Parameter List for SV-X3E Series Servo Drive

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Thank you for purchasing this product.
This manual mainly describes the Parameter List for SV-X3E series servo drive.
For more details, please refer to <SV-X3E Series Servo Drive User Manual>.

Common Parameters

Parameter No	Parameter name	Description
P00.00	Motor positive direction definition	Check the positive direction of the motor rotation, generally by default
P00.02	Real time auto-tuning	Set the "Real time auto-tuning" to 1 or 2, change the rigidity the servo gain parameter adjust automatically Set it to 0, adjust the gain parameter by manual
P00.03	Stiffness grade setting	
P00.04	Load inertia ratio	set up the ratio of the load inertia against the rotor (of the motor) inertia
P00.16	Pulse output positive direction definition	Set the reversal of pulse output B-phase, generally by default
P00.19	Position deviation too large threshold	Set excess range of positional deviation by the command unit (default).
P00.21	Brake resistor setup	Select either to use built-in brake resistor or externally install the brake resistor. Default setting: 1 (external). No need to change.
P00.22	External regenerative resistor capacity	Set the external resistor capacity and resistance in accordance with the actual conditions. For the resistance, please refer to Model selection of peripheral braking resistor in Instruction Manual.
P00.23	External regenerative resistor resistance value	
P03.08	Torque limit source	Set the torque limit source and setting value, generally internal torque limit by default. Default value 300%.
P03.09	Internal forward torque limit	
P03.10	Internal reverse torque limit	
P03.11	External forward torque limit	
P03.12	External reverse torque limit	
P09.00	Modbus axis address	Set the parameters related to the communication.
P09.01	Modbus baud rate	
P09.02	Modbus data format	
P09.03	Communication response delay	

Position control mode – External pulse input

Parameter No.	Parameter name	Description
P00.01	Control mode selection	Set it to 0 – Position control mode
P00.05	Position instruction source	Set it to 0-Pulse instruction
P00.07	Pulse train form	Select one of the following pulse format: 0-Direction + pulse, positive logic 1-Direction + pulse, negative logic 2-A-phase+ B-phase orthogonal pulse, 4 multiplication, positive logic 3-A-phase+ B-phase orthogonal pulse, 4 multiplication, negative logic 4-CW +CCW, positive logic 5- CW +CCW, negative logic
P00.08	Instruction units per motor one revolution (32-bit)	0 Unit/Turn ~ 1073741824 Unit/Turn
P00.10	Electronic gear numerator 1	1~1073741824(Electronic gear is valid when setting P00.08 to 0)
P00.12	Electronic gear denominator	1~1073741824(Electronic gear is valid when setting P00.08 to 0)

Position control mode –Internal multi- stage position command

Parameter No.	Parameter name	Description
P00.01	Control mode selection	Set it to 0 – Position control mode
P00.05	Position instruction source	Set it to 2-Internal position command
P00.08	Instruction units per motor one revolution	0 Unit/Turn～1073741824 Unit/Turn
P00.10	Electronic gear numerator 1	1～1073741824(Electronic gear is valid when setting P00.08 to 0)
P00.12	Electronic gear denominator	1～1073741824(Electronic gear is valid when setting P00.08 to 0)
P08.01	Starting stage number	Set the Start stage No. of internal position command (1-P08.02)
P08.02	Ending stage number	Set the End stage No. of internal position command (P08.01-16)
P08.06	Internal position control 1st stage length	-1073741824～1073741824
P08.08	Internal position control 1st stage max speed	1 ～ 9000rpm
P08.09	Internal position control 1st stage acceleration/deceleration time	0 ～ 65535ms
P08.10	Waiting time after internal position control 1st stage completed	0 ～ 65535ms
P08.11-P08.85		Arrange by the order of parameter from the 1st stage position command, then from the 2nd stage to 16th stage in turn
Notes	When using internal position command, set the DI function 25(internal position command enabling)	

Related parameters for analog speed control

Parameter No.	Parameter name	Description
P00.01	Control mode selection	Set to 1 – Speed control mode
P03.00	Speed command	Set to 1 –External analog(AI1 input by default)
P05.16	Ai1 function selection	Set to 0-Speed analog input
P03.14	Acceleration time 1	Set the acceleration/deceleration time, range is between 0 and 65535ms
P03.15	Deceleration time1	
Analog input setup		
P05.00	AI1 minimum input	-10.00V ~ 10.00V
P05.01	Corresponding value of AI1 minimum input	-100.0%~100.0%(max. speed at 100% speed)
P05.02	AI1 maximum input	-10.00V ~ 10.00V
P05.03	Corresponding value of AI1 maximum input	-100.0%~100.0%(max. speed at 100% speed)
P05.04	Ai1 zero offset	-500mV ~ 500mV
P05.05	Ai1 dead-zone setting	0.0~20.0%
P05.06	Ai1 input filtering time	0.0ms ~ 6553.5ms
P05.14	AI setting 100% speed	Set to 0 ~ max. speed of the motor

Related parameters for internal multi-speed control

Parameter No.	Parameter name	Description
P00.01	Control mode selection	Set to 1 – Speed control mode
P03.00	Speed command source	Set to 3- internal multi-stage speed 1-16 switchover
P03.14	Acceleration time 1	Set the acceleration/deceleration time, range is between 0 and 65535ms
P03.15	Deceleration time1	
P03.36-P03.51	Speed from segment 1 to 16	Parameter P03.36 is the 1st stage speed and so on P03.51 the 16th stage speed. Initial value is 0 and make the setting by the actual usage
Notes	When using internal multi-stage speed, set the DI function 6-9 and select the speed by the switch combination	

