

Development of Ultra-slim Long FPC

Fujikura has developed a flexible printed circuit (ultra-slim long FPC), which is less than 1.0mm width and more than 2.0m length, and has started to provide evaluation samples.

This FPC is expected to be used for endoscopes and catheters for medical use, and endoscopes for industrial use. Generally, a structure that is soldered to a circuit equipped with multiple ultra-slim coaxial cables and ultra-small camera and sensors is widely adopted.

Meanwhile, the diameter of a cable can be smaller by replacing it with a single ultra-slim long FPC, and a seamless structure can be realized by directly implementing an apparatus which enables simplified assembly.

This product has been developed by combining most recent high-precision circuit forming technology and roll-to-roll manufacturing technology. In addition, likewise the conventional FPC, this product enables highly flexible product designing according to the customer needs and has high reliability such as electrical properties, machine properties and environmental response (halogen-free compliant).

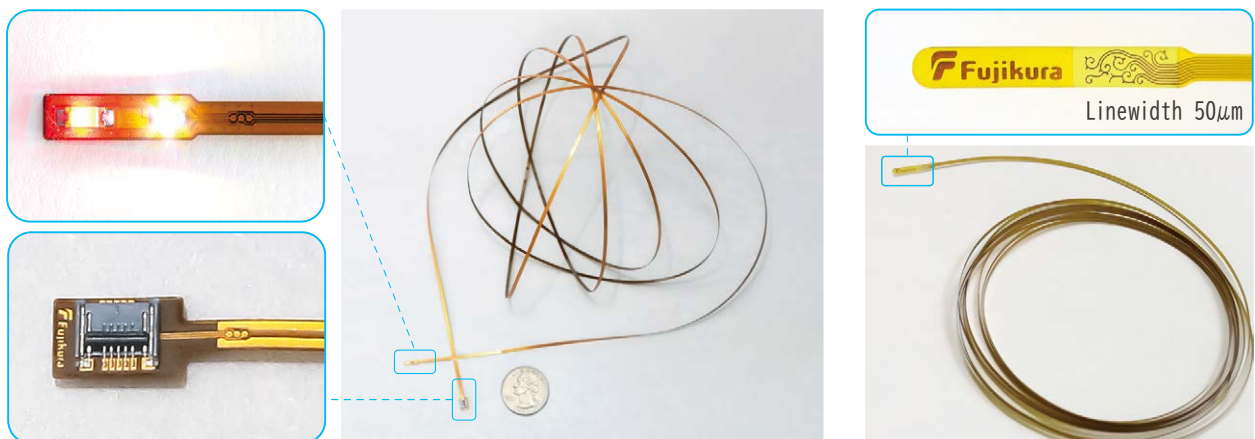
Following table shows basic product specification. This product is a high-resolution circuit with the Line/Space of less than 50/50um and can cope with various structures such as single side, both sides and multi-layer. Also, the edge of the product is designed to flexibly select connection methods such as surface mount technology (SMT) and FPC connector.

In the area of electronic and electric device where miniaturization and high functionality are more advanced, we will cooperate with our customers to develop products and contribute to the society so we can make use of long-length, ultra-fine and high flexibility.

■ Table 1 Basic product specifications

	Standard specifications	Development specifications
FPC width	1.0mm or more	Less than 1.0mm
Length	Less than 2.0m	2.0m or more
Number of FPC layers	Single side (1layer) both sides (2layers)	Multi layers (3layers) or more
Line/ Space	50μm/50μm or more	Less than 50μm/50μm

■ Fig.1 Ultra-slim long FPC



*This is the smallest connector in the industry, and was developed by our Connector Department.

■ Points applicable to the 17 SDGs

We use characteristics of FPC and our high accuracy processing technology to make a contribution to the development of electronic and electric devices with higher functionality.



Introducing a solution that efficiently builds optical fiber network with ultra-high-fiber-count WTC®

Fujikura takes advantages of strong features of ultra-high-fiber-count small-diameter high-density WTC® optical fiber in order to provide solution to enable efficient construction of optical fiber networks.

