NORTECH

CRC200+

Access Controller

INSTALLATION MANUAL &

USER GUIDE

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Contents

1. INTRODUCTION

The CRC200+ is a two-channel card reader controller. It is ideal both for simple card access systems that control vehicle or personnel movements into and out of car parks or through electronically controlled doors, and for more complex systems requiring time zones, anti-passback, etc. It can also be used as part of a Norpass3 managed access network via a data connection to the Norpass3 management platform.

The CRC200+ can control any reader combination from magnetic stripe, proximity and smart card plus numeric keypads, biometric devices, long-range RFID systems and RF remote control systems. It can also support motorised card capture readers for proximity and smart card.

The CRC200+ supports both sequential and random card numbers so that it can be used with sequentially encoded cards supplied with the system or with cards from existing applications and support mixed media on the same controller.

1.1 Scope

This manual covers the CRC200+ with firmware version 4.04 or later. For CRC200R or CRC200S products, please refer to the appropriate user manual. These can be downloaded from **http://www.nortechcontrol.com/document-library.aspx**

1.2 Features

- Supports the connection of two independent readers, each with their own latch relay
- Capacity for up to 65,000 sequential or 8,000 non-sequential card numbers
- Individual or batch adding and voiding cards for each reader independently
- Card number learning
- Capture control option when using card-capture readers
- Ability to program 10 PIN codes for use with a keypad or reader/keypad combination
- Output latch relay time selectable from 0.5 second to 30 seconds
- Independent request to exit input per reader
- Auxiliary input per reader for door monitoring when online
- Auxiliary input per reader for reader arming
- Access rights controlled by the use of access levels and time zones
- Anti-passback with programmable auto reset
- Anti-timeback with selectable time period from 1 to 30 minutes in 1-minute increments.
- Compact design and easy installation
- Selectable reader supply output (5 volts or supply voltage)
- Real-time clock
- Supports both Clock & Data and Wiegand card formats

- Password protection
- Can be managed by Norpass3 Access Control Software

2. INSTALLATION

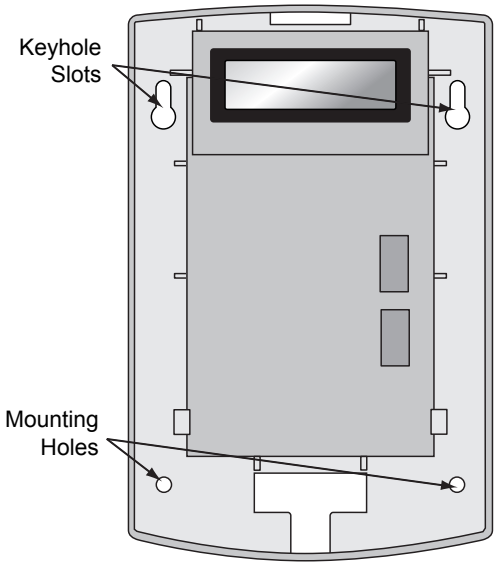
2.1 Mounting the Unit

The CRC200+ can be wall-mounted when used indoors or fixed inside a weatherproof housing for outdoor use.

Identify a location convenient for cabling while ensuring that the LCD screen and keypad are easily accessible for programming the unit and carrying out diagnostics. Also ensure that the CRC200+ is protected from excessive temperatures and moisture.

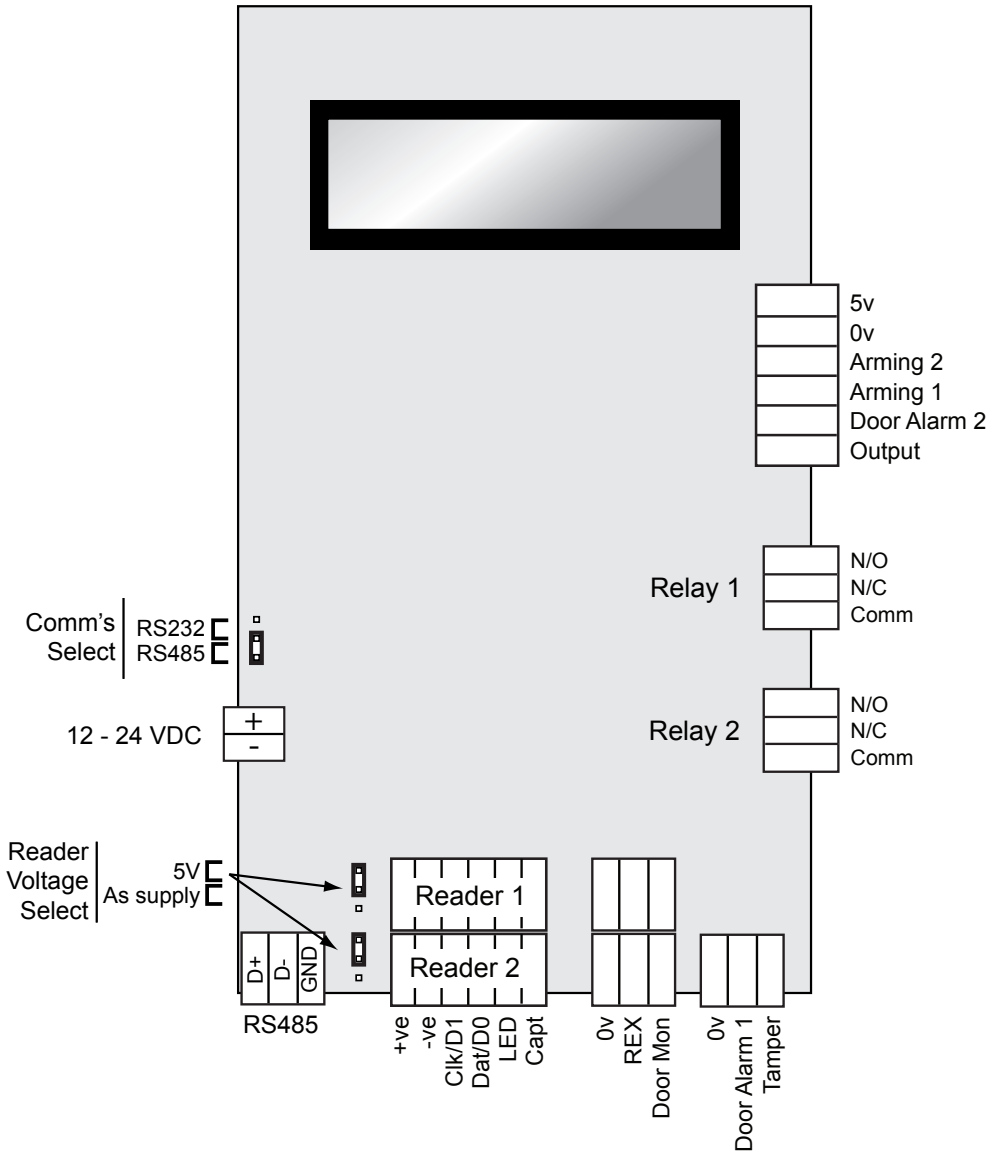
The mounting procedure is as follows:

- Release the front cover from the main unit by pressing the retaining buttons at the base of the unit while you lift off the cover from the bottom (hinging the cover at the top).
- Carefully unplug the ribbon cable linking the cover to the main unit. Avoid pulling or bending the ribbon cable.
- Completely remove the front cover.
- Mount the unit on the mounting surface through the 2 keyhole slots and 2 mounting holes in the back plate. Use 4 appropriate screws or nuts/bolts (M4) according to the type of mounting surface.
- After wiring the unit, support the cover with one hand and carefully re-insert the end of the ribbon cable into its socket. Refit the cover by engaging the top of the cover with the top of the housing and hinging in the bottom of the cover until the retaining buttons are fully engaged in the housing.



2.2 Power Supply and Cabling Requirements

The diagram below shows the CRC200+ with the cover removed. All terminal blocks and configuration jumpers are shown.



