GENOVATION



ControlPad 683 / MacroMaster 683
User Guide

Revision 6
October 2013

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This product has been certified to comply with FCC, EC, TUV and other test standards. See label on the product for confirmation.

FCC CERTIFICATION REQUIRED STATEMENT WARNING:

This equipment has been certified to comply with the limits for a Class B Computing Device, pursuant to Subpart J of Part 15 of the FCC rules. Only peripherals (computer, computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this device. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

NOTE: This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for Class B computing devices in accordance with the specifications in Subpart J of part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off or on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antennas
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer and receiver into different circuits

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: “How to identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. (Stock #004-000-00345-4).

TECHNICAL SUPPORT

If you require technical support or if you wish to make suggestions about the product, don’t hesitate to contact us. We can be reached Monday though Friday from 7:30 AM to 11:00 AM and from 11:30 AM to 3:30 PM Pacific Time. If the customer support lines are busy or if you are calling after hours, leave a message or send a FAX or E-MAIL and a representative will respond, typically within 24 hours.

VOICE NUMBER:	(949) 833-3355 ext. 112
FAX NUMBER:	(949) 833-0322
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FORUM:	http://www.genovation.com/forum/
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1: Installation and Quick Start Guide

Before You Begin

Your ControlPad 683 package should include the following items:

- A Quick Start page
- Product/Installation CD
- ControlPad 683 USB keypad
- Double size keycaps (2) and keycap puller

Features

- Great for any repetitive keystrokes and text
- Saves all your hot-keys, shortcuts and URLs
- Increases speed and productivity while reducing typos
- Adds speed and fun to gaming
- Useful for CAD, online trading, multimedia or any other advanced software
- One-touch control of email, password and login info.

Hardware

The ControlPad keypad is designed to connect to any USB port. Once programmed, the keypad will work with any computer or operating system that supports USB human interface devices.

The ControlPad supports USB boot protocol. This enables the ControlPad to boot a PC and to navigate the BIOS screens.

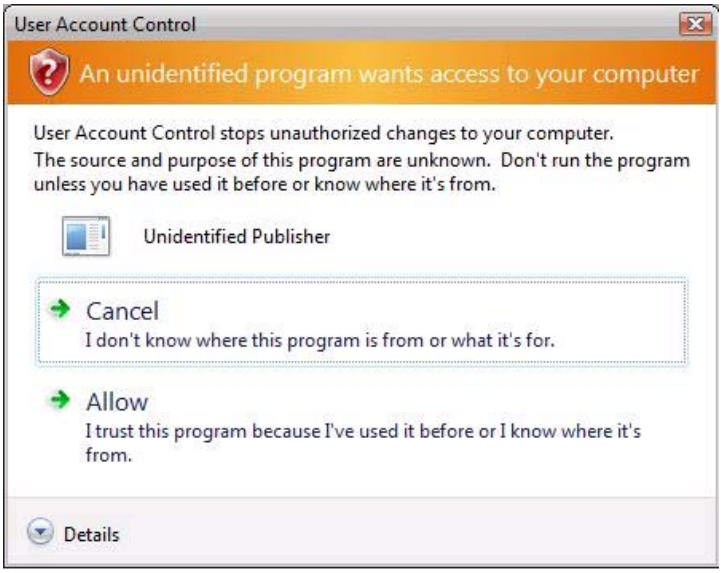
Software

The MacroMaster Windows program is designed to work with computers running Microsoft Windows operating systems. Version 6 of the keypad includes drag n drop file copy in order to program/deploy the keypad on any OS (assumes that MacroMaster has been used previously to create the keypad .BIN data file).

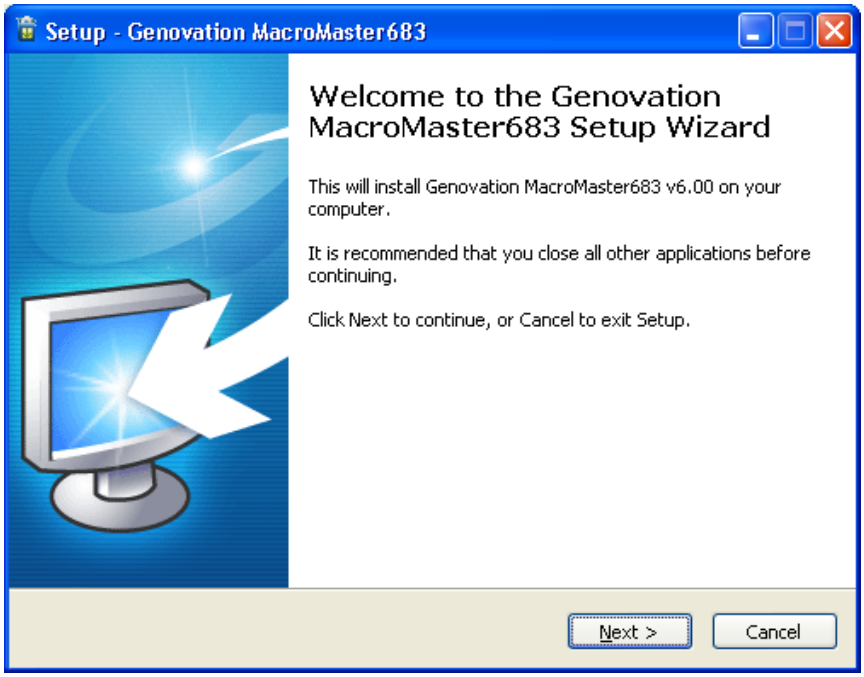
Install Software

If you have a Genovation CD, insert the CD into the target computer's CD drive. If the Installation program does not start immediately, navigate to the CD using Explorer and run **Setup.exe**. If you downloaded the software, unzip the file if required and then run **Setup.exe**.

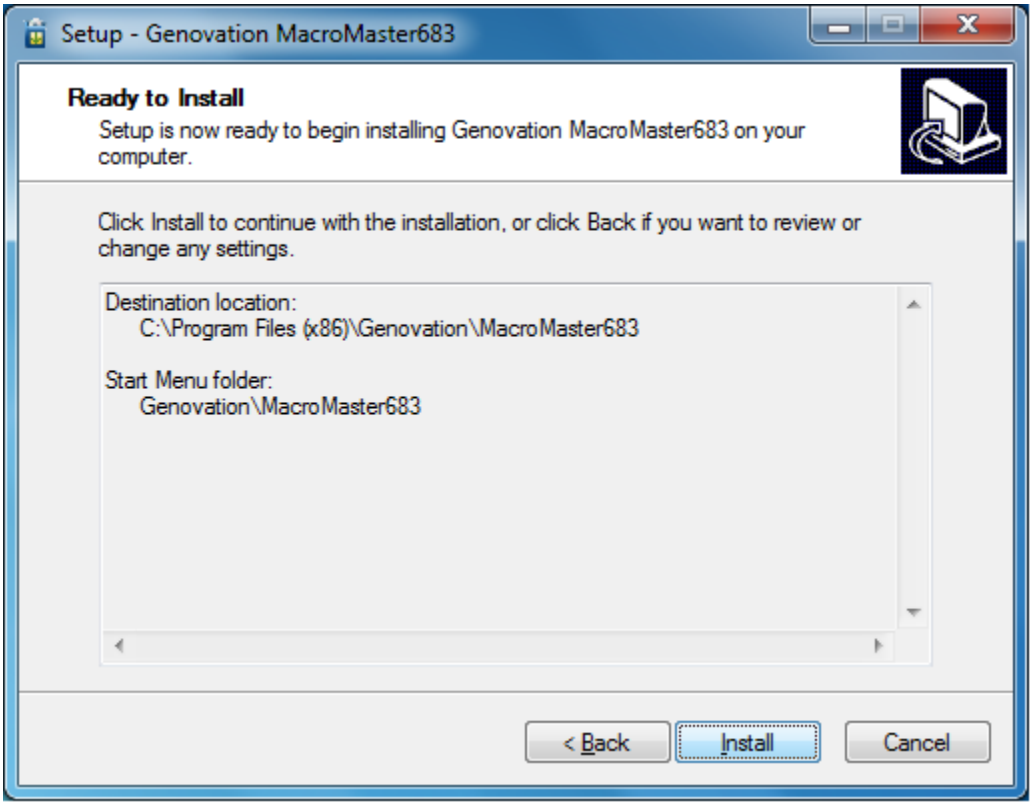
If you see a User Account Control dialog or a warning, such as:



Click on **Allow** or **Yes** as necessary**.** Once Setup begins you should see the following screen:



Click on **Next** as required and choose the path you would like to use for storing the PC applications. Click **Install** to copy the files to your computer from the CD. Click on **Finish** when prompted.



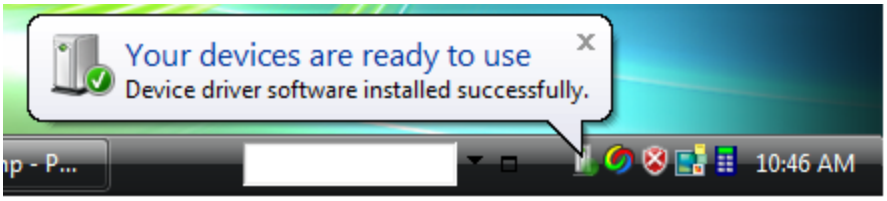
The following files will be installed on your computer:

File	Description
MacroMaster.pdf	This document.
MacroMaster683.exe	Keypad macro creator/editor (redefinition application).
WinLoad683.exe	Downloader utility for copying macros to the keypad.
68xLoad.exe	Alternate downloader for re-flashing the firmware.
KeyTest.exe	Keyboard testing application.
Getting Started.pdf	Quick start guide.
\Macro Files*.ckd	Sample Custom Keypad Definition (.ckd) files.
\Keycap Labels*.*	Pages for printing custom keycap labels.

The Setup procedure will create the necessary icons on your Start Menu.

