

AC-225-X

Advanced Scalable Networked Access Controller

Hardware Installation and User Guide



May 2010

ROSSLARE
SECURITY PRODUCTS

www.rosslaresecurity.com



0706-0960202+02

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1. Introduction

AC-225, AC-225IP and AC-225IPU access control panels are state-of-the-art networked access controllers, employing the latest technology to meet the requirements of the market.

When used in combination with Rosslare's AxTrax software system, the AC-225 gives you full control over access to your premises. The system can control both single and double door entrances and up to four doors, with MD-D02 two Door expansion module. AC-225 supports up to 30,000 users and uses flash memory to enable easy firmware upgrades.

For more information on the AxTrax AS-525 system, refer to the AxTrax Access Control Software Manual.

The AC-225 consists of the following components:

- AC-225 controller board
- Panel enclosure
- PS-33 power supply
- Power Transformer (not included with the AC-225IPU)
- 4 x 2.2k Ohm and 4 x 8.2k Ohm resistors for the supervised inputs.

The AC-225IPU also includes on-board support for communications across a TCP/IP network.

The AC-225U and AC-225IPU are for US installations, and have been approved by UL for use as a stand-alone unit only.

1.1 Features

The AC-225 is a powerful and adaptable access control solution with a range of powerful features.

- Controls 1-2 doors (DIP switch controlled) or 2-4 doors when optional MD-D02 installed
- Two IN/OUT readers, with tamper switch and LED control
- Four inputs, selectable as supervised or non-supervised
- Form-C relay outputs (rated 5A)
- Optional MD-IO84 with an additional 4 relay outputs and 8 inputs, selectable as supervised or non-supervised
- Optional MD-D02 with 2 readers, 4 relay outputs, and 4 inputs selectable as supervised or non-supervised
- Built-in sounder generator for chime, bell and siren signals
- Panel configuration DIP switch
- Up to 32 access control panels in every network (64 doors in every network or 128 door network when optional MD-D02 installed)
- 30,000 users
- 20,000 log events
- RS-232 or RS-485 serial communication (up to 115200 bps)
- On-board TCP/IP communication (AC-225IP only)
- Remote firmware upgrades
- Removable terminal blocks

1.2 AxTrax AS-525

The AxTrax AS-525 software system is custom designed to set-up, manage and supervise all aspects of a access panel network.

It offers the following capabilities:

Users capacity	30000
Unauthorized Users	30000
Access groups	30000
Number of panels in system	1023
Number of doors in system	4092



Note:

These options are software and firmware dependent, and may change in later releases or revisions.

Client-Server Structure

AxTrax AS-525 operates through a dedicated AxTrax server computer, which communicates with the access control panels and can serve an unlimited number of network clients.

Introduction

The server also runs the system's SQL database, which contains settings and definitions for access control across the entire facility. Clients can define new employees and control access permissions. The system includes tools for database backup, input and export of previous configurations and automatic backing-up on a periodic basis.

AxTrax AS-525 supports all panel types and offers scalability and flexibility in addition to a range of advanced control features.

Configurable Links

The system's configurable links model makes it possible to trigger any chosen output automatically or report a configurable alarm, based on a selected input. This allows easy integration with other access systems such as intruder alarms, CCTV systems and elevator controls.

AxTrax AS-525 can also define a selected set of operations (defined in configurable links) when a panel registers a specified user or group of users. This can be useful, for example, in elevator control systems. The system can assign users with counters, allowing a limited number of entries to each panel.

Fingerprint Recognition

AxTrax can share user details with Rosslare's BioTrax software system. The BioTrax system can then download all selected users information to an AYC-W6500 fingerprint reader.

Note: Fingerprint recognition was not evaluated by UL.

1.3 Compatible Readers

For UL-compliant installations, use any of the following UL-listed PIN and PROX card readers made by Rosslare:

AY-H12, AY-J12, AY-K12, AY-L12, AY-M12, AY-Q12, AYC-F54, AYC-F64, AYC-G54, AYC-G64, AYC-Q54B, or AYC-Q64B

2. Technical Specifications

Electrical Characteristics

Operating Voltage	13.8V DC 1.5A from PS-33
Maximum Input Current	AC-225: Standby: 80mA Maximum: 325mA
	AC-225IP: Standby: 120mA Maximum: 370mA
General Inputs	4 supervised high impedance inputs. 8 or 12 supervised inputs when using MD-D02 or MD-IO84 expansion boards Maximum voltage: 5V DC
Relay Outputs	4 Relay outputs 8 supervised outputs when using MD-D02 or MD-IO84 expansion boards 5A Relay N.O. and N.C. options
Reader Ports	Standard = 2 Reader ports With MD-D02 = 4 Reader ports Output voltage: 12V DC Max. Current: 245mA LED control output D0/D1, tamper input
Visual Indicators	11 LEDs
Audio	Built in sounder (bell, chime and siren)
Battery Standby Time	3 hours (for w/12V battery)

Communication Characteristics

RS-232	Terminal Block
RS-485	Molex and Terminal Block
TCP/IP	On-board RJ-45 connector (AC-225IP and AC-225IPU have an internal IP module)
Speed Options	9600 bps 19200 bps 57600 bps 115200 bps

Technical Specifications

Environmental Characteristics

Operating Temperature Range	32°F - 120°F (0°C - 49°C)
------------------------------------	---------------------------

Operating Humidity	0 - 85% (Non-condensing)
---------------------------	--------------------------

Dimensions

Height x Width x Depth	10.4 x 13.2 x 3.4 inch 264 x 334 x 84.5 mm
-------------------------------	---

Weight	AC-225	8.38 lbs. (3.80 Kg)
	AC-225IP	8.40 lbs. (3.81 Kg)
	AC-225U	5.95 lbs. (2.70 Kg)
	AC-225IPU	5.97lbs. (2.71Kg)

Transformer (for AC-225 and AC-225IP models only)

AC Transformer	AC transformer 120/220V AC / 16V AC 3A (50VA),class 2 (not included)
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PS-33 Power Supply Specifications

Input Voltage	16.5V AC/3A
----------------------	-------------

Backup Battery Charger Output	12VDC/300mA
--------------------------------------	-------------

To Access control panel - Output Voltage 1	13.8V DC / 1.5A
---	-----------------

To Relay Outputs Output Voltage 2	13.8V DC/ 0.9A
--	----------------

PS-33 Power Supply Indication

Tamper Output (open collector)	Indicates faulty power
---------------------------------------	------------------------

Technical Specifications

PS-33 Power LEDs

Power In (AC) Green LED1	Main power
Power Out (DC) Red LED2	Low voltage
Low Battery Red LED3	Backup battery low voltage



Note:

For models: AC-225U and AC-225IPU

These models come without a transformer. When using a third-party transformer, please make sure that it is rated for at least 50W (16.5 VAC @ 3A).

