## Note

This guide provides the instructions for wiring and configuring version 1.5 of the CRC220 and CRC221 access control units. For older versions, please refer to issue 05 of this guide. Please refer to the Norpass3 online help for operational instructions. The mounting of the unit will depend upon the product type. Please refer to the mounting instructions provided with the product.

## Overview

The CRC221 access control unit is used to control access through a single door. It has two reader/keypad interfaces plus connections for a free exit button and a door-monitoring device.

The CRC220 control unit is used to control access through up to two doors. It has two reader/keypad interfaces plus connections for a free exit button and a door-monitoring device for each door.

Each access control unit can validate cards and control access autonomously but must be connected over a network to a PC running Norpas3 to allow updating of the card data as well as reporting events and local alarms. Each access control unit connected to the same com port must be assigned a separate node number, which is configured on the PCB using DIP switches.

The access control units can be used with either Wiegand or Clock & Data card readers. It can support either sequentially encoded cards with a site code, or randomly numbered cards (e.g. to support one or more existing card ranges). Norpass3 automatically configures the card system type in each control unit.

## Power Supply Requirement & Cabling

### Power Supply

If the control unit is supplied in an enclosure with an integral power supply unit, the power to the PCB will already be wired.

If however, the control unit is supplied as a separate unit, you must provide a suitable 12V DC power supply unit and cable it to the controller, terminating the conductors at the power input connector at the bottom left of the PCB:
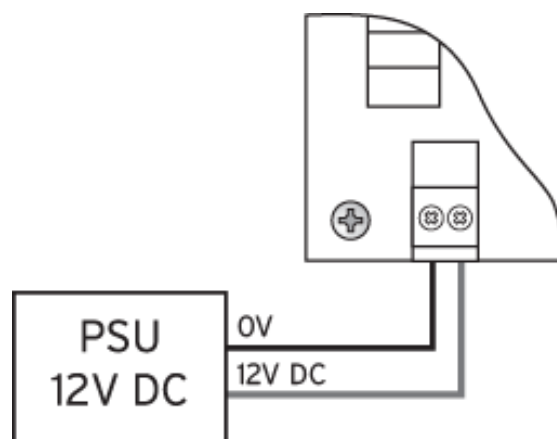
## RS485 Cabling

Cable the RS485 interface to the USB/RS485 adaptor at the PC. The cabling must link all access controller units in the network in the form of a 'daisy chain' using twisted pair screened cable such as Belden 9729 or CAT 5. The Maximum recommended distance between the first and last device is 1,200m. Refer to Norpass3 online help for more details on how to cable the RS485 bus and configure the communications port.

## Terminating Cables

Use 1 twisted pair for D+ and D- and another twisted pair for signal ground (0v). Ground (connect to earth) each cable screen (at one end only). If multiple pair cable such as CAT5 is used, ground all unused conductors in the same way.
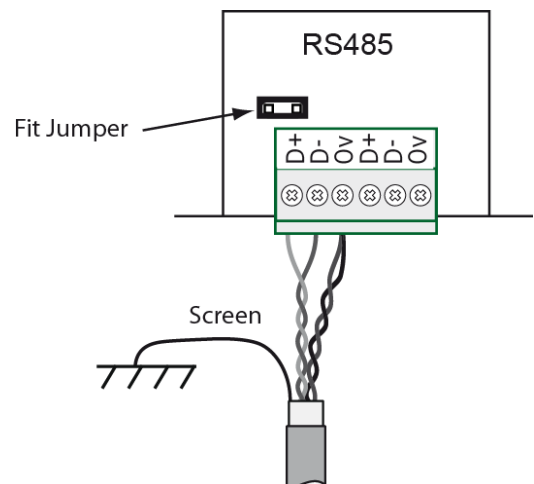
## Intermediate Devices

