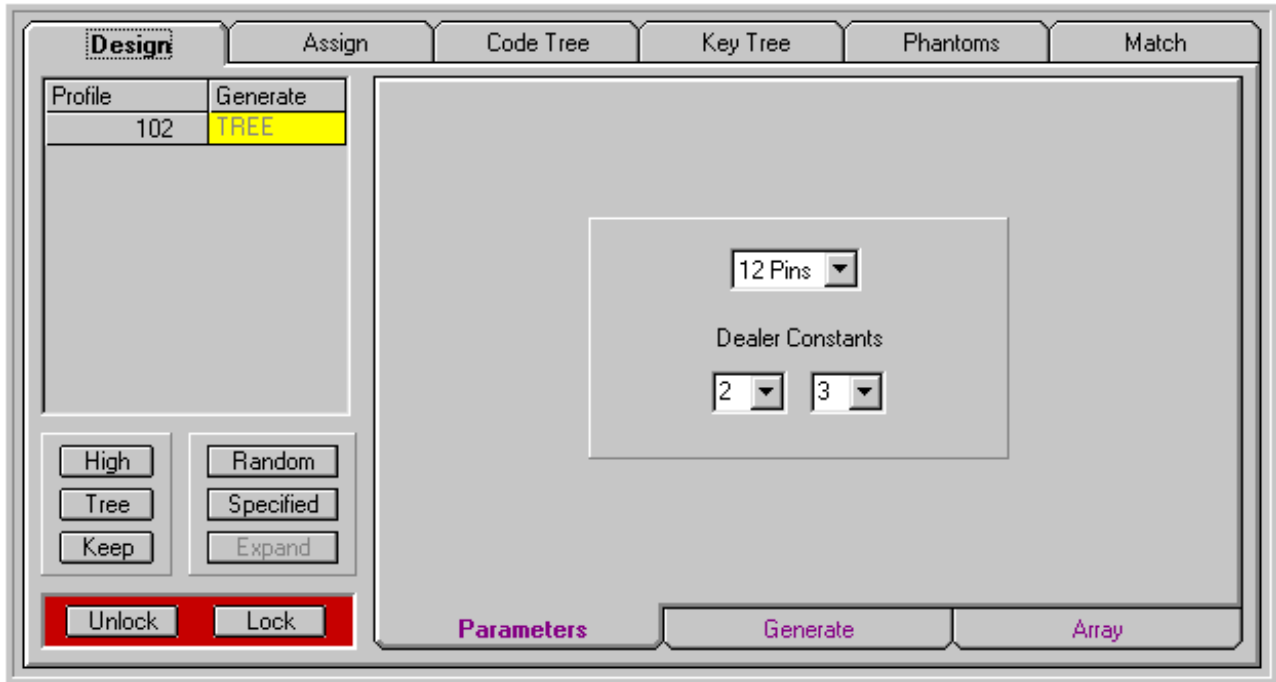


# ***KEY MASTERY***™

**BiLock**

Version 4.3

# Code Design – BiLock Module



There are six tabs within the Code Design section

- Design** This is where you initially design and generate codes for new key systems as well as expanding on existing ones.
- Assign** For assigning the generated codes to your keys or manually entering your key codes.
- Code Tree** For viewing and printing the generated codes in a tree layout according to their rank.
- Key Tree** For viewing keys with their codes in a tree layout according to their Key Above or the rank of their code.
- Phantoms** To check your key system for phantom keys. Essential after changing the keying of existing Doors.
- Match** This tab is automatically activated when necessary to match Key Codes and Design Codes. **Clicking on this tab will do nothing.**

## Design

Profile	Generate
102	TREE

To the left of the screen is a list of profiles for the key system. Although BiLock systems are usually created on a single profile, fictitious profiles can be introduced to enable you to create different design structures within the same system.

**High** Will only generate the Highest Level Code for that profile. This can be used for the master profile or single key systems.

**Tree** Will generate the full tree of codes as specified. This is the default.

**Keep** Allows you to keep the existing codes for that profile while generating others.

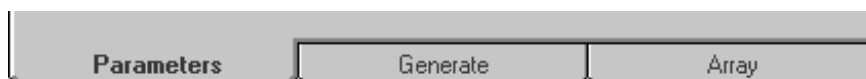


Two buttons are provided to generate new systems, another for expanding existing system.



