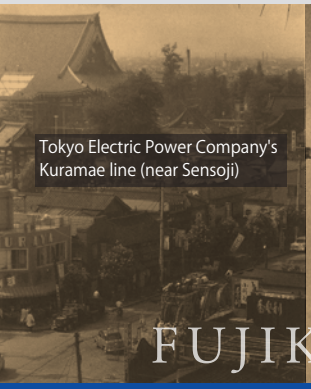
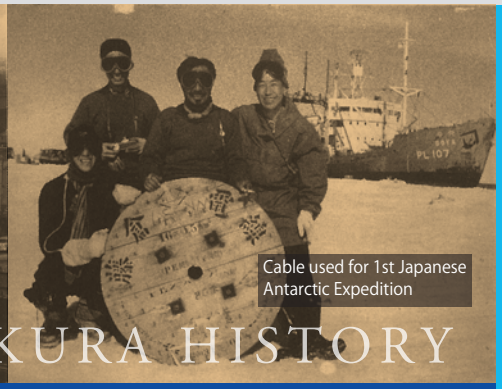
Fujikura

Shaping the future with "Tsunagu" Technology.

FUJIKURA NEWS 2019 No.451 2


Tokyo Electric Power Company's Kuramae line (near Sensoji)


Cable used for 1st Japanese Antarctic Expedition

FUJIKURA HISTORY

Fujikura's Technology and Product Quality Spreads Worldwide: Fujikura completed new plants one after another by its active management strategy toward innovation. The company also experienced growth in exports worldwide including the UK and the US and installed its first 154 kV OF cables in Kuramae line in Japan. In 1957, the cables were used for the first Japanese Antarctic Expedition.

Power & Telecom

Release of Live Wire Sheath Fault Locator

Fujikura Dia Cable Ltd. and Toyota Motor Corp. have jointly developed (patent pending) a live wire sheath fault locator, LILIA-150T, as a diagnosing device for high-voltage cables and have been released onto the market. This device consists of the main body and the input change box and locates faults in high-voltage cable sheaths and other cable sheaths, regardless of live-wire or blackout status, at any timing. Today, thanks to improved cable manufacturing technology, faults caused by the cable itself decreased while there remain external causes of damage to cable sheaths such as rats gnawing, penetrating of frame or other accessories, or water trees due to water intrusion.

Such cable damage eventually leads to sudden power failures to significantly impact users. To prevent this, appropriately maintaining cable sheaths is more important than ever. Toyota Motors Corp. have taken importance on the maintenance of high-voltage cables and prevented accidents by locating faults in the sheaths and repairing them in a power outage state. However, securing power outage time is difficult for facilities operated at full capacity. In addition, depending on environmental conditions, insulation faults can recover, and this often makes taking measurements impossible. Because of the low maintenance efficiency, it has become an urgent task to locate defects in a hot line state.

This device is capable of precisely measuring the insulation resistance of a fault in a sheath, which is lower than 1 MΩ, in a live or outage state. In addition, the output from the power source for testing is limited to 50 V during non-loading time and to 1 mA at the time of a short circuit and thus does not damage sheaths due to the application of test voltage. In addition, the power source, measuring, and AC grounding parts are built as one, and, as a result, compact and portable. The device can locate abnormalities in sheath insulation at desired timing, regardless of live wire or outage conditions. This enables operators to complete their cable repair work in a short time without cutting power repeatedly and also contribute to stable supply of electric power.


● Appearance of main body

● Appearance of input change box

AC ground	Capacitor	150 μF×3
	Discharging resistance	1 kΩ
Measuring device	Measurement method	Murray loop bridge
	Measuring arm resistance	1023 Ω 120 mA, Relay switching
	Measurement phase switching	R-S, R-T, S-T, 3 ranges 0.1%
	Minimum scale	Maximum AC 100 V
	Dielectric withstand voltage	LPF, Digital noise reduction method
	Noise reduction method	
DC power source	Method	Switching
	Voltage	DC 50 V, 100V, 150V 3 ranges
	Maximum output power	1mA, under short circuit conditions
Main body	Input power supply	AC 100V, 50/60 Hz, approx. 10VA
	Dimensions, weight	300 W × 295 H × 350 D, approx. 12 kg
Switch	Switch	Overlapping-type, 3circuits, key switch
	Dimensions, weight	200 W × 120 H × 120 D, approx. 2 kg

Fujikura Dia Cable Ltd. https://www.fujikura-dia.co.jp/contact/

CORE TECHNOLOGY

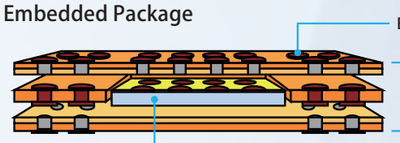
Fujikura's Core Technology for Healthcare

Miniaturization

A WABE (wafer-and-board-level device embedded) package, which is a thin circuit board embedded with components, enables a low profile and 3-D configuration of circuit boards and promotes the miniaturization of advanced medical devices.

