Serial Flash Programmer

S550-SFWv3 **FA Mode Operation Manual**



G Sunny Giken Inc.

Serial Flash Programmer

S550-SFWv3 FA Mode

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1. Outline

1.1 Introduction

This operation manual illustrates the operations of the serial flash programmer S550-SFWv3 FA Mode. Each section describes respective operations of S550-SFWv3 FA Mode.

1.2 Precautions

Thank you for purchasing our product.

Please read this operation manual carefully to understand the functions of this product for effective operations. Please beware that Sunny Giken Inc. shall have no liability for any damages and/or troubles caused by misuse or careless handling of this product. In addition, note that have been described in the "2.3 Terminal Block Specifications" when using terminal block.

1) General Cautions

Please observe the following points to avoid hazards such as fire, burns, electric shock, and/or injures: •Never connect cables with wet and/or dirty hands.

•Use this product under proper environment.

•Handle this product with care to avoid high impact caused by fall and/or physical shock.

•Never disassemble and/or modify this product yourself.

2) Operating Environment

•Do not use this product in environments described below:

Dusty places

Places where there is presence of corrosive gases

Places exposed to direct sunlight

Places surrounded by equipments that could become sources of noises

Places with severe mechanical shock and/or constant mechanical vibration

Outdoors

•Operational ambient temperature 0° C to 40° C Humidity below 80% (non condensing)

•Storage ambient temperature -10° C to $+40^{\circ}$ C Humidity below 80% (non condensing)

• Preventing electrostatic buildup for handling this product is highly recommended.

3) Storage

If you do not plan to use this product for a long time, put this product in the packing box in which the product had been delivered, and store it in the shade with the ambient temperature of -10° C to $+40^{\circ}$ C and below 80% of humidity (non condensing).

4) Transportation

When transporting this product, be sure to use the packing box in which the product had been delivered.

5) Cleaning

Wipe this product with soft and clean fabric when it needs cleaning. Never use any sort of organic solvent such as benzene that causes this product to deteriorate.

S550-SFWv3 FA Mode Configurations 2.

This chapter describes the entire system configurations of S550-SFWv3 FA Mode. S550-SFWv3 FA Mode is composed of S550-SFWv3 and S550-SFWv3-XFA1.

2.1 General Specifications

Device Configuration



USB cable

*For details on connections, see "3 Remote Programming" and "4 Stand-alone Programming".

•Connector (S550-SFWv3 Main Unit FA Mode)

A connector part appears when the cover on the right side of S550-SFWv3 is removed. Please remove the cover when the power supply doesn't enter the entire system (S550-SFWv3-XFA1, S550-SFWv3, target board and FA equipment).

Model: LX40-12P HIROSE ELECTRIC Corporation

•Pin Assignment (S550-SFWv3 Main Unit FA Mode)

*Note that signal names and directions are the ones seen from the programmer side.

*Recommends carrying out the pull-up of the full output signal by the side of S550-SFWv3 by the FA device side.

* All the input-and-output signals are CMOS.

* All the input-and-output H levels are 3.3V.

Pin Number#	Signal	Contents		
1	3.3V	S550-SFWv3 Main Unit power supply *Be not sure to make this connection.	Output	
2	3.3V	S550-SFWv3 Main Unit power supply *Be not sure to make this connection.	Output	
3	CONFIRM	Program selection check complete input	Input	
4	START	Programming start input	Input	
5	SEL0	Program selection 0 input (First bit data)	Input	
6	SEL1	Program selection 1 input (Second bit data)	Input	
7	REMOTE	Remote control authorization output	Output	
8	BUSY	Programming status output	Output	
9	PASS	Programming result PASS output	Output	
10	FAIL	Programming result FAIL output	Output	
11	GND	Ground *Be sure to make this connection.	-	
12 GND		Ground *Be sure to make this connection.	-	