CRC200+ Connection Diagram

2.2.1. Power Supply

You must feed power to the CRC200+ from a suitable power supply that is capable of supplying between 12 and 24 volts DC (see warning below). The supply current requirements for the unit are100 mA quiescent, and 230 mA while reading with a passive reader. Some reader types such as motorised readers need to be powered by a separate supply (refer to the reader's installation instructions).

Connect the power supply to the power input connector at the bottom left of the unit (see diagram above) Do not apply power at this stage.

Warning: Power supply limitations for use of Door Open Time zones feature

It is recommended that the supply voltage is limited to between 12 and 18 volts DC if the Door Open Time zone feature is to be used (i.e. door relays remaining operated for several hours). The continuous operation of relays with certain readers connected may cause unreliable operation of the CRC200+ if fed from a 24 volt supply.

Warning: Use of CRC200+ with 12V readers

If a 12V DC reader is to be powered from the CRC200+, then the power supply to the CRC200+ must be rated at 12V DC. When the “supply voltage” reader supply output is selected, the input +ve pin is connected directly to the reader supply output pin. If therefore, an incorrectly rated supply is connected to the input, it is likely to damage the reader when power is applied.

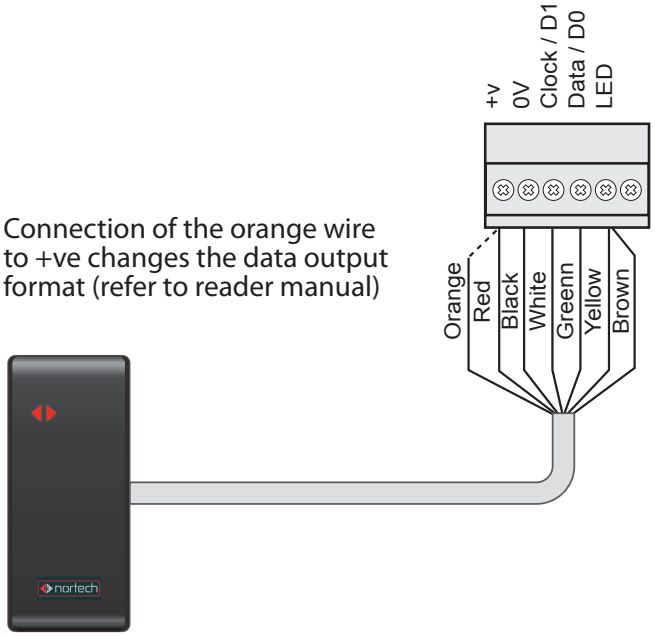
2.2.2. Reader Voltage Settings

Each of the two reader interfaces includes a power supply output. These power supplies can be individually set to either 5V or “supply voltage” to match the requirements of the corresponding reader. The voltage for each reader is set on a jumper to the left of the corresponding terminal block. The factory setting for these jumpers is 5 volts. To avoid damage to the readers, you must set the correct voltage for each reader before applying power to the CRC200+.

If you are in any doubt about the output voltage to the reader, apply power to the CRC200+ without connecting the readers and measure the voltage at the reader connector(s).

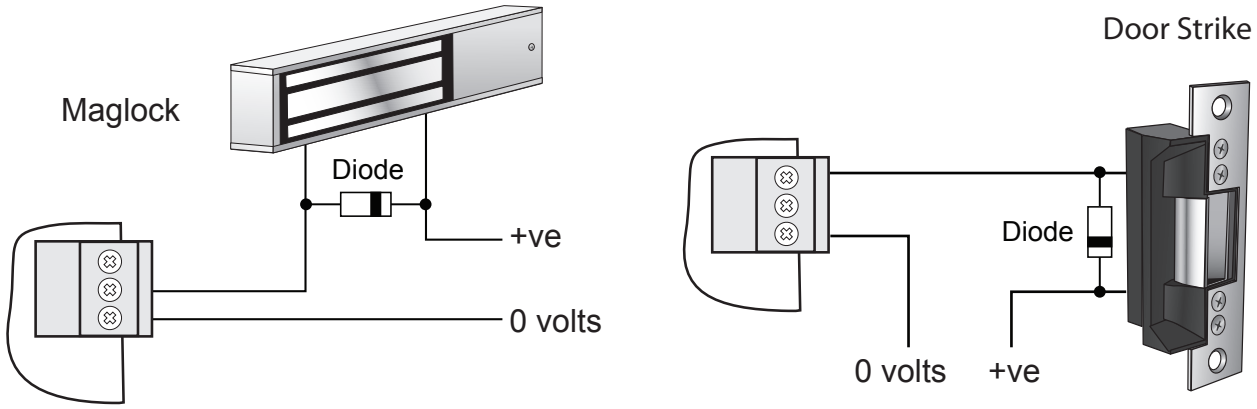
2.2.3. Connecting the Reader

The wiring will depend upon the type of reader and whether the reader is fed directly from a separate power supply. If you need to extend the reader cable, use an overall screened cable such as Belden 9536. Connect the screen of the cable to a suitable earth at one end only (to avoid earthing loops). Connection to earth at the controller end is recommended. The illustration below shows the connection of a Nortech reader to a CRC200+ controller.



2.2.4. Output Relay Connections

Each of the reader inputs is associated with a set of voltage free relay output pins (relay common, normally closed and normally open). Connect these according to the specific requirement (see examples below).



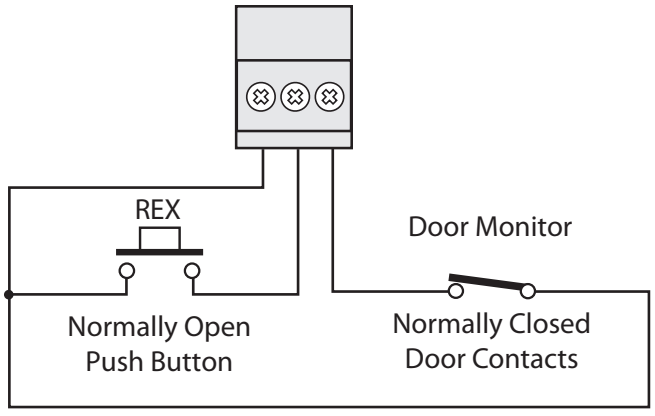
Warning: Do not exceed the relay contact current rating of 2A @ 30V DC, and ensure that inductive loads are fitted with a back EMF protection device. Failure to do this will invalidate the warranty.

2.2.5. Free Exit and Door Monitoring Options

On the CRC200+ there is a 'Free Exit' option for each of the two output relays. This operates such that the momentary application of a ground to the 'free exit' pin (marked REX on the diagram) has the same effect as the detection of a valid card at the corresponding reader (i.e. the corresponding latch relay energises for the preset relay time).

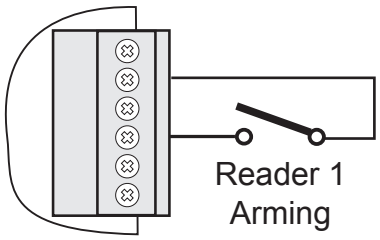
You can use the door-monitoring feature if the CRC200+ is online to a Norpass3 Access Control Management System. Here, these pins are wired via a door contact such that the pins are short-circuited when the door is closed. If the door is left open longer than a preset time (see section 4.5.1) or if the door is forced open without the detection of a valid card, a corresponding alarm can be raised at the control PC.

Wire these terminals as shown below:



2.2.6. Reader Arming

Each of the reader inputs has an arming input associated with it. Connecting the '0v common' and 'Arming' input via a switch or relay contact allows the reader to be armed externally. The contact must be open (open circuit between pins) to arm the associated reader, and closed (short circuit between pins) to disable the associated reader.

