

**SPECIFICATIONS
FOR
FSM-30P
FIBER FUSION SPLICER**

1. GENERAL

These specifications cover the **FSM-30P** fiber fusion splicer. This splicer features some new functions and improvements for factory use, such as wide arc profile, more accurate splice loss estimator, fiber holder system and arc test function. These are for variety fiber applications, stable low splice loss and minimal skill dependency.

The method to detect the core axes and align those with a very high precision is identical to the existing model FSM-30S. The FSM-30P therefore features the same advantages as the FSM-30S has, and can realize the best splice for the factory demand.

The FSM-30P features the followings.

1. Full automatic operation once fibers are set with core-to-core alignment.
2. Simultaneous observation of both X view and Y view.
3. Mechanical in-line proof tester (possible to be turned off by menu command).
4. Wide arc profile to minimize splice loss of dissimilar fiber splicing.
5. New arc parameters to generate various kinds of adequate arc discharges for all types of fibers.
6. Optical power monitoring splice with power meter feedback.
7. Automatic arc time control function for similar fiber splicing.
8. Intentional core offset function for an in-line fixed attenuator.
9. Fiber holder system for stable splice loss.
10. Automatic stuff speed calibrating function before every splicing.
11. Automatic gap-set position calibrating function before every splicing.
12. Arc test function to calibrate the arc power automatically and accurately.
13. Accurate splice loss estimator by observing core distortion and MFD mismatch.
14. Estimating parameters to adjust the estimating equation on each splice mode.
15. User programmable 25 splicing modes on internal memory.
16. User programmable heating condition for the tube heater on internal memory.

17. Individual threshold setting on each splice mode for acceptable cleaved angle, core angle and estimated loss.
18. Dust detecting function.
19. Electrodes stabilizing function.
20. Storage area on internal memory for the last 30 splice results.

2. FUSION SPLICER AND INCLUDED ACCESSORIES

One set of the arc fusion splicer FSM-30P includes the followings (from Item 1 to 9), which are packed in the rugged FRP case.

Table 1 List of Included Items

Item	Description	Q'ty
1	Arc Fusion Splicer FSM-30P	1 pc.
2	AC Power Cord	1 pc.
3	Rugged FRP Case	1 pc.
4	Fiber Holder to hold ϕ 250 μ m O.D. coated fiber	1 set
5	Spare Electrodes	1 pair
6	Spare Fuses	1 set
7	Spare Mirror	1 pc.
8	Hexagon wrench	1 pc.
9	Tweezers	1 pair
10	Instruction Manual (English)	1 pc.

3. SPECIFICATIONS

3-1 Applicable Optical Fibers

Almost all type optical fibers described below for telecommunication, EDFA modules and dispersion compensation modules can be spliced.

- Standard single-mode fiber
- Multi-mode fiber
- Dispersion shifted fiber
- Cut-off shifted fiber
- Erbium doped fiber
- Dispersion compensation fiber

3-2 Fiber Clamping Method

UV or Nylon coated part of a fiber is clamped with a fiber holder, and bare part is clamped with a fiber clamp in order to be precisely set onto the bottom of ceramic V-groove. The fiber folder is designed so as it to be put directly onto Fujikura precision fiber cleaver and thermal jacket stripper. The fiber held with a fiber holder can be cleaved with the cleaver, and stripped with the thermal jacket stripper. There are three types of fiber holders for major fiber coating diameters.

3-2-1 Fiber cladding diameter

ϕ 100 to ϕ 150 μm with standard fiber clamp.
 ϕ 80 to ϕ 125 μm with optional fiber clamp.

3-2-2 Fiber outer diameter

ϕ 250 μm outer diameter with standard fiber holder
 ϕ 400 μm outer diameter with optional fiber holder
 ϕ 900 μm outer diameter with optional fiber holder

3-2-3 Fiber Cleaved Length

10 mm (10mm to 13mm) with fiber cleaver CT-04B/CT-100B
8 mm (8mm to 11mm) with fiber cleaver CT-04B-S8.

3-3 Cleaved Angle Check and Core Angle Check

The thresholds of the cleaved angle and core angle prior to fusion splicing are selectable between 1 degree and 5 degrees with 0.1degree step. These values can be set on each splice mode individually. These functions can be turned off.

