Make Life Easy

User Manual for Communication

Temperature Controllers

TMH Series

MCT-TMHC-V1.4-2002US

Thank you for purchasing an Autonics 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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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.

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.

Communication Protocol

TMH Series is accepted to Modbus RTU Protocol.

Users should be aware that it does not support a broadcast command.

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.

Safety Considerations

- 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 may cause 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 personal injury, fire, or economic loss.
- 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 explosion or fire.
- Install on a device panel to use.
  Failure to follow this instruction may result in fire.
- Do not connect, repair, or inspect the unit while connected to a power source.
  Failure to follow this instruction may result in fire.
- 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.

Caution

- When connecting the power input and relay output, use AWG 20 (0.50mm^2) cable or over and tighten the terminal screw with a tightening torque of 0.74 to 0.90N·m.
  When connecting the sensor input and communication cable without dedicated cable, use AWG 28 to 16 cable and tighten the terminal screw with a tightening torque of 0.74 to 0.90 N·m.
  Failure to follow this instruction may result in fire or malfunction due to contact failure.
- 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.
- Keep metal chip, dust, and wire residue from flowing into the unit.
  Failure to follow this instruction may result in fire or product damage.

Caution during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Check the polarity of the terminals before wiring the temperature sensor. For RTD temperature sensor, wire it as 3-wire type, using cables in same thickness and length. For thermocouple (CT) temperature sensor, use the designated compensation wire for extending wire.
- Keep away from high voltage lines or power lines to prevent inductive noise. In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line. Do not use near the equipment which generates strong magnetic force or high frequency noise.
- Do not apply excessive power when connecting or disconnecting the connectors of the product.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Do not use the unit for other purpose (e.g. voltmeter, ammeter), but temperature controller.
- When changing the input sensor, turn off the power first before changing.
  After changing the input sensor, modify the value of the corresponding parameter.
- Power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Do not overlapping communication line and power line. Use twisted pair wire for communication line and connect ferrite bead at each end of line to reduce the effect of external noise.
- Make a required space around the unit for radiation of heat. For accurate temperature measurement, warm up the unit over 20 min after turning on the power.
- Mounting multiple devices in any way other than the specified mounting method may cause heat to build up inside, which will shorten their service life. If there is a possibility of the ambient temperature rising to a temperature above the specified temperature range, take steps, such as installing fans, to cool the device. Be sure that the cooling method in not cooling just the terminal block. If only the terminal block is cooled, measurement errors may occur.
- Make sure that power supply voltage reaches to the rated voltage within 2 sec after supplying power.
- Do not wire to terminals which are not used.
- Install DIN rail vertically from the ground.
- This unit may be used in the following environments.
  ①Indoors (in the environment condition rated in 'Specifications')
  ②Altitude max. 2,000m
  ③Pollution degree 2
  ④Installation category II

The above specifications 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).

Table of Contents

1 Modbus RTU Protocol

1.1 Overview

The Modbus industrial protocol was developed in 1979 to make communication possible between automation devices. The protocol has expanded to include implementations over serial, TCP/IP, and the user datagram protocol (UDP). Today, it is a common protocol used by countless devices for simple, reliable, and efficient communication across a variety of modern networks.

※ Refer to the reference document of developer for the details.

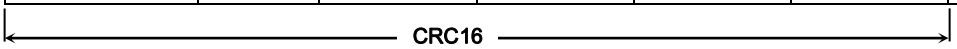
1.2 Frame Structure of Modbus RTU

1.2.1 Read coil status(Func 01–01H)

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

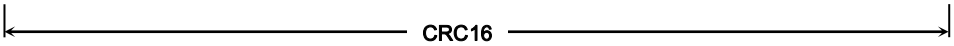
(1) Query (Master)

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



(2) Response (Slave)

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



1.2.2 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

1.2.3 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

1.2.4 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)	
						Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

1.2.5 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

1.2.6 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	Register 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	Register address		Preset data		Error check(CRC16)	
		High	Low	High	Low	Low	High
1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte	1Byte

CRC16

1.2.7 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

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

1.2.8 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

- ILLEGAL FUNCTION (Exception Code: 01 H): When a command is not supported.
- ILLEGAL DATA ADDRESS (Exception Code: 02 H): When Reserved area is read.
- ILLRGAL DATA VALUE (Exception Code: 03 H): When data write to out of setting range is requested.
- SLAVE DEVICE FAILURE (Exception Code: 04 H): When the parameter is locked or communication write is disable.
- SLAVE DEVICE BUSY ((Exception Code: 06 H): When the device status can not perform the requested order.

※ When the exception response situation, the device do not respond data, but send exception code only,

1.3 Autonics Modbus Address System

- **Parameter address structure**
  The parameter address is written in form 'Reference number – Decimal address (Hexadecimal address)'.
  For example, if the parameter address is **310560(293F)**, it means that **3** is Reference number, **10560** is Decimal address(DEC), **(293F)** is Hexadecimal address(HEX).

- **Reference number per each FUNC**

Reference	Function
0	FUNC 01[R], FUNC 05[W], FUNC 15[MW]
1	FUNC 02[R]
3	FUNC 04[R]
4	FUNC 03[R], FUNC 06[W], FUNC 16[MW]

- **Correlation between decimal address and hexadecimal address**
  The parameter address can be somewhat different for each manufacturer because the regulation for a starting number is not defined.
  Autonics Modbus address is started at '1' for decimal (DEC) address, and at '0' for hexadecimal (HEX) address. So, decimal (DEC) address values are +1 for Hex (HEX) address values.

Ex.

03E8(HEX) → 1001(DEC) (1000 + 1)
07D0(HEX) → 2001(DEC) (2000 + 1)
157C(HEX) → 5501(DEC) (5500 + 1)

2 Modbus Mapping Table

2.1 TMH2/4 Series [Control module]

The parameter address of TMH2 and TMH4 is different.

2.1.1 Read coil status(Func 01) / Force single coil(Func 05)

No(Address)		Func	R/W	Parameter	Description	Set range	Unit	Default	Note
TMH2	TMH4								
000001(0000)	000001(0000)	01/05	R/W	CH1 RUN/STOP	CH1 control output RUN/STOP	0: RUN, 1: STOP	-	0: RUN	
000002(0001)	000002(0001)	01/05	R/W	CH2 RUN/STOP	CH2 control output RUN/STOP				
-	000003(0002)	01/05	R/W	CH3 RUN/STOP	CH3 control output RUN/STOP				
-	000004(0003)	01/05	R/W	CH4 RUN/STOP	CH4 control output RUN/STOP				
-	000005(0004)	01/05	R/W	CH1 Auto-Tuning Execute	CH1 auto-tuning ON/OFF	0: OFF, 1: ON	-	0: OFF	
-	000006(0005)	01/05	R/W	CH2 Auto-Tuning Execute	CH2 auto-tuning ON/OFF				
-	000007(0006)	01/05	R/W	CH3 Auto-Tuning Execute	CH3 auto-tuning ON/OFF				
-	000008(0007)	01/05	R/W	CH4 Auto-Tuning Execute	CH4 auto-tuning ON/OFF				
000009(0008) to 000050(0031)		01/05	R/W	Reserved					

2.1.2 Read input status(Func 02)

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
100001(0000)	100001(0000)	02	R	-	CH1 LED(OUT)	0: OFF, 1: ON	-	-	
100002(0001)	100002(0001)	02	R	-	CH2 LED(OUT)				
-	100003(0002)	02	R	-	CH3 LED (OUT)				
-	100004(0003)	02	R	-	CH4 LED (OUT)				
100005(0004)	-	02	R	-	AL1 LED	0: OFF, 1: ON	-	-	
100006(0005)	-	02	R	-	AL2 LED				
100007(0006)	-	02	R	-	AL3 LED				
100008(0007)	-	02	R	-	AL4 LED				
100009(0008)	-	02	R	-	DI-1 input	0: OFF, 1: ON	-	-	
100010(0009)	-	02	R	-	DI-2 input				
100011(000A)	100011(000A)	02	R	-	CH1 EVENT 1 status	0: OFF, 1: ON	-	-	
100012(000B)	100012(000B)	02	R	-	CH1 EVENT 2 status				
100013(000C)	100013(000C)	02	R	-	CH1 EVENT 3 status				
100014(000D)	100014(000D)	02	R	-	CH1 EVENT 4 status				
100015(000E)	100015(000E)	02	R	-	CH2 EVENT 1 status	0: OFF, 1: ON	-	-	
100016(000F)	100016(000F)	02	R	-	CH2 EVENT 2 status				
100017(0010)	100017(0010)	02	R	-	CH2 EVENT 3 status				
100018(0011)	100018(0011)	02	R	-	CH2 EVENT 4 status				
-	100019(0012)	02	R	-	CH3 EVENT 1 status	0: OFF, 1: ON	-	-	
-	100020(0013)	02	R	-	CH3 EVENT 2 status				
-	100021(0014)	02	R	-	CH3 EVENT 3 status				
-	100022(0015)	02	R	-	CH3 EVENT 4 status				
-	100023(0016)	02	R	-	CH4 EVENT 1 status	0: OFF, 1: ON	-	-	
-	100024(0017)	02	R	-	CH4 EVENT 2 status				
-	100025(0018)	02	R	-	CH4 EVENT 3 status				
-	100026(0019)	02	R	-	CH4 EVENT 4 status				
100009(0008) to 100050(0031)		02	R	Reserved					

2.1.3 Read input register(Func 04)

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300001(0000) to 300100(0063)		04	R	Reserved					
300101(0064)		04	R	-	Product number H	-	-	0	
300102(0065)		04	R	-	Product number L	-	-	0	
300103(0066)		04	R	-	Hardware version	-	-	100	
300104(0067)		04	R	-	Software version	-	-	100	
300105(0068)		04	R	-	Model name 1	-	-	“TM”	Product name
300106(0069)		04	R	-	Model name 2	-	-	“H□”	Channel
300107(006A)		04	R	-	Model name 3	-	-	“-□”	Option
300108(006B)		04	R	-	Model name 4	-	-	“□□”	Power voltage/ Control output
300109(006C)		04	R	-	Model name 5	-	-	“□ ”	Structure
300110(006D)		04	R	-	Model name 6	-	-	“ ”	
300111(006E)		04	R	-	Model name 7	-	-	“ “	
300112(006F)		04	R	-	Model name 8	-	-	“ “	
300113(0070)		04	R	-	Model name 9	-	-	“ “	
300114(0071)		04	R	-	Model name 10	-	-	“ “	
300115(0072)		04	R	Reserved					
300116(0073)		04	R	Reserved					
300117(0074)		04	R	Reserved					
300118(0075)		04	R	-	Coil status Start Address	-	-	0	
300119(0076)		04	R	-	Coil status Quantity	-	-	0	
300120(0077)		04	R	-	Input status Start Address	-	-	0	
300121(0078)		04	R	-	Input status Quantity	-	-	0	
300122(0079)		04	R	-	Holding Register Start Address	-	-	0	
300123(007A)		04	R	-	Holding Register Quantity	-	-	0	
300124(007B)		04	R	-	Input Register Start Address	-	-	0	
300125(007C)		04	R	-	Input Register Quantity	-	-	0	
300126(007D)		04	R	-	Channel Quantity	-	-	0	
300127(007E) to 300200(0027)		04	R	Reserved					
301001(03E8)	301001(03E8)	04	R	CH1 Present Value	CH1 present value	Sensor input range, 31000: OPEN, 30000: HHHH, -30000: LLLL	℃/℉, Digit	-	
301002(03E9)	301002(03E9)	04	R	CH2 Present Value	CH2 present value				
-	301003(03EA)	04	R	CH3 Present Value	CH3 present value				
-	301004(03EB)	04	R	CH4 Present Value	CH4 present value				
301005(03EC)	301005(03EC)	04	R	CH1 Dot	CH1 sensor decimal point	0: 0, 1: 0.0	-	0: 0	
301006(03ED)	301006(03ED)	04	R	CH2 Dot	CH2 sensor decimal point				
-	301007(03EE)	04	R	CH3 Dot	CH3 sensor decimal point				

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
-	301008(03EF)	04	R	CH4 Dot	CH4 sensor decimal point				
301009(03F0)	301009(03F0)	04	R	CH1 Unit	CH1 sensor temp. unit	0: ℃, 1: ℉	-	0: ℃	
301010(03F1)	301010(03F1)	04	R	CH2 Unit	CH2 sensor temp. unit				
-	301011(03F2)	04	R	CH3 Unit	CH3 sensor temp. unit				
-	301012(03F3)	04	R	CH4 Unit	CH4 sensor temp. unit				
301013(03F4)	301013(03F4)	04	R	CH1 Set Value	CH1 set value	SV Low Limit to SV High Limit	℃/℉, Digit	0	
301014(03F5)	301014(03F5)	04	R	CH2 Set Value	CH2 set value				
-	301015(03F6)	04	R	CH3 Set Value	CH3 set value				
-	301016(03F7)	04	R	CH4 Set Value	CH4 set value				
301017(03F8)	301017(03F8)	04	R	CH1 Heating_MV	CH1 heating MV	0 to 1000 (0.0 to 100.0)	%	-	
301018(03F9)	301018(03F9)	04	R	CH2 Heating_MV	CH2 heating MV				
-	301019(03FA)	04	R	CH3 Heating_MV	CH3 heating MV				
-	301020(03FB)	04	R	CH4 Heating_MV	CH4 heating MV				
301021(03FC)	301021(03FC)	04	R	CH1 Cooling_MV	CH1 cooling MV	0 to 1000 (0.0 to 100.0)	%	-	
301022(03FD)	301022(03FD)	04	R	CH2 Cooling_MV	CH2 cooling MV				
-	301023(03FE)	04	R	CH3 Cooling_MV	CH3 cooling MV				
-	301024(03FF)	04	R	CH4 Cooling_MV	CH4 cooling MV				
-	301025(0400)	04	R	-	CH1 LED(OUT1)	0: OFF, 1: ON	-	-	Bit 0
				-	CH2 LED(OUT2)				Bit 1
				-	CH3 LED(OUT3)				Bit 2
				-	CH4 LED(OUT4)				Bit 3
				-	-	0 fixed	-	-	Bit 4
				-	-				Bit 5
				-	-				Bit 6
				-	-				Bit 7
				-	-				Bit 8
				-	-				Bit 9
301025(0400)	-	04	R	-	CH1 LED(OUT1)	0: OFF, 1: ON	-	-	Bit 0
				-	CH2 LED(OUT2)				Bit 1
				-	CH3 LED(OUT3), H&C control				Bit 2
				-	CH4 LED(OUT4), H&C control				Bit 3
				-	AL1 LED	0: OFF, 1: ON	-	-	Bit 4
				-	AL2 LED				Bit 5
				-	AL3 LED				Bit 6
				-	AL4 LED				Bit 7
				-	DI-1 input	0: OFF, 1: ON	-	-	Bit 8
				-	DI-2 input				Bit 9
301026(0401)	301026(0401)	04	R	-	CH1 EVENT1 status	0: OFF, 1: ON	-	-	
				-	CH1 EVENT2 status				
				-	CH1 EVENT3 status				
				-	CH1 EVENT4 status				
				-	CH2 EVENT1 status	0: OFF, 1: ON	-	-	

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
				-	CH2 EVENT2 status				
				-	CH2 EVENT3 status				
				-	CH2 EVENT4 status				
				-	CH3 EVENT1 status	0: OFF, 1: ON	-	-	
				-	CH3 EVENT2 status				
				-	CH3 EVENT3 status				
				-	CH3 EVENT4 status				
				-	CH4 EVENT1 status	0: OFF, 1: ON	-	-	
				-	CH4 EVENT2 status				
				-	CH4 EVENT3 status				
				-	CH4 EVENT4 status				
301027(0402)	301027(0402)	04	R	Unit Address	Comm. address	1 to 32	-	1	
301028(0403)	301028(0403)	04	R	CT1_Heater Current	CT1 heater current value monitoring	0 to 500 (0.0 to 50.0)	A	-	
301029(0404)	301029(0404)	04	R	CT2_Heater Current	CT2 heater current value monitoring				
301030(0405)	301030(0405)	04	R	CT3_Heater Current	CT3 heater current value monitoring				
301031(0406)	301031(0406)	04	R	CT4_Heater Current	CT4 heater current value monitoring				
301032(0407) to 301050(0419)	301032(0407) to 301050(0419)	04	R	Reserved					

※ Bit data for 301025(0400) address

Bit F	Bit E	Bit D	Bit C	Bit B	Bit A	Bit 9	Bit 8	Bit 9	Bit 8	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
-	-	-	-	-	-	DI-2 input	DI-1 input	AL4 LED	AL3 LED	AL2 LED	AL1 LED	CH4 LED	CH3 LED	CH2 LED	CH1 LED
0	0	0	0	0	0	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1
1 byte								1 byte							

2.1.4 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple registers(Func 16)

2.1.4.1 Monitoring group

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400001(0000)		03/06/16	R/W	CH1 SV	Temp. set value	SV Low Limit to SV High Limit	℃/℉, Digit	0	
400002(0001)		03/06/16	R/W	CH1 Heating_MV	Heating MV	0 to 1000 (0.0 to 100.0)	%	-	
400003(0002)		03/06/16	R/W	CH1 Cooling_MV	Cooling MV	0 to 1000 (0.0 to 100.0)	%	-	
400004(0003)		03/06/16	R/W	CH1 Auto-Manual Control	Auto/Manual control	0: AUTO, 1: MANUAL	-	0: AUTO	
400005(0004) to 400050(0031)		03/06/16	R/W	CH1 Reserved					
401001(03E8) to 401050(0419)		03/06/16	R/W	CH2 Parameter - Same as above CH1					
402001(07D0) to 402050(0801)		03/06/16	R/W	CH3 Parameter - Same as above CH1					
403001(0BB8) to 403050(0BE9)		03/06/16	R/W	CH4 Parameter - Same as above CH1					

2.1.4.2 Operating (control operation) group

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400051(0032)		03/06/16	R/W	CH1 RUN_STOP	control output RUN/STOP	0: RUN, 1: STOP	-	0: RUN	
400052(0033)		03/06/16	R/W	CH1 Multi SV No	Multi SV No.	0: SV-0, 1: SV-1, 2: SV-2, 3: SV-3	-	0: SV-0	
400053(0034)		03/06/16	R/W	CH1 SV-0 Setting Value	SV-0 set value	SV Low Limit to SV High Limit	℃/℉, Digit	0	
400054(0035)		03/06/16	R/W	CH1 SV-1 Setting Value	SV-1 set value				
400055(0036)		03/06/16	R/W	CH1 SV-2 Setting Value	SV-2 set value				
400056(0037)		03/06/16	R/W	CH1 SV-3 Setting Value	SV-3 set value				
400057(0038) to 400100(0063)		03/06/16	R/W	CH1 Reserved					
401051(041A) to 401100(044B)		03/06/16	R/W	CH2 Parameter - Same as above CH1					
402051(0802) to 402100(0833)		03/06/16	R/W	CH3 Parameter - Same as above CH1					
403051(0BEA) to 403100(0C1B)		03/06/16	R/W	CH4 Parameter - Same as above CH1					

2.1.4.3 Control operation group

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400101(0064)		03/06/16	R/W	CH1 Auto-Tuning Execute	Auto-tuning ON/OFF	0: OFF, 1: ON	-	0: OFF	
400102(0065)		03/06/16	R/W	CH1 Heating_ Proportional Band	Proportinal band of heating control	Temp. H, Analog: 1 to 999 Temp. L: 1 to 9999 (0.1 to 999.9)	℃/℉, %F.S	10	
400103(0066)		03/06/16	R/W	CH1 Cooling_ Proportional Band	Proportinal band of cooling control				
400104(0067)		03/06/16	R/W	CH1 Heating_Integral Time	Integral time of heating control	0 to 9999	Sec	0	
400105(0068)		03/06/16	R/W	CH1 Cooling_Integral Time	Integral time of cooling control				
400106(0069)		03/06/16	R/W	CH1 Heating_Derivation Time	Derivation time of heating control	0 to 9999	Sec	0	
400107(006A)		03/06/16	R/W	CH1 Cooling_Derivation Time	Derivation time of cooling control				
400108(006B)		03/06/16	R/W	CH1 Dead_Overlap band	Dead band of overlap band control	Temp. H, Analog: -999 to 999 Temp. L: -9999 to 9999 (-999.9 to 999.9)	℃/℉, %F.S	0	
400109(006C)		03/06/16	R/W	CH1 Manual Reset	P/PD control, manual reset	0 to 1000 (0.0 to 100.0)	%	500(50.0)	
400110(006D)		03/06/16	R/W	CH1 Heating_ON Hysteresis	Heating, hysteresis	Temp. H, Analog: 1 to 100 Temp. L: 1 to 1000 (0.1 to 100.0)	℃/℉, Digit	2	
400111(006E)		03/06/16	R/W	CH1 Heating_OFF Offset	Heating, OFF offset	Temp. H, Analog: 0 to 100 Temp. L: 0 to 1000 (0 to 100.0)	℃/℉, Digit	0	
400112(006F)		03/06/16	R/W	CH1 Cooling_ON Hysteresis	Cooling, hysteresis	Temp. H, Analog: 1 to 100 Temp. L: 1 to 1000 (0.1 to 100.0)	℃/℉, Digit	2	
400113(0070)		03/06/16	R/W	CH1 Cooling_OFF Offset	Cooling, OFF offset	Temp. H, Analog: 0 to 100 Temp. L: 0 to 1000 (0 to 100.0)	℃/℉, Digit	0	
400114(0071)		03/06/16	R/W	CH1 MV Low Limit	MV low-limit set value	Heating, Cooling control: 0.0 to MV High Limit - 0.1	%	0 (0.0)	
						H&C control: -100.0 to 0.0		-100(-100.0)	
400115(0072)		03/06/16	R/W	CH1 MV High Limit	MV high-limit set value	Heating, Cooling control: MV Low Limit + 0.1 to 100.0	%	1000(100.0)	
						H&C control: 0 to 100.0		1000(100.0)	
400116(0073)		03/06/16	R/W	CH1 MV rate limit	MV change rate limit	0: OFF, 1 to 1000 (0.1 to 100.0)	%/SEC	0: OFF	
400117(0074)		03/06/16	R/W	CH1 Ramp_Up Rate	Ramp up rate	0 to 9999	℃/℉, Digit	0	
400118(0075)		03/06/16	R/W	CH1 Ramp_Down Rate	Ramp down rate	0 to 9999	℃/℉, Digit	0	
400119(0076)		03/06/16	R/W	CH1 Ramp Time Unit	Ramp time unit	0: SEC, 1: MIN, 2: HOUR	-	1: MIN	
400120(0077)		03/06/16	R/W	CH1 PV transfer	Auto control, SV selection	0: OFF, 1: ON	-	0: OFF	
400121(0078)		03/06/16	R/W	CH1 Soft start time	Soft start time	0: OFF, 1 to 9999	SEC	0: OFF	

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range		Unit	Default	Note
400122(0079)		03/06/16	R/W	CH1 Soft start time unit	Soft start time unit	0:SEC, 1:MIN, 2:HOUR		-	0: SEC	
400123(007A)		03/06/16	R/W	CH1 Soft start MV	Soft start MV	1 to 1000 (0.1 to 100.0)		%	1000(100.0)	
400124(007B)		03/06/16	R/W	CH1 Operating Type	Control output operation mode	0: HEATING, 1: COOLING, 2: H&C		-	0: HEATING	
400125(007C)		03/06/16	R/W	CH1 Control Method	Temperature control method	Heating, Cooling control	0: PID, 1: ON/OFF	-	0: PID	
						H&C control	0: PID-PID, 1: PID-ON/OFF, 2: ON/OFF-PID, 3: ON/OFF-ON/OFF	-	0: PID-PID	
400126(007D)		03/06/16	R/W	CH1 Auto-Tuning Type	Auto-tuning mode	0: TUNE1, 1: TUNE2		-	0: TUNE1	
400127(007E)		03/06/16	R/W	CH1 Heating_Control Time	Heating, control cycle	1 to 1200(0.1 to 120.0) 10 to 1200(1.0 to 120.0)		Sec	RY: 200(20.0), SSR: 20(2.0)	
400128(007F)		03/06/16	R/W	CH1 Cooling_Control Time	Cooling, control cycle	1 to 1200(0.1 to 120.0) 10 to 1200(1.0 to 120.0)		Sec	RY: 200(20.0), SSR: 20(2.0)	
400129(0080)		03/06/16	R/W	CH1 Heating_ OUTPUT(SSR_CURR) TYPE	Heating, control output type	0: SSR, 1: CURRENT		-	1: CURRENT	
400130(0081)		03/06/16	R/W	CH1 Heating_ CURRENT OUTPUT RANGE	Heating, current output range	0: 4-20, 1: 0-20		mA	0: 4-20	
400131(0082)		03/06/16	R/W	CH1 Cooling_ OUTPUT(SSR_CURR) TYPE	Cooling, control output type	0: SSR, 1: CURRENT		-	1: CURRENT	
400132(0083)		03/06/16	R/W	CH1 Cooling_ CURRENT OUTPUT RANGE	Cooling, current output range	0: 4-20, 1: 0-20		mA	0: 4-20	
400133(0084) to 400150(0095)		03/06/16	R/W	CH1 Reserved						
401101(044C) to 401150(047D)		03/06/16	R/W	CH2 Parameter - Same as above CH1						
402101(0834) to 402150(0865)		03/06/16	R/W	CH3 Parameter - Same as above CH1						
403101(0C1C) to 403150(0C4D)		03/06/16	R/W	CH4 Parameter - Same as above CH1						

2.1.4.4 Initial setting group

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400151(0096)		03/06/16	R/W	CH1 Input Type	Input type	0: K(CA).H to 32: 4 to 20mA	-	0: K(CA).H	
400152(0097)		03/06/16	R/W	CH1 Unit	Sensor temp. unit	0: ℃, 1: ℉	-	℃	
400153(0098)		03/06/16	R/W	CH1 Low-limit Input Value	Analog low-limit input value	Min. operational value to High-limit Input Value Settings – F.S. 10%	Digit	0000	
400154(0099)		03/06/16	R/W	CH1 High-limit Input Value	Analog high-limit input value	Low-limit Input Value Settings + F.S. 10% to Max. operational value	Digit	1000	
400155(009A)		03/06/16	R/W	CH1 Decimal Point	Scale decimal point	0: 0, 1: 0.0, 2: 0.00, 3: 0.000	-	1: 0.0	
400156(009B)		03/06/16	R/W	CH1 Low-limit Scale Value	Scale low-limit display value	-9999 to 9999	Digit	0	
400157(009C)		03/06/16	R/W	CH1 High-limit Scale Value	Scale high-limit display value	-9999 to 9999	Digit	1000	
400158(009D)		03/06/16	R/W	CH1 Analog Input Unit	Analog input type unit	0: ℃, 1: ℉, 2: %	-	0: ℃	
400159(009E)		03/06/16	R/W	CH1 Input Func	Analog input special function	0: LINEAR, 1: ROOT, 2: SQUARE	-	0: LINEAR	
400160(009F)		03/06/16	R/W	CH1 Root Low Cut	Root function low cut point	-9999 to 9999	Digit	0	
400161(00A0)		03/06/16	R/W	CH1 Input Bias	Input correction	Temp. H, Analog: -999 to 999, Temp. L: -9999 to 9999 (-999.9 to 999.9)	℃/℉, Digit	0	
400162(00A1)		03/06/16	R/W	CH1 Input Digital Filter	Input digital filter	1 to 1200 (0.1 to 120.0)	Sec	1(0.1)	
400163(00A2)		03/06/16	R/W	CH1 SV Low Limit	SV Low Limit set value	Temp.: Sensor input low-limit value to SV High Limit – 1Digit Analog: Low-limit scale value to SV High Limit – 1Digit	℃/℉, %F.S	-200	
400164(00A3)		03/06/16	R/W	CH1 SV High Limit	SV High Limit set value	Temp.: SV Low Limit + 1Digit to Sensor input high-limit Analog: SV Low Limit + 1Digit to High-limit scale value	℃/℉, %F.S	1350	
400165(00A4)		03/06/16	R/W	CH1 RSV Target Address	RSV Master address	0, 1 to 48	-	0	
400166(00A5)		03/06/16	R/W	CH1 RSV Target CH	RSV Master channel	0: CH1, 1: CH2, 2: CH3, 3: CH4	-	CH□:CH□	
400167(00A6)		03/06/16	R/W	CH1 RSV Target	RSV Master channel target	0: OFF, 1: PV, 2: SV	-	0: OFF	
400168(00A7)		03/06/16	R/W	CH1 SV Tracking	SV tracking	0: OFF, 1: ON	-	0: OFF	
400169(00A8)		03/06/16	R/W	CH1 TUNE2 DV	TUNE2 mode deviation	Temp. H, Analog: -999 to 999, Temp. L: -9999 to 9999 (-999.9 to 999.9)	Digit	0	
400170(00A9) to 400200(00C7)		03/06/16	R/W	CH1 Reserved					
401151(047E) to 401200(04AF)		03/06/16	R/W	CH2 Parameter - Same as above CH1					
402151(0866) to 402200(0897)		03/06/16	R/W	CH3 Parameter - Same as above CH1					
403151(0C4E) to 403200(0C7F)		03/06/16	R/W	CH4 Parameter - Same as above CH1					

2.1.4.5 Control setting group

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400201(00C8)		03/06/16	R/W	CH1 Multi SV	Multi SV No.	0: 1EA, 1: 2EA, 2: 4EA	-	0: 1EA	
400202(00C9)		03/06/16	R/W	CH1 Initial Manual MV	Baseline MV for manual control	0: AUTO-MV, 1: PRESET-MV	-	0: AUTO-MV	
400203(00CA)		03/06/16	R/W	CH1 Preset Manual MV	Manual control, initial MV	Heating, Cooling control: 0 to 1000 (0.0 to 100.0), Heating&Cooling control: -1000 (-100.0) to 1000 (100.0)	%	0	
400204(00CB)		03/06/16	R/W	CH1 Sensor Error MV	Sensor error, MV	Heating, Cooling control, PID: 0 to 1000 (0.0 to 100.0), ON/OFF: 0(OFF), 1000(ON), Heating&Cooling control, PID: -1000 to 1000(-100.0 to 100.0), ON/OFF: -1000(cooling ON), 0(OFF), 1000(heating ON)	%	0	
400205(00CC)		03/06/16	R/W	CH1 Stop MV	STOP, control output	Heating, Cooling control,PID: 0 to 1000 (0.0 to 100.0), ON/OFF: 0(OFF), 1000(ON) Heating&Cooling control,PID: -1000 to 1000 (-100.0 to 100.0), ON/OFF: -1000(cooling ON), 0(OFF), 1000(heating ON)	%	0	
400206(00CD)		03/06/16	R/W	CH1 Stop Alarm Out	Stop, alarm output	0: Continue, 1: OFF	-	0: Continue	
400207(00CE) to 400250(00F9)		03/06/16	R/W	CH1 Reserved					
401201(04B0) to 401250(04E1)		03/06/16	R/W	CH2 Parameter - Same as above CH1					
402201(0898) to 402250(08C9)		03/06/16	R/W	CH3 Parameter - Same as above CH1					
403201(0C80) to 403250(0CB1)		03/06/16	R/W	CH4 Parameter - Same as above CH1					

2.1.4.6 Event setting group

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400251(00FA)		03/06/16	R/W	CH1 Event Mode 1	CH1 alarm operation mode 1	0: OFF, 1: AL-1, 2: AL-2, 3: AL-3, 4: AL-4, 5: AL-5, 6: AL-6, 7: LBA, 8: SBA, 9: HBA	-	1: AL-1	
400252(00FB)		03/06/16	R/W	CH1 Event Mode 2	CH1 alarm operation mode 2				
400253(00FC)		03/06/16	R/W	CH1 Event Mode 3	CH1 alarm operation mode 3				
400254(00FD)		03/06/16	R/W	CH1 Event Mode 4	CH1 alarm operation mode 4				
400255(00FE)		03/06/16	R/W	CH1 Event Type 1	CH1 alarm option 1	0: AL-A, 1: AL-B, 2: AL-C, 3: AL-D, 4: AL-E, 5: AL-F	-	0: AL-A	
400256(00FF)		03/06/16	R/W	CH1 Event Type 2	CH1 alarm option 2				
400257(0100)		03/06/16	R/W	CH1 Event Type 3	CH1 alarm option 3				
400258(0101)		03/06/16	R/W	CH1 Event Type 4	CH1 alarm option 4				
400259(0102)		03/06/16	R/W	CH1 Event Low 1	CH1 alarm low-limit set value 1	Deviation alarm: -F.S to F.S, Absoulte alarm: Within the dedicated input type	-	1550	
400260(0103)		03/06/16	R/W	CH1 Event High 1	CH1 alarm high-limit set value 1				
400261(0104)		03/06/16	R/W	CH1 Event Low 2	CH1 alarm low-limit set value 2				

