SINGLE CHANNEL WALL MOUNT CONTROLLER

Gas Detection For Life — **Beacon™ 110 Model**

Features

- Low cost versatile solution
- Compact, weatherproof, NEMA 4X enclosure
- 115/220 VAC or 24 VDC operation
- Long life sensors (2+ years typical)
- Accepts RKI LEL/O_2/CO2/toxic direct connect sensors
- Accepts any 4-20 mA transmitter
- Audible alarm with reset button
- Two programmable alarm levels
- Built-in trouble alarm with relay
- Relay rating 10 amps, form C
- Provides 4-20 mA output
- Optional Strobe

Industry Applications

- Petrochemical plants
- Refineries
- Water & wastewater treatment plants
- Pulp & paper mills
- Gas, telephone, & electric utilities
- Parking garages
- Manufacturing facilities
- Steel
- Automotive
- HVAC

Gas detection should not be complicated. The Beacon 110 is gas detection simplified.

The Beacon 110 is a powerful, low cost fixed system controller for one point of gas detection. It is microprocessor controlled, simple to install and operate, and priced to be the industry's best value single gas detection controller. It is capable of accepting RKI sensors directly for LEL level combustibles, oxygen, CO2, and toxic gas sensors. The Beacon 110 can also accept any 4-20 mA transmitter (2 or 3 wire, 24 VDC). Sensors can be mounted directly at the Beacon 110 housing, or can be wired remote from the controller.

The 10 amp rated relay contacts allow direct control of external alarms and horns. The digital display has backlighting and simultaneous readout of the gas type and concentration.

The Beacon 110 is also housed in a NEMA 4X rated case for a weather tight seal. This case design complies with lock out / tag out standards and can be fully secured. An external reset switch allows the alarm to be silenced from outside of the controller housing. The Beacon 110 ships complete with a wall mounting kit for easy installation.

RKI offers the industry's widest selection of standard and toxic gas detection sensors, all of which can be utilized with the Beacon 110, providing gas monitoring protection for almost any application.

RKI Instruments, Inc. · 33248 Central Ave. Union City, CA 94587 · Phone (800) 754-5165 · (510) 441-5656 · Fax (510) 441-5650

World Leader In Gas Detection & Sensor Technology
www.rkiinstruments.com

Beacon™ 110 Model

Physical	
Dimensions	Height: 8.5” 216 mm Width: 7.0” 178 mm Depth: 4.3” 109 mm
Enclosure	Wall mounting grey fiberglass with hinged cover
Conduit Connection	3/4” NPT conduit hubs, 2 provided. 1 for sensor wiring and 1 for power & relay wiring
Wiring Termination	Screw type terminal block, 14 gauge max.
Power	Universal 115 VAC & 220 VAC, or 24 VDC nominal, battery backup option available
Controls	3 internal push buttons for setup, programming, and calibration. 1 external push button for alarm reset.
Environmental	
Operating Temperature	-4°F to 122°F (-20°C to 50°C)
Storage Temperature	-4°F to 158°F (-20°C to 70°C)
Enclosure Rating	NEMA-4X enclosure, chemical, and weather resistant. Suitable for indoor and outdoor installations.
Inputs	
Direct Wired Sensors	LEL, Oxygen, Carbon Dioxide, and toxic gas sensors. Remote amp not required for less than 500 feet
4-20 mA Sensors	Accepts any 4-20 mA transmitter (24 VDC, 2 or 3 wire). A wide variety of RKI/Riken sensors are available with 4-20 mA signals. Wiring distances up to 8,000 feet
Sampling Methods	Diffusion and sample draw heads available
Outputs	
Relays	Three relays - 10 amp rating (at 115 VAC), SPDT isolated contacts. 2 relays for gas alarms and 1 trouble relay. Relays fully programmable for: increasing or decreasing alarm, latching or self reset, normally energized or normally de-energized, time delay for alarm on and alarm off.
4-20 mA	Signal output, 4-20 mA (maximum load impedance 500 ohms), per channel
24 VDC	24 VDC (400 mA max) output provided to operate sample drawing adapters or other accessories
Display	2 x 8 Alphanumeric display with backlighting
Audible	Built-in audible alarm, 94 dB, mounted on enclosure Coded output: pulsing = gas alarm, steady = fail
Visual	3 LED’s on the front cover for alarm status indication, and malfunction. Optional top-mount strobe
Approvals	CSA Certified to CSA C22.2 No. 1010 and UL 61010-1
Warranty	One year materials and workmanship

Specifications subject to change without notice.

Made in the USA

RKI INSTRUMENTS

10000363 UL REGISTERED FIRM ISO 9001

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Authorized Distributor:

INSTRUMENTS
Gas Detection For Life

Quick Reference Guide
Beacon 110 Series Programming

TOOLS REQUIRED:

None.

CALIBRATION MODE (Direct Connect Combustible gas version example)

- Press and HOLD the UP/YES button.
  - Calib? YES/NO Will be displayed.
  - Press YES to enter Calibration mode or NO to EXIT
  - FreshAir Adjust?
  - Press YES to perform a fresh air adjust.
  - FRESH AIR WAIT… will be displayed as fresh air reading is adjusted.
  - FreshAir 0% LEL / ENTER will be displayed prompting user to press ENTER button. Press the ENTER button.
  - FreshAir PASS will be displayed if Beacon 110 is able to set fresh air reading.
  - FreshAir SAVED will appear briefly.
  - SPAN W/Cal Gas? Press the YES button to continue with calibrating with gas or NO button to EXIT.
  - APPLY SPAN GAS will be displayed if YES button is pressed
  - 0% LEL will be displayed alternating with APPLY SPAN GAS. Attach calibration cup to sensor, turn on calibration gas and let gas flow to sensor for 1-2 minutes or until reading stabilizes.
    - Use UP or DOWN buttons to increase or decrease span to match value on cylinder.
  - Press the ENTER button to set calibration.
  - Remove Cal Gas will be displayed alternating with gas reading. Remove the calibration gas and turn off regulator.

CONFIGURATION MODE

- Press and HOLD the UP and ENTER button
  - Enter Config? Press the YES button to enter or NO button to EXIT
  - METHANE 100% LEL will be displayed then,
  - Alarm-1 10% LEL will be displayed.
    - Press the UP or DOWN button to raise or lower alarm point
    - Press the ENTER button to set
  - Alarm -1 Increase will be displayed
    - Press the UP or DOWN button to change from Increase to Decrease

        - Press the ENTER button to set
    - Alarm-1 N. DE-EN (Alarm-1 relay normally de-energized)
        - Press the UP or DOWN button to change from N. DE-EN to normally energized relay contacts (Fail Safe)
        - Press the ENTER button to set.
    - Alarm-1 LATCH will be displayed
        - Press the UP or DOWN button to change from LATCH to SELF-RST (self resetting alarms)
        - Press the ENTER button to set.
    - A1 Strobe (below functions can be selected by using the Down button)
        - Can Reset
        - None
        - Non Reset
    - Alarm-1 OnDy 1 secs (alarm on delay set to one second)
        - Press the UP or DOWN button to change from 0 seconds to a maximum of 60 minutes.
        - Press the ENTER button to set.
    - Alarm-2 50% LEL will be displayed.
        - Press the UP or DOWN to raise or lower the Alarm-2 set point.
        - Press the ENTER button to set.
    - Alarm -2 INCREASE will be displayed
        - Press the UP or DOWN button to change from INCREASE to DECREASE
        - Press the ENTER button to set
    - Alarm-2 N. DE-EN (Alarm-2 relay normally de-energized)
        - Press the UP or DOWN button to change from N. DE-EN to normally energized relay contacts (Fail Safe)
        - Press the ENTER button to set.
    - Alarm-2 LATCH will be displayed
        - Press the UP or DOWN button to change from LATCH to SELF-RST (self resetting alarms)
        - Press the ENTER button to set.
    - A1 Strobe (below functions can be selected by using the Down button)
        - Can Reset
        - None
        - Non Reset
    - Alarm-2 OnDy 1 secs (alarm on delay set to one second)
        - Press the UP or DOWN button to change from 0 seconds to a maximum of 60 minutes.
        - Press the ENTER button to set.
    - Zero Supp 2% LEL (zero suppression)
        - Press the UP or DOWN button to increase or decrease zero suppression.
        - Press the ENTER button to set.
    - FILTER 5 SEC
        - Press the UP or DOWN button to adjust from 0 to 60 seconds.
        - Press the ENTER button to set.

- CAL TIME 15 MIN will be displayed
  - Use the UP or DOWN button to change from 5 MIN to 30 MIN.
  - Press the ENTER button to set.
- SAVE IT? YES/NO
- Press YES to save and EXIT
- CONFIG SAVED will be displayed.

