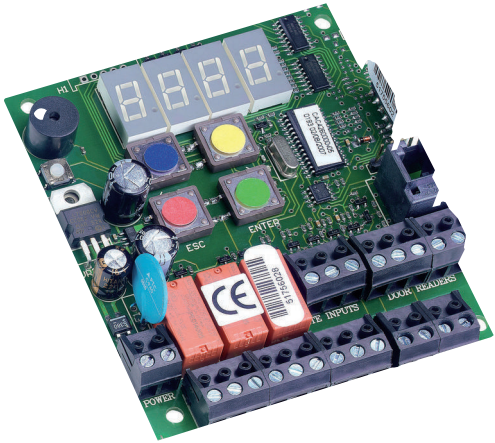
**Installation Instructions** **Solo 2 Access Control Unit**

Part Codes: AC-3300
AC-3300-PCB

## Introduction

The AC-3300 SOLO 2 Access Control Unit (ACU) from Controlsoft® provides a single board solution for one or two doors, supporting up to 2000 Card Holders. The Solo 2 supports up to 4 Wiegand readers, providing Read In / Out capabilities with AntiPassBack.




The Solo 2 is available in 2 forms:

- The AC-3300 is supplied in a metal housing with a 3 Amp power supply
- The AC-3300-PCB is a PCB only, to fit in an existing housing.

## Key Features

- Supports up to 4 readers to control 2 doors
- Supports up to 2000 Card Holders
- Removable Memory Stick for backup of Cardholder data
- Uses industry standard Wiegand 26 bit Readers
- Door Left Open and Forced Door Alarms
- Fire Input Monitoring
- AntiPassBack across doors
- Easily Void or Suspend Card Holders
- Easy to read 4 digit LED Display
- Easy to program and use
- RJ-11 Jack for use with AC-3301 Local Enrolment Reader.



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# Contents

## Cable Specification

**Wiegand Readers**:
Use **Belden 9538** (or equivalent) **untwisted 8 core cable** with overall screen. **Do not** use twisted pair CAT5 or CAT6 cables to connect readers to the ACU.
The maximum length of the Wiegand reader cable is 80m but if this exceeds 25m we recommend using a local power supply for the reader.

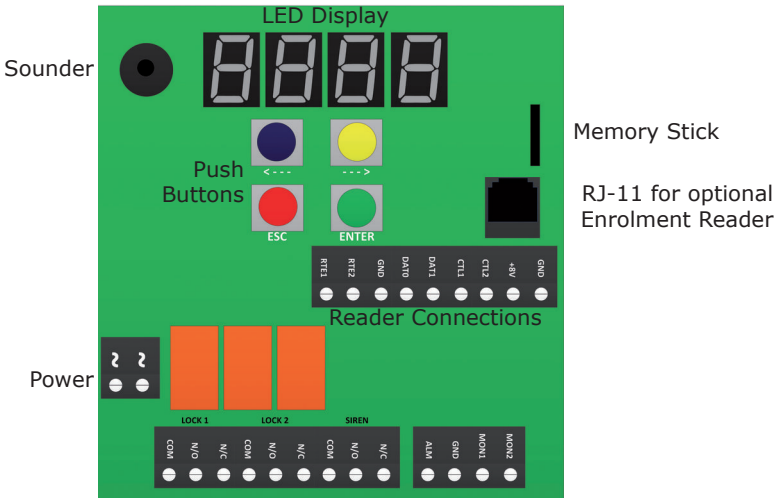
**Locks**
Use 18 AWG (or thicker) gauge alarm cable. We recommend cables with spare cores in case a core breaks.

