



control units

mindy A100F

Instructions and warnings for the fitter

Istruzioni ed avvertenze per l'installatore

Instructions et recommandations pour l'installateur

Anweisungen und Hinweise für den Installateur

Instrucciones y advertencias para el instalador

Instrukcje i uwagi dla instalatora

COMPANY
WITH QUALITY SYSTEM
CERTIFIED BY DNV
== ISO 9001 ==



mindy A100F

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Warnings

⚠ This manual has been especially written for use by qualified fitters. No information given in this manual can be considered as being of interest to end users!

This manual refers to the A100F control unit only and cannot be used for different products.

The A100F control unit is suitable for control of electromechanical actuators designed for the automation of overhead garage doors and sliding gates; any other use is improper and prohibited.

We recommend that you read all the instructions carefully before proceeding with the installation.

This brochure, which contains important directions regarding system safety, should be saved for future reference along with the technical instructions for the automatic system.

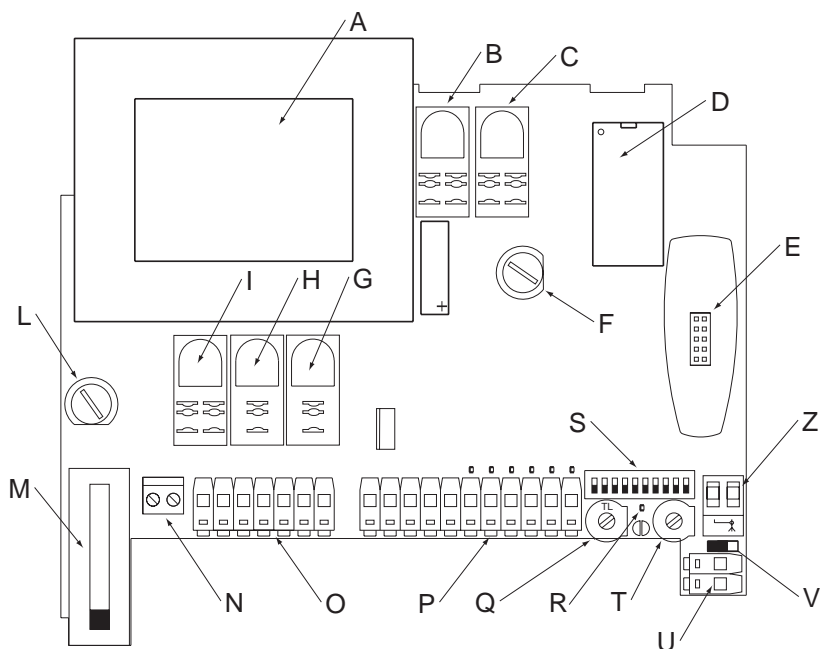
1) Product description

The A100F control unit enables the control of overhead garage doors and sliding gates equipped with single-phase alternate-current gearmotors. It features a system for force adjustment and a "constant resistance STOP" input (e.g. for sensitive edges).

The control unit features a number of functions that can be selected using dip-switches (mini selector switches); some adjustments can be made using trimmers, while a jumper enables the selection of the

type of automation: "Sliding / Overhead".

A number of LEDs located near the inputs signal their status, while an additional LED located below the dip-switch (OK LED) signals the correct operation of the internal logic.



- A** Transformer
- B** "Common" relay
- C** "Brake" relay
- D** Microprocessor
- E** SMX Radio connector
- F** Low voltage fuse
- G** "Open/Close" relay
- H** "Pickup" relay
- I** "Courtesy light" relay
- L** Line fuse
- M** Force selector switch (F)
- N** Power supply terminal board
- O** Flashing / C.tsy light / motor power supply output terminal board
- P** Input / output control terminal board
- Q** Working Time adjustment trimmer (TL)
- R** Led OK
- S** Function selection Dip-Switch
- T** Pause Time adjustment trimmer (TP)
- U** STOP input terminal board with constant resistance 8.2KΩ (sensitive edge)
- V** Selection jumper: overhead / sliding
- Z** Aerial terminal board

⚠ If you need to replace a fuse, be careful to use one of the same type and having identical characteristics: Dimensions (5x20), rated current (e.g. 5A), blowout characteristics (T=delayed, F=quick), maximum voltage and breaking capacity.

2) Installation

⚠ Automatic gate and door systems may only be installed by qualified fitters in the full respect of the law.

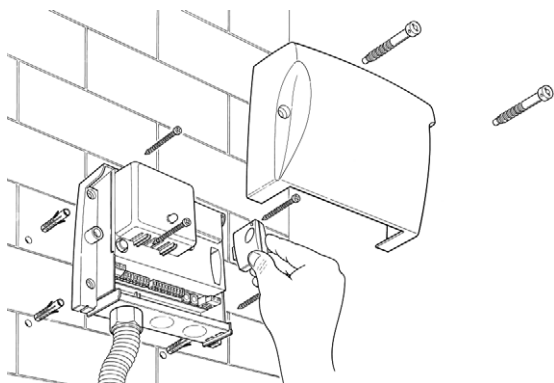
Comply with the warnings shown in the "Warnings for fitters" file.

2.1) Mounting the A100F control unit

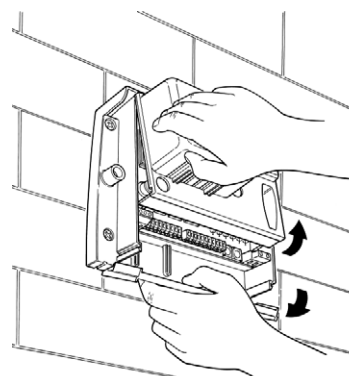
- Mount the control unit on a non-movable, flat vertical surface suitably protected from impacts. Make sure that the bottom is at least 40cm off the ground.
- Insert the cable or tube leads through the bottom of the container only (see **figure 1a**).

- The container is provided with a cover designed to protect the electronic board from accidental contacts (see **figure 1a**). The electronic board can be interfered with only in the event of real need; in this case, proceed as shown in **figure 1b**.