INPUT SELECTION

- Press the UP/YES and DOWN/NO buttons to enter gas type selection mode.
  - Select Input? Will be displayed. Press the YES button to enter. Inputs below can be selected by using the Down button.
    - Input? LEL DIR (LEL direct connect) will be displayed)
    - Input? 4-20mA (remote amp will be displayed)
  - SAVE IT? YES/NO
  - Press the YES button to save and exit.

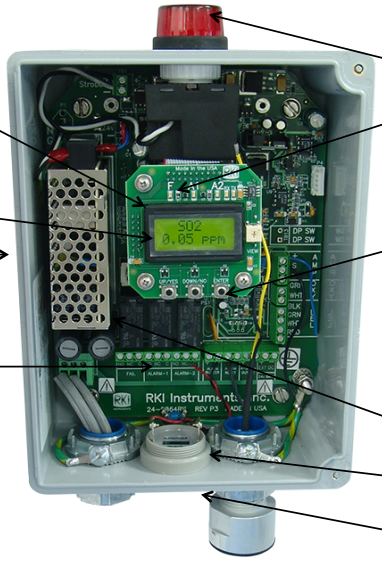
4-20 mA ADJUSTMENT

- Press and HOLD the UP, DOWN and ENTER buttons to enter.
  - Tune 4-20mA? Will be displayed.
  - Press the YES button
  - 4 mA OUT Up Dn-ENT will be displayed
    - Press the UP or DOWN button to raise or lower the 4 mA.
    - Note: If necessary, an ammeter can be installed in the Signal (feed back) line to measure the current.
    - For certain installations it may be necessary to set the 4 mA slightly above 4 if connected directly to PLC.
    - Press the ENTER button to set.
  - 20 mA OUT Up Dn-ENT will be displayed
    - Use the UP or DOWN button to set the reading to 20 mA
    - Press the ENTER button to set.
  - 4-20 CAL DONE will be displayed.

Beacon 110

Single Channel Wall Mount Controller

Internal Components



Backlit LCD Display

Simultaneous readout of the gas type and concentration

Compact NEMA-4X weather resistant enclosure

Accepts any 4-20 mA transmitter or direct connect sensors for LEL / O2 / H2S / CO / CO2

2 programmable alarm levels per channel

Optional Strobe

Alarm 3 LEDs
- Alarm 1
- Alarm 2
- Fail

PCB Control Switches
- UP/YES
- DOWN/NO
- ENTER

On/Off toggle switch

94 dB Buzzer Alarm

Alarm Reset Switch

•2

Calibration

- Internal amp setup
  - Sensor wired directly to controller.
  - Gas applied directly to sensor.
  - Adjustments made at controller.

Calibration Mode

- Press and hold the UP/YES Button to enter the calibration mode menu.
- Press the YES button to proceed.

Fresh Air Adjustment

- Confirm that atmosphere is fresh before making fresh air adjustment.
- Apply Zero Air to sensor if atmosphere is suspect.

Fresh Air Adjustment

- Allow sensor to stabilize when supplying Zero Air.

Fresh Air Adjustment

- Press the ENTER button when reading has stabilized and to complete the fresh air adjustment.

Fresh Air Adjustment

- If Fresh Air adjustment is successful, PASS will be displayed. If not, FAIL will be displayed.
- Check sensor and test gas.

Fresh Air Adjustment

- The new fresh air setting will be saved in memory.

Gas Adjustment

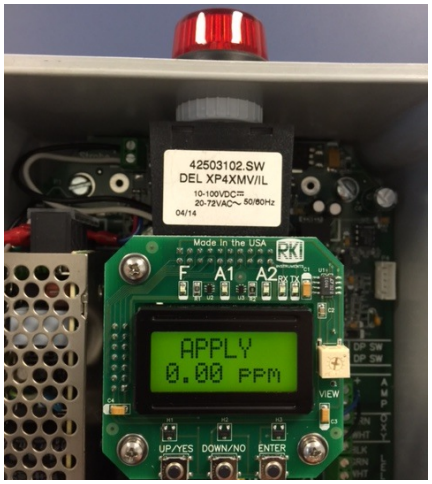
- Upon completion of Air Adjustment, the Beacon 110 will prompt you if you would like to SPAN with Gas.
- Press YES to continue.

Gas Adjustment

- Assemble calibration kit.
- Attach calibration cup to sensor.

Gas Adjustment

- Apply Span gas to detector.



Gas Adjustment

- Allow reading to stabilize.
- Maximum of two minutes.

Gas Adjustment

- Using UP or DOWN button, adjust span to proper setting then press the ENTER button to complete.

Gas Adjustment

- PASS will be displayed if calibration is successful.

Gas Adjustment

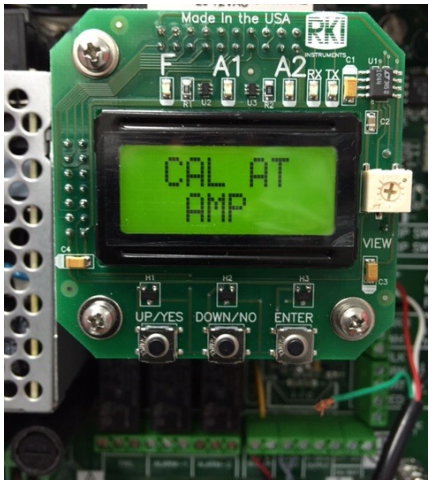
- Calibration data will be saved.

Gas Adjustment

- When calibration is complete, it will leave the calibration mode allowing time for the sensor to return to normal condition.

Gas Adjustment

- If the Beacon 110 is set up with a remote amp transmitter, "CAL AT AMP" will be displayed.

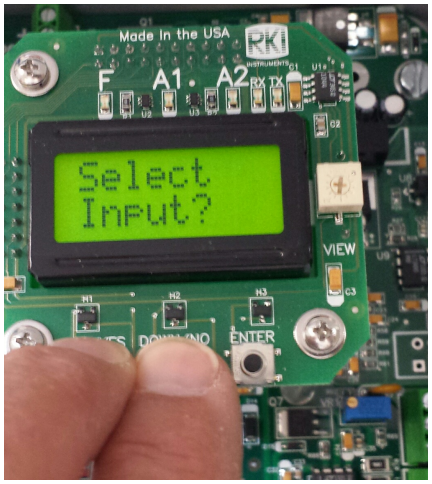


Gas Adjustment

- Calibrate detector as needed.
- DMM, small flat blade screwdriver and calibration kit are required.

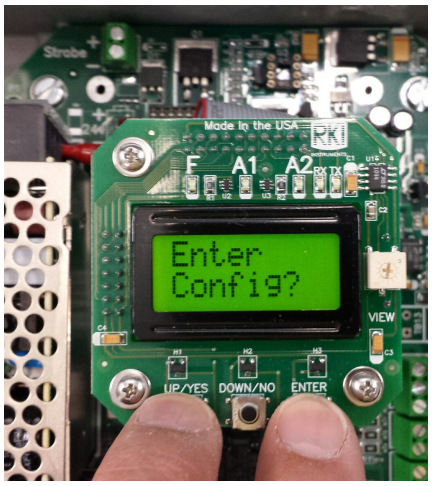
Select Input Mode

- Press and hold the UP/ YES and DOWN/NO buttons to enter the Select Input mode.
- This allows selection of the proper input type such as:
  - O2 DIR
  - TOX DIR
  - LEL DIR
  - 4-20 mA transmitter



Configuration Mode

- Press and hold the UP/Yes and ENTER buttons to enter the Config Mode.
- This mode is used for setting all internal parameters.

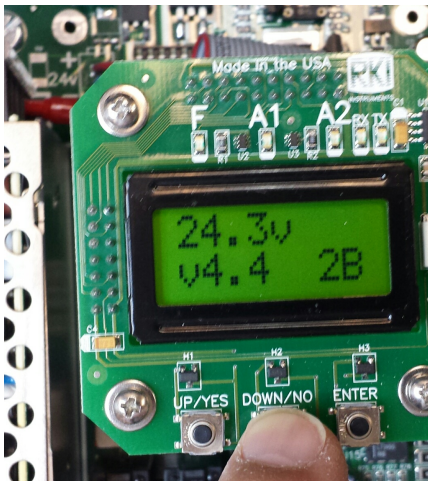


Cal 4-20mA Mode

- Press and hold the UP/YES, DOWN/NO and ENTER buttons to enter the Cal 4-20 Mode.
- This mode is used for fine tuning the 4-20 mA output.

