Integra 32™
A SECURITY MANAGEMENT SOLUTION BY RBH

UNC100 Integra/Axiom Light Manual

BUILDING SECURITY WORLDWIDE
RBH ACCESS

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2 Automatic Road, Suite 108
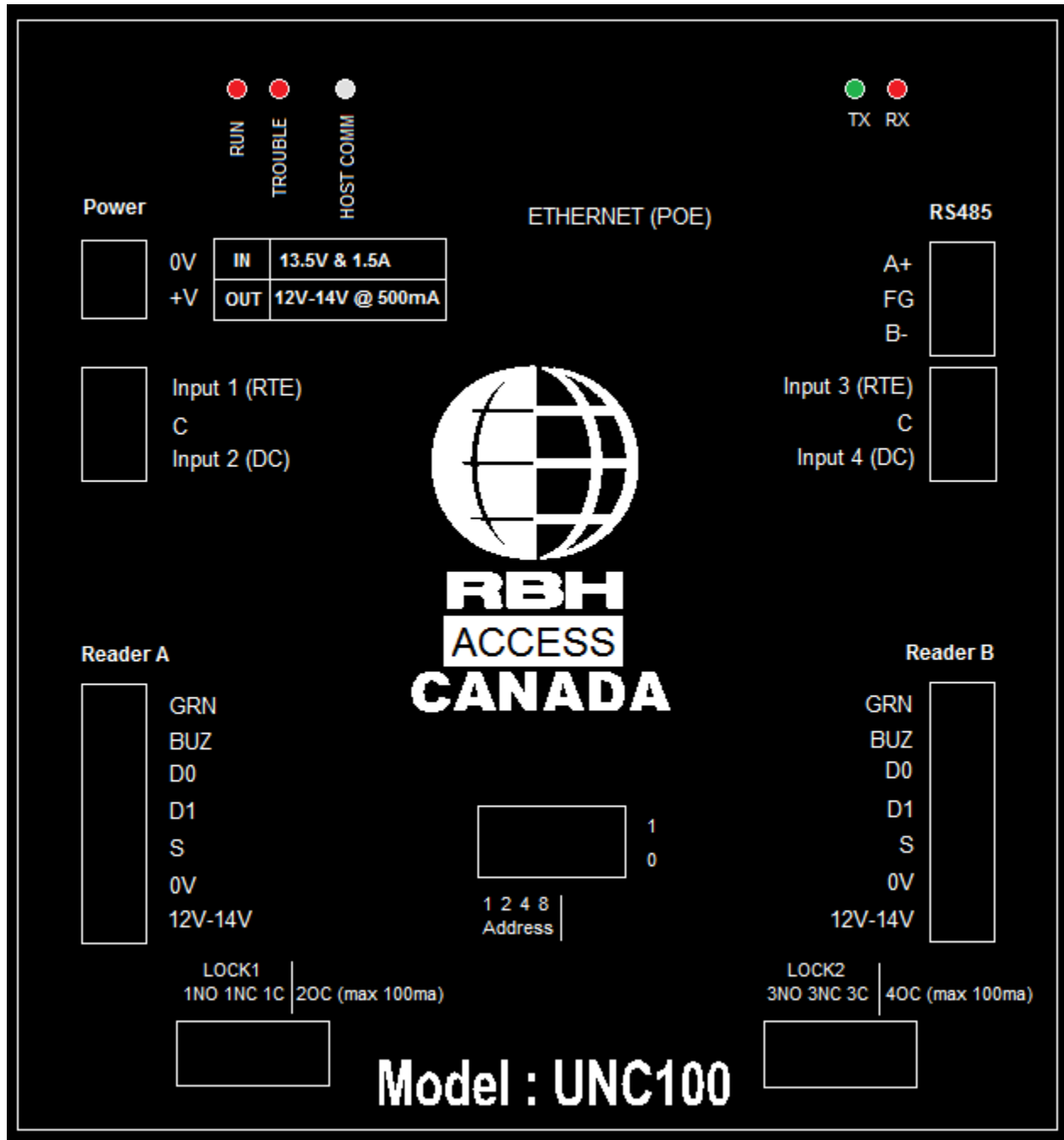Brampton, Ontario
CANADA
L6S 6K8

