

# IntelliProx – SM-2000

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## 1.0 Features of the *IntelliProx* System

The *IntelliProx* is capable of operating as a stand-alone single-door entry control system or as a Wiegand output reader with optional, back-up local door control. Small and unobtrusive, the *IntelliProx* can be mounted almost anywhere within 500 feet of the reader (depending upon the type of reader and the maximum cable run allowed by that reader). When used with a host controller, the *IntelliProx* can be mounted up to 500 feet from the host. Therefore, with the appropriate reader, the reader to host distance can be as great as 1,000 feet.

### 1.1 Stand-alone Entry Control System

The *IntelliProx* has a capacity of 500 user cards, maintained in nonvolatile memory. The cards are held in "slots" within the *IntelliProx*'s internal memory. A Form-C relay output provides normally open and normally closed contacts for door lock control. A door sense input provides door status for local annunciation if the door is held open. Programming is accomplished using either D-Lite card database management software or the Keri Hand-Held Programmer (P/N: HPP-22). With both the D-Lite program and the Hand-Held Programmer, access to the *IntelliProx* is controlled with Personal Identification Numbers (PINs). A user must enter the PIN associated with the *IntelliProx*, and the PIN associated with the host computer (when using D-Lite), before access to the *IntelliProx* unit is granted.

D-Lite is a simple, spreadsheet based *IntelliProx* slot/card management program that can enroll cards, upload a set of cards to an *IntelliProx* unit, or download a set of cards from an *IntelliProx* unit. Refer to the D-Lite Users Manual for programming instructions, P/N 01869-001. D-Lite can be used when the *IntelliProx* is used as a stand-alone entry system; it is not compatible with the *IntelliProx* when the *IntelliProx* is used as a 26-bit Wiegand output reader. Communication between a host computer (with the D-Lite program) and the *IntelliProx* unit is done through an RS-232 serial connection.

The Hand-Held Programmer works like a television remote-control unit, issuing commands to the *IntelliProx* with simple two or three step push-button functions. Refer to the HPP-22 Quick Start Guide for programming instructions, P/N 01831-003.

### 1.2 Wiegand Output Reader

The *IntelliProx* has a standard 26-bit output, allowing reader data to be passed through to a host controller. The *IntelliProx*'s LED can be driven by two control lines or by a single control line to accommodate the host controller's configuration. Optionally, the door lock control relay may be used for back-up local door control should the host controller go down. An *IntelliProx* unit can be easily integrated with larger access systems relying on the host controller's larger database, or it can be used in conjunction with the host database for alternative applications. Host controllers that provide 5 to 12 VDC can power the *IntelliProx*.

**NOTE: For proper Wiegand operation, KC26X, PKT26X, or MT96X credentials must be used.**



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## 1.3 RS-232 Output

The RS-232 serial connection used for D-Lite communication also transmits card read data. If the *IntelliProx* unit is in stand-alone mode, Keri proximity card ID data is sent out the RS-232 serial data lines. If the *IntelliProx* unit is in Wiegand Output mode, Wiegand card ID data is sent out the Data 0/Data 1 lines and the RS-232 serial data lines. A host computer or access panel can use the RS-232 serial data lines as an alternative method for receiving card ID data from the *IntelliProx* unit. Data is transmitted in an ASCII stream at 9600 baud with 8 data bits, 1 stop bit, and no parity.

However, when receiving data in this manner, the host computer or access panel cannot transmit data back to the *IntelliProx* unit through the RS-232 serial data lines. Whenever the *IntelliProx* unit receives data through the RS-232 serial data lines, the *IntelliProx* unit assumes it should be in D-Lite communication mode and automatically switches to D-Lite communication mode. When in D-Lite communication mode the *IntelliProx* unit's LED flashes Red when the first byte is received. The unit continues flashing Red and ignores card reads until the unit switches out of D-Lite mode (done by a disconnect command from the D-Lite software or after 60 seconds of no communication).

## 2.0 Specifications

The *IntelliProx* system is made up of an SM-2000 smart module and a standard Keri Systems proximity reader.

