Preface

Main contents of this Guide are as follows:

- Overall dimensions, installation dimensions and terminals of WISE driver;

- Wiring between WISE servo driver and the control system;

- Axis address setting for M-Ⅱ bus driver;

- Specifications for wiring between WISE servo driver and MA/MB/MN/ME motor or Panasonic motor;

- List of error codes and lists of parameters of WISE servo driver.

● **Applicable Product Models**

This guide is applicable to WSDV series WISE servo drivers. Please refer to the following table.

Product Model	Remarks
WISE servo driver	It is herein abbreviated as WISE. At present, there are six models: WSDV-1R2 (0.1kW); WSDV-2R8 (0.4kW); WSDV-5R0 (0.75kW); WSDV-6R8 (1.0kW); WSDV-110 (1.5kW); WSDV-140 (2.5kW).

● **Contact Us**

You can contact us by the following info for technical support and pre-sales/after-sales service:

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● Revision History

Date	Edition	Revision Contents
2017.04	R5	1) Add section 1.2 Mounting Diagram; 2) Update signal table for analog • pulse type driver in section 3.3; 3) Update section 4.2 Axis Address Setting; 4) Update chapter 5 Connectors and Wiring Diagram of Motors; 5) Update chapter 6 Lists of Error Codes 6) Update section 7 Driver Parameters; 7) Other revisions.
2016.11	R4	1) Model designation of the driver added. (Refer to Section 1.1) 2) Related contents of the bus driver added. (Refer to Section 2.2, Chapter 3, Chapter 4, Chapter 5.4 and Section 7.3) 3) Analog speed command and analog torque command of CN2 terminal added. (Refer to Section 3.3) 4) List of error codes and list of parameters of pulse type servo updated. (Refer to Chapter 5.4 and Section 7.2) 5) Parameter setup on the control pane and via iMotion software updated. (Refer to Section 7.1) 6) Specifications for wiring between the driver and MA/MB/MN/ME motor or Panasonic motor added. (Refer to Chapter 5 and 5.3)
2016.01	R3	Updated on the basis of the latest *Users' Manual of WISE (维智) Servo Driver-R8*

● **Precautions**

Precautions can be divided into caution and warning according to the degree of possible loss or injury in case of negligence or omission of precautions stipulated in this manual.

CAUTION : general info, mainly for informing, such as supplementary instructions and conditions to enable a function. In case of negligence or omission of this kind of precautions, you may not activate a function. Note that in some circumstances, negligence or omission of even this kind of precautions could cause physical injury or machine damage.

WARNING : warning info requiring special attention. In case of negligence or omission of this kind of precautions, you may suffer physical injury, or even death, machine damage or other losses.

┌──┐
│ ⚠ **CAUTION** │
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● **Personnel Safety**

- As the product features high voltage and heavy current, please make sure that the personnel are within the safe area of the working mechanism when the power is on.
- As the product features high voltage and heavy current, mal-operation may cause electric arc burn/shock or other accidents.
- You must conduct wiring and energization in accordance with the Guide.

● **Place Safety**

- Don't power on and use the product when exposed to combustible or corrosive gas; otherwise, fire and explosion may be resulted in.
- Don't power on and use the product exposed to falling combustible and explosive objects; otherwise, fire and explosion may be resulted in.
- Don't use the product in the environment with high humidity, moisture, and metal powder etc.; otherwise, you and other people may get shocked or suffer other dangers.

● **Product and Equipment Safety**

- As the product features high voltage and heavy current, wrong connection may cause damage to the product.
- GND terminal $\frac{\perp}{=}$ must be connected to the ground wire, in order to ensure reliable grounding.
- Terminals U, V and W should be connected to the output power of the motor, not the input power.
- Terminals U, V and W are three-phase output. Don't connect them in wrong order; otherwise, the DC motor may reach the Max. rotary speed and lose control, the equipment and the product may be damaged due to overcurrent.
- Fasten all terminals. Purchase the wires in strict accordance with the power.
- When you make the cables by yourself, please conduct wiring as per the wiring diagram in this Guide.
- Don't conduct power distribution or touch the terminals when the driver is powered on.
- Don't touch the terminals until 5 minutes after power-off.
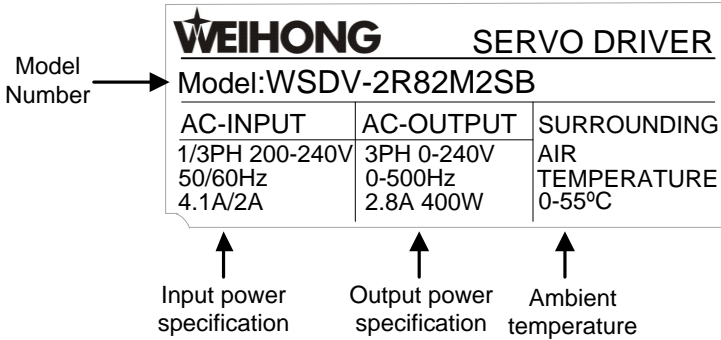- Don't touch the motor or cables when the motor is running, to avoid burn, sprain and other accidents.
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Contents

1 Basic Information

1.1 Nameplate & Model

● Nameplate Specifications

● Model Specifications

Product Series	
Symbol	Type
WSDV	WISE

Capacity

Symbol	Rated Output Power(kW)
1R2	0.1
2R8	0.4
5R0	0.75
6R8	1.0
110	1.5
140	2.5

Voltage Specification

Symbol	Spec
2	200V

Control Mode

Symbol	Spec
B	Position control/velocity control/torque control
P	Exclusive for position control

Encoder Feedback Type

Symbol	Spec
S	Serial communication encoder

Interface Type

Symbol	Spec
0P	Pulse train command
AP	Analog voltage·pulse train command
M2	M-Ⅱ bus communication

1.2 Mounting Diagram

When there are multiple servo drivers installed side by side in a control panel, they must be placed as Fig. 1-1.

Fig. 1-1 Side-by-side installation diagram

● **Installation orientation**

Install driver perpendicularly to the wall so that the display panel faces to operator, as shown in Fig. 1-2. Secure the driver firmly on the wall via mounting holes, and cool it by cooling fans or nature convection.
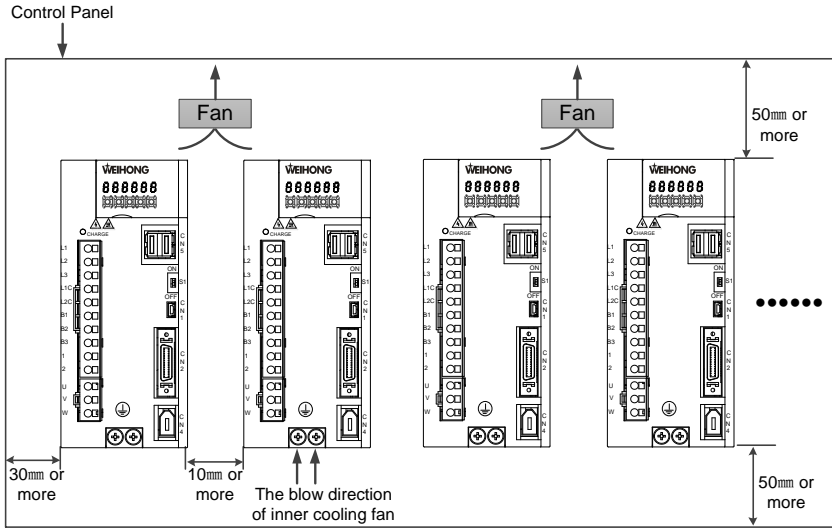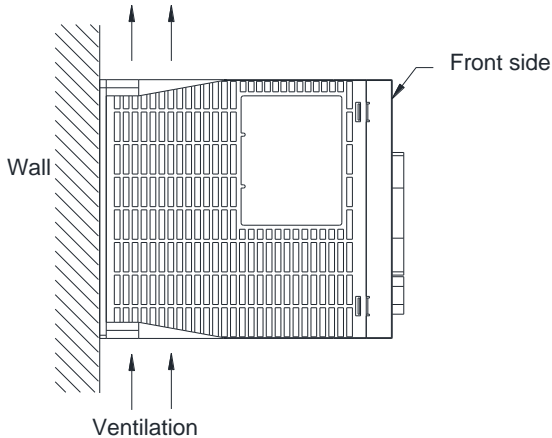

Fig. 1-2 Installation orientation

● **Cooling and convection**

When installing drivers side by side, you should provide at least 10mm between and at least 50mm above and below each driver, and install cooling fans above them.

In order to avoid high ambient temperature at part, and maintain even temperature inside the control panel, the environment requirements in the control panel are as below:

1.   Ambient temperature: 0~+55℃ (no condensation and freezing);

2.   Humidity: 90% RH or less (no freezing or frost);

3.   Ambient temperature for long-term reliability: 45℃ max.

3

1.3 Overall Dimensions and Installation Dimensions

- WSDV-1R2 (100W) and WSDV-2R8 (400W)

Base Back   Mounting hole
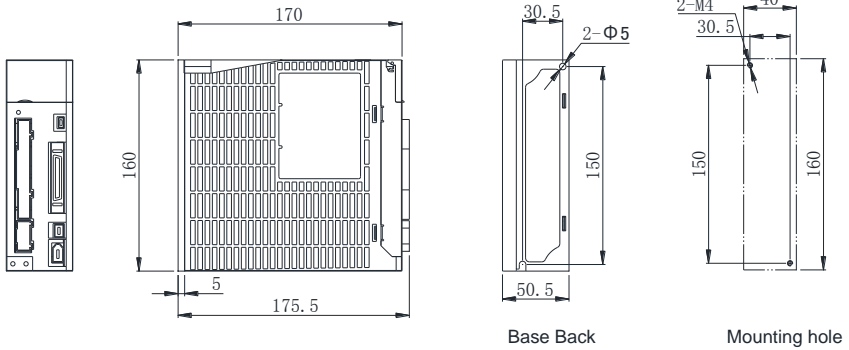
- WSDV-5R0 (750W) & WSDV-6R8 (1kW)

Back of base   Mounting hole

Direction of airflow produced by cooling fan

● WSDV-110 (1.5kW) & WSDV-140 (2.5kW)

