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Controller Intergrated 2-Phase Closed-Loop Stepper Motor Driver

AiC-D Series

User Manual for Communication

CE

AiC-D Series

Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

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Preface

Thank you for purchasing an Autonics product.

Please familiarize yourself with the information contained in the Safety Precautions section before using this product.

This user manual contains information about the product and its proper use, and should be kept in a place where it will be easy to access.

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User Manual Guide

- Please familiarize yourself with the information in this manual before using the product.
- This manual provides detailed information on the product's features. It does not offer any guarantee concerning matters beyond the scope of this manual.
- This manual may not be edited or reproduced in either part or whole without permission.
- A user manual is not provided as part of the product package.
  Visit our web site (www.autonics.com) to download a copy.
- The manual's content may vary depending on changes to the product's software and other unforeseen developments within Autonics, and is subject to change without prior notice. Upgrade notice is provided through out homepage.
- We contrived to describe this manual more easily and correctly. However, if there are any corrections or questions, please notify us these on our homepage.

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Communication Protocol

AiC Series is accepted to Modbus RTU Protocol.

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User Manual Symbols

Symbol	Description
Note	Supplementary information for a particular feature.
Warning	Failure to follow instructions can result in serious injury or death.
Caution	Failure to follow instructions can lead to a minor injury or product damage.
Ex.	An example of the concerned feature's use.
※1	Annotation mark.

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Safety Precautions

- Following these safety precautions will ensure the safe and proper use of the product and help prevent accidents, as well as minimizing possible hazards.
- Safety precautions are categorized as Warnings and Cautions, as defined below:

Warning	Warning	Failure to follow the instructions may lead to a serious injury or accident.

Caution	Caution	Failure to follow the instructions may lead to a minor injury or accident.

Warning

- Fail-safe device must be installed when using the unit with machinery that maycause serious injury or substantial economic loss. (e.g. nuclear power control,medical equipment, ships, vehicles, railways, aircraft, combustion apparatus,safety equipment, crime/disaster prevention devices, etc.)
  Failure to follow this instruction may result in fire, personal injury, or economic loss.
- Do not connect, repair, or inspect the unit while connected to a power source.
  Failure to follow this instruction may result in fire.
- Install the unit after considering counter plan against power failure.
  Failure to follow this instruction may result in personal injury, or economic loss.
- Check 'Connections' before wiring.
  Failure to follow this instruction may result in fire.
- Do not disassemble or modify the unit.
  Failure to follow this instruction may result in fire.
- Install the driver in the grounded housing or ground it directly.
  Failure to follow this instruction may result in electronic shock, personal injury.
- Do not touch the unit during or after operation for a while.
  Failure to follow this instruction may result in burn due to high temperature of the surface.
- Emergency stop directly when error occurs.
  Failure to follow this instruction may result in fire, or personal injury.

Caution

- When connecting the power input, use AWG 18(0.75mm^2) cable or over.
- Brake is non-polar. When connecting the brake, use AWG 24 (0.2mm^2) cable or over.
  Failure to follow this instruction may result in fire or malfunction due to contact failure.
- To use the motor safely, do not apply external force to the motor.
- It is recommended to use STOPPER for the vertical load.
- Install over-current prevention device (e.g. the current breaker, etc) to connect the driver with power.
  Failure to follow this instruction may result in fire.

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- Check the control input signal before supplying power to the driver.
  Failure to follow this instruction may result in personal injury or product damage by unexpected signal.
- Install a safety device to maintain the vertical position after turn off the power ofthis driver.
  Failure to follow this instruction may result in personal injury or product damage by releasing holding torque of the motor.
- Use the unit within the rated specifications.
  Failure to follow this instruction may result in fire or product damage.
- Use dry cloth to clean the unit, and do not use water or organic solvent.
  Failure to follow this instruction may result in fire.
- Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.
  Failure to follow this instruction may result in fire or explosion.
- The driver may overheat depending on the environment. Install the unit in the well ventilated place and forced cooling with a cooling fan.
  Failure to follow this instruction may result in product damage and degradation by heat.
- Keep metal chip, dust, and wire residue from flowing into the unit.
  Failure to follow this instruction may result in fire or product damage.
- Use the designated motor only.
  Failure to follow this instruction may result in fire or product damage.

The specifications of communication manual are subject to change and some models may be discontinued without notice.

Be sure to follow cautions written in the instruction manual, user manual and the technical descriptions (catalog, homepage).

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1 Modbus RTU Protocol

1.1 Read coil status (Func 01–01H)

Read output (OX reference, Coil) ON/OFF status in the slave device.

(1) Query (Master)

Slave address	Function	Starting address		No. of points		Error check (CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

(2) Response (Slave)

Slave address	Function	Byte count	Data	Data	Data	Error check (CRC16)	
						Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

If read the 10 output status (ON: 1, OFF: 0) within coil 000001 (0000 H) to 000010 (0009 H) on Slave (Address 17) from Master.

- Query (Master)

Slave address	Function	Starting address		No. of points		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	01 H	00 H	00 H	00 H	0A H	## H	## H

If the values range from coil 000008 (0007 H) to 000001 (0000 H) on the Slave are “ON-ON-OFF-OFF-ON-ON-OFF-ON”, and the values from 000010 (0009 H) to 000009 (0008 H) are respectively “OFF-ON”.

- Response (Slave)

Slave address	Function	Byte count	Data (000008 to 000001)	Data (000010 to 000009)	Error check (CRC16)	
					Low	High
11 H	01 H	02 H	CD H	01 H	## H	## H

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1.2 Read input status (Func 02–02H)

Read Input ON/OFF status (1X reference) in Slave device.

(1) Query (Master)

Slave address	Function	Starting address		No. of points		Error check (CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

(2) Response (Slave)

Slave address	Function	Byte count	Data	Data	Data	Error check (CRC16)	
						Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

If read the 10 input status (ON: 1, OFF: 0) within range 100001 (0000 H) to 100010 (0009 H) in the Slave (Address 17) from the Master.

- Query (Master)

Slave address	Function	Starting address		No. of points		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	02 H	00 H	00 H	00 H	0A H	## H	## H

If the values range 100008 (0007 H) to 100001 (0000 H) on Slave are “ON-ON-OFF-OFF-ON-ON-OFF-ON”, and the values of 100010 (0009 H) and 100009 (0008 H) are respectively “OFF-ON”.

- Response (Slave)

Slave address	Function	Byte count	Data (100008 to 100001)	Data (100010 to 100009)	Error check (CRC16)	
					Low	High
11 H	02 H	02 H	CD H	01 H	## H	## H

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1.3 Read holding registers (Func 03–03H)

Read the Binary data of Holding Registers (4X reference) in Slave device.

(1) Query (Master)

Slave address	Function	Starting address		No. of points		Error check (CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

(2) Response (Slave)

Slave address	Function	Byte count	Data		Data		Data		Error check (CRC16)	
			High	Low	High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

If read the 2 values from Holding Register 400001 (0000 H) to 400002 (0001 H), in Slave (Address 17) from the Master.

- Query (Master)

Slave address	Function	Starting address		No. of points		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	03 H	00 H	00 H	00 H	02 H	## H	## H

If the value of 400001 (0000 H) on Slave is “555 (22B H)” and the value of 400002 (0001 H) is “100 (64 H)”.

