



ELECTRONIC CONTROL PANEL FOR 24VDC SECTIONAL DOORS AND ROAD BARRIERS

SMARTY PLUS P



TECHNICAL INSTALLATION MANUAL FOR AUTOMATIC GATES



WARNING!

Before installing, thoroughly read this manual that is an integral part of this Kit.

BAME S.r.l. declines any responsibility in the event current standards in the country of installation are not complied with



The CE mark conforms to European directive R&TTE 99/05CE + D. Lgs. 269 of 09/05/20

- 1. INTRODUCTION..... 3**
- 2. MAIN FEATURES 3**
- 3. TECHNICAL SPECIFICATIONS 3**
- 4. CONNECTION AND SET UP OF THE CONTROL UNIT 3**
 - 4.1 SETTINGS AND CONNECTIONS GENERAL DIAGRAM,4**
 - 4.2 SIMPLIFIED LEARNING PROCEDURE5**
 - 4.3 PROFESSIONAL LEARNING PROCEDURE6**
- 5. CONTROL UNIT OPERATING LOGIC (analytical test) 7**
 - 5.1 PROGRAMMING AND CANCELLATION OF THE REMOTE CONTROLS7**
 - 5.2 Operation of the Safety devices7**
 - 5.3 ENCODER.....7**
 - 5.4 “FOR” TRIMMER - MOTOR FORCE/SPEED’8**
 - 5.5 “PAU” TRIMMER - PAUSE TIME8**
 - 5.6 “OBS” TRIMMER - OBSTACLE SENSITIVITY8**
 - 5.7 Operational Mode9**
 - 5.8 FLASHING LIGHT9**
 - 5.9 SLOW-DOWN10**
 - 5.10 COURTESY LIGHT10**
 - 5.11 BACK-UP BATTERY10**
 - 5.12 STOP LOGIC (STP INPUT)10**
- 6. SIGNALLING LED 10**
 - SAFETY WARNINGS FOR INSTALLATION AND USE 11**

1. INTRODUCTION

The Smarty Plus P self-learning control unit has been designed for sectional door, overhead door or road barrier 24VDC single motor automations, with or without electrical limit stops and with or without encoder. **Its innovative self-learning procedure makes for quick and easy installation and its three trimmers permit fine adjustment of all main parameters, namely force (or speed), pause time and motor obstacle detection sensitivity.**

2. MAIN FEATURES

- x Command and control of sectional doors, overhead doors, and road barriers in 24VDC
- x Management of Encoder and/or Limit stop during opening and closing
- x Speed adjustable with FOR trimmer from 50% to 100%
- x 0 to 60" stand-by time adjustment via trimmer.
- x 0.1 to 3.0" obstacle detection triggering time adjustment via trimmer.
- x Softstart during closure (motor starting speed reduced)
- x Operating mode: automatic, step by step, step by step with automatic closure, man present, selectable with DIP.
- x Courtesy light 24VAC 20W max
- x Courtesy light activated with remote control
- x Built in 24V battery charger
- x STOP input
- x Built in 433MHz rolling code receiver with 180 memorisable codes
- x 12 or 24VDC flashing light (selectable with jumper)
- x Flashing light logic, fixed or flashing, selectable with DIP.
- x Safeties test enabled with DIP
- x Flash microprocessor re-programmable on-board via serial interface.
- x Simplified and professional learning procedure
- x Built to European reference Directive Standards (R&TTE 99/05/CE)

