General

The CS Technologies Ace Wiegand access controller is a single door access controller which provides high security, easy programming and low-cost.

The access controller allows control of a single door using a reader with the industry-standard Wiegand interface. The door can have a reader (any Wiegand reader with a standard 26-bit output), an exit pushbutton and an electric release. Cards or keys are used at the reader and if authorised will be given access.

The readers compatible with the system include those manufactured by HID, Motorola, Keri and many other types of readers. The controller interfaces easily with door strikes and there is also a separate output provided for interfacing with an alarm system if required.

Cards can be easily individually, and bulk added or deleted.

The system is programmed using a convenient low-cost keypad. All programming functions are password protected for security. Convenient commands allow rapid addition of single cards or blocks of cards for extremely fast commissioning.

Features

- ❑ Dedicated controller; easy programming.
- ❑ Easy installation
- ❑ Programming commands are password protected.
- ❑ Operates from 12VDC, which can also be used to power the locks.
- ❑ Programming commands available include
  - add user
  - delete user
  - bulk add users
  - bulk delete users
  - set trigger time for each of two relays
  - invert LED operation
  - set base address
- ❑ Very economical and reliable
- ❑ Works with any reader with a wiegand output, including literally hundreds of different readers including key, card, proximity and biometric readers.
- ❑ Capacity for 4000 cards (1-4000) each individually coded. Cards can be programmed to either momentary or unlock/relock (toggle) functions for one or both relay outputs.
- ❑ Cards are numbered in a consecutive block with a programmable base address and a constant site code.
- ❑ Controller come pre programmed with base address 0 (cards 1-4000).

Specifications

Power supply:	12VDC
Current Consumption:	150mA maximum (not including door strikes)
Temperature range:	0°C to 70°C
Humidity range:	0 to 95% relative noncondensing
Dimensions:	Box: 121x96x60mm
	Board: 90x80x18mm
Shipping weight:	300g
Housing:	High impact ABS plastic box with bulkhead mounting lugs
Reader interfaces:	One 26-bit Wiegand interface Presco keypad interface for programming
Exit requests:	One normally open input which triggers both relays
Relay outputs:	Two 'normally open' relays rated at 10A/125VAC (Can be inverted)
Relay trigger time:	Relay 1: 1-63 seconds Relay 2: 1-127 seconds
User capacity:	4000 cards (card number block).

Cable Types

Function	Cable
Proximity reader to controller	6-core screened cable (max 100m) + optional fig-8 for power for readers requiring extra current.
Exit request to controller	Figure-8 cable
Programming keypad to controller	Figure-8 cable
Controller to door strikes	Figure-8 cable (recommend 24-strand)

Installation procedure

Mounting the Ace Wiegand controller:
The controller should be mounted in a convenient location. Removing the base of the box will release the circuit board which can be terminated. To mount the box, make all connections first then replace the base of the box and mount the box using the two 'bulkhead' mounting tabs on the top and bottom of the box.

Connecting the wiegand reader:
Standard Wiegand format readers have connections for power, data0 and data 1 and generally a LED connection. Check the reader documentation for the power supply required – some readers need 12VDC while others need 5VDC.

The default setting for the LED connection is for a red LED i.e. the LED is red in its normal state (when the door is locked). Some readers have the LED operation reversed; in this case it's possible to program the system to ensure that the LED colour is red when the door is locked.

The colours of the wires listed below will probably be correct for most readers but check the reader wiring designations to be certain.

Reader wire	Colour (check reader documentation to be certain	IWiegand connection
0V	**Black**	**GND**
Power	**Red**	**+5V or 12V depending on reader**
Data 0	**Green**	**IN1**
Data 1	**White (sometimes yellow)**	**IN2**
LED	**Varies –can be brown, blue, orange, yellow**	**IN3**

Some wiegand readers have a wire designated HOLD. This should not be connected.

Connecting exit request pushbutton:
An exit request pushbuttons can be connected. The exit request pushbutton is normally open; when the switch closes the door is triggered for its release time.
Exit request: between IN4 and GND

Connecting the programming keypad:
The programming keypad is a Presco reader, which has GND and DAT lines. These connect to the JP3 connector with the white (DAT) wire connecting to the left hand pin (closest to the corner) and the black (GND) wire connecting to the right hand pin.

It is not necessary to leave the programming keypad connected once the system is commissioned.

Connecting the relay outputs:
The controller has two 'normally open' relay outputs. Both outputs are triggered by a valid read or an exit request. They can be triggered for a programmable amount of time. The door strikes or other electronic locks and/or alarm panels or alarm shunts are connected to these relays following the diagram which is later in this manual. Note: the relays contact can be inverted to work 'normally closed'.

Before powering up the controller
- ❑ Unit installed in dry, secure location
- ❑ Reader wiring checked
- ❑ Keypad wiring checked
- ❑ Strike wiring checked
- ❑ Exit request wiring checked
- ❑ No short to 0V on any power connections

After powering up the controller:
- ❑ Controller beeps 10 times on power-up
- ❑ LED1 (Power) on
- ❑ LED2 (Heartbeat) flickering slowly when not in programming mode, fast when in programming mode.

