RCB-1

Software Manual

KONDO
KONDO KAGAKU CO., LTD.

Preface

Thank you for buying our product.

Please read carefully to use this product safety and full functions.

We recommend to copy this manual harddisks on your PC or to print out to refer, if you need.

Contents

This manual describes RCB-1 as robot control board, and HeartToHeart as control software.

Please read hardware manual before this manual if you have robot kit KHR-1.

The information and specifications in this manual are subject to change without notice.

http://www/kopropo.co.jp/KONODO_Top.html

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Legal Notice

First of all, you should read hardware manual if you want to use this manual for KHR-1 (robot kit).

Table of Contents

About Product

RCB-1

RCB-1 is the servo motor control board.
A RCB-1 can control 12 servo motors. And also, two boards can be linked to control 24 servo motors.
The board supports all functions of Red version of our servo motor.
You can make advanced robot with our products.

HeartToHeart Version 1.0

HeartToHeart version 1.0 is motion editor for RCB-1. This software supports all functions of RCB-1. Add to say, you can use teaching function if you attached Red version servo motor on your robot. It makes possible to easy edition of motions.

Descriptions

This manual describes procedure of editing motion using robot control board RCB-1. RCB-1 and software works together. Please read this manual carefully.

Introduction

Installation of software to your PC.

Software Install

First of all, software is copied from CD-ROM to hard disk on your PC.

1 Insert CD-ROM to CD-ROM drive

2 Open CD-ROM drive from "my computer"

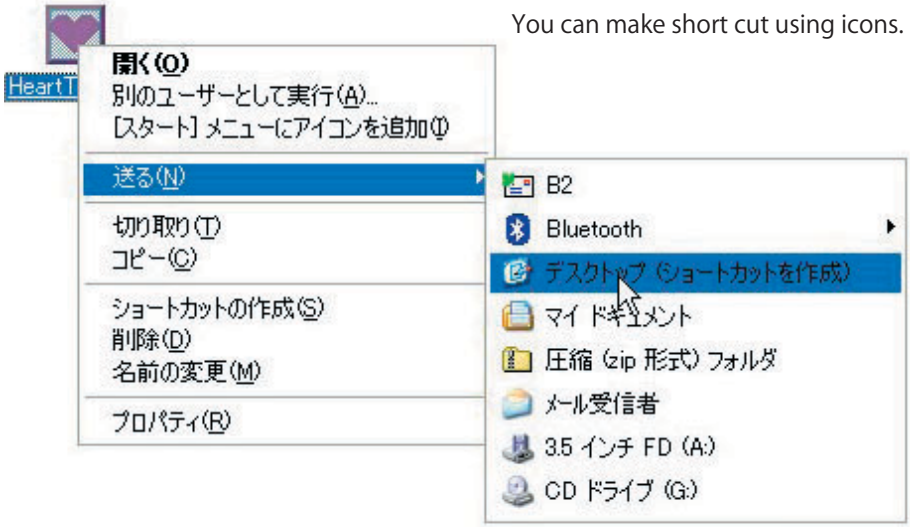
Open "software" folder in CD-ROM folder.

3 Copy "HeartToHeart" file in "software" folder to hard disk on your PC.

Please make new folder for this software in hard disk.

4 It is easy to open "HeartToHeart" if you make short cut folder on the desktop.

You can make short cut using icons.

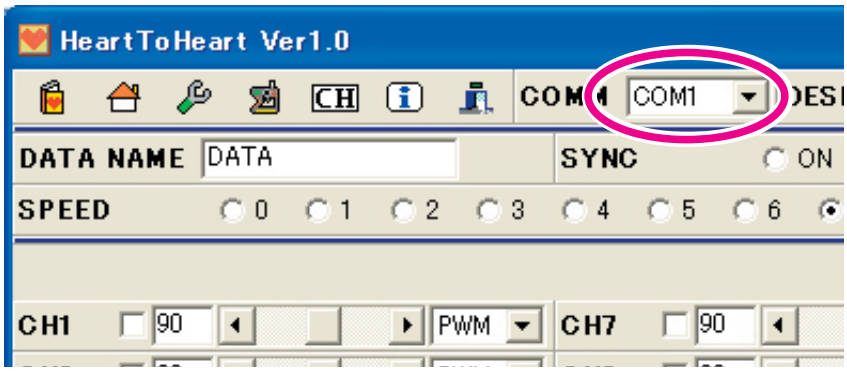


In the case of uninstall the software

Delete all files concerned with this software including folder.

Software Initialize

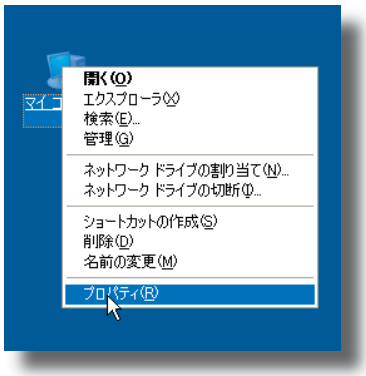
RS232C Port



HeartToHeart uses RS232C to access RCB-1.
Default setting of RS232C is "OFF". You must set the number of COM port on your PC at first.
Please pay attention to the number of COM port if you use USB-RS232C adapter.

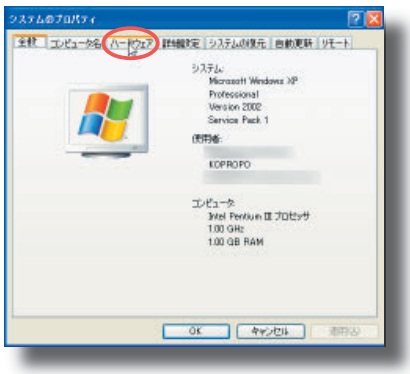
How to confirm RS232C port number

In this manual, we use Windows XP as example. Please refer to windows manual if you have any other version.



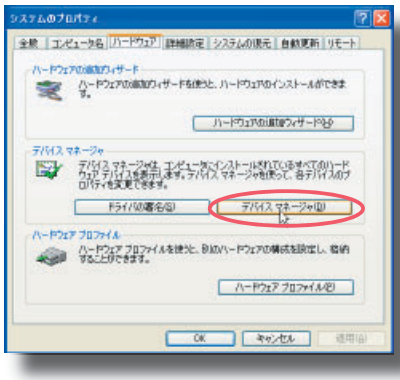
1

Click right button on "my computer" icon on the desktop.



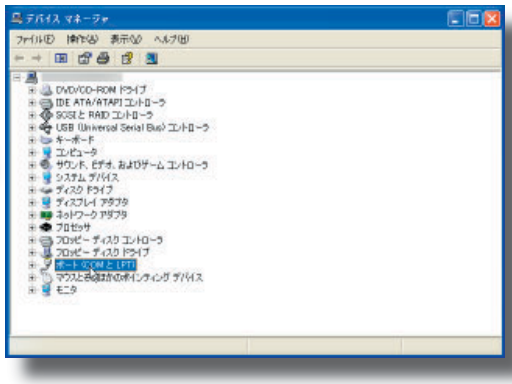
2

Property window is displayed. Click "hardware" tab in this window.



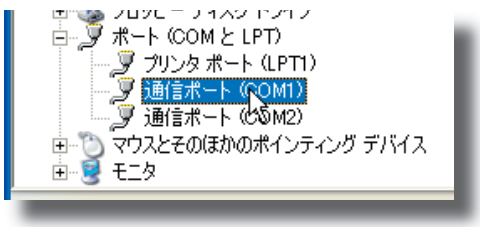
3

"hardware" tab is displayed. Click "device manager" in this window.



4

"device manager" is displayed. Click "+" on the line "Port (COM and LPT)".
Ports are shown by this operation.



In this case, we can see COM1 and COM2 as serial port.
Please set the number of the cable which attached to the PC and RCB-1.

※This information will show no COM ports if PC confirmed any serial cables or USB-RS232C adapter.

Continuous performance is made from a set of positions. We use words "position", "motion" and "scenario" to make performance.

Position and Motion

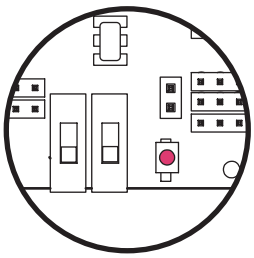
"position" is a set of position data of each servo motor in shape of robot at presence.
Software can set data to each servo motor using teaching function or slide bar.
"motion" is a set of position.
Change of position to position is set by speed. Depending on the set value, performance between positions is compensated automatically.
RCB-1 can save 100 positions for a motion. And also, RCB-1 can save 40 motions.

Scenario

We use scenario to make performance of robot. Of course we can set performance to describe each motion. RCB-1 can save 4 scenario. We call "bank" as the place to save a scenario.
A scenario can keep 200 motion data. (It means that scenario can use motions repeatedly. Because motion can save only 40 data.)

Scenario in Bank 0

Scenarios are saved to bank from #0 to #3. Bank #0 is the special record.
Bank #0 has auto demonstration mode if you turn on the start switch on RCB-1.
Of course Bank #0 can be used for nomal scenario mode.
This function supports auto demonstration of the robot.


スタートスイッチ

Home Position

Home position is the most important position to the robot.
Because it is the basement position of the robot.
Usually, we call home position as "standing position". However, home position will be taken for long time in various positions. We should keep the shape of robot which has less load.
In the case of KHR-1, please set home position referring to hardware manual.

※ All data in the software refers to home position as the basement position. You can replay almost same position in the sample data if you set the same home position.

Software Reference

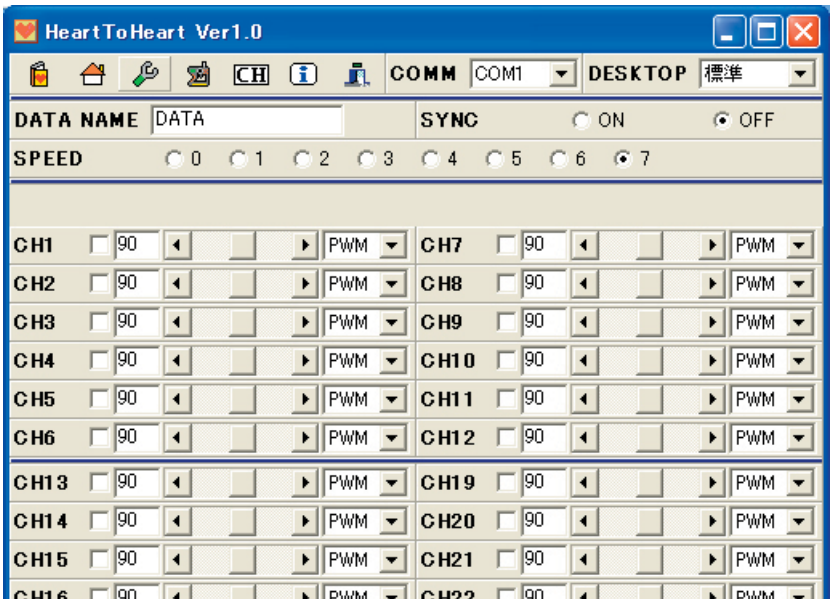
Software consists of
- **Main window,**
- **Motion editor,**
- **Scenario editor, and**
- **Graph window.**

Each name or function is described in this reference.

Main window (1)

Icons on the upper window

Main window is the first window if you start the software.
It is the main software to set value to the servo motor with slide bar and to support various functions.

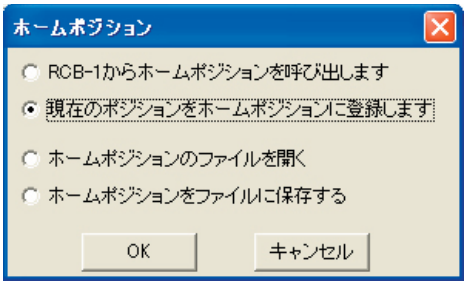


Scenario Editor

This icon opens scenario editor.
Refer to "Edit scenario" for details.

Home Position

This icon opens home position window.
This window save each value on the displayed window as home position to RCB-1



Option Setting

RThis icon opens option setting window.
Option means ID setting to RCB-1 and Trim setting

Option controller setting

This icon opens optional controller.
Optional controller will be on sale in the future.

Label property

This icon opens label setting window.
This window can set name to each channel, color, and display mode ON/OFF.

Close

This icon exit software.

Information

This icon shows version information.

Serial port number setting

This function set the number of serial port on your PC.
Default setting is "OFF". You must set the number of the serial port before access to RCB-1. Please refer to "How to confirm RS232C port number" for details.

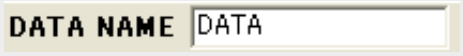
Desktop

You can change location of each channel from ch1 to ch24 by drug and drop on the window.
And also, you can keep 10 locations using this desktop function.

