# KPX-100™
## Programmable Keypad

# Instruction Manual

The KPX-100 is a dual relay output, programmable keypad. It features a durable metal housing and metal backlit keys designed for high traffic areas and harsh environments. Connect this keypad to door strike controls, security systems or automatic gate and door operators. The KPX-100 easily mounts on gooseneck stands, posts or walls.

## Specifications

| | |
|---|---|
| Power | 12-24 VDC/AC |
| Standby Current | 16 mA |
| Detection Current | 78 mA |
| Environmental Rating | IP66 |
| Operating Temperature | -4º to 158ºF (-20º to 70ºC) 5 to 95% relative humidity |
| Housing Material | Powder coated steel with stainless steel faceplate |
| Dimensions (L x W x H) | 6.14" (156 mm) x 4.1" (103 mm) x 2.76" (50 mm) |

## Indicators

| Status | Tones | Left LED | Orange LED | Right LED |
|---|---|---|---|---|
| Standby Mode | --- | --- | 1 flash every 2 seconds | --- |
| Programming Mode | --- | --- | Solid | --- |
| Successful Key Entry Relay 1 | Adjustable with code 81 | --- | 1 flash | Solid green LED |
| Successful Key Entry Relay 2 | Adjustable with code 81 | Solid red LED | 1 flash | --- |
| Unsuccessful Key Entry | 5 beeps | --- | 3 flashes | --- |
| Successful Code Entry | 2 beeps | --- | 2 flashes | --- |
| Unsuccessful Code Entry | 5 beeps | --- | 5 flashes | --- |
| DAP Jumper Not Replaced | Continuous beeps | --- | Flashes continuously | --- |
| Lock-Up Mode | 5 beeps | --- | 1 flash every 2 seconds | Solid red LED |

# Wiring Connections

**1. Power (+):** 12-24 VDC/AC

**2. Power (-):** 12-24 VDC/AC

**3. Output 1:** N.C. (normally closed contact)

**4. Output 1:** COM (common contact)

**5. Output 1:** N.O. (normally open contact)

**6. Output 2:** N.C. (normally closed contact)

**7. Output 2:** COM (common contact)

**8. Output 2:** N.O. (normally open contact)

**9. Egress Input:**

N.O. (normally open) input terminal.
More than one button can be connected in parallel.
Leave this terminal open if not in use.

**10. Keypad Active Output:**

This is an NPN transistor open collector output with a maximum rating of 100mA sink and 24V DC. It switches to ground for 10 seconds after each key stroke. It is often used to turn on lights, CCTV cameras or buzzers.

**11. Duress Output:**

This is an NPN transistor open collector output with a maximum rating of 100mA sink and 24V DC. It switches to ground after a duress key has been entered. It is often used to trigger an alarm, an auto dialer, or a buzzer.



**12. Common Ground**

**13. Door Position Sensor Input:**

N.C. (normally close) input terminal. See door sensor wiring diagram to the right.

 **Always connect terminal 13 to ground if not in use.**

**14. Output 1 Inhibit:**

N.O. (normally open) input terminal. Both relay 1 user keys and egress button cannot activate output 1 while this terminal is tied to ground. It is used in cross wire connections for inter-lock applications.

