

PXL-250 Family Architectural Specification

This document has been prepared to assist design professionals in the preparation of project or office master specifications including proximity access control systems. Modify this document as necessary and delete items that are not applicable.

- I The access controller shall be “smart” to the entry and be able to operate in a “stand-alone” mode or within a network of other like controllers. All decisions regarding the user access, alarms, and automatic timed functions are made at the controller, independent of a computer.
 - A The controller shall contain and operate various outputs for controlling access:
 - 1 A 1.0 amp, dry circuit, single pole, double throw, Form C relay for application of power to an electric locking device, automatic gate, or door operator.
 - 2 An alarm output consisting of a 1.0 amp, Form C, dry circuit closure.
 - 3 The alarm output must be configurable to annunciate:
 - a Door forced condition
 - b Door held open condition
 - c Both conditions
 - d Neither condition
 - 4 An RS485 network communications output capable of linking up to 128 controllers into one network.
 - 5 A serial RS232 output provided at a built-in DB-9M connector that is automatically configured for direct connection to a personal computer or to a modem without a PC attached to the remote site.
 - B The controller and option board shall contain and manage various inputs for controlling access:
 - 1 A door status input for sensing a normally closed switch.
 - 2 A request to exit, normally open input for remote operation of an electric locking device, automatic gate, or door operator; and optionally a second request to exit and separate annunciation for each door of Door Held Open and Door Forced alarms.
 - 3 A general, normally open input that can provide a global release of all lock relays in the network.
 - 4 A special purpose, multi-pin connector for adding an auxiliary board for increasing the functionality of the main controller.
 - 5 Two Proximity reader or two Wiegand interface inputs.
 - C The controller shall contain special visual aids for viewing diagnostic tests and ID functions:
 - 1 An LCD display to be used as a programming and diagnostic aid.
 - 2 A segmented LED display to be used as a controller address display.
 - 3 Single push-button switch for setting the controller address, and for selecting and performing diagnostic tests.
 - D The controller's database memory shall be nonvolatile (supported by a lithium battery with an expected life of at least five years):
 - 1 The database shall maintain a memory capacity to manage 10,000 card or tag holders per controller and it shall be optionally expandable to 65,000 card or tag holders per controller.



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- a Cards can be enrolled into the system using a block enrollment method. This method shall allow card enrollment by serial number.
 - b Card and tag enrollment can also be accomplished by a 'learn' method, requiring the card to be presented to an enrollment reader at the time of enrollment.
- 2 The database shall maintain a memory capacity capable of storing at least 3,600 transactions.
 - a When the transaction memory becomes full, old transactions will be deleted on a first in, first out basis to make room for new transactions.
 - b The controller's transaction memory shall be a record of all transactions performed by the controller.
 - c The transaction memory shall operate independent of other controllers within the network of controllers.
 - 3 The controller shall be capable of communicating with a personal computer at a remote location via a direct connection or a telephone modem.
 - a The controller shall automatically sense if connected directly to a PC or if connected via modem and adjust its communication protocols accordingly.
 - b If the controller is using a modem, the modem shall communicate at 9600 baud or faster.
 - c The controller shall contact the host and upload the contents of the controller's buffer when the buffer reaches a pre-programmed percentage of its event database memory capacity. Should the communication connection be broken during the upload process, the controller shall try to reestablish the communication connection every 10 minutes until a successful connection is made and all data is uploaded.
 - 4 The controller shall be capable of automatically adjusting for daylight savings time on a per network basis if desired by the user.
- E The controller shall provide two reader inputs. These inputs can either both be proximity inputs or both be Wiegand interface inputs:
- 1 Two readers can be operated simultaneously.
 - 2 The readers can be configured to indicate direction - ingress and egress.
 - 3 The second reader can be used to operate a second door with fully independent controls.
- F The controller shall be programmed using a personal computer with the following requirements:
- 1 The personal computer must use the Windows 95, Windows 98, or Windows NT v4.0 operating system.
 - 2 The personal computer must use a 90 MHz, Pentium microprocessor (or faster).
 - 3 The personal computer must have 20 Mbytes of available hard disk space.
 - 4 The personal computer must have a minimum of 16 Mbytes of RAM.
 - 5 The personal computer must have an available COM port equipped with a 16550 UART.
 - 6 The personal computer must have a mouse or some similar pointing device.
 - 7 The personal computer must have a CD-ROM.
- G The maximum dimensions for the controller within the enclosure shall be 9.25 inches high by 8.2 inches wide by 2.6 inches deep (24.65 cm H x 20.25 cm W x 6.60 cm D).
- H All cable/wiring connections shall be of quick disconnect type.
- I The controller shall operate using 12 volts DC with a current consumption of no more than 670 mA in an alarm state with all options installed.

