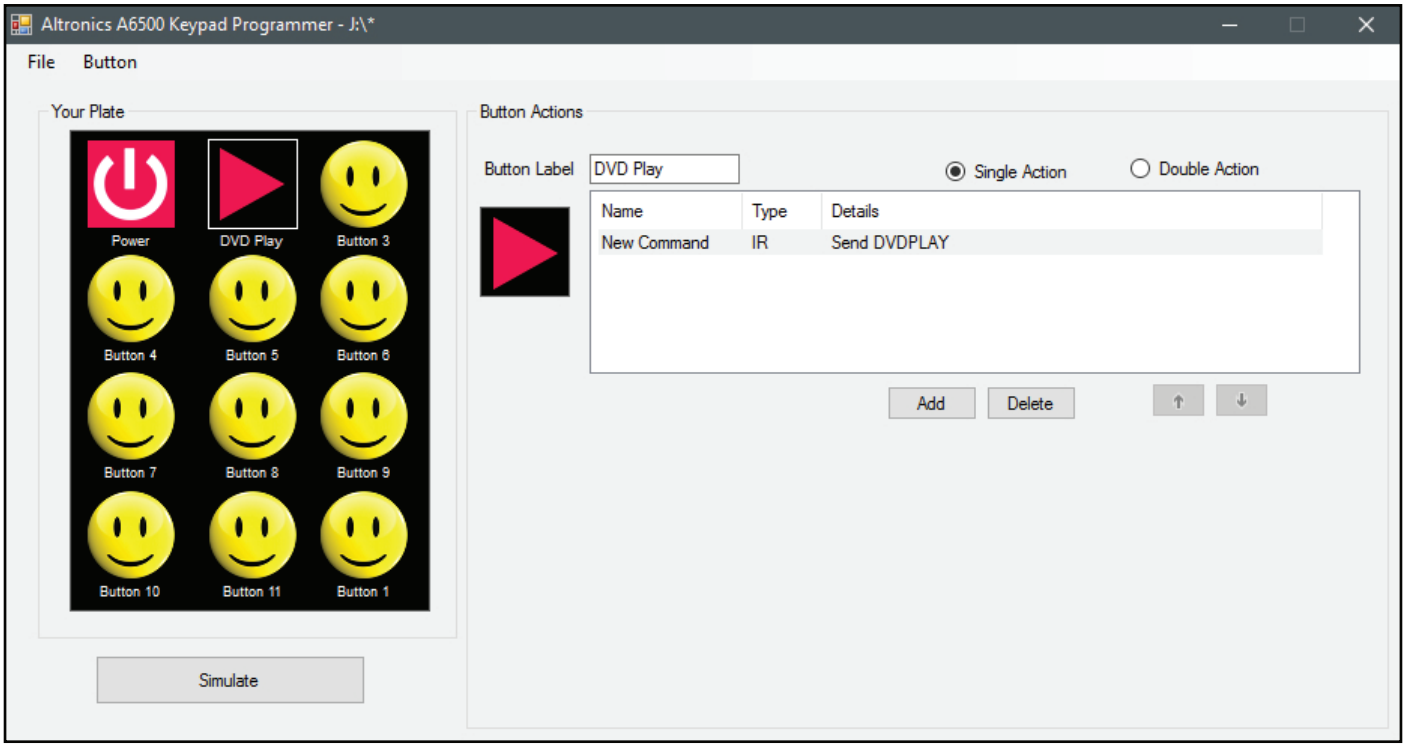
Programmable Touchscreen Wallplate Control System



Software Programming Guide

A 6500 Programmable Touchscreen Wallplate Control System

Redback® Proudly Made In Australia

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1.0 A 6500 WALL PLATE SOFTWARE

1.1 ACCESSING THE SOFTWARE

The software is provided on the supplied Micro SD Card and is called "RedbackA6500Software".

In order to access the program, the Micro SD card will need to be connected to a Windows based device such as a PC or laptop with Windows 7 or above installed. It will need to be equipped with an Micro SD card reader to do this. If an Micro SD slot is not available then the Altronics D 0371A USB Memory Card Reader or similar would be suitable (not supplied).

You will first need to remove the Micro SD card from the side of the A 6500 wall plate (see section 1.4 in the Operating Manual for the location). To remove the Micro SD card push the card in and it will eject itself.

Make sure the Windows based device is on and card reader connected and correctly installed. Then insert the Micro SD card into the reader.

Go to "My Computer" or "This PC" and open the Micro SD card which is usually marked "Removable disk".
In this case it is named "Removable disk (J:)". Select the removable disk and then you should get a window that looks like the picture in figure 1.1.

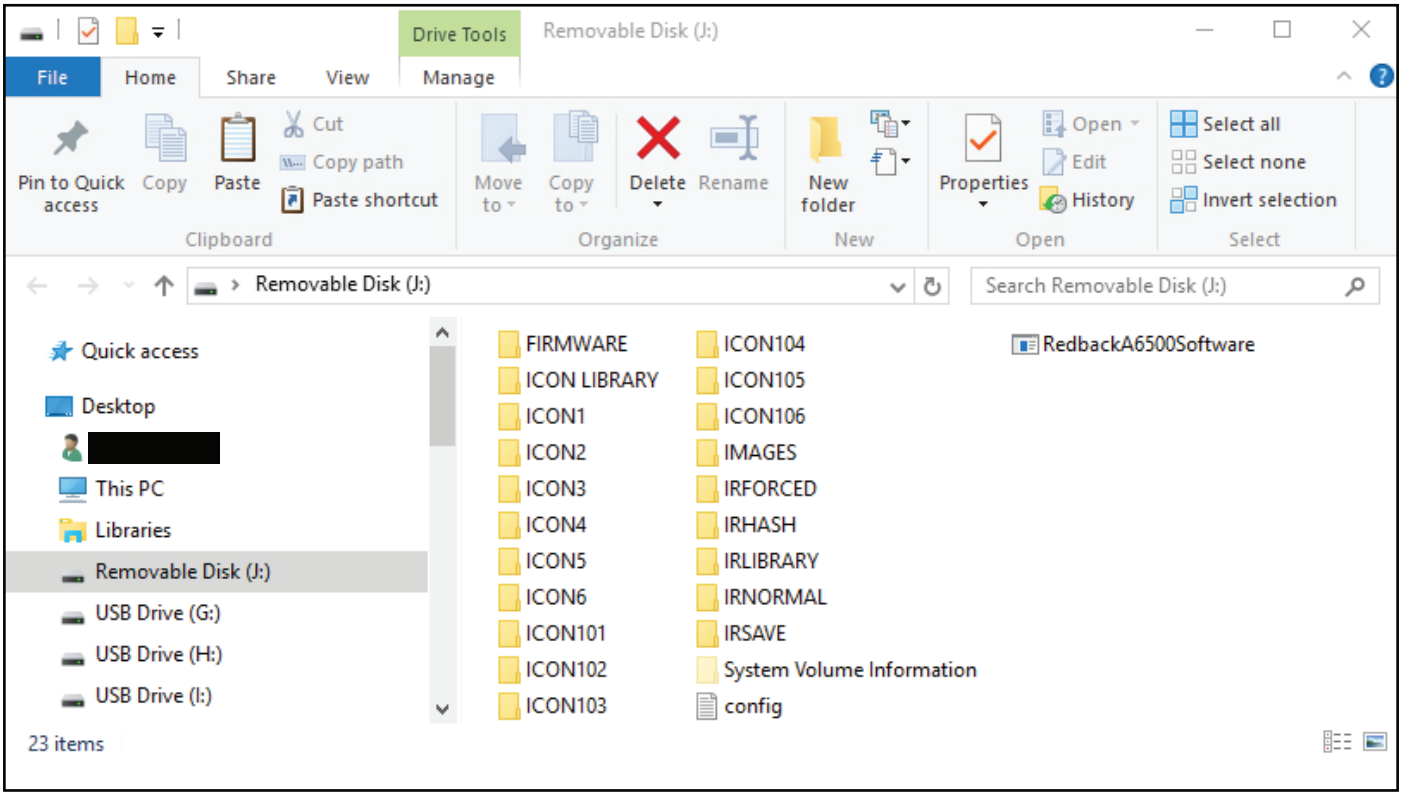


Fig 1.1

The A 6500 wall plate is supplied with a default configuration which is useful for initial testing. This is covered in section 3.8 of the Operating Manual.
It is recommended that a copy is made of the contents of the Micro SD Card before any programming is done. This may come in handy if the SD card becomes corrupted and it also provides a default setup to fall back on.

The contents of the Micro SD card should include the programming software (labelled RedbackA6500Software), a library of button Icons, and a library of IR receiver codes.
The Icon folders shown hold the image for the buttons on the default startup screen, and the IR folders store the IR codes.
The Images folder is where any imported images are saved in bitmap format to be used as icons.
The config file is where all the button information is saved, including links to icons, output command types (serial, IR or relay output), baud rates and delays.

The Firmware folder holds the current firmware version supplied with the plate. Firmware updates are available for download from www.altronics.com.au. If an update is performed (see section 5.0) and fails to update, or the update is found to have errors then the A 6500 can be restored back to its default firmware version with the file in this folder.
(NOTE: The System Volume Information folder is part of the SD Card format. Do not modify this folder).

1.2 FIRST TIME USE RECOMMENDATION

It is recommended that for first time use, the system is setup on a desk for easy access to all connections. Trying to remove the Micro SD card while the Redback® A 6500 Wall Plate is installed is quite cumbersome. Also learning IR codes through the wall plate IR sensor (see section 15.1) is easier on the desk.

1.3 FIRMWARE UPDATE

It is possible to update the firmware for this unit by downloading updated versions from www.altronics.com.au or redbackaudio.com.au.
To perform an update, follow these steps.

