

Err018 Control power	Incorrect wiring or input power failure	1. Check input power or wiring 2. Replace the servo drive
Err019 Tripping	Incorrect wiring may make the control circuit diverge and result in motor stall.	1. Check U/VW and encoder wiring. 2. Check the motor and drive. Replace it when necessary.
Err020 Overvoltage	1. Input power voltage exceeds 280VAC. 2. Regenerative resistor breakage or not matching. 3. Load inertia exceeds acceleration/deceleration time or replace more suitable drive. 4. Drive broken.	1. Check input power voltage. 2. Check or replace regenerative resistor. 3. Increase acceleration/deceleration time or replace more suitable drive. 4. Drive broken.
Err021 Undervoltage	1. Input power voltage drops. 2. Instantaneous power off. 3. P06.36 setting is too high. 4. Drive broken	1. Make sure input power is stable. 2. Reduce P06.36 value if input power is normal. (Memory is configurable by P07.19)
Err022 Current sampling fault	Drive internal current sampling fault	Replace servo drive.
Err023 AI sampling voltage too large	1. AI wiring wrong. 2. AI external input power voltage too high	Do correct AI wiring and set input power voltage within ±10V.
Err024 Overspeed	1. Speed instruction exceeds maximum speed setting. 2. Wrong U/VW phase sequence is correct. 3. Adjust speed loop gains to replace over shock. 4. Replace drive	1. Lower speed instruction 2. Check U/VW phase sequence is correct. 3. Adjust speed loop gains to replace over shock. 4. Replace drive
Err025 Electrical angle identification failure	1. Load or inertia too large. 2. Wrong encoder cable wiring	1. Reduce load or increase current loop gain. 2. Replace encoder cable.
Err026 Load identification failure	1. Load or inertia too large. 2. Motor control run at specified curves. 3. Verification process aborted by other fault.	1. Reduce load or increase current loop gain. 2. Make sure verification process correct.
Err027 DI parameter setting fault	1. Different DOs are assigned with same function. 2. Physical DI and communication DI are assigned with same function.	Reassign DI functions
Err028 DO parameter setting fault	Different DOs are assigned with same function	Reassign DO functions
Err040 S-ON instruction invalid fault	Inputs-ON signal after motor is energized by other auxiliary power supply	Change incorrect operation.
Err042 Pulse division output overvoltage	Pulse division output is over upper limit.	Adjust pulse division output settings.
Err043 Position deviation too large	1. Servo motor U/VW wiring is wrong. 2. Servo drive gain settings are too low. 3. Position instruction pulse frequency is too high. 4. Acceleration is too large. 5. P00.19 setting is too low. 6. Servo motor driver faulty. 7. Brake release abnormal. Motor is locked by external forces, gravity etc.	1. Reconnect the cables to ensure servo gains. 2. Reduce instruction frequency, acceleration or adjust gear ratio. 3. Reduce instruction frequency, acceleration or adjust gear ratio. 4. Set up smoothing parameters. 5. Adjust the value of P00.19 6. Replace the drive 7. Check brake power and servo motor is not blocked.
Err044 Main circuit input phase loss	1. Input power cable bad contact. 2. Motor blocked or brake not released. 3. Wrong U/VW/encoder cable wiring for multiple drives/motors 4. Motor/drive too small for load 5. Phase loss or wrong phase sequence 6. Motor or drive broken	1. Check input power cables 2. Measure R/S/T phase-to-phase voltage to ensure 3 phases are balanced and input power is up to standard. 3. Check there is no wrong U/VW/encoder cable wiring for multiple drives/motors 4. Increase acceleration/deceleration time or choose bigger drivemotor 5. Check U/VW wiring & Replace drivemotor
Err045 Drive output phase loss	1. Motor U/VW bad contact. 2. Motor broken	1. Check U/VW wiring 2. Replace motor
Err046 Drive overload	1. Motor U/VW or encoder cable bad contact or loose 2. Motor blocked or brake not released 3. Wrong U/VW/encoder cable wiring for multiple drives/motors 4. Motor/drive too small for load 5. Phase loss or wrong phase sequence 6. Motor or drive broken	1. Check U/VW/encoder cable wiring 2. Check motor is not blocked and brake is released 3. Check there is no wrong U/VW/encoder cable wiring for multiple drives/motors 4. Increase acceleration/deceleration time or choose bigger drivemotor 5. Check U/VW wiring & Replace drivemotor
Err047 Motor overload	1. Motor U/VW or encoder cable bad contact or loose 2. Motor blocked or brake not released 3. Wrong U/VW/encoder cable wiring for multiple drives/motors 4. Motor/drive too small for load 5. Phase loss or wrong phase sequence 6. Motor or drive broken	1. Check U/VW/encoder cable wiring 2. Check motor is not blocked and brake is released 3. Check there is no wrong U/VW/encoder cable wiring for multiple drives/motors 4. Increase acceleration/deceleration time or choose bigger drivemotor 5. Check U/VW wiring & Replace drivemotor
Err048 Electronic gear setting range	Electronic gear ratio exceeds setting range	Set correct electronic gear

