Zelio Control

RTC48 Communication and Zelio Temperature Control Soft User Guide

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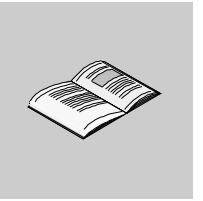
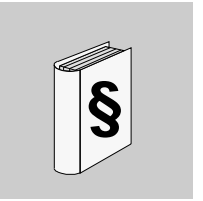


Safety Information



Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

CAUTION

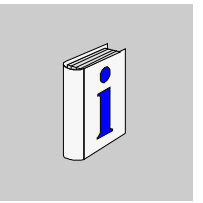
CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result in** equipment damage.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and the installation, and has received safety training to recognize and avoid the hazards involved.

About the Book



At a Glance

Document Scope

This manual acquaints you with the PC loader software, which can work with RTC48 temperature controller.

The Zelio Control Soft is an auxiliary tool for setting the parameters and tuning the temperature controller. You can edit and save the setting conditions with this software. By setting, editing, and saving the parameters on your PC, you can copy the settings to multiple temperature controllers. You can use the PV, SV, and MV to display the trend on the software and perform the data logging in csv format.

Validity Note

This document is valid for the Zelio Temperature Control Soft V1.0 and the RTC48 temperature controllers.

Registered Trademarks

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Related Documents

Title of Documentation	Reference Number
RTC48 Temperature Controller User Guide	EIO0000001539 (Eng) EIO0000001540 (Fre) EIO0000001541 (Ger) EIO0000001542 (Spa) EIO0000001543 (Ita) EIO0000001544 (Chs)
RTC48 Temperature Controller Quick Start Guide	HRB3156801 (Eng) HRB7904900 (Fre) HRB7905200 (Ger) HRB7905600 (Spa) HRB7905400 (Ita) HRB7905100 (Chs)
RTC48 Communication Quick Start Guide	HRB7810101 (Eng) HRB7905700 (Fre) HRB7906000 (Ger) HRB7906200 (Spa) HRB7906100 (Ita) HRB7905800 (Chs)
RTCCBL Communication Cable Quick Start Guide	HRB7810401 (Eng) HRB7906300 (Fre) HRB7906500 (Ger) HRB7906700 (Spa) HRB7906600 (Ita) HRB7906400 (Chs)

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User Comments

We welcome your comments about this document. You can reach us by e-mail at techcomm@schneider-electric.com.

Software Configuration

I

Software Tools

1

What Is in This Chapter?

This chapter contains the following topics:

Terminal Configuration

Operating System Requirements

To install Zelio Temperature Control Soft V1.0, it requires one of the following operating systems:

- Windows 7 Home Premium Edition® (Eng)
- Windows 7 Professional Edition® (Eng)
- Window 7 Ultimate Edition® (Eng)
- Windows XP Home Edition®
- Windows XP Professional Edition®
- Windows 2000 Professional Edition®
- Windows Me Edition
- Windows NT4.0
- Windows 98 Edition

Other Software Requirements

The following software is required before installing Zelio Temperature Control Soft V1.0:

- Internet Explorer V6.0 or later
- .NET 4.0 Framework, SP2
- Windows Installer V3.1 or later
- Visual C++ 2008 Runtime

Hardware Requirements

The following table provides the hardware requirements necessary to install Zelio Temperature Control Soft:

System Components	Requirements
System	Pentium 4 800 MHz or higher
Operating system and minimum RAM	Windows 98/Me/NT4.0: 128 MB or higher Windows 2000: 256 MB or higher Windows XP: 512 MB or higher Windows Vista: 1024 MB or higher Windows 7: 2 GB or higher
Hard disk	20 MB or more free space if available
Display	SVGA 1024 x 768 or higher resolution monitor with 24 bits high color 24 bits or 256 colors or higher
Personal Computer	Interface equipment (COM1 to COM8) required for communication with the controllers

Setting the Font Size

To set the font size, proceed as follows:

Step	Action
1	Close all the applications that are running.
2	Click **Start** → **All Programs** → **Control Panel**. **Result**: **Control Panel** dialog box appears.
3	Double-click **Display** program. **Result**: **Display Properties** dialog box appears.
4	Click **Settings** tab.
5	Click **Advanced** button. **Result**: **Plug and Play Monitor and Intel(R) 82815 Graphics Controller** dialog box appears.
6	Select the **Normal size (96 DPI)** option from the **DPI setting** list.
7	Click **OK**. **Result**: A message appears asking you to confirm the font change operation.
8	Click **OK**. **Result**: A message appears asking you to confirm the operation.
9	Click **Yes**. **Result**: **Display Properties** dialog box appears again.
10	Click **Close** to close the **Display Properties** dialog box. **Result**: A message appears asking you to restart the computer now.
11	Click **Yes**.