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- J The controller shall have MOVs across all relay outputs and transorbs across all inputs and non-relay outputs to provide electrical surge/transient protection.
 - K The controller shall provide protection against incorrect input power connections (i.e. reversed power and ground, voltage too high or too low).
 - L The environmental operating conditions for the controller shall be no less than 0° F to 140° F (-18° C to 60° C) at 0% to 90% Relative Humidity, noncondensing.
- II All configuration, programming, and monitoring of the controllers must be done through a software program that makes these tasks easy to perform.
- A The software program must have the following features:
 - 1 Be able to manage up to 32 distinct time zones with each time zone subdivided into the 7 days of the week, 3 holiday schedules, and 4 start/stop time intervals.
 - 2 Be able to configure up to 1024 input monitoring points (8 per individual controller with option board installed) and 512 Form C, output relay points (4 per individual controller with option board installed) with the following features:
 - a All Form C, output relay points must be programmable to either follow the state of an associated input point or be latched to a state based on an input point.
 - b The operation of all Form C, output relay points must be assignable to time zones, such that the output relay points can have time periods when they are active/operational, and time periods when they are inactive/idle.
 - c All input monitoring points must be linkable to output relay points, allowing input events to initiate output relay responses.
 - d For each controller, all input monitoring points and output relay points on that controller must be able to be used in multiple links on that controller, allowing any combination of controller inputs to drive any combination of controller outputs.
 - 3 Be able to configure up to 3, separately configurable, event monitoring windows, with each window capable of displaying event information from any individual controller or all controllers on the access control network.
 - 4 Be able to automatically unlock specific doors at a given time of the day and day of the week, with user defined overrides on user defined dates.
 - 5 Be able to implement a “First Person In” feature such that an access control network can be programmed to not automatically unlock general access doors until an authorized person has entered the premises. This feature should allow early entrance (in advance of the normal unlock time) in fifteen minute increments up to one hour.
 - 6 Be able to disable the reporting of events that do not need to be tracked, to save event storage space on the controller.
 - 7 Be able to poll the access control network and retrieve network hardware information that the program uses to automatically setup and configure itself without manual data entry.
- III The access control network of controllers must be able to expand to meet future requirements as follows.
- A An access control network must be able to expand to up to 256 doors in 1 door increments.
 - B The access control software and host PC must be able to communicate with up to 255 remote access control networks via modem connections.



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- IV The primary type of reader supported by the controller shall be a proximity type of reader. The proximity reader shall be connected directly to the main controller without the need for an option card and it shall not require a special interface for data formatting. The proximity reader shall read a unique identification number from each card or tag when the card or tag is presented in close proximity to the surface of the reader (without a need for the card or tag to touch the reader).
- A The controller will support a variety of reader styles:
- 1 A door frame reader (mullion reader) which can be mounted directly on a standard metal mullion doorframe (1.75 inches or 4.5 cm).
 - a The read range using a standard proximity card shall be up to 4.00 inches (10.16 cm).
 - b The dimensions of the reader shall be 3.25 inches high by 1.40 inches wide by 0.375 inches deep (8.2 cm H x 3.5 cm W x 0.96 cm D).
 - c The reader shall be of a weatherproof, potted, rugged design.
 - d The reader shall provide a multi-color LED and a sound alert for status annunciation.
 - 2 A single gang mount, wall switch reader which will mount onto a metal or plastic electrical junction box. This reader cannot be mounted on a solid metal surface.
 - a The read range using a standard proximity card shall be up to 6.00 inches (15.24 cm).
 - b The dimensions of the reader shall be 4.40 inches high by 3.00 inches wide by 0.375 inches deep (11.13 cm H x 7.62 cm W x 0.96 cm D).
 - c The reader shall be of a weatherproof, potted, rugged design.
 - d The reader shall provide a multi-color LED and a sound alert for status annunciation.
 - 3 A medium range reader that can be mounted to most building materials except metal.
 - a The read range using a standard proximity card shall be up to 14 inches (35.56 cm).
 - b The dimensions of the reader shall be 8.50 inches high by 6.00 inches wide by 0.75 inches deep (21.59 cm H x 15.24 cm W x 1.91 cm D).
 - c The reader shall be of a weatherproof, potted, rugged design.
 - d The reader shall provide a multi-color LED and a sound alert for status annunciation.
 - 4 An extended range reader that can be mounted to most building materials except metal.
 - a The read range using a standard proximity card shall be up to 18 inches (45.72 cm) when powered at 12 VDC or up to 23 inches (58.42 cm) when powered at 24 VDC.
 - b The dimensions of the reader shall be 16.00 inches high by 12.00 inches wide by 1.35 inches deep (21.59 cm H x 15.24 cm W x 1.91 cm D).
 - c The reader shall be of a weatherproof, rugged design.
 - d The reader shall provide a multi-color LED and a sound alert for status annunciation.
 - 5 A high-security, vandal resistant reader constructed of bullet and heat resistant material that is capable of withstanding severe shock. It can be mounted to most building materials including metal.
 - a The read range using a standard proximity card shall be up to 1 inch (2.54 cm).
 - b The dimensions of the reader shall be 5.25 inches high by 2.00 inches wide by 0.75 inches deep (13.35 cm H x 5.08 cm W x 1.91 cm D).
 - c The reader shall be of a weatherproof, rugged design.

