

S251A Optical Fiber Thermal Stripper User Manual

- Please read the entire manual prior to usage.

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FURUKAWA
ELECTRIC

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1. Safety Instructions


This manual contains the complete operating and maintenance instructions for S251A Optical Fiber Thermal Stripper. Please review this manual carefully before operating the S251A.

The following safety instructions must be observed whenever this product is operated, serviced or repaired. Failure to comply with any of these instructions, or with any precaution or warning contained in this manual is in direct violation of the standards of the design, manufacture, and intended use of the instrument. FURUKAWA ELECTRIC CO., LTD. assumes no liability for the customer's failure to comply with these requirements.

	WARNING	The procedure can result in serious injury or loss of life if not carried out in proper compliance with all safety instructions. Ensure that all conditions necessary for safe handling and operation are met before proceeding.
	CAUTION	The procedure can result in serious damage to or destruction of the instrument if not carried out in compliance with all instructions for proper use. Ensure that all conditions necessary for safe handling and operation are met before proceeding.
One Point		This shows information useful when using this instrument.

Please contact Furukawa Electric Co., Ltd. or your local representative with any questions relating to any subject described within this manual.

In no case will Furukawa Electric Co., Ltd. be liable to the buyer, or to any third parties, for any consequential or indirect damage which is caused by product failure, malfunction, or any problem.

	WARNING
Avoid soaking this instrument in water. Doing so may cause fire, electric shock, or malfunction.	
Do not use an inappropriate input voltage. Doing so may cause fire, electric shock, or malfunction.	
Do not insert or drop any metal or any flammable material into the main body through any gap. Doing so may cause fire, electric shock, or malfunction.	
Avoid direct skin contact with the heating section. This may result in burns or injury.	


WARNING

If abnormal sounds or extra high temperatures are observed, turn off the power switch, disconnect the power cord, remove the battery from the instrument, and contact Furukawa Electric Co., Ltd. or your local representative. Continued operation under these conditions may cause fire or electric shock.

Do not use a damaged power cord where the inner cable is exposed or severed. Doing so may cause fire or electric shock.

If water is spilled into this instrument, turn off the power switch, disconnect the power cord, remove the battery, and contact Furukawa Electric Co., Ltd. or your local representative. Continuing to operate under these conditions may cause fire or electric shock.

If smoke or strange smells are observed, turn off the power switch, disconnect the power cord, remove the battery, and contact Furukawa Electric Co., Ltd. or your local representative. Continued operation under these conditions may cause fire, electric shock or malfunction.

If this instrument is dropped and damaged, turn off the power switch, disconnect the power cable, remove the battery, and contact Furukawa Electric Co., Ltd. or your local representative. Continued operation under these conditions may cause fire or electric shock.

Do not disassemble the instrument except as described in the maintenance section of this manual. This instrument contains no user serviceable parts. Warranty on this product will be void if any of the bottom screws are disturbed.

The S251A Optical Fiber Thermal Stripper complies with the following tests:

Drop resistance – 76 cm drop from 6 different angles.

Water resistance – IPX4 rating drip proof (Water splashed against the enclosure from any direction shall have no harmful effects).

External Impact resistance – IK07 rating external impact proof (exposed to a 500 g weight dropping from a 40 cm height).

Above tests were performed at Furukawa Electric laboratories and do not guarantee that the machine will not be damaged when subjected to these conditions.


CAUTION

Do not use in a humid, dirty, or vibrating site. Doing so may cause fire, electrical shock, or malfunction.

Disconnect all cords when moving this instrument. Failure to do so may damage the cords and result in fire or electric shock.

Do not place the cords around any heating instrument. Doing so may damage the cords


CAUTION

and result in fire or electric shock.

Do not connect or disconnect cords with wet hands. Doing so may cause fire or electric shock.

Do not pull the cord to disconnect. Doing so may damage the cords which may cause fire or electric shock. Hold the plug section and disconnect the cord.

Do not put heavy items on the cords. Doing so may damage the cords and result in fire or electric shock.

Ensure that the cords are disconnected and the batteries are removed from the machine's main body when storing this instrument.

Do not modify or tamper with the cords. Excessive twisting, bending, or stretching the cords may cause fire or electric shock.

Store this instrument in a cool dry place.

When the temperature of the instrument body is vastly different from the operating temperature (even if the environment temperature is within the operating temperature limit), please use only after the instrument body has acclimatized to near the operating temperature. Otherwise, the instrument might not work normally.

The battery is made of Li-ion battery cells. Refer to the following safety instructions on handling and operating the battery safely.


CAUTION

Do not dispose of the battery in a fire or leave the battery near an object of high temperature. Doing so may cause fire or explosion.

Do not short-circuit the recharging connector or the output terminal of the optical fiber thermal stripper. Doing so may cause fire.

Charge the S944 battery by using the S251A Optical Fiber Thermal Stripper. Charging with other equipment that is not suitable for charging the S944 battery, may cause fire.

Avoid soaking the battery in water. Doing so may cause fire or electric shock.

Do not disassemble the battery. Avoid damage by not dropping or subjecting it to heavy shock. Doing so may cause fire or electric shock. If the inner cells rupture and electrolytic solution leaks out, it may cause inflammation to your skin or eyes.

Disposal of used batteries must be carried out according to disposal regulations established by law. For instructions, contact Furukawa Electric Co., Ltd. or your local representative.

