DOOR DRIVE MANUAL

SDS© Drive

• DC-PWM
• BRUSHLESS

Firmware version
01.03.011

safety in motion™

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RISK ASSESSMENTS

Taking into account, during all project planning, the Risk Assessments relating to:

For motors:

- *B105AALX - DC - GR63x55-SG120*
- *B105AANX - DC - GR63x25-80K*

a. **RISKS OF MECHANICAL HAZARDS**
- *Squeezing during operations*
- *Squeezing after Trapping caused by friction (glass panels)*
- *Cuts caused by sharp edges, or static sharp pieces*

b. **RISKS OF ELECTRICAL HAZARDS**
- *Persons in contact with energized parts (direct contact)*
- *Persons in contact with parts that become energized due to a fault (indirect contact)*

c. **RISKS OF OVERHEATING**
d. **RISKS GENERATED BY NOISE**
e. **RISKS GENERATED BY VIBRATION**
f. **RISKS GENERATED BY MATERIALS AND SUBSTANCES**

Safety advice

Hard Hat   Safety Shoes   Protective Gloves   Protective Glasses
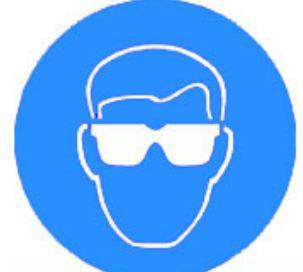
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1   WHAT IS THE SEMATIC DRIVE SYSTEM©?
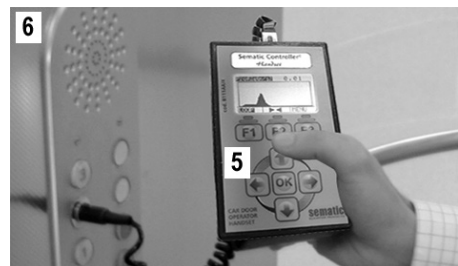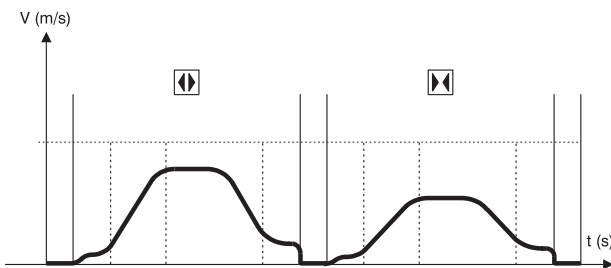
The System consists of:
- *a Car Door Operator (1)*
- *a microprocessor-based Door Controller (2)*

The Sematic Drive System© automatically controls the opening and closing of the lift doors, monitoring the timing, current variations, speeds (high, low, acceleration and deceleration curves), various safety systems (reversing system, Limited Door Reversal etc.) and faults (high voltage, signal failure, …).

There are two independent speed curve profiles for the opening and closing cycles (3) which can be modified by means of the door controller push buttons or by means of the Sematic handset (an optional 8 digit keypad and display accessory which can be connected to the card by an RJ45 plug).

The handset (4) is a key pad that allows viewing and modification of the function parameters stored in the controller.
It is important to use the Sematic handset for installation or maintenance, as it enables viewing and/or variation of the controller parameters, systems, and operation errors.

Furthermore, it is possible to use the Sematic handset directly from the inside of the car (5).
Making it possible to monitor and modify the door operating parameters from a completely safe position, and also to control the movement of the coupled car and landing doors during their effective operating cycle.

Note: the pictures on this document are examples only; real components appearances may differ according to supplied configuration of door operator and motor.

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1.1   SPEED PROFILE

Opening cycle

O1	Opening acceleration
O2	Opening high speed
O3	Opening deceleration

Closing cycle

C1	Closing acceleration
C2	Closing high speed
C3	Closing deceleration
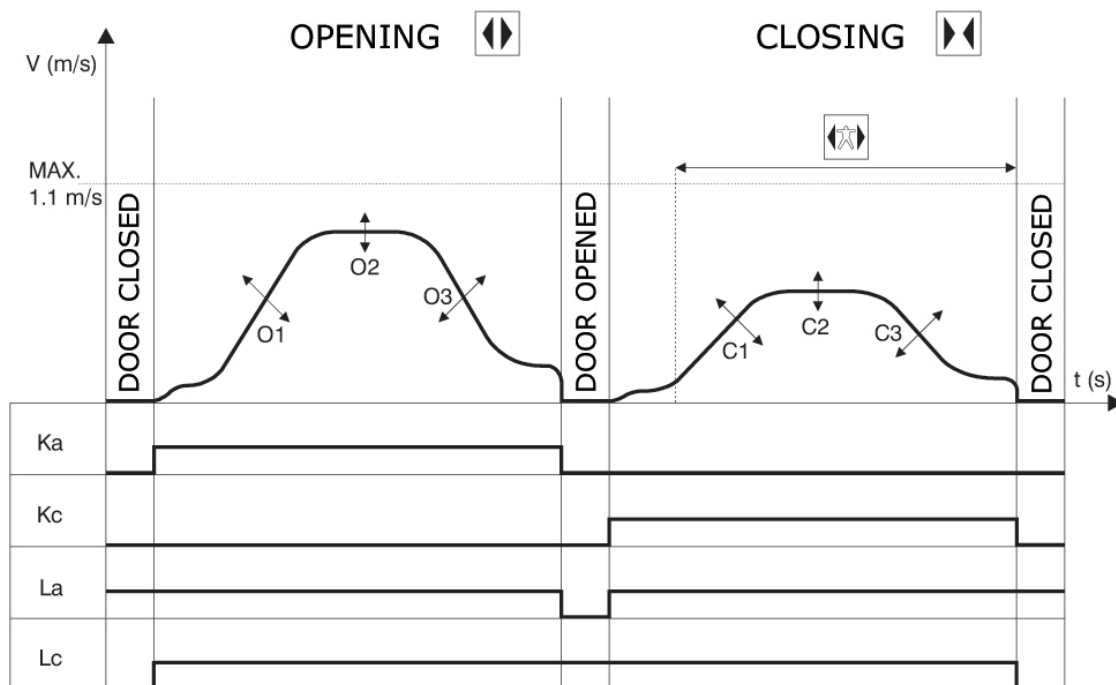
Legenda

Ka	Door opening
Kc	Door closing
La	Open Limit
Lc	Close limit
▶◀	Closing cycle
⟨⋈⟩	Active reversing system
◀▶	Opening cycle

Warning: for big size doors (for example total moving mass over 400 Kg) it's advisable not to modify the pre-set closing high-speed factory default, according to EN81 standard (closing kinetic energy limitations).

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1.2   DEFAULT PROFILES (PARAM. CODE 33)

This parameter allows to select one of the five default speed profiles (50%= low performance; 100% = standard performance, 150% = high performance).
The default speed profile parameter only affect the panels movement

0 -> 50%	3 -> 125%
1 -> 75%	4 -> 150%
2 -> 100%	

1.3   TECHNICAL INFORMATION SEMATIC DRIVE SYSTEM© (DC-PWM)

MAIN SUPPLY VOLTAGE	90-290 Vac (115 V-20%, 230V+26%), 50-60 Hz
TYPICAL POWER CONSUMPTION	200 VA
PEAK POWER CONSUMPTION	300 VA
MOTOR OVERLOAD PROTECTION	@In <15 minutes @2In <3 minutes
OPERATIONAL TEMPERATURE RANGE	from -10°C to +60°C
HUMIDITY	non-condensing between 20% and 80%
PROTECTION	rapid cartridge fuse [5x20, 4 A, R/C JDYX2] battery fuse [5x20, 8 A, R/C JDYX2]
PERFORMANCE SPEED	separately adjustable for opening and closing
REVERSAL SENSITIVITY	Variable, only operational on door closing cycle

Suitable for use on a circuit capable of delivering not more than 5000 Arms, symmetrical Amperes, 240 V AC maximum

1.4   OVERVIEW OF THE CONNECTIONS AND PLUGS
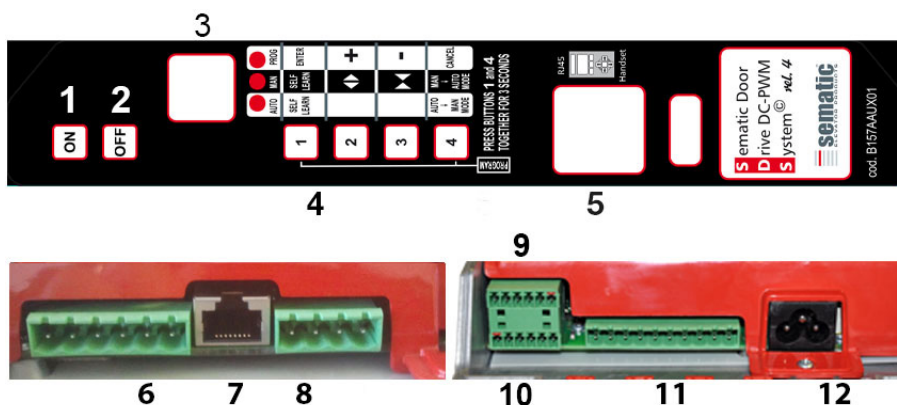
N°	Description
1	Switch ON
2	Switch OFF
3	Display

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N°	Description
4	Keypad buttons
5	RJ45 Connection port (Handset)
6	6 poles motor connector (cod. E066AARX-05)
7	RJ45 Connection port (Motor optical Encoder)
8	Light curtain/detector input connector (cod. E066AARX-06)
9	6 poles Main Lift Controller signals connector (cod. E066AARX-03)
10	6 poles Main Lift Controller signals connector (cod. E066AARX-04)
11	10 poles Main Lift Controller signals connector (cod. E066AARX-07)
12	3 poles Main power supply connector

Sematic Drive System© setup incoming/outgoing signals from the door controller
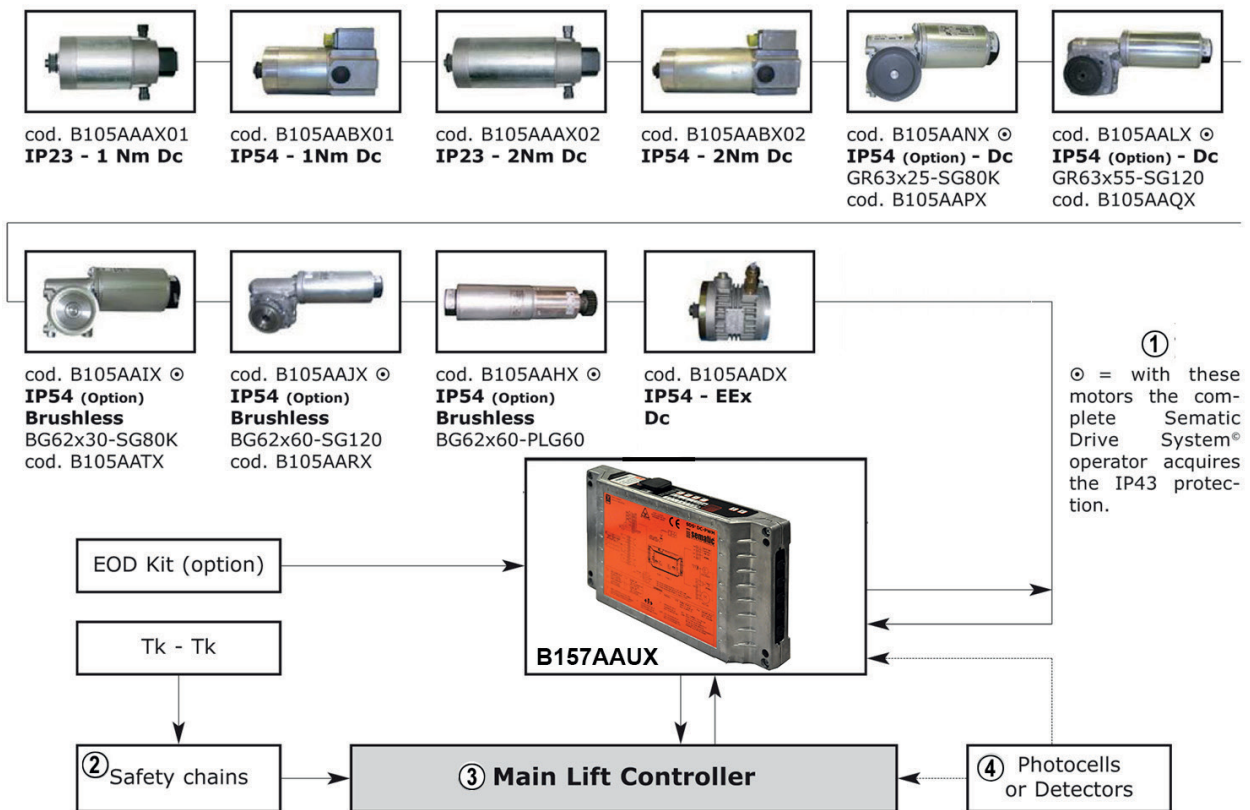
1	= with these motors the complete Sematic Drive System© operator acquires the IP43 protection.
2	Safety chains
3	Main Lift Controller
4	Photocells or Detectors