**15. Inter-Lock Control Output:**

This is an NPN transistor open collector output. It switches to ground for the first 5 seconds after a valid user key is entered or after the egress button is pressed. Use this output to control other keypads in inter-lock applications.
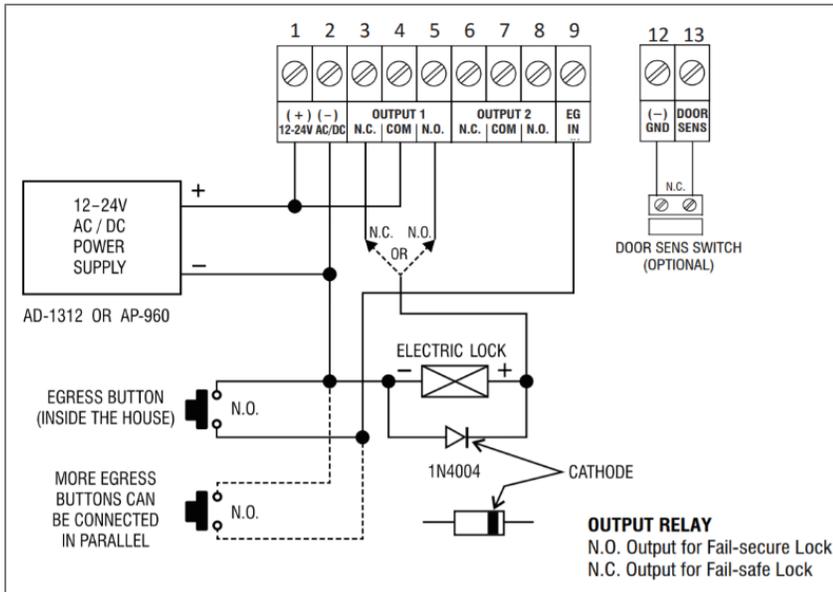
**16. & 17. Tamper N.C.:**

N.C. (normally closed) contact while the keypad is secured in the housing. It opens when the keypad is separated from the housing. To prevent tampering connect this N.C. terminal to an alarm. See wiring diagram to the right.



**Back Lighting Jumper**
**(see page 3 bottom)**

**D.A.P. Jumper**
**(see table page 7)**
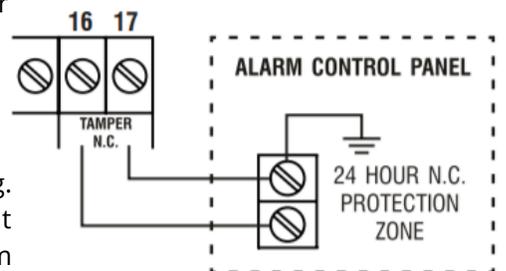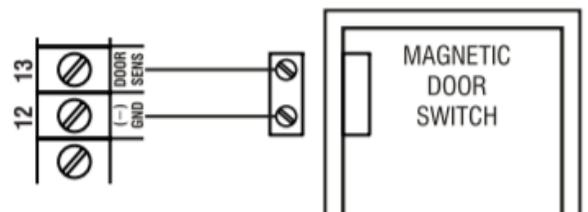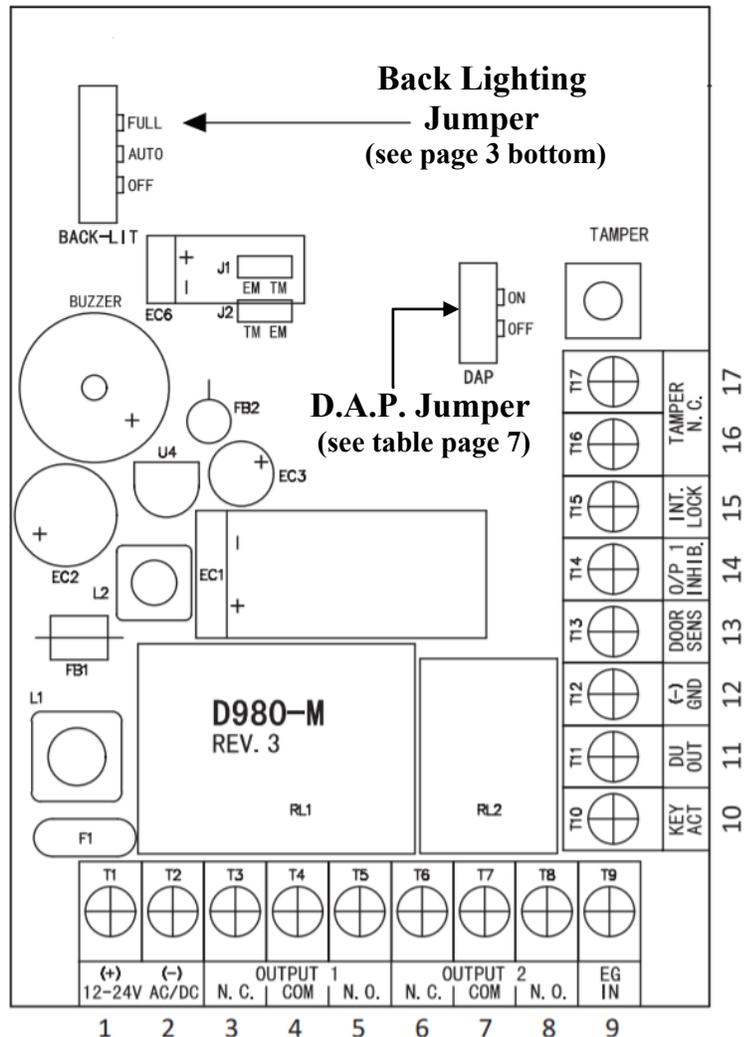
## Single Door Wiring