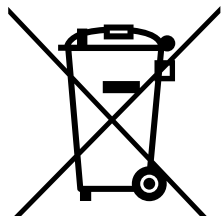
Batteries which have just finished charging may have a high surface temperature. Be



CAUTION

careful when handling them.

NOTES



This symbol mark is for EU countries only.

This symbol mark is according to the directive 2006/66/EC Article 20 Information for end-users and Annex II.

This symbol means that batteries and accumulators, at their end-of-life, should be disposed of separately from your household waste.

If a chemical symbol is printed beneath the symbol shown above, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows:

Hg: mercury (0.0005%)

Cd: cadmium (0.002%)

Pb: lead (0.004%)

In the European Union there are separate collection systems for used batteries and accumulators. Please, dispose of batteries and accumulators correctly at your local community waste collection/recycling center.

Please help us to conserve the environment we live in!

2. Components

2.1. Standard Components

Item	Model No.	Quantity	Remarks
S251A Optical Fiber Thermal Stripper Main Body	S251A-X-A-0002-A	1	
Battery	S944	1	Li-ion Rechargeable Battery
AC Adapter	-	1	AC -> DC Converter
Cleaning Brush	VGC-01	1	
Quick Reference Guide	FTS-B642	1	

2.2. Optional Components

Item	Model No.	Quantity	Remarks
USB-C Cable (for Charging)	S2510-X-S-0001-A	1	
Spare Blade	S2510-X-S-0002-A	1	
Battery	S944	1	Li-ion Rechargeable Battery
AC Adapter (Type A Plug)	S983	1	AC -> DC Converter
AC Adapter (Universal Type)	S984	1	AC -> DC Converter
Hand Strap	S2510-X-S-0003-A	1	
Bag for Main Body	S2150-X-S-0004-A	1	



S944 Battery



S983 AC Adapter
+ USB-C Cable



S984 AC Adapter



Hand Strap



Bag for Main Body



Cleaning Brush

3. Specifications

Description	S251A
Applicable fibers	Optical fibers (glass)
Cladding diameter	125 μ m
Fiber count	1 to 12 16 (only 0.20 mm coating diameter)
Coating diameter	0.20 to 0.40 mm
Fiber ribbon size	0.20 to 0.40 mm (thickness)
Heating temperature	80, 100, 120, 140, 160°C (5 steps of temperature)
Battery life	Approx. 10 hours (Normal mode), Approx. 600 stripping cycles *1
Charging time	Approx. 3 hours (with power off condition)
Power Supply	DC: 5 V, 9 V 2 A, 9 V 3 A AC: 100-240 V: in use of S983A AC adapter
Dimensions	147W x 46D x 35H mm
Weight	Approx. 240 g (including battery)
Operating condition	Temperature: -10 to 50°C Humidity: Max. 95%RH (non-condensing)
Storage condition *2	Temperature: -40 to 60°C Humidity: Max. 95%RH (non-condensing)
Environment condition *3	Drop resistance: 76 cm drop from 6 different angles. Water resistance: IPX4 rating drip proof (Water splashed against the enclosure from any direction shall have no harmful effects). External Impact resistance: IK07 rating external impact proof (exposed to a 500 g weight dropping from a 40 cm height).

*1 With new, fully charged battery, at room temperature with 1 minute cycle.

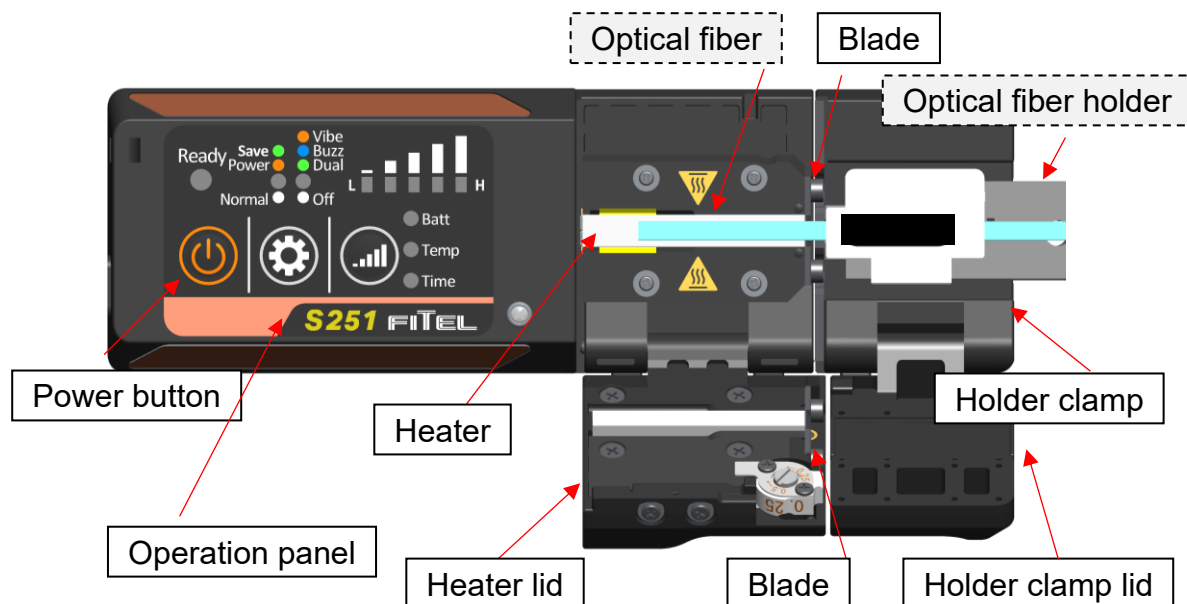
*2 The storage temperature condition for the S944 battery is -20 to 40°C.

