RKI
INSTRUMENTS

AC-7400 Gas Monitor
Operator's Manual

RKI Instruments, Inc.
www.rkiinstruments.com

Product Warranty

RKI Instruments, Inc. (Manufacturer) warrants its products to be free of defects in workmanship and materials—under normal use and service—for one year from the date of purchase from the manufacturer or from the product's authorized reseller.

The manufacturer is not liable (under this warranty) if its testing and examination disclose that the alleged defect in the product does not exist or was caused by the purchaser's (or any third party's) misuse, neglect, or improper installation, testing or calibrations. Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use, including damage by fire, lightning, water damage or other hazard, voids liability of the manufacturer.

Any repaired or replaced product or part has either a 90-day warranty or the remainder of the initial warranty period (whichever is longer).

Table of Contents

Chapter 1: Introduction

Overview

This chapter briefly describes the AC-7400 Gas Monitor. This chapter also describes the *AC-7400 Gas Monitor Operator's Manual* (this document). Table 1 at the end of this chapter lists the specifications for the AC-7400.

About the AC-7400 Gas Monitor

The AC-7400 is an eight or twelve channel gas monitor that functions as a transmission controller. The AC-7400 monitors toxic, combustible, and oxygen gas levels in ambient air by receiving and displaying 4-20mA signals from up to twelve wired sensor assemblies.

The AC-7400 features a 160x104 graphical LCD display and is equipped with four "dry contact" (Form C) 5 Amp alarm relays (with 4 Amp fuses) that are full-scale adjustable.

The AC-7400 operates from either 12-35 Volts DC or 110/240 Volts AC and includes a Modbus output with optional real-time monitoring software.

An optional strobe and/or horn can be ordered. The strobe is installed on the top of the housing and is wired into the first relay. The horn is installed on the bottom of the housing and is wired into the second relay.

About this Manual

The *AC-7400 Gas Monitor Operator's Manual* uses the following conventions for notes, cautions, and warnings:

NOTE: Describes additional or critical information.

CAUTION: *Describes potential damage to equipment.*

WARNING: **Describes potential danger that can result in injury or death.**

⚠   Caution: refer to accompanying documentation

~   Vac (AC voltage)

⎓   Vdc (DC voltage)

Specifications

Table 1 lists specifications for the AC-7400.

Table 1: AC-7400 Specifications

Input Voltage	110/240V ~ or 12 - 35 V ⎓
Current Draw, 8-Channel Version	AC-7408 Alone • 300 mA at 24 VDC • 60 mA at 115 VAC AC-7408 with Powered Accessories and Connected Detectors • Up to 3.5 A at 24 VDC • Up to 770 mA at 115 VAC
Current Draw, 12-Channel Version	AC-7412 Alone • 325 mA at 24 VDC • 70 mA at 115 VAC AC-7412 with Powered Accessories and Connected Detectors • Up to 4.6 A at 24 VDC • Up to 1 A at 115 VAC
Input Signal	4- 20 mA
Output	• 12 - 35 VDC (fault indicator, available at fault terminal block) • RS-485 Modbus
Construction (housing)	Fiberglass with clear window (NEMA 4)
Dimensions	14.97 in. H x 12.17 in. W x 6.5 in. D (38.02 cm H x 30.91 cm W x 16.51 cm D)
Weight	12 lbs.
User Controls	Program buttons: RESET/ESC, SCAN/HOLD, MENU, ADD, SUB
Display	Graphical LCD (160x104), transflective, sunlight readable, LED backlight
Relays	• 4 relays protected by a 4A fuse • 3A at 24 VDC, 115 VAC, and 250 VAC • SPDT, Form C (common, normally open, and normally closed contacts)
Standard Accessory	Operator's manual (this document)
Optional Accessories	• Strobe • Horn

Chapter 2: Description

Front Panel
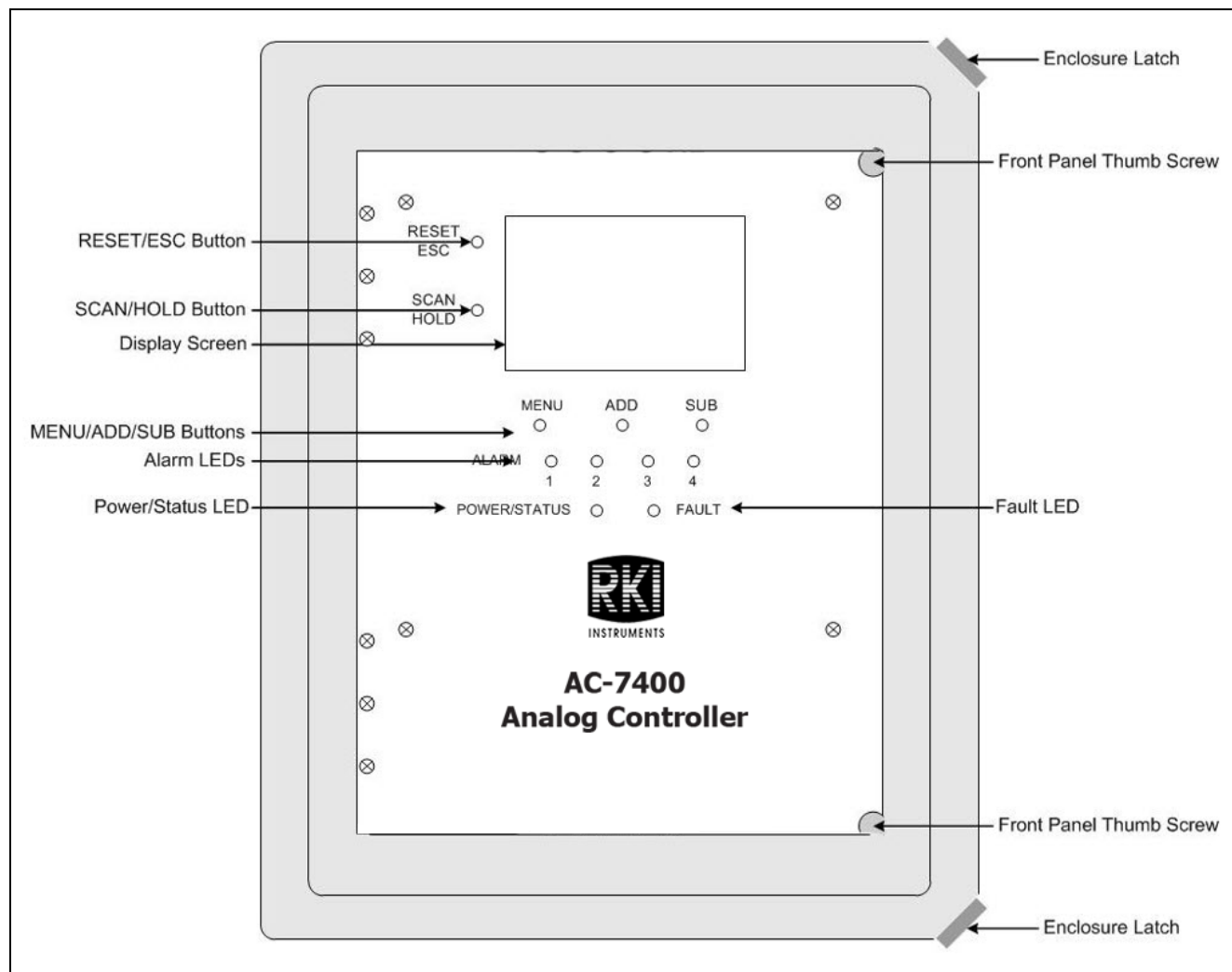
Figure 1: Front Panel

Boards
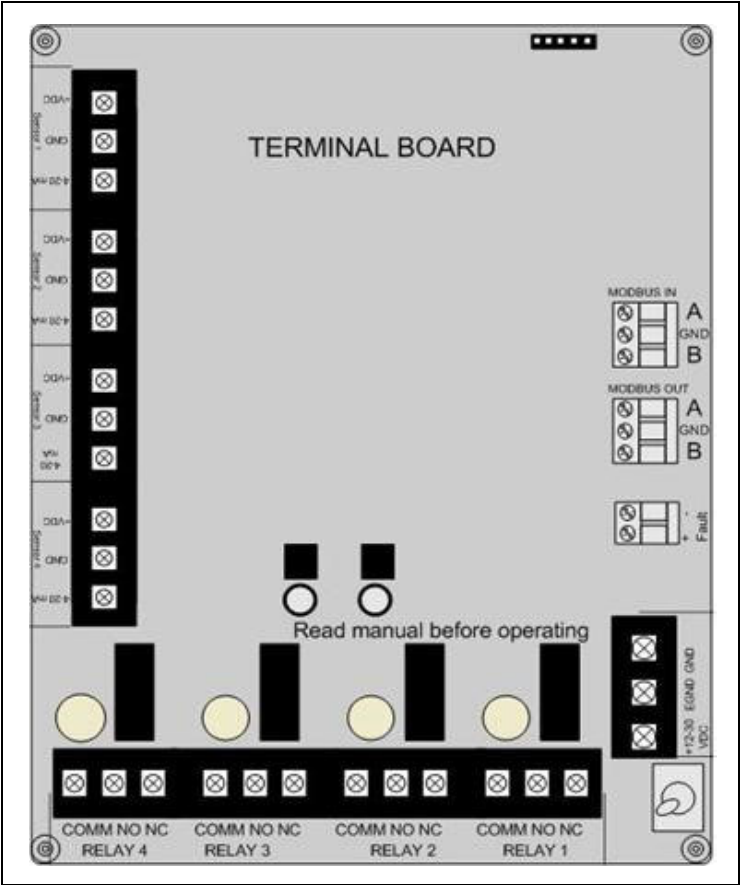
Figure 2: Terminal Board
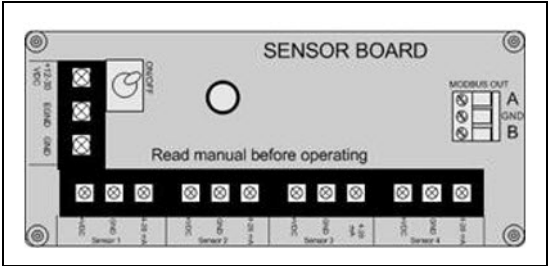
Figure 3: Sensor Board

Internal Components
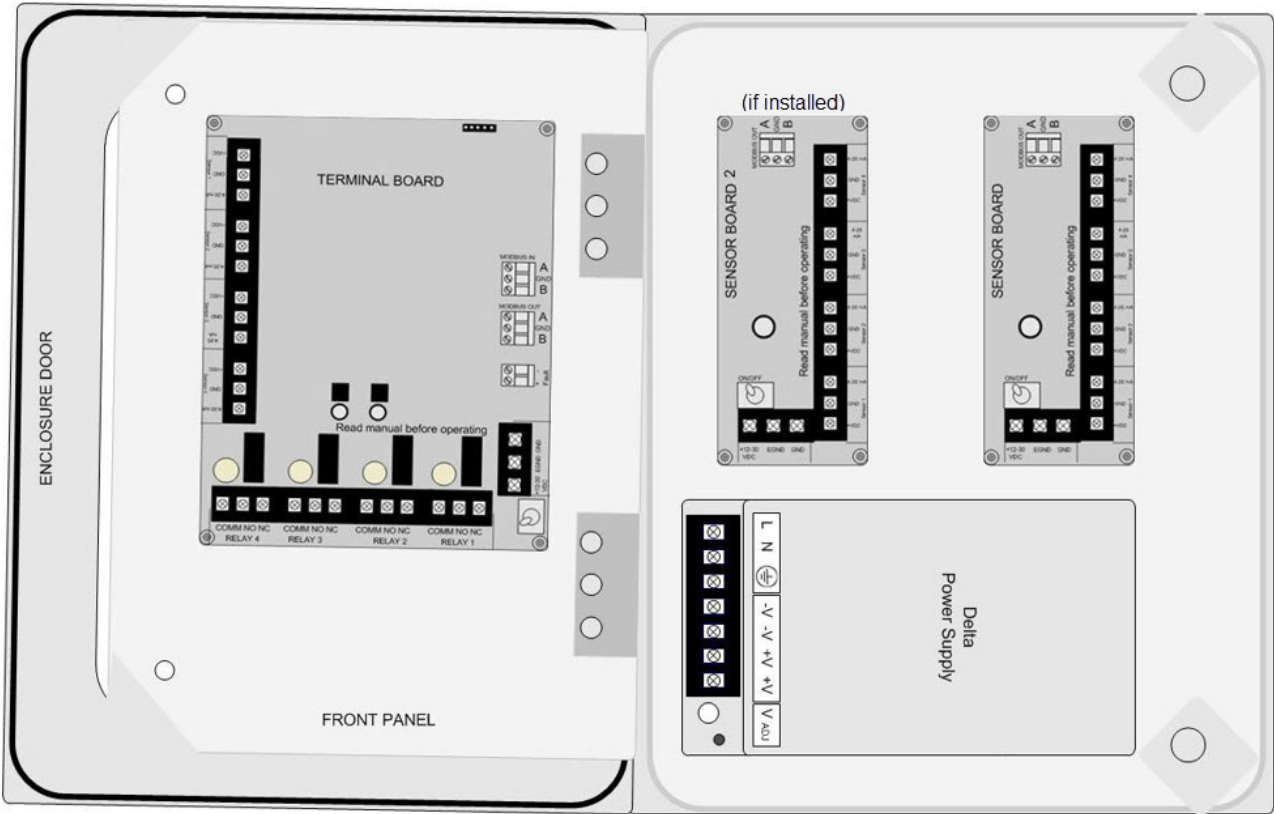
Note: Delta power supply only included with AC-powered version.

Figure 4: Internal Components

Chapter 3: Installation

Mounting the AC-7400 Gas Monitor

1. Select the mounting site. When you select the mounting site, consider the following factors:
   - Is an AC or DC power source available?
   - Is a vertical surface available to mount the AC-7400?
   - Is there enough room to open the housing door and make wiring connections?
   - Are the display screen and status lights visible?

