



Installation manual

Version 1.1

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MANUAL INTRODUCTION

The information in this manual is intended as an installation and commissioning guide for the Portal Plus access control system. This manual should be read carefully before the installation commences. Any damage caused to the equipment due to faulty installations where the information in this manual has not been followed is not the responsibility of Videx Security Ltd. This manual covers the hardware aspects of the Portal Plus system. The Portal Plus PROS manual covers the software aspects of the system and should be used in conjunction with this one.

VIDEX run free training courses for engineers who have not installed this system before. Technical help is also available on 0191 224 3174 during office hours or via e-mail tech@videx-security.com.

SYSTEM INTRODUCTION

The Portal Plus is a networkable access control system with windows based programming and management software with support for up to 15000 users and unlimited entrances. It allows greater flexibility in the design and installation of an access control system having a modular design and facilities for proximity, bio access and coded access readers. A range of readers are available all in the same robust design which also includes an illuminated touch to exit switch. Proximity reader modules are also available for the Videx 4000, VR4K and VR series entrance panels allowing full integration with an intercom system.

Based on 2 door controllers (available with or without integral 3.5A switched mode power supply) and including an RS485 bus that will link up-to 64 doors (32 controllers). Additionally, an optional integral Ethernet connection (TCP/IP) is available allowing controllers to be connected to an existing LAN or WAN with the potential expansion to unlimited doors.

The system includes distributed intelligence allowing the systems to continue functioning even during times of network problems. The user information is retained using a lithium battery on each control PCB. In the event of this battery requiring replacement, power should remain on during the change.

Both anti pass back and mantrap options are available as standard as are free inputs and outputs that can be programmed as per an installation or user requirement. The user friendly windows based software allows the adding, editing or deletion of users and includes finger print enrolment integrated into the software. Using this in conjunction with the desk mount USB finger print reader eliminates the need to enroll a user twice.

SYSTEM COMPONENTS

CONTROLS	
PPCU1	Lockable boxed 2 door controller (RS485 BUS) c/w 3.5A 13.8Vdc PSU Dimensions 265mm x 360mm x 75mm
PPCU2	Lockable boxed 2 door controller (RS485&TCP/IP BUS) c/w 3.5A 13.8Vdc PSU Dimensions 265mm x 360mm x 75mm
PPCU3	Lockable IP55 boxed 2 door controller (RS485 BUS) c/w 3.5A 13.8Vdc PSU Dimensions 300mm x 300mm x 150mm
PPCU4	Lockable IP55 boxed 2 door controller (RS485& TCP/IP BUS) c/w 3.5A 13.8Vdc PSU Dimensions 300mm x 300mm x 150mm
EWSH	Boxed 2 door controller (RS485 BUS) Dimensions 200mm x 144mm x 43mm
EWSiH	Boxed 2 door controller (RS485&TCP/IP BUS) Dimensions 200mm x 144mm x 43mm
EWS	2 door controller PCB (RS485 BUS) Dimensions 152mm x 85mm x 27mm
EWSi	2 door controller PCB (RS485&TCP/IP BUS) Dimensions 152mm x 85mm x 27mm
READERS	
MTPXS-M	Surface mount aluminum grey proximity reader. Dimensions 92mmx51mmx25mm
XPROX	Panel mount proximity reader module. (40mm x 40mm window)
4849PP	4000 Series module proximity reader
VR4KPPM	VR4K vandal resistant proximity reader module
MTPAD	Surface mount aluminum grey coded access keypad. Dimensions 92mmx51mmx25mm
BIOCS	Surface mount aluminum grey finger print reader. Dimensions 92mmx51mmx25mm
ACCESSORIES	
BIOE	Desk mount USB finger print reader
481	RS485 to USB converter
MTTS-EXIT	Surface mount aluminum grey touch to exit switch. Dimensions 92mmx51mmx25mm
FOBS/CARDS	
PBX-1E	ABS fob
PBX-2	Thin card
PBX-2C	Thick card

CONTROLS

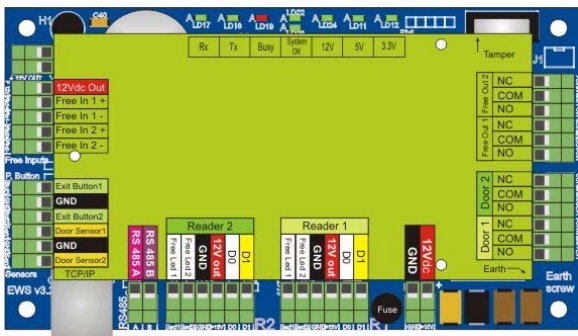
The control cabinet will include a 2 entrance control PCB and may also include a 3.5A 13.8Vdc power supply. If the power supply is not included then ensure that the power supply used has an adequate current rating to supply both the control equipment and the lock release.

3.5A 13.8Vdc PSU

The integral power supply has a current rating of 3.5A. It includes battery charging and battery drop out to prevent the battery being damaged due to deep discharge. There are three independently fused outputs. One should be used to power the control equipment, another for the door release for door one and the last for the lock release for door 2. There is also a fourth fuse to protect against a short circuit battery. Each output also includes a green healthy output LED.

FUSES				
Mains Fuse	Control Equipment Fuse	Lock 1 Fuse	Lock 2 Fuse	Battery Fuse
T3.15A	T1.0A	T1.25A	T1.25A	T1.0A

CONTROL PCB



There are two versions of the control PCB, one with Ethernet connection (EWSi) and one without (EWS). Both PCB's have RS485 connection and control two readers, two lock outputs, two door monitoring inputs and two push to exit button inputs as well as two free inputs and outputs. The following page identifies all the connections on the PCB.

FUSES

Input Fuse	Readers fuse
T2A	T1.0A

Note: These fuses are 'solder in' type and are only a last line of defence to protect against damage to the control PCB electronics. If these fuses fail then the PCB should be returned for repair.

