Preface

Main Contents

- 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 WSDA series WISE servo drivers. Please refer to the following table.

Product Model	Remarks
	It includes two types: MECHATROLINK-II fieldbus type (hereinafter abbreviated as M-II, M2) and Analog • Pulse type.
servo driver	At present, there are six models: WSDA-1R2 (100W); WSDA-2R8 (400W); WSDA-5R0 (750W); WSDA-6R8 (1.0kW); WSDA-110 (1.5kW); WSDA-140 (2.5kW).

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Revision History

Date	Edition	Revision Contents	
2018.05	R1	Released for the first time.	

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
•	 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
•	 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 = 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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1 Basic Information

1.1 Nameplate & Model

See figure below for nameplate specifications.



See figure below for model specifications.

	<u>WSDA</u> ①	<u>2R8</u> ②	2 ③	<u>OP</u> ④	<u>S</u>	<u>B</u> ©
① Produc	t			4	Interf	ace type
Symbol	Spec			Sy	/mbol	Spec.
WSDV	V seri	ie			0P	Pulse train command
WSDA	A seri	ie			AP	Analog voltage · pulse train command
					M2	M-II fieldbus type
2 Rated	output power					
Symbol	Spec. (I	kW)		5	Enco	der feedback type
1R2	0.1			Sy	/mbol	Spec.
2R8	0.4				S	Serial communication encoder
5R0	0.75	5				
6R8	1.0			_		
110	1.5			(6)	Moto	rtype
140	2.5			S	ymbol	Spec.
					В	Rotary motor
③ Voltag	e				L	Linear motor
Symbol	Spec	C.				
2	200	V				

1.2 Unpacking Checking

Do unpacking inspection as follows:

- Check product model on the nameplate, and make sure it is exactly what you have ordered.
- Check if there is damage or scratch on the appearance.
- Check if any screws have been loosen or fallen.
- Check if all components have been delivered.

For an analog • pulse type WISE servo driver, all components of the product are:

- WISE WSDA series driver (Analog Pulse type)
- Power cable
- Connector of the regenerative resistor or the motor
- IO communication cable
- Connector of the encoder
- WISE WSDA Series Servo Driver Guide

For a M-II type WISE servo driver, all component of the product are:

- WSDA series WISE driver (M-II type)
- Power cable
- Connector of the regenerative resistor or the motor
- M-II communication cable
- Terminal resistance
- Connector of the encoder
- WISE WSDA Series Servo Driver Guide

1.3 Operation Mode

WISE servo driver supports three control modes.

Position control	In this mode, the driver receives positional commands,		
	and makes the motor rotate to the target position.		
Velocity control	In this mode, the driver receives velocity commands, and makes the motor speed up to the target velocity.		
Torque control	In this mode, the driver receives torque commands, and		
	makes the motor rotate to the target torque.		

The operation mode is decided by parameter Pr001. Once Pr001 is modified, please restart the driver to validate it.

See table below for relationship among control modes, setting value of parameter Pr001 and types of the servo driver.

Control Mode	Pr001 Value	Analog • Pulse Type Driver	M-II Type Driver
Position control (P)	1	The command is transmitted through CN3, in forms of pulse.	The command is transmitted through M-II command, in forms of digital.
Velocity control (S)	2	The command is provided by analog input or 8 groups of internal registers.	Not available at present
Torque control (T)	3	The command is provided by analog input or 8 groups of internal registers.	Not available at present

1.4 Product Mounting

1.4.1 Mounting Diagram

When several servo drivers are installed side by side in a control must be placed as





Fig. 1-1 Side-by-side installation diagram (M-II Bus Type)



Fig 1-1 Side-by-side installation diagram (Analog • Pulse Type)

• Installation orientation

To install correctly, do the following:

1. Install driver perpendicularly to the wall so that the display panel faces to operator, as shown in Fig. 1-2.



Fig. 1-2 Installation orientation

2. Secure the driver firmly on the wall via mounting holes, and cool it by cooling fans or nature convection.

• Cooling and Convection

When installing drivers side by side, you should pay attention to the following:

