Date: 2-Mar 2020

Doc.No.: B-19M3050

Messrs. _____

SPECIFICATIONS

for

Mass Fusion Splicer 90R12

Prepared by Toshiki Kubo

Engineering Department
Precision Equipment Division
Power&Telecommunication
Systems Company

Approved by Toshiro Mizushima
General Manager

Engineering Department
Precision Equipment Division
Power&Telecommunication
Systems Company

Fujikura

SPECIFICATIONS
for
Mass Fusion Splicer 90R12

This document covers specifications for Mass Fusion Splicer, 90R12.

1. Features

The 90R12 is a mass fusion splicer with a series of features, such as “Automatic wind-protector and tube-heater” and “Easy sleeve positioning” for quicker splicing cycle as well as fewer operation steps. Also, the 90R12 equips “Wireless communication function” which allows automatic cleaver blade rotation for CT50 when the splicer judges the blade is worn.
Below shows the detail of features.

Item	Specification
Automatic functions	Splice mode select by fiber count analysis
	Discharge power calibration
	Wind protector : open and close
	Splice start
	Heater lid : open and close
	Heater clamp : open and close
	Heater start
Reference guide	Video and PDF file stored in splicer
Electrode	Replaceable without tool
Software for PC	Splicer firmware update via internet
	Parameter upload and download
	Operating splicer with PC
	Splice image download to PC

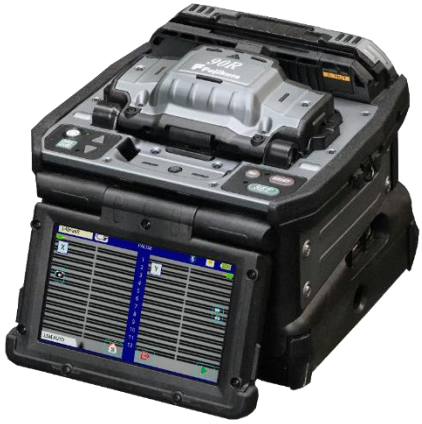
2. Conformity regulations

The 90R12 conforms below regulations to secure safety.

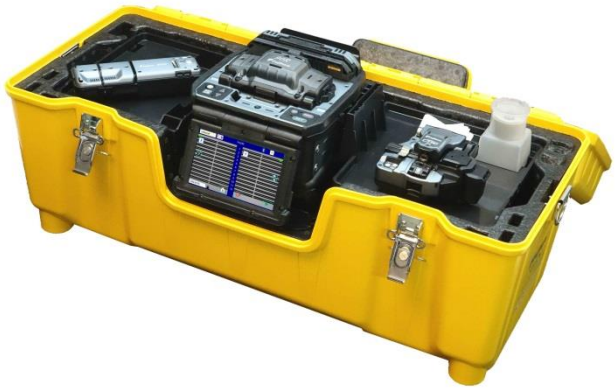
Regulations			Detail
Product Safety	EU	EMC: Electro Magnetic Compatibility Directive	2014/30/EU EMI: EN55011 EMI: Electro Magnetic Interference EMS: EN61000-6-2 EMS: Electro Magnetic Susceptibility
		LVD: Low Voltage Directive	2014/35/EU EN60950-1
		RED: Radio Equipment Directive	2014/53/EU EN300 328 V2.1.2 EN301 489-1 V2.1.1 EN301 489-17 V3.1.1 EN60950-1
Hazardous substances	EU	RoHS: Restriction of Hazardous Substances Directive	2011/65/EU
		PFOS: Perfluorooctanesulfonic Acid Directive	2006/122/EC
Recycle	EU	WEEE: Waste Electrical and Electronic Equipment directive	EU: 2002/96/EC

3. Appearance

Below figure shows the appearance of 90R12.



Mass Fusion Splicer 90R12



with standard items

4. Specifications

4.1 Operating specifications

The 90R12 achieves low splicer loss, e.g. average 0.05dB for ITU-T G.652 fibers.
The average splicing time is 14 to 15 sec in case of SM-FAST mode.