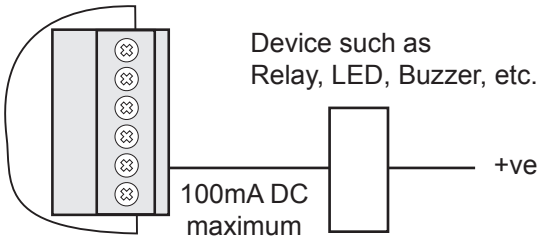


2.2.7. Alarm Inputs and Outputs

The CRC200+ supports several alarm inputs and outputs that are primarily used in conjunction with Norpass3. These are:

Tamper alarm input - connect a tamper switch between ground and the tamper input. The switch should be closed when the cover is in place. The change from closed to open would raise an alarm.

Door Alarms - if door monitoring is enabled, a door incident ('door forced' or 'door left open' with cause an output on the associated 'Door Alarm' output. Door Alarm 1 is also used as a Tamper alarm output. An output should be wired to an external device as shown below:



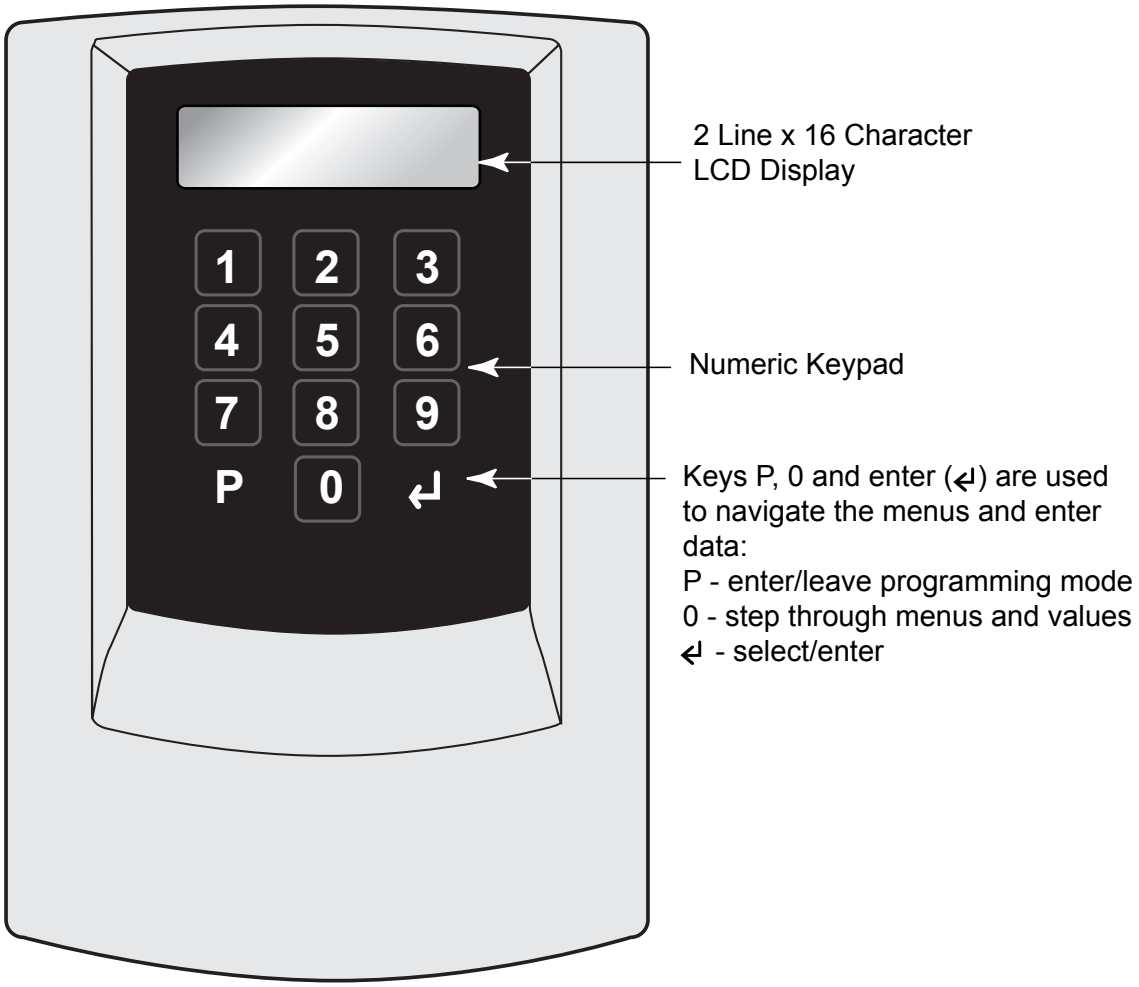
There is a spare output that can be configured to give an output in response to an event using the Message Table in Norpass3.

3. Programming the CRC200+

Once the CRC200+ has been installed and powered up, the next stage is the programming of the operating parameters to match the requirements of the installation.

This section explains how to programme all of the CRC200+ settings according to the application and the features used. Section 5 is a reference section that provides step-by-step detail of each procedure.

3.1 Programming Overview



When you power up the control unit, the screen will display the product code and the version number:

```
CRC200 Vx.xx
Node N:
```

Key:

CRC200 = Product code

Vx.xx = Firmware version number

Node: N - indicates the node identity when the CRC200+ is part of a network. This can be ignored if the unit is standalone. (This line is only displayed when the unit is first powered up.)

This display is referred to as the 'opening display' and is the starting point for each procedure described in this guide. The screen will revert back to the opening display after 1 minute of inactivity (60 seconds since last key was pressed).

Press Ⓟ (program) to enter the programming mode. The display will show the first menu item.

Press ⓪ repeatedly to cycle through the menu items. To enter a particular menu item, simply press ↵ (enter) while that item is displayed on the screen. The first parameter of that item will then be displayed in the bottom row of the screen (unless you move to a sub menu).

To enter or change a parameter, type the new value (or use ⓪ to step through options) and press ↵ (enter) to confirm the change. The unit will then move to the next parameter.

On entering the final parameter of a menu item, the unit will automatically move either to the next menu item or back to the beginning of the current menu item depending upon the particular item.

When you reach the last menu item, a further press of ⓪ will take you back to the first menu item again.

To go back to the opening display, press Ⓟ repeatedly until it is shown (up to 3 times depending upon where you are in the menu structure).

The structure of the CRC200+ menu system is illustrated in Appendix A.

3.2 Using the CRC200+ Online to Norpass3

If the CRC200+ is to be used as part of an online system, you only need to set its Node number (address) so that Norpass3 is able to communicate with it over the RS485 bus. All other parameters will be managed from the Norpass3 control screen (refer to Norpass3 online help).

Set the Node number as follows:

From the initial display, press Ⓟ once and then press ⓪ repeatedly until the following screen is displayed:

```
Installer
```

Press ↵ once. The following screen is displayed:

```
Config
```

Press ↵ repeatedly until the following screen is displayed:

```
Config
Node: N >
```

Type the required node number and press ↵

Press Ⓟ repeatedly until you reach the opening screen.

The CRC200+ is now ready to operate online to Norpass3. All settings will be overwritten by Norpass3.

3.3 Programming Overview for Standalone Operation

Before you configure user access rights and add cards to the CRC200+, you need to configure the way in which it will operate to support the particular type of cards that you will be using. You will also need to set the time and date, relay strike time, etc. These settings are in the “Installer” sub-menu and are used to control the way in which the controller operates.

3.3.1. Date & Time

Although the time and date settings are factory set, it is advisable to check them briefly before entering specific installation details.

Press Ⓟ once and then press ⓪ repeatedly until the ‘Installer’ screen is displayed, press ↵ once again to enter the sub-menu, and press ⓪ repeatedly until “Date/time” is displayed.

Press ↵ to show the first parameter. Refer to section 4.5.3 for details of this procedure.