- Provide at least 10mm between and at least 50mm above and below each driver, and install cooling fans above them.
- To avoid high ambient temperature at part and maintain even temperature inside the control panel, do exactly as the environment requirements in the control panel shows:

- ✓ Ambient temperature: 0~+55[°]C (no condensation and freezing);
- ✓ Humidity: 90% RH or less (no freezing or frost);
- ✓ Ambient temperature for long-term reliability: ≤45°C.

1.4.2 Installation Dimensions

See following figure for diagram of mounting holes:



See table below for installation dimensions of different driver models:

Driver Medel		Size	(mm)		Sorow Sizo	Scrow No.
Driver model	А	в	С	D	Screw Size	Screw NO.
WSDA-1R2	160	150	40	30.5	M4	2
WSDA-2R8	100	100	10	00.0		-
WSDA-5R0	160	150	70	58	M4	3
WSDA-6R8						
WSDA-110	160	150	80	70	M4	4
WSDA-140	100					

1.5 Wiring

1.5.1 Wiring Diagram of Analog • Pulse Type Driver







CAUTION

- 1) When the driver externally wires 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 status.
- Please install the regenerative resistor on non-combustible substance such as metal.

2 Knowing About Front Panel

2.1 Structure of Front Panel

See figure below for structure of the front panel of WSDA series servo driver. Note the differences between analog • pulse type and M-II type.



Analog-Pulse type

Fig. 2-1 Front panel of WSDA series servo driver

2.2 Display and Operation Buttons

See figure below for the LED display and operation buttons.



An example of typical operation is as follows:

- 1. Turn on the power.
- 2. Press [SET] button to switch to "SELECT" status.
- 3. Press [MODE] button to switch among operating modes.
- 4. Press arrow buttons to switch among the items.
- 5. Press [SET] button to modify the setting.

2.3 Main Circuit Terminals

The main circuit terminals of analog ${\scriptstyle \bullet}$ pulse type driver are the same as those of M- $\rm II\,$ 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 ~ 240V^{+10%}_{-15%}, 50/60Hz 	

Terminal	Name	Specifications
L1C/L2C	Control power input terminal	Single-phase200~240V $^{+10\%}_{-15\%}$, 50/60Hz
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.
в1, ⊖	Servo DC mother line terminal	Used to connect among several drivers.
U/V/W	Servo driver terminal	Used to connect with the servo driver.
Ð	GND (2)	Used to connect with power supply ground line.

2.4 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, parameter commissioning, gain adjustment and other operations can be conducted on PC.

To get *iMotion* software, you can:

- Contact the manufacturer.
- Download from Weihong official website: www.weihong.com.cn/en/.

2.5 CN2 Terminals (I/O Signal Interface)

Analog • Pulse Type Driver

The CN2 terminal is not available for analog • pulse type driver.

• M-II Bus Type Driver

The CN2 terminal is the connector for fieldbus, which connects the fieldbus with terminal resistor.

See Fig. 2-2 for its wiring diagram.



Fig. 2-2 Wiring diagram of CN2 Terminals for M-II bus type driver

2.6 CN3 Terminals

Analog • Pulse Type Driver

The CN3 terminal contains input and output signals. See Fig. 2-3 for the default allocation.



Fig. 2-3 Wiring diagram of CN3 Terminals for analog •pulse type driver

Note:

- Pins 12, 20, 31 are empty and unavailable.
- Pins 4, 19 are fixed to ALM signal output.
- Following signals can be allocated to the pins as needed.

- ✓ Input signals: 13(SI8), 14(SI4), 15(SI1), 29(SI6), 30(SI2), 42(SI7), 43(SI5), 44(SI3).
- ✓ Output signals: 1/16(SO7), 2/17(SO5), 3/18(SO1), 32(SO6), 34(SO4), 35(SO2).