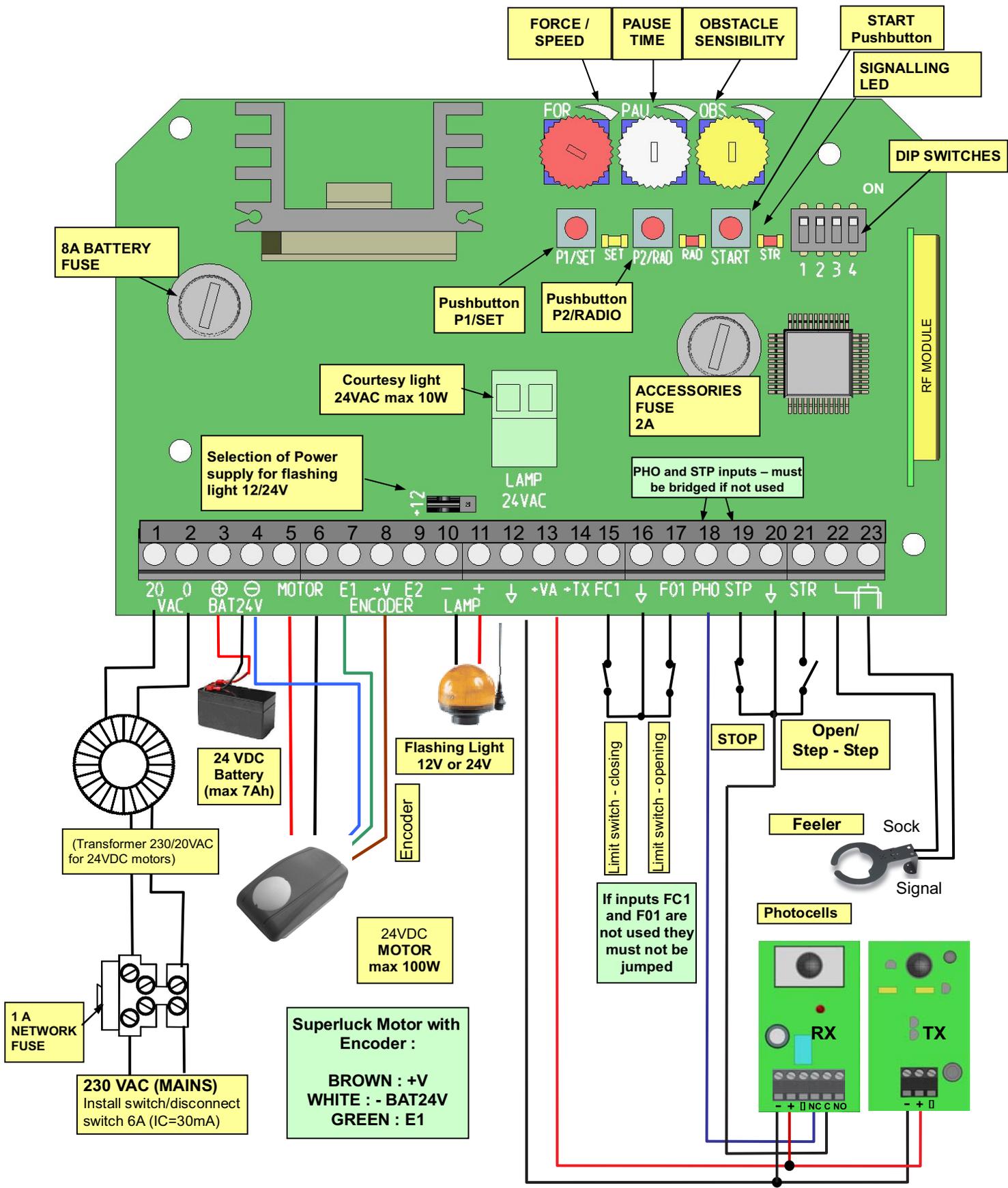
3. TECHNICAL SPECIFICATIONS

Transformer power supply:	230VAC
Control unit power supply:	20VAC
Motor output:	24VDC 100Watt max
Max.current peak of motor:	8 Ampere
Accessory power supply:	12 VDC - 400 mA
Environmental operating temperature:	-20°C / + 55 °C

4. CONNECTION AND SET UP OF THE CONTROL UNIT

- a) Before starting the installation of the Smarty Plus P control unit please read the "Safety warnings for installation and use"
- b) Mount a differential thermo-magnetic circuit breaker 6A (IC=30mA) on the mains supply as specified in the current reference standards (IC = differential current).
- c) Connect the outdoor accessories
- d) **ATTENTION: Connect the limit switches, if present, otherwise do not bridge inputs FC1 and FO1 in the terminal board.** Connect the encoder, if present, as follows: positive to terminal 8 (+V), negative to terminal 4 (-BAT), signal to terminal 7 (E1).
- e) **ATTENTION: in the absence of electrical or mechanical limit stops,** to define the times of the manoeuvre, proceed as follows:
Press button 1 on the remote control or the P1/SET pushbutton to stop the manoeuvre in the desired position.
- f) Check the correct connection and operation of all the accessories connected to the terminal board.

