

MODEL 4200-IG-2 (Up to 2 Sensors)
MODEL 4200-IG-4 (Up to 4 Sensors)
Industrial Grade Gas Monitor

User Manual

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A Product of Arjay Engineering Ltd.
 Oakville, Ontario, Canada

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MODEL:	
HARDWARE NO.:	
SOFTWARE NO.:	
SERIAL NO.:	

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1.0 INSTRUMENT OVERVIEW

The Arjay Model 4200-IG monitors the inputs from various field sensors to provide a gas concentration display, alarms and interlocks.

The monitoring system is comprised of one main control panel and a minimum of one remote alarm sensor transmitter. The panel can support multiple sensor inputs and signal types as per the part number ordered.

Optional Remote alarm panels can also be added that will display and provide audio/visual alarms.

Local or site specific regulations may apply to your application. Be aware and to comply with all applicable regulations for your installation.

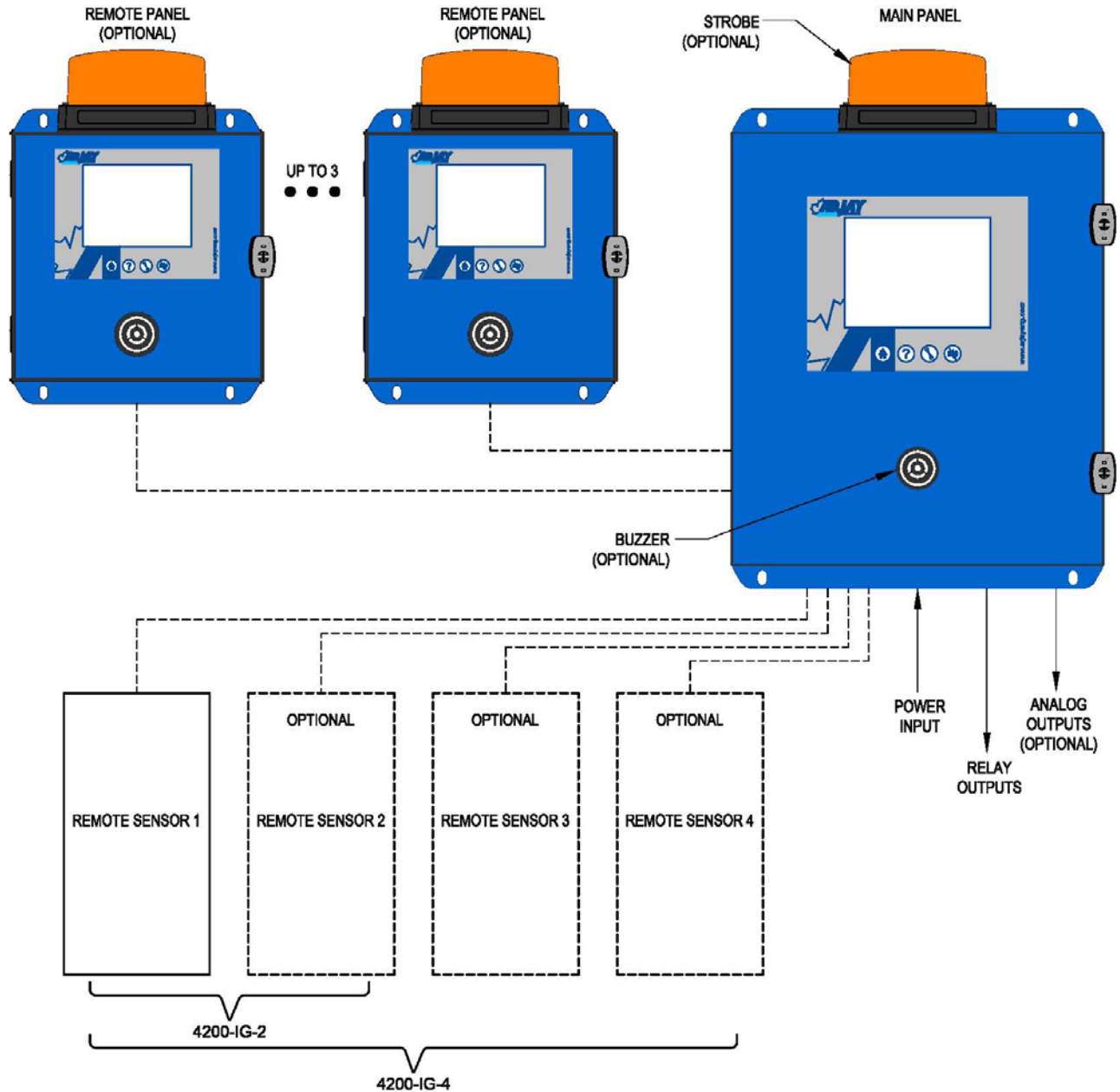


Figure 1 – System Overview

Main Panel

The main panel is a wall mounted touch screen monitor in a general purpose (non-hazardous) location that is accessible for set-up and observation of the display and alarms.

A low alarm relay for each zone is activated at a low setpoint and is indicated by the touch screen flashing yellow. The screen text also shows a low alarm and indicates the sensor number and gas concentration. The relay resets automatically when the concentration clears below the determined differential setpoint.

A high alarm relay for each zone is activated at a high setpoint and is indicated by the touch screen flashing red. The screen text also shows a high alarm and indicates the sensor number and gas concentration. The relay resets automatically when the concentration clears below the determined differential setpoint.