AC-225U and AC-225IPU have a maximum 50W power consumption, which means that it requires 3.0A. This rated power is divided in the system, as follows:

- 1) 300 mA for the Lead Acid Battery Charger
- 2) 980mA total for four readers (when MD-D02 is used)
- 3) 900mA total for the four outputs

In cases where the installation requires more power (for example high rated magnetic locks) we recommend using an external power supply for the lock.



Note:

UL-listed panic hardware must be used to allow emergency exit from the protected area.

3. AC-225 Panel Set-Up

Every AC-225 panel controls one or two doors (up to 4 doors with MD-D02). The panels connect together in a network and are controlled by a central server computer, running the AS-525 AxTrax software system.

The following diagram shows an example set-up for a network of AC-225 access control panels.

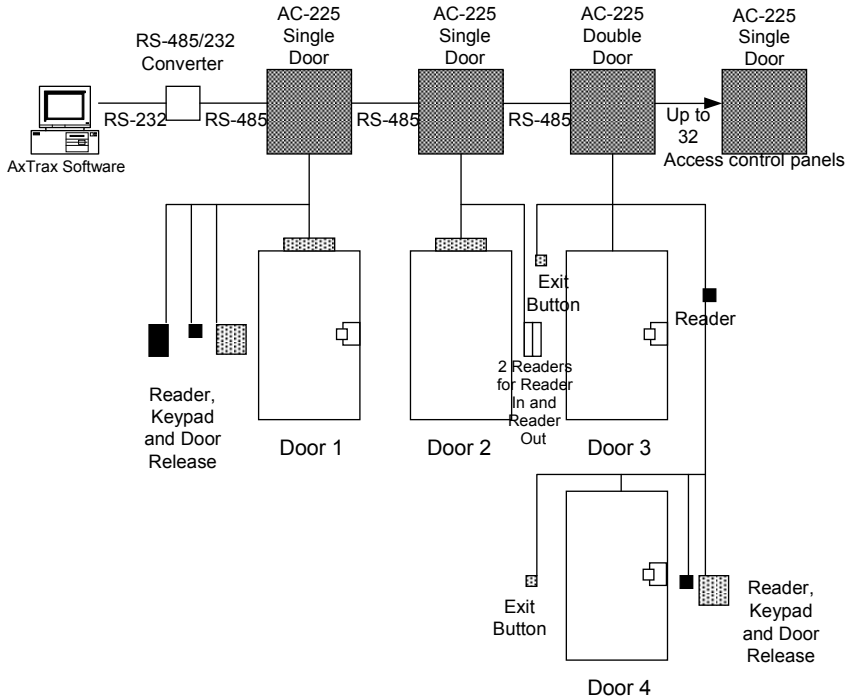


Figure 2: Sample AC-225 Configuration



Note:

The use of bushings is required for any conductors leaving the enclosure through the provided openings.

3.1 Inputs Wiring – Non-Supervised Inputs

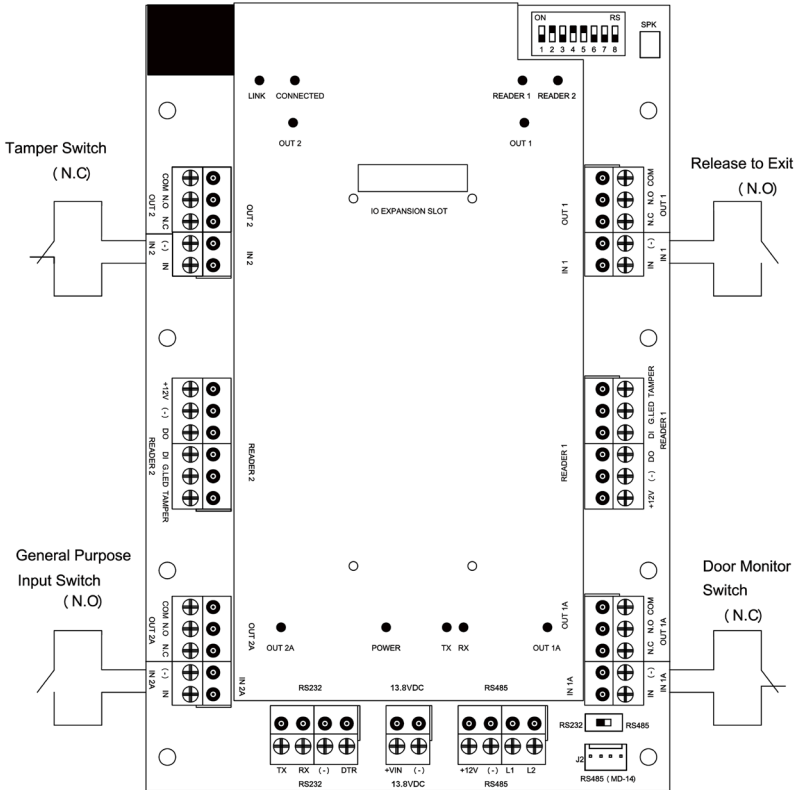


Figure 3: Inputs Wiring – Non-supervised Inputs

3.2 Inputs Wiring – Supervised Inputs

When wiring the AC-225 for supervised inputs, resistors should be placed on the input switch and not on the terminal block.

For further details refer to Input and Output Connections on page 17.

3.3 Outputs Wiring

The following diagram illustrates wiring for two main types of 12VDC electrical release mechanisms. Other electrical devices can be switched using the voltage free relay contacts.

3.5 Reader

Proximity & keypad readers are supplied with a limited cable. The color of the cable cover represents the cable's function.