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- B The operating temperature of all readers shall be at least -22° F to 150°F (-30°C to 65°C).
 - C Accidental or intentional transmission of radio frequency signals into the reader shall not compromise the security of the access control system.
 - D The electrical connection between the reader and the controller shall be a color-coded, six conductor, #24 AWG or greater gauge, shielded cable. No coaxial cable or special connectors shall be required.
- V Proximity cards or tags shall be read when presented in any orientation or at any angle to the front of the surface plane of the reader. Cards and tags shall be uniquely encoded and not sensitive to facility code matching or other limiting factors.
- A Presentation of a card or tag to a reader will produce an audio 'beep' from the reader and will change the color of the reader LED.
 - 1 The audio beep shall be a single beep for access denied and a double beep for access granted.
 - 2 An Amber LED shall indicate power is on.
 - 3 A Green LED shall indicate access is granted.
 - 4 A Red LED shall indicate access is denied.
 - B A standard proximity card shall be in the shape of a credit card and shall fit comfortably in a wallet, pocket, or purse.
 - 1 The dimensions shall be 3.38 inches high by 2.13 inches wide by 0.065 inches deep (8.6 cm H x 5.4 cm W x 1.78 mm D).
 - 2 The color shall be light gray or off-white.
 - C A standard proximity key tag shall be in the shape of a teardrop. It will have an eyelet, allowing the tag to be attached to a key ring.
 - 1 The dimensions shall be 1.57 inches high by 0.98 inches wide (at its widest area) by 0.157 inches deep (40 mm H x 25 mm W x 4 mm D).
 - 2 The color shall be light gray or black.
- VI The controller shall also be able to accept readers and scanners using a Wiegand interface in place of the proximity reader. The Wiegand interface reader shall be connected directly to the main controller without the need for an option card and it shall not require a special interface for data formatting. The Wiegand interface reader shall read a unique identification number from each card when the card is swiped through a slot in the body of the reader.
- A The controller will support a variety of Wiegand interface reader types:
 - 1 Magnetic Stripe
 - 2 Wiegand Swipe or Insert
 - 3 Bar Code
 - 4 Keypad
 - 5 Biometric (such as hand-geometry, fingerprint, or retinal recognition)
 - 6 Electrical Discharge or Touch Devices
 - B Wiegand interface reader devices must output data per the Security Industry Association's (SIA) Wiegand Reader Interface Standard (SIA document number AC-01D-96).



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VII The product warranty to the user warrants the equipment to be free from defects in material and workmanship for the following time period from the date of purchase.

- A A three-year warranty for the controller electronics.
- B A lifetime warranty for the doorframe and single gang mount proximity readers.
- C A lifetime warranty for the medium and extended range proximity readers.
- D A lifetime warranty for the high security, vandal resistant proximity reader.
- E A lifetime warranty for proximity cards and key tags.

