NORBEC™ | E-CIRCUIT - User Manual and Installation Guide

97, Vaudreuil Street,

Boucherville (Québec) J4B 1K7

Tél. : (450) 449-1499 Téléc. : (450) 641-4657

Free of charge : 1 877 667-2321

** WARNING **

READ BEFORE INSTALLATION & USAGE

Table des matières

E-circuit introduction

The E-circuit is a system for automating the opening and closing of Norbec's C2L-1750 sliding doors.

The system consists of a transformer and a motor.

- Power supply 120 Vac - 60 Hz
- 24Vdc motorization

Basic accessories:

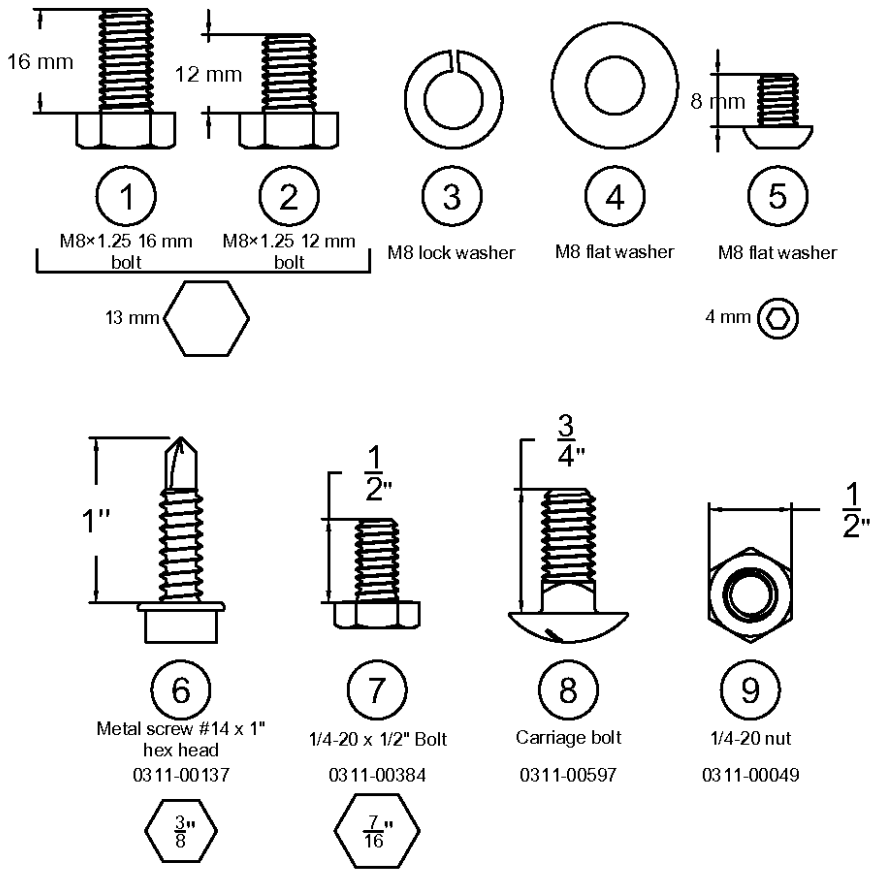
- Anti-pinch safety nose
- Cable pull switches (x2)

Optional accessories:

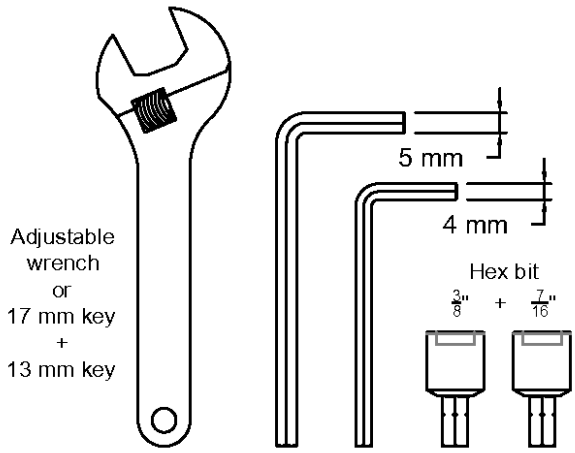
- Radio-controlled push button
- Radio-controlled pull switch
- Motion detector for hands free opening
- Photoelectric safety barrier

Installation Guide - Installing the motor

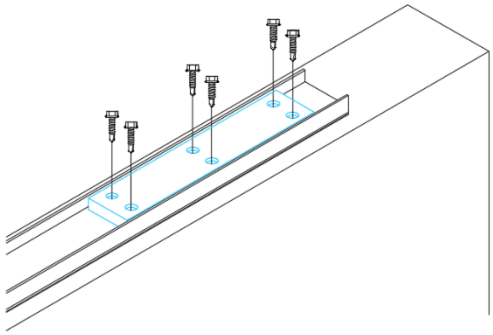
Hardware needed for installation



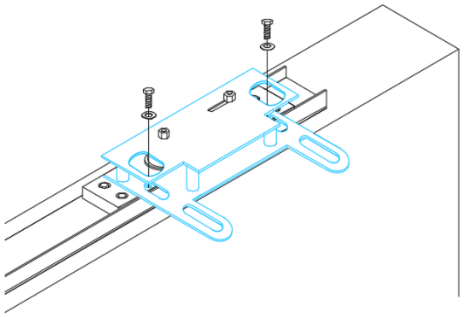
Tool list



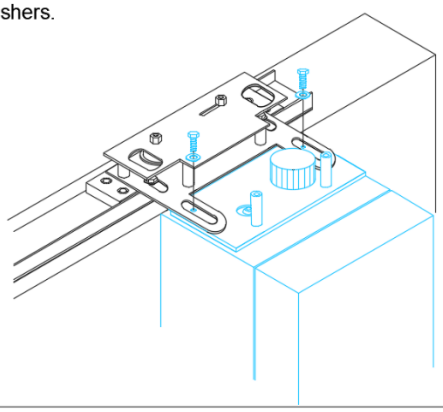
Step 1.
On the top of the door, screw on the motor's bracket with a 14" offset from the side of the door, using six ⑥ screws.



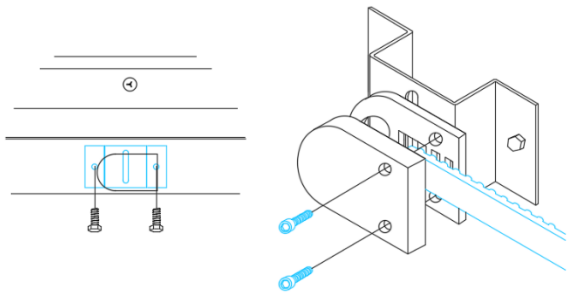
Step 2.
Install the pulley module on the bracket with two ① bolts and two ③ lock washers.



