

# S2 SENSOR / TRANSMITTER



## Available gases include

- LEL, H<sub>2</sub>S, CO, PPM H<sub>2</sub>, and CO<sub>2</sub>
- Toxic gases include NH<sub>3</sub>, AsH<sub>3</sub>, Cl<sub>2</sub>, ClO<sub>2</sub>, HCN, & SO<sub>2</sub>

## Infrared sensor for combustibles and CO<sub>2</sub>

## Hydrogen-Specific now available

## Patented water repellent sensor coating

## 4-20 mA output

## Explosion proof construction

## Optional stainless steel junction box

The RKI S2 series gas sensor/transmitters are highly reliable and very cost effective for the detection of common gas hazards. The S2 series are available for LEL, H<sub>2</sub> Specific (LEL, and ppm), Oxygen, H<sub>2</sub>S, CO, and for a variety of toxic gases. The transmitters for LEL, H<sub>2</sub> Specific, Oxygen, H<sub>2</sub>S, CO<sub>2</sub>, and Carbon Monoxide are explosion-proof with flame arrestors, and approved for use in hazardous areas (Class I, Div 1 Groups B, C, D). An optional non-explosion proof version is available for oxygen, H<sub>2</sub>S, CO, and CO<sub>2</sub> in non-hazardous atmospheres. LEL sensors are available using catalytic bead and infrared technologies.

The toxic sensors are electrochemical type plug-in sensors, which provide high specificity, fast response, and long life. The plug-in design allows quick replacement in the field with no tools required. Toxic sensors are designed for use in Class I, Div. 2 hazardous locations. Sensors available for NH<sub>3</sub>, AsH<sub>3</sub>, Cl<sub>2</sub>, ClO<sub>2</sub>, HCN, PH<sub>3</sub>, and SO<sub>2</sub>.

The S2 transmitters can be used either indoors or outdoors. The flame arrestors for the explosion-proof versions utilize a patented coating which make them water repellent. Splash guards are also available for use in very wet environments. An optional stainless steel junction box is available for corrosive environments.


All of the S2 transmitters are designed to interface with RKI controllers, or with PLC/DCS systems.