Main window (2)

Setting Items

Positon name



This function gives a name to data (position) in presence.
It is used to show to make motion.

Syncronization

This function sets syncronization between this software and RCB-1. RCB-1 works according to the slide bar movement in realtime if the setting is ON. In the case of OFF, RCB-1 doesn't work in realtime.

Speed

This function sets motion speed. 0 is the fastest speed. 7 is the latest speed.

Servo Control

Tracking check

It can increase or decrease data simulteneously using "tracking" button if this check box is ON.

Slide bar

This bar sets data to each servo motor according to the channel number.
Slide bar changes data by user operation. You can see syncronized movement of servo motor and slide bar movement if "sync" is ON.
The setting value is absolute value from 0 to 180. You can set "relative" to home position if you set ON to "RELATIVE" setting.

Label

Each channel is shown with number from CH1. You can give a label to the channel if the name is double clicked to open a window to revise.
For example, you can give a name 

to CH1 on KHR-1.

Mode setting

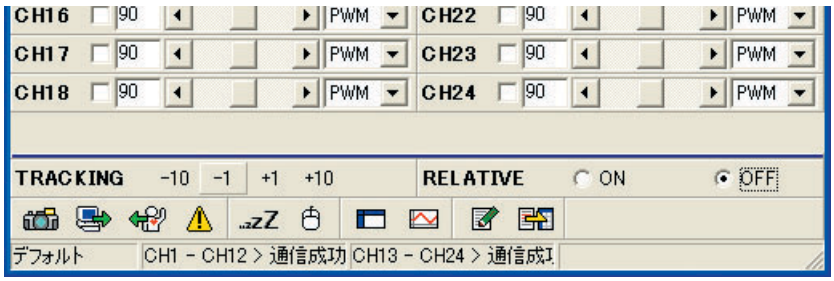
This function sets signal mode to channel output.

PWM : Default setting. Position control mode. Value is set from 0 to 180 by slide bar.
FERR : Servo motor is free.
SET1~3 : 3 values are changed. 3 values are set by ICS function.
-L- : output TTL low level
-H- : output TTL high level

※ FREE and SET1-3 can be available if you use Red version servo motor. Don't use these modes if you have no red version servo motor. It is danger. Because normal servo motor for radio control car doesn't have this function.
※ Please set FREE to channel which is not attached servo motor.
※ Don't set -L- or -H- to channel which is attached servo motor. It is danger. Because servo motor has no function to support -L- or -H- mode.

Main window (3)

Icons on the lower window



TRACKING

This function increase/decrease setting value simulteneously to each channel if the channel tracking check box is ON.

RELATIVE

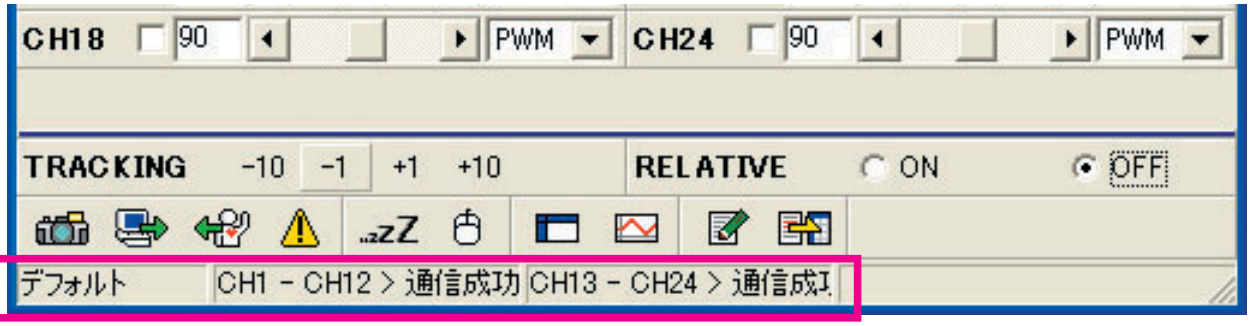
Each channel data is displayed by absolute value. It shows relative value if the radio button is "ON". It is relative to home position.

※ You must read home position from RCB-1 before use this ction.

Shot Button	This button opens window for teaching function.
Data Transmit	This button sends data to RCB-1. It is used in the case of "OFF" mode of "SYNC".
Read Data	This button reads RCB-1 data at presence. (The data is only position. Motion and scenario are not included.)
Home position	This button sets home position which is set in RCB-1. Frist click set to free all servo. Second click to set home position after check dialog box.
Sleep	This button sets sleep mode to RCB-1.Each servo is set free. But RCB-1 and PC can be access each other.To keep battery, it is better to use when you save motion or scenario data to RCB-1.
Default	This icon turns on RCB-1 from sleep mode.
Edit motion data	This icon opens/closes motion editor window.
Graph Window	This icon opens/closes graph window.
Add data	This icon adds data in the window at presence to motion. Data is added to the last of the motion.
Override data	This icon override selected data in the motion editor with data on the main window. Pay attention: original data will be deleted by this operation.

Main window (4)

Information



The bottom on the window shows status.

- Default/Sleep: icons set RCB-1 mode Active / Sleep. Default setting is " デフォルト (の日本語表示)".
- Access status: This software accesses to 2 boards. It shows status of access. Normal display is "success" for each access.

※ In the case of failure to access, please confirm COM port setting.
Especially, USB-RS232C adapter changes the port number if you remove/attach USB-RS232C adapter during operation.

NOTICE

About Data Save

- You can't save only position which set on the main window. You must save "motion" which includes the position.
- Data which is used to change DESKTOP is location of servo control. Display/No Display mode and color are displayed the same setting after save to system in the label property setting.
- Each label name which is set in the label property is saved in "motion".

However, label names are deleted when the data is send to RCB-1. Add to say, read data from RCB-1 is set as the label name which is the setting name in the presence on the main window.

Motion Editor Icons

This window is opend by click "Motion Editor" icon.
This function makes motion using a set of positions.

New data

It makes new data. It clear all information on the window.

File Open

This icon opens window to open file.

Save

This icon saves data to file.

Undo

This icon undo width of display data.

Copy

This icon copy selected data.

Cut

This icon cuts selected data.

Paste

This icon pastes copied / cut data.

Write

This icon writes editing data to RCB-1 with selected number.

Read

This icon read data from RCB-1. The number of motion can be selected using "Selection of Data number".

Delete

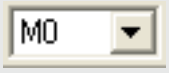
This icon deletes data on RCB-1 which is selected using "Selection of Data number".

Play data

This icon play RCB-1 data which is selected using "Selection of Data number".

※ It plays saved data on RCB-1.

Selection of Data number



This function sets motion data number on RCB-1.

Edit

This icon copies selected data in data window to main window.

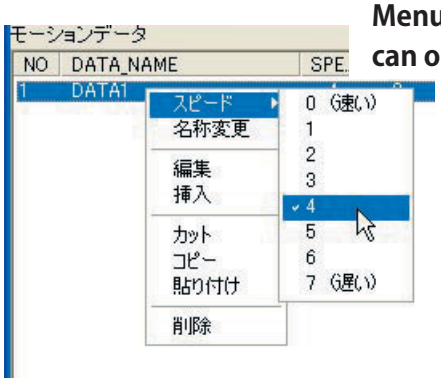
Insert

This icon inserts new positon data.

Delete data

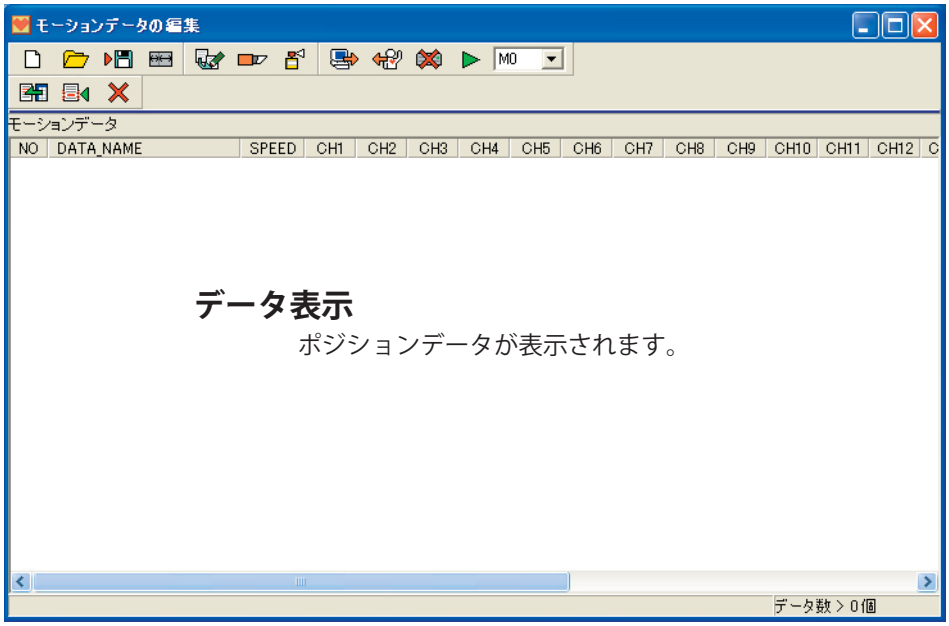
This icon deletes selected data.

Menu is shown by click right button in the data window. You can operate using this menu.



※ You can edit only speed in the data window. Click edit button or double click on the data to revise data using main window. After edit, please override the data.

※ You can change to display motion editor and main window.



Scenario Editor Icons

Scenario plays motions continously. This window can be opend by click "Scenario Editor" icon.

Read All Motion Data
It shows all motion data after reading motion data in the memory of RCB-1.

New
It makes new data. It clear all information on the window.

File Open
This icon opens window to open file.

Save
This icon saves data to file.

Undo
This icon undo width of display data which is changed.

Copy
This icon copy selected data.

Cut
This icon cuts selected data.

Paste
This icon pastes copied / cut data.

Bring Data to lower column
This icon moves selected data to lower line.

Bring Data to upper column
This icon moves selected data to upper line.

Delete data
Selected motion data is deleted from scenario.

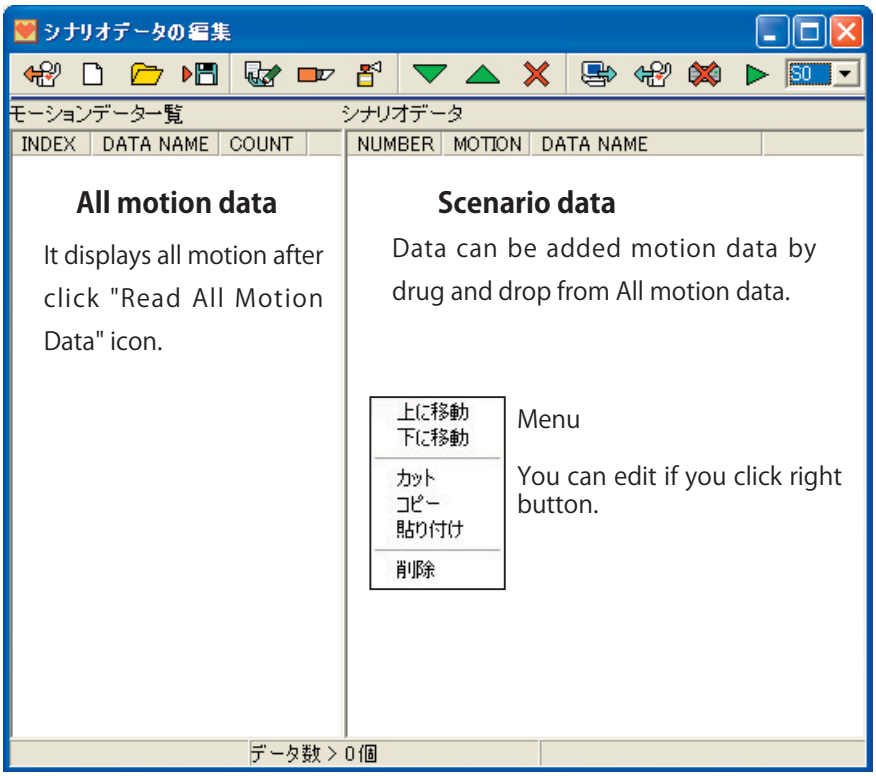
Write data
Editing scenario data is written to the number which is set by "Selection of data number".

Read data
This icon reads scenario data from RCB-1. It can set by "Selection of data number".

Delete data
This icon deletes motion from selected scenario data.

Play data
This icon plays data in RCB-1 which is set by "Selection of data number".

Selection of data number
It sets data number in RCB-1. Scenario can use number from S0 to S3.



※ Main window and Motion window can not be edit if scenario window is opened.