*3 Above tests were performed at Furukawa Electric laboratories and do not guarantee that the machine will not be damaged when subjected to these conditions.

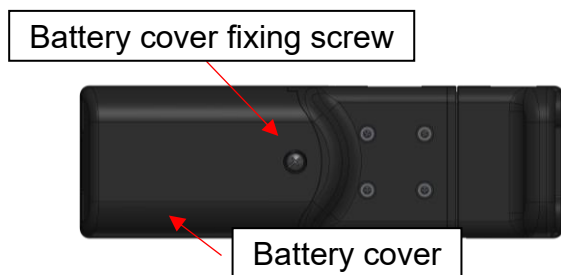
4. Product Description

4.1. Unit Description

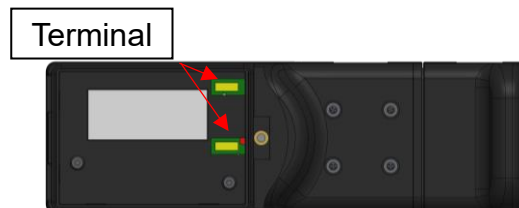
Optical fibers and optical fiber holders are not included in the standard components of this product.



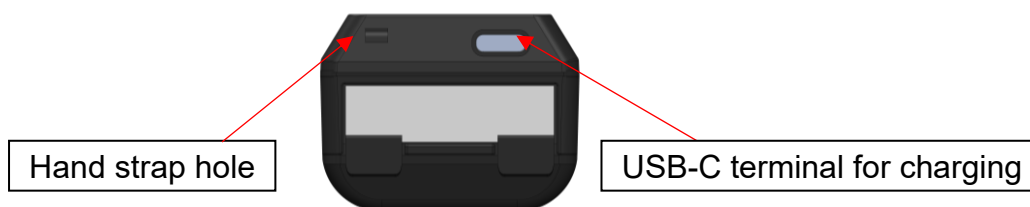
Top view (with an Optical fiber holder)



Bottom view (with battery cover)

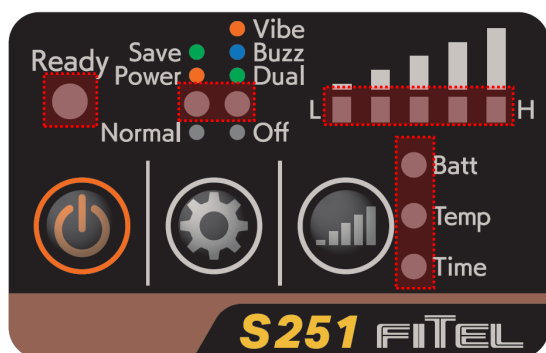
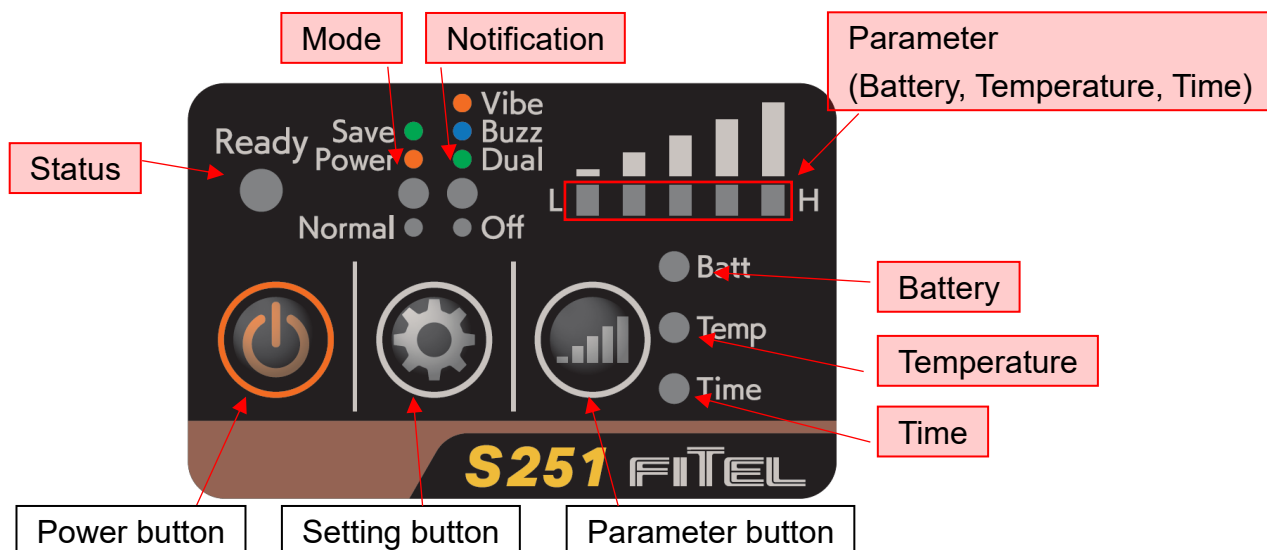


Bottom view (without battery cover)



Side view

4.2. Operation Panel



LEDs



Icons (Not LEDs)

For instructions about how to change the operation mode and notification settings, please see Section 7 Machine Behavior and Settings.

