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FUSION SPLICER
FSU 975

GENERAL

This specification covers fusion splicer FSU 975, designed for all single-mode and multimode fibers, dispersion-shifted and erbium doped fibers.

The FSU 975 features Ericsson's unique splice loss estimation method based on the mode coupling (microbending) theory and warm image processing and also takes splicing one step further by incorporating the unique Hot Core Alignment process.

Special software

In order to splice an erbium doped fiber to a standard single mode fiber or dispersion-shifted fiber with negligible losses, Ericsson has developed special software, the Mode Field Matching process, to be used within the FSU 975. This software eliminates the problems of splicing fibers with different mode field diameters.

With Ericsson's unique Real Time Control (RTC) procedure, a full control of the fiber offset during fusion is obtained within the Attenuator making process. The splice attenuation can be controlled up to 29dB, with a typical accuracy better then 10% and a back reflection lower then -70dB.

With the Pulling or Tapering process, own sequence for splicing fibers can be created. Tapering software is used mainly to produce fiber end faces that serve as microlenses.

Fusion splicer 975 Kit

One set of the FSU 975 single-mode and multimode fusion splicer kit includes the items shown in the table.

In addition to the built-in 3" high resolution LCD monitor, the FSU 975 can be connected to any TV monitor with a video-inlet and a BNC connector can be used.

SPECIFICATION for FSU 975

Applicable optical fibers

Single-mode and multimode silica or low melting compound glass fibers irrespective of the refractive index profiles (matched cladding or depressed cladding for 1310nm, dispersion shifted for 1550nm or dispersion flattened for both 1310 and 1550nm) and irrespective of the coatings; tight secondary or loose tube, uncoloured or coloured fiber.

Fiber cladding diameter

Software is designed to perform splicing of the fibers with the cladding diameters between 30 and 270 µm with auto aligning and between 30 and 400 µm with manual aligning.

Fiber coating diameter

Up to 2 mm of coating diameters.

Fiber clamping

Loose tube secondary coating: Double mechanical non-bare fiber clamp (exchangeable) for primary coating and loose tube. Nom 0.250/2 mm.
Tight secondary coating: Mechanical (exchangeable) for unprotected fiber and tight secondary coating. Nom 0.125/1 mm. For other dimensions, please consult Ericsson.

Alignment/positioning

Automatic core or cladding for single-mode and multimode fiber in the Critical Splice Area (CSA), aided by the computer controlled image processor.

ERICSSON

Arc fusion splice method
Automatic prefusion and fusion by the built-in computer. Fifty different splicing programs (10 factory defined splicing programs are read-only) can be selected in Automode or Manual mode splicing, each either with 16 programmable parameters when splicing in normal splicing process or 19 programmable parameters when splicing in other splicing processes, which are easy to change.

Discharge between electrodes:
Arc: High frequency arc
Arc time: 0.1 to 30.00s in steps of 0.1s
Arc current: 6 to 30mA in steps of 0.1mA

Program security
Every user-defined program has its own key-number and access type: OPEN (every user can read and write), READ ONLY, CONFINDENTIAL (only the owner of the program can read and write).

AOA current
The Arc-on Alignment (AOA) function makes a splice loss much more stable for the fibers with a smaller core size and the carbon coated fibers.

With the AOA current, the fiber ends are align inside an arc with very low current, immediately before the fine alignment to avoid possible fiber bending (jumping) during alignment.

Automatic selection of currents
Automatic selection of prefusion and fusion currents shall use the Hot Core Alignment process. When the optimal parameters are met for fusion, the currents are memorised and stored in the splicer. This considers all external parameters that would affect the splice quality such as altitude, humidity, air-pressure, electrode ware, etc.

Altitude compensation
With the altitude compensation function, all parameters for fusion currents for the corresponding altitudes above sea level will be automatically calculated with approximation and the difference in altitudes above sea level will be compensated.

Typical splice loss
Typical splice loss is 0.02 dB for identical single-mode 9/125 µm fibers.

Messages displayed direct in the monitor
The FSU 975 gives the operator instructions and guidelines on how to operate the splicer throughout the whole splicing sequence. These instructions are displayed in English. Additional languages on request.

Preparation control
The FSU 975 automatically checks the quality of fiber ends regarding cleaving angle and remaining dirt, before splicing. The limit for the cleaving angle can be programmed in steps of 0.1°, from 0.1° to 5.0°.

Splice quality evaluating function
The automatic evaluation is made by an image computer scanning of the images obtained during the fusion process (warm-splice) in the Critical Splice Area (CSA).
The attenuation of the splice is analysed by a patented method, the microbending technique.

This unique technique has considerably improved the accuracy of the loss estimation. FSU 975 also estimates a splice loss when splicing is done manually.

The result is presented in the built-in 3” high-resolution LCD monitor as a value in dB.

Operation time
The fusion time in Automode splicing including everything from preparation control to splice loss estimation is less than 45 seconds.

Environmental conditions
The range of the operation environment temperature is 0° to +45°C. The temperature inside is controlled by a built-in fan. Humidity must not exceed 95%.

The range of the storage environment temperature is -20° to +60°C. Humidity must not exceed 95%.

Dimensions
Length: 370 mm
Width: 220 mm
Height: 145 mm
Weight: 6.5 kg

Outlets
RS-232C interface, analogue video output, Power +12V (DC), Fuse 2A.