1) Download the Zip file from the website.
2) Remove the SD card from the A 6500 and insert it into your PC. (Follow the steps on page 3 to open the SD card).
3) Extract the contents of the Zip file to the root folder of the SD Card.
4) Rename the extracted .BIN file to update.BIN.
5) Remove the SD card from the PC following windows safe card removal procedures.
6) With the power turned OFF, insert the SD card back into the A 6500.
7) Turn the A 6500 ON. The unit will check the SD card and if an update is required the A 6500 will perform the update automatically.

1.4 RUNNING THE SOFTWARE

It is recommended to run the programming software from the SD card.

Double click on the file - RedbackA6500Software.

The programming screen should appear as shown in Fig 1.3.

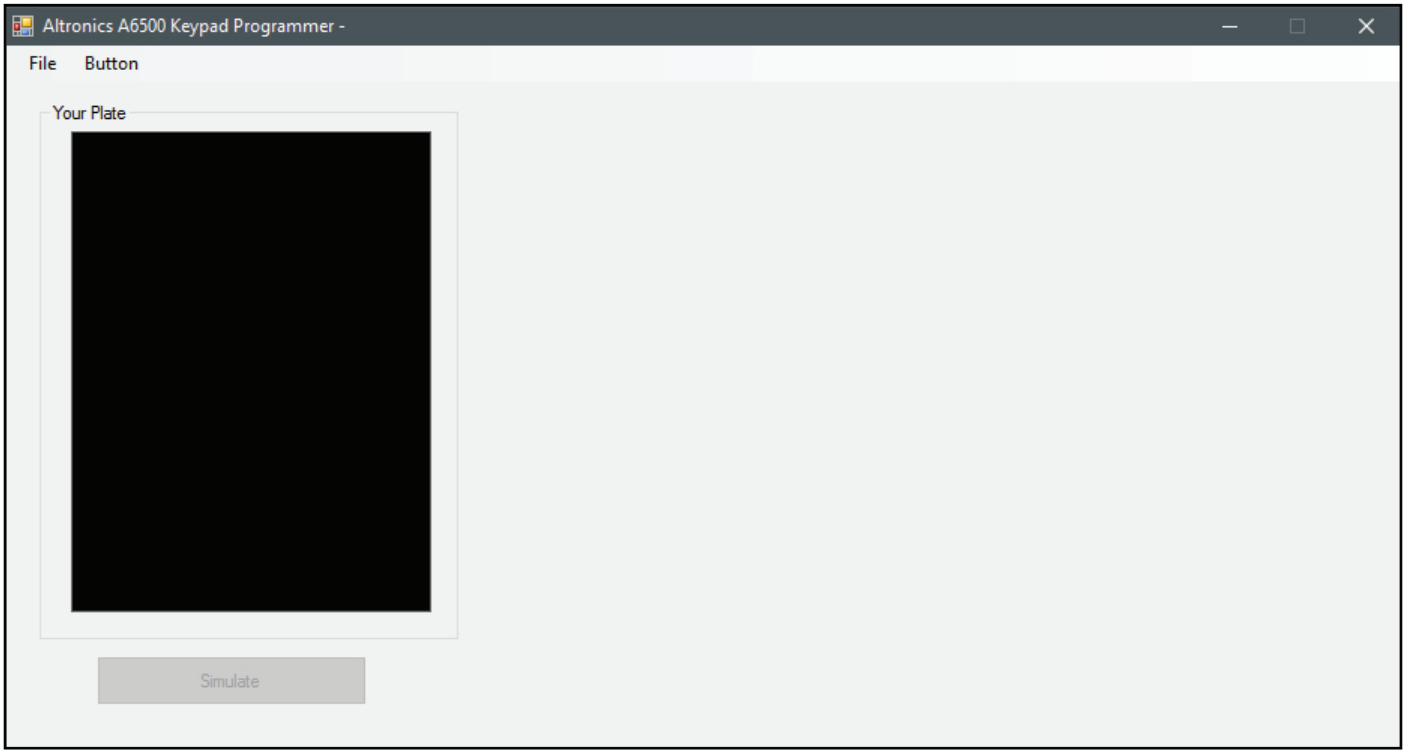


Fig 1.3

If the program doesn't run then the .NET Framework might need to be updated on your PC. This must be updated to the .NET Framework 4 or above, available on the microsoft website.

From this startup screen the available options are to either access the File Tab or the Button Tab as shown in figures 1.4 and figures 1.5.

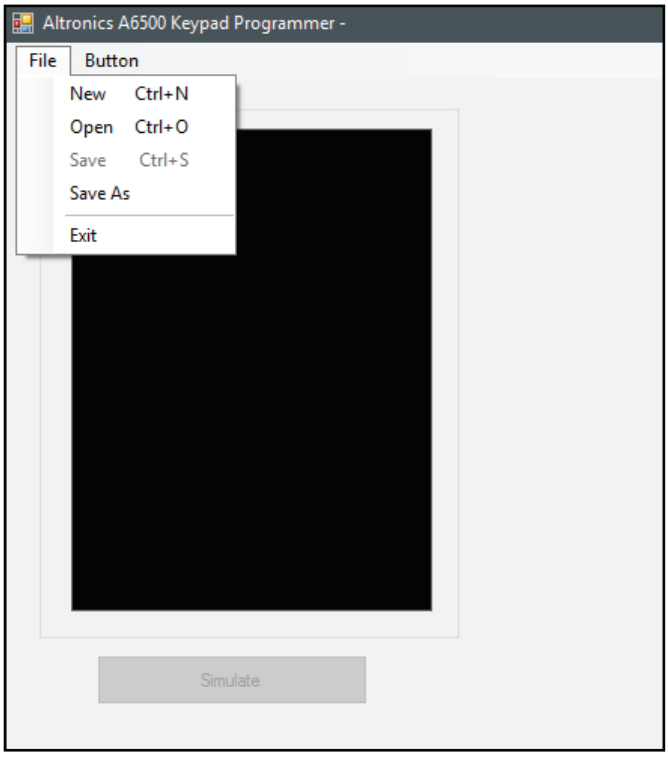


Fig 1.4

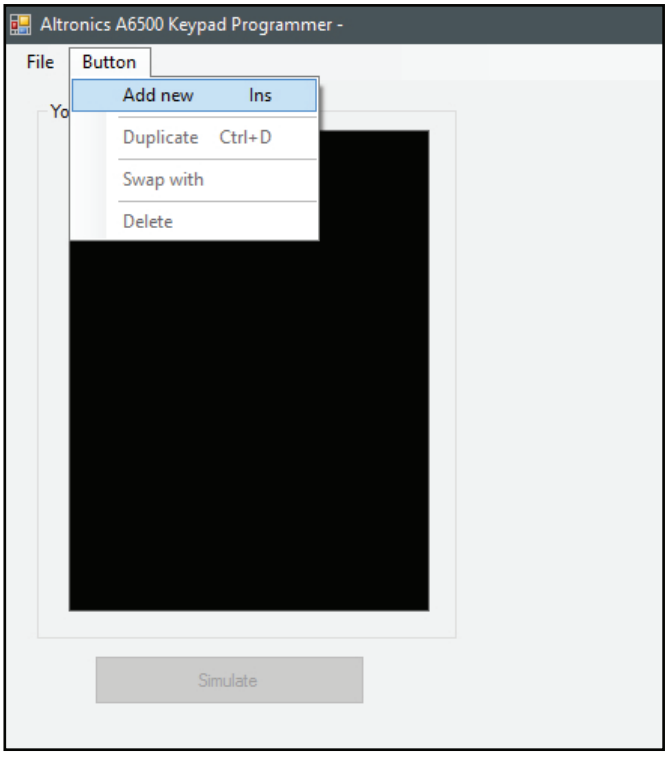


Fig 1.5

The "File" tab provides the standard Windows operating system functions of New, Open, Save and Save As.
It is recommended that the configuration is saved to the Micro SD card by using the "Save" option. But the "Save As" option is available so the setup can be saved elsewhere.
The "Button" tab provides the options of adding a new button, duplicating a button, swapping button positions on the screen and deleting buttons.

2.0 DEFAULT CONFIGURATION

Lets take a brief look at the default configuration.
Navigate to the "File" tab and then select "Open". The window shown below in figure 2.1 should appear.
We need to navigate to the location of the config file which which for our example is on the root folder of the SD card which is Removable disk (J).

