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Revision No.	: 2.0
Date of Issue	: April. 27, 2023
Classification	: ☐ New ■ Change

SPECIFICATIONS

Product Name : AC servo driver
Product Series Name : MINAS-A6B series
Product Model Number : DC24 / 48 V type

Motion Control Business Unit, Industrial Device Business Division
Panasonic Industry Co., Ltd.
7-1-1 Morofuku, Daito－City, Osaka 574-0044, Japan

If you have any questions, please contact the seller (Sales office or Distributor) of the product.

Panasonic

REVISIONS

Date	Page	Rev.	Description	Signed
Jul. 19, 2022	-	1.0	Newly issued	-
Oct. 1, 2022	P.30	1.1	Changed Compliance with the international standards	-
	P.3		Correction of errors: Maximum output current of output segment 5 motors 30.5 -> 30.4	
	P.10		Added connection specification of motor connector for VCM type.	
	P.19		Added notes on connection specifications of motor connector for VCM type.	
Apr. 27,2023	Appendix	2.0	Updated default parameters and objects values	-

Contents

1. Scope of Application

This specification relates to the MINAS A6B series of AC servo driver manufactured by the Motion Control Business Unit, Industrial Device Business Division, Panasonic Industry Co., Ltd.
This product is intended for use as industrial equipment. It must not be used for any other purpose (e.g., for home use).

<Related Materials>

Rotary type

Technical Reference - Function Specification -	: SX-DSV03241
Technical Reference - EtherCAT Communication Specification -	: SX-DSV03242

Linear / DD / VCM type

Technical Reference - Function Specification -	: SX-DSV03306
Technical Reference - EtherCAT Communication Specification -	: SX-DSV03307

* See our Web site for the above documents.

<About EtherCAT>

EtherCAT stands for Ethernet for Control Automation Technology, an open network communication technology that uses real-time Ethernet to communicate between master and slave devices, developed by Beckhoff Automation GmbH and managed by the EtherCAT Technology Group (ETG).

EtherCAT® is registered trademark and patented technology,
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<Precautions>

(1) Reproduction of the contents of this document in whole or in part is strictly prohibited.
(2) Due to product improvements, this document is subject to change without notice.
(3) This product may be upgraded, including revisions to specifications from the ETG. Please note that we are not responsible for labor and costs associated with the version upgrade.
(4) This product makes use of open-source software (OSS).
Please refer to the technical documentation for details.
Your company may also have an obligation to use OSS, so please take appropriate measures at your company.

＜Applicable motor type＞

The description of the terms on this document is based on "Rotary type".
When using "linear type", read as shown in the table above.

Motor type	DD (direct drive) motor	linear motor
Classification on this document	Rotary type	Linear type
Related terms	Inertia（unit：kgm^2）	Mass（unit：kg）
	Torque（unit：Nm）	Thrust（unit：N）
	r/min	mm/s
	rotation	movement

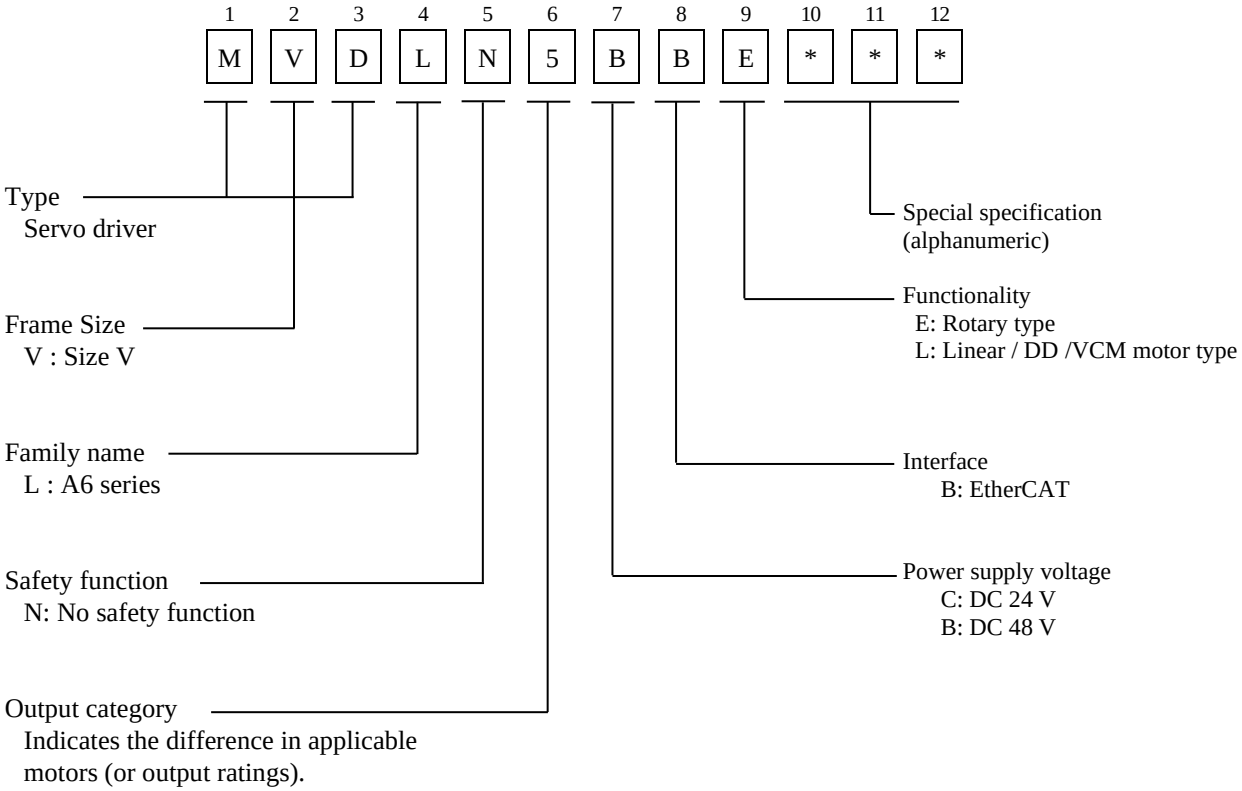
Operating Precautions

Pay a special attention to following items because the part of internal board is exposed.

- When unpacking and installing, implement the measure against static electricity and handle it with great caution.
- Install the servo driver in an environment of Pollution degree 2, such as in the control panel of IP54 or more.

2. How to Read Product Numbers

Product numbers are to be read as follows:



3. Product line-up

3-1 Rotary type

Servo driver				Applicable motor		
Model No.	Product Code (*Note 1)	Size	Power supply input	Model No.	Rated power	Rated speed
MVDLN4CBE	60380046	V	DC 24 V	MSMF5AC△1□2＊	50W	3000r/min
MVDLN5CBE	60380024			MSMF01C△1□2＊ MQMF01C△1□2＊	100W	
				MQMF1EC△1□2＊ MHMF1EC△1□2＊	133W	2000r/min
MVDLN4BBE	60380043		DC 48 V	MSMF5AB△1□2＊ MHMF5AB△1□2＊	50W	3000r/min
				MSMF01B△1□2＊ MQMF01B△1□2＊ MHMF01B△1□2＊	100W	
MVDLN5BBE	60380023			MQMF02B△1□2＊ MHMF02B△1□2＊	200W	
				MQMF2JB△1□2＊ MHMF2JB△1□2＊	266W	2000r/min

(*Note 1) This is the Product code of our Servo Drive written in the ESI file (Hex numeral).

3-2 Linear / DD / VCM type

Servo driver				Applicable motor			
Model No.	Product Code (*Note 1)	Size	Power supply input	Rated current [Arms]			Maximum current [Arms]
				Carrier frequency			
				6 kHz	8 kHz	12 kHz	
MVDLN0CBL	60540047	V	DC 24 V	—	—	0.6	0.9
MVDLN1CBL	60540048			—	—	1.5	2
MVDLN2CBL	60540044			—	—	2.5	4
MVDLN3CBL	60540045			—	—	4	9
MVDLN4CBL	60540046			—	—	6	19
MVDLN5CBL	60540024			9.4	—	—	30.4
MVDLN0BBL	60540049		DC 48 V	—	—	0.6	0.9
MVDLN1BBL	6054004A			—	—	1.5	2
MVDLN2BBL	60540041			—	—	2.5	4
MVDLN3BBL	60540042			—	—	4	9
MVDLN4BBL	60540043			—	—	6	19
MVDLN5BBL	60540023			8.6	—	—	30.4

(*Note 1) This is the Product code of our Servo Drive written in the ESI file (Hex numeral).

4. Specifications

4-1 Basic specifications of rotary type

Basic specifications	Input power supply	24 V type	DC24 V +21 % (DC29 V) -17 % (DC20 V) (*Note 1,2)
		48 V type	DC48 V +21 % (DC58 V) -17 % (DC40 V) (*Note 1,2)
	Operation conditions	Temperature	Operation temperature: 0 - 55 degrees C (no freezing) Storage temperature: -20 - 65 degrees C (Max.temperature guarantee : 80 degrees C for 72 hours no condensation *Note 3)
		Humidity	Operation and storage humidity 20 - 85 %RH or less (no condensation *Note 3)
		Height above the sea	Height above the sea level: 1000 meters or less
		Vibration	5.88 m/s^2 or less, 10 - 60 Hz
		Pollution degree	Pollution degree 2
	Insulation voltage		Resistant to 500 V AC between primary power supply and ground for a minute
	Control method		MOSFET PWM method, sinusoidal drive
	Encoder feedback		23Bit(resolution:8388608) 7cores-serial absolute encoder
	Control signal	Input	General purpose 8 input General purpose input functions can be selected by parameter.
		Output	General purpose 2 output, alarm 1ouput General purpose output functions can be selected by parameter.
	Pulse signal	Output	3 outputs Encoder pulse (A/B phase) or position comparison is output by using the line driver.
	Communication	USB	USB interface to connect to computers (setup software PANATERM) for parameter setting or status monitoring. USB cable connection is possible
		EtherCAT	Real-time operation command transmission, parameter setting, status monitoring, etc.
	Safety terminal		Not supported.
	Front panel		Not supported.
	Regenerative discharge		Not supported.
	Dynamic brake		Built-in type
	Control mode		Position control: Profile position mode (pp), Cyclic synchronous position mode (csp), Homing mode (hm) Velocity control: Profile velocity mode (pv), Cyclic synchronous velocity mode (csv) Torque control: Torque profile mode (tq), Cyclic synchronous torque mode (cst) These modes are switchable each other with commands through EtherCAT.

(Note 1) DC power using stabilized power supply (SELV) are provided with reinforced insulation.
Please do fluctuations in the DC power supply voltage does not exceed the supply voltage range of the servo driver also.

(Note 2) The servo driver can functionally drive the motor within the range of the input power supply voltage.
When input power supply voltage is below the rated value (24 V/48 V), overload protection might be triggered even speed and torque are within the rated range at some motor's specifications.

(Note 3) Please note that condensation tend to occur when temperature fall.

4-2 Basic specifications of linear / DD /VCM motor

Basic specifications	Input power supply	24 V type	DC24 V	+21 % (DC29 V) -17 % (DC20 V)	(*Note 1,2)
		48 V type	DC48 V	+21 % (DC58 V) -17 % (DC40 V)	(*Note 1,2)
	Operation conditions	Temperature	Operation temperature: 0 - 55 degrees C (no freezing) Storage temperature: -20 - 65 degrees C (Max.temperature guarantee : 80 degrees C for 72 hours no condensation *Note 3)		
		Humidity	Operation and storage humidity 20 - 85 %RH or less (no condensation *Note 3)		
		Height above the sea	Height above the sea level: 1000 meters or less		
		Vibration	5.88 m/s^2 or less, 10 - 60 Hz		
		Pollution degree	Pollution degree 2		
	Insulation voltage		Resistant to 500 V AC between primary power supply and ground for a minute		
	Control method		PWM method, sinusoidal drive		
	CS signal feedback		CS signal input (CS1, CS2, CS3) Compatible with TTL level input		
	Feedback scale		A/B phase, homing signal defferential input type Panasonic supported serial communication type		
	Control signal	Input	General purpose 8 input General purpose input functions can be selected by parameter.		
		Output	General purpose 2 output, alarm 1ouput General purpose output functions can be selected by parameter.		
	Pulse signal	Output	3 outputs Encoder pulse (A/B phase) or position comparison is output by using the line driver.		
	Communication	USB	USB interface to connect to computers (setup software PANATERM) for parameter setting or status monitoring. USB cable connection is possible		
		EtherCAT	Real-time operation command transmission, parameter setting, status monitoring, etc.		
	Safety terminal		Not supported.		
	Front panel		Not supported.		
	Regenerative discharge		Not supported.		
	Dynamic brake		Built-in type		
	Control mode		Position control: Profile position mode (pp), Cyclic synchronous position mode (csp), Homing mode (hm) Velocity control: Profile velocity mode (pv), Cyclic synchronous velocity mode (csv) Torque control: Torque profile mode (tq), Cyclic synchronous torque mode (cst) These modes are switchable each other with commands through EtherCAT.		

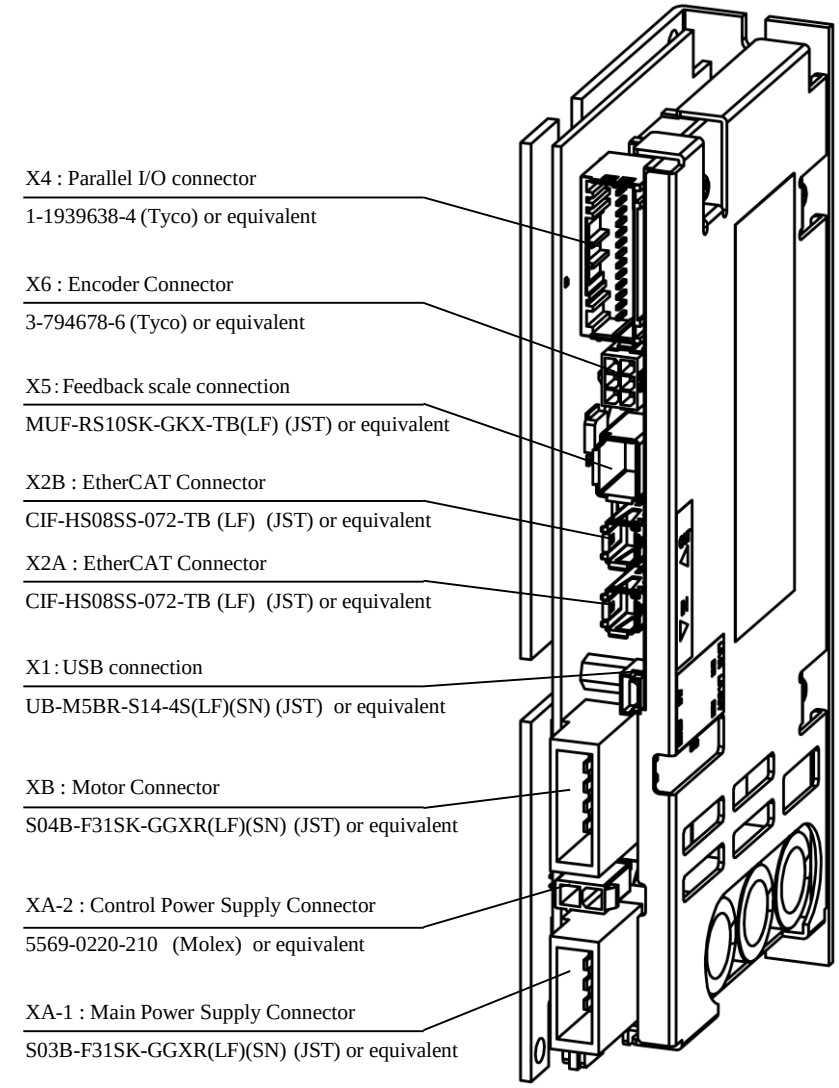
(Note 1) DC power using stabilized power supply (SELV) are provided with reinforced insulation.
Please do fluctuations in the DC power supply voltage does not exceed the supply voltage range of the servo driver also.

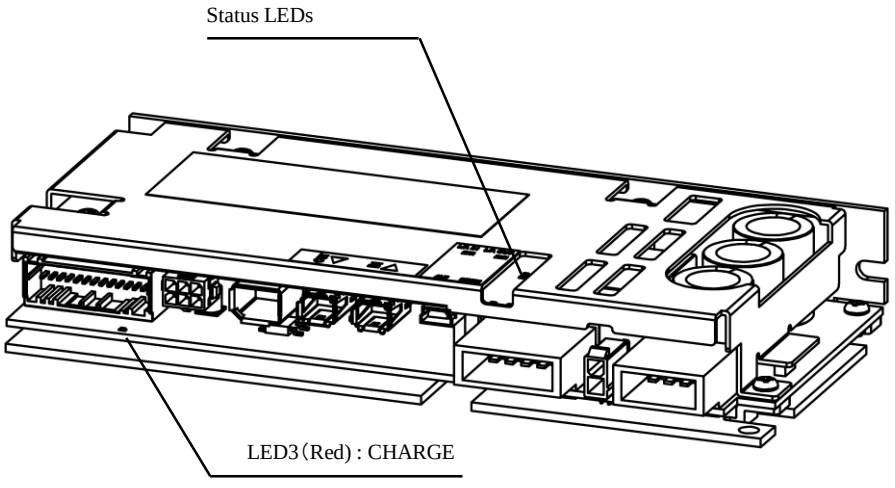
(Note 2) The servo driver can functionally drive the motor within the range of the input power supply voltage.
When input power supply voltage is below the rated value (24 V/48 V), overload protection might be triggered even speed and torque are within the rated range at some motor's specifications.

(Note 3) Please note that condensation tend to occur when temperature fall.

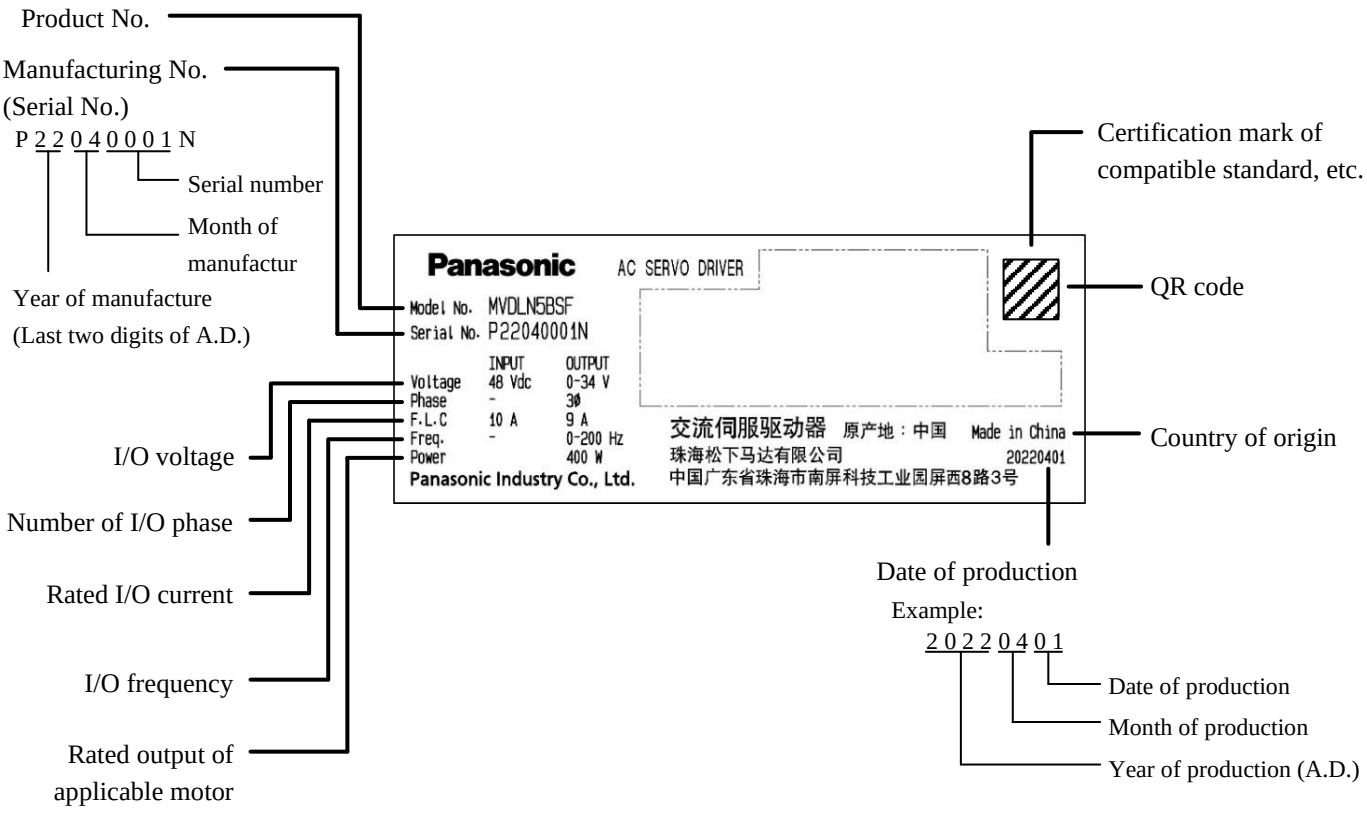
5. Appearance and name of each part

Below figure shows linear / DD /VCM type. Rotary type is not provided with X5 (feedback scale connector).





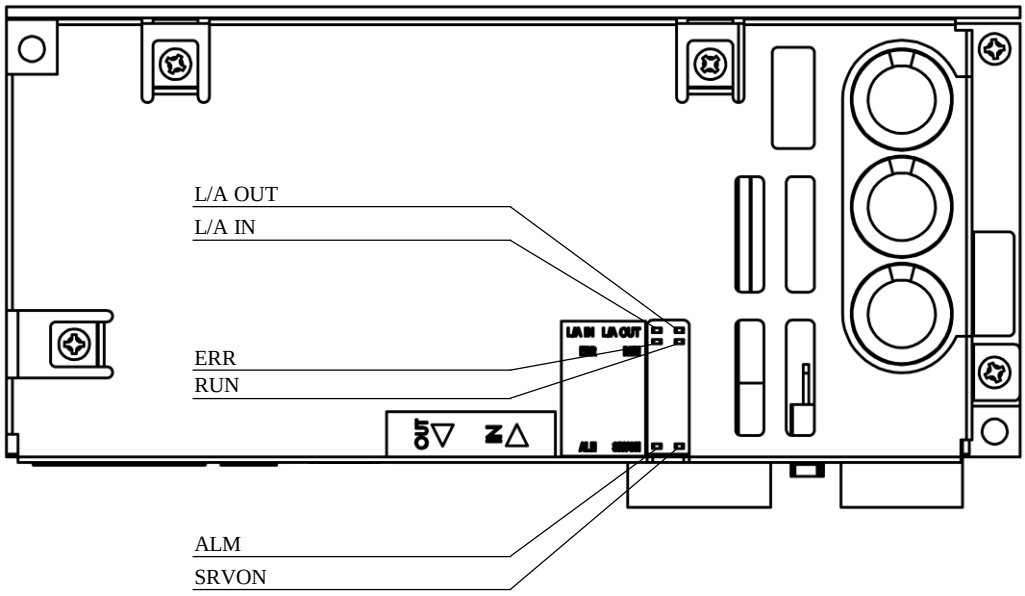
Example of a rating plate



The values of the serial number part of the manufacturing number range from 1 to 33999. On the rating plate, it is indicated in four digits as in the format shown below.
"I" and "O" are not used for the fourth-digit alphabet.