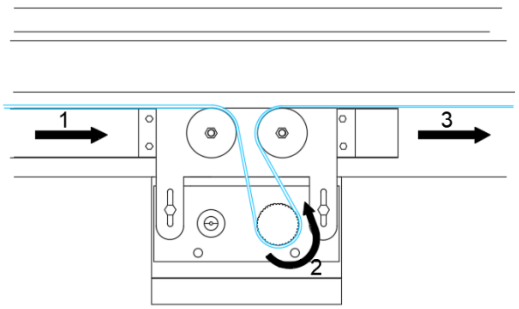
Step 3.
Install the motor on the bracket with two ② bolts and two ⑦ washers.



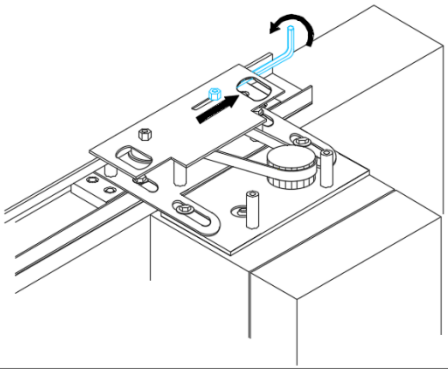
Step 4.
Install the anchor's bracket on the wall, with two bolts (in the holes above the openig).
Insert the end of the belt in the anchor (2-3 teeth) and close the cover with a 5mm Allen key.



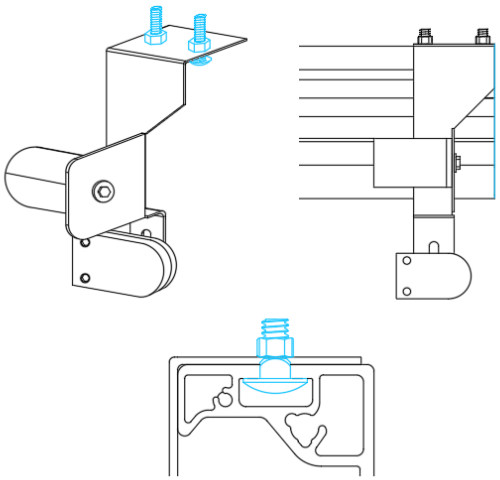
Step 5.
Pass the belt in the pulley module and around the gear.



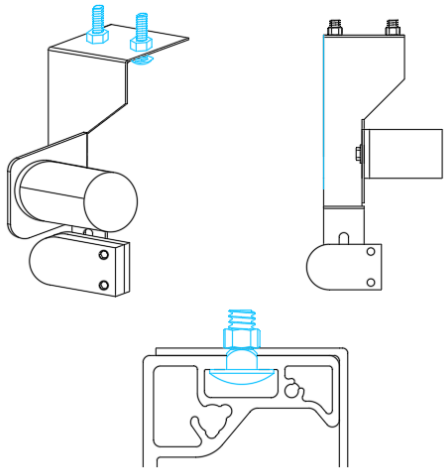
Step 6.
Unscrew as much as possible the movable pulley with a 5mm Allen key, to move the pulley to the far right.



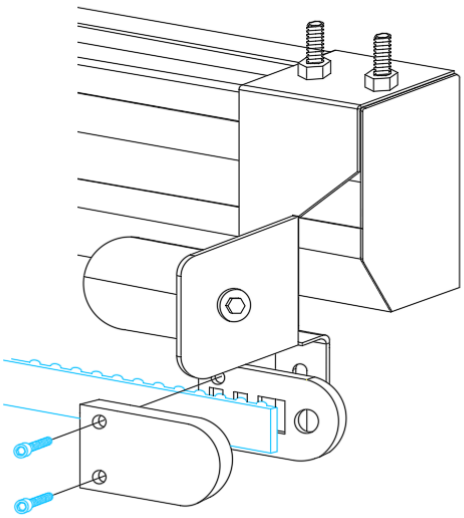
Step 7.
FOR A OPENING TO THE RIGHT
Insert two carriage bolts ⑧ in the bumper bracket and screw two nuts ⑨ on their end. Insert the bracket on top on the rail, sliding the head of the bolts in the rail's top slit. Align the side of the bracket with the extremity of the rail and srew the nuts to solidify.



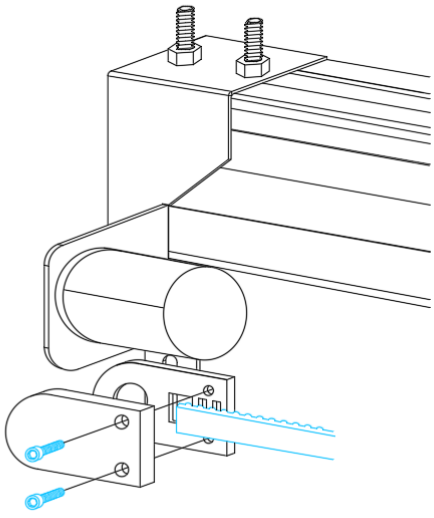
Step 8.
FOR A OPENING TO THE LEFT
Insert two carriage bolts ⑧ in the bumper bracket and screw two nuts ⑨ on their end. Insert the bracket on top on the rail, sliding the head of the bolts in the rail's top slit. Align the side of the bracket with the extremity of the rail and srew the nuts to solidify.



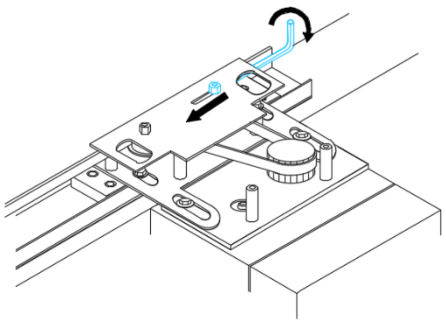
Step 8.
FOR AN OPENING TO THE RIGHT
Mesure the right length and cut the belt in a way to let 2-3 teeth get in the second anchor (and keeping a light tension). Insert the other end of the belt in the second anchor and close the cover with a 5mm Allen key.



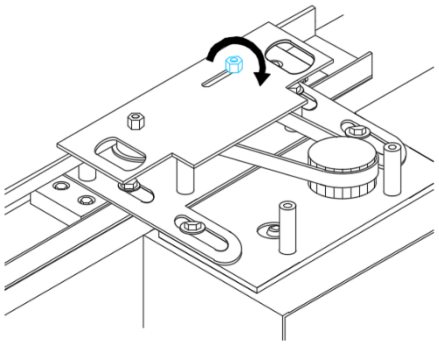
Step 8.1.
FOR AN OPENING TO THE LEFT
Mesure the right length and cut the belt in a way to let 2-3 teeth get in the second anchor (and keeping a light tension). Insert the other end of the belt in the second anchor and close the cover with a 5mm Allen key.