Related parameters for analog torque control

Parameter No.	Parameter name	Description
P00.01	Control mode selection	Set to 2 –Torque control mode
P03.22	Torque instruction source	Set to 1 – External analog input setup
P05.17	Ai2 function selection	Set to 1-Analog torque input
P03.26	Speed limit source in torque control	Set to 0- Internal speed limit
P03.27	Internal positive speed limit	Set to 0 ~ max. speed of the motor
P03.28	Internal negative speed limit	
Analog input setup		
P05.07	AI2 minimum input	-10.00V ~ 10.00V
P05.08	Corresponding value of AI2 minimum input	-100.0%~100.0%(max. torque at 100% torque)
P05.09	AI2 maximum input	-10.00V ~ 10.00V
P05.10	Corresponding value of AI2 maximum input	-100.0%~100.0%(max. torque at 100% torque)
P05.11	AI2 zero offset	-500mV ~ 500mV
P05.12	AI2 dead-zone setting	0.0~20.0%
P05.13	AI2 input filtering time	0.0ms ~ 6553.5ms
P05.14	AI setting 100% speed	Set the motor speed at 100% byAI
P05.15	AI setting 100% torque	Set the motor speed at 100% byAI

Fault and warning code description

Code and name	Cause	What to do
Err. 001: System parameter error	1. Control circuit power suddenly drops; 2. After updating servo software, some previously saved parameters exceed settings range.	1. Make sure input power is within specified range; 2. Set P20.06=1 to initialized system parameters.
Err.002 Product model selection fault	1. Encoder cable connection broken or loose; 2. Invalid drive or motor model.	1. Check and fasten encoder cable; 2. Replace with valid drive or motor model.
Err.003 Fault during parameter storage	1. Parameter reading/writing too frequent; 2. Parameter storage component fault; 3. Control circuit power unstable; 4. Drive fault.	1. Check if upper controller is reading/writing E2PROM too frequent; 2. Check control circuit power cable and ensure control circuit power voltage is within specified range.
Err.004 FPGA fault	Software version fault.	Check if software version is correct.
Err.005 Product matching fault	1. Encoder cable connection broken or loose; 2. Use third-party encoder which is not supported; 3. Motor capacity and drive capacity don't match. Motor capacity class is larger than or two levels off the drive; 4. Product model code doesn't exist.	1. Check and fasten encoder cable; 2. Replace products that don't match; 3. Choose correct encoder type or replace the drive.
Err.006 Software abnormal	1. System parameter abnormal; 2. Drive internal fault.	Set P20.06=1 to initialized system parameters and restart power
Err.007 Encoder initialization abnormal	Encoder signal abnormal at power on.	Check or replace encoder cable
Err.008 Short circuit to ground detection fault	1. UVW wiring fault; 2. Motor breakdown; 3. Drive fault.	1. Check if UVW is short circuited to ground. If so replace cable; 2. Check if motor cable or grounding resistance is abnormal. If so replace the motor
Err.009 Overcurrent fault 1	1. Instruction input is too fast; 2. Regenerative resistor too small or short circuited; 3. Motor cable bad contact; 4. Motor cable grounding; 5. Motor UVW short circuited; 6. Motor burnt; 7. Software detected power transistor overcurrent	1. Check instruction input time sequence and input after S-RDY; 2. Replace regenerative resistor; 3. Check and fasten encoder cable; 4. Replace motor if UVW insulation resistor is broken; 5. Check if UVW is short circuited; 6. Replace motor if UVW don't have equal resistance; 7. Reduce load, use bigger drive and motor, increase acceleration/deceleration time.
Err.010 Overcurrent fault 2	1. Instruction input is too fast; 2. Regenerative resistor too small or short circuited; 3. Motor cable bad contact; 4. Motor cable grounding; 5. Motor UVW short circuited; 6. Motor burnt; 7. Software detected power transistor overcurrent	1. Check instruction input time sequence and input after S-RDY; 2. Replace regenerative resistor; 3. Check and fasten encoder cable; 4. Replace motor if UVW insulation resistor is broken; 5. Check if UVW is short circuited; 6. Replace motor if UVW don't have equal resistance; 7. Reduce load, use bigger drive and motor, increase acceleration/deceleration time.
Err.012 Incremental encoder Z breakage or absolute encoder number of turns abnormal	Incremental encoder: Z-phase signal loss due to cable breakage or encoder fault; Absolute encoder: battery shortage, encoder cable plugging & unplugging during power off, or after P06.47=1 not initialize the encoder.	1. Rotate motor shaft manually, if error still occurs, replace cable or encoder; 2. Replace battery if undervoltage; 3. P20.06=7 and initialize.
Err.013 Encoder communication abnormal	1. Communicational encoder cable breakage; 2. Encoder not grounded; 3. Communication verification abnormal.	1. Check or replace encoder cable; 2. Check if encoder is grounded properly
Err.014 Encoder data abnormal	1. Serial encoder breakage or bad contact; 2. Serial encoder data reading/writing abnormal	Check or replace encoder cable.
Err.015 Encoder battery undervoltage	Encoder battery voltage is less than P06.48 and ten's place of P06.47 is 1.	Replace encoder battery
Err.016 Speed deviation too large	Speed instruction and speed feedback deviation exceeds settings of P06.45.	1. Increase P06.45 value; 2. Increase acceleration/deceleration time or increase system responsiveness; 3. Set P06.45=0 to disable speed deviation too large function.
Err.017 Torque saturation overtime	Torque maintains saturated for time longer than settings of P06.46.	1. Increase P06.46 value; 2. Check if UVW is broken.
Err.018 Control power undervoltage	Poor input wiring or input power failure	1. Check input power and wiring 2. Replace driver
Err.019 Tripping error	Motor stall due to incorrect wiring	1. Check UVW and encoder wiring 2. Check drive and motor
Err.020 Overvoltage	1. Input power voltage exceeds 280VAC; 2. Regenerative resistor breakage or not matching; 3. Load inertia exceeds allowable range; 4. Drive broken.	1. Check input power voltage; 2. Check or replace regenerative resistor; 3. Increase acceleration/deceleration time or replace more suitable drive/motor.
