Optical Fiber Fusion Splicer

User Manual

Warning: Non-proper use of fusion splicer could lead to fatal and serious injury.

1. The input voltage of this model of machine is definite; please do not use the voltage outside the scope. Please use the correct AC and DC power supply.

2. When the fusion splicer comes across the following failures, please immediately remove the AC power cord from the power supply input and turn off the fusion splicer, otherwise will lead to the incapable of the repairing and even will cause personal injury, death and fire.

★ Smoke, smell, noise or heat anomaly

★ Broken or damaged machines

★ Liquid or foreign matter enters the interior of the machine

3. This model of fusion splicer does not have the need to maintain internal components, dismantling of fusion splicer and power modules is prohibited; any mistake in maintenance will lead to the machine beyond repair even causing bodily harm.

4. The machine has strictly limitation to the power supply module used.

5. The fusion splicer is prohibited to be used under the environment with the inflammable liquid or flammable gas; otherwise will lead to fire, explosion and other serious consequences.

● **Disclaimer Clause**

The Company does not assume any liability for all damage caused by the use of non original battery.

● **To avoid possible wrong operation or insecurity, a valid ground three-hole socket must be used when AC/DC adaptor access to AC 220V 50HZ power.**

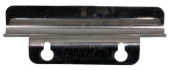
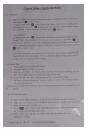
1. Brief Introduction

1.1 Specifications

	OFS-800 Fusion Splicer
Splicing Type	SM, MM, NZ-DS, EDF
Splicing Mode	Manual, Half Auto, Auto
Fiber Alignment	Core Alignment
Splicing Time	Typical 8 sec, with standard SM fiber
Heat Time	Typical 30 sec
Cleaved Length	8～16mm
Fiber Image/ Magnification	300/200 times
View Display	5 inch digital high-quality LCD screen
Tension Test	2.0N (standard)
Protective Sleeve Length	40mm, 60mm or others
Battery Capacity	Typical 200 cycles (splicing and heating)
Battery Life	Cycling charge 300-500 times, easy to replace battery
Electrodes Life	2500
Power supply	AC input: 100-240V, 50/60Hz DC output: 13.5V/4.5A
Operating Condition	-10~+50℃(operation temperature); 0~95%RH(humidity); 0~5000m(altitude)
Weight	1.98KG
Dimension	155 * 158 * 135

1.2 Configuration of fusion splicer

Following is the standard configurations of fusion splicer:

Name	Image	Quantity
Fusion Splicer		1 set
Carry Case		1 pc
Spare Electrodes		1 pair
AC Adaptor		1 pc
Power Cord		1 pc
Cooling Tray		1 pc
User Manual		1 pc
Fiber Stripper		1 set
Fiber Cleaver		1 set

1.3 Parts Name of fusion splicer

Host

Left Keyboard

Right Keyboard

1. 4 Descriptions of the Keyboard

Membrane figure of left and right keyboards:

Keyboard	Standby mode	Mode of manual operation	Mode of automatic operation	Mode of parameter menu
	Power switch	Power switch	Power switch	Power switch
	To increase the brightness of the display	The optical fiber moves upward	Invalid	Increase the parameter quantum or move the cursor
	To reduce the brightness of the display	The optical fiber moves downward	Invalid	Increase the parameter quantum or move the cursor
	Invalid	The optical fiber moves left	Invalid	Increase the parameter quantum or move the cursor
	Turn on the help screen	The optical fiber moves right	Invalid	Increase the parameter quantum or move the cursor
	To enter the menu mode	To switch on the manual driver at pausing state	Invalid	Select→edit the fusion(heating) parameter files
	To enter “select splice parameter files” menu	To enter the “select parameter files” menu	Invalid	To enter the next menu interface/ confirm the modifier
	Invalid	Invalid	Invalid	Exit from the current menu screen
	Heater switch	Heater switch	Heater switch	Heater switch
	Reset of motor	Reset of motor	Reset of motor	Invalid
	Start to fusion	Further propulsion/start	Invalid	Invalid
	Discharging	Discharging	Invalid	Invalid
	Switch X/Y display screen	Switch X/Y display screen	Switch X/Y display screen	Invalid

2. Basic operation

2.1 Descriptions of the power modules

The Fusion Splicer uses 2 in 1 power module design, during the work, the Fusion Splicer can be supplied by the polymer lithium ion battery separately; or use AC adapter for electricity supply; when adapter is used for electricity supply, the polymer lithium ion battery is charged at the same time. The lithium battery to be changed must be the model specified by the Company.