Note:

When extending the cable distance, be careful with the color of the cable cover.

Refer to the reader specifications for the maximum cable length (typically 150m with an 18 AWG cable).



Figure 7: Reader Wiring

3.6 MD-IO84

The MD-IO84 is an optional I/O expansion board which adds four relay outputs and eight supervised inputs to the Access Control Panel. Attach the MD-IO84 to the AC-225's expansion slot (see Figure 8). For more information, see the MD-IO84 Installation and User Guide.

3.7 MD-D02

The MD-D02 is an optional Reader expansion board which adds 2 readers, four relay outputs and four supervised inputs to the Access Control Panel. Attach the MD-D02 to the AC-225's expansion slot, as marked in red in Figure 8. For more information, see the MD-D02 Installation and User Guide.

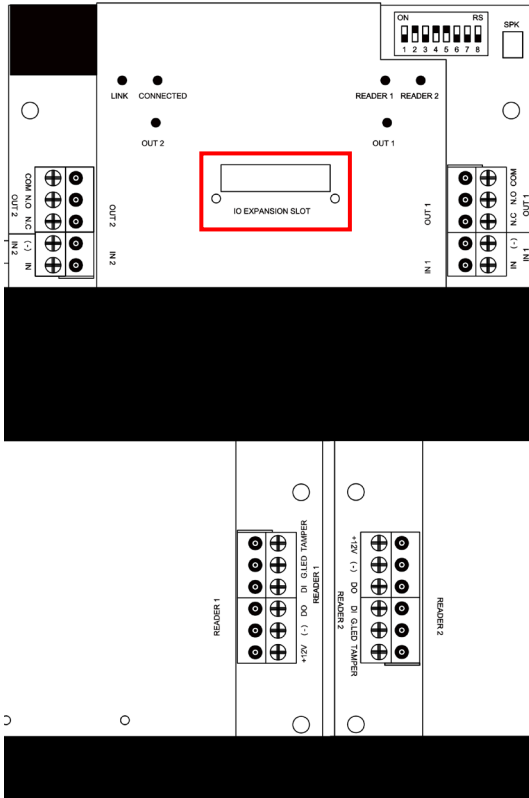


Figure 8: Connector location for MD-IO84 or MD-D02

4. Input and Output Connections

This chapter describes the AC-225 access control panel's input and output connections.

4.1 Input Types

There are four input types – Normally Open, Normally Closed, Normally Open Supervised 1 or 2 resistors, and Normally Closed Supervised 1 or 2 resistors.

Inputs IN1, IN1A, IN2 and IN2A may be configured individually as either supervised or non-supervised inputs. Configure each input separately via the AxTrax AS-525 system.

Non-supervised inputs have two states:

- Normal State
- Abnormal State

Supervised inputs have three states:

- Normal State
- Abnormal State
- Trouble State.

The Trouble state is caused by either tampering with the input circuit or by faulty hardware installation. Once configured as supervised input, add a resistor of 2.2K, of 8.2K or both on the input circuit. See the following diagrams.

Input and Output Connections

Normally Open Input Connection:

Normally Open Input has 2 states:

- Switch Open - Normal State:
Loop resistance = Infinite (open circuit).
- Switch Closed – Abnormal State:
Loop resistance = 0 (short circuit).

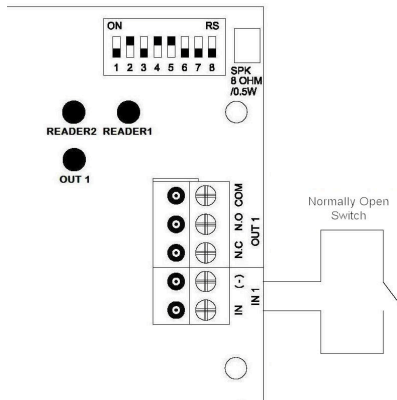


Figure 9: Normally Open Input Connection

Normally Closed Input Connection:

Normally Closed Input has two states:

- Switch Closed - Normal State:
Loop resistance = 0 (short circuit).
- Switch Open – Abnormal State:
Loop resistance = Infinite (open circuit).

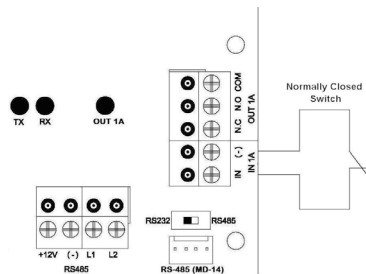


Figure 10: Normally Closed Input Connection

Normally Open Supervised Single Resistor Input Connection

Connect an 8.2K resistor in parallel to the input switch contacts.

Normally Open Supervised Input has 3 states:

- Switch Open - Normal State:
Loop resistance = 8.2K.
- Switch Closed – Abnormal State:
Loop resistance = 0 (short circuit).
- Open circuit across input terminals - Trouble State:
Loop resistance = Infinite (open circuit).

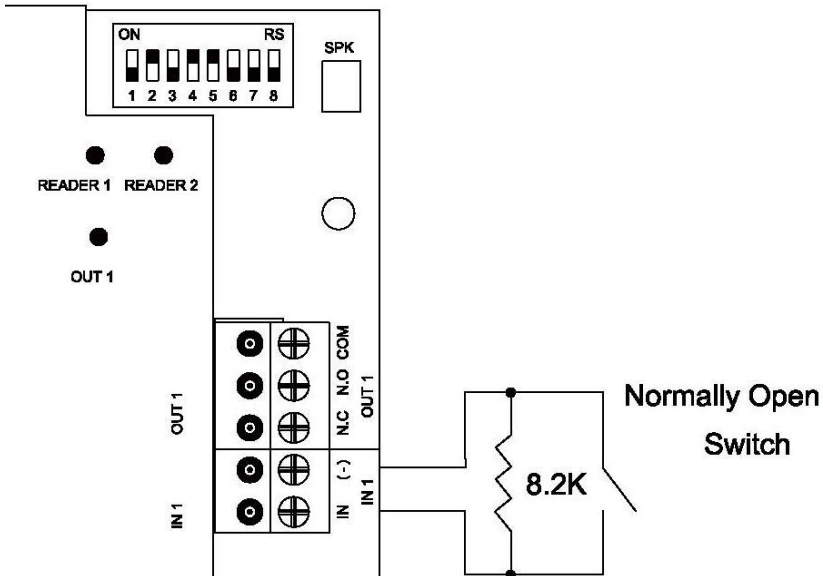


Figure 11: Normally Open Supervised Input (Single Resistor)

Normally Open Supervised Double Resistor Input Connection

Connect a 2.2K resistor in series to the input switch contacts.