**Exit Buttons**
Use 22 AWG (or thicker) gauge alarm cable. We recommend cables with spare cores in case a core breaks.

**Do not** use CAT5 or CAT6 cables to connect locks or exit buttons.

## PCB Layout

The layout of the Solo 2 PCB is as shown below:



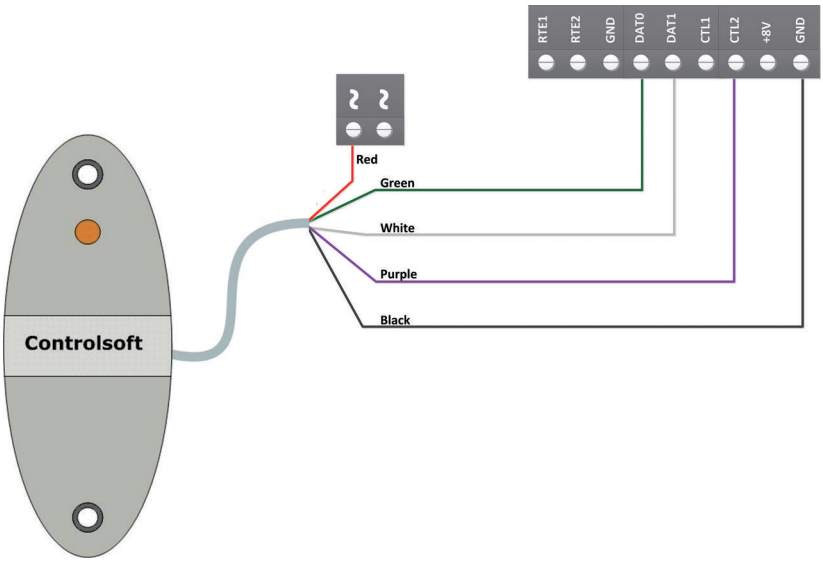
# 4 Mount the ACU

## Step 1: Mount the ACU

**AC-3300**
Using the base of the metal housing as a template, mark the wall and drill the required mounting and cable entry holes. Plug the mounting holes (if required) and mount the housing.
Wire mains to the power supply using an unswitched fused spur.

**AC-3300-PCB**
Mount the PCB in an appropriate housing, using suitable fixings.

## Step 2: Install the Readers

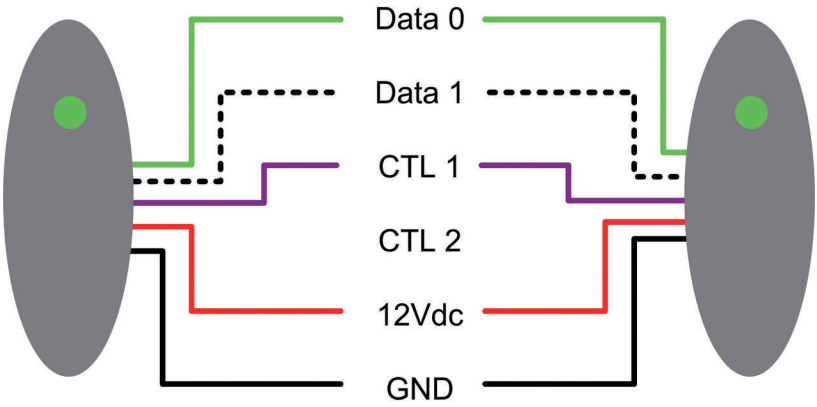



The colour coding for Controlsoft readers is as follows:
RED = +12V
BLACK = 0V (Gnd)
GREEN = Data 0
WHITE = Data 1
PURPLE = LED Control
**NOTE: Other manufacturers may use different colour coding for readers.**

The maximum length of the Wiegand reader cable is 80m using Belden 9538 (or equivalent). If this distance exceeds 25m we recommend using a local power supply for the reader. Always check the manufacturer's specifications in the reader manual, as these can vary between manufacturers. See Page 3 for cable requirements.

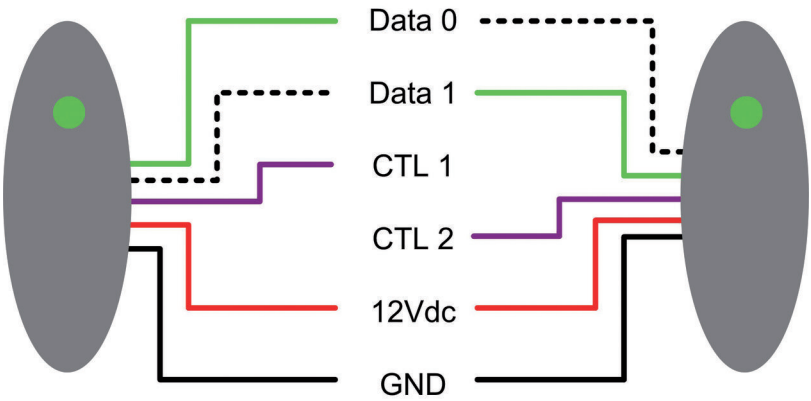
## Connecting Two AC-1200 readers to Control a Single Door

