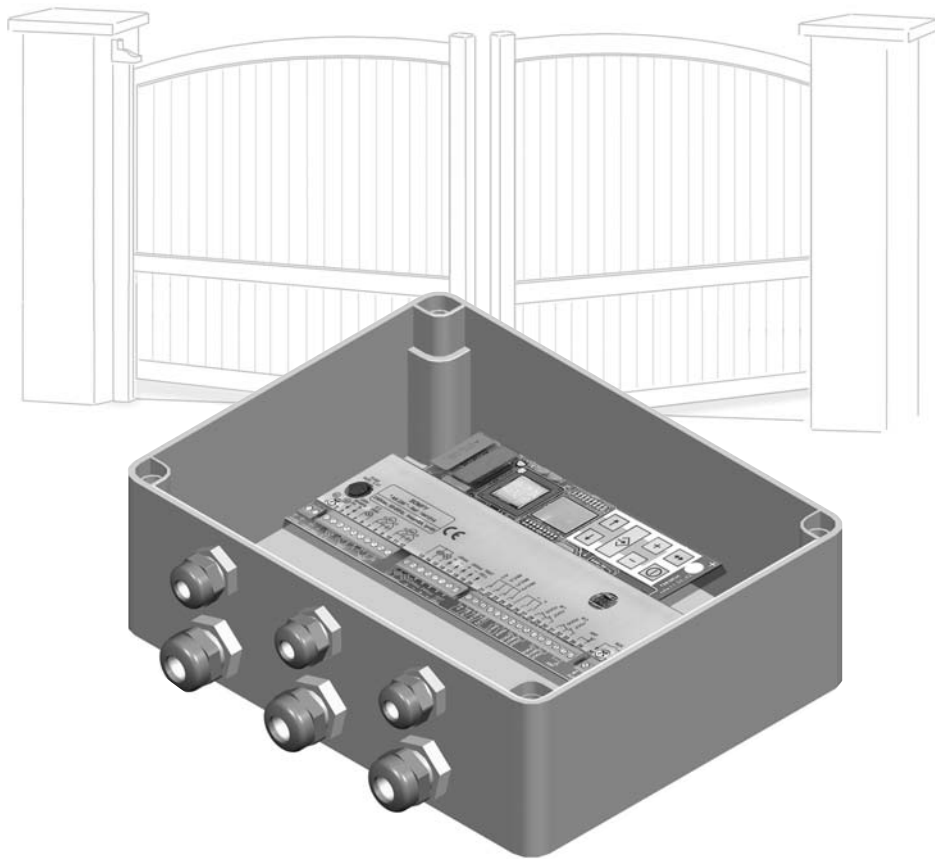


CONTROL BOX AX24



5012076

HOME
MOTION BY

somfy®


Welcome

Please read the enclosed safety instructions prior to implementation. Non-observance of these instructions cancels SOMFY's responsibility as well as its warranty.

SOMFY cannot be held responsible for changes made to standards once these instructions have been published.

This box enables you to carry out an installation (with or without safety accessories) which fully comply with European standards (EN 12445, EN 12453, EN 12978, EN 13241) while at the same time keeping to the parameterisation limits given on page 14.

It is the installer's responsibility to measure the thrust loads on site, in order to guarantee compliance with the EN 12453 appendix A standard.

 We, SOMFY, declare that this product complies with the essential requirements and other provisions of the directive 1999/5/EC. A declaration of compliance is available at the Internet address www.somfy.com section EC.

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1 Product description

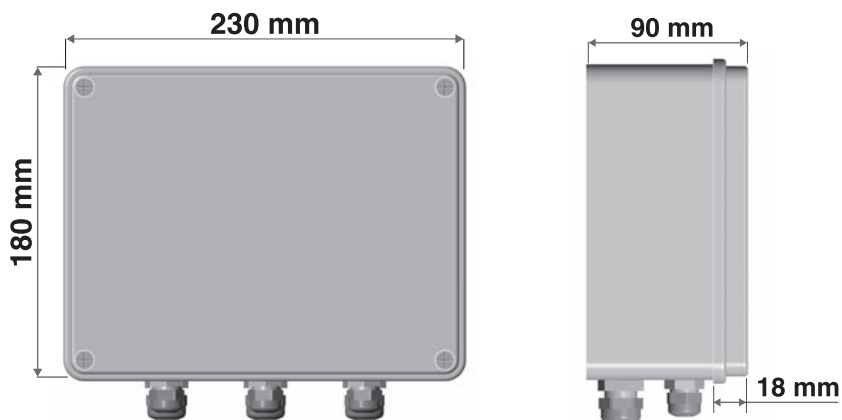
■ Scope

The AX24 is intended to control one or two DC motors having a maximum power of 150 W / 24 V per motor for opening and closing gates

