



# FUJIKURA NEWS

## Development of Wireless-heater with Integrated Power Receiving Coil

Fujikura has developed a wireless FPC (flexible printed circuit) heater with an integrated coil, which receives power wirelessly. In-car sensors require a heater to prevent their performance from being impaired due to condensation or contact with snow in winter. If Fujikura's new heater is installed in cars, it does not need to be connected to a receiving power cable. This contributes to simplifying assembly work at automakers. In addition, we can submit proposals to customers to meet their needs thanks to the thin, flexible coil part and heating part, which enables us to freely designing the shape and temperature distribution.

In designing the power receiving coil, which largely affects the performance of the heater, we obtained cooperation from Akita Industrial Tech-

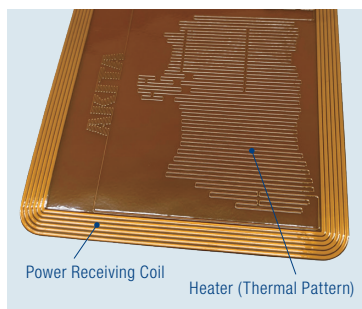
nology Center, which had already developed a wireless power receiving/-supplying system. The coil is the thinnest and demonstrates the most outstanding performance in the industry with an FPC (Table 1).

Another feature of this new product is that it is highly reliable and waterproof since the coil and the heater are molded in one piece seamlessly. This feature can be applied in growing fields such as wearable devices and medical equipment.

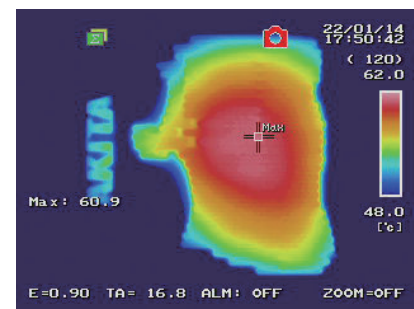
We will apply cutting-edge FPC manufacturing technology that we have nurtured over time to contribute to the advancement of the electronic components industry.

■ Table 1 Characteristics of coil

	Fujikura's newly developed product	Conventional coil with litz wire
Thickness	0.4mm	1.3mm
Transmission output	30 W or higher	
Transmission efficiency	70% or higher	





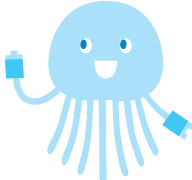
Wireless FPC heater



Thermographic image

### ■ Points applicable to SDGs17



Using the features of FPCs and our advanced manufacturing techniques, we will contribute to the advancement of the electronic components industry.



## Introduction to DFJ series of Board-to-Board Connectors

Along with the currently advancing industrial machinery market, there have been growing demands for board-to-board connectors. The DFJ series are the products to fulfill the demands. They are middle-sized, 0.8-mm-pitch board-to-board connectors, which have a proven track record of use in controllers of machines, such as for industry or factory automation, and in communication systems.

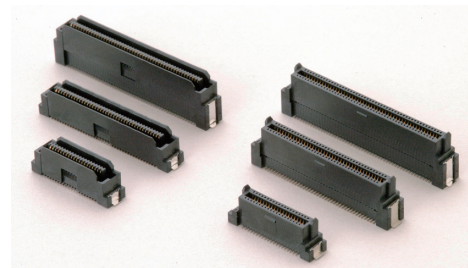
The largest advantage of the products is that they vary in the number of pins

ranging from 20 to 120 and in the mating height ranging from 11 mm to 20 mm so as to satisfy different customer demands. In addition, these products help to improve efficiency of soldering and connect, because they are sturdy and easy to handle.

We are considering verifying the actual performance values for high-speed transmission, which have recently been in greater demand, and adding them to the product performance.

### Table 1 Specifications

Rated voltage	AC 100V (r.m.s.)
Rated current	0.5 A/contact
Insulation resistance	500 MΩ or higher at 250 V DC
Withstand voltage	350 V (r.m.s.) AC/minute
Contact resistance	45 mΩ or higher
Operating temperature range	-55°C~+85°C
Operating humidity range	85%Rh or lower, without condensation
Storage temperature range	-55°C~+85°C
Storage humidity range	85%Rh or lower



Appearance

### Points applicable to SDGs17



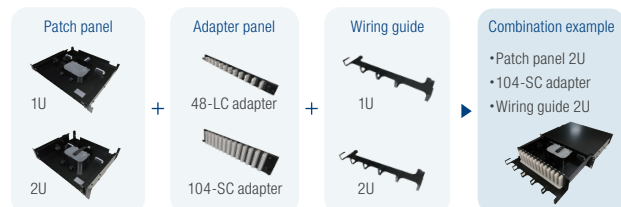
Users can select a connector that suits their purpose from a wide range of products. Moreover, the products help save production costs because they are produced at the same facility.

✉ Connector Division

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## Release of Combination Patch Panels (FTB-235 Series)

Fujikura has started selling combined patch panels (the FTB-235 series) as splice boxes to be used in FTTx and optical networks in data centers. The FTB-235 series products can meet various needs flexibly and allow quick delivery to customers by the combination of the patch panel, adapter panel, and wiring guide. Non-prewired models require customers to assemble them by themselves after buying the kit. On the other hand, for prewired models, the kit and FO codes are assembled at our factory and delivered to customers.



### Points applicable to SDGs17



The products can be delivered in a timely manner by combining different components. We are committed to the development of an advanced information-oriented society.

