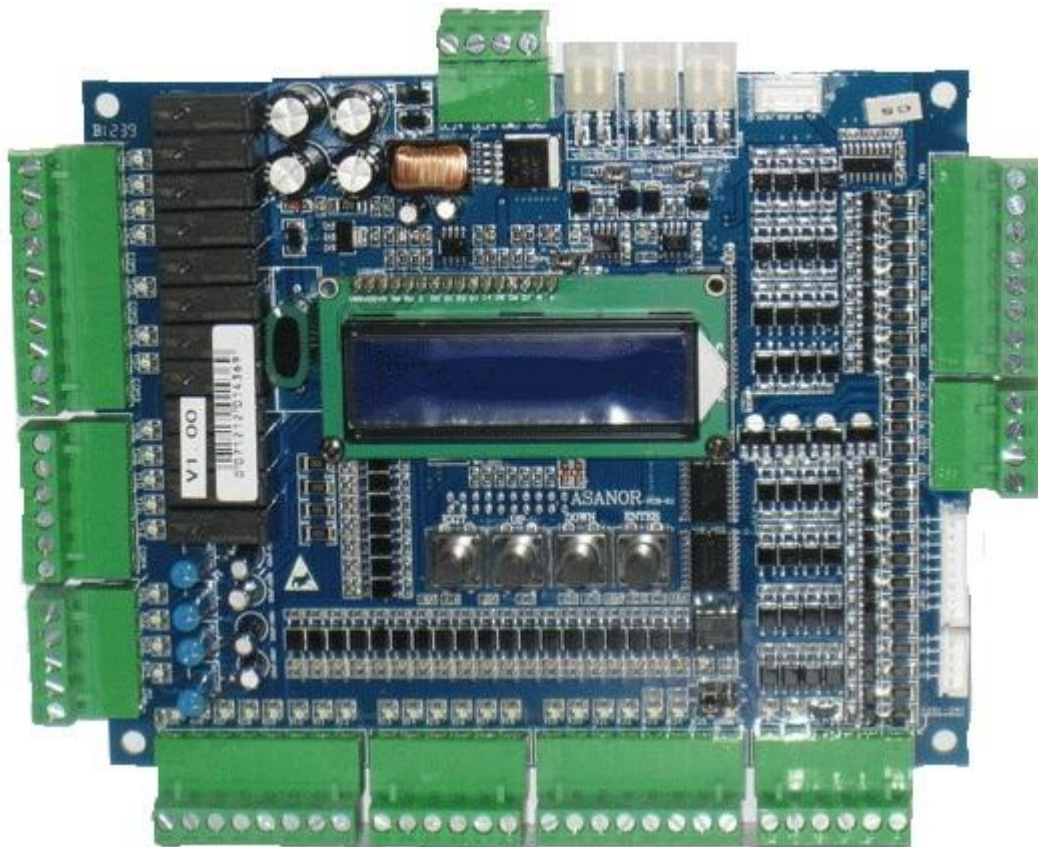


Controller ECO



ASANOR
LIFT CONTROLLER

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ASANOR

Operating Manual ECO

Foreword

ECO Control Systems for Lifts is winning more and more market share after its launch. With beyond-measure security, friendly human-computer interface.

Features

ECO employs local CAN bus control and 32-bit industrial ARM processor. Main processor can handle 32 digits data directly so as to improve the operation ability and handle signals within 64 floors directly. Board-making techniques and surface-paste technology to maximize system's anti-interference ability. The top and bottom board are overlay without wiring. With friendly human-computer interface, the users do not need any programming; only need to input several parameters according to the real instance. It has the following characteristics.

- Hoist way parameters self-learning
- Adopting high-speed counting technology and nicety orientation technology to maximize leveling precision.
- Four-thread system minimizes wiring. The system uses serial communication technology, and thus all the calling signals are connected by two communication wires and reliable insert unit, therefore local wiring progress can be significantly speed up and errors reduced.
- Making controller standardized manufacture possible.
- Calling lifts directly from the system. All the hall call signals and car call signals can be operated and displayed on the system.
- Timing automatic closing-door, opening-door and closing-door protection.
- Choosing not to answer signals from a certain floor.
- Choosing single-door, double-door or not opening-door in a certain floor.
- Setting floor display according to personal preference. For example, setting floor display as -9, -1, or letters.
- Setting base station, and fire-control returning station.
- Displaying the pulses-number of every floor after system self-learning, and the location of on-line car.
- Setting single-floor and multi-floor running curve (set run curve directly while controlled by simulated value), with over-floor decelerating point.
- Supporting remote monitoring and debugging.
- Controlling several lifts at the same time.
- Three display method: seven-segment code, BCD code, and rolling dot matrix.
- Fifty error history records.

Lift Control Functions

Item	Function	Remark
1	Collective selective control	
2	Inspection running	
3	Self-rescue inspection running	
4	Testing running	
5	Time display	
6	Automatic control for door keep open time	
7	Hall door open	
8	Door close button door close in advance	
9	Door open button	
10	door open repeat	
11	Door closed and waiting for call	
12	error cancel	
13	order cancelation when reverse	
14	Full load operation	
15	Auto power supply cut of lighting and fan when lift standby	
16	Auto base station return	
17	controller with LCD display	
18	Error record	
19	hoist-way floor data self-learning	
20	random settings of service floor	
21	floor display character setting	
22	driver operation	
23	Stand-alone running	
24	dot matrix floor display	
25	Rolling display of running direction	
26	auto revise of floor location signal	
27	Lift lock service	
28	protection of door close outside gate area	
29	light curtain protections	
30	over load protection	
31	light load anti-nuisance devise	
32	running protection	
33	antiskid protection	
34	anti-slide protection	
35	terminal over run protection	
36	safe contactor contact point inspection protection	
37	Inverter error protection	
38	main control CPU WDT protection	
39	Auto-reporting-calling function	
40	Digital gong	
41	failure emergency level	
42	emergency return operation	
43	fire-fighter operation	
44	Parallel operation	
45	Group control operation	

Performance index

Performance feature:

- 32 bit ARM CPU
- SMT process, CAN serial bus communication
- High intelligence, high reliability
- Keyboard operation, LCD display
- Parallel and group control supported

Scope of application

- Passenger lift, freight lift, passenger & freight lift
- Full collective lift, parallel connection, group control
- Lift speed range: 0.3m/s-4m/s
- Applicable floor: ≤ 64
- Parallel and group control supported

Reference standard

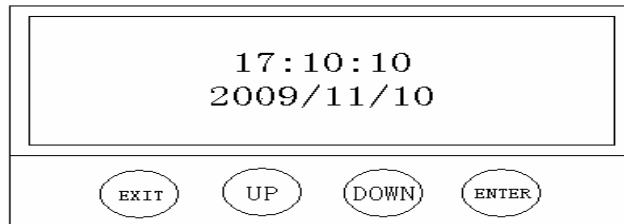
《GB7588-2003 safety standard of lift manufacture and installation》

Working temperature

Components working temperature 0-60 (LCD display components excluded)

Parameter introduction

Operational buttons



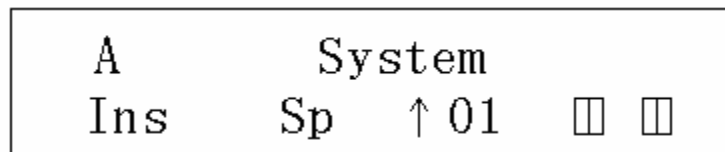
EXIT: Exit button; exit revise when revising parameter; return to main menu when in submenu; return to time interface when in main menu.