Direction of airflow
produced by cooling fan

Base Back

Mounting hole
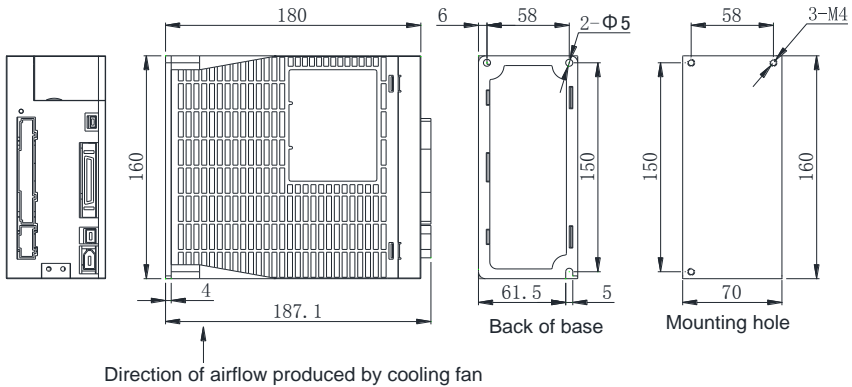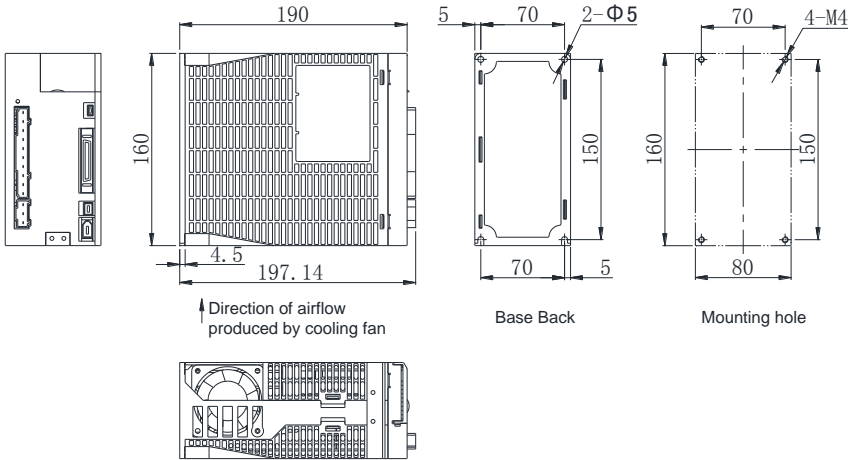
2 System Configuration and Wiring

2.1 Wiring Diagram of Analog • Pulse Type Driver

Circuit Breaker
Protect the power line by shutting the circuit OFF when over-current is detected.

Noise Filter
Used to eliminate external noise from the power line and noise disturbance form the driver.

Magnetic Contactor
Turn the servo ON and OFF. Install a surge suppressor on the magnetic contactor.

Note:
Never start nor stop the servo motor with this Magnetic Contactor.

PC

WISE servo driver (Analog • pulse type)

Weihong CNC system

Regenerative Resistor

Contactor B1, B2 and B3:
- Keep short-circuit wiring between B2-B3 contactors.
- When a regenerative resistor is equipped, break the short-circuit wiring between B2-B3 contactors, and externally connect regenerative resistor to B1-B2 contactors, together set Pr016 to 1.

Encoder Cable

Motor Main Circuit Cable

2.2 Wiring Diagram of M-Ⅱ Bus Type Driver

Circuit Breaker

Protect the power line by shutting the circuit OFF when over-current is detected.

Noise Filter

Used to eliminate external noise from the power line and noise disturbance form the driver.

Magnetic Contactor

Turn the servo ON and OFF. Install a surge suppressor on the magnetic contactor.

Note:
Never start nor stop the servo motor with this Magnetic Contactor.

WISE Servo Driver (M-Ⅱ bus type)

Bus CNC System

PC

Regenerative Resistor

Contactor B1, B2 and B3:

- Keep short-circuit wiring between B2-B3 contactors.
- When a regenerative resistor is equipped, break the short-circuit wiring between B2-B3 contactors, and externally connect regenerative resistor to B1-B2 contactors, together set Pr016 to 1.

Motor Main Circuit Cable

Encoder Cable

🔔 **CAUTION**

1. When externally wiring to a regenerative resistor, external protection such as over-temperature protection must be provided.

2. Over-temperature protection fuse and thermostat are installed in the regenerative resistor. Once fuse action occurs, the regenerative resistor cannot restore to the previous state.

3. Please install the regenerative resistor on non-combustible substance such as non-combustible metal.

4. Please connect the bus control system to Terminal CN5 in case of M-II bus type driver, while connect other non-bus CNC systems to Terminal CN2.
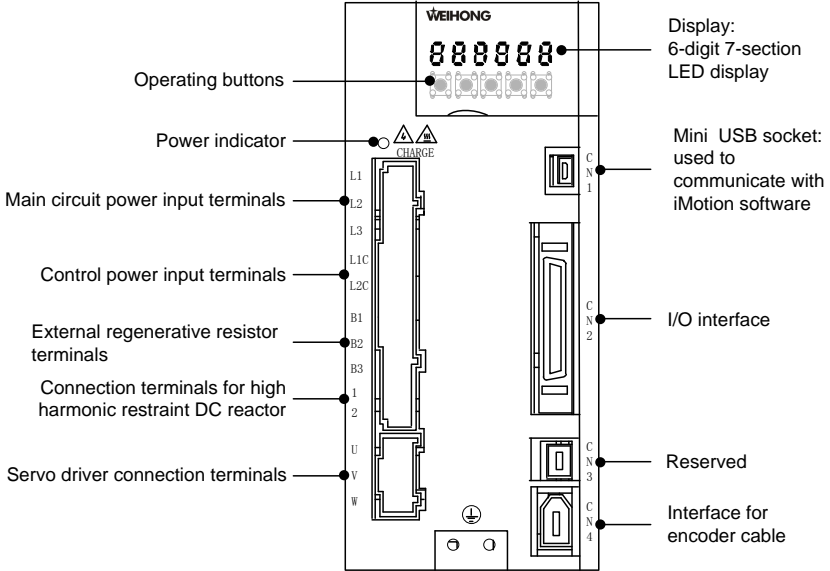
3 Terminals

Operating buttons

Power indicator

Main circuit power input terminals

Control power input terminals

External regenerative resistor terminals

Connection terminals for high harmonic restraint DC reactor

Servo driver connection terminals

Display: 6-digit 7-section LED display

Mini USB socket: used to communicate with iMotion software

I/O interface

Reserved

Interface for encoder cable
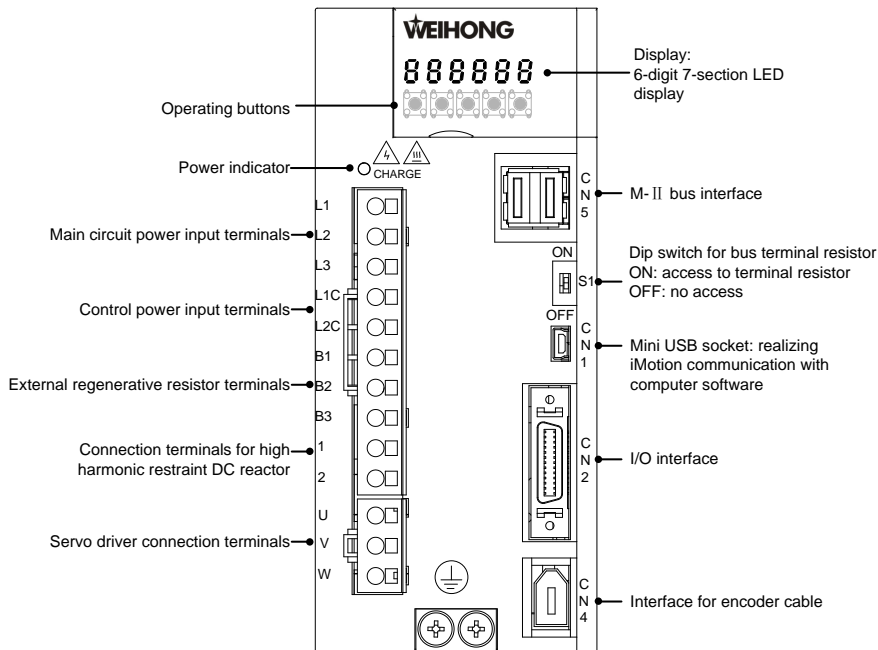
Fig. 3-1 Terminals for analog • pulse type driver

Fig. 3-2 Terminals for M-Ⅱ bus type driver

3.1 Main Circuit Terminals

The main circuit terminals of analog • pulse type driver are the same as those of M-Ⅱ bus type driver.

| Terminal	Name	Specifications
L1/L2/L3	Main circuit power input terminal	➢ Single-phase: connected to any two of the terminals ➢ 3-phase: connected to all of the three terminals ➢ $200 \sim 240V^{+10\%}_{-15\%}$, 50/60Hz
L1C/L2C	Control power input terminal	Single-phase$200{\sim}240V^{+10\%}_{-15\%}$, 50/60Hz

Terminal	Name	Specifications
B1/B2/B3	External regenerative resistor terminal	➤ If the capacity of the internal regenerative resistor is insufficient, connect an external regenerative resistor (optional) to terminals B1 and B2. ➤ If the capacity of the internal regenerative resistor is insufficient, remove the wire between terminals B2 and B3 (B-2B3 is short-circuited by default), and connect an external regenerative resistor to terminals B1 and B2.
1/2	Connection terminal for power high harmonic restraint DC reactor	When high harmonic restraint to the power is required, connect a DC reactor between1-2 (1-2 is short-circuited by default). Make sure 1-2 is short-circuited if no requirement.
1	Main circuit front side terminal	DC power input.
2	Main circuit back side terminal	
U/V/W	Servo driver terminal	Used to connect with the servo driver.
⏚	GND (2)	Used to connect with power supply ground line.

3.2 CN1 Terminals (Mini USB Interface)

Terminal CN1 is used to connect the driver and *iMotion* software on PC via USB wire. After connection, trial run, parameters commissioning, gain adjustment and other operations can be conducted on PC. Please contact the manufacturer for *iMotion* software (or login Weihong official website to download it: www.weihong.com.cn/en/).

3.3 CN2 Terminals (I/O Signal Interface)

● **Analog • Pulse Type Driver**

⚠ **CAUTION**
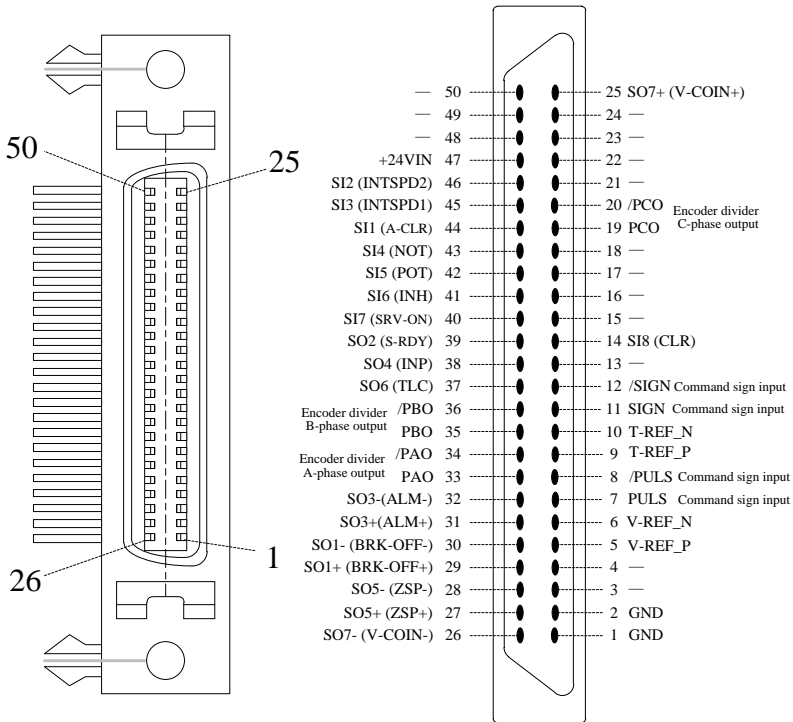
1. Figure above shows how terminals are allocated for CN2 connector of driver of "Analog Voltage• Pulse Train Command" type. Pin 5 and 6 are for analog input 1, and pin 9 and 10 are for analog input 2. For driver of "Pulse Train Command" type, pin 5 and 9 are empty, and pin 6 and 10 are for GND.