Value of the serial number part	Indication on the rating plate
1 - 9999	0001 - 9999
10000 - 10999	A000 - A999
11000 - 11999	B000 - B999
⋮	⋮
17000 - 17999	H000 - H999
18000 - 18999	J000 - J999
⋮	⋮
22000 - 22999	N000 - N999
23000 - 23999	P000 - P999
⋮	⋮
33000 - 33999	Z000 - Z999

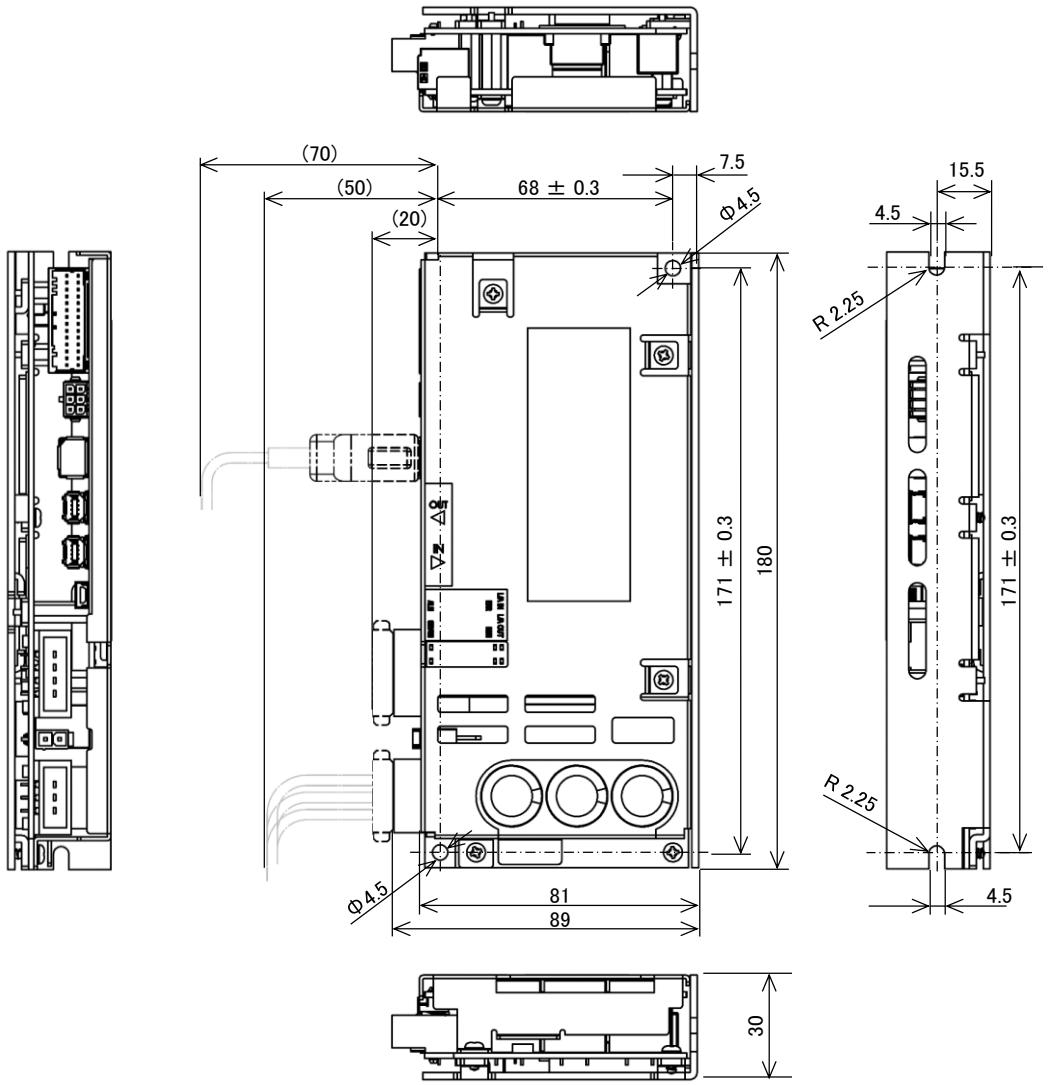
Status LEDs



Symbol	Name	Color	LED Status	Description
ALM	Alarm LED	Red	Lighting on	Alarm occurs
			Lighting off	Normally
SRVON	Servo-ON LED	Green	Lighting on	Servo ON
			Lighting off	Servo OFF
RUN	RUN LED	Green	LED status indicate status of network communication. For details of communication status, please refer to Technical Reference - EtherCAT Communication Specification -.	
ERR	ERROR LED	Red		
L/A IN	Link Activity IN LED	Green		
L/A OUT	Link Activity OUT LED	Green		

6. Outside dimensions

Below figure shows linear / DD /VCM type. Rotary type is not provided with X5 (feedback scale connector).



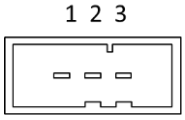
Unit: mm

* Do not use threaded screw holes that do not have description of dimensions.

7. Configuration of connectors and terminal blocks

7-1 Main Power Supply Connector XA-1

Servo driver side: J. S. T. Mfg S03B-F31SK-GGXR(LF)(AU)

Pin No.	Symbol	Description	Layout
1	P1 (+ Line)	• Input DC48 V or DC24 V. • Use stabilized DC power source with reinforced insulation.	
2	N1 (- Line)		
3	FG	• Frame ground	

7-2 Control Power Supply Connector XA-2

Servo driver side: Molex 5569-02A2-210

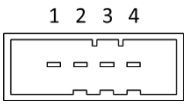
Pin No.	Symbol	Description	Layout
1	P2 (+ Line)	• Input DC48 V or DC24 V. • Use stabilized DC power source with reinforced insulation.	
2	N2 (- Line)		

* There is no anti-connection function on the driver.
Reverse connection is caused of failure.
Enough attention to the power supply wiring.
N-pin of Main power supply connector XA-1 connect to control power supply connector XA-2.

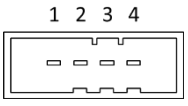
7-3 Motor Connector XB

Servo driver side: J. S. T. Mfg S04B-F31SK-GGXR(LF)(AU)

Rotary / Linear / DD type

Pin No.	Symbol	Description	Layout
1	U	Connect U phase of the motor winding	
2	V	Connect V phase of the motor winding	
3	W	Connect W phase of the motor winding	
4	FG	Connect frame ground wire of the motor	

VCM type

Pin No.	Symbol	Description	Layout
1	U	Connect U phase of the motor winding	
2	—	Do not connect anything	
3	W	Connect W phase of the motor winding	
4	FG	Connect frame ground wire of the motor	

* VCM is a single-phase motor, so use only 1-pin, 3-pin and 4-pin.

7-4 USB connector X1

Operations such as parameter setting/change, control status monitoring, error status/history browsing, and parameter saving/loading can be performed by connecting to a PC or a high-order NC via a USB connector.

Name	Symbol	Pin No.	Description
USB signal	VBUS	1	Used for communication with a PC or a high-order NC.
	D-	2	
	D+	3	
For manufacturer use	—	4	Do not connect anything.
Signal ground	GND	5	Signal ground

The connector shape on the driver side is USB mini-B.

7-5 EtherCATconnectors X2A X2B

[X2A] / [X2B]

Name	Symbol	Pin No.	Description
Network output / input +	TX/RX+	1	• Connect to pin 1 on the RJ45 connector of communication node.
Network output / input -	TX/RX-	2	• Connect to pin 2 on the RJ45 connector of communication node
Network input / output +	RX/TX+	3	• Connect to pin 3 on the RJ45 connector of communication node
Unused	-	4	• Connect to pin 4 on the RJ45 connector of communication node
Unused	-	5	• Connect to pin 5 on the RJ45 connector of communication node
Network input / output -	RX/TX-	6	• Connect to pin 6 on the RJ45 connector of communication node
Unused	-	7	• Connect to pin 7 on the RJ45 connector of communication node
Unused	-	8	• Connect to pin 8 on the RJ45 connector of communication node
Frame ground	-	Shell	• Connect to shield of cable.

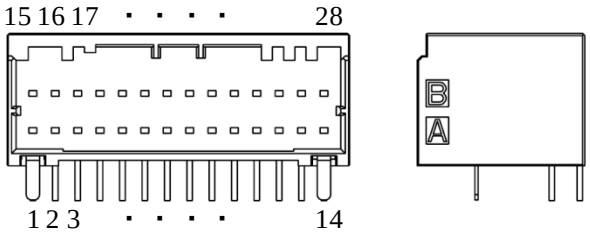
* Be sure to use shielded twisted pair (STP) compatible with 5e of TIA/EIA-568 or higher category
* Auto MDI/MDI-X assigns functions to pin no.1,2,3,6.

7-6 Parallel I/O connector, X4

A list of the pin assignment of the parallel I / O connector is as follows.
For details of each function, please refer the following pages.

Pin No.	Symbol	Description
1	SO1+	Control output 1
2	SO1-	
3	ALM+	Alarm output
4	ALM-	
5	SI1	Control input 1
6	SI-COM	Control input common
7	SI2	Control input 2
8	SI3	Control input 3
9	SI4	Control input 4
10	SI5	Control input 5
11	SI6	Control input 6
12	SI7	Control input 7
13	SI8	Control input 8
14	—	No use
15	—	
16	GND	Signal ground
17	OA+/OCMP1+	A-phase output / Position compare output 1
18	OA-/OCMP1-	
19	OB-/OCMP2-	B-phase output / Position compare output 2
20	OB+/OCMP2+	
21	OCMP3+	Position compare output 3
22	OCMP3-	
23	—	No use
24	GND	Signal ground
25	SO2+	Control output 2
26	SO2-	
27	GND	Signal ground
28	FG	Frame ground

Pin layout



Input signal (control)

Name	Symbol	Pin No.	Description	Circuit
Control input common	SI-COM	6	・ It is connected with the positive or negative electrode of the external DC power supply (12 - 24 V). ・Use 12 V (±5 %) to 24 V (±5 %) for power supply ・It needs to be isolated from the primary side power supply. Do not connect with the same power supply. Primary side power supply: Power supply for motor brake	i-1
Control input 1	SI1	5	・Functions are allocated according to parameters. For details, refer to “Technical reference - Basic Functional Specifications -”. ・Note that there are limitations on function allocation.	
Control input 2	SI2	7		
Control input 3	SI3	8		
Control input 4	SI4	9		
Control input 5	SI5	10		
Control input 6	SI6	11		
Control input 7	SI7	12		
Control input 8	SI8	13		

Output signal (control)

Name	Symbol	Pin No.	Description	Circuit
Control output 1	SO1+ SO1-	1 2	・Functions are allocated according to parameters. For details, refer to “Technical reference - Basic Functional Specifications -”.	o-1
Control output 2	SO2+ SO2-	25 26		
Alarm output	ALM+ ALM-	3 4	・Output for alarm of servo driver. ・Normally: output transistor ON Alarm: output transistor OFF	

Encoder output signal / Position compare output signal

Name	Symbol	Pin No.	Description	Circuit
A-phase output / Position compare output 1	OA+ / OCMP1+	17	· Encoder signals or feedback scale signals for which frequency division was performed (A-phase, B-phase) are output as differential signals. (Equivalent to RS422) · The division ratio can be set for the corresponding parameter. · The ground of the line driver for the output circuit is connected to the signal ground (GND), i.e. non-insulated. · The maximum output frequency is 4 Mpps (after quad edge evaluation). · This differential signal should be received by a line receiver. (AM26C32 or equivalent). Connect a terminating resistor (approx. 330 Ω) between the line receiver inputs. · Use a twisted pair cable with shield for wiring, and connect the shield wire to the connector shell. · By setting bit 0 - bit 2 = 1 of Pr4.47 "Pulse output select" , position compare function can be available.	Do-1
	OA- / OCMP1-	18		
B-phase output / Position compare output 2	OB+ / OCMP2+	20		
	OB- / OCMP2-	19		
Position compare output 3	OCMP3+	21		
	OCMP3-	22		

Other

Name	Symbol	Pin No.	Description	Circuit
Frame ground	FG	28	· Internally connect to the case	-
Signal ground	GND	16 24 27	· Signal ground · Internally connect to N-pin of power supply connector XA-1 and XA-2.	-
Reserved	-	14 15 23	· Do not connect anything	-

7-7 Feedback scale connector X5

This connector is supported only for the linear / DD /VCM type.

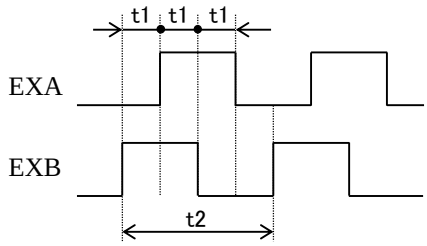
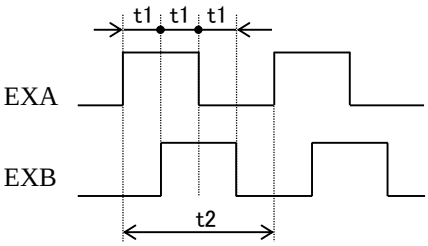
Name	Symbol	Pin No.	Description
Feedback scale power output	EX5V	1	• Feedback scale power output (Note 2) (Note 3)
	EX0V	2	• Ground of feedback scale power output (Note 1)
Feedback scale signal input/output (Serial signal)	EXPS	3	• Serial signal non-inverting input/output
	/EXPS	4	• Serial signal inverting input/output
Feedback scale signal input (A/B/Z-phase signal) (Note 4)	EXA	5	• A-phase signal non-inverting input
	/EXA	6	• A-phase signal inverting input
	EXB	7	• B-phase signal non-inverting input
	/EXB	8	• B-phase signal inverting input
	EXZ	9	• Z-phase signal non-inverting input
	/EXZ	10	• Z-phase signal inverting input
Frame ground	FG	Shell	• It is connected with the earth terminal inside the servo driver.

(Note 1) The feedback scale power output EX0V is connected with the control circuit ground that is connected to connector X4.

(Note 2) The feedback scale power output EX5V should be 5 V±5% and 250 mA at the maximum. When using an feedback scale whose consumption current exceeds this value, external power supply should be prepared by the customer. It may take time to perform initialization after power-on, depending on feedback scales.

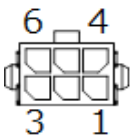
(Note 3) In case an external power supply is used for the feedback scale, make sure that the EX5V pin is open and no external power is supplied to the EX5V pin.

(Note 4) The maximum input frequency is 4 Mpps (after quad edge evaluation). However, if the duty ratio of the feedback scale signal input is not 50%, it may not be able to be read normally.

Count-down direction	Count-up direction
 EXB is advanced 90° than EXA t1 > 0.25 µs t2 > 1.0 µs	 EXB is retarded 90° than EXA t1 > 0.25 µs t2 > 1.0 µs

7-8 Encoder / CS signal connector X6

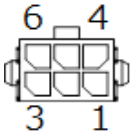
Rotary type

Name	Symbol	Pin No.	Description	Layout
—	—	1	Do not connect.	
Encoder signal I/O (serial signal)	PS	2	Encoder signal non-inverting input/output	
	/PS	3	Encoder signal inverting input/output	
Encoder power supply output	E5V	4	E5V (*Note 1)	
	E0V	5	E0V (*Note 2)	
Frame ground	FG	6	FG	

*Note 1) The encoder power output E5V is connected with the control circuit ground that is connected to connector X5 inside the servo driver.

*Note 2) The encoder power output E0V is connected with the control circuit ground that is connected to Pin.1(E5V) of connector X5 and signal ground of connector X4 inside the servo driver.

Linear / DD /VCM type

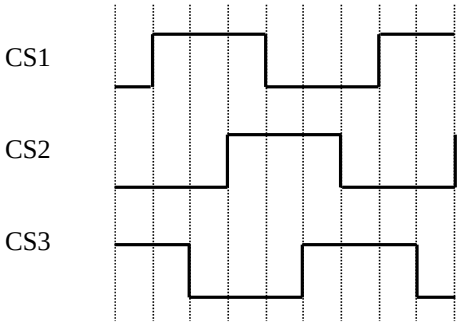
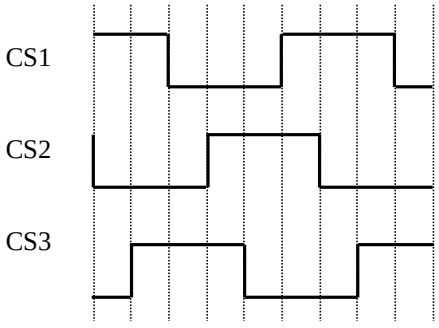
Name	Symbol	Pin No.	Description	Circuit	Layout
CS signal input	CS3	1	CS3 signal input	i-2	
	CS2	2	CS2 signal input		
	CS1	3	CS1 signal input		
CS signal power supply output	E5V	4	CS signal power supply output (*Note 1)	—	
	E0V	5	CS signal power supply output ground (*Note 2)	—	
Frame ground	FG	6	FG	—	

*Note 1) The CS signal power output E5V is connected with the control circuit ground that is connected to connector X5 inside the servo driver.

*Note 2) The CS signal power output E0V is connected with the control circuit ground that is connected to Pin.1(E5V) of connector X5 and signal ground of connector X4 inside the servo driver.

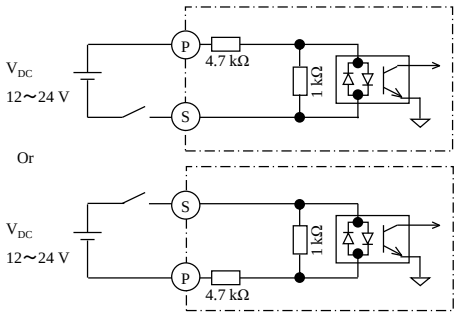
The relationship between the CS signal and the moving direction of the linear motor is shown below.

CS signal direction

	negative direction (count down)	positive direction (count up)
The magnetic pole detection signal	 CS 1 advances 120 ° from CS 2 CS 2 advances 120 ° from CS 3	 CS 3 advances 120 ° from CS 2 CS 2 advances 120 ° from CS 1

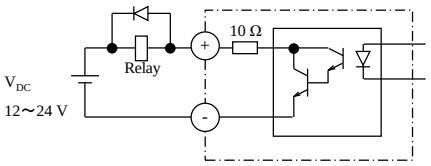
7-9 Input / output signal interface

i-1



Pins:
S:(X4) 5,7,8,9,10,11,12,13
P:(X4) 6

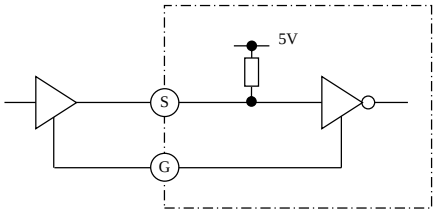
o-1



Pins:
+:(X4) 1, 3, 14, 25
-:(X4) 20, 4, 15, 26

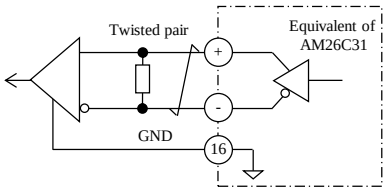
Note) To directly run the relay, attach a diode in Parallel with the relay and in the direction shown in the figure above.

i-2



Pins:
S:(X6) 1, 2, 3
G:(X6) 5

Do-1



Pins:
＋: 17, 20, 21
－: 18, 19, 22

Note) Connect a terminating resistor (approx. 330 Ω) between the input terminals of the line receiver.

8. Wiring and system configuration

8-1 Wire rods used and maximum wiring length

Name	Symbol	Maximum cable length (*Note 1)	Used cable
Main power supply	XA-1	3 m	In accordance with "16. Specifications for Each Model"
Control power supply	XA-2	3 m	
Motor connection	XB	3 m	
EtherCAT connection	X2A, X2B	50 m (*Note 3)	TIA/EIA-568 CAT5e STP
Parallel I/O connection	X4	3 m	Common shielded twisted pair wire Core wire 0.18 mm^2 or more
Feedback scale connection (*Note 2)	X5	3 m	
Encoder / CS signal connection	X6	3 m	

(Note 1) The above wiring length is the maximum value under the evaluation environment of Panasonic.
It does not guarantee the operation under the working environment of the customer.
The above wiring length is the maximum wiring length including tolerance of processing.

(Note 2) It is supported for the linear / DD /VCM type only.

(Note 3) For details, refer to "8-3-2 Connection to connectors X2A and X2B".

8-2 Cable-Side connector

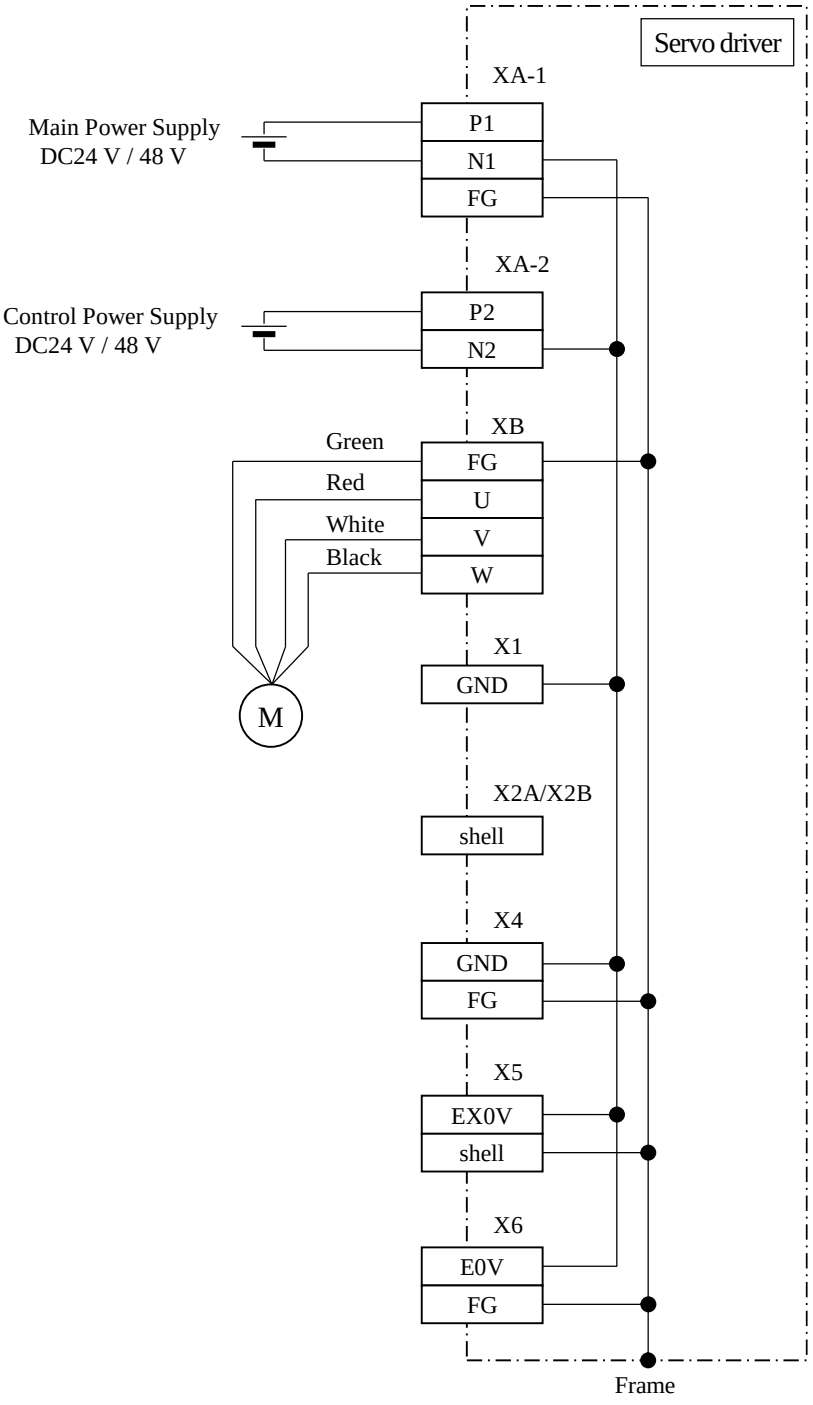
Connector symbol	Part name	Part number	Manufacturer
XA-1	Receptacle Housing	F31FSS-03V-KX	J.S.T. Mfg.
	Receptacle pin	SF3F-**GF-P2.0 (** = 41 or 71)	
XA-2	Receptacle Housing	5557-02R-210	Molex
	Receptacle pin	5556TL	
XB	Receptacle Housing	F31FSS-04V-KX	J.S.T. Mfg.
	Receptacle pin	SF3F-**GF-P2.0 (** = 41 or 71)	
X2A / X2B	Connector	1-2201855-2	Tyco electronics
		CIF-PCNS08KK-072R	J.S.T. Mfg.
X4	Receptacle Housing	1-1827863-4	Tyco electronics
	Receptacle pin	1827587-2	
X5	Connector	MUF-PK10K-X	J.S.T. Mfg.
X6	Connector	794617-6	Tyco Electronics
	Pin	1-794610-2	
	Connector	43025-0600	Molex
	Pin	43030-0002	

Use the above connector or equivalent.