- *For the Door Operator mechanical installation refer to the "Installation and maintenance of Sematic doors" manual.*
- *The door controller is supplied already mounted on the operator (not applicable for C-MOD door model). All the connections between the door controller and the motor are pre-wired at Sematic. In order to prevent possible damage to the wiring cables by coming into contact with the drive belt, they are fixed to the header as shown in the following image.*

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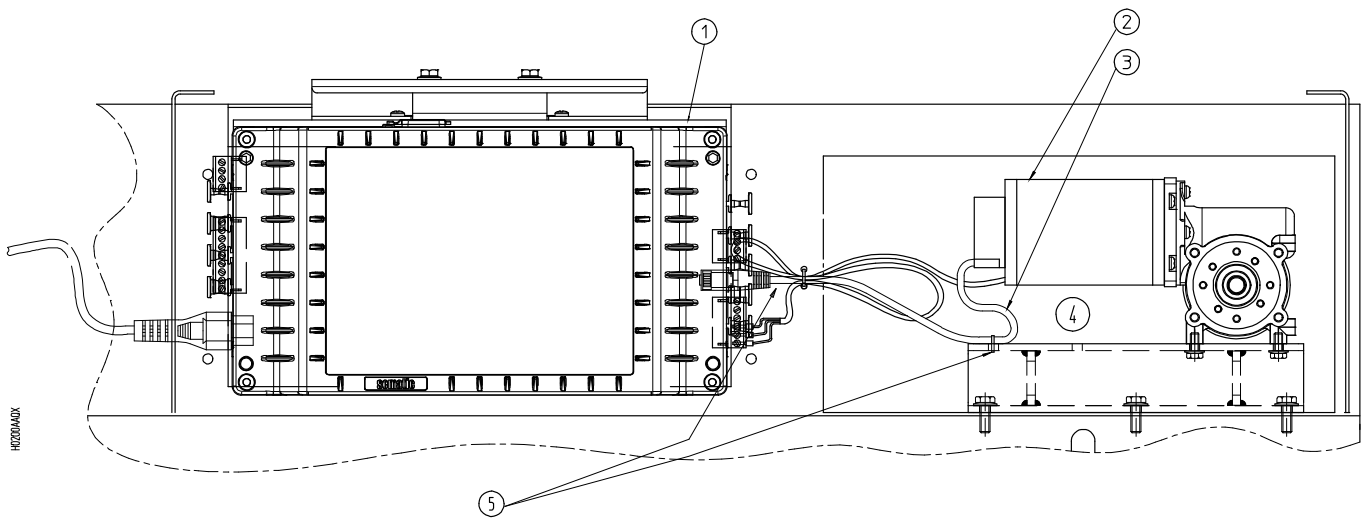
1	Sematic Drive System	2	Motor	3	Encoder cable
4	Rear view	5	Ensure cables are clamp fix		

Note: *In case of motor replacement be sure to bind the excess cable lenght as above pictured, to avoid any contact of the motor cable with the driving belt.*

Warning: to avoid possible induced currents within field wiring, it is recommended to shield the Ka and Kc signals (connector pins 3, 5 and 15) with grounded, shielded cables.
Changes made to the factory wiring length or position can damage the EMC system characteristics and is not recommended.

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2 SEMATIC DRIVE SYSTEM© CONNECTIONS

2.1 SEMATIC DRIVE SYSTEM© (DC-PWM) CONNECTIONS
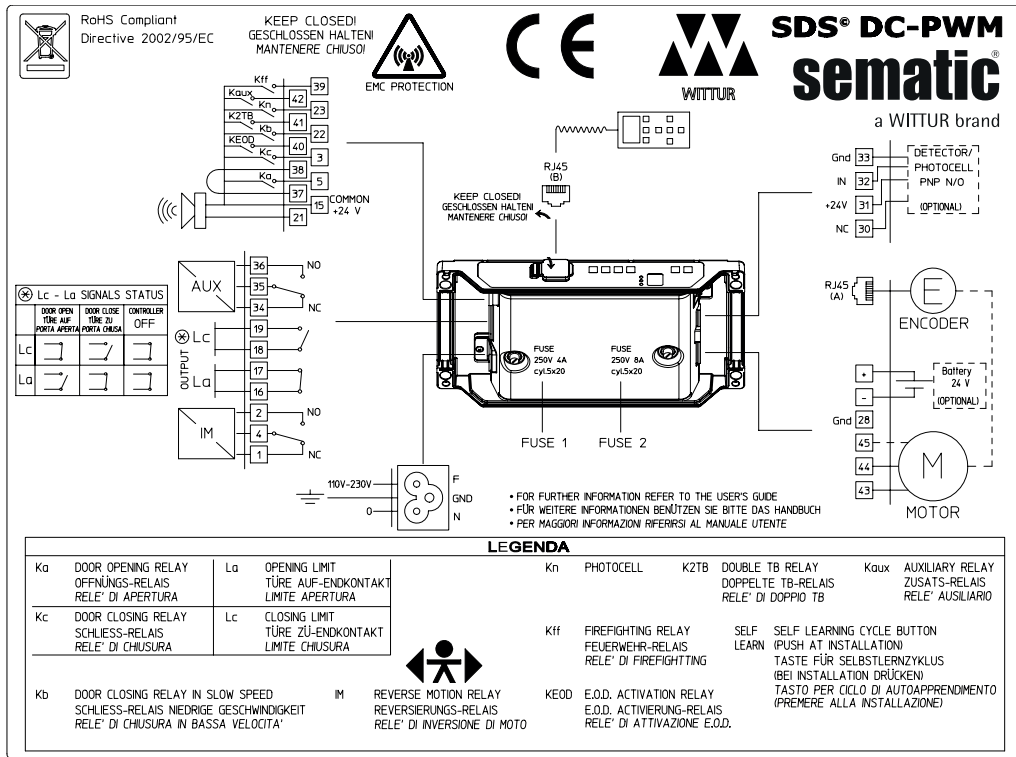
2.2 SEMATIC DRIVE SYSTEM© (BRUSHLESS) CONNECTIONS

*.
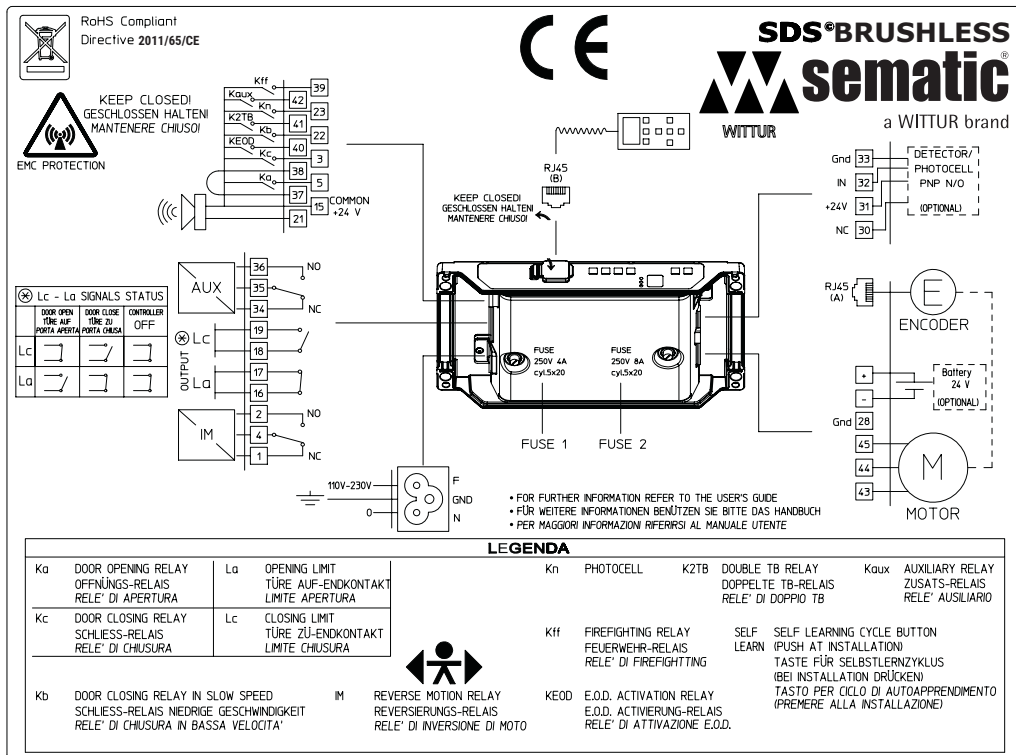
• For 230V **single phase** connection please connect F (phase) N (neutral) and GND (ground)

Field wiring terminal marking in accordance with UL508A

Terminals number	Connection mode	Typer of connections	Wiring conductor type	Wiring temperature rating	Tightening torque	Wire size AWG UL/CUL
6	Clamp connection	Load (motor power)	Use Copper Conductors Only	60°C (140°f)	Not Required	Max 18 Min 20
7	Plug type	Motor encoder	Use Copper Conductors Only	Not Required	Not Required	Not Required
8	Tightening screw	24Vcc Detector/ Photocell power supply and control circuit	Use Copper Conductors Only	Not Required	Max 0,6 Nm Min 0,5Nm	Max 12 Min 30
6	Tightening screw	24Vdc battery power supply	Use Copper Conductors Only	Not Required	Max 0,6 Nm Min 0,5Nm	Max 12 Min 30
9	Tightening screw	Control circuit	Copper Conductors Only	Not Required	Max 0,6 Nm Min 0,5Nm	Max 14 Min 30
10	Tightening screw			Not Required	Max 0,6 Nm Min 0,5Nm	Max 12 Min 30
11	Tightening screw		Use Copper Conductors Only	Not Required	Max 0,6 Nm Min 0,5Nm	Max 12 Min 30
12	Clamp connection	Main power supply voltage	Flexible cord in agreement with **UL category code ZJCZ**. "Use Copper Conductors Only" For use on a solid grounded Wye source only	60°C (140°f)	Not Required	Max 12 Min 18

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2.3   SIGNALS TO/FROM THE DOOR CONTROLLER

