



ViSi-Genie Customised Keyboard

DOCUMENT DATE: **25th April 2020**
DOCUMENT REVISION: **1.2**



Description

This Application Note explains how to customise a keyboard.

This application note requires:

- Workshop4 has been installed according to the document Workshop4 Installation;
- The user is familiar with the Workshop4 environment and with the fundamentals of ViSi-Genie, as described in Workshop4 User Guide and ViSi-Genie User Guide;
- When downloading an application note, a list of recommended application notes is shown. It is assumed that the user has read or has a working knowledge of the topics discussed in these recommended application notes.

A ViSi-Genie project is provided as example to help you along this application note.

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Application Overview

In this application note, the application is a RFID security gate with two screens.

From a functional point of view,

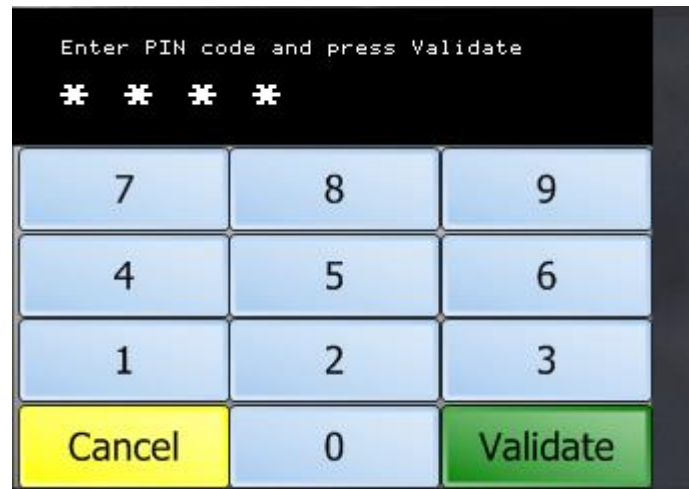
- The first screen asks for the RFID card to be presented,
- The second screen displays a keyboard and asks for the PIN code.

The project includes on two forms and four objects:

- Form0 with one object, a label:



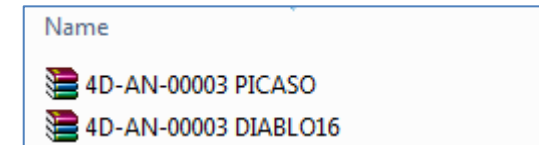
- Form1 with three objects:
 - A label
 - A string
 - A customised keyboard.



The application note focuses on how to customise the keyboard.

Setup Procedure

This application note comes with a zip file which contains two ViSi-Genie projects.



For instructions on how to launch Workshop4, how to open a ViSi-Genie project, and how to change the target display, kindly refer to the section “**Setup Procedure**” of the application note:

ViSi Genie Getting Started – First Project for Picaso Displays

ViSi Genie Getting Started – First Project for Diablo16 Display Modules

ViSi Genie Getting Started – First Project for Pixxi Display Modules

Create a New Project

Create a New Project

For instructions on how to create a new ViSi-Genie project, please refer to the section “**Create a New Project**” of the application note

ViSi Genie Getting Started – First Project for Picaso Displays

ViSi Genie Getting Started – First Project for Diablo16 Displays

The Keyboard Object

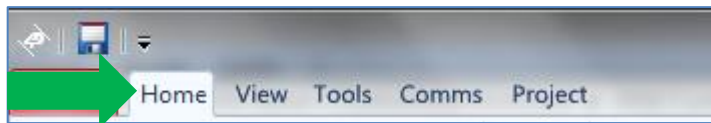
You can load the example...

Example: 4D-AN-00003 PICASO or 4D-AN-00003 DIABLO16

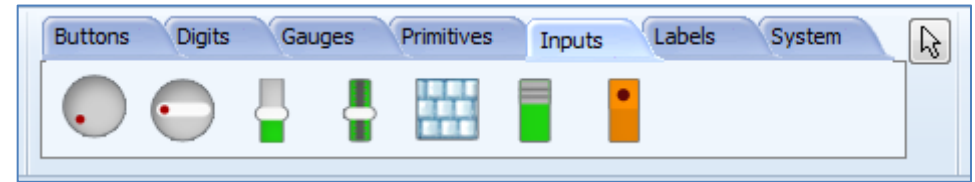
...or follow the procedures described hereafter.

Add a Keyboard Object

Select first the **Home** menu...



...then the **Inputs** pane...



...and finally the **Keyboard** object:

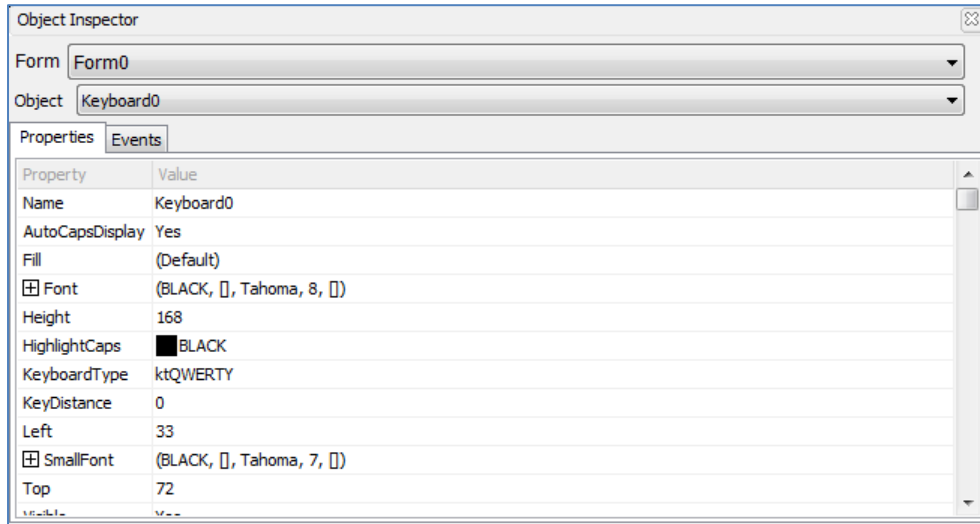


Click on the screen to place it:

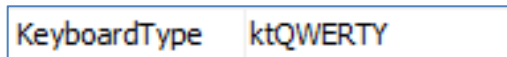


Select the Keyboard Type

The object inspector shows all the properties of the keyboard:




To customise the keyboard, we need to change the keyboard type:

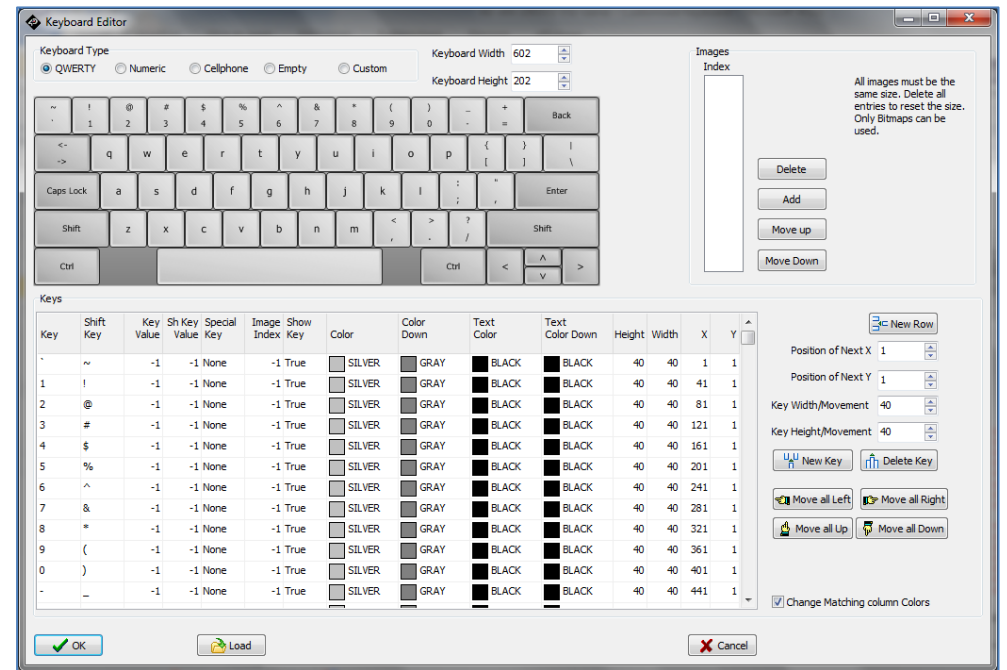


To do so, click on the **KeyboardType** line:

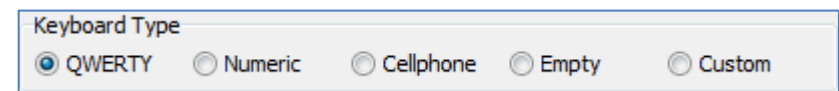


A  symbol appears. Click on it.

A new window appears: the Keyboard Editor.



On top of the window, different keyboard types are proposed:



ViSi-Genie comes with various defined ready-to-use keyboards:

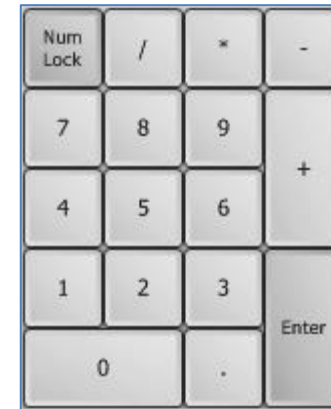
- QWERTY keyboard, by default,



- Cell-phone keyboard



- Numeric keyboard



- And a customised keyboard.



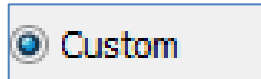
Customise a Keyboard

Before starting to build the customised keyboard, it is a good idea to draw a sketch to have a clear vision of the keys, rows and columns.

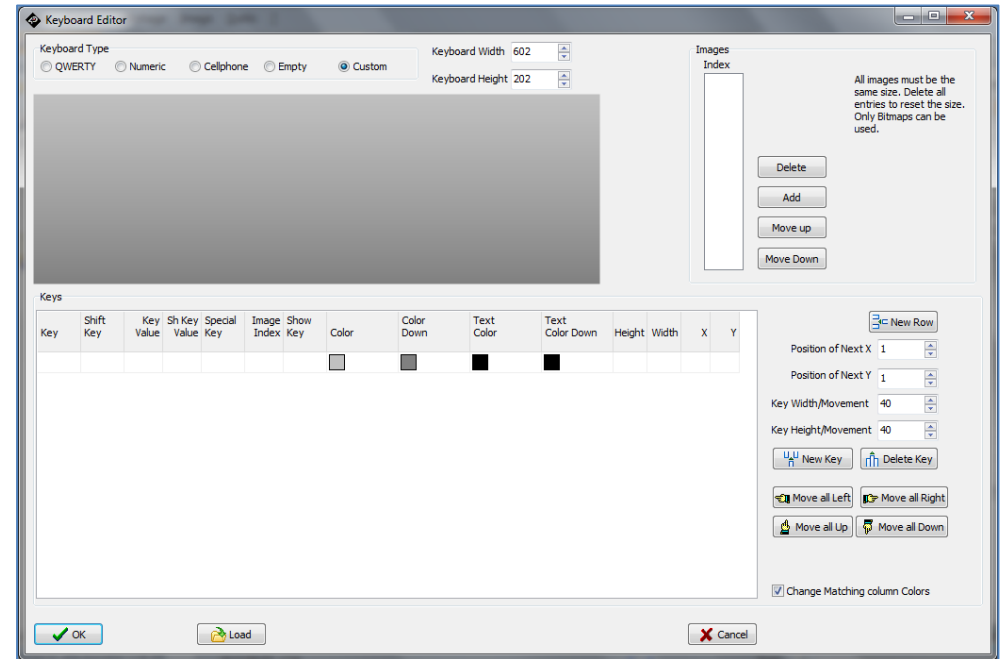
Here, the keyboard includes a numerical pad plus two specific keys, one to cancel and the second to validate:



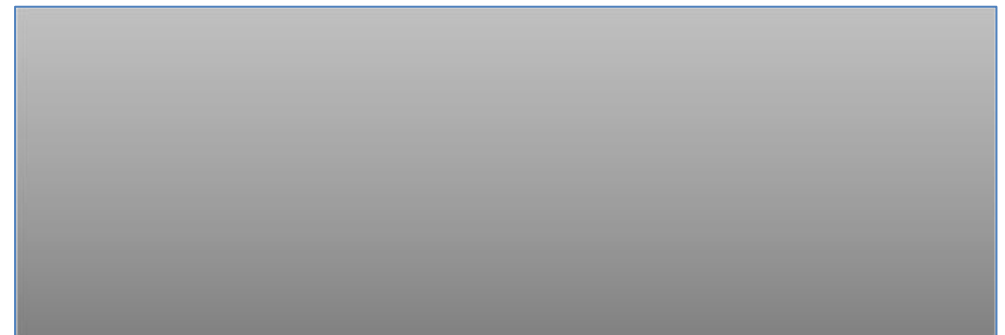
To select the customised keyboard, click on



The Keyboard Editor window is now empty:




The grey area displays the keyboard:



while the keys are displayed just below:

Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
							■	■	■	■				

We are going to use the tools grouped on the right:



 **New Row**

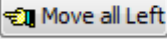
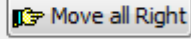
Position of Next X

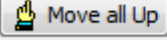
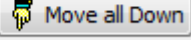
Position of Next Y

Key Width/Movement

Key Height/Movement

 **New Key**  **Delete Key**

 **Move all Left**  **Move all Right**

 **Move all Up**  **Move all Down**

Change Matching column Colors

Add a Key

Let's start by adding our first key. Click on



The WYSIWYG keyboard displays now the first key:



And the list is updated accordingly:

Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
?		-1	-1	None	-1	True	■ SILVER	■ GRAY	■ BLACK	■ BLACK	40	40	1	1

The key label is undefined for the moment and shows ?.

Click on that ? and enter **7** instead.

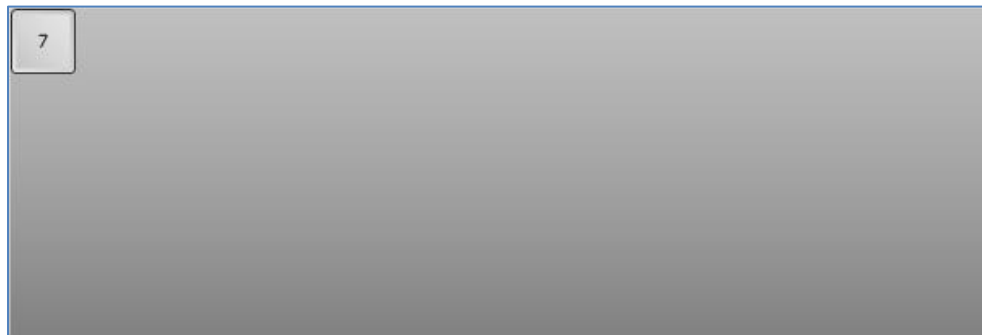
Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
7		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	1



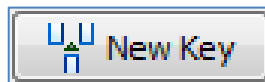
Delete a Key

After the 9 key was added, another key was wrongly added on the same row:

The WYSIWYG keyboard now shows:



Just continue adding the **8** and **9** keys by pressing...



...and entering the corresponding labels.

Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
7		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	1
8		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	1
9		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	1
?		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	121	1

This last key has to be deleted:

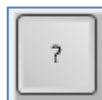


Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
7		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	1
8		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	1
9		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	1
?		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	121	1

Select the key to delete, here the in the last row on the list...



...or from the WYSIWYG keyboard:

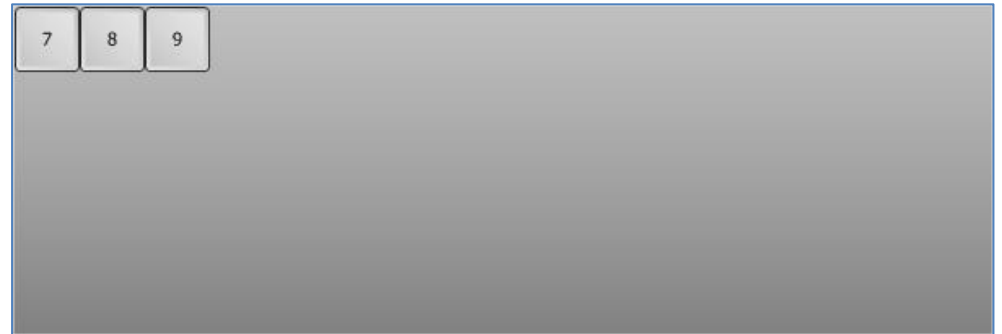


Press the button



There is no confirmation and no undo.

The WYSIWYG keyboard and the list are updated:

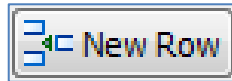


Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
7		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	1
8		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	1
9		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	1

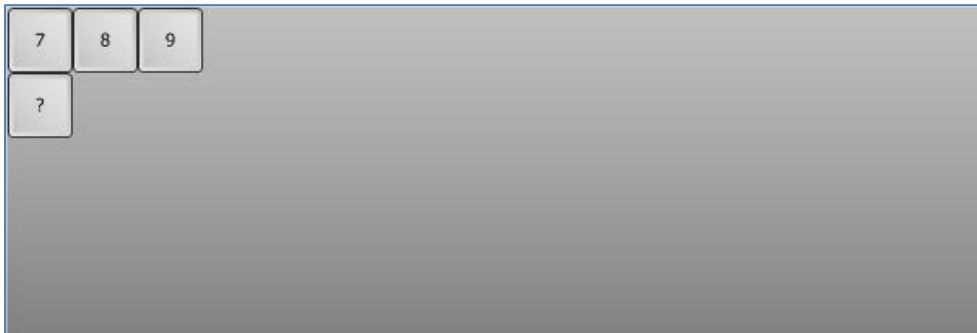
Add a Row

It's time now to add a new row.

