K401-E

External

(V2-April 2022 with Zone Cards)

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. (1096 standard users and 4 panic users) 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 etc

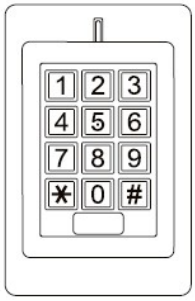
Features

- 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 (1096 standard users and 4 panic users)
- Integrated Alarm Buzzer & Output
- Low power consumption (55mA)
- Anti-Tamper Alarm
- Latch Mode/Toggle Mode
- Relay 2 Can Support a Door Bell Feature or any other volt free input function
- 12-24V DC Power Input
- 750mm sheathed cable tail

Specifications:

User Capacity	**1100 Cards/PINS**
Relay 1	1000 (998 standard users and 2 panic users)
Relay 2	100 (98 standard users and 2 panic users)
Operating Voltage	**12-24V DC**
Idle Current	55mA
Active Current	80mA
Keypad	**12 Key (3*4) Backlight options page 10**
Proximity Card Reader	**EM**
Radio Technology	125KHz Industry Standard Proximity Card
Read Range	20mm – 35mm
Wiring Connections	Electric Lock, Exit Button, DOTL, External Alarm, Door Bell
Relay	**Two (NO, NC, COM)**
Adjustable Relay Output Time	0-99 Seconds (5 seconds default)
Adjustable Alarm Output Time	0-3 minutes (1 minute default)
Lock Output Load	3 Amp Maximum
Alarm Output Load	3 Amp Maximum
Environment	**IP66**
Operating Temperature	-30℃ - 60℃, or -22°F - 140°F
Operating Humidity	10% - 90% Non-Condensing
Physical	**Zinc-Alloy Enclosure**
Surface Finish	Powder Coat
Dimensions	H:120 x W:76 x D:25 (mm)
Unit Weight	650g

Package contents



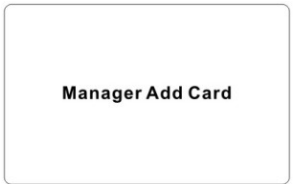
K401-E Keypad

Diode IN4004 (For relay circuit protection)