■ Main functions

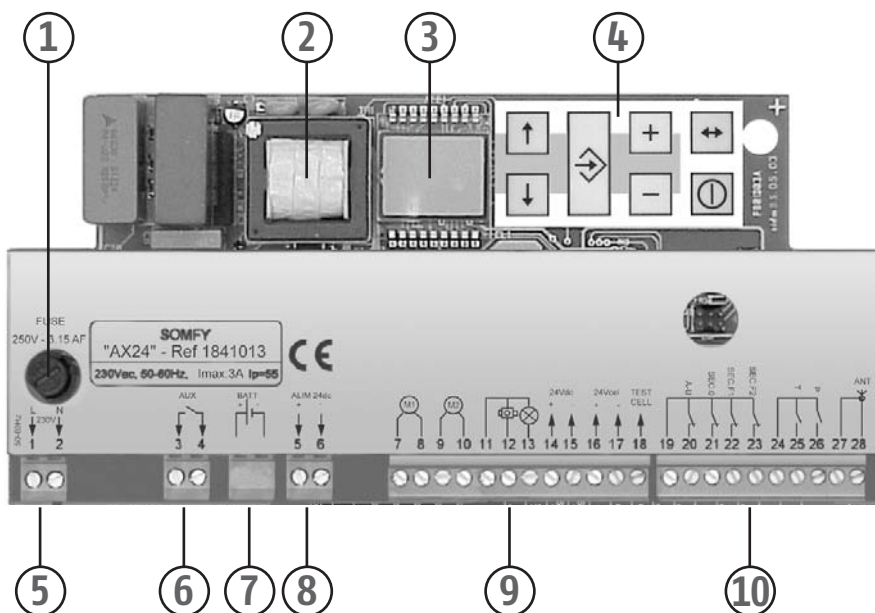
- Independent torque setting for each motor.
- Appliance is programmed using a keyboard and pull-down menu.
- Status of the system is shown up on a LCD display unit.
- Troubleshooting made easier by the failures and defects being indicated on the LCD display.
- Cycle counter.
- Thermal safety for the motor control.
- Speed variation.
- Self-learning.

■ Overall dimension



1 Description of the product

■ Presentation of the electronic board



- 1 Protective fuse
- 2 Transformer
- 3 LCD screen
- 4 Programming keyboard
- 5 230 V terminal block
- 6 Auxiliary contact outlet
- 7 Battery backup unit connection
- 8 Unused 24 V input
- 9 Motor and 24 V power supply connection
- 10 Safety device and control inlets

1 Description of the product

■ Characteristics

General power supply	220-240 Vac / 50-60 Hz
Protective fuse	5 x 20 – 3,15 AF
Power supply to the accessories with overvoltage control system	24 Vdc / 1,2 A max
Operating temperature	-15 to +55 °C
Protection index	IP55
Utilisation class 5	<250 cycles/day
Thermal safety for the motor control	yes
Protective plate	1
Detachable terminal blocks	5
Auxiliary outlets	500 W max.
Number of memorisable remote control units	32 remote controls
Classe II	YES

■ Safety device management

	Emergency stop	Pressing this causes a total shutdown of the door.
A1	Door closure safety mechanisms SEC.F1 SEC.F2	Any case of detection while the door is closing causes a total shutdown of the door (a total or partial re-opening is possible depending on parameter A1).
A0	Door opening safety mechanisms SEC.0	Any case of detection while the door is opening causes a total shutdown of the door (a total or partial re-closure is possible depending on parameter A0).
A7	ADMAP protection	Protection of the Hazardous Movement Area Accessible to the Public (ADMAP) can be validated. This function uses the SEC.F1 inlet. Parameterising it enables the following safety mechanisms to operate: - All movement is prohibited if a fault is detected before the door opens. - The door is shut down and then re-opened if a fault is detected while the door is closing.
A2	Self-test	The safety mechanisms can be automatically checked to make sure that they are working correctly (parameters A2 to A6) at the end of each opening and closure cycle. A fault occurring to one of the safety mechanisms prohibits all movement.
A6	Signalling	Movement of the door is indicated by the flashing orange light (2 x 15 W, 24 Vdc sequenced outlet). Lighting can be added to the area via connection to the auxiliary outlet (500 VA, 230 Vac).

2 Setting up the box

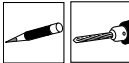
1 Dismount the cover.

2  **Caution! The board must not be removed**

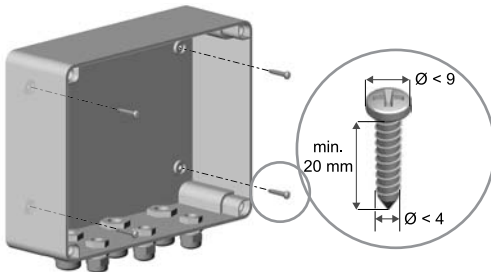
3 Drill the fastening holes at the back of the case (5mm drill), taking care not to damage the board.



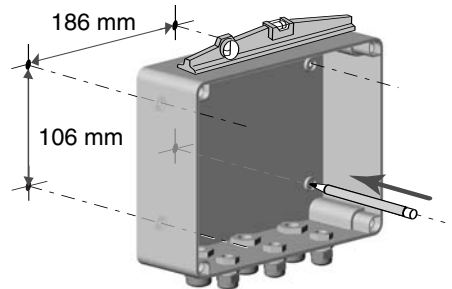
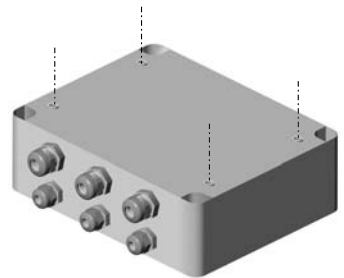
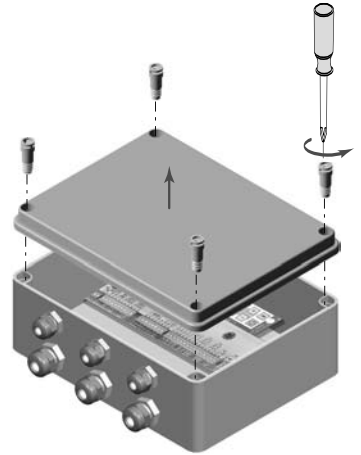
4 Use the box as a template to trace the fastening points on the support. Drill the support.



