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SPECIFICATIONS

FOR

RIBBON FIBER FUSION SPLICER 70R+

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Fujikura

SPECIFICATIONS
FOR
RIBBON FIBER FUSION SPLICER
70R+

1. General

These specifications cover the Ribbon Fiber Fusion Splicer 70R+, which is designed for splicing ribbon fiber and single-count fiber for telecommunication use, up to 12-fiber ribbon.

2. Characteristics of 70R+

2.1 Features

The 70R+ is equipped with precise fixed V-groove for fiber alignment ribbon fiber splicer. The 70R+ has a series of features, such as "Automated wind-protector and tube-heater" for quicker splicing cycle as well as fewer operation steps, "innovative carrying-case design" for quicker preparation, "powerful Li-ion battery" for longer operation, and wireless communication functions. Market is from backbone network installation to opt-electronics components production for quality splice.

2.2 Product safety and environmental adaptations

The 70R+ has been tested in accordance with the following EMC directives.

EMC directive testing, Radiation noise EN55011 Group1, Class A acquired.
EMC directive testing, Radiation noise EN61000-6-4 tested and passed
EMC directive testing, Noise resistance EN61000-6-2 tested and passed
EMC directive testing, Fire/Electrification N61010-1 tested and passed

The 70R+ has been tested in accordance with the following requirements.

Telcordia GR-765-CORE

2.3 Shock resistance, dust resistance, and rain resistance

1) Shock resistance

The 70R+ has been designed to resist shock in accordance with the following requirements.

Condition : Ability to withstand shock from all directions.
Reference specifications : Telcordia GR-765-CORE
Dropping height : 76cm
Clarification : The item is capable to make 10 splices meeting certain performance after the test.

2) Dust resistance

The 70R+ has been designed to resist dust in accordance with the following requirements.

Dust material : Total 6 spoons of 0.1 to 500 microns diameter Alumina Silicate powder
Apply method : Vibrating the item with air-circulate powder in a closed box
Condition : The wind protector shall be properly closed.
Reference specification : Telcordia TR-NWT-000264 (modified harder by Fujikura)
Clarification : The item is capable to make 10 splices meeting certain performance after the test.

3) Rain resistance

The 70R+ has been designed to resist rain in accordance with the following requirements.

Specification : JIS C 0034
Rain simulating : more than R=10mm/h
Time duration : 10min.
Condition : The wind protector shall be properly closed.
Criteria : After drying, the splicer is capable to make 10 splices meeting splice specification.

4) Notification

These tests do not guarantee that the 70R+ will not be damaged under these conditions.

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2.4 Environmental standards compliance

The 70R+ is designed and being produced in consideration of following rules of environmental acceptability.

EU RoHS directive compliant
EU WEEE directive compliant
EU PFOS directive compliant
China RoHS directive compliant

2.5 Fusion Connector applications

The 70R+ is adopted for Fujikura's FuseConnect® System.

2.6 Automated Wind Protector

The wind protector can be set to automatically close after the fiber holder is set and open when splicing is completed. This new feature reduces operation time and improve productivity.

2.7 Slide in AC adaptor

70R+ has the structure that the AC adapter can be installed inside the unit. The AC adapter doesn't occupy any working space outside of the unit.

2.8 Wireless communication function

70R+ has equipped with wireless communication function with the peripheral tools and smartphone..

3. Specifications (Operational)

3.1 Applicable Optical Fibers

Applicable Fiber count	Single, 2, 4, 5, 6, 8, 10, and 12
Type of fiber	SM (ITU-T G.652 & G.657), MM (ITU-T G.651) DS (ITU-T G.653), NZDS (ITU-T G.655)
Applicable Fiber dimensions	Ribbon : Cladding diameter = 125μm, Ribbon fiber thickness = 0.25mm to 0.4mm Single : Cladding diameter = 125μm, Coating diameter = 250μm and 900μm
Fiber cleaved length	10-13mm

3.2 Fiber setting

The 70R+ accepts Fiber Holder system for fiber setting.

