# SafeSuite™

***Integrated Access Control and Security Management System***

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## *HARDWARE MANUAL for RBH-AXS-LED and RBH-AXS-LCD*

**new generation building security**

RBH
ACCESS TECHNOLOGIES INC.

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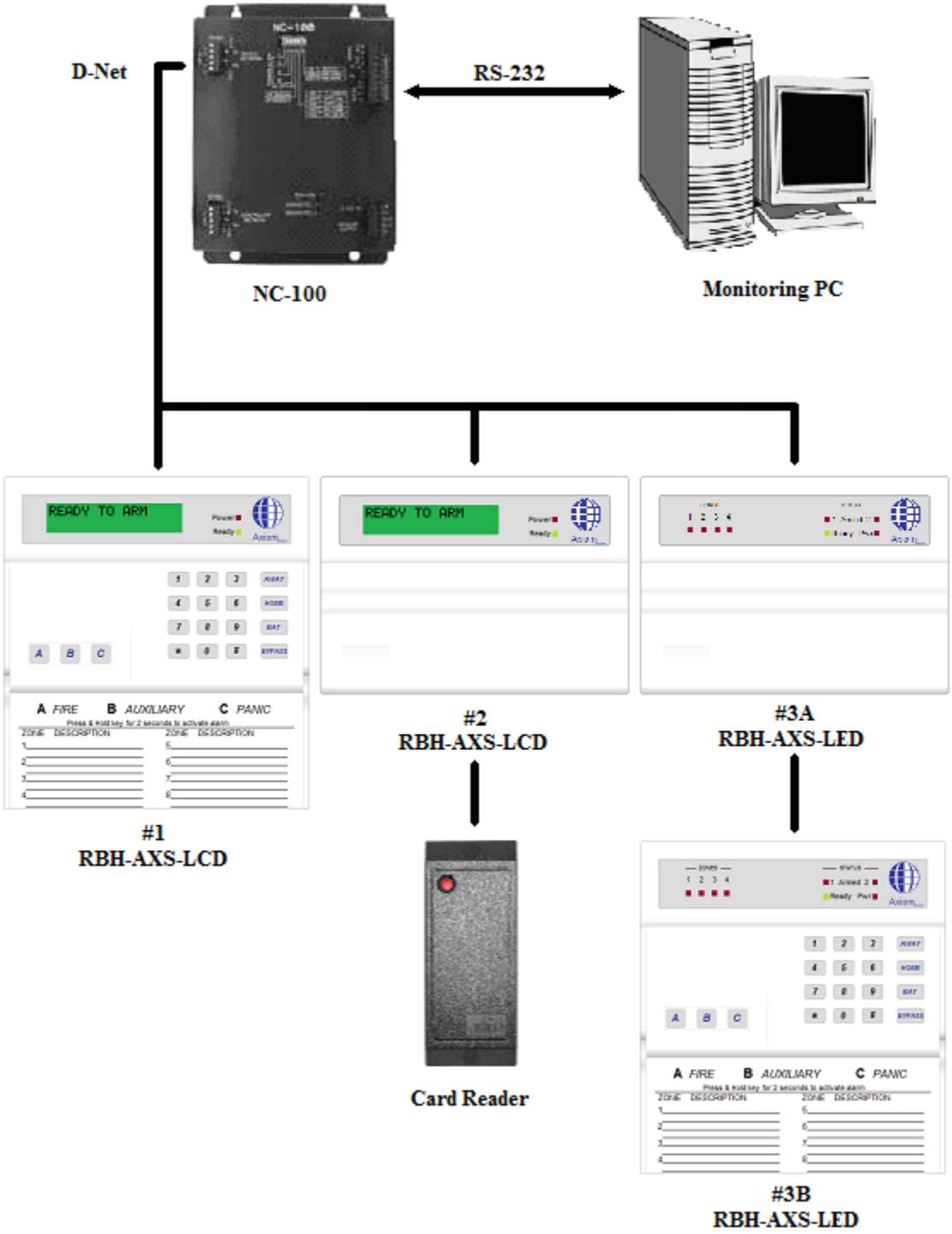
# Contents