5



6



After fastening the box to the wall, place the caps provided on the heads of the box fastening screws so as to guarantee imperiousness.

2 Installing the case


■ Installing the cables

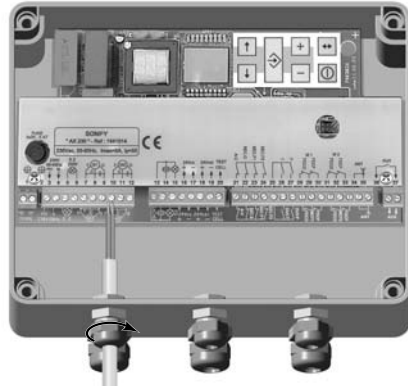
The section of the motor-to-electronics connecting cables depends on the required "L" length:

$0 < L < 10 \text{ m}$	1 mm^2
$10 \text{ m} < L < 15 \text{ m}$	$1,5 \text{ mm}^2$
$15 \text{ m} < L < 25 \text{ m}$	$2,5 \text{ mm}^2$

1 Insert and adjust the length of the cables.

2 Block the cable glands.

 **Caution: in the event of the cables being incorrectly set in place through the cable glands, the IP55 protection index might be downgraded.**



3 The electric line should:

- be exclusively reserved to opening the gate,
- have a minimum section of 1.5 mm^2 ,
- be provided with a protection (10A fuse or circuit breaker) and a differential device (30mA)
- be fitted with an all-pole disconnection device (cf EN 60335-1 standard)
- be installed in compliance with current electrical safety standards.

