

bellswipe

Card Access System

PD-026 Issue 3

System features

- Up to 500 User cards.
- Two Time Zones for Staff / Executive operation.
- Outputs for Fail-safe and Fail-secure locks plus one isolated contact
- Shadow cards for easy deletion of User cards
- Eight function cards for easy system programming.
- Hi-Co Cards for a long durable life: Secure encrypted card data.
- Separate Control unit for maximum security.
- Combined Power Supply and Control Unit for simplified installation.
- Card data is retained after power failure using EEPROM.
- Optional battery backup for operation during mains power failure.

BS500 Kit Components

1	CR500 Control Unit with integral Power Supply
1	RH10 Card Reader
1	203 Lock Release (fail-secure)
1	BSF Starter Pack of cards (8 Function cards + 16 user cards & shadow cards)

Optional Components

Part No.	Description
BS20C	Additional pack of cards for 20 users (includes shadow cards)
TS2000	Time Clock, 7 day, quartz reserve, 12V operated
BAT02	12V 2AH Battery for CR500

Contents

General Description	1
Basic Operation	1
Time-restricted access (Staff / Executive operation)	2
Exit Facility	2
Integrated Power Supply with optional battery backup	2
Installation	3
Wiring diagram	3
Cable Requirements	4
Important Safety Information	5
CR500 Control Unit	8
RH10 Card Reader	9
Electric Lock Release	11
Isolated Lock Relay Contact	12
High Current Lock Releases	13
Time Restricted Access	14
Exit Facility	14
Commissioning	15
BS500 Kit	15
Adding further User cards	17

System/Card Management	18
Summary of function cards	19
Programming the Lock Release time	20
Enabling or Changing a group of cards	21
Adding or Changing a card	23
Disabling a User Card	25
Deleting all user cards	25
The TEST LOCK card	26
Engineering Functions	27
Restoring Factory Settings	27
Enabling the starter Pack	27
Replacing the function cards	29
Troubleshooting	30
Summary of LED operation	30
Fault Finding	31
Testing	33
Specification	36

General Description

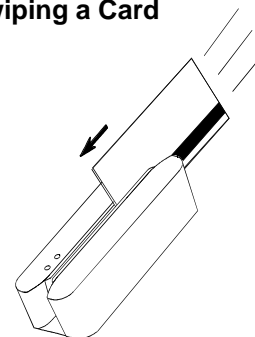
The **bellswipe** Card Access System is a high quality security product for controlling access to offices and apartments using proven Magstripe technology.

A Bellswipe reader should be installed adjacent to the building entrance, and the door fitted with an electric lock release or magnetic lock. Authorised personnel are each issued with an individual BellSwipe card. Swiping a valid card through the reader will result in the door being released for a few seconds. A Time-clock may be used to restrict access to certain card holders to specific times of the day or week.

Basic Operation

When a valid user card is swiped through the reader the green LED illuminates and the electric lock release operates for a predetermined time (1-250 seconds). If an invalid card is swiped the red LED illuminates for 1 second and the lock release does not operate. A card may be invalid either because it has not been enabled on the system or its use has been restricted to another time period.

Swiping a Card



Swipe in the direction indicated by the arrows on the reader and on the card, ensuring the black Magnetic stripe passes through the reader .

Time-restricted access (Staff / Executive operation)

Each card may be individually (or as a group) programmed to operate during a restricted time period only. This time period can be determined by a time-clock or manually via a key switch.

Typically this feature can be used to provide 'Executive access' (no restriction) and 'Staff access' (restricted to Zone 1 or 2 time periods). Time Zones 1 and 2 can also operate as non-overlapping 'shifts' for two groups of workers.

Exit Facility

The Exit facility enables the lock release to operate directly from a push-button for the predetermined lock duration. Typically this is used to allow personnel to freely exit through the controlled door. The facility may also be used for a Fireman's key-switch, or to interface with other security products such as a Door Entry Telephone system.