• M-II Bus Type Driver

The CN3 terminal is not available for M-II type servo driver.

2.7 CN4 Terminals

The CN4 terminal is for encoder of the motor. Following encoders are supported for WSDA series servo driver.

- Serial 17-bit encoder
- Serial 23-bit encoder
- Serial 20-bit encoder

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

Pin	Signal	Remark
1	PS	Serial signal +
2	/PS	Serial signal -
3	BAT+	Battery +
4	BAT-	Battery -
5	SO1-(BRK-OFF)	—
6	—	—
7	+5V	+5V power supply
8	÷	Ground
9	SO1+(BRK-OFF)	—



3 Running the Motor

3.1 Checking Before Running

Check the following items before running the motor.

- Make sure the wiring is correct, especially the power input and the motor output.
- Make sure there is no grounded short circuit.
- Make sure all connections are sound and stable.
- Make sure the power supply is within rated voltage.
- Make sure the motor is stable.

3.2 Trial Running

Conducting trial running of the motor helps to check working condition of the motor.

Before trial running, do the following:

- 1. Connect the main power, control power, motor cable and encoder cable according to wiring diagram in section 1.5.
- 2. Remove the brake and do not connect to machine.

To conduct trial running, do one of the following:

- Operating on the front panel (see section 3.2.1).
- Operating on *iMotion* software (see section 3.2.2).

3.2.1 Operating on the Front Panel

Follow steps below to enable the servo and run the motor:



Note:

- The motor speed is decided by parameter [Pr604 JOG Speed].
- Time to accelerate and decelerate remains 1(r/min)/ms all the time.
- After trial running, press <SET> to exit the trial running mode.

3.2.2 Operating on *iMotion* Software

Before operating on *iMotion* software, do the following:

- 1. Install *iMotion* software on your computer.
- 2. Connect the computer with the servo driver through USB wire.

To conduct trial running on *iMotion* software, do the following:

- 1. Turn on the driver, and launch *iMotion* software.
- 2. Click <Trial Run> in the function menu.

Refer to section "Trial Run" in *iMotion Operation Manual* for details.

CAUTION

- Please disconnect the communication with the control system during motor trial run.
- Please restore parameters especially Pr004, Pr101 ~ 104 to the default before using them.
- 3) To avoid oscillation and other unexpected accidents during trial run, please set the parameters related to gain to appropriate value. Please set Pr004 to "0" when unloading loads.
- The motor is running in velocity control mode during trial-run. Please set the parameters based on velocity control mode.
- "Error" will be displayed when SRV-ON is valid during trial run. You can press <SET> or <MODE> key to exit JOG mode and switch to normal status.
- 6) The motor will be out of control for at most second when cable is disconnected or connectors fall off during trial run. Please be careful during operating.

3.3 Running

3.3.1 Analog • Pulse Type

For analog • pulse type servo driver, you need to set related parameters first before running the motor.

Related parameters including:

- Parameters related to position control (See Table 1)
- Parameters related to velocity control (See Table 2)
- Parameters related to torque control (See Table 3)

Parameter	Setting Value	Remarks
Pr001 Control mode setup	1	It is used to select position control mode.
Pr006Command pulse rotation direction setup	0~1	They are used to set command input
Pr007 Command pulse input mode setup	0~3	mode
electronic gear ratio	—	Its value needs calculation.
Pr011 Output pulse counts per one motor revolution	1~2097152	
Pr503 Denominator of pulse output division	0~8388608	They are used to set feedback pulse input for driver.
Pr012 Reversal of pulse output logic	0~1	

Table 1 Parameters related to position control

Table 2 Parameters related to velocity control

Parameter	Setting Value	Remarks
Pr001 Control mode setup	2	It is used to select velocity control mode.
Pr300 Switching between internal and external speed setup	0~3	It is used to select input way of speed command in velocity control mode.
Pr301 Speed command direction selection	0~1	It is used to specify direction for speed command.
Pr302 Speed command input gain	10~2000	
Pr303 Speed command input reverse	0~1	*1 It is used to control speed through
Pr421 Analog input 1 offset setup	-342~342	analog speed command set by host controller.
Pr422 Analog input 1 filter	0~6400	
Pr423 Analog input 1 over-voltage setup	0~100	
Pr304~ Pr311 1 st speed of speed setup~8 th speed of speed setup	-20000~20000	* ² It is used to control speed through speed command set by the driver.