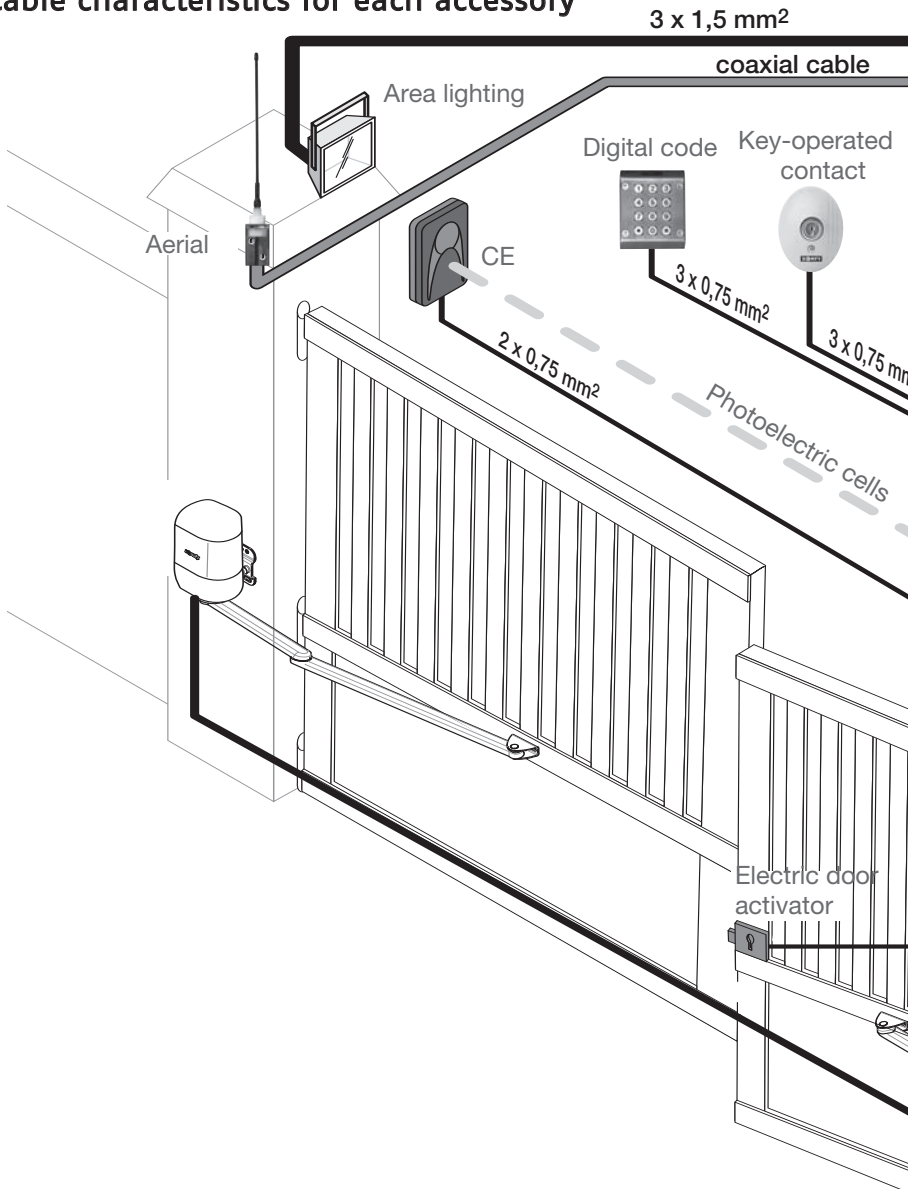
■ Connecting the box

 **For your safety, the appliance should not be energised while these operation are being carried out.**

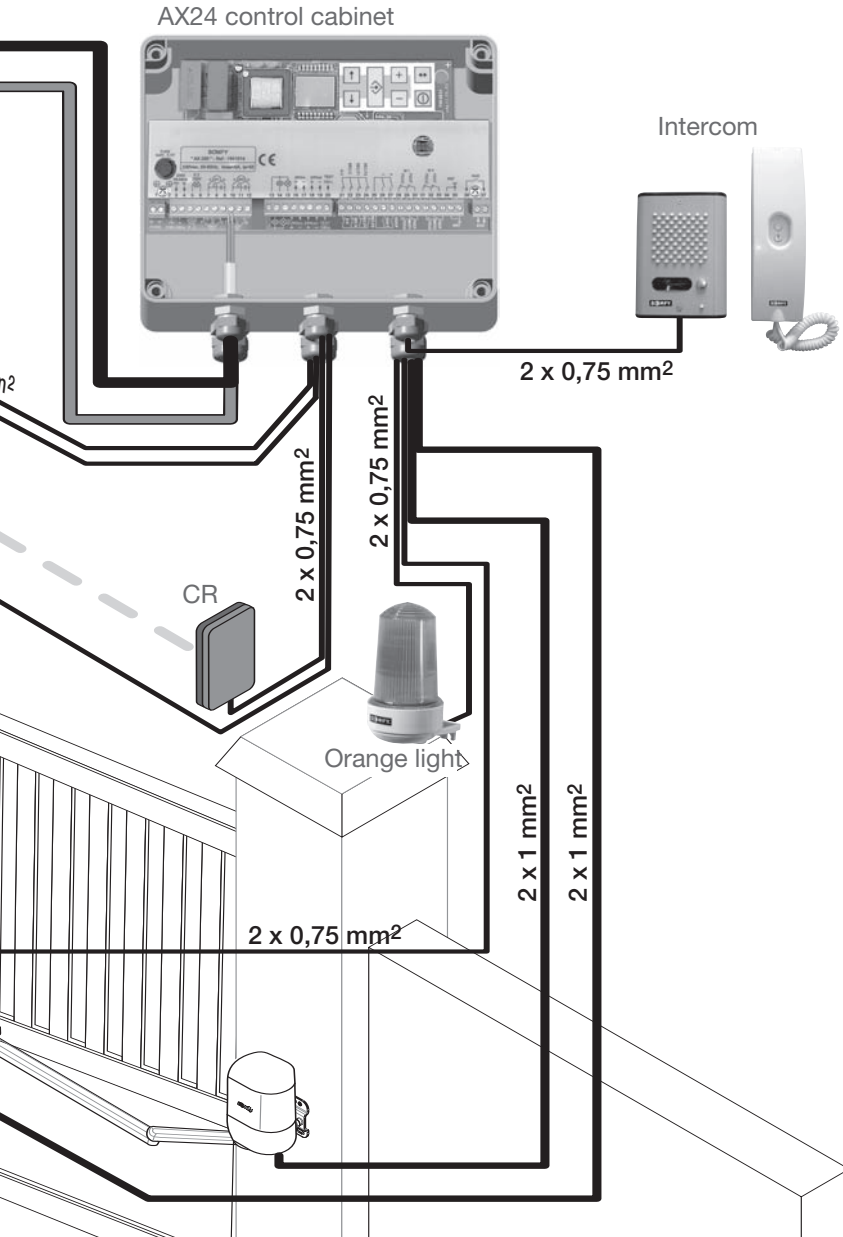
Auxiliary contacts	1 dry contact (230 VAC – Pmax = 500VA)	terminals 3 and 4
Door activator outlet	1 energised contact (24V / 1.5A or 12V / 3A) for using the door activator or the air vent. This contact can be "NC" or "NO" depending on how it is programmed.	terminals 11 and 12
Cell self-test	Before the 24VDC photoelectric cells are self-tested, the 24V power supply from the emitting cell is cut off.	terminals 16 and 17
	The "reflex" cells and sensing bar amplifier are self-tested by the AX24's "TEST CELL" terminal.	terminal 18