- Response (Slave)

Slave address	Function	Byte count	Data		Data		Error check (CRC16)	
			High	Low	High	Low	Low	High
11 H	03 H	04 H	02 H	2B H	00 H	64 H	## H	## H

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1.4 Read input registers (Func 04–04H)

Read the Binary data of Input Registers (3X reference) in Slave device.

(1) Query (Master)

Slave address	Function	Starting address		No. of points		Error check (CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

(2) Response (Slave)

Slave address	Function	Byte count	Data		Data		Data		Error check (CRC16)	
			High	Low	High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

If read the 2 values within the range from Input Register 300001 (0000 H) to 300002 (0001 H) on Slave (Address 17) from Master.

- Query (Master)

Slave address	Function	Starting address		No. of points		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	04 H	00 H	00 H	00 H	02 H	## H	## H

If the values of 300001 (0000 H) and 300002 (0001 H) on Slave are respectively “10 (A H)” and “20 (14 H)”.

- Response (Slave)

Slave address	Function	Byte count	Data		Data		Error check (CRC16)	
			High	Low	High	Low	Low	High
11 H	04 H	04 H	00 H	0A H	00 H	14 H	## H	## H

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1.5 Force single coil (Func 05–05H)

Turns ON (FF00 H) or OFF (0000 H) of single coil (0X reference) status within slave device.

(1) Query (Master)

Slave address	Function	Starting address		Preset data		Error check (CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

(2) Response (Slave)

Slave address	Function	Starting address		Preset data		Error check (CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

If Coil 000001 (0000 H) turns ON of Slave (Address 17) from Master.

- Query (Master)

Slave address	Function	Starting address		Preset data		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	05 H	00 H	00 H	FFH	00 H	## H	## H

- Response (Slave)

Slave address	Function	Starting address		Preset data		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	05 H	00 H	00 H	FF H	00 H	## H	## H

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1.6 Preset single registers (Func 06–06H)

Read the Binary data of single Holding Registers (4X reference) in Slave device.

(1) Query (Master)

Slave address	Function	Starting address		Preset data		Error check (CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

(2) Response (Slave)

Slave address	Function	Starting address		Preset data		Error check (CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

If write “10(A H)” to Holding Register 40001(0000 H) on Slave(Address 17) from Master.

- Query (Master)

Slave address	Function	Starting address		Preset data		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	06 H	00 H	00 H	00 H	0A H	## H	## H

- Response (Slave)

Slave address	Function	Starting address		Preset data		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	06 H	00 H	00 H	00 H	0A H	## H	## H

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1.7 Preset multiple registers (Func 16–10H)

Write the Binary data of Holding Registers (4X reference) consecutively in Slave device.

(1) Query (Master)

Slave Address	Function	Starting Address		No. of register		Byte count	Data		Data		Error check (CRC16)	
		High	Low	High	Low		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

(2) Response (Slave)

Slave address	Function	Starting address		No. of register		Error check(CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

If write “10 (A H)” in common to the range of Holding Register 400001 (0000 H) to 400002 (0001 H) on Slave (Address 17) from Master.

- Query (Master)

Slave address	Function	Starting Address		No. of register		Byte count	Data		Data		Error check (CRC16)	
		High	Low	High	Low		High	Low	High	Low	Low	High
11 H	10 H	00 H	00 H	00 H	02 H	04 H	00 H	0A H	00 H	0A H	## H	## H

- Response (Slave)

Slave address	Function	Starting address		No. of register		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	10 H	00 H	00 H	00 H	02 H	## H	## H

Please use the Single Register Write function rather than Multi Register Write function if you use the slave (device) connecting with external devices such as PLC, Graphic Panel, except in the case of download that Presets the minimum/maximum or basic value of parameter by Input specifications in PC Loader Program

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1.8 Exception response-error code

If occurs an error, send a response command and transmit each Exception Code after set(1) the highest-level bit of received command (Function).

Slave address	Function +80 H	Exception code	Error check (CRC16)	
			Low	High
1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

- ILLEGAL FUNCTION (Exception Code: 01 H): A command that is not supported
- ILLEGAL DATA ADDRESS (Exception Code: 02 H)
  : Starting address of queried data is inconsistent with transmittable address from the device.
- ILLEGAL DATA VALUE (Exception Code: 03 H)
  : Numbers of queried data are inconsistent with the numbers of transmittable (transferable) data from the device.
- SLAVE DEVICE FAILURE (Exception Code: 04 H)
  : Not properly completed the queried command (order).

Read the output status of non-existing coil 010001 (03E8 H) [ON: 1, OFF: 0] on Slave (Address 17) from Master.

- Query (Master)

Slave address	Function	Starting address		No. of points		Error check (CRC16)	
		High	Low	High	Low	Low	High
11 H	01 H	03 H	E8 H	00 H	01 H	## H	## H

- Response (Slave)

Slave address	Function +80 H	Exception Code	Error check (CRC16)	
			Low	High
11 H	81 H	02 H	## H	## H

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2 Modbus Mapping Table

2.1 Output control group [Func: 01/05, R/W: R/W]

No (Address)	I/O Pin	Explanation	Setting range	Notice
000001 (0000)	OUT0	General output 0	0: OFF 1: ON	-
000002 (0001)	OUT1	General output 1		
000003 (0002)	OUT2	General output 2		
000004 (0003)	OUT3	General output 3		
000005 (0004)	OUT4	General output 4		
000006 (0005)	OUT5	General output 5		
000007 (0006)	OUT6	General output 6		
000008 (0007)	OUT7	General output 7		
000009 (0008)	OUT8	General output 8		
000010 (0009)	OUT9※1	General output 9		

Note

※1:There is no OUT 9 for AiC-D-B (built-in brake type).

2.2 Operation command group [Func: 05, R/W: W]

No (Address)	I/O Pin	Explanation	Setting range	Notice
000011 (000A)	Reset	Reset	1: Run	Broadcast possible
000012 (000B)	EMG	Emergency stop		
000013 (000C)	Alarm Reset	Alarm reset		
000014 (000D)	-	Command position clear		
000015 (000E)	-	Actual position clear		
000016 (000F)	Step0/+Run/+Jog	CW operation		
000017 (0010)	Step1/-Run/-Jog	CCW operation		
000018 (0011)	-	Move absolute position		
000019 (0012)	-	Move relative position		
000020 (0013)	Start	Index mode start		
000021 (0014)		Program mode start		
000022 (0015)	-	Home search mode start		
000023 (0016)	Stop	Immediate stop		
000024 (0017)		Decelerating stop		
000025 (0018)	Pause	Pause program mode		
000026 (0019)	-	End program mode		
000027 (001A)	-	Delete program		
000028 to 000030	Reserved			

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2.3 Operation setting group 1 [Func: 01/05, R/W: R/W]

