REMOTE I/O R80 SERIES

PC CONFIGURATOR SOFTWARE
Model: R80CFG Ver. 3.04

Users Manual

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CONTENTS

1. INTRODUCTION

1.1 GENERAL DESCRIPTION

The R80CFG is used to program parameters for the Interface and I/O Modules of the R80 Series Remote I/O (referred hereunder as 'device'). The following major functions are available:

- Edit parameters
- Download parameters to the device, upload parameters from the device
- Save parameters as files, read parameters from files

1.2 APPLICABLE DEVICES

The R80CFG is applicable to the following products:

FUNCTION	MODEL
Power/Network Module for EtherCAT	R80NECT1
Power/Network Module for EtherNet/IP	R80NEIP1
Power/Network Module for CC-Link IE TSN	R80NCIT1
Power/Network Module for DeviceNet	R80ND2
Discrete Input Module, 8 points (16 points)	R80DAT8A, R80DAT16A2
Discrete Output Module, 4 points (8 points, 16 points)	R80DCT4D, R80DCT8A, R80DCT16A2
Universal Input Module, 4 points	R80UST4
DC Voltage / Current Input Module, 4 points	R80FST4NJ
DC Current Output Module, 4 points	R80YST4N
DC Voltage Output Module, 4 points	R80YVT4N

The latest version of the R80CFG is downloadable at our web site if you need higher version software.

1.3 PC REQUIREMENTS

The following PC performance is required for adequate operation of the R80CFG.

PC	IBM PC COMPATIBLE
OS	Windows 7 (SP1) (32bits, 64bits) Windows 8.1 (32bits, 64bits) Windows 10 (32bits, 64bits) Note1: Windows RT is not included. Note2: Not assuring operations in all environments.
CPU	Must meet the relevant Windows' requirements.
Memory	Must meet the relevant Windows' requirements.
Communication port	COM port (COM1 through COM16)

For connecting the device to the PC, use a commercially available USB cable (Type A Mini B).

1.4 DRIVER SOFTWARE

A Driver Software is required to install on a PC where the R80CFG is installed in order to connect the R80CFG to the device.

A FTDI's chip is used for the R80 Interface Module. The dedicated driver software installed on the PC will add a new serial port. Select this port as COM.

1.4.1 INSTALLING DRIVER SOFTWARE

- With a PC connecting to the Internet, the R80 USB Driver is automatically installed with the function of Windows.
- Update in connecting to the R80 Interface Module.
- The R80 USB Driver is downloadable at our web site.

1.5 INSTALLING & DELETING THE PROGRAM

INSTALL

The program is provided as compressed archive. Decompress the archive and execute 'setup.exe' to start up the R80CFG installer program. Follow instructions on the Windows.
Log on as administrator to start installation.

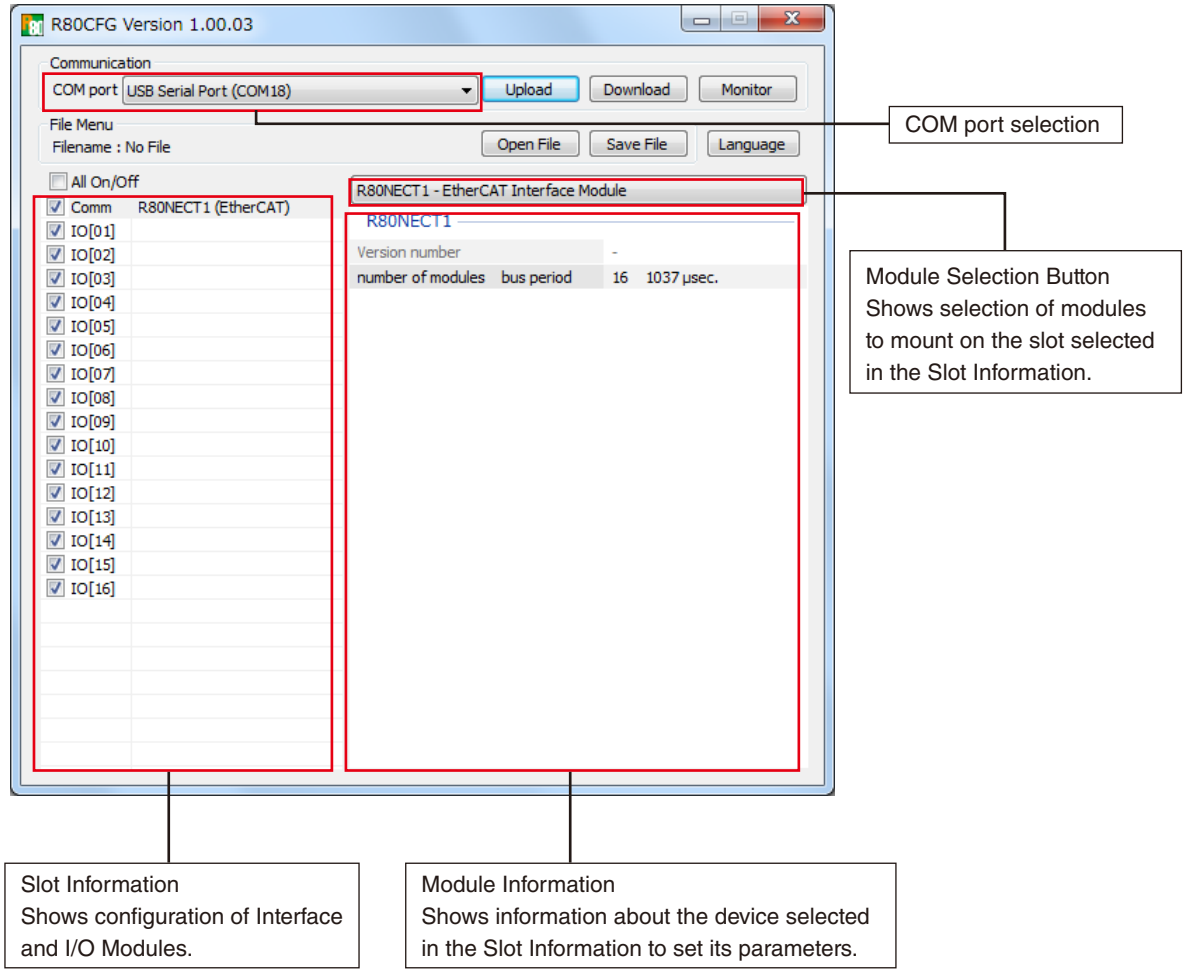
DELETE

- For Windows 7 and 8.1, open Control Panel > Uninstall a program, or Uninstall or change a program. Select the R80CFG from the program list and click on Remove or Uninstall button.
- For Windows 10, open Settings from Start menu > System > Apps & Features. Double-click the R80CFG on the program list and then follow the Windows instructions.

2. GETTING STARTED

2.1 STARTING THE R80CFG

Open the R80CFG program on the Windows PC. The following window appears on the screen.



2.1.1 SELECTING COM PORT

Select a COM port added in installing the R80 USB Driver adequately. The added COM port depends on the PC.

2.1.2 SELECTING SLOTS

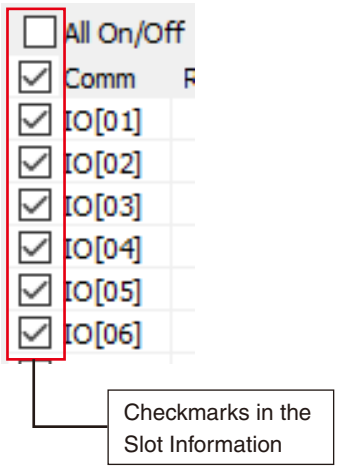
1) The slots with checkmarks are applicable to [Upload] and [Download] button.
2) [Monitor], [Open File] and [Save File] buttons are available with all slots, regardless of the checkmarks.2.2

2.2 MODIFYING PARAMETERS

Whenever you need to modify parameters stored in a device, first read (upload) the present parameters from the device, modify whatever parameters you need, and then write (download) the new parameters to it.

2.2.1 READING PARAMETERS FROM DEVICE (UPLOAD)

1) Choose the COM port to which the device is connected.
2) Click on [Upload] button at the top of the window.
   Then the program starts to communicate with the device to read the present parameters. If an error message appears, confirm the hardware connection and the setting again before retrying.
3) The device's present parameters are uploaded and shown on the screen.