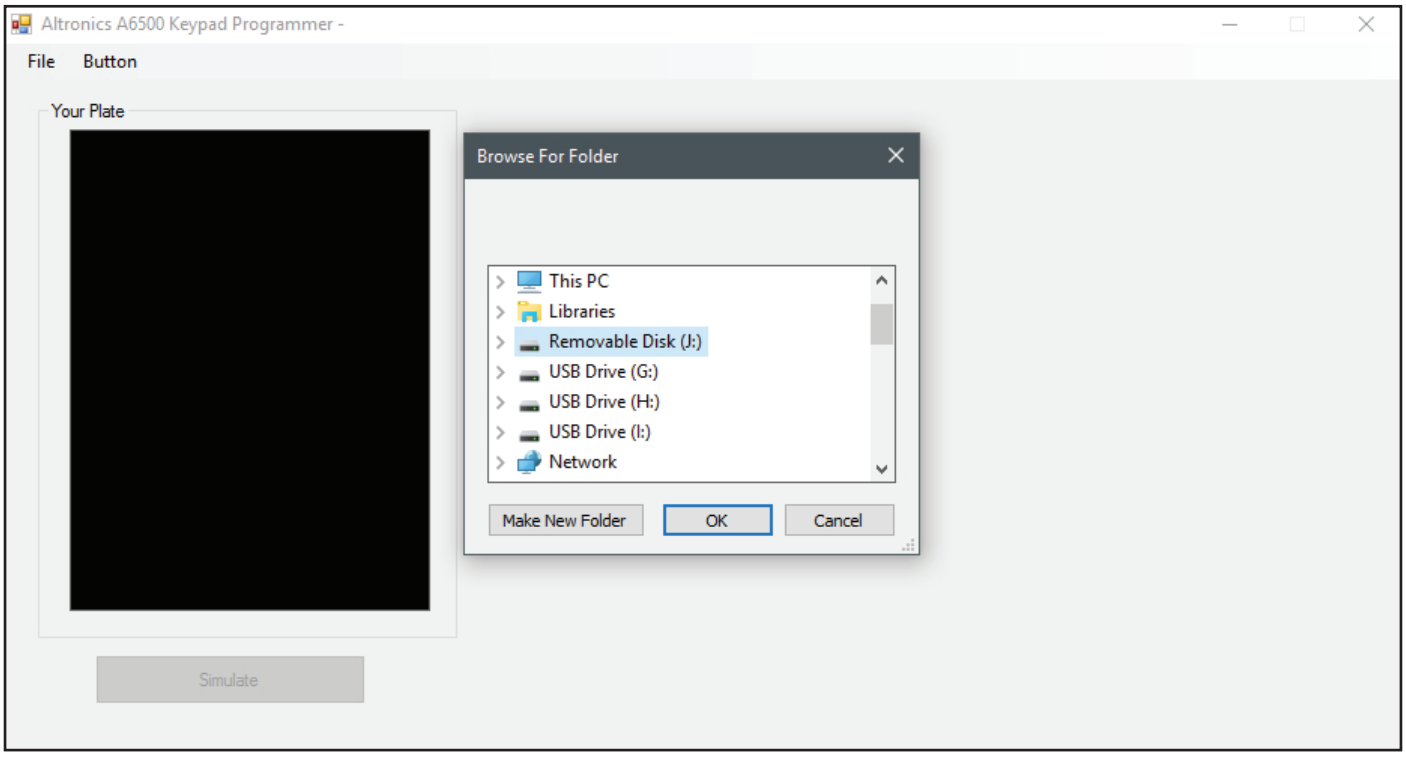


Fig 2.1

We select Removable Disk (J) and then OK.
The default configuration should load and display as shown in figure 2.2.

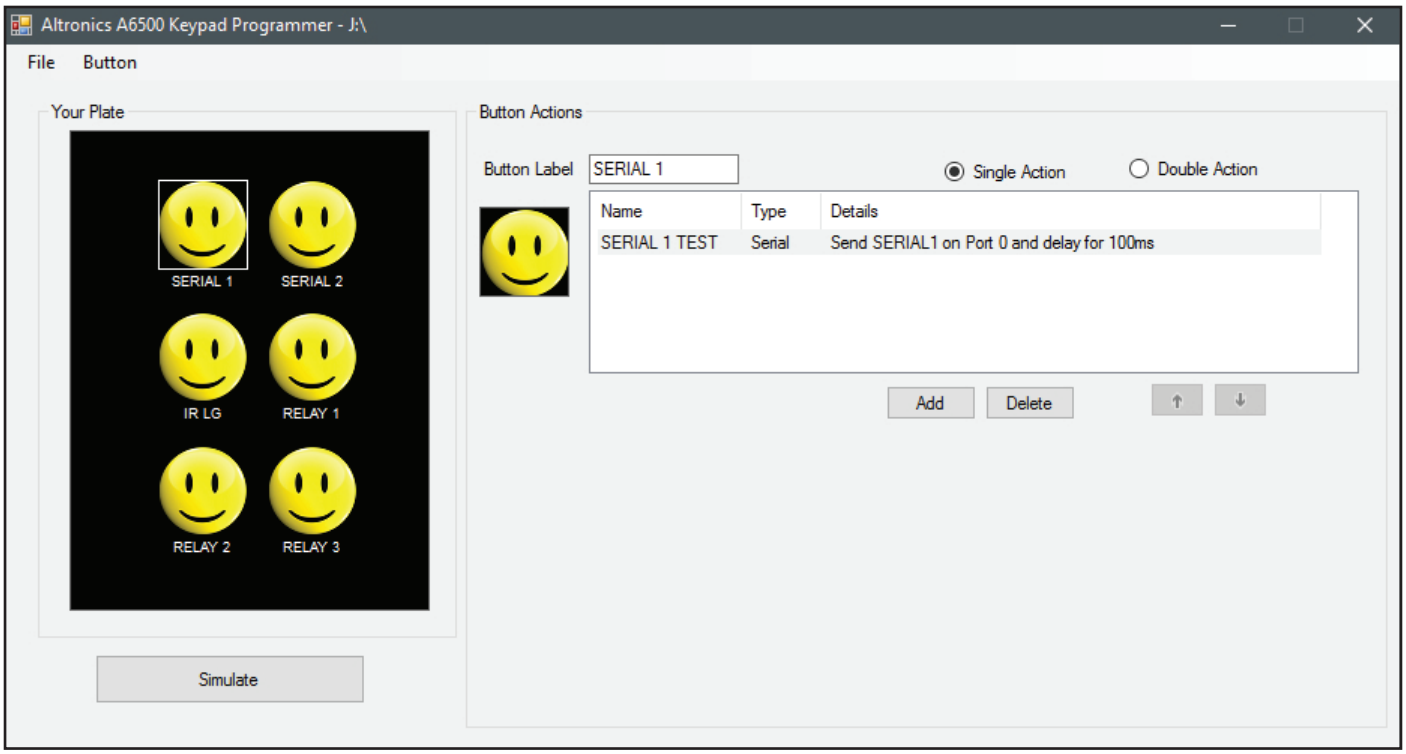


Fig 2.2

Notice that the simulation of the screen (under the text "Your Plate") displays exactly what is displayed when the A 6500 is powered up.
As this configuration is only used for testing we won't go into more detail.

3.0 CREATE A NEW CONFIGURATION

Navigate to the "File" tab and then select "New". The window shown below in figure 3.1 should appear.
Once again it is recommended (if not done previously) that a copy is made of the default contents of the Micro SD Card before a new configuration is saved.

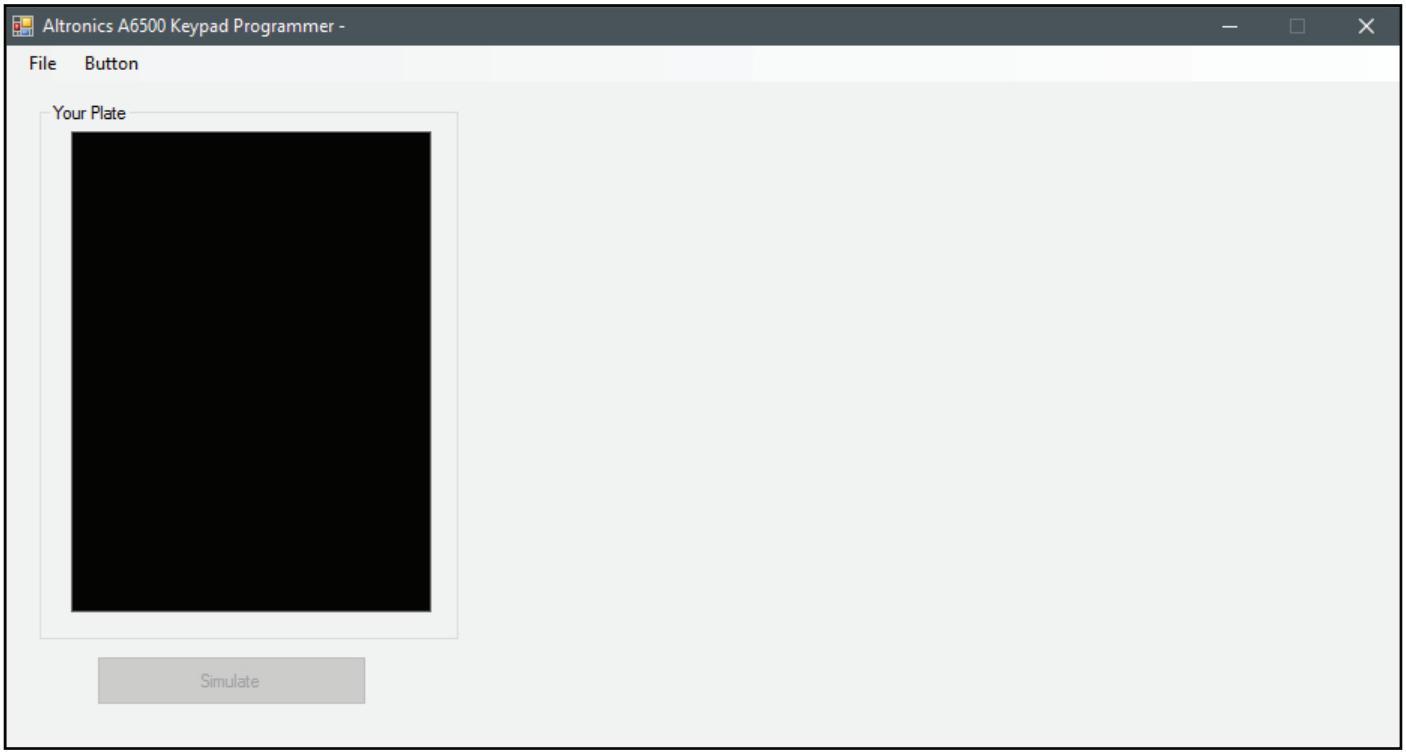


Fig 3.1

4.0 ADDING BUTTON ICONS

Programming the button icons is quite simple. Navigate to the Button tab and select "Add New" or press the "Insert" button on your computer's keyboard. The default "Smiley face" button Icon will appear in the centre of the wall plate simulator as shown in figure 4.1. The simulator section displays exactly what will appear on the A 6500 wall plate once operational.

