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## OMRON Globally Launches Microswitches for Remote, Delicate Control ~ Contributing to the realization of a digitalized society through the spread of devices that eliminate the boundary between reality and virtual reality ~

OMRON Corporation (Headquarters: Shimogyo-Ku, Kyoto, Japan; President and CEO: Junta Tsujinaga) will globally launch three series of operating microswitches, D2FC, D2LS, and D2FP, which enables a delicate operation feeling in controllers, from August 2023.

For 80 years since 1943, when OMRON developed domestically produced microswitches, it has been supplying microswitches to a wide variety of products such as home appliances that are ubiquitous in people's daily lives. Since 2010, OMRON has been working on the quantification of feel for high-quality, comfortable actuation and the structural design for high durability through the development of three series of microswitch products for gaming mice: D2FC, D2LS, and D2FP. By launching these three series globally, OMRON provides these microswitches in a wide range of products and devices, including robot controllers, to realize delicate operations in remote operation devices.



Mounting image of three series of operating microswitches: D2FC, D2LS, and D2FP

In recent years, with the accelerated spread of 5G and 6G, there is a growing need for devices that enable flexible operations, such as remote and VR devices to pursue overcoming handicaps and restrictions. In a wide range of fields such as nursing care and construction sites, remote robots and remote operation devices are increasingly being introduced, and safe and secure control operations over long periods of time are required. To meet these social needs, the operability and durability of the built-in components are also important so that operating the equipment with excellent responsiveness becomes a stress-free experience for users even for long periods of time. The operating microswitches D2FC, D2LS, and D2FP, which will be launched globally this time, have achieved a delicate operation feeling through the use of a stable spring structure in the product through quantification of feel based on ergonomic data. This enables flexible operation of remote equipment in conjunction with human operation with controllers, etc. In addition, high durability has been achieved by implementing structural design and material selection that suppress performance deterioration of the operation parts. The operating microswitches contribute to the operation of remote equipment in a wide range of fields, including nursing care and construction sites, which require safe, secure, and delicate operation over long periods of time.




OMRON will accelerate the spread of remote operation devices among its customers and contribute to

the realization of a digitalized society by expanding the number of customers to whom OMRON provides advanced devices based on the technology it has cultivated over the years.

Challenges and performance requirements for remote control devices

<b>Problems of remote control device</b>	<b>Difficult to operate intuitively</b>	<b>Prone to failure</b>	<b>Slow to respond, prone to lag</b>
<b>Required performance</b>	<b>High operability</b>	<b>High durability</b>	<b>High-speed responsiveness</b>

Main specifications and applications of D2FC, D2LS, and D2FP

Model	D2LS	D2FC	D2FP
<b>Appearance</b>	Ultra-compact, low-profile design W8.6 x L4.8 x H3.0 mm 	Also adopted by major mouse manufacturers 	High-speed response unique to the optical type 
<b>Operability</b>	Snap-action mechanism for a light operational feel		
<b>Durability</b>	Structural design and material selection to suppress performance degradation		No chattering due to the optical type
	5 million, 10 million, 20 million operations	5 million, 20 million, 60 million operations	70 million operations
<b>Application</b>	Structure resistant to long-press operations		
	<b>Miniaturization needs</b>	<b>Response speed</b>	
	<ul style="list-style-type: none"> <li>Game controller and mouse operation (for general-purpose products)</li> <li>Smart switches for security equipment and lighting</li> <li>Small radio, transceiver, broadcasting equipment</li> </ul>	<ul style="list-style-type: none"> <li>Game controller and mouse operation (for general-purpose products)</li> <li>Various controllers</li> </ul>	<ul style="list-style-type: none"> <li>Game controller and mouse operation (for general-purpose products)</li> </ul>

Features of D2FC, D2LS, and D2FP

**D2FC Series**

This series has an ON/OFF function with mechanical contacts and a wide lineup of click durability from 5 million to 60 million times. This allows customers to choose from a wide range of products according to their intended use, and realize delicate, frequent, and durable operability for long periods of time in devices such as robots and controllers.

**D2LS Series**

This series is a derivative model of D2FC, which is downsized by 70% and mounted on the surface of the printed circuit board, enabling customers to downsize their equipment while maintaining a high-quality operation feeling.

**D2FP Series**

This series is a derivative model of D2FC and uses an optical sensor method for the ON/OFF function. This has eliminated chattering\* that can lead to device malfunction and a high durability of 70 million times with a more stable ON/OFF function has been achieved. This series provides more flexible operability for advanced controller devices that require high-speed response and high reliability.

\* Chattering: A phenomenon in which the contact temporarily opens due to external vibration or other factors and ON/OFF is repeatedly output even though the switch is in the ON state

<https://components.omron.com/us-en/products/basic-knowledge/switches/applications>

<About OMRON Corporation>

OMRON Corporation is a global leader in the field of automation based on its core technology of "Sensing & Control + Think." OMRON's business fields cover a broad spectrum, ranging from industrial automation and electronic components to social systems, and healthcare. Established in 1933, OMRON has about 30,000 employees worldwide, working to provide products and services in around 120 countries and regions. For more information, visit OMRON's website: <https://www.omron.com/jp/ja/>