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400262(0105)		03/06/16	R/W	CH1 Event High 2	CH1 alarm high-limit set value 2				
400263(0106)		03/06/16	R/W	CH1 Event Low 3	CH1 alarm low-limit set value 3				
400264(0107)		03/06/16	R/W	CH1 Event High 3	CH1 alarm high-limit set value 3				
400265(0108)		03/06/16	R/W	CH1 Event Low 4	CH1 alarm low-limit set value 4				
400266(0109)		03/06/16	R/W	CH1 Event High 4	CH1 alarm high-limit set value 4				
400267(010A)		03/06/16	R/W	CH1 Event Hysteresis 1	CH1 alarm hysteresis 1	Temp. H, Analog: 1 to 100, Temp. L: 1 to 1000 (0.1 to 100.0)	℃/℉, Digit	1	
400268(010B)		03/06/16	R/W	CH1 Event Hysteresis 2	CH1 alarm hysteresis 2				
400269(010C)		03/06/16	R/W	CH1 Event Hysteresis 3	CH1 alarm hysteresis 3				
400270(010D)		03/06/16	R/W	CH1 Event Hysteresis 4	CH1 alarm hysteresis 4				
400271(010E)		03/06/16	R/W	CH1 Alarm NO/NC	CH1 alarm output contact type	0: NO, 1: NC	-	0: NO	
400272(010F)		03/06/16	R/W	CH1 Event ON Delay Time 1	CH1 alarm ON delay time 1	0 to 3600	Sec	0	
400273(0110)		03/06/16	R/W	CH1 Event OFF Delay Time 1	CH1 alarm OFF delay time 1				
400274(0111)		03/06/16	R/W	CH1 Event ON Delay Time 2	CH1 alarm ON delay time 2				
400275(0112)		03/06/16	R/W	CH1 Event OFF Delay Time 2	CH1 alarm OFF delay time 2				
400276(0113)		03/06/16	R/W	CH1 Event ON Delay Time 3	CH1 alarm ON delay time 3				
400277(0114)		03/06/16	R/W	CH1 Event OFF Delay Time 3	CH1 alarm OFF delay time 3				
400278(0115)		03/06/16	R/W	CH1 Event ON Delay Time 4	CH1 alarm ON delay time 4				
400279(0116)		03/06/16	R/W	CH1 Event OFF Delay Time 4	CH1 alarm OFF delay time 4				
400280(0117)		03/06/16	R/W	CH1 Alarm Output Taget1	CH1 alarm output target address 1	0, 1: 49 to 16: 64	-	0	
400281(0118)		03/06/16	R/W	CH1 Alarm Output Taget2	CH1 alarm output target address 2				
400282(0119)		03/06/16	R/W	CH1 Alarm Output Taget3	CH1 alarm output target address 3				
400283(011A)		03/06/16	R/W	CH1 Alarm Output Taget4	CH1 alarm output target address 4				
400284(011B)		03/06/16	R/W	CH1 Alarm Output Taget1 CH	CH1 alarm output target channel 1	0: Alarm1 to 7: Alarm8	-	0: Alarm1	
400285(011C)		03/06/16	R/W	CH1 Alarm Output Taget2 CH	CH1 alarm output target channel 2				
400286(011D)		03/06/16	R/W	CH1 Alarm Output Taget3 CH	CH1 alarm output target channel 3				
400287(011E)		03/06/16	R/W	CH1 Alarm Output Taget4 CH	CH1 alarm output target channel 4				
400288(011F)		03/06/16	R/W	CH1 LBA Time 1	CH1 LBA monitoring time 1	0 to 9999	Sec	0	
400289(0120)		03/06/16	R/W	CH1 LBA Band 1	CH1 LBA detection band 1	Temp. H: 0 to 999, Temp. L: 0 to 9999 (0.0 to	℃/℉,	2 20(2.0)	

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
						999.9), Analog: 0 to 1000 (0.0 to 100.0)	%F.S	2(0.2)	
400290(0121)		03/06/16	R/W	CH1 LBA Time 2	CH1 LBA monitoring time 2	0 to 9999	Sec	0	
400291(0122)		03/06/16	R/W	CH1 LBA Band 2	CH1 LBA detection band 2	Temp. H: 0 to 999, Temp. L: 0 to 9999 (0.0 to 999.9), Analog: 0 to 1000 (0.0 to 100.0)	℃/℉, %F.S	2 20(2.0) 2(0.2)	
400292(0123)		03/06/16	R/W	CH1 LBA Time 3	CH1 LBA monitoring time 3	0 to 9999	Sec	0	
400293(0124)		03/06/16	R/W	CH1 LBA Band 3	CH1 LBA detection band 3	Temp. H: 0 to 999, Temp. L: 0 to 9999 (0.0 to 999.9), Analog: 0 to 1000 (0.0 to 100.0)	℃/℉, %F.S	2 20(2.0) 2(0.2)	
400294(0125)		03/06/16	R/W	CH1 LBA Time 4	CH1 LBA monitoring time 4	0 to 9999	Sec	0	
400295(0126)		03/06/16	R/W	CH1 LBA Band 4	CH1 LBA detection band 4	Temp. H: 0 to 999, Temp. L: 0 to 9999 (0.0 to 999.9), Analog: 0 to 1000 (0.0 to 100.0)	℃/℉, %F.S	2 20(2.0) 2(0.2)	
400296(0127)		03/06/16	R/W	CH1 CT Target 1	CH1 CT address 1	0, 1: 65 to 16: 80	-	0	
400297(0128)		03/06/16	R/W	CH1 CT Target 2	CH1 CT address 2				
400298(0129)		03/06/16	R/W	CH1 CT Target 3	CH1 CT address 3				
400299(012A)		03/06/16	R/W	CH1 CT Target 4	CH1 CT address 4				
400300(012B)		03/06/16	R/W	CH1 CT Input 1	CH1 CT input 1	0: CT1 to 7: CT8	-	CH□:CT□	
400301(012C)		03/06/16	R/W	CH1 CT Input 2	CH1 CT input 2				
400302(012D)		03/06/16	R/W	CH1 CT Input 3	CH1 CT input 3				
400303(012E)		03/06/16	R/W	CH1 CT Input 4	CH1 CT input 4				
400304(012F) to 400350(015D)		03/06/16	R/W	CH1 Reserved					
401251(04E2) to 401350(0545)		03/06/16	R/W	CH2 Parameter - Same as above CH1					
402251(08CA) to 402350(092D)		03/06/16	R/W	CH3 Parameter - Same as above CH1					
403251(0CB2) to 403350(0D15)		03/06/16	R/W	CH4 Parameter - Same as above CH1					

2.1.4.7 Option (digital input setting) group

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400351(015E)		03/06/16	R/W	CH1 DI Target	CH1 DI target address	0, 1: 49 to 16: 64	-	0	
400352(015F)		03/06/16	R/W	CH1 Digital Input 1 Func	CH1 DI-1 input terminal	0: OFF, 1: STOP, 2: AL-RESET, 3: Manual, 4: Multi-SV, 5: Remote SV	-	0: OFF	
400353(0160)		03/06/16	R/W	CH1 Digital Input 2 Func	CH1 DI-2 input terminal				
400354(0161)		03/06/16	R/W	CH1 Digital Input 3 Func	CH1 DI-3 input terminal				
400355(0162)		03/06/16	R/W	CH1 Digital Input 4 Func	CH1 DI-4 input terminal				
400356(0163)		03/06/16	R/W	CH1 Digital Input 5 Func	CH1 DI-5 input terminal				
400357(0164)		03/06/16	R/W	CH1 Digital Input 6 Func	CH1 DI-6 input terminal				
400358(0165)		03/06/16	R/W	CH1 Digital Input 7 Func	CH1 DI-7 input terminal				
400359(0166)		03/06/16	R/W	CH1 Digital Input 8 Func	CH1 DI-8 input terminal				
400360(0167) to 400400(018F)		03/06/16	R/W	CH1 Reserved					
401351(0546) to 401400(0577)		03/06/16	R/W	CH2 Parameter - Same as above CH1					
402351(092E) to 402400(0959)		03/06/16	R/W	CH3 Parameter - Same as above CH1					
403351(0D16) to 403400(0D47)		03/06/16	R/W	CH4 Parameter - Same as above CH1					

2.1.4.8 Common (common parameter setting) group

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400401(0190)		03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200	bps	1: 9600	
400402(0191)		03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD	-	0: NONE	
400403(0192)		03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1: 2	
400404(0193)		03/06/16	R/W	Response Waiting Time	Communication response wait time	5 to 99	ms	20	
400405(0194)		03/06/16	R/W	Communication Write	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
400406(0195)		03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
400407(0196)		03/06/16	R/W	Alarm1 Logic	Alarm1 alarm output logic operation	0: OR, 1: AND	-	0: OR	
400408(0197)		03/06/16	R/W	Alarm2 Logic	Alarm2 alarm output logic operation				
400409(0198)		03/06/16	R/W	Alarm3 Logic	Alarm3 alarm output logic operation				
400410(0199)		03/06/16	R/W	Alarm4 Logic	Alarm4 alarm output logic operation				
400411(019A) to 400450(01C1)		03/06/16	R/W	Reserved					

2.1.5 User parameter group

(1) User parameter group order assignment

No(Address)		Func	R/W	Parameter	Set range	Unit	Default	Note
TMH2	TMH4							
450001(C350)		03/06/16	R/W	User parameter group > No. 1 parameter assignment	The dedicated parameter address	-	0	
450002(C351)		03/06/16	R/W	User parameter group > No. 2 parameter assignment				
450003(C352)		03/06/16	R/W	User parameter group > No. 3 parameter assignment				
450004(C353)		03/06/16	R/W	User parameter group > No. 4 parameter assignment				
450005(C354)		03/06/16	R/W	User parameter group > No. 5 parameter assignment				
450006(C355)		03/06/16	R/W	User parameter group > No. 6 parameter assignment				
450007(C356)		03/06/16	R/W	User parameter group > No. 7 parameter assignment				
450008(C357)		03/06/16	R/W	User parameter group > No. 8 parameter assignment				
450009(C358)		03/06/16	R/W	User parameter group > No. 9 parameter assignment				
450010(C359)		03/06/16	R/W	User parameter group > No. 10 parameter assignment				
450011(C35A)		03/06/16	R/W	User parameter group > No. 11 parameter assignment				
450012(C35B)		03/06/16	R/W	User parameter group > No. 12 parameter assignment				
450013(C35C)		03/06/16	R/W	User parameter group > No. 13 parameter assignment				
450014(C35D)		03/06/16	R/W	User parameter group > No. 14 parameter assignment				
450015(C35E)		03/06/16	R/W	User parameter group > No. 15 parameter assignment				
450016(C35F)		03/06/16	R/W	User parameter group > No. 16 parameter assignment				
450017(C360)		03/06/16	R/W	User parameter group > No. 17 parameter assignment				
450018(C361)		03/06/16	R/W	User parameter group > No. 18 parameter assignment				
450019(C362)		03/06/16	R/W	User parameter group > No. 19 parameter assignment				
450020(C363)		03/06/16	R/W	User parameter group > No. 20 parameter assignment				
450021(C364)		03/06/16	R/W	User parameter group > No. 21 parameter assignment				
450022(C365)		03/06/16	R/W	User parameter group > No. 22 parameter assignment				
450023(C366)		03/06/16	R/W	User parameter group > No. 23 parameter assignment				
450024(C367)		03/06/16	R/W	User parameter group > No. 24 parameter assignment				

No(Address)		Func	R/W	Parameter	Set range	Unit	Default	Note
TMH2	TMH4							
450025(C368)		03/06/16	R/W	User parameter group > No. 25 parameter assignment				
450026(C369)		03/06/16	R/W	User parameter group > No. 26 parameter assignment				
450027(C36A)		03/06/16	R/W	User parameter group > No. 27 parameter assignment				
450028(C36B)		03/06/16	R/W	User parameter group > No. 28 parameter assignment				
450029(C36C)		03/06/16	R/W	User parameter group > No. 29 parameter assignment				
450030(C36D)		03/06/16	R/W	User parameter group > No. 30 parameter assignment				

(2) User parameter group assignment

No(Address)		Func	R/W	Parameter	Set range	Unit	Default	Note
TMH2	TMH4							
450031(C36E)		03/06/16	R/W	User parameter group > No. 1 parameter	The dedicated parameter set range	-	0	
450032(C36F)		03/06/16	R/W	User parameter group > No. 2 parameter				
450033(C370)		03/06/16	R/W	User parameter group > No. 3 parameter				
450034(C371)		03/06/16	R/W	User parameter group > No. 4 parameter				
450035(C372)		03/06/16	R/W	User parameter group > No. 5 parameter				
450036(C373)		03/06/16	R/W	User parameter group > No. 6 parameter				
450037(C374)		03/06/16	R/W	User parameter group > No. 7 parameter				
450038(C375)		03/06/16	R/W	User parameter group > No. 8 parameter				
450039(C376)		03/06/16	R/W	User parameter group > No. 9 parameter				
450040(C377)		03/06/16	R/W	User parameter group > No. 10 parameter				
450041(C378)		03/06/16	R/W	User parameter group > No. 11 parameter				
450042(C379)		03/06/16	R/W	User parameter group > No. 12 parameter				
450043(C37A)		03/06/16	R/W	User parameter group > No. 13 parameter				
450044(C37B)		03/06/16	R/W	User parameter group > No. 14 parameter				
450045(C37C)		03/06/16	R/W	User parameter group > No. 15 parameter				
450046(C37D)		03/06/16	R/W	User parameter group > No. 16 parameter				
450047(C37E)		03/06/16	R/W	User parameter group > No. 17 parameter				
450048(C37F)		03/06/16	R/W	User parameter group > No. 18 parameter				
450049(C380)		03/06/16	R/W	User parameter group > No. 19 parameter				
450050(C381)		03/06/16	R/W	User parameter group > No. 20 parameter				

No(Address)		Func	R/W	Parameter	Set range	Unit	Default	Note
TMH2	TMH4							
450051(C382)		03/06/16	R/W	User parameter group > No. 21 parameter				
450052(C383)		03/06/16	R/W	User parameter group > No. 22 parameter				
450053(C384)		03/06/16	R/W	User parameter group > No. 23 parameter				
450054(C385)		03/06/16	R/W	User parameter group > No. 24 parameter				
450055(C386)		03/06/16	R/W	User parameter group > No. 25 parameter				
450056(C387)		03/06/16	R/W	User parameter group > No. 26 parameter				
450057(C388)		03/06/16	R/W	User parameter group > No. 27 parameter				
450058(C389)		03/06/16	R/W	User parameter group > No. 28 parameter				
450059(C38A)		03/06/16	R/W	User parameter group > No. 29 parameter				
450060(C38B)		03/06/16	R/W	User parameter group > No. 30 parameter				

2.2 TMHA [Option: Analog input/output module]

2.2.1 Read input status(Func 02)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
100001(0000)	02	R	-	CH1 LED (transmission output 1)	0: OFF, 1: ON	-	-	
100002(0001)	02	R	-	CH2 LED (transmission output 2)				
100003(0002)	02	R	-	CH3 LED (transmission output 3)				
100004(0003)	02	R	-	CH4 LED (transmission output 4)				
100005(0004) to 100050(0031)	02	R	Reserved					

2.2.2 Read input register(Func 04)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300001(0000) to 300100(0063)	04	R	Reserved					
300101(0064)	04	R	-	Product number H	-	-	0	
300102(0065)	04	R	-	Product number L	-	-	0	
300103(0066)	04	R	-	Hardware version	-	-	100	
300104(0067)	04	R	-	Software version	-	-	100	
300105(0068)	04	R	-	Model name 1	-	-	“TM”	Product name
300106(0069)	04	R	-	Model name 2	-	-	“HA”	Option
300107(006A)	04	R	-	Model name 3	-	-	“-4”	transmission output
300108(006B)	04	R	-	Model name 4	-	-	“2A”	Power voltage/output
300109(006C)	04	R	-	Model name 5	-	-	“E”	Structure
300110(006D)	04	R	-	Model name 6	-	-	“ ”	
300111(006E)	04	R	-	Model name 7	-	-	“ “	
300112(006F)	04	R	-	Model name 8	-	-	“ “	
300113(0070)	04	R	-	Model name 9	-	-	“ “	
300114(0071)	04	R	-	Model name 10	-	-	“ “	
300115(0072)	04	R	Reserved					
300116(0073)	04	R	Reserved					
300117(0074)	04	R	Reserved					
300118(0075)	04	R	-	Coil status Start Address	-	-	0	
300119(0076)	04	R	-	Coil status Quantity	-	-	0	
300120(0077)	04	R	-	Input status Start	-	-	0	

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
				Address				
300121(0078)	04	R	-	Input status Quantity	-	-	0	
300122(0079)	04	R	-	Holding Register Start Address	-	-	0	
300123(007A)	04	R	-	Holding Register Quantity	-	-	0	
300124(007B)	04	R	-	Input Register Start Address	-	-	0	
300125(007C)	04	R	-	Input Register Quantity	-	-	0	
300126(007D)	04	R	-	Channel Quantity	-	-	0	
300127(007E) to 300200(00C7)	04	R	Reserved					
301001(03E8)	04	R	CH1 Present Value	CH1 present value	Sensor input range, 31000: OPEN, 30000: HHHH, -30000: LLLL	℃/℉, Digit	-	
301002(03E9)	04	R	CH2 Present Value	CH2 present value				
301003(03EA)	04	R	CH3 Present Value	CH3 present value				
301004(03EB)	04	R	CH4 Present Value	CH4 present value				
301005(03EC)	04	R	CH1 Dot	CH1 sensor decimal point	0: 0, 1: 0.0	-	0: 0	
301006(03ED)	04	R	CH2 Dot	CH2 sensor decimal point				
301007(03EE)	04	R	CH3 Dot	CH3 sensor decimal point				
301008(03EF)	04	R	CH4 Dot	CH4 sensor decimal point				
301009(03F0)	04	R	CH1 Unit	CH1 sensor temp. unit	0: ℃, 1: ℉	-	0: ℃	
301010(03F1)	04	R	CH2 Unit	CH2 sensor temp. unit				
301011(03F2)	04	R	CH3 Unit	CH3 sensor temp. unit				
301012(03F3)	04	R	CH4 Unit	CH4 sensor temp. unit				
301013(03F4)	04	R	CH1 Analog Output Value	CH1 transmission output value	40 to 200(4.0 to 20.0), 0 to 200 (0.0 to 20.0)	mA	-	
301014(03F5)	04	R	CH2 Analog Output Value	CH2 transmission output value				
301015(03F6)	04	R	CH3 Analog Output Value	CH3 transmission output value				
301016(03F7)	04	R	CH4 Analog Output Value	CH4 transmission output value				
301017(03F8)	04	R	-	CH1 LED (OUT1)	0: OFF, 1: ON	-	-	Bit 0
			-	CH2 LED (OUT2)				Bit 1
			-	CH3 LED (OUT3)				Bit 2
			-	CH4 LED (OUT4)				Bit 3
301018(03F9)	04	R	Unit Address	Comm. address	33 to 48	-	1	
301019(03FA) to 301050(0419)	04	R	Reserved					

2.2.3 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple registers(Func 16)

2.2.3.1 Initial setting group

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400001(0000)	03/06/16	R/W	CH1 Input Type	Input type	0: K(CA).H to 32: 4 to 20mA	-	0: K(CA).H	
400002(0001)	03/06/16	R/W	CH1 Unit	Sensor temp. unit	0: ℃, 1: ℉	-	℃	
400003(0002)	03/06/16	R/W	CH1 Low-limit Input Value	Analog low-limit input value	Min. operational value to High-limit Input Value Settings − F.S. 10%	-	0000	
400004(0003)	03/06/16	R/W	CH1 High-limit Input Value	Analog high-limit input value	Low-limit Input Value Settings + F.S. 10% to Max. operational value	-	1000	
400005(0004)	03/06/16	R/W	CH1 Decimal Point	Scale decimal point	0: 0, 1: 0.0, 2: 0.00, 3: 0.000	-	1: 0.0	
400006(0005)	03/06/16	R/W	CH1 Low-limit Scale Value	Scale low-limit display value	-9999 to 9999	Digit	0	
400007(0006)	03/06/16	R/W	CH1 High-limit Scale Value	Scale high-limit display value	-9999 to 9999	Digit	1000	
400008(0007)	03/06/16	R/W	CH1 Analog Input Unit	Analog input type unit	0: ℃, 1: ℉, 2: %	-	0: ℃	
400009(0008)	03/06/16	R/W	CH1 Input Func	Analog input special function	0: LINEAR, 1: ROOT, 2: SQUARE	-	0: LINEAR	
400010(0009)	03/06/16	R/W	CH1 Root Low Cut	Root function low cut point	-9999 to 9999	Digit	0	
400011(000A)	03/06/16	R/W	CH1 Input Bias	Input correction	-9999 to 9999	Digit	0	
400012(000B)	03/06/16	R/W	CH1 Input Digital Filter	Input digital filter	1 to 1200 (0.1 to 120.0)	Sec	1(0.1)	
400013(000C) to 400050(0031)	03/06/16	R/W	CH1 Reserved					
401001(03E8) to 401050(0419)	03/06/16	R/W	CH2 Parameter - Same as above CH1					
402001(07D0) to 402050(0801)	03/06/16	R/W	CH3 Parameter - Same as above CH1					
403001(0BB8) to 403050(0BE9)	03/06/16	R/W	CH4 Parameter - Same as above CH1					

2.2.3.2 Control setting group

No(Address)	Func	R/W	Parameter	Description	Set range		Unit	Default	Note
400051(0032)	03/06/16	R/W	CH1 Analog Output Mode	Analog transmission output	0: PV, 1: SV, 2: H-MV, 3: C-MV		-	0: PV	
400052(0033)	03/06/16	R/W	CH1 Analog Output Target	Transmission output target address	0 to 48		-	0	
400053(0034)	03/06/16	R/W	CH1 Analog Output Target CH	Transmission output target channel	0: CH1, 1: CH2, 2: CH3, 3: CH4		-	CH□:CH□	
400054(0035)	03/06/16	R/W	CH1 Analog Output Range	Current output range	0: 4-20, 1: 0-20		-	0: 4-20	
400055(0036)	03/06/16	R/W	CH1 Full Scale Low	Transmission output low-limit value	PV	Temp.: Operational range Analog: High/Low-scale range	-	-200	
					SV	SV Low Limit to SV High Limit			
					H-MV, C-MV	0 to 1000 (0.0 to 100.0)			
400056(0037)	03/06/16	R/W	CH1 Full Scale High	Transmission output high-limit value	PV	Temp.: Operational range Analog: High/Low-scale range	-	1350	
					SV	SV Low Limit to SV High Limit			
					H-MV, C-MV	0 to 1000 (0.0 to 100.0)			
400057(0038) to 400100(0063)	03/06/16	R/W	CH1 Reserved						
401051(041A) to 401100(044B)	03/06/16	R/W	CH2 Parameter - Same as above CH1						
402051(0802) to 402100(0833)	03/06/16	R/W	CH3 Parameter - Same as above CH1						
403051(0BEA) to 403100(0C1B)	03/06/16	R/W	CH4 Parameter - Same as above CH1						

2.2.3.3 Common (common parameter setting) group

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400101(0064)	03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200	bps	1: 9600	
400102(0065)	03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD	-	0: NONE	
400103(0066)	03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1: 2	
400104(0067)	03/06/16	R/W	Response Waiting Time	Communication response wait time	5 to 99	ms	20	
400105(0068)	03/06/16	R/W	Communication Write	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
400106(0069)	03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
400107(006A) to 400150(0095)	03/06/16	R/W	Reserved					

2.2.4 User parameter group

(1) User parameter group order assignment

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
450001(C350)	03/06/16	R/W	User parameter group > No. 1 parameter assignment	The dedicated parameter address	-	0	
450002(C351)	03/06/16	R/W	User parameter group > No. 2 parameter assignment				
450003(C352)	03/06/16	R/W	User parameter group > No. 3 parameter assignment				
450004(C353)	03/06/16	R/W	User parameter group > No. 4 parameter assignment				
450005(C354)	03/06/16	R/W	User parameter group > No. 5 parameter assignment				
450006(C355)	03/06/16	R/W	User parameter group > No. 6 parameter assignment				
450007(C356)	03/06/16	R/W	User parameter group > No. 7 parameter assignment				
450008(C357)	03/06/16	R/W	User parameter group > No. 8 parameter assignment				
450009(C358)	03/06/16	R/W	User parameter group > No. 9 parameter assignment				
450010(C359)	03/06/16	R/W	User parameter group > No. 10 parameter assignment				
450011(C35A)	03/06/16	R/W	User parameter group > No. 11 parameter assignment				
450012(C35B)	03/06/16	R/W	User parameter group > No. 12 parameter assignment				
450013(C35C)	03/06/16	R/W	User parameter group > No. 13 parameter assignment				
450014(C35D)	03/06/16	R/W	User parameter group > No. 14 parameter assignment				
450015(C35E)	03/06/16	R/W	User parameter group > No. 15 parameter assignment				
450016(C35F)	03/06/16	R/W	User parameter group > No. 16 parameter assignment				
450017(C360)	03/06/16	R/W	User parameter group > No. 17 parameter assignment				
450018(C361)	03/06/16	R/W	User parameter group > No. 18 parameter assignment				
450019(C362)	03/06/16	R/W	User parameter group > No. 19 parameter assignment				
450020(C363)	03/06/16	R/W	User parameter group > No. 20 parameter assignment				
450021(C364)	03/06/16	R/W	User parameter group > No. 21 parameter assignment				
450022(C365)	03/06/16	R/W	User parameter group > No. 22 parameter assignment				
450023(C366)	03/06/16	R/W	User parameter group > No. 23 parameter assignment				
450024(C367)	03/06/16	R/W	User parameter group > No. 24 parameter assignment				
450025(C368)	03/06/16	R/W	User parameter group > No. 25 parameter				

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
			assignment				
450026(C369)	03/06/16	R/W	User parameter group > No. 26 parameter assignment				
450027(C36A)	03/06/16	R/W	User parameter group > No. 27 parameter assignment				
450028(C36B)	03/06/16	R/W	User parameter group > No. 28 parameter assignment				
450029(C36C)	03/06/16	R/W	User parameter group > No. 29 parameter assignment				
450030(C36D)	03/06/16	R/W	User parameter group > No. 30 parameter assignment				

(2) User parameter group assignment

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
450031(C36E)	03/06/16	R/W	User parameter group > No. 1 parameter	The dedicated parameter set range	-	0	
450032(C36F)	03/06/16	R/W	User parameter group > No. 2 parameter				
450033(C370)	03/06/16	R/W	User parameter group > No. 3 parameter				
450034(C371)	03/06/16	R/W	User parameter group > No. 4 parameter				
450035(C372)	03/06/16	R/W	User parameter group > No. 5 parameter				
450036(C373)	03/06/16	R/W	User parameter group > No. 6 parameter				
450037(C374)	03/06/16	R/W	User parameter group > No. 7 parameter				
450038(C375)	03/06/16	R/W	User parameter group > No. 8 parameter				
450039(C376)	03/06/16	R/W	User parameter group > No. 9 parameter				
450040(C377)	03/06/16	R/W	User parameter group > No. 10 parameter				
450041(C378)	03/06/16	R/W	User parameter group > No. 11 parameter				
450042(C379)	03/06/16	R/W	User parameter group > No. 12 parameter				
450043(C37A)	03/06/16	R/W	User parameter group > No. 13 parameter				
450044(C37B)	03/06/16	R/W	User parameter group > No. 14 parameter				
450045(C37C)	03/06/16	R/W	User parameter group > No. 15 parameter				
450046(C37D)	03/06/16	R/W	User parameter group > No. 16 parameter				
450047(C37E)	03/06/16	R/W	User parameter group > No. 17 parameter				
450048(C37F)	03/06/16	R/W	User parameter group > No. 18 parameter				
450049(C380)	03/06/16	R/W	User parameter group > No. 19 parameter				
450050(C381)	03/06/16	R/W	User parameter group > No. 20 parameter				
450051(C382)	03/06/16	R/W	User parameter group > No. 21 parameter				
450052(C383)	03/06/16	R/W	User parameter group > No. 22 parameter				

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
450053(C384)	03/06/16	R/W	User parameter group > No. 23 parameter				
450054(C385)	03/06/16	R/W	User parameter group > No. 24 parameter				
450055(C386)	03/06/16	R/W	User parameter group > No. 25 parameter				
450056(C387)	03/06/16	R/W	User parameter group > No. 26 parameter				
450057(C388)	03/06/16	R/W	User parameter group > No. 27 parameter				
450058(C389)	03/06/16	R/W	User parameter group > No. 28 parameter				
450059(C38A)	03/06/16	R/W	User parameter group > No. 29 parameter				
450060(C38B)	03/06/16	R/W	User parameter group > No. 30 parameter				

2.3 TMHE [Option: Digital input, Alarm output module]

2.3.1 Read input status(Func 02)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
100001(0000)	02	R	-	AL1 LED	0: OFF, 1: ON	-	-	
100002(0001)	02	R	-	AL2 LED				
100003(0002)	02	R	-	AL3 LED				
100004(0003)	02	R	-	AL4 LED				
100005(0004)	02	R	-	AL5 LED				
100006(0005)	02	R	-	AL6 LED				
100007(0006)	02	R	-	AL7 LED				
100008(0007)	02	R	-	AL8 LED				
100009(0008)	02	R	-	DI-1 input	0: OFF, 1: ON	-	-	
100010(0009)	02	R	-	DI-2 input				
100011(000A)	02	R	-	DI-3 input				
100012(000B)	02	R	-	DI-4 input				
100013(000C)	02	R	-	DI-5 input				
100014(000D)	02	R	-	DI-6 input				
100015(000E)	02	R	-	DI-7 input				
100016(000F)	02	R	-	DI-8 input				
100017(0010) to 100050(0031)	02	R	Reserved					

2.3.2 Read input register(Func 04)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300001(0000) to 300100(0063)	04	R	Reserved					
300101(0064)	04	R	-	Product number H	-	-	0	
300102(0065)	04	R	-	Product number L	-	-	0	
300103(0066)	04	R	-	Hardware version	-	-	100	
300104(0067)	04	R	-	Software version	-	-	100	
300105(0068)	04	R	-	Model name 1	-	-	“TM”	Product name
300106(0069)	04	R	-	Model name 2	-	-	“HE”	Option
300107(006A)	04	R	-	Model name 3	-	-	“-8”	Input/Output
300108(006B)	04	R	-	Model name 4	-	-	“2R”	Power voltage/ output
300109(006C)	04	R	-	Model name 5	-	-	“E”	Structure
300110(006D)	04	R	-	Model name 6	-	-	“ ”	
300111(006E)	04	R	-	Model name 7	-	-	“ “	
300112(006F)	04	R	-	Model name 8	-	-	“ “	
300113(0070)	04	R	-	Model name 9	-	-	“ “	
300114(0071)	04	R	-	Model name 10	-	-	“ “	
300115(0072)	04	R	Reserved					
300116(0073)	04	R	Reserved					
300117(0074)	04	R	Reserved					
300118(0075)	04	R	-	Coil status Start Address	-	-	0	
300119(0076)	04	R	-	Coil status Quantity	-	-	0	
300120(0077)	04	R	-	Input status Start Address	-	-	0	
300121(0078)	04	R	-	Input status Quantity	-	-	0	
300122(0079)	04	R	-	Holding Register Start Address	-	-	0	
300123(007A)	04	R	-	Holding Register Quantity	-	-	0	
300124(007B)	04	R	-	Input Register Start Address	-	-	0	
300125(007C)	04	R	-	Input Register Quantity	-	-	0	
300126(007D)	04	R	-	Channel Quantity	-	-	0	
300127(007E) to 300200(00C7)	04	R	Reserved					
301001(03E8)	04	R	-	AL1 LED	0: OFF, 1: ON	-	-	Bit0
			-	AL2 LED				Bit1
			-	AL3 LED				Bit2
			-	AL4 LED				Bit3
			-	AL5 LED				Bit4
			-	AL6 LED				Bit5
			-	AL7 LED				Bit6

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
			-	AL8 LED				Bit7
			-	DI-1 input	0: OFF, 1: ON	-	-	Bit8
			-	DI-2 input				Bit9
			-	DI-3 input				Bit10
			-	DI-4 input				Bit11
			-	DI-5 input				Bit12
			-	DI-6 input				Bit13
			-	DI-7 input				Bit14
			-	DI-8 input				Bit15
301002(03E9)	04	R	Unit Address	Comm. address	49 to 64	-	49	-
301003(03EA) to 301050(0419)	04	R	Reserved					

2.3.3 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple registers(Func 16)

2.3.3.1 Operating (output operation) group

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400001(0000)	03/06/16	R/W	CH1 Alarm Logic	CH1 alarm output logic operation	0: OR, 1: AND	-	0: OR	
400002(0001)	03/06/16	R/W	CH2 Alarm Logic	CH2 alarm output logic operation				
400003(0002)	03/06/16	R/W	CH3 Alarm Logic	CH3 alarm output logic operation				
400004(0003)	03/06/16	R/W	CH4 Alarm Logic	CH4 alarm output logic operation				
400005(0004)	03/06/16	R/W	CH5 Alarm Logic	CH5 alarm output logic operation				
400006(0005)	03/06/16	R/W	CH6 Alarm Logic	CH6 alarm output logic operation				
400007(0006)	03/06/16	R/W	CH7 Alarm Logic	CH7 alarm output logic operation				
400008(0007)	03/06/16	R/W	CH8 Alarm Logic	CH8 alarm output logic operation				
400009(0008)	03/06/16	R/W	CH1 Alarm NO/NC	CH1 alarm output contact type	0: NO, 1: NC	-	0: NO	
400010(0009)	03/06/16	R/W	CH2 Alarm NO/NC	CH2 alarm output contact type				
400011(000A)	03/06/16	R/W	CH3 Alarm NO/NC	CH3 alarm output contact type				
400012(000B)	03/06/16	R/W	CH4 Alarm NO/NC	CH4 alarm output contact type				
400013(000C)	03/06/16	R/W	CH5 Alarm NO/NC	CH5 alarm output contact type				
400014(000D)	03/06/16	R/W	CH6 Alarm NO/NC	CH6 alarm output contact type				
400015(000E)	03/06/16	R/W	CH7 Alarm NO/NC	CH7 alarm output contact type				
400016(000F)	03/06/16	R/W	CH8 Alarm NO/NC	CH8 alarm output contact type				
400017(0010) to 400050(0031)	03/06/16	R/W	Reserved					

2.3.3.2 Common (common parameter setting) group

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400051(0032)	03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200	bps	1: 9600	
400052(0033)	03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD	-	0: NONE	
400053(0034)	03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1: 2	
400054(0035)	03/06/16	R/W	Response Waiting Time	Communication response wait time	5 to 99	ms	20	
400055(0036)	03/06/16	R/W	Communication Write	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
400056(0037)	03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
400057(0038) to 400100(0063)	03/06/16	R/W	Reserved					

