

SANMOTION C S100

Motion controller

Ver.3
English



SANMOTION C

MOTION CONTROLLER

EtherCAT®



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SANMOTION C S100

MOTION CONTROLLER

Equipped with the industry-trusted high-speed fieldbus EtherCAT interface, these models are available in two configurations: a high-performance type (Model no. SMC100-A) for controlling robots and a standard type (Model no. SMC100-B) that specializes in PTP (Point-to-Point) positioning. They are ideal for applications such as assembly equipment and conveying machines.



Refer to the following catalogs for AC servo systems and closed-loop stepping systems (Model No.PB) equipped with EtherCAT interface. Catalogs are available for download from our Catalog Site.

- SANMOTION G Catalog
- SANMOTION R 100/200 V General Catalog
- SANMOTION R 400 V Catalog
- SANMOTION R ADVANCED MODEL 48 VDC Catalog
- SANMOTION Model No.PB Catalog

Information on **SANMOTION C S500** (separate catalog available)

This motion controller can control 15 robot configurations, including complex 7-axis articulated robots.

Functions such as trajectory control and interpolated operation can be done with ease, contributing to the in-house robot motion planning.

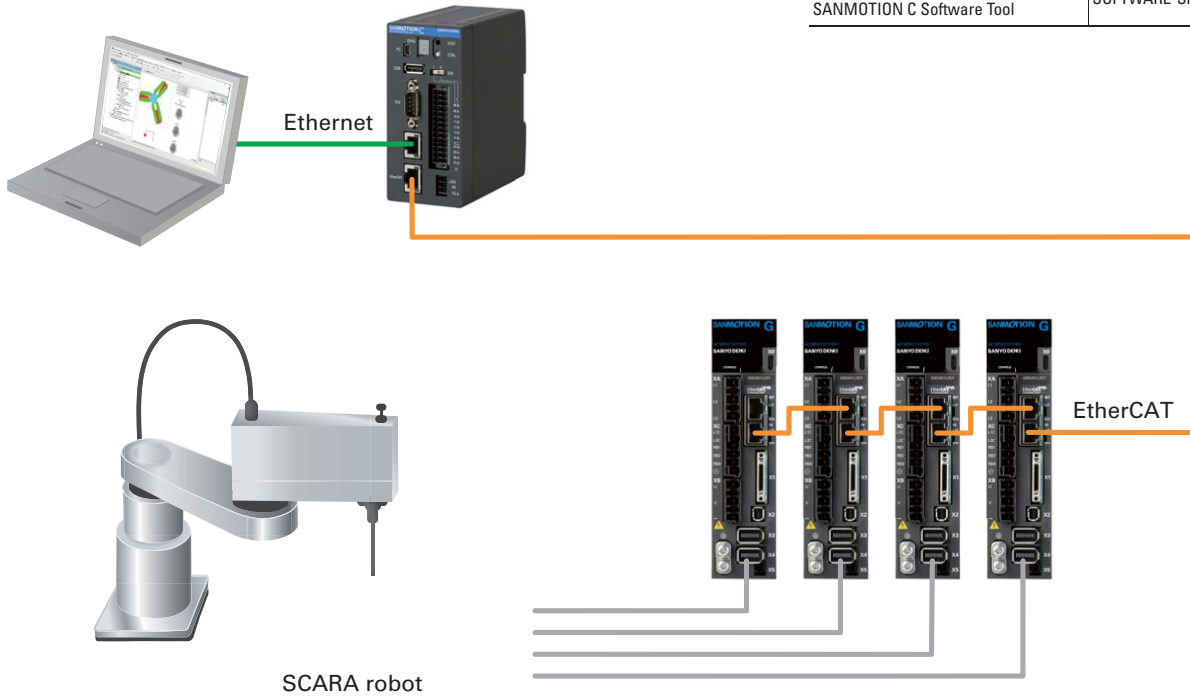
EtherCAT®



Motion controller **SANMOTION C S100**
System Configuration Examples

■ **Assembly equipment** (Model no. SMC100-A)