Choose one to set from *1 and *2.

Parameter	Setting Value	Remarks
Pr001 Control mode setup	3	It is used to select torque control mode.
Pr317 Torque command selection	0	 Select analog input 1 (Al1) to control torque. Speed limit is set by Pr321. Related parameters: Pr318, Pr319, Pr320, Pr421~Pr423.
	1	 Select analog input 1 (Al2) to control torque. Speed limit is set by Pr321. Related parameter: Pr318, Pr319, Pr320, Pr421~Pr426.
	2	 Select internal torque control. Torque control command is set by internal parameter Pr601. Speed limit is set by Pr321 and Pr322.
Pr318 Torque command direction selection	0~1	It is used to specify direction for torque command.
Pr319 Input gain of torque command	10~100	It is used to set conversion gain from voltage (V) of analog torque command to torque (%) command.
Pr320 Input reversal of torque command	0~1	It is used to set the polarity of voltage on analog torque command.

3.3.2 M-II Type

For M-II type servo driver, please set axis address first before running the motor.

Before setting the axis address, do the following:

- 1. Connect according to wiring diagrams in section 1.5.2 and section 2.5.
- 2. Set parameter [Pr001 Control Mode] to "1: Position control".
- 3. Set parameters related to the control system.

CAUTION

- It is recommended to set them in order (X-axis: 1; Y-axis: 2; Z-axis: 3 and so forth)
- 2) 0 means the communication function is disabled.
- In the same control system, the address number of each servo driver must be unique.

To set the axis address, do the following:

- 1. Choose one of the setting method and follow steps below:
 - Set via driver panel:



• Set via *iMotion* software:

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



2. Restart the driver.

4 Connectors and Wiring Diagrams of Motors

Please refer to this chapter for wiring diagrams of encoder and motors if you prepare encoder cables and motor cables by yourself.

Note that $\Box \Box \Box$ represents the length of cable.

4.1 Wiring Diagrams for Drivers and MA/MB/MN/ME Motors

4.1.1 Wiring Diagrams of Encoders

See below for wiring of encoders for Wise MA/MB/MN/ME motors.

Applicable Motors: Wise MA040/MA060/ MA080/ME040 /ME060/ ME080/MN080

Driver Model	Absolute		
	Incremental		
Connector	Driver-side	DB9M1405-091-06-1	
		O-DB plastic case1441-090-00-3; match with DB9M	
	Motor-side	7-pin aviation waterproof connectorXS16K7TM	



Fig. 4-2 Incremental Encoder



• Applicable Motors: Wise MN110/MN130/MN180



Fig. 4-3 Absolute encoder





Fig. 4-4 Incremental Encoder

Applicable Motors: Wise MB100/ MB130

Driver Model	Absolute	AELMBQ	
	Incremental		
Connector	Driver-side	DB9M1405-091-06-1	
	2	O-DB plastic case1441-090-00-3; match with DB9M	
	Motor-side	15-pin military aviation connector CMS3108A18-A5SI	









4.1.2 Wiring Diagrams of Motors

See below for wiring of Wise MA/MB/MN/ME motors.