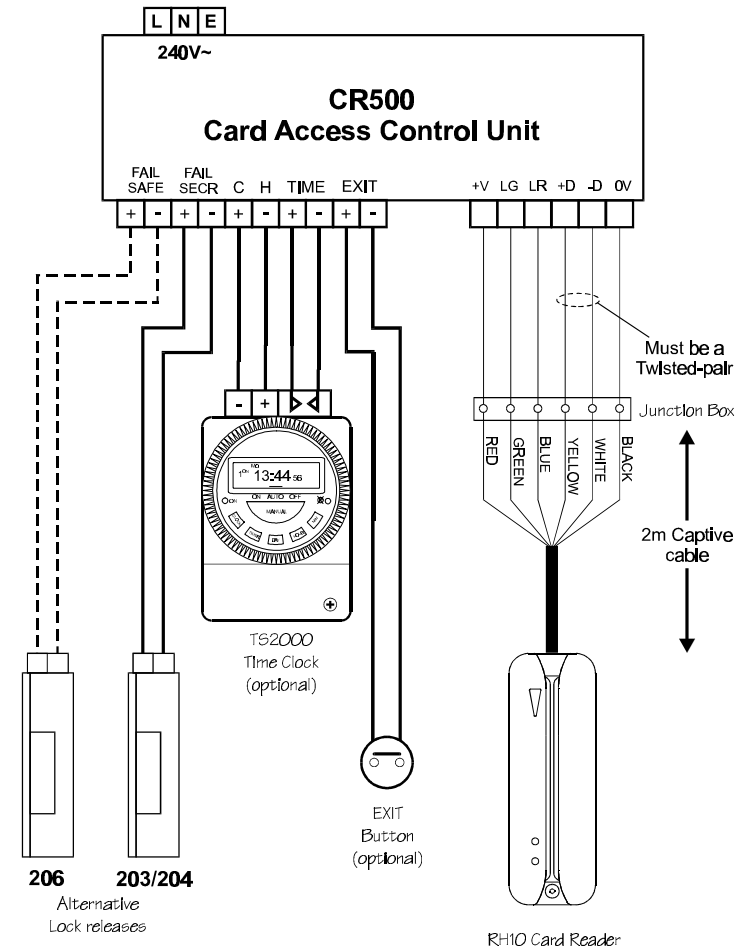
Integrated Power Supply with optional battery backup

The CR500 Control Unit is mounted in a rugged steel enclosure complete with an integral power supply. This cost-effective approach significantly reduces the number of system components and the amount of cabling. There is a provision for an optional 12V 2AH battery which will maintain the system operation in the event of a mains power failure.

Installation

Read carefully all of the information presented in this chapter and then install the system in accordance with the wiring diagram below.

Wiring diagram



Cable Requirements

Cable types (solid core)

0.5 mm :	Twisted pair, e.g. BT spec CW1308
1.0 mm :	1.0 mm ² 'Twin and Earth'
1.8 mm :	2.5 mm ² 'Twin and Earth'

CR500 Control Unit Connections	No. of cores	Cable Length	Core diameter
**RH10 Card Reader	6	300 m	0.5 mm
Exit button / Fire switch	2	300 m	0.5 mm
Lock Release (up to 0.5A)	2	25 m	0.5 mm
		100 m	1.0 mm
		300 m	1.8 mm
Time Clock	4	100 m	0.5 mm
		300 m	1.0 mm

** Must be twisted-pair cable.

Avoid running cables alongside mains or other transmission cables for any great distance. In most cases cable length restrictions should not present a problem; where longer lengths are required please refer to the manufacturer for advice.

Important Safety Information

The CR500 Control Unit and any other mains-powered equipment (e.g., a Time-Clock) must be placed in a protected indoor environment, close to a 240V electrical supply, e.g. an electrical cupboard. Connections to the 240V AC mains supply must be carried out by a qualified electrician or similar competent person, and made in accordance with accepted safety practices.

A two-pole switch (as provided by a Consumer Unit or Switch-Fuse) must be included to isolate both Live and Neutral during Installation or Maintenance. The circuit must be protected by a current limiting fuse or other device with a maximum rating of 5A. A good mains safety earth must be connected to the CR500.

The CR500 internal transformer is protected by a fuse; always replace this with the correct type and rating:

T100mA 250V (20mm glass fuse, 100mA, 250V, Time delay, approved to BS EN 60127 or equivalent.)

Mains Cables

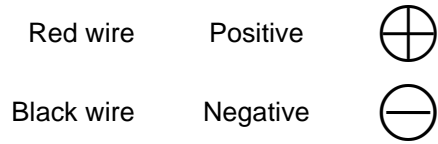
Use only mains cable to BS6004, BS6500, or equivalent, within the following specified limits:

	Minimum	Maximum
Conductor Diameter	1.0 mm (0.75 mm ²)	2.25 mm (4 mm ²)
Cable Diameter	4.0 mm	8.0 mm

Battery (optional)

Care must be taken to ensure the battery terminals are not shorted together by metal objects as this may constitute a Fire Hazard.