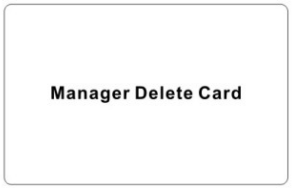
Self Tapping Screws

Wall Anchors

Screw Driver

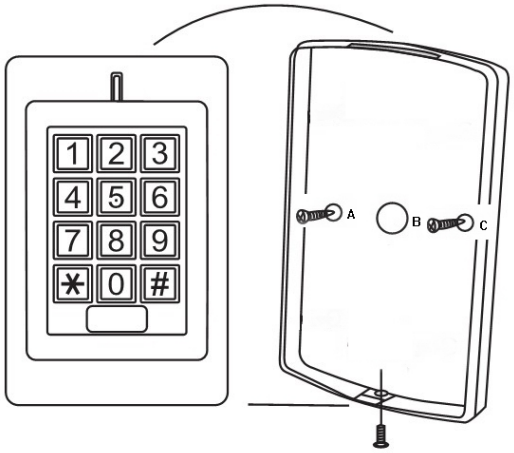


&



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

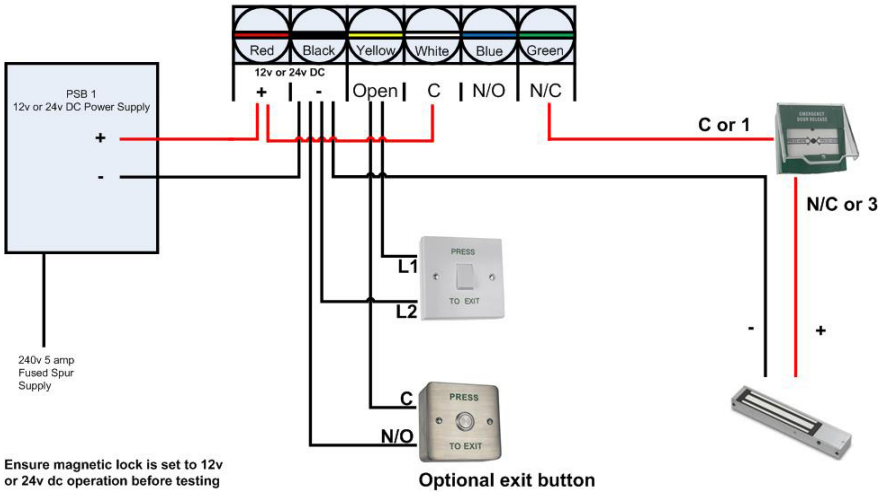


Wiring cable

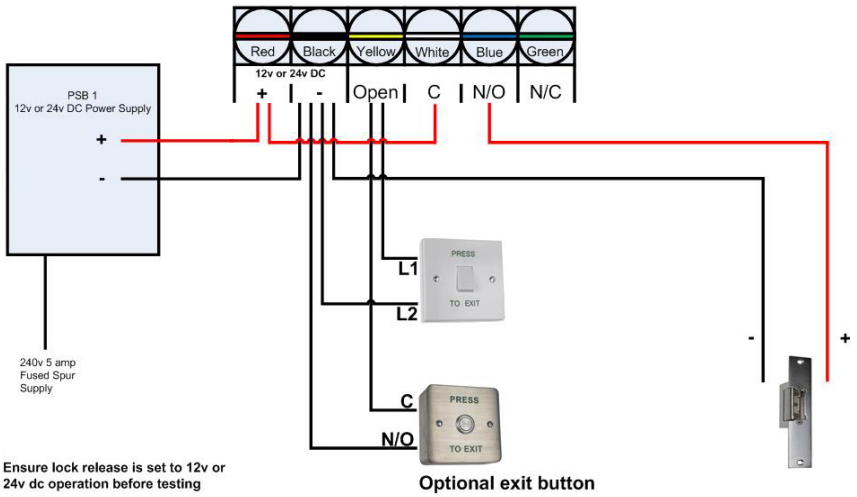
Wire Insulation Colour	Function	Notes
Red	DC	12-24V DC Regulated Power Input
Black	DC	12-24V DC Regulated Power Input
Grey & Black	GND	Negative Pole
Blue	NO1	Normally Open Relay 1 output
White	COM1	Common Connection for Relay 1 Output
Green	NC1	Normally Closed Relay 1 Output
Yellow	OPEN1	Request to Exit input 1
Advanced Input and Output Features – Relay 2		
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

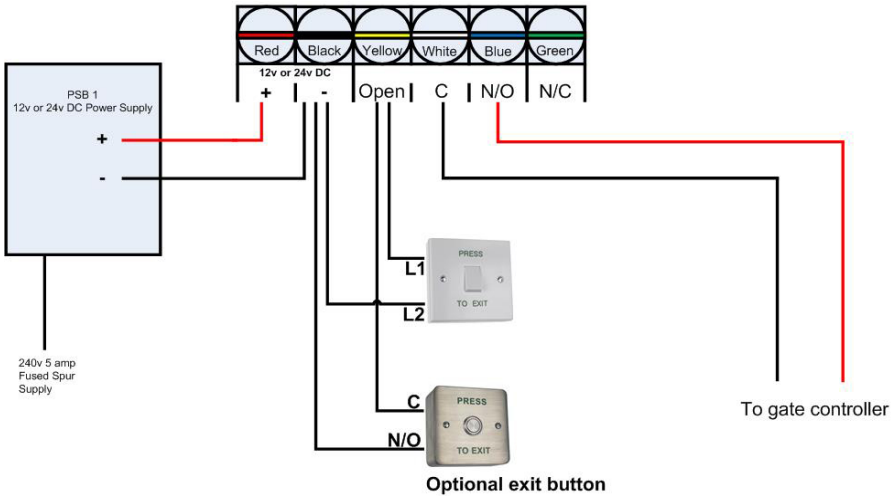
Common power supply for magnetic lock (Fail open – power to lock)