UP: go to upward items in main/sub menu; increase value in parameter modification

DN: go to downward items in main/sub menu; decrease value in parameter modification

ENTER: confirmation button; enter main menu when in time interface; enter submenu when in main menu; enter parameter modification.

Main menus:



Main menu no: A

Menu name: System

Lift modes: Ins (Inspection), Auto (Automation), Over (Overload), Full (Full load) , Fire (Fire control) , Manu (Manual) , Spec (Special) , Lock (lift lock) Speed mode: Sp (Stop) , Vi (Inspection Speed) , V0 (Creeping Speed) , V1 (Level Speed) , Vs (self-rescue Speed) , V1(Speed 1) , V2(Speed 2) , Ai(Inspect acceleration) A0(O acceleration), A1(Acceleration 1) , A2(Acceleration 2) , Di(Inspect deceleration) , D0(Creeping deceleration), D1(Deceleration 1) , D2(Deceleration 2)

Direction: up run down run

Floor display: 01 (1st floor)

Door mode: (door open in place) , (door opening) , (door closing) , (door close in place) ,

There will be blank display when there is stopping and no action

sub-menus

Sub-menus no.: A1 (first menu in main menu A)

Menu name: Password1

Modify method: after selecting parameter, press “Enter”, entering to parameter modification mode.

At this time, parameter to be modified is the first parameter, press “up” or “down” to increase/decrease value. Press “Enter “again”, entering to second parameter modification. So and so forth, when “Enter” modifies the last parameter, the whole data modification is ended.

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Controller Parameter:

A - SYSTEM		
No.	Name	Content
A01	Password1	Primary password menu, after inputting the correct password, password can be modified here.
A02	Password2	Secondary password menu, after inputting correct password, password can be modified here.(note: primary password can be modified when secondary password is entering correctly.
A03	Data	date modification menu
A04	Time	Time modification menu
A05	Factory set	Initializing menu, "Enter To Recover"/"Enter To Save!"(Note: it's allowed to modify when secondary password is correct.)
A06	Software Ver V1.00X	software vision
B - I/O		
B01	X1 X2 X3 X4 X5 X6 X7 X8 X9	Input status of microcontroller X01 to X09, with input is , no input is blank
B02	X10 X11 X12 X13 X14 X15 X16	Input status of microcontroller X10 to X16, with input is , no input is blank
B03	X17 X18 X19 X20 X21 X22 X23	Input status of microcontroller X17 to X23, with input is , no input is blank
B04	X24 X25 X26 A B	Input status of microcontroller X24 to X26, with input is , no input is blank
B05	Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 Y9	Output status of microcontroller Y01 to X09, with output is , no output is blank
B06	Y10 Y11 Y12	Output status of microcontroller Y06 to Y12, with output is , no output is blank
B07	UP DN A B C D E F G H I J	Output status of microcontroller parallel display, with output is , no output is blank
B08	K1:1111,1111 LED1:1111,1111	Input status of button from F01 to F08 in 1st way, with input is 1, no input is O Output status of button LED from F01 to F08 in 1st way, with input is 1, no input is O
B09	K2:1111,1111 LED2:1111,1111	Input status of button from F01 to F08 in 2nd way, with input is 1, no input is O Input status of button LED from F01 to F08 in 2nd way, with input is 1, no input is O
B10	x1 x2 x3 x4 x5 x6 x7 x8	Input status of Car call board from X01 to X08, with input is , no input is blank
B11	Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8	Output status of Car call board from Q01 to Q08, with output is , no output is blank
B12	A0 A1 A2 A3 A4 A5 A6 A7	Input status of car top board from A01 to A07, with input is , no input is blank
B13	A10 A11 A12 A13	Input status of car top board from A10 to A17, with input is , no input is blank

B14	b0 b1 b2 b3 b4 b5 b6	Output status of car top board from b0 to b6, with output is , no output is blank
B15	X07 Setting	<p>Multifunctional choice for microcontroller X07:</p> <ol style="list-style-type: none"> 1. <u>fire</u> 2. <u>fireman</u> 3. <u>Lift lock</u> 4. <u>UPS mode</u> 5. <u>Inverter Running</u> 6. <u>door open limit switch 1</u> (applicable when F13=OFF, input in car top board A00 when F13=ON) 7. <u>door close limit switch 1</u> (applicable when F13=OFF, input in car top board A01 when F13=ON) 8. <u>door open limit switch 2</u> (applicable when F13=OFF, input in car top board A02 when F13=ON) 9. <u>door close limit switch 2</u> (applicable when F13=OFF, input in car top board A03 when F13=ON) 10. <u>Over load</u> (applicable when F13=OFF, input in car top board A04 when F13=ON) 11. <u>Full load</u> (applicable when F13=OFF, input in car top board A05 when F13=ON) 12. <u>Half load</u> (applicable when F13=OFF, input in car top board A06 when F13=ON) 13. <u>Safety touch panel 1</u> (applicable when F13=OFF, input in car top board A07 when F13=ON) 14. <u>Safety touch panel 2</u> (applicable when F13=OFF, input in car top board A10 when F13=ON) 15. <u>Safety touch photo 1</u> (applicable when F13=OFF, input in car top board A11 when F13=ON) 16. <u>Safety touch photo 2</u> (applicable when F13=OFF, input in car top board A12 when F13=ON) 17. <u>Driver man</u> (otherwise input in carcall board X01) 18. <u>Up re-leveling</u> (otherwise input in car call board x02) 19. <u>Spare</u> 20. <u>Special</u> (otherwise input in car call board x04) 21. <u>Keep door</u> (otherwise input in car call board x05) 22. <u>Down re-leveling</u> (otherwise input in car call board x06) 23. <u>Door open button</u> (otherwise input in car call board x07) 24. <u>Door close button</u> (otherwise input in car call board x04) 25. <u>Inverter error</u> 26. <u>Brake feedback</u> 27. <u>Motor hot</u>
B16	X08 Setting	
B17	X09 Setting	
B18	X10 Setting	
B19	X11 Setting	
B20	X12 Setting	
B21	X13 Setting	
B22	X14 Setting	
B23	X15 Setting	