Install Hardware

You may plug in new hardware at any time. If you have not already plugged in your ControlPad keypad, do so now. You should see a few notifications on the bottom right corner of the screen as the automated install proceeds:

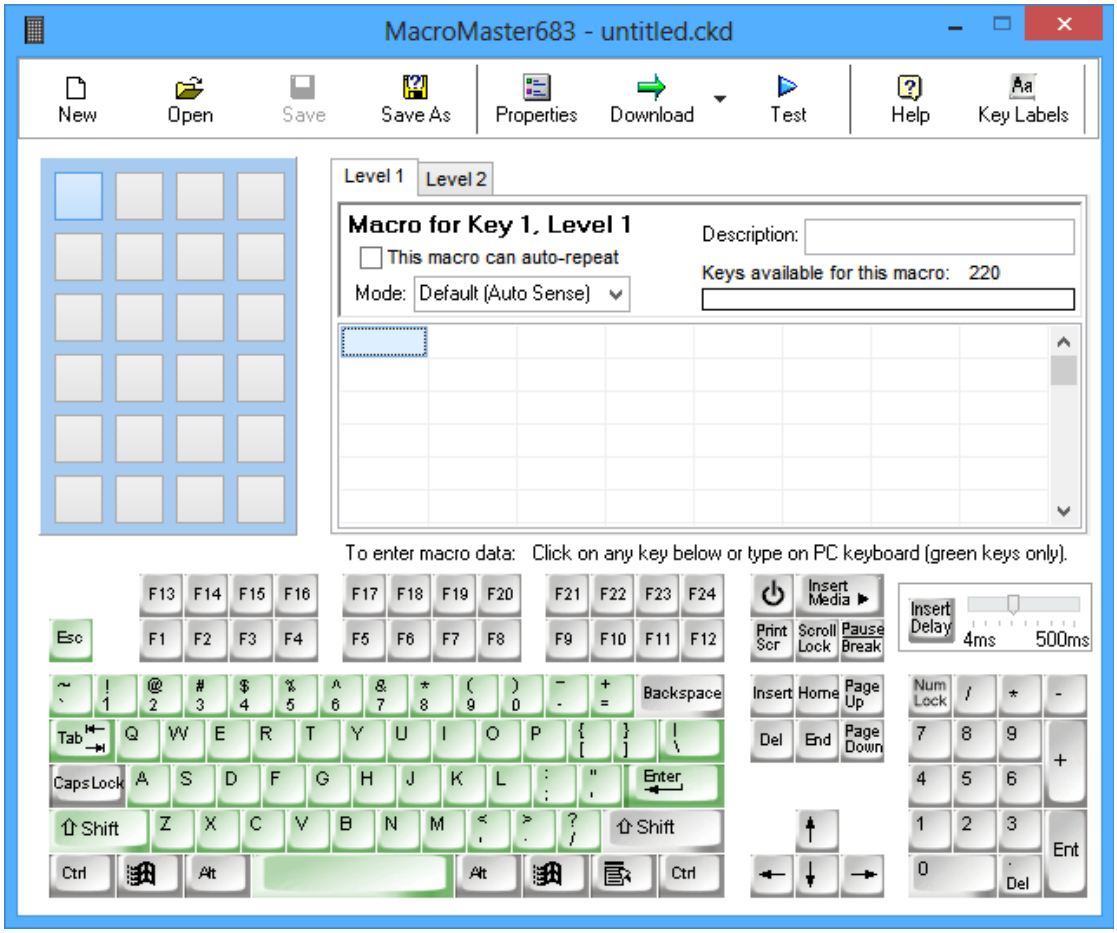


Launch MacroMaster

If you have not started your MacroMaster application, do so now. Click on:

Start >> **Programs** >> **Genovation** >> **MacroMaster683** >> **Genovation MacroMaster683**

You should see a screen similar to the following:



Open File

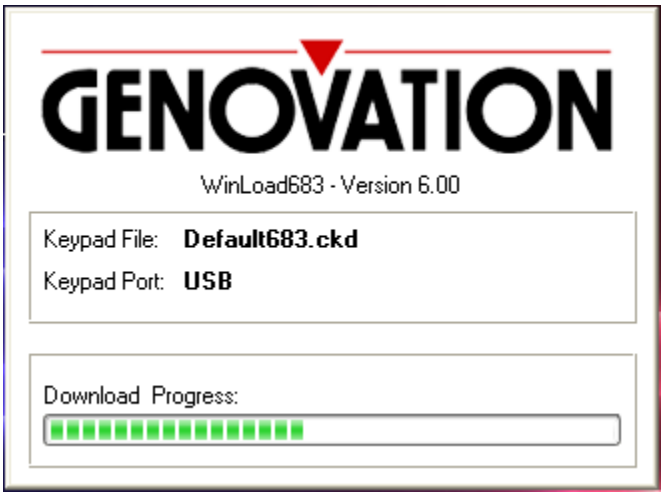
The picture above shows the file Default683.ckd is opened for editing. You should open that file now following these steps.

- Click on the **Open** button at the top right. The open file dialog appears.
- Click on the file named **Default683.ckd** and then click the **Open** button.

This file contains a few simple keys that can be used to verify the correct operation of your keypad and software installation.

Download File to Keypad

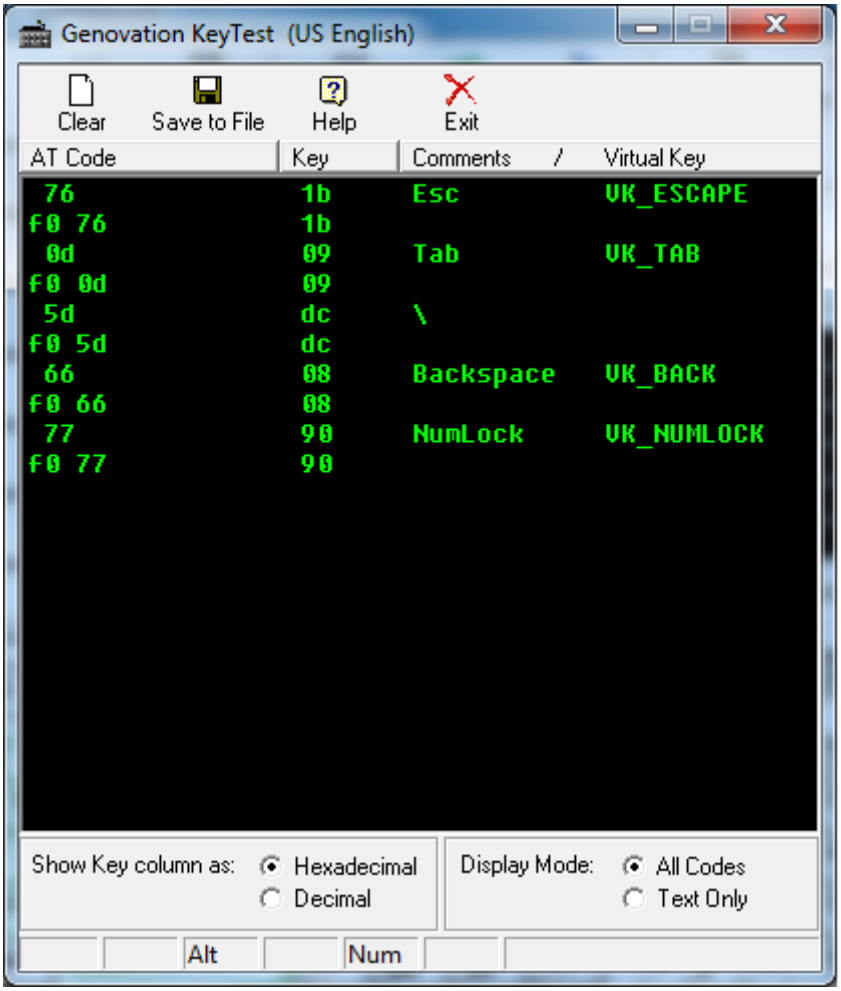
Click on the green arrow of the **Download** button, located near the middle of the toolbar. This will launch the WinLoad683.exe utility that will in turn copy the Default683.ckd file to the keypad in standard Keyboard Mode.



Test Keypad

After the download is complete they keypad will reboot. Click on the **Test** button. This will launch the KeyTest.exe utility that can by used to test the operation of your keypad and the correctness of your macros.

Type on the keys of your ControlPad. You should see the data that is programmed into the keypad appearing in the KeyTest panel. Click on **Exit** to close KeyTest when you are finished with it.



Congratulations, your installation is complete!

Restoring Factory Defaults

At any time your ControlPad can be returned to factory defaults. In order to wipe out the user configuration, **press and hold two keys while plugging the keypad in**.

Continue to hold the two keys down until the keypad is completely plugged in. You should see the LED turn solid red. Release the two keys.

ControlPad683 ROM key table:

F1	F2	F3	F4
F5	F6	F7	F8
7	8	9	F9
4	5	6	F10
1	2	3	F11
Back	0	Enter	F12

Default683.ckd key table:

Esc	Tab	\	Back
Num	/	*	-
7	8	9	
4	5	6	+
1	2	3	
0		.	Enter

The layout on the left indicates the factory (ROM) defaults. The layout on the right is a the provided table (CKD file) that can be modified and downloaded to the keypad.

Un-Installing and Re-Installing

It's a quick and simple matter to remove, re-install or upgrade MacroMaster. To un-install MacroMaster, click on:

Start >> Programs >> Genovation >> MacroMaster683 >> Uninstall MacroMaster683

Or use Add/Remove Programs from within the Control Panel.

The un-installer will NOT remove any macro files you have created. If you are not installing a newer version, you may delete the macro files and directories manually.

If you are installing a newer version (upgrading), your macro files will be saved for you.

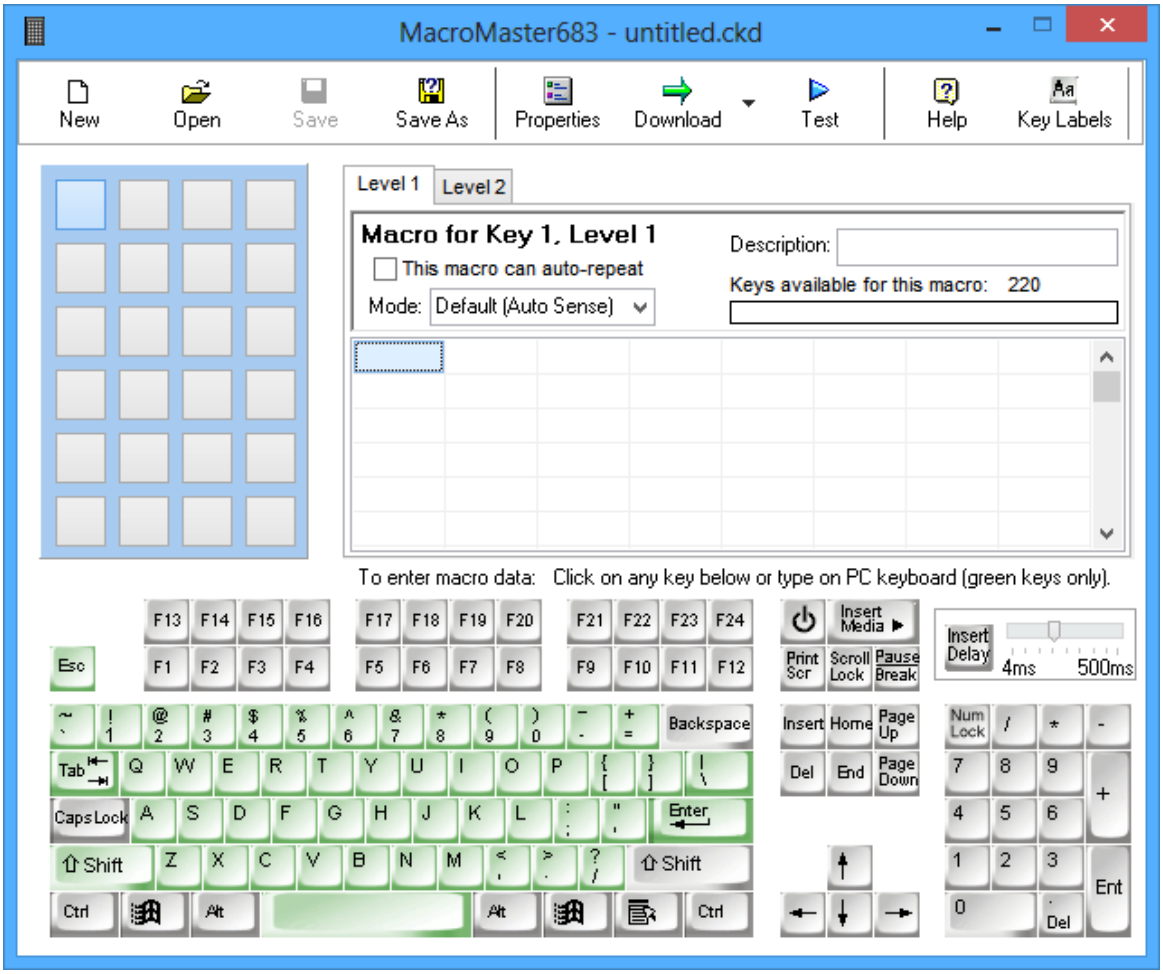
Note: As per Microsoft's new requirement, v6 of MacroMaster places the data files under the user's My Documents rather than in the Program Files area.