Connect an 8.2K resistor parallel to the input switch contacts.

Normally Open Supervised Input has 3 states:

- 1) Switch Open - Normal State:
Loop resistance = 10.4K.
- 2) Switch Closed – Abnormal State:
Loop resistance = 2.2K.

Input and Output Connections

- 3) Open circuit (Infinite loop resistance) or short circuit (0 resistance) across input terminals - Trouble State.

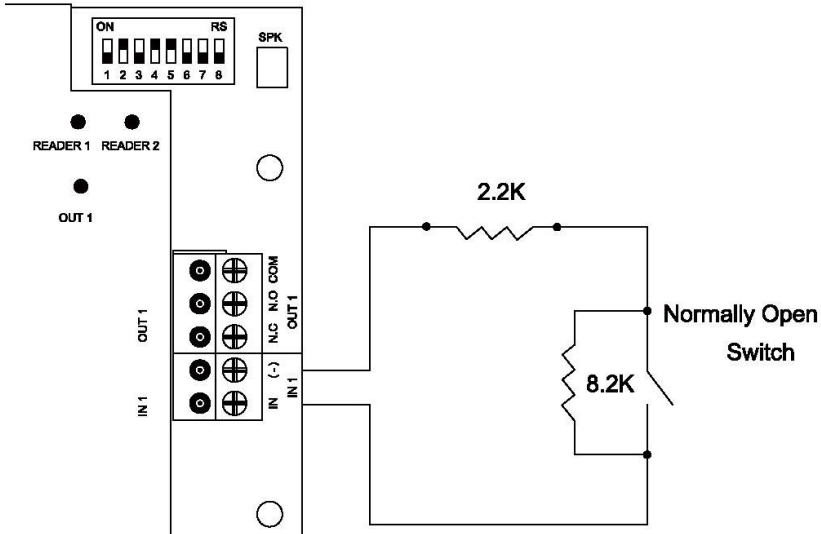


Figure 12: Normally Open Supervised Input (Double Resistor)

Normally Closed Supervised Single Resistor Input Connection

Connect a 2.2K resistor in series to the input switch contacts.

Normally Closed Supervised Input has 3 states:

- Switch Closed - Normal State:
Loop resistance = 2.2K.
- Switch Open – Abnormal State:
Loop resistance = Infinite (open circuit).
- Short circuit across input terminals - Trouble State:
Loop resistance = 0 (short circuit).

Input and Output Connections

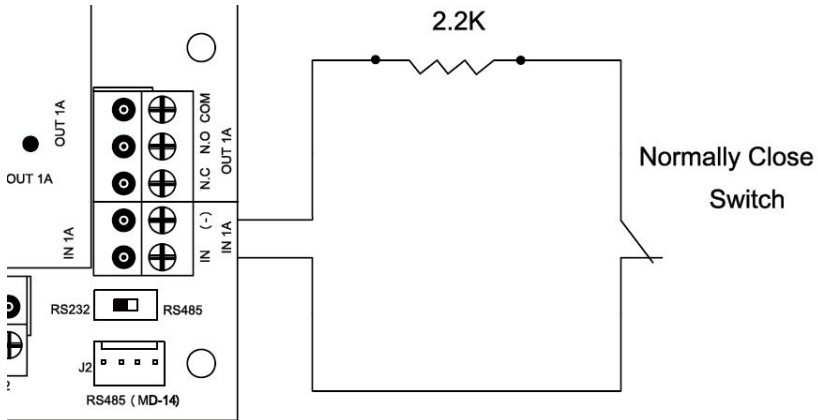


Figure 13: Normally Closed Supervised Input (Single Resistor)

Normally Closed Supervised Double Resistor Input Connection

Connect a 2.2K resistor in series to the input switch contacts.

Connect an 8.2K resistor parallel to the input switch contacts.

Normally Closed Supervised Input has 3 states:

- Switch Closed - Normal State:
Loop resistance = 2.2K.
- Switch Open – Abnormal State:
Loop resistance = 10.4K.
- Open circuit (Infinite loop resistance) or short circuit (0 resistance) across input terminals - Trouble State.

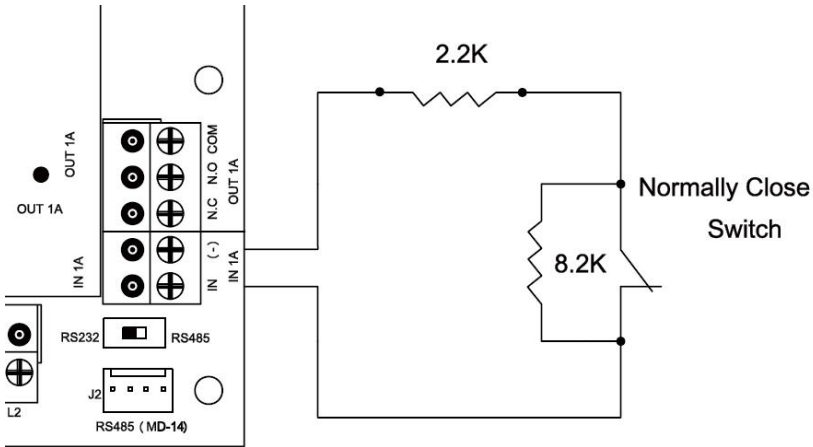


Figure 14: Normally Closed Supervised Input (Double Resistor)

4.2 Inputs Description

Request to Exit Button (REX) Input

Use the REX Input to open a door directly. Typically, the REX input is connected to a Normally Open push button that is located inside the premises. The push button is generally located in an easy-to-access position and opens a door without reading a proximity card or PIN code.