2.2 AC operation

2.2.1 When AC power supply is adopted, the AC/DC adapter supplied by the company should be used. The basic parameters of the adapter are as follows:

INPUT: AC100-240V～1.8A 50/60HZ

OUTPUT: DC13.5V／5A

2.2.2 The AC/DC adapter will not be able to supply normal DC output if the input AC voltage is lower than 100V or higher than 240V. At this situation, the DC output line of the adapter must not be inserted into “POWER INPUT“ specified on the power module of the Fusion Splicer, otherwise, it would result in the damage of fusion splicer.

2.2.3 If lithium battery is arranged in the battery case, the battery pack will also be charged when the adapter is supplying power. However, it is recommended that the Fusion Splicer be shut when Charged.

2.3 Battery supply operation

2.3.1 Battery supply operation

The user may choose to use the polymer lithium battery in the splicer to separately supply for the Fusion Splicer.

2.3.2 Checking of battery capacity

When the power module is not in the charged state, press the "PUSH" button on the flank of the power module. Then the four battery capacity indicator (red) lights on the left side will be bright. The number of the lit light represents the highness or lowness of the battery capacity. See the following table.

When the power module is in the charged state, the four battery capacity indicator (red) lights on the left side will be bright, which only represents the highness of the current charge voltage, but the capacity of the battery.

2.3.2 Battery charging

<1> Whether the battery capacity is in adequacy, every time the AC power adapter is inserted into “POWER INPUT “on the Fusion Splicer power module, the power module will start a charging process.

<2> Display of charged state: During the charging, the charging indicator (CHARGE) light is red; after the charging completion, the charging indicator (CHARGE) will be green.

<3> When the splicer is shut down, the maximum charging time is three hours 40 minutes, and the shortest is 40 minutes. The length of the charging time is dependent on the current battery capacity of the splicer.

<4> If the splicer is charged when it is active, the charging time should be longer. The user is recommended to charge the battery when the splicer is shut down, thus the charging time will be shortened.

2.3.3 Under Voltage Alarm

This model of fusion splicer has the function of “Under Voltage Alarm”. If the capacity of the lithium battery is lower than the specified value (the default value is around 10.3V), the splicer will automatically alarm and lock the keyboard to disable input. The user should press  until the Fusion Splicer is shut down, and charge the lithium battery pack as soon as possible, or use the adapter to supply power.

2.3.4 The other considerations

<1> For any fusion splicer not to be used for more than 1 month, it is suggested to separate the lithium battery and machine for saving.

<2> The lithium battery should be charged in the environmental temperature ranging between 0℃～＋40℃.

<3> The battery, with certain service life, belongs to consumables. When the fusion splicer can only work for a short time despite the battery level of the lithium battery above 90%, please replace the battery. Please use the battery of the model designated by the Company for replacement.

<4> Before the battery power supply for the fusion splicer, the battery level must be checked. If the battery is low or the low voltage warning is given, please recharge the lithium battery timely.

<5> Please do not charge or discharge the battery in a low temperature for a long time to prevent the decrease of the battery life. Accidents may happen if charging or discharging the battery or special battery charger and battery in a high temperature.

<6> When charging the battery with the special battery charger, immediately disconnect the charger when the battery is fully charged. Huge damage may be incurred or accidents may occur on the lithium battery if the battery fully charged is still under the charging state.

<7> The battery should be stored in a clean, dry and ventilated indoor environment of temperature ranging －5℃～＋35℃ and humidity of 65±20％RH.