# System Overview

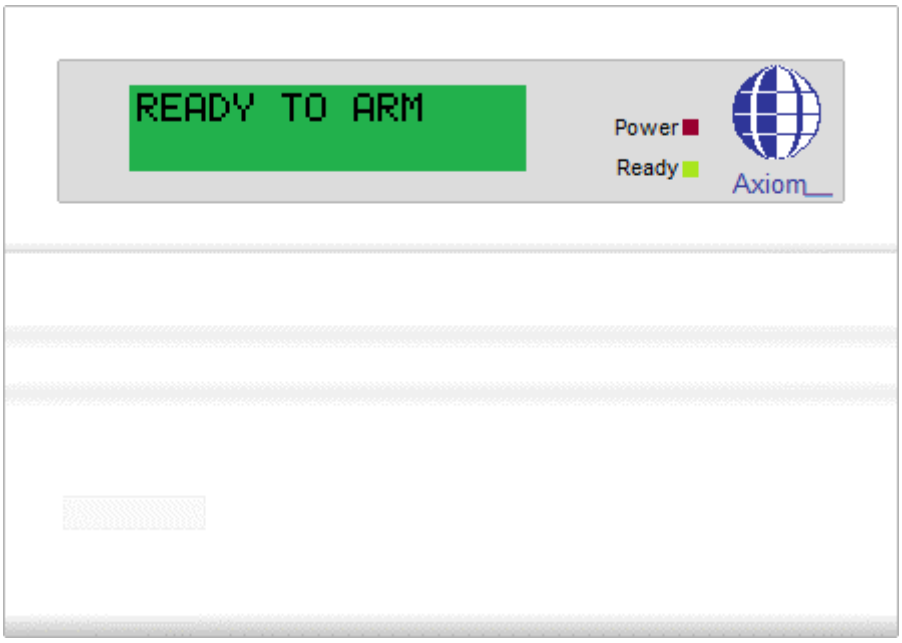
The SafeSuite™ panels, the RBH-AXS-LCD-4z and the RBH-AXS-LED-4z, have been specifically designed for Condominium living. Both are fully supervised four zone alarm control panels with three arming modes. All SafeSuite™ panels have eight user codes that are programmable from the suite, as well as user-selectable door chime and zone bypass. The SafeSuite™ panels are functional as a stand-alone alarm system without connection to a controller or a computer (*which are used for monitoring and programming by integrating with the Axiom™ System*). The panel's features include single press FIRE, AUXILIARY, and PANIC buttons, as well as alarm memory and full zone status. Other options include keyless entry/access control per suite.

# System Diagram

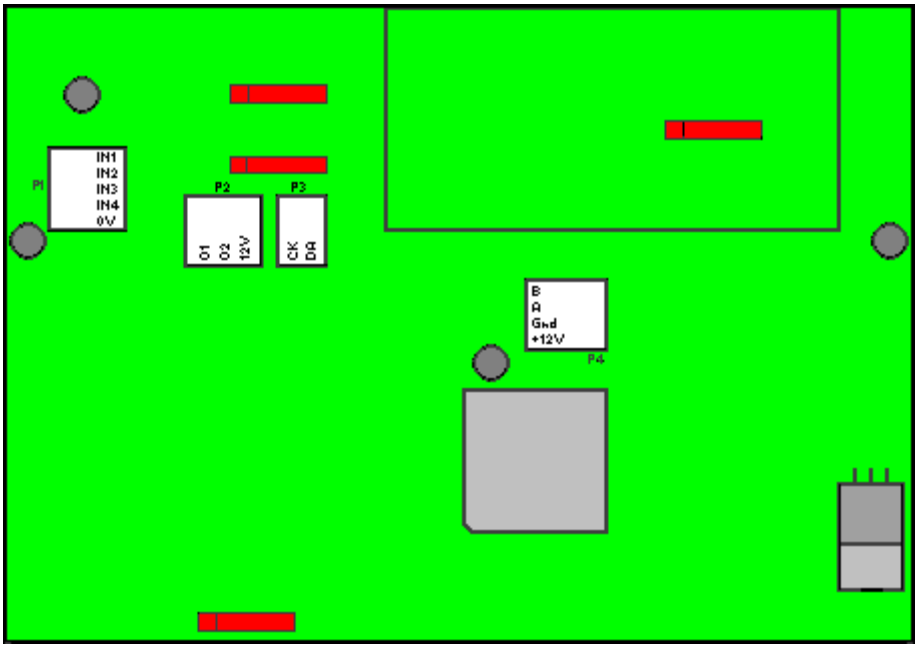


# Controller

## *RBH-AXS-LCD-4z*




### *Connection Details*



**Inputs (P1)**

| | | | |
|---|---|---|---|
| Input 1 | IN1 | = | Brown |
| Input 2 | IN2 | = | Red |
| Input 3 | IN3 | = | Orange |
| Input 4 | IN4 | = | Yellow |
| Common | 0v | = | Black |

Connect the input device between the common wire and the appropriate input wire.

**Outputs (P2)**

| | |
|---|---|
| Output 1 | O1 |
| Output 2 | O2 |
| 12-volt source | 12V |

Connect the output device between the 12-volt source and the appropriate output.

**Communications (P3)**

| | |
|---|---|
| CK | Clock/D0 |
| DA | Data/D1 |

When connecting a remote keypad, connect CK and DA (*of the remote*) to A and B (*of the master*). If a card reader is connected connect D0 and D1 (*of the reader*) to CK and DA.