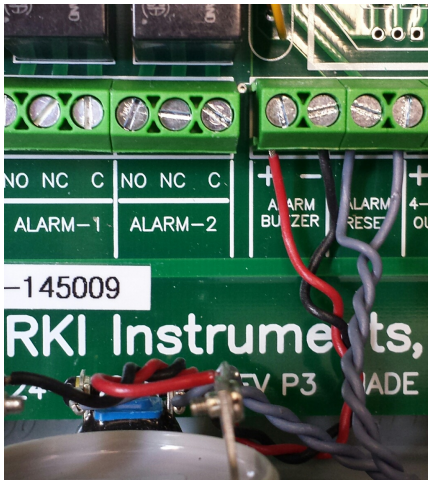
Input Voltage and Firmware

- Push and hold the DOWN/NO button to view the input voltage and firmware version.



Terminal Connections

- Form A contacts for the Fail relay.
  - Common & Normally Closed contacts
- Form C contacts for the Alarm-1 and Alarm-2 relays.
  - Common, Normally Open and Normally Closed contacts



Questions?

TWO CHANNEL WALL MOUNT CONTROLLER

Gas Detection For Life

Beacon™ 200 Model

Affordable 2 Point Monitor

Features

- **Simultaneous readout on 2 channels**
- **Two alarm levels per channel**
- **Discrete and common relays**
- **Built in audible alarm**
- **NEMA 4X enclosure**
- **4-20 mA outputs**
- **Proven, long-life sensors for a wide variety of gases**
- **Accepts any 4-20 mA transmitter input (24 VDC)**
- **Easy to install, operate and expand**
- **CSA, C/US classified**

Industry Applications

- **Petrochemical plants**
- **Refineries**
- **Water & wastewater treatment plants**
- **Pulp & paper mills**
- **Gas, telephone, & electric utilities**
- **Parking garages**
- **Manufacturing facilities**
- **Steel**
- **Automotive**
- **HVAC**

The Beacon 200 is a powerful, low cost fixed system controller for two points of gas detection. It is microprocessor controlled, versatile, simple to install and operate, and priced to be the industry's most economical two point controller. It is capable of connecting directly to RKI sensors for LEL level combustibles, Oxygen, and toxic gas sensors. The Beacon 200 can also accept any 4-20 mA transmitter (2 or 3 wire, 24 VDC). Sensors can be mounted directly at the Beacon 200 housing, or can be wired remotely from the controller.

The 10 amp rated relays are strong enough to actuate most external alarms and horns without using slave relays. The digital display has backlighting and simultaneous readout of the gas type and concentration.

The Beacon 200's housing is rated NEMA 4X for corrosion resistance and a weather tight seal, and complies with lock out / tag out standards. An external reset switch allows the alarm to be silenced from outside of the controller housing. The Beacon 200 comes complete with a wall mounting kit for easy installation.

RKI offers the industry's widest selection of standard and toxic gas detection sensors, which can be utilized with the Beacon 200, providing gas monitoring protection for almost any application.

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Beacon™ 200 Model

Physical	
Dimensions	Height: 10.5” (267 mm) x Width: 8.5” (216 mm) x Depth: 6.3” (158 mm)
Enclosure	Wall mounting grey polycarbonate with hinged cover
Conduit Connection	3/4” NPT conduit hubs, 3 provided. 2 for sensor wiring and 1 for power & relay wiring
Wiring Termination	Screw type terminal block, 14 gauge max
Power	115 VAC or 24 VDC standard, Optional 230 VAC. Battery backup option available
Controls	4 internal push buttons for setup, programming, and calibration. 1 external push button for alarm reset
Operating Environment	
Operating Temperature	-4°F to 122°F (-10°C to 50°C)
Storage Temperature	-4°F to 158°F (-20°C to 70°C)
Relative Humidity	5 - 95% RH (non-condensing) 80% max for CSA
Enclosure Rating	NEMA-4X enclosure, waterproof, chemical, and weather resistant
Inputs	
Direct Wired Sensors	LEL, Oxygen, and toxic gas sensors. Remote amp required for greater than 500 feet
4-20 mA Sensors	Accepts any 4-20 mA transmitter (24 VDC, 2 or 3 wire). A wide variety of RKI/Riken sensors are available with 4-20 mA signals; (See list of detectable gases.) Wiring distances up to 5,000 feet
Sampling Methods	Accepts diffusion or sample draw heads
Outputs	
Relays	7 relays - 10 amp rating (at 115 VAC), SPDT isolated contacts. 2 relays for gas alarm levels per channel, plus 2 relays for common gas alarm and 1 common relay for malfunction. Relays fully programmable for: increasing or decreasing alarm, latching or self reset, normally energized or normally de-energized, time delay for alarm on and alarm off
4-20 mA	Signal output, 4-20 mA (into 1,000 ohms impedance maximum), per channel
24 VDC	24 VDC (350 mA max) output provided to operate sample drawing adapters
Display	Alphanumeric display with backlighting. 20 characters per line; 4 lines each
Audible	Built-in audible alarm, 94 dB, mounted on enclosure Coded output: pulsing = gas alarm, steady = fail
Visual	4 LED’s on the front cover for alarm status indication, pilot, and malfunction
Approvals	CSA Certified to CSA C22.2 No. 1010 and ANSI/ISA S82.01
Warranty	One year material and workmanship

Specifications subject to change without notice.

Made in the USA

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Authorized Distributor:

INSTRUMENTS
Gas Detection For Life

Quick Reference Guide
Beacon 200 Programming

TOOLS REQUIRED:

None.

CONTROL AND SETUP MODE

Press and hold the **ESCAPE** and **ENTER** buttons for approximately 5 seconds to enter the **CONTROL AND SETUP MENU**. The display will prompt you to Proceed? **YES / NO**, press the **YES** button to proceed. The selections are as follows:

- **ENABLE / DISABLE CHANNELS**
  - This allows you to set channels as enabled, disables or not used
- **CONFIGURE CHANNEL SETTINGS**
  - Allows you to configure alarm settings, noise filter setting, and zero suppression for each channel
- **VIEW SYSTEM INFORMATION**
  - Displays the firmware version number and the instrument operating voltage. No adjustment in this screen.

To **EXIT**, press the **ESCAPE** button then press the **DOWN/NO** button to return to normal operation

CALIBRATION PROGRAM

Press and hold the **UP/YES** and **ENTER** buttons for approximately 5 seconds to enter the **CALIBRATION MENU**. The display will prompt you as follows: **ESCAPE = EXIT NOW ENTER = CONTINUE**, press the **ENTER** button to continue.

- **SET CAL TIMEOUT**
  - Use the UP or DOWN buttons to set the calibration time out. The adjustment range is from 5 min. to 240 min., press the ENTER button to continue.
- **CALIBRATING A 4-20 mA DETECTOR HEAD**
  - **DO YOU WANT TO CALIBRATE CHANNEL 1 NOW?, Press YES to continue with calibrating Channel 1. Using the DOWN button will move you to Channel 2.**
    - Reminder. Calibration Must Be Done at the Detector Head
    - Set the amplifier to 100 mV in fresh air (zero emissions air)
    - Apply calibration gas to sensor, adjust span as required.
    - Press the ENTER button when completed.

- **CALIBRATING A DIRECT CONNECT DETECTOR**
  - **DO YOU WANT TO CALIBRATE CHANNEL 2 NOW? (Example as direct connect)** Press the UP/YES button to continue.
    - **Expose Detectors To Fresh Air… When Done Press ENTER** (display will alternate between gas reading and **FRESH AIR ENTER to ACCEPT ESCAPE** to **ABORT**, press **ENTER**
    - **FRESH AIR PASSED for: Channel 2**
    - When display asks to perform **SPAN** adjustment, press **YES.**
    - Set the displayed concentration up or down as necessary at to match the concentration in the cylinder. Press the **ENTER** button to continue.\
    - **Expose Detectors to Gas… When Done Press ENTER**
    - **APPLYING GAS ENTER to ACCEPT, ESCAPE to ABORT,** press **ENTER**
    - **Cal Passed for: Channel 2** will be displayed
    - Press **ESCAPE** to return to normal operation.

SETTING GAS TYPE AND UNITS OF MEASURE

- With the instrument **OFF**, press and hold the **ENTER** button, then turn the Beacon 200 on while still holding the ENTER button. This will allow you to change the gas type and units of measure for both channels.