A high/high alarm relay common to all zones is activated at a high/high setpoint and is indicated by the screen text. The screen text also shows a high/high alarm and indicates the sensor number and gas concentration. An optional beacon and/or buzzer is also available to activate at this setpoint. The high/high alarm maybe latched to be acknowledged and reset after the gas concentration clears.

If latched, the buzzer can be silenced during an alarm condition but the beacon will only turn off when a gas alarm has cleared and has been acknowledged.

The main panel screen provides additional user interface menus for diagnostics, set-up and general help information. Menus can be accessed for viewing but a passcode entry is required to make any changes.

Remote Panel

Remote panels are available to mimic the screen and audio/visual alarms of the main panel. Access to the touch screen menus are password protected on the remote panels.

Remote Sensor

The panel will accept one or more sensor inputs depending on the model ordered. Typical inputs are 4-20 mA signals proportional to the gas concentration.

Refer to your sensor transmitter manual for details. Routine testing and calibration is recommended to ensure the sensor is responsive and accurate.

1.1 Features

- Microprocessor based Controller
- Multiple sensor inputs
- Concentration Display
- Relay alarms on low, high and high/high
- Available analog outputs and RS-485 communication
- Touch Screen interface with passcode protection
- Diagnostic, set-up and Help menus on all screens

1.2 Model Numbers

4200 - IG - x - a b c d e - f

x - # of Sensors
2 – Up to Two Sensors
4 – Up to Four Sensors

a - Buzzer
0 – No
1 – Yes
b - Strobe
0 – No
1 – Yes
c – 4-20mA Output*
0 – No
1 – Yes
d – RS-485 Modbus Communication
0 – No
1 – Yes
e – Ethernet Hub For Remote Panels
0 – No
1 – Yes

f – Custom vs. Standar
x – Custom**
z – Standard

**Fill in the custom requirement below.

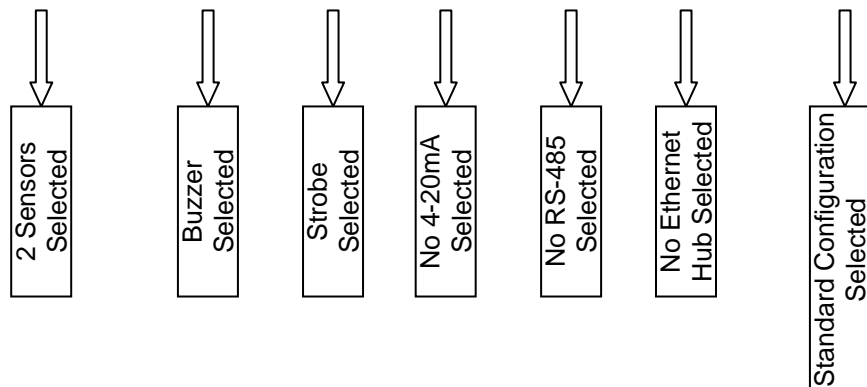
**

x – Custom Description	
-------------------------------	--

*Per Zone

Example:

4200 - IG - 2 - 1 1 0 0 0 - z



1.3 Specifications

Power Input:	100-240 vac, 50/60 Hz, 1.95A maximum
User Interface:	
Touch Screen	Full Colour 6 “ display on Main Panel Monochrome 4” on Remote Panel
Outputs:	
Relay Output	DPDT relay, 8 A @ 250 vac dry contacts Selectable failsafe or non-failsafe Programmable time delay: 0 – 1 hour; ON and/or OFF One relay each for: <ul style="list-style-type: none">• Low Setpoint per zone• High Setpoint per zone• High/High common
Sensor	Accepts various sensor types Refer to your sensor manual for specifications
Environmental:	
Ambient Temperature	0 to +55 °C
Relative humidity	0 to 95% (non-condensing)
Installation Category	II
Pollution Degree	2
Mechanical Specification:	Refer to dimensional drawing

2.0 INSTALLATION

NOTE: If any damage to the instrument is found, please notify an Arjay Engineering representative as soon as possible prior to installation.

2.1 Main and Remote Panel Installation

Choose a mounting location in accordance with good instrument practice. Extremes of ambient temperature and vibration should be avoided (see specifications and installation drawing).

Remote panels can be mounted up to 300 meters away from the main panel. Sensors can be mounted up to 1000 feet away from the main panel.

Important Note: The controller is set in Failsafe mode (Factory Default). This means that the relays are in an energized state during normal operation. The N.O. relay contact will be held closed and the N.C. relay contact will be held open during a normal condition. This will allow the relay to return to it's non-energized (shelf) state during an alarm, fault or power failure condition. **Wire accordingly.**

2.2 Sensor Installation

Refer to sensor manual for more specification on location and wire type.

The sensor is to be mounted near the targeted gas source and protected from extremes of temperature and damage. Keep the sensor accessible for routine calibration. Do not block with equipment or store materials or containers in front of the sensor.

Gases may have densities greater than or less than air. Sensors should be mounted accordingly.

Sensors targeting heavier than air gases should be mounted so the bottom of the sensor housing is approximately 250mm to 450mm (10" to 18") above floor grade to protect it from damage from cleaning equipment and minor washdown. The sensor should be mounted above any risk of flooding.

Sensors targeting lighter than air gases should be mounted near the ceiling in a location that will be accessible for routine testing.

Sensor location is application specific and may need to be in accordance with local regulations or engineered recommendations.

2.3 Electrical Installation

Refer to the drawings provided by the contractual engineer for your project and the drawings included with this manual.

