Integra32™

Integrated Alarm Monitoring

and Access Control

HARDWARE MANUAL

Integra 32™

A SECURITY MANAGEMENT SOLUTION BY RBH

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Disclaimer

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Integra32 Revision 5.0   Printing Date 6 January, 2020

T a b l e   o f   C o n t e n t s

C h a p t e r 1
I n t r o d u c i n g I n t e g r a 3 2 ™

The **Integra32**™ system from RBH Access Technologies Inc. represents the latest in access technology specifically designed for smaller applications. Its intuitive graphical interface allows users to take advantage of the power of the **Integra32**™ with a minimal amount of training.

The **IRC-2000** Intelligent Field Panels utilize flash firmware for easy upgrades. The **IRC-2000** panel uses fully distributed intelligence for off-line operations. In addition to supporting two card readers, each **IRC-2000** Intelligent Field Panel also has eight fully supervised alarm inputs along with eight outputs (*four dry contact outputs and four open collector outputs*). The IRC2000's memory has been increased to now hold 5,000 cards and can be further extended to hold 8,000 cards.

An alternate panel the **URC-2000** can be used along with or instead of the original **IRC-2000**. This panel also uses fully distributed intelligence for off-line operations. In addition to supporting two card readers, each **URC-2000** panel has four fully supervised alarm inputs and four outputs as well as a 3,000 card capacity. Communication is handle through an RS485 port.

The PC is used for data entry, setting up the database, and monitoring activity on the system. Once the database is downloaded to the controllers, the PC is not required for system operation. Should the PC be powered down, the controller will perform all access and other control functions (but of course not Global functions), including logging history events. When the connection is restored, the log will then be reported to the PC.

Integra32™ Security Management software runs on PCs with Windows 8.1, Windows 10, Windows Server 2012/2012R2, Windows Server 2016 and Windows Server 2019. Up to thirty-two panels can be connected together, for a maximum capacity of sixty-four doors. Connect the PC to the first control directly via RS232 or by an IP address (*using an existing Ethernet*). Additional controls can be connected to the first control with RS485 (*maximum total wiring distance is four thousand feet*) to a maximum of sixteen panels per connection (*or network*).

Interfacing with intrusion alarm panels has been made possible. Connect to Bosch or Summit panels through the **PC-100** board.

Elevator control is accomplished with a modified URC2000 panel and ELC-08 relay boards. Four relay boards can control up to thirty-two floors for two readers.

Other features include the capacity for forty holidays, one hundred and twenty-eight time zones, as well as handicap access by cardholder. High security and lock/unlock modes are also supported. Each panel can have up to sixty-four input/output links, and the system is capable of holding two hundred and fifty-five pre-programmed operator commands. Both local and timed Antipassback are also supported.

Chapter 2
Intelligent Field Panel

The Integra32™ access control system consists of one or more controllers. All information required by the controller is downloaded from the PC and stored locally in flash memory. This information includes configuration data, cardholder records, access levels, schedules, and all other records necessary for the operation of the system. The controller operates independent of the PC and all decision-making is performed locally, even in the event of total power loss (*while operating on battery backup*).

IRC2000

Connection Details

Power

The IRC-2000 requires 9 to 14 volts DC and draws about 250ma.

PC/ Modem Interface

The PC/Modem interface connects the IRC-2000 to a PC or modem through an RS232, TCP/IP Ethernet, or an RS485 (*2-wire*) interface.

Inputs

There are two common terminals for each set of four inputs (*one between inputs 1 and 2, another between 3 and 4, one between 5 and 6, and one between 7 and 8*). Seven different input types are supported (*including normally open, normally closed, one resistor, and two resistor configurations*).

Outputs

Four of the eight programmable outputs are dry contact relays (*UL rated 2A @ 30v dc*). These are designated as outputs 1, 2, 5, and 6. The other four outputs are solid-state switches (*open collector to ground capable of sinking 100ma*).

Readers

Readers are connected to non-programmable outputs BUZ, RED, & GRN, as well as data inputs D0 and D1. Both readers have their own connection terminals, reader A on the left side of the board and reader B on the right.

IRC2000 Wiring Diagram
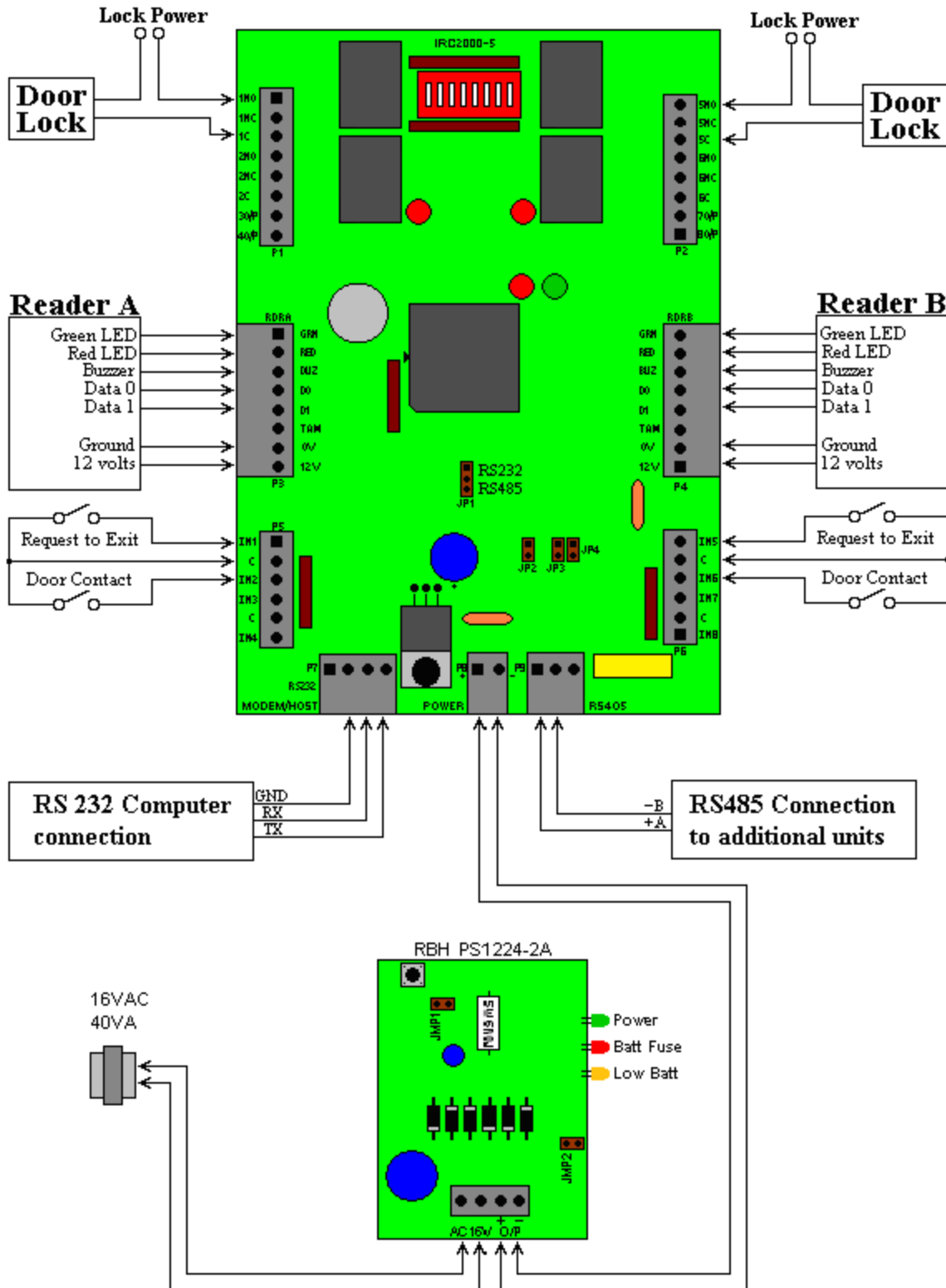
Earth

The controller contains several layers of protection against induced high voltage transients from static discharge, lightning, and power line spikes. In order for this protection to be fully effective, a good connection to earth ground is essential. Wire this connection to a metal cold water pipe or similar structure. Do not connect directly to the AC earth. Use 16 AWG or heavier cable and keep the length as short as possible (*less than 50 feet*).

For multiple panels always use only a single point ground reference for all panels. Bring the shields of all reader and communication cables back to one location. Do not connect them to the panel or the panel's housing.

Grounding the Integra32 system
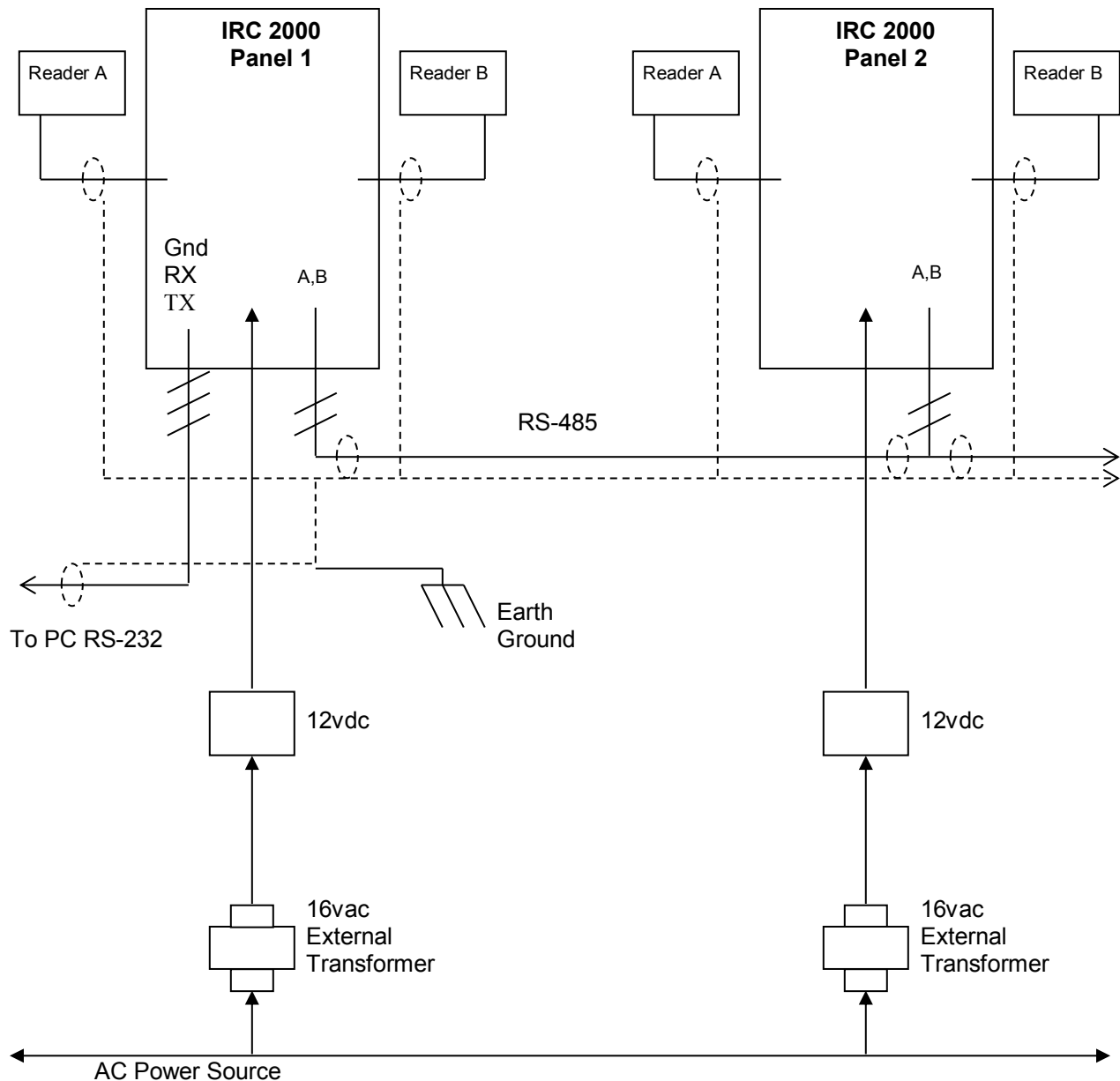
DIP Switch Settings

The IRC-2000's DIP switches control a number of operating parameters including the device address and serial port baud rate. The controller must be powered down to accept any changes in the DIP switch settings. Use DIP switches 1 through 5 to set the controller address. Switches 6 and 7 set the communication baud rate, and switch 8 is used to set the connection type (*modem or direct*).