Single door controller:	Door 1 - IN1
Double door controller:	Door 1 - IN 1
	Door 2 - IN 2

REX Inputs functions when using MD-D02:

Double door controller:	Door 1 - IN1
(each door has two readers)	Door 2 - IN5
Four door controller:	Door 1 - IN1
(each door has one reader)	Door 2 -IN2
	Door 3 -IN5
	Door 4 -IN7

Door Monitor Input

The Door Monitor Input typically connects to a Normally Closed door sensing micro-switch for door status monitoring. Using Door Monitor enables many advanced options such as door forced alarm, door held open warnings, interlocking doors and more. The following should be defined:

Single door controller:	Door 1 - IN1A
Double door controller:	Door 1 - IN 1A Door 2 - IN 2A

Dedicated Inputs functions when using MD-D02:

Double door controller: (each door has two readers)	Door 1 - IN1A Door 2 - IN6
Four door controller: (each door has one reader)	Door 1 - IN1A Door 2 - IN2A Door 3 - IN6 Door 4 - IN8

General Purpose Inputs

These are free inputs that can be used for various functions. The following should be defined:

Single door controller:	Door 1 – IN 2 Door 1 – IN 2A
Double door controller:	(no general purpose inputs available)

General purpose inputs are suitable for most uses. For example, they might be used to detect tampering, to activate alarm sensors or for monitoring power supply failure.

General purpose inputs functions when using MD-IO84 or MD-D02:

MD-IO84:	IN5 to IN12
MD-D02:	IN5 to IN8 except the dedicated inputs

Input and Output Connections

4.3 Outputs

Rosslare Security recommends the use of suppression diodes for all outputs that activate an inductive load.

Door Lock

There are two types of door locking devices:

- Fail open (fail secure)
- Fail close (fail safe)

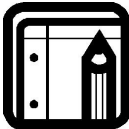
The following should be defined:

Single door controller:	Door 1 – OUT 1
Double door controller:	Door 1 – OUT 1 Door 2 – OUT 2

Door outputs when using MD-D02:

Double door controller: (each door has two readers)	Door 1 – OUT 1 Door 2 – OUT 5
Four door controller: (each door has one reader)	Door 1 – OUT 1 Door 2 – OUT 2 Door 3 – OUT 5 Door 4 – OUT 7

The output can sink current from any power supply (see page 11).



Note:

For UL installations, the installer must configure the system as fail-safe to comply with NFPA (National Fire Protection Association) regulations.

4.4 Card Readers and Keypads

Each access control panel can be connected to a maximum of two readers or 4 readers when using MD-D02. There are three available types of reader:

- Card readers
- Keypads
- Dual keypad card readers

A keypad is required for any reader mode that requires PIN code entries, such as "Card or PIN", "PIN Only" or "Card and PIN (Secured mode)".

When connecting a reader, the following should be defined:

Single door controller:	Door 1 – Reader 1 IN/OUT Door 1 – Reader 2 OUT/ IN
Double door controller:	Door 1 – Reader 1 IN/OUT Door 2 – Reader 2 IN/OUT

Input and Output Connections

When using the MD-D02, the following should be defined:

Double door controller: (each door has two readers)	Reader1 – Door 1 IN/OUT
	Reader2 – Door 1 OUT/IN
	Reader3 – Door 2 IN/OUT
	Reader4 – Door 2 OUT/IN

Four door controller: (each door has one reader)	Reader1 – Door 1 IN/OUT
	Reader2 – Door 2 IN/OUT
	Reader3 – Door 3 IN/OUT
	Reader4 – Door 4 IN/OUT

Use the AxTrax AS-525 software to set the readers for IN or OUT use and to set the data transmission format for each reader.

The reader's tamper output connects to the access control panel's Reader-Tamper input. If the reader is interfered with, an alarm can be generated.

The panel's Reader G.LED output activates the reader's green LED input when operating in "Card and PIN" secure mode. While this mode is in force, users must enter a PIN on the keypad immediately after entering the card.

The controller activates the LED control for 2 seconds when an access granted event occurs.

5. AC-225 Hardware Settings

Each AC-225 panel controls an entrance. The behavior of the panel is controlled by Dipswitch settings.

Select the appropriate Dipswitch setting to operate the panel as either a single door, a double door, or four doors. Refer to Access Control Panel Type, on page 29.

Access control panels configured as either single door or double door controllers have two readers, IN or OUT. Access control panels configured with the MD-D02 expansion as either double door or four-door controllers have four readers.

Single Door:

Outputs	Door Lock output	(OUT 1)
	General purpose output	(OUT 1A)
	General purpose output	(OUT 2)
	General purpose output	(OUT 2A)
Inputs	Request to exit	(IN 1)
	Door monitor input	(IN 1A)
	General purpose input	(IN 2)
	General purpose input	(IN 2A)
Readers	Reader1	Door Entry or Exit
	Reader2	Door Exit or Entry

Double Door:

Outputs	Door1 Lock output	(OUT 1)
	General purpose output	(OUT 1A)
	Door2 Lock output	(OUT 2)
	General purpose output	(OUT 2A)
Inputs	Door1 Request to exit	(IN 1)
	Door1 monitor input	(IN 1A)
	Door2 Request to exit	(IN 2)
	Door2 monitor input	(IN 2A)
Readers	Reader1	(Door1 IN/OUT)
	Reader2	(Door2 IN/OUT)

Double door with 4 readers (MD-D02):

Outputs	Door1 Lock output	(OUT 1)
	General purpose output	(OUT 1A)
	General purpose output	(OUT 2)
	General purpose output	(OUT 2A)
	Door2 Lock output	(OUT 5)
	General purpose output	(OUT 6)
	General purpose output	(OUT 7)
	General purpose output	(OUT 8)
Inputs	Door1 Request to exit	(IN 1)
	Door1 monitor input	(IN 1A)
	General purpose input	(IN 2)
	General purpose input	(IN 2A)
	Door2 Request to exit	(IN 5)
	Door2 monitor input	(IN 6)
	General purpose input	(IN 7)
	General purpose input	(IN 8)
Readers	Reader1	(Door1 IN/OUT)
	Reader2	(Door1 OUT/IN)
	Reader3	(Door2 IN/OUT)
	Reader4	(Door2 OUT/IN)

