

# **Model GD-70D4X-XX Supplement to the GD-70D Operator's Manual**

*Part Number: 71-0172RK*

*Revision: 0*

*Released: 3/1/11*

## **WARNING**

Read and understand this instruction manual before operating detector. Improper use of the detector could result in bodily harm or death.

Periodic calibration and maintenance of the detector is essential for proper operation and correct readings. Please calibrate and maintain this detector regularly! Frequency of calibration depends upon the type of use you have and the sensor types. Typical calibration frequencies for most applications are between 3 and 6 months, but can be required more often or less often based on your usage.

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## Product Warranty

RKI Instruments, Inc. warrants gas alarm equipment sold by us to be free from defects in materials, workmanship, and performance for a period of one year\* from the date of shipment from RKI Instruments, Inc. Any parts found defective within that period will be repaired or replaced, at our option, free of charge. Parts must be returned to RKI Instruments, Inc. for repair or replacement. This warranty does not apply to those items which by their nature are subject to deterioration or consumption in normal service, and which must be cleaned, repaired or replaced on a routine basis. Examples of such items are:

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

Warranty is voided by abuse including mechanical damage, alteration, rough handling, or repair procedures not in accordance with instruction 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.

*THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED OR IMPLIED, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF RKI INSTRUMENTS, INC. INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RKI INSTRUMENTS, INC. BE LIABLE FOR INDIRECT, INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE OF ANY KIND CONNECTED WITH THE USE OF ITS PRODUCTS OR FAILURE OF ITS PRODUCTS TO FUNCTION OR OPERATE PROPERLY.*

This warranty covers instruments and parts sold to users only 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. Warranty covers parts and labor performed at RKI Instruments, Inc. only, and does not cover field labor or shipment of parts back to RKI.

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## Overview

This supplement describes the differences and additional features of the GD-70D4X-XX compared to the GD-70D. It also describes how to install, startup, maintain, and calibrate the GD-70D4X-XX. See the GD-70D Operator's Manual for information specific to the GD-70D.

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## Specifications

Table 1 lists specifications for the GD-70D4X-XX.

**Table 1: Specifications**

Target Gas & Detector Range	Refer to the RKI Instruments Inc. List of Detectable Gasses
Enclosure Type	NEMA 4X
Sampling Method	Sample-draw
Input Power	24 VDC
Signal Output	4 to 20 mA
Response Time	90% in 60 seconds
Accuracy	See GD-70D manual
Flow Rate	Approximately 0.5 liters/minute
Recommended Sample Tubing	1/4" O.D. x 1/8" I.D. Teflon PTFE

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**WARNING:** *When using the GD-70D4X-XX, you must follow the instructions and warnings in this manual to assure proper and safe operation of the GD-70D4X-XX and to minimize the risk of personal injury. Be sure to maintain and periodically calibrate the GD-70D4X-XX as described in this manual.*

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## Description

This section describes the components of the GD-70D4X-XX. It consists of the enclosure and a GD-70D mounted inside. The “XX” at the end of the part number represents characters that denote the target gas and changes depending on the target gas. For example, the part number for a detector head for chlorine (Cl<sub>2</sub>) detection is GD-70D4X-CL2. Consult RKI Instruments, Inc. for a complete list of available part numbers.

A hydrophobic sample filter is also provided with the GD-70D4X-XX for installation near the inlet fitting. The filter has a short length of gray flexible tubing on each end and can be connected to the short tubing stub on the GD-70D4X-XX inlet fitting. The filter scrubs particulates out of the sample stream and keeps water and many other liquids from entering the GD-70D4X-XX flow system.

