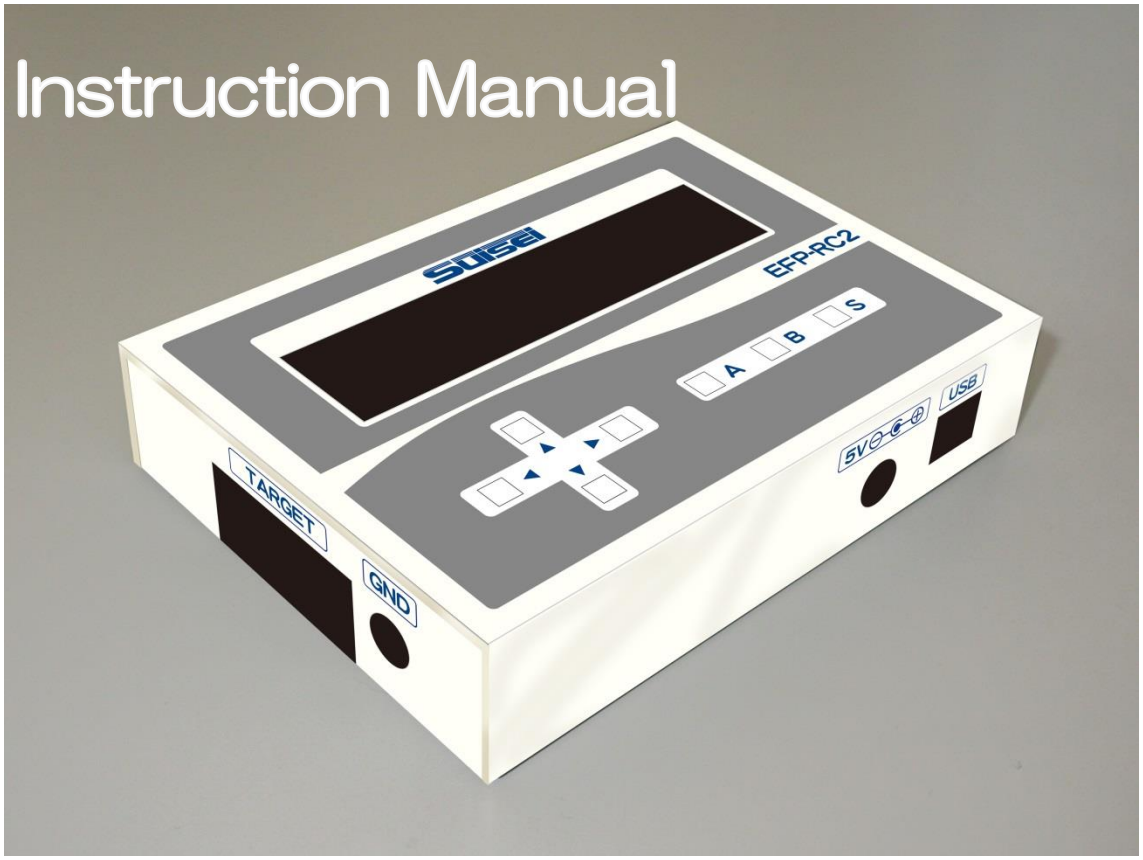
EFP-RC2



4th Edition

SUISEI ELECTRONICS SYSTEM CO., LTD.

Thank you very much for purchasing EFP-RC2 this time.

If you have any comments about the product, please contact us or our distributor.

The contents of this manual are subject to change without notice . The latest information can be viewed on our website (http://www.suisei.co.jp).

Index

Safety Precautions

This manual explains precautions in order of warnings, cautions, and important in order to correctly use the product and to prevent injuries / property damage etc to the people who use it and surroundings.
Before using the product, please understand the contents stated in the notes well.

WARNING	If the requirements shown in the ″WARNING″ sentences are ignored, the equipment may cause serious personal injury or death through improper handling.
CAUTIONS	If the requirements shown in the ″CAUTION″ sentences are ignored, the equipment may cause injury or property damage through improper handling.
IMPORTANT	It means important information on using this product.

WARNING

●Warnings for Installation

Please do not install this product in a place with high humidity and where it is wet with water etc.

If water or the like spills into the inside, it can cause an unrepairable malfunction.

●Warning for Use Environment

The upper limit (maximum rated ambient temperature) of the ambient temperature when using this product is 40℃.

Be careful not to exceed this maximum rated ambient temperature.

CAUTIONS

- Do not disassemble or modify the product. Doing so could result in equipment failure.
- Handle this product carefully, please do not give strong impact by falling etc.
- Do not touch the metal terminals of each connector directly with your hand.
- Do not use this product in the upright position.
- If you don't plan to use the hardware for an extended period of time, place in a vinyl bag ,etc., to control humidity, and store in a place not exposed to direct sunlight where the temperature is 0-37℃.

Plaese read this part first

- This product is a writing device dedicated to one chip microcomputer with built-in flash ROM made by Renesas Electronics. It can not be used for writing to other devices or for other uses.
- The warranty period of this product is one year after purchase. In the meantime, defects caused by manufacturing problems are repaired free of charge. Please contact your dealer or our company.
  However, in the following case, it becomes for a fee.
  Breakage of articles of consumption (a socket, switch, etc.)
  In case of damage due to mishandling of product
  Moreover, it can not guarantee the defect of MCU device written by this device and the problem caused by it.
- In domestic use, we are not subject to the Electrical Appliance and Material Control Law and electromagnetic interference prevention measures.
  In addition, this equipment does not acquire safety standards such as UL, IEC and other standards. Therefore, please be aware of this point if you are brought overseas from Japan.
- When using in Japan, we are not subject to the Electrical Appliance and Material Control Law and electromagnetic interference prevention measures.
  Moreover, this product does not acquire safety standard such as UL, IEC etc etc.
  Therefore, please be aware of this point when taking it outside of Japan.
- The contents described in this document may be changed without notice for future reasons such as performance improvement in the future. Please note that we can not assume the responsibility for the result of the operation of the description contents.
- We are accepting inquiries about the contents of this document and software by our company e-mail.

To 6-5-24, Tsurumi, Tsurumi-ku, Osaka City 538-0053, Japan
Suisei Electronics System Co., Ltd.
E-mail : support@suisei.co.jp
http://www.suisei.co.jp/

1. Preparation needed to start using EFP-RC2

1.1 Check content in a package and accessories

EFP-RC2 main unit : 1

USB cable : 1

Power cable : 1

EF1TGCB-16WX（Target interface cable, cable end is not bound）: 1

CF card（attached to the main unit） : 1

1.2 Operation environment

① Computer environment

Please check if your computer environment satisfies the following conditions.

OS： Windows XP/Vista/7（32bit/64bit）/8（32bit/64bit）/
Windows 8.1（32bit/64bit）/10（32bit/64bit）

Hard disk space : Space capacity more than 100M byte is necessary

Memory : Memory more than 16M byte is necessary

② Power Supply Input

The power supply of EFP-RC2 canbe inputted from the following lines.

External power supply connector（outside : GND, inside : VCC）

USB_I/F connector（1 : +5V）

Target connector （1 : GND, 4 : T_VDD）

＊ When two kinds of power supplies are connected simultaneously, it is supplied from a higher voltage side.

Please use external power supply voltage more than 4V and is less than 5.5V .

When power is turned on, please do not connect the target cable in the status of target power ON and EFP-RC2 power OFF.

For how to connect with the target, please refer to serial unit support documentation (MCU support documentation) on our website;

http://www.suisei.co.jp/download_e/download_e.html.

1.3 Name of each part of the product

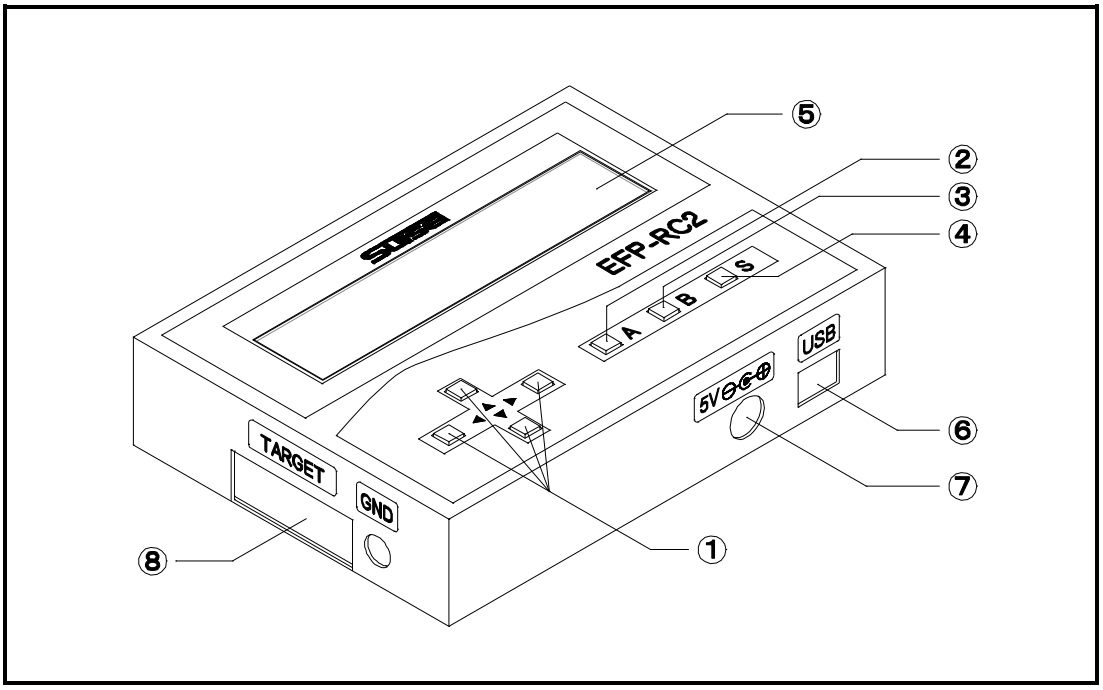


Fig. 1.1 Name of each part of EFP-RC2

	Name	Description
①	Cursor key	Cursor keys for selecting commands and parameters
②	A key	Usage changes depending on the application
③	B key	Back key : Return operation route. Cancel the selected command
④	S key	Set key : Determines the selected command or parameter
⑤	LCD display	Display commands, parameters, etc.
⑥	USB I/Fconnector	Connector to connect with USB cable
⑦	External power supply connector	1.3mm round pin power supply connector for power supply （outside : GND , inside : Vcc）
⑧	Target-connection connector	Connector to be connected with target connection cable

Table 1.1 Each part name

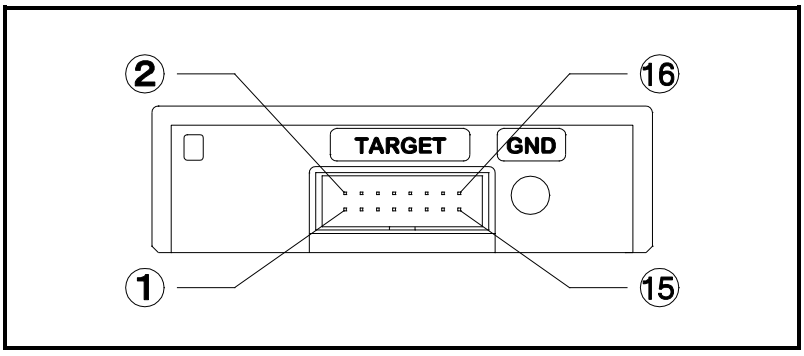


Fig. 1.2　Target connector pin layout

	Signal name	In/Out	Description
1	GND		GND
2	(NC)	—	
3	T_VPP	Out	Target programming power supply output
4	T_VDD	Out	Target power supply input (3.3V to 5V)
5	(NC)	—	
6	Err	Out	External display signal : Programming execution error
7	Exec	Out	External display signal : Under command execution
8	T_PGM/OE	Out	Target write-in read-out pulse
9	T_SCLK	Out	Clock for synchronous communication for target
10	T_TXD	Out	Serial transmission data for target
11	T_RXD	In	Serial receive data from target
12	T_Busy	In	Busy signal from target
13	Start	In	External start switch signal
14	T_Reset	Out	Target reset control signal
15	(NC)	—	
16	GND		GND

Table 1.2　Target connector terminal description

1.4 How to connect

① Connect EFP-RC2 with computer

In case data is downloaded to EFP-RC2, please connect EFP-RC2 and computer using USB cable as shown in Fig.1.3.

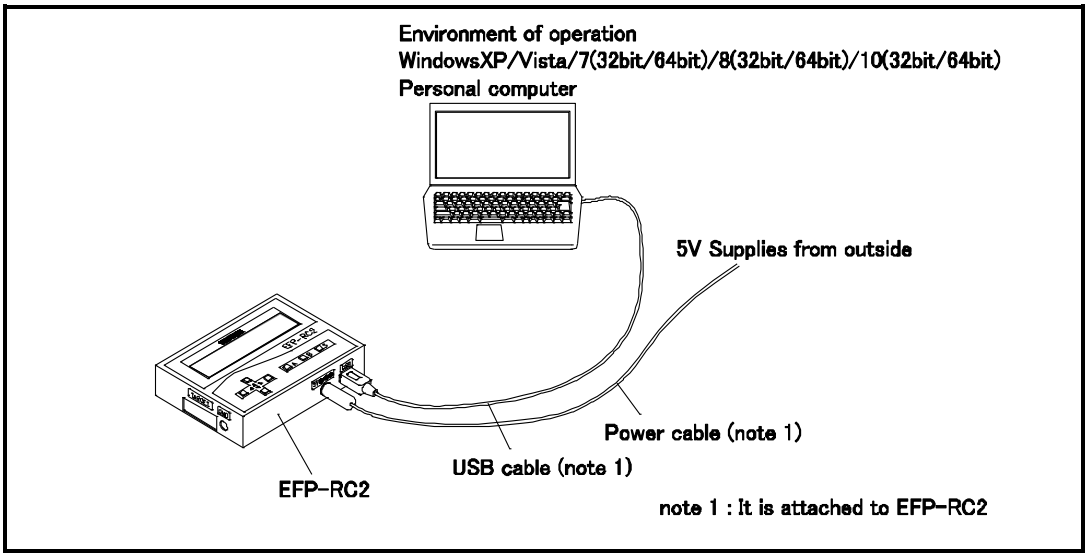


Fig. 1.3 Connection with computer

② Connect EFP-RC2 with target system

When executing (writing) the script to the target system, connect EFP-RC2 and the target system as shown in Fig. 1.4.

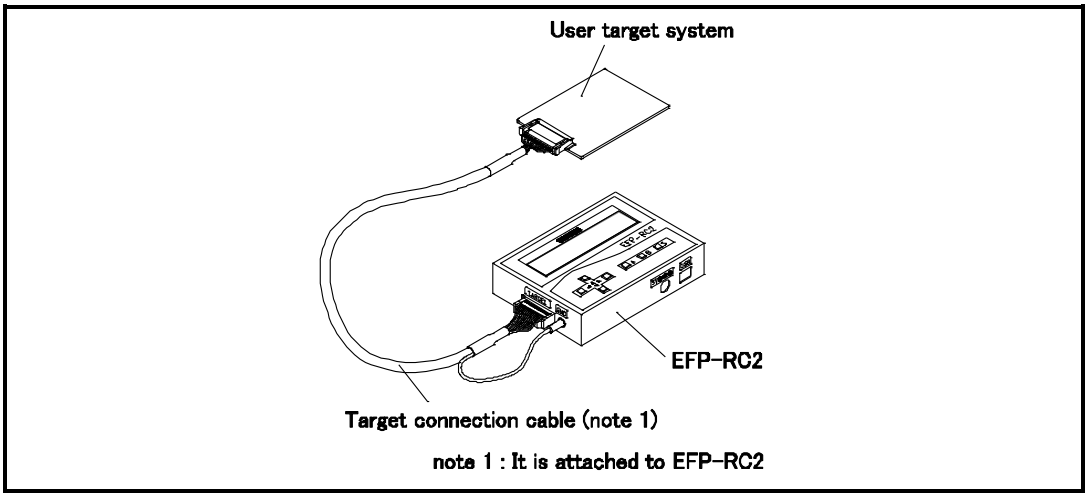


Fig. 1.4 Connection with target system

1.5 How to install CF card

① Remove the back cover

Slide and remove the back cover as shown in Fig. 1.5.

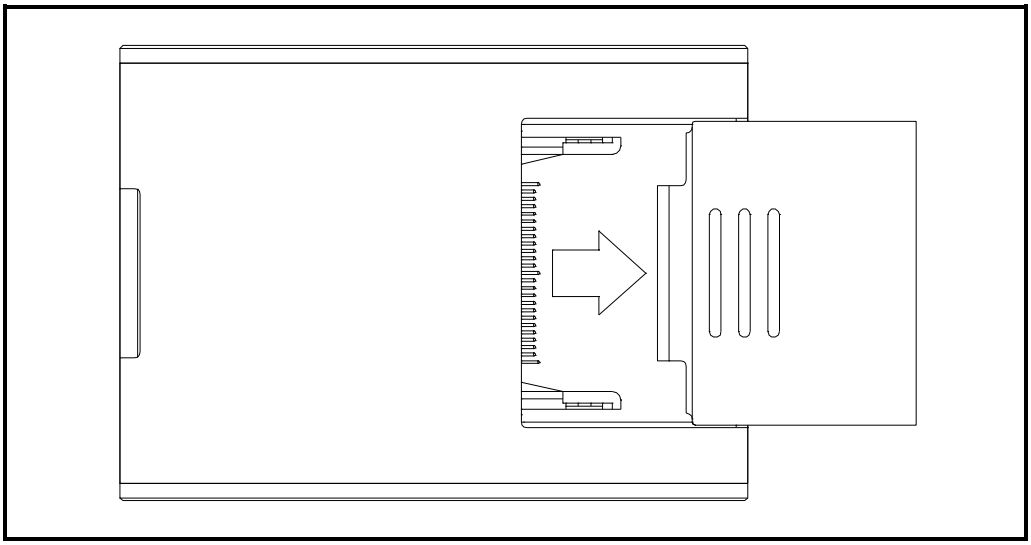


Fig. 1.5 Remove the back cover

② CF card installation

Install the CF card in the EFP-RC2 as shown in Fig. 1.6.

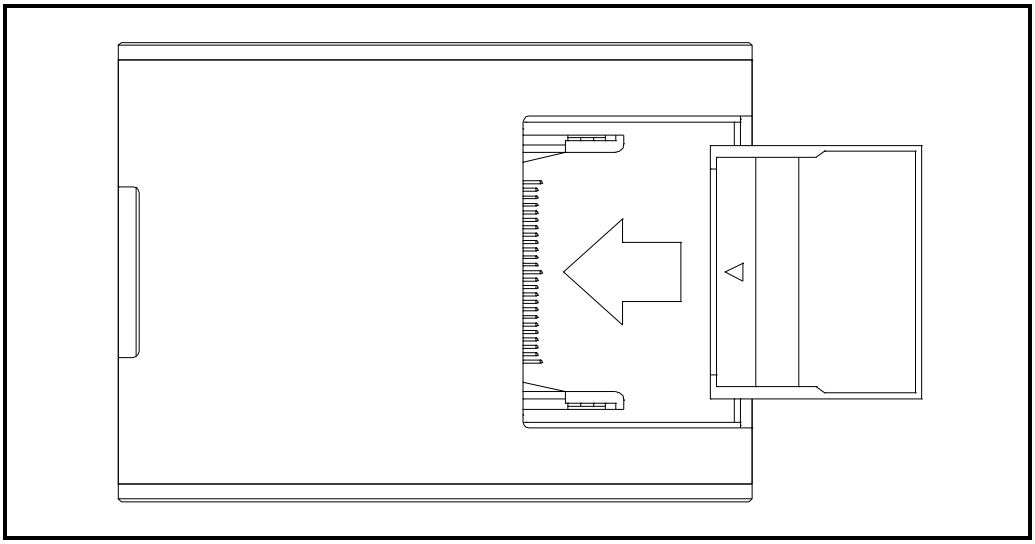


Fig. 1.6 CF card installation

③ Back cover installation

Attach the back cover as shown in Fig. 1.7.

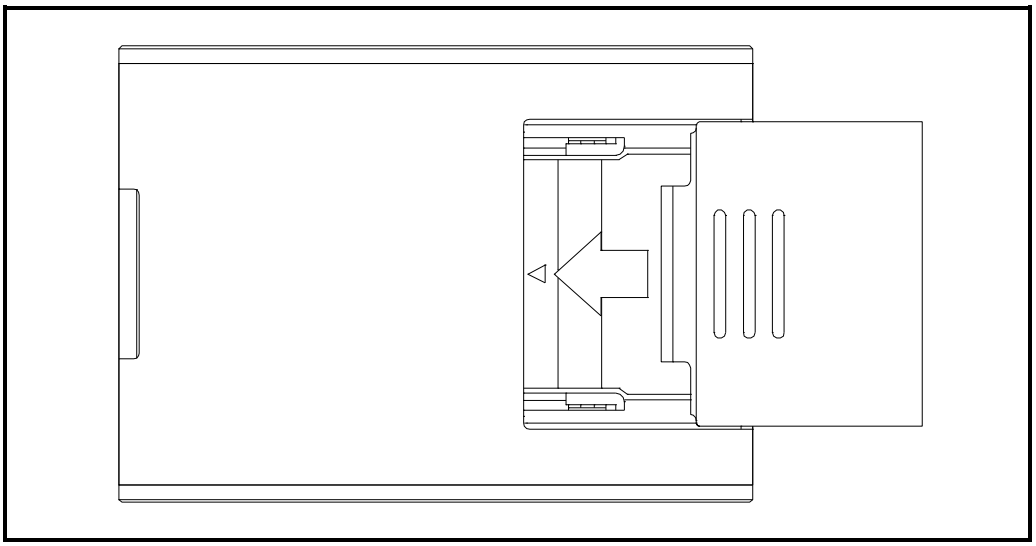
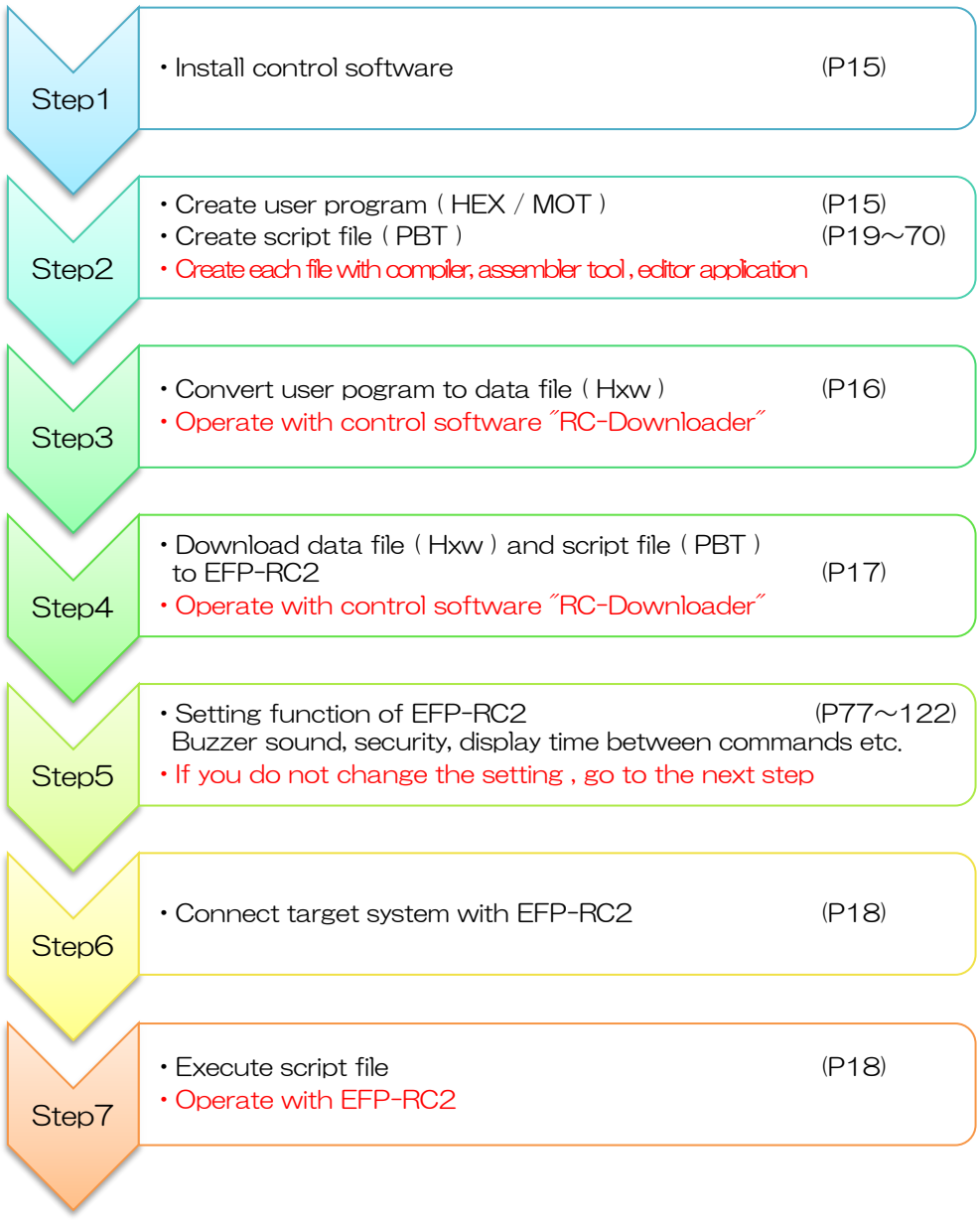


Fig. 1.7　Back cover installation

2. Procedure for using EFP-RC2



2.1 Install control software

EFP-RC2 control software ″RC-Downloader″ is an application for creating Hxw file and downloading it to the EFP-RC2.

