User Manual Comway A Series





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1. PREFACE

MAIN CONTENT

Thanks for choosing COMWAY A-series Fusion Splicer product.

To help users master this machine quickly, this manual particularly introduces the function feature,operation skills, maintenance notes and precautions of COMWAY A-series Fusion Splicer.

Notes:

- When no specific product type is involved, the following chapters of this manual refer to COMWAY fusion splicer with the abbreviation of fusion splicer.
- For the images involved in this manual to make description(including cover), the default uses A series photos for other A series machine.



For more information, please contact local distributor or visit website:

www.comwaytek.com

SAFTY PRECAUTIONS

This machine is only used for splicing the silica optical fiber. It Can not be used for other purpose.

As the splicer is the high precision machine, please be cautious to carry and operate, conforming to the following safety regulations:

- Do not use the machine in an explosive hazardous situation.
- Do not touch the electrodes when the machine is power-on!
- Never disassemble the machine by yourself. Any problem, please contact the authorized maintenance center to repair it.
- Do not expose the machine in fire, thunder, rain, and humid environment.
- Do not put the battery and adapter overlapped when charging.

MAINTENACE NOTES

• Do not use hard and sharp objects to clean V-groove and electrodes.

- Do not use acetone, gas or other chemistry agent to clean any parts.
- Please conform to more maintenance instructions in the subsequent chapters of this manual.

CARRYING AND STORAGE

- To avoid the emergence of condensation, the machine should be kept at least 1 hour to accommodate environment from coldness to warmness.
- If long time no use, the machine should be cleaned and kept dry.
- The machine should be put in the carrying case to avoid damage and dirty when carried.
- Keep the splicer away from the direct sunlight, extremely high temperature or relative humidity over than 95%.

SPECIFICATIONS

Size & Weight	D136 x W135 x H136 (mm)
---------------	---------------------------

Weight	1.5kg (1.8kg with battery)
Fiber Alignment	High Precision PAS Alignment
Fiber type	SM(ITU-T G.652), MM(ITU-T G.651),
	DS(ITU-T G.653), NZ/NZ DS(ITU-T
	G.655), BI(ITU-T G.657)
Splice mode	Single fiber
Fiber diameter	Cladding diameter 80~150 µm, coating 100~3000 µm
Cleave length	250 µm clading diameter 5~16mm
	Over 250 µm cladding diameter 16mm
Splicing programs	Max. 100
Splicing time	5 sec. [SM Fast] program
Heating programs	Max. 30
Heating time	Typical 15sec. (Adjustable)
Splice protector	10~60mm
Splice image	Max. 300
capture	
Splice data storage	Max. 20000
Splice loss	SM:0.02dB, MM:0.01dB, DS:0.04dB,
	NZ/NZ DS:0.04dB, BI:0.02dB
Return loss	>>60dB

Loss estimation	Provided
Operation condition	Altitude 0~5000m, Humidity 0~95%,
	Temperature -20~+50 $^\circ \! \mathbb{C}$, Wind velocity
	up to15m/s
Storage condition	Humidity 0~95%, Temperature
	-40~+80°C (battery -20~+40 °C)
Tension	2N
Fiber view	4.3 inch high-light color touch screen
Fiber magnification	400x for X or Y single axis view,
	200x for both X & Y dual axis view
Port	High speed USB
Electrodes life	5000 splices
Power supply	AC 100-240V, 50/60Hz
Battery parameters	4000mAh High capacity battery,
	morethan 240 times splicing and
	heating, full charge within 3 hours

STRUCTURE



Instruction for operation keys and functions :

Operation	Name	function
key		

U	power	Power on and off
	heating	Heating on and off
SET	SET	Begin to splicing
RST	Reset	Reset
X/Y	X/Y	Switch X & Y axis view
ARC	ARC	Manual discharge, additional discharge
	MENU	Enter the menu, Switch menus, Moving the cursor horizontally
	BACK	cancel, return
^ *	UP	Move the cursor up, Increase edit value
	DOWN	Move the cursor down, Reduce the edit value
	Enter	Confirm, save

In the subsequent content of this manual, the operation of the keys is involved. Use the "Name" column in the above table to describe the button to be operated.