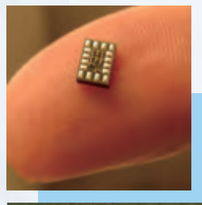
WABE Package®

Wafer And Board level Embedded Package

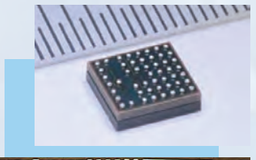


● Schematic cross-section of circuit board

Mounting components and forming bumps on both front and back sides of board possible



Polished IC embedded into ultra-thin multilayered FPC
Mere 0.2 mm thickness



Embedded with multiple ICs between layers
Chip-stack WABE® for high-functionality modules

Support for various solutions to wearables and implants

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Visualization

Fujikura's PICORAMEDIC® provides imaging technology with a small diameter and high-definition and promotes to increase patients' quality of life.

PICORAMEDIC®

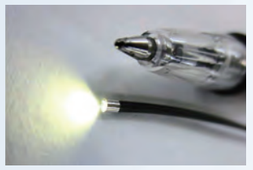
Small-diameter camera module
160,000 pixels, dia. 1.6 mm

Ultra-thin camera module
0,000 pixels, dia. 0.65 mm

Terminal shape made to meet customer needs

● Provision of solutions suitable for use

	Rigid endoscope (compared to a company's existing technology)	Our technology	
		CMOS	Image fiber
Diameter mm (endoscope, catheter)	>4	>1.2	>0.5
Underlying technology	Rod lens	Semiconductor sensor	Optical fiber



Electronic scope by CMOS

iber scope using image fiber

Contribution to advancing low-invasive medical technology by applying our technology to small-diameter endoscopes and catheters

Device enabling visualizing depth of the body using electric or ultrasonic waves

Coil for MRI (magnetic resonating imager)

Catheter for IVUS (intravascular ultrasound)

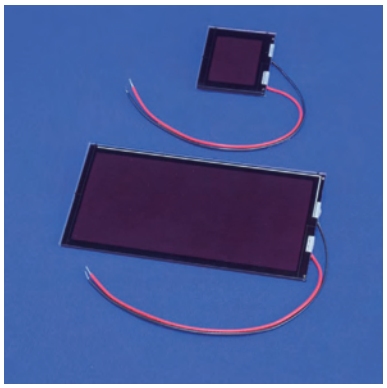
Power & Telecom

Release of Thin Dye-sensitized Solar Cell Module Panels as Energy-harvesting Power Sources

Fujikura is releasing newly developed dye-sensitized solar cell (DSC) module panels most suitable for use as energy harvesting power sources for IoT. These new products of low prices, high power, and slimness have been produced by modifying DSCs, which perform well under low-light conditions. The products are optimal for the use as energy harvesting power sources to eliminate the need of time and trouble to install an AC power supply or replace the battery from small IoT devices, such as wireless sensors.

The newly developed DSC module panels have achieved long-term reliability and the simplification of a sealing structure as well. As a result, they have simple shapes that make mounting to a small electronic device easier. While the new products have the same outer dimensions as existing products and the half height of 25 mm, the effective generating area of the new ones is 1.2 times larger. These module panels will allow further miniaturization of energy harvesting devices.

We will support the development of further accelerating IoT sensing technology and the materialization of an environmentally-friendly society with our DSCs.



● Appearance of thin DSC module for energy harvesting
(Top: FDSC-FSC10FGC、Bottom: FDSC-FSC4FGC)

● Appearance of thin DSC module for energy harvesting

Model：FDSC-FSC10FGC (Outer dimension: 35 × 39.9 mm, thickness: 2.5 mm)※

Operating characteristic	Unit	Specified value	Average	Note
Maximum operating power(Pm)	μW	30 or greater	42	White LED 200 lux Ambient temperature 23 ℃
Operating current (Iop) 0.38 V in operation	μA	77 or greater	108	
Open voltage (Voc)	V	0.45-0.65	0.50	

Model：FDSC-FSC4FGC (Outer dimension：112×56mm、thickness：2.5mm)※

Operating characteristic	Unit	Specified value	Average	Note
Maximum operating power(Pm)	μW	214 or greater	300	White LED 200 lux Ambient temperature 23 ℃
Operating current (Iop) 0.38 V in operation	μA	554 or greater	776	
Open voltage (Voc)	V	0.45-0.65	0.50	

*Projections such as lead excluded

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