

AE-SMART PARAMETER DEFINITIONS

All information about lift and control system settings and timings are stored in system parameters. Through G01-MAIN MENU you can reach all parameters for any function.

However, **G02-PARAMETERS** menu contains mainly used parameters, inputs and outputs. It is advised to use G01-MAIN MENU only to access advanced functions.

The parameters are classified in following groups:

P01-GROUP A PARAMETERS: These parameters are denoted with a prefix letter 'A' as Axx. Main parameters define the type and basic functions of the lift. They can be modified only when the lift is resting.

P02- GROUP B PARAMETERS: These parameters are denoted with a prefix letter 'B' as Bxx. Auxiliary parameters define most of the functions of the lift. They can be modified at any time.

P03-TIMER PARAMETERS: These parameters are denoted with a prefix letter 'C' as Cxx. Timer parameters store all of the user definable timer settings. They can be modified at any time.

P04-SPEED PARAMETERS: This section contains parameters for speed adjustments. They can be modified only when the lift is resting.

P05-CONTROL PARAMETERS: Control parameters are mainly the parameters which are used to control the behaviour of the motor. They can be modified only when the lift is resting.

P06-MOTOR PARAMETERS: This section has parameters on motor and encoder specifications. They can be modified only when the lift is resting.

P07-HARDWARE PARAMETERS: These parameters store the settings for the hardware of the device.

P08-INPUT DEFINITIONS: All input terminals can be accessed.

P09-SPECIAL PARAMETERS: These parameters store the settings for the special functions of the system.

P10-OUTPUT DEFINITIONS: All output terminals can be accessed.

7.1 P01-MAIN PARAMETERS

The lift must be resting to do any modification on main parameters.

[A01] NUMBER OF STOPS	
2...12	This parameter stores the number of stops of the lift.
[A02] COMMAND SYSTEM	
0	Simple Push Button
1	Simple Collective
2	Down Collective
3	Up Collective
4	Full Collective
[A03] MOTOR TYPE	
0	Asynchronous Open Loop - Geared machine without encoder
1	Asynchronous Close Loop - Geared machine with encoder
2	Synchronous - Gearless machine with absolute encoder
[A04] DOOR TYPE	
1	Wing Door (Semi-automatic doors)
2	Automatic Door
[A05] FLOOR SELECTOR Read section 5.2 for detailed explanation	
0	Counter Mono-stable Switch
1	Counter Bi-Stable Switch
2	Motor Encoder
3	Shaft Encoder
[A06] DOOR BRIDGING	
0	Not Active
1	Re-levelling
2	Early Door Open
3	Relevel + Early Door Open

[A07] GROUP NUMBER	
0	Simplex
1	Duplex
[A09] LANDING COMMUNICATION	
0	Car Serial- Landing calls and signals are driven by RBIO board.
1	Full Serial
[A10] LIFT STANDARD	
0	EN81-1
1	EN81-1+A3 SDB Door Bridging Board must be used if relevelling or early door opening is employed (A06>1).
2	EN81-20/50 SDB Door Bridging Board must be used
[A11] LEVEL DETECTOR	
0	MKU/MKD – MKU/MKD switches are used for relevelling start and stop positions. This option should be used if motor encoder is used as floor selector [A05=2].
1	ENCODER Levelling motion is initiated regarding to the current car position. This option should be selected when shaft encoder or absolute encoder is used [A05>2].
[A12] ENTRANCE FLOOR	
0...6	This parameter stores the number of floor(s) below entrance floor if they exist.
[A13] LIFT/HOMELIFT	
0	Normal Lift The lift serves as a normal lift in conformity to the standard EN81-20/50.
1	Homelift The lift performs as a homelift. Traffic system is simple push button.

[A14] FIRE STANDARD	
This parameter determines the behaviour of the lift in case of fire.	
0	EN81-73 Lift Lift continues to work after removal of the fire signal.
4	EN81-73 Lift with blocking after operation Lift stays blocked after removal of the fire signal.
[A15] INSTALLATION MODE	
This parameter is to facilitate the first installation of the system. System must be inspection mode due to inspection box or RECALL switches to activate this utility. Some of the inputs are inhibited when this utility is active. When the controller returns to the normal mode or system is switched on then this parameter is switched to passive [A15=0] automatically.	
0	Passive - System works in normal mode.
1	Active - If the system is in the inspection mode due to RECALL or car top switch, then the controller does not respond 871, DIK, BYP, KRR, DPM, SGO, KL1, KL2, K1C and K2C inputs. Pit inspection, UCM errors and bypass procedures are skipped.
2	Active - In addition to the selection 1 the states of 817 and 818 switches are ignored.
[A16] UCM CONTROLLER	
0	Not Active - No Unintended Car Motion detection is carried out.
1	Active - Unintended Car Motion system is active.
[A18] PIT CONTROLLER BOARD	
0	NOT USED There is no CIO board in shaft-pit.
1	PRESENT CIO board is used in shaft pit.

[A19] SIMULATOR MODE	
<p>Simulator mode can be used to run the integrated device for test and education purpose with a free running motor or without motor. Do not activate [A19>0] this function in a lift installed in the shaft. Read section 8.2 for a detailed explanation.</p>	
0	Not Active - Simulation mode is not active.
1	Simulator Motor with free running Motor
2	Simulator Without Motor
3	Simulator Only Device
[A20] DOOR ZONE	
150...600	This parameter stores the door zone length.
[A21] RELEVEL START mm	
15...30	Releveling starting point measured from the floor level. Active if [A11=1].
[A22] RELEVEL STOP mm	
3..15	Releveling stopping point measured from the floor level. Active if [A11=1].
[A23] EMERGENCY RESCUE OPERATION ALLOWED	
0	Passive -Emergency rescue operation is inhibited.
1	Active
[A24] EKS VOLTAGE	
<p>This parameter stores the motor voltage supplied to the device in case of rescue operation.</p>	
0	220V AC
1	380V AC
2	110V AC
3	60V DC
4	48V DC
[A25] HIGH SPEED SWITCHES (HU/HD)	
0	Passive HU/HD are not used.
1	Active HU/HD are used.