3.3.2. Operating Parameter

For these parameters, you will need to have the following information available:

3.3.2.1. Card Numbering Method

CRC200+ can support up to 65,535 sequentially numbered cards. If you will be using sequentially numbered cards within the range 1 to 65,535 (with or without a site code) then you can set the CRC200+ to support sequentially numbered cards. If the card numbers are not sequential, or if they include numbers higher than 65,535, then you must set the CRC200+ to support random card numbers. This is set from within the ‘Config’ menu (see section 4.5.1)

3.3.2.2. Reader Settings

The following information is required for each reader:

- The required relay operating time (the period for which the door/barrier is to stay open)
- Any time periods when a door/barrier is to be left unlocked (see 3.3.2.4 –Door Open Time Zones)
- Whether anti-timeback is required and, if so, the anti-timeback period (does not apply to doors).

When you have these details available, follow the procedure in section 4.5.1 to enter them into the CRC200+.

3.3.2.3. Card Reader Output Format

You must determine whether the cards used on the system are in Clock & Data or Wiegand format. You also need to know the position and length of the card number on the card. If a site code is used, you need to know the site code and its position and length on the card.

Note: A useful feature to help identify the card format is provided by the ‘Card Test’ menu item. This will check the format of a card presented to reader1 and display the format type, number of digits/bits and the actual number on the card.

Follow the procedure in section 4.5.6 to check a card format.

3.3.2.4. Door Open Time Zones

Should any doors or barriers be left unlocked/open at specific times of the day on certain days of the week?

The use of Door Open Time Zones enables doors to be set to be unlocked during specific times of the day on certain days and controlled by a reader at all other times.

In addition to the two default time zones (0=always inactive, 1=always active), there are 15 programmable time zones (2 to 16). Each time zone can be programmed to unlock the door for a fixed period of the day and may be active on specific days of the week.

You may assign any of the time zones to a doors/barrier such that it is open/unlocked when the time zone is active, and controlled by the reader when the time zone is inactive.

3.3.2.5. Card Validity Access Levels and Time Zones

Are any of the cards to be valid only at specific times of the day on certain days of the week, or valid on only one reader?

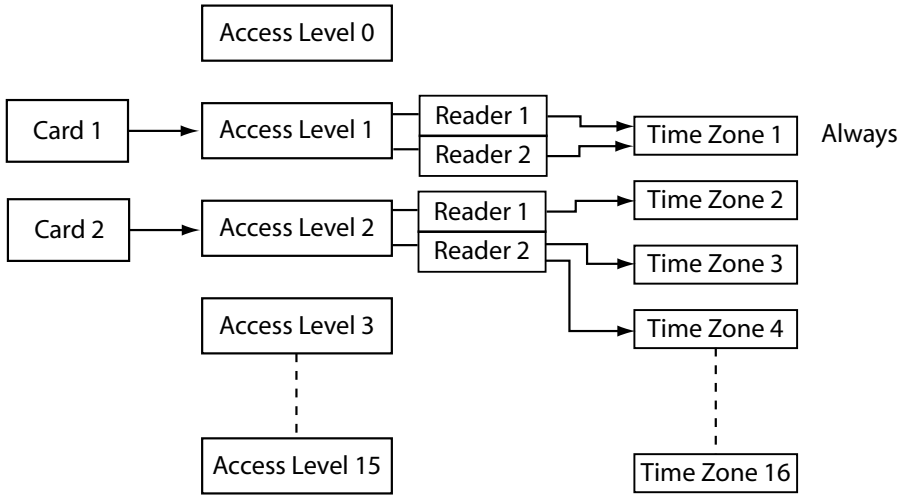
The CRC200+ supports extended access control requirements for different types of card holder relating to the following factors:

Valid reader(s)

Valid times of the day

Valid days of the week

There are 16 access levels, each of which can be assigned a different set of validity time zones for each of the two readers. There are 15 programmable time zones available in addition to a fixed time zone (1 = always valid). Several time zones can apply to the same access level, therefore allowing very complex validity period tables to be set up. The diagram shows the relationship between cards, access levels and time zones.



In this example, Card 1 is assigned to Access Level 1 where it is always valid on both readers. Card 2 is assigned to Access Level 2. For this Access Level, the card is valid on reader 1 for those times of day/days of week set up in Time Zone 2, and is valid on reader 2 for both those times of day/days of week set up in Time Zone 3 and those times of day/days of week set up in Time Zone 4.

The procedure for setting up access levels and time zones is:

1. Choose all likely active time periods (e.g. working hours, morning, afternoon, evening, etc.) and active days (e.g. weekdays, weekend, etc.) and set up appropriate time zones (see section 4.8 for programming procedure).
2. Choose the access levels for groups of cardholders based on applicable validity periods specific to each reader, and add them to the CRC200+ (see 4.9 for programming procedure).
3. Add cards and assign the appropriate access levels (see sections 4.1 and 4.2 for programming procedure).

It is important that you carefully plan and write down time zones and access levels before attempting to add them to the CRC200+.

Note: The factory default Access Level settings are:

Access Level 0: All Time Zones inactive on both readers (no access)

Access Level 1: Time Zone 1 active on both readers (full access)

We recommend that you do not alter these settings.

3.3.2.6. Anti-Passback

Anti-Passback is a feature designed for one-by-one access control (i.e. using a turnstile or barrier system) where the presentation of a valid card to a reader allows just one person to pass. If Anti-passback is activated, it will ensure that once a card has been presented to one of the two readers (usually configured as an entry reader and exit reader), it is made invalid for subsequent use on that reader until it has been presented to the opposite reader. If this is required, you must activate anti-passback.

Where anti-passback is activated, you can programme the CRC200+ to reset anti-passback at up to four times per day. Each reset will cause the APB record (records of APB card numbers that have been presented to one reader but not to the other reader) to be deleted, allowing these cards to be valid once more on both readers. Follow the procedure in section 4.5.2 to programme anti-passback mode.

3.4 Programming the Cards

Once you have configured the controller, you need to tell it which cards to accept and how to manage them. You can add card numbers either individually or in batches.

How you programme cards into the CRC200+ will depend on whether they are sequentially numbered (between 1 and 65,535) or randomly numbered. You can add sequentially numbered cards using the ‘Program cards’ option. Random cards can be added either by the ‘Program cards’ option or they can be ‘learnt’ using the ‘Learn Card’ option.

You must assign each card an access level. By default, Access Level 0 has no Times Zones active (no access) on either reader, and Access Level 1 has Time Zone 1 (full access with no time restriction) activated for both readers. Where card capture readers are connected to the CRC200+, you can set the card to be captured at either of the readers by triggering the ‘card capture’ output. Alternatively, you can set the ‘card capture’ output to trigger other external actions such as capturing video from a security camera on digital video recording equipment (DVR).

Where random card numbers are used, the card numbers are stored against indices. It is recommended that you take a note of each index and associated card number. An example form is provided in Appendix C.

Follow the procedure in section 4.1 to programme either sequential or random cards.

Alternatively, if the CRC200+ is set to manage random cards, you can get it to 'Learn' card numbers by presenting the cards to Reader 1. Follow the procedure in section 4.2 to add cards using the learning method.

Note: A 'Verify Card' feature is also provided to quickly check the programming of any card. To verify a randomly numbered card, you must enter the index against which the card has been stored. On entering an index, you will be presented with the card number and access level.

Follow the procedure in section 4.3 to verify cards.

3.5 Setting PIN Codes

If a keypad or keypad/reader combination is connected to the CRC200+, you can add up to 10 PIN codes for checking against user input.

Follow the procedure in section 4.4 to add PIN codes.

4. Programming Procedures

4.1 Program cards

To programme cards, at the opening display press Ⓟ once. The following is displayed:

```
Program Cards
NNNN cards
```

Where 'NNNN' = the number of cards currently in the memory (only applies to random card mode).

Press ↵ and carry out the following procedure:

Display	Action
`Program Cards` `Frm:`	Enter the first card number & press ↵
`Program Cards` `To:`	Enter the last card number & press ↵. (card number must be greater than that entered in the previous step). For single card validation, simply press ↵.
`Program Cards` `Acc Level: 0`	Enter the required Access Level and press ↵
`Program Cards` `Capt 1 no`	Use ⓪ to toggle between 'Yes' or 'No' to indicate whether these cards should be captured at reader 1 and press ↵
`Program Cards` `Capt 2 no`	Use ⓪ to toggle between 'Yes' or 'No' to indicate whether these cards should be captured at reader 2 and press ↵

The display moves back to the first parameter of 'Program Cards' for the next batch of cards to be added. Press Ⓟ to escape from this menu item and press ⓪ to move the next menu item.

