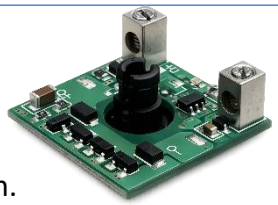
# Solenoid Valve Power Saving Module(PWM)

Model: PA Series



## Product Features

- **Energy Efficient:** Significantly reduces power consumption.
- **Low Temperature Rise:** Lowers coil temperature by over 50% to extend lifespan.
- **Stable Performance:** Built-in temperature compensation for reliable operation.
- **Circuit Protection:** Integrated overcurrent fuse for enhanced safety.
- **Flexible Settings:** Adjustable holding current and PWM duty cycle.
- **Fast Response:** Suitable for high-frequency switching applications.
- **Certified Quality:** RoHS and CE compliant.

## Product Description

The PA (PWM) Series is a compact PCBA-based module designed to enhance the performance, reliability, and service life of solenoid valves. Utilizing advanced Pulse Width Modulation (PWM) technology, the module optimizes coil power consumption while ensuring reliable valve actuation and holding performance.

When the solenoid valve is energized, the PA Series initially supplies sufficient current to ensure rapid and dependable valve activation. Once the valve has reached its operating position, the module automatically reduces the coil holding current through PWM control. This significantly lowers power consumption and coil temperature, helping to extend coil life and improve overall system efficiency without affecting normal valve operation.

The PA (PWM) Series is engineered with a low-noise PWM control circuit that minimizes electromagnetic emissions and switching noise, making it suitable for a wide range of industrial automation applications. By reducing heat generation within the solenoid coil, the module also helps improve system reliability and reduce maintenance requirements.

To accommodate various coil specifications and valve characteristics, key operating parameters can be optimized to meet specific application requirements. Depending on the electrical characteristics of the solenoid valve and coil, the PA (PWM) Series can provide different levels of energy savings while maintaining stable and consistent valve performance.

## Product Applications

- Solenoid valves
- Magnetic Contactor
- Electronic locks
- Electromagnets
- Relays

## Product Function

- Operating Voltage Range: 12/24VDC (-10% / +10%)
- Pulse Output Current: Max. 1200mA
- Continuous Output Current: Max. 500mA
- Adjustable Energy-Saving Rate
- Adjustable Energy-Saving Activation Time: 300~999ms (+/-10%)
- Low Noise, No Magnetic Loss, Reduced Coil Temperature
- Operating Temperature: -20°C ~ 60°C

## Electrical Parameter

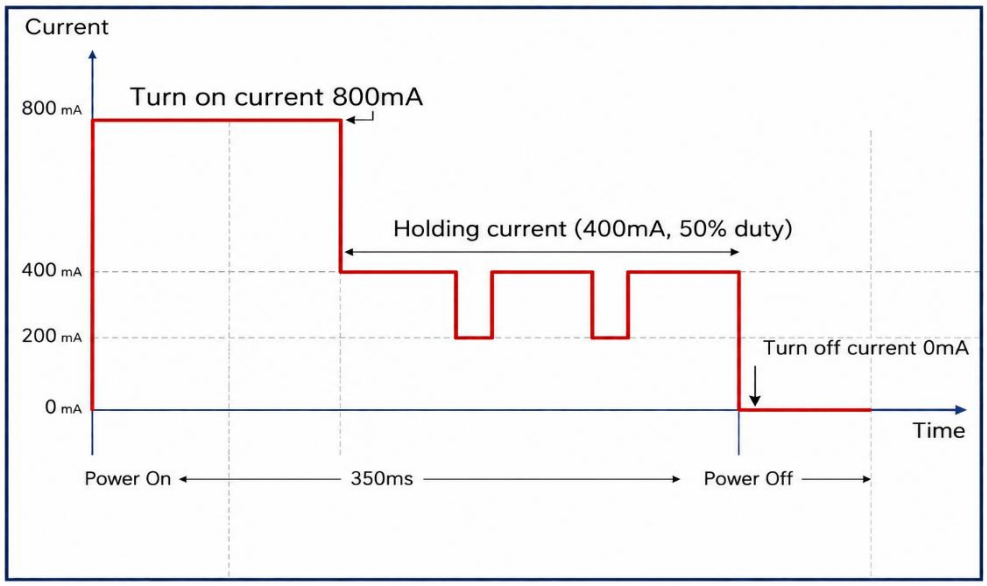
MIT A type (24V , 0~60 degee C)

