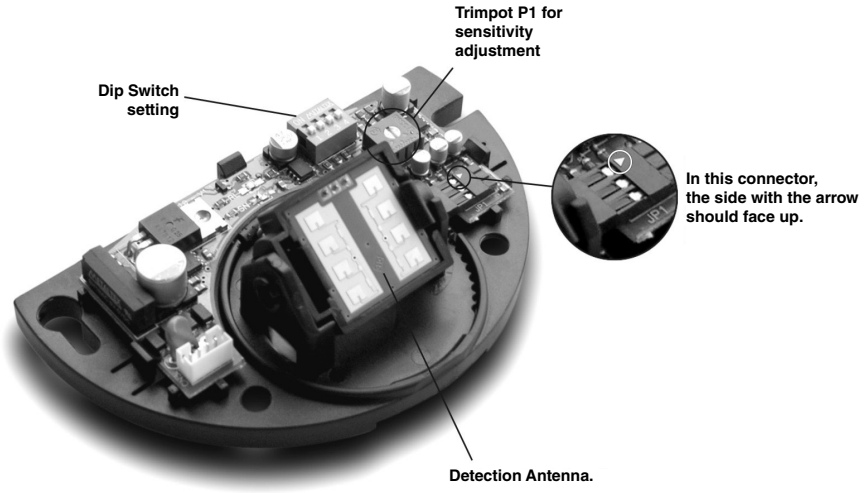
RADAR

Radar is a sensor that activate the automatic door when an object approaches its detection radius.

Technical specifications

- Supply voltage: 12 to 24 VDC / 12 to 18 VAC
- Voltage and current in the relay contacts: 200 V / 0.5 A
- Frequency emitted: 24,125 GHz
- Maximum installation height: approximately 3.5 m
- Adjustment angles: 0 to 90° vertical and -45 to 45° horizontal
- Detection area: - long - narrow

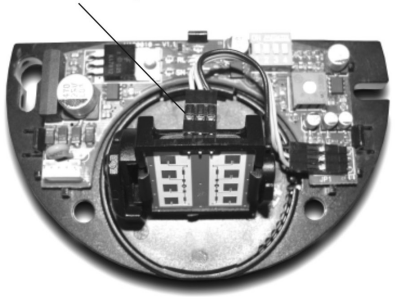
Knowing the board



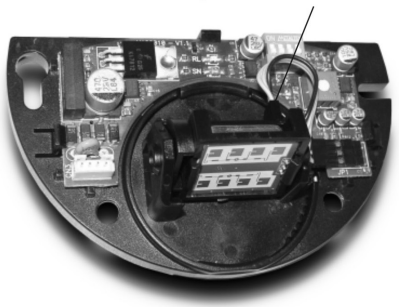
Installation mode

1. Fix the radar in the desired place and connect the power cord (red and brown are power supply and yellow and orange are the contacts of the relay).
2. Adjust the sensitivity through the P1 trimpot.
3. Adjust the direction of the detection area through the mechanical positioning of the antenna. For wide detection area, install the antenna upright (connector up). For narrow detection area, install the antenna in the horizontal position (connector to the right).

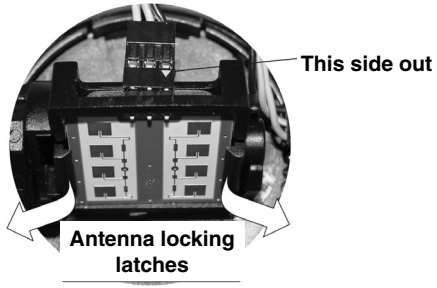
Connector up = long detection



Connector to the right = narrow detectio



NOTE
To reverse the position of the antenna, push the locks in opposite direction from each other, remove the board and fit it back into the desired position (figure on the side). Pay attention to the correct position of the connector. The side with the arrow should always be facing the outside of the board (figure on the side).

