(F) OUTPUT 3 (WHITE/RED WIRE)

WIRE HARNESS

+12V

N.C.

COM

N.O.

(9)
(10)
(11)
(12) WHITE/RED
(13)
(14)
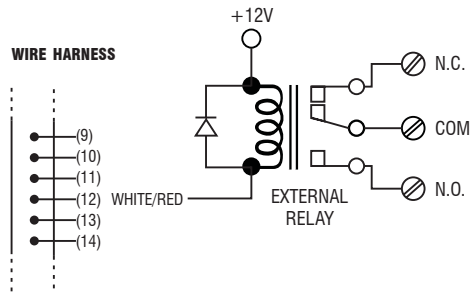
EXTERNAL RELAY

Output 3 is an open collector output prepared for auxiliary controls. It may be used for arm-disarm of a security system, enable and disable of a keypad or a protection zone etc.; it can also drive a relay to give full function of N.C. and N.O. outputs as like the output 2 making the keypad a ture 3 output system.

APPENDIX

● **DRY CONTACT**
A dry contact means that no electricity was connected to it. It is prepared for free connections. The Relay Output contacts provided in this keypad system are dry contacts.

● **N.C.**
Normally Closed, the contact is closed circuit at normal status. It is open circuit when active.

● **N.O.**
Normally Open, the contact is open circuit at normal status. It is closed circuit when active.

● **TRANSISTOR OPEN COLLECTOR OUTPUT**
An open collector output is equivalent to a Normally Open (N.O.) contact referring to ground similar to a relay contact referring to ground. The transistor is normally OFF, and its output switches to ground (-) when active. The open collector can only provide switching function for small power but it is usually good enough for controlling of an alarm system. The Duress, Inter-lock, Key Active Outputs of the keypad are open collector output.

OPEN COLLECTOR OUTPUT ----
Output switches to ground when activates
(-)

EQUIVALENT

N.O. CONTACT OUTPUT ----
Output switches to ground when activates
(-)
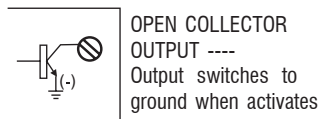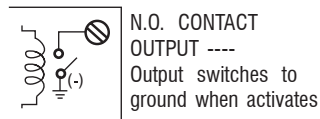
MULTI-PURPOSE SELF-CONTAINED DIGITAL ACCESS CONTROL KEYPAD

AEI DK-9523

CE

DK-9523

Programming & Installation Manual

## FOR ELECTRIC LOCK, INTER-LOCK AND SECURITY SYSTEM INSTALLATIONS

INTRODUCTION

DK-9523 is an universal, self-contained digital access keypad offers field proven reliability and cost effective solutions for residential and commercial installations. It is designed for stand alone electric lock and inter-lock systems and operates from a 12 to 24V AC/DC power supply. It is virtually compatible with any electric locking device. Apart from that it is also the perfect choice for controlling security systems, automatic operators and machinery.

DK-9523 consists two application softwares of Single User Mode for the general Users, and Multi-User Mode for the advanced Users. The system offers a 4 digit length user code with 10,000 combinations for each output in single user mode; and 100 user codes for output 1 and 10 user codes each for output 2 and output 3 in length of 4-8 digits with combinations of more than 100 million in multi-user mode. Operation options of Auto Code entry and Manual Code entry are available in both two user modes. Programmed information that stored in the system are non-volatile in power failure.

The DK-9523 offers three outputs with the following facilities:

| OUTPUT 1	OUTPUT 2	OUTPUT 3
5 Amp relay	1 Amp relay	NPN Open Collector

CONNECTION FACILITIES
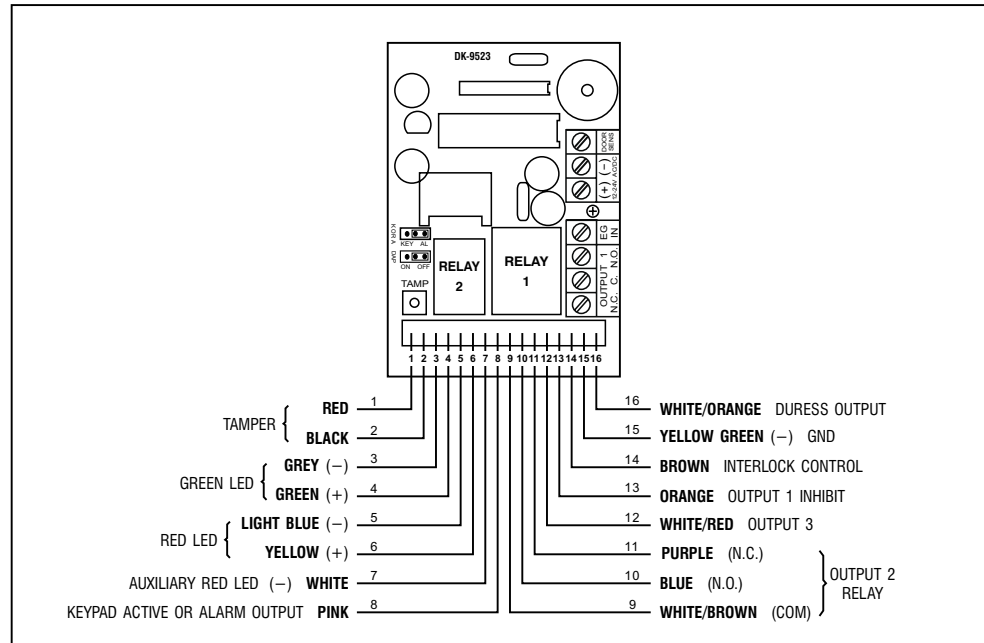
The connection facilities consist one set of terminal block mainly for Output 1 for door striking purpose; and one set of wire harness for Output 2 and 3, and the facilities for those auxiliary functions.

THE TERMINAL BLOCK

● **OUTPUT 1**
  5 Amp relay dry contacts, recommended for door strike controls. Normally Open (N.O.) and Normally Closed (N.C.) outputs are available. Use N.O. output for Fail-secure locking device and N.C. output for Fail-safe locking device. The relay can be programmed in Start/Stop (toggle) mode or timer mode from 1 to 999 seconds.

