

R2M CONFIGURATOR

Model: R2CON

Users Manual

Applicable Software Version 1.0

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1. GENERAL

In this manual, user is assumed that he is already familiar with operating Windows and terminology used in these operating systems.

If you need to know about particular operation or terminology on Windows, please refer to manuals provided with the system.

1.1 FEATURES OF R2CON

The model R2M can accept direct sensor inputs from thermocouples and other sensors, with independent sensor type and temperature range settings for each channel. It can be connected to a PC with RS-232-C cable included in the package of the R2CON. Available R2M models are:

R2M-2H3	Thermocouple inputs, 8 points
R2M-2G3	DC inputs, 8 points

The R2CON software is used to help you program input type, burnout action, cold junction compensation of model R2M.

General functions of the R2CON are as follows:

• COMMUNICATION CONFIGURATION

Parameters concerning Modbus communication such like node address or baud rate can be configured. For use of the R2M as PC Recorder, these settings are or have already been adjusted on the hardware in order to simplify their use.

• PARAMETERS CONFIGURATION FOR EACH CHANNEL

For model R2M-2H3, thermocouple type and temperature range per channel can be programmed.

• FILE MANAGING

The parameter configuration for each channel can be saved as a file on the PC. Therefore, you can configure a set of parameters without actually connecting the R2M to your PC.

Reading (downloading) parameter files helps you to configure multiple modules easily and accurately.

• CREATING AND MODIFYING PARAMETERS

Parameters displayed on the PC can be changed.

New parameter setting can be created.

• MONITORING

You can check analog input data using configured data.

• CALIBRATION

For model R2M-2H3 and -2G3, zero and span adjustments are available.

For model R2M-2H3, replacing cold junction compensation module (model: CJM) is available.

1.2 HARDWARE REQUIREMENTS


- DOS/V compatible PC with Windows 7 (32-bit / 64-bit) or Windows 10 (32-bit / 64-bit) appropriately installed.

2. GETTING STARTED

2.1 INSTALLING THE R2CON

The program, provided as compressed archive, can be downloaded at our web site.

Decompress the archive and execute 'setup.exe' to start up the R1CON installer program. Follow instructions on the Windows.

 If you have already the R2CON program installed in your PC, remove it following the procedure explained in 2.2. before installing a new one.

2.2 UNINSTALLING THE R2CON

For Windows 7, open Control Panel > Uninstall a program, or Uninstall or change a program. Select the R2CON from the program list and click [Uninstall] button.

For Windows 10, open Settings from Start menu > Apps > Apps & features.

Select the R2CON from the program list and click [Uninstall] button.

2.3 CONNECTING THE R2M WITH THE PC

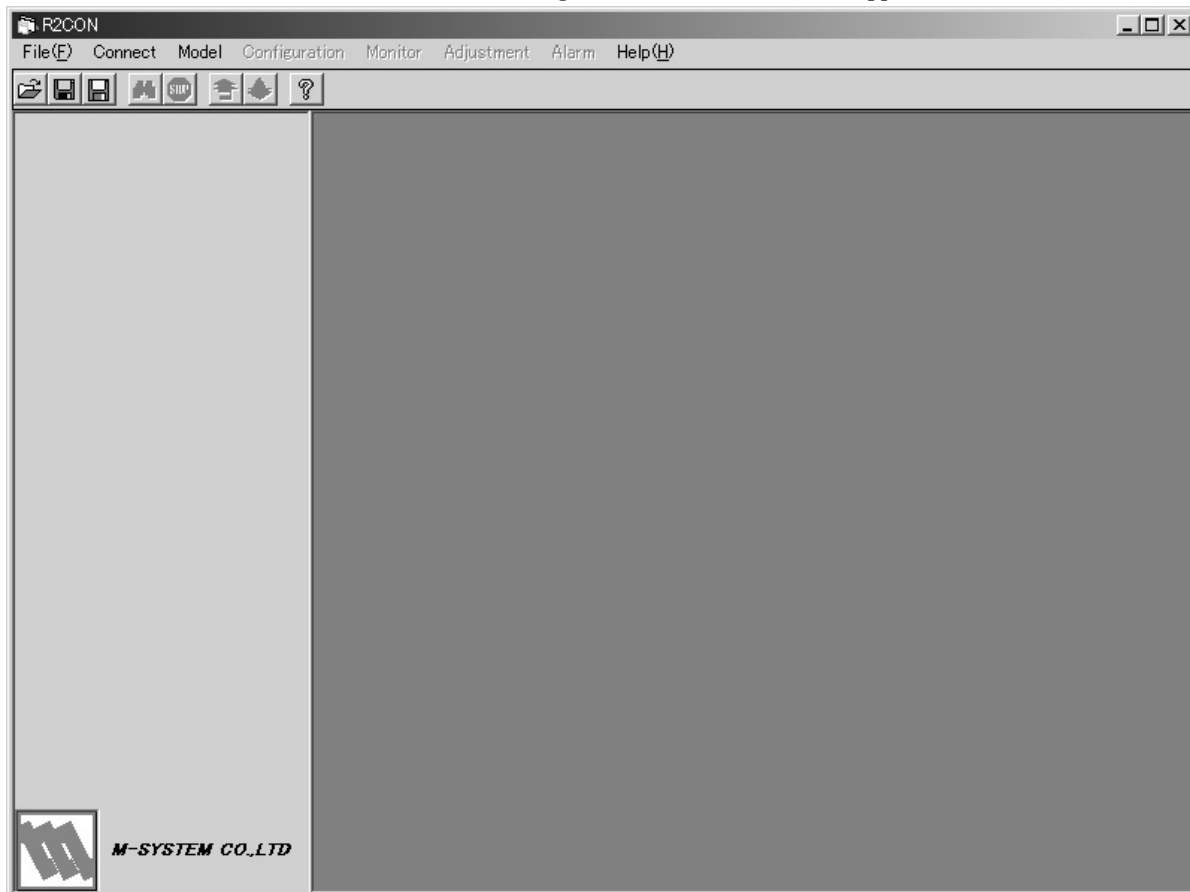
Connect the radio jack end of the non-isolated cable (included in the package of the R2CON) to Config. port at the rear of the R2M module, and its 9-pin D-sub connector end to COM port of the PC.

2.4 STARTING / QUITTING THE R2CON

Display images shown in this manual may change in detail when the software version is updated.


2.4.1 STARTING THE R2CON

Press Start on the task bar and choose “R2CON” from Program menu. The main view appears on the screen as shown below.



2.4.2 ENDING THE R2CON

Choose [End] from [Files] menu to quit the program.

 Clicking [X] button at the right end of the title bar does not end the program.