DIP Switch	
DIP Switch	**Function**
1 - 5	Controller Address
6,7	Controller Baud Rate
8	Modem/Direct PC Connection

Controller Addressing

Use DIP switches 1, 2, 3, 4, and 5 to select the controller address. The address is binary coded and the switch settings for all sixteen possible addresses are given below.

Controller Addressing					
Switch 1	**Switch 2**	**Switch 3**	**Switch 4**	**Switch 5**	**Address**
On	Off	Off	Off	Off	1
Off	On	Off	Off	Off	2
On	On	Off	Off	Off	3
Off	Off	On	Off	Off	4
On	Off	On	Off	Off	5
Off	On	On	Off	Off	6
On	On	On	Off	Off	7
Off	Off	Off	On	Off	8
On	Off	Off	On	Off	9
Off	On	Off	On	Off	10
On	On	Off	On	Off	11
Off	Off	On	On	Off	12
On	Off	On	On	Off	13
Off	On	On	On	Off	14
On	On	On	On	Off	15
Off	Off	Off	Off	On	16

Direct Connect/Modem Selection

DIP switch 8 specifies whether the IRC-2000 is connected directly to a serial port on the PC or communicates with the PC over a modem. Contact the RBH tech support office for information on the optional TCP/IP Ethernet connection.

Direct Connect / Modem Selection	
DIP Switch 8	**Interface Type**
OFF	Direct Connect To PC
ON	Modem

DIP switch 8 specifically turns on the password requirement and enables modem call-back. The panel will still answer a modem call with DIP switch 8 off. You should initially set up the panel with DIP switch 8 off, program the panel and download to it. Then turn DIP switch 8 on to enable password checking.

Computer/Modem Port Baud Rate Selection

The controller's serial port baud rate is set with controller DIP switches 6 and 7. This setting determines the speed used to communicate with the modem or PC serial port. If the controller is connected directly to the PC, the controller baud rate must be the same as the baud rate set for the port on the PC. The default PC baud rate is 38,400.

Controller Baud Rate Selection		
DIP Switch 6	**DIP Switch 7**	**Baud Rate**
OFF	OFF	9,600
ON	OFF	28,800
OFF	ON	38,400
ON	ON	56,000

PC Connections

RS232 Connection

The PC serial port used to connect to the IRC-2000 panels is assigned under the Communication Port Setup screen of Network properties window in the **Integra32**™ software. The baud rate is set by default to 9600 for direct connection to the PC using the standard RS232 interface. The RS232 interface can be used to connect to a single controller or to the first controller of a network. The distance between the PC and controller cannot be greater than 150 feet (4*5 meters*), or 33 feet (*10 meters*) if the baud rate is increased to 38,400.

For distances greater than 150 feet (45 *meters*), an RS485 interface must be used. RS485 is built into the IRC-2000 controller but is not part of the standard PC. The PC must be fitted with either an RS485 serial card or an external RS232 to RS485 serial port converter.

Additional controllers can be connected via the RS485 terminals.

Controller to PC Connection (RS232)		
Controller	DB9 Connector	DB25 Connector
GND	Pin 5	Pin 7
TX	Pin 3	Pin 2
RX	Pin 2	Pin 3

PC to IRC-2000 - RS232 Interface Wiring
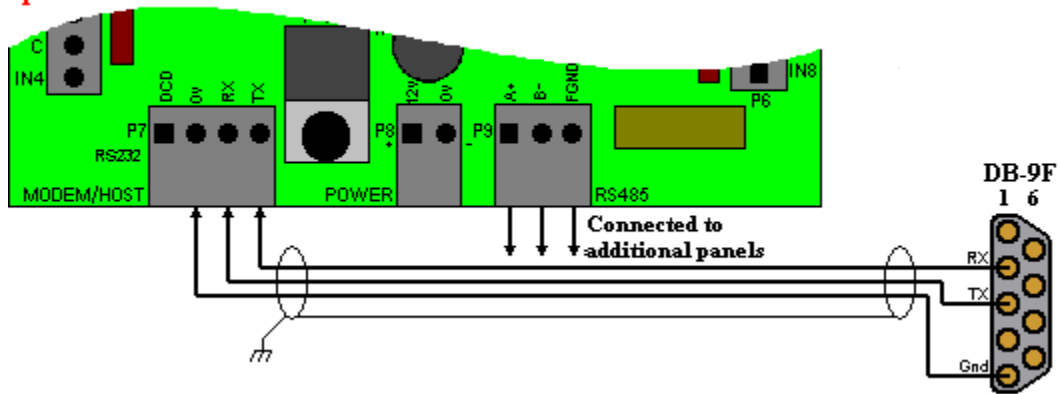
Cable Specification

3 or 4-conductor shielded, 18 to 22 AWG

Maximum Cable Length

9600 baud   150 feet (45 meters)

38400 baud   33 feet (10 meters)

Modem Connection *(Not Supported in Current versions of software)*

The IRC-2000 can be connected to the PC via a modem. The modem connection is similar to the RS-232 connect with the inclusion of the DCD terminal. If multiple controllers are used then the RS-485 connecter will be needed to connect the additional controllers to the modem controller.
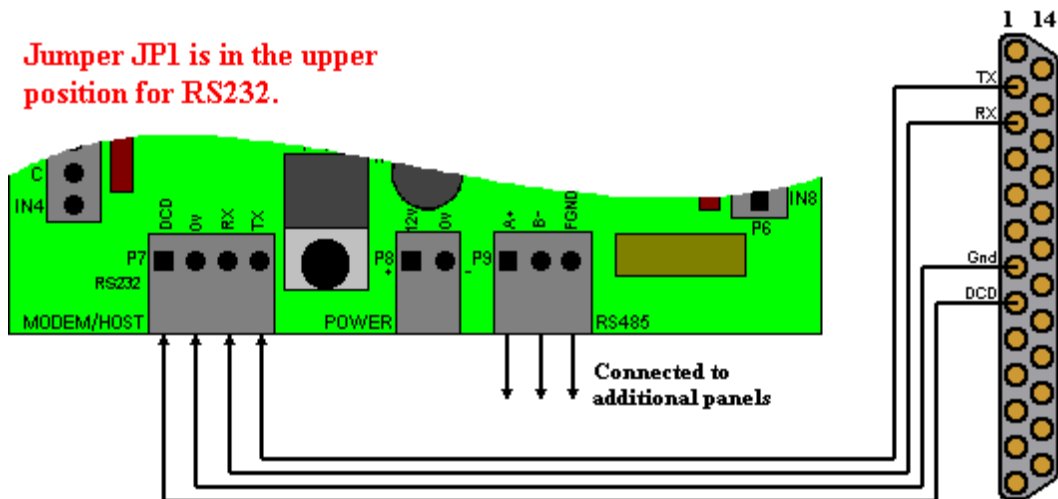
Cable Specification

4-conductor shielded, 18 to 22 AWG

Maximum Cable Length

9600 baud   150 feet (45 meters)

38400 baud   33 feet (10 meters)

TCP/IP Connection

For TCP/IP connections, wire to the TCP/IP interface as you would to the PC, with a direct RS-232 connection. The TCP/IP interface is programmed with an IP address and connected to the LAN (*contact the local system administrator for an IP address*).

Additional controllers can be connected via the RS-485 connection terminals.

RS485 Connection

The IRC-2000 controller supports a two-wire RS485 interface. Jumpers JP1 is to be set on the lower two pins for RS485 operation.

The RS485 interface allows the distance between the controller and the PC to be extended up to 4000 feet (*1200 meters*). RS485 requires one twisted pair shielded cable.

Cable Specification

Single twisted pair, shielded, 18 to 22 AWG

Maximum Cable Length

4000 feet (1200 meters)

Controller Networks

Up to thirty-two controllers can be connected to a single PC. They can be connected to the same network or distributed across multiple networks. After the first controller of the network is connected to the PC, additional controllers can be connected to the network via the RS485 terminals. Connect the TX/A terminal of one controller to the TX/A terminal next one, and connect the RX/B terminal to the RX/B terminal. All of the controllers on a network are connected in parallel.

Controller Network Connection Diagram
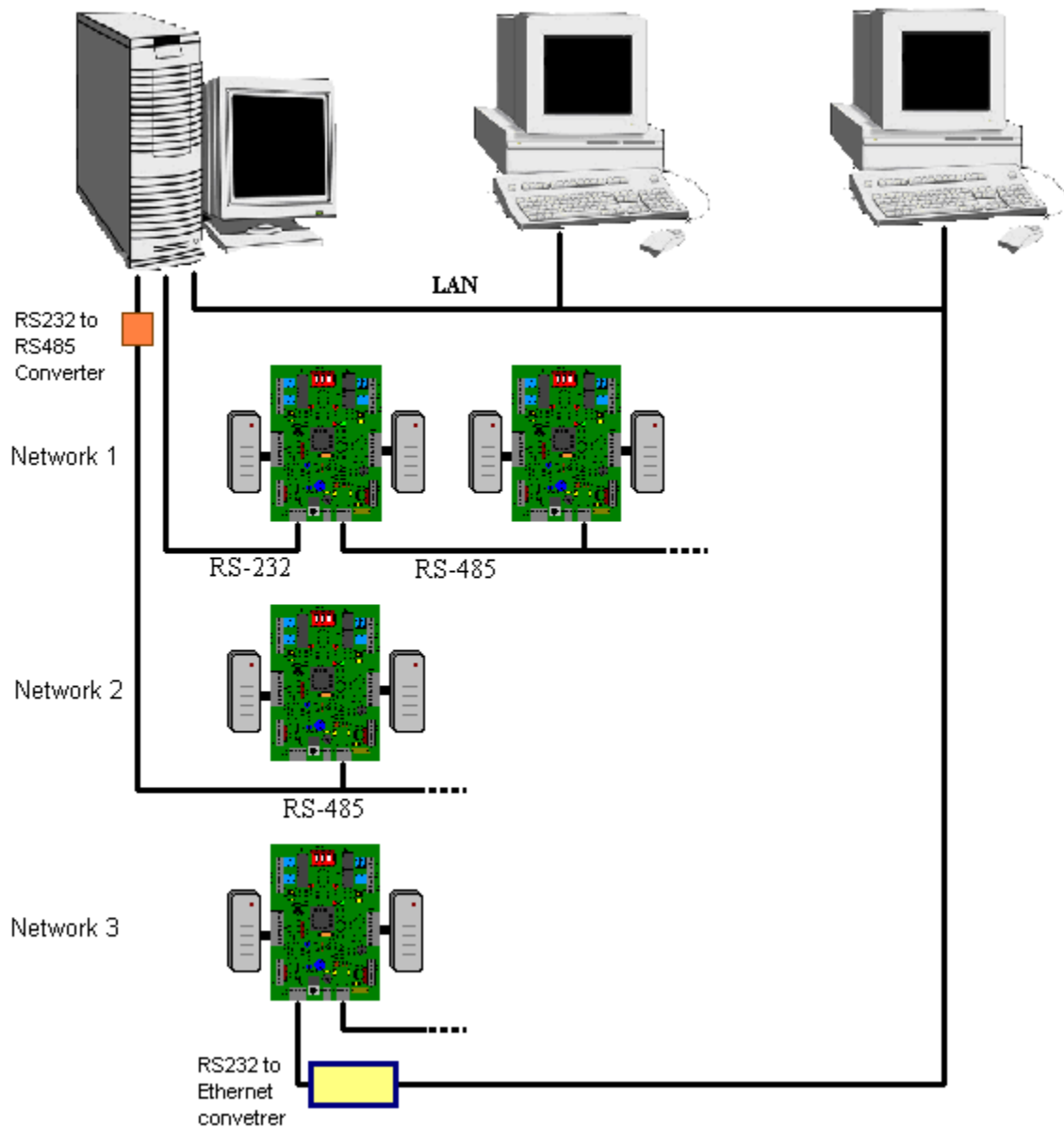
Status LED's

Computer/Modem Port

The computer/modem port has two LEDs to show the flow of data between the IRC-2000 controller and PC or modem. The red RX LED (*LED3*) flashes when the controller receives data. The green TX LED (*LED4*) flashes when the controller transmits data. If the controller is connected directly to the PC, the status LED's flash continuously.