World Leader In Gas Detection & Sensor Technology


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# Explosion Proof

|   | LEL<br>General Purpose  | LEL<br>H2 Specific            | H2 PPM<br>Hydrogen                     | O2<br>Oxygen                      | H2S<br>Hydrogen Sulfide         | CO<br>Carbon Monoxide         | CH4<br>Methane                                      | HC<br>Hydrocarbons | CO2<br>Carbon Dioxide  |
|---|---|-------------------------------|--|-----------------------------------|---------------------------------|-------------------------------|---|--------------------|--|
|  Part # | 65-2405RK   | 65-2451RK                     | 65-2442RK-1000                         | 65-2322RK                         | 65-2331RK                       | 65-2336RK                     | 65-2394RK-CH4                                       | 65-2394RK-HC       | 65-2396RK-02   |
|   | 65-2405RK-05  | 65-2451RK-05                  | 65-2442RK-2000                         |                                   |                                 |                               |   |                    | 65-2396RK-03<br>65-2396RK-05<br>65-2396RK-10                 |
| Sensor  | Catalytic   |                               | Metal oxide semiconductor              | Galvanic cell                     | Electrochemical                 |                               | Infrared  |                    |  |
| Measuring Range   | 0-100% LEL  | 0-100% LEL (H2 Specific)      | 0-1000 ppm<br>0-2000 ppm               | 0-25% Vol.                        | 0-100 ppm                       | 0-300 ppm                     | 0-100% LEL  |                    | 0 - 5000 ppm<br>0 - 5% Vol.<br>0 - 50% Vol.<br>0 - 100% Vol. |
| Lower Detectable Limit (LDL)  | 2% of full scale  |                               |  | 0.1% Vol.                         | 2% of full scale                |                               |   |                    |  |
| Accuracy (whichever is greater)   | ± 5% of reading or ± 2% LEL   |                               | ± 10% of reading or ± 5% of full scale | ± 0.5% O2                         | ± 5% of reading<br>± 2 ppm H2S  | ± 5% of reading<br>± 5 ppm CO | ± 5% of reading or ± 2% of full scale               |                    |  |
| Response Time (T-90)  | 30 Seconds  | 20 Seconds                    | 45 Seconds                             | 20 Seconds                        | 45 Seconds                      | 30 Seconds                    | 30 Seconds  |                    |  |
| Max Current Draw (24VDC)  | 70 mA (power wires) 25 mA (signal wires) 3 wires  |                               |  | 25 mA max, 2 wires                |                                 |                               | 60 mA (power wires)<br>25 mA (signal wires) 3 wires |                    |  |
| Life Expectancy   | 2 to 3 years with normal exposure to flammable gas  | 3-5 years with normal service | 5 years plus with normal service       | 2-3 years with normal service     |                                 |                               | 5 years plus with normal service                    |                    |  |
| Operating Environment   |   |                               |  |                                   |                                 |                               |   |                    |  |
| Location  | Indoor or outdoor. Explosion proof for Class I, Div. 1, Groups B, C, and D.                                       |                               |  |                                   |                                 |                               |   |                    |  |
| Temperature   | -40°F to 167°F<br>-40°C to 75°C   |                               | -40°F to 167°F<br>-40°C to 75°C        | -4°F to 113°F<br>-20°C to 45°C    | -40°F to 104°F<br>-40°C to 40°C | 23°F to 104°F<br>-5°C to 40°C | -40°F to 122°F<br>-40°C to 50°C                     |                    |  |
| Humidity  | 0 - 99% RH, non condensing  |                               |  |                                   |                                 |                               |   |                    |  |
| Housing   |   |                               |  |                                   |                                 |                               |   |                    |  |
| Housing J Box   | Cast aluminum explosion proof, optional stainless steel J-box available   |                               |  |                                   |                                 |                               |   |                    |  |
| Sensor  | Stainless steel explosion proof   |                               |  |                                   |                                 |                               |   |                    |  |
| Controls  |   |                               |  |                                   |                                 |                               |   |                    |  |
| Zero  | Sets transmitter output to 4 mA with zero output from sensor  |                               |  |                                   |                                 |                               |   |                    |  |
| Span  | Sets transmitter output to proper level when span gas is applied  |                               |  |                                   |                                 |                               |   |                    |  |
| Output  | 4 - 20 mA signal  |                               |  |                                   |                                 |                               |   |                    |  |
| Operating Voltage   | 11 VDC to 30 VDC  |                               | 19 VDC to 30 VDC                       | 19-30VDC (250 OHMS impedance max) |                                 |                               | 11 VDC to 30 VDC                                    |                    |  |
| Approvals   | 65-2405RK UL  | 65-2451RK UL                  | UL                                     | CSA NRTL                          |                                 |                               | C UL US   |                    |  |
|   | 65-2405RK-05 CSA  | 65-2451RK-05 CSA              |  |                                   |                                 |                               |   |                    |  |
| Controllers   | Compatible with the following controllers: Beacon 110, Beacon 200, Beacon 410A, and 800, also PLC and DCS systems |                               |  |                                   |                                 |                               |   |                    |  |
| Warranty  | One year materials and workmanship  |                               |  |                                   |                                 |                               |   |                    |  |

# Non Explosion Proof

|  | O2<br>Oxygen  | H2S<br>Hydrogen Sulfide          | CO<br>Carbon Monoxide         | Toxics<br>See chart below                 | CO2<br>Carbon Dioxide  |
|--|---|----------------------------------|-------------------------------|---|--|
|  Part # | 65-2320RK   | 65-2330RK                        | 65-2335RK                     | See chart below                           | 65-2397RK-02<br>65-2397RK-03<br>65-2397RK-05<br>65-2397RK-10 |
| Sensor   | Galvanic cell   | Electrochemical                  |                               |   | Infrared   |
| Measuring Range  | 0-25% Vol.  | 0-100 ppm                        | 0-300 ppm                     | See chart below                           | 0 - 5000 ppm<br>0 - 5% Vol.<br>0 - 50% Vol.<br>0 - 100% Vol. |
| Lower Detectable Limit (LDL)   | 0.1% Vol.   | 2% of full scale                 |                               |   |  |
| Accuracy<br>(whichever is greater)   | ± 0.5% O2   | ± 5% of reading<br>± 2 ppm H2S   | ± 5% of reading<br>± 5 ppm CO | ± 10% of reading or<br>± 5% of full scale | ± 5% of reading or<br>± 2% of full scale                     |
| Response Time (T-90)   | 20 Seconds  | 45 Seconds                       | 30 Seconds                    | 60 Seconds                                | 30 Seconds   |
| Max Current Draw (24VDC)   | 25 mA max, 2 wires  |                                  |                               |   | 60 mA (power wires)<br>25 mA (signal wires)<br>3 wires       |
| Life Expectancy  | 2 years normal service  | 2 to 3 years with normal service |                               |   | 5 years plus with normal service                             |
| Operating Environment  |   |                                  |                               |   |  |
| Location   | Indoor Class I, Div. 2  |                                  |                               |   |  |
| Temperature  | -4°F to 122°F<br>-20°C to 50°C  |                                  |                               | 14°F to 104°F<br>-10°C to 40°C            | -40°F to 122°F<br>-40°C to 50°C                              |
| Humidity   | 0 - 99% RH non condensing   |                                  |                               | 5-95% RH                                  | 0 - 99% RH non condensing                                    |
| Housing  |   |                                  |                               |   |  |
| Housing J-Box  | Cast aluminum, explosion-proof  |                                  |                               |   |  |
| Sensor   | Plastic or aluminum   |                                  |                               |   |  |
| Controls   |   |                                  |                               |   |  |
| Zero   | Sets transmitter output to 4 mA with zero output from sensor  |                                  |                               |   |  |
| Span   | Sets transmitter output to 20 mA with full scale output from sensor   |                                  |                               |   |  |
| Operating Voltage  | 19 VDC to 30 VDC  |                                  |                               |   |  |
| Output   | 4-20 mA signal  |                                  |                               |   |  |
| Controllers  | Compatible with the following controllers: Beacon 110, Beacon 200, Beacon 410A, and 800, also PLC and DCS systems |                                  |                               |   |  |
| Warranty   | One year materials and workmanship  |                                  |                               |   |  |