No (Address)	I/O Pin	Explanation	Setting range	Notice
000031 (001E)	-	Limit stop mode	0: Instant / 1: Slow	-
000032 (001F)	-	S curve acceleration/deceleration	0: Disable / 1: Enable	-
000033 (0020)	-	Input filter selection	0: 10ms / 1: 1.5ms	-
000034 (0021)	-	Software limit	0: Disable / 1: Enable	-
000035 (0022)	-	Power on home search start	0: Disable / 1: Enable	-
000036 (0023)	-	Power on program start	0: Disable / 1: Enable	-
000037 (0024)	-	Stop current fixing method	0: Disable / 1: Enable	-
000038 (0025)	Start	Index/Program mode start logic setting	0: Low / 1: High	-
000039 (0026)	Step0/+Run/+Jog	Step0/+Run/+Jog logic setting	0: Low / 1: High	-
000040 (0027)	Step1/-Run/-Jog	Step1/-Run/-Jog logic setting	0: Low / 1: High	-
000041 (0028)	Step2/SSP0	Step2/SSP0 logic setting	0: Low / 1: High	-
000042 (0029)	Step3/SSP1	Step3/SSP1 logic setting	0: Low / 1: High	-
000043 (002A)	Step4/MSP0	Step4/MSP0 logic setting	0: Low / 1: High	-
000044 (002B)	Step5/MSP1	Step5/MSP1 logic setting	0: Low / 1: High	-
000045 (002C)	MD0/HMD0	RUN mode 0/Home search mode 0 logic setting	0: Low / 1: High	-
000046 (002D)	MD1/HMD1	RUN mode 1/ Home search mode 1 logic setting	0: Low / 1: High	-
000047 (002E)	Pause	Pause logic setting	0: Low / 1: High	-
000048 (002F)	Stop	Stop logic setting	0: Low / 1: High	-
000049 (0030)	EMG	Emergency stop logic setting	0: Low / 1: High	-
000035 (0022)	-	Power on home search start	0: Disable / 1: Enable	-
000036 (0023)	-	Power on program start	0: Disable / 1: Enable	-
000037 (0024)	-	Stop current fixing method	0: Disable / 1: Enable	-
000038 (0025)	Start	Index/Program mode start logic setting	0: Low / 1: High	-
000039 (0026)	Step0/+Run/+Jog	Step0/+Run/+Jog logic setting	0: Low / 1: High	-
000040 (0027)	Step1/-Run/-Jog	Step1/-Run/-Jog logic setting	0: Low / 1: High	-
000041 (0028)	Step2/SSP0	Step2/SSP0 logic setting	0: Low / 1: High	-
000042 (0029)	Step3/SSP1	Step3/SSP1 logic setting	0: Low / 1: High	-
000043 (002A)	Step4/MSP0	Step4/MSP0 logic setting	0: Low / 1: High	-
000044 (002B)	Step5/MSP1	Step5/MSP1 logic setting	0: Low / 1: High	-
000045 (002C)	MD0/HMD0	RUN mode 0/Home search mode 0 logic setting	0: Low / 1: High	-
000046 (002D)	MD1/HMD1	RUN mode 1/ Home search mode 1 logic setting	0: Low / 1: High	-
000047 (002E)	Pause	Pause logic setting	0: Low / 1: High	-
000048 (002F)	Stop	Stop logic setting	0: Low / 1: High	-
000049 (0030)	EMG	Emergency stop logic setting	0: Low / 1: High	-

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No (Address)	I/O Pin	Explanation	Setting range	Notice
000050 (0031)	Home	Home search logic setting	0: Low / 1: High	-
000051 (0032)	Alarm Reset	Alarm Reset logic setting	0: Low / 1: High	-
000052 (0033)	Servo On/Off	Servo On/Off logic setting	0: Low / 1: High	-
000053 (0034)	LIMIT +/-	Limit logical signal level	0: Low / 1: High	-
000054 (0035)	IN0	General input 0 logic setting	0: Low / 1: High	-
000055 (0036)	IN1	General input 1 logic setting	0: Low / 1: High	-
000056 (0037)	IN2	General input 2 logic setting	0: Low / 1: High	-
000057 (0038)	IN3	General input 3 logic setting	0: Low / 1: High	-
000058 (0039)	IN4	General input 4 logic setting	0: Low / 1: High	-
000059 (003A)	IN5	General input 5 logic setting	0: Low / 1: High	-
000060 (003B)	IN6	General input 6 logic setting	0: Low / 1: High	-
000061 (003C)	IN7	General input 7 logic setting	0: Low / 1: High	-
000062 (003D)	IN8	General input 8 logic setting	0: Low / 1: High	-
000063 (003E)	SD	Decelerating stop logic setting	0: Low / 1: High	-
000064 (003F)	-	Control mode setting	0: Speed Filter / 1: Gain	-
000065 (0040)	-	Motor direction setting	0: CW / 1: CCW	-
000066 (0041)	-	Output mode setting (alarm ON)	0: Maintain / 1: Reset	-
000067 to 000100	Reserved			

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2.4 External input status group [Func: 02, R/W: R]

No (Address)	I/O Pin	Explanation	Setting range	Notice
100001 (0000)	Start	Drive start command	0: OFF 1: ON	-
100002 (0001)	Step0/+Run/+Jog	Register designate 0/+Run/+Jog		
100003 (0002)	Step1/-Run/-Jog	Register designate 1/-Run/-Jog		
100004 (0003)	Step2/SSP0	Register designate 2/SPD0		
100005 (0004)	Step3/SSP1	Register designate 3/SPD1		
100006 (0005)	Step4/MSP0	Register designate 4/MPD0		
100007 (0006)	Step5/MSP1	Register designate 5/MPD1		
100008 (0007)	MD0/HMD0	RUN mode 0 / Home search mode 0		
100009 (0008)	MD1/HMD1	RUN mode 1 / Home search mode 1		
100010 (0009)	Pause	Pause		
100011 (000A)	Stop	Stop command		
100012 (000B)	EMG	Emergency stop command		
100013 (000C)	Home	Home search start command		
100014 (000D)	ORG	Home signal		
100015 (000E)	Alarm Reset	Alarm reset command		
100016 (000F)	Servo On/Off	Servo On/Off command		
100017 (0010)	+Limit	+direction limit		
100018 (0011)	-Limit	-direction limit		
100019 (0012)	IN0	General input 0		
100020 (0013)	IN1	General input 1		
100021 (0014)	IN2	General input 2		
100022 (0015)	IN3	General input 3		
100023 (0016)	IN4	General input 4		
100024 (0017)	IN5	General input 5		
100025 (0018)	IN6	General input 6		
100026 (0019)	IN7	General input 7		
100027 (001A)	IN8	General input 8		
100028 (001B)	SD	Deceleration mode	0: OFF 1: ON	-
100029 (001C)	-	Servo On output		
100030 (001D)	Alarm	Alarm output		H->L
100031 (001E)	In-Position	In-Position output		L->H
100032 (001F)	Compare1	Comparison output 1		L->H
100033 (0020)	Compare2	Comparison output 2		L->H
100034 to 100100	Reserved			

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2.5 Product Information group [Func: 04, R/W: R]