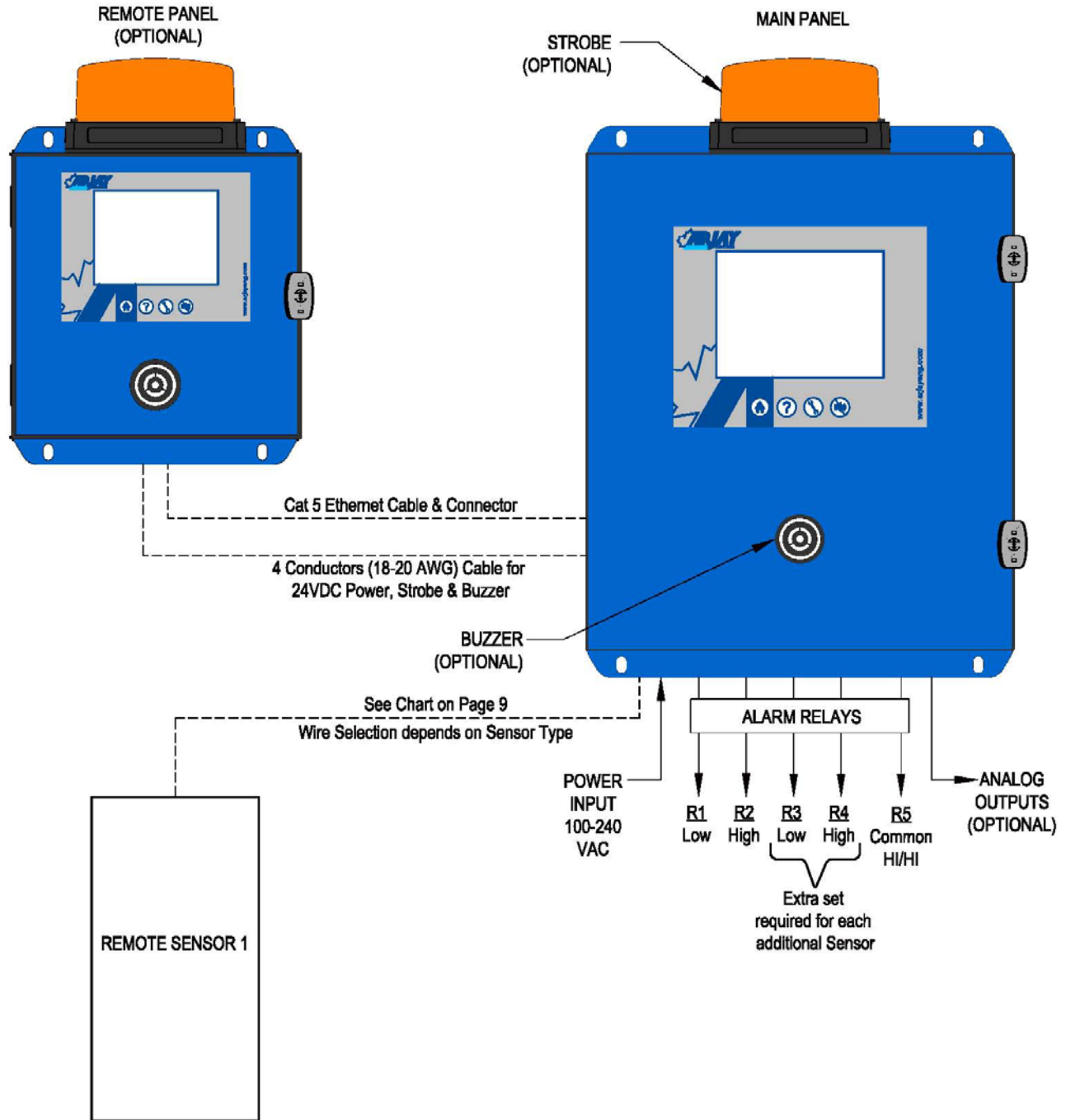


Figure 2 – Electrical Installation Overview

Wiring Chart (Depends on Sensor Selection)

Two wire Loop Powered Transmitters (Sensor)*

Transmitter Model	Transmitter Wire Terminal	Panel Wire Terminal
HLM-2000-TX	+ 24VDC Power Input ●	● 24VDC Power Output
	- Signal Output ●	● Common (Not Used)
		● + 4-20mA Input

Three wire Loop Powered Transmitters (Sensor)*



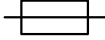
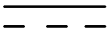




Transmitter Model	Transmitter Wire Terminal	Panel Wire Terminal
HLM-2000-EX		
EC-Gold	+ 24VDC Power Input ●	● + 24VDC Power Output
EC-Gold Dual	-Negative ●	● Common
IR-200	+ 4-20mA Output ●	● + 4-20mA Input

Four wire Loop Powered Transmitters (Sensor)*

Transmitter Model	Transmitter Wire Terminal	Panel Wire Terminal
IR-350	+ 24VDC Power Input ●	● + 24VDC Power Output
	-Negative ●	● Common
	+ 4-20mA Output ●	● + 4-20mA Input
	-Negative ●	

*Shielded wire is recommended on all installation.
 Maximum wire length 1,000 feet @20 AWG.

2.4 Glossary of Symbols

	Attention, consult accompanying documents Attention, veuillez consulter les documents ci-joints.		
	Protective Earth Terre de protection		Fuse Coupe-circuit; fusible
	Direct Current (DC) Courant continu		Normally open relay contacts Contacts travail
	Normally closed relay contacts Contacts Repos		Power off Arrô (mise hors tension)
	Power on Marche (mise sous tension)	L	Live Sous tension
N	Neutral Neutre	G	Ground Terre

3.0 STARTUP AND CALIBRATION

3.1 Startup

Check that the power wiring, sensor and remote panel connections, and interfaced equipment are wired in accordance with the electrical installation drawings.

