

Shell of heat sink

**X1**

**COM1, DIN1.....DIN7:**

7 Digital programmable input channels

**ENCO-Z, ENCO-/Z,**

**ENCO-B, ENCO-/B,**

**ENCO-A, ENCO-/A:**

Encoder out

**OUT1.....OUT4:**

4 Digital programmable output channels

**GND A, AIN1, AIN2, GND A:**

2 analog input channels

**PUL+:** Pulse+/CW+/A+

**PUL-:** Pulse-/CW-/A-

**DIR+:** Direction+/CCW+/B+

**DIR-:** Direction-/CCW-/B-

**X2**

**24VS, GNDS:**

24V Power supply for control

**24VB, GNDB:**

24V Power supply for brake

**BR+, BR-:**

Brake control output

**X3**

**U, V, W, PE:**

Motor power connector

**L, N:**

AC power supply input (AC220V)

**RB+, RB-:**

External braking resistor

**Display**

4-digit LED indicate the status or error information

**4 Setting Buttons**

Parameter setting

**X4**

Male: CAN bus

communication interface

Female: RS485

communication interface

**X5**

RS232 communication

interface

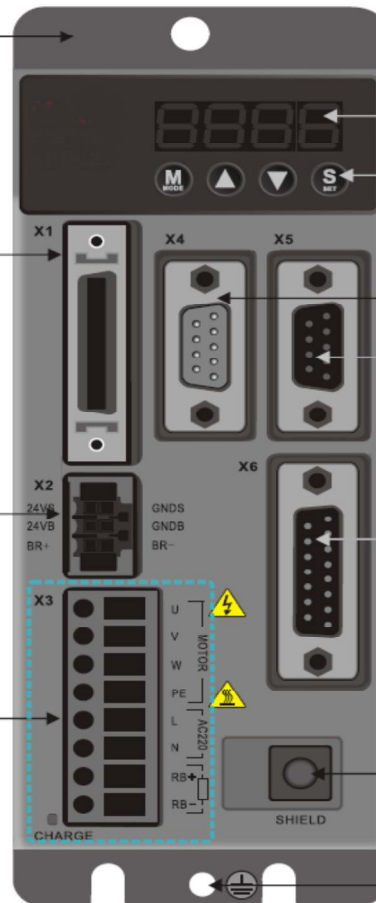
**X6**

Motor encoder input port

**Shield**

Fix the Shield Layer of Power Cable

**Earth Terminal**

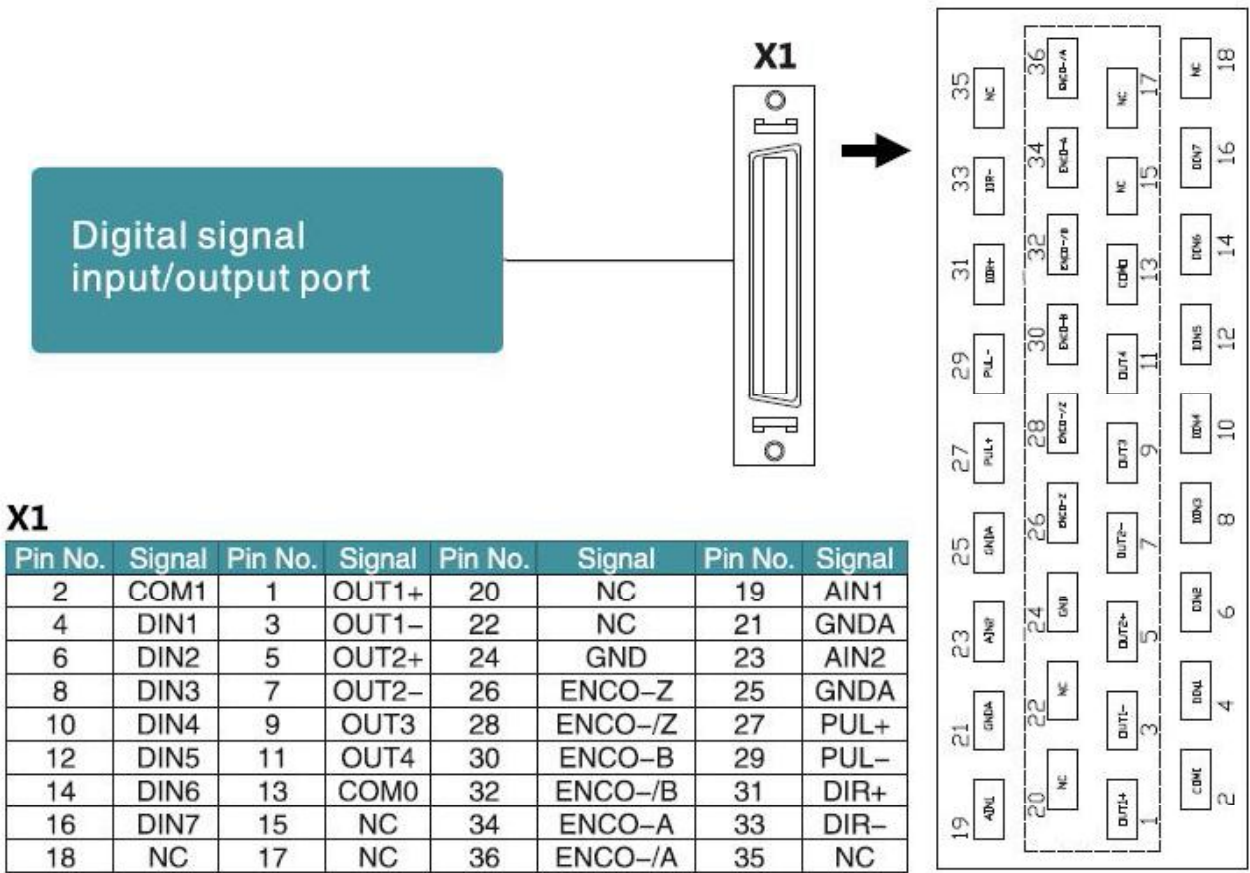


## Interfaces of Driver

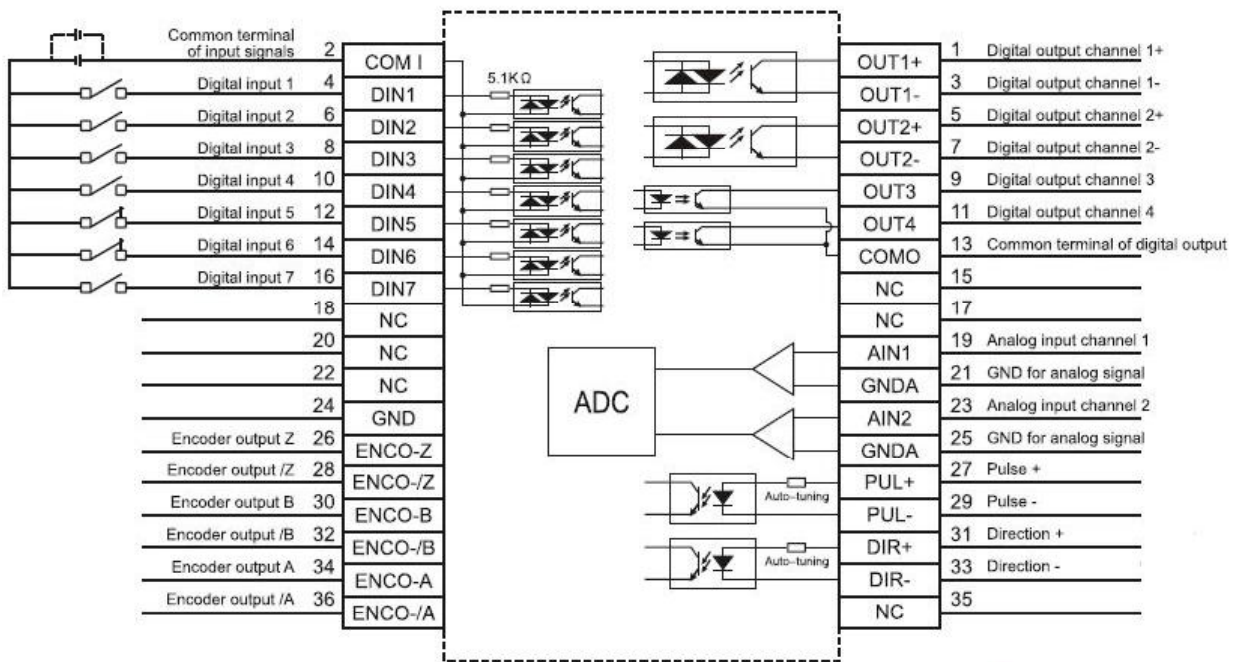