5. Preparation

5.1. Battery Installation

When the S251A Optical Fiber Thermal Stripper is shipped from the factory, the S944 battery is not installed. Install the battery before using it.

1. Loosen the battery cover screw on the bottom by using a screw driver.

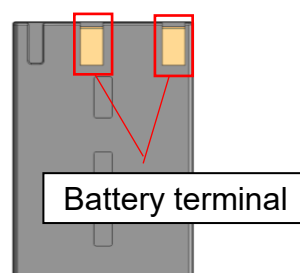


2. Remove the battery cover by rotating it around the hinge side of the cover, as the picture.

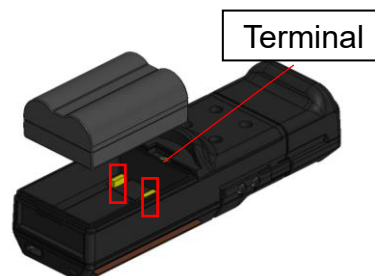
Bottom view



3. Insert the S944 battery into the S251A so that the terminals on the battery and the S251A contact each other. If the battery is inserted into the S251A at a tilt, it will be difficult to close the battery cover.



Battery terminal



Terminal

4. Attach the battery cover to the S251A and tighten the screw.



5.2. Charging the Battery

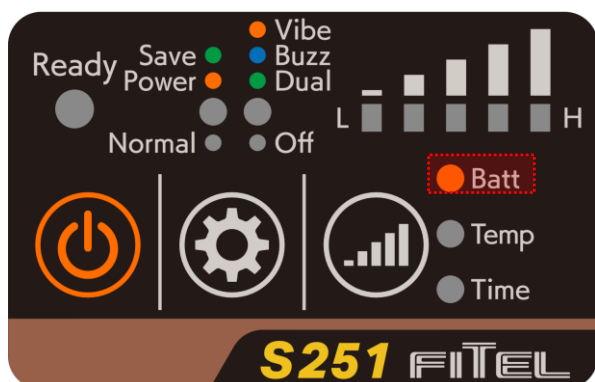
Step No.	Instructions
1	Insert the S944 battery into S251A Optical Fiber Thermal Stripper, as in Section 5.1 Battery Installation.
2	Plug the designated AC adapter into an AC power outlet.
3	Connect the USB-C cable into the AC adapter.
4	Connect the USB-C cable into the S251A.
5	The Batt LED lights up red while charging.

- It takes approximately 3 hours to fully charge an empty battery. The Batt LED turns green when charging is complete.
- Charging while using the S251A is possible. It takes longer to fully charge the battery while using S251A.
- If any charging error occurs, the Batt LED blinks red.

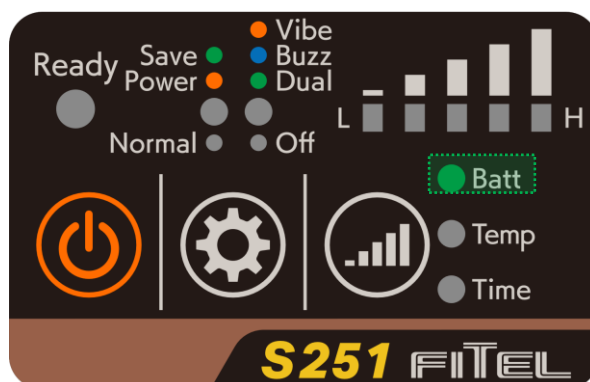
	WARNING	If errors occur during the charging process, please immediately remove the S944 battery and USB-C cable from S251A Optical Fiber Thermal Stripper, and then contact your local representative for assistance. It is dangerous to continuously operate the unit under these conditions, which may cause fire or electrical shock.
	CAUTION	If the AC adapter or other output specification is out of the DC input specification of this instrument, malfunction such as charging errors may occur.



Connecting the USB-C cable



Batt LED while charging



Batt LED when charging is complete

6. Operation Instructions

6.1. Battery Powered Operation

Battery powered operation is possible without the UCB-C cable connected.

6.2. DC Power Supply Operation

The S251A Optical Fiber Thermal Stripper operates on DC power when a USB-C cable connected to an AC adapter is plugged in and the power button is pressed. This is possible without a battery. When the battery is installed, it is charged while the S251A operates on DC power.

6.3. Machine Startup and Shutdown

6.3.1. Startup

Press the power button on the operation panel for 3 seconds.

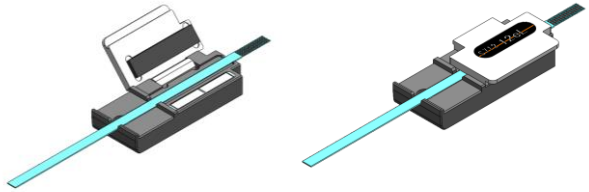
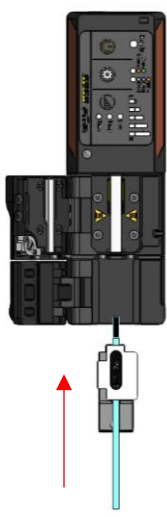
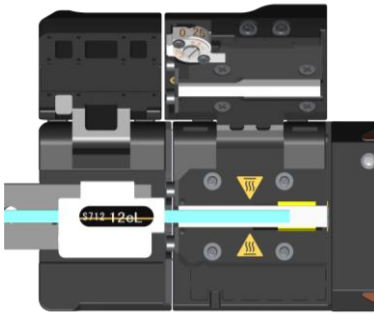
All LEDs turn on at startup.