8-3 Precautions for wiring

8-3-1 Wiring to the power connector

Below figure shows a linear / DD type.
Rotary type is not provided with X5 (feedback scale connector).
Do not connect anything to V pin of Motor connector XB in VCM type.
Below figure do not shows all pins of each connector.



[1] The DC power supply might have a trip to protect its components from over-voltage that is caused by the regenerated energy from motor. In that case, it is necessary to install the diode for protecting from the feedback current and also to install the DC bus capacitor for storing the regenerated energy between the DC power supply and drivers.

[2] So that the specified voltage at the input servo driver, consider the transient voltage drop due to the impedance wiring, select both the diameter of the power line and the length.

[3] This servo driver does not mount the inrush current limit circuit. Inrush current is dependent on the characteristics and wiring impedance of the connection power, please check the actual machine.

[4] Because this servo driver to assume a connection with a stabilized power supply is provided with reinforced insulation, protective ground terminal is not available. The case is functional earth (FG).

[5] Insert the connector securely until it is locked.

[6] Apply power supply voltage as specified in the rating plate.

[7] Install a molded-case circuit-breaker (MCCB), and in an emergency, be sure to shut off power supply outside the servo
driver. When using an earth leakage breaker, take measures against high frequency.

[8] Brake power supply for the motor with brake should be prepared by customer.

[9] Apply power supply voltage after completing wiring.

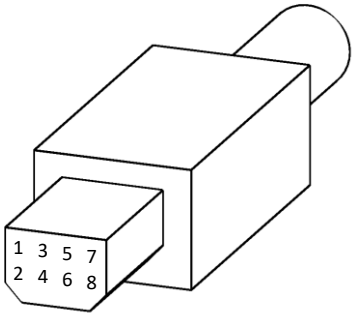
8-3-2 Wiring to connectors X2A and X2B

[1] Use a shielded twisted pair (STP) cable in conformance with category 5e of SIA/EIA-568 or higher.
[2] If both ends of the shield are not grounded, the EMC characteristic will deteriorate.
When attaching a connector plug to both ends of the cable, make sure to connect the shield wire of the cable to the metal shell of the plug.
[3] Correspondence between the lead wire colors and the connector terminals should be in accordance with TIA/E1A-568B (see the figure below).
The 1-2, 3-6pin pair is a signal line. Three pairs of 4-5, and 7-8pins that are not used must also be connected to the connector.
[4] When using a 2-pair line instead of a 4-pair line, connect the wires to the 1-2 and 3-6 pins of the connector and do not connect anything to the 4-5 and 7-8 pins.
[5] The wiring length of the communication cable should be within the range that satisfies the following conditions.

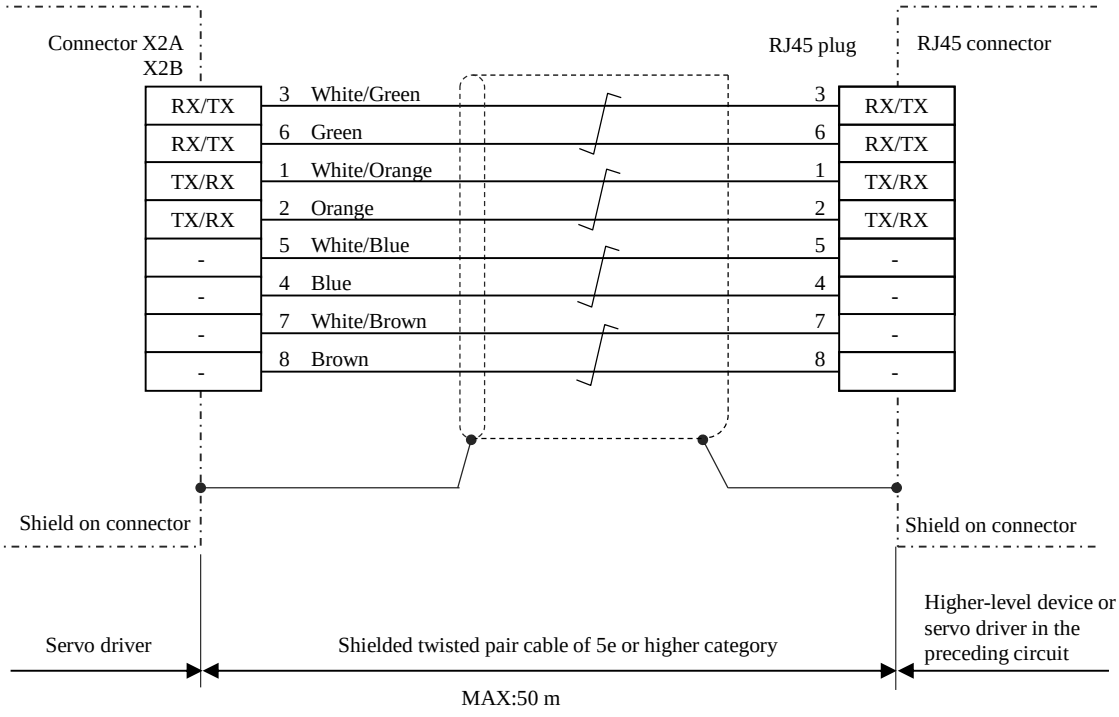
Length between respective nodes: within 50 m

[6] Cable specifications including flexural property, temperature range, and materials used for covering are different according to manufacturers.
Select the cable according to the working conditions of the customer.
A movable cable should also be selected according to the working conditions of the customer.

Pin layout of the communication plug



Connection of X2A / X2B



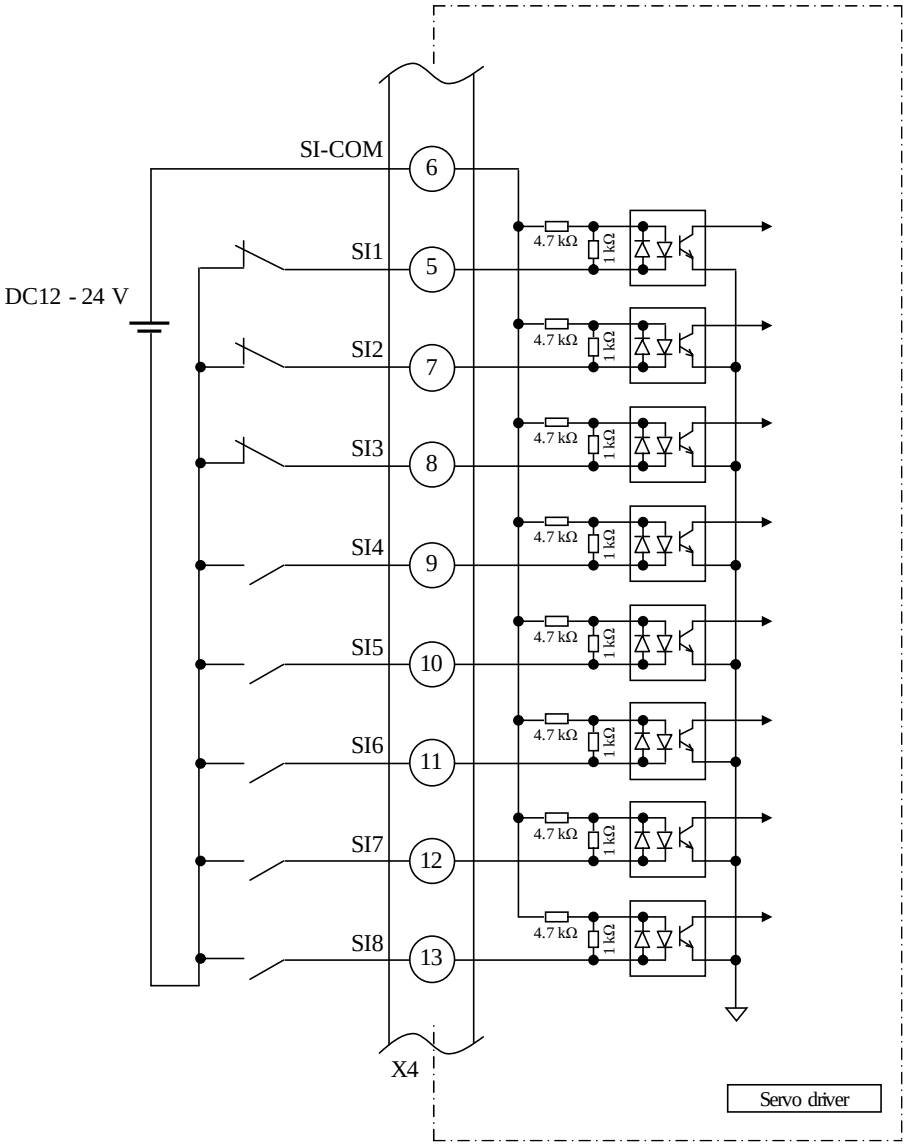
8-3-3 Wiring to connector X4

[1] The customer is required to prepare the 12 to 24 VDC control signal power supply for external control to be connected to SI-COM.

[2] Install peripheral devices close to the servo driver as much as possible so that wiring length is minimized (within 3 m).

[3] Keep the wires away from the wiring of the power lines (P1, N1, P2, N2, U, V, W, FG) as much as possible (at least 30 cm). Do not route the wires through the same duct and do not tie them together.

Control input



The functions of pins SI1 – SI8 should be allocated by parameters.
For details, refer to “Technical Reference - Functional Specifications -”.

Control output

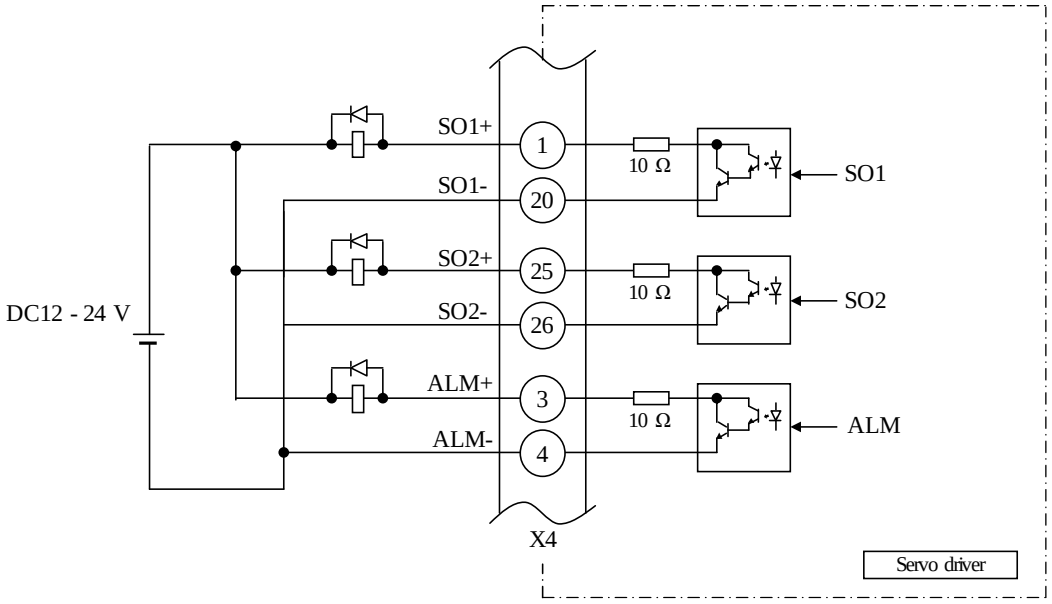
[1] Pay attention to the polarity of the control signal power supply. Connection to the polarity opposite to that in the figure can cause damage to the servo driver.

[2] When driving the relay directly using each output signal, be sure to mount a diode in parallel with the relay in the direction shown in the figure below. If a diode is not mounted or it is mounted in the reverse direction, the servo driver may be damaged.

[3] When receiving each output signal by a logical circuit such as a gate, be careful not to be affected by noise.

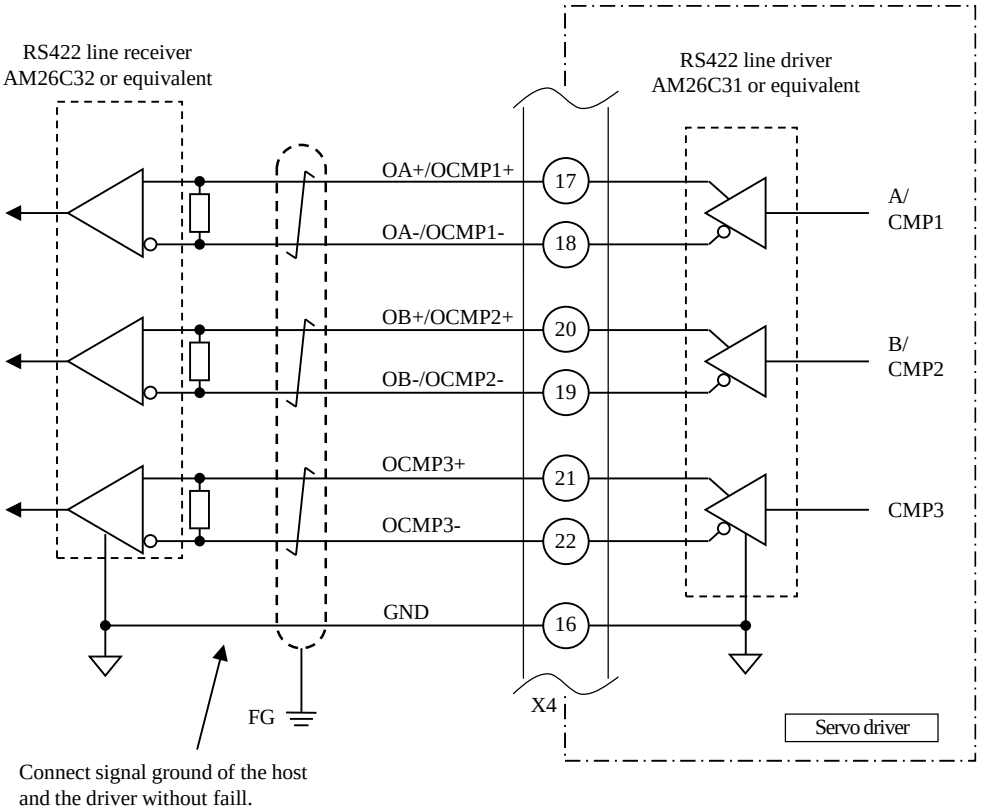
[4] The rated current, maximum current, and rush current applied to each output should be 40 mA, 50 mA, and 90 mA or less respectively.

[5] A limiting resistor (10 Ω) is connected to the output circuit.
For the purpose of Darlington connection of the output transistor, voltage between the collector and the emitter V_{CE} (SAT) is approx. 1 V when the transistor is turned ON.
Note that direct connection is impossible because the normal TTL IC cannot satisfy the VIL.



The functions of pins SO1, SO2 should be allocated by parameters.
For details, refer to “Technical Reference - Functional Specifications -”.

Feedback pulse of the rotary encoder



Note:

[1] Use an RS422 line receiver (AM26C32 or equivalent) to receive output pulse.
At that time, mount an appropriate terminating resistor (approx. 330 Ω) between the line receiver inputs.

[2] The maximum output frequency should be 4 Mpps (after quad edge evaluation) or less.

8-3-4 Wiring to connector X5

[1] It is supported for linear / DD /VCM type only.

[2] The core wire of the feedback scale cable should be a strand wire of 0.18 mm^2 or more. Use a common shielded twisted pair wire.

[3] The maximum cable length should be 3 m or less. If the wiring length is long, double wiring is recommended for the 5 V power supply to reduce influence of voltage drop.

[4] Connect the exterior covering of the shield wire on the motor side to the shield of the shield wire from the feedback scale.
Be sure to connect the exterior covering of the shield wire on the servo driver side to the shell of X5 (FG).

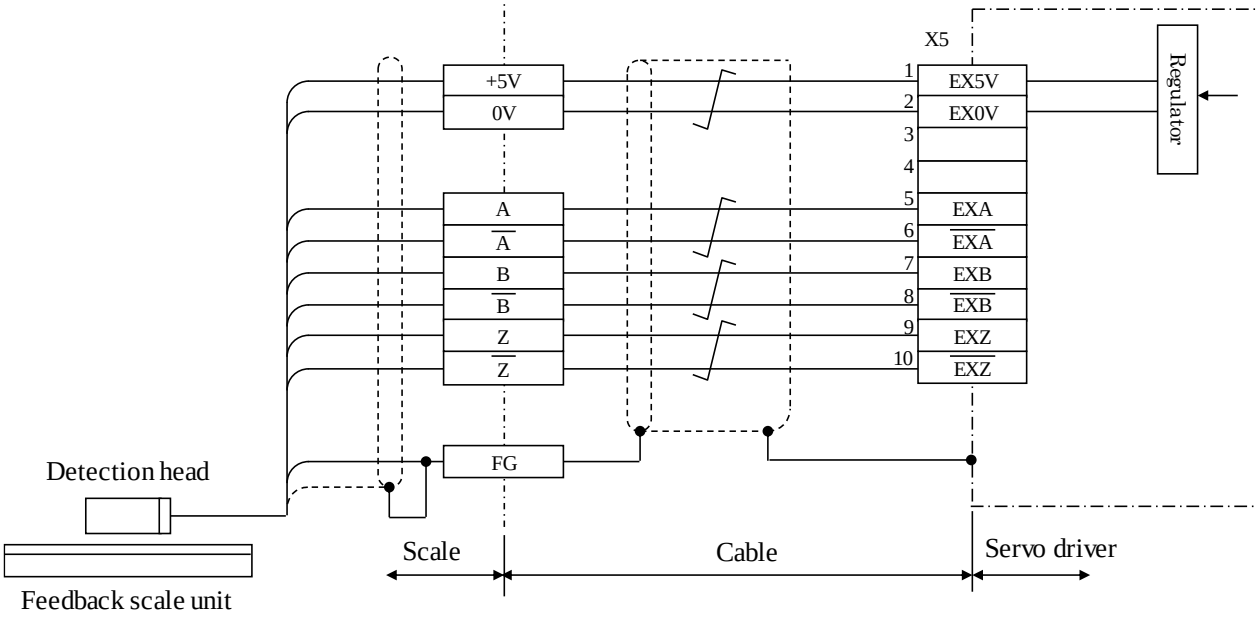
[5] Keep the wires away from the wiring of the power lines (P1, N1, P2, N2, U, V, W, FG) as much as possible (at least 30 cm). Do not route the wires through the same duct and do not tie them together.

[6] Do not connect anything to the idle pin of X5.

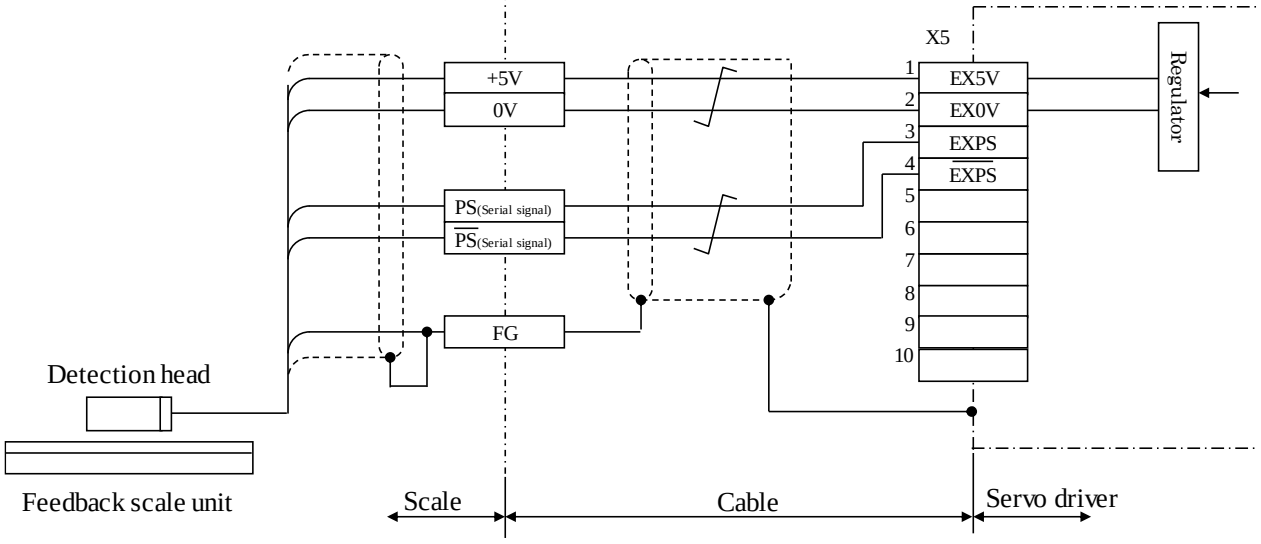
[7] Power that can be supplied from X5 is max. 5 V±5% and 250 mA. When using a feedback scale whose consumption current exceeds this value, the corresponding power supply should be prepared by the customer. It may take time to perform initialization after power-on, depending on feedback scales. Make a design so as to satisfy the operation timing after supplying power.

[8] When driving a feedback scale using external power supply, make the EX5V pin open so that voltage is not supplied to this pin from outside. In addition, connect 0 V (GND) of the external power supply with EX0V (X5 2pin) of the driver to obtain the same electric potential.

Wiring example of A/B phase, the origin signal differential input type



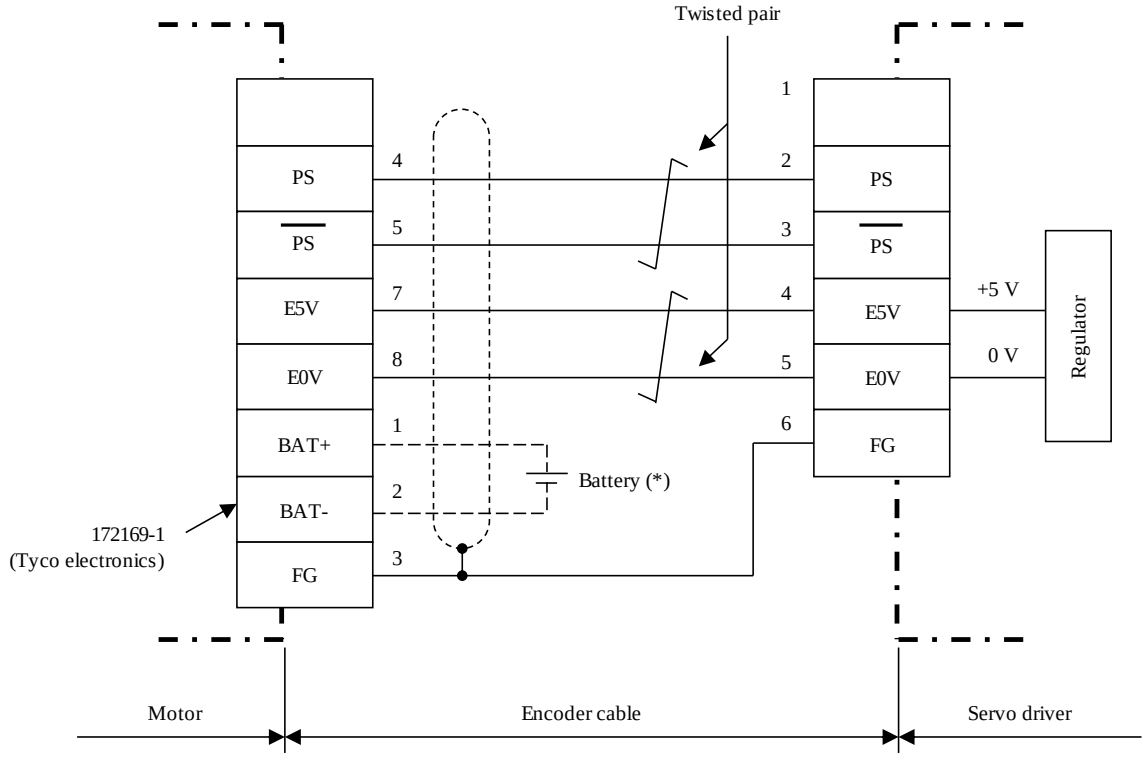
Wiring example of the serial communication type



8-3-5 Wiring to connector X6

Rotary type

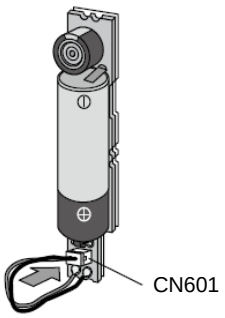
[1] The core wire of the encoder cable should be a strand wire of 0.18 mm^2 or more. Use a common shielded twisted pair wire.
[2] The maximum cable length should be 3 m or less. If the wiring length is long, double wiring is recommended for the 5 V power supply to reduce influence of voltage drop.
[3] Be sure to connect the shield wires of the encoder cable to the FG terminal on the motor side and the shell of X6 (FG) on the servo driver side.
[4] Keep the wires away from the wiring of the power lines (P1, N1, P2, N2, U, V, W, FG) as much as possible (at least 30 cm). Do not route the wires through the same duct and do not tie them together.
[5] Do not connect nothing to pin 1.