4.1 SETTINGS AND CONNECTIONS GENERAL DIAGRAM

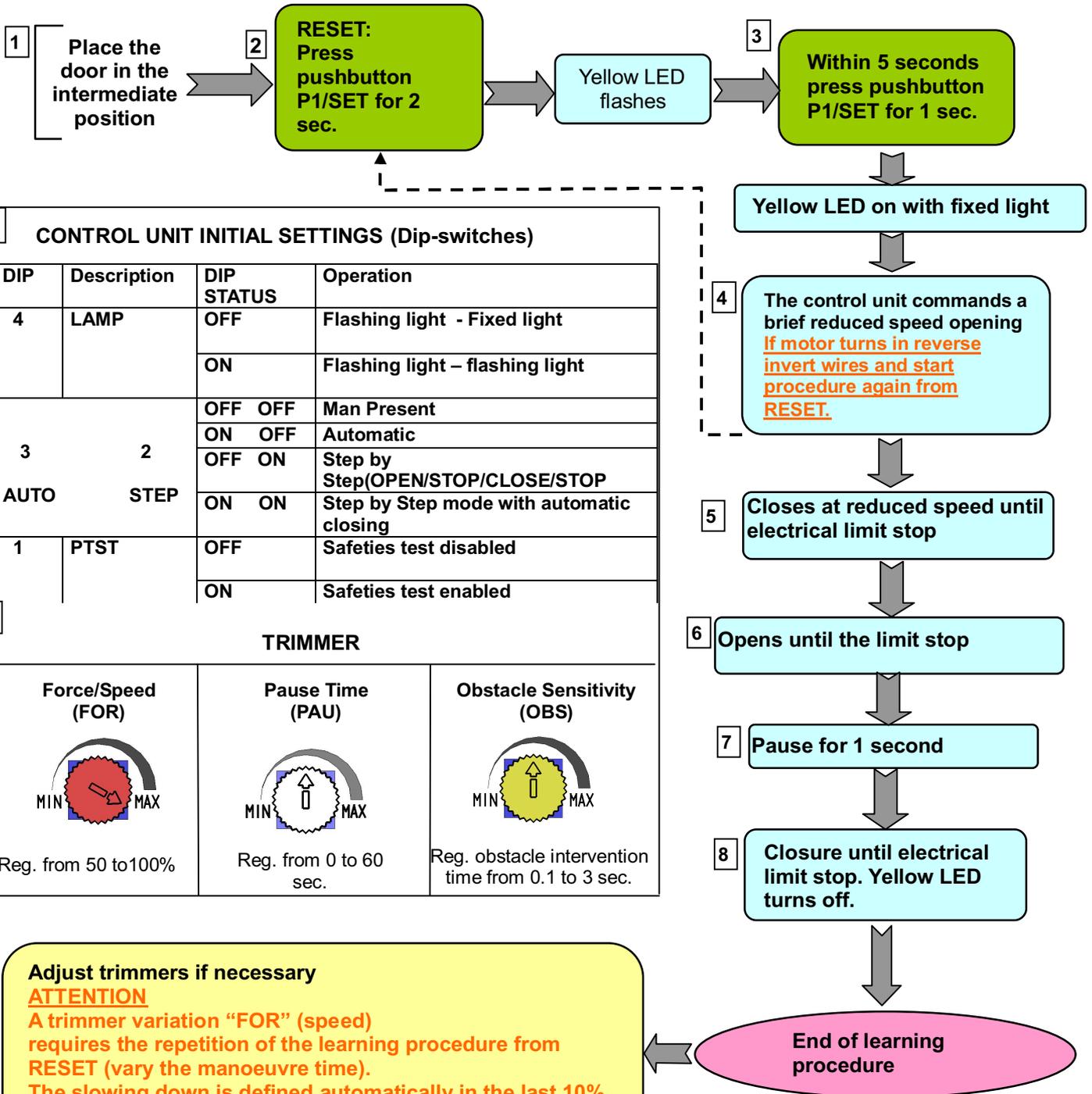


NOTE: The control unit is supplied with a trimmer to adjust the force of the motors set on maximum value (100%). Maintain this setting, which facilitates installation in difficult conditions (worn-out or not lubricated hinges, stress points etc.) Afterwards, reduce the force to obtain an operator movement that is slower and requires less force. **After having adjusted the force the learning procedure must be repeated.**

4.2 SIMPLIFIED LEARNING PROCEDURE

1. Determine the initial settings to be pre-set.
2. Programme the remote controls (if present) according to this sequence:
 - a) Press P2/RAD for two seconds: the corresponding red LED lights up.
 - b) Make a transmission with each remote control using the chosen button (channel).
 - c) Press P2/RADIO to exit the programming.

LEARNING START:



1 CONTROL UNIT INITIAL SETTINGS (Dip-switches)

DIP	Description	DIP STATUS	Operation
4	LAMP	OFF	Flashing light - Fixed light
		ON	Flashing light – flashing light
3	2 AUTO STEP	OFF OFF	Man Present
		ON OFF	Automatic
		OFF ON	Step by Step (OPEN/STOP/CLOSE/STOP)
		ON ON	Step by Step mode with automatic closing
1	PTST	OFF	Safeties test disabled
		ON	Safeties test enabled

