



FUJIKURA NEWS

Fujikura Starts Offering Evaluation Samples to Provide Experience of Maintenance-free Power Supply for IoT Devices

Fujikura has developed and started offering evaluation samples of maintenance-free power supply using dye-sensitized solar cells (DSSCs), an energy-harvesting device, in cooperation with NGK Insulators Ltd. and e-peas (Belgium).

With the progress of telecommunication technology including 5G and low-power wide-area network (LPWAN)*, devices that use IoT technologies have become widely available. However, when conventional batteries are used as power supply, the need for battery maintenance including inspection and replacement increases time and cost of operation and causes interruptions in data collection.

An effective way to solve these challenges is to use light-energy-harvesting technology that converts low light energy around us into electricity. A photovoltaic power generator using this technology demonstrates high performance only when designed by appropriately combining a high-efficiency photovoltaic power generating element with a power management IC and storage device.

Consequently, we have developed a thin, compact, maintenance-free power supply that outputs 3V DC stably by combining our DSSC with a

power management IC and power storage device, jointly with NGK Insulators Ltd., a power storage device maker, and e-peas, a power management IC maker. Replacing existing batteries with the new power supply will allow uninterrupted data communication for a long time without battery maintenance for the IoT devices and thus fine-tuned remote sensing in many locations.

[Benefits from using DSSC]

- No need to replace batteries of IoT devices
- Compensation for increased power consumption according to increased reliability of wireless communication
- Possibility to use IoT devices for computing by using excess power

Fujikura will help create a comfortable society by developing and offering IoT devices that incorporate a device for converting light energy, which has not been effectively used, into electric power.

*LPWAN (low-power wide-area network) : Technology to enable low-power wide-area communication with low power consumption



Appearance of maintenance-free power-supply evaluation sample

[Product Outline]

- Output voltage : DC3V
- Dimensions : 44x85mm
- Plate thickness : 4.5mm
- Battery capacity : 100mWh(27mAh)
- Maximum operating-point power : 165μW(WhiteLED200lx)

Our special website offers information on Fujikura's IoT solutions and the evaluation kit.

Overview of IoT solution
<https://eh-iot.fujikura.jp/>



Overview of this evaluation kit
<https://dsc.fujikura.jp/>



Point applicable to SDGs17



We contribute to creating a smart society through IoT sensing technology by promoting general use of photovoltaic energy-harvesting power generation technology for different IoT devices that use DSSCs.



Development of High-resolution Digital Pressure Sensor, the AG6 Series

Fujikura has developed a new digital pressure sensor, the AG6 series. This sensor features the digital output of signals obtained through high-performance signal processing, such as 16-bit-high-resolution, low-noise, high-speed sampling using an I²C-Bus*¹ interface.

Medical devices, specifically, blood pressure monitors need high resolution and low noise for accurate measurement. The AG6 series enabled these features by optimizing our proprietary MEMS*² built-up structure and internal signal processing that maximize the performance of the pressure sensor chip and signal conditioning IC. In addition, the sensor also has a feature of 2 kHz high-speed sampling and thus is suitable for applications including industrial applications.

We are committed to benefitting society by continuously offering pressure detecting solutions for customers who have various needs.

*1: I²C-Bus is a trademark of NXP Semiconductors
*2: MEMS stands for micro electro mechanical system



New product (AG6 series)

Points applicable to SDGs17



The high-performance pressure sensor that uses our proprietary built-up structure technology and inspection technology help to develop the latest medical devices and improve people's health. Moreover, the product contributes to technological innovation as a component of different equipment in industrial fields.

✉ Sensor Department

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Fujikura received a certificate of appreciation from NTT for our contribution to their recognition as IEEE Milestone.

Fujikura has received a certificate of appreciation from Nippon Telegraph and Telecommunication Corporation (NTT) for contribution to developing and standardizing a multiple-fiber push-on (MPO) connector. NTT's achievement of releasing an optical fiber connector connected by physical contact with a push-pull mating system was recognized as an IEEE milestone.

At the presentation ceremony held at Fujikura headquarters, Mr. Yuji Aoyagi, head of NTT Access Network Service Systems Laboratories, awarded a certificate of appreciation to Mr. Tatsuya Banno, an Executive of Fujikura.

MPO connectors are widely used in optical infrastructures to support the rapidly growing market such as FTTH, 5G/6G, and very large data centers (HSDC).

Fujikura has the world's top share in providing MT ferrules, a key component of

MPO connector, and the global leader in this field.

We will continue to develop innovative technologies and products through further collaboration with NTT and other partners, and contribute to the development of an advanced information society through the practical application of these technologies and products.



NTT Access Network Service Systems Laboratories' head, Yuji Aoyagi (right), and Fujikura's executive officer, Tatsuya Sakano (left)



Testimonial

Points applicable to SDGs17



We will continue to develop innovative technology and products that contribute to an advanced information-oriented society worldwide.

✉ Optical Cable System Division

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Development of One-hour low voltage fire proof cables

Fujikura Dia Cable has developed one-hour low voltage fire proof cables, 600VEM-1HFP. The development was triggered by increasing needs for higher performance (securing time for evacuation guidance) of disaster preventing facilities of buildings with the trends of constructing higher buildings and changes in population composition with an aging society.

