Technical Announcement

Delta Electronics, Inc. IABG

Product	ASDA-B3	Applicable Model	B3-M B3-F B3-E B3-L	Security Classification	☑General ☐Confidential ☐Highly Confidential
				ECN No.	126A-203049
Issued by	ASD	Author	Chloe Chen	Issue No.	ASD20092400
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Recipient	Sales Representative (Taiwan), Product Manager (Taiwan), DGC, DEU, DPR, DES, DEK, DEJ, and DIN				

Subject:

Firmware update release for the ASDA-B3 series products.

- Latest firmware for the B3-M models: v10300 sub11
- Latest firmware for the B3-F models: v10370 sub11
- Latest firmware for the B3-E models: v10360 sub11
- Latest firmware for the B3-L models: v10330 sub11

Important:

1. Firmware release time

Model	Week of production in Wujiang plant
B3-M	W2032
B3-F	W2032
B3-E	W2033
B3-L	W2032

Modified and optimized functions:

1. Optimization: the time synchronization between EtherCAT and DMCNET.
2. Optimized the index coordinates function when overflow occurs.
3. Optimized the function of P1.032 [Bit 6]: trigger the stop command when AL022 occurs.
4. Modification: the range of OD 6071 is -3500 to +3500.
5. Modification: in the communication mode, when OD 6060 is set to 6, executing the homing procedure again is required.
6. Correction: when using the incremental function, the homing complete flag is on by default after powering on. The correction is made so the flag is on after the homing procedure is complete.
7. Correction: in Profile Position (PP) Mode, OD 6040 is unable to operate when its setting is switched from 0x10F to 0x1F.
8. For EtherCAT applications, the maximum torque limit is changed to 350%.

9. Modification: the default value of P2.065 is changed from 0x0104 to 0x0100.

P2.065	Special bit register 1		Address: 0282H 0283H
Default:	0x0100	Control mode:	PT / PR / S / Sz
Unit:	-	Setting range:	0 - 0xFFFF
Format:	HEX	Data size:	16-bit

10. Modified the setting range and parameter function description for P1.012 - P1.014. The following provides the details of P1.012 as an example.

P1.012	Internal Torque command 1 / internal torque limit 1		Address: 0118H 0119H
Default:	100	Control mode:	T / Tz: internal Torque command 1 PT / PR / S / Sz: internal torque limit 1
Unit:	%	Setting range:	-5000 to +5000
Format:	DEC	Data size:	16-bit

Settings:

1. When P2.112 [Bit 14] = 0
   Internal Torque command: 35 = 35%
   Internal torque limit: positive and negative values are identical. Refer to the following descriptions.

Torque limit value of P1.012	Valid torque range	Torque limit in forward direction	Torque limit in reverse direction
35	-35% to +35%	35%	-35%
-35			

2. When P2.112 [Bit 14] = 1
   Internal Torque command: 35 = 3.5%
   Internal torque limit: positive and negative values are identical. Refer to the following descriptions.

Torque limit value of P1.012	Valid torque range	Torque limit in forward direction	Torque limit in reverse direction
35	-3.5% to +3.5%	3.5%	-3.5%
-35			

Corrected functions:

1. Correction: if you set OD 6040.bit 7 fault reset when the servo is off and then trigger the position limit, AL014 and AL015 are cleared when the servo is on.
2. Correction: in Profile Position (PP) Mode, the OD 6040.bit 8 halt function fails for the second time.
3. Correction: in Profile Position (PP) Mode, using the Quick Stop function triggers ALF21.
4. Correction: in communication mode, using the Quick Stop function during the homing process triggers ALF21 or AL223.
5. Correction: PLC cannot recognize the B3-M models.
6. Correction: in CANopen mode, when P3.012.Z is set to 0, the absolute function is enabled, but the home offset is valid after the power is on.
7. Correction: error of PR torque homing in reverse direction to look for Z pulse.