Setting up the site code:
All of the cards for a particular site are coded with a unique site code. This information must be loaded into the controller so that it will recognise only cards with that site code.

To set the controller site code, connect a link across LK1. Now presenting any card to the reader will make the controller beep 5 times to indicate that the site code has been read from the card and stored in the controller.

Setting up the programming master code:
When LK1 is connected, the master programming code can be set by entering it on the keypad. Enter a 4-digit number and press the 'E' key. The keypad will beep 5 times to indicate that the new master code has been stored in the controller. (Default is 1234E)

Indication lights and sounds:
The iWiegand controller is fitted with a LED for each relay to indicate when it is energised.
When a valid card is presented at a reader both relays will operate for their programmed trigger time.
The LED indicator on the reader will be activated whenever relay 1 is active

ACE Wiegand One Door Kit Programming Guide

INSTALLER SYSTEM CONFIGURATION

Setting the Master Code:
To set the programming Master Code put link LK1 on. Now enter a 4 digit code number and press the 'E' key.
You should hear 5 quick beeps from the controller indicating the code has changed. Remove LK1 when you have finished.

Entering Programming mode:
To enter programming mode, simply enter your 4 digit master code number and press the 'E' key.
(MASTER CODE) E   Note: the factory default master code is 1234E.
If the code is valid you should hear a rising beep to indicate that programming mode has been entered, and the red LED on the controller should flash quickly. If the code is not valid the keypad will beep twice quickly.
The controller will also automatically exit programming mode after a few minutes.

Set the Door Release Times:
The door trigger time can be set from 1 to 63 seconds for relay 1 and 1 to 127 seconds for relay 2. The command is
5 * (RELAY) * (TRIGGER TIME) E
For example, to set the time on door 1 to 3 seconds you would enter the commands
5 * 1 * 3 E

Set LED operation:
The reader LED operation can be reversed using the '6' command.
6 * 4 * (0/1) E
If the parameter for this command is 0 then the LED operation is 'normal' and if it is 1 then the LED operation is 'inverted'.

Invert the Relay Contact:
The door relays can configured to work with locks that require power to open (fail secure) and locks that require power to lock (fail safe). The command is:
6 * 1 * (RELAY STATE) E   Relay state: **0** for power fail secure (default),
For example, set door 1 for fail safe operation   Relay state: **1** for power fail safe
6 * 1 * 1 E

Set base address:
The Ace Wiegand controller can work with up to 4000 users. The users must be in a continuous block. Using the 'set base address' command allows the user numbering to start at other than 0. For example you may have a block of cards from 11001 to 15000. The standard Ace Wiegand controller can work with these cards by simply setting the base address to 11000. The '7' command sets the base address; the default value for the base address is 0; the base address can be any number from 0 to (65535 minus controller capacity).
7 * (BASE ADDRESS) E

SYSTEM PROGRAMMING

To make any changes in the system you must be in programming mode (LED2 is flashing fast) – see above.
There are four commands available for programming users:

1. Add user:
1 * (CARD NUMBER) E
This command adds a single user to the system. For example, to add card 100 you would enter: 1 * 100 E

2. Delete user:
2 * (CARD NUMBER) E
This command adds a single user to the system. For example, to delete card 100 you would enter: 2 * 100 E

3. Bulk add users:
It is possible to program many users in bulk, making commissioning the system very fast. The command to bulk enter users is:
3 * (START USER) * (NUMBER OF USERS) E
For example, to add 1000 users starting at card 501 the command would be: 3 * 501 * 1000 E
This would add users 501-1500.

4. Bulk delete users:
It is possible to delete many users in bulk. The command to bulk delete users is:
4 * (START USER) * (NUMBER OF USERS) E
For example, to delete 1000 users starting at card 501 the command would be: 4 * 501 * 1000 E
This would delete users 501-1500.
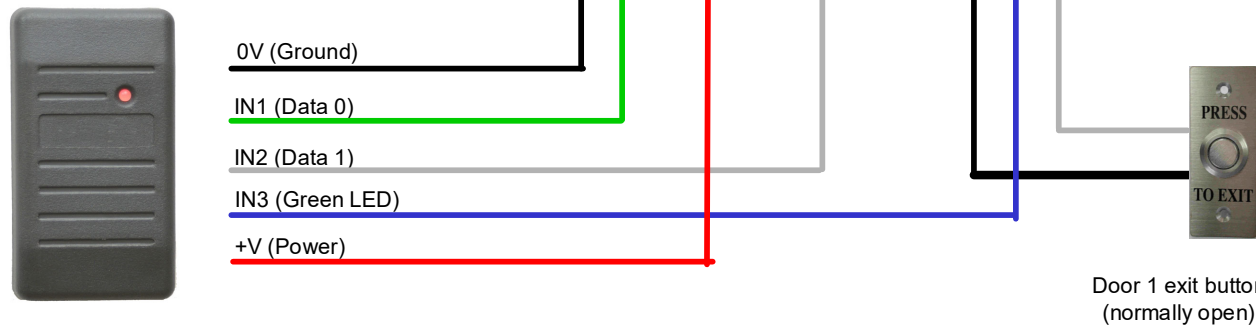
Note that a bulk add or delete operation can take a little while if many cards are being added or deleted. During the bulk operation the on-board red LED will be solid, and every few seconds during the bulk operation the controller will give a short 'bip'. When the bulk addition or deletion is complete the controller will quickly beep 10 times to indicate that the command has completed.