2. If Weihong motion CNC system is chosen, CN2 terminal-Weihong CNC system cable can be purchased directly.

3. Please connect shield layer of I/O signal cable with shell of terminal, and make frame grounding (FG) through the terminal for driver cable.

4. Signals in brackets are default setup when leaving factory. Do not use any empty pins (3, 4, 5, 9, 13, 15, 16, 17, 18, 21, 22, 23, 24, 48, 49, 50).

5. Following signals can be allocated to the pins as needed. 31/32(SO3) outputs ALM signal. Refer to I/O signal allocation in section 2.4 in *WISE Analog • Pulse Type Servo Driver* for details.

   Input signals: 44 (SI1), 46 (SI2), 45 (SI3), 43 (SI4), 42 (SI5), 41 (SI6), 40(SI7), 14 (SI8).

   Output signals: 29/30 (SO1), 39 (SO2), 38 (SO4), 27/28 (SO5), 37 (SO6), 25/26 (SO7).

Signal Name	Pin No.	Default	Description	
Input Signals				
Analog input 1	5 6	V-REF_P V-REF_N	Analog input 1 signal	
Analog input 2	9 10	V-REF_P V-REF_N	Analog input 2 signal	
—	7 8 11 12	PULS /PULS SIGN /SIGN	Position command input signal	
SI1	44	—	—	
SI2	46	—	—	
SI3	45	—	—	
SI4	43	NOT	Negative over-travel inhibition input	When machine moves out of the limits, stop motor driving (over-travel protection function).

Signal Name	Pin No.	Default	Description	
SI5	42	POT	Positive over-travel inhibition input	
SI6	41	INH	Command pulse inhibition input	Ignore position command pulse.
SI7	40	SRV-ON	Servo motor power ON/OFF signal.	
SI8	14	CLR	Clear positional deviation pulse when position control is enabled.	
+24V IN	47	+24V IN	Power supply input; Voltage range: +11V~ +30V (+24V power supply prepared by the user)	
Output Signals				
—	33 34	PAO /PAO	A-phase signal	Output the encoder divided pulse output signals with a 90° phase differential.
	35 36	PBO /PBO	B-phase signal	
	19 20	PCO /PCO	C-phase signal	Output signal of origin pulse.
—	Shell	FG	Connected to the frame ground if the shield of the I/O Signal Cable is connected to the connector shell.	
SO1	29/30	BRK-OFF	1) Time sequence signal of electric-magnetic brake action is fed out. 2) Release time sequence of electric-magnetic brake and connect with transistor.	
SO2	39	S-RDY	Output signal at servo-ON status of the driver.	
SO3	31/32	ALM	Output signal at alarm status.	
SO4	38	INP	1) Output positioning complete signal. 2) Turn transistor ON at positioning complete status.	
SO5	27/28	ZSP	1) Output zero-speed clamp detection signal. 2) Turn transistor ON at zero-speed clamp detection status.	
SO6	37	TLC	1) Output torque in- limit signal. 2) Turn transistor ON at torque limiting status.	

Signal Name	Pin No.	Default	Description
SO7	25/26	V-COIN	1) Output speed consistent signal. 2) Turn transistor ON when speeds are consistent.

● **M-Ⅱ Bus Type Driver**

🔔 **CAUTION**
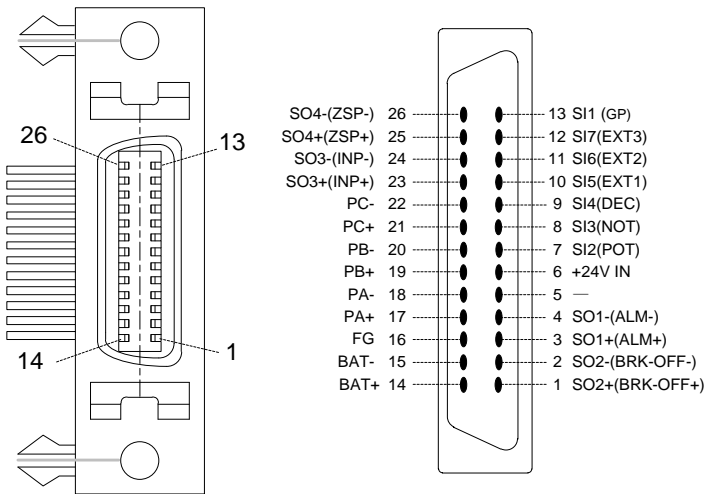
1. If Weihong motion CNC system is chosen, CN2 terminal-Weihong CNC system cable can be purchased directly.

2. Signals in brackets are default setup when leaving factory. Do not use any empty pins.

3. Please connect shield layer of I/O signal cable with shell of terminal, and make frame grounding (FG) through the terminal for driver cable.

4. Following signals can be allocated to the pins in bracket at will as needed. 3/4(SO1) outputs ALM signal. Refer to I/O signal allocation in section 2.4 in *WISE Bus-type Servo Driver Users' Manual* for details.

    Input signals: 13 (SI1), 7 (SI2), 8 (SI3), 9 (SI4), 10 (SI5), 11 (SI6), 12 (SI7).
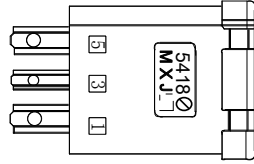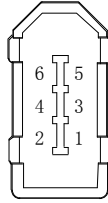
Output signals: 1/2 (SO2), 23/24 (SO3), 25/26 (SO4).

Signal Name	Pin No.	Default	Description	
Input signals				
SI1	13	GP	Universal input	
SI2	7	POT	Positive over-travel inhibition input	When machine moves out of limits, stop motor driving (over-travel protection function).
SI3	8	NOT	Negative over-travel inhibition input	
SI4	9	DEC	Deceleration limit switching	
SI5	10	EXT1	3-circuit external latch signal input	
SI6	11	EXT1		
SI7	12	EXT1		
+24V IN	6	+24V IN	Power supply input; Voltage range: +11V~+30V (+24V power supply prepared by the user)	
Output signals				
—	17 18	PAO /PAO	A-phase signal	Output the encoder divided pulse output signals with a 90° phase differential.
	19 20	PBO /PBO	B-phase signal	
	21 22	PCO /PCO	C-phase signal	Output signal of origin pulse.
—	Shell	FG	Connected to the frame ground if the shield of the I/O Signal Cable is connected to the connector shell.	
SO1	3/4	ALM	Output signal at alarm status.	
SO2	1/2	BRK-OFF	1) Time sequence signal of electric-magnetic brake action is fed out. 2) Release time sequence of electric-magnetic brake and connect with transistor.	
SO3	23/24	INP	1) Output positioning complete signal. 2) Turn transistor ON at positioning complete status.	
SO4	25/26	ZSP	1) Output zero-speed clamp detection signal. 2) Turn transistor ON at zero-speed clamp detection status.	

3.4 CN4 Terminals (Encoder Interface)

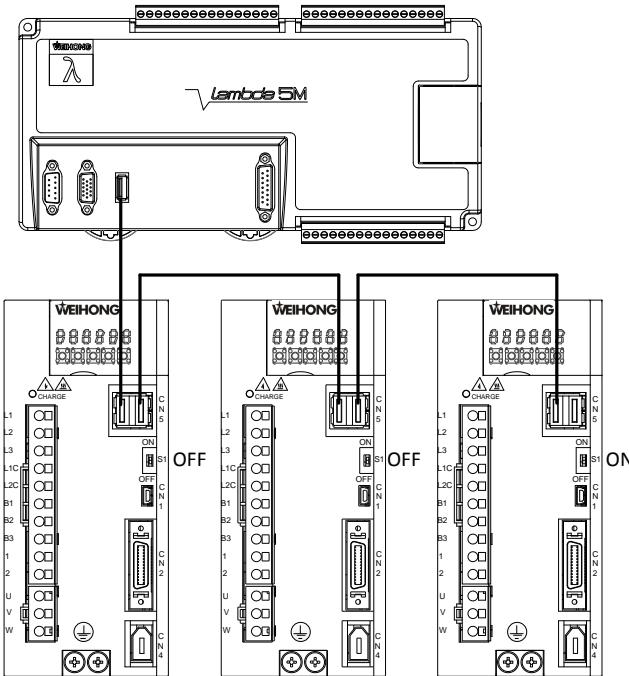The details of pins of CN4 terminals (driver encoder interface) are as below:

Pin	Signal	Remark
1	+5V	Power supply +5V
2	⏚	GND
3	—	—
4	—	—
5	PS	Serial signal +
6	/PS	Serial signal -

4 Axis Address Setting for M-Ⅱ Bus Type Driver

4.1 Connection to Control System

Following diagram shows the connection between the bus driver and the control system.

🔔 **CAUTION**

Please set the dip switch S1 of the last driver at ON while others at OFF, to ensure normal communication of the system. (The dip switch is to activate the terminal resistor, specifically ON for enabling and OFF for disabling).

4.2 Axis Address Setting

Please set the axis address of each driver after connection. It is recommended to set them in order (X-axis: 1; Y-axis: 2; Z-axis: 3 and so forth. 0 means disabling the communication function). The axes addresses can be set via iMotion software (Version 1.2.3 or above) or on the driver panel.