8. Correction: in Speed mode, if the speed is a negative value, the motor speed is in error when it decelerates to zero speed.
9. Correction: if the servo drive is connected to a 50MC controller, after the controller re-downloads the program, it immediately enters Cyclic Synchronous Position (CSP) Mode and switches to Servo On, but the servo drive displays AL3E3.
10. Correction: the Capture trigger logic is abonormal. After the correction, when P5.039.Z is set to 0, the contact is normally-open.
11. Correction: if P1.044 = 1 and P1.045 = 1, when the PR absolute position command is lower than 20,000 PUU, the positioning will be abnormal.
12. Correction: if P1.001.Z = 1, the position error captured by the Capture function is calculated incorrectly.
13. Correction: the default settings of read-only parameters P1.113 - P1.118 are 0.
14. Correction: in the DMCNET communication mode, when undervoltage (AL003) and RST leak phase (AL022) occur, the communication enters the OP state before the input voltage is stable. After the correction, the communication now enters the OP state only after the input voltage is stable.
15. Correction: in the EtherCAT communication mode, the parameter range of OD 607F and OD 6080 is limited to the set value of PM.032.
16. Correction: in the communication mode, AL289 is triggered by mistake when homing.
17. Correction: the PR point-to-point overlap command is abnormal.
18. Correction: in the EtherCAT communication mode, the update timing of OD 60B8 and OD 60B9 is corrected.
19. Correction: the position command is abnormal when the absolute function is enabled and the DI for homing is triggered.
20. Correction: in the EtherCAT interpolation mode, when the motor reaches the limit, the motor vibrates if the position command executes re-positioning.
21. Correction: when the Motor Parameter Identification Wizard for the absolute motor is executed, there is a chance that the calculation of the PM.010 value is incorrect.
22. Correction: when the servo drive is powered on and the motor position is at the Z signal, this leads to the permanent loss of the servo drive OZ signal.
23. Correction: when the servo drive outputs the OZ signal for the first time, the signal is abnormal.
24. Correction: inaccurate positioning during low-speed incremental positioning with a longer deceleration time.
25. Correction: the DO.HOME signal is abnormal when the position is lost.

Added functions:

1. Added Heartbeat function in CANopen mode.
2. Added PFQS function in communication mode.
3. Added: in the communication mode, set OD 6060 to 0 to stop the motor.
4. Added: in the communication mode, all alarms are automatically cleared when the communication is initializing.
5. Added: in the EtherCAT communication mode, use the communication to access hidden parameters.
6. The EtherCAT communication diagnostic system is supported.
7. Added monitoring variables of -169 Regenerative resistor overload (AL086) protection

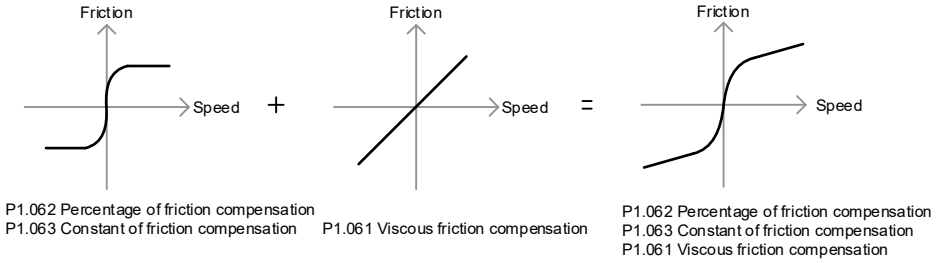
counter, -202 Degree of motor electrical angle, and -207 Regenerative resistor power consumption.

Code	Variable name / property	Description
-169	Regenerative resistor overload (AL086) protection counter	This variable monitors the average power consumed by the regenerative resistor (unit: %) when the capacitor energy of the servo drive is released to the regenerative resistor. When the value reaches 100%, AL086 is triggered.
-202	Degree of motor electrical angle	The current electrical angle degree x 4.
-207	Regenerative resistor power consumption	This variable monitors the power consumed by the regenerative resistor (unit: %) at the moment when the capacitor energy of the servo drive is released to the regenerative resistor.

8. Added P1.061 Viscous friction compensation.

P1.061	**Viscous friction compensation**		**Address: 017AH 017BH**
Default:	0	Control mode:	PT / PR / S / Sz
Unit:	0.1%/1000 rpm	Setting range:	0 - 1000
Format:	DEC	Data size:	16-bit

Settings:
Because kinetic friction corresponds with the speed, you can use this parameter to compensate the motor torque according to the speed to improve the position error during acceleration and deceleration. When P1.062 = 0, this parameter is invalid.