Downloading Zelio Temperature Control Soft

To download Zelio Temperature Control Soft to your PC, proceed as follows:

Step	Action
1	Enter the web address for Schneider Electric (*www.schneider-electric.com*) in an Internet browser.
2	In the **Search from input field**, enter the phrase Zelio Temperature Control Soft and press `Enter`.
3	Examine the search results and select the appropriate entry for the Zelio Control Soft.
4	Follow the on-screen instructions to download both the Zelio Control installation software.

NOTE: The communication between a computer and a controller is performed with the RTCCBL communication cable.

The USB driver version 2.08.14 for the communication cable is needed. The USB driver can be download from *www.schneider-electric.com* as well.

Modbus Communication Accessories

The following table shows the accessories for Modbus communication:

Part Number	Description
TWDXCAFJ010	1 x RJ45 connector and 1 end with flying leads
RTCCBL	USB to Console port
TWDXCAT3RJ	Tap junction box (Line end adapter and Line Pre-polarization)

Installing and Uninstalling Zelio Temperature Control Soft

Installing Zelio Temperature Control Soft on the PC (Operating System - Windows Me/2000/XP)

To install Zelio Temperature Control Soft to your PC, proceed as follows:

Step	Action
1	Close all the applications that are running and set the font size *(see page 13)* to Normal size.
2	Click **Start** → **Run**. **Result**: **Run** dialog box appears.
3	Click **Browse**. **Result**: **Browse** dialog box appears.
4	Browse to select the *Zelio Temperature Control Soft.msi* file.
5	Click **Open**. **Result**: The selected file with path appears in the **Open** field.
6	Click **OK**. **Result**: **Zelio Temperature Control Soft** setup wizard appears.
7	Follow the instructions on the screen to install **Zelio Temperature Control Soft**.

Installing Zelio Temperature Control Soft on the PC (Operating System - Windows 98/NT4.0)

To install Zelio Temperature Control Soft to your PC, proceed as follows:

Step	Action
1	Close all the applications that are running and set the font size *(see page 13)* to Normal size.
2	Click **Start** → **Run**. **Result**: **Run** dialog box appears.
3	Click **Browse**. **Result**: **Browse** dialog box appears.
4	Browse to select the *setup.exe* file.
5	Click **Open**. **Result**: The selected file with path appears in the **Open** field.
6	Click **OK**. **Result**: **Zelio Temperature Control Soft** setup wizard appears.
7	Follow the instructions on the screen to install **Zelio Temperature Control Soft**.

Uninstalling Zelio Temperature Control Soft

To uninstall Zelio Temperature Control Soft from your PC, proceed as follows:

Step	Action
1	Click **Start** → **All Programs** → **Control Panel**. **Result**: **Control Panel** dialog box appears.
2	Click **Add or Remove Programs**. **Result**: **Add or Remove Programs** dialog box appears.
3	Select the **Zelio Temperature Control Soft** software from the list.
4	Click **Remove**. **Result**: A message appears asking you to confirm the operation.
5	Click **Yes**. **Result**: **Zelio Temperature Control Soft** status dialog box appears indicating the status of the uninstalling process.

Connect and Load Zelio Temperature Control Soft

Precautions

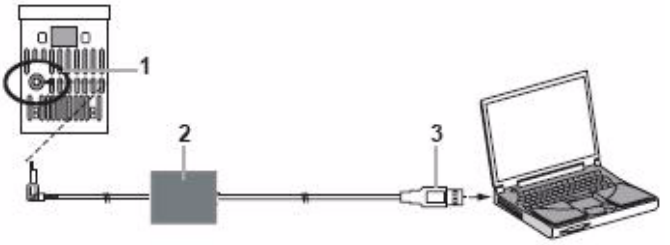
⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not confuse the direction of the USB plug when connecting this cable to the USB port. If the plug cannot be inserted smoothly, do not force it to enter. This may damage the plug or port.
- Do not bend or pull forcibly or put any heavy object on the cable.
- Do not connect or remove this cable during communication. This may cause damage or malfunction.
- Do not allow the metallic section of this cable to come in contact with external power terminals.
- Do not handle the cable plug with wet hands. This may result in electric shock.
- Ensure the cable is used under the following conditions:
  - A minimum of dust, and an absence of corrosive gases
  - No flammable, explosive gases
  - No mechanical vibrations or shocks
  - No exposure to direct sunlight, an ambient temperature of 0...50 °C (32...122 °F) that does not change rapidly, and no icing
  - An ambient non-condensing humidity of 35 to 85% RH
  - No large capacity electromagnetic switches or cables through which large current is flowing
  - No water, oil, chemicals, or where the vapors of these substances can come in direct contact with the cable
  - Ambient temperature of this cable must not exceed 50 °C (122 °F) if mounted within the control panel
- It sometimes takes time for the PC to identify the cable when the USB plug of this cable is connected to the PC. However, this is not a malfunction.
  Be sure to confirm the COM port number before starting communication.
- Do not extend this cable using an extension cable when connecting to the PC. A malfunction may occur.
- Use a soft, dry cloth when cleaning this cable. (Alcohol based substances may deface or tarnish the cable.)