| parameter | | minimum | maximum | unit |
|---|---|---|---|---|
| Power Supply On | | 21.6 | 26.4 | V |
| Maximum pulse current | | | 1.2 | A |
| Maximum cont. current | | | 0.5 | A |
| Allowed coil resistance | | full range | | Ohm |
| pull in time | | 1 | 999 | mS |
| holder power | 5W | 4500 | 5500 | mW |
| | 6W | 5400 | 6600 | |
| | 7W | 6300 | 7700 | |
| | 8W | 8200 | 8800 | |
| Operating Frequency | | 500 | | Hz |
| Duty Cycle | | 0~80% | | % |
| ESD protection | | 4000 | | V |
| Operating Temperature | | -20 | 60 | ℃ |

**Note1** . If your application is out of the specifications listed above. We can then customize the driver to meet your most demanding needs.
**Note2.** build in fuse on board to be safety issue upon surge power occur.
**Note3.** VR version can adjust holding current from 25% ~ 75% power saving : CW to increase duty(current down) , CCW to reduce duty(current up)

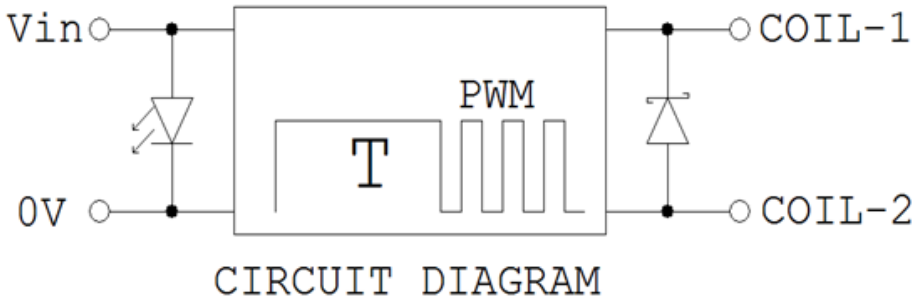
**Note4.** NOT be able to work by incorrect coil , example : 24V input but 12V coil/choke specification selected that is not working correctly

## Energy-Saving Mode Main Function



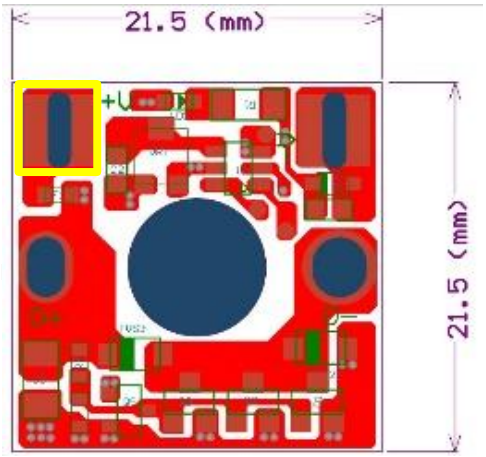

Topology Example (50% duty)

## Major Circuit Diagram




**Surge Protection , LED x 1(power on)**

## PCBA Module Dimension

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*yellow(or white) frame is V+ Unit: mm

## Ordering Information

### PA-VV-WW-SS-PWM

**VV:** Input Voltage range [unit:V]

| VV value | 24 |
|---|---|
| Vcc min [ V ] | 21.6 |
| Vcc max [ V ] | 26.4 |

**WW**: Duty cycle [ % ]

| WW value | 30 | 40 | 50 |
|---|---|---|---|
| Duty Cycle [ % ] | 30 | 40 | 50 |

**SS:** Translate Time (second stage time)[unit:ms]

| SS value | 35 | 50 | 99 |
|---|---|---|---|
| Delay time | 350ms | 500ms | 999ms |

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