HPX-ET Series

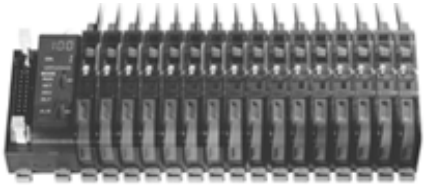
Gang-mounted Distributed Remote Cluster Type Fiber Optic Photoelectric Sensors

click

FEATURES

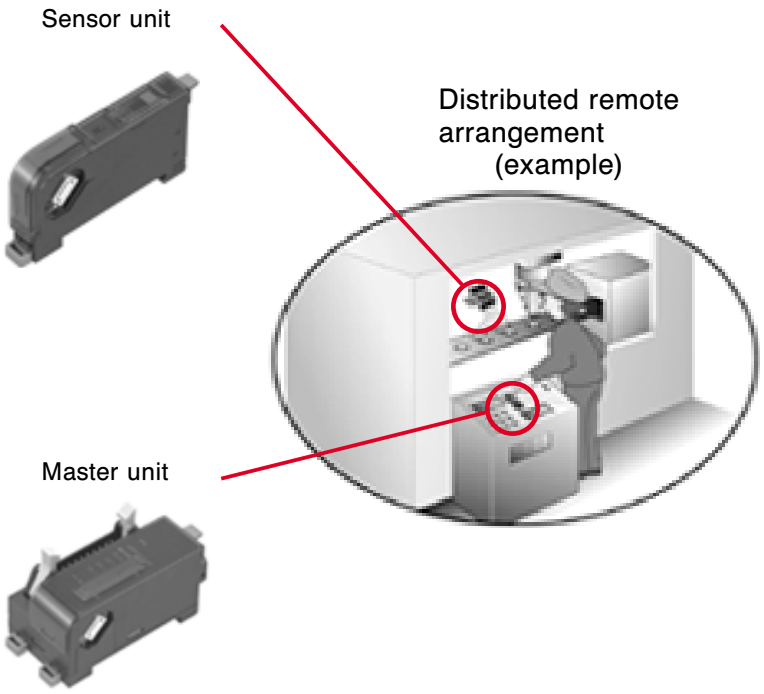
Connector Connection Type 16-unit Gang-mounting Sensors Strongly Support the Request for Wiring and Space Savings.
Distributed Remote Cluster Arrangement is a New Concept for Designing Equipment.

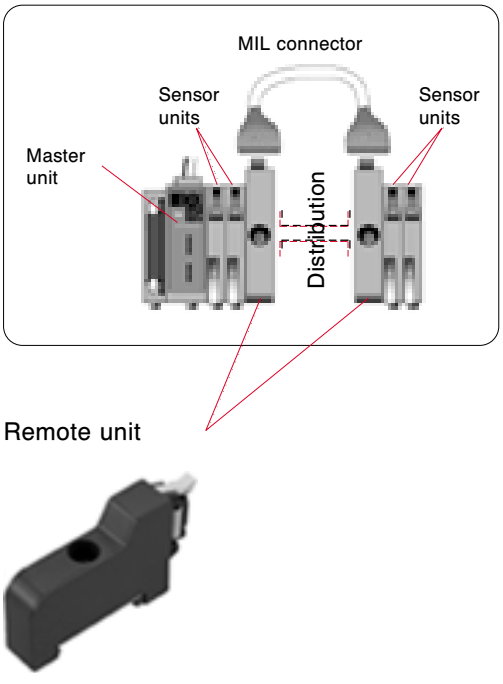
- *Connector connection type 16-unit gang-mounting:*
  Sensor Slave and Master units can be mounted on DIN rail and connected to each other by a slide connector in a single-touch method without requesting wiring work.
  MIL style connectors are used for batch connection except for power supply wiring. (Option exists for inclusion of power wiring too.)
- *The remote distribution arrangement system has removed the limitations in designing equipment caused by wiring arrangement of fibers.*
- *3-digit digital indication of the application contrast stability (margin between ON and OFF) when doing initial setting and incoming received light levels.*
- *Easy setting by a jog-dial switch.*
- *5 types of Programming Options for Setting Threshold.*
  2-position sensitivity, positioning, maximum sensitivity, BGS and full-auto tuning.
- *Mutual interference prevention function:*
  Side-by-side mounting is possible up to 4 fiber units.
- *Superior resolution using 5 gain levels options where one is automatically selected with the intent of providing the lowest hysteresis level where stable detection is possible.*