S550-SFWv3-XFA1 Main unit

External extended I/F	Photocoupler (optical isolator) I/O total 8 ports IN 4 ports: Rated current 10mA to 22mA/12V, 24V OUT 4 ports: Rated output current Max. 300mA Rated voltage 12V/24V		
Main unit power source	S550-SFWv3 side power source 3.3V: supplied from S550-SFWv3 I/O side power source 12V/24V: supplied from FA device side		
Electricity consumption	50mA or below		
Dimensions	59mm(W) x 110mm(D) x 17mm(H) *See "5. External Dimensions".		
Weight	Approx. 100g		

S550-SFWv3-XFA1 (when placed on a fixed base)

Dimensions	155mm(W) x 150mm(D) x 27mm(H)	*See "5. External Dimensions".			
Weight Approx. 260g					



Power LED	Functions
SFWv3	Lights up when power is supplied to S550-SFWv3.
I/O Lights up when power is supplied from the FA device.	

Status indicating LED	Functions
IN1, IN2, IN3, IN4	Lights up when the input signal from the FA device is "L".
OUT1, OUT2, OUT3, OUT4	Lights up when the output signal from S550-SFWv3-XFA1 is "L".

Terminal block/Connector	Functions		
Terminal block	Use this when connecting to the FA device. For details, see "2.3 Terminal Block Specifications".		
Connector for external 5V output	 Use this when supplying power (5V) from S550-SFWv3-XFA1 to S550-SFWv3. *The purpose of this connector is supplying power, and this connector does not have USB communication function. *Do not connect PC to this connector. It may damage the PC. 		

2.3 Terminal Block Specifications

Specifications

Terminal block model	ML-400-NH-10P (Manufactured by SATO PARTS Co., Ltd)			
Rated applicable wire	Single wire ϕ 1.0mm (AWG18) Twisted wire 0.75mm ² strand diameter ϕ 0.18mm or more			
Usable wire range	Single ϕ 0.4mm to ϕ 1.0mm (AWG26 to AWG18) Twisted wire 0.3mm ² to 0.75mm ² (AWG22 to AWG20), strand diameter ϕ 0.18mm or more			
Standard stripped wire length	10mm			
Recommended applicable tool	Flat-blade screwdriver (Shaft diameter ϕ 3mm, blade edge width 2.6mm)			

•How to use

Insert a wire while pressing the wire insert release part with a flat-blade screwdriver.



•Pin Assignment

*Note that signal names and directions are the ones seen from the S550-SFWv3-XFA1 side. *Pulling up all the output signals on the S550-SFWv3-XFA1 side on the FA device is recommended. * All the input-and-output H levels are the power supply of I/O side.

Pin number# Terminal name		Contents	Direction
12V/24V 12V/24V		S550-SFWv3-XFA1 I/O side power source *Be sure to make this connection.	Input
IN1	CONFIRM	Program selection check complete input	Input
IN2	START	Programming start input	Input
IN3 SEL0		Program selection 0 input (First bit data)	Input
IN4 SEL1 Program selection 1 input (Second bit		Program selection 1 input (Second bit data)	Input
OUT1 REMOTE		Remote control authorization output	Output
OUT2	BUSY	Programming status output	Output
OUT3	PASS	Programming result PASS output	Output
OUT4 FAIL		Programming result FAIL output	Output
GND GND		Ground *Be sure to make this connection.	Input

- •Note
 - 1) Connect/remove the electric wire after turning off the power supply of the entire system(S550-SFWv3-XFA1, S550-SFWv3, target board and FA equipment). There is danger of breaking down when the power supply of the entire system is not turned off.
 - 2) Do not insert or connect it excluding the electric wire described in the specification.
 - 3) Connect/remove the electric wire while pushing the "connect/remove operation part of the electric wire "to the lower limit. In addition, confirm whether the electric wire is inserted to the last completely and locked.
 - 4) The electric wire connection frequency of the terminal block might be limited by the frequency of the "connect/remove operation part of the electric wire". Please use it after confirming the frequency of the operation.
 - 5) Please consider the fixation of the connection electric wire so that the tension is not added to the connected electric wire.
 - 6) Note that do not add the unnecessary load to the product when connecting/removing the electric wire.
 - 7) Do not operate the "connect/remove operation part of the electric wire" while turning on electricity.
 - 8) Do not dismantle/rearrange the product. In addition, there is danger of breaking down when the connection of the electric wire is different.
 - 9) Please refer to the notes and limitations of the part maker (SATO PARTS CO.,LTD) together with this manual when using terminal block.

