2023.10

User's manual

OPTICAL FIBER FUSION SPLICER

AI-10A

USER'S MANUAL

Catalogue

Safety requirements

At any stage of the operation of the fiber optic fusion splicer (hereinafter referred to as the "fusion splicer"), the following general safety measures must be taken. Failure to take these safety measures or comply with the warnings and precautions described in this manual will violate the safety standards for the design, manufacturing, and use of the welding machine. We do not assume any responsibility for the consequences caused by users violating these requirements!

● Operating environment and power supply

Requirements for the working, storage environment, and working power supply of the welding machine

operation temperature： 0~+40℃limiting temperature: —10℃~+50℃

Working humidity: below 95% RH (without condensation)maximum wind speed： 15m/sStorage conditions: -20℃~+60℃

Before connecting to the power supply,please ensure that the welding machine is provided with a matching power voltage and all safety measures have been taken.

- Do not use the welding machine in flammable and explosive environments
- Do not use the welding machine in the presence of combustible gases, smoke, or dust
- Do not disassemble or disassemble any components of the welding machine without authorization

Except for the parts that are allowed to be replaced by the user as stated in this manual, please do not disassemble any parts of the welding machine without authorization. Replacement of parts and internal adjustments can only be carried out by authorized maintenance personnel.

Warning/Precautions

● AC/DC adapter

Voltage: 13.5V, output current 4.8A; Polarity: The center is positive. Using an adapter with inappropriate output voltage and current will cause damage to the welding machine or inability to charge. The input AC voltage of the AC/DC power adapter is 100-240V, 50/60Hz. If the input voltage exceeds this range, it will cause damage to the adapter!

● Internal lithium battery

The battery inside the machine is a dedicated lithium-ion battery, and using other batteries will damage the welding machine. For safety reasons, the lithium battery pack cannot be disassembled to prevent short circuits; Do not forcefully hit the battery; Do not approach or immerse the battery in sources of ignition and strong heat. Violation of the above operations may cause the lithium battery to explode, endangering the personal safety of the user.

▶ Note:

1. After being stored for a long time, the battery can easily enter a sleep state, and its capacity is lower than the normal value, resulting in a shorter usage time. However, it only needs to undergo 2-3 normal charging and discharging cycles to activate the battery and restore its normal capacity. Lithium batteries have almost no memory effect and can be charged at any time.
2. Lithium batteries have self discharge phenomenon, and batteries that have not been used for a long time will be in a low voltage state due to self discharge. Long term low voltage state can damage the internal structure of the battery and shorten its lifespan. Therefore, unused batteries should be charged at least once a month, and attention should be paid to charging up to the display of 2 or 3 cells, and should not be fully charged; In daily use, try to charge when the battery level shows more than one grid, and do not charge when the battery is depleted.
3. If the machine is not used for a long time, please remove the battery and store it separately. The temperature range for long-term storage of batteries (storage time exceeding 6 months) is: 0 ℃~40 ℃ The temperature range for short-term storage of batteries (storage time less than or equal to 6 months) is -20 ℃~60 ℃.
4. To ensure the safety of charging, the charging temperature range of the lithium battery inside the fusion splicer is 0 ℃~40 ℃.

Warning/Precautions

- **The use of fiber optic fusion splicer**
  When the welding opportunity encounters the following situations, please immediately turn off the welding machine and disconnect the adapter, battery, and welding machine. Otherwise, it may cause serious consequences such as the welding machine not working properly or unable to repair.
- Liquid and foreign objects enter the interior of the welding machine. There is a protective structure inside the machine, and a small amount of fiber optic debris falling into it will not affect its use. However, please try to be careful not to fall into it.
- The welding machine is subjected to strong vibrations and impacts.
- There are no components that require maintenance inside the welding machine, and disassembly of the welding machine is prohibited.
- During the electrode discharge process of the welding machine, the voltage between the two electrode rods can reach several dry volts. Do not touch the electrodes, otherwise it may cause serious consequences such as damage to the welding machine or even personal injury.

Note:

1. The welding machine is used for welding quartz glass fiber optic cables. Please do not use this instrument for other purposes. Please read this manual carefully before use.
2. When using in dusty environments, try to keep the windshield of the welding machine closed as much as possible; Pay attention to cleaning the V-groove and lens during use (cleaning the V-groove can be done using an art knife along the fiber groove, and then using a brush to clean it); After use, the entire machine needs to be cleaned of dust.
When the welding machine moves from a low temperature environment to a high temperature environment, try to adopt a gradual heating method, otherwise condensation will occur inside the instrument, which will have adverse effects on the instrument.
4. The welding machine is a calibrated precision instrument, please try to avoid strong vibrations and impacts. When storing, a dedicated carrying case should be used, and suitable buffered packaging boxes should be added outside the carrying case for long-distance transportation.