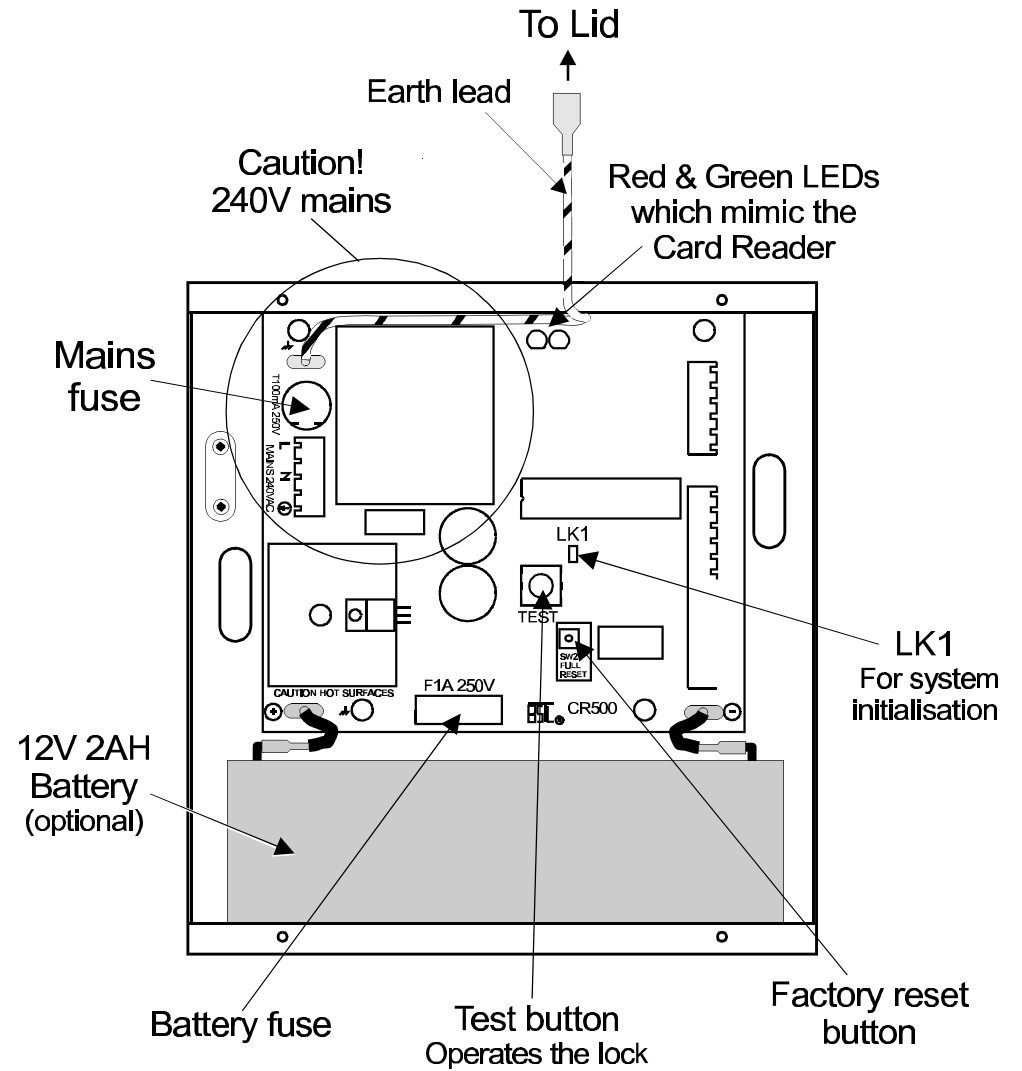
Observe the correct polarity when connecting:



The Battery is protected by a fuse, always replace this with the correct type and rating:

F1A 250V (20mm glass fuse, 1A, Fast Blow, approved to BS EN 60127 or equivalent.)

Battery type: 12V 2AH e.g. YUASA NP1.9-12



CR500 Control Unit

Description

The Controller PCB is housed in a strong steel enclosure. Security can be further enhanced by installing the controller in a secured area. This arrangement provides a superior level of security when compared to standalone card reader / controller units on the market where access may be attained by vandalism of the card reader. With a correctly installed **bellswipe** system this is impossible.

Due to the presence of mains voltages the lid of the CR500 should only be removed by qualified personnel. It should not normally be necessary to open the lid once the unit has been wired up. All card management and setup operations can be performed at the Card Reader.

Fitting

The enclosure contains a number of alternative mounting and conduit holes for easy installation. For safety reasons, use the holes provided; **do not drill or modify the enclosure in any way**. The unit should be wall-mounted in a protected indoor environment. See also "Important Safety Information".