B24	X16 Setting	
B25	X17 Setting	
B26	Y01 Setting	<p>Multifunctional selection of car call board Y01</p> <ol style="list-style-type: none"> 1. <u>Door open 1</u> (output simultaneously on car top board b01) 2. <u>Door close 1</u> (output simultaneously on car top board b01) 3. <u>Door open 2</u> (output simultaneously on car top board b02) 4. <u>Door close 2</u> (output simultaneously on car top board b03) 5. <u>Up gong</u> (output simultaneously on car top board b04) 6. <u>Down gong</u> (output simultaneously on car top board b05) 7. <u>Lamp</u> (output simultaneously on car top board b06) 8. <u>Door open LED</u> (output simultaneously on car top board Q01) 9. <u>Door close LED</u> (output simultaneously on car top board Q02) 10. <u>Up gong</u> (output simultaneously on car top board Q03) 11. <u>Down gong</u> (output simultaneously on car top board Q04) 12. <u>Buzzer</u> (output simultaneously on car top board Q05) 13. <u>Overload light</u> (output simultaneously on car top board Q06) 14. <u>Inspection light</u> (output simultaneously on car top board Q07) 15. <u>Full-load light</u> (output simultaneously on car top board Q08) 16. <u>CAM</u> output in manual operated door 17. <u>Lift lock</u> 18. <u>Inverter reset</u> 19. <u>Fire</u> 20. <u>Brake excitation</u> 21. <u>Inv BB</u>
B27	Y02 Setting	
B28	Y03 Setting	
B29	Y04 Setting	
B30	Y05 Setting	
B31	Photocell	NC/NO of safety touch panel and light curtain input
B32	Fire	NC/NO of fire-fighting output
B33	Overload	NC/NO of overload, full-load and half load input
B34	Brake Feedback	NC/NO of brake feedback input
B35	KC Feedback	NC/NO of operation contactor feedback input
B36	BC Feedback	NC/NO of brake contactor feedback input
B37	Lamp Output	NC/NO of lighting output
B38	Lock Output	NC/NO of lift lock output
B39	Up/Dn Limit	<p>Cancelation of Up and down limit switch input in inspection mode, adopting up-low-velocity intense and acting down levels is up limit switch; adopting down-low-velocity intense and acting up-leveling is down limit switch.</p> <p>In automation mode, adopting up-low-velocity intense and acting down levels, and non-acting up leveling is up limit switch; adopting down-low-velocity intense and acting up-leveling and non-acting down Leveling is down limit switch.</p>
C- Config		
C01	Mode	Operation mode; Single lift , Parallel lift , Group lift , Test lift
C02	Address	Lift address
C03	Shaft Type	Encode , 2 Switch , B switch , N switch

C04	Display F: P:	Floor display setting, F is absolute floor, P is corresponding display.	
C05	Code	Code of output: (Gray)(Binary)(7 Segment) (Decimal)(Gray1)(Binary 1) (parameter)	
C06	Start Floor	Start floor (in split-level parallel and group control, changing absolute start floor value to justify each floor of the lift). If two lifts are in parallel connection, one has floor -1(set to 1), one has not(set to 2).	
C07	Park Floor	Base floor, which lift will return to wait	
C08	Fire Floor	Fire floor, which lift will return to in fire fighting	
C09	Base Flr Time	Waiting time in base floor, if lift is free for more than this value, lift will return to base floor standby.	10Min
C10	Flr Run Time	Single floor operational protection time, when lift is working, level switch should act once within this period of time	020.0S
C11	All Run Time	All run protection time, which is the all protection time of start stop once of the lift	060.0S
C12	Leave Time	Protection start time, lift should leave level within this time.	005.0S
C13	Arrive Time	Protection stop time, lift should arrive level within this time	010.0S
C14	Alarm Time	Spacing interval alarm time rang by buzzer	01.0S
C15	Photo Time	Light curtain protection time; if light curtain is blocked for more than this time set, buzzer will alarm.	05.0S
C16	GONG Time	Continuous time rang by gong	02.0S
C17	Lamp Time	Lighting time, if lift goes no direction for more than this time set, lighting closed	300S
C18	Run Counter	Operation times (note; can be modified in password 2)	
C19	Run Limit	Run limit (note: can be modified in password 2)	
C20	EPlay	Independent shield display of each error information on hall call board, F means error number, 1 means display, O means non-display	
C21	Out parameter	Output of segment select; A B C D E F G H I	
D - Driver			
D01	Driver Mode	Driver mode: <u>VVVF</u> : frequency conversion(no brake and operation contactor control) <u>AC2</u> : doubt-speed <u>Hydraulic</u> : <u>VVVF2</u> : frequency conversion (with brake , operation contactor control) <u>AC1</u> : single speed lift	
D02	N Speed	Speed that lift allow to run Note: when this value is >1, D01 is in frequency conversion, and C03 hoist-way type is Encode, there is no up/down limit switch input. In inspection mode, adopting up-low-velocity intense and acting down levels is up limit switch; adopting down-low-velocity intense and acting up-leveling is down limit switch. In automation mode, adopting up-low-velocity intense and acting down levels, and non-acting up leveling is up limit switch; adopting down-low-velocity intense and acting up-leveling and non-acting down leveling is down limit switch.	
D03	Direction ON Delay	Speed delay time when starting (can be seen in accordant sequence chart in detail)	0.200S