2. Close and latch the housing door.

3. Prepare the selected mounting site as required to mount the AC-7400. It should be mounted at eye level (4 1/2 to 5 feet from the floor). Refer to Figure 5 for the outline and mounting dimensions.

4. Position the monitor on the vertical mounting surface.

5. Insert 1/4" bolts or screws through the slots in the mounting feet at each corner of the housing to secure the housing to the mounting surface.
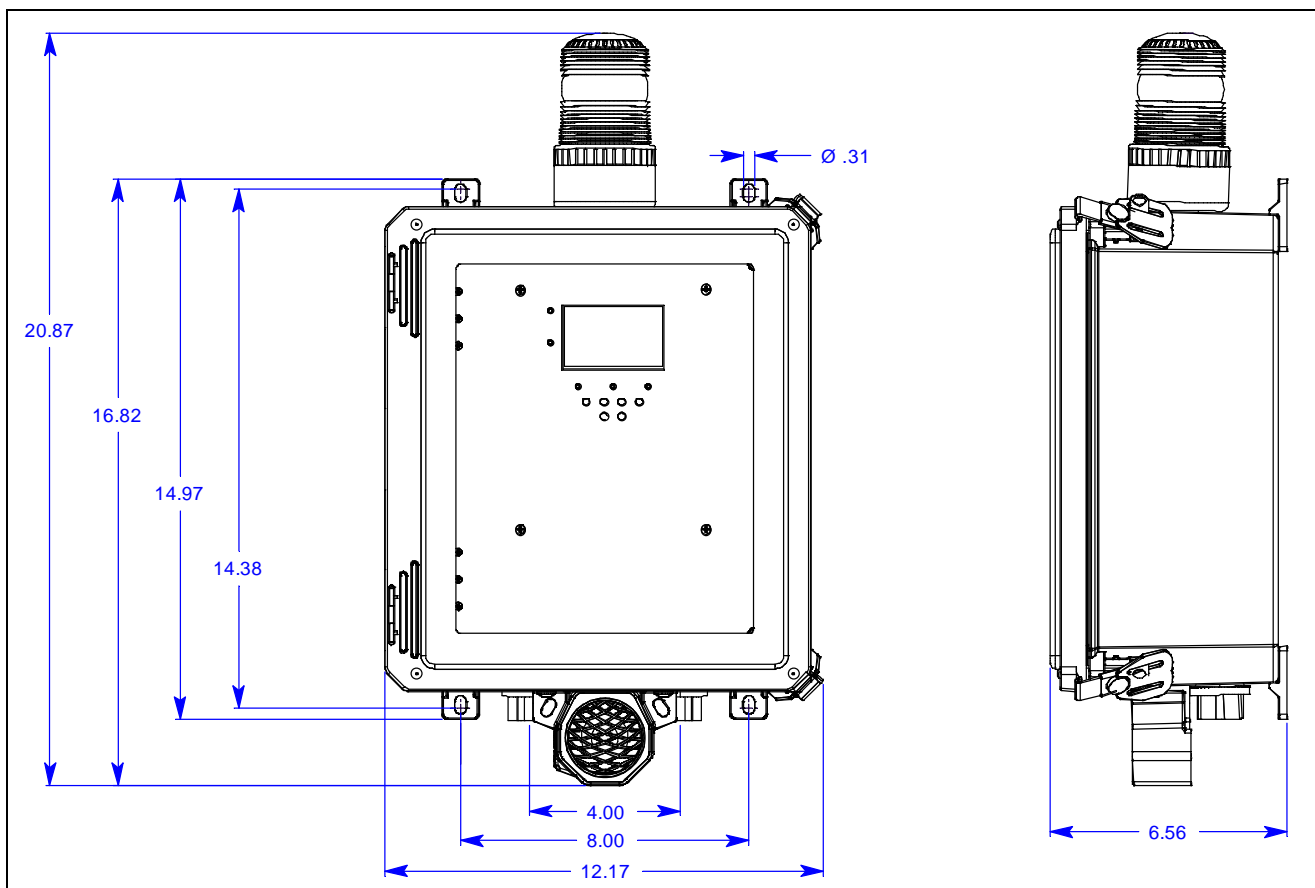
Figure 5: Outline and Mounting Dimensions

Wiring the AC-7400 Gas Monitor

This section describes procedures for DC power source wiring, AC power source wiring, Modbus out wiring, fault indicator wiring, sensor connection, and relay wiring.

The following wiring connections must be made before starting up the AC-7400.

CAUTION: *The internal components can be static sensitive. Use caution when opening the enclosure and handling internal components.*

WARNING: **Make all connections to the AC-7400 before you plug in or turn on the AC or DC power source. Before you make any wiring adjustments, always verify that all power sources are not live.**

Connecting a DC Power Source

NOTE: The AC-7400 is shipped configured for the power type ordered. If your AC-7400 is configured for AC power, go to the next section, "Connecting an AC Power Source".

Provide a clean and stable 12-35 VDC. Failure to do so may cause the unit (and any wired sensors that are connected to the unit) to not operate properly.

Voltage spikes higher than 35 VDC may damage the unit.

1. Open the enclosure box to expose the Front Panel.

2. Unscrew the two thumb screws on the Front Panel.

3. Open the Front Panel so that the Terminal Board is exposed (back of Front Panel).

4. Install an appropriately rated cable bushing or conduit in the left-hand conduit hub on the bottom of the AC-7400 housing.

   CAUTION: *RKI Instruments, Inc. recommends routing power wiring through the left-hand conduit hub but it can be routed through the right-hand conduit hub, if desired.*

   Do not route power and detector head wiring through the same conduit hub. The power wiring may disrupt the transmission of the detector head signal to the monitor.

5. Guide the DC power wires in conduit through the left-hand conduit hub.

6. Locate the Power Terminal Block (on the lower right side of the Terminal Board) and connect the DC-live wire (red) to the terminal marked "+12-35 VDC".

7. Connect the DC-ground wire (black) to the terminal marked "GND".

8. If desired, connect an Earth Ground wire (green) to the terminal marked "EGND" (required for surge suppression).
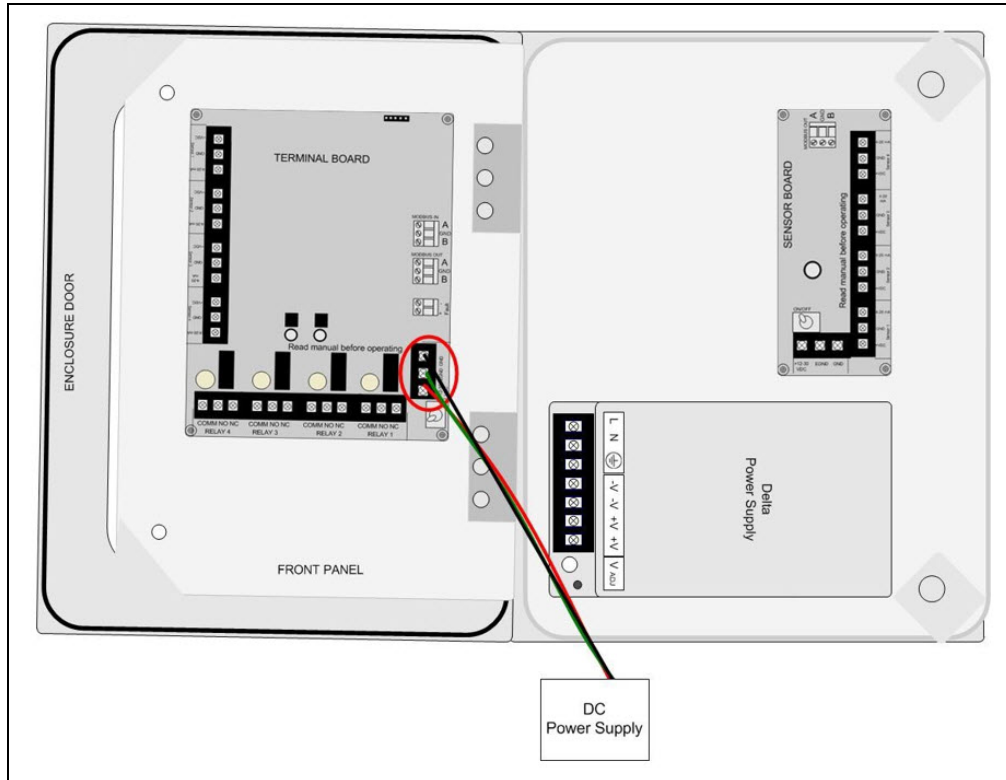
Figure 6: DC Wiring

9. Close the Front Panel.

10. Screw in the thumb-screws.

11. Close the enclosure box.

12. Clamp down the enclosure latches.

Connecting an AC Power Source

NOTE: The AC-7400 is shipped configured for the power type ordered. If your AC-7400 is configured for DC power, it will not have an AC power supply. See "Connecting a DC Power Source".

WARNING: *Verify that the power source is unplugged or turned off before you continue with this procedure.*

1. Open the enclosure box to expose the Front Panel.

2. Unscrew the two thumb-screws on the Front Panel.

3. Open the Front Panel so that the AC (Delta) Power Supply is exposed.

4. Install an appropriately rated cable bushing or conduit in the left-hand conduit hub on the bottom of the AC-7400 housing.

> *CAUTION:* *RKI Instruments, Inc. recommends routing power wiring through the left-hand conduit hub but it can be routed through the right-hand conduit hub, if desired.*
>
> *Do not route power and detector head wiring through the same conduit hub. The power wiring may disrupt the transmission of the detector head signal to the monitor.*

5. Guide the AC power wires in conduit through the left-hand conduit hub.

6. For versions that came with a pre-wired AC line cord: there are three wires (black, white and green) pre-wired from the Delta power supply terminals "L" (AC Load IN), "N" (AC Neutral IN), and "EG" (Chassis GND or Earth GND). This set of wires will be used to plug into an AC power outlet ONCE ALL WIRING CONFIGURATIONS ARE COMPLETE.

7. For versions that did <u>not</u> come with a pre-wired AC line cord:
    a. Connect a line wire from the AC power source to the power supply's "L" terminal.
    b. Connect a neutral wire from the AC power source to the power supply's "N" terminal.
    c. Connect a ground wire from the AC power source to the power supply's "EG" terminal.

NOTE: If the AC-7400 was not ordered with any housing holes, at least one hole will have to be drilled to bring in AC power.
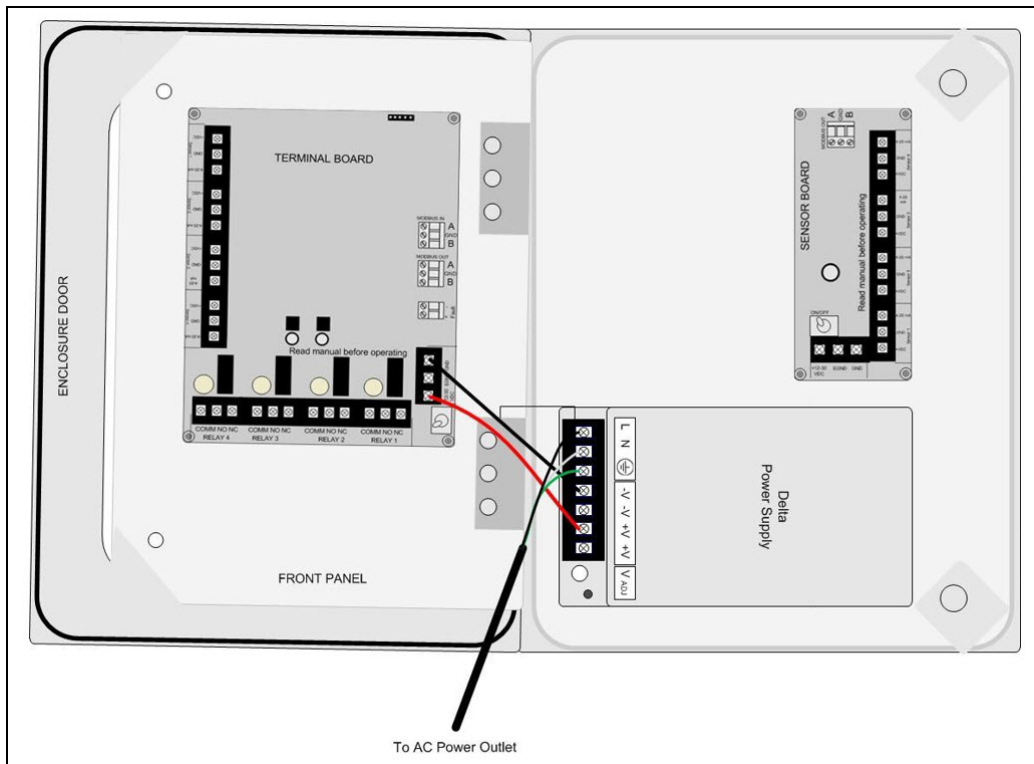
Figure 7: AC Wiring

8. Close the Front Panel.

9. Screw in the thumb-screws.

10. Close the enclosure box.

11. Clamp down the enclosure latches.

RS-485 Modbus Wiring (Modbus Out)

1. Open the enclosure box to expose the Front Panel.

2. Unscrew the two thumb-screws on the Front Panel.

3. Open the Front Panel so that the back of the Terminal Board is exposed.

4. Install an appropriately rated cable bushing or conduit in the right-hand conduit hub on the bottom of the AC-7400 housing.

5. Guide the Modbus wires in conduit through the right-hand conduit hub.

CAUTION: *Do not route power and detector head wiring through the same conduit hub. The power wiring may disrupt the transmission of the detector head signal to the monitor.*

---

6. Locate the Modbus Out Terminal Block.

7. Connect the yellow wire from a DB-9 connector (or the connector-type that best suits your application) to the terminal labeled "A" on the Modbus Out Terminal Block.