● **Setting via Driver Panel**

When bus function is enabled, Pr001 must be set first as shown in Fig. 4-1. The flowchart for axis address setting on the driver panel is as shown in Fig. 4-2.
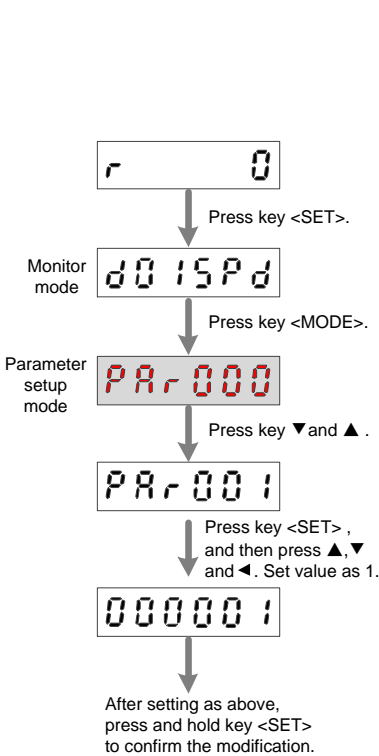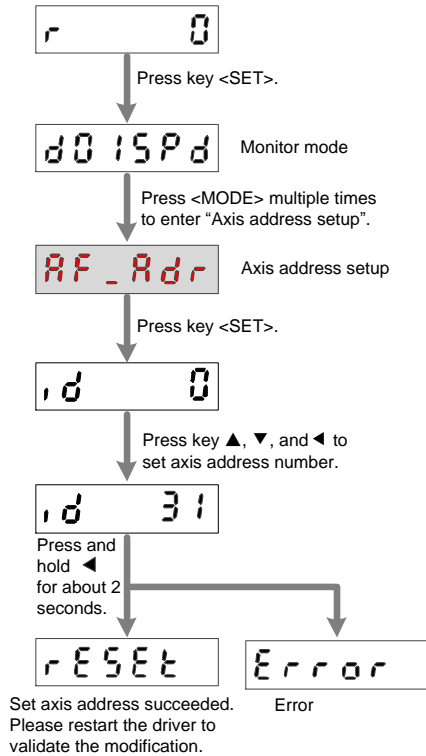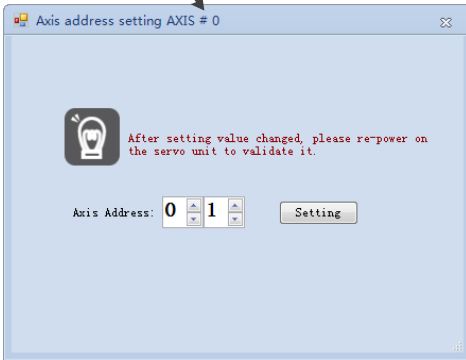

Fig. 4-1 Set Pr001

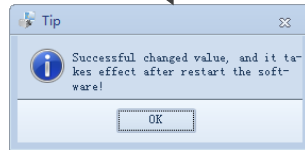Fig. 4-2 Set axis address number

● **Setting via iMotion Software**

1 After the driver is connected, you should click "Axis setting" to enter "Axis setting" interface.

2 Set the axis address and click "Setting". (In the same control system, the number of the axis setting of every driver is the unique one)

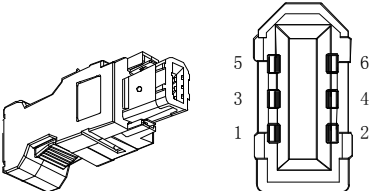*3* Then a prompt box will pop out and you should click "OK".

5 Connectors and Wiring Diagram of Motors

Please refer to this chapter for wiring of encoder cables and motor cables you have prepared by yourselves.
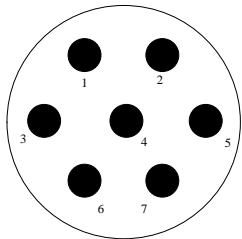
5.1 Connectors

5.1.1 Connectors of Encoders

● SM-6P, connector of an encoder for connecting drivers

Pin	Signal	Diagram
1	+5V	
2	0V	
3	—	
4	—	
5	PS	
6	/PS	

● XS16K7P, 7-pin direct-insert connector

Pin	Signal	Diagram
1	FG (shield ground)	
2	BAT-	
3	BAT+	
4	/PS	
5	0V	
6	PS	
7	+5V	

- YD28K7TSL, 7-pin aviation connector

Pin	Signal	Diagram
1	FG (shield ground)	
2	BAT-	
3	BAT+	
4	/PS	
5	0V	
6	PS	
7	+5V	

- 15-pin military aviation connector (please don't connect anything to NC)

Pin	Signal	Diagram
1	FG (shield ground)	
2	BAT-	
3	BAT+	
4	/PS	
5	0V	
6	PS	
7	+5V	
8~15	NC	

- 172160-1, 6-pin connector of an incremental encoder (please don't connect anything to NC)

Pin	Signal	Diagram
1	NC	
2	PS	
3	/PS	
4	+5V	
5	0V	
6	FG (shield ground)	

1 NC	2 PS	3 /PS
4 E5V	5 E0V	6 FG

172160-1

- 172161-1, 9-pin connector of a bus type encoder (please don't connect anything to NC)

Pin	Signal	Diagram
1	BAT+	
2	BAT-	
3	FG	
4	PS	
5	/PS	
6	NC	
7	+5V	
8	0V	
9	NC	

1 BAT+	2 BAT-	3 FG
4 PS	5 /PS	6 NC
7 E5V	8 E0V	9 NC

172161-1

● 3108B20-29S, 17-pin aviation connector of a bus type encoders (please don't connect anything to NC)
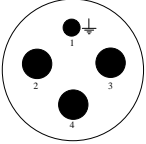
Pin	Signal	Diagram
A~F	NC	
G	0V	
H	+5V	
J	FG (shield ground)	
K	PS	
L	/PS	
M	NC	
N	NC	
P	NC	
R	NC	
S	BAT-	
T	BAT+	

5.1.2 Connectors of Motors
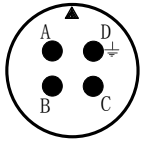
● XS16K4aP, 4-pin direct-insert connector

Pin	Signal	Diagram
1	⏚	
2	U	
3	V	
4	W	
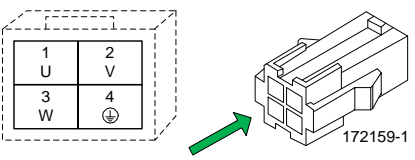
● YD28K4TSL, 4-pin aviation connector

Pin	Signal	Diagram
1	⏚	
2	U	
3	V	
4	W	

● CMS3108A18-10SI ,4-pin aviation connector

Pin	Signal	Diagram
A	U	
B	V	
C	W	
D	⏚	

● 172159-1, 4-pin connector

Pin	Signal	Diagram
1	U	
2	V	
3	W	
4	⏚	

- 3108B20-18S, 9-pin aviation connector of a motor with brake (please don't connect anything to NC)

Pin	Signal	Diagram
G	Brake +	
H	Brake -	
A	NC	
F	U	
I	V	
B	W	
E	⏚	
D	⏚	
C	NC	

- 3108B18-10S, 4-pin aviation connector

Pin	Signal	Diagram
A	U	
B	V	
C	W	
D	⏚	

5.1.3　Connectors of Brakes

- XS12K3P, 3-pin aviation connector of a power off brake

Pin	Signal	Diagram
1	Brake +	
2	Brake -	
3	NC	

● 172157-1, 2-pin connector of a power off brake

Pin	Signal	Diagram
1	Brake +	
2	Brake -	

● SC-CMV1-AP02C, 2-pin connector of a power off brake

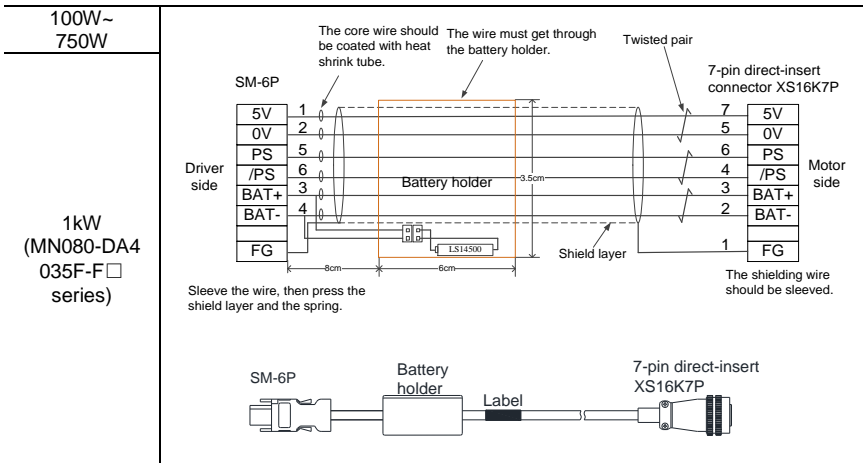| Pin	Signal	Diagram
1	Brake +	
2	Brake -	

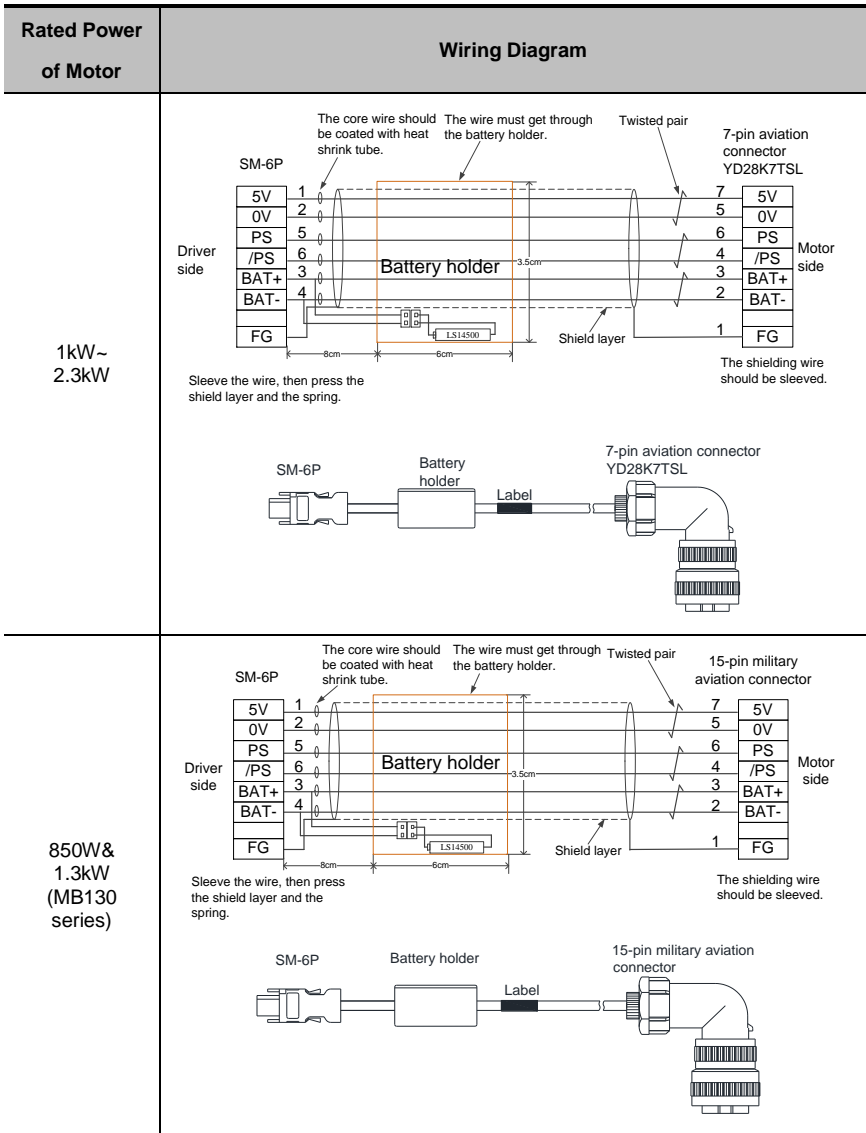## 5.2 Wiring Specifications for Drivers and MA/MB/MN/ME Motors

5.2.1 Wiring Diagrams of Encoders

Rated Power of Motor	Wiring Diagram

Wiring diagram of 17/23-bit absolute encoder

100W~ 750W	
1kW (MN080-DA4 035F-F□ series)	

Rated Power of Motor	Wiring Diagram
1kW~ 2.3kW	
850W& 1.3kW (MB130 series)	

Rated Power of Motor	Wiring Diagram

Wiring diagram of 17-digit incremental encoder

100W~ 750W 1kW (MN080-DA4 035F-F□ series)	
1kW~ 2.3kW	

For the 100W~750W / 1kW section:

SM-6P — Driver side

	SM-6P			7-pin direct-insert connector XS16K7P		Motor side
5V	1			7	5V	
0V	2			5	0V	
PS	5			6	PS	
/PS	6			4	/PS	
FG				1	FG	

The core wire should be coated with heat shrink tube.
Twisted pair
Shield layer
Sleeve the wire, then press the shield layer and the spring.
The shielding wire should be sleeved.

