

# K401-E

External

## Stand-Alone Keypad & Proximity Card Reader



**User Manual**

# INTRODUCTION

The K401-E is a two relay multifunction standalone access control keypad suitable for either indoor or outdoor use. It is housed in a strong, sturdy and vandal resistant Zinc Alloy electroplated case. The electronics are fully potted making it extremely weather resistant and conforming to IP66

It supports up to 1100 users in a Card, PIN, or a Card + PIN option. The inbuilt card reader supports 125KHZ EM frequency card or key fob, and the Pin length is 4-6 digits

Both relays can operate in Pulse Mode (suitable for access control) or Toggle Mode (suitable for arming/disarming alarms, switching lights, machines....etc)

The K401-E has many extra features including block enrollment, anti-tamper alarm & backlit keypad buttons. These features make the K401-E an ideal choice for door access not only for small shops and domestic households but also for commercial and industrial applications such as factories, warehouses, laboratories, banks and prisons

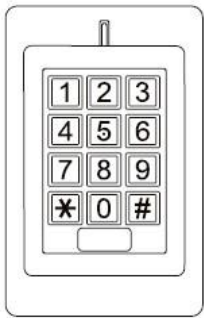
## Features

- Weather resistant to IP66
- Strong Zinc Alloy Electroplated anti-vandal case – Vandal resistant
- Backlit Keypad buttons
- Multi-color LED status display
- Two Programmable Relay Outputs
- **Relay 1:** Up to 1000 Pin & Card holders, **Relay 2:** up to 100 Pin & Card holders
- Card Block enrollment
- Integrated Alarm Buzzer & Output
- Low power consumption (55mA)
- Anti-Tamper Alarm
- Latch Mode/Toggle Mode
- Relay 2 Can Support Door Bell Feature
- 12-28V DC/12-18V AC Power Input (**Cards/fobs will not work on AC power**)
- 750mm cable tail

## Specifications:

<b>User Capacity</b> Relay 1 Relay 2	<b>1100 Cards/PINS</b> 1000 100
<b>Operating Voltage</b> Idle Current Active Current	<b>12-24V DC / 12-18V AC</b> 55mA 80mA
<b>Keypad</b>	<b>12 Key (3*4)</b>
<b>Proximity Card Reader</b> Radio Technology Read Range	<b>EM</b> 125KHz Industry Standard Proximity Card 20mm – 35mm
<b>Wiring Connections</b>	Electric Lock, Exit Button, DOTL, External Alarm, Door Bell
<b>Relay</b> Adjustable Relay Output Time Adjustable Alarm Output Time Lock Output Load Alarm Output Load	<b>Two (NO, NC, COM)</b> 1-99 Seconds (5 seconds default) 1-3 minutes (1 minute default) 3 Amp Maximum 3 Amp Maximum
<b>Environment</b> Operating Temperature Operating Humidity	<b>IP66</b> -30°C - 60°C, or -22°F - 140°F 10% - 90% Non-Condensing
<b>Physical</b> Surface Finish Dimensions Unit Weight	<b>Zinc-Alloy Enclosure</b> Powder Coat H:120 x W:76 x D:25 (mm) 650g

## Package contents



K401-E Keypad



Diode IN4004 (For relay circuit protection)



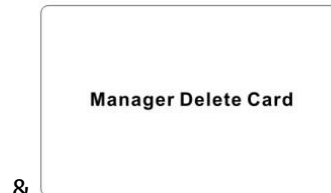
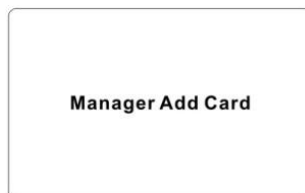
Self Tapping Screws