Smart Module SM-2000 (see Figure 1):

Input Voltage	5 to 14 Volts DC
Current Consumption	50 mA, Nominal
Operating Temperature Range	0° to 65° Centigrade
User Capacity	up to 500 Cards or Tags
Relay Contact Rating	1 Amp at 30 Volts DC or AC
Dimensions	3.5" High x 1.8" Wide x 0.7" Deep (8.89 cm x 4.57 cm x 1.78 cm)
Weight	5 Ounces (0.14 kg)
Door Unlock Time	7 Seconds (factory default cannot be changed)
Door Held Open Time	7 Seconds (factory default cannot be changed)

SM-2000 plus Reader (refer to the appropriate Reader Quick Start Guide):

Current Consumption with Readers		
IP-2003/-2004	100 mA, Typical	(MS-3000/MS-4000 Reader)
IP-2005	150 mA, Typical	(MS-5000 Reader)
IP-2007	250 mA, Typical	(MS-7000 Reader) <sup>1</sup>

## 3.0 Cautions

An *IntelliProx* must have clean power to ensure best operating conditions. Regulated, linear power supplies are recommended. Switching power supplies and rectified AC power supplies cannot be used as they are known sources for radiated electromagnetic interference that affects *IntelliProx* operation.

When using the *IntelliProx* in place of standard proximity readers ensure that Keri KC-26 (or compatible) 26-bit cards are used. The use of alternate format cards will not output a proper 26-bit identification number to the host system, making card enrollment difficult if not impossible.

1. If the host controller provides 5 VDC reader power, the MS-7000 reader should be powered by a separate power supply to ensure they have enough power for proper operation

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A jumper is available for resetting the *IntelliProx's* PIN and memory. The *IntelliProx* will not operate if JP1 is installed; JP1 must be removed for normal system operation. If JP1 is installed and power is applied to the *IntelliProx*, the PINs are reset to the factory default values and to the Dual-Line LED control configuration. If power is applied again with JP1 still installed, all information in system memory is erased and cannot be recovered unless it had been previously uploaded to a data file stored by the D-Lite program.