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Interface	Driver	Symbol	Function	
X1	ESSF-L1	COMI	Common terminal of digital inputs	
		DIN1~DIN7	Digital inputs. Valid signal:12.5V~24V.Invalid signal:<5V	
		OUT1+	Digital output 1+	
		OUT1-	Digital output 1-	
		OUT2+	Digital output 2+	
		OUT2-	Digital output 2-	
		OUT3	Digital output 3	
		OUT4	Digital output 4	
		COMO	Common terminal of digital outputs	
		GND	Ground signal	
		ENCO-Z	Motor encoder output interface	
		ENCO-/Z		
		ENCO-B		
		ENCO-/B		
		ENCO-A		
		ENCO-/A		
		AIN1	Analog signal input 1. Input impedance: 200 K	
		GNDA	Ground signal of analog	
		AIN2	Analog signal input 2. Input impedance: 200 K	
		GNDA	Ground signal of analog	
		PUL+	Pulse or positive pulse interface (+)	Input voltage range: 5V~24V
		PUL-	Pulse or positive pulse interface (-)	
		DIR+	Direction or negative pulse interface (+)	
		DIR-	Direction or negative pulse interface (-)	
		X2		24VS/GNDS
24VB/GNDB	Power supply for brake ,DC18~30V 2A			
BR+/BR-	Brake interface			
X3	ESSF-L1	U/V/W/PE	Motor cable interface	
		L/N	Main power supply (Single-phase AC220V)	