Four door with 4 readers (MD-D02):

Outputs	Door1 Lock output	(OUT 1)
	General purpose output	(OUT 1A)
	Door2 Lock output	(OUT 2)
	General purpose output	(OUT 2A)
	Door3 Lock output	(OUT 5)
	General purpose output	(OUT 6)
	Door4 Lock output	(OUT 7)
	General purpose output	(OUT 8)
Inputs	Door1 Request to exit	(IN 1)
	Door1 monitor input	(IN 1A)
	Door2 Request to exit	(IN 2)
	Door2 monitor input	(IN 2A)
	Door3 Request to exit	(IN 5)
	Door3 monitor input	(IN 6)
	Door4 Request to exit	(IN 7)
	Door4 monitor input	(IN 8)

Readers	Reader1	(Door1 IN/OUT)
	Reader2	(Door2 IN/OUT)
	Reader3	(Door3 IN/OUT)
	Reader4	(Door4 IN/OUT)

5.1 DIP Switch Configuration

The access control panel DIP switch controls a number of operating parameters including the device address and baud rates for serial communication.

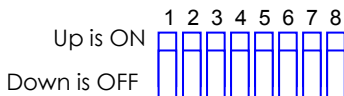


Figure 15: DIP Switch

The following is a list of DIP switch numbers and their functions:

DIP Switch	Function
1	The panel's communication baud rate.
2	
3	<ul style="list-style-type: none"> The panel type: Defines the number of readers for each door - one or two readers per door. This will also effect the number of doors controlled by the panel.
4	The access control panel's RS-485 network address.
5	
6	
7	
8	



Note:

Power down the access control panel before changing the DIP switch settings.
After changes have been made, restart the panel. The new settings are automatically defined after power up.

5.2 Access Control Panel Baud Rate

The Access control panel serial port baud rate, set in dip switches one and two, defines the communication speed for connecting with a PC in a network connection.

The default baud rate is set to 9600 bits per second.

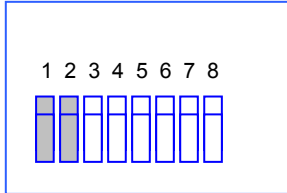


Figure 16: DIP Switch with Baud Rate Setting

The following lists switch 1 and 2 status and baud rate:

Switch 1	Switch 2	Baud Rate
Off	Off	9600
Off	On	19200
On	Off	115200
On	On	57600



Note:

The access control panel baud rate must be identical to the AxTrax Network configuration of baud rate.

5.3 Access Control Panel Type

The access control panel type is defined using the third Dipswitch. There are two panel types, a panel with one reader per each door or a panel with two readers per each door. This Dipswitch setting influences the number of doors in the panel.

The default access control panel setting is for two readers per each door.

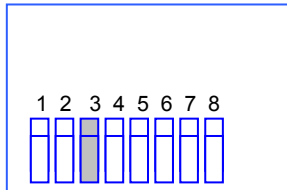


Figure 17: DIP Switch for Door Setting

AC-225 Hardware Settings

- **Off** - defines using two readers for each door. Panel will control one door or two doors when MD-D02 is installed.
- **On** - using one reader for each door. Panel will control two doors or four doors when MD-D02 installed.

5.4 Access Control Panel Addressing

The last 5 DIP switches are used to set the binary code of the access control panel internal network address.

The default access control panel address is "1".

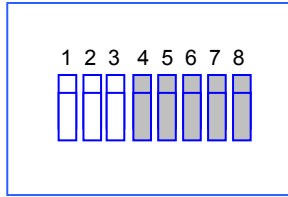


Figure 18: DIP Switch with Internal Network Address Setting



Note:

For successful communications, the DIP switch must match the address set in the AxTrax AS-525 software.

The following table displays the 32 dip switch settings available:

Address	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
1	Off	Off	Off	Off	Off
2	Off	Off	Off	Off	On
3	Off	Off	Off	On	Off
4	Off	Off	Off	On	On
5	Off	Off	On	Off	Off
6	Off	Off	On	Off	On
7	Off	Off	On	On	Off
8	Off	Off	On	On	On
9	Off	On	Off	Off	Off
10	Off	On	Off	Off	On
11	Off	On	Off	On	Off
12	Off	On	Off	On	On
13	Off	On	On	Off	Off
14	Off	On	On	Off	On

AC-225 Hardware Settings

15	Off	On	On	On	Off
16	Off	On	On	On	On
17	On	Off	Off	Off	Off
18	On	Off	Off	Off	On
19	On	Off	Off	On	Off
20	On	Off	Off	On	On
21	On	Off	On	Off	Off
22	On	Off	On	Off	On
23	On	Off	On	On	Off
24	On	Off	On	On	On
25	On	On	Off	Off	Off
26	On	On	Off	Off	On
27	On	On	Off	On	Off
28	On	On	Off	On	On
29	On	On	On	Off	Off
30	On	On	On	Off	On
31	On	On	On	On	Off
32	On	On	On	On	On

6. Communications

Communication lines are used to upload and download information between the access control panel and the AxTrax AS-525 software. When the access control panel and the computer are communicating, the system's two LEDs flash accordingly.

- The RX LED flashes when the controller receives data
- The TX LED flashes when the controller transmits data



Note:

The access control panel address is defined in the AxTrax AS-525 software. It is important that the DIP switch and the software are set to the same address.

There are three connection modes:

- Serial Network (RS-232 or RS-485)
- Modem Network
- TCP/IP Network

6.1 Serial Network Connection

The computer serial port controlling the access control panel is set from within the AxTrax AS-525 software. The default is 9600bps for direct connection to the computer.

When using an RS-232 connector, only one access control panel can be linked to each communication port on the computer. Use an RS-485 if you wish to connect more than one panel on one communication port.



Note:

The J1 switch must be in the correct position to select the RS-232 communication.

RS-232 Connection to the Computer

Set the J1 switch to the RS-232 position.

Access control panel	DB9 Connector	DB25 Connector
GND	Pin 5	Pin 7
Tx	Pin 2	Pin 3
Rx	Pin 3	Pin 2



Note:

The RS-232 connection can only connect a single access control panel to the computer. The distance between the computer and the access control panel must be no more than 150 feet (50 meters). If the baud rate is increased to 57600 or beyond, the distance must be no more than 30 feet (10 meters).