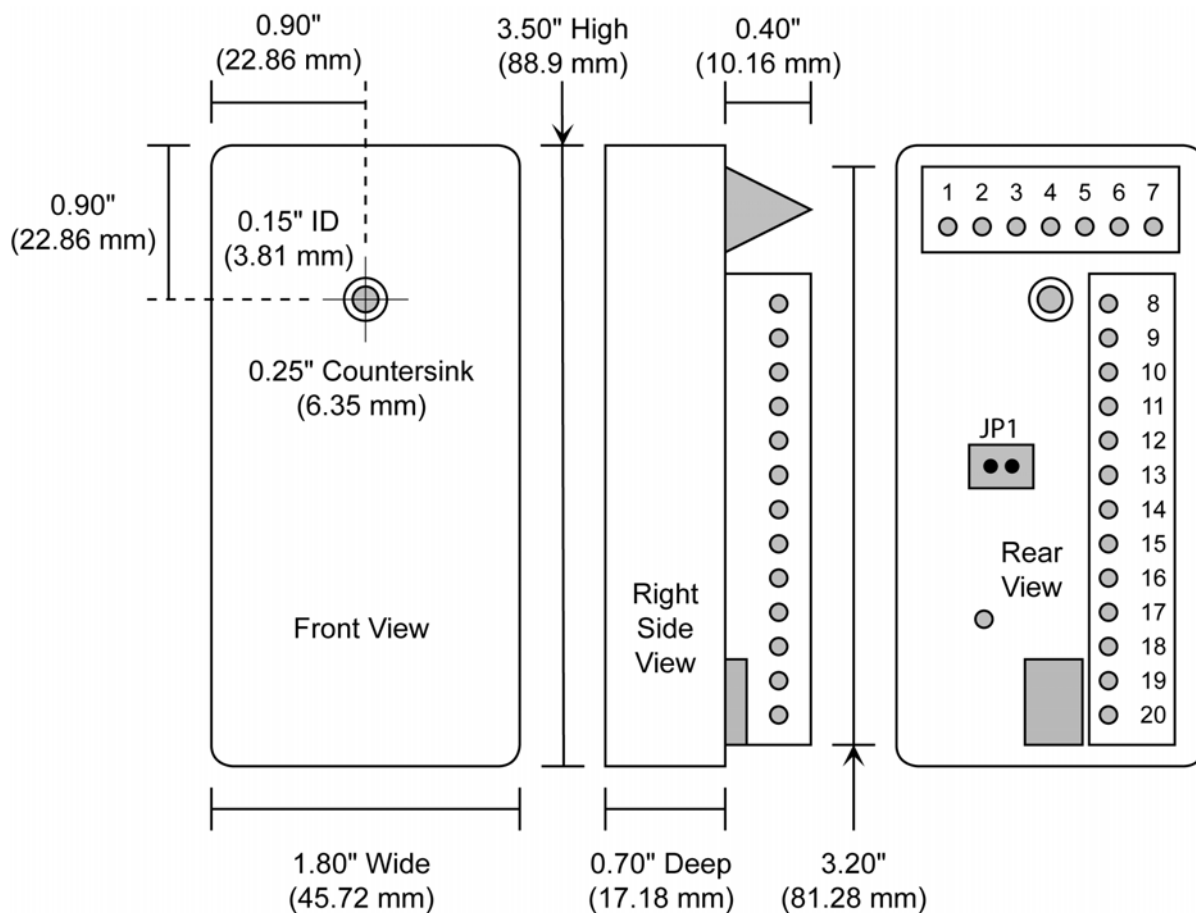


Figure 1: The *IntelliProx* SM-2000

## 4.0 Jumper Settings

There are no switches or jumpers required for normal operation. JP1 is used only for clearing the *IntelliProx's* PIN and system memory (see Figure 1). This should be done the first time the *IntelliProx* is powered on, prior to entering slot/card data, to remove any spurious information that may be in the *IntelliProx's* database. Once the database is cleared, any information that was in the database is erased and can only be recovered if the database had been saved using the D-Lite program. JP1 must be removed for normal system operation. Refer to Section 9 - First Time Power On Procedure: Pin and Memory Reset, LED Mode for instructions.

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## 5.0 IntelliProx Connections in Stand-Alone Mode

When connecting the *IntelliProx* unit (see Figure 2):

- There must be a quality earth ground connected to either the negative terminal of the power supply or to Pin-13 of the *IntelliProx*.
- When wiring the reader to the *IntelliProx*, connect the reader cable's shield wire to Pin-6.
- For best operating conditions, attach a transient suppression device (such as a 1.5KE39C transorb or a Keri Systems Isolation Relay, p/n IRP-1) across the power lines of the electric lock device.
- A door contact switch (normally closed) can be used to indicate the status of the door - open or closed. If a door contact switch is not used, a jumper must be attached between Pin-17 (Door Sense Input) and Pin-13 (Ground).
- A request to exit (RTE) switch (normally open) can be used to indicate if a request to exit through a secure door has been made. When the *IntelliProx* receives an RTE signal the door is unlocked to allow exit.

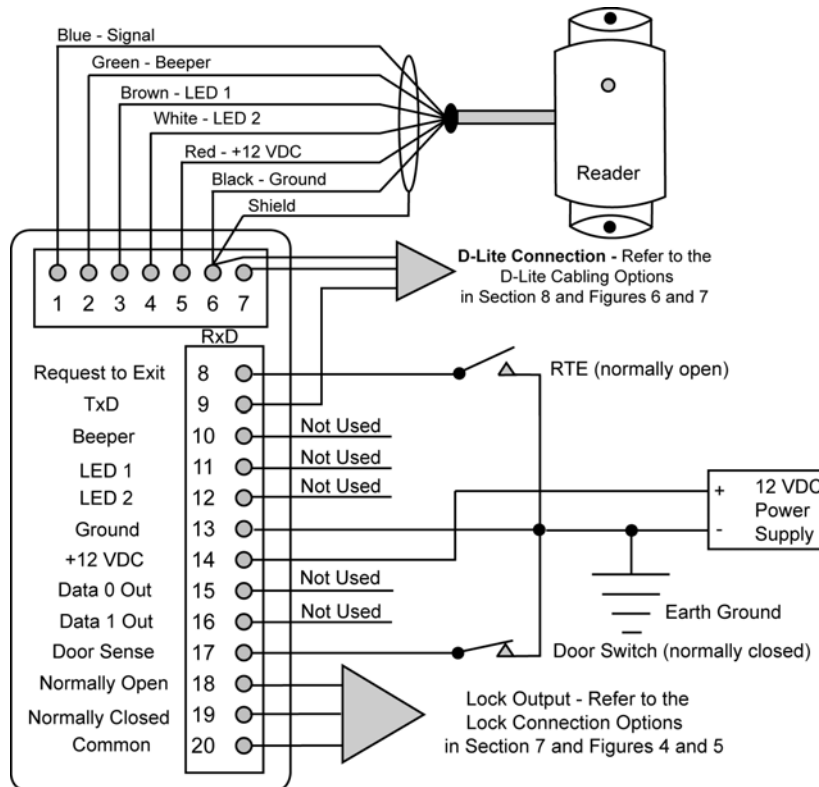


Figure 2: Stand-Alone Controller Mode Connections

## 6.0 IntelliProx Connections in 26-Bit Wiegand Reader Mode

When connecting the *IntelliProx* unit (see Figure 3):