Err049 Heat sink too hot	1. Fan broken 2. Ambient temperature is too high 3. Too many times of restarting power after overload 4. Inappropriate installation directions and spacing 5. Servo drive faulty 6. Motor or drive broken	1. Check fan. Replace fan or drive 2. Measure ambient temperature and improve cooling conditions for servo drive 3. Check error records and see if there has been overload error. Restart after 30s. Increase acceleration/deceleration time. 4. Check U/VW phase sequence according to specifications in this manual. 5. Servo drive faulty 6. Power off wait for 5 minutes. If this error persists, restart drive.
Err050 Pulse input abnormal	1. Input pulse frequency is larger than maximum frequency 2. Input pulse is interfered.	1. Adjust P06.38 2. Check wiring grounding conditions. Use twisted pair, shielded cable. Separate U/VW cable from encoder cable. 3. Check external encoder wiring. 1. Check external encoder wiring. Replace external encoder. 2. Check parameters of fully-closed loop deviation and protective functions.
Err051 Fully-closed loop position deviation too large	1. External encoder abnormal 2. Relative settings too conservative.	1. Check external encoder wiring. Replace external encoder. 2. Check parameters of fully-closed loop deviation and protective functions.
Err054 User forced fault	User uses DI of function 32 FORCE_ERR to forcibly enable Absolute Encoder	Disconnect DI of function 32.
Err055 Regenerative overheat	1. Regenerative position resetting fault 2. Drive faulty	Contact HCFA.
Err056 Main circuit outage	Power outage or main circuit abnormal	Check if there is instantaneous power failure. Increase power voltage capacity.
Err060 F1ST start after writing customized software	F1ST start after writing customized software	Initialize the servo drive.
Err065 CAN bus OFF	CAN bus disconnection or Receive or send failure	Check the wiring
Err066 Abnormal NMT command	Receive NMT stop or reset command at servo-ON	NMT mode reset. Do not stop or reset CAN node at servo-ON.
Err067 CAN bus failure	CAN bus disconnection or Receive or send failure	Check the wiring
Err068 External reserved	1. Speed exceeds the max speed setting value 2. U/VW phase error 3. Speed response severely overshoot 4. Drive faulty	1. Reduce speed 2. Check U/VW phase sequence 3. Adjust speed loop gain 4. Replace servo drive
Err071 Node protection or heartbeat overtime	1. External encoder disconnection 2. External encoder breakage 3. Device transmission failure 4. Do not get any response when node protection and heartbeat monitoring reach the setting value	1. Check or replace external encoder or wiring 2. Check mechanical transmission 3. Check the nodes, NMT node reset
Err072 Synchronization failure	Failure between the CANopen and host controller in IP mode	NMT mode reset or 6040 send failure reset command
Err073 CANOpen Trace buffer underflow	CANOpen. Synchronous clock loss more than 2 times in IP or CSP mode	Check any interference to the communication and operation of host controller. NMT mode reset or 6040 send failure reset command
Err074 CANOpen Sync Trace buffer overflow	CANOpen Sync. Clock stop for time of the actual clock frequency 2. U/VW phase error 3. The setting value of IP or CSP mode	Check any interference to the communication and operation of host controller. NMT mode reset or 6040 send failure reset command
Err075 Slave initialization failure	EtherCAT slave initialization failure	Reload the XML con. paration file, and then power on again
Err076 Synchronization failure	EtherCAT synchronization failure	NMT mode reset, or 6040 sends fault reset command
Err077 EtherCAT communication breakage	The maximum number of consecutive communication losses exceeding the setting value	Check the network cable or use the shielded network cable or increase the setting value of P09.16
Err078 Command abnormal	The operating speed exceeds the maximum speed of the motor or CSP mode	NMT mode reset, or 6040 sends fault reset command
Err079 No control mode after enabled	6040H is the control mode that's not supported after the se is enabled	NMT mode reset, or 6040 sends fault reset command
Alarm code and name	Causes	What to do
AL080 Undervoltage warning	DC bus voltage is relatively low.	1. Check main circuit. 2. Adjust P06.36
AL081 Drive overload warning	Same as Err046	Same as Err046
AL082 Motor overload warning	Same as Err046	Same as Err046
AL083 Parameter modification needs power reset	Modify parameters which needs restarting.	Restart power
AL084 Servo not ready	S-ON when servo is not ready.	S-ON after detecting S-RDY signal.