9. Added P1.078 Gain switching delay time.

P1.078	**Gain switching delay time**		**Address: 019CH 019DH**
Default:	0	Control mode:	P / S
Unit:	ms	Setting range:	0 - 32767
Format:	DEC	Data size:	16-bit

Settings:
When using the gain switching function (P2.027 = 3 or 7), you can use this parameter to set the delay time after the switching condition is met. Refer to the description of P2.027 for more details.

10. Added P1.079 Gain rate of change during gain switching delay.

P1.079	Gain rate of change during gain switching delay		Address: 019EH 019FH
Default:	100	Control mode:	P / S
Unit:	%	Setting range:	0 - 500
Format:	DEC	Data size:	16-bit

Settings:
Sets the gain rate of change during gain switching delay.
If P1.078 is 0, this function is disabled.
Within the delay time set by P1.078, the settings of P2.000 (Position control gain) and P2.004 (Speed control gain) will be affected by the setting of P1.079 (Gain rate of change during gain switching delay). Refer to the description of P2.027 for more details.

11. Added P1.080 Rate of change for speed detection filter and jitter suppression.

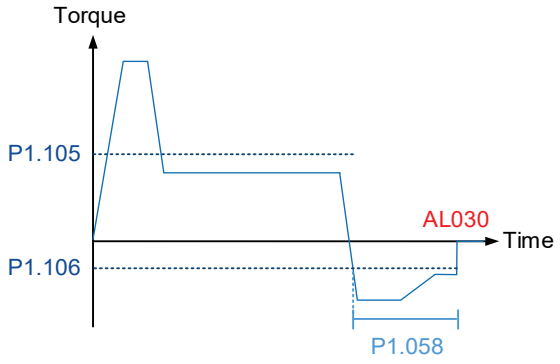
P1.080	Rate of change for speed detection filter and jitter suppression		Address: 01A0H 01A1H
Default:	100	Control mode:	P / S
Unit:	%	Setting range:	0 - 100
Format:	DEC	Data size:	16-bit

Settings:
Adjusts the rate of change for speed detection filter and jitter suppression (P2.049) according to the gain switching condition. (This parameter is inversely proportional to the value of P2.049. The smaller the setting value, the stronger the filtering effect.)

12. Added P1.105 Motor hard stop 2 - torque upper limit.

P1.105	Motor hard stop 2 - torque upper limit		Address: 01D2H 01D3H
Default:	0	Control mode:	All
Unit:	%	Setting range:	-300 to +300
Format:	DEC	Data size:	16-bit

Settings:
When Motor hard stop 2 is enabled (P2.112.bit 8 = 1), the settings of torque percentage (P1.057) and level offset (P1.060) for Motor hard stop are invalid. During motor operation, if the motor current is higher than this protection setting value and continues in this state exceeding the protection time (P1.058), AL030 will be triggered.



13. Added P1.106 Motor hard stop 2 - torque lower limit.

P1.106	Motor hard stop 2 - torque lower limit		Address: 01D4H 01D5H
Default:	0	Control mode:	All
Unit:	%	Setting range:	-300 to +300
Format:	DEC	Data size:	16-bit

Settings:
When Motor hard stop 2 is enabled (P2.112.bit 8 = 1), the settings of torque percentage (P1.057) and level offset (P1.060) for Motor hard stop are invalid. During motor operation, if the motor current is lower than this protection setting value and continues in this state exceeding the protection time (P1.058), AL030 will be triggered.

14. Added P2.032 Gain adjustment modes 5 and 6. The default is changed from 0x0001 to 0x0000. The maximum setting value is changed from 0x0004 to 0x0006.