SM-6P   Label   7-pin direct-insert XS16K7P

For the 1kW~2.3kW section:

SM-6P — Driver side

	SM-6P			7-pin aviation connector YD28K7TSL		Motor side
5V	1			7	5V	
0V	2			5	0V	
PS	5			6	PS	
/PS	6			4	/PS	
FG				1	FG	

The core wire should be coated with heat shrink tube.
Twisted pair
Shield layer
Sleeve the wire, then press the shield layer and the spring.
The shielding wire should be sleeved.

SM-6P   Label   7-pin aviation connector YD28K7TSL

5.2.2 Wiring Diagrams of Motors

Rated Power of Motor	Wiring Diagram
100~400W (with brake)	
100~400W (without brake)	
750W (with brake)	
750W (without brake)	

Rated Power of Motor	Wiring Diagram
1kW~ 2.3kW (with brake)	
1kW~ 2.3kW (without brake)	
850W & 1300W (MB130 series) (with brake)	
850W & 1.3kW (MB130 series) (without brake)	

5.3 Wiring Specifications for Drivers and Panasonic A5/A5-Ⅱ Motors

5.3.1 Wiring Diagrams of Encoders

Rated power of motor	Wiring diagram

17-bit absolute encoder wiring diagram

400W~ 750W	

Rated power of motor	Wiring diagram
1kW~ 1.5kW	The core wire should be coated with heat shrink tube. The wire must get through the holder. Twisted pair 17-pin aviation connector 3108B20-29S SM-6P 5V — 1 — H — 5V 0V — 2 — G — 0V PS — 5 — K — PS /PS — 6 — L — /PS BAT+ — 3 — T — BAT+ BAT- — 4 — S — BAT- FG — J — FG Driver side / Motor side Battery holder ~3.5cm LS14500 Shield layer 8cm 6cm Sleeve the wire, then press the shield layer and the spring. The shielding wire should be sleeved. SM-6P Battery holder Label 17-pin aviation connector 3108B20-29S

20-bit incremental encoder wiring diagram

400W~ 750W	The core wire should be coated with heat shrink tube. Twisted pair SM-6P — 172160-1 5V — 1 — 4 — +5V 0V — 2 — 5 — 0V PS — 5 — 2 — PS /PS — 6 — 3 — /PS FG — 6 — FG Driver side / Motor side Shield layer Sleeve the wire, then press the shield layer and the spring. The shielding wire should be sleeved. SM-6P 172160-1

Rated power of motor	Wiring diagram
1kW~ 1.5kW	

5.3.2 Wiring Diagrams of Motors

Rated Power of Motor	Wiring diagram
400W (with brake)	
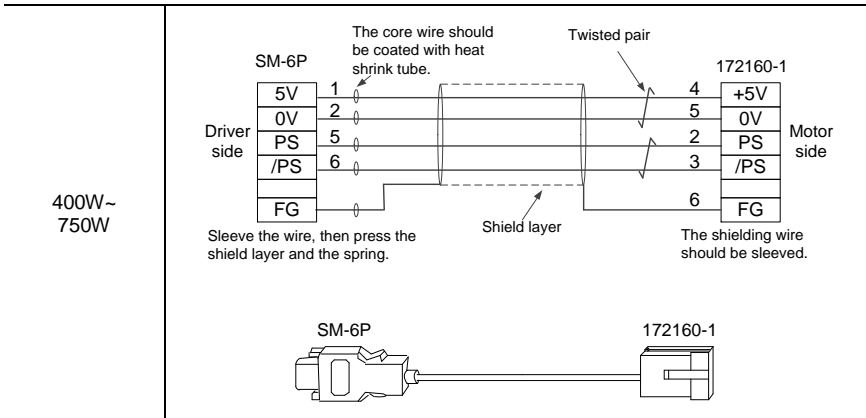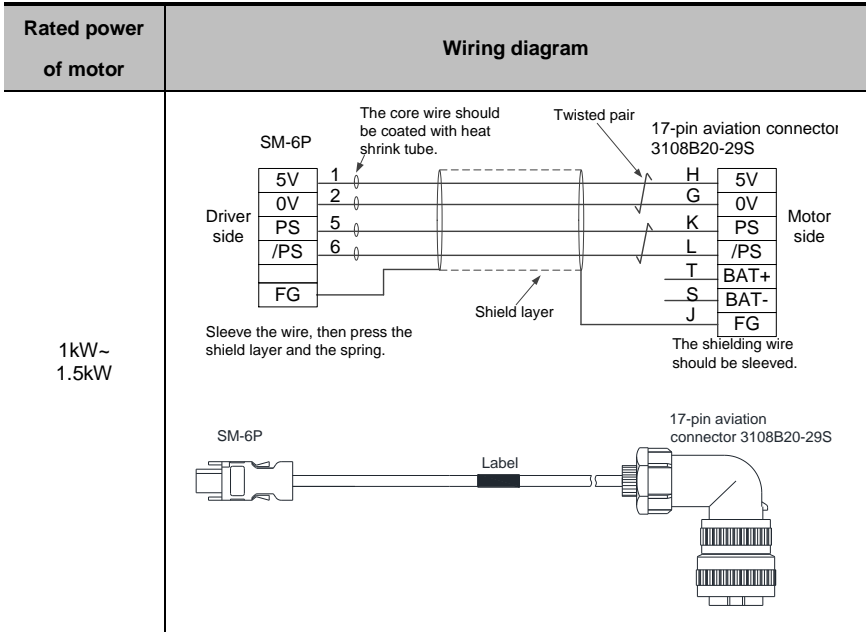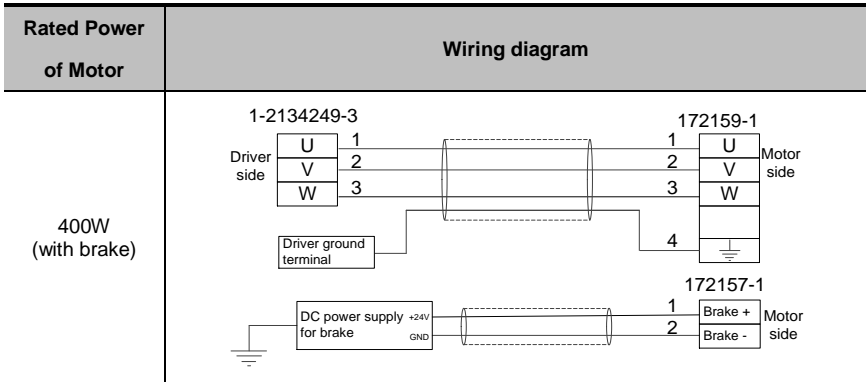
Rated Power of Motor	Wiring diagram
400W (without brake)	
750W (with brake)	
750W (without brake)	
1kW &1.5kW (with brake)	

Rated Power of Motor	Wiring diagram
1kW & 1.5kW (without brake)	
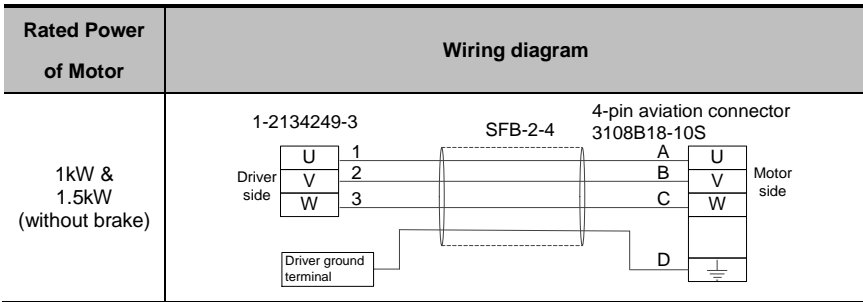
5.4 Wiring Specifications for Drivers and Panasonic A6 Motors

5.4.1 Wiring diagrams of Encoders

Motor rated power	Wiring diagram
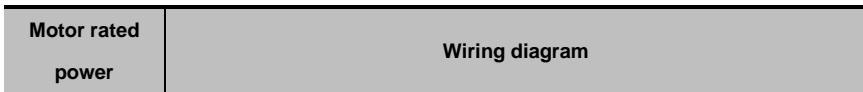
23-bit multi-circle absolute encoder wiring diagram

100W~ 750W (MHMF)	

Motor rated power	Wiring diagram
1kW~ 2kW (MHMF/MSMF /MDMF)	
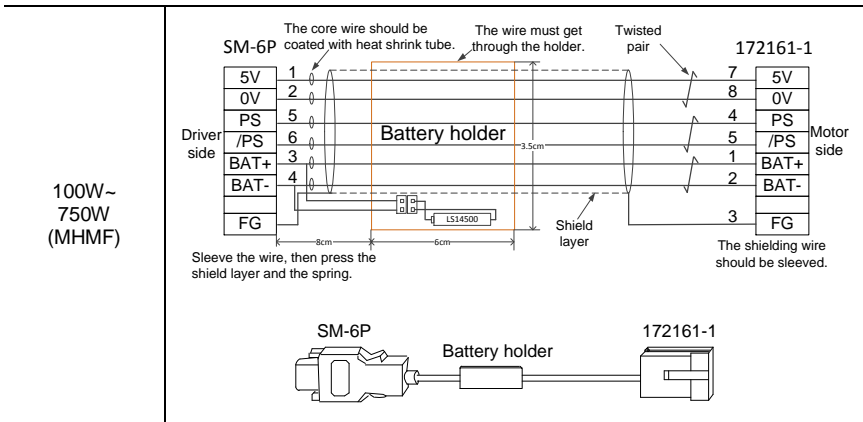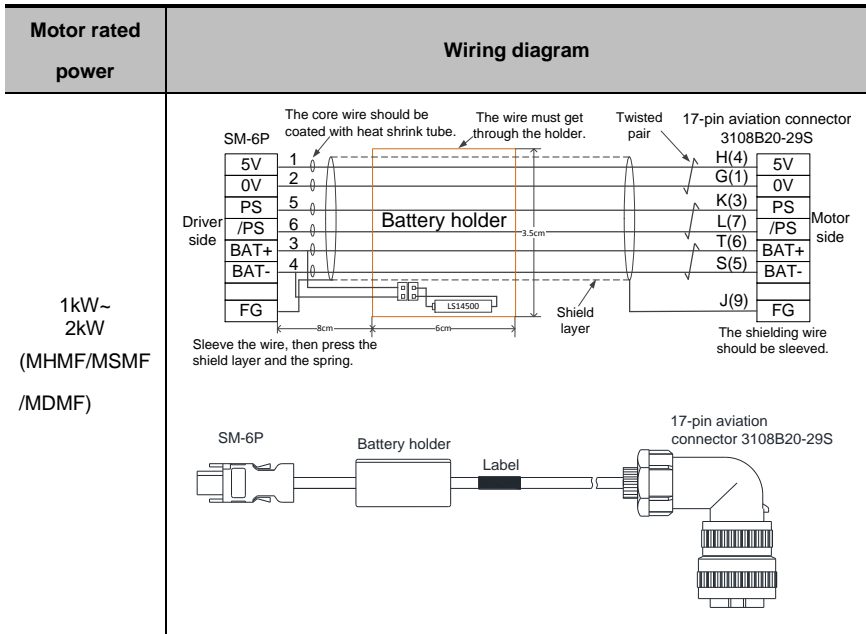
5.4.2   Wiring diagrams of Motors

