



嵐天自動化股份有限公司  
iMaku Automation System Co., Ltd.

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## Austone Servo Driver



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## Summary

- The manual is for the users of the AUSTONE AC servo drive, the explanations are as follows:
  - Specifications of Servo drive
  - Installation of Servo drive
  - Wiring of Servo drive
  - Commissioning of Servo drive
  - Alarms and diagnose of Servo drive
  - Communication protocol
  - Specifications and characteristic of Servo drive and motor
  
- The targets of this manual are as follows:
  - Programmers of Servo drive
  - Operators for installation and wiring of Servo drive
  - Operators for commissioning of Servo drive
  - Operators for maintaining and repairing of Servo drive

## Notices



**危險**

**DANGER** Indicates that death or severe injury will occur without operating correctly.

- In order to assure that Servo drive's running and safety for personnel, the ground terminal of Servo drive must be grounded to avoid an accident. The top of ground lines that are made of a large area of copper layer must be buried 1,5m lower than the surface of the ground and connects with metal material of the buildings.
- Install the Servo drive on the incombustible objects such as metal, otherwise fire will occur.
- Don't put the combustible objects near it, otherwise fire will occur.
- Don't install it in circumstance with the explosive gas, otherwise explosion will occur.
- The personnel with professional qualification can be allowed to wire, otherwise there will be danger of an electric shock
- Make sure that the input power was off before wiring, otherwise there will be danger of an electric shock.
- Make sure that the cover board is installed well, otherwise there will be danger of an electric shock and explosion.



- Don't touch any terminals when power is on, otherwise there will be danger of an electric shock.
- Don't operate the servo drive with watery hand, otherwise there will be danger of an electric shock.
- After the power is off, waiting at least 5 minutes until the DC linkage voltage is below 36V, otherwise there will be danger of an electric shock.
- The professional personnel can be allowed to change the accessories and don't leave line ends and metal material in a machine, otherwise there will be danger of an electric shock.
- The bare parts of cable terminal for main circuit must be bound up well with insulating tape, otherwise there will be danger of an electric shock.
- Hot plug will destroy the Servo drive internal circuit and motor encoder, please plug accessories after putting off the power. The components will be aging with high frequency power off and on, and the service life of the servo drive will decrease, Must control the servo motor with corresponding command signal.



**注意**

**WARNING**

indicates that medium hurt、flesh wound or property damage will occur without operating correctly.

- The servo drive should be installed in the place where can endure its weight, otherwise medium hurt or the property damage will occur if it drops off.
- It is forbidden that the servo drive is installed in the occasions where water exists, otherwise there is an danger of the property damage.
- Don't drop the bolts、gaskets and metal bar etc. In the servo drive, otherwise the property damage and the fire will occur.
- Don't install or run the servo drive if it is damaged or defective, otherwise the injury and the fire will occur.
- Don't install the servo drive in the sun, otherwise the property damage will occur.
- Don't connect the RE and the -V directly, otherwise the property damage and the fire will occur.
- Make sure that the main circuit terminal and the lead end are connected firmly, otherwise the property damage and the fire will occur.
- The interference of the signal cable will result in mechanical vibration and running error, make sure that separate the strong power line and weak power line and shorten the length of the lines.
- It isn't recommended to modify or change at will the parameters of the servo drive, otherwise mechanical vibration will occur and result in extra property damage.



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# 1 Introduction

## 1.1 Type

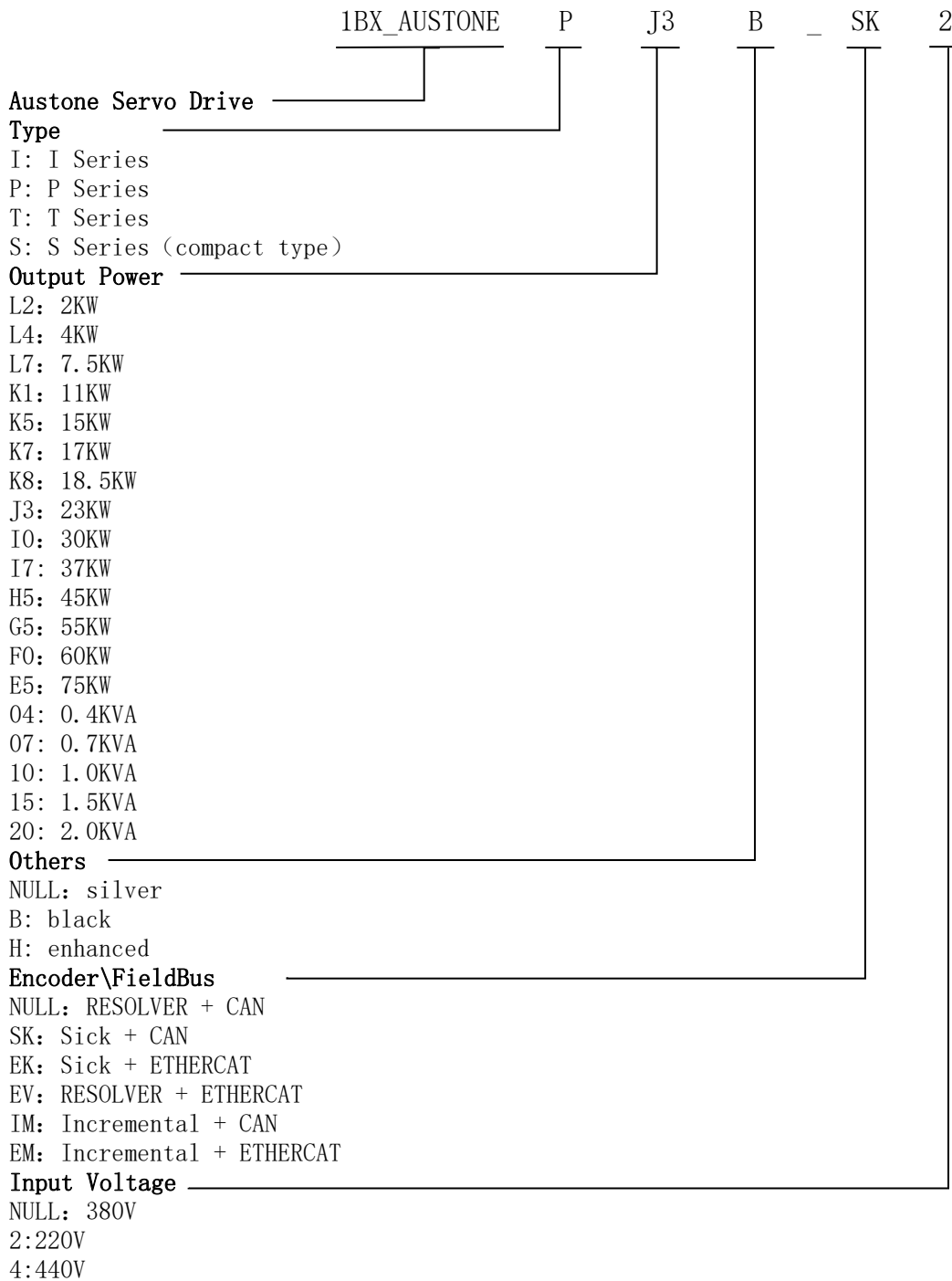


Fig. 1.1 explanations of name



## 1.2 Nameplate

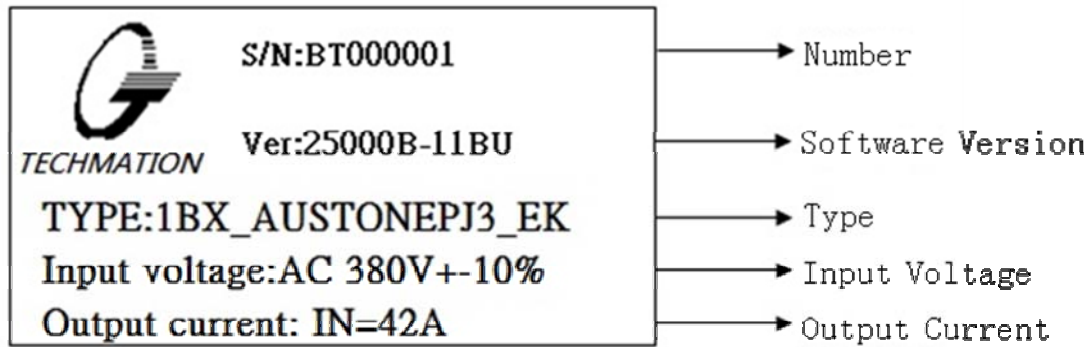


Fig. 1.2 nameplate



### 1.3 List of servo drive

Table 1.1 type of servo drive  
General Purpose Servo Drive as follow:

| Type            | Input voltage/V               | Output power/kw | Rated current/A | Maximum current/A |
|-----------------|-------------------------------|-----------------|-----------------|-------------------|
| 1BX_AUSTONEPL2B | Three phase AC 380V $\pm$ 10% | 2               | 4               | 6.4               |
| 1BX_AUSTONEPL4B |                               | 4               | 8               | 12.8              |
| 1BX_AUSTONEIL7B |                               | 7.5             | 14              | 22.4              |
| 1BX_AUSTONEPL7B |                               | 7.5             | 14              | 22.4              |
| 1BX_AUSTONEPK1B |                               | 11              | 21              | 33.6              |
| 1BX_AUSTONEPK5B |                               | 15              | 30              | 48                |
| 1BX_AUSTONEPK7B |                               | 17              | 32              | 51.2              |
| 1BX_AUSTONEIK8B |                               | 18.5            | 35              | 56                |
| 1BX_AUSTONEPK8B |                               | 18.5            | 35              | 56                |
| 1BX_AUSTONEPJ3B |                               | 23              | 42              | 67.2              |
| 1BX_AUSTONEPIOB |                               | 30              | 53              | 84.8              |
| 1BX_AUSTONETI7B |                               | 37              | 70              | 112               |
| 1BX_AUSTONETH5B |                               | 45              | 95              | 152               |
| 1BX_AUSTONETG5B |                               | 55              | 106             | 169.6             |
| 1BX_AUSTONETFOB |                               | 60              | 116             | 185.6             |
| 1BX_AUSTONETE5B |                               | 75              | 141.5           | 226.4             |



Enhanced Servo Drive as follow:

| Type            | Input voltage/V               | Output power/kw | Rated current/A | Maximum current/A |
|-----------------|-------------------------------|-----------------|-----------------|-------------------|
| 1BX_AUSTONEPK1H | Three phase AC 380V $\pm$ 10% | 11              | 21              | 50.4              |
| 1BX_AUSTONEPK7H |                               | 17              | 32              | 67.2              |
| 1BX_AUSTONEPJ3H |                               | 23              | 44              | 92.4              |
| 1BX_AUSTONETI0H |                               | 30              | 53              | 111.3             |
| 1BX_AUSTONETI7H |                               | 37              | 70              | 147               |
| 1BX_AUSTONETH5H |                               | 45              | 86              | 172               |
| 1BX_AUSTONETFOH |                               | 60              | 112             | 224               |





High Input Voltage Servo Drive(the size is the same as the general purpose's):

| Type              | Input voltage/V              | Output power/kw | Rated current/A | Maximum current/A |
|-------------------|------------------------------|-----------------|-----------------|-------------------|
| 1BX_AUSTONEPL7T_4 | Three phase<br>AC380V~AC480V | 7.5             | 14              | 22.4              |
| 1BX_AUSTONEPK1T_4 |                              | 11              | 21              | 33.6              |
| 1BX_AUSTONEPK5T_4 |                              | 15              | 30              | 48                |
| 1BX_AUSTONEPK7T_4 |                              | 17              | 32              | 51.2              |
| 1BX_AUSTONEPK8T_4 |                              | 18.5            | 35              | 56                |
| 1BX_AUSTONEPJ3T_4 |                              | 23              | 42              | 67.2              |
| 1BX_AUSTONEPIOT_4 |                              | 30              | 53              | 84.8              |
| 1BX_AUSTONETI7T_4 |                              | 37              | 70              | 112               |
| 1BX_AUSTONETH5T_4 |                              | 45              | 95              | 152               |
| 1BX_AUSTONETG5T_4 |                              | 55              | 106             | 169.6             |
| 1BX_AUSTONETFOT_4 |                              | 60              | 116             | 185.6             |
| 1BX_AUSTONETE5T_4 |                              | 75              | 141.5           | 226.4             |