<8> If the battery is stored for a long time, it should be charged with the special charger provided by the Company once every 90 days. The life of the battery may be extended if the battery is half fully charged in a long time.

<9> It is prohibited to remove the battery without explicit approval or put it into fire, to prevent explosion of battery.

2.4 Turn on and turn off

Turn on

Press  button on the operator panel until the LED indicator lights turn from green to red, release the  button. When all of the motors return to the initial position, the screen shows the reset menu.

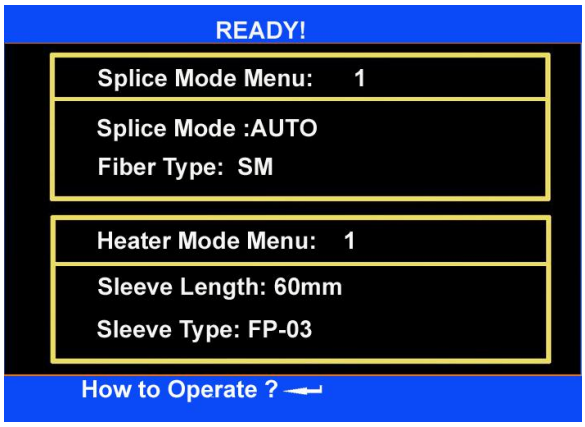
Turn off

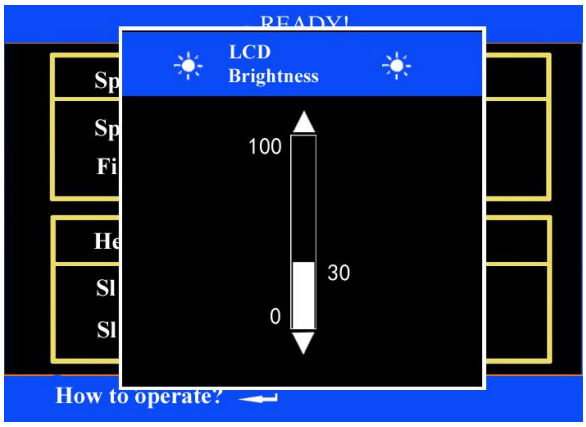
Press  button on the operator panel until the LED indicator turn from red to green, release The  button , now the machine is turned off.

2.5 Display brightness control

When the external environment is different, the user can adjust the display brightness for the convenience of the Fusion Splicer operation. Display brightness control should be done in the “standby” operation interface.

<1> Press ▽ or △ button in the “standby” operation interface to change the brightness of the display.

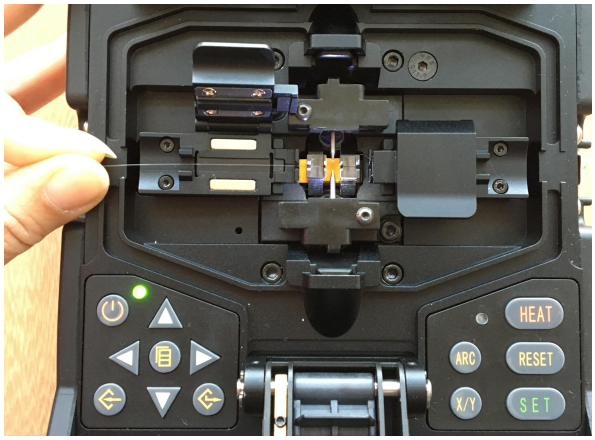




<2> Press ⏎ button to confirm the brightness changes, and return to “standby” operation interface.

- **When the display brightness is moderate, the capacity loss can be reduced, and the endurance of the battery can be prolonged.**

2.6 Place fiber



2.6.1 Open shielding cover and left and right fiber clips.

2.6.2 Put the good fiber end face in the V-shaped groove; ensure the tip of the fiber between the tip of the electrode and V-shaped groove’s edge.

- If the fiber is bending, bending part should be upward when placing the fiber.
- To ensure the splice quality of the fiber, the clean cross-section of fiber cannot touch other things.

