

## Introduction of RIO SWR®/WTC® optical fiber cable - Flame-retardant indoor/outdoor cable for air-blown installation -

Fujikura have been selling indoor/outdoor SWR®/WTC® with a maximum of 6,912 fiber-count, and we proudly announce the release of RIO (Robust Indoor/Outdoor) SWR®/WTC® optical fiber cables. These cables have excellent flame-retardant properties, and have robust structure suitable for air-blown installation.

With the spread of 5th generation mobile communication systems (5G), the data traffic is increasing dramatically, such as the distribution of 4K and 8K movies, the use of cloud services, and the expansion of IoT.

In the future, it is expected that data traffic will continue to increase, such as transportation and delivery by autonomous driving, medical provision to remote areas, and smart agriculture.

In data centers that handle large amounts of data, outdoor cables (non-flame retardant characteristics) connect centers, and indoor cables (flame-retardant characteristics) are used for indoor wiring. The network is built with cables with unique features.

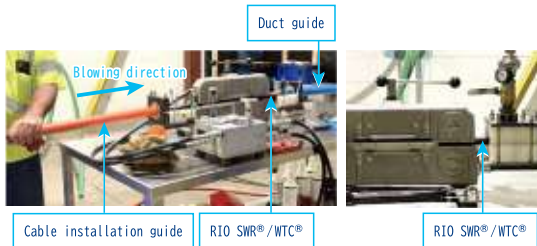
The RIO SWR®/WTC® optical fiber cable has the following excellent features.

- Excellent flame retardant and low smoke emission properties, acquired UL standards in the United States, CPR (Construction Products Regulation) in the EU, and UKCA certification in the UK. This eliminates the need of multiple cables with different flame retardant standards for different countries and regions.
- Since the cable can be used in both indoors and outdoors, it can be pulled directly into the building from outdoor. This feature reduces the number of connection points.
- This cable also has a robust structure suitable for air-blown installation (Photo 1).

RIO SWR®/WTC® optical fiber cables reduce installation time and installation costs, with these features.

Fujikura will continue to support our customers by creating new technologies for the development of an advanced information society.

■ Photo 1: Air-blowing machine for optical fiber cables



■ Table 1: RIO SWR®/WTC® optical fiber cable lineup

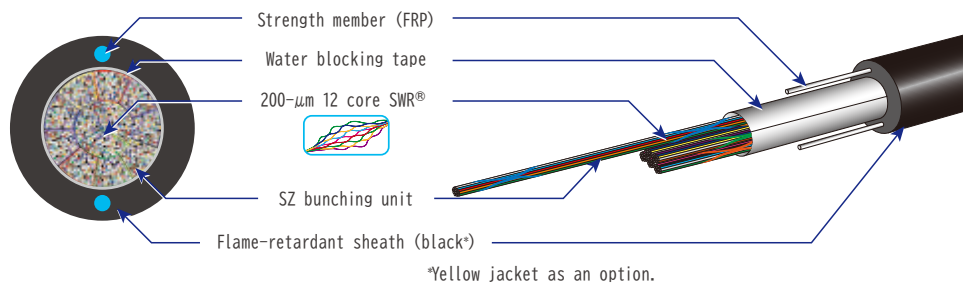
Application	Indoor/Outdoor									
Fiber count	144	192	288	432	576	864	1152	1728	3456	6912 <sup>1)</sup>
Fiber diameter (μm)	200μm									
Cable outer diameter(mm)	12.5	13.0	13.0	14.0	15.0	16.5	17.5	21.0	26.0	31.5
Weight (kg/km)	165	185	185	210	235	280	310	455	650	970
UL Standards	1666(Riser), 1685(FT4)									
CPR Standards									Cca-s1b, d1, a1 <sup>2)</sup>	
UKCA Certification									Cca-s1b, d1, a1 <sup>2)</sup>	

<sup>1)</sup> 6912 fiber-count type is under development and the contents in the table represent design values.

<sup>2)</sup> It indicates the classification of CPR and UKCA.

Cca: flammability, s1b s1: smoke production, d1, d0: flaming droplets, a1: acidity.

■ Fig.1: Structure of RIO SWR®/WTC® Optical Fiber Cable



### ■ Points relevant to the 17 SDGs

Reflecting our advanced technology, RIO SWR®/WTC® optical fiber cables have excellent flame-retardant properties, and suitable for air-blown installation with their high strength characteristics. This combination enables the integration of indoor and outdoor cables and reducing the number of connection points in the network. We will also support our customers in terms of reducing construction time and costs associated with the construction of large-capacity transmission networks for data centers.



# 60 GHz Millimeter-Wave Wireless Communication Module High Sensitivity Version Developed

- Fujikura Acquires Experimental License and Begins Field Experiments -

Fujikura has developed a high-sensitivity version of our 60-GHz-band millimeter-wave wireless communication module (high-sensitivity module), which enables kilometer-class long-distance transmission. Having obtained a license of the experimental radio station \*1, Fujikura has begun various communication experiments in the field.