Revision History

Editor	Revision	Comment	Date mm/dd/yy
DM	1.0	First Release	08/13/13
RB	1.1	Removed reference to fire input Removed partial firmware upgrade (formats) Added dip-switch 5 Added Revision History Updated copyright Eliminated reference to rack mount type Clarified the use of the Power Input/ Output Moved all cable specs to one location. Moved all input specs to one location. Moved all output specs to one location. Reduced the number of pages.	03/19/14
DM	1.1	Minor editing of text.	03/24/14
RB	1.2	Changing output voltage from 12V to 12v – 14v Changing battery charger spec	07/21/14
DM	1.2	Editing of text: -Changed graphic -Removed relevant information -Confirmed correct specifications	07/30/14
DM	1.2	Added ULC text. Reconfigured order of pages.	08/06/14
RM	1.3	Minor editing of text. Replaced UNC-100 Reader connection picture	11/17/16
RM	1.4	Minor editing of fonts used. Replaced UNC-100 Dip switch settings on Page 9	09/08/22

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

UNC-100 Graphics

Introduction

The UNC100 has been designed as a two door access control panel with a built in local area network interface, that can also provide a single door in/out access point.
The network interface also utilizes a POE (power over Ethernet) converter.

ULC-S319-05 III

For ULC-S319-05 III compliance, all wiring into the panel's cabinet must enter through metal conduit. Also be sure to mount the panel in a protected area.

Battery

To protect the battery from being drained during shipping/storage of the UNC100, there is a small paper between the battery and the panel. This must be removed before powering up the panel.

Battery Charger

The battery charger routes input power from the 13.8v input source or POE module and constantly monitors the battery voltage.

Reverse Battery Protection

A combination of a three ampere diode and a 1.6 amp thermal fuse protects against accidental connection of a battery in the reverse direction.

Battery Test

A battery test cycle is operator initiated or scheduled. When initiated the charger is turned off and a 24Ω resistor provides a load to the battery for about ten seconds. If during this period the voltage drops below 10 volts a battery alarm message is sent to the host, otherwise a battery normal message is sent.

Fuse Monitoring

Besides monitoring the battery voltage the UNC100 also monitors the input voltage (DC), auxiliary voltage (aux) and the reader voltage (reader) and reports to the host whenever the state changes.

Diagnostic LED's

The RS485 circuit has a red and green LED to indicate when a signal is received or transmitted.

Host Comms LED is a bicolour LED that turns red when receiving data from the host, and turns green when transmitting of data.
The Run LED will flash slowly when connected to the host and quickly when not connected.
The Trouble LED will flash when there is a power problem such as a low battery or low auxiliary power is detected.

Tamper Detection

A tamper wire may be connected to JP1 located close to the center of the board. A short to this input is normal and an open is alarm.

Power Input / Output

Located on the top right corner of the board is a jumper that selects if the power terminals are to be used to supply power or provide power. Select "OUT" when using a POE supply and require 13.8V @ 500ma for other equipment.
When not using POE, the jumper should be set to "IN".
The UNC100 controller requires 13.8VDC to be supplied from an external source. (Note: Although the unit can run on 12VDC, you will need 13.8VDC to be able to charge backup batteries.

Communication

The UNC100 has one RS485 port and an Ethernet 10/100 interface. Communications from the host computer running Integra™ software is achieved via the Ethernet interface. The UNC100's RS485 channel may be programmed as either NONE, INTEGRA or IOC8. Use the DIP switches to select the baud rate for the Integra™ network communications as 9600, 38400, 57600, or 115200.

Networks

There are two networks supported by the UNC100 these are:

1) **Host Communications** through the Ethernet.
2) **RS485 Communications;**
    a) **Integra Network** for devices such as additional IRC-2000s or URC-2000s starting at address 2, and PC100s.
    b) **IOC8 Network** for IOC8 input/output expansion boards.

RS485 Applications

Application name	Description
None	No connection to other devices.
INTG	The Integra selection connects the UNC100 controller to other Integra units (e.g. IRC-2000s and URC-2000s) on a high-speed RS485 network.

IOC8	This selection is used to connect the UNC100 with up to four IOC8 boards and can <u>not</u> be used for connection with other Integra panels.

DIP Switch Settings

The UNC100 DIP switch controls the device's address and serial port baud rate.

Note: To clear panel memory – all DIP switches must be off and the unit re-powered.

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

Controller Addressing

| 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

RS485 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 other controllers. The baud rate must be the same as the baud rate set for all Integra™ units on the network. The default baud rate is 9600.