2: Using MacroMaster683

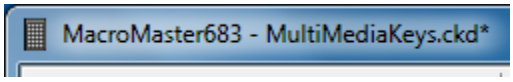
Running MacroMaster683

To program the ControlPad key codes or change the keypad properties use the MacroMaster application. To begin, click on the following (assumes default installation directories):

Start >> Programs >> Genovation >> MacroMaster683 >> Genovation MacroMaster683

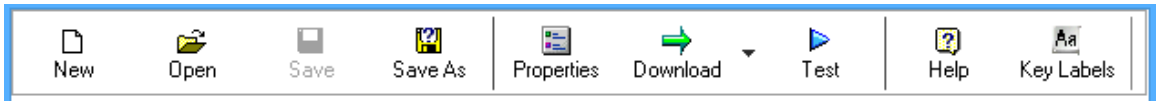


The title bar contains the name of the application and the name of the file that is opened.

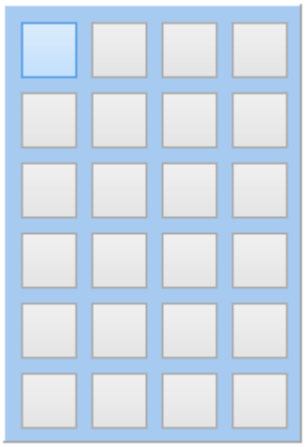


If the file had been modified but not saved, a * character follows the filename. The * will go away once the file is saved or a new file is loaded.

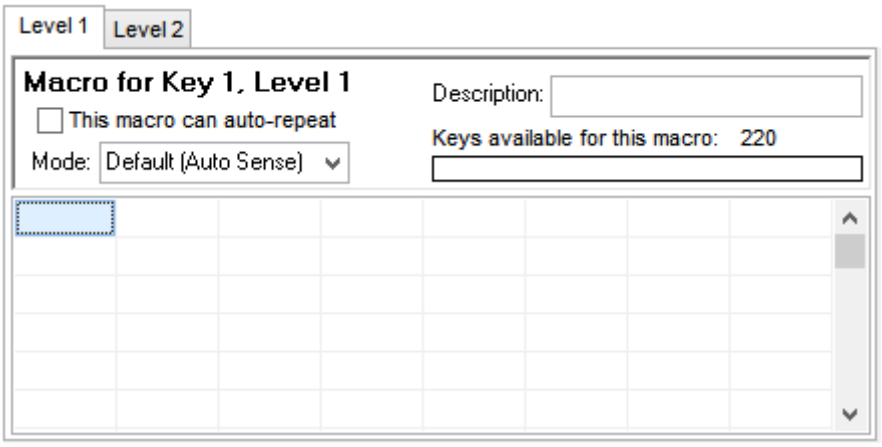
The top row of buttons accesses the major functions of the program.



At the center left of the screen is a Virtual Keypad. It is a series of gray squares that represent the keys on the actual 683 keypad hardware.



To the right of this is a black grid of rectangles is the Key Data Editor. It holds the data associated with each key on the keypad.



Every time you select a new gray keypad key, a new set of black grid cells is available to fill with keystroke data. The bottom of the screen shows a rendition of a PC keyboard. This Virtual PC Keyboard can be used to place the data into the black boxes. You may also type the data in.



Creating and Saving your first CKD file

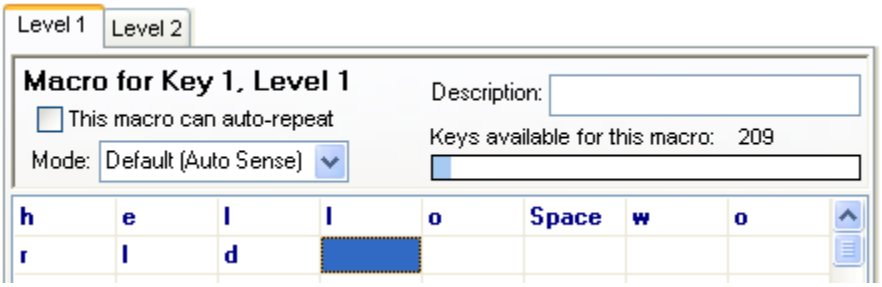
The file type used by MacroMaster is a .CKD file. CKD stands for **C**ustom **K**eypad **D**efinition file. The file is simply a collection of key macros. Its contents are arranged in standard INI file format. To start a new project, click **New** at the top left. This will provide a completely blank template with no keys assigned.

1. Select a key to program. Click on one of the keys on the virtual keypad. Note that whenever you select a new key, the Key Data Editor reflects the key number, for example:

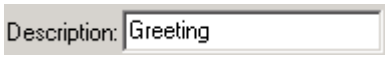
   

   Each key on the virtual keypad can contain about 200 bytes of macro data.

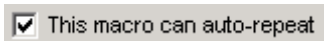
2. Enter some key data. Try typing in the phrase “hello world” (without the quotes). You should see something like the following.

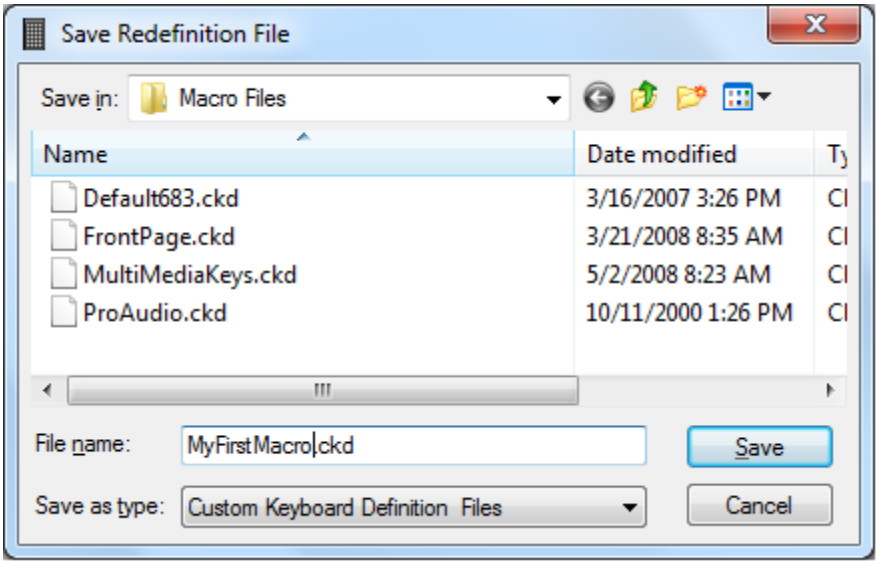
3. Provide a description. Although it’s optional you should consider typing in a short description for your macro. For example:

4. Select repeat mode. If you want the macro to repeat over and over when you hold the keypad key down, click the repeat checkbox:

5. Save the file. Once you are happy with your macro, save the file by clicking on the **Save As** button at the top left. Name the file something appropriate and click **Save**.



Congratulations, you have completed your first macro! It's only one key, but you now understand the basics of macro programming.

The Green Keys

MacroMaster's virtual PC keyboard has keys that are standard gray color and keys that are green. The green keys can be used to enter macro data directly by typing on your real PC keyboard. The gray keys can be used to enter macro data only by clicking the virtual keys with the mouse. The gray keys on your real PC keyboard retain their original function. For instance, the arrow keys allow you to navigate the cells in the black grid.

Correcting Mistakes

If you make a mistake while entering your key macro data, there are several ways to correct it.

- If you want to erase only one cell in the grid, double-click the mouse on that cell. Remember to select the cell at the end of the macro before you begin typing again. The dashed blue box indicates where new data will go.



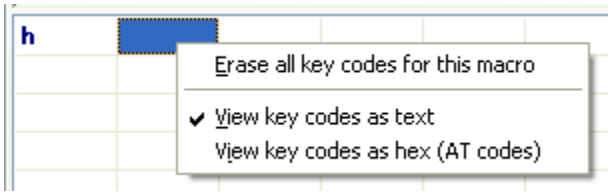
- If you want to erase only one cell in the grid, use the Backspace key on your PC keyboard. Recall that this is a gray key so it does not generate a macro entry.

- For a given macro, if you want to start over, right-click on the grid and select “Erase all key codes for this macro”. This operation only affects the current Level.

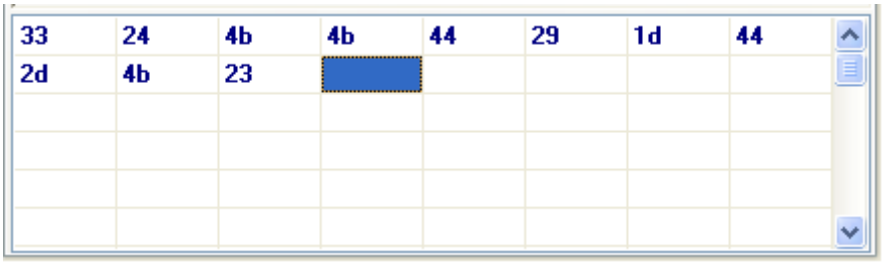


Key Codes

The macro you created at the start of this section is very simple. Each square in the black grid contains exactly one byte. You can reveal the underlying codes at any time by right clicking on the grid and selecting “View key codes as hex”.



MacroMaster displays the codes in AT scan code format (see Appendix) since the keypad supports both PS/2 and USB.



To return to the original (text) view, right click on the grid again and select “View key codes as text”.

Geek Mode On!

Although you may not be aware of it, the ControlPad generates (but does not store) three bytes for each of the cells in the grid above. When you press a key, a “make” code is generated. For an h key the ControlPad (or PC keyboard) sends the byte 33 to the PC. The PC interprets this as “h key is pressed”. When you release the h key, the ControlPad (or PC keyboard) sends a “break” code. For the h key this would be the two-byte pair F0 33. The PC interprets this as “h key is released”.

If you press and hold the h key, the ControlPad (or PC keyboard) generates a series of make codes. This is what causes a key to repeat.

Your ControlPad “compresses” standard alphanumeric key data into one byte. This way your h key only takes up one byte instead of three (the 33 alone instead of the 33 make plus the F0 33 break).

Some keys on the PC keyboard require more than one byte (the extended keys). These are also compressed by the ControlPad, but generally take only 2 bytes instead of the uncompressed 5 bytes they would normally require. For instance the Enter key on the numeric keypad looks like this in text mode 

and like this is hex mode 

. The break code for that key would be E0 F0 5A.

Geek Mode Off!

Modifiers

Modifiers (Shift, Ctrl, Alt, Win) are different again. The ControlPad doesn't compress modifiers.

When used with alphanumeric keys to create uppercase letters or symbols (for example), you must create at least three cells:

- The first is the modifier make. When you click on one of the modifier keys, the key "sticks" down. The data entered in the cell has a D appended to it to indicate that it represents the down (make) code.





- Enter the alphanumeric data you want "modified" (shifted).