2.6.3 Use fingers to pinch the fiber, and then close the left clip, and press the fiber. Ensure the fiber is placed in the bottom of V-shape groovy. If the fiber is placed incorrect, please replace the fiber. The fiber end face don’t touch the V-shape groove when place the fiber.

2.6.4 Place another optical fiber according to the above steps.

2.6.5 Close shielding cover.

2.6.6 Press ”SET” key to start working.

3. Check and Maintenance

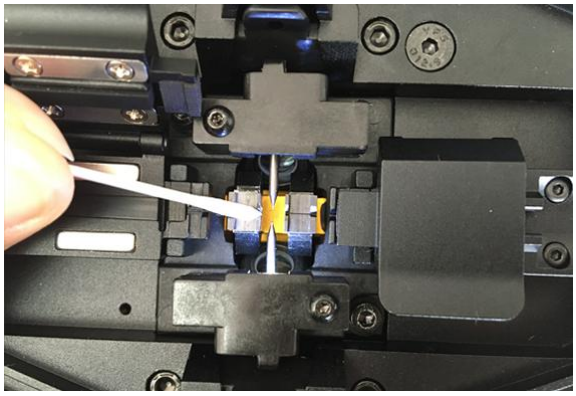
Critical cleaning points and maintenance checks are described below.

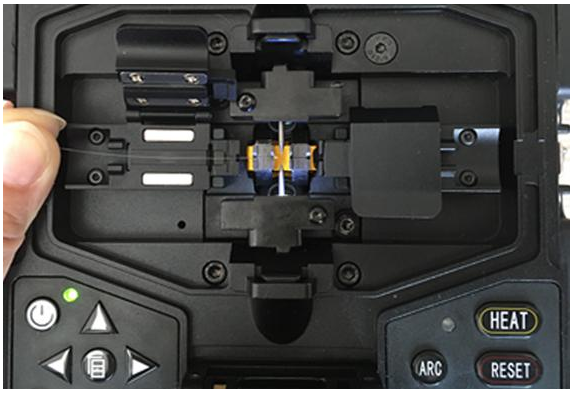
3.1 Cleaning V-grooves

If contaminants are present in the V-grooves, proper clamping may not occur, resulting in higher splice loss. The V-grooves should be frequently inspected and periodically cleaned during normal operation. To clean the V-grooves do the following:

<1> Open the wind protector.

<2> Clean the bottom of the V-groove With an alcohol-impregnated thin cotton swab. Remove excess alcohol from the V-groove with a clean dry swab.





- Be careful to not contact the electrode tips.
- Do not use excessive force when cleaning the V-groove; Otherwise, The V-groove arm may get damaged.
- If the contaminants in the V-groove cannot be removed with an alcohol-impregnated thin cotton swab, use a cleaved fiber end-face to dislodge contaminants from the bottom of the V-groove. Repeat step 2 after this procedure.

3.2 Cleaning Fiber Clamp Chips

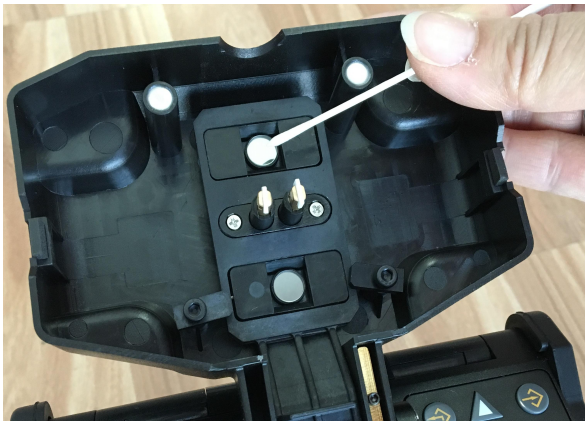
<1> If contaminants are present on the clamp chips, proper clamping may not occur, resulting in poor quality splices. The fiber clamp chips should be frequently inspected and periodically cleaned during normal operation.

<2> To clean the clamp chips, do the following: Open the wind protector. Clean the surface of the chip clamp with an alcohol-impregnated thin cotton swab. Remove excess alcohol from the chip clamp with a clean dry swab.