- KC26X, PKT26X, or MT26X credentials must be used for proper Wiegand operation.
- There must be a quality earth ground connected to either the negative terminal of the power supply or to Pin-13 of the *IntelliProx*.
- Power for the *IntelliProx* may be provided by the host controller or by a separate power supply. If the *IntelliProx* is powered by a separate power supply, ensure the grounds for the *IntelliProx* and the host controller are connected to provide a common ground reference for Wiegand data.
- When wiring the reader to the *IntelliProx*, connect the reader cable's shield wire to Pin-6.
- For best operating conditions if the lock relay is used to provide optional back-up door control, attach a transient suppression device (such as a 1.5KE39C transorb or a Keri Systems Isolation Relay, p/n IRP-1) across the power lines of the electric lock device.
- A jumper must be attached between Pin-17 (Door Sense Input) and Pin-13 (Ground).
- Except for a quick BEEP and LED flash when a card or tag is presented, the host controller is responsible for driving the beeper and the LED.
- The LED display mode may be programmed for either 2-line operation or 1-line operation. Instructions for setting the LED display mode are found in section 10, Standard Operation.
  - In 2-line operation, grounding the LED 1 signal (Pin 11) changes the reader's LED from Amber to Green and grounding the LED 2 signal (Pin 12) changes the reader's LED from Amber to Red.
  - In 1-line operation the LED 1 signal is not used. If the LED 2 signal is high, the reader's LED is Red. If it is low, the reader's LED is Green. If it is toggling at 1 kHz, the reader's LED is Amber.
- To use the IP as a backup door controller (one that continues to control a door if the host controller is offline) you must enroll cards into the *IntelliProx* using either an HPP-22 or the D-Lite software package. These cards would only be used when the host controller is offline.