(*) When not use absolute system, remove battery.

Precautions when using the battery for the absolute encoder

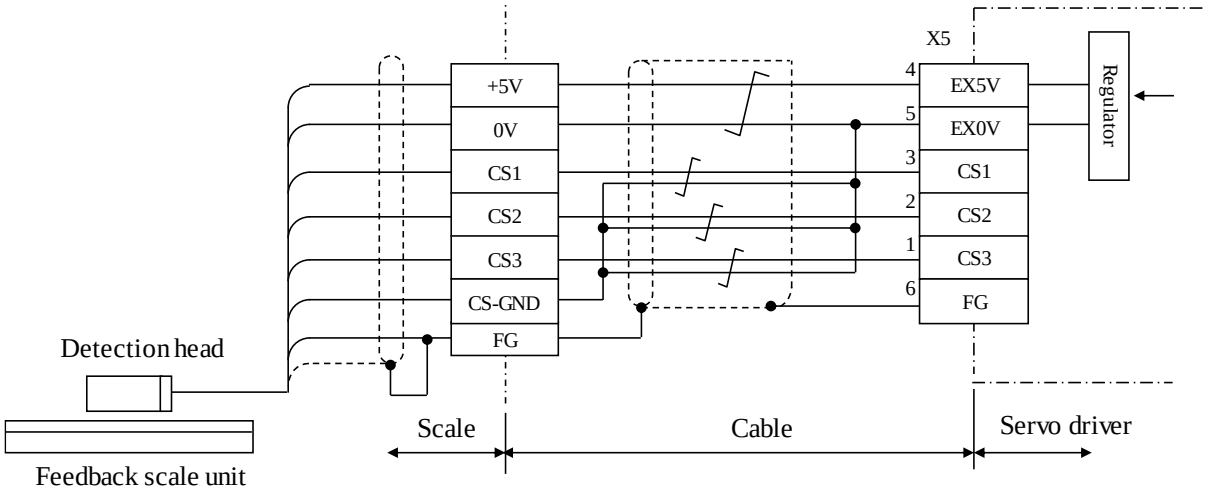
- If the battery voltage drops, an error occurs in the absolute encoder.
  Voltage drop is caused by either the end of the battery life or a voltage delay.
  [1] Note that the battery life is shortened depending on surrounding environmental conditions.
  [2] A lithium battery has the minimum transient voltage (voltage delay phenomenon). Voltage may drop temporarily when the battery starts discharging current. Therefore, it is necessary to refresh the battery before using it.
  <When using the battery for the first time>
  If you use battery unit DV0P2990 (built-in battery: ER6V 3.6V made by TOSHIBA LIFESTYLE PRODUCTS & SERVICES), which is an optional item of Panasonic, connect the connector with lead wire to CN601 as shown in the right figure and set it aside for five minutes.
  Then, disconnect the connector from CN601 and attach it to the servo driver.
  Even when a battery is prepared by the customer, it is recommended to perform refreshing before using it. For the refreshing procedure, consult with the corresponding battery manufacturer.



  <After mounting the battery unit>
  It is recommended to perform turning ON/OFF of the control power supply approx. once in a day.
- Incorrect use of the battery can cause troubles such as corrosion of the product due to leakage from the battery or risks such as breakage of the battery. Therefore, be sure to observe the following.
  [1] Make sure that the directions of the positive and negative electrodes are correct.
  [2] If the battery that has been used for a long period or the battery that cannot be used any more is kept set in the device, troubles such as leakage may occur. Replace it with a new one promptly. (As a guide, it is recommended to replace the battery every two years.)
  • The electrolytic solution of the battery is not only highly corrosive, which corrodes peripheral parts, but also conductive, which can cause short circuiting. Periodical replacement is needed.
  [3] Do not dismantle the battery and do not put it into a fire.
  • Never dismantle it because it is very dangerous if the scattered content enters the eye. Putting it into a fire or heating it may cause a bursting, which is dangerous.
  [4] Do not short circuit the battery and do not peel the battery tube.
  • If a metal or the like touches the positive or negative electrode terminal of the battery, large current is applied at a time, which weakens the battery.
  Further, heavy heat generation may occur, resulting in bursting, which is dangerous.
  [5] This battery cannot be charged. Do not charge the battery.
- Disposal of the used battery after replacement is regulated by some municipalities. Dispose of the battery according to the regulations of each municipality.
- Air transportation
  At the time of transportation by aircraft (both passenger airplane and cargo airplane), it is necessary to make an application with regard to hazardous materials. (UN packaging is required.)
  When requesting air transportation, it is required to submit necessary documents (such as a parameter sheet and SDS) to the transport company. Please make the request for it via the distributor.
- UN packaging
  For details, contact each transport company.

Linear / DD /VCM type

[1] For the CS signal cable, use a stranded wire with a core wire of 0.18 mm 2 or more, and use a cable with integrated shield (twisted pair wire is preferable).
[2] The maximum cable length is 3 m. When the wiring length is long, double wiring is recommended to reduce the influence of voltage drop in the 5 V power supply.
[3] Connect the ground of CS signal to E0V.
[4] Connect the outer sheath of the feedback scale side shield wire to the shield wire shield from the feedback scale. Be sure to connect the sheath of the shielded wire on the servo driver side to the X5 shell and X6 FG.
[5] Keep away from the wiring of the power line (P1, N1, P2, N2, U, V, W, FG) as much as possible (30 cm or more). Please do not pass through the same duct or bind together.
[8] Please do not connect anything to empty pins of X6.
[9] The power supply that can be supplied from X6 is 5 V ± 5% 250 mA MAX. If you are using a feedback scale with more current consumption, please prepare the power supply by the customer. Also, some feedback scale may take time to initialize after turning on the power. Please design so as to meet the operation timing after turning on the power supply described in the technical documents.
[10] Wiring of X6 is unnecessary when magnetic pole position estimation function is used without using CS signal.



8-4 Dynamic brake

The servo driver has a dynamic brake built in for emergency stop.

The dynamic brake can be operated in the following cases.

[1] When power supply is turned off

[2] When the servo is turned off

[3] When the protective function is operated

[4] When drive prohibiting input (POT, NOT) of connector X4 is operated

During deceleration in the above cases [1] to [4] or after the stop of the servo driver, whether the dynamic brake is operated, or free run is applied can be selected by setting the parameter.

However, when the control power input is turned off, the dynamic brake of the servo driver is kept operated.

The dynamic brake is provided only for the short-time usage in case of emergency stop.

Therefore, note the following points.

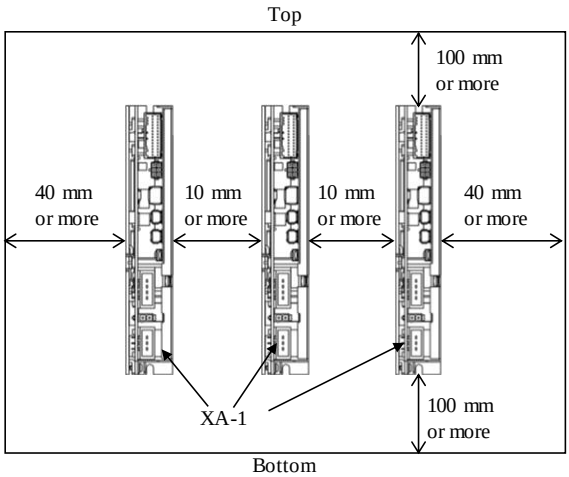
[1] Do not start or stop operation by turning on/off the servo ON signal. Otherwise, the dynamic brake circuit built in the servo driver may get damaged.

[2] Do not drive the motor with external power.
If the motor is driven from outside, it will work as a generator. Therefore, short circuit current is applied during operation of the dynamic brake, which can cause smoking or ignition. In addition, the dynamic brake may be disconnected, which can cause disabling the operation.

[3] If the dynamic brake is operated during high-speed operation, provide stop time for approx. 10 minutes.
If the dynamic brake is used beyond that condition, the brake may be disconnected, which can cause disabling the operation.

8-5 Mounting direction and interval

- Install the servo driver in an environment of Pollution degree 2, such as in the control panel of IP54 or more.
- Secure the surrounding space for effective cooling.
- Satisfy the environmental conditions for the inside of the control panel.
- Fix the servo driver to the conductive frame.
- If the servo driver is mounted to a painted portion, anti-noise measures can be taken by installing it after peeling off the paint.
- The temperature around the servo driver should be measured at a position 50 mm away from the side or bottom surface of the driver. If it is impossible to measure the temperature at a position 50 mm away from it, perform measurement at the midpoint in the clearance between the obstacle and the driver.
- As shown below, install the servo amplifier so that the connector XA - 1 faces downward.
  When other installation directions, use at ambient temperature of 45 ° C or less.



9. Compliance with the international standards

9-1 List of compatible standards for the servo driver to be acquired

		Applicable standard
EU/UK standards	EMC	EN 55011: 2016/A11:2020 (Group 1, Class A) EN 61000-6-2 EN 61000-6-4 EN 61800-3:2004/A1:2012 (Category C3, Second environment)
	Low voltage	EN 61800-5-1
UL standard		UL 61800-5-1 (File No. E164620) Power conversion equipment - component
CSA standard		C 22. 2 No. 274-13
KC		KN 11 K 61000-4-2,3,4,5,6,8,11

EN : European Norman
EMC :Electromagnetic Compatibility
UL : Under writers Laboratoris
CSA : Canadian Standards Association
KC : Radio Waves Act(South Korea)

9-2 EU directives and UK regulations

Our products comply with standards associated with the EU low voltage directive/UK low voltage regulation in order to facilitate compliance of embedded equipment and devices with the EU directives/UK regulations.

9-2-1 Compliance with the EU EMC directive/UK EMC regulation

EN 55011

Warning: Class A equipment is intended for use in an industrial environment. Conductive and radioactive interference can make it difficult to ensure electromagnetic compatibility in other environments.
Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

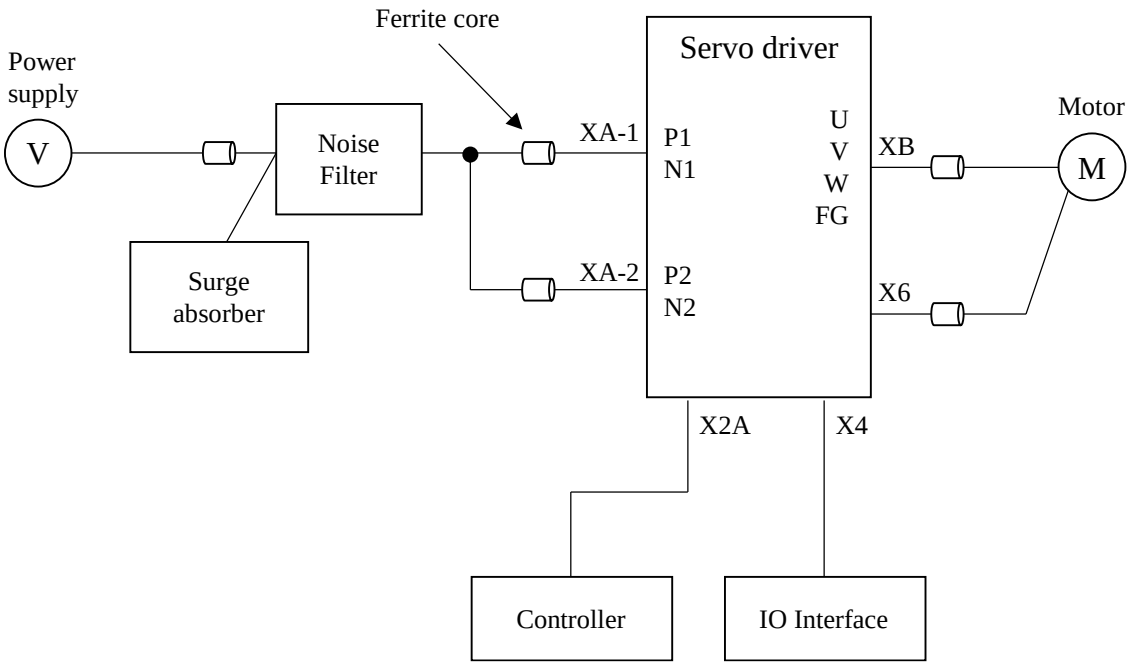
EN 61800-3

Servo drivers and servo motors are not intended for general household use or for connection to low-voltage public communication lines. Radio frequency interference may occur when connected to such circuits.
To comply with the EU EMC directive/UK EMC regulation, use a noise filter, a surge absorber, and a ferrite core. The compliance of machinery and equipment with the EU EMC directive/UK EMC regulation must be confirmed on machinery and equipment in its final state incorporating servo drivers and servo motors.

9-3 Configuration of peripheral devices

9-3-1 Installation environment

Use the servo driver under the environment at pollution degree 2 stipulated in IEC60664-1.



9-3-2 Power supply

DC power using stabilized power supply (SELV) are provided with reinforced insulation or double insulation.

DC24 V	DC20 V – DC29 V	+21 % -17%
DC48 V	DC40 V – DC58 V	+21 % -17%

(1) Use them under the environment of overvoltage category I defined in IEC60664-1.

(2) Use insulated-type 12 to 24 VDC power supply for parallel I/O in compliance with the CE marking or the EN standard (EN60950).

9-3-3 Noise filter

When using multiple units of servo drivers and installing one noise filter collectively in the power supply section, consult with the noise filter manufacturer.

9-3-4 Surge absorber

Install a surge absorber on the primary side of the noise filter.

<Request>

When performing a withstand test for the machines and devices, be sure to remove the surge absorber. Otherwise, the surge absorber may get damaged.

9-3-5 Ferrite core

Install the ferrite cores for signal lines in all cables (power supply, motor, encoder, and interface cables).

9-4 List of servo drivers and applicable peripheral devices

	Optional part number	Part number of manufacturer	Manufacturer
Noise filter	—	SUP-EK15-ER-6	Okaya Electric Industries
Surge Absorber	—	B3082	Okaya Electric Industries
Ferrite Core	DV0P1460	ZCAT3035-1330	TDK

* The number of turns toward the ferrite core is once for each frame.

Note

- Select a noise filter with a capacity suitable for the power supply capacity (in consideration of load conditions).

9-5 Compliance with the UL standard

[1] Installation environment

Install the servo driver under the environment at pollution degree 2 stipulated in IEC60664-1.
Use copper conductor wires whose temperature rating is 75°C or higher.

[2] Branch circuit protection

Protect the branch circuit in accordance with the NEC (National Electrical Code) and the local standard.

[3] Overload protection and overheating protection

The servo driver has a built-in function to protect against servo motor overload.
The overload protection function is operated based on the specified time limit characteristics when current has reached 115% or more of the rating.
The servo motor is not provided with an overheating protection function.
When it is necessary to satisfy the NEC, implement overheating protection measures for the servo motor.
This servo driver has the thermal memory (shut down) function specified in EN61800-5-1: 2007 / A1: 2016 but does not have the thermal memory (loss of Power) and speed sensitivity functions.

[4] Other

This servo driver is certified as “Component”.

9-6 Radio Waves Act of South Korea

The servo driver is a Class A device (broadcast communication device for business use) based on the Radio Waves Act of South Korea.
Use the product after understanding the following precautions.

A 급 기기 (업무용 방송통신기자재)
이 기기는 업무용(A 급) 전자파적합기기로서 판매자
또는 사용자는 이 점을 주의하시기 바라며, 가정외의
지역에서 사용하는 것을 목적으로 합니다.
(대상기종 : Servo Driver)

[Reference translation]

Class A device (broadcast communication device for business use)
This product is an electromagnetic wave generating device for business use (Class A),
which is intended for the use in places other than household.
The distributor and the user should be attentive to this point.
(Applicable model: Servo Driver)

⚠ Safety Precautions

10. Safety Precautions

This section explains precautions that must be taken to prevent harm to people and damage to property.

■The following symbols represent the extent of the harm or damage that may occur through improper use.

⚠ DANGER	This indicates “a significant risk of death or serious injury”.
⚠ CAUTION	This indicates “a risk of minor injury or damage to property”.

■The following symbols indicate how to comply with safety precautions.

	Something that you must not do.
	Something you must do.

⚠ DANGER

(1) Ensure that the product is used in environment of Pollution degree 2 (places free from dust, metal powders, oil mists, and other foreign objects, as well as liquids such as water, oil, or grinding fluids). Do not store or use near combustible materials or in an environment containing corrosive gases (H2S, SO2, NO2, Cl2, etc.) or flammable gases.

(2) Do not place flammable materials near the motor, servo driver, or regenerative resistor.

(3) Do not run the motor using an external power source. If the motor is run externally, it will start acting as an electricity generator. This may cause it to short-circuit during operation of the dynamic brake, which is integrated into the servo driver, resulting in smoke and dust being emitted. Doing so may also cause the dynamic brake to become disconnected, preventing it from functioning.

(4) Do not damage the cable, apply undue stress to it, place heavy objects on it, or pinch it.

(5) Do not use with the cable submerged in oil or water.

(6) Do not install the product next to heating elements such as heaters or large winding resistors. (Protection such as heat shields should be used to protect the product from heating elements.)

(7) Do not connect a commercial power supply directly to the motor.

(8) Do not use in places susceptible to strong vibrations or impacts. If installing a servo driver near a source of vibration, attach a vibration dampening device to the servo driver mounting surface.

(9) Do not touch the rotating parts of the motor during operation.

(10) Do not touch the keyway of the motor output shaft with bare hands.

(11) Do not put hands inside the servo driver.

(12) Do not touch the heat sink and peripheral devices of the motor or servo driver, as they can get very hot.

(13) Do not performing wiring or operate the product with wet hands.

(14) Wiring work should be carried out by an electrical engineer.

(15) Motors other than that specified do not include protective devices. Protect them using overcurrent protection devices, ground-fault circuit interrupters, overheating prevention devices, emergency stop devices, etc.

⚠ Safety Precautions

⚠ DANGER

(16) Before operating the servo driver following an earthquake, ensure that the servo driver and motor are properly installed and that the machine is safe.

(17) After the power supply is switched off, the internal circuit will be charged at high voltage for a period of time. When relocating, wiring, or inspecting the driver, ensure that the power supply input is completely disconnected on the outside of the servo driver and wait at least 15 minutes before carrying out any work.

(18) Install and set up the product so that it does not cause fire or personal injury in the event of an earthquake.

(19) Install an external emergency stop circuit must be installed to enable the power supply to be immediately disconnected in the event of an emergency. Failure of the combined motor and servo driver may result in smoke and dust being emitted. For example, if an electric current is passed through the regenerative control power transistor built into the servo driver following a short-circuit fault, the regenerative resistor installed outside the servo driver may overheat, leading to smoke and dust being emitted.
If a regenerative resistor is connected to the outside of the servo driver, it must be installed so that the thermal protector or other overheating detection devices can detect abnormal overheating and to enable the power supply to be disconnected

(20) Install the motor, servo driver, and peripheral devices to nonflammable materials such as metal.

(21) Ensure that the product is wired correctly and securely. Insecure or incorrect wiring may cause the motor to malfunction or lead to thermal damage. Also, do not allow any conductive materials such as wire debris to enter the servo driver during installation and wiring.

(22) Ensure that the cables are securely connected and that energized parts are insulated.

(23) Binding and inserting wires into a metal duct will cause the temperature to increase, which will result in reduced wire current capacity and possibly lead to thermal damage. Please consider the current reduction coefficient before deciding on how to wire the product.

(24) Make sure to install a molded case circuit breaker (MCCB) to the power supply. Also, make sure to ground the ground terminal or ground wire.
D-type grounding or higher (ground resistance less than 100 Ω) is recommended in order to prevent electric shocks and malfunctions

(25) Securely tighten the screws for connecting the terminal block, as well as the grounding screw, using the torque indicated in the specification sheet.

(26) When constructing a system using safety features, make sure you understand and comply with the relevant safety standards as well as the information in our user manuals or technical reference documents.

⚠ CAUTION

(27) When transporting the product, do not hold it by the cable or motor shaft.

(28) When adjusting the parameters of the servo driver, do not set the gain too high or make extreme modifications to settings simultaneously, as doing so may result in unstable operation.

(29) Following a power outage, do not get close to the machine once power is restored, as it may restart suddenly. Settings must be made to ensure personal safety even in event the machine restarts suddenly.

(30) Do not approach the motor or the machine when it is running during power-up to ensure safety in the event of an unexpected malfunction.

(31) Do not subject the motor shaft to strong shock.

(32) Do not use the electromagnetic contactor installed on the main power supply side to start or stop the motor.

(33) Do not turn the servo driver main power supply on and off more frequently than necessary.

(34) If the motor has a built-in brake, it is for maintenance purposes and should not be used as a stopping (braking) device in order to ensure machine safety.

(35) Do not drop or tip over the product during transportation or installation.

⚠ Safety Precautions

⚠ CAUTION

(36) Do not climb on the motor or place heavy objects on it.

(37) Do not cover the servo driver louver or allow any foreign objects to enter.

(38) Do not expose the product to direct sunlight. When storing the product, keep it away direct sunlight and store at temperatures and humidity within the specified ranges.

(39) Do not attempt to overhaul or modify the motor. Overhauls must be carried out by Panasonic or an authorized dealer.

(40) Do not start or stop the device by turning the servo-on command (SRV-ON) on or off as this may damage the dynamic braking circuit incorporated into the servo drive.

(41) Use the motor and servo driver in the combination specified by Panasonic. If combining the motor with a different servo driver, make sure to confirm its performance and safety.

(42) Failure of the motor or the servo driver it is combined with may result in thermal damage to the motor and may cause smoke and dust to be emitted. Please consider these possibilities when using the device in cleanrooms, etc.

(43) Make sure the device is mounted in a manner suitable for the power output and the weight of the unit.

(44) Keep the ambient temperature and humidity of the servo driver and motor are within the permitted ambient temperature and humidity ranges.

(45) Observe the specified mounting method and orientation.

(46) Keep the required distance between the servo driver and the control panel interior or other equipment.

(47) If an eyebolt is attached to the motor, it should only be used to transport the motor and not to transport any other equipment. The eyebolt should also not be used if a decelerator, face plate, etc., is attached.

(48) Connect the brake control relay in series with the relay that disconnects in the event of an emergency stop.

(49) To perform a test run, secure the motor and check its operation with it disconnected from the mechanical system, then mount it onto the machine.

