



INSTRUMENTS

**65-2340RK
Toxic Gas Transmitter
Operator's Manual**

Part Number: 71-0143RK

Revision: 0

Released: 6/10/08

**RKI Instruments, Inc.
www.rkiinstruments.com**

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- b) Pump diaphragms and valves
- c) Fuses
- d) Batteries
- e) Filter elements

Warranty is voided by abuse including mechanical damage, alteration, rough handling, or repair procedures not in accordance with the operator's manual. This warranty indicates the full extent of our liability, and we are not responsible for removal or replacement costs, local repair costs, transportation costs, or contingent expenses incurred without our prior approval.

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This warranty covers instruments and parts sold to users by authorized distributors, dealers, and representatives as appointed by RKI Instruments, Inc.

We do not assume indemnification for any accident or damage caused by the operation of this gas monitor, and our warranty is limited to the replacement of parts or our complete goods.

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Overview

This manual describes the 65-2340RK toxic gas transmitter. This manual also describes how to install, start up, maintain, and calibrate the toxic gas transmitter when used with a gas monitoring controller. A parts list at the end of this manual lists replacement parts and accessories for the toxic gas transmitter.

The 65-2340RK toxic gas transmitter can be used for various target gasses which are listed in Table 1 below. For a particular target gas, the part number of the toxic transmitter will be of the format 65-2340RK-XXX. For example, 65-2340RK-NH₃ is for ammonia (NH₃) detection.

Specifications

Table 1 lists specifications for the toxic gas transmitter.

Table 1: Specifications

Target Gas	65-2340RK-ASH ₃ : Arsine (AsH ₃) 65-2340RK-CL ₂ : Chlorine (Cl ₂) 65-2340RK-NH ₃ : Ammonia (NH ₃) 65-2340RK-SO ₂ : Sulphur Dioxide (SO ₂) 65-2340RK-PH ₃ : Phosphine (PH ₃)
Sampling Method	Diffusion
Detection Range	AsH ₃ : 0 - 1.50 ppm Cl ₂ : 0 - 3.00 ppm NH ₃ : 0 - 75.0 ppm SO ₂ : 0 - 6.00 ppm PH ₃ : 0 - 1.00 ppm
Accuracy	± 5% of full scale typical
Signal Output	4 to 20 mA
Response Time	<ul style="list-style-type: none">Cl₂ and NH₃: T90 in 90 secondsAll others: T90 in 45 seconds
Operating Temperature & Humidity	<ul style="list-style-type: none">14°F to 104°F (-10°C to 40°C)20% to 90% Relative Humidity

Description

This section describes the components of the toxic gas transmitter. The toxic gas transmitter is a 4 - 20 mA type detector head. It consists of the toxic detector, amplifier, and junction box.