1a



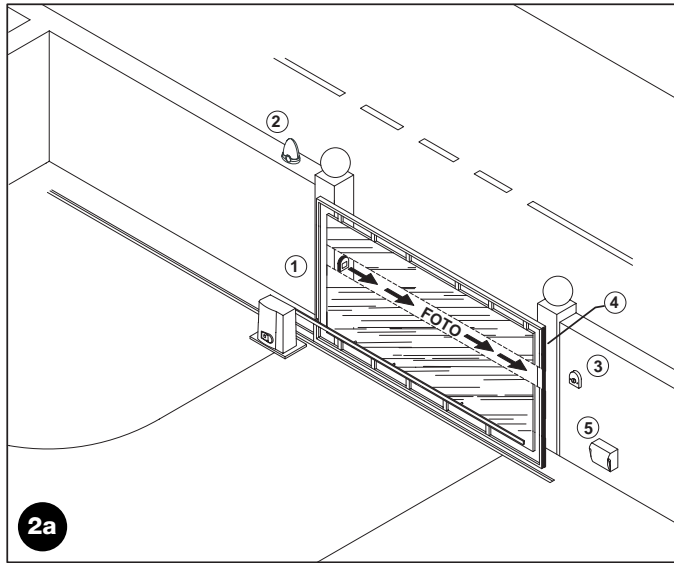
1b



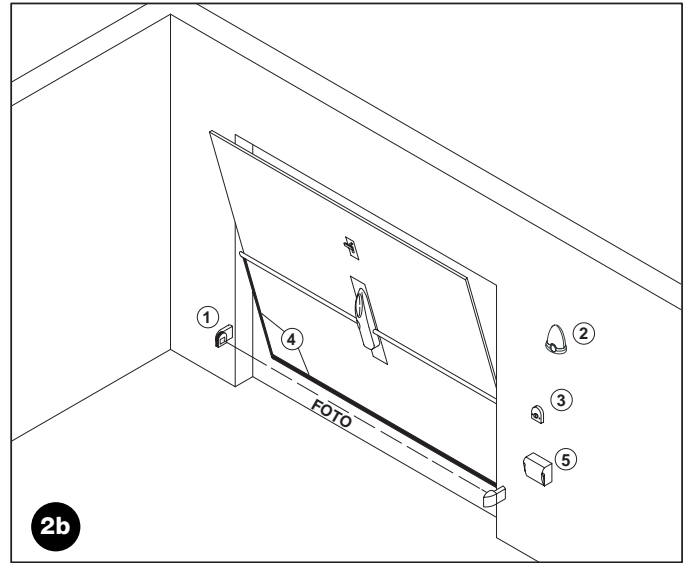
2.2) Typical system layout

In order to explain certain terms and aspects of automatic gate and overhead garage doors systems, we will now illustrate a typical system layout.

SLIDING GATE



OVERHEAD GARAGE DOOR



1. Pair of photocells (PHOTO)
2. Flashing light
3. Key-operated selector switch
4. Sensitive edge
5. Control unit A100f

In particular, please note that:

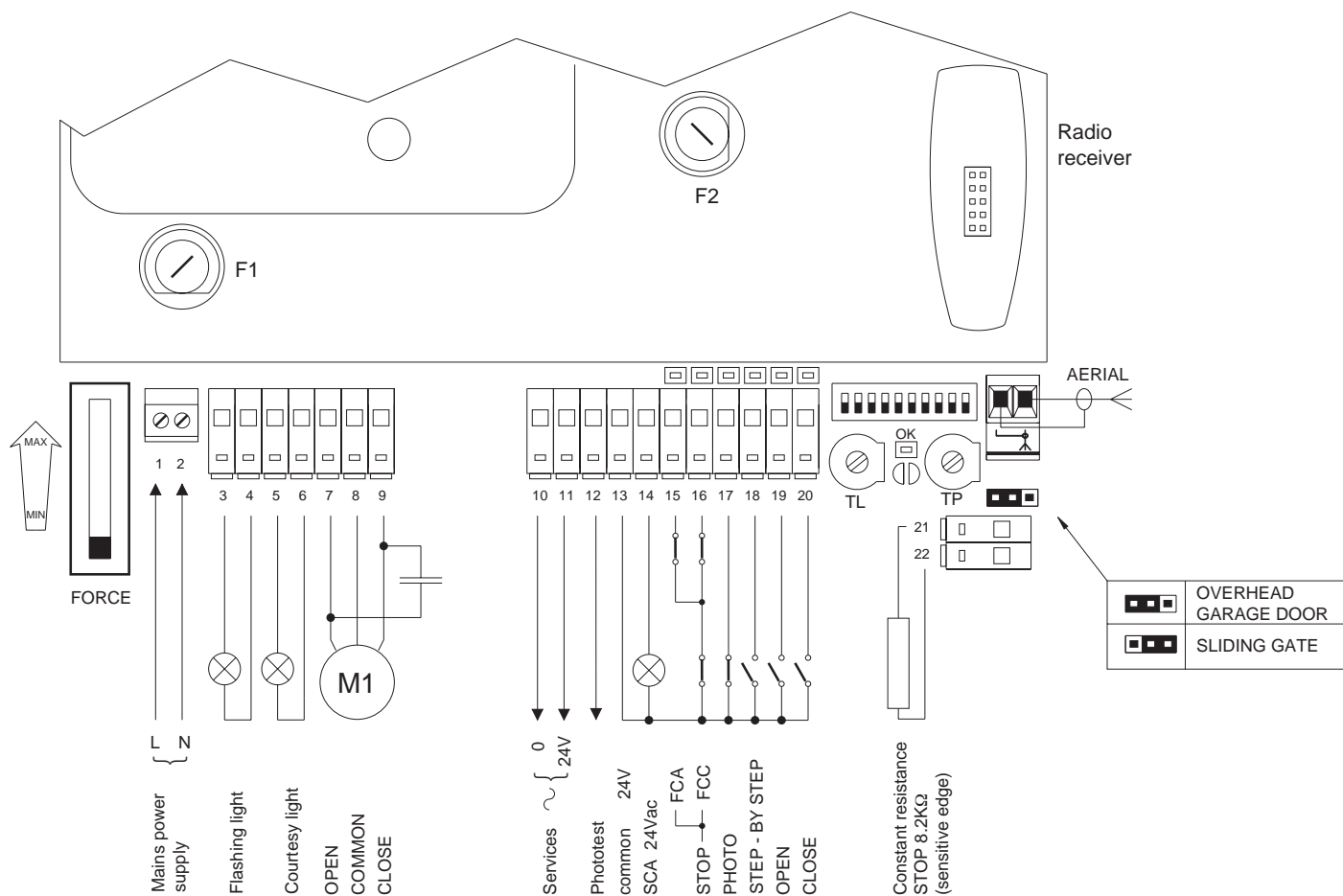
- All the photocells produced by NICE feature a SYNCHRONISATION SYSTEM that eliminates the problem of interference between two pairs of photocells (please consult the photocell instructions for further details).
- The "PHOTO" pair of photocells have no effect when the gate is opening, while they reverse movement when the gate is closing.