Please download Product CD data from the following site and execute ″install.exe″.

For details of installation, refer to ″6.7 How to install RC-Downloader″ (P.133).

http://www.suisei.co.jp/download_e/productdata_efprc2_e.html

After the installation is completed, follow the procedure from STEP 2 to STEP 7 and operate.

2.2 Creation of user program (HEX / MOT) and script file (PBT)

Please create user program using Intel HEX or Motorola S format.

Please create script file (PBT) that run EFP-RC2 with an editor, etc.

For details on how to create a script file (PBT), refer to ″3. Command Description″ (P.19) and ″4. Sample script″ (P.72).

All the script commands including file name should be described in English one byte characters. (except for comment texts)

English characters are not case-sensitive.

2.3 Convert user program (HEX / MOT) to data file (Hxw)

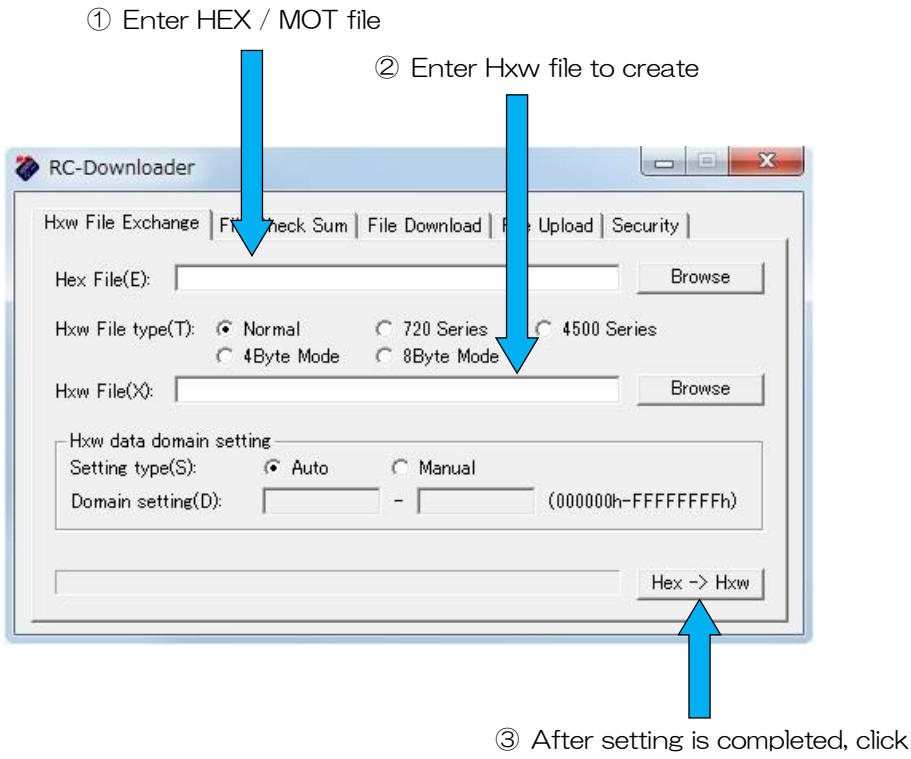
Firstly start RC-Downloader.EXE and open Hxw File Exchange tab.

Enter the HEX / MOT file in the Hex file (E) and enter the Hxw file name to be created in the Hxw file (X).

After completing the setting, please click “Hex -> Hxw” button.

Once progress bar reaches the right edge, Hxw file is to be completed.

For detailed usage of RC-Downloader, please refer to ″6. RC-Downloader Detailed explanation″ (P.126).



2.4 Download data file and script file to EFP-RC2

Connect the personal computer and the EFP-RC2 with a USB cable.

Open the File Download tab of RC-Downloader and set the created Hxw file in the Download File field. Please select Hxw file from Browse.

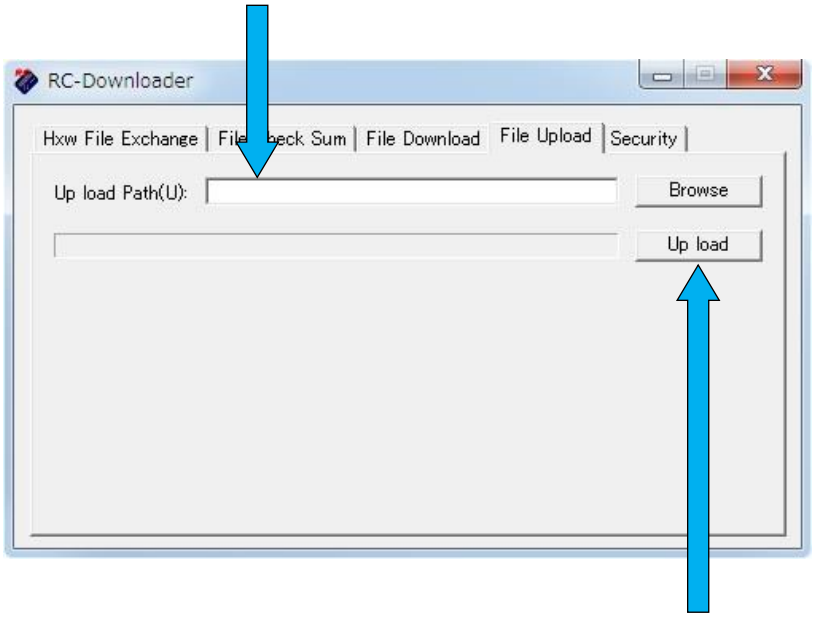
Please click the download button after setting is completed.

Download is completed when the progress bar reaches the right end.

In the same way, please select the created script file from Browse and download it.

After downloading is completed, connection with the personal computer is unnecessary.

① Set Hxw file or PBT file



② After setting is completed, click

Note :

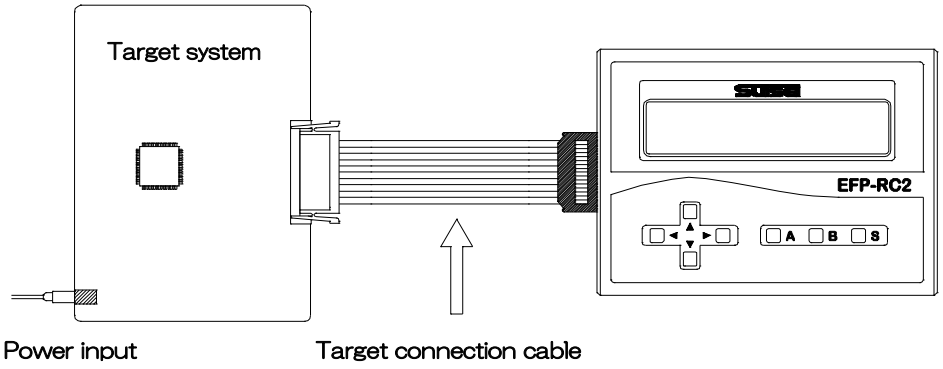
• The downloaded data is saved in the directory displayed on the LCD screen of EFP-RC2.
For the directory structure of the CF card, refer to ″7.2 Directory structure″ (P.134).

2.5 Connect the Target system and EFP-RC2

Connect the target system (MS board etc.) and EFP-RC2 with the target cable.

For details of the connection method, please refer to the serial unit supplementary materials etc on our website.

http://www.suisei.co.jp/download_e/download_e.html



2.6 Execute (write) the script file

Move to the folder where the PBT file is saved, move the cursor to the PBT file to be executed and press the S key.

```
Sample.PBT
Sample.Hxw
```

← Place the cursor on the PBT file and press the S key.

When you press the S key, the execution confirmation screen is displayed alternately as shown below.

If you press the S key again, execution of the script file will start.

B key is cancel. For the memory function of A key, refer to ″5.9 How to use user memory file″ (P. 91).

Display alternately

```
Sample.PBT
EXECUTE THIS FILE?
```

⟷

```
Sample.PBT
A=MEMORY B=NO S=YES
```

When an error occurs, refer to ″8. Trouble shooting″ (P.137).

3. Command Description

3.1 Command list that can be used with RL78 and Battery Management IC

Table 3.1 shows the commands and their description pages that can be used with RL78 Family / Battery Management IC.

Table 3.1 Command list that can be used with RL78 and Battery Management IC

	Command name	Description Command	Summary	Page
	MCU set	T	Set the target MCU	25
	VDD supply	X	Supply VDD to target MCU	27
◆	Baudrate set	S	Change communication speed	28
◆	Signature	G	Check target MCU name	40
◆	Erase	E	Erase MCU built-in ROM	41
	Blank check	B	Confirm that the MCU built-in ROM is erased	45
	Program	P	Program the contents of the Hxw file to the MCU built-in ROM	52
◆	Verify	V	Collate contents of Hxw file with MCU built-in ROM	55
◆	Security setting	L	Security setting for prohibitiong program rewriting	61
◆	Security release	D	Disable security	63
	Checksum	H	Confirm checksum value of MCU built-in ROM	64
	Wait	W	Temporarily stop script action	70

Command of "◆" does not correspond to RL78 / G10.

3.2 Command list that can be used with RX

Table 3.2 shows the commands and their description pages that can be used with RX family.

表 3.2 Command list that can be used with RX

Command name	Description Command	Summary	Page
MCU set	T	Set the target MCU	25
VDD supply	X	Supply VDD to target MCU	27
Baudrate set	N	Change communication speed	30
Mode entry	M	Carry out a mode entry	36
ID collation	I	Cancel ID code protect function	37
Erase	E	Erase MCU built-in ROM	42
Blank check	B	Confirm that the MCU built-in ROM is erased	45
All block blank check	B	Confirm that all blocks of the MCU built-in ROM are erased	49
Program	P	Program the contents of the Hxw file to the MCU built-in ROM	52
Verify	V	Collate contents of Hxw file with MCU built-in ROM	55
Read	R	Read data of MCU built-in ROM to EFP-RC2	58
Checksum	H	Confirm checksum value of MCU built-in ROM	65
Lockbit set	K	Enable lock bit of MCU built-in ROM	66
Wait	W	Temporarily stop script action	70

3.3 Command list that can be used with SH

Table 3.3 shows the commands and their description pages that can be used with SH family.

表 3.3 Command list that can be used with SH

Command name	Description Command	Summary	Page
MCU set	T	Set the target MCU	25
VDD supply	X	Supply VDD to target MCU	27
Baudrate set	N	Change communication speed	30
Mode entry	M	Carry out a mode entry	36
ID collation	I	Cancel ID code protect function	37
Erase	E	Erase MCU built-in ROM	42
Blank check	B	Confirm that the MCU built-in ROM is erased	46
All block blank check	B	Confirm that all blocks of the MCU built-in ROM are erased	49
Program	P	Program the contents of the Hxw file to the MCU built-in ROM	54
Verify	V	Collate contents of Hxw file with MCU built-in ROM	56
Read	R	Read data of MCU built-in ROM to EFP-RC2	59
Checksum	H	Confirm checksum value of MCU built-in ROM	65
Lockbit set	K	Enable lock bit of MCU built-in ROM	67
Wait	W	Temporarily stop script action	70

3.4 Command list that can be used with R8C

Table 3.4 shows the commands and their description pages that can be used with R8C family.

表 3.4 Command list that can be used with R8C

Command name	Description Command	Summary	Page
MCU set	T	Set the target MCU	25
VDD supply	X	Supply VDD to target MCU	27
Baudrate set	S	Change communication speed	34
ID collation	I	Cancel ID code protect function	38
Erase	E	Erase MCU built-in ROM	43
Blank check	B	Confirm that the MCU built-in ROM is erased	45
All block blank check	B	Confirm that all blocks of the MCU built-in ROM are erased	50
High-speed blank	B	Confirm with high speed that the MCU built-in ROM is erased	51
Program	P	Program the contents of the Hxw file to the MCU built-in ROM	52
Verify	V	Collate contents of Hxw file with MCU built-in ROM	55
Read	R	Read data of MCU built-in ROM to EFP-RC2	58
Wait	W	Temporarily stop script action	70

3.5 Command list that can be used with M16C

Table 3.5 shows the commands and their description pages that can be used with M16C family.

表 3.5 Command list that can be used with M16C

Command name	Description Command	Summary	Page
MCU set	T	Set the target MCU	25
VDD supply	X	Supply VDD to target MCU	27
ID collation	I	Cancel ID code protect function	38
Erase	E	Erase MCU built-in ROM	43
Blank check	B	Confirm that the MCU built-in ROM is erased	45
High-speed blank	B	Confirm with high speed that the MCU built-in ROM is erased	51
Program	P	Program the contents of the Hxw file to the MCU built-in ROM	52
Verify	V	Collate contents of Hxw file with MCU built-in ROM	55
High-speed verify	V	Collate the check sum of the Hxw file and MCU built-in ROM data	57
Read	R	Read data of MCU built-in ROM to EFP-RC2	58
Lockbit set	K	Enable lock bit of MCU built-in ROM	68
Wait	W	Temporarily stop script action	70

3.6 Command list that can be used with 720 / 4500 / 740

Table 3.6 shows the commands and their description pages that can be used with 740 family and 720 / 4500 series.

* When using the 720/4500 series and 740 family, it is necessary to update to the dedicated firmware (EFPRC 2 _ 48 Qz.fxw).

表 3.6 Command list that can be used with 720 / 4500 / 740

Command name	Description Command	Summary	Page
MCU set	T	Set the target MCU	25
VDD supply	X	Supply VDD to target MCU	27
ID collation	I	Cancel ID code protect function	38
Erase	E	Erase MCU built-in ROM	44
Blank check	B	Confirm that the MCU built-in ROM is erased	47
Program	P	Program the contents of the Hxw file to the MCU built-in ROM	52
Verify	V	Collate contents of Hxw file with MCU built-in ROM	55
Read	R	Read data of MCU built-in ROM to EFP-RC2	60
Read-protect	Y	Enable read protect function	69
Wait	W	Temporarily stop script action	70

MCU set command (common to all)

Command by which target MCU is specified.

Format : T=xx ; T can also be used in lowercase t.

• xx : ″x″ is the first two digits are valid, and the rest are ignored.

Description example :

T=37 ; Specify RL78 (excluding RL78/G10) as the target MCU

T=0 : An error occurs. (Designation out of range)

T=50: An error occurs. (Same as above)

Details :

The target MCU according to the corresponding variety is specified.

Be sure to include this command at the beginning of the PBT file.

Corresponding variety :

01 : M16C/62,80 Group

02 : M16C/62P Group

03 : M32C/8x Group

04 : R8C/10-13 Group

05 : R8C/14-1B(1Line)

06 : M37775xF Group

07 : M38000 NOR

08 : M38000 N.D.

09 : 720 QzROM

10 : 4500 QzROM

11 : 7544 QzROM

12 : 7545 QzROM

13 : 7546 QzROM

14 : 7547-9 QzROM

15 : 385x QzROM

16 : 38238-A QzROM

17 : 38Dx Qz 8Byte

18 : 7542 Flash

24： 38234-5 QzROM
25： 7544 Qz 4Byyte
26： 7545-7 Qz 8Byte
27： 385x Qz 8Byte
28： 38238-A Qz 8Byte
29： 38234-5 Qz 8Byte
30： 7548-9 Qz 4Byyte
31： R8C/3x,Lx(Type1) （notes：Please use it when it does not work in T=32）
32： R8C/3x,Lx(Type2)
33： R8C/2x (Type1) （notes：Please see the device list for supported groups）
34： R8C/2x (Type2) （notes：Please see the device list for supported groups）
35： R8C/2x (Type3)) （notes：Please see the device list for supported groups）
36： R8C/Lx-SLP
37： RL78 （notes：Except RL78/G10）
38： RX LittleEndian
39： RX BigEndian
40： SH Family
41： RL78/G10
42： FGIC RL78Core

Note：

- Executing the command with the setting of the target MCU incorrectly may cause unexpected errors and destruction of the target MCU, so pay attention to the setting carefully.
- Please refer to http://www.suisei.co.jp/devicelist_e.html for the device list.
- When upgrading the firmware, the order of corresponding products may be changed.
- When using the target MCU setting from 8 to 18, 24 to 30, a dedicated interface board （EFXQZP-01-x）is required.

■ VDD supply command (common to all)

Command to supply VDD (+ 5V) to target MCU.

Format : X=1 ; X can also be used in lowercase x.

Description example :

X=1 ; Supply Vdd to the MCU.

x=0 ; An error occurs. (Designation out of range)

X ; Ignored by error. (There is no argument)

Details :

VDD (+5V) is supplied from the EFP-RC2 to the user target board, enabling access such as data read, verify and write.

Corresponding variety :

Of the MCUs supported by EFP-RC2, there are 18 types of MCUs that can supply VDD. If an MCU other than the following is specified, this command is ignored.

1: M16C/62,80 Group	31: R8C/3x,Lx(Type1)	38: RX(LittleEndian)
2: M16C/62P Group	32: R8C/3x,Lx(Type2)	39: RX(BigEndian)
3: M32C/8x Group	33: R8C/2x(Type1)	40: SH
4: R8C/10-13 Group	34: R8C/2x(Type2)	41: RL78/G10
5: R8C/14-(1Line)	35: R8C/2x(Type3)	42: FGIC RL78Core
6: M3775xF Group	36: R8C/Lx-SLP	
7: M38000 NOR	37: RL78	

Note :

- It is only +5V that can output VDD from EFP-RC2. If it is used for an MCU with other VDD voltage, there is a risk of damaging the MCU. Please use after confirming sufficiently.
- Although the current capacity that can be supplied is possible up to 300mA, if the inrush current of the board is large, an error occurs, and in the worst case the EFP-RC2 itself will reset. In case this command is used, please do so, taking account of consumption current of target board.
- Please describe this command after MCU set command.

■ Baudrate set command (RL78 / Battery Management IC)

Command to change the communication speed with the target MCU.

Format : S=x : S can also be used in lowercase s.

・x : Valid from 4 to 7.
The communication speed of each setting value is as shown in the table below.

Value	Baudrate [bps]
S=4	115200(Default)
S=5	250000
S=6	500000
S=7	1000000

Description example :

S=6 : Set the communication speed to 500000bps.

S=8 : An error occurs. (Designation out of range)

S : An error occurs. (There is no argument)

Details :

RL78 family communicates at 115,200 bps (default) when accessing data read, verify, write, etc.

By changing the setting value you can change the communication speed and reduce processing time.

Corresponding variety :

RL78 family (This function can not be used with RL78/G10 series),

Battery Management IC

Note :

- If the compatibility with the mounted MCU clock oscillator is bad, an error occurs in the MCU access and a device error occurs. Please change communication speed and use.
- After setting, it operates at the baud rate set until changing the MCU setting (T command) or turning off the power of the EFP-RC2.
- Please describe this command after MCU set command.

■ Baudrate set command (RX / SH)

Command to change the communication speed with the target MCU.

Format : N=xxx : N can also be used in lowercase n.

• xxx : Valid from 1 to 256.

Description example :

N=2 : Set the communication speed to 1Mbps.

N : An error occurs. (There is no argument)

Details :

RX family communicates at 9,600 bps (default) when accessing data read, verify, write, etc.

By changing the setting value you can change the communication speed and reduce processing time.

For the communication speed of each setting value, refer to Setting value and baudrate (1) to (3) from the next page.

Corresponding variety : RX family, SH family

Note :

- If the compatibility with the mounted MCU clock oscillator is bad, an error occurs in the MCU access and a device error occurs. Please change communication speed and use.
- After setting, it operates at the baud rate set until changing the MCU setting (T command) or turning off the power of the EFP-RC2.
- Please describe this command after MCU set command.