Rated Power of Motor	Wiring diagram
100~750W (MHMF with brake)	

Rated Power of Motor	Wiring diagram
100W~750W (MHMF without brake)	
1kW~2kW (MHMF/MSMF /MDMF with brake)	
1kW~2kW (MHMF/MSMF /MDMF without brake)	

6 Lists of Error Codes

Error code	Content	Attribute		
		History	Clearable	Stop Immediately
Err 11.0	Control power under-voltage protection		●	
Err 12.0	Over-voltage protection	●	●	
Err 13.0	Main power under-voltage protection (PN)		●	
Err 13.1	Main power under-voltage protection (AC)		●	
Err 14.0	Over-current protection	●		
Err 14.1	IPM error protection	●		
Err 15.0	Over-heat protection	●		●
Err 16.0	Over-load protection	●	●	
Err 18.0	Regeneration over-load protection	●		●
Err 18.1	Regenerative transistor error protection	●		
Err 19.0	DB (Dynamic brake) over-load protection	●		
Err 21.0	Encoder communication disconnection error protection	●		
Err 21.1	Encoder communication error protection	●		
Err 23.0	Encoder communication data error protection	●		
Err 24.0	Positional deviation excess protection	●	●	●
Err 24.1	Velocity deviation excess protection	●	●	●

Error code	Content	Attribute		
		History	Clearable	Stop Immediately
Err 26.0	Over-speed protection	●	●	●
Err 26.1	2nd over-speed protection	●	●	
Err 27.0	Command pulse input frequency error protection	●	●	●
Err 27.1	Command pulse demultiplication frequency error protection	●	●	●
Err 28.0	Pulse regeneration limit protection	●	●	●
Err 29.0	Deviation count overflow protection	●	●	
Err 33.0	IF duplicated allocation error 1	●		
Err 33.1	IF duplicated allocation error 2	●		
Err 33.2	IF input function number error 1	●		
Err 33.3	IF input function number error 2	●		
Err 33.4	IF output function number error 1	●		
Err 34.0	Motor moveable range setup error protection	●	●	
Err 36.0 ~ Err 36.2	EEPROM parameter error protection			
Err 37.0 ~ Err 37.2	EEPROM code error protection			
Err 38.0	Driver inhibited input protection		●	●
Err 39.0	Analog input 1 excess protection	●	●	●
Err 39.1	Analog input 2 excess protection	●	●	●

Error code	Content	Attribute		
		History	Clearable	Stop Immediately
Err 40.0	Absolute encoder system power-off error protection	●	●	
Err 41.0	Absolute encoder count overflow error protection	●		
Err 42.0	Absolute encoder over-speed error protection	●	●	
Err 43.0	Encoder initial error protection	●		
Err 44.0	Absolute encoder single turn count error protection	●		
Err 45.0	Absolute encoder multi-turn count error protection	●		
Err 46.0	Absolute encoder over-heat error protection	●		
Err 47.0	Absolute encoder state error protection	●		
Err 48.0	Encoder Z-phase error protection	●		
Err 49.0	Encoder CS signal error protection	●		
Err 56.0	ABZ incremental encoder over-speed error protection	●		
Err 56.1	ABZ incremental encoder UVW error protection	●		
Err 56.2	ABZ incremental encoder ABZ error protection	●		
Err 57.0	Current sampling offset excess protection	●		
Err 57.1	Current gain diagnosis error protection	●		
Err 58.0	Chip work error protection	●		
Err 59.0	Due register time	●		
Err 59.1	Mismatching software version	●		

Error code	Content	Attribute		
		History	Clearable	Stop Immediately
Err 60.0	M-II communication ASIC fault 1	●		
Err 61.0	M-II communication ASIC fault 2	●		
Err 62.0	M-II internal synchronous error 1	●	●	
Err 63.0	M-II transfer cycle setup error	●	●	
Err 64.0	M-II synchronous error		●	
Err 64.1	M-II synchronous failure	●	●	
Err 65.0	M-II communication fault (receipt error)		●	
Err 65.1	M-II transfer cycle error (synchronous interval error)	●	●	
Err 87.0	Forced alarm input protection		●	●
Err 95.0 ~ Err 95.4	Motor automatic recognition error			
Other	Other error protection	●		

7 Driver Parameters

7.1 Parameter Setting

● **Setting via Driver Front Panel**

After setting a parameter, you should enter EEPROM write mode to save the setting; otherwise, the setting will restore to the previous value after driver restarts.

Parameter setting steps are as below.
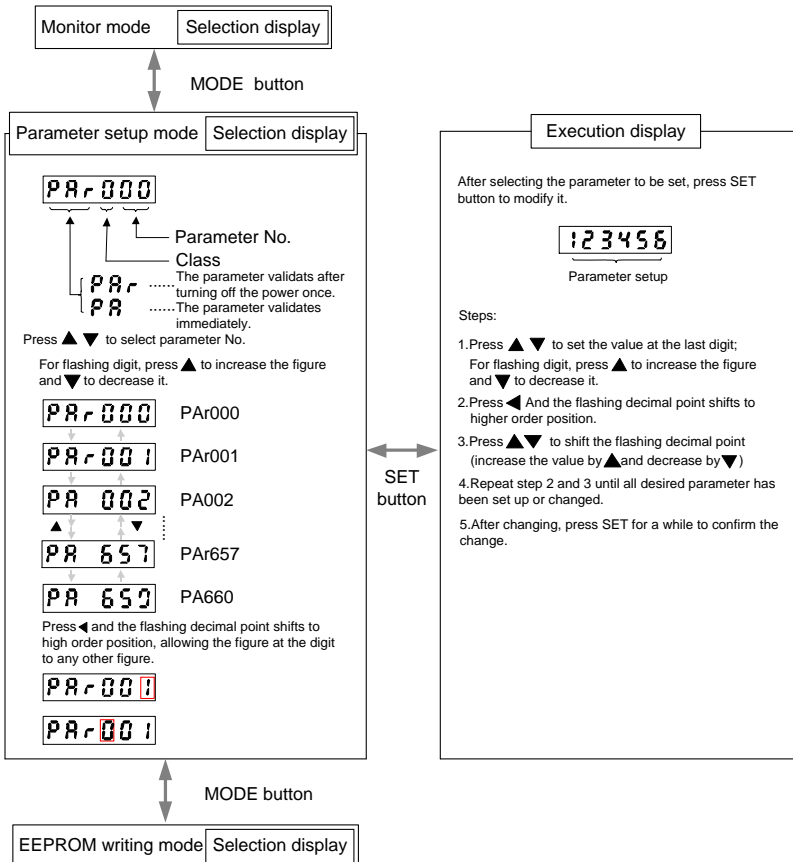
The writing method for EEPROM parameter is as below:

```
┌─────────────────────┬──────────┐
│  Param setup mode    │ Option   │
│                      │ display  │
└─────────────────────┴──────────┘
              │
            MODE
              ↓
```

| EEPROM write mode | Option display |

$EE.5Et$

After writing the parameter into the EEPROM mode, you should press SET to enter the execution display mode.

SET

Execution display

In about 5s after pressing ⎕ , [-] will keep increasing. Press ⎕ until [start] screen appears. Then writing starts as follows.

$EEP \quad -$

$EEP \quad --$

$------$

$StArt$ Writing starts

$Fin iSh$ $rESEt$

Writing ends

$Error$

Error

Caution

1.[start] screen lasts for a short period and may not be observed.

2. $rESEt$ screen will appear after parameter writing ends. The parameter can only take effect after power-off and restart; otherwise, the modified parameter can't be saved.

1. Press MODE, and select EEPROM write mode $EE.5Et$;

2. Press SET. Then $EEP \quad -$ will appear;

3. Keep pressing ▲ for about 5s. Then $EEP \quad -$ to $EEP \quad --$ will appear;

4. When $Fin iSh$ appears, the parameter is saved. If $Error$ appear, the writing is invalid; and you should re-set the parameter.

● **Setting via iMotion Software**

1 After connecting the driver, please click "Parameter" and enter the "Parameter" interface.

2 Click "Value" to modify the parameter directly.
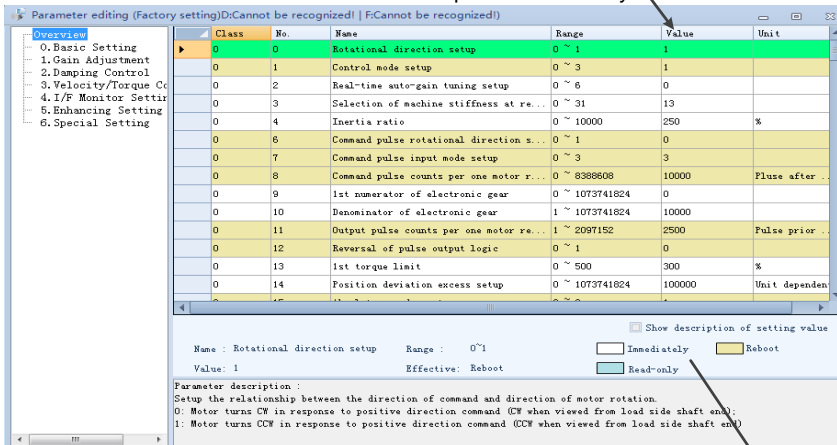
Tip: compare the background colors of the parameters to know their attribute.

3 After the "Reboot" parameter is modified, a prompt box will pop out. Click "OK".

7.2 List of Analog • Pulse Type Driver Parameters

In the following list, modification to parameters with * will take effect after reboot; while modification to parameters without * will take effect immediately.

