Pipeline Pump Seal

Leak Detection

Application Data Sheet
Application: Pump Mechanical Seal Leak Detection

Product: Kayden Classic 812 Series Flanged Thermal Dispersion Flow, Level, Interface & Temperature Switch & Transmitter

Description:
Flow and liquid level detection in drain line systems.

Problem:
Pumps require a form of mechanical seal, these seals will eventually break down and leak. Determining the point of failure is achieved by routine monitoring of the seal. Seal leak can be tolerated by directing the fluid into a recovery system by use of a drain line that directs the fluid into a storage container.

How is it determined when the leak is occurring and to what degree. The Kayden CLASSIC 800 Series Flow, Level, Interface and Temperature Switch/Transmitter will help you in determine whether or not to shut down the pump or send out a maintenance crew to service the mechanical seal.

Solution:
A common “Pipeline Leak Detection” setup for No Flow Condition, Pump Protection:

- Staff can monitor the storage container and recover the leaked fluid, however, the storage container will quickly be overwhelmed if the seal fails and floods the recovery system.
- Monitor inside the drain to detect if there is a fluid present and if so inform the relevant party.
- Monitor the liquid level in the drain pipe while monitoring the flow rate. It is now possible to choose both an alarm point and a shut-down point using the Kayden CLASSIC 800 Series Switch/Transmitter.
Application Data Sheet

Kayden CLASSIC 812

CLASSIC 812 with Customer Specified T

Customer Specified T

Dependent on flange size

1.25 Nom (2.67 Nom.)

4.26 (10.82)

4.75 (12.07)

8.60 Max (21.84 Max)

1.50 Min (3.81 Min)

4.30 Max (10.92 Max)

4.25 Max (10.80 Max)

Telematic.com
**Application Data Sheet**

**CLASSIC™ 812 Flanged**

- Flanged Process Connections - 316 SS sensor standard
- Exotic Alloys, Custom ‘U’ Lengths and Remote Mounted Electronics Available
- Digital Microprocessor Technology - Settings configurable by user for Flow, Level, Interface & Temperature Sensing
- No Jumpers - All Configurable Options are stored in Non-Volatile Memory
- FM Explosion-proof Class I, Div. 1, Groups B, C & D
- CSA/ANSI UL Flameproof Class I, Div. 1, Groups B, C & D
- 316 SS & Exotic Alloy versions designed to ASME Section VIII Div. 1 2007 Latest Addenda and/or to be inserted in system complying with ASME/ANSI B31.3-2006 +2007 Addenda. Canadian Registration Number (CRN): 0F09437.2

**Display Panel & Intelligent User Interface**

The KAYDEN CLASSIC 812 Series Electronics Module is designed for quick and easy setup.

**Display Panel Indicators:**
- Relay 1 & 2 / Set Point 1 & 2
- Fault Alarm
- Run Mode
- Start-up Bypass Timer (for pump control)
- LED Bar Graph for Flow Rate, Level or Interface Indication

**Configuration Mode Features:**
- Adjustable Sensitivity
- Zero & Span Adjustment
- Modbus Addressable

**Electronics Modules Feature:**
- Easy setup; no jumpers or trim pots
- Continuous Self-test Diagnostics with Fault Indicator
- Temperature Compensation
- Universal Power 12-24 VDC & 115-230 VAC standard
- Two SPDT Relays - independently adjustable
- 4-20 mA Analog Output
- “Smart Heater” function for power economy and increased heater life
- Start-up Bypass Timer (for pump control)

**Applications:**

[Diagram of process tank with various sensors and indicators]
### Application Data Sheet

#### Pipeline Leak Detection

**Thermal Dispersion**

- **Sensor Type**
  - R: -45°C to +200°C (-50°F to +392°F) Continuous Service
  - A: 316 Stainless Steel
  - X: Titanium Gr. 2
  - T: Hastelloy C-276

- **Process Connection - Flange Type**
  - A: Raised Face
  - B: RTJ - Ring Type Joint

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- **Flange Material**
  - A: 316 Stainless Steel
  - X: Titanium Gr. 2
  - T: Hastelloy C-276

- **Insertion 'U' Lengths**
  - Custom 'U' Lengths: Use 4 digits preceded by an 'I' (i.e. 3.5" 'U' = I0035)

- **Input Power**
  - 12-24 VDC and 115-230 VAC, 50 to 60 Hz

- **Electronics**
  - Microprocessor Controlled with User Interface.
  - Two SPDT sealed relay contacts. Modbus via RS-485. 4-20 mA current loop.

- **Local Enclosure**
  - Flameproof - Aluminum

- **Cover - For Local Enclosure**
  - B: Blind Cover - Flameproof
  - G: Glass Lens Cover - Flameproof

- **Remote Electronics Enclosure & Cover**
  - 0A: Not Required
  - 1B: Blind Cover - Flameproof
  - 1G: Glass Lens Cover - Flameproof

- **Agency Approvals**
  - UL & CSA
  - UL, CRN & CSA
  - FM

- **Language**
  - English

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Please refer to telematic.com for current specifications and configurations.