The high-sensitivity module has improved antenna gain owing to having double the number of antenna elements compared to conventional module and an optimally designed antenna with a limited frequency range of 61 GHz to 71 GHz where attenuation due to oxygen absorption \*2 is small.

Furthermore, the module has a function that narrows the bandwidth to 1/2 or 1/4. This function increases the transmission power density per unit frequency by narrowing the bandwidth, enabling further long-distance transmission.

With the expectation of ultra-high-speed, low-latency, and large-capacity communications around the world, wireless communication using millimeter waves is gathering attention.

Especially in Europe and the United States, the frequency band supported by the high-sensitivity module can be used without a license\*3, making it easy for anyone to take advantage of its superior performance for backhaul\*4

applications, mobile communications, and other applications that require long-distance, high-speed, large-capacity transmission.

Fujikura will promote the expansion of sales of the high-sensitivity module mainly in Europe and the United States, and contribute extensively to the development of equipment to realize ultra-high-speed, large-capacity communications.

\*1 License of experimental radio station: It is defined as "a radio station established for the purpose of conducting experiments for the development of science or technology, testing the efficiency of the use of radio waves, or surveying the demand for the use of radio waves, but not for practical use," and may be established for the purpose of carrying out experiments, tests or investigations.

\*2 Oxygen absorption: A phenomenon in which electromagnetic waves near 60 GHz are absorbed by oxygen molecules in the air, resulting in significant attenuation.

\*3 Frequency bands supported by the high-sensitivity module can be used without a license: In Europe and the United States, 57-71 GHz is approved as a frequency band that can be used without a license. On the other hand, in Japan, 57-66 GHz can be used without a license, but 66-71 GHz requires a license.

\*4 Backhaul: Relay link that connects the base stations to the core network.

■ Fig.1 : 60 GHz millimeter-wave wireless communication module high sensitivity version



■ Table 1: Specifications of 60 GHz millimeter wave wireless communication module high sensitivity version

Radio interface	61-71 GHz*
Occupied bandwidth	0.55/1.1/2.2 GHz
Interface	PCIe Gen2 x2 lane
Power supply voltage	DC +12 V
Dimensions / Weight	78 mm (W) x 128 mm (H) x 14.4 mm (D) / 205g

\*61-66 GHz for Japan

## ■ Points relevant to the 17 SDGs

Our 60GHz millimeter-wave wireless communication module contributes to the development of gigabit-class communication network devices in a short period of time and at a low cost.



## Fujikura has presentation and exhibition of the 28 GHz Phased Array Antenna Module : FutureAccess™ at the International Microwave Symposium 2023

Together with our partners, Fujikura will present our millimeter-wave wireless communication measurement system at a workshop of IMS (International Microwave Symposium 2023), a professional conference on wireless communications, to be held in San Diego from June 11 to 16, 2023.

We will also be exhibiting with our partners at the accompanying exhibition, where we plan to showcase our 28-GHz phased-array antenna modules. We look forward to seeing you there.

Details of the exhibition  
<https://ims-ieee.org/node/399>



## Regarding Exhibiting in JECA FAIR 2023 (71st Electrical Construction Exhibition)

Fujikura Dia Cable Ltd. and Nishi Nippon Electric Wire & Cable Co., Ltd. will exhibit at JECA FAIR 2023, which will be held under the theme "Toward the Realization of a Sustainable Society! A Step Forward in Electrical Construction Technology." JECA FAIR is the largest exhibition in the electrical construction industry where manufacturers and distributors of electrical equipment, materials, tools, and measuring instruments gather. We look forward to seeing you at the event.



<b>Dates</b>	Wednesday, <b>May 24</b> – Friday, <b>May 26</b> , 2023	<b>Venue</b>	INTEX OSAKA Halls. 3, 4 and 5
	10:00 ~ 17:00 on the first day, 10:00-16:30 on the last day		Fujikura Dia Cable booth: Halls. 5, 5-16 Nishi Nippon Electric Wire & Cable booth: Halls. 5, 5-08

### - Fujikura Dia Cable Ltd. -

Under the themes of "Contributing to the realization of a sustainable society" and "New technologies for a comfortable future," Fujikura Dia Cable will exhibit products such as special high-voltage and high-voltage cables and NSP cables, which have been delivered to many

renewable energy-related applications such as wind and solar power generation, as well as foam-insulation leaky coaxial cables that are lighter than conventional cables. In addition, we will showcase our service for diagnosing high-voltage cable degradation using the cloud.

<p><b>Special high-voltage/high-voltage cable</b></p>  <p>A number of records of deliveries to renewable energy power plants</p>	<p><b>NSP cable</b></p> 	<p><b>Foam-insulation leaky coaxial cable</b></p>  <p>Labor-saving construction and NETIS-registered products</p>	<p><b>Provide service for diagnosing degradation of high-voltage cables</b></p>  <p>Support maintenance work</p>
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✉ Fujikura Dia Cable Ltd. <https://www.fujikura-dia.co.jp/contact/>

### - Nishi Nippon Electric Wire & Cable Co., Ltd. -

Nishi Nippon Electric Wire & Cable will introduce products from our product lineup that are widely used in the construction of various infrastructure, by displaying samples and showing videos of products that contribute to labor savings in on-site work, reduction of material costs,

and reduction of environmental impact. We will continue to utilize customer feedback in our product development and construction method proposals, aiming to be a company that continues to inspire.