Beacon 200

2 Channel Wall Mount
Gas Detection Controller

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Beacon 200 Components

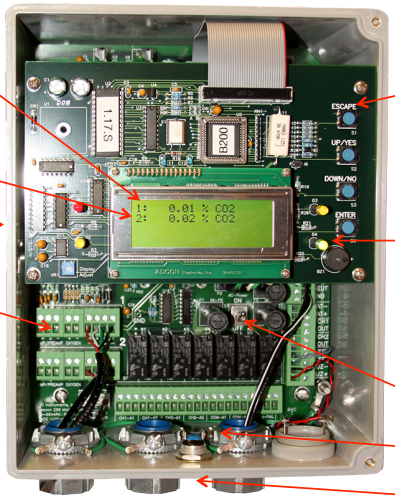
Backlit LCD Display

2 Channels Displayed Simultaneously

NEMA-4X weather resistant enclosure

Accepts any 4-20 mA transmitter

2 programmable alarm levels per channel



PCB Control Switches
- **ESCAPE**
- **UP/YES**
- **DOWN/NO**
- **ENTER**

Alarm LEDs
- **Alarm 1, yellow**
- **Alarm 2, orange**
- **Alarm 3, red**
- **Fail, yellow**

On/Off toggle switch

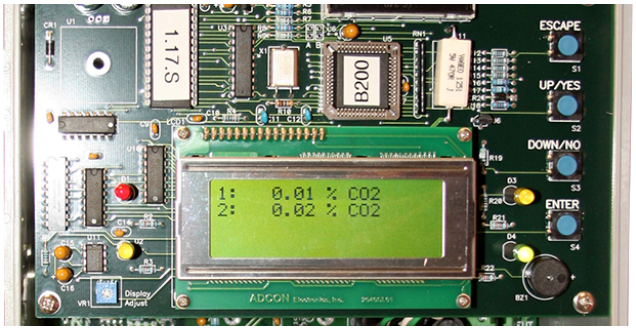
94 dB Buzzer Alarm

Alarm Reset Switch

Alarm Indications

Condition	Cause	Visual Indications	Audible Indications
Alarm 1	▪Increasing (decreasing for O2) gas reading at or above the alarm 1 set point	▪Alarm 1 LED on ▪Gas reading alternates with Alarm-1 message ▪Strobe (if installed) activates	▪Pulsing tone
Alarm 2	▪Increasing gas reading at or above the alarm 2 set point	▪Alarm 2 LED is on ▪Gas readings alternates with ALARM-2 message ▪Strobe (if installed) activates	▪Pulsing tone
Fail	▪Disconnected or misconnected detector head wiring ▪Display reading at -10% of full scale or lower ▪Defective component	▪Fail LED is on ▪Fail message replaces gas reading ▪Strobe (if installed) activates	▪Steady tone
Low Power	▪No AC power and DC power source (primary or backup) less than 21.5 volts.	▪Fail LED is on ▪SUPPLY VOLTAGE IS TOO LOW LOW POWER STANDBY message and actual ▪voltage of incoming DC power	▪None

Beacon 200



Fresh Air and Calibration

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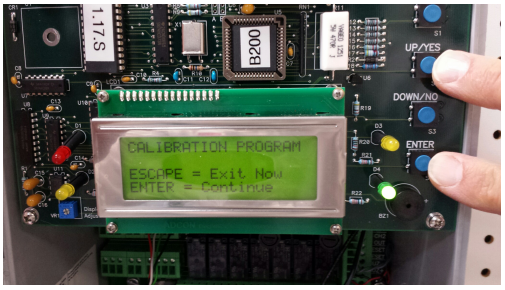
Entering Cal Program

- Press and hold the UP/YES and ENTER buttons to enter into the Calibration Program



Beacon 200 Calibration

Simultaneously press and hold the **UP/YES** and **ENTER** buttons for approximately 5 seconds to enter the **CALIBRATION MENU**. The display will prompt you as follows: **ESCAPE = EXIT NOW ENTER = CONTINUE**, press the **ENTER** button to continue.

- **SET CAL TIMEOUT**

  Use the UP or DOWN buttons to set the calibration time out. The adjustment range is from 5 min. to 240 min., press the ENTER button to continue.

Beacon 200 Calibration

Calibrating a 4-20 mA detector head

1. Verify that the detector head is in a fresh-air environment. (If necessary, use a zero-emission air cylinder, also known as zero air, to introduce a fresh-air sample when adjusting the zero reading below.)
2. Adjust the detector head's zero (fresh air reading for oxygen) reading. See the detector head's instruction manual for instructions on how to adjust the zero reading (fresh air reading for oxygen).
3. Apply calibration gas to the detector head's detector and adjust the detector head's span reading (zero reading for oxygen). See the detector head's instruction manual for instructions on how to adjust the span (zero reading for oxygen) reading.
4. Press the ENTER button to indicate that you are done calibrating.

Beacon 200 Calibration

Calibrating a Direct Connect Detector

1. If you pressed the UP/YES button, the unit will display the following message for a few seconds before continuing: Expose Detector(s) To Fresh Air. . . When Done Press ENTER. Then the display will alternate between the gas reading and the message FRESH AIR ENTER to ACCEPT ESCAPE to ABORT.
2. Press the ENTER button at the Beacon 200. The unit will adjust the zero reading and display the message Fresh Air Adjust Passed.
3. The display asks if you want to perform a span. Press the UP/YES button to continue with adjusting the span.
4. If you pressed the UP/YES button, the display will prompt you for the span gas concentration that will be used. Adjust the displayed concentration up or down as needed using the UP/YES and DOWN/NO buttons so that it matches the concentration in the calibration cylinder.

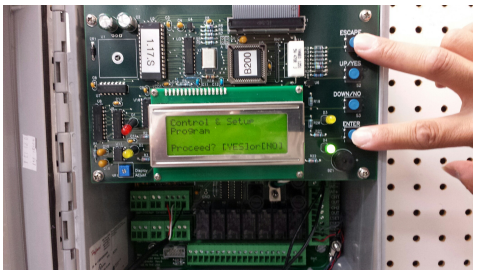
Beacon 200 Calibration

Calibrating a Direct Connect Detector

5. Press the ENTER button to accept the calibration gas concentration and continue. The unit will display the message Expose Detector(s) To Gas. . . when done press ENTER.
6. It will then alternate between the gas reading and the message APPLYING GAS… ENTER to ACCEPT or ESCAPE to ABORT.
7. When the calibration gas is applied, the Beacon 200 will freeze the display gas reading at the highest level reached while the gas was applied (lowest for an oxygen channel).
8. Press the ENTER button at the Beacon 200 to proceed with the calibration adjustment.

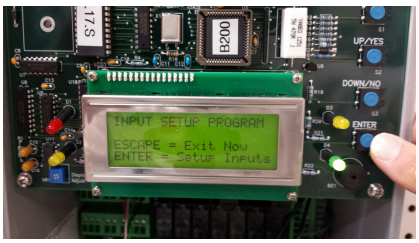
Control & Setup Mode

- Press and hold the ESCAPE and ENTER buttons to enter the Control & Setup Mode
- This mode is used to set up all channel parameters



Select Input Mode

- With the Beacon 200 off, press and hold the ENTER button, then while pressing the ENTER button, turn the Beacon 200 on.
- This allows selection of the proper input type such as:
  - O2 DIR
  - TOX DIR
  - LEL DIR
  - 4-20 mA transmitter



FOUR CHANNEL WALL MOUNT CONTROLLER

Gas Detection For Life

Beacon™ 410 Model

Features

- Simultaneously monitor up to 4 channels
- Digital display of all 4 channels
- LEL/O2/CO2/toxic direct connect sensors
- Accepts any 4-20 mA transmitter, 2 or 3 wire
- 3 programmable alarm levels per channel
- Up to 3 configurable alarm relays per channel
- Zero follower automatically compensates sensor drift
- 4-20 mA analog & Modbus digital output standard
- 115 / 220 VAC or 24 VDC operation
- Audible alarm with silence feature
- Alarm reset switch
- Built in trouble alarm with relay
- Weather proof NEMA 4X enclosure
- Optional strobe & battery backup available

Industry Applications

- Petrochemical plants
- Refineries
- Water & wastewater treatment plants
- Pulp & paper mills
- Gas, telephone, & electric utilities
- Parking garages
- Manufacturing facilities
- Steel
- Automotive
- HVAC

The Beacon 410 is a highly configurable, microprocessor-based, flexible and easy to use 4 channel gas monitor. It simultaneously displays the gas type, readings, and status for 4 channels of gas detection. It can monitor any combination of direct connect sensors (LEL combustibles, oxygen, CO2, and toxic gas sensors, as well as any 4-20mA transmitters.

Each channel has 3 fully configurable alarm points. A built-in silenceable audible alarm alerts you to alarm conditions. Each channel also has 2 dedicated fully configurable relays and there is a bank of common relays as well. The common relays can optionally be configured as additional channel relays allowing up to 3 alarm relays per channel.

Each channel provides a 4-20mA output signal. A digital Modbus interface for remote logging of data via a Modbus network is standard. A Min-Max feature retains high & low peak readings for review at any time.

Field calibration is made simple by the easy to use Calibration Mode. A fully configurable high visibility strobe is available as an option. The unit can be powered from 115/220 VAC, an external 24 VDC source, or a 24 VDC backup battery. A trickle charging battery backup feature is also available as an option.