2.3.4 User parameter group

(1) User parameter group order assignment

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
450001(C350)	03/06/16	R/W	User parameter group > No. 1 parameter assignment	The dedicated parameter address	-	0	
450002(C351)	03/06/16	R/W	User parameter group > No. 2 parameter assignment				
450003(C352)	03/06/16	R/W	User parameter group > No. 3 parameter assignment				
450004(C353)	03/06/16	R/W	User parameter group > No. 4 parameter assignment				
450005(C354)	03/06/16	R/W	User parameter group > No. 5 parameter assignment				
450006(C355)	03/06/16	R/W	User parameter group > No. 6 parameter assignment				
450007(C356)	03/06/16	R/W	User parameter group > No. 7 parameter assignment				
450008(C357)	03/06/16	R/W	User parameter group > No. 8 parameter assignment				
450009(C358)	03/06/16	R/W	User parameter group > No. 9 parameter assignment				
450010(C359)	03/06/16	R/W	User parameter group > No. 10 parameter assignment				
450011(C35A)	03/06/16	R/W	User parameter group > No. 11 parameter assignment				
450012(C35B)	03/06/16	R/W	User parameter group > No. 12 parameter assignment				
450013(C35C)	03/06/16	R/W	User parameter group > No. 13 parameter assignment				
450014(C35D)	03/06/16	R/W	User parameter group > No. 14 parameter assignment				
450015(C35E)	03/06/16	R/W	User parameter group > No. 15 parameter assignment				
450016(C35F)	03/06/16	R/W	User parameter group > No. 16 parameter assignment				
450017(C360)	03/06/16	R/W	User parameter group > No. 17 parameter assignment				
450018(C361)	03/06/16	R/W	User parameter group > No. 18 parameter assignment				
450019(C362)	03/06/16	R/W	User parameter group > No. 19 parameter assignment				
450020(C363)	03/06/16	R/W	User parameter group > No. 20 parameter assignment				
450021(C364)	03/06/16	R/W	User parameter group > No. 21 parameter assignment				
450022(C365)	03/06/16	R/W	User parameter group > No. 22 parameter assignment				
450023(C366)	03/06/16	R/W	User parameter group > No. 23 parameter assignment				
450024(C367)	03/06/16	R/W	User parameter group > No. 24 parameter assignment				
450025(C368)	03/06/16	R/W	User parameter group > No. 25 parameter				

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
			assignment				
450026(C369)	03/06/16	R/W	User parameter group > No. 26 parameter assignment				
450027(C36A)	03/06/16	R/W	User parameter group > No. 27 parameter assignment				
450028(C36B)	03/06/16	R/W	User parameter group > No. 28 parameter assignment				
450029(C36C)	03/06/16	R/W	User parameter group > No. 29 parameter assignment				
450030(C36D)	03/06/16	R/W	User parameter group > No. 30 parameter assignment				

(2) User parameter group assignment

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
450031(C36E)	03/06/16	R/W	User parameter group > No. 1 parameter	The dedicated parameter set range	-	0	
450032(C36F)	03/06/16	R/W	User parameter group > No. 2 parameter				
450033(C370)	03/06/16	R/W	User parameter group > No. 3 parameter				
450034(C371)	03/06/16	R/W	User parameter group > No. 4 parameter				
450035(C372)	03/06/16	R/W	User parameter group > No. 5 parameter				
450036(C373)	03/06/16	R/W	User parameter group > No. 6 parameter				
450037(C374)	03/06/16	R/W	User parameter group > No. 7 parameter				
450038(C375)	03/06/16	R/W	User parameter group > No. 8 parameter				
450039(C376)	03/06/16	R/W	User parameter group > No. 9 parameter				
450040(C377)	03/06/16	R/W	User parameter group > No. 10 parameter				
450041(C378)	03/06/16	R/W	User parameter group > No. 11 parameter				
450042(C379)	03/06/16	R/W	User parameter group > No. 12 parameter				
450043(C37A)	03/06/16	R/W	User parameter group > No. 13 parameter				
450044(C37B)	03/06/16	R/W	User parameter group > No. 14 parameter				
450045(C37C)	03/06/16	R/W	User parameter group > No. 15 parameter				
450046(C37D)	03/06/16	R/W	User parameter group > No. 16 parameter				
450047(C37E)	03/06/16	R/W	User parameter group > No. 17 parameter				
450048(C37F)	03/06/16	R/W	User parameter group > No. 18 parameter				
450049(C380)	03/06/16	R/W	User parameter group > No. 19 parameter				
450050(C381)	03/06/16	R/W	User parameter group > No. 20 parameter				
450051(C382)	03/06/16	R/W	User parameter group > No. 21 parameter				
450052(C383)	03/06/16	R/W	User parameter group > No. 22 parameter				

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
450053(C384)	03/06/16	R/W	User parameter group > No. 23 parameter				
450054(C385)	03/06/16	R/W	User parameter group > No. 24 parameter				
450055(C386)	03/06/16	R/W	User parameter group > No. 25 parameter				
450056(C387)	03/06/16	R/W	User parameter group > No. 26 parameter				
450057(C388)	03/06/16	R/W	User parameter group > No. 27 parameter				
450058(C389)	03/06/16	R/W	User parameter group > No. 28 parameter				
450059(C38A)	03/06/16	R/W	User parameter group > No. 29 parameter				
450060(C38B)	03/06/16	R/W	User parameter group > No. 30 parameter				

2.4 TMHCT [Option: CT input module]

2.4.1 Read input register(Func 04)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300001(0000) to 300100(0063)	04	R	Reserved					
300101(0064)	04	R	-	Product number H	-	-	0	
300102(0065)	04	R	-	Product number L	-	-	0	
300103(0066)	04	R	-	Hardware version	-	-	100	
300104(0067)	04	R	-	Software version	-	-	100	
300105(0068)	04	R	-	Model name 1	-	-	“TM”	Product name
300106(0069)	04	R	-	Model name 2	-	-	“HC”	Option
300107(006A)	04	R	-	Model name 3	-	-	“T-”	Option
300108(006B)	04	R	-	Model name 4	-	-	“82”	Input/Power voltage
300109(006C)	04	R	-	Model name 5	-	-	“NE ”	Output/Structure
300110(006D)	04	R	-	Model name 6	-	-	“ ”	
300111(006E)	04	R	-	Model name 7	-	-	“ “	
300112(006F)	04	R	-	Model name 8	-	-	“ “	
300113(0070)	04	R	-	Model name 9	-	-	“ “	
300114(0071)	04	R	-	Model name 10	-	-	“ “	
300115(0072)	04	R	Reserved					
300116(0073)	04	R	Reserved					
300117(0074)	04	R	Reserved					
300118(0075)	04	R	-	Coil status Start Address	-	-	0	
300119(0076)	04	R	-	Coil status Quantity	-	-	0	
300120(0077)	04	R	-	Input status Start Address	-	-	0	
300121(0078)	04	R	-	Input status Quantity	-	-	0	
300122(0079)	04	R	-	Holding Register Start Address	-	-	0	
300123(007A)	04	R	-	Holding Register Quantity	-	-	0	
300124(007B)	04	R	-	Input Register Start Address	-	-	0	
300125(007C)	04	R	-	Input Register Quantity	-	-	0	
300126(007D)	04	R	-	Channel Quantity	-	-	0	
300127(007E) to 300200(00C7)	04	R	Reserved					
301001(03E8)	04	R	CT1 Heater Current	CT1 input value monitoring	0.0 to 50.0	A	-	
301002(03E9)	04	R	CT2 Heater Current	CT2 input value monitoring				
301003(03EA)	04	R	CT3 Heater Current	CT3 input value monitoring				
301004(03EB)	04	R	CT4 Heater Current	CT4 input value monitoring				

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
301005(03EC)	04	R	CT5 Heater Current	CT5 input value monitoring				
301006(03ED)	04	R	CT6 Heater Current	CT6 input value monitoring				
301007(03EE)	04	R	CT7 Heater Current	CT7 input value monitoring				
301008(03EF)	04	R	CT8 Heater Current	CT8 input value monitoring				
301009(03F0)	04	R	Unit Address	Comm. address	65 to 80	-	65	
301009(03F0) to 301050(0419)	04	R	Reserved					

2.4.2 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple registers(Func 16)

2.4.2.1 Common (common parameter setting) group

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400001(0000)	03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200	bps	1: 9600	
400002(0001)	03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD	-	0: NONE	
400003(0002)	03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1: 2	
400004(0003)	03/06/16	R/W	Response Waiting Time	Communication response wait time	5 to 99	ms	20	
400005(0004)	03/06/16	R/W	Communication Write	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
400006(0005)	03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
400007(0006)	03/06/16	R/W	CT Input Value Indication Lamp1	CT input value indicator 1	0: CT1, 1: CT2, 2: CT3, 3: CT4, 4: CT5, 5: CT6, 6: CT7, 7: CT8	-	0: CT1	
400008(0007)	03/06/16	R/W	CT Input Value Indication Lamp2	CT input value indicator 2		-	1: CT2	
400009(0008) to 400050(0031)	03/06/16	R/W	Reserved					

2.4.3 User parameter group

(1) User parameter group order assignment

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
450001(C350)	03/06/16	R/W	User parameter group > No. 1 parameter assignment	The dedicated parameter address	-	0	
450002(C351)	03/06/16	R/W	User parameter group > No. 2 parameter assignment				
450003(C352)	03/06/16	R/W	User parameter group > No. 3 parameter assignment				
450004(C353)	03/06/16	R/W	User parameter group > No. 4 parameter assignment				
450005(C354)	03/06/16	R/W	User parameter group > No. 5 parameter assignment				
450006(C355)	03/06/16	R/W	User parameter group > No. 6 parameter assignment				
450007(C356)	03/06/16	R/W	User parameter group > No. 7 parameter assignment				
450008(C357)	03/06/16	R/W	User parameter group > No. 8 parameter assignment				
450009(C358)	03/06/16	R/W	User parameter group > No. 9 parameter assignment				
450010(C359)	03/06/16	R/W	User parameter group > No. 10 parameter assignment				
450011(C35A)	03/06/16	R/W	User parameter group > No. 11 parameter assignment				
450012(C35B)	03/06/16	R/W	User parameter group > No. 12 parameter assignment				
450013(C35C)	03/06/16	R/W	User parameter group > No. 13 parameter assignment				
450014(C35D)	03/06/16	R/W	User parameter group > No. 14 parameter assignment				
450015(C35E)	03/06/16	R/W	User parameter group > No. 15 parameter assignment				
450016(C35F)	03/06/16	R/W	User parameter group > No. 16 parameter assignment				
450017(C360)	03/06/16	R/W	User parameter group > No. 17 parameter assignment				
450018(C361)	03/06/16	R/W	User parameter group > No. 18 parameter assignment				
450019(C362)	03/06/16	R/W	User parameter group > No. 19 parameter assignment				
450020(C363)	03/06/16	R/W	User parameter group > No. 20 parameter assignment				
450021(C364)	03/06/16	R/W	User parameter group > No. 21 parameter assignment				
450022(C365)	03/06/16	R/W	User parameter group > No. 22 parameter assignment				
450023(C366)	03/06/16	R/W	User parameter group > No. 23 parameter assignment				
450024(C367)	03/06/16	R/W	User parameter group > No. 24 parameter assignment				
450025(C368)	03/06/16	R/W	User parameter group > No. 25 parameter				

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
			assignment				
450026(C369)	03/06/16	R/W	User parameter group > No. 26 parameter assignment				
450027(C36A)	03/06/16	R/W	User parameter group > No. 27 parameter assignment				
450028(C36B)	03/06/16	R/W	User parameter group > No. 28 parameter assignment				
450029(C36C)	03/06/16	R/W	User parameter group > No. 29 parameter assignment				
450030(C36D)	03/06/16	R/W	User parameter group > No. 30 parameter assignment				

(2) User parameter group assignment

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
450031(C36E)	03/06/16	R/W	User parameter group > No. 1 parameter	The dedicated parameter set range	-	0	
450032(C36F)	03/06/16	R/W	User parameter group > No. 2 parameter				
450033(C370)	03/06/16	R/W	User parameter group > No. 3 parameter				
450034(C371)	03/06/16	R/W	User parameter group > No. 4 parameter				
450035(C372)	03/06/16	R/W	User parameter group > No. 5 parameter				
450036(C373)	03/06/16	R/W	User parameter group > No. 6 parameter				
450037(C374)	03/06/16	R/W	User parameter group > No. 7 parameter				
450038(C375)	03/06/16	R/W	User parameter group > No. 8 parameter				
450039(C376)	03/06/16	R/W	User parameter group > No. 9 parameter				
450040(C377)	03/06/16	R/W	User parameter group > No. 10 parameter				
450041(C378)	03/06/16	R/W	User parameter group > No. 11 parameter				
450042(C379)	03/06/16	R/W	User parameter group > No. 12 parameter				
450043(C37A)	03/06/16	R/W	User parameter group > No. 13 parameter				
450044(C37B)	03/06/16	R/W	User parameter group > No. 14 parameter				
450045(C37C)	03/06/16	R/W	User parameter group > No. 15 parameter				
450046(C37D)	03/06/16	R/W	User parameter group > No. 16 parameter				
450047(C37E)	03/06/16	R/W	User parameter group > No. 17 parameter				
450048(C37F)	03/06/16	R/W	User parameter group > No. 18 parameter				
450049(C380)	03/06/16	R/W	User parameter group > No. 19 parameter				
450050(C381)	03/06/16	R/W	User parameter group > No. 20 parameter				
450051(C382)	03/06/16	R/W	User parameter group > No. 21 parameter				
450052(C383)	03/06/16	R/W	User parameter group > No. 22 parameter				

No(Address)	Func	R/W	Parameter	Set range	Unit	Default	Note
450053(C384)	03/06/16	R/W	User parameter group > No. 23 parameter				
450054(C385)	03/06/16	R/W	User parameter group > No. 24 parameter				
450055(C386)	03/06/16	R/W	User parameter group > No. 25 parameter				
450056(C387)	03/06/16	R/W	User parameter group > No. 26 parameter				
450057(C388)	03/06/16	R/W	User parameter group > No. 27 parameter				
450058(C389)	03/06/16	R/W	User parameter group > No. 28 parameter				
450059(C38A)	03/06/16	R/W	User parameter group > No. 29 parameter				
450060(C38B)	03/06/16	R/W	User parameter group > No. 30 parameter				

2.5 TMHC [Communication: Modbus / Ethernet]

2.5.1 TMHC + expansion (control/option) modules connecting, address mapping table by module

Type	Func01/Func05 (000000)		Func02 (100000)		Func04 (300000)		Func03/Func06/Func16 (400000)		
TMH4/2	Start address	000001	Start address	100001	Start address	300201(by model)	Start address		401001
	Address assignment	150	Address assignment	450	Address assignment	450	Channel assignment		30(group assignment)* 10+200(channel reserve)=500
					Start address	310001(check value)	Module assignment		500*4CH=2000
					Address assignment	500	Total assignment		2000*16 = 32,000
							User group	Start address	450001
								Module assignment	60
								Total assignment	60*16=960
TMHA	-		Start address	100451	Start address	300651(by model)	Start address		433001
			Address assignment	100	Address assignment	450	Channel assignment		30(group assignment)* +60(channel Reserve)=150
					Start address	310501(check value)	Module assignment		150*4CH=600
					Address assignment	300	Total assignment		600*16=9,600
							User group	Start address	450961
								Module assignment	60
								Total assignment	60*16=960
TMHE	-		Start address	100551	Start address	301101(by model)	Start address		442601
			Address assignment	300	Address assignment	450	Module assignment		30(group assignment)*2 =60
					Start address	310801(check value)	Total assignment		60*16=960
					Address assignment	50	User group	Start address	451921
								Module assignment	60
								Total assignment	60*16=960
TMHCT	-		-		Start address	301551(by model)	Start address		443561
					Address assignment	450	Module assignment		30

<table>
<tr><th>Type</th><th>Func01/Func05 (000000)</th><th>Func02 (100000)</th><th colspan="2">Func04 (300000)</th><th colspan="3">Func03/Func06/Func16 (400000)</th></tr>
<tr><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4"></td><td>Start address</td><td>310851(check value)</td><td colspan="2">Total assignment</td><td>30*16=480</td></tr>
<tr><td>Address assignment</td><td>150</td><td rowspan="3">User group</td><td>Start address</td><td>452881</td></tr>
<tr><td colspan="2" rowspan="2"></td><td>Module assignment</td><td>60</td></tr>
<tr><td>Total assignment</td><td>60*16=960</td></tr>
<tr><td rowspan="8">TMHC</td><td rowspan="8">-</td><td rowspan="8">-</td><td>Start address</td><td>300001(check value)</td><td colspan="2">Start address</td><td>400101(set communication 1)</td></tr>
<tr><td>Address assignment</td><td>100</td><td colspan="2">Address assignment</td><td>100</td></tr>
<tr><td>Start address</td><td>300101(by model)</td><td colspan="2">Start address</td><td>400201(set communication 2)</td></tr>
<tr><td>Address assignment</td><td>100</td><td colspan="2">Address assignment</td><td>100</td></tr>
<tr><td colspan="2" rowspan="4"></td><td rowspan="4">User group</td><td>TMH4/2</td><td>450001 to 450960</td></tr>
<tr><td>TMHA</td><td>450961 to 451920</td></tr>
<tr><td>TMHE</td><td>451921 to 452880</td></tr>
<tr><td>TMHCT</td><td>452881 to 453840</td></tr>
</table>

2.5.2 Read input register(Func 04)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300001(0000)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 01 connection check	Not connect: 0, Connect: 1	-	0	
300002(0001)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 02 connection check				
300003(0002)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 03 connection check				
300004(0003)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 04 connection check				
300005(0004)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 05 connection check				
300006(0005)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 06 connection check				
300007(0006)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 07 connection check				
300008(0007)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 08 connection check				
300009(0008)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 09 connection check				
300010(0009)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 10 connection check				
300011(000A)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 11 connection check				
300012(000B)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 12 connection check				
300013(000C)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 13 connection check				
300014(000D)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 14 connection check				
300015(000E)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 15 connection check				
300016(000F)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 16 connection check				
300017(0010)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 17 connection check				
300018(0011)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 18 connection check				
300019(0012)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 19 connection check				
300020(0013)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 20 connection check				
300021(0014)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 21 connection check				
300022(0015)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 22 connection check				
300023(0016)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 23 connection check				
300024(0017)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 24 connection check				
300025(0018)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 25 connection check				
300026(0019)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 26 connection check				
300027(001A)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 27 connection check				
300028(001B)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 28 connection check				
300029(001C)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 29 connection check				
300030(001D)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 30 connection check				
300031(001E)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 31 connection check				
300032(001F)	04	R	TMH4/2 Connected confirmation	TMH4/2 address 32 connection check				
300033(0020)	04	R	TMHA Connected confirmation	TMHA address 33 connection check	Not connect: 0, Connect: 1	-	0	
300034(0021)	04	R	TMHA Connected confirmation	TMHA address 34 connection check				
300035(0022)	04	R	TMHA Connected confirmation	TMHA address 35 connection check				
300036(0023)	04	R	TMHA Connected confirmation	TMHA address 36 connection check				
300037(0024)	04	R	TMHA Connected confirmation	TMHA address 37 connection check				
300038(0025)	04	R	TMHA Connected confirmation	TMHA address 38 connection check				
300039(0026)	04	R	TMHA Connected confirmation	TMHA address 39 connection check				
300040(0027)	04	R	TMHA Connected confirmation	TMHA address 40 connection check				
300041(0028)	04	R	TMHA Connected confirmation	TMHA address 41 connection check				
300042(0029)	04	R	TMHA Connected confirmation	TMHA address 42 connection check				

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300043(002A)	04	R	TMHA Connected confirmation	TMHA address 43 connection check				
300044(002B)	04	R	TMHA Connected confirmation	TMHA address 44 connection check				
300045(002C)	04	R	TMHA Connected confirmation	TMHA address 45 connection check				
300046(002D)	04	R	TMHA Connected confirmation	TMHA address 46 connection check				
300047(002E)	04	R	TMHA Connected confirmation	TMHA address 47 connection check				
300048(002F)	04	R	TMHA Connected confirmation	TMHA address 48 connection check				
300049(0030)	04	R	TMHE Connected confirmation	TMHE address 49 connection check				
300050(0031)	04	R	TMHE Connected confirmation	TMHE address 50 connection check				
300051(0032)	04	R	TMHE Connected confirmation	TMHE address 51 connection check				
300052(0033)	04	R	TMHE Connected confirmation	TMHE address 52 connection check				
300053(0034)	04	R	TMHE Connected confirmation	TMHE address 53 connection check				
300054(0035)	04	R	TMHE Connected confirmation	TMHE address 54 connection check				
300055(0036)	04	R	TMHE Connected confirmation	TMHE address 55 connection check				
300056(0037)	04	R	TMHE Connected confirmation	TMHE address 56 connection check	Not connect: 0, Connect: 1	-	0	
300057(0038)	04	R	TMHE Connected confirmation	TMHE address 57 connection check				
300058(0039)	04	R	TMHE Connected confirmation	TMHE address 58 connection check				
300059(003A)	04	R	TMHE Connected confirmation	TMHE address 59 connection check				
300060(003B)	04	R	TMHE Connected confirmation	TMHE address 60 connection check				
300061(003C)	04	R	TMHE Connected confirmation	TMHE address 61 connection check				
300062(003D)	04	R	TMHE Connected confirmation	TMHE address 62 connection check				
300063(003E)	04	R	TMHE Connected confirmation	TMHE address 63 connection check				
300064(003F)	04	R	TMHE Connected confirmation	TMHE address 64 connection check				
300065(0040)	04	R	TMHCT Connected confirmation	TMHCT address 65 connection check				
300066(0041)	04	R	TMHCT Connected confirmation	TMHCT address 66 connection check				
300067(0042)	04	R	TMHCT Connected confirmation	TMHCT address 67 connection check				
300068(0043)	04	R	TMHCT Connected confirmation	TMHCT address 68 connection check				
300069(0044)	04	R	TMHCT Connected confirmation	TMHCT address 69 connection check				
300070(0045)	04	R	TMHCT Connected confirmation	TMHCT address 70 connection check				
300071(0046)	04	R	TMHCT Connected confirmation	TMHCT address 71 connection check				
300072(0047)	04	R	TMHCT Connected confirmation	TMHCT address 72 connection check	Not connect: 0, Connect: 1	-	0	
300073(0048)	04	R	TMHCT Connected confirmation	TMHCT address 73 connection check				
300074(0049)	04	R	TMHCT Connected confirmation	TMHCT address 74 connection check				
300075(004A)	04	R	TMHCT Connected confirmation	TMHCT address 75 connection check				
300076(004B)	04	R	TMHCT Connected confirmation	TMHCT address 76 connection check				
300077(004C)	04	R	TMHCT Connected confirmation	TMHCT address 77 connection check				
300078(004D)	04	R	TMHCT Connected confirmation	TMHCT address 78 connection check				
300079(004E)	04	R	TMHCT Connected confirmation	TMHCT address 79 connection check				
300080(0050)	04	R	TMHCT Connected confirmation	TMHCT address 80 connection check				
300081(0051)	04	R	Connected Modules Number	Number of connected modules check	0 to 31	-	0	
300082(0052)	04	R	Unit Address	Comm. address	01 to 31	-	01	
300089(0053) to 300100(0063)	04	R	Reserved					
300101(0064)	04	R	-	Product number H	-	-	0	
300102(0065)	04	R	-	Product number L	-	-	0	
300103(0066)	04	R	-	Hardware version	-	-	100	

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300104(0067)	04	R	-	Software version	-	-	100	
300105(0068)	04	R	-	Model name 1	-	-	“TM”	Product name
300106(0069)	04	R	-	Model name 2	-	-	“HC”	Option
300107(006A)	04	R	-	Model name 3	-	-	“-2”	Comm. output
300108(006B)	04	R	-	Model name 4	-	-	“2S”	Power voltage/ Comm. method
300109(006C)	04	R	-	Model name 5	-	-	“E ”	Structure
300110(006D)	04	R	-	Model name 6	-	-	“ ”	
300111(006E)	04	R	-	Model name 7	-	-	“ “	
300112(006F)	04	R	-	Model name 8	-	-	“ “	
300113(0070)	04	R	-	Model name 9	-	-	“ “	
300114(0071)	04	R	-	Model name 10	-	-	“ “	
300115(0072)	04	R	Reserved					
300116(0073)	04	R	Reserved					
300117(0074)	04	R	Reserved					
300118(0075)	04	R	-	Coil status Start Address	-	-	0	
300119(0076)	04	R	-	Coil status Quantity	-	-	0	
300120(0077)	04	R	-	Input status Start Address	-	-	0	
300121(0078)	04	R	-	Input status Quantity	-	-	0	
300122(0079)	04	R	-	Holding Register Start Address	-	-	0	
300123(007A)	04	R	-	Holding Register Quantity	-	-	0	
300124(007B)	04	R	-	Input Register Start Address	-	-	0	
300125(007C)	04	R	-	Input Register Quantity	-	-	0	
300126(007D)	04	R	-	Channel Quantity	-	-	0	
300127(007E) to 300200(00C7)	04	R	Reserved					

2.5.3 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple registers(Func 16)

2.5.3.1 Communication setting group 1 [Modbus]

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400101(0064)	03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200	bps	1: 9600	
400102(0065)	03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD	-	0: NONE	
400103(0066)	03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1: 2	
400104(0067)	03/06/16	R/W	Response Waiting Time1	Communication response wait time	5 to 99	ms	20	
400105(0068)	03/06/16	R/W	Communication Write2	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
400106(0069)	03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
400107(006A) to 400200(00C7)	03/06/16	R/W	Reserved					

2.5.3.2 Communication setting group 2 [Modbus]

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400201(00C8)	03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200	bps	1: 9600	
400202(00C9)	03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD	-	0: NONE	
400203(00CA)	03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1: 2	
400204(00CB)	03/06/16	R/W	Response Waiting Time2	Communication response wait time	5 to 99	ms	20	
400205(00CC)	03/06/16	R/W	Communication Write2	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
400206(00CD)	03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
400207(00CE) to 400300(012B)	03/06/16	R/W	Reserved					

2.5.3.3 Communication setting group 4 [Ethernet]

No(Address) Ethernet	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400401(0190)	03/06/16	R/W	DHCP	Dynamic Host Configuration Protocol	0: OFF, 1: ON	-	0	
400402(0191)	03/06/16	R/W	IP Address 1	IP Address 1	0 to 255	-	210	
400403(0192)	03/06/16	R/W	IP Address 2	IP Address 2	0 to 255		124	
400404(0193)	03/06/16	R/W	IP Address 3	IP Address 3	0 to 255		112	
400405(0194)	03/06/16	R/W	IP Address 4	IP Address 4	0 to 255		251	
400406(0195)	03/06/16	R/W	Subnet Mask 1	Subnet mask 1	0 to 255		255	
400407(0196)	03/06/16	R/W	Subnet Mask 2	Subnet mask 2	0 to 255		255	
400408(0197)	03/06/16	R/W	Subnet Mask 3	Subnet mask 3	0 to 255		255	
400409(0198)	03/06/16	R/W	Subnet Mask 4	Subnet Mask 4	0 to 255		0	
400410(0199)	03/06/16	R/W	Default Gateway	Default Gateway	0 to 255	-	210	
400411(019A)	03/06/16	R/W	Default Gateway	Default Gateway	0 to 255		124	
400412(019B)	03/06/16	R/W	Default Gateway	Default Gateway	0 to 255		112	
400413(019C)	03/06/16	R/W	Default Gateway	Default Gateway	0 to 255		1	
400414(019D)	03/06/16	R/W	Ethernet Com Write	Enable / disable communication write	0: Enable, 1: Disable	-	0:Enable	
400415(019E)	03/06/16	R/W	MODBUS TCP Port Number	Sever port setting	0 to 65535	-	502	
400416(019F)	03/06/16	R/W	Ethernet Com Monitoring Time Set	Time setting for Ethernet communication monitoring	0: Disable 1 to 3600: Time for monitoring data reception during Ethernet communication	sec	0	
400417(01A0) to 400500(01F3)	03/06/16	R/W	Reserved					

※ For the information about “Communication setting group 3”, refer to ‘2.6.2 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple register(Func 16)’.

2.5.4 TMH2/4

The addresses of TMH2 series and TMH4 series are different.

2.5.4.1 Read coil status(Func 01) / Force single coil(Func 05)

No(Address)		Func	R/W	Parameter	Description	Set range	Unit	Default	Note
TMH2	TMH4								
000001(0000)	000001(0000)	01/05	R/W	CH1 RUN/STOP	CH1 control output RUN/STOP	0: RUN, 1: STOP	-	0: RUN	
000002(0001)	000002(0001)	01/05	R/W	CH2 RUN/STOP	CH2 control output RUN/STOP				
-	000003(0002)	01/05	R/W	CH3 RUN/STOP	CH3 control output RUN/STOP				
-	000004(0003)	01/05	R/W	CH4 RUN/STOP	CH4 control output RUN/STOP				
000005(0004) to 000008(0007)		01/05	R/W	02 unit address parameter – Same as above 01 unit address					
000009(0008) to 000012(000B)		01/05	R/W	03 unit address parameter – Same as above 01 unit address					
000013(000C) to 000016(000F)		01/05	R/W	04 unit address parameter – Same as above 01 unit address					
000017(0010) to 000020(0013)		01/05	R/W	05 unit address parameter – Same as above 01 unit address					
000021(0014) to 000024(0017)		01/05	R/W	06 unit address parameter – Same as above 01 unit address					
000025(0018) to 000028(001B)		01/05	R/W	07 unit address parameter – Same as above 01 unit address					
000029(001C) to 000032(001F)		01/05	R/W	08 unit address parameter – Same as above 01 unit address					
000033(0020) to 000036(0023)		01/05	R/W	09 unit address parameter – Same as above 01 unit address					
000037(0024) to 000040(0027)		01/05	R/W	10 unit address parameter – Same as above 01 unit address					
000041(0028) to 000044(002B)		01/05	R/W	11 unit address parameter – Same as above 01 unit address					
000045(002C) to 000048(002F)		01/05	R/W	12 unit address parameter – Same as above 01 unit address					
000049(0030) to 000052(0033)		01/05	R/W	13 unit address parameter – Same as above 01 unit address					
000053(0034) to 000056(0037)		01/05	R/W	14 unit address parameter – Same as above 01 unit address					
000057(0038) to 000060(003B)		01/05	R/W	15 unit address parameter – Same as above 01 unit address					
000061(003C) to 000064(003F)		01/05	R/W	16 unit address parameter – Same as above 01 unit address					
000065(0040)	000065(0040)	01/05	R/W	CH1 Auto-Tuning Execute	CH1 auto-tuning ON/OFF	0: OFF, 1: ON	-	0: OFF	
000066(0041)	000066(0041)	01/05	R/W	CH2 Auto-Tuning Execute	CH2 auto-tuning ON/OFF				
-	000067(0042)	01/05	R/W	CH3 Auto-Tuning Execute	CH3 auto-tuning ON/OFF				
-	000068(0043)	01/05	R/W	CH4 Auto-Tuning Execute	CH4 auto-tuning ON/OFF				
000069(0044) to 000072(0047)		01/05	R/W	02 unit address parameter – Same as above 01 unit address					
000073(0048) to 000076(004B)		01/05	R/W	03 unit address parameter – Same as above 01 unit address					
000077(004C) to 000080(004F)		01/05	R/W	04 unit address parameter – Same as above 01 unit address					
000081(0050) to 000084(0053)		01/05	R/W	05 unit address parameter – Same as above 01 unit address					
000085(0054) to 000088(0057)		01/05	R/W	06 unit address parameter – Same as above 01 unit address					
000089(0058) to 000092(005B)		01/05	R/W	07 unit address parameter – Same as above 01 unit address					
000093(005C) to 000096(005F)		01/05	R/W	08 unit address parameter – Same as above 01 unit address					
000097(0060) to 000100(0063)		01/05	R/W	09 unit address parameter – Same as above 01 unit address					
000101(0064) to 000104(0067)		01/05	R/W	10 unit address parameter – Same as above 01 unit address					
000105(0068) to 000108(006B)		01/05	R/W	11 unit address parameter – Same as above 01 unit address					

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
000109(006C) to 000112(006F)		01/05	R/W	12 unit address parameter – Same as above 01 unit address					
000113(0070) to 000116(0073)		01/05	R/W	13 unit address parameter – Same as above 01 unit address					
000117(0074) to 000120(0077)		01/05	R/W	14 unit address parameter – Same as above 01 unit address					
000121(0078) to 000124(007B)		02	R	15 unit address parameter – Same as above 01 unit address					
000125(007C) to 000128(007F)		02	R	16 unit address parameter – Same as above 01 unit address					
000129(0080) to 000150(0095)		02	R	Reserved					