8. Connect the white wire from a DB-9 connector to the terminal labeled "GND" on the Modbus Out Terminal Block.

9. Connect the brown wire from a DB-9 connector to the terminal labeled "B" on the Modbus Out Terminal Block.

10. Plug the DB-9 connector into a PLC.

Figure 8: Modbus Out Wiring

11. Close the Front Panel.

12. Screw in the thumb-screws.

13. Close the enclosure box.

14. Clamp down the enclosure latches.

Fault Indicator Connection

The Fault terminal provides an output to power some form of Fault indicator. The Fault terminal uses the same supply voltage that is fed into the board, provides 500 mA maximum, and is a DC only output.

1. Open the enclosure box to expose the Front Panel.

2. Unscrew the two thumb-screws on the Front Panel.

3. Open the Front Panel so that the back of the Terminal Board is exposed.

4. Install an appropriately rated cable bushing or conduit in the right-hand conduit hub on the bottom of the AC-7400 housing.

5. Guide the wires in conduit through the right-hand conduit hub.

> *CAUTION:*   *Do not route power and detector head wiring through the same conduit hub. The power wiring may disrupt the transmission of the detector head signal to the monitor.*

6. Locate the Fault Terminal Block on the Terminal Board.

7. Connect a positive (red) wire to the terminal labeled "+".

8. Connect a negative (black) wire to the terminal labeled "-".
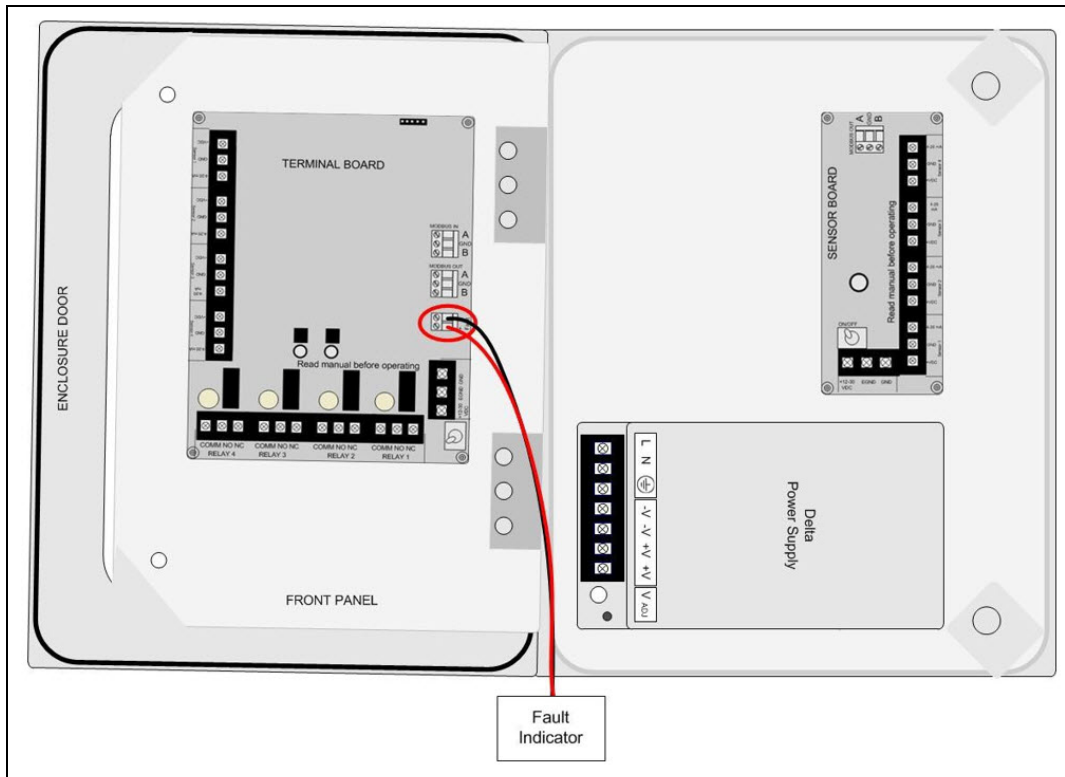
Figure 9: Fault Indicator Wiring

9. Close the Front Panel.

10. Screw in the thumb-screws.

11. Close the enclosure box.

12. Clamp down the enclosure latches.

Connecting 4-20 mA Sensor Assemblies

The AC-7400 allows up to 8 (one sensor board installed) or 12 (two sensor boards installed) 4-20 mA sensor assemblies to be monitored.

1. Open the enclosure box to expose the Front Panel.

2. Unscrew the two thumb-screws on the Front Panel.

3. Open the Front Panel so that the back of the Terminal Board is exposed.

4. Install an appropriately rated cable bushing or conduit in the right-hand conduit hub on the bottom of the AC-7400 housing.

5. Guide the 4-20 mA wires in conduit through the right-hand conduit hub.

CAUTION: *Do not route power and detector head wiring through the same conduit hub. The power wiring may disrupt the transmission of the detector head signal to the monitor.*

6. Locate the Sensor Terminal Blocks on the Terminal Board and Sensor Board(s).

7. For each 4-20 mA detector head, connect:
   a. Connect the sensor assembly's positive (red) wire to the terminal labeled "+VDC".
   b. Connect the sensor assembly's signal (green) wire to the terminal labeled "4-20 mA".
   c. Connect the sensor assembly's neutral (black) wire to the terminal labeled "GND".
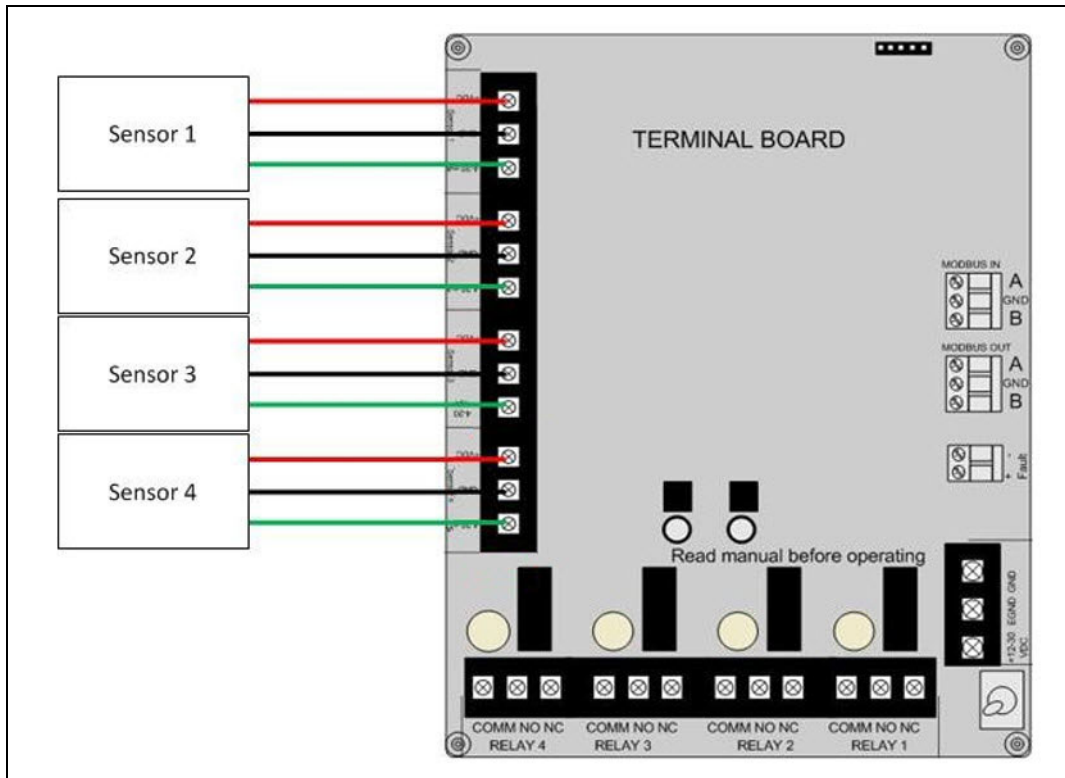
Figure 10: Sensor Wiring, Sensors 1 - 4
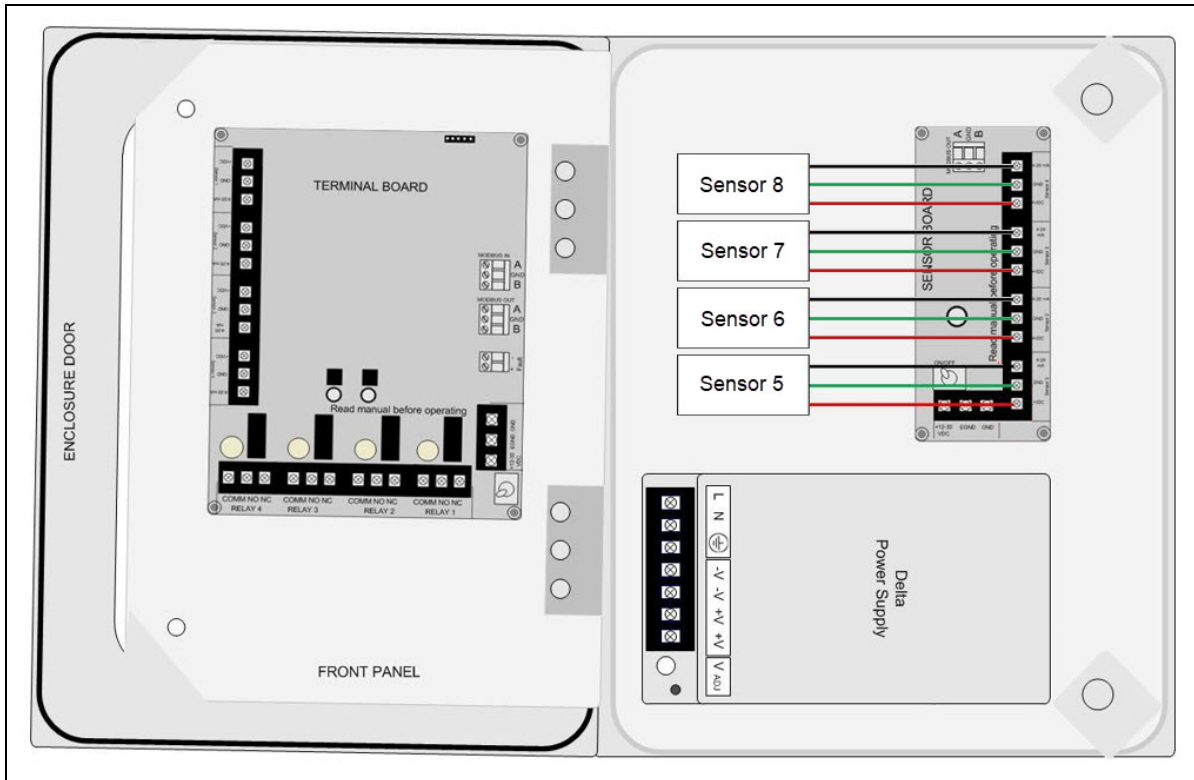
Figure 11: Sensor Wiring, Sensors 5 - 8
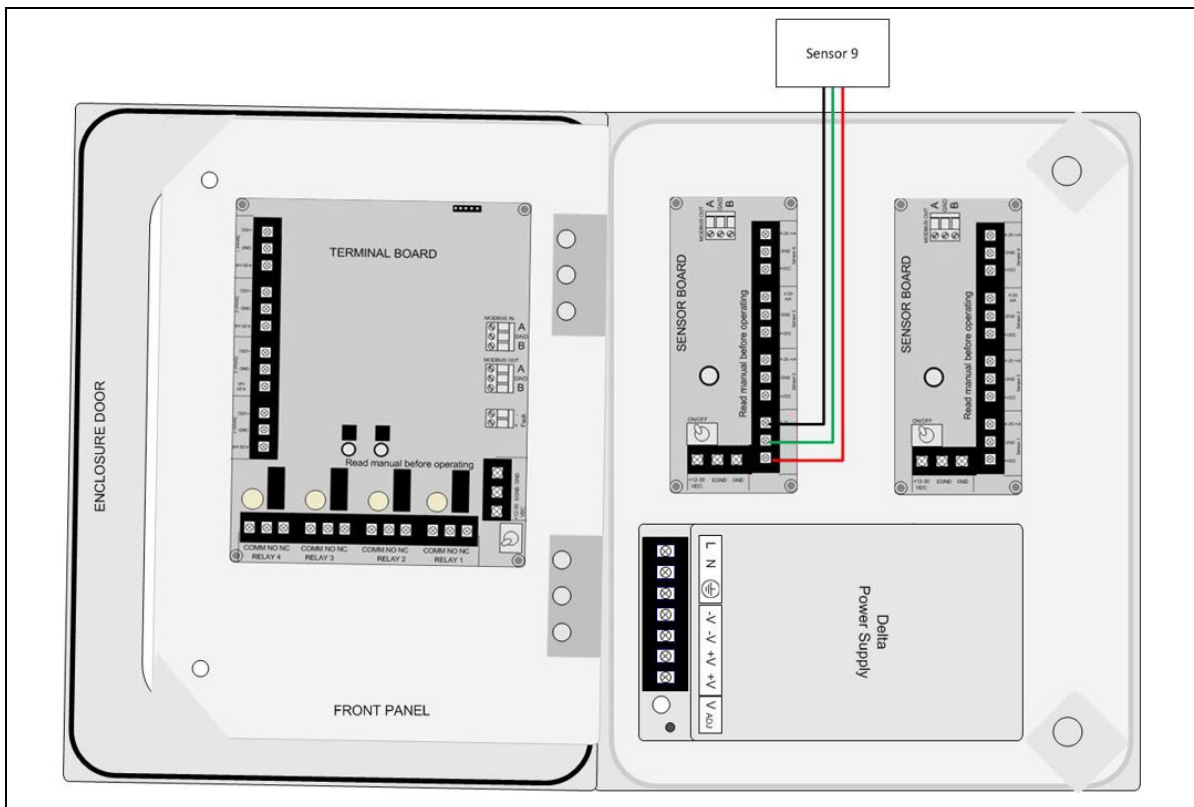
Figure 12: Sensor Wiring, Sensors 9 - 12