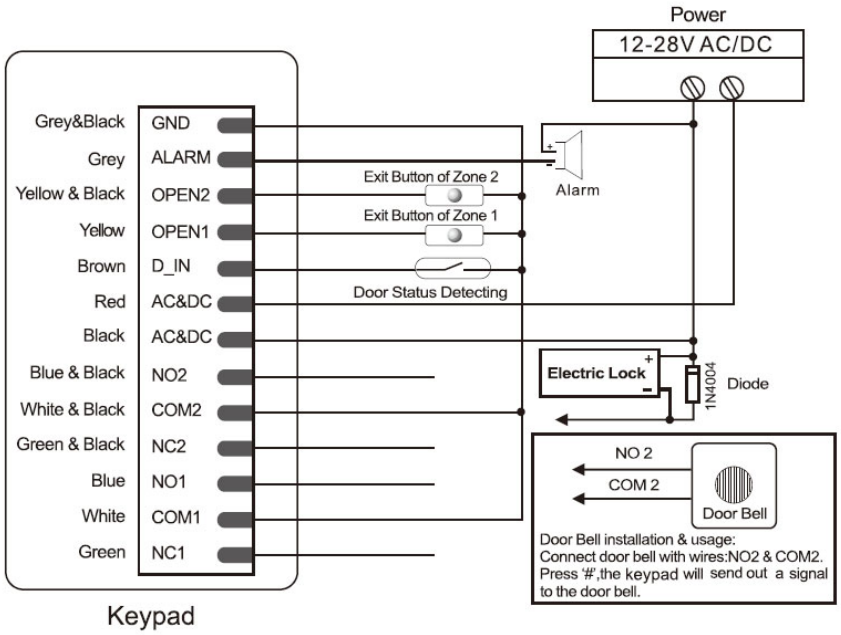
Common power supply for lock release (Fail secure – power to unlock)



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



Connection Diagram



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 is supplied with two Master Cards, a Zone 1 card to Add/Delete users for relay one and a Zone 2 card to Add/Delete for relay two in order to allow rapid card enrollment

Anti-Tamper Alarm – Please refer to the last page for this

The K401-E uses an L.D.R (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: 123456)**. We recommend immediate update and recording of your Master Code

Programming Step	Keystroke Combination
1. Enter Program Mode	*** (Master Code-default is 123456) #**
2. Update Master Code	**0** *（New Master Code）#（Repeat New Master Code）#*
3. Exit Program Mode	*****

User Settings

To enter the programming mode	***** **Master code** **#**
To exit from the programming mode	*****
Note that to undertake the following programming, the Master PIN must be entered	
Note: When adding users, if the card/fob or Pin user has been enrolled already, you cannot 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	

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	***(Default)***
Relay 1	**4 1 0 #**
Relay 2	**4 2 0 #**
3. Card + PIN	
Relay 1	**4 1 1 #**
Relay 2	**4 2 1 #**
4. Exit Program Mode	*****

To set users for Relay 1. **4** **1** **0** **#**	
To add **PIN** users	**1** **User ID number** **#** **PIN** **#** The User ID number is any number from 1-998 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** **User ID number 1** **#** **PIN** **#** **User ID number 2** **#** **PIN** **#**
To add a **PANIC PIN (Emergency PIN)**	**1** **User ID number** **#** **PIN** **#** The User ID number is any number from 999-1000 The PIN is any 4-6 digits between 0000-999999 with the exception of 1234 which is reserved
To delete PIN users	**3 User ID number #** **Users can be deleted continuously without exiting programming mode**
To change the **PIN** of a PIN user (Note: This step must be done outside of programming mode)	* **User ID number #** **Old PIN #** **New PIN #** **Repeat new PIN #**
To add **Card** Users. (Method 1) This is an easy way to enter cards with auto-generated User ID numbers The User ID number will start from 1 if no user has been programmed	**1** **Read card** **#** **Or** **1** Enter the 8 or 10 digit card/fob number **#** Cards can be added continuously without exiting programming mode
To add **Card** Users. (Method 2) This is the alternative way to enter cards using the User ID number. In this method a User ID is allocated to a card. Only one User ID number can be allocated to a single card	**1** **User ID number** **#** **Card** **#** The User ID number can be any number from 1-998 **Or** **1** Enter the 8 or 10 digit card/fob number **#** **For PANIC (Emergency Cards)** **1** **User ID number** **#** **Card** **#** The User ID number can be any number from 999-1000
To **delete Card** users by cards **Note:** Users can be deleted continuously without exiting programming mode	**3** **Read Card** **#** This function can automatically identify the card of relay 1 or relay 2
To **delete Card** users by their User ID number This option can be used when a user has lost their card	**3** **Enter the** **User ID number** **#**