After a system has been generated, you can lock the design to stop users from accidentally changing the structure. When locked, only the Expand button is active.

To the right of the screen are three more tabs:



**Parameters** The settings you wish to use to generate the codes

**Generate** The positions you wish to progress and the number of codes required.

**Array** The key depths you wish to progress in each position.

## Parameters



The image shows a software interface with a grey background. At the top, there is a dropdown menu labeled '12 Pins' with a downward arrow. Below it, the text 'Dealer Constants' is centered. Underneath, there are two dropdown menus, the first showing '2' and the second showing '3', both with downward arrows.

Here you can specify:

- **12 or 8 Pin locks** - If the system has a mix of both, different profiles need to be created.
- **Your Dealer Constants** - These will be automatically entered in positions 6 and 12.

## Generate

Key Mastery can generate codes on up to 6 levels

<b>GGMK</b>		Great Grand Master
<b>[G]</b>	<b>GMK</b>	Grand Master
<b>[X]</b>	<b>XM</b>	Cross Master – can be selectively keyed with any key under a GMK
<b>[M]</b>	<b>MK</b>	Master Key
<b>[I]</b>	<b>IK</b>	Interchange Key – can be selectively keyed with any key under a MK
<b>[C]</b>	<b>CK</b>	Change Key

The characters in brackets are used to designate the chambers. **Constants are left empty.**



The Direction Buttons allow you to choose the direction the codes will be progressed, as well as the direction that the constants will be rotated.

Two Options are provided to generate new systems

Random

Will automatically find a system that will provide the codes that you require.

Specified

Allows you to design the system yourself. Ideal for re-generating existing systems.

## Random

This is by far the easiest way to generate new codes, as all you need to do is type in the number of codes required on each level. In the example below, we have asked for 1 GM, 5 MK's and 50 CK's (individual codes) under each MK.

Rank	Possible	Required	Generated	1	2	3	4	5	6	7	8	9	10	11	12
GGM	0	0													
GM	1	1													
XM	0	0													
MK	6	5													
IK	0	0													
CK	108	50													

Wherever possible, Key Mastery will utilize rotating constants, to minimize the number of master pins. Here we have a rotating constant for MK's and CK's.

If you prefer not to have rotating constants on any level, then untick the boxes:

On typing in your requirements click  and Key Mastery will find a design that will produce the required number of codes. Clicking this button again will produce another design.

Rank	Possible	Required	Generated	1	2	3	4	5	6	7	8	9	10	11	12
GGM	0	0													
GM	1	1	1												
XM	0	0													
MK	6	5	5												
IK	0	0													
CK	108	50	59												

On finding a system, simply click on  or  as described in the next section.

## Specified

This option allows you to specify the way you want codes to be generated.

Highest Key	1	2	3	4	1	2	3	4	1	2	3	4
Designation												
Rotating												

Type in the highest level code on this line  
 Designate the chambers to be progressed  
 Choose which constants to rotate

1	2	3	4	1	2	3	4	1	2	3	4
	M							C	C	C	
		m								c	
1	2	3	4	5	6	7	8	9	10	11	12
	1	1				1	1	2	1		
	3	2				2	2	3	3		
	4	4				4	3	4	4		

As you type in the information, Key Mastery calculates the Array and the theoretical number of codes displaying them in the Possible Column.

**Tip:** It is a good idea to leave as many constants as possible. This will provide your customer with better security and allow flexibility when expanding.

If you do not need all the possible codes, you can specify the quantity in the Required column.

For smaller systems, simply press  which will fill in the Required column for you.

Will only generate the good codes. This is the recommended option

Would generate all codes, good and bad. Handy in certain situations.

Bad codes are those with opposing 4 cuts, which make the key weak.