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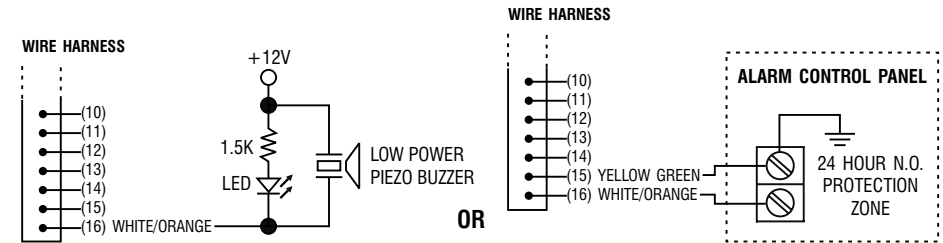
The Duress Output will switch to (−) ground when duress code is entered. You may use it to turn ON an LED lamp and /or a small buzzer to notify a guard; or connect it to a 24 hour Normally Open protection zone of an alarm system.

∗ 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 (WHITE/BROWN & BLUE WIRES)
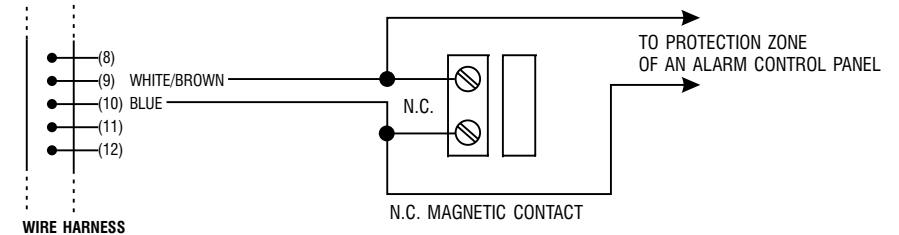
∗ Use the Normally Open (N.O.) output contact to shunt a Normally Closed (N.C.) protection zone of an alarm system.

∗ Set output contact to Start / Stop Mode (Programming Option 51).

(ii) Alarm System Arm-Disarm Control (WHITE/BROWN & BLUE or PURPLE WIRES)
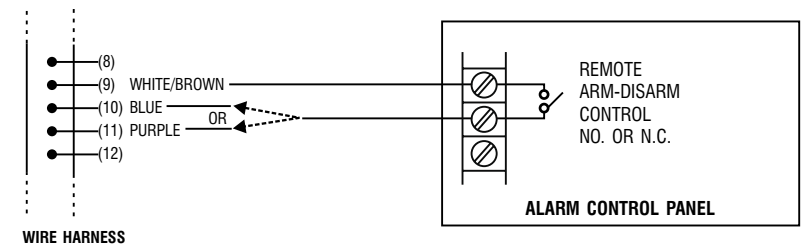
∗ Use the (N.O.) or (N.C.) output contact to make arm-disarm control of an alarm system.

∗ 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.

APPLICATION HINTS FOR THE AUXILIARY FACILITIES

(A) TAMPER N.C. (RED, BLACK WIRES)

WIRE HARNESS

ALARM CONTROL PANEL

(1) RED
(2) BLACK
(3)
(4)
(5)
(6)
(7)

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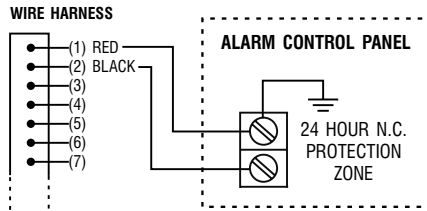
The tamper switch is Normally Closed while the keypad is secured on gang box. It is open when the keypad is removed from the gang box. To prevent sabotage, connect these terminals in series with a 24 hour N.C. protection zone of an alarm system if required.

(B) DOOR SENS

DOOR SENS
(−) GND SENS

MAGNETIC DOOR SWITCH

a) **Door Auto Relock** -- The system will immediately re-lock the door after a valid access has been gained to prevent "tailgate" entries.

b) **Door Forced-open Alarm** -- The keypad will generate alarm instantly if the door is forced to open. Enable the function with Programming Option 801.

c) **Door Propped-up Alarm** -- The keypad will generate alarm if the door is left open longer than the pre-set delay time. Enable the function with Programming Option 9 with time of 1 to 999 seconds possible.

d) **Inter-lock Control** -- When the door is open, the inter-lock output of the keypad will give a (−) command to stop the other keypad in an inter-lock system.

With the help of a Normally Closed door position sensor (usually a magnetic door switch) on the door to set up the following functions:

(C) KEY ACTIVE (PINK WIRE)

WIRE HARNESS   +12V

(3)
(4)
(5)
(6)
(7)
(8) PINK
(9)

1.5K
LED

LOW POWER PIEZO BUZZER

OR

WIRE HARNESS   +12V

(3)
(4)
(5)
(6)
(7)
(8) PINK
(9)

N.O. RELAY CONTACT

ISOLATION RELAY

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.

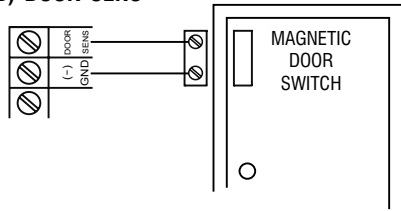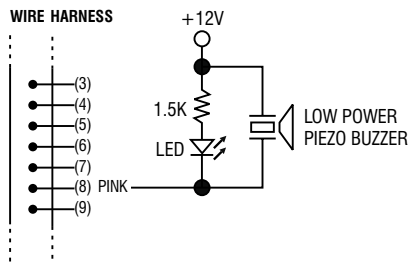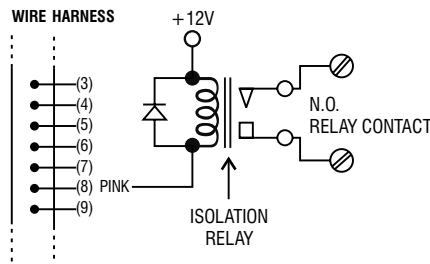✳ External power supply and isolation relay are necessary in driving high power device, such as lights.

● **EG IN** EGRESS INPUT

A Normally Open (N.O.) input terminal refers to (−) ground, with the help of a normally open button to activate the Output 1 for the same time period as the user code. Egress button is usually put inside the house near the door. More than one egress buttons can be connected in parallel to the terminal. Leave this terminal open if it is not used.

● **12–24V AC/DC** POWER INPUT

Connect to 12-24V AC or DC power supply. The (−) supply and (−) GND (wire 15) 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; and there is no polarity discrimination for AC power input.

● **DOOR SENS** DOOR POSITION SENSOR INPUT

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 will give the following functions:

NOTE: Always connect this terminal to (−) ground if not used.

1) **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.

2) **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. This function is selectable via the programming options at Location 80.