2.4 Internal Interface Circuits

Following illustrates the internal interface circuits of S550-SFWv3-XFA1.



2.5 Remote Control Timing

Following illustrates the timing diagrams of start-up, programming, and cancellation.

(Common for both single data mode and multi data mode)

A) Start-up timing



① While Stand-alone

- (a) The REMOTE signal becomes "H" when S550-SFWv3 is not connected or is turned on.
- (b) After the start up, the REMOTE signal becomes "L". ("H", when data is not downloaded.)
- (c) The REMOTE signal becomes "H" when S550-SFWv3 is disconnected or settings are initialized.

2 At control software start-up

- (a) The REMOTE signal becomes "H" on screens other than programming execution screen.
- (b) After moving to the programming execution screen, the REMOTE signal becomes "L".
- (c) If the screen moves to other screen from programming execution screen, the REMOTE signal becomes "H".

(When single data mode is selected)

B) Programming success timing



- (a) Programming is started when the START signal from the FA device becomes "L".
- (b) The BUSY signal becomes "L" when programming is started.
- (c) The PASS signal becomes "L" when programming is complete.
- (d) The BUSY signal becomes "H", 1ms after the result output.
- (e) For the FA device, switch back the START signal to "H" after the BUSY signal completion.
- (f) Please start the next sequence, at least 100ms after the START signal becomes "H".



- (a) The FAIL signal becomes "L" when programming is complete.
- (b) The BUSY signal becomes "H" 1ms after the result output.
- (c) For the FA device, switch back the START signal to "H" after the BUSY signal completion.
- (d) Please start the next sequence, at least 100ms after the START signal becomes "H".

D) Programming cancellation timing



- (a) For the FA device, switch back the START signal to "H".
- (b) The result is output (FAIL signal "L") when programming is canceled. * Cancellation corresponds to programming error.
- (c) The BUSY signal becomes "H", 1ms after the result output.
- (d) Please start the next sequence, at least 100ms after the START signal becomes "H".

(When multi data mode is selected)

- The data switching information is output to the CONFIRM/SEL0/SEL1 signals. The S550-SFWv3 main unit outputs data setting information to the PASS/FAIL signals after switching the data. Confirm the PASS/FAIL signals to confirm whether data switching has a mistake.
- Do not select the data that is not set in the S550-SFWv3 main unit. The data is not switched when selecting it.
- The CONFIRM/SEL0/SEL1 signal is invalid in the single data mode. (See the timing when single data mode is selected.)

Data No.	Data Sv Inforr	witching nation	Data Setting Information		
	SEL1	SEL0	FAIL	PASS	
1	L	L	L	L	
2	L	Н	L	Н	
3	Н	L	Н	L	
4	Н	Н	Н	Н	

B) Programming success timing



- (a) The FA device outputs data switching information (0 through 3) according to SEL0, SEL1 signals.
- (b) Data is confirmed when the CONFIRM signal from the FA device becomes "L".
- (c) The data setting information is output to the programming Pass/Fail signals.
- (d) The BUSY signal becomes "L" when data is set.
- (e) Output "H" to the CONFIRM signal from the FA device.*If the data setting information is not correct, start over from (a).
- (f) The BUSY signal becomes "H" when the CONFIRM signal is confirmed as "H".
- (g) Programming is started when the START signal from the FA device becomes "L".
- (h) The BUSY signal becomes "L" when programming is started.
- (i) The PASS signal becomes "L" when programming is complete.
- (j) The BUSY signal becomes "H", 1ms after the result output.
- (k) For the FA device, switch back the START signal to "H" after the BUSY signal completion.
- (l) Please start the next sequence, at least 100ms after the START signal becomes "H".