Param No.	Name	Range	Unit	Default
Pr000*	Rotational direction setup	0~1	—	1
Pr001*	Control mode setup	0~3	—	1
Pr002	Real-time auto-gain tuning setup	0~6	—	0
Pr003	Real-time auto tuning mechanical stiffness setup	0~31	—	13
Pr004	Inertia ratio	0~10000	%	250
Pr006*	Command pulse rotation direction setup	0~1	—	0
Pr007*	Command pulse input mode setup	0~3	—	3
Pr008*	Command pulse counts per one motor revolution	0~8388608	pulse	10000
Pr009	1st numerator of electronic gear	0~1073741824	—	0
Pr010	Denominator of electronic gear	1~1073741824	—	10000
Pr011*	Output pulse counts per one motor revolution	1~2097152	pulse	2500
Pr012*	Reversal of pulse output logic	0~1	—	0
Pr013	1st torque limit	0~500	%	300
Pr014	Position deviation excess setup	0~1073741824	Unit-dependent	100000
Pr015*	Absolute encoder setup	0~2	—	0
Pr016*	External regenerative resistor setup	0~3	—	3
Pr017*	Load factor of external regenerative resistor selection	0~4	—	0
Pr100	1st gain of position loop	0~30000	0.1/S	480
Pr101	1st gain of velocity loop	1~32767	0.1Hz	270
Pr102	1st time constant of velocity loop integration	1~10000	0.1ms	210
Pr103	1st filter of speed detection	0~10000	0.01ms	0
Pr104	1st torque filter	0~2500	0.01ms	84
Pr105	2nd gain of position loop	0~30000	0.1/s	570
Pr106	2nd gain of velocity loop	1~32767	0.1Hz	270

Param No.	Name	Range	Unit	Default
Pr107	2nd time constant of velocity loop integration	1~10000	0.1ms	10000
Pr108	2nd filter of speed detection	0~10000	0.01ms	0
Pr109	2nd torque filter	0~2500	0.01ms	84
Pr110	Velocity feed forward gain	0~1000	0.10%	300
Pr111	Velocity feed forward filter	0~6400	0.01ms	50
Pr112	Torque feed forward gain	0~1000	0.1%	0
Pr113	Torque feed forward filter	0~6400	0.01ms	0
Pr114	2nd gain setup	0~1	—	1
Pr115	Position control switching mode	0~10	—	0
Pr116	Position control switching delay time	0~10000	0.1ms	50
Pr117	Position control switching level	0~20000	Mode-dependent	50
Pr118	Position control switching hysteresis	0~20000	Mode-dependent	33
Pr119	Position gain switching time	0~10000	0.1ms	33
Pr120	Velocity control switching mode	0~5	—	0
Pr121	Velocity control switching delay time	0~10000	0.1ms	0
Pr122	Velocity control switching level	0~20000	Mode-dependent	0
Pr123	Velocity control switching hysteresis	0~20000	Mode-dependent	0
Pr124	Torque control switching mode	0~3	—	0
Pr125	Torque control switching delay time	0~10000	0.1ms	0
Pr126	Torque control switching level	0~20000	Mode-dependent	0
Pr127	Torque control switching hysteresis	0~20000	Mode-dependent	0
Pr200	Adaptive filter mode setup	0~4	—	0
Pr201	1st notch frequency	50~5000	Hz	5000
Pr202	1st notch width selection	0~20	—	2
Pr203	1st notch depth selection	0~99	—	0
Pr204	2nd notch frequency	50~5000	Hz	5000
Pr205	2nd notch width selection	0~20	—	2
Pr206	2nd notch depth selection	0~99	—	0
Pr207	3rd notch frequency	50~5000	Hz	5000
Pr208	3rd notch width selection	0~20	—	2
Pr209	3rd notch depth selection	0~99	—	0

Param No.	Name	Range	Unit	Default
Pr210	4th notch frequency	50~5000	Hz	5000
Pr211	4th notch width selection	0~20	—	2
Pr212	4th notch depth selection	0~99	—	0
Pr214	1st damping frequency	0~2000	0.1Hz	0
Pr215	1st damping filter setup	0~500	0.001	0
Pr216	2nd damping frequency	0~2000	0.1Hz	0
Pr217	2nd damping filter setup	0~500	0.001	0
Pr218	3rd damping frequency	0~2000	0.1Hz	0
Pr219	3rd damping filter setup	0~500	0.001	0
Pr220	4th damping frequency	0~2000	0.1Hz	0
Pr221	4th damping filter setup	0~500	0.001	0
Pr222	Positional command smoothing filter	0~32767	0.1ms	0
Pr223	Positional command FIR filter	0~1000	0.1ms	0
Pr300	Switching between internal and external speed setup	0~3	—	1
Pr301	Speed command direction selection	0~1	—	0
Pr302	Speed command input gain	10~2000	(r/min)/V	500
Pr303	Speed command input reverse	0~1	—	0
Pr304	1st speed of speed setup	-20000~20000	r/min	0
Pr305	2nd speed of speed setup	-20000~20000	r/min	0
Pr306	3rd speed of speed setup	-20000~20000	r/min	0
Pr307	4th speed of speed setup	-20000~20000	r/min	0
Pr308	5th speed of speed setup	-20000~20000	r/min	0
Pr309	6th speed of speed setup	-20000~20000	r/min	0
Pr310	7th speed of speed setup	-20000~20000	r/min	0
Pr311	8th speed of speed setup	-20000~20000	r/min	0
Pr312	Acceleration time setup	0~10000	ms/(1000r/min)	0
Pr313	Deceleration time setup	0~10000	ms/(1000r/min)	0
Pr314	Sigmoid acceleration/deceleration time setup	0~10000	ms	0
Pr315	Speed-zero clamp function selection	0~3	—	0
Pr316	Speed-zero clamp level	10~20000	r/min	30
Pr317	Torque command selection	0~2	—	0
Pr318	Torque command direction	0~1	—	0

Param No.	Name	Range	Unit	Default
	selection			
Pr319	Input gain of torque command	10~100	0.1V/100%	30
Pr320	Input reversal of torque command	0~1	—	0
Pr321	Speed limit value 1	0~20000	r/min	0
Pr322	Speed limit value 2	0~20000	r/min	0
Pr400*	SI1 input selection	0~00FFFFFFh	—	00000000h (0)
Pr401*	SI2 input selection	0~00FFFFFFh	—	00000E00h (3584)
Pr402*	SI3 input selection	0~00FFFFFFh	—	00000F00h (3840)
Pr403*	SI4 input selection	0~00FFFFFFh	—	00020202h (131586)
Pr404*	SI5 input selection	0~00FFFFFFh	—	00010101h (65793)
Pr405*	SI6 input selection	0~00FFFFFFh	—	00111108h (1118472)
Pr406*	SI7 input selection	0~00FFFFFFh	—	00030303h (197379)
Pr407*	SI8 input selection	0~00FFFFFFh	—	00000007h (7)
Pr408*	SO1 output selection	0~00FFFFFFh	—	00030303h (197379)
Pr409*	SO2 output selection	0~00FFFFFFh	—	00020202h (131586)
Pr410*	SO3 output selection	0~00FFFFFFh	—	00010101h (65793)
Pr411*	SO4 output selection	0~00FFFFFFh	—	00050504h (328964)
Pr412*	SO5 output selection	0~00FFFFFFh	—	00070707h (460551)
Pr413*	SO6 output selection	0~00FFFFFFh	—	00060606h (394758)
Pr414*	SO7 output selection	0~00FFFFFFh	—	00080808h (526344)
Pr421	Analog input 1 offset setup	-342~342	5.86mV	0
Pr422	Analog input 1 filter	0~6400	0.01ms	0
Pr423	Analog input 1 over-voltage setup	0~100	0.1V	0
Pr424	Analog input 2 offset setup	-342~342	5.86mV	0

Param No.	Name	Range	Unit	Default
Pr425	Analog input 2 filter	0~6400	0.01ms	0
Pr426	Analog input 2 over-voltage setup	0~100	0.1V	0
Pr430	Positioning complete (In-position) range	0~262144	Unit-dependent	10
Pr431	Positioning complete (In-position) output setup	0~3	—	0
Pr432	INP hold time	0~30000	1ms	0
Pr433	Zero-speed	10~20000	r/min	50
Pr434	Speed coincidence range	10~20000	r/min	50
Pr435	At-speed (speed arrival)	10~20000	r/min	1000
Pr436	Mechanical brake action at stalling setup	0~10000	1ms	0
Pr437	Mechanical brake action at running setup	0~10000	ms	0
Pr438	Brake release speed setup	30~3000	r/min	30
Pr439	Selection 1 of alarm output	0~10	—	0
Pr440	Selection 2 of alarm output	0~10	—	0
Pr441	2nd positioning complete (In-position) range	0~262144	Command unit	10
Pr500	Numerator of 2nd electronic gear	0~1073741824	—	0
Pr501	Numerator of 3rd electronic gear	0~1073741824	—	0
Pr502	Numerator of 4th electronic gear	0~1073741824	—	0
Pr503*	Denominator of pulse output division	0~8388608	—	0
Pr504*	Over-travel inhibit input setup	0~2	—	1
Pr505*	Sequence of over-travel inhibit	0~2	—	0
Pr506	Sequence at Servo-OFF	0~9	—	0
Pr507	Sequence of main power OFF	0~9	—	0
Pr508	LV trip selection at main power OFF	0~1	—	1
Pr509	Detection time of main power OFF	70~2000	1ms	70
Pr510	Sequence at alarm	0~7	—	0
Pr511	Torque setup for emergency stop	0~500	%	0
Pr512	Over-load level setup	0~500	%	0
Pr513	Over-speed level setup	0~20000	r/min	0
Pr514	Motor working range setup	0~1000	0.1 revolution	10

Param No.	Name	Range	Unit	Default
Pr516*	Alarm clearance input setup	0~1	—	0
Pr518	Invalidation setup of command pulse input	0~1	—	1
Pr520*	Position setup unit selection	0~1	—	0
Pr521	Selection of torque limit	0~6	—	1
Pr522	2nd torque limit	0~500	%	500
Pr523	Torque limit switching setup 1	0~4000	ms/100%	0
Pr524	Torque limit switching setup 2	0~4000	ms/100%	0
Pr525	Positive direction torque limit at external input	0~500	%	500
Pr526	Negative direction torque limit at external input	0~500	%	500
Pr527	Analog torque limit input gain	10~100	0.1V/100%	30
Pr528*	LED initial status	0~36	—	1
Pr533*	Pulse regenerative output limit setup	0~1	—	0
Pr535*	Lock front panel setup	0~1	—	0
Pr601	Torque command setup	-500~500	%	0
Pr602	Velocity deviation excess setup	0~100	r/min	0
Pr604	JOG trial run command speed	0~500	r/min	300
Pr607	Torque command additional value	-100~100	%	0
Pr608	Positive direction torque compensation value	-100~100	%	0
Pr609	Negative direction torque compensation value	-100~100	%	0
Pr611	Current response setup	20~500	%	100
Pr612	Positive/negative torque compensation filter	0~3000	0.01ms	0
Pr615	2nd over-speed level setup	0~20000	r/min	0
Pr617*	Front panel parameter write selection	0~1	—	0
Pr623	Disturbance torque compensating gain	-100~100	%	0
Pr624	Disturbance observer filter	0~2500	0.01ms	2000
Pr627*	Alarm latch time selection	0~10	s	5
Pr628	Auto resonance detection level	30~1000	%	100
Pr630	Damping filter ON/OFF switch	0~2	—	0
Pr632	Real-time auto-tuning customer	-32767~32767	—	0

Param No.	Name	Range	Unit	Default
	setup			
Pr633	Friction compensation valid speed setup	0~1000	0.1rpm	0
Pr638*	Alarm mask setup	-32767~32767	—	0
Pr639	Lambda communication ON/OFF signal	0~1	—	1

7.3 List of M-Ⅱ Bus Type Driver Parameters

In the following list, modification to parameters with * will take effect after reboot; while modification to parameters without * will take effect immediately.