Hardware must be set before access using software.

Hardware

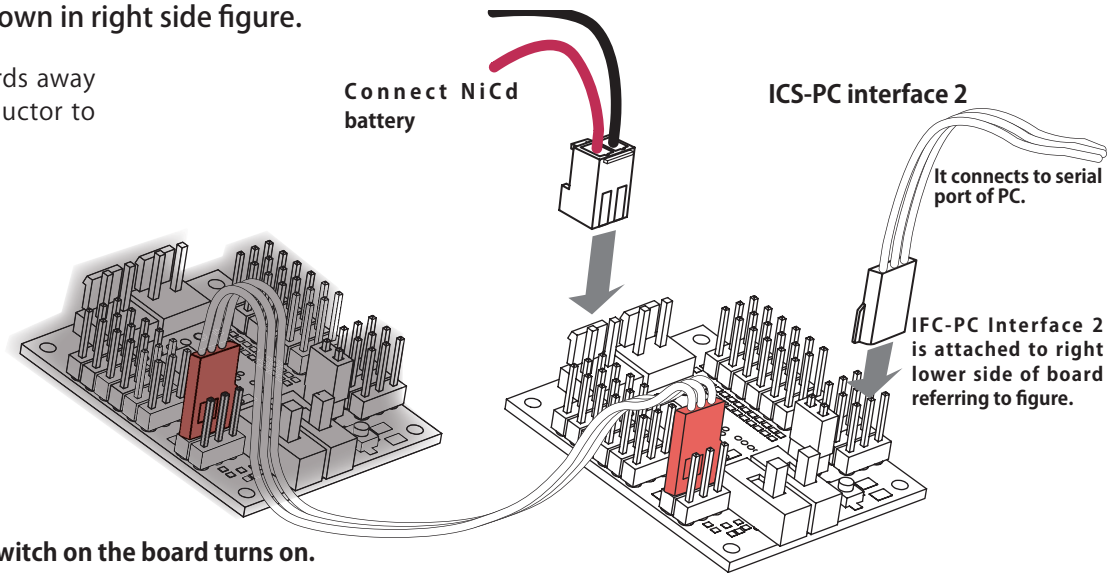
Initialize RCB-1

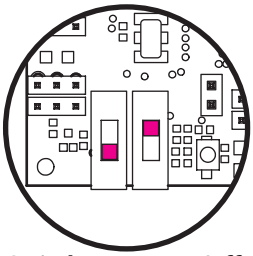
ID setting

KHR-1 uses 2 RCB-1 boards. To distinguish each board, a board must have ID number. Both boards are set ID0 when they are shipped. One of the boards must be changed ID1 from ID0.

Boards connection is shown in right side figure.

*Attention: Keep boards away from an electric conductor to avoid short circuit.



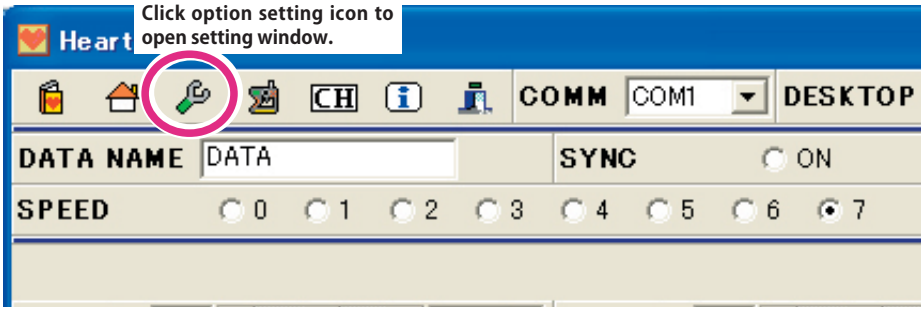


Swicth to turn on/off

Start software in PC then switch on the board turns on.

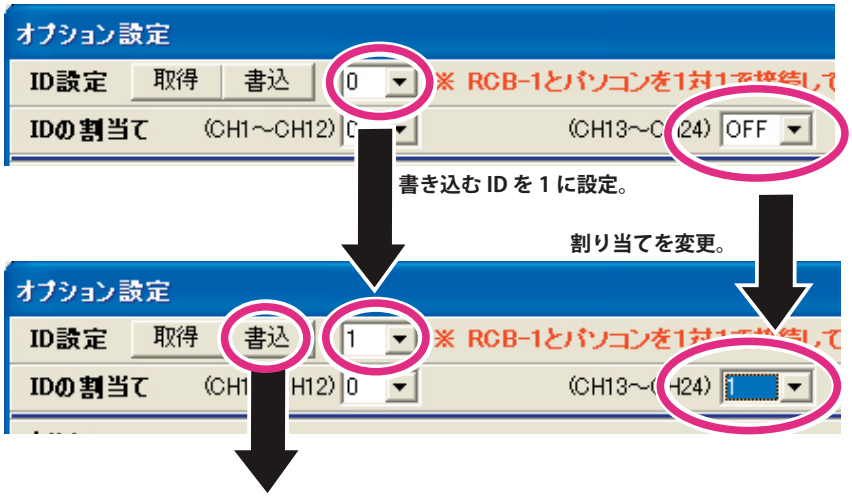
Main window

Set ID number using software.



Option setting window

*A board which attached IFC-PC interface 2 cable is the target board to change ID number. In the software, it describes PC and a board should be attached to change ID.
You can ignore it.



At last, click " 書込 " button to set ID number to board.

After setting, close software then switch on the board turns off.

RCB-1 cable assignment

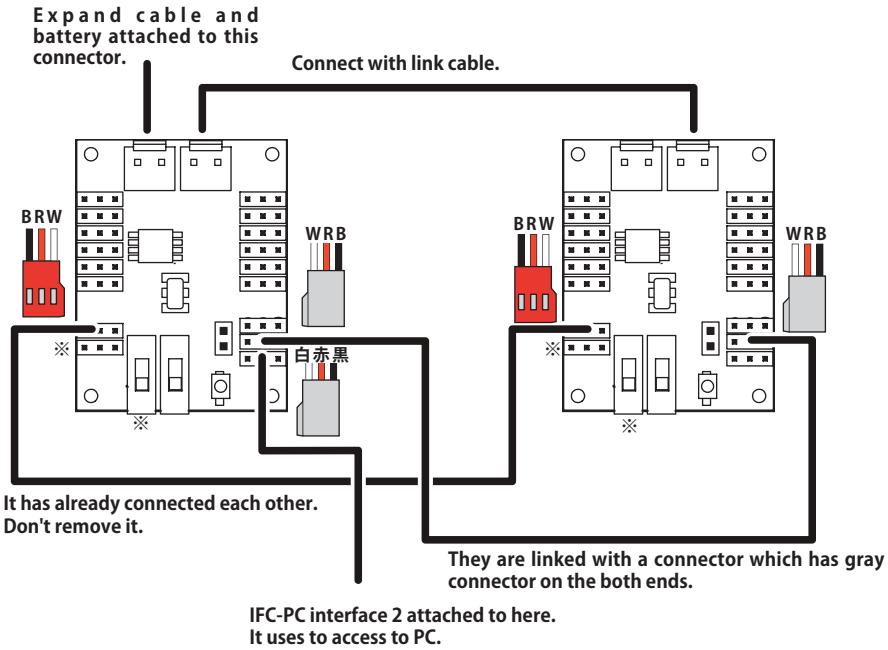
Attention

Direction and location of each connector must be attached right connector.

It may occur fire or serious damage if it failed. Please confirm direction and location before power on.

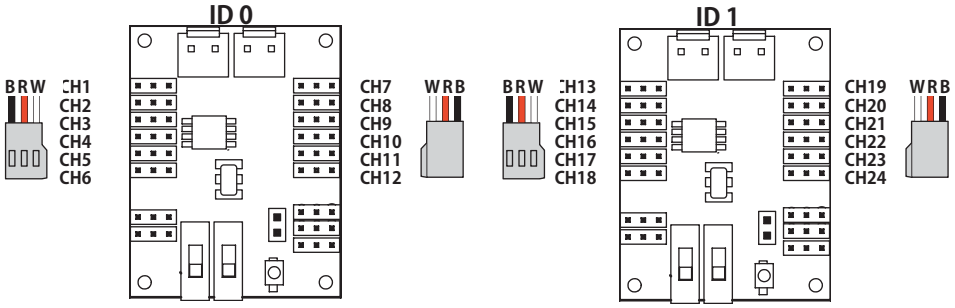
3 cables attached to connector are black, red and white. Black cable should be put on the outside of board.Please pay attention position of black cable to be contrary position on the right side or the left side of board. Both sides has black cables.

*This switch and connector will be atteched optional controller.



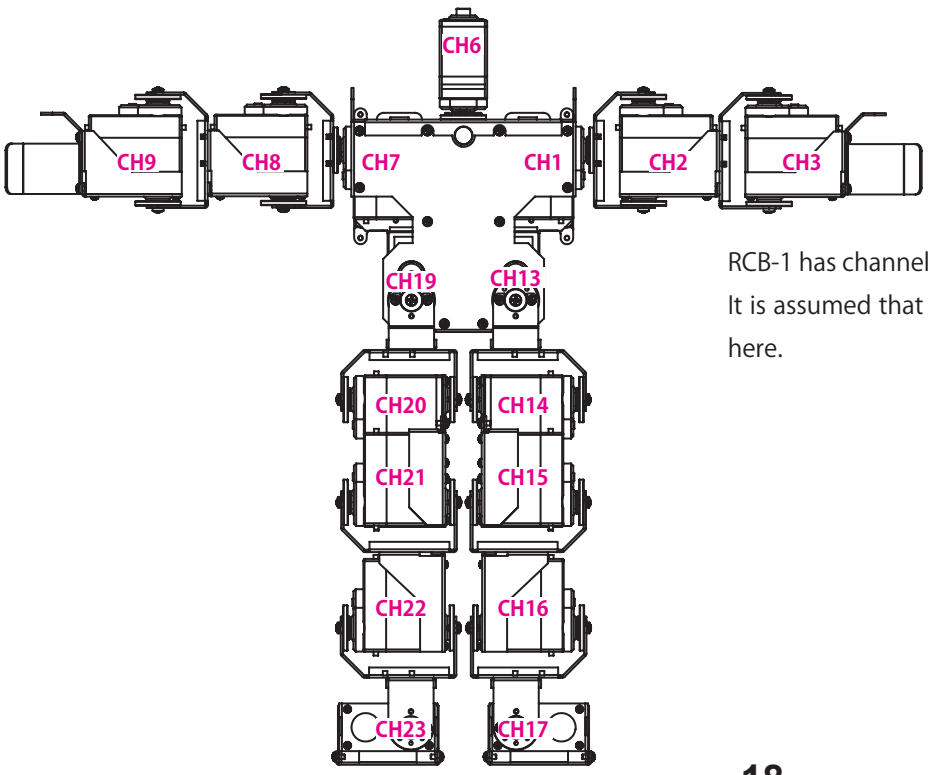
Connection Servo motor and board

CH is number of channel.



Pay attention to direction of connector to attach to the board pins and CH number.

Access to KHR-1



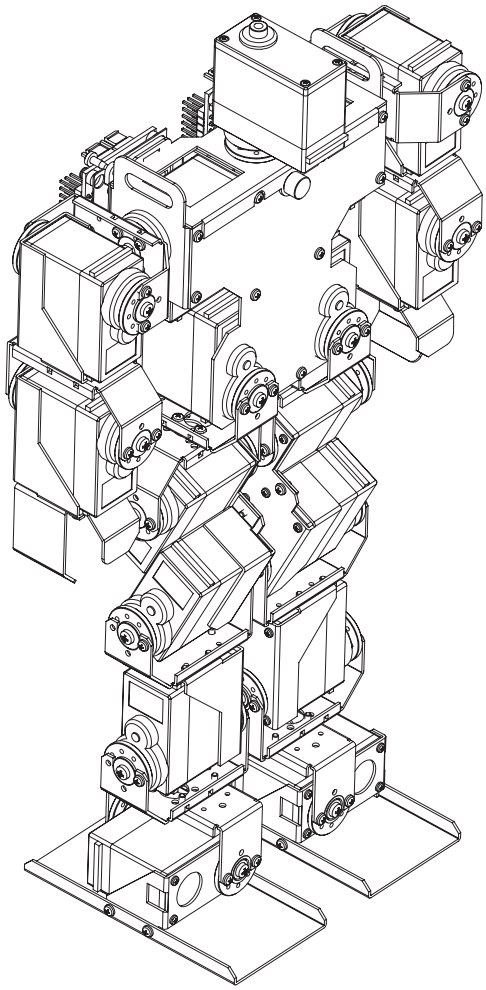
RCB-1 has channel assignment like left side figure to attach to KHR-1. It is assumed that KHR-1 is used as application of this software after here.