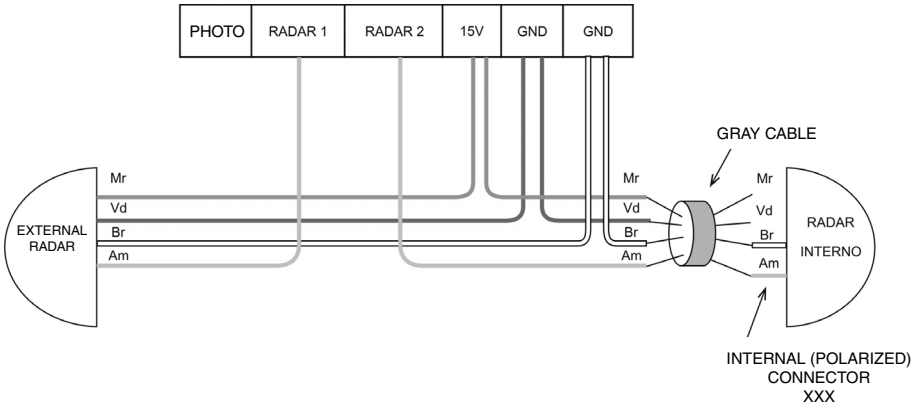


Dip switch setting
Key 1 sets the state of the relay: ON = NF and OFF = NA.
Key 2 sets the pulse time retention shot: ON = 2 seconds and OFF = 0,5 seconds.
Key 3 sets the mode of immunity: ON = high immunity and OFF = normal immunity.

NOTE
Set up with high immunity in environments where rain or other light movement may occur in front of the sensor to prevent false shots. This setting makes the sensor "slower".

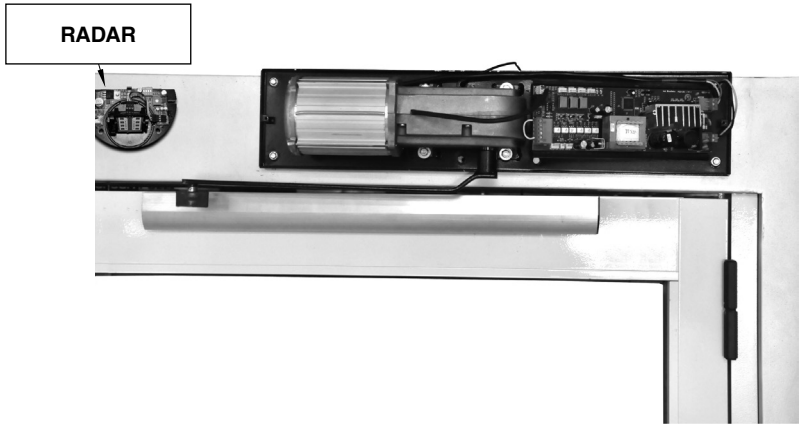
Observations:
- Do not touch the surface area of the antenna, as it is sensitive to small electrostatic discharges.
- Do not install the sensor in places where plant movements or other objects may occur.
- Do not install the sensor near fluorescent bulbs as they may cause interference.
- Do not install in places where vibration may occur.
- Ensure good sensor fixing to prevent false shots.

Wiring diagram in the Command Board - Radar



Fixing the radar on the cover

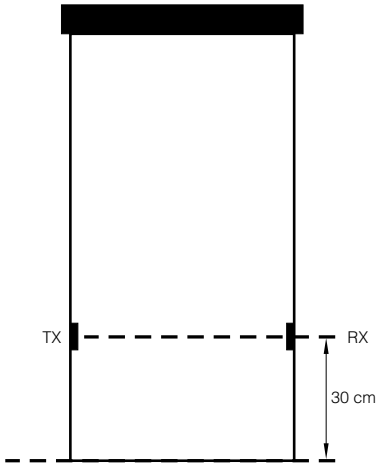
Fit and fix the radar stand near the Giro operator.