Setting value and boudrate (1)

Value	Baudrate	Value	Baudrate	Value	Baudrate	Value	Baudrate
N=1	2000000	N=29	68965	N=57	35087	N=85	23529
N=2	1000000	N=30	66666	N=58	34482	N=86	23255
N=3	666666	N=31	64516	N=59	33898	N=87	22988
N=4	500000	N=32	62500	N=60	33333	N=88	22727
N=5	400000	N=33	60606	N=61	32786	N=89	22471
N=6	333333	N=34	58823	N=62	32258	N=90	22222
N=7	285714	N=35	57142	N=63	31746	N=91	21978
N=8	250000	N=36	55555	N=64	31250	N=92	21739
N=9	222222	N=37	54054	N=65	30769	N=93	21505
N=10	200000	N=38	52631	N=66	30303	N=94	21276
N=11	181818	N=39	51282	N=67	29850	N=95	21052
N=12	166666	N=40	50000	N=68	29411	N=96	20833
N=13	153846	N=41	48780	N=69	28985	N=97	20618
N=14	142857	N=42	47619	N=70	28571	N=98	20408
N=15	133333	N=43	46511	N=71	28169	N=99	20202
N=16	125000	N=44	45454	N=72	27777	N=100	20000
N=17	117647	N=45	44444	N=73	27397	N=101	19801
N=18	111111	N=46	43478	N=74	27027	N=102	19607
N=19	105263	N=47	42553	N=75	26666	N=103	19417
N=20	100000	N=48	41666	N=76	26315	N=104	19230
N=21	95238	N=49	40816	N=77	25974	N=105	19047
N=22	90909	N=50	40000	N=78	25641	N=106	18867
N=23	86956	N=51	39215	N=79	25316	N=107	18691
N=24	83333	N=52	38461	N=80	25000	N=108	18518
N=25	80000	N=53	37735	N=81	24691	N=109	18348
N=26	76923	N=54	37037	N=82	24390	N=110	18181
N=27	74074	N=55	36363	N=83	24096	N=111	18018
N=28	71428	N=56	35714	N=84	23809	N=112	17857

Unit [bps]

Setting value and boudrate (2)

Value	Baudrate	Value	Baudrate	Value	Baudrate	Value	Baudrate
N=113	17699	N=141	14184	N=169	11834	N=197	10152
N=114	17543	N=142	14084	N=170	11764	N=198	10101
N=115	17391	N=143	13986	N=171	11695	N=199	10050
N=116	17241	N=144	13888	N=172	11627	N=200	10000
N=117	17094	N=145	13793	N=173	11560	N=201	9950
N=118	16949	N=146	13698	N=174	11494	N=202	9900
N=119	16806	N=147	13605	N=175	11428	N=203	9852
N=120	16666	N=148	13513	N=176	11363	N=204	9803
N=121	16528	N=149	13422	N=177	11299	N=205	9756
N=122	16393	N=150	13333	N=178	11235	N=206	9708
N=123	16260	N=151	13245	N=179	11173	N=207	9661
N=124	16129	N=152	13157	N=180	11111	N=208	9615
N=125	16000	N=153	13071	N=181	11049	N=209	9569
N=126	15873	N=154	12987	N=182	10989	N=210	9523
N=127	15748	N=155	12903	N=183	10928	N=211	9478
N=128	15625	N=156	12820	N=184	10869	N=212	9433
N=129	15503	N=157	12738	N=185	10810	N=213	9389
N=130	15384	N=158	12658	N=186	10752	N=214	9345
N=131	15267	N=159	12578	N=187	10695	N=215	9302
N=132	15151	N=160	12500	N=188	10638	N=216	9259
N=133	15037	N=161	12422	N=189	10582	N=217	9216
N=134	14925	N=162	12345	N=190	10526	N=218	9174
N=135	14814	N=163	12269	N=191	10471	N=219	9132
N=136	14705	N=164	12195	N=192	10416	N=220	9090
N=137	14598	N=165	12121	N=193	10362	N=221	9049
N=138	14492	N=166	12048	N=194	10309	N=222	9009
N=139	14388	N=167	11976	N=195	10256	N=223	8968
N=140	14285	N=168	11904	N=196	10204	N=224	8928

Unit [bps]

Setting value and boudrate (3)

Value	Baudrate	Value	Baudrate	Value	Baudrate	Value	Baudrate
N=225	8888	N=233	8583	N=241	8298	N=249	8032
N=226	8849	N=234	8547	N=242	8264	N=250	8000
N=227	8810	N=235	8510	N=243	8230	N=251	7968
N=228	8771	N=236	8474	N=244	8196	N=252	7936
N=229	8733	N=237	8438	N=245	8163	N=253	7905
N=230	8695	N=238	8403	N=246	8130	N=254	7874
N=231	8658	N=239	8368	N=247	8097	N=255	7843
N=232	8620	N=240	8333	N=248	8064	N=256	7812

Unit [bps]

Baudrate set command (R8C)

Command to change the communication speed with the target MCU.

Format : S=x : S can also be used in lowercase s.

• x : Valid from 0 to 6.
The communication speed of each setting value is as shown in the table below.

Value	Baudrate [bps]
S=0	9600
S=1	19200(Default)
S=2	38400
S=3	57600
S=4	115200
S=5	230400
S=6	460800

Description example :

S=3 : Set the communication speed to 57600bps.

S=7 : An error occurs. (Designation out of range)

S : An error occurs. (There is no argument)

Details :

R8C family communicates at 19,200 bps (default) when accessing data read, verify, write, etc.

By changing the setting value you can change the communication speed and reduce processing time.

Corresponding variety :

R8C/14-(1Line), R8C/2x, R8C/3x, R8C/Lx

(This function can not be used with R8C/10-13 group)

Note :

- If the compatibility with the mounted MCU clock oscillator is bad, an error occurs in the MCU access and a device error occurs. Please change communication speed and use.
- After setting, it operates at the baud rate set until changing the MCU setting (T command) or turning off the power of the EFP-RC2.
- Please describe this command after MCU set command.
- When you use the maximum high speed of S= 4 or higher, please use what can generate the most exact possible baud rate for the MCU clock oscillation child carried in the target board. (ex. 14.7456MHz)
- MCUs not equipped with high-speed OCO can be set up to S=3. (Fastest 57600 bps)

■ Mode entry command (RX / SH)

Command to make each command executable.

Format : M,[Main Clock Frequency],[Main Clock Multiplication Ratio],[Peripheral Clock Multiplication Ratio]

; M can also be used in lowercase m.

- Main Clock Frequency : Write the main clock operating frequency in units of 0.01MHz (Example 12.4MHz : 1240)
- Main Clock Multiplication Ratio : Fill in the multiplication ratio according to the MCU specification
- Peripheral Clock Multiplication Ratio : Fill in the multiplication ratio according to the MCU specification

Description example :

M,8 0 0,8,4 ; Frequency = 8MHz, Main Clock Multiplication Ratio = 8, Peripheral Clock Multiplication Ratio = 4

Details :

In order to execute each command in the RX family and SH family, it is necessary to first execute the mode entry command.

Please describe this command after Baudrate setting command.

■ ID collation command (RX / SH)

Release ID code protect function.

Format : i,[Number of executions],[ID code], [ID code format]

; i can also be used in uppercase I.

- Number of executions : 0 = 1 time, 1 = 3 times
- ID code : 16 byte ID code
- ID code format : 0 = ASCII code input, 1 = HEX code input

Description example :

i,0,ESUISEIPROTECTID,0 ; Input by ASCII codes

i,0,4501020304050607080 90a0b0c0d0e0f,1 ; Input by HEX codes

Details :

Enables access to the MCU by canceling the ID code protection function before each command is executed.

Please describe this command after Mode entry command.

Note :

- The number of bytes transmitted is fixed at 16 bytes.
- In case of SH family, please fill in the unnecessary part on the upper side of the ID code with FF.

■ ID collation command (R8C / M16C / 720 / 4500 / 740)

Release ID code protect function. (Flash ROM only)

Format : i,[ID area first address],[ID code],[ID code format]

; i can be either uppercase or lowercase letters.

• ID code format : 0 = ASCII code input, 1 = HEX code input

Description example :

i,FFFDF,SUISEIS,0 ; Input by ASCII codes

i,FFFDF,01020304050607,1 ; Input by HEX codes

Details :

Enables access to the MCU by canceling the ID code protection function before each command is executed.

Corresponding variety :

Use this command only for products that support ID code protection.

Note :

- The MCU's corresponding ID area start address has a default value exists by MCU. An error will occur if written incorrectly.
- If ID code protection cancellation fails on MCU with ID written, all commands will not be accepted. Please turn off MCU power once.

Reference :

After ID verification is successfully completed, the following ID verification commands will be ignored until the power to the target board (MCU) is turned off. Even if ID verification is conducted with wrong codes, an error does not happen.

This command is ignored in case of an erased MCU (not protected). If rewriting is frequently performed on an MCU equipped with an ID code protect function, we recommend that you insert this command line before executing each command.

The HEX/MOT files that are created without having to worry about an ID, IDs of all zeros are normally set.

(For details, please check each MCU's program , user manual etc.)

Forced erase function

For an MCU with a forced erase function, it is possible to erase the entire area by writing ″ALeRASE″ (ASCII code input) as ID code.

For details of the forced erase function, refer to the hardware manual of each MCU.

Description example :

```
i,FFDF,ALeRASE,0  ; ASCII code input
```

Note :

If program and verify are executed with the same script using ″ALeRASE″, the program data will be erased before the verify check.
When ″ALeRASE″ is used, it is recommended to execute only the ID collation command.

■ Signature command (RL78 / Battery Management IC)

Command to check the type name of the target MCU.

Format : G,[MCU type name (up to 10 characters)] ; G can also be used in lowercase g.

Description example:

G,R5F100LE ; Confirm the MCU type name is R5F100LExxx.

G,R5F ; Confirm the MCU type name is R5Fxxxxxxxx.

Details

Confirm that the target MCU type name matches the parameter content.

Parameters can be set from 1 to 10 characters, only set characters are checked.

Corresponding variety :

RL78 family (This function can not be used with RL78/G10 series),

Battery Management IC

Example of use :

Since an error occurs when the parameters do not match, erroneous writing to a different series MCU can be prevented.

■ Erase command (RL78 / Battery Management IC)

Erase the MCU built-in flash ROM.

Format : e,[erase block start address],[lockbit format] ; case of block erase

e,,[lockbit format] ; case of all erase

; e can be either uppercase or lowercase letters

- lockbit format : 0 : valid , 1 : invalid
- erase block start address : Start address of block to erase

Description example :

e,00000000,1 ; case of block erase

E,,1 ; case of all erase (not describing the block start address)

Details :

It is possible not to erase the locked block by enabling the lock bit format.

When lock bit format is invalidated, all blocks are erased regardless of lock / unlock status.

Corresponding variety :

RL78 family (This function can not be used with RL78/G10 series),

Battery Management IC

Note :

- If you all erase with the battery management IC, erase all other than erase prohibited area.

  If erase prohibited area is specified by block erase, an error will occur.

■ Erase command (RX / SH)

Erase the MCU built-in flash ROM.

Format : e,[block end address],[lockbit format]; case of block erase

e,,[lockbit format] ; case of all erase

; e can be either uppercase or lowercase letters

- lockbit format : 0 : valid , 1 : invalid
- block end address : End address of block to be erased

Description example :

e,ffffffff,1 ; case of block erase

E,,1 ; case of all erase (not describing the block end address)

Details :

It is possible not to erase the locked block by enabling the lock bit format.

When lock bit format is invalidated, all blocks are erased regardless of lock / unlock status.

The user boot area is not erased with all erase.

Corresponding variety : RX family , SH family

Note :

- To erase the user boot area, execute the block erase command.
  Write end block address as FF7FFFFF. (Common to both RX and SH)
- For the SH family, it is always erasable regardless of whether the lock bit format is valid or invalid.

Erase command (R8C / M16C)

Erase the MCU built-in flash ROM.

Format : e,[block end WORD address],[lockbit format] ; case of block erase

e,,[lockbit format] ; case of all erase

; e can be either uppercase or lowercase letters

- lockbit format : 0 : valid , 1 : invalid
- block end WORD address : Even value of end address of block to erase

Description example :

e,fffe,1 ; case of block erase

E,,1 ; case of all erase (not describing the block end address)

Details :

It is possible not to erase the locked block by enabling the lock bit format.

When lock bit format is invalidated, all blocks are erased regardless of lock / unlock status.

Corresponding variety : R8C family , M16C family

Note :

- Please note that some MCUs (such as M16C / 62P) of the M16C have blocks that can not be erased with the all erase command.

Erase command (720 / 4500 / 740)

Erase the MCU built-in flash ROM.

Format : e,[block end WORD address],[lockbit format] ; case of block erase

e,,[lockbit format] ; case of all erase

; e can be either uppercase or lowercase letters

- lockbit format : 0 : valid , 1 : invalid
- block end WORD address : Even value of end address of block to erase

Description example :

e,fffe,1 ; case of block erase

E,,1 ; case of all erase (not describing the block end address)

Details :

It is possible not to erase the locked block by enabling the lock bit format.

When lock bit format is invalidated, all blocks are erased regardless of lock / unlock status.

Corresponding variety : 720 / 4500 series and 740 family ROM built-in MCU

Note :

- QzROM can not be erased.

M38000 special notation of NOR type MCU (MCU type = 7)

Please write a comma after this command only for this model and specify the start address of the on-chip ROM in your MCU as an argument. If this is not mentioned, a command error occurs.

Description example :
e,1000 ; Set the ROM start address to 1000H

Note :
An error occurs if an address not supported by the MCU is described in the start address.

■ Blank check command (RL78/RX/R8C/M16C/Battery Management IC)

Confirm that the MCU built-in flash ROM is erased.

Format : b,[start address],[end address]

; b can be either uppercase or lowercase letters

- start address : Start address of area to be executed
- end address : End address of area to be executed

Description example : b,C0000,FFFFF

Details :

Confirm that the data from the start address to the end address of the MCU built-in Flash ROM is erased.

Corresponding variety :

RL78 family , RX family , R8C family , M16C family , Battery Management IC

Note :

- If address other than MCU compatible address is described in start address or end address, an error occurs.
- In case of MCU of page writing, an error occurs unless you specify start address to end address in 1 page unit (256 byte).
- It can not be used in the data flash area of the RX family.
- If the address of the write / erase prohibited area is specified for both the start address and the end address in the battery management IC, an error will occur.

Blank check command (SH)

Confirm that the MCU built-in flash ROM is erased.

Format : b,[area type],[start address],[end address]
; b can be either uppercase or lowercase letters

- start address : Start address of area to be executed
- end address : End address of area to be executed
- area type : 1 = User area , 3 = User boot area

Description example : b,1,00000000,0013FFFF ; Blank check user area

Details :
Confirm that the data from the start address to the end address of the MCU built-in Flash ROM is erased.

Corresponding variety : SH family

Note :
- If address other than MCU compatible address is described in start address or end address, an error occurs.
- It can not be used in the data flash area of the RX family.

Blank check command (720 / 4500 / 740)

Confirm that the MCU built-in ROM is erased.

Format : b, [start address],[end address]

; b can be either uppercase or lowercase letters

- start address : Start address of area to be executed
- end address : End address of area to be executed

Description example : b,4000,FFFF

Details :

Confirm that the data from the start address to the end address of the MCU built-in ROM is erased.

Corresponding variety :

720 / 4500 series , 740 family (QzROM 4Byte/8Byte write excluded)

Note :

- If address other than MCU compatible address is described in start address or end address, an error occurs.
- In case of MCU of page writing, an error occurs unless you specify start address to end address in 1 page unit (256 byte).

Special notation at the time of the QzROM 4Byte/8Byte setting

This MCU setting uses a special writing and reading method for processing at high speed.

Format： b,[blank data Hxw file],[start address],[end address]

- **blank data Hxw file**

  For 4Byte blank data：QzBlank_4Byte.HXW
  For 8Byte blank data：QzBlank_8Byte.HXW

  Blank data Hxw file is stored in ″￥Software￥8bit QzROM Blank Data″ folder of Product CD Data.
  Please download it in the same folder as the execution script file of EFP-RC2 when using it.

All block blank check command (RX / SH)

Confirm that the data of all blocks of MCU built-in ROM are erased.

Format： b,[area type]　　; b can be either uppercase or lowercase letters

• area type： 1 = User area , 2 = Data area , 3 = User boot area

Description example：b,1 ：All block blank check of user area

Details：

Confirm that data of all blocks are erased in each area of the MCU built-in ROM.
The erase confirmation is executed by the boot program, so it can be checked faster than usual blank command.

Corresponding variety：RX family , SH family

Note：

• An error occurs when setting the MCU type incorrectly.

All block blank check command (R8C)

Confirm that the data of all blocks of MCU built-in ROM are erased.

Format : b ; b can be either uppercase or lowercase letters

Description example : b

Details :

Confirm that data of all blocks are erased in each area of the MCU built-in ROM.

The erase confirmation is executed by the boot program, so it can be checked faster than usual blank command.

Corresponding variety :

R8C/3x, Lx series (choose MCU Type T=31, T=32 or T=36)

Note :

• An error occurs when setting the MCU type incorrectly.

■ High-speed blank command (R8C / M16C)

Confirm with high speed that the MCU built-in ROM is erased.

Format : b,[start address],[end address],1

; b can be either uppercase or lowercase letters

Description example : b,C0000,FFFFF,1

Details :

Confirm that the data from the start address to the end address of the MCU built-in ROM is erased.

The erase confirmation is executed by the boot program, so it can be checked faster than usual blank command.

Corresponding variety :

M16C/63-65 (MCU Type choose T=02)

R8C/3x,Lx series (MCU Type is T=31 or to choose T=32)

R8C/2x series (MCU Type is T=33 or to choose T=34)

Note :

- If address other than MCU compatible address is described in start address or end address, an error occurs.
- In case of MCU of page writing, an error occurs unless you specify start address to end address in 1 page unit (256 byte).
- An error occurs when setting the MCU type incorrectly.

Program command
(RL78 / RX / R8C / M16C / 720 / 4500 /740 / Battery Management IC)

Program the contents of the Hxw file to the MCU built-in ROM

Format : p,[Hxw file name],[start address],[end address], [lockbit format]
; p can be either uppercase or lowercase letters

- Hxw file name : Hxw file name downloaded to the CF card of EFP-RC2
- start address : Start address of area to be executed
- end address : End address of area to be executed
- lockbit format : 0 : valid , 1 : invalid

Description example :

p, SAMPLE.Hxw,C0000,FFFFF,0 ; Lockbit valid

P, SAMPLE.Hxw,C0000,FFFFF,1 ; Lockbit invalid

Details :

Writes Hxw data from the start address to the end address in the MCU internal ROM.
Even if it is a locked area, if the data in that area has been erased, it is possible to set the lock bit invalid and write it.
If locked area is set to lock bit enabled and written, an error occurs.
Even if it is not locked, writing to an unerased page results in an error. (RL78 / G10 does not apply because it automatically executes erase before programming.)

Corresponding variety :

RL78 family , RX family , R8C family , M16C family , 720 / 4500 series , 740 family , Battery Management IC

Note :

- If an address other than the address range of the Hxw file is described in the start / end address, an error will occur.
- In case of MCU of page writing, an error occurs unless you specify start address to end address in 1 page unit (256 byte).

- If the end address of the MOT file is not xxxxxxFFh, when converting from MOT to Hxw with RC-Downloader, set the Setting type to Manual in the Hxw data domain setting item, set the start address to xxxxxx00h and end address to xxxxxxFFh , please convert it. At this time, 0xFF data is embedded in the unused area of the conversion source MOT file.
- Writing is not executed for the program / erase prohibited area of the battery management IC.

Program command (SH)

Program the contents of the Hxw file to the MCU built-in ROM

Format : p, [Hxw file name],[area type],[start address],[end address], [lockbit format]
; p can be either uppercase or lowercase letters

- Hxw file name : Hxw file name downloaded to the CF card of EFP-RC2
- area type : 1 = User area , 2 = Data area , 3 = User boot area
- start address : Start address of area to be executed
- end address : End address of area to be executed
- lockbit format : 0 : valid , 1 : invalid

Description example :

p, SAMPLE.Hxw,1,00000000,0013FFFF,1 : User area , Lockbit invalid

Details :

Writes Hxw data from the start address to the end address in the MCU internal ROM.
Even if it is a locked area, if the data in that area has been erased, it is possible to set the lock bit invalid and write it.
Even if it is not locked, writing to an unerased page results in an error.

Corresponding variety : SH family

Note :

- If an address other than the address range of the Hxw file is described in the start / end address, an error will occur.
- In case of MCU of page writing, an error occurs unless you specify start address to end address in 1 page unit (256 byte).
- If the end address of the MOT file is not xxxxxxFFh, when converting from MOT to Hxw with RC-Downloader, set the Setting type to Manual in the Hxw data domain setting item, set the start address to xxxxxx00h and end address to xxxxxxFFh , please convert it. At this time, 0xFF data is embedded in the unused area of the conversion source MOT file.
- In the SH family, it is always possible to write, regardless of whether the lock bit is locked or unlocked.

■ Verify command
(RL78 / RX / R8C / M16C / 720 / 4500 /740 / Battery Management IC)

Collate contents of Hxw file with MCU built-in ROM

Format : v,[Hxw file name],[start address],[end address]
; v can be either uppercase or lowercase letters

- Hxw file name : Hxw file name downloaded to the CF card of EFP-RC2
- start address : Start address of area to be executed
- end address : End address of area to be executed

Description example : v,SAMPLE.Hxw,C0000,FFFFF

Details :
Collate the data from the start address to the end address with MCU built-in ROM and the data of the Hxw file.

Corresponding variety :
RL78 family (This function can not be used with RL78/G10 series) , RX family , R8C family , M16C family , 720 / 4500 series , 740 family , Battery Management IC

Note :
- If an address other than the address range of the Hxw file is described in the start / end address, an error will occur.
- In case of MCU of page writing, an error occurs unless you specify start address to end address in 1 page unit (256 byte).
- It can not be used in the data flash area of the RX family.
- Verify check is not executed for the program / erase prohibited area of the battery management IC.

Verify command (SH)

Collate contents of Hxw file with MCU built-in ROM

Format : v, [Hxw file name],[area type],[start address],[end address]
; v can be either uppercase or lowercase letters

- Hxw file name : Hxw file name downloaded to the CF card of EFP-RC2
- area type : 1 = User area , 3 = User boot area
- start address : Start address of area to be executed
- end address : End address of area to be executed

Description example :
v,SAMPLE.Hxw,1,00000000,0013FFFF ; Verify check of user area

Details :
Collate the data from the start address to the end address with MCU built-in ROM and the data of the Hxw file.

Corresponding variety : SH family

Note :
- If an address other than the address range of the Hxw file is described in the start / end address, an error will occur.
- It can not be used in the data flash area.

■ High-speed verify command (M16C)

Collate the check sum of the Hxw file and MCU built-in ROM data

Format : v,[Hxw file name],[start address],[end address],[CRC sum value .]

; v can be either uppercase or lowercase letters

Description example : v,SAMPLE.Hxw,C0000,FFFFF,1234

Details :

Collate the CRC sum value from the start address to the end address with MCU built-in ROM and the CRC sum value of the Hxw file.

Collation of CRC sum value is executed by MCU boot program, so it can be collated faster than normal verify command.

Corresponding variety :

M16C/63 - 65 , M16C/30P (choose MCU Type T=02)

M32C/87 , R32C/111 - 118 (choose MCU Type T=03)

Note :

- If an address other than the address range of the Hxw file is described in the start / end address, an error will occur.
- In case of MCU of page writing, an error occurs unless you specify start address to end address in 1 page unit (256 byte).
- An error occurs when setting the MCU type incorrectly.

Read command (RX / R8C / M16C)

The data of the MCU built-in ROM is read into EFP-RC2.

Format : r,[Hxw file name],[start address],[end address]
; r can be either uppercase or lowercase letters

- Hxw file name : Hxw file name to be read to EFP-RC2
- start address : Start address of area to be executed
- end address : End address of area to be executed

Description example : r, Read.Hxw,FFFFF000,FFFFFFFF

Details :
The data from the start address to the end address of the MCU built-in ROM is read.