\* Partial pressure sensor for helium (He) applications. Consult factory for details.

| <b>Non Explosion Proof Toxic Assemblies</b>   |   |                               |                                      |              |                    |
|---|---|-------------------------------|--------------------------------------|--------------|--------------------|
|  <b>ESM-01</b> |  <b>CT-7</b> | <b>Part Number With J-Box</b> | <b>Gas</b>                           | <b>Range</b> | <b>Sensor Type</b> |
|   |   | 65-2648RK-NH3                 | Ammonia (NH <sub>3</sub> )           | 0 - 75.0 ppm | 0.1 ppm ESM -01    |
|   |   | 65-2648RK-AsH3                | Arsine (AsH <sub>3</sub> )           | 0 - 75.0 ppm | 0.1 ppm ESM -01    |
|   |   | 65-2670RK-CL2                 | Chlorine (Cl <sub>2</sub> )          | 0 - 3.00 ppm | 0.01 ppm CT-7      |
|   |   | 65-2670RK-CL210               | Chlorine (Cl <sub>2</sub> )          | 0 - 10.0 ppm | 0.1 ppm CT-7       |
|   |   | 65-2670RK-CLO2                | Chlorine Dioxide (ClO <sub>2</sub> ) | 0 - 1.00 ppm | 0.01 ppm CT-7      |
|   |   | 65-2648RK-HCN                 | Hydrogen Cyanide (HCN)               | 0 - 15.0 ppm | 0.1 ppm ESM -01    |
|   |   | 65-2648RK-PH3                 | Phosphine (PH <sub>3</sub> )         | 0 - 1.00 ppm | 0.01 ppm ESM -01   |
|   |   | 65-2648RK-SO2                 | Sulfur Dioxide (SO <sub>2</sub> )    | 0 - 6.00 ppm | 0.01 ppm ESM -01   |

# S2 SENSOR / TRANSMITTER



AC power supply



Remote horns & lights



Calibration kits



Calibration adaptors



Splash guards



Flow through adaptors



Dataloggers



Remote Mount  
Calibration Adaptor

## Direct Interface with Beacon 110 / 200 / 410A / 800 Controllers

| S2 Wiring Matrix |                               |                                |             |             |
|------------------|-------------------------------|--------------------------------|-------------|-------------|
| S2 Transmitter   | Number of Wires to Controller | Maximum Distance to Controller |             |             |
|                  |                               | 18 AWG wire                    | 16 AWG wire | 14 AWG wire |
| LEL / IR / CO2   | 3                             | 2500 ft.                       | 5,000 ft.   | 8,000 ft.   |
| Oxygen           | 2                             | 2500 ft.                       | 5,000 ft.   | 8,000 ft.   |
| H2S              | 2                             | 2500 ft.                       | 5,000 ft.   | 8,000 ft.   |
| CO               | 2                             | 2500 ft.                       | 5,000 ft.   | 8,000 ft.   |
| Toxics           | 2                             | 2500 ft.                       | 5,000 ft.   | 8,000 ft.   |

Made in the USA

Authorized Distributor:



Gas Detection For Life