4.2 Learn Cards (Random Card Mode)

This menu item only appears when the CRC200+ is in 'Random Card' mode. It allows you to add cards to the CRC200+ by presenting them to a connected reader. Ensure that an appropriate reader is connected to the 'Reader 1' input of the CRC200+ before starting the procedure.

To reach this menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the following screen is displayed:

```
Learn Cards
```

Press ↵ and carry out the following procedure:

Display	Action
Learn Cards Acc Level: 0	Enter the required Access Level and press ↵
Learn Cards Capt 1 no	Use 0 to toggle between 'Yes' or 'No' to indicate whether these cards should be captured at reader 1 and press ↵
Learn Cards Capt 2 no	Use 0 to toggle between 'Yes' or 'No' to indicate whether these cards should be captured at reader 2 and press ↵
Learning	This display indicates that the CRC200+ is waiting for a card to be presented to reader 1. Present a card to the reader.
Learning XXXX NNNNNNNN	Card number NNNNNNNN has been stored against Index XXXX. You can now present further cards (requiring same access rights) to be learnt or press P to escape learning mode. Keep a note of the index number that each card is stored against.

4.3 Verify Cards

To reach this menu item from the initial display, press P once and then press 0 repeatedly until the following screen is displayed:

```
Verify Cards
```

The way cards are verified depends upon whether the CRC200+ is in sequential or random card mode.

For sequential cards, you must enter the card number.

For random cards, you must enter the index number that the card is stored against. It is important therefore that you keep a record of the card database as mentioned in section 3.4.

4.3.1. Verify Cards in Sequential Mode

Press ↵ to enter the menu item, enter the card number at the prompt 'Card:' and then press ↵. You will see a display similar to:

```
Verify Card
C:00055 02 CC
```

The first number is the card number that you entered ('55' in this case), the second number is the Access Level assigned to it and the 'C' indicates card capture at each reader. Where card capture is not activated on a particular reader, that space is left blank.

Press ↵ to verify subsequent cards numbers or press P to escape learning mode.

4.3.2. Verify Cards in Random Card Mode

Press ↵ to enter the menu item, enter the index number for the card location in response to the prompt 'Card Idx:' and then press ↵. You will see a display similar to:

```
Verify:0005
00000055 02 CC
```

The the number on the top line is the index that you entered ('5' in this case), the first number on the bottom line is the card number ('55' in this case), the second number is the Access Level assigned to it and the 'C' indicates card capture at each reader. Where card capture is not activated on a particular reader, that space is left blank.

Press ↵ to verify subsequent cards numbers or press Ⓟ to escape learning mode.

4.4 Set PIN Code

This menu item enables you to set up to 10 (0 to 9) 4-digit PIN codes for use with a suitable keypad or keypad/reader combination connected.

To reach this menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the following screen is displayed:

```
Set PIN Code
```

Press ↵ and carry out the following procedure:

Display	Action
`Set PIN Code` `PIN0: XXXX`	Type in the PIN number for PIN location 0 and press ↵
`Set PIN Code` `PIN1: XXXX`	Type in the PIN number for PIN location 1 and press ↵
`Set PIN Code` `PINx: XXXX`	The display will continue to increment up to the maximum PIN value of 9. Press Ⓟ at any time to escape from this menu item and then press ⓪ to move to the next menu item.

4.5 Installer

This menu item is used to set up installation options. Unqualified personnel should not alter any values within this menu item as this may cause the unit to operate incorrectly.

To reach this menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the following screen is displayed:

```
Installer
```

This menu item leads to a sub-menu of installation set-up procedures.

Press ↵ to move to the first sub-menu item:

4.5.1. Config

This sub-menu item allows you to set the main operational parameters of the controller and is automatically selected when ↵ is pressed in 'Installer'.

To reach this menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the 'Installer' screen is displayed, and press ↵ once. The following screen will be displayed

```
Config
```

Press ↵ once. The first parameter will be displayed on the bottom line. Set the parameters as follows:

Display	Action
`Config` `Relay1:xxx>`	Enter a value of between 1 and 255 to set the pulse duration for relay 1 in second (or set to '0' for 500ms) & then press ↵.
`Config` `D1 hld:xxx>`	This parameter is used for online operation only and should only be configured through Norpass3 software. Ensure that it is set to '0' for standalone operation.
`Config` `Dr1 TZ:x>`	Enter a door open time zone value between 0 and 2 and press ↵. This parameter controls the times at which door 1 is left unlocked (if any). 0 = never, 1 = always, 2 = use programmable time zones (up to 16 available). See section 4.5.4 on how to programme these time zones)
`Config` `Relay2: xxx>`	Enter a value of between 1 and 255 to set the pulse duration for relay 2 in second (or set to '0' for 500ms) & then press ↵.
`Config` `D2 hld:xxx>`	This parameter is used for online operation only and should only be configured through Norpass3 software. Ensure that it is set to '0' for standalone operation.

Config Dr2 TZ:x>	Enter a door open time zone value between 0 and 2 and press ↵ . This parameter controls the times at which door 2 is left unlocked (if any). 0 = never, 1 = always, 2 = use programmable time zones (up to 16 available). See section 4.5.4 on how to programme these time zones)
Config Card DB xxxxxxx	This setting is used to set the database storage mode to match the card numbering method and use of PIN codes. The options are: RANDOM — Select this option if the card numbers are completely random or where card numbering is not controllable (e.g. cards are supplied by a third party), and where the 'PIN and Pass card' feature is not required. The maximum number of cards that can be stored is 8,000. RAN+PIN — Select this option if the card numbers are completely random or where card numbering is not controllable (e.g. cards are supplied by a third party), and where the 'PIN and Pass card' feature is required. The maximum number of cards that can be stored is 8,000. 64k — Select this option if the cards are sequentially numbered with a common site code and where the 'PIN and Pass card' feature is not required. The maximum number of cards that can be stored is 65,535. 16K+PIN — Select this option if the cards are sequentially numbered with a common site code and where the 'PIN and Pass card' feature is required. The maximum number of cards that can be stored is 16,000. Select the required mode by repeatedly pressing ⓪ until the required mode is displayed and then press ↵.
Config RD1: CARD	Press ⓪ to step through reader 1 door control options: CARD = normally closed, opens on valid card read UNLOCKED = permanently open LOCKED = permanently closed (not effected by valid card read) Press ↵ when the desired mode is displayed.
Config RD2: CARD	Press ⓪ to step through reader 2 door control options: CARD = normally closed, opens on valid card read UNLOCKED = permanently open LOCKED = permanently closed (not effected by valid card read) Press ↵ when the desired mode is displayed.
Configuration Node: x	This parameter is only required when the CRC200+ is online (See section 3.2)

Config RDr1 ATB:xx>	Anti-timeback (ATB) prevents a card being used twice on the same reader within a given period. Enter the ATB period for reader 1 in minutes (between 1 and 30 minutes) and then press ↵. To disable anti-timeback, set this value to '0'.
Config Rdr2 ATB:xx>	Enter the ATB period for reader 2 in minutes (between 1 and 30 minutes) and then press ↵. To disable this feature, set this value to '0'.
Configuration Password No	Press 0 to toggle the Password option 'Yes' or 'No' and press ↵ when the desired state is displayed. If set to 'Yes', you will be prompted for a four-digit number. Enter a 4-digit number and press ↵. You will then need to enter this number whenever you select programming mode from the opening display. (See warning below)

IF YOU LOSE YOUR PASSWORD YOU WILL BE PERMANENTLY LOCKED OUT OF THE CONTROLLER PROGRAMMING MENUS. PLEASE CONTACT THE INSTALLER IF THIS OCCURS.