<table>
<tr><th colspan="3">Controller Baud Rate Selection</th></tr>
<tr><td>DIP Switch 6</td><td>DIP Switch 7</td><td>Baud Rate</td></tr>
<tr><td>OFF</td><td>OFF</td><td>9600</td></tr>
<tr><td>OFF</td><td>ON</td><td>38400</td></tr>
</table>

Host Connection

The controller is connected to the local Ethernet via a static IP address only [*default address is 192.168.168.125*]. To change the IP address of the unit you can either use IP Locator [*a utility program provided by RBH*] or Telnet. The communications configuration is set in the Integra™ software under the network's properties under the *Comms* tab.

PC to UNC100 Connection
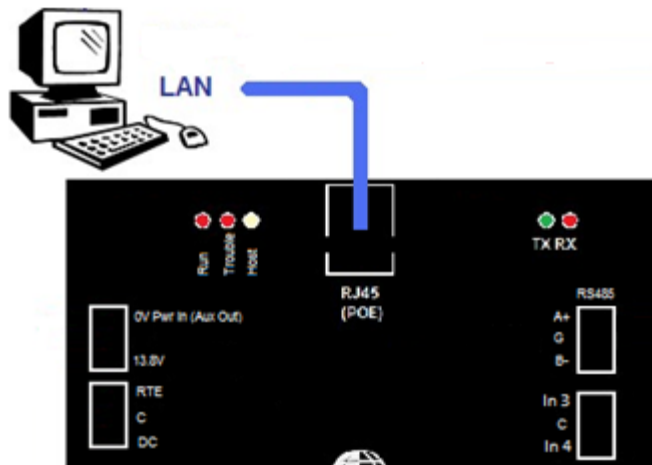
PC to UNC100 Connection

For ULC-S319-05 III compliance, all wiring into the panel's cabinet must enter through metal conduit. Also be sure to mount the panel in a protected area.

Name	Defaults	Description and notes
IP ADDRESS	192.168.168.125	Local Ethernet address.
SUBNET MASK	255.255.255.0	Local Ethernet mask.
IP GATEWAY	0.0.0.0	Local Ethernet Gateway (Router).

PORT NUMBER	3002	Primary port number.
ALT PORT NUMBER	3003	Alternate port number applies to "LAN" application.
RS485	INTEGRA	Set the RS485 to INTEGRA in order to connect via RS485 to the PC and other Integra™ devices.
Telnet Password	password	This is a string of up to 10 characters that allows the user access to this program.

Integra™ Network

URC2000 panels may also be used in place of IRC-2000 panels.
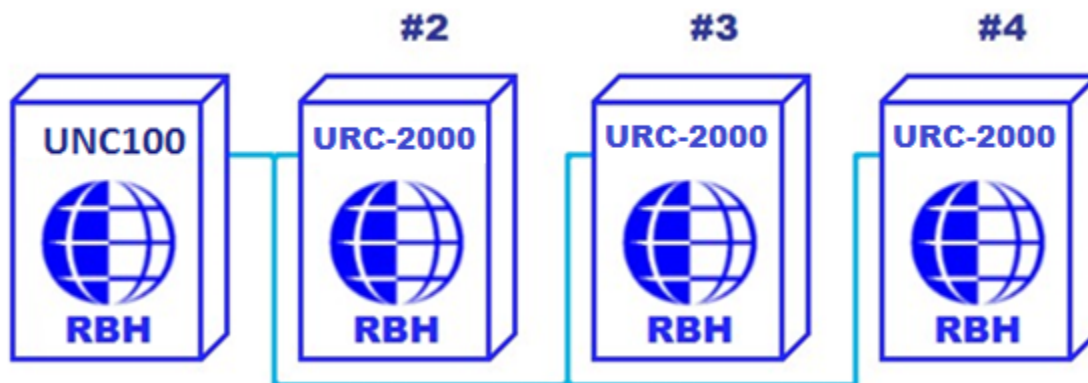
Note: When UNC100 panels are used in conjunction with IRC2000 and URC2000 panels the last panel in the line must be terminated.
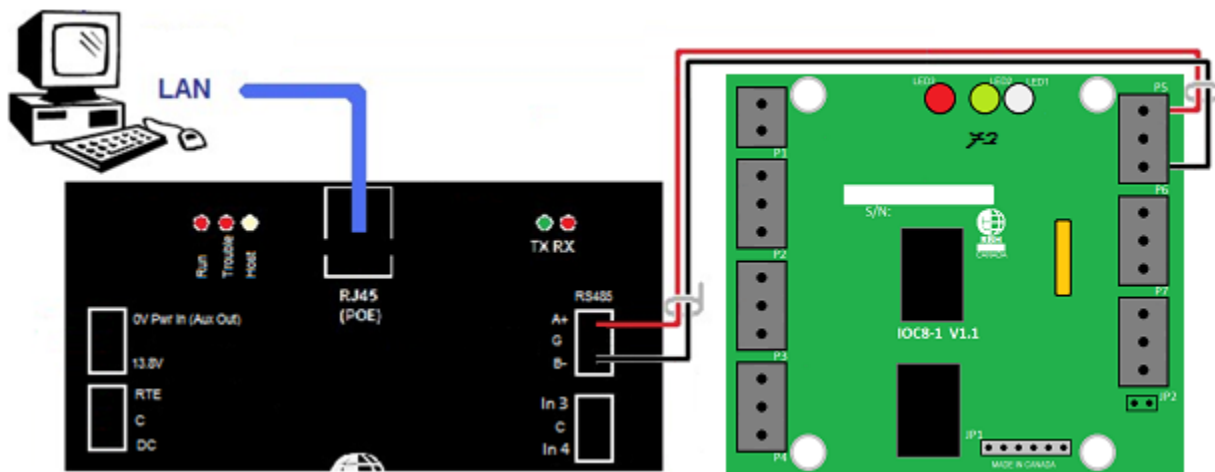
UNC100 & IOC8 Connection