8. To provide power to the sensor board(s), for each sensor board:
    a. Connect a positive (red) wire to the "+12-35 VDC" terminal on the sensor board and the "+V" terminal on the power supply.
    b. Connect a negative (black) wire to the "GND" terminal on the sensor board and the "-V" terminal on the power supply.
    c. Connect a ground (green) wire to the "EGND" terminal on the sensor board and the ground terminal on the power supply.
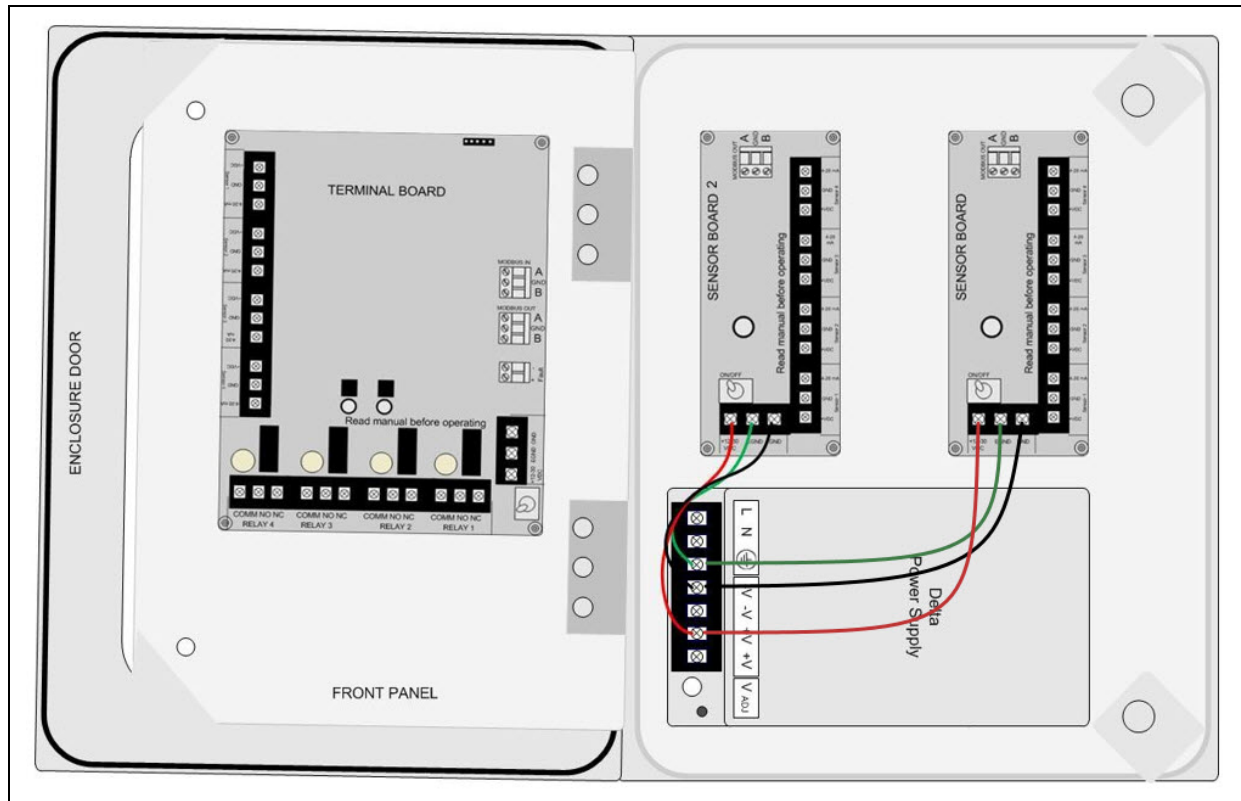
Figure 13: Wiring Power to Sensor Boards

9. To establish communication between the sensor board(s) and the terminal board:
    a. Connect the "A" terminals on each sensor board (yellow)
    b. Connect the "GND" terminals on each sensor board (white)
    c. Connect the "B" terminals on each sensor board (brown)
    d. Connect the "A" terminal on Sensor Board 1 to the "A" terminal on the Terminal Board's Modbus In block.
    e. Connect the "GND" terminal on Sensor Board 1 to the "GND" terminal on the Terminal Board's Modbus In block.
    f. Connect the "B" terminal on Sensor Board 1 to the "B" terminal on the Terminal Board's Modbus In block.
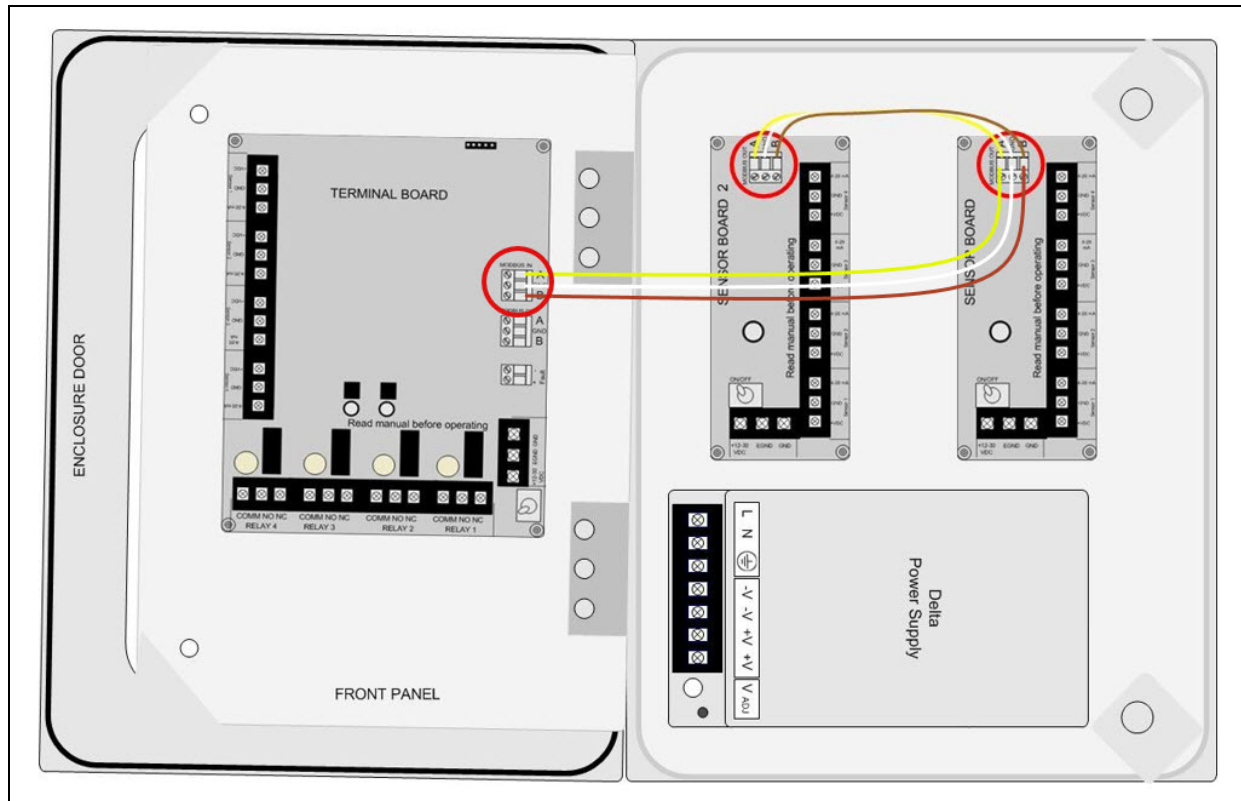
Figure 14: Wiring Communication for Sensor Board(s)
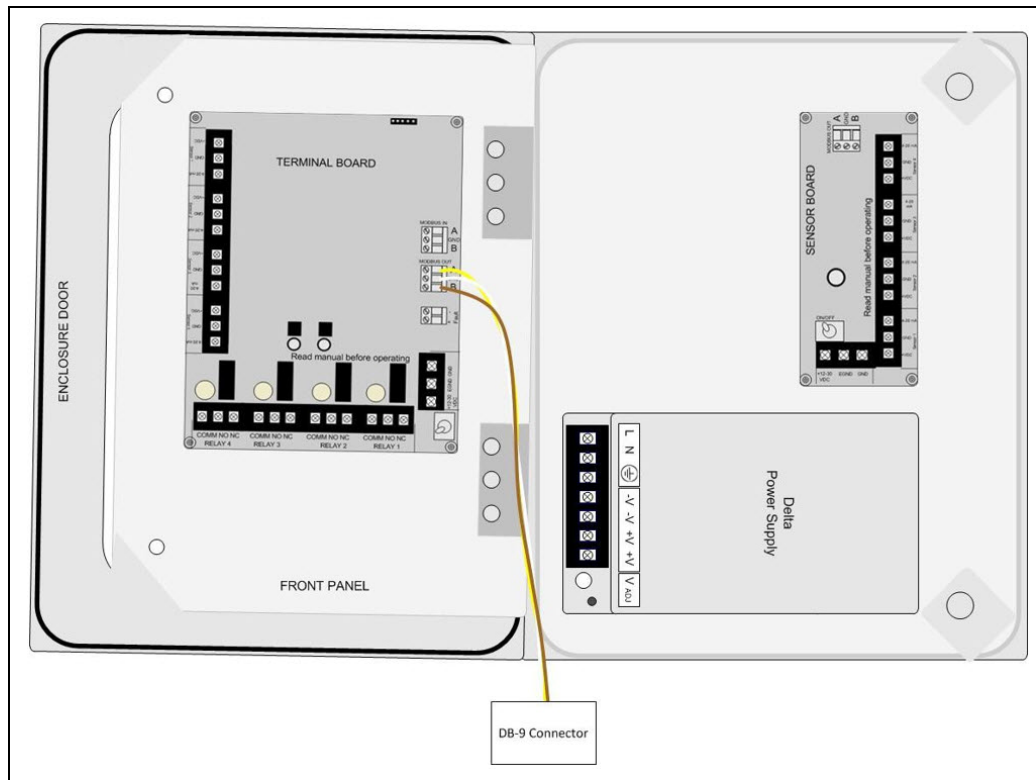
10. Close the Front Panel.

11. Screw in the thumb-screws.

12. Close the enclosure box.

13. Clamp down the enclosure latches.

Relay Wiring

The AC-7400 has four relays. Each of the four relays may be setup as Normally Open (NO) or Normally Closed (NC). See page 37 for more explanation about relay actuation.

NOTE: If installed, the strobe is factory wired to the Relay 1 terminals and the horn is factory wired to the Relay 2 terminals.

---

1. Locate the Relay Terminal Blocks on the Terminal Board.

2. Install an appropriately rated cable bushing or conduit in the right-hand conduit hub on the bottom of the AC-7400 housing.

3. Guide the wires in conduit through the right-hand conduit hub.

CAUTION: *Do not route power and detector head wiring through the same conduit hub. The power wiring may disrupt the transmission of the detector head signal to the monitor.*

---

4. Connect the alarm device's "+ (H)" terminal to the **NO** or **NC** terminal on the relay terminal block.

NOTE: It is recommended that the relay connections are wired as normally-open (NO). However, normally-closed (NC) wiring configurations provide an inherent fail-safe and may be preferred.

---

5. Connect the alarm device's "- (N)" terminal to an external power source's "- (N)" terminal.

6. Connect the external power source's "+ (H)" terminal to the COM terminal on the relay terminal block.
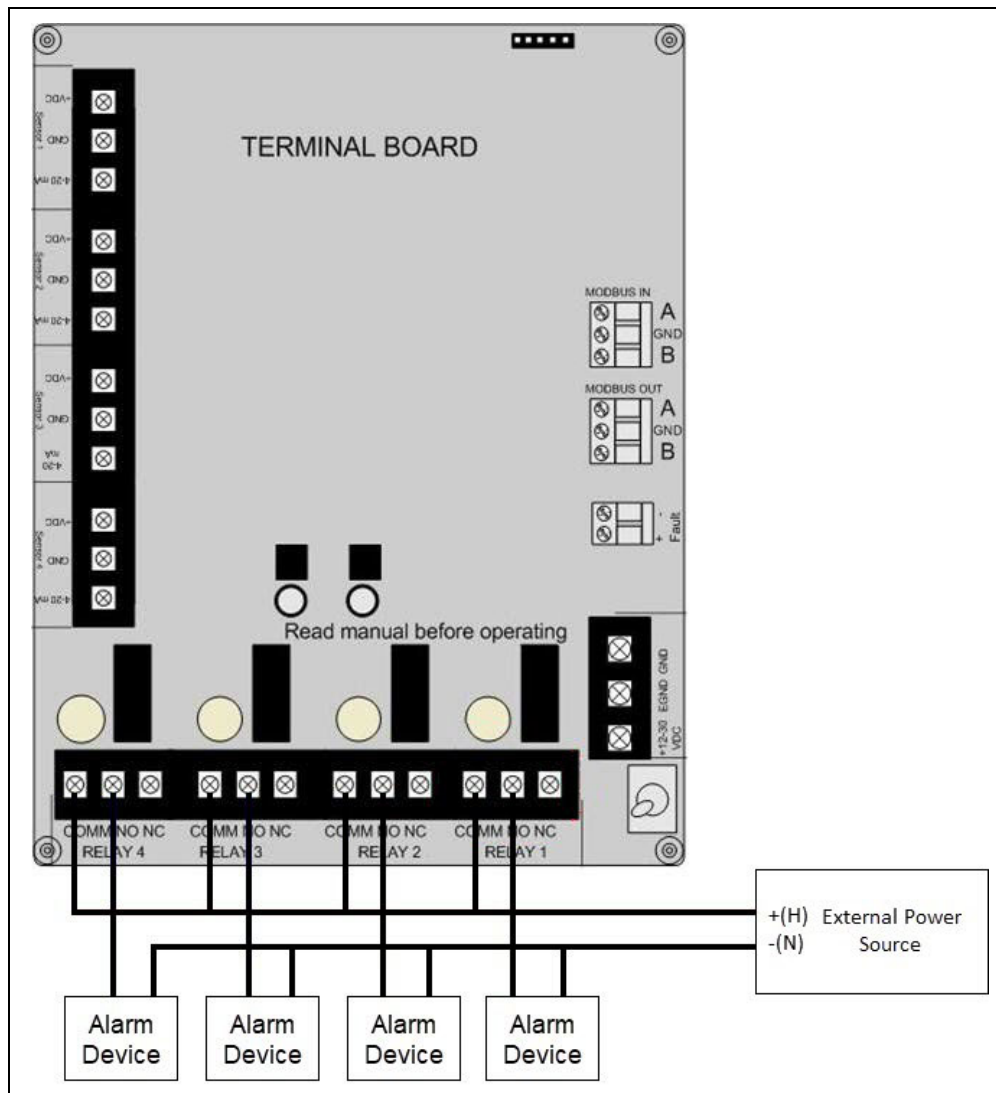
Figure 15: Relay Wiring

Chapter 4: Startup and Operation

Power On/Off

Powering on the device activates its functions. When powered on, the device is fully functional and access to system and settings menus is allowed.