Power On the unit.

The main screen will light up and run through initialization. After any operator power start up or power interruption, the display will indicate it was non-gas power-up condition and that it must be acknowledged by an operator to proceed.

The main and remote panels are set to factory defaults or customer specifications. The sensor is factory tested prior to shipment. As such, the system will be operational upon start-up.

After the power-up is acknowledged, confirm the screen reads similar to the following.

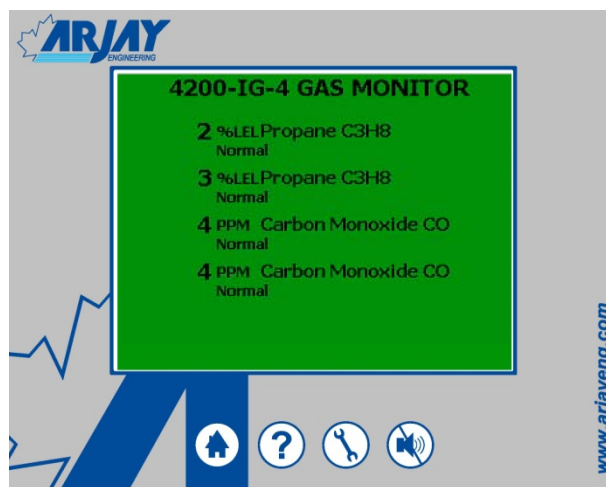


Figure 3 – Startup Main Screen View

3.2 Screen Menu Background Information

3.2.1 Keypad Main Menu Entry

Below the touch screen are 4 touch keys.



Home

At any time, you can press the Home Key to return directly to the Home Screen



Help

This provides an overview of the system operation and components. Contact details for technical help are included at the end of the text.



Tools

Access this section to view or configure the screen and control settings, view diagnostics or to do a system alarm test.



Silence

During an alarm condition the audio can be silenced. Silencing at any panel will silence all panels. The audio alarm will automatically re-set when the alarm clears.

4.2 Alarm Setup

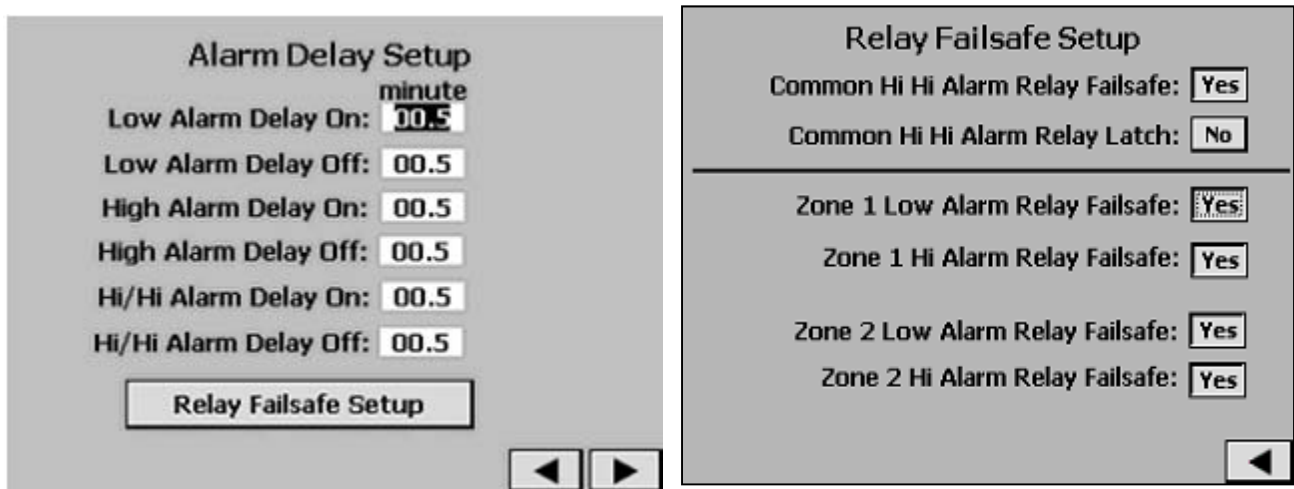


Figure 6 – Alarm Setup Screen View

The Passcode 2000 will be required to make changes in this section.