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Connecting the PC to the RTC48 Temperature Controller Through Console Communication

Step	Action
1	Turn the power supply to the PC On, and start Windows.
2	Connect the cable. ● Check that the power supply to the instrument is turned Off. ● Connect the USB port of the PC to the console connector of the instrument, using this cable.  **1** RTC48 console port **2** RTCCBL communication cable **3** PC USB port
3	Insert the plug pin until a click sound is audible. Otherwise communication is impossible due to imperfect insertion.
4	Install the driver. ● Install the USB driver 2.08.14 downloaded from *www.schneider-electric.com*. ● Install the USB driver and virtual COM port driver. **Result**: The same display for installation appears twice based on the PC with Windows XP operating system. ● Refer to *Setup_E.txt* in the USB driver 2.08.14 folder for installation on the PC with Windows Vista/7 system. ● If driver installation has been already completed, go to step 5. **a.** Connect the USB plug of this cable with the USB port of the PC. **b.** After a short while, **Found New Hardware** is indicated. Then, **Found New Hardware Wizard** dialog box appears. **c.** Select **Install from a list of specific location (Advanced)**, and click **Next**. **d.** Click **Search for the best driver in these locations**. **e.** Click **Include this location in the search** and click **Browse**. **f.** Select the USB driver folder and click **OK**. **g.** Click **Next**. **Result**: **Completing the Found New Hardware Wizard** dialog box appears. **h.** Click **Finish**. **Result**: **Found New Hardware Wizard** dialog box appears again. **i.** Repeat the steps c to h. **Result**: The driver installation is complete.

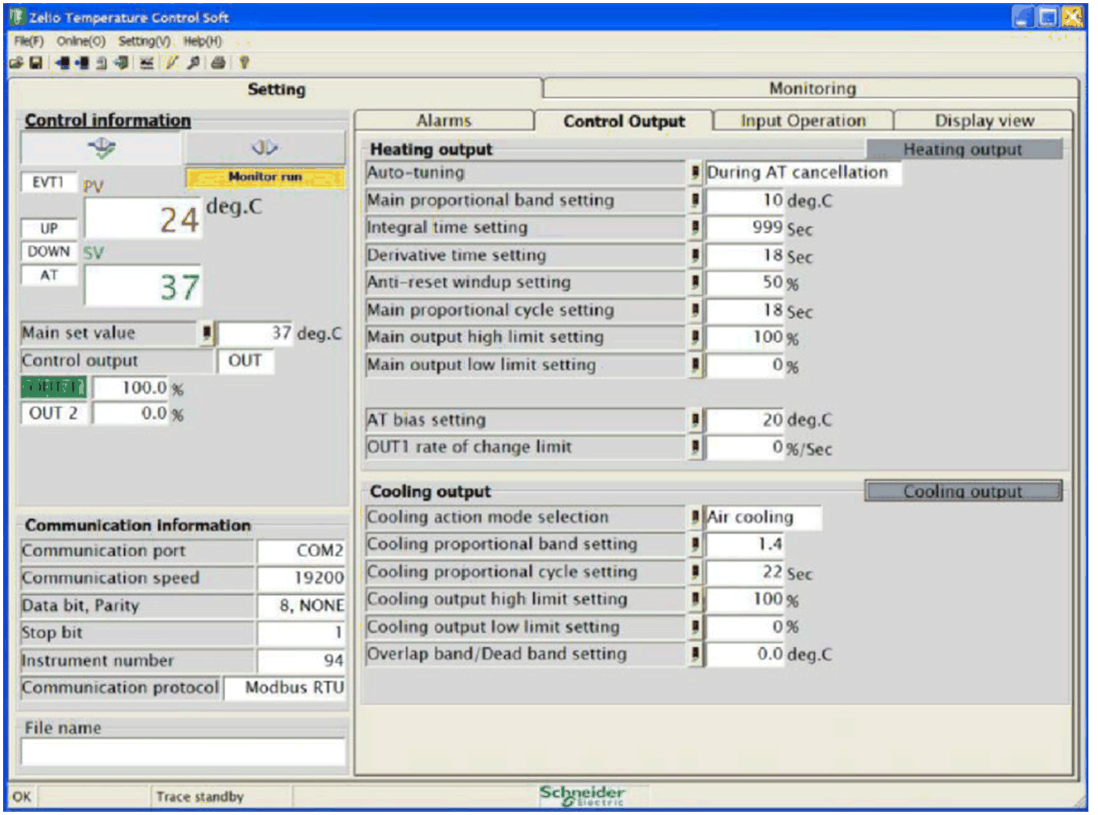
Step	Action
5	Confirm the port number by the following the procedure given below: ● Click **Start** → **Control Panel**. **Result**: **Control Panel** dialog box appears. ● Click **Performance and Maintenance**. **Result**: **Performance and Maintenance** dialog box appears. ● Click **System**. **Result**: **System Properties** dialog box appears. ● Click **Hardware** tab. ● Click **Device Manager**. **Result**: If USB Serial Port (COM3) is indicated in the Ports (COM & LPT), COM port has been allocated No.3. ● Close **Device Manager**, **System Properties**, and **Control Panel** dialog boxes.
6	Turn the power supply to the instrument On.
7	Start the **Zelio Temperature Control Soft** of the instrument. Refer to the Starting the Zelio Temperature Control Soft chapter for more information.

