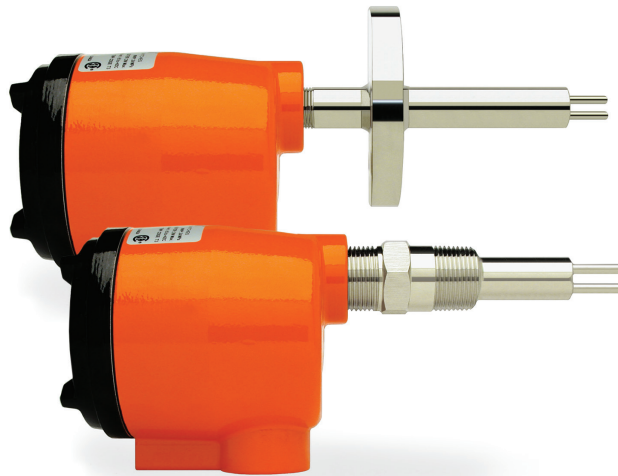


Application Considerations



CLASSIC[®] Series

Thermal Flow, Level, Interface &
Temperature Switches & Transmitters



CRN
Canadian
Registration
Number

KAYDEN[®]
Helping the World Switch[®]

Application Considerations - Flow

Ideal Process Conditions

Liquids

- Consistent process composition & temperature
- Sufficient straight run flow profile (minimizes turbulence)
- Recommended minimum of 5 pipe diameters from any disturbance, preferably 15 pipe diameters.

Air & Gas

- Consistent process composition and temperature, ideally clean and dry but not necessarily so long as process is consistent.
- Sufficient straight run flow profile (minimizes turbulence)
- Recommended minimum of 5 pipe diameters from any disturbance, preferably 15 pipe diameters.

Slurries

- Consistent process composition & temperature
- Sufficient straight run flow profile (minimizes turbulence)
- Recommended minimum of 5 pipe diameters from any disturbance, preferably 15 pipe diameters.

Emulsion

- Consistent process composition & temperature
- Sufficient straight run flow profile (minimizes turbulence)
- Recommended minimum of 5 pipe diameters from any disturbance, preferably 15 pipe diameters.

Undesirable Process Conditions

Liquids

- Inconsistent process composition or temperature
- Insufficient straight run
- Turbulence

Air & Gas

- Inconsistent process composition or temperature
- Wet or saturated air/gas

Slurries

- Inconsistent process composition or temperature
- Insufficient straight run
- Turbulence

Emulsion

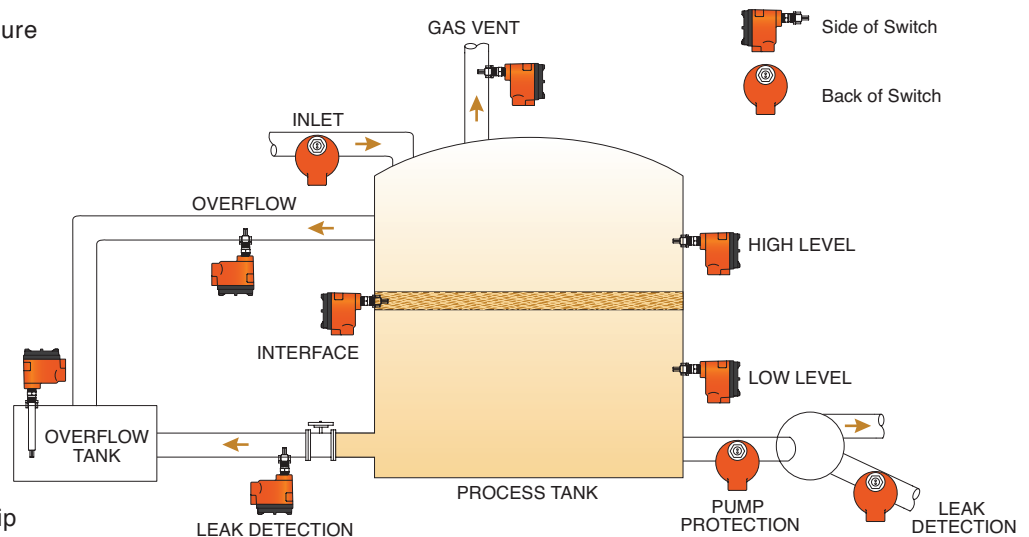
- Inconsistent process composition & temperature
- Insufficient straight run
- Turbulence