• Applicable Motors: Wise MA040/MA060/ME040/ ME060

ŧΤΜ
K4TM Viotor side J2
VI s

Driver Mode	I		
Connector	Driver-side	7-pin connector8EDGKB-7.5-07P-11-01AH	
	Motor-side	4-pin aviation waterproof connectorXS16K4TM	


• Applicable Motors: Wise MN110/MN130

Driver Model		PLMNN 🗆 🗆 A3
Connector	Driver-side	7-pin connector8EDGKB-7.5-07P-11-01AH
	Motor-side	4-pin aviation connectorYD28K4TSL



• Applicable Motors: Wise MN180

Driver Model		PLMNP C A3
Connector	Driver-side	7-pin connector8EDGKB-7.5-07P-11-01AH
	Motor-side	4-pin aviation connector YD32K4TSL



• Applicable Motors: Wise MB100/MB130

Driver Model		PLMBQ A3
Connector	Driver-side	7-pin connector8EDGKB-7.5-07P-11-01AH
	Motor-side	4-pin aviation connector CMS3108A18-10SI



4.1.3 Wiring Diagrams of Brakes

See below for wiring of brakes for Wise MA/MB/MN/ME motors.

• Applicable Motors: Wise MA040/MA060/MA080/ME040/ME060

ME080/MN080



	BK T	L ~	•	1	BK+	Motor side
J1			0	2		J2
	BK-		U		DN-	

• Applicable Motors: Wise MN110/MN130

Driver Model		
Connector	Driver-side	24 V power interface
	Motor-side	3-pin aviation connector XS12K3P



• Applicable Motors: Wise MN180

Driver Model		BLMNR C A0
Connector	Driver-side	24 V power interface
	Motor-side	4-pin aviation waterproof connector XS16K4TM



• Applicable Motors: Wise MB100/MB130

Driver Model		BLMBQ A0
Connector	Driver-side	24 V power interface
	Motor-side	2-pin power-off brake connectorSC-CMV1-AP02C



4.2 Wiring Diagrams for Drivers and Panasonic A5/A6 Motors

4.2.1 Wiring Diagrams of Encoders

See below for wiring of encoders for Panasonic A5/A6 motors.

● Applicable Motors: Panasonic A5 MHMD/MHMJ motors (≤750W)

Driver Model	Incremental	AELP5S AAAA
Connector	Driver-side	DB9M1405-091-06-1
		O-DB plastic case1441-090-00-3; match with DB9M
	Motor-side	6-pin white encoder connector172160-1





Applicable Motors: Panasonic A5&A6 MDME/MHME/MDMF motors (>750W)

Driver Model	Incremental	
Connector	Driver-side	DB9M1405-091-06-1
		O-DB plastic case1441-090-00-3; match with DB9M
	Motor-side	17-pin aviation connector3108B20-29S



Driver	Absolute	AELP6T
Model	Incremental	AELP6T AOA
Connector	Driver-side	DB9M1405-091-06-1 O-DB plastic case1441-090-00-3; match with DB9M
	Motor-side	9-pin white encoder connector172161-1

Applicable Motors: Panasonic A6 MHMF motors (≤750W)



Fig. 4-7 Absolute encoder



Fig. 4-8 Incremental encoder

• Applicable Motors

- ✓ Absolute: Panasonic A6 MDMF motors (>750W)
- Incremental: Panasonic A5&A6 MDME/MHME/MDMF motors (>750W)

Driver	Absolute	AELP6L A1B
Model	Incremental	AELPAL C AOA
Connector	Driver-side	DB9M1405-091-06-1 O-DB plastic case1441-090-00-3; match with DB9M
	Motor-side	17-pin aviation connector3108B20-29S



Fig. 4-9 Absolute encoder



Fig. 4-10 Incremental encoder

4.2.2 Wiring Diagrams of Motors

See below for wiring of Panasonic A5/A6 motors.

Applicable motors: Panasonic A5&A6 MHMD/MHMJ/MHMF Motors (≤400W)

Driver Model		PLPAS D A0
Connector	Driver-side	7-pin connector8EDGKB-7.5-07P-11-01AH
	Motor-side	4-pin white connector172159-1

The core wire should be coated with heat shrink tube.