Corresponding variety : RX family , R8C family , M16C family

Note :
- If address other than MCU compatible address is described in start address or end address, an error occurs.
- If you write anything other than Hxw in the file extension it will result in an error.
- In the RX family, it is not possible to read the data flash area.

Reference
- You can upload the data you have read and save it on your computer.
- Using the created Hxw file, you can write to other MCUs. Especially the Hxw file created by reading the entire area of the MCU is not different from the data of the original MCU.

Read command (SH)

The data of the MCU built-in ROM is read into EFP-RC2.

Format : r,[Hxw file name],[area type],[start address],[end address]
; r can be either uppercase or lowercase letters

- Hxw file name : Hxw file name to be read to EFP-RC2
- area type : 1 = User area , 3 = User boot area
- start address : Start address of area to be executed
- end address : End address of area to be executed

Description example : r, Read.Hxw,1,00000000,0013FFFF

Details :
The data from the start address to the end address of the MCU built-in ROM is read.

Corresponding variety : SH family

Note :
- If address other than MCU compatible address is described in start address or end address, an error occurs.
- If you write anything other than Hxw in the file extension it will result in an error.
- In the SH family, it is not possible to read the data flash area.

Reference
- You can upload the data you have read and save it on your computer.
- Using the created Hxw file, you can write to other MCUs. Especially the Hxw file created by reading the entire area of the MCU is not different from the data of the original MCU.

Read command (720 / 4500 / 740)

The data of the MCU built-in ROM is read into EFP-RC2.

Format : r,[Hxw file name],[start address],[end address]
; r can be either uppercase or lowercase letters

- Hxw file name : Hxw file name to be read to EFP-RC2
- start address : Start address of area to be executed
- end address : End address of area to be executed

Description example : r, Read.Hxw,4000,FFFF

Details :

The data from the start address to the end address of the MCU built-in ROM is read.

Corresponding variety :

720/4500 series , 740 family (QzROM 4 Byte / 8 Byte write excluded)

Note :

- If address other than MCU compatible address is described in start address or end address, an error occurs.
- If you write anything other than Hxw in the file extension it will result in an error.
- It can not be read in QzROM 4 Byte / 8 Byte write mode.

Reference

- You can upload the data you have read and save it on your computer.
- Using the created Hxw file, you can write to other MCUs. Especially the Hxw file created by reading the entire area of the MCU is not different from the data of the original MCU.

■ Security setting command (RL78 / Battery Management IC)

Command to set the security of the target MCU.

Format :

L,[Boot block number],[FSW start block],[FSW end block], [Protect content]

; L can be either uppercase or lowercase letters

Description example :

L, 3,0,0,4 ; Write disable is set. (Boot block number is fixed to 3)

Details :

Disable write to the target MCU, prohibit block erase, prohibit rewriting of boot cluster 0, and set the flash shield window (FSW).

Details of protect contents are as shown in the table below.

Protect content	Rewrite of Boot cluster 0 prohibit	Block erase prohibit	Write prohibit
0	×	×	×
1	○	×	×
2	×	○	×
3	○	○	×
4	×	×	○
5	○	×	○
6	×	○	○
7	○	○	○

※ ○ : Enable , × : Disable

Corresponding variety :

RL78 family (This function can not be used with RL78/G10 series),

Battery Management IC

Note :

- It can not be invalidated after setting block erase prohibition and boot cluster 0 rewrite prohibition. After that, you can not perform block erase on the MCU, erase and write to the boot cluster 0.

  We recommend that you execute it with PBT dedicated to security setting alone after checking target board operation.

Security verification function

By adding ″, v″ to the end of the security setting command, it is possible to check the state of security set in the target MCU.

Format :
L, [Boot block number],[FSW start block],[FSW end block], [Protect content] ,V

Description example :
L, 3,0,0,2,V ; Make sure erase prohibition is set.

Details :
Compare the parameters described in the command with the security status set in the target MCU.

Note :
If the boot block number, FSW start block, FSW end block, and protect contents do not all match, an error will occur.

Security release command (RL78)

Command to initialize the security set in the target MCU.

Format : D ; D can be either uppercase or lowercase letters

Description example :

D ; Initialize set write inhibit and FSW.

D=0 ; An error occurs. (Arguments can not be used)

Details :

When the security release command is executed, the set write inhibit and flash shield window (FSW) are initialized.

It is not possible to cancel about boot cluster 0 rewrite prohibition and erase prohibition.

Corresponding variety :

RL78 family (This function can not be used with RL78/G10 series),

Note :

- After executing the security setting command in the battery management IC, the security release command can not be used.

■ Checksum command (RL78 / Battery Management IC)

Command to confirm the checksum value of the data in the MCU built-in ROM.

Format : H,[start address],[end address],[checksum value]

; H can be either uppercase or lowercase letters

Description example :

H,00000,0FFFF,0000

Details :

Confirm that the checksum value of the data of the MCU built-in ROM matches the set checksum value.

Corresponding variety :

RL78 family , Battery Management IC

Note :

- Please set the start address and end address so that the address range is 256 bytes.
- The checksum value is the value obtained by subtracting from the start address to the end address in 1 byte units.
- For the battery management IC, calculate the checksum value except the write / erase prohibited area.

■ Checksum command (RX / SH)

Command to confirm the checksum value of the data in the MCU built-in ROM.

Format : H,[area type],[ROM size],[checksum value]

; H can be either uppercase or lowercase letters

- area type : 1 = User area , 2 = Data area , 3 = User boot area
- ROM size : Described in KB units (64KB ⇒ 64 , 2MB ⇒ 2048)
- checksum value : 4 Byte (longword data added by byte unit)

Description example :

H,1,256,1D4B59E6

Details :

Confirm that the checksum value of the data of the MCU built-in ROM matches the set checksum value.

Corresponding variety :

RX family , SH family

Note :

- The checksum value is longword data obtained by byte-adding all data in the ROM area. The calculated size of SUM is as follows, and if it does not satisfy the following size in each area, SUM is calculated with the closest size over the mounting size. Missing areas are calculated as FF.

  ◎ Data area , User boot area : 8kByte × 2^n (n = 0 , 1 , 2・・・)

  ◎ User area : 64kByte × 2^n (n = 0 , 1 , 2・・・)

- If there is an unwritten area in the data area, the data becomes undefined.

■ Lockbit set command (RX)

A lock bit can be set for each block of the MCU built-in ROM to prevent erroneous erase, write mistake, etc.

Format : k,[Lock block end address]

; k can be either uppercase or lowercase letters

• Lock block end address : End address of area to be executed

Description example :

k, FFFFFFFF ; When the end address is FFFFFFFF

Details :

The lock bit is locked for each block specified by the lock block end address.

Corresponding variety : RX family

Note :

• To cancel locking, it is necessary to erase with lock bit invalid.

• In the RX family, the lock bit protect function exists only in the user area.

• If the corresponding block end address of the MCU is written incorrectly, an error will occur.

■ Lockbit set command (SH)

A lock bit can be set for each block of the MCU built-in ROM to prevent erroneous erase, write mistake, etc.

Format : k,[area type],[Lock block end address]
; k can be either uppercase or lowercase letters

- area type : 1 = User area
- Lock block end address : End address of area to be executed

Description example :
k,1,0013FFFFF ; User area , When the end address is 0013FFFF

Details :
The lock bit is locked for each block specified by the lock block end address.

Corresponding variety : SH family

Note :
- To cancel locking, it is necessary to erase with lock bit invalid.
- In the SH family, the lock bit protect function exists only in the user area.
- If the corresponding block end address of the MCU is written incorrectly, an error will occur.

■ Lockbit set command (M16C)

A lock bit can be set for each block of the MCU built-in ROM to prevent erroneous erase, write mistake, etc.

Format : k,[Lock block end address]

; k can be either uppercase or lowercase letters

• Lock block end address : Last even value of end address of area to be executed

Description example :

k, CFFFE ; When the end address is CFFFF

Details :

Please specify the last even value of the end address of the locked block as an argument.

Corresponding variety : M16C family

Note :

• If the corresponding block end address of the MCU is written incorrectly, an error will occur.

Read-protect command (720 / 4500 / 740)

Command to protect the target MCU and prohibit access to the MCU.

Format : Y　　;　Y can be either uppercase or lowercase letters

Description example :

Y　;　Protect MCU

Y=0　;　An error occurs (arguments can not be used)

Details :

Protect the target MCU and prohibit access such as data read, verify and write afterwards.

Corresponding variety :

4Bit MCU	720 QzROM、4500 QzROM
8Bit MCU	7544 QzROM、7545 QzROM、7546 QzROM、7547-9 QzROM、385x QzROM、38238-A QzROM、38Dx Qz 8Byte

Note :

- Execution of this command makes it impossible to access data such as data read, verify and write to the MCU afterwards.
  We recommend that you run it on a single protect-only PBT after checking the operation of the target board.

■ Wait command (common to all)

Command to pause script. (While the script is stopped, MCU reset is released.)

Format : W=xx ; W can be either uppercase or lowercase letters

• xx : Specify the number of seconds to pause (Valid from 0 to 99, 0 waits for key input)

Description example :

W=7 ; Stop script execution for 7 seconds.

w=0 ; Stop script execution until key input is made.

Details :

Wait command can stop the script operation for 1 to 99 seconds or until there is a key input.

While stopping, resetting the target MCU is released, so it is possible to operate the MCU with the writing cable connected.

While waiting for key input, a warning sound (beeping) is generated once every 5 minutes.

If any key is pressed in the key input waiting state and released, the command after the wait command can be continued. This command can be used many times in one PBT file.

Example of use :

It is possible to perform operation check by operating simple debugging and demonstration software without disconnecting cables, such as protect write after checking operation with protectable MCU.

A reference example of the PBT file using the wait command is shown on the next page.

Note :

• The writer normally terminates without releasing the reset of the target MCU for safety after writing is completed. To check the operation, disconnect the power supply, remove the connection cable for writing, and then turn on the power again to the target board to check. If resetting is canceled after writing, MCU operation may be affected by the circuit to which the writing cable is connected.

- As this command may cause safety problems depending on the circuit configuration of the target circuit board, please fully consider this point and use it at your own risk. We can not take responsibility even if any damage caused by use occurs. Also, it does not guarantee MCU operation at reset release.
- If you are using SECURITY LEVEL 2, please note that even if you press the B key while waiting for a key input, the script will not be canceled.

Usage example of wait command :

A reference example of PBT file using wait command is shown below.

Reference example for shipment inspection

Contents of PBT file	Operating condition
t=1	Target MCU setting (M16C/62, 80 Group)
i,ffffdf,,1	ID setting
e,,1	Erase target MCU data
b,fc0000,ffffff	Blank check
p,test.hxw,fc0000,ffffff,1	Writing adjustment program
v,test.hxw,fc0000,ffffff	Verify check
w=0	Adjustment of the target board etc. until key input
i,ffffdf,,1	ID setting
e,,1	Erase target MCU data
b,fc0000,ffffff	Blank check
p,shukka.hxw,fc0000,ffffff,1	Writing shipping program
v,shukka.hxw,fc0000,ffffff	Verify check
w=5	Confirm target board operation for 5 seconds
	end

Reference example for demonstration

Contents of PBT file	Operating condition
t=1	Target MCU setting (M16C/62, 80 Group)
i,ffffdf,,1	ID setting
e,,1	Erase target MCU data
p,demo1.hxw,fc0000,ffffff,1	Writing demonstration program 1
w=60	Run Demonstration program 1 for 1 minute
i,ffffdf,,1	ID setting
e,,1	Erase target MCU data
p,demo2.hxw,fc0000,ffffff,1	Writing demonstration program 2
w=60	Run Demonstration program 2 for 1 minute
	end

4. Sample script

Here is a reference example of a script file (extension .pbt) necessary for writing in EFP-RC2.

For details of each command, please see ″3. Command Description″.

● In case of RL78 / G13 (R5F100LE)

After setting the communication baud rate, when erase, blank, program, verify, and setting security for all areas, the script is as follows.

Script contents	Command description
t=37	Set MCU type
s=6	Communication baud rate setting (500 kbps). When this setting is not done, it is set to 115200 bps.
e,,1	Erase all areas (lockbit invalid)
b,00000,0ffff	Blank check
p,data.hxw,00000,0ffff,1	Writing the program (lockbit invalid)
v,data.hxw,00000,0ffff	Verify check
L,3,0,0,4	Write-protected setting with security setting command
L,3,0,0,4,V	Confirm security contents with security verify command. An error occurs if it does not match the contents of the security setting command.

● In case of RX210 (R5F52108)

After setting the communication baud rate, when erase, blank, program, and verify for all areas, the script is as follows.

Script contents	Command description
t=38	Set MCU type 38 : Select RX (little endian)
s=3	Communication baud rate setting (500 kbps).
M,3200,1,1	Mode entry command
i,0,45010203040506070809 0A0B0C0D0E0F,1	ID collation
e,,1 e,FF7FFFFF,1	Erase user area all Block erase (User boot area)
b,FFF80000,FFFFFFFF b,FF7FC000,FF7FFFFF b,2	Blank check Blank check of data area is valid for all area blank check command only
p,User_Program.hxw,FFF80000,FFFFFFFF,1 p,Data_Program.hxw,00100000,00101FFF,1 p,Boot_Program.hxw,FF7FC000,FF7FFFFF,1	Program to user area Program to data area Program to user boot area
v,User_Program.hxw,FFF80000,FFFFFFFF v,Boot_Program.hxw,FF7FC000,FF7FFFFF	Verify the user area Verify the user boot area
H,2,8,000FED0B	Since the verify check is not possible for the data area, confirm with the checksum.

● In case of SH7250 (R5F72531)

After setting the communication baud rate, when erase, blank, program, and verify for all areas, the script is as follows.

Script contents	Command description
t=40	Set MCU type , 40 : Select SH
s=3	Communication baud rate setting (500 kbps).
M,1600,6,2	Mode entry command
i,0,FFFFFFFFFFFFFFFF00010203040506 07,1	ID collation The ID code is fixed at 16 bytes. When the ID code is less than 16 bytes, the upper side is FF.
e,,1 e,FF7FFFFF,1	Erase user area all Block erase (User boot area)
b,1,00000000,0013FFFF b,2 b,3,00000000,00007FFF	Blank check (User area) Blank check (Data area) Blank check (User boot area)
p,User_Program.hxw,1,00000000,0013FFFF,1 p,Data_Program.hxw,2,80100000,80107FFF,1 p,Boot_Program.hxw,3,00000000,00007FFF,1	Program to user area Program to data area Program to user boot area
v,User_Program.hxw,1,00000000,0013FFFF v,Boot_Program.hxw,3,00000000,00007FFF	Verify the user area Verify the user boot area
H,2,32,003FD1E3	Since the verify check is not possible for the data area, confirm with the checksum.

● In case of R8C/Tiny (R5F212B)

After setting the communication baud rate, when erase, blank, program, and verify for all areas, the script is as follows.

Script contents	Command description
t=34	Set MCU type
s=3	Communication baud rate setting (57600 bps). When this setting is not done, it is set to 19200 bps.
i,ffdf,SUISEIS,0	Cancel ID protect
e,,0	Erase all areas (lockbit valid)
b,4000,13fff	Blank check
p,data.hxw,4000,13fff,0	Writing the program (lockbit valid)
v,data.hxw,4000,13fff	Verify check

● In case of M16C/62P (M30624FGP)

When erase, blank, program, verify, read, and lock bit setting are performed for all areas, the script is as follows.

Script contents	Command description
t=02	Set MCU type
i,fffdf,SUISEIS,0	Cancel ID protect (Example of protect code : ″SUISEIS″)
e,,1	Erase all areas (lockbit invalid)
b,c0000,fffff	Blank check
p,data.hxw,c0000,fffff,1	Writing the program (lockbit invalid)
v,data.hxw,c0000,fffff	Verify check
r,read_data.hxw,c0000,fffff	Read written data
k,cffff k,dffff k,effff k,f7fff k,f9fff k,fbfff k,fdfff k,fefff k,fffff	Enable the lock bit of each block.

5. Function explanation

5.1 Menu explanation

At the time of EFP-RC2 start, the upper two rows of the following five items are displayed on the LCD, and the display items can be switched with ↑ key and ↓ key. Move the cursor to each item and press the → key to move to the respective link destination.

For the directory structure of the CF card, refer to ″7.2 Directory structure″ (P.134).

Table 5.1 Display menu screen (default)

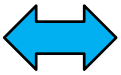
Display	Link destination	Remarks
1:FILES	CF ROOT	Used for file operation. (uppermost route of CF card)
2:PROGRAM	DOWNLOAD	Folder for writing
3:MCU SET	MCU_TYPE	Folder for writing
4:USER	USER	Subfolder for writing
5:FIRM UPDATE	FIRMWARE	Save firmware version update data

＊Since the data downloaded to the FIRMWARE folder is protected, it can not be deleted on this machine.

■ Switch display language of menu

You can switch between English display and Japanese display alternately by holding down ↑ key and pressing A, B and S key at the same time on the menu screen.

English display
1:FILES
2:PROGRAM
3:MCU SET
4:USER
5:FIRM UPDATE



Japanese display
1:ﾌｧｲﾙ ｿｳｻ
2:ﾌﾟﾛｸﾞﾗﾑ
3:MCU ｾｯﾃｲ
4:ﾕｰｻﾞｰ
5:ﾌｧｰﾑ ｱｯﾌﾟﾃﾞｲﾄ

Change menu name

It is possible to change the display name of the menu item.

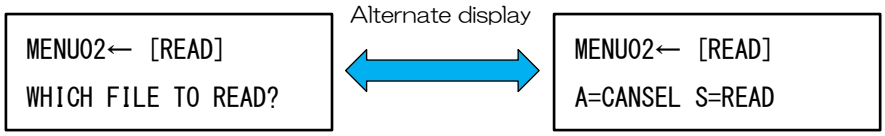
< Operation procedure >

Step1 Press the B key while holding down ↑ key on the menu screen to switch to menu file selection mode.

Step2 Select MENU 02 to 99 with ↑and ↓ key and press S key to set as specified file and return to menu screen. Since MENU 01 saves the initial state, it can not be edited.

Step3 Pressing the B key while pressing the ↑ key again displays [MEMORY FILE CREATED] and returns to the menu screen.

Step4 When you press the B key while holding the ↑ key again, the ← mark is displayed on the right side of the menu file.
When MENU 02 is selected, it is displayed as follows.



Step5 Pressing the ← key in the above state shifts to the menu name edit mode.
→ and ← key use to select the character you want to change and use ↑ and ↓ key to change the character.
Alphabetic letters are A key and it is possible to convert case.
Place the cursor on the rightmost blank and press the ↑ or ↓ key to add letters.
Pressing the A key erases the last letter.

Step6 When you press the S key, it decides name change and moves on to editing the next item. Pressing the B key cancels the editing and moves to the next item.
When all the items are changed, the edit mode is exited and the change contents are displayed on the menu screen.

Note :

- You can not edit the item number of the menu name and ″: (colon)″.
- The number of characters that can be used for the menu name is 1 to 18 characters.
- When replacing the CF card, the setting of the menu file returns to the initial state (MENU 01). Please set the menu file again.

■ Change link destination

It is possible to freely change the folder to open directly from the menu.

The only changeable menu is the link destination of items 2 to 4.

To change the link destination, it is necessary to set it to a menu file other than MENU01 in advance.

Table 5.2 Changeable link destination

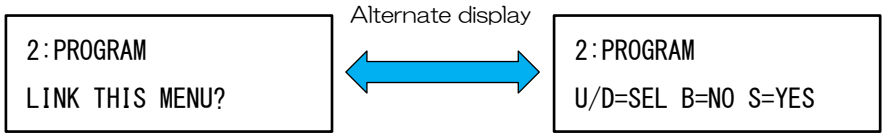
Menu item	Link destination	Modifiable
1:FILES	CF ROOT	Can not change
2:PROGRAM	DOWNLOAD	Changeable
3:MCU SET	MCU_TYPE	Changeable
4:USER	USER	Changeable
5:FIRM UPDATE	FIRMWARE	Can not change

< Operation procedure >

Step1 Open the menu item ″1: FILES″, move the cursor to the desired folder displayed within ″<″ and ″>″, press the ↑ key while holding down the B key to switch to the link destination change mode To do.

Step2 As [LINK TO MENU?] Is displayed, press the S key to specify the selected folder as the link destination. To cancel, press the B key.

Step3 The menu items linked to the upper line of the LCD are displayed as shown below.



Step4 Select the menu item to link with ↑ or ↓ key, and press the S key to change the link destination. To cancel, press the B key.

Note :

- The link to ″CF ROOT″ of menu item 1 can not be changed.
- When replacing the CF card, the setting of the menu file returns to the initial state (MENU 01). Please set the menu file again.

■ Copy menu file

Copy the contents of the currently used menu file to another menu file.

< Operation procedure >

Step1 Press the B key while holding down ↑ key on the menu screen to enter menu file selection mode.

Step2 Select the copy destination menu file and press the → key to switch from [READ] to [WRITE] as shown below.

```
MENU03   [WRITE]
WHICH FILE TO WRITE?
```

Step3 Pressing the S key in the above state copies the menu file.

■ Menu display and Initialization of link destination

The changed menu name and link destination are returned to the initial state.

< Operation procedure >

Step1 Press the B key while holding down ↑ key on the menu screen to enter menu file selection mode.

Step2 Select MENU01 with the ↑ or ↓ key and press the S key to return to the menu screen and initialization is completed.

5.2 Display information description

Information on the EFP-RC2 and various files is displayed.

■ Firmware version and CF card free space indication

Pressing the ← key while the menu screen is displayed displays the firmware version of EFP-RC2 in the upper row of the LCD, and the free space of the CF card in the lower row.

EFPRC2 Ver.1.xx.xx	← Firmware version
xxxxxxxxxx BYTE FREE	← CF card free space indication

■ CF card ID display

When the ↓ key is pressed while the firmware version and free space of the CF card are displayed, the CF card ID is displayed in the upper row of the LCD and the free space of the CF card is displayed in the lower row.

xxxxxxxxxxxxxxxxxxxx	← CF card ID
xxxxxxxxxx BYTE FREE	← CF card free space indication

■ USB-PID display

When the ↓ key is pressed on the CF card ID and CF card free space display screen, USB-PID is displayed at the upper row of the LCD, CRC sum value of the firmware and creation date are displayed at the lower row.

USB PID:xxxx xxsct	← USB-PID
CRC:xxxx 201x/xx/xx	← CRC sum value of the firmware and creation date

Display of cumulative execution count of PBT

When the ↓ key is pressed on the display screen of USB-PID, CRC sum value and creation date of firmware, the cumulative execution count of PBT is displayed.

```
Total count:
        xx Count
```
← Cumulative execution count of PBT

Counter display

When the S key is pressed on the screen displayed the firmware version and the free space of the CF card, the PBT execution count is displayed in the upper row and the error occurrence count is displayed in the lower row.

```
PBT EXECUTED:    xx
ERR.OCCURRED:    xx
```
← PBT execution count
← Error occur count

In the above state, pressing the A key shifts to the counter clear mode (P.90), and pressing the ↓ key shifts to the preset mode (P.88). Press the B key to return to the menu screen.