3) **Door Propped-up Alarm**
When the door is left open longer than the allowable time. The keypad will generate door propped-up alarm after the expiry 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.

4) **Inter-lock Control**
The inter-lock control output goes to (−) while the door is open in order to give signal to disable the other keypad in the inter-lock system.

THE WIRE HARNESS

NOTE: Always hold the circuit board tightly and pull the socket out gently to prevent damage of the electronic assembly of the keypad if the wire harness is required to pull out from the circuit board.

● **N.C. TAMPER (1-2)**

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

● **GREEN, RED & AUXILIARY RED LED LAMPS (3-4), (5-6) & (7)**

Three on-board LED lamps are available. They are prepared for free connections. Suggest to connect these LED lamps to the remote indicator driving terminals of your specific equipment, such as an alarm control panel. Be sure to observe the polarity (+ & −).

The Green and Red LED lamps that are independent are equipped with 1.5K Ohm current limiting resistor.

The anode of the auxiliary Red LED was connected to +5V internally. It turns ON with the cathode (wire 7) connecting to (−) ground.

● **KEYPAD ACTIVE OUTPUT OR ALARM OUTPUT (8)**

This is an NPN transistor open collector output with maximum ratings of 100mA sink and 24V DC. It is selectable to give Keypad Active or Alarm Output via the "K" or "A" Jumper.

i) **KEYPAD ACTIVE OUTPUT (KEY)** --- It switches to (−) ground for 10 seconds on each key touching. This can be used to turn on lights, CCTV camera, or buzzer to notify a guard. See Application Hints for more information.

ii) **ALARM OUTPUT (AL)** --- It switches to (−) ground while Door Forced Open Alarm or Door Propped-up Alarm occurs in order to trigger external alarm to give notification at remote location.

- **OUTPUT 2 (9-10-11)**
  This is an auxiliary relay output with 1 Amp rating Normally Open (N.O.) and Normally Close (N.C.) dry contacts controlled by the User Code 2, which is ideal for controlling security systems & automatic operators. It is programmable for Start / Stop (toggle) operation or timing operation from 1 to 999 seconds.

- **OUTPUT 3 (12)**
  This is an NPN transistor open collector output ideal for auxiliary control functions, such as controlling security systems, code Authorization control of output 1 in the keypad etc.

  Output 3 is programming for Start / Stop (toggle) operation or timing operation from 1 to 999 seconds. It switches to (−) ground in activation and the maximum rating is 100mA sink / 24VDC.

- **OUTPUT 1 INHIBIT (13)**
  A Normally Open (N.O.) input terminal refers to (−) ground. Both user code 1 and Egress button can not activate output 1 while this terminal is tied to (−) ground. It is prepared for cross wire connection in Inter-lock application.

- **INTER-LOCK CONTROL OUTPUT (14)**
  An NPN transistor open collector output. It is OFF at normal condition 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 that the door position sensor is open due to door opening. Use this output to control the other keypad (or, the inter-lock controller in power supply, e.g. AD-2312) in an inter-lock system to prevent both door 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 door keeps close until the opened door is re-closed in order to prevent the unauthorized people dashing into a protected area.

- **DURESS OUTPUT (16)**
  An NPN transistor open collector output. It switches to (−) ground after the Duress Code is entered. Use it to trigger an alarm zone, or turn on a buzzer to notify a guard. Ic max: 100mA sink. Vc max: 24VDC
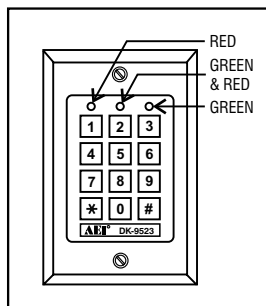
THE LED INDICATORS

- **RED & GREEN**
  The Red & Green LEDs are prepared for free connection. They give indication according to installer's connections.

- **AUX RED / GREEN** (AT THE CENTRE)
  The Green LED at the centre is a status indicator at normal condition. The lamp changes to steady Red while the auxiliary Red LED is energized.


THE PACIFIER TONES & THE LED INDICATING SIGNALS

The built-in buzzer and the green LED indicator at the centre give the following tones and signals for operation status:

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 **	- - -

NOTE: * 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.

4) BASIC WIRINGS OF AN INTER-LOCK SYSTEM USING KEYPAD AND INTER-LOCK CONTROLLER POWER SUPPLY
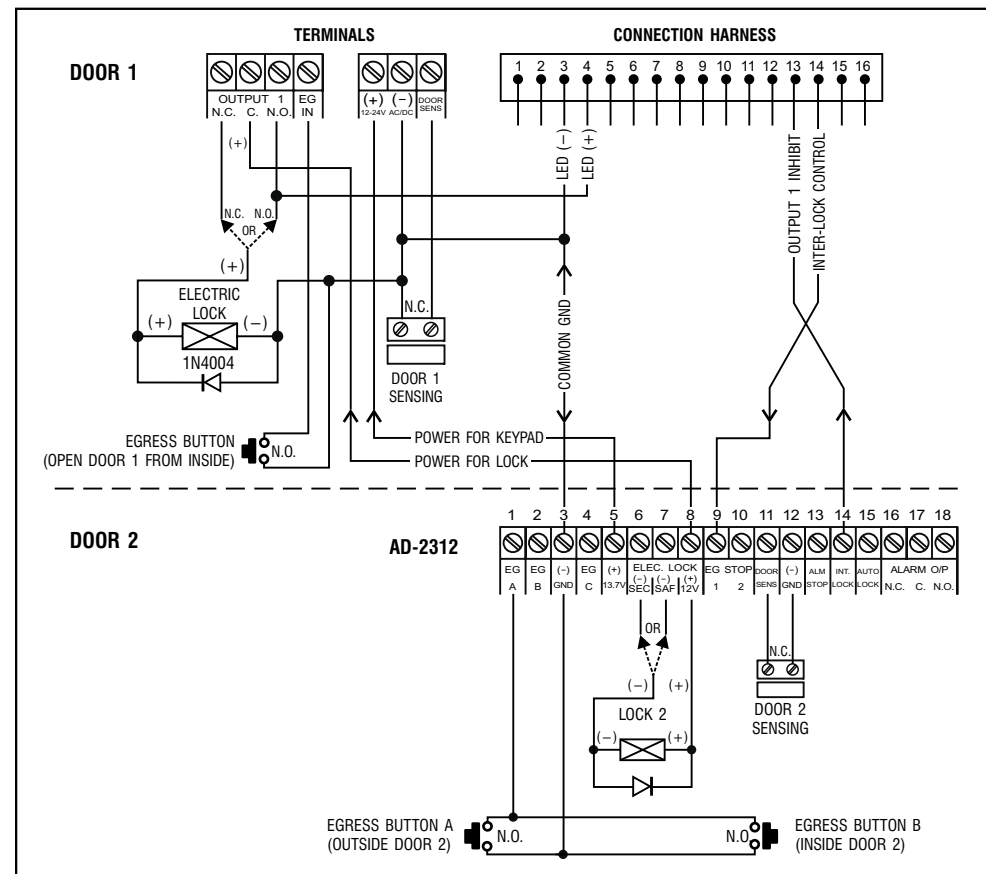
This inter-lock application example utilizes one DK-9523 and a power supply with inter-lock controller, AD-2312. The power supply provides the power source for the whole system including both electric locks and the keypad. It is necessary to make sure that the total power consumption of the system does not exceed the maximum power ratings of the power supply, expecially if fail-safe locks are used. The inter-lock function is accomplished with the cross wire connection of the "Inter-lock Control Output" and the "Output 1 Inhibit" (or the "EG Stop 1" on AD-2312) terminals between the keypad and the controller. It is necessary to link up a Common Ground between the keypad and power supply to set up a power path and to achieve the inter-lock logical functions.