No (Address)	I/O Pin	Explanation	Setting range	Notice
300001 to 300100	Reserved			
300101 (0064)	-	Serial number	-	-
300102 (0065)		Serial number	-	-
300103 (0066)		Hardware version	-	-
300104 (0067)		Software version	-	-
300105 (0068)		Model name 1	-	“Ai”
300106 (0069)		Model name 2	-	“C-“
300107 (006A)		Model name 3	-	“D-“
300108 (006B)		Model name 4	-	“56”
300109 (006C)		Model name 5	-	“LA”
300110 (006D)		Reserved	-	-
300111 (006E)		Reserved	-	-
300112 (006F)		Reserved	-	-
300113 (0070)		Reserved	-	-
300114 (0071)		Reserved	-	-
300115 (0072)		Reserved	-	-
300116 (0073)		Reserved	-	-
300117 (0074)		Reserved	-	-
300118 (0075)		Coil Status Start Address	0 x 00	-
300119 (0076)		Coil Status Quantity	-	-
300120 (0077)		Input Status Start Address	0 x 00	-
300121 (0078)		Input Status Quantity	-	-
300122 (0079)		Holding Register Start Address	0 x 02	-
300123 (007A)		Holding Register Quantity	-	-
300124 (007B)		Input Register Start Address	0 x 64	-
300125 (007C)		Input Register Quantity	-	-
300126 to 300999	Reserved			

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2.6 Monitoring data group [Func: 04, R/W: R]

No (Address)	I/O Pin	Explanation	Setting range	Notice
301000 (03E7)	-	Run mode	0: Waiting / 1: Index / 2: Jog / 3: Continuous / 4: Program / 5: Home / 6: General	-
301001 (03E8)	-	Command position coordicate H	2 MSB (Most Significant Byte) among -2,147,483,648 to +2,147,483,647	-
301002 (03E9)	-	Command position coordicate L	2 LSB (Least Significant Byte) among -2,147,483,648 to +2,147,483,647	-
301003 (03EA)	-	Actual position coordicate H	2 MSB (Most Significant Byte) among -2,147,483,648 to +2,147,483,647	-
301004 (03EB)	-	Actual position coordicate L	2 LSB (Least Significant Byte) among -2,147,483,648 to +2,147,483,647	-
301005 (03EC)	-	Command running speed H	2 MSB (Most Significant Byte) among 1 to 600,000	-
301006 (03ED)	-	Command running speed L	2 LSB (Least Significant Byte) among 1 to 600,000	-
301007 (03EE)	-	Actual running speed H	2 MSB (Most Significant Byte) among 1 to 600,000	-
301008 (03EF)	-	Actual running speed L	2 LSB (Least Significant Byte) among 1 to 600,000	-
301009 (03F0)	-	Motor speed [RPM]	1 to 4,000	-
301010 (03F1)	-	The number of running program STEP	0 to 255	-
301011 (03F2)	-	Over current error	0: OFF 1: ON	Bit 0
	-	Over speed error		Bit 1
	-	Position tracking error		Bit 2
	-	Over load error		Bit 3
	-	Over heat error		Bit 4
	-	Motor connection error		Bit 5
	-	Encoder connection error		Bit 6
	-	Regenerative voltage error		Bit 7
	-	Motor misalignment		Bit 8
	-	Command speed error		Bit 9
	-	Input voltage error		Bit 10
	-	In-Position error		Bit 11
	-	Memory error		Bit 12
	-	Emergency stop error		Bit 13
	-	Program mode error		Bit 14
	-	Index mode error	0: OFF 1: ON	Bit 15
301012 (03F3)	-	Home search mode error	0: OFF 1: ON	Bit 0
	-	+Software limit error		Bit 1

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No (Address)	I/O Pin	Explanation	Setting range	Notice
	-	-Software limit error		Bit 2
	-	+Hardware limit error		Bit 3
	-	-Hardware limit error		Bit 4
	-	Over load warning		Bit 5
301013 (03F4)	Start	Drive start command	0: OFF 1: ON	Bit 0
	Step0/+Run/+Jog	Register designate 0/+Run/+Jog		Bit 1
	Step1/-Run/-Jog	Register designate 1/-Run/-Jog		Bit 2
	Step2/SSP0	Register designate 2/SPD0		Bit 3
	Step3/SSP1	Register designate 3/SPD1		Bit 4
	Step4/MSP0	Register designate 4/MSP0		Bit 5
	Step5/MSP1	Register designate 5/MSP1		Bit 6
	MD0/HMD0	RUN mode assignment 0		Bit 7
	MD1/HMD1	RUN mode assignment 1		Bit 8
	Pause	Pause		Bit 9
	Stop	Stop		Bit 10
	EMG	Emergency stop error		Bit 11
	Home	Home search start command		Bit 12
	Alarm Reset	Alarm Reset command		Bit 13
	Servo On/Off	Servo On/Off command		Bit 14
	ORG	Home signal		Bit 15
301014 (03F5)	+Limit	+direction limit	0: OFF 1: ON	Bit 0
	-Limit	-direction limit		Bit 1
	IN 0	General input 0		Bit 2
	IN 1	General input 1		Bit 3
	IN 2	General input 2		Bit 4
	IN 3	General input 3		Bit 5
	IN 4	General input 4		Bit 6
	IN 5	General input 5		Bit 7
	IN 6	General input 6		Bit 8
	IN 7	General input 7		Bit 9
	IN 8	General input 8		Bit 10
	SD	Deceleration mode		Bit 11
301015 (03F6)	Alarm	Alarm output	0: OFF 1: ON	Bit 0
	IN-POSITION	In-Position output		Bit 1
	Compare1	Comparison output 1		Bit 2
	Compare2	Comparison output 2		Bit 3
301015 (03F6)	-	Servo On output	0: OFF 1: ON	Bit 4
301016 to 301050	Reserved			

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2.7 Operation status group[Func: 03/06/16, R/W: R/W]

No (Address)	Explanation	Setting range	Notice
400001 to 400002	Reserved		
400003 (0002)	Start speed H	Setting initial value of resupplying power	-
400004 (0003)	Start speed L		-
400005 (0004)	Final speed H		-
400006 (0005)	Final speed L		-
400007 (0006)	Acceleration time		-
400008 (0007)	Deceleration time		-
400009 (0008)	Position to move H	Default: 0	-
400010 (0009)	Position to move L		-
400011 (000A)	Program starting adress	0 to 255	-
400012 (000B)	Home search command type setting	0 to 3	-
400013 to 400050	Reserved		

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2.8 Program mode group [Func: 03/06/16, R/W: R/W]

No (Address)	Explanation	Data length	Notice
400051(0032)	STEP0 data	20 byte	-
400061(003C)	STEP1 data	20 byte	-
400071(0046)	STEP2 data	20 byte	-
400081(0050)	STEP3 data	20 byte	-
400091(005A)	STEP4 data	20 byte	-
400101(0064)	STEP5 data	20 byte	-
400111(006E)	STEP6 data	20 byte	-
400121(0078)	STEP7 data	20 byte	-
400131(0082)	STEP8 data	20 byte	-
400141(008C)	STEP9 data	20 byte	-
400151(0096)	STEP10 data	20 byte	-
400161(00A0)	STEP11 data	20 byte	-
400171(00AA)	STEP12 data	20 byte	-
400181(00B4)	STEP13 data	20 byte	-
400191(00BE)	STEP14 data	20 byte	-
400201(00C8)	STEP15 data	20 byte	-
400211(00D2)	STEP16 data	20 byte	-
400221(00DC)	STEP17 data	20 byte	-
400231(00E6)	STEP18 data	20 byte	-
400241(00F0)	STEP19 data	20 byte	-
400251(00FA)	STEP20 data	20 byte	-
400261(0104)	STEP21 data	20 byte	-
400271(010E)	STEP22 data	20 byte	-
400281(0118)	STEP23 data	20 byte	-
400291(0122)	STEP24 data	20 byte	-
400301(012C)	STEP25 data	20 byte	-
400311(0136)	STEP26 data	20 byte	-
400321(0140)	STEP27 data	20 byte	-
400331(014A)	STEP28 data	20 byte	-
400341(0154)	STEP29 data	20 byte	-
400351(015E)	STEP30 data	20 byte	-
400361(0168)	STEP31 data	20 byte	-
400371(0172)	STEP32 data	20 byte	-
400381(017C)	STEP33 data	20 byte	-
400391(0186)	STEP34 data	20 byte	-
400401(0190)	STEP35 data	20 byte	-
400411(019A)	STEP36 data	20 byte	-