There are three alarm settings: Low alarm, High Alarm and High/High alarm

The low alarm is typically used as a warning level that gas is present but at a safe level. It is not unusual to have trace levels of gas present during maintenance or process operations. A relay is provided for each zone. Determine your application requirement such as fan ventilation.

The high alarm is typically used as an alarm condition for action. A relay is provided for each sensor.

The high/high alarm is common to all sensors and will activate the buzzer and strobe if ordered. A common relay is provided.

DELAY SETUP

The low and high alarm delay settings are as follows:

Delay ON. This is the time, in minutes and seconds, that the relays will delay before activating when the ppm setpoint has been reached. Delay ON is used to suppress a nuisance alarm that may be caused by a spurious or momentary alarm of gas.

Delay OFF. The time, in minutes and seconds, that the relays will stay on after the ppm has dropped below the setpoint. Delay OFF is used to keep ventilation fans running after the sensor has cleared to assist ventilating any areas that may not be clear due to poor ventilation.

FAILSAFE SETUP

Failsafe will determine if the relays are energized or de-energized during a normal operating state (no alarm condition).

If Failsafe is YES, the relay will be energized during a normal operating condition. An alarm or power failure will de-energize the relay to the alarm state.

When in Failsafe mode and during a normal condition, the N.O. contact is closed and the N.C. contacts is open. WIRE ACCORDINGLY.

COMMON Hi/Hi LATCH

Select YES to latch the Hi/Hi relay when it alarms. In this mode, the alarm will need to be manually acknowledged by the Reset button on the Main screen after the gas condition has cleared.

4.3 Sensor Setup

The screenshot shows the 'Sensor 1 Setup' screen with the following fields and values:

- Gas Name No: 3 (with a 'Gas Name Number Table' button)
- Gas Unit No: 1 (with a dropdown menu showing '0 - PPM; 1 - %LEL; 2 - %')
- Span: 100.0
- Low Alarm On: 10.0 (with an 'Off: 8.0' field)
- High Alarm On: 20.0 (with an 'Off: 18.0' field)
- HiHi Alarm On: 20.0 (with an 'Off: 18.0' field)

A back arrow button is located in the bottom right corner of the screen.

Figure 7 – Sensor Setup Screen View

The Passcode 2000 will be required to make changes in this section.

Gas Name

You can enter the gas name or identifier. This will show on the main screen adjacent to the gas concentration. This has been factory set according to the sensor shipped with this panel.

Span

This will determine the full concentration level of sensor. This is determined by the sensor type and is factory set according to the sensor shipped with this panel.

Low Alarm ON

This will determine the concentration at which the low alarm relay activates. At this setpoint, the screen will flash yellow.

Low Alarm OFF

This will determine the concentration at which the low alarm will turn off. This differential is used to suppress chattering of alarms if the gas concentration is hovering at the setpoint.

The low alarm will clear automatically if the concentration levels drop below the alarm levels.

High Alarm ON

This will determine the concentration at which the high alarm relays activate. At this setpoint, the screen will flash red. The high alarm will clear automatically if the concentration levels drop below the alarm levels.

High Alarm OFF

This will determine the concentration at which the screen will indicate the gas condition has cleared.

High/High Alarm

This will determine the concentration at which the high/high alarm relay and alarms activate. This relay can be latched to be acknowledged after the gas clears.

4.4 Factory Setup

This screen is used to set the number of sensors inputs and enter the serial and firmware data. It is only accessible by a unique user name and passcode.

This panel model can support up to four sensors. If a sensor is being added or removed from this panel, contact the factory with the serial number to update the factory database. The passcode can then be provided.

4.5 Date and Time

The 4200-IG has a real time clock to remind users of impending calibration duties.

The reminder frequency can be entered here. When a calibration is performed, Press the Record calibration icon to initiate reminder countdown timer.