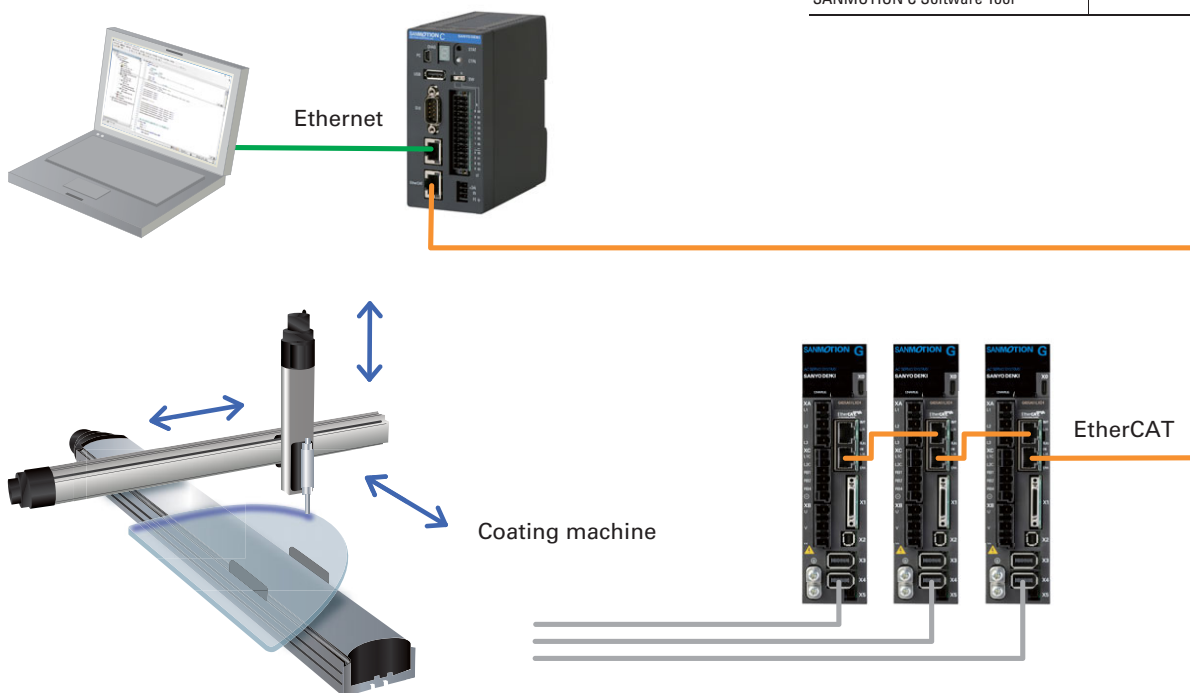
Robot control



Name	Model no.
Motion controller	SMC100-A
Integrated development software SANMOTION C Software Tool	SOFTWARE-SMC100- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

■ **Automatic coating machine** (Model no. SMC100-A)

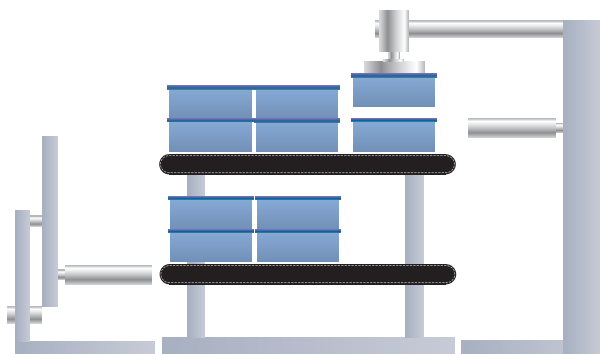
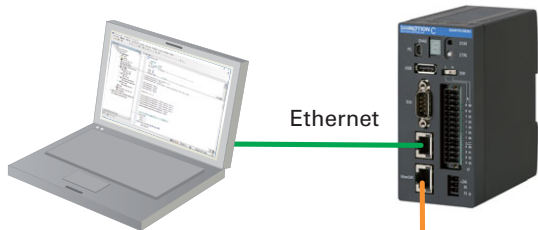
Interpolation control, etc.