- **LCD display screen**
  1. The LCD screen of the fusion splicer is not a touch screen. Sharp objects should not be used to click on the LCD screen, and it should not be forcefully impacted.
  2. Do not drop organic solvents or dirt on the LCD screen, such as acetone, engine oil, antifreeze, ointment, etc., as this may cause abnormal display on the LCD screen. 3. The LCD screen can be cleaned by wiping with silk cloth or soft fabric.
  4. The brightness of the LCD screen may vary depending on the viewing angle of the screen; There may be noise on the screen when the windproof cover of the welding machine is opened or when the optical fiber is not inserted. These are not malfunctions of the LCD screen, they are normal phenomena.

- Introduction to operating buttons and components
  This machine is mainly used for connecting optical fibers, and can connect ordinary leather fiber optic cables, jumpers, and cladding diameters of 80 μm -150 μ Multiple types of quartz based optical fibers such as single mode, multimode, and dispersion shift for m. During use, attention should be paid to maintaining cleanliness and avoiding strong vibrations or impacts.

OPM VFL power switch: ① - ⑤ Cycle: ①. Turn on light work, wavelength 1310. ② Switch wavelength 1550. ③ Switch wavelength to 850. ④ Turn on the red light. ⑤ Turn off light power and red light.

Cleaning button function ①: Short press to enter cleaning mode, the cutting blade clamping block retracts inward, and at this time, a brush or cotton swab can be used to clean the clamping surface. Short press again to return to normal mode.
Function ②: Press and hold for 1.5 seconds in normal mode to manually cut once.

Reset key: Press the reset key to reset the propulsion motor, core adjustment motor, and focus motor to the original point. The reset key light will turn on to indicate that the reset is in progress, and it will automatically turn off within 5 seconds to indicate successful reset. Otherwise, the reset will fail.

Continue key: has three functions
① Forced fusion: In the case of poor fiber cut surface or fiber recognition error, the machine will not automatically fuse. Press this key to ignore errors and force welding.
② Secondary welding: After the welding is completed, within 15 seconds (without opening the wind cover), press this button once to discharge the welding machine again for supplementary welding. This function can improve the defects of the fusion joint after the first fusion,For example, welding defects caused by insufficient firepower and insufficient cleaning of the cutting surface.
Note: This function is only used to assist in welding. If welding defects often occur, the cutting tool should be checked or discharge correction should be redone.
③ Step by step fusion function: You need to first activate the "Fusion Process Pause" function (Fusion Settings - Function Settings) on the mobile phone's "Signalfire2". When the left and right optical fibers align with the screen, they will not automatically fuse. You need to press this button to complete the fusion process.

Zoom in key: Switch between displaying images at 200x and 300x.

Machine power switch: Long press to turn on or off the machine。

Component Introduction

Cooling tray

Heating oven

Windproof cover

Charging port 1
Can independently charge the battery
Input voltage: 13.5±0.5V;
Input current: 4.8A

Power display

Charging indicator light

Battery view button
Press to check battery level

Battery eject button
Press the button to eject the battery from the side of the welding machine Can charge the battery separately

Charging port 2
Direct charging (without removing the battery)

Heating indicator light
Close the cover and turn on the light, indicating that heating is in progress
Heating completed, indicator light off

Cleaver holder

Cleaver clamping block/surface
Dip a fiber brush or cotton swab in alcohol
Then wipe and clean the clamping glass

Fiber sweeping brush

Component Introduction

Handle

Strap buckle

Box lock catch

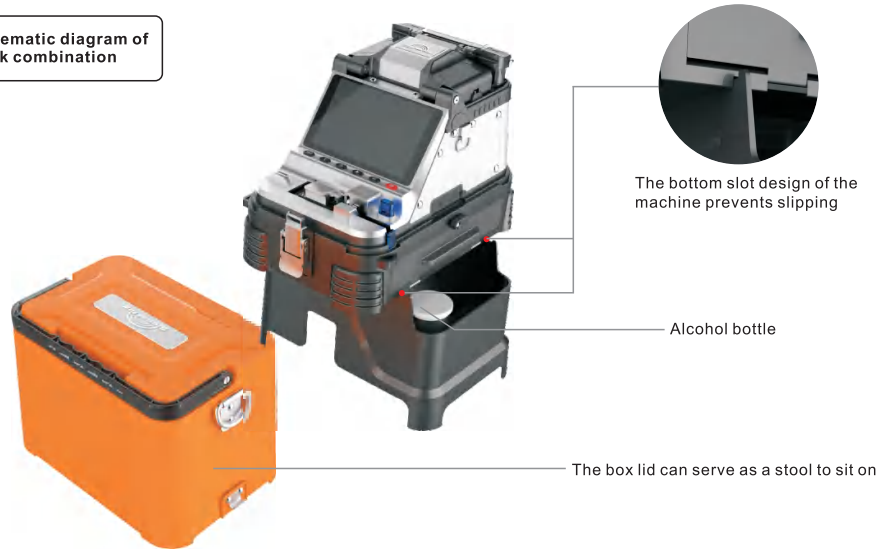
Built in tool clamp box

Tool box

8-in-1 fiber stripper

Component Introduction

Schematic diagram of work combination



Introduction to Key Combination

The four function keys at the bottom of the screen, except the basic functions which has been introduced above, there are also some combined functions for daily maintenance of the machine.