How to Use Zelio Temperature Control Soft

Overview

The main screen consists of the following tabs:

- **Setting**
- **Monitoring (only available in Zelio Temperature Control Soft Advanced version)**



Setting

The **Setting** tab consists of the following tabs:

- **Alarms**
- **Control Output**
- **Input Operation**
- **Display view**

Tabs	Description
Control information	Enables you to switch between Online and Offline modes. Displays the monitorig status, online/offline status, and so on.
Alarms	Enables you to view and set the alarm information.
Control Output	Enables you to view and set the control outputs (OUT1 - Heating output and OUT2 - Cooling output) information.
Input Operation	Enables you to view and set the input operation information.
Display view	Enables you to view and set the 3 color display.

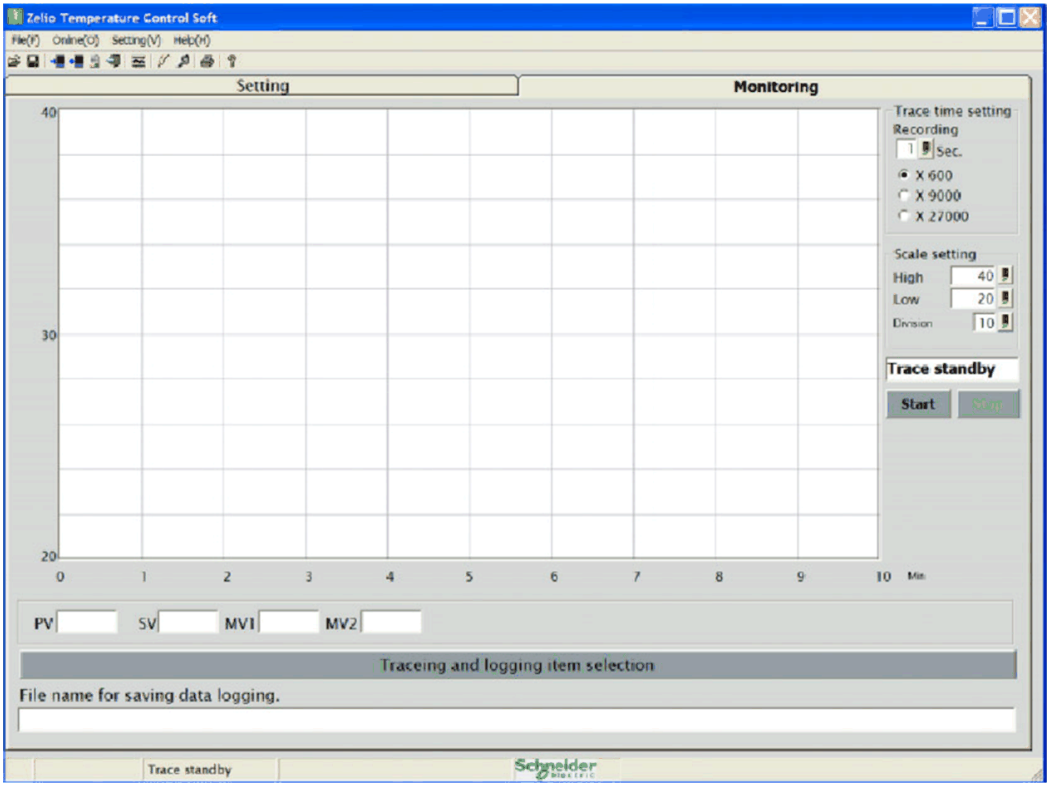
For more details on the User Interface, refer to Zelio Temperature Control Soft User Guide.