RS-485 Connection to the Computer

Set the J1 switch to the RS-485 position.

Up to 32 access control panels can be linked together and connected to a single communication port on the computer.

Use the RS-485 interface for situations where there will be multiple controllers connected. The serial port used to control the access control panel is assigned within the AxiTrax AS-525 software.

The Access control panel supports the two-wire RS-485 interface. RS-485 interface enables the distance between the Access control panel and PC to be extended up to 4000 feet (1200) meters. The data line wiring must be in daisy chain formatting with one control unit following another. The first Access control panel connecting to the PC must use the MD-14 RS-485 to RS-232 adaptor.

Daisy Chaining

Daisy chaining allows many panels to connect to the computer along a single serial line.

The first panel is connected directly to the computer and a second panel connects to the first panel. Additional panels connect in the same way, one after another. The maximum distance from the PC to the last panel in the chain is 4,000 ft (1,219.2 m).

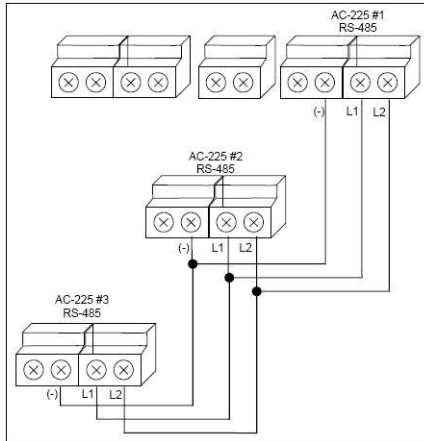


Figure 19: Daisy Chaining

At each end of the data line, both where the panel connects to the computer and on the last panel in the network, a termination resistor of 120Ω may be required. Apply the resistor across the L1 and L2 connections.



Note:

These termination resistors are especially important in long cable runs.

6.2 TCP/IP Network Connection

The computer running the AxTrax AS-525 software can communicate with the access control panels via a TCP/IP network. The connection settings are controlled within the AxTrax AS-525 software.

AC-225IP panels connect to the TCP/IP network (LAN or WAN) directly, using an on-board network module. When an access control panel network is connected using RS-485, up to 32 panels can be connected on each TCP/IP network. This means that one AC-225IP panel can support up to 31 AC-225 panels.

To connect to a TCP/IP network using other AC-225 models, add Rosslare's MD-N32 TCP/IP to RS-232 gateway converter.



Note:

For more information on operating an MD-N32, refer to the MD-N32 User Manual.

LAN and WAN Requirements

The devices can be connected to a TCP/IP network using any valid network address.

Use a TCP/IP connection when a LAN network already exists and the long RS-485 network is not required. The following schematic illustrates the connection of a single AC-225 to a computer via a LAN network.

The maximum distance from the Ethernet port of the panel to the LAN/WAN connection is 328 ft (99.97 m).

When the TCP/IP connection is implemented over a Wide Area Network (WAN) it becomes possible to connect through the Internet. This makes it possible to control multiple access control panels worldwide, all from a single computer.

Before connecting a panel by TCP/IP connection for the first time, the AxTrax AS-525 software must configure the device. Settings will then remain stored in non-volatile memory on the device. See Software manual configuring instructions.

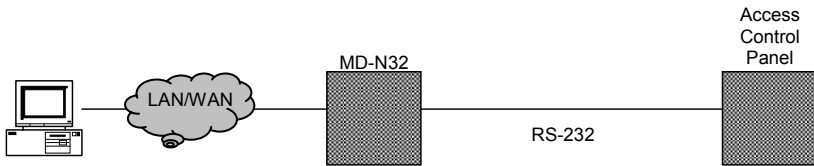


Figure 20: MD-N32 Configuration connecting a single panel

When using an MD-N32, for a single panel, either an RS-232 cable or Rosslare's MD-14 RS-485 converter can be used.

To connect an MD-N32 to more than one panel (up to 32 panels), Rosslare's MD-14 RS-485 converter must be used. Connect the MD-14 between the RS-485 access control panel network and the MD-N32 converter.

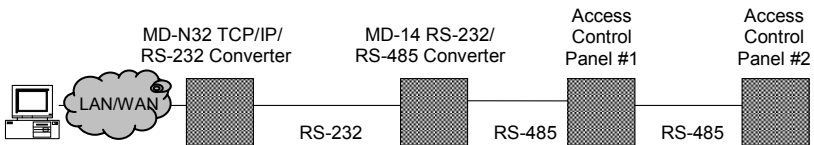


Figure 21: Connecting Multiple Access control panels with MD-N32

The MD-14 is not required when using the AC-225IP.

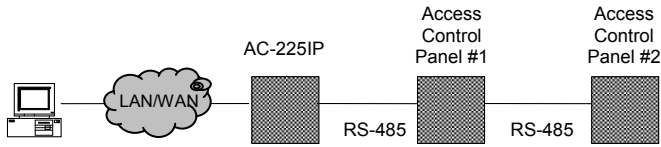


Figure 22: Connecting Multiple Access control panels with AC-225IP



Note:

For more information on operating an MD-N32, refer to the MD-N32 User Manual.

6.3 Modem Network Connection

Access control panels can be controlled from the computer's modem. The modem is assigned from within the AxTrax AS-525 software.

Use a modem when the access control panel is too far from the computer to use a serial connection and an alternative RS-232/RS-485 network or TCP/IP network is unavailable.

The following diagram illustrates remote site modem configuration with AC-225.

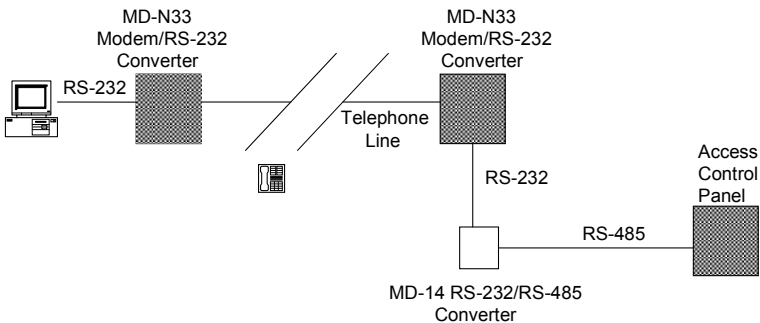


Figure 23: Remote Site Modem Configuration



Note:

For more information on modem connections, refer to the MD-N33 User Manual and the AS-525 software manual.