**Power (P4)**

| | | | |
|---|---|---|---|
| 12 volts | +12v | = | Red |
| 0 volts | Gnd | = | Black |
| RS-485 (A) | A | = | Green |
| RS-485 (B) | B | = | Yellow |

Connect 12-volt dc power to the Red and Black wires.

Connect the communications for the Axiom system to the RS-485 wires. Green for A and yellow for B

## *Programming*

The Axiom SafeSuite™ LCD alarm keypad has some installer level programming not meant for the end user. End user programming is cover in the User's Manual. Here we will deal with installer level programming.

### Unit Address

The Axiom SafeSuite™ LCD keypad does not have any DIP switches for setting its address. Its address is programmed. All new units are shipped with address 000. To change an address:

1. Enter the primary user code (*default 1234*) followed by 83#. The display will show the current address of the unit.


2. Enter the required address as three digits and press #. The display will change to:


3. Enter the number of remote keypads in three digits (i.e. 000-003) then enter #.

## Offline Operation

When address 000 is programmed the LCD alarm keypad will operate in an offline mode. The red LED will indicate when the unit is armed (*On*), disarm (*Off*) or in alarm (*Flashing*).
By entering the primary password followed by 38# the zone editor will be invoked. After editing zone parameters the outputs will be fixed as follows: Output 1 will be assigned Siren, Output 2 will be assigned Lock output, Output 3 will be assigned Siren, and Output 4 will be assigned Status output. Outputs 3 and 4 are only available on the remote keypad. The zone editor will only be available when the address has been set to 000.

The first parameter to enter will be the zone number. Select the zone by entering 1-8. (eg.1)


Use the "A" and "B" keys to scroll to the parameter to be edited, and press # to select it. Enter a value from 0-7 (*according to the charts below*). Then press # to save the entered value.

### *CCT types*


| Value | **Description** |
|---|---|
| 0 | Disconnected |
| 1 | Normally Closed with No Resistor |
| 2 | Normally Open with No Resistor |
| 3 | Normally Closed with One Resistor |
| 4 | Normally Closed with Two Resistors |
| 5 | Normally Open with One Resistor |
| 6 | Normally Open with Two Resistors |
| 7 | Normally Closed and Normally Open |

### *Zones Types*


| Value | **Description** |
|---|---|
| 0 | No Function |
| 1 | Entrance |
| 2 | Follower |
| 3 | Interior |
| 4 | Exterior |
| 5 | 24 Hour with Delay |
| 6 | 24 Hour with No Delay |
| 7 | Arm/Disarm Switch |

***Alarm Types***


| Value | **Description** |
|---|---|
| 0 | Silent |
| 1 | Steady Alarm |
| 2 | Siren Pulsed |
| 3 | Siren Pulsed |
| 4 | Buzzer Steady |
| 5 | Buzzer & Siren Steady |
| 6 | Buzzer & Siren Pulsed |
| 7 | Buzzer & Siren Pulsed |

***Zone Text***


To edit a Zone Text use the "A" key to increment the character, the "B" key to decrement the character, and the "C" key to advance to the next character. The advance will wrap back to the first character and if a key is held down it will advance rapidly.

## *Status Display*

### Zone Status

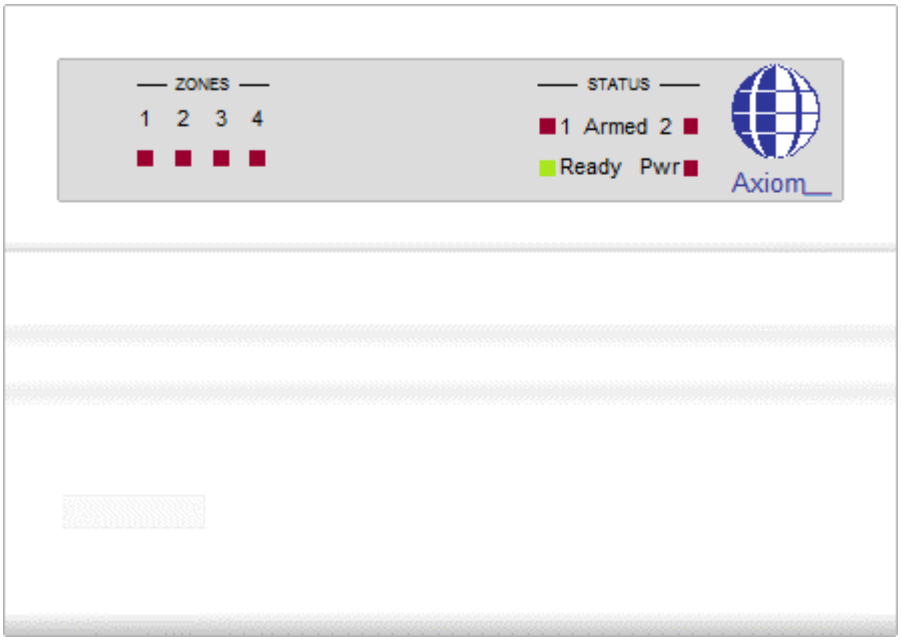
The status of the zones will be printed out on the second row of the LCD.

