8) CP.B24-D120 CONTROL UNIT

8.1) WIRE DIAGRAM

Wire connections shown in Fig. 17 are described hereunder:

M2 SEL. 115V	Mains power supply selection	230Vac 50/60Hz (from 207Vac to 253Vac) M2 OPEN jumper 115Vac 50/60Hz (from 102Vac to 125 Vac) M2 CLOSED jumper
L-N-GND	Mains power supply	Mains power supply input selectable via M2 jumper.
+ BATT -	Batteries	Input for connecting buffer batteries (accessory) 2x12V 2.1Ah
M11	Motor	24Vdc motor connection
+ 24 -	24 Vdc	Accessories power supply output 24Vdc 0.8 A max (respect accessories polarity).
AUX1	AUX 1 Auxiliary output	Output with N.O. contact configurable by AUX1 operating logic
BAR J3	Responsive sensor	Responsive sensor contact input Resistive sensor: Jumper "DAS" closed Mechanical sensor: Jumper "DAS" open The sensor stops the movement of the door and reverses it for about 3s. If the sensor is not used: Jumper "DAS" open, jumper between BAR terminals.
S.I.S.	Synchronisation card optional	Optional SIS card input for synchronising two opposing automations. See paragraph synchronisation of two automations.
BLINK	Flashing	24Vdc output 4W max. for connection to the flashing light.
AUX2	Auxiliary output AUX 2	Output with N.O. contact configurable by AUX2 operating logic
COM	Common Inputs	Common for all control inputs.
SWO	Limit switch opens	Limit switch input OPENS (N.C. contact).
SWC	Limit switch closes	Limit switch input CLOSES (N.C. contact).
STOP	STOP	Button input STOP (N.C. contact).
PHO	Photocell opening/ closing	Photocell input active in opening and closing (N.C. contact).
PHC	Photocell closing	Photocell input active only during closing (N.C. contact)
OPEN	Opens	Input for configurable opening command as pedestrian input (N.O. contact) It is possible to connect a timer for opening in time slots.
CLOSE	Closes	Close command input (N.O. contact)
PP	Step-by-step	Step-by-Step button input (N.O. contact)
COM	Common Inputs	Common for all control inputs.
ANT-SHIELD	Antenna	Built-in radio transmitter card antenna connection (ANT-signal/SHIELD-screen).

8.2) PROGRAMMING

The programming of the various functions of the control unit is carried out using the LCD display on the control unit and setting the desired values in the programming menus described below.
The parameters menu allows you to assign a numerical value to a function, in the same way as a regulating trimmer.
The logic menu allows you to activate or deactivate a function, in the same way as setting a dip-switch.

8.2.1) TO ACCESS MANUAL PROGRAMMING

1 - Press the <PG> button to enter the first Installation menu "INST".
2 - Choose with <+> or <-> button the menu you want to select (see menu at page 10-11)
3 - Press the button <PG>, the display shows the first function available on the menu.
4 - With the <+> or <-> button, select the function you want.
5 - Press the button <PG>, the display shows the value currently set for the function selected.
6 - With the <+> or <-> button, select the value you intend to assign to the function.
7 - Press the button <PG>, the display shows the signal "PRG" which indicates that programming has been completed.

8.2.2) PROGRAMMING NOTES

Simultaneously pressing <+> and <-> from inside a function menu allows you to return to the previous menu without making any changes. Hold down the <+> key or the <-> key to accelerate the increase/decrease of the values.
Hold down the <+> key or the <-> key to accelerate the increase/decrease of the values.
After waiting 120s the control unit quits programming mode and switches off the display.
When the board is switched on, the software version is displayed for around 5 sec
The pre-set logic functions and parameters are made taking account of a typical installation.

8.3) TESTING

- Check that the safety devices work correctly.
- Check the opening/closing forces at the points set out in EN 12445 with an appropriate instrument.
- If the forces are greater, install a safety device compliant with EN12978 (e.g. safety sensitive edge) and repeat the measurements.
- Check the correct setup of the operation logic and that the manual release works properly.

8.4) PARAMETERS, LOGICS AND SPECIAL FUNCTIONS

The following tables describe the functions available on the control unit.