- Connect the 1N4004 diode in parallel with the lock terminals to absorb the back EMF and prevent damage to the keypad. This is not required if the lock is AC powered.
- Connect common ground terminal (12) to earth ground.
- Connect door position sensor terminal (13) to ground if not in use.

## Inter-Lock Wiring
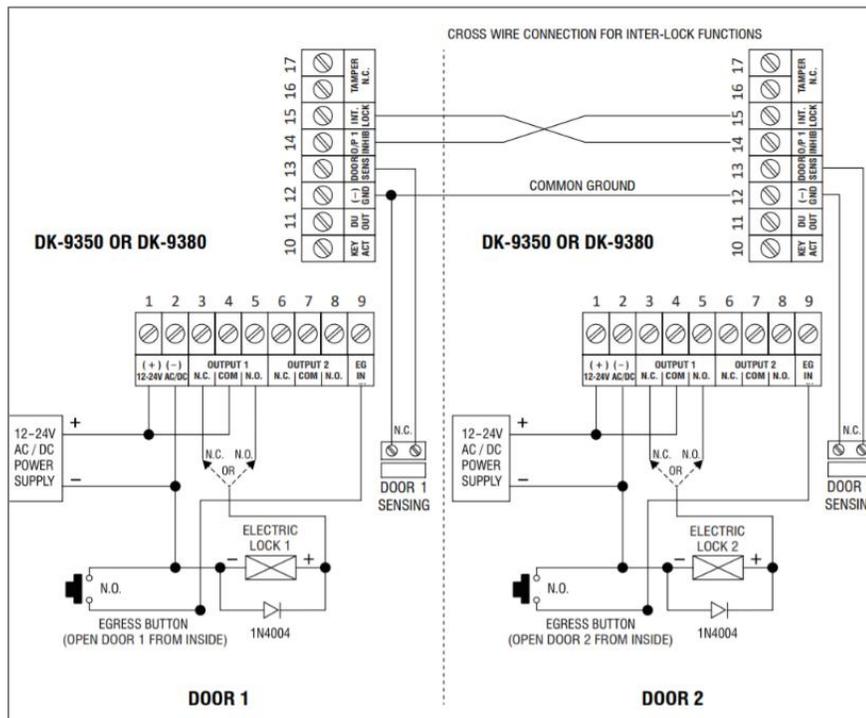


- This inter-lock system uses two KPX-100 with cross wire connections on the output 1 inhibit (14) and inter-lock control output (15) terminals.
- Connect the common ground terminals (12) of the two keypads.
- Use N.O. relay output for fail secure locking and N.C. output for fail safe locking.
- An inter-lock system prevents both doors from being open at the same time for a more secure entry.

## Keypad Back Lighting (jumper selected)

1. Backlit          - The keypad is dimly lit standby. It turns to full back lighting with any keystroke.
2. Auto Backlit     - The keypad is not lit standby. It turns to full back lighting with any keystroke. It turns off 10 seconds after the last key stroke.
3. No Backlit       - The keypad is never lit.

