» New Products

# Super High End Fusion Splicer S185ROF / S185PMROF

## 1. INTRODUCTION

The demand for a high performance fusion splicer used in the manufacture of the optical communication equipment and the fiber laser products is increasing every year. The high performance fusion splicer S184PM-SLDF already on the market is equipped with the world's first three electrode discharge mechanism and is enabling the fusion splice of the ultra large diameter optical fibers. Furthermore, it was a super universal fusion splicer capable of splicing the polarization maintaining optical fibers, but we have been receiving the feedback that the equipment size was too large. Therefore, we have developed the S185ROF / 185PMROF (ROF: Ring of Fire(Note)), which is the same size as the high end fusion splicer S185 series already on the market and has an additional discharge function between three electrodes. As a result, the S185 series lineup will include 6 models. The S185ROF enables the fusion splice of an ultra large diameter optical fiber, and the S185PMROF enables the fusion splice of the polarization maintaining optical fiber with an ultra large diameter.

## 2. FEATURES

### 2.1 Miniaturization

A picture of the S185ROF is shown in Figure 1. Compared to the conventional model S184PM-SLDF, the main body has achieved a 46% reduction in volume ratio and a 48% reduction in mass ratio. In addition, the conventional model required two AC adapters, one for driving the main body and one for discharging, but in the new product, one AC adapter can be used for driving the main body and for discharging.

### 2.2 Improvement of Fusion Splice Performance

The resolution of the centering mechanism used for the axis alignment of the optical fibers has been improved three times compared to the conventional model, enabling more accurate axis alignment. In addition, the image processing system has been improved to expand the observation range so that the entire fiber can be imaged even with an ultra large diameter optical fiber. Furthermore, the resolution of the rotation mechanism required for the alignment of the polarization maintaining optical fiber is doubled compared to the conventional mode and the rotation range is expanded from 270° to 360°. Therefore, the accurate and speedy rotation alignment can be performed.


**Figure 1 Appearance of S185ROF.**

### 2.3 Discharge Function Between 3 Electrodes

In the S185ROF / PMROF, a three electrode discharge system, which has been well received from feedback on the conventional models, is used. By improving the power supply for discharge, we have achieved both the miniaturization and the improved discharge stability. Discharge between three electrodes is particularly suitable for the fusion splicing of the large diameter optical fibers because it is less likely to cause uneven heating due to wide area heating and it enables the high power discharge heating. (Figure 2)

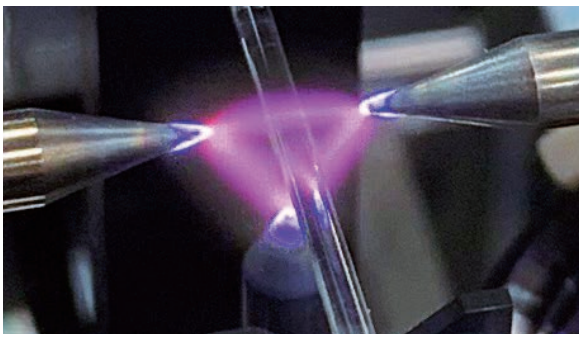

**Figure 2 Appearance of 3-electrode arc discharge.**

### 2.4 Improvement of the Rotation Adjustment Algorithm for Polarization Maintaining Optical Fiber

When splicing a polarization maintaining optical fiber, it is necessary to align the internal stress applying member by adjusting the rotation of the optical fiber. In some cases, it could not be aligned correctly under the operating conditions preinstalled in the equipment since the cross sectional shape of stress applying member varies slightly depending on the optical fiber manufacturer and the production batch. This time, we have solved this problem by drastically reviewing the rotation adjustment algorithm.

### 2.5 Development of FiberBank

There are many types of optical fibers, and each fusion splice requires the optimization of the fusion splice conditions. This time, we have developed FiberBank, which is a web service system that provides fusion splice conditions. (Figure 3) This makes it possible to check and obtain a report that describes the optimum fusion splice conditions and the fusion splice results. The acquired fusion splice conditions can be easily imported into the fusion splicer via an external storage such as a PC control application (Splice Data Explorer 2), USB memory, etc.

In the future, we will launch a fusion condition creation request form with the aim of improving the convenience.

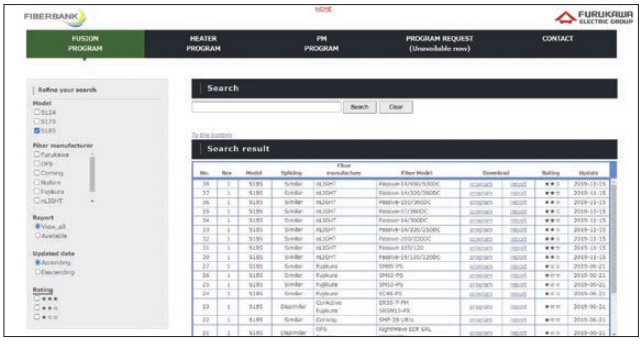


**Figure 3 Screen of FiberBank.**

## 3. Main Specification

Main specification is shown in table 1.

**Table 1 Main Specification of S185ROF and S185PMROF.**

| Item | Specification | |
|---|---|---|
| | S185ROF | S185PMROF |
| Applied optical fiber | SMF, MMF, DSF, NZDSF, BIF, EDF, PCF, LDF, etc. | SMF, MMF, DSF, NZDSF, BIF, EDF, PCF, LDF, PMF, etc. |
| Applied cladding diameter | 125 to 800 μm | |
| Applied coating diameter | 160 to 2000 μm | 160 to 1300 μm |
| Optical fiber cut length | 6 mm for coating cramp splicing<br>8 to 10 mm for glass cramp splicing | |
| Splicing loss | SMF: 0.014 dB | |
| Splicing time | SMF: 15 sec. | |
| Extinction ratio | NA | −40 dB / 0.6 deg. |
| Data communication terminal | USB version 2.0 type A: 1 port<br>USB version 2.0 mini B: 1 port | |
| Main body dimension | 210W × 180D × 150H mm | |
| Main body weight | 4.55 kg | 4.8 kg |

## 4. CONCLUSION

By miniaturizing the equipment and optimizing each mechanism, we have developed a high performance fusion splicer 185ROF / PMROF, which is compact and lightweight and has an improved fusion splice performance. With the lineup of 6 types of high performance fusion splicers, including the S185 series already on the market, it became possible to meet the needs of a wide range of customers.

In the future, we will continue to support the splicing of the special optical fibers, for which new products are emerging steadily and constantly by upgrading the firmware of the fusion splicer and the FiberBank.

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