7.2 P02-B PARAMETERS

[B01] AFTER LOCK FAULT	
0	<p>Continue</p> <p>The system continues its operation after any lock fault.</p>
1	<p>Block at Repeated</p> <p>The system will be blocked after a certain number of repeated lock faults. This number is the value defined in parameter [B05].</p>
2	<p>Clear Registers</p> <p>All call registers are cleared after any lock fault.</p>
3	<p>Block + Try Again</p> <p>The system will be blocked after a certain number of repeated lock faults. This number is the value set in parameter [B05]. However, the system returns to its normal operation automatically after 5 minutes.</p>
[B02] SKIP SIMPLE ERRORS	
0	<p>Stop</p> <p>The system stops after all errors.</p>
1	<p>Continue</p> <p>The system continues its operation after some simple errors, which are not related to the safety circuit or car motion.</p>
[B03] ERROR BLOCKING	
0	<p>The system will be blocked after error 45, SDB bridge error.</p>
1	<p>The system will not be blocked after error 45, SDB bridge error</p>

[B04] UCM ERROR BLOCK	
This parameter determines whether the system is going to be blocked after the occurrence of any UCM related errors (Errors with the error number 64, 68, 69 and 72).	
0	<p>CAN BE BLOCKED</p> <p>UCM Errors will block the lift.</p>
1	<p>NO BLOCKING</p> <p>UCM Errors will not block the lift.</p> <p>Warning: This option can be used only for installation, repair and maintenance purposes. This parameter cannot be set to 0 for normal operation according to the current lift standards.</p>
[B05] MAXIMUM ERROR REPEAT	
3..50	<p>When any error in the list given below occurs and repeated consecutively as many times as the number defined in this parameter then the system will be blocked.</p> <p>These errors are:</p> <p>6, 7, 12, 13, 21, 23, 27, 28, 30, 38, 40, 41, 42, 43, 44, 61, 62, 63, 65, 66, 67, 70, 71, 73, 74, 75, 82, 88, 89, 90, 91, 92, 116, 119, 120, 121</p>
[B06] PARK DEFINITION	
This parameter determines whether the park floor is present or not and its behaviour at the park floor.	
0	<p>No Park Floor</p> <p>No park floor is defined.</p>
1	<p>Park Floor Door Close</p> <p>The car will go to the parking floor set in parameter [B07] when no calls have been received in a specified time period [T02] after the car light goes off. The car will wait at parking floor [B07] with closed doors.</p>
2	<p>Park Floor Door Open</p> <p>The car will go to the parking floor set in parameter [B07] when no calls have been received in a specified time period [T02] after the car light goes off. The car will wait at parking floor [B07] floor with open doors.</p> <p>Warning: This option is not in conformity with EN81-20/50 as well as EN81-1.</p>

[B07] PARK FLOOR	
0...63	This parameter defines the parking floor where the car will go and wait if parking has been activated.
[B08] HALL CALLS INHIBIT	
You can inhibit hall calls by using this parameter.	
0	Hall Calls Allowed
1	Hall Calls Inhibited
[B09] MAXIMUM CABIN CALLS	
3...11	This parameter sets the maximum number of accepted car calls at any time. Any new car calls will not be executed if there are already [B09] car calls.
[B10] DOOR IN STOP BREAK	
0	Door Passive If stop circuit (120) is off at floor level then door signals are passive, neither open nor close commands are applied to the doors.
1	Door Active Door signals are active after a stop break.
[B12] BASE FLOOR (GROUP LIFT)	
0...10	This parameter is used only for group operations. If there are one or more floors of the other lifts in the group below the base floor of this lift, then the number of missing floors downwards must be defined in this parameter. This information is used in adapting the floor levels in group communication.
[B13] DOOR LIMIT SWITCHES	
0	Normally Open AL1, KL1 inputs will be active when their terminals connected to 1000.
1	Normally Closed AL1, KL1 inputs will be active when their terminals are left open.
[B14] FIRE FLOOR 1	
0...63	When the input terminal assigned to the input function FR1 is activated then the car immediately moves to the floor defined in this parameter.

[B15] FIRE FLOOR 2	
0...63	When the input terminal assigned to the input function FR2 is activated then the car immediately moves to the floor defined in this parameter.
[B16] PTC CONTROL	
0	PTC Control Off Motor thermistor control is not active.
1	PTC Control On Motor thermistor control is active.
[B17] PHOTOCELL BYPASS CONTROL	
0	Inactive No photocell bypass operation is carried out.
1	ACTIVE-1 / No Door Close Command Photocell bypass operation is carried out. Only SLOW CLOSE output function is activated for door operator to close the door in photocell bypass operation. See also timer parameter [T34].
2	ACTIVE-2 / with Door Close Command Photocell bypass operation is carried out. Door close command is sent together with SLOW CLOSE output function to door operator to close the door in photocell bypass operation. See also timer parameter [T34].
[B18] GONG CONTROL	
This parameter defines how the arrival gong is executed.	
0	Gong at Stop Gong signal is activated when the lift stops.
1	Gong at Slow Speed Gong signal is activated when the lift starts to slow down.
2	No Car Gong There is no arrival gong.