2.5.4.2 Read input status(Func 02)

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
100001(0000)	100001(0000)	02	R	-	CH1 LED(OUT)	0: OFF, 1: ON	-	-	
100002(0001)	100002(0001)	02	R	-	CH2 LED(OUT)				
-	100003(0002)	02	R	-	CH3 LED (OUT)				
-	100004(0003)	02	R	-	CH4 LED (OUT)				
100005(0004)	-	02	R	-	AL1 LED	0: OFF, 1: ON	-	-	
100006(0005)	-	02	R	-	AL2 LED				
100007(0006)	-	02	R	-	AL3 LED				
100008(0007)	-	02	R	-	AL4 LED				
100009(0008)	-	02	R	-	DI-1 input	0: OFF, 1: ON	-	-	
100010(0009)	-	02	R	-	DI-2 input				
100011(000A)	100011(000A)	02	R	-	CH1 EVENT 1 status	0: OFF, 1: ON	-	-	
100012(000B)	100012(000B)	02	R	-	CH1 EVENT 2 status				
100013(000C)	100013(000C)	02	R	-	CH1 EVENT 3 status				
100014(000D)	100014(000D)	02	R	-	CH1 EVENT 4 status				
100015(000E)	100015(000E)	02	R	-	CH2 EVENT 1 status	0: OFF, 1: ON	-	-	
100016(000F)	100016(000F)	02	R	-	CH2 EVENT 2 status				
100017(0010)	100017(0010)	02	R	-	CH2 EVENT 3 status				
100018(0011)	100018(0011)	02	R	-	CH2 EVENT 4 status				
-	100019(0012)	02	R	-	CH3 EVENT 1 status	0: OFF, 1: ON	-	-	
-	100020(0013)	02	R	-	CH3 EVENT 2 status				
-	100021(0014)	02	R	-	CH3 EVENT 3 status				
-	100022(0015)	02	R	-	CH3 EVENT 4 status				
-	100023(0016)	02	R	-	CH4 EVENT 1 status	0: OFF, 1: ON	-	-	
-	100024(0017)	02	R	-	CH4 EVENT 2 status				
-	100025(0018)	02	R	-	CH4 EVENT 3 status				
-	100026(0019)	02	R	-	CH4 EVENT 4 status				
100027(001A) to 100052(0033)		02	R	02 unit address parameter – Same as above 01 unit address					
100053(0034) to 100078(004D)		02	R	03 unit address parameter – Same as above 01 unit address					
100079(004E) to 100104 (0067)		02	R	04 unit address parameter – Same as above 01 unit address					
100105(0068) to 100130(0081)		02	R	05 unit address parameter – Same as above 01 unit address					
100131(0082) to 100156(009B)		02	R	06 unit address parameter – Same as above 01 unit address					
100157(009C) to 100182(00B5)		02	R	07 unit address parameter – Same as above 01 unit address					

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
100183(00B6) to 100208(00CF)		02	R	08 unit address parameter – Same as above 01 unit address					
100209(00D0) to 100234(00E9)		02	R	09 unit address parameter – Same as above 01 unit address					
100235(00EA) to 100260(0103)		02	R	10 unit address parameter – Same as above 01 unit address					
100261(0104) to 100286(011D)		02	R	11 unit address parameter – Same as above 01 unit address					
100287(011E) to 100312(0137)		02	R	12 unit address parameter – Same as above 01 unit address					
100313(0138) to 100338(0151)		02	R	13 unit address parameter – Same as above 01 unit address					
100339(0152) to 100364(016B)		02	R	14 unit address parameter – Same as above 01 unit address					
100365(016C) to 100390(0185)		02	R	15 unit address parameter – Same as above 01 unit address					
100391(0186) to 100416(019F)		02	R	16 unit address parameter – Same as above 01 unit address					
100417(01A0) to 100450(01C1)		02	R	Reserved					

2.5.4.3 Read input register(Func 04)

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300201(00C8)		04	R	-	Product number H	-	-	0	
300202(00C9)		04	R	-	Product number L	-	-	0	
300203(00CA)		04	R	-	Hardware version	-	-	100	
300204(00CB)		04	R	-	Software version	-	-	100	
300205(00CC)		04	R	-	Model name 1	-	-	“TM”	Product name
300206(00CD)		04	R	-	Model name 2	-	-	“H□”	Channel
300207(00CE)		04	R	-	Model name 3	-	-	“-□”	Option
300208(00CF)		04	R	-	Model name 4	-	-	“□□”	Power voltage/Control output
300209(00D0)		04	R	-	Model name 5	-	-	“□”	Structure
300210(00D1)		04	R	-	Model name 6	-	-	“ ”	
300211(00D2)		04	R	-	Model name 7	-	-	“ “	
300212(00D3)		04	R	-	Model name 8	-	-	“ “	
300213(00D4)		04	R	-	Model name 9	-	-	“ “	
300214(00D5)		04	R	-	Model name 10	-	-	“ “	
300215(00D6)		04	R	Reserved					
300216(00D7)		04	R	Reserved					
300217(00D8)		04	R	Reserved					
300218(00D9)		04	R	-	Coil status Start Address	-	-	0	
300219(00DA)		04	R	-	Coil status Quantity	-	-	0	
300220(00DB)		04	R	-	Input status Start Address	-	-	0	
300221(00DC)		04	R	-	Input status Quantity	-	-	0	
300222(00DD)		04	R	-	Holding Register Start Address	-	-	0	
300223(00DE)		04	R	-	Holding Register Quantity	-	-	0	
300224(00DF)		04	R	-	Input Register Start Address	-	-	0	
300225(00E0)		04	R	-	Input Register Quantity	-	-	0	
300226(00E1)		04	R	-	Channel Quantity	-	-	0	
300227(00E2) to 300252(00FB)		04	R	02 unit address parameter – Same as above 01 unit address					
300253(00FC) to 300278(0115)		04	R	03 unit address parameter – Same as above 01 unit address					
300279(0116) to 300304(012F)		04	R	04 unit address parameter – Same as above 01 unit address					
300305(0130) to 300330(0149)		04	R	05 unit address parameter – Same as above 01 unit address					
300331(014A) to 300356(0163)		04	R	06 unit address parameter – Same as above 01 unit address					
300357(0164) to 300382(017D)		04	R	07 unit address parameter – Same as above 01 unit address					
300383(017E) to 300408(0197)		04	R	08 unit address parameter – Same as above 01 unit address					
300409(0198) to 300434(01B1)		04	R	09 unit address parameter – Same as above 01 unit address					
300435(01B2) to 300460(01CB)		04	R	10 unit address parameter – Same as above 01 unit address					
300461(01CC) to 300486(01E5)		04	R	11 unit address parameter – Same as above 01 unit address					
300487(01E6) to 300512(01FF)		04	R	12 unit address parameter – Same as above 01 unit address					
300513(0200) to 300538(0219)		04	R	13 unit address parameter – Same as above 01 unit address					

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300539(021A) to 300564(0233)		04	R	14 unit address parameter – Same as above 01 unit address					
300565(0234) to 300590(024D)		04	R	15 unit address parameter – Same as above 01 unit address					
300591(024E) to 300616(0267)		04	R	16 unit address parameter – Same as above 01 unit address					
300617(0268) to 300650(0289)		04	R	Reserved					
310001(2710)	310001(2710)	04	R	CH1 Present Value	CH1 present value	Sensor input range, 31000: OPEN, 30000: HHHH, -30000: LLLL	°C/°F, Digit	-	
310002(2711)	310002(2711)	04	R	CH2 Present Value	CH2 present value				
-	310003(2712)	04	R	CH3 Present Value	CH3 present value				
-	310004(2713)	04	R	CH4 Present Value	CH4 present value				
310005(2714) to 310008(2717)		04	R	02 unit address parameter – Same as above 01 unit address					
310009(2718) to 310012(271B)		04	R	03 unit address parameter – Same as above 01 unit address					
310013(271C) to 310016(271F)		04	R	04 unit address parameter – Same as above 01 unit address					
310017(2720) to 310020(2723)		04	R	05 unit address parameter – Same as above 01 unit address					
310021(2724) to 310024(2727)		04	R	06 unit address parameter – Same as above 01 unit address					
310025(2728) to 310028(272B)		04	R	07 unit address parameter – Same as above 01 unit address					
310029(272C) to 310032(272F)		04	R	08 unit address parameter – Same as above 01 unit address					
310033(2730) to 310036(2733)		04	R	09 unit address parameter – Same as above 01 unit address					
310037(2734) to 310040(2737)		04	R	10 unit address parameter – Same as above 01 unit address					
310041(2738) to 310044(273B)		04	R	11 unit address parameter – Same as above 01 unit address					
310045(273C) to 310048(273F)		04	R	12 unit address parameter – Same as above 01 unit address					
310049(2740) to 310052(2743)		04	R	13 unit address parameter – Same as above 01 unit address					
310053(2744) to 310056(2747)		04	R	14 unit address parameter – Same as above 01 unit address					
310057(2748) to 310060(274B)		04	R	15 unit address parameter – Same as above 01 unit address					
310061(274C) to 310064(274F)		04	R	16 unit address parameter – Same as above 01 unit address					
310065(2750)	310065(2750)	04	R	CH1 Dot	CH1 sensor decimal point	0: 0, 1: 0.0	-	0: 0	
310066(2751)	310066(2751)	04	R	CH2 Dot	CH2 sensor decimal point				
-	310067(2752)	04	R	CH3 Dot	CH3 sensor decimal point				
-	310068(2753)	04	R	CH4 Dot	CH4 sensor decimal point				
310069(2754) to 310072(2757)		04	R	02 unit address parameter – Same as above 01 unit address					
310073(2758) to 310076(275B)		04	R	03 unit address parameter – Same as above 01 unit address					
310077(275C) to 310080(275F)		04	R	04 unit address parameter – Same as above 01 unit address					
310081(2760) to 310084(2763)		04	R	05 unit address parameter – Same as above 01 unit address					
310085(2764) to 310088(2767)		04	R	06 unit address parameter – Same as above 01 unit address					
310089(2768) to 310092(276B)		04	R	07 unit address parameter – Same as above 01 unit address					
310093(276C) to 310096(276F)		04	R	08 unit address parameter – Same as above 01 unit address					
310097(2770) to 310100(2773)		04	R	09 unit address parameter – Same as above 01 unit address					
310101(2774) to 310104(2777)		04	R	10 unit address parameter – Same as above 01 unit address					
310105(2778) to 310108(277B)		04	R	11 unit address parameter – Same as above 01 unit address					
310109(277C) to 310112(277F)		04	R	12 unit address parameter – Same as above 01 unit address					
310113(2780) to 310116(2783)		04	R	13 unit address parameter – Same as above 01 unit address					
310117(2784) to 310120(2787)		04	R	14 unit address parameter – Same as above 01 unit address					
310121(2788) to 310124(278B)		04	R	15 unit address parameter – Same as above 01 unit address					

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
310125(278C) to 310128(278F)		04	R	16 unit address parameter – Same as above 01 unit address					
310129(2790)	310129(2790)	04	R	CH1 Unit	CH1 sensor temp. unit	0: ℃, 1: ℉	-	0: ℃	
310130(2791)	310130(2791)	04	R	CH2 Unit	CH2 sensor temp. unit				
-	310131(2792)	04	R	CH3 Unit	CH3 sensor temp. unit				
-	310132(2793)	04	R	CH4 Unit	CH4 sensor temp. unit				
310133(2794) to 310136(2797)		04	R	02 unit address parameter – Same as above 01 unit address					
310137(2798) to 310140(279B)		04	R	03 unit address parameter – Same as above 01 unit address					
310141(279C) to 310144(279F)		04	R	04 unit address parameter – Same as above 01 unit address					
310145(27A0) to 310148(27A3)		04	R	05 unit address parameter – Same as above 01 unit address					
310149(27A4) to 310152(27A7)		04	R	06 unit address parameter – Same as above 01 unit address					
310153(27A8) to 310156(27AB)		04	R	07 unit address parameter – Same as above 01 unit address					
310157(27AC) to 310160(27AF)		04	R	08 unit address parameter – Same as above 01 unit address					
310161(27B0) to 310164(27B3)		04	R	09 unit address parameter – Same as above 01 unit address					
310165(27B4) to 310168(27B7)		04	R	10 unit address parameter – Same as above 01 unit address					
310169(27B8) to 310172(27BB)		04	R	11 unit address parameter – Same as above 01 unit address					
310173(27BC) to 310176(27BF)		04	R	12 unit address parameter – Same as above 01 unit address					
310177(27C0) to 310180(27C3)		04	R	13 unit address parameter – Same as above 01 unit address					
310181(27C4) to 310184(27C7)		04	R	14 unit address parameter – Same as above 01 unit address					
310185(27C8) to 310188(27CB)		04	R	15 unit address parameter – Same as above 01 unit address					
310189(27CC) to 310192(27CF)		04	R	16 unit address parameter – Same as above 01 unit address					
310193(27D0)	310193(27D0)	04	R	CH1 Set Value	CH1 set value	SV Low Limit to SV High Limit	℃/℉, Digit	0	
310194(27D1)	310194(27D1)	04	R	CH2 Set Value	CH2 set value				
-	310195(27D2)	04	R	CH3 Set Value	CH3 set value				
-	310196(27D3)	04	R	CH4 Set Value	CH4 set value				
310197(27D4) to 310200(27D7)		04	R	02 address parameter – Same as above 01 address					
310201(27D8) to 310204(27DB)		04	R	03 address parameter – Same as above 01 address					
310205(27DC) to 310208(27DF)		04	R	04 address parameter – Same as above 01 address					
310209(27E0) to 310212(27E3)		04	R	05 address parameter – Same as above 01 address					
310213(27E4) to 310216(27E7)		04	R	06 address parameter – Same as above 01 address					
310217(27E8) to 310220(27EB)		04	R	07 address parameter – Same as above 01 address					
310221(27EC) to 310224(27EF)		04	R	08 address parameter – Same as above 01 address					
310225(27F0) to 310228(27F3)		04	R	09 address parameter – Same as above 01 address					
310229(27F4) to 310232(27F7)		04	R	10 address parameter – Same as above 01 address					
310233(27F8) to 310236(27FB)		04	R	11 address parameter – Same as above 01 address					
310237(27FC) to 310240(27FF)		04	R	12 address parameter – Same as above 01 address					
310241(2800) to 310244(2803)		04	R	13 address parameter – Same as above 01 address					
310245(2804) to 310248(2807)		04	R	14 address parameter – Same as above 01 address					
310249(2808) to 310252(280B)		04	R	15 address parameter – Same as above 01 address					
310253(280C) to 310256(280F)		04	R	16 address parameter – Same as above 01 address					
310257(2810)	310257(2810)	04	R	CH1 Heating_MV	CH1 heating MV	0 to 1000 (0.0 to 100.0)	%	-	
310258(2811)	310258(2811)	04	R	CH2 Heating_MV	CH2 heating MV				
-	310259(2812)	04	R	CH3 Heating_MV	CH3 heating MV				
-	310260(2813)	04	R	CH4 Heating_MV	CH4 heating MV				
310261(2814) to 310264(2817)		04	R	02 unit address parameter – Same as above 01 address					

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
310265(2818) to 310268(281B)		04	R	03 unit address parameter – Same as above 01 address					
310269(281C) to 310272(281F)		04	R	04 unit address parameter – Same as above 01 address					
310273(2820) to 310276(2823)		04	R	05 unit address parameter – Same as above 01 address					
310277(2824) to 310280(2827)		04	R	06 unit address parameter – Same as above 01 address					
310281(2828) to 310284(282B)		04	R	07 unit address parameter – Same as above 01 address					
310285(282C) to 310288(282F)		04	R	08 unit address parameter – Same as above 01 address					
310289(2830) to 310292(2833)		04	R	09 unit address parameter – Same as above 01 address					
310293(2834) to 310296(2837)		04	R	10 unit address parameter – Same as above 01 address					
310297(2838) to 310300(283B)		04	R	11 unit address parameter – Same as above 01 address					
310301(283C) to 310304(283F)		04	R	12 unit address parameter – Same as above 01 address					
310305(2840) to 310308(2843)		04	R	13 unit address parameter – Same as above 01 address					
310309(2844) to 310312(2847)		04	R	14 unit address parameter – Same as above 01 address					
310313(2848) to 310316(284B)		04	R	15 unit address parameter – Same as above 01 address					
310317(284C) to 310320(284F)		04	R	16 unit address parameter – Same as above 01 address					
310321(2850)	310321(2850)	04	R	CH1 Cooling_MV	CH1 cooling MV	0 to 1000 (0.0 to 100.0)	%	-	
310322(2851)	310322(2851)	04	R	CH1 Cooling_MV	CH2 cooling MV				
-	310323(2852)	04	R	CH1 Cooling_MV	CH3 cooling MV				
-	310324(2853)	04	R	CH1 Cooling_MV	CH4 cooling MV				
310325(2854) to 310328(2857)		04	R	02 unit address parameter – Same as above 01 unit address					
310329(2858) to 310332(285B)		04	R	03 unit address parameter – Same as above 01 unit address					
310333(285C) to 310336(285F)		04	R	04 unit address parameter – Same as above 01 unit address					
310337(2860) to 310340(2863)		04	R	05 unit address parameter – Same as above 01 unit address					
310341(2864) to 310344(2867)		04	R	06 unit address parameter – Same as above 01 unit address					
310345(2868) to 310348(286B)		04	R	07 unit address parameter – Same as above 01 unit address					
310349(286C) to 310352(286F)		04	R	08 unit address parameter – Same as above 01 unit address					
310353(2870) to 310356(2873)		04	R	09 unit address parameter – Same as above 01 unit address					
310357(2874) to 310360(2877)		04	R	10 unit address parameter – Same as above 01 unit address					
310361(2878) to 310364(287B)		04	R	11 unit address parameter – Same as above 01 unit address					
310365(287C) to 310368(287F)		04	R	12 unit address parameter – Same as above 01 unit address					
310369(2880) to 310372(2883)		04	R	13 unit address parameter – Same as above 01 unit address					
310373(2884) to 310376(2887)		04	R	14 unit address parameter – Same as above 01 unit address					
310377(2888) to 310380(288B)		04	R	15 unit address parameter – Same as above 01 unit address					
310381(288C) to 310384(288F)		04	R	16 unit address parameter – Same as above 01 unit address					
-	310385(2890)	04	R	-	CH1 LED(OUT1)	0: OFF, 1: ON	-	-	Bit 0
				-	CH2 LED(OUT2)				Bit 1
				-	CH3 LED(OUT3)				Bit 2
				-	CH4 LED(OUT4)				Bit 3
				-	-	0 fixed	-	-	Bit 4
				-	-				Bit 5
				-	-				Bit 6
				-	-				Bit 7
				-	-				Bit 8
				-	-				Bit 9
310385(2890)	-	04	R	-	CH1 LED(OUT1)	0: OFF, 1: ON	-	-	Bit 0

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
				-	CH2 LED(OUT2)				Bit 1
				-	CH3 LED(OUT3), H&C control				Bit 2
				-	CH4 LED(OUT4), H&C control				Bit 3
				-	AL1 LED	0: OFF, 1: ON	-	-	Bit 4
				-	AL2 LED				Bit 5
				-	AL3 LED				Bit 6
				-	AL4 LED				Bit 7
				-	DI-1 input	0: OFF, 1: ON	-	-	Bit 8
				-	DI-2 input				Bit 9
310386(2891)	310386(2891)	04	R	-	CH1 EVENT1 status	0: OFF, 1: ON	-	-	
				-	CH1 EVENT2 status				
				-	CH1 EVENT3 status				
				-	CH1 EVENT4 status				
				-	CH2 EVENT1 status	0: OFF, 1: ON	-	-	
				-	CH2 EVENT2 status				
				-	CH2 EVENT3 status				
				-	CH2 EVENT4 status				
				-	CH3 EVENT1 status	0: OFF, 1: ON	-	-	
				-	CH3 EVENT2 status				
				-	CH3 EVENT3 status				
				-	CH3 EVENT4 status				
				-	CH4 EVENT1 status	0: OFF, 1: ON	-	-	
				-	CH4 EVENT2 status				
				-	CH4 EVENT3 status				
				-	CH4 EVENT4 status				
310387(2892)		04	R	Unit Address	Comm. address	1 to 16	-	1	
310388(2893) to 310390(2895)		02	R	02 unit address parameter – Same as above 01 unit address					
310391(2896) to 310393(2898)		02	R	03 unit address parameter – Same as above 01 unit address					
310394(2899) to 310396(289B)		02	R	04 unit address parameter – Same as above 01 unit address					
310397(289C) to 310399(289E)		02	R	05 unit address parameter – Same as above 01 unit address					
310400(289F) to 310402(28A1)		02	R	06 unit address parameter – Same as above 01 unit address					
310403(28A2) to 310405(28A4)		02	R	07 unit address parameter – Same as above 01 unit address					
310406(28A5) to 310408(28A7)		04	R	08 unit address parameter – Same as above 01 unit address					
310409(28A8) to 310411(28AA)		04	R	09 unit address parameter – Same as above 01 unit address					
310412(28AB) to 310414(28AD)		04	R	10 unit address parameter – Same as above 01 unit address					
310415(28AE) to 310417(28B0)		04	R	11 unit address parameter – Same as above 01 unit address					
310418(28B1) to 310420(28B3)		04	R	12 unit address parameter – Same as above 01 unit address					
310421(28B4) to 310423(28B6)		04	R	13 unit address parameter – Same as above 01 unit address					
310424(28B7) to 310426(28B9)		04	R	14 unit address parameter – Same as above 01 unit address					
310427(28BA) to 310429(28BC)		04	R	15 unit address parameter – Same as above 01 unit address					
310430(28BD) to 310432(28BF)		04	R	16 unit address parameter – Same as above 01 unit address					
310433(28C0)	310433(28C0)	04	R	CT1_Heater Current	CT1 heater current value monitoring	0 to 500 (0.0 to 50.0)	A	-	

No(Address)		Func	R/W	Parameter	Description	Set range	Unit	Default	Note
TMH2	TMH4								
310434(28C1)	310434(28C1)	04	R	CT2_Heater Current	CT2 heater current value monitoring				
310435(28C2)	310435(28C2)	04	R	CT3_Heater Current	CT3 heater current value monitoring				
310436(28C3)	310436(28C3)	04	R	CT4_Heater Current	CT4 heater current value monitoring				
310437(28C4) to 310440(28C7)		04	R	02 unit address parameter – Same as above 01 unit address					
310441(28C8) to 310444(28CB)		04	R	03 unit address parameter – Same as above 01 unit address					
310445(28CC) to 310448(28CF)		04	R	04 unit address parameter – Same as above 01 unit address					
310449(28D0) to 310452(28D3)		04	R	05 unit address parameter – Same as above 01 unit address					
310453(28D4) to 310456(28D7)		04	R	06 unit address parameter – Same as above 01 unit address					
310457(28D8) to 310460(28DB)		04	R	07 unit address parameter – Same as above 01 unit address					
310461(28DC) to 310464(28DF)		04	R	08 unit address parameter – Same as above 01 unit address					
310465(28E0) to 310468(28E3)		04	R	09 unit address parameter – Same as above 01 unit address					
310469(28E4) to 310472(28E7)		04	R	10 unit address parameter – Same as above 01 unit address					
310473(28E8) to 310476(28EB)		04	R	11 unit address parameter – Same as above 01 unit address					
310477(28EC) to 310480(28EF)		04	R	12 unit address parameter – Same as above 01 unit address					
310481(28F0) to 310484(28F3)		04	R	13 unit address parameter – Same as above 01 unit address					
310485(28F4) to 310488(28F7)		04	R	14 unit address parameter – Same as above 01 unit address					
310489(28F8) to 310492(28FB)		04	R	15 unit address parameter – Same as above 01 unit address					
310493(28FC) to 310496(28FF)		04	R	16 unit address parameter – Same as above 01 unit address					
310497(2900) to 310500(2903)		04	R	Reserved					

2.5.4.4 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple registers(Func 16)

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
401001(03E8)		03/06/16	R/W	CH1 SV	Temp. set value	SV Low Limit to SV High Limit	℃/℉, Digit	0	Monitoring group
401002(03E9)		03/06/16	R/W	CH1 Heating_MV	Heating MV	0 to 1000 (0.0 to 100.0)	%	-	
401003(03EA)		03/06/16	R/W	CH1 Cooling_MV	Cooling MV	0 to 1000 (0.0 to 100.0)	%	-	
401004(03EB)		03/06/16	R/W	CH1 Auto-Manual Control	Auto/Manual control	0: AUTO, 1: MANUAL	-	0: AUTO	
401005(03EC) to 401030(0405)		03/06/16	R/W	Reserved					
401031(0406)		03/06/16	R/W	CH1 RUN_STOP	Control output RUN/STOP	0: RUN, 1: STOP	-	0:RUN	Operating (Control Operation) group
401032(0407)		03/06/16	R/W	CH1 Multi SV No	Multi SV No.	0: SV-0, 1: SV-1 2: SV-2, 3: SV-3	-	0:SV-0	
401033(0408)		03/06/16	R/W	CH1 SV-0 Setting Value	SV-0 set value	SV Low Limit to SV High Limit	℃/℉, Digit	0	
401034(0409)		03/06/16	R/W	CH1 SV-1 Setting Value	SV-1 set value				
401035(040A)		03/06/16	R/W	CH1 SV-2 Setting Value	SV-2 set value				
401036(040B)		03/06/16	R/W	CH1 SV-3 Setting Value	SV-3 set value				
401037(040C) to 401060(0423)		03/06/16	R/W	Reserved					
401061(0424)		03/06/16	R/W	CH1 Auto-Tuning Execute	Auto-tuning ON/OFF	0: OFF, 1: ON	-	0: OFF	Control Operation group
401062(0425)		03/06/16	R/W	CH1 Heating_ Proportional Band	Proportinal band of heating control	Temp. H, Analog: 1 to 999 Temp. L: 1 to 9999 (0.1 to 999.9)	℃/℉, %F.S	10	
401063(0426)		03/06/16	R/W	CH1 Cooling_ Proportional Band	Proportinal band of cooling control				
401064(0427)		03/06/16	R/W	CH1 Heating_Integral Time	Integral time of heating control	0 to 9999	Sec	0	
401065(0428)		03/06/16	R/W	CH1 Cooling_Integral Time	Integral time of cooling control				
401066(0429)		03/06/16	R/W	CH1 Heating_Derivatio n Time	Derivation time of heating control	0 to 9999	Sec	0	
401067(042A)		03/06/16	R/W	CH1 Cooling_Derivation Time	Derivation time of cooling control				
401068(042B)		03/06/16	R/W	CH1 Dead_Overlap band	Dead band of overlap band control	Temp. H, Analog: -999 to 999 Temp. L: -9999 to 9999 (-999.9 to 999.9)	℃/℉, %F.S	0	
401069(042C)		03/06/16	R/W	CH1 Manual Reset	P/PD control, manual reset	0 to 1000 (0.0 to 100.0)	%	500(50.0)	
401070(042D)		03/06/16	R/W	CH1 Heating_ON Hysteresis	Heating, hysteresis	Temp. H, Analog: 1 to 100 Temp. L: 1 to 1000 (0.1 to 100.0)	℃/℉, Digit	2	
401071(042E)		03/06/16	R/W	CH1 Heating_OFF Offset	Heating, OFF offset	Temp. H, Analog: 0 to 100 Temp. L: 0 to 1000 (0 to 100.0)	℃/℉, Digit	0	
401072(042F)		03/06/16	R/W	CH1 Cooling_ON	Cooling,	Temp. H, Analog: 1 to 100 Temp. L: 1 to 1000 (0.1 to	℃/℉, Digit	2	

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range		Unit	Default	Note
				Hysteresis	hysteresis	100.0)				
401073(0430)		03/06/16	R/W	CH1 Cooling_OFF Offset	Cooling, OFF offset	Temp. H, Analog: 0 to 100 Temp. L: 0 to 1000 (0 to 100.0)		℃/℉, Digit	0	
401074(0431)		03/06/16	R/W	CH1 MV Low Limit	MV low-limit set value	Heating, Cooling control	0.0 to MV High Limit - 0.1	%	0 (0.0)	Control Operation group
						H&C control	-100.0 to 0.0		-100(-100.0)	
400475(01DA)		03/06/16	R/W	CH1 MV High Limit	MV high-limit set value	Heating, Cooling control	MV Low Limit + 0.1 to 100.0	%	1000(100.0)	
						H&C control	0 to 100.0		1000(100.0)	
401076(0433)		03/06/16	R/W	CH1 MV rate limit	MV change rate limit	0: OFF, 1 to 1000 (0.1 to 100.0)		%/SEC	0: OFF	
401077(0434)		03/06/16	R/W	CH1 Ramp_Up Rate	Ramp up rate	0 to 9999		℃/℉, Digit	0	
401078(0435)		03/06/16	R/W	CH1 Ramp_Down Rate	Ramp down rate	0 to 9999		℃/℉, Digit	0	
401079(0436)		03/06/16	R/W	CH1 Ramp Time Unit	Ramp time unit	0: SEC, 1: MIN, 2: HOUR		-	1: MIN	
401080(0437)		03/06/16	R/W	CH1 PV transfer	Auto control, SV selection	0: OFF, 1: ON		-	0: OFF	
401081(0438)		03/06/16	R/W	CH1 Soft start time	Soft start time	0: OFF, 1 to 9999		SEC	0: OFF	
401082(0439)		03/06/16	R/W	CH1 Soft start time unit	Soft start time unit	0:SEC, 1:MIN, 2:HOUR		-	0: SEC	
401083(043A)		03/06/16	R/W	CH1 Soft start MV	Soft start MV	1 to 1000 (0.1 to 100.0)		%	1000(100.0)	
401084(043B)		03/06/16	R/W	CH1 Operating Type	Control output operation mode	0: HEATING, 1: COOLING, 2: H&C		-	0: HEATING	
401085(043C)		03/06/16	R/W	CH1 Control Method	Temperature control method	Heating, Cooling control	0: PID, 1: ON/OFF	-	0: PID	
						H&C control	0: PID-PID, 1: PID-ON/OFF, 2: ON/OFF-PID, 3: ON/OFF-ON/OFF	-	0: PID-PID	
401086(043D)		03/06/16	R/W	CH1 Auto-Tuning Type	Auto-tuning mode	0: TUNE1, 1: TUNE2		-	0: TUNE1	
401087(043E)		03/06/16	R/W	CH1 Heating_Control Time	Heating, control cycle	1 to 1200(0.1 to 120.0) 10 to 1200(1.0 to 120.0)		Sec	RY: 200(20.0), SSR: 20(2.0)	
401088(043F)		03/06/16	R/W	CH1 Cooling_Control Time	Cooling, control cycle					
401089(0440)		03/06/16	R/W	CH1 Heating_OUTPUT(SSR_CURR) TYPE	Heating, control output type	0: SSR, 1: CURRENT		-	1: CURRENT	
401090(0441)		03/06/16	R/W	CH1 Heating_CURRENT OUTPUT RANGE	Heating, current output range	0: 4-20, 1: 0-20		mA	0: 4-20	
401091(0442)		03/06/16	R/W	CH1 Cooling_OUTPUT(SSR_CURR)	Cooling, control output type	0: SSR, 1: CURRENT		-	1: CURRENT	

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
				TYPE					
401092(0443)		03/06/16	R/W	CH1 Cooling_CURRENT OUTPUT RANGE	Cooling, current output range	0: 4-20, 1: 0-20	mA	0: 4-20	
401093(0444) to 401120(045F)		03/06/16	R/W	Reserved					
401121(0460)		03/06/16	R/W	CH1 Input Type	Input type	0: K(CA).H to 32: 4 to 20mA	-	0: K(CA).H	
401122(0461)		03/06/16	R/W	CH1 Unit	Sensor temp. unit	0: ℃, 1: ℉	-	℃	
401123(0462)		03/06/16	R/W	CH1 Low-limit Input Value	Analog low-limit input value	Min. operational value to High-limit Input Value Settings – F.S. 10%	-	0	
401124(0463)		03/06/16	R/W	CH1 High-limit Input Value	Analog high-limit input value	Low-limit Input Value Settings + F.S. 10% to Max. operational value	-	1000	
401125(0464)		03/06/16	R/W	CH1 Decimal Point	Scale decimal point	0: 0, 1: 0.0, 2: 0.00, 3: 0.000	-	1:00.0	
401126(0465)		03/06/16	R/W	CH1 Low-limit Scale Value	Scale low-limit display value	-9999 to 9999	Digit	0	
401127(0466)		03/06/16	R/W	CH1 High-limit Scale Value	Scale high-limit display value	-9999 to 9999	Digit	1000	
401128(0467)		03/06/16	R/W	CH1 Analog Input Unit	Analog input type unit	0: ℃, 1: ℉, 2: %	-	0: ℃	
401129(0468)		03/06/16	R/W	CH1 Input Func	Analog input special function	0: LINEAR, 1: ROOT, 2: SQUARE	-	0: LINEAR	
401130(0469)		03/06/16	R/W	CH1 Root Low Cut	Root function low cut point	-9999 to 9999	Digit	0	
401131(046A)		03/06/16	R/W	CH1 Input Bias	Input correction	-9999 to 9999	Digit	0	
401132(046B)		03/06/16	R/W	CH1 Input Digital Filter	Input digital filter	1 to 1200 (0.1 to 120.0)	Sec	1(0.1)	
401133(046C)		03/06/16	R/W	CH1 SV Low Limit	SV Low Limit set value	Temp.: Sensor input low-limit value to SV High Limit – 1Digit Analog: Low-limit scale to SV High Limit – 1Digit	℃/℉, %F.S	-200	
401134(046D)		03/06/16	R/W	CH1 SV High Limit	SV High Limit set value	Temp.: SV Low Limit + 1Digit to Sensor input high-limit Analog: SV Low Limit + 1Digit to High-limit scale value	℃/℉, %F.S	1350	
401135(046E)		03/06/16	R/W	CH1 RSV Target Address	RSV Master address	0, 1 to 48	-	0	
401136(046F)		03/06/16	R/W	CH1 RSV Target CH	RSV Master channel	0: CH1, 1: CH2, 2: CH3, 3: CH4	-	CH□:CH□	
401137(0470)		03/06/16	R/W	CH1 RSV Target	RSV Master channel target	0: OFF, 1: PV, 2: SV	-	0: OFF	
401138(0471)		03/06/16	R/W	CH1 SV Tracking	SV tracking	0: OFF, 1: ON	-	0: OFF	
401139(0472)		03/06/16	R/W	CH1 TUNE2 DV	TUNE2 mode deviation	-9999 to 9999	Digit	0	
401140(0473) to 401150(047D)		03/06/16	R/W	Reserved					
401151(047E)		03/06/16	R/W	CH1 Multi SV	Multi SV No.	0: 1EA, 1: 2EA, 2: 4EA	-	0: 1EA	
401152(047F)		03/06/16	R/W	CH1 Initial Manual MV	Baseline MV for manual control	0: AUTO-MV, 1: PRESET-MV	-	0: AUTO-MV	