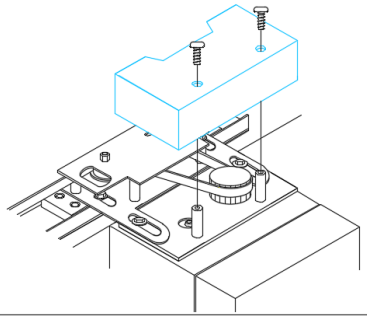
Step 9.
On the pulley module, adjust the tension of the belt. With a 5mm Allen key, screw the movable pulley to move it to the left. Push on the belt ond screw until its displacement is less that an ich from its original position.



Step 10.
Once the good tension in the belt has been reached, lock the position of the movable pulley by screwing the nut with a 17mm wrench or an adjustable wrench.



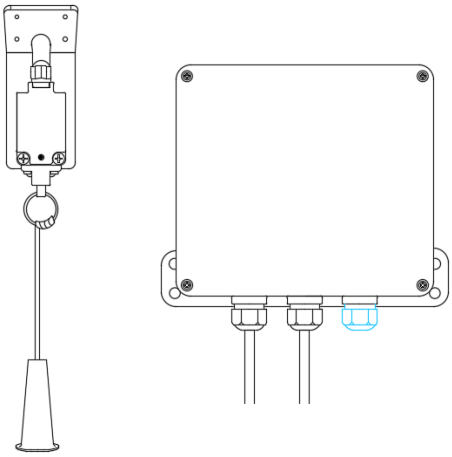
Step 11.
Add the cover on the pulley assembly and screw screw two ⑤ screws with a 4mm Allen key. (To be done once the electrical connections of the safety nose (p.9) and the photocell barrier (option) (p.13) have been made)



Installation Procedure - Cable Switches (Base 2x)

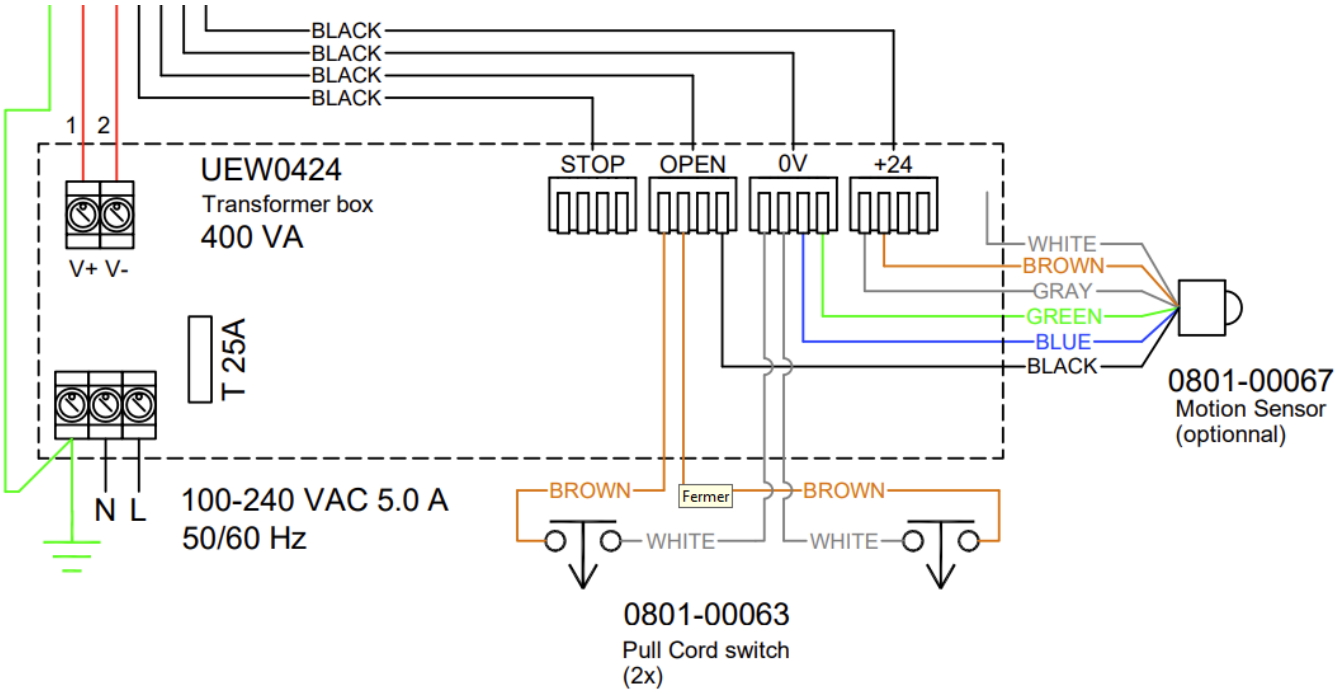
1. Place the switches in the desired location.
2. Run the cables along to the transformer box.
3. Run the cables through the waterproof grommet under the transformer box.

*The supplied cable for the switches has a length of 240 in (600cm).



4. Connection to the transformer according to the following connection diagram:

*See p.15 for full E-circuit *



Installation Procedure - Anti-Pinch Safety Nose (Base)

The anti-pinch safety nose is installed on the door on the handle side and serves as a mechanical safety edge.