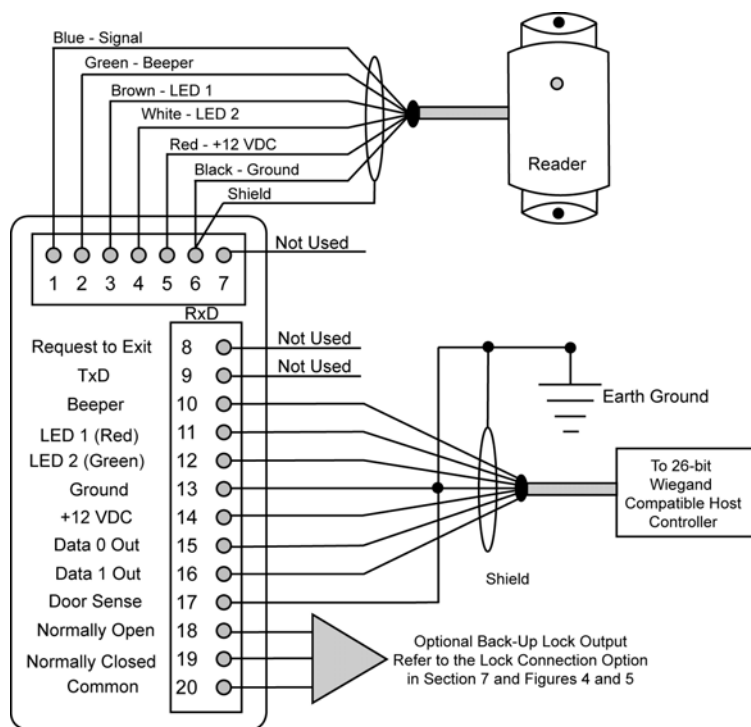


Figure 3: 26-Bit Wiegand Reader Mode Connections

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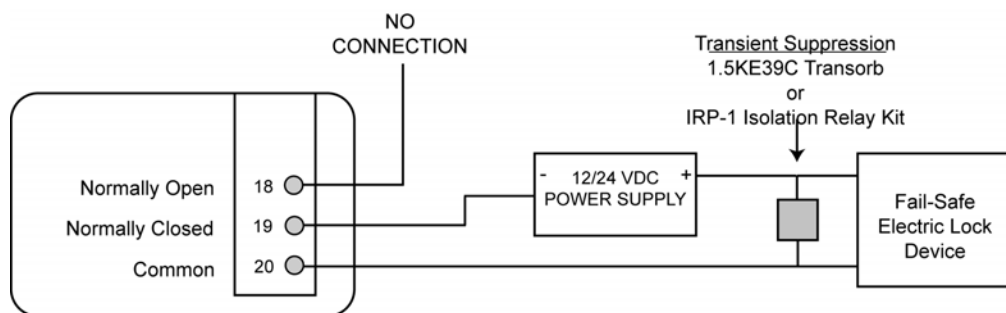
## 7.0 Lock Connection Options

When installing a door lock there are two things to consider: safety versus security, or should the door lock be "fail-safe" or "fail-secure".

### 7.1 Fail-Safe Door Lock

Fail-safe means that if the power should fail at a door (perhaps due to a power outage or equipment failure), the door will automatically unlock allowing entrance or egress. Power is required to keep the door locked. A fail-safe door ensures people will be able to enter and exit through that door in the case of an emergency. A typical fail-safe application may use a magnetic lock. In this application, the controller energizes the lock relay causing the lock relay to open, breaking the power to the magnetic lock, and allowing the door to be opened. Refer to Figure 4 for a sample wiring diagram.

**NOTE: DO NOT share the 24VDC Lock Power Supply with the IntelliProx unit.**

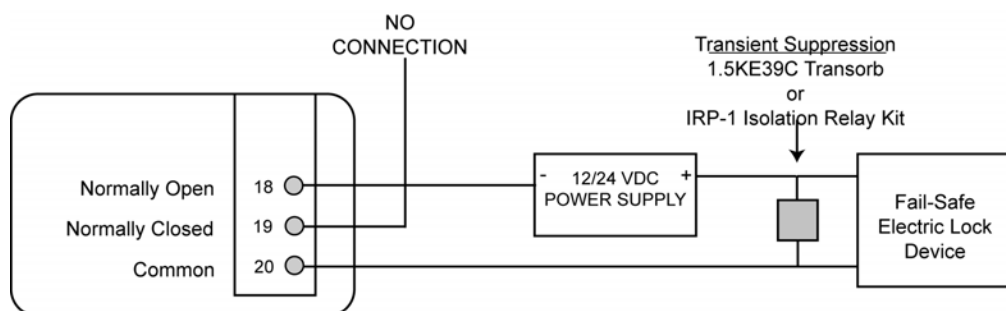


**Figure 4: Sample Fail-Safe Wiring Diagrams**

### 7.2 Fail-Secure Door Lock

Fail-secure means that if the power should fail at a door (perhaps due to a power outage or equipment failure), the door will automatically lock and not allow entrance but can continue to allow egress if a mechanical override device is present. Power is required to unlock the door. A fail-secure door ensures a secure area remains secure regardless of the situation. A typical fail-secure application may use a door strike. In this application, the controller energizes the lock relay, causing the lock relay to close, providing power to the release mechanism on the door strike, and allowing the door to be opened. Refer to Figure 5 for a sample wiring diagram.

**NOTE: DO NOT share the 24VDC Lock Power Supply with the IntelliProx unit.**



**Figure 5: Sample Fail-Secure Wiring Diagrams**

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## 8.0 IntelliProx to D-Lite Connections

Communication between the *IntelliProx* and the D-Lite software is done between the RS-232 serial port in the *IntelliProx* and a serial port in the host computer. The most common connection is made through a three-conductor, shielded cable using a DB-9F connector to connect to the host computer. Some computers might use a DB-25F connector. Refer to Figures 6 and 7 as appropriate for the computer you are using.