MENU	8.4.1) PARAMETERS (PAr) FUNCTION	MIN-MAX-(Default)	MEMO
tcA	Automatic closing time. Enabled only with logic "TCA"=ON. At the end of the set time, the control unit commands a closing maneuver .	3-240-(40)	
tPEd	The passage left open by the gate leaf during the partial opening (pedestrian) is adjusted.	10-99-(50)	
FSto	The opening speed is adjusted. *	50-99-(99)	
FStc	The closing speed is adjusted. *	50-99-(99)	
SLdo	Adjusts the slowdown speed of sliding door during the opening phase* (Fig.10 -slow Open).	10-50-(25)	
SLdc	Adjusts the slowdown speed of sliding door during the closing phase * (Fig.11 -slow Close).	10-50-(25)	
tSMo	Sets the starting point of the slowdown during the opening phase (Fig.10- beginning of the slow Open). The value is expressed in percentage on the entire stroke. *	1-99-(20)	
tSMc	Sets the starting point of the slowdown during the closing phase (Fig.11- beginning of the slow Close). The value is expressed in percentage on the entire stroke. *	1-99-(20)	
PNo	Adjusts the motor torque applied to sliding door during the opening phase.	1-99-(20)	
PNc	Adjusts the motor torque applied to sliding door during the closing phase.	1-99-(20)	
PSo	Adjusts the motor torque applied to sliding door during the slowdown in opening phase (Fig.9 - Slow Open).	1-99-(20)	
PSc	Adjusts the motor torque applied to sliding door during the slowdown in closing phase (Fig.10 - Slow Close).	1-99-(20)	
bLc	Adjusts the stopping distance after the closing and opening limit switches have been intercepted. Function only active when deceleration is enabled. 0: Minimum deceleration distance 5: Maximum deceleration distance.	0-5-(2)	
tLS	Activation time of the courtesy light contact. Value expressed in seconds. At the beginning of each maneuver the contact latches for the set time. See the description of AUX1 parameter.	1-240 (60)	
t2ch	Activation time of AUX1/AUX outputs when set as a second radio channel. 0: Bistable output, the output status switches each time a command is received. 1-250: Switching time in seconds	0-250-(1s)	
AUX1	Sets the operating mode of the AUX1 output (N.O. contact) 0: SCA output (gate open indicator light). The light is off when the door is closed, flashes when the door is moving, is on when the door is open. 1: 2CH radio output. The output is controlled by the second radio channel of the built-in receiver (see RADIO menu) 2: courtesy light output (activation time is set by parameter TLS) 3: Zone light output. The contact closes for the duration of the manoeuvre and for the duration of the TCA, it only reopens when the gate is closed. **ATTENTION: LED lamps 24Vdc, due to the inrush current, cannot be connected directly to the AUX1/2 outputs, use a decoupling relay.** 4: accessory power supply output (for .photocell verification - coast, in combination with logics TST1-TST2-TST3) 5: flashing output 6: gate open alarm output (gate open for twice the set TCA time) 7: NC input alarm output or card error (NC=alarm not active, NO=alarm active)	0 -7 - (0)	
AUX2	Same settings as parameter AUX1 but referring to output AUX2 (N.O contact)	0-7 - (1)	

* ATTENTION: A WRONG SETTING OF THESE PARAMETERS CAN BE DANGEROUS.
RESPECT THE REGULATION IN FORCE!
Measure that impact forces comply with the values laid down in regulation en 12445. change, if necessary, the operating parameters and repeat the measurements.
Once you have manually modified the parameters SLDO/SLDC the controller performs a complete manoeuvre to learn the new parameters.

MENU	8.4.2) LOGICS (LoG) FUNCTION	ON-OFF-(Default)	MEMO
tcA	Enables or disables automatic closing On: automatic closing enabled Off: automatic closing disabled	(ON)	
IbL	Enables or disables condominium function. On: condominium function enabled. The step-by-step impulse or transmitter impulse has no effect during the opening phase. Off: condominium function disabled.	(OFF)	