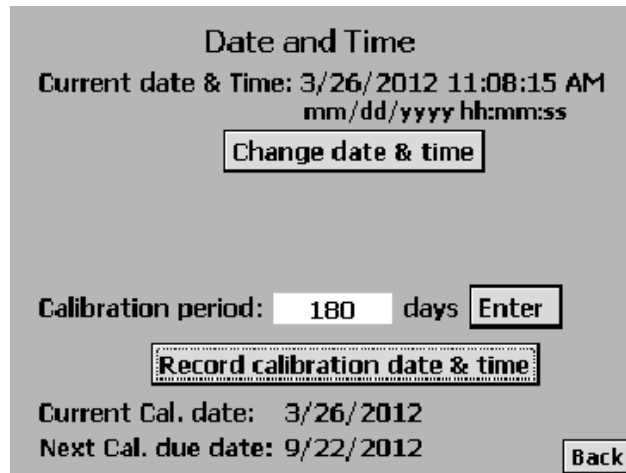


Figure 8 – Date & Time Screen View

4.6 System Test

The Low, High and Common HI/Hi relays can be tested for each zone by pressing appropriate Icon will turn green if selected. Push the appropriate alarm level for test.

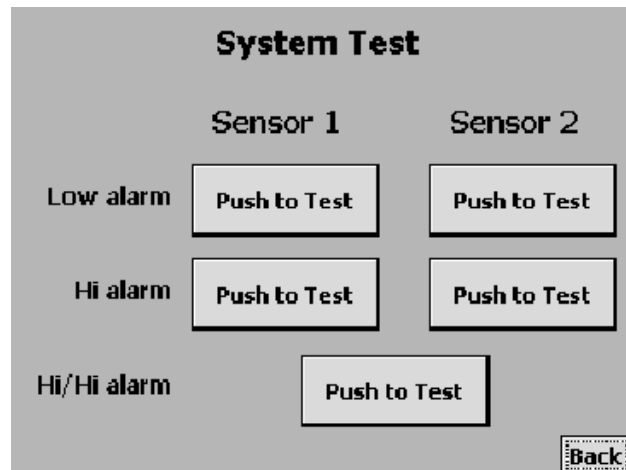


Figure 9 – System Test Screen View

5.0 SENSOR CALIBRATION

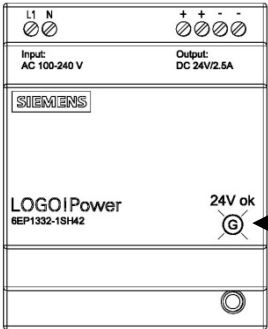
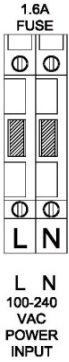
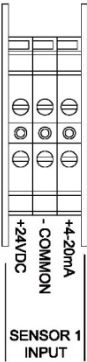
Refer to the specific sensor Instruction Manual attached to this manual for the sensor calibration details.

The sensor is factory calibrated and will operate upon installation, however, the sensor response should be verified after installation with a calibration or test gas. Re-calibrate if necessary.

Routine verification of the sensor response and confirmation of the panel alarms and interlocks is recommended. A minimum verification every 4 to 6 months is recommended. Re-calibrate as necessary.

6.0 TROUBLESHOOTING

Main Panel

 <p>The image shows the main panel of the device. At the top, there are terminals for 'L1 N' and '+ + - -'. Below that, it specifies 'Input: AC 100-240 V' and 'Output: DC 24V/2.5A'. The Siemens logo is present. In the lower section, it says 'LOGO! Power 6EP1332-1SH42'. A green LED is labeled '24V ok' with an arrow pointing to it from the text 'Green LED'.</p>	<ul style="list-style-type: none"> • Confirm the power supply LED is active (Green).
 <p>The diagram shows a fuse holder labeled '1.6A FUSE' with two slots. Below it are terminals labeled 'L N' and '100-240 VAC POWER INPUT'.</p>	<ul style="list-style-type: none"> • Confirm the Power Input is 100-240VAC using a meter. • Confirm if input fuse has blown.
 <p>The diagram shows a terminal block for 'SENSOR 1 INPUT'. It has three columns of terminals. The first column has terminals labeled '+24V/DC'. The second column has terminals labeled '- COMMON'. The third column has terminals labeled '+4-20mA'.</p>	<ul style="list-style-type: none"> • Confirm that sensor is wired according to electrical wiring drawing for each sensor.

7.0 DETAILED ELECTRICAL AND DIMENSIONAL DRAWINGS

Drawings are included in this section that are specific to your model ordered.