AL085 EEPROM frequency writing warning	Operating EEPROM too frequently	Reduce EEPROM using frequency. Use communication2 which do not save in EEPROM.
AL086 Positive over-travel warning	1. POT & NOT valid simultaneously 2. Servo over-travel in some directions. Can be removed automatically.	Trigger positive limit switch. Check operation mode, move the servo towards negative direction. After leaving positive limit switch, this alarm will be removed automatically.
AL087 Negative over-travel warning	Same as AL086	Trigger negative limit switch. Check operation mode, move the servo towards positive direction. After leaving negative limit switch, this alarm will be removed automatically.
AL088 Positive instruction overspeed warning	1. Electronic gear ratio too high 2. Pulse frequency too large	1. Reduce electronic gear ratio 2. Reduce pulse frequency
AL090 Absolute encoder angle initialization warning	Angle is over 7.2 degree.	Replace motor
AL093 Regenerative overload	1. Regenerative resistor wrong wiring or bad contact. 2. Internal resistor wiring breakage. 3. Resistor capacity insufficient. 4. Resistor resistance too large and causing long time braking. 5. Input voltage exceeds specification. 6. Resistor resistance, capacity or heating time constant parameters settings are wrong. 7. Drive faulty	1. Check resistor wiring. 2. Check internal resistor wiring. 3. Increase resistor capacity 4. Reduce resistor resistance. 5. Reduce input voltage 6. Set correct parameters 7. Replace drive
AL094 Regenerative resistor too small	Emergency stop is triggered.	1. Replace resistor 2. Check parameters P00.21-P00.24
AL095 Emergency stop	Emergency stop is triggered.	This is a normal DI function (function 30)
AL096 Homing error	1. Homing time exceeds P08.95 2. P08.95 is set to 3, 4, or 5 and contacted limit switches when not using limit switches as origin points.	1. Increase the value of P08.95. 2. Reduce P08.92, P08.93
AL097 Encoder battery undervoltage	Encoder battery voltage is lower than what's set in P06.46.	Replace battery.
AL099 Limit alignment	Meet limits during operation in CSP mode, resulting in misalignment of the position feedback and the command	Send a reverse command to exit the limit area, and the warning will be automatically cleared (Manual rotation of the motor is prohibited for the safety)

Value	Sign	Name	Description	Remarks
1	S, ON	Servo enable	InValid-Servo disabled Valid- Servo enabled	
2	ERR_RST	Error reset	Servo can continue to work after some error reset. Valid when detecting edge changes.	
3	GAIN_SEL	Gain switchover	InValid-Speed loop is P control. Valid-Speed loop is P control.	
4	CMD_SEL	Command switchover	InValid- present command is A Valid- present command is B	
5	PERR_CLR	Pulse deviation clear	InValid-Valid pulse deviation	
6	MI_SEL1	Multi-stage selection 1	InValid-No action	
7	MI_SEL2	Multi-stage selection 2	InValid-No action	
8	MI_SEL3	Multi-stage selection 3	InValid-No action	
9	MI_SEL4	Multi-stage selection 4	InValid-No action	
10	MODE_SEL	Control mode switchover	Switchover of control modes(speed m position, torque when P00.01 is set to 3, 4 or 5.	
12	ZERO_SPD	Zero-speed clamp	Valid-Enable zero-speed clamp InValid-Disable zero-speed clamp	
13	INHIBIT	Pulse input inhibition	InValid-Enable pulse input Valid-Disable pulse input	
14	P_OT	Positive over-travel	Use with limit switches for over-travel protections. Valid-Negative over-travel, positive drive disabled InValid-Over-range, positive drive enabled	
15	N_OT	Negative over-travel	Use with limit switches for over-travel protections. Valid-Negative over-travel, positive drive disabled InValid-Normal range, positive drive enabled	
16	P_CL	External forward torque limit	Valid-External torque limit enabled InValid-External torque limit disabled	