(50) Confirm that the input power supply voltage is in line with the servo driver specifications before turning it on and operating.
Entering a voltage higher than the rated voltage could cause smoke and dust to be emitted inside the servo driver, which in some cases may cause the motor to malfunction or lead to thermal damage.

(51) In the event of an alarm, eliminate the cause of the alarm and restart the device.
Restarting the device without eliminating the cause of the alarm may cause the motor to malfunction or lead to thermal damage.

(52) If the motor has a built-in brake, it may not last due to reasons such as its life span or mechanical structure. A stopping device must be installed on the machine side to ensure safety.

(53) The motor and servo drive emit heat while the motor is in operation. Ambient temperature may rise abnormally if used in an enclosed area. Take care to ensure that the ambient temperatures of the motor and servo driver are within the operating range.

(54) Maintenance and inspections should be performed by a specialist.

(55) Make sure to turn off the power supply if the device will not be used for a long period of time.

(56) Allow approx. 10 minutes pause when the dynamic brake is activated during high-speed running.
Resistor is damaged, and the dynamic brake might not work when using it under more critical operating condition.

(57) Fix the cable so that stress is not applied to the connection parts such as the connector and terminal block.

(58) Use stabilized power supply (SELV) provided with reinforced insulation.

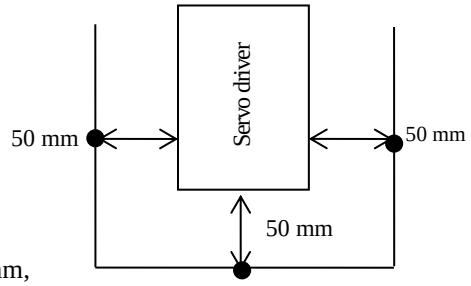
- The capacitance of the capacitors of the power supply rectifier circuit will drop over time. To avoid a secondary problem due to a failure, replacement is recommended approx. every five years. Replacement must be carried out by Panasonic or an authorized dealer.

Safety Precautions

Servo Driver Ambient Temperature

The life span of the servo driver is largely dependent on the ambient temperature.
Make sure that the ambient temperature within 50 mm of the servo driver does not exceed the operating temperature range.

If the temperature cannot be measured from a distance of 50 mm, measure at the midpoint of the gap between the obstacle preventing measurement and the servo driver.



Operating temperature range: 0 - 55°C

11. Life span

(Life span is not guaranteed.)

11-1 Expected life span of servo driver

When used continuously under the following conditions, the expected life span is 28,000 hours.

Definition of life span: "Life span" is defined as the time it takes for the electrolytic to decrease in capacity by 20% once shipped from the factory.

Conditions:

Input power supply	:	DC 24 V or DC 48 V
Ambient temperature	:	55 ℃
Height above sea level	:	100 m or less
Output torque	:	Rated torque constant
Speed	:	Rated speed constant

Life span changes significantly depending on working conditions.

12. Warranty

12-1 Warranty period

The warranty period for the product is one year from the date of purchase or one year and six months from the date the product was manufactured.
However, the warranty will be void in any of the following cases, even within the warranty period:

(1) If the issue is due to incorrect use or improper repair/modification.
(2) If the issue is due to the device being dropped after purchase or damaged during transit.
(3) If the issue is due to the device being used outside of its specifications.
(4) If the issue is due to a fire, earthquake, lightning strike, wind/water damage, salt damage, voltage abnormalities, other natural disasters, or natural damage.
(5) If the issue is due to ingress of water, oil, metal fragments, or other foreign objects.
(6) If parts with a stated standard life span have exceeded their respective life spans.

12-2 Warranty coverage

If the product fails during the warranty period for reason in which our company is at fault, we will only replace or repair the defective parts of the device that were provided by us. Please note that our above-stated responsibility is limited to the replacement and repair of the equipment provided by us and that we do not accept any responsibility for damage to your company or any third party that may occur in connection with the failure of the equipment provided by us.
We do not accept responsibility for any equipment failures or damage to your company or any third party in the case of any of the exclusions set forth in 12-1 above or in any of the following cases:

(1) If the equipment has been incorporated or used in a way that does not conform to the instructions or precautions set forth in this specifications document.
(2) If the issue is due to a combination of products that incorporate different equipment.
(3) If you fail to comply with the requests made to your company in this specifications document.
(4) If the equipment failure is not caused by our company's actions.

12-3 Warranty service

If you require the warranty service (fault cause investigation, repair, etc.), please contact the retailer from which you purchased the product. If you wish to send it directly to us with the permission of the retailer, please receive a repair/investigation request form from the place of purchase, fill out the necessary information, and send it to our motor service desk along with the product.
As a general rule, you will be responsible for shipping costs.

13. Network Security

As you will use this product connected to a network, your attention is called to the following security risks.
(1) Leakage or theft of information through this product
(2) Use of this product for fraudulent operation by persons with malicious intent
(3) Interference with or stoppage of this product by persons with malicious intent

It is the customer's responsibility to ensure that sufficient network security measures are taken, including those listed below.
We will not be liable for any damage caused by insufficient network security.

< Notes >

- This product is to be used in an environment where only a limited number of parties are permitted access to the product.
- This product is not to be installed in locations where the product and its accessories, such as cables, can be easily destroyed.
- This product is to be used on a network that is not connected to the Internet.
- If an external device, such as a computer or tablet, is connected to this product, there are concerns about the effects of computer viruses and unauthorized programs.
  Take appropriate security measures with external devices, such as ensuring that they are checked for computer viruses and that regularly cleaning of such viruses is performed before connecting them.
- If the product is to be disposed of, transferred, repaired, or otherwise transferred to a third party, important information may also be recorded on the product.
  At customer's risk, please handle it with care, such as erasing it.

14. Additional Precautions

(1) Precautions to be taken when exporting the product or equipment incorporating the product.
If the end user or end use of this product is related to the military or weaponry, etc., it may be subject to export restrictions as set forth in the Foreign Exchange and Foreign Trade Act. When exporting, please review and follow the necessary export procedures.

(2) This product is designed for general industrial use. This product is not for use in devices critical to human wellbeing or in specialized environments, such as nuclear power control, aerospace equipment, transportation systems, medical equipment, various safety devices, or equipment that requires a high degree of cleanliness.

(3) Please ensure that finished equipment complies with standards, laws, and regulations, and confirm that the structure, dimensions, life span, and characteristics of the product match those of your installed equipment and components.

(4) Since it is possible, albeit unlikely, that your finished equipment will operate abnormally due to a malfunction of our product (such as due to signal disconnections, signal open phases, or operation performed outside the settings as a result of external noise or static electricity being applied), please put in place failsafe and ensure adequate safety within the operational range of your site.

(5) Make sure to follow indications as overloading products can cause loads to collapse.

(6) Ensure that the motor shaft is not operated without being electrically grounded, as this may lead to electrolytic corrosion of the motor bearing and increased bearing noise, depending on the machine and the installation environment.

(7) A tightening torque appropriate for the product mounting screws should be chosen to avoid loosening or damage, taking into account the strength of the screws used and the material to which they are mounted.

(8) Because noise resistance may be affected by wiring conditions (e.g., grounding methods, cable length, signal wire shielding), please confirm the noise resistance of your equipment.

(9) When disposing of the servo driver or motor, treat them as industrial waste.

(10) When disposing of batteries, insulate them with tape and dispose of them in accordance with local regulations.

(11) As long as you comply with this specifications document, certain components may be modified to improve performance, etc.

(12) Changes to specifications shall be reflected in the delivery specifications document or in a document specified by your company. If this affects the function or characteristics of the product, the specifications will be changed following a test with a prototype.

(13) Changes in specifications may affect the price of the product.

(14) If you require clarification on something that is not covered by this specifications document, please contact us in advance.

(15) In the event of a problem, the two parties shall resolve the issue following consultations as set forth in this specifications document.

(16) Depending on the nature of the failure of the product, an amount of smoke equivalent to one cigarette may be emitted.
Please consider these possibilities when using the device in cleanrooms, etc.

(17) Do not use detergents containing benzine, thinner, alcohol, acid, or alkaline as this may cause discoloration or damage to the product's exterior.

(18) Please check the matching between the linear motor and the servo driver and check the safety at your own risk.

(19) Do not reverse engineer, decompile, or disassemble this product.

(20) Abnormal current may cause thermal damage with some linear motors.

(21) Ensure safety against thermal damage on the equipment by covering the linear motor with nonflammable materials, etc.

15. Other notes of specification

・Main power supply and the control circuit are not isolated. Please Insulate processing if necessary

16. Specifications for each model

Model	MVDLN4CBE	MVDLN5CBE	MVDLN4BBE	MVDLN5BBE
Power supply input	DC 24 V	DC 24 V	DC 48 V	DC 48 V
Maximum output current	26.9 Ao-p	43 Ao-p	26.9 Ao-p	43 Ao-p
Input capacitance of Main power supply (*Note 1)	1800 uF	1800 uF	1640 uF	1640 uF
Input capacitance of Control power supply (*Note 1)	3600 uF	3600 uF	820 uF	820 uF
Ambient temperature	0 - 55 °C	0 - 55 °C	0 - 55 °C	0 - 55 °C
Main power supply cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16	AWG14～16	AWG14～16
Control power supply cable	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2
	AWG18～20	AWG18～20	AWG18～20	AWG18～20
Functional Grounding cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16	AWG14～16	AWG14～16
Motor cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16	AWG14～16	AWG14～16
Rush current suppression	No limit by driver	No limit by driver	No limit by driver	No limit by driver
Regenerative discharge	Not supported.	Not supported.	Not supported.	Not supported.
Weight	Approx 0.35 kg	Approx 0.35 kg	Approx 0.35 kg	Approx 0.35 kg
Dimensions	89×180×30 mm	89×180×30 mm	89×180×30 mm	89×180×30 mm

(Note 1) Rated capacitance specified by parts manufacturer

Model	MVDLN0CBL	MVDLN1CBL	MVDLN2CBL	MVDLN3CBL
Power supply input	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Maximum output current	1.3 Ao-p	2.9 Ao-p	5.7 Ao-p	12.8 Ao-p
Input capacitance of Main power supply (*Note 1)	1800 uF	1800 uF	1800 uF	1800 uF
Input capacitance of Control power supply (*Note 1)	3600 uF	3600 uF	3600 uF	3600 uF
Ambient temperature	0 - 55 °C	0 - 55 °C	0 - 55 °C	0 - 55 °C
Main power supply cable	HVSF 0.5～2.0 mm^2	HVSF 0.5～2.0 mm^2	HVSF 0.75～2.0 mm^2	HVSF 0.75～2.0 mm^2
	AWG14～20	AWG14～20	AWG14～18	AWG14～18
Control power supply cable	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2
	AWG18～20	AWG18～20	AWG18～20	AWG18～20
Functional Grounding cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16	AWG14～16	AWG14～16
Motor cable	HVSF 0.5～2.0 mm^2	HVSF 0.5～2.0 mm^2	HVSF 0.75～2.0 mm^2	HVSF 0.75～2.0 mm^2
	AWG14～20	AWG14～20	AWG14～18	AWG14～18
Rush current suppression	No limit by driver	No limit by driver	No limit by driver	No limit by driver
Regenerative discharge	Not supported.	Not supported.	Not supported.	Not supported.
Weight	Approx 0.35 kg	Approx 0.35 kg	Approx 0.35 kg	Approx 0.35 kg
Dimensions	89×180×30 mm	89×180×30 mm	89×180×30 mm	89×180×30 mm

(Note 1) Rated capacitance specified by parts manufacturer

Model	MVDLN4CBL	MVDLN5CBL
Power supply input	DC 24 V	DC 24 V
Maximum output current	26.9 Ao-p	43 Ao-p
Input capacitance of Main power supply (*Note 1)	1800 uF	1800 uF
Input capacitance of Control power supply (*Note 1)	3600 uF	3600 uF
Ambient temperature	0 - 55 °C	0 - 55 °C
Main power supply cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16
Control power supply cable	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2
	AWG18～20	AWG18～20
Functional Grounding cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16
Motor cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16
Rush current suppression	No limit by driver	No limit by driver
Regenerative discharge	Not supported.	Not supported.
Weight	Approx 0.35 kg	Approx 0.35 kg
Dimensions	89×180×30 mm	89×180×30 mm

(Note 1) Rated capacitance specified by parts manufacturer

Model	MVDLN0BBL	MVDLN1BBL	MVDLN2BBL	MVDLN3BBL
Power supply input	DC 48 V	DC 48 V	DC 48 V	DC 48 V
Maximum output current	1.3 Ao-p	2.9 Ao-p	5.7 Ao-p	12.8 Ao-p
Input capacitance of Main power supply (*Note 1)	1640 uF	1640 uF	1640 uF	1640 uF
Input capacitance of Control power supply (*Note 1)	820 uF	820 uF	820 uF	820 uF
Ambient temperature	0 - 55 °C	0 - 55 °C	0 - 55 °C	0 - 55 °C
Main power supply cable	HVSF 0.5～2.0 mm^2	HVSF 0.5～2.0 mm^2	HVSF 0.75～2.0 mm^2	HVSF 0.75～2.0 mm^2
	AWG14～20	AWG14～20	AWG14～18	AWG14～18
Control power supply cable	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2
	AWG18～20	AWG18～20	AWG18～20	AWG18～20
Functional Grounding cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16	AWG14～16	AWG14～16
Motor cable	HVSF 0.5～2.0 mm^2	HVSF 0.5～2.0 mm^2	HVSF 0.75～2.0 mm^2	HVSF 0.75～2.0 mm^2
	AWG14～20	AWG14～20	AWG14～18	AWG14～18
Rush current suppression	No limit by driver	No limit by driver	No limit by driver	No limit by driver
Regenerative discharge	Not supported.	Not supported.	Not supported.	Not supported.
Weight	Approx 0.35 kg	Approx 0.35 kg	Approx 0.35 kg	Approx 0.35 kg
Dimensions	89×180×30 mm	89×180×30 mm	89×180×30 mm	89×180×30 mm

(Note 1) Rated capacitance specified by parts manufacturer

Model	MVDLN4BBL	MVDLN5BBL
Power supply input	DC 48 V	DC 48 V
Maximum output current	26.9 Ao-p	43 Ao-p
Input capacitance of Main power supply (*Note 1)	1640 uF	1640 uF
Input capacitance of Control power supply (*Note 1)	820 uF	820 uF
Ambient temperature	0 - 55 °C	0 - 55 °C
Main power supply cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16
Control power supply cable	HVSF 0.5～0.75 mm^2	HVSF 0.5～0.75 mm^2
	AWG18～20	AWG18～20
Functional Grounding cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16
Motor cable	HVSF 1.25～2.0 mm^2	HVSF 1.25～2.0 mm^2
	AWG14～16	AWG14～16
Rush current suppression	No limit by driver	No limit by driver
Regenerative discharge	Not supported.	Not supported.
Weight	Approx 0.35 kg	Approx 0.35 kg
Dimensions	89×180×30 mm	89×180×30 mm

(Note 1) Rated capacitance specified by parts manufacturer

Appendix List of Default Parameters

The following pages show default parameters and objects for when the servo driver is shipped from the factory. Operation must be confirmed for each customer machine before use and the optimal parameters set.

■Default value of the parameters(1/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
0	0	For Manufacturer's use	1
	1	Control mode setup	0
	2	Real-time auto-gain tuning setup	1
	3	Selection of machine stiffness at real-time auto-gain tuning	13
	4	Inertia ratio	250
	5	No use	-
	6	No use	-
	7	No use	-
	8	For Manufacturer's use	0
	9	For Manufacturer's use	1
	10	For Manufacturer's use	1
	11	Output pulse counts per one motor revolution	2500
	12	Reversal of pulse output logic/ Output source selection	0
	13 *2	1st torque limit	500
	14	Position deviation excess setup	83886080
	15	Absolute encoder setup	1
	16	External regenerative resistor setup	3
	17	Load factor of external regenerative resistor selection	0
	18	For Manufacturer's use	0

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ･･･ Value of Panaterm：0.53 / Value of parameter-file：53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(2/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
1	0 *1	1st gain of position loop	48.0
	1 *1	1st gain of velocity loop	27.0
	2 *1	1st time constant of velocity loop integration	21.0
	3	1st filter of velocity detection	0
	4 *1	1st time constant of torque filter	0.84
	5 *1	2nd gain of position loop	48.0
	6 *1	2nd gain of velocity loop	27.0
	7 *1	2nd time constant of velocity loop integration	21.0
	8	2nd filter of velocity detection	0
	9 *1	2nd time constant of torque filter	0.84
	10 *1	Velocity feed forward gain	100.0
	11 *1	Velocity feed forward filter	0.00
	12 *1	Torque feed forward gain	100.0
	13 *1	Torque feed forward filter	0.00
	14	2nd gain setup	1
	15	Mode of position control switching	0
	16 *1	Delay time of position control switching	1.0
	17	Level of position control switching	0
	18	Hysteresis at position control switching	0
	19 *1	Position gain switching time	1.0
	20	Mode of velocity control switching	0
	21 *1	Delay time of velocity control switching	0.0
	22	Level of velocity control switching	0
	23	Hysteresis at velocity control switching	0
	24	Mode of torque control switching	0
	25 *1	Delay time of torque control switching	0.0
	26	Level of torque control switching	0
	27	Hysteresis at torque control switching	0
	28	For Manufacturer's use	0
	29	For Manufacturer's use	0
	30	For Manufacturer's use	0

Category	Pr.	Parameter	Default value
1	31	For Manufacturer's use	0
	32	For Manufacturer's use	0
	33	For Manufacturer's use	0
	34	For Manufacturer's use	0
	35	For Manufacturer's use	0
	36	For Manufacturer's use	0
	37	For Manufacturer's use	0
	38	For Manufacturer's use	0
	39	For Manufacturer's use	0
	40	For Manufacturer's use	0
	41	For Manufacturer's use	0
	42	For Manufacturer's use	0
	43	For Manufacturer's use	0
	44	For Manufacturer's use	0
	45	For Manufacturer's use	0
	46	For Manufacturer's use	0
	47	For Manufacturer's use	0
	48	For Manufacturer's use	0
	49	For Manufacturer's use	0
	50	For Manufacturer's use	0
	51	For Manufacturer's use	0
	52	For Manufacturer's use	0
	53	For Manufacturer's use	0
	54	For Manufacturer's use	0
	55	For Manufacturer's use	0
	56	For Manufacturer's use	0
	57	For Manufacturer's use	0
	58	For Manufacturer's use	0
	59	For Manufacturer's use	0
	60	For Manufacturer's use	0
	61	For Manufacturer's use	0

Category	Pr.	Parameter	Default value
1	62	For Manufacturer's use	0
	63	For Manufacturer's use	0
	64	For Manufacturer's use	0
	65	For Manufacturer's use	0
	66	For Manufacturer's use	0
	67	For Manufacturer's use	0
	68	For Manufacturer's use	0
	69	For Manufacturer's use	0
	70	For Manufacturer's use	0
	71	For Manufacturer's use	0
	72	For Manufacturer's use	0
	73	For Manufacturer's use	0
	74	For Manufacturer's use	0
	75	For Manufacturer's use	0
	76	For Manufacturer's use	0
	77	For Manufacturer's use	0
	78	For Manufacturer's use	0

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(3/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
2	0	Adaptive filter mode setup	0
	1	1st notch frequency	5000
	2	1st notchwidth selection	2
	3	1st notch depth selection	0
	4	2nd notch frequency	5000
	5	2nd notch width selection	2
	6	2nd notch depth selection	0
	7	3rd notch frequency	5000
	8	3rd notch width selection	2
	9	3rd notch depth selection	0
	10	4th notch frequency	5000
	11	4th notch width selection	2
	12	4th notch depth selection	0
	13	Selection of damping filter switching	0
	14 *1	1st damping frequency	0.0
	15 *1	1st damping filter setup	0.0
	16 *1	2nd damping frequency	0.0
	17 *1	2nd damping filter setup	0.0
	18 *1	3rd damping frequency	0.0
	19 *1	3rd damping filter setup	0.0
	20 *1	4th damping frequency	0.0
	21 *1	4th damping filter setup	0.0
	22 *1	Command smoothing filter	9.2
	23 *1	Command FIR filter	1.0
	24	5th notch frequency	5000
	25	5th notch width selection	2
	26	5th notch depth selection	0
	27	1st damping width setting	0
	28	2nd damping width setting	0
	29	3rd damping width setting	0
	30	4th damping width setting	0
2	31	For Manufacturer's use	0
	32	For Manufacturer's use	0
	33	For Manufacturer's use	0
	34	For Manufacturer's use	0
	35	For Manufacturer's use	0
	36	For Manufacturer's use	0
	37	For Manufacturer's use	0

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(4/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
3	0	No use	-
	1	No use	-
	2	No use	-
	3	No use	-
	4	For Manufacturer's use	0
	5	For Manufacturer's use	0
	6	No use	-
	7	No use	-
	8	No use	-
	9	No use	-
	10	No use	-
	11	No use	-
	12	Acceleration time setup	0
	13	Deceleration time setup	0
	14	Sigmoid acceleration/ deceleration time setup	0
	15	No use	-
	16	No use	-
	17	Selection of speed limit	2
	18	No use	-
	19	No use	-
	20	No use	-
	21	For Manufacturer's use	0
	22	For Manufacturer's use	0
	23	External scale selection	0
	24	Numerator of external scaledivision	0
	25	Denominator of external scaledivision	10000
	26	Reversal of direction ofexternal scale	0
	27	External scale Z phase disconnection detection disable	0
	28	Hybrid deviation excess setup	16000
	29	Hybrid deviation clear setup	0
	30	No use	-

Category	Pr.	Parameter	Default value
3	31	No use	-
	32	No use	-
	33	For Manufacturer's use	0
	34	For Manufacturer's use	0
	35	For Manufacturer's use	0.00
	36	For Manufacturer's use	0

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(5/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
4	0	SI1 input selection	3289650
	1	SI2 input selection	8487297
	2	SI3 input selection	8553090
	3	SI4 input selection	2236962
	4	SI5 input selection	2105376
	5	SI6 input selection	2171169
	6	SI7 input selection	3158064
	7	SI8 input selection	3223857
	8	No use	-
	9	No use	-
	10	SO1 output selection	197379
	11	SO2 output selection	1052688
	12	SO3 output selection	65793
	13	No use	-
	14	No use	-
	15	No use	-
	16	Type of analog monitor 1	0
	17	Analog monitor 1 output gain	0
	18	Type of analog monitor 2	4
	19	Analog monitor 2 output gain	0
	20	No use	-
	21	Analog monitor output setup	0
	22	For Manufacturer's use	0
	23	For Manufacturer's use	0
	24	For Manufacturer's use	0
	25	No use	-
	26	No use	-
	27	No use	-
	28	No use	-
	29	No use	-
	30	No use	-
4	31	Positioning complete (In-position) range	8400
	32	Positioning complete (In-position) output setup	0
	33	INP hold time	0
	34	Zero-speed	50
	35	Speed coincidence range	50
	36	At-speed (Speed arrival)	1000
	37	Mechanical brake action at stalling setup	0
	38	Mechanical brake action at running setup	0
	39	Brake release speed setup	30
	40	Selection of alarm output 1	0
	41	Selection of alarm output 2	0
	42	2nd Positioning complete (In-position) range	8400
	43	No use	-
	44 *1	Position comparison output pulse width setting	0
	45	Position comparison output polarity selection	0
	46	No use	-
	47	Pulse output selection	0
	48	Position comparison value 1	0
	49	Position comparison value 2	0
	50	Position comparison value 3	0
	51	Position comparison value 4	0
	52	Position comparison value 5	0
	53	Position comparison value 6	0
	54	Position comparison value 7	0
	55	Position comparison value 8	0
	56 *1	Position comparison output delay compensation amount	0.0
	57	Position comparison output assignment setting	0