DISTRIBUTED REMOTE ARRANGEMENT

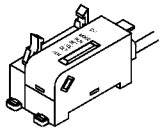
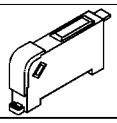
The **HPX-ET** enables both gang-mounting (master unit and sensor units are connected in series) and a distributed remote arrangement using remote units (can be separated between master unit and sensor units, and also between sensor units: maximum 5 clusters per Master due to resistance buildup). This distributed remote arrangement allows the wiring and location of the Master unit in a position close to the operator where programming and monitoring functions are more easily accomplished. It also allows the ability to locate the Slave sensor units where sensing functions need to be accomplished. The distributed remote arrangement can solve the problems of wiring arrangement for electical cabling and fiberoptic cables and will enable full flexibility to the designer for saving wiring, ease of use, and ability to use shorter fibercable lengths. Change out of faulty sensor units is also easily done by quick disconnection and programming through the Master as needed without having to rewire.



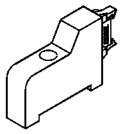


No. CP-PC-2199SE

AMPLIFIER UNIT ORDER GUIDE

Model	Shape	Supply voltage	Output mode	Operation mode	3-digit indicator	Selective five tuning ways	Setting delay timer	Mutual interference prevention	Catalog listing
Master unit		12 to 24Vdc	NPN open collector	depend on selectable-switch of Sensor unit	○	○	○	○	**HPX-ET1**
			PNP open collector						**HPX-ET2**
Sensor unit		Based on master unit		Light ON/ dark ON selectable	Based on master unit				**HPX-ETS**

REMOTE UNIT

Model	Shape	Application	Catalog listing
Remoto unit (Remote connections: Max. 5 locations Remote cable length: Max. 2 each)		(Male connector) Attach only at the right side for both the master and sensor unit.	**HPX-ETR1**
		(Female connector) Attach only at the left side for the sensor unit.	**HPX-ETR2**

AMPLIFIER UNIT SPECIFICATIONS

Model	Master unit		Sensor unit
Catalog listing	**HPX-ET1**	**HPX-ET2**	**HPX-ETS**
Supply voltage	12 to 24Vdc		Supplied from Master unit
Current consumption	60mA + (35mA × Number of Sensor unit)		35mA
Operation mode	—		Light-ON/Dark-ON switch selectable
Output mode	NPN transistor open collector	PNP transistor open collector	—
Control output	Output switching circuit: 50mA max. (resistive load), Output dielectric strength: 30V max., Voltage drop: 1V max. (at 50mA switching circuit)		—
Response time	1ms max.		
Sensitivity adjustment	Set by Master unit: (2-step, Position, Maximum sensitivity, BGS, Full-auto), (OP level adjust)		
Light emitter	—		Red LED
Display functions	Green digital display (1 to 16): Adless of Sensor units Orange digital display (−100 to 100): Receiving light level, Contrast margin, OP level, Delay timer Mode display: RUN, SET, ADJ, DLY, ALM		
Timer function	Set by Master unit: ON delay/OFF delay/instantaneous Delay time setting: 1 to 100msec at 1msec step, 100msec to 1sec at 100msec step)		
Ambient light immunity	—		Incandescent lamp: 5,000lux max. Sunlight: 20,000lux max.
Operating temperature range	−20 to +50°C (condensation not allowed) *		
Storange temperature range	−40 to +70°C (condensation not allowed)		
Humidity range	35 to 85% RH (condensation not allowed)		
Insulation resistance	20MΩ min. (at 500Vdc)		
Dielectric strength	1,000Vac, 50/60Hz for 1 minute between case and electrically live metals		
Vibration resistance	10 to 55Hz, 1.5mm peak-to-peak amplitude, 2hrs in X, Y and Z directions.		
Shock resistance	500m/s^2, 3 timers in X, Y and Z directions		
Wiring method	Voltage: Pre-leaded, Output: MIL connector (MIL-C-83503)		Connection to master unit by gang-mounting method or remote unit
Circuit protection	Reverse connection protection circuit, Output short-circuit protection circuit		

