

# Programming & Installation Manual

# KPX 100



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## KPX 100 Quick Start Guide

1. Connect 12V to 24V AC/DC to terminals
2. Connect the OUTPUT 1 N/O and COM to OPEN contacts in the operator (see operator manufacturer's manual for proper terminals)
3. Press 0000 \*     \* to enter programming mode (factory set Master Code)
4. Press 8901 #     # to set the KPX to Multi-user mode
5. Press 0 and 4-8 digits and #          # to set PERSONAL MASTER CODE  
Optional additional digits
6. Press 1 then 00 and 4 to 8 digits and #          # to set USER CODE 1  
Optional additional digits
7. Press 01 and 4 to 8 digits and #          # to set USER CODE 2  
Optional additional digits
8. Press 02 and 4 to 8 digits and #          # to set USER CODE 3  
Optional additional digits
9. Continue as needed up to 100 codes
10. Press 402#    # to set Output for 2 seconds
11. Press \*  exit programming

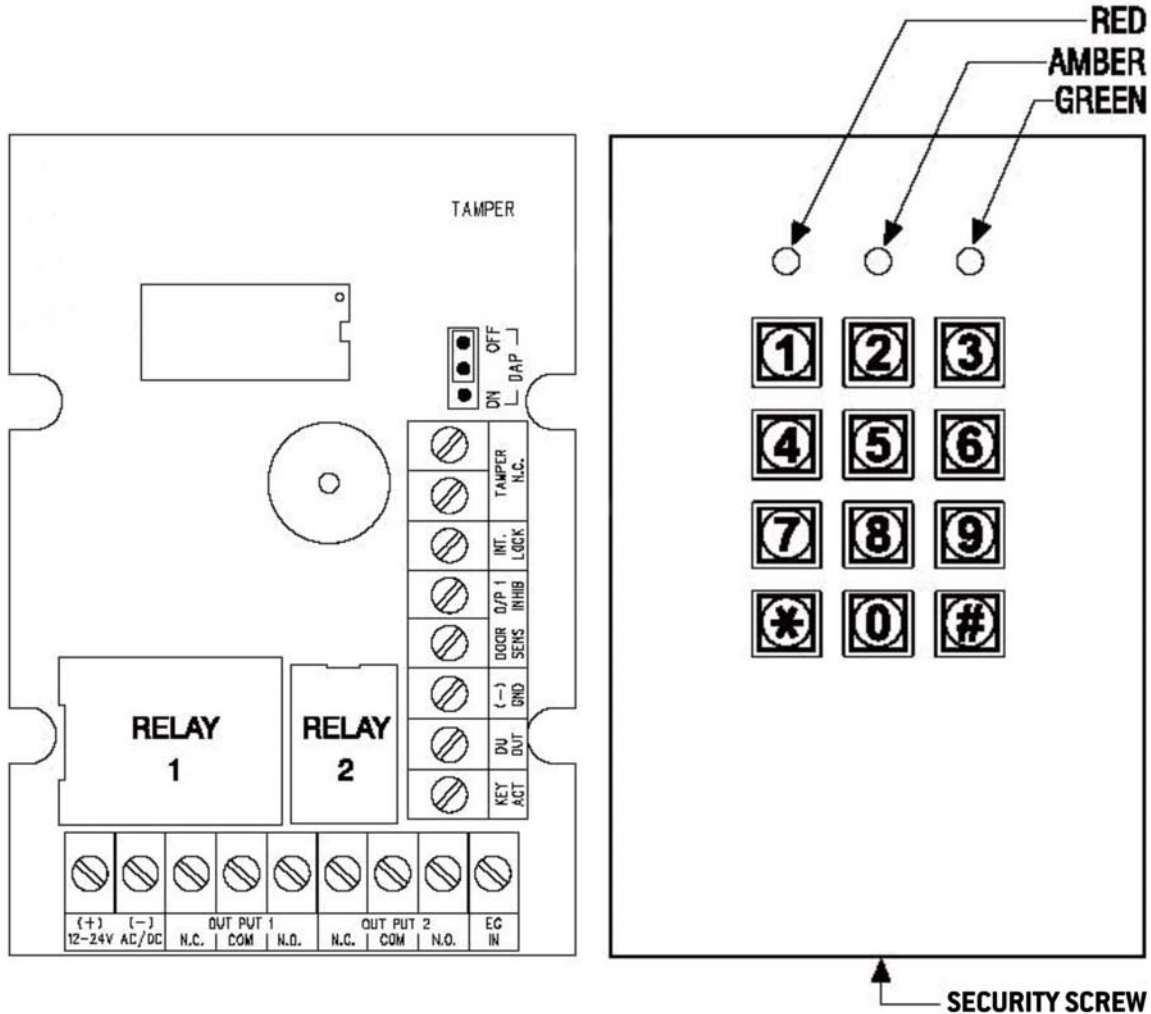
**For additional detailed information regarding functions, connection to door controls, alarms and troubleshooting please refer to the manual.**

## INTRODUCTION

The KPX 100 is a dual relay output, vandal resistant and weatherproof keypad. The KPX 100 employs durable back-lit all metal key buttons and a rugged metal housing for high traffic and harsh environment.

The KPX 100 is designed to fit on gooseneck mounts or on posts and walls.

## TERMINAL CONNECTIONS FOR THE KPX 100



- **12 - 24V AC/DC (POWER INPUT)**

Connect to 12-24V AC or DC power supply. The (-) supply and (-) GND are the common grounding points of the keypad system. No selection jumper is required for the full input voltage range.

Connect DC power with the (+) and (-) polarity indicated; there is no polarity discrimination for AC power input.

- **Output 1**  
5 Amp relay dry contacts (type "C"), recommended for door strike controls. Normally Open (N.O.) and Normally Closed (N.C.) outputs are available. Use the N.O output for Fail-secure locking devices and the N.C. output for Fail-safe devices. Output 1 relay may be programmed in Start/Stop toggle mode or timer mode from 1 to 999 seconds.
- **Output 2**  
1 Amp relay dry contact (type "C"), Normally Open (N.O.) and Normally Closed (N.C.). This is an auxiliary output controlled by the user code 2, which is ideal for controlling security systems and automatic operators. It is programmable for Start/Stop (toggle) or timing operation from 1 to 999 seconds.
- **EG IN**  
Egress Input is normally open (N.O.) input terminal and connects to ground, with the help of a normally open button to activate the Output 1 for the same time period as the user code. The egress button is usually placed inside the facility near the door being controlled by the KPX 100. More than one egress button may be connected in parallel to the terminal. Leave this terminal open if it is not used.
- **KEY ACT**  
Keypad Active Output is an NPN open collector output transistor that switches to (-) ground for 10 seconds on each key touch. This may be used to turn on lights, CCTV camera, or buzzers to notify a guard. This output is rated at I c max: 100mA sink, V c max: 24VDC.
- **DU OUT** Duress Output is an NPN open collector output transistor that switches to (-) ground after the Duress Code is entered. This is used to trigger a zone alarm, or turn on a buzzer to notify a guard. I c max: 100mA sink. V c max: 24VDC.
- **Door Sens** Door Position Sensor Input is a normally closed (N.C.) input terminal referring to ground (-). With the help of a normally closed magnetic door switch, the system will monitor the position of the door and give the following functions:  
**Note:** Always connect this terminal to (-) ground if not used.

