

Mini 6SI

User Manual



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Important

FiberFox highly recommends all users to read this manual before operating Mini 6S.
This manual is valid for the following software version.

◆ Introduction

Thanks for choosing Mini 6S FTTx Master from FiberFox. The Mini 6S with innovative design and exquisite manufacturing technology gives customers unexperienced convenience.

Unprecedented splicing experience and new technology greatly reduces splicing and heating time. Advanced estimate method and core alignment technique ensure the accuracy of splice loss estimation. Its small size, compact design and reliable protection shell make it suitable for any operating environment. Dynamic operation interface and automatic splice mod give the customers great convenience. For more information, please contact your local distributor or visit our website at www.fiberfox.co.kr

This manual explains the features, specifications, operation, maintenance and warnings about Mini 6S. The primary goal of this manual is to make the user as familiar with the splicer as possible.

◆ Technical specifications

Camera	High precision dual camera		
Display	4.3" wide color reinforced LCD		
Microscope	x150 : X&Y axis dual view		
	x300 : X axis single view		
	x300 : Y axis single view		
Power Supply	Splicer	AC 100~240V	
		50~60HZ	
		DC9~14V	
Data Capacity	Splice Mode	Factory pre-set	33ea
		User Edit	34ea
	Data Storage (Splicing result)		3,000ea
Splice Speed	SM FAST mode	7 Sec.	
	SM AUTO mode	9 Sec.	

Heating Oven	Applicable Sleeve	Standard : 20, 25, 30, 35, 40, 60mm		
		Custom : 4 *32mm sleeve (For SOC)		
	Heating Time	8~900sec (Typical: 18Sec)		
	Cooling Time	0~ 180sec		
	Heat mode	Factory pre-set	9ea	
		User Edit	9ea	
	Heating block	Standard	1ea(Pre-installed)	
SOC Customized		1ea(In Package)		
Applicable Fiber	Fiber count : Single core			
	Fiber Type : SM(ITU-TG.652)/ DS(ITU-TG.653)/ NZDS(ITU-TG.655)/ ITU-TG.657 / MM(ITU-TG.651)			
Applicable Cable	Fiber count : Single core fber in cable			
	Applicable diameter : 0.25mm / 0.9mm / 2.0mm / 2.4mm / 3.0mm			
	Applicable buffer Diameter : Cladding diameter : 80~150μm, Coating diameter : 100~3,000 μm			
Splice Loss	SM : 0.02dB			
	MM : 0.01dB			
	DS : 0.04dB			
	NZDS : 0.04dB			
	G.657 : 0.02dB			
Reliability	Operating Condition	Altitude	0~5,000M	
		Humidity	0~95%	
		Temperature	-15~60℃	
		Wind Speed	15m/s	
	Storage Condition	Humidity	0~95%	
		Temperature	Splicer	-40~80℃
			Battery	-20~30℃

◆ Splicer description & part name



◆ How to replace the fiber holder



- 1) Unscrew the bolt
- 2) Take out the worn holder
- 3) Replace it by new one
- 4) Tighten up the screw

⚠ Caution

- 1) The unscrewed bolts remain in the holder (Do not take the bolts out)
- 2) Do not screw down the holder too tight

◆ Cleaning

V-Grooves



Checking with fiber after cleaning with cotton swab

Lens



Mirrors



⚠ Caution

- 1) Do not disturb the electrode tips
- 2) Use only 99% or better purity alcohol

◆ Splice Programs



Splice Menu, Maintenance, Stabilize Electrodes, Setting, User Instruction, Arc Calibration

[Stabilize Electrodes]

In the event of sudden change in environmental conditions or after cleaning electrodes, the arc power sometimes becomes unstable, resulting in higher splice loss. Especially when the splicer is moved from lower altitudes to higher , it takes time for the arc power to stabilize. In this case, stabilizing electrodes will expedite the process to set the arc power stable. If many tests are needed to get the ‘Test ok” message appears in [Arc calibration], use this function as well.