1. Attach the A2 plate to the door jamb according to these dimensions:

A1	A2	A3
16 5/8”	44 ½”	72 1/8”
Bottom	Middle	Top

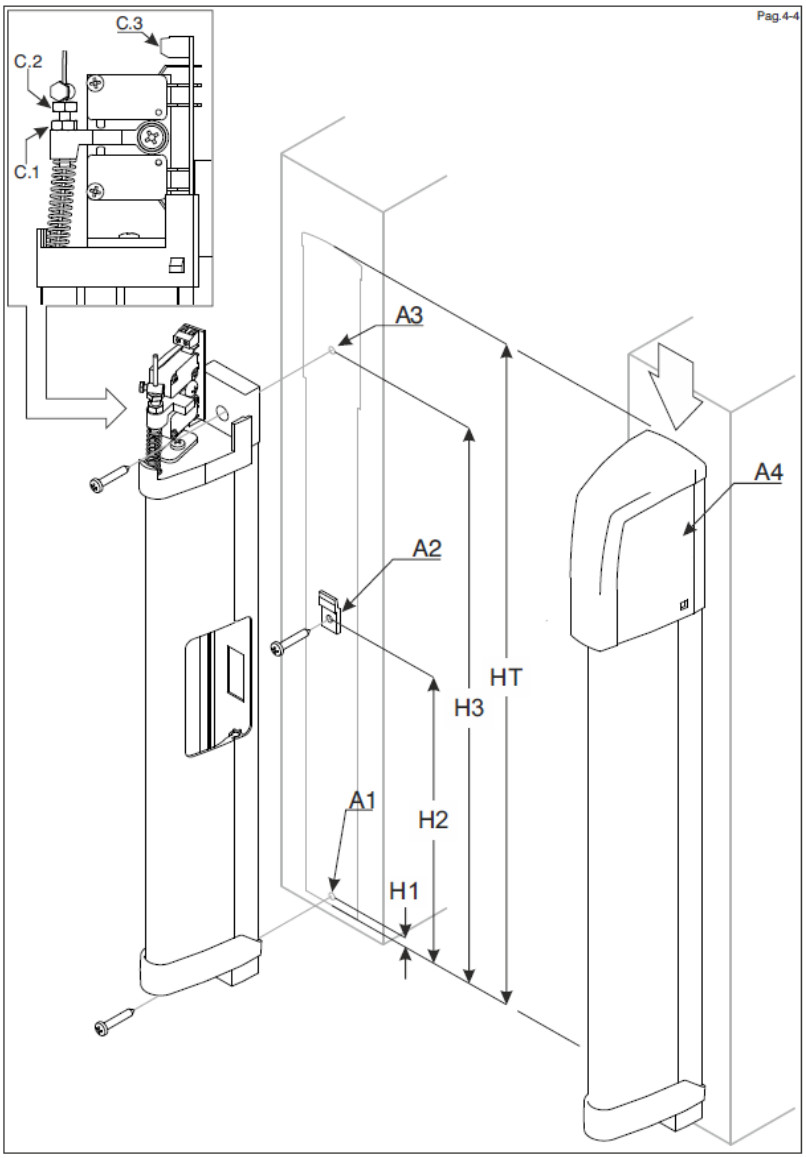
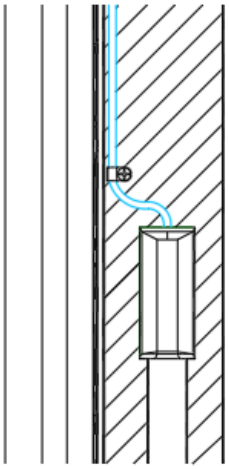


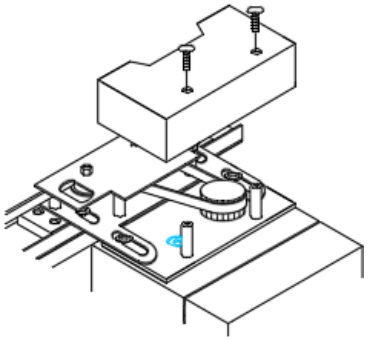
Figure 1: Installation Diagram - Anti-Pinch Safety Nose

2. Insert the safety nose on the A2 plate and secure it using holes A1 and A3.

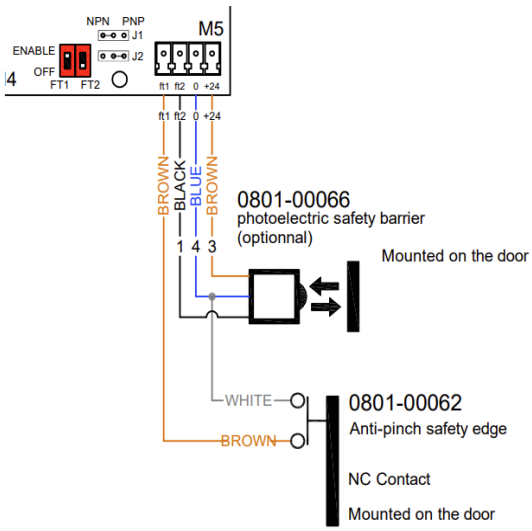


3. Run the wiring along the edge and top of the door toward the motor housing, along the gasket.

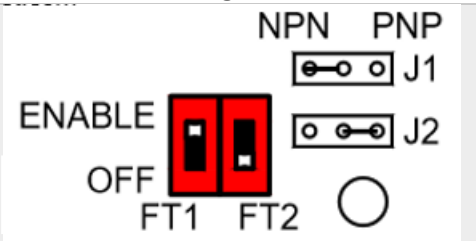
4. Run the cable through the waterproof grommet on the top of the motor.



5. Perform the wiring connections according to the following diagram.
   Terminal M5
   *See p.15 for Full E-circuit *

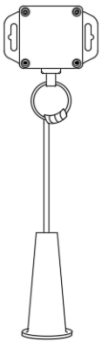


5. Select the switch and the commutator near the M5 terminal of the engine box.

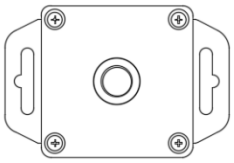
Option	Switch	Commutator	Diagram
Safety nose	FT1 = ENABLE *White button*	#1 : NPN	

Synchronization procedure – Radio control (option)

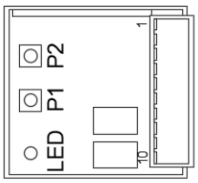
Radio-controlled pull switch



Radio-controlled button



Internal radio receptor

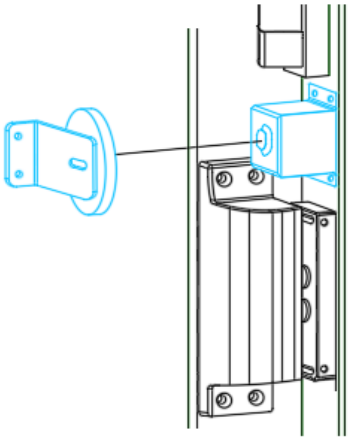


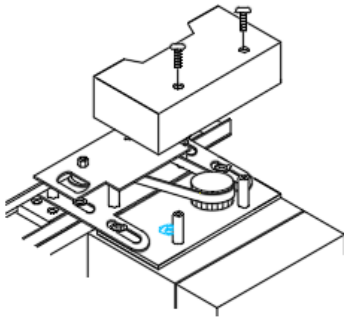
Programming steps

1. Power on the system.
2. Open the Motor case cover.
3. Press the P1 button on the internal radio receiver 1 time.
4. LED light will light up.
5. Activate the opening control on the remote control.
    a. Button: Press for 2 seconds.
    b. Pull switch: Pull for 2 seconds.
6. When the control is released, the LED light will turn off, indicating that the remote control has been memorized.
   If the remote control is not recognized, the LED will remain on for 10 seconds.
7. Repeat the steps for each remote control.