17	N_CL	External reverse torque limit	Valid-External torque limit enabled InValid-External torque limit disabled
18	P_JOG	Positive JOG	Valid-Input instructions InValid-Stop input instructions
19	N_JOG	Negative JOG	Valid-Reverse input instructions InValid-Stop input instructions
20	GEAR_SEL1	Electronic gear selection	Valid-1st electronic gear GEAR_SEL1 valid, GEAR_SEL2 invalid InValid-2nd electronic gear GEAR_SEL1 invalid, GEAR_SEL2 valid
21	GEAR_SEL2	Electronic gear selection	Valid-1st electronic gear GEAR_SEL1 valid, GEAR_SEL2 invalid InValid-2nd electronic gear GEAR_SEL1 valid, GEAR_SEL2 valid
22	POS_DIR	Position instruction negation	InValid-Not reverse, Valid-Reverse
23	SPD_DIR	Speed instruction negation	InValid-Not reverse, Valid-Reverse
24	TOQ_DIR	Torque instruction negation	InValid-Not reverse, Valid-Reverse
25	PSEC_EN	Internal multi-stage enable	InValid-Disable internal multi-stage instruction Valid-Enable internal multi-stage instruction
26	INTP_ULK	Interrupt positioning release	InValid-No action Valid-When P08.86 is set to 2 or 4
27	INTP_OFF	Interrupt positioning inhibit	InValid-No action Valid-When P08.86 is set to non-zero value
28	HOME_IN	Homing origin point	Can be used as home position signal or deceleration-point position signal
29	STHOM	Homing start	Start homing
30	ESTOP	Emergency stop	InValid-No action Valid-Emergency stop
31	STEP	Step enable	Valid-Step enable, InValid-Step is 0
32	FORCE_ERR	Forced error protection	InValid-No action Valid-Forced error protection
33	HOME_DEC	Homing deceleration point	Valid-Switchover to low-speed search InValid-No action
34	INTP_TRIG	Interrupt positioning trigger	InValid-No action Valid-Valid, can only use DIR or DIR
35	INPOSHALT	Internal position commands generation pause	Valid-Decelerate or pause internal multi-stage instruction and interruption positioning
36	ANALOG_OFF	Analog input prohibition	InValid-No action Valid-Enable analog input
37	ENC-SEN	SEN enabled absolute position data send	InValid-No action Valid-Valid probe 1 function
39	Touch 1	Probe 1	InValid-No action Valid- Probe 1 function
40	Touch 2	Probe 2	InValid-No action Valid- Probe 2 function

Value	Sign	Name	Description	Remarks
1	S_RDY	Servo ready	Valid-Servo ready InValid-Servo not ready	
2	S_ERR	Servo error	Valid-When detecting error	
3	S_WARN	Servo warning	Valid-When warning signal output (discarded)	
4	TGON	Motor rotation	Valid-When motor speed is larger than settings InValid-invalid motor rotation signal	
5	V_ZERO	Motor speed is 0	Valid-Motor speed is 0 InValid-Motor speed is non-zero	
6	V_CMP	Speed conformity	Speed control, valid when absolute deviation of motor speed and speed instruction is less than the settings of P04.45	
7	COIN	Positioning completed	Position control, valid when pulse deviation is less than the settings of P04.47	
8	NEAR	Positioning near	Position control, valid when pulse deviation is less than the settings of P04.50	
9	T_LT	Torque in limit	Valid-Motor torque is in limit InValid-Motor torque is not in limit	
10	V_LT	Speed in limit	Valid-Motor speed is in limit InValid-Motor speed is not in limit	
11	BKOFF	Brake release	Valid-Brake release InValid-Brake recover	
12	T_ARR	Torque reached	Valid when torque feedback reaches the settings of P04.55, allowable fluctuations ±10μm	
13	V_ARR	Speed reached	Valid when torque feedback reaches the settings of P04.55, allowable fluctuations ±10μm	
15	INTP_DONE	Interrupt positioning complete	Output after interrupt positioning complete	
16	BD_OUT	Dynamic brake output	Externally connecting relay or contactor and current-limiting resistor	
17	HOME	Homing complete	Valid-Home return completed InValid-Home return not completed	
18	INTP_WORK	Interrupt positioning working	Interrupt positioning working	
19	PCOM1	Position 1 comparison trigger signal	Output trigger signal when position 1 reaches the corresponding range	
20	PCOM2	Position 2 comparison trigger signal	Output trigger signal when position 2 reaches the corresponding range	
21	PCOM3	Position 3 comparison trigger signal	Output trigger signal when position 3 reaches the corresponding range	
22	PCOM4	Position 4 comparison trigger signal	Output trigger signal when position 4 reaches the corresponding range	