CAUTION: *The internal components can be static sensitive. Use caution when opening the enclosure and handling internal components.*

Once power is supplied to the AC-7400—by being plugged into an AC outlet or by being wired to a DC power supply—the display screen and LEDs will illuminate.

To cycle the Terminal Board power, flip the Power Switch (located on the lower right side of the Terminal Board) to the OFF (and then ON) position.
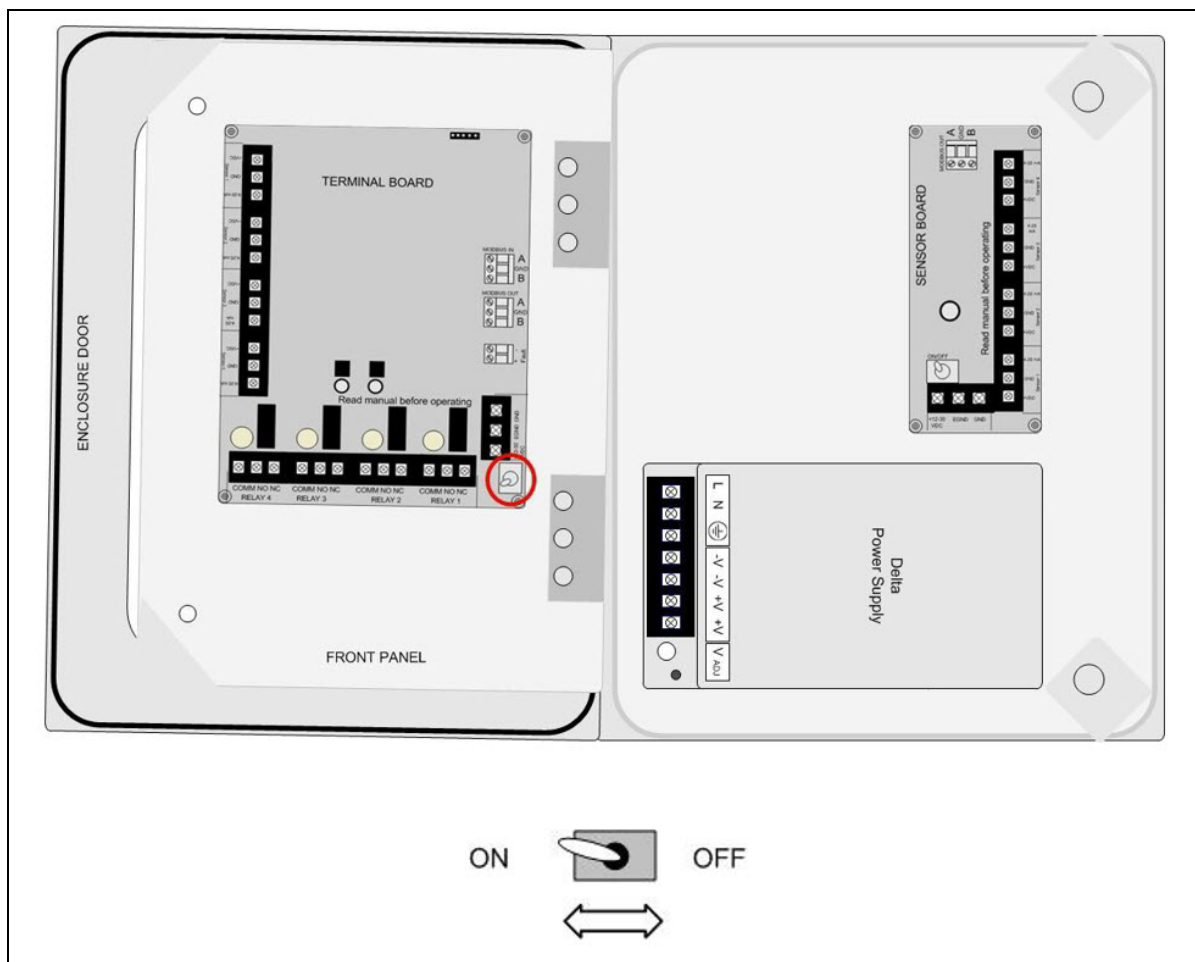
Figure 16: Power Switch Location

Normal Operating Mode

In Normal Operating Mode, the display shows the channel number, gas reading, alarm status, gas units, and gas name for 2 channels at a time. The instrument automatically scrolls through the active channels, 2 channels at a time, in 3-second intervals.

CH	3	4
RDG	0	0
ALM		
UNT	PPM	PPM
GAS	H2S	H2S

Holding Channels

This feature can be used to monitor a select channel, rather than the continuous scanning of channels while in Normal Operating Mode.

1. Open the enclosure box.

2. Press *SCAN/HOLD* once to "freeze" the channel scan sequence.

3. Press *ESC* to return to Normal Operating Mode.

   NOTE: The device will automatically return to Normal Operating Mode after five minutes of inactivity.

4. Close the enclosure box.

5. Clamp down the enclosure latches.

Alarm Conditions

If the gas reading for a channel reaches an alarm setpoint, that alarm type appears in the "ALM" section of the display.

CH	3	4
RDG	20	0
ALM	1 2 3	
UNT	PPM	PPM
GAS	H2S	H2S

The LEDs behave as shown in the table below.

LED	Color / Status	Description
ALARM 1	off	No alarm condition has occurred on 1 since the last reset or power up
	solid red	An alarm condition is currently happening on 1
	blinking red	An alarm condition has occurred on 1, but condition has now gone
ALARM 2	off	No alarm condition has occurred on 2 since the last reset or power up
	solid red	An alarm condition is currently happening on 2
	blinking red	An alarm condition has occurred on 2, but condition has now gone
ALARM 3	off	No alarm condition has occurred on 3 since the last reset or power up
	solid red	An alarm condition is currently happening on 3
	blinking red	An alarm condition has occurred on 3, but condition has now gone
ALARM 4	off	No alarm condition has occurred on 4 since the last reset or power up
	solid red	An alarm condition is currently happening on 4
	blinking red	An alarm condition has occurred on 4, but condition has now gone
Fault	off	No Fault condition has occurred on any sensor unit since the last reset or power up
	solid orange	A Fault condition is currently happening on at least one sensor unit
POWER/ STATUS	red	A Fault condition is occurring on the monitor
	blue	Normal Operating Mode

1. Press and release *RESET/ESC* to clear an alarm indication once the alarm condition has cleared.

Chapter 5: Setup Mode

Overview

This mode is used for: Channel Settings (On/Off, Gas Type, Scale, Number of Decimals), Relay Settings (On/Off, Low/High, Value, Latching/Auto Resetting), and System Information.

NOTE: Each channel must be set up individually.

NOTE: To exit Setup Mode at any time, press ESC.

Entering Setup Mode

1. Open the enclosure box.

2. From Normal Operating Mode, press and hold *MENU* and *ADD* for 8 seconds to enter Setup Mode.

Channel Settings

1. <u>Channel Selection</u>: Once in Setup Mode, press *ADD* (increase) or *SUB* (decrease) to select the channel you want to set up (1-8 or 1-12).

NOTE: To view system information, scroll up from channel 8 (or 12) or down from channel 1.

2. Press *MENU* (Next).

3. <u>Channel On/Off</u>: Press *ADD* or *SUB* to change the state of the channel to On or Off.

4. Press *MENU* (Next).

5. Gas Type: Press *ADD* or *SUB* to change the detector head type. Available options are: H2S, SO2, O2, CO, Cl2, CO2, LEL,VOC, FEET, HCl, NH3, H2, CLO2, HCN, F2, HF, CH2O, NO2, O3, INCHES, 4-20, None, Degrees C, Degrees F, CH4, NO, PH3, HBr, Eto, CH3SH, AsH3, R410A, R1234, R32, SF6, SiH4, B2H6, BF3.

NOTE: Selecting the gas type will preset the scale and relay settings to common values, but those values can be adjusted in the following screens.

```
    Channel  1  Setup:

           Gas:

          H2S

   Next      Add      Sub
```
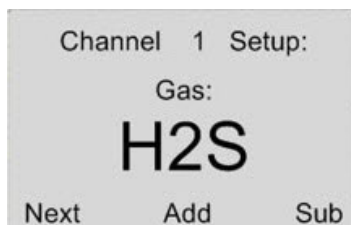
6. Press *MENU* (Next).

7. Scale: Press *ADD* (increase) or *SUB* (decrease) to manipulate the sensor's scale (between 1 and 65,000) for the channel being setup.

```
    Channel  1  Setup:

          Scale:

          100

   Next      Add      Sub
```
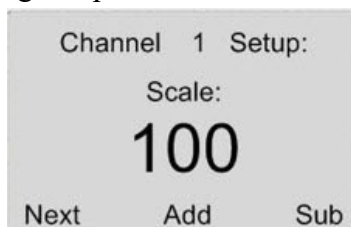
8. Press *MENU* (Next).

9. Number of Decimals: Press *ADD* (increase) or *SUB* (decrease) to manipulate the display screen's number of decimals. The number of decimals available to be set will depend on the previously set scale.

    • 3 decimals: Scale 1 or less

    • 2 decimals: Scale 10 or less

    • 1 decimal: Scale 100 or less

    • 0 decimal: Scale greater than 100 (the Set # of Decimals option will not show up in this case).

```
    Channel  1  Setup:

       # of Decimals:

            0

   Next      Add      Sub
```
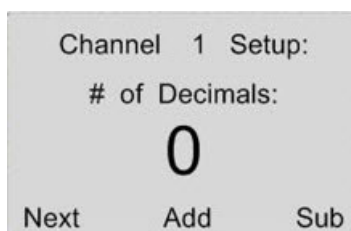
10. Press *MENU* (Next).

Relay Settings

See page 37 for more explanation about relay actuation.

1. <u>Relay On/Off</u>: Press *ADD* or *SUB* to manipulate the relay's On/Off status. The On/Off status affects whether a relay is active on the selected channel or not.

```
Channel  1  Setup:

        Relay 1

         On

Next        Add        Sub
```

2. Press *MENU* (Next).

3. <u>Relay Increasing/Decreasing</u>: Press *ADD* or *SUB* to manipulate the relay's Increasing/Decreasing status.

```
Channel  1  Setup:

        Relay 1

     Alarm sets when
      reading INCS.
Next        Add        Sub
```
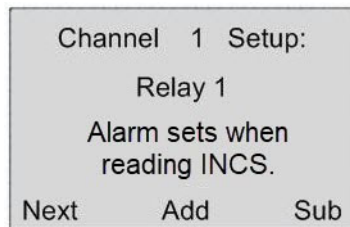
4. Press *MENU* (next).

5. <u>Relay Threshold</u>: Press *ADD* (increase) or *SUB* (decrease) to manipulate the threshold value (1-65,000).

```
Channel  1  Setup:

        Relay 1

          10

Next        Add        Sub
```

6. Press *MENU* (Next).

7. <u>Relay Latch/Auto Reset</u>: Press *ADD* or *SUB* to manipulate the relay's Latching/Auto Resetting status.

```
Channel  1  Setup:

        Relay 1

      Auto Rst

Next        Add        Sub
```
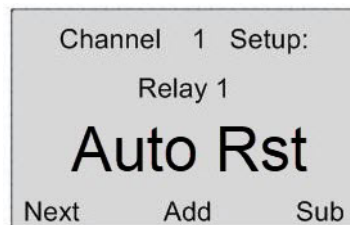
8. Press *MENU* (Next).

9. Repeat Step 1 through Step 8 for the remaining relays.

10. Once all four relays have been setup, the display screen will show the following:

```
Duplicate this
Channel's settings?


No        Yes
```
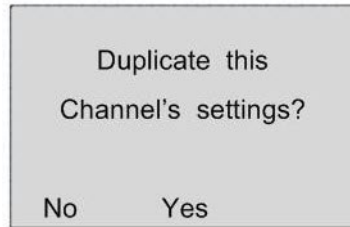
11. Based on the specific application, choose <u>one</u> of the following steps to complete:
   - Press *MENU* (Next) to setup the next channel (or continue to system information)
   - Press *ADD* (Yes) to duplicate the settings to all consecutive channels—and *ADD* (Yes) again to confirm the operation
   - Press ESC to exit Setup Mode

View System Information

After the last channel is set, press *MENU* to view the system's information, including the:
   - Build Date (Example: 01/01/2011)
   - Serial # (Example: L00590)
   - Unit Type: AC-7400
   - Version (Example: 2.0)
   - Build (Example: 2)

```
INFORMATION
Date: 07/11/2011
Serial #: L00590
Unit: AC -7400
Version: 3.0
Build: 0
```
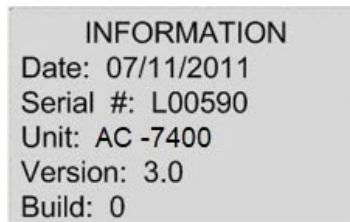
Exiting Setup Mode

Complete the following steps to exit Setup Mode at any time.