Up to four IOC8 boards may be connected to a UNC100. The connection is made through the RS485 port and will only connect IOC8s.
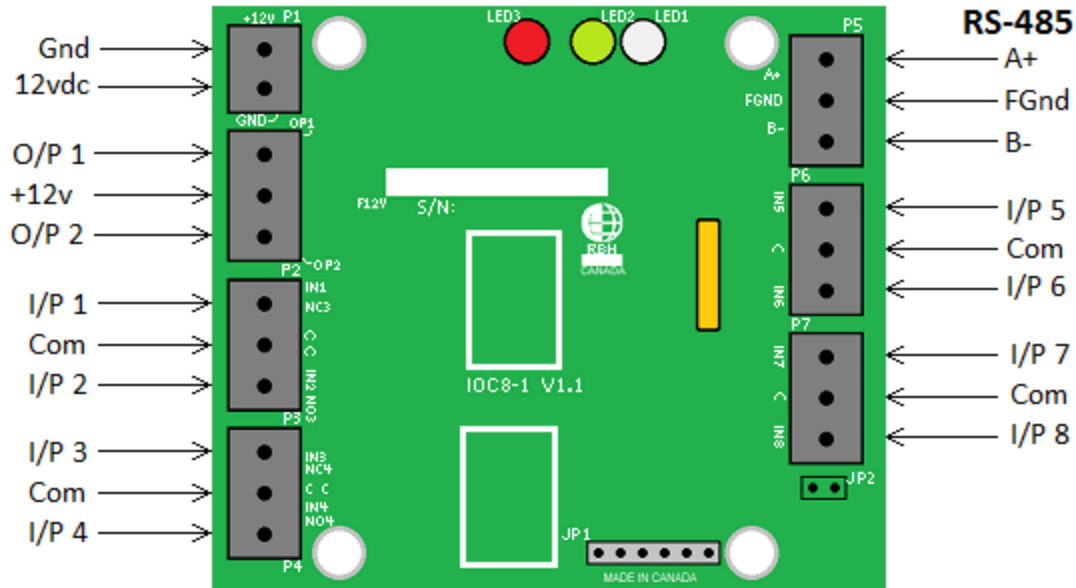
Note: Only UNC100s added as 'UNC100 with IOC8' will be configured to connect to IOC8s, and will only connect to IOC8s and will __not__ connect to other Integra boards. Other Integra boards still be added to the system via a different network (i.e. a different IP address).
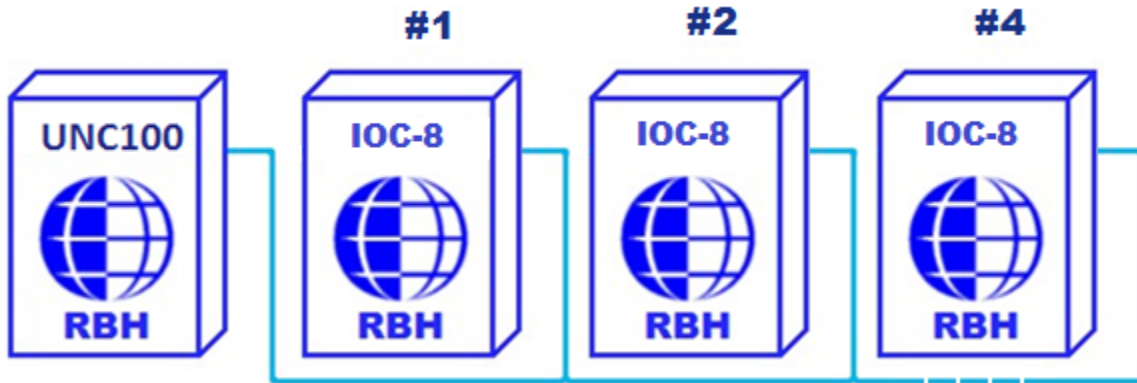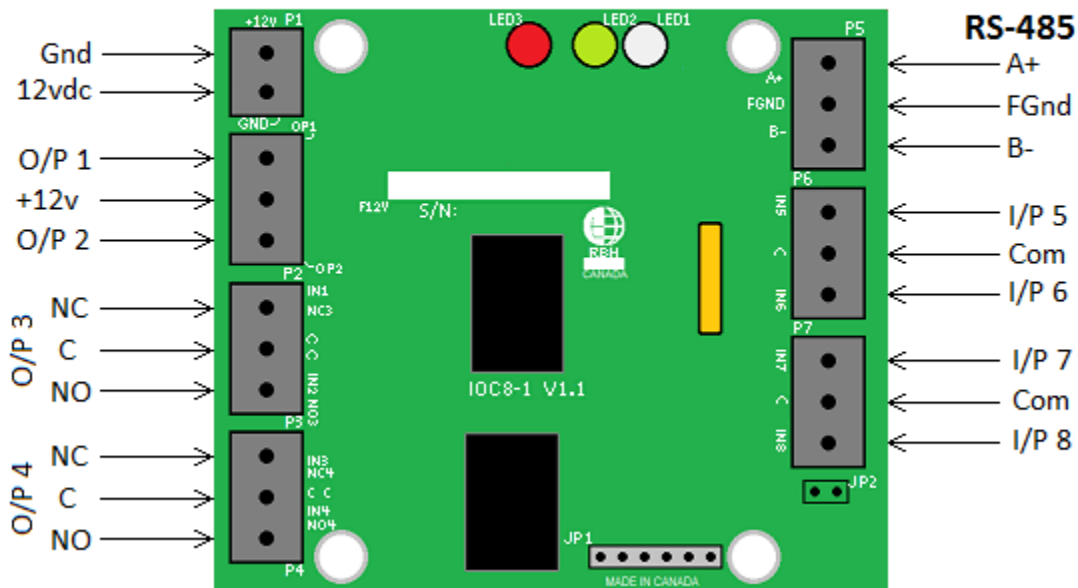