There are two sets of RS485 terminals for ease of wiring. Connect each cable to one set of terminals. Ensure that the jumper is not fitted on the RS485 interface board as it connects a terminating resistor between D+ and D-, which should only be fitted at the extremes of the daisy chain.
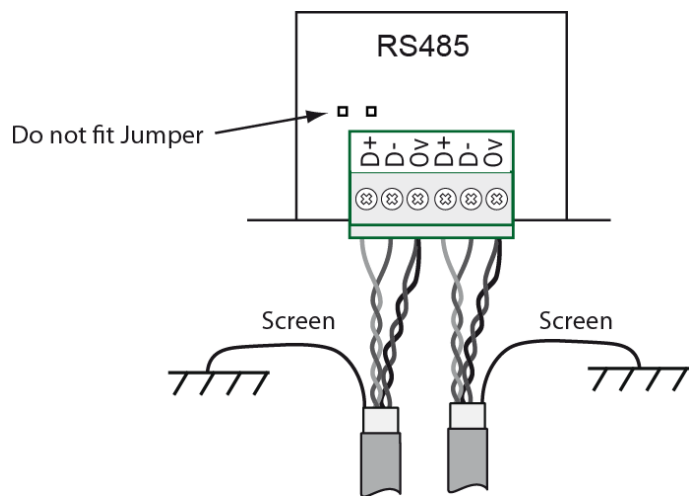
Last Device

Connect the cable to one set of terminals (it doesn't matter which). The terminal resistor should be connected between D+ and D- by fitting the jumper on the RS485 interface board.

**Note:** The USB/RS485 converter also has a terminating resistor jumper. Ensure that this jumper is always fitted unless the converter has been cabled as an intermediate device in the chain.

### TCP/IP Connection

For connection to a TCP/IP network, simply connect the RJ45 socket on the TCP/IP 'Thin Server' daughter board to a network access point using a 10BaseT/100BaseT patch cable and connect the Norpass3 hosting PC to a network access point on the same network. Assign a suitable IP address to the thin server by following the installation procedure described in Appendix C of the full User Guide.

You can use the TCP/IP daughter board to provide onward communication to other controllers via an RS485 network by connecting the RS485 cable to the terminals on the daughter board (as shown on the right), and following the RS485 cabling instructions on the previous page. A jumper is fitted to the left of the terminal block. This connects a terminating resister across the data lines. Remove this jumper if this controller is not at the end of the RS485 network.
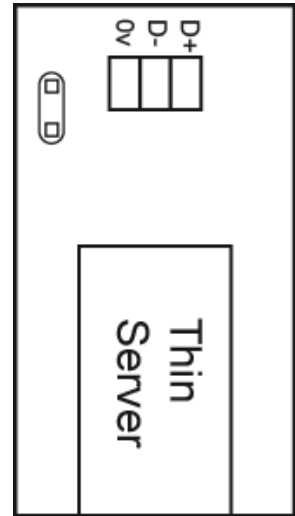
### Reader Connections

For connecting each reader to the access control unit, refer to the wiring instruction cards provided with the access control unit and follow the instructions provided with the reader, making sure that you check its power requirement. Certain types of reader need separate powering due to current requirement (see the reader specifications). Most readers that can be powered through the access control unit will accept 12V DC. For those readers that require a 5V DC supply, connect all leads to the reader interface except the +v power lead. Connect this to the '5v Out' pin on the opposite edge of the PCB. Where a reader is powered separately, omit the 'power' terminal only.

> ⚠ <u>Do not power up the controller</u> until you have checked that you have connected each reader to the correct voltage supply as shown on the wiring instruction cards provided with the access control unit. Failure to do so may cause irreversible damage to the reader.

### Output Relay Connections

Each output relay has a common and both normally open and normally closed contacts. Terminate the output cable according to the specific requirements of the installation. Refer to the wiring instruction cards for guidance (they show the normally closed contacts being used for magnetic locks).

> ⚠ Always fit a back EMF protection device across any inductive load connected to the output relay contacts. Failure to do this will cause damage to the access control unit. Damage caused in this way is not covered by the product warranty.

### Request to Exit Button & Door Monitoring

A request to exit signal can be generated by a momentary short circuit between the 'REX' pin and the '0V common' pin. Connect a suitable N/O push button between these terminals if required.