Err.021 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)
Err.022 Current sampling fault	Drive internal current sampling fault.	Replace servo drive.
Err.023 AI sampling voltage too large	1. AI wrong wiring; 2. AI external input power voltage too high	Do correct AI wiring and set input power voltage within ±10V
Err.024 Overspeed	1. Speed instruction exceeds maximum speed setting value; 2. Wrong UVW phase sequence; 3. Speed response over modulation; 4. Drive faulty	1. Lower speed instruction 2.Check if UVW phase sequence is correct; 3. Adjust speed loop gains to reduce over shoot; 4. Replace drive
Err.025 Electrical angle identification failure	1. Load or inertia too large; 2. Wrong encoder cable wiring	1. Reduce load or increase current loop gains 2. Replace encoder cable.
Err.026 Load identification failure	1. Load or inertia too large. Motor cannot run at specified curves; 2. Verification process aborted by other faults.	1. Reduce load or increase current loop gains 2. Make sure verification process correct.
Err.027 DI parameter setting fault	1. Different DOs are assigned with same function; 2. Physical DI and communicational DI have definition conflicts	Reassign DI functions
Err.028 DO parameter setting fault	Different DOs are assigned with same function	Reassign DO functions
Err.040 S-ON instruction invalid fault	Input S-ON signal after motor is energized by other auxiliary functions	Change incorrect operation.
Err.042 Pulse division output overspeed	Pulse division output is over upper limit.	Adjust pulse division output settings.
Err.043 Position deviation too large	1. Servo motor UVW wiring is wrong; 2. Servo drive gain settings are too low; 3. Position instruction pulse frequency is too high; 4 Position instruction acceleration is too large; 5. P00.19 setting is too low; 6. Servo drive/motor faulty; 7. Brake release abnormal. Motor is locked by external forces, gravity etc.	1. Reconnect the cables 2. Increase servo gains 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.
Err.044 Main circuit input phase loss	1. Input power cable bad contact; 2. Phase loss fault, i.e. during power on, one phase of R/S/T is too low for over 1s. 3. For the drive of 1KW or more, use single-phase 220VAC input	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. Set P06.30 to 1 to prevent this alarm.
Err.045 Drive output phase loss	1. Motor UVW bad contact; 2. Motor broken	1. Check UVW wiring 2. Replace motor
Err.046 Drive overload	1. Motor UVW or encoder cable bad contact or loose 2. Motor blocked or brake not released 3. Wrong UVW/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 UVW/encoder cable wiring 2. Check motor is not blocked and brake is released 3. Check there is no wrong UVW/encoder cable wiring for multiple drives/motors 4. Increase acceleration/deceleration time or choose bigger drive/motor 5. Check UVW wiring 6. Replace drive/motor
Err.047 Motor overload	1. Motor UVW or encoder cable bad contact or loose 2. Motor blocked or brake not released 3. Wrong UVW/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 UVW/encoder cable wiring 2. Check motor is not blocked and brake is released 3. Check there is no wrong UVW/encoder cable wiring for multiple drives/motors 4. Increase acceleration/deceleration time or choose bigger drive/motor 5. Check UVW wiring 6. Replace drive/motor
Err.048 Electronic gear setting fault	Electronic gear ratio exceeds setting range	Set correct electronic gear
Err.049 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 improved cooling conditions for servo drive 3. Check error records and see if there has been overload error. Restart after 30s. Increase acceleration/deceleration time. 5. Install the servo drive according to specifications in this manual. 6. Power off and wait for 5 minutes. If this error persists, replace drive.

Alarm code and name	Causes	What to do
AL.080 Undervoltage warning	DC bus voltage is relatively low	1. Check main circuit. 2. Adjust P06.36
AL.081 Drive overload warning	Same as Err.046	Same as Err.046
AL.082 Motor overload warning	Same as Err.046	Same as Err.046
AL.083 Parameter modification needs power restart	Modify parameters which needs restarting.	Restart power
AL.084 Servo not ready	S-ON when servo is not ready	S-ON after detecting SRDY signal.
AL.085 E2PROM frequency writing warning	Operating E2PROM too frequent.	Reduce E2PROM using frequency Use communication2 which do not save in E2PROM.
AL.086 Positive over-travel warning	1. P_OT & N_OT 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
AL.087 Negative over-travel warning	Same as AL.086	Trigger negative limit switch, check operation mode, move the servo towards positive direction After leaving negative limit switch, this alarm will be removed automatically
AL.088 Positive instruction overspeed	1. Electronic gear ratio too large 2. Pulse frequency too high	1. Reduce electronic gear ratio 2. Reduce pulse frequency
AL.090 Absolute encoder angle initialization warning	Angle is over 7.2 degree.	Replace motor
AL.093 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 specifications 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
AL.094 Regenerative resistor too small	1. External regenerative resistor is less than minimum value 2. Wrong parameter settings	1. Replace resistor 2. Check parameters P00.21~P00.24
AL.095 Emergency stop	Emergency stop is triggered.	This is a normal DI function (function 30)
AL.096 Homing error	1. Homing time exceeds P08.95 2. P08.90 is set is 3, 4, or 5 and contacted limit switches 3. Contact limit switches twice when not using limit switches as origin points.	1. Increase the value of P08.95; 2. Reduce homing speeds P08.92, P08.93
AL.097 Encoder battery undervoltage	Encoder battery voltage is lower than what's set in P06.48.	Replace battery