Low Input Voltage Servo Drive(the size is the same as the general purpose's):

| Type              | Input voltage/V                   | Output power/kw | Rated current/A | Maximum current/A |
|-------------------|-----------------------------------|-----------------|-----------------|-------------------|
| 1BX_AUSTONEPL7B_2 | Three phase 220V<br>AC220V~AC380V | 7.5             | 14              | 22.4              |
| 1BX_AUSTONEPK1B_2 |                                   | 11              | 21              | 33.6              |
| 1BX_AUSTONEPK5B_2 |                                   | 15              | 30              | 48                |
| 1BX_AUSTONEPK7B_2 |                                   | 17              | 32              | 51.2              |
| 1BX_AUSTONEPK8B_2 |                                   | 18.5            | 35              | 56                |
| 1BX_AUSTONEPJ3B_2 |                                   | 23              | 42              | 67.2              |
| 1BX_AUSTONEPIOB_2 |                                   | 30              | 53              | 84.8              |
| 1BX_AUSTONETI7B_2 |                                   | 37              | 70              | 112               |
| 1BX_AUSTONETH5B_2 |                                   | 45              | 95              | 152               |
| 1BX_AUSTONETG5B_2 |                                   | 55              | 106             | 169.6             |
| 1BX_AUSTONETF0B_2 |                                   | 60              | 116             | 185.6             |
| 1BX_AUSTONETE5B_2 |                                   | 75              | 141.5           | 226.4             |



Compact type Servo Drive as follows:

| Type               | Input voltage/V          | Output power/kw | Rated current/A | Maximum current/A |
|--------------------|--------------------------|-----------------|-----------------|-------------------|
| 1BX_AUSTONES04_SK2 | Three phase 220V<br>±10% | 0.4KVA          | 1.2             | 4.8               |
| 1BX_AUSTONES04_EK2 |                          |                 |                 |                   |
| 1BX_AUSTONES04_EV2 |                          |                 |                 |                   |
| 1BX_AUSTONES04_IM2 |                          |                 |                 |                   |
| 1BX_AUSTONES07_SK2 |                          | 0.7KVA          | 2.3             | 9.2               |
| 1BX_AUSTONES07_EK2 |                          |                 |                 |                   |
| 1BX_AUSTONES07_EV2 |                          |                 |                 |                   |
| 1BX_AUSTONES07_IM2 |                          |                 |                 |                   |
| 1BX_AUSTONES10_SK2 |                          | 1KVA            | 3               | 12                |
| 1BX_AUSTONES10_EK2 |                          |                 |                 |                   |
| 1BX_AUSTONES10_EV2 |                          |                 |                 |                   |
| 1BX_AUSTONES10_IM2 |                          |                 |                 |                   |
| 1BX_AUSTONES15_SK2 |                          | 1.5KVA          | 4.6             | 13.8              |
| 1BX_AUSTONES15_EK2 |                          |                 |                 |                   |
| 1BX_AUSTONES15_EV2 |                          |                 |                 |                   |
| 1BX_AUSTONES15_IM2 |                          |                 |                 |                   |
| 1BX_AUSTONES20_SK2 | 2KVA                     | 6               | 18              |                   |
| 1BX_AUSTONES20_EK2 |                          |                 |                 |                   |
| 1BX_AUSTONES20_EV2 |                          |                 |                 |                   |
| 1BX_AUSTONES20_IM2 |                          |                 |                 |                   |



## 1.4 Specifications

Table 1.2 specifications of servo drive

|                        |                         |   |
|------------------------|-------------------------|---|
| power input            | rated voltage/V         | Three phase AC 380V $\pm$ 10%   |
|                        | rated frequency/HZ      | 50Hz/60Hz, range: $\pm$ 5%  |
| power output           | rated power/KW          | refer to table 1.1  |
|                        | rated current/A         |   |
|                        | Maximum current/A       |   |
| control characteristic | control mode            | vector control, V/F control   |
|                        | speed control precision | $\pm$ 0.2% (vector control)   |
| Protection function    | Protection function     | Short protection, overcurrent protection, overvoltage protection, undervoltage protection, high temperature protection, overload protection |
| Others                 | Key function            | speed control, torque control, pressure control, V/F control  |
|                        | Setting mode            | Simulation setting: AI1/2/3; E_NET; CAN; PC   |
|                        | IP level                | IP20  |
|                        | cooling                 | forced cooling  |
| Environment            | Environment             | Indoors, no sunshine, no dust, corrosive gas, combustible gas, mist, vapor, drip tile or salinity and so on                                 |
|                        | Attitude                | under 1000M normally, decrease frequency above 1000M, decrease 1% per100M   |
|                        | ambient temperature     | -10 $^{\circ}$ C $\sim$ +40 $^{\circ}$ C (ambient temperature at 40 $^{\circ}$ C $\sim$ 50 $^{\circ}$ C, using with decreasing frequency)   |
|                        | humidity                | 5 $\sim$ 95%RH  |
|                        | vibration               | Less than 4.9m/s <sup>2</sup> (0.5G)  |
|                        | Storage temperature     | -40 $^{\circ}$ C $\sim$ +70 $^{\circ}$ C  |



## 1.5 Dimensions

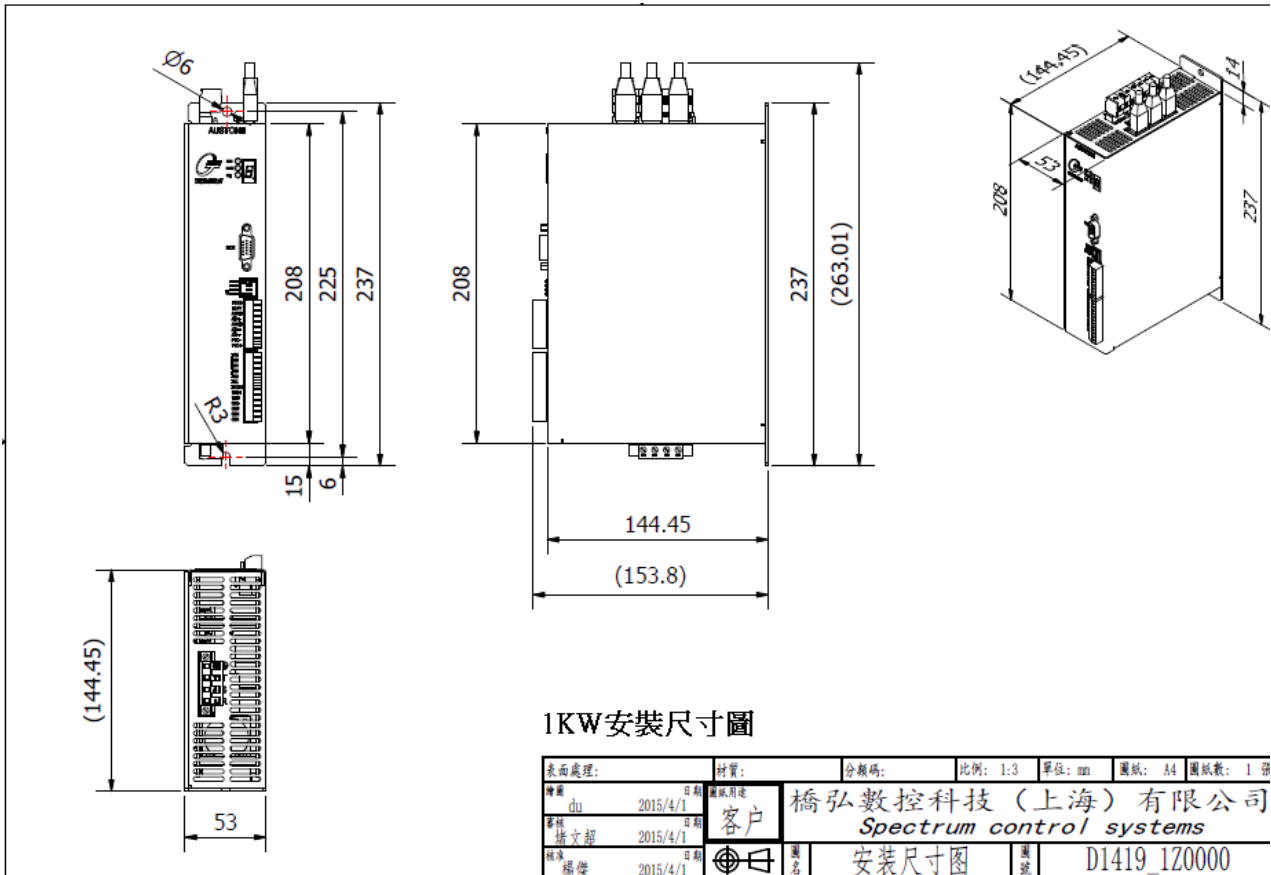
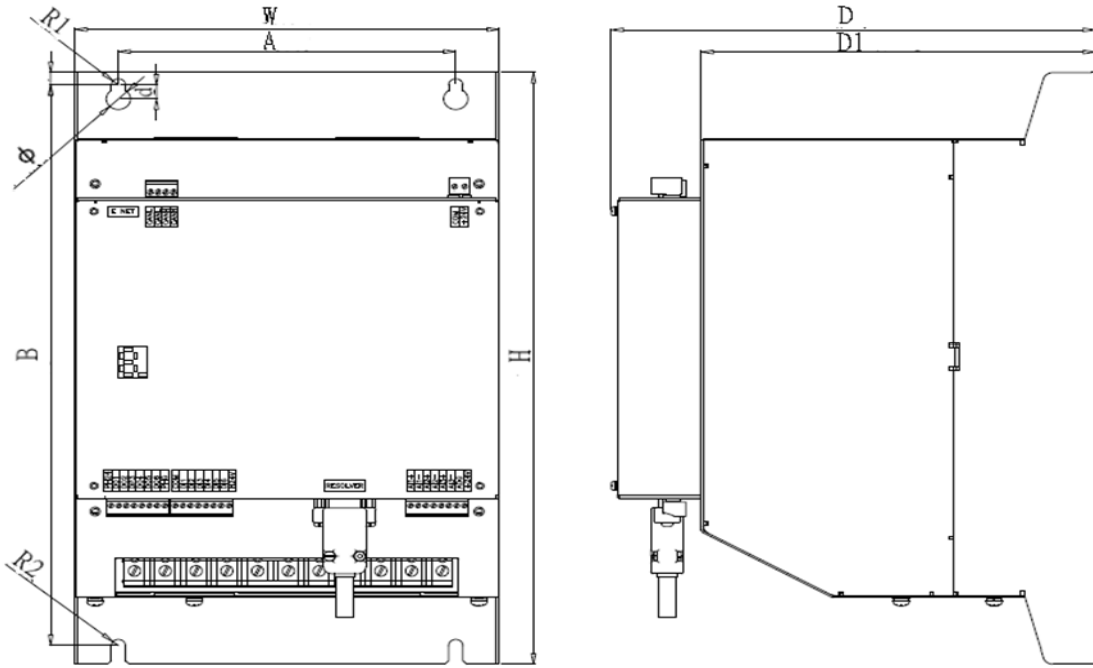
The dimensions of different drives are as follows:

Table 1.3 dimensions of different drives

| Type               | Installing holes position/mm |     | outline size/mm |     |       |     | Installing aperture/mm |      |    |     |
|--------------------|------------------------------|-----|-----------------|-----|-------|-----|------------------------|------|----|-----|
|                    | A                            | B   | H               | W   | D     | D1  | R1                     | φ    | d  | R2  |
| 1BX_AUSTONES04_SK2 | /                            | 225 | 237             | 53  | 153.8 | /   | /                      | 6    | /  | 3   |
| 1BX_AUSTONES07_SK2 |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONES10_SK2 |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONES15_SK2 |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONES20_SK2 |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONEPL2B    | 45                           | 287 | 310             | 78  | 231   | /   | 3                      | 11   | 8  | 3   |
| 1BX_AUSTONEPL4B    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONEIL7B    | 145                          | 250 | 265             | 180 | 236.5 | 195 | 3.5                    | 12   | 7  | 3   |
| 1BX_AUSTONEPL7B    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONEPK1B    | 167                          | 318 | 335             | 210 | 239.6 | 195 | 3.5                    | 12   | 8  | 3.5 |
| 1BX_AUSTONEPK5B    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONEPK1H    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONEIK8B    | 220                          | 345 | 380             | 265 | 242.6 | 201 | 4.25                   | 17   | 12 | /   |
| 1BX_AUSTONEPK7B    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONEPK7H    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONEPK8B    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONEPJ3B    | 220                          | 405 | 440             | 265 | 242.6 | 201 | 4.3                    | 17.5 | /  | /   |
| 1BX_AUSTONEPIOB    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONEPJ3H    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONETI7B    | 220                          | 405 | 440             | 265 | 276.6 | 235 | 4.3                    | 17.5 | 12 | /   |
| 1BX_AUSTONETIOH    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONETI7H    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONETH5B    | 330                          | 443 | 480             | 380 | 287.5 | 246 | 4.25                   | 17   | 12 | /   |
| 1BX_AUSTONETG5B    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONETF0B    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONETH5H    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONETF0H    |                              |     |                 |     |       |     |                        |      |    |     |
| 1BX_AUSTONETE5B    |                              |     |                 |     |       |     |                        |      |    |     |



Reference diagram is as follows:





## 1.6 Maintenance

The servo drive is consist of capacitance , resistance and other parts. Due to the environmental temperature, humidity and other external environment impact, the drive parts will aging, may lead to drive failure or damage, so it is necessary to do some routine maintenance and repair

Note: not immediately do drive maintenance after power off, must measure voltage by meter to confirm that the DC voltage is reduced to below 36V.