3 Installing the case

■ Cable characteristics for each accessory

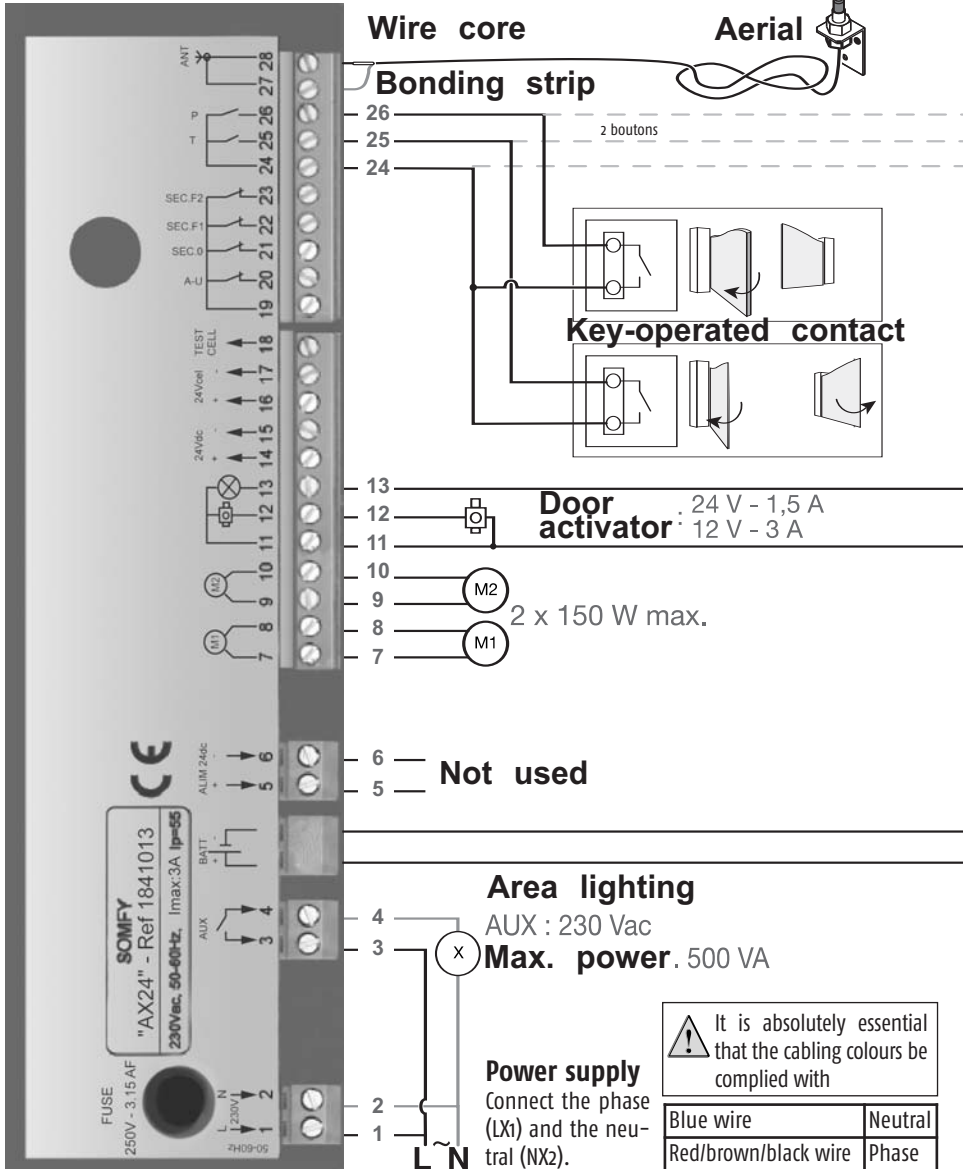


3 Installing the case



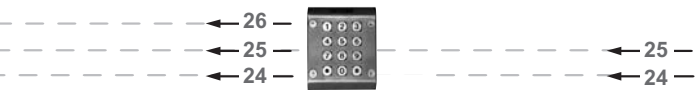
3 Installing the case

■ Accessories cabling

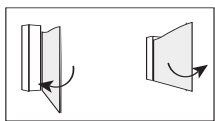
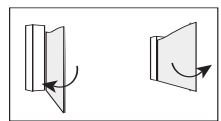
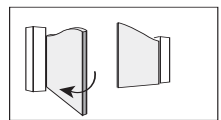


3 Installing the case


Code-operated keyboard



Intercom



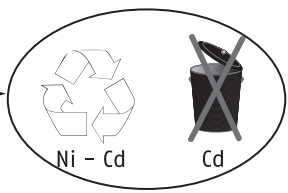
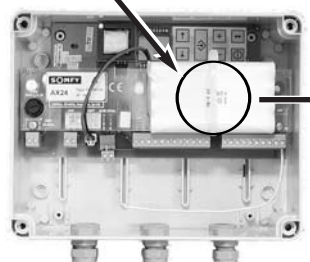
Orange light

 Use a fixed light, Since the control is clocked.

2 x 15 W max.



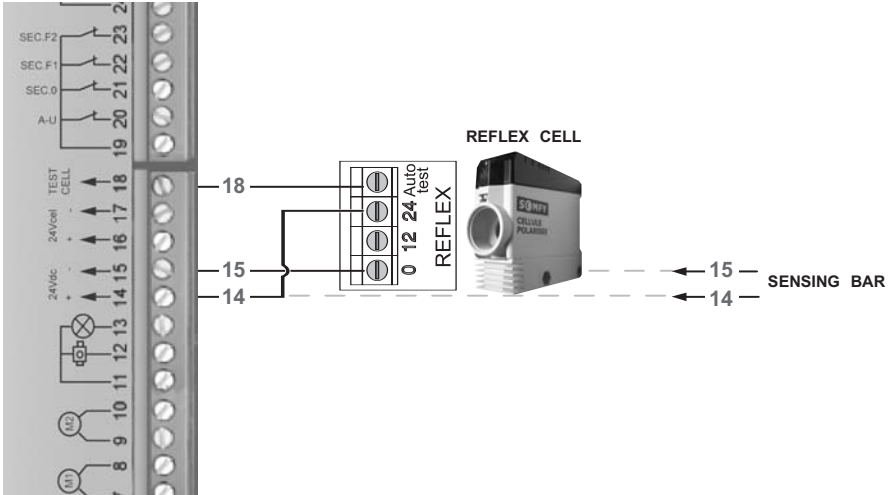
Battery



3 Installing the case

■ Accessories cabling (contd.)

