

XP1M

V1.0X

Networked Access Control Panel

Installation Guide

XP1M ACCESS CONTROL SYSTEM

Installation Guide

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LIMITED WARRANTY.

i) Access Control Services Limited (ACS) warrants that, if properly installed and correctly operated in conjunction with compatible peripheral equipment and software (running on a computer for which it was designed) the xP1M control panel will perform substantially in accordance with the accompanying documentation for a period of five (5) years from the date of purchase from ACS.

ii) Due to the inherently complex nature of computer software and firmware, ACS does not warrant that the panel firmware, PC software or the documentation is error free, will operate without interruptions, be compatible with all equipment and software configurations, or will otherwise meet your needs.

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Introduction

Introduction to the scope of this document and conventions used throughout the manual.

This manual assumes very little understanding of PLAN access control systems specifically, however, some aspects of the panel installation and commissioning process (such as mains connection, lock and reader termination and PC networking) will require a degree of experience in security systems installation and a basic knowledge of computers and the Microsoft Windows operating system.

Note: This guide is not intended to be a definitive installation manual for installing access control systems. The installer is expected to have a level of installation expertise and experience appropriate to the scale and complexity of the project at hand.

At all times the prevailing local safety regulations and codes of practice should take precedence and be applied to the installation of this system.

This document is intended for guidance on the installation and commissioning of the **XP1M Access Control Door controller** only. The manual is intended for installation personnel, project managers and people with similar responsibilities.

For speed and ease of understanding the XP1M will be referred to in this document as the 'System', and the engineering personnel who carry out the installation of the system will be referred to as 'installers' or 'users'.

Note: Tips, notes, or definitions are occasionally printed in the left-hand margin (like this). These provide additional information which is related to the subject being discussed in the main text.

The XP1M is expected to operate as part of an on-line system - connected to a PC running appropriate PLAN software. For detailed guidance on the use and operation of the the Software, please consult the relevant user manual (supplied separately).

General Description

Product Overview

The XP1M controller is designed to be a flexible 1 door access control system, capable of standalone or networked operation. The system can control up to 50,000 personnel (expandable), has 128 time profiles and alarm monitoring options with separate alarm output relays.

Each unit features 3 extended alarm inputs for monitoring third party equipment and standard alarm input devices (such as door contacts and PIRs).

The built in real time clock and system memory are both battery backed on the circuit board and using the built-in PSU charger option (if fitted) all systems are also backed up against mains failure. Mains supplies are filtered and suppressed to protect against spurious noise and surges.

When off-line from the main PC, events are logged in the system RAM and the last 2000 transactions will be buffered until they can be up-loaded to the host system when comms is restored.

The XP1M controller is housed in a steel cabinet with provision for cable entry through the rear panel or side walls. All external connections to the main board utilise demountable terminal blocks.

The system is compatible with most types of card reader; technologies supported range from Mag-stripe, Wiegand Swipe and Proximity through to the more sophisticated Biometric and Contactless Smart Card solutions. The controller has built-in enhanced support for the latest in multiple-reading long range RFID tagging.

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Technical Specification

Enclosure	
Construction	Powder coated steel cabinet
Dimensions	320 x 260 x 95mm (H x W x D)
Weight	3.20 Kg
Power	
Input	100 – 250v ~ 2.3A 50/60/440 Hz or DC 120-300v 1.5A
Output	Integral 12vDC PSU/Charger unit fused @ 3.15 Amps
Environmental	
Operating Temp	0°C to +40°C
Storage	-10°C to +50°C
Humidity	10% to 80% (non-condensing relative humidity)
Interfaces	
Communications	RS422/RS485/TCP-IP** WiFi*
Reader Interface	Wiegand or 'Clock and Data'
Protection	Isolated communication, over voltage protection and transient suppression on all inputs.

* Using appropriate plug-in module.

Features summary

2 card reader inputs (with RTE and Alarm Monitoring facility)
3 extended alarm inputs
50,000 Card holders *
2,000 Event Cyclical Transaction Memory
Fire Alarm override input (jumper configurable)
128 Time Profiles
Shut-down profiles
AES 128 bit encrypted communications
1 x General alarm relay output
Built-in PSU charger Option
TCP/IP LAN and WiFi wireless communications option

* Cardholder capacity may vary depending on card format configuration

Installation Procedure

XP1M Control Panel location

The control panel is supplied in a wall mounting enclosure. Care should be taken to ensure that the mounting surface and the fixings used are appropriate for the weight of the panel. The following additional notes and observations should be considered when choosing a location for the unit.

Note: Always install at least one manual access override if a controller is located within an area that has no other means of entry (i.e other than through a controlled door).

