



FUJIKURA NEWS

Fujikura Succeeds in 60 GHz High-Speed Communication Experiment in Safe Driving Support Demonstration Using Local Bus

Fujikura has succeeded in high-speed vehicle-to-infrastructure communication*1 using an electric pole and in-house developed 60 GHz millimeter wave wireless communication modules in a demonstration of safe driving support. The demonstration was conducted in Himeji City, Hyogo Prefecture, for four days from March 15 to 18, 2021, in cooperation with Kansai Transmission and Distribution, Inc., KYOCERA Corporation, Shinki bus Co., Ltd., Panasonic System Networks R&D Lab. Co., Ltd. and Magellan Systems Japan, Inc. This demonstration was conducted to confirm the effectiveness of the safe driving support system for local bus services by vehicle-to-infrastructure communication using an electric pole and by vehicle-to-vehicle*2 communication with bicycles at intersections without traffic lights. This demonstration using a local bus in service was the first of its kind in Japan (🇯🇵).

In this demonstration, Fujikura installed a communication device equipped with the module on both electric poles and a local bus to establish a wideband wireless connection between the two. By using the wireless connection, the module has successfully uploaded in-vehicle camera images in real time and also has transmitted the GNSS (global navigation satellite system) correction data*3 necessary for high-precision vehicle positioning which is required for

supporting safe driving.

In addition, since the module has been proven to be capable of immediate connection for mobile communications, we will accelerate our studies on applications of the module to various vehicles in addition to the fixed communications field. The "outdoor evaluation kit" that was used as the communication device during the demonstration will be available to evaluate the excellent transmission performance of the module.

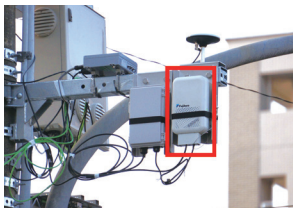
Explanation of terms

*1 Vehicle-to-infrastructure communication: Two-way communication between the vehicle and the communication equipment installed on the road designed to offer various driving assistance

*2 Vehicle-to-vehicle communication: Two-way communication between vehicles designed to offer various driving assistance

*3 GNSS (global navigation satellite system) correction data: The positioning data is transmitted to mobile stations via radio or internet from reference stations on the ground after the reference stations calculate corrections of errors due to satellite clock drift and ionospheric delay. This results in centimeter-level positioning accuracy.

(📄) Regarding the outline of the demonstration, please refer to a press release, "Fujikura succeeds in 60 GHz band high-speed communication experiment in safe driving support demonstration using local bus," issued on March 15, 2021.



Fujikura's 60 GHz millimeter-wave wireless communication device (outdoor evaluation kit) used for Himeji City safe driving support demonstration



In-vehicle camera image transmitted in real time by the 60 GHz millimeter-wave communication device

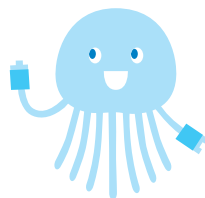


Appearance of the outdoor evaluation kit

Major specifications of the outdoor evaluation kit

Radio interface	57-71 GHz (802.11ad standard-compliant)
Network interface	2×1 Gbps Ethernet
Power supply	AC100-240 W/50-60 Hz
Dimensions /weight	155 mm (W) × 109 mm (D) × 299 mm (H)/2.3 kg

Points applicable to SDGs17



Conducting experimental demonstrations using Fujikura's 60 GHz millimeter wave wireless communication modules jointly with other companies will lead to the safe driving of local busses and contribute to creating a reassuring and safe living environment.



Contact with us through the following URL

<https://mmwavetech.fujikura.jp/>



Fujikura Begins Sales of 3000-Fiber Optical Cable with 200 μm Fiber Spider Web Ribbon®

Fujikura has newly added a 3000-fiber optical cable with 200 μm fiber Spider Web Ribbon® (SWR®) to its lineup of Wrapping Tube Cable® (WTC®), small-diameter high-density optical cable with SWR® intermittent-adhesion-type optical cable line, our proprietary technology, and started sales.

In recent years, with the spread of video streaming and cloud services, there is growing need for even greater capacity optical networks to accommodate 5G, IoT and increased cyber security. However, the optical cable laid in domestic mainlines (underground conduits) must be 24 mm or less in outer diameter because of size constraints from the inner tube used in these underground conduits. Thus, achieving higher capacity optical networks requires optical cables with a higher fiber count for use within confined spaces.