The five connections are wired so that each connection is connected to the same terminal block as shown below:




## Connecting Two AC-1200 readers to Control Two Doors

Connect the first reader as shown above. When connecting the second reader, reverse the Data0 and Data1 connections (Green and White on a Controlsoft reader), and connect the LED Control wire (Purple on a Controlsoft reader) to CTL2 as shown below:



# 6 Connect the Inputs & Outputs

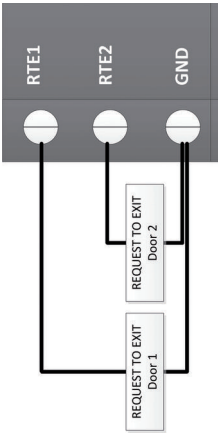
## Step 3: Connect the Inputs

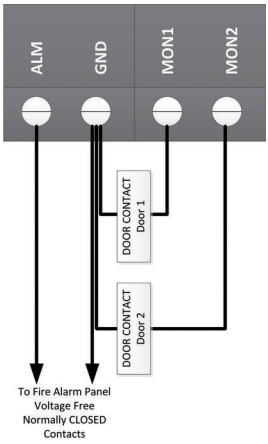
**Request to Exit** buttons (normally open contacts) are used to open a door from within the secure area. Connect Request To Exit buttons between RTE and GND.

**Door Contacts** (normally closed contacts) are required to detect 'Door Forced' and 'Door Held Open' conditions. Connect door contacts between MON and GND.

A **Fire Alarm** (normally closed contacts) can be used to release all doors in the event of an emergency. Connect the Fire Alarm between ALM and GND. To reset an alarm, first reset the fire panel, then present a Master card to any reader.

**NOTE**: If the system will not be connected to a fire alarm system, the ALM terminal **MUST** be connected to the GND terminal

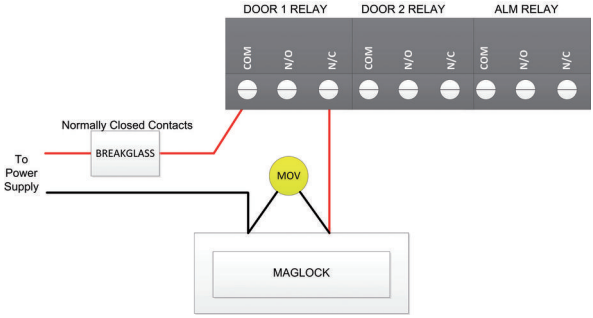



## Step 4: Connect the Outputs

A **MagLock** is normally energised to keep the door locked. Connect between the Normally Closed and Common contacts of the door relay.

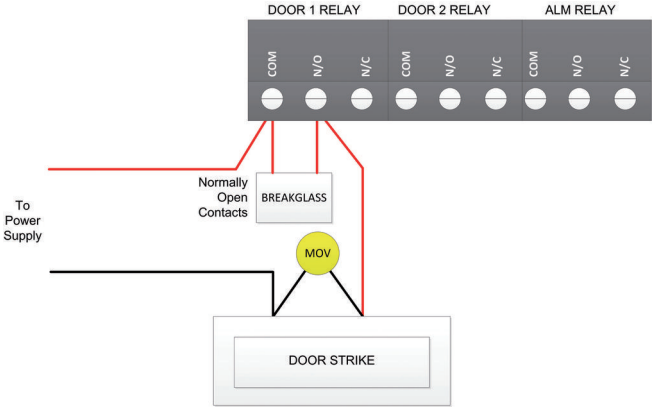
The Breakglass uses normally closed contacts which open when the Breakglass is pressed to de-energise the magnet and release the door:




**ALWAYS FIT A MOV SUPPLIED WITH THE SOLO 2 ACROSS THE MAGLOCK TO AVOID BACK-EMF DAMAGING THE ACU**

A **Door Strike** is normally de-energised to keep the door locked. Connect between the Normally Open and Common contacts of the door relay.