2 TRIMMER

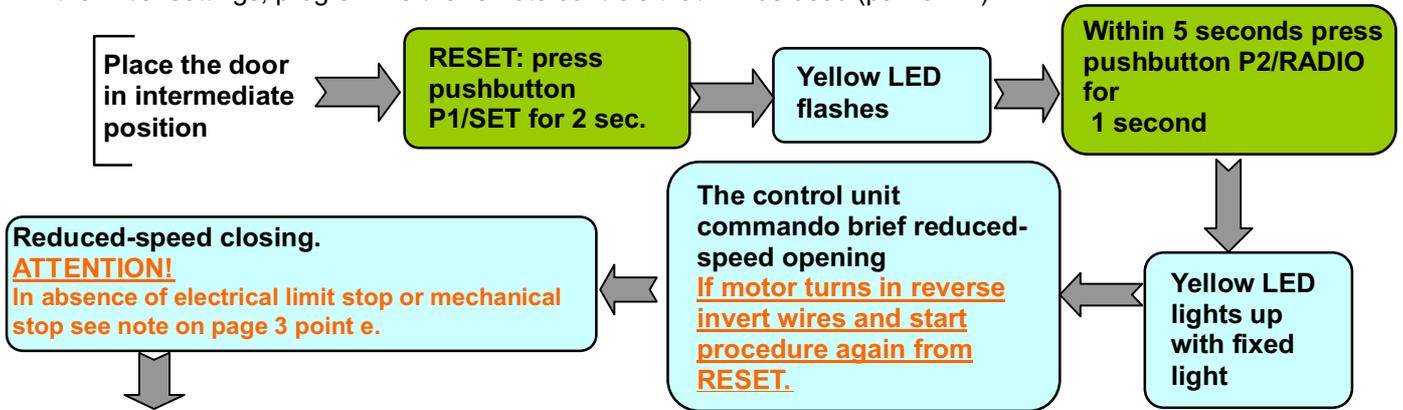
Force/Speed (FOR)	Pause Time (PAU)	Obstacle Sensitivity (OBS)
<p>Reg. from 50 to 100%</p>	<p>Reg. from 0 to 60 sec.</p>	<p>Reg. obstacle intervention time from 0.1 to 3 sec.</p>

Adjust trimmers if necessary
ATTENTION
 A trimmer variation "FOR" (speed) requires the repetition of the learning procedure from RESET (vary the manoeuvre time).
 The slowing down is defined automatically in the last 10% of the manoeuvre. With only encoder present, terminate manoeuvre by pressing P1/SET pushbutton on board or with channel 1 of memorised remote control before obstacle detection intervention