Monitoring

You can trace and perform data logging for the PV, SV, MV1, and MV2 parameters.

NOTE: Monitoring function is available only on Zelio Temperature Control Soft Advanced version.

The following figure shows the **Monitoring** tab:



When tracing is stopped, press the Trace  icon on the tool bar or click **Online(O)** → **Trace(T)** on the menu to start tracing (logging).

When tracing is stopped, press the **Start** button on the Trace display to start the tracing (logging). Trace status bar shows Logging and Trace run.

When trace begins, data logging also automatically begins. It saves the logged data file with the date when logging begins.

NOTE: You cannot change the logging data save folder and file name.

You can select the tracing (logging) item and its color.

For more details, refer to Zelio Temperature Control Soft User Guide.

How to Save the Controller Parameters

Overview

You can save the controller into a file on your computer.

The extension of the file will be *.dat*.

File Save

To save all setting data indicated on the Main Display in 1 file and to name the file, proceed as follows:

Step	Action
1	Click **File(F)** → **File save(S)** menu. **Result**: It saves all setting data indicated on the Main Display into a 1 file and names the file (*xxx.dat*) of a folder randomly. **NOTE:** This function works while in Online and Offline modes.

File Load

To load all setting data saved into a file located in a folder and to set to the Main Display, proceed as follows:

Step	Action
1	Click **File(F)** → **File load(L)** menu. **Result**: It loads all setting data saved into a file located in a folder and sets to the Main Display. **NOTE:** This function does not work while in Online mode. However, click the Download  icon to set the loaded data on the currently connected RTC48. If the file is loaded successfully, the executed file name (*xxx.dat*) appears in the **File name** field.

Communication Modbus

II

What Is in This Part?

This part contains the following chapters:

Communication Modbus

2

Integration in a Network

Tap Junction Box (Line End Adapter and Line Pre-polarisation)

The tap junction box TWDXCAT3RJ (sold separately):

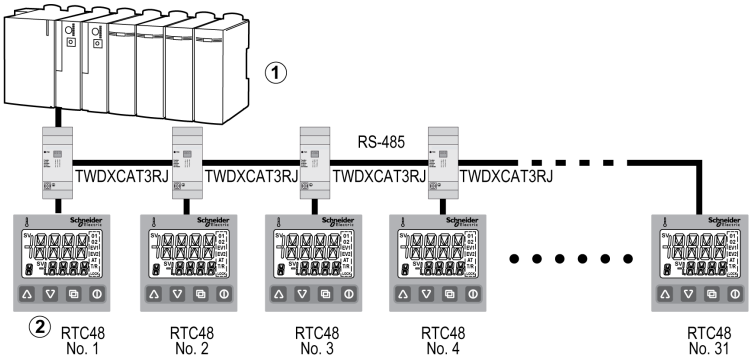
- has a built-in line end adapter (RC 120 Ω, 1 nF)
- is Din Rail Mounting
- is for easy set up of RJ45 terminal and for line end termination.

How to Install

The following table explains the procedure of the temperature controller connection to a Modbus network:

Step	Action
1	Connect the coaxial cable on the port L1 of the Modbus tap (TWDXCAT3RJ) junction box. The port L2 is used to connect the temperature controller. The port L3 is used to connect the port L1 of the second Modbus TAP junction. Use the switches of the tap configure the end line impedance and polarization.
2	Repeat the above step for each device.
3	Use the switches of the TAP as integrated end line of the device for the end line of the last device.

The following figure explains the integration in a network:



1 Programmable logic controller

2 RTC48 temperature controller (Can connect up to 31 RTC48 units in serial communication (Modbus))

Functions

3

What Is in This Chapter?