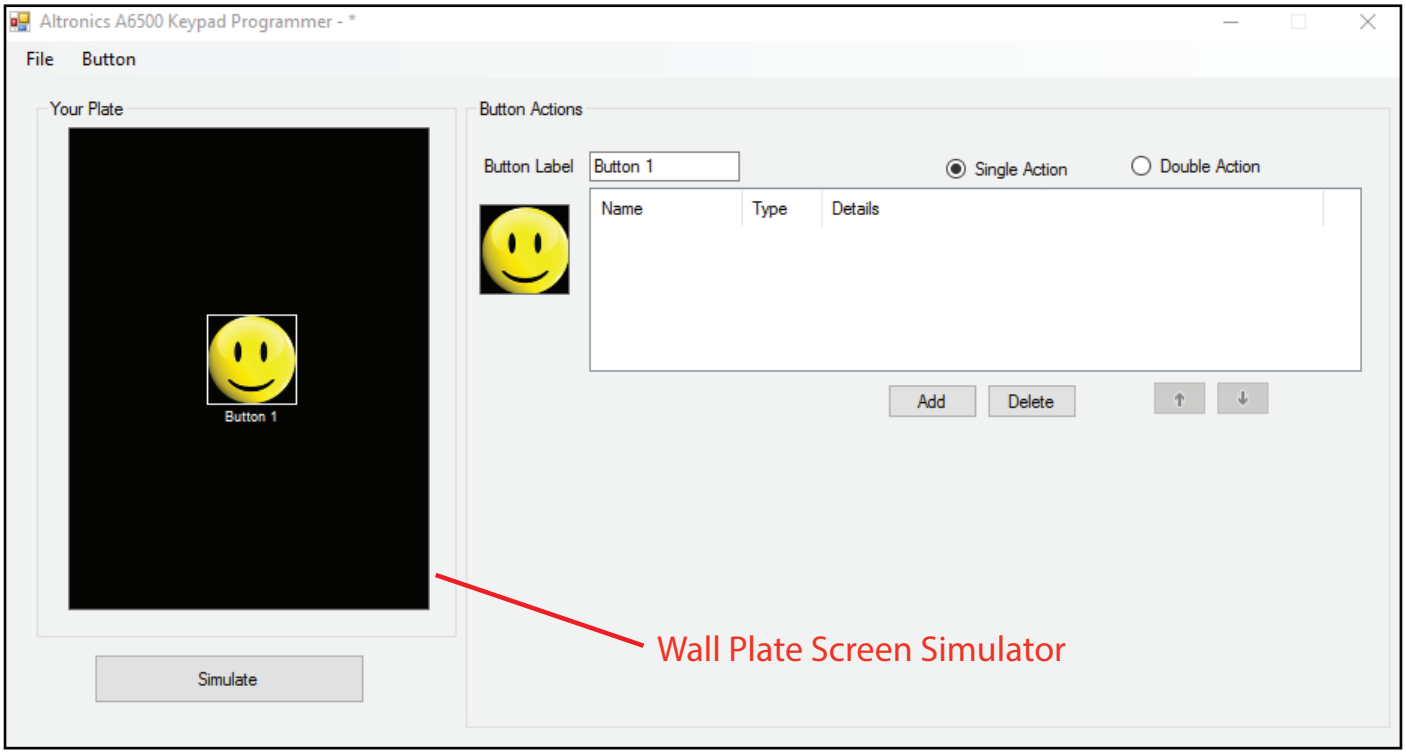


Fig 4.1

Any number of buttons can be added at this stage up to a maximum of 12 buttons as shown in figure 4.2.
(NOTE: There is no option to change the size of the icons on the screen i.e. The buttons are a fixed size regardless of the number of buttons selected).

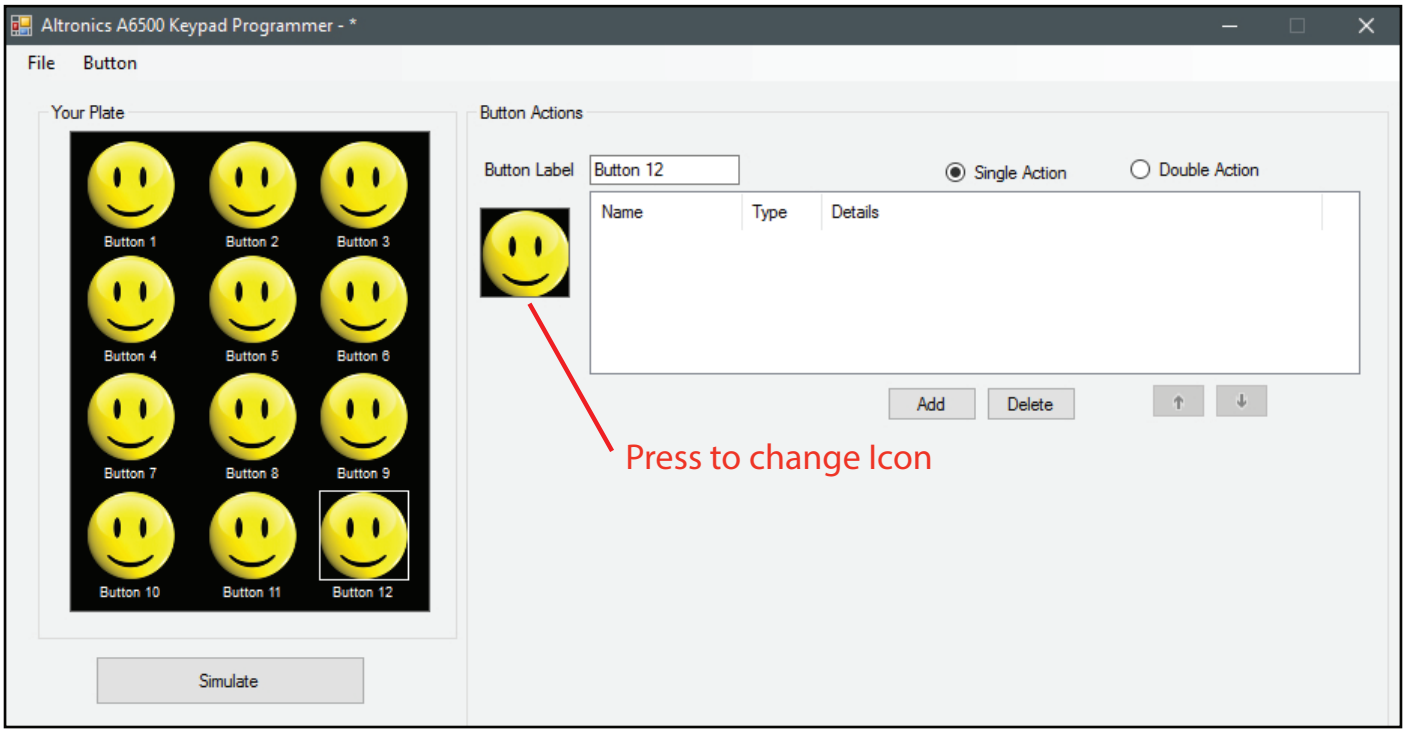


Fig 4.2

Obviously a screen full of smiley faces doesn't provide a very good visual indicator of the functions of the buttons. The button icons can be changed to the those supplied in the Icon Library or you can create your own. The Icon image is 60 pixels x 60 pixels and can be created and saved as a bitmap image using other readily available image creation software.
It is also possible to import most image files of any size which will be converted by the software to a bitmap image making it available as an icon.

5.0 CHANGING BUTTON ICONS

Changing the button Icons is simply a matter of selecting the Icon from the screen simulator and then clicking on the Icon under the button label as highlighted in figure 5.2.
The Select Icon window should appear as shown below. From here it is possible to scroll through the icons in the icon library, or by pressing the browse button (highlighted in figure 5.1) navigate to an icon or image stored elsewhere. Select the icon or image and then press OK.

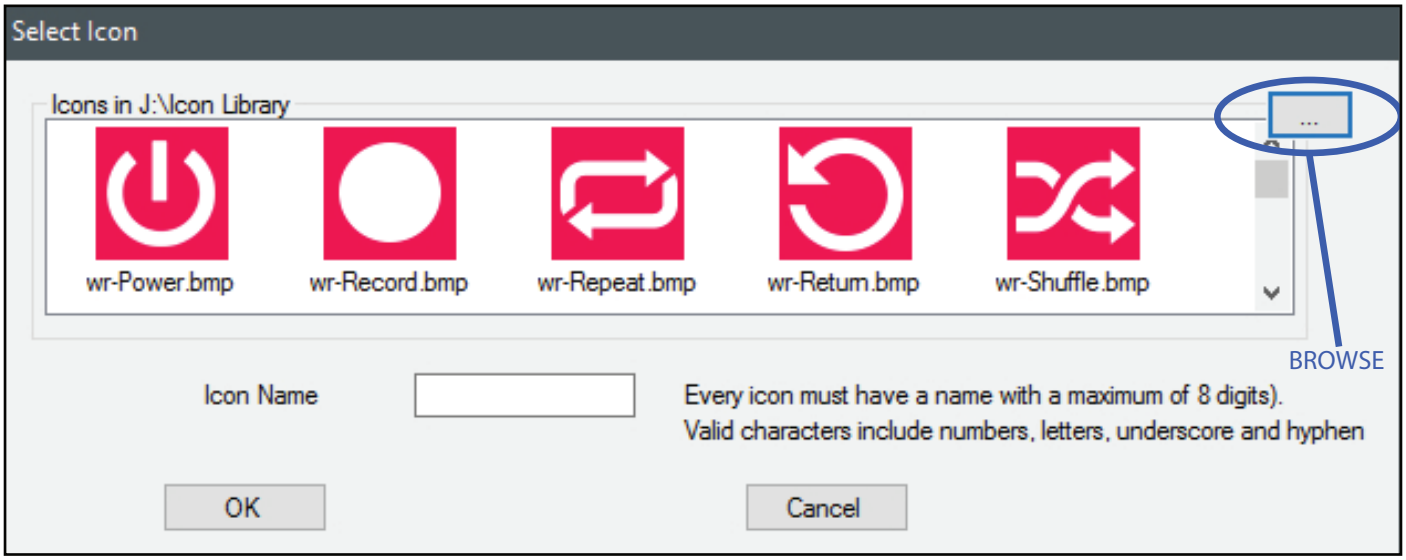


Fig 5.1

The updated icon should now replace the selected icon. In our case we have selected wr-Power.bmp.
We then changed the button label to "Power" by typing in the new name in the Button Label section. The new label now appears below the icon on the wall plate simulation. (NOTE: the label can be a maximum of 12 characters long).