- (a) The FAIL signal becomes "L" when programming is complete.
- (b) The BUSY signal becomes "H", 1ms after the result output.
- (c) For the FA device, switch back the START signal to "H" after the BUSY signal completion.
- (d) Please start the next sequence, at least 100ms after the START signal becomes "H".

						(a)	(b)	(c)	(d)
START						<u> </u>	-	 	
BUSY					1				
SEL0	Н	I or L	L			 			
SEL1	н	I or L	<u> </u>			 			
PASS	H or L		H or L		I	 			
FAIL	H or L		H or L		I	 	-		
CONFIRM						 			
	•					I	۱m	s min 10)0ms
				One S	equence				

- (a) For the FA device, switch back the START signal to "H".
- (b) The result is output (FAIL signal "L") when programming is canceled. *Cancellation corresponds to programming error.
- (c) The BUSY signal becomes "H", 1ms after the result output.
- (d) Please start the next sequence, at least 100ms after the START signal becomes "H".

3. **Remote Programming**

The following procedures show how to connect and operate for remote programming.

3.1 Connecting Steps

- ① Connect S550-SFWv3 and S550-SFWV3-XFA1 with the attached cable.
- 2 Connect S550-SFWV3-XFA1 and the FA device.
- (3) Connect PC and S550-SFWv3 with a USB cable. *Check if the START signal is set to "H".
- (4) Connect S550-SFWv3 and the target board with the target connecting cable. * When the consumption current of the target board exceeds 200mA, supply from an external power supply.



USB2.0 High-Speed

3.2 Data Settings

1 Start up the control software

Start up the control software. The main screen appears. When the control software is started, the switches on the S550-SFWv3 main unit become invalid. Also, the REMOTE signal becomes "H".

😫 default.prj - S550-SFWv3 Ver.4.00	
<u>P</u> roject <u>H</u> elp	
_ Information	
Maker :	
MCU :	
Type :	
ROM Size :	
Action Mode :	
Program File :	
Check Sum :	
Setting	
Target Project Maintenance	
Action	
Initialize UpLoad DownLoad Program	Exit

2 Select FA mode

Click the "Maintenance" button on the main screen. The maintenance screen appears. Check the "Enable FA Mode" check box to select the FA mode. When multi data mode is selected, you can switch among the data 1 through 4. Note that remote programming is disabled in multi data mode.

*For the	\$550	SEW ₃ 2	main	unit E	A mode	satting	bacomas	valid	oftor	down	loadina
"For the	3330-	- 3 F W V 3	main u	ши, г	A mode	setting	becomes	vanu	anter	uowin	loauing

Maintenance		<u>×</u>
Initial Setting Logging Vi	iew]	
– Initial Setting –		
Directory Setting —		
	Ena Save Directory	
Action Log :	C:¥SFWv3¥	
Project File:	JC:¥SF₩√3¥	
- Hardware Setting	Descurred	
Buzzer		
Mute	Enable	Password Change
Action Setting		Power Save Setting
Enable Expans	ion Action Mode	Enable Power Save Mode
– Multi Data Setting –		EA Setting
Enable Multi D	lata Mode	
	ata more	
MultiCH Setting —		
📃 📃 Enable Multi C	H Mode	
		OK Cancel

 ③ Device settings Click the "Target Project" button. Following screen appears. On this screen, you can specify settings of the programming data. For details of settings, see "S550-SFWv3 Operation Manual".