PHOTOCELL

Fixing and connecting the photocell

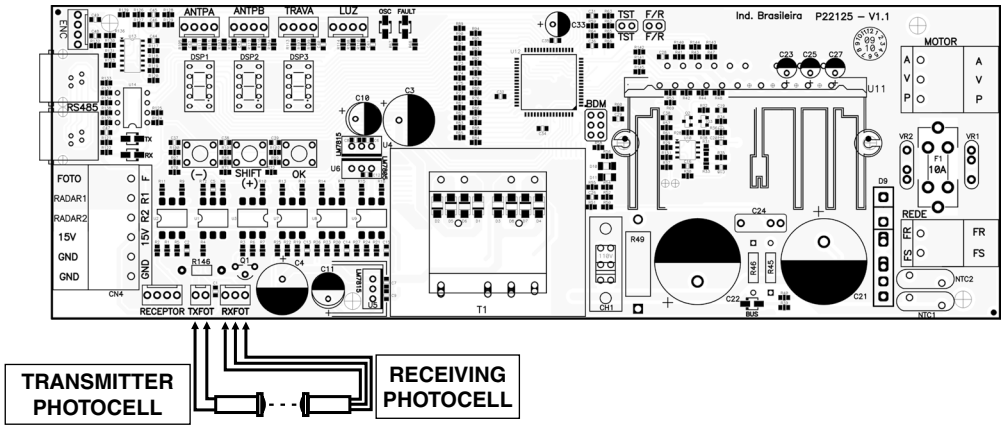
1. Pass a 4-way cable going from the TX to the board, passing through the rail and fastened with cable ties.
2. Pass a 4-way cable going from RX to the board, passing through the rail and fastened with cable ties.
The command for the activation of the photocell must be made by an NC (Normally Closed) contact, that is, for the board to receive a photocell command, the connection between PHOTO and GND of the CN6 connector.



Precautions

-Do not install the receiver directly facing the sun;
- Make sure that the side that has the output of the wires is positioned downwards;

Photocell connection



CLOSING THE OPERATOR COVER

After all connections and adjustments have been made, fit the board cover, close the operator cover and fixed it with 2 screws M5 x 10 .

MAINTENANCE

Before any Maintenance, remove the power cord from the electrical network.

DEFECTS, POSSIBLE CAUSES AND CORRECTIONS

Here are some DEFECTS, PROBABLE CAUSES AND CORRECTIONS, which may occur in your operator, in case you need maintenance.

DEFECTS	PROVÁVEIS CAUSAS	CORREÇÕES
Door opening and closing by itself	-Dirt in the rail. -Dirt in the door guide. -Radar unregulated, is picking up the movement of the leaf.	-Clean the rail. -Clean the door guide. --Regular sensitivity of the radar.
Door slowly opening	- Lack of electricity.	--Drive the radar on and wait for the door to open and close slowly.
Door opened and did not close	Blocked photocell.	-Unblocked the photocell.

INVERTER BOARD INSTALLATION

The electrical connections of the board must be made according to the diagram contained in this manual.

When the automatic door has an electromagnetic lock, or garage light, a relay module must be connected to "LOCK" and / or "LIGHT" (optional, separate sale).

To adapt a single receiver, simply connect it to "RECEIVER" (optional). The motor is connected to the "MOTOR" terminal.

The mains voltage is connected to the "NETWORK" terminal and must be either 127Vac or 220Vac according to the "CH1" voltage selection switch and the frequency according to the requested transformer in the inverter (60Hz or 50Hz).

The CN4 has a 15V (450mA) power supply to power the radars and the photocell as well as the input for radar command and photocell command. The radar command is a normally open contact, that is, for the board to receive a command, you must connect RADAR1 or RADAR2 to the GND.

The photocell PHOTO command on the CN4 connector must be a normally closed command, that is, for the board to receive a photocell command, the PHOTO of the GND must be disconnected.

FIRST DRIVE OF THE INVERTER AFTER BEING INSTALLED ON THE AUTOMATIC DOOR (MEMORIZATION)

WARNING: Before any drive, make sure that the door model selected in the inverting unit is the same port that is installed (F9 function, see Table 2).