Settings are described after here.
And also, operation is described with sample data.

Application

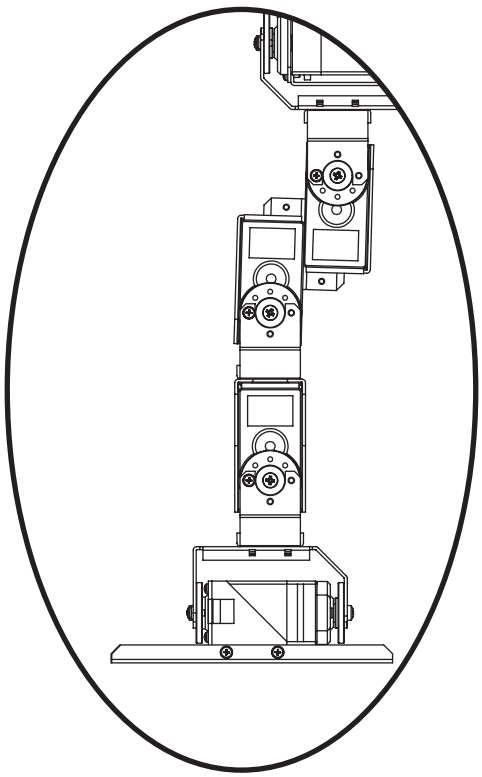
How to set Home position?

In the right figure, KHR-1 is set in home position.
In the lower figure, we can see difference between initialized position and home position. In initialized position, center of gravity is set in backward. On the other hand, the center of gravity comes almost center of body in home position. It makes less current and less load for servo motor in home position.
In CD-ROM, sample home position is included. You can use this sample home position for your robot if your robot has no fault to assemble.

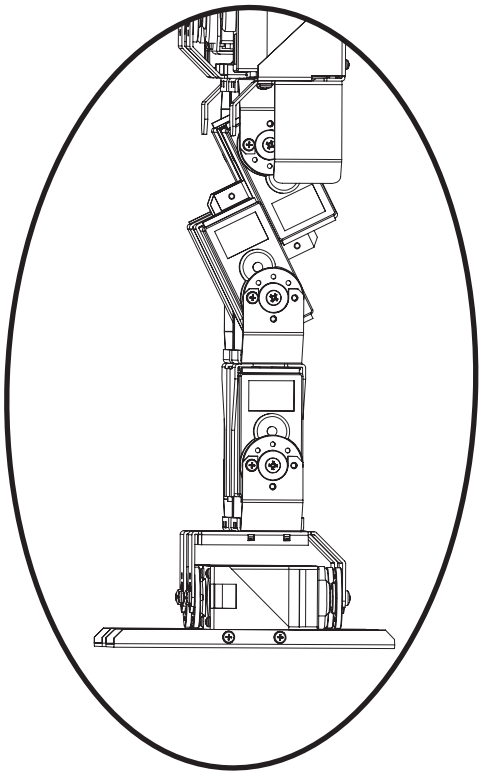


*In this manual, we have various sample motion. They are assumed that your robot has almost same home position which is described here.

Initial position



Home position



How to make new home position?

In this case, your robot spreads its arms and stands with two straight legs like cross.
From this posture, we shall make new home position.

Make the new home position.

1 Read current position.
click (1) button in lower window. Current positions are read from RCB-1 to window. All values must be 90.

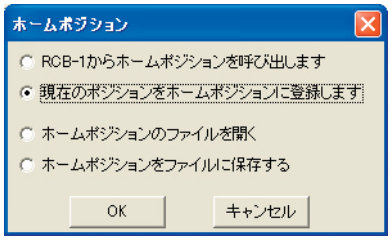
2 Set "SYNC" setting to "ON". This setting makes robot and slide bar working together in realtime.

*Transmitting data increases in SYNC mode. Please make it "OFF" if your computer is down or to be slow in this mode.

3 CH1,2 and CH7,8 are for arms. CH13-17 and CH19-23 are for legs. They should be moved for home position.
In the lower case, CH1=0, CH2=5, CH7=0, CH8=5 are set for arms to be dropped position.
CH14,15,16 and CH19,20,21 are set each servo hone to be in line.

*click (3) button to realize the motor value if you use "SYNC" off mode.

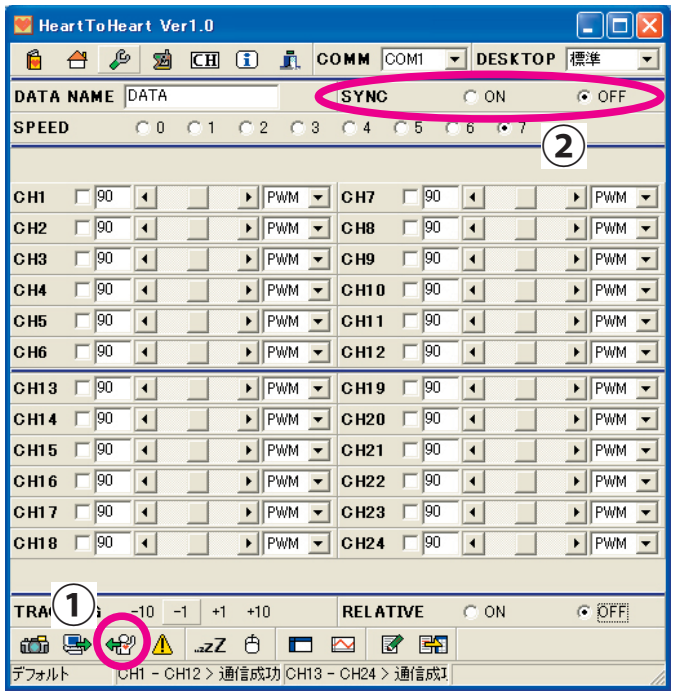
4 **Click (4) button to set home position after setting.**
Following dialog will be opened.



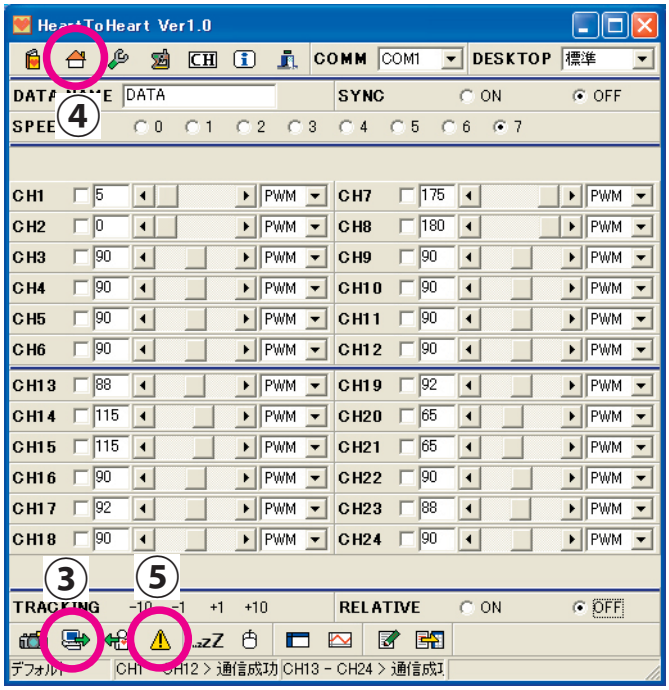
Click button in second line then click "OK" button.
In this case, current home position will be recorded.
Save to RCB-1 is completed.

5 After setting, please confirm home position which is saved.
First of all, move any slide bar to set other position from home position.
(click (3) button if you use "SYNC" off mode.)
Click (5) button to return to home position. At first click, all servo motors are set free.
Second click makes robot to be home position after dialog

Original condition



Example of home position



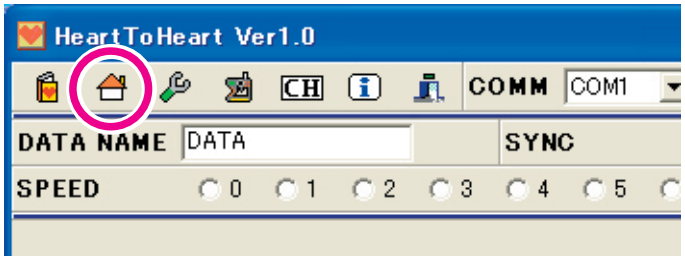
Watch robot movement in home position recovery operation.
It is danger that robot moves rapidly.

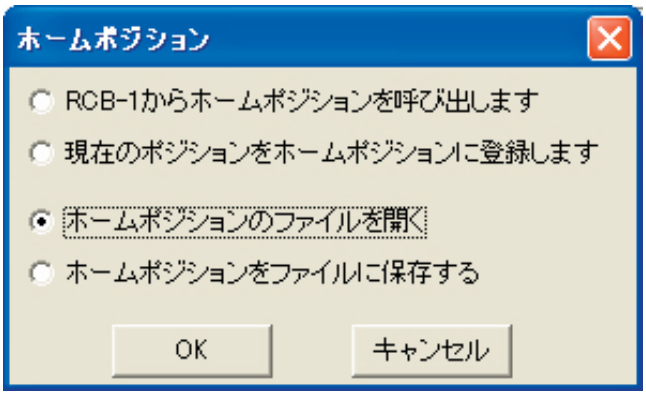
Setting home position from file

In this description, we introduce to set home position from file.

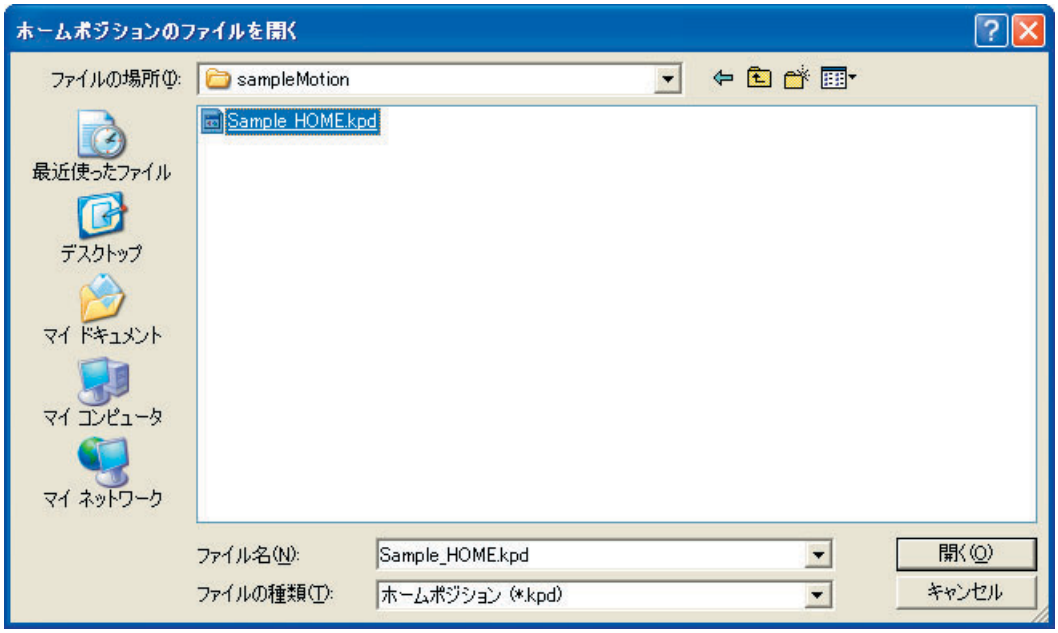
Set home position from sample data.

1 **In main window, click "home position" icon to open dialog.**





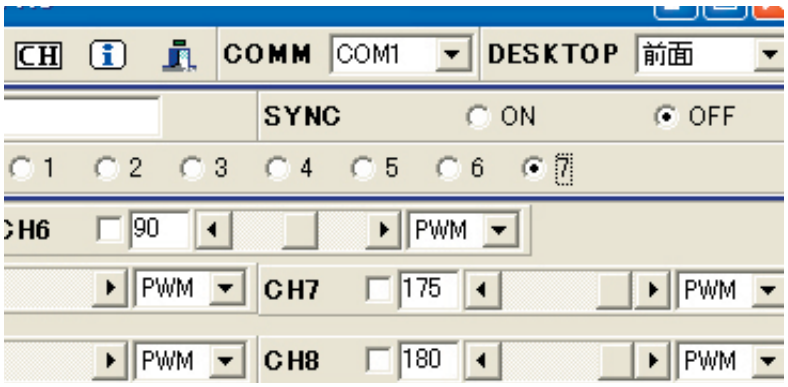
2 **click "OK" button after selection of "open file" in the window.**
Next operation is selection of file. In this case, we select "Sample_HOME".