### System Status

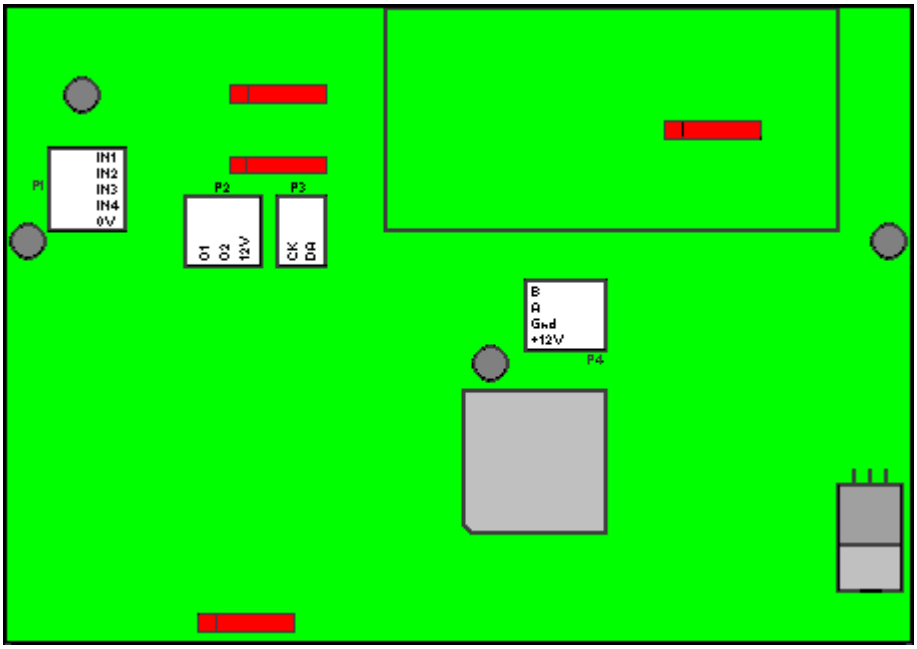
The POWER LED is on when the system is powered, and will flash if there is no communications with the NC-100.

The READY LED is on when the system is disarmed and ready to be armed. If any zone is violated or in trouble, or the system is armed this LED will be off. Alarm memory will cause this LED to flash.

## *RBH-AXS-LED-4z*




### *Connection Details*



**Inputs (P1)**

| | | | |
|---|---|---|---|
| Input 1 | IN1 | = | Brown |
| Input 2 | IN2 | = | Red |
| Input 3 | IN3 | = | Orange |
| Input 4 | IN4 | = | Yellow |
| Common | 0v | = | Black |

Connect the input device between the common wire and the appropriate input wire.

**Outputs (P2)**

| | |
|---|---|
| Output 1 | O1 |
| Output 2 | O2 |
| 12-volt source | 12V |

Connect the output device between the 12-volt source and the appropriate output.

**Communications (P3)**

| | |
|---|---|
| CK | Clock |
| DA | Data |

When connecting a remote keypad, connect CK and DA (*of the remote*) to A and B (*of the master*).

**Power (P4)**

| | | | |
|---|---|---|---|
| 12 volts | +12v | = | Red |
| 0 volts | Gnd | = | Black |
| RS-485 (A) | A | = | Green |
| RS-485 (B) | B | = | Yellow |

Connect 12-volt dc power to the Red and Black wires.

Connect the communications for the Axiom system to the RS-485 wires. Green for A and yellow for B

### *Controller Addressing*

Pressing the PG button will momentarily display the panel's address using all eight LEDs. The address is displayed in binary using the values for the LEDs as shown below.

| Zone 1 | Zone 2 | Zone 3 | Zone 4 | Armed 1 | Armed 2 | Ready | Power |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 |

To enter a new address punch in the primary password (*default 1234*) followed by 83#. Then enter the new address in three digits (*e.g. 009*) followed by #. Press 55# to exit. Press PG to verify the new address.

### *Status Display*

The zone and system status on the four-zone panel is the same as the eight-zone LED panel, except of course only four (*not eight*) zone LEDs are provided.

# Inputs

The SafeSuite™ panels have fully supervised inputs. Each input is independently programmable from the PC, and has four states: Restore, Alarm, Trouble, and Illegal. Trouble is reported if a short or break is detected on a supervised circuit and illegal is reported if the measured loop resistance lies between valid states. For example, if the circuit type is programmed as '2 resistor normally closed', then 1K ohms represents a restored state, 2K ohms represents an alarm state, and open & short represent trouble states. An illegal state is reported when the loop resistance changes by more than 15%, but not enough to enter the next state (*e.g. 1K3 ohms, or 500 ohms*).