POWER SUPPLY AND CHARGING

In order to facilitate the replacement of spare batteries for outdoor construction, the battery compartment adopts a detachable structure design.

To remove the battery in the battery compartment, follow these steps:

• Push the buckle at the bottom of the battery compartment in the direction of the arrow;



• Push the battery compartment cover in the direction of the arrow to open the battery compartment;



• Remove the battery from the battery compartment in the direction of the arrow



• To replace the battery, follow the opposite steps

The supplied power adapter is used to charge the battery, and the battery charging port is set in the body. On one side, plug in the adapter, the POWER indicator and the CHARGE indicator illuminate, Start charging the battery, and the CHARGE indicator will automatically turn off when charging is complete.



warning!!

Do not place the fusion splicer, battery, and adapter near the heat source while charging. Flammable and explosive materials.

WORKING INTERFACE

Insert the battery adapter and press the **[**Power button**]** until the power indicator is steady on, fusion splicer will start and starts self-checking. After completion, it breaks into the work interface and displays the current work. The status is "Ready".



At this point, open the windshield and you can continue to perform the melting operation.

SCREEN BRIGHTNESS

Follow these steps:

• In the work interface, press [direction up key], the

brightness adjustment function menu will pop up;

Press the "direction up button" and "direction down button" to adjust the screen brightness. After the adjustment is completed, Press [Enter] to save, or press [Back button]

to save.



VOLUME SETTING

Follow the below step:

- In the work interface, press the "down button", the volume adjustment function menu will pop up.
- Press the "up button" and "down button" to adjust the volume. After the adjustment is completed, press the "Enter" button to save, or press the "Back button" to abandon the save.



2. QUICK REFERANCE GUIDE





3. SPLICE MODE

SPLICE MODE

When the splice mode is not matched with the fiber type,

click the Menu key, then enter into the Splice / Splice mode, select and enable the splice mode matched with the fiber type.

	Splice mode		
	001. AUTO	_	
	002. SM G652		
	003. MM G651		
	004. DS G653		
	005. NZ G655		
5	006. BI G657	-	
E	🥪 Enter 📃 Change		

AUTO START

	Splice	2	3	4	0	Ш
	Splice mode					^
	Auto start				On	
	Pause 1				Off	
	Pause 2				Off	
	Camera					
5	Skip error					-
E P	age	~	Char	ige		

Auto start includes two options:

ON	Close the wind-protector under Main screen, start to splice automatically.
OFF	Close the wind-protector under Main screen, no response.

PAUSE 1, PAUSE 2

Pause 1 includes the following options:

ON	When starts to splice under the operation
	interface, the splicer will be paused for
	confirmation after finished cleaning &

OFF	When start to splice under the operation interface,
	the splicer will keep operating after finished
	cleaning & discharging operation.

Pause 2 includes the following options:

ON	When starts to splice under the work interface,		
	the splicer will be paused for confirmation after		
	finished the second time alignment.		
OFF	When start to splice under the work interface,		
	the splicer will keep operating after finished the		
	second time alignment.		

CAMERA

This option is for setting up the display mode of the X/Y view in the fiber splicing process. COMWAY Fusion Splicer has two cameras, the display images from these two cameras called X-view and Y-view.

Camera		0	Ш
	Gap set	Х	
	Clean	X/Y	
	Align	Х	
	Align again	Y	
	ARC	X/Y	
5	Estimate	Х	-
0	hange		

Camera interface shows every steps of a fiber splicing process:

Gap set	Push the fibers into view.
Clean	ARC to clean the fiber.
Align	Adjust fibers to align approximately.
Align	Adjust fibers to align accurately.
again	
ARC	ARC to splice the fibers.
Estimate	Estimate the splicing loss.