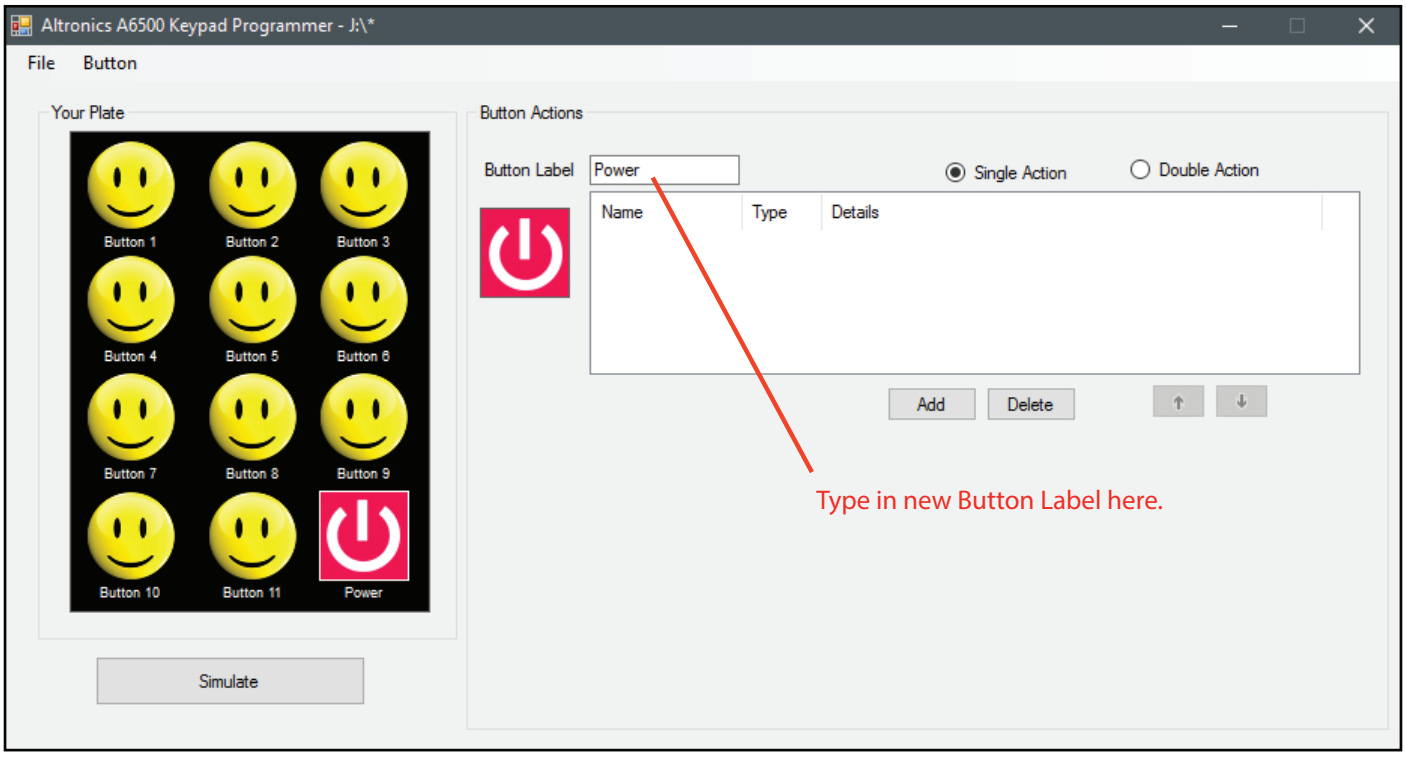


Fig 5.2

6.0 SAVING THE BUTTON CONFIGURATION

At the top of the programming window the location of the save file is shown (In our case the program is saved to the SD card which is the path to the Removable disk (J:). The asterisk at the end of the path signifies that the program has changed since it was last saved, or in our case it hasn't been saved yet.
Lets now save this by selecting File/Save (see Fig 6.1) or by pressing Ctrl+S.

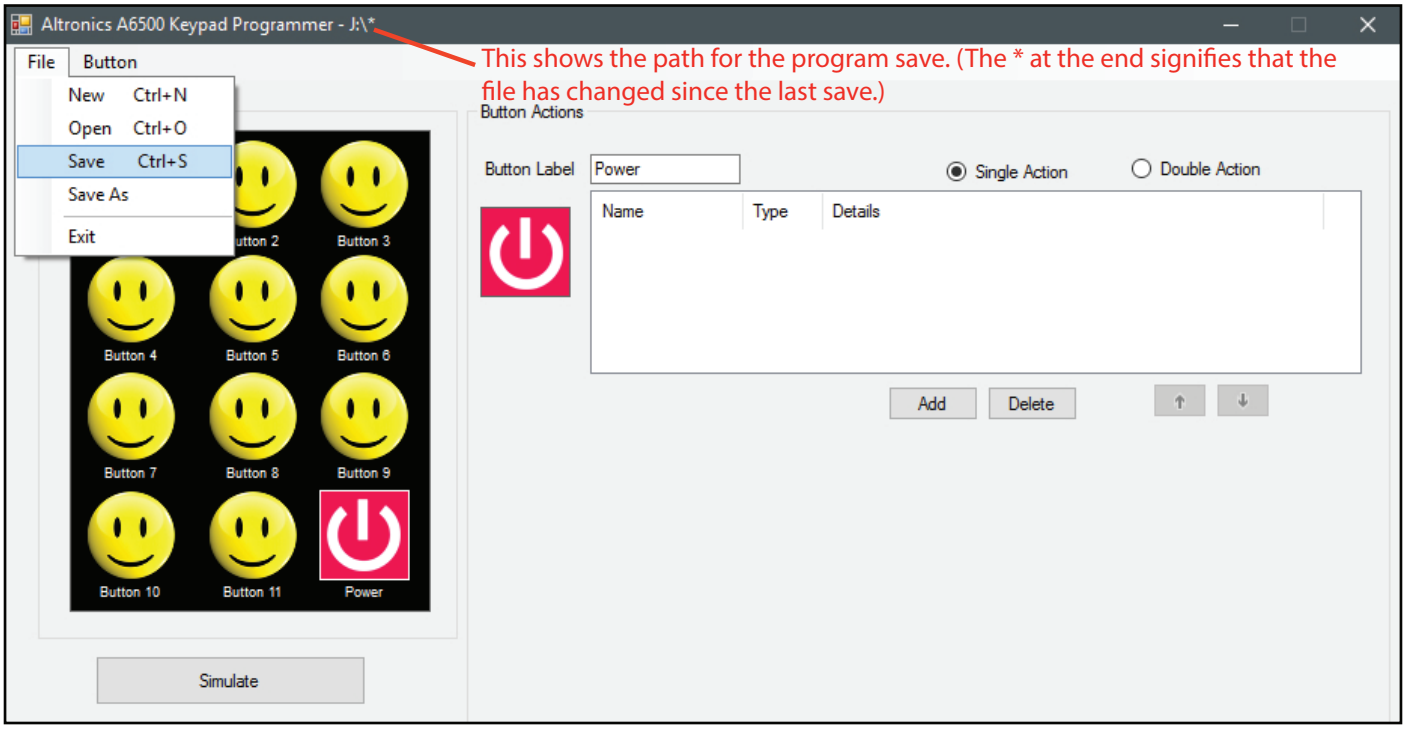


Fig 6.1

Lets take a quick look at the SD card now that this configuration has been saved.
The contents are now quite different to that shown in figure 1.1.
There are now 24 Icon folders as all the buttons have two Icon folders associated to them. The reason they each have two folders is because each button can have two possible action states if required (An example might be: the Icon to turn a device ON may be different to the icon to turn a device OFF.) This is covered in section 16.