Property display function

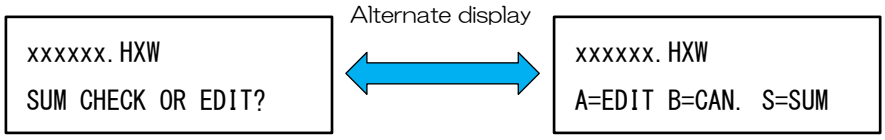
With the file or folder selected, pressing the B key displays the creation date and time and the size, and continues to display as long as you press the B key.
Release the B key to return to the file or folder display screen.

```
201x/xx/xx 00:00:00
      xxKbyte a-----
```
← Creation date
← Data size

Display checksum of Hxw file

If you press the S key while Hxw file is selected, it will be in checksum display and edit selection mode. If you press S key again, the checksum will be displayed.

Pressing the A key transitions to the Hxw edit mode, and pressing the B key cancels it.



Dump display

If you press the S key with something other than the following files selected, dump display will start.

Press the B key to cancel.

< Excluded files >

PBT file, Hxw file, MOT file, HEX file

5.3 One touch write

When you turn on the power, you can determine the execution script automatically, and you can execute the script with just one touch.

When executing the script with this function, it automatically creates a trace file (RESULT.TXT).

< Operation procedure >

Step1 Set [Auto Execute = on] in automatic execution of PBT file at power on (P.97) in option function setting.

Step2 Download one pair of PBT file and HXW file to be used on the CF ROOT.
(Select FILES on the menu screen and save to the root moved with → key.)

Step3 If Step1 and Step2 are already set up, the following screen will be displayed when turning on the power supply.

```
Sample
  Ready to Start...
```

← Name of the PBT file to be executed

Step4 Pressing the S key on the above screen starts executing the displayed PBT file. Pressing the B key or the ← key will cancel and the menu screen will be displayed.

Step5 After the script is finished, the execution result is displayed. Since the screen of Step3 is displayed again with any key input, it is possible to execute the script continuously.

Note :

- This function requires that a pair of PBT file and HXW file is stored on the CF ROOT. Even if [Auto Execute = on] is set, if the file is insufficient, a normal menu screen will be displayed.
- The created trace file is automatically overwritten every time.

5.4 Hxw file conversion function

It is possible to convert from Motorola S format and Intel HEX format to Hxw file by operation of EFP-RC2.

< Operation procedure >

Step1 Select the file of Motorola S format or Intel HEX format downloaded to EFP-RC2.

Step2 When you press the S key, the following display is displayed and creation of the Hxw file is started.

← Execution is completed when progress bar reaches the right end.

Step3 After completion, an Hxw file with the same name as the original file is created in the same folder.

Note :

- If an Hxw file with the same name already exists, this function will be canceled, so please execute it after deleting the Hxw file with the same name.
- When using an MCU in which the data flash area, program area, and boot area are arranged separately, program data for each area must be created. If you convert from one data you can not convert correctly with over capacity.

5.5 Edit Hxw file

It is possible to edit the Hxw file by operating the EFP-RC2.

< Operation procedure >

Step1 Move the folder from FILES and select the Hxw file to edit.

Step2 When you press the S key, a selection screen for checksum display and Hxw file edit is displayed.

Step3 When you press the A key, the following display is displayed and you can edit the Hxw file.

```
Set Adrs: 000000
Set Data: 00
```

← Start address of Hxw file

← The data of the displayed address

Step4 Use the ← and → key to manipulate the digit position of the address, and change the address value with ↑ and ↓ key. The displayed data follows the changed address.

Step5 After setting the address, pressing the A key moves the cursor to the data side and you can change the data. Like the address, change the data digit position with ← and → key, and change the data with ↑ and ↓ key.
To return the cursor to the address side, press the A key again.

Step6 Press the S key to display the next address. If the cursor is at the least significant digit of the address, the previous address is displayed each time the ↑ key is pressed.

Step7 When you press the B key, recalculate the CRC, write it to the CF card, and finish editing the Hxw file.

Note :

- Since you will directly change the data of the Hxw file, please be careful when using it.
- The data is changed when the value is changed with the ↑ or ↓ key. There is no cancellation function, so please manually restore the original data.
- It can not be edited if the folder is being moved using a link other than FILES.

5.6 Quick trace

Create the command execution result og the PBT file to be executed as a trace file.

< Operation procedure >

Step1 Select the PBT file to be executed and hold down the → key and press the S key.

Step2 Since execution confirmation screen is displayed, press S key to start execution.

Step3 After the script is finished, RPT_xxx.TXT is created in the same folder.

(xxx is a three-digit number)

The trace file when running RL78/G13 is shown below.

Sample trace file

```
RL78_EBPV.PBT                          ; Execution file name
[TRACE START]                          ; Start tracing

1:<t=37>                               ; Command executed
RL78 Group                             ; Processing content
T COMMAND OK!                          ; Success or failure of execution

2:<s=6>                                ; Command executed
Set 500Kbps!                           ; Processing content

3:<e,,1>                               ; Command executed
MCU ERASING NOW!                       ; Processing content
E COMMAND OK!                          ; Success or failure of execution
TIME = 1.129sec.                       ; Processing time

4:<b,0000,FFFF>                        ; Command executed
BLANK CHECKING NOW!                    ; Processing content
B COMMAND OK!                          ; Success or failure of execution
TIME = 1.135sec.                       ; Processing time

5:<p,RL78_sample.hxw,0000,FFFF,1>      ; Command executed
DATA PROGRAMING NOW!                   ; Processing content
P COMMAND OK!                          ; Success or failure of execution
TIME = 3.147sec.                       ; Processing time

6:<v,RL78_sample.hxw,0000,FFFF>        ; Command executed
DATA VERIFING NOW!                     ; Processing content
V COMMAND OK!                          ; Success or failure of execution
TIME = 3.084sec.                       ; Processing time

[TRACE END]                            ; End tracing
```

5.7 Counter preset function

Set the execution count of PBT, and decrement the counter by 1 each time PBT is executed. When the counter reaches 0, each counter value blinks for confirmation and an alarm sound is generated.

< Operation procedure >

Step1 Press the ← key on the menu screen, and shift to the firmware version display screen.

Step2 Press the S key, and shift to the execution times counter display screen.

Step3 When the ↓ key is pressed, the following counter mode change screen is displayed. Press S key to shift to the setting screen of PBT execution count. If you press the B key, it will be canceled and you will return to the counter display screen.

```
COUNTER-MODE CHANGE?
S=CHANGE B=CANSEL
```

Step4 On the setting screen below, it is possible to set the execution count of PBT from 0 to 59999.

Use the ← and → keys to select the digit to be changed, press the ↑ and ↓ keys to change the value, then press the S key to set the number of times to execute. If you press the B key, it will be canceled and you will return to the counter display screen.

When it is set to 0, it operates with the normal integration counter.

When it is set to 1 or more, it operates in preset mode.

```
Set PBT COUNT:00000
U/D=chg.  B=CAN S=SET
```

← PBT execution count setting value

Step5 After setting to the preset mode, the counter display screen switches to the display of the number of remaining execution and the number of error occurrences as shown below.

```
PBT REMAINS :    xx   ← Remaining PBT execution count
ERR.OCCURRED:    xx   ← Number of error occurrences
```

Note :

- When set to preset mode, the counter clear function is invalid.
- After the counter value of PBT becomes 0, it needs to set again the execution count.

5.8 Counter clear function

Initialize accumulated PBT execution counter. (It returns to 0.)

< Operation procedure >

Step1 Press the ← key on the menu screen to shift to the firmware version display screen.

Step2 Press the S key to move to the execution counter display screen.

Step3 Press the A key to display the following counter clear screen.

```
COUNTER CLEAR?
S=CLEAR B=CANSEL
```

Step4 When S key is pressed, PBT execution count and error count are initialized. If you press the B key, it will be canceled and you will return to the counter display screen.

Note :

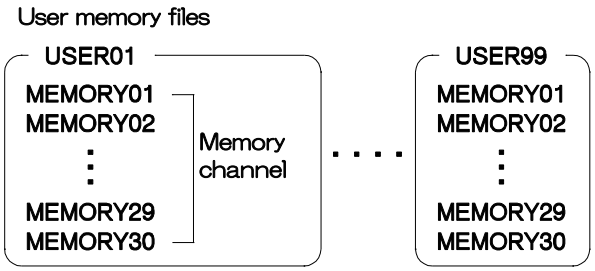
• When the counter preset function is used, the counter can not be initialized.

5.9 How to use user memory file

By storing the PBT file in the memory channel in the user memory file, it is possible to execute the PBT file immediately without searching the file or moving the folder.

There are 99 user memory files (USER01 - 99), and memory channels can be saved up to 30 (MEMORY01 - 30), respectively.

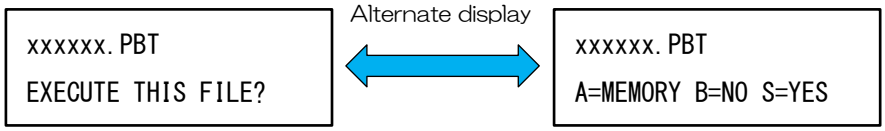
Multiple users can use individual user memory files by switching user memory files.



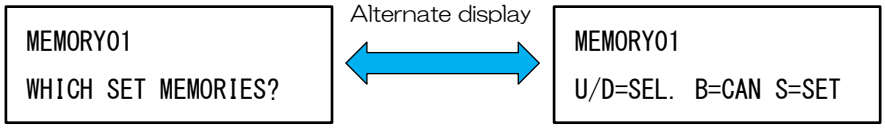
< Operation procedure >

(1)Save to memory channel

Step1 Select the PBT file to be stored and press the S key, the following screen will be displayed, press the A key.



Step2 Use the ↑ and ↓ keys to select the memory channel, and use the S key to decide to save the PBT file. Press the B key to cancel.

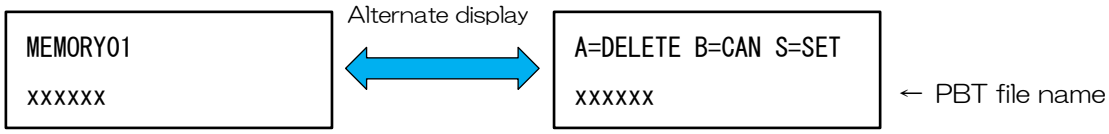


Note :

- A file with ← on the right side of the file name indicates that data is saved.
  If you save another data in a file marked with ←, the data will be overwritten.
- Once you overwrite the stored PBT file with download etc., the memory will be deleted.

(2)Execution of memory

Step1 Pressing the S key on the menu screen will display the saved memory channel number and PBT file name as shown below.



Step2 Use the ↑ and ↓ keys to select the memory channel and press the S key to start script execution.

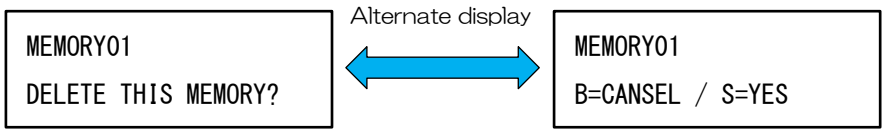
Step3 After the script is finished, the execution result is displayed. Since you return to the memory file selection screen of Step1 with one of the key inputs, you can execute it continuously. Press the B key to return to the menu screen.

(3)Erase memory

Step1 In the menu screen press S key to move to the memory file selection screen.

Step2 Select the memory file to erase with ↑ and ↓ keys and press the A key.

Step3 The following erase confirmation screen will be displayed, so when you press the S key, the memory file will be erased. Press the B key to return to the menu screen.



Note：

• If you are loading a user file with no data, pressing the S key is also invalid.

(4)Switch user memory file

Step1 When you press the B key on the menu screen, the user memory file being used is dislplayed. (Initial setting is USER01)

Step2 Select the user memory file to switch with ↑ and ↓ keys and press the S key to decision.

A file with ← on the right of the file name indicates that there is saved data of the PBT file.

When there is saved data

```
USER01← [READ]
FILE READ? DELETE?
```

When there is no saved data

```
USER02   [READ]
WHICH FILE TO READ?
```

(5)Copy user memory file

Step1 In the menu screen press Bkey to shift to the user memory file selection screen.

Step2 If there is saved data in the user memory file, pressing → key will switch from [READ] to [WRITE] as shown below. (If there is no data, the → key is invalid.)

```
USER01← [WRITE]
WHICH FILE TO WRITE?
```

Step3 Use the ↑ and ↓ keys to select the copy destination user memory file and press the S key to copy the stored contents.

Note :

- If you replace the CF card, the settings will be canceled so you need to set it again.
- When using memory execution, do not set the MCU type with EFP-RC2. Please set with T command in PBT file.

5.10 Option function setting

You can set optional functions by pressing the ↑ key and S key on the menu screen.

Every time you press the S key, the items to be set change in the following order. Please press the S key up to the item you want to set.

If you change the setting other than the forced reset of item 1, you will be stored in the EFP-RC2 main unit by pressing the S key.

Pressing the B key will exit the setting mode and return to the menu screen.

If there is no key input for 10 seconds for each item, exit setting mode and return to the menu screen.

Even if you turn off the power, this setting will be saved.

Setting items

(1) Forced reset of EFP-RC2 main unit
(2) Time to recover at the end of command
(3) Display time between commands
(4) Startup time of EFP-RC2
(5) Automatic execution of PBT file at power on
(6) Sum check of executable file at power on ← If (5) is off, skip the item.
(7) Automatic sun check at Hxw download
(8) Hxw file match
(9) ID code output of trace file
(10) Measure download time

■ (1) Forced reset of EFP-RC2 main unit

It is possible to reset and restart the EFP-RC2 main unit.

Step1 When entering the setting, the LCD flashes with the following display.

```
GO TO RESET?
  A=RESET S=CANSEL
```

Step2 Pressing the A key restarts the EFP-RC2 after reset. If automatic execution is permitted, it will wait for execution.

Step3 Press the S key to move to the next setting. Also, even if 5 seconds elapse without pressing anything, it will shift to the next setting.

■ (2) Time to recover at the end of command

It is possible to change the time to return to the original screen after PBT execution. Normally, the return time is set to 60 seconds, and the execution result of the final command is displayed during this time.

Step1 When the setting is started, it is displayed on the LCD as follows. (initial state)

```
Remain time = 60sec.
Set Remain time?
```

Alternate display ⟷

```
Remain time = 60sec.
U/D=SEL.  B=CAN S=SET
```

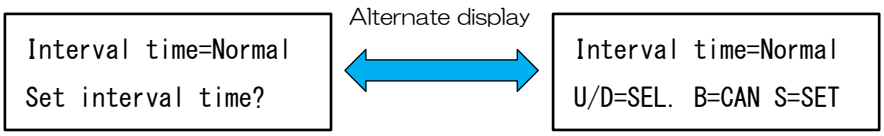
Step2 It is possible to set from 0 to 60 seconds with the ↑ and ↓ keys. If it is set to 0 second, the execution result is displayed until any key input is made.

Step3 Press the S key to complete the setting and move to the next setting. Pressing the B key cancels the setting and returns to the menu screen.

■ (3) Display time between commands

It is possible to shorten the execution time by omitting the execution result display time of each command.

Step1 When the setting is started, it is displayed on the LCD as follows. (initial state)



Step2 It is possible to set it to "Normal", "Short", "Non" with the ↑ and ↓ keys.

Normal : Display execution result for 1 second

Short : No execution result display, only sound effects occurred

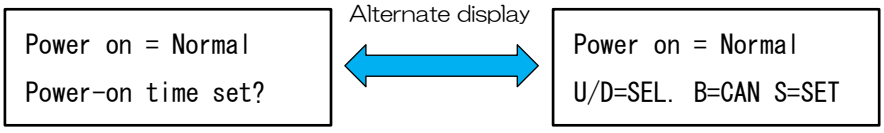
Non : No execution result display, no sound effects

Step3 Press the S key to complete the setting and move to the next setting. Pressing the B key cancels the setting and returns to the menu screen.

■ (4) Startup time of EFP-RC2

It is possible to shorten the time to start up by omitting display of the free space of the CF card and display of the MCU type setting of the main unit when the power of this machine is turned on.

Step1 When the setting is started, it is displayed on the LCD as follows. (initial state)



Step2 It is possible to set it to "Normal", "Short" with the ↑ and ↓ keys.

Normal : Displayed CF card free space etc. at startup

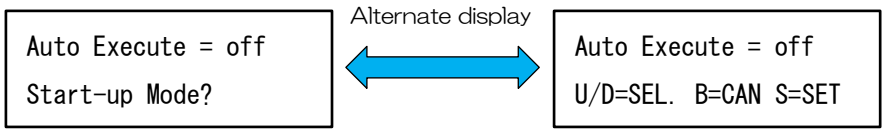
Short : Omit display of CF card free space etc. at startup

Step3 Press the S key to complete the setting and move to the next setting. Pressing the B key cancels the setting and returns to the menu screen.

■ (5) Automatic execution of PBT file at power on

It is possible to automatically execute the PBT file on CF route at power on.

Step1 When the setting is started, it is displayed on the LCD as follows. (initial state)



Step2 It is possible to set it "on" or "off" with the ↑ and ↓ keys.

on : Enable automatic execution of PBT file

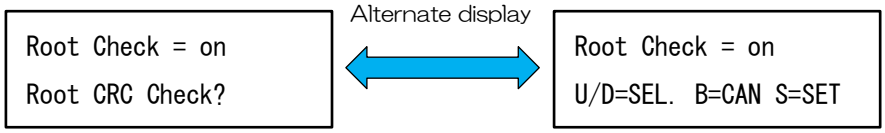
off : Disable automatic execution of PBT file

Step3 Press the S key to complete the setting and move to the next setting. Pressing the B key cancels the setting and returns to the menu screen.

■ (6) Sum check of executable file at power on

It is possible to set the automatic sum check of the Hxw file on the route of the CF card at power on.This item can be set only when automatic execution of PBT file is enabled.

Step1 When the setting is started, it is displayed on the LCD as follows. (initial state)



Step2 It is possible to set it "on" or "off" with the ↑ and ↓ keys.

on : allow sum check at startup

off : prohibit sum check at startup

Step3 Press the S key to complete the setting and move to the next setting. Pressing the B key cancels the setting and returns to the menu screen.

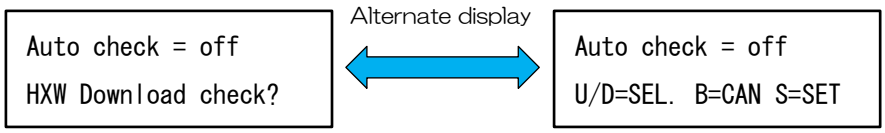
Note :

• When you set Sum check to permission, Sum check is executed every time when turning on the power, so if you use a large file, the startup time will be longer.

■ (7) Automatic sun check at Hxw download

It is possible to execute sum check automatically when downloading Hxw file.

Step1 When the setting is started, it is displayed on the LCD as follows. (initial state)



Step2 It is possible to set it ″on″ or ″off″ with the ↑ and ↓ keys.

on : Execute sum check at download

off : Do not execute sum check at download

Step3 Press the S key to complete the setting and move to the next setting. Pressing the B key cancels the setting and returns to the menu screen.

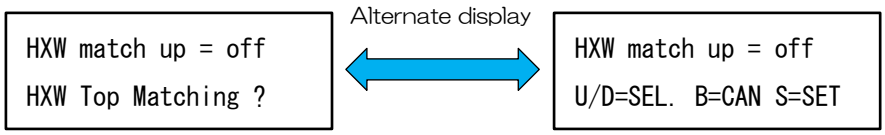
Note :

• If the setting of ″(6) Sum check of executable file at power on″ is off, checksum is executed even if this item is set to off.

■ (8) Hxw file match

It is possible to omit the Hxw file name specified by the program and verify command.

Step1 When the setting is started, it is displayed on the LCD as follows. (initial state)



Step2 It is possible to set it ″on″ or ″off″ with the ↑ and ↓ keys.

on : Hxw file name matching enable

off : Hxw file name matching disable

Step3 Press the S key to complete the setting and move to the next setting. Pressing the B key cancels the setting and returns to the menu screen.

【 Behavior of ″ HXW match up = on ″ 】

Search the file that matches the specified Hxw file name from the execution folder and execute the first matching Hxw file as the target file. (Ignores the character following the specified Hxw file name.)

The contents of the PBT file and the executable Hxw file at that time are shown below.

Content described in PBT file	Hxw file name	Executability
P,abcd.hxw,F000,FFFF (The same applies to the V command)	abcd.hxw	◎
	abcd012.hxw	◎
	abcdefg.hxw	◎
	abc.hxw	×
	abc01.hxw	×
	xyz.hxw	×

◎ : Executable × : Not executable

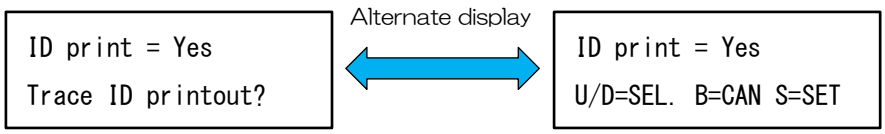
Note :

• Please note that if there are multiple matching files in the execution folder, the first file found will be used.

■ (9) ID code output of trace file

When using the quick trace function, it is possible to output a trace file by hiding the ID code.

Step1 When the setting is started, it is displayed on the LCD as follows. (initial state)



Step2 It is possible to set it "Yes" or "No" with the ↑ and ↓ keys.

Yes : Display ID code

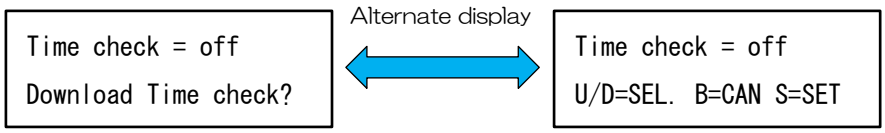
No : Hide ID code (All "5Fh". ("_" underscore code))

Step3 Press the S key to complete the setting and move to the next setting. Pressing the B key cancels the setting and returns to the menu screen.

■ (10) Measure download time

Measure and display the download time of the file.

Step1 When the setting is started, it is displayed on the LCD as follows.（initial state）



Step2 It is possible to set it "on" or "off" with the ↑ and ↓ keys.

on：Measure downloaded time of next download

off：Do not measure download time

Step3 Press the S key to complete the setting and returns to the menu screen. Pressing the B key cancels the setting and returns to the menu screen.

【 Example of execution result display 】

```
DOWNLOAD TIME =
  2.18sec.
```

By entering any key while displaying the measurement time result, you will return to the original display screen.

Note：

- Time measurement measures and displays only the first download after setting. When measuring again, it is necessary to set it again.
- If you execute the PBT file first after setting the time measurement to ON, the time measurement setting will be canceled.
- It is not displayed when multiple files are downloaded by dragging and dropping.

5.11 Secure function of EFP-RC2

It is possible to set the ID code on the EFP-RC2 and make it impossible to read the internal data of the CF card.