Please take off the watch repair, rings and other metal objects, do insulated protection.

- check drivers working environment, check abnormal sound and motor noise is obviously increased when enabled
- check the drive temperature is obviously too high, make sure fan is working . cleane regularly drive surface and fan dust. prevent any metal objects into drive
- regularly check the mounting screws, check the drive terminal connection ,check traces of corrosion and shock, if necessary ,do the insulation test.
- drive fan and capacitance are wearing parts, it need to be replaced after a certain age, voice and so on.
- If drive not used immediately, it can store with original packaging. Long time storage capacitor need charging to periodic action .Recommended one time per 2 years, each charging more than 4 hours, the input voltage slowly increased to the rated voltage. If the deposit time is not enough, it is recommended to do this action before use.
- drive should be saved in 0-40 °C, relative humidity is less than 80% (no condensation ) environment.  
Avoid rain, various chemical agents or volatile acidity.



## 2 Mechanical installation

### 2.1 Installation environment

- Installation in the electric control cabinet

The servo drive must be installed in the electric control cabinet, which can prevent erosive and combustible gas, conductance things, metal powder, oil mist and other liquid things into it. Because of heat, the ambient temperature will rise. the maximal ambient temperature around the drive is below 50°C, the relative humidity is below 95%, the temperature for a long time safe running is below 40 °C.

- Temperature/ humidity

Running with high temperature, the life of drive will decrease, and fault will occur. It need good thermal convection and thermal radiation, and the maximal temperature around the drive is below 50°C, the below relative humidity is 95%.

- Vibration

Take measures for decreasing vibration and make sure that vibration of drive is below 0.5G (4.9m/s<sup>2</sup>).

- Others

Fault will occur in the bad environment, such as erosive gas, humid, metal powder, water and machining liquid things. While installing, it should be avoided to contact the drive with the mentioned gas and liquid

- interferences

The interferences will disturb the power line and the control line, and can result in incorrect command. Power filter and other measures for anti-interference should be added to ensure the drive run safely. The linkage current will increase after the power filter is added, we can also use isolating transformer. An appreciate wiring and shield can decrease the interferences on control signal lines.

- If need special installation request, please consult us.





## 2.2 Installation method

### ■ Installation method

Install the drive erectly in the place where is drafty and indoors.

### ■ Assembly spacing

Make sure that the spacing around the drive is above 10cm to ensure good heat dissipation and ventilate.

## 3 Installation

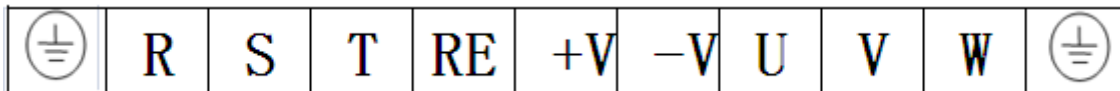
### 3.1 Wiring for main circuit

Please obey the following notices when wiring:

- Please do not mix the main circuit cables and signal cables in one pipe ,and don' t tie them together, the distance between them should be above 30cm.
- Please use twisted and shield cables as signal and encode cables
- The length of signal cables and encoder cables should be shorter than 3M and 5M corresponding.
- After turning off the power, wait at least 5 minutes until the DC voltage is below 36V, then contact the terminal is allowed.


#### 3.1.1 Terminal diagram for main circuit

Take 1BX\_AUSTONEIK3 for example:



#### 3.1.2 Overview of the terminal of main circuit

Table 3.1 name and function of the terminal of main circuit

| Terminal name   | function description                       |
|---|--|
| R、S、T   | The input terminal for three phase AC 380V |
| +V、-V   | DC link voltage terminal                   |
| RE、+V   | External brake terminal                    |
| U、V、W   | The output terminal for motor              |
|  | Ground terminal                            |



### 3.1.3 Peripheral

Add AC reactor to prevent the influence of external import high voltage, and the damage to small external drive circuit, and add brake to decrease the DC voltage while braking, please select suitable AC reactor and brake

| Servo Drive | Type            | AC reactor          | Number | Recommend brake resistance | Recommend brake power |
|-------------|-----------------|---------------------|--------|----------------------------|-----------------------|
| A-7.5KW     | 1BX_AUSTONEIL7B | 66FLMPR30001-16-03  | 1      | larger than 56 Ohm         | 500W                  |
| A-11KW      | 1BX_AUSTONEPK1B | 66FLMPR30001_21_03  | 1      | larger than 56 Ohm         | 800W                  |
| A-15KW      | 1BX_AUSTONEPK5B | 66FLMPR30001_29_03  | 1      | larger than 56 Ohm         | 1KW                   |
| A-17KW      | 1BX_AUSTONEPK7B | 66FLMPR30001_35_03  | 1      | larger than 27 Ohm         | 1.3KW                 |
| A-23KW      | 1BX_AUSTONEPJ3B | 66FLMPR30001_46_03  | 1      | larger than 27 Ohm         | 1.5KW                 |
| A-30KW      | 1BX_AUSTONEII0B | 66FLMPR30001_60_03  | 1      | larger than 27 Ohm         | 2.5KW                 |
| A-37KW      | 1BX_AUSTONEII7B | 66FLMPR30001_75_03  | 1      | larger than 15 Ohm         | 3.5KW                 |
| A-45KW      | 1BX_AUSTONETH5B | 66FLMPR30001_95_03  | 1      | larger than 15 Ohm         | 4.5KW                 |
| A-55KW      | 1BX_AUSTONETG5B | 66FLMPR30001_124_02 | 1      | larger than 10 Ohm         | 5.5KW                 |
| A-60KW      | 1BX_AUSTONETF0B | 66FLMPR30001_124_02 | 1      | larger than 10 Ohm         | 7.5KW                 |



## 3.2 Wiring for control circuit

### 3.2.1 Overview of the terminal of control circuit

Table 3.2 name and function of the terminal of control circuit

| type          | Terminal   | Name                            | functional description for terminal      | specification               |
|---------------|------------|---------------------------------|--|-----------------------------|
| analog input  | PTC+, PYC- | PTC-temperature sensor          | PTC temperature sensor interface         |                             |
|               | AI1+, AI1- | The first analog input channel  | Programmable                             | input voltage range: 0~10V  |
|               | AI2+, AI2- | The second analog input channel |  |                             |
|               | AI3+, AI3- | The third analog input channel  |  |                             |
|               | ADG        | analog ground                   | AI1-, AI2-, AI3- should connect with ADG |                             |
|               | +24V       | power supply of 24V             | Supply 24V power                         |                             |
| analog output | DA1        | The first analog output channel | Programmable                             | output voltage range: 0~10V |
|               | DA2        | The first analog output channel |  |                             |
|               | DAG        | analog ground                   |  |                             |
| RESOLVER      | 1          | SIN+                            | Sin signals                              |                             |
|               | 2          | SIN-                            |  |                             |
|               | 3          | COS+                            | Cos signals                              |                             |
|               | 4          | COS-                            |  |                             |
|               | 5          | REF+                            | excitation signals                       |                             |
|               | 6          | REF-                            |  |                             |
|               | 7~10       | GND                             | GND                                      |                             |



| type           | Terminal | Name                   | functional description for terminal | specification   |
|----------------|----------|------------------------|-------------------------------------|---|
|                | 11~13    | reserve                | temperature sensor                  |   |
|                | 14       | KTY84-                 |                                     |   |
|                | 15       | KTY84+                 |                                     |   |
| digital input  | DI1      | digital input channel  | Programmable;                       |   |
|                | DI2      |                        |                                     |   |
|                | DI3      |                        |                                     |   |
|                | DI4      |                        |                                     |   |
|                | DI5      |                        |                                     |   |
|                | DI6      |                        |                                     |   |
| digital output | D01      | digital output channel | Programmable                        |   |
|                | D02      |                        |                                     |   |
|                | D03      |                        |                                     |   |
|                | D04      |                        |                                     |   |
|                | D05      |                        |                                     |   |
|                | D06      |                        |                                     |   |
| communication  | E_NET    | Network communication  |                                     | Standard communication interface for RJ45   |
|                | CAN      | CAN bus communication  | CANopen DSP402 standard protocol    | Standard communication interface of CAN   |
| power supply   | +24V     | power supply terminal  | 24V power supply                    | Input voltage:<br>24±0.5V<br>Rated current:24A<br>Linear calibration:<br>±0.5%<br>Load calibration:<br>0.5%<br>Ripple:150mV |
|                | COM      |                        |                                     |   |

### 3.2.2 Introduction of DIP switch

When CAN following control is activated, the DIP switch should be used ,not by TMDC.  
The DIP switch configuration is as follows:

- 1) Enable the dial switch function(Set 57575 = TRUE)
- 2) The Master Station Input configuration should include **I\_MasterSlave**

➤ Note:

- 1) The DIP switch only be used in M8 CPU Version, the value of DIP switch is not 0 .
- 2) If the DIP switch is changed, reboot the power, the change will be effective.
- 3) One digital input as I\_MasterSlave configuration and DIP switch should all be used.

➤ The configuration of using DIP switch is as follows:

Digital Input as I\_MasterSlave is low, the driver is Master, the following steps can be finished automatically:

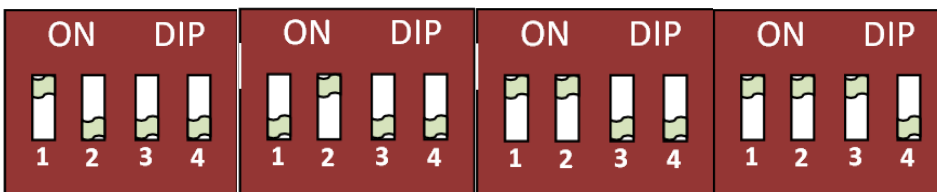
- 1) Set the CAN operate state as **pre-operation**
- 2) Set Node ID as **1**
- 3) Set control source as **AD**
- 4) Set control mode as **Pressure control mode**
- 5) Set CAN Master function as **TRUE**
- 6) Set the number of CAN slave as the value of DIP switch
- 7) Set the CAN operate state as the setting state

Digital Input as I\_MasterSlave is high or NC, the driver is Salve, the following steps can be finished automatically:

- 1) Set the CAN operate state as **pre-operation**
- 2) Set Node ID as the value of DIP switch(the value must not be 1)
- 3) Set control source as **CAN**
- 4) Set control mode as **Speed control mode**
- 5) Set CAN Master function as **FALSE**
- 6) Set the number of CAN slave as **0**
- 7) Set CAN offline time as **500ms**
- 8) Set the CAN operate state as the setting state

The value of DIP switch:

The value is 1 when the Switch is at the top, or is 0. For example:



1

2

3

7



### 3.2.3 brake

you need update TMDC software if you not find below parameter.

53500 motor brake exist

53501 motor brake opening time, the default value is 100ms

53502 motor brake closing time, the default value is 100ms

52507 zero speed threshold: when actual velocity is low than zero speed threshold, the drive is stationary state. the default value is 30rpm

52508 zero speed monitor time, the default value is 4s.

53032 setting the disable response: the default value OFF2, if brake exist, the disable response need to be OFF1 or OFF3(OFF1 and OFF3 just have different ramp)

53012-53031 fault response: all fault response is OFF2, it may be hurt brake when fault happen.

57109-57114 output function configuration: the output can control brake function. But the max output current is 50mA, so the relay is necessary.