### Enclosure

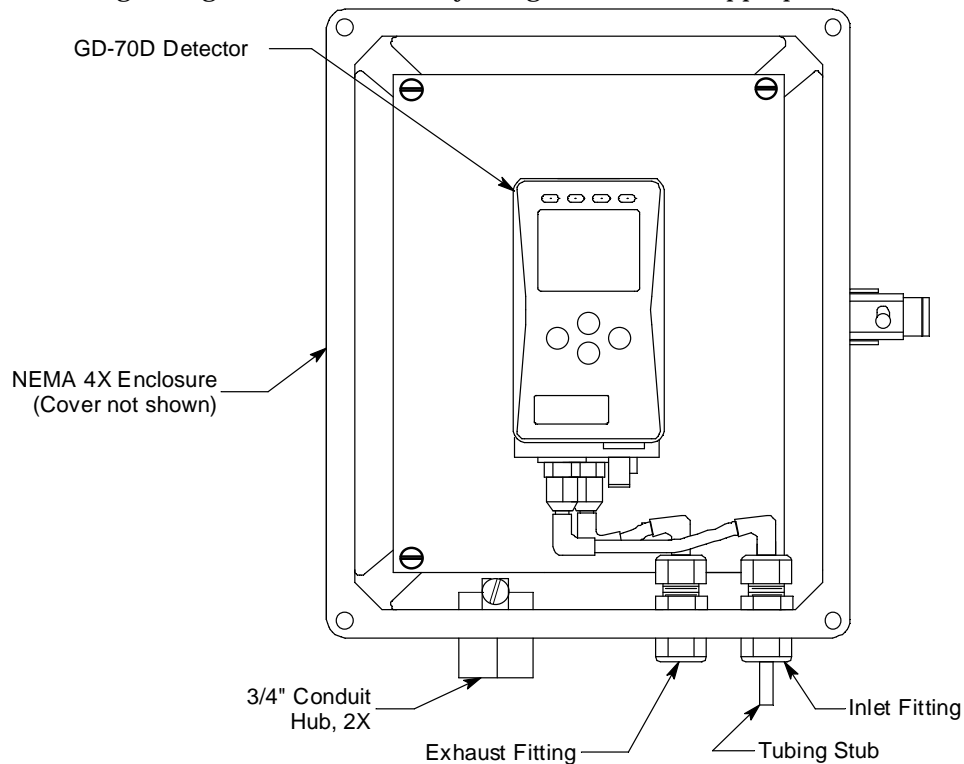
The enclosure is a type NEMA 4X plastic enclosure designed for use in areas that are subject to rain or hosing down. A mounting foot is installed in each corner. Two sample fittings are mounted on the bottom right of the enclosure and two 3/4” conduit hubs are mounted to the left of the sample fittings.

### Sample Fittings

The inlet fitting is on the bottom right of the enclosure and the exhaust fitting is to the left of the inlet fitting. The fittings accept 1/4” O.D. x 1/8” I.D. Teflon tubing. The inlet fitting has a short factory installed tubing stub for use with the hydrophobic filter.

### Conduit Hubs

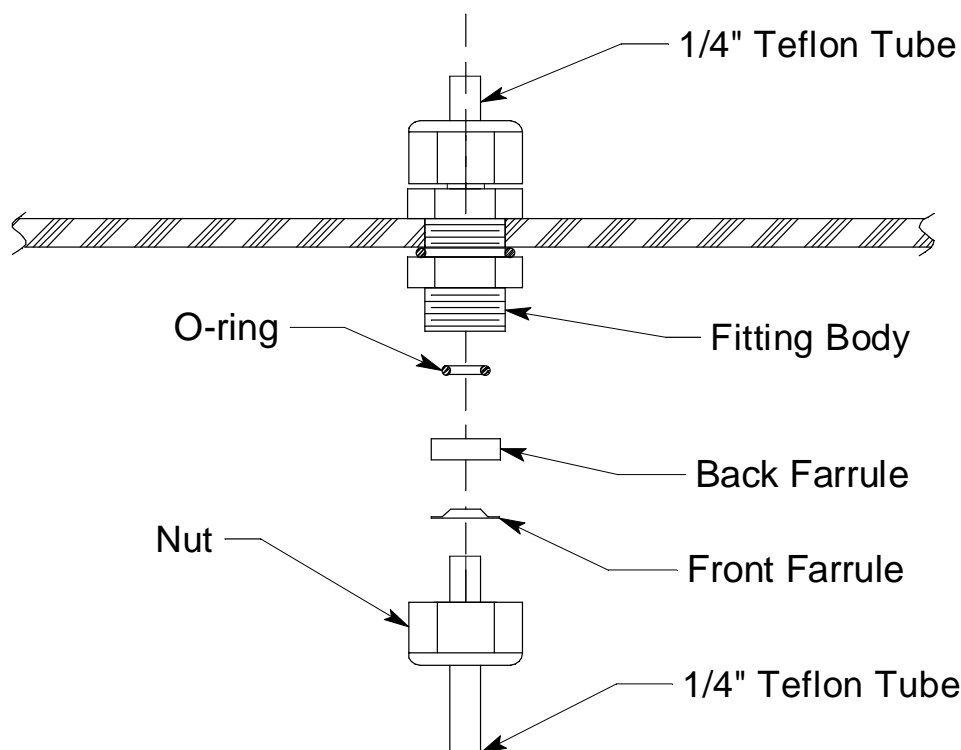
Two 3/4” conduit hubs are located to the left of the sample fittings. They are used for routing wiring into the enclosure by using conduit or an appropriate cable bushing.