- 1) The unit is not designed to be mounted externally unless it is fitted within a suitably rated secondary enclosure.
- 2) Sufficient free space around the unit (approx 35mm) should be left clear for the purpose of removing the outer doors.
- 3) The unit must be fitted in an upright orientation (hinges to the left).
- 4) Do not use the XP1M enclosure to house additional equipment (other than devices specifically designed to be fitted inside the box).

The unit should always be mounted in an accessible location - ideally on the secure side of the doors that are controlled by the panel.

Mounting

Remove and retain all packaging and documentation that was shipped with the unit. The precise fixing methods will vary from application to application, however, as a general guide...

- 1) Before fitting the back-box to the wall, establish the preferred route for cable access into the enclosure; the box is supplied with a number of 25mm holes to the rear and several 20mm 'knock-out' access points to the top, bottom and side walls. Use a hammer and punch to remove any of 'knock-outs' and drill any additional holes that are required before fixing the box to the wall.
- 2) There are four fixing holes in the rear of the enclosure. If necessary, use the back-box as a template to mark the fixing holes on the wall - note that the top two fixings are 'key-holed' to enable easier single handed installation.

Connecting up

Mains Power

The XP1M controller unit can be supplied with an integral 13.8vDC PSU/charger. This unit is fitted into the rear of the back-box and must be powered from a continuous mains supply. Ideally the mains supply will be isolated through a dedicated un-switched, fused spur. The length and type of cable that is used to connect the charger unit to the mains supply should

conform to local regulations and be appropriate to the termination method used in the XP1M (e.g. Fused screw terminal block).

The controller should be earthed and the mains (L&N) polarity should be observed when making this connection. **Do not apply mains power to the unit until the readers and other peripheral equipment are fully installed and connected.**

Please see the technical specification indicated on the PSU for further information about the mains supply voltage and frequency.

Standby Batteries

Space is available inside the enclosure for a single 7Amp/Hr. sealed lead acid battery, this must be connected to the 'BATT' output on the PSU/Charger (observing the correct polarity). One set of standard battery leads is provided with each panel – although an additional pair will be provided on request. **Do not connect the batteries to the unit until the readers and other peripheral equipment are fully installed and connected.**

External 12vDC Power

The control unit can optionally be powered by an external third party 12vDC PSU. Please see the connection diagrams for further information.