1. Press *ESC* at any time to exit Setup Mode.

2. Close the enclosure box.

3. Screw in the thumb-screws.

4. Clamp down the enclosure latches.

   NOTE: The monitor will automatically exit Setup Mode after 15 minutes.

Chapter 6: Advanced Configuration Menu

Overview

This mode is used to: adjust LCD contrast, restore factory default settings, set up the fault relay, and set up global Modbus parameters.

Entering the Advanced Configuration Menu

1. Open the enclosure box to expose the Front Panel.

2. Cycle the unit's power (turn OFF, then ON). For instructions on how to cycle the unit's power, see page 24.

3. When the RKI Logo appears on the Display Screen, press *MENU*.

Adjusting the LCD Contrast

1. Press *ADD* (increase) or *SUB* (decrease) to manipulate the LCD contrast.

2. Press *MENU*.

Restore Factory Default Settings

1. Press *ADD* or *SUB* (Yes/No—as indicated on the display screen) to set the unit back to the factory's default settings. To leave the settings as they are, press *MENU* (Next).
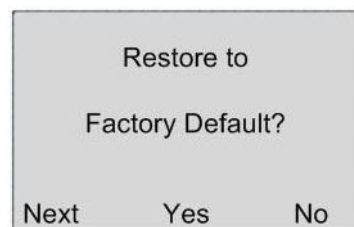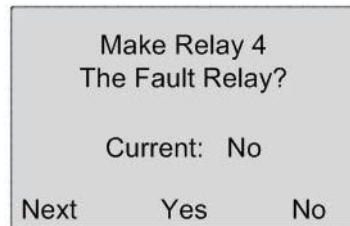
Factory settings are:

*   Channels 1-8 (or 12) "On"
*   Relays set at "10, 15, 20 and 25"
*   All relays set to "Auto Reset" / "Increasing"

- Modbus Output Baud set at 9600
- Modbus Output Address set at 1
- Gas Type set at H2S
- Scale set at 100
- Number of Decimals set at 0

Fault Relay Setup

1. Set Fault Relay: Press *ADD* or *SUB* (Yes/No—as indicated on the display screen) to setup Relay 4 as the Fault Relay. To leave the setting as it is, press *MENU* (Next).

```
         Make Relay 4
        The Fault Relay?

         Current:  No

Next          Yes          No
```
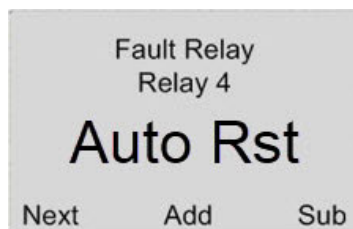
NOTE: With this feature enabled, if any Fault occurs (on any channel) the Fault Relay is engaged. In addition, Relay 4 is removed from all setup options.

2. Relay 4 Fault Relay Latch/Auto Reset: Press *ADD* or *SUB* to manipulate the relay 4 fault relay's Latching/Auto Resetting status.

NOTE: This screen only appears if Relay 4 was set as a fault relay in the previous screen.
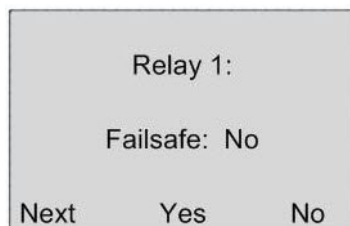
```
           Fault Relay
             Relay 4

           Auto Rst

Next          Add          Sub
```

3. Failsafe: Press *ADD* or *SUB* (Yes/No—as indicated on the display screen) to setup Relay 1 as failsafe (or not failsafe). To leave the setting as it is, press *MENU* (Next).

```
             Relay 1:

           Failsafe:  No

Next          Yes          No
```

4. Repeat Step 1 through Step 4 for Relays 2, 3, and 4.

5. <u>Fault Terminal Failsafe</u>: Press *ADD* or *SUB* (Yes/No—as indicated on the display screen) to setup the Fault terminal as failsafe (or not failsafe). To leave the setting as it is, press *MENU* (Next).

```
┌─────────────────────────────┐
│        Fault Terminal       │
│                             │
│        Failsafe: Yes        │
│                             │
│  Next        Yes        No  │
└─────────────────────────────┘
```
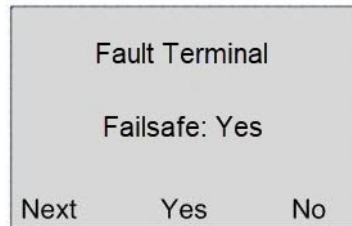
Modbus Setup

1. <u>Global Modbus Address</u>: Press *ADD* (increase) or *SUB* (decrease) to manipulate the global Modbus Address setting (between 1 and 247).

```
┌─────────────────────────────┐
│      Modbus  Settings:      │
│         Address:            │
│                             │
│            1                │
│  Next        Add       Sub  │
└─────────────────────────────┘
```
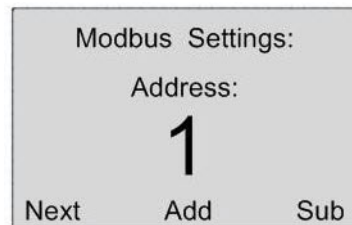
2. Press *MENU* (Next).

3. <u>Global Baud</u>: Press *ADD* (increase) or *SUB* (decrease) to manipulate the global Baud setting to: 4800, 9600 (factory setting), or 19200.

```
┌─────────────────────────────┐
│      Modbus  Settings:      │
│        Baud Rate:           │
│                             │
│         9600                │
│  Next        Add       Sub  │
└─────────────────────────────┘
```
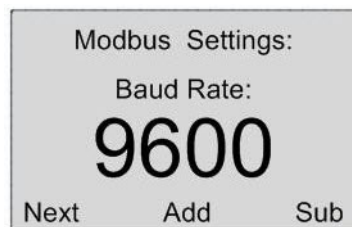
4. Press *MENU* (Next) to exit the Advanced Configuration Menu and return to Normal Operating Mode.

Exiting the Advanced Configuration Menu

1. Press *ESC* at any time to exit the Advanced Configuration Menu.

2. Close the enclosure box.

3. Clamp down the enclosure latches.

Chapter 7: Maintenance

Calibration Mode

Entering Calibration Mode disables the relays and allows the sensors to be calibrated without triggering alarms. Once in Calibration Mode, the unit will remain in this state for two hours—unless *RESET/ESC* is pressed.

1. Open the enclosure box to expose the Front Panel.

2. To enter Calibration Mode, from Normal Operating Mode, press and hold *MENU* for 5 seconds.

3. Once in Calibration Mode, the display screen will show "CAL" beside the "ALM" identifier.

C - A	3 – 3	4 – 4
RDG		
ALM	CAL	CAL
UNT	PPM	PPM
GAS	H2S	H2S

4. To return to Normal Operating Mode, press *RESET/ESC*.

> **NOTE:** If RESET/ESC is not pressed, the unit will remain in Calibration Mode for two hours.

5. Close the enclosure box.

6. Clamp down the enclosure latches.

Relay Test Mode

Relay Test Mode activates each relay and can be used to determine whether or not the relays and attached alarms are functioning properly.

1. Open the enclosure box to expose the Front Panel.

2. To enter Relay Test Mode, from Normal Operating Mode, press and hold *RESET/ESC*.

3. Starting with Relay 1, the relays will activate in 5-second intervals.

C - A	3 – 3	4 – 4
RDG		
ALM	TEST	TEST
UNT	PPM	PPM
GAS	H2S	H2S

4. To return to Normal Operating Mode, release and press *RESET/ESC*.

5. Close the enclosure box.

6. Clamp down the enclosure latches.

Troubleshooting

Table 2 describes symptoms, probable causes, and recommended actions for the most common problems you may encounter with the AC-7400.

NOTE: This troubleshooting guide describes **AC-7400** problems only. See the detector head operator's manuals for preventive maintenance procedures that apply to the detector heads installed on your AC-7400.

Table 2: Troubleshooting the AC-7400

Condition	Probable Causes	Recommended Action
Fault 10 (F10)	The sensor is not communicating with the monitor. The problem could be that the sensor assembly is not connected properly, or there may be board issues with the sensor or monitor.	1. Check all connections. Use a current meter inline to see if the current is correct.
Fault 13 (F13)	The sensor assembly is in a fault condition.	1. Since it is 4-20mA, the monitor does not know the exact fault condition. Therefore, check the sensor assembly to see what the fault is.

Chapter 8: Parts List

Table 3 lists the part numbers and descriptions for replacement parts and accessories offered for the AC-7400 Gas Monitor.

Table 3: Parts List, AC-7400 Gas Monitor

Part No.	Description
18-0107RK	Conduit hub (3/4 in.)
51-0040-RED	Strobe/horn, 20 - 28 VDC, Cl. I Div. 1 Zone 1
71-0551	AC-7400 Gas Monitor Operator's Manual (this document)

Appendix A: Relay Operation

Relays are offered in certain RKI devices for the purpose of activating alarms, horns, and other equipment upon the detection of gas.

There are two key terms to remember when using relays.

- Deactivated: refers to a relay in its normal state
- Activated: refers to a relay in an alarm state

"Dry" Contact and "Wet" Contact Relays

In regard to power, there are two types of relays.

1. Dry Contact Relays: This type of relay <u>does not</u> provide power to the equipment attached to it (i.e. if there is a light hooked up to this type of relay, it must be powered by another source).

2. Wet Contact Relays: This type of relay <u>does</u> provide power to the equipment attached to it (i.e. if a light was hooked up to this type of relay, it would be powered by the relay). When using a Wet Contact Relay, power should run through the "COMM" terminal to the end equipment.
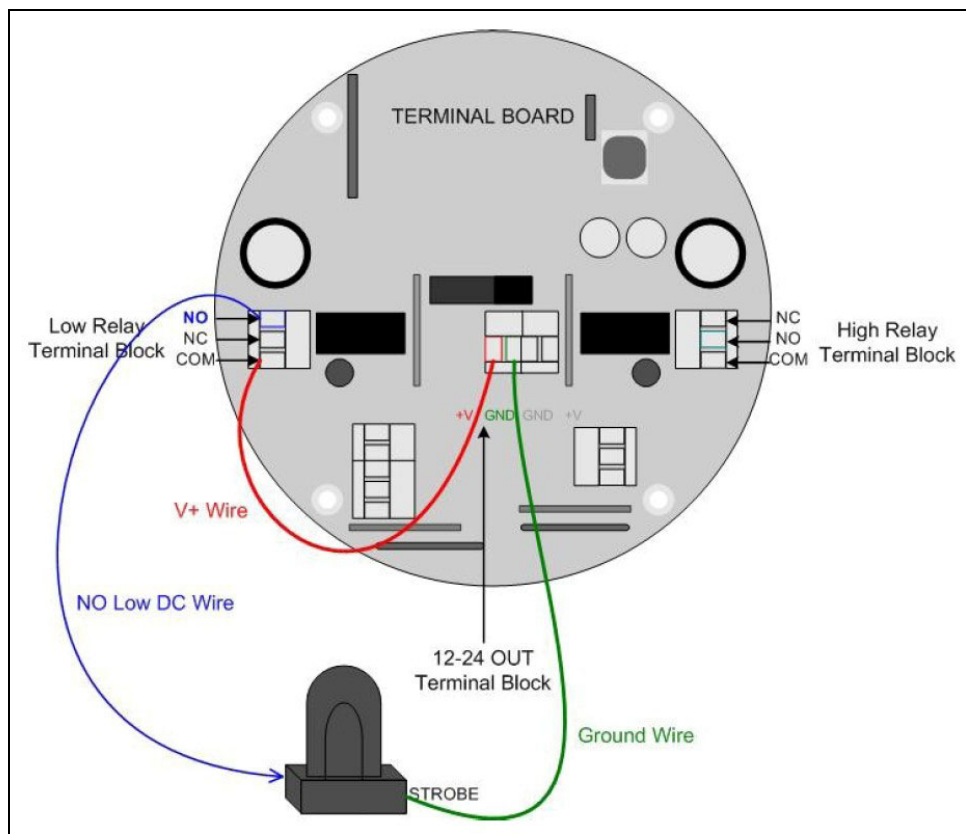
Figure 17: "Dry" Contact Relay Configured as a "Wet" Contact

Failsafe Setting's Effect on Normally-Open/Normally-Closed Contacts

If Failsafe is set to No, the relays are de-energized in normal operation and energize when the appropriate alarm circuit is activated. The NO (normally open) relay contacts are open during non-alarm operation and close when the appropriate alarm condition occurs. The NC (normally closed) relay contacts are closed during non-alarm operation and open when the appropriate alarm condition occurs.