This chapter contains the following topics:

RS-485 Specifications

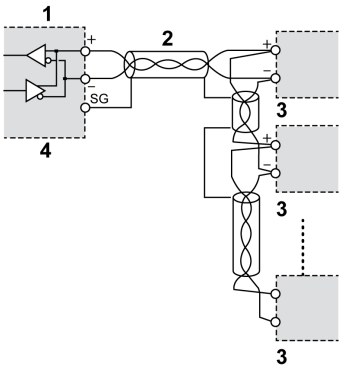
Specifications

Specifications of the terminal:

Item	Specifications
Cable length	1.2 km (maximum) Cable resistance: 50 or less (terminators are not necessary, but if used, use 120 Ω or more on one side.)
Communication line	EIA RS485.
Communication method	Half-duplex communication.
Communication speed	9600 bps (2400, 4800, 19200 bps) selectable by keypad.
Synchronization method	Max 500 m (total length).
Communication speed	Start-stop synchronization.
Code	ASCII, Hexadecimal value.
Error correction	LRC (Modbus ASCII), CRC-16 (Modbus RTU).

Wiring Principle

This following figure explains the principle of wiring:



1 Master
2 Shielded twist per cable
3 Zelio Temperature Controller
4 RS-485 Interface

List of Setting Parameters

Overview

The setting parameters are shown in the chart below. Change the settings using the keys on the front of the temperature controller.

RS-485 Parameters

The setting parameters includes the following items:

Display	Parameter Name		Description	Setting Range	Factory Default Setting
	cMSL	Communication protocol [1]	Selects communication protocol.	The various communication protocols used are: ● PRTC ● Modbus ASCII mode ● Modbus RTU mode	PRTC
	STNo	Station number [1]	Sets the station number individually to each instrument when communicating by connecting plural instruments in serial communication.	0...95	1
	cMSP	Communication speed[1]	Selects a communication speed equal to that of the host computer.	The various communication speeds are: ● 2400 bps ● 4800 bps ● 9600 bps ● 19200 bps	19200 bps
	coM	Data bit/Parity[1]	Selects data bit and parity.	The various data bits are: ● 8 bits/No parity ● 7 bits/No parity ● 8 bits/Even parity ● 7 bits/Even parity ● 8 bits/Odd parity ● 7 bits/Odd parity	8 bits/Even parity
	cMSL	Stop bit[1]	Selects the stop bit.	The stop bits are: ● 1 ● 2	1

1 This option is not available if RS-485 communication models are not selected.

Parameters Setting Procedure

Procedure

The following procedure explains how to change the settings of each communication parameter.

Step	Action	Remarks
1	Press the key for approximately 3 seconds while pressing the key in the PV/SV display mode.	The display unit proceeds to auxiliary function setting mode. 
2	Press the key twice.	
3	Use the keys to set the following communication protocol: ● PRTC : RTC protocol ● ModA : Modbus ASCII mode ● ModR : Modbus RTU mode (Default)	
4	Press the key, then use the keys to set the station number of the controller individually when communicating by connecting plural instruments. 0...95 (Default: 1). **NOTE:** Do not set anything to Global addresses (0 and 95). Global address: PRTC:95, Modbus ASCII, RTU: 0 and 95	
5	Press the key to confirm the setting.	–
6	Use the keys to set the communication speed equal to that of the host computer. ● 24 : 2400 bps ● 48 : 4800 bps ● 96 : 9600 bps ● 192 : 19200 bps (Default)	

Step	Action	Remarks
7	Press the key, then use the keys to set the data bit and parity. ● 8NoN : 8 bits/No parity ● 7NoN : 7 bits/No parity ● 8EVN : 8 bits/Even parity (Default) ● 7EVN : 7 bits/Even parity ● 8odd : 8 bits/Odd parity ● 7odd : 7 bits/Odd parity	
8	Press the key, then use the keys to set the stop bit. ● 1 : 1 (Default) ● 2 : 2	
9	Press the key to confirm the setting and to return to PV/SV display mode.	–

Address Map and Data Format

Function Codes Supported

For Modbus protocol, register numbers are assigned by the function code, and each function code only works for the assigned register number.

The message length for each function is as follows:

Code	Contents	Assignable Data Number	Command Message		Response Message	
			Minimum	Maximum	Minimum	Maximum
03H	Read word data	60 words	8	8	7	125
06H	Write word data	1 word	8	8	8	8

NOTE: Assignable data number is limited by the data number that is assigned by the micro controller to the address number (excluding function code 06H).

Sent Data Format

The Modbus protocol used by this equipment employs RTU (Remote Terminal Unit) mode. The data is sent as numerical value, not as ASCII code.