## Installation

**1.** Connect power to terminals 1 and 2, 12-24 VDC/AC. The terminals are polarized.

**2.** Connect the operator OPEN contacts to output 1 N.O. (5) and COM (4).

**3.** Enter programing mode by pressing…
The orange LED will turn on.

| 0 | 0 | 0 | 0 | * |
|---|---|---|---|---|

**TIP:**
- 0000 is the factory set programming key. At any time, you can enter the programming key followed by * to enter programming mode.
- You must enter programming mode to enter any codes or add any user keys.

| **Multi-User** (Factory default) | **Single-User** |
|---|---|
| **4.** To enter Multi-user mode press… | **4.** To enter single user mode press… |

Multi-User:

| 8 | 9 | 0 | 1 | # |
|---|---|---|---|---|

Only needs entered once during initial setup. Deletes all previous user keys. Record user locations and keys for easier editing in the future!

Single-User:

| 8 | 9 | 0 | 0 | # |
|---|---|---|---|---|

Only needs entered once during initial setup. Deletes all previous user keys.

**5.** To change the programming key, press 0 and then 4-8 digits of your choice followed by #.

| 0 | ? | ? | ? | ? | ? | ? | ? | ? | # |
|---|---|---|---|---|---|---|---|---|---|

**5.** To change the programming key, press 0 and then 4 digits of your choice followed by #.

| 0 | ? | ? | ? | ? | # |
|---|---|---|---|---|---|

**6.** To create user keys for relay 1 and 2, press the relay number, the user number and then 4-8 digits of your choice followed by #. Relay 1 can have 100 user keys, relay 2 can have 10 user keys.

| | Relay | User # | User Key | Confirm |
|---|---|---|---|---|
| Output 1 | 1 | 00-99 | 4-8 Digits | # |
| Output 2 | 2 | 0-9 | 4-8 Digits | # |

**TIP:** User keys must be the same length as the programming key if planning on using auto entry mode.

**6.** To create the user keys for relay 1 and 2, press the relay number followed by 4 digits of your choice. User keys are 4 digits in length.

Relay 1

| 1 | ? | ? | ? | ? | # |
|---|---|---|---|---|---|

Relay 2

| 2 | ? | ? | ? | ? | # |
|---|---|---|---|---|---|

**7.** The output length and toggle mode can be adjusted using the codes shown in the tables.

| **Relay Output 1** | | | | **Relay Output 2** | | | |
|---|---|---|---|---|---|---|---|
| 4 | 0 | **1-999** | # | 5 | 0 | **1-999** | # |
| 4 | 1 | # | **Toggle Mode** | 5 | 1 | # | **Toggle Mode** |

Code 4 0 / 5 0 will change the output length – the time the door will remain unlocked.

Code 4 1 / 5 1 will change the output to toggle mode – the door will remain unlocked until a key is re-entered.

**8.** To exit programming mode press…

| * |
|---|

## Programming Options

### Enter/Exit Programming Mode

| Programming Key | * |
| --- | --- |

Enters programming mode. Orange LED should turn on. **You must enter programming mode to enter any code.**

| | * |
| --- | --- |

Exits programming mode.

### Super User Key

| 4 | 5 | 4-8 digits | # |
| --- | --- | --- | --- |

Multi-task user key. Once created, enter the key while in Standy Mode followed by # and a single digit number to use super user functions. The amber led will blink a few times a second after pressing # but before the function number.

Super user function 9 will lock or unlock the keypad. 7 will activate relay 1 in toggle mode and can only be undone by using function 7 again.

### Duress Keys

| 4 | 6 | 0-9 | 4-8 digits | # |
| --- | --- | --- | --- | --- |

Duress keys activate output 1 and duress outputs simultaneously to report a user is under duress.
10 duress keys may be used at once.

### Visitor Keys

User ID   Operation Time

| 4 | 7 | 0-9 | 00-99 | 4-8 digits | # |
| --- | --- | --- | --- | --- | --- |

Operation Time:
00 = one-time use only
01-99 = valid for xx hours

Activates relay output 1.
10 visitor keys may be used at once.