#### **Door Auto Re-lock**

The system will immediately relock the door after valid access has been gained before the end of the programmed time for output 1, that prevents unwanted "tailgate" entries.

#### **b. Door Forced Open Alarm**

The keypad will generate door forced-open alarm instantly if the door is forced to open without a valid user entry or egress input. The alarm will last for 60 seconds and can be stopped with user code 1 or one of the user codes in Group 1 at anytime.

#### **c. Door Propped Open Alarm**

When the door is left open longer than the allowable time. The keypad will generate Door propped open alarm after the expiration of the pre-set door-open-time until the door is closed again. The door-open-time is programmable from 1 to 999 seconds at location 9.

#### d. Inter-lock Control

The interlock control output goes to (-) while the door is open in order to give a signal to disable another keypad that may be in the inter-lock system.

- **O/P 1 INHIB**

The Output 1 Inhibit Normally Open (N.O.) input terminal refers to ground (-). Both user code 1 and Egress button cannot activate output 1 while this terminal is tied to ground (-). It is prepared for cross wire connection in inter-lock application.

- **INT. LOCK**

Inter-Lock Control Output Is NPN transistor open collector output. The status is OFF in normal position and switches to ground (-) immediately for the first 5 seconds after keying in a valid user code to operate output 1, then it will keep tying to ground during the time the door is position sensor is open due to the door being open.

Use this output to control the other keypad in an inter-lock system to prevent both doors opening at the same time. An Inter-lock system is a two door system that always allows only one door to open during the operation time. While one of the doors in the system is opened, the other doors keeps closed until the first door is closed to prevent unauthorized people dashing into a protected area.

- **N.C. TAMPER**

Normally Closed (N.C.) contact while the keypad is secured on the housing. It is open only while the Keypad is separated from the housing. Connect this N.C. terminal to the 24 hour zone of an alarm system if necessary.

#### LED INDICATORS

- **RED**

Lights up when output 2 is activated.

- **AMBER**

This is a status indicator. It's signal is in synchronization with the pacifier tones from the built in buzzer.

- **GREEN**

Lights up when output 1 is activated.

#### The Pacifier Tones & LED indicator signals

	STATUS	TONES*	LED SIGNALS
1.	In programming mode	---	ON
2.	Successful key entry	1 BEEP	1 Flash
3.	Successful code entry	2 BEEPS	2 Flashes
4.	Unsuccessful code entry	5 BEEPS	5 Flashes
5.	DAP jumper not replaced	Continuous BEEPS	Continuous flashes
6.	In standby mode	---	1 Flash in 2 seconds interval
7.	Output relay activated	1 second long BEEP**	---

\* All pacifier tones can be enabled or disabled through programming options at location 83.

\*\* The output activation beep can be enabled or disabled through programming options at location 81.

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## The DAP Jumper (Direct Access to Programming)

If the Personal Master Code is forgotten, use the DAP jumper to override the forgotten code permitting the keypad to enter directly into the programming mode. You are required to apply the following procedures precisely.

1. Disconnect the power supply.
2. Move the DAP jumper from OFF to ON position.
3. Re-connect power supply (buzzer will be activated).
4. Put the DAP jumper back to OFF position (the buzzer will be deactivated at this time).
5. The keypad is in programming mode and ready to receive new programming data.
6. As the old master code was forgotten it is suggested that you put in a new 4 digit master code at location 0 first.
7. Enter the new programming data starting from selection "B" in the following summary chart.

## The factory-set master code - *Important note*

For the owner's convenience in programming the first time, the factory has put in a master code of 0000 into the keypad. To insure security in all cases the owner should program in a new Personal Mater Code to invalidate the factory set master code before use.

## PROGRAMMING OPTIONS - SUMMARY CHART

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### A) Use the Factory set Master Code to enter into programming mode - on first use

<u>Enter code</u>	<u>Validation</u>	<u>Comments</u>
<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="*"/>	Set system into programming mode with factory set master code.

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### B) Set System to single user or multi user mode and refresh the system - Installer

<u>User Mode Options</u>	<u>Validation</u>	<u>Comments</u>
<input type="text" value="8"/> <input type="text" value="9"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="#"/>	Set system to single user mode, clear all previous data & refresh system
<input type="text" value="8"/> <input type="text" value="9"/> <input type="text" value="0"/> <input type="text" value="1"/>	<input type="text" value="#"/>	Set system to multi user mode, clear all previous data & refresh system

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### C) Recording of Personal Master Codes & User Codes - User Programming

#### i) Recording of the master code and user codes for single user (digits may be repeated)

<u>Locations</u>	<u>Entry of Codes</u>	<u>Validation</u>	<u>Comments</u>
<input type="text" value="0"/>	4 digits, fixed	<input type="text" value="#"/>	Personal Master Code & Super User Code
<input type="text" value="1"/>	4 digits, fixed	<input type="text" value="#"/>	User Code 1 for output 1 with Duress Code function
<input type="text" value="2"/>	4 digits, fixed	<input type="text" value="#"/>	User code 2 for output 2

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#### ii) Recording of the master code and user codes for Multi-user (Digits may be repeated)

<u>Locations</u>	<u>User Number</u>	<u>Entry of Codes</u>	<u>Validation</u>	<u>Comments</u>
<input type="text" value="0"/>		4 to 8 digits	<input type="text" value="#"/>	Personal Master Code & Super User Code
<input type="text" value="1"/>	00 to 99	4 to 8 digits	<input type="text" value="#"/>	100 User codes in Group 1 for output 1 with Duress Code function
<input type="text" value="2"/>	0 to 9	4 to 8 digits	<input type="text" value="#"/>	10 User Codes in Group 2 for output 2

**D) Configuration of Output Modes - Installer Programming**

<u>Locations</u>	<u>Code of Duration</u>	<u>Validation</u>	<u>Comments</u>
<input type="text" value="4"/> <input type="text" value="0"/>	1 to 999	<input type="text" value="#"/>	Output 1 in momentary mode from 1 to 999 seconds
<input type="text" value="4"/> <input type="text" value="1"/>		<input type="text" value="#"/>	Output 1 in Start / Stop Mode (toggle)
<input type="text" value="4"/> <input type="text" value="2"/>		<input type="text" value="#"/>	Output 1 in Start / Stop Mode (toggle) with accelerated code
<input type="text" value="5"/> <input type="text" value="0"/>	1 to 999	<input type="text" value="#"/>	Output 2 in momentary mode from 1 to 999 seconds
<input type="text" value="5"/> <input type="text" value="1"/>		<input type="text" value="#"/>	Output 2 in Start / Stop Mode (toggle)
<input type="text" value="5"/> <input type="text" value="2"/>		<input type="text" value="#"/>	Output 2 in Start / Stop Mode (toggle) with accelerated code