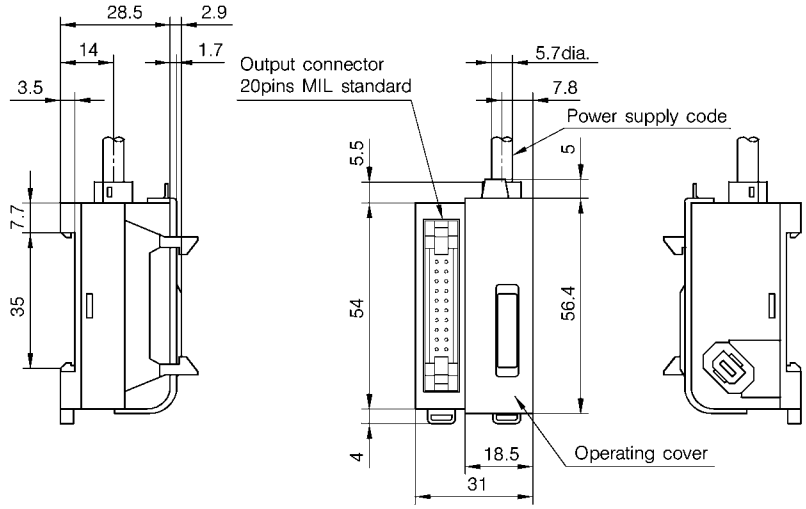
• Installation Instructions No.: **CP-UM-5155E**

* Operating temperature range depends on the numbers of gang-mounted sensor units.
1 to 4 units: −20 to +50°C, 5 to 6 units: −20 to +45°C, 7 to 16 units: −20 to +40°C

EXTERNAL DIMENSIONS

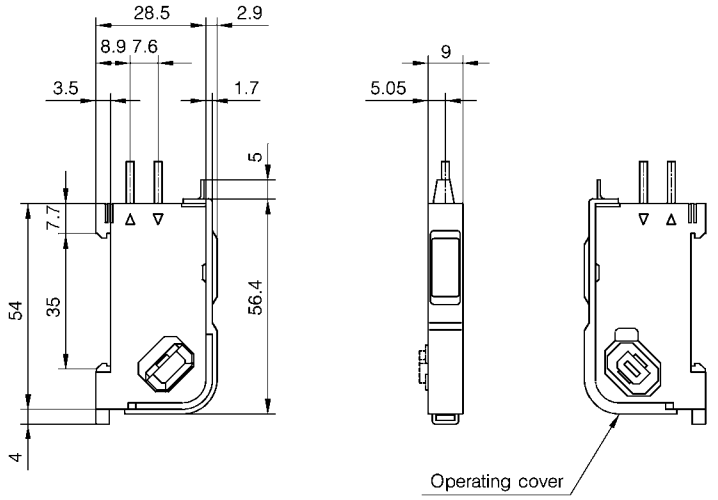
● Master unit (**HPX-ET1, HPX-ET2**)

(unit: mm)



Note:
1. Material
   Master unit body: PC/ABS alloy resin/dark gray
   Operating cover: PC resin/clear gray
2. Cord: Oil resistant
   5.8mm dia., 0.5mm^2 cross section
   Sheath color: Gray
3. Recommended connector (MIL-C-83503)
   AXM120415 (Matsushita)
   Applicable wire
   Strarded wire: pitch 1.27mm/conductor AWG #28 (7 units/0.127mm dia.)