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No (Address)	Explanation	Data length	Notice
400421(01A4)	STEP37 data	20 byte	-
400431(01AE)	STEP38 data	20 byte	-
400441(01B8)	STEP39 data	20 byte	-
400451(01C2)	STEP40 data	20 byte	-
400461(01CC)	STEP41 data	20 byte	-
400471(01D6)	STEP42 data	20 byte	-
400481(01E0)	STEP43 data	20 byte	-
400491(01EA)	STEP44 data	20 byte	-
400501(01F4)	STEP45 data	20 byte	-
400511(01FE)	STEP46 data	20 byte	-
400521(0208)	STEP47 data	20 byte	-
400531(0212)	STEP48 data	20 byte	-
400541(021C)	STEP49 data	20 byte	-
400551(0226)	STEP50 data	20 byte	-
400561(0230)	STEP51 data	20 byte	-
400571(023A)	STEP52 data	20 byte	-
400581(0244)	STEP53 data	20 byte	-
400591(024E)	STEP54 data	20 byte	-
400601(0258)	STEP55 data	20 byte	-
400611(0262)	STEP56 data	20 byte	-
400621(026C)	STEP57 data	20 byte	-
400631(0276)	STEP58 data	20 byte	-
400641(0280)	STEP59 data	20 byte	-
400651(028A)	STEP60 data	20 byte	-
400661(0294)	STEP61 data	20 byte	-
400671(029E)	STEP62 data	20 byte	-
400681(02A8)	STEP63 data	20 byte	-
400691(02B2)	STEP64 data	20 byte	-
400701(02BC)	STEP65 data	20 byte	-
400711(02C6)	STEP66 data	20 byte	-
400721(02D0)	STEP67 data	20 byte	-
400731(02DA)	STEP68 data	20 byte	-
400741(02E4)	STEP69 data	20 byte	-
400751(02EE)	STEP70 data	20 byte	-
400761(02F8)	STEP71 data	20 byte	-
400771(0302)	STEP72 data	20 byte	-
400781(030C)	STEP73 data	20 byte	-
400791(0316)	STEP74 data	20 byte	-
400801(0320)	STEP75 data	20 byte	-

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No (Address)	Explanation	Data length	Notice
400811(032A)	STEP76 data	20 byte	-
400821(0334)	STEP77 data	20 byte	-
400831(033E)	STEP78 data	20 byte	-
400841(0348)	STEP79 data	20 byte	-
400851(0352)	STEP80 data	20 byte	-
400861(035C)	STEP81 data	20 byte	-
400871(0366)	STEP82 data	20 byte	-
400881(0370)	STEP83 data	20 byte	-
400891(037A)	STEP84 data	20 byte	-
400901(0384)	STEP85 data	20 byte	-
400911(038E)	STEP86 data	20 byte	-
400921(0398)	STEP87 data	20 byte	-
400931(03A2)	STEP88 data	20 byte	-
400941(03AC)	STEP89 data	20 byte	-
400951(03B6)	STEP90 data	20 byte	-
400961(03C0)	STEP91 data	20 byte	-
400971(03CA)	STEP92 data	20 byte	-
400981(03D4)	STEP93 data	20 byte	-
400991(03DE)	STEP94 data	20 byte	-
401001(03E8)	STEP95 data	20 byte	-
401011(03F2)	STEP96 data	20 byte	-
401021(03FC)	STEP97 data	20 byte	-
401031(0406)	STEP98 data	20 byte	-
401041(0410)	STEP99 data	20 byte	-
401051(041A)	STEP100 data	20 byte	-
401061(0424)	STEP101 data	20 byte	-
401071(042E)	STEP102 data	20 byte	-
401081(0438)	STEP103 data	20 byte	-
401091(0442)	STEP104 data	20 byte	-
401101(044C)	STEP105 data	20 byte	-
401111(0456)	STEP106 data	20 byte	-
401121(0460)	STEP107 data	20 byte	-
401131(046A)	STEP108 data	20 byte	-
401141(0474)	STEP109 data	20 byte	-
401151(047E)	STEP110 data	20 byte	-
401161(0488)	STEP111 data	20 byte	-
401171(0492)	STEP112 data	20 byte	-
401181(049C)	STEP113 data	20 byte	-
401191(04A6)	STEP114 data	20 byte	-

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No (Address)	Explanation	Data length	Notice
401201(04B0)	STEP115 data	20 byte	-
401211(04BA)	STEP116 data	20 byte	-
401221(04C4)	STEP117 data	20 byte	-
401231(04CE)	STEP118 data	20 byte	-
401241(04D8)	STEP119 data	20 byte	-
401251(04E2)	STEP120 data	20 byte	-
401261(04EC)	STEP121 data	20 byte	-
401271(04F6)	STEP122 data	20 byte	-
401281(0500)	STEP123 data	20 byte	-
401291(050A)	STEP124 data	20 byte	-
401301(0514)	STEP125 data	20 byte	-
401311(051E)	STEP126 data	20 byte	-
401321(0528)	STEP127 data	20 byte	-
401331(0532)	STEP128 data	20 byte	-
401341(053C)	STEP129 data	20 byte	-
401351(0546)	STEP130 data	20 byte	-
401361(0550)	STEP131 data	20 byte	-
401371(055A)	STEP132 data	20 byte	-
401381(0564)	STEP133 data	20 byte	-
401391(056E)	STEP134 data	20 byte	-
401401(0578)	STEP135 data	20 byte	-
401411(0582)	STEP136 data	20 byte	-
401421(058C)	STEP137 data	20 byte	-
401431(0596)	STEP138 data	20 byte	-
401441(05A0)	STEP139 data	20 byte	-
401451(05AA)	STEP140 data	20 byte	-
401461(05B4)	STEP141 data	20 byte	-
401471(05BE)	STEP142 data	20 byte	-
401481(05C8)	STEP143 data	20 byte	-
401491(05D2)	STEP144 data	20 byte	-
401501(05DC)	STEP145 data	20 byte	-
401511(05E6)	STEP146 data	20 byte	-
401521(05F0)	STEP147 data	20 byte	-
401531(05FA)	STEP148 data	20 byte	-
401541(0604)	STEP149 data	20 byte	-
401551(060E)	STEP150 data	20 byte	-
401561(0618)	STEP151 data	20 byte	-
401571(0622)	STEP152 data	20 byte	-
401581(062C)	STEP153 data	20 byte	-