The RBH-AXS-LCD-4z and the RBH-AXS-LED-4z each come with four programmable inputs, but both can be expanded to eight zones with the addition of a remote.

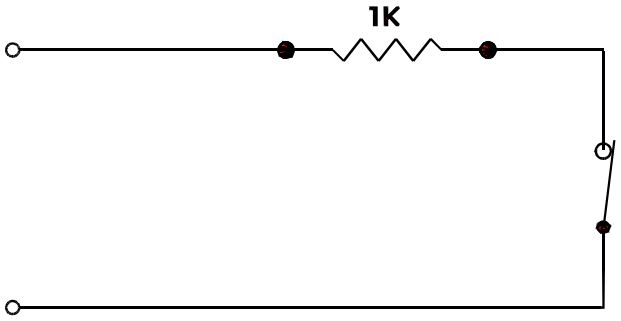
## *Input Circuit types*

SafeSuite™ panels support seven different input circuit types ranging from 'no resistor' for low security applications to 'two resistor normally closed' circuits where the highest security is required.

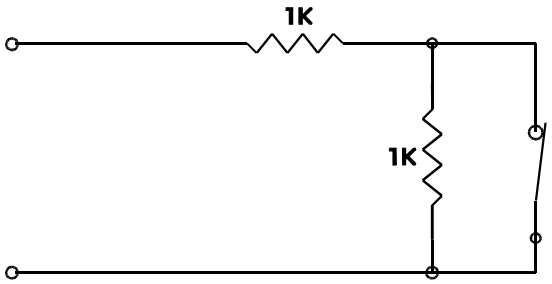
| **Normally Closed, no resistor** | |
|---|---|
| **Loop Resistance** | **State** |
| Short | Restore |
| Open circuit | Alarm |

| Normally Open, no resistor | |
|---|---|
| **Loop Resistance** | **State** |
| Short | Alarm |
| Open circuit | Restore |

| Normally Closed, one resistor | |
|---|---|
| **Loop Resistance** | **State** |
| Short | Trouble |
| 1k | Restore |
| Open circuit | Alarm |

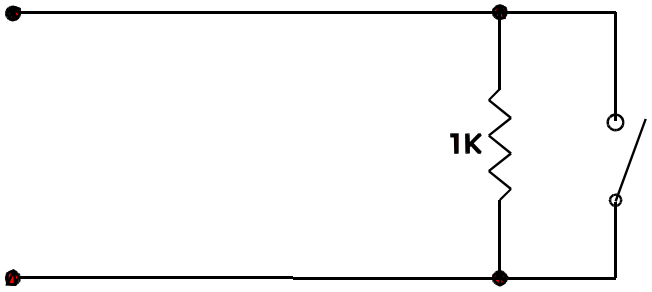


| Normally Closed, 2 resistor | |
|---|---|
| **Loop Resistance** | **State** |
| Short | Trouble |
| 1k | Restore |
| 2k | Alarm |
| Open circuit | Trouble |

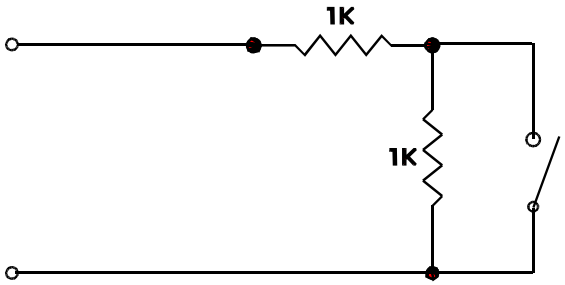



This circuit provides a high degree of supervision and detects both short and open circuit fault conditions. Use this circuit in high security applications.

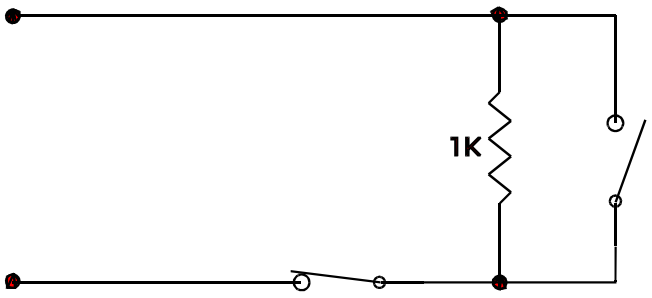
| Normally Open, one resistor | |
|---|---|
| **Loop Resistance** | **State** |
| Short | Alarm |
| 1k | Restore |
| Open circuit | Trouble |



| Normally Open, two resistor | |
|---|---|
| **Loop Resistance** | **State** |
| Short | Trouble |
| 1k | Alarm |
| 2k | Restore |
| Open circuit | Trouble |




| Normally Open and Normally Closed, one resistor | |
|---|---|
| **Loop Resistance** | **State** |
| Short | Alarm |
| 1k | Restore |
| Open circuit | Alarm |




This circuit type is used where normally open and normally closed contacts are used in the same loop.