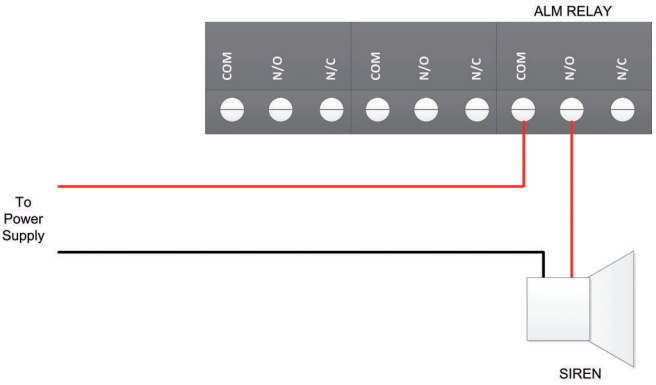
The Breakglass uses normally open contacts which close when the Breakglass is pressed to energise the Door Strike and release the door:




**ALWAYS FIT A MOV SUPPLIED WITH THE SOLO 2 ACROSS THE DOOR STRIKE TO AVOID BACK-EMF DAMAGING THE ACU**

A **Siren** is used for audible indication of an alarm condition, i.e. door forced, door left open or a fire alarm.

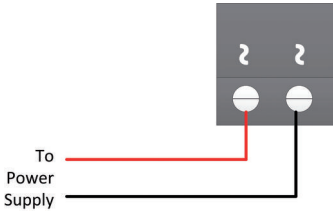
Connect between the Normally Open and Common contacts of the alarm relay as shown opposite:




## Step 5: Connect Power

Connect the power terminal blocks to a 12Vdc power supply. The power supply must be capable of supplying 50mA for the SOLO 2 PCB plus enough current to power the lock and other components.

The SOLO 2 is designed so that +12V and 0V can be connected to either terminal block. The connections opposite are shown as an example:




Power up the SOLO 2.

## Step 6: Initialise the SOLO 2

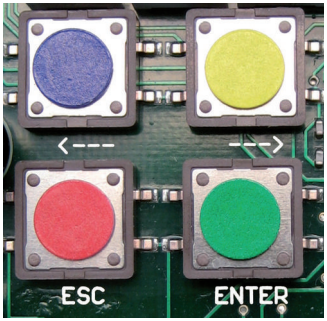
The first time the SOLO 2 is powered on, the LED screen should display INIT. If it does not, press and hold the reset button (located to the left of the LED display). The display will then show 1 followed by 2 followed by 3 followed by 4 followed by RST6. Release the reset button and the display will change to INIT.

Present a card to the reader, the display will change to 0.0.0.1. followed by ☐☐☐☐. This card will now be your Master Card, and will be required to add, edit and remove cardholders, program the system and upload / restore data to the removable memory stick.

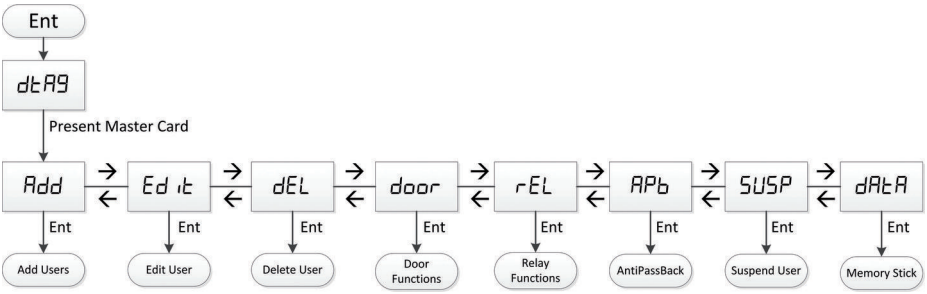
Present the Master Card to the reader again; the relay will switch, and the display will momentarily show 0.0.0.1. indicating the memory allocation of that card.

## Step 7: Program the SOLO 2

The SOLO 2 is programmed using the four digit LED display and the four PCB mounted push buttons marked <--- (with a Blue sticker), ---> (with a Yellow sticker), ESC (with a Red sticker) and ENTER (with a Green sticker).




