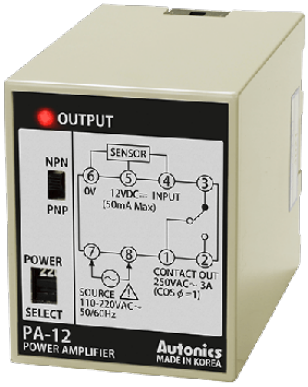
Autonics

8-Pin Plug Sensor Controllers



PA-12 Series

PRODUCT MANUAL

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.
The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- 110 / 220 VAC~ dual voltage
- NPN / PNP input switch
- High contact capacity (250 VAC~ 3 A, 30 VDC⎓ 3 A resistive load)
- Socket plug-in type (8-pin)
- N.O. or N.C. relay output available

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow instructions may result in serious injury or death.

01. 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 personal injury, economic loss or fire.

02. Do not use the unit in the place where flammable / explosive / corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.
Failure to follow this instruction may result in explosion or fire.

03. Install on a device panel or DIN rail to use.
Failure to follow this instruction may result in fire or electric shock.

04. Do not connect, repair, or inspect the unit while connected to a power source.
Failure to follow this instruction may result in fire or electric shock.

05. Check 'Connections' before wiring.
Failure to follow this instruction may result in fire.

06. Do not disassemble or modify the unit.
Failure to follow this instruction may result in fire or electric shock.

⚠ Caution Failure to follow instructions may result in injury or product damage.

01. Use the unit within the rated specifications.
Failure to follow this instruction may result in fire or product damage.

02. Use a dry cloth to clean the unit, and do not use water or organic solvent.
Failure to follow this instruction may result in fire or electric shock.

03. Keep the product away from metal chip, dust, and wire residue which flow into the unit.
Failure to follow this instruction may result in fire or product damage.

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Since the power for external sensor is without the output short over current protection circuit, do not short circuit 12 V and 0 V terminals.
- Use the product, 0.1 sec after supplying power.
- When supplying or turning off the power, use a switch or etc. to avoid chattering.
- Switch or circuit breaker should be installed nearby users for convenient control.
- 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.
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category II

EAC

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

PA	-	12	-	❶

❶ Type
No mark: Power amplifier
PG: Pulse generator (NPN)
PGP: Pulse generator (PNP)

Product Components

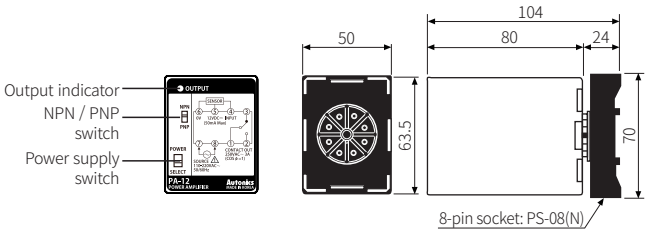
- Product
- Instruction manual

Sold Separately

- 8-Pin socket: PS-08(N)

Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.
- This dimensions shows PA-12 and it may differ by model.



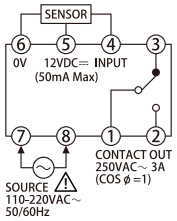
Specifications

Model	PA-12	PA-12-PG	PA-12-PGP
Type	NPN / PNP switching	NPN open collector	PNP open collector
Power supply	110 / 220 VAC~ switching 50 / 60 Hz	110 / 220 VAC~ 50 / 60 Hz	
Power consumption	≈ 4 VA		
Sensor supply power [01]	12 VDC⎓ ± 10 % 50 mA	12 VDC⎓ ± 10 % 30 mA	
Control output	Relay contact output [02]	NPN open collector output	PNP open collector output
	Contact capacity: 250 VAC~ 3 A, 30 VDC⎓ 3 A resistance load, Contact configuration: 1 a 1 b	Allowable input voltage: ≤ 30 VDC⎓ Rated current: ≤ 50 mA	
NPN input signal	Short-circuit impedance : ≤ 1 kΩ Residual voltage : ≤ 2 VDC⎓ Open-circuit impedance : ≥ 100 kΩ	Short-circuit impedance : ≤ 1 kΩ Residual voltage : ≤ 2 VDC⎓ Open-circuit impedance: ≥ 100 kΩ	-
PNP input signal	High: 7 - 12 VDC⎓ Low: 0 - 5 VDC⎓	-	High: 7 - 12 VDC⎓ Low: 0 - 5 VDC⎓
Input resistance	10 kΩ	-	-
Response time	Input: ≥ 0.2 ms, Output: ≥ 10 ms		
Ambient temperature	-10 to 50 °C (no freezing or condensation)		
Ambient humidity	35 to 85 %RH (no freezing or condensation)		
Approval	EAC		
Unit weight	≈ 269 g		

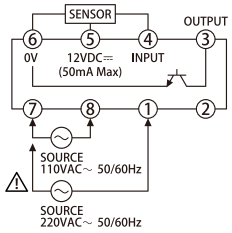
01) Make sure that total consumption current shall not exceed sensor's power supply capacity when connecting a sensor.
02) Electrical life cycle: ≥ 10,000,000 operations, Mechanical life cycle: ≥ 100,000 operations

Connections

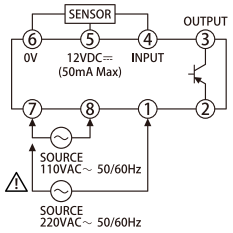
■ PA-12



■ PA-12-PG

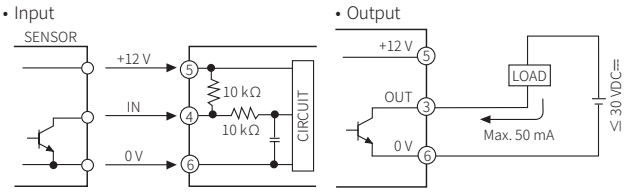


■ PA-12-PGP

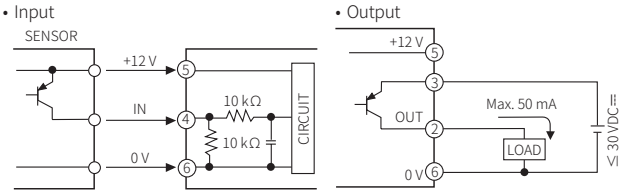


Function Diagram

■ PA-12-PG: NPN open collector



■ PA-12-PGP: PNP open collector



Operation Mode

■ PA-12

		NPN	PNP
Input level		H / L	H / L
Relay output	Normally open	H / L	H / L
	Normally closed	H / L	H / L
Output indicator		ON / OFF	ON / OFF

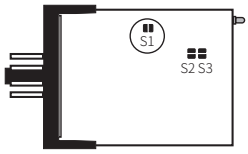
■ PA-12-PG / PGP

- When selecting re-start mode while operating, re-supply power.
- 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.
- E.g.) When the signal of which input signal is 100 Hz (ON: OFF=1:1) is inserted, 1/100 Hz = 10 ms (ON = 5 ms, OFF = 5 ms).
  Since input signal's on time is 5ms, therefore, total delay time for output waveform becomes ≈ 35 ms (5 ms + 30 ms).

Power supply	ON / OFF
Sensor input	H / L — 1 2 19 20 1 2 19 20 1 2 19 20
Transistor output	t: Delay time • t: ON time for input signal • Delay time: ≈ 30 ms ON / OFF
Output Indicator	ON / OFF

[PA-12-PG / PGP] Function Setting

■ Counting speed selection



No.	ON	OFF
S1	30 cps	2 kcps (factory default)

■ Division selection

- Setting range: 1 to 99 (factory default: 20)