**Figure 1: Component Location**

### ***Inlet Fitting Tubing Stub***

A short tubing stub comes factory installed in the inlet fitting. It is used for connecting the hydrophobic filter. If the hydrophobic filter is not used, or if you install the hydrophobic filter in a different location, the tubing stub needs to be removed and replaced with tubing. Do not pull the tubing stub downward to remove it. Instead, unscrew the lower inlet fitting nut from the fitting body. The tubing stub should come out with the nut. Be careful not to lose the O-ring that may come out with the tubing stub. Push the tubing stub up and out of the inlet fitting nut being careful not to lose the ferrule set. Push the new tubing up through the inlet fitting nut and replace the ferrule set and the O-ring, if it came out, in the orientation shown in Figure 2. Screw the inlet fitting nut back onto the fitting body and push the tubing upward until it stops. See Figure 2 for the inlet fitting layout.



**Figure 2: Inlet Fitting with Tubing Stub**

### **GD-70D**

The GD-70D sample draw detector head is mounted to a plate inside the enclosure. The GD-70D sample fittings are factory connected to the sample fittings on the NEMA 4X enclosure. See the GD-70D operator's manual for a complete description of the GD-70D.

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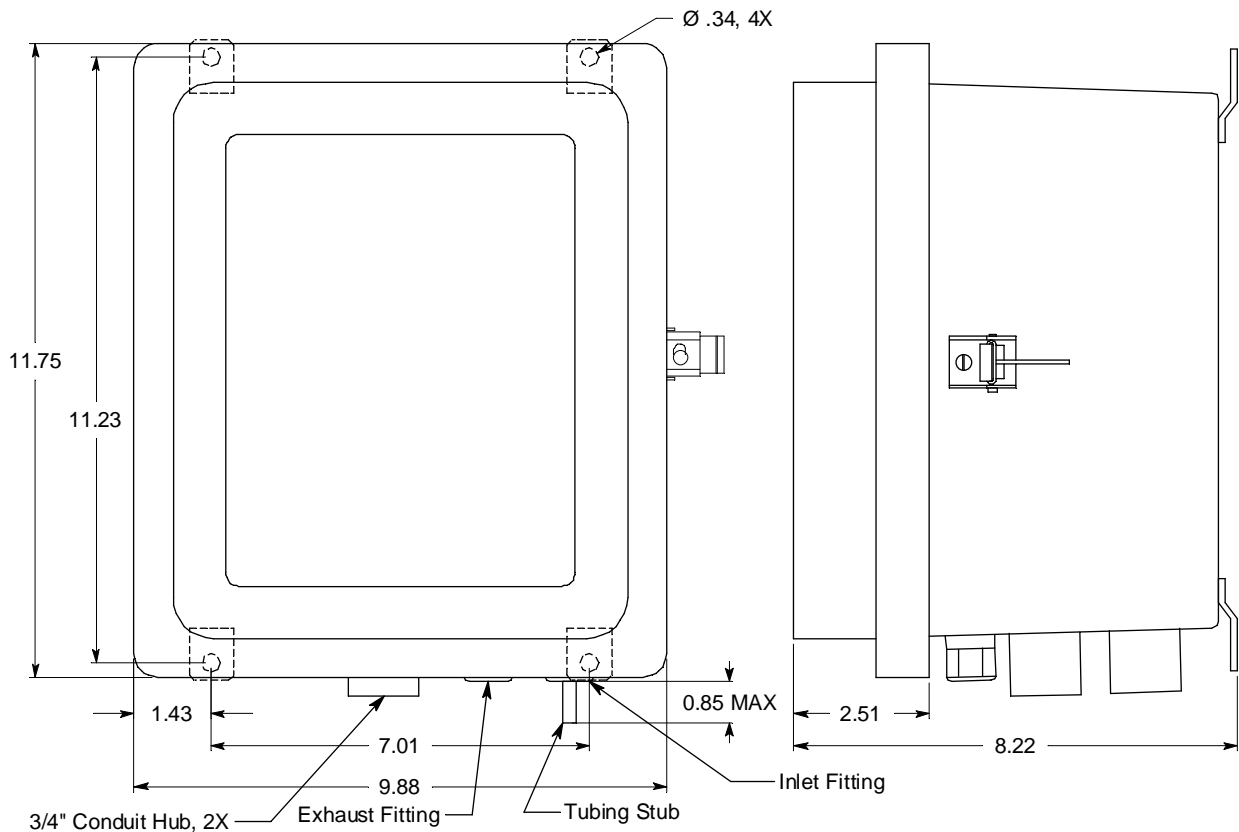
## **Installation**