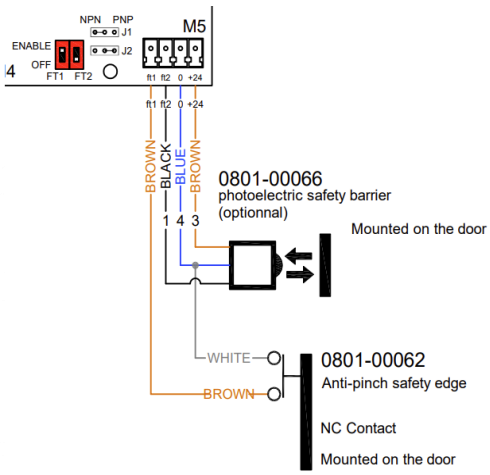
Installation procedure - Photocell Barrier (option)

1. Screw the sensor on the door, under the safety nose.
2. Run the cable on the side and top of the door toward the motor box.
3. Install the reflector to the wall, in the field on view of the sensor,
4. Pass the cable through the waterproof grommet on top of the motor.



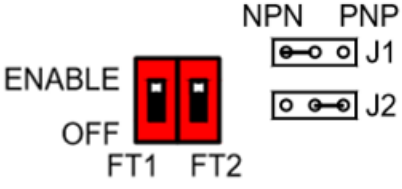


5. Install the wiring according to the following diagram.
   Terminal M5



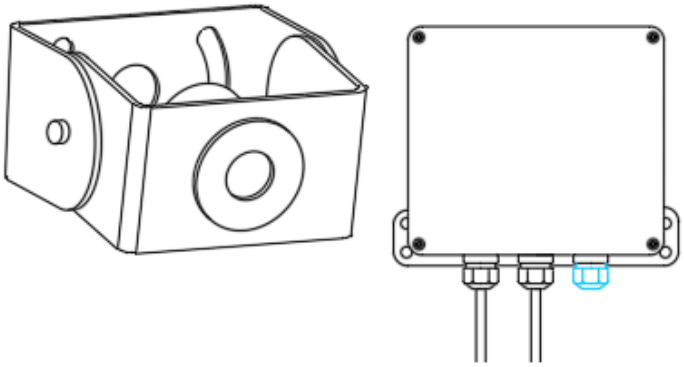
*See p.15 for Full E-circuit

6. Select the switch and le commutator near the M5 terminal of the engine box.

Option	Switch	Commutator	Diagram
Photocell barrier (Option)	FT1 = ENABLE FT2 = ENABLE *White button*	#2 : PNP	

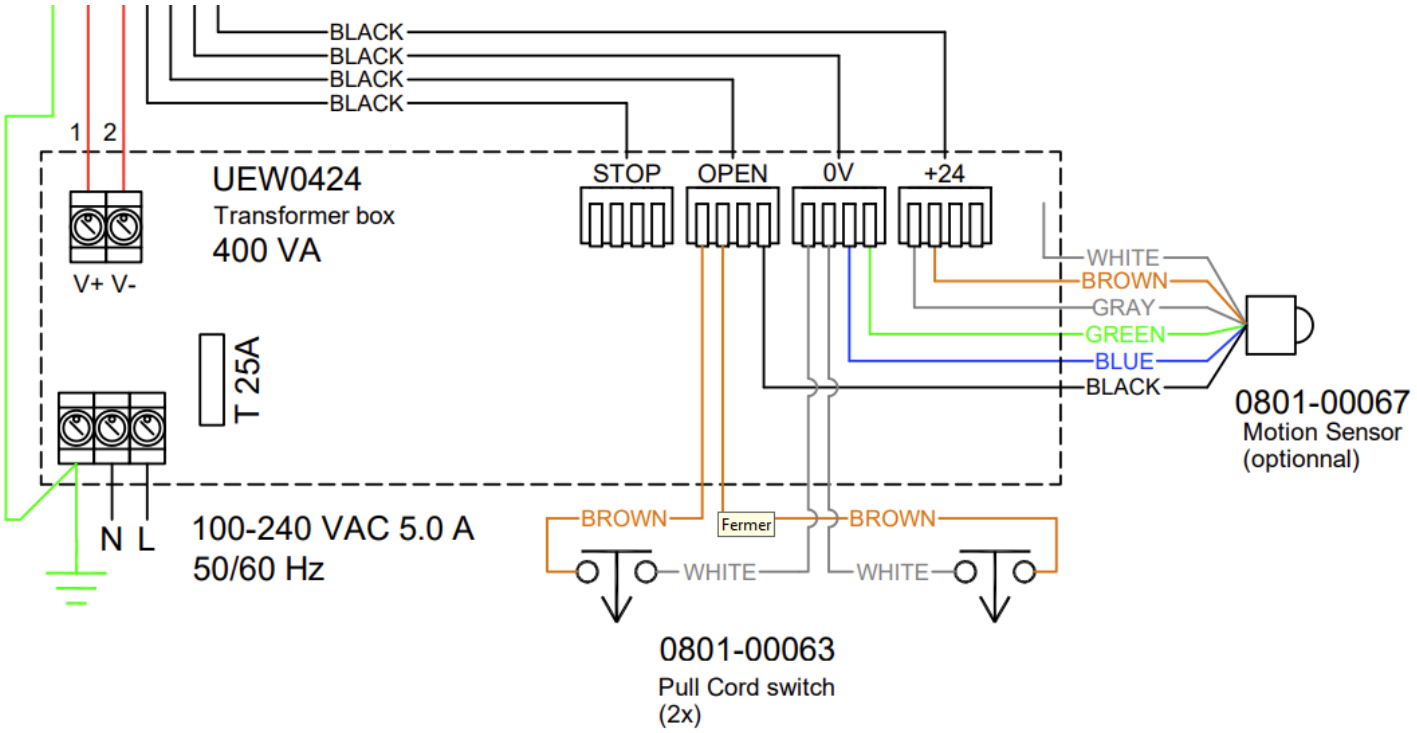
Installation Procedure - Motion Sensor (option)

1. Install the sensor in the desired location.
2. Run the cable along to the transformer box.
3. Run the cable through the waterproof grommet under the transformer.