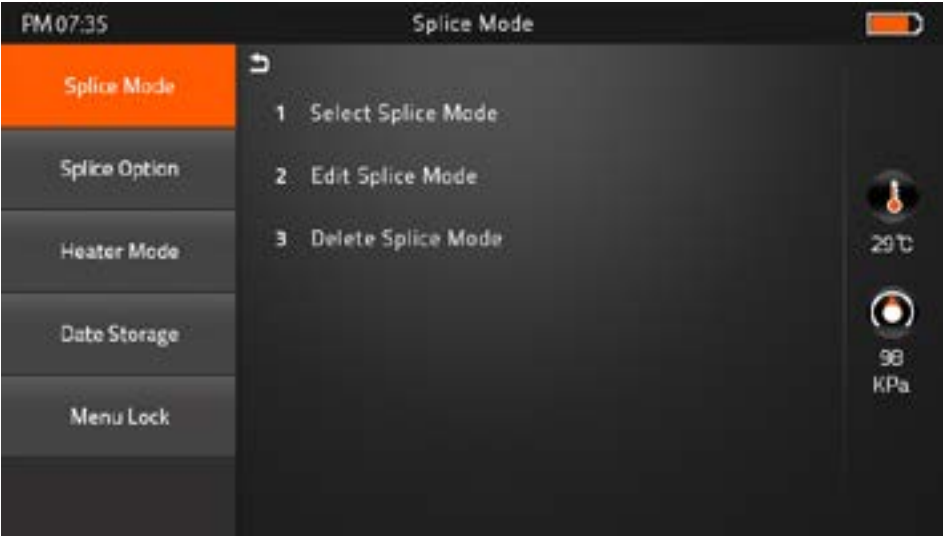
[Arc Calibration]

Atmospheric conditions such as temperature, humidity, and pressure are constantly changing, which creates variability in the arc temperature. This splicer is equipped with temperature and pressure sensors that are used in a constant feedback monitoring control system to regulate the arc power at a constant level. However, changes in arc power due to electrode wear and glass adhesion cannot be corrected automatically. Also, the center position of arc discharge sometimes shifts to the left or to the right. In this case, the fiber splicing position has to be shifted in relation to the arc discharge center. It is necessary to perform an arc power calibration to eliminate those problems.

Note : Performing [Arc calibration] function changes the arc power ‘Factor” value. The factor value is used in the algorithm program for all splicing. The arc power value will not change in the splice modes.

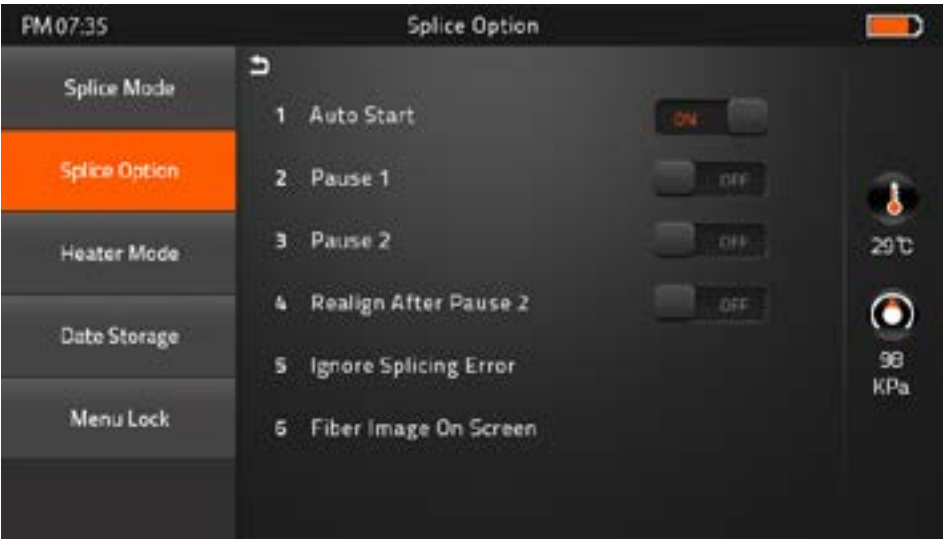
[Splice Menu]

1) Splice Mode



Select Splice Mode	Factory Pre-set : 33ea
Edit Splice Mode	User edit : 33ea Custom build splice mode : 1ea
Delete Splice Mode	-