 Applicable motors: Panasonic A5&A6 MHMD/MHMJ/MHMF Motors (750W)

Driver Model		PLPAS D D A1
Connector	Driver-side	7-pin connector8EDGKB-7.5-07P-11-01AH
	Motor-side	4-pin white connector172159-1



 Applicable motors: Panasonic A5&A6 MDME/MHME/MDMF Motors (> 750W)

Driver Model		PLPAL A3		
Connector	Driver-side	7-pin connector8EDGKB-7.5-07P-11-01AH		
Connector	Motor-side	4-pin aviation power connector3108B20-4S (withoubrake)		
Driver side J1	U 1 V 2 W 3 Driver ground terminal	The core wire should be coated with heat shrink tube. 4-pin aviation connector 3108B20-4S A U White Blue V Vellow Vellow D L L L L L L L L L L L L L		

 Applicable motors: Panasonic A5&A6 MDME/MHME/MDMF Motors (>750W)

Driver Model		PLPAM D D A3
Connector	Driver-side	7-pin connector8EDGKB-7.5-07P-11-01AH
	Motor-side	9-pin aviation power connector3108B20-18S(with brake)



4.2.3 Wiring diagrams of Brakes

See below for wiring of brakes for Panasonic A5/A6 motors.

Applicable Motors: Panasonic A5/A6 motors(≤750W)

Driver Model		BLMNS C A0
Connector	J1-side	24 V power interface
	Motor-side	2-pin white connector172157-1



Appendix

A. 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	Name	Range	Unit	Default
No.				
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	1 st 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	1 st torque limit	0~500	%	300
Pr014	Position deviation excess setup	0~1073741824	Unit-dependent	100000
Pr015*	Absolute encoder setup	0~2	_	0

Param	Namo	Pango	Unit	Default
No.	Name	Kange	Unit	Delauit
Pr016*	External regenerative resistor setup	0~3	_	3
Pr017*	Load factor of external regenerative resistor selection	0~4	_	0
Pr100	1 st gain of position loop	0~30000	0.1/S	480
Pr101	1 st gain of velocity loop	1~32767	0.1Hz	270
Pr102	1 st time constant of velocity loop integration	1~10000	0.1ms	210
Pr103	1 st filter of speed detection	0~10000	0.01ms	0
Pr104	1 st torque filter	0~2500	0.01ms	84
Pr105	2 nd gain of position loop	0~30000	0.1/s	570
Pr106	2 nd gain of velocity loop	1~32767	0.1Hz	270
Pr107	2 nd time constant of velocity loop integration	1~10000	0.1ms	10000
Pr108	2 nd filter of speed detection	0~10000	0.01ms	0
Pr109	2 nd 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	200
Pr112	Torque feed forward gain	0~1000	0.1%	0
Pr113	Torque feed forward filter	0~6400	0.01ms	0
Pr114	2 nd 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

Param	Namo	Pango	Unit	Dofault
No.	Name	Kange	Unit	Derault
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	1 st notch frequency	50~5000	Hz	5000
Pr202	1 st notch width selection	0~20	_	2
Pr203	1 st notch depth selection	0~99	_	0
Pr204	2 nd notch frequency	50~5000	Hz	5000
Pr205	2 nd notch width selection	0~20	_	2
Pr206	2 nd notch depth selection	0~99	_	0
Pr207	3 rd notch frequency	50~5000	Hz	5000
Pr208	3 rd notch width selection	0~20	_	2
Pr209	3 rd notch depth selection	0~99	_	0
Pr210	4 th notch frequency	50~5000	Hz	5000
Pr211	4 th notch width selection	0~20	_	2

