

# Split Decoded Security System

## art. SEC-3C

### Introduction

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SEC-3C is a split decoded, three output system designed for office and home security and access control installations.

The system is adopting "Split Decoded" design philosophy to give highest system security. Each SEC-3C is split in two parts, the remote keypad unit and the master decoder unit, they communicate with each other in digital data. Anyone who tries to cut or short the connection wires at the remote keypad can not compromise the security of the system or bypass the keypad function.

The SEC-3C uses Current Mode Data Bus Communication, one master unit can accommodate up to 3 remote keypad units connected in parallel for totally independent operation.

SEC-3C employs 3 User Codes (code 1, code 2 and code 3) and one Super User Code for operating of the 3 outputs which are designed for door strike and other security and access control applications.

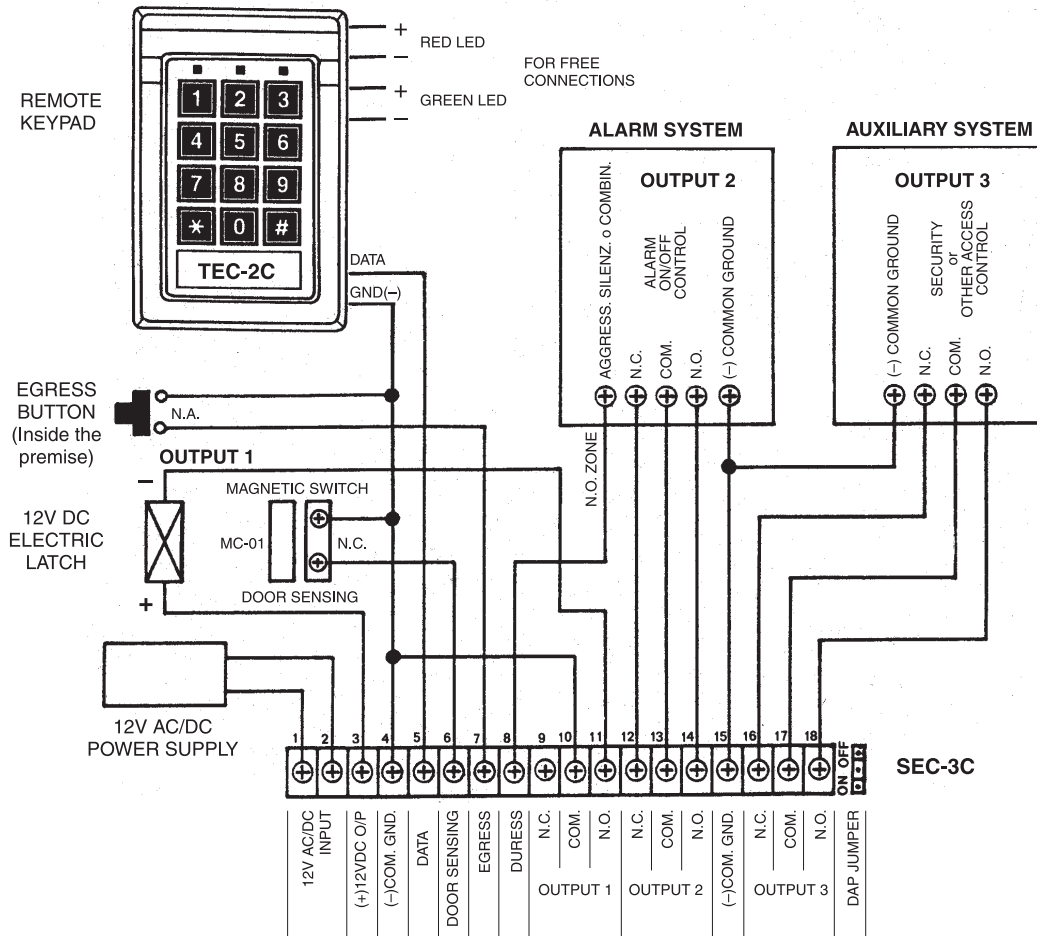
With its E<sup>2</sup>PROM memory, the system's programmed data is non-volatile in case of power failure. Over 100 million combinations are possible for the 3 User Codes, the Master Code (it also acts as the Super User Code) and the Duress Code.