Run LED

The run LED (*LED2*) flashes to indicate the controller is not communicating, it is on solid when running normally, and off if power is missing.

Diagnostic LED

This LED (*LED1*) will be on if either (*reader A or reader B*) buzzer output is on.

Fuses

There are two 1-amp self-resetting Polyfuses on the IRC-2000 board. F1 is connected to Reader Power and F2 is connected to Main Power.
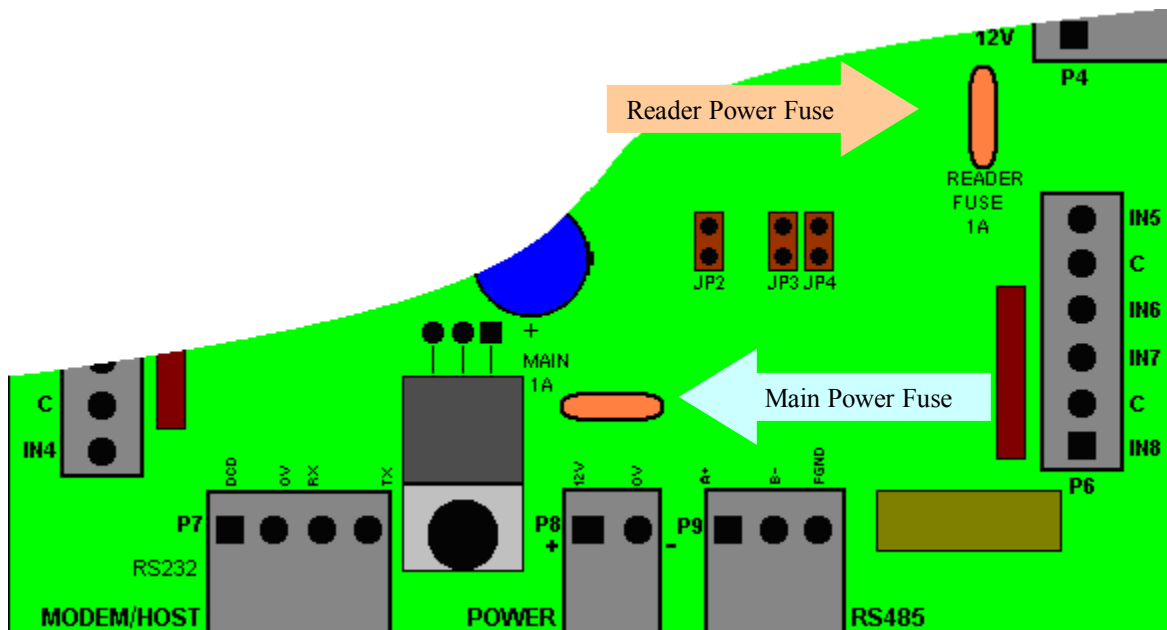
Jumpers

JP1   The upper position is for RS232, and the lower position is for RS485. (*In a multi-panel network with the first panel connected to the PC via RS-232 and all other panel connected to the first panel via RS-485, set JP1 of panel #1 to RS-232 and all other JP1s to RS-485*)

JP2   Bias Low – RS485 tuning

JP3   Termination – RS485 tuning

JP4   Bias High – RS485 tuning

> **Leave jumpers JP2, JP3, and JP4 open. Do not use these jumpers without consulting RBH.**
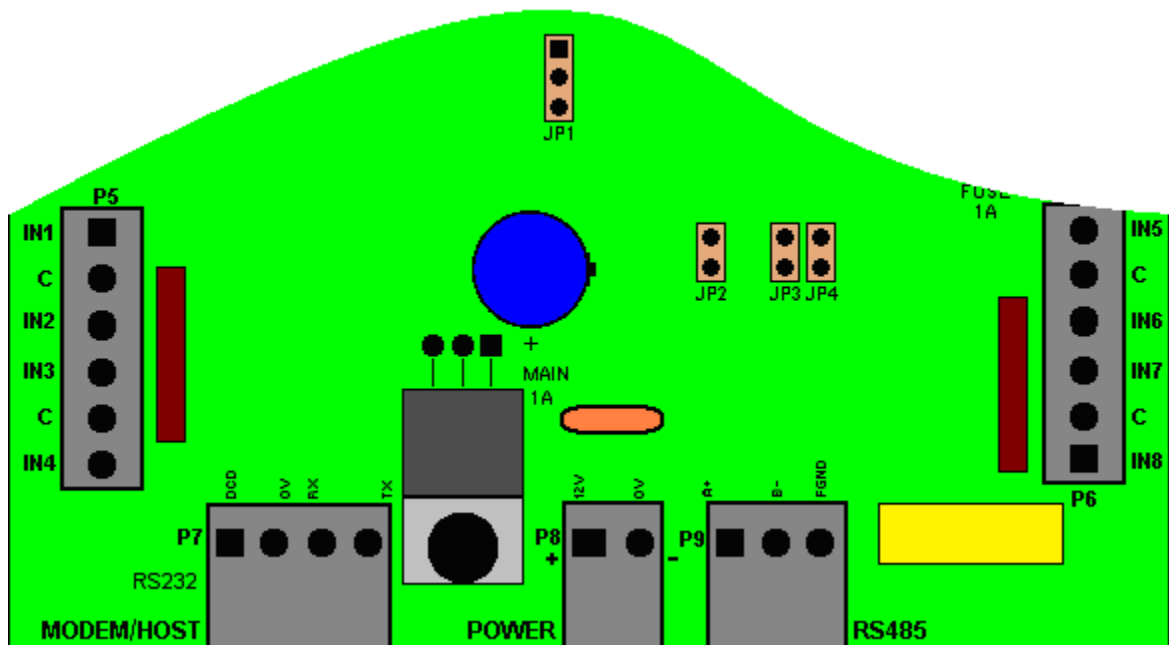
URC2000

Connection Details

Power

The URC-2000 requires 9 to 14 volts DC and draws about 200ma.

PC Interface

The PC interface connects the URC-2000 to a PC through an RS485 (*2-wire*) connection.

Inputs

There are two common terminals for each set of inputs (*one between inputs 1 and 2, another between 3 and 4*). Seven different input types are supported (*including normally open, normally closed, one resistor, and two resistor configurations*).

Outputs

Two of the four programmable outputs are dry contact relays (*UL rated 2A @ 30v dc*). These are designated as outputs 1, and 3. The other two outputs are solid-state switches (*open collector to ground capable of sinking 100ma*).

Readers

Readers are connected to non-programmable outputs BUZ, & LED, as well as data inputs D0 and D1. Both readers have their own connection terminals, reader A is designated as P4 and reader B is designated as P5.

URC2000 Wiring Diagram
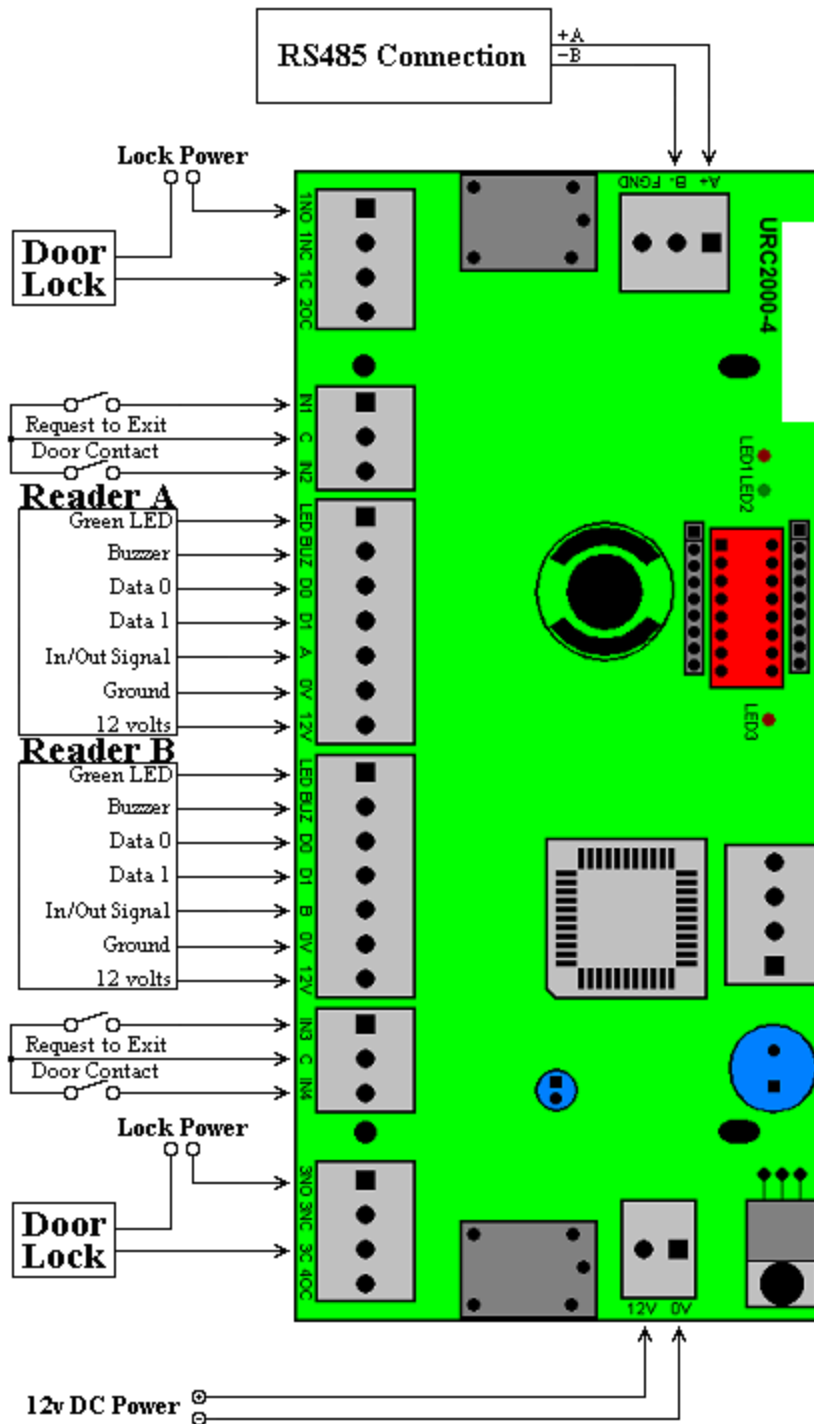
RS485 Connection

+A
−B

Lock Power

Door Lock

Request to Exit
Door Contact

Reader A
Green LED
Buzzer
Data 0
Data 1
In/Out Signal
Ground
12 volts

Reader B
Green LED
Buzzer
Data 0
Data 1
In/Out Signal
Ground
12 volts

Request to Exit
Door Contact

Lock Power

Door Lock

12v DC Power

Earth

The controller contains several layers of protection against induced high voltage transients from static discharge, lightning, and power line spikes. In order for this protection to be fully effective, a good connection to earth ground is essential. Wire this connection to a metal cold water pipe or similar structure. Do not connect directly to the AC earth. Use 16 AWG or heavier cable and keep the length as short as possible (*less than 50 feet*).

For multiple panels always use only a single point ground reference for all panels. Bring the shields of all reader and communication cables back to one location. Do not connect them to the panel or the panel's housing.

DIP Switch Settings

The URC-2000's DIP switches control a number of operating parameters including the device address and serial port baud rate. The controller must be powered down to accept any changes in the DIP switch settings. Use DIP switches 1 through 5 to set the controller address. Switches 6 and 7 set the communication baud rate, and switch 8 is used to set the connection type (*modem or direct*).