All features and functions of the Beacon 410 are controlled by easy to use menus on the backlit LCD display. The form-C (SPDT) relay contacts are rated at 10A, 250V, reducing or eliminating the need for additional slave relays. All features of the Beacon 410 are built into the unit so you never need to purchase or maintain any “add-on” cards or components.

RKI Instruments, Inc. • 33248 Central Ave. Union City, CA 94587 • Phone (800) 754-5165 • (510) 441-5656 • Fax (510) 441-5650

Beacon™ 410 Model

Physical	
Dimensions	Height: 12.5” (318 mm) x Width: 11” (279 mm) x Depth: 6.4” (136 mm)
Enclosure	NEMA 4X non-metallic for indoor and outdoor locations
Conduit Connection	3/4” NPT conduit hubs, 4 provided, for sensor, power, & relay wiring
Wiring Termination	Screw type terminal block, 14 gauge max
Power	115 VAC & 220 VAC, or 24 VDC nominal, battery backup option available
Controls	Display PCB Control Switches: • UP/YES push button switch • DOWN/NO push button switch • ESCAPE push button switch • ENTER push button switch • External reset switch • On/Off toggle switch
Environmental	
Operating Temperature	-4°F to 122°F (-20°C to 50°C)
Storage Temperature	-4°F to 158°F (-20°C to 70°C)
Enclosure Rating	NEMA-4X enclosure, chemical and weather resistant. Suitable for indoor and outdoor installations.
Inputs	
Direct Wired Sensors	LEL, Oxygen, Carbon Dioxide, and toxic gas sensors. Remote amp not required for less than 500 feet
4-20 mA Sensors	Accepts any 4-20 mA transmitter (24 VDC, 2 or 3 wire). A wide variety of RKI/Riken sensors are available with 4-20 mA signals. Wiring distances up to 8,000 feet
Sampling Methods	Diffusion and sample draw heads available
Outputs	
Relays	Two flexible, programmable Form-C (C, NO, NC) relays per channel, plus five common relays (Fail, Alarm-1, Alarm-2, Alarm-3, Alarm-Any). Common relays may optionally be assigned to function as additional channel alarm relays, providing for up to three alarm relays per channel. 10A contact rating.
4-20 mA	Signal output, 4-20 mA (maximum load impedance 500 ohms), per channel
RS-485	Modbus format RS-485 serial output of all channel data, including gas reading and alarm status.
Display	4 x 20 backlit LCD display
Audible	Built-in audible alarm, 94 dB, mounted on enclosure Coded output: pulsing = gas alarm, steady = fail
Visual	1. Alarm LED’s (on Display PCB) • Alarm 1, yellow • Alarm 2, orange • Alarm 3, red • Fail, yellow 2. Green Pilot LED to indicate AC power connected (on Display PCB) 3. An optional 24 VDC NEMA 4X strobe mounted to top of case.
Approvals	CSA Certified to CSA C22.2 No. 1010 and UL 61010-1
Warranty	One year materials and workmanship

Specifications subject to change without notice.

Made in the USA

RKI INSTRUMENTS

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INSTRUMENTS

Gas Detection For Life

Quick Reference Guide
Beacon 410A Series Programming

TOOLS REQUIRED:

None.

Configuration Menu

- Press and HOLD the ESCAPE and ENTER buttons.
  - Select Channel 1-4.
    - Press the UP or DN button to select the channel that you want to configure, then press the ENTER button.
  - Channel (x) Active.
    - Press the UP or DN button to select Not Used or Stand By then Press the ENTER button.
  - Channel (x) Alarm-1 Level.
    - Press the UP or DN button to change, then press the ENTER button.
  - Channel (x) Alarm-1 INC/DEC.
    - Press the UP or DN button to select INC or DEC then press the ENTER button.
  - Channel (x) Alarm-1 Latching.
    - Press the UP or DN button to select Latching or Self Resetting then press ENTER.
  - Channel (x) Alarm-1 On Delay. 1 Seconds
    - Press the UP or DN button to select from 0 seconds to 60 Seconds then press the ENTER button.
  - Channel (x) Alarm-2 Level.
    - Press UP or DN button to select then press the ENTER button
  - Channel (x) Alarm-2 INC/DEC
    - Press the UP or DN button to select INC or DEC then press the ENTER button.
  - Channel (x) Alarm-2 LATCHING.
    - Press the UP or DN button to select Latching or Self Resetting then press the ENTER button.
  - Channel (x) Alarm-2 On Delay.
    - Press the UP or DN button to select from 0 to 60 seconds then press the ENTER button.
  - Channel (x) Alarm-3 Level.
    - Press the UP or DN button to set then press ENTER button.
  - Channel (x) Alarm-3 INC/DEC

- Press the UP or DN button to select INC or DEC then press the ENTER button.

- Channel (x) Alarm Latching.
  - Press the UP or DN button to select Latching or Self Resetting then press the ENTER button.
- Channel (x) Alarm-3 On Delay.
  - Press the UP or DN button to set On Delay from 0 to 60 seconds. Press the ENTER button.
- Channel (x) Relay -1 Assignment, Alarm-1
  - Press UP or DN button to select Alarm-1, Alarm-2, Alarm-3, Alarms 1 or 2, Alarms 1 or 3, Alarms 2 or 3, Alarms 1, 2, or 3 or Use As Channel Fail, then press ENTER button.
- Channel (x) Relay-2 Assignment, Alarm-2
  - Press the UP or DN button to select Alarm-2, Alarm-3, Alarms 1 or 2, Alarms 1 or 3, Alarms 2 or 3, Alarms 1, 2 or 3, or Use As Channel Fail, then press ENTER button.
- Channel (x) Relay-A Assignment, Alarm-3
  - Press the UP or DN button to select Alarms 1 or 2, Alarms 1 or 3, Alarms 2 or 3, Alarms 1, 2 or 3 or Use As Channel Fail for Alarm-1, Alarm-2 or Alarm-3 then press ENTER button.
- Channel (x) Noise Filter, 2 Seconds.
  - Press the UP or DN button to select from 1 Second to 10 second then press Enter button.
- Channel (x) Deadband
  - Press the UP or DN button to select from 0 to ??? then press the ENTER button.
- Save Settings?
  - Y/N
  - Press the Y button
  - Settings Saved
  - Do you want more channels?
  - Press Y or N

Global Menu

- Press and hold the ESCAPE and UP/YES buttons to enter into the Global Menu
  - Continue Y/N, press the YES button
  - Strobe Installation
    - No Strobe Installed (displayed)
    - Press the UP or DN button to select No Strobe Installed or Strobe is Installed then press ENTER button.
  - Normal Relay States
    - Norm De-Energized (displayed)
    - Press the UP or DN button to select Norm Energized or Norm De-Energized, then press the ENTER button.

- Relays ABCD Used As:
  - Channel Alarm Relays (displayed)
  - Press the UP or DN button to select Channel Alarm Relays or Common Alarm Relays, then press the ENTER button.
- Buzzer Silence
  - Can Silence Buzzer (displayed)
  - Press UP or DN button to select Can't Silence Buzer or Can Silence Buzzer, then press the ENTER button.
- Save Settings?
  - Y/N
  - Press the YES button to save the settings

Mod Bus Menu

- Press the DN/NO and ENTER buttons simultaneously to enter ModBus Menu
- Continue Y/N?, press the YES button to continue.
  - ModBus Feature is Disabled (displayed)
    - Press the UP or DN button to select Inabled or Disabled, then press the ENTER button.
  - Slave ID: 1 (displayed)
    - Press the UP or DN button to select between 1 and 247 then press the ENTER button.
  - Baud Rate: 9600 (displayed)
    - Press the UP or DN button to select 14,400, 19,200, 4,800, 2,400 or 1,200, then press the ENTER button.
  - Parity: Even
    - Press the UP or DN button to select NONE, ODD or EVEN, then press the ENTER button.
  - Response Delay: 0 mS (displayed)
    - Press the UP or DN button to select from 0 to 20 mS then press the ENTER button.
  - Save Settings? Y/N
    - Press the YES button to save settings.
    - Settings Saved

Calibration Mode

- Press the hold the UP/YES and ENTER buttons to enter Calibration Mode
  - Continue Y/N?
    - Press YES button to continue
  - Select Operation
    - Set Cal Time Out (displayed)

- Press the UP or DN button to select Air Adjust, Perform Gas Adjust, View Max Spans, Exit Cal Menu.
- Press the ENTER buttin to enter the menue you require.