The photocell PHOTO command on the CN4 connector must be a normally closed command, ie for the board to receive a photocell command; the PHOTO of the GND must be disconnected. If no photocell is used, a jumper between PHOTO and GND must be connected. (Optional / replacement).

After the inverter is energized for the first time, start the motor by pressing the OK button or by a command on RADAR1 or RADAR2 or RECEIVER. The door should initiate an opening movement, for better visualization of the movement leave it in the middle of the opening path. If the door starts a closing movement, remove the F / R jumper, wait two seconds (2s), and then start the engine again. Note that the board will change the direction of the motor. The door should start the opening movement.

After this condition, leave the door open until it stops at the opening stop. Then it will reverse the direction to close, let it lean against the closing stop. The automatic door is now ready to operate.

Note: During closing in the storage period, only one photocell command can revert the door.

FROM THE SECOND DRIVE ON

After memorizing, the door need not record the route again. On a new power-up, it will simply open slowly until it stops at the opening stop. Ready! The door is now ready to operate.

QUICK GUIDE FOR FREQUENCY INVERTER PROGRAMMING

The inverter already comes with factory-set parameters, but the user can modify them if he deems it necessary. To do this, press and hold the SHIFT key (+) until the display shows F01, you can now release the key. Ready, the user has already entered the programming mode. The programming menu has twenty-six functions

CODE PRINTED ON DISPLAY	FUNCTION
F01	Semi-automatic mode or pause time in automatic mode.
F02	Operation with lock or without lock.
F03	Time the garage light stays on after the door is closed.
F04	Reset recorded route.
F05	Opening speed.
F06	Closing speed.
F07	Opening limit switch.

CODE PRINTED ON DISPLAY	FUNCTION
F08	Closing limit switch.
F09	Door model (Bona, Flash, Tore, Avanti, Replacement and Pivoting).
F10	Sensibility of anti-smashing at closing (force at closing).
F11	Enables or disables Anti Panic.
F12	Function to choose whether the door should stop when there is an anti panic signal or if should open at a slower speed.
F13	Filter time for photocell command input and “Radar 1”.
F14	Limit switch speed.
F15	Applies the factory settings.
F16	Deceleration at closing.
F17	Reserved.
F18	Anti panic opening speed.
F19	Force during opening.
F20	Closing limit switch force (closing ensure).
F21	Enables or disables “Anti-wind” function (more used in the pivoting model).
F22	Acceleration / deceleration at opening.
F23	On/Off Pulse on the closing lock.
F24	Enable inverted pause.
F25	Wait time to start the engine after the lock has been activated.
F26	On/Off automatic opening when the door is manually moved in the opening direction
Out	Exit the programming menu.

(26) functions described in the table below:

To navigate through the programming menu, simply press the SHIFT (+) button to incremented or (-) button to decrease until find the desired function, and then press OK to enter the function. Each function has own specific settings that can be changed by the SHIFT (+) button or (-) button.

When finish changing, press OK again and then the value is saved and the menu returns to the functions and can navigate through again.

See the table below for the meaning of each existing configuration for the functions.