2.3) Electrical connections

⚠ To safeguard the operator and avoid damaging the components while you are wiring or plugging in the various cards: under no circumstances may the unit be electrically powered.

- Power the control unit using a 3x1.5 mm² cable; should the distance between the unit and the earth connection exceed 30m, install an earth plate near the unit.
- Use wires with a minimum cross-section of 0.25 mm² to connect extra-low voltage safety circuits.
Use shielded wires if the length exceeds 30m and only connect the earth braid to the control unit side.
- Do not make connections to cables in buried boxes even if they are completely watertight.
- If the inputs of the Normally Closed (NC) contacts are not used, they should be jumped with the "24V common" terminal except for the photocell inputs if the phototest function is enabled. For further information please see the "PHOTOTEST" paragraph.
- If there is more than one (NC) contact on the same input, they must be connected in SERIES.
- If the inputs of the Normally Open (NA) contacts are not used they should be left free.
- If there is more than one (NA) contact on the same input, they must be connected in PARALLEL.
- The contacts must be mechanical and potential-free; no stage connections are allowed, such as those defined as "PNP", "NPN", "Open Collector", etc.
- The constant resistance STOP input transmits an OK signal to the control unit if a circuit with a resistance of 8.2k Ω (e.g. a sensitive edge) is connected between terminals 21-22.

2.3.1) Wiring diagram



2.3.2) Description of the connections

The following table provides a brief description of the possible control unit output connections.

Terminal	Functions	Description
1-2	Power supply	mains power supply line
3-4	Flashing light	Output for connecting flashing light to mains voltage (Max. 100W)
5-6	Courtesy Light	Output for connection of a mains voltage lamp (Max 100W)
7-8-9	motor	motor output (Max 500VA)
10-11	24 Vac	24 Vac services power supply: Photo, Radio, ecc. (Max. 200mA)
12	Phototest	Phototest output: power supply to photocell transmitters (Max. 100 mA)
13	Common	Common for all inputs
14	A.C. Light	24 Vac output for open gate indicator light (Max. 2W)
15	OPEN limit switch	Input for connection of the OPEN limit switch.
16	CLOSE limit switch	Input for connection of the CLOSE limit switches.
(15-16)	Stop	The "Stop" input is obtained by connecting an NC-type contact serially with the limit switches (see wiring diagram).
17	Photo	Input for safety devices with NC contact (e.g. photocells)
18	Step-by-step	Input for cyclic command (OPEN – STOP – CLOSE – STOP)
19	Open	Input for opening function (OPEN – STOP – OPEN)
20	Close	input for closing command (CLOSE – STOP – CLOSE)
21-22	constant resistance Stop	Input for "constant resistance Stop" 8.2kΩ (e.g. sensitive edge)

2.3.3) Constant resistance STOP input

It enables the connection to the control unit of devices with 8.2KΩ constant resistance (e.g. sensitive edges)

The input measures the value of the resistance and disables the manoeuvre when the resistance is outside the nominal value

The control unit is supplied with 8.2KΩ resistance connected to the input, which simulates the resistance of the devices even if the input is not used; the resistance must of course be removed when connecting a device with 8.2KΩ output.

Also devices with normally open "NO" or normally closed "NC" contacts, or multiple devices, even of different type, can be connected to the constant resistance STOP input, provided that appropriate arrangements are made.

For this purpose, refer to the following table:

Table 1				
		1st device type:		
		NO	NC	8,2KΩ
2nd device type:	NO	In parallel (note 1)	(note 2)	In parallel
	NC	(note 1)	In series (note 3)	In series
	8,2KΩ	In parallel	In series	(note 4)

Note 1.

Any number of NO devices can be connected to each other in parallel, with an 8.2KΩ termination resistance

Note 2.

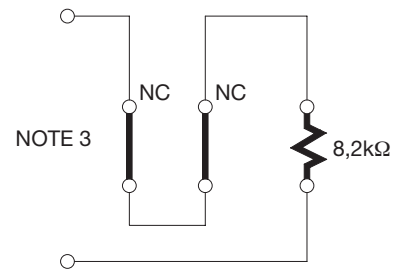
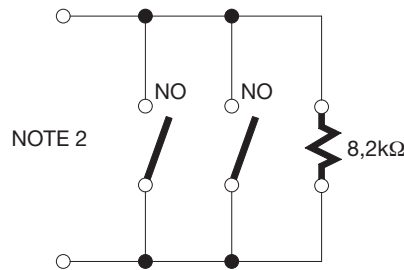
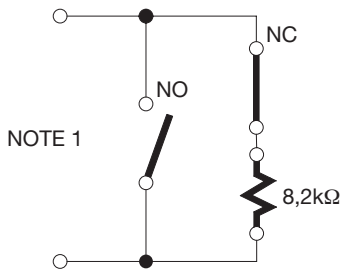
The NO and NC combination can be obtained by placing the two contacts in parallel, and placing in series to the NC contact an 8.2KΩ resistance (therefore, the combination of 3 devices is also possible: NO, NC and 8.2KΩ).