3.3 Cleaning Wind Protector Mirrors

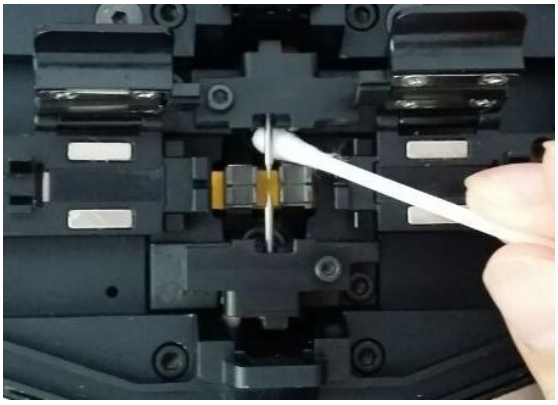
If the wind protector mirrors become dirty, the fiber core position may be incorrect due to decreased optical path clarity, resulting in higher splice loss. To clean the mirrors, do as following:

- Clean the mirror surface with an alcohol-impregnated thin cotton swab;
- Remove excess alcohol from the mirror surface with a clean dry swab;
- And mirror should look clean with no streaks or smudges.



3.4 Cleaning Objective Lenses

If the objective lenses' surface becomes dirty, normal observation of the core position may be incorrect, resulting in higher splice loss or poor splicer operation. Therefore, clean both of them at regular intervals. Otherwise, dirt may accumulate and become impossible to remove. Cleaning Objective Lenses：



<1> Before cleaning the objective lenses, always turn off the splicer.

- Do not hit or touch tip of electrode when cleaning it.

<2>Gently clean the surface of lenses (X-axis and Y-axis) with an alcohol-impregnated thin cotton swab. Using the cotton swab, start at the center of the lens and move the swab in a circular motion until you spiral out to the edge of the lens surface. Remove excess alcohol from the mirror surface with a clean dry swab. The lens surface should be clean and free of streaks or smudges.

<3> Turn on the power and make sure no smudges or streaks are visible on the monitor screen. Press X/Y to change the screen and check the state of the lens surface on both the X- and Y-screens. Perform dust check.

3.5 Replace Electrodes

Electrodes wear with use and also must be cleaned periodically due to silica oxide buildup. It is recommended that the electrodes should be replaced after 1,000 arc discharges. When the number of arc discharges reaches a count of 1,000, a message prompting to replace the electrodes is displayed immediately after turning on the power. Using the electrodes without a replacement will result in greater splice loss and reduced splice strength.

Steps of replace electrodes:

<1> Press button on the operator panel until the LED indicator turn from red to green, release the button, now the machine is turned off.

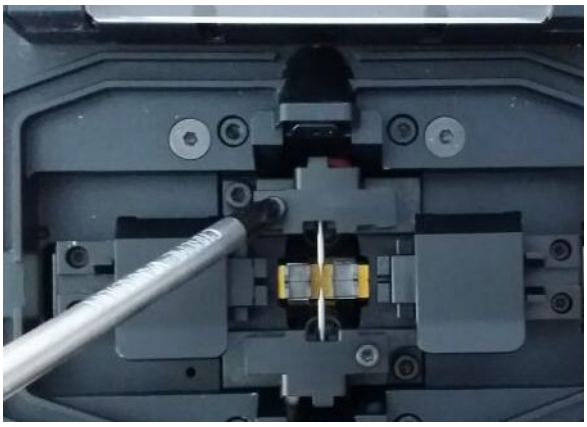
<2> Remove the old electrodes and Method for tearing:

a. Loosen screw located on electrode cover.

b. Take electrode out of electrode cover. (Electrode is fixed in the electrode cover)

<3> Clean the new electrodes with alcohol-impregnated clean gauze or lint-free tissue and install them in the splicer.