Wall Anchors



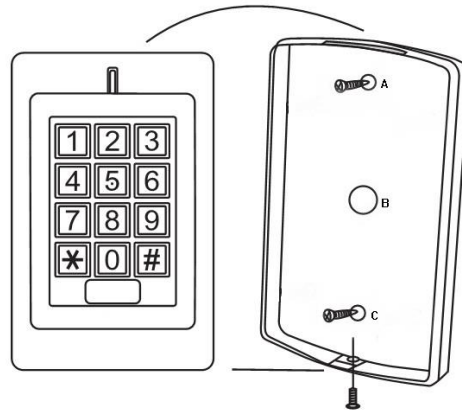
Screw Driver



&

# INSTALLATION

- Remove the back cover from the unit
- Drill 2 holes (A,C) on the wall for the screws and one hole for the cable
- Knock the supplied rubber bungs to the screw holes (A,C)
- Fix the back cover firmly on the wall with 4 flat head screws
- Thread the cable through the cable hole (B)
- Attach the unit to the back cover

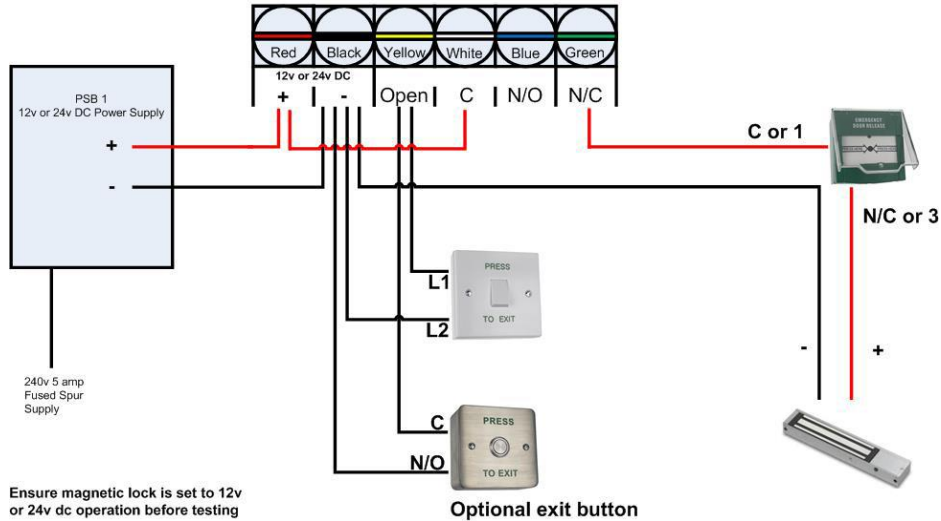


## Wiring cable

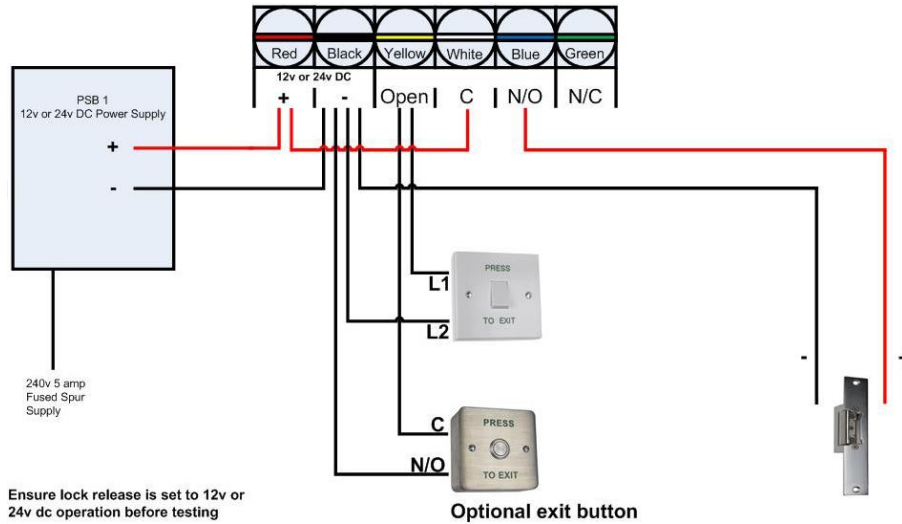
Wire Insulation Colour	Function	Notes
Red	AC & DC	12-24V DC / 12-18V AC Regulated Power Input
Black	AC & DC	12-24V DC / 12-18V AC Regulated Power Input
Grey & Black	GND	Negative Pole
Blue	NO1	Normally Open Relay 1 output
White	COM1	Common Connection for Relay 1 Output
Green	NC1	Normally Closed Relay 1 Output
Yellow	OPEN1	Request to Exit input 1
<b>Advanced Input and Output Features – Relay 2</b>		
Blue & Black	NO2	Normally Open Relay 2 Output
White & Black	COM2	Common Connection for Relay 2 Output
Green & Black	NC2	Normally Closed Relay 2 Output
Yellow & Black	OPEN2	Request to Exit input 2
Grey	Alarm -	Alarm Negative
Brown	D_IN	Door Status Detecting