Note 3.

Any number of NC devices can be connected in series to each other and to an 8.2KΩ resistance.

Note 4.

Only one device with 8.2KΩ constant resistance output can be connected; multiple devices must be connected in cascade with a single 8.2KΩ termination resistance (see 11. What to do if...)



⚠ if the constant resistance STOP input is used to connect devices with safety functions, only the devices with 8.2KΩ constant resistance output (the resistance is inside the device) guarantee the fail-safe category 3.

2.3.4) Connecting the photocells

This control unit features a "Phototest" function designed to improve the reliability of the safety devices, enabling the control unit and safety photocells set to fall under "Category 2" according to EN 954-1 (12/1998 edition).

Each time a manoeuvre is started, the safety devices involved are checked; the manoeuvre is started only if everything is OK. If the test does not have positive results (photocell blinded by sun, shorted cables, etc.) the fault is identified and the manoeuvre is aborted.

To obtain the "Phototest" function you need to:

- Connect the photocells as shown in **fig. 4a** (when using a single pair of photocells) or in **fig. 4b** (when using two pairs of photocells). The power supply to the photocell transmitters is not drawn directly from the service output but from the "Phototest" output between terminals 10-12. The maximum current available from the "Phototest" output is 100mA.
- Power the receivers directly from the service output of the control unit (terminals 17-18).

- Set Dip –Switch 10 to ON: Phototest enabled; in the future it can be disabled at any time by setting Dip –Switch no. 10 to OFF: Phototest disabled.

When using 2 pairs of photocells which may interfere with each other, activate the synchronisation function as described in the photocell instructions.

⚠ A traditional photocell connection, such as that shown in fig. 4c, will not enable the use of the "phototest" function.

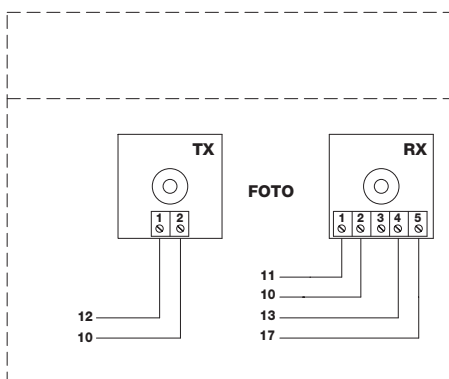
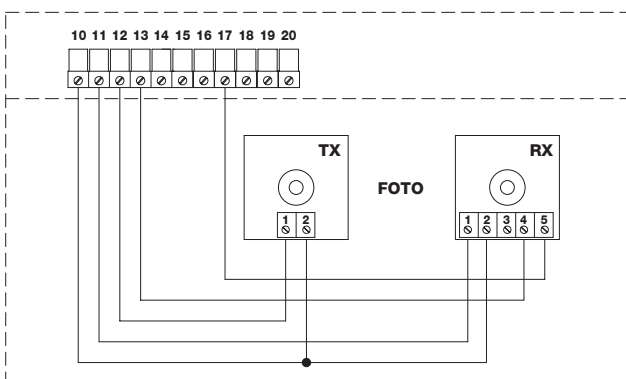


fig. 4a
Connection of a pair of photocells enabling the use of the photocell function

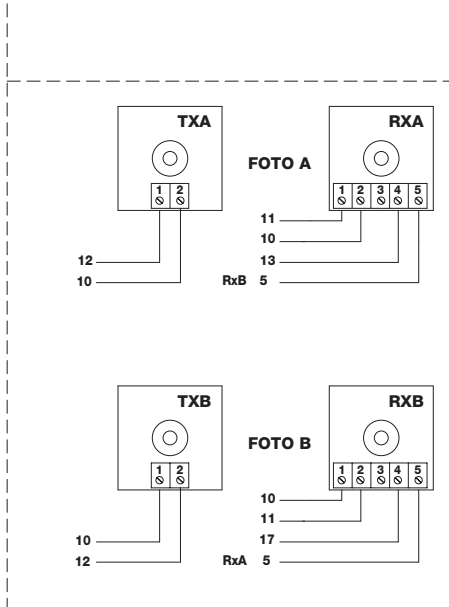
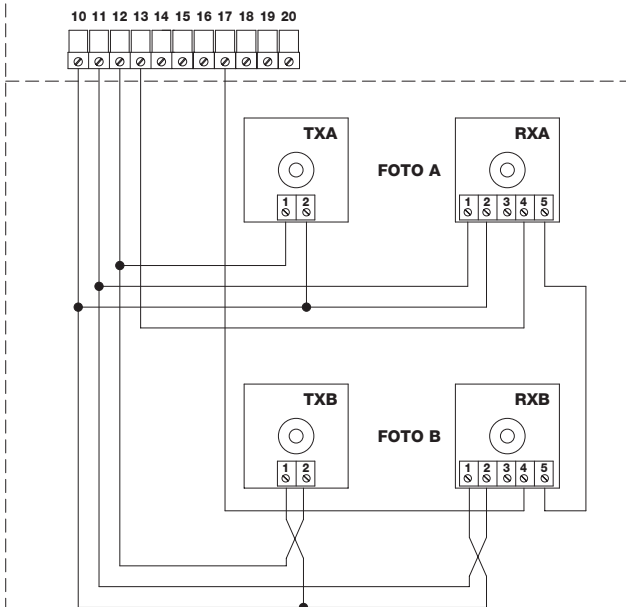


fig. 4b
Connection of two pairs of photocells enabling the use of the photocell function. The photocells are connected to enable the activation of the synchronism.