		RB+/RB-	Braking resistor interface
X4	ESSF-L1	BUS	RS485
X5	ESSF-L1	RS232	RS232 interface
X6		ENCODER IN	Encoder cable interface



I/O interface of ESSF-L1 driver



Wirings of the I/O interface of ESSF-L1 driver

## Parameter List: Group E (To Set Driver Instructions)

Numeric Display	Internal Address	Variable Name	Meaning	Default Value	Range
E-0.0	60600008	Operation_Mode	0.004 (-4): Pulse control mode, including pulse direction (P/D) and double pulse (CW/CCW) modes. 0.003 (-3): instantaneous speed mode 0001 (1): Internal position control mode 0003 (3): Speed mode with acceleration/deceleration 0004 (4): Torque mode Note: Only applied in the working mode where no external signals control the driver.	-4	/
E-0.1	2FF00508	Control_Word_Easy	000.0: Releases the motor 000.1: Locks the motor 001.0: Clears errors Note: Only applied in the situation where enabling a driver or wrong resetting is not controlled by external signals. After the wrong reset of the driver, the motor must be enabled again.	0	/
E-0.2	2FF00910	SpeedDemand_RPM	Sets the motor's target rotation speed when the driver works in the "-3" or "3" mode and the address d3.28 is set to 0 (without external analog control).	0	/
E-0.3	60710010	CMD_q	Sets input torque instructions (current instructions) when the driver works in the "4" mode and the address d3.30 is set to 0 (without external analog control).	0	-2047~2047
E-0.4	2FF00A10	Vc_Loop_BW	Sets the velocity loop bandwidth. The unit is Hz. This variable can only be set after auto tuning is performed properly; otherwise the actual bandwidth goes wrong, which causes abnormal working of the driver. If the auto tuning result is abnormal, setting this parameter may also cause abnormal working of the driver.	60	0~600

			Note: This parameter cannot be applied when auto tuning is unavailable. After setting this parameter, apply d2.00 to save the settings as required.		
E-0.5	2FF00B 10	Pc_Loop_BW	Sets the position loop bandwidth. The unit is Hz. Note: After setting this parameter, apply d2.00 to save the settings as required.	10	/
E-0.6	2FF00C 10	Tuning_Start	If the variable is set to 11, auto tuning starts. All input signals are neglected during auto tuning. The variable is automatically changed to 0 after auto tuning is completed. Sets the variable to other values to end auto tuning.	0	/

### Parameter List: Group G (To Set Real-Time Display Data)

Numeric Display	Internal Address	Variable Name	Displayed Content
G-0.0	2FF00F20	Soft_Version_LED	Software version of numeric display
G-0.1	2FF70020	Time_Driver	Accumulated working time of the driver (S)
G-0.2	2FF01008	Motor_Ilt_Rate	Ratio of real iit to the maximum iit of a motor
G-0.3	60F61210	Motor_Ilt_Real	Actual data of motor overheat protection The formula of conversion between display value and actual current(Average value): $I_{rms} = \frac{\sqrt{Motor\_Ilt\_Real * 512}}{2047} * \frac{I_{peak}}{\sqrt{2}}$ <p><math>I_{peak}</math> is the max. peak value of the output current of driver.</p>
G-0.4	2FF01108	Driver_Ilt_Rate	Ratio of real iit to the maximum iit of a driver
G-0.5	60F61010	Driver_Ilt_Real	Actual data of driver overheat protection

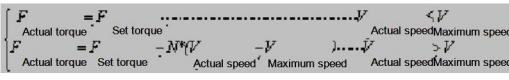
Numeric Display	Internal Address	Variable Name	Displayed Content
G-0.6	2FF01208	Chop_Power_Rate	Ratio of actual power to rated power of a braking resistor
G-0.7	60F70D10	Chop_Power_Real	Actual power of a braking resistor
G-0.8	60F70B10	Temp_Device	Temperature of a driver (°C)
G-0.9	60790010	Real_DCBUS	Actual DC bus voltage
G-1.0	60F70C10	Ripple_DCBUS	Fluctuating value of the bus voltage (Vpp)
G-1.1	60FD0010	Din_Status	Status of an input port
G-1.2	20101410	Dout_Status	Status of an output port
G-1.3	25020F10	Analog1_out	Filter output of external analog signal 1
G-1.4	25021010	Analog2_out	Filter output of external analog signal 2
G-1.5	26010010	Error_State	Error state
G-1.6	26020010	Error_State2	Error state word 2
G-1.7	60410010	Status_Word	Driver status word bit0: Ready to switch on bit1: Switch on bit2: Operation enable bit3: Fault bit4: Voltage Disable bit5: Quick Stop bit6: Switch on disable bit7: Warning bit8: Reserved bit9: Reserved bit10: Target reach bit11: Internal limit active bit12: Step.Ach./V=0/Hom.att. bit13: Foll.Err/Res.Hom.Err. bit14: Commutation Found bit15: Referene Found
G-1.8	60610008	Operation_Mode_Buff	Efficient working mode of a driver
G-1.9	60630020	Pos_Actual	Actual position of a motor
G-2.0	60FB0820	Pos_Error	Position following error
G-2.1	25080420	Gear_Master	Count of input pulses before electronic gear
G-2.2	25080520	Gear_Slave	Count of executed pulses after electronic gear
G-2.3	25080C10	Master_Speed	Pulse speed entered by the master axis (pulse/mS)
G-2.4	25080D10	Slave_Speed	Pulse speed of the slave axis (pulse/mS)
G-2.5	606C0010	Real_Speed_RPM	Real speed (rpm) Internal sampling time: 200 mS
G-2.6	60F91910	Real_Speed_RPM2	Real speed (0.01 rpm) Internal sampling time: 200 mS