# Connection Diagram Examples

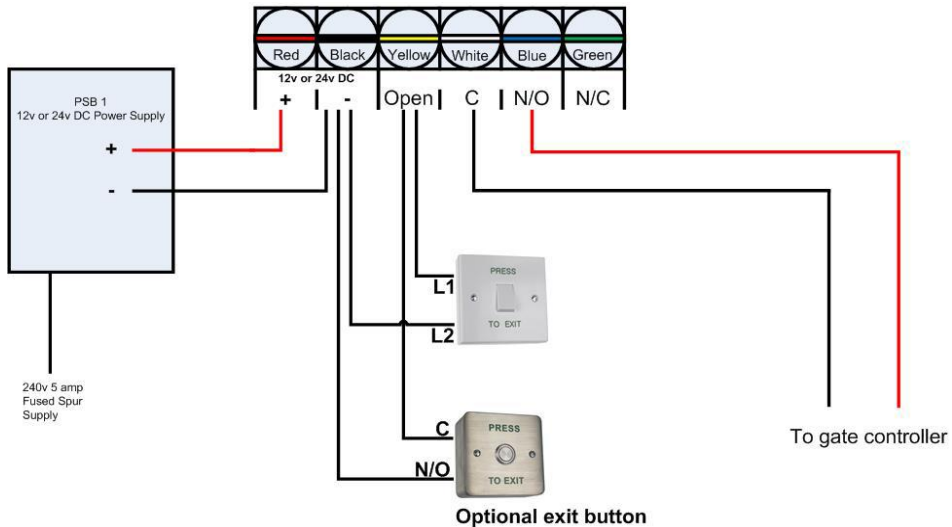
## Common power supply for magnetic lock (Fail open – power to lock)



## Common power supply for lock release (Fail secure – power to unlock)



## Common power supply for auto gate controller (using Normally Open contact)



**Comments:** Relay 2 can be used to operate a doorbell if there is no need to operate a second door. The wiring to connect the doorbell is via NO2 and COM2. Press #, the K401-E will send out a switching signal to the doorbell, as long as you press the " #", the doorbell will operate, it will stop when you release the " #"

# Function Description

## Relay operation (Pulse mode and Toggle mode)

Both relays can operate in Pulse Mode (suitable for access control) or Toggle Mode (suitable for arming/disarming alarms, switching lights, machines....etc)

Every time a valid card/fob is presented or a Pin input is made in Pulse Mode, the relay will operate, for the pre-set relay pulse time

Every time a valid card/fob is presented or a Pin input is made in Toggle Mode, the relay changes state, which will not revert until a valid card/fob is re-presented or a Pin input is re-made

## Master Card

The K401-E can use Master Cards to program user cards/fobs into and out of the system. There are two pre-programmed Master Cards (an Add Card, and a Delete Card) to allow rapid card enrollment. They are for Relay 1 only

**Anti Tamper Alarm** – Please the last page for this

The K401-E uses an LDR (light Dependent Resistor) as an anti tamper alarm. If the keypad facia is removed, or a sudden change in light source, the tamper alarm will bleep constantly

# PROGRAMMING

## Configure the Keypad

Change the configure settings according to your application (optional). Multiple configuration settings can be changed at one time: Enter program mode, change the desired settings, then exit program mode

