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SPECIFICATIONS
FOR
SINGLE FIBER FUSION SPLICER
61S



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1. General

These specifications cover the Core Alignment Optical Fiber Fusion Splicer 61S, which is designed for splicing single-count optical fiber for telecommunication use.

2. Characteristics of 61S

2.1 Features

The 61S is a core-to-core alignment single fiber splicer equipped with PAS (profile alignment system) for precise core-to-core fiber alignment for consistent low splice loss and accurate loss estimation regardless of fiber type or quality. It has a series of features, such as calibration-free arc discharge system (with AUTO splice mode), automatic fiber identification, auto-start tube heater, auto-start fiber splice upon closing of wind protector cover, powerful Li-ion battery for longer operation, high resolution LCD monitor, greater fiber view magnification after splicing. It is suitable for various applications from backbone network installation to optical electronics component production.

2.2 Product safety and environmental adaptations

The 61S 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 61S 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 61S has been designed to withstand shock in accordance with the following requirements.

Condition : Ability to withstand shock from bottom surface.

Specifications : Telcordia GR-765-CORE

Dropping height : 76cm

Criteria : The splicer is capable to make 10 splices meeting splice specification after the test.

2) Dust resistance

The 61S 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

Test 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)

Criteria : The splicer is capable to make 10 splices meeting splice specification after the test.

3) Rain resistance

The 61S has been designed to resist rain in accordance with the following requirements.

Specification : JIS C 0034

Rain intensity : 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 61S will not be damaged under these conditions.

2.4 Environmental standards compliance

The 61S is designed and 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 61S is adopted for Fujikura's FuseConnect[®] System.

3. Specifications (Operational)

3.1 Applicable Optical Fibers

Applicable Fiber count	Single
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) Others
Applicable Fiber dimensions	Cladding diameter : 80μm to 150μm Coating diameter : 100μm to 1000μm
Fiber cleaved length	5mm to 16mm

3.2 Fiber setting

61S accepts 2 types of selectable fiber setting methods, Sheath Clamp System or Fiber Holder System. In Sheath Clamp System, 2 models are available, Clamp A and B, to handle different kind of fibers. In Fiber Holder System, the 61S accepts FH-60 series fiber holder to handle a wider range of fibers. The detail of the each fiber setting type is as shown in the table below.

Description	Package	Specifications
CLAMP-S21A	Standard	Coating diameter : 100μm to 3000μm (5mm to 16mm cleave)
CLAMP-S21B	Option	Coating diameter of 900μm (5mm to 16mm cleave) For loose tube fiber
Fiber holder FH-60-250	Option	Coating diameter of 250μm (5mm to 13mm cleave)
Fiber holder FH-60-900	Option	Coating diameter of 900μm (5mm to 13mm cleave)
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 indoor cable
Fiber holder FH-FC-20/30	Option	Coating diameter of 2mm/3mm (5mm to 13mm cleave) For 2mm/3mm cord

3.3 Alignment of fiber

Core-to-core alignment for SM/DS/NZDS fibers and cladding-to-cladding alignment for MM fiber are performed by PAS (Profile Alignment System) technology invented by Fujikura Ltd. 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) Number of Splice Modes available in total for preset modes and user programmable modes = 100.
- 2) The 61S has the following preset splice modes

The 61S has below Splice Modes.

AUTO	Automatic fiber discrimination (SM/MM//DS/NZDS) Arc calibration free Auto-focus
SM-AUTO	For Single mode fiber (ITU-T G.652). Arc calibration free Auto-focus
MM-AUTO	For Multi-mode fiber (ITU-T G.651) Arc calibration free Auto-focus
DS-AUTO	For Dispersion shifted fiber (ITU-T G.653) Arc calibration free Auto-focus
NZ-AUTO	For Non-zero Dispersion shifted fiber (ITU-T G.655) Arc calibration free Auto-focus
SM-FAST	For Single mode fiber (ITU-T G.652) Quicker splice with minimum functions
ULTRA-FAST	For Single mode fiber (ITU-T G.652) Quickest splice with minimum functions
Others	Regular splice modes Attenuation splice modes Manual splice modes User programmable modes are available

3.5 Splicing Performance

Typical splice loss (measured by cut-back method relevant to ITU-T standards)		
	SM (ITU-T G.652)	0.02dB
	MM (ITU-T G.651)	0.01dB
	DS (ITU-T G.653)	0.04dB
	NZDS (ITU-T G.655)	0.04dB
	Return loss	60dB or greater
Typical splicing time		
	ULTRA FAST mode	6sec. with standard SM fiber
	SM FAST mode	7sec. with standard SM fiber
	SM AUTO mode	10sec. with standard SM fiber
	AUTO mode	15sec. with standard SM fiber

3.6 Splice loss estimate function

Several types of core deformations as well as core axis offset are taken into account for accurate loss estimate.

3.7 Attenuation splice function

Intentional high splice loss of 0.1dB to 15dB (0.1dB step) can be made for an in-line fixed attenuator.

3.8 Tube heater

- 1) Number of Heating Modes available in total for preset modes and user programmable modes = 30.
- 2) The 61S has the following preset heating modes.