DI/DO function code

DI function description			
Value	Sign	Name	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 PI control. Valid-Speed loop is Pcontrol.
4	CMD_SEL	Command switchover	Invalid: present command is A Valid: present command is B
5	PERR_CLR	Pulse deviation clear	Invalid-No action Valid-Clear pulse deviation
6	MI_SEL1	Multi-stage selection 1	For internal position or internal speed control
7	MI_SEL2	Multi-stage selection 2	
8	MI_SEL3	Multi-stage selection 3	
9	MI_SEL4	Multi-stage selection 4	
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	Valid-Disable pulse input Invalid-Enable pulse input
14	P_OT	Positive over-travel	Use with limit switches for over-travel protections. Valid-Positive over-travel, positive drive disabled Invalid-Normal 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 inputting instructions
19	N_JOG	Negative JOG	Valid-Reverse input instructions Invalid-Stop inputting instructions
20	GEAR_SEL1	Electronic gear selection	GEAR_SEL1 invalid, GEAR_SEL2 invalid: first electronic gear GEAR_SEL1 valid, GEAR_SEL2 invalid: second electronic gear GEAR_SEL1 invalid, GEAR_SEL2 valid: third electronic gear GEAR_SEL1 valid, GEAR_SEL2 valid: fourth lectronic gear
21	GEAR_SEL2		

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	STHOME	Homing start	Start homing
30	ESTOP	Emergency stop	Invalid-No action Valid-Emergency stop
31	STEP	Step enable	Valid-Step enable; Invalid-Instruction is 0
32	FORCE_ERR	Forced error protection	Invalid-No action Valid-Forced error protection
33	HOME_DEC	Homing deceleration point	Invalid-No action Valid-Switchover to low-speed search homing
34	INTP_TRIG	Interrupt positioning trigger	Invalid-No action; Valid-Valid: when P08.86 is set to non-zero value, can only use DI8 or DI9
35	INPOSHALT	Internal position instruction generation pause	Invalid-No effect Valid- Decelerate and pause executing internal multi-stage position and interrupt positioning
36	ANALOG_OFF	Analog input inhibition	Invalid-No effect, Valid-Analog input inhibition
37	ENC_SEN	EN enable absolute position data sending	Invalid-No effect; Valid- OAOBOZ send absolute position data, cannot enable servo

DO function description			
Value	Sign	Name	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 (disconnected)
4	TGON	Motor rotation	Valid-When motor speed is larger than settings of P04.43. 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 P04.44.
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-Break release Invalid-Break recover
12	T_ARR	Torque reached	Valid when torque feedback reaches the settings of P04.55; allowable fluctuations set in P04.56.
13	V_ARR	Speed reached	Valid when speed feedback reaches the settings of P04.45; allowable fluctuations ±10rpm
15	INTP_DONE	Interrupt positioning complete	Output after interrupt positioning complete
16	DB_OUT	Dynamic braking output	External relays or contacts and current-limiting resistance are required
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
P00 Group Basic Parameters	00	Motor positive direction definition	●	●	●
	01	Control mode selection	●	●	●
	02	Real time auto-tuning	●	●	●
	03	Stiffness grade setting	●	●	●
	04	Load inertia ratio	●	●	●
	05	Position instruction source	●	●	●
	07	Pulse train form	●	–	–
	08	Instruction units per motor one revolution (32-bit)	●	–	–
	10	Electronic gear numerator 1 (32-bit)	●	–	–
	12	Electronic gear denominator (32-bit)	●	–	–
	14	Pulse output counts per motor one revolution (32-bit)	●	–	–
	16	Pulse output positive direction definition	●	●	●
	17	Pulse output OUT_Z polarity	●	–	–
	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 pulse train form	●	–	–

P01 Group Gain Tuning Parameters	00	Position loop gain 1	●	–	–
	01	Speed loop gain 1	●	●	–
	02	Speed loop integral time 1	●	●	–
	03	Speed detection filter 1	●	●	●
	04	Torque instruction filter 1	●	●	●
	05	Position loop gain 2	●	–	–
	06	Speed loop gain 2	●	●	–
	07	Speed loop integral time 2	●	●	–
	08	Speed detection filter 2	●	●	●
	09	Torque instruction filter 2	●	●	●
	10	Speed regulator PDFF coefficient	●	●	–
	11	Speed feedforward control selection	●	–	–
	12	Speed feedforward gain	●	–	–
	13	Speed feedforward filtering time	●	–	–
	14	Torque feedforward control selection	●	●	–
	15	Torque feedforward gain	●	●	–
	16	Torque feedforward filtering time	●	●	–
	17	Digital input GAIN_SEL function selection	●	●	–
	18	Position control gain switchover mode	●	–	–
	19	Position control gain switchover delay	●	–	–
	20	Position control gain switchover class	●	–	–
	21	Position control gain switchover hysteresis	●	–	–
	22	Position control gain switchover time	●	–	–
	23	Speed control gain switchover mode	–	●	–
	24	Speed control gain switchover delay	–	●	–
	25	Speed control gain switchover class	–	●	–
	26	Speed control gain switchover hysteresis	–	●	–
	27	Torque control gain switchover mode	–	–	●
	28	Torque control gain switchover delay	–	–	●
	29	Torque control gain switchover class	–	–	●
	30	Torque control gain switchover hysteresis	–	–	●