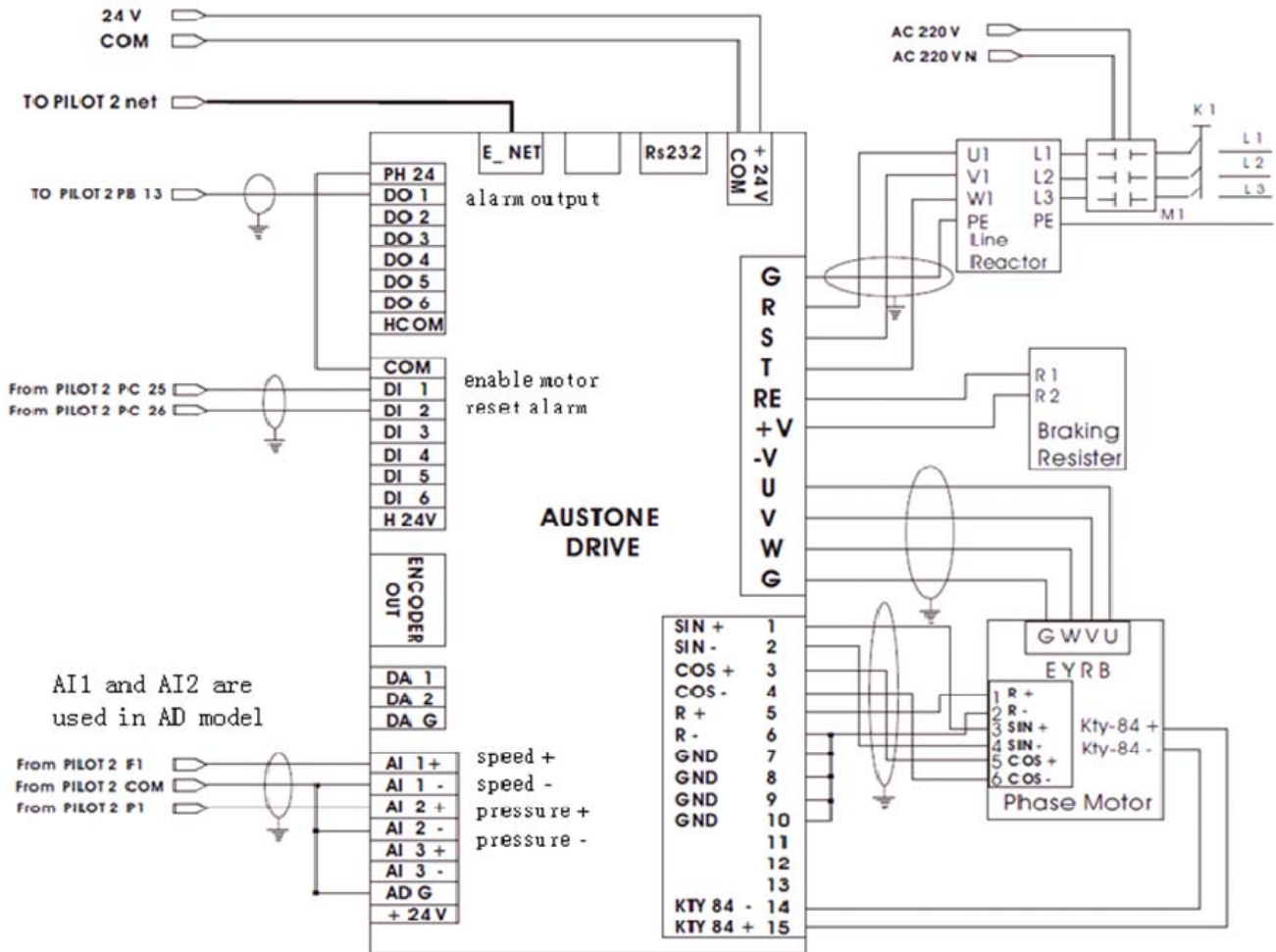
#### Brake control:

When motor enable, the drive control output make brake open and keep motor zero speed. The drive can accept external command after opening time pass. When motor disable, the drive control motor to zero speed with set ramp, when motor is stationary, output make the brake close, then the drive disable after closing time pass.

Note: keep the brake open when motor commissioning.

### 3.3 Examples for wiring

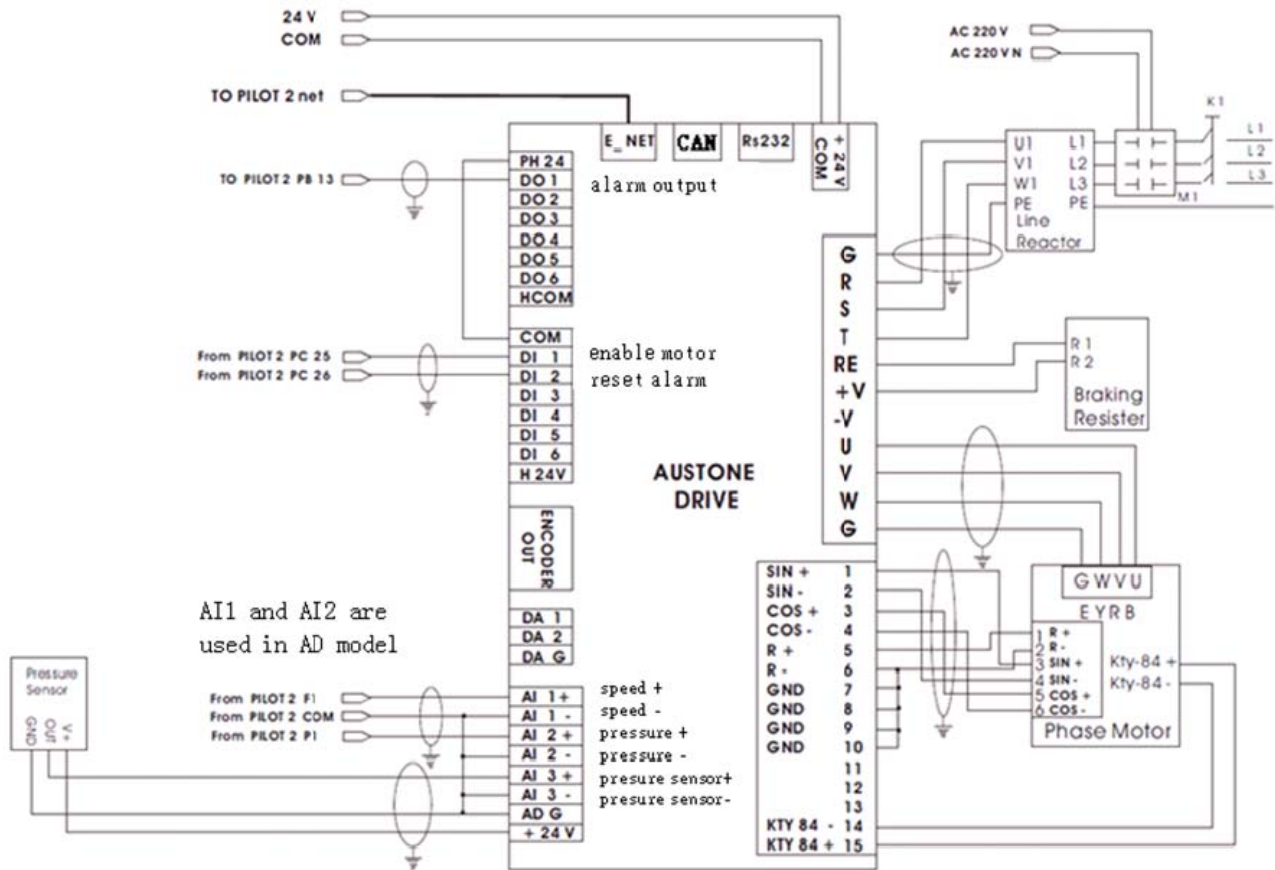
#### 3.3.1 Example for speed mode





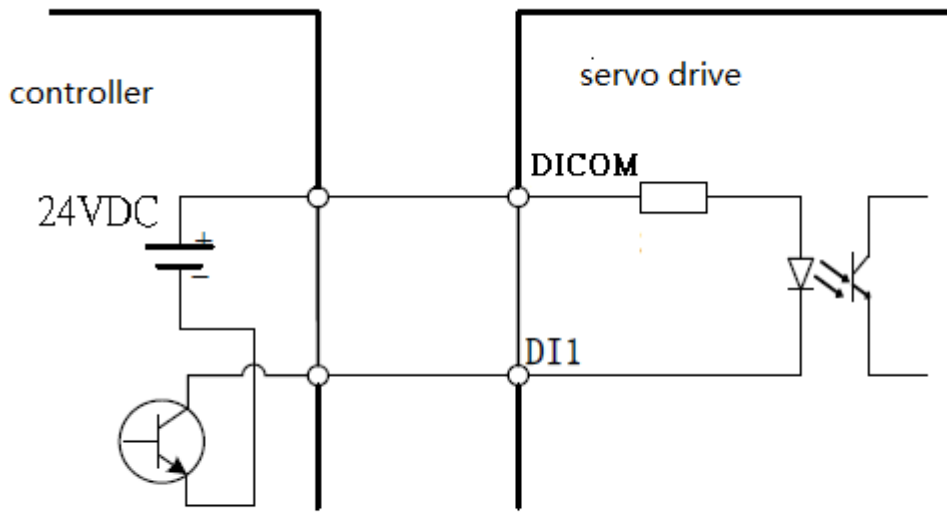


### 3.3.2 Example for pressure close loop



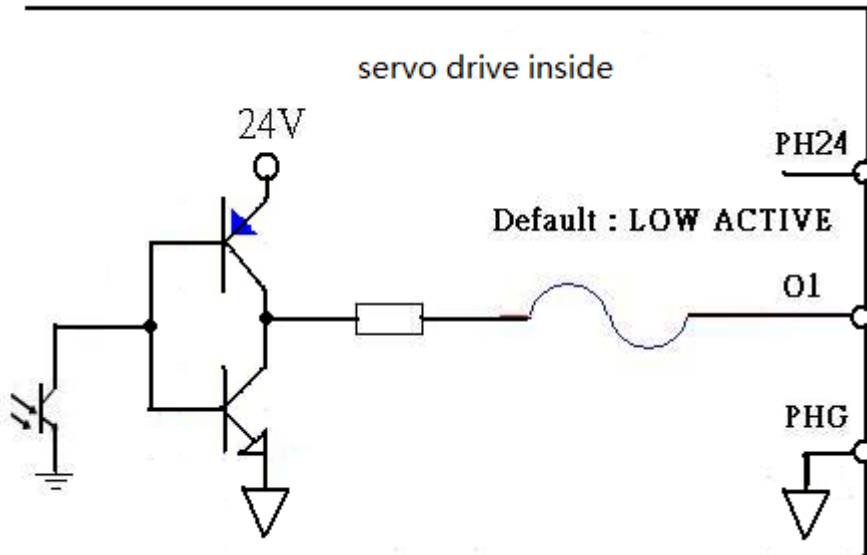
### 3.3.3 IO wiring diagram

#### Digital input wiring diagram



external 24VDC power wiring diagram

#### Digital output wiring diagram





## 4 Parameters

### 4.1 List of parameters

Explanations for parameter are as follows:

|               |  |
|---------------|--|
| Field         | Description  |
| ID            | Parameter ID   |
| name          | parameter name   |
| Default value | Parameter default values after restoring factory setting<br><b>Bold font</b> is parameter default value ,for example:<br>51520(motor types )<br><b>0:PMSM motor</b> ; 1:Induction motor;<br><b>0:PMSM motor</b> is the default value |
| range         | The maximum and the minimum values for parameter.  |
| unit          | V:voltage ; A:current ; Nm: torque; °C: temperature ;<br>Ω:resistance ; mH: inductance;rpm: speed; ° :angle ; %:<br>percent; bps: baud rate; Hz,kHz: frequency;<br>ms,s,100us:time; kW: power; : no unit                             |
| Minimum       | Minimum value  |
| Maximum       | Maximum value  |
| attribute     | RO: read only; RW; read and write; SW: the parameter can' t<br>be written when the drive is enabled.   |