Param	Name	Range	Unit	Default
No.				
Pr212	4 th notch depth selection	0~99	_	0
Pr214	1 st damping frequency	0~2000	0.1Hz	0
Pr215	1 st damping filter setup	0~500	0.001	0
Pr216	2 nd damping frequency	0~2000	0.1Hz	0
Pr217	2 nd damping filter setup	0~500	0.001	0
Pr218	3 rd damping frequency	0~2000	0.1Hz	0
Pr219	3 rd damping filter setup	0~500	0.001	0
Pr220	4 th damping frequency	0~2000	0.1Hz	0
Pr221	4 th 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	1 st speed of speed setup	-20000~20000	r/min	0
Pr305	2 nd speed of speed setup	-20000~20000	r/min	0
Pr306	3 rd speed of speed setup	-20000~20000	r/min	0
Pr307	4 th speed of speed setup	-20000~20000	r/min	0
Pr308	5 th speed of speed setup	-20000~20000	r/min	0
Pr309	6 th speed of speed setup	-20000~20000	r/min	0
Pr310	7 th speed of speed setup	-20000~20000	r/min	0

Param	Name	Range	Unit	Default
No.	Hunte	Runge	onit	Delaun
Pr311	8 th 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/deceleratio n 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 selection	0~1	_	0
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	_	0000007h (7)
Pr408*	SO1 output selection	0~00FFFFFFh	_	00030303h (197379)

Param No.	Name	Range	Unit	Default
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
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

Param	Nama	Bango	Unit	Default
No.	Name	Kange	Unit	Delaun
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	2 nd positioning complete (In-position) range	0~262144	Command unit	10
Pr500	Numerator of 2 nd electronic gear	0~1073741824	_	0
Pr501	Numerator of 3 rd electronic gear	0~1073741824	_	0
Pr502	Numerator of 4 th 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
Pr516*	Alarm clearance input setup	0~1	_	0

Param	Namo	Pango	Unit	Dofault
No.	Name	Kange	Unit	Delauit
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	2 nd 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

Param No.	Name	Range	Unit	Default
Pr612	Positive/negative torque compensation filter	0~3000	0.01ms	0
Pr615	2 nd 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 setup	-32767~32767	_	0
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
Pr642	2 nd time constant of torque filter	0~2500		0
Pr643	2 nd time attenuation term of torque filter	0~1000	_	1000
Pr647	For internal use	0~15	—	0
Pr648	For internal use	0~2000	_	0
Pr649	For internal use	0~99	_	0
Pr650	For internal use	0~10000	_	0
Pr651	For internal use	0~10000	_	0
Pr657	For internal use	0~5000	_	0
Pr660	For internal use	-32767~32767	—	0

B. 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	1 st 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	1 st 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
Pr017*	Load factor of external regenerative resistor selection	0~4	_	0

Param No.	Name	Range	Unit	Default
Pr100	1 st gain of position loop	0~30000	0.1/s	480
Pr101	1 st gain of velocity loop	1~32767	0.1Hz	270
Pr102	1 st time constant of velocity loop integration	1~10000	0.1ms	210
Pr103	1 st filter of speed detection	0~10000	0.01ms	0
Pr104	1 st torque filter	0~2500	0.01ms	84
Pr105	2 nd gain of position loop	0~30000	0.1/s	570
Pr106	2 nd gain of velocity loop	1~32767	0.1Hz	270
Pr107	2 nd time constant of velocity loop integration	1~10000	0.1ms	10000
Pr108	2 nd filter of speed detection	0~10000	0.01ms	0
Pr109	2 nd 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	2 nd 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

Param No.	Name	Range	Unit	Default
	Desition			
Pr119	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	1 st notch frequency	50~5000	Hz	5000
Pr202	1 st notch width selection	0~20	_	2
Pr203	1 st notch depth selection	0~99	_	0
Pr204	2 nd notch frequency	50~5000	Hz	5000
Pr205	2 nd notch width selection	0~20	_	2
Pr206	2 nd notch depth selection	0~99	_	0
Pr207	3 rd notch frequency	50~5000	Hz	5000
Pr208	3 rd notch width selection	0~20	_	2
Pr209	3 rd notch depth selection	0~99	_	0
Pr210	4 th notch frequency	50~5000	Hz	5000
Pr211	4 th notch width selection	0~20	_	2

