

# Autonics Sensor Controller PA-12 SERIES

## INSTRUCTION MANUAL



Thank you for choosing our Autonics product.  
Please read the following safety considerations before use.

### ■ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.  
※⚠ symbol represents caution due to special circumstances in which hazards may occur.

**⚠ Warning** Failure to follow these instructions may result in serious injury or death.  
**⚠ Caution** Failure to follow these instructions may result in personal injury or product damage.

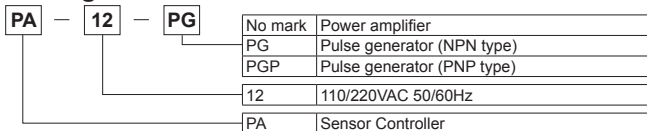
### ⚠ Warning

1. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)  
Failure to follow this instruction may result in fire, personal injury, or economic loss.
2. **Install on a device panel or DIN rail to use.**  
Failure to follow this instruction may result in electric shock or fire.
3. **Do not connect, repair, or inspect the unit while connected to a power source.**  
Failure to follow this instruction may result in electric shock or fire.
4. **Check 'Connections' before wiring.**  
Failure to follow this instruction may result in fire.
5. **Do not disassemble or modify the unit.**  
Failure to follow this instruction may result in electric shock or fire.

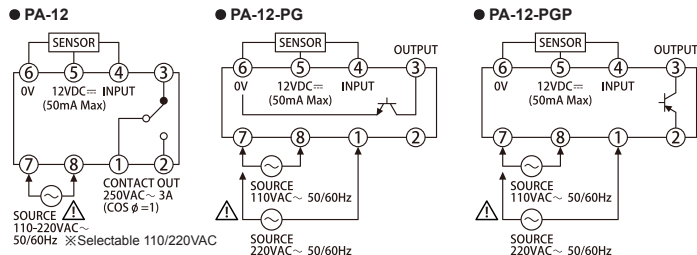
### ⚠ Caution

1. **Use the unit within the rated specifications.**  
Failure to follow this instruction may result in fire or product damage.
2. **Use dry cloth to clean the unit, and do not use water or organic solvent.**  
Failure to follow this instruction may result in electric shock or fire.
3. **Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**  
Failure to follow this instruction may result in fire or explosion.
4. **Keep metal chip, dust, and wire residue from flowing into the unit.**  
Failure to follow this instruction may result in fire or product damage.

### ■ Ordering Information



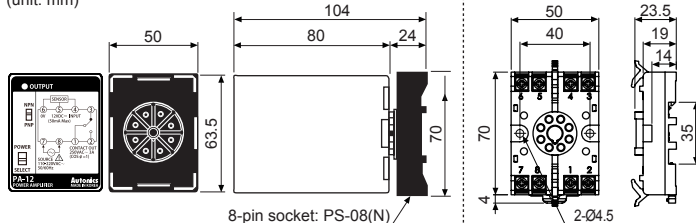
### ■ Connections



※The above specifications are subject to change and some models may be discontinued without notice.  
※Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

### ■ Dimensions

(unit: mm)



### ■ Specifications

Model	PA-12	PA-12-PG	PA-12-PGP
Type	Selectable NPN/PNP	NPN open collector only	PNP open collector only
Power supply	Selectable 110-220VAC~ 50/60Hz	110/220VAC~ 50/60Hz	
Power consumption	Approx. 4VA		
Power supply for sensor	12VDC± ±10% 50mA	12VDC± ±10% 30mA	
(Make sure that total consumption current shall not exceed sensor's power supply capacity when connecting a sensor.)			
Control output	<ul style="list-style-type: none"> <li>Relay contact output (Contact capacity : 250VAC~ 3A, 30VDC~ 3A resistance load, contact arrangement 1a1b)</li> <li>Life expectancy                             <ul style="list-style-type: none"> <li>Mechanical : Min. 10,000,000 operations</li> <li>Electrical : Min. 100,000 operations</li> </ul> </li> </ul>	NPN open collector output	PNP open collector output
Allowable input voltage: Max. 30VDC±, Rated current: Max. 50mA			
Input signal	NPN	Short-circuit impedance : Max. 1kΩ Residual voltage: Max. 2VDC Open-circuit impedance : Min. 100kΩ	—
	PNP	High level: 7-12VDC±, Low level: 0-5VDC	High level: 7-12VDC±, Low level: 0-5VDC
Input resistance	10kΩ	—	—
Response time	Input	Min. 0.2ms	—
	Output	Min. 10ms	—
Environment	Ambient temp.	-10 to 50°C	—
	Ambient humi.	35 to 85%RH	—
Unit weight	Approx. 269g		

※Environment resistance is rated at no freezing or condensation.