* Use keypad to open door 1 from outside.
* Open door 2 with egress button A from outside while door 1 is closed.
* Open door 1 from inside with egress button; and door 2 with egress button B.
* Connect the door magnetic sensors on door 1 and door 2 to monitor their positions.
* During the time that door 1 is open, then, door 2 is forced to keep close, or vice versa.
* Use N.O. Relay output for fail-secure locking device; and N.C. output for fail-safe locking device.
* Relay output 2 of the keypad is independent and has nothing concern with the inter-lock system. It may be used for other applications, such as controlling security systems.
* Please also see the "NOTE" stated in the Application (1) and (2) for the common information.

3) BASIC WIRINGS OF AN INTER-LOCK SYSTEM USING TWO KEYPADS
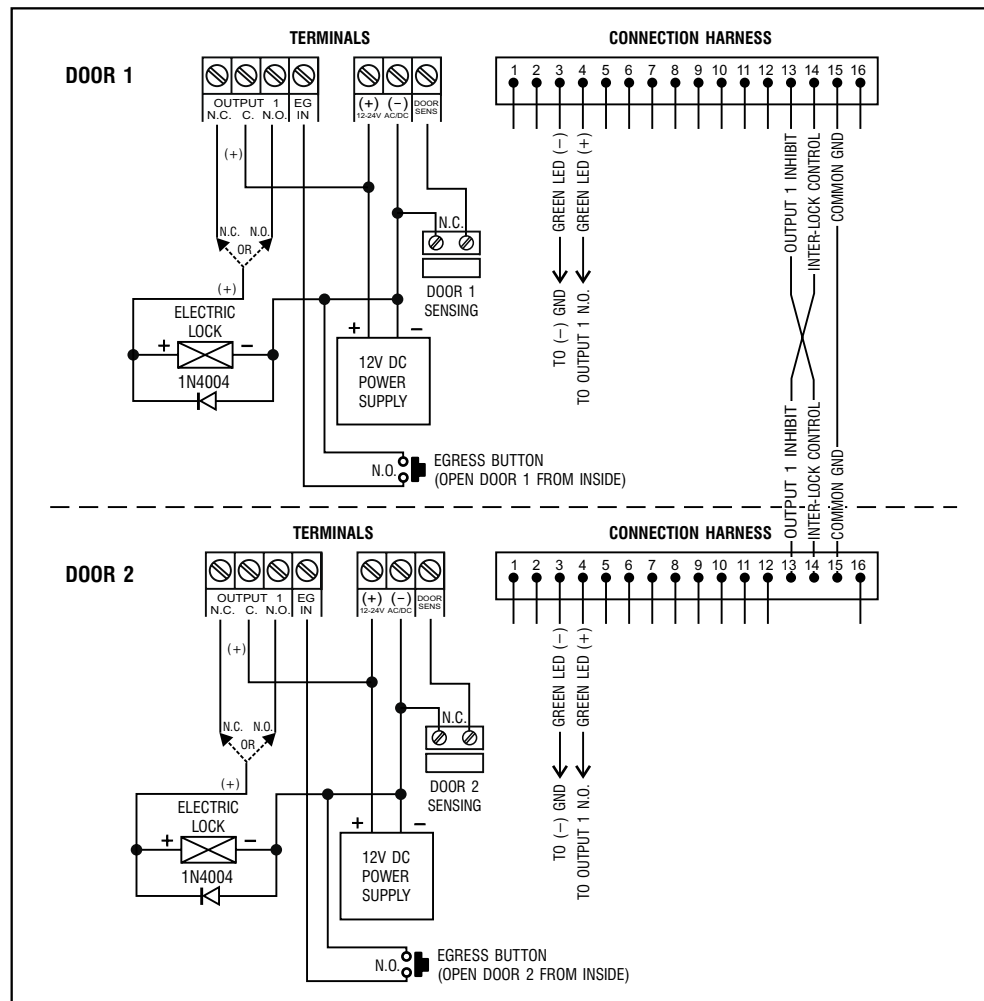
An inter-lock system needs two door controllers. This application example uses two DK-9523 with simple cross wire connection on their "Output 1 Inhibit" and "Inter-lock Control Output" terminals. It is necessary to link up the "(−) GND" terminals of the two keypads as common ground to achieve the inter-lock logical functions. The connection of the Green LED is optional. It will light up for lock active if connected.

* Use keypad to open the door from outside.
* Press egress button to open the door from inside.
* Connect the door magnetic sensors on the door 1 and door 2 to monitor their positions.
* During the time that door 1 is open, then, door 2 is forced to keep closed, or vice versa.
* Use N.O. Relay output for fail-secure locking device; and N.C. output for fail-safe locking device.
* Relay output 2 is independent and has nothing concern with the inter-lock system. It may be used for other applications, such as controlling security systems, automatic operators etc.
* Please also see the "NOTE" stated in the Application (1) and (2) for the common information.

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 direct entry into programming mode. You are required to apply the following procedures precisely.

1. Disconnect power supply.
2. Displace the DAP jumper from OFF to ON position.
3. Reconnect power supply (buzzer is activated).
4. Put the DAP jumper back to OFF position (this done, the buzzer is de-activated).
5. The keypad is in programming mode and ready to receive new programming data.
6. As the old master code was forgotten, suggest you to put a 4 digit new master code into Location 0 first.
7. Enter the new programming data starting from Section (B) in the summary chart shown below.