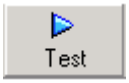
- Click on the modifier that is stuck in the down position. This will release the modifier.

As an example, to create "Hello World!" you would use the shift modifier three times. The first to capitalize H, the second to capitalize W and the third to create the exclamation mark on the 1 key.

LShiftD	h	LShiftU	e	l	l	o	Space
LShiftD	w	LShiftU	o	r	l	d	LShiftD
1	LShiftU						

NOTE: Be careful not to leave a modifier in the stuck down position. This can cause your PC to become stuck in the shifted/modified state. It is a common mistake for ControlPad novices. If you manage to create a stuck key on your PC, try the following steps:

1. Press the same key that is stuck down on your regular PC keyboard. This can cause the PC to release the key. For the modifiers, simply press each of the left and right modifier keys once.
2. If the above fails, try unplugging and re-plugging your keyboard. This will cause the PC to reset its keyboard status.

Always test your macros using the TEST application first. 

SEE ALSO:

There are other ways to use modifiers in combination with each other or alone. Refer to the advanced topic, Macro Modes, later in this document.

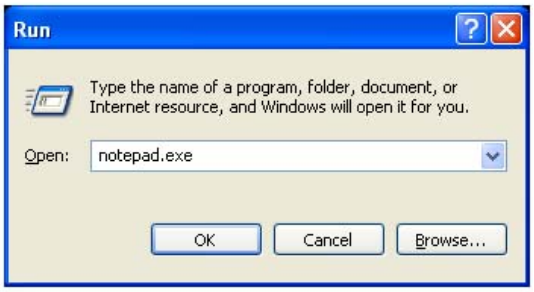
We also have a series of Tips and PDF's on our website that go deeper into advanced programming situations.

The Genovation.com Forum is a good place to ask questions and exchange ideas.

Inserting Delays

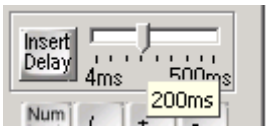
The ControlPad can rapidly send a long series of keystrokes to the PC. At times the PC, no matter how fast, will not be able to keep up. To give the PC a breather, you can insert delays between your keystrokes. An example of where this is useful is when launching programs from the Windows Run command line. If you wanted to launch Notepad.exe on XP by strictly typing, you would press and release the Windows key , followed by r for Run[1], then notepad.exe and finally Enter to activate the OK button.





Compared to your ControlPad, it may take your PC quite a while to perform some of these steps. Inserting delays will make the operation successful every time.

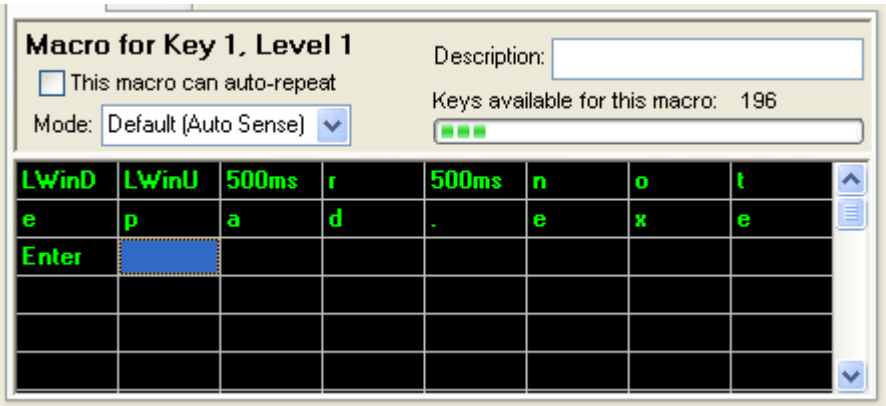
To the right of MacroMaster's virtual PC keyboard is a small box with an Insert Delay button. The delay is adjustable over a range of 4ms to 500ms (half a second) using the slider. Hovering your mouse over the slider tells you how long the inserted delay will be. The default is 200ms (one fifth of a second). Click



[1] In Windows 7 and later you must leave out the "r for Run" and just type notepad.exe then Enter. The Win key is a special key and requires more care. Read the Advanced section for more detail.

the **Insert Delay** button to pause the ControlPad for that amount of time. If you need extremely long delays, click it several times in a row.

For our notepad example above, the finished macro might look like this:



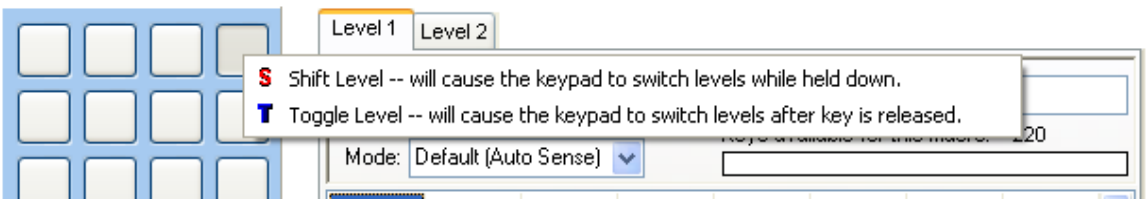
Two-Level Programming (Layers)

On your PC keyboard , the number keys 1 through 9 are also used for symbols !@#$%^&*(). As you know, these symbols are accessed using the Shift key. Similarly, your ControlPad supports two “levels” or “layers” per key.

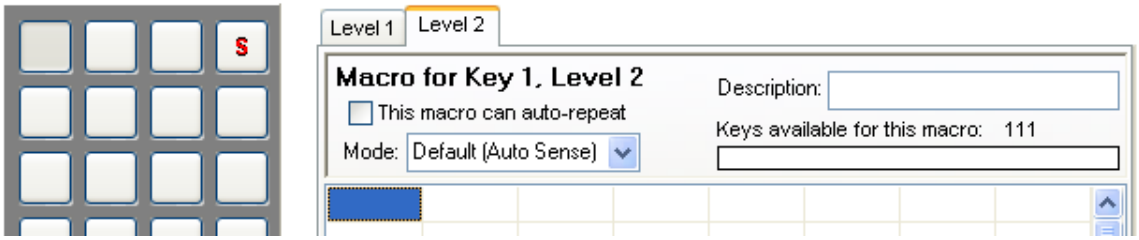
There are approximately 220 bytes of storage available for each key on your Controlpad 683 keypad. If you only use Level 1 for a given key, you may use all 220 bytes for that Level 1 macro on that key. If you use Level 2 then the macro space is roughly split in half. In that case both Level 1 and Level 2 can have about 110 bytes.

In order to use the second level on your ControlPad, you must first assign an access key (a level shift and/or level toggle key) and you must fill in the data for both levels.

1. Assigning the 2nd level access key. Choose a key on MacroMaster’s virtual keypad and then right-click that key. Select whether you want the level access to be Shift (requires that you hold the shift key down) or Toggle (the level switches back and forth every time you press the toggle key).



2. Fill in the 2nd level data. Click on the **Level 2** tab that is located right above the words **Macro for Key 1, Level 1.** The words should change to **Macro for Key 1, Level 2** and the virtual keypad background should change from blue to gray. You now have access to a new grid of 111 bytes for your 2nd level macro.



You may have up to two level shifts and toggles. The keys that perform the level shift/toggle function may also contain macros, but it's not very common.

The next section describes how to assign an LED indicator so that you can see which level is active.

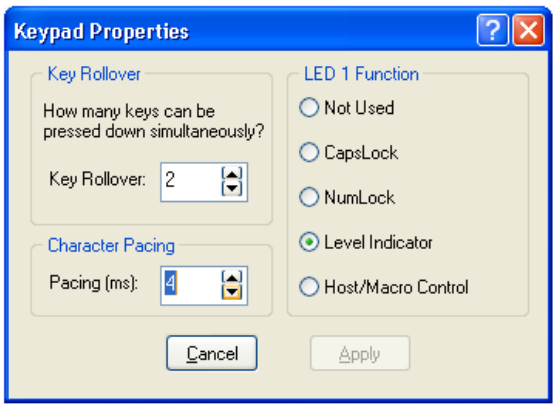
NOTE: To use a level shift key, a minimum of 2-key rollover **must** be programmed via the Keypad Properties panel since the shift level key must be pressed and held along with another key to access that key's second level macro. See the next section for information regarding Key Rollover.

Keypad Properties

There are several global ControlPad settings that can be modified to suit your application. Click on the **Properties** button. 

This will open up the Properties panel:

683:



1. Key Rollover. This parameter controls how many keys may be pressed at the same time and be accepted by the keypad. For most control applications, 1-key rollover is recommended. If the ControlPad is used for higher speed data entry or you are using two levels, then 2-key rollover may be preferable.

   - o 1-Key: When one key is held down, the keypad will recognize no other key(s).
   - o 2-Key or more: Two (or more) keys pressed and held at the same time will be recognized by the keypad. Keys beyond the rollover number will be ignored. A minimum of two-key rollover is required when using a shift level access key or double size keys.

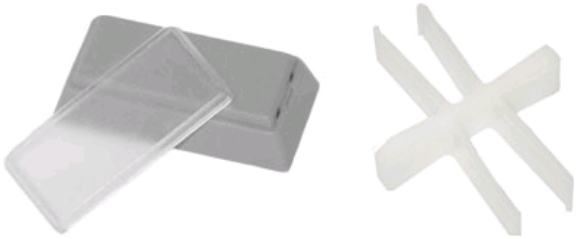
   The 683 keypad has diode-per key technology allowing for up to 6 keys down at a time with no ghosting.

2. Inter-character Pacing. This parameter inserts a short pause between **all** bytes sent to the PC. The range for this parameter is 2ms to 20ms. It has the effect of slowing down the typing slightly in case you are working with a slow PC.

3. LED Function. You may select one of 5 modes for the LED in your ControlPad. The default is for the LED to perform no function (Not Used). You may assign the LED to duplicate the PC's internal LED (Caps Lock or Num Lock) or you may assign it to illuminate when the keypad's own 2nd level is active (Level Indicator). Finally, you may also control the LED from within a macro or from the Host PC.

Double Size Keys

Genovation sells an accessory kit for those who wish to utilize double size keys.



When programming double size keys it is recommended to program only one of the two keys that are combined into the double size key. In addition, you should select a key rollover of 2 on the Keypad Properties page.

Keycap Labels

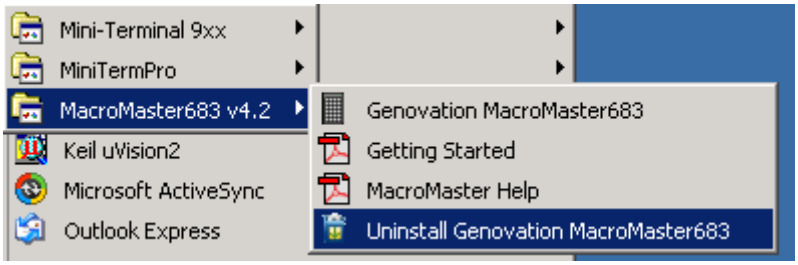
Click on the **Key Labels** button 

. The ControlPad keys have clear lenses that allow for labels may be inserted under the lens to indicate the key function. Several templates are provided for Wordpad, Word Paint and Excel in the "Keycap Files" folder. Text, images or icons may be inserted in the template. The resulting file can be printed and saved. The labels can then be cut with scissors and placed under the lens caps. Don't overlap the edge of the keys with the paper (this can stress the lens cap).