Other security features include duress output and door sensing for door auto re-lock function. Facility for connecting an egress button for easy exit is also incorporated.

The plastic case of the keypad unit is precisely engineered, in which, the front panel and the mounting box is sealed with a water resistant gasket making the keypad unit suitable for both in-door and out-door installations.

## Typical Application

**Output 1:** Door Strike; **Output 2:** Alarm Control; **Output 3:** Auxiliary Security or Access Control



### The Master Unit

#### 12V AC/DC Input:

Power supply input, 12V AC or DC power is possible. No polarity discrimination for the terminals is required.

#### 12V DC Output (+):

Output power for the DC operated door latch. Output current is 2 Amp maximum.

#### Common Ground (-):

The common grounding point of the keypad system.

#### Data:

This is the communication data bus of the master unit and the remote keypad unit(s). It is also the power supply line for the remote keypad unit(s). Connect it to the DATA terminal at the remote keypad unit(s).

#### Door Sensing:

A Normally Closed (N.C.) input circuit refers to ground. With the help of a magnetic contact to monitor the opening of the door which is controlled by Output 1. The circuit is open when the door is open. It initiates the **Door Auto Re-lock** function. When the door is opened and then re-closed, the keypad will release the electric latch immediately to re-lock the door before the end of the operation time in Momentary mode; or you do not require to enter Code 1 again to re-lock the door in Start/Stop mode.



➔ **NOTE:** Connect this terminal to Common Ground (-) if door sensing is not used.

**Egress Input:** A Normally Open (N.O.) input terminal refers to (-) ground. Connect it to Common Ground (-) via a momentary push-button switch to activate Output 1. Allows users to bypass the security Code 1 by pushing the push-button switch. This switch is normally put inside the protected premise near the door to allow those inside the protected premise to exit without keying in the code.

➔ **NOTE:** Leave this terminal open if it is not used.

**Duress Output:** An NPN transistor open collector output. It switches to ground (-) when the Duress Code is entered. Connect to activate an alarm control panel or telephone dialer. Output transistor rating: I<sub>c</sub> max -- 100mA sin, V<sub>ce</sub> max -- 12V DC

**Output 1:** 5 Amp relay dry contacts, with Normally Open (N.O.) and Normally Close (N.C.) terminals. This relay is primarily prepared for door strike application. It is also good for other security and access control. Use the N.O. contact for door strike connection. If for other security and access control applications, please consult the manual of your system for the appropriate pair of terminals (N.C. or N.O.) for the connection. The relay output is programmable for Momentary or Start/Stop operation.

**Output 2:** Output 2 is prepared for other security and access control applications. The output is programmable for Momentary or Start/Stop operation by using 1 Amp relay dry contacts, with N.O. and N.C. output terminals.

**Output 3:** Output 3 has identical function as output 2. It is also prepared for other security and access control applications. The output is programmable for Momentary or Start/Stop operation.  
1 Amp relay dry contacts, with N.O. and N.C. output terminals.