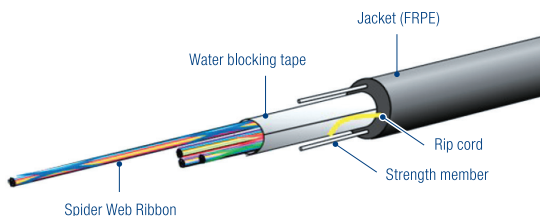
Thus the newly developed WTC® with 200 μm fiber SWR® employs a structure using the same pitch between the fibers as that of conventional 250 μm fiber SWR®.

In addition, since the fiber pitch of the new cable and the previous model is the same, there is no need to use a fusion splicer designed particularly for 200 μm fibers, which will also reduce installation costs.

The performance of this 3000-fiber WTC® with 200 μm fiber SWR® has been highly evaluated and it has already been adopted by Colt Technology Services Co., Ltd.*, a major telecommunications company. Fujikura has begun delivering this new product to this company from March 2021 together with the newly developed optical closure.

*Colt Technology Services Co., Ltd.: Colt Technology Services Co., Ltd. is the Japanese subsidiary of Colt Technology Services Group, a major global telecommunications company based in London, UK. The company owns and operates a network connecting more than 900 data centers and more than 29,000 commercial buildings in Asia, Europe and North America. The company also provides ICT infrastructure services to corporate customers using an integrated platform and processes focused mainly on optical cable networks along with data communication, internet connectivity, voice, IT management services and other professional services.

3000-Fiber WTC® Cable Structure



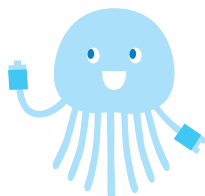
Specifications of 3000-Fiber WTC® Cable

	3000-Fiber WTC®	2000-Fiber WTC®(Reference)
Number of cable fibers	3000fibers	2000fibers
Diameter	23mmφ	23mmφ
Weight	430kg/km	470kg/km



Mr. Hoshino, President and Head of Asia (pictured at left) of Colt Technology Services Co., Ltd. visiting the installation site for 3000-fiber WTC®

Points applicable to SDGs17



The 3000-fiber optical cable containing Fujikura's proprietary technology, SWR®, contributes to the development of safe and strong communication infrastructures toward the progress of 5G and increases in optical network capacity.



Fujikura to Join Heat Solution Exhibition

Fujikura joins Heat Solution Exhibition held in three venues in Fukuoka, Tokyo and Osaka with NTT SmartConnect CORPORATION.

In recent years, extreme heat during the summer has been becoming salient. That raised the importance of taking precautions against heatstroke at different places such as workplaces, schools or public facilities. We started offering an IoT solution to prevent heatstroke last year and are going to introduce them at the exhibition.

This solution offers from hardware to cloud application to visualize data at one time and contains various useful features. For example, the wireless sensor node integrated in the system employs a dye-sensitized solar cell. The cell can efficiently generate power even in low illuminance environments such as inside a building and in the shade, so the nodes can be easily installed without wiring work. In addition, the dedicated visualizing application allows the people in

charge of managing the system to find out the risk of heatstroke in real time even when they are away from the actual site. In case of exceeding threshold of the wet bulb globe temperature (WBGT), an index to prevent heatstroke, the system can also issue a notification by email or flashing lights.

At our booth, visitors can see the configuration of energy-harvesting sensor nodes of two different wireless systems (multi-hop*1, LoRaWAN®*2). They can also realize the performance of the visualizing application while actually measuring WBGT of outside each site. We are sincerely looking forward to welcoming you there.

*1 Multi-hop: data transmission system with fewer communication errors by multi-hopping to automatically choose an optimum route

*2 LoRaWAN®: long distance one-on-one communication with gateway

LoRaWAN® is a trademark of Semtech Corporation (International registration number 1434929).

The 3rd KYUSHU HEAT SOLUTION

[Date / Venue]

- Jun 16 (Wed.) to 17 (Thu.) 2021
- Hall A, Marine Messe Fukuoka



The 7th HEAT SOLUTION

[Date / Venue]

- Jun 23 (Wed.) to 25 (Fri.) 2021
- Aomi Exhibition Hall, Tokyo Big Sight



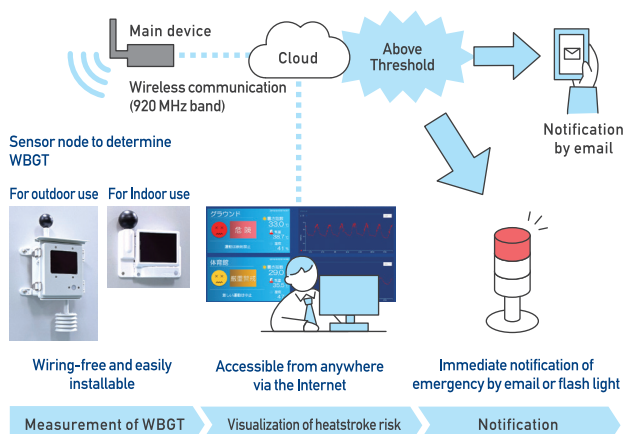
The 2nd KANSAI HEAT SOLUTION

[Date / Venue]

- July 14 (Wed.) to 16 (Fri.) 2021
- Intex Osaka



■ Fujikura's IoT solution to prevent heatstroke



This product is for use in Japan only and cannot be used outside Japan.