Uninstalling/Removing MacroMaster Completely

Before you uninstall the application you should backup and remove any .CKD files or keycap labels you have created. This will allow the uninstaller to completely remove the MacroMaster application and all folders. Once you have done that, click on the following (assumes default installation path):

Start >> Programs >> Genovation >> MacroMaster683 >> Uninstall MacroMaster683



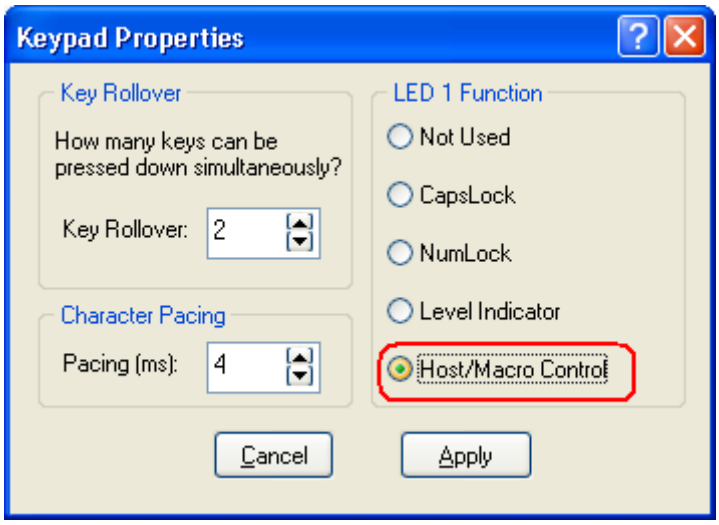
Customization Is Standard

The ControlPad product line has been designed with customization in mind. Contact our sales or technical support staff for full-custom or semi-custom variations of our products.

3: Advanced Topics

LED Programming

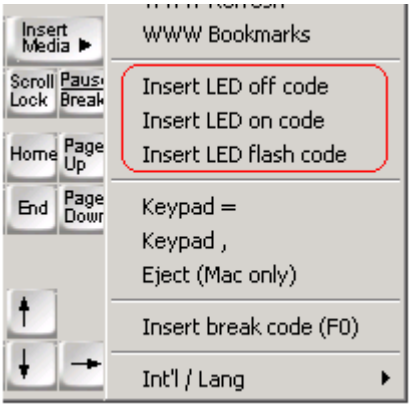
Starting with firmware version 5.0, the LED state can be controlled from within a macro or from the Host PC.



Macro LED Control:

To insert an LED state code in a macro, click the Insert Media key. 

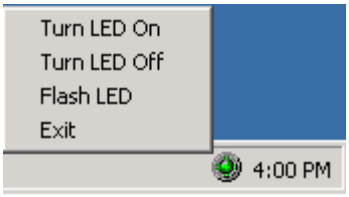
At the bottom of the pop-up list are the three choices for controlling the LED from within a macro.



If you are using more than one LED state in a given macro you should also insert some delays so that the LED is visible. If you are using separate keys to turn the LED on and off, then no delay is required.



Host LED Control:



Controlling the LED from the Host PC over USB will require software on the PC side to control the LED state (on, off or flashing). Some C language demonstration programs are available from Genovation that show how to control the LED from a PC. A sample application is included that allows control of the LED from the system tray using a mouse or from a completely different application (using messaging to the supplied system tray application). A DLL is also provided.

You can send a message to the supplied tray icon application using the form shown here:

```
// Lparam: 06 = flash the led, 05 = turn it on, 04 = turn it off.
HANDLE Wnd;

Wnd = FindWindow(NULL, "Genovation ControlPadLED");
if(Wnd)
   PostMessage(Wnd, WM_APP+0x0683, (WPARAM)0x00E4, (LPARAM)0x0006);
```

Alternatively, using the demonstration tray application as a guide, you can create your own application that accesses the keypad over USB directly. Contact Genovation technical support or visit our website for more information on this feature.

Multimedia Keys

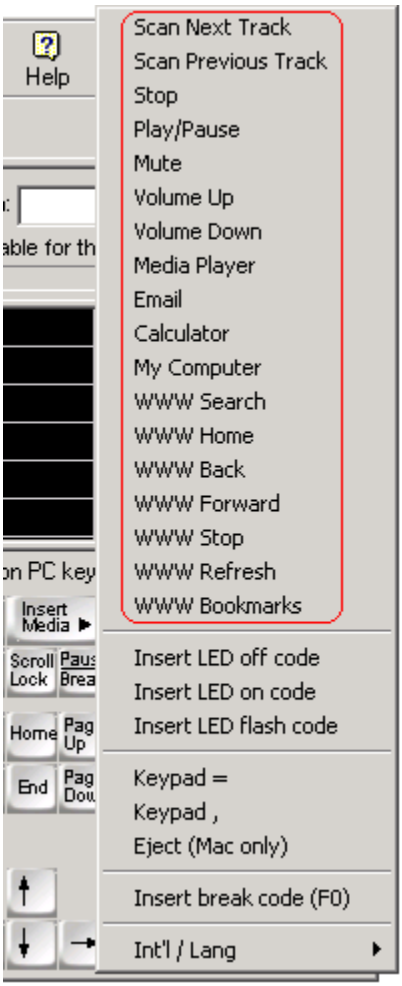
Starting with firmware version 5.1, the ControlPad 683 fully supports the following multimedia keys in both USB and PS/2 environments.

PS/2	USB	Comment
E0 4D	00B5	Scan Next Track*
E0 15	00B6	Scan Previous Track*
E0 3B	00B7	Stop*
E0 34	00CD	Play/Pause*
E0 23	00E2	Mute*
E0 32	00E9	Volume Up*
E0 21	00EA	Volume Down*
E0 50	0183	Media Select*
E0 48	018A	Mail*
E0 2B	0192	Calculator*
E0 40	0194	My Computer*
E0 10	0221	Web Search*

E0 3A	0223	Web Browser/Home*
E0 38	0224	Web Back*
E0 30	0225	Web Forward*
E0 28	0226	Web Stop*
E0 20	0227	Web Refresh*
E0 18	022A	Web Favourites*
E0 3B	00B7	USB Eject**

* Please note that the Multimedia values are only available with firmware v5.10 or higher.
** USB Eject requires firmware version 5.20. Only Mac supports USB Eject at this time.
Not all operations are available on all operating systems.

In order to insert a multimedia key into a macro, select the key, select the cell and then click on the Insert Media key. Click on the desired multimedia action.



Even More Keys

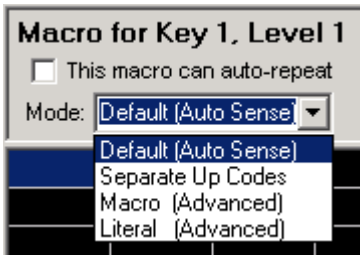
As of version 5.20 a few more keys, defined by the USB specification, have been added. They are also added to a macro using the Insert Media key. 

PS/2	USB	Comment
0F	67	Keypad =*
6D	85	Keypad , (Brazil Keypad .)*
51	87	Int'l 1* (Ro)
13	88	Int'l 2 (a: Katakana/Hiragana)*
6A	89	Int'l 2 (b: Yen)*
64	8A	Int'l 4 (Henkan)*
67	8B	Int'l 5 (Muhenkan)*
27	8C	Int'l 6 (PC9800 Keypad ,)*
63	92	Lang 3 (Katakana)*
62	93	Lang 4 (Hiragana)*
61	64	Europe 2*

* Please note that these values are only available with firmware v5.20 or higher.
Not all operations are available on all operating systems.

Keypad Macro Modes

The ControlPad plays back macros for the keys in one of three modes. Every macro can have it's own mode and the setting is adjusted via the **Mode** drop down box:



Note that the three modes are Separate Up Codes, Macro Mode and Literal Mode. **The first item on the list, Default (Auto Sense) is not a mode in itself**. The default setting actually tells MacroMaster to choose one of the next two modes for you automatically (Separate Up Codes or Macro Mode). Normally MacroMaster will make the correct decision for you, but there are times you may want to override this setting and specify one of the three modes yourself.

If you find that your macro is not operating as you intended, you may have to dig under the hood a little to either select the correct mode and/or modify some of the codes in your macro. The following section describes the three modes in detail.

Modes: Separate Up Codes

This mode is used to generate combinations of keys or individual keys that may be used in combination with other keys. In this mode your macro supplies the standard code for:

- All modifier key make codes (**only**)
- Alphanumeric make codes only

In this mode the make codes are all played at once on ControlPad key down (and repeats if enabled). On ControlPad key up, the macro is rewound to the beginning and this time the break codes are generated. For musicians **this is like a "chording" style**. If you had a macro containing the letters t h and e, then it would be implemented as: *t make, h make, e make, … repeat(s) … t break, h break, e break.*

This is not normal for the PC because it allows multiple alphanumeric keys to be pressed at once (which can have its uses, though rare). It works well for true single keys or modifiers or for combinations of modifiers, etc.

If you only have a single key in your macro, this is the best way to implement it. The "Default (Auto Sense)" feature of MacroMaster selects this automatically when it detects a macro that is a single key.

Modes: Macro

This mode is used to emulate normal typing. Or more accurately, the typing that a "two-fingered peck and poke" typist would do. In this mode your macro supplies the standard code for:

- All modifier key make and break codes
- Alphanumeric make codes only

When the keypad plays the macro back, the modifier codes are played literally but the alphanumeric codes are "uncompressed" to create make codes followed by break codes. **The alphanumeric codes are played one at a time.** For our earlier Hello World example the keypad would generate the following keys: *shift make, h make, h break, shift break, e make, e break, etc…*

All of the operations described above happen on the ControlPad key down (and repeats, if enabled). Nothing happens when you release the key on your ControlPad.

The "Default (Auto Sense)" feature of MacroMaster selects this automatically when it detects a macro that has more than a single key.

Modes: Literal

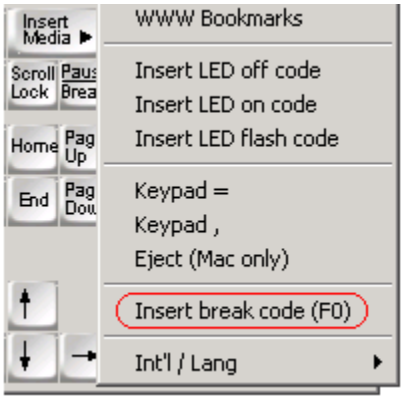
In this mode you know exactly what you want, byte-for-byte. In this mode your macro supplies:

- Everything

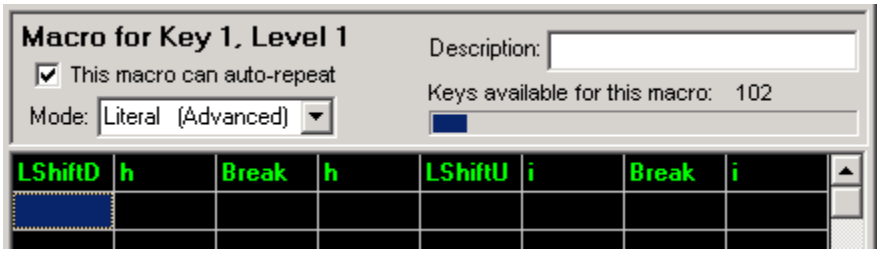
The macro is played literally on ControlPad key down (and repeats). Nothing happens on ControlPad key up.