Parameter number		Description	Control mode		
			P	S	T
P01 Group Gain Tuning Parameters	31	Observer enable	●	●	●
	32	Observer cutoff frequency	●	●	●
	33	Observer phase compensation time	●	●	●
	34	Observer inertia coefficient	●	●	●

Parameter number		Description	Control mode		
			P	S	T
P02 Group Vibration Suppression Parameters	00	Position instruction smoothing filter	●	–	–
	01	Position instruction FIR filter	●	–	–
	02	Adaptive filtering mode	●	●	●
	04	First notch filter frequency (manual)	●	●	●
	05	First notch filter width	●	●	●
	06	First notch filter depth	●	●	●
	07	Second notch filter frequency (manual)	●	●	●
	08	Second notch filter width	●	●	●
	09	Second notch filter depth	●	●	●
	10	Third notch filter frequency	●	●	●
	11	Third notch filter width	●	●	●
	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 2	●	–	–
	20	First vibration attenuation frequency	●	●	–
	21	First 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
P03 Group Speed & Torque Control Parameters	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	–	●	–
	19	Zero-speed clamp function	–	●	●
	20	Zero-speed clamp threshold value	–	●	●
	22	Torque instruction source	–	–	●
	25	Torque instruction digital setting value	–	–	●
	26	Speed limit source in torque control	–	–	●
	27	Internal positive speed limit	–	–	●
	28	Internal negative speed limit	–	–	●
	29	Hard limit torque limit	●	●	●
	30	Hard limit torque limit detection time	●	●	●
	31	Internal speed instruction segment number selection mode	–	●	–
	32	Acceleration time selection for internal speed segment 1-8	–	●	–
	33	Deceleration time selection for internal speed segment 1-8	–	●	–
	34	Acceleration time selection for internal speed segment 9-16	–	●	–
	35	Deceleration time selection for internal speed segment 9-16	–	●	–
	36	Segment 1 speed	–	●	–
	37	Segment 2 speed	–	●	–
	38	Segment 3 speed	–	●	–
	39	Segment 4 speed	–	●	–
	40	Segment 5 speed	–	●	–
	41	Segment 6 speed	–	●	–
	42	Segment 7 speed	–	●	–
	43	Segment 8 speed	–	●	–

Parameter number		Description	Control mode		
			P	S	T
P03 Group Speed & Torque Control Parameters	44	Segment 9 speed	–	●	–
	45	Segment 10 speed	–	●	–
	46	Segment 11 speed	–	●	–
	47	Segment 12 speed	–	●	–
	48	Segment 13 speed	–	●	–
	49	Segment 14 speed	–	●	–
	50	Segment 15 speed	–	●	–
	51	Segment 16 speed	–	●	–

Parameter number		Description	Control mode		
			P	S	T
P04 Group Digital Input/output Parameters	00	Normal DI filter selection	●	●	●
	01	DI1 terminal function selection	●	●	●
	02	DI2 terminal function selection	●	●	●
	03	DI3 terminal function selection	●	●	●
	04	DI4 terminal function selection	●	●	●
	05	DI5 terminal function selection	●	●	●
	06	DI6 terminal function selection	●	●	●
	07	DI7 terminal function selection	●	●	●
	08	DI8 terminal function selection	●	●	●
	09	DI9 terminal function selection	●	●	●
	11	DI1 terminal logic selection	●	●	●
	12	DI2 terminal logic selection	●	●	●
	13	DI3 terminal logic selection	●	●	●
	14	DI4 terminal logic selection	●	●	●
	15	DI5 terminal logic selection	●	●	●
	16	DI6 terminal logic selection	●	●	●
	17	DI7 terminal logic selection	●	●	●
	18	DI8 terminal logic selection	●	●	●
	19	DI9 terminal logic selection	●	●	●
	21	Do1 terminal function selection	●	●	●
	22	DO2 terminal function selection	●	●	●
	23	DO3 terminal function selection	●	●	●
	24	DO4 terminal function selection	●	●	●
	25	DO5 terminal function selection	●	●	●
	26	DO6 terminal function selection	●	●	●
	27	DO7 terminal function selection	●	●	●
	28	DO8 terminal function selection	●	●	●
	29	DO9 terminal function selection	●	●	●
	31	Do1 terminal function selection	●	●	●
	32	DO2 terminal function selection	●	●	●
	33	DO3 terminal function selection	●	●	●
	34	DO4 terminal function selection	●	●	●
	35	DO5 terminal function selection	●	●	●
	36	DO6 terminal function selection	●	●	●
	37	DO7 terminal function selection	●	●	●
	38	DO8 terminal function selection	●	●	●
	39	DO9 terminal function selection	●	●	●
	41	FUNINL signal unassigned state (Hex)	●	●	●
	42	FUNINH signal unassigned state (Hex)	●	●	●
	43	Motor rotational signal (TGON) threshold	●	●	●
	44	Speed conformity signal (V_CMP) width	–	●	–
	45	Speed reached signal (V_ARR) width	●	●	●
	47	Positioning completion (COIN) threshold	●	–	–
	48	Positioning completion output setting	●	–	–
	49	Positioning completion holding time	●	–	–
	50	Positioning near (NEAR) threshold	●	–	–
	51	Servo OFF delay time after holding brake taking action when speed is 0	●	●	●
	52	Speed setting for holding brake to take action in motion	●	●	●
	53	Waiting time for holding brake to take action in motion	●	●	●
	54	Special output function setting	●	●	●
	55	Torque reached (T_ARR) threshold	●	●	●
	56	Torque reached signal width	●	●	●
	57	Z-phase pulse width adjustment	●	●	●
	58	Zero-speed output threshold	●	●	●