**E) Personal Safety - Installer Programming**

<u>Locations</u>	<u>No. of False Entry</u>	<u>Validation</u>	<u>Comments</u>
<input type="text" value="7"/> <input type="text" value="0"/>		<input type="text" value="#"/>	After 10 successive false codes, keypad will lock for 30 seconds
<input type="text" value="7"/> <input type="text" value="1"/>		<input type="text" value="#"/>	After 10 successive false codes, the Duress output switches to ground
<input type="text" value="7"/> <input type="text" value="2"/>	5 to 10	<input type="text" value="#"/>	Selectable from 5 to 10 successive false codes, the keypad locks for 15 minutes. The keypad can be reset to release lock with the Master Code at any time during the locking period.
<input type="text" value="7"/> <input type="text" value="6"/>	00	<input type="text" value="#"/>	Removal of all above security settings

**F) Door Forced Open Alarm - Installer Programming**

<u>Locations</u>	<u>Function Code</u>	<u>Validation</u>	<u>Comments</u>
<input type="text" value="8"/> <input type="text" value="0"/>	<input type="text" value="1"/>	<input type="text" value="#"/>	Door Forced Open Alarm is Activated
<input type="text" value="8"/> <input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="#"/>	Door Forced Open Alarm is Disabled

**G) Output Activation Annunciation - Installer Programming**

<u>Locations</u>	<u>Function Code</u>	<u>Validation</u>	<u>Comments</u>
<input type="text" value="8"/> <input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="#"/>	1 second notification beep is given to notify the person outside to open the door when output relay is activated with a user code or egress button. Good for the locking device that gives no sound when it activates, such as magnetic lock.
<input type="text" value="8"/> <input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="#"/>	Notification beep disabled and replaced by 2 short successful code entry beeps for valid user codes.

## H) User Code Entry Mode (Auto or Manual) - Installer Programming

<u>Locations</u>	<u>Function Code</u>	<u>Validation</u>	<u>Comments</u>
8 2	1	#	Auto Entry Mode is selected. # Key that follows the user code is <u>not</u> required in code entry. The user codes <u>must</u> be set in the same digit length as the Master Code in Auto Entry mode and the code can be 4-8 digits
8 2	0	#	Manual Entry Mode is selected. # Key that follows the user code is required in code entry. The user codes can be 4-8 digits and are not required to be the same length as the Master Code.

**NOTE:** In single user mode, if selection is auto or manual mode, the Master Code and the User Code must be set to 4 digits length.

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## I) Pacifier Tones (Key-press Acknowledgement Tones) - Installer Programming

<u>Locations</u>	<u>Function Code</u>	<u>Validation</u>	<u>Comments</u>
8 3	1	#	Tones are active on key press
8 3	0	#	Tones are off. Use for silent environment requirements

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## J) Door Propped Open Alarm Time - Installer Programming

<u>Locations</u>	<u>Function Code</u>	<u>Validation</u>	<u>Comments</u>
9	0	#	No Propped Open Alarm
9	1 to 999	#	Time from 1 to 999 seconds until door propped open activates alarm

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## K) Exit Programming Mode

<u>Validation</u>	<u>Comments</u>
*	Keypad exits programming mode and returns to normal operation

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## SINGLE USER MODE OR MULTI-USER MODE SELECTION

They keypad consists of two sets of software for owners selection in user code programming. They are "Single User Mode" and "Multi-User Mode".

The keypad has been set with a Master Code of "0000" and in single user mode from the factory. If your required mode is Multi-User, you have to refresh the system with the appropriate comment code "8901" to set it into Multi-User mode.

### Single User Mode (Command Code: 8900)

Single user mode is prepared for the simple users, which allows only one user code to operate each output. The user codes are fixed to 4 digits and 10,000 code combinations are possible. User codes can be programmed directly into the User Code Location 1 and Location 2. Please see programming summary chart section "C", item i) for details. This mode is always set with the Auto Code Entry as default. The user is not required to press the # key during code entry. The user only has to enter the 4 digit user code. The relay will activate for the programmed time.

**Note:** The system can be set for manual entry with programming option 0 at location 82 if desired.



## Multi-User Mode (Command Code: 8901)

Multi-User mode allows up to 100 individual user codes to operate output 1 and 10 individual user codes to operate output 2. The user codes can be 4 to 8 digits with over 100 million possible combinations. The user codes can be set for Auto Entry or Manual Entry with programming options at Location 82. Manual Entry Mode is the default. The user code followed by the #key is required.

Once the keypad is programmed in Auto Entry, the Master Code and the User Codes must be set in the same digit length, and the need for the user code to not be followed by the # key is required.

### Default Values

<u>Default Values</u>	<u>Comments</u>
401	output 1 in 1 second Momentary Mode
501	output 2 in 1 second Momentary Mode
70	After 10 successive false code the keypad lock for 30 seconds
800	Door forced open alarm is disabled
811	Output relay activation beep is ON
820	User Code Manual Entry Mode ** (for multi-user mode)
821	User code Auto Entry mode ** (for single user mode)
831	audible tone output ON
90	No propped Open alarm

**Note:** \*\*The default values in Multi-User mode and Single User mode are exactly the same except the user code entry mode.

### Code Entry Limitation in Multi-User Mode due to Duress Code

The system comes with Duress function for the user code 1 in single user mode and all the user codes in group 1 in Multi-User mode; The Duress Code is set up by the system automatically with the first digit of the User Code "+2". To prevent the other user codes from falling into the duress code, or the duress code from falling into the user codes, the first digit of the "stored" user code "+2" or "-2" is not allowed for use in User code entry programming. The system will refuse those code entries.

**Example:** User code 56789 was stored in the system, then 36789 and 76789 are not allowed for other user codes.

### Set the system to Single User Mode

The system may be set to Single User Mode with the command code "8900" and will retain the setting until the system is reprogrammed for another mode. Make sure that the Master Code was already in 4 digits before setting the system to Single User Mode.

MASTER CODE \* 8 9 0 0 # --- Single user mode on duty (Please wait 2-3 seconds until confirmation beeps are heard after the # key is pressed.)

### Set the System to Multi-User Mode

The system may be set to Multi-User Mode with the command code "8901" and will retain the setting until the system is reprogrammed for another mode.

MASTER CODE \* 8 9 0 0 # --- Multi-User Mode on duty (Please wait 2-3 seconds until confirmation beeps are heard after the # key is pressed.)

## Refresh the System -- When changing the mode of operation

The system can be changed from Single User Mode to Multi-User Mode; or vice versa with the above operation command codes.

When this is done, the keypad will reset itself as a fresh unit with default values; and all previous settings will be cleared except the Master Code.