When either of both angles is greater than the preset thresholds, the splicer stops and displays the alarm message. After splicing, the splicer checks the core angle again.

3-4 Automatic Stuff Speed and Gap-set Position Calibration

Before splicing, the splicer measures fiber stuff amount and arc discharge position. Then, stuff speed and gap-set position are automatically calibrated.

3-5 Alignment Method

With single-mode fibers, automatic core-to-core alignment with PAS (Profile Alignment System) aided by a computer controlled CCD camera and image processor.

With multi-mode fibers, automatic cladding-to-cladding (not core-to-core) alignment aided by the same technique as one with the single-mode fibers.

The alignment method is selectable on each splice mode individually.

3-6 Arc Fusion Splice Method

Prefusion process and fusion process are controlled by built-in computer.

Discharge between electrodes are described below.

Trigger voltage	10000 V DC
Arc voltage	500 – 600 V AC
Frequency	110 kHz
Arc current	10 – 20 mA approx.

3-6-1 Wide Arc Profile and stable discharge

Low splice loss of dissimilar fiber splicing is achieved with the wide arc profile.

3-6-2 User Programmable Splice Modes

User programmable 25 splicing modes on internal memory are equipped in order to store arc parameters. New arc parameters can generate various kinds of adequate arc discharges for all types of fibers.

3-6-3 Optical Power Monitoring Splice with Power meter Feedback

The arc discharge automatically stops at the lowest splice loss with power meter measuring actual loss during splicing.

3-6-4 Attenuation Splice

The splice loss control function with intentional core off-set is provided to obtain an intentionally high splice loss between 1 dB and 15 dB with 1 dB step for an in-line fixed attenuator.

3-6-5 Arc Time Control Function

The arc time of the fusion program setting is optimized automatically by observing the fiber core eccentricity.

3-7 Splice Loss

3-7-1 Actual Splice Loss

Typical 0.02 dB with identical single mode fibers (ITU-T G.652)

Typical 0.01 dB with identical multi mode fibers (ITU-T G.651)

Typical 0.05 dB with identical dispersion shifted fibers (ITU-T G.653)

These above are measured by the cut-back method to the relevant ITU-T and IEC standards.

3-7-2 Splice Loss Estimating Function

Splice loss estimator calculates accurate estimated splice loss by observing core distortion and MFD mismatch. Estimating parameters to adjust the estimating equation can be set on each splice mode.

3-7-3 Storing Splicing Situations and Results

Last 30 splice results including date and splice loss can be stored automatically and can be reviewed on the LCD monitor.

3-8 In-line Proof Tester

A proof test for tensile strength test of 2N is automatically carried out on each splice. This function can be turned off. For the values other than 2N, please consult Fujikura.

3-9 Built-in Tube Heater

The built-in ceramic heater is basically equipped. The heating program can be changed in order to optimize the heating process with any kinds of the heat shrinkable protectors. Both of splice protectors, a 60 mm long and 40 mm long is available.

3-10 TV Monitor

The TV monitor of 5 inches low reflective LCD is equipped. The image on the monitor can be seen even in daylight.

3-11 Arc Test Function

Arc test function measures and calibrates the arc power automatically and accurately.

3-12 Electrodes Stabilizing Function

With the Electrodes stabilizing function, some deposit is formed on the tip of the brand-new electrodes to generate stable arc discharge. Operators are recommended to use this function after electrode replacement.

3-13 Dust Check Function

The dust detector counts the dust and dirt in the optical pass.

In addition, judgment of the dust check, good or bad, is automatically performed.

The judgement (i.e. "OK" or "NG") are displayed on the monitor.

3-14 Dimensions and Weight

Splicer Body : 210 mm W × 187 mm D × 173 mm H, and 8 kg
8.3"W × 7.4"D × 6.8"H, and 17.6 lb.