DIP Switch	
DIP Switch	**Function**
1 - 5	Controller Address
6,7	Controller Baud Rate
8	not used

Controller Addressing

Use DIP switches 1, 2, 3, 4, and 5 to select the controller address. The address is binary coded and the switch settings for all sixteen possible addresses are given below.

Controller Addressing					
Switch 1	**Switch 2**	**Switch 3**	**Switch 4**	**Switch 5**	**Address**
On	Off	Off	Off	Off	1
Off	On	Off	Off	Off	2
On	On	Off	Off	Off	3
Off	Off	On	Off	Off	4
On	Off	On	Off	Off	5
Off	On	On	Off	Off	6
On	On	On	Off	Off	7
Off	Off	Off	On	Off	8
On	Off	Off	On	Off	9
Off	On	Off	On	Off	10
On	On	Off	On	Off	11
Off	Off	On	On	Off	12
On	Off	On	On	Off	13
Off	On	On	On	Off	14
On	On	On	On	Off	15
Off	Off	Off	Off	On	16

Computer Port Baud Rate Selection

The controller's RS485 port baud rate is set with DIP switches 6 and 7. This setting determines the speed used to communicate with the PC. All controllers connected to the software through the same port must have the same baud rate. The default PC baud rate is 38,400.

Controller Baud Rate Selection		
DIP Switch 6	**DIP Switch 7**	**Baud Rate**
OFF	OFF	9,600
ON	OFF	28,800
OFF	ON	38,400
ON	ON	56,000

PC Connections

RS485 Connection

The URC-2000 controller supports a two-wire RS485 interface. The RS485 interface allows the distance between the controller and the PC to be up to 4000 feet (*1200 meters*). RS485 requires one twisted pair shielded cable.

Status LED's

Communication Port

The RS485 port has two LEDs to show the flow of data between the URC-2000 controller and PC. The red RX LED (*LED1*) flashes when the controller receives data. The green TX LED (*LED2*) flashes when the controller transmits data. If the controller is connected directly to the PC, the status LED's flash continuously.

Run LED

The run LED (*LED3*) flashes to indicate the controller is not communicating, it is on solid when running normally, and off if power is missing.
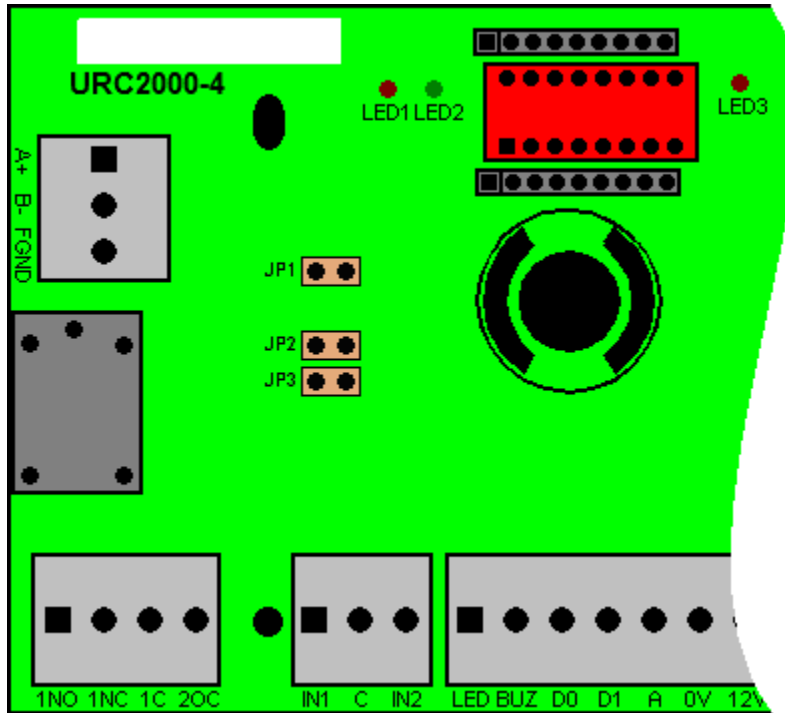
Fuses

There are two 1-amp self-resetting Polyfuses on the URC-2000 board. F1 is connected to Reader Power and F2 is connected to Main Power.
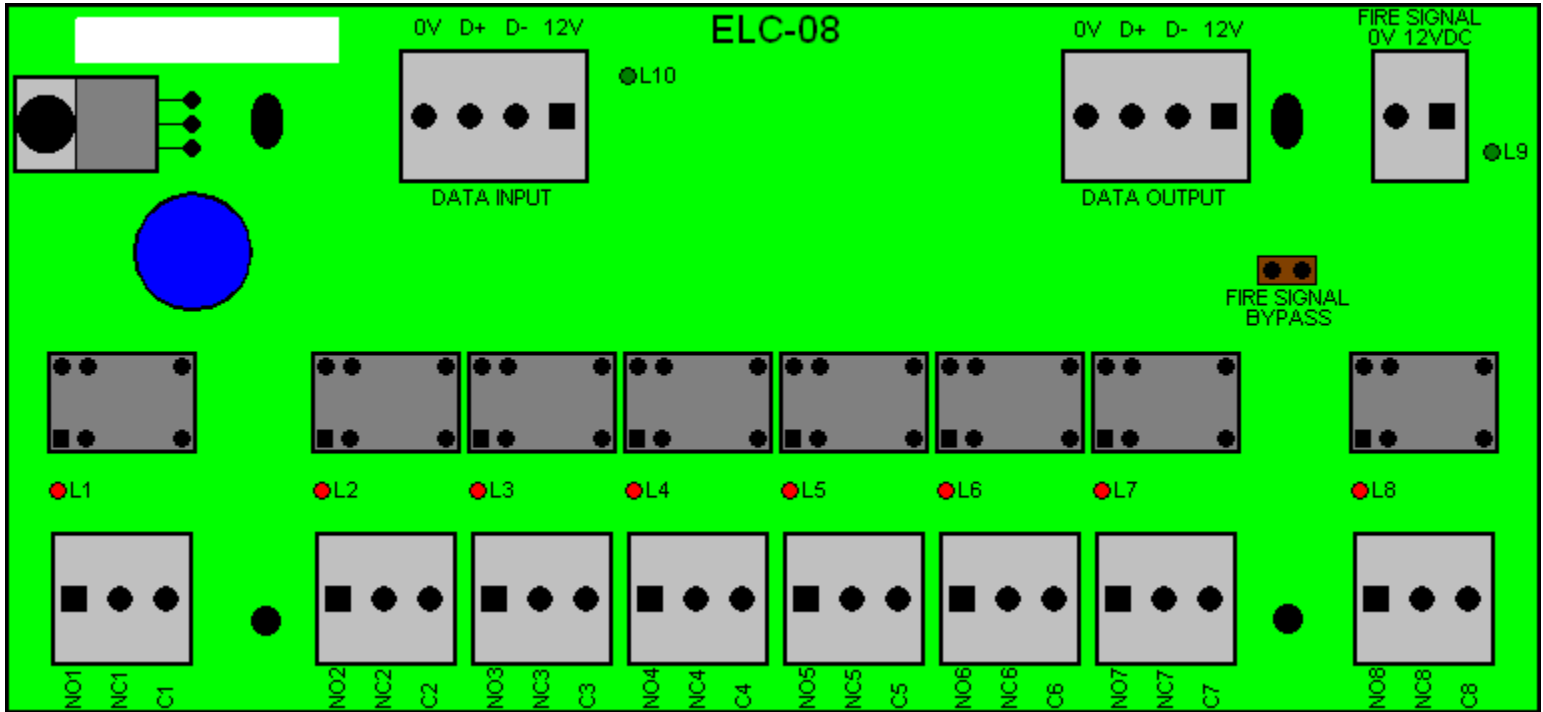
Jumpers

JP1 Bias Low – RS485 tuning
JP2 Termination – RS485 tuning
JP3 Bias High – RS485 tuning

Leave jumpers JP1, JP2, and JP3 open. Do not use these jumpers without consulting RBH.

Elevator Control

Integra32™ Elevator Control uses a modified URC2000 board with ELC firmware.

Up to four ELC-08 relays boards may be connected (strung) together for a maximum of thirty-two dry contact outputs per Elevator Control panel. These contacts are programmed as "on state de-energized" so that the release of the fire signal or power will place the outputs in the ON state. There are red LEDs (one for each relay) that turn on as each relay is energized therefore indicating an off state.

The green LED next to the data input connector flash when communications is lost. Another green LED next to the Fire Signal connector indicates the presence of a Fire Signal or Fire Signal Bypass.

Connection Details

ELC-08 Installation

First stage output board for outputs 1-8

Second stage output board outputs 9-16
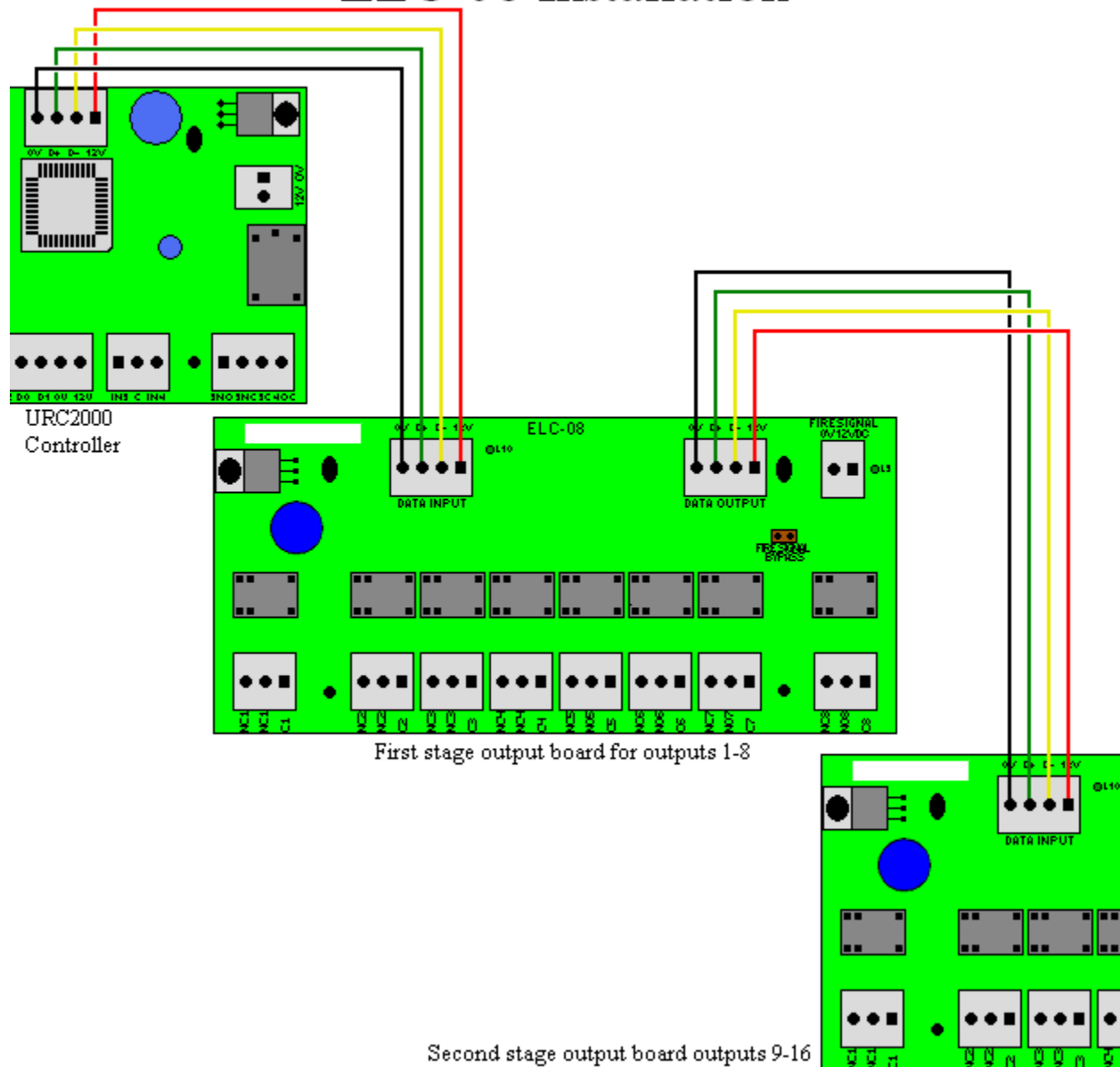
Power

The ELC-08 requires 9 to 14 volts DC (connected to the Data Input) and draws a maximum of 325ma.