Setting and releasing of secure function can be set by operation of EFP-RC2 main unit or RC-downloader operation.

There are the following two kinds of secure functions of EFP-RC2.

(1) Upload prohibition function (SECURITY LEVEL 1)

Uploading of data other than execution result log file is prohibited by setting ID code on EFP-RC2. There is no data download restriction, but firmware version upgrade and version down can not be done.

(2) Script execution count setting function (SECURITY LEVEL 2)

In addition to the function of SECURITY LEVEL 1, it is possible to set the number of script execution count. If the set number of writes are completed correctly, the data in the CF card will be deleted and than writing will not be possible.

With SECURITY LEVEL 2, data other than the data set by the PBT file automatic execution function can not be executed. For how to set data, refer to ″5.3 One touch write″ (P.84).

Function comparison by security level

Function	Security level		
	No security	LEVEL1	LEVEL2
Upload	No limit	Execution result log only	Execution result log only
Download	No limit	No limit	Can not
Firmware version change	Changeable	Can not change	Can not change
Executable PBT	No limit	No limit	Only on CF route
Execution count limit	Can not be set	Can not be set	Can be set

Note :

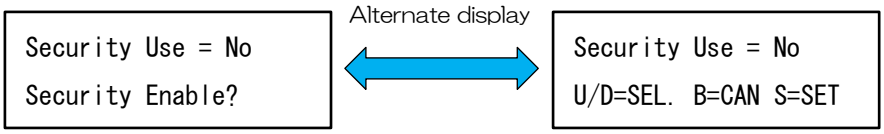
- If you enable the secure function, the CF card will be scrambled and it will be unusable with other EFP-RC2. Also, it can not be read by a CF card reader or the like.
- If you attempt to read a scrambled CF card with a CF card reader etc., a format confirmation screen will be displayed.
  If you format the disk as it is, there is a possibility that formatting can not be done correctly, so please do not format it.
  When reading with a CF card reader etc, please use after canceling secure function.

5.11.1 How to set / cancel secure function on EFP-RC2

(1) Setting of upload prohibition function

■No security → SECURITY LEVEL1

Step1 Press the ↑ key and A key on the menu screen to display the following security setting screen. (initial state)



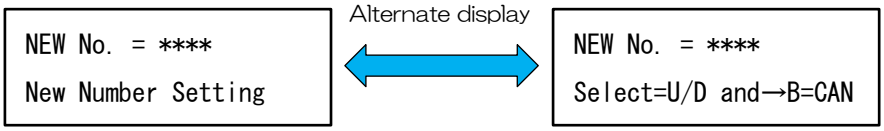
Step2 It is possible to set it "Yes" or "No" with the ↑ and ↓ keys.

Yes : Set secure function

No : Do not use secure function

Step3 Select "YES" and press the S key to display the ID code input screen. If you press the S key with the B key or "No" selected, it will shift to ON / OFF setting of the buzzer sound.

Step4 When entering 4 digit ID code on the screen below and pressing → key or S key to confirm, EFP-RC2 is reset and SECURITY LEVEL1 setting is completed.



＜ Key operation explanation of ID code input screen ＞

↑・↓ key : Numeric selection of 0 to 9

→ key : Move to the next digit, determine the ID code

← key : Re-enter ID code

B key : Cancel ID code setting, shift to ON / OFF setting buzzer sound

S key : Determination of ID code (Valid only when inputting 4digit ID code)

Note :

・"0000" can not be set as the ID code of the secure function.

(2) Setting of script execution count setting function

■SECURITY LEVEL1 → SECURITY LEVEL2

Step1 Set [Auto Execute = on] in option function setting. Refer to "(5) Automatic execution of PBT file at power on" (P.97).

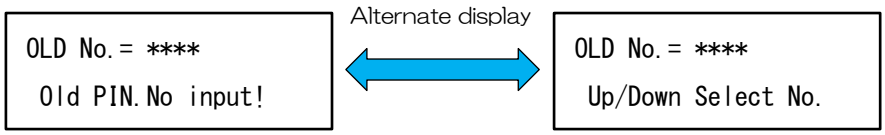
Step2 Download one pair of PBT file and HXE file to be used on the CF route.
(Select "FILES" on the menu screen and save it in the route moved with → key.)

Step3 Press the ← key on the menu screen to shift to the firmware version display screen.

Step4 Press the S key to move to the display screen of the counter of execution count.

Step5 Pressing the ↓ key displays the counter mode change screen, so press the S key.

Step6 Enter the ID code set in the EFP-RC2 on the following screen.



< Key operation explanation of ID code input screen >

↑・↓ key : Numeric selection of 0 to 9

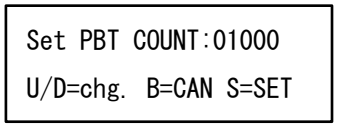
→ key : Move to the next digit, determine the ID code

← key : Re-enter ID code

B key : Cancel ID code setting, shift to ON / OFF setting buzzer sound

S key : Determination of ID code (Valid only when inputting 4digit ID code)

Step7 When the correct ID code is entered, the following screen is displayed, so set the number of PBT executions from 1 to 50000.



← PBT execution count setting value
(eg, set to 1000 times)

< Key opration explanation on the number of exection times input screen >

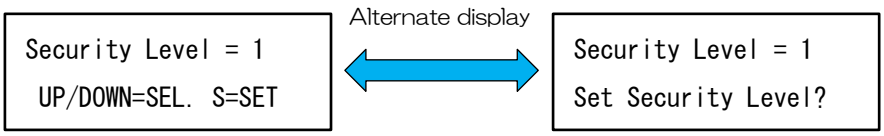
↑・↓ key : Numeric selection of 0 to 9

←・→ key : Selection of digit of execution count value

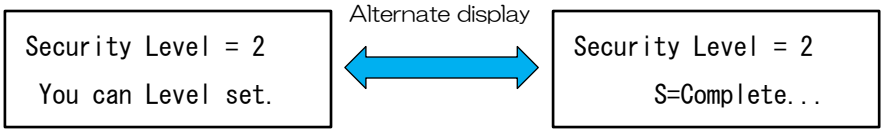
B key : Cancel execution count setting, return to counter display screen

S key : Determine the number of executions

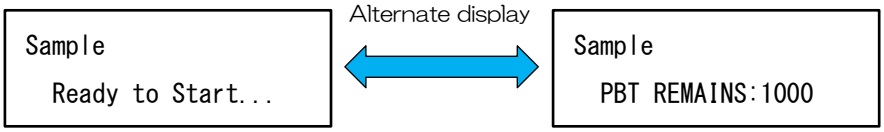
Step8 When the execution count is set, the following security level setting screen is displayed.



Step9 Press the ↓ key to set the security level to 2, and when you decide with the S key, EFP-RC2 is reset and SECURITY LEVEL2 setting is completed.
If you decide at security level 1, it will operate as counter preset function of SECURITY LEVEL1.



Step10 When setting of SECURITY LEVEL2 is completed, the PBT file name to be executed and the number of remaining execution times are displayed as shown below, and it waits for input of S key.



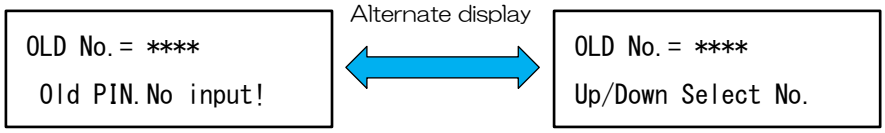
Note：

- When PBT file automatic execution is invalid, or when Hxw file and PBT filw are not downloaded on the CF card route, the security level setting screen will not be displayed. It works as counter preset function of SECURITY LEVEL1.
- When set to SECURITY LEVEL2, secure function can not be canceled with EFP-RC2 main unit.
- With SECURITY LEVEL2, data can not be downloaded. To change data, ID code authentication or secure function must be canceled.

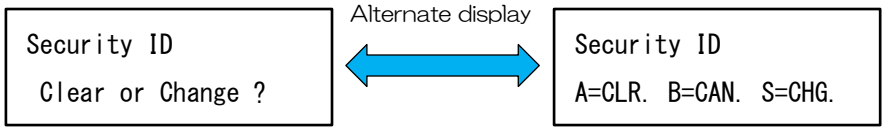
(3) Cancel of secure function

■SECURITY LEVEL1 → No security (SECURITY LEVEL2 can not be canceled)

Step1 Press the ↑ key and A key on the menu screen to display the following ID authentication screen.



Step2 After entering the correct ID code and making the decision, the following screen is displayed and pressing the A key will cancel the secure function.



＜ Description of key operation after ID code authentication ＞

A key : Cancel secure function

B key : Allow ID code authentication only, Switch to ON / OFF setting of buzzer sound

S key : Move to change ID code setting

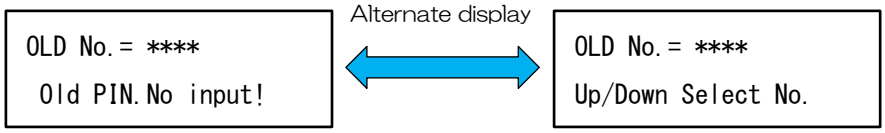
Note :

- Please be aware that if you mistype the ID code three consecutive times, ID code authentication can not be performed for one hour thereafter. Functions other than ID code authentication can be used.
- If you permit only ID code authentication, data can be uploaded until the power of EFP-RC2 is turned off or the main unit is reset.
- If you set an ID code using alphabet characters with RC-Downloader, you can not cancel secure function with EFP-RC2 main unit.

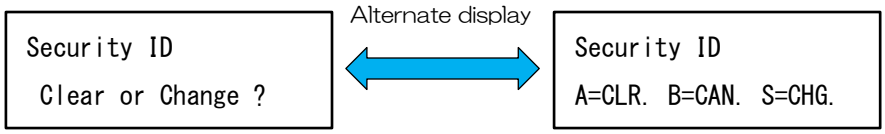
(4) Change of ID code

■SECURITY LEVEL1（SECURITY LEVEL2 can not be canceled）

Step1 Press the ↑ key and A key on the menu screen to display the ID authentication screen.

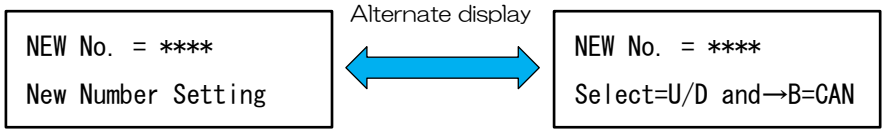


Step2 After entering the correct ID code and making the decision, the secure function cancellation and ID change confirmation screen will be displayed.



Step3 When you press the S key, a new ID code input screen is displayed as shown below.

After entering 4 digit ID code and pressing → key or S key, EFP-RC2 is reset and ID code change is completed.



Note：

- ″0000″ can not be set as the ID code of the secure function.
  If you enter ″0000″ in the new ID code, the secure function will be canceled.
- Please be aware that if you mistype the ID code three consecutive times, ID code authentication can not be performed for one hour thereafter. Functions other than ID code authentication can be used.
- ID code can not be changed on the EFP-RC2 main unit when ID code using alphabet characters is set with RC-Downloader.

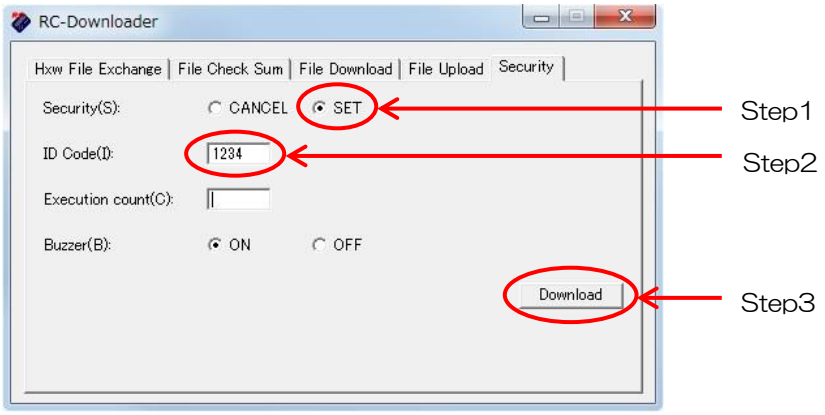
5.11.2 How to set / cancel secure function in RC-Downloader

(1) Setting of upload prohibition function

Step1 Open the Security tab of RC-Downloader and select "SET" of Security.

Step2 Enter an arbitrary ID code in the ID Code field. (up to 4 alphanumeric characters)

Step3 When you click the Download button, the secure function setting data is transferred to EFP-RC2.



Step4 After the data transfer is complete, EFP-RC2 is reset and SECURITY LEVEL1 setting is completed.

Note :

- "0000" can not be set as the ID code of the secure function.
- When alphabet characters are used for ID code, cancellation of secure function and change of setting can not be done with EFP-RC2 main unit.

(2) Setting of script execution count setting function

Step1 Set [Auto Execute = on] in option function setting. Refer to ″(5) Automatic execution of PBT file at power on″ (P.97).

Step2 Download one pair of PBT file and HXE file to be used on the CF route. (Select ″FILES″ on the menu screen and save it in the route moved with → key.)

Step3 Open the Security tab of RC-Downloader and select ″SET″ of Security.

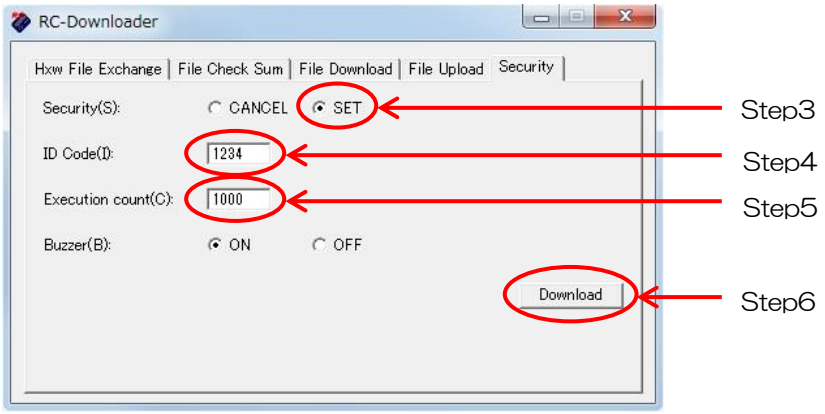
Step4 Enter an arbitrary ID code in the ID Code field. (up to 4 alphanumeric characters)

When security is not set : Any ID code

For security level : Set ID code

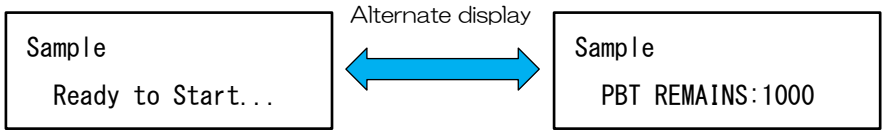
Step5 In the Execution count field, enter the number of executions. (1 to 50,000 half-width numbers)

Step6 When you click the Download button, the secure function setting data is transferred to EFP-RC2.



Step7 After the data transfer is complete, EFP-RC2 is reset and SECURITY LEVEL2 setting is completed.

Step8 When setting of SECURITY LEVEL2 is completed, the PBT file name to be executed as below and the number of remaining execution times are displayed on EFP-RC2 and it waits for input of S key.



Note :

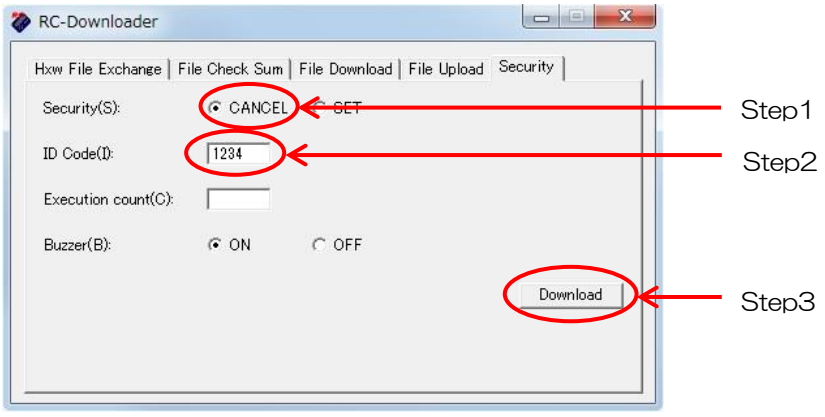
- When PBT file automatic execution is invalid, or when Hxw file and PBT filw are not downloaded on the CF card route, it works as counter preset function of SECURITY LEVEL1.
- When set to SECURITY LEVEL2, secure function can not be canceled with EFP-RC2 main unit.
- With SECURITY LEVEL2, data can not be downloaded. To change data, ID code authentication or secure function must be canceled.

(3) Cancel of secure function

Step1 Open the Security tab of RC-Downloader and select "CANCEL" of Security.

Step2 Enter the ID Code set in the ID code field.

Step3 When you click the Download button, the secure function setting data is transferred to EFP-RC2.



Step4 After the data transfer is complete, EFP-RC2 is reset and the cancellation of secure function is completed.

Note :

- If you enter the number in Execution count field, secure function can not be canceled.
- Please be aware that if you mistype the ID code three consecutive times, ID code authentication can not be performed for one hour thereafter. Functions other than ID code authentication can be used.

(4) Change of setting of secure function

Step1 Open the Security tab of RC-Downloader and select "SET" of Security.

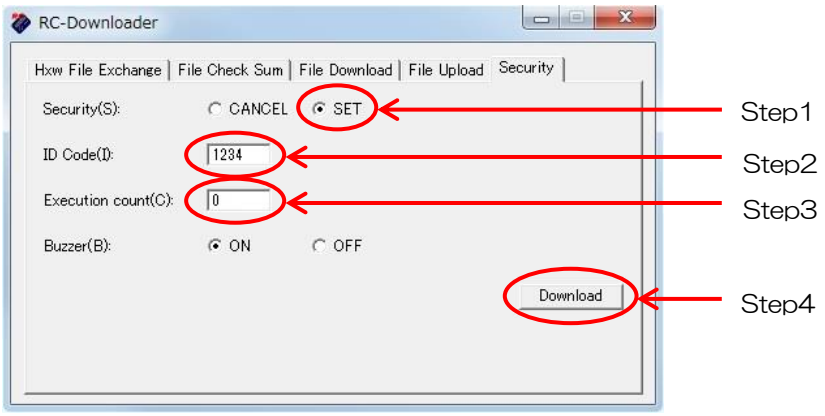
Step2 Enter the ID Code set in the ID code field.

Step3 In the Execution count field, enter the number of executions.

To change from SECURITY LEVEL2 to SECURITY LEVEL1 : Enter 0

To change the execution count while keeping SECURITY LEVEL2 : Enter 1 to 50,000

Step4 When you click the Download button, the secure function setting data is transferred to EFP-RC2.



Step5 After the data transfer is completed, EFP-RC2 is reset and the setting change of the secure function is completed.

Note :

• Please be aware that if you mistype the ID code three consecutive times, ID code authentication can not be performed for one hour thereafter. Functions other than ID code authentication can be used.

5.11.3 Operation after secure function setting

(1) Upload prohibition function (SECURITY LEVEL1)

Uploading of data other than the execution result log file is prohibited, but the others can be used like the EFP-RC2 with no secure function set.

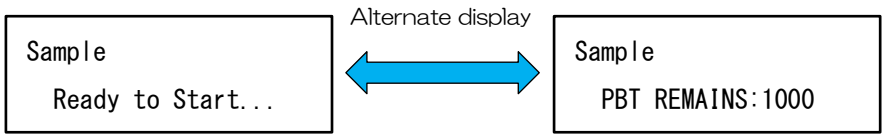
Please refer to ″2.6 Execute (write) the script file″ (P.18).

(2) Script execution count setting function (SECURITY LEVEL2)

With SECURITY LEVEL2, uploading of data other than the download and execution result log file is prohibited, and it is only possible to execute the data set by automatic execution of PBT file for the set number of times.

When the specified number of normal writes are completed, all data in the CF card will be deleted.

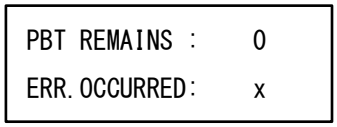
Step1 When SECURITY LEVEL2 setting is completed, the PBT file name to be executed and the remaining execution count are displayed in EFP-RC2 as shown below.



Step2 Press the S key to execute the PBT file.

Step3 When the PBT file is successfully executed, the number of PBT REMAINS decreases once.

Step4 After writing the set number of times, when S key is pressed, PBT REMAINS becomes 0 and a warning tone is generated as shown in the screen below.



Step5 Press the S key or B key to start erasing data on the CF card. Since execution result log file can not be uploaded when data is deleted, please execute upload before erasing.

Step6 When the data erase of the CF card is completed, the menu screen is displayed and the secure function of EFP-RC2 is canceled.

(3) How to check the security level

■ Check on LCD of EFP-RC2

① If "Normal" is set in the time setting at EFP-RC2 startup, the security level is displayed when EFP-RC2 is started.

② If it is set to "Short", you can check with the following procedure.

Step1 Press the ← key on the menu screen to display the firmware version and free space on the CF card.

Step2 Next, pressing the ↓ key displays the CF card ID in the upper row of the LCD and the security level in the lower row.

(Displayed only when SECURITY LEVEL1)

xxxxxxxxxxxxxxxxxxxx	← CF card ID
Security Level = 1	← Security level

■ Confirm with execution result log file

Step1 Upload the execution result log file with RC-Downloader.

Step2 When you refer to the execution result log file, the following contents are displayed at the end.

The current security level is displayed below the firmware version.

Security level 1	Security level 2
-Machine Report-	-Machine Report-
EFPRC2 Ver2.00.00 ← Firmware version	EFPRC2 Ver2.00.00 ← Firmware version
SECURITY LEVEL 1 ← Security level	SECURITY LEVEL 2 ← Security level
[COUNTER]	[COUNTER]
PBT EXECUTED: 5 ← PBT execution count	PBT REMAINS: 99 ← Remaining execution count
ERR OCCURRED: 0 ← Error occurre count	PBT EXECUTED: 1 ← PBT execution count
Total Executed:	ERR OCCURRED: 0 ← Error occurre count
5 Counts ← Total execution count	————————
————————	

Note :

• It is not displayed when the secure function is not set.

5.11.4 Security move function

The EFP-RC2 and the CF card with the secure function set will operate only the originally set. This function is to move the CF card while keeping the security level and the set number of execution times and to continue using the secure function with another EFP-RC2.

(1) Operating procedure with EFP-RC2

Step1 Hold down the A, B, and S keys of EFP-RC2 and turn on the power.

Step2 Since the screen below is displayed, press the A key to execute.

```
SECURITY PROG. MOVE?
  A=YES B/S=CANSEL
```

Step3 After the EFP-RC2 is reset, confirm that the following screen is displayed, turn off the power, remove the CF card from EFP-RC2.

```
SECURITY PROG.= MOVE          Alternate display          SECURITY PROG.= MOVE
  READ OR MOVE?                                          U/D=SELECT S=SET
```

Step4 Attach the removed CF card to another EFP-RC2.

Step5 When power on to EFP-RC2, the above screen is displayed.