Parameter number		Description	Control mode		
			P	S	T
P05 Group Analog Input/output Parameters	00	AI1 minimum input	●	●	●
	01	Corresponding value of AI1 minimum input	●	●	●
	02	AI1 maximum input	●	●	●
	03	Corresponding value of AI1 maximum input	●	●	●
	04	AI1 zero offset	●	●	●
	05	AI1 dead-zone setting	●	●	●
	06	AI1 input filtering time	●	●	●
	07	AI2 minimum input	●	●	●
	08	Corresponding value of AI2 minimum input	●	●	●
	09	AI2 maximum input	●	●	●
	10	Corresponding value of AI2 maximum input	●	●	●
	11	AI2 zero offset	●	●	●
	12	AI2 dead-zone setting	●	●	●
	13	AI2 input filtering time	●	●	●
	14	AI setting 100% speed	●	●	●
	15	AI setting 100% torque	●	●	●
	16	AI1 function selection	●	●	●
	17	AI2 function selection	●	●	●
	28	AO1 signal selection (need optional card)	●	●	●
	29	AO1 voltage offset	●	●	●
	30	AO1 multiplier	●	●	●
	31	AO2 signal selection (need optional card)	●	●	●
	32	AO2 voltage offset	●	●	●
	33	AO2 multiplier	●	●	●
	34	AO monitoring value types	●	●	●

Parameter number		Description	Control mode		
			P	S	T
P06 Group Expansion Parameters	00	Electronic gear numerator 2(32-bit)	●	–	–
	02	Electronic gear numerator 3(32-bit)	●	–	–
	04	Electronic gear numerator 4(32-bit)	●	–	–
	06	Position deviation clearance function	●	–	–
	09	Electronic gear ratio switchover delay	●	–	–
	10	Potential energy load torque compensation	●	●	–
	11	P06.10 memory selections	●	●	–
	12	Forward friction torque compensation	●	●	–
	13	Reverse friction torque compensation	●	●	–
	14	Viscous friction compensation	●	●	–
	15	Friction compensation time constant	●	●	–
	16	Friction compensation lo-speed zone	●	●	–
	19	Parameter identification rate	●	●	–
	20	Parameter identification acceleration time	●	●	–
	21	Parameter identification deceleration time	●	●	–
	22	Parameter identification mode selection	●	●	–
	23	Initial angle identification current limit	●	●	●
	24	Instantaneous power failure protection	●	●	●
	25	Instantaneous power failure deceleration time	●	●	●
	26	Servo OFF stop mode selection	●	●	●
	27	Second category fault stop mode selection	●	●	●
	28	Over-travel input setting	●	●	●
	29	Over-travel stop mode selection	●	●	●
	30	Input power phase loss protection	●	●	●
	31	Output power phase loss protection	●	●	●
	32	Emergency stop torque	●	●	●
	33	Tripping protection function	●	●	●
	34	Overload warning value	●	●	●
	35	Motor overload protection coefficient	●	●	●
	36	Undervoltage protection point	●	●	●
	37	Over-speed error point	●	●	●
	38	Maximum input pulse frequency	●	–	–
	39	Short circuit to ground detection protection selection	●	●	●
	40	Encoder interference detection delay	●	●	●
	41	Input pulse filtering setting	●	–	–
	42	Input pulse inhibition setting	●	–	–
	43	Deviation clearance input setting	●	–	–
	44	High speed DI filtering setting	●	●	●
	45	Speed deviation too large threshold	●	●	–
	46	Torque saturation overtime setting	●	●	●
	47	Absolute system setting	●	●	●
	48	Encoder battery undervoltage threshold	●	●	●
	49	High pulse input filter	●	●	●

Parameter number		Description	Control mode		
			P	S	T
P07 Group Auxiliary function Parameters	00	User password	●	●	●
	01	Panel monitoring parameter setting 1	●	●	●
	02	Panel monitoring parameter setting 2	●	●	●
	03	Panel monitoring parameter setting 3	●	●	●
	04	Panel monitoring parameter setting 4	●	●	●
	05	Panel monitoring parameter setting 5	●	●	●
	06	Panel monitoring parameter setting 6	●	●	●
	07	Panel monitoring parameter setting 7	●	●	●
	08	Function selection 1	●	●	●
	09	Function selection 2	●	●	●
	10	User password	●	●	–
	11	Instant power failure immediate memory function	●	–	–
	12	User password screen-lock time	●	–	–
	14	Fast deceleration time	–	–	–
	16	Function selection 3	●	●	●
	17	Maximum division number pre motor one revolution	●	●	●
	19	Function selection 5	●	●	●
	20	Function selection 6	●	●	●
	21	Function selection 7	●	●	●
	22	Function selection 8	●	●	●
	23	Alarm reset time	●	●	●
	24	Positive soft-limit(32-bit)	●	●	●
	26	Negative soft-limit(32-bit)	●	●	●