Solids

- Dry granulated processes are NOT good candidates for thermal switches

Application Principles - Flow, Level, Interface & Temperature

- ✓ Consistent process composition
- ✓ Consistent process temperature
- ✓ Clean or dirty process
- ✓ Liquids
- ✓ Dry air & gas
- ✓ Slurries
- ✓ Emulsion
- ✓ Aerated Fluids
- ✗ Large temperature swings
- ✗ Wet or saturated air/gas
- ✗ Solids
- ✗ Sediment covering sensing tip



Application Considerations - Level

Ideal Process Conditions

Liquids

- Consistent process composition & temperature
- Non-turbulent applications

Slurries

- Consistent process composition & temperature

Emulsion

- Consistent process composition & temperature

Undesirable Process Conditions

Liquids

- Inconsistent process composition
- Turbulence
- Large temperature swings

Slurries

- Inconsistent process composition
- Turbulence
- Large temperature swings

Emulsion

- Inconsistent process composition
- Turbulence
- Large temperature swings

Solids

- Dry granulated processes are NOT good candidates for thermal switches

Application Considerations - Interface

Ideal Process Conditions

Liquids

- Liquid to Liquid
- Consistent process composition & temperature
- Non-turbulent applications
- Large differential in thermal conductivities

Air or Gas to Liquid

- Consistent process composition & temperature
- Non-turbulent applications
- Dry gas

Emulsion

- Consistent process composition & temperature
- Large differential in thermal conductivities

Undesirable Process Conditions

Liquid to Liquid

- Inconsistent process composition or temperature
- High aeration
- High turbulence
- Small differential in thermal conductivities

Air or Gas to Liquid

- Inconsistent process composition or temperature
- High turbulence

Emulsion

- Inconsistent process composition or temperature
- High aeration
- High turbulence
- Small differential in thermal conductivities

Solids

- Dry granulated processes are NOT good candidates for thermal switches

Application Considerations - Temperature

Ideal Process Conditions

- Consistent Processes
- Process Temperature -55°C to +200°C

Undesirable Process Conditions

- Process Temperature < -55°C or > +200°C

GENERAL INSTALLATION GUIDELINES

Kayden electronics are designed to be universal for flow, level, interface and temperature applications and with most liquids, gases and slurries. The user can take advantage of this flexibility through:

- Correct setup of the electronics and
- Proper physical installation of the sensor.

Location:

- Consider the need for easy access in order to view the operation and make any required field adjustments.
- Provide at least 12 inches (30 cm) clearance if possible to allow access for setup and viewing after installation.

Shock and Vibration:

- Install the switch/transmitter so as to minimize any effects due to vibration, shock and extreme temperatures.

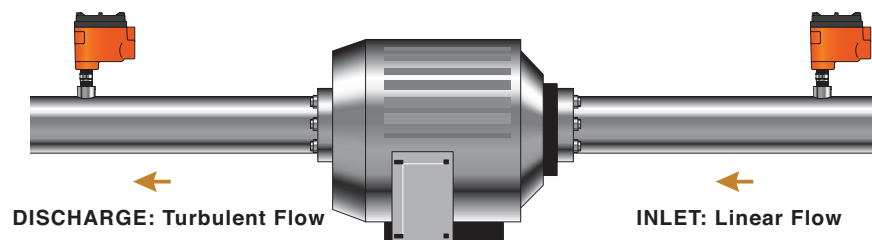
Temperature:

- The continuous operating temperature limits of the Electronics Module is -55°C to $+65^{\circ}\text{C}$ (-67°F to $+149^{\circ}\text{F}$). Ambient temperatures in excess of $+65^{\circ}\text{C}$ ($+149^{\circ}\text{F}$) require the electronics to be mounted remotely from the sensor. Consult kayden.com or the factory for more information.
- The continuous operating temperature limits of the sensors are -45°C to $+200^{\circ}\text{C}$ (-50°F to $+392^{\circ}\text{F}$).

Turbulence / Interference:

- Pumps, fans, valves, or pipe bends of 90° or more will cause turbulence or significant variance in the flow which will affect the repeatability of the switch/transmitter. Care should be taken to minimize this possibility.
- For Pump Flow/No-Flow detection the best/preferred installation point is on the inlet side of the pump. The discharge side will have turbulence, reverse flow and an undeveloped flow profile. These factors will greatly reduce repeatability and accuracy.
- Keep the sensor away from any devices that may cause physical damage such as: agitators, valves, injectors, etc.

Note: Many times, especially when replacing a different type of instrument, the installation point is predetermined and is difficult to change. Kayden switches/transmitters have specific design features that allow them to perform well even in difficult locations and applications. Please consult your local representative or Kayden for questions or installation / setup recommendations.



Note: For full installation instructions refer to the CLASSIC Series Product Manual on kayden.com