Numeric Display	Internal Address	Variable Name	Displayed Content
G-2.7	60F91A10	Speed_1mS	Speed data (inc/1 mS) Internal sampling time: 1 mS
G-2.8	60F60C10	CMD_q_Buff	Internal effective current instruction
G-2.9	60F61710	I_q	Actual current The formula of conversion between display value and actual current: $I_{rms} = \frac{I_q}{2047} * \frac{I_{peak}}{\sqrt{2}}$ $I_{peak}$ is the max. peak value of the output current of driver.
G-3.0	60F90E10	K_Load	Load parameter
G-3.1	30100420	Z_Capture_Pos	Position data captured by encoder index signals

## Parameter List: Group A (To Set Control Loop Parameters)

Numeric Display	Internal Address	Variable Name	Meaning	Default Value	Range
A-0.0	2FF00108	Store_Loop_Data	1: Stores all setup parameters except those of a motor 10: Initializes all setup parameters except those of a motor	0	/
A-0.1	60F90110	Kvp	Sets the response speed of velocity loop		0~32767
A-0.2	60F90210	Kvi	Time used to adjust speed control to compensate minor errors		0~16384
A-0.3	60F90308	Notch_N	Notch/filtering frequency setting for a velocity loop, used to set the frequency of the internal notch filter, so as to eliminate the mechanical resonance produced when the motor drives the machine. The formula is $F = \text{Notch\_N} * 10 + 100$ . For example, if the mechanical resonance frequency is $F = 500$ Hz, the parameter should be set to 40.	45	0~90
A-0.4	60F90408	Notch_On	Enable or disable the notch filter 0: Disable the trap filter 1: Enable the trap filter	0	/
A-0.5	60F9050	Speed_F	You can reduce the noise during motor		0~45



Numeric Display	Internal Address	Variable Name	Meaning	Default Value	Range
	8	b_N	operation by reducing the feedback bandwidth of velocity loop. When the set bandwidth becomes less, the motor responds slower. The formula is $F = \text{Speed\_Fb\_N} * 20 + 100$ . For example, to set the filter bandwidth to "F = 500 Hz", you need to set the parameter to 20.		
A-0.6	60F90608	Speed_Mode	0: Speed response after traveling through a low-pass filter 1: Direct speed response without filtering 2: Feedback on output feedback	0	/
A-0.7	60FB0110	Kpp	Proportional gains on position loop Kpp	1000	0~16384
A-0.8	60FB0210	K_Speed_FF	0 indicates no feedforward, and 256 indicates 100% feedforward	256	0~256
A-0.9	60FB0310	K_Acc_FF	The data is inversely proportional to the feedforward	7FF.F	32767~10
A-1.0	2FF00610	Profile_Acce_16	To set trapezoidal acceleration (rps/s) in the "3" and "1" modes	610	0~2000
A-1.1	2FF00710	Profile_Dece_16	To set trapezoidal acceleration (rps/s) in the "3" and "1" modes	610	0~2000
A-1.2	60F60110	Kcp	To set the response speed of the current loop and this parameters does not require adjusting	/	/
A-1.3	60F60210	Kci	Time used to adjust current control to compensate minor errors	/	/
A-1.4	60730010	CMD_q_Max	Indicates the maximum value of current instructions	/	/
A-1.5	60F60310	Speed_Limit_Factor	The factor that limits the maximum speed in the torque mode  V the maximum speed complies with d2.24 Max_Speed_RPM parameter settings	10	0~1000
A-1.6	607E0008	Invert_Dir	Runs polarity reverse 0: Counterclockwise indicates the forward direction 1: Clockwise indicates the forward direction	0	/
A-1.7	60F90E10	K_Load	Indicates load parameters	/	20~15000
A-1.8	60F90B10	Kd_Virtual	Indicates the kd of observers	1000	0~32767
A-1.9	60F90C1	Kp_Virtu	Indicates the kp of observers	1000	0~