Click on



The keyboard is updated with a second row and a new key on the left:



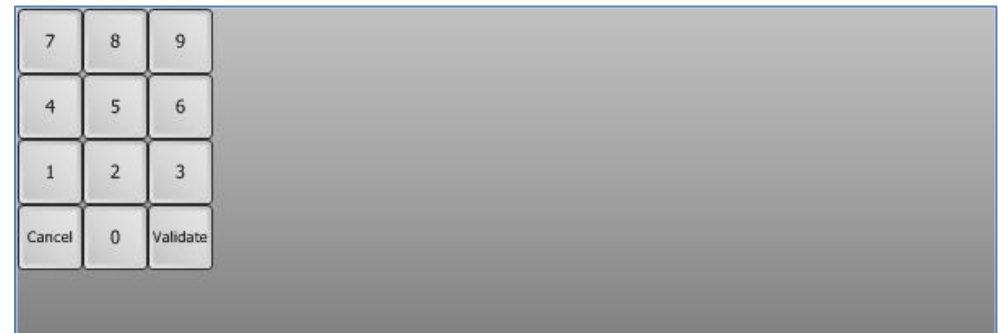
All the coordinates are managed automatically on the columns **X** and **Y**. X=1 and Y=41 as shown below:

Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
7		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	1
8		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	1
9		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	1
?		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	41

Just complete the 2nd row and continue with the 3rd one. For the Cancel and Validate keys, enter the labels Cancel and Validate.

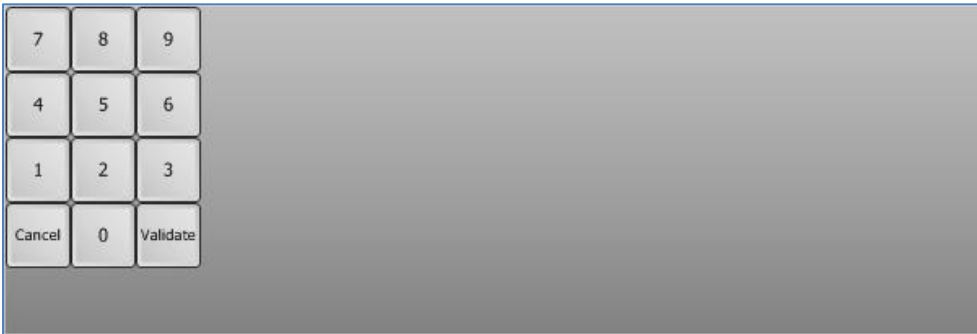
Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
7		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	1
8		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	1
9		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	1
4		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	41
5		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	41
6		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	41
1		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	81
2		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	81
3		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	81
Cancel		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	121
0		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	121
Validate		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	121

Here's the final result:



Change the Size of a Key

The initial keyboard looks like



The Validate key is too small and should be bigger.

Select the Validate key in the list:

Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
7		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	1
8		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	1
9		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	1
4		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	41
5		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	41
6		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	41
1		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	81
2		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	81
3		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	81
Cancel		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	1	121
0		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	41	121
Validate		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	40	81	121

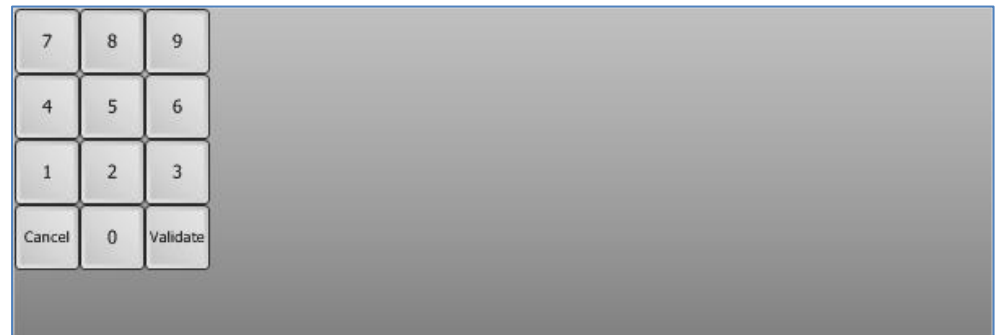
Change the width from 40 to **80** and press **Enter**.

Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
Validate		-1	-1	None	-1	True	SILVER	GRAY	BLACK	BLACK	40	80	81	121

The key is resized:



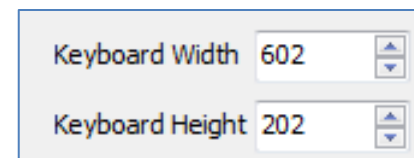
To return to the initial size, just enter again **40** as width.



Resize the Keyboard

The keys don't use all the keyboard area, so we are going to resize it.

The size of the keyboard is provided by



Enter the new dimensions:

Keyboard Width	122
Keyboard Height	162

The keyboard looks nicer now:



Change the Colour of All Keys

The keys have 4 colours:

- Colour of the key
- Colour of the key, when pressed
- Colour of the text on the key
- Colour of the text on the key, when pressed.