There are two ways to edit the codes literally. The first method is to edit the CKD (INI) file by hand. You will need to look at the key table in the appendix to enter the correct codes. The second method is to use MacroMaster, though it may have some limitations since there is no "hex editor". The most important tool here is the "Manually Insert a break code" operation. This is selected by clicking on the Insert Media key.



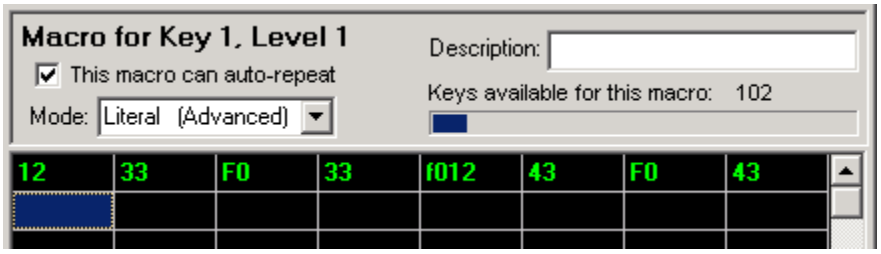


As a simple example, here is the literal macro for "Hi" (not including the quotes):



Remember that you need to supply all of the break codes too. So for each key you will have make code, F0, make code.

Here is the hex view of the same macro:



The above macro was all done inside MacroMaster. The CKD file entry for this macro looks like this:

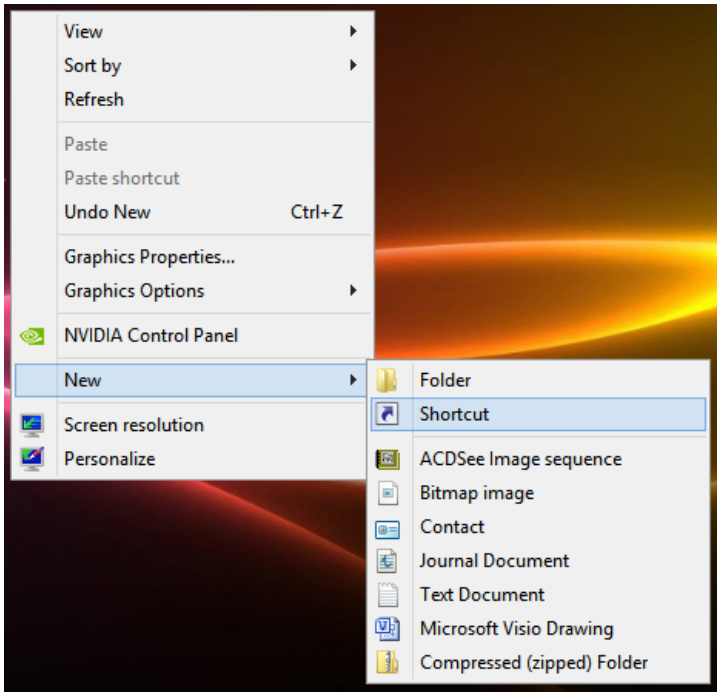
```
Level_1_Codes=1233f033f01243f043
```

Rapid Reconfiguration

If you would like to have several keypad layouts defined, and quickly switch between them, then follow the steps belowto create a shortcut for each layout.

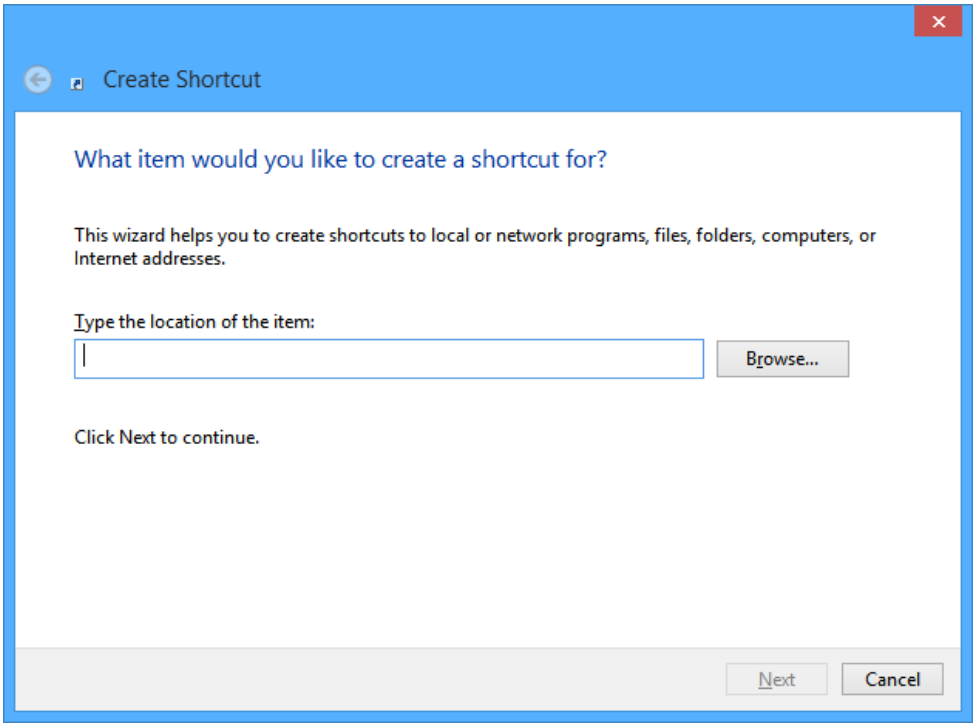
- Build your keypad layout with MacroMaster and test it with your ControlPad.

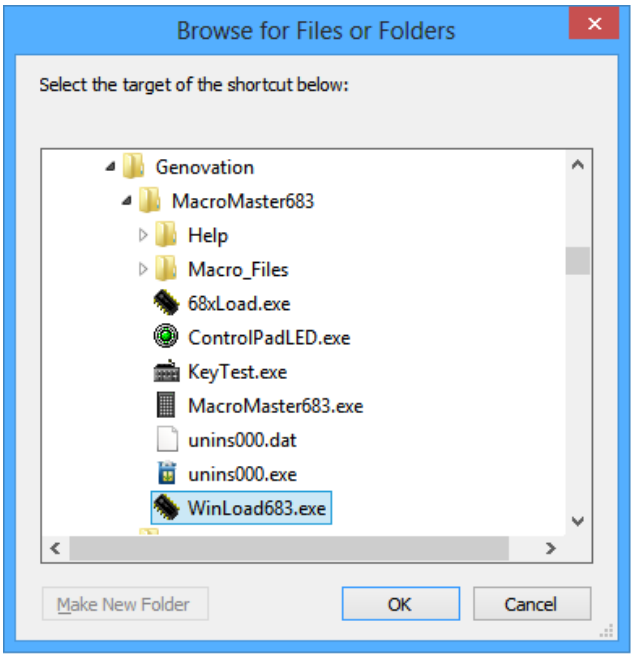
- Create a new shortcut in a handy location. For instance right-click on the desktop, and choose New followed by Shortcut.



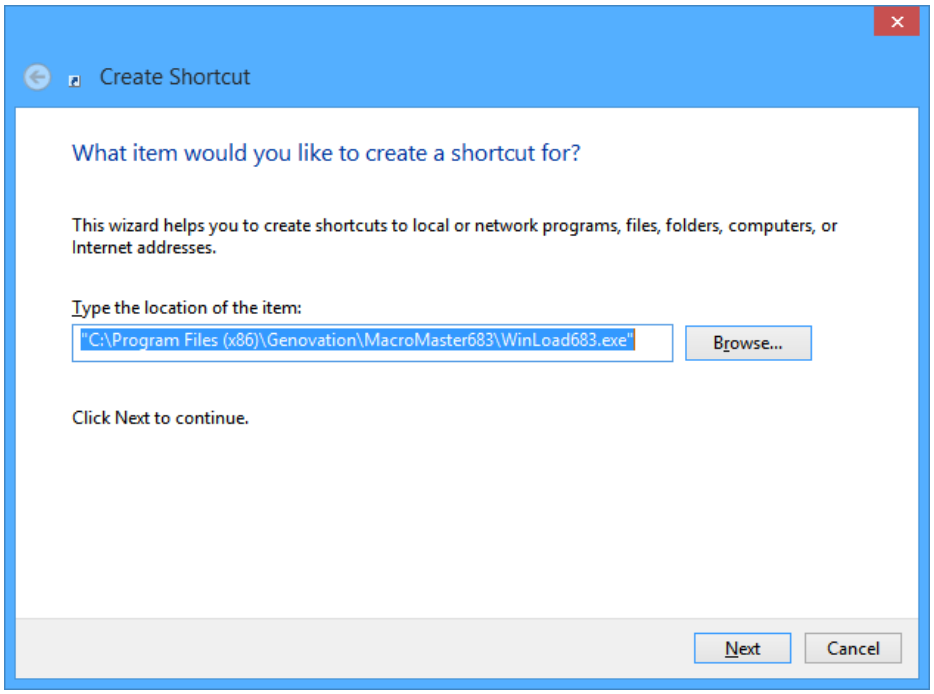
- Browse to the MacroMaster program folder and choose WinLoad683.exe. The location will normally be

  C:\Program Files\Genovation\MacroMaster683.exe
  or
  C:\Program Files (x86)\Genovation\MacroMaster683\WinLoad683.exe

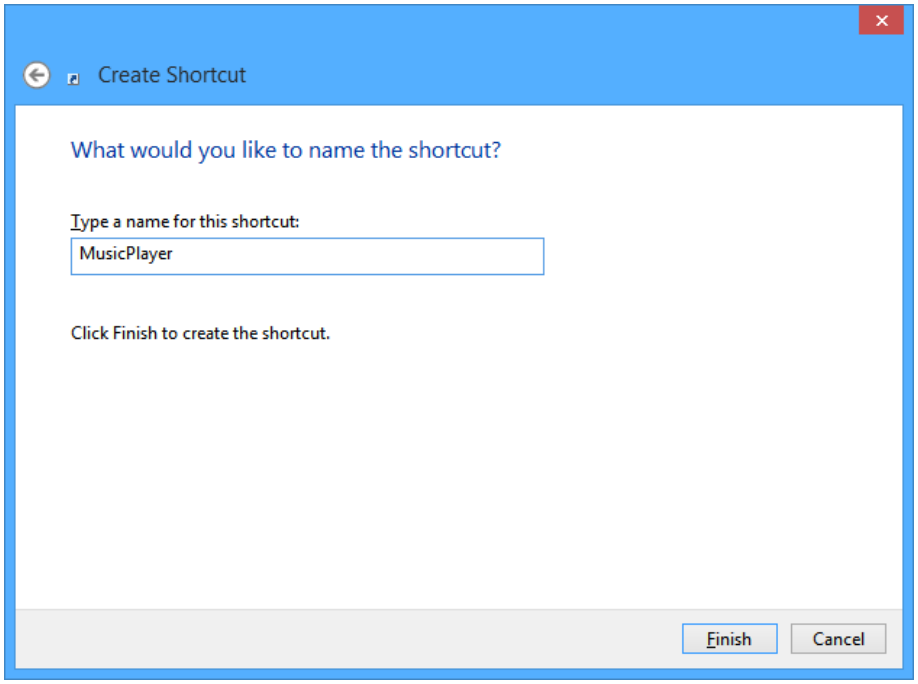




- Click on OK and then Next.