JUMPER

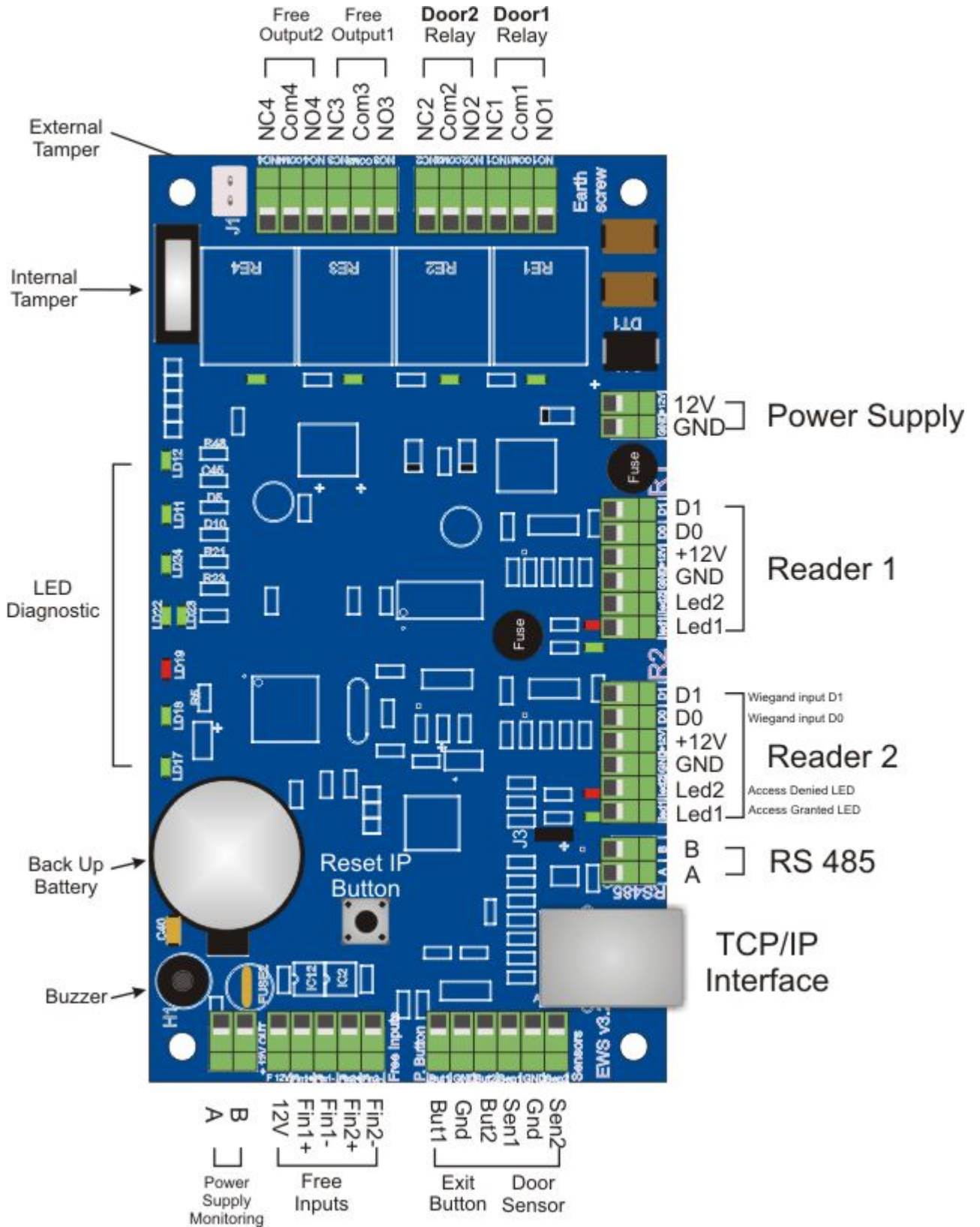
	Fitted (Closed)	Removed (Opened)
JP3	RS485 'Controller at the end of line'	RS485 'Controller in the middle of the bus'

ON-BOARD BATTERY

The battery specification is 3V lithium, 20mm Diameter with nominal capacity 230mAh. Part number CR2032. The battery should be replaced while the controller is powered to avoid loss of data. Ensure the polarity is correct before inserting the battery (See holder). The battery should last up to 7 years with infrequent power cuts but we suggest it is replaced every 3 years as a precaution.

RESET IP BUTTON

If you forget the password to gain entry to the IP portal setup page then power down, press this button and keep pressed while you power up to reset all TCP/IP settings on that controller to default.

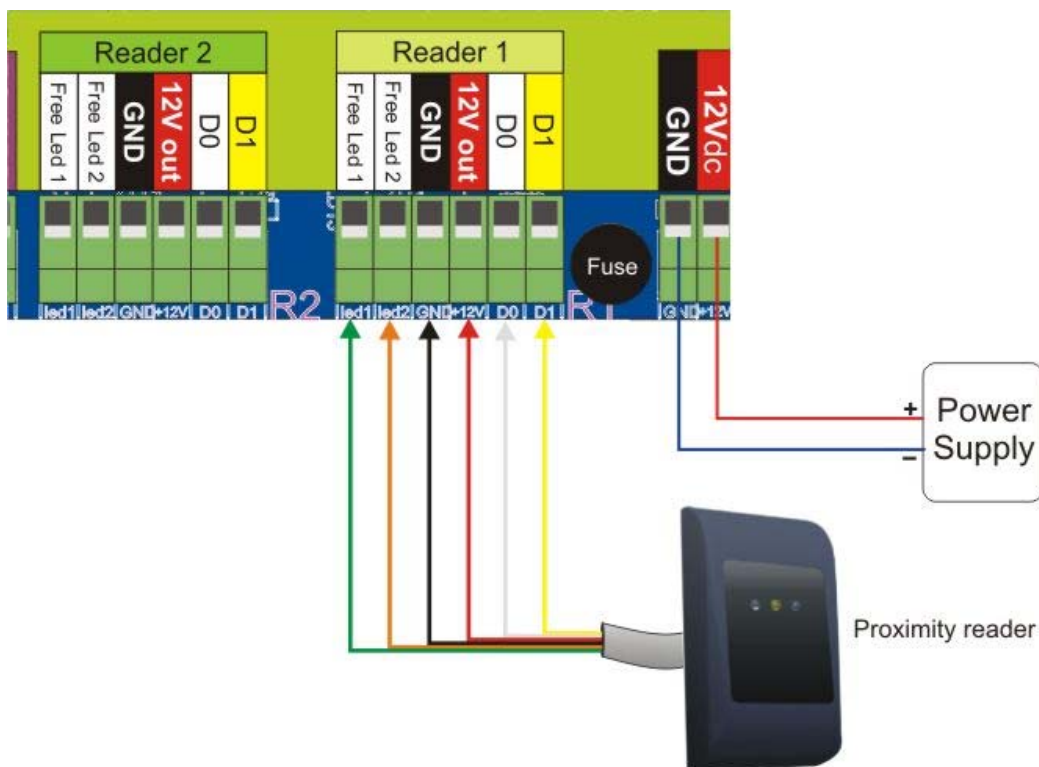


READERS

PROXIMITY READERS

Proximity readers require 6 connections. Readers should be no more than 50m from the control PCB and can be wired in alarm cable.