Data Input / Data Output

The first ELC-08 is connected to the Elevator URC2000. Four wires are connected as per the diagram above. The second, third, and fourth boards are each connected to the previous board. Board four connected to board three, board three connected to board two, and board two connected to board one. Connect 0v to 0v, D+ to D+, D- to D-, and 12v to 12v.

Fire Signal

Apply 12-24 volts DC to satisfy this input. When this voltage is removed all of the relays on the board will power down (turn ON), making all floors accessible. If the Fire Signal feature is not required install a jumper on the Fire Signal Bypass.

PC100

Connection Details
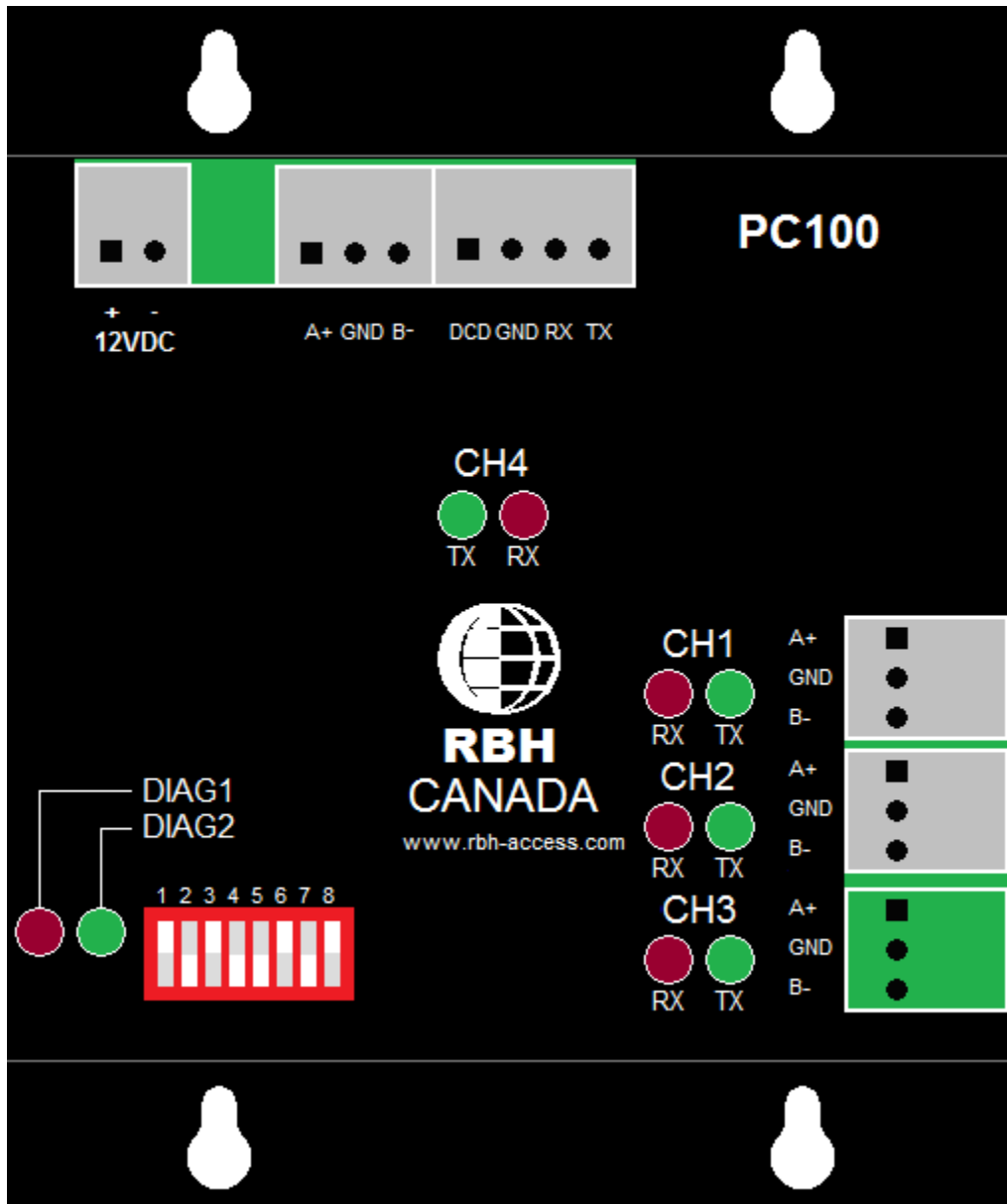
Power

The PC-100 requires 9 to 14 volts DC and draws about 150ma.

PC Interface

The PC interface connects the PC-100 to a PC through an RS232 serial connection at 9600 baud only.

RS485 Interfaces

Connect the PC-100 to IRC-2000 & URC-2000 panels through an RS485 connection, and connect the PC-100 to an Alarm Panel through an RS485 connection.

Status LED's

Health

The green health LED indicates synchronization with the LSCP bus and the red health LED indicates LSCP problems. For normal operation the green led will be flashing quickly and brightly and the red led will be mostly off.

PC Interface

The PC Interface port has two LEDs to show the flow of data between the PC-100 and the PC. The red RX LED (*LED9*) flashes when the controller receives data. The green TX LED (*LED10*) flashes when the controller transmits data.

Access Panel Interface

The Access Panel Interface is an RS485 port that has two LEDs to show the flow of data between the PC-100 and IRC2000 and/or URC2000 panels. The red RX LED (*LED5*) flashes when the controller receives data. The green TX LED (*LED6*) flashes when the controller transmits data.

Alarm Panel Interface

The Alarm Panel Interface is an RS485 port that has two LEDs to show the flow of data between the PC-100 and a Bosch or a Summit panel. The red RX LED (*LED7*) flashes when the controller receives data. The green TX LED (*LED8*) flashes when the controller transmits data.

Jumpers

JP1   Do not use (for developmental purposes only).

JP2 & JP3   Both jumpers are left in the upper position for normal operation. This will connect the PC Interface port to the micro controller. Move the jumper to the lower position only if a LAN interface module is attached to the PC100. This will connect the PC Interface port to the LAN interface module for the purpose of programming it.

Chapter 3
Input & Output Connections

Inputs

The IRC-2000 has eight fully supervised inputs, two sets of four each with two common terminals, and the URC-2000 has four fully supervised inputs, two sets of two each with a common terminal. All inputs are individually programmable from the PC. The panels employ digital filtering to eliminate the effect of interference on the input loops and to verify all loop changes before reporting to the controller.

Each input can report up to four states; Open, Short, Abnormal, and Normal. For example, if the circuit type is programmed as '2 resistor normally closed', 1k represents a normal state and 2k represents an abnormal state. Less than twenty ohms is a short and very high resistance is an open.

RTE (Request to Exit)

Inputs programmed, as RTE will be connected to push buttons mounted on the door or to motion detectors mounted near the door. Activating the RTE input will cause a grant access to be executed on the appropriate door. The RTE can be disabled by a schedule. Multiple inputs can be programmed as RTEs for the same door.

DC (Door Contact)

Inputs programmed as door contacts monitor the state of the door. Forced entry, door held open alarm, and door held open warning require monitoring of the door state.

General Purpose

General Purpose Inputs are inputs that are not tied directly to an access point. The user defines what happens when they change state. They can trigger links, cause alarms, and/or report their change of state.

Input Circuit Types

The IRC-2000 supports seven different input circuit types ranging from no resistor for low security applications to two resistors normally closed circuits where the highest security is required.
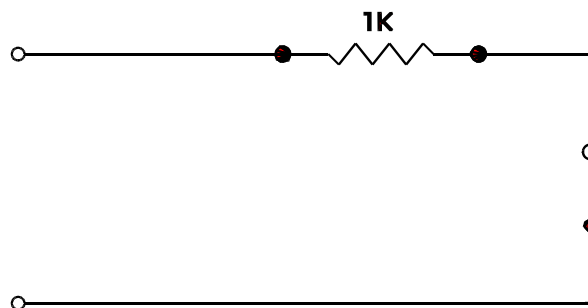
Normally Closed, No Resistor	
Loop Resistance	**State**
Short	Restore
Open Circuit	Alarm
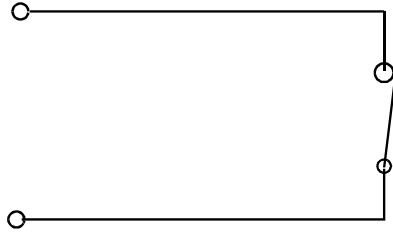
Normally Open, No Resistor

Loop Resistance	State
Short	Alarm
Open Circuit	Restore

Normally Closed, One Resistor

Loop Resistance	State
Short	Trouble
1k	Restore
Open Circuit	Alarm

1K

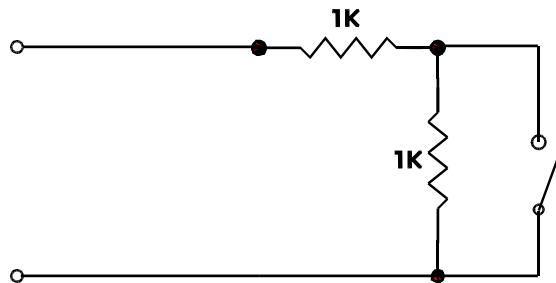| Normally Closed, Two Resistor	
Loop Resistance	**State**
Short	Trouble
1k	Restore
2k	Alarm
Open Circuit	Trouble
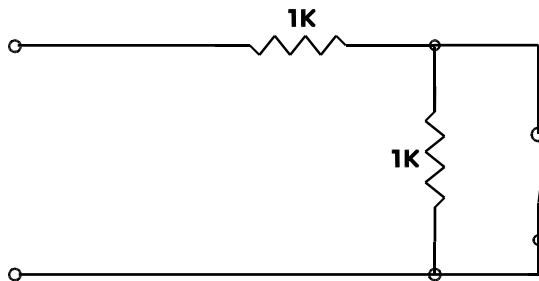
This circuit provides a high degree of supervision and detects both short and open circuit fault conditions. Use this circuit in high security applications.
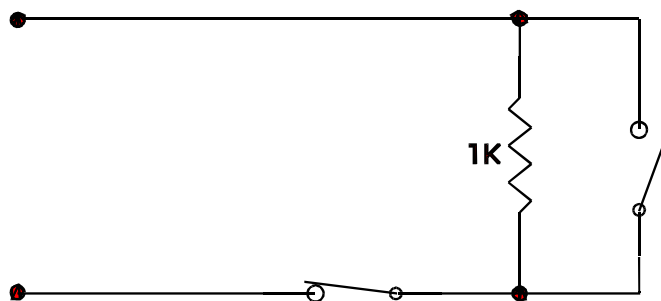
Normally Open, One Resistor	
Loop Resistance	**State**
Short	Alarm
1k	Restore
Open Circuit	Trouble
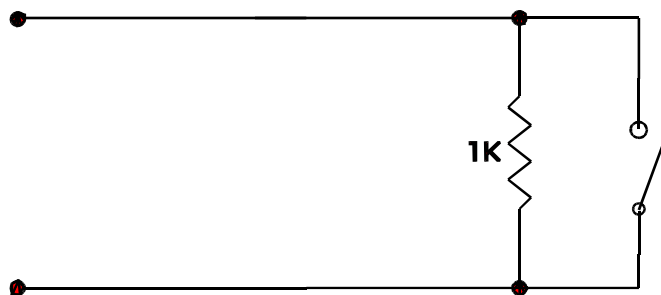
Normally Open, Two Resistor	
Loop Resistance	**State**
Short	Trouble
1k	Alarm
2k	Restore
Open Circuit	Trouble

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

The IRC-2000 has eight outputs; four relay outputs and four solid-state outputs. Outputs 1, 2, 5, and 6 are dry contact relays (*UL rated 2A @ 30v dc*). Outputs 3, 4, 7, and 8 use electronic drivers and can switch up to 100ma. The URC-2000 has four outputs, two relay outputs and two solid-state outputs. Outputs 1 and 3 are dry contact relays (*UL rated 2A @ 30v dc*). Outputs 2 and 4 use electronic drivers and can switch up to 100ma.