Initial Setting group

Control Setting group

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
401153(0480)		03/06/16	R/W	CH1 Preset Manual MV	Manual control, initial MV	Heating, Cooling control: 0 to 1000 (0.0 to 100.0), Heating&Cooling control: -1000(-100.0) to 1000(100.0)	%	0	
401154(0481)		03/06/16	R/W	CH1 Sensor Error MV	Sensor error, MV	Heating, Cooling control, PID: 0 to 1000 (0.0 to 100.0), ON/OFF: 0(OFF), 1000(ON), Heating&Cooling control, PID: -1000 to 1000(-100.0 to 100.0), ON/OFF: -1000(cooling ON), 0(OFF), 1000(heating ON)	%	0	
401155(0482)		03/06/16	R/W	CH1 Stop MV	STOP, control output	Heating, Cooling control, PID: 0 to 1000 (0.0 to 100.0), ON/OFF: 0(OFF), 1000(ON) Heating&Cooling control, PID: -1000 to 1000(-100.0 to 100.0), ON/OFF: -1000(cooling ON), 0(OFF), 1000(heating ON)	%	0	
401156(0483)		03/06/16	R/W	CH1 Stop Alarm Out	Stop, alarm output	0: Continue, 1: OFF	-	0: Continue	
401156(0483) to 401180(049B)		03/06/16	R/W	Reserved					
401181(049C)		03/06/16	R/W	CH1 Event Mode 1	CH1 alarm operation mode 1	0: OFF, 1: AL-1, 2: AL-2, 3: AL-3, 4: AL-4, 5: AL-5, 6: AL-6, 7: LBA, 8: SBA, 9: HBA	-	0: AL-1	Alarm Setting group
401182(049D)		03/06/16	R/W	CH1 Event Mode 2	CH1 alarm operation mode 2				
401183(049E)		03/06/16	R/W	CH1 Event Mode 3	CH1 alarm operation mode 3				
401184(049F)		03/06/16	R/W	CH1 Event Mode 4	CH1 alarm operation mode 4				
401185(04A0)		03/06/16	R/W	CH1 Event Type 1	CH1 alarm option 1	0: AL-A, 1: AL-B, 2: AL-C, 3: AL-D, 4: AL-E, 5: AL-F	-	0: AL-A	
401186(04A1)		03/06/16	R/W	CH1 Event Type 2	CH1 alarm option 2				
401187(04A2)		03/06/16	R/W	CH1 Event Type 3	CH1 alarm option 3				
401188(04A3)		03/06/16	R/W	CH1 Event Type 4	CH1 alarm option 4				
401189(04A4)		03/06/16	R/W	CH1 Event Low 1	CH1 alarm low-limit set value 1	Deviation alarm: -F.S to F.S, Absoulte alarm: Within the dedicated input type	-	1550	
401190(04A5)		03/06/16	R/W	CH1 Event High 1	CH1 alarm high-limit set value 1				
401191(04A6)		03/06/16	R/W	CH1 Event Low 2	CH1 alarm low-limit set value 2				
401192(04A7)		03/06/16	R/W	CH1 Event High 2	CH1 alarm high-limit set value 2				
401193(04A8)		03/06/16	R/W	CH1 Event Low 3	CH1 alarm low-limit set value 3				
401194(04A9)		03/06/16	R/W	CH1 Event High 3	CH1 alarm high-limit set value 3				
401195(04AA)		03/06/16	R/W	CH1 Event Low 4	CH1 alarm low-limit set value 4				

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
401196(04AB)		03/06/16	R/W	CH1 Event High 4	CH1 alarm high-limit set value 4				
401197(04AC)		03/06/16	R/W	CH1 Event Hysteresis 1	CH1 alarm hysteresis 1	Temp. H, Analog: 1 to 100, Temp. L: 1 to 1000 (0.1 to 100.0)	℃/℉, Digit	1	Alarm Setting group
401198(04AD)		03/06/16	R/W	CH1 Event Hysteresis 2	CH1 alarm hysteresis 2				
401199(04AE)		03/06/16	R/W	CH1 Event Hysteresis 3	CH1 alarm hysteresis 3				
401200(04AF)		03/06/16	R/W	CH1 Event Hysteresis 4	CH1 alarm hysteresis 4				
401201(04B0)		03/06/16	R/W	CH1 Alarm NO/NC	CH1 alarm output contact type	0: NO, 1: NC	-	0: NO	
401202(04B1)		03/06/16	R/W	CH1 Event ON Delay Time 1	CH1 alarm ON delay time 1	0 to 3600	Sec	0	
401203(04B2)		03/06/16	R/W	CH1 Event OFF Delay Time 1	CH1 alarm OFF delay time 1				
401204(04B3)		03/06/16	R/W	CH1 Event ON Delay Time 2	CH1 alarm ON delay time 2				
401205(04B4)		03/06/16	R/W	CH1 Event OFF Delay Time 2	CH1 alarm OFF delay time 2				
401206(04B5)		03/06/16	R/W	CH1 Event ON Delay Time 3	CH1 alarm ON delay time 3				
401207(04B6)		03/06/16	R/W	CH1 Event OFF Delay Time 3	CH1 alarm OFF delay time 3				
401208(04B7)		03/06/16	R/W	CH1 Event ON Delay Time 4	CH1 alarm ON delay time 4				
401209(04B8)		03/06/16	R/W	CH1 Event OFF Delay Time 4	CH1 alarm OFF delay time 4				
401210(04B9)		03/06/16	R/W	CH1 Alarm Output Taget1	CH1 alarm output target address1	0, 1: 49 to 16: 64	-	0	
401211(04BA)		03/06/16	R/W	CH1 Alarm Output Taget2	CH1 alarm output target address2				
401212(04BB)		03/06/16	R/W	CH1 Alarm Output Taget3	CH1 alarm output target address3				
401213(04BC)		03/06/16	R/W	CH1 Alarm Output Taget4	CH1 alarm output target address4				
401214(04BD)		03/06/16	R/W	CH1 Alarm Output Taget1 CH	CH1 alarm output target channel1	0: Alarm1 to 7: Alarm8	-	0: Alarm1	
401215(04BE)		03/06/16	R/W	CH1 Alarm Output Taget2 CH	CH1 alarm output target channel2				
401216(04BF)		03/06/16	R/W	CH1 Alarm Output Taget3 CH	CH1 alarm output target channel3				
401217(04C0)		03/06/16	R/W	CH1 Alarm Output Taget4 CH	CH1 alarm output target channel4				
401218(04C1)		03/06/16	R/W	CH1 LBA Time 1	CH1 LBA monitoring time 1	0 to 9999	Sec	0	
401219(04C2)		03/06/16	R/W	CH1 LBA Band 1	CH1 LBA detection band 1	Temp. H: 0 to 999, Temp. L: 0 to 9999 (0.0 to 999.9), Analog: 0 to 1000 (0.0 to 100.0)	℃/℉, %F.S	2	
401220(04C3)		03/06/16	R/W	CH1 LBA Time 2	CH1 LBA monitoring time 2	0 to 9999	Sec	0	
401221(04C4)		03/06/16	R/W	CH1 LBA Band 2	CH1 LBA detection band 2	Temp. H: 0 to 999, Temp. L: 0 to 9999 (0.0 to 999.9), Analog: 0 to 1000 (0.0 to	℃/℉, %F.S	2	

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
						100.0)			
401222(04C5)		03/06/16	R/W	CH1 LBA Time 3	CH1 LBA monitoring time 3	0 to 9999	Sec	0	
401223(04C6)		03/06/16	R/W	CH1 LBA Band 3	CH1 LBA detection band 3	Temp. H: 0 to 999, Temp. L: 0 to 9999 (0.0 to 999.9), Analog: 0 to 1000 (0.0 to 100.0)	℃/℉, %F.S	2	
401224(04C7)		03/06/16	R/W	CH1 LBA Time 4	CH1 LBA monitoring time 4	0 to 9999	Sec	0	
401225(04C8)		03/06/16	R/W	CH1 LBA Band 4	CH1 LBA 1 detection band 4	Temp. H: 0 to 999, Temp. L: 0 to 9999 (0.0 to 999.9), Analog: 0 to 1000 (0.0 to 100.0)	℃/℉, %F.S	2	
401226(04C9)		03/06/16	R/W	CH1 CT Target 1	CH1 CT address 1	0, 1: 65 to 16: 80	-	0	
401227(04CA)		03/06/16	R/W	CH1 CT Target 2	CH1 CT address 2				
401228(04CB)		03/06/16	R/W	CH1 CT Target 3	CH1 CT address 3				
401229(04CC)		03/06/16	R/W	CH1 CT Target 4	CH1 CT address 4				
401230(04CD)		03/06/16	R/W	CH1 CT Input 1	CH1 CT input 1	0: CT1 to 7: CT8	-	CH□:CT□	
401231(04CE)		03/06/16	R/W	CH1 CT Input 2	CH1 CT input 2				
401232(04CF)		03/06/16	R/W	CH1 CT Input 3	CH1 CT input 3				
401233(04D0)		03/06/16	R/W	CH1 CT Input 4	CH1 CT input 4				
401234(04D1) to 401240(04D7)		03/06/16	R/W	Reserved					
401241(04D8)		03/06/16	R/W	CH1 DI Target	CH1 DI target address	0, 1: 49 to 16: 60	-	0	Option (Digital Input Setting) group
401242(04D9)		03/06/16	R/W	CH1 Digital Input 1 Func	CH1 DI-1 input terminal	0: OFF, 1: STOP, 2: AL-RESET, 3: Manual, 4: Multi-SV, 5: Remote SV	-	0: OFF	
401243(04DA)		03/06/16	R/W	CH1 Digital Input 2 Func	CH1 DI-2 input terminal				
401244(04DB)		03/06/16	R/W	CH1 Digital Input 3 Func	CH1 DI-3 input terminal				
401245(04DC)		03/06/16	R/W	CH1 Digital Input 4 Func	CH1 DI-4 input terminal				
401246(04DD)		03/06/16	R/W	CH1 Digital Input 5 Func	CH1 DI-5 input terminal				
401247(04DE)		03/06/16	R/W	CH1 Digital Input 6 Func	CH1 DI-6 input terminal				
401248(04DF)		03/06/16	R/W	CH1 Digital Input 7 Func	CH1 DI-7 input terminal				
401249(04E0)		03/06/16	R/W	CH1 Digital Input 8 Func	CH1 DI-8 input terminal				
401250(04E0) to 401270(04F5)		03/06/16	R/W	Reserved					
401271(04F6)		03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200	bps	1: 9600	Common (common parameter setting) group
401272(04F7)		03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD	-	0: NONE	
401273(04F8)		03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1:02	

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
401274(04F9)		03/06/16	R/W	Response Waiting Time	Communication response wait time	5 to 99	ms	20	
401275(04FA)		03/06/16	R/W	Communication Write	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
401276(04FB)		03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
401277(04FC)		03/06/16	R/W	Alarm1 Logic	Alarm1 alarm output logic operation	0: OR, 1: AND	-	0: OR	
401278(04FD)		03/06/16	R/W	Alarm2 Logic	Alarm2 alarm output logic operation				
401279(04FE)		03/06/16	R/W	Alarm3 Logic	Alarm3 alarm output logic operation				
401280(04FF)		03/06/16	R/W	Alarm4 Logic	Alarm4 alarm output logic operation				
401281(0500) to 401500(05DB)		03/06/16	R/W	Reserved					
401501(05DC) to 402000(07CF)		03/06/16	R/W	CH2 Parameter – Same as above CH1					
402001(07D0) to 402500(09C3)		03/06/16	R/W	CH3 Parameter – Same as above CH1					
402501(09C4) to 403000(0BB7)		03/06/16	R/W	CH4 Parameter – Same as above CH1					

※ When setting unit address 02 to 16, parameter address assignment

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
403001(0BB8) to 405000(1387)	03/06/16	R/W	02 unit address parameter – Same as above 01 unit address					
405001(1388) to 407000(1B57)	03/06/16	R/W	03 unit address parameter – Same as above 01 unit address					
407001(1B58) to 409000(2327)	03/06/16	R/W	04 unit address parameter – Same as above 01 unit address					
409001(2328) to 411000(2AF7)	03/06/16	R/W	05 unit address parameter – Same as above 01 unit address					
411001(2AF8) to 413000(32C7)	03/06/16	R/W	06 unit address parameter – Same as above 01 unit address					
413001(32C8) to 415000(3A97)	03/06/16	R/W	07 unit address parameter – Same as above 01 unit address					
415001(3A98) to 417000(4267)	03/06/16	R/W	08 unit address parameter – Same as above 01 unit address					
417001(4268) to 419000(4A37)	03/06/16	R/W	09 unit address parameter – Same as above 01 unit address					
419001(4A38) to 421000(5207)	03/06/16	R/W	10 unit address parameter – Same as above 01 unit address					
421001(5208) to 423000(59D7)	03/06/16	R/W	11 unit address parameter – Same as above 01 unit address					
423001(59D8) to 425000(61A7)	03/06/16	R/W	12 unit address parameter – Same as above 01 unit address					
425001(61A8) to 427000(6977)	03/06/16	R/W	13 unit address parameter – Same as above 01 unit address					
427001(6978) to 429000(7147)	03/06/16	R/W	14 unit address parameter – Same as above 01 unit address					
429001(7148) to 431000(7917)	03/06/16	R/W	15 unit address parameter – Same as above 01 unit address					
431001(7918) to 433000(80E7)	03/06/16	R/W	16 unit address parameter – Same as above 01 unit address					

2.5.5 TMHA

2.5.5.1 Read input status(Func 02)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
100451(01C2)	02	R	-	CH1 LED(transmission output1)	0: OFF, 1: ON	-	-	
100452(01C3)	02	R	-	CH2 LED(transmission output2)				
100453(01C4)	02	R	-	CH3 LED(transmission output3)				
100454(01C5)	02	R	-	CH4 LED(transmission output4)				
100455(01C6) to 100458(01C9)	02	R	02 unit address parameter – Same as above 01 unit address					
100459(01CA) to 100462(01CD)	02	R	03 unit address parameter – Same as above 01 unit address					
100463(01CE) to 100466(01D1)	02	R	04 unit address parameter – Same as above 01 unit address					
100467(01D2) to 100470(01D5)	02	R	05 unit address parameter – Same as above 01 unit address					
100471(01D6) to 100474(01D9)	02	R	06 unit address parameter – Same as above 01 unit address					
100475(01DA) to 100478(01DD)	02	R	07 unit address parameter – Same as above 01 unit address					
100479(01DE) to 100482(01E1)	02	R	08 unit address parameter – Same as above 01 unit address					
100483(01E2) to 100486(01E5)	02	R	09 unit address parameter – Same as above 01 unit address					
100487(01E6) to 100490(01E9)	02	R	10 unit address parameter – Same as above 01 unit address					
100491(01EA) to 100494(01ED)	02	R	11 unit address parameter – Same as above 01 unit address					
100495(01EE) to 100498(01F1)	02	R	12 unit address parameter – Same as above 01 unit address					
100499(01F2) to 100502(01F5)	02	R	13 unit address parameter – Same as above 01 unit address					
100503(01F6) to 100506(01F9)	02	R	14 unit address parameter – Same as above 01 unit address					
100507(01FA) to 100510(01FD)	02	R	15 unit address parameter – Same as above 01 unit address					
100511(01FE) to 100514(0201)	02	R	16 unit address parameter – Same as above 01 unit address					
100515(0202) to 100550(0225)	02	R	Reserved					

2.5.5.2 Read input register(Func 04)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300651(028A)	04	R	-	Product number H	-	-	0	
300652(028B)	04	R	-	Product number L	-	-	0	
300653(028C)	04	R	-	Hardware version	-	-	100	
300654(028D)	04	R	-	Software version	-	-	100	
300655(028E)	04	R	-	Model name 1	-	-	″TM″	Product name
300656(028F)	04	R	-	Model name 2	-	-	″HA″	Option
300657(0290)	04	R	-	Model name 3	-	-	″-4″	transmission output
300658(0291)	04	R	-	Model name 4	-	-	″2A″	Power voltage/output
300659(0292)	04	R	-	Model name 5	-	-	“E”	Structure
300660(0293)	04	R	-	Model name 6	-	-	“ ”	
300661(0294)	04	R	-	Model name 7	-	-	“ “	
300662(0295)	04	R	-	Model name 8	-	-	“ “	
300663(0296)	04	R	-	Model name 9	-	-	“ “	
300664(0297)	04	R	-	Model name 10	-	-	“ “	

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300665(0298)	04	R	Reserved					
300666(0299)	04	R	Reserved					
300667(029A)	04	R	Reserved					
300668(029B)	04	R	-	Coil status Start Address	-	-	0	
300669(029C)	04	R	-	Coil status Quantity	-	-	0	
300670(029D)	04	R	-	Input status Start Address	-	-	0	
300671(029E)	04	R	-	Input status Quantity	-	-	0	
300672(029F)	04	R	-	Holding Register Start Address	-	-	0	
300673(02A0)	04	R	-	Holding Register Quantity	-	-	0	
300674(02A1)	04	R	-	Input Register Start Address	-	-	0	
300675(02A2)	04	R	-	Input Register Quantity	-	-	0	
300676(02A3)	04	R	-	Channel Quantity	-	-	0	
300677(02A4) to 300702(02BD)	04	R	02 unit address parameter – Same as above 01 unit address					
300703(02BE) to 300728(02D7)	04	R	03 unit address parameter – Same as above 01 unit address					
300729(02D8) to 300754(02F1)	04	R	04 unit address parameter – Same as above 01 unit address					
300755(02F2) to 300780(030B)	04	R	05 unit address parameter – Same as above 01 unit address					
300781(030C) to 300806(0325)	04	R	06 unit address parameter – Same as above 01 unit address					
300807(0326) to 300832(033F)	04	R	07 unit address parameter – Same as above 01 unit address					
300833(0340) to 300858(0359)	04	R	08 unit address parameter – Same as above 01 unit address					
300859(035A) to 300884(0373)	04	R	09 unit address parameter – Same as above 01 unit address					
300885(0374) to 300910(038D)	04	R	10 unit address parameter – Same as above 01 unit address					
300911(038E) to 300936(03A7)	04	R	11 unit address parameter – Same as above 01 unit address					
300937(03A8) to 300962(03C1)	04	R	12 unit address parameter – Same as above 01 unit address					
300963(03C2) to 300988(03DB)	04	R	13 unit address parameter – Same as above 01 unit address					
300989(03DC) to 301014(03F5)	04	R	14 unit address parameter – Same as above 01 unit address					
301015(03F6) to 301040(040F)	04	R	15 unit address parameter – Same as above 01 unit address					
301041(0410) to 301066(0429)	04	R	16 unit address parameter – Same as above 01 unit address					
301067(042A) to 301100(044B)	04	R	Reserved					
310501(2904)	04	R	CH1 Present Value	CH1 present value	Sensor input range, 31000: OPEN, 30000: HHHH, -30000: LLLL	℃/℉, Digit	-	
310502(2905)	04	R	CH2 Present Value	CH2 present value				
310503(2906)	04	R	CH3 Present Value	CH3 present value				
310504(2907)	04	R	CH4 Present Value	CH4 present value				
310505(2908) to 310508(290B)	04	R	02 unit address parameter – Same as above 01 unit address					
310509(290C) to 310512(290F)	04	R	03 unit address parameter – Same as above 01 unit address					
310513(2910) to 310516(2913)	04	R	04 unit address parameter – Same as above 01 unit address					
310517(2914) to 310520(2917)	04	R	05 unit address parameter – Same as above 01 unit address					
310521(2918) to 310524(291B)	04	R	06 unit address parameter – Same as above 01 unit address					
310525(291C) to 310528(291F)	04	R	07 unit address parameter – Same as above 01 unit address					

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
310529(2920) to 310532(2923)	04	R	08 unit address parameter – Same as above 01 unit address					
310533(2924) to 310536(2927)	04	R	09 unit address parameter – Same as above 01 unit address					
310537(2928) to 310540(292B)	04	R	10 unit address parameter – Same as above 01 unit address					
310541(292C) to 310544(292F)	04	R	11 unit address parameter – Same as above 01 unit address					
310545(2930) to 310548(2933)	04	R	12 unit address parameter – Same as above 01 unit address					
310549(2934) to 310552(2937)	04	R	13 unit address parameter – Same as above 01 unit address					
310553(2938) to 310556(293B)	04	R	14 unit address parameter – Same as above 01 unit address					
310557(293C) to 310560(293F)	04	R	15 unit address parameter – Same as above 01 unit address					
310561(2940) to 310564(2943)	04	R	16 unit address parameter – Same as above 01 unit address					
310565(2944)	04	R	CH1 Dot	CH1 sensor decimal point	0: 0, 1: 0.0	-	0: 0	
310566(2945)	04	R	CH2 Dot	CH2 sensor decimal point				
310567(2946)	04	R	CH3 Dot	CH3 sensor decimal point				
310568(2947)	04	R	CH4 Dot	CH4 sensor decimal point				
310569(2948) to 310572(294B)	04	R	02 unit address parameter – Same as above 01 unit address					
310573(294C) to 310576(294F)	04	R	03 unit address parameter – Same as above 01 unit address					
310577(2950) to 310580(2953)	04	R	04 unit address parameter – Same as above 01 unit address					
310581(2954) to 310584(2957)	04	R	05 unit address parameter – Same as above 01 unit address					
310585(2958) to 310588(295B)	04	R	06 unit address parameter – Same as above 01 unit address					
310589(295C) to 310592(295F)	04	R	07 unit address parameter – Same as above 01 unit address					
310593(2960) to 310596(2963)	04	R	08 unit address parameter – Same as above 01 unit address					
310597(2964) to 310600(2967)	04	R	09 unit address parameter – Same as above 01 unit address					
310601(2968) to 310604(296B)	04	R	10 unit address parameter – Same as above 01 unit address					
310605(296C) to 310608(296F)	04	R	11 unit address parameter – Same as above 01 unit address					
310609(2970) to 310612(2973)	04	R	12 unit address parameter – Same as above 01 unit address					
310613(2974) to 310616(2977)	04	R	13 unit address parameter – Same as above 01 unit address					
310617(2978) to 310620(297B)	04	R	14 unit address parameter – Same as above 01 unit address					
310621(297C) to 310624(297F)	04	R	15 unit address parameter – Same as above 01 unit address					
310625(2980) to 310628(2983)	04	R	16 unit address parameter – Same as above 01 unit address					
310629(2984)	04	R	CH1 Unit	Sensor temp. unit	0: ℃, 1: ℉	-	0: ℃	
310630(2985)	04	R	CH2 Unit	Sensor temp. unit				
310631(2986)	04	R	CH3 Unit	Sensor temp. unit				
310632(2987)	04	R	CH4 Unit	Sensor temp. unit				
310633(2988) to 310636(298B)	04	R	02 unit address parameter – Same as above 01 unit address					
310637(298C) to 310640(298F)	04	R	03 unit address parameter – Same as above 01 unit address					
310641(2990) to 310644(2993)	04	R	04 unit address parameter – Same as above 01 unit address					
310645(2994) to 310648(2997)	04	R	05 unit address parameter – Same as above 01 unit address					
310649(2998) to 310652(299B)	04	R	06 unit address parameter – Same as above 01 unit address					
310653(299C) to 310656(299F)	04	R	07 unit address parameter – Same as above 01 unit address					
310657(29A0) to 310660(29A3)	04	R	08 unit address parameter – Same as above 01 unit address					
310661(29A4) to 310664(29A7)	04	R	09 unit address parameter – Same as above 01 unit address					
310665(29A8) to 310668(29AB)	04	R	10 unit address parameter – Same as above 01 unit address					
310669(29AC) to 310672(29AF)	04	R	11 unit address parameter – Same as above 01 unit address					

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
310673(29B0) to 310676(29B3)	04	R	12 unit address parameter – Same as above 01 unit address					
310677(29B4) to 310680(29B7)	04	R	13 unit address parameter – Same as above 01 unit address					
310681(29B8) to 310684(29BB)	04	R	14 unit address parameter – Same as above 01 unit address					
310685(29BC) to 310688(29BF)	04	R	15 unit address parameter – Same as above 01 unit address					
310689(29C0) to 310692(29C3)	04	R	16 unit address parameter – Same as above 01 unit address					
310693(29C4)	04	R	CH1 Analog Output Value	CH1 transmission output value	40 to 200(4.0 to 20.0)	mA	-	
310694(29C5)	04	R	CH2 Analog Output Value	CH2 transmission output value				
310695(29C6)	04	R	CH3 Analog Output Value	CH3 transmission output value				
310696(29C7)	04	R	CH4 Analog Output Value	CH4 transmission output value				
310697(29C8) to 310700(29CB)	04	R	02 unit address parameter – Same as above 01 unit address					
310701(29CC) to 310704(29CF)	04	R	03 unit address parameter – Same as above 01 unit address					
310705(29D0) to 310708(29D3)	04	R	04 unit address parameter – Same as above 01 unit address					
310709(29D4) to 310712(29D7)	04	R	05 unit address parameter – Same as above 01 unit address					
310713(29D8) to 310716(29DB)	04	R	06 unit address parameter – Same as above 01 unit address					
310717(29DC) to 310720(29DF)	04	R	07 unit address parameter – Same as above 01 unit address					
310721(29E0) to 310724(29E3)	04	R	08 unit address parameter – Same as above 01 unit address					
310725(29E4) to 310728(29E7)	04	R	09 unit address parameter – Same as above 01 unit address					
310729(29E8) to 310732(29EB)	04	R	10 unit address parameter – Same as above 01 unit address					
310733(29EC) to 310736(29EF)	04	R	11 unit address parameter – Same as above 01 unit address					
310737(29F0) to 310740(29F3)	04	R	12 unit address parameter – Same as above 01 unit address					
310741(29F4) to 310744(29F7)	04	R	13 unit address parameter – Same as above 01 unit address					
310745(29F8) to 310748(29FB)	04	R	14 unit address parameter – Same as above 01 unit address					
310749(29FC) to 310752(29FF)	04	R	15 unit address parameter – Same as above 01 unit address					
310753(2A00) to 310756(2A03)	04	R	16 unit address parameter – Same as above 01 unit address					
310757(2A04)	04	R	-	CH1 LED(OUT1)	0: OFF, 1: ON	-	-	Bit 0
	04	R	-	CH2 LED(OUT2)				Bit 1
	04	R	-	CH3 LED(OUT3)				Bit 2
	04	R	-	CH4 LED(OUT4)				Bit 3
310758(2A05)	04	R	02 unit address parameter – Same as above 01 unit address					
310759(2A06)	04	R	03 unit address parameter – Same as above 01 unit address					
310760(2A07)	04	R	04 unit address parameter – Same as above 01 unit address					
310761(2A08)	04	R	05 unit address parameter – Same as above 01 unit address					
310762(2A09)	04	R	06 unit address parameter – Same as above 01 unit address					
310763(2A0A)	04	R	07 unit address parameter – Same as above 01 unit address					
310764(2A0B)	04	R	08 unit address parameter – Same as above 01 unit address					
310765(2A0C)	04	R	09 unit address parameter – Same as above 01 unit address					
310766(2A0D)	04	R	10 unit address parameter – Same as above 01 unit address					
310767(2A0E)	04	R	11 unit address parameter – Same as above 01 unit address					
310768(2A0F)	04	R	12 unit address parameter – Same as above 01 unit address					
310769(2A10)	04	R	13 unit address parameter – Same as above 01 unit address					

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
310770(2A11)	04	R	14 unit address parameter – Same as above 01 unit address					
310771(2A12)	04	R	15 unit address parameter – Same as above 01 unit address					
310772(2A13)	04	R	16 unit address parameter – Same as above 01 unit address					
310773(2A14)	04	R	Unit Address	Comm. address	33 to 48	-	1	
310774(2A15)	04	R	02 unit address parameter – Same as above 01 unit address					
310775(2A15)	04	R	03 unit address parameter – Same as above 01 unit address					
310776(2A17)	04	R	04 unit address parameter – Same as above 01 unit address					
310777(2A18)	04	R	05 unit address parameter – Same as above 01 unit address					
310778(2A19)	04	R	06 unit address parameter – Same as above 01 unit address					
310779(2A1A)	04	R	07 unit address parameter – Same as above 01 unit address					
310780(2A1B)	04	R	08 unit address parameter – Same as above 01 unit address					
310781(2A1C)	04	R	09 unit address parameter – Same as above 01 unit address					
310782(2A1D)	04	R	10 unit address parameter – Same as above 01 unit address					
310783(2A1E)	04	R	11 unit address parameter – Same as above 01 unit address					
310784(2A1F)	04	R	12 unit address parameter – Same as above 01 unit address					
310785(2A20)	04	R	13 unit address parameter – Same as above 01 unit address					
310786(2A21)	04	R	14 unit address parameter – Same as above 01 unit address					
310787(2A22)	04	R	15 unit address parameter – Same as above 01 unit address					
310788(2A23)	04	R	16 unit address parameter – Same as above 01 unit address					
310789(2A24) to 310800(2A2F)	04	R	Reserved					

2.5.5.3 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple registers(Func 16)

No(Address)	Func	R/W	Parameter	Description	Set range		Unit	Default	Note
433001(80E8)	03/06/16	R/W	CH1 Input Type	Input type	0: K(CA).H to 32: 4 to 20mA		-	0: K(CA).H	Initial Setting group
433002(80E9)	03/06/16	R/W	CH1 Unit	sensor temp. unit	0: ℃, 1: ℉		-	℃	
433003(80EA)	03/06/16	R/W	CH1 Low-limit Input Value	Analog low-limit input value	Min. operational value to High-limit Input Value Settings − F.S. 10%		-	0000	
433004(80EB)	03/06/16	R/W	CH1 High-limit Input Value	Analog high-limit input value	Low-limit Input Value Settings + F.S. 10% to Max. operational value		-	1000	
433005(80EC)	03/06/16	R/W	CH1 Decimal Point	Scale decimal point	0: 0, 1: 0.0, 2: 0.00, 3: 0.000		-	1: 0.0	
433006(80ED)	03/06/16	R/W	CH1 Low-limit Scale Value	Scale low-limit display value	-9999 to 9999		Digit	0	
433007(80EE)	03/06/16	R/W	CH1 High-limit Scale Value	Scale high-limit display value	-9999 to 9999		Digit	1000	
433008(80EF)	03/06/16	R/W	CH1 Analog Input Unit	Analog input type unit	0: ℃, 1: ℉, 2: %		-	0: ℃	
433009(80F0)	03/06/16	R/W	CH1 Input Func	Analog input special function	0: LINEAR, 1: ROOT, 2: SQUARE		-	0: LINEAR	
433010(80F1)	03/06/16	R/W	CH1 Root Low Cut	Root function low cut point	-9999 to 9999		Digit	0	
433011(80F2)	03/06/16	R/W	CH1 Input Bias	Input correction	-9999 to 9999		Digit	0	
433012(80F3)	03/06/16	R/W	CH1 Input Digital Filter	Input digital filter	1 to 1200 (0.1 to 120.0)		Sec	1(0.1)	
433013(80F4) to 433030(8105)	03/06/16	R/W	Reserved						
433031(8106)	03/06/16	R/W	CH1 Analog Output Mode	Analog transmission output	0: PV, 1: SV, 2: H-MV, 3: C-MV		-	0: PV	Control Setting group
433032(8107)	03/06/16	R/W	CH1 Analog Output Target	Transmission output target address	0 to 48		-	0	
433033(8108)	03/06/16	R/W	CH1 Analog Output Target CH	Transmission output target channel	0: CH1, 1: CH2, 2: CH3, 3: CH4		-	CH□:CH□	
433034(8109)	03/06/16	R/W	CH1 Analog Output Range	Current output range	0: 4-20, 1: 0-20		-	0: 4-20	
433035(810A)	03/06/16	R/W	CH1 Full Scale Low	Transmission output low-limit value	PV	-	-200	1350	
					SV	SV Low Limit to SV High Limit			
					H-MV, C-MV	0 to 1000 (0.0 to 100.0)			
433036(810B)	03/06/16	R/W	CH1 Full Scale High	Transmission output high-limit value	PV	-	1350	-200	
					SV	SV Low Limit to SV High Limit			
					H-MV, C-MV	0 to 1000 (0.0 to 100.0)			
433037(810C) to 433060(8123)	03/06/16	R/W	Reserved						
433061(8124)	03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200		bps	1: 9600	Option Setting(Communication Setting)
433062(8125)	03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD		-	0: NONE	

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
433063(8126)	03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1: 2	group
433064(8127)	03/06/16	R/W	Response Waiting Time	Communication response wait time	5 to 99	ms	20	
433065(8128)	03/06/16	R/W	Communication Write	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
433066(8129)	03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
433067(812A) to 433150(817D)	03/06/16	R/W	Reserved					
433151(817E) to 433300(8213)	03/06/16	R/W	CH2 Parameter – Same as above CH1					
433301(8214) to 433450(82A9)	03/06/16	R/W	CH3 Parameter – Same as above CH1					
433451(82AA) to 433600(833F)	03/06/16	R/W	CH4 Parameter – Same as above CH1					

※ When setting unit address 02 to 16, parameter address assignment

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
433601(8240) to 434200(8597)	03/06/16	R/W	02 unit address parameter – Same as above 01 unit address					
434201(8598) to 434800(87EF)	03/06/16	R/W	03 unit address parameter – Same as above 01 unit address					
434801(87F0) to 435400(8A47)	03/06/16	R/W	04 unit address parameter – Same as above 01 unit address					
435401(8A48) to 436000(8C9F)	03/06/16	R/W	05 unit address parameter – Same as above 01 unit address					
436001(8CA0) to 436600(8EF7)	03/06/16	R/W	06 unit address parameter – Same as above 01 unit address					
436601(8EF8) to 437200(914F)	03/06/16	R/W	07 unit address parameter – Same as above 01 unit address					
437201(9150) to 437800(93A7)	03/06/16	R/W	08 unit address parameter – Same as above 01 unit address					
437801(93A8) to 438400(95FF)	03/06/16	R/W	09 unit address parameter – Same as above 01 unit address					
438401(9600) to 439000(9857)	03/06/16	R/W	10 unit address parameter – Same as above 01 unit address					
439001(9858) to 439600(9AAF)	03/06/16	R/W	11 unit address parameter – Same as above 01 unit address					
439601(9AB0) to 440200(9D07)	03/06/16	R/W	12 unit address parameter – Same as above 01 unit address					
440201(9D08) to 440800(9F5F)	03/06/16	R/W	13 unit address parameter – Same as above 01 unit address					
440801(9F60) to 441400(A1B7)	03/06/16	R/W	14 unit address parameter – Same as above 01 unit address					
441401(A1B8) to 442000(A40F)	03/06/16	R/W	15 unit address parameter – Same as above 01 unit address					
442001(A410) to 442600(A667)	03/06/16	R/W	16 unit address parameter – Same as above 01 unit address					