CONNECTION	FUNCTION	COLOUR
+	12Vdc supply to reader	Red
-	0V supply to reader	Black
D0	Wiegand data 0 (Approx. 4Vdc in standby)	White
D1	Wiegand data 1 (Approx. 4Vdc in standby)	Yellow
LG-	Green LED switched 0V trigger	Green
LR-	Red LED switched 0V trigger	Orange

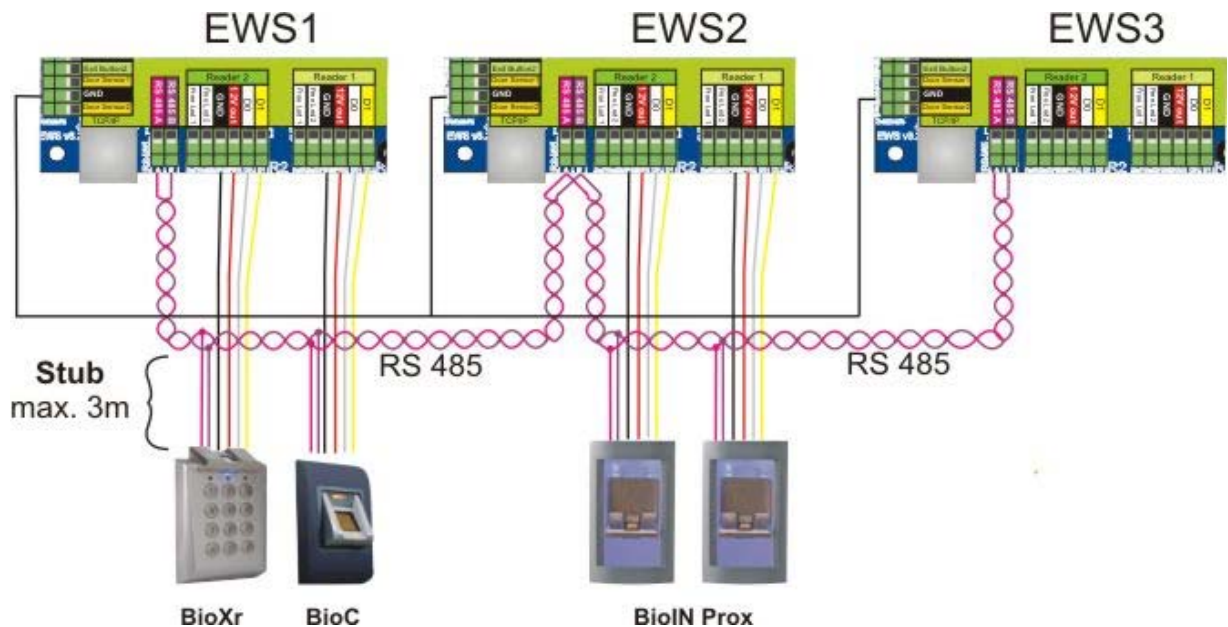


The Reader output can supply up to 400mA.

BIOMETRIC READERS

Biometric readers require 4 connections for the Wiegand bus and a further 2 connections for the RS485 bus. Readers should be no more than 50m from the control unit. The Wiegand bus can be wired in alarm cable. The RS485 bus must be wired in a shielded twisted pair cable and wired in a daisy chain with any other RS485 devices on the bus. (If the distance is less than 3m from the controller then it is possible to branch off the RS485).

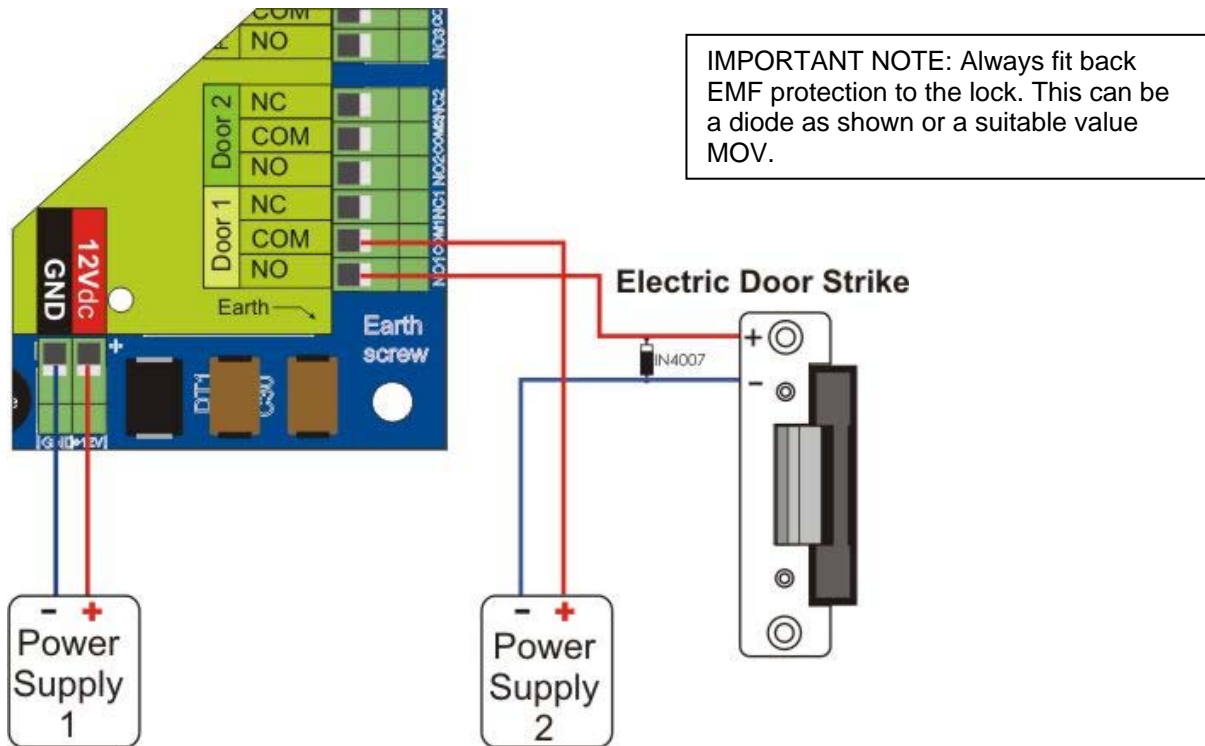
CONNECTION	FUNCTION	COLOUR
+	12Vdc supply to reader	Red
-	0V supply to reader	Black
D0	Wiegand data 0 (Approx. 4Vdc in standby)	White
D1	Wiegand data 1 (Approx. 4Vdc in standby)	Yellow
A	RS485 Bus (Twisted pair shielded cable)	Pink
B		Purple