For each step, Camera options are available as below :

Х	Show the X-view only
Y	Show the Y-view only.

SKIP ERROR



Skip error interface lists various errors that may be detected

in a fiber splicing process:

Fiber face	Fiber end is not found, face uneven or dusty.
error	
End face	cleavting angle is too large.
angle too	
large	
End face angle too large	cleavting angle is too large.

Fiber angle	The fibers of V-grooves are not in the same	
too large	level	
	(There may be dust on the V-grooves or fiber	
	surface.)	
Dust burn	It tests dust burning when discharging and	
	splicing (There is dust on the fiber surface or	
	the fiber end face.)	
Loss too	The estimated loss is large after spliced (This	
large	splicing may be not eligible.)	

For each error, the Skip error options are available

ON	Warn and pause to confirm when detects corresponding error.
OFF	Skip and keep operating when detects corresponding error.

ELECTRODE MENU

Electrodes are the consumable parts of a splicer. According to different materials and processes, each new electrode has its lifetime (discharge times). Electrode menu is used for automatically recording the lifetime of new electrodes.

Replace notice	The Main screen will remind users to		
	replace new electrodes when the discharge		
	times of electrodes reach to the setting		
	point of this option.		
Replace	The Main screen will warn users of		
warning	replacing new electrodes when the		
	discharge times of electrodes reach to the		
	setting point of this option.		
Clear current	It records the current ARC counter.		
counter	After changing new electrodes, select		
	this option, push \checkmark to clear the		
	record to restart recording the ARC		
	times of new electrodes.		



Important!! .

Using inferior electrodes will lead to the splicer's abnormal working or even breakdown. Please contact with the COMWAY agent to purchase original electrodes.

SPLICING HISTORY

History interface will automatically record the specification data of each splicing operation and the estimate loss in order to take reference inquiries about the statistics

	History	IIII	
Γ	00306. 2018-12-23 22:13	0.00	
	00305. 2018-12-23 21:47	0.00	
	00304. 2018-12-23 21:43	0.03	
	00303. 2018-12-19 23:37	0.03	
	00302. 2018-12-19 23:17	0.10	
5	00301. 2018-12-19 23:14	0.02 🖵	
🥪 View			

Each item in the list records the data of a splicing operation, chronologically, with the most recent records ranked first.

IMAGE STORAGE

The image storage function is used to automatically save the current screen image for errors in engineering records or error analysis when an error occurs.

4. HEATING MENU

HEATING MODE

When the heating mode does not match the currently used heat shrinkable sleeve, press the "Menu" button on the work interface, then enter the [Heating Menu - Heating Mode] screen and select the heating mode that matches the heat shrinkable sleeve:

	Heat mode	
	01. 40mm	-
	02. 40mm Plus	
	03. 60mm	
	04. 60mm Plus	
_	05. 200S	
5	06.180C/20S	-
V E	nter 🔲 Change	

The [40mm] and [60mm] modes are designed to work in environments above 0 $^{\circ}$ C for heating of heat shrink tubings of the usual 0-40mm and 40~60mm lengths. When the heat shrinkable sleeve is thick or the ambient temperature is low and the heating is not complete, the following scheme is adopted in order until improvement:

1. Switch from [XXmm] mode to the corresponding [XXmm Plus] mode;

2. Use a [60mm] or [60mm Plus] mode to heat the 40mm heat shrink tubing;

3. When [60mm Plus] mode can't be heated completely, select [New =>], press "Enter" to create a new heating mode, set the heating time to a larger value, return and select Enable this mode ;

	Mode edit	[Ш
	Mode name	180C/25S	
	Temperature	180	
	Heat time	25	
	Cool time	2	
5			-
0	hange		

4. The above steps still can't be heated completely. Enter the mode selection interface and select the new mode of the

previous step. Press [Menu key] to enter the mode editing interface, increase the heating time slightly and return, and test whether it can be fully heated.