## Array

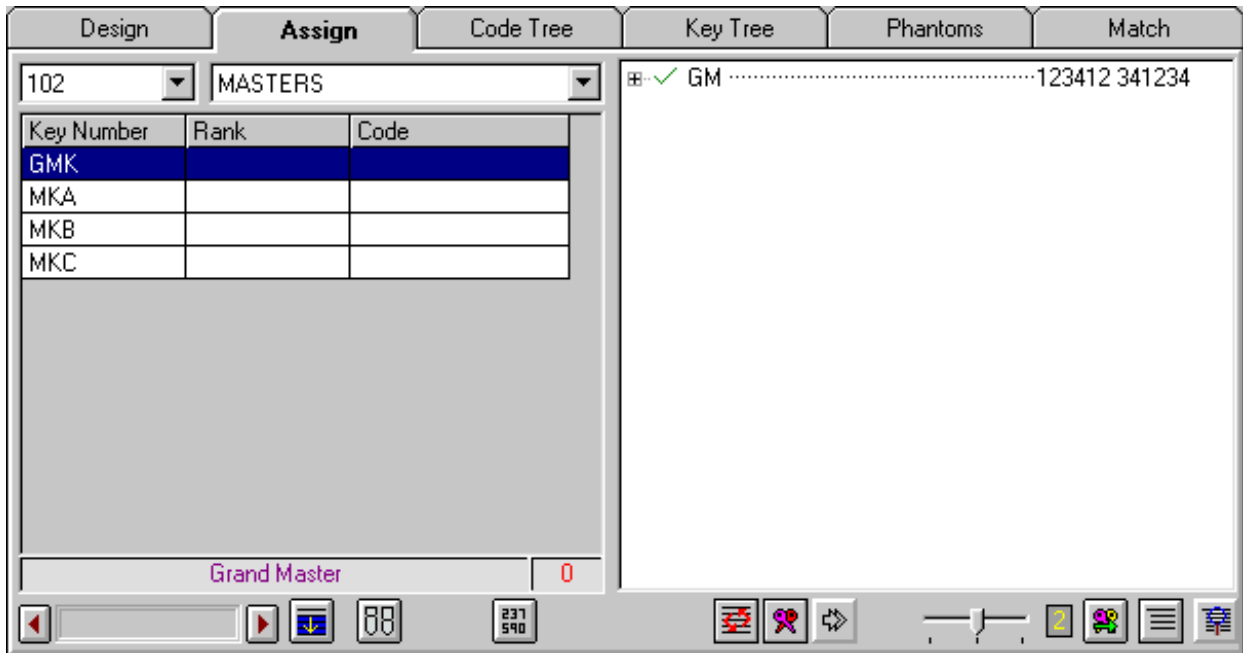
Mixes or Sorts the array

Re-sets the array to the parameters

Allows you to manually edit the array.

# Assign

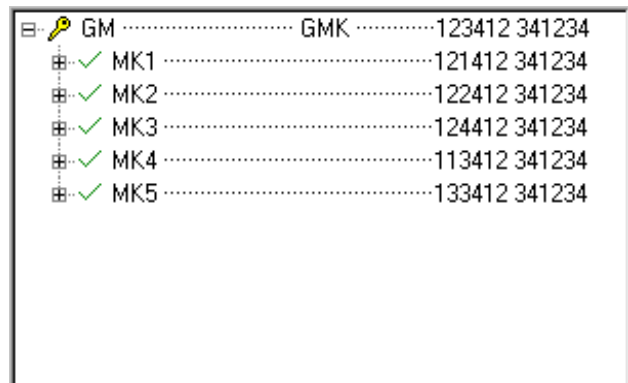
After the codes are generated, you can assign them to the keys.



On the left hand side is the key list under the MASTERS heading. On the right, are the generated codes, in a tree format. As our GMK key is already selected, you can simply assign it a code by **Right Clicking** on the GM code. Once a code is assigned a small key appears next to the code.

The tree will expand allowing you to choose the codes for your masters. Right Click on any of the MK codes for the MK

You will notice that the Rank as well as the Code is transferred to your keys in the key list. The code tree also displays the key using the assigned codes.