Numeric Display	Internal Address	Variable Name	Meaning	Default Value	Range
	0	al			32767
A-2.0	60F90D10	Ki_Virtual	Indicates the ki of observers	0	0~16384
A-2.1	60F91010	Sine_Amplitude	Proper increase in this data will reduce the tuning error, but machine vibration will become severer. This data can be adjusted properly according to actual conditions of machines. If the data is too small, the auto tuning error becomes greater, or even causes a mistake.	64	0~1000
A-2.2	60F91110	Tuning_Scale	It is helpful to reduce the auto tuning time by reducing the data, but the result may be unstable.	128	0~16384
A-2.3	60F91210	Tuning_Filter	Indicates filter parameters during auto-tuning	64	1~1000
A-2.4	60800010	Max_Speed_RPM	Limits the maximum rotation speed of motors	5000	0~6000

## Parameter List: Group c (To Set Input/Output & Pattern Operation Parameters)

Numeric Display	Internal Address	Variable Name	Meaning	Default Value	Range
c-0.0	2FF00108	Store_Loop_Data	1: Stores all setup parameters except motors 10: Initializes all setup parameters except motors	0	/
c-0.1	20100310	Din1_Function	1:Sürücü Aktif 2:Hata Reset 3:İşletim Modu	11	/
c-0.2	20100410	Din2_Function	4:Hız döngüsünde P kontrol aktif 5:Pozisyon pozitif Limit 6:Pozisyon negatif Limit	12	/
c-0.3	20100510	Din3_Function	7:Homing sinyali 8:Yön Seçimi	1	/

Numeric Display	Internal Address	Variable Name	Meaning	Default Value	Range
c-0.4	20100610	Din4_Function	9:Dahili Hız kontrol 0 10:Dahili Hız kontrol 1 11:Dahili Pozisyon Kontrol 0	18	/
c-0.5	20100710	Din5_Function	12:Dahili Pozisyon Kontrol 1 13:Hızlı Durma	19	/
c-0.6	20100810	Din6_Function	14:Homing Start 15:Aktif komutu 16:Dahili Hız kontrol 2	3	/
c-0.7	20100910	Din7_Function	17:Dahili pozisyon kontrol 2 18:Elektronik Dışli oranı 0 19:Elektronik Dışli oranı 1 20:Elektronik Dışli oranı 2 21:Kazanç 0 22:Kazanç 1	2	/
c-0.8	2FF00D10	Dio_Polarity	Sets IO polarity	0	/
c-0.9	2FF00810	Dio_Simulate	Simulates input signals, and enforce output signals for outputting	0	/
c-1.0	20000008	Switch_On_Auto	Automatically locks motors when drivers are powered on 0: No control 1: Automatically locks motors when drivers are powered on	0	/
c-1.1	20100F10	Dout1_Function	1:Hazır 2:Hata 3:Pozisyona ulaşıldı	1	/
c-1.2	20101010	Dout2_Function	4:Sıfır Hız 5:Motor Fren 6:Hıza ulaşıldı	3	/
c-1.3	20101110	Dout3_Function	7:Index 8:Maksimum hıza ulaşıldı Tork modda	2	/
c-1.4	20101210	Dout4_Function	9:PWM ON 10:Pozisyon Limit 11:Referans bulundu	10	/
c-1.5	20101310	Dout5_Function	12:Kullanımdışı 13:Multi Din0 14:Multi Din1 15:Multi Din2  Note:DoutX_Function(X is 1-5) is	5	/

Numeric Display	Internal Address	Variable Name	Meaning	Default Value	Range
			used to define functions of the digital outputs.		
c-1.6	20200D08	Din_Mode0	If a digital input is defined as Operation mode control, then this operation mode is selected when the input signal is invalid	-4	/
c-1.7	20200E08	Din_Mode1	If a digital input is defined as Operation mode control, then this operation mode is selected when the input signal is valid	-3	/
c-1.8	20200910	Din_Speed0_RPM	Multi-speed control: 0 [rpm]	0	/
c-1.9	20200A10	Din_Speed1_RPM	Multi-speed control: 1 [rpm]	0	/
c-2.0	20200B10	Din_Speed2_RPM	Multi-speed control: 2 [rpm]	0	/
c-2.1	20200C10	Din_Speed3_RPM	Multi-speed control: 3 [rpm]	0	/
c-2.2	25020110	Analog1_Filter	Used to smooth the input analog signals $F \text{ (Filter Frequency)} = 4000 / (2\pi * \text{Analog1\_Filter})$ $T \text{ (Time Constant)} = \text{Analog1\_Filter} / 4000 \text{ (S)}$	5	1~127
c-2.3	25020210	Analog1_Dead	Sets dead zone data for external analog signal 1	0	0~8192
c-2.4	25020310	Analog1_Offset	Sets offset data for external analog signal 1	0	-8192~8192
c-2.5	25020410	Analog2_Filter	Used to smooth the input analog signals Filter frequency: $f = 4000 / (2\pi * \text{Analog1\_Filter})$ Time Constant: $T = \text{Analog1\_Filter} / 4000 \text{ (S)}$	5	1~127
c-2.6	25020510	Analog2_Dead	Sets dead zone data for external analog signal 2	0	0~8192
c-2.7	25020610	Analog2_Offset	Sets offset data for external analog signal 2	0	-8192~8192
c-2.8	25020708	Analog_Speed_Con	Chooses analog-speed channels 0: Invalid analog channel 1: Valid analog channel 1 (AIN1) 2: Valid analog channel 2 (AIN2)	0	/