### Important Notes:

- 1) Make sure all User Codes and Master Codes are 4 digits in length if the system is in Single User Mode. Code entry will not be accepted otherwise.
- 2) It is necessary to change the Master Code to 4 digits first (no matter if it was 4 or more than 4 digits in Multi-User Mode) before changing from Multi-User Mode to Single User Mode.
- 3) The system takes approximately 2-3 seconds to reset to the new operating mode after the command code is entered. DO NOT enter any code during this time. Please wait until the 2 confirmation beeps are heard.

## Programming and use of the keypad - Operation Examples

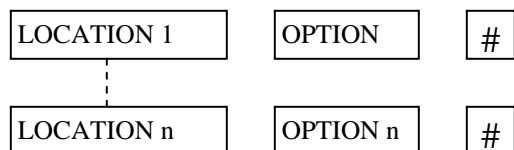
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### A) Programming Procedures

- a) All programming is accomplished through the keypad. The keypad may be programmed in your shop or at the installation site. Programmed information is stored in non-volatile memory and will not be lost if the power is removed.
- b) When programming is required, it is necessary to set the keypad into programming mode using the master code and validating with the  key.

**Note:** If the Master Code is forgotten, use the DAP jumper to set the keypad into programming mode. (See DAP Jumper description in previous section for details)

- c) After the keypad is in programming mode, you may go to any location for programming options one by one. (Please see programming options summary chart for details)
- d) You may make continuous programming until all desired options are programmed. Repeated programming at the same location is allowed if the previous entry was mistaken.



- e) Exit programming mode with the  key after all your required options are programmed. The new information that you have programmed will be saved.
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## B) Single User Mode Operation - Operation Example

### 1) Requirement

- a) Single User Mode Operation
- b) Change factory set Master Code 0000 to a Personal Master Code 3289
- c) Set User Code 1 to 8321
- d) Set User Code 2 to 6854
- e) Set Output 1 to Momentary Mode. 1 second
- f) Set Output 2 to Start / Stop (toggle) Mode
- g) Set Keypad to lock itself for 15 minutes after 10 successive false codes

### 2) Programming - Set the above requirements into the keypad:

- System has been placed in program mode with factory set Master Code
- System has been set for Single User Mode \*\* (see note (a) below)
- 3289 has been stored as the new Personal Master Code & Super User Code
- 8321 has been stored as User Code 1, with Duress Code function on Output 1
- 6854 has been stored as User Code 2, for output 2
- Output 1 has been set to momentary mode with 1 second duration
- Output 2 has been set to Start / Stop (toggle) mode
- The keypad has been set to lock for 15 minutes after 10 successive false codes
- Keypad exits programming mode. All changes are stored, system is ready to use

Note: a) \*\* Enter the single user mode command code "8900" may not be necessary if the keypad was already in single user mode.

b) In case of wrong entry during programming, cancel with  key, or, wait 10 seconds, then re-try.

### 3) Operate the Keypad - Taking the data programmed above and other features in default value as reference

a) To command an output, enter it's user code. Press  is not required.

----- Output 1 activates for 1 second

----- Output 2 Starts or Stops (toggle mode)

b) The Personal Master Code is a Super User Code to control the outputs. This feature allows the owner to use only one code to operate several keypads if they have the same Master Code but different User codes. Enter the personal Master Code and validate via the  key and corresponding output number.

----- Output 1 activates for 1 second

----- Output 2 Starts or Stops (toggle mode)

c) The Duress Code does not need to be programmed. The keypad determines it automatically by increasing the first digit of User Code 1 by two units.

For Example: The User Code 1 is "1234", then the Duress Code is "3234", or the User code 1 is "8321", then the Duress Code is "0321".

To activate the Duress Functions, enter the Duress Code

0	3	2	1
---	---	---	---

 ----- Duress output activates (output switches to (-) ground) & Output 1 activates for 1 second

**Note:**

The Duress Code has double actions. It activates the Duress Output and at the same time activates Output 1 as if User Code 1 has been used. The Duress Code can always activate or deactivate (in Start / Stop mode) Output 1, but cannot deactivate the Duress Output. Only the User Codes in Group 1 can reset (deactivate) the Duress Output.

d) The accelerated Code is the first two digits of the User Code. If Output 1 has been programmed in Start / Stop mode with Accelerated Code at Location 42, it is possible to activate Output 1 with only the first 2 digits of the User Code. Deactivating Output 1 requires the full User Code 1 to be entered.

**Example:** Output 1 has been re-programmed to Start / Stop mode with Accelerated Code (location: 42) with complete code of: 8321 The Accelerate Code will be 83.

8	3	#
---	---	---

 ----- Output 1 starts

8	3	2	1
---	---	---	---

 ----- Output 1 stops

e) Enter false codes into the keypad to test the security. The keypad considers 4 digits as 1 code and it generates 5 beeps for each unsuccessful entry. The keypad will lock for 15 minutes after 10 unsuccessful code entries. Normal operation will resume after 15 minutes have expired or it may be reset with the Master User Code at any time during lockout.

3	2	8	9	#
---	---	---	---	---

 ----- Lockout is reset and keypad resumes normal operation

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**C) Multi-User Operation - Operation Example**

1) Requirement

- a) Multi-User Mode Operation
  - b) Change factory set Master Code "0000" to a Personal Master Code "3289".
  - c) Set 1<sup>st</sup> User Code in Group 1 of 8321
  - d) Set 2<sup>nd</sup> User Code in Group 1 of 11223
  - e) Set 3<sup>rd</sup> User Code in Group 1 of 33331
  - f) Set 1<sup>st</sup> User Code in Group 2 of 6854
  - g) Set 2<sup>nd</sup> User Code in Group 2 of 54321
  - h) Set Output 1 to Momentary Mode, 1 second duration
  - i) Set Output 2 to Start / Stop Mode
  - j) Set the keypad to lock for 15 minutes after 10 successive false codes
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## 2) Programming

<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="*"/>	----- System is set to programming mode using factory set Master User Code
<input type="text" value="8"/> <input type="text" value="9"/> <input type="text" value="0"/> <input type="text" value="1"/> <input type="text" value="#"/>	----- System is set to Multi-User Mode *8 (see note (a) below)
<input type="text" value="0"/> <input type="text" value="3"/> <input type="text" value="2"/> <input type="text" value="8"/> <input type="text" value="9"/> <input type="text" value="#"/>	----- 3289 has been stored as the new Personal Master Code & Super User Code
<input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="1"/> <input type="text" value="8"/> <input type="text" value="3"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="#"/>	----- 8321 has been stored as 1 <sup>st</sup> user code in Group 1 with duress code function
<input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="#"/>	----- 11223 has been stored as 2 <sup>nd</sup> user code in Group 1 with duress code function
<input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="3"/> <input type="text" value="3"/> <input type="text" value="3"/> <input type="text" value="2"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="#"/>	----- 33221 has been stored as 3 <sup>rd</sup> user code in Group 1 with duress code function
<input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="6"/> <input type="text" value="8"/> <input type="text" value="5"/> <input type="text" value="4"/> <input type="text" value="#"/>	----- 6854 has been stored as 1 <sup>st</sup> user code in Group 2
<input type="text" value="2"/> <input type="text" value="2"/> <input type="text" value="5"/> <input type="text" value="4"/> <input type="text" value="3"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="#"/>	----- 54321 has been stored as 2 <sup>nd</sup> user code in Group 2
<input type="text" value="4"/> <input type="text" value="0"/> <input type="text" value="1"/> <input type="text" value="#"/>	----- Output 1 is set to Momentary Mode with 1 second duration
<input type="text" value="5"/> <input type="text" value="1"/> <input type="text" value="#"/>	----- Output 2 is set to Toggle Mode
<input type="text" value="7"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="#"/>	----- Keypad is set to lock for 15 minutes after 10 successive false codes
<input type="text" value="*"/>	----- Keypad exits programming mode. All changes are stored, system is ready to use