This section describes how to install the GD-70D4X-XX at the monitoring site.

### **Mounting the GD-70D4X-XX**

1. Select a mounting site that is representative of the monitoring environment. Consider the following when you select the mounting site.
  - Select a site that is easily accessible for servicing.

- Select a site where the GD-70D4X-XX is not likely to be bumped or disturbed. Make sure there is sufficient room to make wiring and sample line connections at the bottom of the GD-70D4X-XX. Also make sure there is sufficient room to perform start-up, maintenance, and calibration procedures.
- Select a site near the sampling area. The GD-70D4X-XX is designed to detect a variety of toxic gases, many of which are easily absorbed in sample tubing. Keep the sample line length to a minimum. Teflon PTFE tubing is recommended to minimize sample absorption.
- Use four 1/4" screws through the mounting feet to mount the GD-70D4X-XX to a vertical surface. See Figure 3 for the mounting dimensions.



**Figure 3: Outline & Mounting Dimensions**

### Connecting Sample Lines to the GD-70D4X-XX

1. Connect the hydrophobic filter to the tubing stub on the inlet by pushing the gray flexible tubing on the filter onto the stub.  
  
If the hydrophobic filter is not used, or if you install the hydrophobic filter in a different location, replace the tubing stub with 1/4" x 1/8" tubing as described in "Inlet Fitting Tubing Stub" on page 3.
2. Connect a length of sample tubing to the other side of the hydrophobic filter and route it to the sampling area. If the hydrophobic filter is not used, or if you install the hydrophobic filter in a different location, route tubing from the inlet fitting to the sample area. Be sure to keep the length to a minimum. Consult RKI Instruments, Inc. for lengths of more than 20 feet.

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**CAUTION:** Avoid loops or slumps in the incoming sample line. To reduce response time, keep the incoming sample line as short as possible.

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3. Install 1/4" O.D. x 1/8" I.D. Teflon PTFE sample tubing to the gas out fitting. Route the opposite end of the tubing to an open area where the sample can safely disperse or to an exhaust duct.