If Failsafe is set to Yes, the relays are energized in normal operation and de-energize when the appropriate alarm circuit is activated. The NO (normally open) relay contacts are closed during non-alarm operation and open when the appropriate alarm condition occurs. The NC (normally closed) relay contacts are open during non-alarm operation and close when the appropriate alarm condition occurs.
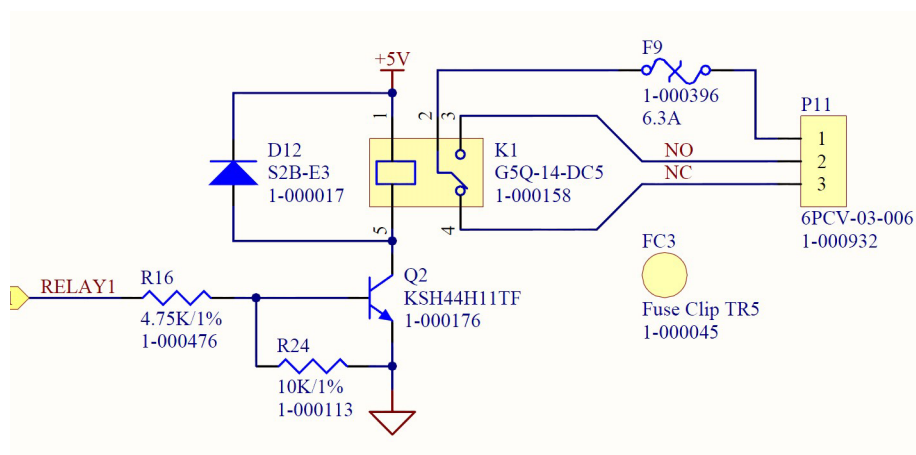
Figure 18: Relay Circuit Schematic

Appendix B: RS-485 Modbus Output

Modbus Terms

Modbus: RTU
Setting: Baud Rate = 9600
Data Bits: 8
Parity: None
Stop Bits: 1
Time Out: 1000 ms
Device Address: 1-247
Data Type: Holding Registers
Start Address: The first register the user would like to view (must be between 1-255)
Length: Depends on the number of addresses the user would like to view
Scan Rate:1000 ms
Data Format: Hex, Decimal, Float

AC-7408 (8 Channel) Register Map

AC-7408 (8 Channel) Modbus Register Map

Register Address (Hexadecimal)	Register Address (Decimal)	Data Description	R/W	Length (In Bits)	Units	Valid Response
					Radio Data	
1	1	Channel 1 Port Number	R	16	INTEGER	1
2	2	Channel 2 Port Number	R	16	INTEGER	2
3	3	Channel 3 Port Number	R	16	INTEGER	3
4	4	Channel 4 Port Number	R	16	INTEGER	4
5	5	Channel 5 Port Number	R	16	INTEGER	5
6	6	Channel 6 Port Number	R	16	INTEGER	6
7	7	Channel 7 Port Number	R	16	INTEGER	7
8	8	Channel 8 Port Number	R	16	INTEGER	8
9	9	Channel 1 Reading	R	32	FLOAT	Any valid sensor reading
B	11	Channel 2 Reading	R	32	FLOAT	Any valid sensor reading
D	13	Channel 3 Reading	R	32	FLOAT	Any valid sensor reading
F	15	Channel 4 Reading	R	32	FLOAT	Any valid sensor reading
11	17	Channel 5 Reading	R	32	FLOAT	Any valid sensor reading
13	19	Channel 6 Reading	R	32	FLOAT	Any valid sensor reading
15	21	Channel 7 Reading	R	32	FLOAT	Any valid sensor reading
17	23	Channel 8 Reading	R	32	FLOAT	Any valid sensor reading
19	25	Channel 1 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
1A	26	Channel 2 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
1B	27	Channel 3 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
1C	28	Channel 4 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
1D	29	Channel 5 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
1E	30	Channel 6 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
1F	31	Channel 7 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
20	32	Channel 8 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
21	33	Channel 1 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
23	35	Channel 2 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
25	37	Channel 3 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
27	39	Channel 4 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
29	41	Channel 5 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
2B	43	Channel 6 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
2D	45	Channel 7 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.

2F	47	Channel 8 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
31	49	Channel 1 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
32	50	Channel 2 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
33	51	Channel 3 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
34	52	Channel 4 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
35	53	Channel 5 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
36	54	Channel 6 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
37	55	Channel 7 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
38	56	Channel 8 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
39	57	Channel 1 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
3A	58	Channel 2 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
3B	59	Channel 3 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
3C	60	Channel 4 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
3D	61	Channel 5 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
3E	62	Channel 6 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
3F	63	Channel 7 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
40	64	Channel 8 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
41	65	Channel 1 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
42	66	Channel 2 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
43	67	Channel 3 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
44	68	Channel 4 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
45	69	Channel 5 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
46	70	Channel 6 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
47	71	Channel 7 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
48	72	Channel 8 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
49	73	Channel 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
4A	74	Channel 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
4B	75	Channel 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
4C	76	Channel 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
4D	77	Channel 5 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
4E	78	Channel 6 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
4F	79	Channel 7 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
50	80	Channel 8 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
51	81	Channel 1 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
52	82	Channel 2 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
53	83	Channel 3 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
54	84	Channel 4 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
55	85	Channel 5 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
56	86	Channel 6 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
57	87	Channel 7 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on

58	88	Channel 8 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
59	89	Channel 1 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
5A	90	Channel 2 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
5B	91	Channel 3 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
5C	92	Channel 4 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
5D	93	Channel 5 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
5E	94	Channel 6 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
5F	95	Channel 7 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
60	96	Channel 8 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
61	97	Channel 1 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
63	99	Channel 2 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
65	101	Channel 3 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
67	103	Channel 4 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
69	105	Channel 5 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
6B	107	Channel 6 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
6D	109	Channel 7 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
6F	111	Channel 8 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
71	113	Channel 1 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
72	114	Channel 2 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
73	115	Channel 3 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
74	116	Channel 4 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
75	117	Channel 5 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
76	118	Channel 6 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
77	119	Channel 7 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
78	120	Channel 8 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
79	121	Channel 1 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7A	122	Channel 2 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7B	123	Channel 3 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7C	124	Channel 4 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7D	125	Channel 5 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7E	126	Channel 6 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7F	127	Channel 7 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
80	128	Channel 8 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
81	129	Channel 1 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
82	130	Channel 2 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
83	131	Channel 3 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
84	132	Channel 4 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
85	133	Channel 5 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
86	134	Channel 6 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
87	135	Channel 7 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high

88	136	Channel 8 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
89	137	Channel 1 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
8B	139	Channel 2 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
8D	141	Channel 3 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
8F	143	Channel 4 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
91	145	Channel 5 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
93	147	Channel 6 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
95	149	Channel 7 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
97	151	Channel 8 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
99	153	Channel 1 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
9A	154	Channel 2 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
9B	155	Channel 3 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
9C	156	Channel 4 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
9D	157	Channel 5 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
9E	158	Channel 6 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
9F	159	Channel 7 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
A0	160	Channel 8 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
A1	161	Channel 1 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
A2	162	Channel 2 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
A3	163	Channel 3 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
A4	164	Channel 4 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
A5	165	Channel 5 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
A6	166	Channel 6 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
A7	167	Channel 7 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
A8	168	Channel 8 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
A9	169	Channel 1 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
AA	170	Channel 2 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
AB	171	Channel 3 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
AC	172	Channel 4 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
AD	173	Channel 5 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
AE	174	Channel 6 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
AF	175	Channel 7 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
B0	176	Channel 8 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
B1	177	Channel 1 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
B3	179	Channel 2 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
B5	181	Channel 3 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
B7	183	Channel 4 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
B9	185	Channel 5 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
BB	187	Channel 6 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
BD	189	Channel 7 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.

BF	191	Channel 8 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
C1	193	Channel 1 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
C2	194	Channel 2 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
C3	195	Channel 3 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
C4	196	Channel 4 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
C5	197	Channel 5 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
C6	198	Channel 6 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
C7	199	Channel 7 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
C8	200	Channel 8 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
C9	201	Channel 1 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
CA	202	Channel 2 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
CB	203	Channel 3 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
CC	204	Channel 4 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
CD	205	Channel 5 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
CE	206	Channel 6 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
CF	207	Channel 7 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
D0	208	Channel 8 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
D1	209	Channel 1 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
D2	210	Channel 2 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
D3	211	Channel 3 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
D4	212	Channel 4 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
D5	213	Channel 5 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
D6	214	Channel 6 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
D7	215	Channel 7 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
D8	216	Channel 8 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
D9	217	Channel 1 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
DB	219	Channel 2 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
DD	221	Channel 3 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
DF	223	Channel 4 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
E1	225	Channel 5 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
E3	227	Channel 6 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
E5	229	Channel 7 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
E7	231	Channel 8 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
E9	233	Channel 1 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
EA	234	Channel 2 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
EB	235	Channel 3 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
EC	236	Channel 4 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
ED	237	Channel 5 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
EE	238	Channel 6 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
EF	239	Channel 7 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch

F0	240	Channel 8 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
F1	241	Channel 1 Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
F2	242	Channel 2 Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
F3	243	Channel 3 Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
F4	244	Channel 4 Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
F5	245	Channel 5 Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
F6	246	Channel 6 Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
F7	247	Channel 7 Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
F8	248	Channel 8 Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
F9	249	Channel 1 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom of the scale.
FA	250	Channel 2 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom of the scale.
FB	251	Channel 3 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom of the scale.
FC	252	Channel 4 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom of the scale.
FD	253	Channel 5 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom of the scale.
FE	254	Channel 6 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom of the scale.
FF	255	Channel 7 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom of the scale.
100	256	Channel 8 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom of the scale.
Modbus and Build Data						
1771	6001	Modbus Address	R/W	16	INTEGER	1 – 247
1772	6002	Modbus Baud Rate	R/W	16	INTEGER	Valid Baud Rate. See below.
1773	6003	Month	R	16	INTEGER	1 – 12
1774	6004	Day	R	16	INTEGER	1 – 31
1775	6005	Year	R	16	INTEGER	2009 –
1776	6006	Serial Number Character	R	16	ENUMERATION	12 This is for the Letter "L" in the serial number.
1777	6007	Serial Number	R	32	LONG INT	1 – 99999
Settings in Startup Menu						
177C	6012	Relay 4 as Fault Relay	R	16	ENUMERATION	0 – 1, 0 means normal relay, 1 means Fault Relay
177D	6013	Relay 1 Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
177E	6014	Relay 2 Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
177F	6015	Relay 3 Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
1780	6016	Relay 4 Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
1781	6017	Fault Terminal Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
Diagnostics Data						
2704	9988	Reset	R/W	16	INTEGER	0, 1. If user sets to 1, resets the unit.
2705	9989	Serial Receive Good Count	R	16	UINT	0 – 65535
2706	9990	Serial Receive Error Count	R	16	UINT	0 – 65535
2707	9991	Serial Transmit Good Count	R	16	UINT	0 – 65535
2708	9992	Serial Transmit Error Count	R	16	UINT	0 – 65535
2709	9993	Radio Receive Good Count	R	16	UINT	0 – 65535
270A	9994	Radio Receive Error Count	R	16	UINT	0 – 65535

270B	9995	Radio Transmit Good Count	R	16	UINT	0 – 65535
270C	9996	Radio Transmit Error Count	R	16	UINT	0 – 65535
270D	9997	Uptime Days	R	16	UINT	0 – 65535
270E	9998	Uptime Hours	R	16	UINT	0 – 65535
270F	9999	Uptime Minutes	R	16	UINT	0 – 65535

MODE SENSOR	MODE
0	NORMAL
1	NULL
2	CALIBRATION
3	RELAY
4	Radio ADD
5	Diagnostic/Batt
6	Advanced Menu
7	Admin Menu

Serial Number Char	Char
1	A
2	B
3	C
4	D
5	E
6	F
7	G
8	H
9	I
10	J
11	K
12	L
13	M
14	N
15	O
16	P
17	Q
18	R
19	S
20	T
21	U
22	V

Valid Baud Rates
4800
9600
19200

FAULT	FAULT
0	NONE
1	N/A
2	Future Error
3	Future Error
4	N/A
5	N/A
6	N/A
7	Future Error
8	N/A
9	N/A
10	When Sensor is wired, it means no sensor is connected
11	Future Error
12	Future Error
13	Unspecified Error on sensor unit. Shown only on Monitor
14	N/A
15	Monitor Fault

SENSOR TYPE NUM	SENSOR
0	EC
1	IR
2	CB
3	MOS
4	PID
5	TANK
6	4-20
7	SWITCH
8	Unknown

23	W
24	X
25	Y
26	Z
27	AA
28	AB
29	AC
30	AD
31	AE
32	AF
33	AG
34	AH
35	AI
36	AJ
37	AK
38	AL
39	AM
40	AN
41	AO
42	AP
43	AQ
44	AR
45	AS
46	AT
47	AU
48	AV
49	AW
50	AX
51	AY
52	AZ

30	WF190
31	None Selected

GAS TYPE NUM	GAS
0	H2S
1	SO2
2	O2
3	CO
4	CL2
5	CO2
6	LEL
7	VOC
8	FEET
9	HCl
10	NH3
11	H2
12	ClO2
13	HCN
14	F2
15	HF
16	CH2O
17	NO2
18	O3
19	INCHES
20	4-20
21	Not Specified
22	Cº
23	Fº
24..N	Future Gases

AC-7412 (12 Channel) Register Map

AC-7412 (12 Channel) Modbus Register Map						
Register Address (Hexadecimal)	Register Address (Decimal)	Data Description	R/W	Length (In Bits)	Units	Valid Response
					Radio Data	
1	1	Channel 1 Port Number	R	16	INTEGER	1
2	2	Channel 2 Port Number	R	16	INTEGER	2
3	3	Channel 3 Port Number	R	16	INTEGER	3
4	4	Channel 4 Port Number	R	16	INTEGER	4
5	5	Channel 5 Port Number	R	16	INTEGER	5
6	6	Channel 6 Port Number	R	16	INTEGER	6
7	7	Channel 7 Port Number	R	16	INTEGER	7
8	8	Channel 8 Port Number	R	16	INTEGER	8
9	9	Channel 9 Port Number	R	16	INTEGER	9
A	10	Channel 10 Port Number	R	16	INTEGER	10
B	11	Channel 11 Port Number	R	16	INTEGER	11
C	12	Channel 12 Port Number	R	16	INTEGER	12
D	13	Channel 1 Reading	R	32	FLOAT	Any valid sensor reading
F	15	Channel 2 Reading	R	32	FLOAT	Any valid sensor reading
11	17	Channel 3 Reading	R	32	FLOAT	Any valid sensor reading
13	19	Channel 4 Reading	R	32	FLOAT	Any valid sensor reading
15	21	Channel 5 Reading	R	32	FLOAT	Any valid sensor reading
17	23	Channel 6 Reading	R	32	FLOAT	Any valid sensor reading
19	25	Channel 7 Reading	R	32	FLOAT	Any valid sensor reading
1B	27	Channel 8 Reading	R	32	FLOAT	Any valid sensor reading
1D	29	Channel 9 Reading	R	32	FLOAT	Any valid sensor reading
1F	31	Channel 10 Reading	R	32	FLOAT	Any valid sensor reading
21	33	Channel 11 Reading	R	32	FLOAT	Any valid sensor reading
23	35	Channel 12 Reading	R	32	FLOAT	Any valid sensor reading
25	37	Channel 1 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
26	38	Channel 2 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
27	39	Channel 3 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
28	40	Channel 4 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
29	41	Channel 5 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
2A	42	Channel 6 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
2B	43	Channel 7 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode

2C	44	Channel 8 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
2D	45	Channel 9 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
2E	46	Channel 10 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
2F	47	Channel 11 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
30	48	Channel 12 Mode	R	16	ENUMERATION	0-2 . 0 is in normal mode, 1 is any other mode, 2 is cal mode
31	49	Channel 1 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
33	51	Channel 2 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
35	53	Channel 3 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
37	55	Channel 4 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
39	57	Channel 5 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
3B	59	Channel 6 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
3D	61	Channel 7 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
3F	63	Channel 8 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
41	65	Channel 9 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
43	67	Channel 10 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
45	69	Channel 11 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
47	71	Channel 12 Power	R	32	FLOAT	0. The 4-20 Sensors do not send the power reading.
49	73	Channel 1 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
4A	74	Channel 2 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
4B	75	Channel 3 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
4C	76	Channel 4 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
4D	77	Channel 5 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
4E	78	Channel 6 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
4F	79	Channel 7 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
50	80	Channel 8 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
51	81	Channel 9 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
52	82	Channel 10 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
53	83	Channel 11 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
54	84	Channel 12 Sensor Type	R	16	ENUMERATION	0. The 4-20 Sensors do not send the Sensor Type.
55	85	Channel 1 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
56	86	Channel 2 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
57	87	Channel 3 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
58	88	Channel 4 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
59	89	Channel 5 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
5A	90	Channel 6 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
5B	91	Channel 7 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
5C	92	Channel 8 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
5D	93	Channel 9 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
5E	94	Channel 10 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below

5F	95	Channel 11 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
60	96	Channel 12 Gas Type	R/W	16	ENUMERATION	0-127 See Gas Enumeration below
61	97	Channel 1 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
62	98	Channel 2 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
63	99	Channel 3 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
64	100	Channel 4 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
65	101	Channel 5 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
66	102	Channel 6 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
67	103	Channel 7 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
68	104	Channel 8 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
69	105	Channel 9 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
6A	106	Channel 10 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
6B	107	Channel 11 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
6C	108	Channel 12 Fault	R	16	ENUMERATION	0 or 13. The 4-20 Sensors do not send what type of Fault
6D	109	Channel 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
6E	110	Channel 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
6F	111	Channel 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
70	112	Channel 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
71	113	Channel 5 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
72	114	Channel 6 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
73	115	Channel 7 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
74	116	Channel 8 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
75	117	Channel 9 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
76	118	Channel 10 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
77	119	Channel 11 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
78	120	Channel 12 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
79	121	Channel 1 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7A	122	Channel 2 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7B	123	Channel 3 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7C	124	Channel 4 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7D	125	Channel 5 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7E	126	Channel 6 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
7F	127	Channel 7 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
80	128	Channel 8 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
81	129	Channel 9 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
82	130	Channel 10 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
83	131	Channel 11 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
84	132	Channel 12 Relay 1 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
85	133	Channel 1 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high

86	134	Channel 2 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
87	135	Channel 3 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
88	136	Channel 4 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
89	137	Channel 5 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
8A	138	Channel 6 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
8B	139	Channel 7 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
8C	140	Channel 8 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
8D	141	Channel 9 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
8E	142	Channel 10 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
8F	143	Channel 11 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
90	144	Channel 12 Relay 1 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
91	145	Channel 1 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
93	147	Channel 2 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
95	149	Channel 3 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
97	151	Channel 4 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
99	153	Channel 5 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
9B	155	Channel 6 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
9D	157	Channel 7 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
9F	159	Channel 8 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
A1	161	Channel 9 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
A3	163	Channel 10 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
A5	165	Channel 11 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
A7	167	Channel 12 Relay 1 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
A9	169	Channel 1 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
AA	170	Channel 2 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
AB	171	Channel 3 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
AC	172	Channel 4 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
AD	173	Channel 5 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
AE	174	Channel 6 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
AF	175	Channel 7 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
B0	176	Channel 8 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
B1	177	Channel 9 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
B2	178	Channel 10 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
B3	179	Channel 11 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
B4	180	Channel 12 Relay 1 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
B5	181	Channel 1 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
B6	182	Channel 2 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
B7	183	Channel 3 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
B8	184	Channel 4 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on

B9	185	Channel 5 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
BA	186	Channel 6 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
BB	187	Channel 7 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
BC	188	Channel 8 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
BD	189	Channel 9 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
BE	190	Channel 10 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
BF	191	Channel 11 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
C0	192	Channel 12 Relay 2 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
C1	193	Channel 1 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
C2	194	Channel 2 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
C3	195	Channel 3 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
C4	196	Channel 4 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
C5	197	Channel 5 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
C6	198	Channel 6 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
C7	199	Channel 7 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
C8	200	Channel 8 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
C9	201	Channel 9 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
CA	202	Channel 10 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
CB	203	Channel 11 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
CC	204	Channel 12 Relay 2 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
CD	205	Channel 1 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
CF	207	Channel 2 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
D1	209	Channel 3 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
D3	211	Channel 4 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
D5	213	Channel 5 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
D7	215	Channel 6 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
D9	217	Channel 7 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
DB	219	Channel 8 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
DD	221	Channel 9 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
DF	223	Channel 10 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
E1	225	Channel 11 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
E3	227	Channel 12 Relay 2 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
E5	229	Channel 1 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
E6	230	Channel 2 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
E7	231	Channel 3 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
E8	232	Channel 4 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
E9	233	Channel 5 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
EA	234	Channel 6 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
EB	235	Channel 7 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch

EC	236	Channel 8 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
ED	237	Channel 9 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
EE	238	Channel 10 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
EF	239	Channel 11 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
F0	240	Channel 12 Relay 2 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
F1	241	Channel 1 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
F2	242	Channel 2 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
F3	243	Channel 3 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
F4	244	Channel 4 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
F5	245	Channel 5 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
F6	246	Channel 6 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
F7	247	Channel 7 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
F8	248	Channel 8 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
F9	249	Channel 9 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
FA	250	Channel 10 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
FB	251	Channel 11 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
FC	252	Channel 12 Relay 3 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
FD	253	Channel 1 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
FE	254	Channel 2 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
FF	255	Channel 3 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
100	256	Channel 4 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
101	257	Channel 5 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
102	258	Channel 6 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
103	259	Channel 7 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
104	260	Channel 8 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
105	261	Channel 9 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
106	262	Channel 10 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
107	263	Channel 11 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
108	264	Channel 12 Relay 3 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
109	265	Channel 1 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
10B	267	Channel 2 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
10D	269	Channel 3 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
10F	271	Channel 4 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
111	273	Channel 5 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
113	275	Channel 6 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
115	277	Channel 7 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
117	279	Channel 8 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
119	281	Channel 9 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
11B	283	Channel 10 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.

11D	285	Channel 11 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
11F	287	Channel 12 Relay 3 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
121	289	Channel 1 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
122	290	Channel 2 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
123	291	Channel 3 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
124	292	Channel 4 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
125	293	Channel 5 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
126	294	Channel 6 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
127	295	Channel 7 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
128	296	Channel 8 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
129	297	Channel 9 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
12A	298	Channel 10 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
12B	299	Channel 11 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
12C	300	Channel 12 Relay 3 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
12D	301	Channel 1 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
12E	302	Channel 2 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
12F	303	Channel 3 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
130	304	Channel 4 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
131	305	Channel 5 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
132	306	Channel 6 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
133	307	Channel 7 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
134	308	Channel 8 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
135	309	Channel 9 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
136	310	Channel 10 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
137	311	Channel 11 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
138	312	Channel 12 Relay 4 On/Off	R/W	16	ENUMERATION	0 – 1, 0 means off, 1 means on
139	313	Channel 1 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
13A	314	Channel 2 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
13B	315	Channel 3 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
13C	316	Channel 4 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
13D	317	Channel 5 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
13E	318	Channel 6 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
13F	319	Channel 7 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
140	320	Channel 8 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
141	321	Channel 9 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
142	322	Channel 10 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
143	323	Channel 11 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
144	324	Channel 12 Relay 4 High/Low	R/W	16	ENUMERATION	0 - 1 ,0 means low, 1 means high
145	325	Channel 1 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.

147	327	Channel 2 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
149	329	Channel 3 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
14B	331	Channel 4 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
14D	333	Channel 5 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
14F	335	Channel 6 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
151	337	Channel 7 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
153	339	Channel 8 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
155	341	Channel 9 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
157	343	Channel 10 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
159	345	Channel 11 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
15B	347	Channel 12 Relay 4 Set Point	R/W	32	FLOAT	Float < 2000.When writing it needs to be less than the scale.
15D	349	Channel 1 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
15E	350	Channel 2 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
15F	351	Channel 3 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
160	352	Channel 4 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
161	353	Channel 5 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
162	354	Channel 6 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
163	355	Channel 7 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
164	356	Channel 8 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
165	357	Channel 9 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
166	358	Channel 10 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
167	359	Channel 11 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
168	360	Channel 12 Relay 4 Latch/Unlatch	R/W	16	ENUMERATION	0 - 1 ,0 means unlatch, 1 means latch
169	361	Channel 1 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
16A	362	Channel 2 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
16B	363	Channel 3 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
16C	364	Channel 4 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
16D	365	Channel 5 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
16E	366	Channel 6 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
16F	367	Channel 7 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
170	368	Channel 8 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
171	369	Channel 9 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
172	370	Channel 10 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
173	371	Channel 11 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
174	372	Channel 12 Max Scale	R/W	16	INTEGER	0-2000. This is the scale of the sensor on this channel.
175	373	Channel 1 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
176	374	Channel 2 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
177	375	Channel 3 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
178	376	Channel 4 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.

179	377	Channel 5 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
17A	378	Channel 6 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
17B	379	Channel 7 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
17C	380	Channel 8 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
17D	381	Channel 9 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
17E	382	Channel 10 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
17F	383	Channel 11 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
180	384	Channel 12 Min Scale	R/W	16	INTEGER	-70-0. This is the bottom value of the scale.
Modbus and Build Data						
1771	6001	Modbus Address	R/W	16	INTEGER	1 – 247
1772	6002	Modbus Baud Rate	R/W	16	INTEGER	Valid Baud Rate. See below.
1773	6003	Month	R	16	INTEGER	1 – 12
1774	6004	Day	R	16	INTEGER	1 – 31
1775	6005	Year	R	16	INTEGER	2009 –
1776	6006	Serial Number Character	R	16	ENUMERATION	13 This is for the Letter "M" in the serial number.
1777	6007	Serial Number	R	32	LONG INT	1 – 99999
Settings in Startup Menu						
177C	6012	Relay 4 as Fault Relay	R	16	ENUMERATION	0 – 1, 0 means normal relay, 1 means Fault Relay
177D	6013	Relay 1 Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
177E	6014	Relay 2 Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
177F	6015	Relay 3 Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
1780	6016	Relay 4 Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
1781	6017	Fault Terminal Fail Safe	R	16	ENUMERATION	0 – 1, 0 means not Fail Safe, 1 means Fail Safe
Diagnostics Data						
2704	9988	Reset	R/W	16	INTEGER	0, 1. If user sets to 1, resets the unit.
2705	9989	Serial Receive Good Count	R	16	UINT	0 – 65535
2706	9990	Serial Receive Error Count	R	16	UINT	0 – 65535
2707	9991	Serial Transmit Good Count	R	16	UINT	0 – 65535
2708	9992	Serial Transmit Error Count	R	16	UINT	0 – 65535
2709	9993	Radio Receive Good Count	R	16	UINT	0 – 65535
270A	9994	Radio Receive Error Count	R	16	UINT	0 – 65535
270B	9995	Radio Transmit Good Count	R	16	UINT	0 – 65535
270C	9996	Radio Transmit Error Count	R	16	UINT	0 – 65535
270D	9997	Uptime Days	R	16	UINT	0 – 65535
270E	9998	Uptime Hours	R	16	UINT	0 – 65535
270F	9999	Uptime Minutes	R	16	UINT	0 – 65535

MODE SENSOR	MODE
0	NORMAL

Valid Baud Rates
4800

1	NULL
2	CALIBRATION
3	RELAY
4	Radio ADD
5	Diagnostic/Batt
6	Advanced Menu
7	Admin Menu

Serial Number Char	Char
1	A
2	B
3	C
4	D
5	E
6	F
7	G
8	H
9	I
10	J
11	K
12	L
13	M
14	N
15	O
16	P
17	Q
18	R
19	S
20	T
21	U
22	V
23	W
24	X
25	Y
26	Z
27	AA
28	AB
29	AC
30	AD
31	AE
32	AF
33	AG
34	AH
35	AI
36	AJ
37	AK
38	AL
39	AM
40	AN
41	AO
42	AP
43	AQ
44	AR
45	AS
46	AT
47	AU
48	AV
49	AW
50	AX
51	AY
52	AZ

	9600
	19200

FAULT	FAULT
0	NONE
1	N/A
2	Future Error
3	Future Error
4	N/A
5	N/A
6	N/A
7	Future Error
8	N/A
9	N/A
10	When Sensor is wired, it means no sensor is connected
11	Future Error
12	Future Error
13	Unspecified Error on sensor unit. Shown only on Monitor
14	N/A
15	Monitor Fault

SENSOR TYPE NUM	SENSOR
0	EC
1	IR
2	CB
3	MOS
4	PID
5	TANK
6	4-20
7	SWITCH
8	Unknown
30	WF190
31	None Selected

GAS TYPE NUM	GAS
0	H2S
1	SO2
2	O2
3	CO
4	CL2
5	CO2
6	LEL
7	VOC
8	FEET
9	HCl
10	NH3
11	H2
12	ClO2
13	HCN
14	F2
15	HF
16	CH2O
17	NO2
18	O3
19	INCHES
20	4-20
21	Not Specified
22	C°
23	F°
24..N	Future Gases