Numeric Display	Internal Address	Variable Name	Meaning	Default Value	Range
			Valid mode -3 and 3		
c-2.9	25020A10	Analog_Speed_Factor	Sets the proportion between analog signals and output speed	1000	/
c-3.0	25020808	Analog_Torque_Con	Chooses analog-torque channels 0: Invalid analog channel 1: Valid analog channel 1 (AIN1) 2: Valid analog channel 2 (AIN2) Valid mode 4	0	/
c-3.1	25020B10	Analog_Torque_Factor	Sets the proportion between analog signals and output speed (current)	1000	/
c-3.2	25020908	Analog_MaxT_Con	0: No control 1: Max. torque controlled by AIN 1 2: Max. torque controlled by AIN 2	0	/
c-3.3	25020C10	Analog_MaxT_Factor	Indicates the max torque factor on analog signal control	8192	/
c-3.4	25080110	Gear_Factor	Indicates the numerator to set electronic gears when the operation mode is -4	1000	-32767 ~32767
c-3.5	25080210	Gear_Divider	Indicates the denominator to set electronic gears when the operation mode is -4	1000	1~ 32767
c-3.6	25080308	PD_CW	Pulse mode control 0...CW/CCW 1...Pulse/Direction 2...Incremental encoder 10..CW/CCW(RS422 type) 11..Pulse/Direction(RS422 type) 12.. Incremental encoder (RS422 type) Note:0,1,2 are used for PIN4,5,9, 10,14,15 of Master_Encoder interface,they are TTL signal. 10,11,12 are used for PIN6,7,8,11, 12,13,they are differential signal. After changing this parameter,it needs to save by d2.00/d3.00/d5.00 and then reboot driver.	1	/
c-3.7	25080610	PD_Filter	To flat the input pulse. Filter frequency: $f=1000/(2\pi \cdot PD\_Filter)$ Time constant: $T = PD\_Filter/1000$	3	1~ 32767

Numeric Display	Internal Address	Variable Name	Meaning	Default Value	Range
			Unit: S Note: If you adjust this filter parameter during the operation, some pulses may be lost.		
c-3.8	25080810	Frequency_Check	Indicates the limitation on pulse input frequency (k Hz)	600	0~600
c-3.9	25080910	PD_ReachT	Indicates the position reached time window in the pulse mode Unit: mS	10	0~32767
c-4.0	2FF10108	Din_Position_Select_L	Select which internal position will be set.(The range of L is 0-7) Din_Pos0 Din_Pos1 Din_Pos2 Din_Pos3 Din_Pos4 Din_Pos5 Din_Pos6 Din_Pos7	0	
c-4.1	2FF10210	Din_Position_M	Refer to d3.42	0	
c-4.2	2FF10310	Din_Position_N	The position of internal position set in Din_Position_Select_L Din_Pos = Din_Position_M*10000+Din_Position_N	0	
c-4.3	20200F10	Din_Control_Word	Absolute positioning/Relative positioning 2F:Absolute positioning 4F:Relative positioning Note:This parameter needs to save and reboot driver after change.	2F	
c-4.4	20201810	Din_Speed4_RPM	Multi-speed control: 4 [rpm]	0	
c-4.5	20201910	Din_Speed5_RPM	Multi-speed control: 5 [rpm]	0	
c-4.6	20201A10	Din_Speed6_RPM	Multi-speed control: 6 [rpm]	0	
c-4.7	20201B10	Din_Speed7_RPM	Multi-speed control: 7 [rpm]	0	