- Note: a) \*\* Entering the Multi-User Mode Command Code "8901" may not be necessary if the keypad is already in Multi-User Mode.
- b) In case of incorrect entry during programming, cancel with the  key, or, wait 10 seconds, then re-try.

## 3) Operating the Keypad - Taking the data programmed above and other features in default value as reference

a) To control Output 1 enter any one of the user codes in Group 1 and validate via the  key

<input type="text" value="8"/> <input type="text" value="3"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="#"/>	----- Output 1 activates for 1 second
<input type="text" value="1"/> <input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="3"/> <input type="text" value="#"/>	----- Output 1 activates for 1 second
<input type="text" value="3"/> <input type="text" value="3"/> <input type="text" value="2"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="#"/>	----- Output 1 activates for 1 second

b) To control Output 2 enter any one of the user codes in Group 2 and validate via the  key

<input type="text" value="6"/> <input type="text" value="8"/> <input type="text" value="5"/> <input type="text" value="4"/> <input type="text" value="#"/>	----- Output 2 Starts or Stops (toggle mode)
<input type="text" value="5"/> <input type="text" value="4"/> <input type="text" value="3"/> <input type="text" value="2"/> <input type="text" value="1"/> <input type="text" value="#"/>	----- Output 2 Starts or Stops (toggle mode)

c) The Personal Master Code is a Super User Code to control the outputs. This feature allows the owner to use only one code to operate several keypads if they have the same Master Code but different User Codes. Enter the Personal Master Code and validate via the **#** key and the corresponding output number.

3 2 8 9 # 1 ----- Output 1 activates for 1 second  
3 2 8 9 # 2 ----- Output 2 Starts or Stops (toggle mode)

d) The Duress codes do not need to be programmed. The keypad determines them automatically by increasing the first digit in Group 1 by two units. All User Codes have Duress Code function

Example:	<u>User Codes in Group 1</u>	<u>Corresponding Duress Codes</u>
	8321	0321
	11223	31223
	33221	53221

To activate the Duress function, enter the Duress Code(s)

0 3 2 1 # --- Duress output activates (switches to ground) & Output 1 activates for 1 second  
3 1 2 2 3 # --- Duress output activates 9switches to ground) & Output 1 activates for 1 second  
5 3 2 2 1 # --- Duress output activates 9switches to ground) & Output 1 activates for 1 second

**Note:**

The Duress Code has double actions. It activates the Duress Output and at the same time activates Output 1 as if User Code 1 has been used. The Duress Code can always activate or deactivate (in Start / Stop mode) Output 1, but cannot deactivate the Duress Output. Only the User Code in Group 1 can reset (deactivate) the Duress Output.

e) The accelerated Code is the first two digits of the User Code. If Output 1 has been programmed in Start / Stop mode with Accelerated Code )Programming Option 42, for users in Group 1 & Programming Option 52 for user codes in Group2), it is possible to activate Output 1 with only the first 2 digits of the User Code(s). Deactivating the Output requires the full User Code(s) in their code group to be entered.

**Example:** Output 1 has been re-programmed to Start / Stop mode with Accelerated Code (Programming Option 42)

With the Complete Code of 1<sup>st</sup> user in Group 1 of: 8321 The Accelerate Code will be 83.  
 With the Complete Code of 2<sup>nd</sup> user in Group 1 of: 11223 The Accelerated Code will be 11.

8 3 # ----- Output 1 Starts  
8 3 2 1 # ----- Output 1 Stops  
1 1 # ----- Output 1 Starts  
1 1 2 2 3 # ----- Output 1 Stops

- f) Enter false codes into the keypad to test the security. The keypad will lock for 15 minutes after 10 unsuccessful code entries. Normal operation will resume after 15 minutes have expired or it may be reset with the Master User Code at any time during lockout.

----- Lockout is reset and keypad resumes normal operation

#### D) Delete User (Multi-User Mode)

If you need to delete a user who has left the company or who no longer has authority To enter the protected area:

- 1) Enter System Programming mode with the Personal Master Code and the  key

----- Keypad is now in Programming Mode

- 2) Enter the User Number (00-99 for Output 1; 0-9 for Output 2) and the  key to delete the user code

If you want to delete User Number 05 in Group 1, press:

If you want to delete User Number 03 in Group 2, press:

- 3) You may delete other user code(s) in this fashion

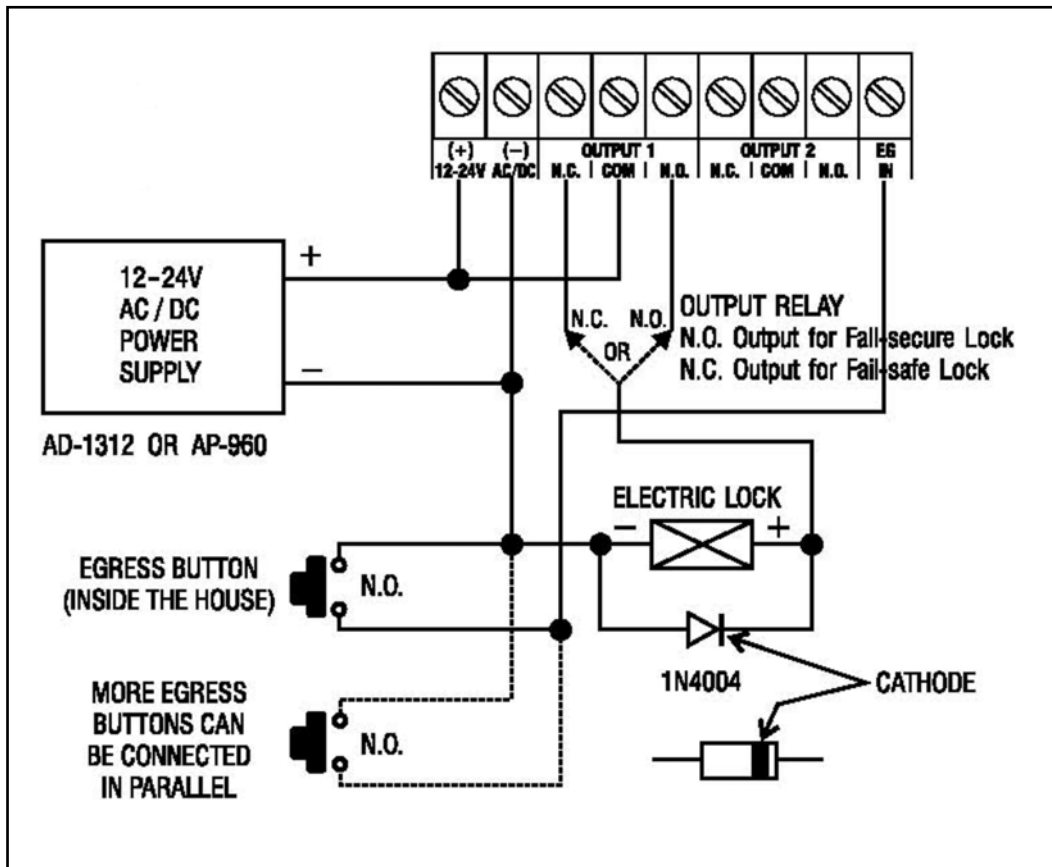
- 4) Exit the programming mode by pressing the  key when finished