● Sensor unit (**HPX-ETS**)

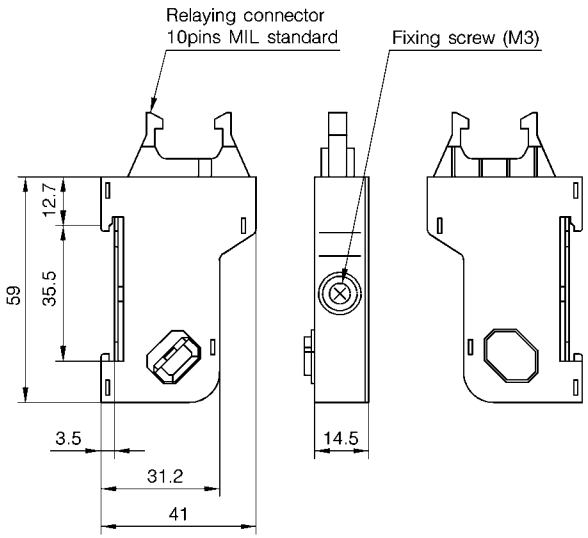


Note:
1. Material
   Sensor unit body: PC/ABS allorg/dark gray
   Operating cover: PC resin/clear gray

● Remoto unit

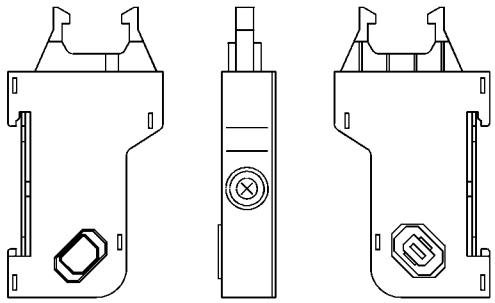
(unit: mm)

• **HPX-ETR1**



Note:
1. Material
   Sensor unit body: PC/ABS alloy resin/dark gray

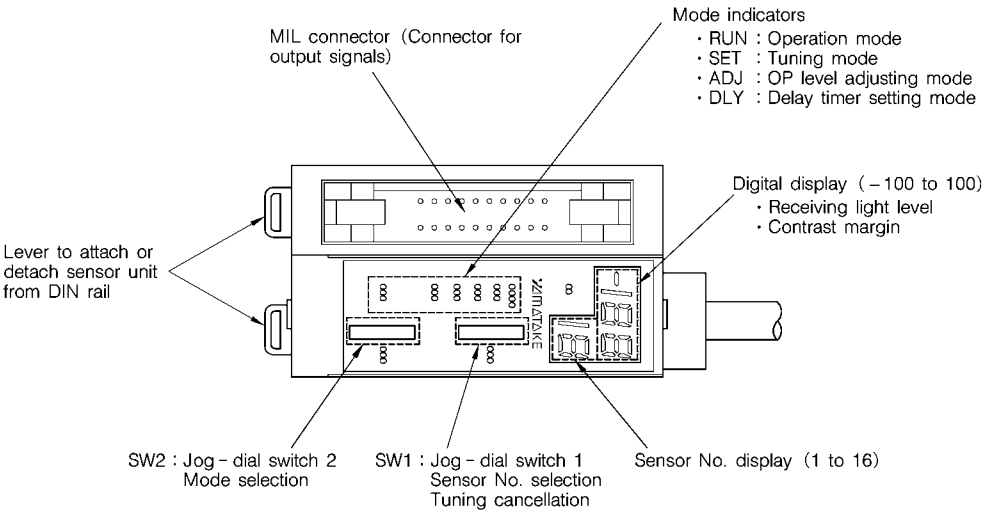
• **HPX-ETR2**



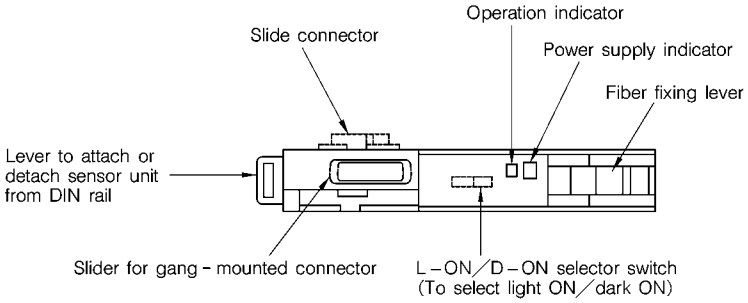
2. Recommended connector (MIL-C-83503)
   AXM110415 (Matsushita)
   Applicable wire
   Stranded wire: pitch 1.27mm/conductor AWG #28 (7 units/0.127mm dia.)