## Parameter List: Group H (To Set Motor Parameters)

Numeric display	Internal Address	Variable Name	Meaning
H-0.0	2FF00308	Store_Motor_Data	1: Stores the set motor parameters
H-0.1	64100110	Motor_Num	
H-0.2	64100208	Feedback_Type	Type of encoders 001.1: Differential ABZ and differential UVW signals 001.0: Differential ABZ and UVW signals of TTL 000.1: ABZ of TTL and differential UVW signals 000.0: ABZ of TTL and UVW signals of TTI
H-0.3	64100508	Motor_Poles	Number of motor poles pairs [2p]
H-0.4	64100608	Commu_Mode	Searching excitation mode
H-0.5	64100710	Commu_Curr	Searching excitation current [dec]
H-0.6	64100810	Commu_Delay	Delay in searching excitation [mS]
H-0.7	64100910	Motor_Ilt_I	Indicates current settings on overheat protection of motors $I_r[\text{Arms}] * 1.414 * 10$
H-0.8	64100A10	Motor_Ilt_Filter	Indicates time settings on overheat protection of motors Time: $N * 256 / 1000$ Unit: S
H-0.9	64100B10	Imax_Motor	Indicates max peak current of motors $I[A_{\text{peak}}] * 10$
H-1.0	64100C10	L_Motor	Indicates phase inductance of motors $L[\text{mH}] * 10$
H-1.1	64100D08	R_Motor	Indicates phase resistance of motors $R[\Omega] * 10$
H-1.2	64100E10	Ke_Motor	Indicates the reverse electromotive force of motors $K_e[\text{Vp/krpm}] * 10$
H-1.3	64100F10	Kt_Motor	Indicates the torque coefficient of motors $K_t[\text{Nm/Arms}] * 100$
H-1.4	64101010	Jr_Motor	Indicates the rotor inertia of motors $J_r[\text{kgm}^2] * 1\ 000\ 000$
H-1.5	64101110	Brake_Duty_Cycle	Indicates the duty cycle of contracting brakes 0~2500[0...100%]
H-1.6	64101210	Brake_Delay	Indicates the delay time of contracting brakes Default value: 150 ms
H-1.7	64101308	Invert_Dir_Motor	Indicates the rotation direction of motors

Numeric display	Internal Address	Variable Name	Meaning
H-1.8	64101610	Motor_Using	Current using motor type.

### Parameter List: Group S (To Set Driver Parameters)

Numeric Display	Internal Address	Variable Name	Meaning	Default Value
S-0.0	2FF00108	Store_Loop_Data	1: Stores all control parameters except motor parameters 10: Initializes all control parameters except motor parameters	0
S-0.1	100B0008	ID_Com	Station No. of Drivers Note: To change this parameter, you need to save it with the address "d5.00", and restart it later.	1
S-0.2	2FE00010	RS232_Bandrate	Set the baud rate of RS232 port 540 19200 270 38400 90 115200 Note: To change this parameter, you need to save it with the address "d5.00", and restarts it later.	270
S-0.3	2FE10010	U2BRG	Sets the baud rate of RS232 port 540 19200 270 38400 90 115200 You need not restart it, but it can't be saved.	270
S-0.4	60F70110	Chop_Resistor	Indicates the values of braking resistors	0
S-0.5	60F70210	Chop_Power_Rated	Indicates the nominal power of a braking resistor	0
S-0.6	60F70310	Chop_Filter	Indicates the time constant of a braking resistor Time: N*256/1000 Unit: S	60
S-0.6	25010110	ADC_Shift_U	Indicates data configuration of U phase shift. Note: Factory parameters	/
S-0.7	25010210	ADC_Shift_V	Indicates data configuration of V	/



			phase shift Note:Factory parameters	
S-0.8	30000110	Voltage_200	ADC original data when DC bus voltage is 200 V Note:Factory parameters	/
S-0.9	30000210	Voltage_360	ADC original data when DC bus voltage is 360 V Note:Factory parameters	/
S-1.0	60F60610	Comm_Shift_UVW	Indicates the excitation pointer of a motor Note:Factory parameters	/
S-1.1	26000010	Error_Mask	Indicates error masks Note:Factory parameters	FFF.F
S-1.2	60F70510	RELAY_Time	Indicates the relay operating time of capacitor short-circuits Unit: mS Note:Factory parameters	150
S-1.3	2FF00408	Key_Address_F001	Sets numeric display data	/
S-1.4	65100B08	RS232_Loop_Enable	0: 1 to 1 1: 1 to N	0
S-1.5	2FFD0010	User_Secret	User password.16bits.	0~ 65535


#### Polarity Control on Digital Input Signals

Note:all the digital inputs are normally open by default.

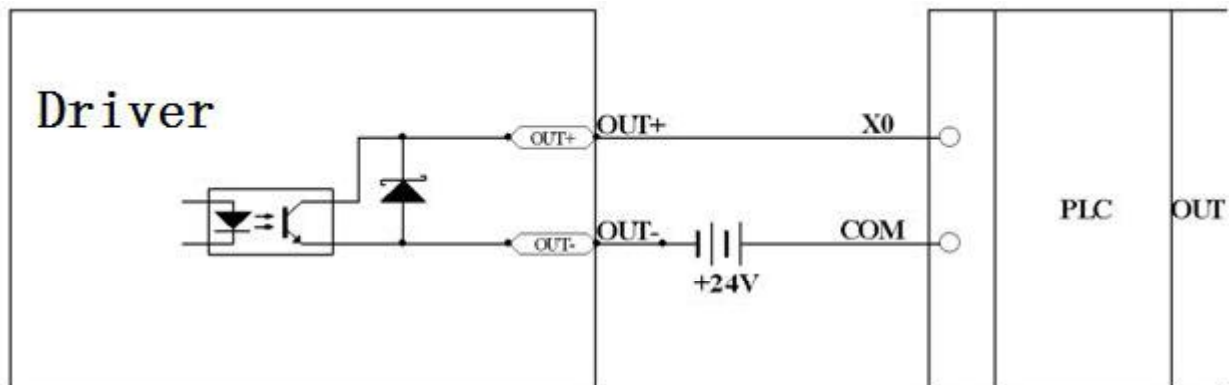
Table 7-1 Simplified IO polarity setting variables