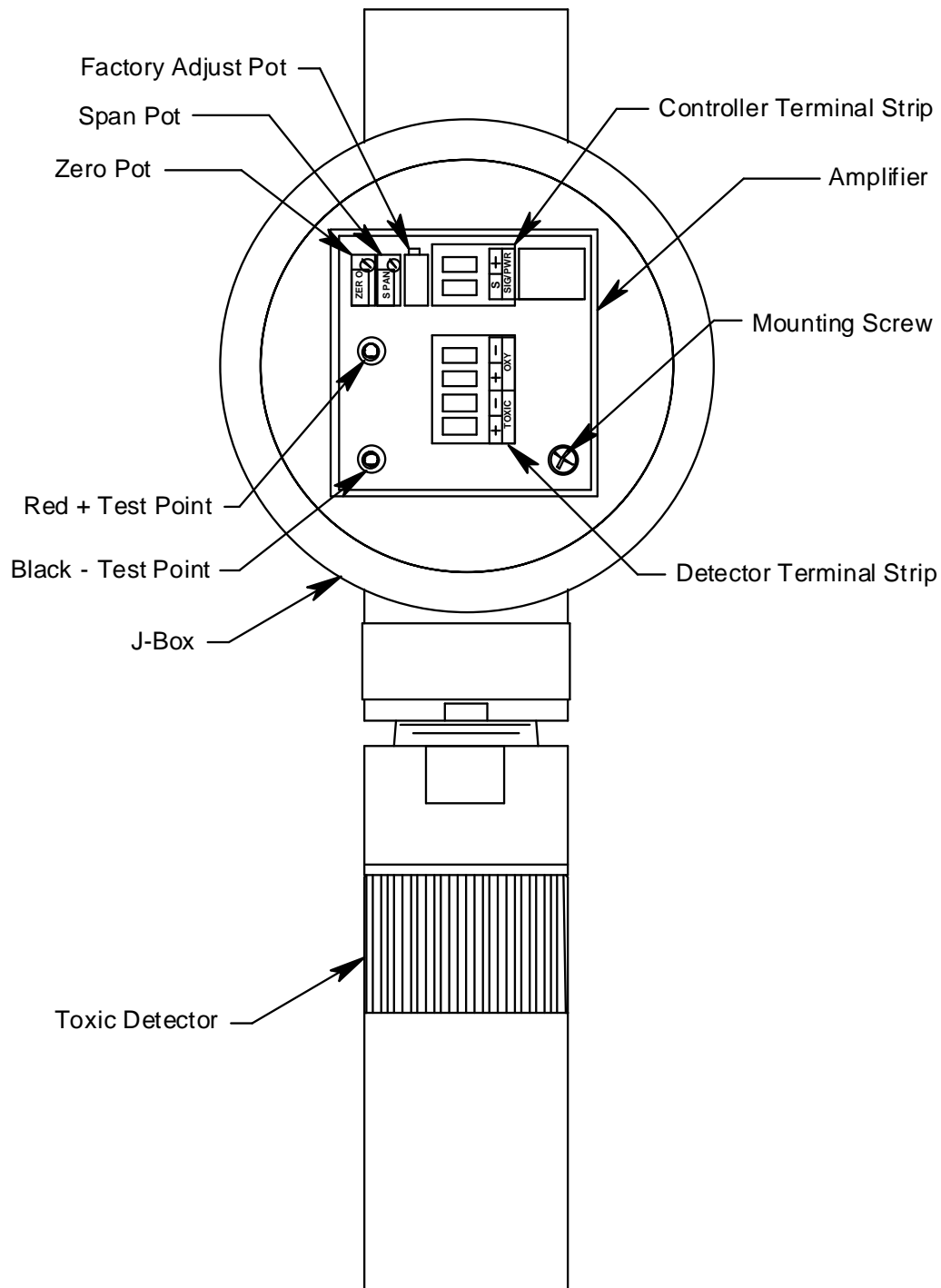


Figure 1: Toxic Transmitter Component Location

Toxic Detector

The toxic detector consists of the detector housing body, detector housing cap, splashguard, cap gasket, and the plug-in sensor.

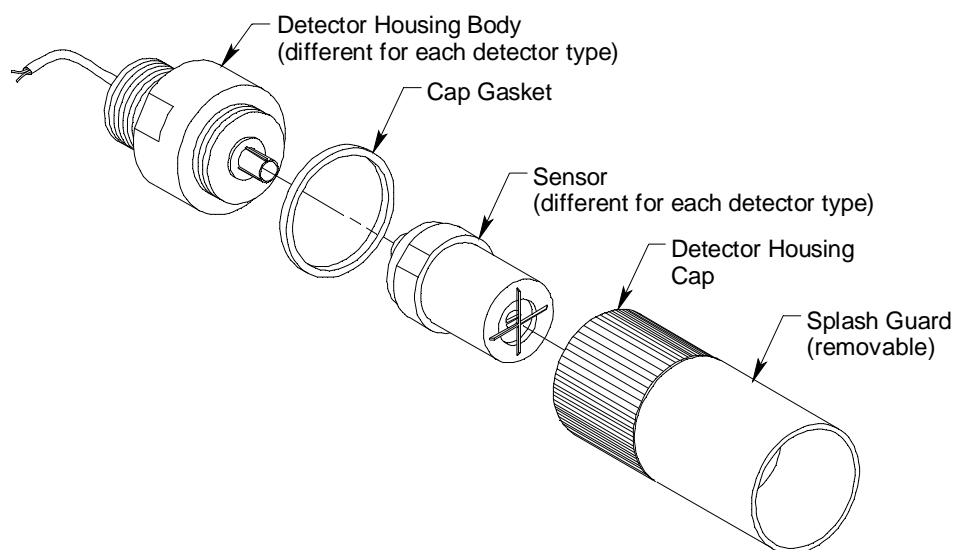


Figure 2: Toxic Detector Component Location

Detector Housing Body

The detector housing body protects the electronic components within the housing. Use the mounting threads at the top of the housing to screw the toxic detector into the 3/4" NPT hub on the bottom of the junction box. Two wires extend from the top of the detector housing body. Use these wires to connect the toxic detector to the amplifier. One of the wires is black and one of the wires is color coded depending on the detector type. See Figure 4 on page 10 for the color code assignments.

The housing body includes a 12 position connector at the bottom of the housing body. The plug-in sensor mates to this connector. A pre-amplifier located between the connector and the two interconnect wires conditions the sensor's signal before the signal reaches the controller. Each plug-in sensor type (Cl₂ for example) requires a different pre-amplifier, so there is a different detector housing body for each gas type.

Housing Cap, Cap Gasket, & Splashguard

The housing cap screws onto the detector housing. It retains the plug-in sensor and protects it from damage. A removable splashguard is screwed onto the detector cap to protect the sensor from impact damage, direct water spray, and splashing. Unscrew the detector cap to access the sensor for maintenance or replacement. A cap gasket seals the interface between the housing and cap.

Plug-in Sensor

The plug-in sensor is secured in the detector assembly by the housing cap. There is a different sensor for each target gas. Through a series of chemical and electrical reactions, the sensor produces an electrical output that corresponds to the detection range of the sensor.

Amplifier

The amplifier converts the electrical output from the detector to a 4 to 20 mA signal that corresponds to the detection range and transmits the signal to a gas monitoring controller. A foam gasket that orients the amplifier and keeps it from rotating is installed on the

bottom of the amplifier. The amplifier includes the detector terminal strip, controller terminal strip, zero pot, span pot, and test points (see Figure 1).

Controller Terminal Strip

The controller terminal strip is a two position plug-in style terminal strip located at the top edge of the amplifier. Use the controller terminal strip to wire the transmitter to a controller.

Detector Terminal Strip

The detector terminal strip is a four position plug-in style terminal strip located below the controller terminal strip. Two of the positions are for use with an oxygen sensor and are not used in the toxic gas transmitter. Use the two detector terminal strip positions that are labelled "TOXIC" to connect the detector to the amplifier.

NOTE: The detector is factory-wired to the detector terminal strip. See the "Wiring the Toxic Gas Transmitter to a Controller" on page 9 for all wiring procedures related to the transmitter.

Zero Pot

The zero pot is located in the upper left corner of the amplifier (see Figure 1). Use a small flat blade screwdriver to turn the zero pot's adjustment screw and adjust the amplifier's zero (fresh air) output during the start-up and calibration procedures. Turn the adjustment screw clockwise to increase the zero output and counterclockwise to decrease the zero output.