2.5.6 TMHE

2.5.6.1 Read input status(Func 02)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
100551(0226)	02	R	-	AL1 LED	0: OFF, 1: ON	-	-	
100552(0227)	02	R	-	AL2 LED				
100553(0228)	02	R	-	AL3 LED				
100554(0229)	02	R	-	AL4 LED				
100555(022A)	02	R	-	AL5 LED				
100556(022B)	02	R	-	AL6 LED				
100557(022C)	02	R	-	AL7 LED				
100558(022D)	02	R	-	AL8 LED				
100559(022E)	02	R	-	DI-1 input	0: OFF, 1: ON	-	-	
100560(022F)	02	R	-	DI-2 input				
100561(0230)	02	R	-	DI-3 input				
100562(0231)	02	R	-	DI-4 input				
100563(0232)	02	R	-	DI-5 input				
100564(0233)	02	R	-	DI-6 input				
100565(0234)	02	R	-	DI-7 input				
100566(0235)	02	R	-	DI-8 input				
100567(0236) to 100582(0245)	02	R	02 unit address parameter – Same as above 01 unit address					
100583(0246) to 100598(0255)	02	R	03 unit address parameter – Same as above 01 unit address					
100599(0256) to 100614(0265)	02	R	04 unit address parameter – Same as above 01 unit address					
100615(0266) to 100630(0275)	02	R	05 unit address parameter – Same as above 01 unit address					
100631(0276) to 100646(0285)	02	R	06 unit address parameter – Same as above 01 unit address					
100647(0286) to 100662(0295)	02	R	07 unit address parameter – Same as above 01 unit address					
100663(0296) to 100678(02A5)	02	R	08 unit address parameter – Same as above 01 unit address					
100679(02A6) to 100694(02B5)	02	R	09 unit address parameter – Same as above 01 unit address					
100695(02B6) to 100710(02C5)	02	R	10 unit address parameter – Same as above 01 unit address					
100711(02C6) to 100726(02D5)	02	R	11 unit address parameter – Same as above 01 unit address					
100727(02D6) to 100742(02E5)	02	R	12 unit address parameter – Same as above 01 unit address					
100743(02E6) to 100758(02F5)	02	R	13 unit address parameter – Same as above 01 unit address					
100759(02F6) to 100774(0305)	02	R	14 unit address parameter – Same as above 01 unit address					
100775(0306) to 100790(0315)	02	R	15 unit address parameter – Same as above 01 unit address					
100791(0316) to 100806(0325)	02	R	16 unit address parameter – Same as above 01 unit address					
100807(0326) to 100850(0351)	02	R	Reserved					

2.5.6.2 Read input register(Func 04)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
301101(044C)	04	R	-	Product number H	-	-	0	
301102(044D)	04	R	-	Product number L	-	-	0	
301103(044E)	04	R	-	Hardware version	-	-	100	
301104(044F)	04	R	-	Software version	-	-	100	
301105(0450)	04	R	-	Model name 1	-	-	″TM″	Product name
301106(0451)	04	R	-	Model name 2	-	-	″HE″	Option
301107(0452)	04	R	-	Model name 3	-	-	″-8″	Input/Output
301108(0453)	04	R	-	Model name 4	-	-	″2R″	Power voltage/Output
301109(0454)	04	R	-	Model name 5	-	-	“E”	Structure
301110(0455)	04	R	-	Model name 6	-	-	“ ”	
301111(0456)	04	R	-	Model name 7	-	-	“ “	
301112(0457)	04	R	-	Model name 8	-	-	“ “	
301113(0458)	04	R	-	Model name 9	-	-	“ “	
301114(0459)	04	R	-	Model name 10	-	-	“ “	
301115(045A)	04	R	Reserved					
301116(045B)	04	R	Reserved					
301117(045C)	04	R	Reserved					
301118(045D)	04	R	-	Coil status Start Address	-	-	0	
301119(045E)	04	R	-	Coil status Quantity	-	-	0	
301120(045F)	04	R	-	Input status Start Address	-	-	0	
301121(0460)	04	R	-	Input status Quantity	-	-	0	
301122(0461)	04	R	-	Holding Register Start Address	-	-	0	
301123(0462)	04	R	-	Holding Register Quantity	-	-	0	
301124(0463)	04	R	-	Input Register Start Address	-	-	0	
301125(0464)	04	R	-	Input Register Quantity	-	-	0	
301126(0465)	04	R	-	Channel Quantity	-	-	0	
301127(0466) to 301152(047F)	04	R	02 unit address parameter – Same as above 01 unit address					
301153(0480) to 301178(0499)	04	R	03 unit address parameter – Same as above 01 unit address					
301179(049A) to 301204(04B3)	04	R	04 unit address parameter – Same as above 01 unit address					
301205(04B4) to 301230(04CD)	04	R	05 unit address parameter – Same as above 01 unit address					
301231(04CE) to 301256(04E7)	04	R	06 unit address parameter – Same as above 01 unit address					
301257(04E8) to 301282(0501)	04	R	07 unit address parameter – Same as above 01 unit address					
301283(0502) to 301308(051B)	04	R	08 unit address parameter – Same as above 01 unit address					
301309(051C) to 301334(0535)	04	R	09 unit address parameter – Same as above 01 unit address					
301335(0536) to 301360(054F)	04	R	10 unit address parameter – Same as above 01 unit address					
301361(0550) to 301386(0569)	04	R	11 unit address parameter – Same as above 01 unit address					
301387(056A) to 301412(0583)	04	R	12 unit address parameter – Same as above 01 unit address					

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
301413(0584) to 301438(059D)	04	R	13 unit address parameter – Same as above 01 unit address					
301439(059E) to 301464(05B7)	04	R	14 unit address parameter – Same as above 01 unit address					
301465(05B8) to 301490(05D1)	04	R	15 unit address parameter – Same as above 01 unit address					
301491(05D2) to 301516(05EB)	04	R	16 unit address parameter – Same as above 01 unit address					
301517(05EC) to 301550(060D)	04	R	Reserved					
310801(2A30)	04	R	-	AL1 LED	0: OFF, 1: ON	-	-	Bit0
			-	AL2 LED				Bit1
			-	AL3 LED				Bit2
			-	AL4 LED				Bit3
			-	AL5 LED				Bit4
			-	AL6 LED				Bit5
			-	AL7 LED				Bit6
			-	AL8 LED				Bit7
			-	DI-1 input	0: OFF, 1: ON	-	-	Bit8
			-	DI-2 input	0: OFF, 1: ON			Bit9
			-	DI-3 input	0: OFF, 1: ON			Bit10
			-	DI-4 input	0: OFF, 1: ON			Bit11
			-	DI-5 input	0: OFF, 1: ON			Bit12
			-	DI-6 input	0: OFF, 1: ON			Bit13
			-	DI-7 input	0: OFF, 1: ON			Bit14
			-	DI-8 input	0: OFF, 1: ON			Bit15
310802(2A31)	04	R	02 unit address parameter – Same as above 01 unit address					
310803(2A32)	04	R	03 unit address parameter – Same as above 01 unit address					
310804(2A33)	04	R	04 unit address parameter – Same as above 01 unit address					
310805(2A34)	04	R	05 unit address parameter – Same as above 01 unit address					
310806(2A35)	04	R	06 unit address parameter – Same as above 01 unit address					
310807(2A36)	04	R	07 unit address parameter – Same as above 01 unit address					
310808(2A37)	04	R	08 unit address parameter – Same as above 01 unit address					
310809(2A38)	04	R	09 unit address parameter – Same as above 01 unit address					
310810(2A39)	04	R	10 unit address parameter – Same as above 01 unit address					
310811(2A3A)	04	R	11 unit address parameter – Same as above 01 unit address					
310812(2A3B)	04	R	12 unit address parameter – Same as above 01 unit address					
310813(2A3C)	04	R	13 unit address parameter – Same as above 01 unit address					
310814(2A3D)	04	R	14 unit address parameter – Same as above 01 unit address					
310815(2A3E)	04	R	15 unit address parameter – Same as above 01 unit address					
310816(2A3F)	04	R	16 unit address parameter – Same as above 01 unit address					
310817(2A40)	04	R	Unit Address	Comm. address	49 to 64	-	49	-
310818(2A41)	04	R	02 unit address parameter – Same as above 01 unit address					
310819(2A42)	04	R	03 unit address parameter – Same as above 01 unit address					
310820(2A43)	04	R	04 unit address parameter – Same as above 01 unit address					
310821(2A44)	04	R	05 unit address parameter – Same as above 01 unit address					
310822(2A45)	04	R	06 unit address parameter – Same as above 01 unit address					
310823(2A46)	04	R	07 unit address parameter – Same as above 01 unit address					
310824(2A47)	04	R	08 unit address parameter – Same as above 01 unit address					

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
310825(2A48)	04	R	09 unit address parameter – Same as above 01 unit address					
310826(2A49)	04	R	10 unit address parameter – Same as above 01 unit address					
310827(2A4A)	04	R	11 unit address parameter – Same as above 01 unit address					
310828(2A4B)	04	R	12 unit address parameter – Same as above 01 unit address					
310829(2A4C)	04	R	13 unit address parameter – Same as above 01 unit address					
310830(2A4D)	04	R	14 unit address parameter – Same as above 01 unit address					
310831(2A4E)	04	R	15 unit address parameter – Same as above 01 unit address					
310832(2A4F)	04	R	16 unit address parameter – Same as above 01 unit address					
310833(2A50) to 310850(2A61)	04	R	Reserved					

2.5.6.3 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple registers(Func 16)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
442601(A668)	03/06/16	R/W	CH1 Alarm Logic	CH1 alarm output logic operation	0: OR, 1: AND	-	0: OR	Operating (Output Operation) group
442602(A669)	03/06/16	R/W	CH2 Alarm Logic	CH2 alarm output logic operation				
442603(A66A)	03/06/16	R/W	CH3 Alarm Logic	CH3 alarm output logic operation				
442604(A66B)	03/06/16	R/W	CH4 Alarm Logic	CH4 alarm output logic operation				
442605(A66C)	03/06/16	R/W	CH5 Alarm Logic	CH5 alarm output logic operation				
442606(A66D)	03/06/16	R/W	CH6 Alarm Logic	CH6 alarm output logic operation				
442607(A66E)	03/06/16	R/W	CH7 Alarm Logic	CH7 alarm output logic operation				
442608(A66F)	03/06/16	R/W	CH8 Alarm Logic	CH8 alarm output logic operation				
442609(A670)	03/06/16	R/W	CH1 Alarm NO/NC	CH1 alarm output contact type	0: NO, 1: NC	-	0: NO	
442610(A671)	03/06/16	R/W	CH2 Alarm NO/NC	CH2 alarm output contact type				
442611(A672)	03/06/16	R/W	CH3 Alarm NO/NC	CH3 alarm output contact type				
442612(A673)	03/06/16	R/W	CH4 Alarm NO/NC	CH4 alarm output contact type				
442613(A674)	03/06/16	R/W	CH5 Alarm NO/NC	CH5 alarm output contact type				
442614(A675)	03/06/16	R/W	CH6 Alarm NO/NC	CH6 alarm output contact type				
442615(A676)	03/06/16	R/W	CH7 Alarm NO/NC	CH7 alarm output contact type				
442616(A677)	03/06/16	R/W	CH8 Alarm NO/NC	CH8 alarm output contact type				
442617(A678) to 442630(A685)	03/06/16	R/W	Reserved					
442631(A686)	03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200	bps	1: 9600	Option Setting (Communication Setting) group
442632(A687)	03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD	-	0: NONE	
442633(A688)	03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1: 2	
442634(A689)	03/06/16	R/W	Response Waiting Time	Communication response wait time	5 to 99	ms	20	

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
442635(A68A)	03/06/16	R/W	Communication Write	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
442636(A68B)	03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
442637(A68C) to 442660(A6A3)	03/06/16	R/W	Reserved					

※ When setting unit address 02 to 16, parameter address assignment

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
442661(A6A4) to 442720(A6DF)	03/06/16	R/W	02 unit address parameter – Same as above 01 unit address					
442721(A6E0) to 442780(A71B)	03/06/16	R/W	03 unit address parameter – Same as above 01 unit address					
442781(A71C) to 442840(A757)	03/06/16	R/W	04 unit address parameter – Same as above 01 unit address					
442841(A758) to 442900(A793)	03/06/16	R/W	05 unit address parameter – Same as above 01 unit address					
442901(A794) to 442960(A7CF)	03/06/16	R/W	06 unit address parameter – Same as above 01 unit address					
442961(A794) to 443020(A80B)	03/06/16	R/W	07 unit address parameter – Same as above 01 unit address					
443021(A80C) to 443080(A847)	03/06/16	R/W	08 unit address parameter – Same as above 01 unit address					
443081(A848) to 443140(A883)	03/06/16	R/W	09 unit address parameter – Same as above 01 unit address					
443141(A884) to 443200(A8BF)	03/06/16	R/W	10 unit address parameter – Same as above 01 unit address					
443201(A8C0) to 443260(A8FB)	03/06/16	R/W	11 unit address parameter – Same as above 01 unit address					
443261(A8FC) to 443320(A937)	03/06/16	R/W	12 unit address parameter – Same as above 01 unit address					
443321(A938) to 443380(A973)	03/06/16	R/W	13 unit address parameter – Same as above 01 unit address					
443381(A974) to 443440(A9AF)	03/06/16	R/W	14 unit address parameter – Same as above 01 unit address					
443441(A9B0) to 443500(A9EB)	03/06/16	R/W	15 unit address parameter – Same as above 01 unit address					
443501(A9EC) to 443560(AA27)	03/06/16	R/W	16 unit address parameter – Same as above 01 unit address					

2.5.7 TMHCT

2.5.7.1 Read input register(Func 04)

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
301551(060E)	04	R	-	Product number H	-	-	0	
301552(060F)	04	R	-	Product number L	-	-	0	
301553(0610)	04	R	-	Hardware version	-	-	100	
301554(0611)	04	R	-	Software version	-	-	100	
301555(0612)	04	R	-	Model name 1	-	-	“TM”	Product name
301556(0613)	04	R	-	Model name 2	-	-	“H□”	Channel
301557(0614)	04	R	-	Model name 3	-	-	“-□”	Option
301558(0615)	04	R	-	Model name 4	-	-	“□□”	Power voltage/Control output
301559(0616)	04	R	-	Model name 5	-	-	“□”	Structure
301560(0617)	04	R	-	Model name 6	-	-	“ ”	
301561(0618)	04	R	-	Model name 7	-	-	“ “	
301562(0619)	04	R	-	Model name 8	-	-	“ “	
301563(061A)	04	R	-	Model name 9	-	-	“ “	
301564(061B)	04	R	-	Model name 10	-	-	“ “	
301565(061C)	04	R	Reserved					
301566(061D)	04	R	Reserved					
301567(061E)	04	R	Reserved					
301568(061F)	04	R	-	Coil status Start Address	-	-	0	
301569(0620)	04	R	-	Coil status Quantity	-	-	0	
301570(0621)	04	R	-	Input status Start Address	-	-	0	
301571(0622)	04	R	-	Input status Quantity	-	-	0	
301572(0623)	04	R	-	Holding Register Start Address	-	-	0	
301573(0624)	04	R	-	Holding Register Quantity	-	-	0	
301574(0625)	04	R	-	Input Register Start Address	-	-	0	
301575(0626)	04	R	-	Input Register Quantity	-	-	0	
301576(0627)	04	R	-	Channel Quantity	-	-	0	
301577(0628) to 301602(0641)	04	R	02 unit address parameter – Same as above 01 unit address					
301603(0642) to 301628(065B)	04	R	03 unit address parameter – Same as above 01 unit address					
301629(065C) to 301654(0675)	04	R	04 unit address parameter – Same as above 01 unit address					
301655(0676) to 301680(068F)	04	R	05 unit address parameter – Same as above 01 unit address					
301681(0690) to 301706(06A9)	04	R	06 unit address parameter – Same as above 01 unit address					
301707(06AA) to 301732(06C3)	04	R	07 unit address parameter – Same as above 01 unit address					
301733(06C4) to 301758(06DD)	04	R	08 unit address parameter – Same as above 01 unit address					
301759(06DE) to	04	R	09 unit address parameter – Same as above 01 unit address					

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
301784(06F7)								
301785(06F8) to 301810(0711)	04	R	10 unit address parameter – Same as above 01 unit address					
301811(0712) to 301836(072B)	04	R	11 unit address parameter – Same as above 01 unit address					
301837(072C) to 301862(0745)	04	R	12 unit address parameter – Same as above 01 unit address					
301863(0746) to 301888(075F)	04	R	13 unit address parameter – Same as above 01 unit address					
301889(0760) to 301914(0779)	04	R	14 unit address parameter – Same as above 01 unit address					
301915(077A) to 301940(0793)	04	R	15 unit address parameter – Same as above 01 unit address					
301941(0794) to 301966(07AD)	04	R	16 unit address parameter – Same as above 01 unit address					
301967(07AE) to 302000(07CF)	04	R	Reserved					
310851(2A62)	04	R	CT1 Heater Current	CT1 input value monitoring	0.0 to 50.0	A	-	
310852(2A63)	04	R	CT2 Heater Current	CT2 input value monitoring				
310853(2A64)	04	R	CT3 Heater Current	CT3 input value monitoring				
310854(2A65)	04	R	CT4 Heater Current	CT4 input value monitoring				
310855(2A66)	04	R	CT5 Heater Current	CT5 input value monitoring				
310856(2A67)	04	R	CT6 Heater Current	CT6 input value monitoring				
310857(2A68)	04	R	CT7 Heater Current	CT7 input value monitoring				
310858(2A69)	04	R	CT8 Heater Current	CT8 input value monitoring				
310859(2A6A) to 310866(2A71)			66 unit address parameter – Same as above 01 unit address					
310867(2A72) to 310874(2A79)			67 unit address parameter – Same as above 01 unit address					
310875(2A7A) to 310882(2A81)			68 unit address parameter – Same as above 01 unit address					
310883(2A82) to 310890(2A89)			69 unit address parameter – Same as above 01 unit address					
310891(2A8A) to 310898(2A91)			70 unit address parameter – Same as above 01 unit address					
310899(2A92) to 310906(2A99)			71 unit address parameter – Same as above 01 unit address					
310907(2A9A) to 310914(2AA1)			72 unit address parameter – Same as above 01 unit address					
310915(2AA2) to 310922(2AA9)			73 unit address parameter – Same as above 01 unit address					
310923(2AAA) to 310930(2AB1)			74 unit address parameter – Same as above 01 unit address					
310931(2AB2) to 310938(2AB9)			75 unit address parameter – Same as above 01 unit address					
310939(2ABA) to 310946(2AC1)			76 unit address parameter – Same as above 01 unit address					
310947(2AC2) to 310954(2AC9)			77 unit address parameter – Same as above 01 unit address					
310955(2ACA) to 310962(2AD1)			78 unit address parameter – Same as above 01 unit address					
310963(2AD2) to 310970(2AD9)			79 unit address parameter – Same as above 01 unit address					
310971(2ADA) to			80 unit address parameter – Same as above 01 unit address					

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
310978(2AE1)								
310979(2AE2)	04	R	Unit Address	Comm. Address	65 to 80	-	65	
310980(2AE3)	04	R	66 unit address parameter – Same as above 01 unit address					
310981(2AE4)	04	R	67 unit address parameter – Same as above 01 unit address					
310982(2AE5)	04	R	68 unit address parameter – Same as above 01 unit address					
310983(2AE6)	04	R	69 unit address parameter – Same as above 01 unit address					
310984(2AE7)	04	R	70 unit address parameter – Same as above 01 unit address					
310985(2AE8)	04	R	71 unit address parameter – Same as above 01 unit address					
310986(2AE9)	04	R	72 unit address parameter – Same as above 01 unit address					
310987(2AEA)	04	R	73 unit address parameter – Same as above 01 unit address					
310988(2AEB)	04	R	74 unit address parameter – Same as above 01 unit address					
310989(2AEC)	04	R	75 unit address parameter – Same as above 01 unit address					
310990(2AED)	04	R	76 unit address parameter – Same as above 01 unit address					
310991(2AEE)	04	R	77 unit address parameter – Same as above 01 unit address					
310992(2AEF)	04	R	78 unit address parameter – Same as above 01 unit address					
310993(2AF0)	04	R	79 unit address parameter – Same as above 01 unit address					
310994(2AF1)	04	R	80 unit address parameter – Same as above 01 unit address					
310995(2AF2) to 311000(2AF7)	04	R	Reserved					

2.5.7.2 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple registers(Func 16)

(1) Common(common parameter setting) group

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
443561(AA28)	03/06/16	R/W	Bit Per Second	Communication speed	0: 4800, 1: 9600, 2: 19200, 3: 38400, 4: 115200	bps	1: 9600	
443562(AA29)	03/06/16	R/W	Parity Bit	Communication parity bit	0: NONE, 1: EVEN, 2: ODD	-	0: NONE	
443563(AA2A)	03/06/16	R/W	Stop Bit	Communication stop bit	0: 1, 1: 2	bit	1: 2	
443564(AA2B)	03/06/16	R/W	Response Waiting Time	Communication response wait time	5 to 99	ms	20	
443565(AA2C)	03/06/16	R/W	Communication Write	Communication writing enable/disable	0: ENABLE, 1: DISABLE	-	0: ENABLE	
443566(AA2D)	03/06/16	R/W	Parameter Initialize	Parameter reset	0: NO, 1: YES	-	0: NO	
443567(AA2E)	03/06/16	R/W	CT Input Value Indication Lamp1	CT input value indicator 1	0: CT1, 1: CT2, 2: CT3, 3: CT4, 4: CT5, 5: CT6, 6: CT7, 7: CT8	-	0: CT1	
443568(AA2F)	03/06/16	R/W	CT Input Value Indication Lamp2	CT input value indicator 2			1: CT2	
443569(AA30) to 443590(AA45)	03/06/16	R/W	Reserved					

※ When setting unit address 66 to 80, parameter address assignment

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
443591(AA46) to 443620(AA63)	03/06/16	R/W	66 address parameter – Same as above 01 address					
443621(AA64) to 443650(AA81)	03/06/16	R/W	67 address parameter – Same as above 01 address					
443651(AA82) to 443680(AA9F)	03/06/16	R/W	68 address parameter – Same as above 01 address					
443681(AAA0) to 443710(AABD)	03/06/16	R/W	69 address parameter – Same as above 01 address					
443711(AABE) to 443740(AADB)	03/06/16	R/W	70 address parameter – Same as above 01 address					
443741(AADC) to 443770(AAF9)	03/06/16	R/W	71 address parameter – Same as above 01 address					
443771(AAFA) to 443800(AB17)	03/06/16	R/W	72 address parameter – Same as above 01 address					
443801(AB18) to 443830(AB35)	03/06/16	R/W	73 address parameter – Same as above 01 address					
443831(AB36) to 443860(AB53)	03/06/16	R/W	74 address parameter – Same as above 01 address					
443861(AB54) to 443890(AB71)	03/06/16	R/W	75 address parameter – Same as above 01 address					
443891(AB72) to 443920(AB8F)	03/06/16	R/W	76 address parameter – Same as above 01 address					
443921(AB90) to 443950(ABAD)	03/06/16	R/W	77 address parameter – Same as above 01 address					
443951(ABAE) to 443980(ABCB)	03/06/16	R/W	78 address parameter – Same as above 01 address					
443981(ABCC) to 444010(ABE9)	03/06/16	R/W	79 address parameter – Same as above 01 address					
444011(ABEA) to 444040(AC07)	03/06/16	R/W	80 address parameter – Same as above 01 address					

2.5.8 User group

This function is used for setting frequently used parameters quickly and easily by registering to user group. Each module can be set individually, and up to 30 parameters can be configured per 1 unit address.

Note

Parameter settings for ethernet module and PLC ladderless module are different from each other. Refer to user group chapter for each group.

2.5.8.1 Setting guide

Before using user group, configure following guide completely.

(1) Number of parameter

It is possible to set the effective number of parameters up to 30ea per 1 unit address.

※ Refer to '2.5.8.2 User group address' to check all address of parameter.

- Unit address

Module \ SW		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
TMH2/4		16	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
		32	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
TMHA		48	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
TMHE		64	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
TMHCT		80	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
TMHC		16	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15

※ In case of TMH2/4, assign unit address by combinating unit address setting switch (SW1) and unit address group switch (SW2).

※ For the details of assigning unit address and unit description, refer to the sections in "User manual".

(2) Using paramter

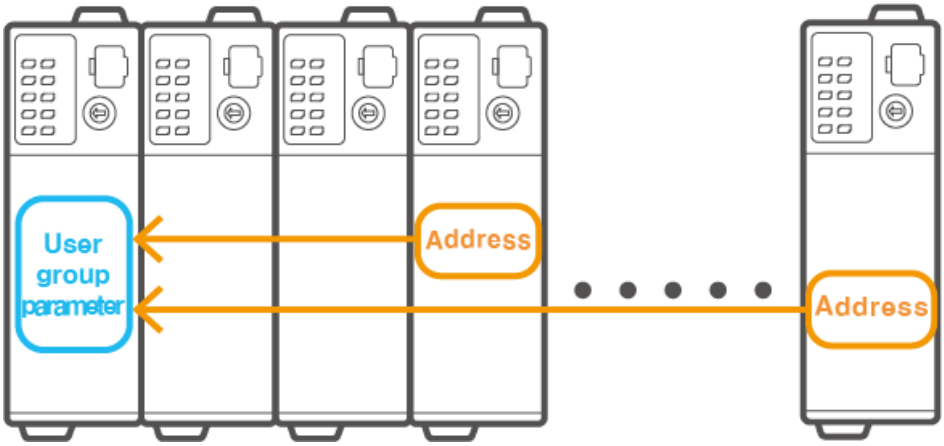
Enter the parameter address except 10^5 digit number up to the maximum number of parameter (30) per 1 unit address'.
(E.g.: TMH4 Control output operation mode address is 400124. Enter as 40124.)

※ Set unique address of each module ('2.1 TMH2/4 Series [Control module] to 2.4 TMHCT [Option: CT input module]') not TMHC parameters.

※ Refer to '2.5.8.2 User group address' to check all address of parameter data.

Ex.

Enter 40124, excluding 10^5 digit number from the original address of the TMH4 "Control output operation mode" parameter 400124, into No.1 user group parameter address 450001 of TMH2/4.



(3) Parameter data

Set the data corresponding to the parameter address set in "Using parameter".

※ Refer to '2.5.8.2 User group address' to check all address of parameter data.

2.5.8.2 User group address

(1) TMH2/4

- Using parameter setting

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
450001(C350)		03/06/16	R/W	Set number of parameter - 01 unit address		Parameter address	-	0	
450002(C351)		03/06/16	R/W	Set number of parameter - 02 unit address		Parameter address	-	0	
450003(C352)		03/06/16	R/W	Set number of parameter - 03 unit address		Parameter address	-	0	
450004(C353)		03/06/16	R/W	Set number of parameter - 04 unit address		Parameter address	-	0	
450005(C354)		03/06/16	R/W	Set number of parameter - 05 unit address		Parameter address	-	0	
450006(C355)		03/06/16	R/W	Set number of parameter - 06 unit address		Parameter address	-	0	
450007(C356)		03/06/16	R/W	Set number of parameter - 07 unit address		Parameter address	-	0	
450008(C357)		03/06/16	R/W	Set number of parameter - 08 unit address		Parameter address	-	0	
450009(C358)		03/06/16	R/W	Set number of parameter - 09 unit address		Parameter address	-	0	
450010(C359)		03/06/16	R/W	Set number of parameter - 10 unit address		Parameter address	-	0	
450011(C35A)		03/06/16	R/W	Set number of parameter - 11 unit address		Parameter address	-	0	
450012(C35B)		03/06/16	R/W	Set number of parameter - 12 unit address		Parameter address	-	0	
450013(C35C)		03/06/16	R/W	Set number of parameter - 13 unit address		Parameter address	-	0	
450014(C35D)		03/06/16	R/W	Set number of parameter - 14 unit address		Parameter address	-	0	
450015(C35E)		03/06/16	R/W	Set number of parameter - 15 unit address		Parameter address	-	0	
450016(C35F)		03/06/16	R/W	Set number of parameter - 16 unit address		Parameter address	-	0	
450017(C360)		03/06/16	R/W	Set number of parameter - 17 unit address		Parameter address	-	0	
450018(C361)		03/06/16	R/W	Set number of parameter - 18 unit address		Parameter address	-	0	
450019(C362)		03/06/16	R/W	Set number of parameter - 19 unit address		Parameter address	-	0	
450020(C363)		03/06/16	R/W	Set number of parameter - 20 unit address		Parameter address	-	0	
450021(C364)		03/06/16	R/W	Set number of parameter - 21 unit address		Parameter address	-	0	
450022(C365)		03/06/16	R/W	Set number of parameter - 22 unit address		Parameter address	-	0	
450023(C366)		03/06/16	R/W	Set number of parameter - 23 unit address		Parameter address	-	0	
450024(C367)		03/06/16	R/W	Set number of parameter - 24 unit address		Parameter address	-	0	
450025(C368)		03/06/16	R/W	Set number of parameter - 25 unit address		Parameter address	-	0	
450026(C369)		03/06/16	R/W	Set number of parameter - 26 unit address		Parameter address	-	0	
450027(C36A)		03/06/16	R/W	Set number of parameter - 27 unit address		Parameter address	-	0	
450028(C36B)		03/06/16	R/W	Set number of parameter - 28 unit address		Parameter address	-	0	
450029(C36C)		03/06/16	R/W	Set number of parameter - 29 unit address		Parameter address	-	0	
450030(C36D)		03/06/16	R/W	Set number of parameter - 30 unit address		Parameter address	-	0	

- Parameter data setting

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
450031(C36E)		03/06/16	R/W	User group > Set 01 parameter		Set range of using parameter	-	0	
450032(C36F)		03/06/16	R/W	User group > Set 02 parameter		Set range of using parameter	-	0	
450033(C370)		03/06/16	R/W	User group > Set 03 parameter		Set range of using parameter	-	0	
450034(C371)		03/06/16	R/W	User group > Set 04 parameter		Set range of using parameter	-	0	
450035(C372)		03/06/16	R/W	User group > Set 05 parameter		Set range of using parameter	-	0	

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
450036(C373)		03/06/16	R/W	User group > Set 06 parameter		Set range of using parameter	-	0	
450037(C374)		03/06/16	R/W	User group > Set 07 parameter		Set range of using parameter	-	0	
450038(C375)		03/06/16	R/W	User group > Set 08 parameter		Set range of using parameter	-	0	
450039(C376)		03/06/16	R/W	User group > Set 09 parameter		Set range of using parameter	-	0	
450040(C377)		03/06/16	R/W	User group > Set 10 parameter		Set range of using parameter	-	0	
450041(C378)		03/06/16	R/W	User group > Set 11 parameter		Set range of using parameter	-	0	
450042(C379)		03/06/16	R/W	User group > Set 12 parameter		Set range of using parameter	-	0	
450043(C37A)		03/06/16	R/W	User group > Set 13 parameter		Set range of using parameter	-	0	
450044(C37B)		03/06/16	R/W	User group > Set 14 parameter		Set range of using parameter	-	0	
450045(C37C)		03/06/16	R/W	User group > Set 15 parameter		Set range of using parameter	-	0	
450046(C37D)		03/06/16	R/W	User group > Set 16 parameter		Set range of using parameter	-	0	
450047(C37E)		03/06/16	R/W	User group > Set 17 parameter		Set range of using parameter	-	0	
450048(C37F)		03/06/16	R/W	User group > Set 18 parameter		Set range of using parameter	-	0	
450049(C380)		03/06/16	R/W	User group > Set 19 parameter		Set range of using parameter	-	0	
450050(C381)		03/06/16	R/W	User group > Set 20 parameter		Set range of using parameter	-	0	
450051(C382)		03/06/16	R/W	User group > Set 21 parameter		Set range of using parameter	-	0	
450052(C383)		03/06/16	R/W	User group > Set 22 parameter		Set range of using parameter	-	0	
450053(C384)		03/06/16	R/W	User group > Set 23 parameter		Set range of using parameter	-	0	
450054(C385)		03/06/16	R/W	User group > Set 24 parameter		Set range of using parameter	-	0	
450055(C386)		03/06/16	R/W	User group > Set 25 parameter		Set range of using parameter	-	0	
450056(C387)		03/06/16	R/W	User group > Set 26 parameter		Set range of using parameter	-	0	
450057(C388)		03/06/16	R/W	User group > Set 27 parameter		Set range of using parameter	-	0	
450058(C389)		03/06/16	R/W	User group > Set 28 parameter		Set range of using parameter	-	0	
450059(C38A)		03/06/16	R/W	User group > Set 29 parameter		Set range of using parameter	-	0	
450060(C38B)		03/06/16	R/W	User group > Set 30 parameter		Set range of using parameter	-	0	