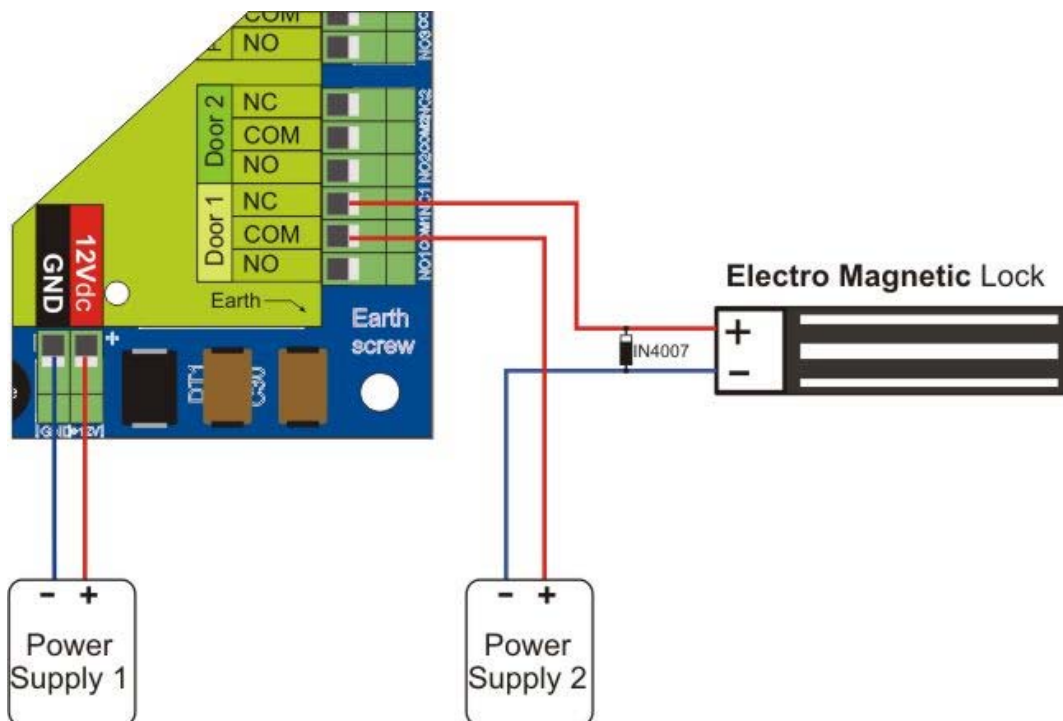
Note: Bio readers require a link to both the reader terminals and the RS485 bus connections. It is ok to make a very short star connection to the Bio reader (Max 3m). If a longer distance is required it will be necessary to run the bio reader in series with the other control PCB's (i.e. run an RS485 pair to and from the reader).

LOCK OUTPUT

FAIL CLOSED (Power to unlock)

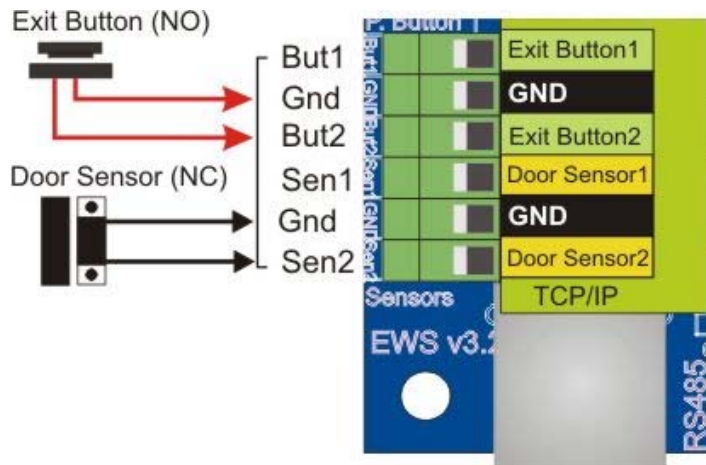


FAIL OPEN (Power to lock)



The lock outputs are dry contact change over relays rated at 250Vac 10A.

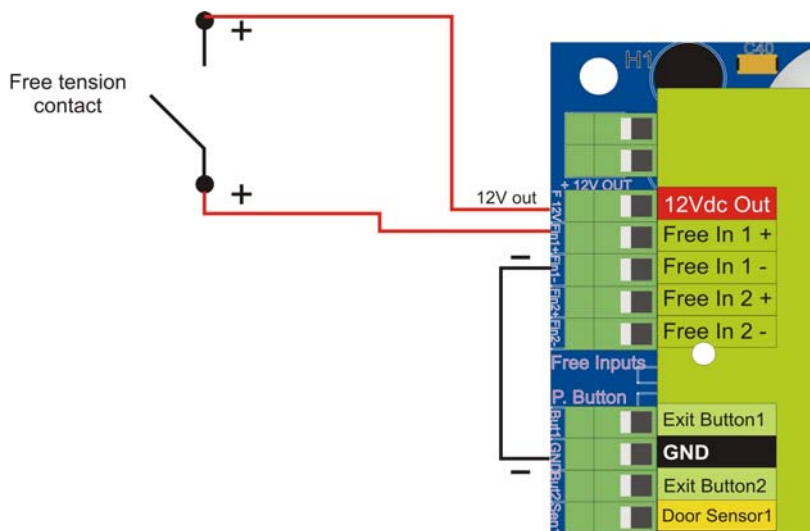
DOOR CONTACTS AND EXIT BUTTON INPUTS



Push to exit inputs will trigger their respective door relay.