FUNCTION	EXISTING CONFIGURATION FOR THIS FUNCTION	MEANING OF CONFIGURATION
F01	Sau/t00 to t99	Semi-automatic mode (SA) or pause time in seconds [s].
F02	tof or t01 to t99	Disables the operation of electromagnetic lock (tof) or enable locking and the activation time of it (t01 to t99) in milliseconds, t01 = 0,1s.
F03	t00 to t99	Time the garage light comes on after the door is closed (time in seconds [s]).
F04	rst or nrt	Delete the route (rst) or do not delete the route (nrt).
F05	001 to 060 for Tore and Replacement models, up to 090 for the Flash and Bona models.	Opening speed, 001 to 090 [Hz].
F06	001 to 090	Closing speed 001 to 090 [Hz].
F07	001 to 099	Openign limit switch, 001 (minor), 099 (higher limit switch).
F08	001 to 099	Closing limit switch, 01 (minor), 99 (higher limit switch).
F09	FLA, bon, tor, rEP, AuA or Plu	Door model: Flash (FLA: larger motor with encoder hall), Bona (bon: smaller motor with encoder hall), Tore (tor: smaller motor with hall encoder), Replacement (rEP: smaller motor with optical encoder), Avanti AuA: medium motor with Hall encoder) and Pivot (Plu).
F10	A10 to A50	Sensitivity of the anti-smash in the closing, the smaller the value, the smaller the force. Higher the value, the greater the force.
F11	dAP or EAP	Enable (EAP) or disable (dAP) anti-panic. ATTENTION: This function should only be enabled if the door is the mechanical anti panic system.
F12	oPE to Sto	Set the anti-panic function to open the door (ope) or stop the door (sto) when receiving an anti-panic signal.
F13	t01 or t99	Waiting time to recognize that there is no photocell command and "radar 1", this function is used when the door is commanded by access control by cards, time x 100ms (one hundred milliseconds) [ms].
F14	001 to 015	Limit switch speed [Hz].
F15	ndE or dEF	Applies factory values (dF) or does not apply (nd).
F16	001 or 099	Deceleration at closing [Hz / s], the lower the smoother the motion and the greater the closing limit switch.
F17		Reserved.

FUNCTION	EXISTING CONFIGURATION FOR THIS FUNCTION	MEANING OF CONFIGURATION
F18	001 or 025	Opening speed [Hz] when there anti panic signal, if the door is configured to open in this situation.
F19	10 to A50	Opening force. WARNING: If the value is too low, the operator can have little force to open, slowing.
F20	000 or 015	Force in the final closing region, used to ensure closing.
F21	dAu or LAu	Enables (dAu) or disables (LAu) anti-wind function. This function is most commonly used in pivoting doors, forming the set closing again if the door open due to an external factor and not by an electric command.
F22	001 to 099	Acceleration / Deceleration at aperture [Hz / s]. As the value of this function decreases, the opening movement of the door will be smoother and the open limit switch should be increased as the door will require more braking space
F23	dPt or LPt	Turn on closing lock pulse (LPt) or turn off closing pulse lock (dPt).
F24	PnI or PIn	Non-inverted pause (PnI) starts counting when the door is fully open. Pause inverted (PIn), the pause starts counting when there is no more radar, photocell or buttonhole signal. If any command is restarted during the pause, the count is restarted.
F25	tof or t01 to t99	Disables the wait to start the engine after tof the tof or enables the time to start the engine (t01 to t99) in milliseconds, t01 = 0.1s.
F26	LAA or dAA	Turn on automatic open when the door is moved in the open direction (LAA) or Turn off automatic when the door is moved in the opening direction (dAA).
Out	Exit of the menu.	Exits the programming menu.

Important: At the end of the configuration of the operating parameters, navigate the menu to the Out function and press OK. If the card is turned off without this operation, the settings will return to the previous.

ATTENTION: It is mandatory (a) to use photocells to prevent accidents.

INCORPORATED PHOTOCELL

In this board there is a incorporated photocell, ie it is only necessary to connect the light transmitter and the infrared light receiver to the "TXFOT" and "RXFOT" connectors respectively.
Operation can be checked by the first display point from left to right. When the point is lit, the photocell is obstructed. When the point is off, the light receiver is receiving the signal from the light transmitter.
When the photocell is disconnected or has any change of connection or operation, the door remains open until the correction is applied.

ENCODER TEST

It is possible to test the encoder operator by simply plugging it into the board and starting the motor, press the SHIFT button once and the display will show the encoder pulses in real time. There is a sequence of pulses that must be obeyed:
First sequence: the display shows 0 1 3 2 ...
Second sequence: the display shows 0 2 3 1 ...
Any sequence is valid, but if the encoder is working correctly all numbers should appear, without exception!
Pressing the SHIFT button a second time, the route of the door will be shown in hexadecimal format, eg the number 0200h corresponds to the zero point (door open).