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(6/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
5	0	No use	-
	1	No use	-
	2	No use	-
	3	Denominator of pulse outputdivision	0
	4	Over-travel inhibit input setup	1
	5	Sequence at over-travel inhibit	0
	6	Sequence at Servo-off	0
	7	Sequence at main power off	0
	8	LV trip selection at main power off	0
	9	Detection time of main power off	2000
	10	Sequence at alarm	0
	11	Torque setup for emergency stop	0
	12	Over-load level setup	0
	13	Over-speed level setup	0
	14 *1	Motor working range setup	1.0
	15	Control input signal reading setup	0
	16	Alarm clear input(A-CLR) setup	1
	17	No use	-
	18	No use	-
	19	No use	-
	20	Position setup unit select	0
	21	Selection of torque limit	1
	22 *2	2nd torque limit	500
	23	No use	-
	24	No use	-
	25	For Manufacturer's use	0
	26	For Manufacturer's use	0
	27	No use	-
	28	No use	-
	29	For Manufacturer's use	2
	30	No use	-

Category	Pr.	Parameter	Default value
5	31	USB axis address	1
	32	No use	-
	33	Pulse regenerative output limitsetup	0
	34	For Manufacturer's use	4
	35	No use	-
	36	For Manufacturer's use	0
	37	No use	-
	38	No use	-
	39	No use	-
	40	No use	-
	41	No use	-
	42	No use	-
	43	No use	-
	44	No use	-
	45 *1	Quadrant glitch positive-direction compensation value	0.0
	46 *1	Quadrant glitch negative-direction compensation value	0.0
	47	Quadrant glitch compensation delay time	0
	48 *1	Quadrant glitch compensation filter setting L	0.00
	49 *1	Quadrant glitch compensation filter setting H	0.0
	50	For Manufacturer's use	0
	51	For Manufacturer's use	0
	52	For Manufacturer's use	0
	53	For Manufacturer's use	0
	54	For Manufacturer's use	0
	55	For Manufacturer's use	0
	56	Slow stop deceleration time setting	0
	57	Slow stop S-shape acceleration and deceleration setting	0
	58	No use	-
	59	No use	-
	60	No use	-
	61	No use	-

Category	Pr.	Parameter	Default value
5	62	No use	-
	63	No use	-
	64	No use	-
	65	No use	-
	66 *1	Deterioration diagnosis convergence judgment time	0.0
	67	Deterioration diagnosis inertia ratio upper limit	0
	68	Deterioration diagnosis inertia ratio lower limit	0
	69 *1	Deterioration diagnosis unbalanced load upper limit	0.0
	70 *1	Deterioration diagnosis unbalanced load lower limit	0.0
	71 *1	Deterioration diagnosis dynamic friction upper limit	0.0
	72 *1	Deterioration diagnosis dynamic friction lower limit	0.0
	73 *1	Deterioration diagnosis viscous friction upper limit	0.0
	74 *1	Deterioration diagnosis viscous friction lower limit	0.0
	75	Deterioration diagnosis velocity setting	0
	76	Deterioration diagnosis torque average time	0
	77 *1	Deterioration diagnosis torque upper limit	0.0
	78 *1	Deterioration diagnosis torque lower limit	0.0
	79	No use	-
	80	No use	-
	81	No use	-
	82	No use	-
	83	No use	-
	84	No use	-
	85	No use	-
	86	No use	-
	87	No use	-
	88	No use	-
	89	No use	-
	90	No use	-
	91	No use	-
	92	No use	-

Category	Pr.	Parameter	Default value
5	93	No use	-
	94	Position comparison Output condition setting	0
	95	No use	-
	96	For Manufacturer's use	0
	97	For Manufacturer's use	0

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(7/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
6	0	No use	-
	1	No use	-
	2	Velocity deviation excess setup	0
	3	For Manufacturer use	0
	4	No use	-
	5 *1	Position 3rd gain valid time	0.0
	6	Position 3rd gain scale factor	100
	7	Torque command additional value	0
	8	Positive direction torque compensation value	0
	9	Negative direction torque compensation value	0
	10	Function expansion setup	528
	11	Current response setup	100
	12	No use	-
	13	No use	-
	14	Emergency stop time at alarm	200
	15	2nd over-speed level setup	0
	16	No use	-
	17	No use	-
	18 *1	Power-up wait time	0.0
	19	For Manufacturer's use	0
	20	For Manufacturer's use	0
	21	For Manufacturer's use	0
	22	A,B phase external scale pulse output selection	0
	23	Load change compensation gain	0
	24 *1	Load change compensation filter	0.53
	25	For Manufacturer's use	0
	26	For Manufacturer's use	2
	27	Warning latch state setup	3
	28	No use	-
	29	No use	-
	30	For Manufacturer's use	0

Category	Pr.	Parameter	Default value
6	31	Real time auto tuning estimation speed	1
	32	Real time auto tuning custom setup	0
	33	No use	-
	34 *1	Hybrid vibration suppression gain	0.0
	35 *1	Hybrid vibration suppression filter	0.10
	36	Dynamic brake operation input setup	0
	37 *1	Oscillation detecting level	0.0
	38	Warning mask setup	4
	39	Warning mask setup2	0
	40	No use	-
	41	1st damping depth	0
	42 *1	Two-stage torque filter time constant	0.00
	43	Two-stage torque filter attenuation term	1000
	44	No use	-
	45	No use	-
	46	No use	-
	47	Function expansion settings 2	1
	48 *1	Adjust filter	5B/5C : 1.2 Other : 1.1
	49	Command / tuning filter damping	15
	50 *1	Viscous friction compensation gain	0.0
	51	Immediate cessation completion wait time	0
	52	For Manufacturer's use	0
	53	For Manufacturer's use	0
	54	For Manufacturer's use	0
	55	No use	-
	56	No use	-
	57	Torque saturation anomaly detection time	0
	58	For Manufacturer's use	0
	59	For Manufacturer's use	0
	60	2nd damping depth	0
	61 *1	1st resonance frequency	0.0

Category	Pr.	Parameter	Default value
6	62	1st resonance attenuation ratio	0
	63 *1	1st anti-resonance frequency	0.0
	64	1st anti-resonance attenuation ratio	0
	65 *1	1st response frequency	0.0
	66 *1	2nd resonance frequency	0.0
	67	2nd resonance attenuation ratio	0
	68 *1	2nd anti-resonance frequency	0.0
	69	2nd anti-resonance attenuation ratio	0
	70 *1	2nd response frequency	0.0
	71	3rd damping depth	0
	72	4th damping depth	0
	73 *1	Load estimation filter	0.00
	74 *1	Torque compensation frequency 1	0.0
	75 *1	Torque compensation frequency 2	0.0
	76	Load estimation count	0
	77	No use	-
	78	No use	-
	79	No use	-
	80	No use	-
	81	No use	-
	82	No use	-
	83	No use	-
	84	No use	-
	85	Retracting operation condition setting	0
	86	Retracting operation alarm setting	0
	87	For Manufacturer's use	0
	88	Absolute encoder multi-turn data upper-limit value	0
	89	No use	-
	90	No use	-
	91	No use	-
	92	No use	-

Category	Pr.	Parameter	Default value
6	93	No use	-
	94	No use	-
	95	Overload warning detection level	0
	96	Overload warning release level	0
	97	Function expansion setup 3	0
	98	Function expansion setup 4	0
	99	No use	-
	100 *1	For Manufacturer's use	40.00
	101	For Manufacturer's use	0
	102	Setting of over-travel inhibition release level	0

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(8/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
7	0	Display on LED	0
	1	Display time setup upon power-up	0
	2	No use	-
	3	Output setup during torque limit	0
	4	Backlash correction selection	0
	5	Amount of backlash correction	0
	6 *1	Backlash correction time constant	0.00
	7	For Manufacturer's use	0
	8	For Manufacturer's use	0
	9	Correction time of latch delay 1	360
	10	For Manufacturer's use	3
	11	For Manufacturer's use	0
	12	For Manufacturer's use	0
	13	For Manufacturer's use	0
	14	Main power off warning detection time	0
	15	For Manufacturer's use	0
	16	Torque saturation error protection frequency	0
	17	No use	-
	18	Backlash compensation value holding range	0
	19	No use	-
	20	No use	-
	21	No use	-
	22	Communication function expansion settings 1	0
	23	Communication function expansion settings 2	16384
	24	Communication function expansion settings 3	14352
	25	No use	-
	26	No use	-
	27	No use	-
	28	No use	-
	29	No use	-
	30	No use	-

Category	Pr.	Parameter	Default value
7	31	No use	-
	32	No use	-
	33	No use	-
	34	No use	-
	35	No use	-
	36	No use	-
	37	No use	-
	38	No use	-
	39	For Manufacturer's use	0
	40	Station alias setup (for controller)	0
	41	Station alias selection	1
	42	Maximum continuation communication error	-30584
	43	Detection time of lost link	0
	44	Software Ver.	-
	45	No use	-
	46	No use	-
	47	No use	-
	48	No use	-
	49	No use	-
	50	No use	-
	51	No use	-
	52	No use	-
	53	No use	-
	54	No use	-
	55	No use	-
	56	No use	-
	57	No use	-
	58	No use	-
	59	No use	-
	60	No use	-
	61	No use	-

Category	Pr.	Parameter	Default value
7	62	No use	-
	63	No use	-
	64	No use	-
	65	No use	-
	66	No use	-
	67	No use	-
	68	No use	-
	69	No use	-
	70	No use	-
	71	No use	-
	72	No use	-
	73	No use	-
	74	No use	-
	75	No use	-
	76	No use	-
	77	No use	-
	78	For Manufacturer use	0
	79	For Manufacturer's use	0
	80	Communication function expansion settings 8	0
	81	No use	-
	82	No use	-
	83	No use	-
	84	No use	-
	85	No use	-
	86	No use	-
	87 *3	Communication function expansion settings 5	3072
	88	No use	-
	89	No use	-
	90	No use	-
	91	No use	-
	92	Correction time of latch delay 2	0

Category	Pr.	Parameter	Default value
7	93	Home position return limit speed	0
	94	No use	-
	95	No use	-
	96	No use	-
	97	No use	-
	98	No use	-
	99	Communication function expansion settings 6	0
	100	For Manufacturer's use	0
	101	For Manufacturer's use	0
	102	For Manufacturer's use	0
	103	For Manufacturer's use	0
	104	For Manufacturer's use	0
	105	No use	-
	106	No use	-
	107	No use	-
	108	For Manufacturer's use	7
	109	For Manufacturer's use	0
	110 *4	Communication function expansion settings 7	0
	111	No use	-
	112	No use	-
	113 *1	Torque offset filter	0.00
	114	No use	-
	115	No use	-
	116	No use	-
	117	No use	-
	118	No use	-
	119	No use	-
	120	Absolute Scale Offset 1	0
	121	Absolute Scale Offset 2	0

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point. Ex) Pr6.24 Load change compensation filter ･･･ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

*3 bit13 : The setting condition of 6041h bit12, It is not supported by the software versions of function extended version 7 or earlier. *4 It is not supported by the software versions of function extended version 7 or earlier.

■Default value of the parameters(9/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
8	0	For Manufacturer's use	0
	1	Profile linear acceleration constant	1
	2	For Manufacturer's use	0
	3	For Manufacturer's use	0
	4	Profile linear deceleration constant	1
	5	For Manufacturer's use	0
	6	No use	-
	7	No use	-
	8	No use	-
	9	No use	-
	10	For Manufacturer's use	0
	11	No use	-
	12	For Manufacturer's use	0
	13	For Manufacturer's use	0
	14	For Manufacturer's use	0
	15	For Manufacturer's use	0
	16	No use	-
	17	Relative movement of retracting operation	0
	18	Retracting operation speed	0
	19	For Manufacturer's use	0

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ･･･ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(10/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
9	0	For Manufacturer's use	0
	1	External scale resolution	0
	2	For Manufacturer's use	0
	3	For Manufacturer's use	0
	4	For Manufacturer's use	0
	5	For Manufacturer's use	0
	6	For Manufacturer's use	0
	7	For Manufacturer's use	0
	8	For Manufacturer's use	0
	9	For Manufacturer's use	0
	10	For Manufacturer's use	0
	11	For Manufacturer's use	1
	12	For Manufacturer's use	80
	13	For Manufacturer's use	50
	14	For Manufacturer's use	10
	15	No use	-
	16	No use	-
	17	For Manufacturer's use	0
	18	For Manufacturer's use	0
	19	For Manufacturer's use	0
	20	For Manufacturer's use	0
	21	For Manufacturer's use	0
	22	For Manufacturer's use	200
	23	For Manufacturer's use	50
	24	For Manufacturer's use	100
	25	For Manufacturer's use	40
	26	For Manufacturer's use	40
	27	For Manufacturer's use	1000
	28	For Manufacturer's use	100
	29	For Manufacturer's use	0
	30	For Manufacturer's use	0

Category	Pr.	Parameter	Default value
9	31	For Manufacturer's use	0
	32	For Manufacturer's use	0
	33	For Manufacturer's use	100
	34	For Manufacturer's use	0
	35	No use	-
	36	No use	-
	37	No use	-
	38	No use	-
	39	No use	-
	40	No use	-
	41	No use	-
	42	No use	-
	43	No use	-
	44	No use	-
	45	No use	-
	46	No use	-
	47	No use	-
	48	For Manufacturer's use	0
	49	For Manufacturer's use	0
	50	For Manufacturer's use	0

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(11/11)

PARAMETER	MODEL	MINAS-A6BE SizeV series

Category	Pr.	Parameter	Default value
15	0	For Manufacturer's use	0
	1	No use	-
	2	For Manufacturer's use	0
	3	No use	-
	4	No use	-
	5	No use	-
	6	No use	-
	7	No use	-
	8	No use	-
	9	No use	-
	10	No use	-
	11	No use	-
	12	No use	-
	13	No use	-
	14	No use	-
	15	No use	-
	16	For Manufacturer's use	2
	17	For Manufacturer's use	4
	18	No use	-
	19	No use	-
	20	No use	-
	21	No use	-
	22	No use	-
	23	No use	-
	24	No use	-
	25	No use	-
	26	No use	-
	27	No use	-
	28	No use	-
	29	No use	-
	30	For Manufacturer's use	0

Category	Pr.	Parameter	Default value
15	31	For Manufacturer's use	5
	32	No use	-
	33	For Manufacturer's use	0
	34	For Manufacturer's use	0
	35	For Manufacturer's use	1

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(1/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
0	0	For manufacturer's use	1
	1	For manufacturer's use	0
	2	Real-time auto-gain tuning setup	1
	3	Selection of machine stiffness at real-time auto-gain tuning	13
	4	Inertia ratio	250
	5	No use	-
	6	No use	-
	7	No use	-
	8	For manufacturer's use	0
	9	For manufacturer's use	1
	10	For manufacturer's use	1
	11	Numerator of pulse output division	2500
	12	Reversal of pulse output logic/ output source selection	0
	13 *2	1st torque limit	500
	14	Position deviation excess setup	100000
	15	For manufacturer's use	1
	16	External regenerative resistor setup	3
	17	Load factor of external regenerative resistor selection	0
	18	For manufacturer's use	0

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ･･･ Value of Panaterm：0.53 / Value of parameter-file：53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(2/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
1	0 *1	1st gain of position loop	48.0
	1 *1	1st gain of velocity loop	27.0
	2 *1	1st time constant of velocity loop integration	21.0
	3	1st filter of velocity detection	0
	4 *1	1st time constant of torque filter	0.84
	5 *1	2nd gain of position loop	48.0
	6 *1	2nd gain of velocity loop	27.0
	7 *1	2nd time constant of velocity loop integration	21.0
	8	2nd filter of velocity detection	0
	9 *1	2nd time constant of torque filter	0.84
	10 *1	Velocity feed forward gain	100.0
	11 *1	Velocity feed forward filter	0.00
	12 *1	Torque feed forward gain	100.0
	13 *1	Torque feed forward filter	0.00
	14	2nd gain setup	1
	15	Mode of position control switching	0
	16 *1	Delay time of position control switching	1.0
	17	Level of position control switching	0
	18	Hysteresis at position control switching	0
	19 *1	Position gain switching time	1.0
	20	Mode of velocity control switching	0
	21 *1	Delay time of velocity control switching	0.0
	22	Level of velocity control switching	0
	23	Hysteresis at velocity control switching	0
	24	Mode of torque control switching	0
	25 *1	Delay time of torque control switching	0.0
	26	Level of torque control switching	0
	27	Hysteresis at torque control switching	0
	28	For manufacturer's use	0
	29	For manufacturer's use	0
	30	For manufacturer's use	0

Category	Pr.	Parameter	Default value
1	31	For manufacturer's use	0
	32	For manufacturer's use	0
	33	For manufacturer's use	0
	34	For manufacturer's use	0
	35	For manufacturer's use	0
	36	For manufacturer's use	0
	37	For manufacturer's use	0
	38	For manufacturer's use	0
	39	For manufacturer's use	0
	40	For manufacturer's use	0
	41	For manufacturer's use	0
	42	For manufacturer's use	0
	43	For manufacturer's use	0
	44	For manufacturer's use	0
	45	For manufacturer's use	0
	46	For manufacturer's use	0
	47	For manufacturer's use	0
	48	For manufacturer's use	0
	49	For manufacturer's use	0
	50	For manufacturer's use	0
	51	For manufacturer's use	0
	52	For manufacturer's use	0
	53	For manufacturer's use	0
	54	For manufacturer's use	0
	55	For manufacturer's use	0
	56	For manufacturer's use	0
	57	For manufacturer's use	0
	58	For manufacturer's use	0
	59	For manufacturer's use	0
	60	For manufacturer's use	0
	61	For manufacturer's use	0

Category	Pr.	Parameter	Default value
1	62	For manufacturer's use	0
	63	For manufacturer's use	0
	64	For manufacturer's use	0
	65	For manufacturer's use	0
	66	For manufacturer's use	0
	67	For manufacturer's use	0
	68	For manufacturer's use	0
	69	For manufacturer's use	0
	70	For manufacturer's use	0
	71	For manufacturer's use	0
	72	For manufacturer's use	0
	73	For manufacturer's use	0
	74	For manufacturer's use	0
	75	For manufacturer's use	0
	76	For manufacturer's use	0
	77	For manufacturer's use	0
	78	For manufacturer's use	0

Category	Pr.	Parameter	Default value

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(3/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
2	0	Adaptive filter mode setup	0
	1	1st notch frequency	5000
	2	1st notchwidth selection	2
	3	1st notch depth selection	0
	4	2nd notch frequency	5000
	5	2nd notch width selection	2
	6	2nd notch depth selection	0
	7	3rd notch frequency	5000
	8	3rd notch width selection	2
	9	3rd notch depth selection	0
	10	4th notch frequency	5000
	11	4th notch width selection	2
	12	4th notch depth selection	0
	13	Selection of damping filter switching	0
	14 *1	1st damping frequency	0.0
	15 *1	1st damping filter setup	0.0
	16 *1	2nd damping frequency	0.0
	17 *1	2nd damping filter setup	0.0
	18 *1	3rd damping frequency	0.0
	19 *1	3rd damping filter setup	0.0
	20 *1	4th damping frequency	0.0
	21 *1	4th damping filter setup	0.0
	22 *1	Command smoothing filter	9.2
	23 *1	Command FIR filter	1.0
	24	5th notch frequency	5000
	25	5th notch width selection	2
	26	5th notch depth selection	0
	27	1st damping width setting	0
	28	2nd damping width setting	0
	29	3rd damping width setting	0
	30	4th damping width setting	0
2	31	For manufacturer's use	0
	32	For manufacturer's use	0
	33	For manufacturer's use	0
	34	For manufacturer's use	0
	35	For manufacturer's use	0
	36	For manufacturer's use	0
	37	For manufacturer's use	0

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(4/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
3	0	No use	-
	1	No use	-
	2	No use	-
	3	No use	-
	4	For manufacturer's use	0
	5	For manufacturer's use	0
	6	No use	-
	7	No use	-
	8	No use	-
	9	No use	-
	10	No use	-
	11	No use	-
	12	Acceleration time setup	0
	13	Deceleration time setup	0
	14	Sigmoid acceleration/ deceleration time setup	0
	15	No use	-
	16	No use	-
	17	Selection of speed limit	2
	18	No use	-
	19	No use	-
	20	No use	-
	21	For manufacturer's use	0
	22	For manufacturer's use	0
	23	Feedback scale selection	0
	24	For manufacturer's use	0
	25	For manufacturer's use	1
	26	Reversal of direction of feedback scale	0
	27	Feedback scale Z phase disconnection detection disable	0
	28	For manufacturer's use	1
	29	For manufacturer's use	0
	30	No use	-
3	31	No use	-
	32	No use	-
	33	For manufacturer's use	0
	34	For manufacturer's use	0
	35	For manufacturer's use	0.00
	36	For manufacturer's use	0

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(5/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
4	0	SI1 input selection	3289650
	1	SI2 input selection	8487297
	2	SI3 input selection	8553090
	3	SI4 input selection	2236962
	4	SI5 input selection	2105376
	5	SI6 input selection	2171169
	6	SI7 input selection	3158064
	7	SI8 input selection	3223857
	8	No use	-
	9	No use	-
	10	SO1 output selection	197379
	11	SO2 output selection	1052688
	12	SO3 output selection	65793
	13	No use	-
	14	No use	-
	15	No use	-
	16	Type of analog monitor 1	0
	17	Analog monitor 1 output gain	0
	18	Type of analog monitor 2	4
	19	Analog monitor 2 output gain	0
	20	No use	-
	21	Analog monitor output setup	0
	22	For manufacturer's use	0
	23	For manufacturer's use	0
	24	For manufacturer's use	0
	25	No use	-
	26	No use	-
	27	No use	-
	28	No use	-
	29	No use	-
	30	No use	-
4	31	Positioning complete (In-position) range	10
	32	Positioning complete (In-position) output setup	0
	33	INP hold time	0
	34	Zero-speed	50
	35	Speed coincidence range	50
	36	At-speed (Speed arrival)	1000
	37	Mechanical brake action at stalling setup	0
	38	Mechanical brake action at running setup	0
	39	Brake release speed setup	30
	40	Selection of alarm output 1	0
	41	Selection of alarm output 2	0
	42	2nd Positioning complete (In-position) range	10
	43	No use	-
	44	Position comparison output pulse width setting	0
	45	Position comparison output polarity selection	0
	46	No use	-
	47	Pulse output selection	0
	48	Position comparison value 1	0
	49	Position comparison value 2	0
	50	Position comparison value 3	0
	51	Position comparison value 4	0
	52	Position comparison value 5	0
	53	Position comparison value 6	0
	54	Position comparison value 7	0
	55	Position comparison value 8	0
	56	Position comparison output delay compensation amount	0
	57	Position comparison output assignment setting	0

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(6/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
5	0	No use	-
	1	No use	-
	2	No use	-
	3	Denominator of pulse outputdivision	0
	4	Over-travel inhibit input setup	1
	5	Sequence at over-travel inhibit	0
	6	Sequence at Servo-off	0
	7	Sequence at main power off	0
	8	LV trip selection at main power off	0
	9	Detection time of main power off	2000
	10	Sequence at alarm	0
	11	Torque setup for emergency stop	0
	12	Over-load level setup	0
	13	Over-speed level setup	0
	14 *1	Motor working range setup	1.0
	15	Control input signal reading setup	0
	16	Alarm clear input(A-CLR) setup	1
	17	No use	-
	18	No use	-
	19	No use	-
	20	Position setup unit select	0
	21	Selection of torque limit	1
	22 *2	2nd torque limit	500
	23	No use	-
	24	No use	-
	25 *2	For manufacturer's use	0
	26 *2	For manufacturer's use	0
	27	No use	-
	28	No use	-
	29	For manufacturer's use	2
	30	No use	-