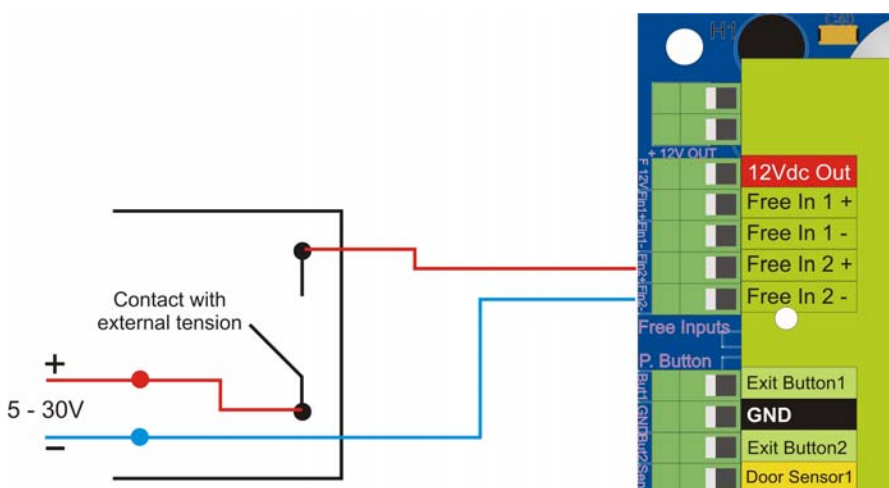
The door contacts can be used in junction with the PROS software and the free output relays to identify the different door open conditions (Door forced, door left open, door opened by access control etc).

PROGRAMMABLE INPUTS



Programmable inputs can be used to trigger any of the four available relays on the control PCB (Including the lock relays) and any combination of relays can be triggered at the same time (i.e. A trigger from free input 1 could trigger both the lock relay 1 and free output relay 2 at the same time).

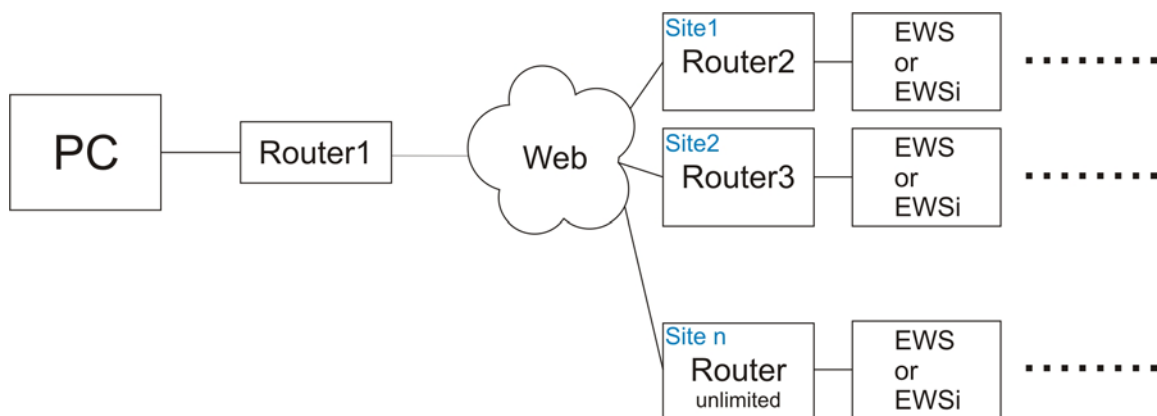
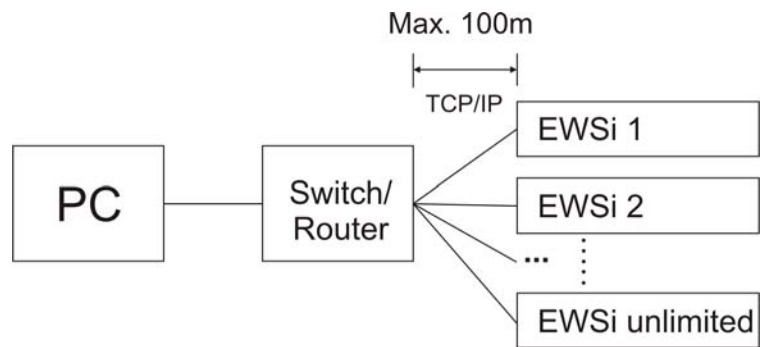
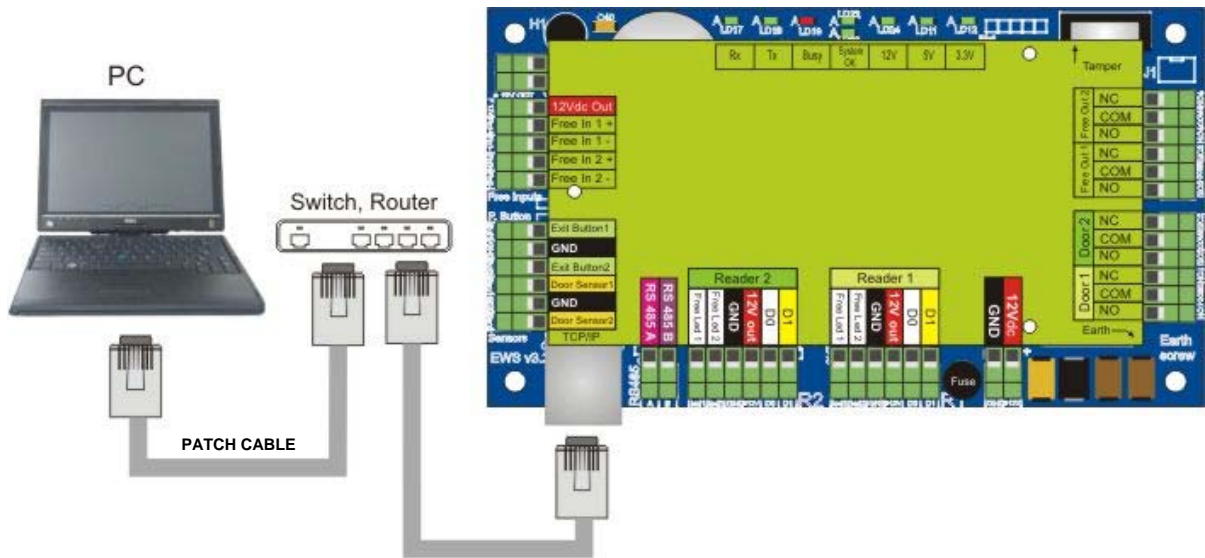
Either the 12V or the 0V can be switched. The inputs are opto-isolated and so require both the 12V and the 0V to be connected.