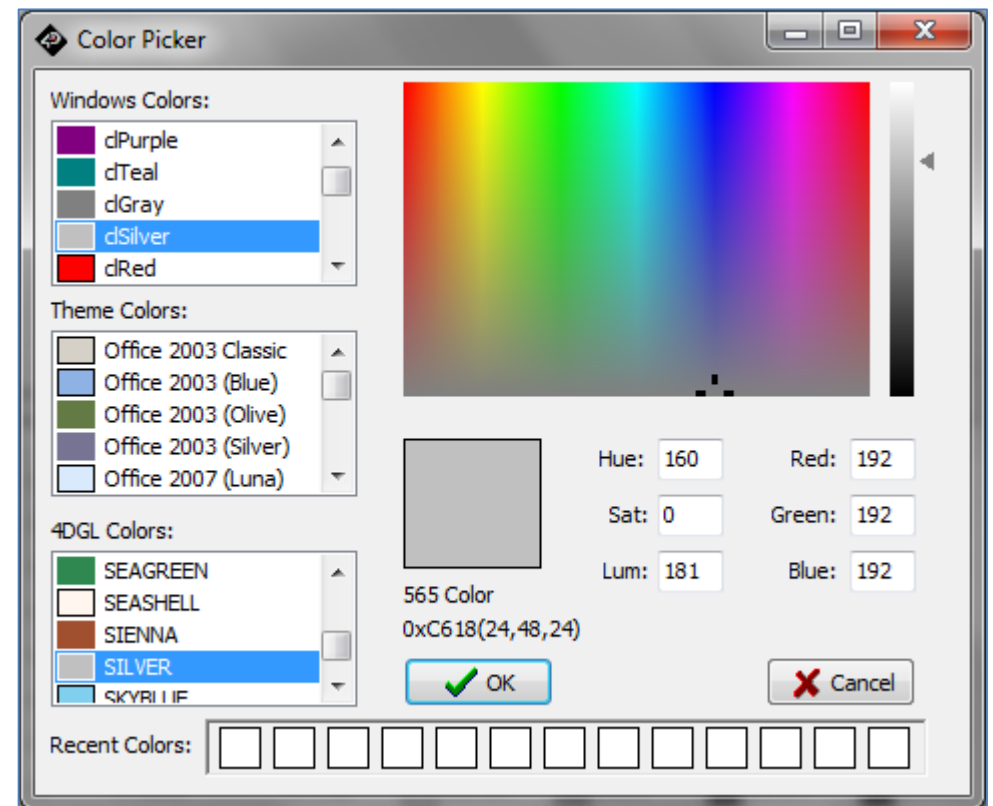
To change the colour of all keys, make sure the check-box **Change Matching Column Colours** is ticked

 Change Matching column Colors

Now, click on the **SILVER** colour of any key:



A new window **Colour Picker** appears and shows all the colours available:



Colours are grouped under Windows, Theme and 4DGL. Manual values can be set for Hue-Saturation-Luminance or Red-Green-Blue components. Select **Office 2003 (Blue)** then click **OK**.

The WYSIWYG keyboard is updated accordingly:



Do the same for the **Colour Down** and select **Office 2003 (Silver)**. The key list displays the new colours:

Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
7		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	1	1
8		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	41	1
9		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	81	1
4		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	1	41
5		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	41	41
6		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	81	41
1		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	1	81
2		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	41	81
3		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	81	81
Cancel		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	1	121
0		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	41	121
Validate		-1	-1	None	-1	True	Office 2003	Office 2003	BLACK	BLACK	40	40	81	121

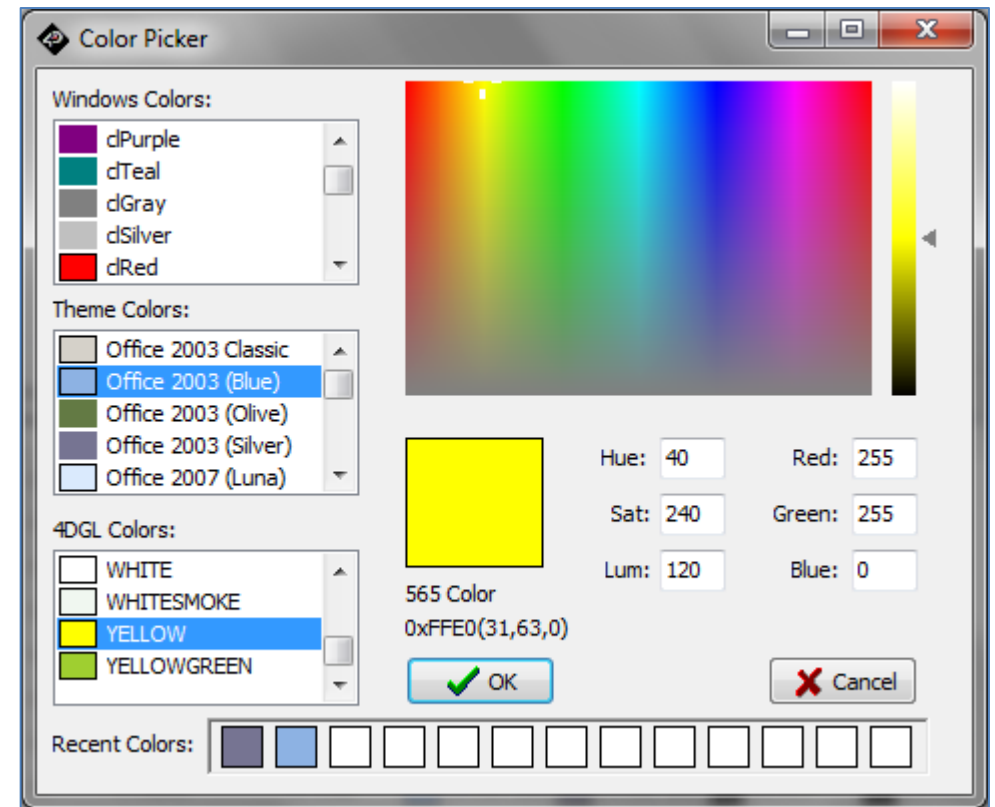
Change the Colour of One Specific Key

The Cancel and Validate keys have specific colours.

To change the colour of all keys, make sure the check-box **Change Matching Column Colours** is unticked



Now, click on the **Office 2003 (Blue)** colour of the **Cancel** key. Select **Yellow** on the colour picker and confirm by **OK**:



Repeat with **Colour Down** for the **Cancel** key and select **ORANGE**.