5. Repeat the previous step until you find a heating time value that will heat up in the current environment.

AUTO START

The settings available for the Auto Start option are:

ON	The fiber is placed in the heater, and the heater		
	cover is automatically turned off to automatically		
	initiate a heating operation.		
OFF	After the fiber is placed in the heater and the heater		
	cover is automatically closed, you need to manually		
	press the "heating button" to start a heating		
	operation.		

5. MAINTNESS MENU

BRIGHTNESS CALIBRATION

The Brightness Calibration screen is used to automatically calibrate the X-field and Y-field brightness of the video system

X	Remove fiber	

Before performing this function, you need to remove the fiber and close the draft shield.

Calibration can be done through the Brightness Calibration interface when:

- X field of view and Y video appear inconsistent brightness
- A field of view (or both fields of view) is too dark or too bright

(Note: In general, COMWAY fiber fusion splicer products will set the automatic brightness calibration to the standard configuration, that is, automatically detect the video brightness and correct it before each welding, but the automatic brightness correction function will make the welding time slightly longer. When the above situation occurs, the brightness calibration is performed manually to make the fusion splicer work at the best state)

STABLE ELECTRODE

The stabilizing electrode interface is used to correct the discharge center of the arc and to make the discharge arc of the electrode more stable.



Before performing this function, it is necessary to place a cut and cleaned standard single mode (G.652) fiber and close the draft shield.

Calibration can be performed through the stable electrode interface when:

- After removing the electrode and reinstalling it,
- After replacing the new electrode
- During the welding process, it is found that the brightest part of the discharge arc is not in the center

(Note: Under normal circumstances, the stable electrode will be completed when the discharge counter is 45 times. However, this is not necessary. When the counter exceeds 5 times, it is observed that the discharge arc is completely centered and uniform without jitter, you can manually press The "Back button" will end early.)

ARC ADJUST

ARC adjust interface is used to correct the discharge intensity of the electrode under current environmental conditions.



Before performing this function, need to place the single-mode (G.652) fiber which already cut and clean well ,then Close the Wind-protector (and depending on the interface, you may need to cut, clean, and place the fiber again)

When the following occurs, Calibration can be done through the discharge calibration interface:

• Before each official start of construction

- Replace the new electrode and after performing the stable electrode
- During the welding process, it is observed that the discharge arc appears brightly dark bright dark alternately

(Note: In general, COMWAY fiber fusion splicer products will set the automatic ARC adjust to the standard configuration, that is, the discharge intensity is automatically monitored during each fusion process and corrected in real time, but it is recommended to perform the ARC adjust manually when the above occurs. In order to make the fusion splicer work at its best)

ELECTRODES REPLACEMENT

The electrodes replacement interface is used to clear the discharge counter of the old electrodes after replacing the new electrodes, and set the notification and reminder parameters of the new electrode.

The current count clear function is used to reset the current

discharge counter to a value of zero.

Normally, the electrode replacement notice and the electrode replacement warning only need to maintain the default recommended values.

MOTOR DRIVE

The motor drive interface is used to manually drive the motor. It assists in judging the working state of the mechanical running parts of the fusion splicer.



6. SYSTEM

SYSTEM INFORMATION

System information interface presents all the basic information of the current system of the splicer, including the temperature in the wind-protector detected by temperature sensor.

	System Info.	
	2018-12-26 09:17	26.56°C
	Serial number	$\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{$
	60110514126	environment
	Firmware version	temperature
	1.2.6	temperature
5	Activation date	_
VA P	age 📁 Back	

LANGUAGE

Language interface are available for the specific sales area. All the languages under this menu can be selected.

DATETIME

Datetime interface is for setting date and time. The exact date and time would be shown on functions like splice history and image storage, etc. Correct date and time can make your information more accurate.

The power supply on the mainboard makes sure time run precisely when the machine is off. Normally, the power supply can work several years. If the system time stops working when the machine is off, please contact the authorized COMWAY service center to change a new power supply.

