# K-TEK RESONATOR™ Model RS85

## Multi-option Vibrating Liquid Level Switch

**FEATURES:**

- Direct Replacement for Ultrasonic Gap Switches, RF Capacitance Switches, Float Switches and Other Technologies
- Immune to Coating or Build-Up on Sensor
- Robust Sensing Element
- ¾" and 1" (NPT, BSPT) Process Connections
  - ⇒ Temperatures between -40°F to 350°F (-40°C to 177°C)
  - ⇒ Pressures to 2000 psig (138 bar)
  - ⇒ Viscosity up to 20000 cP
  - ⇒ Density from 0.45 to 2.0
- Choice of International Flanges and Range of Tri-Clamp Fittings and Probe Finishes
- Single or Dual Compartment Housing with Viewing Cover
- Field Selectable Parameters with External Magnet or Internal Pushbuttons (Fail Safe, Density, Time Delay)
- Modular Electronics with Alarm Status LED
- Self-Test Diagnostics
- Extended Probe Lengths to 120 in (3048 mm)

**OPTIONS:**

- Hermetic Seal Probe and Housing
- Special Alloy Sensors (Hastelloy) and Halar/PFA Coating for Chemical Resistance
- Remote Mount Electronics
- Low / High Pressure Packing Glands

**RS85 with Dual Compartment Housing and 1-½" Welded Raised Face Flange**

**SPECIFICATIONS**

**Mechanical**

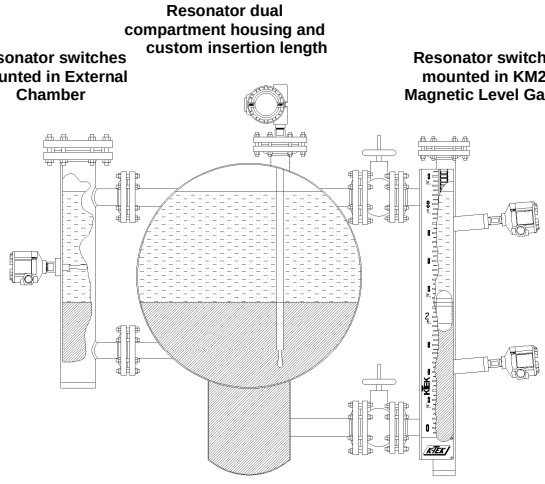
| | |
|---|---|
| Housing Type | Single Compartment Powder Coated Aluminum (standard)<br>Optional: Single Compartment Stainless Steel or<br>Dual Compartment (Powder Coated Aluminum or Stainless Steel) |
| Electronics Temperature | -40°F to 158°F ( -40°C to 70°C) |
| Specific Gravity | Variable Setpoint Sensitivity (0.45 to 2.0 SG) |
| Viscosity | Up to 20,000 cP |
| Remote Mounting | Maximum length of 20 ft. from sensing probe to the remote electronics |
| Process Temperature | -40°F to 350°F (-40°C to 177°C) |
| Process Pressure | 0 to 2000psig (138 bar) |
| Process Connection | ¾" NPT (standard) |
| Probe Length | 3-3/8" (86mm) (standard) to 120" (3048mm) |

**Approvals**

| | |
|---|---|
| Factory Mutual System | XP CL1, Div1&2 ABCD, CLII, III EFG |
| Canadian Standards Association | XP CL1, Div1&2 ABCD, CLII, III EFG |
| GOST Russia | 1ExdIICT6 |

**Electrical**

| | |
|---|---|
| Input Power | 85-250 VAC, 50-60Hz<br>12-36 VDC |
| Relay Contact Rating | 1 x DPDT Resistive: 8 Amp @ 250 VAC;<br>8 Amp @ 30 VDC<br>Inductive: ½HP @ 240 VAC,<br>¼HP @ 120 VAC |
| Repeatability | 0.1" (2.6mm) |
| Static Protection | Peak Surge Current: 800 Amps; Clamp Voltage: 75 Volts |
| Selectable Fail-safe | High or Low |
| Adjustable Time Delay | 0.5 to 35 seconds |
| Cable Entry | 2 x ¾" NPT (Single Compartment)<br>1 x ½" NPT (Dual Compartment)<br>1 x ¾" NPT (Dual Compartment with Relay) |




**Resonator Sample Applications**

## ORDERING INFORMATION

**RS85 / a / b / c / d / e / f / g / PL:**

**/a Housing**

| | |
|---|---|
| **A1** | Single Compartment Aluminum Housing (Standard) |
| **A1W** | Single Compartment Aluminum Housing with Glass Viewing Window |
| **A2** | Dual Compartment Aluminum Housing |
| **A2W** | Dual Compartment Aluminum Housing with Glass Viewing Window |
| **S2** | Dual Compartment 316L Stainless Steel Housing |
| **S2W** | Dual Compartment 316L Stainless Steel Housing with Glass Viewing Window |

**/b Process Connection**

| | |
|---|---|
| **P7** | ¾" MNPT (Standard) |
| **P1** | 1" MNPT |
| **B7** | ¾" BSPT |
| **B1** | 1" BSPT |
| **Tnn** | Tri-Clamp; Specify 'nn' as follow: 10 = 1" , 15 = 1.5", 20 = 2.0", 25 = 2.5" up to 6" |
| **WP** | Welded Flange[1,2] |
| **FL** | Loose Flange[1,2,3] |

**Notes:**
1. Minimum Flange size is 1".
2. Specify type and size from flange designation table (SLG-0001-1) located at www.ktekcorp.com under vibrating fork level switches. View "Data Sheet" section and select "Flange Designations."
3. P7 (¾" MNPT) will be utilized with loose flanges unless otherwise specified.