If it is necessary to raise an alarm when the door is held open beyond a pre-determined time (see Norpass3 online help), a door monitor contact (closed when door is closed) can be wired between the 'Door Mon' pin and the '0V common' pin. A local 'Door Fault' alarm output is available for each door.

## Configuring the Node Address

Each controller on the same network must be allocated an individual node number starting at '0'. The node number set in Norpass3 for each controller must correspond to the setting on the corresponding CRC22x PCB. Switches 1 to 5 are used to set the node number:

 = Node 0,   = Node 1,   = Node 2,   = Node 3, etc.
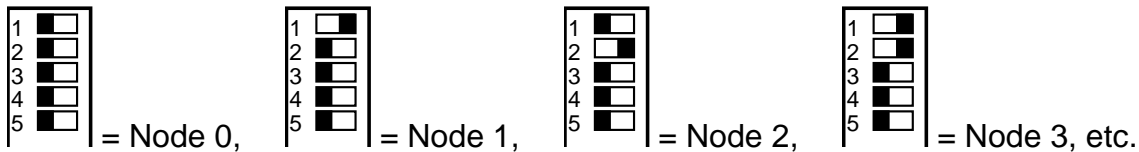
Here is the full lookup table of switch settings:

| Node | Switch Setting | | | | |
|------|-----|-----|-----|-----|-----|
|      | 5   | 4   | 3   | 2   | 1   |
| 0    | OFF | OFF | OFF | OFF | OFF |
| 1    | OFF | OFF | OFF | OFF | ON  |
| 2    | OFF | OFF | OFF | ON  | OFF |
| 3    | OFF | OFF | OFF | ON  | ON  |
| 4    | OFF | OFF | ON  | OFF | OFF |
| 5    | OFF | OFF | ON  | OFF | ON  |
| 6    | OFF | OFF | ON  | ON  | OFF |
| 7    | OFF | OFF | ON  | ON  | ON  |
| 8    | OFF | ON  | OFF | OFF | OFF |
| 9    | OFF | ON  | OFF | OFF | ON  |
| 10   | OFF | ON  | OFF | ON  | OFF |
| 11   | OFF | ON  | OFF | ON  | ON  |
| 12   | OFF | ON  | ON  | OFF | OFF |
| 13   | OFF | ON  | ON  | OFF | ON  |
| 14   | OFF | ON  | ON  | ON  | OFF |
| 15   | OFF | ON  | ON  | ON  | ON  |

| Node | Switch Setting | | | | |
|------|-----|-----|-----|-----|-----|
|      | 5   | 4   | 3   | 2   | 1   |
| 16   | ON  | OFF | OFF | OFF | OFF |
| 17   | ON  | OFF | OFF | OFF | ON  |
| 18   | ON  | OFF | OFF | ON  | OFF |
| 19   | ON  | OFF | OFF | ON  | ON  |
| 20   | ON  | OFF | ON  | OFF | OFF |
| 21   | ON  | OFF | ON  | OFF | ON  |
| 22   | ON  | OFF | ON  | ON  | OFF |
| 23   | ON  | OFF | ON  | ON  | ON  |
| 24   | ON  | ON  | OFF | OFF | OFF |
| 25   | ON  | ON  | OFF | OFF | ON  |
| 26   | ON  | ON  | OFF | ON  | OFF |
| 27   | ON  | ON  | OFF | ON  | ON  |
| 28   | ON  | ON  | ON  | OFF | OFF |
| 29   | ON  | ON  | ON  | OFF | ON  |
| 30   | ON  | ON  | ON  | ON  | OFF |
| 31   | ON  | ON  | ON  | ON  | ON  |

## LED Indicators

When Norpass3 is communicating with the access control unit, the polling LED flashes as it is being polled for data by the software. If the LED does not flash, there is a problem with communications.

A relay LED lights whenever the associated output relay is energised due to either the presentation of a valid card at the reader or a request to exit signal. This can be used as a basic local test of the card validity, the reader and reader cabling.