P2.032	Gain adjustment mode		Address: 0240H 0241H
Default:	0x0000	Control mode:	All
Unit:	-	Setting range:	0x0000 - 0x0006
Format:	HEX	Data size:	16-bit

Settings:

Value	Adjustment mode	Inertia estimation	Parameter	
			Manual	Auto
5	Gain adjustment mode 5 (Same as P2-32 = 1 of the A2 series)	Real-time estimation, the value is updated to P1.037 every 30 minutes	P2.126	P1.037, P2.000, P2.004, P2.006, P2.023, P2.024, P2.025, P2.043, P2.044, P2.045, P2.046, P2.049, P2.089, P2.094, P2.098, P2.099, P2.101, P2.102
6	Gain adjustment mode 6 (Same as P2-32 = 2 of the A2 series)	Fixed set value of P1.037	P1.037 P2.126	P2.000, P2.004, P2.006, P2.023, P2.024, P2.025, P2.043, P2.044, P2.045, P2.046, P2.049, P2.089, P2.094, P2.098, P2.099, P2.101, P2.102

15. Added P2.068.U CANopen PV mode unit selection.

P2.068	Following error compensation switch		Address: 0288H 0289H
Default:	0x0000	Control mode:	All
Unit:	-	Setting range:	0x0000 - 0x2101
Format:	HEX	Data size:	16-bit

Settings:

- U: CANopen PV mode unit selection
  0: 0.1 rpm
  1: 0.01 rpm

Note: when you change the setting of P2.068.U, the units of OD 606B, OD 606C, OD 60FF, and P5.003 Deceleration time for auto-protection in bus communication mode will change as well. Make sure the setting values are correct.

16. Added the P2.069.U single-turn absolute function and modified the maximum setting range of P2.069 from 0x0111 to 0x1111.

P2.069●	**Absolute encoder**		**Address: 028AH 028BH**
Default:	0x0000	Control mode:	All
Unit:	-	Setting range:	0x0000 - 0x1111
Format:	HEX	Data size:	16-bit

Settings:

U: single-turn absolute function
0: disable
1: enable (This automatically enables the absolute type operation mode (X = 1) and index coordinates are not affected by overflow, but absolute coordinates are not retained (Z = 1)).

17. Added P2.094 [Bit 6] AL007 detection in Position mode and [Bit 7] Switch for AL086. The default values, 0x0010 (-F models) and 0x1010 (-L, -M, and -E models), are now changed to 0x0090.

P2.094▲	**Special bit register 3**		**Address: 02BCH 02BDH**
Default:	0x0090	Control mode:	PT / PR / S / Sz
Unit:	-	Setting range:	0x0000 - 0xF3F6
Format:	HEX	Data size:	16-bit

Settings:

Bit	7	6	5	4	3	2	1	0
Bit	15	14	13	12	11	10	9	8

Bit	Function	Description
Bit 6	AL007 detection in Position mode	Switch for AL007 detection in Position mode (PT and PR) 0: disable AL007 detection (default) 1: enable AL007 detection
Bit 7	Switch for brake resistor overload protection after AL086 is triggered	Switch for the brake resistor overload protection when the input voltage is too high 0: disable 1: enable

18. Added P2.112 [Bit 13] regenerative braking mode setting and [Bit 14] unit selection for internal Torque command / internal torque limit (P1.012 - P1.014). The default of P2.112 is changed from 0x0018 to 0x2018 and the maximum setting value is changed from 0x153F to 0x753F.

P2.112	**Special bit register 4**		**Address: 02E0H 02E1H**
Default:	0x2018	Control mode:	PT / PR / S / Sz
Unit:	-	Setting range:	0x0000 - 0x753F
Format:	HEX	Data size:	16-bit

Settings:

Bit	7	6	5	4	3	2	1	0
Bit	15	14	13	12	11	10	9	8

Bit	Function	Description
Bit 13	Regenerative braking mode setting	Regenerative braking mode 2 accelerates the release of capacitor voltage and reduces capacitor load voltage. 0: regenerative braking mode 1 1: regenerative braking mode 2
Bit 14	Unit selection for internal Torque command / internal torque limit (P1.012 - P1.014)	0: 1 % 1: 0.1 %

19. Added P2.121 Special bit register 6.

P2.121	**Special bit register 6**		**Address: 02FCH 02FDH**
Default:	0x00000000	Control mode:	All
Unit:	-	Setting range:	0x00000000 - 0x0000000F
Format:	HEX	Data size:	32-bit

Settings:

Bit	7	6	5	4	3	2	1	0
Bit	15	14	13	12	11	10	9	8

Bit	Function	Description
Bit 0	Reserved	-
Bit 1	In the communication mode, the behavior setting after homing	0: absolute positioning to the home offset (OD 607C) after homing. 1: decelerate to a stop after homing.
Bit 2	In the communication mode, the definition of the setting value for origin definition (P6.001) and home offset (OD 607C)	0: origin definition (P6.001) = multiply the OD 607C setting value by a negative sign. 1: origin definition (P6.001) = OD 607C
Bit 3	The unit for the homing speed in the CANopen mode	0: 0.1 rpm 1: 1 rpm
Bit 4 - Bit 31	Reserved	-

20. Added P2.125 Special bit register 7.

P2.125	Special bit register 7		Address: 02FAH 02FBH
Default:	0x0000	Control mode:	All
Unit:	-	Setting range:	0x0000 - 0xFFFF
Format:	HEX	Data size:	16-bit

Settings:

Bit	7	6	5	4	3	2	1	0
Bit	15	14	13	12	11	10	9	8

Bit	Function	Description
Bit 0	Filter frequency for the motor speed of the monitoring variable (P0.002 = 7)	0: 15 Hz 1: 1 Hz
Bit 1 - Bit 15	Reserved	-

21. Added P2.126 Speed loop response bandwidth

P2.126	Speed loop response bandwidth		Address: 02FCH 02FDH
Default:	40	Control mode:	PT / PR / S / Sz
Unit:	Hz	Setting range:	1 - 1000
Format:	DEC	Data size:	16-bit

Settings:

This parameter only takes effect when P2.032 is set to 5 or 6.

Bandwidth	Stiffness and response	Applicable mechanical part
1 - 100 Hz	Low stiffness and low response	Belt, gear and rack, reducer, cam
101 - 250 Hz	Medium stiffness and medium response	Screw
251 Hz and above	High stiffness and high response	Direct drive mechanism

Note:

1. The servo drive automatically sets the response of the position loop according to this parameter. The function of this parameter is the same as P2-31 of the A2 series.
2. This function is valid when you set P2.032 to 5 or 6.

22. Changed the default value of P3.007 from 0 to 1 to be closer to the delay time recognized by RTU (duration of 3.5 characters).

P3.007	Modbus communication response delay time		Address: 030EH 030FH
Default:	1	Control mode:	All
Unit:	0.5 ms	Setting range:	0 - 1000
Format:	DEC	Data size:	16-bit

23. Added P3.012.U Error clearing when the limit alarm occurs and changed the maximum setting value from 0x0111 to 0x1111.

P3.012	Communication support setting		Address: 0318H 0319H
Default:	0x0000	Control mode:	CANopen / DMCNET / EtherCAT
Unit:	-	Setting range:	0x0000 - 0x1111
Format:	HEX	Data size:	16-bit

Settings:

- U: error clearing when the limit alarm occurs
  0: when the limit alarm occurs, it needs to be cleared before reversing the operating direction to move away from the limit.
  1: when the limit alarm occurs, it does not need to be cleared before reversing the operating direction to move away from the limit.

Note: use 0x6041 Statusword and 0x60FD Digital inputs to determine whether the motor has reached the limit.
Positive limit: OD 0x6041 [Bit 14] On & 0x60FD [Bit 1] On
Negative limit: OD 0x6041 [Bit 15] On & 0x60FD [Bit 0] On
The bit status of 0x6041 (Fault / Warning / Quick stop) remains unchanged when the servo reaches the limit.

24. Added P3.017 CANopen B mode disconnection delay time.

P3.017	CANopen B mode disconnection delay time		Address: 0322H 0323H
Default:	1000	Control mode:	CANopen
Unit:	ms	Setting range:	1 - 1000
Format:	DEC	Data size:	16-bit

Settings:

If the communication disconnection time exceeds this set value when using the PV (Profile Velocity), PT (Profile Torque), or HM (Homing Mode) mode in CANopen B mode, the system issues AL303.