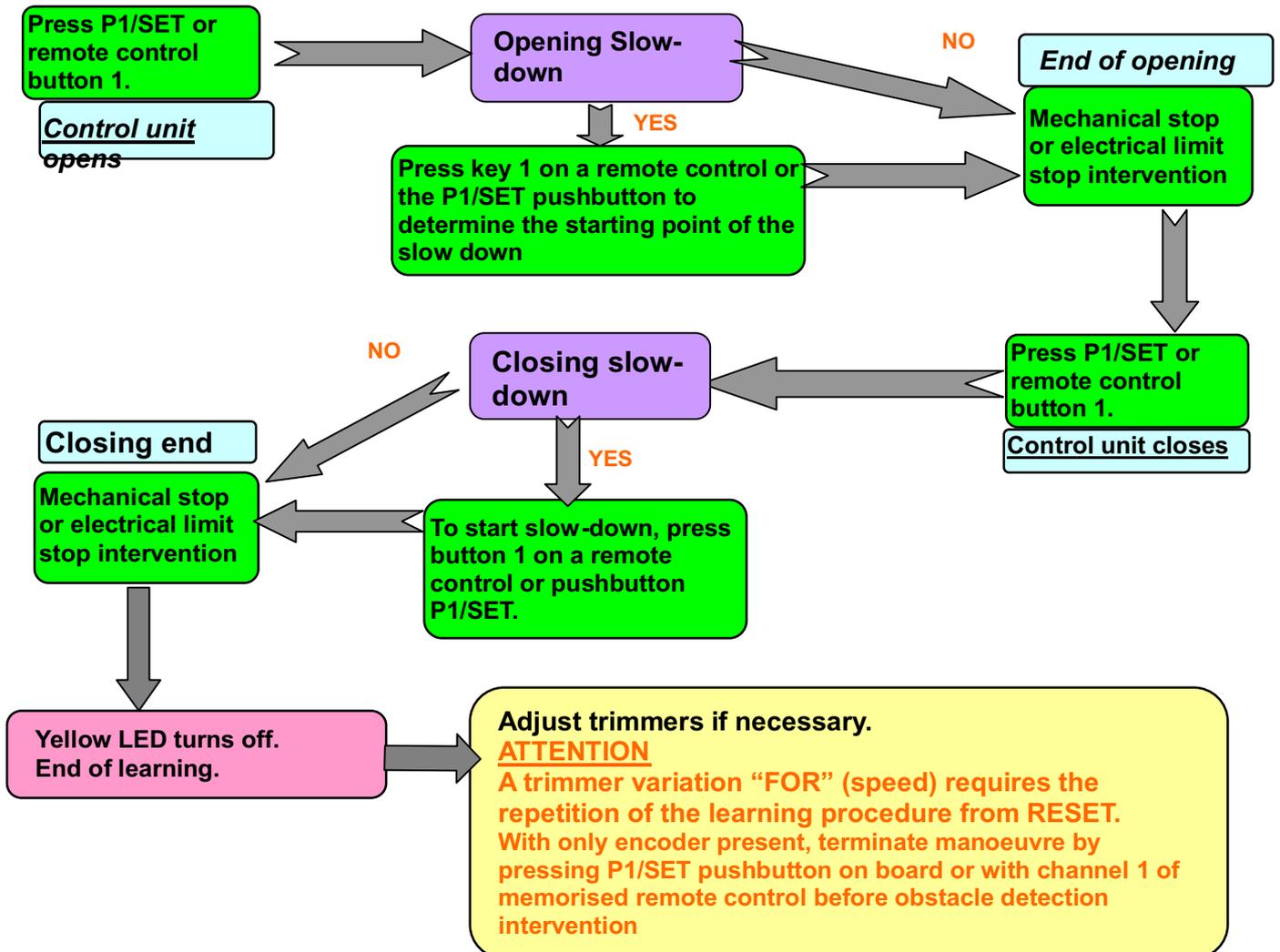
4.3 PROFESSIONAL LEARNING PROCEDURE

Using the **professional learning** procedure the installer **can determine the instant in which the slow-down starts**.

The point in which the slow-down starts can be set independently in opening and closing. After having connected the motor, the limit stops (if present), the encoder (if present) and the safety devices and made the initial settings, programme the remote controls that will be used (par. 5.1.1).



MANUAL INTERVENTION TO CHANGE THE OPERATION



5. CONTROL UNIT OPERATING LOGIC (analytical test)

5.1 PROGRAMMING AND CANCELLATION OF THE REMOTE CONTROLS

With the receiver built into the control box the memorising operations of the BAME rolling code remote controls Style or Joy can be carried out indifferently.

5.1.1 Programming the radio codes

Power up the control unit and check that:

- x **The control unit is not set for the Man Present operation (DIP 2 and 3 to OFF) and DIP1 is in OFF**
- x Press the "P2/RAD" pushbutton for 2 seconds: the red LED lights up to signal that the programming is activated.
- x Make a transmission by pressing one of the pushbuttons on the transmitter
- x The code is memorised. During code insertion, the red LED flashes slowly. At the end, the red LED returns to a fixed light to indicate that a new remote control can be inserted.
- x Memorise all the transmitters by carrying out a transmission with a chosen channel.
- x At the end of the operation press the "P2/RADIO" pushbutton again to exit the procedure. The red LED switches off.

ATTENTION: The exit from the procedure occurs automatically 10 seconds after the last transmission.

To switch on just the courtesy light with another channel of the transmitter, proceed as follows: **Power up the control unit and check that DIP1 is ON:**

- x Press the "P2/RAD" pushbutton: the red LED lights up to indicate that the programming is activated
- x Make a transmission by pressing the selected button on the transmitter, different from the one used for opening the door.
- x The code is saved in the memory. During saving, the red LED flashes slowly. When it is finished, the red LED returns to the fixed light status to signal that a new remote control can be entered.
- x Memorise all the transmitters by making a transmission with the chosen channel.
- x At the end of the operation, press the "P2/RAD" pushbutton again to exit the procedure. The red LED turns off.

5.1.2 Total cancellation of the codes

- x Press and hold down the "P2/RADIO" pushbutton for 3 seconds; the red LED starts flashing quickly.
- x Press the "P2/RADIO" pushbutton again (within 6 seconds) to confirm the cancellation. The confirmation is signalled when the red LED starts flashing more rapidly.

5.2 OPERATION OF THE SAFETY DEVICES

5.2.1 Photocell (PHO input)

If the photocell is activated it provokes:

- the immediate inversion of direction during the closing phase
- in opening phase it has no effect,
- if the access is closed it has no effect on the opening controls.
- if the access is open it inhibits the closing commands.

5.2.2 safety device self-test

The control unit has a self-test function of the safety devices connected to the "PHO" input of the control unit, which consists in switching off the transmitter and the checking the commutation of the corresponding receiver contact before each manoeuvre is carried out. To activate the self-test function:

- switch **DIP 1** to **ON**
- connect the positive of the photocell transmitter power supply to the terminal ("+TX")

If the Safeties self-test function is not to be enabled:

- switch **DIP 1** to **OFF**

5.3 ENCODER

The control unit can operate both with a Hall-effect encoder and with optical encoders.