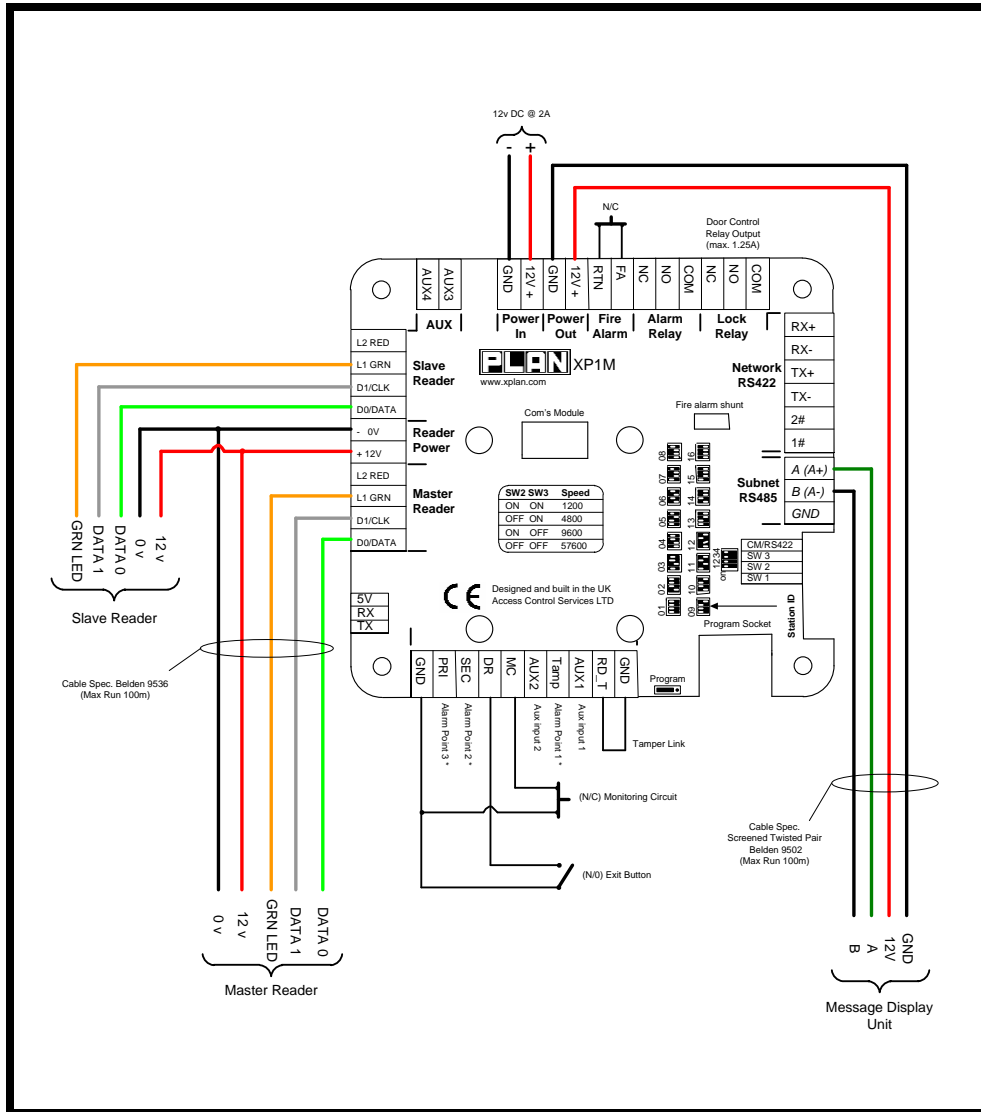
Readers

The system is compatible with most types of card reader; technologies supported range from Mag-stripe, Wiegand Swipe and Proximity through to more sophisticated Biometric and Contact-less Smart Card solutions. For Asset Matching and Long range hands free, the system utilises the latest in long range RFID tagging.

For connection purposes, all of the above reader options can be split into two general interface types: 'Wiegand' and 'Clock and Data'. Generally, the Wiegand interface is used for all proximity readers and 'Clock and Data' is used for Mag-stripe devices.

The documentation provided with the readers should be consulted for installation guidance and cable requirements, however, the diagram below indicates how the most common types of reader should be connected into the XP1M reader ports.

STANDARD WIEGAND READER TERMINATION



Door Egress Switch (DR input)

As can be seen in the diagram above, an input (DR) is provided on each reader port for a normally open ‘momentary operation’ egress switch. Whenever the DR (Door Release) input is pulsed low (via the RTE switch) the lock output will be switched for the pre-selected lock delay time.

The RTE is generally used in the following circumstances...

- to provide an exit signal in the case of alarmed doors.
- to allow a means of exit for doors with no mechanical override (e.g. Mag-locks).
- to allow the location of a remote override button.

- to provide an interface point between third party systems (such as required by telephone entry systems).

Door Monitoring Alarm (MC Input)

Using the MC input, the system can monitor for Door Forced or Door Ajar alarms.

Door Forced: If the MC input is open circuit without there first having been a valid card or RTE, then a Door Forced alarm will be generated.

Door Ajar: If the MC input remains open circuit for longer than the allocated door ajar delay then a Door Ajar alarm will be generated.

To use the door monitoring feature, connect a normally closed alarm circuit between MC and 0V (this input would usually be derived from an integrated contact within the locking device).

Note: In addition to the door state monitoring for reader controlled doors, the System features an additional 3 extended alarm inputs... please see 'Extended Alarms' for more information.

Locks

The XP1M provides the installer with a volt free SPCO relay o/p for connection of locking devices or third party control equipment (such as vehicle barriers or powered doors).

For locking devices that draw up to 1.25 Amps, the lock feed can be switched directly by the relay o/p. For locks that draw above 500mA, the source power should not be drawn from the 'on-board' XP1M 12v power, but direct from the PSU fitted in the rear of the enclosure - or from an additional PSU fitted adjacent to the controller.

An optional 'Break-Glass' fire alarm override switch can be fitted in such a way that it breaks either the positive, or, depending on local codes of practice, both poles. **Under no circumstances should the emergency override be installed so that it is only switching the negative supply.**

The Break Glass device would normally be required if the controlled door prevented access or egress to a nominated Fire Exit. **Please note that some local authorities will require the use of a Double Pole break glass call point (configured to disconnect power to both poles of the locking device).**

It is advisable to separately fuse the individual lock feeds using 'in-line' fuses as shown.

The specific arrangement and connection of the locking device will be dependent on the type of equipment used. In all cases reference and

consideration should be made to the lock supplier's documentation before connection.

IMPORTANT NOTE: For enhanced safety and flexibility the XP1M controller firmware features the option to select Fail Safe or Fail Secure mode from within the software. When set into Fail Safe mode the selected lock relays will reverse their operation. This should be taken into consideration when connecting a Fail Safe locking device because the panel default is for Fail Secure.

Extended Alarms

Each XP1M features 3 extended alarm inputs for monitoring third party equipment and standard alarm input devices (such as door contacts and PIRs).