- When setting unit address 02 to 16, parameter address assignment

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
450061(C38C) ~ 450120(C3C7)		03/06/16	R/W	02 unit address parameter – Same as above 01 unit address					
450121(C3C8) ~ 450180(C403)		03/06/16	R/W	03 unit address parameter – Same as above 01 unit address					
450181(C404) ~ 450240(C43F)		03/06/16	R/W	04 unit address parameter – Same as above 01 unit address					
450241(C440) ~ 450300(C47B)		03/06/16	R/W	05 unit address parameter – Same as above 01 unit address					
450301(C47C) ~ 450360(C4B7)		03/06/16	R/W	06 unit address parameter – Same as above 01 unit address					
450361(C4B8) ~ 450420(C4F3)		03/06/16	R/W	07 unit address parameter – Same as above 01 unit address					
450421(C4F4) ~ 450480(C52F)		03/06/16	R/W	08 unit address parameter – Same as above 01 unit address					
450481(C530) ~ 450540(C56B)		03/06/16	R/W	09 unit address parameter – Same as above 01 unit address					
450541(C56C) ~ 450600(C5A7)		03/06/16	R/W	10 unit address parameter – Same as above 01 unit address					
450601(C5A8) ~ 450660(C5E3)		03/06/16	R/W	11 unit address parameter – Same as above 01 unit address					
450661(C5E4) ~ 450720(C61F)		03/06/16	R/W	12 unit address parameter – Same as above 01 unit address					
450721(C620) ~ 450780(C65B)		03/06/16	R/W	13 unit address parameter – Same as above 01 unit address					
450781(C65C) ~ 450840(C697)		03/06/16	R/W	14 unit address parameter – Same as above 01 unit address					
450841(C698) ~ 450900(C6D3)		03/06/16	R/W	15 unit address parameter – Same as above 01 unit address					
450901(C6D4) ~ 450960(C70F)		03/06/16	R/W	16 unit address parameter – Same as above 01 unit address					

(2) TMHA

- When setting unit address 33 to 48, parameter address assignment

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
450961(C710) ~ 451020(C74B)	03/06/16	R/W	33 unit address parameter – Same as above 01 unit address					
451021(C74C) ~ 451080(C787)	03/06/16	R/W	34 unit address parameter – Same as above 01 unit address					
451081(C788) ~ 451140(C7C3)	03/06/16	R/W	35 unit address parameter – Same as above 01 unit address					
451141(C7C4) ~ 451200(C7FF)	03/06/16	R/W	36 unit address parameter – Same as above 01 unit address					
451201(C800) ~ 451260(C83B)	03/06/16	R/W	37 unit address parameter – Same as above 01 unit address					
451261(C83C) ~ 451320(C877)	03/06/16	R/W	38 unit address parameter – Same as above 01 unit address					
451321(C878) ~ 451380(C8B3)	03/06/16	R/W	39 unit address parameter – Same as above 01 unit address					
451381(C8B4) ~ 451440(C8EF)	03/06/16	R/W	40 unit address parameter – Same as above 01 unit address					
451441(C8F0) ~ 451500(C92B)	03/06/16	R/W	41 unit address parameter – Same as above 01 unit address					
451501(C92C) ~ 451560(C967)	03/06/16	R/W	42 unit address parameter – Same as above 01 unit address					
451561(C968) ~ 451620(C9A3)	03/06/16	R/W	43 unit address parameter – Same as above 01 unit address					
451621(C9A4) ~ 451680(C9DF)	03/06/16	R/W	44 unit address parameter – Same as above 01 unit address					
451681(C9E0) ~ 451740(CA1B)	03/06/16	R/W	45 unit address parameter – Same as above 01 unit address					
451741(CA1C) ~ 451800(CA57)	03/06/16	R/W	46 unit address parameter – Same as above 01 unit address					
451801(CA58) ~ 451860(CA93)	03/06/16	R/W	47 unit address parameter – Same as above 01 unit address					
451861(CA94) ~ 451920(CACF)	03/06/16	R/W	48 unit address parameter – Same as above 01 unit address					

(3) TMHE

- When setting unit address 49 to 64, parameter address assignment

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
451921(CAD0) ~ 451980(CB0B)	03/06/16	R/W	49 unit address parameter – Same as above 01 unit address					
451981(CB0C) ~ 452040(CB47)	03/06/16	R/W	50 unit address parameter – Same as above 01 unit address					
452041(CB48) ~ 452100(CB83)	03/06/16	R/W	51 unit address parameter – Same as above 01 unit address					
452101(CB84) ~ 452160(CBBF)	03/06/16	R/W	52 unit address parameter – Same as above 01 unit address					
452161(CBC0) ~ 452220(CBFB)	03/06/16	R/W	53 unit address parameter – Same as above 01 unit address					
452221(CBFC) ~ 452280(CC37)	03/06/16	R/W	54 unit address parameter – Same as above 01 unit address					
452281(CC38) ~ 452340(CC73)	03/06/16	R/W	55 unit address parameter – Same as above 01 unit address					
452341(CC74) ~ 452400(CCAF)	03/06/16	R/W	56 unit address parameter – Same as above 01 unit address					
452401(CCB0) ~ 452460(CCEB)	03/06/16	R/W	57 unit address parameter – Same as above 01 unit address					
452461(CCEC) ~ 452520(CD27)	03/06/16	R/W	58 unit address parameter – Same as above 01 unit address					
452521(CD28) ~ 452580(CD63)	03/06/16	R/W	59 unit address parameter – Same as above 01 unit address					
452581(CD64) ~ 452640(CD9F)	03/06/16	R/W	60 unit address parameter – Same as above 01 unit address					
452641(CDA0) ~ 452700(CDDB)	03/06/16	R/W	61 unit address parameter – Same as above 01 unit address					
452701(CDDC) ~ 452760(CE17)	03/06/16	R/W	62 unit address parameter – Same as above 01 unit address					
452761(CE18) ~ 452820(CE53)	03/06/16	R/W	63 unit address parameter – Same as above 01 unit address					
452821(CE54) ~ 452880(CE8F)	03/06/16	R/W	64 unit address parameter – Same as above 01 unit address					

(4) TMHCT

- When setting unit address 65 to 80, parameter address assignment

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
452881(CE90) ~ 452940(CECB)	03/06/16	R/W	65 unit address parameter – Same as above 01 unit address					
452941(CECC) ~ 453000(CF07)	03/06/16	R/W	66 unit address parameter – Same as above 01 unit address					
453001(CF08) ~ 453060(CF43)	03/06/16	R/W	67 unit address parameter – Same as above 01 unit address					
453061(CF44) ~ 453120(CF7F)	03/06/16	R/W	68 unit address parameter – Same as above 01 unit address					
453121(CF80) ~ 453180(CFBB)	03/06/16	R/W	69 unit address parameter – Same as above 01 unit address					
453181(CFBC) ~ 453240(CFF7)	03/06/16	R/W	70 unit address parameter – Same as above 01 unit address					
453241(CFF8) ~ 453300(D033)	03/06/16	R/W	71 unit address parameter – Same as above 01 unit address					
453301(D034) ~ 453360(D06F)	03/06/16	R/W	72 unit address parameter – Same as above 01 unit address					
453361(D070) ~ 453420(D0AB)	03/06/16	R/W	73 unit address parameter – Same as above 01 unit address					
453421(D0AC) ~ 453480(D0E7)	03/06/16	R/W	74 unit address parameter – Same as above 01 unit address					
453481(D0E8) ~ 453540(D123)	03/06/16	R/W	75 unit address parameter – Same as above 01 unit address					
453541(D124) ~ 453600(D15F)	03/06/16	R/W	76 unit address parameter – Same as above 01 unit address					
453601(D160) ~ 453660(D19B)	03/06/16	R/W	77 unit address parameter – Same as above 01 unit address					
453661(D19C) ~ 453720(D1D7)	03/06/16	R/W	78 unit address parameter – Same as above 01 unit address					
453721(D1D8) ~ 453780(D213)	03/06/16	R/W	79 unit address parameter – Same as above 01 unit address					
453781(D214) ~ 453840(D24F)	03/06/16	R/W	80 unit address parameter – Same as above 01 unit address					

2.6 TMHC [Communication: PLC ladderless]

2.6.1 Read input register(Func 04)

No(Address) Expended serial	Func	R/W	Parameter		Description	Set range	Unit	Default	Note
300083(0053)	04	R	Communication Status		Check communication status	ON/OFF	-	-	
300084(0054)	04	R	Communication Flag		Communication Flag	ON/OFF	-	-	
300085(0055)	04	R	PLC Error code	PLC register R/W error	Error code of PLC ladderless communication	ON/OFF	-	-	Bit: 0
		R		Slave comm timeout		ON/OFF	-	-	Bit: 1
		R		Internal comm error		ON/OFF	-	-	Bit: 2
		R		Master comm timeout		ON/OFF	-	-	Bit: 3
300086(0056)	04	R	TMHC recognition flag	Master TMHC	TMHC recognition flag	ON/OFF	-	-	Bit: 0
		R		Slave TMHC 1		ON/OFF	-	-	Bit: 1
		R		Slave TMHC 2		ON/OFF	-	-	Bit: 2
		R		Slave TMHC 3		ON/OFF	-	-	Bit: 3
300087(0057)	04	R	Connected Modules		Check the number of connected modules	0 to 31	-	-	
300088(0058)	04	R	Unit Address		Unit address of communication	01 to 31	-	01	
300101(0064)	04	R	-		Product number H	-	-		
300102(0065)	04	R	-		Product number L	-	-		
300103(0066)	04	R	-		Hardware version	-	-		
300104(0067)	04	R	-		Software version	-	-		
300105(0068)	04	R	-		Model name 1	-	-	“TM”	
300106(0069)	04	R	-		Model name 2	-	-	“HC”	
300107(006A)	04	R	-		Model name 3	-	-	“-2”	
300108(006B)	04	R	-		Model name 4	-	-	“2□”	□ → S/L/E
300109(006C)	04	R	-		Model name 5	-	-	“E ”	
300110(006D)	04	R	-		Model name 6	-	-	“ ”	
300111(006E)	04	R	-		Model name 7	-	-	“ “	
300112(006F)	04	R	-		Model name 8	-	-	“ “	
300113(0070)	04	R	-		Model name 9	-	-	“ “	
300114(0071)	04	R	-		Model name 10	-	-	“ “	
300116(0073)	04	R	Reserved						
300116(0073)	04	R	Reserved						
300117(0074)	04	R	Reserved						
300118(0075)	04	R	-		Coil status Start Address	-	-	0	
300119(0076)	04	R	-		Coil status Quantity	-	-	0	
300120(0077)	04	R	-		Input status Start Address	-	-	0	
300121(0078)	04	R	-		Input status Quantity	-	-	0	
300122(0079)	04	R	-		Holding Register Start Address	-	-	0	
300123(007A)	04	R	-		Holding Register Quantity	-	-	0	

No(Address) Expended serial	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
300124(007B)	04	R	-	Input Register Start Address	-	-	0	
300125(007C)	04	R	-	Input Register Quantity	-	-	0	
300126(007D)	04	R	-	Channel Quantity	-	-	0	
300127(007E) to 300200(00C7)	04	Reserved						

※ Bit data of 300085(0055) address

Bit F	Bit E	Bit D	Bit C	Bit B	Bit A	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
-	-	-	-	-	-	-	-	-	-	-	-	Master comm timeout	Internal comm error	Slave comm timeout	PLC register R/W error
0	0	0	0	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1
1 byte								1 byte							

※ Bit data of 300085(0055) address

Bit F	Bit E	Bit D	Bit C	Bit B	Bit A	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
-	-	-	-	-	-	-	-	-	-	-	-	Slave TMHC 3	Slave TMHC 2	Slave TMHC 1	Master TMHC
0	0	0	0	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1
1 byte								1 byte							

2.6.2 Read holding register(Func 03) / Preset single register(Func 06) / Preset multiple register(Func 16)

2.6.2.1 Communication setting group 3 [PLC ladderless communication]

No(Address) Extended serial	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
400301(012C)	03/06/16	R/W	Protocol 1	Select the protocol of communication port 1	0: MODBUS, 1: MASTERK, 2: GLOFA, 3: XGT, 4: MELSEC1, 5: MELSEC2, 6: SYSMAC	-	MODBUS	
400302(012D)	03/06/16	R/W	Station number	Select the PLC station number	0 to 31 : 00 to 31	-	0	
400303(012E)	03/06/16	R/W	CPU number	Select the CPU number	MITSUBISHI MELSEC series, : 0 to 255	-	255	
400304(012F)	03/06/16	R/W	Register type	Select the PLC register type	MITSUBISHI MELSEC series 0: D register (Data register) 1: W register (File register) 2: W register (Link register) 3: ZR register (When R register exceeds address 32767, Serial Number Access Method register), in “QnA-compatible 3C frame (format 4)” use only	-	0	
					OMRON SYSMAC series 0: DM register (Data memory) 1to13: EM register (Extended data memory), specifying bank No. (bank No. +10) 14: EM register (Extended data memory), specifying bank No.			
					LSIS MASTER-K 0: D register (Data register)			
					LSIS GLOFA-GM 0: MW register (Data register)			
					LSIS XGT/XGB 0: D register (Data register) 1: R register (File register)			
400305(0130)	03/06/16	R/W	Register start number_High	Set the register start number (upper 4bits)	0 to 15: MITSUBISHI MELSEC series, “QnA-compatible 3C frame (format 4)” use only. Set if ZR register exceeds 65535.	-	0	
400306(0131)	03/06/16	R/W	Register start number_Low	Set the register start number (lower 4bits)	MITSUBISHI MELSEC series [A-compatible 1C frame (format 4) ACPU common command (WR/WW)] OMRON SYSMAC series LSIS MASTER-K series LSIS GLOFA-GM series LSIS XGT/XGB series If set value over 9999, PLC register read/write error occurs (except W register).	0 to 9999	1000	
					MITSUBISHI MELSEC series [A-compatible 1C frame (format 4) AnA/AnUCPU common command (QR/QW) QnA-compatible 3C frame (format 4) command (0401/1401)]	0 to 65535		
400307(0132)	03/06/16	R/W	System data address bias	System data address bias	0 to 65535	-	2800	
400308(0133)	03/06/16	R/W	System data address bias Set	Select on/off system data	0: OFF, 1: ON	-	1: ON	

No(Address) Extended serial	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
				address bias				
400309(0134)	03/06/16	R/W	PLC communication start time	Set PLC communication start time	1 to 255	SEC	10	
400310(0135)	03/06/16	R/W	All Run/Stop	All Run/Stop	0: All Run, 1: All Stop, 2: Select	-	2	
400311(0136)	03/06/16	R/W	All Autotuning Execute	All Autotuning Execute	0: All Stop, 1: All execution, 2: Select	-	2	
400312(0137) to 400400(018F)	03/06/16	R/W	Reserved					

2.6.2.2 PLC masking group

- Monitoring group

No(Address)	R/W	Parameter	Description	Set range	Unit	Default	Note
400401(0190)	R/W	Present Value	Masking present value	0 : OFF 1 : ON	-	0 : OFF	TMH4/2 monitoring group
400402(0191)	R/W	Dot	Masking dot position of sensor input value	0 : OFF 1 : ON	-	0 : OFF	
400403(0192)	R/W	Unit	Masking temperature unit of sensor input	0 : OFF 1 : ON	-	0 : OFF	
400404(0193)	R/W	Set Value	Masking current set value	0 : OFF 1 : ON	-	0 : OFF	
400405(0194)	R/W	Heating_MV	Masking heating MV	0 : OFF 1 : ON	-	0 : OFF	
400406(0195)	R/W	Cooling_MV	Masking cooling MV	0 : OFF 1 : ON	-	0 : OFF	
400407(0196)	R/W	DI	Masking digital input	0 : OFF 1 : ON	-	0 : OFF	
400408(0197)	R/W	CT_Heater Current	Masking CT heater current	0 : OFF 1 : ON	-	0 : OFF	
400409(0198)	R/W	Present Value	Masking present value	0 : OFF 1 : ON	-	0 : OFF	TMHA Monitoring group
400410(0199)	R/W	Dot	Masking dot position of sensor input	0 : OFF 1 : ON	-	0 : OFF	
400411(019A)	R/W	Unit	Masking temperature unit of sensor input	0 : OFF 1 : ON	-	0 : OFF	
400412(019B)	R/W	Analog Output Value	Masking analog output value	0 : OFF 1 : ON	-	0 : OFF	
400413(019C)	R/W	ALARM_ LED STATUS	Masking alarm led status	0 : OFF 1 : ON	-	0 : OFF	TMHE Monitoring group
400414(019D)	R/W	DI_ LED STATUS	Masking digital input led status	0 : OFF 1 : ON	-	0 : OFF	
400415(019E)	R/W	ALARM_STATUS	Masking alarm atatus	0 : OFF 1 : ON	-	0 : OFF	
400416(019F)	R/W	DI_STATUS	Masking digital input status	0 : OFF 1 : ON	-	0 : OFF	
400417(01A0)	R/W	CT Heater Current	Masking CT heater current	0 : OFF 1 : ON	-	0 : OFF	TMHCT Monitoring group

- Parameter setting group

No(Address)	R/W	Parameter	Description	Set range	Unit	Default	Note
400418(01A1)	R/W	Heating_MV	Manipulated variable of heating output	0 : OFF 1 : ON	-	0 : OFF	TMH4/2 Parameter setting group
400419(01A2)	R/W	Cooling_MV	Manipulated variable cooling output	0 : OFF 1 : ON	-	0 : OFF	
400420(01A3)	R/W	Auto-Manual Control	Select Auto/Manual control	0 : OFF 1 : ON	-	0 : OFF	
400421(01A4)	R/W	RUN/STOP	Control output run/stop	0 : OFF 1 : ON	-	0 : OFF	

No(Address)	R/W	Parameter	Description	Set range	Unit	Default	Note
400422(01A5)	R/W	Auto-Tuning Execute	auto-tuning Execution	0 : OFF 1 : ON	-	0 : OFF	
400423(01A6)	R/W	SV	Setting value	0 : OFF 1 : ON	-	0 : OFF	
400424(01A7)	R/W	Heating_ Proportinal Band	Proportinal band of heating control	0 : OFF 1 : ON	-	0 : OFF	
400425(01A8)	R/W	Cooling_ Proportinal Band	Proportinal band of cooling control	0 : OFF 1 : ON	-	0 : OFF	
400426(01A9)	R/W	Heating_Integral Time	Integral time of heating control	0 : OFF 1 : ON	-	0 : OFF	
400427(01AA)	R/W	Cooling_Integral Time	Integral time of cooling control	0 : OFF 1 : ON	-	0 : OFF	
400428(01AB)	R/W	Heating_Derivation Time	Derivation time of heating control	0 : OFF 1 : ON	-	0 : OFF	
400429(01AC)	R/W	Cooling_Derivation Time	Derivation time of cooling control	0 : OFF 1 : ON	-	0 : OFF	
400430(01AD)	R/W	Dead_Overlap band	Dead band of overlap band control	0 : OFF 1 : ON	-	0 : OFF	
400431(01AE)	R/W	Manual Reset	Manual Reset	0 : OFF 1 : ON	-	0 : OFF	
400432(01AF)	R/W	Heating_ON Hysteresis	ON hysteresis of heating control	0 : OFF 1 : ON	-	0 : OFF	
400433(01B0)	R/W	Heating_OFF Offset	OFF offset of heating control	0 : OFF 1 : ON	-	0 : OFF	
400434(01B1)	R/W	Cooling_ON Hysteresis	ON hysteresis of cooling control	0 : OFF 1 : ON	-	0 : OFF	
400435(01B2)	R/W	Cooling_OFF Offset	OFF offset of cooling control	0 : OFF 1 : ON	-	0 : OFF	
400436(01B3)	R/W	MV Low Limit	Low limit of manipulated variable	0 : OFF 1 : ON	-	0 : OFF	
400437(01B4)	R/W	MV High Limit	High limit of manipulated variable	0 : OFF 1 : ON	-	0 : OFF	
400438(01B5)	R/W	Input Bias	Input bias	0 : OFF 1 : ON	-	0 : OFF	
400439(01B6)	R/W	Input Digital Filter	Input digital filter	0 : OFF 1 : ON	-	0 : OFF	
400440(01B7)	R/W	SV Low Limit	Low limit of setting value	0 : OFF 1 : ON	-	0 : OFF	
400441(01B8)	R/W	SV High Limit	High limit of setting value	0 : OFF 1 : ON	-	0 : OFF	
400442(01B9)	R/W	Auto-Tuning Type	Auto-tuning type	0 : OFF 1 : ON	-	0 : OFF	
400443(01BA)	R/W	Heating_Control Time	Control time of heating control	0 : OFF 1 : ON	-	0 : OFF	
400444(01BB)	R/W	Cooling_Control Time	Control time of cooling control	0 : OFF 1 : ON	-	0 : OFF	
400445(01BC)	R/W	Event Low 1	Low limit 1 of alarm	0 : OFF 1 : ON	-	0 : OFF	
400446(01BD)	R/W	Event High 1	High limit 1 of alarm	0 : OFF 1 : ON	-	0 : OFF	
400447(01BE)	R/W	Event Low 2	Low limit 2 of alarm	0 : OFF 1 : ON	-	0 : OFF	
400448(01BF)	R/W	Event High 2	High limit 2 of alarm	0 : OFF 1 : ON	-	0 : OFF	
400449(01C0)	R/W	Event Low 3	Low limit 3 of alarm	0 : OFF 1 : ON	-	0 : OFF	
400450(01C1)	R/W	Event High 3	High limit 3 of alarm	0 : OFF 1 : ON	-	0 : OFF	
400451(01C2)	R/W	Event Low 4	Low limit 4 of alarm	0 : OFF 1 : ON	-	0 : OFF	
400452(01C3)	R/W	Event High 4	High limit 4 of alarm	0 : OFF 1 : ON	-	0 : OFF	
400453(01C4)	R/W	Input Bias	Input bias	0 : OFF 1 : ON	-	0 : OFF	TMHA Parameter setting group
400454(01C5)	R/W	Input Digital Filter	Input digital filter	0 : OFF 1 : ON	-	0 : OFF	
400455(01C6)	R/W	Full Scale Low	Low limit of transfer output	0 : OFF 1 : ON	-	0 : OFF	

No(Address)	R/W	Parameter	Description	Set range	Unit	Default	Note
400456(01C7)	R/W	Full Scale High	Low limit of transfer output	0 : OFF 1 : ON	-	0 : OFF	
400457(01C8)	R/W	Alarm Logic	Select alarm logic	0 : OFF 1 : ON	-	0 : OFF	TMHE Parameter setting group
400458(01C9)	R/W	Alarm NO/NC	Select alarm type	0 : OFF 1 : ON	-	0 : OFF	
400459(01C9) to 400500(1F3)	R/W	Reserved					

2.6.3 PLC Register map

The PLC ladderless module is designed with the dynamic allocation memory structure to optimize the communication speed, and the register number differs according to the type and number of connected control/option modules.

The table below shows the range of register number based on the default values of register start number [Register start number_Low] (default: 1000) and system data address bias [System data address bias] (default: 2800) according to the number of connected control/option modules.

For the details of register number per parameter, refer to 2.6.3.1 Communication status group, 2.6.3.2 Monitoring group, 2.6.3.3Setting parameter group.

TMHC 1EA can connect 16 control modules (TMH2/4) and 16 option modules (TMHA/E/CT). (Max. 32EA)

- TMH2/4: N ea, TMHA: A ea TMHE: E ea, TMHCT: T ea

Register start number (Lower 16bit) [Register start number_Low]: 1000 (default)		
Communication status group		D01000 to D1005
Monitoring group	**TMH2/4**	D01006 to D01005+31N
	TMHA	D01006+31N to D01005+31N+16A
	TMHE	D01006+31N+16A to D01005+31N+16A+18E
	TMHCT	D01006+31N+16A+18E to D01005+31N+16A+18E+8T
System data address bias [System data address bias]: 2800 = B (default)		
Setting parameter group	**Setting parameter**	D01006+B+31N+16A+18E+8T to D01009+B+31N+16A+18E+8T
	TMH2/4	D01010+B+31N+16A+18E+8T to D01009+B+171N+16A+18E+8T
	TMHA	D01010+B+171N+16A+18E+8T to D01009+B+171N+32A+18E+8T
	TMHE	D01010+B+171N+32A+18E+8T to D01009+B+171N+32A+34E+8T

Ex.

- TMH2/4: 1 ea, TMHA: 1 ea TMHE: 1 ea, TMHCT: 1 ea

Register start number (Lower 16bit) [Register start number_Low]: 1000 (default)		
Communication status group		D01000 to D1005
Monitoring group	**TMH2/4**	D01006 to D01036
	TMHA	D01037 to D01052
	TMHE	D01053 to D01070
	TMHCT	D01071 to D01078
System data address bias [System data address bias]: 2800 (default)		
Setting parameter group	**Setting parameter group**	D03879 to D03882
	TMH2/4	D03883 to D04022
	TMHA	D04023 to D04038
	TMHE	D04039 to D04054

Ex.

- TMH2/4: 8 ea, TMHA: 4 ea TMHE: 2 ea, TMHCT: 1 ea

Register start number (Lower 16bit) [Register start number_Low]: 1000 (default)		
Communication status group		D01000 to D1005
Monitoring group	**TMH2/4**	D01006 to D01253
	TMHA	D01254 to D01317
	TMHE	D01318 to D01353
	TMHCT	D01354 to D01361
System data address bias [System data address bias]: 2800 (default)		
Setting parameter group	**Setting parameter**	D04162 to D04165
	TMH2/4	D04166 to D05285
	TMHA	D05286 to D05349
	TMHE	D05350 to D05381

2.6.3.1 Communication status group

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D01000	R	Communication Status	Check communication status	0:ON, 1:OFF	-	-	-
D01001	R	Communication Flag	Communication status FLAG	0:ON, 1:OFF	-	-	-
D01002	R	PLC Error code	Error code of PLC ladderless communication	0:ON, 1:OFF	-	-	-
D01003	R	TMHC recognition flag	TMXC recognition flag	0:ON, 1:OFF	-	-	-
D01004	R	Connected Modules	Check connected modules	0 to 31	-	-	-
D01005	R	Unit Address	Unit address	01 to 31			

2.6.3.2 Monitoring group

The register numbers on the table below are based on “TMH2/4: 1 ea, TMHA: 1 ea TMHE: 1 ea, TMHCT: 1 ea / (TMH2/4: N ea, TMHA: A ea TMHE: E ea, TMHCT: T ea)”

- TMH2/4

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D01006 to D01009 (D01006 to D01005+4N)	R	CH1 Present Value to CH4 Present Value	Present value	Input range per sensors 31000 : OPEN, 0000 : HHHH -30000 : LLLL	℃/℉	-	
D01010 to D01013 (D01006+4N to D01005+8N)	R	CH1 Dot to CH4 Dot	Dot position of sensor input value	0: 0 1: 0.0	-	0	
D01014 to D01017 (D01006+8N to D01005+12N)	R	CH1 Unit to CH4 Unit	Temperature unit of sensor input	0: ℃ 1: ℉	-	0	
D01018 to D01021 (D01006+12N to D01005+16N)	R	CH1 Set Value to CH4 Set Value	Setting value	SV Low Limit to SV High Limit	℃/℉	0	
D01022to D01025 (D01006+16N to D01005+20N)	R	CH1 Heating_MV to CH4 Heating_MV	Manipulated variable of heating output	0. 0 to 100.0	%	0	

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D01026 to D01029 (D01006+20N to D01005+24N)	R	CH1 Cooling_MV to CH4 Cooling_MV	Manipulated variable of cooling output	0.0 to 100.0	%	0	
D01030 to D01031 (D01006+24N to D01005+26N)	R	DI-1 to DI-2	Check digital input status	0 : OFF 1 : ON	-	0	
D01032 to D01035 (D01006+26N to D01005+30N)	R	CT1_Heater Current to CT4_Heater Current	Heater current	0 to 500 (0.0 to 50.0)	A	0	
D01036 (D01006+30N to D01005+31N)	R	CH1 EVENT1 to EVENT4, CH2 EVENT1 to EVENT4, CH3 EVENT1 to EVENT4, CH4 EVENT1 to EVENT4	EVENT1 status (Bit)	0: OFF 1: ON	-	0	Bit 0 to Bit 15

- TMHA

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D01037 to D01040 (D01006+31N to D01005+31N+4A)	R	CH1 Present Value to CH4 Present Value (The number of modules: Max. 64CH)	Present value	Input range per sensors 31000 : OPEN 0000 : HHHH -30000 : LLLL	℃/℉	-	
D01041 to D01044 (D01006+31N+4A to D01005+31N+8A)	R	CH1 Dot to CH4 Dot (The number of modules: Max. 64CH)	Dot position of sensor input value	0 : 0 1: 0.0	-	0	
D01045 to D01048 (D01006+31N+8A to D01005+31N+12A)	R	CH1 Unit to CH4 Unit (The number of modules: Max. 64CH)	Temperature unit of sensor input	0: ℃ 1: ℉	-	0	
D01049 to D01052 (D01006+31N+12A to D01005+31N+16A)	R	CH1 Analog Output Value to CH4 Analog Output Value (The number of modules: Max. 64CH)	Tansmission ouput value	40 to 200(4.0 to 20.0), 0 to 200 (0.0 to 20.0)	mA	-	

- TMHE

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D01053 (D01006+31N+16A to D01005+31N+16A+E)	R	AL1 STATUS to AL8 STATUS (The number of modules: Max. 64CH)	Alarm status(Bit)	0 : OFF 1 : ON	-	0	Bit 0 to Bit 7
D01054 (D01006+31N+16A+E to D01005+31N+16A+2E)	R	DI-1 STATUS to DI-8 STATUS (The number of modules: Max. 64CH)	Digital input status(Bit)	0 : OFF 1 : ON	-	0	Bit 0 to Bit 7
D01055 to D01062 (D01006+31N+16A+2E to D01005+31N+16A+10E)	R	AL1 STATUS to AL8 STATUS (The number of modules: Max. 64CH)	Alarm status(Bit)	0 : OFF 1 : ON	-	0	
D01063 to D01070 (D01006+31N+16A+10E to D01005+31N+16A+18E)	R	DI-1 STATUS to DI-8 STATUS (The number of modules: Max. 64CH)	Digital input status(Bit)	0 : OFF 1 : ON	-	0	

- TMHCT

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D01071 to D01078 (D01006+31N+16A+18E to D01005+31N+16A+18E+8T)	R	CT1 Heater Current to CT8 Heater Current (The number of modules: Max. 64CH)	Monitoring CT input	0.0 to 50.0	A	0	

2.6.3.3 Setting parameter group

The register numbers on the table below are based on “TMH2/4: 1 ea, TMHA: 1 ea TMHE: 1 ea, TMHCT: 1 ea, System data address bias [System data address bias] default: 2800) / (TMH2/4: N ea, TMHA: A ea TMHE: E ea, TMHCT: T ea, System data address bias [System data address bias]: B)”

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D03879 (D01006+B+31N+16A+18E+8T)	R	Set Communication state	Check communication completed status(bit) 0bit: Setting Group Read/Write error 1bit: Setting Group Write completed 2bit: Setting Group Read completed	0:ON, 1:OFF	-	-	0bit to 2bit
D03880 (D01007+B+31N+16A+18E+8T)	R	Request	Read/Write request(bit) 0bit: Setting Group Write 1bit: Setting Group Read	0:ON, 1:OFF	-	-	0bit to 1bit
D03881 (D01008+B+31N+16A+18E+8T)	R	All Run/Stop	All Run/Stop	0:ON, 1:OFF	-	0	
D03882 (D01009+B+31N+16A+18E+8T)	R	All Autotuning	All Autotuning	0:ON, 1:OFF	-	-	

- TMH2/4

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D03883 to D03886 (D01010+B+31N+16A+18E+8T to D01009+B+35N+16A+18E+8T)	R	CH1 Heating_MV to CH4 Heating_MV	Manipulated variable of heating output	0to1000(0.0 to100.0)	%	-	
D03887 to D03890 (D01010+B+35N+16A+18E+8T to D01009+B+39N+16A+18E+8T)	R	CH1 Cooling_MV to CH4 Cooling_MV	Manipulated variable of cooling output	0to1000(0.0 to100.0)	%	-	
D03891 to D03894 (D01010+B+39N+16A+18E+8T to D01009+B+43N+16A+18E+8T)	R	CH1 Auto-Manual Control to CH4 Auto-Manual Control	Auto/Manual control	0: AUTO 1: MANUAL	-	0: AUTO	
D03895 to D03898 (D01010+B+43N+16A+18E+8T to D01009+B+47N+16A+18E+8T)	R	CH1 RUN/STOP to CH4 RUN/STOP	Control output run/stop	0 : RUN 1 : STOP	-	0 : RUN	
D03899 to D03902 (D01010+B+47N+16A+18E+8T to D01009+B+51N+16A+18E+8T)	R	CH1 Auto-Tuning Execute to CH4 Auto-Tuning Execute	Auto-tuning	0 : OFF 1 : ON	-	0 : OFF	
D03903 to D03906 (D01010+B+51N+16A+18E+8T to D01009+B+55N+16A+18E+8T)	R	CH1 SV to CH4 SV	Setting value	SV Low Limit to SV High Limit	℃/℉, Digit	0	
D03907 to D03910 (D01010+B+55N+16A+18E+8T to D01009+B+59N+16A+18E+8T)	R	CH1 Heating_Proportinal Band to CH4 Heating_Proportinal Band	Proportinal band of heating control	1to9999(0.1 to 999.9)	℃/℉, %F.S	100	
D03911 to D03914 (D01010+B+59N+16A+18E+8T to D01009+B+63N+16A+18E+8T)	R	CH1 Cooling_Proportinal Band to CH4 Cooling_Proportinal Band	Proportinal band of cooling control	1 to 9999(0.1 to 999.9)	℃/℉, %F.S	100	
D03915 to D03918 (D01010+B+63N+16A+18E+8T to D01009+B+67N+16A+18E+8T)	R	CH1 Heating_Integral Time to CH4 Heating_Integral Time	Integral time of heating control	0 to 9999	Sec	0	
D03919 to D03922 (D01010+B+67N+16A+18E+8T to D01009+B+71N+16A+18E+8T)	R	CH1 Cooling_Integral Time to CH4 Cooling_Integral Time	Integral time of cooling control	0 to 9999	Sec	0	