All outputs are programmable from the PC as 'On State' energized or 'On State' de-energized. 'On State' de-energized outputs are used for fail-safe operation where it is essential that the output return to a safe state when the system fails due to power loss, communications failure, or fire.

Electronic outputs are 'switched negative' which means that they switch the power negative to the terminal. When the output is off, the output terminal is electronically disconnected. Outputs can be programmed for lock or handicap operation (*as described below*), or they can be used as general-purpose outputs.

Lock Output

The lock output is used to activate or deactivate the locking device on the door. It can apply power to door strikes or remove power from magnetic locks.

Handicap Output

This output is used to drive door operators. It turns on in less than one second after the Lock Output is turned on, and stays on until the Lock Output is turned off. Only designated cardholders will activate this output.

Alarm Shunt Output

This output is activated at the same time as the Lock Output and is used to bypass the door contact of a burglar alarm panel. The Alarm Shunt Output will reset with the closure of the access control panel's door contact (*the Alarm Shunt Output will stay activated past the Unlock Time as long as the door is open*). A door with two contacts (*one for the burglar Alarm and one for the access control*) will require an Alarm Shunt Output to prevent the burglar alarm system for going into alarm during a valid entry.

Modem Power Output

The Modem Power Output is a normally activated output that is used to reset a modem by momentarily removing the power from the modem.

General Purpose Output

General Purpose Outputs are outputs that are user controlled. They are activated and de-activated by user defined links and schedules.

Electronic Output Connection Diagram

The electronic outputs are capable of switching up to 100ma to ground.
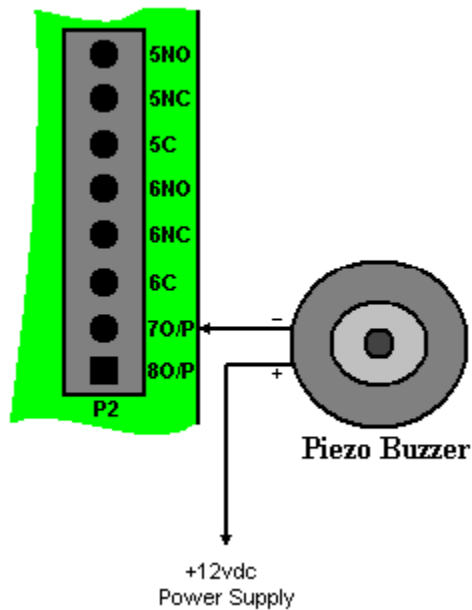
Switching Inductive Devices (Locks, Bells)

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.

Relay Output Operation

Lock Output

Any output can be used to control a magnetic lock or door strike. Multiple outputs can be set to the same function (*outputs one and two can both be Lock outputs for reader A*).
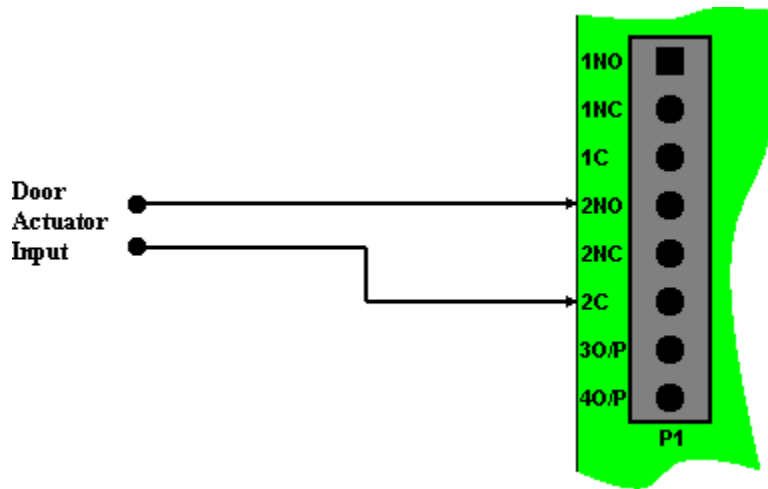
Magnetic Lock Connection Diagram
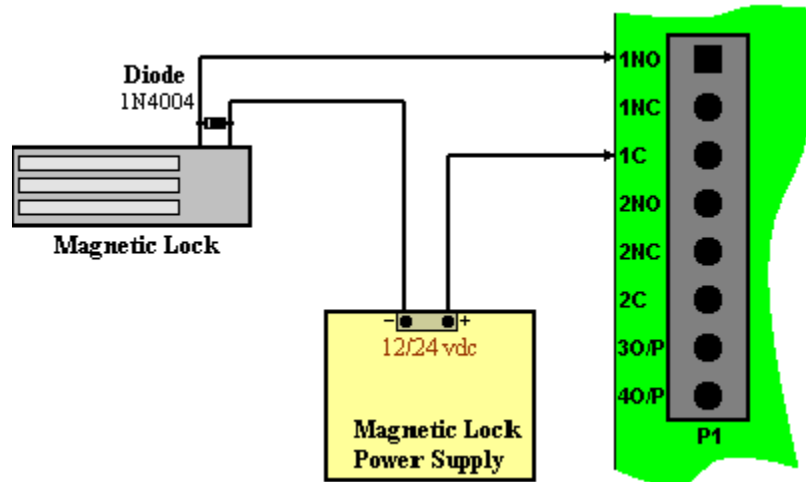
For magnetic locks, the relay should be configured from the PC as 'On State' de-energized for fail-safe operation. If power fails (*AC and battery*), the power to the magnetic lock is removed and the door is opened.

Door Strike Connection Diagram
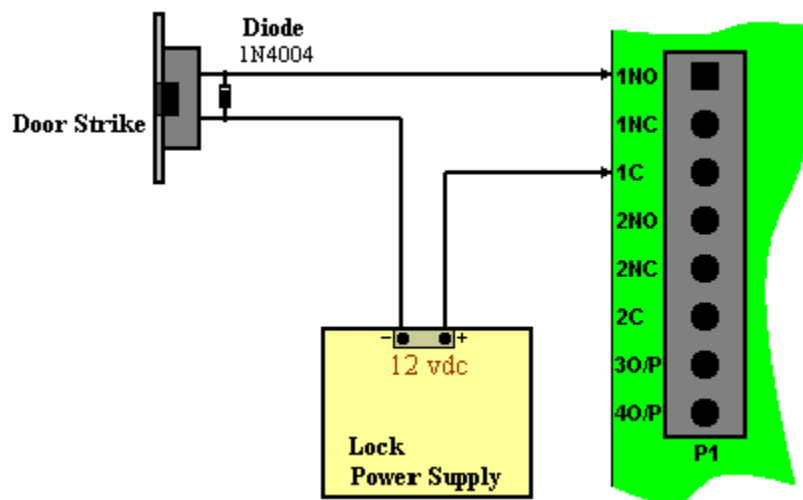
Handicap Output Connection Diagram

If this output is used with an inductive load, use a back EMF diode (*as described on page 26*) to prevent damage to other equipment.

Access Point Operating Modes

High Security

In high security mode, only cardholders with supervisor privilege are allowed access.

Unlocked

The green LED turns on to indicate the door is unlocked.

Door Held Open Warning

The Buzzer beeps slowly.

Door Held Open Alarm

The Buzzer beeps continuously.

Keypad / Reader Combination

The Buzzer emits a series of short beeps every second after a card is presented, until a PIN is entered.

Access Granted

The Buzzer emits one long beep and the green LED turns on for the duration of the unlock time.
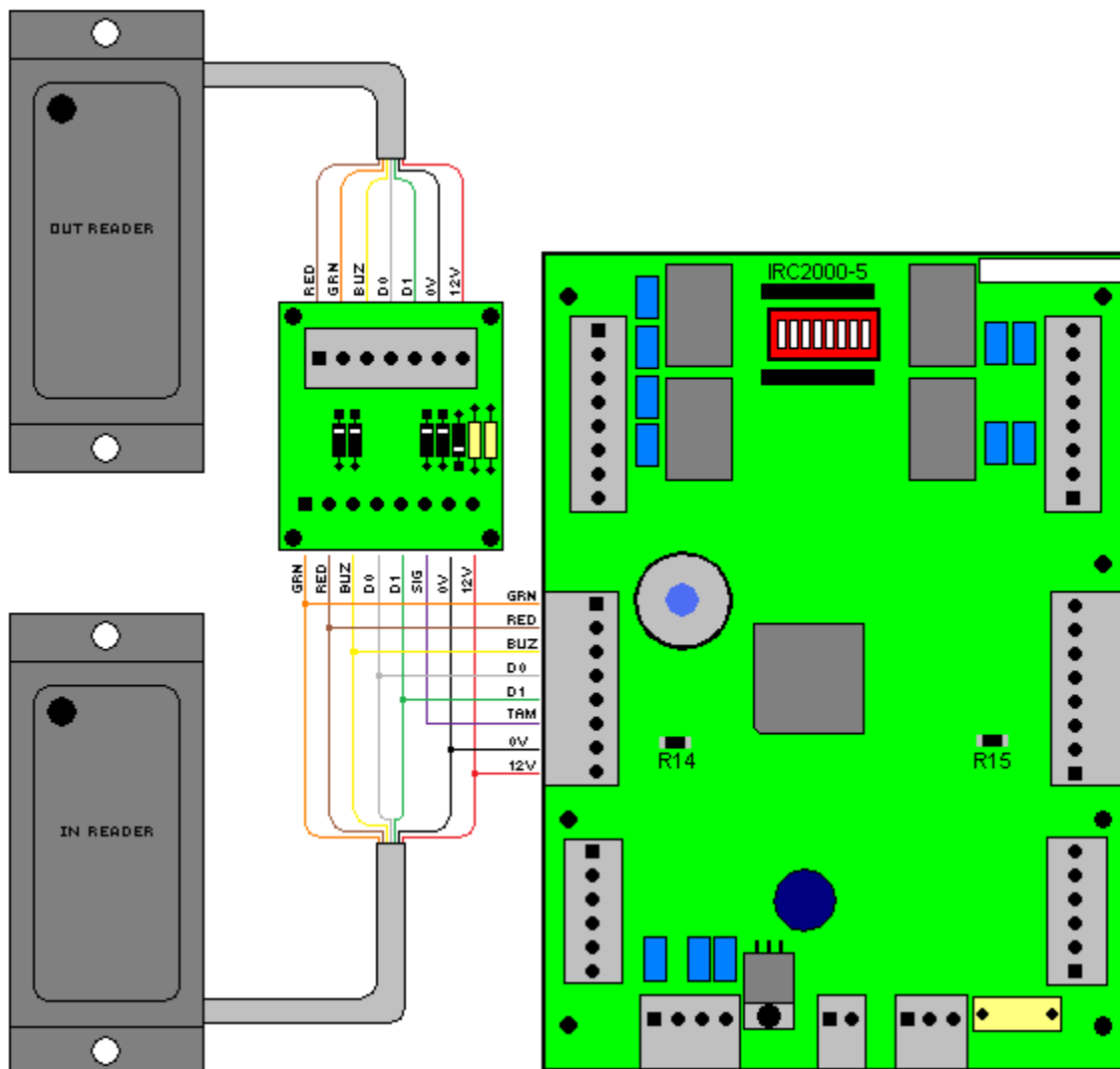
Access Denied

The Buzzer emits two short beeps and the red led flashes twice.

Exit Reader Interface Connection Diagrams

The Exit Reader Interface board enhances the IRC2000 and URC200 panels by allowing the connection of two readers to a single reader port. A single reader port can now have an 'In' and an 'Out' reader.