Step6 After selecting "READ" with the ↑ and ↓ keys as shown below and pressing the S key, the EFP-RC2 is reset and the move of the secure function setting is completed.

```
SECURITY PROG.= READ
 U/D=SELECT S=SET
```

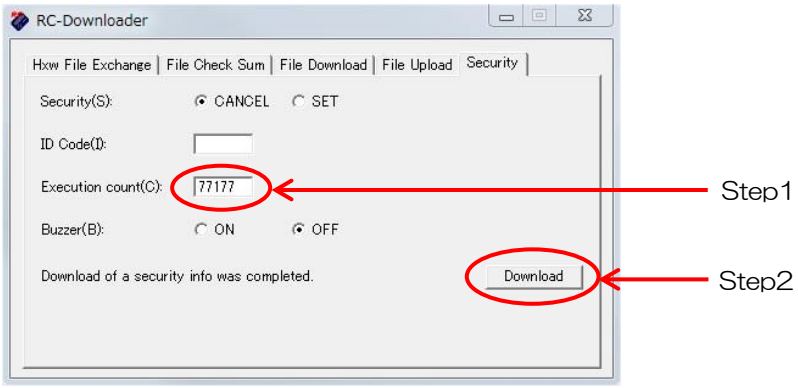
Note :

- If EFP-RC2 of the move destination does not support the secure function, an error will occur.
- If EFP-RC2 of the move destination has already set the secure function, an error will occur.

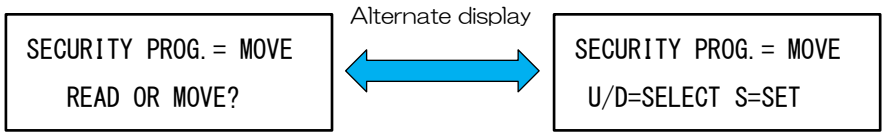
(2) Operating procedure with RC-Downloader

Step1 Open the Security tab of RC-Downloader and enter "77177" in Execution count field.

Step2 Click the Download button.



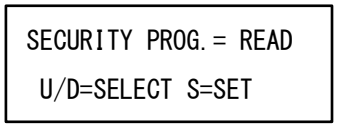
Step3 After the EFP-RC2 is reset, confirm that the following screen is displayed, turn off the power, remove the CF card from EFP-RC2.



Step4 Attach the removed CF card to another EFP-RC2.

Step5 When power on to EFP-RC2, the above screen is displayed.

Step6 After selecting "READ" with the ↑ and ↓ keys as shown below and pressing the S key, the EFP-RC2 is reset and the move of the secure function setting is completed.



Note :

- If EFP-RC2 of the move destination does not support the secure function, an error will occur.
- If EFP-RC2 of the move destination has already set the secure function, an error will occur.

5.12 ON / OFF setting of buzzer sound

It is possible to mute the buzzer sound of each command that occurs during script execution of EFP-RC2.

The buzzer ON / OFF operation after setting is as shown in the table below.

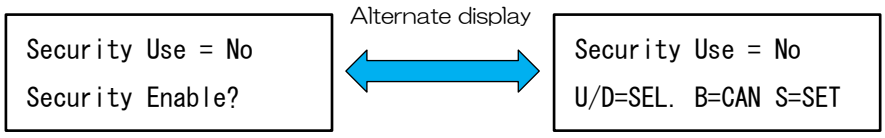
Buzzer sound	Script execution			RC-Downloader	
	Start	Command execution	Finish	Download	Upoad
ON (Default)	○	○	○	○	○
OFF	○	×	○	○	○

○ : To sound, × : Does not sound

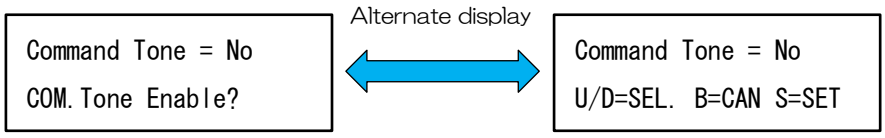
5.12.1 How to set using EFP-RC2

■No security

Step1 Press the ↑ key and A key on the menu screen to display the following security setting screen. (initial state)



Step2 If you press the B key and cancel the security setting, the buzzer sound setting screen will be displayed. (It is the same even if you press the S key with "NO" selected.)



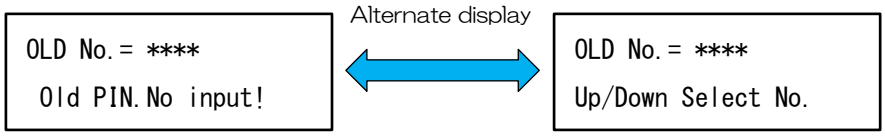
Step3 Press the ↑ and ↓ keys to select "YES" and "NO", and press the S key to set the ON / OFF of buzzer sound.

YES : Set the buzzer sound to ON

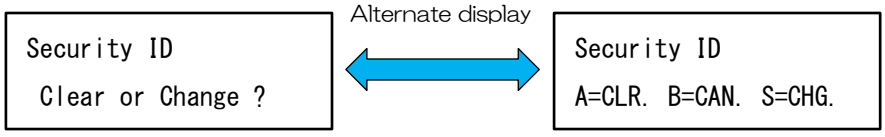
NO : Set the buzzer sound to OFF

■SECURITY LEVEL1

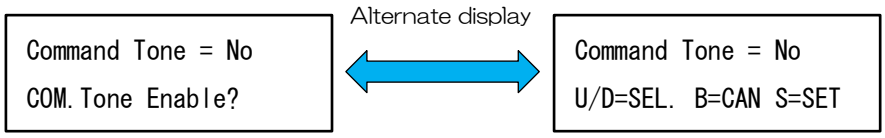
Step1 Press the ↑ and A keys on the menu screen to display the following ID authentication screen.



Step2 After entering the correct ID code and making the decision, the following screen will be displayed.



Step3 When you press the B key, only the ID code authentication is permitted and the screen for setting the buzzer sound is displayed.



Step4 Press the ↑ and ↓ keys to select "YES" and "NO", and press the S key to set the ON / OFF of buzzer sound.

YES : Set the buzzer sound to ON

NO : Set the buzzer sound to OFF

5.12.2 How to set using RC-Downloader

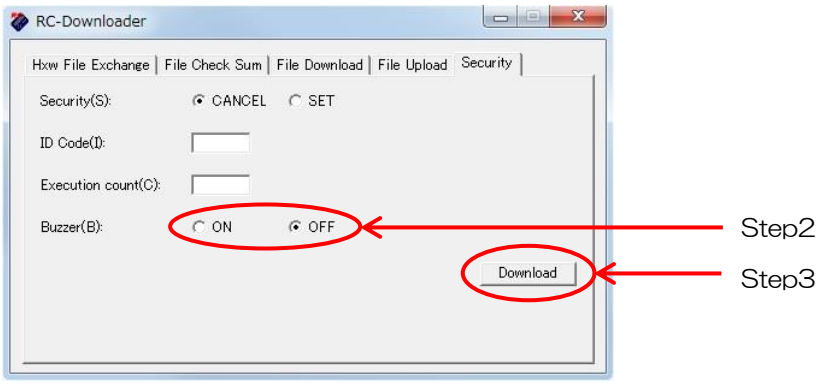
■No security

Step1 Open the Security tab of RC-Downloader.

Step2 Select Buzzer ON / OFF.

Step3 When you click the Download button, buzzer sound setting data is transferred to EFP-RC2.

Step4 EFP-RC2 is reset after completion of data transfer, and the buzzer sound setting is completed.



■SECURITY LEVEL1 / LEVEL2

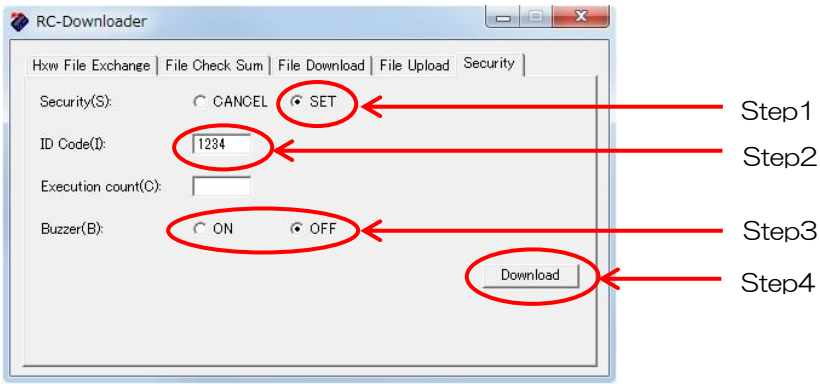
Step1 Open the Security tab of RC-Downloader and select "SET" of Security.

Step2 Enter the ID Code set in the ID code field.

Step3 Select Buzzer ON / OFF.

Step4 When you click the Download button, buzzer sound setting data is transferred to EFP-RC2.

Step5 EFP-RC2 is reset after completion of data transfer, and the buzzer sound setting is completed.



5.13 Change file name

It is possible to change the names of various files and folders.

< Operation procedure >

Step1 Move the cursor to the file and folder to be modified and press the ↑ key while holding down the B key to enter the name change mode.

Step2 Selecting the character you want to change with → and ← keys, and you can change the character with the ↑ and ↓ keys.

Alphabetic character are A key and it is possible to convert case.

To increase the number of characters in the folder name, move the cursor to the rightmost blank and press the ↑ and ↓ keys to insert the character A. To reduce the number of characters, move the cursor to the rightmost blank and press the A key to erase the last character.

To increase the number of characters in the file name, move the cursor to the dot ″.″ of the extension and press the ↑ and ↓ keys to insert the character A. To reduce the number of characters, move the cursor to the dot ″.″ of the extension and press the A key to erase the last character.

Step3 After completing the change, press the S key to change the name. Press B key to cancel.

Note :

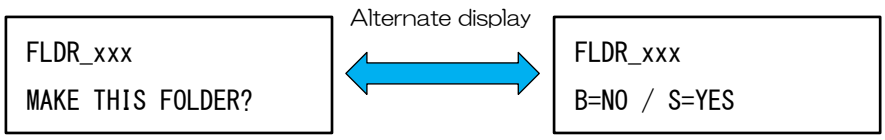
- If the same name file exists, ″ ERROR! USED NAME!″ is displayed, then the screen returns to the edit screen.
- Changing the files and folder names stored in the user memory file will erase the stored memory, so you need to set it again.
- If you change the folder name of the link destination, the link destination will not open from the menu, so you need to set it again.
- In case of file name change, the number of characters of the extension can not be changed.

5.14 How to create the folder

It is possible to create folders for file management.

< Operation procedure >

Step1 If you press the B key and S key at the same time in an arbitrary folder, the folder name to be created is displayed as shown below.



(Numbers from 001 to 255 are sequentially allocated to xxx.)

Step2 It is possible to edit the folder name on the screen above.
Selecting the character you want to change with → and ← keys, and you can change the character with the ↑ and ↓ keys.
Alphabetic character are A key and it is possible to convert case.
To increase the number of characters in the folder name, move the cursor to the rightmost blank and press the ↑ and ↓ keys to insert the character A. To reduce the number of characters, move the cursor to the rightmost blank and press the A key to erase the last character.

Step3 After setting the folder name, press the S key to create the folder. Pressing the B key cancels the folder creation and returns to the previous screen.

To change the folder name after folder creation, refer to "5.13 Change file name" (P.120).

Note :

- Folder name must be 1 to 18 characters.
- If the same name file exists, "ERROR! USED NAME!" is displayed, then the screen returns to the edit screen.
- If you create without editing the folder name, you can not create more than 255 folders in the same folder.
- If there is no free space on the CF card or the folder can not be created due to an error in the file structure etc, "ERROR! NOT CREATED!" is displayed and creation is canceled.

5.15 How to erase the file

Delete various files and folders. There are three ways to erase.

(1) Individual erase

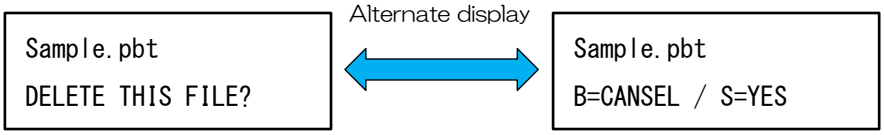
(2) Clear all files in the folder

(3) Clear all trace files at once

< Operation procedure >

(1) Individual erase

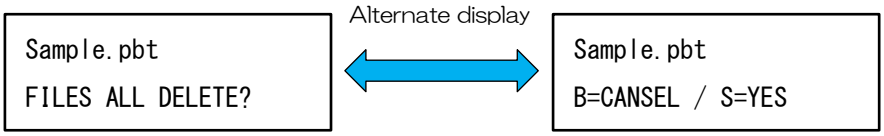
Step1 Select the file or folder you want to erase and press the A key, the following erase confirmation screen will be displayed.



Step2 Press the S key to erase the selected file or folder. Pressing the B key will cancel and return to the previous screen.

(2) Clear all files in the folder

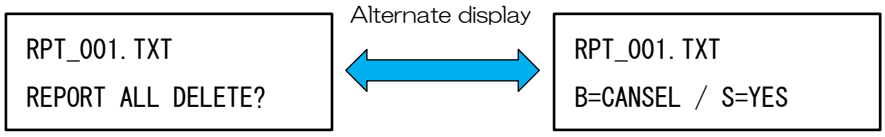
Step1 If you select any file in the folder and press A key and B key at the same time, the following erase confirmation screen will be displayed.



Step2 Pressing the S key to erase all the files in the folder. (The folder is not erase.)
Pressing the B key cancels and returns to the previous screen.

(3) Clear all trace files at once

Step1 Select the trace file, hold down the → key and press the A key, the following erase confirmation screen will be displayed.



Step2 When you press the S key, all the trace files in the folder are erased. Pressing the B key cancels and returns to the previous screen.

Note：

• To erase the file, it must be expanded from ″FILES″ on the menu screen. If you use a link other than ″FILES″ to open the folder, erase operation will be invalid.

5.16 Firmware update

The procedure for updating the firmware of EFP-RC2 is explained.

< Operation procedure >

Step1 Please download ProductCD data from our site and unzip the downloaded ZIP file to an arbitrary place.
ProductCD data of EFP-RC2 can be downloaded from the following site.

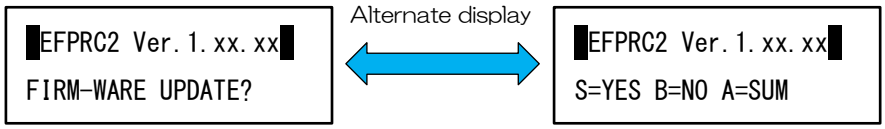
http://www.suisei.co.jp/download_e/productdata_efprc2_j.html

Step2 Please connect EFP-RC2 and PC with USB cable and start RC-Downloader.exe.

Step3 Select "5:FIRM UPDATE" on the menu screen of EFP-RC2 and move to the FIRMWARE folder with the → key.

Step4 Open the File Download tab of RC-Downloader and download the EFP-RC2 firmware in the ProductCD data.

Step5 Select the firmware downloaded to EFP-RC 2 and press the S key, the following screen will be displayed.



Step6 When you press the A key, start the update. When S key is pressed, the checksum of the firmware is displayed, and pressing the B key will cancel and return to the previous screen.

Note :

- Do not turn off the power while firmware is being updated. If the power is disconnected during the update, EFP-RC2 will break and repair will be required.

Firmware backup function
EFP-RC2 automatically saves the current firmware when updating the firmware. If a malfunction occurs after updating and you want to return to the original firmware, press the A, B, S keys at the same time and turn on the power.

5.17 About external control signal

The EFP-RC2 has ″S key″, ″Running display″, and ″Error display″ signals on the target connector. By using these signals, write operation can be performed by external control. Figure 5.1 shows an example of external control signal connection.

The following signals are added to the terminals (6, 7, 13 pins) that are not used as signals in the EFP-S2 etc in the target connection connector of EFP-RC2.

6pin : Error signal (Err)

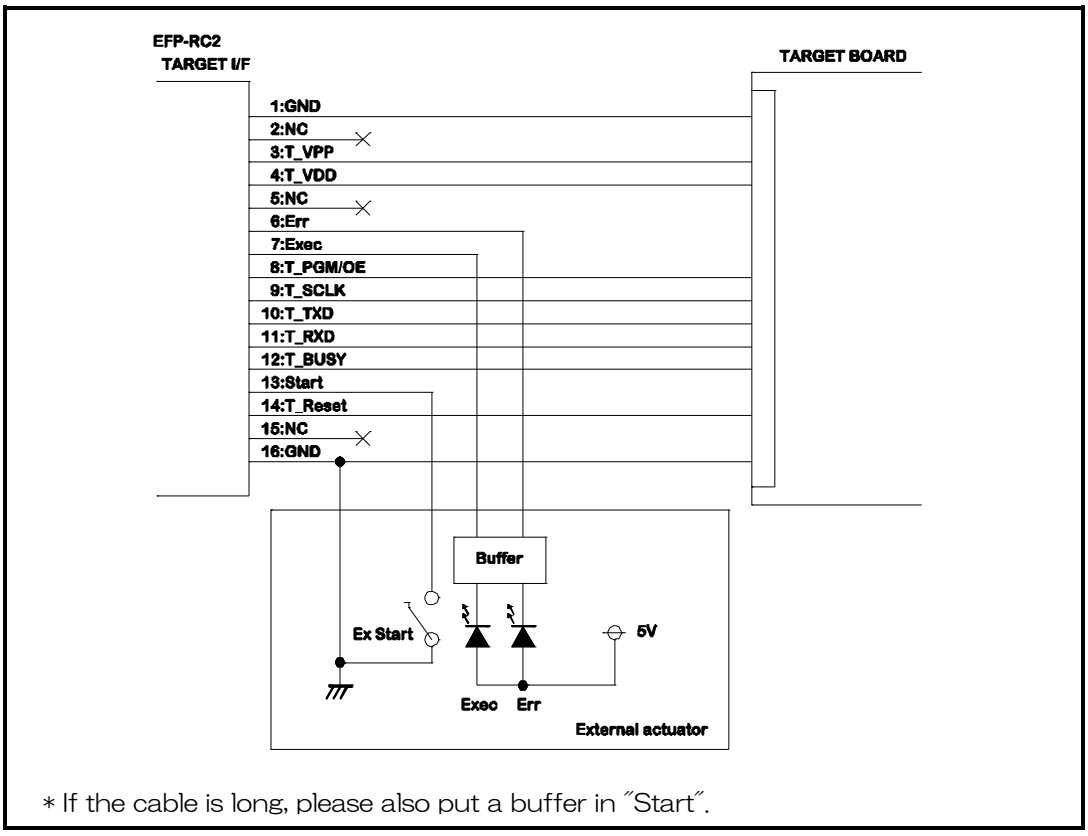
It becomes ″L″ when an error occurs during script execution. Press S key or restore with exit timer.

7pin : Executing signal (Exec)

It becomes ″L″ during script execution and goes ″H″ at the finish.

13pin : External start (Start)

Execute the script externally with the same function as the ″S key″ of EFP-RC2.



＊If the cable is long, please also put a buffer in ″Start″.

Figure 5.1 Example of external control signal connection

6. RC-Downloader Detailed explanation

RC-Downloader is an application that creates an Hxw file and executes data transfer between the built-in CF card and the PC in EFP-RC2.

6.1 Create Hxw file

In the Hxw file conversion tab, it is possible to convert the user program (HEX / MOT) to Hxw file.

The Hxw file is a file extracted from the data part of the user program and developed in binary format.

< Procedure for creating Hxw file >

Step1 Set the user program to convert to the Hxw file in the "Hex file" field.

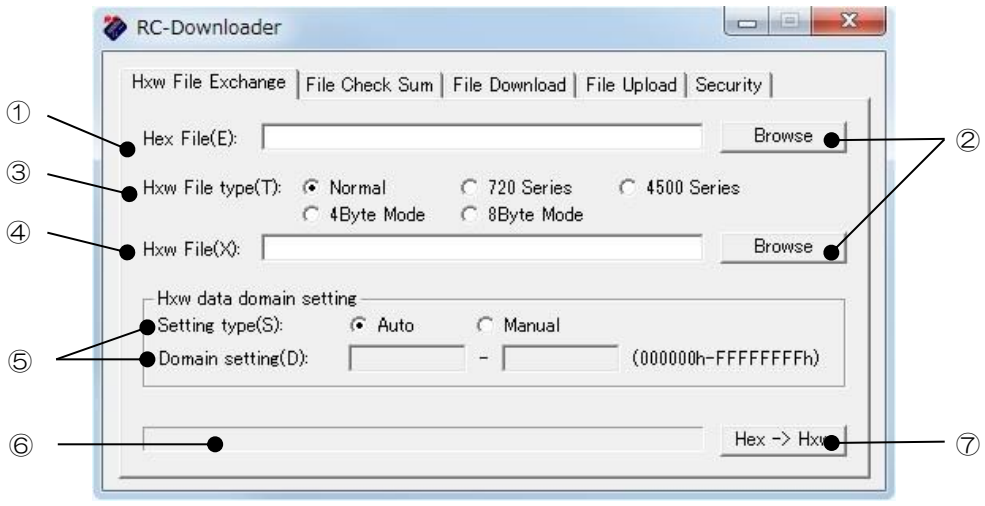
Step2 Select Hxw file type.

Step3 Enter the Hxw file to be created in the "Hxw file" field.

Step4 Set the setting mode and area range of Hxw area setting.

Step5 Click the "Hex -> Hxw" button (⑦), and when the progress bar reaches the right end, the creation of the Hxw file is completed.

Hxw file conversion tab menu



<table>
<tr><th>No.</th><th>Dialog item function</th></tr>
<tr><td>①</td><td>Enter the user program to be converted.</td></tr>
<tr><td>②</td><td>You can display the file section dialog for file reference.</td></tr>
<tr><td>③</td><td>Specify Hxw file creation format.
Specify the Hxw file type according to the MCU series to be used.
Normal : Normally, specify "Normal".
720 Series : 4BitMCU 720 family for 720 series Hxw file
4500 Series : 4BitMCU 720 family for 4500 series Hxw file
4Byte Mode : 8BitMCU 740 family for QzROM 4Byte mode Hxw file
8Byte Mode : 8BitMCU 740 family for QzROM 8Byte mode Hxw file</td></tr>
<tr><td>④</td><td>Specify the Hxw file to be created.</td></tr>
<tr><td>⑤</td><td>Hxw file creation data area is set up.
Create Hxw file Specify one of the following setting modes according to the data area.
Auto : The same Hxw file as the data arrangement configuration of the Hex file is created.
Manual : Specify the area range of the Hxw file to be created.
The indication contents of (000000h-FFFFFFFFh) of the right side are values of the ranges that can input, and different content is displayed by setting contents of Hxw File type.