Item		Specification
Fiber alignment method		Self cladding alignment with surface melting tension
Fiber count can be spliced		90R: Up to 12 fiber ribbon
Applicable fiber	Fiber type	Single mode optical fiber
		Multi mode optical fiber
	Cladding dia.	Approx.125µm
Applicable coating	Fiber holder	Coating shape. : Refer to options
		Cleave length : 10mm
Fiber splice performance	Splice loss *1	ITU-T G.652 : Avg. 0.05dB
		ITU-T G.651 : Avg. 0.02dB
		ITU-T G.653 : Avg. 0.08dB
		ITU-T G.655 : Avg. 0.08dB
		ITU-T G.657 : Avg. 0.05dB
	Splice time *2	SM FAST mode : Avg. 14 to 15sec.
		SM AUTO mode : Avg. 19 to 20sec.
Applicable protection sleeve	Sleeve type	Heat shrinkable sleeve
	Sleeve length	Max. 66mm
	Sleeve dia.	Max. 6.0mm before shrinking
Sleeve heat performance	Heat time *3	40mm FP-05 mode : Avg. 38 to 40sec.
		40mm FP-04T mode : Avg. 17 to 19sec.
		Single 60mm mode: Avg. 13 to 15sec.
Fiber tensile test force		Approx. 2.0N
Electrode life *4		Approx. 1,500 splices

NOTES:

*1 Measured with a cut-back method relevant to ITU-T and IEC standard after splicing Fujikura identical fibers. The average splice loss changes depending on the environmental condition and fiber characteristics.

*2 Measured at the room temperature. The definition of splice time is from the fiber image appeared in LCD monitor to the estimated loss displayed. The average splice time changes depending on the environmental condition and fiber type and fiber characteristics.

*3 Measured at the room temperature with the AC adapter. The heat time is defined from the start beep sound to the finish beep sound. The average heat time changes depending on the environmental condition, sleeve type and battery pack condition.

*4 The electrode life changes depending on the environmental condition, fiber type and splice modes.

4.2 Physical and Environmental specifications

The 90R12 design, compact size and light weight, enables to carry it and use in various environment conditions.

Item		Specification
Physical description	Dimensions W	Approx.170mm without projection
	Dimensions D	Approx.173mm without projection
	Dimensions H	Approx.150mm without projection
	Weight	Approx. 2.6kg including battery
Environmental condition"	Temperature	Operate : -10 to 50 degreeC
		Storage : -40 to 80 degreeC
	Humidity	Operate : 0 to 95%RH non-condensing
		Storage : 0 to 95%RH non-condensing
	Altitude	Max. 3,700m
AC adaptor	Input	AC100 to 240V, 50/60Hz, Max. 1.5A
	Output	Approx. DC 12V, Max. 7A

4.3 Power supply

There three types of power supply, AC100-240V, DC10-15V and Lithium Ion battery pack.
The battery pack capacity provides 165 splice and heat cycles per one charge.

Item		Specification
AC adaptor	Input	AC100 to 240V, 50/60Hz, Max. 1.5A
	Output	Approx. DC 12V, Max. 7A
DC adaptor	Input	DC10 to 15V, Max. 7A
	Output	DC10 to 15V, Max. 7A
Battery pack	Type	Rechargeable Lithium Ion
	Output	Approx. DC14.4V / 6,380mAh
	Capacity *5	Approx. 165 splice and heat cycles
	Temperature	Operate : -10 to 50 degreeC
		Recharge : 0 to 30 degreeC
		Storage : -20 to 30 degreeC
	Recharge	Approx. 5 to 8 hours from empty
	Battery life *6	Approx. 500 recharge cycles

NOTES:

*5 Test condition
(1) Splice and heat time: 2 minutes cycle
(2) Using the splicer power save settings with 12 fiber ribbon and FP-05 sleeve.
(3) Using a not degraded battery
(4) At the room temperature
The battery capacity changes when testing with a different conditions from the above.