Heating modes

FP-03	For Fujikura FP-03 protection sleeve
FP-03 (L=40)	For Fujikura FP-03 (L=40) protection sleeve
FPS01-400-20/25/34/40	For Fujikura FPS01-400-20/25/34/40 micro sleeves respectively
FPS01-900-25/34/45	For Fujikura FPS01-900-25/34/45 micro sleeves respectively

3) Typical Heating time

FP-03 coating dia.250 μ m	23 sec.
FP-03 coating dia.900 μ m	25 sec
FP-03 (L=40) coating dia.900 μ m	29 sec.
Fujikura micro sleeves	16-28sec.
Slim60mm coating dia.250 μ m	15 sec
Slim40mm coating dia.250 μ m	15 sec
FP-04T	28 sec

3.10 Storage of Splice Results

No. of splice memory	10,000splice results
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3.11 Arc power calibration

Real-time arc calibration	The arc power and time are automatically calibrated real-time by cladding illumination feedback 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.

3.12 Tension test

Tension tester	Applicable for both Sheath Clamp and Fiber Holder
Tension load	1.96N (200gf) to 2.25N(230gf)

3.13 Electrodes life

3,000 arc-discharges are possible by a pair of electrodes.

3.14 Operating conditions

Operating altitude	From 0 to 5,000m 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 163(D) x 144(H) mm Including wind protector, monitor, and rubber protector Excluding rubber foot
Weight	2.4 kg, with ADC-18 AC adaptor 2.7 kg, with BTR-09 battery

4.2 Fiber image display

Viewing method	By two CMOS cameras for intersecting fiber viewing
Type of display monitor	4.73 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. The fiber image is turned upside down automatically according to the monitor position.
Fiber view and magnification	X / Y (320X magnification) or both X and Y simultaneously (200X 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-19 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	384 g

4.3 Power supply : Battery

Model name of battery	BTR-09, detachable and rechargeable battery
Battery type	Lithium-ion 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-19 Charging under Splice operation possible while the battery is 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 Operation 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.
No. of splice cycle with battery	200 times of splicing and heat shrinking under the following conditions. 1) The battery has been activated 2) The battery shall not be damaged by incorrect storage conditions 3) Use power save function Monitor off time : 5 sec. , Power off time : not used 4) 2 minutes splicing and heating cycle
Battery life (half reduction capacity)	Under normal circumstances the battery has a typical charge/discharge cycle of 500
Weight	558 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
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4.6 Operating software

User can upgrade the operating software for the 61S, when new version released, via Internet.
 Instructions for software upgrade are described in the CD contained in the standard package.

5. Standard package

Items/accessories stated in the table below are supplied as the 61S Standard Package.

No.	Name	Model	Q'ty	Note
1	Fusion splicer	61S	1 pc.	--
2	Sheath clamp	CLAMP-S21A	1 pc.	Installed
3	Electrodes	ELCT2-20A	1 pair	Installed
4	AC adaptor / battery charger	ADC-18	1 pc.	-
5	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
6	Spare electrodes	ELCT2-20A	1 pair	-
7	Quick reference guide	Q-62S-E/C	1 pc.	E:Englicsh, C:Chinese-
8	Instruction manual	M-61	1 pc.	Instruction manual CD
9	Warning and cautions	W-61-E	1 pc.	-
10	Splicing report	-	1 pc.	-
11	Carrying case	CC-30	1 pc.	Including working table and strap
12	Screw Driver	SD-01	1pc	-

6. Optional accessories for 61S

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

No.	Name	Model	Note
1	Fiber Holder	FH-60-250	For 250μm coating fiber
		FH-60-900	For 900μm coating fiber
		FH-60-LT900	For 900μm loose tube fiber
		FH-60-DC250	For coating diameter of 250μm in drop cable
		FH-60-IDC250	For coating diameter of 250μm in indoor cable
		FH-FC-20/30	For 2mm/3mm cord
2	Sheath clamp	CLAMP-S21A	Coating diameter from 100μm to 1000μm Included in standard package
		CLAMP-S21B	900μm diameter loose tube fiber
3	Battery pack	BTR-09	Li-ion battery
4	Battery charge cord	DCC-18	Use for connecting BTR-09 and ADC-18
5	DC power cord	DCC-12	For ADC-11/ADC-13/ADC-18, Cigarette lighter socket type
		DCC-13	For ADC-11/ADC-13/ADC-18, Alligator clamp type
6	Electrodes	ELCT2-20A	
7	J-Plate	JP-08	-
8	Primary Coat Stripper	PS-02	For single 250μm fiber
9	Jacket Stripper	JS-01	For single 900μm fiber
10	Fiber Cleaver	CT-06	For single fiber only
		CT-30	For single - 12 ribbon fibers cleaving
11	Fiber Protection Sleeve	FP-03	For single 250μm ~ 900μm(L=60)
		FP-03(L=40)	For single 250μm ~ 900μm(L=40)
		Micro sleeves	For different type of single fiber
12	Hot Jacket Stripper	HJS-02	Standard
		HJS-03	Battery type
13	DC Power Cord	DCC-11	HJS power cord with Fujikura splicer

7. Appearance



61S

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

++ END OF SPECIFICATIONS ++