[B19] MK DELAY	
0...50	<p>This parameter is used when floor selector is not encoder [A05<2]. It defines the delay in stopping after the stop magnet switch has been read by the system in normal operation. One unit in this parameter corresponds to a time delay of 10 msec. Setting to 0 disables this function.</p> <p>Maximum value 50 corresponds to 0,5 sec. delay.</p>
[B20] ERS MK DELAY	
0...50	<p>It defines the delay in stopping after the stop magnet switch has been read by the system in rescue mode. One unit in this parameter corresponds to a time delay of 10 msec. Parameter unit is 10 msec. Setting to 0 disables this function. Maximum value of 120 corresponds to 1,2 sec. delay.</p>
[B22] VIP CONTROL	
0	<p>Not Active</p> <p>VIP control system is not active.</p>
1	<p>Active</p> <p>VIP control system is active</p>
[B23] 1st VIP FLOOR	
0...63	<p>When the input terminal assigned to VP1 input function is activated then the lift immediately moves to the floor set in this parameter. VP1 has highest priority and VP2 is the next one in VIP system. If VP2 or VP3 is active while VP1 too is active then VP1 is selected and VP2 and VP2 are ignored.</p>
[B24] 2nd VIP FLOOR	
0...63	<p>When the input terminal assigned to the VP2 input function is activated then the lift immediately moves to the floor set in this parameter. VP1 has highest priority and VP3 the lowest. If VP2 and VP3 are both active then VP2 is selected and VP3 is ignored. And when VP1 is active V2P is ignored.</p>
[B25] 3th VIP FLOOR	
0...63	<p>When the input terminal assigned to the VP3 input function is activated then the lift immediately moves to the floor set in this parameter. VP3 has the lowest priority. Therefore, if VP2 or VP1 are active then VP3 is ignored.</p>

[B26] WAIT DOOR OPEN	
This parameter determines how the doors behave at floor level while resting.	
0	Wait Closed Door Car waits with closed doors at floor level.
1	Wait Open Door Car waits with open doors at floor level. Warning: This option is not in conformity with EN81-20/50 as well as EN81-1.
[B27] MR TEMPERATURE	
This parameter determines how the machine room temperature information is collected.	
0	No Temp. Control Machine room temperature will not be carried out.
1	THR Input An external temperature detector is used in processing machine room temperature. Any active state (ON) in the input terminal assigned to the function THR indicates that the temperature is out of the allowed temperature limits for machine room and therefore any motion is prohibited.
[B28] PANIC FLOOR	
0...63	When panic input [PNB] has been activated then the lift cancels current calls and travels to the floor defined in this parameter.
[B30] CAR DISPLAY OUTPUT	
This parameter defines the digital outputs in car are driven by RBIO board.	
0	7 Segment Display
1	Gray Code Output Digital display outputs of parallel car controller board give Gray Code outputs. Bits are: A: G0, B : G1, C: G2 and D: G3.
2	Binary Code Output Digital display outputs of parallel car controller give Binary Code output. Bits are: A: B0, B : B1, C: B2 and D: B3.

[B31] HALL DISPLAY OUTPUT	
This parameter defines the digital outputs in panel are driven by RBIO board.	
0	7 Segment Display Digital outputs are 7 segment display data.
1	Gray Code Output Digital display outputs RBIO board give Gray Code output. Bits are: A: G0, B : G1, C: G2 and D: G3.
2	Binary Code Output Digital display outputs on RBIO board give Binary Code output. Bits are: A: B0, B : B1, C: B2 and D: B3.
[B32] CNT CHECKING	
0	Checking Off - No contactor checking is carried out. Warning: This option can be used only for installation, repair and maintenance purposes. This parameter is not allowed to be set 0 for normal operation according to the current lift standards.
1	Checking On - Contactor checking is always carried out.
[B34] MENU CHARACTER SET	
0	Latin Character Set (Standard)- LCD screen has Latin Characters.
1	Russian Character Set (Cyrillic) - LCD screen has Cyrillic Characters.
[B35] FLOOR RESETTING	
0	Not Activated The lift will not start to travel to reset the counting system after any start-up.
1	Go Resetting When the lift is switched on then the lift travels the base (or top) floor to reset floor counting system where the floor selector is not absolute encoder, namely [A05<4].

[B36] BLOCKING INHIBIT AT SLOW MOTION PERIOD	
0	Can Be Blocked Timeout of the timer [T31] Slow Speed Pass Period results in blocking of the system.
1	No Blocking Timeout of the timer [T31] Slow Speed Pass Period does not in block the system. If [A10=0], then timeout [T05] Floor Pass Period will not block the system, too.
[B37] MOTION IN INSPECTION This parameter determines the limits of the inspection travel in the shaft limits.	
0	Stop At 817 / 818 The motion in inspection stops upwards at 818 and downwards at 817. Beyond these limit switches no inspection motion is allowed.
1	To the Last Floor Inspection motion can continue until last floor levels upwards and downwards.
[B38] DOOR OPEN CHECK	
0	Check Always Door open check is always carried out when a door open command is executed.
1	Check Once Door open check is carried out once at the first opening after reaching a new floor. If it is passed, then no check is carried out at this floor anymore. If not passed the system will be blocked.
2	No Checking No door open check is carried out. Warning: This option is not in conformity with EN81-20/50.
[B40] FIRE SWITCH	
0	Normally Closed - Fire alarm is activated if the input FRx is passive.
1	Normally Open - Fire alarm is activated if the input FRx is active.