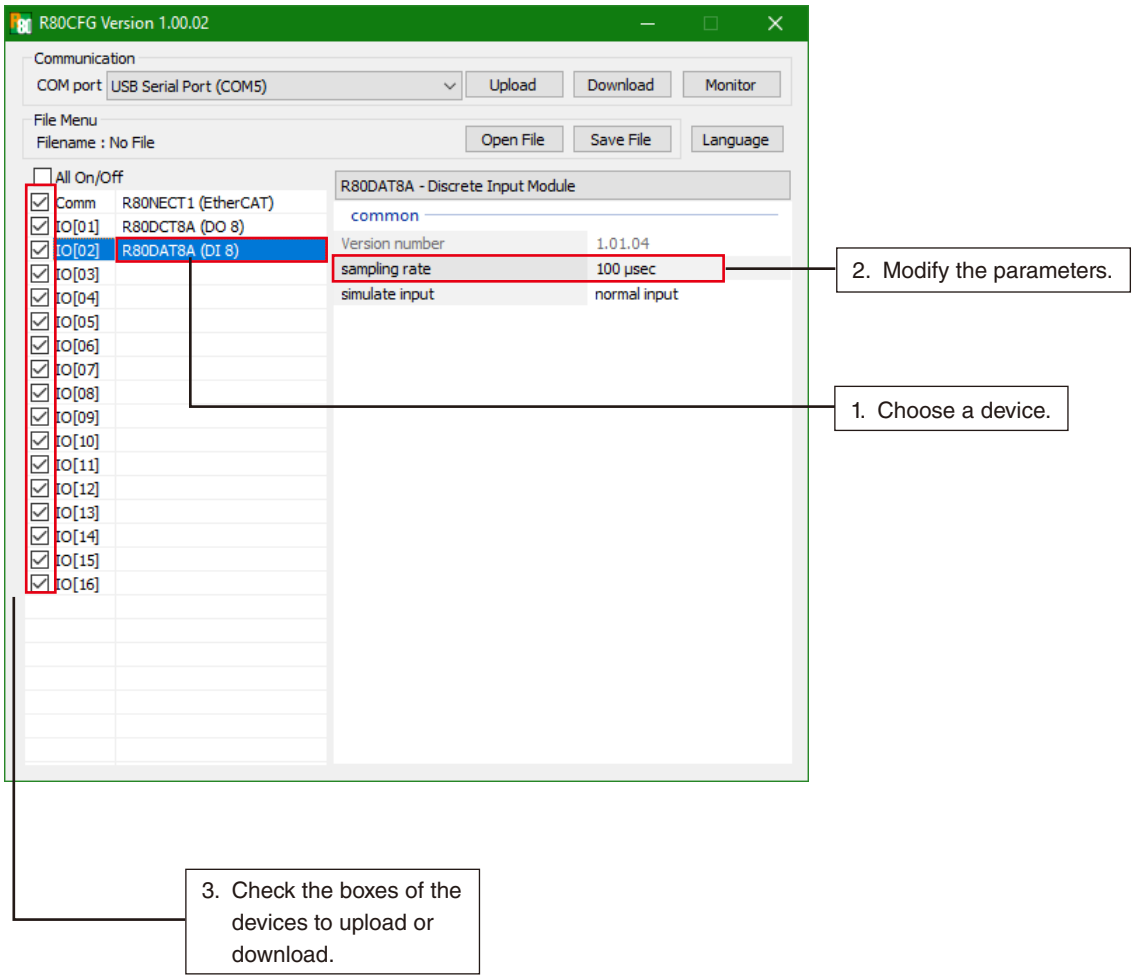
NOTE

The parameters of the slots without the checkmarks are not uploaded.

2.2.2 MODIFICATION EXAMPLE

The initial view is composed of the R80 module configuration to the left and the parameters of the selected module to the right.

The example below shows the R80NECT1 Interface Module, Discrete Input Module (slot 1) and Discrete Output Module (slot 2).



Parameters available to each type of module are explained in the later sections.

2.2.3 WRITING NEW PARAMETERS (DOWNLOAD)

1) Click on [Download] button at the top of the window.
2) When the indicator showing progress of the download reaches the right end without showing any error message, the new parameters are correctly updated, downloaded to the device, and immediately valid.
   If the setting change of the number of I/O modules is downloaded to the interface module, turn OFF and ON the power supply to the interface module. Since the dialog box “Please Power OFF and Power ON” appears after the downloading, reboot the interface module and then click on [OK] button.

2.3 SAVING & READING PARAMETERS IN A FILE

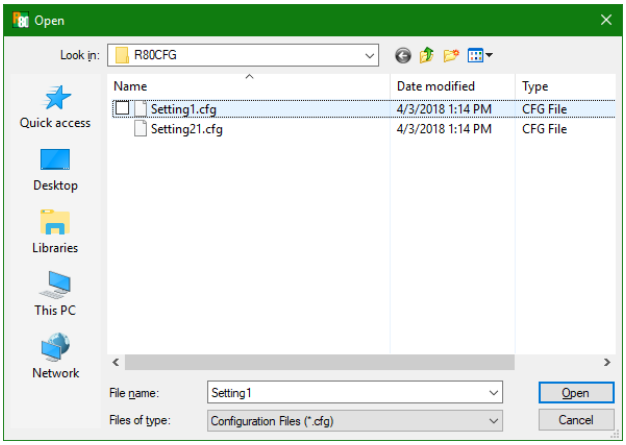
Parameters edited on the screen can be saved as a file, and read out on the screen from the file. By combining [Upload] / [Download] functions with [Save File] / [Open File], a backup file of those presently used in the device can be created.

2.3.1 READING PARAMETERS SAVED AS FILE

Clicking on [Open File] button calls up the Windows-standard Open dialog box, depending on the PC’s operating system on which the program is running.

NOTE
The dialog box is displayed in the language of the OS.

Select a parameter file and click on [Open] button to show a stored parameter setting.

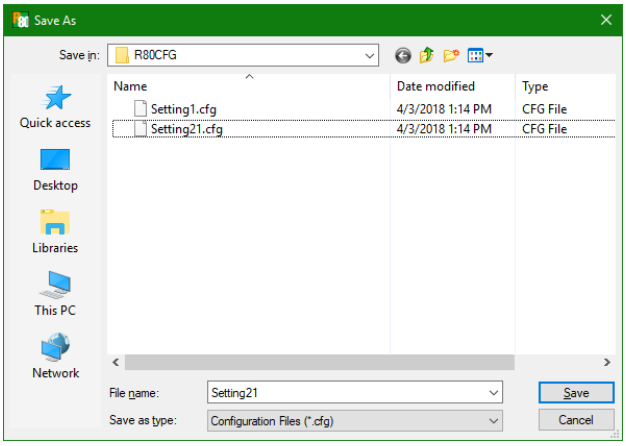


2.3.2 SAVING PARAMETERS IN A FILE

Clicking on [Save File] button calls up the Windows-standard Save dialog box, depending on the PC’s operating system on which the program is running.

NOTE
The dialog box is displayed in the language of the OS.

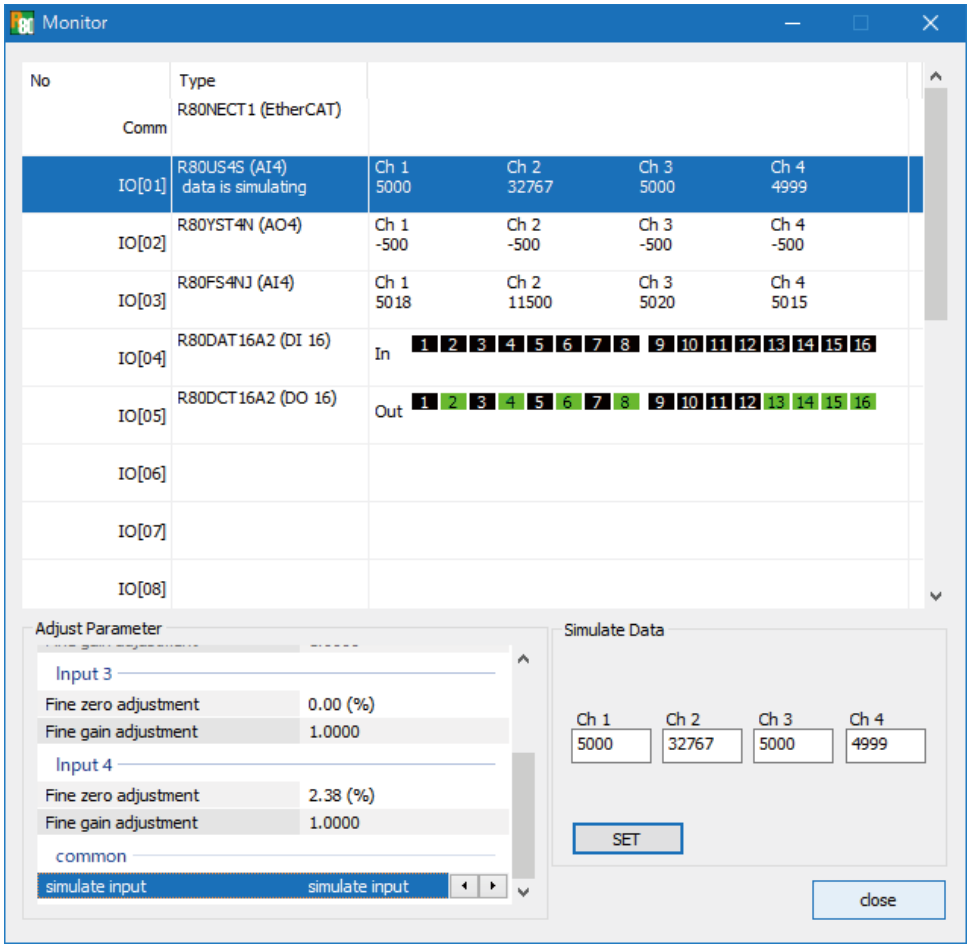
Enter a desired file name to File Name field and click on [Save] button to store a parameter setting.



2.4 MONITORING I/O STATUS

The Monitoring function is used to show each I/O status on the window, conduct fine adjustments and set simulate I/O.