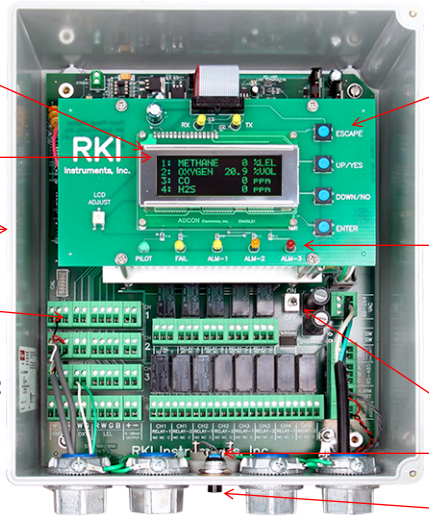
- Set Cal Time Out
  - Press ENTER button
  - Press the UP or DN button to select from 5 minutes to 240 minutes.
  - Press the ENTER button when completed.
  - Settings Saved will be displayed.
- Perform Air Adjust
  - Press ENTER button
  - Select the channel you want to Air Adjust
  - Press the UP button to select 2, 3, 4, 1 and 2, 1 and 3, 1 and 4, 2 and 3, 2 and 4, 3 and 4, 1, 2 and 3, 1, 2 and 4, 1, 3 and 4, 2, 3 and 4, 1, 2, 3 and 4.
  - Note: Air adjust will be used with Direct Connect sensors only.
  - Press the ENTER button
- Perform Gas Adjust
  - Press ENTER button
  - Press the UP or DN button to select the same channels as above.
  - Note: Gas Adjust to be used on Direct Connect sensors only.
  - Press the ENTER button
- View Max Spans

Beacon 410A

4 Channel Wall Mount Gas Detection Controller

1

Beacon 410 Features



- Backlit LED Display
- 4 Channels Displayed Simultaneously
- NEMA-4X weather resistant enclosure
- Accepts any 4-20 mA transmitter or direct connect sensors for LEL / O2 / H2S / CO / CO2
- 3 programmable alarm levels per channel

- PCB Control Switches
  - ESCAPE
  - UP/YES
  - DOWN/NO
  - ENTER
- Alarm LEDs
  - Alarm 1, yellow
  - Alarm 2, orange
  - Alarm 3, red
  - Fail, yellow
- On/Off toggle switch
- 94 dB Buzzer Alarm
- Alarm Reset Switch

2

Alarm Indications

Condition	Cause	Visual Indications	Audible Indications
Alarm 1	▪Increasing (decreasing for O2) gas reading at or above the alarm 1 set point	▪Alarm 1 LED on ▪Gas reading alternates with Alarm-1 message ▪Strobe (if installed) activates	▪Pulsing Tone
Alarm 2	▪Increasing gas reading at or above the alarm 2 set point	▪Alarm 2 LED is on ▪Gas readings alternates with ALARM 1 and ALARM-2 messages ▪Strobe (if installed) activates	▪Pulsing Tone
Fail	▪Disconnected or misconnected detector head wiring ▪Display reading at -10% of full scale or lower ▪Defective component	▪Fail LED is on ▪Fail message replaces gas reading ▪Strobe (if installed) activates	▪Pulsing Tone
Low Power	▪No AC power and DC power source (primary or backup) less than 21.5 volts.	▪Fail LED is on ▪SUPPLY VOLTAGE IS TOO LOW LOW POWER STANDBY message and actual ▪voltage of incoming DC power	▪None

Beacon 410A Calibration

The Beacon 410 can support both direct connect (internal amp) and 4-20 mA transmitter (remote amp) detector heads.

- Direct connect detector heads only.

  If all the active channels are direct connect detector heads, then all calibration adjustments are made at the Beacon 410 after calibration gas is applied to the detectors.

- 4-20 mA transmitter detector heads only.

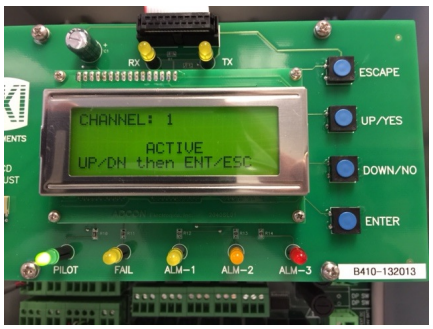
  If all the active channels are 4 - 20 mA transmitter detector heads, then all calibration adjustments are made at the detector head when calibration gas is applied to the detectors.

Configuration Menu

- Press the ESCAPE and ENTER buttons to enter into Configuration menu.
- Press YES to continue.

Configuration Menu

- Select the channel you would like to view.
- You can make the channel ACTIVE.



Configuration Menu

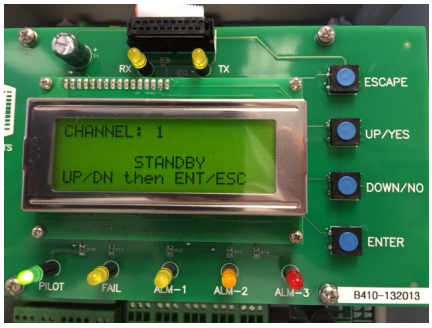
- If ACTIVE is selected, you can step through all parameters for this channel using the ENTER button.
- Adjust parameters using the UP or DOWN button

Channel Parameters

- Parameters include:
  - Alarm 1
    - Alarm 1 LEVEL
    - Alarm 1 INC/DEC
    - Alarm 1 LATCHING
    - Alarm 1 ON DELAY
  - ALARM 2
    - Alarm 2 LEVEL
    - Alarm 2 INC/DEC
    - Alarm 2 LATCHING
    - Alarm 2 ON DELAY
  - Alarm 3
    - Alarm 3 LEVEL
    - Alarm 3 INC/DEC
    - Alarm 3 LATCHING
    - Alarm 3 ON DELAY
  - Relay 1 Assignment Alarm 1
  - Relay 2 Assignment Alarm 2
  - Noise Filter
  - Deadband

Configuration Mode

- Channel can be placed in STANDBY mode.
- All alarms are off line for this channel.
- Sensor may be attached but not active.



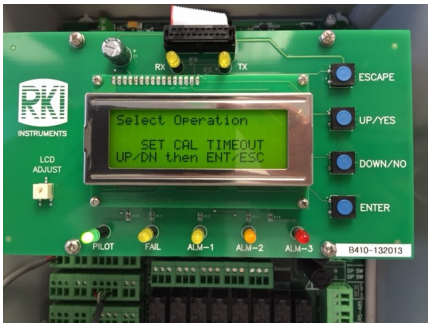
Configuration Mode

- The channel can be set to NOT USED.
- No sensor or transmitter would be wired to the panel.

Calibration Mode

- Press and hold the UP/YES and ENTER buttons to enter into the calibration mode.
- Press YES to continue.

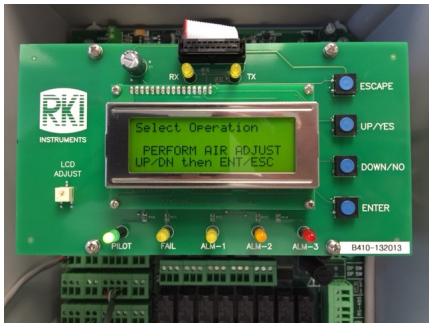
Calibration Mode



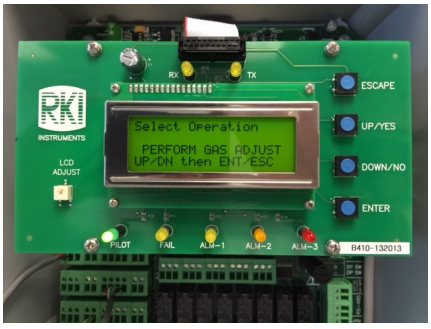
- Set Cal Timeout from 5 minutes to 240 minutes.
- Press ENTER button to continue.

Calibration Mode

- Perform Air Adjust
- Select channel you would like to Air adjust.
- You can select any combination of the four sensors attached.



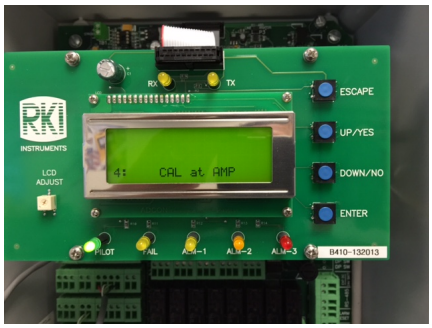
Calibration Mode



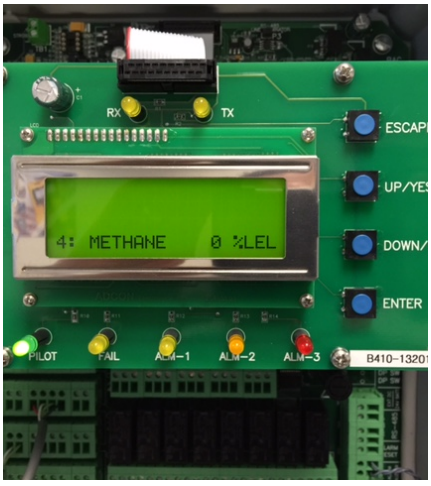
- When Perform Gas Adjust is displayed, press the ENTER button to continue.
- Apply gas to the channels selected.