When removing or replacing the lid, for convenience, the earth lead may be temporarily disconnected from the spade connector. Take care not to damage or trap this earth lead and always ensure that it is correctly replaced.

RH10 Card Reader

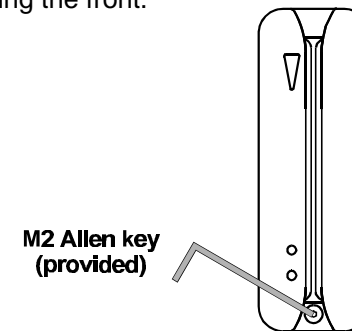
Description

This Card reader is cast from LM24 alloy which is extremely robust and offers a high degree of corrosion resistance. Additional protection is provided by a special ALACROM anti-corrosion layer and a high quality abrasion resistant metallic paint, whilst the internal electronics is sealed to resist water ingress. The unit is recommended for most environments including protected external locations.

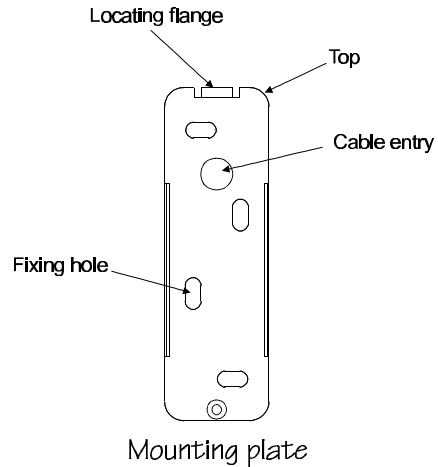
The reader has one red and one green LED for indication of operational status. Six connections to the Control unit are required with 2 metres of captive cable being provided. Wall fixing is accomplished with a removable mounting plate secured by a countersunk security screw.

Fitting

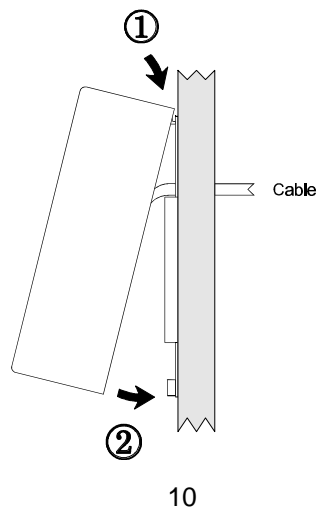
1. Remove the mounting plate by undoing the security screw at the bottom and unhinging the front.



2. Mark and drill the cable entry and fixing holes. Fix the plate to the wall using at least two of the fixing holes shown. Ensure that the screw head does not stand proud by more than 4mm (eg No. 8 woodscrew).



3. Push the captive cable through the entry hole in the mounting plate. Locate the reader on the mounting plate flange at the top and fix with the security screw at the bottom.



Electric Lock Release

When installing lock releases please allow a little movement on the door as operation will be impaired if fitted too tight.

The CR500 Control unit provides two alternative pairs of connections for direct connection of an electric lock release: -

'FAIL SECUR': Use these connections for 'Fail-Secure' lock releases. These devices require power to release the lock and will secure the door in the event of power failure. These are the most commonly used lock releases.

'FAIL SAFE': Use these connections for 'Fail-Safe' lock releases and magnetic locks. Both of these devices require continuous power to lock the door and will release the door if power fails.

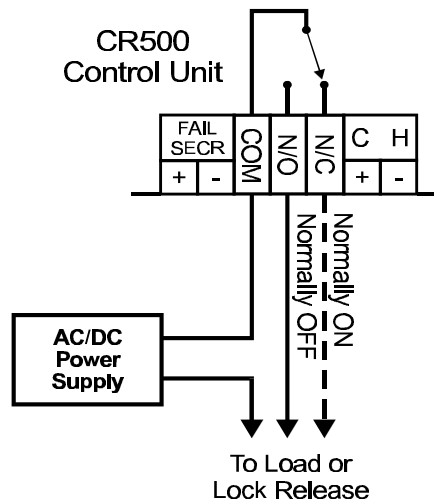
These outputs are rated at 12V DC with a maximum current consumption of 0.5A.

An isolated relay contact is also available for a non-standard lock release, please refer to the next section.

Isolated Lock Relay Contact

An isolated relay contact has been provided to interface with non-standard locks and other devices. The load must not be rated above 1A AC or DC. Inductive loads must have separate suppression for EMI.