Category	Pr.	Parameter	Default value
5	31	USB axis address	1
	32	No use	-
	33	Pulse regenerative output limitsetup	0
	34	For manufacturer's use	4
	35	No use	-
	36	For manufacturer's use	0
	37	No use	-
	38	No use	-
	39	No use	-
	40	No use	-
	41	No use	-
	42	No use	-
	43	No use	-
	44	No use	-
	45 *1	Quadrant glitch positive-direction compensation value	0.0
	46 *1	Quadrant glitch negative-direction compensation value	0.0
	47	Quadrant glitch compensation delay time	0
	48 *1	Quadrant glitch compensation filter setting L	0.00
	49 *1	Quadrant glitch compensation filter setting H	0.0
	50	For manufacturer's use	0
	51	For manufacturer's use	0
	52	For manufacturer's use	0
	53	For manufacturer's use	0
	54	For manufacturer's use	0
	55	For manufacturer's use	0
	56	Slow stop deceleration time setting	0
	57	Slow stop S-shape acceleration and deceleration setting	0
	58	No use	-
	59	No use	-
	60	No use	-
	61	No use	-

Category	Pr.	Parameter	Default value
5	62	No use	-
	63	No use	-
	64	No use	-
	65	No use	-
	66 *1	Deterioration diagnosis convergence judgment time	0.0
	67	Deterioration diagnosis inertia ratio upper limit	0
	68	Deterioration diagnosis inertia ratio lower limit	0
	69 *1	Deterioration diagnosis unbalanced load upper limit	0.0
	70 *1	Deterioration diagnosis unbalanced load lower limit	0.0
	71 *1	Deterioration diagnosis dynamic friction upper limit	0.0
	72 *1	Deterioration diagnosis dynamic friction lower limit	0.0
	73 *1	Deterioration diagnosis viscous friction upper limit	0.0
	74 *1	Deterioration diagnosis viscous friction lower limit	0.0
	75	Deterioration diagnosis velocity setting	0
	76	Deterioration diagnosis torque average time	0
	77 *1	Deterioration diagnosis torque upper limit	0.0
	78 *1	Deterioration diagnosis torque lower limit	0.0
	79	No use	-
	80	No use	-
	81	No use	-
	82	No use	-
	83	No use	-
	84	No use	-
	85	No use	-
	86	No use	-
	87	No use	-
	88	No use	-
	89	No use	-
	90	No use	-
	91	No use	-
	92	No use	-

Category	Pr.	Parameter	Default value
5	93	No use	-
	94	Position comparison Output condition setting	0
	95	No use	-
	96	For manufacturer's use	0
	97	For manufacturer's use	0

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(7/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
6	0	No use	-
	1	No use	-
	2	Velocity deviation excess setup	0
	3	For Manufacturer use	0
	4	No use	-
	5 *1	Position 3rd gain valid time	0.0
	6	Position 3rd gain scale factor	100
	7	Torque command additional value	0
	8	Positive direction torque compensation value	0
	9	Negative direction torque compensation value	0
	10	Function expansion setup	528
	11	For manufacturer's use	100
	12	No use	-
	13	No use	-
	14	Emergency stop time at alarm	200
	15	2nd over-speed level setup	0
	16	No use	-
	17	No use	-
	18 *1	Power-up wait time	0.0
	19	For manufacturer's use	0
	20	For manufacturer's use	0
	21	For manufacturer's use	0
	22	A,B phase feedback scale pulse output selection	0
	23	Load change compensation gain	0
	24 *1	Load change compensation filter	0.53
	25	For manufacturer's use	0
	26	For manufacturer's use	2
	27	Warning latch state setup	3
	28	No use	-
	29	No use	-
	30	For manufacturer's use	0

Category	Pr.	Parameter	Default value
6	31	Real time auto tuning estimation speed	1
	32	Real time auto tuning custom setup	0
	33	No use	-
	34	For manufacturer's use	0
	35	For manufacturer's use	0
	36	Dynamic brake operation input setup	0
	37 *1	Oscillation detecting level	0.0
	38	Warning mask setup	4
	39	Warning mask setup2	0
	40	No use	-
	41	1st damping depth	0
	42 *1	Two-stage torque filter time constant	0.00
	43	Two-stage torque filter attenuation term	1000
	44	No use	-
	45	No use	-
	46	No use	-
	47	Function expansion settings 2	1
	48 *1	Adjust filter	5B/5C: 1.2 Other: 1.1
	49	Command / tuning filter damping	15
	50 *1	Viscous friction compensation gain	0.0
	51	Immediate cessation completion wait time	0
	52	For manufacturer's use	0
	53	For manufacturer's use	0
	54	For manufacturer's use	0
	55	No use	-
	56	No use	-
	57	Torque saturation anomaly detection time	0
	58	For manufacturer's use	0
	59	For manufacturer's use	0
	60	2nd damping depth	0
	61 *1	1st resonance frequency	0.0

Category	Pr.	Parameter	Default value
6	62	1st resonance attenuation ratio	0
	63 *1	1st anti-resonance frequency	0.0
	64	1st anti-resonance attenuation ratio	0
	65 *1	1st response frequency	0.0
	66 *1	2nd resonance frequency	0.0
	67	2nd resonance attenuation ratio	0
	68 *1	2nd anti-resonance frequency	0.0
	69	2nd anti-resonance attenuation ratio	0
	70 *1	2nd response frequency	0.0
	71	3rd damping depth	0
	72	4th damping depth	0
	73 *1	Load estimation filter	0.00
	74 *1	Torque compensation frequency 1	0.0
	75 *1	Torque compensation frequency 2	0.0
	76	Load estimation count	0
	77	No use	-
	78	No use	-
	79	No use	-
	80	No use	-
	81	No use	-
	82	No use	-
	83	No use	-
	84	No use	-
	85	Retracting operation condition setting	0
	86	Retracting operation alarm setting	0
	87	For manufacturer's use	0
	88	For manufacturer's use	0
	89	No use	-
	90	No use	-
	91	No use	-
	92	No use	-

Category	Pr.	Parameter	Default value
6	93	No use	-
	94	No use	-
	95	Overload warning detection level	0
	96	Overload warning release level	0
	97	Function expansion setup 3	0
	98	Function expansion setup 4	0
	99	No use	-
	100 *1	For manufacturer's use	40.00
	101	For manufacturer's use	0
	102	Setting of over-travel inhibition release level	0

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(8/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
7	0	Display on LED	0
	1	Display time setup upon power-up	0
	2	No use	-
	3	Output setup during torque limit	0
	4	For manufacturer's use	0
	5	For manufacturer's use	0
	6	For manufacturer's use	0
	7	For manufacturer's use	0
	8	For manufacturer's use	0
	9	Correction time of latch delay 1	360
	10	For manufacturer's use	3
	11	For manufacturer's use	0
	12	For manufacturer's use	0
	13	For manufacturer's use	0
	14	Main power off warning detection time	0
	15	For manufacturer's use	0
	16	Torque saturation error protection frequency	0
	17	No use	-
	18	For manufacturer's use	0
	19	No use	-
	20	No use	-
	21	No use	-
	22	Communication function expansion settings 1	0
	23	Communication function expansion settings 2	16384
	24	Communication function expansion settings 3	14352
	25	No use	-
	26	No use	-
	27	No use	-
	28	No use	-
	29	No use	-
	30	No use	-

Category	Pr.	Parameter	Default value
7	31	No use	-
	32	No use	-
	33	No use	-
	34	No use	-
	35	No use	-
	36	No use	-
	37	No use	-
	38	No use	-
	39	For manufacturer's use	0
	40	Station alias setup (for controller)	0
	41	Station alias selection	1
	42	Maximum continuation communication error	-30584
	43	Detection time of lost link	0
	44	Software Ver.	-
	45	No use	-
	46	No use	-
	47	No use	-
	48	No use	-
	49	No use	-
	50	No use	-
	51	No use	-
	52	No use	-
	53	No use	-
	54	No use	-
	55	No use	-
	56	No use	-
	57	No use	-
	58	No use	-
	59	No use	-
	60	No use	-
	61	No use	-

Category	Pr.	Parameter	Default value
7	62	No use	-
	63	No use	-
	64	No use	-
	65	No use	-
	66	No use	-
	67	No use	-
	68	No use	-
	69	No use	-
	70	No use	-
	71	No use	-
	72	No use	-
	73	No use	-
	74	No use	-
	75	No use	-
	76	No use	-
	77	No use	-
	78	For Manufacturer use	0
	79	For manufacturer's use	0
	80	Communication function expansion settings 8	0
	81	No use	-
	82	No use	-
	83	No use	-
	84	No use	-
	85	No use	-
	86	No use	-
	87 *3	Communication function expansion settings 5	3072
	88	No use	-
	89	No use	-
	90	No use	-
	91	No use	-
	92	Correction time of latch delay 2	0

Category	Pr.	Parameter	Default value
7	93	Home position return limit speed	0
	94	No use	-
	95	No use	-
	96	No use	-
	97	No use	-
	98	No use	-
	99	Communication function expansion settings 6	0
	100	For manufacturer's use	0
	101	For manufacturer's use	0
	102	For manufacturer's use	0
	103	For manufacturer's use	0
	104	For manufacturer's use	0
	105	No use	-
	106	No use	-
	107	No use	-
	108	For manufacturer's use	7
	109	For manufacturer's use	0
	110 *4	Communication function expansion settings 7	0
	111	No use	-
	112	No use	-
	113 *1	Torque offset filter	0.00
	114	No use	-
	115	No use	-
	116	No use	-
	117	No use	-
	118	No use	-
	119	No use	-
	120	Absolute scale offset 1	0
	121	Absolute scale offset 2	0

Category	Pr.	Parameter	Default value

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point. Ex) Pr6.24 Load change compensation filter ･･･ Value of Panaterm：0.53 / Value of parameter-file：53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

*3 bit13 : The setting condition of 6041h bit12, It is not supported by the software versions of function extended version 7 or earlier. *4 It is not supported by the software versions of function extended version 7 or earlier.

■Default value of the parameters(9/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
8	0	For manufacturer's use	0
	1	Profile linear acceleration constant	1
	2	For manufacturer's use	0
	3	For manufacturer's use	0
	4	Profile linear deceleration constant	1
	5	For manufacturer's use	0
	6	No use	-
	7	No use	-
	8	No use	-
	9	No use	-
	10	For manufacturer's use	0
	11	No use	-
	12	For manufacturer's use	0
	13	For manufacturer's use	0
	14	For manufacturer's use	0
	15	For manufacturer's use	0
	16	No use	-
	17	Relative movement of retracting operation	0
	18	Retracting operation speed	0
	19	For manufacturer's use	0

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(10/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
9	0	Motor type selection	1
	1	Feedback scale resolution/ Number of scale pulses per rotation	0
	2	Magnetic pole pitch	0
	3 *1	Number of pole pairs per rotation	0.00
	4 *1	Weight of motor's movable section/Motor inertia	0.00
	5 *1	Rated motor thrust/ Rated motor torqu	0.0
	6 *1	Rated motor effective current	0.0
	7 *1	Maximum instantaneous motor current	0.0
	8 *1	Motor phase inductance	0.00
	9 *1	Motor phase resistance	0.00
	10	Overspeed level	0
	11	Carrier frequency selection	5B/5C: 0 Other: 1
	12	Automatic current response adjustmen	60
	13	Current proportional gain	0
	14	Current integrative gain	0
	15	No use	-
	16	No use	-
	17	For manufacturer's use	0
	18	For manufacturer's use	0
	19	For manufacturer's use	0
	20	Magnetic poles detection method selection	0
	21	CS phase setting	0
	22	Thrust command time for estimating magnetic poles position	200
	23	Command thrust for estimating magnetic poles position	50
	24	Zero moving pulse width for estimating magnetic poles position	100
	25	Number of pulses for judging as a motor stop when estimating magnetic poles position	40
	26	Time for judging as a motor stop when estimating magnetic poles position	40
	27	Time limit of motor stop for estimating magnetic poles position	1000
	28 *1	Thrust command filter for estimating magnetic poles position	1.00
	29	Overload protection time constant setting	0
	30	Pulse count between magnetic pole	0
9	31	For manufacturer's use	0
	32	For manufacturer's use	0
	33	For manufacturer's use	100
	34	For manufacturer's use	0
	35	No use	-
	36	No use	-
	37	No use	-
	38	No use	-
	39	No use	-
	40	No use	-
	41	No use	-
	42	No use	-
	43	No use	-
	44	No use	-
	45	No use	-
	46	No use	-
	47	No use	-
	48	Voltage feed forward gain 1	0
	49	Voltage feed forward gain 2	0
	50	For manufacturer's use	0

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■Default value of the parameters(11/11)

PARAMETER	MODEL	MINAS-A6BL SizeV series

Category	Pr.	Parameter	Default value
15	0	For manufacturer's use	0
	1	No use	-
	2	For manufacturer's use	0
	3	No use	-
	4	No use	-
	5	No use	-
	6	No use	-
	7	No use	-
	8	No use	-
	9	No use	-
	10	No use	-
	11	No use	-
	12	No use	-
	13	No use	-
	14	No use	-
	15	No use	-
	16	For manufacturer's use	2
	17	For manufacturer's use	4
	18	No use	-
	19	No use	-
	20	No use	-
	21	No use	-
	22	No use	-
	23	No use	-
	24	No use	-
	25	No use	-
	26	No use	-
	27	No use	-
	28	No use	-
	29	No use	-
	30	For manufacturer's use	0
15	31	For manufacturer's use	5
	32	No use	-
	33	For manufacturer's use	0
	34	For manufacturer's use	0
	35	For manufacturer's use	1

*1 When checking directly value of parameter-file with a text data etc., it does not show the decimal point.
Ex) Pr6.24 Load change compensation filter ・・・ Value of Panaterm : 0.53 / Value of parameter-file : 53

*2 The maximum torque limit value (Pr.0.13,Pr.5.22) varies by the applicable motor.

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1000h	00h	Device type	Read Only
1001h	00h	Error register	Read Only
1008h	00h	Manufacturer device name	Read Only
1009h	00h	Manufacturer hardware version	Read Only
100Ah	00h	Manufacturer software version	Read Only
1010h	–	Store parameters	—
	00h	Number of entries	Read Only
	01h	Save all parameters	1
1018h	–	Identity object	—
	00h	Number of entries	Read Only
	01h	Vendor ID	Read Only
	02h	Product code	Read Only
	03h	Revision number	Read Only
	04h	Serial number	Read Only
10F3h	–	Diagnosis history	—
	00h	Number of entries	Read Only
	01h	Maximum messages	Read Only
	02h	Newest message	Read Only
	03h	Newest acknowledged message	0
	04h	New messages available	Read Only
	05h	Flags	39
	06h	Diagnosis message 1	Read Only
	07h	Diagnosis message 2	Read Only
	08h	Diagnosis message 3	Read Only
	09h	Diagnosis message 4	Read Only
	0Ah	Diagnosis message 5	Read Only
	0Bh	Diagnosis message 6	Read Only
	0Ch	Diagnosis message 7	Read Only
	0Dh	Diagnosis message 8	Read Only
	0Eh	Diagnosis message 9	Read Only
	0Fh	Diagnosis message 10	Read Only
	10h	Diagnosis message 11	Read Only
	11h	Diagnosis message 12	Read Only
	12h	Diagnosis message 13	Read Only
	13h	Diagnosis message 14	Read Only

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1600h	–	Receive PDO mapping 1	—
	00h	Number of entries	4
	01h	1st receive PDO mapped	1614807056
	02h	2nd receive PDO mapped	1616904200
	03h	3rd receive PDO mapped	1618608160
	04h	4th receive PDO mapped	1622671376
	05h	5th receive PDO mapped	0
	06h	6th receive PDO mapped	0
	07h	7th receive PDO mapped	0
	08h	8th receive PDO mapped	0
	09h	9th receive PDO mapped	0
	0Ah	10th receive PDO mapped	0
	0Bh	11th receive PDO mapped	0
	0Ch	12th receive PDO mapped	0
	0Dh	13th receive PDO mapped	0
	0Eh	14th receive PDO mapped	0
	0Fh	15th receive PDO mapped	0
	10h	16th receive PDO mapped	0
	11h	17th receive PDO mapped	0
	12h	18th receive PDO mapped	0
	13h	19th receive PDO mapped	0
	14h	20th receive PDO mapped	0
	15h	21st receive PDO mapped	0
	16h	22nd receive PDO mapped	0
	17h	23rd receive PDO mapped	0
	18h	24th receive PDO mapped	0
	19h	25th receive PDO mapped	0
	1Ah	26th receive PDO mapped	0
	1Bh	27th receive PDO mapped	0
	1Ch	28th receive PDO mapped	0
	1Dh	29th receive PDO mapped	0
	1Eh	30th receive PDO mapped	0
	1Fh	31st receive PDO mapped	0
	20h	32nd receive PDO mapped	0

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1601h	–	Receive PDO mapping 2	—
	00h	Number of entries	7
	01h	1st receive PDO mapped	1614807056
	02h	2nd receive PDO mapped	1616904200
	03h	3rd receive PDO mapped	1618018320
	04h	4th receive PDO mapped	1618608160
	05h	5th receive PDO mapped	1619001376
	06h	6th receive PDO mapped	1622671376
	07h	7th receive PDO mapped	1627324448
	08h	8th receive PDO mapped	0
	09h	9th receive PDO mapped	0
	0Ah	10th receive PDO mapped	0
	0Bh	11th receive PDO mapped	0
	0Ch	12th receive PDO mapped	0
	0Dh	13th receive PDO mapped	0
	0Eh	14th receive PDO mapped	0
	0Fh	15th receive PDO mapped	0
	10h	16th receive PDO mapped	0
	11h	17th receive PDO mapped	0
	12h	18th receive PDO mapped	0
	13h	19th receive PDO mapped	0
	14h	20th receive PDO mapped	0
	15h	21st receive PDO mapped	0
	16h	22nd receive PDO mapped	0
	17h	23rd receive PDO mapped	0
	18h	24th receive PDO mapped	0
	19h	25th receive PDO mapped	0
	1Ah	26th receive PDO mapped	0
	1Bh	27th receive PDO mapped	0
	1Ch	28th receive PDO mapped	0
	1Dh	29th receive PDO mapped	0
	1Eh	30th receive PDO mapped	0
	1Fh	31st receive PDO mapped	0
	20h	32nd receive PDO mapped	0

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1602h	–	Receive PDO mapping 3	—
	00h	Number of entries	6
	01h	1st receive PDO mapped	1614807056
	02h	2nd receive PDO mapped	1616904200
	03h	3rd receive PDO mapped	1618083856
	04h	4th receive PDO mapped	1618608160
	05h	5th receive PDO mapped	1622671376
	06h	6th receive PDO mapped	1627324448
	07h	7th receive PDO mapped	0
	08h	8th receive PDO mapped	0
	09h	9th receive PDO mapped	0
	0Ah	10th receive PDO mapped	0
	0Bh	11th receive PDO mapped	0
	0Ch	12th receive PDO mapped	0
	0Dh	13th receive PDO mapped	0
	0Eh	14th receive PDO mapped	0
	0Fh	15th receive PDO mapped	0
	10h	16th receive PDO mapped	0
	11h	17th receive PDO mapped	0
	12h	18th receive PDO mapped	0
	13h	19th receive PDO mapped	0
	14h	20th receive PDO mapped	0
	15h	21st receive PDO mapped	0
	16h	22nd receive PDO mapped	0
	17h	23rd receive PDO mapped	0
	18h	24th receive PDO mapped	0
	19h	25th receive PDO mapped	0
	1Ah	26th receive PDO mapped	0
	1Bh	27th receive PDO mapped	0
	1Ch	28th receive PDO mapped	0
	1Dh	29th receive PDO mapped	0
	1Eh	30th receive PDO mapped	0
	1Fh	31st receive PDO mapped	0
	20h	32nd receive PDO mapped	0

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1603h	–	Receive PDO mapping 4	—
	00h	Number of entries	8
	01h	1st receive PDO mapped	1614807056
	02h	2nd receive PDO mapped	1616904200
	03h	3rd receive PDO mapped	1618018320
	04h	4th receive PDO mapped	1618083856
	05h	5th receive PDO mapped	1618608160
	06h	6th receive PDO mapped	1619001376
	07h	7th receive PDO mapped	1622671376
	08h	8th receive PDO mapped	1627324448
	09h	9th receive PDO mapped	0
	0Ah	10th receive PDO mapped	0
	0Bh	11th receive PDO mapped	0
	0Ch	12th receive PDO mapped	0
	0Dh	13th receive PDO mapped	0
	0Eh	14th receive PDO mapped	0
	0Fh	15th receive PDO mapped	0
	10h	16th receive PDO mapped	0
	11h	17th receive PDO mapped	0
	12h	18th receive PDO mapped	0
	13h	19th receive PDO mapped	0
	14h	20th receive PDO mapped	0
	15h	21st receive PDO mapped	0
	16h	22nd receive PDO mapped	0
	17h	23rd receive PDO mapped	0
	18h	24th receive PDO mapped	0
	19h	25th receive PDO mapped	0
	1Ah	26th receive PDO mapped	0
	1Bh	27th receive PDO mapped	0
	1Ch	28th receive PDO mapped	0
	1Dh	29th receive PDO mapped	0
	1Eh	30th receive PDO mapped	0
	1Fh	31st receive PDO mapped	0
	20h	32nd receive PDO mapped	0

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1A00h	–	Transmit PDO mapping 1	—
	00h	Number of entries	8
	01h	1st transmit PDO mapped	1614741520
	02h	2nd transmit PDO mapped	1614872592
	03h	3rd transmit PDO mapped	1616969736
	04h	4th transmit PDO mapped	1617166368
	05h	5th transmit PDO mapped	1622736912
	06h	6th transmit PDO mapped	1622802464
	07h	7th transmit PDO mapped	1626603552
	08h	8th transmit PDO mapped	1627193376
	09h	9th transmit PDO mapped	0
	0Ah	10th transmit PDO mapped	0
	0Bh	11th transmit PDO mapped	0
	0Ch	12th transmit PDO mapped	0
	0Dh	13th transmit PDO mapped	0
	0Eh	14th transmit PDO mapped	0
	0Fh	15th transmit PDO mapped	0
	10h	16th transmit PDO mapped	0
	11h	17th transmit PDO mapped	0
	12h	18th transmit PDO mapped	0
	13h	19th transmit PDO mapped	0
	14h	20th transmit PDO mapped	0
	15h	21st transmit PDO mapped	0
	16h	22nd transmit PDO mapped	0
	17h	23rd transmit PDO mapped	0
	18h	24th transmit PDO mapped	0
	19h	25th transmit PDO mapped	0
	1Ah	26th transmit PDO mapped	0
	1Bh	27th transmit PDO mapped	0
	1Ch	28th transmit PDO mapped	0
	1Dh	29th transmit PDO mapped	0
	1Eh	30th transmit PDO mapped	0
	1Fh	31st transmit PDO mapped	0
	20h	32nd transmit PDO mapped	0

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1A01h	–	Transmit PDO mapping 2	—
	00h	Number of entries	9
	01h	1st transmit PDO mapped	1614741520
	02h	2nd transmit PDO mapped	1614872592
	03h	3rd transmit PDO mapped	1616969736
	04h	4th transmit PDO mapped	1617166368
	05h	5th transmit PDO mapped	1617690656
	06h	6th transmit PDO mapped	1618411536
	07h	7th transmit PDO mapped	1622736912
	08h	8th transmit PDO mapped	1622802464
	09h	9th transmit PDO mapped	1627193376
	0Ah	10th transmit PDO mapped	0
	0Bh	11th transmit PDO mapped	0
	0Ch	12th transmit PDO mapped	0
	0Dh	13th transmit PDO mapped	0
	0Eh	14th transmit PDO mapped	0
	0Fh	15th transmit PDO mapped	0
	10h	16th transmit PDO mapped	0
	11h	17th transmit PDO mapped	0
	12h	18th transmit PDO mapped	0
	13h	19th transmit PDO mapped	0
	14h	20th transmit PDO mapped	0
	15h	21st transmit PDO mapped	0
	16h	22nd transmit PDO mapped	0
	17h	23rd transmit PDO mapped	0
	18h	24th transmit PDO mapped	0
	19h	25th transmit PDO mapped	0
	1Ah	26th transmit PDO mapped	0
	1Bh	27th transmit PDO mapped	0
	1Ch	28th transmit PDO mapped	0
	1Dh	29th transmit PDO mapped	0
	1Eh	30th transmit PDO mapped	0
	1Fh	31st transmit PDO mapped	0
	20h	32nd transmit PDO mapped	0