Parameter list

Control modes: P: position control; S: speed control; T: torque control
 * means applicable * means not applicable

Parameter number	Description	Control mode	P	S	T
00	Motor positive direction definition		*	*	*
01	Control mode selection		*	*	*
02	Real time auto-tuning		*	*	*
03	Stiffness control setting		*	*	*
04	Load inertia ratio		*	*	*
14	Pulse output counts per motor one revolution (32-bit)		*	*	*
15	Pulse output positive direction definition		*	*	*
17	Pulse output OUT_Z delay		*	*	*
18	Pulse output function selection		*	*	*
19	Position deviation too large threshold		*	*	*
21	Regenerative resistor setting		*	*	*
22	External regenerative resistor capacity		*	*	*
23	External regenerative resistor resistance value		*	*	*
24	External regenerative resistor heating time constant		*	*	*
25	Regenerative voltage threshold		*	*	*
26	Step value setting		*	*	*
27	High-speed pulse train form		*	*	*
28	Second encoder interface		*	*	*
31	Motor type selection		*	*	*
32	DDL motor polar pitch (N-N)		*	*	*
33	DDL motor resolution		*	*	*
34	DDL motor rated current		*	*	*
35	DDL rated thrust		*	*	*
36	DDL maximum thrust/theoretical value		*	*	*
37	DDL max. speed		*	*	*
39	DDL rotor mass		*	*	*
40	DDL Stator phase resistance Rs		*	*	*
41	DDL motor Lr (line inductance①)		*	*	*
42	DDL motor Ld (line inductance②)		*	*	*
43	DDL Back EMF Coefficient		*	*	*
44	DDR encoder resolution (32-bit)		*	*	*
45	DDR encoder resolution high-bit		*	*	*
46	DDR motor rated current		*	*	*
48	DDR rated torque		*	*	*
50	DDR Maximum torque/theoretical value		*	*	*
50	DDR motor max. speed		*	*	*
51	Reserved		*	*	*
52	DDR motor rotor inertia		*	*	*
53	DDR stator resistance Rs		*	*	*
54	DDR motor Lr		*	*	*
55	DDR motor Ld		*	*	*
56	DDL Back EMF Coefficient		*	*	*
57	Reserved		*	*	*
58	Reserved		*	*	*
59	Control response time-tuning coefficient		*	*	*
60	Magnetic pole seeking method		*	*	*
61	Magnetic pole seeking current		*	*	*
62	Magnetic pole seeking action threshold value		*	*	*
63	Magnetic pole seeking static threshold value		*	*	*
64	DDL/DDR Feedback source		*	*	*
66	DDL/DDR Motor - electrical angle		*	*	*

Parameter number	Description	Control mode	P	S	T
00	Position instruction smoothing filter		*	*	*
01	Position instruction FIR filter		*	*	*
02	Adaptive filtering mode		*	*	*
03	Adaptive filtering load mode		*	*	*
04	First notch filter frequency		*	*	*
05	Second notch filter frequency		*	*	*
06	First notch filter depth		*	*	*
07	Second notch filter frequency		*	*	*
08	Second notch filter depth		*	*	*
09	Second notch filter depth		*	*	*
10	Third notch filter frequency		*	*	*
11	Third notch filter depth		*	*	*
12	Third notch filter depth		*	*	*
13	Fourth notch filter frequency		*	*	*
14	Fourth notch filter width		*	*	*
15	Fourth notch filter depth		*	*	*
19	Position instruction FIR filter		*	*	*
20	F1ST vibration attenuation frequency		*	*	*
21	F1ST vibration attenuation filter setting		*	*	*
22	Second vibration attenuation frequency		*	*	*
23	Second vibration attenuation filter setting		*	*	*
31	Resonance point 1 frequency		*	*	*
32	Resonance point 1 bandwidth		*	*	*
33	Resonance point 1 amplitude		*	*	*
34	Resonance point 2 frequency		*	*	*
35	Resonance point 2 bandwidth		*	*	*
36	Resonance point 2 amplitude		*	*	*

Parameter number	Description	Control mode	P	S	T
00	Speed instruction source selection		*	*	*
03	Speed instruction digital setting		*	*	*
04	JOG speed setting		*	*	*
08	Torque limit source		*	*	*
09	Internal forward torque limit		*	*	*
10	Internal reverse torque limit		*	*	*
11	External forward torque limit		*	*	*
12	External reverse torque limit		*	*	*
14	Acceleration time 1		*	*	*
15	Deceleration time 1		*	*	*
16	Acceleration time 2		*	*	*
17	Deceleration time 2		*	*	*