INCOMING SIGNALS FROM THE DOOR CONTROLLER				
Signal	**Command**	**Connector Pins**	**Contact type & normal state**	**Note**
Ka	Opening control (coming from the Main Lift Controller)	5-15	These connections require dry (voltage free) contacts (contact open when inactive)	This signal is generated by dry (voltage free) Form C contacts (relay within the Door Controller) and is activated only when either a mechanical obstacle (excessive force) prevents the doors from closing/opening, or a signal is received from an external safety device that is connected to the door controller. It is used to signal the main lift controller to interrupt the door close command and give a door open signal. Contact rating: 3A 250Vac 30Vdc
Kc	Closing control (coming from the Main Lift Controller)	3-15	These connections require dry (voltage free) contacts (contact open when inactive)	
Kb	Forced closing control at low speed	15-22	These connections require dry (voltage free) contacts (contact open when inactive)	The main lift controller may signal the forced closing when the photocell (or similar device) shall be made inoperative due to a failure, or after several door closing failures
Kn	Re-opening control	15-23	These connections require dry (voltage free) contacts (both logics available)	
Kff	Fire-Fighting Contact	15-39	These connections require dry (voltage free) contacts (contact open when inactive)	
K2TB	Contact	15-41	These connections require dry (voltage free) contacts (contact open when inactive)	This signal allows the door controller to recognize different door opening widths in the same lift installation. Given this signal, the opening and closing operations are carried out referring to an alternative TB (door width recorded by an additional self-learning cycle).
RJ45 (A)	Encoder signals	Connector RJ45	Factory prewired connector	
KEOD	Contact	15-40	These connections require dry (voltage free) contacts (contact open when inactive)	This connection is to signal the use of the Sematic E.O.D. Emergency Opening Device to the Door controller
Handset (Optional)		Connector RJ45 (B)		
Kaux	Auxliary contact	15-42	These connections require dry (voltage free) contacts (contact open when inactive)	Not yet implemented

Note: Sematic Drive System© controller may be used also with incoming signal from the Main Lift Controller with voltage range between 6 and 24 Vdc.
To use this feature:
- *Remove the shunt between 37-38 connector pins*
- *Connect the 38 connector pin at the 0V DC external incoming signal Power supply*

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OUTGOING SIGNALS FROM THE DOOR CONTROLLER				
Signal	Command	Connector Pins	Contact type & Normal state	Notes
La	Opening limit switch contact	16-17	These connections provide dry (voltage free) contact.	The contact is open when the door is fully open. Contact rating: 3A 250Vac 30Vdc
Lc	Closing limit switch contact	18-19	These connections provide dry (voltage free) contact.	The contact is open when the door is fully closed. Contact rating: 3A 250Vac 30Vdc
IM	Reversing system signal	1-4	These connections provide dry (voltage free) contact. (contact normally closed)	This signal is generated by dry (voltage free) Form C contacts (relay within the Door Controller) and is activated only when either a mechanical obstacle (excessive force) prevents the doors from closing/opening, or a signal is received from an external safety device that is connected to the door controller. It is used to signal the main lift controller to interrupt the door close command and give a door open signal. Contact rating: 3A 250Vac 30Vdc
		2-4	(contact normally open)	
AUX	Auxliary autput signal	34-35	These connections provide dry (voltage free) contact. (contact normally open	These contacts can be used to signal that a particular (pre-set) door opening distance has been achieved, or as a Gong or Buzzer while the door is opening or as a Thermic alarm signal. Contact rating: 3A 250Vac 30Vdc.
		35-36	(contact normally closed)	
Motor		43-44-45	Factory-prewired connector	
Acoustic alarm (BUZZER) Optional		15-21	These connections provide a 24Vdc, 100ma contact. Contact is open when not active.	

2.4 DETECTOR/PHOTOCELL/BARRIERS: SIGNAL-ONLY CONNECTION TO THE DOOR CONTROLLER (DIRECT CONNECTION)

This connection requires a dry (voltage free) external relay contact connected to the Door Controller Connector pins 15 & 23.

If desired, it is possible to connect the single output signal from a photocell (or similar device) formed by a voltage free contact, so that the door controller will directly receive the command to re-open.

The photocell (or similar device) has therefore an independent power supply and sends only its outgoing signal to the Sematic Drive System© controller.

Reopening is operated according to the REVERSING SYSTEM, LIMITED DOOR REVERSAL EFFECT and PROTECTIVE DEVICE LOGIC settings (see sections **"6.3.1 Reversing System choice: Internal or External (Param. Code 00)" a pag. 27**, **"6.4.1 Main Lift Controller Test (Param. Code 01)" a pag. 28**, **"6.5.5 Protective Device Logic Kn (Param. Code 21)" a pag. 30**).

NOTE: This connection method does not provide for Door Controller interaction with Fire Service Operation. The Main Lift Controller must be arranged to either interrupt the signal from the Detector/Photocell/Barrier, or to interrupt the power supply of the Detector/Photocell/Barrier as required under Fire Service Operation (Fire Fighting).

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2.5 DETECTOR/PHOTOCELL/BARRIERS: COMPLETE CONNECTION TO THE DOOR CONTROLLER

Complete Connection means that the device draws its power supply from and sends the re-open signal directly and only to the Sematic Drive System© controller.

It is possible to have the complete connection of detectors or photocells with a 24 Vdc max 100 mA supply and a PNP N/O or N/C output, through the connector pins:
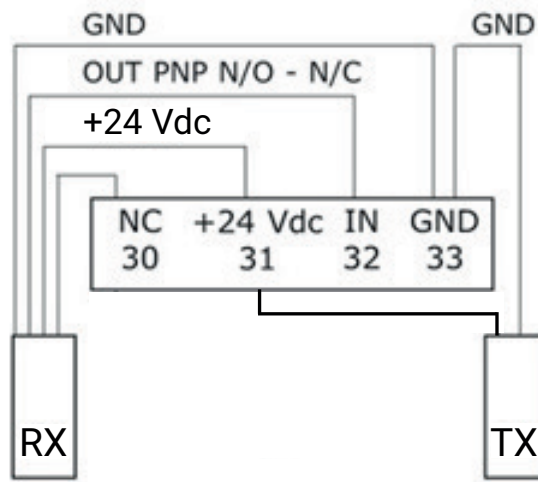
33	ground connector pin
32	PNP N/O or N/C signal from detector/photocell/barrier
31	Vdc power supply to detector/photocell/barrier
30	dummy free connector pin (it can be used as a dummy connector for connection between the detectors system components).

The operating reopening modes depend upon the setting of the REVERSING SYSTEM, LIMITED DOOR REVERSAL EFFECT and PROTECTIVE DEVICE LOGIC settings.

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3 HMI

3.1 HMI FUNCTION TABLE

MODE		NORMAL	MANUAL	PROGRAMMING
MODE Description		Automatic mode (DD checks EC command)	Manual mode (local commands)	Programming mode
	AUTO	ON	OFF	OFF
	MAN	OFF	ON	OFF
	PROG	OFF	OFF	ON
	1	Change to programming mode (pressed 1+4 for <3s)	-	ENTER Enter in parameter value or save parameter value
	2	-	Open door	+ increase parameter index or parameter value
	3	-	Close door	- decrease parameter index or parameter value
	4	Change to manual mode (pressed for <1s) Change to programming mode (pressed 1+4 for <3s)	return to AUTO mode (pressed for <1s)	ESC exit from programming mode or exit from parameter selection
		This is the default mode after controller reset or power-on All the inputs are active in this mode	All the signals coming fromEC are ignored	Parameter selection: "P" alternate to the index is flashing on the display

3.2 HMI DISPLAY TABLE

Displayed symbol	Display status	Description
"- -"	blinking	DD is waiting for a command in intermediate door position
"oP"	blinking	Door di opening
"oP"	fixed	Door is open
"CL"	blinking	Door is closing
"CL"	fixed	Door is closed
"SL"	blinking	Self-learning for door is active
"IM"	blinking	The IM output is active
"AL" + alarm code	blinking	The alarm code reported is active

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4   HANDSET TOOL

4.1   HANDSET KEYS

KEY	DESCRIPTION
F1	Meaning is described in every menu on the display
F2	Meaning is described in every menu on the display
F3	Meaning is described in every menu on the display
↑	Scroll the menu list from bottom to top/Increase parameter value
↓	Scroll the menu list from top to bottom/Decrease parameter value
<--	Select previous parameter
-->	Select next parameter
OK	Confirm menu selection/Save parameter value

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4.2   USER HANDSET MENUS AND SUBMENUS

1   DOOR CONFIGURATION

1.1	DOOR OPERATOR SET-UP	1.1.1	PC26 SKATE TYPE
		1.1.2	PC90 MOTOR
		1.1.3	PC22 CLOSING ROTATION
		1.1.4	PC05 CAR DOOR LOCK. DEVICE
		1.1.5	PC06 GLAZED DOORS
		1.1.6	PC33 SPEED PROFILES
		1.1.7	PC99 I/O INTERFACE (**)
1.2	SELF-LEARNING		
1.3	REVERSING SYSTEM	3.1	PC00 REVERS. SYSTEM CHOICE
		3.2	PC34 IM SIGNAL TYPE

2   MAINTENANCE

2.1	MONITOR
2.2	MLC MONITOR
2.3	RESET SPEED PROFILES (PC70)
2.4	LAST ALARMS
2.5	ALARMS COUNTERS
2.6	DATA DOWNLOAD
2.7	DATA UPLOAD
2.8	STATISTICS
2.9	SOFTWARE UPGRADES

(*) **3   ADVANCED SETTINGS**

3.1	PARAMETERS	3.1.1	MLC PARAMETERS	PC01 MLC TEST
				PC02 NO MLC SIGNAL
				PC03 MLC INPUT ALARM
		3.1.2	INPUTS PARAMETERS	PC04 KN INPUT
				PC21 PROTECTIVE DEV. LOGIC
				PC32 AUX IN
				PC27 KB OPTIONS
				PC19 FIRE FIGHTING OPTIONS
				PC20 EOD TIMEOUT
				PC47 TIMEOUT DETECTOR FAIL
		3.1.3	OUTPUTS PARAMETERS	PC07 AUX RELAY OUT
				PC37 LA OUT WITH NO COMMAND
				PC38 LA THRESHOLD
		3.1.4	PC25 CLOSED PARKING MODE	
		3.1.5	PC 49 CL EVACUATION DELAY	
				PC50 SKATE OPENING OFFSET
		3.1.5	REDUCED SPEED	
		3.1.6	CL RESET CURRENT	
		3.1.7	REVERS. SYSTEM SPACE	
		3.1.8	SERIAL BUS SETTINGS	
		3.1.9	PC24 SMOOTH REOPENING	
		3.1.10	PC36 MAX POWER OP	
		3.1.11	PC39 SOFT DEGRADATION OP	
		3.1.12	PC43 PARK OP NO TORQUE	
		3.1.13	PC44 PARK CL LOW TORQUE TRESHOLD	
				PC45 PARK CL LOW TORQUE DELAY
3.2	OPENING PARAMETERS	3.2.1	PC11 LOW START SPEED	
		3.2.2	ACCELERATION START	
		3.2.3	ACCELERATION	
		3.2.4	PC10 HIGH SPEED	
		3.2.5	PC62 OFFSET DECELERATION	
		3.2.6	DECELERATION	
		3.2.7	PC64 LOW SPEED	
		3.2.8	FITTINGS	
		3.2.9	MAX CURRENT	
		3.2.10	MAX REST CURRENT	
		3.2.11	MIN REST CURRENT	
3.3	CLOSING PARAMETERS	3.3.1	LOW START SPEED	
		3.3.2	DECELERATION STOP	
		3.3.3	ACCELERATION	
		3.3.4	PC13 HIGH SPEED	
		3.3.5	PC63 OFFSET DECELERATION	
		3.3.6	DECELERATION	
		3.3.7	PC14 LOW SPEED	
		3.3.8	FITTINGS	
		3.3.9	MAX CURRENT	
		3.3.10	MAX REST CURRENT	
		3.3.11	MIN REST CURRENT	
3.4	REVERSING SYSTEM	3.4.1	PC00 REVERS. SYSTEM CHOICE	
		3.4.2	PC34 IM SIGNAL TYPE	
		3.4.3	PC42 FSET SELF-TUNING	
		3.4.4	PC09 REVERS. FORCE SETTING	
		3.4.5	PC48 % OP FORCE LIMITER	
		3.4.6	P51 REVERS. OFFSET SETTINGS	
3.9	CHANGE PASSWORD			
3.10	RESERVED AREA (current menu)			

(***)

(*) Access to advanced options with user PASSWORD
(**) (***) The parameter PC99 is reachable with the Sematic password

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4.3   SELF LEARNING PROCEDURE WITH HANDSET

Important!
It can only be activated manually and must be carried out under direct supervision of maintenance personnel so that they may check that the operation is correctly completed.