✉ Optical Cable System Division

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## Development of New Corrugated Copper Low-loss WF-H™ Coaxial Cable

Fujikura Dia Cable has developed new cables and connectors, which are smaller and lighter than other previous corrugated copper coaxial cables of the WF-H™ series. The production techniques such as highly-foamed-insulator extruding and corrugate forming, which have been nurtured over time, enabled the development of high-performance coaxial cables. For the connectors, as well as the cables, their size and weight have been reduced while their performance and reliability remain the same. This eases cable installation work and brings about excellent handleability, which results in space savings and a reduction in working time compared to previous products.

In addition, the reduced cable diameter helps reduce material costs to produce

more environmentally friendly products. The products also meets the increasing demands for high-performance coaxial cables that provide consistent quality in ever-higher frequency bands used in 5G services, for which the construction of base stations has rapidly been ongoing.

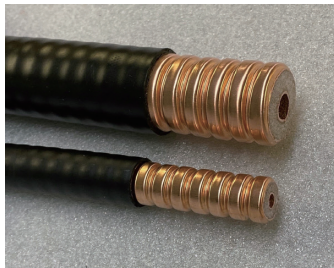
- Major uses

As feeders at cellular base stations (between wireless device and antenna) operating at 5G frequency bands

As antenna feeders at microwave communication facilities and transmission sites

As feeders in other various mobile communication systems

■ Fig. 1 Appearance of new cable



■ Fig. 2 Appearance of new connector



■ Table 1 Dimensions and weight comparison between new product and previous product

Comparison	10D			20D		
	Previous model (WF-H50-4S)	New model (WF-H50-4R)	Comparison to previous model	Previous model (WF-H50-7S)	New model (WF-H50-7R)	Comparison to previous model
Cable diameter (mm)	φ16.0	φ15.2	5% diameter reduction	φ28.0	φ26.8	5% diameter reduction
Cable weight (kg/100 m)	22	18	22% weight reduction	50	40	25% weight reduction
Connector dimensions (length × diameter in mm)	57×φ24	54×φ24	5% size reduction	70×φ34.5	61×φ34.5	12% size reduction
Connector weight (g)	103	81	21% weight reduction	189	160	15% weight reduction

■ Table 2 Comparison of electric characteristics between previous and new models

Comparison	10D		20D	
	Previous model (WF-H50-4S)	New model (WF-H50-4R)	Previous model (WF-H50-7S)	New model (WF-H50-7R)
Characteristic impedance (Ω)	50		50	
Attenuation (dB /km)	400MHz	44.0	24.2	
	900MHz	68.6	37.6	
	2000MHz	108.0	58.8	
	3500MHz	150.0	81.3	

■ Points applicable to SDGs17



These products are based on the technology that support communication infrastructures essential to modern society compatible with 5G communication. Furthermore, the miniaturization and lighter weight of the products reduce material waste and contribute to energy savings.



## Receipt of Type Approval Certificate of Instrumentation control and communication fire proof cables

Fujikura Dia Cable developed instrumentation control and communication\*1 fire proof cables and received a type approval certificate (EM-JFP) in January, 2022. The company is now preparing to release these products to the market. Instrumentation control and communication fire proof cables fall under a new category set up following the May 2021 revision of "Notification No. 10 of the Fire and Disaster Management Agency in 1996: standards for fire proof cables." This enables the use of the cables in such as emergency power supply circuit of automatic fire alarm system with an operating voltage of up to 60 V.

These facilities used to accommodate low voltage fire proof cables or heat proof cables without fire resistance. However, since the instrumentation control and communication fire proof cables become available, this will ensure optimal, safe wiring.

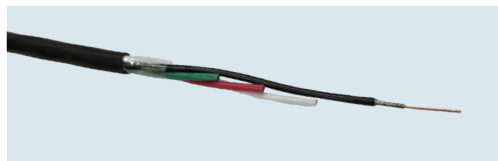
These cables ease handling and offer excellent workability because they have a smaller diameter and weight compared to low voltage fire proof cables.

In addition, although the wiring in the installation of an analog detector at a large-scale storage used to require treatment to enhance heat-resistance (taping for fire resistance), the use of the product will eliminate the treatment in the field and reduce the number of man-hours.

The instrumentation control and communication fire proof cables underwent the following process. The 2021 revision of above-mentioned "Notification No. 10 of the Fire and Disaster Management Agency in 1996: standard for fire proof cables" led to setting up The Japanese Electric Wire & Cable Makers' Association Standard "JCS 4525: Instrumentation control and communication fire proof cables" in October the same year. Then, in November, Japan Electric Cable Technology Center started receiving applications for type approval certificate. In keeping with the trend, Fujikura Dia Cable applied for and received the type approval certificate in the first acceptance period.

\*1 Instrumentation control and communication circuit : circuit with maximum operating voltage of 60 V or less

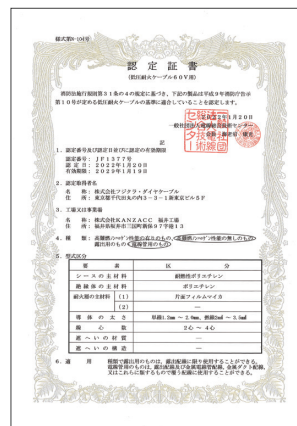
■ Fig. 1 Instrumentation control and communication fire proof cable (EM-JFP)



■ Table 1 Scope of certification

Certificate number	Category	Number of conductors	Conductor size
JF1377	Flat type	2~3C	1.2~2.0mm 2・3.5mm <sup>2</sup>
	Round type	2~4C	1.2~2.0mm 2・3.5mm <sup>2</sup>

■ Fig. 2 Certificate



### ■ Points applicable to SDGs17



We will produce cables needed by society in higher awareness of disaster prevention to contribute to building the infrastructure of a safe, secure, and better society.

✉ Fujikura Dia Cable

<https://www.fujikura-dia.co.jp/contact/>