Power supply and consumed power
12V DC. Peak current (with the arc on at 15mA) is 3.2A. More then 100 splicing operations per single battery charge are performed by a splicer only and more then 50 splicing operations per single battery charge are performed by a splicer with a heat oven.

Printout facilities
As an optional item, a printer can be connected to the RS-232C interface provided on the FSU 975 for registration of splice loss, time etc. Memory capacity is for up to 100 last splices.

Software package
Software package, FSU for Windows, is a graphical interface for the FSU 975. The FSU 975 is controlled by direct button accessing on a computer screen, where an image represents the panel of the splicer. This image will also show text sent from the FSU.

Editing FSU 975 programs is done easily through a dialog based interface and the program can either be sent directly to the unit or saved in a file for later use.

There is also an ability to remotely control a FSU 975 over a network that supports the TCP/IP protocol.

Service system
Ericsson's service concept incorporates the company's 20 years experience from usage of our fusion splicers in a variety of field splicing conditions and climates the world over. This operation experience has been built into the latest model, the FSU 975. The service system is based on and characterised by:
- built-in splice counter to keep track of service intervals
- fast service due to reduced maintenance routines to a small number of service checkpoints
- service and repair kits for local stockings
- continuous training of service partners
- only usage of components that are well-proven in field use

OPTIONAL ACCESSORIES

Fiber preparation kit
The Ericsson fiber preparation kit includes all accessories like stripping tools and fiber cleavers for preparation and cleaving of all different kinds of fibers used in the field or in the laboratory.

Stripping tool
We offer three different kind of stripping tools, stripping tools for removing primary coatings, secondary coatings and loose tubes.

Fiber cleavers
We offer two different kind of cleavers, the fiber cleaver EFC-11 for cleaving 80-200 µm fibers and the fiber cleaver EFC-P21 for cleaving 125 µm fibers.

Heat oven
The heat oven is intended to be used with the FSU 975 for heat shrinking of the splice protecting sleeves (23 to 65mm), and is mounted on top of the splicer. The heat oven is powered by the splicer.

Temperature: 100° to 145° in steps of 5°
Operational time ranges: 16 to 128s in steps of 16s (8s/1 mode)

Fiber fixture
The fiber fixture is a holder for the fibers to avoid fiber bending. It is necessary for splicing of pigtails. It is easily mounted on the fusion splicer above the splicing point and can be lifted and attached over the heat oven.

Prooftester
The prooftester approves the mechanical strength of the spliced fiber. The pulling force is 2.5 N.

ORDERING INFORMATION

Article No. (Old)	Article No. (New)	Article Description
		RECOMMENDED FSU 975 DELIVERY SET WITH BATTERY
89ST002	NKA10130/1R2B	FSU 975 Kit incl: - FSU 975 - transport case - tool box - pair of blue and black v-grooves - spare electrodes - users manual - pc communication kit
42ST072	NKY10125R1B	Power Supply/Batt Charger
42ST029	NKY10117R2A	Battery for FSU splicers
see above	see above	Main power cord
10000640	NKD10107R1A	Fiber stripping tool
10000428*	NKC10105R1A*	Fiber cleaver EFC-11 or EFC-11/4
41ST014	NKF10103R1E	Heat oven
		FSU ACCESSORIES
		Power
42ST029	NKY10117R2A	Battery for FSU
42ST052	NKY10119R1A	Car battery cable, FSU
42ST072	NKY10125R1B	Power supply/battery charger 100-240 V, 50-60 Hz
10000159	NKY10121R1A	Main power cord, EU
10000160	NKY10123R1A	Main power cord, UK
10000161	NKY10122R1A	Main power cord, US
		V-grooves & fixtures
45MD053	NKY10143R2B	V-groove, Std. blue 1000/125 µm
45MD068	NKY10144R2B	V-groove, Std. black 1000/250 µm
42ST059	NKY10105R1A	Fixture for FSU 900/905/925/975 (not PM-A)
42ST075	NKY10106R2A	Fixture for FSU with tensile tester
		Electrodes and others
45SM004	NKY10170R2A	Electrodes for FSU 900/905/925/975 (/pair)
22MD051	NKY10169R1A	Electrode for FSU 850 (/piece)
42ST004	NKY10107R1A	Tray for splice cassette, for FSU
		Stripping Tools
10000510	NKD10102R1A	Stripping tool, No-Nik, secondary coating, single fiber
10000640	NKD10107R1A	Stripping tool, Miller, primary coating, single fiber
10000645	NKD10101R1A	Stripping tool, Corex, loose tube
10000646	NKD10103R1A	Stripping tool, Sumiofcas, tight secondary coating
		Fiber Cleavers
10000428	NKC10105R1A	Fiber cleaver EFC-11, single fiber, clamps on 8 mm distance from the cleaving point
10000513	NKC10106R1A	Fiber cleaver EFC-11/4, single fiber, clamps on 18 mm distance from the cleaving point
10000706	NKC10104R1A	Fiber cleaver EFC-P22, single fiber (in v-grooves)
		Heat oven and Protection sleeves
41ST014	NKF10103R1E	Heat oven for FSU 975
NTA16212/2	NTA16212/2	Protection sleeve for single fiber, 60 mm

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