<p><b>Aluminum CVT cable</b></p>  <p>"It is cheaper and lighter than copper. It enables significant labor saving at construction sites. Please check the difference between copper and aluminum."</p>	<p><b>Information composite cable</b></p>  <p>It unifies multiple information wiring such as TV, LAN, optical fiber, etc. It enables reduction of wiring installation costs and shortening of construction period.</p>	<p><b>NISHI-TUBE®</b></p>  <p>It is a shrink tubing with flexibility and elasticity for unlimited applications. High workability will be shown.</p>	<p><b>"Unit cable for indoor wiring"</b></p>  <p>It streamlines on-site construction with high quality. One-stop manufacturing at a dedicated factory can meet short delivery times.</p>	<p><b>Bypass Cable Equipment</b></p>  <p>A mock pillar will be displayed to show uninterrupted construction work that contributes to a stable supply of electricity.</p>
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✉ Nishi Nippon Electric Wire & Cable Co., Ltd. : [nishipii@nnd.co.jp](mailto:nishipii@nnd.co.jp)

**Points relevant to the 17 SDGs**  
Our group's products contribute to the realization of an environmentally friendly and sustainable society by promoting energy conservation and construction savings for a stable energy supply and social infrastructure.





## Introduction of industrial board-to-board connector DHB series

With the development of the industrial machinery field, there has been a demand for board-to-board connectors that can connect a wide variety of board-to-board distances and accommodate diverse board layouts.

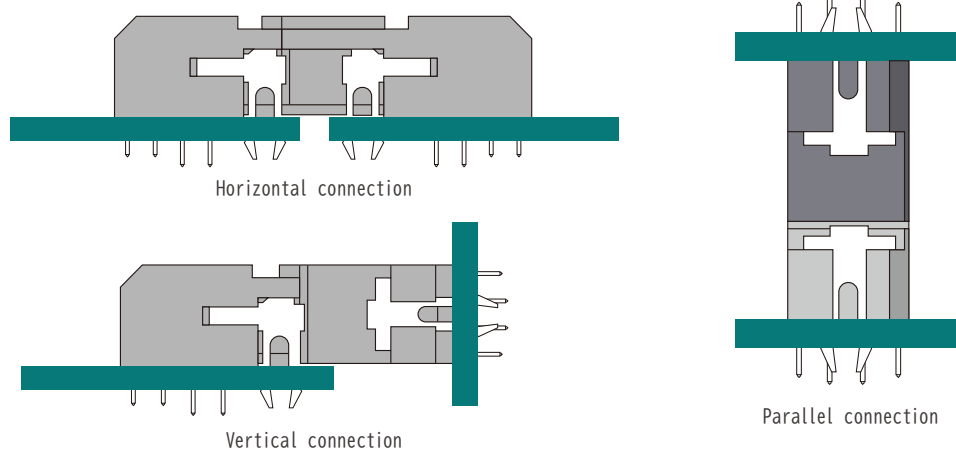
The DHB series responds to this demand.

This product has straight-type and right-angle-type shapes for both plug and receptacle connectors, enabling three types of connection methods: parallel, horizontal,

and vertical. In parallel connection, the distance between boards can be selected at 1-mm increments in the range of 17 to 20 mm so that the distance between the boards can be freely selected.

The DHB series has been adopted in many fields, including industrial equipment and information and telecommunications equipment, owing to the wide range of products that can be adapted to customers' applications.

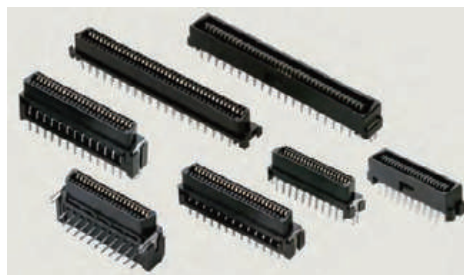
■ Fig. 1 : Connection method



■ Table 1 : Connector specifications

Rated voltage	AC250V(r.m.s)
Rated current	0.5A / Contact
Insulation resistance	500 MΩ or more at 500 VDC
Voltage resistance	500 VAC (r.m.s.)/minute
Contact resistance	50 mΩ or less
Operating temperature range	-55°C ~ +85°C
Operating humidity range	85% RH or less, but no condensation

■ Photo 1 : Connector appearance



### ■ Points relevant to the 17 SDGs

An extensive lineup of products to meet various customer needs allows selection according to the situation of use.



✉ Connector Division : [ddk.contact@jp.fujikura.com](mailto:ddk.contact@jp.fujikura.com)