There is also a useful 'FireAlarm' feature whereby one of the free inputs can be linked to the fire alarm and when activated will trigger both the lock output relays on the PCB for as long as the fire alarm is triggered. (Note: The fire alarm will need to connect to all controllers and this feature relies on the controller PCB still functioning correctly and so cannot be classed as fail safe.

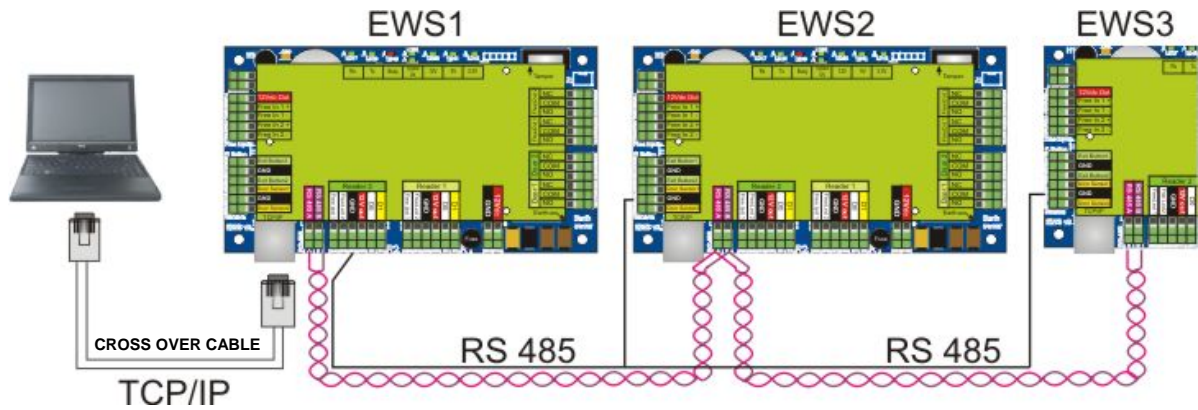
For fire exit doors we still recommend a green break glass to release the door in an emergency.

NETWORK COMMUNICATION
TCP/IP



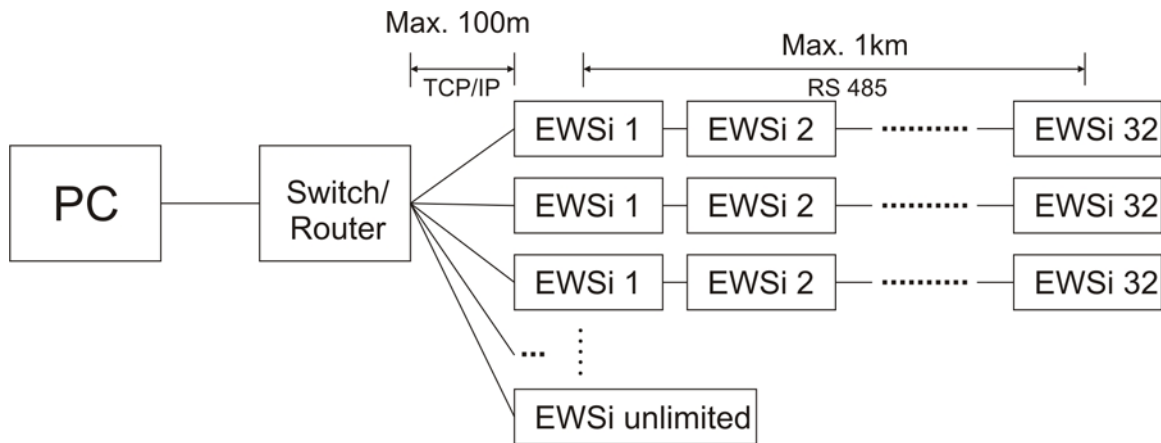
Using this method, each EWS control PCB will have its own unique IP address and connection made to a switch or router via a patch lead. The EWS is supplied with a default IP address and so IP addresses must be set to those supplied by the network administrator prior to connection to the network. Please see the PROS manual for more information.