# Outputs

SafeSuite™ outputs are software programmable and can be used for a number of different functions. These outputs can be used for sirens, LED drivers, and locks to name a few.

The RBH-AXS-LCD-4z and the RBH-AXS-LED-4z panels have two electronic outputs (*open collector to ground*) capable of sinking 100ma. Two more outputs are available with the addition of a remote keypad.

## *Switching Inductive Devices (Locks, bells)*

Exercise caution when switching an inductive load. Inductive devices include external relay, solenoids, bells, and door locks. All of these devices generate extremely high voltage spikes (*several thousand volts*) when power is applied or removed and possible disruption of the operation could occur if this interference gets on to the electronic circuit board.

This interference can be suppressed by placing a diode (*1N4004 or similar*) across the lock or other inductive device being switched. Connect the diode cathode (*end with band*) to the positive terminal and the other end to the negative terminal. The diode must be placed at the device being switched and not at the controller.

# Remote Keypad

## *RBH-AXS-LCD-4z & RBH-AXS-LED-4z*

The SafeSuite™ RBH-AXS-LCD-4z and RBH-AXS-LED-4z keypads allow the use of up to three remote keypads (of the same type as the master keypad). The remote keypads are addressable from 0 to 3 with differing capabilities depending upon the chosen address.

**Remote LCD**

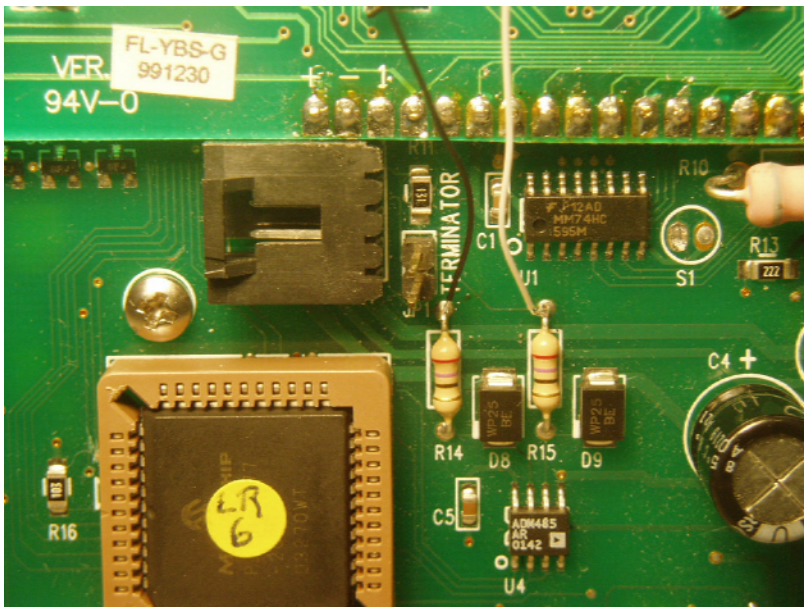
| **ADDRESS** | **0** | **1** | **2** | **3** |
|---|---|---|---|---|
| Additional Inputs | | X | | |
| Keystrokes | | X | X | X |
| Outputs 3&4 | | X | X | X |
| Display | X | X | X | X |

**Remote LED**

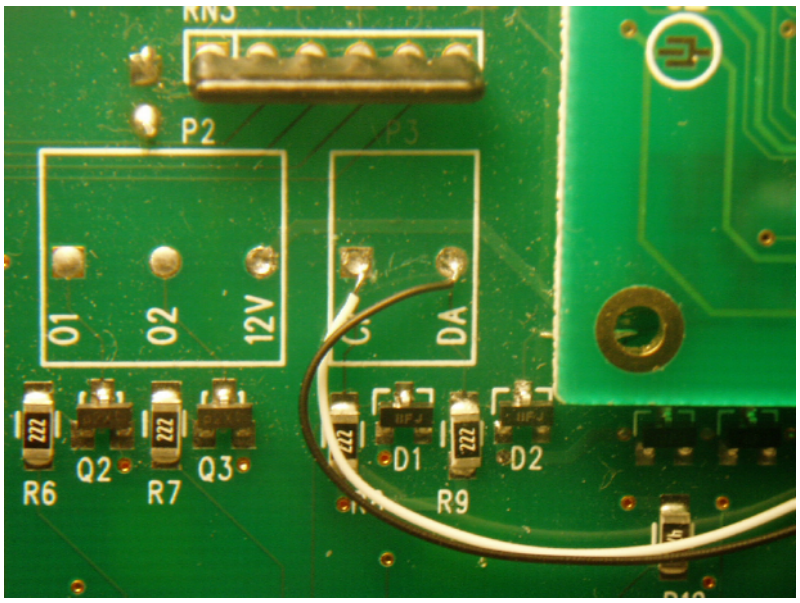
| **ADDRESS** | **1** | **2** | **3** |
|---|---|---|---|
| Additional Inputs | | | |
| Keystrokes | X | X | X |
| Outputs 3&4 | X | X | X |
| Display | X | X | X |