THE FACTORY-SET MASTER CODE -- IMPORTANT NOTE

For the owner's convenience in programming at the first time, the factory has put a Master Code 0000 into the keypad. To compromise security, in all cases, the owner should program a Personal Master Code to invalidate the factory-set Master Code before use.

PROGRAMMING OPTIONS -- SUMMARY CHART

A) Use The Factory-set Master Code to Entry in Programming -- When starts for the first time

Entry of Code	Validation	Comments
0 0 0 0	*	Set system into Programming Mode with the Factory-set Master Code

B) Set System to Single User or Multi User Mode & Refresh The System -- Installer Programming

User Mode Options	Validation	Comments
8 9 0 0	#	Set system to Single User Mode, clear all the data previously stored and refresh system
8 9 0 1	#	Set system to Multi User Mode, clear all the data previously stored and refresh system

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

i) Recording of the master code and user codes for Single User (Digits may be repeated)

Locations	Entry of Codes	Validation	Comments
0	4 digits, fixed	#	Personal Master Code & Super User Code
1	4 digits, fixed	#	User Code 1 for output 1 with Duress Code function
2	4 digits, fixed	#	User Code 2 for output 2
3	4 digits, fixed	#	User Code 3 for output 3

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

Locations	User Number	Entry of Codes	Validation	Comments
0		4 to 8 digits	#	Personal Master Code & Super User Code
1	00 to 99	4 to 8 digits	#	100 User Codes in Group 1 for output 1 with Duress Code function
2	0 to 9	4 to 8 digits	#	10 User Codes in Group 2 for output 2
3	0 to 9	4 to 8 digits	#	10 User Codes in Group 3 for output 3

D) Configuration of Output Modes -- Installer Programming

Locations	Code of Duration	Validation	Comments
4 0	1 to 999	#	Output 1 in Momentary Mode from 1 to 999 seconds
4 1		#	Output 1 in Start / Stop Mode (toggle)
4 2		#	Output 1 in Start / Stop Mode (toggle) with accelerated code
5 0	1 to 999	#	Output 2 in Momentary Mode from 1 to 999 seconds
5 1		#	Output 2 in Start / Stop Mode (toggle)
5 2		#	Output 2 in Start / Stop Mode (toggle) with accelerated code
6 0	1 to 999	#	Output 3 in Momentary Mode from 1 to 999 seconds
6 1		#	Output 3 in Start / Stop Mode (toggle)
6 2		#	Output 3 in Start / Stop Mode (toggle) with accelerated code

E) Personal Safety -- Installer Programming

Locations	No. of False Entry	Validation	Comments
7 0		#	After 10 successive false codes, the keypad locks during 30 seconds
7 1		#	After 10 successive false codes, the Duress output switches to ground
7 2	5 to 10	#	Selectable of after 5 to 10 successive false codes, the keypad locks during 15 minutes. The keypad can be reset to release locking with the Master Code at any time during the locking period
7 6	00	#	Disappearance of all the above securities

F) Door Forced-Open Alarm -- Installer Programming

| Locations	Code of Functions	Validation	Comments
8 0	1	#	Door Forced-Open Alarm is Enabled
8 0	0	#	Door Forced-Open Alarm is Disabled

G) Output Activation Announcer -- Installer Programming

Locations	Code of Functions	Validation	Comments
8 1	1	#	1 second notifying beep is given to notify the person outside to open the door when output relay is activated with an user code or egress button. Good for the locking device that gives no sound when it activates, such as a magnetic lock.
8 1	0	#	Notifying 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

Locations	Code of Functions	Validation	Comments
8 2	1	#	Auto Entry Mode is selected. # key that follows the user code is NOT required in code entry. The User Codes MUST be set in the same digit length as the Master Code in Auto Entry Mode and the code length 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 they are not required to be in the same length as the Master Code

NOTE: In Single User Mode, no matter the selection is Auto or Manual mode, the Master Code and the User Code MUST be set in the length of 4 digits.

2) BASIC WIRINGS FOR ALARM ARM-DISARM AND STAND ALONE DOOR LOCK
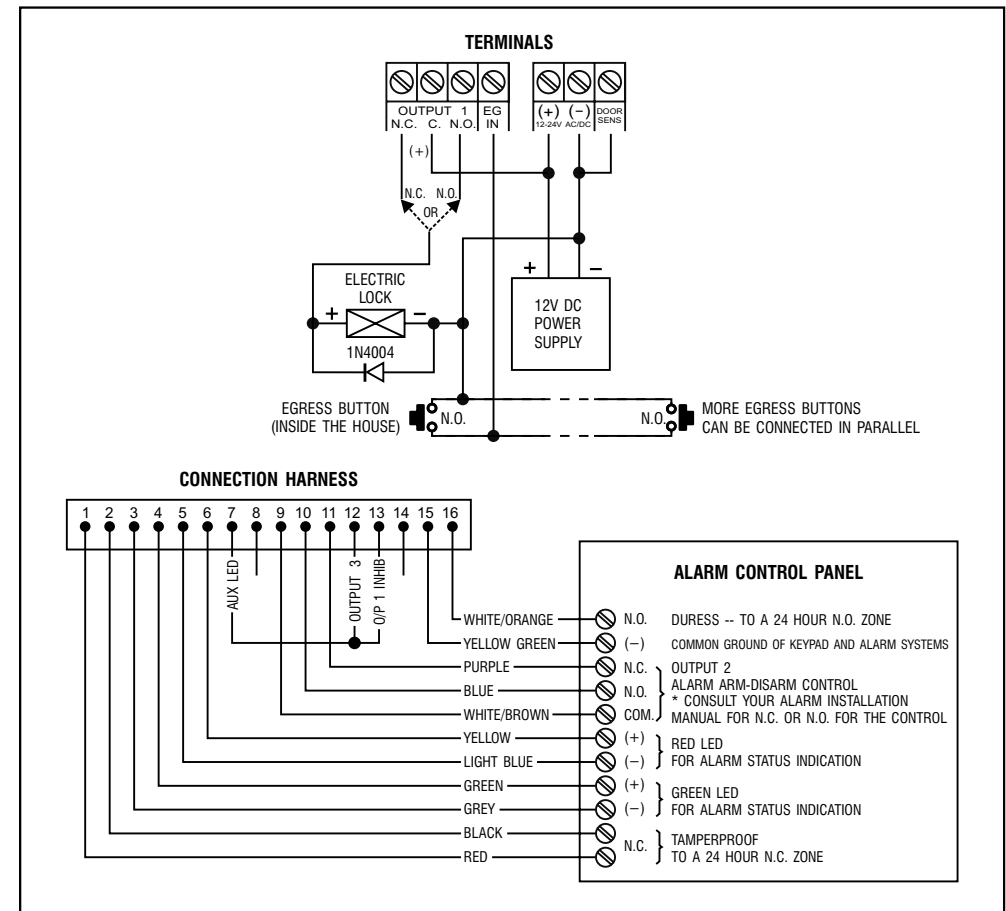
✱ The door lock function is exactly the same as like the Application Example (1) except the Green and Red LED indications.