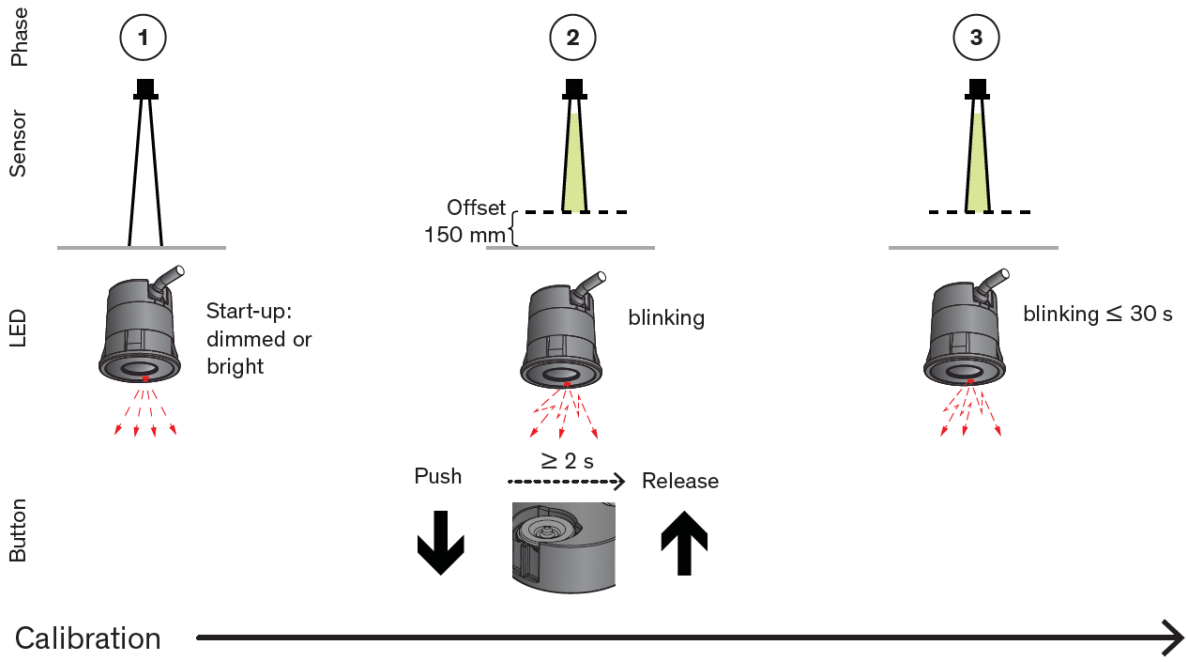
*The cable supplied for the motion sensor has a length of 192 in (500cm).

4. Connect the transformer according to the following connection diagram:
   **See p.15 for full E-circuit*

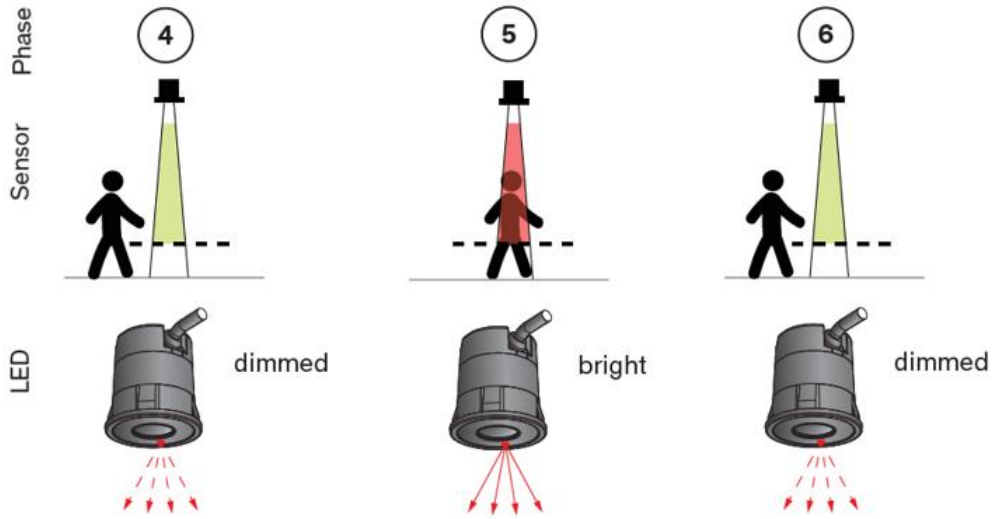


6. Follow the procedure for changing the settings and change the parameter **RA** =1.
   **See p.20 for settings*

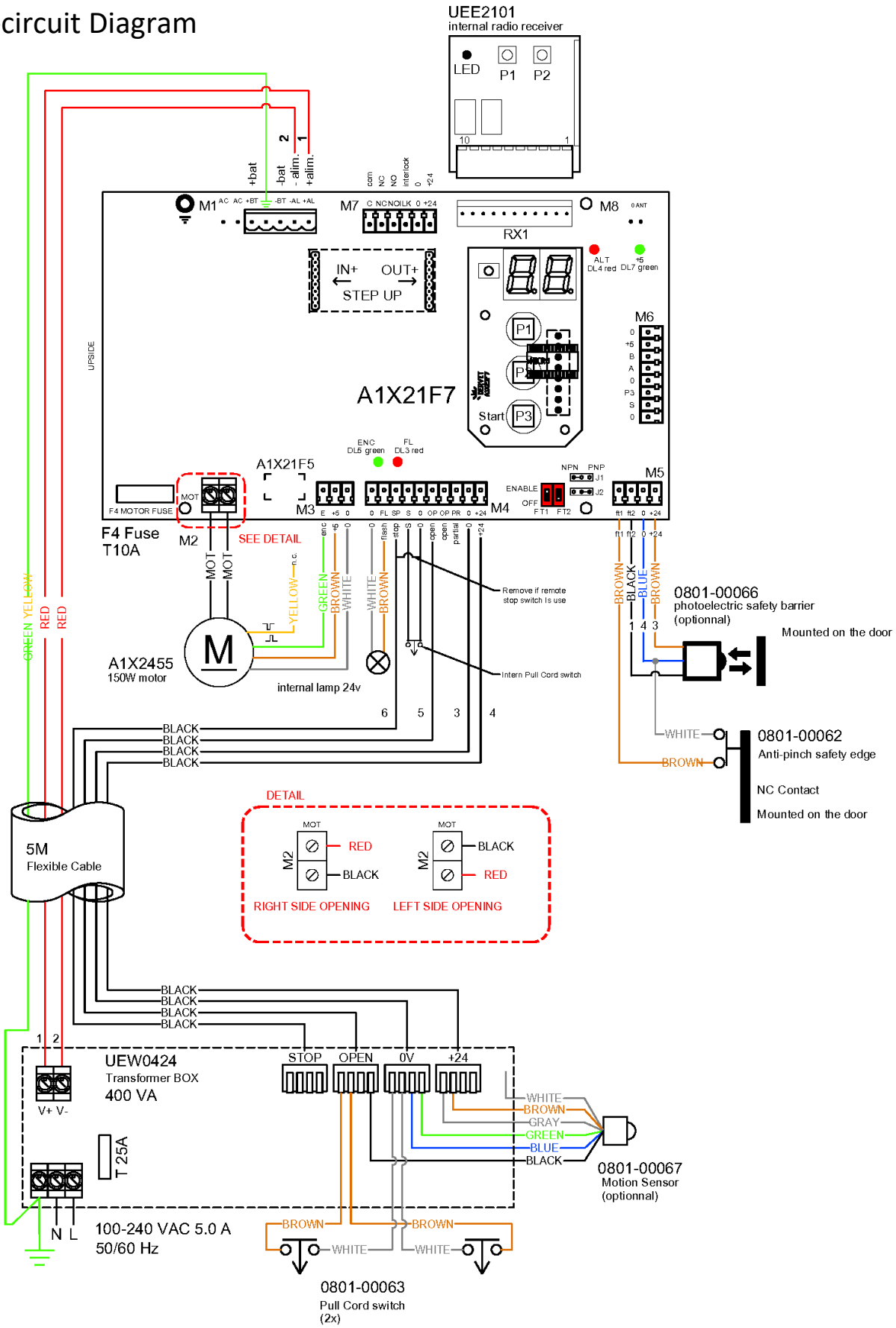
7. Calibrate the distance in operation.