3. HOW TO USE THE R2CON

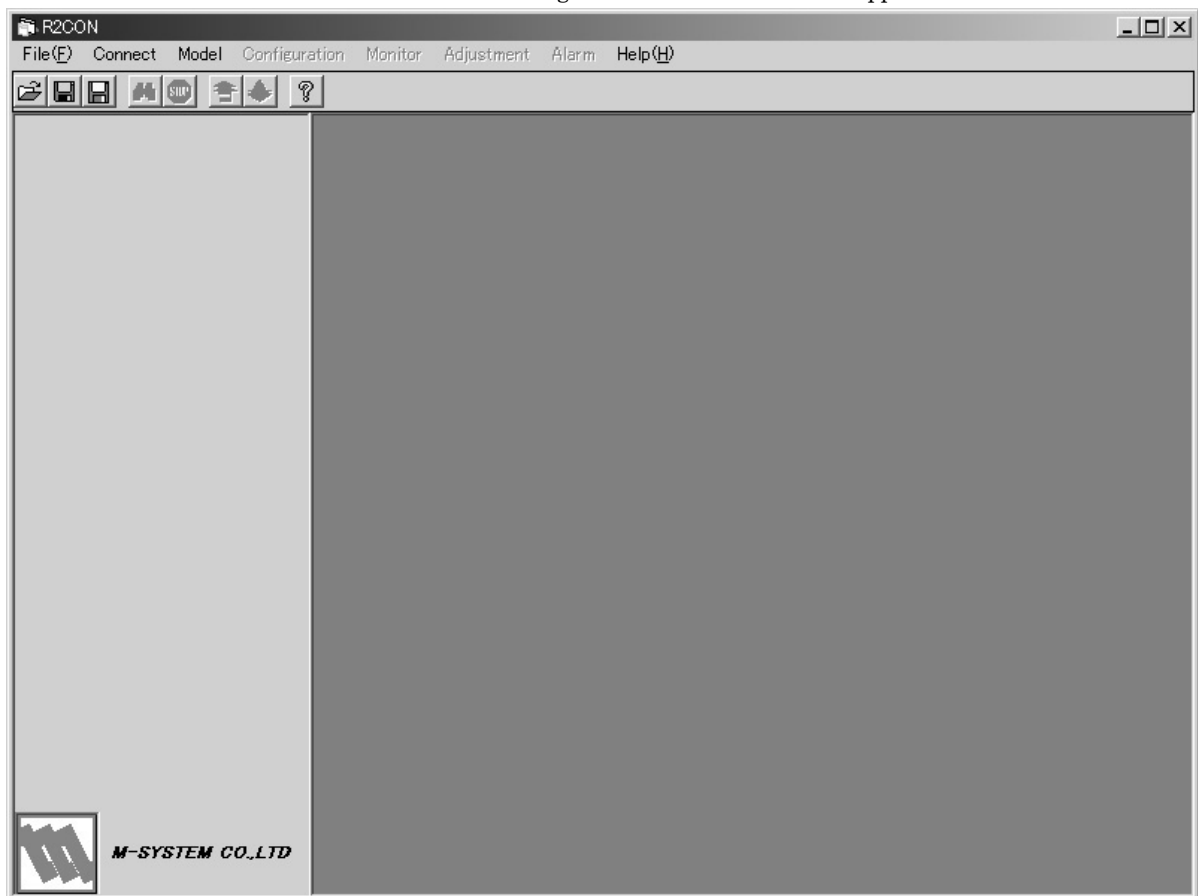
The R2CON can be used on-line or off-line (the R2M connected or disconnected to/from communication line. In this section, the following procedures are explained with examples.

3.1 ON-LINE OPERATION

- 1) Starting up the R2CON program
- 2) Connecting to the communication line
- 3) Confirming the hardware type and current setting
- 4) Modifying parameters
- 5) Downloading the parameters to the R2M
- 6) Confirming new configuration
- 7) Monitoring
- 8) Closing the communication line

3.1.1 STARTING UP THE R2CON PROGRAM

Press Start on the task bar and choose "R2CON" from Program menu. The main view appears on the screen as shown below.

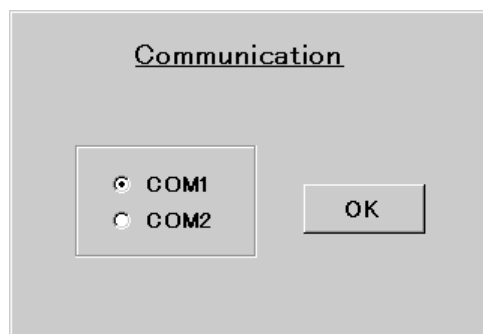


3.1.2 CONNECTING TO THE COMMUNICATION LINE

Connecting the R2M module to the communication line.

Choose [Connect] from [Connect] on the menu bar and the following dialog box appears on the screen.

Confirm that the power is supplied to the R2M and that the configurator jack of the R2M and the COM1 port of the PC is firmly connected with the attached cable.

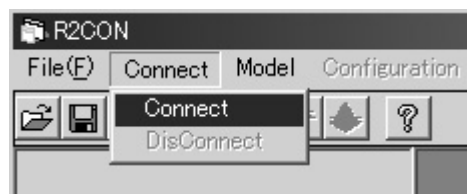


Choose COM1 (See left) and click OK.

With the communication line established, the version No. of the hardware and current parameter setting are displayed.

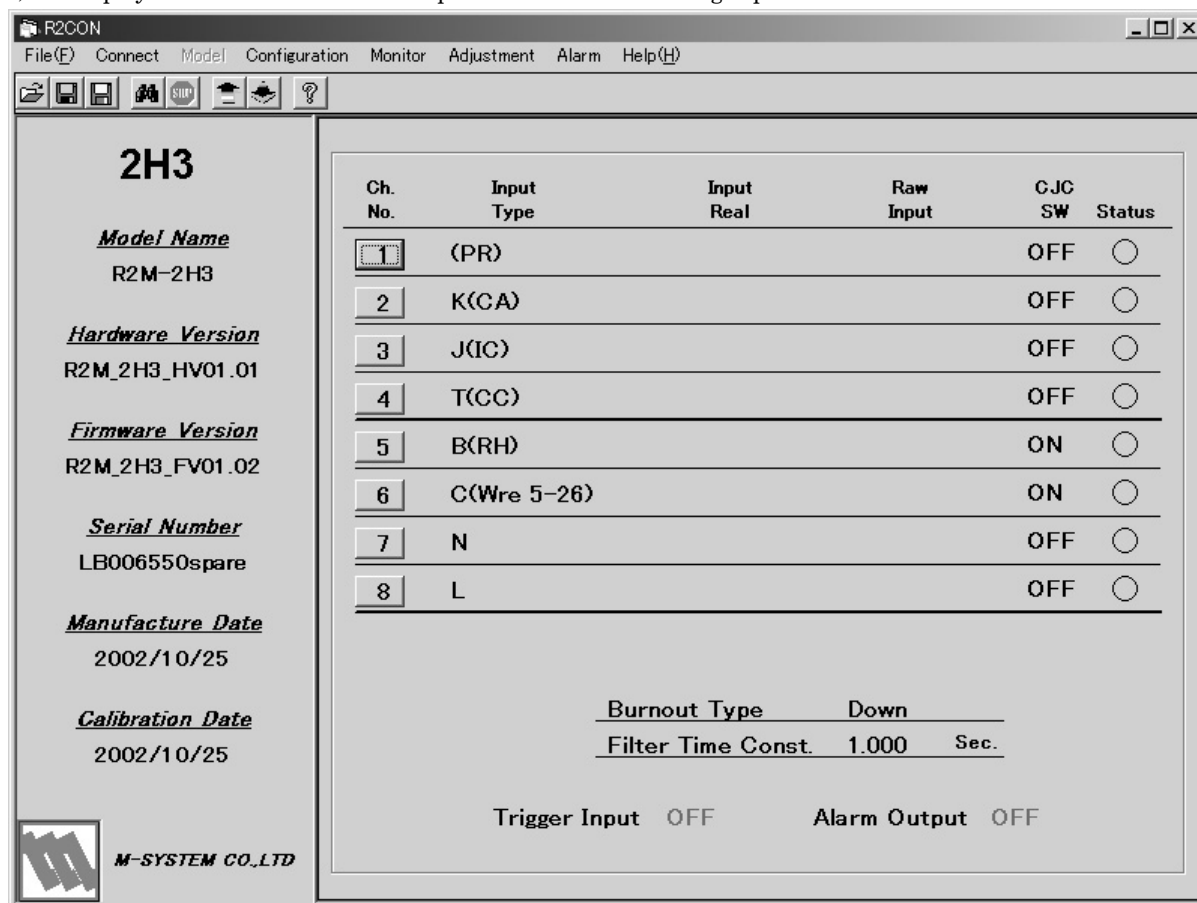
⚠ If a message appears saying that the connection is unsuccessful, confirm again the connection between the R2M and PC, and the COM1 port driver status on the PC.