### **The DAP Jumper** (*Direct access to programming*)

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

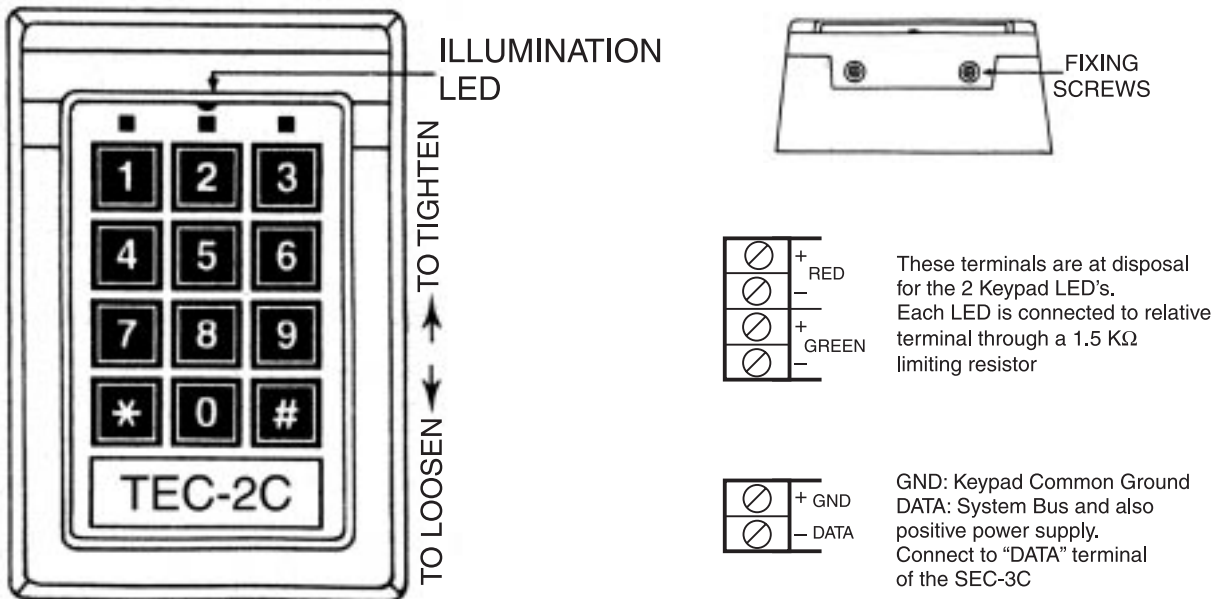
1. Disconnect power supply.
2. Displace the DAP jumper from OFF to ON position.
3. Reconnect power supply (buzzer in Master is activated).
4. Put the DAP jumper back to OFF position (this done, the buzzer in the Master unit is de-activated).
5. The keypad is in programming mode, ready to receive new data.
6. Enter the new data starting from Section (B) shown in the Summary Chart.

## The Remote Keypad Unit

- Data (+):** This is the communication data bus of the system. It is also the power supply input terminal of the remote keypad unit. Link it up with the "DATA" terminal at the master unit.
- GND (-):** The common grounding point of the remote keypad.
- Green & Red LEDS:** Two LED lamps are prepared for free connection in case of alarm status or access control operation indication is required. Each LED is connected with a 1.5 KW current limiting resistor.

## TEC-2C Remote Keypad Unit

### Connection terminals



## Visible and Audible Indicators

The built-in buzzers at remote keypad and master unit, and the amber LED generate 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 (Master)	1 Flash every 2 seconds
6. Standby mode	- - -	1 Flash every 2 seconds.

## The Factory-set Data (*Important note to the owner*)

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

## Programming The Keypad -- Summary

### A) Use the factory-set Master Code entry in programming *(when starting for first time)*

Entry of Code	Validation	Comments
0000	★	Enter in programming mode by the factory-set Master Code

### B) Recording of Personal Master Code & User Codes -- User Programming

Access Keys	Entry of Codes	Validation	Comments
0	From 1 to 8 digits	#	Personal Master Code & Super User Code
1	From 1 to 8 digits	#	User Code1 & Duress Code
2	From 1 to 8 digits	#	User Code 2
3	From 1 to 8 digits	#	User Code 3

### C) Configuration of Relay Outputs -- Installer Programming

Access Keys	Code Duration	Validation	Comments
4 0	From 1 to 999	#	Output 1 in Momentary mode from 1 to 999 seconds
4 1		#	Output 1 in Start/Stop mode without accelerated code
4 2		#	Output 1 in Start/Stop mode with accelerated code
5 0	From 1 to 999	#	Output 2 in Momentary mode from 1 to 999 seconds
5 1		#	Output 2 in Start/Stop mode without accelerated code
5 2		#	Output 2 in Start/Stop mode with accelerated code
6 0	From 1 to 999	#	Output 3 in Momentary mode from 1 to 999 seconds
6 1		#	Output 3 in Start/Stop mode without accelerated mode
6 2		#	Output 3 in Start/Stop mode with accelerated mode

### D) Personal safety -- Installer Programming

Access Keys	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 (activates)
7 2	#	Disappearance of the 2 above securities

### E) Exit Programming Mode

Validation	Comments
★	Exits programming mode, returns to normal operation

## The Keyboard Illumination LED

The keyboard illumination LED lights up for 10 seconds when a key button is pressed, which indicates the duration of allowable time for each digit of a continuous code entry. The digit of code entry is invalid when the LED is off.