**NOTE:** Wire colors may be different than shown. Always verify pin to pin connections.

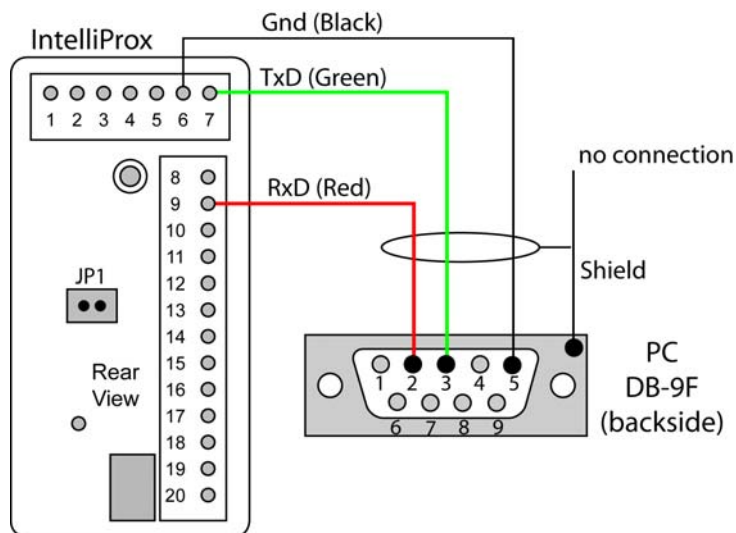


Figure 6: *IntelliProx* to DB-9F Connection

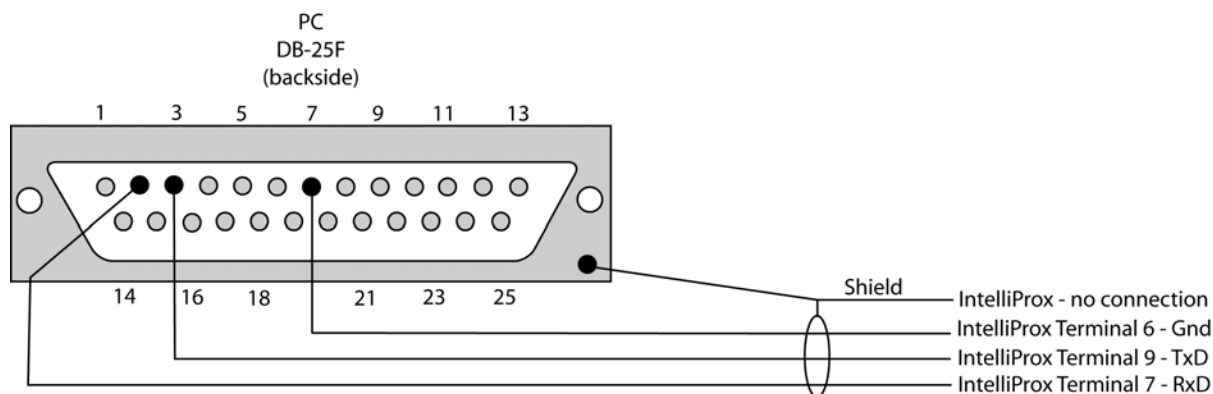


Figure 7: *IntelliProx* to DB-25F Connection

**NOTE:** Keri Systems does not supply the *IntelliProx* to DB-25F cable.

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## 9.0 First Time Power On Procedure: PIN and Memory Reset, LED Mode

Before powering on an *IntelliProx* for the first time, its system memory must be cleared. This removes any spurious information that may be in the *IntelliProx's* database. This will also reset the *IntelliProx's* PINs to the factory default values: "1234" for the *IntelliProx* and "0000" for the host computer (for use with D-Lite).

### 9.1 To Reset the PINs to the Default Values

1. Ensure the *IntelliProx* power is OFF.
2. Install JP1 (see Figure 1).
3. Turn the *IntelliProx* power ON. If the original PINs are not at the factory default values, they are changed to the default values, the reader's LED is steady Green and the beeper is beeping. If the original PINs are at the default values, the reader's LED is steady Red and the beeper is beeping.
4. Turn the *IntelliProx* power OFF.
5. Remove JP1. The *IntelliProx's* PINs are now at the default values of "1234" for the *IntelliProx* and "0000" for the host computer (for use with D-Lite).

*NOTE: If JP1 is removed before the power is turned OFF, not only will the PINs be returned to the factory default values, but also the IntelliProx's database is cleared.*

### 9.2 To Clear Unit Memory

Ensure the *IntelliProx* power is OFF.

1. Install JP1 (see Figure 1).
2. Turn the *IntelliProx* power ON.
3. If the original PINs are not at the default values, they are changed to the default values, the reader's LED is steady Green, and the beeper is beeping. Turn the *IntelliProx's* power OFF and then ON again. The *IntelliProx's* PINs are now set to the default values of "1234" for the *IntelliProx* and "0000" for the host computer (for use with D-Lite).
4. If the original PINs are at the default values, the reader's LED is steady Red, the beeper is beeping, and the *IntelliProx* is ready for the memory to be cleared.
5. With the power ON, the reader's LED blinking Red, and the beeper beeping remove JP1. The *IntelliProx's* memory is cleared and the *IntelliProx* is ready for programming.