✱ The Green and Red LEDs are used for Alarm Status indications, such as EXIT, Armed, Alarm Memory etc.

✱ Relay Output 2 is used for Alarm Arm-Disarm Control. Please consult your alarm control panel manual for the appropriate output contact and the operation mode for the control; such as N.O. or N.C. contact, and Momentary or Start / Stop mode are required.

✱ Connect the Tamper Switch to a 24 hour N.C. zone and the Duress output to a 24 hour N.O. zone for tamperproof and emergency reporting.

✱ Connection of "Output 3" to "Output 1 Inhibit" is optional. With this connection, the owner may use the User Code 3 as authorization Code to stop the operation of the electric lock in the night time or after office hour to prevent unauthorized access. Set output 3 in Start / Stop mode (Programming Option 61) for ON-OFF control. The centre LED will change from flashing Green to Red while the operation of the electric lock is stopped.

✱ The Yellow green wire is the common ground to link up the keypad and the alarm control panel to achieve the logical functions.

✱ Please also see the NOTE stated in Application Example (1) for the common information.

APPLICATION EXAMPLES

1) BASIC WIRINGS OF A STAND ALONE DOOR LOCK WITH INHIBIT AUTHORIZATION CODE AND INDICATION

TERMINALS

OUTPUT 1 — N.C. C. N.O.
EG IN
(+) (−) 12-24V AC/DC
DOOR SENS

CONNECTION HARNESS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

GREEN LED (↑) (+)
GREEN LED (↑) (+)
RED LED (↑) (+)
RED LED (↑) (+)
OUTPUT 3
O/P 1 INHIBIT

N.C. N.O. OR *

ELECTRIC LOCK
1N4004
CATHODE

12V DC POWER SUPPLY

EGRESS BUTTON (INSIDE THE HOUSE) N.O.
N.O. MORE EGRESS BUTTONS CAN BE CONNECTED IN PARALLEL

REMARKS:

* OUTPUT RELAY 1
  N.O. Output for Fail-secure Lock
  N.C. Output for Fail-safe Lock

* LEDS
  Each LED Requires a 1.5K Ohm Series Resistor on 24V Operation

NOTE:

* Connect the 1N4004 as close as possible to the lock in parallel with the lock power terminals to absorb the back EMF to prevent it from damaging 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 (−) GND terminal of the keypad to earth.

* The Green LED lights up during the keypad is striking the electric lock.

* Connection of "Output 3" to "Output 1 Inhibit" is optional. With this connection, output 3 is used as authorization control. The owner may key in the User Code 3 to stop the operation of the electric lock in the night time or after office hour to prevent unauthorized access. Set output 3 in Start / Stop mode (Programming Option 61) for ON-OFF control. The Red LED lights up while the operation of the electric lock is stopped.

* Tape all the un-used wires to prevent short circuit.

> **WARNING**
>
> * FOR SAFETY, MAKE SURE NOBODY INSIDE THE HOUSE BEFORE YOU START THE DOOR LOCK INHIBIT FUNCTION. THE LOCK LOCKS ALL THE TIME DURING "INHIBIT" IS ON DUTY.
>
> * THE INHIBIT AUTHORIZATION CODE SHOULD ALWAYS BE KEPT BY THE OWNER BUT NOT OTHER USER(S).

I) Pacifier Tones (Keypress Acknowledgement Tones) -- Installer Programming

Locations	Code of Functions	Validation	Comments
8 3	1	#	Pacifier tones available on keypress
8 3	0	#	All pacifier tones are off. Good for place requires silent environment

J) Main LED Flashing ON-OFF -- Installer Programming

Locations	Code of Functions	Validation	Comments
8 4	1	#	Main LED flashing in normal mode during system standby
8 4	0	#	Main LED OFF during system standby

K) Allowable Time to Start Door Propped-up Alarm -- Installer Programming

Locations	Code of Functions	Validation	Comments
9	0	#	No propped-up alarm
9	1 to 999	#	Allowable time from 1 to 999 seconds for door left open before the door propped-up alarm starts

L) Exit Programming Mode

Validation	Comments
*	Keypad exits programming mode and returns to normal operation

SINGLE USER MODE OR MULTI-USER MODE SELECTION

The keypad consists two sets of software for owner's 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 at 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 Locations 1, 2 and 3 respectively for the three outputs. Please see Programming Summary Chart Section (C), item i) for details. This mode is always set with Auto Code Entry in default. The user does not require to press the # key in user code entry. The user only needs 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 required.

Multi-User Mode (Command Code: 8901)

Multi-User Mode allows up to 100 individual user codes to operate the output 1 and 10 each individual user codes to operate the output 2 and 3. The user codes can be 4 to 8 digits with over 100 million code combinations. The user codes can be set for Auto Entry or Manual Entry with programming options at Location 82. Manual Entry Mode is in default. The user code followed by # 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 not to be followed by # key is required.

The Default Values

Default	Comments	Default	Comments
401	Output 1 in 1 second Momentary Mode	820	User code Manual Entry Mode **(Multi-User)
501	Output 2 in 1 second Momentary Mode	821	User code Auto Entry Mode ** (Single-User)
601	Output 3 in 1 second Momentary Mode	831	Pacifier Tones ON
70	After 10 successive false code, the keypad locks during 30 seconds	841	Main LED flashing in normal mode during system standby
800	Door forced-open alarm disabled	90	No propped-up alarm
811	Output relay activation beep ON		

NOTE: ** All 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 of 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 fall into the Duress Code, or the Duress Codes fall into other User Codes, the first digit of a "Stored" User code "+2" or "-2" is not allowed for the later User Code entry in programming. The system will refuse those code entries.