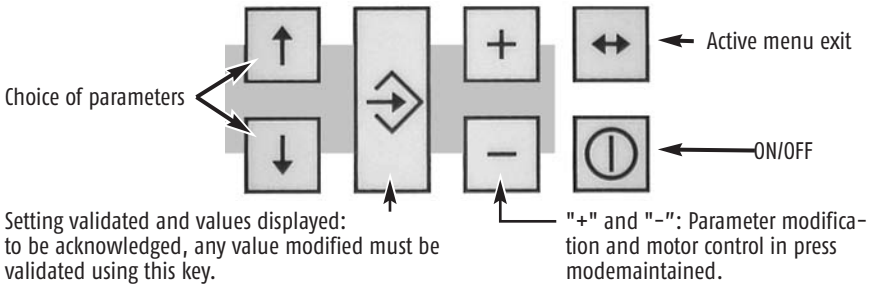
● Cabling the photoelectric cells



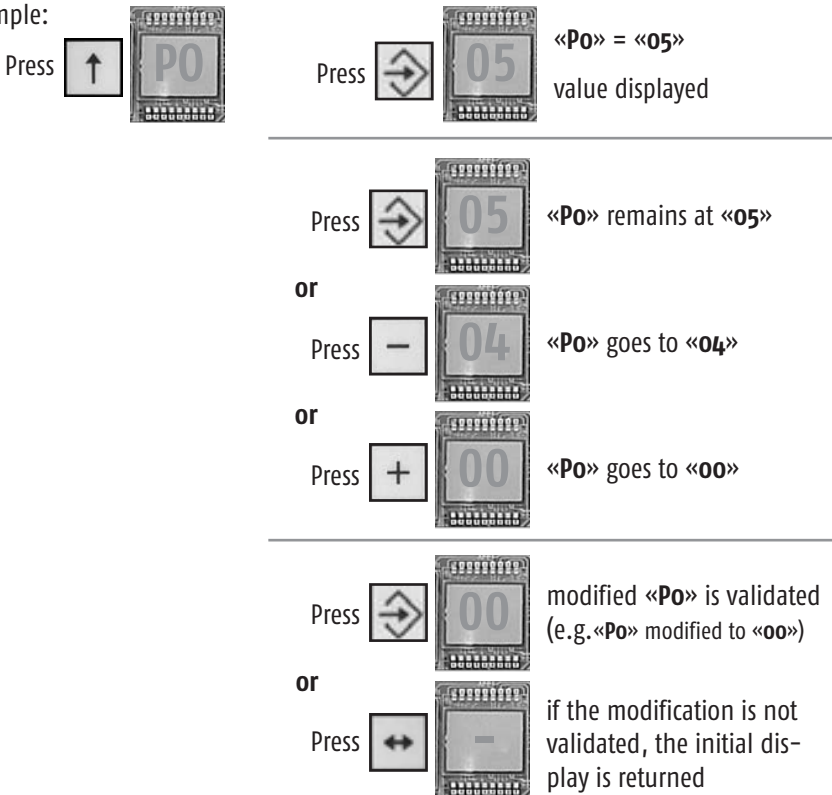
4 Parameterising the product

■ User interface

Appliance is parameterised using the AX24's internal keyboard



Example:



4 Parameterising the product


■ How to parameterise



Only modify the values of the parameters when the door has come to a stop and is closed. Once the parameterisation is over, check that the safety accessories are working correctly.

■ Operating modes: PO

The AX24 has several operating modes (which can be parameterised via PO): some of them require the compulsory installation of safety accessories (see page 20).

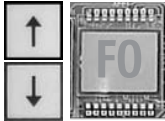










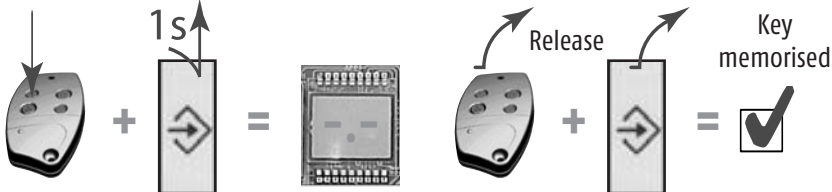
Po = 0	Automatic	<p>Door closed, a control pulse causes it to open. The door automatically closes again once the closing time-lag has elapsed.</p> <p>Door in the process of opening, a control pulse has no effect.</p> <p>Door in the process of closing, a control pulse causes it to open again.</p>
Po = 1	Semi-automatic	<p>Door closed, a control pulse causes it to open. While it is in the process of opening, a control pulse has no effect.</p> <p>Door open, a control pulse causes it to close. While it is in the process of closing, a control pulse causes it to open again.</p>
Po = 2	Blocking	<p>After the door has opened, movement past the cells assigned to the safety mechanisms during closure operations (SEC.F1 and SEC.F2) causes the door to close following a time-lag (parameter t₂).</p> <p>If there is no movement past the cells, the blocking mode actuates closure of the door after the automatic closing time lag (parameter t₀).</p>
Po = 3	Sequential	<p>A control pulse causes the door to open, a new control pulse brings the movement to a stop, another new pulse causes the door to close, etc.</p>
Po = 4	Sequential + Time-lag	<p>The same as in sequential mode alone, but in this case the door closes automatically after the time-lag (parameter T₀).</p>
Po = 5	Press mode maintained	<p>The "+" key on the internal keyboard controls the opening of the door. The "-" key on the keyboard controls the closing of the door.</p> <p> In this operating mode, no safety device is activated except for the emergency stop and torque limiting.</p>

4 Parameterising the product

■ Programming the remote controls (parameter «Fo»)

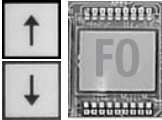

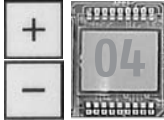
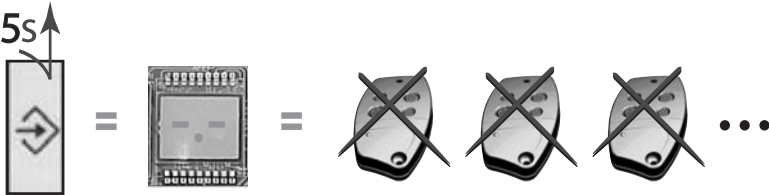
Each key of a single remote control unit can command one of the three functionalities: complete opening, pedestrian opening or auxiliary command.

