

T-400S Active V-groove Fusion Splicer

1. Outline

With the recent increasing use of smartphones, the volume of communication traffic has been surging. To cope with this, the deployment of optical fiber networks has been accelerated in the world. In emerging economies, in particular, considerable efforts have been spent for installing optical fiber to establish fiber to the x (FTTx) networks. Optical fiber fusion splicers are widely used in such installation work. For high-quality fusion splicing, careful preparation of the optical fibers and regular maintenance of splicers are important. However, since proper handling of the fibers and splicing tools are not passed on to workers, and combined with the harsh installation environment with much dust, the risk of frequent glitches increases.

To solve this problem, we have developed the T-400S, a new active V-groove fusion splicer.

2. Features

Table 1 shows the product specifications of T-400S. With the concept of being user friendly even for less-experienced workers, we have developed a product that (1) reduces operational errors caused by inferior work, (2) enables quick splicing using conventional technologies, and (3) has a multi-clamp that holds fibers with various types of outer coating.

2-1 Reducing errors

Assuming significant fiber misalignment resulting from insufficient preparation of the optical fiber, we adopted an observation system with a deep depth of field. The new tool is also equipped with functions for analyzing the conditions of the facet of the optical fiber before splicing, and for automatically optimizing the splicing conditions. This design minimizes the effects of optical fiber preparation, which depends on the worker's skill level, and thus reducing errors such as fiber misalignment.

2-2 Quick splicing

With parallel control of image processing and driving, as well as high-speed calculation, we succeeded in developing the world's fastest active V-groove fusion splicer with a splicing speed of 6 seconds.

2-3 Multi-clamp

The installation of optical fibers for establishing FTTx networks involves various media, including drop cables, indoor cables, optical fiber cords, and splice-on connectors such as Lynx-CustomFit.*¹ To support the connections of these cables as standard, we have extended the range of

cable sizes accepted by the fiber coating clamp. In addition, the coating clamp of the heat shrink oven was improved with a slider that enables various sizes of splice-on connectors to be held without using additional tools or replacing parts.

2-4 User interface

Following the Sumitomo Electric's Visual Identity Guideline, a flat and simplified user interface is applied to its operation window, allowing for intuitive operability even for beginners.

2-5 FC-5S new optical fiber cleaver

We have also developed an optical fiber cleaver that cleaves optical fibers to be fusion-spliced. The cleaver uses a new pendulum mechanism for improved operability. Its simple structure enables the user to cleave an optical fiber with a single action.



Photo 1. Outer appearance

Table 1. Product specifications

Item	T-400S
Size (without protrusion)	129 x 195 x 99 mm
Weight (with battery)	1.3 kg
Splice loss (typical)* ²	SMF: 0.03 dB
Splice time (typical)	6 seconds
Heating time (typical)	24 seconds
Multi clamp	Provided
Heater clamp for splice-on connector	Provided
Electrode life* ³	6,000 arc discharges
Shock resistance* ⁴	Dropped from 76 cm on bottom face only
Water resistance* ⁴	Equivalent to IPx1
Dust resistance* ⁴	Equivalent to IP5x

- *1 Lynx-CustomFit is a trademark or registered trademark of Sumitomo Electric Industries, Ltd.
- *2 Average value if the final inspection is at room temperature with Sumitomo Electric identical fiber. Measured by the cut-back method in compliance with ITU-T and IEC standards.
- *3 Achieved in laboratory conditions. Electrode life may vary depending on the operating environment.
- *4 Splicer operation after shock, water or dust tests, was confirmed under battery power, by Sumitomo Electric. Does not guarantee the product will not be damaged by these conditions.