Self learning procedure

Step	Action	Result	Note
1	Press the red button	Power the system	
2	Press the ON/OFF button	The controller is ready	If there are any closing or opening signals from the main lift controller, the operator will perform the relevant reset cycle in low speed up to the end run limit
3	Insert the RJ45 in the controller	The handset is connected	
4	Using keys ⬆ and ⬇ in the MAIN MENU, choose DOOR CONFIGURATION and then press OK	You are in the DOOR CONFIGURATION menu	
5	Select SELF LEARNING and press OK	The door controller perform the self learning procedure	If the operator is not on a closing position use key F2 (><) to allow the door to complete a closing cycle in low speed
6	Push key F2 (<>)	The door performs a complete opening cycle in low speed	During this operation please check carefully that the operator completes its total expected travel.
7	NO ACTION	At the end of the opening cycle the self-learning cycle is completed. This will be signalled with the information "Self-learning completed".	
8	Press the "OK" key to choose the option "Spped profiles"		
9	Press key F1 (EXIT) to restore the "main menu"		

⚠️ In case of problems, please refer to troubleshooting

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5   PARAMETERS

5.1 PROGRAMMING MODE "PROG"

- *When the Door Controller is working in "programming mode" the "PROG" red led is on whereas the other two red leds are off.*
- *Press contemporaneously Key 1 and Key 4 for few seconds to enter the programming mode. The display on the Door Controller will show "P" and "00" flashing alternately.*
- *When the Door Controller is in the programming mode, all signals coming from the main lift controller and from the external devices (barriers, photocells,...) are ignored.*
- *The parameter to be modified is selected by means of the increasing and decreasing KEYs, respectively the buttons 2 and 3; this parameter is then confirmed by pushing the key 1, ENTER.*
- *After confirming the parameter to be modified, the display shows the relevant numeric value.*
- *Modify the chosen parameter using the key 2, increase, and 3, decrease, and confirm the changes by pressing key 1 ENTER.*
- *At the end of the necessary configurations, using the key 4 press to select the required operating mode (manual "MAN" or automatic "AUTO").*

The following table contains the available parameters, the relevant codes, the description and the allowed modification range:

Codice param.	Default	Parameter	Range	Note
00	00	Reversing system choice	00, 01, 02	00-> Internal 01-> External - Moving 02-> External - Moving + Parking
01	00	Main Lift Controller Test	00, 01, 02	00-> When moving 01-> Moving + Parking 02-> Off
02	00	No MLC signal	00, 01, 02	00 -> Instant Stop 01 -> Low Speed to Stop 02 -> Low Speed Cycle
03	00	MLC Input Alarm	00, 01	00 -> Off 01 -> On
04	00	Kn Input	00, 01, 02	00 -> Default 01 -> Limited door reversal 02 -> Safety edge
05	00	Car door locking device	00, 01	00 -> Off 01 -> On
06	00	Glass doors and heavy doors	00, 01	00 -> Off 01 -> On
07	03	Aux Output Relay	00, 01, 02, 03, 04	00 -> Off 01 -> Gong While opening 02 -> Space percentage 03 -> Alarm signal 04 -> Master <-> Slave SWS
08	50	Space Percentage (Percentage of the available space to operate the AUX relay)	00...99	00..99% (00 = closing limit)
09	49	Reversing force setting	00...99	110-150 N (110-135 N U.S. version)
10	50	Opening High Speed	01...99	with PC 33=02
11	50	Opening Low Speed	01...99	with PC 33=02
12	80	Opening "comfort"	01...99	with PC 33=02
13	35	Closing High Speed	01...99	with PC 33=02
14	16	Closing Low Speed	01...99	with PC 33=02
15	99	Closing "comfort"	01...99	with PC 33=02
16	-	Not Used	-	
17	-	Not Used	-	

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18	-	Not Used	-	
19	01	Fire Fighting Mode	00, 01	00 -> Reversing system Off 01 -> Reversing System reduced sensitivity
20	01	Timeout EOD	00 --> 05 minutes	Opening time on EOD contact (minutes)
21	00	Protective Device Logic Kn	00, 01	00 -> N/O, on obstruction closed 01 -> N/C, on obstruction open
22	00	Closing Rotation	00, 01	00 -> Clockwise 01 -> Anti-clockwise
23	70	% Partial reopening	01...99	
24	00	Smooth reopening	00...01	00 -> Off 01 -> On
25	00	Closed parking mode	00, 01	00 -> Closed skate parking 01 -> Opened skate parking
26	01	Skate Type	00, 01, 02	00 -> Standard (STD) skate 01 -> Expansion (EXP) skate 02 -> Expansion (EXP-B) skate
27	01	KB options	00, 01	00 -> Rev. Sense OFF 01 -> Rev. Sense ON
29	-	Not Used	-	
32	00	Aux In	00, 01, 02	00 -> Off 01 -> % Partial reopening (See Param. codes 23) 02 -> Antifinger-trap device
33	02	Default Profile	00, 01, 02, 03, 04	00 -> 50% 01 ->75% 02 -> 100% 03 -> 125% 04 -> 150%
34	00	IM signal type	00, 01, 02	00 -> IM pulse 01 -> IM continuous 02 -> Monostable pulse
36	00	Max power Op	00, 01	00 -> Off 01 -> On
37	01	LA out with NO command	00, 01	00 -> Off 01 -> On
38	25	LA Threshold	05...40	
39	00	Soft Degradation OP	00, 01	00 -> Off 01 -> On
42	01	Fset Autoregulation	00,01	00 -> Off 01 -> On
43	00	Park OP No torque	00,01	00 -> Off 01 -> On
44	02 (for std skate) 07 (for exp skate)	Parl CL low torque thr.	01...10	01 = 1 mm 10 = 10 mm
45	60	Park CL low torque delay	05...240	05 = 5 sec 240 = 240 sec
47	30	Timeout detector fail	00...99 sec	00 --> Function disabled 01...99 --> Function enabled and timeout active
48	90	% OP force limiter	00...99%	00 --> Function disabled 01..99 -> Function enabled and opening force limiter active (included IM activation)

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49	10	CL evacuation delay	00...99 sec	00 --> Function disabled 01...99 --> Function enabled and timeout active
50	00	Skate opening offset	-50 ... +50mm	If PC49=00 --> Function disabled If PC49 = 01 ...99 --> Function enabled and the opening space is influenced by the "Skate space" and the PC50 values setted as described below. Below is reported the setting available: PC50 --> -50...0 --> to decrease the skate opening space PC50 --> 0...+ 50 --> to increase the skate opening space
51	10	Rev. offset settings	00...20	0=0% 10=100% 20=200%
62	00	Offset deceleration OP	-50...+50	
63	00	Offset deceleration CI	-50...+50	
64	14	Low speed end OP	00...99	
70		Reset speed profile		Press button 1 to confirm
90	00	Motor	00, 01, 02, 03, 04, 12, 13, 14, 15, 16, 20, 21, 22, 23	00->auto 01->B105AAXX01 02->B105AAXX02 03->DC-PWM 5 40V 04->DC PWM 5 30V 12->B105AANX 13->B105AALX 14->B105AAJX (Brushless) 15->B105AAHX (Brushless) 16->B105AAIX (Brushless) 20->B105AAWX 21->B105AAYX 22->B105AAZX 23->B105AAXX

5.2 VERIFY THE CORRECT WORKING OF THE CONTROLLER SDS

In order to verify if the controller is broken or not please follow the instruction below:

INSTRUCTIONS:
1. *Remove all the connections to the controller including the power supply.*
2. *Verify the controller power supply fuse.* **Note***: Eventually replace the fuse.*
3. *Connect only the power supply cable*
4. *Verify, that after switching ON the controller by the key ON, the controller disply will light* **"/- -/"** *after 5 seconds*
5. *Switch OFF the controller and connect the motor and the encoder*
6. *Switch ON and verify the display lighting*
7. *Press key 4 to enter in MAN mode (led MAN switch on).*
8. *Press key 2 and 3 to verify the partial motor movement (partial opening and closing movement).* **Note***: In case of alarm or loss of movement try to connect another motor with encoder (only the connection, do not replace it initially on the door and repeat from point 5 to point 8. If the new motor works correctly replace the motor on the door.*

CHECK: CONTROLLER NOT DEFECTIVE

5.3 RESET SPEED PROFILE PROCEDURE

9. *Verify that after switching ON the controller by the key ON, the controller display will show "/- -/" after 5 seconds*
10. *Press contemporaneously Key 1 and Key 4 for a few seconds to enter PROGRAMMING MODE. The display on the Door Controller will show "P" and "00" flashing alternately.*
11. *When the Door Controller is working in PROGRAMMING MODE the "PROG" red led is on while the other two red leds are off.*
12. *When the Door Controller is in PROGRAMMING MODE, all signals coming from the main lift controller and from the external devices (barriers, photocells, ...) are ignored.*
13. *Choose parameter 70 increasing or decreasing the value shown on the display through keys 2 and 3 respectively; to confirm the parameter press key 1, ENTER.*
14. *The display will automatically restart in approximately 7 seconds and the SDS controller will get back in AUTO mode, ready to work.*
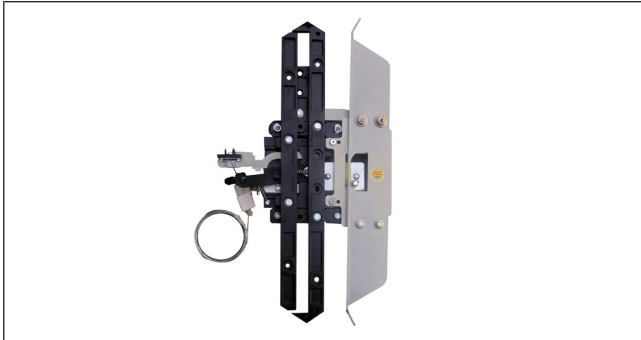
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6   FUNCTIONS

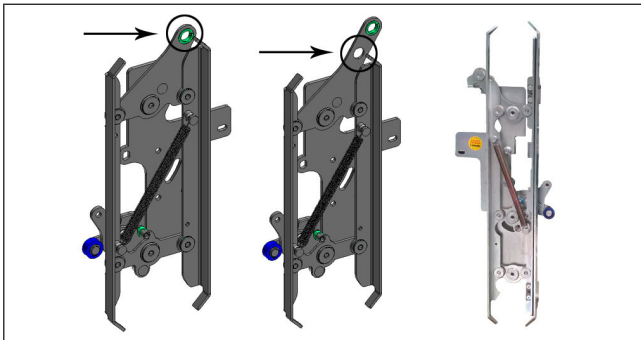## 6.1   DOOR CONFIGURATION

6.1.1 Skate type (Param. Code 26)

This function allows the user to set the skate type:
- *Standard (STD) skate: the speed profile setting are optimized for the Sematic standard ALU skate type.*
- *Expansion (EXP and EXP-B) skate: the speed profile setting are optimized for the Sematic 2000 US Expansion skate type.*
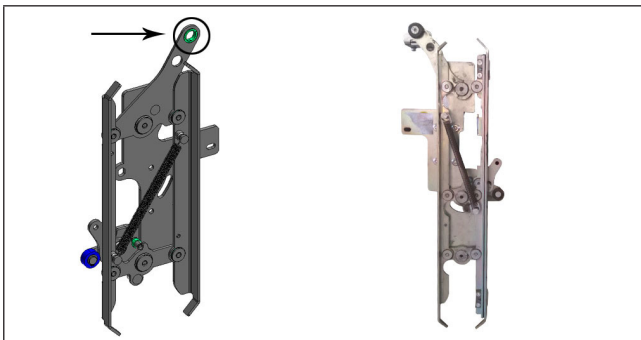

00 - **STD Skate (Aluminium skate)**

01 - **EXP Skate**
Use this setting when you have a single hole in the upper fixing plate (left picture) or you have two holes and you are connecting the belt to the lower one (right picture)

02 - **EXP Skate-B**
Use this setting when you have two holes in the upper fixing plate and you are connecting the belt to the upper one
Note: Skate space= 0,130m; acceleration start Op=0,135m; deceleration stop Cp=0,135m.To be set manually (handset)

Setting a different skate type means telling the controller that different opening dimensions have to be used (20mm std, 90mm exp and 120 mm exp type B) and this allows correct operation in opening and closing cycles.