[B41] DOORS IN FIRE	
0	Doors wait open at fire exit floor. (EN81-73)
1	Doors wait closed at fire exit floor. (EN81-73)
[B44] EMERGENCY PHONE BUTTON	
0	Emergency phone is activated when INTERCOM BUTTON being pressed for 5 seconds.
1	Emergency phone is activated when ALARM BUTTON being pressed for 5 seconds.
[B45] CAR CALL CANCELLATION	
0	PASSIVE - Car call cancellation system is passive.
1	ACTIVE - Car call cancellation system is active. Car calls can be cleared by pressing onto the button once more unless this call is not for the target floor.
[B47] EXCEEDING MAXIMUM STARTS	
This parameter determines what the lift will do, when the maximum number of starts given for maintenance control is exceeded.	
0	ALARM AND WORK
1	ALARM AND BLOCK

7.3 P03-TIMER PARAMETERS

In all T type parameters (timings), one unit corresponds to 0.1 sec.

[T01] BUSY PERIOD	
20...999	Busy period during which cabin light and Busy output (16) are activated.
[T02] PARK WAIT PERIOD	
50...9999	If the parking function has been defined in parameter [B06] (1 or 2) then the lift starts to travel to the parking floor specified in parameter [B07] when no calls have been received after the last travel for the time period specified in this parameter.
[T03] WAIT IN FLOOR	
31...999	This parameter defines the time period for the car to wait before departing for the next call in collective systems.

[T04] POWER SAVE DELAY	
0...6000	This timer controls the time delay after which the landing displays are switched off when the lift is not in use. Making the value of the parameter zero disables this function.
[T05] FLOOR PASS PERIOD	
60...3500	This parameter defines the maximum time interval in which the lift travels from one floor to the next one. If this interval is exceeded an error signal (6) is created.
[T06] OPEN WAIT PERIOD	
30...999	After a door-1 open command the door will wait for the period defined in this parameter to close back.
[T07] CONTACTOR WAIT FOR START	
2...15	After executing a motion command, the device activates the contactors and waits for the period defined in this parameter for the contacts of the contactors to settle down. At the end of this period, motor driver is enabled.
[T08] BRAKE DELAY AT START	
2...50	The brake coils are activated after a time delay when the device has been enabled. This parameter defines this delay.
[T09] ZERO SPEED PERIOD	
2..50	Zero Speed period is present only in closed loop systems. As soon as the device has been enabled after a motion command zero speed operation is started to hold the motor shaft stationary. This period starts with [T08] simultaneously. After [T08] period brakes are opened. Therefore [T08] must be smaller than [T09].
[T10] START SPEED ACCELERATION PERIOD	
2...50	When a motion command is received then the speed is increased up to the start speed [S01] in a time period defined in this parameter. This parameter has no effect if [S09] parameter is set to 0.
[T11] START SPEED WAIT PERIOD	
2...50	This parameter defines how long the driver will hold the car at the starting speed [S01]. At the end of this period, the motor driver starts to accelerate up to its command speed. This parameter has no effect if [S09] parameter is set to 0.

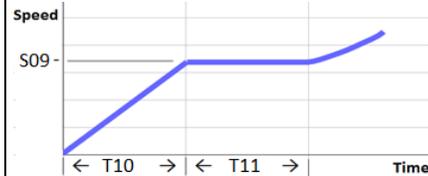
[T12] DC BRAKE PERIOD	
2...50	When the speed is lower or equal to the stopping speed [S18] in deceleration phase then either Zero Speed (in closed loop systems) or DC Braking (in open loop systems) is activated to hold the motor stationary. Active DC Braking or Zero Speed period is the sum of [T12] + [T13]. It means that the timer related to this parameter counts down after [T13] period has been diminished.
[T13] BRAKE HOLD DELAY AT STOP	
3...50	When the speed is lower or equal to the stopping speed [S18] in deceleration phase the time, period defined in this parameter is initialized and at the end of this period brakes are closed. After this point DC Braking or Zero Speed starts to count down and terminates after [T12] period.
[T14] CONTACTOR DELAY AT STOP	
2...50	This timer defines the delay for the contactors to switch off after all operations related to the travel has been completed.
[T15] DTS BUTTON DELAY	
40...500	DTS (Door close button) is inhibited during the period defined in this parameter after arrival at the floor.
[T16] RESCUE STARTUP DELAY	
30...300	The starting delay of rescue operation after a power failure or phase failure.
[T17] CAM ACTIVATION DELAY	
2...30	Time delay to activate door close after the door contact becomes ON in semi-automatic door.
[T18] K20 PERIOD	
8...500	When K20 input function is activated then door will open. Then it will wait for the time period specified in this parameter before closing back.
[T19] PHOTOCELL PERIOD	
20...500	When FOT input function is activated then door will open. Then it will wait for the time period specified in this parameter before closing back.
[T20] DOOR OPEN PERIOD	
30...80	This parameter defines the time period for door to open. The controller checks if the door-1 is open (or more accurately, not closed anymore) within this period after a door-1 open command.