25. Added P3.018 EtherCAT special function switch.

P3.018	EtherCAT special function switch		Address: 0324H 0325H
Default:	0x00002000	Control mode:	EtherCAT
Unit:	-	Setting range:	0x00000000 - 0x01112211
Format:	HEX	Data size:	32-bit

Settings:

- X: unit selection for Target velocity (OD 60FF) and Velocity actual value (OD 606C) when in the PV (Profile Velocity) mode or CSV (Cyclic Synchronous Velocity) mode.
  0: 0.1 rpm
  1: pulse/sec
- C: unit selection for the maximum speed of OD 607F and OD 6080
  0: 0.1 rpm for OD 607F and rpm for OD 6080.
  1: pulse/sec for OD 607F and OD 6080.

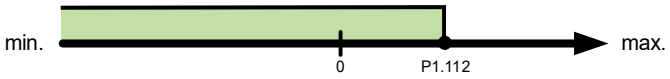
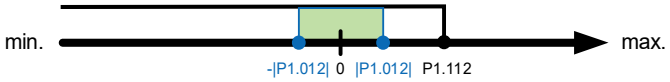
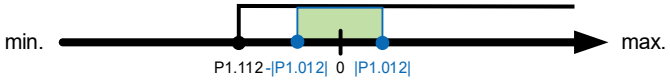
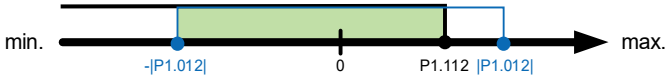
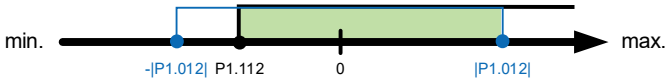
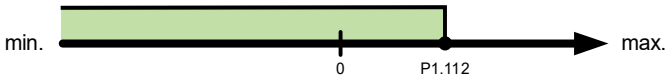
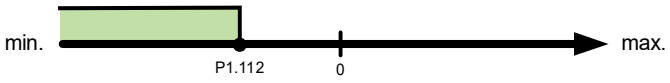
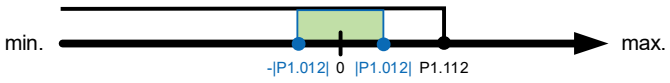
26. Added P4.044.X Single-direction torque limit setting.

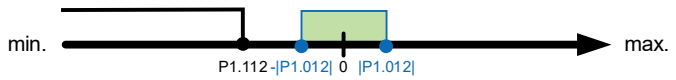
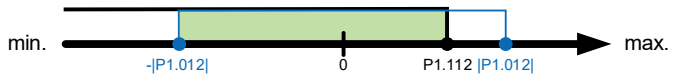
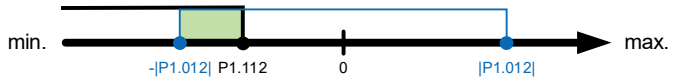
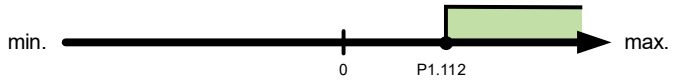
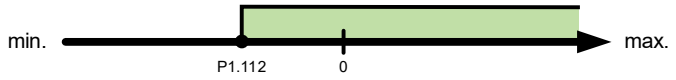
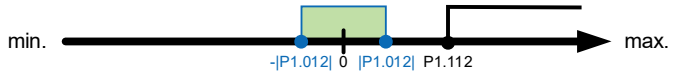
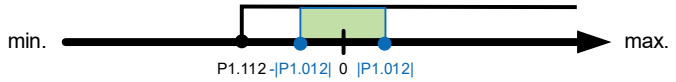
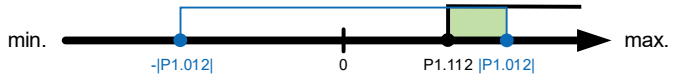
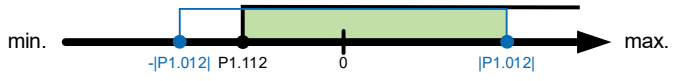
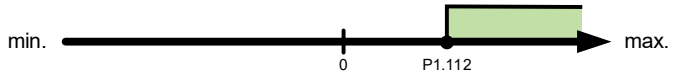
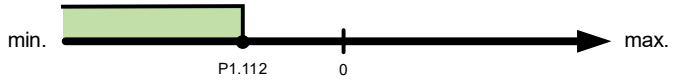
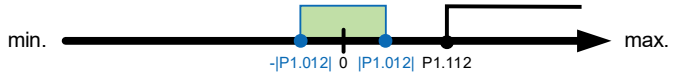
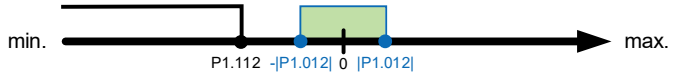
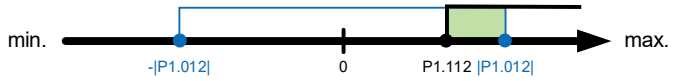
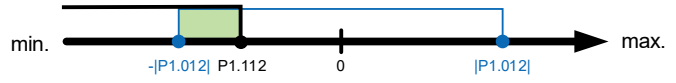
P4.044	Special bit register 5		Address: 0458H 0459H
Default:	0x0000	Control mode:	All
Unit:	-	Setting range:	0x0000 - 0x0003
Format:	HEX	Data size:	16-bit