6.1.2 Motor type (param. code 90)

Sematic Drive System rel. 3 door controller may be used with different motors (DC, Brushless or Brushless Plus). The door controller automatically recognizes as default the connected motor type, DC - PWM B105AANX, B105AALX, B105AAXX01/02.
For the rest of the motor is possible to manually choose the motor type from the complete Sematic list of motors.

6.1.3 Motor Rotation during closing (Param. Code 22)

This parameter sets the closing rotation verse: its default value (0) means that the motor turns clockwise during door closing cycle; the alternative value (1) means that the motor turns anti-clockwise during door closing cycle.

6.1.4 Car Door Locking Device (USA = Restrictor) (Param. Code 05)

This option must be set when the optional car door locking device is installed. This function provides for proper operation with the car door locking device.
00 -> Off (without car door lockig device)
01 -> On (with car door lockig device)

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6.1.5 Full or framed Glazed and Heavy Paneled Doors (GLASS AND HEAVY DOORS) (Param. Code 06)

In presence of car and landing door with Glazed Paneled Doors, this feature must be activated. When active, the Opening High Speed as additional featurevalue is restricted to conform to EN81-1/2 Standard, 7.2.3.6.d. and 8.6.7.5.d.

Note: activate this option also with heavy doors paneled applications:
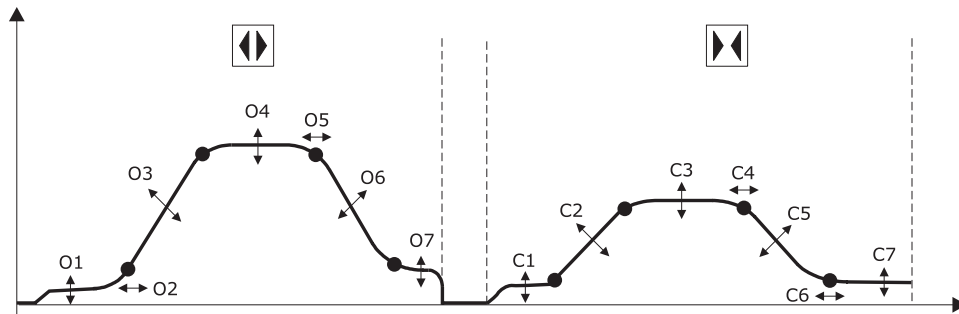00 -> Off (function disable)
01 -> On (function able)
Pc 33=00/01/02
Vmax Op=0,5 m/s

6.2   OPENING/CLOSING PARAMETERS

The following diagram shows the correspondance between speed profiles and available parameters:

01 - Low start speed	C1 - Low start speed
02 - Accelleration start	C2 - Accelleration start
03 - Accelleration	C3 - Accelleration
04 - High speed	C4 - High speed
05 - Offset deceleration	C5 - Offset deceleration
06 - Deceleration	C6 - Deceleration
07 - Low speed	C7 - Low speed

Advance Setting				
	STANDARD DOORS		HEAVY DOORS	
Opening Parameters*	ExP. A Type	ExP. B Type	ExP. A Type	ExP. B Type
Low start speed	0,10 m/s	0,10 m/s	0,10 m/s	0,10 m/s
Acceleration start	0,09 m	0,110 m	0,9 m	0,110 m
Acceleration	1 m/s2	1 m/s2	1 m/s2	1 m/s2
High Speed	0,55 m/s	0,55 m/s	0,5 m/s	0,5 m/s
Offset Deceleration	0 m	0 m	0 m	0 m
Deceleration	0,5 m/s2	0,5 m/s2	0,5 m/s2	0,5 m/s2
Low Speed	0,045 m/s	0,045 m/s	0,045 m/s	0,045 m/s
Fittings	80%	80%	80%	80%

Closing Parameters*	ExP. A Type	ExP. B Type	ExP. A Type	ExP. B Type
Low start speed	0,10 m/s	0,10 m/s	0,10 m/s	0,10 m/s
Deceleration Stop	0,095 m	0,125 m	0,100 m	0,125 m
Acceleration	0,3 m/s2	0,3 m/s2	0,3 m/s2	0,3 m/s2

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High Speed	0,24 m/s	0,24 m/s	0,24 m/s	0,24 m/s
Offset Deceleration	0 m	0 m	0 m	0 m
Deceleration	0,2 m/s2	0,2 m/s2	0,2 m/s2	0,2 m/s2
Low Speed	0,048 m/s	0,048 m/s	0,048 m/s	0,048 m/s
Fittings	99%	99%	99%	99%

*-> DEFAULT PROFILES=100%

6.3 REVERSING

6.3.1 Reversing System choice: Internal or External (Param. Code 00)

If the reversing system is internal, the reopening of the doors due to obstacle detection is solely controlled by the Door Controller and door reopening is signalled to the main lift controller through the IM contacts (1, 4 contacts normally closed, 2, 4 contacts normally open).
If the reversing system is external-MOVING, the Door Controller signals, through the IM contacts, the presence of an obstacle to the main lift controller, which in turn must signals the re-opening command using Ka. The IM signal is present up to the complete reopening of the doors.
If the main lift controller does not give the re-opening signal during the doors movement, the Door Controller commands a low-speed closure.
If the doors are completely open and an obstacle is present, the door controller does not allow the door to close until a Kb (forced closing) is given from the main lift controller.
If the reversing system is external-MOVING + PARKING, the Door Controller signals, through the IM contacts, the presence of an obstacle to the main lift controller, which in turn must signals the re-opening command using Ka. The IM signal is present up to the complete reopening of the doors.
If the main lift controller does not give the re-opening signal, the Door Controller commands a low-speed closure.
If the doors are completely open and an obstacle is present, the door controller allows to close the door if a Kb (forced closing) is given from the main lift controller. If a Kc closing signal is given from the main lift controller, the door controller commands a low-speed closure and shows a "Reversing system fault"

6.3.2 IM (reversing motion) signal type (Param. Code 34)

This parameter allow to choose 3 different signals to manage the IM (reversing motion) coming from external to main lift controller:

6.3.2.1 *Im pulse.*

The IM (reversing motion) is active until KA (door opening relay) arrive from MLC (main lift controller).

6.3.2.2 *IM Continuous*

IM (reversing motion) is active up to the end of complete opening of a doors LA (contact limit open doors).

6.3.2.3 *Monostable pulse (default)*

IM (inversion of movement) is active only for a preset time of 0.5 [sec]. After this time interval the output is disabled.

6.3.3 Reversing system force setting (Param. Code 09)

The reverse motion torque parameter sets the sensitivity degree to detect an obstacle during the door closure, thus giving the reopening command. The parameter's value can be manually set.
Please note that a lower sensitivity corresponds to higher values and vice versa.

6.3.4 Reversing system offset (Param. code 51)

The set value represents the size of the space (expressed as a percentage) for disabling the "Reversing" function. By decreasing the percentage (values < 100%) the controller is able to improve the reactivity of the system in reversing situations even with obstacles with small dimensions, in order to let inoperative the IM/KSKB signal in the last 20mm of closing gap (EN81-20 section 5.3.6.2.2.1 b)

6.3.5 Fset self tuning (Param. Code 42)

Fset with Parameter 42 Off (00)
- The value can be set within the Fmax and Fmin range
- The value will remain stable during time
- Always perform a measure of closing force with a suitable equipment in case of Fset value set out of the limits foreseen by regulation.

Fset with Parameter 42 On (01)
- The value can be set within the Fmax and Fmin range
- Fset valuewill adjust automatically during time to reach the maximum sensibility
Note 1: Back to "Reversing force setting" menu you can notice that the set value is changed
Note 2: If necessary you can decrease the sensibility increasing Fmin value parameter (only with handset)
- Always perform a measure of closing force with a suitable equipment in case of Fset value set out of the limits foreseen by regulation.

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6.3.6 OBSTACLE DETECTION IN OPENING DIRECTION

The obstacle detection in opening direction is performed by two separate modules:
1.Door blocked detection
2.Opening force limiter
The door blocked detection is ALWAYS active during normal opening, from door CLOSED to 25mm from door open.
If the door is blocked during opening for at least 0.5s, the door blocked condition is activated and the reversing event is generated.
The opening force limiter is implemented according EN81-20 to recognized obstacle higher than 150N in opening direction. For a correct behavior the parameter P-1C has to be active before the execution of the learning procedure.
When additional force higher then 150N is applied during normal opening, a reversing event is generated.

Management of the reversing event:
-IM output is activated for 0.5s
-A back-step of 20mm is performed in closing direction, and a successive delay of 1s with blocked door
-If the opening command is still active, the opening movement will restart.
-If a closing command is activated from EC, the closing movement will start immediately, without the execution of the back-step

6.3.7 OBSTACLE DETECTION IN CLOSING DIRECTION

The obstacle detection in closing direction is performed by two separate modules:
1.Door blocked detection
2.Closing force limiter
The door blocked detection is ALWAYS active during normal closing, from door OPEN to 10mm from door CLOSED.
If the door is blocked during closing for at least 0.5s, the door blocked condition is activated and the reversing event is generated.
The closing force limiter is implemented to recognized obstacle higher than 150N in closing direction. This module is active from ¾ door open to 10mm from door CLOSED.
When additional force higher then 150N is applied during normal closing, a reversing event is generated.

Management of the reversing event:
-IM output is activated for 0.5s
-A back-step of 20mm is performed in opening direction, and a successive delay of 1s with blocked door
-If the closing command is still active, the closing movement will restart.
-If an opening command is activated from EC, the re-opening movement will start immediately, without the execution of the back-step

6.3.8 OP Force Limiter (Parameter Code 48)

This parameter allows to set the sensitivity degree to detect an obstacle during the opening.
The parameter can be manually set in order to satisfy the EN 81-20 section 5.3.6.2.2.1 h opening force limiter at max 150N as follow reported :
- If the set value is 00% ,the opening force limiter is disabled
- If the set value is from 01 to 99% ,the opening force limiter is enabled and the opening force reacts as follow:
Max open force = 99%
Min open force =01%

In case of obstacle which block the opening for at least 0,5s the door controller reacts stopping the door opening activates the IM signal and then
- If opening command remains active the door automatically recloses appox.20mm (back-step) and wait 1s before to restart the opening (safe function for Antifinger trap)
- If opening command is removed and closing command is active the door recloses immediately

Additional note:
- The IM signal activation reacts accordingly to the "Reversing system choice" and "IM signal type" parameters
- The opening force limiter is active for all door configuration (not only glass door) and during all the panel opening excluded at max last 40mm

6.4   MLC PARAMETERS

6.4.1 Main Lift Controller Test (Param. Code 01)

When set to "OFF" selection (no Main Lift Controller Test), a simple impulse of signal Ka or Kc from the Main Lift Controller is sufficient to produce door movement; the signal is stored by the Door Controller which will complete the required movement even if the main lift controller signal fails. The impulse width must be at least 400ms in duration.
When the Main Lift Controller Test is set to "When Moving" (default setting) or set to "Moving + Parking", the operation is as described in the next two sections.