#### Specifications

* Operating voltage	12V - 24V AC/DC No jumper selection required for full voltage range
* Current	10 mA@ 12VDC standby - 100mA peak (both relays activated)
* Environmental Temperature	-30°C to +70°C
* Ambient Humidity	5 - 95 % relative humidity non-condensing
* Environment	All weather IP 66
* Operation Modes	a) Single User Mode, Auto or Manual Code Entry b) Multi-User - 100 user codes for output 1 (user number 00-99), Auto or Manual Code Entry -10 user codes for output 2 (user number 0-9), Auto or Manual Code Entry
* User Code Combinations	a) Single User Mode - 10,000 (non-volatile memory) b) Multi-User Mode - 111,110,000 (non-volatile memory)
* Input Sensing Terminals	a) Egress Input - Normally Open sinking to Ground (-) b) Door Position Input - Normally Open sinking to ground (-) c) Relay 1 Stop Control - Normally Open sinking to ground (-)
* Relay Output Contacts	Output 1 Dry contact 5A/30VDC max normally open, normally closed Output 2 Dry contact 1A/30VDC max normally open, normally closed
* Tamper Switch Contact	Dry contact 50 mA max normally closed
* Duress, Interlock & key active output	NPN Open collector sinks to ground when active 24VDC / 100mA
* Keypad timeout during code entry	a) Each digit maximum entry time limit -- 10 seconds b) Each code maximum entry time limit - 30 seconds
* dimensions	6.14 in (156mm) H x 4.1 in (103mm) W x 2.76 in (50mm) D
* Weight	2.16 pounds (980grams) net
* Housing	Anodized & Powder Coated Steel (Black)
* Face Plate	0.06 in ( 1.5mm) Stainless steel
* Key Buttons	Cast Metal Back-lit Buttons

Specifications subject to change without notice.

## 1) Basic wiring of Stand Alone Door Lock Installation

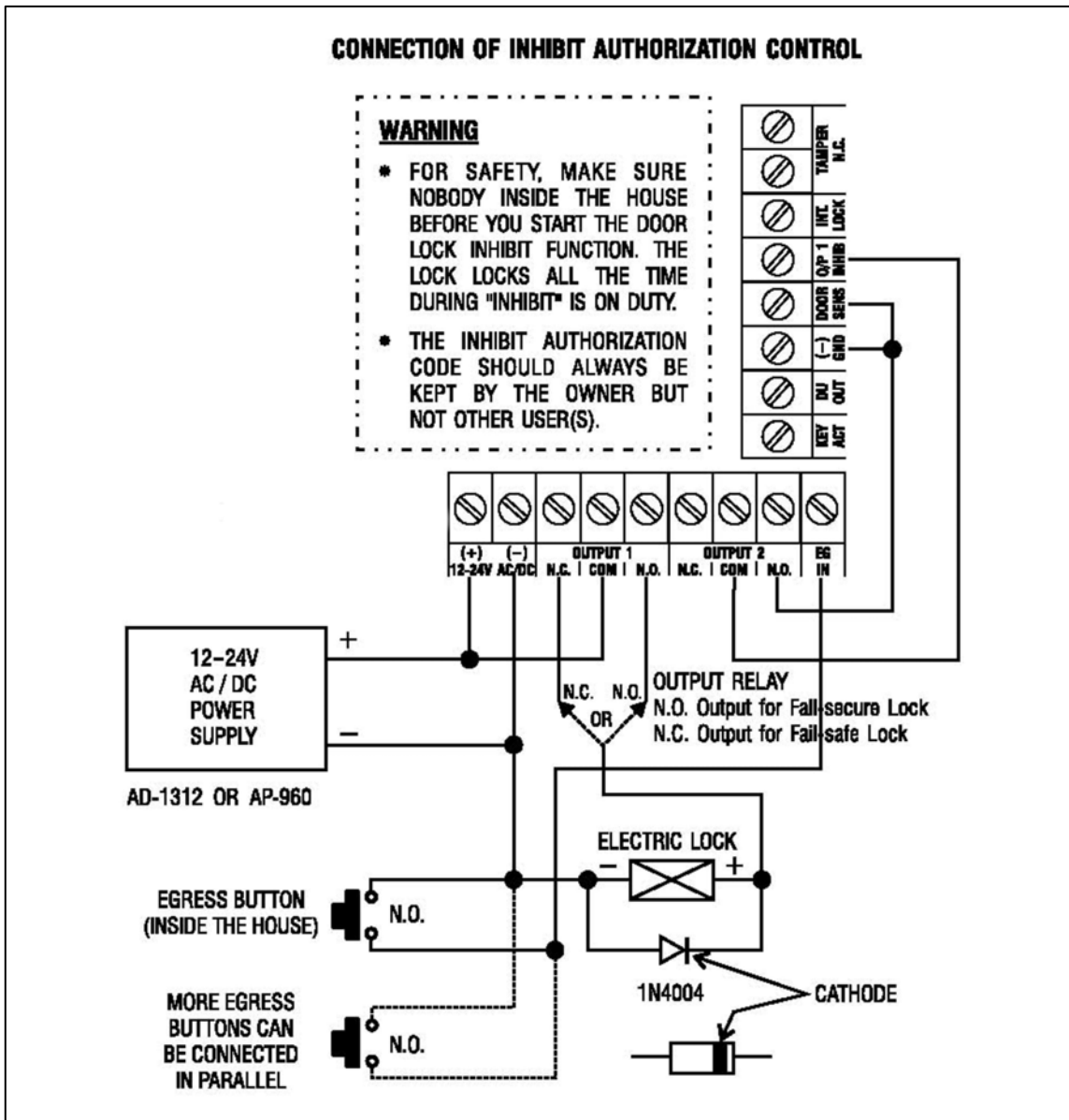


### Note:

- Connect the 1N4004 as close as possible to the lock in parallel with the lock terminals to absorb the back EMF to prevent damage to the keypad. The 1N4004 is not required if the electric lock is AC operated.
- To avoid Electro-Static-Discharge from interfering with the operation of the keypad, always ground the (-) terminal to earth ground.
- Always connect Door Sensor terminal to (-) ground if not used.