NAMES OF PARTS

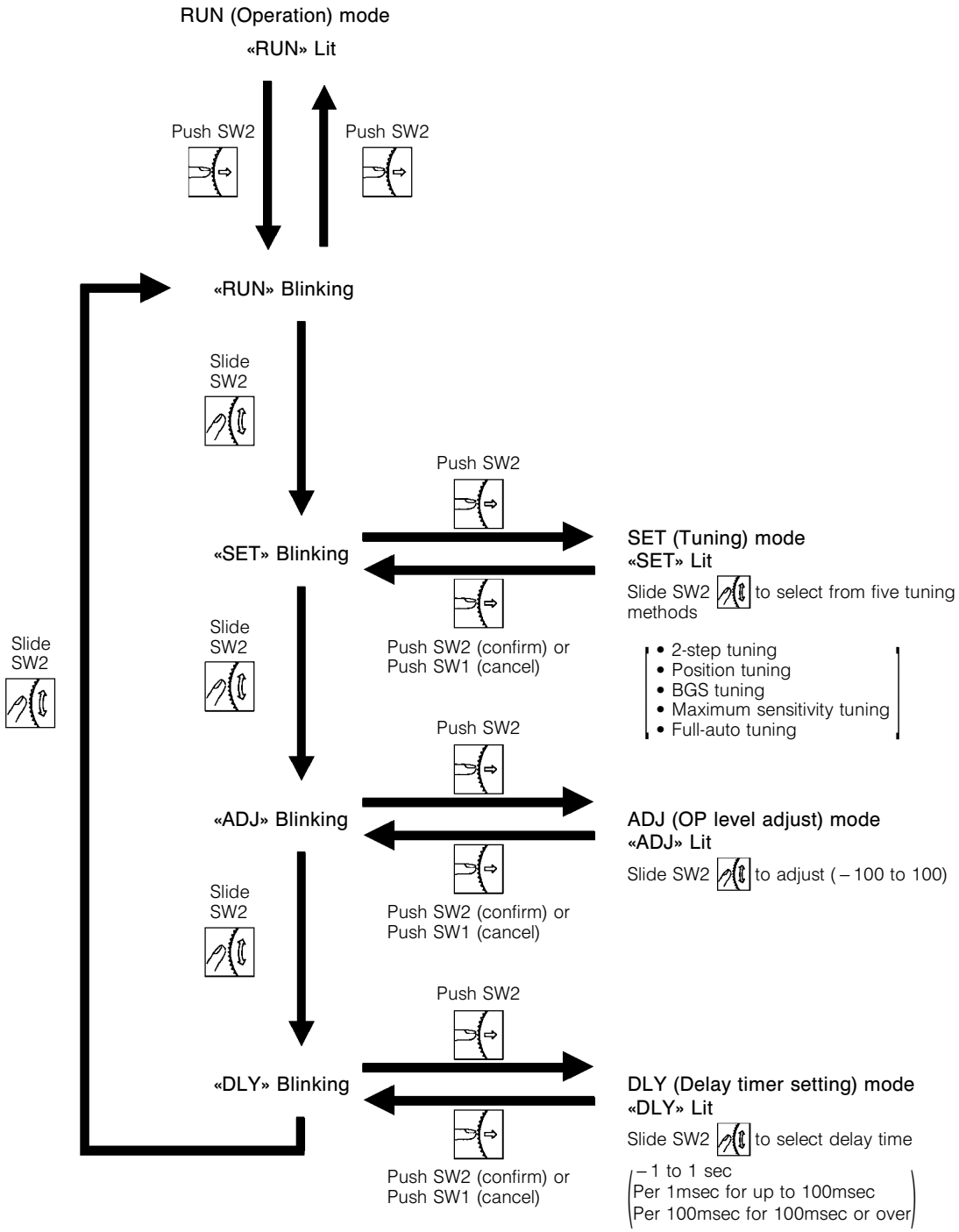
● Master unit



● Sensor unit



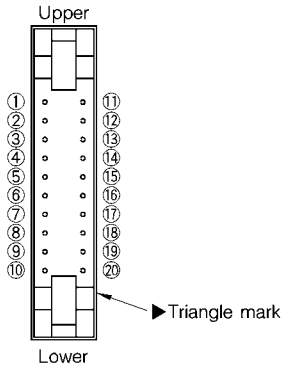
MODE SELECTION AND TUNING CHART



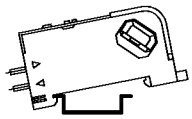
MASTER UNIT MIL CONNECTOR PIN ASSIGNMENT

Pin No.	Sensor unit No.	
	HPX-ET1	HPX-ET2
①	Out 1	
②	Out 2	
③	Out 3	
④	Out 4	
⑤	Out 5	
⑥	Out 6	
⑦	Out 7	
⑧	Out 8	
⑨	Vcc	0V
⑩	COM	

Pin No.	Sensor unit No.	
	HPX-ET1	HPX-ET2
⑪	Out 9	
⑫	Out 10	
⑬	Out 11	
⑭	Out 12	
⑮	Out 13	
⑯	Out 14	
⑰	Out 15	
⑱	Out 16	
⑲	Vcc	0V
⑳	COM	



MOUNING METHOD



• Remove side connector protection cover.

• Pull lever back from underneath Master and Sensor unit.

• Attach the gang-mounted Master and sensor units on DIN rail.

• Lock the attach or the detach lever underneath the unit.

• Remove the protection cover on sensor unit.

• Slide the slide connector from right to left and connect all sensor units.

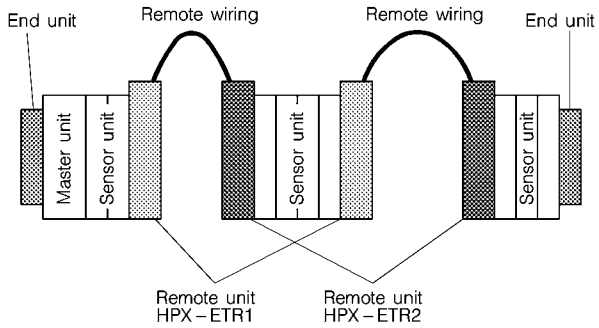
• Attach end units from both sides and fasten them.

• Last of all, attach a protection cover removed (5).

* When removing a sensor unit, first, move the slide connector of the sensor unit on the right side from left to right, then detach the connection and remove the sensor unit from the DIN rail.

Attention : Mount and dismount sensor units, only after switching the power OFF.

● Mounting method for remote units



• Refer to the above illustration, **ETR1** is always attached on the right side and **ETR2** is always attached on the left side.

• The remote unit is also the end unit, therefore fasten it by screws after mouning.

• The remote wiring must be connected to **ETR1** and **ETR2**.

• Remote wiring can be performed for max. 5 locations. Cable for each remote wring is max. 2m.

BASIC PRECAUTIONS

● Wiring