Click on [Monitor] button. When the communication is established, the following window appears on the screen.



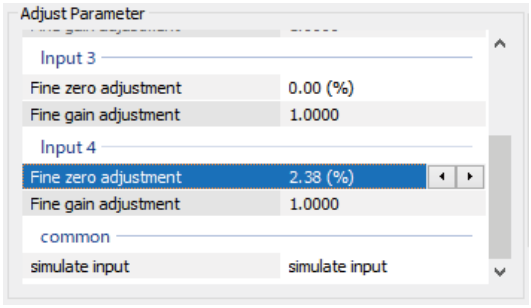
The following table explains the window above.

ITEMS	DESCRIPTION
(1) I/O	Shows the types of modules mounted on the base, followed by each I/O status of I/O values. Click on an I/O module to show (2) the fine adjustment and (3) the simulate I/O. Shows I/O values for analog module, and green when ON, and black when OFF for discrete module.
(2) Fine adjustment	Enable or disable the simulate I/O, and configurate the zero/fine adjustment for analog I/O. The setting is immediately valid. When a channel of R80UST4 is set to thermocouple or RTD, be sure to set different values for each zero base and full base.
(3) Simulate I/O	To set the simulate I/O. Click [SET] after setting the value to validate the setting. When performing scaling setting, set the scaling value. Refer to the simulate input of users manual for each I/O module for setting range. For discrete I/O, put a check mark on the channel to ON.

*For R80DAT8A, R80DAT16A2 even when the simulate Input is set to ON, LED on the input module does not turn ON.

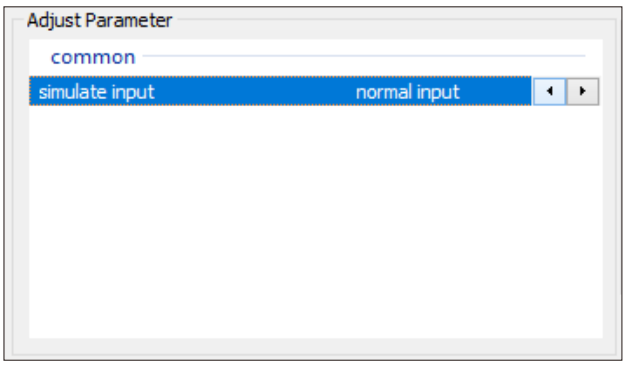
2.4.1 FINE ZERO / GAIN ADJUSTMENT

Click the [Fine zero adjustment] or [Fine gain adjustment] to display the buttons.
Clicking the button, the fine adjustment value will increase or decrease.
(For fine zero adjustment, increase/decrease in 0.01, and for fine gain adjustment, increase/decrease in 0.0001.)
When double-clicking, the value is configurable directly as shown in right figure.

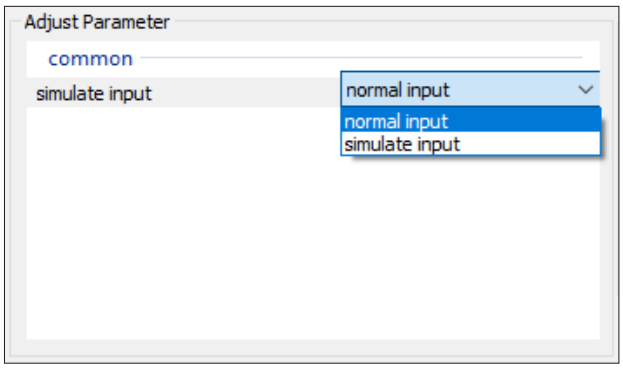


2.4.2 SETTING SIMULATE I/O

Click on [Simulate input] or [Simulate output] to display the buttons. Click on the right arrow button to select the simulate I/O and the left to the normal.



Double-click on [Simulate input] or [Simulate output] to show the drop-down menu.



NOTE

Each time the simulate I/O is set on the Monitor screen, the program communicates and writes the settings to the device.
After closing the Monitor screen, the initial view still shows the previous settings. To reflect the new settings on the screen, click on [Upload] button.

* The simulate I/O setting returns to the normal I/O in starting up the device.

2.5 SWITCHING LANGUAGE

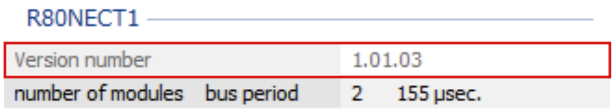
Clicking on [Language] button opens the Language dialog box. Choose one of the available languages. Note that the PC's operating system on which the program is running must be compatible with the selected language in order to show all characters correctly on the window.

3. PARAMETER DETAILS OF INTERFACE MODULE

3.1 R80NECT1 - POWER/NETWORK MODULE for EtherCAT, R80ND2 - POWER/NETWORK MODULE for DeviceNet

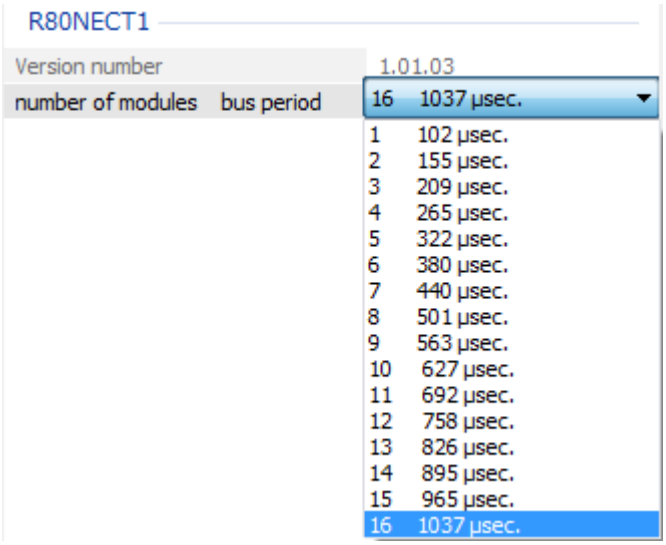
3.1.1 CONFIRMING VERSION NO.

Version number of the firmware is displayed. It is not available to set.
When not uploaded, "–" is displayed.

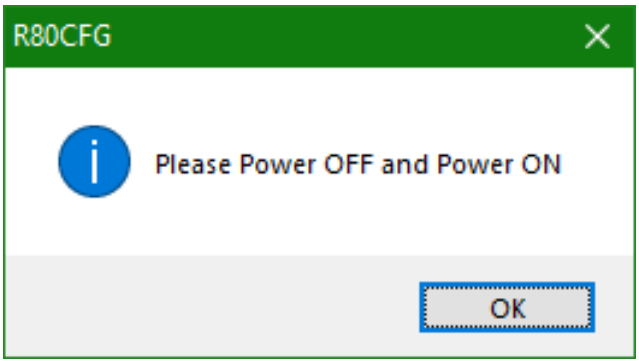


3.1.2 SETTING NO. OF I/O MODULES

Specify the number of I/O modules to mount.
The internal bus period varies depending on the mounted number. With fewer modules the period is faster.
The mounted number and corresponding internal bus period are shown in the drop-down menu.
Setting range: 1 to 16 modules



When the setting change of the number of I/O modules is downloaded to the interface module, turn OFF and ON the power supply to the interface module. Since the dialog box "Please Power OFF and Power ON" appears after the downloading, reboot the interface module and then click on [OK] button.



NOTE

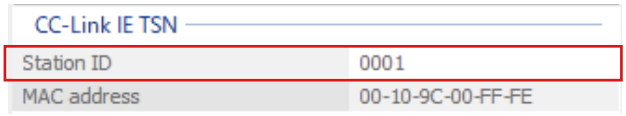
Please pay attention to the following items on the setting of the number of I/O modules. If there is setting error, they may not operate normally.

- Each I/O module Address is set with a rotary SW on them. Set the addresses in consecutive numbers, starting at '0' and not duplicating.
- When adding or reducing I/O modules, make sure to change the setting as instructed in "3.1.2 SETTING NO. OF I/O MODULES".

3.2 R80NCIT1 - POWER/NETWORK MODULE for CC-Link IE TSN

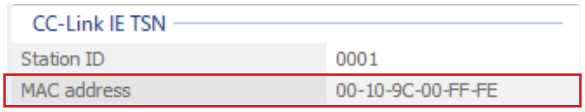
3.2.1 CONFIRMING STATION ID

Station ID set by the R80NCIT1 is displayed.
It is not available to change.
When not uploaded, "–" is displayed.



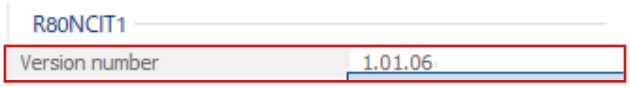
3.2.2 CONFIRMING MAC ADDRESS.

MAC address of the R80NCIT1 is displayed.
It is not available to change.
When not uploaded, "–" is displayed.