Fiber holder, "FH-50-12" (option)	Ribbon fiber, 12-fiber
Fiber holder, "FH-50-10" (option)	Ribbon fiber, 10-fiber
Fiber holder, "FH-50-8" (option)	Ribbon fiber, 8-fiber
Fiber holder, "FH-50-6" (option)	Ribbon fiber, 6-fiber
Fiber holder, "FH-50-5" (option)	Ribbon fiber, 5-fiber
Fiber holder, "FH-50-4" (option)	Ribbon fiber, 4-fiber
Fiber holder, "FH-50-2" (option)	Ribbon fiber, 2-fiber
Fiber holder, "FH-50-250" (option)	Coating diameter of 250μm
Fiber holder, "FH-50-900" (option)	Coating diameter of 900μm

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Fiber holder, “FH-60-250” (option)	Coating diameter of 250μm
Fiber holder, “FH-60-LT900” (option)	Coating diameter of 900μm (5mm to 13mm cleave) For 900μm Loose Tube Fiber
Fiber holder, “FH-60-DC250” (option)	Coating diameter of 250μm (5mm to 13mm cleave) For Drop Cable
Fiber holder, “FH-60-IDC250” (option)	Coating diameter of 250μm (5mm to 13mm cleave) For Low Friction Cable
Fiber holder, “FH-FC-20” (option)	Coating diameter of 900μm (5mm to 13mm cleave) For 2mm sheath cord
Fiber holder, “FH-FC-30” (option)	Coating diameter of 900μm (5mm to 13mm cleave) For 3mm sheath cord

3.3 Alignment of fiber

The precise fixed V-grooves provide accurate fiber alignment. Two cameras observe fibers from both perpendicular axes, and fibers are aligned automatic by fiber image processing in both axes simultaneously.

3.4 Splicing Modes

1) Including preset splice modes, a total memory of 100 splicer modes are available.

2) The 70R+ has below Splice Modes.

AUTO mode	Automatic fiber count identification Arc calibration free General splice settings suited for all fibers (Except MM)
SM-AUTO mode	For Single mode fiber (ITU-T G.652 & G.657) Automatic fiber count identification Arc calibration free
SM-FAST mode	For Single mode fiber (ITU-T G.652 & G.657) Automatic fiber count identification For quick splice operation
MM-AUTO mode	For Multi mode fiber (ITU-T G.651) Automatic fiber count identification Arc calibration free
DS-AUTO mode	For Dispersion shifted fiber (ITU-T G.653) Automatic fiber count identification Arc calibration free
NZ-AUTO mode	For Non-zero Dispersion shifted fiber (ITU-T G.655) Automatic fiber count identification Arc calibration free
Other modes	Regular splice modes User programmable mode area are available

3.5 Splicing Performance

Typical splice loss (measured by cut-back method relevant to ITU-T standards)		
	SM (ITU-T G.652 & G.657)	0.05dB
	MM (ITU-T G.651)	0.02dB
	DS (ITU-T G.653)	0.08dB
	NZDS (ITU-T G.655)	0.08dB
Return loss		60dB or greater
Typical splicing time		
	SM AUTO mode	15 sec
	AUTO mode	15 sec
	SM FAST mode	11 sec

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3.6 Splice loss estimate function

Cladding axis offset are taken into account for accurate loss estimate.

3.7 Tube heater

1) Including preset heating modes, a total memory of 30 heating modes are available.

2) Heating modes

FP-03	For Fujikura FP-03 (L=60mm) protection sleeve
FP-03(L=40)	For Fujikura FP-03 (L=40mm) protection sleeve
FPS01-400-15/20/25/34/40	For Fujikura FPS01-400-15/20/25/34/40 micro sleeves respectively
FPS01-900-20/25/34/45	For Fujikura FPS01-900-20/25/34/45 micro sleeves respectively
FP-04(T)	For Fujikura FP-04(T) protection sleeve
FP-05	For Fujikura FP-05 protection sleeve

3) Typical Heating time

FP-03 coating dia.250μm	13sec.
FP-03 coating dia.900μm	14sec.
FP-03(L=40) coating dia.900μm	17sec.
Fujikura micro sleeves	5 to 16 sec
FP-04(T)	18 sec
FP-05	40 sec

4) Automated Tube-heater

Auto-cover close and auto-start feature when splice joint is set in the heater unit.
The clamping speed of the tube heater has been shortened from the previous model.