Do the same for the **Validate** key and select **GREEN** as **Colour** and **GREENYELLOW** as **Colour Down**.

Final result is:

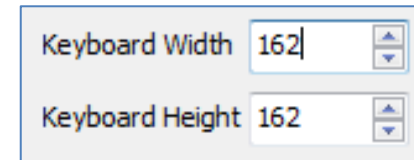


And the detail is:

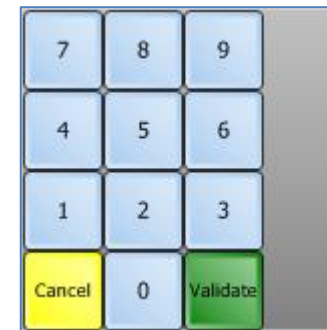
Key	Shift Key	Key Value	Sh Key Value	Special Key	Image Index	Show Key	Color	Color Down	Text Color	Text Color Down	Height	Width	X	Y
7		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	1	1
8		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	41	1
9		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	81	1
4		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	1	41
5		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	41	41
6		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	81	41
1		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	1	81
2		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	41	81
3		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	81	81
Cancel		-1	-1	None	-1	True	YELLOW	ORANGE	BLACK	BLACK	40	40	1	121
0		-1	-1	None	-1	True	dSkyBlue	Office 2003	BLACK	BLACK	40	40	41	121
Validate		-1	-1	None	-1	True	GREEN	GREENYELL	BLACK	BLACK	40	40	81	121

Move the Columns and Rows of the Keyboard

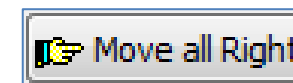
To add a column on the left side of 7 4 1 Cancel, define a new size for the keyboard:



The WYSIWYG keyboard shows



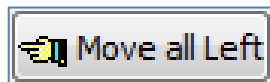
Press the key



All the keys are moved one column right:



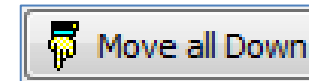
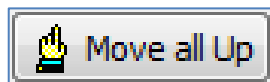
Similarly, click on



All the keys are moved back one column left:



Same procedure applies to move the keys up and down with the corresponding buttons:



Save the Keyboard

It's time now to save the keyboard.

To do so, click on



The Keyboard Editor window closes and the form shows the keyboard:



Define the Font and Size of the Keyboard

The keyboard looks nice but it is hard to read, because the font size is too small.

Note the font is not defined during the building of the keyboard. The same keyboard can be used on different screens, and thus be adapted to match each screen. The font is a property like the size of the keyboard.

We are going to change the size of the font.
Select the keyboard by clicking on it. The keyboard is within a green dotted rectangle:



On the Object Inspector, look for the entry

Font (BLACK, [], Tahoma, 8, [])

Click on the + to display the details:

Font	(BLACK, [], Tahoma, 8, [])
Color	BLACK
Effects	[]
Name	Tahoma
Size	8
Style	[]

Replace 8 by 16 and press **Enter**.

Size 16

The keyboard is updated:



But the Cancel and Validate keys are still with small font. Their font is called **SmallFont**.

On the Object Inspector, look for the entry

SmallFont (BLACK, [], Tahoma, 7, [])

Click on the + to display the details:

SmallFont	(BLACK, [], Tahoma, 7, [])
Color	BLACK
Effects	[]
Name	Tahoma
Size	7
Style	[]

Replace 7 by **14** and press **Enter**.



This is the final screen, which is much better:



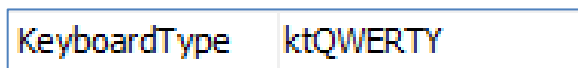
Load a Keyboard

The keyboards previously defined are saved and can be loaded again for re-use.

To load a keyboard, first open the Keyboard Editor.

To open the Keyboard Editor:

- On the Object Inspector, select the keyboard and click on the **Keyboard Type** line

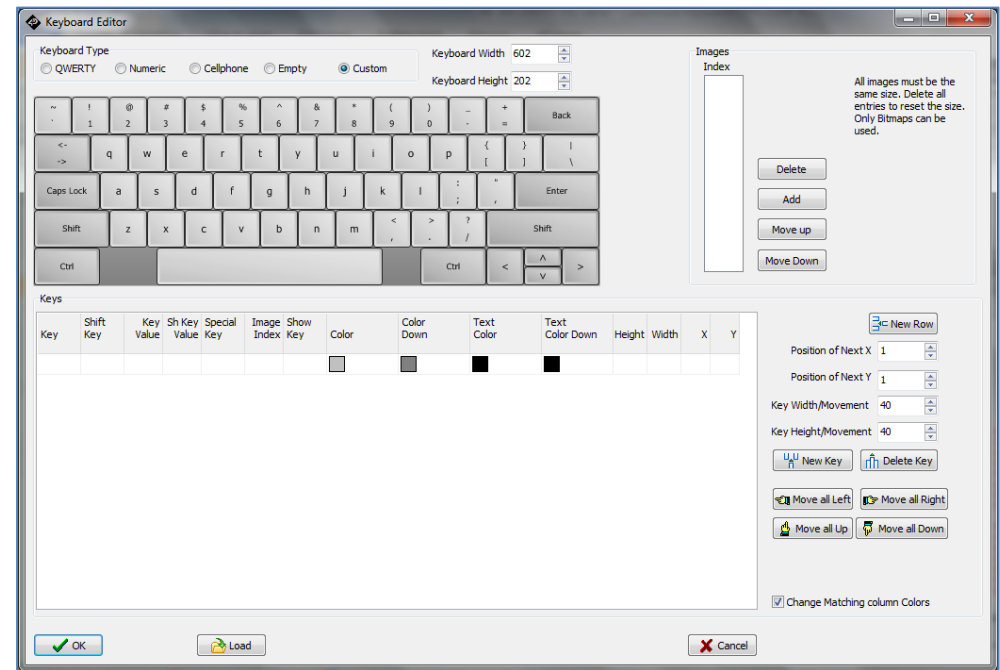


- The line changes for

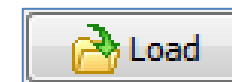


- Click on the symbol.