Calibration Mode

- For 4-20mA transmitters, calibration must be done at the amplifier.



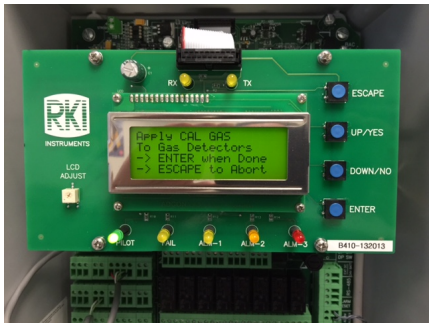
Calibration Mode



- Gas reading will be displayed.

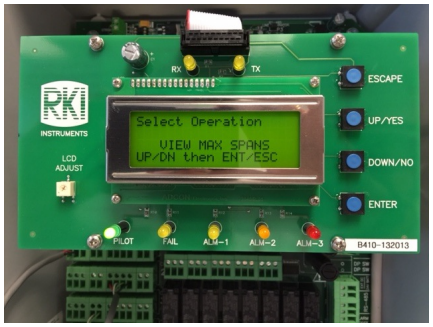
Calibration Mode

- The display will prompt you to apply calibration gas.
- Once done with the calibration at the amplifier, press the ENTER button to continue.



Calibration Mode

- To view max spans, press and hold the ENTER button.

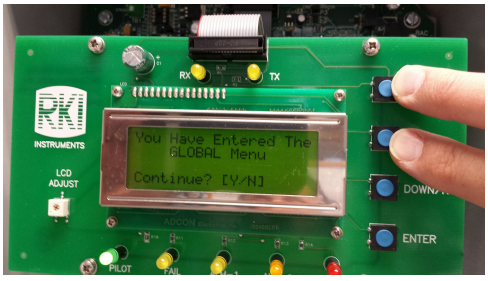


Calibration Mode

- Once completed, press the ENTER button to EXIT calibration mode.

Entering Global Menu

- Press and hold the ESCAPE and UP/YES buttons to enter into the global menu.



Global Menu Settings

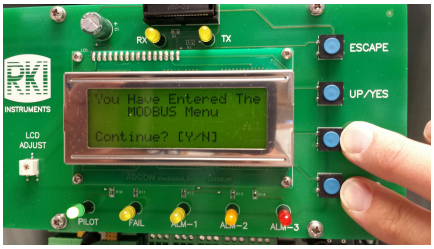
- Strobe
  - No Strobe Installed
  - Strobe Installed
- Normal Relay States:
  - Norm DE-ENERGIZED
  - Norm ENERGIZED
- Relays ABCD Used As:
  - Common Alarm Relays
  - Channel Alarm Relays
- Buzzer Silence
  - Can Silence Buzzer
  - Can't Silence Buzzer

Global Menu

- After all Global parameters are set, save settings by pressing the Yes button.

Entering MODBUS Mode

- Press and hold the DOWN/NO and ENTER buttons to enter into the MODBUS menu.
- Press YES to proceed.

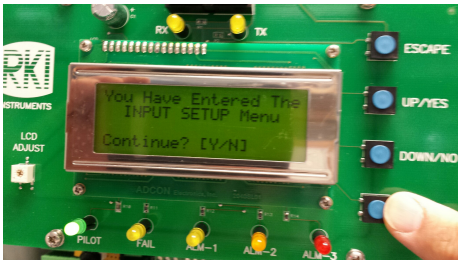


Modbus Settings

- Modbus Feature
  - Enabled
  - Disabled
- Modbus Setup
  - Slave ID
  - Use UP/Down to set
- Baud Rate
  - 9600
  - Use UP/Down to set
- Parity
  - Even
  - None
  - Odd
- Response Delay
  - 0mS
  - Use UP/Down to set
- Save Settings
  - Select Yes or No

Input Set up Mode

- With the Beacon 410A off, press and hold the ENTER button and turn the Beacon on.
- Press the YES button to proceed.



Input Setup

- Select Channel (1-4)
  - Preamp Direct
  - Oxygen Direct (25%)
  - RWGB Direct (LEL)
  - 4-20mA XMTR
- Gas Setup is displayed.
- Set for the proper gas type.
- Save Settings
  - Select Yes/No

Questions?

8 CHANNEL WALL MOUNT CONTROLLER

Gas Detection For Life

Beacon™ 800 Model

Features

- Capable of up to 8 separate channels
- Digital display of all 8 channels simultaneously
- Compact, weatherproof, NEMA 4X enclosure
- 85 to 264 VAC or 24 VDC operation
- Long life sensors (2+ years typical)
- Accepts any 4-20 mA transmitter
- Audible alarm with reset button
- Two programmable alarm levels per channel
- Common alarm and fail relays
- Relay rating 3 amps, form C
- Low cost versatile solution

Applications

- Petrochemical plants
- Refineries
- Water & wastewater treatment plants
- Pulp & paper mills
- Gas, telephone, & electric utilities
- Parking garages
- Manufacturing facilities
- Steel
- Automotive
- HVAC

Gas detection should not be complicated. The Beacon™ 800 is gas detection simplified.

The Beacon™ 800 is a versatile, low cost fixed system controller for one to eight points of gas detection. It is microprocessor controlled and is capable of accepting up to 8 separate 4-20 mA sensor transmitters which can be either 2 or 3 wire. The Beacon™ 800 can be powered by either 24 VDC, or 85-264 VAC. It is simple to operate and comes complete with a wall mount installation kit.

The 2 large digital displays have backlighting and easily identify both the gas type and the gas concentration for all 8 channels simultaneously. The Beacon™ 800 is housed in a NEMA 4X rated case for a weather tight seal. This case design complies with lock out / tag out standards and can be fully secured. An external reset switch allows alarms to be silenced from outside the controller housing. The bottom mounted wiring hubs allow for easy wiring.

With 3 amp rated relays, the Beacon™ 800 can be wired directly to a variety of devices like alarm horns, buzzers, or lights. This eliminates the need for costly external relays from the controller to devices. RKI offers the industry's widest selection of standard and toxic gas detection sensors, which can be utilized with the Beacon™ 800, providing gas monitoring protection for almost any application.

RKI Instruments, Inc. • 33248 Central Ave. Union City, CA 94587 • Phone (800) 754-5165 • (510) 441-5656 • Fax (510) 441-5650

Beacon™ 800 Model

Physical	
Dimensions	Height: 12.5” 318 mm Width 11.0” 279 mm Depth 6.4” 163 mm
Enclosure	Wall mounting grey fiberglass with hinged cover.
Conduit Connection	3/4” NPT conduit hubs, 4 provided for sensors, power, and relay wiring.
Wiring Termination	Screw type terminal block, 14 gauge max.
Operating Environment	
Operating Temp	-4°F to 122°F (-10°C to 50°C)
Storage Temp	-4°F to 158°F (-20°C to 70°C)
Relative Humidity	0 - 95% RH
Enclosure Rating	NEMA-4X enclosure, waterproof, chemical, and weather resistant.
Inputs	
4-20 mA	Accepts any 4-20 mA transmitter (24 VDC, 2 or 3 wire). A wide variety of RKI sensors are available with 4-20 mA signals. Wiring distances up to 8,000 feet.
Outputs	
Relays	2 relays per channel 3 amp rating, SPDT isolated contacts. *1 set of common relays:* • 2 for gas alarm levels • 1 for malfunction *Relays fully programmable for:* • Increasing or decreasing alarms • Latching or self reset alarms • Normally energized or normally de-energized • Time delay for alarm on and alarm off.
24VDC	24 VDC output provided to operate sample drawing adapters.
Display	2 alphanumeric displays with backlighting. 16 characters per line; 4 lines each. All 8 channels continuously displayed.
Audible	Built-in audible alarm, 94 dB, mounted on enclosure. *Coded Output:* • pulsing = gas alarm • steady = fail
Visual	4 visual LED alarms on front cover for alarm indications, pilot, and malfunction.
Optional Expansion Cards	Individual 4-20 mA (or 1 - 5 VDC) outputs. Heavy duty relay card (4 each @ 30 amps)
Power	85-264VAC or 24VDC
Approvals	CSA Certified to CSA C22.2 No. 1010 and UL 61010-1
Warranty	One year materials and workmanship.

Specifications subject to change without notice.