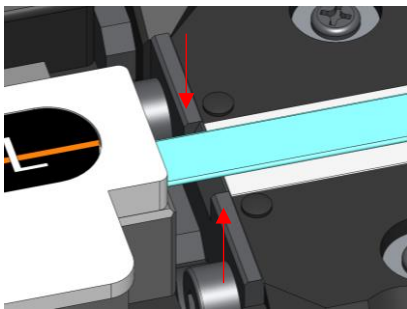
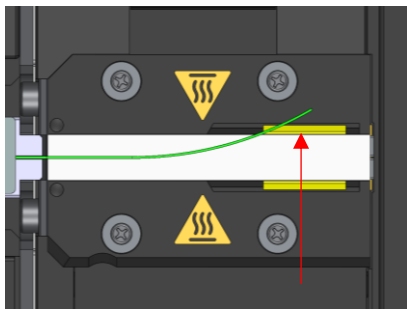
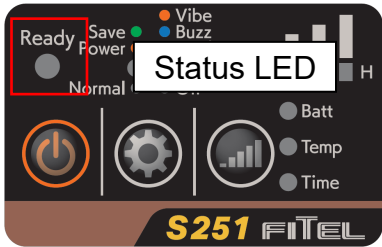
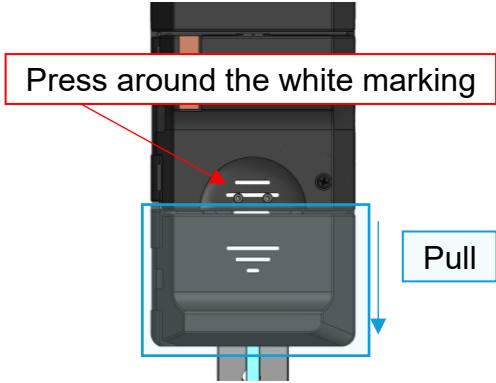
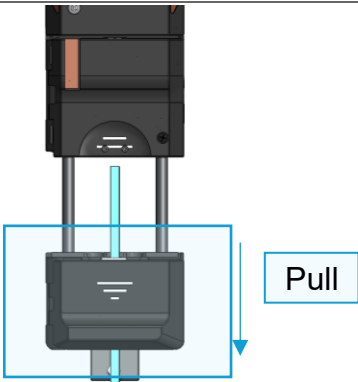



6.3.2. Shutdown

Press the power button for 3 seconds when the machine is turned on.

6.4. Optical Fiber Stripping

Step No.	Instructions	
1	Set an optical fiber on an optical fiber holder, with approximately 30 mm (20 to 35 mm) of the optical fiber end protruding from the optical fiber holder.	 <p>Cover open -> Cover closed</p>
2	Slide the holder clamp towards the thermal stripper main body. Open the holder clamp lid and heater lid.	
3	Set the optical fiber holder on the holder clamp.	

	 <p>The pointed area is not the blade. Check if the optical fiber does not lie on this area.</p>	 <p>Set the fiber so that it does not extend beyond the heater area.</p>
4	<p>Press firmly around the white marking on the heater lid until the Status LED blinking ends. Depending on the notification settings, the vibration and/or buzzer notify the completion of heating. For details, see Section 7.2.3 Heating Complete Notification Setting.</p> 	 <p>Press around the white marking</p> <p>Pull</p>
5	<p>Pull slowly the holder clamp while firmly holding the heater lid. Pull until the sliding stops.</p>	 <p>Pull</p>
6	<p>Open the heater lid and holder clamp lid. Take out the optical fiber holder.</p>	
7	<p>Remove any optical fiber residue on the heater or rubber.</p>	

	CAUTION	The heater area is hot. Do not touch the heater when setting an optical fiber or cleaning it. This may result in burns or injury.
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One Point	<ul style="list-style-type: none">• When there is small dust on the heater or heater lid rubber, clean it with alcohol soaked cotton buds or cotton tissues.• When there is optical fiber residue on the heater or heater lid rubber, remove it by brush and after that strip the optical fiber.
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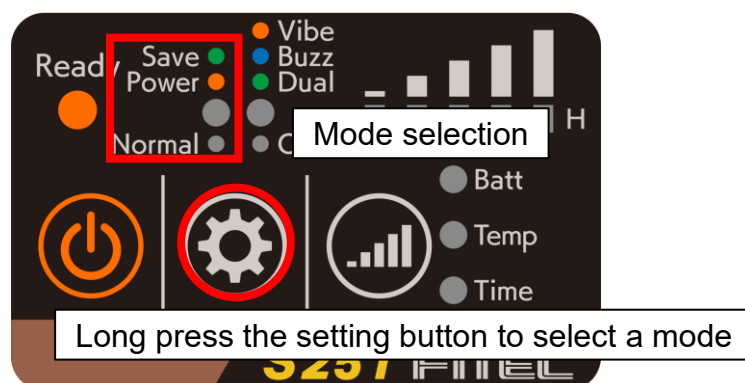
7. Machine Behavior and Settings

7.1. Behavior

7.1.1. Sleep Mode

The S251A Optical Fiber Thermal Stripper enters sleep mode when there is no movement of the heater lid for approximately 20 seconds. In sleep mode, the Status LED changes from green to red. The sleep mode behavior depends on the operation mode setting. See Section 7.2.2 Operation Mode Setting for more details.