Param No.	Name	Range	Unit	Default
Pr000*	Rotational direction setup	0~1	—	1
Pr001*	Control mode setup	0~3	—	1
Pr002	Real-time auto-gain tuning setup	0~6	—	0
Pr003	Real-time auto tuning mechanical stiffness setup	0~31	—	13
Pr004	Inertia ratio	0~10000	%	250
Pr008*	Command pulse counts per one motor revolution	0~8388608	pulse	0
Pr009	1st numerator of electronic gear	0~1073741824	—	1
Pr010	Denominator of electronic gear	1~1073741824	—	1
Pr011*	Output pulse counts per one motor revolution	1~2097152	pulse	2500
Pr012*	Reversal of pulse output logic	0~1	—	0
Pr013	1st torque limit	0~500	%	300
Pr014	Position deviation excess setup	0~1073741824	Command unit	35000000
Pr015*	Absolute encoder setup	0~2	—	0
Pr016*	External regenerative resistor setup	0~3	—	0

Param No.	Name	Range	Unit	Default
Pr017*	Load factor of external regenerative resistor selection	0~4	—	0
Pr100	1st gain of position loop	0~30000	0.1/s	480
Pr101	1st gain of velocity loop	1~32767	0.1Hz	270
Pr102	1st time constant of velocity loop integration	1~10000	0.1ms	210
Pr103	1st filter of speed detection	0~10000	0.01ms	0
Pr104	1st torque filter	0~2500	0.01ms	84
Pr105	2nd gain of position loop	0~30000	0.1/s	570
Pr106	2nd gain of velocity loop	1~32767	0.1Hz	270
Pr107	2nd time constant of velocity loop integration	1~10000	0.1ms	10000
Pr108	2nd filter of speed detection	0~10000	0.01ms	0
Pr109	2nd torque filter	0~2500	0.01ms	84
Pr110	Velocity feed forward gain	0~1000	0.001	300
Pr111	Velocity feed forward filter	0~6400	0.01ms	200
Pr112	Torque feed forward gain	0~1000	0.001	0
Pr113	Torque feed forward filter	0~6400	0.01ms	0
Pr114	2nd gain setup	0~1	—	1
Pr115	Position control switching mode	0~10	—	0
Pr116	Position control switching delay time	0~10000	0.1ms	50
Pr117	Position control switching level	0~20000	Mode-dependent	50
Pr118	Position control switching hysteresis	0~20000	Mode-dependent	33
Pr119	Position gain switching time	0~10000	0.1ms	33
Pr120	Velocity control switching mode	0~5	—	0
Pr121	Velocity control switching delay time	0~10000	0.1ms	0
Pr122	Velocity control switching level	0~20000	Mode-dependent	0
Pr123	Velocity control switching hysteresis	0~20000	Mode-dependent	0
Pr124	Torque control switching mode	0~3	—	0

Param No.	Name	Range	Unit	Default
Pr125	Torque control switching delay time	0~10000	0.1ms	0
Pr126	Torque control switching level	0~20000	Mode-dependent	0
Pr127	Torque control switching hysteresis	0~20000	Mode-dependent	0
Pr200	Adaptive filter mode setup	0~4	—	0
Pr201	1st notch frequency	50~5000	Hz	5000
Pr202	1st notch width selection	0~20	—	2
Pr203	1st notch depth selection	0~99	—	0
Pr204	2nd notch frequency	50~5000	Hz	5000
Pr205	2nd notch width selection	0~20	—	2
Pr206	2nd notch depth selection	0~99	—	0
Pr207	3rd notch frequency	50~5000	Hz	5000
Pr208	3rd notch width selection	0~20	—	2
Pr209	3rd notch depth selection	0~99	—	0
Pr210	4th notch frequency	50~5000	Hz	5000
Pr211	4th notch width selection	0~20	—	2
Pr212	4th notch depth selection	0~99	—	0
Pr214	1st damping frequency	0~2000	0.1Hz	0
Pr215	1st damping filter setup	0~500	0.001	0
Pr216	2nd damping frequency	0~2000	0.1Hz	0
Pr217	2nd damping filter setup	0~500	0.001	0
Pr218	3rd damping frequency	0~2000	0.1Hz	0
Pr219	3rd damping filter setup	0~500	0.001	0
Pr220	4th damping frequency	0~2000	0.1Hz	0
Pr221	4th damping filter setup	0~500	0.001	0
Pr222	Positional command smoothing filter	0~32767	0.1ms	0
Pr223	Positional command FIR filter	0~1000	0.1ms	0
Pr300	Switching between internal and external speed setup	0~3	—	1
Pr301	Speed command direction selection	0~1	—	0
Pr304	1st speed of speed setup	-20000~20000	r/min	0
Pr305	2nd speed of speed setup	-20000~20000	r/min	0
Pr306	3rd speed of speed setup	-20000~20000	r/min	0

Param No.	Name	Range	Unit	Default
Pr307	4th speed of speed setup	-20000~20000	r/min	0
Pr308	5th speed of speed setup	-20000~20000	r/min	0
Pr309	6th speed of speed setup	-20000~20000	r/min	0
Pr310	7th speed of speed setup	-20000~20000	r/min	0
Pr311	8th speed of speed setup	-20000~20000	r/min	0
Pr312	Acceleration time setup	0~10000	ms/(1000r/min)	0
Pr313	Deceleration time setup	0~10000	ms/(1000r/min)	0
Pr314	Sigmoid acceleration/deceleration time setup	0~1000	ms	0
Pr315	Speed-zero clamp function selection	0~3	—	0
Pr316	Speed-zero clamp level	10~20000	r/min	30
Pr317	Torque command selection	0~2	—	0
Pr318	Torque command direction selection	0~1	—	0
Pr321	Speed limit value 1	0~20000	r/min	0
Pr322	Speed limit value 2	0~20000	r/min	0
Pr400*	SI1 input selection	0~00FFFFFFh	—	002E2E2EH (3026478)
Pr401*	SI2 input selection	0~00FFFFFFh	—	00818181H (8487297)
Pr402*	SI3 input selection	0~00FFFFFFh	—	00828282H (8553090)
Pr403*	SI4 input selection	0~00FFFFFFh	—	00222222H (2236962)
Pr404*	SI5 input selection	0~00FFFFFFh	—	00202020H (2105376)
Pr405*	SI6 input selection	0~00FFFFFFh	—	00212121H (2171169)
Pr406*	SI7 input selection	0~00FFFFFFh	—	002B2B2BH (2829099)
Pr408*	SO1 output selection	0~00FFFFFFh	—	00010101H (65793)
Pr409*	SO2 output selection	0~00FFFFFFh	—	00030303H (197379)
Pr410*	SO3 output selection	0~00FFFFFFh	—	00000004H (4)
Pr411*	SO4 output selection	0~00FFFFFFh	—	00070707H (460551)

Param No.	Name	Range	Unit	Default
Pr430	Positioning complete (In-position) range	0~262144	Command unit	10
Pr431	Positioning complete (In-position) output setup	0~3	—	0
Pr432	INP hold time	0~30000	ms	0
Pr433	Zero-speed	10~20000	r/min	50
Pr434	Speed coincidence range	10~20000	r/min	50
Pr435	At-speed (speed arrival)	10~20000	r/min	1000
Pr436	Mechanical brake action at stalling setup	0~10000	ms	0
Pr437	Mechanical brake action at running setup	0~10000	ms	0
Pr438	Brake release speed setup	30~3000	r/min	30
Pr439	Selection 1 of alarm output	0~16	—	0
Pr440	Selection 2 of alarm output	0~16	—	0
Pr441	2nd positioning complete (In-position) range	0~262144	Command unit	10
Pr500	Numerator of 2nd electronic gear	0~1073741824	—	0
Pr501	Numerator of 3rd electronic gear	0~1073741824	—	0
Pr502	Numerator of 4th electronic gear	0~1073741824	—	0
Pr503*	Denominator of pulse output division	0~8388608	—	0
Pr504*	Over-travel inhibit input setup	0~2	—	1
Pr505*	Sequence of over-travel inhibit	0~2	—	0
Pr506	Sequence at Servo-OFF	0~9	—	0
Pr507	Sequence of main power OFF	0~9	—	0
Pr508	LV trip selection at main power OFF	0~1	—	1
Pr509*	Detection time of main power OFF	70~2000	ms	70
Pr510	Sequence at alarm	0~7	—	0
Pr511	Torque setup for emergency stop	0~500	%	0
Pr512	Over-load level setup	0~500	%	0

Param No.	Name	Range	Unit	Default
Pr513	Over-speed level setup	0~20000	r/min	0
Pr514	Motor working range setup	0~1000	0.1 revolution	10
Pr516*	Alarm clear input setup	0~1	—	0
Pr520*	Position setup unit selection	0~1	—	0
Pr521	Selection of torque limit	0~6	—	1
Pr522	2nd torque limit	0~500	%	500
Pr523	Torque limit switching setup 1	0~4000	ms/100%	0
Pr524	Torque limit switching setup 2	0~4000	ms/100%	0
Pr525	Positive direction torque limit at external input	0~500	%	500
Pr526	Negative direction torque limit at external input	0~500	%	500
Pr528*	LED initial status	0~36	—	1
Pr533*	Pulse regenerative output limit setup	0~1	—	0
Pr535*	Lock front panel setup	0~1	—	0
Pr601	Torque command setup	-500~500	%	0
Pr602	Velocity deviation excess setup	0~100	r/min	0
Pr604	JOG trial run command speed	0~500	r/min	300
Pr607	Torque command additional value	-100~100	%	0
Pr608	Positive direction torque compensation value	-100~100	%	0
Pr609	Negative direction torque compensation value	-100~100	%	0
Pr611	Current response setup	20~500	%	100
Pr612	Positive/negative torque compensation filter	0~3000	0.01ms	0
Pr615	2nd over-speed level setup	0~20000	r/min	0
Pr617*	Front panel parameter write selection	0~1	—	0
Pr623	Disturbance torque compensating gain	-100~100	%	0
Pr624	Disturbance observer filter	0~2500	0.01ms	2000
Pr627*	Alarm latch time selection	0~10	s	5

Param No.	Name	Range	Unit	Default
Pr628	Auto resonance detection level	30~1000	%	100
Pr630	Damping filter ON/OFF switch	0~2	—	0
Pr632	Real-time auto-tuning customer setup	-32767~32767	—	0
Pr633	Friction compensation valid speed setup	0~1000	0.1rpm	0
Pr638*	Alarm mask setup	-32768~32767	—	0
Pr640	Absolute type origin position deviation	-1073741823~ 1073741823	Command unit	0