For example: An 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 can be set to Single User Mode with the command code "8900" and will stay in that mode until the system is refreshed for other 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 the confirmation beeps are heard after the # key is pressed)

SET THE SYSTEM TO MULTI-USER MODE

The system can be set to Multi Users Mode with the command code "8901" and will stay in that mode until the system is refreshed for other mode.

| MASTER CODE | ⁎ | 8 | 9 | 0 | 1 | # | ----- Multi-User Mode on Duty (please wait 2-3 seconds until the confirmation beeps are heard after the # key is pressed)

REFRESH THE SYSTEM -- WHEN IN CHANGE OF OPERATION MODE

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 the default values; and all the previously programmed data will be cleared except the Master Code.

IMPORTANT NOTES:

1) Make sure all the User Codes and Master Code are in the length of 4 Digits if the system is in Single User Mode operation. Otherwise, code entry will not be accepted.

2) It is necessary to change the Master Code in the length of 4 digits first (no matter it was in 4 digits or more than 4 digits in Multi- User Mode) before refreshing it from Multi-User Mode to Single User Mode.

3) The system takes approximate 2 to 3 seconds to refresh itself for the new operation mode after the command code is entered. DO NOT enter any code during the system is being refreshed until the 2 confirmation beeps are heard.

PROGRAMMING AND USE OF THE KEYPAD -- OPERATION EXAMPLES

A) PROCEDURES OF PROGRAMMING

a) All programming is accomplished entirely from the front of the keypad. The keypad may be programmed in your shop or at the installation site. Programmed information is stored in non-volatile memory so it will not be lost if power is removed.

b) When programming is required. It is necessary to set the keypad into programming mode first with the master code and validating it with ⁎ key.

| MASTER CODE | ⁎ |

NOTE: If the master code is forgotten, please use DAP jumper to set the keypad into programming mode. See DAP JUMPER description in previous section for the details.

SPECIFICATIONS

● **Operation Voltage:**
12V–24V AC/DC, No Jumper is Required for voltage selection

● **Operation Modes:**
a) Single User Mode, Auto, or Manual Code Entry
b) Multi-User Mode -- 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
-- 10 user codes for output 3 (user number 0-9), Auto or Manual Code Entry

● **User Code Combinations:**
a) Single User Mode --- 10,000
b) Multi User Mode ---- 111,110,000

● **Input Sensing Terminals:**
a) Egress Input -- Normally open referring to (–) ground
b) Door Position Sensor Input -- Normally closed referring to (–) ground
c) Relay 1 Stop Control -- Normally open referring to (–) ground

● **Relay Output Contacts:**
OUTPUT 1: Normally Closed and Normally Open Dry Contacts, 5A / 30VDC Max. Rating
OUTPUT 2: Normally Closed and Normally Open Dry Contacts, 1A / 30VDC Max. Rating
OUTPUT 3: NPN Open Collector, 100mA Sink / 24VDC Max.

● **Tamper Switch Contact:**
Normally Closed Dry Contact, 50mA Max.

● **Duress, Inter-lock & Key Active Output Rating:**
NPN Open Collector switches to ground when active, 24VDC / 100mA Sink

● **Auto Refreshing Time During Code Entry:**
a) Each Digit Maximum Entry Time Limit -- 10 seconds
b) Each Code Maximum Entry Time Limit -- 30 seconds

● **Dimensions:** 117(H) x 74(W)mm X 48(D)mm

● **Weight**: 180g net

Specifications are subject to change for modification without notice

For example: The User Codes in Group 1   The Corresponding Duress Codes

	The User Codes in Group 1	The Corresponding Duress Codes
	8321	0321
	11223	31223
	33221	53221

To command the Duress Function, enter the Duress Code(s).

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

[3][1][2][2][3] [#] -- Duress output activates (output switches to ground) & Output 1 activates for 1 second

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

NOTE:
The Duress Code(s) has double actions. It activates the Duress Output and at the same time activates the Output 1 as like the normal User Codes in Group 1. The Duress Code(s) can always activate or deactivate (in Start / Stop mode) Output 1, but cannot deactivate (reset) the Duress Output. ONLY the User Codes in Group 1 can deactivate (reset) the Duress Output.

f) The Accelerated Code is the First Two Digits of the User code(s). If the Output has been programmed in Start / Stop mode with Accelerated Code (Programming Option 42 for user codes in Group 1 and Programming Option 52 for user codes in Group 2), it is possible to activate the Output with only the First Two Digits of the User Code(s). Deactivating of the Output always requires the composition of the Complete User Code(s) in their code Group.

Example:
Output 1 has been re-programmed to Start / Stop Mode with Accelerated Code (Programming Option 42)
with the Complete Code of 1st User Code in Group 1: **8321**   The Accelerated Code is: **83**
                  2nd User Code in Group 1: **11223**   The Accelerated Code is: **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

g) Try to put some random false codes to the keypad to test its Safety. The keypad generates 5 beeps for each unsuccessful code entry. The keypad locks itself during 15 minutes after 10 successive false codes are entered. Normal operation will resume after 15 minutes expired, or, it can be reset with the Master Code during the locking period.

[3][2][8][9] [#] ------ Locking 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) Set system in programming mode with the Personal Master Code and the [∗] key

[3][2][8][9] [∗] ------------ The keypad is now in the programming mode

2) Enter the User Number (00-99 for output 1; 0-9 for output 2 & 3) and the [#] key to delete a user code

If you want to delete User Number 05 in Group 1, press [1][0][5] [#]

If you want to delete User Number 3 in Group 2, press [2][3] [#]

If you want to delete User Number 2 in Group 3, press [3][2] [#]

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

4) Exit the programming mode by pressing the [∗] key after the work is done

---

c) After the keypad is in programming mode, you may go to any Location for your programming options one by one, please see Programming Options Summary Chart for the feature 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.

LOCATION 1	OPTION	[#]
⋮		
LOCATION n	OPTION n	[#]

e) Exit programming mode with the [∗] key after all your required options are programmed. The new information that you have just programmed is saved.