3 **Selected data is displayed in the main window.**
According to "SYNC" mode, different procedure should be done.

Case "ON":
Robot forms the same posture according to the data in window.

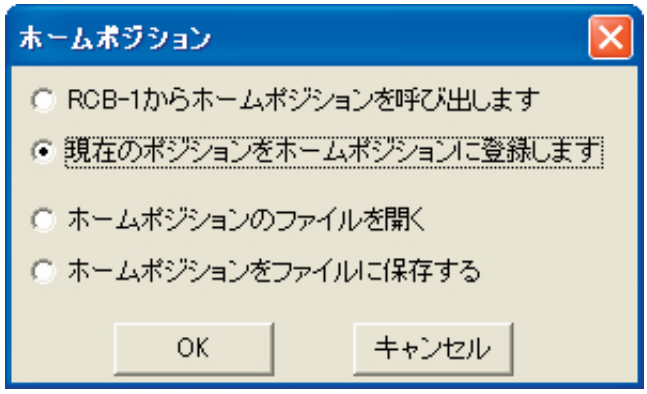
Case "OFF":
Click "Data Transmit" icon to send data to robot.



4 Save current position as home position.

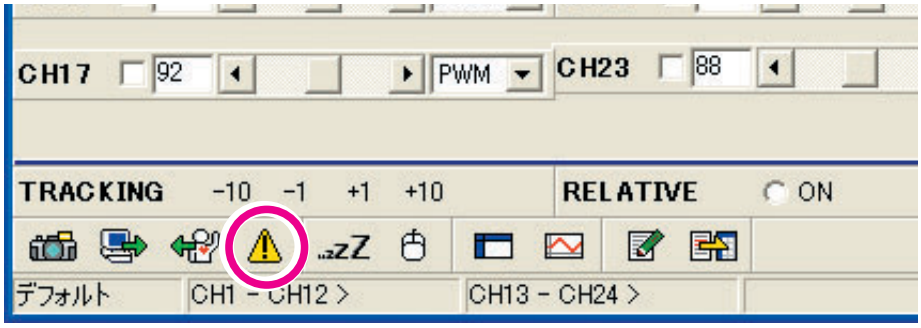
In this procedure we can see same position between robot and main window data.
But it is not home position in presence.

Click "home position" icon to open dialog.
Click "save current position as home position" in second line.



5 Confirm saved home position.

Move slide bar in main window and make different position.
SYNC mode is "ON": robot realizes same position in main window.
"OFF": click data transmit icon to set robot position to be the same as main window.



Click "home position" icon to return to home position.
Please confirm position which is set in upper procedure.

From position to motion (1) Data input

In this procedure, we set motion with positions.

1 **t first, open main window. Then access to robot.**
Robot stands at home position.

2 **Read data from RCB-1 to show data in main window.**

Read Data

Click button to read data from RCB-1. Window displays home position data.

3 **Save home position as 1st position data.**
In this sample, CH1 (left shoulder) is moved.

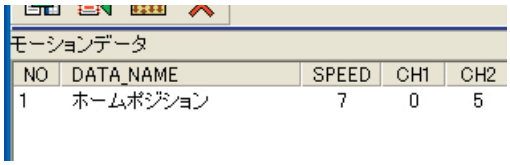
To recognize position, we can give name to position.
We put "home position" as name to the position.
And set speed 7 as latest movement.

4 

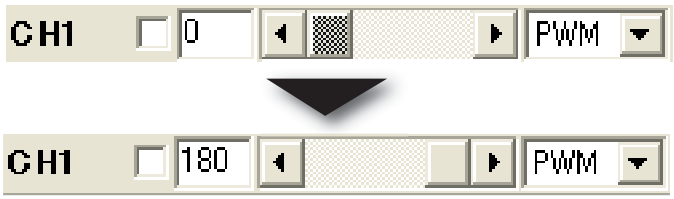
Edit motion data **click motion data icon to open window.**

5 

Add data **click "Add data" icon to add new data.**

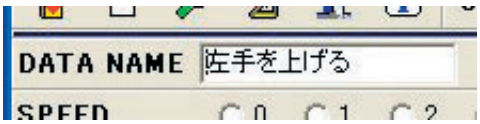


See added new data in motion data editing window.

6 

Change CH1 data from 0 to 180

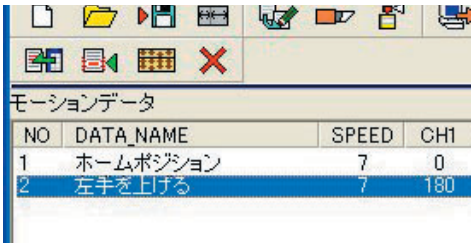
Servo motor is worked together if "SYNC" is on.

7 

Change data name to "raise left hand" and set speed 7.
click "add data" icon.

8 

Add data **click "Add data" icon to add new data.**



e can see two data in the window.

Motion is added by procedure from 1 to 8.
This is only operation on the software. Therefore, the data must be transmitted to robot to realize motion.

9 Confirm robot movement before tranmission.

Set "SYNC" to "ON".
Double click position in the motion editing window.
Robot makes the same position in the main window.

After confirmation, let's transmit data to robot.

10 

Set number to "Selection motion data number".
In this case, "M0" is set.

11  Click "Write" icon to save the data.

12  Click "play data" icon to confirm the transmitted data.

*In this case, home position is the first position. You feel nothing occur at first.
But you can see "raise left arm" after home position.

We recommend to save motion data to file.

***positon names are not saved in RCB-1 (robot). But saved file records all data including name.**
***Saved data can be used as basement position when you make new position.**

 Click "Save file" icon to open dialog.
You can set filename. Default setting of file name is "date+motion".

 Click "open file" to read saved data from file.

From position to motion (2) Teaching

Teaching function is realized using RCB-1 and Red version servo motor.

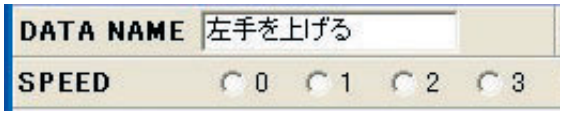
What is "Teaching"?

Mechanism of "servo" is set signal to go specified position. Sensor reads position data to know position. Send signal to motor if specified position is not satisfied. These procedure is repeated to set specified position. Traditional servo motor has signal sending function only. But Red version servo motor has signal sending/receiving function.

We call this function "position capture function". And also, Red version servo motor has "free" mode accoding to setting signal. Using this "free" mode, teaching function realizes movement of servo motor to know position of specified channel to set position.

1 Do procedure 1-5 in data input description to set home position.

2

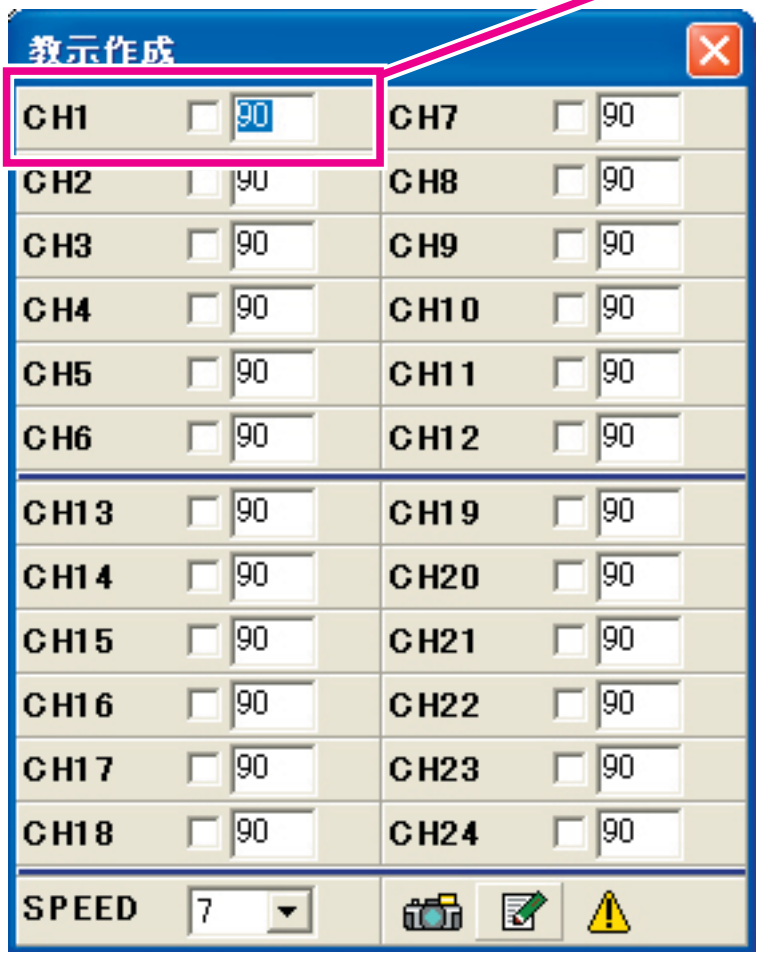


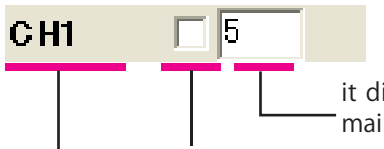
give a name to position. "raise left hand" is given here.

*this name is saved only in PC. "name" data can't set to robot.

3  **"Shot" icon.** It opens "teaching window".

4 **Teaching window**





it displays same data on main window.

Free setting check box
servo motor set "free" if it is checked.

Label : The same label name in main window is shown.

Speed

It is the same function in main window.
It set motion speed.

Shot icon 

It returns servo motor position from FREE mode if the channel has checked box.
And also, it revises data in main window at once.

 **Add data**

Displayed data is added to motion editing window.

 **Home position**

First click makes all servo motors to be free.
Second click requires click in dialog box, then robot forms home position.

5 Operation in Teaching window.

When teaching window open, other windows can't be operated.
Close teaching window if you want to operate value in other editing window.

Check Free setting check box to get data using teaching function. You can check plural channels at the same time.

Pay attention: It is difficult to stand if you set almost servo motors to be free.

Servo motor is set free when you check the box. Then you put servo motor on the robot to specified position which you want.

We have two method to read specified position of chennel.

① ● remove check from check box. Software fixes the data at the position.

② ● lick shot icon. All checked channels are read at once. Then all data is clear. Signals are fixed at the position.

*Servo motor is set free in the position if you set free to check box.

In the case to add position data to motion, click data add icon.

In the case to set home position as basement position to make new position, click home position icon.

*The first click of home position icon, all servo will be free. Second click shows dialog to confirm to return home position, then robot forms home position. Please watch your robot not to injury when robot moves speed at 0.

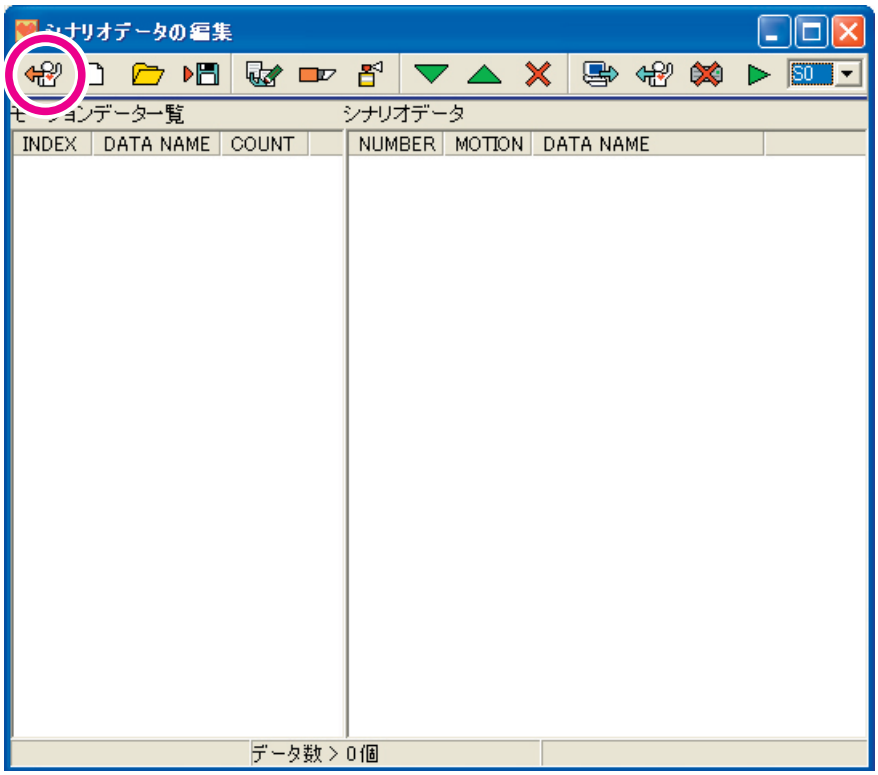
**Main window can be operated when teaching window is closed.
Main window data inherited data in teaching window. Servo motor will be free if you set any servo motor to be free and close teaching window.**

Here after, it is the same operation from 10 to last in data input (previous description). Please confirm robot motion using motion editing window after data transmission to RCB-1.