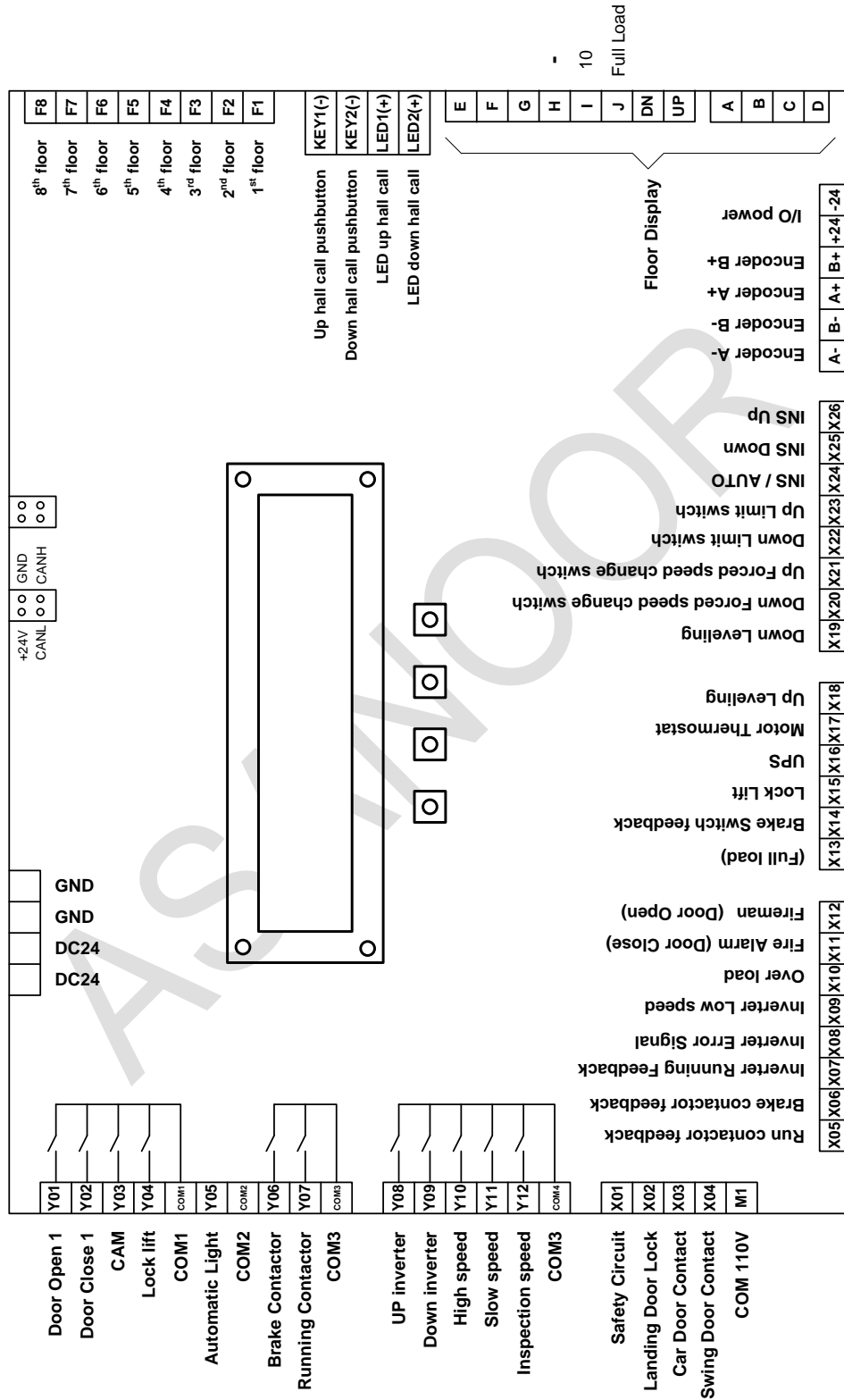
D04	Speed ON Delay	Brake delay time when starting (can be seen in accordant sequence chart in detail)	0.200S
D05	Speed OFF Delay	Enable delay time when stopping (can be seen in accordant sequence chart in detail)	0.100S
D06	BC close Delay	Direct delay time when stopping (can be seen in accordant sequence chart in detail)	0.100S
D07	Level Delay	Level delay time when in re-leveling (can be seen in accordant sequence chart in detail)	0.500S
D08	Direction Off Delay		0.500S
D09	KC OFF Delay		3.000S
E - Pulse			
E01	Rated Speed	Rated speed of lift	1.0 m/s
E02	Rated RPM	Rated speed of motor	000rpm
E03	Pulses/Rev	Pulse/ encoder	000000 000ppr
E04	Now High	Current height	000000 .000M
E05	Now Speed	Current speed	00M/S
E06	Max Floor	Maximum floor	
E07	Level Dis	Distance difference between car stopping location and microcontroller Setting	
E08	Level Length	Length of magnet vane (obtained by self-learning)	
E09	Switch Dis	Switch distance between up and down level (obtained by self-learning)	
E10	Floor01 High Mid	Level switches height of each floor, can be obtained by self-learning. Up1 means the height of up level entering gate area when lift is upward running, cannot be modified. Up2 means the height of down level entering gate area when lift is upward running cannot be modified. Flr means the height of stopping car floor, can be modified Dn1 means the height of up level leaving gate area when lift is upward running, cannot be modified. Dn2 means the height of up level leaving gate area when lift is upward running, cannot be modified.	
E11	Up SW1 High	Location of up low-velocity-intense switch, obtained by self-learning	
E12	Up SW2 High	Location of up high-velocity-intense switch, obtained by self-learning	
E13	Dn SW1 High	Location of down low-velocity-intense switch, obtained by self-learning.	
E14	Dn SW2 High	Location of down high-velocity-intense switch, obtained by self-learning.	
E15	Up LDec Dis	Distance of up low-velocity-intense switch, obtained by self-learning.	
E16	Dn LDec Dis	Distance of down low-velocity-intense switch, obtained by self-learning.	
E17	Up HDec Dis	Distance of up high-velocity-intense switch in self-learning, obtained by self-learning.	
E18	Dn HDec Dis	Distance of down high-velocity-intense switch in self-learning, obtained by self-learning	
E19	V2 Add Dis	Distance that allowed V2 to go	
E20	V0 Dec Dis	VO speed deceleration distances (creeping distance); when lift up-	

		run and down-run distance difference are the same, adjust this parameter to make level adjustment. If up-run distance is higher than down-run distance, decrease the value of this parameter; if up-run distance is lower than down-run distance, increase the value of this parameter.	
E21	V1 Dec Dis	V1 deceleration distance (distance of low speed), adjust this parameter can adjust distance of lift creeping.	
E22	V2 Dec Dis	V2 deceleration distance (distance of low speed), adjust this parameter can adjust distance of lift creeping	
E23	QEI Direct	Encoder direction	
E24	Adjust Type	Adjust type: Pulse self-adjust; pulse adjusted by Switch	
E25	Max Adjust	Maximum error of pulse adjustment	
E26	Error Adjust	Minimum pulse of error recorded, if pulse difference is more than this value, error E27 will be reported.	
E27	Learning	Hoist-way data self-learning when using encoder Back: lift back to terminal Ready: ready to start learning Doing: learning Success: learning succeed Error: learning error	
F – Door			
F01	Door Type	Door type: 0)Automatic; (1)Semi-Auto (2)Swing Door;	
F02	Door Limit	Door limit function: (0)No Limit (1) With Limit	
F03	Door Output	Door output maintain: (0)All No Keep (1)Keep Close (2)Keep Open (3)Both Keep	
F04	Driver Door	Manual door close ways OFF: hold down door close button for several seconds to close door ON: press door close button to close door	
F05	Open Delay	Open delay time when car stopping	01.0S
F06	Close Delay	Close delay time when door closed	01.0S
F07	Open Time	Protection time of door open (door will open within this time when door is in no limit switch)	03.0S
F08	Close Time	Protection time of door close (door will close within this time when door is in no limit switch)	03.0S
F09	Keep Time	Door open keep time	03.0S
F10	Enable Error	Enable error times in door open and close (door is allowed to open and close repetitive under this times)	010
F11	EnDr1 +01	Enable Door 1 open settings	
F12	EnDr2 +01	Enable Door 2 open settings	
F13	PM709	Car top board enable (note: when it's ON, some microcontroller input definition is invalid, some functional point is transferred to car top board)	
F14	Wait Type	(0)Keep Close (1)Keep Open (2)Delay Close open delay for the time set in F15 , then close door	
F15	Wait Delay	Wait delay to close time when lift is free	05Min
F16	Door Control	Door control mode:	