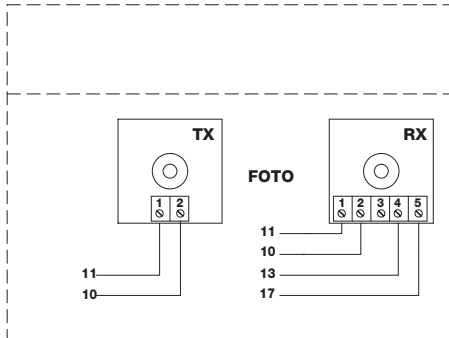
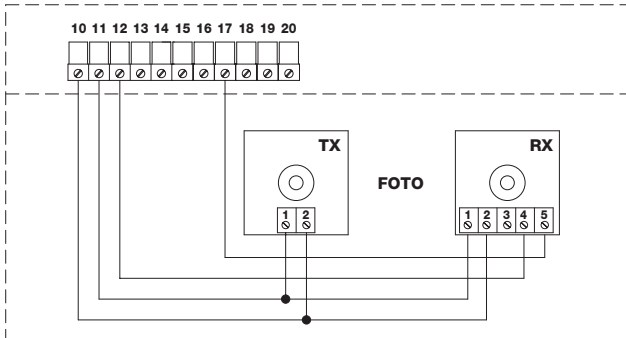



fig. 4c
Connection of a pair of photocells that will NOT enable the use of the photocell function

2.3.5) Testing the connections

⚠ The following operations entail working on live circuits; most of these run on extra-low safety voltage so they are not dangerous but some contain mains voltage which means they are HIGHLY DANGEROUS! Pay the greatest of attention to what you are doing and NEVER WORK ALONE!

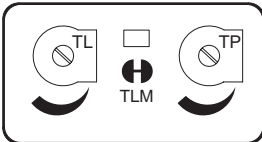
- Power the unit and check that voltage between terminals 10-11 is approx. 24Vac.
- Make sure that the “OK” LED, after flashing rapidly for a few seconds, flashes at intervals of one flash per second.
- Now check that the LED’s related to the N.C. (Normally Closed) contacts are on (all safety devices active) and that the LED’s related to the N.O. (Normally Open) inputs are off (no command); if this is not the case, check the connections and efficiency of the various devices. The STOP input switches off both FCA and FCC LEDs.
- Make sure that the voltage between terminals 21-22 ranges from 9Vdc to 11Vdc
- Release the gate, take it to the halfway point and then block it; it is now free to move in either the opening or closing direction
- Now make sure that movement occurs in the right direction, that is, see whether the movement set on the unit corresponds to that of the leafs. This check is of paramount importance, if the direction is wrong, in some cases (in the “Semiautomatic” mode, for instance) the “Automatic” system might appear to be working properly; in fact, the “OPEN” cycle is similar to the “CLOSE” cycle but with one basic difference: the safety devices are ignored in the closing manoeuvre which is the most dangerous.

- To see whether or not the direction of rotation is correct, give a short impulse to the Open input, and make sure that the automatic system moves in the opening direction; if this movement is incorrect, proceed as follows:
 - Turn the power off
 - Exchange the wires that power the motor (“open” with “close”)
 - Once this has been done, check whether the direction of rotation is correct by repeating the last operation.
- Make sure that the limit switches (if any) are properly connected; move the limit switch lever and see whether the related limit switch is triggered (switches off the corresponding LED on the control unit).
- Check the operation of the “Constant resistance Stop” input (e.g. sensitive edge), if used:
 - Start an opening manoeuvre and check whether the automatic movement stops immediately and briefly reverses direction after the device connected to the input is triggered.
 - Repeat this test for the closing manoeuvre.

 The “OK” LED located in the centre of the board microprocessor has the task of signalling the status of the internal logic: regular flashing at 1 second intervals indicates that the internal microprocessor is active and waiting for commands. When the microprocessor recognises a variation in the status of an input (whether it is a command or a function Dip-Switch input) it generates a rapid double flash even if the variation does not have any immediate effects. Extremely rapid flashing for 3 seconds means that the control unit has just been powered and is carrying out internal testing.

3) Adjustments

Adjustments can be made through trimmers or selectors that modify the following parameters:



• WORKING TIME (TL):

These adjust the maximum duration of the opening or closing manoeuvre.

To adjust the working times TL, select the “Semiautomatic” operating mode by setting Dip-Switch 1 to ON, then adjust the TL trimmer to halfway along the travel distance. Now run an opening and closing cycle and, if necessary, readjust the TL Trimmer in order to leave enough time for the whole manoeuvre plus a margin of about 2 to 3 seconds.

If the TL trimmer is at maximum and there still is not enough time to perform the entire manoeuvre, cut the TLM jumper to increase the working time.

The modification of the working time will be effective starting with the next opening manoeuvre.

If you wish to use the deceleration function (dip-switch 8), see the notes (chapter 6.1) on the working time adjustment method.

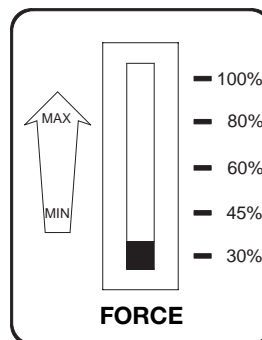
• PAUSE TIME (TP):

In the “Automatic” mode, this adjusts the delay between the end of the opening manoeuvre and the beginning of the automatic closing manoeuvre.

To adjust Pause Time TP, select the “Automatic” operating mode by moving Dip-Switch 2 to ON and adjust the TP trimmer as required. Then carry out an opening manoeuvre and check the time elapsed before “Automatic” closing manoeuvre.

• FORCE (F):

The control unit features a selector switch that enables you to adjust the FORCE (F) of the motor on 5 levels: 30/45/60/80/100% . Take great care when adjusting this selector switch, as this may affect the level of safety of the automatic system. Trial by error is required to adjust this parameter, measuring the force applied to the leaf and comparing it with regulatory values.



4) Testing

After the above checks and adjustments have been made, the system can be tested.

⚠ The automation system must be tested by qualified and experienced personnel who must establish what tests should be conducted according to current regulations based on the risks involved.