[T21] DOOR CLOSING PERIOD-1	
0...999	After a door close command has been executed then the controller waits for a time period defined in this parameter for door-1 to be closed. If door-1 is not closed within this time period then an error (8) will be created.
[T27] DOOR CONTACT TEST	
6...999	When KL1 and KL2 inputs become ON and but safety line is not closed after a door close command within the period in this parameter then the system will evoke error (40). The doors are opened.
[T29] GRUP DOOR WAIT	
300...3000	This parameter is used only for group lifts. If a door will not be closed after a door close command as long as the time in this parameter, then this lift will not work as a group lift anymore.
[T31] SLOW SPEED MAXIMUM PERIOD	
50...1000	This parameter stores the maximum period to reach the floor level in slow speed. When this time is over, error (6) is generated and if parameter [B36=0] then system is blocked. [B36=1] prevents blocking after timeout of [T31].
[T32] ERS DOOR WAIT PERIOD	
20...300	This parameter defines the time delay to close the door after arrival at the floor on the rescue mode.
[T33] MAXIMUM BUSY PERIOD	
0	Inactive
0...9999	If the doors are left open or cannot close for a period of [T01] then the busy signal and cabin lights are switched off at the end of this timer [T33]. When a new call is received then lights are activated again, and this function is disabled.
[T34] PHOTOCELL BYPASS PERIOD	
50...3000	When FT1 input function is activated continuously for the time period defined in this parameter then door-1 switches to slow close-1 mode and activates slow closing-1 for the door-1 provided that other than 0 is selected in parameter [B17].
[T36] MAXIMUM RESCUE PERIOD	
600...5000	This parameter defines the maximum time period allowed for emergency rescue operation. If the rescue operation is not completed within this period, then it will be terminated by the controller.

[T37] INSPECTION EXIT DELAY	
30...600	After inspection the system is switched to Normal mode from inspection then the system waits for the period defined in this parameter to start any travel.
[T38] DIRECTION DELAY	
40...110	When the lift arrives at a new floor then its last direction before stopping is kept unchanged within the time interval defined in this parameter.
[T39] LOADING PERIOD	
0...9999	When LDB input function (loading button) has been assigned to an input terminal then pressing LDB button holds the doors open within the time period defined in this parameter. The door will not be closed due to a new call. Only DTS and DT2 buttons (door close) can terminate this function.
[T40] ENCODER CONTROL	
20...99	When an incremental encoder is used to get car position [A05=2] it is checked by using this timer parameter. If no encoder pulses have been received for a time interval defined in this parameter then an error signal is created (13) and the motion will be stopped.
[T41] PRIORITY PERIOD	
300...3000	Priority waiting period. After the lift is called by a priority key and no further call is received for a time period defined in this parameter then the priority operation is cancelled.
[T42] CAM DELAY	
0...60	This parameter is used for semi-automatic doors and defines the activation delay period of retiring cam after the landing door has been closed.
[T43] CAM TIMEOUT	
30...900	This parameter is used for retiring cam in semi-automatic doors and defines the timeout period of retiring cam. If 130 signal in safety line does not become ON within the period defined in this parameter after activated, then error 61 will be evoked and CAM will be deactivated.

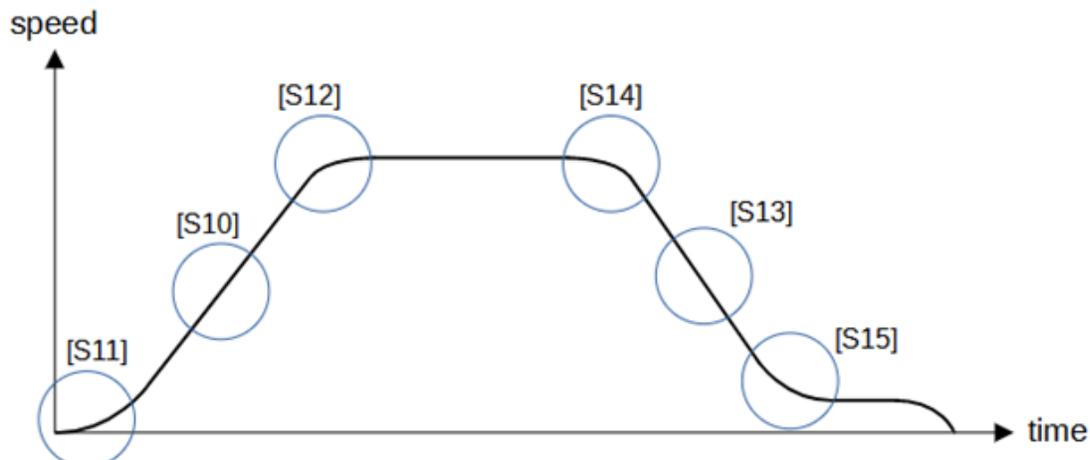
7.4 P04-SPEED PARAMETERS

[S01] NOMINAL SPEED (m/s)	
0,01 ... 1,6	Maximum allowed travel speed for normal operation.
[S02] RECALL SPEED (m/s)	
0,01 ... 1,0	The travel speed used in recall operation.
[S03] RELEVELING SPEED (m/s)	
0,005 ... 0,1	The travel speed used in releveling.
[S04] INSPECTION NORMAL SPEED (m/s)	
0,01 ... 0,63	The travel speed in inspection operation where in downwards motion [817=1] and upwards motion [818=1].
[S05] INSPECTION SLOW SPEED (m/s)	
0,01 ... 0,30	The travel speed in inspection motion below 817 downwards [817=0] and above 818 upwards [818=0].
[S06] RESCUE SPEED (m/s)	
0,01 ... 0,50	The travel speed in rescue operation.
[S07] RESETTING TRAVEL SPEED (m/s)	
0,05 ... 1,0	The travel speed used in resetting travel.
[S08] CREEPING SPEED (m/s)	
0,02 ... 0,20	The travel speed used while approaching the floor.
[S09] STARTING SPEED (m/s)	
0,0 ... 0,10	<p>If this parameter is zero then the device starts directly from zero.</p> <p>If this parameter is non-zero then the device accelerates in [T10] time period to starting speed [S09] at start. Then it waits for the time period [T11] at the starting speed. Start speed should be used mainly in open loop applications.</p>



ACCELERATION, DECELERATION AND S-CURVES

The parameters S10...S15 and S22 are only accessible if [S23=0] otherwise they are automatically set regarding to the value of S23.