Span Pot

The span pot is located to the right of the zero pot (see Figure 1). Use a small flat blade screwdriver to turn the span pot's adjustment screw and adjust the amplifier's gas response output during the calibration procedure. Turn the adjustment screw clockwise to increase the span output and counterclockwise to decrease the span output.

CAUTION: *The amplifier includes an additional potentiometer. It is factory-set. Do not adjust it.*

Test points

The test points are on the left side of the amplifier (see Figure 1). The test points produce a 100 mV to 500 mV output that corresponds to the transmitter's 4 to 20 mA output. Use the test points and a voltmeter to measure the amplifier's output during the start-up and calibration procedures. The black test point in the lower left corner is the negative (-) test point and the red test point below the zero pot is the positive (+) test point.

Junction Box

Use the junction box to install the transmitter at a mounting site that is remote from the controller. The junction box protects the amplifier and wiring connections made to the amplifier. Use the top 3/4 inch conduit hub to connect wiring from the amplifier to the controller. Use the cover on the front of the junction box to access the interior of the junction box. The detector and amplifier are factory installed in the junction box. Three spacers installed on the back of the junction box control the distance of the junction box from a mounting surface and insure that there is enough room to install a calibration cup on the detector during calibration.

Installation

This section describes procedures to mount the toxic gas transmitter in the monitoring environment and wire the transmitter to a controller.

Mounting the Toxic Gas Transmitter

1. Select a mounting site that is representative of the monitoring environment. Consider the following when you select the mounting site.
 - Select a site where the transmitter is not likely to be bumped or disturbed. Make sure there is sufficient room to perform start-up, maintenance, and calibration procedures.
 - Select a site where the target gas is likely to be found first.

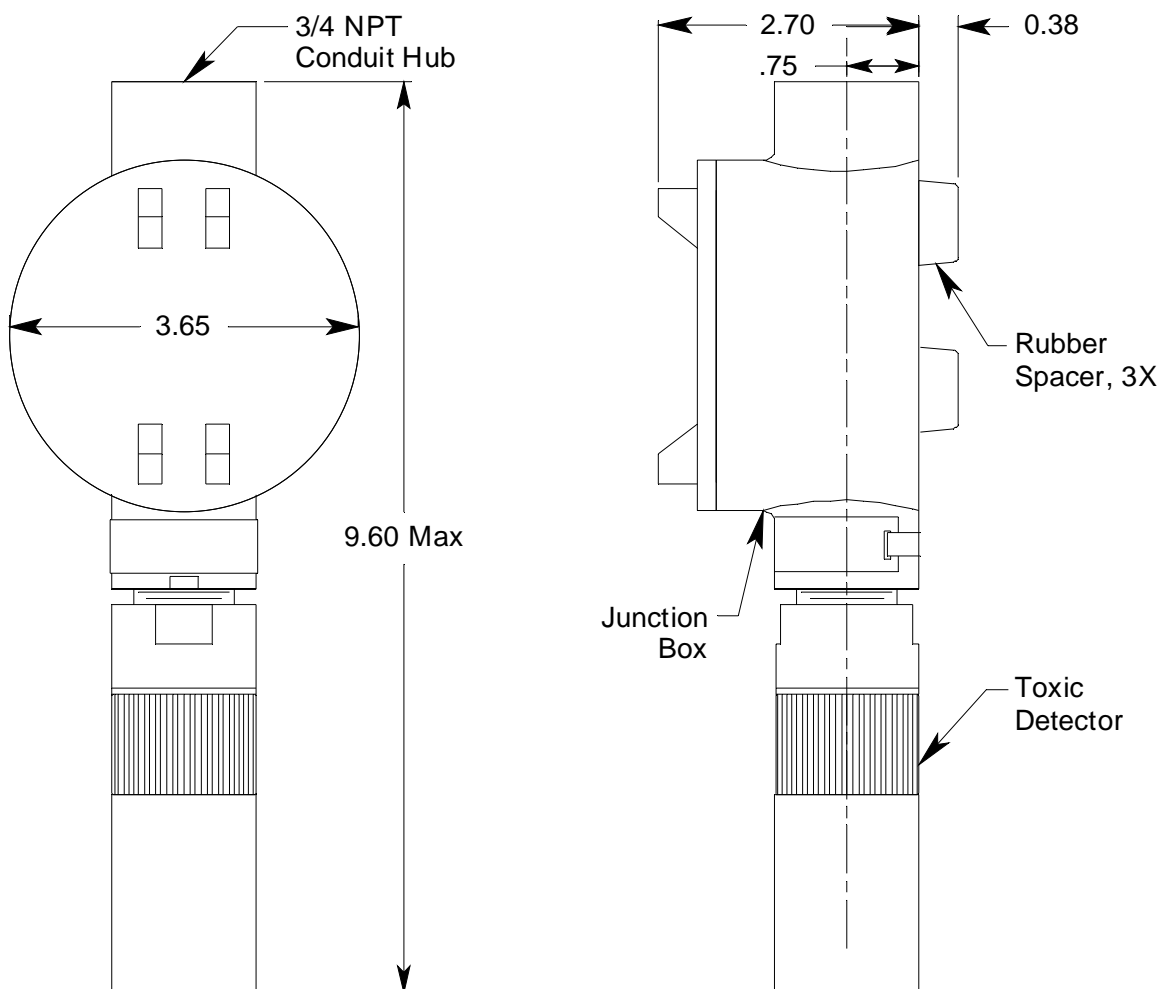


Figure 3: Mounting the Toxic Gas Transmitter

2. At the monitoring site you select, hang or mount the junction box with the detector facing down (see Figure 3).

Wiring the Toxic Gas Transmitter to a Controller

WARNING: *Always verify that power to the controller is off before you make wiring connections.*