*6 The battery capacity decreases to a half after approx. 500 discharge and recharge cycles, The battery life was shortened more by the out of storage temperature range, out of operating temperature range or complete discharge by storing a long time without recharge.

4.4 Other specifications

The 90R12 equips 5 inches size LCD monitor with touch screen. It provide up to x60 magnifications fiber image. Touch screen provides easy operation. USB 2.0 Mini B type interface provide data transfer function with PC. Also, Bluetooth 4.1LE provides the data communication with fiber cleaver CT50 to manage cleaver its blade.

The “1/4-20UNC” screw hole is for fixing splicer to the tripod.

Item		Specification
Display	LCD monitor	TFT 5 inches with touch screen
	Magnification	Approx. 20X : 12 ribbon to 60X : single
Illumination	V-grooves	LED lamp
Interface	PC	USB2.0 Mini B type
	External LED lamp	USB2.0 A type Approx. DC5V, 500mA
	Ribbon Stripper	Mini DIN 6pin DC12V, Max. 1A
	Wireless *7	Bluetooth 4.1 LE
Data storage	Splice mode	100 splice modes
	Heat mode	30 heat modes
	Splice result	10,000 splices
	Splice image	100 images
Screw hole for tripod		1/4-20UNC

Notes: *7 Bluetooth® mark and logos are the registered trademarks of Bluetooth SIG, Inc.

5. Standard items

The 90R12 standard package includes below items. The combination between 90R12 and CT50, RS03 provides Bluetooth communication to manage the cleaver blade. You can select AC power cord type according to your region.

Item	Model	Qty
Mass Fusion Splicer	90R12	1 pc
Battery Pack *8	BTR-15	1 pc
AC Adapter	ADC-20	1 pc
AC Power Cord	ACC-14(US)/ -15(EU)/ -16(UK)/ -17(AU)/ -18(Brazil)	1 pc
USB Cable	USB-01	1 pc
Fusion Splicer Strap	ST-02	1 pc
Electrodes, on spare V-groove	ELCT2-16B	1 pair
12 fiber V-groove, spare	VG12-01, 255μm fiber spacing	1 pc
Hexagonal Wrench	HEX-01	1 pc
V-groove Cleaning Brush	VCB-01	1 pc
Carrying Case	CC-39	1 pc
Work Table Left	WT-09L	1 pc
Work Table Right	WT-09R	1 pc
Work Table J-Plate	JP-09	1 pc
Tripod Screw	TS-03	2 pcs
Carrying Case Strap	ST-03	1 pc
Alcohol Dispenser	AP-02	1 pc
Quick Reference Guide	QRG-03-E	1 pc
Wireless and PC Setting Guide	SG-04-E	1 pc
Warning and Cautions	WAC-01-E	1 pc
Splice Test Report	Only English	1 pc
Single Fiber Stripper	SS03	1 pc
Ribbon Fiber Stripper	RS03	1 pc
Battery Pack *8	BTR-12A	1 pc
AC Adapter	ADC-09A	1 pc
AC Power Cord	ACC-08(JP)/ -09(US)/ -10(UK)/ -11(EU)/ -12(AU)	1 pc
Blade Cleaning Brush	BRS-02	1 pc
Hexagonal Wrench	HEX-01	1 pc
Instruction Manual	M-RS03-E	1 pc
Optical Fiber Cleaver	CT50	1 pc
Fiber Scrap Collector	FDB-05	1 pc
Fiber Setting Plate	AD-10-M24	1 pc
Case	CC-37	1 pc
Hexagonal Wrench	HEX-01	1 pc
Instruction Manual	M-CT50-E	1 pc

*8: Please follow IATA regulation in case of shipping the battery by air.