Only COM1 and COM2 can be specified as standard. In order to use COM3 and other communication ports, change the port numbers following instructions in the appendix.



3.1.3 CONFIRMING THE HARDWARE TYPE & CURRENT SETTING

With the communication line established, the type No. and version No. of the hardware (left) and current parameter setting (right) are displayed on the screen. The example below and the following explanation is one with model R2M-2H3.



3.1.4 MODIFYING PARAMETERS

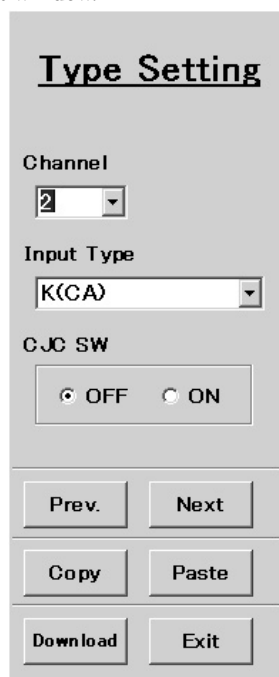
Click a channel No. button on the right window and Type Setting window appears as shown below.

Modifying [Input Type] of Ch. 2 from “K(CA)” to “E(CRC)”

Choose “2” from [Channel] pull-down menu.

Choose “E(CRC)” from [Input Type].

Confirm the new setting at Ch. 2 on the right window.



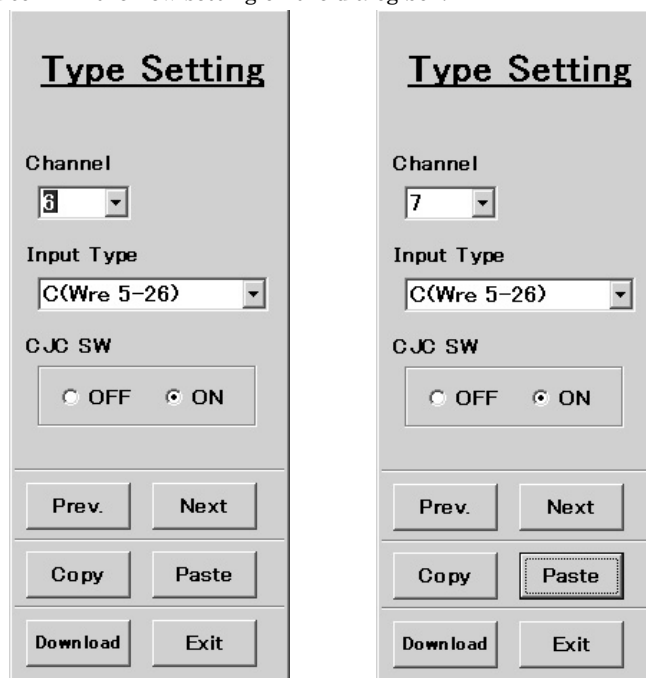
The 'Type Setting' dialog box for Channel 2. It features a title bar with the text 'Type Setting'. Below the title bar, there are three main sections: 'Channel' with a pull-down menu showing '2', 'Input Type' with a pull-down menu showing 'K(CA)', and 'CJC SW' with two radio buttons, 'OFF' and 'ON', where 'OFF' is selected. At the bottom, there are six buttons arranged in three rows: 'Prev.' and 'Next' in the first row, 'Copy' and 'Paste' in the second row, and 'Download' and 'Exit' in the third row.

Applying the setting of Ch. 6 to Ch. 7

Choose “6” from [Channel] pull-down menu.

Press < Copy > button. Then press < Next > button and confirm that the window shows current setting of Ch. 7.

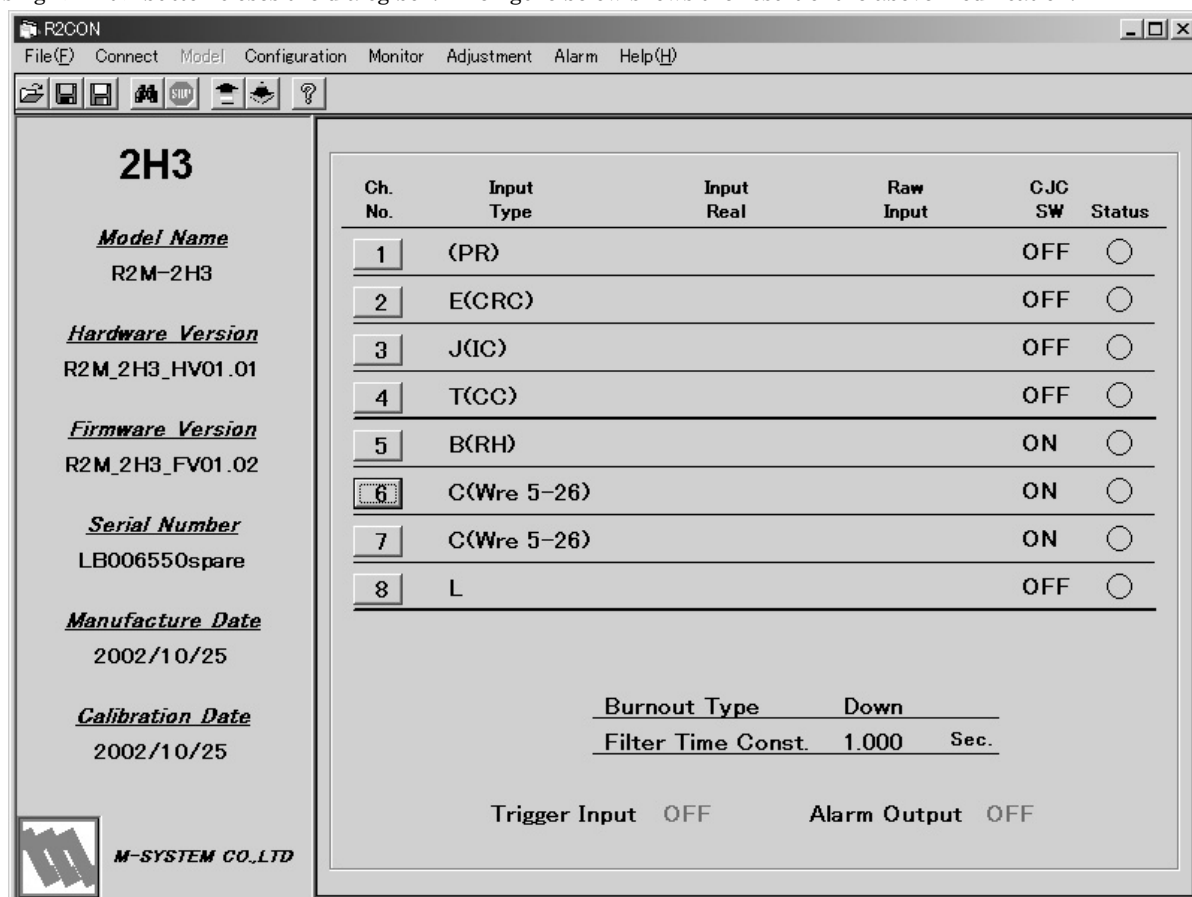
Press < Paste > button and confirm the new setting on the dialog box.