1. Turn off the controller.
2. Turn off power to the controller.
3. Remove the junction box cover.
4. The detector leads are factory wired. Verify that the detector leads are wired to the amplifier's detector terminal strip as shown in Figure 4.
5. To gain access to a plug-in terminal strip for wiring, pull it out of its socket by grasping the terminal strip and pulling. The detector strip is keyed so that the controller and detector terminal strips cannot be reversed inadvertently.
6. Guide a two-conductor, shielded cable or two wires in conduit through the top conduit hub of the junction box.
7. Pull out the controller terminal strip, and connect the two wires to the terminal strip as follows (see Figure 4).
 - Connect the positive wire to the **SIG/PWR “+”** terminal.
 - Connect the signal wire to the **SIG/PWR “S”** terminal.

CAUTION: *If shielded cable is used, leave the cable shield's drain wire disconnected and insulated at the transmitter. You will connect the opposite end of the cable's drain wire to the controller's chassis (earth) ground.*

8. Reinstall the controller terminal strip into its socket.
9. Secure the junction box cover to the junction box.
10. Route the cable or wires leading from the toxic gas transmitter through one of the conduit hubs at the controller housing.

CAUTION: *Do not route power and transmitter wiring through the same controller conduit hub. The power cable may disrupt the transmission of the transmitter signal to the controller.*

11. Connect the wires to the applicable detector/transmitter terminal strip at the controller as shown in Figure 4

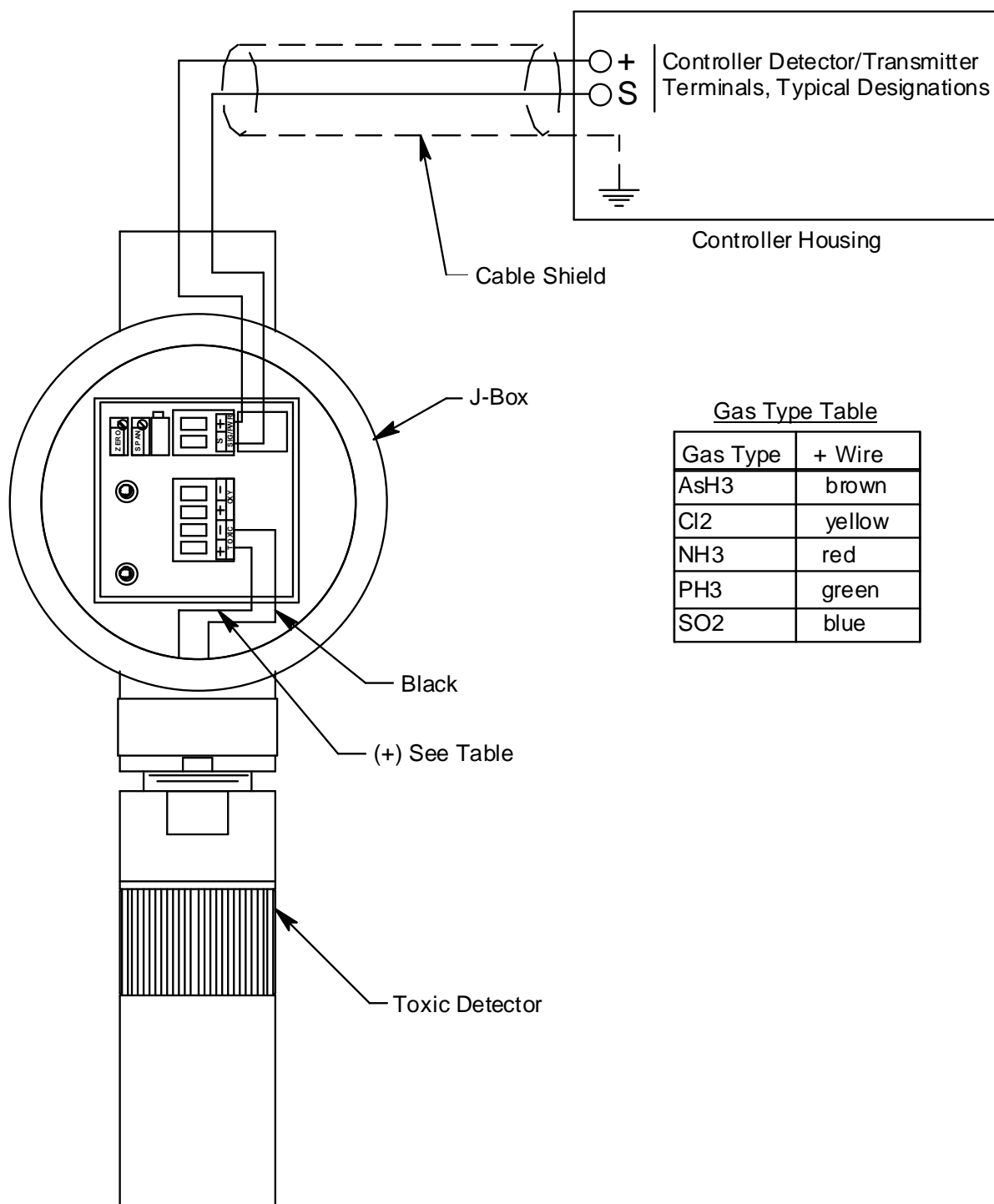


Figure 4: Wiring the Toxic Gas Transmitter to a Controller

12. If shielded cable is used, connect the cable's drain wire to an available chassis (earth) ground at the controller. RKI controllers typically have a ground stud that can be used to ground the cable's drain wire.