Testing is the most important part of the whole automation process. Each single component, e.g. motor, emergency stop, photocells, etc., may require a specific test phase; please follow the procedures described in the operating instructions for each component.

To test the control unit, perform the following operations:

1. Set Dip Switch 1 to ON (Semi-automatic operation)

If the connections required for activation of the Phototest function have been made, set Dip Switch no.10 to ON (Phototest function). Set all the other Dip-Switches to OFF

2. Activate an Open impulse and make sure that:

- the flashing lamp activates
- an opening manoeuvre starts
- the movement stops when the opening limit switch FCA is reached or at the end of the working time

3. Activate a Close impulse and make sure that:

- the flashing lamp activates
- a closing manoeuvre starts
- the movement stops when the closing limit switch FCC is reached or at the end of the working time.

4. Start an opening manoeuvre and check that during the manoeuvre the triggering of a device:

- Connected to the "Stop" input causes an immediate stop and a short reverse run
- Connected to the constant resistance Stop input (8,2K Ω) causes an immediate stop and a short reverse run.
- connected to the Photo input has no effect

5. Start a closing manoeuvre and check that during the manoeuvre the cut-in of a device:

- Connected to the "Stop" input causes an immediate stop and a short reverse run.
- Connected to the "constant resistance Stop" input (8,2K Ω) causes an immediate stop and a short reverse run.
- Connected to the "Photo" input stops and reverses the manoeuvre

6. On inputs used, make sure that the activation of the input triggers a step in the following sequence:

- Step-by-step Input: open-stop-close-stop sequence.
- Open Input: open-stop-open-stop sequence.
- Close Input: close-stop-close-stop sequence.

7. If the "Phototest" function is used, check the efficiency of the test:

- Interrupt the "Photo" photocell, then start a manoeuvre and check that it is not performed
- Short the "Photo" photocell contact, then start a manoeuvre and check that it is not performed

8. Adjust the force to the lowest value that enables the proper movement of the leaf

9. Perform the tests for measuring the Impact Forces as required by EN 12445.

If after the completion of the testing process additional functions are activated, specific testing of these functions must be performed.

5) Operating modes

In the manual operating mode, the OPEN input enables an opening movement, while the CLOSE input enables a closing movement. The STEP-BY-STEP input enables an alternating opening and closing movement.

Movement stops as soon as the input command stops. During an opening manoeuvre, movement will stop when the limit switch is triggered; during a closing manoeuvre, movement will stop if the "Photocell" or the sensitive edge enable signal fails, or when the limit switch is triggered. During both opening and closing manoeuvres, the activation of the "ALT" command or of the sensitive edge will always cause an immediate stopping of movement and a short reverse run. When a movement is stopped, stop the input command before giving a command to start a new movement.

When one of the automatic modes (Semiautomatic, Automatic or Close Always) is operational, a command impulse to the "OPEN" input causes an opening manoeuvre. A command impulse to the "STEP BY STEP" input begins an alternating closing and opening manoeuvre. A second impulse to the STEP-BY-STEP input or to the same input the started the movement will cause it to stop.

Both in the opening and closing phases, the activation of the STOP

command or the sensitive edge will cause an immediate stopping of movement and a short reverse run.

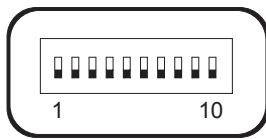
If a continuous signal rather than an impulse is maintained in a command input, a "prevalence" condition will be generated causing the other command inputs to be disabled (**this is useful if you need to connect a clock or a Night/Day selector switch**).

If an automatic operating mode has been chosen, the opening manoeuvre will be followed by a pause and then a closing manoeuvre. If PHOTO triggers during the pause, the timer will be reset with a new pause time; if, on the other hand, STOP or sensitive edge is activated during the pause, the closing function will be cancelled and the system will switch to the STOP mode.

Nothing will happen if PHOTO is triggered during an opening manoeuvre; if the related function has not been enabled through the dip switch (switch 6), the triggering of PHOTO during a closing manoeuvre causes a reverse run with a possible pause followed by a new closing run.

6) Programmable functions

The control unit features a set of microswitches and a selection jumper that allow you to activate various functions designed to make the system more suitable to the needs of users and more reliable under different operating conditions. These functions are enabled by setting the relevant dip-switch to ON; if the dip-switch is set to OFF they are disabled.





 **overhead garage door**

 **sliding gate**

⚠ Some of the programmable functions are linked to safety aspects; carefully evaluate the effects of a function and see which function will ensure the highest possible level of safety.

The dip-switches allow you to select the various operating modes and to activate the desired functions according to the table below:

Switch 1-2:	Off-Off	= "Manual" movement, i.e. hand operated
	On -Off	= "Semiautomatic" movement
	Off-On	= "Automatic" movement, i.e. automatic closing
	On -On	= "Automatic + always close" movement
Switch 3:	On	= Condominium operation (not available in manual mode)
Switch 4:	On	= Pre-flashing
Switch 5:	On	= Close 5" after Photo (in automatic mode) or Close after Photo (in semiautomatic mode)
Switch 6:	On	= "Photo" safety also during opening manoeuvres
Switch 7:	On	= gradual departure
Switch 8:	On	= deceleration
Switch 9:	On	= Brake
Switch 10	On	= Phototest
Ponticello		= overhead garage door
Ponticello		= sliding gate

6.1) Description of functions

Here is a brief description of the functions that can be added by setting the corresponding Dip-Switch to "ON".

Switch 1-2:	Off-Off	= "Manual" movement (hand operated)
	On-Off	= "Semiautomatic" movement
	Off-On	= "Automatic" movement (automatic closing)
	On-On	= "Automatic + Always Close" movement

In the "Manual" operating mode, the gate will only move as long as the control button is held down.

In "Semiautomatic" mode, a command impulse will perform the whole movement until the Working Time limit expires or the limit stop is reached. In the "Automatic" operating mode, an opening manoeuvre is followed by a pause, after which the gate closes automatically.

