Series 11 Application Notes

Introduction

In liquid process systems, precise temperature control is critical for safety, efficiency, and product quality. Compac Engineering's Series 11 temperature switches offer a reliable solution, especially in challenging chemical environments. Their compatibility with robust thermoplastics like Polypropylene, Acetal, and PVDF makes them uniquely suited for applications where traditional metal-encased switches may fail. These switches combine chemical resistance, modularity, and bimetallic sensing principles into a compact and dependable form factor for OEM design engineers.

Series 11 Overview

The Series 11-800 temperature switches are designed for OEM applications requiring dependable temperature monitoring. Key features include:
- Bimetallic Sensing Element: Uses a bi-metallic strip that responds to temperature changes by bending, actuating the switch contacts.
- Preset Temperature Set Points: Available in various fixed set points, accommodating a range of application needs.
- SPST Contacts: Single Pole Single Throw contacts that either open or close on temperature rise, depending on the model.
- Enclosure Materials: Offered in Polypropylene (PP), Acetal (POM), and PVDF (Kynar), each with distinct advantages in chemical resistance and mechanical properties.

Material Compatibility

The choice of enclosure material is crucial for ensuring the longevity and reliability of temperature switches in liquid environments:
- Polypropylene (PP): Offers excellent chemical resistance to a broad range of acids and bases, making it suitable for general-purpose applications.
- Acetal (POM): Known for its high mechanical strength and dimensional stability, ideal for applications requiring durability.
- PVDF (Kynar): Provides superior resistance to aggressive chemicals and high temperatures, suitable for demanding chemical processing environments.

Application Areas

Series 11 temperature switches are applicable in various industries:
- Chemical Processing: Monitoring and controlling temperatures in tanks and pipelines handling corrosive substances.
- Water Treatment: Ensuring optimal temperatures in filtration and purification systems.
- Food and Beverage: Maintaining required temperatures in processing and storage equipment.
- Pharmaceuticals: Controlling temperatures in reactors and storage vessels to ensure product integrity.
- HVAC Systems: Regulating temperatures in heating and cooling systems for energy efficiency.

Use Case Scenarios

1. Acid Bath Overheat Protection (PVDF Enclosure)
Industry: Chemical Processing
Scenario: Electroplating tanks filled with hydrochloric acid require protection against overheating.
Solution: A Series 11-800-KR with a 70°C setpoint is mounted directly into the tank. When temperature exceeds the limit, it cuts off heater power via relay.

2. Filter Housing Freeze Prevention (Polypropylene Enclosure)
Industry: Water Treatment
Scenario: Outdoor filter housings risk freezing in winter, leading to cracks and blockages.
Solution: A Series 11-800-PP with a 5°C setpoint is installed to trigger a heater or pump when temperature drops.

3. Cooking Oil Heater Cutoff (Acetal Enclosure)
Industry: Food Processing
Scenario: Cooking oil in fryers needs overheat protection.
Solution: A Series 11-800-AC with a 90°C cutoff disables the heater when oil temperature exceeds the safe limit.

4. Chemical Mixing Tank Interlock (PVDF Enclosure)
Industry: Pharmaceuticals
Scenario: Active ingredients are added only when solvent reaches 50°C.
Solution: A Series 11-800-KR closes a valve circuit upon reaching temperature, ensuring proper mixing.

5. Heat Exchanger Loop Shutdown (Acetal Enclosure)
Industry: HVAC
Scenario: Cooling loops need protection from low return water temperatures.
Solution: A Series 11-800-AC with a 10°C setpoint opens the pump circuit to prevent freezing.

6. CIP System Water Temperature Confirmation (Polypropylene Enclosure)
Industry: Beverage Processing
Scenario: Clean-in-place systems require 60°C water to start.
Solution: A Series 11-800-PP with a 60°C setpoint enables rinse cycle only when conditions are met.

Comparison to Other Solutions

While many temperature switches are available in the marketplace, very few offer the range of chemically compatible thermoplastics and integrated OEM-friendly designs found in the Series 11. Other manufacturers often limit their products to metal enclosures, which restricts their use in corrosive liquid environments. Even among those offering plastic variants, the breadth of chemical resistance, modular installation flexibility, and range of preset trip points provided by Compac's Series 11 is unmatched.

Conclusion

Compac Engineering's Series 11 temperature switches are a uniquely versatile solution for liquid process temperature control. They are built to withstand a wide array of chemical and environmental conditions, thanks to the availability of three proven enclosure materials. Whether for freeze protection, overheat safety, process interlocking, or sanitation control, Series 11 delivers both performance and value. OEM engineers seeking robust, chemically compatible, and modular temperature switch systems will find the Series 11 family a superior choice for liquid system applications.