Start Up

This section describes procedures to start up the toxic gas transmitter and place the transmitter into normal operation.

Introducing Incoming Power

1. Complete the installation procedures described earlier in this manual.
2. Verify that the power wiring to the controller is correct and secure. Refer to the controller operator's manual.
3. Turn on power to the controller.
4. Turn on the controller.
5. Verify that the controller is on and operating properly. Refer to the controller operator's manual.

CAUTION: *Allow the transmitter to warm up for 5 minutes before you continue with the next section, "Setting the Zero Signal."*

Setting the Zero Signal

CAUTION: *If you suspect the presence of toxic gas in the monitoring environment, use the calibration kit and the zero air calibration cylinder to introduce "fresh air" to the detector and verify an accurate zero setting. See "Calibration" on page 17 for instructions to apply zero air when setting the zero signal.*

1. Verify that the transmitter is in a fresh air environment (environment known to be free of toxic gas).
2. Unscrew and remove the junction box cover from the junction box.
3. Set a voltmeter to measure in the millivolt (mV) range.
4. Plug the voltmeter leads into the test points on the amplifier. Plug the positive lead into the red + test point; plug the negative lead into the black - test point.
5. Verify a voltmeter reading of 100 mV (± 2 mV).
6. If necessary, use a small flat-blade screwdriver to adjust the zero pot until the voltmeter reading is 100 mV (± 2 mV).
7. Remove the voltmeter leads from the test points.
8. Secure the junction box cover to the junction box.

Maintenance

This section describes maintenance procedures. It includes preventive maintenance, troubleshooting, and component replacement procedures.

Preventive Maintenance

This section describes a preventive maintenance schedule to ensure the optimum performance of the toxic gas transmitter. It includes daily, monthly, and quarterly procedures.

Daily

Verify a display reading of 0 ppm at the controller. Investigate significant changes in the display reading.

Monthly

This procedure describes a test to verify that the toxic gas transmitter responds properly to the target gas. It describes the test using a calibration kit that includes a calibration cup, calibration gas, sample tubing, and a fixed flow regulator with an on/off knob. See Table 3 on page 17 to determine the correct calibration cup and regulator for the required flowrate for your detector.

WARNING: *Failure to use the recommended calibration cup and calibration gas flow rate will result in an inaccurate reading.*

NOTE: Performing a response test on the toxic gas transmitter may cause alarms. Be sure to put the controller into its calibration mode or disable external alarms before performing this test

Preparing for the response test

1. Place the controller into its calibration mode or disable external alarms.
2. Verify that the controller display reading for the channel you are testing is 0 ppm.
If the display reading is not 0 ppm, set the zero reading of the transmitter as described in “Start Up” on page 11, then continue this procedure.
3. Unscrew and remove the junction box cover.
4. Set a voltmeter to read in the millivolt (mV) range.
5. Plug the voltmeter leads into the test points on the amplifier. Plug the positive lead into the red + test point; plug the negative lead into the black -test point.
6. Use the following formula to determine the correct test points output for the test sample.

$$\text{Output (mV)} = (\text{test sample/fullscale}) \times 400 + 100$$

For example, with a test sample of 0.5 ppm and a fullscale setting of 1.00 ppm, the correct output is 300 mV.

$$300 \text{ (mV)} = (.50/1.00) \times 400 + 100$$

7. Unscrew the splashguard from the housing cap. Make sure the housing cap remains screwed firmly onto the housing body.
8. Screw the regulator into the calibration cylinder.

9. Use the sample tubing to connect the regulator to the calibration cup. Check the bottom of the calibration cup to see if it has a specified flow direction through the cup and if it does, make sure you connect the tube from the regulator to the inlet port. The 81-1138RK calibration cup, which is used for all detectors except for Cl₂ and NH₃ detectors, has a specified flow direction on the bottom of the cup. The 81-1138RK-Cl₂ and 81-1138RK-NH₃ calibration cups do not have a specified flow direction.
10. Push the calibration cup onto the plug-in sensor that sticks through the housing cap as far as it will go. The cup seals to the sensor with an O-ring. Make sure to use the correct calibration cup and sample flowrate for your detector.

Performing the response test

1. Turn the regulator's on/off knob counterclockwise to open the regulator. Gas will begin to flow
2. Allow the gas to flow for two minutes, then verify that the reading is within $\pm 20\%$ of the cylinder gas concentration.

NOTE: If the reading is not within $\pm 20\%$ of the correct response reading, calibrate the detector as described in "Calibration" on page 17.

3. Turn the regulator's on/off knob clockwise to close the regulator.
4. Unscrew the regulator from the calibration cylinder.
5. Gently pull the calibration cup off of the plug-in sensor.
6. Screw the splashguard firmly back onto the housing cap.
7. Remove the voltmeter leads from the amplifier test points.
8. Reinstall the junction box cover.
9. When the controller display reading falls below the alarm setpoints, return the controller to normal operation.
10. Store the components of the calibration kit in a safe place.

Quarterly

Calibrate the toxic gas transmitter as described in "Calibration" on page 17 of this manual.

Troubleshooting

The troubleshooting guide describes symptoms, probable causes, and recommended action for problems you may encounter with the toxic gas transmitter.