IbcA	The multi-flat function is enabled or disabled during the TCA counting. On: the bloc of flat function is enabled. The Step-by-Step signal or the transmitter signal has no effect during the TCA counting. Off: the bloc of flat function is disabled.	(OFF)	
ScL	The rapid closure is enabled or disabled On: rapid closure is enabled. When the gate is open or moving, the photocell activation causes the automatic closure of the gate after 3 s. It is activated only with **tcA**:ON Off: rapid closure is disabled.	(OFF)	
PP	Selects the operating mode of the "Step by step button" and of the transmitter. On: Operation: OPEN > CLOSE > OPEN > Off: Operation: OPEN > STOP > CLOSE > STOP >	(OFF)	
PrE	Enables or disables pre-blinking. On: Pre-blinking enabled. Blinking is activated 3s before the motor starts. Off: Pre-blinking disabled.	(OFF)	
htr	Enabled or disables HOLD-TO-RUN function On: HOLD-TO-RUN function. The pressure of the OPENS/CLOSES button must be maintained throughout the entire manoeuvre. The opening of the STOP input stops the motor. All the safety inputs are deactivated. Off: Automatic/semiautomatic function	(OFF)	
cuAr	Enables or disables the cloned ARC transmitters. On: The transmitters of the AK series cloned from an already memorized ARC transmitter are enabled. Off: Cloned transmitters are not enabled.	(ON)	
LtcA	Selects the operating mode of the blinking light during the time TCA On: Blinking light on during TCA Off: Blinking light off during TCA	(OFF)	
oPPd	Enables OPEN input as Pedestrian input (Partial parameter TPED opening). On: OPEN input enabled as pedestrian input (PED). Off: No modification to the OPEN input	(OFF)	
tSt1	Enables or disables checking of photocells on PHOT input, active both in closing and in opening. On: Check enabled. If the check has a negative result, no manoeuvre is commanded. See Fig.23 - "PHOTO TEST". (AUX1=3) Off: Check of photocells each time a manoeuvre is disabled. This setting requires maintenance of photocells every 6 months.	(OFF)	
tSt2	Enables or disables the check of photocells on PHOT C input. On: Check enabled. If the check fails, no manoeuvre will be enabled. (AUX1=3) Off: Check of photocells each time a manoeuvre is disabled. This setting requires maintenance of photocells every 6 months.	(OFF)	
tSt3	Enables or disables the TEST of the COSTA (BAR) input. The activation of the TEST function is possible only with the use of the articles SC.RF and RF/RF.SUN, consult the specific instructions. On: Test enabled. If the test has a negative result, no operation is commanded. See Fig.2 - "BAR TEST". Off: Checking disabled.	(OFF)	
AoPF	The "forced opening in case of power cut-off" function is activated or deactivated (it can be activated only with connected and operating emergency batteries). On: Activated function. In the event of power failure, before the emergency battery completely discharged, the control unit causes an opening operation. The door remains open until the power supply is back. Off: Deactivated function.	(OFF)	
M Inu	The opening direction of the motor is selected: On: Right side motor mount Off: Left side motor mount (fig.20)	(OFF)	
rEM	Enables or disables remote radiotransmitters learning, as indicated in the paragraph "Remote transmitters learning". On: Remote learning enabled. Off: Remote learning not enabled.	(ON)	
ESA	Enables or disables the energy saving feature "ESA". On: once the opening or closing manoeuvre is completed, the control unit goes into the maximum energy efficiency condition, reducing absorption to a minimum, disconnecting the power transformer and the accessory outputs. Note: the ESA function is not activated if: - the battery charger board is being recharged - the AUX1 or AUX 2 logic is set to 0 and the door is open. - during the service light activation time if AUX1 or AUX 2:2. Off: Energy saving disabled. To be used if you wish to have the accessory power output always on, for example when using keyboards powered at 24 Vdc, or other devices that need to be powered at all times.	(ON)	

8.4.3) RADIO (rAd 1)	
MENU	**FUNZIONE**
PP	By selecting this function, the receiver goes in waiting (PUSh) for a transmitter code to assign to the step-step function. Press the key of the transmitter to assign to this function. If the code is valid, it is memorised and the message oH is displayed If the code is not valid, the message Err is displayed
2ch	By selecting this function, the receiver goes into waiting (PUSh) for a transmitter code to assign to the second radio channel. Press the key of the transmitter to assign to this function. If the code is valid, it is memorised ad the oH message is displayed If the code is not valid, the message Err is displayed.
PEd	When this function is selected, the receiver awaits (Push) a transmitter code to be assigned to the PED function. Press the transmitter key, which is to be assigned to this function. If the code is valid, it will be stored in memory and OK will be displayed. If the code is not valid, the Err message will be displayed.
ntH	By selecting this function the LCD screen shows the number of transmitters memorized into the receiver.
cLr	By selecting this function, the receiver goes into waiting (PUSh) for a transmitter code to erase from the memory. If the code is valid, it is erased and the message oH is displayed If the code is not valid or not present in memory, the message Err is displayed
rtr	Completely erases memory of the receiver. Confirmation of the operation is requested. By selecting this function the receiver goes into waiting (PUSh) for a new PGM pressure to confirm the operation. At end of erasing the oH message is displayed

8.4.4) CYCLES NUMBER (nMAn)
Displays the number of complete cycles (open+close) carried out by the automation. When the <PG> button is pressed for the first time, it displays the first 4 figures, the second time it shows the last 4. Example <PG> 00 12 >>> <PG> 3456: made 123.456 cycles.