The IOC8 comes in two types. One version with eight programable inputs and two open collector outputs. The other version with the four programable inputs and four outputs, two open collector and two form C relays. Both can be wired to the UNC100 on the same RS485 port.

IOC8 8x2
Wiring Diagram

Gnd	**RS-485**
12vdc	A+
	FGnd
O/P 1	B-
+12v	
O/P 2	I/P 5
	Com
I/P 1	I/P 6
Com	
I/P 2	I/P 7
	Com
I/P 3	I/P 8
Com	
I/P 4	

IOC8-1 V1.1

MADE IN CANADA

IOC8 4x4
Wiring Diagram

Gnd	**RS-485**
12vdc	A+
	FGnd
O/P 1	B-
+12v	
O/P 2	I/P 5
	Com
O/P 3 NC	I/P 6
O/P 3 C	
O/P 3 NO	I/P 7
	Com
O/P 4 NC	I/P 8
O/P 4 C	
O/P 4 NO	

IOC8-1 V1.1

MADE IN CANADA

For details on Input (I/P) wiring see page Input (I/P) Circuit Types 18.
For details on Output (O/P) wiring see page 16.

RS485 Configuration

The RS485 port has three possible selections; **NONE**, **INTG**, & **IOC8**. Select **NONE** if the port isn't going to be used. **INTG** is used for PC connection and connection to other Integra panels. **IOC8** will connect only to IOC8 boards and will not connect to any other Integra panels.
Note: The UNC100 will connect to either other Integra panels or to IOC8 boards, not both.

Reader Interface

Two standard Wiegand interfaces provide the following connections for typical proximity readers. Thermal fuse protected power (500ma @13vdc).