The list of the parameter:

| ID                | Name  | Default value | unit | minimum | maximum | attribute |
|-------------------|---|---------------|------|---------|---------|-----------|
| parameter display |   |               |      |         |         |           |
| 50000             | actual speed before actual value<br>smoothing | 0             | rpm  | -210000 | 210000  | RO        |
| 50001             | actual speed after actual value<br>smoothing  | 0             | rpm  | -210000 | 210000  | RO        |
| 50003             | actual DC link voltage                        | 540           | V    | 0       | 63000   | RO        |
| 50004             | output voltage                                | 380           | V    | 0       | 63000   | RO        |
| 50006             | absolute current                              | 0             | A    | 0       | 10000   | RO        |
| 50007             | current actual value,                         | 0             | A    | -10000  | 10000   | RO        |



| ID              | Name  | Default value | unit | minimum | maximum    | attribute |
|-----------------|---|---------------|------|---------|------------|-----------|
|                 | field-generating                              |               |      |         |            |           |
| 50008           | current actual value,<br>torque-generating    | 0             | A    | -10000  | 10000      | RO        |
| 50009           | torque actual value                           | 0             | Nm   | -100000 | 100000     | RO        |
| 50011           | actual power actual value,<br>unsmoothed      | 0             | kW   | 0       | 100000     | RO        |
| 50012           | actual power actual value,<br>smoothed        | 0             | kW   | 0       | 100000     | RO        |
| 50014           | motor temperatures                            | 0             | °C   | -80     | 200        | RO        |
| 50015           | power unit temperatures                       | 0             | °C   | -80     | 200        | RO        |
| 50016           | actual slip speed                             | 0             | rpm  | 0       | 1000       | RO        |
| 50017           | motor phase A current                         | 0             | A    | -10000  | 10000      | RO        |
| 50018           | motor phase C current                         | 0             | A    | -10000  | 10000      | RO        |
| 50019           | AD channel 1 input voltage                    | 0             | V    | -10     | 10         | RO        |
| 50020           | AD channel 2 input voltage                    | 0             | V    | -10     | 10         | RO        |
| 50021           | AD channel 3 input voltage                    | 0             | V    | -10     | 10         | RO        |
| 50022           | DA channel 1 output voltage                   | 0             | V    | 0       | 10         | RO        |
| 50023           | DA channel 2 output voltage                   | 0             | V    | 0       | 10         | RO        |
| 50024           | drive IO status                               | 0             |      | 0       | 65535      | RO        |
| 50025           | program update datetime                       | 0             |      | 0       | 0xFFFFFFFF | RO        |
| 50026           | program version                               | 0             |      | 0       | 0xFFFFFFFF | RO        |
| 50035           | mechanical angle                              | 0             | °    | 0       | 360        | RO        |
| 50036           | electric angle                                | 0             | °    | 0       | 360        | RO        |
| 50037           | alarm status                                  | 0             |      | 0       | 65535      | RO        |
| 50500           | sampling times for current<br>controller loop | 8             | khz  | 1       | 16         | SW        |
| 50501           | sampling times for speed<br>controller loop   | 4             | khz  | 1       | 16         | SW        |
| 50502           | max speed record                              | 0             | rpm  | -210000 | 210000     | RW        |
| 50503           | max current record                            | 0             | A    | -10000  | 10000      | RW        |
| 50504           | max torque record                             | 0             | Nm   | -100000 | 100000     | RW        |
| drive parameter |   |               |      |         |            |           |
| 51000           | Drive rated power                             | 0             | kW   | 0       | 100000     | SW        |
| 51001           | Drive rated current                           | 0             | A    | 0       | 10000      | SW        |
| 51002           | Drive line supply voltage                     | 400           | V    | 0       | 63000      | SW        |
| 51003           | DC link voltage undervoltage                  | 380           | V    | 0       | 900        | SW        |



| ID              | Name                                  | Default value                  | unit   | minimum | maximum | attribute |
|-----------------|---------------------------------------|--------------------------------|--------|---------|---------|-----------|
|                 | threshold                             |                                |        |         |         |           |
| 51004           | DC link voltage overvoltage threshold | 750                            | V      | 0       | 900     | SW        |
| 51005           | I2t Drive alarm with I2t overload     | 95                             | %      | 10      | 100     | SW        |
| 51006           | delay time of power unit alarm        | 100                            | s      | 0       | 600     | SW        |
| 51007           | enable drive temperature setpoint     | 40                             | °C     | -80     | 200     | SW        |
| 51008           | over temperature                      | 80                             | °C     | -80     | 200     | SW        |
| 51009           | temperature sensor type               | 0:NONE;<br>1:10kohm;<br>2:PIM; |        | 0       | 3       | SW        |
| 51010           | over loading ratio                    | 1.5                            |        | 1       | 1.7     | SW        |
| Motor parameter |                                       |                                |        |         |         |           |
| 51500           | motor rated voltage                   | 0                              | V      | 0       | 63000   | SW        |
| 51501           | motor rated current                   | 0                              | A      | 0       | 10000   | SW        |
| 51502           | motor rated power                     | 0                              | kW     | 0       | 100000  | SW        |
| 51503           | motor pole pair                       | 4                              |        | 0       | 127     | SW        |
| 51504           | motor rated frequency                 | 0                              | Hz     | 0       | 3000    | SW        |
| 51505           | motor rated speed                     | 3000                           | rpm    | 0       | 210000  | SW        |
| 51506           | motor rated torque                    | 0                              | Nm     | 0       | 100000  | SW        |
| 51507           | motor-toque constant, actual value    | 0                              | Nm/A   | 0       | 100     | SW        |
| 51508           | motor voltage constant                | 0                              | V/krpm | 0       | 63000   | SW        |
| 51509           | motor rated EMF                       | 0                              | V      | 0       | 63000   | SW        |
| 51510           | motor stall current                   | 0                              | A      | 0       | 10000   | SW        |
| 51511           | motor stall torque                    | 0                              | Nm     | 0       | 100000  | SW        |
| 51512           | motor moment of inertia               | 0                              | kgm2   | 0       | 10000   | SW        |
| 51513           | motor stator resistance               | 0                              | Ohm    | 0       | 2000    | SW        |
| 51514           | motor stator leakage inductance       | 0                              | H      | 0       | 1000    | SW        |
| 51515           | max motor speed                       | 0                              | rpm    | 0       | 210000  | SW        |
| 51516           | max motor current                     | 0                              | A      | 0       | 1000    | SW        |
| 51517           | speed at the start of field weakening | 0                              | rpm    | 0       | 210000  | SW        |
| 51518           | speed theta of field weakening        | 15                             | °      | 0       | 90      | SW        |
| 51519           | torque theta of field weakening       | 15                             | °      | 0       | 90      | SW        |



| ID                                | Name  | Default value   | unit | minimum | maximum    | attribute |
|-----------------------------------|---|---|------|---------|------------|-----------|
| 51520                             | motor type  | <b>0:PMSM motor;</b><br>1:Induction motor;                                |      | 0       | 1          | SW        |
| 51521                             | enable motor temperature setpoint                 | 40  | ℃    | -80     | 200        | SW        |
| 51522                             | motor rotor resistance                            | 0   | Ohm  | 0       | 2000       | SW        |
| 51523                             | motor rotor leakage inductance                    | 0   | H    | 0       | 1000       | SW        |
| 51524                             | mutual inductance                                 | 0   | H    | 0       | 1000       | SW        |
| 51525                             | max slip speed                                    | 500   | rpm  | 0       | 1000       | SW        |
| 51526                             | motor phase voltage                               | 0   | V    | 0       | 1000       | SW        |
| 51527                             | motor phase current                               | 0   | A    | 0       | 1000       | SW        |
| 51528                             | stator leakage induction                          | 0   | H    | 0       | 1000       | SW        |
| 51529                             | rotor leakage induction                           | 0   | H    | 0       | 1000       | SW        |
| 51530                             | motor over temperature protection                 | 130   | ℃    | -80     | 200        | SW        |
| 51531                             | motor direction reverse                           | 1   |      | 0       | 1          | SW        |
| 52000                             | encoder type                                      | 1:AbsEncoder;<br><b>2:resolver;</b><br>3:IncEncoder;<br>4:sincos encoder; |      | 0       | 5          | SW        |
| 52001                             | encoder, single-turn resolution                   | 65535   |      | 0       | 0xFFFFFFFF | SW        |
| 52002                             | encoder, angular commutation offset               | 0   |      | 0       | 360        | SW        |
| 52003                             | encoder reserve                                   | 1   |      | 0       | 1          | SW        |
| 52004                             | Encoder inversion actual value                    | <b>bit 0: setpoint speed inverse</b><br>bit 1: setpoint position inverse  |      | 0       | 3          | SW        |
| 52500                             | motor temperature sensor type                     | 0:NONE;<br><b>1:KTY84;</b>  |      | 0       | 3          | SW        |
| alarm and response halt parameter |   |   |      |         |            |           |
| 53011                             | OFF3 ramp-down time                               | 150   | ms   | 0       | 65535      | SW        |
| 53012                             | Setting the first fault number for fault response | 0   |      | 0       | 65535      | RW        |
| 53013                             | Setting the seond fault number for fault response | 0   |      | 0       | 65535      | RW        |
| 53014                             | Setting the third fault number                    | 0   |      | 0       | 65535      | RW        |



| ID    | Name  | Default value   | unit | minimum | maximum | attribute |
|-------|---|---|------|---------|---------|-----------|
|       | for fault response                                  |   |      |         |         |           |
| 53015 | Setting the fourth fault number for fault response  | 0   |      | 0       | 65535   | RW        |
| 53016 | Setting the fifth fault number for fault response   | 0   |      | 0       | 65535   | RW        |
| 53017 | Setting the sixth fault number for fault response   | 0   |      | 0       | 65535   | RW        |
| 53018 | Setting the seventh fault number for fault response | 0   |      | 0       | 65535   | RW        |
| 53019 | Setting the eighth fault number for fault response  | 0   |      | 0       | 65535   | RW        |
| 53020 | Setting the ninth fault number for fault response   | 0   |      | 0       | 65535   | RW        |
| 53021 | Setting the tenth fault number for fault response   | 0   |      | 0       | 65535   | RW        |
| 53022 | Setting the first fault response                    | 1:NONE;<br>2:OFF1;<br>4:OFF2;<br>8:OFF3;<br>16:STOP1;<br>32:STOP2;<br>64:IASC/DC BRAKE; |      | 1       | 0x0040  | RW        |
| 53023 | Setting the second fault response                   | <b>idem</b>   |      | 1       | 0x0040  | RW        |
| 53024 | Setting the third fault response                    | <b>idem</b>   |      | 1       | 0x0040  | RW        |
| 53025 | Setting the fourth fault response                   | <b>idem</b>   |      | 1       | 0x0040  | RW        |
| 53026 | Setting the fifth fault response                    | <b>idem</b>   |      | 1       | 0x0040  | RW        |
| 53027 | Setting the sixth fault response                    | <b>idem</b>   |      | 1       | 0x0040  | RW        |
| 53028 | Setting the seventh fault response                  | <b>idem</b>   |      | 1       | 0x0040  | RW        |
| 53029 | Setting the eighth fault response                   | <b>idem</b>   |      | 1       | 0x0040  | RW        |
| 53030 | Setting the ninth fault response                    | <b>idem</b>   |      | 1       | 0x0040  | RW        |
| 53031 | Setting the tenth fault response                    | <b>idem</b>   |      | 1       | 0x0040  | RW        |
| 53032 | Setting the disable response                        | 1:NONE;<br>2:OFF1;<br>4:OFF2;<br>8:OFF3;  |      | 2       | 8       | RW        |



| ID                           | Name                                      | Default value   | unit        | minimum | maximum | attribute |
|------------------------------|---|---|-------------|---------|---------|-----------|
|                              |   | 16:STOP1;<br>32:STOP2;<br>64:IASC/DC BRAKE;   |             |         |         |           |
| setting control parameter    |   |   |             |         |         |           |
| 53000                        | speed setpoint before the setpoint filter | 0   | rpm         | -210000 | 210000  | RW        |
| 53001                        | torque setpoint value                     | 0   | Nm          | -100000 | 100000  | RW        |
| 53002                        | V/F start voltage                         | 0   | V           | 0       | 540     | RW        |
| 53003                        | V/F start speed                           | 0   | rpm         | 0       | 500     | RW        |
| 53004                        | d Axis current reference percent          | 0   |             | 0       | 1       | RW        |
| 53010                        | relay on delay time                       | 0   | ms          | 0       | 65535   | RW        |
| 53209                        | enable ramp function generator            | 1   |             | 0       | 1       | SW        |
| 53210                        | ramp up time of ramp function generator   | 120   | ms          | 0       | 65535   | SW        |
| 53211                        | ramp down time of ramp function generator | 150   | ms          | 0       | 65535   | SW        |
| 54000                        | V/f control ramp up/down time             | 10  | s           | 0       | 10000   | SW        |
| 54001                        | V/f control voltage at zero frequency     | 0   | V           | 0       | 1000    | SW        |
| 54002                        | V/f control max frequency limit           | 0   | Hz          | 0       | 3000    | SW        |
| 54003                        | V/f control max voltage limit             | 0   | V           | 0       | 63000   | SW        |
| 55048                        | option mode                               | 0:Torque control mode;<br><b>1:Speed control mode;</b><br>2:V/f control mode;<br>7:Pressure control mode; |             | 0       | 8       | SW        |
| 57133                        | control source                            | <b>0:AD;</b><br>1:RS232;<br>2:DSP54;<br>3:PC;<br>4:CAN;   |             | 0       | 5       | SW        |
| speed control loop parameter |   |   |             |         |         |           |
| 55007                        | speed controller p gain                   | 0   | Nms<br>/rad | 0       | 10000   | SW        |
| 55008                        | speed controller reset time               | 0   | s           | 0       | 10000   | SW        |