Once the password parameters have been entered, press P to move to the next sub-menu item.

4.5.2. Set APB Mode

This sub-menu item allows you to activate anti-passback mode and set the associated parameters.

This sub-menu item is automatically selected when the final parameter of 'Config' has been entered and P is pressed.

To reach this sub-menu item from the initial display, press P once and then press 0 repeatedly until the 'Installer' screen is displayed, press ↵ once to enter the sub-menu, and press 0 repeatedly until the following screen is displayed:

```
Set APB Mode
```

Press ↵ and carry out the following procedure:

Display	Action
Set APB Mode APB no	Use the 0 key to toggle between ''yes' and 'no', then press ↵ . If you change the state, the unit will take a moment to initialise all cards to that state. Also if you select 'no', the unit will skip to the next sub-menu option. If you select 'yes' then it will continue as follows:

Set APB Mode APB Hour0: 25

You may then enter an hour in the 24-hour clock (0 to 23). At this hour every day the Anti-passback will reset, allowing all valid cards to operate on both readers.

'0' = midnight, any number above 23 will disable this 'APB Hour'.

On pressing ↵ you then have a further three 'APB Hours' (1 to 3), which you can set in the same way.

Note: When APB is active, anti-passback initialisation takes place when the CRC200+ is powered up. This process may take several seconds to complete depending upon the number of cards in the memory.

Pressing ↵ after the last APB hour will take you to the next sub-menu item.

4.5.3. Date & Time

This sub-menu item allows you to adjust the time and date in the unit's real time clock.

This sub-menu item is automatically selected when the final parameter of 'APB Mode' has been entered.

To reach this sub-menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the 'Installer' screen is displayed, press ↵ once to enter the sub-menu, and press ⓪ repeatedly until the following screen is displayed:

Date/time

Press ↵ and carry out the following procedure:

Display	Action
Date/time Year: xx	Enter the year as two digits and press ↵.
Date/time Month: xx	Enter the month in two-digit format and press ↵.
Date/time Date: xx	Enter the day of the month as two digits and press ↵.
Date/time Day: x	Enter a number corresponding to the day of the week, where 1 = Monday, 2 = Tuesday, etc.
Date/time Hour: xx	Enter the current hour as two digits and press ↵.

Date/time Min: xx	Enter the current minute as two digits and press ↵.
Date/time Sec: xx	Enter the current second as two digits and press ↵.

On completion of these parameters, the unit will move to the 'Door Open Time Zones' menu item.

4.5.4. Door Open Time Zones

This sub-menu item allows you add parameters for the programmable Door Open Time Zones (1 to 16). Each Time Zone will determine a period during which a door will be unlocked (strike relay kept operated). A singe Time Zone cannot span midnight (e.g. from 22:00 to 02:00).

All configured Time Zones will apply to those doors to which they have been assigned as long as the Drx TZ parameter under the 'Config' menu item has been set to '2' (see section 4.5.1).

This sub-menu item is automatically selected when the final 'Time/Date' parameter has been entered.

To reach this sub-menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the 'Installer' screen is displayed, press ↵ once to enter the sub-menu, and press ⓪ repeatedly until the following screen is displayed:

```
Timezones
Timezone:?
```

To edit a time zone, enter a number between 1 and 16 to select the required Time Zone and proceed as follows:

Display	Action
Timezone 1 FHour: xx	Enter a number for the 'From Hour' of the chosen Time Zone and press ↵ .
Timezone 1 FMin: xx	Enter a number for the 'From Minutes' of the chosen Time Zone and press ↵ .
Timezone 1 THour: xx	Enter a number for the 'To Hour' of the chosen Time Zone and press ↵ .
Timezone 1 TMin: xx	Enter a number for the 'To Minutes' of the chosen Time Zone and press ↵ .

Timezone 1 Mon: NO	Use the ⓪ key to toggle between ‘’YES’ and ‘NO’, then press ↵ . When set to ‘YES’, the active period set above will be active on that day of the week (Monday in this case). Repeat this sequence for each day of the week.
Timezone 1 RDR1 no	Use the ⓪ key to toggle between ‘’yes’ and ‘no’, then press ↵. When set to ‘yes’, this Time Zone will apply to Reader 1.
Timezone 1 RDR2 no	Use the ⓪ key to toggle between ‘’yes’ and ‘no’, then press ↵. When set to ‘yes’, this Time Zone will apply to Reader 2.
Timezones Timezone:?	You can now select a new Time Zone to edit or press Ⓟ to move on to the next menu item.

4.5.5. Card Format

This sub-menu item is used to set the format of the card data that will be read to the CRC200+ so that it can identify the card number for validation. Please refer to Appendix B for help on identifying the required data.

This sub-menu item is automatically selected when Ⓟ is pressed to leave ‘Door Open TZ’.

To reach this sub-menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the ‘Installer’ screen is displayed, press ↵ once to enter the sub-menu, and press ⓪ repeatedly until the following screen is displayed:

Card Format

Press ↵ and carry out one the following two procedures according to the card format

Display	Action
Card Format Mag	The CRC200+ supports: Mag - Clock & Data (ISO/ABA Track 2) Wiegand - Wiegand format Use the ⓪ key to select the required format and then press ↵. The next set of parameters depend on the chosen format.

4.5.5.1. Clock & Data Format

For an example of the values to enter for an ISO card number format, see Appendix B.

Display	Action
Card Format Digits: xx	Enter the number of digits that you want to read from the card and press ↵ .
Card Format M. SDigs: xx	Enter the number of digits used as the site code and press ↵. For random cards, set this to '0' (site code not used).
Card Format M. SLoc: xx	Enter the location of the first digit of the site code within the card data (counting from 0) and press ↵. Not required for random cards (set to '0').
Card Format Card Len: xx	Enter the number of digits used to represent the card number and press ↵.
Card Format Card Loc: xx	Enter the location of the first digit of the card number within the card data (counting from 0) and press ↵ .
Card Format Site: xx	Enter the site code to be used for this installation and press ↵. Not required for random cards (set to '0').

4.5.5.2. Wiegand Format

For an example of the values to enter for a Wiegand format, see Appendix B.

Display	Action
Card Format W. Bits: xx	Enter the total number of Wiegand bits and press ↵ .
Card Format W. Even: xx	Enter the number of even parity bits and press ↵.
Card Format W. Odd: xx	Enter the number of odd parity bits and press ↵.
Card Format W. SBits: xx	Enter the number of bits used as the site code and press ↵. For random cards, set this to '0' (site code not used).

Card Format W. SLoc: xx	Enter the location of the first bit of the site code within the bit string (counting from 0) and press ↵. Not required for random cards (set to '0').
Card Format W. CBits: xx	Enter the number of bits used to represent the card number and press ↵.
Card Format W. CLoc: xx	Enter the location of the first bit of the card number within the bit string (counting from 0) and press ↵ .
Card Format Site: xx	Enter the site code to be used for this installation and press ↵. Not required for random cards (set to '0').

Upon completion of the setting of these parameters, the unit will display the next sub-menu item

4.5.6. Card Test

This sub-menu item is used to read the card data format to ensure that it is compatible with the unit's settings and to test cards to verify the data format on them. Please refer to Appendix B for help on interpreting this data.

This sub-menu item is automatically selected when the final parameter of 'Card Format' has been entered.

To reach this sub-menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the 'Installer' screen is displayed, press ↵ once to enter the sub-menu, and press ⓪ repeatedly until the following screen is displayed:

```
Card Test
```

Press ↵ to enter the item. When the '>' symbol appears on the bottom line, present the card to reader 1.

Where the card data is in Mag format and the 'Card Format' setting is 'Mag', the top line will display an 'M' followed the number of digits on the card, and the second line will display the card number.

Example:

```
M10
0012340001
```

This indicates a 10-digit Mag number with a value of 0012340001.

Where the card data is in Wiegand format and the 'Card Format' setting is 'Wiegand', the bottom line will display the number of bits followed by the card number in hexadecimal format.