The "Always Close" function comes into play following a power failure; if the gate is not closed (FCC), a closing manoeuvre takes place, automatically preceded by 5 seconds of pre-flashing.

Switch 3:	On	= Condominium operating mode (not available in the Manual mode)
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In the Condominium operating mode, once an opening manoeuvre has started it cannot be interrupted by other command pulses on "STEP-BY-STEP" or "OPEN" until the gate has finished opening.

During a closing manoeuvre, a new command pulse will stop the gate and reverse the direction of movement in order to open the gate.

Switch 4:	On	= Pre-flashing
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A command impulse activates the flashing lamp followed by movement 5 s later (2 s later in the manual mode).

Switch 5:	On	= "Close" 5 s. after Photo (in the "Automatic" mode) or "Close" after Photo (in the "Semiautomatic" mode)
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This function, if in the Automatic mode, allows the gate to be kept open only for the time required for transit; when "PHOTO" finishes, the manoeuvre stops. After 5 s a closing manoeuvre will automatically begin. In the Semiautomatic mode, the triggering of PHOTO during a closing manoeuvre will cause the re-opening of the gate followed by its automatic closing with adjusted pause time.

Switch 6:	On	= Safety (Photo1) also during the opening manoeuvre
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The "Photo" safety device is normally active only during the closing manoeuvre; if Dip-Switch 6 is turned "On", the safety device will cause the movement to stop also during the opening manoeuvre.


In the Semiautomatic or Automatic modes, the opening manoeuvre will start again immediately after the photocell has been disengaged.

Switch 7:	On	= gradual departure
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Starts the manoeuvre gradually, preventing the automatic system from being jolted.

Switch 8:	On	= deceleration
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Deceleration reduces speed to 30% of rated speed in order to limit the force of the impact in the gate's opening and closing areas.

 As well as reducing the speed of the manoeuvre, the deceleration function also reduces motor torque by 70%. For systems requiring elevated torque, this decrease may cause the motor to stop immediately.

Deceleration function in sliding mode

At the end of an opening or closing manoeuvre due to the expiration of the Working Time the system enters a deceleration stage which lasts up to a maximum of half the Working Time, until the limit switches are reached.
 If the manoeuvre stops due to the triggering of the limit switches, the deceleration stage has not taken place. In this case it is necessary to adjust the Working Time so that the deceleration stage starts 80-50 cm. before the limit switches are triggered.

Deceleration function in overhead mode

At the end of a closing manoeuvre due to the expiration of the Working Time the system enters a deceleration stage which lasts $\frac{1}{2}$ of the Working Time.
 If the manoeuvre stops due to the triggering of the FCC limit switch, the duration of the deceleration stage will be proportional to the Working Time. (for proper operation of the deceleration feature we recommend the installation of the limit switches).
 During the opening manoeuvre, a gradual stop replaces the deceleration feature.

Switch 9: On = Brake

At the end of the movement a motor brake procedure is electrically performed in order to stop the gate as rapidly as possible.

Switch 10: On = Phototest


This function controls photocell efficiency at the beginning of each manoeuvre. See the "PHOTOTEST" chapter.

Ponticello: overhead garage door / sliding gate

Establish the type of automation required (overhead garage door or sliding gate) using selection jumper "V" (Chapter 1: Product Description)

 **OVERHEAD GARAGE DOOR**

 **SLIDING GATE**

 The basic difference between the Sliding gate and Overhead door modes concerns the deceleration function (dip-switch n°8). When the latter is active in the Overhead door mode, deceleration starts as soon as the closing limit switch is reached, while in the sliding gate mode deceleration starts before the limit switch is reached. In both cases the deceleration time is proportional to the Working Time (TL).

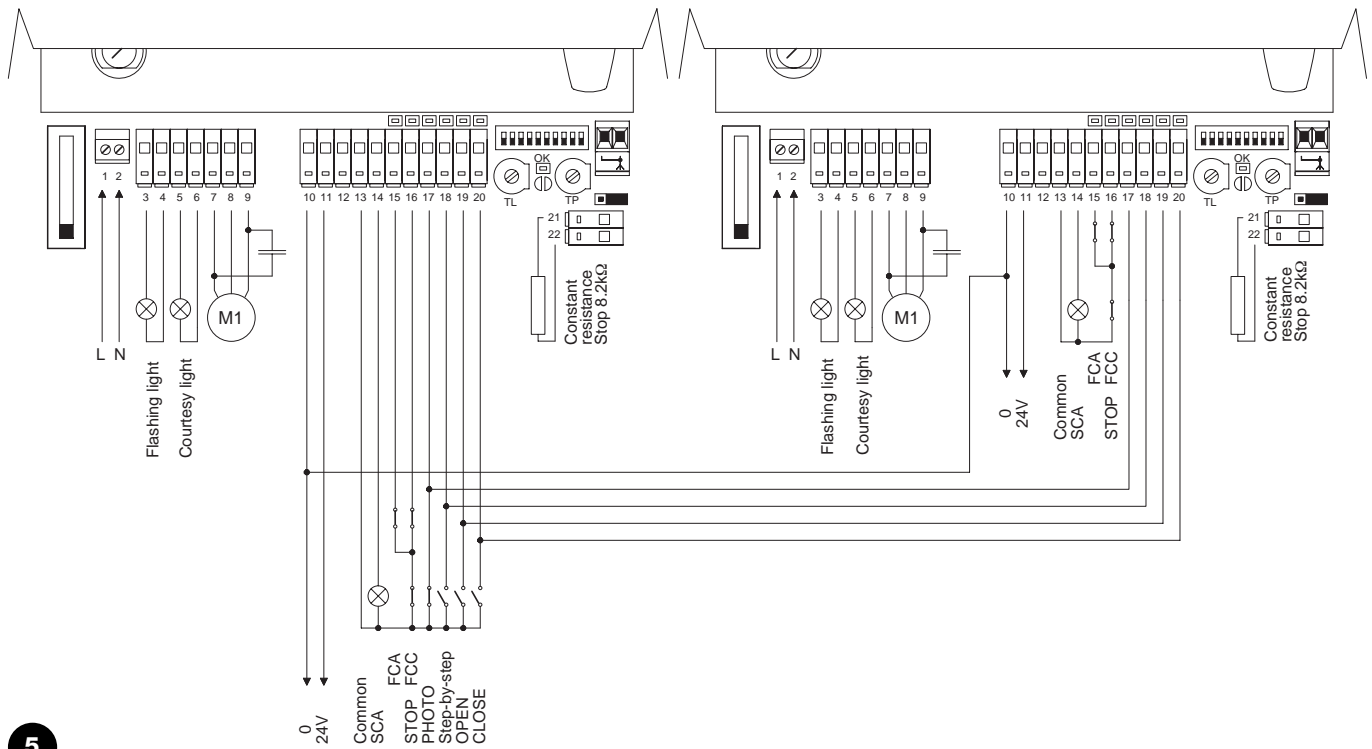
7) How to...