[S10] ACCELERATION (m/s²)

0,1...5,0	Acceleration value of the system. Increasing the value makes the lift reach to the target speed in shorter time.
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[S11] S-CURVE IN ACCELERATION START (m/s³)

0,1...3,0	Increase in acceleration in the S-Curve at the beginning of acceleration. A lower value results in a softer start.
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[S12] S-CURVE IN ACCELERATION END(m/s³)

0,1...3,0	Decrease in acceleration in the S-Curve at the end of acceleration. A lower value results in a softer transition at the end of the acceleration path.
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[S13] DECELERATION (m/s²)

0,1...3,0	This parameter defines the deceleration rate. Higher value shortens the slow down path. Lower value increases slow down path and comfort.
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[S14] S CURVE IN DECELERATION START (m/s³)

0,1...3,0	Increase in deceleration in the S-Curve at the beginning of deceleration. A lower value results in a softer transition to slow down path.
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[S15] S CURVE IN DECELERATION END (m/s ³)		
0,1 ...3,0	S-Curve at the end of deceleration. A lower value results in a softer transition to stopping.	
[S16] STOPPING METHOD		
0	Stop mode for synchronous motor.	
1	Stop mode for asynchronous motor.	
2	Faster stop mode for synchronous motor.	
3	Faster stop mode for asynchronous motor.	
4	Declining torque	
[S17] STOP SPEED (m/s)		
0,0 ... 0,1	When the speed is below the value defined in this parameter during a travel while the car is approaching the floor in slow down phase then the device accepts this as stop command. You should also define the method for detecting stop speed in parameter [S18] properly.	
[S18] STOP SPEED REFERENCE		
0	Real Speed Reference speed read by the encoder. Recommended for closed loop applications.	
1	Drive Speed Reference speed is the speed calculated by the device. Recommended for open loop applications.	

[S19] START MODE		
This parameter is used to prevent any rollback of the car in starting for synchronous motors. See section 8.1 for detailed explanation.		
0	Passive	
1	Anti-Rollback - Smart	
2	Anti-Rollback - Fast	
3	Anti-Rollback - Fast+Smart	
4	Pre-Torque - Digital weight transducer feedback is optional.	
5	Pre-Torque – Analog - Analog weight transducer feedback is required.	
[S20] STOPPING DECELERATION		
0,1 ... 5,0	This parameter defines the deceleration rate when the car gets stop command while travelling at creeping speed.	
[S21] STOPPING DECELERATION START S-CURVE		
0,01 ... 5,0	This parameter defines S-curve rate to reach the deceleration in [S20], when the car gets stop command while travelling at creeping speed.	
[S22] CREEPING PATH		
0 ... 500	This parameter defines the travel path in creeping speed. Unit is mm.	
[S23] TRAVEL CURVE		
0	Free access to speed curve parameters S10...S15 and S22. Deceleration with creep speed.	
1	Direct Landing system – Slow	
2	Direct Landing system - Medium	
3	Direct Landing system - Fast	

7.5- P05 CONTROL PARAMETER

Control parameters are mainly the parameters which are used to control the behaviour of the motor.

[C01] CARRIER FREQUENCY	
Carrier frequency defines the time period during which the basic calculations of speed are carried out. Preferred values are 8-10 kHz for most of the application.	
However, some motors may become noisy in some carrier frequencies.	
6...16	Carrier frequency [kHz]
[C02] - ENCODER FILTER	
This parameter defines the time period of reading encoder data. Making this period shorter results in a faster response to any speed deviation. However, a faster response may create some vibrations in speed. Set this parameter lower than 3 if ppr (pulse per revolution) value of encoder is less than 500.	
0	1 ms
1	2 ms (Preferred for synchronous motor)
2	4 ms (Preferred for asynchronous motor)
3	8 ms
4	16 ms

PID Control

AE-SMART is a vector-controlled lift motor driver. It calculates required data carrier frequency times and assigns voltage and frequency of motor signals. Device receives motor speed via encoder of motor. If the reference speed differs from the motor speed, device makes calculations to reset this difference. PID control contains the definitions of the adjustment procedure.

Zero Speed PD Control	
Zero speed process is used to overcome slip of the machine when mechanical brakes opened at start-up.	
[C03] – ZERO SPEED Kp	
1,0...200	Kp coefficient in zero speed control.
[C04] - ZERO SPEED Kd	
0...200	Kd coefficient in zero speed control.

Start Speed PI Control

When reference speed is lower than the value defined in [S09] Start Speed parameter then C05 and C06 are used as PI parameters.

[C05] – START SPEED Kp

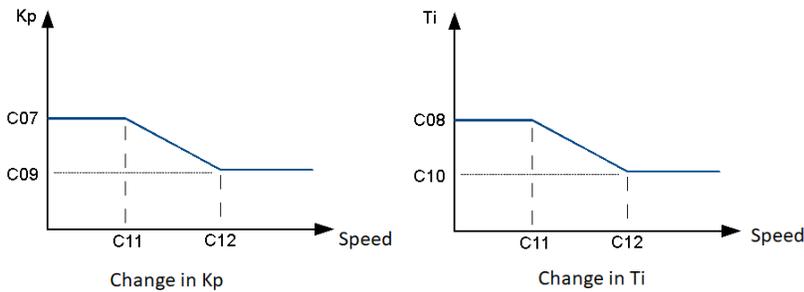
0.1...100.0 Kp coefficient on PID process

[C06] – START SPEED Ti

0 ... 9999 Ti (1/Ki) coefficient on PID process when reference speed is lower than Start Speed [S09] parameter.