Reader Tamper Input(s): Initially, if open it will be ignored, but once a short is connected it will report a reader tamper alarm whenever the input is opened.

LED and beeper outputs are open collector current limited to 100ma.

Reader Connection

UNC-100 to 12-Volt Reader Connection Diagram[1]
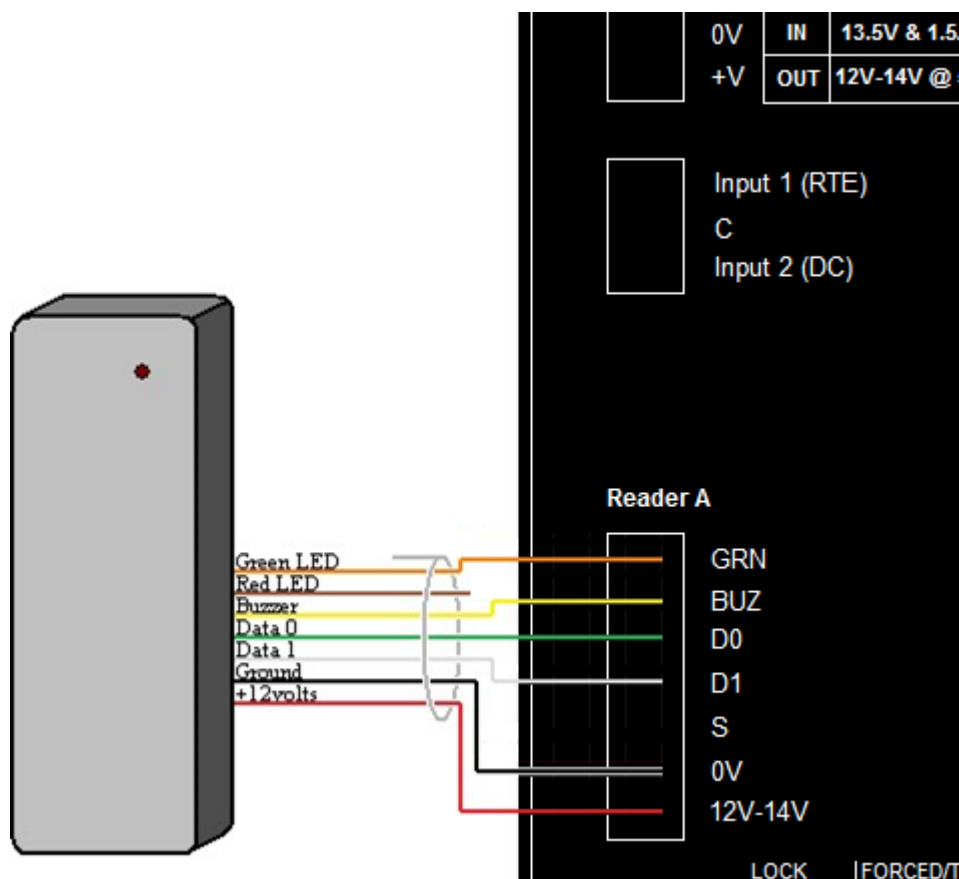
For ULC-S319-05 III compliance, all wiring into the panel's cabinet must enter through metal conduit. Also be sure to mount the panel in a protected area.

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[1] Reader wire colours may vary for different reader manufactures. Please verify your wiring.
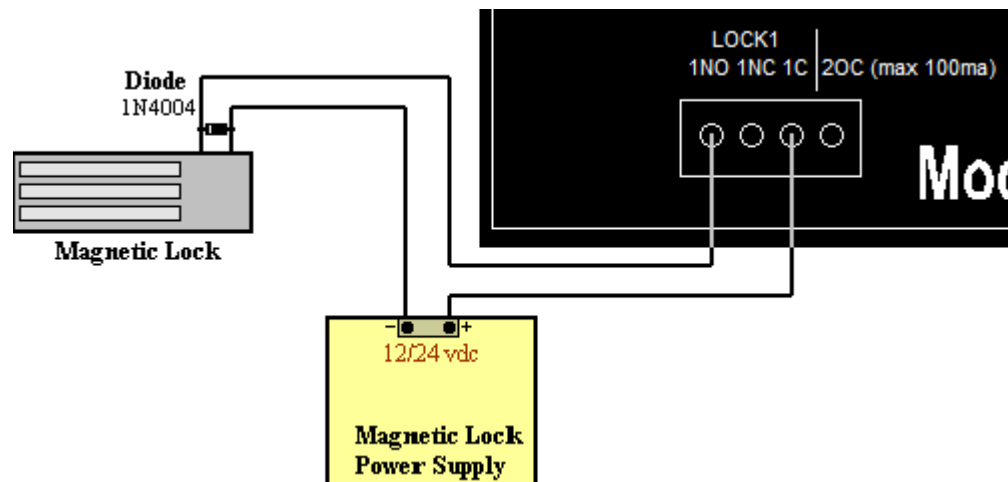
Outputs (O/P)