MIXED TCP/IP & RS485

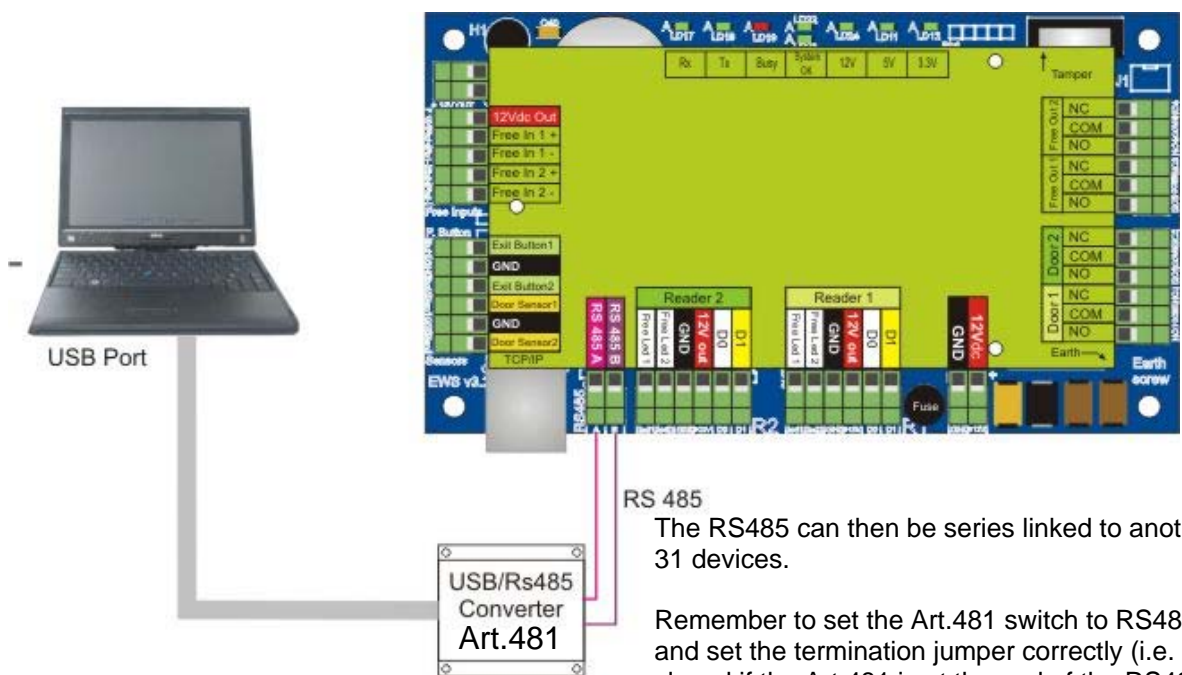


IMPORTANT:

One RS485 bus can connect 32 controllers maximum (CPU's and Readers with RS485 combined). For more devices add more TCP converters or another RS485 converter to another communication port on the PC. Also remember to link the grounds between the controllers as shown above.



RS485 (SERIAL)



RS 485
The RS485 can then be series linked to another 31 devices.
Remember to set the Art.481 switch to RS485 and set the termination jumper correctly (i.e. closed if the Art.481 is at the end of the RS485 bus and open if it is in the middle).

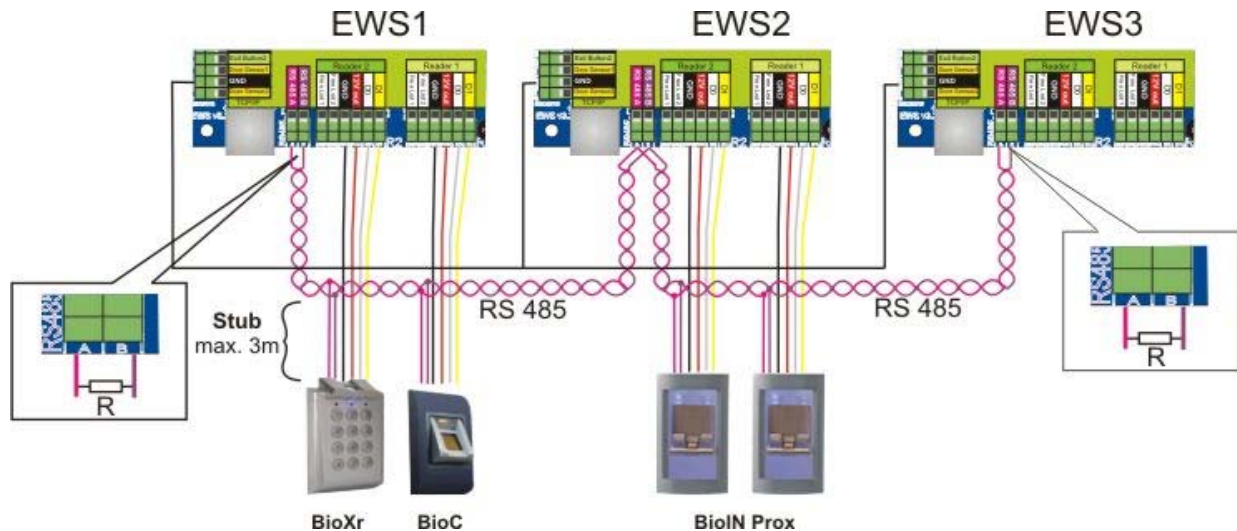
RS485 CABLING AND TERMINATION

For reliable communication over an RS485 network, the end of line points must be terminated with a 120 Ohm resistor.

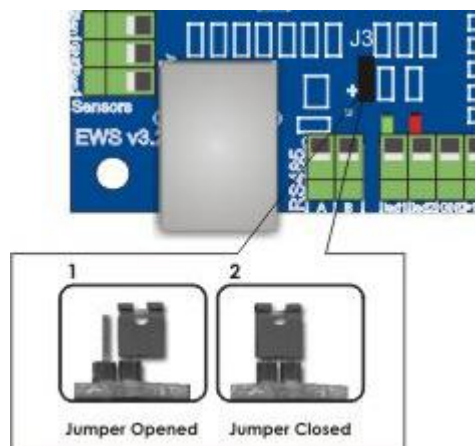
The RS485 Communication Line must be made in a daisy chain, NOT in a star wired communication. The cable must be twisted and shielded with a min. 0.5 mm² cross section. Ideally a cable with low capacitance specifically designed for RS485 communication is preferred.

Connect the ground (0V) of each unit in the RS 485 line using a third wire in the same cable (A 2 pair RS485 cable will allow for one of the additional cores to be used as the ground).

The shield of the RS485 cable must be connected to the buildings EARTH at one end of the RS485 link only. All RS485 cable shields should also be linked together. The Fingerprint Readers use the same RS485 communication line. The Fingerprint Readers must also be part of the daisy chain. If stubs are used for the Fingerprint Readers, their length must not exceed 3m.



On the EWS PCB, there is a 120 ohm resistor for termination. To use this termination resistor close the Jumper J3 on the first and last unit in the RS485 Line. All other must be open.



IMPORTANT:

One RS485 bus can connect 32 units (EWS and Readers with RS485). For more devices add more TCP/IP controllers.