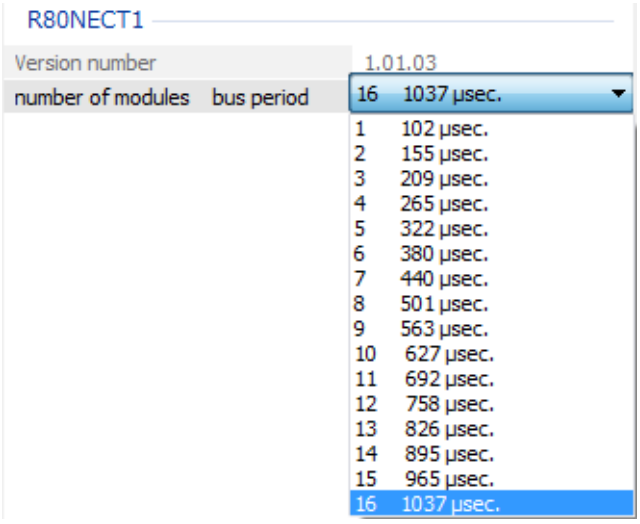
3.2.3 CONFIRMING VERSION NO.

Version number of the firmware is displayed.
It is not available to set.
When not uploaded, "–" is displayed.

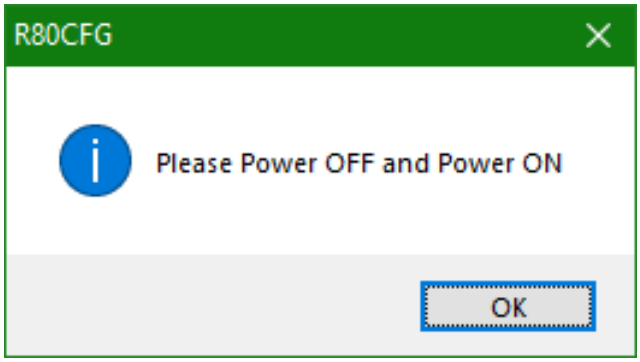


3.2.4 SETTING NO. OF I/O MODULES

Specify the number of I/O modules to mount.
The internal bus period varies depending on the mounted number. With fewer modules the period is faster.
The mounted number and corresponding internal bus period are shown in the drop-down menu.
Setting range: 1 to 16 modules.



When the setting change of the number of I/O modules is downloaded to the interface module, turn OFF and ON the power supply to the interface module. Since the dialog box "Please Power OFF and Power ON" appears after the downloading, re-boot the interface module and then click on [OK] button.



NOTE

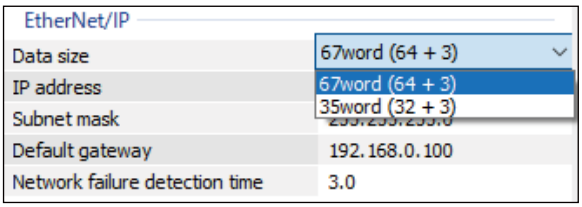
Please pay attention to the following items on the setting of the number of I/O modules. If there is setting error, they may not operate normally.

- Each I/O module Address is set with a rotary SW on them. Set the addresses in consecutive numbers, starting at '0' and not duplicating.
- When adding or reducing I/O modules, make sure to change the setting as instructed in "3.2.4 SETTING NO. OF I/O MODULES".

3.3 R80NEIP1 - POWER/NETWORK MODULE for EtherNet/IP

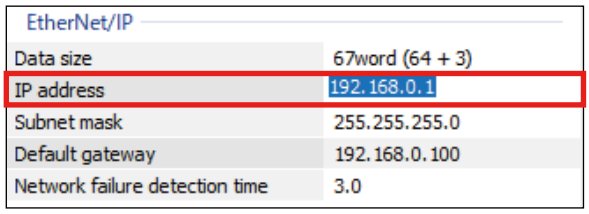
3.3.1 DATA SIZE

Specify the area size for input data and output data.
Select from 67-word (64+3) or 35-word (32+3).



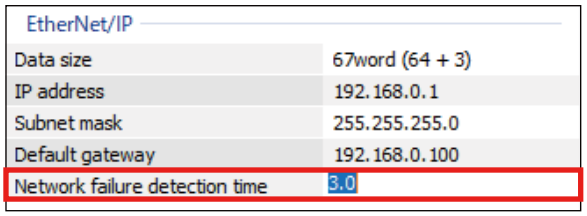
3.3.2 IP ADDRESS / SUBNET MASK / DEFAULT GATEWAY

Network configurations for EtherNet/IP communication.
The setting range is 0.0.0.0 to 255.255.255.255.



3.3.3 COMMUNICATION TIMEOUT

When there is no EtherNet/IP communication for the specified time period, the RUN LED turns off as an abnormal communication status. The setting range is 0.0 to 3200.0 (sec.).

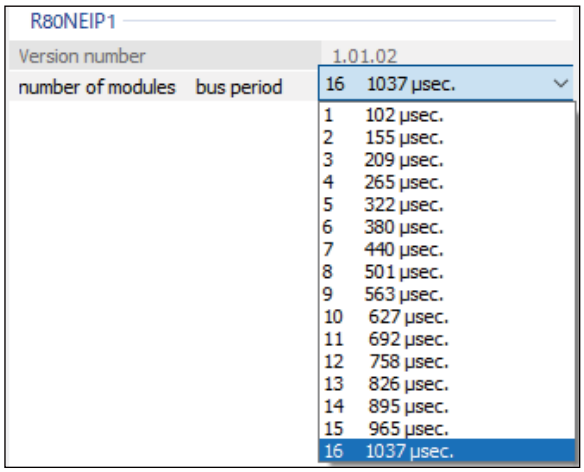


3.3.4 CONFIRMING VERSION NO.

Version number of the firmware is displayed.
It is not available to set.
When not uploaded, "–" is displayed.

3.3.5 SETTING NO. OF I/O MODULES

Specify the number of I/O modules to mount.
The internal bus period varies depending on the mounted number. With fewer modules the period is faster.
The mounted number and corresponding internal bus period are shown in the drop-down menu.
Setting range: 1 to 16 modules.

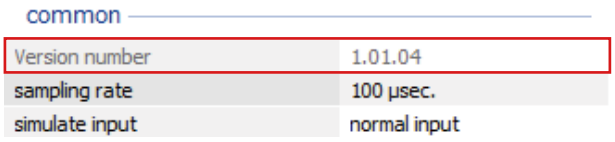


4. PARAMETER DETAILS OF I/O MODULES

4.1 R80DAT8A - DISCRETE INPUT MODULE, 8 POINTS, R80DAT16A2 - DISCRETE INPUT MODULE, 16 POINT

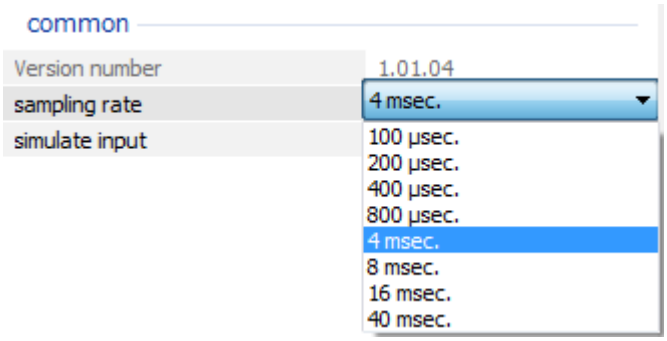
4.1.1 CONFIRMING VERSION NO.

Version number of the firmware is displayed.
It is not available to set.
When not uploaded, "–" is displayed.



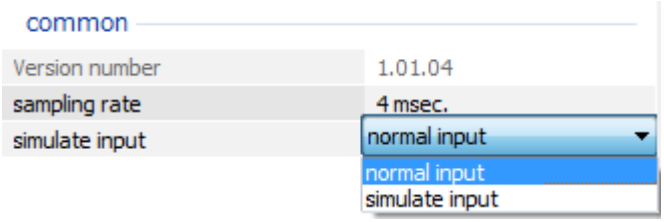
4.1.2 SETTING SAMPLING RATE

Specify the sampling rate from among the following range.
Setting range: 100, 200, 400, 800 µsec., 4, 8, 16, 40 msec.



4.1.3 SETTING SIMULATE INPUT

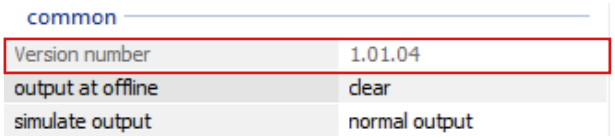
Choose normal input or simulate input.
The setting is also available on the Monitor screen.



4.2 R80DCT4D and R80DCT8A - DISCRETE OUTPUT MODULE, 8 POINTS, R80DCT16A2 - DISCRETE OUTPUT MODULE, 16 POINTS

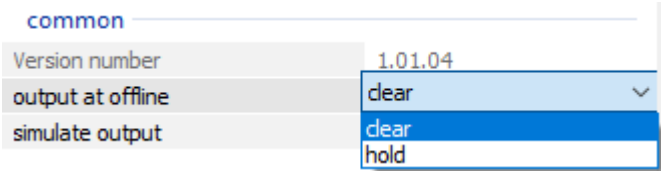
4.2.1 CONFIRMING VERSION NO.

Version number of the firmware is displayed. It is not available to set.
When not uploaded, "–" is displayed.