5) Fiber tensioning available.

3.9 Storage of Splice Results

No. of splice memory	2,000 splices
Data stored	Date, Splice mode No./title1/title2, error message, estimated splice loss, cleave angle, axial offset, cleave angle threshold, estimated splice loss threshold, arc power, arc time.

3.10 Arc power calibration

Real-time arc calibration	The arc power and time are automatically calibrated real-time by cladding illumination feed back during arc discharge. Applied to all AUTO splice modes.
Automatic arc power calibration	The arc power and time are automatically calibrated based on previous arc discharge. Applied to all AUTO splice modes.
Manual arc power calibration	Manual arc power calibration function is available by using fiber's melting amount measuring.

3.11 Tension test

Tension load	1.96N (200gf) to 2.25N(230gf)

3.12 Electrodes life

1,500 arc-discharges are possible by a pair of electrodes.

3.13 Wind protector

Wind protector automatically open and close function.
Auto start function by closing the wind protector is available.

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3.14 Operating conditions

Operating altitude	From 0 to 3,660m above the sea level
Operating humidity	From 0 to 95% RH(Non-dew)
Operating temperature	From –10 to 50deg.C
Operating wind condition	Up to 15m/s wind velocity

3.15 Storage conditions

Storage humidity	From 0 to 95% RH(Non-dew)
Storage temperature	From –40 to 80deg.C
Long term storage temperature with battery	From –20 to 30deg.C

4. Specifications (Product)

4.1 Dimensions and weight

Dimensions	146(W) x 159(D) x 150(H) mm Including wind protector, monitor, and rubber protector Excluding rubber foot
Weight	2.3kg, with ADC-18 AC adaptor 2.5kg, with BTR-09 battery

4.2 Fiber image display

Viewing method	By two CMOS cameras for intersecting fiber viewing
Type of display monitor	4.7 inches TFT color LCD monitor
Surface protection of the monitor	Transparent plastic plate with anti-reflection coating
Image change-over	The orientation of the screen is adjusted automatically according to monitor position.
Fiber view and magnification	X / Y or both X and Y simultaneously (35X magnification)

4.2 Power Supply : AC adaptor

Model name of AC adaptor	ADC-18, detachable AC adaptor
AC power inlet	Applicable voltage : from AC100V to AC240V Applicable current : Max.1A AC power cable : 3-pin cable with a grounding terminal, ACC-14 ~ ACC-17
DC power inlet	Applicable voltage : from DC10V to DC15V Applicable current : Max.6A DC power cable : proprietary 3-pin cable, DCC-12, DCC-13
Battery charge terminal	Charge cable : proprietary 5-pin charge cord, DCC-18 Applicable battery : proprietary battery, BTR-09 Charging time : approximate 5 hours Charging voltage and current : Max.16.8V, Max.0.8A Simultaneous battery charging and splice operation possible
DC outlet	To main body : proprietary 8-pin connector Supply voltage and current : DC12V, 4A
LED indicators	Green : normal and proper DC power supply Red : DC input voltage is over 15V Yellow : Battery is being charged Yellow blinking : Abnormal battery charging
Weight	386 g

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4.3 Power supply : Battery

Model name of battery	BTR-09, detachable and rechargeable battery
Battery type	lithium battery 14.8V output voltage, 4000mAh capacity Remaining amount indicator equipped
Charging	Charge power supply : ADC-18 Charge cord : proprietary 5-pin charge cord, DCC-18 Able to charge battery during splice operation when the battery is slotted in the splicer main body.
DC outlet	To main body : proprietary 8-pin connector Supply voltage and current : DC14.8V, 4A
Operation conditions	Charging temperature : from 0 to 40 deg.C Discharging temperature : from –10 to 50 deg.C The battery to be fully discharged and charged in every 6 months to prevent the battery from “memory effect”.
Long term storage conditions	Storage temperature : from –20 to 30 deg.C The battery to be fully charged in every 6 months to prevent the battery from chemical damage caused by complete discharge.
Battery capacity	110 splice and heat cycles
Weight	557 g

4.4 Terminals

USB terminal	Status : Slave Use for : Data and video signal transfer to PC Connector type : Mini-B Specification : USB2.0
HJS terminal	Use for : power supply for HJS-02, HJS-03 Connector type : 6-pin Mini-DIN connector Supply power : DC12V, continuous 1A