There are two form C relays and two open collector outputs that can be programmed as general purpose or default applications. The contacts are rated for 2 amperes at 30vdc. The recommended use of the relays is to provide isolated outputs for driving electric strikes or magnetic locks at a maximum voltage of 24v. The open collector outputs are current limited to 100 milli-amperes direct current only.

Number	Default Application	Type
1	Lock Reader 1	Relay form C
2	Forced Entry Alarm Reader 1	Open Collector (100ma)
3	Lock Reader 2	Relay form C
4	Forced Entry Alarm Reader 2	Open Collector (100ma)

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 applied power is removed. Possible disruption of operation could occur if this interference gets on to the electronic circuit board.

This interference can be suppressed by placing a diode (*1N4001 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.

Output Operation

General Purpose Output

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

Lock Output

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.

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.

Forced / Tamper

The Forced/Tamper output turns on if the door is forced open or if a reader tamper is detected. This output remains on for as long as the alarm condition exists.

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.

For ULC-S319-05 III compliance, all wiring into the panel's cabinet must enter through metal conduit. Also be sure to mount the panel in a protected area.

Supervised Inputs

The UNC100 has 4 fully supervised inputs. Each input is individually programmable from the PC Each input 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 resistors normally closed", 1k represents a restored state and 2k represents an alarm state. If the loop resistance changes by more than 15% but not enough to enter the next state, an illegal state is reported.

Input (I/P) Circuit Types

The UNC-100 supports 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.
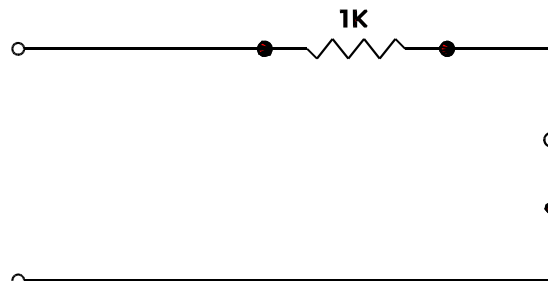
Normally Closed, No Resistor	
Loop Resistance	State
Short	Restore
Open Circuit	Alarm
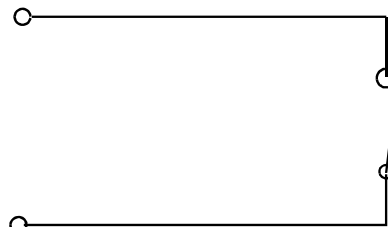
Normally Open, No Resistor	
Loop Resistance	State
Short	Alarm
Open Circuit	Restore
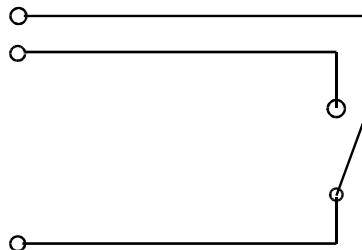
Normally Closed, One Resistor	
Loop Resistance	State
Short	Trouble
1k	Restore
Open Circuit	Alarm