Motion PI Control

When reference speed is higher than start speed, then Kp and Ti parameters are selected from [C07]-[C12] parameters according to reference speed. [C07] and [C08] are used where the reference speed is lower than [C11] PI Low Speed; [C09] and [C10] is used where the reference speed is higher than [C12] PI High Speed. Kp and Ti parameters change linearly between [C11] and [C12] reference speeds.



[C07] – LOW SPEED Kp

0.1...100.0 Kp coefficient when system speed is lower than [C11] parameter.

[C08] – LOW SPEED Ti

0.09999 Ti coefficient when system speed is lower than [C11] parameter.

[C09] - HIGH SPEED Kp

0.1...100.0 Proportional gain coefficient, Kp when the system speed is higher than [C12].

[C10] – HIGH SPEED Ti

0.0...9999 inverse of the integral gain coefficient T_i , when the system speed is higher than [C12].

[C11] - LOW SPEED PI

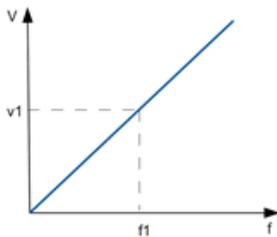
0.0 ... 1.0 C11 sets the lower transition speed for PID coefficients Kp and Ti.

[C12] - HIGH SPEED PI

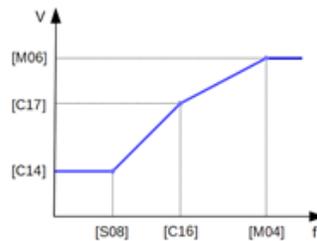
0.0 ... 1.0	C12 sets the upper transition speed for PID coefficients Kp and Ti.
[C13] - CURRENT Kp	
0.1...9.9	Proportional gain Kp coefficient of the current PID loop.
[C14] - CURRENT Ti	
0.0....9999	Ti, inverse of the integral coefficient of the current PID loop.

Open Loop Control

Open Loop can be used with synchronous motors below 1m/s and for low load capacity lift operations. Open loop control uses voltage/frequency (V/f) curve. As seen on the Figure all frequencies have different voltage values. Increase on frequency increases drive voltage. However, on low frequencies, system cannot drive a motor because of the low voltage values. Adjust low frequency settings with [C16] and [C17] parameters.



Open Loop Linear V/f Curve



Open Loop Real V/f Curve

[C15] - DC BRAKE LEVEL (%)	
5.0 ...100.0	This is a parameter used only for open loop applications. [C15] defines the DC brake level at start-up and stopping. In DC braking the motor is held stable until the inverter starts to rotate the motor at starting and until the mechanical brake is released at stopping. A high value may warm up the motor. If the value is lower than required, then motor slips at start and stopping.
[C16] - V/F STARTING SPEED	
0.1 ...1.0	This is a parameter used only for open loop applications. In V/f mode, system cannot start up with linear curve due to the static load. Instead of this inverter drives motor with a constant voltage below a frequency point. [C16] parameter is the start point of V/f curve.
[C17] - V/F STARTING TORQUE	
0,1...1	This is a parameter used only for open loop applications. Minimum torque level when system speed is under [C16]-V/f Low Speed at starting and stopping phases. If it is greater than required, then motor may vibrate. If the value is smaller, then the device cannot drive motor smoothly at low speeds.

[C18] - TORQUE Kp	
0.1...9.9	Kp coefficient of torque feedback.
[C19] - TORQUE Ti	
0.0...9999	Ti coefficient of torque feedback.
[C20] - TUNING CURRENT (%)	
0.0...100.0	The percentage of the nominal motor current that will be applied to the synchronous motor in tuning process. If motor tuning is not successful then increase [C20].
[C21] – FIELD WEAKENING	
If motor is driven above its nominal speed, magnetizing current has to be decreased. This process is called Field Weakening. [C21] parameter determines whether field weakening is active or inactive.	
0	Passive - No field weakening. Magnetizing current will not be decreased. (Motor may not reach set speed)
1	Active 1 - Field weakening is activated. (Method 1)
2	Active 2 - Field weakening is activated. (Method 2)
[C23] - PULSE/mm	
0.1...1000	This parameter stores the corresponding number of encoder pulses for 1 mm travel of the car. This parameter is set automatically in shaft learning process.

7.6 P06 MOTOR PARAMETERS

[M01] - ENCODER PULSE	
100...5000	Pulse value of encoder. Get this information from encoder label.
[M02] - MOTOR SPEED	
0,1...1,6	Nominal speed of motor. Get this information from motor label.
[M03]- MOTOR RPM VALUE	
10...3000	RPM value of motor. Get this information from motor label.
[M04] - MOTOR FREQUENCY	
5...250	Nominal frequency of motor. Get this information from motor label.

[M05]- MOTOR CURRENT	
1...60	Nominal current of motor. Get this information from motor label.
[M06] - MOTOR VOLTAGE	
100...450	Nominal voltage of motor. Get this information from motor label.
[M07] - MOTOR COS VALUE	
0,1...1	Cos value of motor. Get this information from motor label.
[M08] – NUMBER OF MOTOR POLES	
2...200	Number of poles of motor. Get this information from motor label.
[M09] - MOTOR NOLOAD CURRENT (%)	
5 ... 100	Ratio of motor no-load current and motor nominal current. If the value is high, motor might use more current, otherwise if the value is low then motor start-up might be noisy or it cannot start-up. This parameter has no effect in synchronous motors (gearless machines).
[M10] – STATOR RESISTANCE (ohm)	
0,1...10	Resistance value of stator. Automatically set by tuning process.
[M11] – RESIDUAL INDUCTANCE (mH)	
10...3000	Inductance value of stator. Automatically set by tuning process.
[M12] – ROTOR RESISTANCE (ohm)	
0,1...10	Resistance value of rotor. Automatically set by tuning process.
[M13] – MAGNETISING INDUCTANCE (mH)	
10...3000	Mutual inductance value of motor. Automatically set by tuning process.
[M14] – ROTOR TIME CONSTANT (ms)	
10...3000	Rotor time constant of motor. Automatically set by tuning process. This parameter has no effect in synchronous motors (gearless machines).
[M15] - ENCODER OFFSET	
0...359.99	Encoder offset in synchronous motor. Automatically set by tuning process.