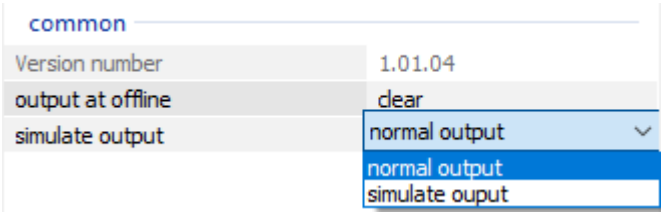
4.2.2 SETTING OUTPUT AT OFFLINE

Specify the output value to be used when there is a problem in communication with the host or in R80's internal communication.
When clear is specified, all the outputs are turned OFF.
When hold is specified, the last value used during normal communication is output.



4.2.3 SETTING SIMULATE OUTPUT

Choose normal output or simulate output.
The setting is also available on the Monitor screen.



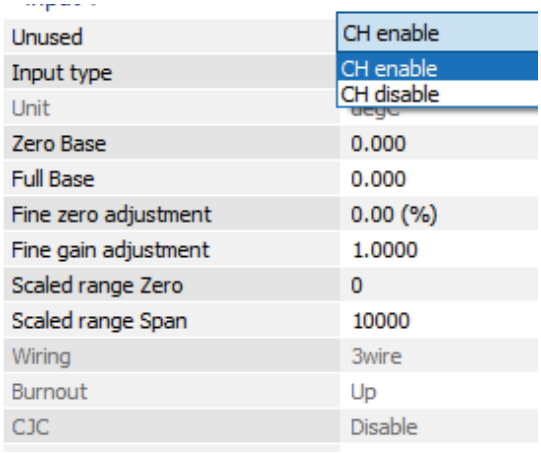
4.2.4 SETTING OUTPUT AT POWER ON

Specify output for the period from power on until output value is set.

4.3 R80UST4 - UNIBERSAL INPUT MODULE, 4 POINTS

4.3.1 UNUSED SETTING

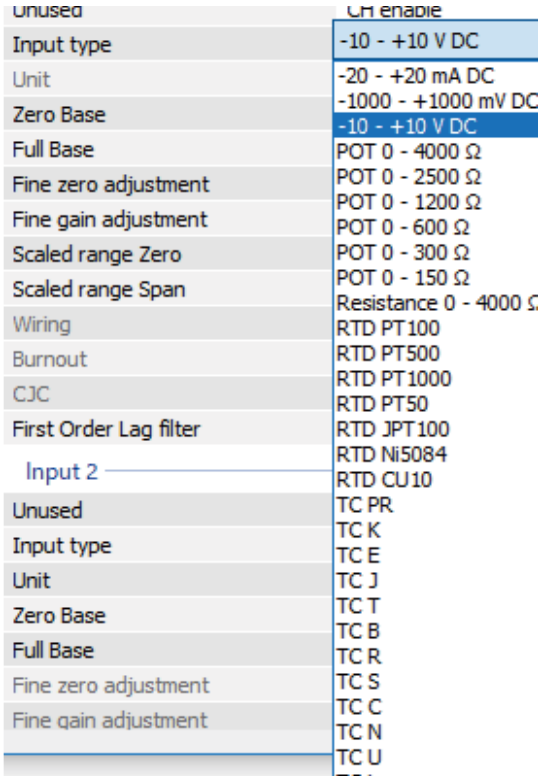
Select CH enebale / CH disable.
Set unused input for CH disable.



4.3.2 INPUT TYPE

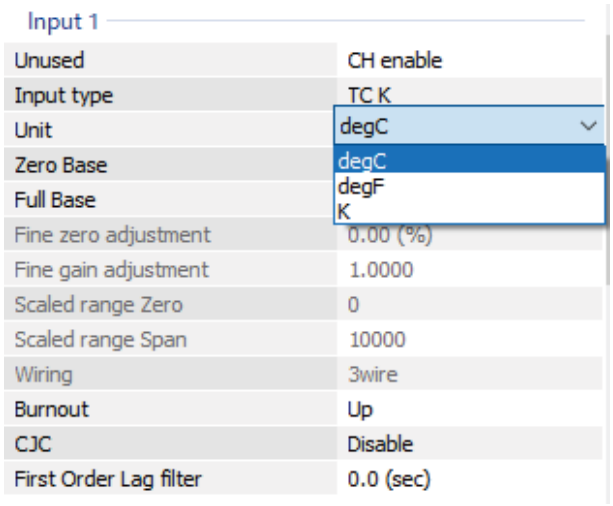
Select the input type to use.
Depending on the type of input, items that cannot be selected will be displayed in gray and cannot be edited.

- DC Current
  - -20 - +20 mA DC
- DC Voltage
  - -1000 - +1000 mV DC
  - -10 - +10 V DC
- Potentiometer
  - POT 0 - 4000 Ω
  - POT 0 - 2500 Ω
  - POT 0 - 1200 Ω
  - POT 0 - 600 Ω
  - POT 0 - 300 Ω
  - POT 0 - 150 Ω
- Resister
  - Resistance 0 - 4000 Ω
- RTD
  - RTD PT100
  - RTD PT500
  - RTD PT1000
  - RTD PT150
  - RTD JPT100
  - RTD Ni5084
  - RTD CU10
- Thermocouple
  - TC PR
  - TC K
  - TC E
  - TC J
  - TC T
  - TC B
  - TC R
  - TC S
  - TC C
  - TC N
  - TC U
  - TC L
  - TC P



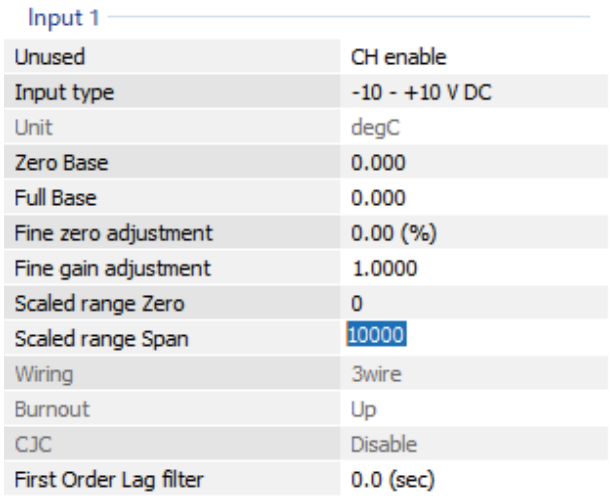
4.3.3 SETTING TEMPERATURE UNIT

Choose the temperature unit from degC (Centigrade),
degF (Fahrenheit) and K (absolute temperature).
This parameter is available only when a thermocouple or RTD is selected for the input type.



4.3.4 SETTING ZERO / FULL BASES, FINE ZERO / GAIN ADJUSTMENTS, AND SCALED RANGE ZERO / SPAN

Specify the setting values. The figure below shows an example for setting the scaled range Span.
If the same value is entered for the zero base and full base, the scaled values are not calculated but the engineering unit temperature values are returned for thermocouple and RTD inputs. Also, the input ranges corresponding to the individual input types are scaled for DC current, DC voltage, potentiometer and resistor inputs. (e.g. If "-10 - +10 V DC" is specified for the input type and "0" is entered for both the zero base and full base, the scaling calculation is conducted by regarding the zero base to be "-10.0" and full base "10.0.")



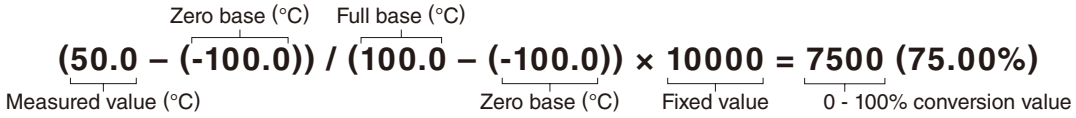
*1. Factory settings for the zero base and full base are "0."
*2. If the zero base and full base parameters having the same value are downloaded and then uploaded, "0" is shown for the zero base and full base.
*3. If the zero base and full base parameters having the minimum and maximum values in the input range respectively are downloaded and then uploaded, "0" is shown for the zero base and full base. (e.g. When "-10 - +10 V DC" is specified for the input type, if the zero base and full base parameters having the values "-10.0" and "+10.0" respectively are downloaded and then uploaded, "0" is shown for the zero base and full base.

PARAMETER	DESCRIPTION	INPUT TYPE	AVAILABLE RANGE
Zero Base / Full Base	0% setting value / 100% setting value	-20 - +20 mA	-32.000 - +32.000
		-10 - +10 V	
		POT	-320.00 - +320.00
		-1000 - +1000 mV	-3200.0 - +3200.0
		RTD, TC (degC, K)	
		RTD, TC (degF)	-32000 - +32000
		0 - 4000 Ω	
Fine zero adjustment	Zero (bias) adjustment value	Independent from the input type	-320.00 - +320.00
Fine gain adjustment	Gain (span) adjustment value		-3.2000 - +3.2000
Scaled range Zero	Scaled value 0%		-32000 - +32000
Scaled range Span	Scaled value 100%		-32000 - +32000

NOTE
Calculation is carried out in the order of the zero base/full base, fine gain, fine zero, and scaled range Zero/Span.