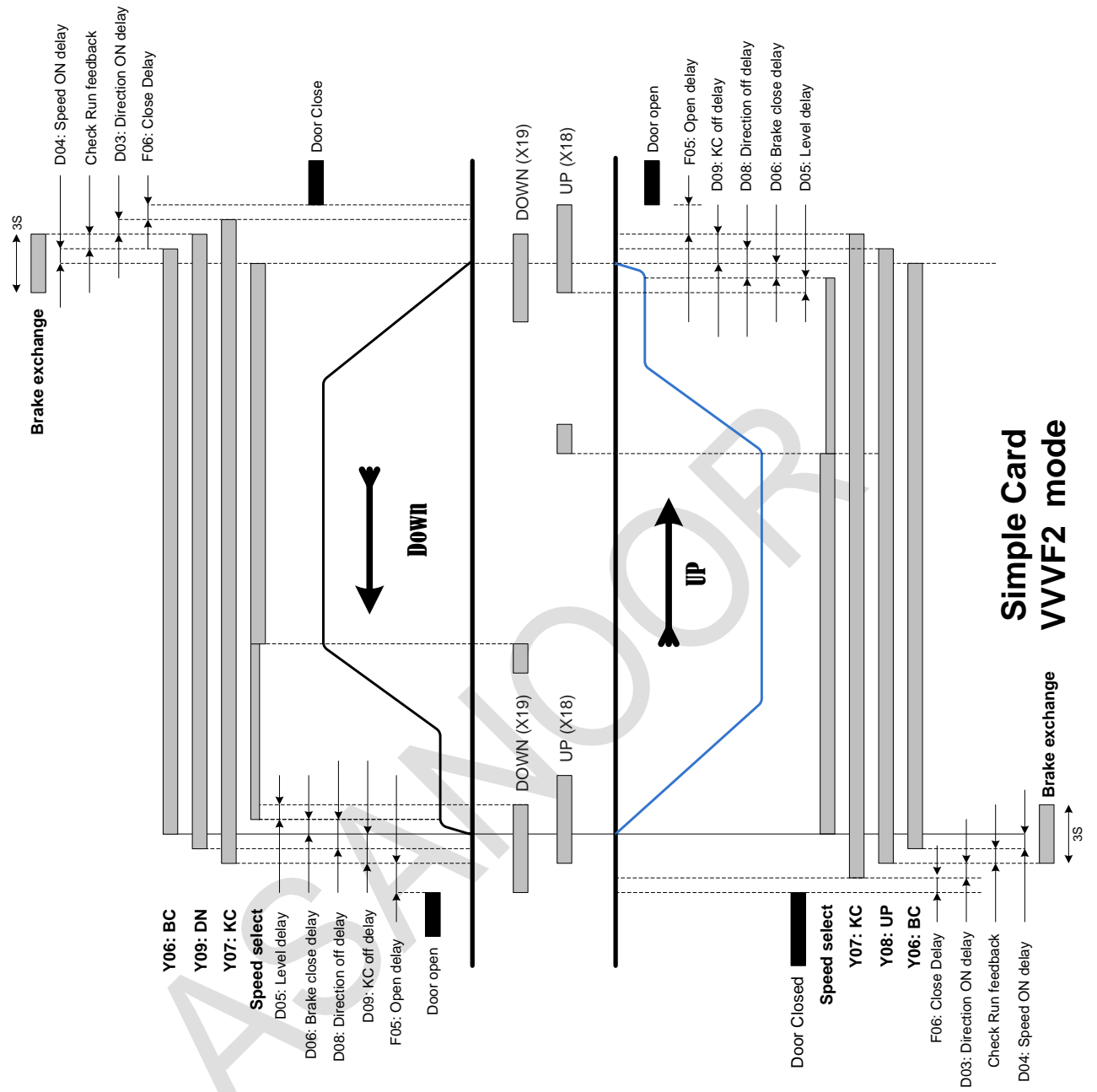
		(0)One Door: single door (1)Two Door Same :two door open and close at the same time (2)Two Door Diff :two door open and close separately	
G – Call			
G01	CarCl +01	Car call menu	
G02	UpCal +01	Up call menu	
G03	DnCal +01	Down call menu	
G04	EnCal +01	Car call enable menu	
G05	EnUp +01	Up call enable menu	
G06	EnDn +01	Down call enable menu	
G07	Driver Call	Manual call	
G08	Collective	Car call selection: (0) PUp_PCar < 8F : parallel, 8 floor up collective (1) PDn_PCar < 8F : parallel, 8 floor down collective (2) P2B_PCar < 6F : parallel, 6 floor up down button full collective. (3) P1B_PCar < 8F : parallel, 8 floor single button full collective. (4) PUp_SCar < 16F : External with serial internal, 16 floor up collective. (5) PDn_Scar < 16F : External with serial internal, 16 floor down collective. (6) P2B_Scar < 9F : external with serial internal, 9 floors up down button (7) P1B_Scar < 16F : external with serial internal, 16 floor single button. (8) S1B_Scar < 64F : all serial, single button full collective (9) S2B_Scar < 64F : all serial, up down button full collective	
G09	Ground Floor		
H – Error			
E1	Safety Circuit error	Please check the AC110V no input of X01 and its corresponding Circuits	
E2	Inverter Ready error	Please check the settings of inverter error input .	
E3	Brake Feedback error	Please check settings of normal open/normal close in B34 and settings of brake feedback	
E4	Brake Contact Feedback error	3VF:operation contactor does not work after speed order sent out for 5 seconds AC2: operation feedback does not work after speed order sent out for 5 seconds. Please check settings of normal open/normal close of B36 and input point of X06 and its corresponding circuits.	
E5	Running Feedback error	Please check setting of input point of inverter operation in X07-X17 and its corresponding circuits	
E6	Run Contact Feedback error	3VF:operation contactor doses not work after speed order sent out for 5 seconds AC2: operation feedback does not work after speed order sent out for 5 seconds Hdy: operation feedback does not work after star/angle starting output for 5 seconds. Please check the settings of normal open/normal close in B35 and input point of X05 and its corresponding circuits	
E7	Encoder Direction error	Please check E20 menu and modify direction, and inspection recover.	
E8	Up Limited Switch error		