Operation Mode Setting	Sleep mode behavior
Normal mode (Factory setting)	The heater temperature decreases to save power consumption.
Save mode	The heater consumes no power.
Power mode	Sleep mode is disabled.



7.1.2. Auto Shutdown

S251A Optical Fiber Thermal Stripper shuts down automatically when there is no movement of the heater lid for more than 10 minutes. However, the auto shutdown function is disabled in power mode.

7.1.3. Battery Level

The parameter LEDs show the battery level when the power is on and the parameter is set to "Batt". When the parameter button is pressed while charging with the power off, it will also show the battery level.

Parameter LED	Battery level
LED Off	No battery connected
■ blinking	0%
■	0 to 20%
■ ■	20 to 40%
■ ■ ■	40 to 60%
■ ■ ■ ■	60 to 80%
■ ■ ■ ■ ■	80 to 100%

7.2. Settings

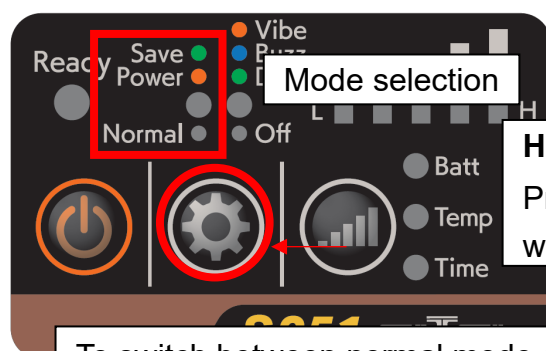
7.2.1. Factory Settings

The factory settings of S251A Optical Fiber Thermal Stripper is as the following table.



Setting item	Factory setting
Operation Mode	Normal mode
Heating complete notification	Dual (Vibration and buzzer)
Heating temperature	140°C
Heating time	2 seconds

7.2.2. Operation Mode Setting

The operation mode setting can be changed. By long pressing the setting button, the operation mode is changed between normal mode and save mode. To activate power mode, press the setting button while long pressing the power button and turn on the machine.



How to activate power mode:

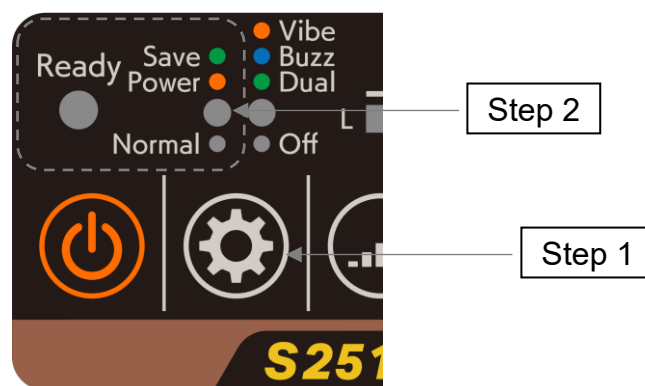
Press the setting button  while long pressing the power button  at startup.

To switch between normal mode and **save mode**, long press the setting button 

Operation Mode Setting	Sleep mode behavior
Normal mode (Factory setting)	The heater temperature decreases to save power consumption.
Save mode	The heater consumes no power.
Power mode	Sleep mode is disabled.

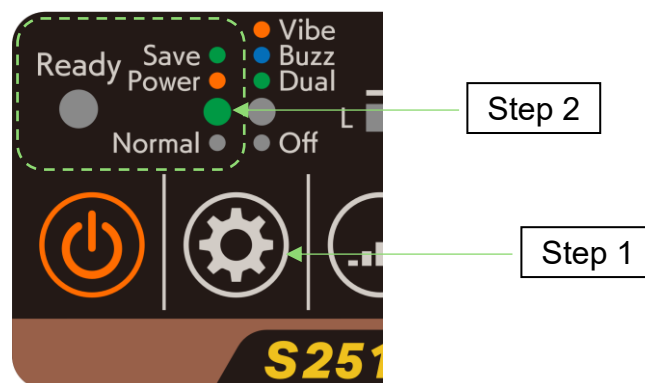
Instructions for setting to normal mode

Step No.	Instructions
1	Long press the setting button.
2	The mode LED is turned off and the Normal mode is applied.



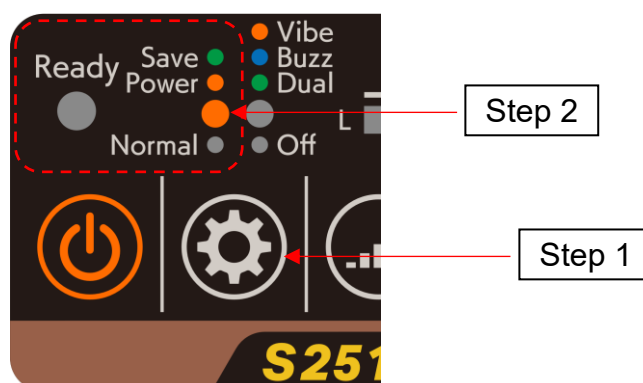
Instructions for setting to save mode

Step No.	Instructions
1	Long press the setting button.
2	The mode LED lights up green and the Save mode is applied.