1. Four addition zones #5-8 are available on remote #1with the use of its inputs.
2. Remotes must not share the same address.
3. Outputs 3&4 are available on O1 & O2 respectfully, on remotes 1, 2, & 3.
4. Remote address #0 will only display data on the LCD and not accept keystrokes or work the status LED's and buzzer (do not use address zero with LED keypads).

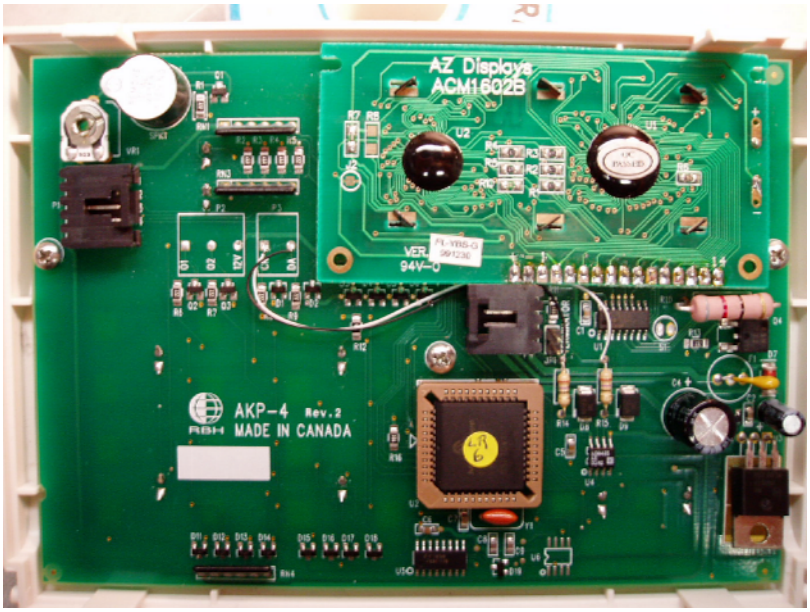
Before connecting remotes to the master a modification to the remotes along with a new firmware chip is necessary. It is recommended that you order the required number of remote keypads and have the necessary changes done by RBH.




Connect a 3½” 30 gage white wire to R15 and a black wire to R14.