Carrying Case : 468 mm W × 290 mm D × 382 mm H
18.6"W × 11.6"D × 15.2"H

Package : 630 mm W × 410 mm D × 540 mm H
25"W × 16.3"D × 21.5"H

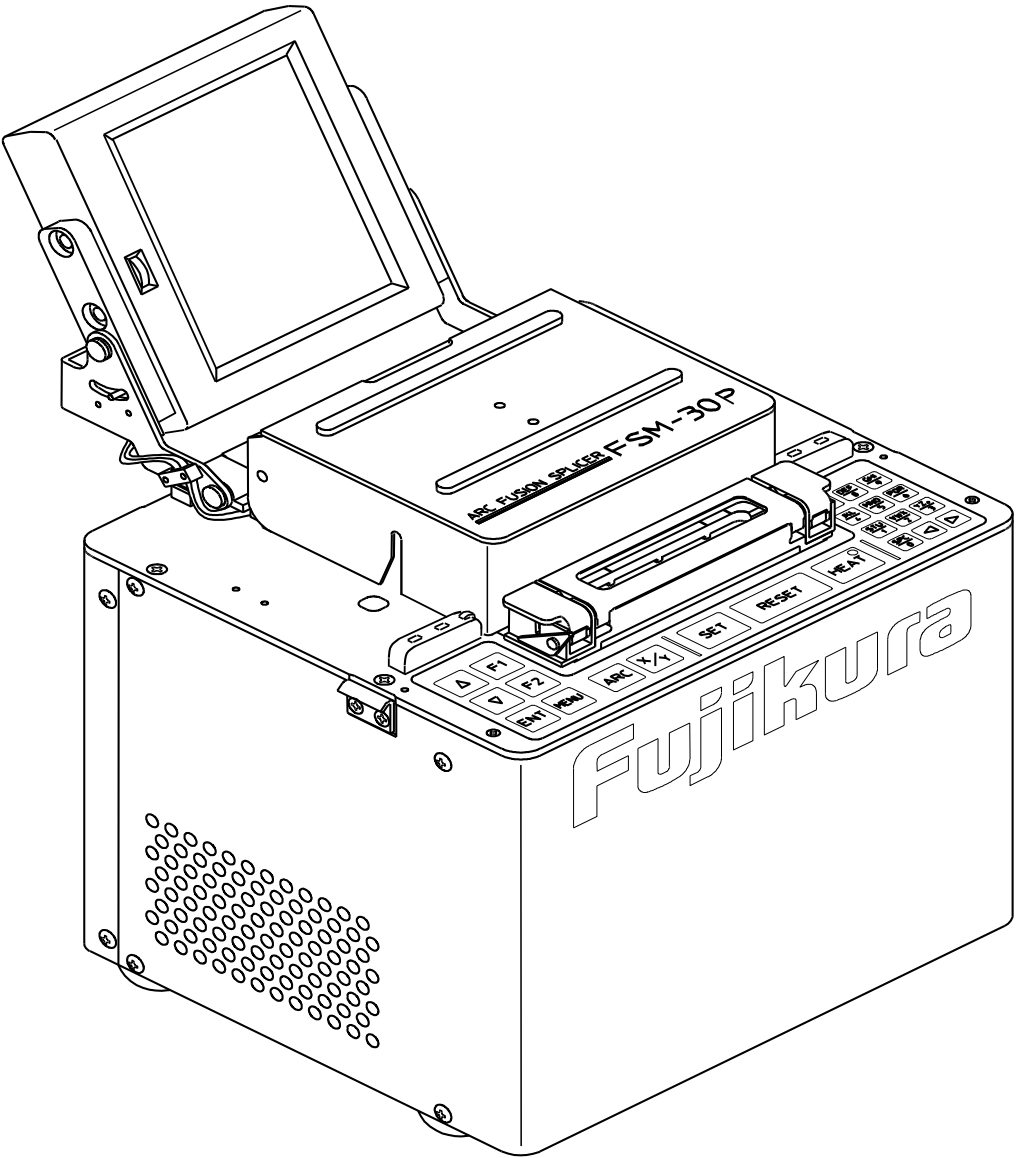
3-15 Power Supply

2 types of power supply inlets are equipped. One terminal is for DC 12 V, and another terminal is for AC 100 to 240 V (50/60 Hz). Automatic voltage selection is provided for the AC power supply.

Power Consumption: 24 W approx. (DC power supply)

29 W (AC power supply)

3-18 Outside view



----- END OF SPECIFICATIONS -----

Specifications subject to change without prior notice.