• Calculation example of zero base/full base

Convert engineering unit value to 0 – 100% value
Zero base = -100.0 (°C), full Base = 100.0 (°C)
With the measured value 50.0 (°C),

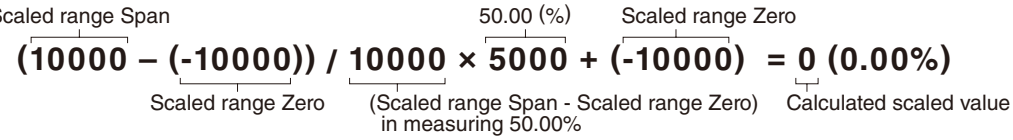


• Calculation example of fine zero/gain adjustments

Used for fine adjustment such as calibration.
Fine zero adjustment = 100.00 (%), fine gain adjustment = 2.0000
With the raw value 50.00% (with the 0 – 100% conversion value of the zero base/full base 50.00% for temperature),

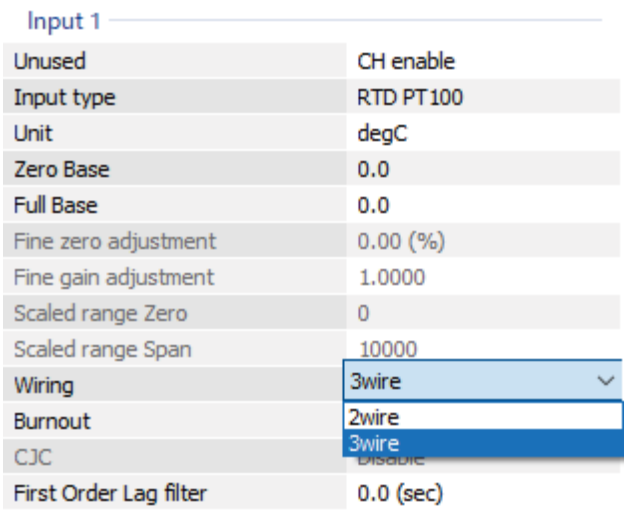
• Calculation example of scaled range Zero / Span

Scaled range Zero = -10000, scaled range Span = 10000
With the measured value 50.00% (5000) after calculating the fine adjustments with the scaled range Zero 0 and Span 10000,



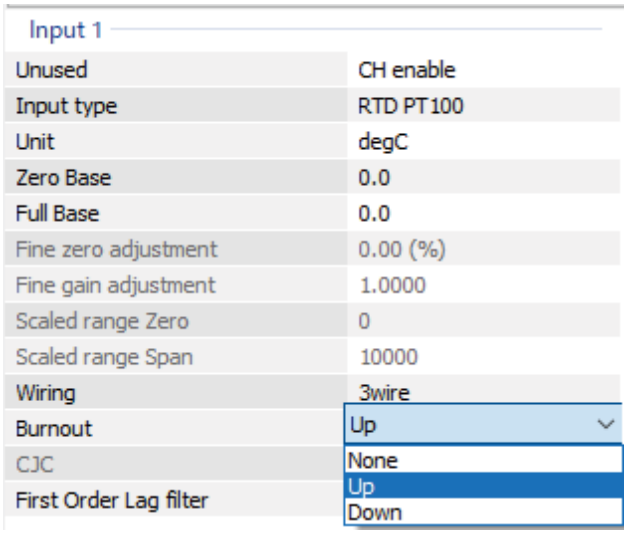
4.3.5 SETTING WIRING (RTD CONNECTION)

Choose “2wire” or “3wire” in accordance with the number of connection wires of the RTD or resistor.
This parameter is available only for the input types of RTD and resistor.



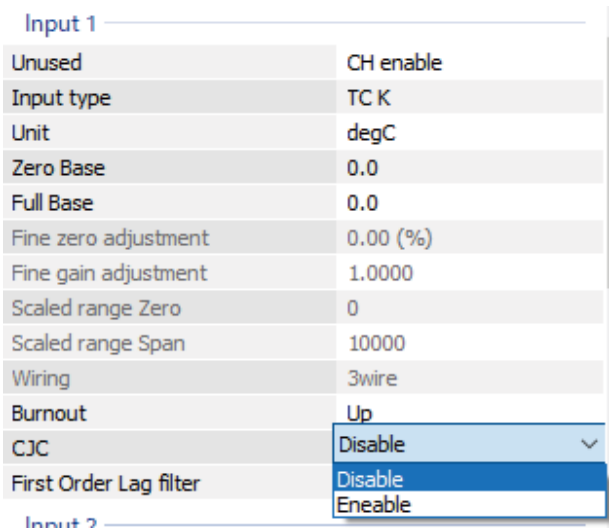
4.3.6 SETTING BURNOUT

Specify the direction for the burnout.
This parameter is available only for the input types of thermocouple, RTD, potentiometer, and resistor.



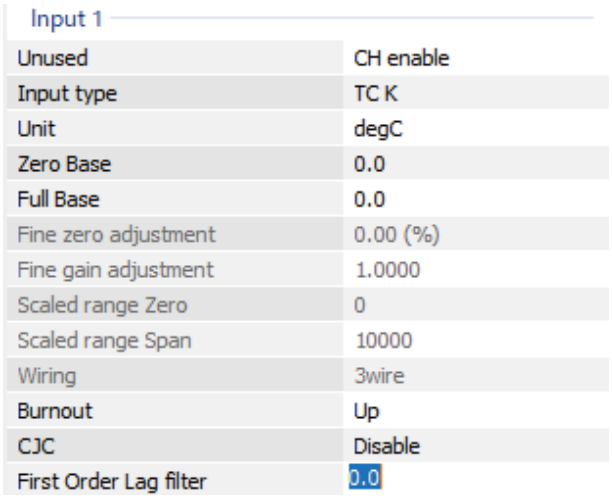
4.3.7 SETTING CJC

Specify whether or not to enable cold junction compensation when using a thermocouple.
This parameter is available only for the input types of thermocouple.



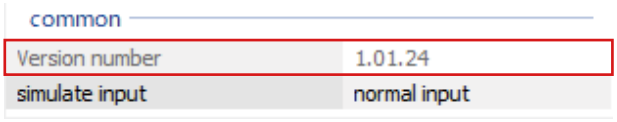
4.3.8 SETTING FIRST ORDER LAG FILTER

Specify the time constant for the first order lag filtering.
Filtering is not performed when “0.0” is entered for this parameter.
Available range: 0.5 – 60.0 (seconds)



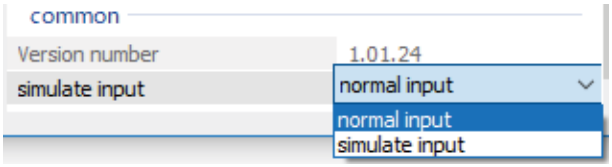
4.3.9 CONFIRMING VERSION NO.

The firmware version is shown.
This is not editable.
“–” is shown when not uploaded.



4.3.10 SETTING SIMULATE INPUT

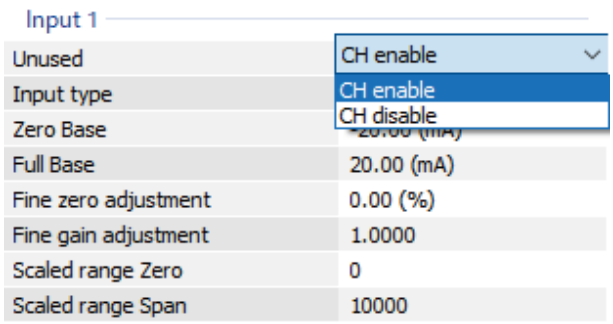
Choose normal input or simulate input.
The setting is also available on the Monitor screen.
Specify the simulate input value between -32000 and +32000. If entering a value under -32000, -32000 is set. If above +32000, +32000 is set.



4.4 R80FST4NJ - DC VOLTAGE / CURRENT INPUT MODULE, 4 POINTS

4.4.1 SETTING UNUSED OUTPUT

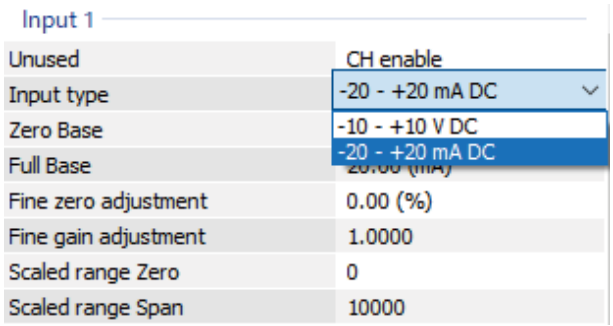
Enable or disable each output.
Disable the unused outputs.



4.4.2 SETTING OUTPUT RANGE

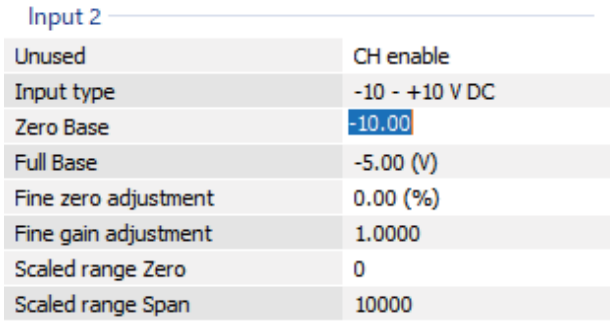
Choose the output range for the enabled outputs.

· DC voltage
  -10 - +10 V DC
· DC current
  -20 - +20 mA DC



4.4.3 SETTING FINE ZERO / GAIN ADJUSTMENTS AND SCALED RANGE ZERO / SPAN

Specify the setting values. The figure below shows an example of setting the scaled range Span.