Hardware Requirements

- 2 Standard Telephone cables – RJ11 plugs in both sides
- Crossed 9 pin RS-232 cable (female jack on both sides)
- Rosslare MD-14 (RS-232 to RS-485 converter)
- 2 Rosslare MD-N33 (Modem to serial gateway)
- Rosslare AC-225 panel

Prerequisites

Before performing permanent modem installations, the modem that will be connected to the panel must be initialized from the computer running the AxTrax software.

Computer Connections

The MD-N33 must connect to the computer via a serial port.

To connect to the PC:

1. Connect a 9VDC adapter to the first MD-N33. Make sure that the power LED (Red) is on.
2. Connect the PC, using an available COM port, to the MD-N33 with **crossed 9 pins RS-232 cable**.
3. Connect the MD-N33's RJ11 jack to the telephone line using the telephone cable.

AC-225 Panel Connections

1. Connect a 9VDC adapter to the second MD-N33. Make sure that the power LED (Red) is on.
2. Connect the MD-N33's RJ11 jack to the telephone wall mount using the telephone cable.
3. Connect the MD-N33 DB9 female jack to the MD-14 DB9 female jack.
4. Connect the AC-225 RS-485 outlet to the MD-14 4 wires cable. Make sure the J1 switch (on the AC-225) is set to RS-485 Mode.

Limited Warranty

Appendix A. Limited Warranty

ROSSLARE ENTERPRISES LIMITED S (Rosslare) TWO YEARS LIMITED WARRANTY is applicable worldwide. This warranty supersedes any other warranty. Rosslare's TWO YEARS LIMITED WARRANTY is subject to the following conditions:

Warranty

Warranty of Rosslare's products extends to the original purchaser (Customer) of the Rosslare product and is not transferable.

Products Covered By This Warranty and Duration

ROSSLARE ENTERPRISES LTD. AND / ORSUBSIDIARIES (ROSSLARE) warrants that the AC-225 Access Control Panel, to be free from defects in materials and assembly in the course of normal use and service. The warranty period commences with the date of shipment to the original purchaser and extends for a period of 2 years (24 Months).

Warranty Remedy Coverage

In the event of a breach of warranty, ROSSLARE will credit Customer with the price of the Product paid by Customer, provided that the warranty claim is delivered to ROSSLARE by the Customer during the warranty period in accordance with the terms of this warranty. Unless otherwise requested by ROSSLARE ENTERPRISES LTD. AND / OR SUBSIDIARIES representative, return of the failed product(s) is not immediately required.

If ROSSLARE has not contacted the Customer within a sixty (60) day holding period following the delivery of the warranty claim, Customer will not be required to return the failed product(s). All returned Product(s), as may be requested at ROSSLARE ENTERPRISES LTD. AND /OR SUBSIDIARY'S sole discretion, shall become the property of ROSSLARE ENTERPRISES LTD. AND /OR SUBSIDIARIES.

To exercise the warranty, the user must contact Rosslare Enterprises Ltd. to obtain an RMA number after which, the product must be returned to the Manufacturer freight prepaid and insured

In the event ROSSLARE chooses to perform a product evaluation within the sixty (60) day holding period and no defect is found, a minimum US\$ 50.00 or equivalent charge will be applied to each Product for labor required in the evaluation.

Rosslare will repair or replace, at its discretion, any product that under normal conditions of use and service proves to be defective in material or workmanship. No charge will be applied for labor or parts with respect to defects covered by this warranty, provided that the work is done by Rosslare or a Rosslare authorized service center.

Exclusions and Limitations

ROSSLARE shall not be responsible or liable for any damage or loss resulting from the operation or performance of any Product or any systems in which a Product is incorporated. This warranty shall not extend to any ancillary equipment not furnished by ROSSLARE, which is attached to or used in conjunction with a Product, nor to any Product that is used with any ancillary equipment, which is not furnished by ROSSLARE.

This warranty does not cover expenses incurred in the transportation, freight cost to the repair center, removal or reinstallation of the product, whether or not proven defective.

Specifically excluded from this warranty are any failures resulting from Customer's improper testing, operation, installation, or damage resulting from use of the Product in other than its normal and customary manner, or any maintenance, modification, alteration, or adjustment or any type of abuse, neglect, accident, misuse, improper operation, normal wear, defects or damage due to lightning or other electrical discharge. This warranty does not cover repair or replacement where normal use has exhausted the life of a part or instrument, or any modification or abuse of, or tampering with, the Product if Product disassembled or repaired in such a manner as to adversely affect performance or prevent adequate inspection and testing to verify any warranty claim.

ROSSLARE does not warrant the installation, maintenance, or service of the Product. Service life of the product is dependent upon the care it receives and the conditions under which it has to operate.

In no event shall Rosslare be liable for incidental or consequential damages.

Limited Warranty Terms

THIS WARRANTY SETS FORTH THE FULL EXTENT OF ROSSLARE ENTERPRISES LTD. AND IT'S SUBSIDIARIES' WARRANTY

THE TERMS OF THIS WARRANTY MAY NOT BE VARIED BY ANY PERSON, WHETHER OR NOT PURPORTING TO REPRESENT OR ACT ON BEHALF OF ROSSLARE.

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IN NO EVENT SHALL ROSSLARE BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, OR FOR ANY OTHER INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF USE, LOSS OF TIME, COMMERCIAL LOSS, INCONVENIENCE, AND LOSS OF PROFITS, ARISING OUT OF THE INSTALLATION, USE, OR INABILITY TO USE SUCH PRODUCT, TO THE FULLEST EXTENT THAT ANY SUCH LOSS OR DAMAGE MAY BE DISCLAIMED BY LAW.

THIS WARRANTY SHALL BECOME NULL AND VOID IN THE EVENT OF A VIOLATION OF THE PROVISIONS OF THIS LIMITED WARRANTY.

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