E9	Down Limited Switch error		
E10	Min Pulse error (internal error)		
E11	Max Pulse error (internal error)		
E12	Start Level Time Over error	Please modify start protection time in C12	
E13	Stop Level Time Over error	Please modify start protection time in C13	
E14	Floor Time Over error	Please modify single floor running protection time in C10	
E15	Running Time Over	Please modify total running protection time in C11	
E16	Up Dec Switch 1 error	Location of Up Deceleration switch 1 is higher than that in self-learning for one gate area distance	
E17	Down Dec Switch 1 error	Location of Up Deceleration switch 1 is lower than that in self-learning for one gate area distance	
E18	Up Dec Switch 2 error	Location of Up Deceleration switch 2 is higher than that in self-learning for one gate area distance	
E19	Down Dec Switch 2 error	Location of Up Deceleration switch 2 is lower than that in self-learning for one gate area distance	
E20	Hand Lock error	X03 is not connected after door closed or X03 is not cut after door open	
E21	Car Lock error	X02 is not connected after door closed or X02 is not cut after door open	
E22	Open Time Over error	Please modify door open time in F07	
E23	Close Time Over error	Pleas modify door close time F08	
E24	Door Lock Not Ready error	After control board is power on or door lock error occurs, door should set to automation after door open and close normally once, to prevent man-made door lock short-circuit	
E25	Door Jam error		
E26	Floor Counter Wrong error	When the floors calculated by magnet vane and floors calculated by impulse are not the same, lift will adjust automatically to down terminal.	
E27	Encode Counter Wrong error	When impulse difference is more than E24 value, there will be no impact on the lift operation	
E28	Swing Feedback error		
E29	Door error over	Parameter F10 setting	
E30	Encode Para Wrong error	Parameters E01-E03 settings are inappropriate	
E31	Inspect For Reset error	It means lift should recover on inspection mode.	
E32	Car Top Broad error	(alarm only)	
E33	Car Broad error	(alarm only)	
E34			
E35	Motor Hot error		
E36	IO Setting Error IO error	Settings of input points are inappropriate.	
E37			
E38			