From this point on, JP1 should never be installed on the *IntelliProx* unless it is necessary to reset the PINs, or clear system memory and rebuild its database from scratch. Applying power with JP1 installed irretrievably resets the PIN. Applying power a second time and removing JP1 irretrievably erases all card holder data. A database can be restored if the database has been saved using the D-Lite program prior to being cleared.

### 9.3 Setting LED Single-line or Dual-line Operation

LED line operating mode is set using a Keri Systems proximity card programmed with a unique card value (Keri Systems P/N: 05509-401). The operating mode toggles from its current state to the other state every time the reader reads the LED Operating Mode card. For example, if the *IntelliProx* is in single-line LED operating mode, presenting the LED Operating Mode card will toggle the *IntelliProx's* to dual-line LED operating mode.

On power-up, the *IntelliProx* will beep twice and its LED will blink Red when in single-line mode, and it will beep twice and its LED will blink Green when in dual-line mode.

If no signal lines are connected to pins 11 and 12 of the *IntelliProx* to control the operation of the LEDs, the steady state color when waiting for a card will be Red when in 1-line LED operating mode and Amber when in 2-line LED operating mode.

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## 10.0 Standard Operation

### 10.1 As a Wiegand Reader

When the *IntelliProx* is used as a Wiegand reader, the host controller is responsible for driving the beeper and the LED. When a card or tag is presented to the reader, the *IntelliProx* will send a quick BEEP and an LED flash to acknowledge the card has been read. The host controller then drives the beeper and LED's responses to the card/tag presentation.

### 10.2 As a Stand-alone Reader

The reader's LED will reflect the *IntelliProx's* operating status as follows.

Color	State	Meaning
Amber	Steady On	Power On – Normal Operation
Green	Single Flash	Valid Card Presented
Red	Single Flash	Invalid Card or Access Denied

The reader's beeper will reflect the *IntelliProx's* operating status as follows.

Tone	Meaning
Short BEEP	Valid Card Read
Continuous Beeping	Alarm Condition

### 10.3 When in Programming Mode with the HPP-22

When the HPP-22 is being used to enter cardholder information, the *IntelliProx* cannot handle door access requests and cannot communicate with the host computer/D-Lite program.

### 10.4 When in Programming Mode with the D-Lite Program

When D-Lite is being used to upload or download cardholder database information, the *IntelliProx* can handle door access requests, but cannot receive commands from an HPP-22.

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## 11.0 Troubleshooting the *IntelliProx*

Problem	Probable Cause	Corrective Action
When a valid card is presented and the door is opened, the Reader BEEPs continually.	The door switch is not connected or is not being used.	Connect the door switch or install a jumper across Pins 13 and 17.
The <i>IntelliProx</i> is not granting access to any card.	JP1 is installed.	Turn power OFF and remove JP1. <i>NOTE: Your card database and PIN are may be erased and may have to be restored.</i>
When using the <i>IntelliProx</i> for optional back-up door control, a card continues to have access after being voided from the host system.	The card is still enrolled in the <i>IntelliProx</i> database.	Delete the card from the <i>IntelliProx</i> .
<i>IntelliProx</i> LED not lit	RS-232 communication line interrupted.	Verify communication line is functioning properly.

## 12.0 Ordering Information

Model	P/N	Reader Range		
		at 5 VDC	at 12 VDC	at 24 VDC
IntelliProx Smart Module	SM-2000	–	–	–
<i>IntelliProx</i> + MicroStar Door Frame Mullion Mount Reader	IP-2003	up to 3 inches (7.6 cm)	up to 4 inches (10.2 cm)	–
<i>IntelliProx</i> + ShootingStar Vandal Resistant Reader	IP-2004	up to 1 inch (2.5 cm)	up to 1 inch (2.5 cm)	–
<i>IntelliProx</i> + MiniStar Wall Switch Mount Reader	IP-2005	up to 4 inches (10.2 cm)	up to 6 inches (15.2 cm)	–
<i>IntelliProx</i> + SuperStar Medium Range Reader	IP-2007	–	up to 14 inches (35.5 cm)	–

*NOTE: Due to the physical size difference between cards and tags, tags provide approximately 50% less read range than cards.*