[M16] - ENCODER TYPE

This parameter defines the encoder type used in the inverter. An asynchronous motor uses INCREMENTAL encoder where an asynchronous motor needs an absolute encoder listed between 1...7.

0	INCREMENTAL	4	SSI (Gray)
1	ENDAT	5	ENDAT-SPI
2	SINCOS	6	BISS-BIN (Binary)
3	BISS (Gray)	7	SSI-BIN (Binary)

[M17] - ENCODER DIRECTION

This parameter interchanges encoder channels. Change this parameter only if there is an encoder direction fault at installation, otherwise check encoder and connections.

1	CLOCKWISE
2	COUNTER CLOCKWISE

[M18] - TUNING MODE

0	Stationary Tuning Tuning process is carried out while motor is held stationary. Motor brakes must be held closed to prevent any rotation.
1	Rotating Tuning Tuning process is carried on with motor rotation. Brakes must be opened to allow rotation.

[M19] – MOTOR DIRECTION

This parameter determines the rotation direction of the motor. After tuning process, if the car moves upwards for a down command or vice versa then change the value of this parameter.

1	Direction 1
2	Direction 2

[M20] – CAR DIRECTION

This parameter determines the count direction of the car when motor encoder is used as floor selector [A05=2]. After installation process, if the floor position is counted reversely then change the value of this parameter.

1	Direction 1
2	Direction 2

7.7 P07 HARDWARE PARAMETERS

[E01] – LANGUAGE

The screen language of LCD screen is set by this parameter.

0	Turkish	4	Russian
1	English	5	Spanish
2	German	6	Greek
3	French	7	Italian

[E02] – BUTTON PRESSED CONTROL

This parameter enables or inhibits checking of faulty button.

0	PASSIVE No faulty button is checked.
1	ACTIVE If a landing button remains pressed for 5 minutes then the system creates an error. This button is not read any more and the lift can function normally. When the system is switched off or entered into inspection mode then disregarding the button is terminated. Note that this function can be used only in car serial connection.

[E04] – LANDING ARROWS

This parameter determines the information indicated by landing arrow.

0	Motion Direction	- Landing arrows indicate motion direction.
1	Service Direction	- Landing arrows indicate next direction.

[E05] - SERIAL CHANNEL 1

This parameter determines for which purpose serial port 1 SP1 is going to be used.

0	FREE - Not used.
1	PC COMMUNICATION It is used to transfer data to a PC via Ethernet or USB interface.
2	GSM - A GSM system is connected to SP1.
[E07] - CAR CAN CHANNEL.	
0	CAN 0
[E08] - LANDING CAN CHANNEL E08 defines the interface channel for landing panels.	
0	CAN 0
1	CAN 1
2	CAN 2
3	NOT ACTIVE
[E09] - GROUP CAN CHANNEL	
2	CAN 2
3	NOT ACTIVE
[E10] - ENCODER CAN CHANNEL A10 defines the interface channel for absolute CAN encoder.	
0	CAN 0
3	NOT ACTIVE
[E13] - LCD BACKLIGHT This parameter determines the activation of LCD backlight.	
0	AUTO OFF
1	ALWAYS ON
2	ALWAYS OFF

7.8 P08-SPECIAL PARAMETERS

[U01] - TEMPERATURE LIMIT	
55-85	Temperature limit of the system. If device temperature exceeds this limit, it stops working until the temperature decreases below the limit.
[U02] - CURRENT COEFFICIENT	
0.1-5.0	The system uses this coefficient in current sense function.
[U03] – DYNAMIC BRAKE START	
350-770	If DC-Bus voltage exceeds the voltage defined in this parameter, then dynamic braking is started. The device lowers DC-Bus voltage level by sending current to the braking resistor.
[U04] – DYNAMIC BRAKE END	
345-765	Dynamic braking is terminated, if dc-bus voltage gets down under the voltage defined in this parameter.
[U05] – DYNAMIC BRAKE PERIOD	
0-6	Frequency of dynamic braking operation.
[U06] – MAXIMUM OUTPUT FREQUENCY	
This parameter defines the maximum output frequency of motor driver.	
0	100Hz - Motor Frequency is less than or equal to 100 Hz.
1	250Hz - Motor Frequency above 100 Hz.
[U07] – LINE VOLTAGE	
0	Line Voltage is 3x400V
1	Line Voltage is 3x200V
2	Line Voltage is 1x220V/230V
[U08] – PRE-TORQUE Kp	
1-100	The value in this parameter determines the magnitude of the torque applied in pre-torque operation. Increasing value increases the torque.
[U09] – PRE-TORQUE PULSE	
2-50	The value in this parameter determines after how many pulses of rollback, pre-torque operation will be activated.

[U10] – PRE-TORQUE SPEED	
0.0 – 0.1	The value in this parameter determines after reaching which speed of rollback, pre-torque operation will be activated.
[U11] – PRE-TORQUE PERIOD	
1-500	The value in this parameter determines T_i period in pre-torque operation. Decreasing T_i will increase pre-torque power.
[U12] – SPEED FILTER	
1-20	Low pass filter of the system speed feedback.