6.4.1.1   *Main Lift Controller Test (when moving) [default setting]*

When this parameter is set to "WHEN MOVING", the Door Controller checks for the Ka or Kc signal coming from the main lift controller only during the door movement (Ka signal during the opening cycle, Kc signal during the closing cycle). At the end of the movement, which can be detected through the La and Lc signals, respectively Door Open and Door Closed, it is possible to remove the signal that has controlled the movement, without the Door Controller detecting this as failure.
For this setting, the main lift controller must be equipped with 2 relays: 1 for the opening command, and 1 for the closing command.

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The Door Controller checks for continuous presence of the Ka and Kc signals coming from the main lift controller.

The Door Controller detects signal drops exceeding 200ms; this is interpreted as NO MLC Signal alarm if the relevant parameter MAIN LIFT CONTROLLER TEST is set on "WHEN MOVING".

In case of signal failure, the Door Controller acts as described in the parameter setting NO MLC SIGNAL.

6.4.1.2   *Main Lift Controller Test (when moving + parking)*

If the main lift controller test is set to MOVING+PARKING, the Door Controller checks for the Ka or Kc signals coming from the main lift controller both during movement (Ka signal during the opening cycle, Kc signal during the closing cycle) and during parking (Ka signal while opening, Kc signal while closing).
This test setting should only be applied for main lift controllers that are equipped with just 1 relay to command both opening and closing.

The Door Controller detects signal drops exceeding 200ms; this is interpreted as NO MAIN LIFT CONTROLLER Input alarm if the relevant parameter MAIN LIFT CONTROLLER TEST is set on "MOVING+PARKING".
In case of signal failure, the Door Controller acts as described in the parameter setting NO MAIN LIFT CONTROLLER SIGNAL.

6.4.1.3   *Main Lift Controller Input Alarm (Param. Code 03)*

This option allows the installer to choose to consider or not to consider a recorded fault the case that the door controller detects the signal failure, both Ka and Kc, when the Main Lift Controller Test is activated.
00 -> Off (function disable)
01 -> On (function able)

6.4.2 No MLC Signal (Param. Code 02)

This submenu is not available if the parameter MAIN LIFT CONTROLLER TEST is set to "off".
If the Main lift controller test is set either to "When Moving" or to "When Moving+Parking" this menu allows the selection of the Door Controller behaviour that must be adopted in case of signal loss or failure of the main lift controller.
The following 3 options are available:

6.4.2.1   *Instant Stop*

If the "INSTANT STOP" option is activated (default setting), the door controller stops the door movement.

6.4.2.2   *Low Speed to Stop*

If the "Low Speed to Stop" option is activated, the door controller switches to low speed until completion of the interrupted movement.

6.4.2.3   *Low Speed Cycle*

If the parameter NO MLC SIGNAL is set on "LOw SPEED CYCLE":
*   *If the doors are opening or fully opened, the door controller operates the buzzer output, it stays open for a time then closes at low speed;*
*   *If the doors are closing but not fully closed, the door controller operates the buzzer output, reverses direction, opens fully and stays open for a time then closes at low speed;*
*   *If the doors are closed, the doors will stay in the closed position, and the buzzer is operated for a short time.*
*   *The buzzer will be de-activated upon door closed.*

6.4.3 Main Lift Controller Input Alarm (Param. Code 03)

This option allows the installer to choose to consider or not to consider a recorded fault the case that the door controller detects the signal failure, both Ka and Kc, when the Main Lift Controller Test is activated.
00 -> Off (function disable)
01 -> On (function able)

6.5   INPUT PARAMETERS

6.5.1 KN Input

6.5.1.1   *Default type.*

With light photocells or light curtains directly connected to the controller, in case an obstacle is detected the door open completely. The inversion motion signal IM (reversing motion) is being sent by the controller to the main lift controller until the doors are fully open.

6.5.1.2   *Limited door reversal.*

This option allow a partial reopening of the doors when an obstacle has been detected by means of optoelectronic ,traditional or proximity door protection devices. The door re-opening only for the time during witch the obstacle is detected and not necessarily up to open limit. IM (reversing motion) signal is sent to the lift controller as long as the obstacle is present.

6.5.1.3   *Safety edge.*

Safety edge and mechanical detection systems are directly connected to the Kn contact ,the controller manages the emergency door reopening. The IM(reversing motion) is being sent by the controller to the main lift controller and depends by the parameter IM (REVERSING MOTION) SIGNAL TYPE. Please change the following values only for special purposes, otherwise leave default values.

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- *KN Disable Threshold Start CL (Default value=0,000m): this value sets the space in which RSE signal is disabled at the beginning of door closing*
- *KN Disable Threshold End CL (Default value=0,050m): this value sets the space in which RSE signal is disabled at the end of door closing*

6.5.2 KB Options (Param. Code 27)

This function allow IM activation during the door closing in low speed with KB/VRVRT command active.

6.5.2.1 *Rev. Sense On*

IM/KSKB active

> *Precondition for the correct IM/KSKB activation:*
> *- SDS power ON (not after power restart procedure)*
> *- Pc 27 = 01*
> *- KB = ON*
> *- Detector interruption / closing force Fset overcoming / Kn activation*

IM can be activated during the closing in low speed if:
- *The reopening force exceed the FSET*
- *KN (closing edge) input activation*
- *Photocel activation if it's connect in the Detector INPUT*

After the SDS restart in case of closing with KB the IM can not activate.

6.5.3 Timeout detector fail (Parameter Code 47)

This parameter allows to set the door controller reaction in case of lightcurtain failure or permanent obstructed whlie the door is opened.
The parameter can be manually set in order to satisfy the EN81-20 section 5.3.6.2.2.1. b)4 as follow reported:
- If the set value is 00sec the function is disabled
- If the set value is from 01sec to 99sec after the timeout expiration setted and only if the closing command is active the door close in Reduced Speed (Kinetic energy <4J) with the Buzzer ON

Additional note:
-While the door is opened every closing command (KC) on --> off transition means the restert of the timeout procedure

6.5.4 AUX Input (Param. Code 32)

This parameter allow the choose of the possible options:

6.5.4.1 *Disabled (default)*

In this case the door controller implement a complete door opening after a opening command.

6.5.4.2 *% Partial Reopening*

In this case is active the " partial opening" of a door (set in percentage) for a particular plan or with a control key. The "Aux Input" is able and the controller open the door (after the open command) until to percentage of self-learning space

6.5.4.3 *Antifinger trap device*

In case of signal activation the door stops the opening and execute smallback-step in closing. The closing contnues only in the signal remains active.

6.5.5 Protective Device Logic Kn (Param. Code 21)

This parameter sets the logic on the protective device input Kn (Photocells, optical barrier...); its default value (0) means that the contact is open in normal condition and it is closed to signal the presence of an obstacle; the alternative value (1) reverses the logic, i.e. the contact is closed in normal conditions and it opens to signal the presence of an obstacle.

> [CS:Grassetto:[9:WARNING]: [CS:Corsivo:if the selected logic is Kn N/C on obstruction open (contact opens to signal the presence of an obstacle) and is used only one protective device input ([1:15-23] terminals for photocells, **30-31-32-33** terminals for direct connection of protective barriers), the other input must be shorted. For example if N/C logic protective barriers are connected to **31-32-33** terminals, **23** and **15** terminals must be shorted; if N/C logic photocells are connected to **23** and **15** terminals, **31** and **32** terminal must be shorted].

6.5.6 Fire Fighting (Param. Code 19)

The FIRE FIGHTING option is possible for specific installations where the main lift controller contains the applicable functions.
For operative details of the complete lift installation, refer to the following standards:
- *BS5588: Part 5: 1991*
- *EN81-72: 2003*
- *ASME A17.1: 2000*
- *AS-1735.1: 2003*

The Fire Fighting option has a dedicated input, Kff.

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When Kff switches from OPEN to CLOSED the directly or completely connected light barriers or similar devices are ignored, as these are assumed to be devices which may be affected by smoke or heat due to fire conditions; the reopening system can be set to either ignore mechanical obstacle (parameter 19 = 0) or to have its sensitivity reduced (parameter 19 = 1).

Warning: the default setting is "reduced sensitivity" (parameter 19 = 1). Change of this parameter is according to customer's choice, following careful assessments and check of the standards required in the Country of installation.

At the end of the first closing cycle the main lift controller takes the car to the Fire Fighters' access floor, if it is not already there. [CS:Corsivo:The Sematic Drive System[4:©] Door Controller operates only on signals coming from the main lift controller. Even during the opening cycle it is possible to reverse the movement by deactivating the Ka signal and activating the Kc signal].

The Main lift controller must steadily monitor the continuous pressure of the car push-buttons (open door and floor call push-buttons), performed by the Fireman controlling the installation.
During a closing cycle, the release of the floor call push-button must release the Kc signal, insert the Ka signal and cancel the call.
During an opening cycle, the release of the door opening push-button must release the Ka signal and insert the Kc signal.
At the end of the closing or opening run (detectable through the Lc and La signals respectively) the main lift controller can detect the release of the floor call or open door push buttons without inserting the Ka and Kc signals respectively; the door controller will wait for a new control signal.

Important! *Other systems that interface with the Car Door Operator reversing functions (e.g. optical barriers/photocells etc.) which are operated by the main lift controller and which may be affected by smoke or heat should be deactivated by the main lift controller itself.*

6.5.7 E.O.D. (Emergency Opening Device) and timeout (Param. Code 20)

In an emergency situation such as a main power supply failure, it may be beneficial that when the car is aligned with landing doors (inside the lock release zone) they open automatically, remain open for a set time, and then close, all with normal opening/closing speed profiles. According to this requirement Sematic offers to its Customers as an extra option the Sematic E.O.D. (Emergency Opening Device).
When the Sematic Drive System© controller is powered by battery, the KEOD input allows a signal to open the doors at the proper time, when the car is brought to a designated escape floor. After set disactivation, (see parameter 20 disactivation time E.O.D.) the controller closes the doors, in order to save battery life.
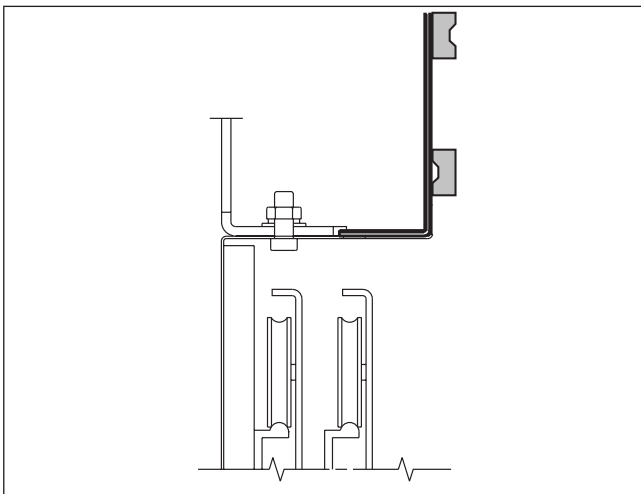
A magnetic switch (option), mounted on the Door Operator by Sematic, is connected to the 15-40 connectors and is operated by magnets (option) mounted on the designed emergency landing door by means of a special support plate (see drawing). This signal allows the door controller to open the doors. Please refer to the specific instruction Sematic 301-036-000 "**BATTERY KIT AND ACTIVATOR FOR AUTOMATIC EMERGENCY OPENING DEVICE (SEMATIC EOD) FOR SEMATIC DRIVE SYSTEM**© **rel. 3**"

6.6   OUTPUT PARAMETERS

6.6.1 Aux Output Relay (Param. Code 07)

This option can be used to signal the achievement of a particular opening distance (pre-set) or as Gong while opening (device not supplied by Sematic). **Note**: default setting: 03 -> Alarm signal

6.6.1.1   *Space Percentage*

If set, this option allows the Aux Output Relay contacts to send a signal during door opening that relates to a pre-set distance percentage (in comparison to the total door opening) and a signal during the door closing up to the same opening percentage.