For more detail of Optical Fiber Cleaver CT50 and Ribbon Fiber Stripper RS03, see the specification in Appendix.

6. Options

Choosing options make various range of splicing. You may choose fiber holder type according to the type of fibers.

(Options 1 of 2)

Item	Model	Remark
Battery pack	BTR-15	Battery pack for replacement
Electrodes	ELCT2-16B	Electrodes for replacement
V-groove	VG12-01	12 fiber V-groove, 255μm fiber spacing
	VG08-01	8 fiber V-groove, 255μm fiber spacing
	VG04-01	4 fiber V-groove, 255μm fiber spacing
Fiber holder	FH-70-250	250μm coating diameter
	FH-70-900	900μm coating diameter
	FH-70-160	160μm coating diameter
	FH-70-500	500μm coating diameter
	FH-70-2	2 fiber ribbon
	FH-70-4	4 fiber ribbon
	FH-70-5	5 fiber ribbon
	FH-70-6	6 fiber ribbon
	FH-70-8	8 fiber ribbon
	FH-70-10	10 fiber ribbon
	FH-70-12	12 fiber ribbon
	FH-70-12PC	Pitch conversion for 12 fiber ribbon
	FH-60-DC250	250μm in drop wire cable
	FH-FC-20	900μm in 2mm diameter cable
	FH-FC-30	900μm in 3mm diameter cable
	FH-60-LT900	900μm loose buffer cable
DC Adapter	DCA-03	Connect AC adapter not through battery
DC power cord	DCC-20	Car cigar socket to BTR-15/DCA-03
	DCC-21	Car battery to BTR-15/DCA-03
	DCC-11	Splicer to ribbon stripper
Single Fiber Stripper	SS03	Stripped to 125/250/900μm diameter
	SS01	Stripped to 125μm diameter only
Optical Fiber Cleaver	CT58	Cladding diameter 80μm
Ribbon Fiber Stripper	RS03	Standard
	RS02	No Battery Pack
	RS03-80	Cladding diameter 80μm, up to 16 fiber ribbon
Ribbonising Tool	FAT-04	2 to 16 fibers, 250μm diameter
	RT-02	2 to 12 fibers, 200 to 250μm diameter
Transfer Clamp	CLAMP-DC-12	Transferring drop cable on work table
J-Plate	JP-10	Attaching to splicer, not to work table
	JP-10-FC	JP-10 with fiber clamps

(Options 2 of 2)

Item	Model	Remark
Protection sleeve	FP-03	60mm Max. 900μm coating diameter
	FP-03(L=40)	40mm Max. 900μm coating diameter
	FP-03M	FP-03 with non-magnetic material
	FP-04(T)	40mm up to 8 fiber ribbon
	FP-05	40mm up to 12
	FPS01-400-12	12mm Max. 400μm coating diameter
	FPS01-400-15	15mm Max. 400μm coating diameter
	FPS01-400-20	20mm Max. 400μm coating diameter
	FPS01-400-25	25mm Max. 400μm coating diameter
	FPS01-400-34	34mm Max. 400μm coating diameter
	FPS01-400-40	40mm Max. 400μm coating diameter
	FPS01-900-15	15mm Max. 900μm coating diameter
	FPS01-900-20	20mm Max. 900μm coating diameter
	FPS01-900-25	25mm Max. 900μm coating diameter
	FPS01-900-34	15mm Max. 900μm coating diameter
	FPS01-900-45	45mm Max. 900μm coating diameter
	FPS04-30	30mm for up to 4 fiber ribbon
	FPS08-28	28mm for up to 8 fiber ribbon
	FPS01-DC-60	60mm for drop cable / indoor cable

Note: Specifications described herein are based or tested on Fujikura standards
Descriptions and specifications are subject to change without prior notice.