Settings:

X	Single-direction torque limit setting	Z	Reserved
Y	Reserved	U	Reserved

This parameter limits the torque of the motor. The area with the background color is the torque limit area.
P4.044 is applicable to external analog commands and internal torque limits (P1.012 - P1.014).
The following diagrams are illustrated based on P1.012 and you can set P4.044 according to the requirements.

P4.044.X	P1.012	P1.112	Operating range
0	Disable P1.012 (P1.002.Y = 0)	≥ 0	
		< 0	
	≤ |P1.112|	≥ 0	
		< 0	
	≥ |P1.112|	≥ 0	
		< 0	
1	Disable P1.012 (P1.002.Y = 0)	≥ 0	
		< 0	
	< |P1.112|	≥ 0	

P4.044.X	P1.012	P1.112	Operating range
		< 0	
	> |P1.112|	≥ 0	
		< 0	
2	Disable P1.012 (P1.002.Y = 0)	≥ 0	
		< 0	
	< |P1.112|	≥ 0	
		< 0	
	> |P1.112|	≥ 0	
		< 0	
3	Disable P1.012 (P1.002.Y = 0)	≥ 0	
		< 0	
	< |P1.112|	≥ 0	
		< 0	
	> |P1.112|	≥ 0	
		< 0	

27. Added AL048 Abnormal encoder signal output.

AL048 Abnormal encoder signal output	
Trigger condition and cause	Condition: the output pulse frequency of the encoder is higher than the maximum output frequency of the hardware. Cause: 1. The pulse resolution of the encoder is set too high. 2. There is interference or cable damage causing communication error. 3. Encoder error.
Checking method and corrective action	1. The settings of P1.076 and P1.046 should follow these requirements: P1.076 > motor speed and $\frac{\text{Motor speed}}{60} \times \text{P1.046} \times 4 < 19.8 \times 10^6$ 2. Check the communication error rate by setting P0.002 to -80. If this value continues to accumulate, it means there is interference. Check the following items: (a) Check if the motor is properly grounded. Make sure the power cable (green end) is grounded to the servo drive heat sink. (b) Check if the connection for the encoder signal cable is normal. Make sure the encoder signal cable is separated from the power supply or any high-current cables to avoid interference. (c) Use shielded cable for the encoder. 3. Check the error log (P4.000 - P4.004) and see if an alarm has occurred (AL011, AL024, AL025, or AL026). Use the checking methods and corrective actions to clear the alarm if any of them occurs. 4. If you do not need to use the OA/OB pulse, set P2.065 [Bit 13] to 1 to disable the encoder output error detection function.
How to clear the alarm?	1. DI.ARST 2. Contact the distributor.

28. Added AL066 Number of turns for the absolute encoder overflows (servo drive)

AL066 Number of turns for the absolute encoder overflows (servo drive)	
Trigger condition and cause	Condition: the number of turns for the encoder absolute position (P0.051) exceeds half the number of turns for the encoder resolution. 1. The number of turns for a Delta motor is -32768 to +32767. 2. For third-party motors, calculate the number of turns based on the motor specifications. Cause: motor's rotation cycle exceeds the allowable range.
Checking method and corrective action	Check if the motor's number of turns during operation is within the range specified above. If not, re-establish the absolute origin coordinates.
How to clear the alarm?	Re-establish the absolute origin coordinates.