PARAMETER	DESCRIPTION	INPUT TYPE	AVAILABLE RANGE
Zero base Full base	Setting value 0% Setting value 100%	-10 - +10 V	-10.00 - +10.00
		-20 - +20 mA	-20.00 - +20.00
Fine zero adjustment	Zero adjustment value	Independent from the input type	-320.00 - +320.00
Fine gain adjustment	Gain adjustment value		-3.2000 - +3.2000
Scaled range Zero	Scaled value 0%		-32000 - +32000
Scaled range Span	Scaled value 100%		-32000 - +32000

NOTE
Calculation is carried out in the order of the scaled range Zero/Span, fine zero, and fine gain.

• **Calculation example of scaled range Zero / Span**

Scaled range Zero = -10000, scaled range Span = 10000

With the output setting value 50% (5000),

$$(5000 - (-10000)) \times 10000 / (10000 - (-10000)) = 7500\ (75.00\%)$$

5000: Output setting value; -10000: Scaled range Zero; 10000: Scaled range Span; -10000: Scaled range Zero; 7500 (75.00%): Calculated scaled value (value converted to 0 - 10000 scale)

• **Calculation of fine zero/gain adjustments**

Used for fine adjustment such as calibration.

Fine zero adjustment = 5.00 (%), fine gain adjustment = 1.0100

With the output setting value (value converted to 0 - 10000 scale) 75.00%,

$$75.00\ (\%) \times 1.0100 + 5.00\ (\%) = 80.75\ (\%)$$

1.0100: Fine gain adj.; 5.00: Fine zero adj.; 80.75 (%): Calculated output setting value

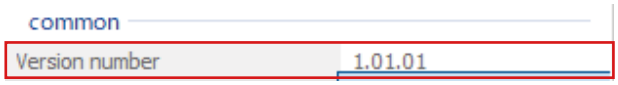
* The calculation of scaled range zero/span and fine zero/gain adjustment are calculated by signed 16 bit value. When the process or result of calculation overflows, it is calculated by replacing with upper limit or lower limit of signed 16 bit value. Therefore result may not be the value calculated by above mentioned calculation formula.

4.4.4 CONFIRMING VERSION NO.

The firmware version is shown.

This is not editable.

"–" is shown when not uploaded.

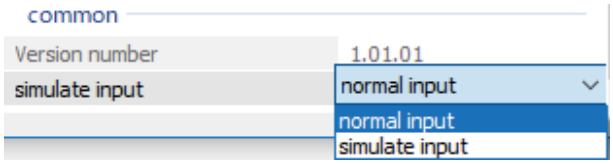


4.4.5 SETTING SIMULATE INPUT

Choose normal input or simulate input.

The setting is also available on the Monitor screen.

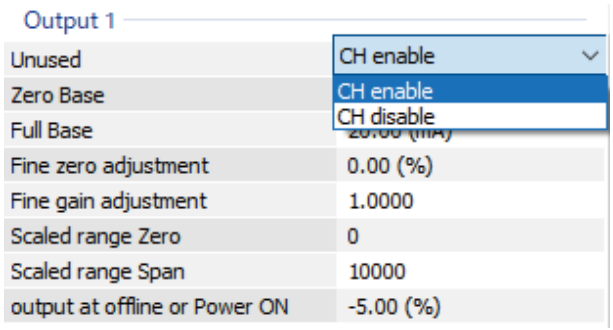
Specify the simulate input value between -32000 and +32000. If entering a value under -32000, -32000 is set. If above +32000, +32000 is set.



4.5 R80YST4N - DC CURRENT OUTPUT MODULE, 4 POINTS

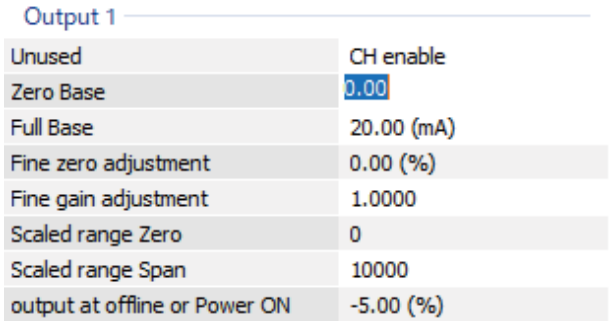
4.5.1 SETTING UNUSED OUTPUT

Enable or disable each output.
Disable the unused outputs.



4.5.2 SETTING FINE ZERO / GAIN ADJUSTMENTS AND SCALED RANGE ZERO / SPAN

Specify the setting values. The figure in right shows an example of setting the scaled range Span.



PARAMETER	DESCRIPTION	INPUT TYPE	AVAILABLE RANGE
Zero base Full base	Setting value 0% Setting value 100%	0 - 20 mA	0.00 - +20.00
Fine zero adjustment	Zero adjustment value		-320.00 - +320.00
Fine gain adjustment	Gain adjustment value		-3.2000 - +3.2000
Scaled range Zero	Scaled value 0%		-32000 - +32000
Scaled range Span	Scaled value 100%		-32000 - +32000

NOTE
Calculation is carried out in the order of the scaled range Zero/Span, fine gain, fine zero, and Zero/Full base.

- **Calculation example of scaled range Zero / Span**
  Scaled range Zero = -4000, scaled range Span = 20000
  With the output setting value 12000,

Scaled range Zero　　Scaled range Zero

$$(12000 - (4000)) \times 10000 / (20000 - 4000)) = 5000 \text{ -> } 50.00\%$$

Output setting value　　Scaled range Span　　Calculated scaled value (value converted to 0 - 10000 scale)

- **Calculation of fine zero/gain adjustments**

Used for fine adjustment such as calibration.
Fine zero adjustment = 5.00 (%), fine gain adjustment = 1.0100
With the output setting value (value converted to 0 - 10000 scale) 50.00%,

$$50.00\ (\%) \times 1.0100 + 5.00\ (\%) = 55.5\ (\%)$$

Fine gain adj.　Fine zero adj.　Calculated output setting value

• Calculation example of Zero/Full base

Converts calculated output setting value to engineeroing value.

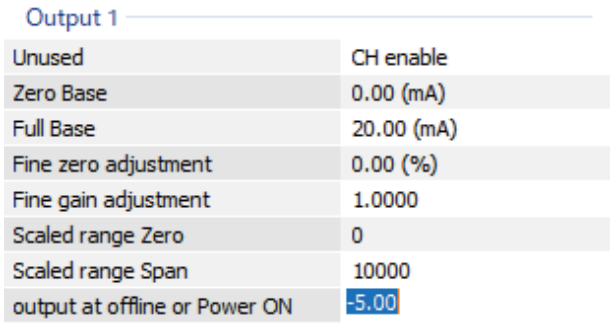
Fixed value　　Zero base (mA)　　Output engineering value

(5550 / 10000 × (20.000 – (-4.000) + 4.000 = 12.88 (mA)

Output value　　Full base (mA)　　Zero base (mA)

4.5.3 SETTING OUTPUT AT OFFLINE OR POWER ON

Specify output for the period from power on until output value is set.
Enter a percent data value.
Available range: -5.00 to +105.00

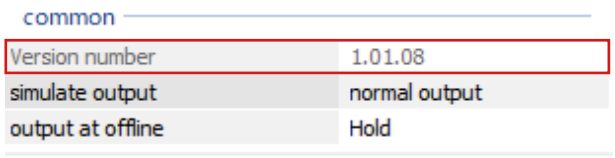


NOTE

Enter a percent data value even if the scaled ranges are specified.
If fine adjustments are specified, the value after adjustments is output.

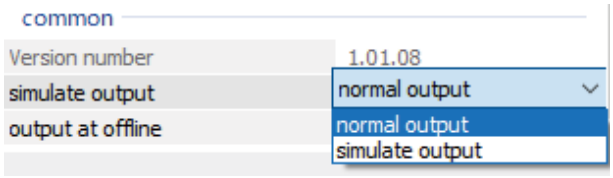
4.5.4 CONFIRMING VERSION NO.

The firmware version is shown.
This is not editable.
"–" is shown when not uploaded.



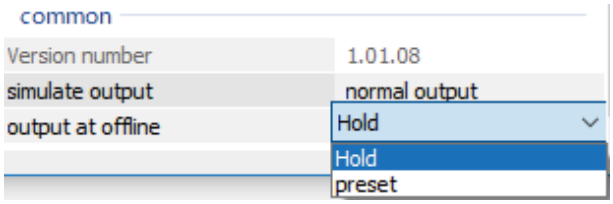
4.5.5 SETTING SIMULATE OUTPUT

Choose normal output or simulate output.
The setting is also available on the Monitor screen.
Specify the simulate output value between -32000 and +32000. If entering a value under -32000, -32000 is set. If above +32000, +32000 is set.