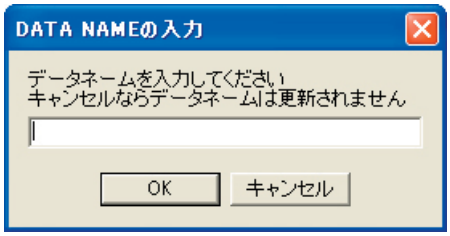
Edit Scenario

Scenario data can be edited after motion data transmission to RCB-1.
Scenario can't be edited if RCB-1 doesn't have any motion data.

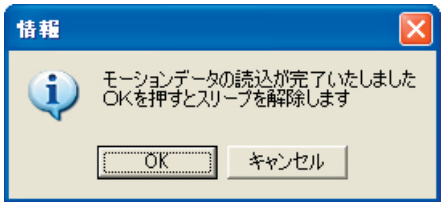
1 **click "Read all motion data" to get motion data in RCB-1.**



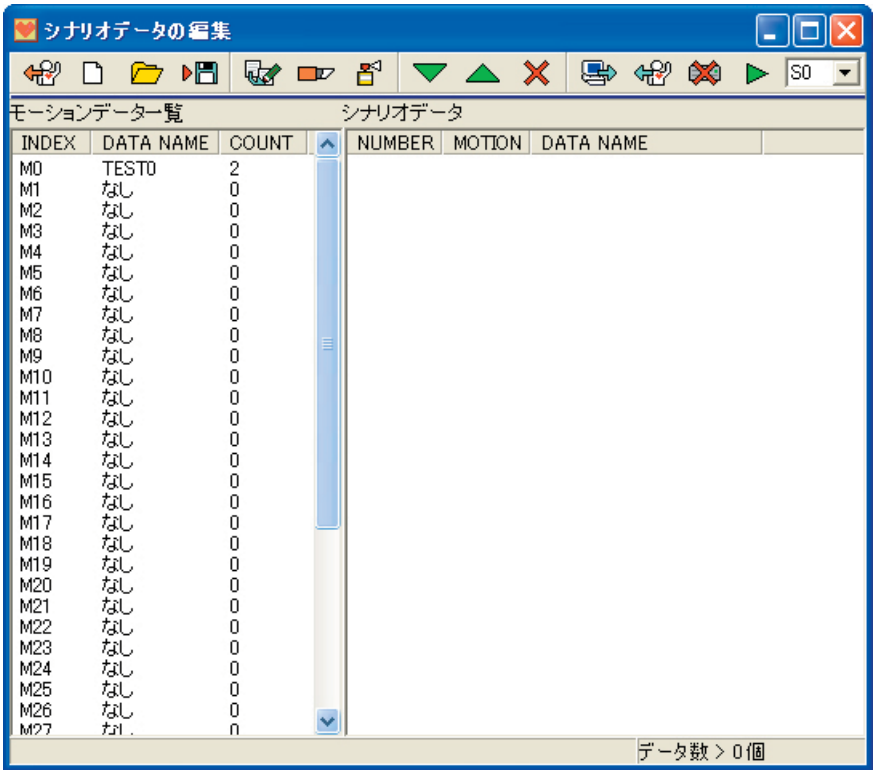
Data name is required to read motion. Dialog is displayed to give a name.



During communication, RCB-1 set sleep mode to output OFF to servo motors.
Confirmation box will be shown to return to ordinary mode at the end of communication.



In this case, saved motion is only one like right side figure.

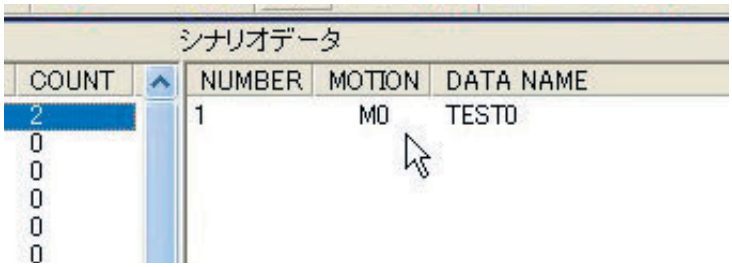


INDEX :M0
DATA NAME :TEST0
COUNT :2

INDEX: M0
motion number
DATA NAME: TEST0
specified name + number
COUNT: 2
number of positions which aresaved in the motion.

2 **Drug and drop motion from all motion data to scenario window.**

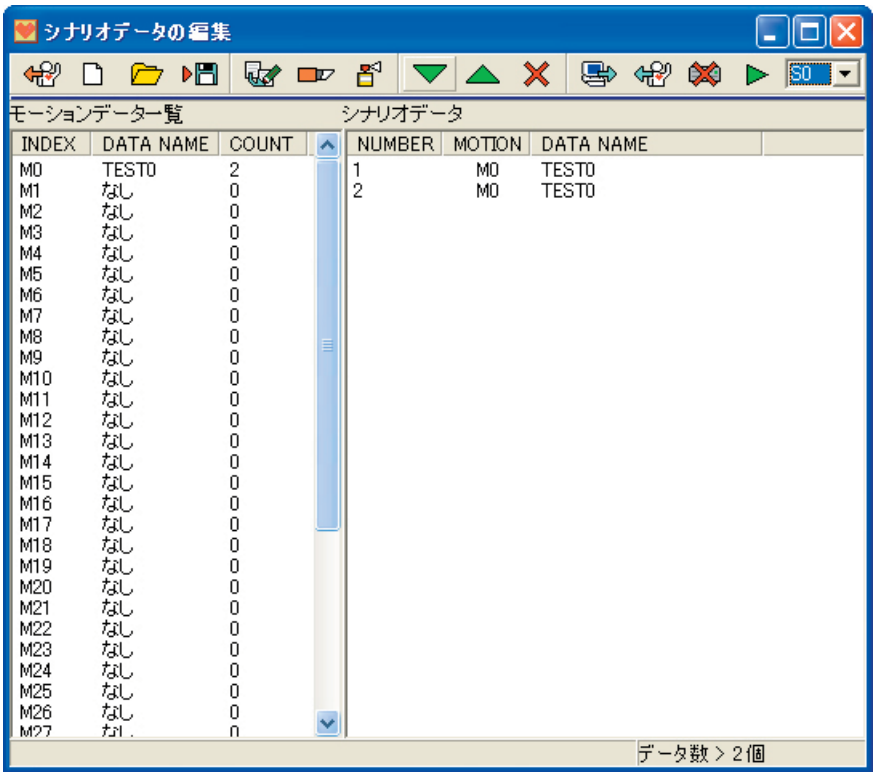
In this case, motion data saves "raise left hand".



3 **Transmit data to RCB-1 to save scenario to robot.**

click "write" icon to transmit scenario.

*During transmission, robot will be set "sleep" mode.After transmission, dialog opens to confirm to return ordinary mode.




You can choose data number for scenario to save. In this case, we choose "S0".


Click "play" icon to confirm scenario.


Click "save file" to open dialog box to specified file name to save.
Default setting of filename is "date+SINARIO".


click "open file" to read saved file.

Optional controller

Robot can perform with transmitted data. Optional controller makes it easy to play with robot.
Optional controller will be in sale in the future. It can control two methods.
● Wired control: Optional controller and RCB-1 are connected with cable.
● Wireless control: Optional controller sends signals using tranmitter to receiver on the robot.

Both cases, the same format of data is used.
RCB-1 performs according to scenario or motion which is set by optional controller.

Click "optional controller" in main window to open the setting window.

Description of setting window.

Open file:
read data in saved file.

Save:
save data to file.

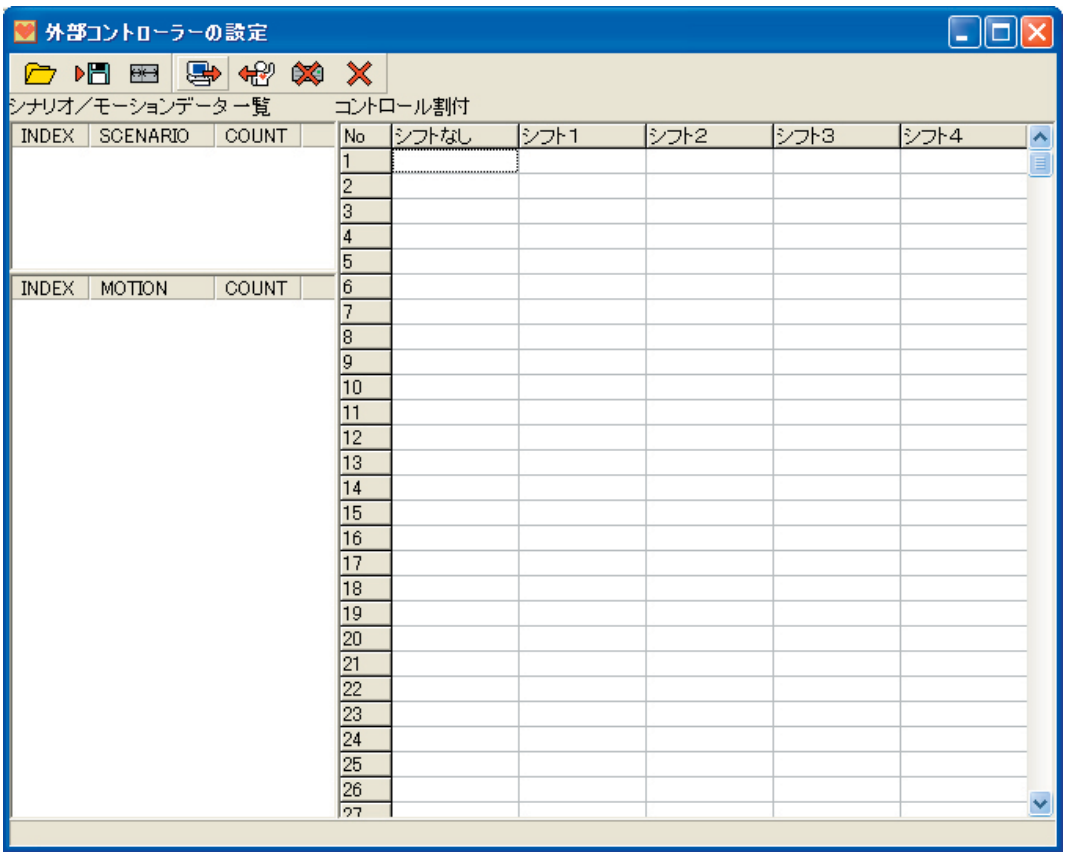
Initialize width:
It returns initialized width from revised display width.

Write:
Set data to RCB-1.

Read:
Read data from RCB-1.

Initialize:
It initializes from current settings.

Delete:
It deletes selected settings.



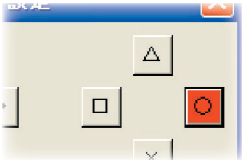
Control assignment

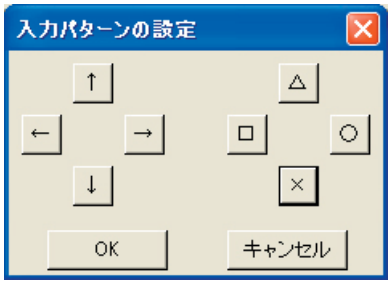
In control assignment, motion or scenario can be assigned with key. key consists of 8 command keys and 4 shift keys.
Shift key makes conbination motion with command key. In assignment window, column shows combination with shift key (nothing, 1, 2, 3, 4). It can spcify 32 combination in each column. It can set 32x5 = 160 performance (motion or scenario).

1  Read motion and scenario data from RCB-1 using "Read" icon.

2 Drug and drop motion or scenario to set to assignment window.

3 設 double click setting assignement to open window like right figure.
It changes color when it is assigned. You can set plural keys at the same.





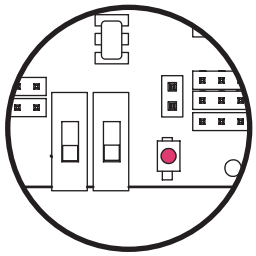
Electorical characteristics and signal settings are described in technical manual in the case of control from outside.

Auto demonstration

RCB-1 has auto demonstration mode. It plays saved data in scenario bank 0.

1 Save scenario or motion to play auto demonstration mode referring to procedure.

2 A start button on a board turns on to start even if you use 2 boards.
Push start button red LED off then turn on red LED.
It takes about 2 seconds.