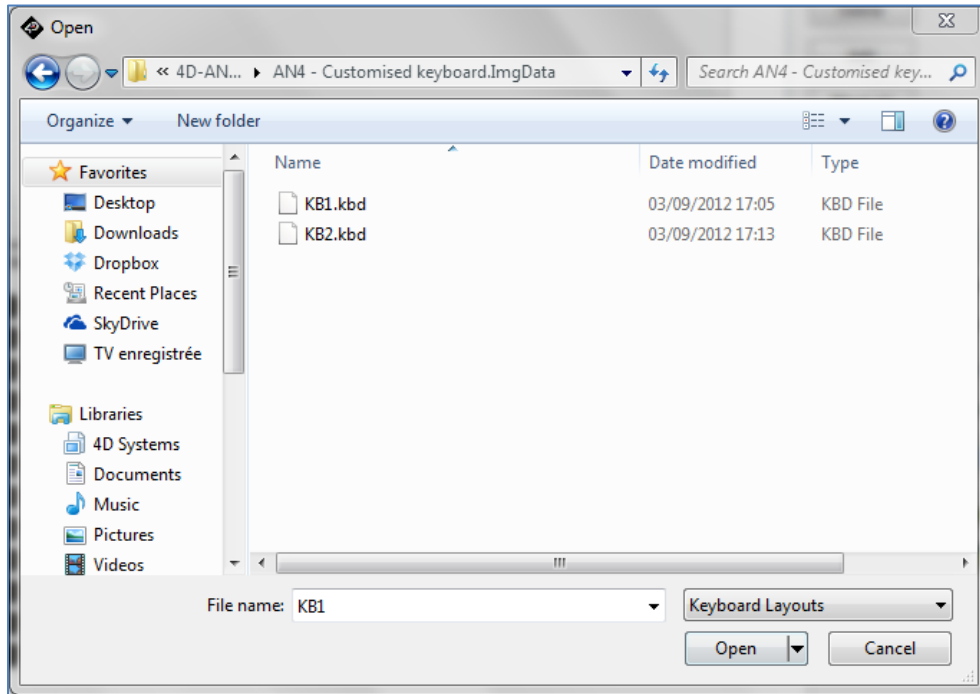
The Keyboard Editor shows up:



On the Keyboard Editor window, click on

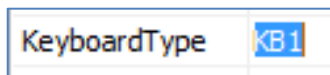


A Windows Open window shows the keyboards available:



Select the desired keyboard, for example *KB1.KBD*, and click on **Open**.

Back to the Keyboard object Properties, the **KeyboardType** shows:



Building and Upload the Project

For instructions on how to build and upload a ViSi-Genie project to the target display, please refer to the section “**Build and Upload the Project**” of the application note

ViSi Genie Getting Started – First Project for Picaso Displays

ViSi Genie Getting Started – First Project for Diablo16 Display Modules

ViSi Genie Getting Started – First Project for Pixxi Display Modules

The uLCD-32PTU and/or the uLCD-35DT display modules are commonly used as examples, but the procedure is the same for other displays.

Debug the Project

It's time now to eject the micro-SD card from the PC and plug it in the micro-SD card slot of the screen.

Once this is done, the screen displays the form:

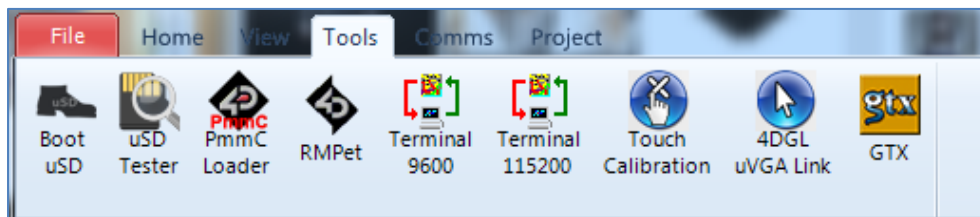
Enter PIN code and press Validate

* * * *

7	8	9
4	5	6
1	2	3
Cancel	0	Validate

Launch the Debugger

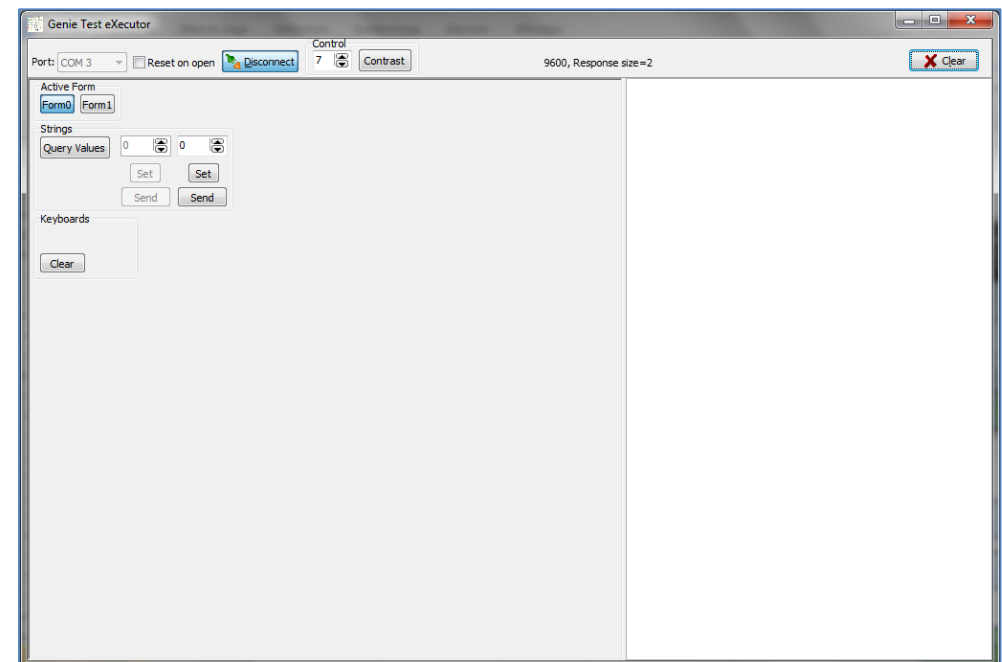
To launch the **Genie Test Executor** or GTX, select the **Tools** menu...