Alternatively the contact can be used to trigger or interface with other equipment; for example, to switch on a surveillance camera, trigger a carpark gate, or give an audible indication.



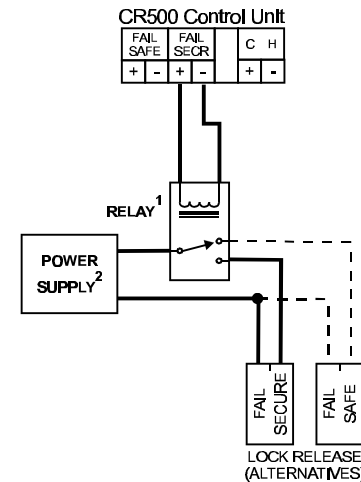
High Current Lock Releases

For a lock release or magnetic lock rated higher than 0.5A an additional power supply will be required. Above 1A a relay must be used to interface with the CR500 Control unit. For locks in the range 0.5 -1A refer to the previous section.

The relay contacts or the lock-release must be fitted with a suitable suppression device to prevent voltage transient and electromagnetic interference being generated by the coil of the lock release (refer to the manufacturer for further advice).

Consideration should be given to the problem of a voltage drop at the lock release. Please refer to the manufacturer of the particular lock release for information on suitable cable length versus thickness and power supply rating.

High Current Lock Release



Notes:

1. Single-pole changeover relay, contact rating as per lock release. Lock release or contact must be suppressed for EMI.
2. Power Supply Is AC or DC and rated according to lock release requirements. (polarity Is not usually Important)

Suitable Bell System Products

Product	Description	Fail Safe	Fail Secure
M89	12V DC Relay, 10A Contact.		
M340	12V DC Power Supply,	1A	
M440	12V DC Power Supply,	1.5A	2A
M225	12V AC Power Supply. This power supply incorporates a relay, eliminating the need for an external relay. Wiring diagram available on request.	2A	

Time Restricted Access

The CR500 Control unit has a pair of terminals marked 'TIME' which can be connected to an external Time Clock or Key switch to control time-restricted access. Any switch contact must be fully isolated (i.e. voltage-free) Refer to 'Optional components' at the front of this manual for a suitable Time Clock.

Cards may be programmed to operate as follows:

Access	TIME switch status	Usage
No Restriction	-	Executive
Zone 1	Contact closed	Staff (shift 1)
Zone 2	Contact open	Staff (shift 2)

Refer to 'ENABLE CARD' or 'ENABLE GROUP' to set a card's time zone.

Exit Facility

The terminals marked 'EXIT' may be connected to an external push-button (e.g. an M5077 switch) for 'push to exit' operation. Momentarily operating this button will directly operate the lock release for the programmed duration.

Alternatively the input maybe used with a Fireman's override switch which should be of the normally open type. If this feature is to be used it is important that the lock release be of the continuously rated design.

In general, a switch connected to the 'EXIT' terminals should be fully isolated, i.e. voltage-free.

Commissioning

BS500 Kit (with 16 user cards)

- ✓ Install and wire up the CR500 Control Unit, RH10 Card Reader and any optional equipment, referring to the previous sections. Leave the lid of the controller off and do not connect the battery at this stage (if supplied).
- ✓ Power up the CR500 Control Unit; the red and green LEDs on the PCB will flash 3 times (also on the RH10 Card Reader). Fix the lid in place ensuring that the earth lead has been correctly replaced.

Note: The system has already been initialised with the Starter Pack at the factory. Any of the 16 user cards can be used immediately.

Testing the system

- ✓ Ensure the 'TIME' connections are open circuit (If a Time clock is present manually force it to OFF). Swipe the TEST LOCK card. Check the lock release operates for 5 seconds with the green LED on at the same time The red LED should remain off.
- ✓ Ensure the 'TIME' connections are short circuit. (Time clock forced to ON) Swipe the TEST LOCK card. Check the lock release operates for 5 seconds with both the red and green LED on at the same time.

- ✓ Check the periods for Zone 1 and 2 are set correctly on the Time Clock.

Setting the Lock release duration

- ✓ The lock release time is factory set at 5 seconds; if necessary adjust the lock release time by following the procedure on page 20.

Setting time restrictions for the user cards

- ✓ The 16 user cards are factory programmed for unrestricted access. If time restricted access is required for any of the 16 cards, follow the procedure for adding a single or group of cards on pages 24 and 22 respectively.

Keep all the cards in a safe place and record each users name on the back of the corresponding SHADOW card (ie with the same number.)