## Set Master Code

The 6 digit Master Code is used to prevent unauthorized access to the system. To interface with the K401-E, the administrator will need a Master Code (**Factory default code: 666666**). We recommend immediate update and recording of your Master Code

Programming Step	Keystroke Combination
1. Enter Program Mode	* <b>(Master Code)</b> #
2. Update Master Code	<b>0</b> <i>(New Master Code)</i> # <i>(Repeat New Master Code)</i> #
3. Exit Program Mode	*

## SET ACCESS CONFIGURATION

- **Card or PIN (Default):** The User must present a valid card/fob to the K401-E or enter their PIN code followed by the # key, in order to be granted access
- **Card + PIN:** The User must first present a valid card/fob to the K401-E and then enter their PIN code followed by the # key, in order to be granted access

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Card or PIN Relay 1 Relay 2	(Default) 4 1 0 # 4 2 0 #
3. Card + PIN Relay 1 Relay 2	4 1 1 # 4 2 1 #
4. Exit Program Mode	*

## User Settings

To enter the programming mode	* <b>Master code</b> #
To exit from the programming mode	*
<b>Note that to undertake the following programming, the Master PIN must be entered</b>	
<b>Note:</b> When adding users, if the card/fob or Pin user has been enrolled already, you can not add it again on the same relay, or the device will give a bleep as an error. It is ok to enroll the same card/fob or PIN for both relay outputs	

Factory default setting: Card or PIN mode	
<b>To set users for Relay 1.</b> 4 1 0 #	
To add <b>PIN</b> users	1 <b>User ID number</b> # <b>PIN</b> # The ID number is any number from 1-1000 The PIN is any 4-6 digits between 0000-999999 with the exception of 1234 which is reserved. Users can be added continuously without exiting programming mode as follows: 1 <b>User ID no 1</b> # <b>PIN</b> # <b>User ID no 2</b> # <b>PIN</b> #
To delete <b>PIN</b> users	3 <b>User ID number</b> # Users can be deleted continuously without exiting programming mode
To change the <b>PIN</b> of a PIN user (Note: This step must be done out of programming mode)	* <b>ID number</b> # <b>Old PIN</b> # <b>New PIN</b> # <b>Repeat new PIN</b> #

<p>To add <b>Card</b> Users. (Method 1)</p> <p>This is an easy way to enter cards with auto-generated ID numbers</p> <p>The ID number will start from 1 if no user has been programmed</p>	<p><b>1</b> <b>Read card</b> <b>#</b></p> <p>Cards can be added continuously without exiting programming mode</p>
<p>To add <b>Card</b> Users. (Method 2)</p> <p>This is the alternative way to enter cards using User ID Allocation. In this method a User ID is allocated to a card. Only one user ID can be allocated to a single card</p>	<p><b>1</b> <b>ID number</b> <b>#</b> <b>Card</b> <b>#</b></p> <p>The ID number can be any number from 1-1000</p>
<p>To add a <b>series of cards</b> users – <b>Block Enrolment</b></p> <p>The card number must be consecutive</p> <p>(This operation is only for relay 1)</p>	<p><b>2</b> <b>ID number</b> <b>#</b> <b>8 digits or 10 digits Card number</b> <b>#</b> <b>Card quantity</b> <b>#</b></p> <p>Card quantity is between 1-1000</p>
<p>To <b>delete Card</b> users by cards</p> <p><b>Note:</b> Users can be deleted continuously without exiting programming mode</p>	<p><b>3</b> <b>Read Card</b> <b>#</b></p> <p>The device can automatically identify the card of relay 1 or relay 2</p>
<p>To <b>delete Card</b> users by user ID</p> <p>This option can be used when a user has lost their card</p>	<p><b>3</b> <b>Enter the</b> <b>User ID</b> <b>#</b></p>
<p>To <b>delete card</b> users by card number</p>	<p><b>9</b> <b>Input 8 digits or 10 digits Card number</b> <b>#</b></p> <p>Cards can be deleted continuously without exiting from programming mode</p>
<p><b>To set users for Relay 2.</b> <b>4</b> <b>2</b> <b>0</b> <b>#</b></p>	
<p>To set <b>Pin</b> user for relay 2 is the same as relay 1, accept the ID number is 1001-1100 for relay 2</p> <p>To set <b>Card</b> user for relay 2 is the same as relay 1, with the exception of adding <b>Card</b> users with auto-generated ID numbers and Block enrolment as below</p>	
<p>To add <b>Card</b> Users. (Method 1)</p> <p>Auto-generated ID numbers</p>	<p><b>2</b> <b>Read Card</b> <b>#</b></p> <p>Card can be added continuously without exiting programming mode</p>