8.4.5) MAINTENANCE CYCLES (MAc 1)
This function enables to activate the maintenance request notice after a number of manoeuvres determined by the installer. To activate and select the number of manoeuvres, proceed as follows: Press button <PG>, the display will show OFF, which indicated that the function is disabled (default value). With the buttons <+> and <-> select one of the numeric values proposed (from OFF to 100). The values are intended as hundreds of cycles of manoeuvres (for example: the value 50 indicates 5000 manoeuvres). Press the OK button to activate the function. The display will show the message ProG. The maintenance request is indicated to the user by keeping the indicator lamp lit up for other 10 sec after the conclusion of the opening or closing operation.

8.4.6) RESET (rES)
RESET of the control unit. ATTENTION!: Returns the control unit to the default values. Pressing the <PG> button for the first time causes blinking of the letters rES, pressing the <PG> button again resets the control unit. Note: The transmitters are not erased from the receiver nor is the access password and the configuration of synchronism. All the logics and all the parameters are brought back to default values, it is therefore necessary to repeat the autoset procedure.

8.4.7) AUTOSET (Auto)
This function sets the optimal functioning values of the installation, at the end of the procedure, it sets the average values of torque (PMO/PMC and PSO/PSC). To carry out the AUTOSET, proceed as follow: a) Make sure that during the autoset there is no obstacle is in the maneuver area, if necessary, fence off the area so that persons, animals, cars, etc., cannot interrupt the procedure. **During the autoset phase, the anti-crushing function is not active, while the activation of inputs and safety devices generates an error. (paragraph 8.10)** b) select the function AUTO and press PG. c) the control unit waits the confirmation to start the procedure "AUTO" FLASHING. d) press PG to start the AUTOSET procedure. The control unit performs few maneuvers for the stroke learning and the configuration of the parameters. In case that the procedure is not successful the message ERR will be shown. Repeat the procedure after checking the wirings and the possible presence of obstacles.

8.4.8) PASSWORD (codE)

It allows to type in an access protection code to the programming of the control unit.
A four-character alphanumeric code can be typed in by using the numbers from 0 to 9 and the letters A-B-C-D-E-F.
The default value is 0000 (four zeros) and shows the absence of a protection code.
While typing in the code, this operation can be cancelled at any moment by pressing keys + and – simultaneously. Once the password is typed in, it is possible to act on the control unit by entering and exiting the programming mode for around 10 minutes in order to allow adjustments and tests on functions.
By replacing the 0000 code with any other code, the protection of the control unit is enabled, thus preventing the access to any other menu. If a protection code is to be typed in, proceed as follows:
- select the Code menu and press OK.
- the code 0000 is shown, also in the case a protection code has been previously typed in.
- the value of the flashing character can be changed with keys + and -.
- press OK to confirm the flashing character, then confirm the following one.
- after typing in the 4 characters, a confirmation message "CONF" appears.
- after a few seconds, the code 0000 appears again
- the previously stored protection code must be reconfirmed in order to avoid any accidental typing in.
If the code corresponds to the previous one, a confirmation message "oH" appears.
The control unit automatically exits the programming phase. To gain access to the Menus again, the stored protection code must be typed in.
IMPORTANT: TAKE NOTE of the protection code and KEEP IT IN A SAFE PLACE for future maintenance operations.
To remove a code from a protected control unit it is necessary to enter into programming with the password and bring the code back to the 0000 default value.
IF YOU LOOSE THE CODE, PLEASE CONTACT THE AUTHORISED SERVICE CENTER FOR THE TOTAL RESET OF THE CONTROL UNIT.

8.4.9) SYNCHRONIZATION (bU5)

MENU	FUNCTION
Id	Sets the synchronizing number. It is possible to set a numeric value from 0 to 16. If the ID parameter is to 0 the control unit is set as MASTER, all the other values set the door as SLAVE.
Loc	Allows a door set as SLAVE to receive local commands. See paragraph 8.5 "SYNCHRONIZATION OF TWO OPPOSITE SLIDING DOORS"