2) Splice Option



Auto Start	ON : Automatic splicing procedure
	OFF : Maunal Splicing procedure
Pause 1	ON : Pause after the fiber gap position process
	OFF : Proceeding without the pause
Pause 2	ON : Pause after camera focus & Axis alignment process
	OFF : Proceeding without the pause
Realign After Pause 2	ON : Automatically proceed realignment
	OFF : Proceeding without the pause
Ignore Splicing Error	'splicng error' message is not displayed
Fiber Image On Screen	Select display structure for each splicing process

3) Heater Mode



Select Heater Mode	Factory Pre-set : 9ea
Edit Heater Mode	User edit : 9ea Custom build splice mode : 1ea
Delete Heater Mode	-

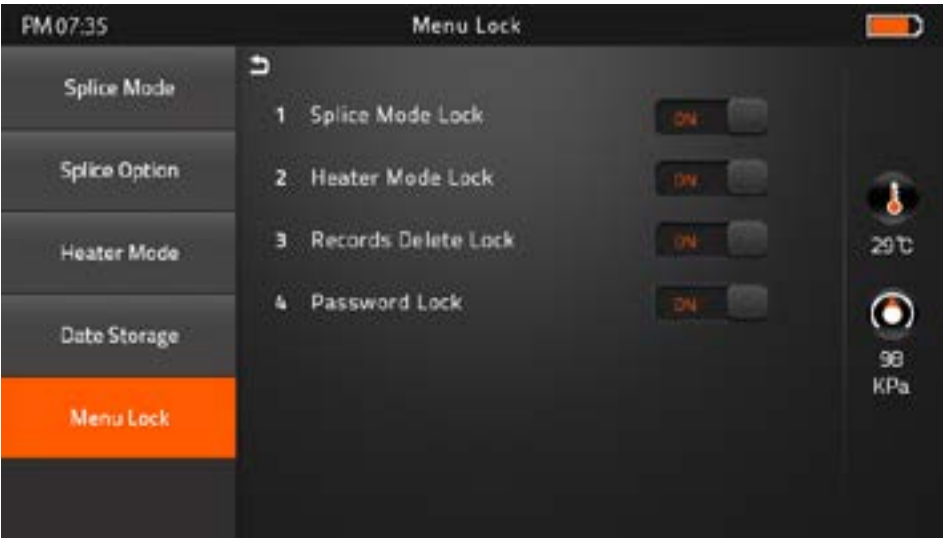
4) Data Storage



Display Splice Record	Displaying your detailed splice record
Delete Splice Record	-
Export Splice Data	Downloading saved data (Splice record or Image)
Splice Data Save	ON : Automatic data save * Image data is saved manually *
	OFF : Do not save splice record