## Programming the Keypad – Example

1. **Requirement** -- The following data are required to be stored:
  - a) Change the factory set Master Code 0000 to a Personal Master Code 3289
  - b) Set User Code 1 in 8321
  - c) Set User Code 2 in 6854
  - d) Set User Code 3 in 9270
  - e) Set Output 1 in Momentary mode, 5 seconds
  - f) Set Output 2 in Start/Stop mode without accelerated code

g) Set Output 3 in Start/Stop mode with accelerated code

h) Set the keypad to lock itself during 30 seconds after 10 successive false codes

## 2. Programming -- Put the data above into the keypad:

- [0] [0] [0] [0] [✳] Enter the programming mode using the factory-set Master Code.
- [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 & Duress Code.
- [2] [6] [8] [5] [4] [#] 6854 has been stored as User Code 2.
- [3] [9] [2] [7] [0] [#] 9270 has been stored as User Code 3.
- [4] [0] [5] [#] Output 1 has been set in Momentary Mode, 5 seconds.
- [5] [1] [#] Output 2 has been set in Start/Stop Mode with accelerated code.
- [7] [0] [#] Keypad has been set to lock during 30 seconds after 10 successive false codes.
- [✳] Programming is finish. All the data above have been stored and ready for use.

➔ **NOTE:** In case of wrong entry during programming, cancel it with key #, or wait 10 seconds, then re-entry.

### Use the Keypad *(Taking the stored data above as reference)*

1. To command the outputs 1, 2 & 3, enter the corresponding codes into the keypad and validate it via #.

- [8] [3] [2] [1] [#] Output 1 activates for 5 seconds  
 [6] [8] [5] [4] [#] Output 2 starts (or stops)  
 [9] [2] [7] [0] [#] Output 3 starts (or stops)

2. The Personal Master Code is also the **Super User Code** for outputs, 1, 2 & 3. It allows the owner to use **only one Code** to operate the 3 outputs. To command output 1, 2 & 3, enter the Personal Master Code into the keypad and validate via the # key **Plus** the corresponding output number(s).

- [3] [2] [8] [9] [#] [1] Output 1 activates for 5 seconds  
 [3] [2] [8] [9] [#] [2] Output 2 starts (or stops)  
 [3] [2] [8] [9] [#] [3] Output 3 starts (or stops)

3. 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: If the User Code 1 is "1234", then the Duress Code is "3234". If the User Code 1 is "8321", then the Duress Code is "0321".

To command the **Duress Output**, enter the Duress Code and validate via the # key.

- [0] [3] [2] [1] [#] Duress Output activates, Output 1 activates for 5 seconds

The Duress Code has a double action. It controls the Relay Output 1 at the same time as the User Code 1 and activates the Duress Output. **Only** the composition of User Code 1 can de-activate (reset) the Duress Output.

4. The **Accelerated Code**, if the one output from 1 to 3, has been programmed in Start/Stop mode with Accelerated Code, it is possible to activate with only the **first two digit**, from Code 1 to Code 3, of the corresponding code. De-activating of this output always requires the composition of the Complete Code.

In this example, Output 3 has been programmed in Start/Stop Mode with Accelerated Code.

The Complete Code of Code 3: **9270**; The Accelerated Code of Code 3: **92**

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

5. Try to put some 1 to 8 digits random false codes to the keypad to test its **safety**. The keypad generates 5 beeps for each unsuccessful code entry after the # key is pressed. The keypad locks itself during 30 seconds after 10 successive false codes are entered. Normal operation will be resumed after 30 seconds expired.

➔ **NOTE:** The maximum allowable time for a Successive Digit and a Successive Code are 10 seconds and 30 seconds respectively. The keypad refreshes itself automatically after the allowable times are expired.

### Re-programming the Keypad for other Operation Modes

1. To access to **Programming Mode**, enter your Personal Master Code and validate via the ★ key.

[3] [2] [8] [9] [★] The keypad is in Programming Mode & ready to receive new data

2. Set Relay Output 1 in Start/Stop Mode without accelerated code.

[4] [1] [#] Output 1 has been changed from Momentary Mode to Start/Stop Mode.