Two side-by-side 'Type Setting' dialog boxes. The left dialog box is for Channel 3, showing 'Channel' as '3', 'Input Type' as 'C(Wre 5-26)', and 'CJC SW' with 'ON' selected. The right dialog box is for Channel 7, showing 'Channel' as '7', 'Input Type' as 'C(Wre 5-26)', and 'CJC SW' with 'ON' selected. Both dialog boxes have the same layout of buttons at the bottom: 'Prev.', 'Next', 'Copy', 'Paste', 'Download', and 'Exit'.

Confirm the new setting at Ch. 7 on the right window.

Pressing < Exit > button closes the dialog box. The figure below shows the result of the above modification.



3.1.5 DOWNLOADING PARAMETERS TO THE R2M



For downloading the parameters for all channels, choose [Configuration] – [Download] or click <  > button.

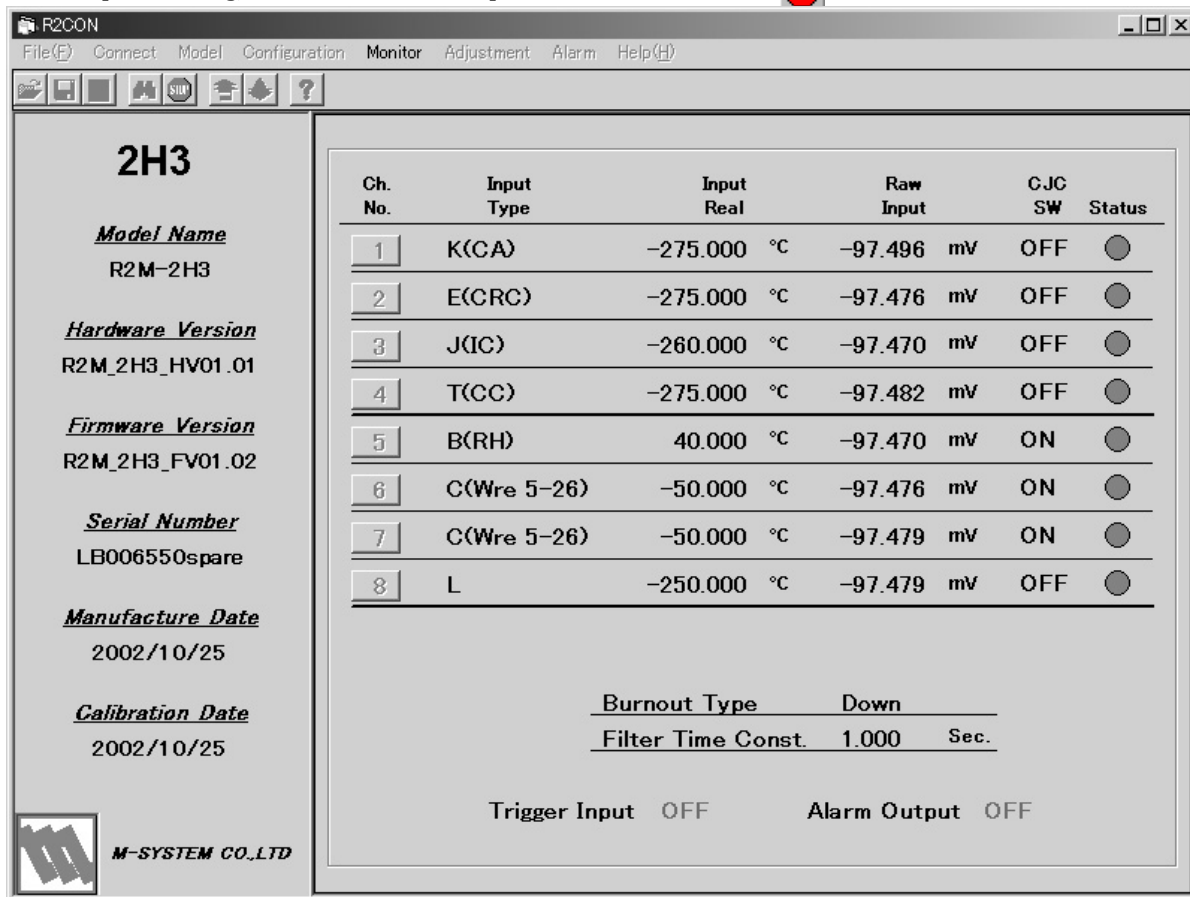
For downloading the parameters for single channel, click < Download > in [Type Setting] dialog box of that channel.

3.1.6 CONFIRMING NEW CONFIGURATION

The R2CON automatically uploads the configuration after every downloading. Therefore you can confirm that new configuration has been applied by comparing the currently displayed setting with applied changes.

3.1.7 MONITORING

You can monitor analog input values on the display. Choose [Monitor] – [Start] from the menu bar or click <  > tool button. In order to stop monitoring, choose [Monitor] – [Stop] from the menu or click <  > tool button.



2H3

Model Name
R2M-2H3


Hardware Version
R2M_2H3_HV01.01









Firmware Version
R2M_2H3_FV01.02

Serial Number
LB006550spare

Manufacture Date
2002/10/25

Calibration Date
2002/10/25

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Ch. No.	Input Type	Input Real	Raw Input	CJC SW	Status
1	K(CA)	-275.000 °C	-97.496 mV	OFF	
2	E(CRC)	-275.000 °C	-97.476 mV	OFF	
3	J(IC)	-260.000 °C	-97.470 mV	OFF	
4	T(CC)	-275.000 °C	-97.482 mV	OFF	
5	B(RH)	40.000 °C	-97.470 mV	ON	
6	C(Wre 5-26)	-50.000 °C	-97.476 mV	ON	
7	C(Wre 5-26)	-50.000 °C	-97.479 mV	ON	
8	L	-250.000 °C	-97.479 mV	OFF	

Burnout Type Down

Filter Time Const. 1.000 Sec.