1. Operation



E-circuit Diagram



User Manual

Use and Setup Instruction

← Keyboard
P1 - Partial
P2 - Menu
P3 - Open

Motor box →
Pull switch –
Opening control

Display
In standard operation, the screen displays the following information:

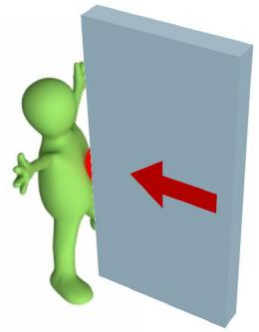
Display	Description
OP	Opening the door
CL	Closing the door
ST	Locked door for interlocking
F	Photocell intervention
S	Stop button pressed
E1	First start or voltage return after failure, press the opening control to start the learning phase
E3	Accidental loss of position or change of function, press the opening control to calibrate
E4	Double safety intervention, remove the obstacle and press the opening control to calibrate

When the door is closed, the screen shows the number of times the door has opened (thousand).

When the door is opened and closing is activated, the display displays the countdown to the seconds remaining until closing. [Adjustable, see Configuration Settings Description].

Electronic obstacle detection

Electronic obstacle detection is active when opening and closing. When it is in operation, it reverses the movement of the door, without deactivating the automatic closing. If the detection occurs 2 consecutive times, the door movement is reversed by 4 inches [10 cm] and falls to the STOP position. Once the obstacle has been removed from the path of the door, press the opening control and the door opens completely at reduced speed. Press the open control again to reactivate the normal opening and closing.



Description of configuration settings

Opening mode

When the ST parameter **= 0**: Open/Close mode

Following the opening order:

State	Action
The door is closed	The door opens.
The door is opening	The door stops and closes.
The door is open	The door closes.
The door is closing	The door stops and opens again.

When the ST parameter **= 1:** Open/Stop/Close mode

Following the opening order: State	Action
The door is closed	The door opens.
The door is opening	The door stops and stays open, press START to close the door.
The door is open	The door closes.
The door is closing	The door stops and stays open, press START to open the door again.

If the auto-close parameter is set to: **AU = 1**, following the open command the pause time is restored before closing.

If the radar function parameter is set to **RA** = **1**, when the door is open, the opening control is ignored.

Self-closing

When the parameter **AU = 1,** following the opening command, the door will open and remain open for a time set by the pause time parameter, before closing again.

Radar function (Motion sensor option)

When the parameter RA = 1, because of a movement detected by the sensor, the door will open and remain open for a period of time defined by the pause time parameter, before closing.

Partial opening

By pressing the Partial key, the door will open partially according to the **LE** setting, the auto-close setting is ignored, and the door remains open until the start command is restarted.

Flashing light

The light located under the motor box provides visual information on the operation of the door.

- Door is open, the light will flash rapidly for the time set in the **TF** setting, before starting the closing movement.
- Flashes slowly during the closing and opening motion.
- Stays on during the programming phase.
- Lights up if there is a loss of power.
- Lights up if the door is partially open.
- Lights up if the safety edge detects an obstacle

Anti-pinch safety nose (base)

The pinch-proof safety nose installed on the door serves as a mechanical safety edge. When the nose encounters an obstacle, the sensor causes the door to stop in the closing phase and reverses the moving direction. The sensor corresponds to the FT1 switch, type NPN.

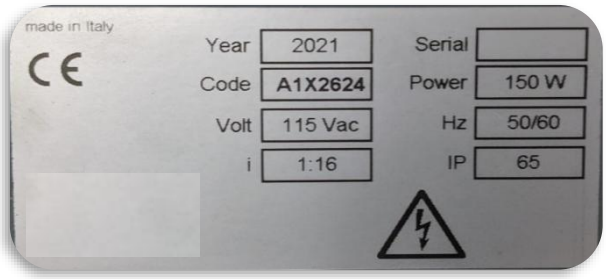
Photoelectric barrier (option)

The photocell sensor installed on the door and the mirror installed on the frame serve as an invisible barrier. When there is an obstacle in the door opening, the sensor causes the door to stop in the closing phase and reverses the moving direction. The sensor corresponds to the FT2 switch, type PNP.

Connection procedure

Electrical connections

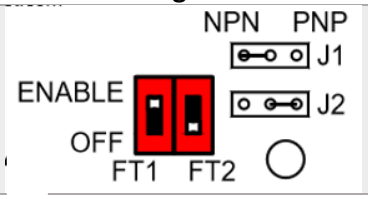
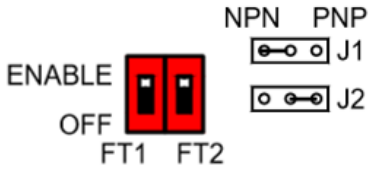
- Before connecting the power supply, make sure that the specs on the nameplate is compatible with that of the distribution network.



- The system power supply must be equipped with a circuit breaker that complies with current regulations, located in an easily accessible and clearly identified location.
- The power supply must be equipped with a grounding system that complies with the regulations in force.
- During installation, maintenance and repair, disconnect the power supply before opening the cover to access the electrical parts.