IRC-2000 Connection

Connect the 'Out' reader to the seven-pin terminal and the 'In' reader to the eight-pin terminal. Also connect the eight-pin terminal to the panel's reader port. For the IRC2000 connect the SIG terminal of the interface to the TAM terminal on the reader port. If you are connecting to a URC2000 connect the SIG terminal to appropriate A or B terminal as indicated by the diagram below.
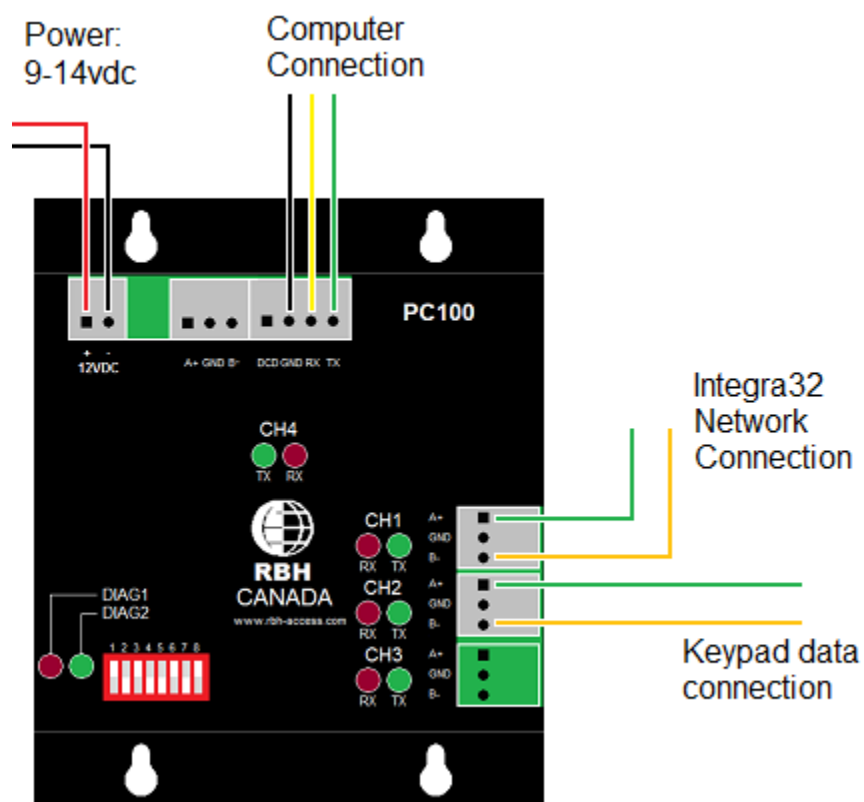
URC-2000 Connection
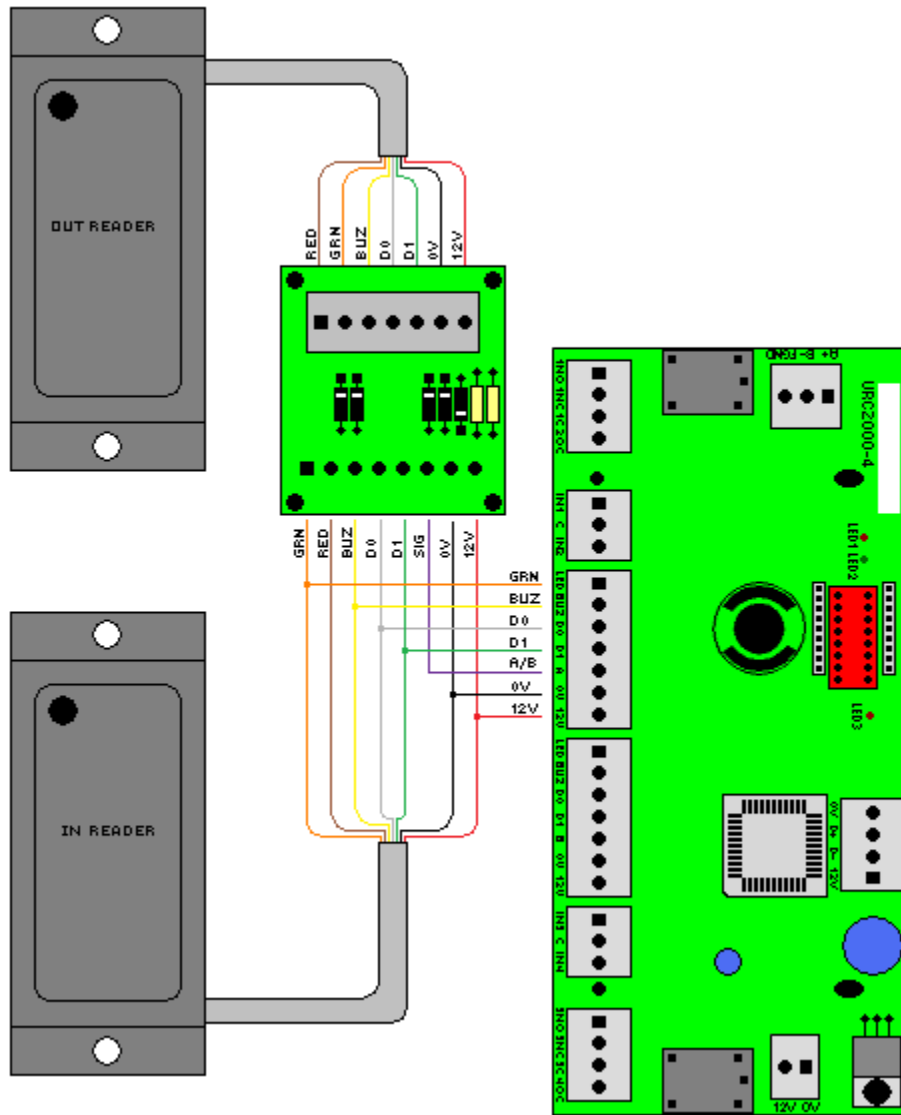
For more information on the Exit Reader Interface check 'TB51 Exit Reader Interface.pdf'.

Appendix A: PC-100 Interface Applications

The PC-100 communications interface can be used for a number of different applications.

PC-100s can be used to interface alarm panels with the Integra™ system. Some DSC, Bosch, Summit, Gardtec, Rokonet, and Paradox alarm panels can be interfaced this way.

Wiring

The PC-100 connects to the IRC-2000 through the RS-485.

Power

9-14vdc @ 150ma

LEDs

DIAG1 – Interface status
DIAG2 – Integra status:

Communication Channel LEDs – Each communication channel has a green transmit LED and a red receive LED.

Normally flashing at a rate of once a second, DIAG2 will flash twice as fast if the unit is offline with the Integra network.

DSC Alarm Panel Interface

It is recommended that the user be familiar with the DSC alarm panel and has the ability to program PIN codes and parameters into the panel.
The PC100 interface has been designed to connect the Integra network to the DSC alarm panel through the keypad bus. It will emulate a keypad when a link has been provided and report status to the Integra network when included in the list of keypads.

Keypad States

The emulated keypads in this case are representations of partition states. A partition can be armed, disarmed or in alarm. Panic, Emergency, and Fire alarms initiated by the alarm panel will be reflected on the first keypad.

Input States

 In addition to the keypads the PC100 will also emulate 256 inputs. Each input address will be mapped directly from the DSC alarm panel interface. When an input changes state on the alarm panel the PC100 will report the change of state as if it happened on its own panel.

Status Display

```
 ┌──────────────────────────────────┐
 │                         ┌_┐┌□┐┌X┐ │
 │                         └─┘└─┘└─┘ │
 │  Partition 1      ┌─────┐┌────────┐
 │                   │ Arm ││ Disarm │
 │                   └─────┘└────────┘
 │  Alarm Status     ⌂I⌂ ⌂E⌂  ♥  ⚠  │
 │  Mode         Disarmed            │
 ├──────────────────────────────┬───┤
 │                              │   │
 │  Zone #   Name       Status  │   │
 │                              │   │
 │  1     Front Gate    Abnormal│   │
 │  2     Front Door    Normal  │   │
 │  3     Side Door     Normal  │   │
 │  4     Garage Door   Normal  │   │
 │  5     Back Door     Normal  │ ┌┐│
 │  6     Front Window  Normal  │ │││
 │  7     Side Window   Normal  │ │││
 │  8     Back Window   Abnormal│ │││
 │  9     Front Hall    Restore │ │││
 │  10    Living Room   Restore │ │││
 │  11    Kitchen       Restore │ │││
 │  12    Upstairs Hall Restore │ │││
 │  13  1st Bedroom Door Abnormal││││
 │  14  1st Bedroom Wind Abnormal││││
 │  15    2nd Bedroom   Restore │ └┘│
 └──────────────────────────────┴───┘
```

Some inputs such as smoke detectors are always armed so they will only be able to display Restore or Alarm. Inputs such as Entry types are delayed so that at first they will display the disarmed states Normal and Abnormal followed by Alarm if the timed entry fails.

In order to display a partition's status a database has to be created to store the zone names and its partition reference.

Bosch Alarm Panel Interface

It is recommended that the user be familiar with the DS7400Xi panel and has the ability to program PIN codes and parameters into the panel.

The PC100 interface has been designed to connect the Integra network to the DS7400Xi alarm panel through the option or keypad bus. It will emulate a keypad when a link has been provided and report status to the Integra network when included in the list of keypads. If you observe the red and green led associated with the keypad network you should notice the red LED flashing as it receives data and the green LED flashing as it responds to polls. The response to polls will only occur under the following conditions:

1) The keypad address is included in the list of keypads programmed in the Integra network

2) The keypad emulation box has been checked.

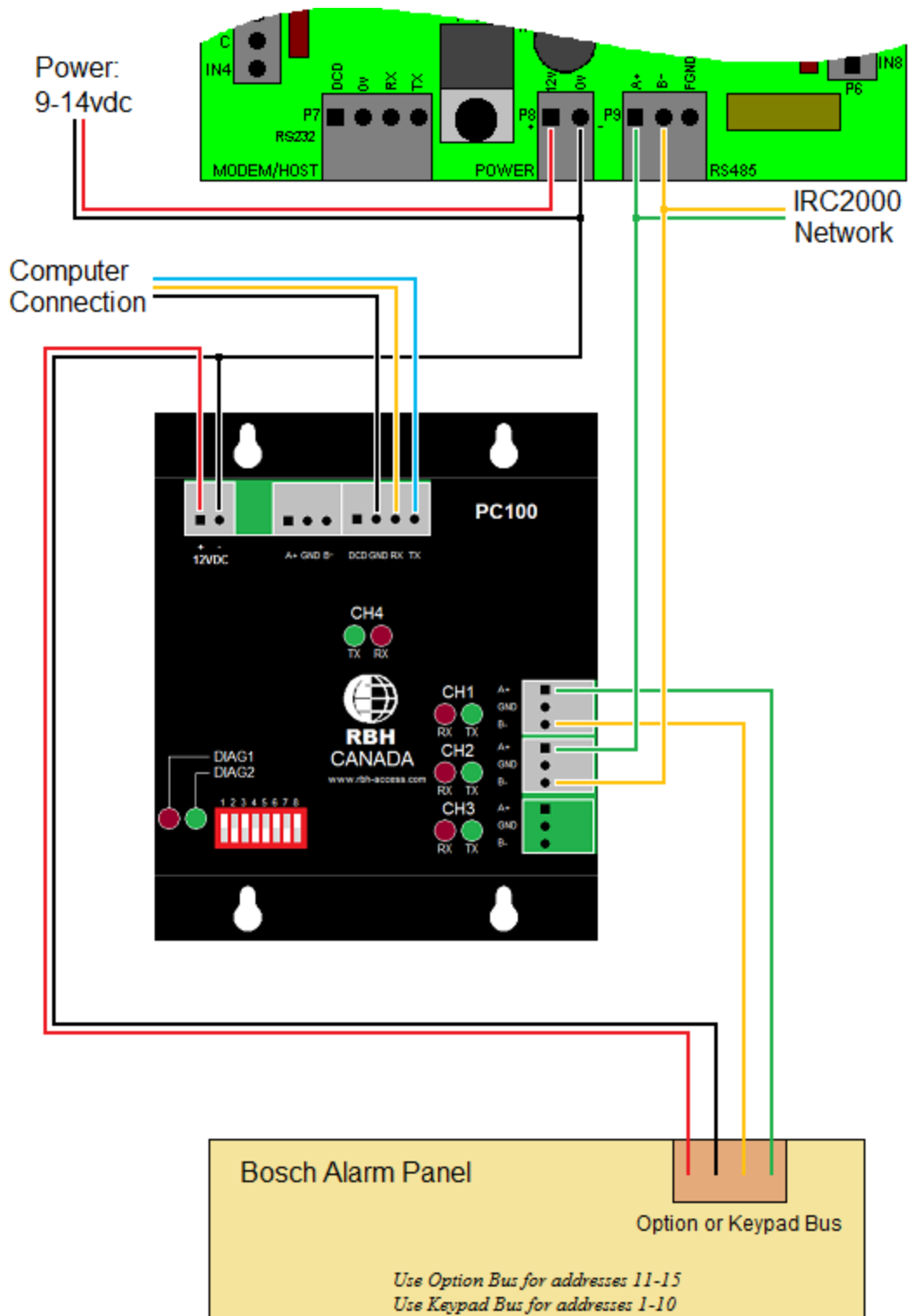3) The keypad address has been programmed into the alarm panel.