スタートスイッチ

3 Robot plays scenario 0.
It plays one time (not repeat).

NOTICE

Wrong case

Scenario data consists of enumerate motion data in control board.
There is wrong case that robot performs unspecified motion.

● **After tranmission of scenario and motion to robot, only motion data is renewal and transmitted. Or motion data is deleted.**

Override or deleted motion in scenario, latest motion will play.
In this case, scenario must be revised using latest motion.

Home position must be same in the case to use motion data in PC.
It is the reason that data is relative to home position.
It is required to save home position data to RCB-1 and software.

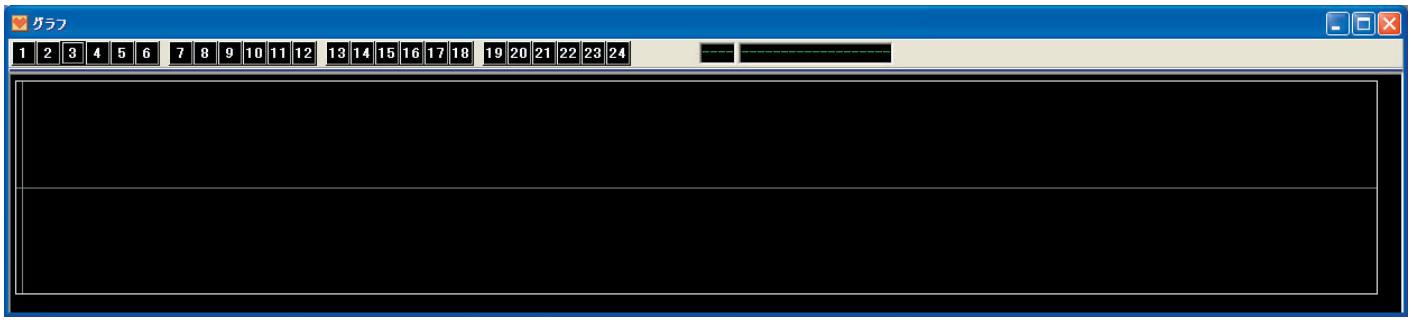
● **At least one time, home position data should be read from robot before save/read data to/from PC.**

How to use Graph window?

Movement of servo motor of motion data can be confirmed using graph window. Graph window can be opened by click "graph window" icon.

At begining, less positions are saved to motion. Increasing position data, positons makes gap or wrong revision.
In this case, graph can show what is problem in the positions.

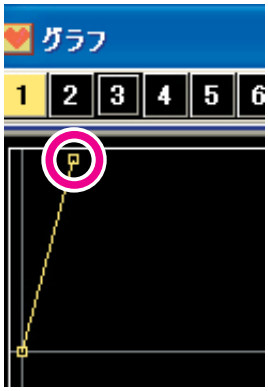
Graph window



Graph window shows data of each servo motor in motion editing window.
There is no data at initialization because of no active channels.

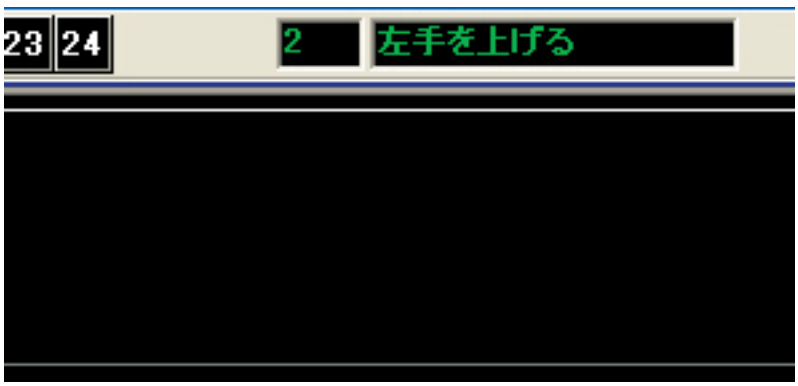
Each numer shows channel. Click channel number to activate to show data in specified color. Click active number not to display.

Color is set using setting which is specified label property in the main window.



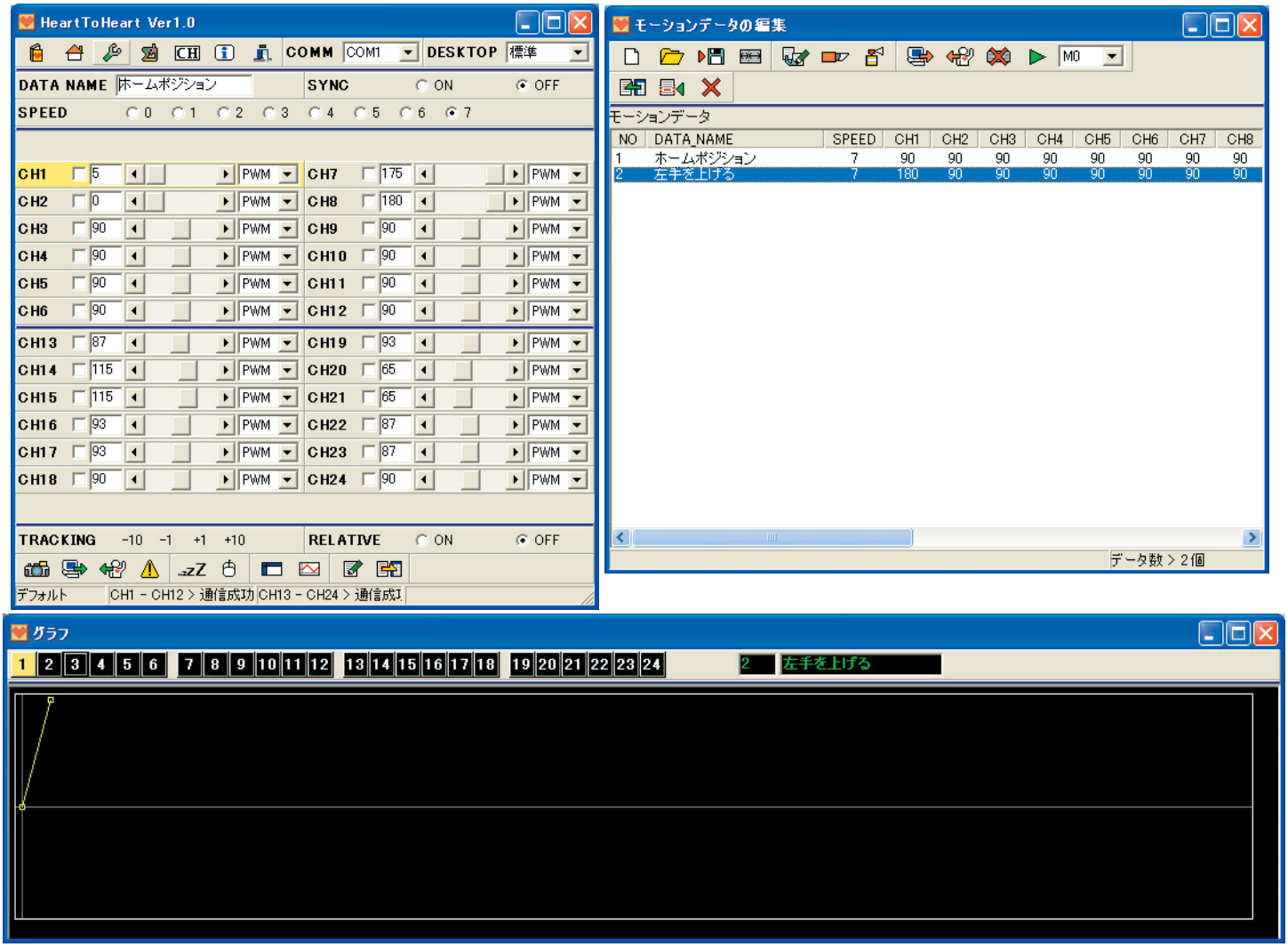
In the left case, CH1 is yellow.

Motion shows each position with ☐ .
Position and name are displayed when ☐ is clicked.



How to tile setting windows?

Three windows besides of scenario window, they can be tiled.
Their location are saved at once. The same location is set from next start.

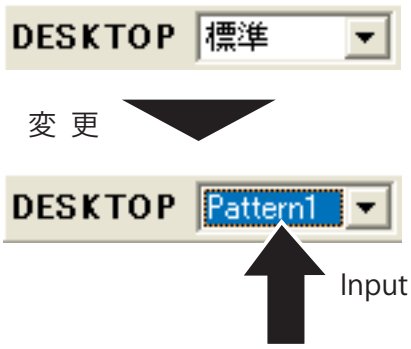


Label property and DESKTOP (1)

"Label property" and "DESKTOP" set settings of display of servo control.

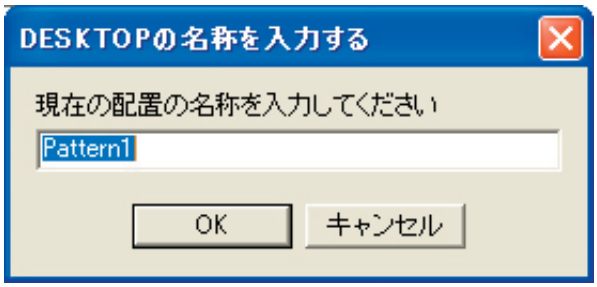
Settings of DESKTOP

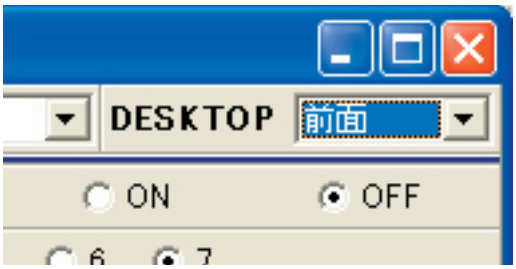
It can move by drug and drop at region of label or space in the window.
Originally, servo control is tiled in order to channel number.
You can set the same assignment to robot and channels such as view from front or view from back.



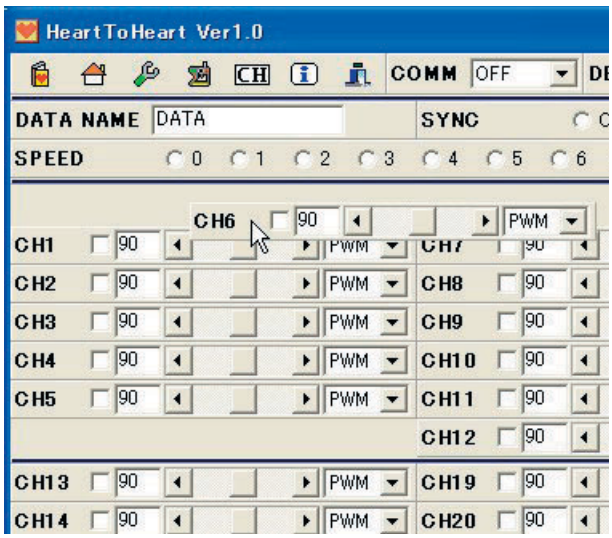
Change selection "default" to another if you want to change control position.
You can give a name to click right button on the DESKTOP combo box.

Input name using right button click to open the window to input.





In the following case, CH6 is moved using drug.



- **Setting is saved automatically. Next start is same window setting.**
- **Assignment can't set if "standard" is selected.**
- **10 assignment can be saved.**

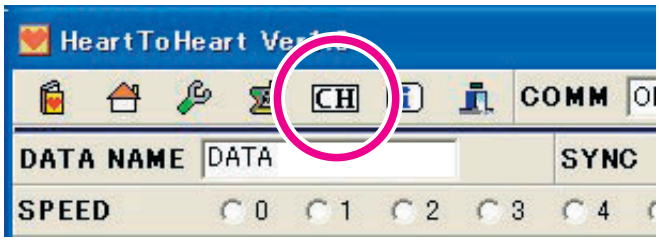
Label property and DESKTOP (2)

How to open label property?

There are two methods to open label property.

1 CH

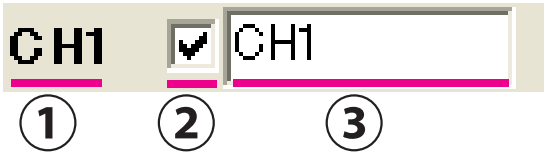
Click "label property" icon in the main window to open label property window.