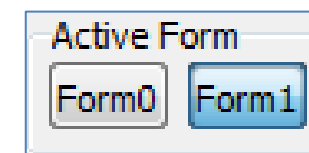
...and then click on the **GTX** button.



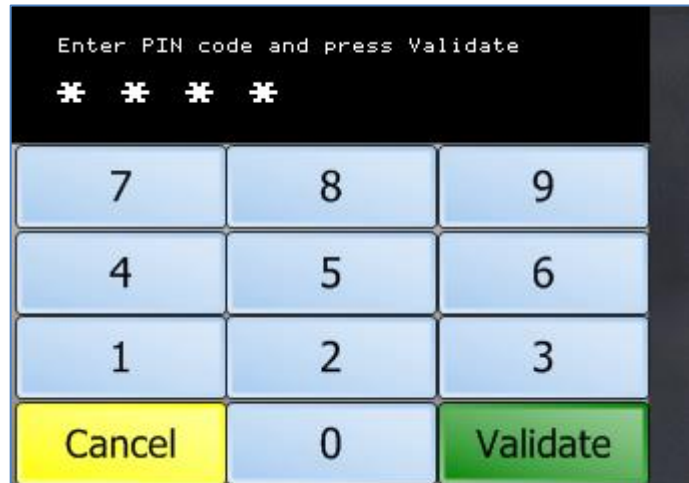
A new screen appears, with the form and objects we have defined previously:



Click on Form1 to display the screen with the keyboard:



The screen displays the keyboard:



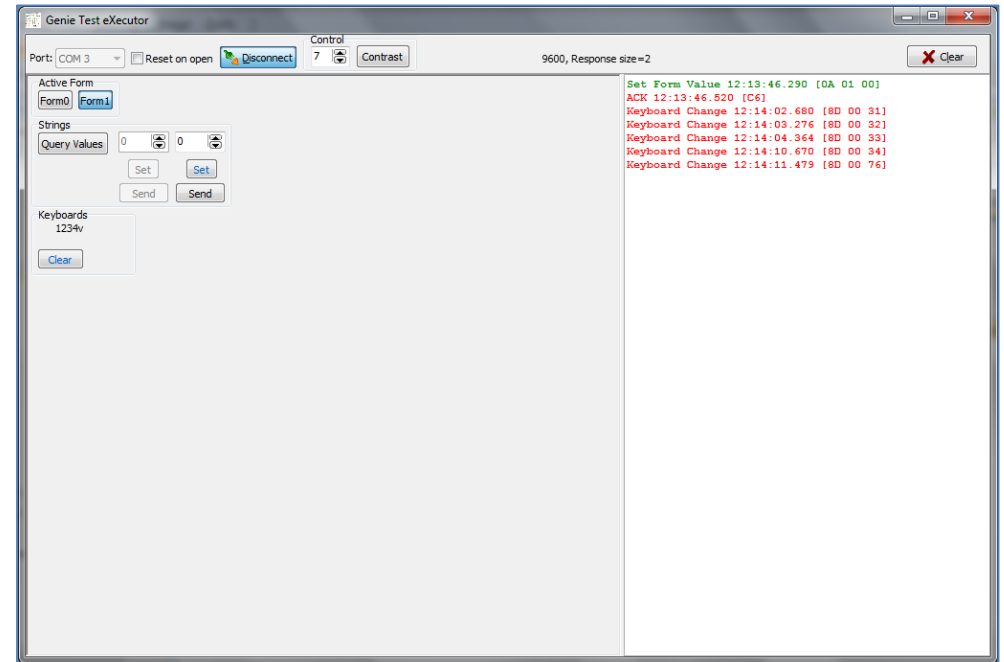
Press on the screen...



...and



The debugger shows now:



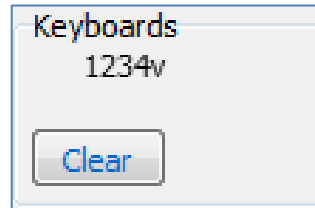
The white area on the right displays the messages sent by the screen:

```
Set Form Value 12:30:58.060 [01 0A 01 00 00 0A]
ACK 12:30:58.278 [06]
Keyboard Change 12:31:05.860 [07 0D 00 00 31 3B]
Keyboard Change 12:31:06.796 [07 0D 00 00 32 38]
Keyboard Change 12:31:07.545 [07 0D 00 00 33 39]
Keyboard Change 12:31:08.605 [07 0D 00 00 34 3E]
Keyboard Change 12:31:09.448 [07 0D 00 00 76 7C]
```

All codes are in hexadecimal. **0x31** stands for 1, ..., **0x34** for 4.

Note that the key  has sent the message **0x76** or v.

The code entered on the screen is displayed below the Keyboards section:

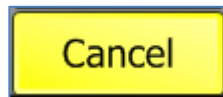


Note that the key  has sent the message v.

On a similar way, let's enter a wrong code and press...



...and finally



The message window displays:

Keyboard Change 12:32:41.083 [07 0D 00 00 31 3B]
Keyboard Change 12:32:41.707 [07 0D 00 00 32 38]
Keyboard Change 12:32:42.362 [07 0D 00 00 33 39]
Keyboard Change 12:32:42.955 [07 0D 00 00 30 3A]
Keyboard Change 12:32:43.672 [07 0D 00 00 63 69]

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