Ultra-high-fiber-count WTC, which uses the latest optical cabling technology, SWR®/intermittently bonded ribbon, realizes 2000-fiber and 3000-fiber cables with the same outer diameter* as conventional 1000-fiber ribbon slotted core cable. The cable consists of multiple 8-fiber SWRs bundled to units to facilitate identification of thousands of optical fibers. Fujikura has also developed a highly compatible, low fiber count WTC that can be connected with high-fiber-count WTC. The 8-fiber SWR bundle units in both low and high fiber count cables are so grouped that the branching can be done quickly, saving significantly the time and labor for splicing. We also provide closures for underground applications that are compatible with ultra-high-fiber-count WTC.

In addition, we offer pre-terminated patch panel having 8-fiber SWR fanout cords that can fit in to a 19-inch rack. 8-fiber SWR has compatibility with the low count WTC thus enabling reduction in the number of fusion splices at the terminal point.

Fujikura's high fiber count cabling solution based on 8-fiber SWR contributes to faster deployment and economically efficient optical fiber network.

*:compared to our conventional products.



Termination unit
FTB-207



3000-fiber closure
FCMO-TN-HA-CK21

SWR® : Spider Web Ribbon® WTC® : Wrapping Tube Cable®

Points applicable to the 17 SDGs

This is a solution to build optical fiber network efficiently, which is one of communication infrastructures indispensable for present-day society. We will continue to contribute to the development of advanced information-oriented society.



✉ Solution Engineering Department : telcon@jp.fujikura.com

Introducing MMCXF series MMCX connector with advanced SHOCK

Fujikura has developed MMCXF series (photo 1), which is compatible with conventional MMCX type, and has improved its SHOCK. A conventional MMCX connector (standard item) has a structure that gains contact force by repulsive force generated by opening/closing a ring in connector engagement. Therefore, it may be easily deformed by insertion/removal, and contact tends to be unstable. MMCXF series adopt a press ring in which the ring itself has been integrated as spring

contact equipment, realizing improvement of contact reliability and multipoint contacts, and securing high SHOCK. (Tables 1, 2)

MMCXF series products have been adopted to products such as headphones (earphones) with frequent insertion/removal and dashboard cameras, as well as base station and communication equipment.

*MMCX: Micro Miniature Coaxial

Photo 1. Appearance of connector



Table 1 Comparison with conventional products

	Connector shape		SHOCK
MMCX			98m ² /s ² (10G)
MMCXF		 The ring itself is contact equipment and realizes multipoint contacts.	196m ² /s ² (20G)

Table 2 Product specifications

Characteristic impedance	50Ω
Rated voltage	AC335V(r.m.s.)
Withstand voltage	AC500V(r.m.s.)/min
Insulation resistance	More than 1,000Ω at DC500V
Contact resistance	Central conductor Less than 5mΩ Outer conductor Less than 2.5mΩ
Frequency band	DC to 6GHz
VSWR	Less than 1.2
Temperature range	-55 to +85°C
SHOCK, shock resistance	Vibration: 196m/s ² (20G) Impact: 735m/s ² (75G)

Points applicable to the 17 SDGs

We contribute to development of stable infrastructure by improving anti-shock characteristics.



✉ Connector Business Department : ddk.contact@jp.fujikura.com

Information on JECA FAIR 2022 (70th electric facilities exhibition)

Fujikura Dia Cable and Nishi Nippon Electric Wire & Cable will participate in JECA FAIR 2022, to be held with a theme of "Challenge to Decarbonization, Electric Facility Technology will save the future (earth)". We take measures for preventing infections at our booth. We are looking forward to seeing you at our booth.



Dates	Wednesday, June 1 2022 to Friday, June 3	Venue	Tokyo Big Sight East Hall 1, 2, 3
	10 : 00am ~ 5 : 00pm Day 1 10:30 to 5:00 Day 3 10:00 to 4:30		Fujikura Dia Cable booth: East Hall 1 1-50 Nishi Nippon Electric Wire & Cable: East Hall 1 1-49

- Fujikura Dia Cable -

Fujikura Dia Cable will exhibit Instrumentation control and communication fire proof cables, which is a new type of certified product for automatic fire alarm system, foam-insulation leaky coaxial cable that enables weight saving over the conventional product, as well as special

high-voltage/high-voltage cable that has an extensive track record in recyclable energy such as wind power generation and solar power generation, and others. In addition, Fujikura Dia Cable will introduce high-voltage cable deterioration diagnostic service using the cloud.