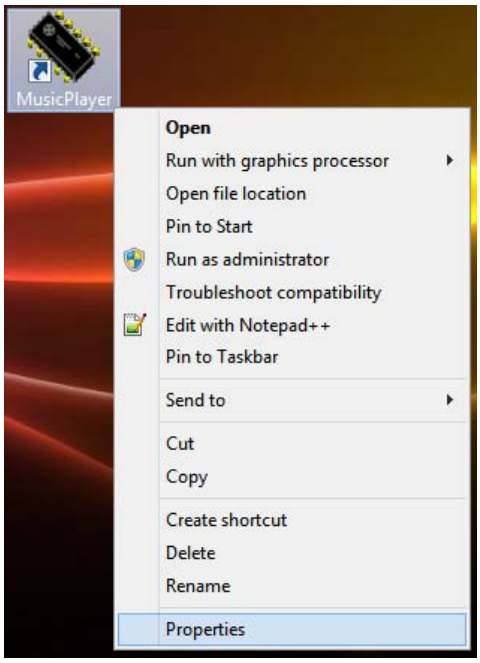


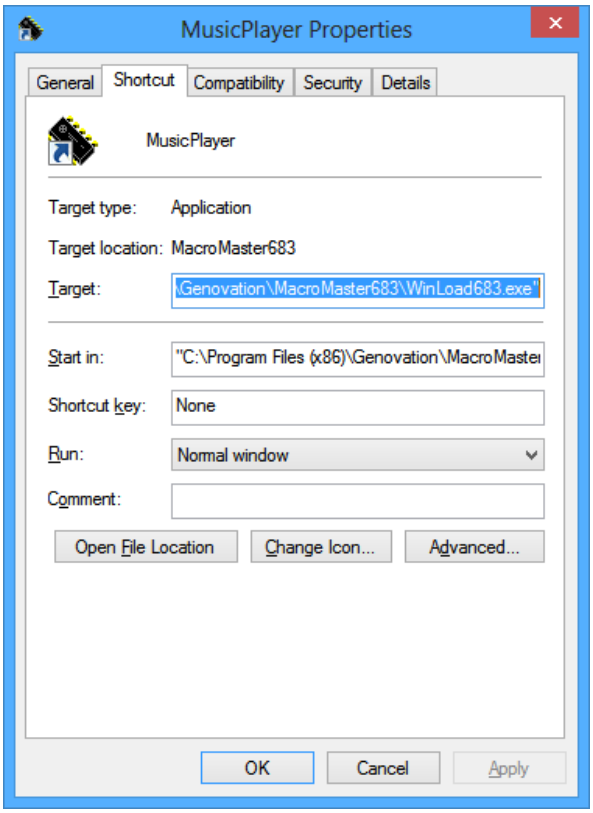
- Enter a suitable name for the shortcut, for instance MusicPlayer.



- Click Finish. You should now have a new shortcut called MusicPlayer.

- Next we have to tell the shortcut which file to download. Right click on the shortcut and click on Properties.





- You need to edit the Target line to append the file that needs to be downloaded. This will be the name of your keypad definition file, but you need to include the path and quotes such as:

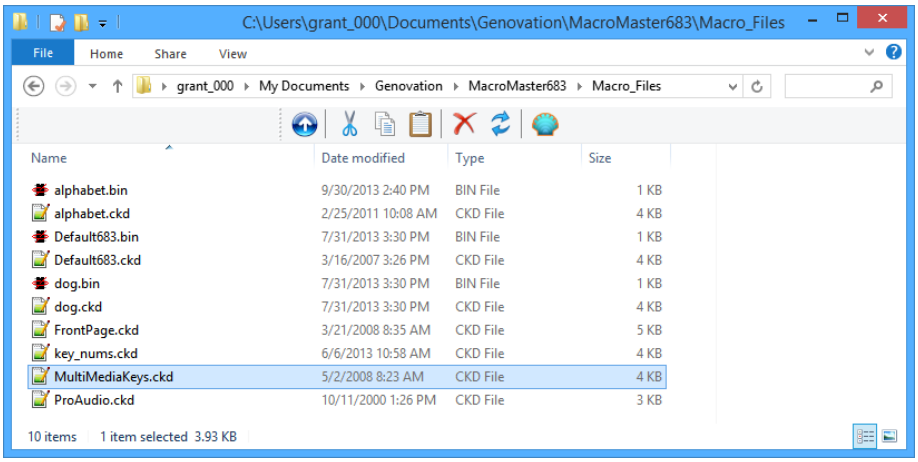
"C:\Users\YourName\Documents\Genovation\MacroMaster683\Macro_Files\MultiMediaKeys.ckd"

or

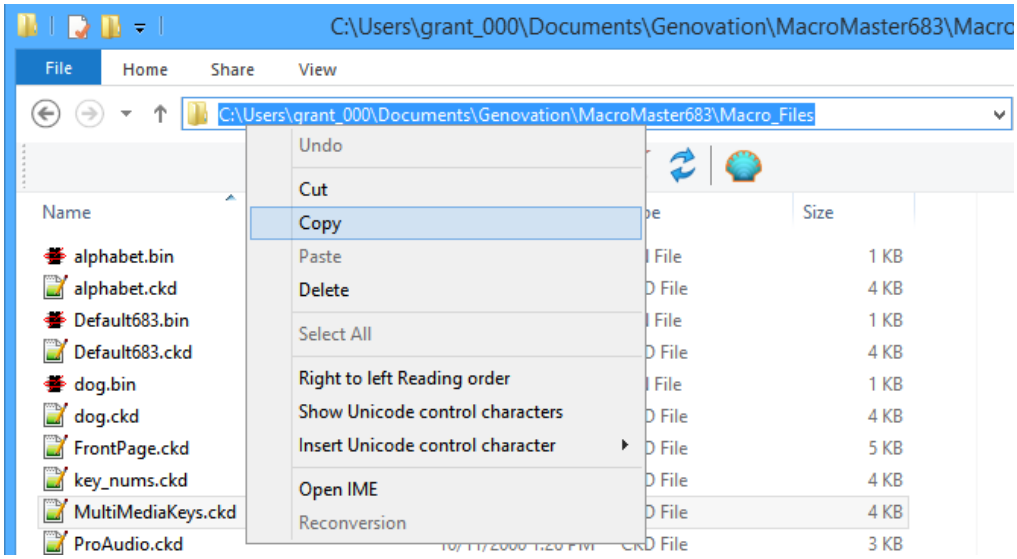
"\\SERV1\Users\UserName\My Documents\Genovation\MacroMaster683\Macro_Files\MultiMediaKeys.ckd"

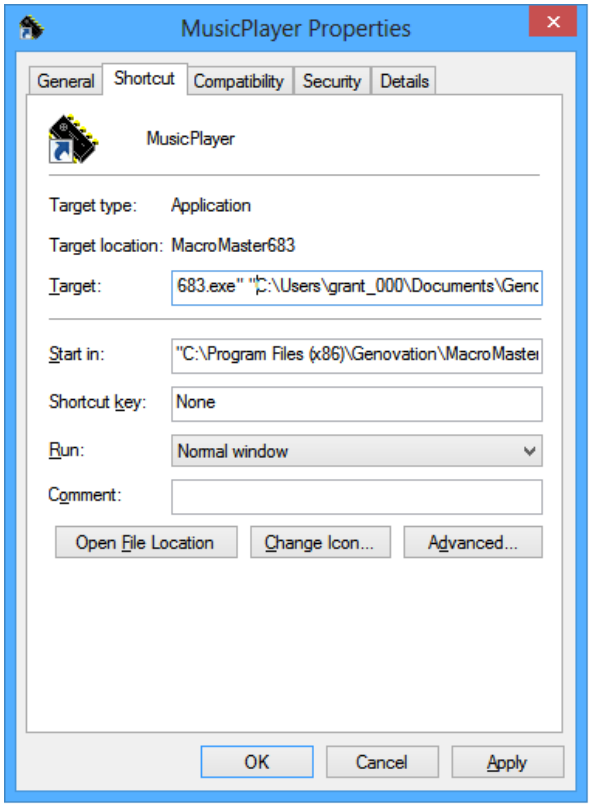
or

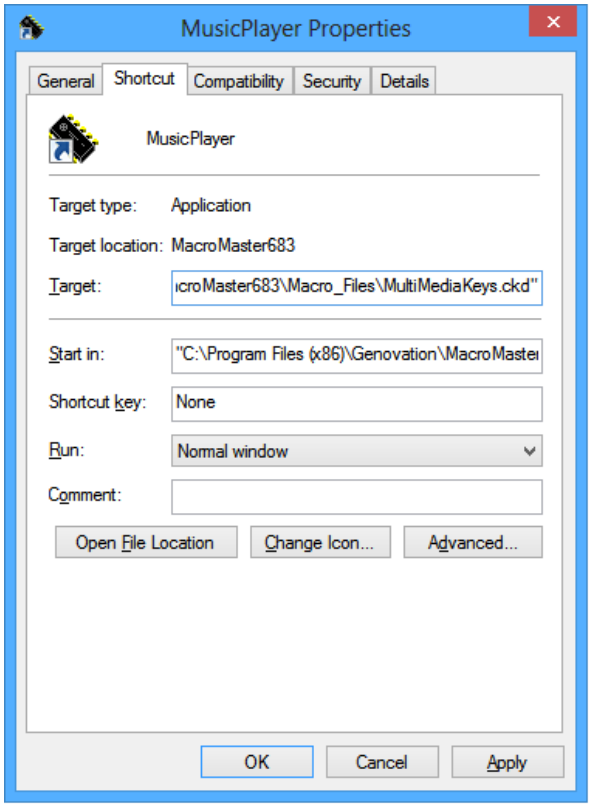
"C:\Documents and Settings\UserName\My Documents\ Genovation\MacroMaster683\Macro_Files\MultiMediaKeys.ckd"



If you click on the folder icon in the address bar you can see the path and then copy it. You will still need to add the filename at the end and surround the whole thing in quotes. Make sure there is a space between the EXE part and the CKD part.







- Finally, click on OK.

Now your shortcut is complete. When you double-click on it, WinLoad will launch and it will send the MultiMediaKeys.ckd file to the ControlPad. After the download is complete the ControlPad will reboot so wait a few moments while the PC re-initializes the connection.

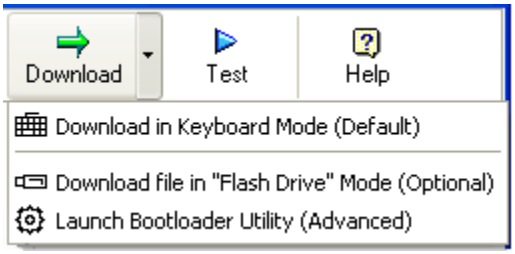
Drag n Drop Programming (v6+)

If you have already created your keypad definition file, you can use File Copy or Drag-n-Drop to send it to your keypad. This technique requires using the rear panel switch to place the keypad in "USB Flash Drive" configuration[2].

Move the rear panel switch from **Keypad** operation to **USB Flash Drive Mode**. You will see the light flicker and eventually turn **solid red**. The first time you do this your computer will display the new USB device balloon. Once the LED becomes solid red, you should have a new disk drive called CONTROLPAD available to you. You can copy your **.BIN** file from your Macro Files directory to the CONTROLPAD drive. Note that it must be the .BIN file, not the .CKD file.