The SOLO 2 programming has a menu structure as shown below:




To enter programming mode, first press the ENTER button, and the display will show DTA6. Present the Master Card to the reader and the display will change to ADD. Press ---> to display EDIT, or ---> again to display DEL etc. When the display shows the desired function, press the ENTER button.

**Enrolling New Users**

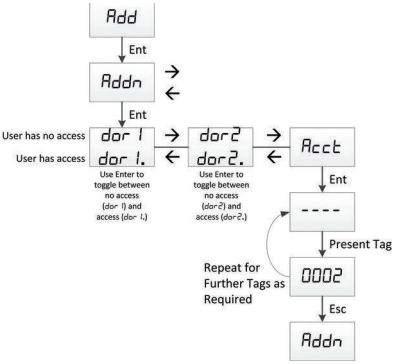
To enrol one or more new users, enter programming mode, and press the ENTER button when the display shows ADD

The SOLO 2 supports 3 types of users:
**Standard**: enrolled via the ADDn option
**Master**: additional Master Cards can be enrolled via the ADD. option. Master Cards operate both doors and are not subject to AntiPassBack.
**Supervisor**: enrolled via the ADDS option. Supervisor Cards operate both doors and are not subject to AntiPassBack.


**NOTE: Depending on the distance between the ACU and the readers, enrolling users can be simplified by plugging a AC-3301 enrolment reader into the RJ-11 socket.**

**Enrolling Standard Users**:
Press the ENTER button when the display shows ADDn

The first parameter to program is whether this new user has access through door 1, indicated by DOR1 on the display. As there is no dot after the '1', this user will have no access through this door. Press ENTER and the display will change to DOR1. indicating that access will be granted through this door.




Press the ---> button & repeat for door 2

Press the ---> button and the display will show ACCT To accept these settings, press ENTER.

When the display shows ----, present a card/tag to the reader and the display will show the user number allocated to that card. Present the next tag to be learned in and continue until all tags have been enrolled.

Press the ESC button return to the ADDn option.

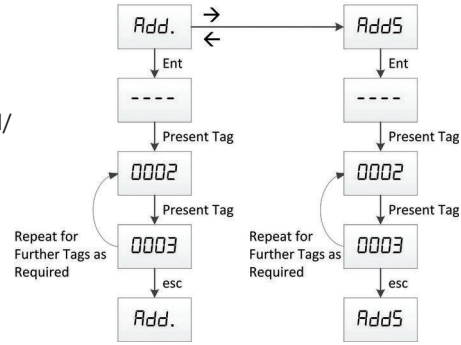
**Enrolling Master Users**:
Press the ENTER button when the display shows ADD.

Enrolling a Master Card is the same as a normal card, except that it is not necessary to program the doors.

Press ENTER when ADD. is displayed.

When the display shows ----, present a card/tag to the reader and the display will show the user number allocated to that card. Present the next tag to be learned in and continue until all tags have been enrolled.

Press the ESC button return to the ADD. option.



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**Enrolling Supervisor Users**:
Press the ENTER button when the display shows ADDS

Enrolling a Supervisor Card is the same as a Master Card, with ADD. replaced by ADDS.

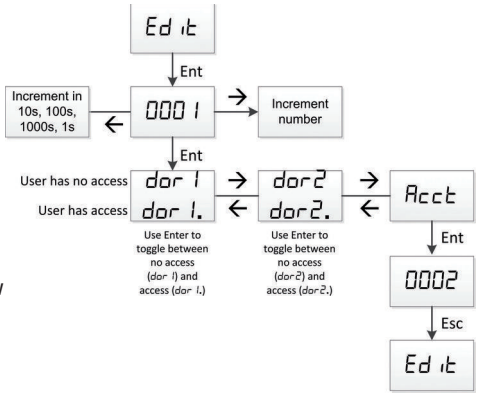
**Editing Standard Users**:
Press the ENTER button when the display shows EDIT

The first card number is shown on the display. Press ---> to increment the number by one.

To quickly select a higher number, press <--- to select the 2nd / 3rd / 4th / 1st digit, then press ---> to increment the selected digit

When the display shows the required card number, edit whether door 1 and/or door 2 is to be operated, and accept the changes in the same way as adding a new card.