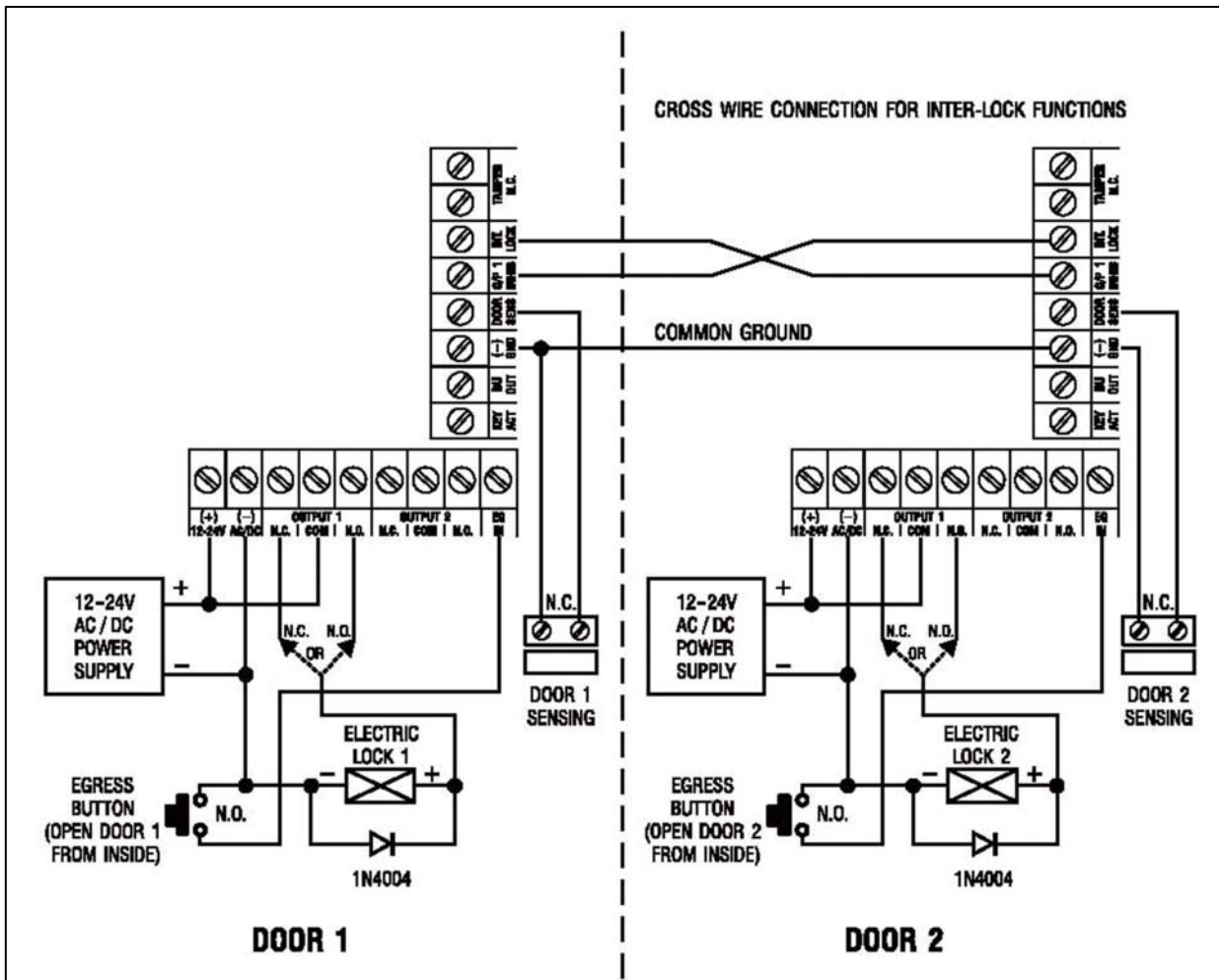


## 2) Example of wiring with stand alone door lock with inhibit authorization code



- Use output 2 as authorization control. The owner may key in the user code 2 to stop operation of the electric lock at night or after office hours to prevent unauthorized access.
- Set output 2 to Start / Stop (toggle) Mode (Program Option 51) for ON-Off control.
- Simply connect the "output 1 inhibit" (O/P 1 INHIB) terminal with output 2 as shown in the wiring diagram. User code 1 is invalid while the "O/P 1 INHIB" terminal is shunted to ground with user code 2.

### 3) Basic Wiring of an Inter-lock System using two keypads

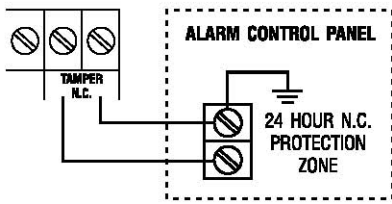


An inter-lock system needs two door controllers. This application example uses two KPX 100 with simple cross wire connection on the “Output 1 Inhibit” and “Inter-lock Control Output” terminals. It is necessary to link up the “(-) GND” terminals of the two keypads as common ground to achieve the inter-lock logic function.

- Use keypad to open door from outside
- Press egress button to open door from inside
- Connect the door magnetic sensors on the doors to monitor position
- While door 1 is open, door 2 is forced to stay closed or vice versa
- Use N.O. relay output for fail-secure lock; and N.C. output for fail-safe lock
- Please consult “NOTE” stated in application example (1)

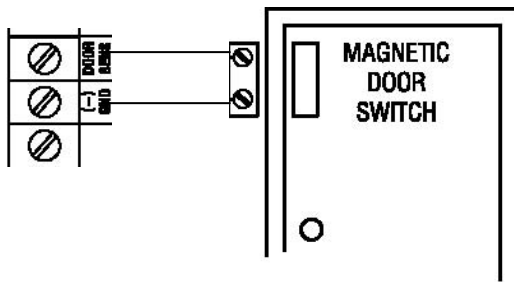
## Application Examples for Auxiliary Terminals

### (A) TAMPER N.C.



The tamper switch is Normally Closed while the keypad is secured on gang box. It is open when the keypad is removed from the gang box. To prevent sabotage, connect these terminals in series with a 24 hour N.C. protection zone of an alarm system if required.

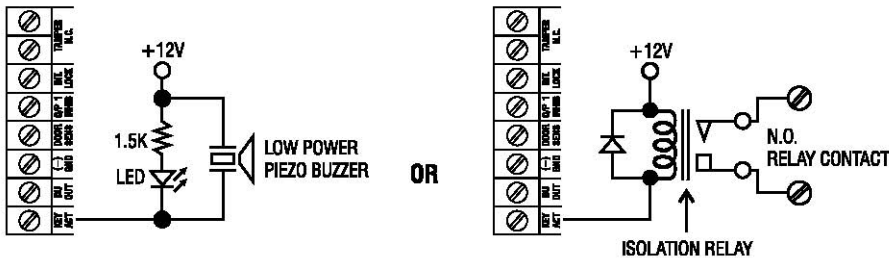
### (B) DOOR SENS



With the help of a normally closed door Position sensor (usually a magnetic door switch) on the door to set up the following functions.