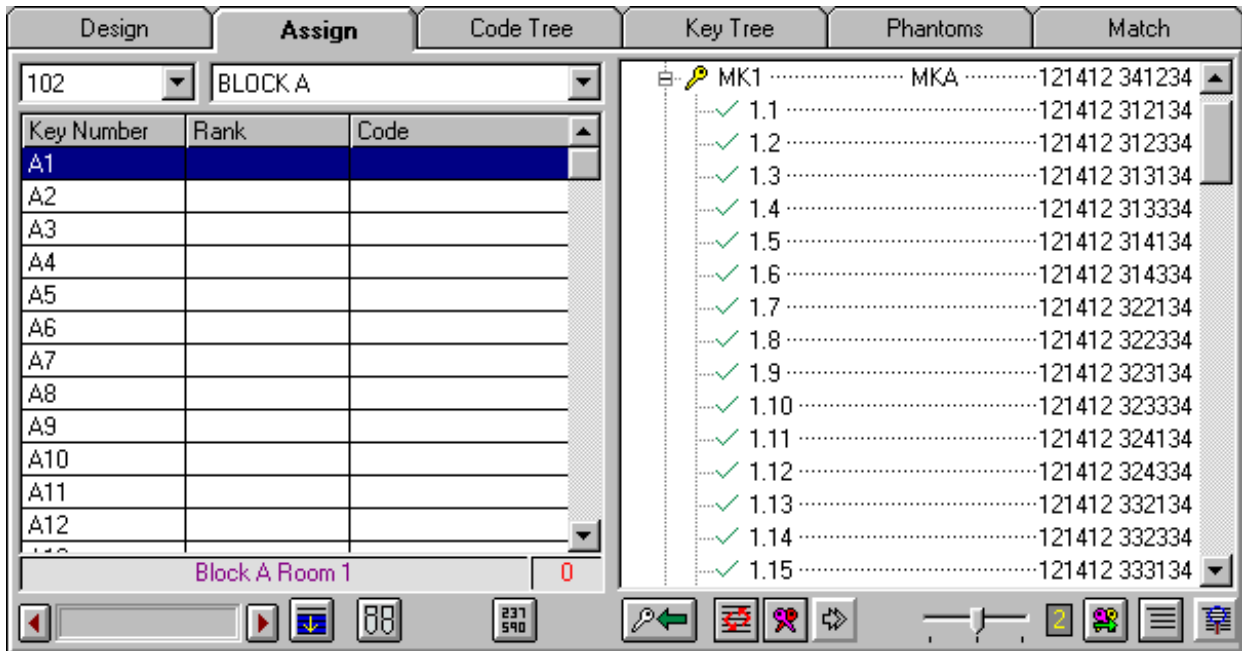


Key Mastery has many features to help you assign codes, but it cannot assume what you want with any level of masters and cross masters, as there are too many possible alternatives that you may have in mind. Hence it is up to you to choose these codes to meet with your requirements.

Once the masters have been chosen, Key Mastery is ready to automatically assign your individual keys, which would normally be the most laborious job, especially if there is any cross keying.

## Assign (continued)

The drop down Profile and Heading lists allow you to choose the desired key list.



For the majority of systems, all you will need to do is click 2 buttons to assign your individual Keys:



The select down button will select all your keys (you can also select with your mouse).



The assign button will automatically assign codes to the selected keys according to your settings.



Will randomly select codes in the list. (Default)

*This button toggles to:*



Will search for codes sequentially down the list.



Ensures that no Phantoms (unwanted cross-keys) are created. (Default On)  
Only required for cross-keyed systems, but should be left on anyway.



Looks for codes that will produce the least number of master pins. (Default Off)  
This is only required for cross-keyed systems. Will slow down assigning.



Selects the variation required between key codes. (Default: 2)

## Assign (continued)

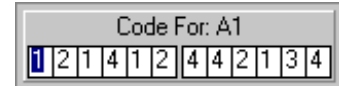
There are also additional buttons below your key list. Their functions are as follows:



Counts the number of master positions throughout the system. The smaller the number, the more secure the system.



Allows you to manually Enter a Key Code



The remaining buttons are for altering your viewing options as follows:-



Shows the status of each Code in relation to the selected key.