Press the ESC button return to the EDIT option.

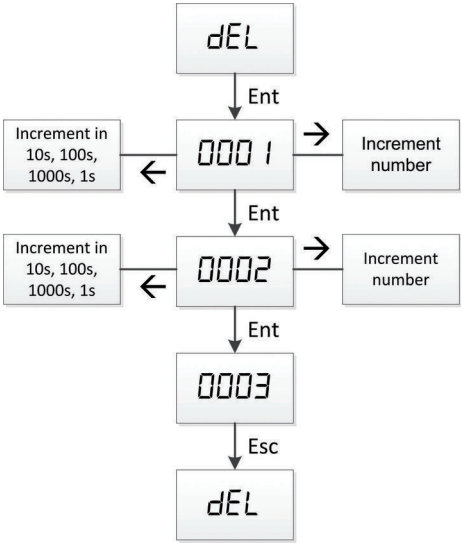



**Deleting Users**:
Press the ENTER button when the display shows DEL

The first card number is shown on the display. Press ---> to increment the number by one.

Press <--- to select the 2nd / 3rd / 4th / 1st digit, then press ---> to increment the selected digit

When the display shows the required card number, press ENTER to delete the card. Further cards can be deleted by repeating the process, or press ESC to finish.



**Door Forced Open**:

The AC-3300 supports the Door Forced function, which will activate the siren if the door is opened without presentation of a valid card or activation of the REX or if the door is held open for too long after normal access is granted.

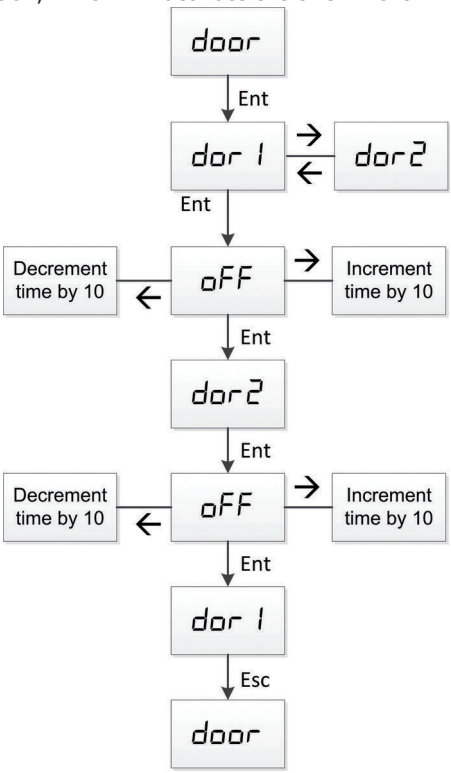
Press the ENTER button when the display shows DOOR

Press the ENTER button for Door 1 or press ---> followed by the ENTER button for Door 2.

OFF indicates that the Door Forced alarm is disabled. Press ---> to enable the function and set the maximum door open time to 10 seconds. Each press of the ---> button will increment the time by 10 seconds, or press <--- to decrement the time by 10 seconds.

When the display shows the required time, press the ENTER button and repeat for Door 2.

When the display returns to DOR1, press the ESC button return to the DOOR option.




**NOTE**: For a Door Forced or Door Held Open alarm to activate, the relevant doors must be fitted with normally closed door contacts.

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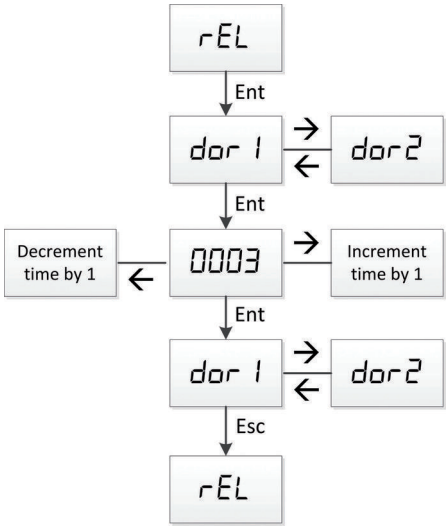
**Door Release Time**:
To program how long the door remains unlocked, press the ENTER button when the display shows REL

Press the ENTER button for Door 1 or press ---> followed by the ENTER button for Door 2.