NOTE: This troubleshooting guide describes transmitter problems only. See the controller operator's manual for problems you may encounter with the controller.

Table 2: Troubleshooting the Toxic Gas Transmitter

Condition	Symptom(s)	Probable Causes	Recommended Action
Fail Condition	<ul style="list-style-type: none"> Controller indicates a fail condition. 	<ul style="list-style-type: none"> The transmitter wiring is disconnected or misconnected. The plug-in sensor is not properly plugged into the socket in the detector housing body. The transmitter's zero reading is low enough to cause a fail condition. The transmitter is malfunctioning. 	<ol style="list-style-type: none"> 1. Verify that the transmitter wiring is correct and secure. 2. Confirm that the plug-in sensor is installed properly. 3. Perform a zero (fresh air) adjustment. A full calibration is recommended. 4. If the fail condition continues, replace the plug-in sensor as described later in this section. 5. If the fail condition continues, contact RKI for further instruction.
Slow or No Response/ Difficult or Unable to Calibrate	<ul style="list-style-type: none"> Transmitter responds slowly or does not respond to response test. Unable to accurately set the zero or response reading during calibration. Transmitter requires frequent calibration. <p>Note: Under "normal" circumstances, the transmitter requires calibration once every 3 months. Some applications may require a more frequent calibration schedule.</p>	<ul style="list-style-type: none"> The calibration cylinder is low, out-dated, or defective. The incorrect calibration cup or regulator is being used. The plug-in sensor face is blocked with dirt or some other particulate contamination. The calibration gas is not an appropriate concentration The transmitter is malfunctioning. 	<ol style="list-style-type: none"> 1. Verify that the calibration cylinder contains an adequate supply of a fresh test sample. 2. Confirm that you are using the correct calibration cup and regulator for your detector type. See Table 3 on page 17 for a list of the required calibration cups and regulators. 3. Check the plug-in sensor face and remove any particulate contamination if necessary. 4. Verify that the calibration gas concentration is appropriate for the transmitter. The concentration should be in the detection range, preferably about half of the detection range. 5. If the calibration/response difficulties continue, replace the plug-in sensor as described later in this section. 6. If the calibration/response difficulties continue, contact RKI for further instruction.

Replacing Components of the Toxic Gas Transmitter

This section includes a procedure to replace the plug-in toxic sensor, a procedure to replace the entire toxic detector assembly, and one to replace the amplifier. In most cases, it is not necessary to replace the entire detector assembly.

Replacing The Plug-in Toxic Sensor

CAUTION: The plug-in sensor contains electrolyte which is a dilute acid. Do not disassemble the sensor when replacing it with a new one. If sensor electrolyte comes in contact with your skin, wash affected area thoroughly with soap and water.

1. Turn off the controller.
2. Turn off or unplug power to the controller.
3. Unscrew the detector housing cap with the splashguard from the detector housing body. Make sure not to lose the cap gasket.

4. Unplug and remove the toxic sensor.
5. Carefully plug the replacement sensor into the connector that is located in the detector housing body.

WARNING: *You must replace the plug-in sensor with the same type of sensor that is installed. A detector cannot be converted from one type of detector to another by using a different plug-in sensor. For example, if you are replacing a Cl₂ sensor, you must replace it with a Cl₂ sensor.*

6. Make sure the cap gasket is in place and screw the detector housing cap with the splashguard back onto the detector housing body.
7. Turn on power to the controller.
8. Turn on the controller and place into normal operation.

CAUTION: *Allow the replacement sensor to warm up for 5 minutes before you continue with the next step.*

9. Calibrate the detector as described in “Calibration” on page 17.

Replacing the Toxic Detector

NOTE: In most cases, it is only necessary to replace the plug-in sensor.

1. Turn off the controller.
2. Turn off or unplug power to the controller.
3. Remove the junction box cover.
4. Remove the detector terminal strip from its socket.
5. Disconnect the detector leads from the detector terminal strip. Note the position of the color-coded leads as you remove them.
6. Unscrew the detector from the junction box conduit hub.
7. Guide the detector leads of the replacement detector through the bottom conduit hub of the junction box, then screw the mounting threads of the detector into the conduit hub. If necessary for environmental conditions, apply thread sealant or teflon tape to the hub and/or detector threads to seal them.
8. Connect the detector leads to the appropriate detector terminal strip terminals. Connect the black wire to the terminal labelled TOXIC - and the color coded wire to the terminal labelled TOXIC +. See Figure 4 on page 10 for the detector wiring connections to the amplifier and the detector wire color coding.
9. Reinstall the junction box cover.
10. Turn on or plug in power to the controller.
11. Turn on the controller and place it into normal operation.

CAUTION: *Allow the replacement detector to warm up for 5 minutes before you continue with the next step.*

12. Calibrate the replacement detector as described in “Calibration” on page 17.

Replacing the Amplifier

1. Turn off the controller.
2. Turn off or unplug power to the controller.
3. Remove the junction box cover.
4. Unplug the detector terminal strip and controller terminal strip from their sockets. You may leave the wires connected to the terminal strips.
5. Unscrew and remove the screw with the flat and lock washers that secures the amplifier to the junction box.
6. Remove the old amplifier.
7. Install the new amplifier into the junction box with the screw, lock washer, and flat washer you removed in Step 5 above. A foam gasket that orients the amplifier and keeps it from rotating is installed on the bottom of the amplifier. Make sure the amplifier is seated flat in the junction box.
8. Install the detector and controller terminals strips into their sockets on the new amplifier as shown in Figure 4 on page 10. If controller leads or detector leads were removed during this procedure, refer to Figure 4 on page 10 for the detector and amplifier connections.