ACE Wiegand 1 Door Kit Wiring Diagram

13.8VDC 1 Amp Regulated Power Supply

Programming Keypad

GND (Black)

I/O (White)
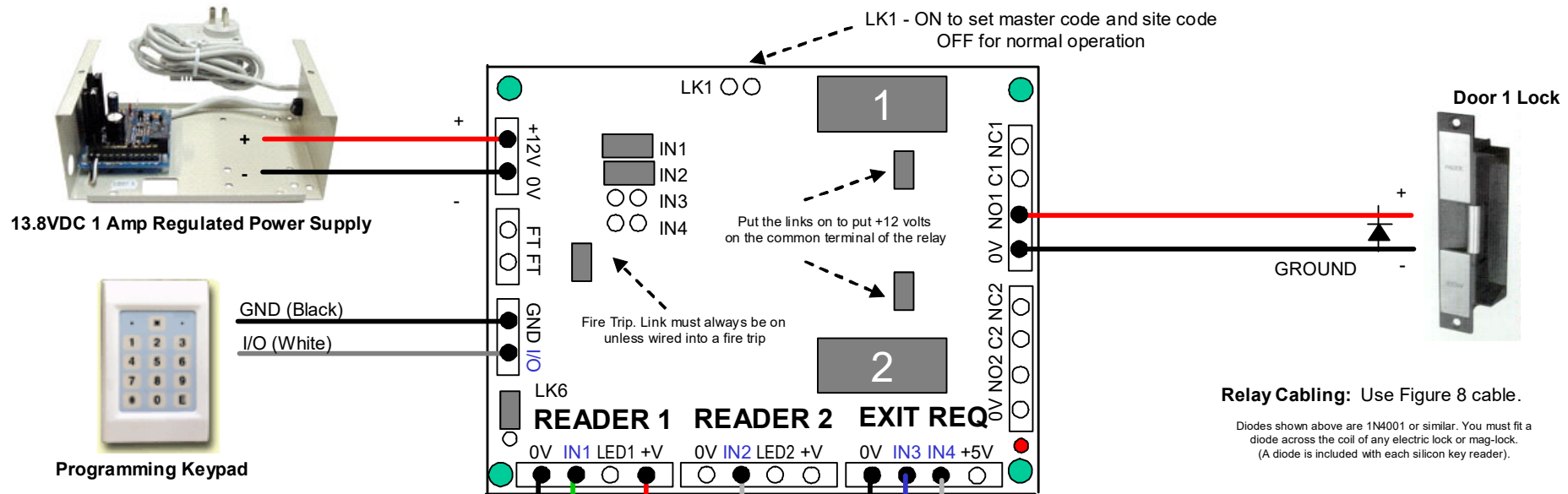
IN1-2 on, IN3-4 off, LK6 up.

DOOR 1 READER CONNECTIONS

0V (Ground)

IN1 (Data 0)

IN2 (Data 1)

IN3 (Green LED)

+V (Power)

Reader Cabling: Use 6 core shielded cable.

Maximum 50 meters.

Note: The green LED will normally be off and will turn green when then the door is released.

LK1 - ON to set master code and site code
OFF for normal operation

Door 1 Lock

Put the links on to put +12 volts
on the common terminal of the relay

Fire Trip. Link must always be on
unless wired into a fire trip

READER 1   **READER 2**   **EXIT REQ**

GROUND

Relay Cabling: Use Figure 8 cable.

Diodes shown above are 1N4001 or similar. You must fit a
diode across the coil of any electric lock or mag-lock.
(A diode is included with each silicon key reader).

Door 1 exit button
(normally open)

PRESS
TO EXIT

The controller will only accept cards with a
certain site code.

This site code must be set in the controller
before it will recognise the cards.

To set the controllers site code:
• Connect a link across **LK1**.
• Simply touch one of the cards to the reader,
this will make the controller beep 5 times to
indicate that the site code has been read from
the card and stored in the controller.
• Remove **LK1** when finished.

When ordering extra cards the same site code
number must be ordered (see the red sticker for
the details)

ATTENTION!!
PLEASE KEEP THE
FOLLOWING SITE
NUMBER SAFE