In order for the alarm panel to poll the emulated keypad the keypad assignment for the alarm panel should be programmed. Keypad addresses 1-10 connect to the keypad bus and addresses 11-15 is connected to the option bus.

The PC100 can monitor all keypads on the bus that are listed under panel properties "Keypads".

A Link to an Event will use an emulated keypad to enter a password followed by a command. If the password is not programmed into the alarm panel no operation will take place. Whenever a command is executed the green "DIAG2" LED will turn on. The green "DIAG2" LED will turn off when the alarm panel finishes its poll to the keypad.

Do not overload the power supply by connecting the IRC2000's along with their weigand readers to the Bosch +12v supply.

Power: 9-14vdc

Computer Connection

IRC2000 Network

PC100

RBH CANADA
www.rbh-access.com

Bosch Alarm Panel

Option or Keypad Bus

Use Option Bus for addresses 11-15
Use Keypad Bus for addresses 1-10

Summit Alarm Panel Interface

General description

The PC100 when made for the Summit application will interface the Electronics Line Summit alarm panel to the IRC2000 access control system.

1) (RS232, RS485, TCP/IP) Host – for communication with the PC software running Integra32™.

2) (RS485) Panel – for connection to the LSCP bus on the Summit alarm panel.

3) (RS485) IRC – for connection to the Access control system.

All channels are programmed for a baud rate of 9600 8-bits no parity and all Integra32™ panels need to be programmed for 9600 baud.

All activity is synchronized to the Summit LSCP bus. If the bus is disconnected all activity on the PC100 will halt. The PC100 acts like a zone expander to the Summit panel allowing up to 32 zones. Each zone is mapped to an element in the IRC network. The state of each element in the IRC network will cause a zone to appear open or closed.

The PC100 acts like an IRC panel at address 32 to the host. The host can poll the PC100 to see if it is online, request status, write to memory, and update flash memory.

IRC2000 panels connected along with the PC100 must be running firmware version 76 or higher for the PC100 and the IRC2000 panels to function together correctly.

Programming an Arm/Disarm key-switch

When an Access Granted message is used as a source for an input, the status of the alarm panel is checked before execution is allowed. If the function is to disarm the panel and the panel is already disarmed no action will take place. Conversely if the function is to arm the panel and the panel is already armed the command will be ignored.

The key-switch functionality works on the basis of a momentary contact. Whenever the button is pushed the alarm panel will change states if possible when the switch returns to its closed position. It is not allowed to arm if an exterior zone is open for example.

Each zone can be programmed manually through the keyboard interface.

There are two types of arming allowed - STAY and AWAY.

Sharing a door contact

It is possible to use the door contact of the access control system to be mapped to the door contact of the alarm panel as long as the reporting for the door contact is enabled by software.

Using Alarms

Three types of alarms with A or B readers are allowed.

DHO alarm reader "A"
DHO alarm reader "B"
Forced entry reader "A"
Forced entry reader "B"
Reader Tamper "A"
Reader tamper "B"

Multiple Combinations

For multiple combinations of inputs/outputs and events a spare output on an IRC panel can be assigned this functionality, through the use of links. The output can be assigned to a Summit input and instructed to follow.
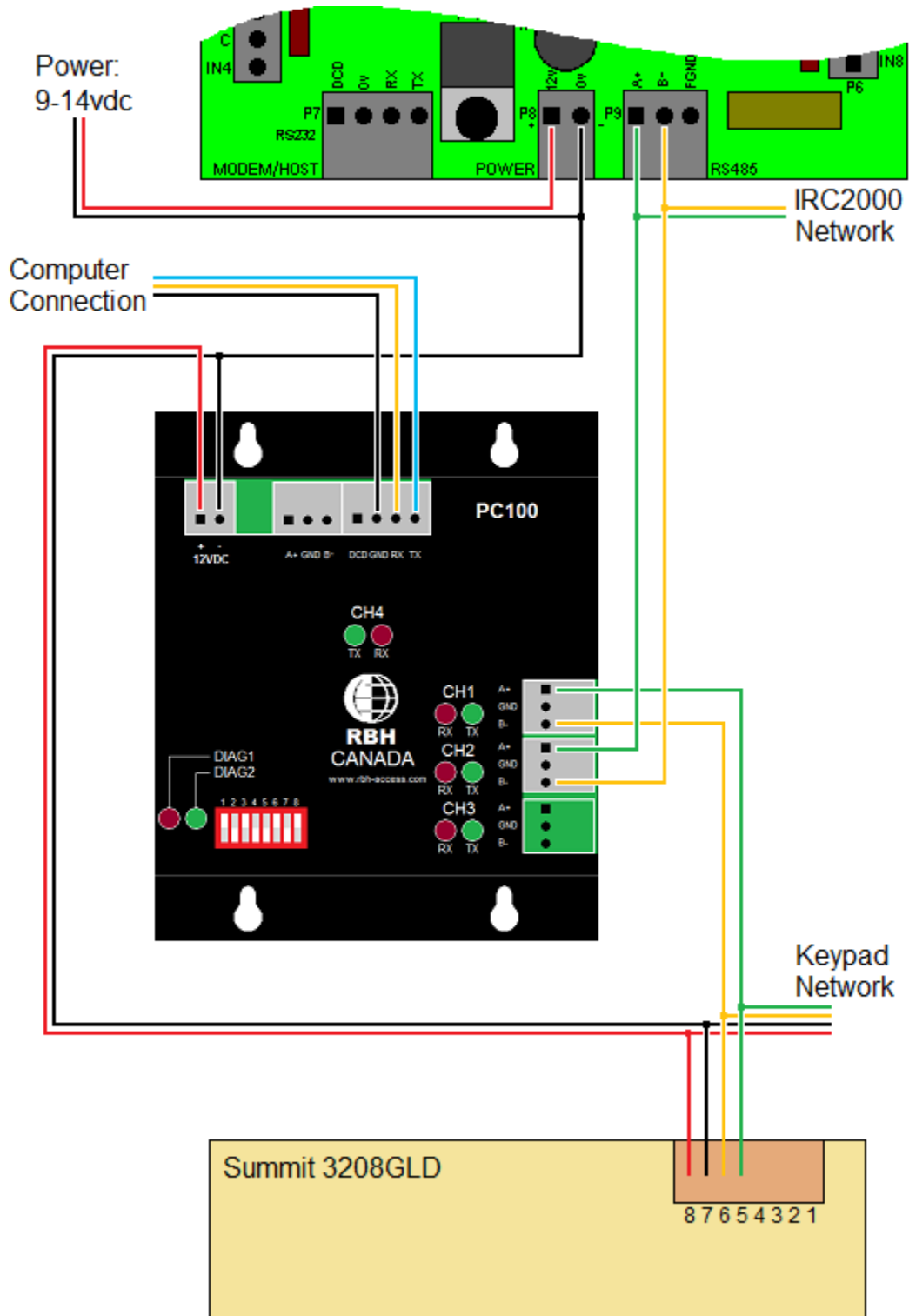
S p e c i f i c a t i o n s

IRC - 2 0 0 0   S p e c i f i c a t i o n

Controller Power Requirements: 9 – 14V DC

Current Consumption: 250ma

Flash ROM: Download firmware upgrades from the PC to IRC-2000

System Capacities:

	IRC-2000's per System	Maximum of 32
	Readers per IRC-2000	2
	Cardholder (normal)	Maximum 5,000
	(Extended)	Maximum 8,000
	Event Log per IRC-2000	Maximum 1,400

Network Connection:

	Type	RS-232 or RS-485
	Serial Port Speed	9600, 28800, 38400, or 56000

Real Time Clock: Dallas DS1994 with battery back up

Housing dimensions: **H** 12in. x **W** 14in. x **D** 3½in.

Operating temperature: 0 to 70°C (35 - 150°F)

Operating Humidity: 20 to 80% RH (*non-condensing*)

PC Connection: Can be connected via RS232, RS485, or by Modem

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URC-2000 Specification

Controller Power Requirements: 9 – 14V DC

Current Consumption: 200ma

Flash ROM: Download firmware upgrades from the PC to URC-2000.

System Capacities:

URC-2000's per System	Maximum of 32
Readers per URC-2000	2
Cardholder	Maximum 3,000
Event Log per URC-2000	Maximum 1,400

Network Connection:

Type	RS-485
Serial Port Speed	9600, 28800, 38400, or 56000

Real Time Clock: Dallas DS1994 with battery back up

Board dimensions: **H** 3in. x **W** 6½in.

Operating temperature: 0 to 70°C (35 - 150°F)

Operating Humidity: 20 to 80% RH (*non-condensing*)

PC Connection: Can be connected via RS485.

P C - 1 0 0   S p e c i f i c a t i o n

Controller Power Requirements: 9 – 14V DC

Current Consumption: 150ma

Flash ROM: Download firmware upgrades from the PC to PC-100.

System Capacities: PC-100's per System Maximum of 1

Network Connection: Type RS-232 and RS-485
Serial Port Speed 9600, 28800, 38400, or 56000

Real Time Clock: Dallas DS1994 with battery back up

Board dimensions: **H** 4¼in. x **W** 4¾in.

Operating temperature: 0 to 70°C (35 - 150°F)

Operating Humidity: 20 to 80% RH (*non-condensing*)

PC Connection: Can be connected via RS232, RS485, or by Modem

E L C - 0 8   S p e c i f i c a t i o n

Controller Power Requirements: 9 – 14V DC

Current Consumption: 325ma (max.)

System Capacities: ELC-08's per URC2000   Maximum of 4

Network Connection: Type   RS-485

Relay Outputs: 1A @ 30vdc

Board dimensions: **H** 3in. x **W** 6½in.

Operating temperature: 0 to 70°C (35 - 150°F)

Operating Humidity: 20 to 80% RH (*non-condensing*)

Cable Specification

PC to Controller

RS232:   3 or 4-conductor shielded, 18 to 22 AWG
                             Maximum Cable Length
                             9600 baud   150 feet (50 meters)
                             56000 baud   50 feet (15 meters)

2 Wire RS485:   Single twisted pair, shielded 18 to 22 AWG
                             Maximum Cable Length
                             4000 feet (1200 meters)

IRC-2000/URC-2000 to Reader:

                             20 to 22 AWG, 6 or 8 conductor, stranded, shielded (*not twisted*)
                             Maximum Cable Length
                             22 AWG Cable 250 feet (75 meters)
                             20 AWG Cable 500 feet (150 meters)

PC-100

RS232 to PC: 3 or 4-conductor shielded, 18 to 22 AWG
                             Maximum Cable Length
                             9600 baud   150 feet (50 meters)
                             56000 baud   50 feet (15 meters)

2 Wire RS485 to panels: Single twisted pair, shielded 18 to 22 AWG
                             Maximum Cable Length
                             4000 feet (1200 meters)

Input / Output Port Circuit Loop:

                             2-conductor, 20 to 22 AWG
                             Maximum Cable Length
                             1000 feet (300 meters)

I n d e x

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