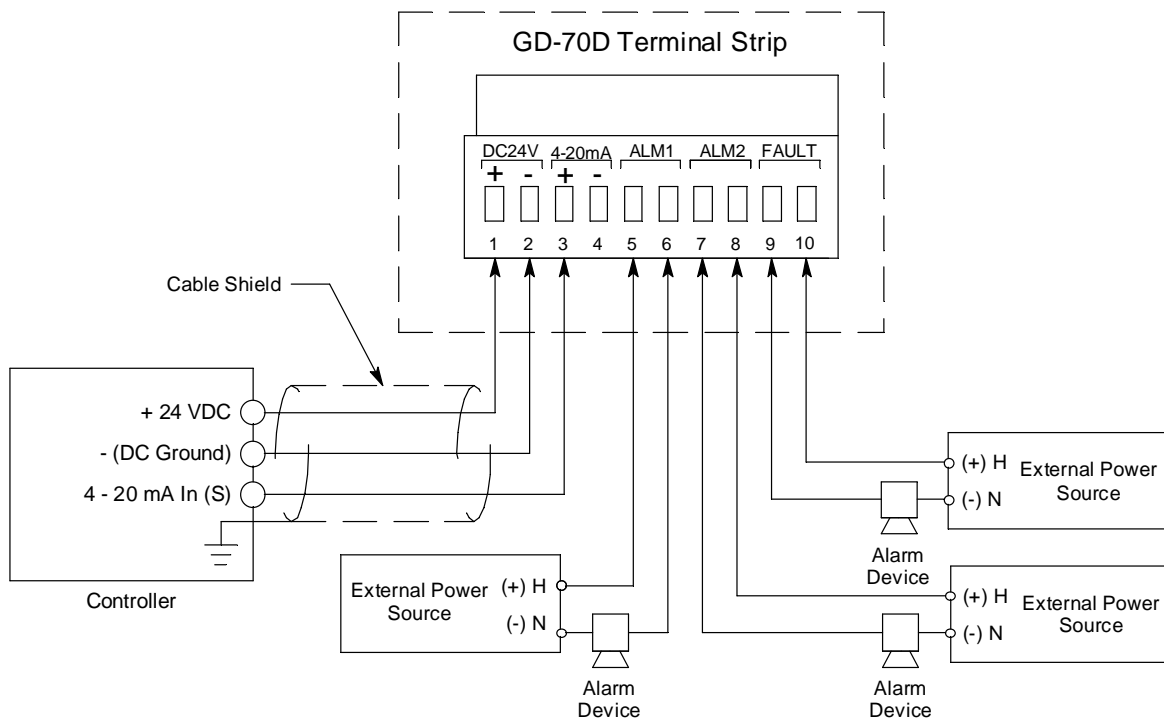
### Wiring the GD-70D to a Controller

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**WARNING:** Always verify that power to the GD-70D4X-XX and to the controller are off and that the controller's and GD-70D's power switches are in the off position before making wiring connections or adjustments.

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1. Turn off power to the controller.
2. Place the controller's and GD-70D's power switches in the OFF position.
3. Use the conduit hubs at the bottom of the GD-70D4X-XX for routing power and signal cables into the enclosure. Route any relay wiring through one conduit hub, and a 3-conductor shielded cable, or three wires in conduit, for controller connections through the other conduit hub to minimize crosstalk.



**Figure 4: External Wiring**

4. If shielded cable is used for controller wiring, connect the cable shield's drain wire to a chassis ground at the controller, but do not connect it at the GD-70D4X-XX.

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**CAUTION:** Leave the cable shield's drain wire insulated and disconnected at the GD-70D4X-XX. You will connect the opposite end of the cable shield's drain wire at the controller.

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**CAUTION:** *At the controller, do not route power and GD-70D wiring through the same conduit hub. The power cable may disrupt the transmission of the GD-70D's signal to the controller.*

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## Start Up

1. Turn on power to the controller.
2. Turn on the controller.
3. Turn on the GD-70D. See the GD-70D Operator's Manual for GD-70D startup instructions.

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## Operation

See the GD-70D Operator's Manual for an operational description of the GD-70D that is mounted inside the enclosure.

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## Maintenance/Calibration

See the GD-70D Operator's Manual for maintenance and calibration instructions. Use the inlet fitting on the NEMA 4X enclosure to apply gas instead of the fittings inside the enclosure on the GD-70D.

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## Parts List

Table 4 lists replacement parts and accessories for the GD-70D4X-XX.

**Table 2: Parts List**

<b>Part Number</b>	<b>Description</b>
06-1273RK	1/4" O.D. x 1/8" I.D. Teflon PTFE tubing
17-4820RK	Sample fitting, 1/4" tube bulkhead union
18-0107RK	3/4" conduit hub
33-0165RK-01	Hydrophobic filter w/flexible tubing stubs