Testing battery backup (optional)

- ✓ Temporarily disconnect the mains supply. Connect the battery inside the CR500 Control unit observing the '+' and '-' markings.
- ✓ Swipe the TEST LOCK card through the Card Reader and check the lock release operates. If the lock release does not operate, the battery may need to be left to charge with the mains on for a period of several hours. Repeat the previous step until the test is successful then reconnect the mains.

Adding further User cards

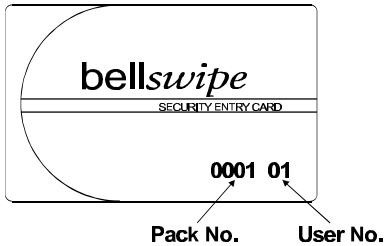
- ✓ Add each additional user pack with the ENABLE GROUP procedure on page 21. If required, set time restricted access for the whole pack at the same time; refer to page 22.
- ✓ If time restricted access is required, on a card by card basis, follow the procedure for adding a single card or a group of cards on pages 24 and 22 respectively.

Keep all the cards in a safe place and record each users name on the back of the corresponding SHADOW card (ie with the same number.)

System/Card Management

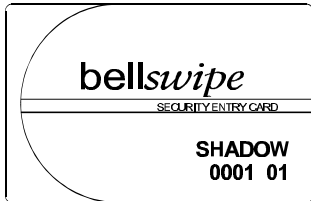
The following procedures describe in detail, the programming and setup operations required to manage cards on the system. There are 3 types of card used:

User Cards



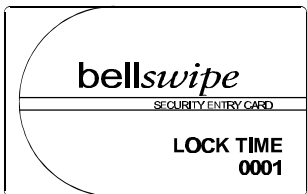
User cards are issued to each person who is to be given access to the protected area. They have a signature strip on the back to record and identify the user's name, and on the front there is a user number (01-20) and a 4-digit pack number.

Shadow cards



For each user card there is a corresponding Shadow card with an identical user and pack number. The shadow cards are used to disable a user card (which may have been lost or stolen).

Function cards



Eight Function cards are provided for card and System management, e.g. setting the lock release time. All eight cards have the same 4-digit pack number, which also appears on the lid of the CR500 controller.

Summary of function cards

Card	Function
ENABLE CARD	Enable a single user card
ENABLE GROUP	Enable a group of user cards (max 20)
ZONE 1	Restrict user card(s) to Time Zone 1 (used with ENABLE CARD or ENABLE GROUP)
ZONE 2	Restrict user card(s) to Time Zone 2 (used with ENABLE CARD or ENABLE GROUP)
LOCK TIME	Set the lock release time
TEST LOCK	Operate the lock release for 5 seconds
DELETE ALL	Delete all user cards.
ENABLE PACK	Use only under direction from the manufacturer Enable a Starter pack (8 function cards and 16 users)

Programming the Lock Release time

The duration for which the lock release operates, after either a valid user card has been swiped or an exit button pushed. This can be varied between 1 and 250 seconds.

Procedure



Swipe LOCK TIME

▶ Green LED flashes once per second.



Count the green flashes.



Swipe LOCK TIME *again*

▶ Red and green LEDs flash for 1 second.

Enabling or Changing a group of cards

(with unrestricted access)

This procedure is used to quickly add a group of user cards in a single operation where unrestricted access is required. The cards must be sequential and have the same pack number (making the maximum 20 cards). The procedure may also be used to remove Time Zone restrictions from an existing group of cards.

Procedure



Swipe ENABLE GROUP

▶ Green LED flashes.



Swipe 1st User (or Shadow)

▶ Green LED flashes.



Swipe Last User (or Shadow)

▶ Red and Green LEDs flash for 1 second.

Eg:

The first card in a User Pack is 9843 01; the last card is 9843 20.

Enabling or Changing a group of cards (with Time Zone access)

This procedure is used to quickly add a group of user cards, in a single operation, where a common Time Zone restriction is required. The cards must be sequential and have the same pack number, making the maximum 20 cards. The procedure may also be used to change the Time Zone restriction of an existing group of cards.

Procedure



Swipe ENABLE GROUP

▶ Green LED flashes.



Swipe ZONE 1 or ZONE 2

▶ Green LED flashes.



Swipe 1st User (or Shadow)

▶ Green LED flashes.



Swipe Last User (or Shadow)

▶ Red and Green LEDs flash for 1 second.

Eg:

The first card in a User Pack is 1743 01; the last card is 1743 20.

Note:

ZONE 1: allows access when the TIME input is closed.