| ID                               | Name  | Default value   | unit | minimum | maximum    | attribute |
|----------------------------------|---|---|------|---------|------------|-----------|
| 55010                            | speed controller p gain adaption, lower speed           | -3000   | rpm  | -210000 | 0          | SW        |
| 55011                            | speed controller p gain adaption, upper speed           | 3000  | rpm  | 0       | 210000     | SW        |
| 55042                            | current controller p gain                               | 0   | V/A  | 0       | 10000      | SW        |
| 55043                            | current controller reset time                           | 0   | s    | 0       | 10000      | SW        |
| 55045                            | current controller p gain adaption, lower torque limit  | 0   | Nm   | -1000   | 0          | SW        |
| 55046                            | current controller p gain adaption, upper torque limit  | 0   | Nm   | 0       | 1000       | SW        |
| 56005                            | q Axis current setpoint in AutoAlign                    | 10  | A    | 0       | 1000       | SW        |
| 56006                            | angular commutation offset, measuring                   | 0   | °    | 0       | 360        | RO        |
| 56007                            | encoder, single-turn resolution, measuring              | 65535   |      | 0       | 0xFFFFFFFF | SW        |
| 56008                            | encoder actual position                                 | 0   |      | 0       | 0xFFFFFFFF | RO        |
| filter parameter of current loop |   |   |      |         |            |           |
| 55022                            | switch current setpoint filter 1 type                   | <b>0: Not used</b><br>1: Low pass: PT2<br>2: General 2nd-order filter |      | 0       | 2          | RW        |
| 55023                            | current setpoint filter 1 denominator natural frequency | 1999  | Hz   | 0.5     | 16000      | RW        |
| 55024                            | current setpoint filter 1 denominator damping           | 0.7   |      | 0.001   | 10         | RW        |
| 55025                            | current setpoint filter 1 numerator natural frequency   | 1999  | Hz   | 0.5     | 16000      | RW        |
| 55026                            | current setpoint filter 1 numerator damping             | 0.7   |      | 0       | 10         | RW        |
| 55027                            | switch current setpoint filter 2 type                   | <b>0: Not used</b><br>1: Low pass: PT2<br>2: General 2nd-order filter |      | 0       | 2          | RW        |
| 55028                            | current setpoint filter 2 denominator natural frequency | 1999  | Hz   | 0.5     | 16000      | RW        |



| ID                            | Name  | Default value  | unit | minimum | maximum | attribute |
|-------------------------------|---|--|------|---------|---------|-----------|
| 55029                         | current setpoint filter 2 denominator damping           | 0.7  |      | 0.001   | 10      | RW        |
| 55030                         | current setpoint filter 2 numerator natural frequency   | 1999   | Hz   | 0.5     | 16000   | RW        |
| 55031                         | current setpoint filter 2 numerator damping             | 0.7  |      | 0       | 10      | RW        |
| 55032                         | switch current setpoint filter 3 type                   | <b>0: Not used</b><br>1: Low pass: PT2<br>2: General 2and-order filter |      | 0       | 2       | RW        |
| 55033                         | current setpoint filter 3 denominator natural frequency | 1999   | Hz   | 0.5     | 16000   | RW        |
| 55034                         | current setpoint filter 3 denominator damping           | 0.7  |      | 0.001   | 10      | RW        |
| 55035                         | current setpoint filter 3 numerator natural frequency   | 1999   | Hz   | 0.5     | 16000   | RW        |
| 55036                         | current setpoint filter 3 numerator damping             | 0.7  |      | 0       | 10      | RW        |
| 55037                         | switch current setpoint filter 4 type                   | <b>0: Not used</b><br>1: Low pass: PT2<br>2: General 2and-order filter |      | 0       | 2       | RW        |
| 55038                         | current setpoint filter 4 denominator natural frequency | 1999   | Hz   | 0.5     | 16000   | RW        |
| 55039                         | current setpoint filter 4 denominator damping           | 0.7  |      | 0.001   | 10      | RW        |
| 55040                         | current setpoint filter 4 numerator natural frequency   | 1999   | Hz   | 0.5     | 16000   | RW        |
| 55041                         | current setpoint filter 4 numerator damping             | 0.7  |      | 0       | 10      | RW        |
| 55092                         | Filter data acceptance                                  | 0  |      | 0       | 15      | RW        |
| parameter of pressure control |   |  |      |         |         |           |
| 55049                         | motion control frequency                                | 1  | kHz  | 1       | 4       | SW        |
| 55050                         | kp1 of pressure control                                 | 0  |      | 0       | 100     | SW        |
| 55051                         | kil of pressure control                                 | 0  |      | 0       | 10      | SW        |
| 55052                         | kdl of pressure control                                 | 0  |      | 0       | 10      | SW        |



| ID                         | Name  | Default value   | unit | minimum | maximum | attribute |
|----------------------------|---|---|------|---------|---------|-----------|
| 55053                      | kp2 of pressure control                     | 0   |      | 0       | 100     | SW        |
| 55054                      | ki2 of pressure control                     | 0   |      | 0       | 10      | SW        |
| 55055                      | kd2 of pressure control                     | 0   | 0    | 0       | 10      | SW        |
| 55056                      | ramp up time of pressure control            | 500   | ms   | 0       | 65535   | SW        |
| 55057                      | ramp down time of pressure control          | 500   | ms   | 0       | 65535   | SW        |
| 55058                      | ramp enable of pressure control             | 1   |      | 0       | 1       | SW        |
| 55059                      | max voltage of pressure sensor              | 0   | V    | 0       | 10      | SW        |
| 55060                      | min voltage of pressure sensor              | 0   | V    | 0       | 10      | SW        |
| 55061                      | max pressure of pressure sensor             | 0   | bar  | 0       | 1000    | SW        |
| 55062                      | max pressure setting of pressure control    | 0   | bar  | 0       | 1000    | SW        |
| 55063                      | min flux of pressure control                | 0   | bar  | 0       | 1000    | SW        |
| 55064                      | speed limit of min flux of pressure control | 10.0  | %    | 0       | 100     | SW        |
| 55065                      | the time of reverse protection              | 1000  | ms   | 0       | 65535   | SW        |
| 55066                      | pressure setpoint value                     | 0   | bar  | 0       | 10000   | RW        |
| 55067                      | actual pressure                             | 0   | bar  | 0       | 10000   | RO        |
| 55068                      | pressure control speed upper limit          | 0   | rpm  | -210000 | 210000  | RO        |
| 55069                      | pressure control speed lower limit          | -1000   | rpm  | -210000 | 0       | SW        |
| 55070                      | pressure special parameter                  | 50  |      | 0       | 1000    | SW        |
| 55071                      | speed special parameter                     | 10  |      | 0       | 1000    | SW        |
| 55072                      | actual alarm pressure                       | 170   | bar  | 0       | 10000   | SW        |
| 55073                      | over pressure delay time                    | 1000  | ms   | 0       | 65535   | SW        |
| parameter of test function |   |   |      |         |         |           |
| 55076                      | switch measure function                     | 0: speed controller setpoint frequency response (after speed setpoint filter)<br>1: Speed controller setpoint jump (after speed setpoint filter)<br>2 : Current controller setpoint frequency |      | 0       | 3       | SW        |



| ID                    | Name   | Default value   | unit | minimum | maximum | attribute |
|-----------------------|--|---|------|---------|---------|-----------|
|                       |  | response (after current setpoint filter)<br>3: Current controller seopoint jump (after current setpoint filter) |      |         |         |           |
| 55077                 | controller frequency response settling periods         | 0   |      | 0       | 200     | SW        |
| 55078                 | controller frequency response amplitude                | 2   | %    | 0       | 100     | SW        |
| 55079                 | controller frequency response offset                   | 0   | %    | -100    | 100     | SW        |
| 55080                 | controller frequency response ramp-up time             | 0   | ms   | 0       | 65535   | SW        |
| 55081                 | controller frequency response measuring periods        | 20  |      | 1       | 200     | SW        |
| 55082                 | controller jump settling time                          | 0   | ms   | 0       | 2000    | SW        |
| 55083                 | controller jump amplitude                              | 2   | %    | -100    | 100     | SW        |
| 55084                 | controller jump offset                                 | 0   | %    | -100    | 100     | SW        |
| 55085                 | controller jump ramp-up time                           | 0   | ms   | 0       | 2000    | SW        |
| 55086                 | controller jump measuring time                         | 10  | ms   | 1       | 2000    | SW        |
| 55087                 | reference model active                                 | 0   | ms   | 0       | 1       | SW        |
| 55088                 | speed controller reference model natural frequency     | 0   | Hz   | 0       | 8000    | SW        |
| 55089                 | Speed controller reference model damping               | 1   |      | 0       | 5       | SW        |
| 55090                 | Speed controller reference model dead time             | 0   | ms   | 0       | 2       | SW        |
| 55091                 | Speed controller reference model speed setpoint output | 0   | %    | 0       | 100     | SW        |
| parameter of PWM      |  |   |      |         |         |           |
| 55500                 | pulse frequency  | 4   | kHz  | 1       | 16      | SW        |
| 55501                 | dead time for PWM                                      | 7   | us   | 1       | 15      | SW        |
| parameter of AD/DA/IO |  |   |      |         |         |           |
| 57033                 | AD command reverse flag                                | 0   |      | 0       | 1       | SW        |
| 57034                 | AD limit reverse flag                                  | 0   |      | 0       | 1       | SW        |
| 57035                 | AD command channel polarity                            | 0: bipolar  |      | 0       | 1       | SW        |



| ID    | Name                                | Default value       | unit | minimum | maximum | attribute |
|-------|-------------------------------------|---------------------|------|---------|---------|-----------|
|       |                                     | <b>1: unbipolar</b> |      |         |         |           |
| 57036 | AD limit channel polarity           | <b>idem</b>         |      | 0       | 1       | SW        |
| 57037 | AD pressure sensor channel polarity | <b>idem</b>         |      | 0       | 1       | SW        |
| 57038 | AD Command startvalue               | 0                   | V    | -32768  | 32767   | SW        |
| 57055 | AD1 configuration                   |                     |      | 0       | 3       | SW        |
| 57056 | AD2 configuration                   |                     |      | 0       | 3       | SW        |
| 57057 | AD3 configuration                   |                     |      | 0       | 3       | SW        |
| 57058 | AD simulator enable                 | 0                   |      | 0       | 65535   | RW        |
| 57059 | AD1simulator value                  | 0                   | V    | 0       | 10      | RW        |
| 57060 | AD2simulator value                  | 0                   | V    | 0       | 10      | RW        |
| 57061 | AD3simulator value                  | 0                   | V    | 0       | 10      | RW        |
| 57069 | DA1 configuration                   | 0                   |      | 0       | 10      | SW        |
| 57070 | DA2 configuration                   | 0                   |      | 0       | 10      | SW        |
| 57073 | DA simulator enable                 | 0                   |      | 0       | 65535   | RW        |
| 57074 | DA1 simulator value                 | 0                   | V    | 0       | 10      | RW        |
| 57075 | DA2 simulator value                 | 0                   | V    | 0       | 10      | RW        |
| 57091 | IO input1 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57092 | IO input2 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57093 | IO input3 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57094 | IO input4 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57095 | IO input5 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57096 | IO input6 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57097 | IO ouput1 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57098 | IO ouput2 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57099 | IO ouput3 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57100 | IO ouput4 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57101 | IO ouput5 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57102 | IO ouput6 reverse flag              | 0                   |      | 0       | 1       | SW        |
| 57103 | Input1 configuration                | 1                   |      | 0       | 10      | SW        |
| 57104 | Input2 configuration                | 2                   |      | 0       | 10      | SW        |
| 57105 | Input3 configuration                | 6                   |      | 0       | 10      | SW        |
| 57106 | Input4 configuration                | 8                   |      | 0       | 10      | SW        |
| 57107 | Input5 configuration                | 0                   |      | 0       | 10      | SW        |
| 57108 | Input6 configuration                | 0                   |      | 0       | 10      | SW        |
| 57109 | Output1 configuration               | 1                   |      | 0       | 6       | SW        |