### ■ Operation Mode

#### ● PA-12

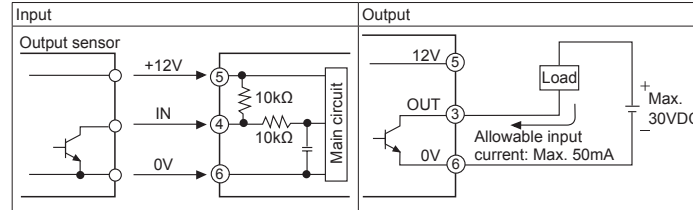
Mode	NPN	PNP
Input level	H L	H L
Relay output	N.O. N.C.	N.O. N.C.
Output display lamp LED	Light ON Light OFF	Light ON Light OFF

#### ● PA-12-PG/PGP

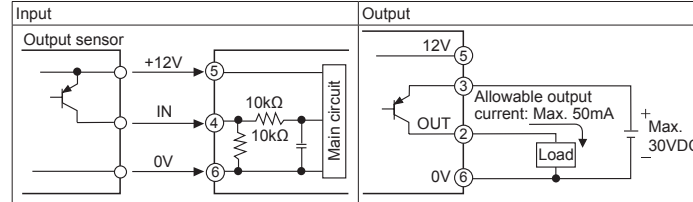
Division selection S/W	 : 20 division (1 to 99 divisions available)	※When selecting Re-start mode while operating, cut off the power and turn it on again. ※Delay Time: Approx. 30ms ※t: ON time for input signal (e.g.) When the signal of which input signal is 100Hz (ON: OFF=1:1) is inserted, 1/100Hz=10ms (ON=5ms, OFF=5ms). Since input signal's on time is 5ms, therefore, total delay time for output waveform becomes approx. 35ms(5ms+30ms). ※You should consider total delay time first when selecting the division. When division time is shorter than total delay time, output TR keeps staying ON state.
Power supply	ON OFF	
Sensor input	H L	
TR output (Open Collector)	ON OFF	
Output display lamp LED	Light ON Light OFF	

### ■ Function Diagram

#### ● PA-12-PG (NPN open collector)

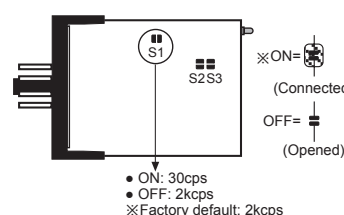


#### ● PA-12-PGP (PNP open collector)



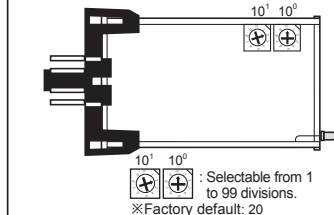
### ■ Counting Speed Selection

#### ● PA-12-PG/PGP



### ■ Division Selection Switch

#### ● PA-12-PG/PGP



### ■ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
2. Since the power for external sensor is without the output short over current protection circuit, do not short circuit 12V and 0V terminals.
3. Use the product, 0.1 sec after supplying power.
4. When supplying or turning off the power, use a switch or etc. to avoid chattering.
5. Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
6. Keep away from high voltage lines or power lines to prevent inductive noise.  
In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.  
Do not use near the equipment which generates strong magnetic force or high frequency noise.
7. This unit may be used in the following environments.
  - ①Indoors (in the environment condition rated in 'Specifications')
  - ②Altitude max. 2,000m
  - ③Pollution degree 2
  - ④Installation category II

### ■ Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connector/Socket
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, Co<sub>2</sub>, Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate) Meters
- Display Units
- Sensor Controllers

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