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No (Address)	Explanation	Data length	Notice
401591(0636)	STEP154 data	20 byte	-
401601(0640)	STEP155 data	20 byte	-
401611(064A)	STEP156 data	20 byte	-
401621(0654)	STEP157 data	20 byte	-
401631(065E)	STEP158 data	20 byte	-
401641(0668)	STEP159 data	20 byte	-
401651(0672)	STEP160 data	20 byte	-
401661(067C)	STEP161 data	20 byte	-
401671(0686)	STEP162 data	20 byte	-
401681(0690)	STEP163 data	20 byte	-
401691(069A)	STEP164 data	20 byte	-
401701(06A4)	STEP165 data	20 byte	-
401711(06AE)	STEP166 data	20 byte	-
401721(06B8)	STEP167 data	20 byte	-
401731(06C2)	STEP168 data	20 byte	-
401741(06CC)	STEP169 data	20 byte	-
401751(06D6)	STEP170 data	20 byte	-
401761(06E0)	STEP171 data	20 byte	-
401771(06EA)	STEP172 data	20 byte	-
401781(06F4)	STEP173 data	20 byte	-
401791(06FE)	STEP174 data	20 byte	-
401801(0708)	STEP175 data	20 byte	-
401811(0712)	STEP176 data	20 byte	-
401821(071C)	STEP177 data	20 byte	-
401831(0726)	STEP178 data	20 byte	-
401841(0730)	STEP179 data	20 byte	-
401851(073A)	STEP180 data	20 byte	-
401861(0744)	STEP181 data	20 byte	-
401871(074E)	STEP182 data	20 byte	-
401881(0758)	STEP183 data	20 byte	-
401891(0762)	STEP184 data	20 byte	-
401901(076C)	STEP185 data	20 byte	-
401911(0776)	STEP186 data	20 byte	-
401921(0780)	STEP187 data	20 byte	-
401931(078A)	STEP188 data	20 byte	-
401941(0794)	STEP189 data	20 byte	-
401951(079E)	STEP190 data	20 byte	-
401961(07A8)	STEP191 data	20 byte	-
401971(07B2)	STEP192 data	20 byte	-

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No (Address)	Explanation	Data length	Notice
401981(07BC)	STEP193 data	20 byte	-
401991(07C6)	STEP194 data	20 byte	-
402001(07D0)	STEP195 data	20 byte	-
402011(07DA)	STEP196 data	20 byte	-
402021(07E4)	STEP197 data	20 byte	-
402031(07EE)	STEP198 data	20 byte	-
402041(07F8)	STEP199 data	20 byte	-
402051(0802)	STEP200 data	20 byte	-
402061(080C)	STEP201 data	20 byte	-
402071(0816)	STEP202 data	20 byte	-
402081(0820)	STEP203 data	20 byte	-
402091(082A)	STEP204 data	20 byte	-
402101(0834)	STEP205 data	20 byte	-
402111(083E)	STEP206 data	20 byte	-
402121(0848)	STEP207 data	20 byte	-
402131(0852)	STEP208 data	20 byte	-
402141(085C)	STEP209 data	20 byte	-
402151(0866)	STEP210 data	20 byte	-
402161(0870)	STEP211 data	20 byte	-
402171(087A)	STEP212 data	20 byte	-
402181(0884)	STEP213 data	20 byte	-
402191(088E)	STEP214 data	20 byte	-
402201(0898)	STEP215 data	20 byte	-
402211(08A2)	STEP216 data	20 byte	-
402221(08AC)	STEP217 data	20 byte	-
402231(08B6)	STEP218 data	20 byte	-
402241(08C0)	STEP219 data	20 byte	-
402251(08CA)	STEP220 data	20 byte	-
402261(08D4)	STEP221 data	20 byte	-
402271(08DE)	STEP222 data	20 byte	-
402281(08E8)	STEP223 data	20 byte	-
402291(08F2)	STEP224 data	20 byte	-
402301(08FC)	STEP225 data	20 byte	-
402311(0906)	STEP226 data	20 byte	-
402321(0910)	STEP227 data	20 byte	-
402331(091A)	STEP228 data	20 byte	-
402341(0924)	STEP229 data	20 byte	-
402351(092E)	STEP230 data	20 byte	-
402361(0938)	STEP231data	20 byte	-

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No (Address)	Explanation	Data length	Notice
402371(0942)	STEP232 data	20 byte	-
402381(094C)	STEP233 data	20 byte	-
402391(0956)	STEP234 data	20 byte	-
402401(0960)	STEP235 data	20 byte	-
402411(096A)	STEP236 data	20 byte	-
402421(0974)	STEP237 data	20 byte	-
402431(097E)	STEP238 data	20 byte	-
402441(0988)	STEP239 data	20 byte	-
402451(0992)	STEP240 data	20 byte	-
402461(099C)	STEP241 data	20 byte	-
402471(09A6)	STEP242 data	20 byte	-
402481(09B0)	STEP243 data	20 byte	-
402491(09BA)	STEP244 data	20 byte	-
402501(09C4)	STEP245 data	20 byte	-
402511(09CE)	STEP246 data	20 byte	-
402521(09D8)	STEP247 data	20 byte	-
402531(09E2)	STEP248 data	20 byte	-
402541(09EC)	STEP249 data	20 byte	-
402551(09F6)	STEP250 data	20 byte	-
402561(0A00)	STEP251 data	20 byte	-
402571(0A0A)	STEP252 data	20 byte	-
402581(0A14)	STEP253 data	20 byte	-
402591(0A1E)	STEP254 data	20 byte	-
402601(0A28)	STEP255 data	20 byte	-

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2.8.1 Program command packet structure

(1) ABS

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 Byte	7 Byte
0001 [0 to 3]	Start speed [4 to 7]+ Max. speed [0 to 3]	Acceleration time [4 to 7]+ Deceleration time [0 to 3]	Continuation [1]+S curve acceleration/deceleration [0]	Start speed (1 to 600,000)		
8 Byte	**9 Byte**	**10 Byte**	**11 Byte**	**12 Byte**	**13 Byte**	**14 Byte**
Max. speed (1 to 600,000)			Acceleration time (0 to 10,000)		Deceleration time (0 to 10,000)	
15 Byte	**16 Byte**	**17 Byte**	**18 Byte**	**19 Byte**	**20 Byte**	**-**
S curve acceleration/ deceleration (1 to 5,000)		Setting range (-2,147,483,648 to +2,147,483,647)				-

(2) INC

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 Byte	7 Byte
0010 [0 to 3]	Start speed [4 to 7]+ Max. speed [0 to 3]	Acceleration time [4 to 7]+ Deceleration time [0 to 3]	Continuation [1]+S curve acceleration/deceleration [0]	Start speed (1 to 600,000)		
8 Byte	**9 Byte**	**10 Byte**	**11 Byte**	**12 Byte**	**13 Byte**	**14 Byte**
Max. speed (1 to 600,000)			Acceleration time (0 to 10,000)		Deceleration time (0 to 10,000)	
15 Byte	**16 Byte**	**17 Byte**	**18 Byte**	**19 Byte**	**20 Byte**	**-**
S curve acceleration/ deceleration (1 to 5,000)		Setting range (-2,147,483,648 to +2,147,483,647)				-