4.5.6 SETTING OUTPUT AT OFFLINE

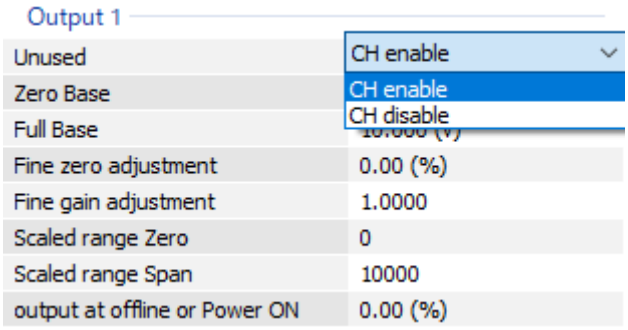
Specify the output value to be used when there is a problem in communication with the host or in R30's internal communication.
When "Hold" is specified, the last value used during normal communication is output. When "preset" is specified, the value entered in "4.5.3 SETTING OUTPUT AT OFFLINE OR POWER ON" is output.
Note that the fine zero/gain adjustments are valid.



4.6 R80YVT4N - DC VOLTAGE OUTPUT MODULE, 4 POINTS

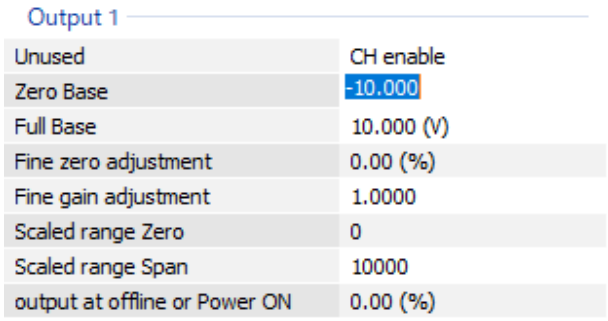
4.6.1 SETTING UNUSED OUTPUT

Enable or disable each output.
Disable the unused outputs.



4.6.2 SETTING FINE ZERO / GAIN ADJUSTMENTS AND SCALED RANGE ZERO / SPAN

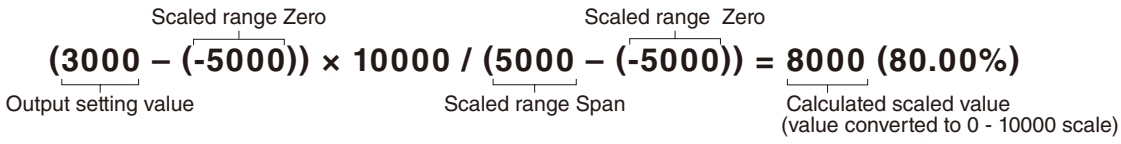
Specify the setting values. The figure in right shows an example of setting the scaled range Span.



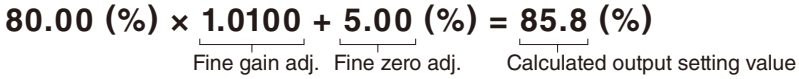
PARAMETER	DESCRIPTION	INPUT TYPE	AVAILABLE RANGE
Zero base Full base	Setting value 0% Setting value 100%	-10.000 - +10.000 V	-10.000 - +10.000
Fine zero adjustment	Zero adjustment value		-320.00 - +320.00
Fine gain adjustment	Gain adjustment value		-3.2000 - +3.2000
Scaled range Zero	Scaled value 0%		-32000 - +32000
Scaled range Span	Scaled value 100%		-32000 - +32000

NOTE
Calculation is carried out in the order of the scaled range Zero/Span, fine gain, fine zero, and Zero/Full base.

• Calculation example of scaled Zero/Span
Zero scale = -5000, Full scale = 5000
With the output setting value 30% (3000),



• Calculation example of fine zero/gain adjustment
Used for fine adjustment such as calibration.
Fine zero adjustment = 5.00 (%), fine gain adjustment = 1.0100
With the output setting value (value converted to 0 - 10000 scale) 80.00%,



• Calculation example of Zero/Full base

Converts calculated output setting value to engineering value.
Zero base = -5 (V), Full base = 5 (V)
With otput 0 - 100 % value 85.8%,

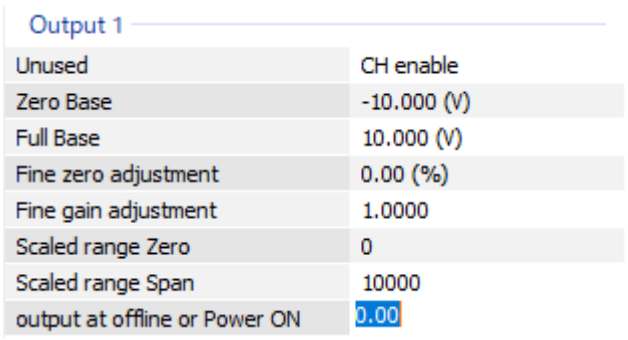
$$\underbrace{(8580}_{\text{Output value}} / \overbrace{10000}^{\text{Fixed value}} \times (\underbrace{5.000}_{\text{Full base (V)}} - \overbrace{(-5.000)}^{\text{Zero base (V)}}) + \underbrace{(-5.000)}_{\text{Zero base (V)}} = \overbrace{3.58}^{\text{Output engineering value}}\ (V)$$

4.6.3 SETTING OUTPUT AT OFFLINE OR POWER ON

Specify output for the period from power on until output value is set.
Enter a percent data value.
Available range: -5.00 to +105.00

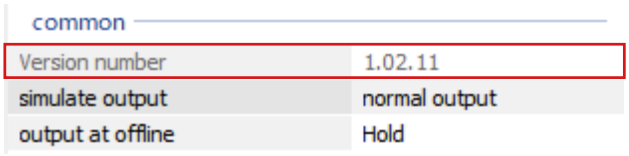
NOTE

Enter a percent data value even if the scaled ranges are specified.
If fine adjustments are specified, the value after adjustments is output.



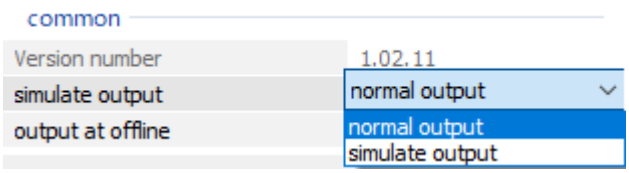
4.6.4 CONFIRMING VERSION NO.

The firmware version is shown.
This is not editable.
"–" is shown when not uploaded.



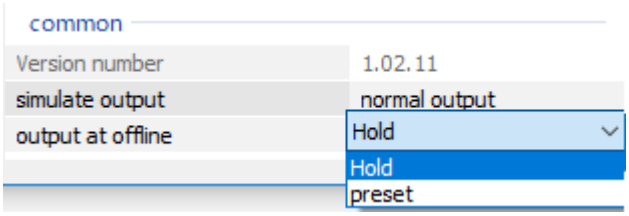
4.6.5 SETTING SIMULATE OUTPUT

Choose normal output or simulate output.
The setting is also available on the Monitor screen.
Specify the simulate output value between -32000 and +32000. If entering a value under -32000, -32000 is set. If above +32000, +32000 is set.



4.6.6 SETTING OUTPUT AT OFFLINE

Specify the output value to be used when there is a problem in communication with the host or in R30's internal communication.
When "Hold" is specified, the last value used during normal communication is output. When "preset" is specified, the value entered in "4.6.3 SETTING OUTPUT AT OFFLINE OR POWER ON" is output.
Note that the fine zero/gain adjustments are valid.



5. REMARKS

5.1 SETTING EXAMPLE OF FINE ADJUSTMENT

Fine zero/gain adjustment is used for fine adjustment of calibration.

5.1.1 ONLY FINE ZERO ADJUSTMENT IS PERFORMED

Change the fine zero adjustment value on the monitor screen to adjust.
For example, while applying the voltage equivalent to 0% from voltage source, adjust fine zero adjustment value so that monitor value becomes 0%. (When input type is thermocouple, cold junction compensation must be disabled during adjustment.)

5.1.2 FINE ZERO/GAIN ADJUSTMENT IS PERFORMED

Adjustment is available for any two points. Fine adjustment with two points such as Y0 %, Y1 %.
1)
• When input type is thermocouple, cold junction compensation must be disabled during adjustment.
• Set fine zero adjustment to "0.00", fine gain adjustment to "1.0000".
• Set scaled range zero to "0", scaled range span to 10000.

2) While applying the voltage equivalent to Y0 % from voltage source, record the monitor value (X0).
3) While applying the voltage equivalent to Y1 % from voltage source, record the monitor value (X1).
4) Calculate zero/gain adjustment value by following formula.
• Gain adjustment value = (Y1 – Y0) / (X1 – X0)
• Zero adjustment value = Y0 – (X0 x gain adjustment value)

5) Set zero/gain adjustment value obtained at step 4, confirm the monitor value after adjustment on the monitor screen.

E.g. Monitor value at 0% input is -85, monitor value at 100% input is 9810.
Y0 = 0, X0 = -0.85
Y1 = 100, X1 = 98.10
Gain adjustment value = (100 – 0) / (98.10 – (-0.85)) ≈ 1.0106
Zero adjustment value = 0 – (-0.85 x 1.0106) ≈ 0.86

5.2 VERSION HISTORY

Ver.1.00.xx First version, applicable to R80NECT1, R80DAT8A and R80DCT8A
Ver. 1.01.xx Applicable to R80NCIT1, R80DAT16A2, A80DCT16A2, R80UST4, R80FST4NJ, and R80YST4N
Ver. 1.02.xx Applicable to R80DCT4D and R80YVT4N
Ver. 3.04.xx Applicable to R80NEIP1