● For each remote control

<p>1 Select the parameter «Fo»</p> 	<p>2 Validate</p> 	<p>3 Select the function to be assigned to the key</p> <p>Complete opening (2 leaves)  </p> <p>or</p> <p>pedestrian opening (1 leaf)  </p> <p>or</p> <p>auxiliary control  </p> <p>or  Parameterised in F3</p> <p>bulk erasing of the remote controls  </p>
<p>4 Memorise the remote control unit key by simultaneously pressing the remote control key and the keyboard validation key.</p>  <p>The diagram illustrates the final step: a remote control key is pressed simultaneously with the keyboard validation key (a square with a right-pointing arrow) for a duration of 1 second. This action results in the key being memorized, indicated by a checkmark in a box.</p>		

4 Parameterising the product

■ Erasing the remote controls (parameter «Fo»)

<p>1 Select the parameter «Fo»</p> 	<p>2 Validate</p> 	<p>3 Select the function «04»</p> 
<p>4 Erase all the remote controls by pressing the keyboard validation key for 5 seconds</p> 		

4 Parameterising the product

■ Self-learning

The purpose of self-learning is to measure the travel and opening angles of the leaves as well as to assign the speeds, lags and automatic torque.



The following parameters are affected: P2, P4, P5, P6, P7, P8, P9, PA, Pb. All these parameters may be modified after the learning process in order to fine-tune the movement of the door.

The learning process will only be ended after a complete closing movement.




A stop which may occur during the movement postpones the end of the learning process by one cycle.

The learning process is carried out under the user's supervision, with no safety mechanism and no signalling.





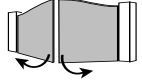

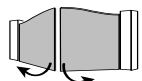

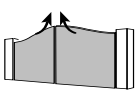
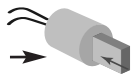
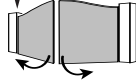

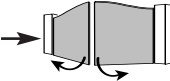

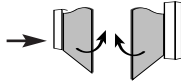
If your installation comprises an electric lock, parameter « F1 » Before running the self-test.

● Run the self-learning process

- Put the doors in the intermediate position. Parameter the ON mode "Po" according to requirements (except for the value "05" which is prohibited), validate  and run the self-learning procedure "P3" to "01".
- Validate  and exit the menu , the display unit now indicates "H1".
- Generate an open command by means of the external control or the radio (after programming it).
- The door's leaf/leaves should open. Check that the lapping leaf (wired to M1) is the first to move, and if this is not the case check the motor connections. The display indicates "H2" (opening).
- Wait for the end of the opening procedure.
- When the display unit shows "H1", generate a new command to close the door.
- The door should start closing. The display unit indicates "H4" (closure).
- Once closure is complete, the self-learning procedure is over. As from now, the display unit indicates "C1".

4 Parameterising the product

■ Main settings

	Parameter	Value	Operation
With or without prior notice	P1	1	with  →  → 
		0	without  → 
1 or 2 motors	P2	1	1 motor
		0	2 motors
With or without pressure surge	F1	1	  →  →  with
		0	without
Time-lag at opening and closing	Pa	0 to 10 s	 → lag at opening: 0 - 10 s → 
		Pb	 → lag at closure: 0 - 10 s → 
In the case of a gate with 2 leaves, enables opening/closure of the second leaf to be delayed.			

4 Parameterising the product

■ Keep the compliance with standards

● With regard to stresses (EN 12453 Appendix A)

The default values of the parameters « **P6 = 5** » (high speed) and « **P8 = 2** » (low speed position), resulting from the self-learning procedure, have been chosen to provide a maximum degree of safety when the appliance is used and preset an installation in compliance with the standard **EN 12453 annexe A**.

Depending on your installation and keeping to the limits given in the table below, you may increase the « **P6** » high speed so as to provide a greater degree of comfort when the appliance is used without affecting the safety of the users.

Depending on the motor used, comply with the values of the « **P6** » (high speed) and « **P8** » (low speed position) parameters set out in the following table:

Motorisation	Leaf length	Leaf weight	Arm boomss	P6 max	P8 min
AXOVIA multi	1,5 to 2,5 m	100 kg	15 cm	10	1
		150 kg		8	1
		300 kg		6	2
AXOVIA 220A	1 m	100 kg		5	2
		200 kg		4	2
	2 m	100 kg		8	2
		200 kg		4	2
AXOVIA 180B	Maintain the AX24's default parameters.				

● With regard to the operating modes (EN12453 Table 1)

List of the compulsory accessories:

Thrust loads	Sequential mode (Po=3)	Other modes (Po≠3)
Less than the limits defined by Appendix A of the EN12453 standard.	No accessory is compulsory	<ul style="list-style-type: none"> • Flashing orange light • Area lighting • Set of photoelectric cells
Greater than the limits defined by Appendix A of the EN12453 standard.	<ul style="list-style-type: none"> • Sensing bar 	<ul style="list-style-type: none"> • Sensing bar • Flashing orange light • Area lighting • Set of photoelectric cells