1.force upgrade mode: in the shutdown state, press and hold the reset key(the left first one) and the power button, and the machine enters the force upgrade mode.

Usage :In this mode, connect the phone again-Signalfire2,firmware updates are more stable, faster, and can force a firmware refresh.When normal upgrades fail, it's easier to succeed with this feature.

2.Self-check of optical fiber fusion splicer: in the shutdown state, press and hold the continue button(the left second one) and the power button at the same time, and the machine enters the self-check mode.

Usage: When the welding machine is not working normally and the hardware is suspected under problem, it can be confirmed by machine self-checking. For example, fiber align procession is normal, but there is no welding arc, you can check whether the ”HV-Discharge“ is error.

After entering the self-check, the test time will be displayed at the bottom of the screen. When all the 12 firmwares are self-checked over, if the firmware is under problem then the red font will be displayed, that means the correspond firmware has problem may need to replace it. please contact the after-sales service to deal with it.

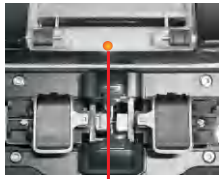
The meaning of the 12 self-checking items as following

01 Image processing	Image processing	Report an error,please check again. If the error is still reported, please contact after-sales service
02 Data Rom	Data Rom	
03 Data Ram	Data Ram	
04 Controller	Controller	
05 Motor: PL PR AL AR	Fiber control motor: Push motors and align motors each one pair	report an error,Please contact the after-sales service
06 Focusing Motor: X Y	Focusing motors :2	
07 Camera: X Y	One pair	report an error, first clean up the lens, upgrade the firmware.If the fault persists, Please contact the after-sales service.

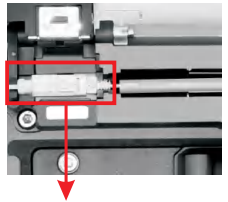
Introduction to Key Combination

08 Camera LED: X Y	Camera LED:two	report an error,Please check whether the red light above the electrode is bright and dim(see electrode replacement for specific operations)If the fault persists,Please contact the after-sales service.
09 RTC	RTC	Report an error,please check again. If the error is still reported, please contact after-sales service.
10 Battery	battery	unplug the battery and plug the battery again, check whether the battery plug into the machine firmly.check the battery socket is there any rust. if the problem is still there, please contact after-sales service.
11 HV-Discharge	HV-Discharge	check the electrode mount good or not, check the discharge wire connection to the electrode base is that well. if that's all good and the "HV-Discharge" error shows in the self-checking result, please contact after-sales service.
12 Bluetooth	Bluetooth	If error reported, please contact after-sales service.

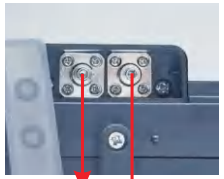
OPM & VFL Introduce



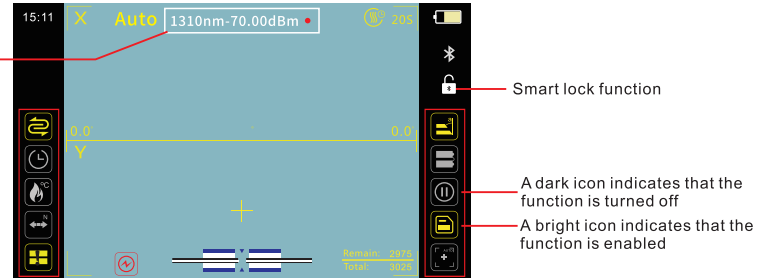
Preheating
when the fiber fusion succeed then open the wind cover, the heating oven will turn on this light and preheat the oven 6s



Heating part compatible with SC fiber
SC Fiber: Push up
Ordinary fiber: Push down



Introduction to Screen Interface



ICON	NAME	FUNCTION
	Normal mode	Normal Splicing Mode For The Machine
	ARC calibration	According to the altitude, temperature, humidity and other conditions of the user, match the most suitable arc discharge value to minimize the splicing loss.(See chapter 4, discharge correction)
	Timing Power Off	When you don't have any operation on the machine, and the machine is under idle state. Fiber Splicer will auto turn off (function off by default)
	preheating	Each time when the fiber fusion succeed then open the wind cover, the heating oven will preheat the oven 6s (function on by default)