**/c Sensor Material**

| | |
|---|---|
| **S6** | 316L SS (Standard) |
| **HC** | Hastelloy C-276 |
| **MO** | Monel |

**/d Probe Finish**

| | |
|---|---|
| **X** | Standard Finish |
| **1F** | 180 grit finish |
| **2F** | 240 grit finish |
| **EP** | 240 grit and Electro-polished (316 SS Only) |
| **TN6** | Teflon "S" Coated 316SS[1,2] |
| **HL6** | Halar Coated 316SS[1,3] |
| **TF6** | Tefzel Coated 316SS[1,2] |

**Notes:**
1. Flange units only
2. Minimizes build-up on forks [115" (2921mm) maximum insertion length]
3. For increased corrosion resistance [115" (2921mm) maximum insertion length]

**/e Power**

| | |
|---|---|
| **1** | 18-36 VDC |
| **2** | 100-136 VAC |
| **3** | 200-245 VAC |
| **4** | Universal Power (12-36 VDC, 85-250 VAC) **standard** |

**/f Options**

| | |
|---|---|
| **X** | None |
| **HT6** | 6" 316SS High Temperature Extension (>250°F / 121°C up to 350°F / 177°C ) |
| **MM** | M20 Conduit Connection Brass (CSA only) |
| **MMS** | M20 Conduit Connection Stainless |
| **HS** | Hermetic Seal between Probe and Housing (Hastelloy, Stainless Only) |
| **Rxx** | Remote Mounted Electronic; Specify length in feet (up to 20 ft.) |
| **RSG1** | Packing Gland for Retractable Probe (50 psig / 3.4 bar max) *Consult factory.* |
| **RSG2** | Packing Gland for Retractable Probe (500 psig / 34.5 bar max) *Consult factory.* |

**/g Approvals**

| | |
|---|---|
| **X** | No approvals |
| **FMX** | Factory Mutual Standards (FM) Explosion Proof |
| **CSX** | Canadian Standards Association (CSA) Explosion Proof |
| **GR** | GOST Russia |

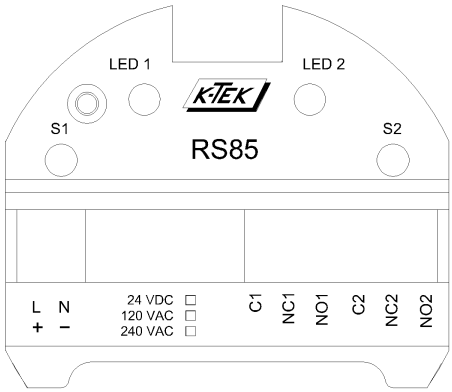
**/PL Probe Length**

3-3/8" (86 mm) Standard, specify extended lengths in 1.0 in (25.4 mm) increments up to 120 in (3048 mm)

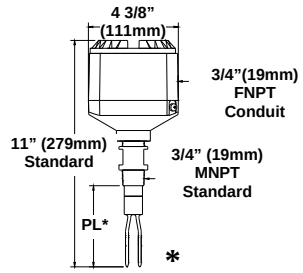
## PRINCIPLE OF OPERATION:

The Resonator utilizes a piezoelectric driven tuning fork that exhibits a large change in resonant frequency when immersed in any liquid. A "smart" microprocessor-based electronic unit keeps the sensor in a resonant state as it changes from dry to wet or wet to dry. The resonant frequency is continuously monitored for changes created by a wet or dry sensor and an alarm is provided via a relay. An important feature of the Resonator is that its resonant frequency is not significantly affected by coating on the fork until the space between the forks is bridged. The Resonator's ability to identify true liquid level in viscous, coating or aerated liquid is unparalleled. The self-test option checks for fault conditions such as crystal damage and excessive product build up on the sensor. Applications include redundant high/low liquid level without concern for parameters such as specific gravity, dielectric constant or mounting position of the sensor.

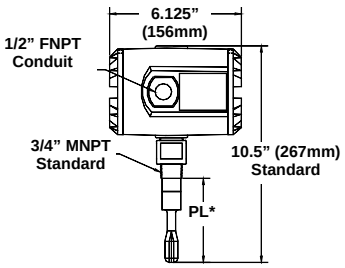
## MODULAR ELECTRONICS CONNECTION DIAGRAM




## Standard Single Compartment Dimensions




## Optional Dual Compartment Dimensions




***Trip Point 3/4" from probe end type**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RS85-0202-1 Rev f (08-2009)
DCN0234
For latest version of this data sheet, visit www.ktekcorp.com.



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