6.6.1.2   *Gong While Opening*

If set, this option allows the Aux Output Relay contacts to send a signal during the door opening (to a device not supplied by Sematic).

6.6.1.3   *Alarm signal*

If set, this option allows the Aux Output Relay contacts to send a signal during any protection alarm presence.
This option allows to send the AUX signal to the elevator control in case the motor temperature exceed a certain limit.
The signal is disabled when a proper condition is restored.

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OVERTEMPERATURE MANAGEMENT

The motor temperature is estimated from the door drive with an i2T algorithm. The door drive temperature is measured from the door drive with an internal probe.
The AUX output is activated as following:
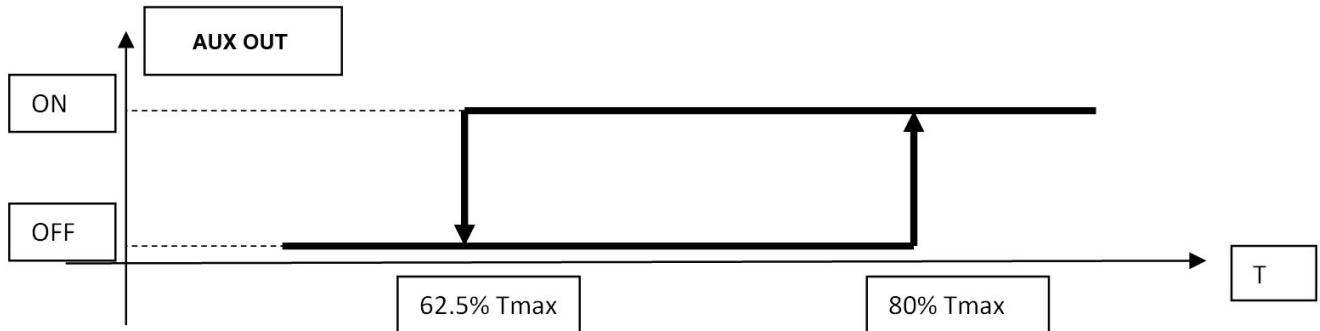
The over-temperature conditions are divided into two threshold to permit the normal reaction from the EC, as reported below:
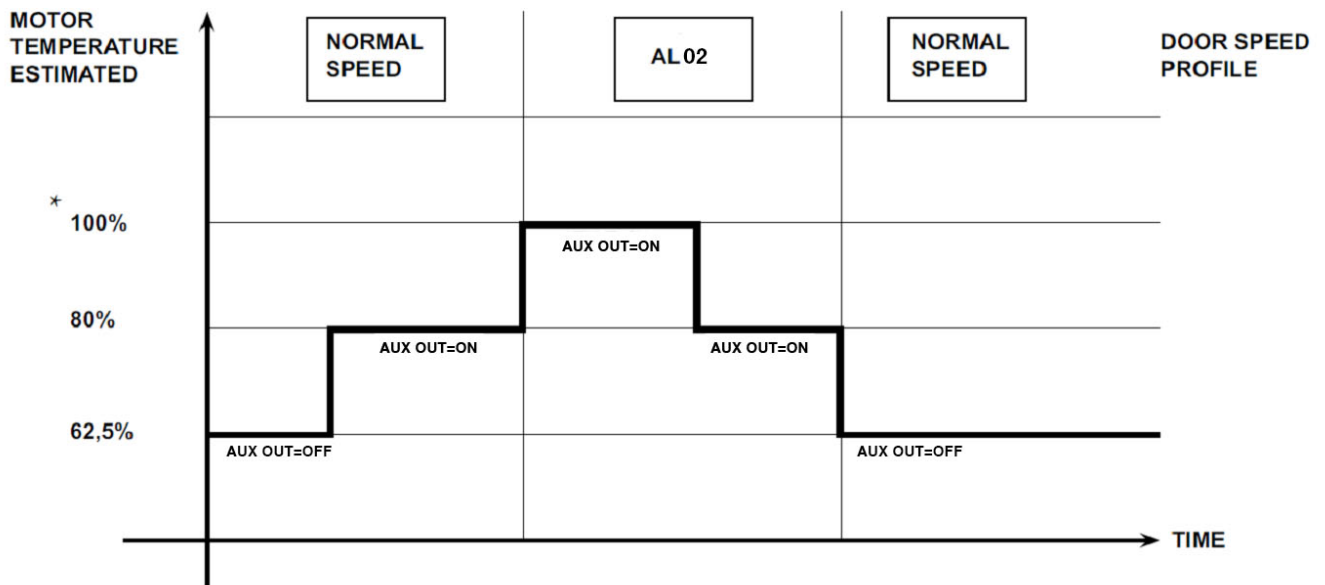
6.6.2 LA with NO Command (Parameter Code 37)

This option allow to modify the management of LA OUT SIGNAL
  - **00 --> Function disable**. *If the door is not completely open the LA output management is disable in case of no input command. So the LA activation is disable if no command is present and the door is not completely open. The LA activation is given only after a KA activation. This configuration avoids any LA reactivation problem. Once the door is open, the LA management return to standard mode.*
  - **01 --> Function enable** *(DEFAULT) If the door is not completely open and the panel are moved externally into the open position threshold also if no command is present the LA will be activated.*

6.6.3 LA Treshold (Parameter Code 38)

With this parameter is possible modify the range of the space where the LA output signal could be activated

The functionality is described below:
-Decreasing the value the LA could be activated only when the door is fully open
-Increasing the values the LA could be activated when the door is not fully open

Is recommended to increase the "LA Threshold" value where the mechanical limit of the fully open position is critical to reach (for example with high force contribute of the landing door closing device)

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6.7   OTHER FUNCTIONS

6.7.1 Closing parking mode (Param. Code 25)

This function allows the user to choose the closing parking mode:

6.7.1.1   *Closed skate parking (default)*

The motor is powered during the closing door parking condition and the operator skate arms are closed.

6.7.1.2   *Opened skate parking*

This option has been introduced for decrease/avoid the power consumption of the plant (so to preserve the use of the motor) when it is found in close position.
Important note: *during the car travel it is necessary that the Main Lift controller gives the closing Kc command, to allow the skate arms closing during the movement.*

6.7.1.3   *PM activation Delay (Default 300 sec.)*

This sub-parameter represents the delay in entering the open skate parking phase after the activation event represented by the disabling of the closing command KC. So the system waits for a time equal to the parameter, before opening the skates and going into energy saving condition.

6.7.1.4   *PM Opening space (Default 90 mm)*

The value represents the size of the space reached by the skate when it is completely open during open skate parking.

6.7.1.5   *PM position error (Default 5 mm)*

This sub-parameter represents the space threshold (with relation to the open skate parking point represented by the PM ACTIVATION DELAY parameter) within which the panels can move. When the set value is exceeded the controller loses the door closed signal LC and activates immediate automatic closure of the skate. During this last operation the Main Lift Controller should however give the closing or opening command to the door operator.

6.7.1.6   *PM position control (Default 00)*

The sub-parameter allows the selection of two different currents that may be applied to the motor:
- *00: No parking current. In this situation it is possible to open the doors by hand.*
- *01: Maximum parking current. The motor does not allow the manual opening of the doors, supplying current that opposes the opening movement ONLY when necessary*

6.7.2 Option "Change Password"

This option allows the user to change access passwords; input the new password as follows:
Select the desired code digit using keys ⬆ and ⬇; Use keys ⬅ and ➡ to move to different digits. Press OK at the end.

6.7.3 CL evacuation delay (Parameter Code 49)

This parameter allows to set the car door opening procedure in order to satisfy the evacaution requirements requested by EN81-20 section 5.3.15.1 (Manually door open <300N).
Scope of this fuction is to release the skates in order to open the landing and car locking elements and allow the manually door open while the cabin is in the unlocking zone.

The functionality is described below:
- If the set value is 00sec the function is disable and the skate remains closed
- If the set value is from 01sec to 99sec the function is enabled and the skate automatically open after the timeout expiration setted and only after the presence of the following conditions:

- Door closing limit (LC) active
- Closing command (KC) inactice
- If the skates is not yet open every closing command KC transition (on --> off) means the timeout restart procedure.

6.7.4 Skate opening offset (Parameter Code 50)

This parameter allows to adjust the automatic open space after the "CL evacuation delay" expiration in order to guarantee the unlocking proceudure and reduce the impact on the panels gap.

The functionality is described below
- Set the value from -0,050m to 0 m to decrease the skate opening space
- Set the value from 0m to 0,050m to increase the skate opening space

Impotant notes:
- An excessive decrease of PC50 may influence the evacuation procedure
- An excessive increase of PC50 may influence the clearance between the panels (EN81-20 section 5.3.1.4 and 5.3.5.3.3)

7   MAINTENANCE MENU AND ALARM TABLE

7.1   CONSULTING THE MAINTENANCE MENU WITH THE HANDSET

The following options are viewed on the display:
- *MONITOR*
- *MLC MONITOR*
- *RESET SPEED PROFILES*
- *LAST ALARMS*
- *ALARMS COUNTERS*
- *DATA DOWNLOAD*
- *DATA UPLOAD*
- *STATISTICS*
- *SOFTWARE UPGRADES*
- *The following options are available*
  - *"BACK": Press key F1 to restore the MENU MAINTENANCE*
  - *"MENU": Press key F3 to restore the MAIN MENU*
- *Using keys ⬆ and ⬇, run through the MAINTENACE menu and choose the required option*
- *Press "OK" to confirm the choice*

If the option **MONITOR** is chosen, the display shows opening and closing speed profiles, with a indication of the speed in m/s.
The following options are available:
- *"Loop": Pressing key F1 the door performs a number of consecutive opening and closing cycles until key F1 is pressed again. Before movement it is possible to set the pause gap between an opening and closing cycle. Confirm with "OK" key.*
- *"<>" or " >< ": Press key F2 to let the doors respectively open or close*
- *"MENU": Press key F3 to restore the MAIN MENU*

If the option **STATISTICS** is chosen , the display shows the door total working time expressed in days:hours:minutes, the cycle total number which have been performed in this working time and the manufacture date.
The following options are available:
- *"BACK": Press key F1 to restore the menu MAINTENANCE*
- *"MENU": Press key F3 to restore the MAIN MENU*

If the option **LAST ALARMS** is chosen the display shows the last occurred alarms showing their code, the relevant description and time of occurrence (day :hour :minute from the door controller start-up). Using keys ⬆ and ⬇, run through the stored alarm list. The following options are available:
- *"BACK": Press key F1 to restore the menu MAINTENANCE*
- *"CANC": Press key F2 to cancel all stored alarms*
- *"MENU": Press key F3 to restore the MAIN MENU*

If the option **ALARMS COUNTERS** the display views the alarm list showing their code, the relevant description and the number of times they have occurred. Using keys ⬆ and ⬇, run through the stored alarm list.
The following options are available:
- *"BACK": Press key F1 to restore the menu MAINTENANCE*
- *"CANC": Press key F2 to cancel all stored alarms*
- *"MENU": Press key F3 to restore the MAIN MENU*

The viewed alarms are the same as in the Alarms Table in **"7.2 Alarms" a pag. 35**