Connect the encoder, if present, in the following way: Positive to terminal 8 (+V), negative to terminal 4 (-BAT), Signal to terminal 7 (E1).

During learning, the control unit checks the presence of the limit stops and of the encoder and prepares to operate:

_ with timer; in the absence of limit stops and encoder, stopping when it meets the mechanical stops (the obstacle detection provokes the inversion except in the last 30 cm of manoeuvre).

_ with timer, with just limit stops present and with obstacle detection that always provokes the inversion

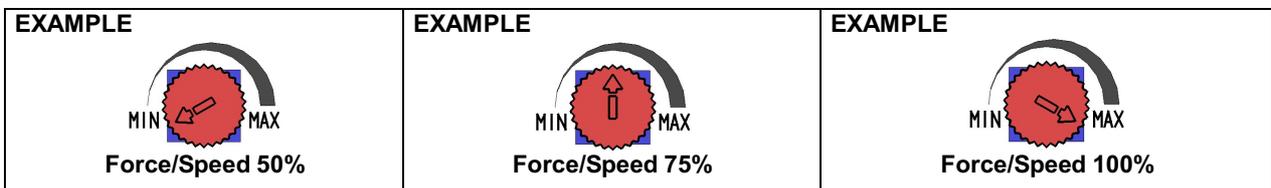
_ counting the encoder impulses with the presence of just the encoder (the obstacle detection provokes an inversion except in the last 3 cm of the manoeuvre).

_ in the presence of encoder and limit stop, counting the encoder impulses and resetting the count when the limit stop intervenes. The obstacle detection always provokes an inversion. With this configuration the best results can be obtained from the obstacle detection function from the point of view of Regulation EN12453 (impact curve).

5.4 “FOR” TRIMMER - MOTOR FORCE/SPEED’

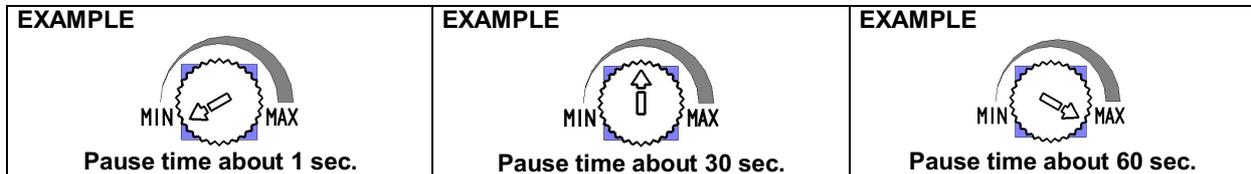
With the “FOR” trimmer the voltage that powers the motor during the manoeuvre can be adjusted, and hence its speed. If the trimmer is in the minimum position the speed is equal to 50% of the maximum, the intermediate position is equal to 75% of the maximum.

ATTENTION: A variation of the “FOR” trimmer necessitates the repeat of the learning procedure because the manoeuvre times are modified and consequently the moment in which the slow-down commences.



5.5 “PAU” TRIMMER - PAUSE TIME

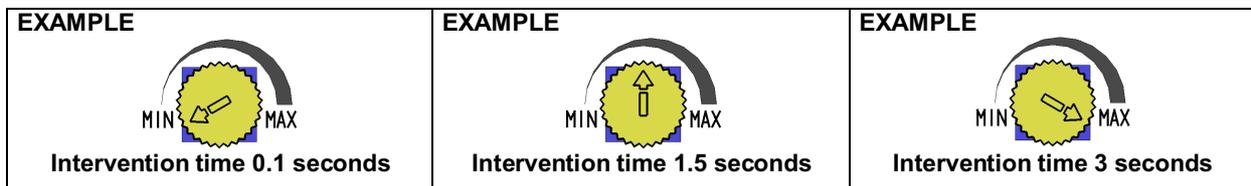
The “PAU” trimmer is used to set the pause time of the control unit when the automatic closing is enabled with DIP 3. The pause time can be set between 3 and 60 seconds and is increased by turning the trimmer clockwise.



5.6 “OBS” TRIMMER - OBSTACLE SENSITIVITY

The “OBS” trimmer is used to adjust both the delay for the intervention when an obstacle is detected and the counter force necessary to trigger the intervention. **Both the intervention time and the counter force are increased by turning the trimmer clockwise.** The OBS intervention delay can be adjusted between 0.1 and 3 seconds.

This function is useful to overcome any critical points of the automation when, for a short period of time, there is an increased absorption of current by the motor.



With electrical limit stops, the detection of an obstacle always provokes the inversion of motion during closure and the inversion for 2 seconds during opening.