### Single User Mode/Reset

**\*ERASES ALL USER KEYS\***

| 8 | 9 | 0 | 0 | # |
| --- | --- | --- | --- | --- |

Sets the mode and clears all previously stored keys and settings, except for the programming key. Single user mode allows one user key per relay. To change from Multi-User Mode to Single User Mode the programming key must be 4 digits.

### Multi-User Mode/Reset

**\*ERASES ALL USER KEYS\***

| 8 | 9 | 0 | 1 | # |
| --- | --- | --- | --- | --- |

Sets the mode and clears all previously stored keys and settings, except for the programming key. Multi-user mode allows up to 100 user keys for relay 1 and up to 10 user keys for relay 2.

### Relay Output Mode Configuration

| Output 1 | 40 | 1-999 | # |
| --- | --- | --- | --- |

Momentary Mode:
Keeps OUTPUT 1 triggered for 1-999 seconds upon user key entry.

| | 41 | | # |
| --- | --- | --- | --- |

Toggle Mode: Keeps OUTPUT 1 triggered until re-entry of user key.

| Output 2 | 50 | 1-999 | # |
| --- | --- | --- | --- |

Momentary Mode:
Keeps OUTPUT 2 triggered for 1-999 seconds upon user key entry.

| | 51 | | # |
| --- | --- | --- | --- |

Toggle Mode: Keeps OUTPUT 2 triggered until re-entry of user key.

**Note:** Output 2 may be used as a supervisor mode to disable Output 1 if wired in series.

## False Key Lock-Up & Reporting

| | | | | |
|---|---|---|---|---|
| **7** | **0** | **1** | **#** | After 10 successive false keys, keypad locks for 30 seconds. (default) Only super user and duress keys can be used while locked. |
| **7** | **0** | **2** | **#** | After 10 successive false keys, duress output activates. |
| **7** | **0** | **5-10** | **#** | Keypad locks for 15 minutes after specified number (5-10) of false keys. Locking is released with super user key followed by # and 9. |
| **7** | **0** | **00** | **#** | Keypad will not lock or activate the duress output from false keys. |

## Door Forced Open Alarm

| | | | |
|---|---|---|---|
| **8** | **0** | **0** | **#** | Nothing occurs when the door is forced open. (default) |
| **8** | **0** | **1** | **#** | Alarm sounds for 60 seconds when the door is forced open. Output through terminal 13. |

## Correct Key Entry Tones

| | | | |
|---|---|---|---|
| **8** | **1** | **0** | **#** | Keypad does not beep upon correct key entry. |
| **8** | **1** | **1** | **#** | Keypad beeps twice upon correct key entry. |
| **8** | **1** | **2** | **#** | Keypad beeps once upon correct key entry. (default) |

## User Key Entry Mode

| | | | |
|---|---|---|---|
| **8** | **2** | **0** | **#** | Requires # after user key is entered. (default) |
| **8** | **2** | **1** | **#** | Keypad does not require # after user key is entered. **All user keys must match programming key length while using this setting.** |

## Keystroke Tones

| | | | |
|---|---|---|---|
| **8** | **3** | **0** | **#** | Keystrokes are silenced. |
| **8** | **3** | **1** | **#** | Keypad beeps on every keystroke. (default) |

## Orange LED Standby

| | | | |
|---|---|---|---|
| **8** | **4** | **0** | **#** | Orange LED is OFF during system standby. |
| **8** | **4** | **1** | **#** | Orange LED flashes during system standby. (default) |

## Door Propped Open Alarm

| | | |
|---|---|---|
| **9** | **0** | **#** | No alarm for a propped open door. (default) |
| **9** | **1-999** | **#** | Alarm sounds for a propped open door after the specified time (1-999 seconds). |