<b>Card and PIN Mode</b>	
<b>To set users for relay 1.</b> 4 1 1 #	
To Add a <b>card</b> and <b>Pin</b> user (The PIN is any four-six digits between 0000 & 999999 with the exception of 1234 which is reserved.)	Add the card as for a card user Press * to exit from the programming mode Then allocate the card a PIN as follows: * Read card 1234 # PIN # PIN #
To change a <b>PIN</b> in card and PIN mode (Method 1) Note that this is done outside programming mode so the user can undertake this themselves	* Read Card Old PIN # New PIN # New PIN #
To change a <b>PIN</b> in card and PIN mode (Method 2) Note that this is done outside programming mode so the user can undertake this themselves	* ID number # Old PIN # New PIN # New PIN #
To delete a <b>Card and PIN</b> user just delete the card	3 Read Card # or 3 User ID #
<b>To set users for relay 2.</b> 4 2 1 # <b>The operation is the same as relay 1</b>	

To set <b>Card</b> user only. (in this mode, users can only be valid by card or fob)	
To set <b>Card</b> user only	4 1 2 # Relay 1 4 2 2 # Relay 2 Entry is by <b>Card/fob</b> only

## Relay Setting (Pulse mode, Toggle mode)

Pulse mode (Factory default)

Pulse mode - Door relay time setting	For Relay 1: 5 1 1-99 # For Relay 2: 5 2 1-99 # The door relay time is between 1-99 seconds, the factory default setting is 5 seconds. 1 means relay 1, 2 means relay 2
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## Toggle mode

Toggle mode	For Relay 1: 5 1 0 # For Relay 2: 5 2 0 #
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# Door, Alarm, Acoustic Signal, Door Bell Settings

## Door Open Detection

*Door Open Too Long (DOTL) warning.* When used with an optional magnetic contact or built-in magnetic contact of the lock, if the door is opened normally, but not closed after 1 minute, the internal buzzer will beep automatically to remind people to close the door and continue for 1 minute before switching off automatically

*Door Forced Open warning.* When used with an optional magnetic contact or built-in magnetic contact of the lock, if the door is forced open, the internal buzzer and alarm output will both operate

To disable door open detection	<b>6 0 # (Default)</b>
To enable door open detection	<b>6 1 #</b> It is optional to connect the D_IN line to LOCK1 or LOCK 2

**Keypad Lockout & Alarm Output options.** If there are 10 invalid cards or 10 incorrect PIN numbers in a 10 minute period either the keypad will lockout for 10 minutes or the alarm will operate for 10 minutes, depending on the option selected below

Normal status: No keypad lockout or alarm	<b>7 0 # (Default)</b>
Keypad Lockout	<b>7 1 #</b>
Alarm Output	<b>7 2 #</b>

## Alarm output time

To set the alarm output time	<b>8 1-3 # (Default is 1 minute)</b> (1-3 minutes available)
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## Acoustic Signal

*The acoustic signal can be set on or off. When on, the keypad will beep when the key buttons are pressed, when off, the keypad will be in silent*

Normal status: On	<b>8 6 # (Default)</b>
Acoustic signal Off	<b>8 7 #</b>

## Change Relay 2 to Door Bell

(When there is no need to operate a second door, relay 2 can be set to operate as a door bell. The wiring is connecting the door bell to COM2 and NO2. Press #, and the keypad will send the signal to the door bell