29. Added AL06B The error between the servo drive internal coordinates and the encoder coordinates is too large.

AL06B The error between the servo drive internal coordinates and the encoder coordinates is too large	
Trigger condition and cause	Condition: when the absolute motor is powered by the battery, the number of motor rotations exceeds 1/4 the number of turns for the resolution. Cause: the deviation between the servo drive internal coordinates and the encoder coordinates is too large.

Checking method and corrective action	The mechanical parts are not properly fastened when the machine is being transported, causing rotation of the motor.
How to clear the alarm?	Re-establish the absolute origin coordinates.

30. Added AL06F The absolute position is not established.

AL06F The absolute position is not established	
Trigger condition and cause	Condition: the establishment of the absolute position has timed out. Cause: the servo drives process of establishing the absolute position is in error.
Checking method and corrective action	Cycle power on the servo drive and re-establish the absolute origin coordinates. If the issue persists, contact your local distributor or technician.
How to clear the alarm?	Cycle power on the servo drive and re-establish the absolute origin coordinates.

31. Added AL0A6 Absolute position coordinates of the servo drive and motor do not match.

AL0A6 Absolute position coordinates of the servo drive and motor do not match	
Trigger condition and cause	Condition: suppose there are servo drive A, servo motor A, servo drive B, and servo motor B. Servo drive A and servo drive B have established the absolute origin coordinates with servo motor A and servo motor B, respectively. In this case, if you operate servo drive A with servo motor B, AL0A6 will be triggered. Cause: replace the servo drive or servo motor.
Checking method and corrective action	Re-establish the absolute origin coordinates.
How to clear the alarm?	Re-establish the absolute origin coordinates.

32. Added AL086 Regenerative resistor overload. The description is as follows.

AL086 Regenerative resistor overload	
Trigger condition and cause	Condition: the energy in the capacitor of the servo drive is released to the regenerative resistor, causing resistor overload. Cause: 1. The selected regenerative resistor is incorrect or the external regenerative resistor is not connected. 2. Parameter setting error (P1.052 and P1.053). 3. Other energy (such as interference) is input to the servo drive or the input voltage is higher than the allowable rated voltage. 4. Malfunction of the servo drive hardware.
Checking method and corrective action	1. Check the connection for the regenerative resistor and the settings of P1.052 and P1.053. 2. Check whether the regenerative energy exceeds the value of P1.053. If so, use a regenerative resistor with higher power. 3. Use a voltmeter to measure if the input voltage from the power supply is within the allowable rated voltage (refer to Appendix A Specifications). If the input voltage exceeds the rated range, remove the interference source. 4. Measure the voltage of P3 and ⊖ terminals. If it does not match the displayed DC bus voltage when you input monitoring code 14 to P0.002, then the servo drive may be malfunctioning and you can send it back to the distributor or contact Delta. 5. If you took the above actions and the issue persists, use a scope with a differential carbon rod to measure whether the input voltage has high-frequency signal interference. If there is interference, remove the interference source and use the right voltage source or connect the regulator in series.
How to clear the alarm?	DI.ARST

33. Added AL422 Write-in failed caused by power supply cut off.

AL422 Write-in failed caused by power supply cut off	
Trigger condition and cause	Condition: if P2.069.Z is set to 1 (function of preventing indexing coordinate from overflow) and the power supply is cut off, the motor fails to store the current position. Cause: 1. The load is over the rated range and the servo drive is in a continuous overload condition. 2. After updating the firmware, the internal variables vary depending on the version. 3. The servo drive hardware EEPROM is abnormal. 4. The hardware of the servo drive is short-circuited. 5. AL520 occurred and causes malfunction of the servo drive.
Checking method and corrective action	1. Set P0.002 to 12 for monitoring if the average load rate [%] is continuously over 100%. If so, increase the motor capacity or reduce the load. Refer to Appendix A for Graph of load and operating time. 2. If this alarm persists, send your servo drive back to the distributor or contact Delta.
How to clear the alarm?	Cycle power on the servo drive.