Trigger Input OFF Alarm Output OFF

3.1.8 CLOSING THE COMMUNICATION LINE

Disconnecting the R2M module to the communication line. Choose [Disconnect] from [Connect] on the menu bar.

3.2 OFF-LINE OPERATION

- 1) Selecting the hardware type
- 2) Creating or modifying parameters
- 3) Saving parameter files

3.2.1 SELECTING THE HARDWARE TYPE

When creating a new parameter file, choose the hardware type from [Model] pull-down menu.

If you want to modify an existing file, choose [File] – [Open] from the menu bar and select the file name.

The following window appears when type 2H3 is selected for a new file.

The screenshot shows the R2CON software window. The title bar reads 'R2CON'. The menu bar includes 'File(F)', 'Connect', 'Model', 'Configuration', 'Monitor', 'Adjustment', 'Alarm', and 'Help(H)'. Below the menu bar is a toolbar with icons for file operations and hardware selection. The main window is divided into two panes. The left pane displays '2H3' in large text. The right pane contains a table with 8 rows, each representing a channel. The columns are 'Ch. No.', 'Input Type', 'Input Real', 'Raw Input', 'CJC SW', and 'Status'. The 'Ch. No.' column contains numbers 1 through 8. The 'Input Type' column is empty. The 'Input Real' column is empty. The 'Raw Input' column is empty. The 'CJC SW' column is empty. The 'Status' column contains radio buttons. Below the table, there are two rows of settings: 'Burnout Type' set to 'None' and 'Filter Time Const.' set to '0.000 Sec.'. At the bottom, there are two labels: 'Trigger Input' and 'Alarm Output OFF'. The bottom left corner of the window features the MG logo and the text 'M-SYSTEM CO.,LTD'.

Ch. No.	Input Type	Input Real	Raw Input	CJC SW	Status
1					<input type="radio"/>
2					<input type="radio"/>
3					<input type="radio"/>
4					<input type="radio"/>
5					<input type="radio"/>
6					<input type="radio"/>
7					<input type="radio"/>
8					<input type="radio"/>

Burnout Type None

Filter Time Const. 0.000 Sec.

Trigger Input Alarm Output OFF

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3.2.2 CREATING OR MODIFYING PARAMETERS

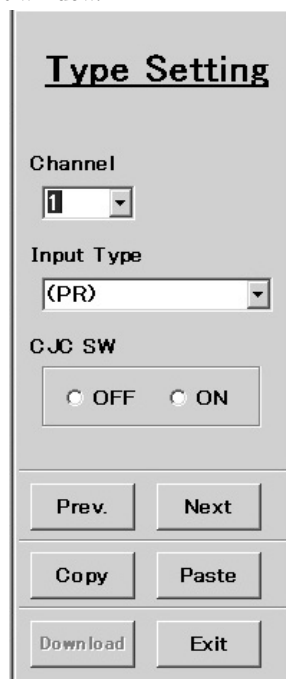
Click a channel No. button on the right window and Type Setting window appears as shown below.

Specifying [Input Type] of Ch. 1 as “E(CRC)” and [CJC SW] to “ON” (CJC enable)

Choose “1” from [Channel] pull-down menu.

Choose “E(CRC)” from [Input Type] and “ON” from [CJC SW].

Confirm the new setting at Ch. 1 on the right window.



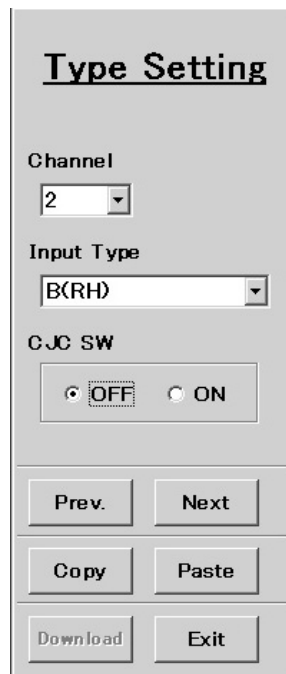
The image shows a 'Type Setting' dialog box. At the top, the title 'Type Setting' is underlined. Below it, there are three main sections: 'Channel' with a pull-down menu showing '1', 'Input Type' with a pull-down menu showing '(PR)', and 'CJC SW' with two radio buttons, 'OFF' and 'ON', where 'ON' is selected. At the bottom, there are six buttons arranged in three rows: 'Prev.' and 'Next' in the first row, 'Copy' and 'Paste' in the second row, and 'Download' and 'Exit' in the third row.

Specifying [Input Type] of Ch. 2 as “B(RH)” and [CJC SW] to “OFF” (CJC disable)

Click < Next > button and Type Setting dialog box for Ch. 2 appears.

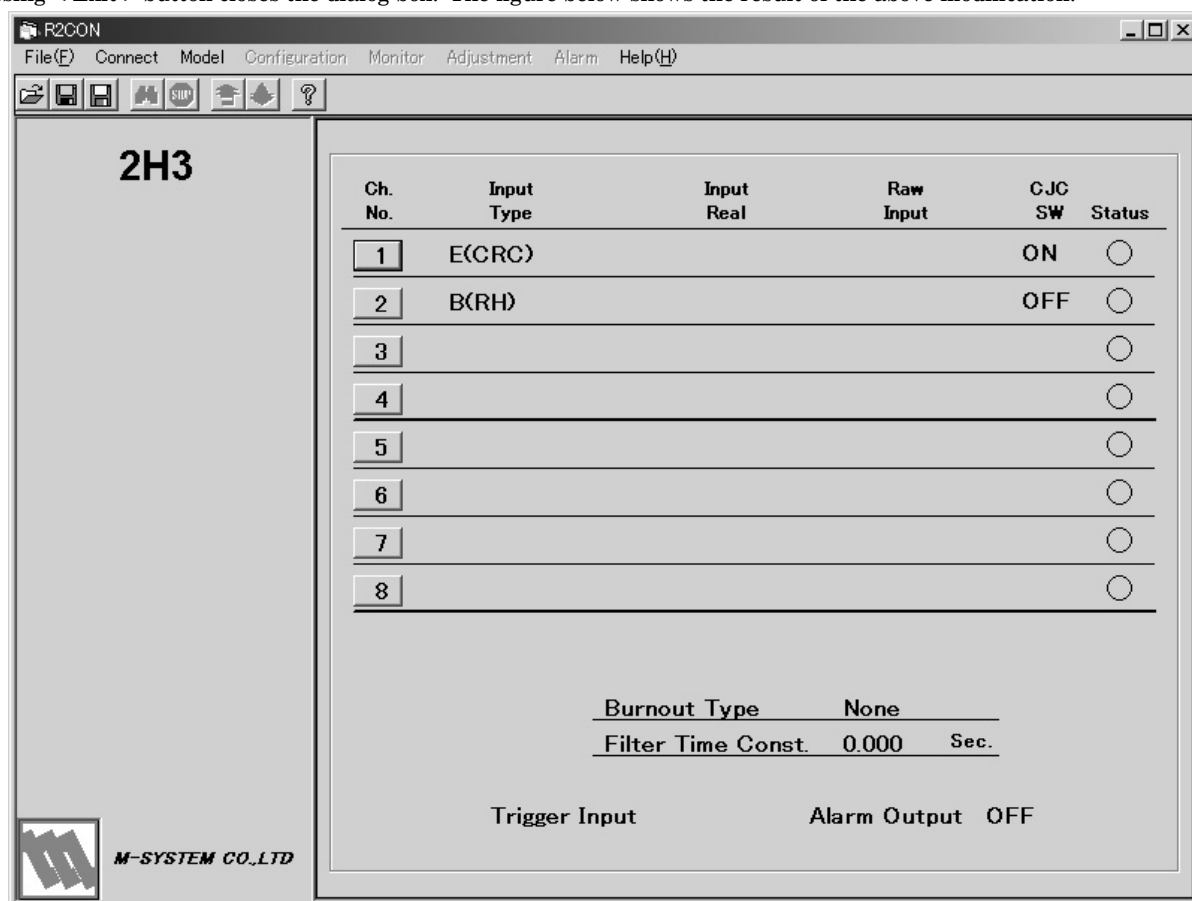
Choose “B(RH)” from [Input Type] and “OFF” from [CJC SW].