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Model Number Legend

Doc.#: ML-812-004-005
Applications:
- Flow, Level, Interface & Temperature

Process Connections:
- Flanged

Insertion ‘U’ Lengths:
- Custom Lengths:
  - Available in 1/2” or 1 cm increments
  - Min. 1.2” - Max. 120” (3.0 - 305 cm)

Wetted Materials:
- 316 Stainless Steel standard
- Titanium Gr. 2, Hastelloy® C-276, Monel® 400, Inconel® 600, Alloy 20, Nickel 200

Enclosure Material:
- Copper-free aluminum
  (does not exceed 0.4% copper)
- Powder coated Polyester TGIC
  (polyester triglycidyl isocyanurate)
- NEMA 4X / Type 4 / IP55
- 1” FNPT Conduit Connection
- Buna O-ring on Cover

Temperature Range – Continuous Service:
- Sensors:
  - -45°C to +200°C (-50°F to +392°F)
- Electronics:
  - -55°C to +65°C (-67°F to +149°F)
  - **Note:** For temperatures above +65°C (+149°F) electronics must be remotely mounted.
- Storage:
  - -55°C to +75°C (-67°F to +167°F)

Operating Pressure - Sensor:
- Flanged Style:
  - Maximum Working Pressure: per flange rating

Switch / Transmitter Switch Point Range
- Water-based Liquids:
  - 0.01 to 3.0 ft./sec. (0.003 to 0.9 meters/sec.)
- Hydrocarbon-based Liquids:
  - 0.01 to 5.0 ft./sec. (0.003 to 1.5 meters/sec.)
- Gases:
  - 0.25 to 254 sfps (0.076 to 77 smps)
  - Standard conditions: 21°C (70°F) at 14.7 psi (1 atm)

Display Panel Indicators:
- Relay 1
  - On steady when Relay 1 is energized
- Relay 2
  - On steady when Relay 2 is energized
- Fault
  - Indicates a self-test error or fault condition
- Set Point 1
  - On steady when viewing Set Point 1
- Set Point 2
  - On steady when viewing Set Point 2
- Run Mode
  - Flashing when switch is operating
- Bypass
  - Flashing when the Start-up Bypass Timer is active
- Thermal Signal
  - Displays Thermal Signal

The Thermal Signal increases as:
- Flow
  - The flow rate increases
- Level
  - The sensor is submerged
- Interface
  - The sensor is submerged by the second liquid of greater thermal conductivity
CLASSIC™ 812 Specifications

Accuracy:
- **Flow Service:** ±1% set point velocity over operating range of ±28°C (±50°F)
- **Level Service:** ±0.25 inches (±0.64 cm)

Response Time:
- Approximately 0.5 to 30 seconds

Remote Electronics Option:
- Maximum recommended cable length - 200 feet (60 m)
- Cable type - 24 AWG minimum - twisted pairs

Heater Power:
- Field adjustable to optimize performance

Input Power:
- Universal Power standard 12-24 VDC and 115-230 VAC, 50-60 Hz
- Consumption: Maximum: 4.8 watts (fully configured)

Outputs:
- 4-20 mA current loop
- Two (2) SPDT sealed relay contacts rated @ 5 amps resistive 230 VAC or 30 VDC Max.; individually adjustable

Start-Up Bypass Timer:
- Adjustable for 0 to 100 seconds

Communications:
- Modbus via RS-485

RCMS (Remote Control & Monitoring Software) Functions and Features:
- Display Panel Lock-Out
- Set Points configuration¹
- Relay Actuation Delay Timer
  - Independently configurable for both On and Off, increasing or decreasing
  - Adjustable from 0 - 5,000 seconds
- Start-up Bypass Timer¹
  - Adjustable from 0 - 100 seconds
- Relay Mode Configuration¹
  - Energized above or below set point
- Relay Temperature Mode Configuration
- Heater Power setting¹
- Zero and Span settings¹
- Analog (4-20 mA) output configuration¹
- View and Print Graphing (Trend) function
- Configuring settings; write to device, save to file and print
- Fault Event Log

Note:¹ Also configurable from Display Panel

Diagnostics:
- Primary watchdog circuit monitors microprocessor parameter anomalies
- Secondary watchdog circuit monitors microprocessor health
- Heater monitored for out-of-range conditions
- Fault Mode de-energizes relay(s) and halts power to the heater

Agency Approvals:
- **CSA - ANSI/UL**
  Class I, Div. 1, Groups B, C and D; Ex d IIB + H₂; AEx d IIB+H₂ (Class I, Zone 1, Group IIB + H₂.)
  T3; Enclosure Type 4 / IP55
- Single Seal Approval
  Per ANSI/ISA 12.27.01-2003
- **CRN**
  Canadian Registration Number
- **FM**
  Class I, Div. 1, Groups B, C and D;
  Class I, Zone 1, AEx d IIB+H₂
  T2D (Ta=75°C); T3 (Ta=65°C);
  Enclosure Type 4 / IP55

Weights and Dimensions:
- 812 Flanged: 1-1/2" 300#, 7” U length - 16 lbs (7.25 kg)
- Carton Size - 15” x 8” x 8” (38 cm x 20 cm x 20 cm)

Warranty:
- One (1) Year from shipment date from factory (see Terms & Conditions on kayden.com for details)
Ordering & Contact Information
Contact us with any inquiries you may have.

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Contact a Local Distributor

Distributors
Visit kayden.com to find a local Distributor near you. Kayden Distributors provide local inventory, technical support and service.

For more information about the CLASSIC 800 Series or any of Kayden’s other products, or to learn more about Kayden, please visit kayden.com