With just an encoder, the detection of an obstacle always provokes the inversion of motion during closure and the inversion for 2 seconds during opening, except during the last 3cms of the manoeuvre.

With no electrical limit stops or encoder the obstacle detection provokes:

- during closure, the inversion of direction except during the last 5 seconds of manoeuvre, where it will STOP.

- during opening the inversion of direction for 2 seconds except during the last 5 seconds of manoeuvre, where it will STOP.

5.7 Operational Mode

5.7.1 Automatic closure with timer mode

Switch the **dip-switch 3** to the ON position and **dip-switch 2** to the OFF position.

In this mode, if a command is given via radio or via the "STR" input, the control unit:

- makes a one-second fixed pre-flash
- activates the motor at the speed set with the FOR trimmer
- the opening stops when the limit stop or the obstacle detection device intervenes, or when the manoeuvre time expires. If, during opening, additional commands are given, they will not have any effect.
- with the automation at a standstill and in automatic pause, each time a command is received, the pause count will restart from zero.

When the pause time has elapsed, the closing manoeuvre occurs and the control unit:

- makes a one-second fixed pre-flash
- activates the motor for one second at reduced speed (Softstart) and then at the speed set with the FOR trimmer.
- if a command is received during closure, the control unit commands the complete re-opening.
- the closure terminates when the limit stop or obstacle detection device intervenes or when the manoeuvre time expires.

ATTENTION: Maintaining the opening contact closed ("STR" terminal), for example with a time delay relay, the control unit commands opening and the operator remains open with automatic closing excluded until the contact is re-opened (Company Function).

5.7.2 Step by step mode without automatic closing

Switch the **dip-switch 3** to the OFF position and **dip-switch 2** to the ON position.

The step by step sequence to the controls is: OPEN-STOP-CLOSE-STOP.

The opening and closing manoeuvres happen according to the mode described in the preceding paragraph.

5.7.3 Step by step mode with automatic closing

Switch the **dip-switch 3** to the ON position and **dip-switch 2** to the ON position.

The step by step logic is OPEN/STOP/CLOSE/STOP.

When the opening manoeuvre is completed and the pause time set by the PAU trimmer has elapsed, the control unit commands the automatic closing.

If with the automation closed a command is given via radio or with the "STR" input or the START pushbutton present on the board, the control unit:

- makes a one-second fixed pre-flash
- activates the motor at the speed set with the FOR trimmer.
- the opening stops with the intervention of the limit stop, the obstacle detection device or when the manoeuvre time expires, or with a radio or manual command. **In this latter case, the control unit disables the automatic closing and to restart the manoeuvre another command must be given.**

If the automation is completely open, when the pause time has elapsed the closing manoeuvre starts. The control unit:

- makes a one-second fixed pre-flash.
- activates the motor for one second at reduced speed and then at the speed set with the FOR trimmer.
- the closing stops with the intervention of the limit stop or the detection of an obstacle or when the manoeuvre time has expired.

5.7.4 Man present mode

Switch the **dip-switch 3** to the OFF position and **dip-switch 2** to the OFF position.

Keep the START pushbutton on the board pressed, the control unit commands an opening until the limit stop is reached in opening or the pushbutton is released.

Keep the P2/RAD pushbutton on the board pressed, the control unit commands the closure until the limit stop is reached or the pushbutton is released.

The radio command has no effect. When the control unit is in this mode, it is not possible to enter the radio code programming.

5.8 FLASHING LIGHT

The control unit is fitted with two output terminals (LAMP + and -) to control a 12 or 24 VDC low voltage flashing light. The voltage can be selected using the jumper above the terminal of the flashing light.

The flashing light flashes 1 second before every opening manoeuvre and 1 second before a closing manoeuvre.

If DIP 4 is in the OFF position the power supplied to the flashing light is DC, therefore a low consumption flashing light with a built in oscillating circuit must be connected to the terminal (FEBOLIX 12VDC 2W type).

If the DIP 4 is the ON position the power supplied to the flashing light is alternating and therefore a normal lamp without an oscillating circuit can be connected (12 or 24VDC, Max 10W).

5.9 SLOW-DOWN

With the slow-down function, the door applies a reduced force before reaching the limit stop. The reduced speed is about one third of the normal working speed. With the professional learning, the starting points of the slow-down, in both opening and closing, can be selected at will, or else the slow-down can be disabled.

5.10 COURTESY LIGHT

The contact provided by the control unit allows 24VAC Max 10W lamps to be controlled. The switching on command of the courtesy light is given before every manoeuvre and the contact remains activated for about 120 seconds after opening.

To switch on the courtesy light with a radio channel that is different from that for the door opening see paragraph 5.1.1.

5.11 BACK-UP BATTERY

The control unit is equipped with a 24VDC battery charger therefore a 24V battery or two 12V batteries in series must be used.