0003 indicates the default door release time of 3 seconds, which can be adjusted between 1 second and 60 seconds. Press ---> to increment the time by 1 second, or <--- to decrement it by 1 second.



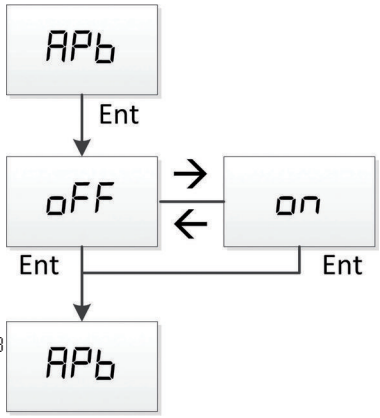

The SOLO 2 also supports Pulse and Toggle modes for the relay:
Pulse - activates the relay for a very short duration. Only used for specialist applications.
Toggle - present a card at a reader to activate the relay, present another card to deactivate it.

To select either of these options, decrement the door release time to 0001, then press <--- to select PULS for Pulse mode, press <--- again to select TOGG for Toggle mode.

When the display shows the required time, press the ENTER button and repeat for Door 2.

Press the ESC button return to the REL option.

**AntiPassBack** (APB):
AntiPassBack on the SOLO 2 is an option to force users to use alternate doors. Once a user has used one door, they will not be able to use the same door again, until they have used the other door. This feature can be particularly useful with car parks or areas which have designated IN and OUT routes.




Master and Supervisor users are not effected by the AntiPassBack rules.

Press the ENTER button when the display shows APB

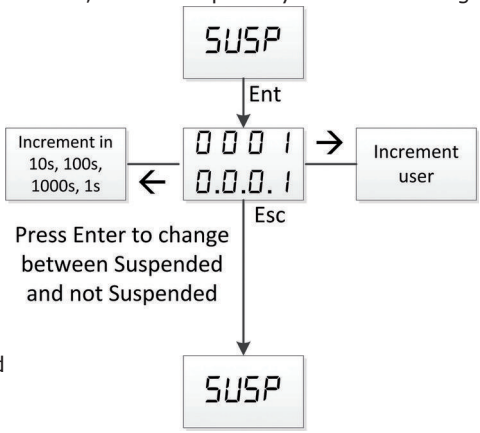
The default condition is OFF, press ---> to cycle between ON and OFF, then press the ENTER button to save the setting and return to the APB message.

**Suspend User**:
The SOLO 2 has a useful facility to suspend users, which temporarily disables the tag rather than having to delete it from memory, then reprogram it at a later date.

Press the ENTER button when the display shows SUSP

The display will then show a user number. Press ---> to increment this.

Press <--- to select the 2nd / 3rd / 4th / 1st digit, then press ---> to increment the selected digit




When the display shows the required card number, press ENTER to suspend the card. The display will change from 0 0 0 1 to 0.0.0.1. the dots indicating that the tag is suspended. Press Enter to return to the SUSP message.

If the tag is now used, it will display 0.0.0.1. but will not open the relevant doors.

To un-suspend the tag at a later date and repeat the above changing the display from 0.0.0.1. back to 0 0 0 1

**Backups**:
The SOLO 2 has a useful feature to backup the programming to a Memory Stick supplied with the product. This backup can then be restored at a later time, or copied to another SOLO 2 ACU.

Two options exist:
SYNC copies data from the SOLO 2 into the Memory Stick (backup data)
UPLD copies data from the Memory Stick into the SOLO 2 (restore data)

Press the ENTER button when the display shows DATA then press ---> to select the SYNC or UPLD option as required.