Numeric Display	Variable Name	Meaning
c-0.8	Dio_Polarity	Sets IO polarity

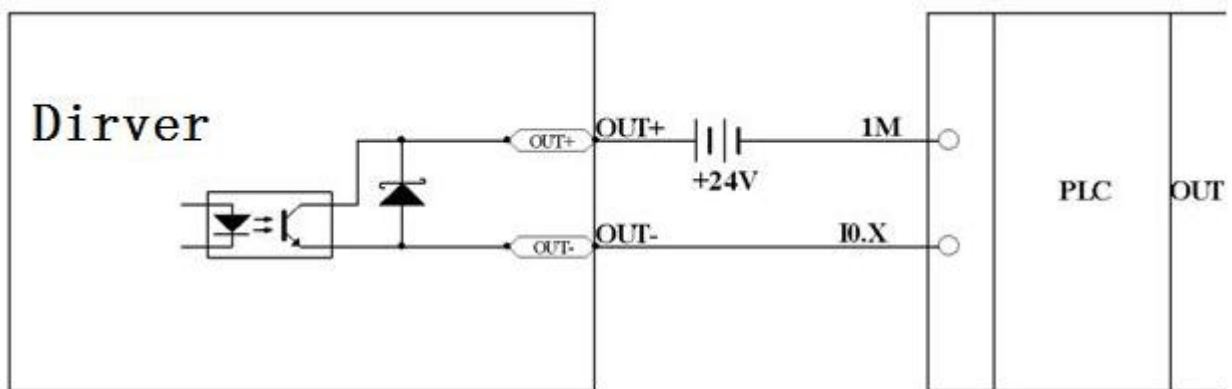
Table 7-2 Polarity setting methods for digital input signals

				
①	②	③	④	
Input/output port selection 0: Output port 1: Input port	Channel selection Input: 1-8 Output: 1-7	Reserved	0: The inputs are normally close 1: The inputs are normally open Others:Check the current status	

NPN Wiring Diagram (OUT1-OUT5 all support this)



PNP wiring diagram (Only OUT1,OUT2 support this wiring)



### Alarm Causes & Troubleshooting

Alarm code	Alarm Information	Alarm Cause	Troubleshooting
FFF.F /800.0	No motor configured	There is no motor type set in servo driver	Set the motor type in d4.01.
000.1	Internal	Internal problem	Please contact manufacturer
000.2	Encoder ABZ	The ABZ signal cable is disconnected.	Check the cable.
000.4	Encoder UVW	The UVW signal cable is disconnected.	Check the cable.
000.8	Encoder Counting	Interferences are suppressed. Encoder cable problem	Check encoder cable. Remove interference(Such as connect the motor cable to SHIELD terminal etc.)
000.6	Encoder Error	ABZ and UVW signals of the encoders incur error simultaneously.	Check the cable.
001.0	Over Temperature	The driver temperature exceeds	Check whether the selected driver

		83°C.	has enough power.
002.0	Over Voltage	The bus voltage of the driver exceeds the allowable range.	Check the input voltage,or determine whether a braking resistor is connected.
004.0	Low Voltage	The voltage of the driver bus is below the allowable range.	Check the input power. Power on AC first,then power DC. Reduce deceleration.
008.0	Over Current	The power tube in the driver is faulty, or short circuit occurs on the phase line of the motor.	Check motor wires. If the motor works properly, it can be judged that faults occur on the power tube in the driver.
010.0	Chop Resistor	The actual power of brake resistor is larger than rated power	Change brake resistor.
020.0	Following Error	Control loop parameters setting problem. Overload or block. Encoder signal problem.	Set VFF (d2.08) as 100%,increase kpp(d2.07) and kvp(d2.01). Choose bigger power motor or check whether the load is blocked. Check the encoder cable.
040.0	Logic Voltage	The logic voltage is lower than 18V.	Check the logic power supply 24V.
080.0	Illt Error	Control loop parameters setting problem. Overload or block.	Increase kvp(d2.01). Choose bigger power motor or check whether the load is blocked.
100.0	Over Frequency	The input pulse frequency exceeds the allowable maximum value.	Check the input pulse frequency and the maximum permissible value of the frequency. (d3.38) 。
200.0	STO Error	STO Error	Check the wiring according to Chapter 3.4.
400.0	Commutation	UVW signal of encoder cable problem	Check encoder cable.
800.0	EEPROM Error	Because of updating firmware. Driver internal problem.	Initialize all control parameters and save,then restart driver. Contact manufacturer.
888.8	Driver abnormal working states	Logic power supply problem. Driver internal problem.	Check 24VDC power supply. Contact manufacturer.