| ID                             | Name                                     | Default value  | unit | minimum | maximum    | attribute |
|--------------------------------|--|--|------|---------|------------|-----------|
| 57110                          | Output2 configuration                    | 0  |      | 0       | 6          | SW        |
| 57111                          | Output3 configuration                    | 4  |      | 0       | 6          | SW        |
| 57112                          | Output4 configuration                    | 0  |      | 0       | 6          | SW        |
| 57113                          | Output5 configuration                    | 0  |      | 0       | 6          | SW        |
| 57114                          | Output6 configuration                    | 5  |      | 0       | 6          | SW        |
| 57115                          | IO simulator enable                      | 0  |      | 0       | 65535      | RW        |
| 57116                          | IO simulator value                       | 0  |      | 0       | 65535      | RW        |
| parameter of CAN communication |  |  |      |         |            |           |
| 57500                          | producer heartbeat time                  | 0  | ms   | 0       | 65535      | RW        |
| 57501                          | Guard time                               | 0  | ms   | 0       | 65535      | RW        |
| 57502                          | Life time factor                         | 0  |      | 0       | 255        | RW        |
| 57503                          | CAN bus address / node ID                | 2  |      | 1       | 126        | SW        |
| 57504                          | Transmission rate                        | <b>0:1M</b><br>1:500k<br>2:250k<br>3:125k<br>4:100k<br>5:50k   | bps  | 0       | 5          | SW        |
| 57505                          | CAN NMT command                          | <b>0:None</b><br>1:Start Remote Node<br>2:Stop Remote Node<br>128:Enter Pre-operational State<br>129:Reset Node<br>130:Reset Communication |      | 0       | 130        | RW        |
| 57506                          | CAN bus operate state                    | <b>0:Initialising</b><br>1:Stopped<br>2:Pre-operational<br>3:Operational   |      | 0       | 3          | RO        |
| 57507                          | CAN Receive PDO 1, PDO COB-ID            | 0  |      | 0       | 0xFFFFFFFF | RO        |
| 57508                          | CAN Receive PDO 1, PDO transmission type | 0  |      | 0       | 255        | SW        |
| 57509                          | CAN Receive PDO 2, PDO COB-ID            | 0  |      | 0       | 0xFFFFFFFF | RO        |
| 57510                          | CAN Receive PDO 2, PDO transmission type | 0  |      | 0       | 255        | SW        |
| 57511                          | CAN Receive PDO 3, PDO COB-ID            | 0  |      | 0       | 0xFFFFFFFF | RO        |



| ID    | Name   | Default value | unit | minimum | maximum    | attribute |
|-------|--|---------------|------|---------|------------|-----------|
| 57512 | CAN Receive PDO 3, PDO transmission type           | 0             |      | 0       | 255        | SW        |
| 57513 | CAN Receive PDO 4, PDO COB-ID                      | 0             |      | 0       | 0xFFFFFFFF | RO        |
| 57514 | CAN Receive PDO 4, PDO transmission type           | 0             |      | 0       | 255        | SW        |
| 57515 | CAN Receive Mapping for RxPDO 1, Mapped object 1   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57516 | CAN Receive Mapping for RxPDO 1, Mapped object 2   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57517 | CAN Receive Mapping for RxPDO 1, Mapped object 3   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57518 | CAN Receive Mapping for RxPDO 1, Mapped object 4   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57519 | CAN Receive Mapping for RxPDO 2, Mapped object 1   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57520 | CAN Receive Mapping for RxPDO 2, Mapped object 2   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57521 | CAN Receive Mapping for RxPDO 2, Mapped object 3   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57522 | CAN Receive Mapping for RxPDO 2, Mapped object 4   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57523 | CAN Receive Mapping for RxPDO 3, Mapped object 1   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57524 | CAN Receive Mapping for RxPDO 3, Mapped object 2   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57525 | CAN Receive Mapping for RxPDO 3, Mapped object 3   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57526 | CAN Receive Mapping for RxPDO 3, Mapped object 4   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57527 | CAN Receive Mapping for RxPDO 4, Mapped object 1   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57528 | CAN Receive Mapping for RxPDO 4, Mapped object 2   | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57529 | 第 CAN Receive Mapping for RxPDO 4, Mapped object 3 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57530 | CAN Receive Mapping for RxPDO                      | 0             |      | 0       | 0xFFFFFFFF | SW        |



| ID    | Name  | Default value | unit  | minimum | maximum    | attribute |
|-------|---|---------------|-------|---------|------------|-----------|
|       | 4, Mapped object 4                                |               |       |         |            |           |
| 57531 | CAN Transmit PDO 1, PDO COB-ID                    | 0             |       | 0       | 0xFFFFFFFF | RO        |
| 57532 | CAN Transmit PDO 1, PDO transmission type         | 0             |       | 0       | 255        | SW        |
| 57533 | CAN Transmit PDO 1, Inhibit time(in 100us)        | 0             | 100us | 0       | 65535      | SW        |
| 57534 | CAN Transmit PDO 1, Reserved                      | 0             |       | 0       | 0          | RO        |
| 57535 | CAN Transmit PDO 1, Event timer(in ms)            | 0             | ms    | 0       | 65535      | SW        |
| 57536 | CAN Transmit PDO 2, PDO COB-ID                    | 0             |       | 0       | 0xFFFFFFFF | RO        |
| 57537 | CAN Transmit PDO 2, PDO transmission type         | 0             |       | 0       | 255        | SW        |
| 57538 | CAN Transmit PDO 2, Inhibit time(in 100us)        | 0             | 100us | 0       | 65535      | SW        |
| 57539 | 第二个发送 PDO 预留 CAN Transmit PDO 2, Reserved         | 0             |       | 0       | 0          | RO        |
| 57540 | CAN Transmit PDO 2, Event timer(in ms)            | 0             | ms    | 0       | 65535      | SW        |
| 57541 | CAN Transmit PDO 3, PDO COB-ID                    | 0             |       | 0       | 0xFFFFFFFF | RO        |
| 57542 | CAN Transmit PDO 3, PDO transmission type         | 0             |       | 0       | 255        | SW        |
| 57543 | CAN Transmit PDO 3, Inhibit time(in 100us)        | 0             | 100us | 0       | 65535      | SW        |
| 57544 | CAN Transmit PDO 3, Reserved                      | 0             |       | 0       | 0          | RO        |
| 57545 | CAN Transmit PDO 3, Event timer(in ms)            | 0             | ms    | 0       | 65535      | SW        |
| 57546 | CAN Transmit PDO 4, PDO COB-ID                    | 0             |       | 0       | 0xFFFFFFFF | RO        |
| 57547 | CAN Transmit PDO 4, PDO transmission type         | 0             |       | 0       | 255        | SW        |
| 57548 | CAN Transmit PDO 4, Inhibit time(in 100us)        | 0             | 100us | 0       | 65535      | SW        |
| 57549 | CAN Transmit PDO 4, Reserved                      | 0             |       | 0       | 0          | RO        |
| 57550 | CAN Transmit PDO 4, Event timer(in ms)            | 0             | ms    | 0       | 65535      | SW        |
| 57551 | CAN Transmit Mapping for TxPDO 1, Mapped object 1 | 0             |       | 0       | 0xFFFFFFFF | SW        |





| ID    | Name  | Default value | unit | minimum | maximum    | attribute |
|-------|---|---------------|------|---------|------------|-----------|
| 57552 | CAN Transmit Mapping for TxPDO 1, Mapped object 2 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57553 | CAN Transmit Mapping for TxPDO 1, Mapped object 3 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57554 | CAN Transmit Mapping for TxPDO 1, Mapped object 4 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57555 | CAN Transmit Mapping for TxPDO 2, Mapped object 1 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57556 | CAN Transmit Mapping for TxPDO 2, Mapped object 2 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57557 | CAN Transmit Mapping for TxPDO 2, Mapped object 3 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57558 | CAN Transmit Mapping for TxPDO 2, Mapped object 4 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57559 | CAN Transmit Mapping for TxPDO 3, Mapped object 1 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57560 | CAN Transmit Mapping for TxPDO 3, Mapped object 2 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57561 | CAN Transmit Mapping for TxPDO 3, Mapped object 3 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57562 | CAN Transmit Mapping for TxPDO 3, Mapped object 4 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57563 | CAN Transmit Mapping for TxPDO 4, Mapped object 1 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57564 | CAN Transmit Mapping for TxPDO 4, Mapped object 2 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57565 | CAN Transmit Mapping for TxPDO 4, Mapped object 3 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57566 | CAN Transmit Mapping for TxPDO 4, Mapped object 4 | 0             |      | 0       | 0xFFFFFFFF | SW        |
| 57577 | CAN bus operate state after booting               | 10            | ms   | 0       | 65535      | SW        |



## 5 Diagnosis

AUSTONE Servo drive supports the fault protection function. When a fault is activated, the drive can run the motor with a user-defined response. When a fault occurs, please check the reasons carefully.

| Alarm code | Alarm                  | Brief description and disposal   | Corresponding ID | Response of alarm                           |
|------------|------------------------|--|------------------|---|
| 1          | Over current           | <b>Cause</b><br>short-circuit at the output<br>overloaded<br><b>Remedy</b><br>Please check the following:<br>Increase the accelerating<br>time.<br>reduce the gain   |                  | OFF2  |
| 2          | Short current          | <b>Cause</b><br>short-circuit at the output  | 55501            | OFF2  |
| 3          | Drive over temperature | <b>Cause</b><br>inadequate cooling<br>ambient temperature is too high<br><b>Remedy</b><br>Please check the following:<br>is the Power Over Temperature<br>Setpoint (51008) too low?<br>Does the ambient temperature<br>lie within the permissible<br>limits?<br>reduce the load and / or ensure<br>adequate cooling<br>Does the fan rotate if the Power<br>is operational? | 51008            | OFF2 (NONE,<br>OFF1, OFF3,<br>STOP1, STOP2) |
| 4          | Motor over temperature | <b>Cause</b><br>Motor overloaded   | 51530            | OFF2 (OFF1,<br>OFF3, STOP1,                 |



| Alarm code | Alarm                  | Brief description and disposal   | Corresponding ID | Response of alarm               |
|------------|------------------------|--|------------------|---------------------------------|
|            |                        | <b>Remedy</b><br>Please check the following:<br>Load too high?<br>Motor over temperatures setpoint(51530) must be correct  |                  | STOP2)                          |
| 5          | overvoltage protection | <b>Cause</b><br>DC link voltage (50003) higher than the overvoltage threshold (refer to parameter 51004)<br>Motor is in regenerative mode<br><b>Remedy</b><br>Please check the following:<br>Is the line supply voltage within the permissible range?<br>extend the deceleration ramp (ramp-down time 53211)<br>Is the required braking power within the permissible limits? | 51004            | OFF2                            |
| 6          | Motor over speed       | <b>Cause</b><br>The maximum permissible speed was either positively (55011) or negatively (55010) exceeded.<br><b>Remedy</b><br>For a positive direction of rotation:<br>- check upper speed 55011<br>For a negative direction of rotation:<br>- check lower speed 55010   | 55010<br>55011   | OFF2 (OFF1, OFF3, STOP1, STOP2) |
| 7          | Encoder fault          | <b>Cause</b><br>Serial communication protocol transfer error between the encoder and evaluation module   |                  | OFF2 (OFF1, OFF3, STOP1, STOP2) |



| Alarm code | Alarm                      | Brief description and disposal  | Corresponding ID | Response of alarm               |
|------------|----------------------------|---|------------------|---------------------------------|
|            |                            | Signal from Encoder lost or disturb<br><b>Remedy</b><br>EMC / connect the cable shield  |                  |                                 |
| 8          | Pressure control reversion | <b>Cause</b><br>the time of Motor rotate reverse is too long in Pressure Control<br><b>Remedy</b><br>increase the time of reverse protection(55065)   | 55065            | OFF2 (OFF1, OFF3, STOP1, STOP2) |
| 9          | 54 Net fault break         | <b>Cause</b><br>DSP54 is not ready when power on Ethernet cable is off<br>Ethernet frame is lost or extend monitor time<br><b>Remedy</b><br>Check Ethernet cable<br>Check the status of DSP54 |                  | OFF2 (OFF1, OFF3, STOP1, STOP2) |
| 10         | DC regenerate fault        | <b>Cause</b><br>line supply voltage is high<br><b>Remedy</b><br>Is the line supply voltage within the permissible range?<br>Is AD gain or offset of channel DC link Voltage calibrated?       |                  | OFF2                            |
| 11         | Drive not ready            | <b>Cause</b><br>DC link Voltage is low<br><b>Remedy</b><br>Is the line supply voltage within the permissible range?<br>Is initial status of Drive over?                                       |                  | OFF2                            |
| 12         | DC under                   | <b>Cause</b>  | 51003            | OFF2                            |