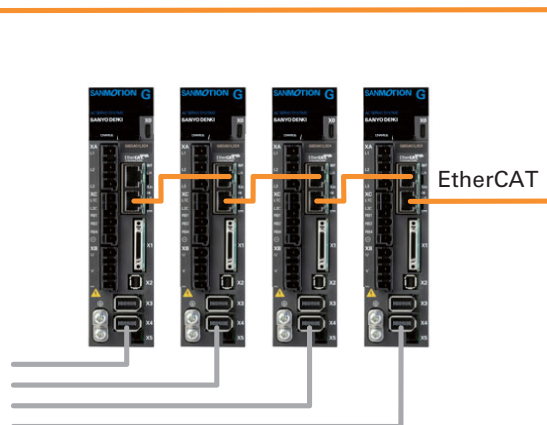
Name	Model no.
Motion controller	SMC100-A
Integrated development software SANMOTION C Software Tool	SOFTWARE-SMC100- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Tray loader (Model no. SMC100-B)

PTP motion controller



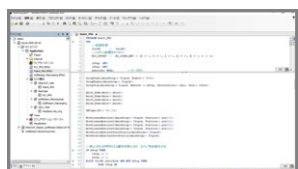
Tray loaders



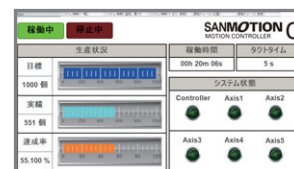
Name	Model no.
Motion controller	SMC100-B
Integrated development software SANMOTION C Software Tool	SOFTWARE-SMC100- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

SCARA robot moving with automated guided vehicle (Model no. SMC100-A)

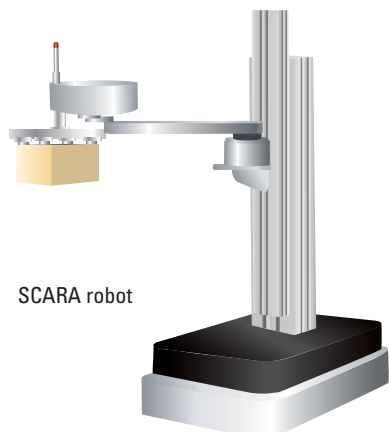
Robot control



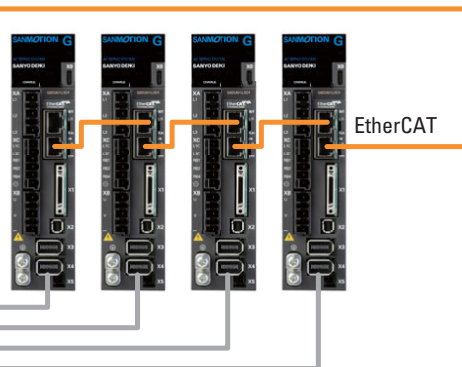
Programming screen



Web browser screen



SCARA robot



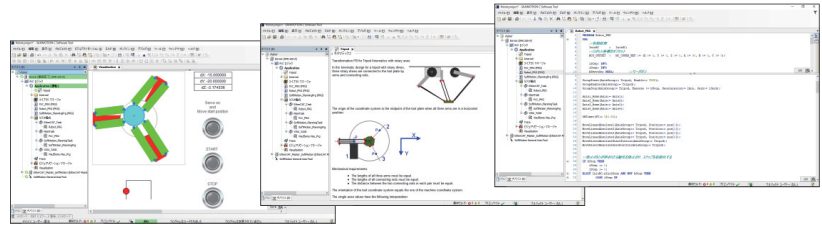
Name	Model no.
Motion controller	SMC100-A
Integrated development software SANMOTION C Software Tool	SOFTWARE-SMC100- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Wireless Adapter	SMC-USBW-01

Software and peripherals

Integrated development software **SANMOTION C Software Tool**

Software features various functions for system development.

- Programming tool
- Electronic cam editor
- Configuration tool
- Simple HMI (human machine interface) tool
- Analysis and diagnostic tool