5) Menu Lock

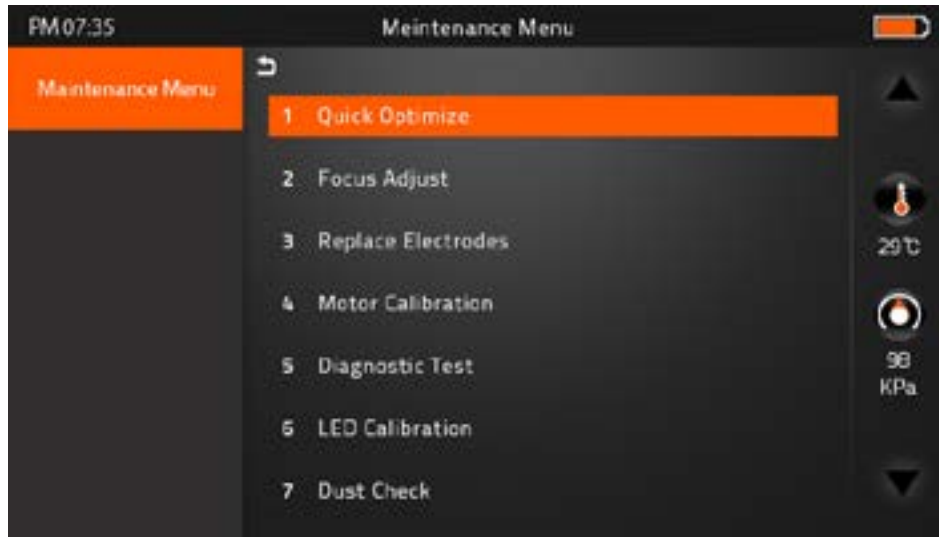
Input password to access the sub-menus



Splice Mode Lock	ON : Disable 'Splice mode' edit
	OFF : Enable 'Splice mode' edit
Heater Mode Lock	ON : Disable 'Heater mode' edit
	OFF : Enable 'Heater mode' edit
Records Delete Lock	ON : Disable 'Record mode' edit
	OFF : Enable 'Heater mode' edit
Password Lock	ON : Disable to change the password
	OFF : Enable to change the password

[Maintenance]

1) Maintenance Menu



► Quick Optimize

Quick & Easy overall maintenance

Automatic process 'Lens focus+motor calibration+fiber training'

► Focus Adjust

Find the optimized position for 'Press, Focus & Align Motor'

► Replace Electrodes

Instruction on how to replace electrodes

FiberFox recommendation

It is highly recommended to change the electrodes every 3,000 splicing

► Motor Calibration

Automatically calibrates the speed of all six motors

► Diagnostic Test



LED Calibration	Measures and adjusts the brightness of LED
Dust Check	Dust checking process
Motor Calibration	Automatically calibrates the motor speed
Arc Calibration	Automatically calibrates the Arc power

► LED Calibration

Measures and adjusts the brightness of LED

► Dust Check

Detect dust&contaminant causing improper splicing

In order to find out optimized position for splicing, the splicer analyses the fiber images being transmitted by the optical camera & LED inside but dust or contaminant on the camera, lenses, LED may cause improper splicing result.

Therefore, the dust check process is recommended to proceed in case of frequent splicing fail or high insertion loss.

► Fiber Training



Automatic Fiber recognition program

► Electrode Setting



Electrode Caution	Caution alram will be displayed when it reaches the number of splicing cycle you set
Electrode Warning	Caution alram will be displayed when it reaches the number of splicing cycle you set

► Motor Drive

It checks the operation status of 6 motors (L, R Press, X, Y Focus, X, Y Align).

► Update Software

Upgrade to the latest version.

Procedure

1	Prepare the USB device.
2	Download the latest version software to the USB.
3	Link to the Splicer (Via link cable in the package).
4	Press 'O' Button to proceed update.
5	Device will be rebooted once it is done.

[Setting]

1) System Setting



Buzzer	ON : Sound on OFF : Sound off
Temperature Unit	°C : Celcius °F : Fahrenheit
Automatic Heating	ON : Auto start OFF : Manual start
Monitor Position	Front : Normal direction display Rear : Opposite direction display
Dust Check	ON : Check the dust density OFF : Skip dust checking process
Password Lock	ON : Password is required to operate the device OFF : No passwerd is required
Pull Test	ON : Automatic pull test processing after splicing OFF : Skip pull test process

2) Language

Set your own language.



Language Available	
繁體中文	Việt
English	العربية
한글	Español
Русский	Italiano
Deutsch	Português
Français	فارسی
ไทย	

3) Power Save Option



Monitor Shut Down	1) No input during the time you set, the splicer will block the power supply toward LCD 2) System will be switched over to standby mode.
	Press the power button to resume (Screen will be back on)
Splicer Shut Down	No input during the time you set, the splicer will be shut down to save the power
	Pressing the power cutton for 2sec, to reboot the splicer

4) Set Calendar



5) Password
Change your password.



Procedure

1	Input 4-digit old password number
2	Input new 4-digit number for new password









6) System Information






Machine Serial No.	Identification number of the splicer
Software Version	Software version being installed
FPGA	Field programmable gate array' version
Total Arc Count	Total number of Arc discharges
Current Arc Count	Current number of Arc discharge
Last Maintenance	Last maintenance date
Production Date	Manufacturing date
Sales Region	Authorised country for sales
Product OEM	Manufacturer name

◆ Appendix I

Splice loss increase : Reason and solution.