Addresses Not Written

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Use only the addresses contained in this manual.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Appendices

III

Data Address Map

4

Holding Register

Overview

Handles data dependent on an input range as an internal value before scaling (0.00...100.00%).

Word Data (Read/Write)

The following table represents the internal parameters address map (first line the Internal Calculation Value and second line the Engineering Unit value).

The following table represents the addresses of the Holding Registers parameters accessible using the function code 03H and 06H:

Parameter Names	Relative Address	Register Number	Description	Setting Range
SV	0001H	40002	SV	Set value, Decimal point ignored
AT	0003H	40004	AT/Auto-reset	0000H: Cancel 0001H: Perform
P	0004H	40005	OUT1 proportional band	0...1000 °C (32...1832 °F) Decimal point ignored
P2	0005H	40006	OUT2 proportional band	0...1000 °C (32...1832 °F) Decimal point ignored
I	0006H	40007	Integral time	0...1000
d	0007H	40008	Derivative time	0...300
c	0008H	40009	OUT1 proportional cycle	1...120
c2	0009H	40010	OUT2 proportional cycle	1...120

Parameter Names	Relative Address	Register Number	Description	Setting Range
A1	000BH	40012	Alarm 1 value	Set value, Decimal point ignored
A2	000CH	40013	Alarm 2 value	Set value, Decimal point ignored
LocK	0012H	40019	lock	0000H: Unlock 0001H: Lock 1 0002H: Lock 2 0003H: Lock 3
So	0015H	40022	Sensor correction	-100.0...100.0 °C Vdc voltage, Current input: -1000...1000
db	0016H	40023	Overlap/Dead band	-100.0...100.0 °C Vdc voltage, Current input: -1000...1000
STLH	0018H	40025	Scaling high limit value	-2000...10000 °C, Decimal point ignored
STLL	0019H	40026	Scaling low limit value	-2000...10000 °C, Decimal point ignored
dP	001AH	40027	Decimal point place	0000H: xxxx 0001H: xxx.x 0002H: xx.xx 0003H: x.xxx
FILT	001BH	40028	PV filter time constant	0.0...10.0 s, Decimal point ignored
oLH	001CH	40029	OUT1 high limit	OUT1 low limit value...100%
oLL	001DH	40030	OUT1 low limit	0...OUT1 low limit value %
HYS	001EH	40031	OUT1 ON/OFF hysteresis	0.1...100.0 °C, Vdc voltage 1...1000, current input, Decimal point ignored
cAcT	001FH	40032	OUT2 cooling mode	0000H: Air cooling 0001H: Oil cooling 0002H: Water cooling
oLH2	0020H	40033	OUT2 high limit	OUT2 low limit value...100%
oLL2	0021H	40034	OUT2 low limit	0...OUT2 low limit value %
HYSb	0022H	40035	OUT2 ON/OFF hysteresis	0.1...100.0 °C, Vdc voltage 1...1000, current input, Decimal point ignored

Parameter Names	Relative Address	Register Number	Description	Setting Range
AL1T	0023H	40036	Alarm 1 type	0000H: No alarm action 0001H: High limit alarm 0002H: Low limit alarm 0003H: H/L limits alarm 0004H: H/L limit range 0005H: Process high alarm 0006H: Process low alarm 0007H: High limit w/standby 0008H: Low limit w/standby 0009H: H/L limits w/standby
AL2T	0024H	40037	Alarm 2 type	The same as Alarm 1 type
A1HY	0025H	40038	Alar m 1 hysteresis	0.1...100.0 °C, Vdc voltage 1...1000, current input, Decimal point ignored
A2HY	0026H	40039	Alarm 2 hysteresis	0.1...100.0 °C, Vdc voltage 1...1000, current input, Decimal point ignored
A1dY	0029H	40042	Alarm 1 delay time	0...10000 s
A2dY	002AH	40043	Alarm 2 delay time	0...10000 s
PSV	0032H	40051	Indication when output OFF	0000H: OFF indication 0001H: No indication 0002H: PV indication 0003H: PV+ Alarm action
RATU	0033H	40052	SV rise rate	Set value, Decimal point ignored
RATd	0034H	40053	SV fall rate	Set value, Decimal point ignored
dIIN	0037H	40056	Control OUT/OFF function	0000H: Control output ON 0001H: Control output OFF
MANU	0038H	40057	Auto/Manual control	0000H: Automatic control 0001H: Manual control
–	0039H	40058	Manual control MV	Set value
A1LM	0040H	40065	Alarm 1 Energized/De-energized	0000H: Energized 0001H: Deenergized
A2LM	0041H	40066	Alarm 2 Energized/ De-energized	0000H: Energized 0001H: De-energized