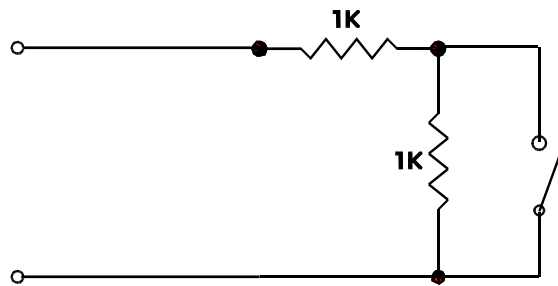| Normally Closed, Two Resistor	
Loop Resistance	State
Short	Trouble
1k	Restore
2k	Alarm
Open Circuit	Trouble
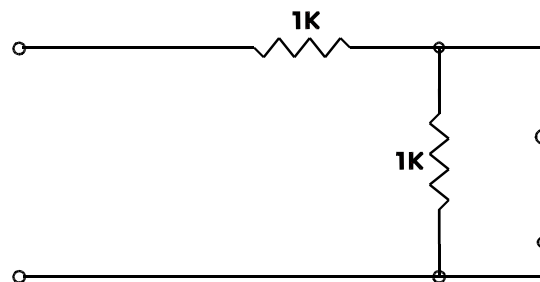
This circuit provides a high degree of supervision and detects both short and open circuit fault conditions. Use this circuit in high security applications.
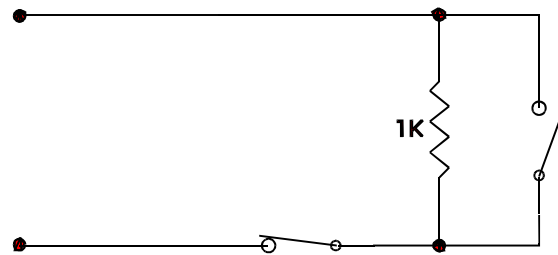
Normally Open, One Resistor	
Loop Resistance	State
Short	Alarm
1k	Restore
Open Circuit	Trouble
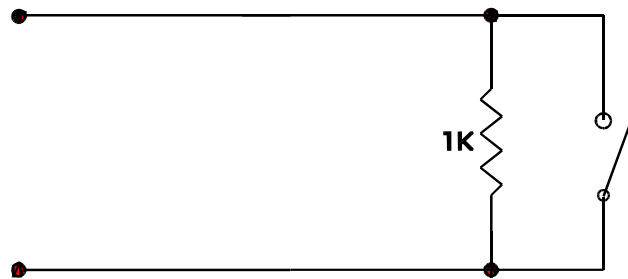
Normally Open, Two Resistor	
Loop Resistance	State
Short	Trouble
1k	Alarm
2k	Restore
Open Circuit	Trouble

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.

Input Applications

Number	Default Application
1	General Purpose
2	RTE (Request to Exit) Reader A
3	DC (Door Contact) Reader A
4	RTE (Request to Exit) Reader B
5	DC (Door Contact) Reader B

Request to Exit (RTE)

The Request to Exit [RTE] input is connected to a push button mounted on the door or to a motion detector mounted near the door. A normally open or normally closed button can be used and the circuit type can be

programmed from the PC. Activating the RTE input will unlock the door. The RTE can be disabled by time zone.

Door Contact (DC)

The Door Contact [DC] input monitors the state of the door. Forced entry, door held open alarm, and door held open warning require monitoring of the door state.

General Purpose

The General Purpose selection is used for inputs that are not directly associated with the access point.

Access Point Operating Modes

High Security

The Red LED flashes quickly.
In High Security Mode, only cardholders with *High Security Privilege* are allowed access.

Unlocked

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

Tamper

The Buzzer sounds continuously.

Lockout Alarm

The Buzzer beeps rapidly.
A lockout alarm occurs when a user-defined number of "Access Denied" messages occur.
These messages can include "Invalid Card Number", "No Access at this Time", "No Access at this Reader", or "Invalid PIN Code".

Door Held Open Warning

The Buzzer beeps slowly.

Door Held Open Alarm

The Buzzer sounds continuously.

Keypad / Reader Combination

The Buzzer emits a short beep 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.

For ULC-S319-05 III compliance, all wiring into the panel's cabinet must enter through metal conduit. Also be sure to mount the panel in a protected area.

UNC100 Specification

Controller Power Requirements	12 – 14vdc
Current Consumption	250mA
Processor	32 bit micro controller
Memory	2MB
Panels per Network	16
HOST Ethernet speed	10/100 TCP/IP Ethernet, RS485 4 wire
HOST RS485 Speed	9600, 38400, 57600, 115200 baud
Clock/RAM backup battery	3v Lithium battery CR1632
Real Time Clock	Built-in as standard
Watch Dog Circuit	Built-in as standard
Board Dimensions	H 5½ in x W 5 in (14 *x 12½ cm*)
Operating Temperature	0 to 70C (*35 - 150F*)
Operating Humidity	20 to 85% RH (*non-condensing*)

Cable Specification

Circuit Function	Cable type	Length
PC To Controller (Ethernet)	CAT5 communications cable	323 feet (100 meters)
PC To Controller (RS485)	Twisted pair, shielded, stranded 18 to 22 AWG	2000-4000 feet (600-1200 meters)
Reader	20 to 22 AWG, 6 or 8-conductor, stranded, shielded (*not twisted*)	500 feet (1*50 meters*)
Input / Output Port Circuit Loop	2-conductor, 20 to 22 AWG	1000 feet (*300 meters*)