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D03923 to D03926 (D01010+B+71N+16A+18E+8T to D01009+B+75N+16A+18E+8T)	R	CH1 Heating_Derivation Time to CH4 Heating_Derivation Time	Derivation time of heating control	0 to 9999	Sec	0	
D03927 to D03930 (D01010+B+75N+16A+18E+8T to D01009+B+79N+16A+18E+8T)	R	CH1 Cooling_Derivation Time to CH4 Cooling_Derivation Time	Derivation time of cooling control	0 to 9999	Sec	0	
D03931 to D03934 (D01010+B+79N+16A+18E+8T to D01009+B+83N+16A+18E+8T)	R	CH1 Dead_Overlap band to CH4 Dead_Overlap band	Dead band of overlap band control	Temperature H, Analog: -999 to 999 Temperature L: -9999 to 9999 (-999.9 to 999.9)	℃/℉, %F.S	0	
D03935 to D03938 (D01010+B+83N+16A+18E+8T to D01009+B+87N+16A+18E+8T)	R	CH1 Manual Reset to CH4 Manual Reset	P/PD control, manual reset	0 to 1000 (0.0 to 100.0)	%	500(50.0)	
D03939 to D03942 (D01010+B+87N+16A+18E+8T to D01009+B+91N+16A+18E+8T)	R	CH1 Heating_ON Hysteresis to CH4 Heating_ON Hysteresis	ON hysteresis of heating control	Temperature H, Analog: 1 to 100 Temperature L: 1 to 1000 (0.1 to 100.0)	℃/℉, Digit	2	
D03943 to D03946 (D01010+B+91N+16A+18E+8T to D01009+B+95N+16A+18E+8T)	R	CH1 Heating_OFF Offset to CH4 Heating_ON Hysteresis	OFF offset of heating control	Temperature H, Analog: 1 to 100 Temperature L: 1 to 1000 (0.1 to 100.0)	℃/℉, Digit	0	
D03947 to D03950 (D01010+B+95N+16A+18E+8T to D01009+B+99N+16A+18E+8T)	R	CH1 Cooling_ON Hysteresis to CH4 Cooling_ON Hysteresis	ON hysteresis of cooling control	Temperature H, Analog: 1 to 100 Temperature L: 1 to 1000 (0.1 to 100.0)	℃/℉, Digit	2	
D03951 to D03954 (D01010+B+99N+16A+18E+8T to D01009+B+103N+16A+18E+8T)	R	CH1 Cooling_OFF Offset to CH4 Cooling_OFF Offset	OFF offset of cooling control	Temperature H, Analog: 1 to 100 Temperature L: 1 to 1000 (0.1 to 100.0)	℃/℉, Digit	0	
D03955 to D03958 (D01010+B+103N+16A+18E+8T to D01009+B+107N+16A+18E+8T)	R	CH1 MV Low Limit to CH4 MV Low Limit	Low limit of manipulated variable	H/C control: 0.0 to MV High Limit - 0.1 H&C control: -100.0 to 0.0	%	0(0.0) -100(-100.0)	
D03959 to D03962 (D01010+B+107N+16A+18E+8T to D01009+B+111N+16A+18E+8T)	R	CH1 MV High Limit to CH4 MV High Limit	High limit of manipulated variable	H/C control: MV Low Limit + 0.1 to 100.0 H&C control: 0 to 100.0	%	1000(100.0) 1000(100.0)	
D03963 to D03966 (D01010+B+111N+16A+18E+8T to D01009+B+115N+16A+18E+8T)	R	CH1 Input Bias to CH4 Input Bias	Input bias	-9999 to 9999	Digit	0	
D03967 to D03970 (D01010+B+115N+16A+18E+8T to D01009+B+119N+16A+18E+8T)	R	CH1 Input Digital Filter to CH4 Input Digital Filter	Input digital filter	1 to 1200(0.1 to 120.0)	Sec	1(0.1)	
D03971 to D03974 (D01010+B+119N+16A+18E+8T to D01009+B+123N+16A+18E+8T)	R	CH1 SV Low Limit to CH4 SV Low Limit	Low limit of setting value	Temperature: Low limit of sensor input to SV high limit – 1digit Analog: low limit of scale value to SV high limit – 1digit	℃/℉, %F.S	-200	
D03975 to D03978 (D01010+B+123N+16A+18E+8T to D01009+B+127N+16A+18E+8T)	R	CH1 SV High Limit to CH4 SV High Limit	High limit of setting value	Temperature: SV low Limit + 1Digit to High limit of sensor input Analog: SV low limit +1digit to High limit of scale value	℃/℉, %F.S	1350	

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D03979 to D03982 (D01010+B+127N+16A+18E+8T to D01009+B+131N+16A+18E+8T)	R	CH1 Auto-Tuning Type to CH4 Auto-Tuning Type	Auto-tuning type	0: TUNE1 1: TUNE2	-	0: TUNE1	
D03983 to D03986 (D01010+B+131N+16A+18E+8T to D01009+B+135N+16A+18E+8T)	R	CH1 Heating_Control Time to CH4 Heating_Control Time	Control time of heating control	1 to 1200 (0.1 to 120.0) 10 to 1200 (1.0 to 120.0)	Sec	RY: 200(20.0) , SSR: 20(2.0)	
D03987 to D03990 (D01010+B+135N+16A+18E+8T to D01009+B+139N+16A+18E+8T)	R	CH1 Cooling_Control Time to CH4 Cooling_Control Time	Control time of cooling control	1 to 1200 (0.1 to 120.0) 10 to 1200(1.0 to 120.0)	Sec	RY: 200(20.0) ,SSR: 20(2.0)	
D03991 to D03994 (D01010+B+139N+16A+18E+8T to D01009+B+143N+16A+18E+8T)	R	CH1 Event Low 1 to CH4 Event Low 1	Low limit 1 of alarm	Deviation alarm: -F.S to F.S Absolute alarm: Display per input specification within the range	-	1550	
D03995 to D03998 (D01010+B+143N+16A+18E+8T to D01009+B+147N+16A+18E+8T)	R	CH1 Event High 1 to CH4 Event High 1	High limit 1 of alarm	Deviation alarm: -F.S to F.S Absolute alarm: Display per input specification within the range	-	1550	
D03999 to D04002 (D01010+B+147N+16A+18E+8T to D01009+B+151N+16A+18E+8T)	R	CH1 Event Low 2 to CH4 Event Low 2	Low limit 2 of alarm	Deviation alarm: -F.S to F.S Absolute alarm: Display per input specification within the range	-	1550	
D04003 to D04006 (D01010+B+151N+16A+18E+8T to D01009+B+155N+16A+18E+8T)	R	CH1 Event High 2 to CH4 Event High 2	High limit 2 of alarm	Deviation alarm: -F.S to F.S Absolute alarm: Display per input specification within the range	-	1550	
D04007 to D04010 (D01010+B+155N+16A+18E+8T to D01009+B+159N+16A+18E+8T)	R	CH1 Event Low 3 to CH4 Event Low 3	Low limit 3 of alarm	Deviation alarm: -F.S to F.S Absolute alarm: Display per input specification within the range	-	1550	
D04011 to D04014 (D01010+B+159N+16A+18E+8T to D01009+B+163N+16A+18E+8T)	R	CH1 Event High 3 to CH4 Event High 3	High limit 3 of alarm	Deviation alarm: -F.S to F.S Absolute alarm: Display per input specification within the range	-	1550	
D04015 to D04018 (D01010+B+163N+16A+18E+8T to D01009+B+167N+16A+18E+8T)	R	CH1 Event Low 4 to CH4 Event Low 4	Low limit 4 of alarm	Deviation alarm: -F.S to F.S Absolute alarm: Display per input specification within the range	-	1550	
D04019 to D04022 (D01010+B+167N+16A+18E+8T to D01009+B+171N+16A+18E+8T)	R	CH1 Event High 4 to CH4 Event High 4	High limit 4 of alarm	Deviation alarm: -F.S to F.S Absolute alarm: Display per input specification within the range	-	1550	

- TMHA

Register No	R/W	Parameter	Description	Set range		Unit	Default	Note
D04023 to D04026 (D01010+B+171N+16A+18E+8T to D01009+B+171N+20A+18E+8T)	R	CH1 Input Bias to CH4 Input Bias	Input bias	-9999 to 9999		Digit	0	
D04027 to D04030 (D01010+B+171N+20A+18E+8T to D01009+B+171N+24A+18E+8T)	R	CH1 Input Digital Filter to CH4 Input Digital Filter	Input digital filter	1 to 1200(0.1 to 120.0)		Sec	1(0.1)	
D04031 to D04034 (D01010+B+171N+24A+18E+8T to D01009+B+171N+28A+18E+8T)	R	CH1 Full Scale Low to CH4 Full Scale Low	Low limit of transfer output	PV	Temperature: Usage range Analog: High/Low scale range	-	-200	
				SV	Low limit of setting value High limit of setting value			
				H-MV, C-MV	0 to 1000 (0.0 to 100.0)			
D04035 to D04038 (D01010+B+171N+28A+18E+8T to D01009+B+171N+32A+18E+8T)	R	CH1 Full Scale High to CH4 Full Scale High	High limit of transfer output	PV	Temperature: Usage range Analog: High/Low scale range	-	1350	

- TMHE

Register No	R/W	Parameter	Description	Set range	Unit	Default	Note
D04039 to D04046 (D01010+B+171N+32A+18E+8T to D01009+B+171N+32A+26E+8T)	R	CH1 Alarm Logic to CH8 Alarm Logic	Alarm logic	0: OR, 1: AND	-	0: OR	
D04047 to D04054 (D01010+B+171N+32A+26E+8T to D01009+B+171N+32A+34E+8T)	R	CH1 Alarm NO/NC to CH8 Alarm NO/NC	Alarm output type	0: NO, 1: NC	-	0: NO	

2.6.4 User group

This function is used for setting frequently used parameters quickly and easily by registering to user group. Each module can be set individually, and up to 30 parameters can be configured per 1 unit address.
In addition, the user group parameters of PLC ladderless module is configured sequentially and consecutively in the device, so it can improve efficiency of communication to the master device via batch read/write process.

Note

The settings of each user group parameter are different. Refer to the user group items per type.

2.6.4.1 Initial setting

Before using user group, configure following sequence completely.

- Initial setting

Seq.	Item	Description
1	Number of parameter	Set the effective number of parameter to be used by each connected module. Refer to '(1) Number of parameter'.
2	Using parameter	Set the address of parameter to be used corresponding to the number same as set in “1. Number of parameter”. Refer to ‘(2) Using paramter’.
3	Parameter data	Set the parameter data to the address set in “2. Using parameter”. Refer to ‘(3) Parameter data’.

(1) Number of parameter

Set the effective number of parameters (up to 30ea per 1 unit address). You can use user parameters as many as the effective number set in this sequence.

※ Refer to ‘(1) Number of parameter in 2.6.4.2 User group address’ to check all address of number of parameter.

Ex.

When using unit address 1: 2ea, 2: 5ea, 16: 3ea, 33: 2ea

No(Address)	Unit address	Number of parameter (0 to 30)	Assgined unit address by each module
54001	1	2	TMH2/4
54002	2	5	
54003	3	0	
...	...	...	
54016	16	3	
54017	33	2	TMHA
54018	34	0	
...	...	...	...
54064	80	0	TMHCT

※ If set unit address setting switch (SW1) of TMHA to 1 and connect, TMHC recognize it as communicationt address 33.

▪ Unit address

Module \ SW		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
TMH2/4		16	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
		32	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
TMHA		48	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
TMHE		64	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
TMHCT		80	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
TMHC		16	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15

※ In case of TMH2/4, assign unit address by combinating unit address setting switch (SW1) and unit address group switch (SW2).

※ For the details of assigning unit address and unit description, refer to the sections in “User manual”.

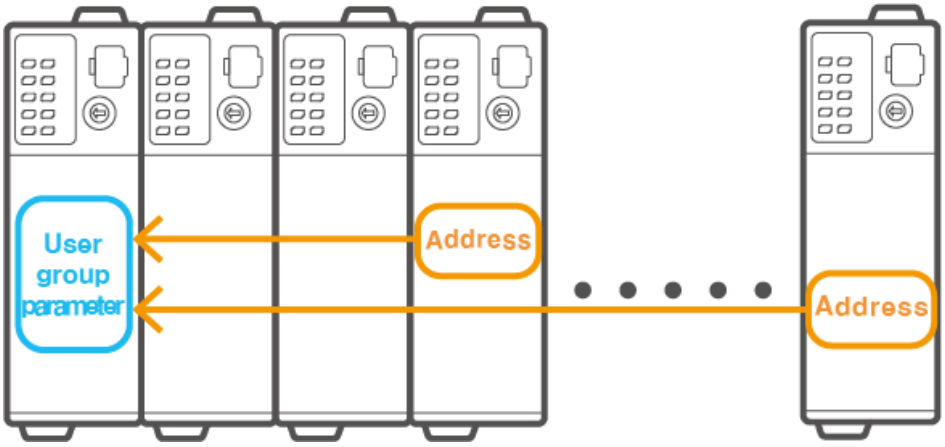
(2) Using paramter

Enter the parameter address except 10^5 digit number corresponding to the effective number set by ‘(1) Number of parameter’.
(E.g.: TMH4 Control output operation mode address is 400124. Enter as 40124.)

※ Set unique address of each module (‘2.1 TMH2/4 Series [Control module] to 2.4 TMHCT [Option: CT input module]’) not TMHC parameters.

Ex.

Enter 40124, excluding 10^5 digit number from the original address of the TMH4 "Control output operation mode" parameter 400124, into No.1 user group parameter address 450001 of TMH2/4.



Ex.

When using unit address 1: 2ea, 2: 5ea, 16: 3ea, 33: 2ea

No(Address)	CA	Setable parameter	Effective parameter address	Assgined unit address by each module
50001	1	No. 1	Using parmeter address 1	TMH2/4
50002		No. 2	Using parmeter address 2	
50003		No. 3	-	
50004		No. 4	-	
...		...	...	
50030		No. 30	-	
50031	2	No. 1	Using parmeter address 3	
50032		No. 2	Using parmeter address 4	
50033		No. 3	Using parmeter address 5	
50034		No. 4	Using parmeter address 6	
50035		No. 5	Using parmeter address 7	
50036		No. 6	-	
...		...	...	
50060		No. 30	-	
50061	3	No. 1	-	
...		...	...	
50090		No. 30	-	
…	...	...	...	
50451	16	No. 1	Using parmeter address 8	
50452		No. 2	Using parmeter address 9	
50453		No. 3	Using parmeter address 10	
50454		No. 4	-	
…		...	...	
50480		No. 30	-	
50481	33	No. 1	Using parmeter address 11	TMHA
50482		No. 2	Using parmeter address 12	
...		...	...	
50510		No. 30	-	
...	...	...	...	...
51891	80	No. 1	-	TMHCT
...		...	...	
51920		No. 30	-	

(3) Parameter data

Set the data corresponding to the parameter address set in “Using parameter”.

Parameter data setting address is configured sequentially and consecutively by the effective number of user group parameters set in "Number of parameters".

 Ex.

When using unit address 1: 2ea, 2: 5ea, 16: 3ea, 33: 2ea

No(Address)	Setable parameter		Parameter data (Set range of using parameter)	Assgined unit address by each module
	Unit address	Effecive parameter		
52001	1	Using parameter address 1	Parameter data 1	TMH2/4
52002		Using parameter address 2	Parameter data 2	
52003	2	Using parameter address 3	Parameter data 3	
52004		Using parameter address 4	Parameter data 4	
52005		Using parameter address 5	Parameter data 5	
52006		Using parameter address 6	Parameter data 6	
52007		Using parameter address 7	Parameter data 7	
52008	16	Using parameter address 8	Parameter data 8	
52009		Using parameter address 9	Parameter data 9	
52010		Using parameter address 10	Parameter data 10	
52011	33	Using parameter address 11	Parameter data 11	TMHA
52012		Using parameter address 12	Parameter data 12	

※ Data requst from the master device is possible only under the effective number of total parameters.

2.6.4.2 User group address

(1) Number of parameter

- Set range: Number of parameter

Series	Address range
TMH2/4	54001(D2F0) to 54016(D2FA)
TMHA	54017(D300) to 54032(D30F)
TMHE	54033(D310) to 54048(D31F)
TMHCT	54049(D32A) to 54064(D32F)

All address(64) = Type of module(4) × Selectable address(16) × Number of address(1)

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
454001(D2F0)		03/06/16	R/W	Set number of parameter - 01 unit address		0 to 30	-	0	
454002(D2F1)		03/06/16	R/W	Set number of parameter - 02 unit address		0 to 30	-	0	
454003(D2F2)		03/06/16	R/W	Set number of parameter - 03 unit address		0 to 30	-	0	
454004(D2F3)		03/06/16	R/W	Set number of parameter - 04 unit address		0 to 30	-	0	
454005(D2F4)		03/06/16	R/W	Set number of parameter - 05 unit address		0 to 30	-	0	
454006(D2F5)		03/06/16	R/W	Set number of parameter - 06 unit address		0 to 30	-	0	
454007(D2F6)		03/06/16	R/W	Set number of parameter - 07 unit address		0 to 30	-	0	
454008(D2F7)		03/06/16	R/W	Set number of parameter - 08 unit address		0 to 30	-	0	
454009(D2F8)		03/06/16	R/W	Set number of parameter - 09 unit address		0 to 30	-	0	TMH4/2
454010(D2F9)		03/06/16	R/W	Set number of parameter - 10 unit address		0 to 30	-	0	
454011(D2FA)		03/06/16	R/W	Set number of parameter - 11 unit address		0 to 30	-	0	
454012(D2FB)		03/06/16	R/W	Set number of parameter - 12 unit address		0 to 30	-	0	
454013(D2FC)		03/06/16	R/W	Set number of parameter - 13 unit address		0 to 30	-	0	
454014(D2FD)		03/06/16	R/W	Set number of parameter - 14 unit address		0 to 30	-	0	
454015(D2FE)		03/06/16	R/W	Set number of parameter - 15 unit address		0 to 30	-	0	
454016(D2FF)		03/06/16	R/W	Set number of parameter - 16 unit address		0 to 30	-	0	
454017(D300)		03/06/16	R/W	Set number of parameter - 33 unit address		0 to 30	-	0	
454018(D301)		03/06/16	R/W	Set number of parameter - 34 unit address		0 to 30	-	0	
454019(D302)		03/06/16	R/W	Set number of parameter - 35 unit address		0 to 30	-	0	
454020(D303)		03/06/16	R/W	Set number of parameter - 36 unit address		0 to 30	-	0	
454021(D304)		03/06/16	R/W	Set number of parameter - 37 unit address		0 to 30	-	0	
454022(D305)		03/06/16	R/W	Set number of parameter - 38 unit address		0 to 30	-	0	
454023(D306)		03/06/16	R/W	Set number of parameter - 39 unit address		0 to 30	-	0	
454024(D307)		03/06/16	R/W	Set number of parameter - 40 unit address		0 to 30	-	0	TMHA
454025(D308)		03/06/16	R/W	Set number of parameter - 41 unit address		0 to 30	-	0	
454026(D309)		03/06/16	R/W	Set number of parameter - 42 unit address		0 to 30	-	0	
454027(D30A)		03/06/16	R/W	Set number of parameter - 43 unit address		0 to 30	-	0	
454028(D30B)		03/06/16	R/W	Set number of parameter - 44 unit address		0 to 30	-	0	
454029(D30C)		03/06/16	R/W	Set number of parameter - 45 unit address		0 to 30	-	0	
454030(D30D)		03/06/16	R/W	Set number of parameter - 46 unit address		0 to 30	-	0	

No(Address) TMH2	TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
454031(D30E)		03/06/16	R/W	Set number of parameter - 47 unit address		0 to 30	-	0	
454032(D30F)		03/06/16	R/W	Set number of parameter - 48 unit address		0 to 30	-	0	
454033(D310)		03/06/16	R/W	Set number of parameter - 49 unit address		0 to 30	-	0	
454034(D311)		03/06/16	R/W	Set number of parameter - 50 unit address		0 to 30	-	0	
454035(D312)		03/06/16	R/W	Set number of parameter - 51 unit address		0 to 30	-	0	
454036(D313)		03/06/16	R/W	Set number of parameter - 52 unit address		0 to 30	-	0	
454037(D314)		03/06/16	R/W	Set number of parameter - 53 unit address		0 to 30	-	0	
454038(D315)		03/06/16	R/W	Set number of parameter - 54 unit address		0 to 30	-	0	
454039(D316)		03/06/16	R/W	Set number of parameter - 55 unit address		0 to 30	-	0	
454040(D317)		03/06/16	R/W	Set number of parameter - 56 unit address		0 to 30	-	0	
454041(D318)		03/06/16	R/W	Set number of parameter - 57 unit address		0 to 30	-	0	TMHE
454042(D319)		03/06/16	R/W	Set number of parameter - 58 unit address		0 to 30	-	0	
454043(D31A)		03/06/16	R/W	Set number of parameter - 59 unit address		0 to 30	-	0	
454044(D31B)		03/06/16	R/W	Set number of parameter - 60 unit address		0 to 30	-	0	
454045(D31C)		03/06/16	R/W	Set number of parameter - 61 unit address		0 to 30	-	0	
454046(D31D)		03/06/16	R/W	Set number of parameter - 62 unit address		0 to 30	-	0	
454047(D31E)		03/06/16	R/W	Set number of parameter - 63 unit address		0 to 30	-	0	
454048(D31F)		03/06/16	R/W	Set number of parameter - 64 unit address		0 to 30	-	0	
454049(D320)		03/06/16	R/W	Set number of parameter - 65 unit address		0 to 30	-	0	
454050(D321)		03/06/16	R/W	Set number of parameter - 66 unit address		0 to 30	-	0	
454051(D322)		03/06/16	R/W	Set number of parameter - 67 unit address		0 to 30	-	0	
454052(D323)		03/06/16	R/W	Set number of parameter - 68 unit address		0 to 30	-	0	
454053(D324)		03/06/16	R/W	Set number of parameter - 69 unit address		0 to 30	-	0	
454054(D325)		03/06/16	R/W	Set number of parameter - 70 unit address		0 to 30	-	0	
454055(D326)		03/06/16	R/W	Set number of parameter - 71 unit address		0 to 30	-	0	
454056(D327)		03/06/16	R/W	Set number of parameter - 72 unit address		0 to 30	-	0	
454057(D328)		03/06/16	R/W	Set number of parameter - 73 unit address		0 to 30	-	0	TMHCT
454058(D329)		03/06/16	R/W	Set number of parameter - 74 unit address		0 to 30	-	0	
454059(D32A)		03/06/16	R/W	Set number of parameter - 75 unit address		0 to 30	-	0	
454060(D32B)		03/06/16	R/W	Set number of parameter - 76 unit address		0 to 30	-	0	
454061(D32C)		03/06/16	R/W	Set number of parameter - 77 unit address		0 to 30	-	0	
454062(D32D)		03/06/16	R/W	Set number of parameter - 78 unit address		0 to 30	-	0	
454063(D32E)		03/06/16	R/W	Set number of parameter - 79 unit address		0 to 30	-	0	
454064(D32F)		03/06/16	R/W	Set number of parameter - 80 unit address		0 to 30	-	0	

(2) Using parameter

- Set range: Using parameter address

Series	Address range
TMH2/4	50001(C350) to 50480(C52F)
TMHA	50481(C530) to 50960(C70F)
TMHE	50961(C710) to 51440(C8EF)
TMHCT	51441(C8F0) to 51920(CACF)

All address(1920) = Type of module(4) × Selectable address(16) × Number of address(30)

- TMH2/4

No(Address) TMH2	No(Address) TMH4	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
450001(C350)		03/06/16	R/W	User group > Set 01 parameter		Parameter address	-	0	
450002(C351)		03/06/16	R/W	User group > Set 02 parameter		Parameter address	-	0	
450003(C352)		03/06/16	R/W	User group > Set 03 parameter		Parameter address	-	0	
450004(C353)		03/06/16	R/W	User group > Set 04 parameter		Parameter address	-	0	
450005(C354)		03/06/16	R/W	User group > Set 05 parameter		Parameter address	-	0	
450006(C355)		03/06/16	R/W	User group > Set 06 parameter		Parameter address	-	0	
450007(C356)		03/06/16	R/W	User group > Set 07 parameter		Parameter address	-	0	
450008(C357)		03/06/16	R/W	User group > Set 08 parameter		Parameter address	-	0	
450009(C358)		03/06/16	R/W	User group > Set 09 parameter		Parameter address	-	0	
450010(C359)		03/06/16	R/W	User group > Set 10 parameter		Parameter address	-	0	
450011(C35A)		03/06/16	R/W	User group > Set 11 parameter		Parameter address	-	0	
450012(C35B)		03/06/16	R/W	User group > Set 12 parameter		Parameter address	-	0	
450013(C35C)		03/06/16	R/W	User group > Set 13 parameter		Parameter address	-	0	
450014(C35D)		03/06/16	R/W	User group > Set 14 parameter		Parameter address	-	0	
450015(C35E)		03/06/16	R/W	User group > Set 15 parameter		Parameter address	-	0	
450016(C35F)		03/06/16	R/W	User group > Set 16 parameter		Parameter address	-	0	
450017(C360)		03/06/16	R/W	User group > Set 17 parameter		Parameter address	-	0	
450018(C361)		03/06/16	R/W	User group > Set 18 parameter		Parameter address	-	0	
450019(C362)		03/06/16	R/W	User group > Set 19 parameter		Parameter address	-	0	
450020(C363)		03/06/16	R/W	User group > Set 20 parameter		Parameter address	-	0	
450021(C364)		03/06/16	R/W	User group > Set 21 parameter		Parameter address	-	0	
450022(C365)		03/06/16	R/W	User group > Set 22 parameter		Parameter address	-	0	
450023(C366)		03/06/16	R/W	User group > Set 23 parameter		Parameter address	-	0	
450024(C367)		03/06/16	R/W	User group > Set 24 parameter		Parameter address	-	0	
450025(C368)		03/06/16	R/W	User group > Set 25 parameter		Parameter address	-	0	
450026(C369)		03/06/16	R/W	User group > Set 26 parameter		Parameter address	-	0	
450027(C36A)		03/06/16	R/W	User group > Set 27 parameter		Parameter address	-	0	
450028(C36B)		03/06/16	R/W	User group > Set 28 parameter		Parameter address	-	0	
450029(C36C)		03/06/16	R/W	User group > Set 29 parameter		Parameter address	-	0	
450030(C36D)		03/06/16	R/W	User group > Set 30 parameter		Parameter address	-	0	

※ When setting unit address 02 to 16, parameter address assignment

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
450031(C36E) to 450060(C38B)	03/06/16	R/W	02 unit address parameter – Same as above 01 unit address					
450061(C38C) to 450090(C3A9)	03/06/16	R/W	03 unit address parameter – Same as above 01 unit address					
450091(C3AA) to 450120(C3C7)	03/06/16	R/W	04 unit address parameter – Same as above 01 unit address					
450121(C3C8) to 450150(C3E5)	03/06/16	R/W	05 unit address parameter – Same as above 01 unit address					
450151(C3E6) to 450180(C415)	03/06/16	R/W	06 unit address parameter – Same as above 01 unit address					
450181(C4B8) to 450210(C421)	03/06/16	R/W	07 unit address parameter – Same as above 01 unit address					
450211(C422) to 450240(C43F)	03/06/16	R/W	08 unit address parameter – Same as above 01 unit address					
450241(C440) to 450270(C45D)	03/06/16	R/W	09 unit address parameter – Same as above 01 unit address					
450271(C45E) to 450300(C47B)	03/06/16	R/W	10 unit address parameter – Same as above 01 unit address					
450301(C47C) to 450330(C49B)	03/06/16	R/W	11 unit address parameter – Same as above 01 unit address					
450331(C49A) to 450360(C4B7)	03/06/16	R/W	12 unit address parameter – Same as above 01 unit address					
450361(C4B8) to 450390(C4D5)	03/06/16	R/W	13 unit address parameter – Same as above 01 unit address					
450391(C4D6) to 450420(C4F3)	03/06/16	R/W	14 unit address parameter – Same as above 01 unit address					
450421(C4F4) to 450450(C511)	03/06/16	R/W	15 unit address parameter – Same as above 01 unit address					
450451(C512) to 450480(C52F)	03/06/16	R/W	16 unit address parameter – Same as above 01 unit address					

- TMHA

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
450481(C530) to 450510(C54D)	03/06/16	R/W	33 unit address parameter – Same as above 01 unit address					
450511(C54E) to 450540(C56B)	03/06/16	R/W	34 unit address parameter – Same as above 01 unit address					
450541(C56C) to 450570(C589)	03/06/16	R/W	35 unit address parameter – Same as above 01 unit address					
450571(C58A) to 450600(C5A7)	03/06/16	R/W	36 unit address parameter – Same as above 01 unit address					
450601(C5A8) to 450630(C5C5)	03/06/16	R/W	37 unit address parameter – Same as above 01 unit address					
450631(C5C6) to 450660(C5E3)	03/06/16	R/W	38 unit address parameter – Same as above 01 unit address					
450661(C5E4) to 450690(C601)	03/06/16	R/W	39 unit address parameter – Same as above 01 unit address					
450691(C602) to 450720(C61F)	03/06/16	R/W	40 unit address parameter – Same as above 01 unit address					
450721(C620) to 450750(C63E)	03/06/16	R/W	41 unit address parameter – Same as above 01 unit address					
450751(C63F) to 450780(C65B)	03/06/16	R/W	42 unit address parameter – Same as above 01 unit address					
450781(C65C) to 450810(C679)	03/06/16	R/W	43 unit address parameter – Same as above 01 unit address					
450811(C54E) to 450840(C697)	03/06/16	R/W	44 unit address parameter – Same as above 01 unit address					
450841(C698) to 450870(C6B5)	03/06/16	R/W	45 unit address parameter – Same as above 01 unit address					
450871(C6B6) to 450900(C6D3)	03/06/16	R/W	46 unit address parameter – Same as above 01 unit address					
450901(C6D4) to 450930(C6F1)	03/06/16	R/W	47 unit address parameter – Same as above 01 unit address					
450931(C6F2) to 450960(C70F)	03/06/16	R/W	48 unit address parameter – Same as above 01 unit address					

- TMHE

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
450961(C710) to 450990(C72D)	03/06/16	R/W	49 unit address parameter – Same as above 01 unit address					
450991(C72E) to 451020(C74B)	03/06/16	R/W	50 unit address parameter – Same as above 01 unit address					
451021(C74C) to 451050(C769)	03/06/16	R/W	51 unit address parameter – Same as above 01 unit address					
451051(C76A) to 451080(C787)	03/06/16	R/W	52 unit address parameter – Same as above 01 unit address					
451081(C788) to 451110(C7A5)	03/06/16	R/W	53 unit address parameter – Same as above 01 unit address					
451111(C7A6) to 451140(C7C3)	03/06/16	R/W	54 unit address parameter – Same as above 01 unit address					

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
451141(C7C4) to 451170(C7E1)	03/06/16	R/W	55 unit address parameter – Same as above 01 unit address					
451171(C7E2) to 451200(C7FF)	03/06/16	R/W	56 unit address parameter – Same as above 01 unit address					
451201(C800) to 451230(C81D)	03/06/16	R/W	57 unit address parameter – Same as above 01 unit address					
451231(C81E) to 451260(C83B)	03/06/16	R/W	58 unit address parameter – Same as above 01 unit address					
451261(C83C) to 451290(C859)	03/06/16	R/W	59 unit address parameter – Same as above 01 unit address					
451291(C85A) to 451320(C877)	03/06/16	R/W	60 unit address parameter – Same as above 01 unit address					
451321(C878) to 451350(C895)	03/06/16	R/W	61 unit address parameter – Same as above 01 unit address					
451351(C896) to 451380(C8B3)	03/06/16	R/W	62 unit address parameter – Same as above 01 unit address					
451381(C8B4) to 451410(C8D1)	03/06/16	R/W	63 unit address parameter – Same as above 01 unit address					
451411(C8D2) to 451440(C8EF)	03/06/16	R/W	64 unit address parameter – Same as above 01 unit address					

- TMHCT

No(Address)	Func	R/W	Parameter	Description	Set range	Unit	Default	Note
451441(C8F0) to 451470(C90D)	03/06/16	R/W	65 unit address parameter – Same as above 01 unit address					
451471(C90E) to 451500(C92B)	03/06/16	R/W	66 unit address parameter – Same as above 01 unit address					
451501(C92C) to 451530(C949)	03/06/16	R/W	67 unit address parameter – Same as above 01 unit address					
451531(C94A) to 451560(C967)	03/06/16	R/W	68 unit address parameter – Same as above 01 unit address					
451561(C968) to 451590(C985)	03/06/16	R/W	69 unit address parameter – Same as above 01 unit address					
451591(C986) to 451620(C9A3)	03/06/16	R/W	70 unit address parameter – Same as above 01 unit address					
451621(C9A4) to 451650(C9C1)	03/06/16	R/W	71 unit address parameter – Same as above 01 unit address					
451651(C9C2) to 451680(C9DF)	03/06/16	R/W	72 unit address parameter – Same as above 01 unit address					
451681(C9E0) to 451710(C9FD)	03/06/16	R/W	73 unit address parameter – Same as above 01 unit address					
451711(C9FF) to 451740(CA1B)	03/06/16	R/W	74 unit address parameter – Same as above 01 unit address					
451741(CA1C) to 451770(CA39)	03/06/16	R/W	75 unit address parameter – Same as above 01 unit address					
451771(CA3A) to 451800(CA57)	03/06/16	R/W	76 unit address parameter – Same as above 01 unit address					
451801(CA58) to 451830(CA75)	03/06/16	R/W	77 unit address parameter – Same as above 01 unit address					
451831(CA76) to 451860(CA93)	03/06/16	R/W	78 unit address parameter – Same as above 01 unit address					
451861(CA94) to 451890(CAB1)	03/06/16	R/W	79 unit address parameter – Same as above 01 unit address					
451891(CAB2) to 451920(CACF)	03/06/16	R/W	80 unit address parameter – Same as above 01 unit address					

(3) Parameter data

- Set range: Parameter data

Series	Set range
TMH2/4	52001(CB20) to Variable
TMHA	
TMHE	
TMHCT	

※ Parameter data address is configured differently according to the number of effective parameters. Refer to '(3) Parameter data in 2.6.4.1 Initial setting' for the details.

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