The new product shows fire proof performance (60 min, 925°C) more than double that (30 minutes, 840°C) of an existing fire proof cable (Fig. 1).

The specifications of the new product comply with The Japanese Electric Wire & Cable Makers' Association Standard, JCS 4524 (2020) and acquired a certification and rating from Japan Electric Cable Technology Center (Fig. 2). The product lineup is indicated in Table 1.

As the wiring example (Fig. 3) illustrates, the new cable is expected to be used in fire prevention wiring (emergency power supply circuit) in buildings that need more than 30 minutes for evacuation guidance in case of fire.

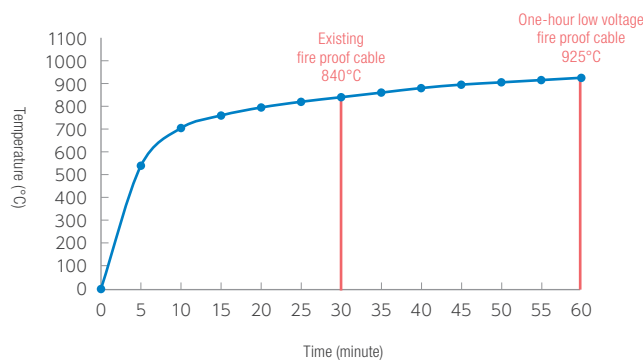


Appearance of cable (flat-type with two cores)



Appearance of cable (round-type with three cores)

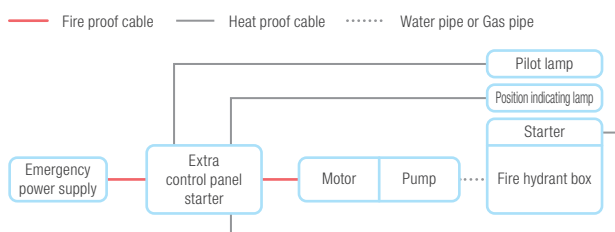
■ Fig. 1 Standard fire proof curve



■ Fig. 2 Certificate and rating certificate (Certificate of a certification and rating?)



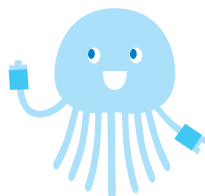
■ Fig. 3 Wiring Example



■ Table 1 Lineup of 600V EM-1HFP

Certification No.	Classification	Number of core	Conductor size
No. JF1313	Single core	One core	5.5-8mm ²
No. JF1355	Flat type	Two to three cores	1.2~2.0mm
	Round type	Two to three cores	1.25~8mm ²

■ Points applicable to SDGs17



We have developed the product that has more than double fire proof performance compared to an existing fire proof cable to deal with changes in society such as increase in the number of high buildings and aging population. We will contribute to creating a sustainable society by developing suitable products.



Development of Small-sized, Easily Attachable/Detachable BNC Connector, the BM1 Series

Fujikura has developed a connector, the BM1 series, smaller and more densely packed compared to BNC connectors, which are widely used in videos, communication devices and measuring devices.

Compared to conventional BNC connectors*, this new product achieved about 50% decrease in size and space (Fig. 1) and employs a bayonet lock system with mating waterproofness, which offers benefits to customers'

space saving and reducing the number of man-hours. In addition, the product demonstrated good high-frequency characteristics at 6 GHz (Fig. 2).

*BNC connector : BNC (Bayonet Neill Concelman) connectors are commonly used in videos, communication devices, and measurement machines, operates at an impedance of 50 Ω and uses a bayonet lock system to make fitting easier.

■ Table 1 Comparison of coaxial connector shape

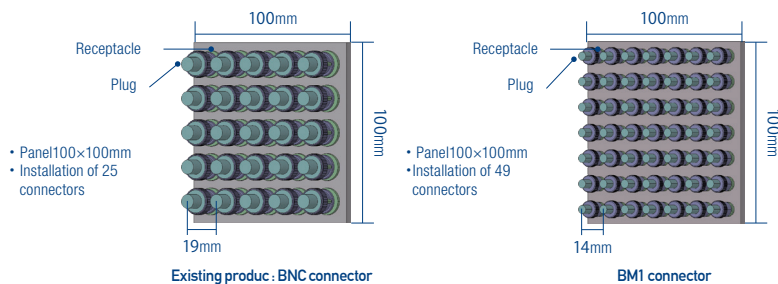


Appearance of connector

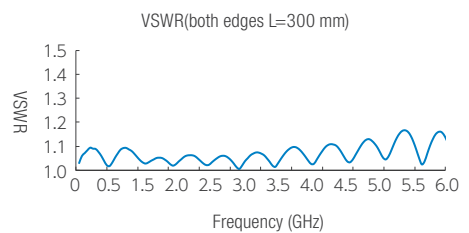
	Connector shape	Weight (g)	Volume (mm ³)
BNC		11.6	1146.9
BM1		5	412.9
SMA		2.5	375.1

*Comparison of connectors for cables equivalent to 1.5D

■ Fig. 1 Space saving



■ Fig. 2 High-frequency characteristics



■ Point applicable to SDGs17



Miniaturizing the connector to save space and improving installation workability benefit the advancement of telecommunication infrastructures and energy saving.

✉ Connector Business Department

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