4 Parameterising the product

■ Complete list of the parameters

Parameter	Function	Value	Setting
P0	ON mode	0	Automatic
		1	Semi-automatic
		2	Blocking
		3	Sequential
		4	Sequential + Time-lag
		5	Press held (keys + et -)
P1	Prior notice	0	Without prior notice
		1	With prior notice
P2	1 or 2 motors	0	2 motors
		1	1 motor
P3	Running the self-learning procedure	0	Pressing "Valid" activates the self-learning procedure, H1 displayed during the learning phase (see p.11)
		1	
P4	Motor 1 torque setting	00 à 10 (10)	Torque setting from 40 to 100%
P5	Motor 2 torque setting	00 à 10 (10)	Torque setting from 40 to 100%
P6	High-speed setting for motors 1& 2	00 à 10 (05)	HS setting from 00 to 10
P7	Low-speed setting for motors 1& 2	00 à 10 (04)	LS setting from 00 to 10
P8	Low-speed position setting	00 à 10 (02)	Position setting from 00 to 10
P9	Pedestrian opening position setting	00 à 08 (05)	Position setting from 00 to 08 (active only in motor mode 1)
Pa	Opening lag setting	00 à 10 (02)	Position setting from 00 to 10
Pb	Closing lag setting	00 à 10 (04)	Position setting from 00 to 10 Pb=0 prohibited on swinging gate
A0	Activating the opening safety mechanism	0	Stop
		1	Total re-reversion
		2	Partial re-reversion
A1	Activating closing safety mechanisms 1 and 2	0	Stop
		1	Total re-reversion
		2	Partial re-reversion
A2	Opening safety mechanism self-test	0	Without self-test
		1	With self-test
A3	Photoelectric cell self-test by cutting off power supply to closing safety mechanism 1	0	Without self-test
		1	With self-test
A4	Photoelectric cell self-test by cutting off power supply to closing safety mechanism 2	0	Without self-test
		1	With self-test
A5	Closing safety mechanism 1 reflex cell or sensing bar self-test	0	Without self-test
		1	With self-test

The values indicated in **bold** correspond to settings chosen during manufacture.

4 Parameterising the product

Parameter	Function	Valeur	Setting
A6	Closing safety mechanism 2 reflex cell or sensing edge self-test	0 1	Without self-test With self-test
A7	ADMAP on No. 1 closing safety mechanism input	0 1	Without ADMAP With ADMAP
F0	Radio code memorisation 32 remote controls maximum	0 1 2 3	Total control Pedestrian control Auxiliary Bulk erasing of radio codes by press VALID and holding for 5 s
F1	Pressure surge	0 1	Without pressure surge With pressure surge
F2	Door activator / air vent	0 1 2 3	12 V door activator 24 V activator Air vent Open door indicator light
F3	Auxiliary exit function selection	0 1 2 3 4 5	Contact for timer Open door indicator light Monostable radio channel Bistable radio channel Area lighting Intrusion alarm by means of blanked cells
F4	Keyboard locking	55 xx	Keyboard unlocked Keyboard locked (any other number)
F5	Accessory consumption display	xx	Current in A
U0 U1 U2	Cycle counter	xx xx xx	Tens and units Thousands and hundreds Hundreds and tens of thousands
		ex: U2=05 U1= 43 U0=12 soit 54 312 cycles	

● Time-lag setting

Parameter	Function	Value	Setting
t0	Reclosing time (free passage)	00 to 99 (05)	incrementation of 1 s
t1	Area lighting time after end of cycle	00 to 10 (00)	incrementation of 1 mn
t2	Waiting time after cell pass-by	00 to 99 (00)	incrementation of 1 s
t3	Acceleration time up to high speed for motors 1 and 2	00 to 03 (03)	incrementation of 1 s

The values indicated in **bold** correspond to settings chosen during manufacture.

4 Parameterising the product

■ On-battery operation

The safety mechanisms are no longer operational

In the case of the 2 leaves, one leaf moves after the other.

It proves impossible to memorise a radio code, change a parameter, erase the recordings, use the ON/OFF push button.

The orange light, 24 V power supply and auxiliary contact are no longer energised.

Autonomy: 24 hours without any movement or between 1 and 10 cycles depending on the motors and leaves used

■ Anti-intrusion mechanism operation

In the event of an intruder attempting to enter the premises, the motor is re-energised for a period of 10 seconds when the gate is shut.

5 Troubleshooting

■ Monitoring operation and assisting with diagnosis

Display	Meaning
C1 / H1	Awaiting command
C2 / H2	Gate in the process of opening
C3	Awaiting re-closure
C4 / H4	Gate in the process of closing
C5	ADMAP safety mechanism blanked
C6	Opening safety mechanism cell blanked
C7	Closing safety mechanism cell blanked
C8	Movement forced by the keyboard
C9	Emergency stop actuated
Ca	Safety mechanism self-test in progress
Cb	Permanent command
Cd	Operation in battery mode

If the AX24 permanently displays a defect, erase the defects in the "Dd" menu.

Display	Meaning
E1	Opening safety mechanism contact defect
E2	Closing safety mechanism 1 contact defect
E3	Closing safety mechanism 2 contact defect
E4	Opening safety mechanism self-test defect
E5	Closing safety mechanism 1 self-test defect
E6	Closing safety mechanism 2 self-test defect
E7	24 V power supply overload, intensity exceeded
E8	Intrusion defect
E9	Power supply thermal safety mechanism
Ea	Motor short circuit safety mechanism
Eb	Learning not finished
Do-D9	History of the last 10 defects
Dd	Defects erased (press on "VALID" held for 5s)

If no parameter can be modified, check the value of "F4".

Technical assistance U.K.:

(44)113 391 3030

WWW.SOMFY.COM