🔛 default.prj	- S550-SFWv3 Ver.4.00	
<u>M</u> ain <u>H</u> elp		
- Device Maker : MCU : Type : R	Renesas Communication : Single-wire R8C/2x Detail Baudrate : 38400bps R5F212BASDFA/DFP/NFA/NFP/NLG Vcc Type : No Supply OM Size : 96Kbyte+2Kbyte Vcc : 33 or 5V	
-Settings - Chec	Program File : C:¥SFWv3¥test.mot ID Code : 49,4D,56,5A,5E,63,67 Check Sum : 6FA9 (User: 77A9, Data: F800) k ID Code : 49,4D,56,5A,5E,63,67 anced Settings	Load Edit Set ID
- Acti	Lock Bit Block : Keep Device Lock Bits Operation Block : Selective Setup ROM Code Protect : Removed ion Mode	Set Blocks
	C Verify C Verify	Set

3.3 Downloading

① Download device settings

After device settings, click the "Program" button. The settings are downloaded to the S550-SFWv3 main unit and the screen moves to the programming execution screen.

*When the FA mode is selected in the maintenance screen, [FAmode] indication appears on the main screen.

🔛 defau	ilt.prj – S550-SF	Wv3 Ver.4.00	<u> </u>
<u>P</u> roject	<u>H</u> elp		
_ Info	ormation —		1
	Maker :	Renesas	FAmode
	MCU :	R8C/2x	
	Type :	R5F212BASDFA/DFP/NFA/NFP/NLG	
	ROM Size :	96Kbyte+2Kbyte	
	Action Mode :	Erase/Program/Verify	
	Program File :	C:¥SFWv3¥test.mot	
	Check Sum :	6FA9 (User: 77A9, Data: F800)	
- Set	tting Target Project	Maintenance	
	lnitialize	UpLoad DownLoad Program	Exit

3.4 Remote Programming

① Complete programming preparation

The REMOTE signal becomes "L" when the screen moves to the execution screen. The remote control by the FA device becomes enabled.

*When the FA mode is selected in the maintenance screen, [FAmode] indication appears on the main screen.

🔛 default.prj – S550-S	SFWv3 Ver.4.00	<u>- 0 ×</u>
<u>S</u> top <u>C</u> ounter Clear	<u>H</u> elp	
_ Information		
Maker :	Renesas	FAmode
MCU :	R8C/2x	
Type :	R5F212BASDFA/DFP/NFA/NFP/NLG	
ROM Size :	96Kbyte+2Kbyte Pass/Fail Counter —	
Action Mode :	Erase/Program/Verify Pass: 0	
Check Sum :	6FA9 (User: 77A9, Data: F800) Fail: 0	
Serial No. : 000001	s Fail No Action SFWv3	Detail View

Start programming Switch the START signal to "L" from the FA device and the programming is started.

*While programming, switch the START signal to "H" to cancel programming.

🙀 default.prj – S550-3	SFWv3 Ver.4.00		<u>_</u> _×
<u>S</u> top <u>C</u> ounter Clear	<u>H</u> elp		
_ Information ——			
Maker :	Renesas		FAmode
MCU:	R8C/2x		
Type :	R5F212BASDFA/DFP/NFA/NFP/NLG		
ROM Size :	96Kbyte+2Kbyte	– Pass/Fail Counter ––––	
Action Mode :	Erase/Program/Verify	Pass: 0	
Check Sum :	6FA9 (User: 77A9, Data: F800)	Fail: 0	
Serial No. : 000560	Action	are	Detail View

Programming complete You can proceed to the next programming.

🔛 default.prj – S550-S	FWv3 Ver.4.00		
<u>S</u> top <u>C</u> ounter Clear	<u>H</u> elp		
_ Information		1	
Maker :	Renesas		FAmode
MCU :	R8C/2x		
Type :	R5F212BASDFA/DFP/NFA/NFP/NLG		
ROM Size :	96Kbyte+2Kbyte	– Pass/Fail Counter ––––	
Action Mode :	Erase/Program/Verify	Pass: 1	
Check Sum :	6FA9 (User: 77A9, Data: F800)	Fail: 0	
Serial No. : 000001 2011/03/25 09:5	1 4:13 Pass: 1 , Fail: 0		
			*

4. Stand-alone Programming

The following procedures show how to connect and operate for stand-alone programming.