Confirm the new setting at Ch. 2 on the right window.




The image shows a 'Type Setting' dialog box. At the top, the title 'Type Setting' is underlined. Below it, there are three main sections: 'Channel' with a pull-down menu showing '2', 'Input Type' with a pull-down menu showing 'B(RH)', and 'CJC SW' with two radio buttons, 'OFF' and 'ON', where 'OFF' is selected. At the bottom, there are six buttons arranged in three rows: 'Prev.' and 'Next' in the first row, 'Copy' and 'Paste' in the second row, and 'Download' and 'Exit' in the third row.

Pressing < Exit > button closes the dialog box. The figure below shows the result of the above modification.



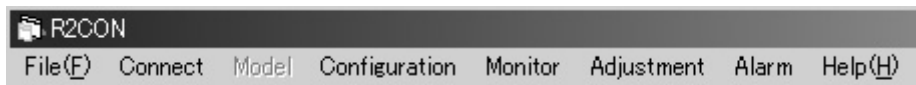
3.2.3 SAVING PARAMETER FILES

Choose [Save as] from [File] pull-down menu, or click  > button and specify a file name.

4. VIEWS AND OPERATIONS

The R2CON view is composed of the menu bar and tool buttons at the top, the hardware type and version information window at the left, and the configuration window for each channel with several popping-up sub-windows at the right.

4.1 MENU BAR



Menu	Submenu	Function
File	Open	Reading the specified file and displaying its contents.
	Save	Saving the configuration of all the channels as the current file.
	Save as	Saving the configuration of the all the channels as a new file.
	End	Quitting the R2CON program.
Connect	Connect	Connecting to the communication line.
	DisConnect	Disconnecting from the communication line.
Model	2H3	Displaying the configuration window for type 2H3.
	2G3	Displaying the configuration window for type 2G3.
Configuration	Modbus	Opening the Modbus Communication Parameter Setting window.
	Burnout Type	Opening the Burnout Type Setting window.
	Filter Time Const.	Opening the Filter Time Constant Setting window.
	CJM	Used when replacing the Cold Junction Compensation sensor.
	Upload	Uploading the configuration.
	Download	Downloading the configuration.
Monitor	Start	Starting monitoring of input signals.
	Stop	Stopping monitoring of input signals.
Adjustment	Zero/Span	Opening the Zero/Span Adjustments window.
Alarm	Alarm out	Opening the Alarm Output Setting window.
Help	Index	Not available
	Contents	Not available
	Version	Indicating Version No. of the R2CON.

4.2 TOOL BUTTONS



Name (from left to right)	Function
Open File	Reading the specified file and displaying its contents.
Save	Saving the configuration of all the channels as the current file.
Save as	Saving the configuration of the all the channels as a new file.
Start	Starting monitoring of input signals.
Stop	Stopping monitoring of input signals.
Upload	Uploading the configuration.
Download	Downloading the configuration.
Help	Not available.

4.3 HARDWARE TYPE & VERSION INFORMATION WINDOW

2H3

Model Name
R2M-2H3

Hardware Version
R2M_2H3_HV01.01

Firmware Version
R2M_2H3_FV01.02

Serial Number
LB006550spare

Manufacture Date
2002/10/25

Calibration Date
2002/10/25

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Name	Function
Model Name	Model No. of the R2M
Hardware Version	Hardware version No.
Firmware Version	Firmware version No.
Serial Number	Serial No. of the R2M
Manufacture Date	Manufacturing date of the R2M
Calibration Date	Date of latest calibration

4.4 CONFIGURATION WINDOW FOR EACH CHANNEL

4.4.1 Model R2M-2H3

Ch. No.	Input Type	Input Real	Raw Input	CJC SW	Status
1	(PR)	-50.000 °C	-97.378 mV	OFF	●
2	E(CRC)	-275.000 °C	-97.358 mV	OFF	●
3	J(IC)	-260.000 °C	-97.351 mV	OFF	●
4	T(CC)	-275.000 °C	-97.364 mV	OFF	●
5	B(RH)	40.000 °C	-97.351 mV	ON	●
6	C(Wre 5-26)	-50.000 °C	-97.358 mV	ON	●
7	N	-275.000 °C	-97.360 mV	ON	●
8	L	-250.000 °C	-97.360 mV	ON	●

Burnout Type	Down
Filter Time Const.	100.000 Sec.

Trigger Input OFF Alarm Output OFF

Name	Function
Ch. No.	Channel No.
Input Type	Input Type
Input Real	Input value in engineering unit
Raw input	Input voltage before conversion
CJC SW	Enable/disable the cold junction compensation
Status	Analog input status Green ON: Normal input Red ON: Abnormal input (out of range)
Burnout Type	Burnout protection action
Filter Time Const.	Time constant for the input fileter
Trigger Input	Trigger input status
Alarm Output	Alarm output status

4.4.2 Model R1M-2G3

Ch. No.	Input Type	Input Real	Raw Input	Status
1	-10 to 10 V	0.002 V	0.002 V	<input type="radio"/>
2	-10 to 10 V	0.002 V	0.002 V	<input type="radio"/>
3	-10 to 10 V	0.002 V	0.002 V	<input type="radio"/>
4	-10 to 10 V	0.002 V	0.002 V	<input type="radio"/>
5	-10 to 10 V	0.002 V	0.002 V	<input type="radio"/>
6	-10 to 10 V	0.002 V	0.002 V	<input type="radio"/>
7	-10 to 10 V	0.002 V	0.002 V	<input type="radio"/>
8	-10 to 10 V	0.002 V	0.002 V	<input type="radio"/>

Filter Time Const. 1.000 Sec.