Special high-voltage /high-voltage cable

Contribute to recyclable energy



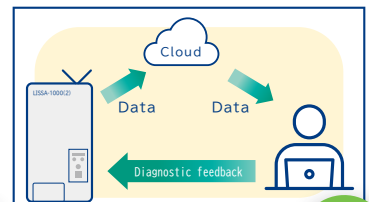
Instrumentation control and communication fire proof cable

New product



Foam-insulation leaky coaxial cable

NETIS registered product



Provide deterioration diagnosticservice

Shift from tangible to intangible

✉ Fujikura Dia Cable Technical Department <https://www.fujikura-dia.co.jp/contact/>

- Nishi Nippon Electric Wire & Cable -

Nishi Nippon Electric Wire & Cable will exhibit and show images of sample products that contribute to work savings at the worksite, reduce material cost, and lower environmental burden.

In addition, Nishi Nippon Electric Wire & Cable will introduce a construction method of unit cable for indoor wiring via moving image at the ONLINE exhibition, which is to be held antecedently on May 9.



Aluminum CVT cable

Achieve weight reduction



Nishi tube

Adopt for many purposes



Unit cable for indoor wiring

Support stable quality



Combined information cable

Contribute to reduction of construction period

✉ Nishi Nippon Electric Wire & Cable Sales Planning Department : nishipii@nnd.co.jp

Points applicable to the 17 SDGs

Our products promote energy saving and labor saving, such as stable provision of energy and management of social infrastructure, and contribute to building an environmental-friendly society.



Efforts for Safety Culture Development, and ISO45001 Certification

For making a workplace where employees can work lively and healthy without any disaster, Fujikura Dia Cable has focused on “communication” with work sites since 2016, and works on thorough “intrinsic facility safety”, which has gradually decreased disasters caused by “facilities”.

In order to raise activity level further and reduce risk, we have started our efforts with an intention of “developing safety culture”.

We have a review meeting about “safety culture” and have frequent discussions about “what we want to be” and “common sense of value” such as “showing felt leadership (leadership that evokes sympathy of others) and take the initiative”, “taking responsibility for securing safety and health”, “caring for our mates and developing a culture that enables communication and mutual understanding”, “enhancing ability of detecting danger”, etc. Based on 8 basic approaches of safety culture, we use simple and specific words to define what each person should do in each position, and have started our action.

Also, as an operational tool to ensure our goal, which is, “the development of safety culture”, we quickly engage in building a labor safety management system and acquire ISO45001 certificate.

We use our developed management system and will continue to develop a safety culture by mutually cultivating each other.



ISO45001 Certificate of Registration

Fujikura Dia Cable Safety Culture

Based on 8 basic approaches of safety culture, Fujikura Dia Cable Safety Culture observes regulations related to safety and health of all workers and builds a workplace where all workers can work lively and healthy without disaster based on the common sense of value.

1. **Leadership of organization (Governance)**
Managers and administrators show felt leadership* in safety and health activities and take the initiative.
*Felt Leadership : Leadership that evokes sympathy of others
2. **Participation in responsibility (Commitment)**
We take a responsibility to secure safety and health in each position.
3. **Mutual understanding (Communication)**
We care for each other and develop a culture of communication and mutual understanding.
4. **Awareness of danger (Awareness)**
We continue to make efforts to detect potential risk in every operation, and enhance ability to detect danger and take action.
5. **Transmission of learning (Learning)**
We obtain knowledge necessary for safety and health and ability to reduce risk and continue to conduct learning and educational training to hand down.
6. **Management of operation (Work management)**
We create procedures necessary to promote each worker's operations properly, understand its purpose, and the importance of practice.
7. **Resource management (Resource management)**
Based on the appropriate management, managers and administrators continue to secure human, physical, and financial resources necessary for safety and health
8. **Motivation (Motivation)**
Managers and administrators encourage and evaluate efforts to improve safety and health and develop safety culture with all workers cultivating each other.

April 1, 2021
Fujikura Dia Cable
President and Representative Director

■Points applicable to the 17 SDGs

Securing safety of employees is the basis of corporate activity and we make efforts considering it one of the most important matters.



✉ Fujikura Dia Cable <https://www.fujikura-dia.co.jp/contact/>