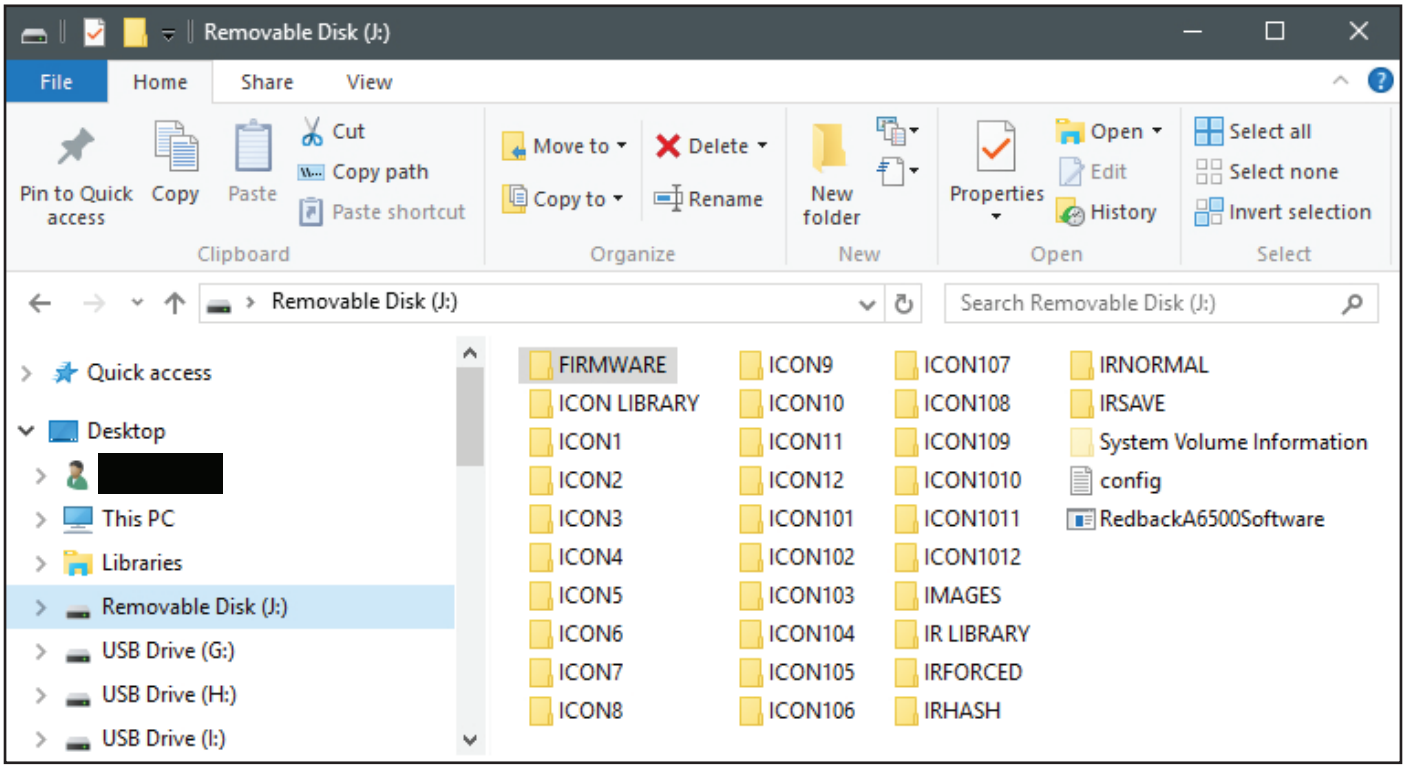


Fig 6.2

6.1 COPYING THE CONFIGURATION FOR USE ACROSS MULTIPLE JOBS

Sometimes the same setup is required for different jobs, an example might be setting up a school where multiple classrooms have the same equipment setup. Since the A 6500 configuration is saved to the Micro SD card, simply by copying the contents of the SD card to another SD card for the next job, removes the need to program the wall plate with the same configuration again. If the configuration is slightly different, then the changes can be made to the saved configuration.

7.0 SWAPPING BUTTONS

The position of the buttons can be moved around the screen by using the "Swap with" command located in the Button/Swap with tab as shown in figure 7.1. Simply select the button to swap and the buttons will swap accordingly.

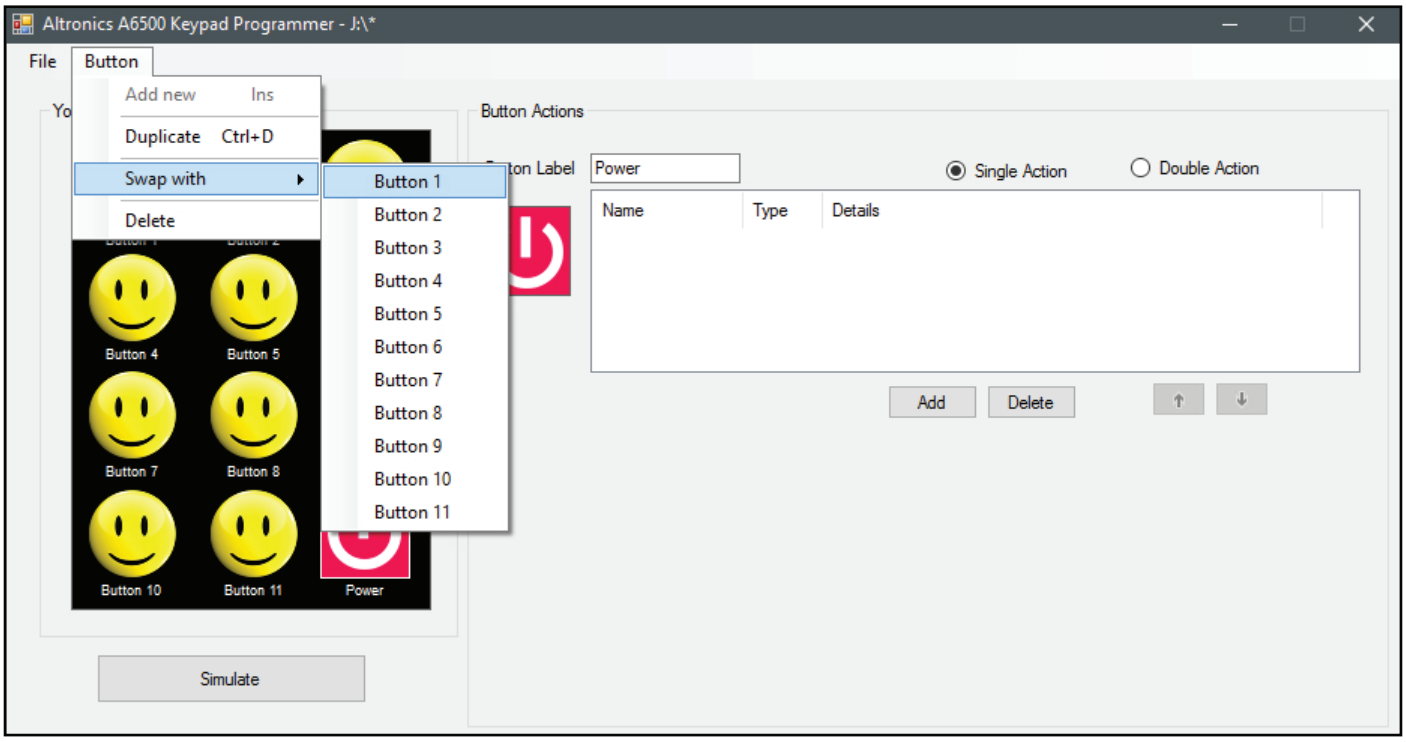


Fig 7.1

In our example we have swapped button 1 with button 12, the result is shown in figure 7.2

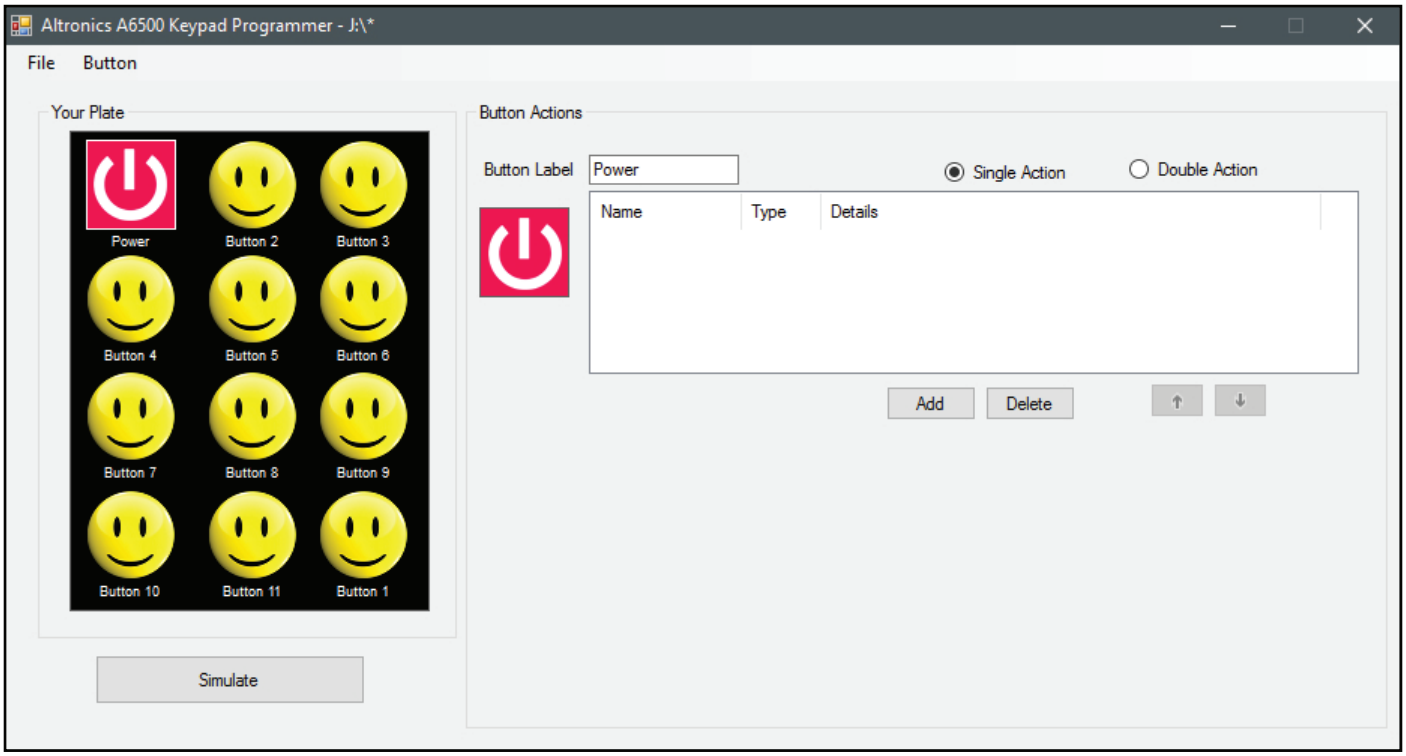


Fig 7.2

8.0 DELETING BUTTONS

Buttons can be removed from the screen by navigating to the Button/Delete tab and pressing delete.
(NOTE: Make sure you have selected the button to be removed beforehand).