ATTENTION: To check that the motor encoder is in perfect condition, open and close the door several times by pressing the OK or RADAR button, then open it and leave it open, then press the SHIFT button twice and write down the number (it should be 0200h). Whenever the door is open, the display should mark the position 0200h or close to it, for example: 0201h or 0202h. If the number changes beyond 0200h, the encoder may be experiencing problems.

When you press the SHIFT button for the third time, the bus capacitor voltage will be displayed (V).

After the button is pressed, the display will automatically delete in 255s.

TST JUMPER

When removing the TST jumper, the OK button is used to slowly rotate the motor in a certain direction while the button is pressed, and the SHIFT button is used to turn the motor in the opposite direction of the OK button while it is pressed. When the TST jumper is replaced, the inverter returns to normal operation.

EVENTS AND FAULTS SIGNING

The main function of the OSC LED is to indicate that the microcontroller of the board is operational (the same flashes, with fixed frequency (~ 1Hz), as long as the power is on).
The BUS LED indicates that there is load on the capacitors of the DC bus.

ATTENTION: Do not touch the power region (capacitor region) of the board while this LED is lit even after the inverter is disconnected from the electrical network!

The FAULT LED indicates the alignment between the emitter and the receiver of the internal photocell. The higher the light intensity of the LED, the greater the alignment accuracy of the TX / RX photocell.
The activated panic indication (unlocked ports) is signaled on the seven segment displays (DSP1, DSP2 and DSP3) by means of the "APA" description (display format source).

NOTE: The signaling connections of the activated panic system are carried out by means of the ANTPA and ANTPB connectors.

FUNCTIONS OF THE DECIMAL POINTS OF THE INVERTER DISPLACES WHEN THE OPERATOR IS OPERATING

There are some functions for the decimal points of the displays when the operator is operating, these functions facilitate the verification of the operation and installation errors:
1. The point of the unit (the first point from the right to the left) represents commands for opening, ie when there is a receiver command or buttonhole, the point will be lit. When there is no signal, the point remains off.
2. The point of the tenth (the second point from the right to the left) represents a photocell signal, if the photo is drive or absent or still faulted the point will be lit and the door will remain open.
3. The hundredth point (the third point from right to left) represents whether there is a signal from the incorporated photocell. Lit point: photocell blocked, missing or connection failure; the door will remain open until clearing / correction.

POSSIBLE ERRORS AND DEFECTS

Errors

1.E00, E01 and E02: Signals that the power part of the inverter is faulty. Cause: Problems with power or weld defect. Solution: A qualified technician should evaluate the equipment.

2. E03: There is no encoder signal. Cause: Encoder disconnected or defective. Solution: Connect encoder to the board and check encoder.

3. E04: Indicates that the route recorded during memorization is too small. Cause: The encoder cable is missing and the door is locked. Solution: Check the encoder cable, check if the door slides all the way, in case the error persists.

4. E06: The port is not reaching the zero point (aperture). Cause: Encoder may be broken, or lack of force at the end of stroke. Solution: Check the encoder. Increase the limit switch speed (see "Encoder Test").

5.E09: Possibility of loss of synchronism of the belt with the toothed pulley. Cause: Belt loose or improper to pulley.

ATTENTION: When the new inverter is to replace one of the old model (optical encoder), the two wires in the middle of the encoder harness must be crossed:
- **Old sequence: Black, White, Red, Yellow.**
- **New sequence: Black, Red, White, Yellow.**
- **For the optical encoder extender that has two ends, cross only one of them:**
- **Old sequence: Brown, Red, Orange, Yellow.**
- **Sequence and mapping are as follows: Brown, Orange, Red, Yellow.**

DEFECT		
DEFECT	**CAUSE**	**SOLUCTION**
The door does not match the installed location route (brakes before closing stop or hits closing).	There is a different route recorded the route from the local installed.	Enter the function menu and function 4 (F4), change from nrt to rSt, exit the menu via out, and allow to memorize the course.
Door remains open and when it receives commands to open, it closes.	The memorization was performed erroneously.	See item: First drive of the inverter after being installed in the operator (memorization).