4.1 Connecting Steps (Downloading)

① Connect PC and S550-SFWv3 with a USB cable.



USB2.0 High-Speed

4.2 Data Settings

See "3.2 Data Settings".

4.3 Downloading

Download device settings After device settings, click the "DownLoad" button. The settings are downloaded to S550-SFWv3.

🚔 default.prj - S550-SFWv3 Ver.4.00				
<u>P</u> roject <u>H</u> elp				
Information				
Maker : Renesas	FAmode			
MCU: R8C/2x				
Type : R5F212BASDFA/DFP/NFA/NFP/NLG				
ROM Size : 96Kbyte+2Kbyte				
Action Mode : Erase/Program/Verify				
Program File : C:¥SFWv3¥test.mot				
Check Sum : 6FA9 (User: 77A9, Data: F800)				
Setting Target Project				
Action Initialize UpLoad DownLoad Program	Exit			

Downloading complete Exit from the control software. Disconnect PC from S550-SFWv3.

4.4 Connecting Steps (Stand-alone Programming)

- (1) Connect S550-SFWv3 and S550-SFWV3-XFA1 with the attached cable.
- 2 Connect S550-SFWV3-XFA1 and the FA device.
- (3) Connect S550-SFWV3-XFA1 and S550-SFWv3 with a USB cable. *Check if the START signal is set to "H"
- (4) Connect S550-SFWv3 and the target board with the target connecting cable.
 - * When the consumption current of the target board exceeds 200mA, supply from an external power supply.



USB cable

- 4.5 Stand-alone Programming
- (1) Complete programming preparation When the FA mode is set, "F.A" is indicated on the 14SEG LED of the S550-SFWv3 main unit immediately after the start-up.
 - The REMOTE signal becomes "L" and the remote control by the FA device becomes enabled.
- ② Start programming

Switch the START signal to "L" from the FA device and the programming is started. *While programming, switch the START signal to "H" to cancel programming.

3 Programming complete

You can proceed to the next programming.

5. External Dimensions

5.1 S550-SFWv3-XFA1 Main Unit





6. Troubleshooting

This chapter	describes how	to resolve errors	regarding	S550-SFWv3 FA Mode.
· · · · · · · · · · · · · · · · · · ·			0.0	

Problem	Solution
Programming does not start.	• Is the OUT2(BUSY) status LED lighted?
	If lighted, check the BUSY signal connection.
	• Is the OUT1(REMOTE) status LED lighted?
	If not lighted, the settings of S550-SFWv3 may not be done properly.
	Download the programming data with the control software again.
	If the control software is started, and the screen other than the
	programming execution screen is displayed, the START signal will not be
	accepted.
	• Is the IN2(START) status LED lighted?
	If not lighted, check the START signal connection.
Programming does not end.	• Is the OUT2(BUSY) status LED lighted?
	If not lighted, check the BUSY signal connection.
After programming is complete, the	• Is the OUT2(BUSY) status LED off?
result is not displayed.	If it is not off, the programming has not been finished.
	• Is either OUT3(PASS) or OUT4(FAIL) lighted?
	If none of them are lighted, check the PASS and FAIL signal connections.
Programming error occurs frequently	• Is there anything(environment) that causes noise on the periphery?
	When any noise is caught by the START signal, it may invite malfunction.

Version	Revised contents	Revised date
Rev.A	First edition	2010/08/09
Rev.B	"2.3 Terminal Block Specifications""Note" has been added.	2011/03/25
Rev.C	"2.5 Remote Control Timing"The explanation of "When multi data mode is selected" is corrected.	2011/06/14
Rev.D	"2.5 Remote Control Timing"The figure of "Start-up timing " is corrected.	2011/07/22
Rev.E	"2.5 Remote Control Timing"The table of "Data setting information " is corrected.	2014/07/11
Rev.F	"2.5 Remote Control Timing"The figure and explanation about starting the next sequence is corrected.	2020/01/10

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