9.0 ADDING SERIAL COMMANDS TO BUTTONS

To configure a serial command to a button, select the button from the Wall Plate Screen Simulator and then press the "Add" button as shown in figure 9.1.

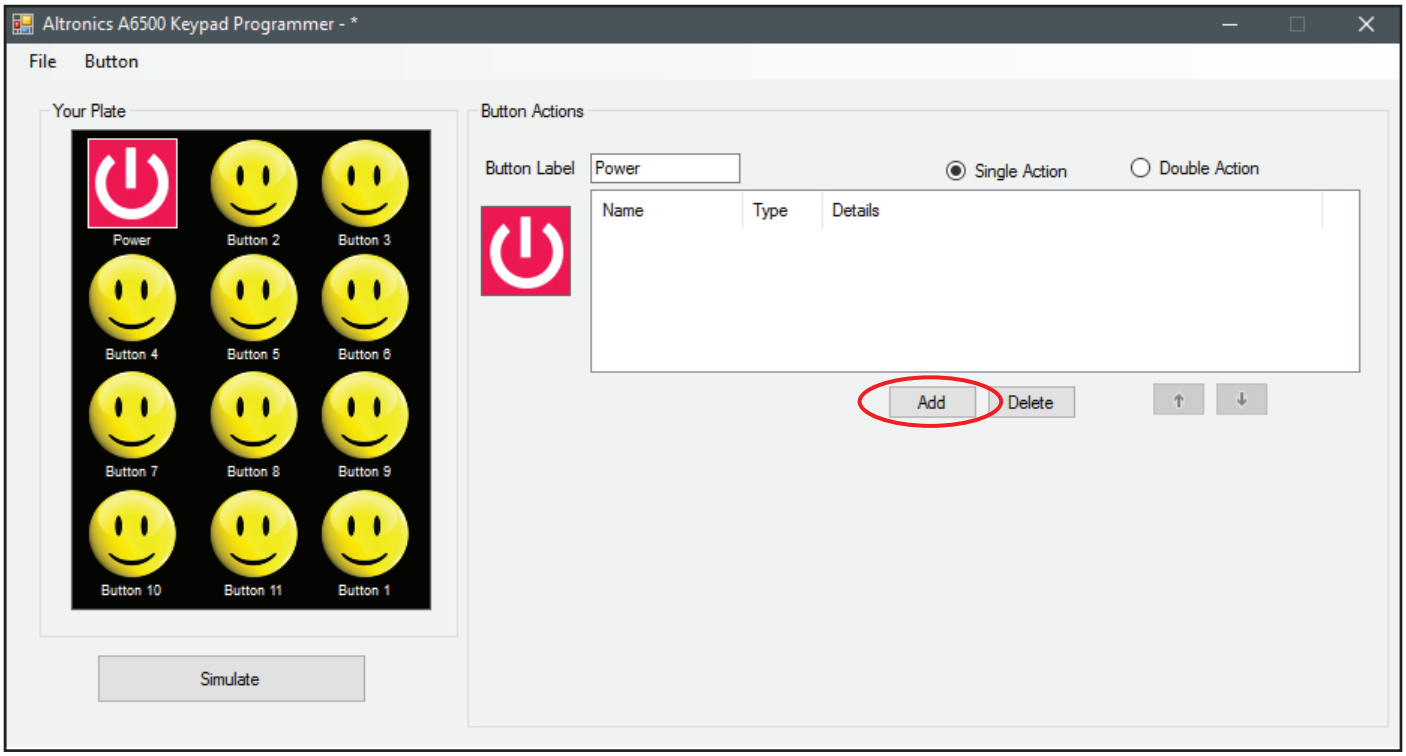


Fig 9.1

The "Add New Command" window should appear as shown in figure 9.2 and will default to the Serial command type.

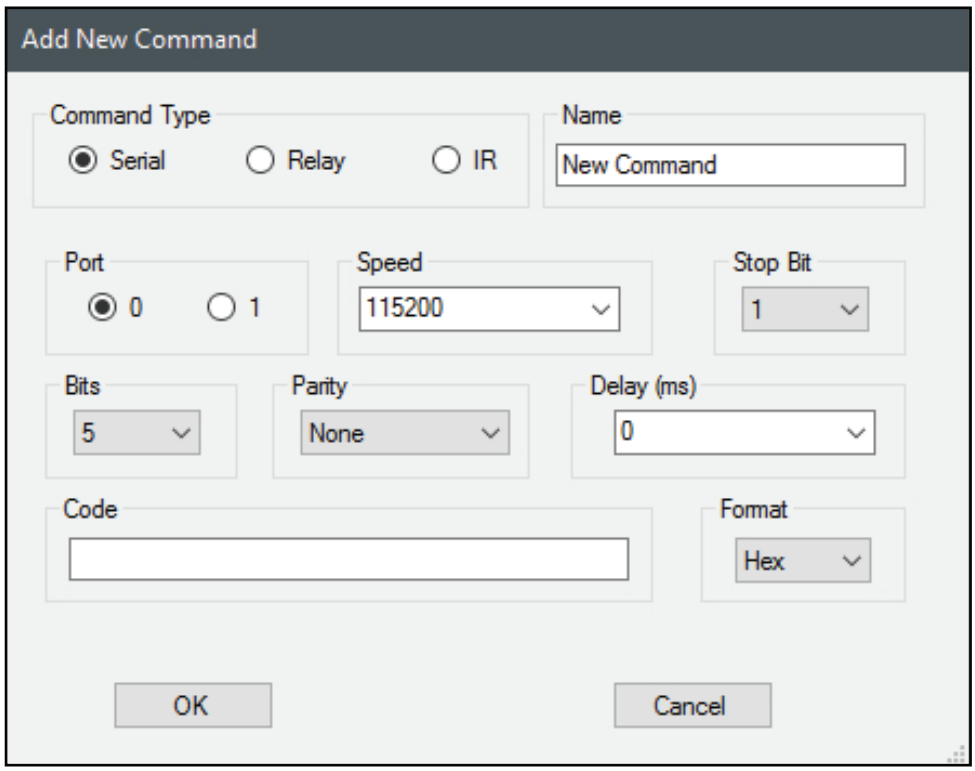


Fig 9.2

This is where all the serial command parameters are set. The Port refers to output port of the A 6505 serial hub and is either Port 1 or 2. *(NOTE: Older versions of the software may have the option of Port 0 or 1.)*
The serial transmission parameters are set by simple drop down boxes, for the baud rate (Speed), Stop bits, transmission Bits and Parity.

The Delay refers to the amount of time the system will wait after the command is exectued. This has the option of 10,100 or 1000 milliseconds via the drop down box or any time period can be entered manually.
The Code is the serial code to be output, which can be in either HEX or ASCII format as selcted by the drop down box.
The Name provides the user with a way of creating a meaningful description of the command.

In the example below, we have set the output port to 0 (which will output from Port 1 of the A 6505), set the transmission speed to 9600 baud, with 1 stop bit, 8 bits of data and parity None. The transmission code is FFFF in HEX format, we have set a delay of 1 sec (1000ms) and labelled the command Turn Device ON.
(Note: Spaces cannot be used in the HEX code. They are invalid).

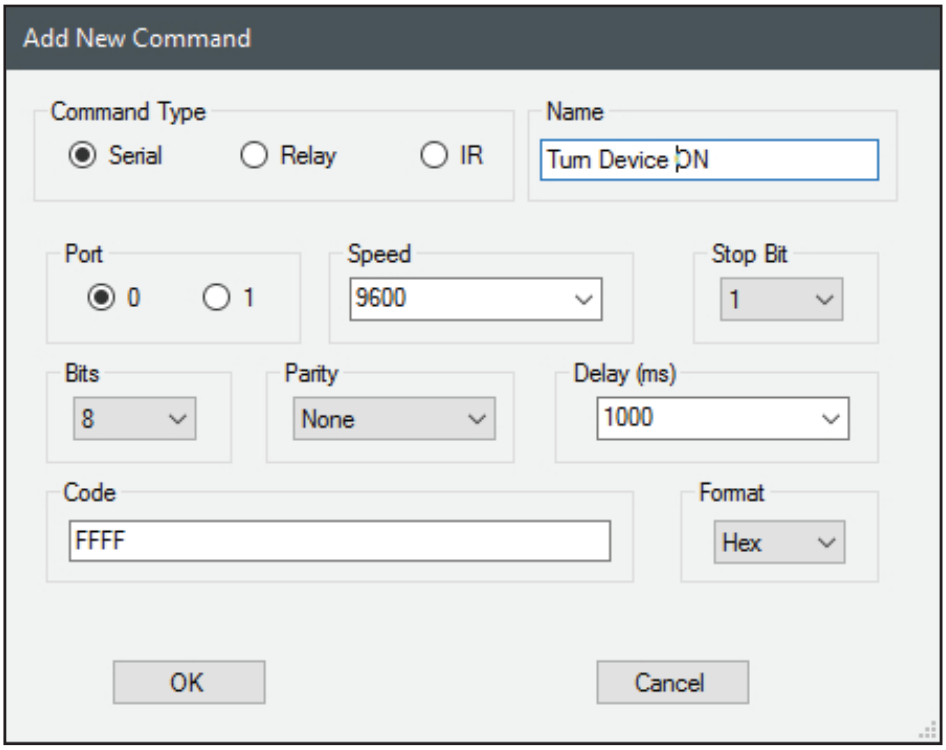


Fig 9.3

After pressing "OK", the resultant command line is shown below in figure 9.4. All the settings are now visible and can be deleted or edited from this screen (double click the line to edit).