Fire Alarm override

In addition to the local Break Glass Points fitted at each door, the System can accept door override signals from a Fire Alarm system using the configurable Fire Alarm Input.

At all times, this input must detect a closed contact 'safe' signal from an evacuate relay controlled by the fire alarm system. If the fire alarm link is removed, or the fire panel is activated, the selected doors will open.

The doors that will open in the event of an evacuation signal are selected by means of a jumper (JP1) as shown above.

NOTE: The Fire Alarm override input will only activate doors that have been set to Fail Safe in the door configuration menu.

Since this facility does not depend on the microprocessor to operate it can be considered fail safe in operation.

Networking

The PLAN system offers the installer a high degree of networking flexibility. Direct cabled 'star' and 'daisy chain' topologies can be used. Using the field upgradeable plug-in Ethernet module, client LAN/WAN infrastructure can be utilised, as well as a wireless Ethernet (WiFi) option. All of these can be mixed in a single installation.

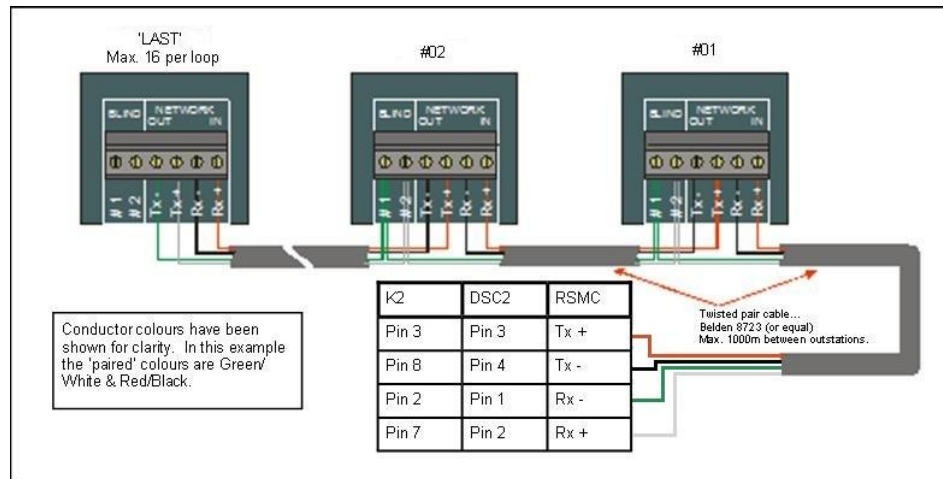
As standard, the panel is shipped with the relevant jumpers set for direct cabled systems, this presumes that XP1Ms are linked together using dedicated twisted paired cables and connected to the Host PC via an RS422 interface.

- Network cable should be minimum 7/0.2mm shielded two twisted pairs. Recommended cable is Belden 8723 or equivalent. Maximum cable distance between any two panels is 5,000m.

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- Normal precautions to avoid possible causes of harmful interference should be employed... e.g. avoid running with heavy duty mains cables or adjacent to fluorescent lighting etc.
- A maximum of 16 door controllers (XP1Ms PLAN200s or PLAN400s) can be connected to any single comms port.
- Care should be employed when using twisted pair cables that include multiple 'black' conductors. 'Crossing' the black conductors between panels will cause spurious faults that may be difficult to track down.

PLAN NETWORK CONNECTION DIAGRAM



Note above that the 'BLIND' terminals have been used to link the 'through' pair in the IN and OUT cables. These termination points have no connection to the panel electronics and are provided solely for the purpose of linking the 'straight-through' pairs. The Blind terminals are not used in controllers situated at the end of a chain.

Commissioning Procedure

Powering up the unit

Before applying mains power to the XP1M, make a final check that all connections are made off and terminated correctly. It is important that these checks are carried out at the panel **and** at the door location. Ensure that all unused conductors and foil shielding is insulated and made 'safe' as necessary to prevent short circuits when the panel is closed.

To initiate the first time power-up sequence apply mains power to the PSU/charger. Check that the LED on the PSU is displaying Green and that the "5vDC" and LED on the xP1M is illuminated. If the LEDs are on, connect the stand-by batteries to the PSU charger.

For direct cabled applications ensure that the 'Comms Select' jumpers are set for RS422. For alternate communications configurations such as WiFi or Ethernet, please refer to the relevant paperwork.

Setting the station ID

If the XP1M is connected in a network to other PLAN400s or PLAN200s, then each unit must be given a Station-ID in the range 01-16. To Set the Station ID for this panel simply use the dip switches as indicated on the PCB overlay.

The control panel is now ready to be tested on-line. Refer to the software manual for further instruction.