NOTE: When a transmitter is first powered up with a new amplifier, the initial output may be either high or below zero depending on the setting of the zero pot. Be sure to make arrangements so that this does not cause unwanted alarms.

9. Turn on power to the controller.
10. Turn on the controller and place it into normal operation.
11. Allow the transmitter to warm-up for 5 minutes.
12. Calibrate the transmitter as described in “Calibration” on page 17 of this manual.

Calibration Frequency

Although there is no particular calibration frequency that is correct for all applications, a calibration frequency of every 3 months is adequate for most toxic gas transmitter applications. Unless experience in a particular application dictates otherwise, RKI Instruments, Inc. recommends a calibration frequency of every 3 months for the toxic gas transmitter.

If an application is not very demanding, for example detection in a clean, temperature controlled environment where toxic gas is not normally present, and calibration adjustments are minimal at calibration, then a calibration frequency of every 6 months is adequate.

If an application is very demanding, for example if the environment is not well controlled or if toxic gas is often present, then more frequent calibration than every 3 months may be necessary.

Calibration

This section describes how to calibrate the toxic gas transmitter. It includes procedures to prepare for calibration, set the zero (fresh air) reading, set the span (response) reading, and return to normal operation. It describes calibration using a calibration kit that includes a calibration cup, calibration gas, sample tubing, and a fixed flow regulator with an on/off knob. The required sample flow rate and calibration cup depend on the transmitter being calibrated. Table 3 below lists the required calibration cups and regulators for the various toxic gas transmitters.

Table 3: Required Calibration Cups and Flow Rates

Transmitter Type	Required Calibration Cup	Required Regulator/ Flowrate for Calibration Gas	Flow Direction Specified on Calibration Cup
Arsine (AsH ₃)	81-1138RK	81-1051RK, 0.5 LPM (liters per minute)	Yes
Chlorine (Cl ₂)	81-1138RK-CL2	81-1051RK, 0.5 LPM	No
Ammonia (NH ₃)	81-1138RK-NH3	81-1051RK-25, 0.25 LPM	No
Phosphine (PH ₃)	81-1138RK	81-1051RK, 0.5 LPM	Yes
Sulphur Dioxide (SO ₂)	81-1138RK	81-1051RK, 0.5 LPM	Yes

WARNING: *Not using the recommended calibration cup, sample flowrate, and specified flow direction (for 81-1138RK calibration cup only) will result in an inaccurate calibration. Make sure to use the calibration cup and sample flow rate listed in Table 3 for your target gas when performing a calibration. Also make sure to connect the sample tubing to the calibration cup port that results in the specified flow direction for the 81-1138RK calibration cup.*

Preparing for Calibration

1. Place the controller into its calibration mode or disable external alarms.
2. Unscrew and remove the junction box cover.
3. Set a voltmeter to measure in the millivolt (mV) range.
4. Plug the voltmeter leads into the test points on the amplifier. Plug the positive lead into the red + test point; plug the negative lead into the black - test point.
5. Use the following formula to determine the correct test points output for the calibrating sample.

$$\text{Output (mV)} = (\text{calibrating sample/fullscale}) \times 400 + 100$$

For example, with a calibrating sample of .50 ppm and a fullscale setting of 1.00, the correct output is 300 mV.

$$300(\text{mV}) = (.50/1.00) \times 400 + 100$$

NOTE: Calibrating the toxic gas transmitter may cause alarms. Be sure to put the controller into its calibration program or disable external alarms before continuing.

6. Unscrew the splashguard from the detector housing cap. Make sure the cap remains securely screwed onto the housing body.
7. Push the calibration cup onto the plug-in sensor that sticks through the housing cap. The calibration cup seals to the sensor with an O-ring.

Setting the Zero (Fresh Air) Reading

NOTE: If you can verify that the toxic gas transmitter is in a fresh air environment, you do not need to apply zero air to the detector before adjusting the fresh air reading.

1. Screw the regulator into the zero air calibration cylinder.
2. Use the sample tubing to connect the regulator to the calibration cup. Make sure to connect the tube to the inlet side of the calibration cup if using the 81-1138RK calibration cup which is marked on the outside bottom to show the required flow direction through the cup.
3. Turn the regulator knob counterclockwise to open the regulator.
4. Allow the gas to flow for two minutes and verify a reading of 100 mV (± 2 mV). If necessary, use the zero pot on the amplifier to adjust the reading to 100 mV (± 2 mV).
5. Turn the regulator knob clockwise to close the regulator.
6. Unscrew the regulator from the zero air calibration cylinder. Leave the sample tubing connected to the regulator and the calibration cup.

NOTE: Depending on the size of your zero air cylinder, it is possible that you will have a different regulator for the zero air cylinder and toxic gas cylinder. If necessary to fit the calibration toxic gas cylinder, change the regulator.

Setting the Span (Response) Reading

1. Screw the regulator into the calibration cylinder. Verify that the calibration gas is representative of the transmitter's target gas.
2. Turn the regulator knob counterclockwise to open the regulator.
3. Allow the calibration gas to flow for two minutes and verify that the reading matches the response reading (± 2 mV) you determined earlier. If necessary, use the span pot on the amplifier to adjust the reading to match the correct response reading.
4. Turn the regulator knob clockwise to close the regulator.
5. Unscrew the regulator from the calibration cylinder and gently pull the calibration cup off of the plug-in sensor.

Returning to Normal Operation

1. Remove the voltmeter leads from the amplifier test points.
2. Gently pull the calibration cup off of the plug-in sensor

NOTE: For convenience, leave the regulator and calibration cup connected by the sample tubing.