Example:

Card Test 26 000A0006

This represents a 26-bit Wiegand number with card data 000A0006. (655366 random card number or site code 10, card number 6)

Further cards can be presented to reader 1 – the display will change accordingly. Press Ⓟ to leave this sub-menu item.

Notes:

1. If you are investigating an unknown card, you may get either an unusual reading or no result. Where this happens, swap the Wiegand/Mag setting in 'Card Format' and test it again.
2. The card data value shown for Wiegand cards has odd and even parity check bits removed. Use a scientific calculator (available on MS windows) to convert from Hex to binary and refer to Appendix B. in order to identify the card number and site code, if applicable.

End of Installer sub-menu.

4.6 Clear Cards

This menu is for high level administrators only and must be used with care. When activated, all card records will be cleared from the CRC200+ memory. It is password protected for this reason. Prior to using this feature, ensure that 'Password Protection' has been activated and a 4-digit password has been set (see section 4.5.1). Even if 'Password Protection' is no longer active, the latest password set can be used for clearing cards.

To reach this menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the following screen is displayed:

Clear Cards

Press ↵ and carry out the following procedure:

Display	Action
Clear Cards Password?	Enter the 4-digit password and press ↵. ⚠ **WARNING:** All cards will be deleted from memory when you press ↵.
Clear Cards Cards Cleared	While the cards are being cleared, the screen displays 'Clearing ....'. When the process is completed, the 'Cards Cleared' message is shown momentarily. Press ⓪ to move on to the next menu item.

4.7 Clear Events

This menu item is for support staff only and should be ignored by normal users.

4.8 Time Zones

This menu item is used for setting up Time Zones where they are required (refer to section 3.3.2.5). Use these in conjunction with 'Access Levels' (see section 4.9).

To reach this menu item from the initial display, press Ⓟ once and then press Ⓞ repeatedly until the following screen is displayed:

```
TimeZones
```

Press ↵ and carry out the following procedure:

Display	Action
`Timezones` `Timezone:?`	Enter a number between 2 and 16 to select the time zone that you wish to configure and press ↵.
`Timezone nn` `FHour: xx`	Enter a number for the 'From Hour' of the chosen Time Zone and press ↵ .
`Timezone nn` `FMin: xx`	Enter a number for the 'From Minutes' of the chosen Time Zone and press ↵ .
`Timezone nn` `THour: xx`	Enter a number for the 'To Hour' of the chosen Time Zone and press ↵ .
`Timezone nn` `TMin: xx`	Enter a number for the 'To Minutes' of the chosen Time Zone and press ↵ .
`Timezone nn` `Mon: NO`	Use the Ⓞ key to toggle between ''YES' and 'NO', then press ↵ . When set to 'YES', the active period set above will be active on that day of the week (Monday in this case). Repeat this sequence for each day of the week.
`Timezones` `Timezone:?`	You can now select a new Time Zone to edit or press Ⓟ once and then press Ⓞ to move on to the next menu item.

4.9 Access Levels

This menu item is used for setting up Access Levels where they are required (refer to section 3.3.2.5).

Use these in conjunction with 'Time Zones' (see section 4.8).

This menu item is selected when Ⓟ is pressed in 'Time Zones' and then ⓪ is pressed once.

To reach this menu item from the initial display, press Ⓟ once and then press ⓪ repeatedly until the following screen is displayed:

```
Access Levels
```

Press ↵ and carry out the following procedure:

Display	Action
`Access Levels` `Level:?`	Enter a number between 0 and 15 to select the Access Level that you wish to configure and press ↵.
`Acc Level: nn` `Rdr1: TZ1: NO`	Use the ⓪ key to toggle between ''YES' and 'NO', then press ↵. When set to 'YES', Time Zone 1 will be active for access level 'nn' .
`Acc Level: nn` `Rdr1: TZ2: NO`	Repeat the sequence for each Time Zone for reader 1. After the last Time Zone (Time Zone 16) the display will change to show Time Zones for reader 2
`Acc Level: nn` `Rdr2: TZ1: NO`	Follow the same procedure as for reader 1 to set the Time Zones for reader 2.
`Access Levels` `Level:?`	Once the access level has been programmed, the next access level can be chosen and the above sequence repeated.

To escape from this menu, press Ⓟ once and use the ⓪ key to step to other menu items.

5. Technical Specifications

Electrical

Supply Voltage:	12 - 24V DC
Current Requirement:	100 mA quiescent, 230 mA while reading (both readers)
Reader Supply:	5V DC (100mA max.) or supply voltage

Physical

Display:	2 lines x 16 character LCD
Keypad:	12 button membrane. Keys 0 to 9 plus 'Program' and 'Enter'
Dimensions (mm):	190 x 130 x 43 (H x W x D)
Cable Termination:	Pluggable Screw terminal blocks

Environmental

Operating Temperature:	0°C to 40°C
Storage Temperature:	-20°C to 70°C
Relative Humidity:	95% non-condensing

Capacity

Card Numbers	Sequential Mode - 65,535 sequential card numbers
	Random Mode - 8,000 random card numbers

Inputs

Readers:	2 x 5-wire reader interfaces for Clock & Data (ABA Track 2) & Wiegand formats
Arming:	2 independent, ground activated inputs - open-circuit arming.
Door Open Monitor:	2 independent, ground activated inputs. Monitor door open status for system alarm reporting (online operation).
Request to Exit:	2 independent, ground activated inputs, each operating the associated latch relay.
Tamper Input:	Ground activate input - open circuit is alarm condition (online operation).