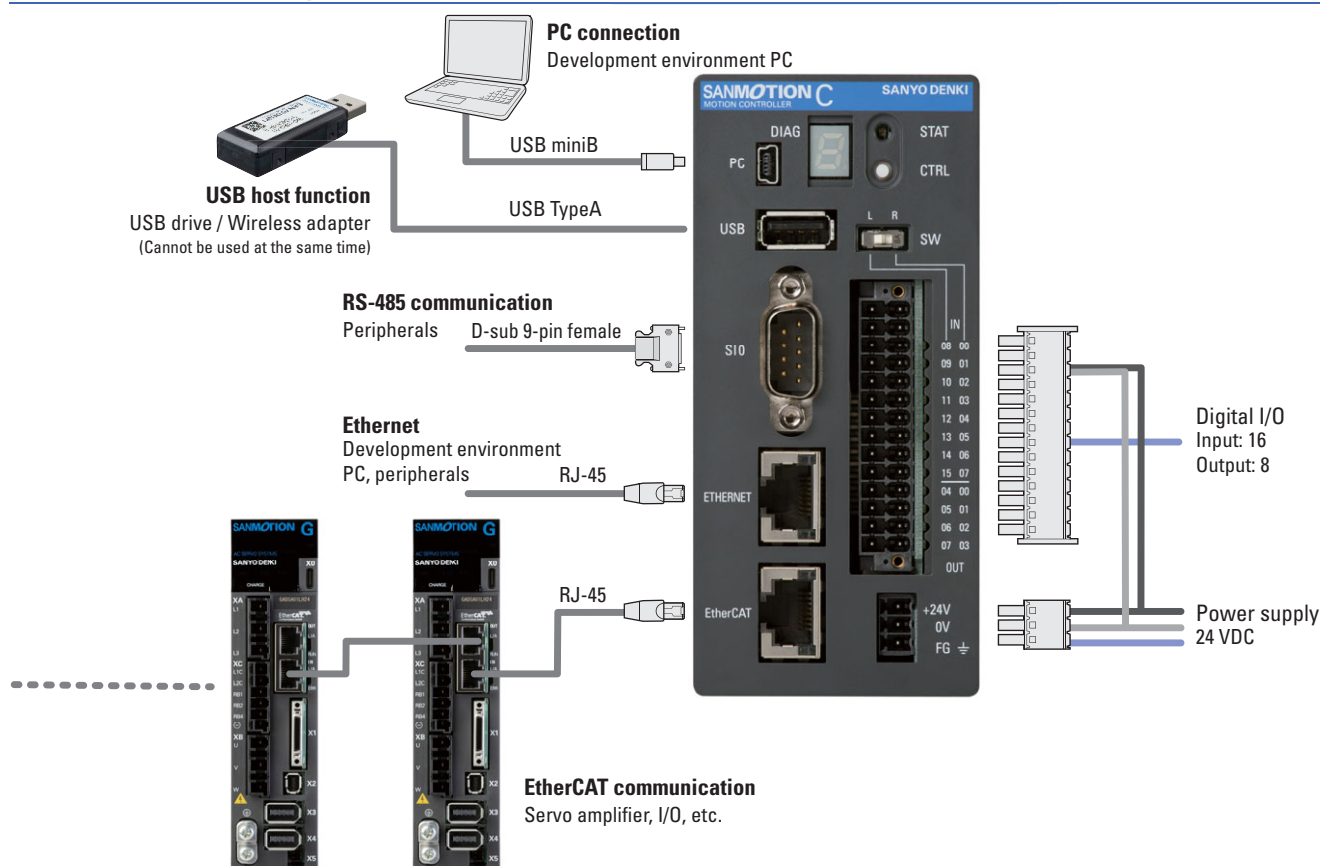
Wireless Adapter adds wireless communication to motion controllers

- Status monitoring and settings of SANMOTION products can be done remotely from smart devices.
- Motion controllers can be connected to a wireless LAN network by simply connecting the adapter to their USB port.
- The adapter can be set for use in various countries.
- Send a license key we provide to motion controllers to turn on wireless capability.

Note: The serial number of the controller is required for issuing the license key.