LOW POWER MODE

The splicer can run at Low power mode when idling time.

These options are available:

OFF	When the Low power mode is OFF, the splicer
	will not run at low power mode anytime.
(Number)	The splicer will run at Low power mode when
	there is no operation during the setting times.
	Unit: second.

AUTO SHUTDOWN

The splicer can shutdown automatically when idling time.

These options are available:

OFF	When this function is off, the machine won't	
	shut down automatically anytime.	
(Number)	The machine will shut down automatically	
	when there is no operation during the setting	
	times.	
	Unit: second.	

LCD DIRECTION

LCD Direction is to set the image direction which is shown on the display. See below picture, you can use this function when invert the display.



Set points of LCD Direction:

Auto	The machine detects whether invert the LCD	
	direction or not automatically	
Front	The image is shown in forward direction	
Back	The image is shown in inverted direction, should	
	invert the LCD to use.	

7. ERROR WARNING AND SOLUTION

As shown in the figure, the machine shows error warning.



This chapter gives common error hints and corresponding solutions.

"BAD FIBER POSITION"

Error warning	Cause	Solution
	• The fiber is	• Press "RST" key, and
	not set	re-position the fiber to
	correctly at	seat it correctly
"Rad Fibor	the bottom	between the endface of
Data Fiber	of the	the V-groove and
FOSILION	V-groove	electrodes.
	• There's dust	• Clean the V-groove.
	in the	
	V-groove	

"MOTOR OVERRUN"

Error warning	Cause	Solution
	• The fiber is	• Press "RST" key, and
	not set	re-position the fiber to
"] / _ _ _ _ _ _ _ _ _ _	correctly	seat it correctly
Molor	• There's dust	between the endface of
Overrun	in the	the V-groove and
	V-groove	electrodes.
		• Clean the V-groove.

"FIBER DIRTY"

Error warning	Cause	Solution
	• Dust or dirt	• Completely prepare the
"File ou diute."	is on the	fiber again, strip, clean
Fiber dirty	fiber	with alcohol and
	surface.	cleave.

"LARGE CLEAVE ANGLE"

Error warning	Cause	Solution
	• Cleave bad	• Completely prepare the
"Large cleave		fiber again, strip, clean
anlge"		with alcohol and
		cleave.

"BAD FIBER-ENDFACE"

Error warning	Cause	Solution
	• Fiber	• Completely prepare the
"Bad	endface is	fiber again, strip, clean
fiber-endface"	cataclastic,ro	with alcohol and cleave
	ugh.	

"LARGE FIBER ANGLE"

Error warning	Cause	Solution
	• Dust or dirt	• Completely prepare the
	is on the	fiber again, strip, clean
"Large fiber	fiber	with alcohol and cleave
angle"	• Dust or dirt	• Clean the V-groove.
	is in the	
	V-groove.	

"DUST BURN"

Error warning	Cause	Solution	
"Dust burn"	• Dust or dirt	• Completely prepare the	
	is on the	fiber again, strip, clean	
	fiber	with alcohol and cleave	
	• Dust or dirt	• Clean the V-groove.	
	is in the		
	V-groove.		

8. CONNECT THE PC SOFTWARE

INSTALLATION AND CONNECTION

Follow these steps:

- Visit the "Download" page of the COMWAY official website:http://www.comwaytek.com/download
- Input the Series Number, download the Windows PC software COMWAY Fusion Splicer specially for the splicer and install it.
- Connect the splicer with PC by the Micro USB able (The USB port is in the left side of the LCD screen.)
- Start the COMWAY Fusion Splicer software.