ZONE 2: allows access when the TIME input is open.

Adding or Changing a card (with unrestricted access)

This procedure is used to enable a single user card where unrestricted access is required, or to remove the Time Zone restrictions of a card already enabled.

Procedure



Swipe ENABLE CARD

▶ Green LED flashes.



Swipe User (or Shadow)

▶ Red and Green LEDs flash for 1 second.

Adding or Changing a card (with timed access)

This procedure is used to enable a single user card requiring a Time Zone restriction, or to change the Time Zone of a card already enabled.

Procedure



Swipe ENABLE CARD

▶ *Green LED flashes.*



Swipe ZONE 1 or ZONE 2

▶ *Green LED flashes.*



Swipe User (or Shadow)

▶ *Red and Green LEDs flash for 1 second.*

Notes

ZONE 1: allows access when the TIME input is closed.

ZONE 2: allows access when the TIME input is open.

Disabling a User Card

Swiping a Shadow Card will disable the corresponding User Card (which has the same Pack number and User number).

Procedure



Swipe SHADOW

▶ *Red and Green LEDs flash for 1 second.*

Deleting all user cards

This procedure will completely disable (delete) all User cards from the system. Please be sure this is what you want!

Procedure




Swipe DELETE ALL

▶ *Red and Green LEDs flash for 1 second.*

The TEST LOCK card


This card will operate the lock release for a fixed 5 seconds, regardless of any other settings. It is primarily intended as a quick and simple way of testing the system after installation. The Card reader, lock release and 'Active Time Zone' are all tested with a single swipe. Swiping the card backwards tests the red LED

Procedure



Swipe TEST LOCK

- ▶ Lock operates, and green LED stayson for 5 secs.
- ▶ Zone 1 if red LED is on.
- ▶ Zone 2 if red LED is off.



Swipe TEST LOCK backwards

- ▶ Red LED flashes for 1 second.

Comments

The lock release can also be tested directly from the CR500 Control unit. Please refer to the Testing section on page 33.

ZONE 1: allows access when the TIME input is closed.

ZONE 2: allows access when the TIME input is open.

Engineering Functions

CAUTION! Mains voltages present; The following procedures must only be carried out by an Electrician or similarly competent person.

Warning

These procedures are normally only used when the system is setup at the factory. They should only be used in the field under the manufacturer's directions.

Restoring Factory Settings

All settings will be reset to the following defaults:

User cards:	All disabled
Function cards:	All disabled
Lock time:	5 seconds

Enabling the starter Pack

The 16 user cards in the starter pack are enabled with unrestricted access, as well as, the 8 function cards.

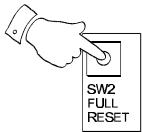
Procedure



Remove link LK1 in the CR500 Control unit.

▶ Red LED flashes continuously

Factory Reset



Hold down the Factory Reset button

- ① Red and green LEDs alternate quickly 3 times.
- ② Both LEDs flash for 1 second: Release the button.

Adding the Starter Pack



Swipe ENABLE PACK

▶ Red and Green LEDs light for 1 second.



Replace link LK1

▶ Red LED stops flashing.

Notes:

Releasing the Factory Reset button prematurely during the above procedure may cause only a partial reset (indicated by the red LED flashing for 1 second). In this case the procedure must be repeated before adding the Starter Pack or using the system.

Replacing the function cards

This procedure can be used to replace the 8 function cards on the system without affecting any user cards already present.

Procedure



Remove link LK1 in the CR500 Control unit.

▶ Red LED flashes continuously.



Swipe a new Function card*

▶ Red and green LEDs flash for 1 second.



Replace link LK1

▶ Red LED stops flashing.

Notes

* Any new function card except ENABLE PACK.

The previous set of functions cards will be erased from the system.

Troubleshooting

Summary of LED operation

Event	Green LED	Red LED
Valid User Card swiped	On while the lock is active	
User Card rejected		Long flash (1 second)
Programming operations		
Card accepted	Brief flash	
Card rejected		Long flash (1 second)
Programming sequence successful	Long flash together (1 second)	
Programming the lock time (time between 2 card swipes)	Brief flash (marking each second)	
Engineering / Diagnostic		
Power-up	3 flashes in unison	
Factory Reset button held	3 red and green alternating flashes, then; both leds on for 1 second	
Test button held	On	Off if TIME input open On if TIME input short
TEST LOCK card swiped	On for 5 seconds	If TIME input open: Off If TIME input closed: On for 5 secs
CR500 Control unit link LK1 removed	Off	Continuous short flashes

Fault Finding

Use the table below to determine the most probable cause of a fault condition and perform any suggested tests which are described in detail in the following pages.