System Configuration



Specifications

Model no.	SMC100-A	SMC100-B
Interface	EtherCAT (100 Mbps) master function, FoE-compatible	
	Ethernet (10/100/1000 Mbps) protocols (Modbus TCP, OPC-UA)	
	RS-485 (9600 to 115200 bps)	
	USB 2.0 (for memory storage)	
Digital I/O	Digital input: 16 points; rated input voltage: 24 VDC; positive/negative common input Digital output: 8 points; load voltage range: 19.2 to 30 VDC; maximum load current: 0.5 A/point; sink output	
Input power supply	main power supply	Rated voltage: 24 VDC; load voltage range: 19.2 to 30 VDC; Rated current: 0.8 A
	I/O power supply	Rated voltage: 24 VDC; load voltage range: 19.2 to 30 VDC; Rated current: 20 mA
Power consumption	19.2 W	
Cooling method	Passive	
Dimensions	55(W) × 120(H) × 110(D) mm	
Mass	300 g	
Max. no. of controllable axes	8	
Control functions	Sequence control Motion control (Electronic cam, electronic gear, linear interpolation, circular interpolation) Robot control (Cartesian coordinate, SCARA, and parallel link robots)	Sequence control Motion control (PTP control)
	Network functions	Web visualization
Control language	Programming languages conforming to international standard (IEC 61131-3) G-code (SMC100-A only)	
Ambient temperature	0 to 55°C	
Storage temperature	-40 to 70°C	
Operation/storage humidity	10 to 95% (non-condensing)	
Vibration resistance	Constant amplitude: 3.5 mm (5 to 8.4 Hz) conforming to JIS B 3502:2011	
	Constant acceleration: 10 m/s ² (8.4 to 150 Hz) conforming to JIS B 3502:2011	
Shock resistance	Peak acceleration: 147 m/s ² , duration 11 ms conforming to JIS B 3502:2011	
Operation altitude	2,000 m max.	
Installation location	In control panel	
Overvoltage category	II or lower	
Degree of pollution	2 or lower	

Control functions

Motion control function

Number of controllable axes	8
Communication cycle	2 to 16 ms
Control system	Position control, speed control, torque control
Acceleration/deceleration profile	Trapezoidal, Sin ² , trapezoidal with jerk limit
Unit for positioning control	Arbitrary (pulse, mm, inch, degree)
Programming language	Complies with IEC 61131-3 IL, ST, LD, FBD, SFC, CFC
Function block	Homing, incremental mode, absolute mode, constant speed mode, electronic cam, electronic gear

Robot control function (Model no. SMC100-A only)

Number of controllable axes	Robot: 4 axes max
Communication cycle	8 to 16 ms
Control system	PTP motion, 3D linear interpolation, 3D circular interpolation
Teaching method	Numeric input
Unit for positioning control	Arbitrary (pulse, mm, inch, degree)
Programming language	Motion function block
Supported robots	Cartesian coordinate (3 axes), SCARA (4 axes), parallel link (4 axes)

EtherNet/IP™ specifications

Common	Interface	Ethernet (10/100 Mbps) Note: Can be combined with Modbus TCP, etc.
	Communication	Scanner function: Network master Adapter function: Network slave Note: Cannot be used at the same time.
	Node distance	100 m or less
	Topology	Star
	Communication cable	Shielded twisted pair cable, category 5/5e or higher recommended
	Conformance testing	ODVA conformance (Conformance test 16 passed)
Scanner	Maximum number of connectable units	4
	Minimum communication cycle	50 ms
Adapter	Device type	12
	Maximum data length	Output: 508 bytes, input: 504 bytes (Recommended output: 128 bytes, input: 128 bytes)
	Supported data types	50 ms BYTE (1 byte) WORD (2 bytes) DWORD (4 bytes) REAL (4 bytes) Big (A collection of BYTE type data with the maximum data length)

Software

■ Connector set

Model no.	Application	Manufacturer part no.
AL-01005600-01	Power connector	Phoenix Contact K.K. FMC 1,5/3-ST-3,5
AL-01005600-02	I/O connector	Phoenix Contact K.K. DFMC 1,5/14-ST-3,5-LR

■ USB cable

Model no.	Application
AL-00896515-01	USB cable (1 m)
AL-00896515-02	USB cable (2 m)

■ Integrated development software SANMOTION C Software Tool

Model no.	Application
SOFTWARE-SMC100- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Integrated development software for sequence/motion/robot control

Peripherals

■ Wireless Adapter

Model no.		SMC-USBW-01	
Basic specifications	Dimensions	21.8 (W) × 11.5 (H) × 56.5 (D) mm	
	Mass	Approx. 10 g	
	Rated voltage	5 VDC	
	Interface	USB 2.0 Type A	
	Use with	Motion controllers (SANMOTION C S100) only	
	Operating environment	Ambient temperature	0 to 55°C
Ambient humidity		10 to 95% (non-condensing)	
Functions	Wireless standard	Compliant with IEEE802.11b / IEEE802.11g / IEEE802.11n	
	Operating frequency band	2.4 GHz band	
	Channels	1 to 13	
	Maximum communication speed	72.2 Mbps	
	Wireless LAN mode	Access point mode (Acting as a master network station)	
		Station mode (Acting as a slave network station)	
	Maximum number of connectable units	3 (in access point mode)	
Security	WPA2-PSK (AES)		
Applicable regions	Japan	Technical Standard Conformity Certification, VCCI	
	Europe	CE (RE Directive, RoHS2)	
	North America	FCC, ISED	
	China	SRRC	
	Taiwan	NCC	