Trigger Input OFF Alarm Output OFF

Name	Function
Ch. No.	Channel No.
Input Type	Input Type
Input Real	Input value in engineering unit
Raw input	Input voltage before conversion
Status	Analog input status
Filter Time Const.	Time constant for the input fileter
Trigger Input	Trigger input status
Alarm Output	Alarm output status

4.5 CONFIGURATION SUB-WINDOWS

4.5.1 TYPE SETTING

< Prev. > button
 < Next > button
 < Copy > button
 < Paste > button
 < Download > button

< Exit > button

Move to the previous channel.
 Move to the next channel.
 Copy the setting on the current display.
 Paste the copied setting.
 Downloading the setting on the current display to the R2M module.
 Close the window.

Function	Selection
Channel	1 – 8
Input Type	(PR) K (CA) E (CRC) J (IC) T (CC) B (RH) R S C (WRe 5-26) N U L P (Platinel II)
CJC SW	Enable/disable CJC

4.5.2 MODBUS COMMUNICATION SETTINGS

Modbus Settings(RTU)

Node Address

1

Bit Length

8 bit

Stop Bits

1 bit

Baud Rate

38400

Parity

ODD

Floating Type

Normal Float

Upload

Download

System Restart

Exit

Function	Selection
Node Address	Displaying the current node address setting.
Baud Rate	9600 / 19200 / 38400 (default)
Bit Length	8 bit
Parity	NONE / ODD (default) / EVEN
Stop Bits	1 bit (default) / 2 bit
Floating Type	Normal Float (default) / Swapped Float

4.5.3 BURNOUT TYPE SETTINGS

Burnout Type

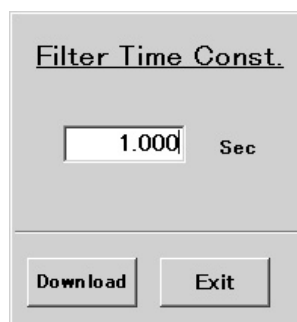
Down

Download

Exit

Function	Selection
Burnout Type	None Upscale Downscale

4.5.4 FILTER TIME CONSTANT SETTINGS



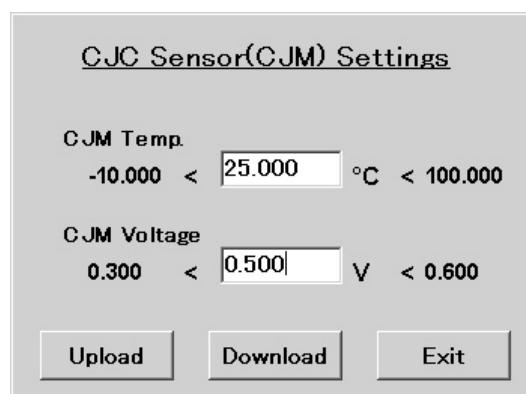
Filter Time Const.

1.000 Sec

Download Exit

Function	Selection
Filter Time Const.	Time constant for the filter in seconds

4.5.5 COLD JUNCTION COMPENSATION SETTINGS



CJC Sensor(CJM) Settings

CJM Temp.
-10.000 < 25.000 °C < 100.000


CJM Voltage
0.300 < 0.500 V < 0.600

Upload Download Exit

Function	Selection
CJM Temp.	Reference junction temperature in °C
CJM Voltage	Reference junction voltage

4.5.6 ZERO/SPAN ADJUSTMENTS

Zero and span adjustments are available independently for each channel. First set Zero and go to Span. < Reset > button clears both of zero and span adjustments automatically.

 If you have changed the Input Type for a channel, the zero and span adjustments for this channel are reset.

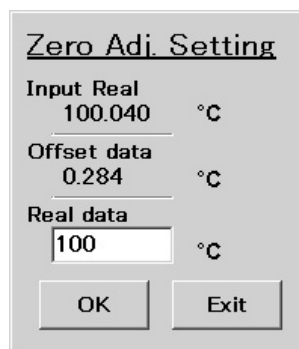
ZERO/SPAN



The 'Zero/Span Adj.' window features a 'Channel' dropdown menu currently set to '2'. Below the menu are two rows of buttons. The first row contains 'Prev.' and 'Next' buttons. The second row contains 'Zero' and 'Span' buttons. The third row contains 'Reset' and 'Exit' buttons.

< Prev. > button	Move to the previous channel.
< Next > button	Move to the next channel.
< Zero > button	Opening the Zero Adjustment window.
< Span > button	Opening the Span Adjustment window.
< Reset > button	Resetting the current zero/span adjustments.
< Exit > button	Close the window.

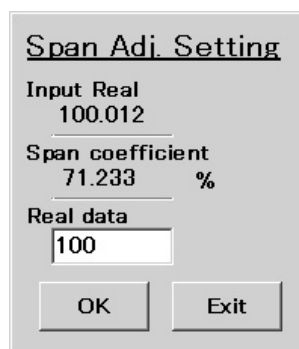
ZERO ADJUSTMENT



The 'Zero Adj. Setting' window displays three input fields: 'Input Real' with the value '100.040' and unit '°C', 'Offset data' with the value '0.284' and unit '°C', and 'Real data' with the value '100' and unit '°C'. At the bottom are 'OK' and 'Exit' buttons.

Name	Function
Input Real	Input value in engineering unit
Offset Data	Offset value of the zero point
Real Data	Real value of the zero point

SPAN ADJUSTMENT

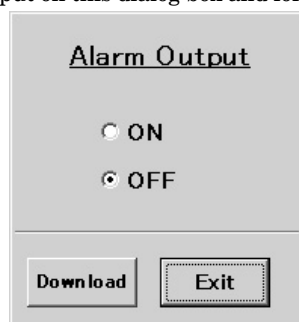


The 'Span Adj. Setting' window displays three input fields: 'Input Real' with the value '100.012', 'Span coefficient' with the value '71.233' and unit '%', and 'Real data' with the value '100'. At the bottom are 'OK' and 'Exit' buttons.