Symptom	Name	Reason	Solution
	Core Axial Offset	Dust on v-groove or fiber clamp chip	Clean v-groove and fiber clamp chip
	Core Angle	Dust on v-groove or fiber clamp chip	Clean v-groove and fiber clamp chip
		Bad fiber end-face quality	Check if fiber cleaver is well conditioned
	Core Step	Dust on v-groove of fiber clamp chip	Clean v-groove and fiber clamp chip
	Core Curve	Bad fiber end-face quality	Check if fiber cleaver is well conditioned
		Pre-fuse power too low or pre-fuse time too short	INcrease [Pre-fuse power] and/or [Pre-fuse time]
	MFD Mismatch	Arc power too low	Increase [Arc power]
	Combution	Bad fiber end-face quality	Check the cleaver
		Dust still present after cleaning fiber of cleaning arc	Clean fiber thoroughly or increase [Cleaning arc time]
	Bubbles	Bad fiber end-face quality	Check if fiber cleaver is well conditioned
		Pre-fuse power too low or pre-fuse time too short	Pre-fuse power too low or pre-fuse time too short
	Separation	Fiber stuffing too small	Perform [Motor calibration]
		Pre-fuse power too high of pre-fuse time too long	Decrease [Pre-fuse power] and/or [Pre-fuse time]

	Fat	Fiber stuffing too much	Decrease [Overlap] and perform [Motor calibration]
	Thin	Arc power not adequate	Perform [Arc calibration]
		Some arc parameters not adequate	Adjust [Prefuse power], [Pre-fuse time] or [Overlap]
	Line	Some arc parameters not adequate	Adjust [Prefuse power], [Pre-fuse time] or [Overlap]

Note : A vertical line sometimes appears at the splice point when MM fibers, or dissimilar fibers (different diameters) are spliced. This does not affect splice quality, such as splice loss or tensile strength.

◆ Appendix II

If error message is shown as below during the process, Please follow the instruction accordingly. If the problem still remains, please contact us.

Error Message	Reason	Solution
L Fiber Place Error	The fiber end-face is placed on the electrode centerline, or beyond it	Press the 'Reset" Button. Reload the fibers, make sure fiber end face between V-groove and the centre position of electrodes
R Fiber Place Error		
Propulsion Motor Overrun	The fiber is no set correctly at the bottom of the V-groove, which results in that the fiber offsets beyond motor formation range	Press the 'Reset" button and then re-position the fiber at the bottom of the V-groove
Propulsion Motor Trouble	Motor might be damaged	Consult your nearest sales agency
Failed to Find The Fiber End-face	The fiber is not set correctly at the bottom of the V-groove	Press the 'Reset" button and then re-position the fiber correctly at the bottom of the V-groove
No Arc Discharge	Arc Discharge does not occur	Confirm the electrodes in proper position; Replace electrodes
Motor Overrun	The fiber is not set correctly at the bottom of the V-groove	Press the 'Reset" button and then re-position the fiber at the bottom of the V-groove
Cannot Find the Edge of The Cladding	The fiber is not set correctly at the bottom of the V-groove	Press the 'Reset" button and then re-position the fiber at the bottom of the V-groove
Find Wrong Fiber Edges	There's dust on the fiber surface	Re-prepare the fiber; Clean the lens and protector mirror and then redo 'Dust Check"
Unidentified Type of Fiber	Shock occurred to the splicer during the splicing process	Execute 'Motor Calibration" If the [problem stillexist, please contact the sale agent

Unidentified Type of Fibers	Shock occurred to the splicer during the splicing process	Execute 'Motor Clibration" If the [problem still exist, please contact the sale agent
Contact of Fiber End-faces	Overlap too much	Adjust overlap parameter
	Motor is not calibrated	Calibrate and maintain the motor
Focus Motor Overrun	The fiber is misplaced	Press the 'Reset" vutton and then reposition the fiber correctly
	There's dust of dirt on the fiber surface	Prepare the fiber again
	There's dust of dirt on the fiber surface	Execute the [Dust check] after the lenses and LEDs are cleaned
Fibers Mismatch	The fibers of two sides are different type	It may resul tin large splice loss if you continue to splice, Please use the proper splice mode corresponding to the fibers
Large Cleave Angle	Bad fiber end-face	check the condition of the fiber cleaver, if the blade is worn, rotate the blade to a new position or change a new one, and then re-prepare the fibers
	[Cleave Limit] is set too low	Increase the [Cleave limit] to an adequate limit(standard:3.0°c)
Large Core Angle	[Core angle limit] is set too low	Increase the [Core angle limit] to an adequate limit (standard:1.0°c)
	Dust of dirt is on the V-groove or hte clamp chip	Clean V-groove and clamp chip. Prepare the fibers and re-load them
Focus Error	Too large axial offset(>0.4um)w	Re-prepare the fibers
	The motor is not calibrated	Execute [Motor clibration]