Connect two control units on opposing sliding leaves

To create an automation system working with 2 opposing sliding leaves:

- Set the selection jumper (Overhead door/Sliding gate) on both control units to the Sliding mode
- Use two motors with the control units connected as indicated in fig.5.
- Connect the flashing light and the "Gate Open Indicator" to any one of the two control units, setting up the connections as shown in the figure.

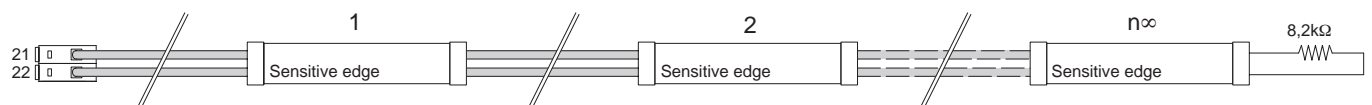
- The inputs must be connected in parallel.
- As "Common" terminal for the inputs (terminal 13) you can use the one on either control unit.
- Connect the 0Volts (Terminal 10) of the two control units.
- The "PHOTOTEST" function must not be used.
- The "Condominium" function (Dip-Switch 3) should be selected as this allows the leaves to be resynchronised if the 2 control units become unsynchronised (e.g.: due to the action of one of the sensitive edges).



Connect two or more Sensitive Edges to the "Constant resistance STOP" input in the same control unit.

Two or more sensitive edges must be cascade-connected one after the other, ending the series with a resistance of 8.2kΩ.

The constant resistance devices must always be connected in cascade and NEVER in series or parallel



8) Accessories

"RADIO" Card

The control unit features an SM connector for plugging a radio card, which activates the "Open", "Close", "Step-by-Step" and "Stop" inputs and allows the control unit to be remote-controlled through a transmitter.

The radio receiver has 4 outputs that must be connected to the control unit's inputs according to the following chart:

- Output 1 Step-by-step
- Output 2 Open
- Output 3 Close
- Output 4 Stop

As regards the transmitters' memorization procedures refer to the instructions for the receiver, in particular concerning the transmitter key / receiver output combination.

9) Maintenance

The control unit, being electronic, needs no particular maintenance. However, periodically make sure (at least once every six months) that the device reducing motor force is in perfect working order.

Carry out the whole test phase again to check that the limit switches, safety devices (photocells, pneumatic edges, etc.) and the flashing light are in perfect working order.

10) Disposal

This product is made from various kinds of material, some of which can be recycled. Make sure you recycle or dispose of the product in compliance with laws and regulations locally in force.

⚠ Some electric components may contain polluting substances; do not dump them.

GB

11) What to do if...

This section will help fitters to solve some of the most common problems that may arise during installation.

No LED is on:

- Check whether the control unit is powered (check mains voltage is present at terminals 1-2 and a voltage of approx. 24Vac at terminals 10-11)
- Check the 2 mains fuses have not blown; if they have, replace them. If the malfunction persists a serious fault has probably occurred and the control unit should therefore be replaced.

The OK LED flashes regularly but the INPUT LED's do not reflect the state of the respective inputs

- Carefully check the connections on input terminals 10÷20

Even if a command impulse is sent to the inputs the manoeuvre does not start

- Check that the LED's of the "STOP" (FCA + FCC) and "PHOTO" safety device are on and that the relative command LED that is activated ("STEP-BY-STEP, OPEN or CLOSE") remains on for the whole duration of the command.
- Check the connection of the constant resistance STOP input; the manoeuvre is enabled only if there is a voltage of 9 to 11 Vdc (corresponding to a resistance of 6150 Ω to 10250 Ω) on terminals 21 – 22.

The gate changes direction during a manoeuvre

An inversion is caused by:

- Photocell triggering; in this case, check the connections of the photocells and check the input LED's.

12) Technical specifications

Mains power input	: 230 Vac 50/60 Hz	version A100F
	120 Vac 50/60 Hz	version A100F/V1
Adjustable force:	: 5 levels 30/45/60/80/100% with selector switch	
Motor output	: one 500VA (2.5A) motor or two 250VA (1.25A) motors connected in parallel	
Services voltage	: 24 Vac \pm 25%	
Max current for 24 V services	: 200mA	
Phototest output	: 100mA	
Sensitive edge input	: 8200 Ω \pm 25% to enable the manoeuvre	
Flashing light output	: For flashing lights at mains voltage, maximum power 100 W	
Courtesy light output	: For flashing lights at mains voltage, maximum power 100 W	
"SCA" open gate telltale light output	: For 24 Vac telltale lights, maximum power 2 W	
Operating temperature	: -20 \div 50 $^{\circ}$ C	
Working Time (sliding mode)	: Adjustable from 2.5 to >40 s, or from <40 to >80 s with TLM	
Working Time (overhead garage door mode)	: Adjustable from 2.5 to >20 s, or from <20 to >80 s with TLM	
Pause Time (TP)	: Adjustable from 5 to >80 sec.	
Dimensions; Weight	: 230 x 180 h100 mm ; 2110 g.	
Protection class	: IP 55	

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