To **delete card** users by card number	**9** **Enter the 8 or 10 digit card/fob number** **#** Cards can be deleted continuously without exiting from programming mode
To set users for Relay 2. **4** **2** **0** **#**	
To set **Pin** user for relay 2 is the same as relay 1, except the User ID numbers are 1001-1098 for relay 2. **Panic User ID numbers are 1099-1100** To set **Card** user for relay 2 is the same as relay 1, with the exception of adding **Card** users with auto-generated User ID numbers as below	
To add **Card** Users. (Method 1) Auto-generated User ID numbers	**2** **Read Card** **#** Card can be added continuously without exiting programming mode

Card and PIN Mode

To set users for relay 1. **4** **1** **1** **#**	
To Add a **card** and **Pin** 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 **PIN** 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 **PIN** in card and PIN mode (Method 2) Note that this is done outside programming mode so the user can undertake this themselves	***** **User ID number #** **Old PIN #** **New PIN #** **New PIN #**
To delete a **Card and PIN** user just delete the card	**3** **Read Card** **#** **or** **3** **User ID number** **#**
To set users for relay 2. **4** **2** **1** **#** **The operation is the same as relay 1**	

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

Toggle mode

Toggle mode	For Relay 1: **5** **1** **0** **#** For Relay 2: **5** **2** **0** **#**

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 bleep 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	**6** **0** **#** ***(Default)***
To enable door open detection	**6** **1** **#** 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	**7** **0** **#** ***(Default)***
Keypad Lockout	**7** **1** **#**
Alarm Output	**7** **2** **#**
Alarm output time	
To set the alarm output time	**8** **1-3** **#** ***(Default is 1 minute)*** (1-3 minutes available)

Set Audio sound & Visual LED display

LED status always **OFF** LED status aways **ON**	**8** **40** **#** **8** **41** **#** ***(Default)***
Keypad back lit always **OFF** Keypad back lit always **ON** Keypad back lit **Automatic OFF**	**8** **50** **#** **8** **51** **#** **We recommend this setting** **8** **52** **#** ***(Default)*** After 20 seconds the keypad backlight will go off and only return to normal mode upon pressing any button
Enable sound Disable sound	**8** **6** **#** ***(Default)*** **8** **7** **#**

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	**8** **8** **#** ***(Default)***
Door bell	**8** **9** **#**
To remove The Alarm	
To reset the Door Forced Open warning	**Read valid card** **or** **Master Code #**
To reset the Door Open Too Long warning	Close the door **or** **Read valid card** **or** **Master Code #**

Others

Using Master Zone Cards

Using Master Card (Available for relay 1 & 2 – Zone 2 is the same operation as Zone 1)	
Add a User Card	1. **(Present Zone 1 Master Card)** 2. **(Present User Card/fob)** *Repeat Step 2 for additional user cards* 3. **(Present Zone 1 Master Card when complete)**
Delete a User Card	1. **(Present Zone 1 Master Card TWICE)** 2. **(Present User Card/fob)** *Repeat Step 2 for additional user cards* 3. **(Present Zone 1 Master Card when complete)**

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 Zone 1 & 2 Master Cards
NOTE: *This is also useful if the original Zone Master 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 Zone 1 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 Zone 2 Master Delete Card

When the red LED begins to flash, 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/Orange LED	Green LED	Blue LED	Sounds
Power On	ON			Short Single Bleep
Standby	ON			
Press Keypad	Flashing			Short Single Bleep
Enter Master Code Entry Mode	Flashing			Short Single Bleep
In program mode	Orange ON	Single Flash		Short Single Bleep
Entered Program Step Successfully	Flashing	Single Flash		Short Single Bleep
Entered Program Step Incorrectly				3 Short Bleeps
Exit Programming Mode	ON			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	*** (Master Code) #** *(123456 is the default factory master code)*
Change the Master Code	**0**（**New Master Code**）**#**（**Repeat New Master Code**）**#** *(code: 4-6 digits)*
Add Card User	**1 (Present Card) #** (For relay 1) **2 (Present Card) #** (For relay 2)
Add PIN User	**1 (User ID number 1-1000) # (PIN)#** (For relay 1) **1 (User ID number 1001-1100) # (PIN)#** (For relay 2) *The PIN is any 4-6 digits between 0000 - 999999*
Delete User	**3 (Present Card) #** **3 (Enter User ID number) #**
Exit	*
How to be granted access	
Card User	**Present card/fob**
PIN User	**Enter (PIN) #**

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