SPECIFICATIONS
for
Optical Fiber Cleaver CT50

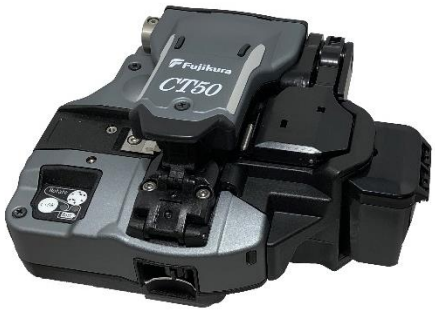
This document covers specifications for Optical Fiber Cleaver, CT50.

1. Features

The optical fiber cleaver CT50 offers wireless communication function “Active Blade Managing Technology” with fusion splicer and it allows operator to manage the condition of blade.
The CT50 allows workers to replace the cleaving blade, providing customers with a drastic reduction in handling time for maintenance. The CT50 changes the position of the cleaving blade automatically and in accordance with the condition of the cleaving state of optical fibers on a fusion splicer through wireless communication. In addition, the CT50 can complete cleaving works including scrap collection, with a single-step.

2. Appearance

Below figure shows the appearance of CT50.



3. Specifications

Item		Specification
Applicable fiber	Fiber type	Single mode optical fiber
		Multi mode optical fiber
	Fiber count	Up to 16 fibers
	Cladding diameter	Approximately 125µm
Cleave length	Fiber plate	AD-10-M24: 5 to 20mm*1
	Fiber holder	Approximately 10mm
Cleave angle	Single fiber *2	Avg. 0.3 to 0.9 degrees
	Ribbon fiber *2	Avg. 0.3 to 1.2 degrees
Blade life *3		Approximately 60,000 fibers
Physical description	Dimension W	Approximately 120mm without projection*4
	Dimension D	Approximately 95mm without projection*4
	Dimension H	Approximately 58mm without projection*4 When closing the lever
	Weight	Approx. 305g including battery and AD-10-M24
Environmental condition	Temperature	Operate : -10 to 50 degreeC
		Storage : -40 to 80 degreeC
	Humidity	Operate : 0 to 95%RH non-condensing
		Storage : 0 to 95%RH non-condensing
Battery		2 pieces of LR03/AAA dry battery
Wireless interface *7		Bluetooth® 4.1 LE
Screw hole for tripod		1/4-20UNC
Other features	Blade rotation	Motorized rotation
		Manual rotation dial
	Replaceable parts	Blade
		Clamp arm

NOTES:

*1 When the cleave length is less than 10mm, the coating diameter should be 250µm or less. Also, a blade height adjustment is required before cleaving. The average cleave angle is worse than the specification when the cleave length is less than10mm.

*2 Measured with an interferometer at room temperature, not with a splicer. A new blade was used to cleave both the single fibers and 12 fiber ribbons. The cleave length is set from 10 to 16mm. The average cleave angle changes depending on the environmental conditions, blade condition, operating method, and cleanliness.

*3 The blade life changes depending on the environmental conditions, operating method, and the fiber type cleaved.

*4 Measured in a condition when closing the lever

*5 Bluetooth® mark and logos are the registered trademarks of Bluetooth SIG, Inc

4. Options

Choosing options make various range of splicing. You may choose fiber holder type according to the type of fibers.

(Options 1 of 2)

Item	Model	Remark
Fiber Setting Plate	AD-50	Optional fiber setting plate
Blade	CB-08	Blade for replacement
Clamp Arm	ARM-CT50-01	Blade for replacement
Fiber Scrap Collector	FDB-05	Spare scrap collector
Side cover	SC-CT50-01	Side cover instead of scrap collector

Note: Specifications described herein are based or tested on Fujikura standards
Descriptions and specifications are subject to change without prior notice.