Symptom	Possibly Cause / Remedy
When power is applied nothing happens. (LEDs do not flash)	<ul style="list-style-type: none"> ● CR500 Control unit is overloaded; Remove external connections until the fault disappears. ● Check the CR500 Control unit fuses. Always replace fuses with the correct type and rating.
The lock does not operate. Red and green LEDs flash together.	<ul style="list-style-type: none"> ● Fail-secure Lock release output is short-circuited or lock is of an incorrect rating.††
Lock release does not operate when the Exit button is operated.	<ul style="list-style-type: none"> ● Test by applying a short circuit directly to the 'EXIT' terminals; Check connections to the Exit button.††
Lock release is permanently active	<ul style="list-style-type: none"> ● 'EXIT' terminals are short-circuited; Temporarily remove connections to 'EXIT' and then re-test.††
Lock release operates in reverse	<ul style="list-style-type: none"> ● Incorrect lock output has been used; Swap connections between the Fail-safe and Fail-secure outputs.††

<p>The lock operates from the test button but not the User card.</p>	<ul style="list-style-type: none"> ● Check the system has been correctly programmed for that user card. ● Check the Card Reader by refer to page 33. ● Check the magnetic strip has not become defective (exposure to moisture, a strong magnetic field or excessive abrasion).
--	--

†† Refer to page 34 to confirm correct operation of the lock release..

Testing

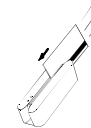
Ensure the link LK1 in the CR500 Control unit is fitted before carrying out any tests. Confirm that the red LED is not continuously flashing.

Warning



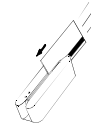
Using the test button requires removing the lid of the CR500 Control unit. To avoid the risk of electric shock, care should be taken not to touch anything other than the Test button. This operation should only be undertaken by qualified personnel.

Testing the Card Reader



Swipe the TEST LOCK card through the reader:

- ▶ Check the green LED comes on for 5 seconds. (Depending on the Time Zone red may also come on)



Swipe the TEST LOCK card through the reader backwards (testing the red LED):

- ▶ The red LED should come on for 1 second.

Testing the Lock release outputs

Ensure the lock release is connected to the correct output (as shown in the wiring diagram on page 3).



Press and hold the PCB TEST button

- ▶ The Lock outputs and green LED will operate whilst the button is held.

If the LED turns on as described, but the lock release fails to operate:

Check the lock release and its wiring by moving the lock connections to C+,H-. The Control Unit PCB can be checked by measuring the voltage output on the lock release pair; this should be the same as the power supply (13.8V).

Note: the fail-safe output will have voltage present **except** when the TEST button is pressed.

If pressing the TEST button causes the LEDs to flash immediately:

The power supply has been overloaded; look for either a short-circuit across the lock release output, or check that the lock release used requires less than 500mA @ 12V.

Testing the Time Clock Input

ZONE 1

Set the Time Clock or key-switch to Zone 1 ('TIME connection shorted).



Press the TEST button:

- ▶ Check the red and green LEDs stays on all the time the button is pressed.

ZONE 2

Set the Time Clock or key-switch to Zone 2 ('TIME connection open circuit).



Press the TEST button:

- ▶ Check only the green LED stays on, while the TEST button is held.

Specification

CR500 Control Unit

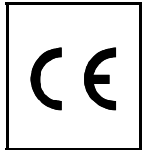
Dimensions	215 mm (H) x 200 mm (W) x 70 mm (D)	
Power Consumption	32VA max. @ 230V~ ±10% 50Hz	
Output(C + & H -)	13.8V DC @ 200mA max.	
Lock outputs	Fail-secure or Fail-safe Undedicated relay contact	13.8V DC @ 0.5A max. connections: 1 pole changeover (Voltage free) switching current **1A @ 30VDC max.
Lock release time	1 - 250 seconds	
Exit Input	Normally open contact (must be voltage free)	
Time input	Normally open or closed contact (must be voltage free)	

**protection must be added for Inductive loads, if used .

RH10 Card Reader

Dimensions	111 mm (H) x 38 mm (W) x 36mm (D)
Length of captive cable	2 m
Consumption	13.8V DC @ 40 mA maximum

Standards



This Product complies with European Directives:
89/336/EEC for Electro-Magnetic Compatibility (EMC)
73/23/EEC for Low Voltage Systems (LVD)

Made in the United Kingdom