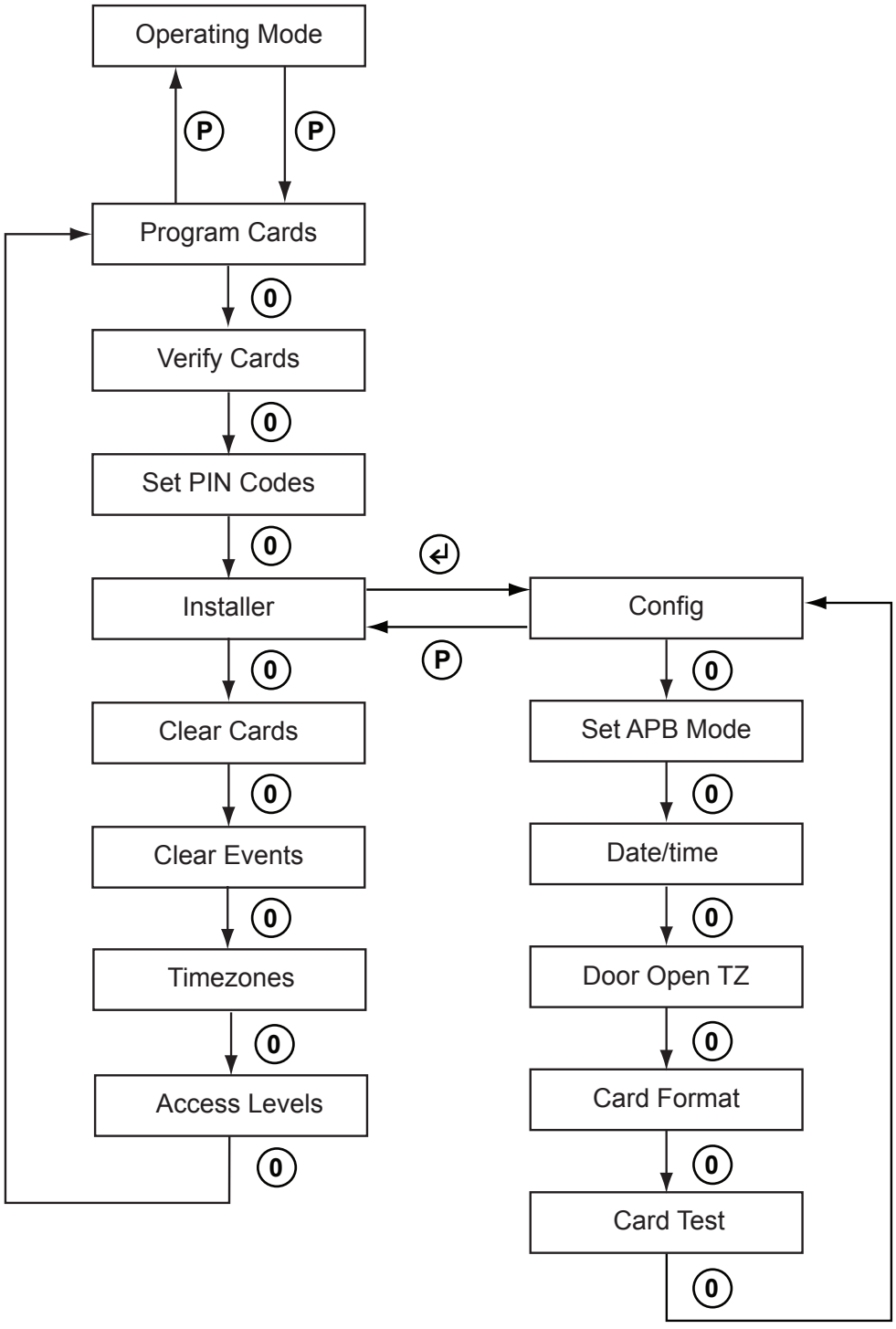
Outputs

Latch Relays	2 independent latch relays with change-over contacts rated at 2A at 30V DC
Auxiliary Output:	2 independent open-collector outputs for auxiliary control such as card capture.
Door Alarm:	2 independent open-collector outputs used to indicate a door alarm condition. Door 1 alarm doubles up as a tamper alarm output. (online operation).
Assignable Output	Open-collector output controlled from Norpass3 in online operation.

Data Communication

Management Interface:	RS485 (up to 32 controllers per control port)

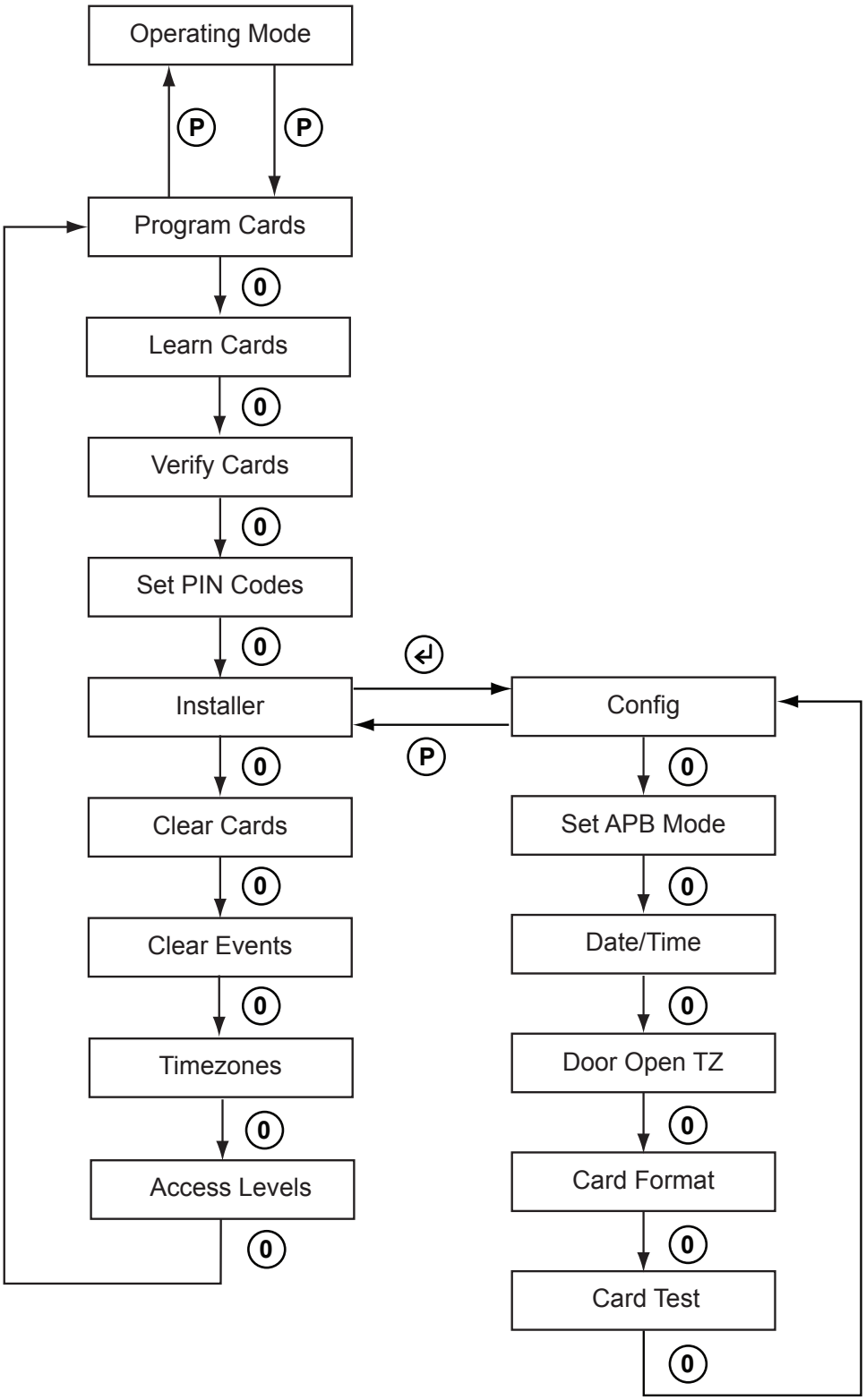
Appendix A - Menu Structures



Sequential Mode

Press ↵ to enter a menu item

Press Ⓟ to escape a menu item or move up a level



Random Mode

Press ↵ to enter a menu item

Press Ⓟ to escape a menu item or move up a level

Appendix B - Card Formats

Clock & Data (ISO/ABA Track 2)

This is an example of card format parameters for an ISO card to be entered in the 'Card Format' menu item. The card number is 0012340001 all digits of which need to be read. You wish to set the site code to 1234 and assign the last four digits as the card number as shown below.

			SITE CODE				CARD NUMBER			
Digit No.	0	1	2	3	4	5	6	7	8	9
Value	0	0	1	2	3	4	0	0	0	1

You would set it up as follows: -

Digits:	10	Card Len:	4
Site Len:	4	Card Loc:	6
Site Loc:	2	Site:	1234

Wiegand

This is an example of card format parameters for a card using standard 26-bit Wiegand format. The structures for other Wiegand formats can be more complex.

The information is displayed on the 'Card Test' screen in hexadecimal form. The conversion from an example hexadecimal reading of 103884 to a binary frame structure is shown below:

	1				0				3				8				8				4				
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
x	0	0	0	1	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	1	0	0	x
P	SITE CODE								CARD NUMBER																P
	16								14468																

Use a scientific calculator (available on MS Windows) to convert the most significant 8 binary digits to decimal for the site code, and the next 16 binary digits to decimal for the card number.

You would then set the CRC200+ up as follows:-

Number of Bits:	26	Wiegand Site Loc:	1
Wiegand Even Bits:	13	Wiegand Card Bits:	16
Wiegand Odd Bits:	13	Wiegand Card Loc:	9
Wiegand Site Bits:	8	Site Code:	16 (binary = 00010000)

Alternatively, the card number can be treated as a 24-bit whole number (no site code) with a decimal value of 1063044. To support this format, the CRC200+ must be set to Random Card mode.

Set the Wiegand Site Bits to '0', Wiegand Site Loc to '0', Wiegand Card Bits to '24', Wiegand Card Loc to '1' and Site Code to '0' (not applicable).

Appendix C - Random Card Record Sheet

Index	Card No.	Date Issued	Card Holder	Date Returned	Note (Lost, Stolen)