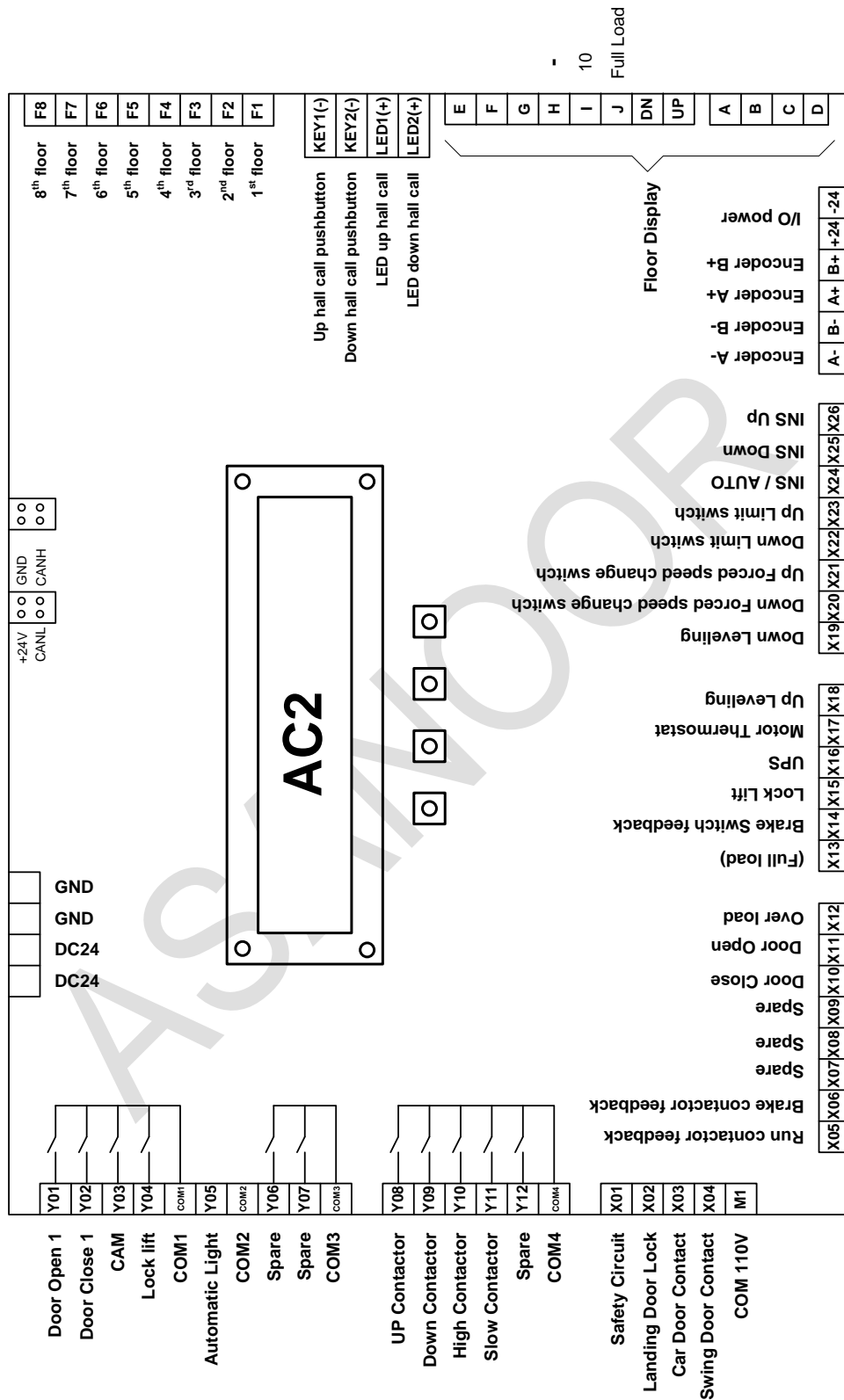
I / O CONTROLLER

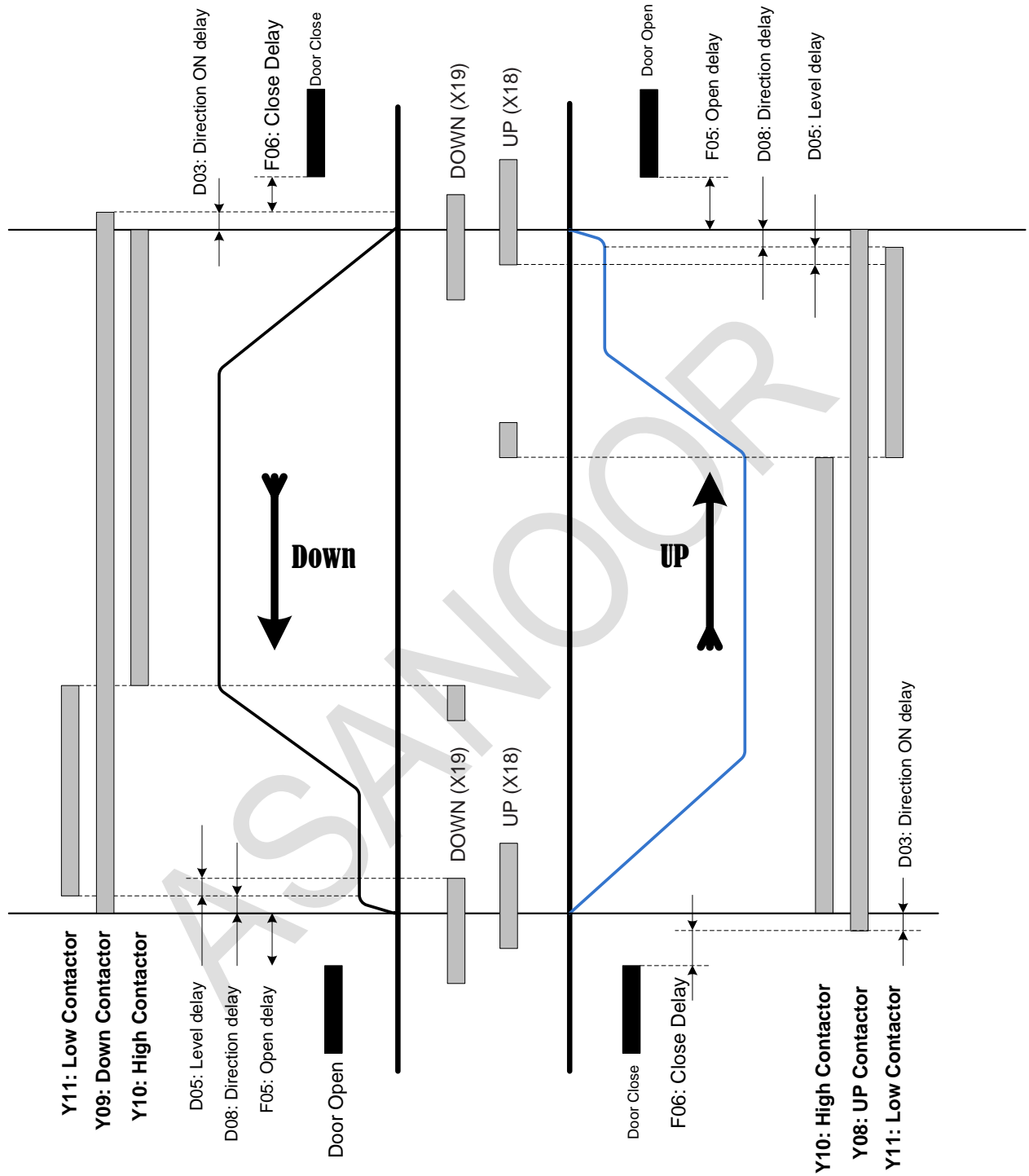


- 10 Full Load

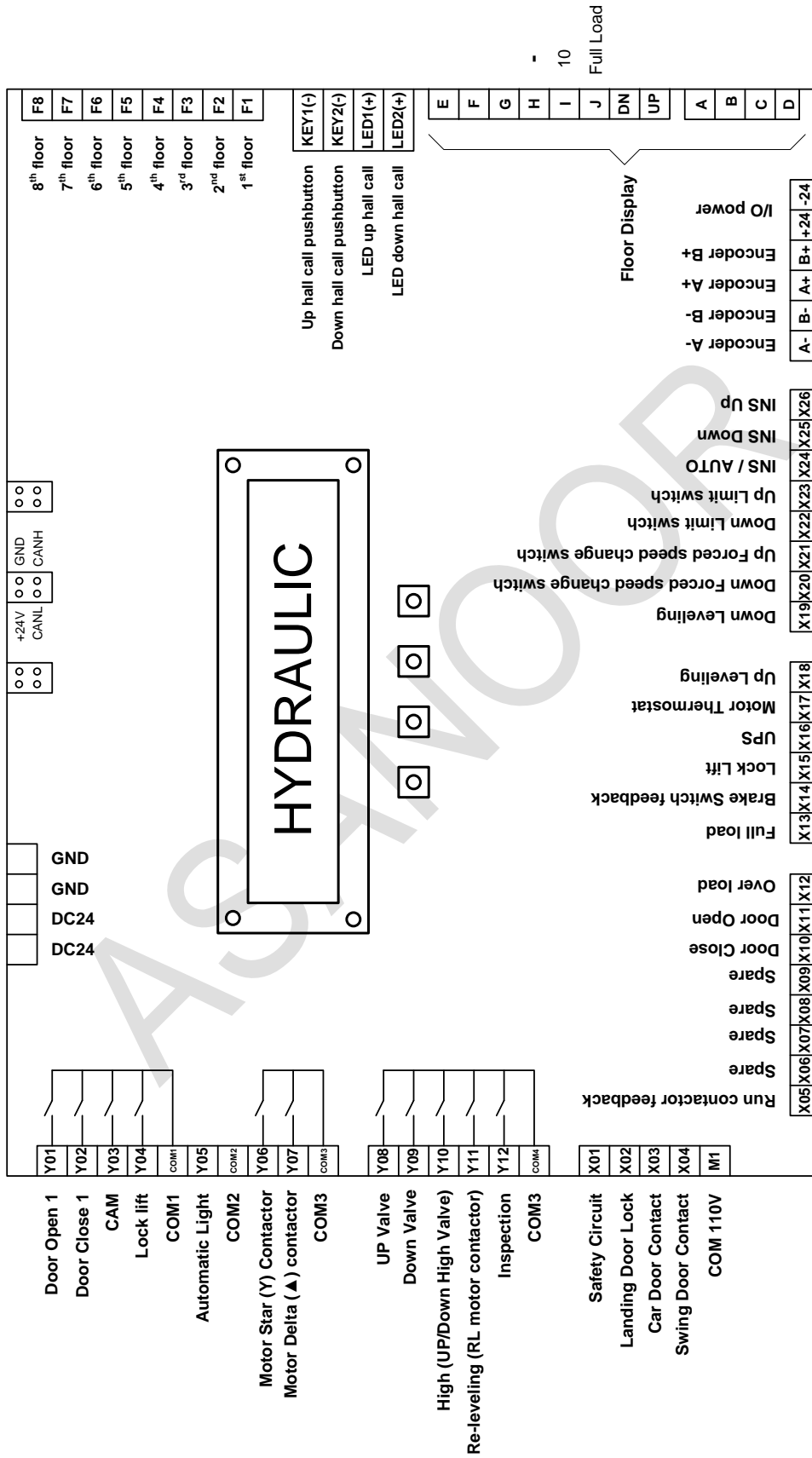


**Simple Card
VVVF2 mode**



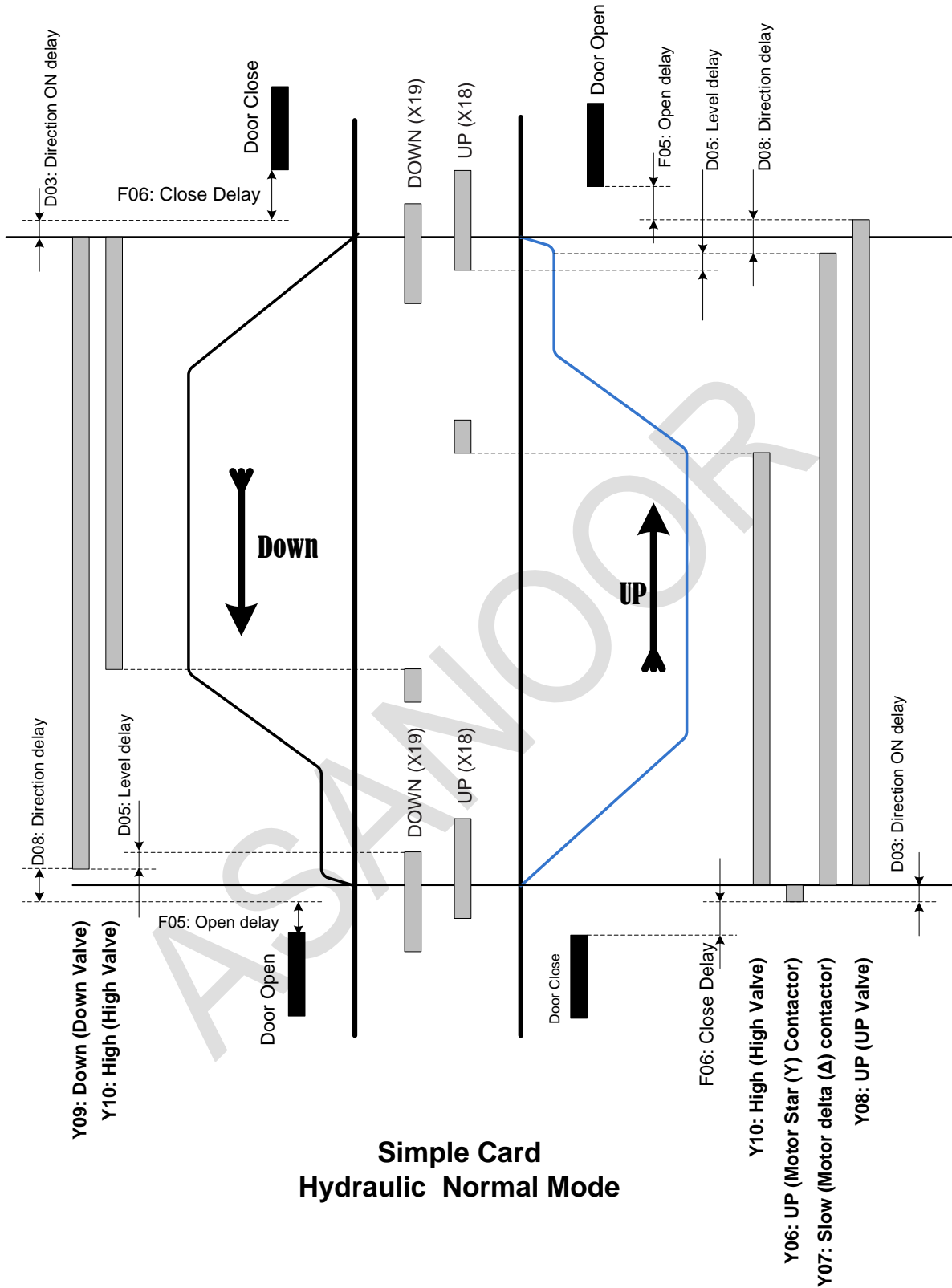