4.5 Carrying case

Dimensions	547(W) x 277(D) x 281(H) mm, excluding rubber foot Including working table and strap

4.6 Wireless communication

Wireless technical standard	Bluetooth 4.1
Communication target	RS02/03 Smartphone with Android or iOS
Wireless Certification	Japan, USA, Canada, EU Member States, China, India etc *For details, refer to the following Splicer website: https://www.fusionsplicer.fujikura.com/
Communication distance	up to 5 to 10 m (equivalent to Class 2)

4.6 Operating software

User can upgrade the operating software for the 70R+, when new version released, via Internet.
Instructions for software upgrade are described in the CD contained in the standard package.

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5. Standard package

Items/accessories stated in the table below are supplied as the 70R+ Standard Package.

No.	Name	Model	Q'ty	Note
1	Fusion splicer	70R+	1 pc.	--
2	Electrodes	ELCT2-20A	1 pair	Installed
3	AC adaptor / battery charger	ADC-18	1 pc.	-
4	AC power cord	ACC-xx	1 pc.	One of below types ACC-14 : USA, JAPAN type ACC-15 : Europe type ACC-16 : UK type ACC-17 : Australia type
5	Spare electrodes	ELCT2-20A	1 pair	--
6	USB cable	USB-01	1 pc.	--
7	Quick reference guide	Q-70R+/19R+-E	1 pc.	English
8	Instruction manual	M-70+	1 pc.	CD containing operation manual and PC software
9	Warning and cautions	W-70+-E	1 pc.	English
10	Splicing report	-	1 pc.	English or Japanese
11	Carrying case	CC-30	1 pc.	Including working table and strap
12	Alcohol Pot	AP-01	1pc	
13	Screw Driver	SD-01	1pc	
14	Sleeve Loader	SL-01	1pc	
15	V-Groove Cleaning Brush	VCB-01	1 pc	

6. Optional accessories for Splicer

Items stated in the table below are optional items and items for sell separately.

No.	Name	Model	Note
1	Fiber Holder	FH-50-12	For 12-fiber ribbon
		FH-50-10	For 10-fiber ribbon
		FH-50-8	For 8-fiber ribbon
		FH-50-6	For 6-fiber ribbon
		FH-50-5	For 5-fiber ribbon
		FH-50-4	For 4-fiber ribbon
		FH-50-2	For 2-fiber ribbon
		FH-50-250	For 250μm coating, single count fiber
		FH-50-900	For 900μm coating, single count fiber
		FH-60-250	For 250μm coating, single count fiber
		FH-60-LT900	For 900μm coating, single count loose tube fiber
		FH-60-DC250	For 250μm coating, single count fiber in drop cable
		FH-60-IDC250	For 250μm coating, single count fiber in low friction cable
		FH-FC-20	For 900μm coating, single count fiber in 2mm sheath cord (Left side only)
		FH-FC-30	For 900μm coating, single count fiber in 3mm sheath cord
2	Battery pack	BTR-09	Li-Ion battery
3	Battery charge cord	DCC-18	Use for connecting BTR-09 and ADC-18
4	DC power cord	DCC-12	For ADC-13, Cigarette lighter socket type
		DCC-13	For ADC-13, Alligator clamp type
5	Electrodes	ELCT2-20A	--
6	Primary Coat Stripper	PS-02	For single 250μm fiber

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7	Jacket Stripper	JS-01	For single 900μm fiber
8	Fiber Cleaver	CT-05	For single fiber only
		CT-30	For single - 12 ribbon fibers cleaving
9	Fiber Protection Sleeve	FP-03	For single 250μm ~ 900μm(L=60)
		FP-03(L=40)	For single 250μm ~ 900μm(L=40)
		FP-04T	For 8 ribbon fiber
		FP-05	For 12 ribbon fiber
		Micro sleeves	For different type of single fiber
10	Ribbon Fiber Stripper	RS02	
		RS03	Battery type
11	Transfer clamp	CLAMP-DC	
12	J-Plate	JP-06	

7. Appearance

70R+

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

++ END OF SPECIFICATIONS ++

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