Parameter number		Description	Control mode		
			P	S	T
P08 Group Internal Position Control Parameters	00	Internal position execution pattern selection	●	–	–
	01	Starting stage number	●	–	–
	02	Ending stage number	●	–	–
	03	Restarting pattern of residual stags after pausing	●	–	–
	04	Position instruction type selection	●	–	–
	05	Unit for waiting time	●	–	–
	06	Internal position control 1st stage length (32-bit)	●	–	–
	08	Internal position control 1st stage max speed	●	–	–
	09	Internal position control 1st stage acceleration/ deceleration time	●	–	–
	10	Waiting time after internal position control 1st stage completed	●	–	–
	11	Internal position control 2nd stage length (32-bit)	●	–	–
	13	Internal position control 2nd stage max speed	●	–	–
	14	Internal position control 2nd stage acceleration/ deceleration time	●	–	–
	15	Waiting time after internal position control 2nd stage completed	●	–	–
	16	Internal position control 2nd stage length (32-bit)	●	–	–
	18	Internal position control 3rd stage max speed	●	–	–
	19	Internal position control 3rd stage acceleration/ deceleration time	●	–	–
	20	Waiting time after internal position control 3rd stage completed	●	–	–
	21	Internal position control 4th stage length (32-bit)	●	–	–
	23	Internal position control 4th stage max speed	●	–	–
	24	Internal position control 4th stage acceleration/ deceleration time	●	–	–
	25	Waiting time after internal position control 4th stage completed	●	–	–
	26	Internal position control 5th stage length (32-bit)	●	–	–
	28	Internal position control 5th stage max speed	●	–	–
	29	Internal position control 5th stage acceleration/ deceleration time	●	–	–
	30	Waiting time after internal position control 5th stage completed	●	–	–
	31	Internal position control 6th stage length (32-bit)	●	–	–
	33	Internal position control 6th stage max speed	●	–	–
	34	Internal position control 6th stage acceleration/ deceleration time	●	–	–
	35	Waiting time after internal position control 6th stage completed	●	–	–
	36	Internal position control 7th stage length (32-bit)	●	–	–
	38	Internal position control 7th stage max speed	●	–	–
	39	Internal position control 7th stage acceleration/ deceleration time	●	–	–
	40	Waiting time after internal position control 7th stage completed	●	–	–
	41	Internal position control 8th stage length (32-bit)	●	–	–
	43	Internal position control 8th stage max speed	●	–	–
	44	Internal position control 8th stage acceleration/ deceleration time	●	–	–

Parameter number		Description	Control mode		
			P	S	T
P08 Group Internal Position Control Parameters	45	Waiting time after internal position control 8th stage completed	●	–	–
	46	Internal position control 9th stage length (32-bit)	●	–	–
	48	Internal position control 9th stage max speed	●	–	–
	49	Internal position control 9th stage acceleration/ deceleration time	●	–	–
	50	Waiting time after internal position control 9th stage completed	●	–	–
	51	Internal position control 10th stage length (32-bit)	●	–	–
	53	Internal position control 10th stage max speed	●	–	–
	54	Internal position control 10th stage acceleration/ deceleration time	●	–	–
	55	Waiting time after internal position control 10th stage completed	●	–	–
	56	Internal position control 11th stage length (32-bit)	●	–	–
	58	Internal position control 11th stage max speed	●	–	–
	59	Internal position control 11th stage acceleration/ deceleration time	●	–	–
	60	Waiting time after internal position control 11th stage completed	●	–	–
	61	Internal position control 12th stage length (32-bit)	●	–	–
	63	Internal position control 12th stage max speed	●	–	–
	64	Internal position control 12th stage acceleration/ deceleration time	●	–	–
	65	Waiting time after internal position control 12th stage completed	●	–	–
	66	Internal position control 13th stage length (32-bit)	●	–	–
	68	Internal position control 13th stage max speed	●	–	–
	69	Internal position control 13th stage acceleration/ deceleration time	●	–	–
	70	Waiting time after internal position control 13th stage completed	●	–	–
	71	Internal position control 14th stage length (32-bit)	●	–	–
	73	Internal position control 14th stage max speed	●	–	–
	74	Internal position control 14th stage acceleration/ deceleration time	●	–	–
	75	Waiting time after internal position control 14th stage completed	●	–	–
	76	Internal position control 15th stage length (32-bit)	●	–	–
	78	Internal position control 15th stage max speed	●	–	–
	79	Internal position control 15th stage acceleration/ deceleration time	●	–	–
	80	Waiting time after internal position control 15th stage completed	●	–	–
	81	Internal position control 16th stage length (32-bit)	●	–	–
	83	Internal position control 16th stage max speed	●	–	–
	84	Internal position control 16th stage acceleration/ deceleration time	●	–	–
	85	Waiting time after internal position control 16th stage completed	●	–	–
	86	Interrupt positioning setting	●	–	–
	88	Homing start modes	●	–	–
	89	Homing modes	●	–	–
	90	Limit switch and Z-phase signal setting at homing	●	–	–
	92	Origin search high speed	●	–	–
	93	Origin search low speed	●	–	–
	94	Acceleration/deceleration time at origin search	●	–	–
	95	Homing time limit	●	–	–
	96	Origin point coordinate offset (32-bit)	●	–	–
	98	Mechanical origin point offset (32-bit)	●	–	–