Options

■ EtherCAT cables with RJ-45 plug

Model no.	Cable length	Specifications	Manufacturer
AL-01109322-R50	0.5 m	Plug: RJ-45 (TM21P-88P), on both ends Boot color: black Cable: 20276 ESVP AWG#24X4P, CAT5e	Plug: Hirose Electric Co., Ltd. Cable: Bando Densen Co., Ltd.
AL-01109322-01	1 m		
AL-01109322-03	3 m		
AL-01109322-05	5 m		
AL-01109322-10	10 m		

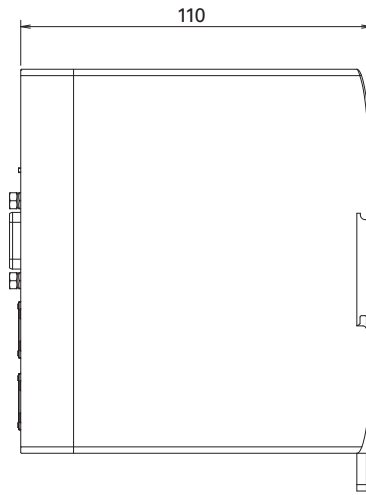
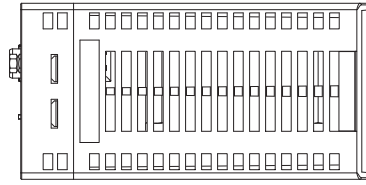
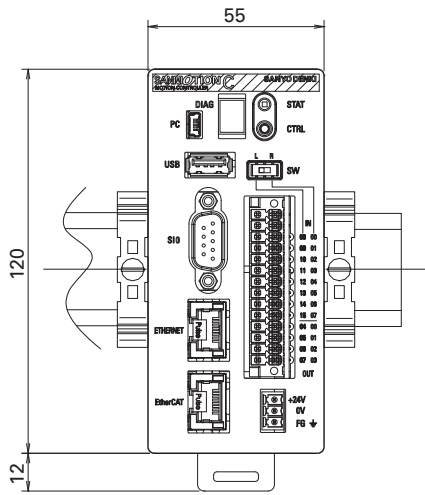
■ Ethernet cables with RJ-45 plug

Model no.	Cable length	Specifications	Manufacturer
AL-01111556-01	1 m	Plug: RJ-45 (TM21P-88P), on both ends Boot color: yellow Cable: 20276 ESVP AWG#24X4P, CAT5e	Plug: Hirose Electric Co., Ltd. Cable: Bando Densen Co., Ltd.
AL-01111556-03	3 m		
AL-01111556-05	5 m		
AL-01111556-10	10 m		

Dimensions [Unit: mm]

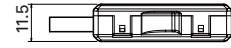
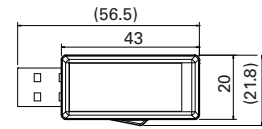
Motion controller

Model no.: SMC100-A, SMC100-B



Wireless Adapter

Model no.: SMC-USBW-01





■ ECO PRODUCTS

ECO PRODUCTS are designed to reduce the environmental impacts throughout the product's life cycle. Ranging from design to manufacturing stages, the environmental impact of a product and its packaging materials is assessed against the eco-design requirements. Those products that satisfy the requirements are accredited as ECO PRODUCTS.

Notes Before Purchase

- Read the accompanying Instruction Manual carefully prior to using the product.
- Do not use this product in an environment where vibration is present, such as in moving vehicles or shipping vessels.
- Do not modify or alter the product in any way.

Please contact us beforehand if you intend to use this product in the following applications.

- Medical equipment that may have an effect on human life
- Systems or equipment that may have a major impact on society or on the public.
- Special applications related to aviation and space, nuclear power, electric power, submarine repeaters, etc.

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