8.5) SYNCHRONISATION OF TWO OPPOSITE SLIDING DOORS

It is possible to manage a system composed of two sliding doors by using for each CP.B24-D120 the specific optional control unit SIS, which must be plugged into the appropriate connector as shown in Fig. 21.
Each SIS unit must be connected to the other one by means of 3 wires by 0,5 sq.mm each, as shown in Fig.21.
One of the control unit must be set as MASTER (ID=0) and the other one as SLAVE (ID=1).
All the commands (given by transmitters, push buttons or safety devices) received by the MASTER sliding door are sent to the SLAVE sliding door, which will replicate instantaneously the behavior of the MASTER.
The logic LOC can be set in two ways:
ON: the SLAVE sliding door can accept a local command and execute an opening/closing maneuver with no effect on the MASTER sliding door.
OFF: the SLAVE sliding door do not accept any local command and so it will replicate exclusively the behavior of the MASTER sliding door.
A SLAVE sliding door *with LOC set to ON can be useful in case it is occasionally necessary the partial opening of a passage which is usually managed by two synchronized doors, since that a step by step command (or OPEN/CLOSE) given to the SLAVE will have effect only on this last one, while all the other commands given to the MASTER will be replicated by the SLAVE.*
The connection of the safety devices (photocells, safety edges, etc.) can be done indifferently to the MASTER unit or to the SLAVE.

8.6) TRANSMITTERS REMOTE LEARNING

If an already memorised transmitter is available in the receiver it is possible to carry out remote radio learning (without needing to access the control unit).
IMPORTANT: the procedure must be carried out with door open.The logic REM must be ON.
Proceed as follows:
1 Press the hidden key of the transmitter which is already memorised.
2 Press, within 5s, the key of the corresponding transmitter which is already memorised to associate to the new transmitter. The flashing light will turn on.
3 Press within 10s the hidden key of the new transmitter.
4 Press, within 5s, the key of the new transmitter to associate to the channel chosen at point 2. The flashing light will turn off.
5 The receiver memorised the new transmitter and immediately exits from programming.
Note*: function not enabled with TO.GO 2/4 AK*

8.7) FUSES

F1 =T4A - General protection fuse

8.8) BACK UP BATTERIES

The CP.B24-D120 control panel is equipped with built-in battery chargers to handle in series two 12V 2.1 Ah DA.BT2 batteries (optional - fig. 19) that allow the operation of the automation even in the case of temporary absence of mains power supply.
During normal mains operation, the card charges the batteries.
The maximum charge current is 1A, the average charge current is 300mA. (respect the polarity).
Charging time with 2.1Ah mod. DA.BT2 batteries: about 3h.
Number of cycles with charged battery for a 4m/600kg gate: about 20.

8.9) DIAGNOSTICS
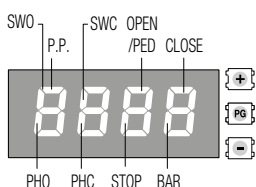
DL 1: Control panel CP.B24-D120 properly powered - Program operating/Control panel programmed.
To each input is associated a line of the LCD screen which in case of activation it turns on according to the following diagram.
The N.C. inputs are represented by vertical lines.
The N.O. inputs are represented by horizontal lines.

SW0 P.P. SWC OPEN/PED CLOSE
+ PG -
PHO PHC STOP BAR

8.10) ERROR MESSAGES

Some messages that are displayed in case of function anomalies are listed as follows:

Err	Generic AUTOSET error	Repeat procedure.
Econ	Modbus error	Communication error between SIS modules, check connections.
ESUo ESUc	Limit switch error in AUTOSET	The limit switch was not intercepted during the autoset phase.
Err1	Motor error Check motor connections	Motor disconnected or not operating. Problem on control unit.
Err2	Photocells check error	Photocells check failed, check connections and configuration.
Err8	INPUTS ACTIVATION Error	Activation of an input (START/OPEN/CLOSE/PED) or one of the buttons (+/-/PG) during the Autoset phase. Repeat the procedure.
AMP	Amperometric sensor alert	Check for obstacles or friction.
thrM	Thermal sensor alert	Overheating due to permanent obstacles. Unlock the gate and check for friction points.
ouLd	Overload	Exceeding the maximum power. Check motor or presence of friction.
bAr	BAR input tripping during manoeuvring	

9) MAINTENANCE

The following table is used to record maintenance operations, improvement or repair works carried out by the expert engineer.

Date _	Engineer's Signature _	Stamp
Description of operation _		

Date _	Engineer's Signature _	Stamp
Description of operation _		

Date _	Engineer's Signature _	Stamp
Description of operation _		

Date _	Engineer's Signature _	Stamp
Description of operation _		

Date _	Engineer's Signature _	Stamp
Description of operation _		

Date _	Engineer's Signature _	Stamp
Description of operation _		