(3) HOM

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 to 20 Byte
0100 [0 to 3]	-	-	-	Home search mode (0 to 3)	-

(4) ICJ

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 Byte	7 to 20 Byte
1000 [0 to 3]	-	-	-	Input port number	Step to jump	-

(5) IRD

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 to 20 Byte
0011 [0 to 3]	-	-	-	Input port number	-

(6) OPC

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 Byte	7 to 20 Byte
0101 [0 to 3]	-	-	-	Output port number	ON	-

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(7) OPT

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 Byte	7 to 8 Byte	9 to 20 Byte
0111 [0 to 3]	ON time [0 to 3]	-	-	Output port number	Next step	ON time (1 to 10,000 msec)	-

(8) JMP

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 to 20 Byte
1001 [0 to 3]	-	-	-	Step to jump	-

(9) REP

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 to 20 Byte
1010 [0 to 3]	-	-	-	The number of repeatition (1 to 255)	-

(10) RPE

1 Byte	2 to 20 Byte
1011 [0 to 3]	-

(11) END

1 Byte	2 to 20 Byte
1100 [0 to 3]	-

(12) POS

1 Byte	2 Byte	3 Byte	4 Byte	5 to 8 Byte	9 to 20 Byte
1101 [0 to 3]	-	-	-	Setting range (-2,147,483,648 to +2,147,483,647)	-

(13) TIM

1 Byte	2 Byte	3 Byte	4 Byte	5 to 6 Byte	7 to 20 Byte
1110 [0 to 3]	Delay time [0 to 3]	-	-	Waiting time (1~10,000msec)	-

(14) CMP

1 Byte	2 Byte	3 Byte	4 Byte	5 Byte	6 Byte
0110 [0 to 3]	-	-	-	Compare port number	Compare mode (0 to 3)
7 to 8 Byte	**9 to 10 Byte**	**11 to 14 Byte**	**15 to 18 Byte**		**19 to 20 Byte**
Pulse range (1 to 1,000)	-	Pulse period	Setting range (-2,147,483,648 to +2,147,483,647)		-

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2.9 Operation setting group 2 [Func: 03/06/16, R/W: R/W]

No (Address)	Explanation	Setting range	Notice
405001 (1388)	Limit stop mode	0: Instant / 1: Slow	Bit 0
	S curve acceleration/deceleration	0: Disable / 1: Enable	Bit 1
	Input filter selection	0: 10ms / 1: 1.5ms	Bit 2
	Software limit	0: Disable / 1: Enable	Bit 3
	Power on home search start	0: Disable / 1: Enable	Bit 4
	Power on program start	0: Disable / 1: Enable	Bit 5
	Stop current fixing method	0: Disable / 1: Enable	Bit 6
	Index/Program mode start logic setting	0: Low / 1: High	Bit 7
	Register designate 0/+Run/+Jog logic setting	0: Low / 1: High	Bit 8
	Register designate 1/-Run/-Jog logic setting	0: Low / 1: High	Bit 9
	Register designate 2/SSP0 logic setting	0: Low / 1: High	Bit 10
	Register designate 3/SSP1 logic setting	0: Low / 1: High	Bit 11
	Register designate 4/MSP0 logic setting	0: Low / 1: High	Bit 12
	Register designate 5/MSP1 logic setting	0: Low / 1: High	Bit 13
	RUN mode 0 / Home search mode 0 logic setting	0: Low / 1: High	Bit 14
	RUN mode 1 / Home search mode 1 logic setting	0: Low / 1: High	Bit 15
405002 (1389)	Pause logic setting	0: Low / 1: High	Bit 0
	Stop logic setting	0: Low / 1: High	Bit 1
	Emergency stop logic setting	0: Low / 1: High	Bit 2
	Home search start logic setting	0: Low / 1: High	Bit 3
	Alarm Reset logic setting	0: Low / 1: High	Bit 4
	Servo On/Off logic setting	0: Low / 1: High	Bit 5
	Limit logic setting	0: Low / 1: High	Bit 6
	General input 0 logic setting	0: Low / 1: High	Bit 7
	General input 1 logic setting	0: Low / 1: High	Bit 8
	General input 2 logic setting	0: Low / 1: High	Bit 9
	General input 3 logic setting	0: Low / 1: High	Bit 10
	General input 4 logic setting	0: Low / 1: High	Bit 11
	General input 5 logic setting	0: Low / 1: High	Bit 12
	General input 6 logic setting	0: Low / 1: High	Bit 13
	General input 7 logic setting	0: Low / 1: High	Bit 14
	General input 8 logic setting	0: Low / 1: High	Bit 15
405003 (138A)	SD logic setting	0: Low / 1: High	Bit 0
	Control mode setting	0: Speed Filter / 1: Gain	Bit 1
	Motor direction setting	0: CW / 1: CCW	Bit 2
	Output mode setting (alarm ON)	0: Maintain / 1: Reset	Bit 3
405004 to 405050	Reserved		

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2.10 Home search parameter group [Func: 03/06/16, R/W: R/W]

No (Address)	Description	Setting range	Unit	Notice
405051(13BA)	Home search max. running speed	2 MSB (Most Significant Byte)	pps	-
405052(13BB)	Home search max. running speed	2 LSB (Least Significant Byte)	pps	-
405053(13BC)	Home search initial running speed	2 MSB (Most Significant Byte)	pps	-
405054(13BD)	Home search initial running speed	2 LSB (Least Significant Byte)	pps	-
405055(13BE)	Home search acceleration time setting	1 to 10000	msec	-
405056(13BF)	Home search deceleration time setting	1 to 10000	msec	-
405057(13C0)	Home search motor rotation direction	0: CW, 1: CCW	-	-
405058(13C1)	Home search offset	2 MSB (Most Significant Byte)	pulse	-
405059(13C2)	Home search offset	2 LSB (Least Significant Byte)	pulse	-
405060(13C3)	Zero setting after home search	2 MSB (Most Significant Byte)	pulse	-
405061(13C4)	Zero setting after home search	2 LSB (Least Significant Byte)	pulse	-
405062(13C5)	Home sensor level	Low / High	-	-
405063(13C6)	Home search torque setting	20 to 100	%	-
405064 to 405100	Reserved			

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2.11 Operation parameter group [Func: 03/06/16, R/W: R/W]