If drawings are not included here, record the serial number on the left outside wall of the main panel and contact:

ARJAY ENGINEERING TECHNICAL SUPPORT

(800) 387-9487

+1 (905) 829-2418

www.arjayeng.com



WARRANTY STATEMENT

with options for: Extended Warranty by Purchase
 Extended Warranty by Start-Up Service
 New Home Warranty Act

Seller's Express Warranty. Seller warrants the Purchased Items to be free from defects in materials and workmanship under normal use and service for a period of one year from time of purchase. Seller further warrants that it will perform the Services in a professional and workmanlike manner. Buyer agrees that it has the sole responsibility for the proper selection, application, installation, and/or use of the Purchased Items and for instructions to ultimate users, if any, concerning use, application, periodic maintenance, and cautions regarding the Purchased Items. Buyer agrees that the warranties provided herein shall not apply to any Purchased Item which: (1) has been repaired or altered outside of Seller's factory in any way so as, in Seller's judgment, to affect such Purchased Item's reliability; (2) has been subject to misuse, negligence, or accident; (3) has been operated other than in accordance with the applicable printed instructions provided by Seller; or (4) has been subject to wear of wetted or reactive parts caused by Buyer's application of the Purchased Items.

Seller's Exclusive Obligations Under Warranty. Seller may, at its option, repair or replace, or refund the purchase price of Purchased Items which shall be returned to Seller, no later than one month after the expiration of the applicable warranty period in the manner set forth in this clause, and which Seller's examination shall disclose to Seller's satisfaction to be defective as specified in the warranty clause hereof.

All such Purchased Items shall be returned to Seller at Oakville, Canada; freight, duty and brokerage prepaid, accompanied, or preceded by a particularized statement of the claimed defect. Under such circumstances and if confirmed warranty applicable by Seller, Seller shall bear the cost of repair or replacement and the risk of loss while the Purchased Items are in Seller's possession at Seller's plant. Seller will return warranty product to Buyer prepaid by a freight method of Seller's discretion. SELLER'S OPTION TO REPAIR, REPLACE, OR REFUND THE PURCHASE PRICE FOR PURCHASED ITEMS IS BUYER'S EXCLUSIVE REMEDY AGAINST SELLER WITH RESPECT TO THE PURCHASED ITEMS. SELLER SHALL NOT BE LIABLE TO BUYER, ITS AGENTS, EMPLOYEES, OFFICERS, OR DIRECTORS, FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES, LOSS OF REVENUE OR PROFIT, OR ANY OTHER INDIRECT DAMAGES RELATED TO THE PURCHASED ITEMS OR SERVICES.

Fee based extension:

For an additional fee, the standard factory warranty can be extended. To initiate this process please contact an Arjay Representative to determine price and time allotment.

Start-up Services extension:

The basic factory warranty of one year will be extended if the Arjay Start-up services are purchased along with the instruments on the original order. An additional one year of warranty will apply in addition to the standard one year warranty supplied. Carbon Monoxide sensors cells are included in this extended warranty. All other consumable gas sensor cells are excluded from this additional warranty.

New Home Warranty Act extension:

If the Arjay Start-up services are purchased along with the instruments on the original order and the instrument is further maintained and calibrated a minimum of once per year during the warranty period by an Arjay Authorized Service company, an additional two years of warranty will apply in addition to the standard one year warranty supplied. This warranty extends to Arjay supplied equipment and includes carbon monoxide sensing cells. All other consumable gas sensor cells are excluded from this additional warranty.

Arjay Engineering Ltd.
arjayeng.com



Gas Detection Calibration Services

- single visit calibration and repair
- multi-visit contracts with discounts on multi-year
- on-site or in-shop (Oakville, Ontario) services

We provide:

- ✓ fully trained technicians
- ✓ WSIB Certificates
- ✓ full insurance (2 million liability)
- ✓ Calibration Certificates
- ✓ Stock parts in vehicles and Oakville facility
- ✓ Calibration gas certified to NIST Standards

Our Technicians have:

- ✓ Dangerous Goods Handling Certification
- ✓ St. Johns First Aid Training
- ✓ Fall Arrest Training
- ✓ Confined Space Training (special request)
- ✓ WHMIS Training

Call for a no obligation quote

Gas Detection division of Arjay Engineering Ltd.

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