A maximum of 5 manoeuvres are possible with the 24V 1.2Ah back-up battery. The control unit can manage batteries up to 7Ah (20-30 complete manoeuvres).

5.12 STOP LOGIC (STP INPUT)

The activation of the STOP input provokes the block all the functions.

To restart the cycle the STOP must be deactivated and another command must be given.

6. SIGNALLING LED

SET yellow LED:

- when turned on, it flashes for 5 seconds to indicate that simplified or professional learning mode can be entered
- lights up with a fixed light during simplified or professional learning procedure
- **it is OFF during normal operation of the control unit**

RAD red LED:

- flashes briefly when a 433 MHz line Multipass radio code is received
- lights up with a fixed light while the radio codes are being memorised
- flashes rapidly when the control unit is switched on if the radio code memory is defective
- flashes rapidly during the cancellation of radio codes
- flashes faster when there is an attempt to enter new radio codes and the memory is full
- **it is OFF during normal operation of the control unit while waiting to receive commands via radio**

ST status red LED:

- lights up when the door is closed
- flashes rapidly when the control unit is blocked (e.g. safeties test not passed)
- flashes when the control unit is open or during opening or closing

SAFETY WARNINGS FOR INSTALLATION AND USE

These warnings are an essential, integral part of the product and must be given to the user. They provide important indications on the installation, use and maintenance and must be read carefully. This form must be preserved and passed on to subsequent users of the system. The incorrect installation or improper use of the product may be dangerous.

INSTALLATION INSTRUCTIONS

- x The installation must be performed by professionally skilled personnel and in compliance with current local, state, national and European legislation.
- x Before beginning the installation, check the integrity of the product.
- x The laying of cables, electrical connections and adjustments must be workmanlike performed.
- x The packing materials (cardboard, plastic, polystyrene, etc.) are a potential hazard and should be disposed of correctly and not left within reach of children.
- x Do not install the product in potentially explosive environments or environments disturbed by electromagnetic fields. The presence of inflammable gases or fumes is a grave danger to safety.
- x Set up a safety device for overvoltage, a disconnecting and/or differential switch suitable for the product and conforming to current standards.
- x The manufacturer declines any and all responsibility for product integrity, safety and operation in the event incompatible devices and/or components are installed.
- x Solely original spare parts should be used for repairs and replacements.
- x The installer must provide all the information relative to the operating, maintenance and use of the individual components and the complete system as specified in the MACHINE LEGISLATION (see regulations EN 12635, EN 12453 and EN 12445).

x

MAINTENANCE

- x To ensure product efficiency, it is essential that professionally skilled personnel carry out maintenance within the times established by the installer, the manufacturer and by current legislation.
- x All installation, maintenance, repairs and cleaning operations must be documented. This documentation must be preserved by the user, and made available to the personnel responsible for the control.

WARNINGS FOR THE USER

- x Read the instructions and enclosed documentation carefully.
- x The product must be used for the express purpose for which it was designed. Any other use is considered improper and therefore hazardous. In addition, the information given in this document and in the enclosed documentation may be subject to modifications without prior notice. It is given as an indication only for product application. BAME S.r.l. declines any responsibility for the above.
- x Keep products, devices, documentation and anything else provided out of reach of children.
- x In the event of maintenance, cleaning, breakdown or faulty operation of the product, cut off the power and do not attempt to operate on the product except when indicated. Contact professional personnel, competent and suitable for the task. Failure to adhere to the above indications may be dangerous.

WARRANTY LIMITS

The warrantee is valid for 24 months from the date indicated in the sales document and its validity is limited to the original purchaser. It does not cover the following eventualities: negligence, incorrect or improper use of the product, use of accessories not conforming to the manufacturer's specifications, tampering by the customer or third parties, natural causes (lightning, floods, fire, etc.), riots, vandalism, modifications to the environmental conditions of the installation site. Nor does the warranty cover parts subject to wear (batteries, oil etc.). Products returned to BAME S.r.l. for repair shall only be accepted carriage paid. BAME S.r.l. shall return the repaired product to the sender carriage forward. Otherwise the goods will be refused on receipt. The purchase of the product implies the full acceptance of all the general terms of sale.



BAME s.r.l. - Via L. da Vinci, 23 - 46020 SAN GIACOMO SEGNATE (MN) - ITALY

Tel. +39 0376 616 638 - Fax +39 0376 629 456 - <http://www.bame.it> - <http://www.delma.it>

Unità locale: Via Enrico Berlinguer, 6 - 63844 GROTTAZZOLINA (FM) - ITALY

Tel. +39 0734 633 533 - Fax +39 0734 636 895 - e-mail: delma@bame.it - venditedelma@bame.it