<4> Place the electrode cover and tighten screw

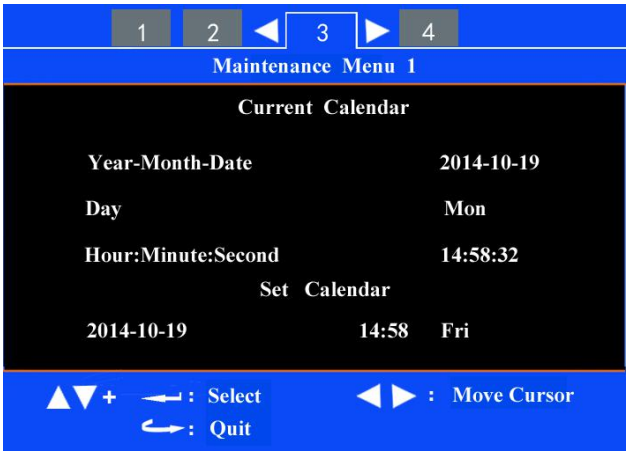


- **Do not pull out night light wiring when replacing electrode.**
- **The tightening of the screw should not exceed the strength of fingers.**

3.6 Set Calendar

This function sets the date and time in the calendar incorporated in the splicer.

<1> In the［Maintenance Men1］Menu, press △ or ▽ button and move the cursor to select the [Calendar]



<2> Press ⏎ button to enter [Current Calendar] interface. Move the cursor to select the item to be changed. Press △ or ▽ button to adjust the value.

<3> After completion of calendar setting, press ⏎ button. The date and time are stored.

Addenda A: Summary of quick operating

I. Preparing

1. Verify that the machine is plugged in power or the battery capacity is enough; then press  and hold the key until the machine is booted.

2. In the standby mode, press  to enter “Splice Menu” menu. Move the cursor to [Operation Options]; press  to enter. Set [Auto Start] [pause 1],[pause 2] respectively as “ON”,“OFF”,“OFF”.

3. Discharge Calibration*

Discharge calibration is needed because constant changing of atmospheric conditions such as temperature and pressure, and the long service of the machine creates variability in the arc temperature and position.

Step of discharge calibration:

In the [Ready] mode, press  button to enter “Splice Menu” menu.

Then prepare and place fiber according to the method described in fiber preparation. Close the wind protector. Press  to enter [Arc Calibration]. Discharge calibration automatically starts. The user is recommended to repeatedly prepare and place fiber in discharge calibration interface, until the “Step II of discharge calibration completed” message is displayed for three Times.

Note:* Discharge calibration is needed only arc power fluctuates strongly; it is not necessary upon boot every time. After discharge calibration is completed, the machine will adjust the arc discharge current according to the Calibration results to ensure fusion quality.

Ⅱ. Fiber preparation

1. Put the tube over one end of the fiber.
2. Use fiber stripping pliers to strip fiber coating layer, the length of which is 30-40 mm. Use gauze dipping with alcohol or wadding to wrap the fiber, and then clean the bare part.
3. Use a fiber cleaver to cut the fiber。Bare fiber length is 16 mm around.
4. Put the finished fiber in the Fusion Splicer. Cross-section of fiber can not touch other things.

Ⅲ. Cover the wind protector, then the fiber fusion automatically starts and the splicing loss is displayed.

Ⅳ. Reinforce the fusion point.

1. Transfer fiber with protection sleeve from V-grooves to tube heater;

2. Make sure the splice point is located at the center of the protection sleeve. Put the tube at the center of the heater.

3. Press HEAT to start tube heating. The buzzer beeps and the HEAT LED turn off when tube heating is completed.

4. Remove the tube from the heater when the heater is cool. The whole process of Fusion Operation is completed.

Ⅴ. Repeat Step II, III, IV to continue splicing.

Addenda B: Guarantee period and limits

The following occurs, not covered under warranty

★Malfunction or damage caused by user's inadvertent actions (including physical damage, damp short circuit)

★ Product damage caused by nature disasters (earthquakes, fires, floods, lightning, typhoons, etc.) or force majeure.

★ Other failure or damage due to improper use, or improper installation, or configuration use of non-original batteries and accessories or other external factors (such as voltage instability)

★ Unauthorized disassemble or repair.

★ Consumable parts (such as electrode, cleaver blade, carrying case of fusion splicer, etc.)