Simple Card AC2 Mode

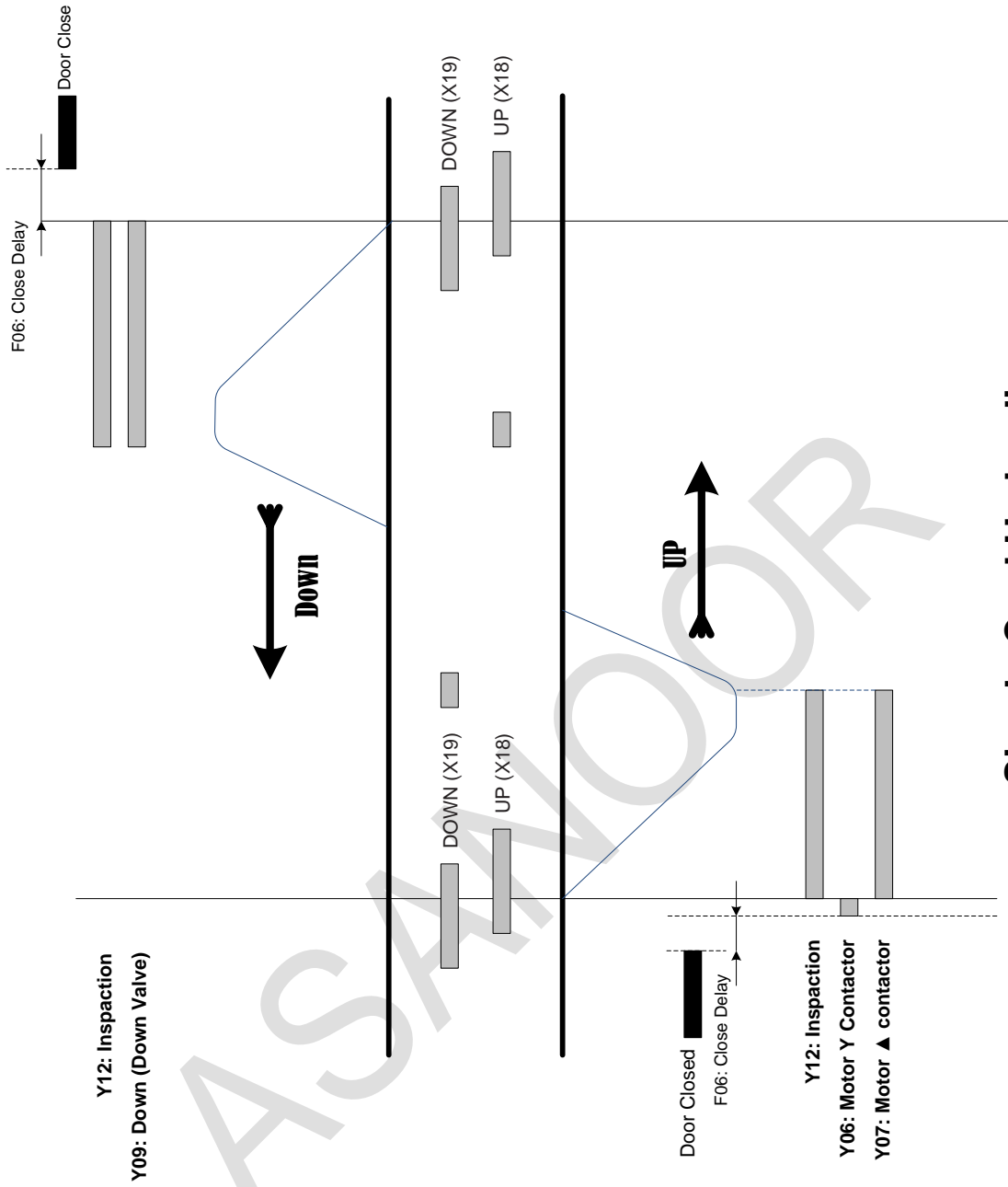


- 10 Full Load

I/O Layout (Hydraulic mode)



**Simple Card
Hydraulic Normal Mode**



Simple Card Hydraulic INS Sequence



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