Parameter number		Description	Control mode		
			P	S	T
P09 Group Communication Setting Parameters	00	Modbus axis address	●	●	●
	01	Modbus baud rate	●	●	●
	02	Modbus data format	●	●	●
	03	Communication overtime	●	●	●
	04	Communication response delay	●	●	●
	05	Communication DI enabling setting 1	●	●	●
	06	Communication DI enabling setting 2	●	●	●
	07	Communication DI enabling setting 3	●	●	●
	08	Communication DI enabling setting 4	●	●	●
	09	Communication DO enabling setting 1	●	●	●
	10	Communication DO enabling setting 2	●	●	●
	11	Communication instruction holding time	●	●	●
	12	Enable AO function or CAN communication	●	●	●
	13	CAN communication configuration 1	●	●	●
	14	CAN communication configuration 2	●	●	●
	15	CAN communication configuration 3	●	●	●

Parameter number		Description	Control mode		
			P	S	T
P17 Group Expansion position control function	00	External encoder using method	●	–	–
	01	External encoder pitch(32-bit)	●	–	–
	03	Full-closed hybrid deviation threshold(32-bit)	●	–	–
	05	Hybrid deviation counting setting	●	–	–
	06	Hybrid vibration suppression gain	●	–	–
	07	Hybrid vibration suppression time constant	●	–	–
	09	Full-closed hybrid deviation external unit(32-bit)	●	–	–
	11	Internal encoder counting external unit(32-bit)	●	–	–
	13	External encoder counting value(32-bit)	●	–	–
	16	Position comparison output mode	●	–	–
	17	First position(32-bit)	●	–	–
	19	2nd position(32-bit)	●	–	–
	21	3rd position(32-bit)	●	–	–
	23	4th position(32-bit)	●	–	–
	25	Effective time 1	●	–	–
	26	Effective time 2	●	–	–
	27	Effective time 3	●	–	–
	28	Effective time 4	●	–	–
	29	Display delay	●	–	–

Parameter number		Description	Control mode		
			P	S	T
P18 Group Motor Parameters	00	Motor model code	●	●	●

Parameter number		Description	Control mode		
			P	S	T
P20 Group Panel and Communication Interface Parameters	00	Panel JOG	●	●	●
	01	Fault reset	●	●	●
	03	Parameter identification function	●	●	●
	05	Analog input automatic offset adjustment	●	●	●
	06	System initialization function	●	●	●
	08	Communication operation instruction input	●	●	●
	09	Communication operation status output	●	●	●
	10	Communication setting DI input	●	●	●
	11	Multi-stage operation selection by communication	●	●	–
	12	Homing start by communication	●	–	–

Parameter number		Description	Control mode		
			P	S	T
P21 Group Monit oring Parameters	48	Input terminal status upon selected fault	●	●	●
	49	Output terminal status upon selected fault	●	●	●
	50	Customized software version	●	●	●
	51	Accumulative load ratio	●	●	●
	52	Regenerative load ratio	●	●	●
	53	Internal warning code	●	●	●
	54	Internal instruction present stage code	●	●	●
	55	Customized serial code	●	●	●
	56	High 32 place of absolute position counter (32-bit)	●	●	●
	58	High 32 place of feedback pulse counter (32-bit)	●	●	●

Parameter number		Description	Control mode		
			P	S	T
P21 Group Monit oring Parameters	00	Servo status	●	●	●
	01	Motor speed feedback	●	●	●
	03	Speed instruction	●	●	●
	04	Internal torque instruction (relative to rated torque)	●	●	●
	05	Phase current effective value	●	●	●
	06	DC bus voltage	●	●	●
	07	Absolute position counter (32-bit)	●	●	●
	09	Electrical angle	●	●	●
	10	Mechanical angle (relative to encoder zero point)	●	●	●
	11	Load inertia identification value	●	●	●
	12	Speed value relative to input instruction	●	●	●
	13	Position deviation counter (32-bit)	●	●	●
	15	Input pulse counter (32-bit)	●	●	●
	17	Feedback pulse counter (32-bit)	●	●	●
	19	Position instruction deviation counter unit (32-bit)	●	●	●
	21	Digital input signal monitoring	●	●	●
	23	Digital output signal monitoring	●	●	●
	25	Total power-on time	●	●	●
	27	AI 1 voltage after adjustment	●	●	●
	28	AI 2 voltage after adjustment	●	●	●
	29	AI 1 voltage before adjustment	●	●	●
	30	AI 2 voltage before adjustment	●	●	●
	31	Module temperature	●	●	●
	32	Number of turns of absolute encoder (32-bit)	●	●	●
	34	Single turn position of absolute encoder (32-bit)	●	●	●
	36	Version code 1	●	●	●
	37	Version code 2	●	●	●
	38	Version code 3	●	●	●
	39	Product series code	●	●	●
	40	Fault record display	●	●	●
	41	Fault code	●	●	●
	42	Time stamp upon selected fault (32-bit)	●	●	●
	44	Motor speed upon selected fault	●	●	●
	45	U-phase current upon selected fault	●	●	●
	46	V-phase current upon selected fault	●	●	●
	47	DC bus voltage upon selected fault	●	●	●

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