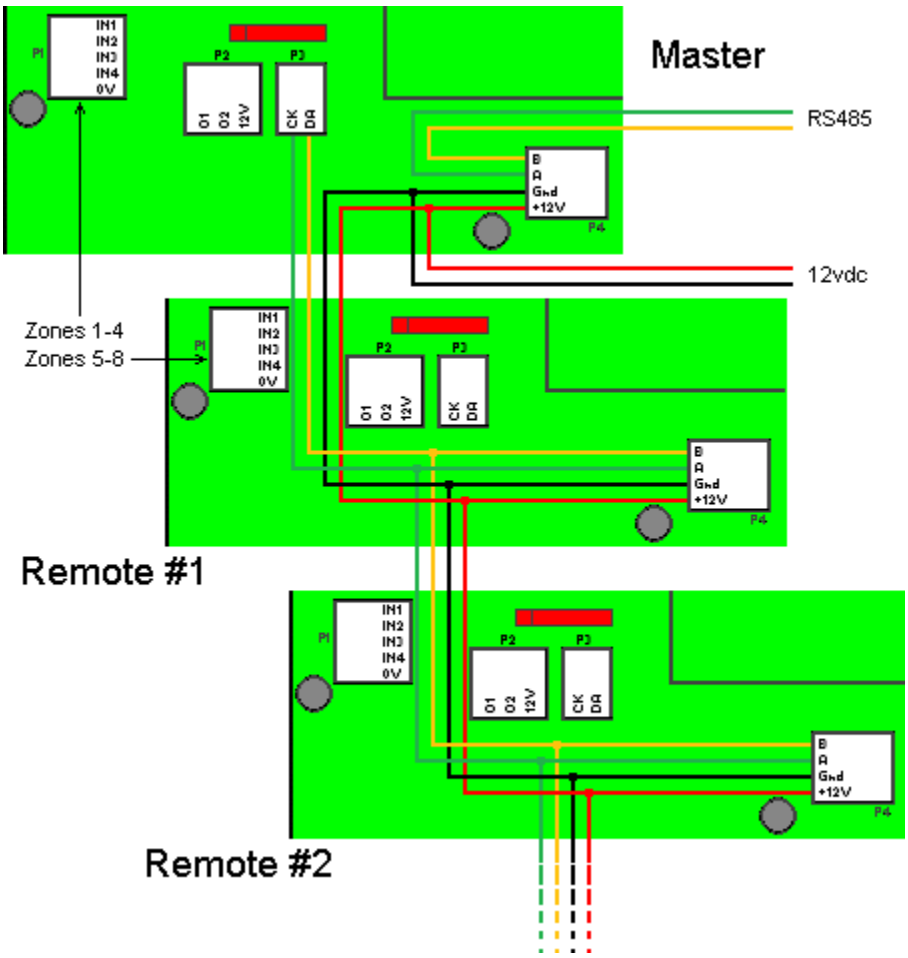

Connect the white wire to CK and black wire to DA.




Install Remote firmware.

Remote firmware can be downloaded to a panel, but after the firmware download is complete the now new remote keypad will not communicate with the software directly and must be connected to a *master* keypad.

Connect terminal CK on the master keypad to A of all remotes. Then connect terminal DA on the master keypad to B of all remotes.



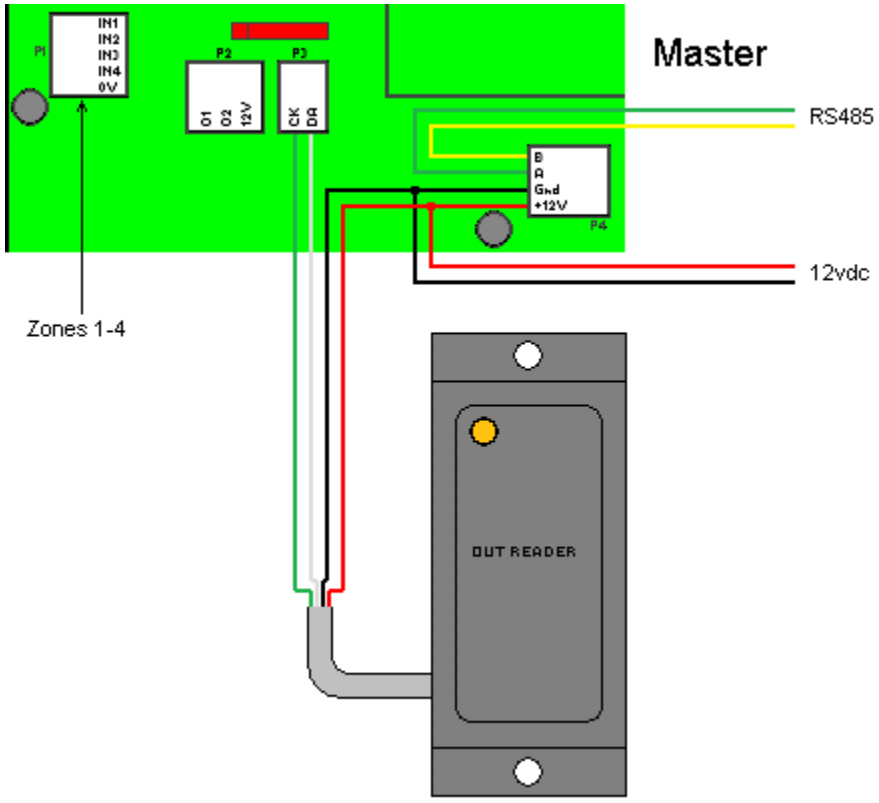

Remote keypad addresses are changed by pressing and holding the * and # buttons for about three seconds. Pressing and holding the PG button for about three seconds will display the current remote address.

To enable the communications link between remotes and the master, the master must be programmed with the proper network address and the REMOTE number. To program these features enter the primary password followed by 83. Enter the three digit address followed by # and enter the three digit value 001#. **You can not do this unless the keypad is fully disarmed.**

**The remote (*or slave*) keypad has different firmware then a regular (*or master*) keypad and can only be used as a slave keypad.**

# Card Reader

A card reader can be added to a regular (*or master*) keypad to disarm the keypad. Valid card reads will also turn on an output defined as 'Lock'.




Only four wires from the reader are connected; Data0, Data1, and two for power. On the RBH-AXS-LCD-4z panels connect Data0 and Data1 to terminal CK and DA.

**The RBH-AXS-LCD-4z allows for either a remote keypad or a card reader, <u>not</u> both.**

# NC-100 Wiring

SafeSuite™ panels are wired in parallel (*A to A, and B to B*) to the NC-100's D-Net connector. Each NC-100 can have up to 255 devices connected to it. If more than 32 panels are being used a Riser Board or RS-485 multiplexer will be required.