No (Address)	Explanation	Setting range	Unit	Notice
405101 to 405102	Reserved			
405103 (13EE)	Initial running speed 1	2 MSB (Most Significant Byte)	pps	
405104 (13EF)	Initial running speed 1	2 LSB (Least Significant Byte)	pps	
405105 (13F0)	Initial running speed 2	2 MSB (Most Significant Byte)	pps	
405106 (13F1)	Initial running speed 2	2 LSB (Least Significant Byte)	pps	
405107 (13F2)	Initial running speed 3	2 MSB (Most Significant Byte)	pps	
405108 (13F3)	Initial running speed 3	2 LSB (Least Significant Byte)	pps	
405109 (13F4)	Initial running speed 4	2 MSB (Most Significant Byte)	pps	
405110 (13F5)	Initial running speed 4	2 LSB (Least Significant Byte)	pps	
405111 (13F6)	Initial running speed 5	2 MSB (Most Significant Byte)	pps	
405112 (13F7)	Initial running speed 5	2 LSB (Least Significant Byte)	pps	
405113 (13F8)	Final running speed 1	2 MSB (Most Significant Byte)	pps	
405114 (13F9)	Final running speed 1	2 LSB (Least Significant Byte)	pps	
405115 (13FA)	Final running speed 2	2 MSB (Most Significant Byte)	pps	
405116 (13FB)	Final running speed 2	2 LSB (Least Significant Byte)	pps	
405117 (13FC)	Final running speed 3	2 MSB (Most Significant Byte)	pps	
405118 (13FD)	Final running speed 3	2 LSB (Least Significant Byte)	pps	
405119 (13FE)	Final running speed 4	2 MSB (Most Significant Byte)	pps	
405120 (13FF)	Final running speed 4	2 LSB (Least Significant Byte)	pps	
405121 (1400)	Final running speed 5	2 MSB (Most Significant Byte)	pps	
405122 (1401)	Final running speed 5	2 LSB (Least Significant Byte)	pps	
405123 (1402)	Waiting time setting 1	1 to 10,000	-msec	
405124 (1403)	Waiting time setting 2	1 to 10,000	msec	
405125 (1404)	Waiting time setting 3	1 to 10,000	msec	
405126 (1405)	Waiting time setting 4	1 to 10,000	msec	
405127 (1406)	Waiting time setting 5	1 to 10,000	msec	
405128 (1407)	Acceleration time setting 1	0 to 10,000	msec	
405129 (1408)	Acceleration time setting 2	0 to 10,000	msec	
405130 (1409)	Acceleration time setting 3	0 to 10,000	msec	
405131 (140A)	Acceleration time setting 4	0 to 10,000	msec	
405132 (140B)	Acceleration time setting 5	0 to 10,000	msec	
405133 (140C)	Deceleration time setting 1	0 to 10,000	msec	
405134 (140D)	Deceleration time setting 2	0 to 10,000	msec	
405135 (140E)	Deceleration time setting 3	0 to 10,000	msec	
405136 (140F)	Deceleration time setting 4	0 to 10,000	msec	-
405137 (1410)	Deceleration time setting 5	0 to 10,000	msec	-
405138 (1411)	S curve acceleration/deceleration time setting	1 to 5,000	msec	-
405139 (1412)	S/W limit(+) setting	2 MSB (Most Significant Byte)	pulse	-
405140 (1413)	S/W limit(+) setting	2 LSB (Least Significant Byte)	pulse	-
405141 (1414)	S/W limit(-) setting	2 MSB (Most Significant Byte)	pulse	-
405142 (1415)	S/W limit(-) setting	2 LSB (Least Significant Byte)	pulse	-
405143 (1416)	ON time setting 1	1 to 10,000	msec	-
405144 (1417)	ON time setting 2	1 to 10,000	msec	-
405145 (1418)	ON time setting 3	1 to 10,000	msec	-
405146 (1419)	ON time setting 4	1 to 10,000	msec	-
405147 (141A)	ON time setting 5	1 to 10,000	msec	-
405148 (141B)	Compare1 mode	0: Disable, 1: >, 2: <, 3: Period	-	-

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No (Address)	Explanation	Setting range	Unit	Notice
405149 (141C)	Compare1 pulse width	1 to 1,000	msec	-
405150 (141D)	Compare1 interval	2 MSB (Most Significant Byte)	pulse	-
405151 (141E)	Compare1 interval	2 LSB (Least Significant Byte)	pulse	-
405152 (141F)	Compare1 position	2 MSB (Most Significant Byte)	pulse	-
405153 (1420)	Compare1 position	2 LSB (Least Significant Byte)	pulse	-
405154 (1421)	Compare2 mode	0: Disable, 1: >, 2: <, 3: Period	-	-
405155 (1422)	Compare2 pulse width	1 to 1,000	msec	-
405156 (1423)	Compare2 interval	2 MSB (Most Significant Byte)	pulse	-
405157 (1424)	Compare2 interval	2 LSB (Least Significant Byte)	pulse	-
405158 (1425)	Compare2 position	2 MSB (Most Significant Byte)	pulse	-
405159 (1426)	Compare2 position	2 LSB (Least Significant Byte)	pulse	-
405160 (1427)	The number of pulse per 1 motor rotation	0 to 9	-	-
405161 (1428)	Motor operation response	0 to 15	-	-
405162 (1429)	Stop current	20 to 100	%	-
405163 (142A)	Motor Gain setting	0 to 15	-	-
405164 (142B)	In-Position range setting	0 to 15	-	-
405165 (142C)	P GAIN setting	0 to 7.000	-	0.001 unit setting
405166 (142D)	I GAIN setting	0 to 4.000	-	0.001 unit setting
405167 to 405200	Reserved			

2.12 Communication group [Func: 03/06/16, R/W: R/W]

No (Address)	Explanation	Setting range	Unit	Notice
405201 (1450)	Communication speed	00: 9,600 / 01: 19,200 02: 38,400 / 03: 57,600 / 04: 115,200	bps	Broadcast possible
405202 (1451)	Communication parity	0: None / 1: Even / 2: odd	-	Broadcast possible
405203 (1452)	Stop bit	0: 1 / 1: 2	-	Broadcast possible
405204 (1453)	Response waiting time	1 to 99	ms	Broadcast possible
405206 to 405250	Reserved			

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2.13 Other Communication Rules

When to perform Broadcast command, reserve separate broadcast addresses by the product family to be used for slave addresses. OR the 80H to use function. Slave addresses that are different to other in-house models must be assigned.

- Support broadcast command only for force single coil (Func 05 – 05 H), preset single registers (Func 06 – 06 H) and preset multiple registers (Func 16 – 10 H), and you need to OR the 80H to use each of these functions.
- When writing broadcast command of preset multiple registers, you cannot use more than two commands.

Slave address	Descriptioin
1 to 31	Unicast Slave address
129	Broadcast AiC series

A list of AiC series broadcast commands is as below.

Item	Function	No(Address)
Reset	Force Single Coil	000011 (000A)
Emergency stop		000012 (000B)
Aalarm reset		000013 (000C)
Command position clear		000014 (000D)
Actual position clear		000015 (000E)
CW operation		000016 (000F)
CCW operation		000017 (0010)
Move absolute position		000018 (0011)
Move relative position		000019 (0012)
Index mode start		000020 (0013)
Program mode start		000021 (0014)
Home search mode start		000022 (0014)
Immediate stop		000023 (0014)
Decelerating stop		000024 (0014)
Pause program mode		000025 (0014)
End program mode		000026 (0014)
Delete program		000027 (0014)
Communication speed	Preset Single Register Preset Multiple Register	405201(1450)
Communication parity		405202(1451)
Stop bit		405203(1452)
Response waiting time		405204(1453)

- When requesting data successively, up to 123 data (246 bytes) are available.
- Only in the same parameter setting group, it is possible to read/write more than 2 successive data.
  It is not possible to read/write more than 2 parameter setting group data.
  (Error process: It processes as Error Code “03”.)
- If CRC16 error occurrs, you need to resend the relevant frame from the beginning.

Caution

If master sends commands with broadcast to slave, there is no individual response from slave. Be careful to use broadcast command.

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Dimensions or specifications on this manual are subject to change and some models may be discontinued without notice.

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