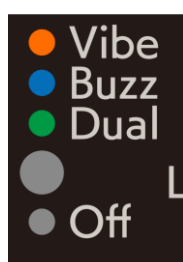
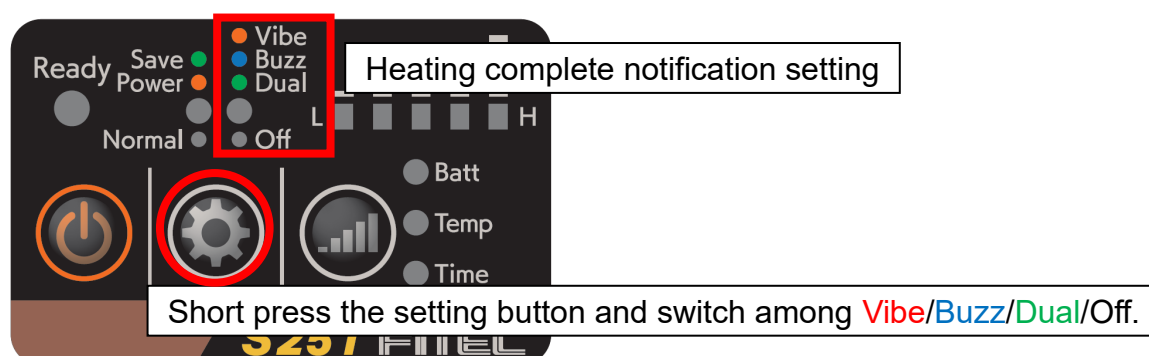
Instruction for setting to power mode

Step No.	Instructions
1	Press the setting button while long pressing the power button and turn on the machine.
2	The mode LED lights up red and the Power mode is applied.

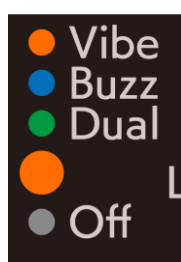


7.2.3. Heating Complete Notification Setting

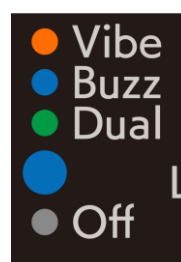
The notification type for indicating the completion of heating can be changed by short pressing the setting button. The notification type switches as Dual -> Off -> Vibe -> Buzz -> Dual ->.... The factory setting is Dual.



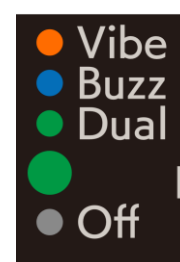
Off
No vibration, no sound



Vibe
Only vibration



Buzz
Only buzzer sound



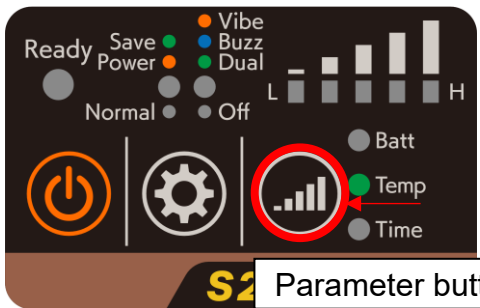
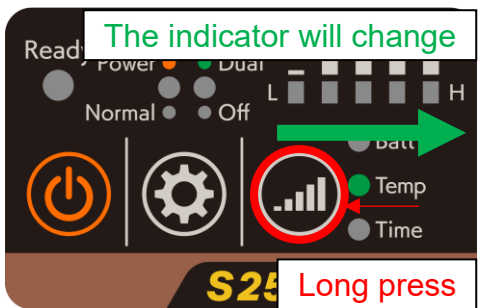
Dual
Both vibration and sound

7.2.4. Heater Temperature Setting

The heater temperature can be set at 5 levels. The factory setting is 140°C. Change the settings depending on the working condition, such as setting it to 160°C in colder weather or setting it to low temperature when stripping optical fibers with easily melting coating.

Parameter LED	Heater temperature
■	80°C
■■	100°C
■■■	120°C
■■■■	140°C (Factory setting)
■■■■■	160°C

Setting Instruction

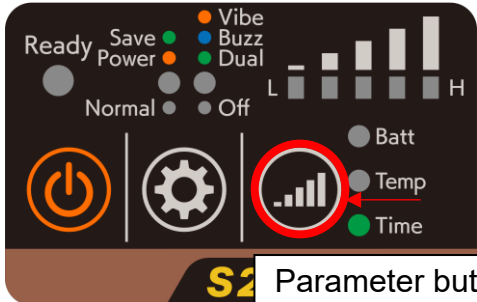
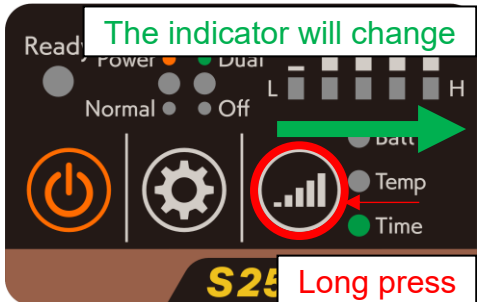
Step No.	Instructions	
1	By short pressing the parameter button, the LED switches as Batt -> Temp -> Time -> Batt -> ..., so select Temp. Changing the heater temperature setting is possible when the Temp LED is green.	
2	By long pressing the parameter button when the Temp LED is green, the heater temperature setting changes. By releasing the parameter button when the heater temperature setting is at the desired value, the setting is fixed. Temperature changing 80°C -> 100°C -> 120°C -> 140°C -> 160°C -> 80°C -> ...	