3. Screw the splashguard firmly back onto the housing cap.
4. Secure the junction box cover to the junction box.
5. When the controller display reading falls below the alarm setpoints, return the controller to normal operation.

NOTE: If you do not allow the gas reading to decrease below the alarm points, then unwanted alarms may occur.

6. Verify that the controller display reading decreases and stabilizes at 0 ppm.
7. Store the components of the calibration kit in a safe and convenient place.

Parts List

Table 4 lists replacement parts and accessories for the toxic gas transmitter.

Table 4: Parts List

Part Number	Description
06-1283RK	Calibration kit sample tubing, 3 foot teflon w/flexible tubing on ends
07-0125RK	Detector housing cap gasket
18-0400RK-01	Junction box with rubber spacers
57-1064RK-03	S2 series toxic amplifier
65-2300RK-ASH3	Replacement detector assembly, AsH ₃ (includes plug-in sensor)
65-2300RK-CL2	Replacement detector assembly, Cl ₂ (includes plug-in sensor)
65-2300RK-NH3	Replacement detector assembly, NH ₃ (includes plug-in sensor)
65-2300RK-PH3	Replacement detector assembly, PH ₃ (includes plug-in sensor)
65-2300RK-SO2	Replacement detector assembly, SO ₂ (includes plug-in sensor)
71-0143RK	65-2340RK Operator's Manual (this document)
81-0076RK	Zero air calibration cylinder, 17 liter steel
81-0076RK-01	Zero air calibration cylinder, 34 liter steel
81-0076RK-03	Zero air calibration cylinder, 103 liter steel
81-0170RK-02	Calibration cylinder, 5 ppm SO ₂ in nitrogen, 58 liter aluminum
81-0170RK-04	Calibration cylinder, 5 ppm SO ₂ in nitrogen, 34 liter aluminum
81-0175RK-02	Calibration cylinder, 10 ppm NH ₃ in nitrogen, 58 liter aluminum
81-0175RK-04	Calibration cylinder, 10 ppm NH ₃ in nitrogen, 34 liter aluminum
81-0185RK-02	Calibration cylinder, 0.5 ppm PH ₃ in nitrogen, 58 liter aluminum, used to calibrate PH ₃ and AsH ₃ detectors, see conversion factor on AsH ₃ plug-in sensors
81-0185RK-04	Calibration cylinder, 0.5 ppm PH ₃ in nitrogen, 34 liter aluminum, used to calibrate PH ₃ and AsH ₃ detectors, see conversion factor on AsH ₃ plug-in sensors
81-0192RK-02	Calibration cylinder, 2 ppm Cl ₂ in nitrogen, 58 liter, aluminum
81-0192RK-04	Calibration cylinder, 2 ppm Cl ₂ in nitrogen, 34 liter aluminum
81-1050RK	Regulator with gauge and knob, 0.5 LPM, for 17 liter and 34 liter steel calibration cylinders (used for 34 liter zero air cylinder only)
81-1051RK	Regulator with gauge and knob, 0.5 LPM, for 34AL/58/103 liter calibration cylinders
81-1051RK-25	Regulator with gauge and knob, 0.25 LPM, for 34AL/58/103 liter calibration cylinders (used to calibrate NH₃ toxic detector only)

Table 4: Parts List

Part Number	Description
81-1138RK	Calibration cup, general (SO ₂), for ESM-01, use 0.5 LPM flow
81-1138RK-CL2	Calibration cup, for ESM-01 Cl ₂ , use 0.5 LPM flow
81-1138RK-NH3	Calibration cup, for ESM-01 NH ₃ , use 0.25 LPM flow
81-F503RK	Calibration kit, includes regulator, calibration cup, and a 58 liter 10 ppm NH ₃ in nitrogen aluminum calibration cylinder
81-F503RK-LV	Calibration kit, includes regulator, calibration cup, and a 34 liter 10 ppm NH ₃ in nitrogen aluminum calibration cylinder
81-F603RK	Calibration kit, includes regulator, calibration cup, and 58 liter 2 ppm CL ₂ in nitrogen aluminum calibration cylinder
81-F603RK-LV	Calibration kit, includes regulator, calibration cup, and 34 liter 2 ppm CL ₂ in nitrogen aluminum calibration cylinder
81-F702RK	Calibration kit, includes regulator, calibration cup, and a 58 liter 5 ppm SO ₂ in nitrogen aluminum calibration cylinder
81-F702RK-LV	Calibration kit, includes regulator, calibration cup, and a 34 liter 5 ppm SO ₂ in nitrogen aluminum calibration cylinder
81-F811RK	Calibration kit, includes regulator, calibration cup, and a 58 liter 0.5 ppm PH ₃ in nitrogen aluminum calibration cylinder
81-F811RK-LV	Calibration kit, includes regulator, calibration cup, and a 34 liter 0.5 ppm PH ₃ in nitrogen aluminum calibration cylinder
ESM-01DH-ASH3	ESM-01 plug-in sensor, 0 - 1.50 ppm arsine
ESM-01DH-D-SO2	ESM-01 plug-in sensor, 0 - 6.00 ppm sulphur dioxide, diffusion type only
ESM-01DH-PH3	ESM-01 plug-in sensor, 0 - 1.00 ppm phosphine
ESM-01R-D-NH3	ESM-01 plug-in sensor, 0 - 75.0 ppm ammonia, diffusion type only
ESM-K01-D-CL2	ESM-01 plug-in sensor, 0 - 3.00 ppm chlorine, diffusion type only