• Be sure to connect the photoelectric sensor to the power supply and load correctly.

• If a high-voltage cable or power cable is located near a photoelectric sensor, isolate the photoelectric sensor's cable or lay in a separate conduit to prevent surge or the influence of noise.

• Connect the cable securely to the connector using a crimp terminal.

• Use leads of 0.3mm^2 in cross-sectional area for extensions. The lead length should be kept to 100m at most. When connecting extensions, consider the possible influence of noise.

• If a switching power supply is used, ground its frame.

● Handling

• Do not swing a photoelectric sensor by its cable.

• Do not impact or damage the scanning head.

• Do not pull the cable of the photoelectric sensor with excessive force. The tensile strength of the cable is about 49N at 50cm from the conduit.

RESTRICIONS ON USE

This product has been designed, developed and manufactured for general-purpose application in machinery and equipment. Accordingly, when used in applications outlined below, special care should be taken to implement a fail-safe and/or redundant design concept as well as a periodic maintenance program.

- Safety devices for plant worker protection
- Start/stop control devices for transportation and material handling machines
- Aeronautical/aerospace machines
- Control devices for nuclear reactors

Never use this product in applications where human safety may be put at risk.

YAMATAKE

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Yamatake Corporation
Advanced Automation Company

International Business Headquarters
Totate International Building
2-12-19 Shibuya Shibuya-ku
Tokyo 150-8316 Japan
URL:http://www.yamatake.com

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