- Door Auto Relock – the system will immediately re-lock the door after a valid access has been gained to prevent “tailgate” entry.
- Door Forced-open alarm – The keypad will generate an instant alarm if the door is forced to open. Enable the function with Program Option 801
- Door Propped Open Alarm – The keypad will generate an alarm if the door is left open longer than the pre-set time. Enable the function with Program Option 9 with duration of 1 to 999 seconds.
- Inter-lock Control – When the door is open the inter-lock output of the keypad will give a (-) command to de-activate the other keypad in an inter-lock system.

### (C) KEY ACTIVE

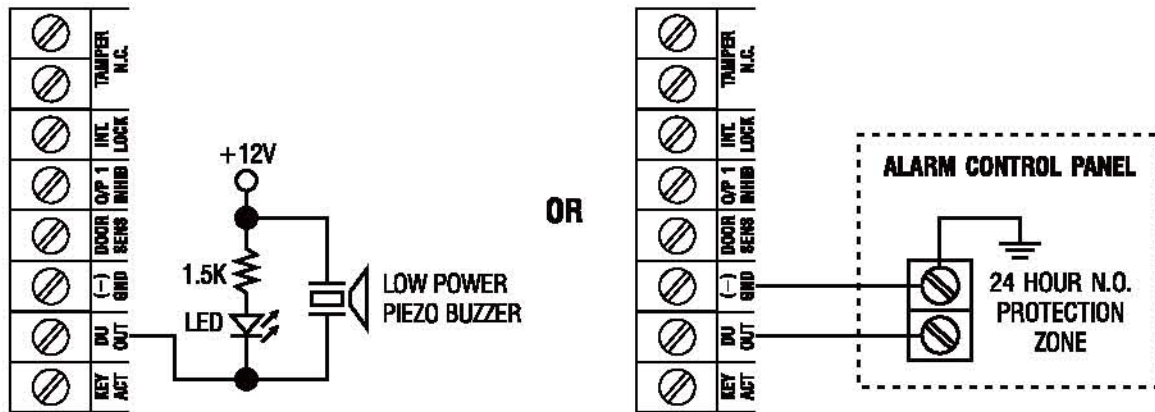


The Key Active Output will switch to (-) ground for 10 seconds whenever a key is touched. You may use it to turn ON an LED lamp and /or a small buzzer to notify a guard; or to energize a relay to switch ON lights or trigger an CCTV Camera to start recording.

\* Make sure that the relay for switching ON lights has high enough isolation between high voltage and low voltage to prevent damage of the keypad.

- \* Only one connection option is recommended. Make sure the sink current does not exceed the maximum rating of 100mA.
- \* External power supply and isolation relay are strictly necessary in driving high power device, such as lights.

## (D) DURESS OUTPUT

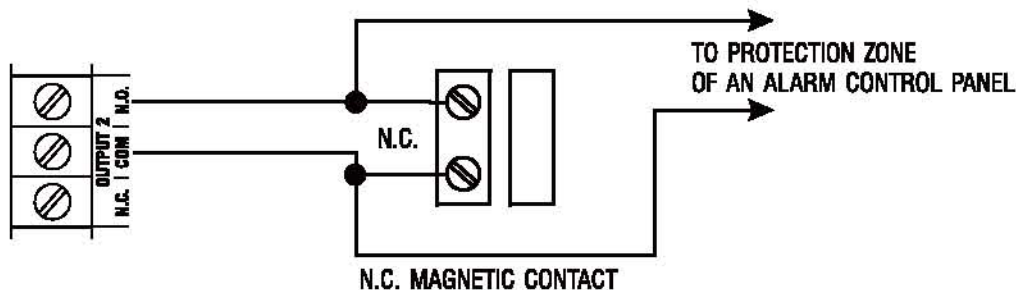


The Duress Output will switch to (-) ground when duress code is entered. You may use it to turn ON an LED lamp and /or a small buzzer to notify a guard; or connect it to a 24 hour Normally Open protection zone of an alarm system.

- Only one connection option is recommended. Make sure that the sink current does not exceed the maximum rating of 100mA.

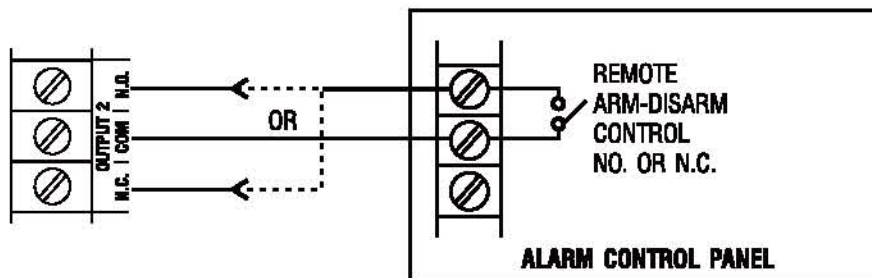
## (E) OUTPUT 2

### ( i ) Shunting an N.C. Zone



- Use the Normally Open (N.O.) output contact to shunt a Normally Closed (N.C.) protection zone of an alarm system.
- Set output contact to Start / Stop Mode (Programming Option 51).

### ( ii ) Alarm System Arm-Disarm Control



- Use the (N.O.) or (N.C.) output contact to make arm-disarm control of an alarm system.
- Consult your alarm control panel manual for the appropriate output contact to be used in arm-disarm control.
- Usually set output 2 to Momentary mode (Programming Option 501) for multi station systems and Start / Stop mode (Programming Option 51) for single station systems.

## APPENDIX

- **Dry Contact**

A dry contact means that no electricity is connected to it. It is prepared for free connection. The relay contacts provide by the KPX 100 are dry contacts

- **N.C.**

Normally Closed, the contact is closed circuit in a normal status. It is open when activated.

- **N.O.**

Normally Open, the contact is open circuit in a normal status. It is closed when activated.

- **Transistor Open Collector Output**

An open collector output is equivalent to Normally Open (N.O.) contacts switching to ground similar to a relay contact connecting to ground. The transistor is normally OFF, and it's output switches to ground (-) when activated. The open collector can only provide switching function for low power requirements but is usually good enough for control of an alarm system . The Duress, Inter-lock and Key Active outputs of the KPX 100 are open collector outputs.

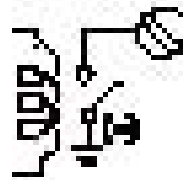


Open Collector

Output ---

Output switches to  
ground when  
activated

EQUIVALENT



N.O. CONTACT

Output ---

Output switches to  
ground when  
activated