SPECIFICATIONS
for
Ribbon Fiber Stripper RS03

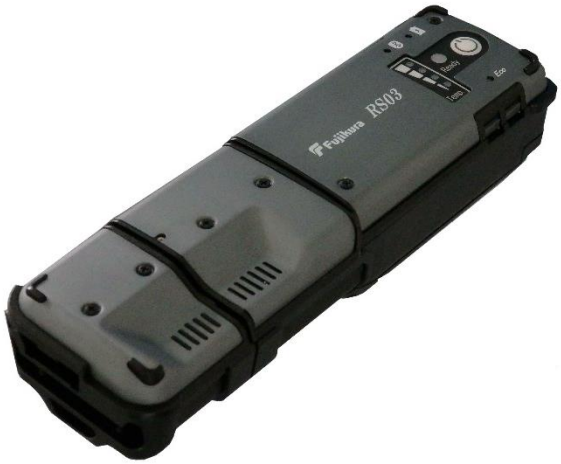
This document covers specifications for Ribbon Fiber Stripper, RS03.

1. Features

The RS03 is designed and developed with emphasis on operability and usability where less force is required for the stripping process. Furthermore, equipped with new features such as large capacity battery for 600 stripping cycles, 6 times larger than conventional stripper, and wireless link with smartphones for operational parameters adjustment.
These fiber stripping tools are also compatible with stripping Fujikura latest Spider Web Ribbon, which consists of optical fibers (with a coating diameter of 250μm or 200 μm) fixed intermittently.
Below shows the detail of features.

2. Appearance

Below figure shows the appearance of RS03.



3. Specifications

The RS03 is compatible with many types of ribbon without replacing the stripping blades. The blade shape realizes lower stripping force. Below table shows the specification of RS03.

Item		Specification
Applicable fiber	Fiber type	Single mode optical fiber
		Multi mode optical fiber
	Fiber count	Up to 16 fibers
	Cladding diameter	Approx. 125um
	Coating diameter	200 to 400um
Stripping length		Max. 35mm
Heat Time *1		Approx. 3sec
		Approx. 5sec with Eco-mode
Heat temperature		85 to140 degreeC
Physical description	Dimension W	Approx.156mm without projection
	Dimension D	Approx.49mm without projection
	Dimension H	Approx.37mm without projection
	Weight	Approx. 265 g including battery
Environmental condition	Temperature	Operate : -10 to 50 degreeC
		Storage : -40 to 80 degreeC
	Humidity	Operate : 0 to 95%RH non-condensing
		Storage : 0 to 95% RH non-condensing
AC adaptor	Input	AC100 to 240V, 50/60Hz, Max.0.58A
	Output	Approx. DC 12V, Max. 2A
DC power		DC10 to 17V, Max. 1A
Battery	Type	Rechargeable Lithium Ion
	Output	Approx. DC7.2V, 1840mAh
	Capacity *2	Approx. 600 times with Eco-mode
	Temperature	Recharge : 0 to 40 degreeC
		Storage : -20 to 30 degreeC
	Recharge	Approx. 2 hours from empty
	Battery life *3	Approx. 500 recharge cycles
Wireless interface *4		Bluetooth® 4.1 LE
Other features	Stripping force	Lower stripping force design
	Automatic heat setting	Controlled from splicer or smartphone

Notes:

*1 Measured at the room temperature. The heat time changes depending on the environmental condition and fiber coating type.

*2 Tested at the room temperature with a not degraded battery. The number of cycles changes depending on the environmental condition, stripper settings and battery degrading condition.

*3 The battery capacity decreases to a half after approx. 500 recharge cycles
The battery life was shortened more by the out of storage temperature range, out of operating temperature range or complete discharge by storing a long time without recharge.

*4 Bluetooth® mark and logos are the registered trademarks of Bluetooth SIG, Inc

4. Options

Item	Model	Remark
Spacer	SPA-RS02-08	Coating length 8mm
DC power cord	DCC-11	Splicer to ribbon stripper

Note: Specifications described herein are based or tested on Fujikura standards
Descriptions and specifications are subject to change without prior notice.

++ END OF DOCUMENT ++