Relay 2	<b>8 8 # (Default)</b>
Door bell	<b>8 9 #</b>

## To remove The Alarm

To reset the Door Forced Open warning	<b>Read valid card</b> or <b>Master Code #</b>
To reset the Door Open Too Long warning	Close the door or <b>Read valid card</b> or <b>Master Code #</b>

# Others

## Using Master Cards

<b>Using Master Card</b> (It is only available for relay 1)	
Add a User Card	1. <b>(Read Master Add Card)</b> 2. <b>(Read User Card)</b> <i>Repeat Step 2 for additional user cards</i> 3. <b>(Read Master Add Card)</b>
Delete a User Card	1. <b>(Read Master Delete Card)</b> 2. <b>(Read User Card)</b> <i>Repeat Step 2 for additional user cards</i> 3. <b>(Read Master Delete Card)</b>

### Reset to Factory Default:

This will reset the K401-E to the factory default but **all card/PIN information will still be retained**

**This procedure will also require reprogramming of the Master Add and Delete Cards**

**NOTE:** *This is also useful if the original Master Add and Delete Cards have been lost*

1. Power down the K401-E
2. Press the \* (Star) button and hold, at the same time power up the keypad
3. Release the button and wait until the amber LED shines

### ***(Parts 4 & 5 must be undertaken within 10 seconds)***

4. Present any 125KHz proximity EM card or the Master Add Card (provided) to the K401-E. This card is now the Master Add Card
5. Present any 125KHz proximity EM card or the Master Delete Card (provided) to the K401-E. This card is now the Master Delete Card

When the red LED begins to blink, the K401-E has been successfully reset

### **Erase all Users \*\***

This will delete ALL User data for relay 1 or relay 2 as per below

1. Enter Program Mode: \*(Master Code)#
2. Enter 30000# (for relay 1) Or 90000 # (for relay 2)
3. Exit: \*

**\*\* All configuration data is retained**

## Sound and LED indication

Operation Status	Red LED	Green LED	Blue LED	Sounds
Power On	Flashing			Short Single Bleep
Standby	Flashing			
Press Keypad	Flashing			Short Single Bleep
Enter Master Code Entry Mode	ON			Short Single Bleep
In program mode	ON	Single Flash		Short Single Bleep
Entered Program Step Successfully	ON	Single Flash		Short Single Bleep
Entered Program Step Incorrectly				3 Short Bleeps
Exit Programming Mode	Flashing			Short Single Bleep
Entry Granted for Relay 1		ON		Short Single Bleep
Entry Granted for Relay 2			ON	
Alarm Mode Engaged	Flashing			Alarm

## K401-E - Simplified Instruction

Function Description	Operation
Enter the Programming Mode	<b>* (Master Code) #</b> <i>(666666 is the default factory master code)</i>
Change the Master Code	<b>0 (New Master Code) # (Repeat New Master Code) #</b> <i>(code: 4-6 digits)</i>
Add Card User	<b>1 (Read Card) #</b> ( for relay 1) <b>2 (Read Card) #</b> ( for relay 2)
Add PIN User	<b>1 (User ID 1-1000) # (PIN)#</b> ( for relay 1) <b>1 (User ID 1001-1100) # (PIN)#</b> ( for relay 2) <i>The PIN is any 4-6 digits between 0000 - 999999</i>
Delete User	<b>3 (Read Card) #</b> <b>3 (User ID) #</b>
Exit	*
<b>How to be granted access</b>	
Card User	<b>Present card/fob</b>
PIN User	<b>Enter (PIN) #</b>

## Anti Tamper Alarm

The K401-E's alarm trigger is activated by an LDR (Light Dependant Resistor) which is located to the lower side of the unit as illustrated below

The alarm function is designed as an 'Anti-Theft' facility. Forceful removal of the installed keypad or a sudden change in light source will trigger the keypad to bleep constantly. The keypad will also be "Blocked" from use

The function cannot be disabled but it can be stopped by presenting a valid card or key fob to the reader or entering the Master Code followed by the # sign

Alternatively, you can prevent the alarm from future activation by covering the LDR with a non-light absorbent substance in addition to sealing around all edges of the keypad