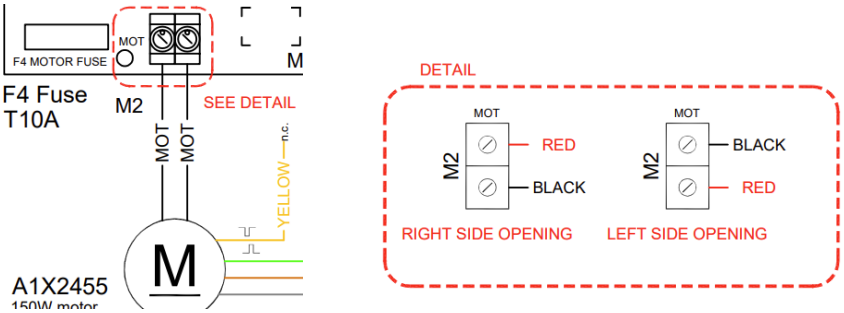
Configuration of safety options

Before connecting the power supply, the FT1 and FT2 switches, as well as the commutator, near the M5 terminal of the motor box, must be set according to the options.

Option	Switch	Commutator	Diagram
Safety nose	FT1 = ENABLE *White button*	#1 : NPN	
Photocell barrier (Option)	FT1 = ENABLE FT2 = ENABLE *White button*	#2 : PNP	

Configuring the opening direction

Adjust the position of the motor encoder cables on the M2 terminal.



Setting modification procedure

1. Make sure the power supply is unplugged.
2. Open the door manually to about 20" [50 cm].
3. Power on the system.
4. The screen will show **E1.**
5. Press the P2 – Menu key, to enter programming mode, the door movement is inhibited, and the display displays the first AU setting.
6. **See p. 20 Configuration Configuration Settings* Table
7. Press the P2 – Menu key to move to the next settings.
8. Press the P1 – Partial, key to increase the parameter value or P3 – open, to decrease the parameter value.
9. Press the P2 – Menu key, to save the new value and return to the settings menu.
10. To exit programming mode, select the parameter **--** and press the P1 – Partial key
11. Press one of the opening controls, the door will open completely, after a second of pause, the door will close completely and complete the learning phase.

Running the Teaching Phase After a Power Outage

When the device is powered on after a power outage, the screen will show **E1** and the light is on, you need to:

1. Open the door manually to about 20" [50 cm], if the door is closed.
2. Pressing one of the opening controls, the door will open completely, after a second of pause, the door will close completely and complete the learning phase.

Configuration Settings Table

Parameter	Display	Value	Description	Default value
Self-closing	**AU**	1	ON	**0**
		0	OFF	
Pause Time	**Tc**	0 - 30	[sec] Break time before automatic closing	**4**
Light flashing timer	**TF**	0 - 10	[sec] Flashing time before closing	**2**
Assisted opening	**UE**	0	OFF	**1**
		1	Partial opening when the door is manually moved	
Partial opening	**LE**	0 - 9	0 = 31 po [80 cm]; 1 = 35 po [90 cm]; 2 = 39 po [100 cm]; 3 = 43 po [110 cm]; 4 = 47 po [120 cm]; 5 = 51 po [130 cm]; 6 = 55 po [140 cm]; 7 = 59 po [150 cm]; 8 = 63 po [160 cm]; 9 = 67 po [170 cm];	**3**
Forced Closure*	*CA*	*0*	*OFF*	*0*
		1 - 4	*Clamping force to improve seal tightness*	
Opening mode	**ST**	0	Opening / Closing	**0**
		1	Opening / Stopping / Closing	
Radar	**RA**	0	OFF	**0**
		1	In the opening phase, the START command is ignored (Motion sensor option)	
Obstacle detection delays*	*SE*	*0 - 2*	*0 = OFF; 1 = 10%; 2 = 20%*	*0*
Slow speed	**SL**	0 - 5	0 = very slow ; 5 = Maximum speed	**0**
Opening speed	**PA**	0 - 5	0 = very slow ; 5 = Maximum speed	**5**

Closing speed	**PC**	0 - 5	0 = very slow ; 5 = Maximum speed	**3**
Programming speed	**PP**	0 - 2	0 = very slow ; 2 = Maximum speed	**0**
Reduction Report*	*rd*	*1 - 99*	*Reduction report installed*	*16*
Pulley Diameter*	*dP*	*1 - 99*	*[mm] Pulley Diameter*	*46*
Encoder Resolution*	*PE*	*0 - 4*	*0 = 4P; 1 = 6P; 2 = 8P; 3 = 12P*	*0*
Soft start	**SS**	0	OFF	**1**
		1 - 3	1 = 10%; 2 = 20%; 3 = 30%	
Soft stop	**Sb**	0	OFF	**1**
		1	ON	
Alarm*	*AL*	*0*	*Relay activates when the door closes*	*1*
		1	*Relay activates when the door opens*	
*Interlock**	*Bl*	*0*	*OFF*	*0*
		1	*ON*	
Zero distance search	*Oe*	*0 - 40*	*[mm] Reset the card to save*	*40*
Exit from programming mode	**--**			

**** Ignore for E-Circuit***

Alarms or problems table

Problem	Display	Cause	Solution
The door does not move.	Screen is off	Loss of power	Check the status of the electrical network.
	Screen is off	Blown fuses.	Replace the fuses with the spare fuses supplied with the electrical system.
	Screen is off	Electronic fault.	Request for maintenance intervention.
	The screen shows **S**	The STOP button is pressed.	Release the STOP button.
	The screen shows **F**	Safety options are obstructed or out of alignment.	Check the alignment of the light barrier with the reflective mirror. Check that the anti-pinch safety nose is working properly.
	The screen shows **ST**	Interlocked door, another door on the network is opened.	Wait until all the doors of the network are closed.
	The screen shows **BT**	Insufficient buffer battery level, the system prevents movement when voltage levels are low.	Restore voltage on the power grid.
The door opens but does not close.	The screen shows **F**	Safety options are obstructed or out of alignment.	Check the alignment of the light barrier with the reflective mirror. Check that the anti-pinch safety nose is working properly.
	The screen shows a countdown timer	The automatic closing has been programmed with a long delay time.	Set the value of the **Tc** parameter as needed.
The door moves a few inches and stops.		The encoder is faulty or disconnected.	Request for maintenance intervention.
The door does not leave the learning phase.	The screen shows **E1**	Door width less than 47 in [1200 cm]. The settings: Reduction Ratio, Pulley Diameter, or Encoder Resolution are incorrect.	Check parameter values: **PE, rD,** and **PE**

	The screen shows **F**	Safety options are obstructed or out of alignment.	Check the alignment of the light barrier with the reflective mirror. Check that the anti-pinch safety nose is working properly.
During the learning phase, the door opens slowly until it stops but does not close.	The screen shows **E1**	Electronics are faulty.	Request for maintenance intervention.
The range of the remote control is very low		The radio receiver is disconnected or missing	Replace the radio receiver.

Appendix – Installation guide for C2L-1750 & Rail Cover Installation Procedure