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1A02h	–	Transmit PDO mapping 3	—
	00h	Number of entries	9
	01h	1st transmit PDO mapped	1614741520
	02h	2nd transmit PDO mapped	1614872592
	03h	3rd transmit PDO mapped	1616969736
	04h	4th transmit PDO mapped	1617166368
	05h	5th transmit PDO mapped	1617690656
	06h	6th transmit PDO mapped	1618411536
	07h	7th transmit PDO mapped	1622736912
	08h	8th transmit PDO mapped	1622802464
	09h	9th transmit PDO mapped	1627193376
	0Ah	10th transmit PDO mapped	0
	0Bh	11th transmit PDO mapped	0
	0Ch	12th transmit PDO mapped	0
	0Dh	13th transmit PDO mapped	0
	0Eh	14th transmit PDO mapped	0
	0Fh	15th transmit PDO mapped	0
	10h	16th transmit PDO mapped	0
	11h	17th transmit PDO mapped	0
	12h	18th transmit PDO mapped	0
	13h	19th transmit PDO mapped	0
	14h	20th transmit PDO mapped	0
	15h	21st transmit PDO mapped	0
	16h	22nd transmit PDO mapped	0
	17h	23rd transmit PDO mapped	0
	18h	24th transmit PDO mapped	0
	19h	25th transmit PDO mapped	0
	1Ah	26th transmit PDO mapped	0
	1Bh	27th transmit PDO mapped	0
	1Ch	28th transmit PDO mapped	0
	1Dh	29th transmit PDO mapped	0
	1Eh	30th transmit PDO mapped	0
	1Fh	31st transmit PDO mapped	0
	20h	32nd transmit PDO mapped	0

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1A03h	–	Transmit PDO mapping 4	—
	00h	Number of entries	9
	01h	1st transmit PDO mapped	1614741520
	02h	2nd transmit PDO mapped	1614872592
	03h	3rd transmit PDO mapped	1616969736
	04h	4th transmit PDO mapped	1617166368
	05h	5th transmit PDO mapped	1617690656
	06h	6th transmit PDO mapped	1618411536
	07h	7th transmit PDO mapped	1622736912
	08h	8th transmit PDO mapped	1622802464
	09h	9th transmit PDO mapped	1627193376
	0Ah	10th transmit PDO mapped	0
	0Bh	11th transmit PDO mapped	0
	0Ch	12th transmit PDO mapped	0
	0Dh	13th transmit PDO mapped	0
	0Eh	14th transmit PDO mapped	0
	0Fh	15th transmit PDO mapped	0
	10h	16th transmit PDO mapped	0
	11h	17th transmit PDO mapped	0
	12h	18th transmit PDO mapped	0
	13h	19th transmit PDO mapped	0
	14h	20th transmit PDO mapped	0
	15h	21st transmit PDO mapped	0
	16h	22nd transmit PDO mapped	0
	17h	23rd transmit PDO mapped	0
	18h	24th transmit PDO mapped	0
	19h	25th transmit PDO mapped	0
	1Ah	26th transmit PDO mapped	0
	1Bh	27th transmit PDO mapped	0
	1Ch	28th transmit PDO mapped	0
	1Dh	29th transmit PDO mapped	0
	1Eh	30th transmit PDO mapped	0
	1Fh	31st transmit PDO mapped	0
	20h	32nd transmit PDO mapped	0
1C00h	–	Sync manager communication type	—
	00h	Number of used sync manager channels	Read Only
	01h	Communication type sync manager 0	Read Only
	02h	Communication type sync manager 1	Read Only
	03h	Communication type sync manager 2	Read Only
	04h	Communication type sync manager 3	Read Only
1C12h	–	Sync manager channel 2	—
	00h	Number of assigned PDOs	1
	01h	PDO mapping object index of assigned RxPDO 1	5632
	02h	PDO mapping object index of assigned RxPDO 2	5633
	03h	PDO mapping object index of assigned RxPDO 3	5634
	04h	PDO mapping object index of assigned RxPDO 4	5635
1C13h	–	Sync manager channel 3	—
	00h	Number of assigned PDOs	1
	01h	PDO mapping object index of assigned TxPDO 1	6656
	02h	PDO mapping object index of assigned TxPDO 2	6657
	03h	PDO mapping object index of assigned TxPDO 3	6658
	04h	PDO mapping object index of assigned TxPDO 4	6659

■EtherCAT Object Initial value

◎ CoE communication profile area (1000h～1FFFh)

Index	Sub-Index	Name	Initial value
1C32h	–	Sync manager 2 synchronization	—
	00h	Number of sub-objects	Read Only
	01h	Sync mode	2
	02h	Cycle time	1000000
	03h	Shift time	Read Only
	04h	Sync modes supported	Read Only
	05h	Minimum cycle time	Read Only
	06h	Calc and copy time	Read Only
	08h	Command	Read Only
	09h	Delay time	Read Only
	0Ah	Sync0 cycle time	Read Only
	0Bh	Cycle time too small	Read Only
	0Ch	SM-event missed	Read Only
	0Dh	Shift time too short	Read Only
	0Eh	RxPDO toggle failed	Read Only
	20h	Sync error	Read Only
1C33h	–	Sync manager 3 synchronization	—
	00h	Number of sub-objects	Read Only
	01h	Sync mode	2
	02h	Cycle time	Read Only
	03h	Shift time	0
	04h	Sync modes supported	Read Only
	05h	Minimum cycle time	Read Only
	06h	Calc and copy time	Read Only
	08h	Command	Read Only
	09h	Delay time	Read Only
	0Ah	Sync0 cycle time	Read Only
	0Bh	Cycle time too small	Read Only
	0Ch	SM-event missed	Read Only
	0Dh	Shift time too short	Read Only
	0Eh	RxPDO toggle failed	Read Only
	20h	Sync error	Read Only

■EtherCAT Object Initial value

◎ Common servo information monitor object area (2000h～2FFFh)

Index	Sub-Index	Name	Initial value
202Fh	00h	Number of axes	Read Only

■EtherCAT Object Initial value

◎ User-specific area (4000h～4FFFh)

Index	Sub-Index	Name	Initial value
4304h	00h	Touch probe function expansion setup	0
4308h	00h	History number	0
4310h	00h	Alarm main no	0
4311h	00h	For manufacturer's use	—
4312h	00h	Velocity control loop torque limit	5000
4314h	00h	Analog input internal offset	0
4315h	00h	Analog deviation limit	0
4316h	00h	Number of entries	Read Only
	01h	Analog input voltage dead zone	0
4320h	00h	Analog monitor output 1	0
4321h	00h	Analog monitor output 2	0
4351h	00h	Analog input function	0
4C00h	00h	Number of entries	Read Only
	01h	Analog input gain	0
	02h	Analog input polarity	0
	03h	Analog input integration time constant	0
	04h	Analog input integration limit	0
	05h	Analog input offset	0
	06h	Analog input filter	0
	07h	Analog input excess setup	0
4D00h	–	Special function start	—
	00h	Number of entries	Read Only
	01h	Special function start flag 1	0
	02h	Special function start flag 2	0
	03h	For manufacturer's use	0
4D01h	00h	Special function setting 9	0
4D10h	–	External scale ID	—
	00h	Number of entries	Read Only
	01h	External scale vendor ID	Read Only
	02h	External scale model ID	Read Only
4D11h	–	For manufacturer's use	—
	00h	Number of entries	—
	01h	For manufacturer's use	—
	02h	For manufacturer's use	—
4D12h	00h	Motor serial number	Read Only
4D13h	00h	For manufacturer's use	—
4D14h	00h	For manufacturer's use	—
4D15h	00h	Drive serial number	Read Only
4D29h	00h	Over load factor	Read Only
4D35h	–	For manufacturer's use	—
	00h	Number of entries	—
	01h	For manufacturer's use	—
	02h	For manufacturer's use	—
4D36h	–	For manufacturer's use	—
	00h	Number of entries	—
	01h	For manufacturer's use	—
	02h	For manufacturer's use	—
4D51h	00h	Analog input status	Read Only
4D52h	00h	For manufacturer's use	—
4D53h	00h	For manufacturer's use	—
4D54h	00h	For manufacturer's use	—
4D55h	00h	For manufacturer's use	—
4D56h	00h	For manufacturer's use	—

■EtherCAT Object Initial value

◎ User-specific area (4000h～4FFFh)

Index	Sub-Index	Name	Initial value
4D57h	–	Position comparison range	—
	00h	Highest sub-index supported	Read Only
	01h	Min position comparison range	Read Only
	02h	Max position comparison range	Read Only
4DA0h	–	Alarm accessory information	—
	00h	Number of entries	Read Only
	01h	History number echo	Read Only
	02h	Alarm code	Read Only
	03h	Control mode	Read Only
	04h	Motor speed	Read Only
	05h	Positional command velocity	Read Only
	06h	Velocity control command	Read Only
	07h	Torque command	Read Only
	08h	Position command deviation	Read Only
	09h	Position actual internal value	Read Only
	0Ah	For manufacturer's use	—
	0Bh	Input port (logic signal)	Read Only
	0Ch	Output port (logic signal)	Read Only
	0Dh	Analog input	Read Only
	0Eh	For manufacturer's use	—
	0Fh	For manufacturer's use	—
	10h	Overload ratio	Read Only
	11h	Regenerative load ratio	Read Only
	12h	Voltage across PN	Read Only
	13h	Temperature of amplifier	Read Only
	14h	Warning flags	Read Only
	15h	Inertia ratio	Read Only
	16h	For manufacturer's use	—
	17h	For manufacturer's use	—
	18h	For manufacturer's use	—
	19h	Temperature of encoder	Read Only
	1Ah	For manufacturer's use	—
	1Bh	For manufacturer's use	—
	1Ch	For manufacturer's use	—
	1Dh	U-phase current detection value	Read Only
	1Eh	W-phase current detection value	Read Only
	1Fh	For manufacturer's use	—
	20h	For manufacturer's use	—
	21h	Encoder single-turn data	Read Only
	22h	Encoder communication error count (accumulated)	Read Only
	23h	External scale communication data error count (accumulated)	Read Only
	24h	For manufacturer's use	—
4DB0h	–	For manufacturer's use	—
	00h	Number of entries	—
	01h	Reserved	—
	02h	For manufacturer's use	—
	03h	Reserved	—
	04h	Reserved	—
	05h	Reserved	—
	06h	Reserved	—
	07h	Reserved	—
	08h	For manufacturer's use	—

■EtherCAT Object Initial value

◎ User-specific area (4000h～4FFFh)

Index	Sub-Index	Name	Initial value
4F01h	00h	Following error actual value (after filtering)	Read Only
4F03h	00h	Analog input internal voltage	Read Only
4F04h	00h	Position command internal value (after filtering)	Read Only
4F0Bh	00h	For manufacturer's use	—
4F0Ch	00h	Velocity command value (after filtering)	Read Only
4F0Dh	00h	External scale position	Read Only
4F11h	00h	Regenerative load ratio	Read Only
4F21h	00h	Logical input signal	Read Only
4F22h	00h	Logical output signal	Read Only
4F23h	00h	Logical input signal (expansion portion)	Read Only
4F24h	00h	For manufacturer's use	—
4F25h	00h	Physical input signal	Read Only
4F26h	00h	Physical output signal	Read Only
4F31h	00h	Inertia ratio	Read Only
4F32h	00h	Motor automatic identification	Read Only
4F33h	00h	Cause of motor no work	Read Only
4F34h	00h	Warning flags	Read Only
4F36h	00h	For manufacturer's use	—
4F37h	–	Multiple alarm/warning information	—
	00h	Number of entries	Read Only
	01h	Multiple alarm information 1	Read Only
	02h	Multiple alarm information 2	Read Only
	03h	Multiple alarm information 3	Read Only
	04h	Multiple alarm information 4	Read Only
	05h	For manufacturer's use	—
	06h	For manufacturer's use	—
	07h	For manufacturer's use	—
	08h	For manufacturer's use	—
	09h	For manufacturer's use	—
	0Ah	For manufacturer's use	—
	0Bh	For manufacturer's use	—
	0Ch	For manufacturer's use	—
	0Dh	For manufacturer's use	—
	0Eh	For manufacturer's use	—
	0Fh	For manufacturer's use	—
	10h	Multiple sub alarm information	Read Only
	11h	Multiple warning information 1	Read Only
	12h	Multiple warning information 2	Read Only
4F41h	–	Motor encoder data	—
	00h	Number of entries	Read Only
	01h	Mechanical angle (Single-turn data)	Read Only
	02h	Multi-turn data	Read Only
4F42h	00h	Electrical angle	Read Only
4F44h	00h	Encoder status	Read Only
4F46h	00h	For manufacturer's use	—
4F48h	00h	External scale pulse total	Read Only
4F49h	00h	External scale absolute position	Read Only
4F4Ah	00h	External scale position deviation	Read Only
4F4Bh	00h	Touch probe external scale pos1 pos value	Read Only
4F4Ch	00h	Touch probe external scale pos1 neg value	Read Only
4F4Dh	00h	Touch probe external scale pos2 pos value	Read Only
4F4Eh	00h	Touch probe external scale pos2 neg value	Read Only
4F4Fh	00h	Analog input value	Read Only
4F51h	00h	For manufacturer's use	—

■EtherCAT Object Initial value

◎ User-specific area (4000h～4FFFh)

Index	Sub-Index	Name	Initial value
4F53h	00h	For manufacturer's use	—
4F61h	00h	Power on cumulative time	Read Only
4F62h	00h	Temperature of amplifier	Read Only
4F63h	00h	Temperature of encoder	Read Only
4F64h	00h	Inrush resistance relay operating count	Read Only
4F65h	00h	Dynamic brake operating count	Read Only
4F66h	00h	Fan operating time	Read Only
4F67h	00h	Fan life expectancy	Read Only
4F68h	00h	Capacitor life expectancy	Read Only
4F6Ah	00h	For manufacturer's use	—
4F6Bh	00h	For manufacturer's use	—
4F6Ch	00h	Motor power consumption	Read Only
4F6Dh	00h	Amount of motor power consumption	Read Only
4F6Eh	00h	Cumulative value of motor power consumption	Read Only
4F72h	00h	For manufacturer's use	—
4F73h	00h	For manufacturer's use	—
4F74h	00h	For manufacturer's use	—
4F77h	00h	Lost link error count	Read Only
4F78h	00h	Synchronization signal error count	Read Only
4F81h	00h	Encoder communication error count (accumulated)	Read Only
4F82h	00h	For manufacturer's use	—
4F83h	00h	External scale communication error count (accumulated)	Read Only
4F84h	00h	External scale communication data error count (accumulated)	Read Only
4F85h	00h	For manufacturer's use	—
4F86h	00h	Hybrid deviation	Read Only
4F87h	00h	External scale data(Higher)	Read Only
4F88h	00h	External scale data(Lower)	Read Only
4F89h	00h	External scale status	Read Only
4F8Ah	00h	External scale Z phase counter	Read Only
4F8Ch	00h	External scale single-turn data	Read Only
4F91h	00h	Estimation accuracy of magnetic pole position	Read Only
4F92h	00h	Execution time of estimation of magnetic pole position	Read Only
4F93h	00h	Maximum travel distance to plus direction when estimating magnetic pole position	Read Only
4F94h	00h	Maximum travel distance to minus direction when estimating magnetic pole position	Read Only
4FA1h	00h	Velocity command value	Read Only
4FA4h	00h	For manufacturer's use	—
4FA5h	00h	Velocity internal position command	Read Only
4FA6h	00h	Velocity error actual value	Read Only
4FA7h	00h	External scale position(Applied polarity)	Read Only
4FA8h	00h	Positive direction torque limit value	Read Only
4FA9h	00h	Negative direction torque limit value	Read Only
4FABh	00h	Gain switching flag	Read Only
4FACh	00h	For manufacturer's use	—
4FAFh	00h	Estimated position for seamless mode change	Read Only
4FB1h	00h	Deterioration diagnosis state	Read Only
4FB2h	00h	Deterioration diagnosis torque command average value	Read Only
4FB3h	00h	Deterioration diagnosis torque command standard value	Read Only
4FB4h	00h	Deterioration diagnosis inertia ratio estimate value	Read Only
4FB5h	00h	Deterioration diagnosis offset load estimate value	Read Only
4FB6h	00h	Deterioration diagnosis dynamic friction estimate value	Read Only
4FB7h	00h	Deterioration diagnosis viscous friction estimate value	Read Only
4FC2h	00h	Analog input voltage	Read Only
4FF5h	00h	For manufacturer's use	—

■EtherCAT Object Initial value

◎ User-specific area (4000h～4FFFh)

Index	Sub-Index	Name	Initial value
4FF6h	00h	For manufacturer's use	—
4FF7h	–	For manufacturer's use	—
	00h	Number of entries	Read Only
	01h	For manufacturer's use	—
	02h	For manufacturer's use	—
4FF8h	–	For manufacturer's use	—
	00h	Number of entries	Read Only
	01h	For manufacturer's use	—
	02h	For manufacturer's use	—
4FFDh	00h	For manufacturer's use	Read Only
4FFFh	00h	Target position echo	Read Only

■EtherCAT Object Initial value

◎ Drive profile area (5000h～5FFFh)

Index	Sub-Index	Name	Initial value
5350h	00h	Homing torque limit value	0
5351h	00h	Homing detection time	0
5352h	00h	Homing detection velocity value	0

■EtherCAT Object Initial value

◎ Drive profile area (6000h～6FFFh)

Index	Sub-Index	Name	Initial value
6007h	00h	Abort connection option code	1
603Fh	00h	Error code	Read Only
6040h	00h	Controlword	0
6041h	00h	Statusword	Read Only
605Ah	00h	Quick stop option code	2
605Bh	00h	Shutdown option code	1
605Ch	00h	Disable operation option code	1
605Dh	00h	Halt option code	1
605Eh	00h	Fault reaction option code	2
6060h	00h	Modes of operation	0
6061h	00h	Modes of operation display	Read Only
6062h	00h	Position demand value	Read Only
6063h	00h	Position actual internal value	Read Only
6064h	00h	Position actual value	Read Only
6065h	00h	Following error window	100000
6066h	00h	Following error time out	0
6067h	00h	Position window	10
6068h	00h	Position window time	0
6069h	00h	Velocity sensor actual value	Read Only
606Ah	00h	Sensor selection code	0
606Bh	00h	Velocity demand value	Read Only
606Ch	00h	Velocity actual value	Read Only
606Dh	00h	Velocity window	52429
606Eh	00h	Velocity window time	0
606Fh	00h	Velocity threshold	52429
6070h	00h	Velocity threshold time	0
6071h	00h	Target torque	0
6072h	00h	Max torque	5000
6073h	00h	Max current	Read Only
6074h	00h	Torque demand	Read Only
6075h	00h	Motor rated current	Read Only
6076h	00h	Motor rated torque	Read Only
6077h	00h	Torque actual value	Read Only
6078h	00h	Current actual value	Read Only
6079h	00h	DC link circuit voltage	Read Only
607Ah	00h	Target position	0
607Bh	–	Position range limit	—
	00h	Highest sub-index supported	Read Only
	01h	Min position range limit	-2147483648
	02h	Max position range limit	2147483647
607Ch	00h	Home offset	0
607Dh	–	Software position limit	—
	00h	Number of entries	Read Only
	01h	Min position limit	0
	02h	Max position limit	0
607Eh	00h	Polarity	0
607Fh	00h	Max profile velocity	838860800
6080h	00h	Max motor speed	6500
6081h	00h	Profile velocity	0
6082h	00h	End velocity	0
6083h	00h	Profile acceleration	1000000
6084h	00h	Profile deceleration	1000000
6085h	00h	Quick stop deceleration	1000000
6086h	00h	Motion profile type	0
6087h	00h	Torque slope	1000
6088h	00h	Torque profile type	0

■EtherCAT Object Initial value

◎ Drive profile area (6000h～6FFFh)

Index	Sub-Index	Name	Initial value
608Fh	–	Position encoder resolution	—
	00h	Highest sub-index supported	Read Only
	01h	Encoder increments	Read Only
	02h	Motor revolutions	Read Only
6091h	–	Gear ratio	—
	00h	Number of entries	Read Only
	01h	Motor revolutions	1
	02h	Shaft revolutions	1
6092h	–	Feed constant	—
	00h	Highest sub-index supported	Read Only
	01h	Feed	8388608
	02h	Shaft revolutions	1
6098h	00h	Homing method	0
6099h	–	Homing speeds	—
	00h	Number of entries	Read Only
	01h	Speed during search for switch	873813
	02h	Speed during search for zero	87381
609Ah	00h	Homing acceleration	1000000
60A3h	00h	Profile jerk use	1
60A4h	–	Profile jerk	—
	00h	Highest sub-index supported	Read Only
	01h	Profile jerk1	0
	02h	Profile jerk2	0
60B0h	00h	Position offset	0
60B1h	00h	Velocity offset	0
60B2h	00h	Torque offset	0
60B8h	00h	Touch probe function	0
60B9h	00h	Touch probe status	Read Only
60BAh	00h	Touch probe pos1 pos value	Read Only
60BBh	00h	Touch probe pos1 neg value	Read Only
60BCh	00h	Touch probe pos2 pos value	Read Only
60BDh	00h	Touch probe pos2 neg value	Read Only
60C2h	–	Interpolation time period	—
	00h	Highest sub-index supported	Read Only
	01h	Interpolation time period value	1
	02h	Interpolation time index	-3
60C5h	00h	Max acceleration	4294967295
60C6h	00h	Max deceleration	4294967295
60E0h	00h	Positive torque limit value	5000
60E1h	00h	Negative torque limit value	5000

■EtherCAT Object Initial value

◎ Drive profile area (6000h～6FFFh)

Index	Sub-Index	Name	Initial value
60E3h	–	Supported homing method	—
	00h	Number of entries	Read Only
	01h	1st supported homing method	Read Only
	02h	2nd supported homing method	Read Only
	03h	3rd supported homing method	Read Only
	04h	4th supported homing method	Read Only
	05h	5th supported homing method	Read Only
	06h	6th supported homing method	Read Only
	07h	7th supported homing method	Read Only
	08h	8th supported homing method	Read Only
	09h	9th supported homing method	Read Only
	0Ah	10th supported homing method	Read Only
	0Bh	11th supported homing method	Read Only
	0Ch	12th supported homing method	Read Only
	0Dh	13th supported homing method	Read Only
	0Eh	14th supported homing method	Read Only
	0Fh	15th supported homing method	Read Only
	10h	16th supported homing method	Read Only
	11h	17th supported homing method	Read Only
	12h	18th supported homing method	Read Only
	13h	19th supported homing method	Read Only
	14h	20th supported homing method	Read Only
	15h	21st supported homing method	Read Only
	16h	22nd supported homing method	Read Only
	17h	23rd supported homing method	Read Only
	18h	24th supported homing method	Read Only
	19h	25th supported homing method	Read Only
	1Ah	26th supported homing method	Read Only
	1Bh	27th supported homing method	Read Only
	1Ch	28th supported homing method	Read Only
	1Dh	29th supported homing method	Read Only
	1Eh	30th supported homing method	Read Only
	1Fh	31st supported homing method	Read Only
	20h	32nd supported homing method	Read Only
60E4h	–	Additional position actual value	—
	00h	Highest sub-index supported	Read Only
	01h	1st additional position actual value	Read Only
60F2h	00h	Positioning option code	0
60F4h	00h	Following error actual value	Read Only
60FAh	00h	Control effort	Read Only
60FCh	00h	Position demand internal value	Read Only
60FDh	00h	Digital inputs	Read Only
60FEh	–	Digital outputs	—
	00h	Number of entries	Read Only
	01h	Physical outputs	0
	02h	Bit mask	0
60FFh	00h	Target velocity	0
6403h	00h	Motor catalogue number	Read Only
6502h	00h	Supported drive modes	Read Only