Made in the USA

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Gas Detection For Life

Quick Reference Guide
Programming the Beacon 800

Required Materials:

None

Enter Programming Mode

1. Open front door to Beacon 800
2. Press and HOLD the ESCAPE and ENTER buttons on the front panel.
    a. The lower display screen will show the version for firmware that the Beacon contains, and the power supply voltage.
    b. To return to Normal Operation, press the NO button.
    c. To continue press the YES button.
3. Enable / Disable Channels
    a. Select Channel 1 through 8, or ALL Channels.
    b. View current Channel Setting. Press Yes if it is OK as is, or NO if it requires changing.
    c. If you enter NO, then use the UP/DOWN buttons to select the desired setting.
    d. Press Enter to finish your selection.
4. Enter Calibration Mode
    a. Use the UP/DOWN buttons to select the desired duration of the calibration process.
    b. Press ENTER to go accept and enter calibration mode.
    c. Readings will show on the display, but alarms and relays are disabled.
    d. Once calibration is complete, press the ESCAPE button to return to normal operation.
5. Configure Channel Settings
    a. Select Channel 1 through 8 or ALL Channels.
    b. Select from each of the following options for the Channels selected:
        i. UNITS and GAS TYPE (Choose from list or create your own)
        ii. FULL SCALE (choose from the list, or create your own)
        iii. ALARM-1 Level
        iv. ALARM-1 ON DELAY
        v. ALARM-1 OFF DELAY
        vi. ALARM-1 INCREASING or DECREASING
        vii. ALARM-1 Relay set as NORMALLY DE-ENERGIZED or NORMALLY ENERGIZED
        viii. ALARM-1 set as SELF RESETTING or LATCHING

ix. ALARM-2 Relay to be used for the ALARM-2 condition or the channel Fail condition
x. ALARM-2 Level
xi. ALARM-2 ON DELAY
xii. ALARM-2 OFF DELAY
xiii. ALARM-2 INCREASING or DECREASING
xiv. ALARM-2 Relay set as NORMALLY DE-ENERGIZED or NORMALLY ENERGIZED
xv. ALARM-1 set as SELF RESETTING or LATCHING
xvi. NOISE FILTER (Select from 1-8, 1 is minimum filtering and 8 is maximum filtering)
xvii. ZERO SUPPRESSION (Select “Dead Band” as percent of Full Scale)

c. Press YES to save your settings or NO if you do not want to save them.

6. Configure Power Relays
   a. This option will only show in the menu if you have the optional Power Relay Board installed.
   b. Use the UP/DOWN buttons to select one of the 4 relays.
   c. Set the Relay as ENABLED or DISABLED.
   d. Set the Relay as NORMALLY DE-ENERGIZED or NORMALLY ENERGIZED.
   e. Set the Relay Assignments:
      i. On the Lower Display, a grid will be shown indicating each Channel and possible Alarm or Fail condition. A minus sign (-) indicates that condition on that channel WILL NOT cause this relay to activate. A plus sign (+) indicates that condition on that channel that WILL cause the relay to activate.
      ii. If the assignments shown are what you want, press YES, if not, press NO.
      iii. If NO is pressed, set the +/- setting for each condition using the UP (+) and DOWN (-) buttons. You can also press ESCAPE to back up, or press ENTER to skip forward without changing the assignment
      iv. After the last grid entry, press YES to save your settings or NO if you don’t want to.

Beacon 800

Beacon 800, 8 channel gas detection system

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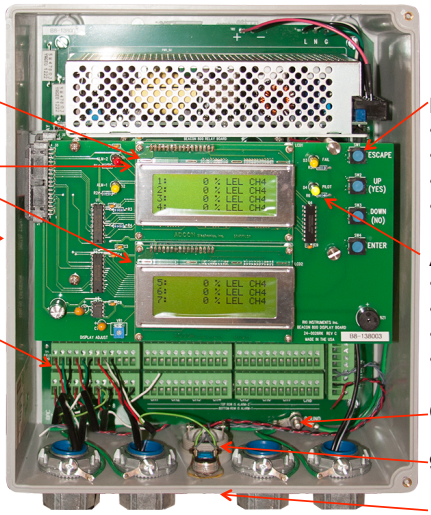
Beacon 800 Applications

- Petrochemical plants
- Refineries
- Water & wastewater treatment pants
- Pulp & paper mills
- Gas, telephone, & electric utilities
- Parking garages
- Manufacturing facilities
- Steel
- Automotive
- HVAC

Beacon 800 Features



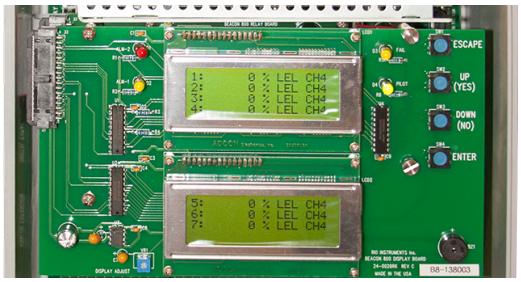
Beacon 800 Operation

- The Beacon 800 is a fixed-mounted, continuous-monitoring instrument. This multiple channel gas monitor is capable of detecting gas at up to eight locations. The display screens simultaneously display the gas readings of all active channels.
- The Beacon 800 includes audible and visual alarms that warn you of hazardous gas conditions. The alarm circuit includes two levels of gas alarms. The fail circuit alerts you to failures in the gas transmitter(s) or Beacon 800.

Alarm Indications

Condition	Cause	Visual Indications	Audible Indications
Alarm 1	▪Increasing (decreasing for O2) gas reading at or above the alarm 1 set point	▪Alarm 1 LED on ▪Gas reading alternates with Alarm-1 message ▪Strobe (if installed) activates	▪Steady tone
Alarm 2	▪Increasing gas reading at or above the alarm 2 set point	▪Alarm 2 LED is on ▪Gas readings alternates with ALARM 1 and ALARM-2 messages ▪Strobe (if installed) activates	▪Steady tone
Fail	▪Disconnected or misconnected detector head wiring ▪Display reading at -10% of full scale or lower ▪Defective component	▪Fail LED is on ▪Fail message replaces gas reading ▪Strobe (if installed) activates	▪Steady tone
Low Power	▪No AC power and DC power source (primary or backup) less than 21.5 volts.	▪Fail LED is on ▪SUPPLY VOLTAGE IS TOO LOW LOW POWER STANDBY message and actual ▪voltage of incoming DC power	▪None

Beacon 800 Calibration



NOTE: All calibration adjustments must be made at the detector head.

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Beacon 800 Calibration

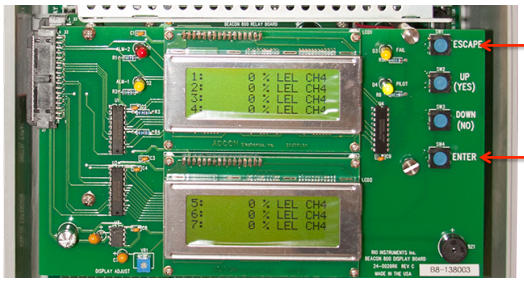
1. Simultaneously press and hold the ESCAPE and ENTER buttons for approximately 5 seconds to enter the Configuration menu.
2. Press the UP (YES) button to continue.
3. Press the UP (YES) or DOWN (NO) button until the 2) Enter Calibration Mode message appears on the bottom display screen, then press the ENTER button.
4. The calibration time-out setting displays. Adjust this setting using the UP/YES and DOWN/NO buttons.

Beacon 800

(calibrating a 4-20mA head)

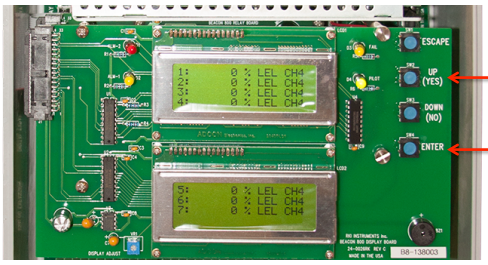
1. Verify that the detector head is in a fresh-air environment. (If necessary, use a zero emission air cylinder, also known as zero air, to introduce a fresh-air sample when adjusting the zero reading below.)
2. Adjust the detector head's zero (fresh air reading for oxygen) reading. See the detector head's instruction manual for instructions on how to adjust the zero reading
3. Apply calibration gas to the detector head's detector and adjust the detector head's span reading (zero reading for oxygen). See the detector head's instruction manual for instructions on how to adjust the span (zero reading for oxygen) reading.
4. Repeat steps 1 through 3 for each detector head you wish to calibrate.
5. Press the ESCAPE button to return to normal operation.

Channel Setup Mode



- Press and hold the ESCAPE and ENTER buttons to enter the Channel Setup Mode

Calibration Mode



- Press and hold he UP/YES and ENTER buttons to enter the calibration mode

INSTRUMENTS

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Training Notes