**Egress (Exit) Delay & Warning**

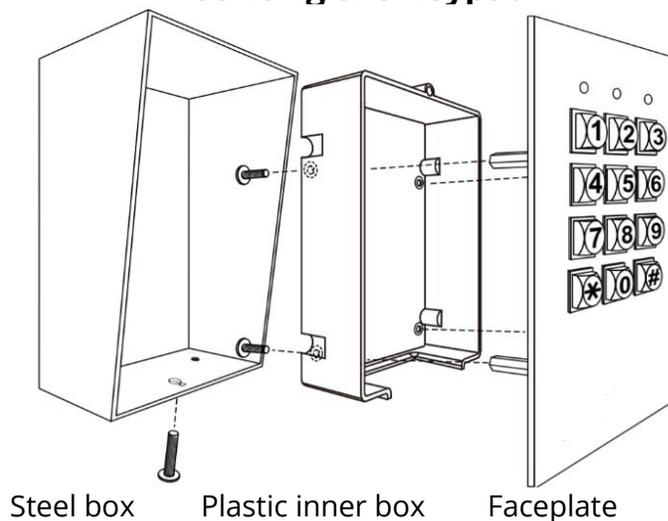| Keys | Description |
|---|---|
| 8 5 0 # | After pressing the egress button, output 1 activates with no delay or warning. |
| 8 5 1 # | After pressing the egress button, the keypad will beep for 5 seconds before output 1 activates. |
| 8 5 2 # | After pressing the egress button, the keypad will beep for 10 seconds before output 1 activates. |
| 8 5 3 # | Press and hold the egress button for 5 seconds, the keypad will beep before output 1 activates. |
| 8 5 4 # | Press and hold the egress button for 10 seconds, the keypad will beep before output 1 activates. |

## Troubleshooting

| Symptom | Possible Cause | Solution |
|---|---|---|
| Forgotten programming key | Forgotten programming key | 1. Disconnect the power supply.<br>2. Move the DAP jumper from OFF to ON.<br>3. Reconnect the power supply. The keypad will start beeping.<br>4. Move the DAP jumper back to the OFF position. The keypad will stop beeping.<br>5. The keypad is now in programming mode. Press 0, enter a new programming key, and then #.<br><br>(This does not change any keys or settings.) |

**Mounting the Keypad**



Steel box          Plastic inner box          Faceplate

**User Codes and Location Record**

| Loc | Code | Loc | Code |
|-----|------|-----|------|
| 00 |  | 50 |  |
| 01 |  | 51 |  |
| 02 |  | 52 |  |
| 03 |  | 53 |  |
| 04 |  | 54 |  |
| 05 |  | 55 |  |
| 06 |  | 56 |  |
| 07 |  | 57 |  |
| 08 |  | 58 |  |
| 09 |  | 59 |  |
| 10 |  | 60 |  |
| 11 |  | 61 |  |
| 12 |  | 62 |  |
| 13 |  | 63 |  |
| 14 |  | 64 |  |
| 15 |  | 65 |  |
| 16 |  | 66 |  |
| 17 |  | 67 |  |
| 18 |  | 68 |  |
| 19 |  | 69 |  |
| 20 |  | 70 |  |
| 21 |  | 71 |  |
| 22 |  | 72 |  |
| 23 |  | 73 |  |
| 24 |  | 74 |  |
| 25 |  | 75 |  |
| 26 |  | 76 |  |
| 27 |  | 77 |  |
| 28 |  | 89 |  |
| 29 |  | 79 |  |
| 30 |  | 80 |  |
| 31 |  | 81 |  |
| 32 |  | 82 |  |
| 33 |  | 83 |  |
| 34 |  | 84 |  |
| 35 |  | 85 |  |
| 36 |  | 86 |  |
| 37 |  | 87 |  |
| 38 |  | 88 |  |
| 39 |  | 89 |  |
| 40 |  | 90 |  |
| 41 |  | 91 |  |
| 42 |  | 92 |  |
| 43 |  | 93 |  |
| 44 |  | 94 |  |
| 45 |  | 95 |  |
| 46 |  | 96 |  |
| 47 |  | 97 |  |
| 48 |  | 98 |  |
| 49 |  | 99 |  |

## Warranty

EMX Industries, Inc. products have a warranty against defects in materials and workmanship for a period of two years from date of sale to our customer.