UPGRADING THE FIRMWARE OF THE SPLICER

Enter into the "System / System information" interface to check the firmware version of the splicer. Users can get the update file from the COMWAY website or COMWAY distributor, and upgrade the firmware of the splicer. Follow these steps:

 Connect the PC and splicer by reference to the previous chapter, Start COMWAY Fusion Splicer Software, click "Firmware"

👕 USB Data Transporter for Windows - 1.0.1	- 🗆 🗙			
Firmware	History			
Select File(s)	Or trag file(s) here.			
Connected. SN: Model: 0x00 Version: 1.0.1				

• Click "Select Files...", select the update file in the pop-up window, then click "Open"; Upgrade is completed.

COMWAY_FS_187.BIN	2015/9/16 17:18	BIN 文件
۲		>
(N): COMWAY_FS_187.BIN	✓ *.bin files	~
	打开(0)	取消
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 . 4 . ??. D	CC (1

- when the interface shows "Complete"; Power off the machine then restart the splicer.
- Enter into the "System / System information" interface, then check if the software version of the splicer has been updated.

EXPORT THE SPLICING HISTORY

COMWAY Fusion Splicer software supports users viewing the splicing history on PC quickly. Follow these steps:

- Connect PC and the splicer by the reference to the previous chapter, Start the COMWAY Fusion Splicer Software, click the "History";
- Click "Receive" to make the splicing history transporting from splicer to the PC;
- After received, COMWAY Fusion Splicer Software will draw out a chart based on the data;

🚡 USB Data Transporter for Windows - 1.0.1	–
Firmware	History
R	ceive
Connected. SN: Model: 0x00 Version: 1.0.1	

9. MAINTENANCE

Since the splicer is the high precision machine, it should be cleaned and maintained regularly while being used in order to guarantee the optimum performance.

DAILY CLEANING

There are mainly two parts need daily cleaning: V-groove and Microscope Lens:

- 1. When cleaning the V- groove, follow these steps:
- Wipe the bottom of the V-groove with a small cotton swab dipped by alcohol;



- Suck the remaining alcohol in the V-groove with a dry cotton swab;
- Jab out the dirt in the V-groove with the end part of a cleaved fiber.



- 2. When cleaning the microscope lens, follow these steps:
- Wipe the surface of the microscope lens with a small cotton swab dipped by alcohol;



• Suck the remaining alcohol on the surface of the microscope lens with a dry cotton swab.

ELECTRODES REPLACEMENT

When discharging times surpass the electrodes'life time, the discharging will be unstable, and splicing loss goes larger. So when the splicer warns users of replacing electrodes, please change the electrodes as required to guarantee the Splicer's performance.

Please operate as the following steps:

• Shut down the splicer, unfasten the buckle to remove the electrodes, replace the old electrodes with the new ones,

then restall the buckle on the splicer.



- Power on the splicer, press the "menu" key, and then enter into the Maintenance menu;
- Run Electrode Stabilize;



• Run ARC Adjust

	1 2 Maintenance 4 🎹	
	Brightness	
	Electrode stabilize	
\leq	ARC adjust	
	Electrode replace	
	Motor driver	
5		-
E P	age 📿 Enter	

Enter into the Splice / Electrode menu interface, select clear current counter item, push"√"key to zero the ARC counter in order to restart recording the ARC times of the new electrodes.

HOW TO IMPROVE THE SPLICING QUALITY

If the users follow the tips when using the splicer, good splicing quality can be achieved, even zero splicing loss. Here list some important tips:

 Preparatory work before splicing: Daily Maintenance Clean the dust that falls into the V-groove (refer to the Daily Cleaning section)

Enter into the maintenance interface,run "Brightness adjust" and "ARC Adjust"

• Clean the stripped fiber with a piece of dustless cloth dipped by alcohol carefully and keep the end face of the fiber even. Refer to the following picture:



• Choosing the corresponding Splice mode according to the

fiber type (instead of Fast splice mode). E.g., if the fiber type is SM, then choose SM G652 splice mode (instead of SM Fast splice mode);

- - Cleaning the V-groove every 500 times discharging and splicing.

COMWAY User Manual

Version: 5.0

The models, specifications and menus of software&functions could be amended at any time without prior notice.