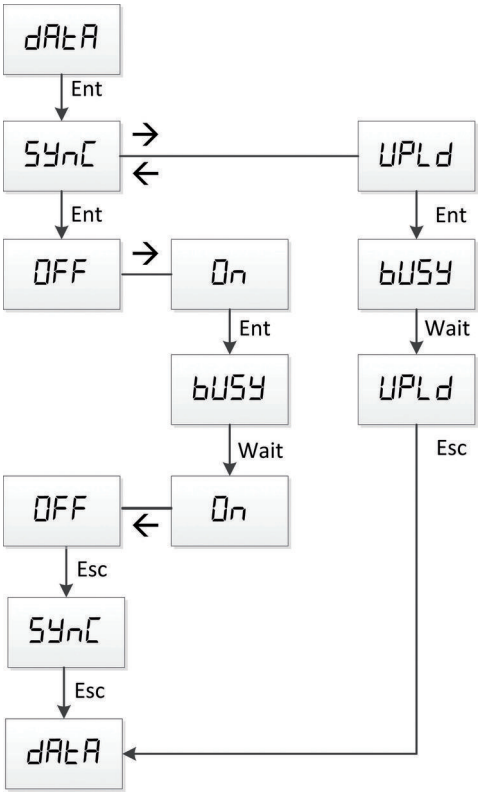
SYNC:
When the display shows SYNC, press the ENTER button and the display will change to OFF indicating that the Memory Stick is switched off. Press ---> to switch the Memory Stick to ON.

Press the ENTER button again and the display will show BUSY while data is being transferred into the Memory Stick, then return to ON.

Press <--- to switch the Memory Stick OFF, then press ESC to return the display to SYNC.

Press ESC again to return the display to DATA.

**NOTE: After backing up the data, remove the Memory Stick as keep in a safe place**




UPLD:
**NOTE: This function will erase all data on the SOLO 2 and replace it with the data on the memory stick**

When the display shows UPLD, press the ENTER button and the display will change to BUSY while data is being transferred into the SOLO 2, then return to UPLD.

Press ESC to return the display to DATA.

## Technical Specifications

- Input Power Supply: 12V AC/DC
- Maximum Current Consumption: 300mA @ 12Vdc
- Relay Outputs: 2 x voltage free changeover contacts
- Alarm Output: Voltage free changeover contacts
- Relay Rating: 3A @ 250Vac
- Output modes: Selectable as pulse (250ms), 1s to 60s or Toggle
- Inputs : 2 x Door Contacts
- Inputs: 2 x RTE (Request to exit Buttons)
- Input: 1 x Fire Alarm (must be voltage free normally closed contacts)
- Display: 4 x 7 Segment LED
- Audible Buzzer
- User Capacity: 2000 cardholders
- Dimensions (PCB): 104mm (h) x 90mm (w) x 30mm (d)
- Dimensions (Boxed): 283mm(h) x 283mm(w) x 93mm(d)
- Protection Category: Internal user only
- Operating Temperature: -10 °C to +60 °C

**NOTE: The Relays in the SOLO 2 are rated at 3A at 250Vac, maximum. If switching loads with higher current rating, please connect an external relay with the necessary current rating.**

**Always connect a MOV across inductive loads, including external relays.**

# Frequently Asked Questions

| | |
|---|---|
| How do I clear an alarm condition? | Remove the source of the alarm (close the door or reset the Fire Alarm panel), then present the Master Card to either reader. |
| Why can't I clear the message FIRE from the display? | This indicates that the fire input is not connected, or the fire alarm relay contacts are open. Reset the Fire Alarm panel, check the wiring to the fire alarm panel or ensure that a link is fitted between the terminal blocks GND and ALM |
| Why does the display show RTE1 or RTE2 | This indicates that the Request To Exit connections are shorted. Check the wiring to the button or ensure that a link is not fitted between the terminal blocks GND and RTE1 or RTE2. |
| What is the difference between Delete and Suspend? | If a tag is deleted, all programming for that tag is removed from the system. To reinstate the tag, it has to be learned in again and allocated to the relevant doors.<br>If a tag is suspended, it remains in memory and the tag number is displayed when presented at a reader. The tag will NOT open the door/s while it is suspended. |

**Caution:**
The "crossed out wheeled bin" logo on Controlsoft products indicates that this product should not be disposed of via the normal household waste stream.
To prevent possible harm to the environment or human health, please separate this product from other waste streams. For further information, contact your local government office or the retailer where you purchased product.
This information only applies to customers in European Union.
For other countries, please contact your local government to investigate the possibility of recycling your product.

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