If the option **MAIN LIFT CONTROLLER MONITOR** is chosen, the system IS BACK TO FOLLOW MAIN LIFT CONTROLLER'S SIGNALS; the display shows a complete list of the input/output signals with their value.
When the input or output signal is activated the character on the display will change their graphic in white with dark background.
The following options are available:
- *"BACK": Press key F1 to restore the menu MAINTENANCE*
- *"MENU": Press key F3 to restore the MAIN MENU*

The following options are available:
- *"BACK": Press key F1 to restore the menu MAINTENANCE*
- *"MENU": Press key F3 to restore the MAIN MENU*

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7.2 ALARMS

The Sematic Drive System© controller has the ability to diagnose and record a number of defects; such diagnostics is very helpful to the maintenance personnel in order to locate possible operational problems.
When any monitored error occurs, the Door Controller display will signal it and the error code will show.
The following table illustrates the type of signalling and the relevant alarm detected by the Door Controller:

ALARMS TABLE				
Code on display	Viewed error	Error description	Action undertaken by Door controller	Trouble Shooting
01	No MLC Signal	Main lift controller is disconnected or has failed	Auto reset when proper condition is restored.	Note 1
02	Over current protection	Motor over current due to door mechanical strain	Auto reset after: ca. 5 seconds after the first and second trials (fast alarm) ca. 5 minutes (B105AANX motor type) and 3 minutes (B105AALX motor type) at the third trial	Note 2
03	Reversing system fault	The main lift controller does not send the reopening command after the Door Controller has signalled an obstacle (Note 3)	Door drive keeps on closing at low speed	Be sure to activate KA when IM is active Note 3
04	Power-on motor inverted	Inverted motor connection or inverted Encoder channels. Door performs a jerk and then stops (Note 4)	Auto reset, after about 10 seconds, when normal operating conditions are restored; after 5 trials the system stops.	Switch off the DD and verify the motor power cable especially the connection and the correct sequences of the pins 43-44. If the alarm persist replace the motor
05	Encoder jerk	Interruption of the motor's Encoder cables, or interruption of the motor cables after system's start up or the connecting plug to the Encoder motor is inverted	Auto reset after 5 seconds; after 5 occurrences within 5 minutes the system stops	Switch off the DD and check the encoder cable condition and verify the correct connection to the DD (Rj45 A)
06	Motor thermal protection	Motor over-heating (with motors where internal PTC sensor is present)	Auto reset when normal operating conditions are restored.	
07	Motor jerk	Interruption of the motor cables	Auto reset after 5 seconds; after 5 occurrences within 5 minutes the system stops	Switch off the DD and verify the motor power cable especially the connection and the correct sequences of the pins 43-44. If the alarm persist replace the motor
08	Over-voltage	Over-voltage in the power supply	Door controller switches to low speed, signals the error, and performs an auto-reset; after 5 occurrences within 5 minutes the system stops	Verify the correct values of the MAIN POWER supply

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ALARMS TABLE				
09	PWM-Trip	Impulse over-current	Auto reset when proper condition is restored; after 5 occurrences within 5 minutes the system stops.	Switch off the DD.Remove the motor power connection form the DD and witch on the DD.If the alarm is not present measn the DD is OK.Using multimeter check between the motor phases and if any short circuit between the phases is present (pins 43-44) replace the motor
10	Internal fault	Generic alarm due to an internal malfunction of the Door Controller	Auto reset when proper condition is restored.	Internal communication error. If persistent it is necessary to replace the DD
11	Power supply protection	Internal switching power supply over current, due to mechanical strain	Auto reset when proper condition is restored; after 5 occurrences within 5 minutes the system stops.	The DD is working under too high environment condition or with too high perofrmances resptec to the door. Decrease the speed profiles. LOW: power consumption from the power input stage is too high, due to high selected speed profiles respect to the moving mass. Reduce the speed profiles settings
12	Mechanical block	Door movement blocked during the normal opening phase (note2)	After max 7 sec. the system reduce the opening torque	Check that there is no mechanical obstruction during OP. phase

Notes:
1. *This alarm can only occur if the Main Lift Controller Test has been set either to "WHEN Moving" or "Moving+Parking" and the "Main Lift Controller Input Alarm" parameter has been set to "ON".*
2. *This alarm indicates an excessive strain in the operator's functioning; it is advisable to check that the system has no friction whatsoever, especially during the opening phase. The alarm is just recorded in the alarm list but not displayed on the door drive front panel.*
3. *This alarm can only occur if the REVERSING SYSTEM parameter has been set to "EXTERNAL".*
4. *If both connections (motor and Encoder signals) are inverted, the door opens when a closing signal is received and closes with an opening signal. The Door Operator is pre-wired and tested by the manufacturer; so special attention must be taken when replacing motor and/or cables.*

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8   CONTROLLER UPGRADE

8.1   CONTROLLER SOFTWARE UPGRADE

- *Connect the handset to the RJ45 connector*
- *If necessary, using keys ⬆ and ⬇ choose the required language and confirm with the "OK" key*
- *Using keys ⬆ and ⬇, run through the MAINTENANCE and choose "SOFTWARE UPGRADES"*
- *Press "OK" to confirm the choice*
- *Display shows the last available update and the software version in use at the moment.*
- *Press "OK" to confirm the software update*
- *Controller operates a reset and the display shows "Upload" with the progression value of data loading*
- *At the end of the upload the controller operates a reset*
-

In case of interruption of connection between handset and controller during the data transfer, turn "off" the controller, turn it "on" again and reconnect the handset.The upload starts again from the beginning.

8.2   SOFTWARE UPGRADE BY USB KEY

To update the controller with the latest firmware, using the USB key, please refer to the special instruction (301-115-010)

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9   SPARE PARTS

It is possible to order all the Sematic Drive System© spare parts using the spare parts catalogue, by specifying the required quantity and the code of the ordered piece.

The spare parts manual is extremely important to avoid misunderstandings and to ensure a rapid supply of the correct spare parts. The spare parts catalogue, with photographs and details will make the Sematic doors spare parts purchase easy and quick.

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10   CONFIDENTIALITY AGREEMENT DISCLAIMER

The software/hardware "Sematic Drive System©" and all the relevant information, ideas, concepts and know-how are confidential and the exclusive property of Sematic.
All information relevant to this instruction manual and any other support supplied by Sematic must be kept confidential and proprietary to Sematic and shall not to be copied or reproduced in any form whatsoever.
Any information contained in the "Sematic Drive System©" shall not be disclosed to anyone, without Sematic's written consent apart from authorized representatives employed by the user which commits itself to the confidentiality clause.
The Company that makes use of the Sematic Drive System©, binds itself not to use confidential informations owned by Sematic and not to compile or reingineer the Sematic Drive System© and any information in it contained.

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11   FINAL CONSIDERATIONS

This manual has been drafted taking into account that the Company installing genuine Sematic products will comply with the following necessary requirements:

- *personnel responsible for the installation and/or maintenance of the doors must be familiar with the General and Specific regulations in force on the subjects of work safety and hygiene (89/391/CEE - 89/654/CEE - 89/656/CEE);*
- *personnel responsible for the installation and/or maintenance must be familiar with the Sematic product and must have been trained by Sematic or by an authorized Sematic agent;*
- *installation equipment used must be in good working order with all measuring instruments calibrated (2009/104/EC).*

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- *undertakes to update the present manual and send the customer copies of all new updates together with material;*
- *within its continuous product improvement policy, reserves the right to make changes to the designs and materials of its products. Sematic will give an agreed reasonable time to all its customers to allow them to adapt to the new changes their complementary current constructions;*
- *guarantees a good performance only of the original parts sold directly and correctly installed.*

Therefore:

parts manufactured and/or added to the Sematic product without having it checked by Sematic, or non-original parts based upon a Sematic design (even if supplied by authorised agents) cannot be considered under guarantee since the following conditions have not been ensured:

1. *Quality control of raw material supply*
2. *Process control*
3. *Product control*
4. *Conformity tests according to Sematic specifications*

Furthermore, Sematic

- *guarantees the performance life of its products only if correctly stored (indoors storage at temperatures ranging between -10 and +60 °C out of direct sunlight) and correctly installed;*
- *guarantees the perfect performance of the products installed in environments with temperatures between -10 and +60 °C and with a non-condensing, relative humidity level inbetween 20% and 80%. (Special note: for temperatures and humidity rates outside these ranges, please consult our Technical Dept.)*

The product is compliant with the following EU Directives:

- *2006/42/CE Machinery Directive and subsequent modifications (when applicable)*
- *2014/33/EU Lifts Directive*
- *93/68/CEE Markings*
- *90/269/CEE Heavy loads handling*
- *Noise (Acoustic emission) 86/188/CEE modified according to Directive 98/24/CEE*
- *Electromagnetic compatibility 2014/30/EU*
- *Low Voltage Directive 2014/35/EU*

and with the following particular standards:

- *EN81 20/50;*
- *AS1735;*
- *EN12015/EN12016;*
- *ASME A17.1;*
- *UL508C*
- *GB7588 + XG1*

The present document has been drafted in accordance with EN13015
Also evaluate in accordance with ANSI/ASME A17.1-2 013-10-21 and A17.5-2014-08-01
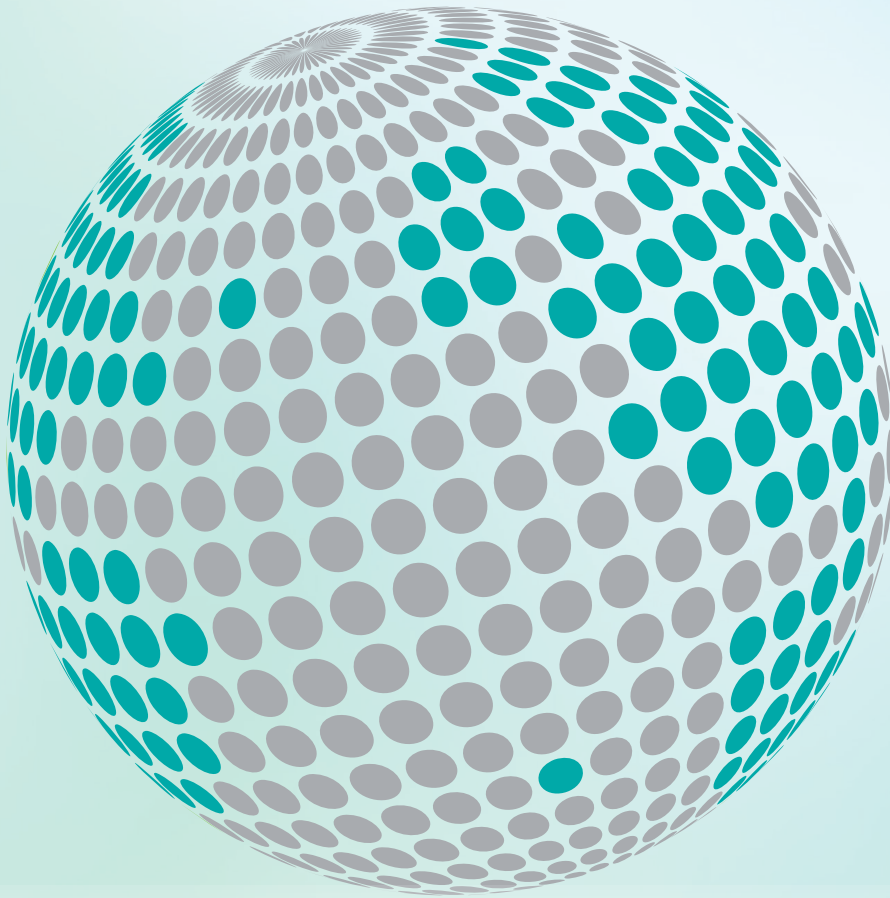Also evaluate in accordance with CAN/CSA B44, and B44.1

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