■ Use scenario of heatstroke preventing IoT solution

Underground construction site

The device secures communication paths using wireless multi-hopping and collects data.

Distribution warehouse

Stable data collection without transmission errors by multi-hop communication in warehouses accommodating to many obstacles such as shelves.

Outdoor wide-range work site

Installation of sensor nodes under harsh environments exposed to direct sunlight or rain is possible by using waterproof (IPX4) casing for outdoor use. LoRaWAN® wireless communication, one of the LPWA technologies, allows data collection in wide areas (up to a few km).

Factory

Even in factories containing obstacles such as large equipment, multi-hop wireless communication can collect data stably. The device allows easy installation, removal, and reinstallation of it in response to changes in layout of work sites or relocation.

■ Points applicable to SDGs17

The heatstroke preventing IoT solution with the wireless, easily installable sensor system prevents heatstroke. In addition, the system reduces the cost for replacing cells and related waste of them, which contributes to creating a green, comfortable society.



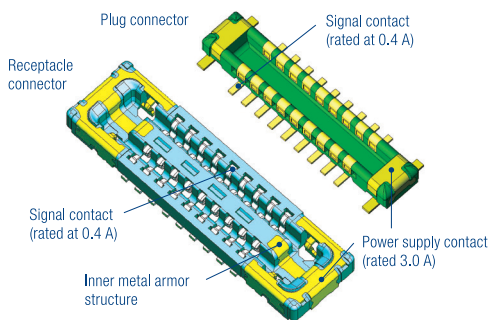
Development of Board-to-Board Connector, the FB35AT6 Series, for Smartphone

Smartphones and mobile devices have higher functionality while the connectors are required to offer high added value such as carrying high current and being smaller and lighter. To meet these market demands, Fujikura has developed a substantially miniaturized board-to-board connector of 1.65 in width, 0.6 mm in mating height for high current. On top of signal contacts of 0.4 A rated current, the connector accommodates two 3 A power

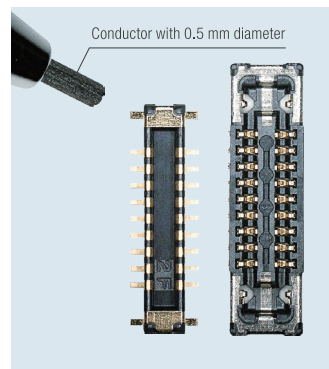
supply contacts (Fig 1). The power supply contacts play the role of reinforcing the connector to prevent damage at the time of mating as well as passing high current.

Furthermore, an inner metal armor structure, where metal is placed in the center of a receptacle connector, was employed to further support increases in strength of the connector.

■ Fig. 1 Appearance of connector



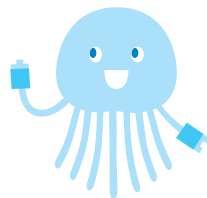
■ Fig. 2 Appearance



■ Table 1 Specifications

	Currently-used product	New product
Series	FB35K	FB35AT6
Mating height	0.6 mm	
Pitch	0.35 mm	
Width	1.80 mm	1.65 mm
Rated voltage	AC 30 V (r.m.s.)/DC 30 V	
Rated current	Signal contact:0.4 A/pin Power supply contact:3.0 A/pin	
Withstand voltage	AC 200 V (r.m.s) for 1 min.	
Insulation resistance	DC 200 V 100 MΩ or greater	
Contact resistance	Signal contact:30 mΩ or lower Power supply contact:20 mΩ or lower	
Operating temperature range	-40°C~+85°C	
Contact number	Signal contact	18,20,24
	Power supply contact	2

■ Points applicable to SDGs17



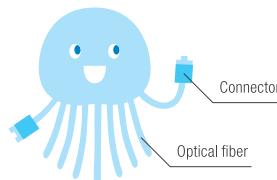
Fujikura's connectors are focused on being miniaturized to meet market demands for the smartphones and mobile devices with increasingly high performance and to contribute to the advancement of these devices.

✉ Connector Business Division

ddk.contact@jp.fujikura.com

Introduction to Our Character

This is the Fujikura News character with an optical fiber and connector motif. It introduces you to the Fujikura Group's efforts in SDGs.



Every issue will explain about points applicable to SDGs in detail. Let's increase our understanding on them together.