Parameter Names	Relative Address	Register Number	Description	Setting Range	
SENS	0044H	40069	Input type	0000H: K	-200...1370 °C
				0001H: K	-200.0...400.0 °C
				0002H: J	-200...1000 °C
				0003H: R	0...1760 °C

Parameter Names	Relative Address	Register Number	Description	Setting Range	
				0004H: S	0...1760 °C
				0005H: B	0...1820 °C
				0006H: E	-200...800 °C
				0007H: T	-200.0...400.0 °C
				0008H: N	-200...1300 °C
				0009H: PL-II	0...1390 °C
				000AH: C (W/Re5-26)	0...2315 °C
				000BH: Pt100	-200.0...850.0 °C
				000CH: JPt100	-200.0...500.0 °C
				000DH: Pt100	-200...850 °C
				000EH: JPt100	-200...500 °C
				000FH: K	-320...2500 °F
				0010H: K	-320.0...750.0 °F
				0011H: J	-320...1800 °F
				0012H: R	0...3200 °F
				0013H: S	0...3200 °F
				0014H: B	0...3200 °F
				0015H: E	-320...1500 °F
				0016H: T	-320.0...750.0 °F
				0017H: N	-320...2300 °F
				0018H: PL-II	0...2500 °F
				0019H: C (W/Re5-26)	0...4200 °F
				001AH: Pt100	-320.0...1500.0 °F
				001BH: JPt100	-320.0...900.0 °F
				001CH: Pt100	-320...1500 °F
				001DH: JPt100	-320...900 °F
				001EH: 4...20 mA	-2000...10000
				001FH: 0...20 mA	-2000...10000
				0020H: 0...1 V	-2000...10000
				0021H: 0...5 V	-2000...10000
				0022H: 1...5 V	-2000...10000
				0023H: 0...10 V	-2000...10000

Parameter Names	Relative Address	Register Number	Description	Setting Range
coNT	0045H	40070	Direct/Reverse action	0000H: Reverse action 0001H: Direct action
AT_b	0047H	40072	AT bias	Set value
ARW	0048H	40073	ARW	Set value
oRAT	004AH	40075	OUT1 rate-of-change	0...100
dPTM	0050H	40081	Backlight	0000H: All are backlit
				0001H: PV display backlit
				0002H: SV display backlit
				0003H : Action indicators backlit
				0004H: PV+SV displays backlit
				0005H: PV+Action indicators backlit
				0006H: SV+Action indicators backlit
coLR	0051H	40082	PV color	0000H: Green
				0001H: Red
				0002H: Orange
				0003H: When Alarm ON:Green to red
				0004H: When Alarm ON: Orange to red
				0005H: PV continuous change
				0006H: PV continuous change+ Alarm ON, Red
cLRG	0052H	40083	PV color range	Set value, Decimal point ignored
dPTM	0053H	40084	Backlight time	0...99
–	0070H	40113	Key operation change flag clearing	0000H: No action 0001H: Clear all
–	0080H	40129	PV (Process Variable)	Current PV (Process variable), Decimal point ignored
–	0081H	40130	OUT1 MV	OUT1 MV, Decimal point ignored
–	0082H	40131	OUT2 MV	OUT2 MV, Decimal point ignored
–	0083H	40132	SV (When SV rises or falls)	Current SV (Desired value), Decimal point ignored

Parameter Names	Relative Address	Register Number	Description	Setting Range	
–	0085H	40134	Status flag	2^0: OUT1	0: OFF 1: ON (DC current output: Not fixed)
				2^1: OUT2	0: OFF 1: ON
				2^2: Alarm 1 output	0: OFF 1: ON
				2^3: Alarm 2 output	0: OFF 1: ON
				2^8: Overscale	0: OFF 1: ON
				2^9: Underscale	0: OFF 1: ON
				2^{10}: Control output OUT/OFF	0: OFF 1: ON
				2^{11}: During AT/Auto-reset	0: OFF 1: During AT/Auto-reset
				2^{12}: OUT/OFF key function	0: OUT/OFF function 1: Auto/Manual control
				2^{14}: Auto/Manual control	0: Auto 1: Manual
				2^{15}: Change in key operation	0: No 1: Yes
				2^4, 2^5, 2^6, 2^7, 2^{13}	Not used, Always 0

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