3. Set keypad to activate **Duress Output** after 10 successive false codes.

[7] [1] [#] The keypad has been changed from locks 30 seconds to activates Duress Output.

4. Re-programming is finish. Exit programming mode.

[★] The keypad is back to normal operation with all the re-programmed data stored.

### Using the Keypad with the newly re-programmed Data

1. To command Relay Output 1, enter the User Code 1 and validate via the # key.

[8] [3] [2] [1] [#] Relay Output 1 starts

In Start/Stop operation mode, it is necessary to enter Code 1 again to STOP Output 1. If Output 1 is for door strike application, it is suggested to work with a **Door Sensing Switch** (e.g. MC-01) to initiate the **Auto Re-lock (Stop)** function, in which, entering Code 1 again for re-locking the door is not necessary.

2. Try to put some 1 to 8 digits false codes to the keypad to test its **safety**. The keypad will activate the **Duress Output** after 10 successive false codes are entered.

To reset (de-activate) the Duress Output, you are required to enter the composition of the User Code 1 and validate via # key.

### The Tamper Switch of the Remote Keypad Unit

Each remote keypad unit employs a tamper switch which is normally depressed. When the keypad is separated from the mounting box, it will be released and will make the keypad unit to send a command to the Master Unit to activate the **Duress Output** for 60 seconds. The Duress Output can be stopped by keying-in the User Code 1 before the end of the time.

### Connecting the Remote Keypad Unit(s) to the Master Unit.

The basic SEC-3C system comes with one Master unit and one Remote Keypad unit. Actually, each master unit allows maximum 3 remote keypad units connecting to it. The SEC-3C system uses current mode data bus communication, which makes the additional keypad connections very simple, just connecting all the "DATA" and "GND" terminals of the keypad units and the master unit in parallel as the diagram shown below.

### For operation

All the remote keypad units in the system give identical control function to the Master unit in normal operation.

## For programming

Any one of the remote keypad units in the system can be used for programming. Once the one has been selected for programming, the other keypads in the system will be disabled until the system exits the programming mode.

The keypad unit can be selected as a programming keypad under one of the following two conditions:

1. When the Personal Master Code has been keyed-in to that keypad unit.
2. After use the DAP jumper entering to programming mode, all the keypad units in the system are prepared for the selection. When the one is FIRST keyed-in with any code, it is considered to be selected as a programming keypad automatically.

## Specifications

Operation Voltage:	12V AC or DC (10-14 AC or DC)
Current Drain:	50 -- 160mA
Operation Codes:	Master; User 1, 2 & 3; Super User; Duress and Accelerated Codes
Code Combinations:	111.111.100
Relay Output:	Output 1 ----- 5 Amp N.O. & N.C. dry contacts, 30V DC maximum Output 2 & 3 -- 1 Amp N.O. & N.C. dry contacts.
Duress Output:	NPN transistor open collector output switching to (-) ground, 100 mA sink, 12 V DC max
Digit Entry Time:	10 seconds, auto refresh
Dimensions (approx.):	Master -- 120mm (W) x 87mm (D) x 32.5 (H) Keypad -- 84 mm (W) x 41 mm (D) x 129 mm (H)
Weight (approx.):	Master -- 160g (net) Keypad -- 150g (net)

*Specifications are subject to change for modification without notice*

## Appendix

**Dry Contact** -- A dry contact means that no electricity was connected to it. It is prepared for free connections, Usually the relay output contacts provided in a keypad system are dry contacts.

**N.C.** -- Stands for Normally Closed, the contact is closed circuit at normal status. It is open circuit when activated.

**N.O.** -- Stands for Normally Open, the contact is open circuit at normal status. It is closed circuit when activated.

**Transistor Open Collector Output** -- An open collector output is equivalent to a Normally Open (N.O.) contact referring to ground similar to an N.O. relay contact referring to ground. The transistor is normally OFF, and its output is switching to ground (-) when activated if it is an NPN transistor. The open collector transistor can only provide switching function for small power but it is usually good enough for controlling an alarm system and most other small signal control functions.

The Duress Output in all 3 keypad versions is NPN transistor open collector outputs.



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