Param	Name	Range	Unit	Default
No.				
Pr212	4 th notch depth selection	0~99	_	0
Pr214	1 st damping frequency	0~2000	0.1Hz	0
Pr215	1 st damping filter setup	0~500	0.001	0
Pr216	2 nd damping frequency	0~2000	0.1Hz	0
Pr217	2 nd damping filter setup	0~500	0.001	0
Pr218	3 rd damping frequency	0~2000	0.1Hz	0
Pr219	3 rd damping filter setup	0~500	0.001	0
Pr220	4 th damping frequency	0~2000	0.1Hz	0
Pr221	4 th 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	1 st speed of speed setup	-20000~20000	r/min	0
Pr305	2 nd speed of speed setup	-20000~20000	r/min	0
Pr306	3 rd speed of speed setup	-20000~20000	r/min	0
Pr307	4 th speed of speed setup	-20000~20000	r/min	0
Pr308	5 th speed of speed setup	-20000~20000	r/min	0
Pr309	6 th speed of speed setup	-20000~20000	r/min	0

Param	Name	Range	Unit	Default
No.	Name	Range	onit	Deraun
Pr310	7 th speed of speed setup	-20000~20000	r/min	0
Pr311	8 th 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/decelera tion 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)

Param No.	Name	Range	Unit	Default
Pr409*	SO2 output selection	0~00FFFFFFh	_	00030303H (197379)
Pr410*	SO3 output selection	0~00FFFFFFh	_	00000004H (4)
Pr411*	SO4 output selection	0~00FFFFFFh	_	00070707H (460551)
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	2 nd positioning complete (In-position) range	0~262144	Command unit	10
Pr500	Numerator of 2 nd electronic gear	0~1073741824	_	0
Pr501	Numerator of 3 rd electronic gear	0~1073741824	_	0
Pr502	Numerator of 4 th electronic gear	0~1073741824	_	0

Param	Name	Range	Unit	Default
No.	Hume	Runge	onit	Deradat
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
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	2 nd 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

Param No.	Name	Range	Unit	Default
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	2 nd 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

Param No.	Name	Range	Unit	Default
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	-1073741823~1 073741823	Command unit	0
Pr642	2 nd time constant of torque filter	0~2500	0.01ms	0
Pr643	2 nd time attenuation term of torque filter	0~1000	_	
Pr647	For internal use	0~15	_	0
Pr648	For internal use	0~2000	—	0
Pr649	For internal use	0~99	—	0
Pr650	For internal use	0~10000	_	0
Pr651	For internal use	0~10000	_	0
Pr657	For internal use	0~5000	_	0
Pr660	For internal use	-32767~32767	_	0

C. Lists of Error Codes

Error	,		Attribute	•
code	Content	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	•	•	•

France		Attribute			
Error code	Content		Clearable	Stop Immediately	
Err 24.1	Velocity deviation excess protection	•	•	•	
Err 26.0	Over-speed protection	•	•	•	
Err 26.1	2 nd 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	EEPROM parameter error protection				
Err 36.2 Err 37.0 ~ Err 37.2	EEPROM code error protection				

_	Content	Attribute		
Error		History	Clearable	Stop Immediately
Err 38.0	Driver inhibited input protection		•	•
Err 39.0	Analog input 1 excess protection	•	•	•
Err 39.1	Analog input 2 excess protection	•	٠	•
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	•		

France	Content	Attribute		
Error		History	Clearable	Stop Immediately
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	•		
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	•	٠	
Err 65.0	M-II communication fault (receipt error)		٠	
Err 65.1	M-II transfer cycle error (synchronous interval error)	•	٠	
Err 87.0	Forced alarm input protection		•	•
Err 95.0 ~ Err 95.4	Motor automatic recognition error			
Other	Other error protection	•		