【 Notes about Domain setting parameter input 】
When the Hex file's start address and end address do not match the Page unit address, please correct the area range when creating Hxw file so that it becomes the address area of Page unit.
The write units differs depending on the MCU, so specify the area range to be created according to each MCU. (see table below)

<table><tr><th>Write units</th><th>Start address</th><th>End address</th></tr><tr><td>256 Byte</td><td>xxxxxx00h</td><td>xxxxxxFFh</td></tr><tr><td>128 Byte</td><td>xxxxxx00h/xxxxxx80h</td><td>xxxxxx7Fh/xxxxxxFFh</td></tr><tr><td>16 Byte</td><td>xxxxxxx0h</td><td>xxxxxxxFh</td></tr></table>
【 Use example 】
When data placement constitution of Hex file is FE008h - FFFFEh, inputs a value of FE000h, FFFFFh into Domain setting parameter.
Data of FE000h - FE007h and FFFFFh which does not exist in the Hex file is converted to Hxw file as FFh.</td></tr>
<tr><td>⑥</td><td>Progress bar of the Hxw file making is displayed.</td></tr>
<tr><td>⑦</td><td>Start creating Hxw file.</td></tr>
</table>

6.2 Calculate checksum of Hxw file

On the tab of the File Check Sum, it is possible to calculate the checksum value of the user program data.

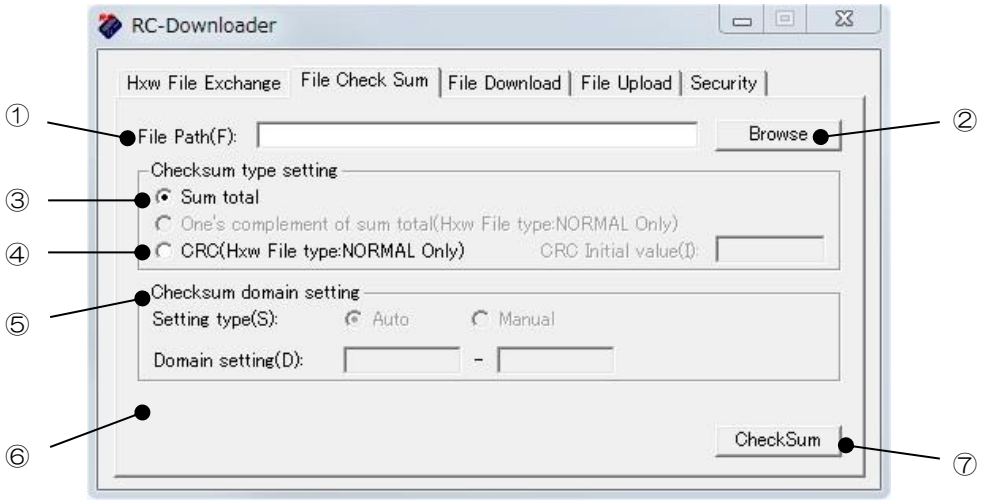
< Procedure for calculating checksum value >

Step1 Set the Hxw file for calculating the checksum value in the "File Path" field.

Step2 Select Sum total or CRC of Checksum type setting.

Step3 When clicking the CheckSum button, the checksum value is displayed in ⑥.

File Check Sum tab menu



No.	Dialog item function
①	Specify the Hxw file for checksum calculation.
②	You can display the file section dialog for file reference.
③	Calculates the lower 16 bit value of the sum total of user program data in the Hxw file.
④	Calculate the CRC sum value of the user program data in the Hxw file.
⑤	When calculating the CRC sum value, set the check sum area.
⑥	The sum of the user program data or the CRC sum value is displayed here.
⑦	Perform checksum calculation.

6.3 File download

In the file download tab, it is possible to download the data file to the CF card of EFP-RC2.

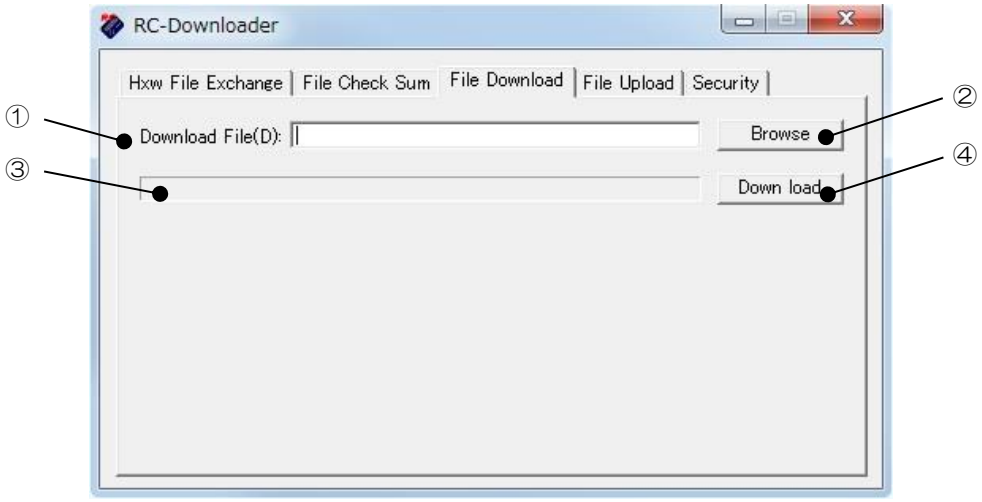
< File download procedure >

Step1 Set the file to be downloaded to the CF card of EFP-RC2 in the ″Download File″ field.

Step2 When you click the ″Down Load″ button and the progress bar reaches the right end, downloading of the file is completed.

※ When you drag and drop a file from Explorer to RC-Downloader, download will start automatically.

File Download tab menu



No.	Dialog item function
①	Specify the file to be downloaded to the CF card of EFP-RC2.
②	You can display the file section dialog for file reference.
③	Progress bar of file download is displayed.
④	Start downloading to the CF card of EFP-RC2.

6.4 Uploading files

In the file upload tab, it is possible to upload the data stored in the CF card of EFP-RC2 to the PC.

< File upload procedure >

Step1 Operate EFP-RC2 and move the cursor to the file to be uploaded.

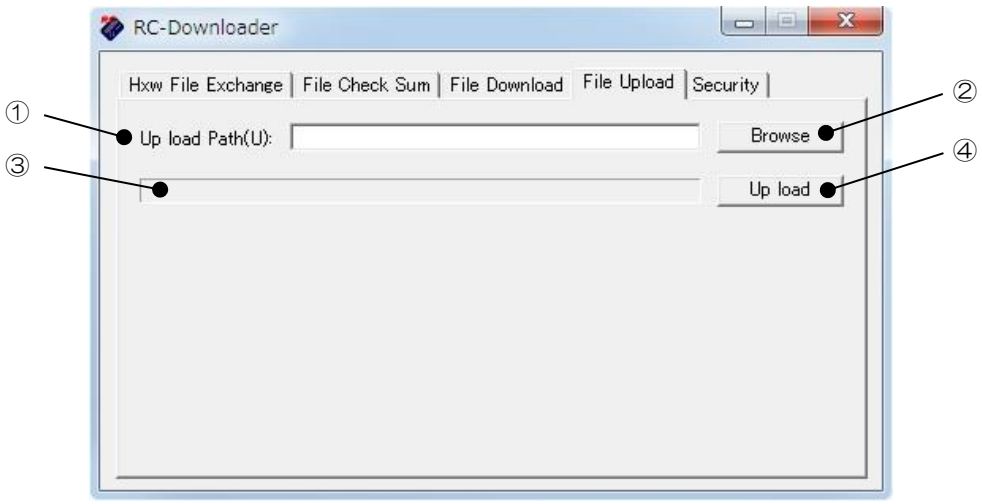
```
Sample.PBT
▌ample.Hxw
```

← The file with the leftmost character blinking is selected

Step2 Specify the save destination of the upload file in the "Upload Path" field of RC-Downloader.

Step3 When you click the Upload button and the progress bar reaches the right end, file uploading is completed.

File Upload tab menu



No.	Dialog item function
①	Soecify the save destination of the file to be uploaded from EFP-RC2.
②	You can display the file section dialog for file reference.
③	Progress bar of file upload is displayed.
④	Start uploading to the PC from EFP-RC2.

Note :

• If the file name is longer than 22 characters, it is truncated from the last character.

6.5 Secure function setting

In the security tab, it is possible to download the setting data of the secure function to the CF card of EFP-RC2.

＜ Secure function setting procedure ＞

Step1 Select Security ″SET″. (Select ″CANCEL″ when canceling)

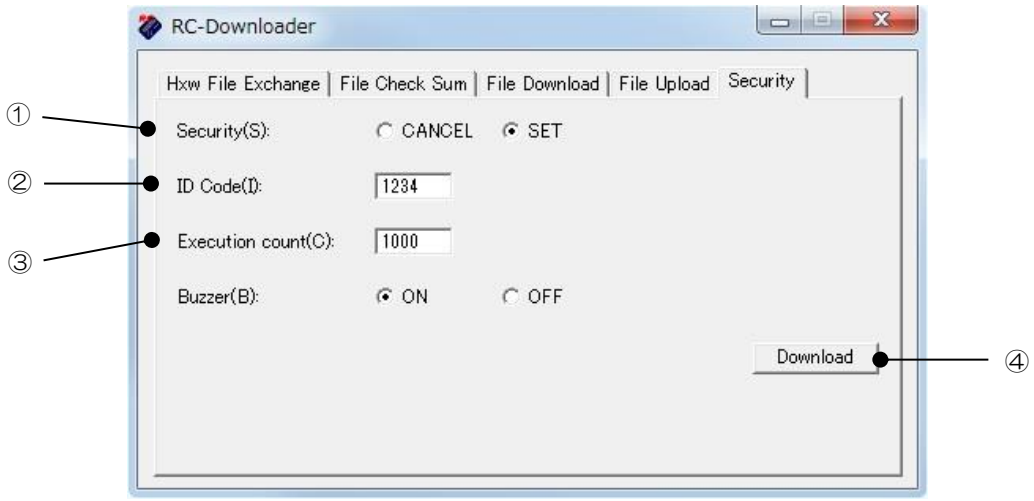
Step2 Enter an arbitrary ID code in the ID Code field. (ID code is up to 4 digits)

Step3 Enter the execution count in the Execution count field.

＊ Blank when using with upload prohibition function (SECURITY LEVEL1).

Step4 When you click the Download button, the secure function setting data is transferred to EFP-RC2.

Security tab menu



No.	Dialog item function
①	Select ID code setting or cancelation of EFP-RC2. ″CANSEL″ : Selected when canceling, ″SET″ : Selected when setting
②	Enter the ID code. You can enter up to 4 alphanumeric characters for ID code. (Upper case letters and lower case letters are distinguished)
③	Enter the number of write execution counts. Half-width numbers from 1 to 50,000 can be set.
④	Transfer secure function setting data to EFP-RC2.

6.6 Buzzer sound setting

When executing the script of EFP-RC2, it is possible to turn ON / OFF the buzzer sound of each command.

< Buzzer sound setting procedure >

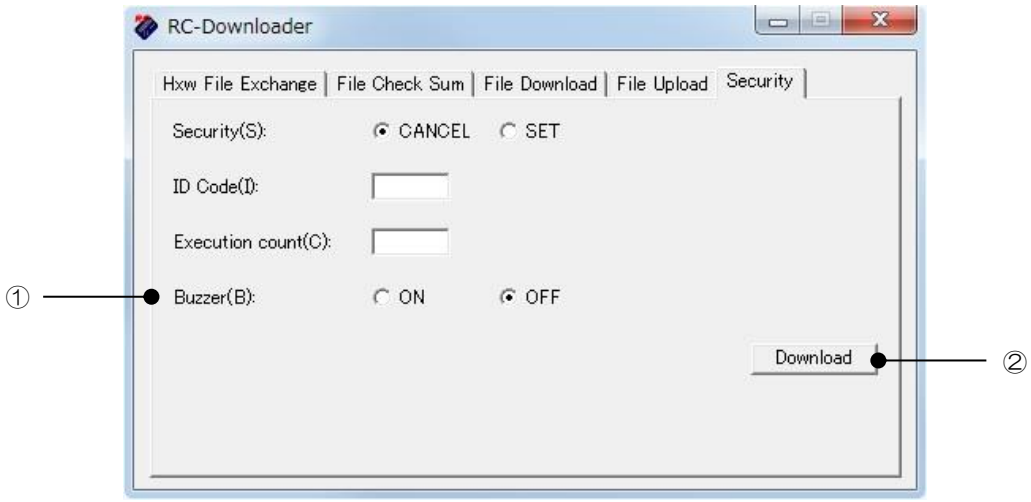
Step1 On the Security tab, select Buzzer ON or OFF.

ON : Sound the buzzer sound when command is executed. (default)

OFF : Erase the buzzer sound when command is executed.

Step2 When you click the Download button, the buzzer sound setting data is transferred to EFP-RC2.

Security tab menu



No.	Dialog item function
①	Select ON / OFF of buzzer sound. ON : Buzzer sound is generated each time the command is executed. (default) OFF : Buzzer sound is generated only when script starts and ends.
②	Transfer the buzzer sound setting data to EFP-RC2.

Note :

• If secure function is set, you need to enter ID code in the ID Code field.

6.7 How to install RC-Downloader

The installation procedure of RC-Downloader is shown below.

Step1 Download ProductCD data from our site, and decompress the downloaded ZIP file to an arbitrary place.
ProductCD data of EFP-RC2 can be downloaded from the following site.

http://www.suisei.co.jp/download_e/productdata_efprc2_e.html

Step2 Execute install.exe in the RC-Downloader folder.
install.exe is in the Software folder -> RC-Downloader folder.

Step3 If you are asked "Do you want to allow changes to the next program?", Click Yes.

Step4 Specify the installation destination of RC-Downloader and click Next.

Step5 After setting up the start menu and shortcut creation, click on the Next button to start the installation.

Step6 When the installation completion screen is displayed, click Finish.

6.8 How to uninstall RC-Downloader

The uninstallation procedure of RC-Downloaderis shown below.

Step1 Click Uninstall RC-Downloader from the start menu of the PC.

Step2 If you are asked "Do you want to allow changes to the next program?", Click Yes.

Step3 As the deletion confirmation screen of RC-Downloader is displayed, click OK.

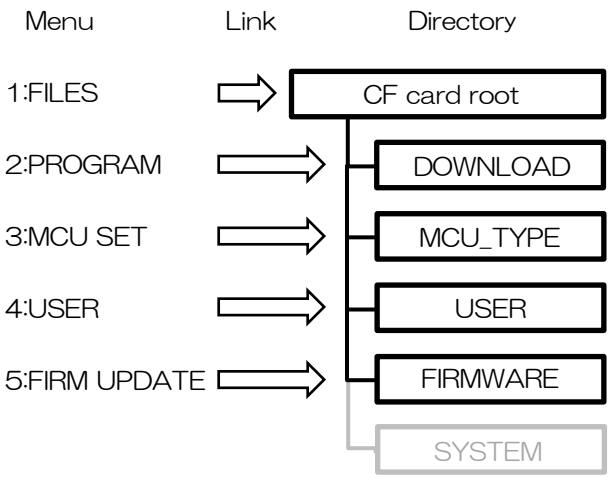
Step4 When the uninstallation completion screen of RC-Downloader is displayed, click Finish.

7. About handling CF card

7.1 CF card file specification

MS-DOS	(FAT16 / FAT32)
MS-WINDOUWS	(FAT16 / FAT32)
Number of sectors of cluster	MS-DOS / MS-WINDOWS compliant
Long filename correspondence	MS-DOS / MS-WINDOWS compliant
CF card capacity	32M - 4GB

7.2 Directory structure



Files downloaded to the FIRMWARE folder are protected and can not be deleted on this machine.

Because the SYSTEM folder is protected, it can not be displayed / deleted on this machine.

7.3 Restrictions on downloading

When downloading files using RC-Downloader, the following restrictions apply.

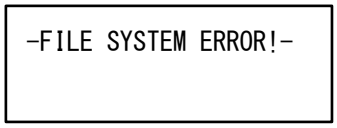
Files with file names longer than 25 characters can not be downloaded.
Depending on the formatting conditions of the CF card, the file size that can be transferred will differ. (See table below)
If you download a file exceeding the limit, "Failed to write the file" is displayed and it ends.

Format condition	Maximum transfer file size
2 sector cluster	6,029,312Byte (About 6MB)
4 sector cluster (normal)	12,058,624Byte (About 12MB)
8 sector cluster	24,117,248Byte (About 24MB)

When using a CF card reader or the like to write directly to the CF card, please use the above limitation with understanding.

7.4 CF card error

If the CF card is not installed or the format of the CF card does not correspond to EFP-RC2, the following error is displayed and all operations are prohibited.
If the error below is displayed, please confirm that the CF card is installed correctly and format is compatible.



7.5 Precautions

- When initializing (formatting) the CF card, the setting of the EFP-RC2 main unit will also be initialized.
- Be sure to initialize (format) the CF card used by another device with EFP-RC2. If you use it without initialization it may malfunction.
- If formatted with FAT32, the maximum number of executable files that can be stored in the user memory file is limited to 24.
- Operation can not be guaranteed for all CF cards on the market.
- Regular CF cads are formatted with one partition. If you have created multiple partitions using the Disk tool, use only the first partition.

8. Trouble shooting

When an error is detected, an error code is displayed on the LCD. Here we will list the errors that occur in EFP-RC2 and how to deal with common errors.

If the symptom does not improve after reconfirming the connection or restarting EFP-RC2, please contact us or our distributor.

Other questions are accepted by e-mail. (support@suisei.co.jp)

Error code	Cause and remedy
2001	[Start address error] (1) Is there a mistake in setting the start address? (2) Do the start addresses of PBT and Hxw match? Please set "Hxw data domain setting" to "Manual" and match the address of Hxw with script or match the address of script to Hxw file.
2002	[End address error] (1) Is there a mistake in setting the end address? (2) Do the end addresses of PBT and Hxw match? Please set "Hxw data domain setting" to "Manual" and match the address of Hxw with script or match the address of script to Hxw file.
41xx	[Device error] (1) Is the power supply voltage of the MCU used within the normal range? (2) Is there a mistake in terminal connection between MCU and EFP-RC2? (3) There is a possibility of contact failure of connector and IC socket. Please clean the connector and IC socket.
4184	[R8C communication timeout error] (1) For the R8C/Tiny MCU, the communication baud rate may not be correct. Please change the baud rate setting.

Error code	Cause and remedy
5000	[Program error] (1) Is there a mistake in terminal connection between MCU and EFP-RC2? (2) There is a possibility of contact failure of connector and IC socket. Please clean the connector and IC socket. (3) Is the data of the write target cevice erased?
5200	[Blank error] (1) Are you erasing the data before executing the blank command? If the lock bit is valid and erasing, please erase with the lock bit invalid.
8200	[ID mismatch error] (1) It does not match the written ID code. The ID codes do not match.

Code	Error type	Status	Error contents
01	System error	00	RAM check error
		04	EEPROM write error
		05	EFP-RC2 hardware limit error
		10	Hxw file editing error
10	Serial I/O error	00	Overrun error
		01	Framing error
		02	Parity error
11	Character error	00	ASCII / binary conversion error
		01	Binary / ASCII conversion error
12	Type error	00	Command code not defined
		01	Command extension code error
		04	ID check type error
		05	Address check type error (internal error)
		06	Reply type error (internal error)
		07	Block set type error
		08	Hxw file extension error
		10	Hxw header data error
13	Checksum error	00	Command reception sum error
		03	Hxw file checksum error
14	Format error	00	HEX reception format error
		01	Command receive format error
		06	HEX / MOT code conversion error
20	Parameter error	00	Parameter data error
		01	Start address error
		02	End address error
		03	Offset address error
		04	Start / end address inversion error
30	Timeout error	00	Data transfer timeout error
41	Device error	01	Serial device check error
		02	BUSY timeout error
		03	Serial BUSY "L" check error
		04	Clock check error
		05	Serial read status error
		06	Serial BUSY "H" check error
		10	Target Vdd voltage error
		84	R8C communication timeout error
		85	R8C baud rate setting error

When an error occurs, code and status are displayed in 4 digits.

Code	Error type	Status	Error contents
42	Status error	00	Status not confirmed
50	Program error	00	Unable to write by program
		01	Unable to write by program (PV command)
51	Verify error	00	Mismatch between MCU data and object data occurred.
52	Blank error	00	There was a part that was not erased in the MCU data.
53	Erase error	00	Erase command can not be executed.
54	Erase execution not possible error	00	An attempt was made to erase MCU that can not be erased.
55	Lock error	00	Erasing and writing were impossible because it is locked.
56	Read protect error	00	The MCU is protected and can not be accessed
59	Security error	00	RL78 series
5A	Signature error	00	
5B	Sum verify error	00	
70	File access error	00	File can not be opened / created.
		01	There is no file that can refer to the status.
		02	The data size of the file is 0.
		03	File name length is 25 characters or more
		04	File write error
		05	File reading error (file does not exist)
80	Sum check error	11	Sum check error (RX)
	Entry error	22	Clock mode mismatch error
	Entry error	23	Clock mode selection unnecessary error
	Entry error	24	Baud rate setting impossible error
	Entry error	25	Clock error
	Entry error	26	Multiplication ratio error
	Entry error	27	Operating frequency error
	Erase error	29	Block address error
	Program error	2A	Write address error
	Read error	2B	Data length error
	Entry error	51	Erase error
	Lock bit error	52	Not erased error
	Program error	53	Write error

When an error occurs, code and status are displayed in 4 digits.

Code	Error type	Status	Error contents
80	ID error	61	ID mismatch error
	ID error	63	Erase error (when ID mismatch)
	MCU status error	90~99	Information error
	Bit rate error	FF	Bit rate matching confirmation error
81	Entry / Sum error	00	
82	ID mismatch	00	It does not match ID written on MCU
83	ID unchecked	00	ID verification is not done.
99	Command execution	00	Command can not be executed with device
	not possible	01	Command can not be executed with SYSYTEM
F1	CF card error	00	CF write error
		01	CF reading error
		03	Hxw file header read error

When an error occurs, code and status are displayed in 4 digits.

9. About supported devices

Please check our website for the latest device list.

http://www.suisei.co.jp/download_e/devicelist_e.html

10. Specification

Write method		MCU write method by Renesas Electronics
Target device		Built-in MCU with FLASH ROM by Renesas Electronics
		M16C/6x,8x, M16C/6xP, R8C, SH, RL78 family, RX family, Battery management IC, 720/4500 series, 740 family and more
Memory		CF 32MB or more. For storing the user program and the write script
Interface		USB 1.1
Supported OS		Microsoft® Windows® XP, Microsoft® Windows® Vista, Microsoft® Windows® 7 (32bit/64bit), Microsoft® Windows® 8 (32bit/64bit), Microsoft® Windows® 8.1 (32bit/64bit), Microsoft® Windows® 10 (32bit/64bit)
Power supply	USB I/F	Supplied from USB bus power. (5V)
	User target	Supplied from user target system. (3.3V to 5V)
	Dedicated terminal	Supplied from the external round pin power jack. (5V)
Power consumption		Standby : at 3.3V : 150mA, at 5V : 75mA Running : at 3.3V : :280mA, at 5V : 150mA
External dimensions		108 (W) × 78 (D) × 23 (H)mm
Weight		230g

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Editoevision History

Edition	Date	Content
1st	September, 2015	Japanese only
2nd	April, 2016	Japanese only
3rd	March, 2017	Japanese only
4th	May, 2017	English version issued