Name	Function
Input Real	Input value in engineering unit
Span Coefficient	Calculated gain
Real Data	Real value of the span point

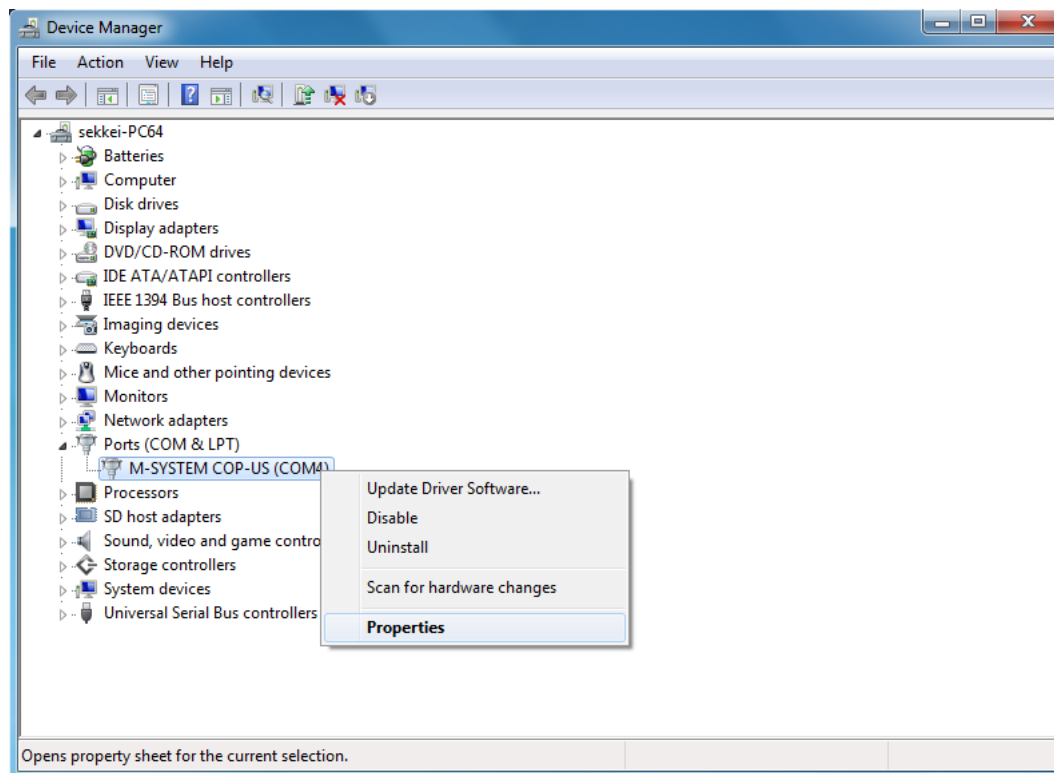
4.5.7 ALARM OUTPUT

You can confirm the current status of alarm output on this dialog box and forcibly turn the relay on and off in order to testing.

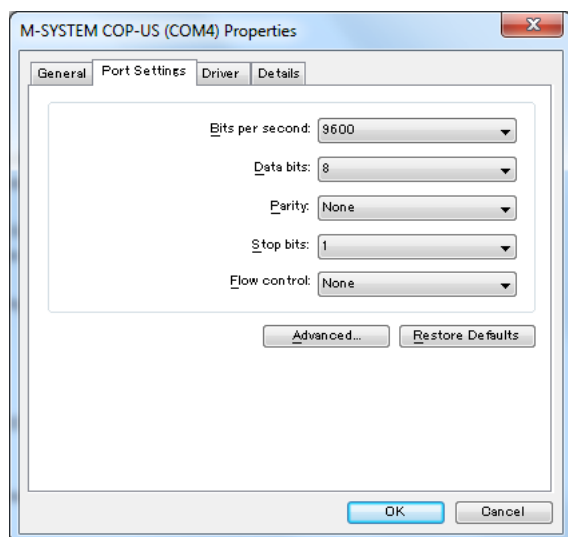


APPENDIX - 1. HOW TO CHANGE THE COM PORT NUMBERS

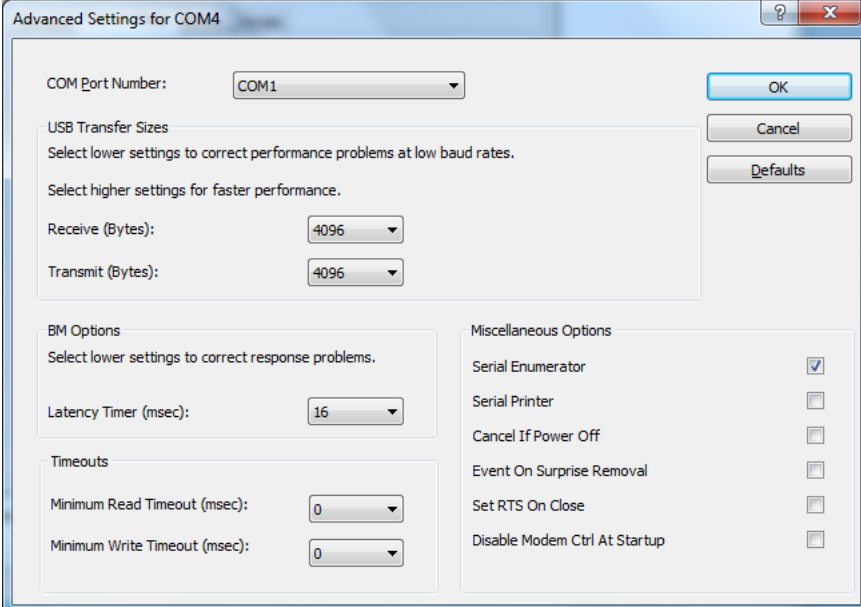
- 1) Open Control Panel and double-click System icon and press System Properties in the System dialog box. Choose Hardware tab – Device Manager (View examples with Windows 7).



- 2) Locate the COM port under Port (COM & LPT) of which you wish to change the number and show its properties by clicking it with the right mouse button.
- 3) Press Advanced button under Port Setting tab.



4) Choose a desired COM Port number and press OK.



The image shows a Windows-style dialog box titled "Advanced Settings for COM4". It contains several sections for configuring the serial port. At the top, there is a "COM Port Number:" label with a dropdown menu currently set to "COM1". To the right of this section are three buttons: "OK", "Cancel", and "Defaults". Below the port number is a section titled "USB Transfer Sizes" with the instruction "Select lower settings to correct performance problems at low baud rates. Select higher settings for faster performance." It contains two dropdown menus: "Receive (Bytes):" set to "4096" and "Transmit (Bytes):" set to "4096". Further down, there are two more sections. The "BM Options" section has the instruction "Select lower settings to correct response problems." and a "Latency Timer (msec):" dropdown set to "16". The "Timeouts" section has two dropdowns: "Minimum Read Timeout (msec):" set to "0" and "Minimum Write Timeout (msec):" set to "0". The "Miscellaneous Options" section on the right contains five checkboxes: "Serial Enumerator" (checked), "Serial Printer" (unchecked), "Cancel If Power Off" (unchecked), "Event On Surprise Removal" (unchecked), and "Set RTS On Close" (unchecked). The "Disable Modem Ctrl At Startup" checkbox is also present but unchecked.

Advanced Settings for COM4

COM Port Number: COM1

OK Cancel Defaults

USB Transfer Sizes

Select lower settings to correct performance problems at low baud rates.
Select higher settings for faster performance.

Receive (Bytes): 4096

Transmit (Bytes): 4096

BM Options

Select lower settings to correct response problems.

Latency Timer (msec): 16

Timeouts

Minimum Read Timeout (msec): 0

Minimum Write Timeout (msec): 0

Miscellaneous Options

Serial Enumerator ☒

Serial Printer ☐

Cancel If Power Off ☐

Event On Surprise Removal ☐

Set RTS On Close ☐

Disable Modem Ctrl At Startup ☐