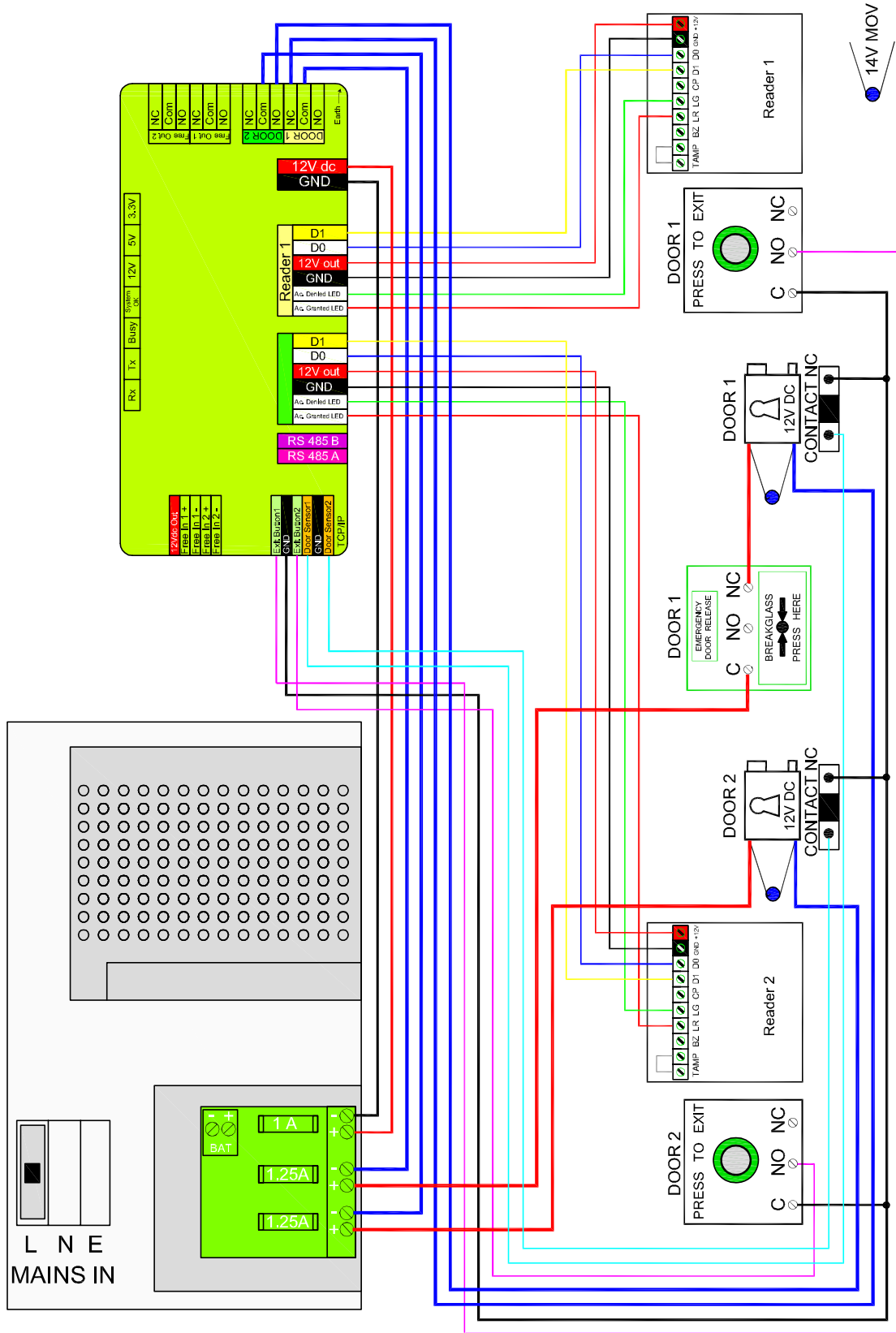
EWS SPECIFICATIONS

Reader inputs	2
Wiegand interface	Length: 8-128 bit Data: 8-32 bit Parity: 0-4 bit
Door relays	2
Door sensor inputs	2
Door egress inputs	2
Users/Events	1000/30000 - 15000/2500
Programmable outputs	2 (relays)
Programmable inputs	2 (opto couplers)
Clock & date	Internal dedicated chip
Data retention	CR2032 Lithium battery
Tamper	Onboard or external
Connections	Pluggable terminals
Communication interface	RS485 Network (optional)
Diagnostic	Buzzer 16 LED

EWS TECHNICAL CHARACTERISTICS

Supply voltage	11-15Vdc
Consumption	300mA (without readers)
Reader supply	400mA Max
Door relays	250Vac, 10 A
Programmable outputs relays	250Vac, 10 A
Programmable inputs	5-30Vdc, 3mA-28mA
Main fuse	2A
Readers fuse	1A
Input Supply fuse	315mA
Wiegand levels	1.3V Max (Logic 0) - 2.5V Min (Logic 1)
Environment temperature	0 - 45C°
Humidity	0-80%
Battery back up	3V Lithium 20mm Dia. Part No CR2032

EXAMPLE WIRING DIAGRAM



TROUBLE SHOOTING

RS485 Communication problems

1. Check that none of the A & B connections are reversed.
2. Check the end of lines are terminated correctly
3. Check all controllers that are not at the end of line do not have end of line termination.
4. Check there is only one communication port setup on the PROS software and that all controllers are communicating through that portal.
5. Check the switch on the Art.481 is towards the RS485 position.
6. Ensure the correct driver has been installed on the PC for the Art.481 converter. See PROS manual for more information.
7. When the RS485 is communicating correctly, the Rx & Tx LED's on each controller should be flickering (As long as the PC software is running and on the main screen with no other windows open).
8. Try breaking the bus down to a smaller size.

Reader not reading fob/card

1. Check the reader has 12Vdc on the + & - terminals
2. Check the D0 & D1 connections are ok and not crossed. To do this check the voltage at the reader is approx. 4Vdc. Disconnect one of them at the controller and the reader and check again at the reader that correct wire now has no voltage. The terminal on the reader (D0 or D1) with no connection to the controller should sit at 5Vdc.

Lock release not operating when the programmed fob/card is presented

1. First check that the relay on the controller is energising correctly.
2. If it isn't then check that the reader is accepting the fob (LED goes green).
3. Check for 12Vdc across the lock at the correct time.
4. Check that there is no setting on the PC software that could prevent the door from opening (Door locked etc).

Fobs work on some doors but not others

1. Check the fob in question does not have an access level which would prevent access through certain doors.
2. Check anti-pass back settings.
3. Check the controller has all user data by reloading the users data to that controller.

One controller is not working

1. Check that the System OK, 12V, 5V & 3.3V LED's are all illuminated.
2. Check that the PC PROS software can see the controller and is setup correctly with the correct serial no/IP Address.
3. Check the controller has all user data by reloading the user's data to that controller.
4. Check the readers connections.

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