Once the file has been copied over, move the switch back to the Keypad position. It may take a while for the keypad to process the .BIN file, and as it does so you may see the LED flickering blue/red. Once processing is complete, the keypad will resume normal operation with your new definitions installed.

This method is also available from MacroMaster. Place the keypad in Flash Drive Mode using the rear panel switch (as above). Click on the small down arrow on the right hand side of the Download button.



Select **Download file in "Flash Drive" Mode**. This will send the current file from the editor to the Flash Drive. Once copied, moved the rear panel switch back to Keypad and wait until the file is processed.

[2] Do not copy any other files to the keypad except .BIN files.

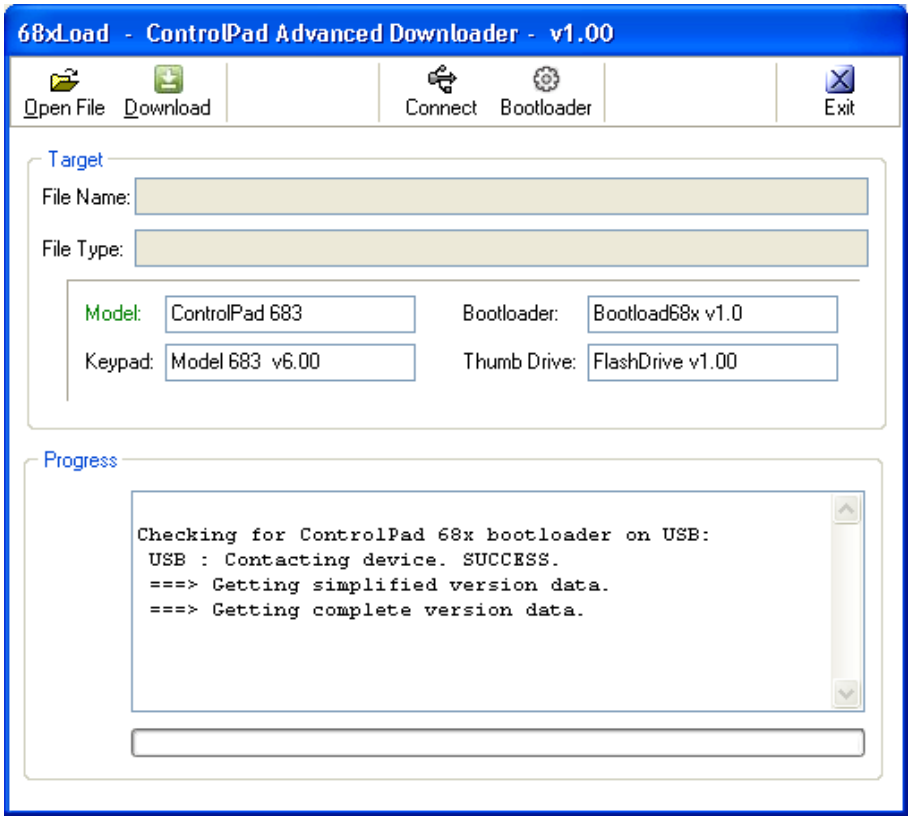
Reflashing the Firmware (v6+)



A utility program (68xLoad.exe) is included that allows you to reflash the firmware as well as transfer CKD files to the keypad using an alternalte USB method. Whether reflashing the firmware or transferring the CKD file, you need to place the keypad in **Bootloader mode**.

To put the keypad in bootloader mode, disconnect the keypad from the PC, press and hold the two top corner keys indicated. Plug the keypad back into the PC while holding the two keys down. Once plugged in you can release the two keys. The LED should be **flashing red**.

Launch the 5Load.exe utlilty program. Click on the **Connect** button. If you don't see the version information filled-in, then the keypad is not connected in bootloader mode. Follow the steps above to enable bootloader mode.



Using **Open File** choose a file type: either a .UPG firmware upgrade file or a .CKD definition file. Once the file is loaded into the utility program, you simply click on **Download** and the file will be copied over to the keypad.

4: Technical Specifications

	ControlPad 683
Number of Keys	24 relegendable mounted on an industrial strength metal sub panel.
Key Type	Gold plated industrial quality Cherry MX key switches. Travel 3.5 mm (0.14"). Operating force is 0.686N (79gf). Life 5 X 10^7 Cycles.
USB Port	USB 1.0, 1.1, 2.0 and 3.0 compatible. HID keyboard and multimedia. USB Flash drive mode.
Keyboard Port	PS/2 version available as special order only.
Wedge Capability	PS/2 version available as special order only.
Power	Bus-powered. No external power supply required.
Number of LEDs	1 (dual color)
LED Modes	CapsLock, NumLock, Level, Host/Macro control
Temperature	0C to 70C (32F to 158F)
Dimensions	6 x 3.75 x 1.25 (inches)
Weight	1.1 lbs. shipping weight
Macro Storage	Two levels, 111 bytes per level, 222 bytes per key
Level shift keys	0, 1 or 2 assignable.
Level toggle keys	0, 1 or 2 assignable.
Rollover	1 to 6
Storage Type	High reliability Flash
Endurance	100,000 write cycles
Data Retention	100 years
Program Method	Create .CKD in MacroMaster683.exe Windows application (can also use text editor)
Download Method	Windows download using WinLoad.exe All other OS's using .BIN file copy (drag n drop)
Driver Requirement	None (uses OS native drivers)
MacroMaster OS	Requires Microsoft XP, Win7 or Win8
Keypad OS	USB hardware supports all OS types (Win, Mac, Linux)
Will boot PC in standalone mode	Yes

A: Appendix

Scan Code Table

All values are hexadecimal AT (PS/2) scan codes.

Function	Make Code(s)	Break Codes
F9	01	F0 01
F5	03	F0 03
F3	04	F0 04
F1	05	F0 05
F2	06	F0 06
F12	07	F0 07
F13 (new)	08	F0 08
F10	09	F0 09
F8	0A	F0 0A
F6	0B	F0 0B
F4	0C	F0 0C
TAB	0D	F0 0D
` ~	0E	F0 0E
Keypad =	0F	F0 0F
Function	**Make Code(s)**	**Break Codes**
F14 (new)	10	F0 10
L Alt	11	F0 11
L Shift	12	F0 12
Int'l 2 (a)	13	F0 13
L Ctrl	14	F0 14
q Q	15	F0 15
1 !	16	F0 16
F15 (new)	18	F0 18
z Z	1A	F0 1A
s S	1B	F0 1B
a A	1C	F0 1C
w W	1D	F0 1D
2 @	1E	F0 1E
Function	**Make Code(s)**	**Break Codes**
F16	20	F0 20
c C	21	F0 21
x X	22	F0 22
d D	23	F0 23
e E	24	F0 24
4 $	25	F0 25
3 #	26	F0 26
Int'l 6	27	F0 27

F17	28	F0 28
Space	29	F0 29
v V	2A	F0 2A
f F	2B	F0 2B
t T	2C	F0 2C
r R	2D	F0 2D
5 %	2E	F0 2E
F13 (old)	2F	F0 2F
Function	**Make Code(s)**	**Break Codes**
F18	30	F0 30
n N	31	F0 31
b B	32	F0 32
h H	33	F0 33
g G	34	F0 34
y Y	35	F0 35
6 ^	36	F0 36
F14 (old)	37	F0 37
F19	38	F0 38
m M	3A	F0 3A
j J	3B	F0 3B
u U	3C	F0 3C
7 &	3D	F0 3D
8 *	3E	F0 3E
F15 (old)	3F	F0 3F
Function	**Make Code(s)**	**Break Codes**
F20	40	F0 40
, <	41	F0 41
k K	42	F0 42
i I	43	F0 43
o O	44	F0 44
0)	45	F0 45
9 (	46	F0 46
F21	48	F0 48
. >	49	F0 49
/ ?	4A	F0 4A
l L	4B	F0 4B
; :	4C	F0 4C
p P	4D	F0 4D
- _	4E	F0 4E
Function	**Make Code(s)**	**Break Codes**
F22	50	F0 50
Int’l 1	51	F0 51
‘ “	52	F0 52
[{	54	F0 54
= +	55	F0 55

F23	57	F0 57
Caps Lock	58	F0 58
R Shift	59	F0 59
Enter	5A	F0 5A
] }	5B	F0 5B
\ |	5D	F0 5D
F24	5F	F0 5F
Function	**Make Code(s)**	**Break Codes**
Europe 2	61	F0 61
Lang 4	62	F0 62
Lang 3	63	F0 63
Int'l 4	64	F0 64
Backspace	66	F0 66
Int'l 5	67	F0 67
Keypad 1	69	F0 69
Int'l 2 (b)	6A	F0 6A
Keypad 4	6B	F0 6B
Keypad 7	6C	F0 6C
Keypad ,	6D	F0 6D
Function	**Make Code(s)**	**Break Codes**
Keypad 0	70	F0 70
Keypad .	71	F0 71
Keypad 2	72	F0 72
Keypad 5	73	F0 73
Keypad 6	74	F0 74
Keypad 8	75	F0 75
Escape	76	F0 76
Num Lock	77	F0 77
F11	78	F0 78
Keypad +	79	F0 79
Keypad 3	7A	F0 7A
Keypad -	7B	F0 7B
Keypad *	7C	F0 7C
Keypad 9	7D	F0 7D
Scroll Lock	7E	F0 7E
Function	**Make Code(s)**	**Break Codes**
F7	83	F0 83
Function	**Make Code(s)**	**Break Codes**
R Alt	E0 11	E0 F0 11
R Ctrl	E0 14	E0 F0 14
L Win	E0 1F	E0 F0 1F
R Win	E0 27	E0 F0 27
App	E0 2F	E0 F0 2F
Power	E0 37	E0 F0 37
Keypad /	E0 4A	E0 F0 4A

Keypad Enter	E0 5A	E0 F0 5A
Wake	E0 5E	E0 F0 5E
End	E0 69	E0 F0 69
Left	E0 6B	E0 F0 6B
Home	E0 6C	E0 F0 6C
Insert	E0 70	E0 F0 70
Delete	E0 71	E0 F0 71
Down	E0 72	E0 F0 72
Right	E0 74	E0 F0 74
Up	E0 75	E0 F0 75
Page Down	E0 7A	E0 F0 7A
Page Up	E0 7D	E0 F0 7D

Media Function	**Make Code(s)**	**Break Codes**
Search	E0 10	E0 F0 10
Prev Track	E0 15	E0 F0 15
WWW Favorites	E0 18	E0 F0 18
Eject (mac)	E0 1A	E0 F0 1A
WWW Refresh	E0 20	E0 F0 20
Volume Down	E0 21	E0 F0 21
Mute	E0 23	E0 F0 23
WWW Stop	E0 28	E0 F0 28
App 1 (Calc)	E0 2B	E0 F0 2B
WWW Forward	E0 30	E0 F0 30
Volume Up	E0 32	E0 F0 32
Play/Pause	E0 34	E0 F0 34
WWW Back	E0 38	E0 F0 38
WWW Home	E0 3A	E0 F0 3A
Stop	E0 3B	E0 F0 3B
App 2 (My PC)	E0 40	E0 F0 40
Mail	E0 48	E0 F0 48
Next Track	E0 4D	E0 F0 4D
Media Select	E0 50	E0 F0 50

Additional information can be found in “translate.pdf” (courtesy of Microsoft) and “Hut1_12.pdf” (courtesy of USB.org).