7.2.5. Heating Time Setting

The heating time can be set at 5 levels. This heating time means the duration starting from clamping an optical fiber until the notification begins. The factory setting is 2 seconds. Change the setting depending on the working condition, such as setting it longer in colder weather or setting in shorter when stripping optical fibers with easily melting coating.

Parameter LED	Heating Time
■	1 second
■■	2 seconds (Factory setting)
■■■	3 seconds
■■■■	4 seconds
■■■■■	5 seconds

Setting Instruction

Step No.	Instructions	
1	<p>By short pressing the parameter button, the LED switches as Batt -> Temp -> Time -> Batt -> ..., so select Time.</p> <p>Changing the heating time setting is possible when the Time LED is green.</p>	 <p>Parameter button</p>
2	<p>By long pressing the parameter button when the Time LED is green, the heating time setting changes.</p> <p>By releasing the parameter button when the heating time setting is at the desired value, the setting is fixed.</p> <p>Time changing 1 s -> 2 s -> 3 s -> 4 s -> 5 s -> 1 s -> ...</p>	 <p>The indicator will change</p> <p>Long press</p>

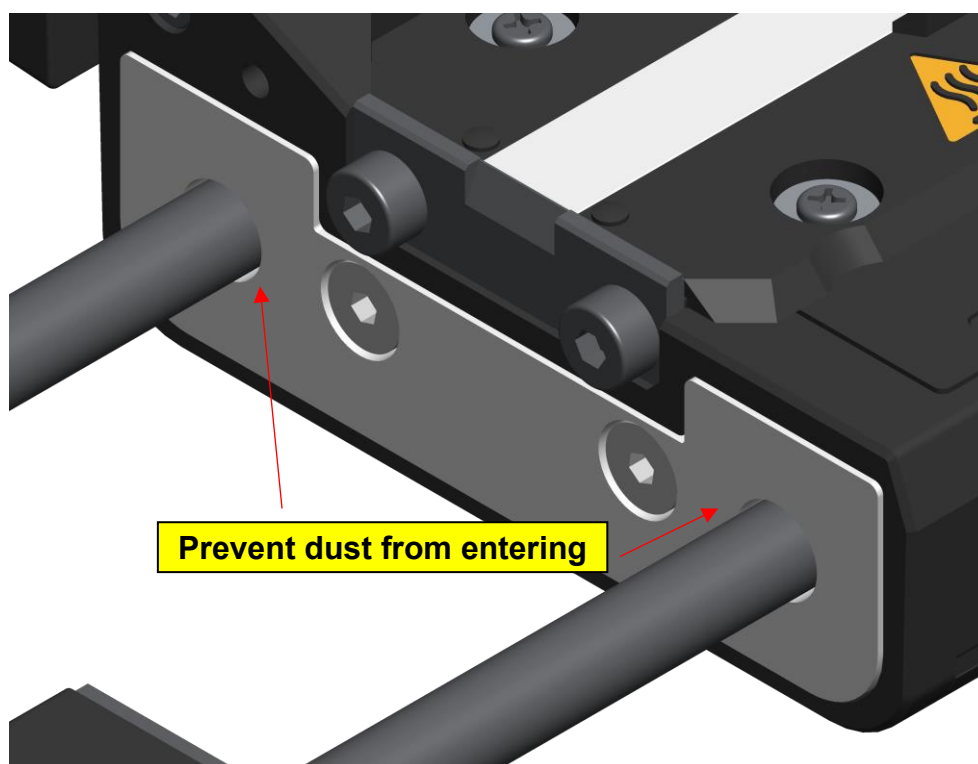
8. Maintenance

8.1. Stripping Blade, Heater, Clamping Rubber Maintenance

As a routine maintenance procedure, please periodically clean the blade and heater area by using the brush or air-blow gun. If there is any dust or residue remaining on the blade and heater area, the stripping process may not be smooth. As a result, the operation may fail.


8.2. Slide Unit Maintenance

Please clean the slide shaft if there is any dust attached. If any dust enters inside the sliding area, the slide movement may become unsmooth.



8.3. Maintenance After Use in Bad Weather

After using the S251A Optical Fiber Thermal Stripper in bad weather, please clean any water and dirt from the machine. Rust on metal parts or condensation inside the machine may occur.

	CAUTION	Do not touch the heater. This may result in burns or injury. Please use a brush to clean the heater.
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9. Others

9.1. Battery Storage Conditions

If the S944 battery pack needs to be stored for more than 1 month without being used, please store it using the following procedures.

- 1) Remove the S944 battery pack from the S251A main body, then move it to a proper storage area.
- 2) Maintain the storage environment under the following conditions.
Temperature: -20 to 20°C, Humidity: 15 to 95%RH without condensing.
- 3) Charge the battery for approximately 30 minutes every 6 months. (Caution: If the battery is over discharge, it may be unusable.)

10. Maintenance Period

We will keep the spare parts for repair and replacement at least 6 years after the S251A Optical Fiber Thermal Stripper is discontinued. During this period, we will repair this product. Beyond this period, we may be able to repair it, depending on the problems. Please contact Furukawa Electric Co., Ltd. or your local sales representative for further assistant.

11. Contacts

For sales and service information, contact FURUKAWA ELECTRIC CO., LTD. or your local representative.

Sales & Marketing Department

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