- MK1 ..... This code is the best for the chosen key.
- 1.1 ..... Meets with the minimum variation but will cause unnecessary master pins.
- 1.2 ..... Meets with the minimum variation but will cause unnecessary master pins.
- 1.3 ..... Creates minimum masters, but does not meet with the minimum variation.
- 1.4 ..... Creates minimum masters, but does not meet with the minimum variation.
- 1.5 ..... A good code, but did not meet with any of your requirements.
- 1.6 ..... A good code, but did not meet with any of your requirements.
- 1.7 ..... This is a bad code.
- 1.8 ..... This is a bad code.
- 1.9 ..... This code is already assigned to another key.
- 1.10 ..... This code is already assigned to another key.
- 1.11 ..... This is a phantom code and should not be used.
- 1.12 ..... This is a phantom code and should not be used.
- 1.13 ..... Assigning this code will cause other keys to phantom.
- 1.14 ..... Assigning this code will cause other keys to phantom.
- 1.15 ..... The assigned code is a phantom or causes other keys to phantom.



Close Branches. Will close the branches of your key tree to display masters only.



Find Key Above ON/OFF.

Key Mastery always tries to find the code branch for the Key Above. If you have not specified a Key Above or allocated the incorrect one, this button will enable you to open the correct code branch manually.

## Code Tree

Displays the generated codes.



Displays all codes.

[-] 102	Profile	
[-] GM	GMK	123412 341234
[-] MK1	MKA	121412 341234
[-] 1.1		121412 312134
[-] 1.2		121412 312334
[-] 1.3		121412 313134
[-] 1.4	A21	121412 313334
[-] 1.5	A11	121412 314134
[-] 1.6	A10	121412 314334
[-] 1.7	A28	121412 322134
[-] 1.8	A14	121412 322334



Only displays the assigned codes.

[-] 102	Profile	
[-] GM	GMK	123412 341234
[-] MK1	MKA	121412 341234
[-] 1.4	A21	121412 313334
[-] 1.5	A11	121412 314134
[-] 1.6	A10	121412 314334
[-] 1.7	A28	121412 322134
[-] 1.8	A14	121412 322334
[-] 1.9	A19	121412 323134
[-] 1.12	A23	121412 324334
[-] 1.16	A9	121412 333334

## Key Tree



Key Above Tree

[-] GMK	GM	123412 341234	Grand Master
[-] MKA	MK1	121412 341234	Master Block A
[-] A1	1.31	121412 442134	Block A Room 1
[-] A2	1.39	121412 121134	Block A Room 2
[-] A3	1.59	121412 123234	Block A Room 3
[-] A4	1.49	121412 411134	Block A Room 4
[-] A5	1.35	121412 444134	Block A Room 5
[-] A6	1.34	121412 443334	Block A Room 6
[-] A7	1.53	121412 431134	Block A Room 7
[-] A8	1.57	121412 114234	Block A Room 8
[-] A9	1.16	121412 333334	Block A Room 9
[-] A10	1.6	121412 314334	Block A Room 10



Key Rank Tree

In most cases, both tree options will produce the same tree, as they did here. If they didn't and you want the Key Above to correspond with the rank of the code, simply click on this button:



Set Key Above to Code Rank

## Phantoms

Although Key Mastery has the option to automatically check for Phantoms as you are assigning codes, there are two instances where a separate phantom check is vital.

- Re-Keying Doors after the system has been designed.
- Replacing lost keys in doors that have been cross keyed.

In any case, it is good practice to run a check.

The following example shows a system that was cross keyed after codes were assigned.

Design	Assign	Code Tree	Key Tree	<b>Phantoms</b>	Match
<b>Phantom Keys</b>		<b>Doors Accessed</b>		<b>Door Keying</b>	
Key Number	Code	Door Number	Stamped	Key Number	Code
A1	121412 442134	A6		GMK	123412 341234
A3	121412 123234	A7		MKA	121412 341234
A5	121412 444134			A17	121412 334334
A6	121412 443334			A18	121412 442334
A9	121412 333334			A6	121412 443334
A15	121412 334134				
A19	121412 323134				
A20	121412 431334				
A22	121412 243334				
A25	121412 443134				
Block A Room 20		Block A Room 6		Grand Master	

The **Phantom Keys** list shows all key that access doors they were not intended to.

The **Doors Accessed** list displays the doors accessed by the highlighted key.

The **Door Keying** list shows the keying of the highlighted door, with the codes of the keys.

On close examination, you should be able to determine which keys need replacing.