[∗]

B) SINGLE USER MODE OPERATION -- An Example

1) Requirement
  a) Single User Mode Operation
  b) Change the factory-set Master Code 0000 to a Personal Master Code 3289
  c) Set User Code 1 of 8321
  d) Set User Code 2 of 6854
  e) Set User Code 3 of 9270
  f) Set Output 1 to Momentary Mode, 1 second
  g) Set Output 2 to Start / Stop Mode
  h) Set Output 3 to Start / Stop Mode
  i) Set the keypad to lock itself during 15 minutes after 10 successive false codes

---

2) Programming -- Set the above requirement into the keypad:

[0][0][0][0] [∗] ------- System has been set in programming mode with the factory-set Master Code

[8][9][0][0] [#] ------- System has been set for Single User Mode** (please see NOTE (a) below)

[0] [3][2][8][9] [#] -- 3289 has been stored as the new Personal Master Code & Super User Code

[1] [8][3][2][1] [#] -- 8321 has been stored as User Code 1, with Duress Code function, for output 1

[2] [6][8][5][4] [#] -- 6854 has been stored as User Code 2, for output 2

[3] [9][2][7][0] [#] -- 9270 has been stored as User Code 3, for output 3

[4][0] [1] [#] --------- Output 1 has been set to Momentary Mode, 1 second

[5][1] [#] ------------- Output 2 has been set to Start / Stop Mode

[6][1] [#] ------------- Output 3 has been set to Start / Stop Mode

[7][2] [1][0] [#] ----- The keypad has been set to lock during 15 minutes after 10 successive false codes

[∗] --------------------- Keypad exits programming mode. All the above data are stored and ready for 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 it 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, only enter its user code. Press [#] is NOT required.

[8][3][2][1] ---------- Output 1 activates for 1 second

[6][8][5][4] ---------- Output 2 starts or stops

[9][2][7][0] ---------- Output 3 starts or stops

b) The Personal Master Code is a Super User Code to command the outputs. This feature allows the owner to use only one code to operate several keypads if they are having the same Master Code but different user codes. Enter the Personal Master Code and validate via `#` 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

`3` `2` `8` `9` `#` `3` --- Output 3 starts or stops

c) The Duress Code does not need to be programmed. The keypad determines it automatically by increasing the first digit of the User Code 1 of 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 command the Duress Function, 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 the Output 1 as like the User Code 1. The Duress Code can always activate or deactivate (in Start / Stop mode) Output 1, but cannot deactivate (reset) the Duress Output. ONLY the User Code 1 can deactivate (reset) the Duress Output.

d) The Accelerated Code is the First Two Digits of the User Code. If the Output 1 has been programmed in Start / Stop mode with Accelerated Code at Location 42, it is possible to activate the Output 1 with only the First Two Digits of the User Code. Deactivating of the Output 1 always requires the composition of the Complete User Code 1.

Example: Output 1 has been re-programmed to Start / Stop Mode with Accelerated Code (Location: 42) with the Complete Code of: **8321**   The Accelerated Code will be: **83**

`8` `3` `#` ------------- Output 1 starts

`8` `3` `2` `1` ----------- Output 1 stops

e) Try to put some random false codes to the keypad to test its Safety. The keypad considers 4 digits as one code and it generates 5 beeps for each unsuccessful code entry. The keypad locks itself during 15 minutes after 10 successive false codes. Normal operation will be resumed after 15 minutes expired, or, it can be reset with the Master Code during the locking period.

`3` `2` `8` `9` `#` ------ Locking is reset and keypad resumes normal operation.

C) MULTI-USER MODE OPERATION -- An Example

1) Requirement
a) Multi-User Mode Operation
b) Change the factory-set Master Code 0000 to a Personal Master Code 3289
c) Set 1st User Code in Group 1 of 8321
d) Set 2nd User Code in Group 1 of 11223
e) Set 3rd User Code in Group 1 of 33221
f) Set 1st User Code in Group 2 of 6854
g) Set 2nd User Code in Group 2 of 54321
h) Set 1st User Code in Group 3 of 9270
i) Set Output 1 to Momentary Mode, 1 second
j) Set Output 2 to Start / Stop Mode
k) Set Output 3 to Start / Stop Mode
l) Set the keypad to lock itself during 15 minutes after 10 successive false codes

---

2) Programming -- Set the above requirement into the keypad

`0` `0` `0` `0` `*` ------------------- System has been set in programming mode with the factory-set Master Code

`8` `9` `0` `1` `#` ------------------- System has been set for Multi User Mode** (please see NOTE (a) below)

`0` `3` `2` `8` `9` `#` -------------- 3289 has been stored as the new Personal Master Code & Super User Code

`1` `0` `1` `8` `3` `2` `1` `#` ------- 8321 has been stored as the 1st User Code in Group 1 with Duress Code function

`1` `0` `2` `1` `1` `2` `2` `3` `#` ---- 11223 has been stored as the 2nd User Code in Group 1 with Duress Code function

`1` `0` `3` `3` `3` `2` `2` `1` `#` ---- 33221 has been stored as the 3rd User Code in Group 1 with Duress Code function

`2` `1` `6` `8` `5` `4` `#` ---------- 6854 has been stored as the 1st User Code in Group 2

`2` `2` `5` `4` `3` `2` `1` `#` ------ 54321 has been stored as the 2nd User Code in Group 2

`3` `1` `9` `2` `7` `0` `#` ---------- 9270 has been stored as the 1st User Code in Group 3

`4` `0` `1` `#` ----------------------Output 1 has been set to Momentary Mode, 1 second

`5` `1` `#` -------------------------- Output 2 has been set to Start / Stop Mode

`6` `1` `#` -------------------------- Output 3 has been set to Start / Stop Mode

`7` `2` `1` `0` `#` ------------------ The keypad has been set to lock during 15 minutes after 10 successive false codes

`*` --------------------------------- Keypad exits programming mode. All the above data are stored and ready for use

NOTE: a) **Enter the Multi User Mode Command Code "8901" may not be necessary if the keypad was already in Multi User Mode.

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

---

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

a) To command output 1, enter any one of the User Codes in Group 1 and validate via the `#` key

`8` `3` `2` `1` `#` ------ Output 1 activates for 1 second

`1` `1` `2` `2` `3` `#` --- Output 1 activates for 1 second

`3` `3` `2` `2` `1` `#` --- Output 1 activates for 1 second

b) To command output 2, enter any one of the user codes in Group 2 and validate via the `#` key.

`6` `8` `5` `4` `#` ------ Output 2 starts or stops

`5` `4` `3` `2` `1` `#` --- Output 2 starts or stops

c) To command output 3, enter any one of the user codes in Group 3 and validate via the `#` key.

`9` `2` `7` `0` `#` ------ Output 3 starts or stops

d) The Personal Master Code is a Super User Code to command the outputs. This feature allows the owner to use only one code to operate several keypads if they are having the same Master Code but different user codes. Enter the Personal Master Code and validate via `#` 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

`3` `2` `8` `9` `#` `3` --- Output 3 starts or stops

e) The Duress Codes do not need to be programmed. The keypad determines them automatically by increasing the first digit of the User Codes in Group 1 of Two units. All the User Codes have Duress Code Function.