| Alarm code | Alarm                                      | Brief description and disposal  | Corresponding ID | Response of alarm                     |
|------------|--|---|------------------|---------------------------------------|
|            | voltage                                    | <p>Main supply failed.<br/>Shock load outside specified limits.</p> <p><b>Remedy</b><br/>Check the following:<br/>1. Is the line supply voltage within the permissible range?<br/>2. Supply must not be susceptible to temporary failures or voltage reductions.</p>  |                  |                                       |
| 13         | Speed direction deviation                  | <p><b>Cause</b><br/>Motor overloaded<br/>Velocity direction bias protection time(53508) is low</p> <p><b>Remedy</b><br/>Load too high?<br/>increase Velocity direction bias protection time(53508)</p>  | 53508            | OFF2 (OFF1, OFF3, STOP1, STOP2)       |
| 14         | Motor test fault                           |   |                  | OFF2 (OFF1, OFF3, STOP1, STOP2)       |
| 15         | Motor locked/speed controller at its limit | <p><b>Cause</b><br/>Motor has been operating at the torque limit longer than the time specified in 53514 (Motor locked delay time) and below the speed threshold set in 53513 (Motor locked speed threshold).</p> <p><b>Remedy</b><br/>Check that the motor can freely rotate.<br/>Check the torque limit: For a positive direction of rotation</p> | 53513<br>53514   | OFF2 (NONE, OFF1, OFF3, STOP1, STOP2) |



| Alarm code | Alarm               | Brief description and disposal   | Corresponding ID | Response of alarm                     |
|------------|---------------------|--|------------------|---------------------------------------|
|            |                     | 55046, for a negative direction of rotation 55045.<br>Check the parameter, message "Motor locked" and if required, correct (53513, 53514).<br>Check the Encoder inversion (52003).<br>Check the motor encoder connection.  |                  |                                       |
| 16         | Drive I2t alarm     | <b>Cause</b><br>Drive I2t(50039) is over I2t limit(51005)<br><b>Remedy</b><br>Check that the motor can freely rotate.<br>Check drive rated current.<br>Check the Encoder inversion (52003).<br>Check the motor encoder connection.<br>Reduce load or increase low load duty. | 51005            | OFF2 (NONE, OFF1, OFF3, STOP1, STOP2) |
| 17         | EEPROM Write Fault  | <b>Cause</b><br>EEPROM can not be written correctly.<br><b>Remedy</b><br>Try to do "save to ROM" again   |                  | OFF2 (OFF1, OFF3, STOP1, STOP2, NONE) |
| 18         | Speed track         | <b>Cause</b><br>The actual speed not track speed set, refer 51536, 51537<br><b>Remedy</b><br>Check Phase U,V,W   | 51536<br>51537   | OFF2 (OFF1, OFF3, STOP1, STOP2, NONE) |
| 19         | Enable status error | <b>Cause</b><br>The drive is disable when external enable input is on, check parameter   | 51017            | OFF2(OFF1, OFF3, STOP1, STOP2, NONE)  |



| Alarm code | Alarm               | Brief description and disposal   | Corresponding ID | Response of alarm                    |
|------------|---------------------|--|------------------|--------------------------------------|
|            |                     | 51017  |                  |                                      |
| 20         | Motor I2t           | <p><b>Cause</b><br/>The motor i2t value exceed threshold</p> <p><b>Remedy</b><br/>Check the motor rated current(51501)<br/>Check the Encoder Offset(52002)<br/>Check the Motor U,V,W phase sequence</p>  |                  | OFF2(OFF1, OFF3, STOP1, STOP2, NONE) |
| 27         | Pressure drift      | <p><b>Cause</b><br/>Setpoint and Actual Pressure is incorrect when power on</p>  |                  | OFF2 (OFF1, OFF3, STOP1, STOP2)      |
| 28         | Over pressure       | <p><b>Cause</b><br/>Actual Pressure is beyond the limit of maximum pressure</p>  | 55072            | OFF2 (OFF1, OFF3, STOP1, STOP2)      |
| 29         | Low pressure        | <p><b>Cause</b><br/>Actual Pressure is too low, check actual current and press. Refer to 55074</p> <p><b>Remedy</b><br/>Check the Encoder Offset(52002)<br/>Check the Motor U,V,W phase sequence<br/>Check the channel of Pressure Sensor<br/>Increase Monitor time(55074) in some cases when Pressure Sensor is disable</p> | 55074            | OFF2 (OFF1, OFF3, STOP1, STOP2)      |
| 30         | No output voltage   |  |                  | OFF2                                 |
| 31         | Phase current drift | <p><b>Cause</b><br/>AD offset of Channel Phase current is on calibrated</p>  |                  | OFF2                                 |
| 32         | Lack power phase    | <p><b>Cause</b><br/>Lack R or T phase input power</p> <p><b>Remedy</b><br/>Check RST</p>   |                  | OFF2 (OFF1, OFF3, STOP1, STOP2)      |
| 33         | Low switch          | <p><b>Cause</b></p>  | 50050            | OFF2                                 |



| Alarm code | Alarm             | Brief description and disposal   | Corresponding ID | Response of alarm                     |
|------------|-------------------|--|------------------|---------------------------------------|
|            |                   | The 24V switch power is not enough<br><b>Remedy</b><br>Increase the switch power and voltage   |                  |                                       |
| 34         | Low weak voltage  | <b>Cause</b><br>The 24V switch power is not enough, check 50050 and 51016 parameter.<br><b>Remedy</b><br>Increase the switch power and voltage                       | 50050、51016      | OFF2                                  |
| 101        | CAN node guarding | <b>Cause</b><br>CAN bus is offline or disturb<br><b>Remedy</b><br>EMC<br>Check the time of Nodeguarding  | 57501<br>57502   | OFF2 (NONE, OFF1, OFF3, STOP1, STOP2) |
| 102        | CAN master config | <b>Cause</b><br>Number of slave(57569) is few then setting number of slave(57574)<br>The state of slave config is not finished<br><b>Remedy</b><br>Check the CAN Bus | 57569、57574      | OFF2 (OFF1, OFF3, STOP1, STOP2, NONE) |
| 103        | Node duplication  | <b>Cause</b><br>more than one same node ID in CAN net.<br><b>Remedy</b><br>Find same ID drive ,Change node ID  |                  | OFF2 (OFF1, OFF3, STOP1, STOP2, NONE) |
| 106        | CAN bus offline   | <b>Cause</b><br>CAN bus is offline<br>Master stop to send PDO<br><b>Remedy</b><br>Check the CAN Bus<br>Check CAN offline time(57577)                                 | 57577            | OFF2 (NONE, OFF1, OFF3, STOP1, STOP2) |





| Alarm code | Alarm                     | Brief description and disposal  | Corresponding ID                   | Response of alarm                     |
|------------|---------------------------|---|------------------------------------|---------------------------------------|
| 107        | DSP54 communication fault | <b>Cause</b><br>Interval of operational data is beyond the monitor limit  |                                    | OFF2 (NONE, OFF1, OFF3, STOP1, STOP2) |
| 108        | CAN slave error           | <b>Cause</b><br>CAN slave error   |                                    | OFF2 (NONE, OFF1, OFF3, STOP1, STOP2) |
| 109        | Cable disconnect          | <b>Cause</b><br>Net cable disconnect  |                                    | OFF2 (NONE, OFF1, OFF3, STOP1, STOP2) |
| 120        | Position Following Error  | <b>Cause</b><br>A position actual value(58514) outside the allowed range of the following error window(58515) around a position setpoint value(58513) for longer than the following error time out(58516).<br><b>Remedy</b><br>1. following error window(58515) set too small<br>2. following error time out(58516) set too low<br>3. position loop gain(58511) too low<br>4. position loop gain(58511) too high(instability/oscillation) | 58513<br>58514、<br>58515、<br>58516 | OFF2 (OFF1, OFF3)                     |
| 121        | Position Set Error        | <b>Cause</b><br>The parameter of position control set incorrectly.<br><b>Remedy</b><br>1. the target position or profile velocity exceed limits   |                                    | OFF2 (OFF1, OFF3)                     |



| Alarm code | Alarm          | Brief description and disposal   | Corresponding ID | Response of alarm |
|------------|----------------|--|------------------|-------------------|
|            |                | 2. the position of continuous segment or fellow-up segment set incorrectly |                  |                   |
| 150        | External fault | <b>Cause</b><br>External fault   |                  | OFF2              |

Note: In the column of alarm response, the default option is out of parenthesis. The response is as follows:

NONE: do nothing

OFF1: Braking along the ramp function generator down ramp followed by a pulse inhibit

OFF2: pulse inhibit

OFF3: Braking along the OFF3 down ramp followed by a pulse inhibit

STOP1:

STOP2: Set speed setpoint value 0rpm

The relative parameters ID for fault response are 53011~53031



## Edit log

| version | Date       | Comment  |
|---------|------------|--|
| V1.0    | 2011.06.29 | draft  |
| V1.1    | 2011.06.30 | Complete list of Servo drive   |
| V1.2    | 2011.07.08 | Update the fault explanations  |
| V1.3    | 2011.08.16 | Add the fault E015、E016、E109   |
| V1.4    | 2011.09.16 | Add the description of 24V power supply  |
| V1.5    | 2011.11.10 | Add T series Servo Drive   |
| V1.6    | 2012.02.09 | Add PK5 and PL7 Servo Drive  |
| V1.7    | 2012.06.25 | Add PL4, PL2, TF0 Servo Drive  |
| V1.8    | 2012.07.03 | Add TI7  |
| V1.9    | 2012.10.10 | Add PK5  |
| V1.10   | 2012.11.16 | Add the fault E017、E018、E029、E032、E033、E034、<br>E102、E103、E120、E121<br>PTC temperature sensor interface<br>DIP switch. |
| V1.11   | 2013.03.13 | Change PL2, PL7, IL7, IL9, TF0   |
| V1.12   | 2013.06.25 | Add PIO<br>Add Error 19, 20, 130   |
| V1.13   | 2014.3.4   | Add brake , maintenance. Add 75KW and H type drive   |
| V2.0    | 2014.3.20  | Delete unused device   |
| V2.1    | 2014.4.17  | Delete unused device   |

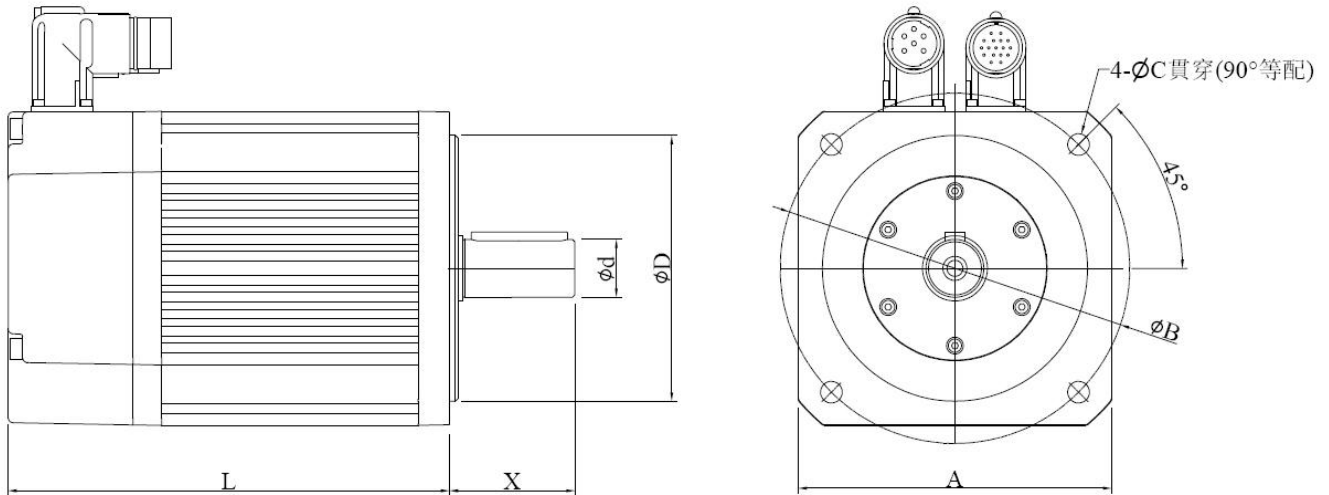


|      |           |                                     |
|------|-----------|-------------------------------------|
| V2.2 | 2015.3.17 | Delete unused device                |
| V2.3 | 2015.4.10 | Add IO wiring diagram               |
| V2.4 | 2015.6.17 | Add 1kw                             |
| V2.5 | 2015.6.19 | Modify the size of some servo drive |
| V2.6 | 2016.2.1  | Add high input voltage servo drive  |
| V2.7 | 2016.3.29 | Add S type(compact) servo drive     |



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