Dust Error (fiber core)	There's dust or dirt on the fiber surface	Prepare the fiber again
	The lens or LEDs are coated in dust	Execute the dust check after cleaning the lenses and LEDs
	Cleaning Arc time is too short	Set the cleaning arc time to be 180ms
	It is difficult to identify the fiber core by using the method of core alignment to splice	It is difficult to identify the fiber core by using MM splice mode to splice
	There's dust or dirt on the fiber surface	Prepare the fiber again
	There's dust or dirt on the fiber surface	Execute the [Dust check] after the lenses and LEDs are cleaned
	Cleave angle limit is too low	Increase the cleave angle limit to a decent value (standard value: 3.0°c)
Fat Fiber	Overlap too much	Adjust overlap parameter
	Motor is not calibrated	Calibrate and maintain the motor
Thin Fiber	Arc power too low	Execute [Arc Calibration]
	The level of pre-discharge is too high	Decreased pre-discharge of pre-discharge time
	Insufficient overlap	Adjust overlap parameter

◆ Appendix III

[Questions and troubleshooting]

- Power does not turn off when pressing On / Off button.
Press and hold the key until the LED color changes from green to red.
- Few splices can be made with a fully charged battery pack
- If the power saving function is not enabled, battery power degrades quicker.
[System setting] Always enable it to conserve power usage.
- If degradation appears (memory effect). of if the battery pack is stored for an extended period of time, completely discharge it. After discharge completion, recharge the battery pack.
- The battery pack has reached the end of its service life. Install a new battery pack.
- The battery pack uses chemical reaction. The capacity decreases at low temperature, especially at lower than 0 degree °c.
- Error message appears on monitor please refer to appendix II.
- Inconsistent splice loss / High splice loss
- Clean the V-grooves, fiber clamps, wind protector mirrors, and objective lenses.
- Replace the electrodes.
- Please refer to Appendix I.
- The splice loss varies according to the cleave angle, arc conditions and fiber cleanliness.
- Monitor suddenly turned off
- The monitor suddenly turn off after an extended period of splicer inactivity, if the power saving function is enabled. Press any key to return to the normal state.
- Splicer power suddenly turned off without 'Low battery' message.
- The monitor will turn off after an extended period of splicer inactivity, if the power saving function is enabled. Press ant key to return to the normal state.
- Identify fibers error in AUTO mode
AUTO mode is applicable for SM, MM, NZ fiber. Errors may occurs while splicing special fibers.
- Mismatch between Estimated splice loss and Actual splice loss
- The estimated loss is a calculated loss, so it can be used for reference only.
- The optical components of the splicer may need to be cleaned.
- Fiber protection sleeve does not shrink completely.
- Extend the heating time.
- Method to cancer heating process.
- Press Heat key to stop during heating process. The LED light will go off after pressing.

- Fiber protection sleeve adhered to heating plate after shrinking use a cotton swab or a similar soft tip object to push and remove the sleeve.
- Forgot password
Please contact the sale agent.
- No arc power change after [Arc calibration]
An internal factor is calibrated and adjusted for the specific arc power selected.
The displayed arc power in each splice mode does not change.
- Forgot to load fibers while execute some specified function that fibers are needed. Return key is invalid. Open the wind protect shield, load prepared fibers in the splicer, and press 'Set' to continue or press 'Reset'
- Upgrading Failure
When users use the 'New' U-disk to upgrade, the splicer may not be able to correctly identify the upgrade file, you need to re-plug the U-disk, and restart the splicer
- Check if the upgrade file name and the format are correct.
- If you cannot solve the problem, please contact the sale agent.
- Other
Please refer to the video in user's CD