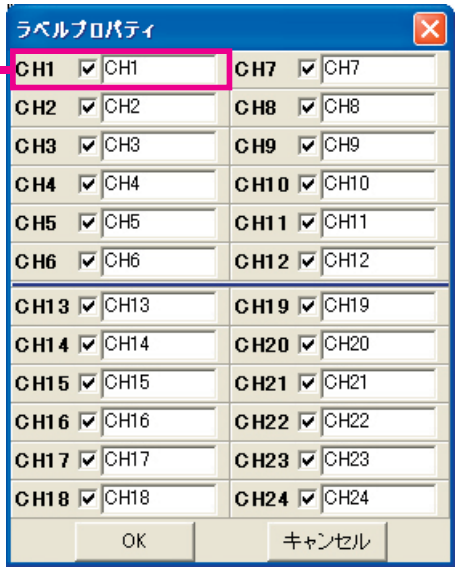


2 

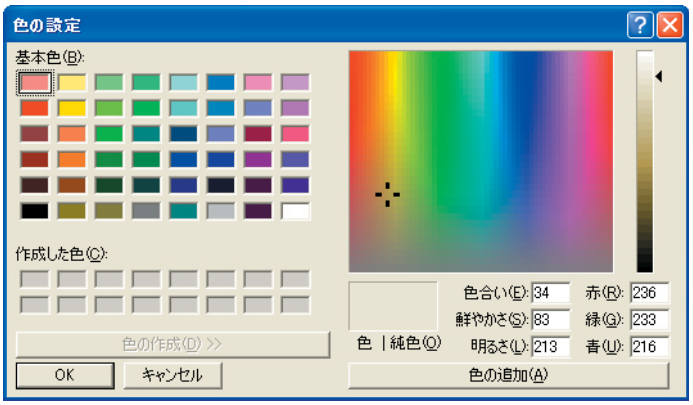
Double click at region label of servo control or space to open label property window.

Setting of label property





① Channel name
Color setting will be opened if double clicked here.
It sets background color.
Specified color is used for main window and graph window.



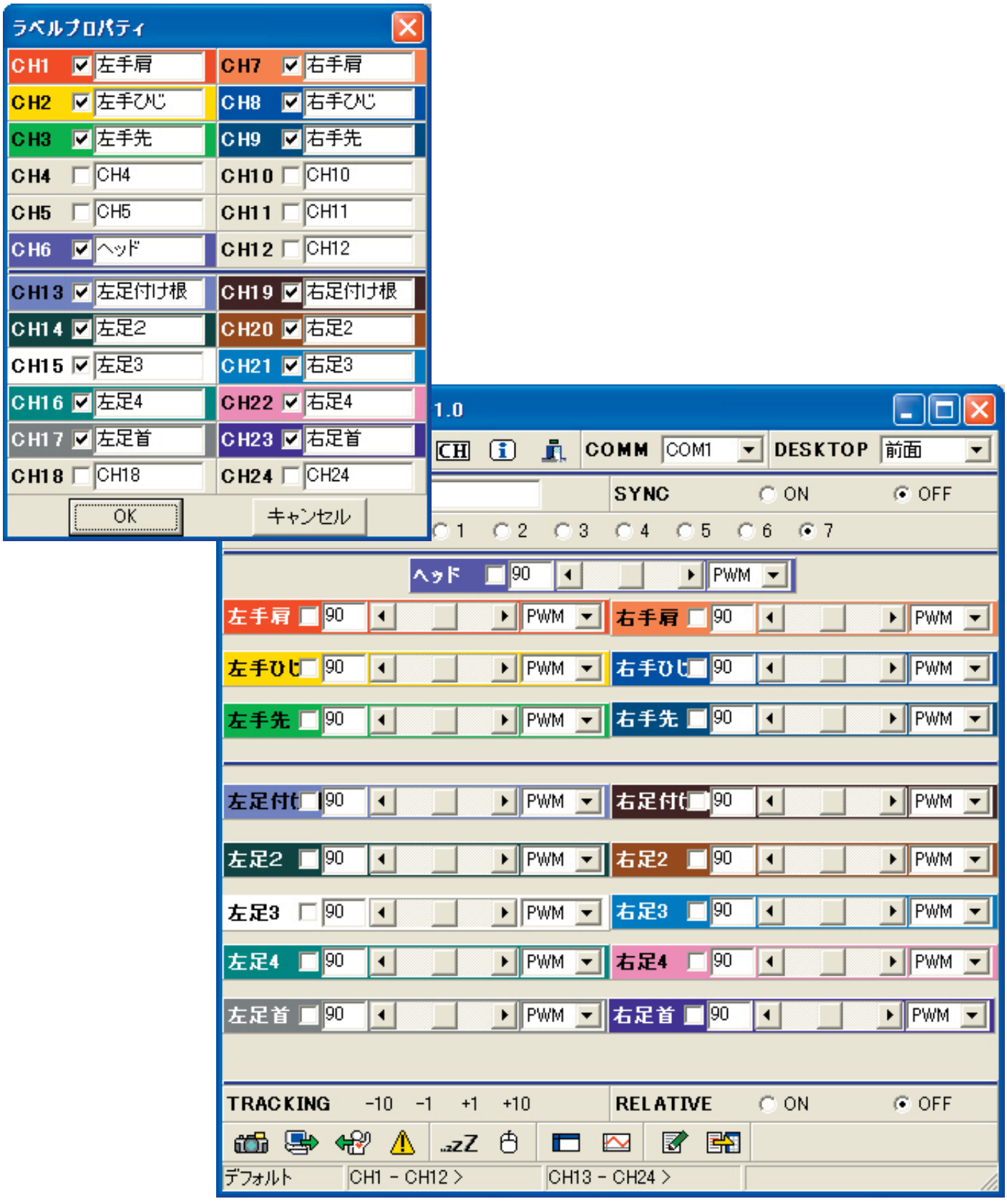
② It is not displayed on the main window if this check box is removed.

③ Input name to show channel label. The name is shown in main window and motion window.

● Names which are set to labels are saved in motion data.
They are override if other motion data is read.

Label property and DESKTOP (3)

Following window display is the sample of setting label property.
Each channel has different name and color settings from standard.



Sample motion is introduced.

Sample motion

Sample motion

Sample motion is saved in CD-ROM.

There is no guarantee of this sample motion.
It is required to revise positions because sample motion is set using factory robot.
Depending on the home position of your robot, please ajust positions.

In this procedure, sample motion transmission to robot and operation are described.

PC and RCB-1 (robot) are connected each other using IFC-PC interface 2.
Battery is mounted to the robot. PC starts software.

1 Home position is important to use sample motion. Sample motion can't works well if home position is wrong. Please fix home position of your robot if sample motion can't performs well.

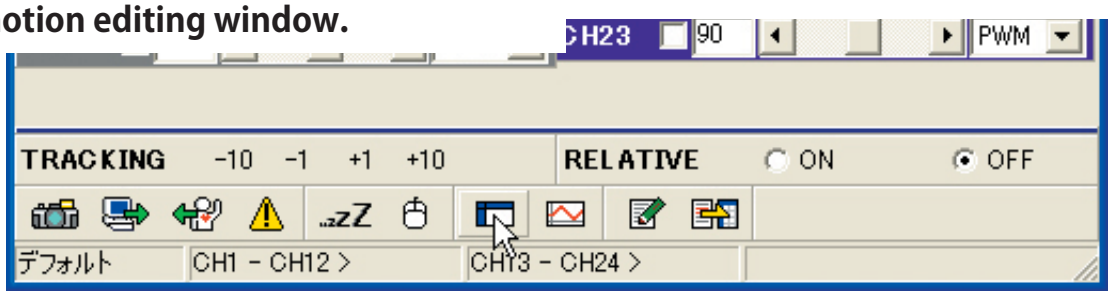
All servo motor position is 90 in main window at first.
Home position is made from this basement position.
Please refer to following sample data to set each channel.

CH1	*5*		*CH7*	*175*
CH2	*0*		*CH8*	*180*
CH3	*90*		*CH9*	*90*
CH6	*90*			
CH13	*88*		*CH19*	*92*
CH14	*115*		*CH20*	*65*
CH15	*115*		*CH21*	*65*
CH16	*90*		*CH22*	*90*
CH17	*92*		*CH23*	*88*

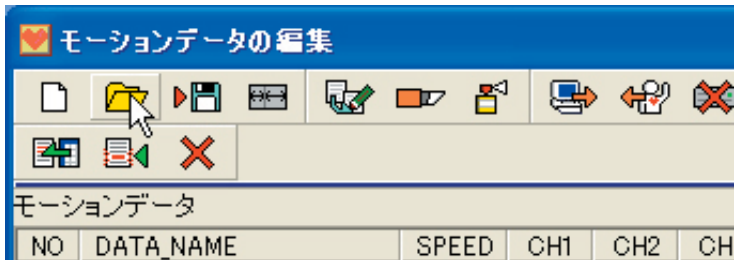
※ These valus are reference data.

2 After confrimation of home position, open the motion editing window from main window.
Open sample motion using "Open file". "Sample_FWD" is used for sample.
This file includes "walk forward".

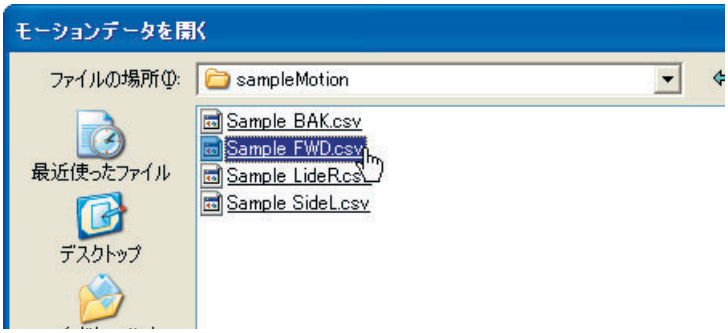
Open motion editing window.



3 Open file to read sample data.

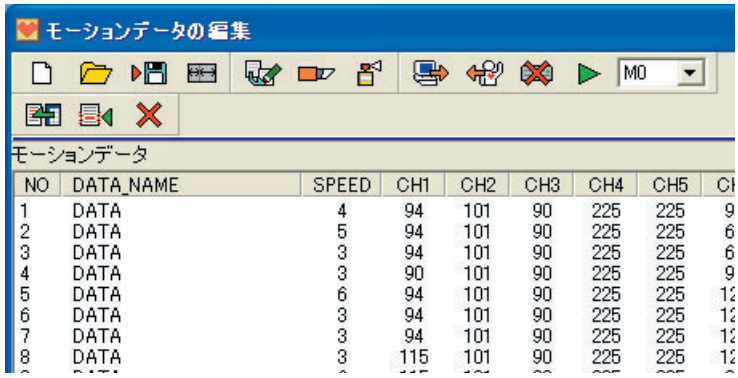


4 Select "Sample_FWD" fro SampleMotion folder in CD-ROM.

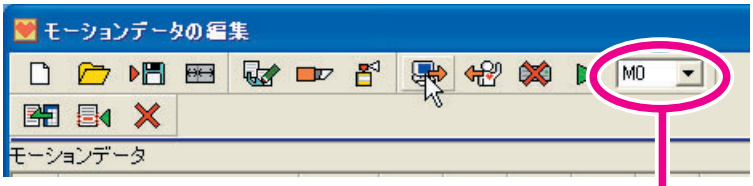


5 Sample data is displayed.

Position can be revised by double click at each position or click right button to select edit. Robot can work together with data revision if "SYNC" is on.



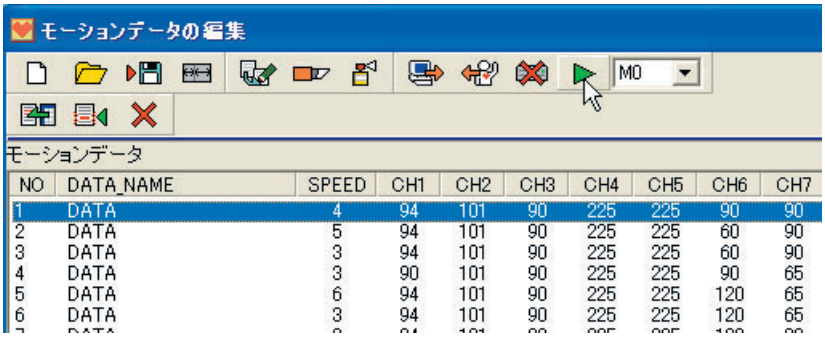
6 Send motion data to robot.



Click "Write" icon after specified motion number to save.
During transmission, each servo motors will be set free. Please pay attention to robot to be down. After transmission, dialog box confirms to return to ordinary mode of robot.

7 Saved motion plays by click "play" icon.

The motion plays according to specified motion number.
Please confirm the number if the robot performs different motion.



*All motions are played at once. It can't stop in the middle of motion.
*Please robot works on the wide open space. Robot may occur injury or damage by down or wrong performance.

**Please transmit to other motion to other motion number as the same procedure.
You can make continuous motions using scenario and auto demonstration.**