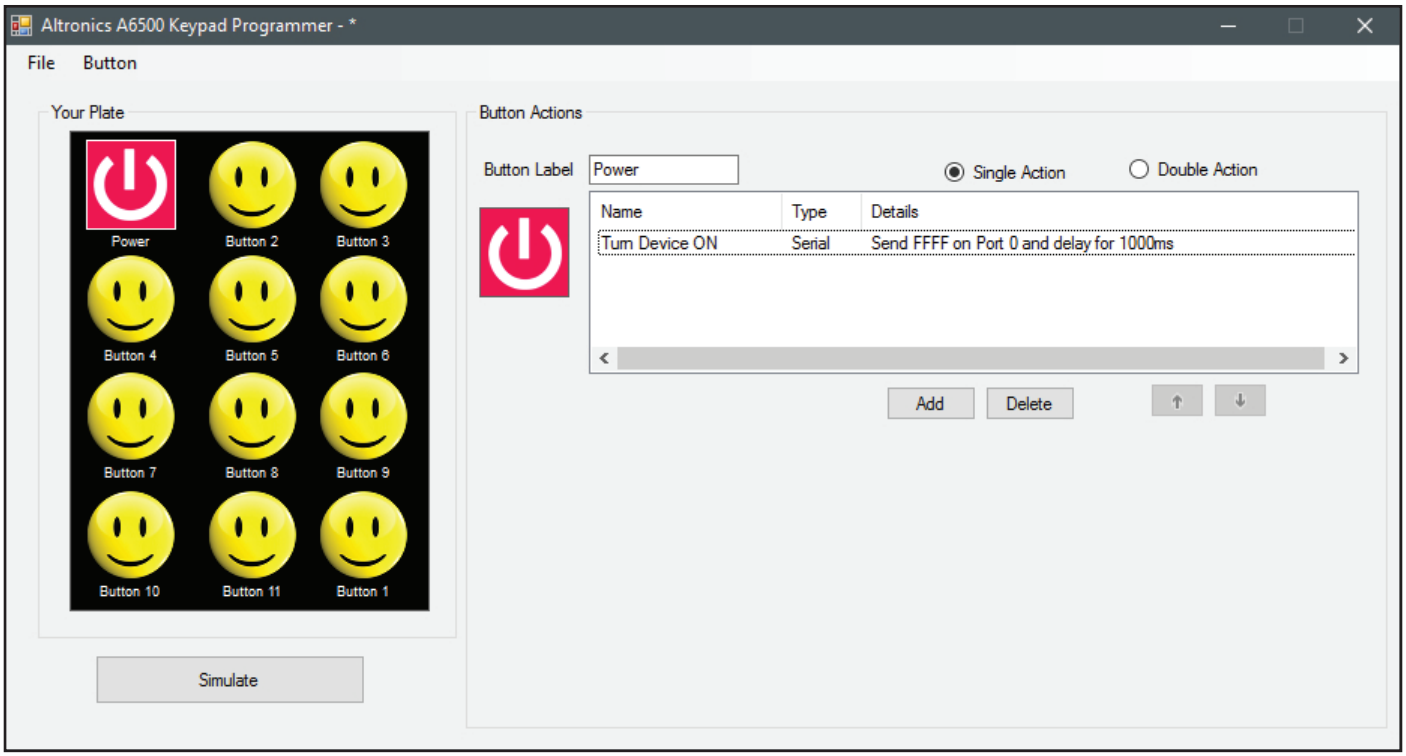


Fig 9.4

10.0 ADDING RELAY COMMANDS TO BUTTONS

To configure a relay command to a button, select the button from the Wall Plate Screen Simulator and then press the "Add" button as shown in figure 9.1.
The "Add New Command" window should appear as shown in figure 9.2 and will default to the Serial command type. Select the "Relay" tick box and the window should change to that shown below in figure 10.1.

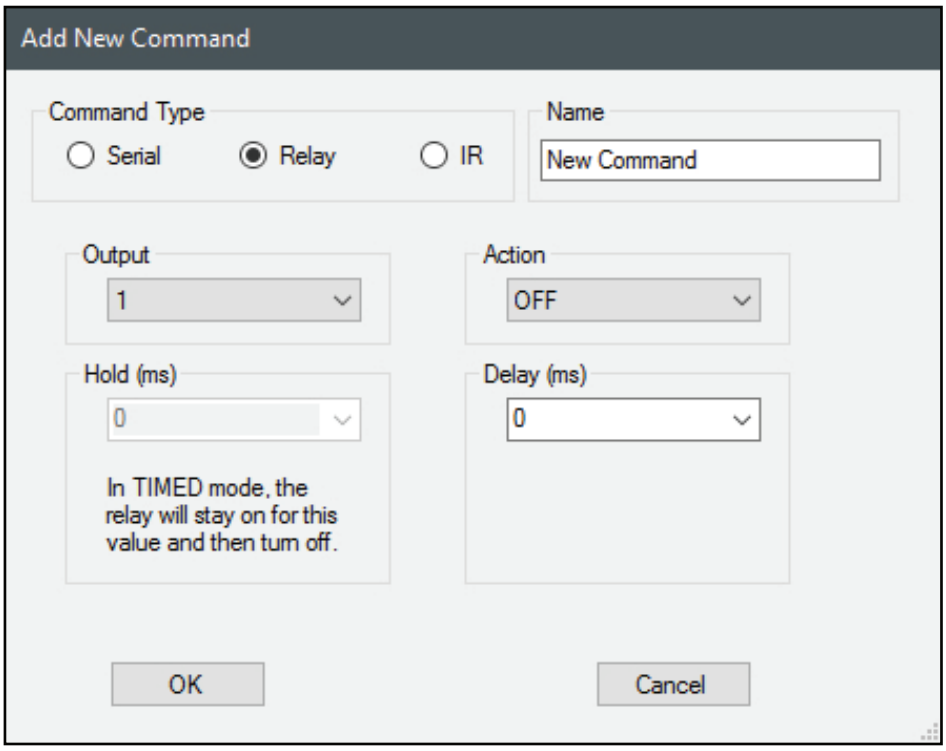


Fig 10.1

From here we can select the relay output 1-3 (of the A 6505 Serial Hub) and determine the action for that relay. The relay can be set to OFF or ON, the output can be set to toggle it's state each time the button is pressed or the relay can be set to a timed output which will remain on for 10, 100, 1000 or 10,000 milliseconds (set by the "Hold" drop down box) or any time period can be entered manually.
The Delay refers to the amount of time the system will wait after the command is exectued before performing any more tasks. This has the option of 10,100, 1000 or 10000 milliseconds via the drop down box or any time period can be entered manually.

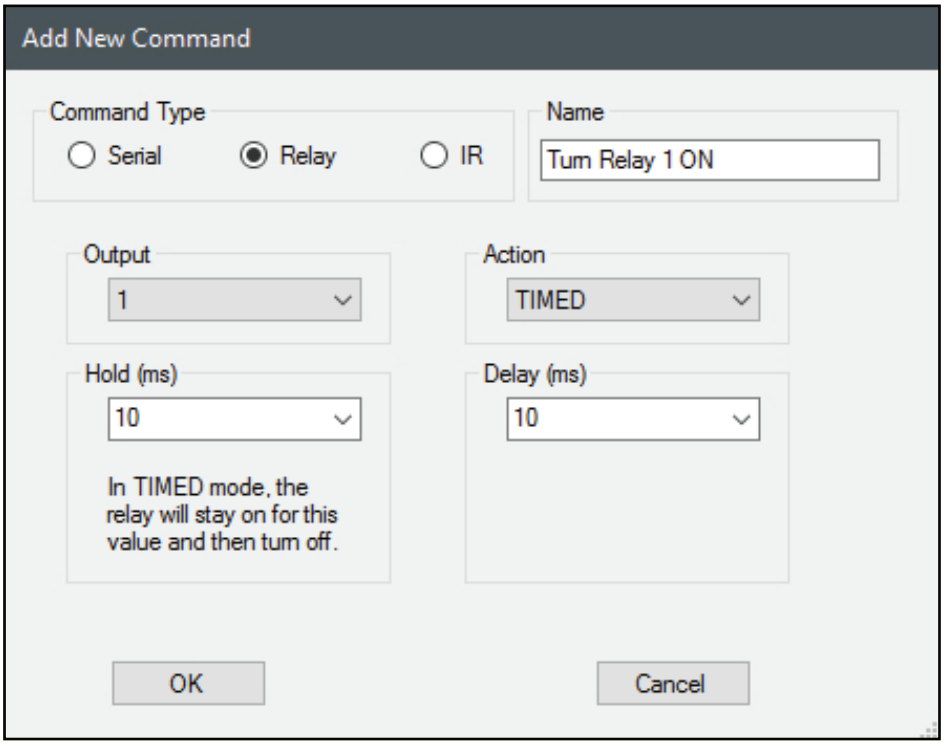


Fig 10.2

In the example shown in figure 10.2, we have set the output to relay 1, and set the action to a timed output which will activate the relay for 10 milliseconds. We have also set a delay of 10 milliseconds and labelled the command "Turn Relay 1 ON".
After pressing "OK", the resultant command line is shown below in figure 10.3. Two command lines are visible in the button actions window. The first line is the command from the example in section 9.0 and the second line is the example in this section.

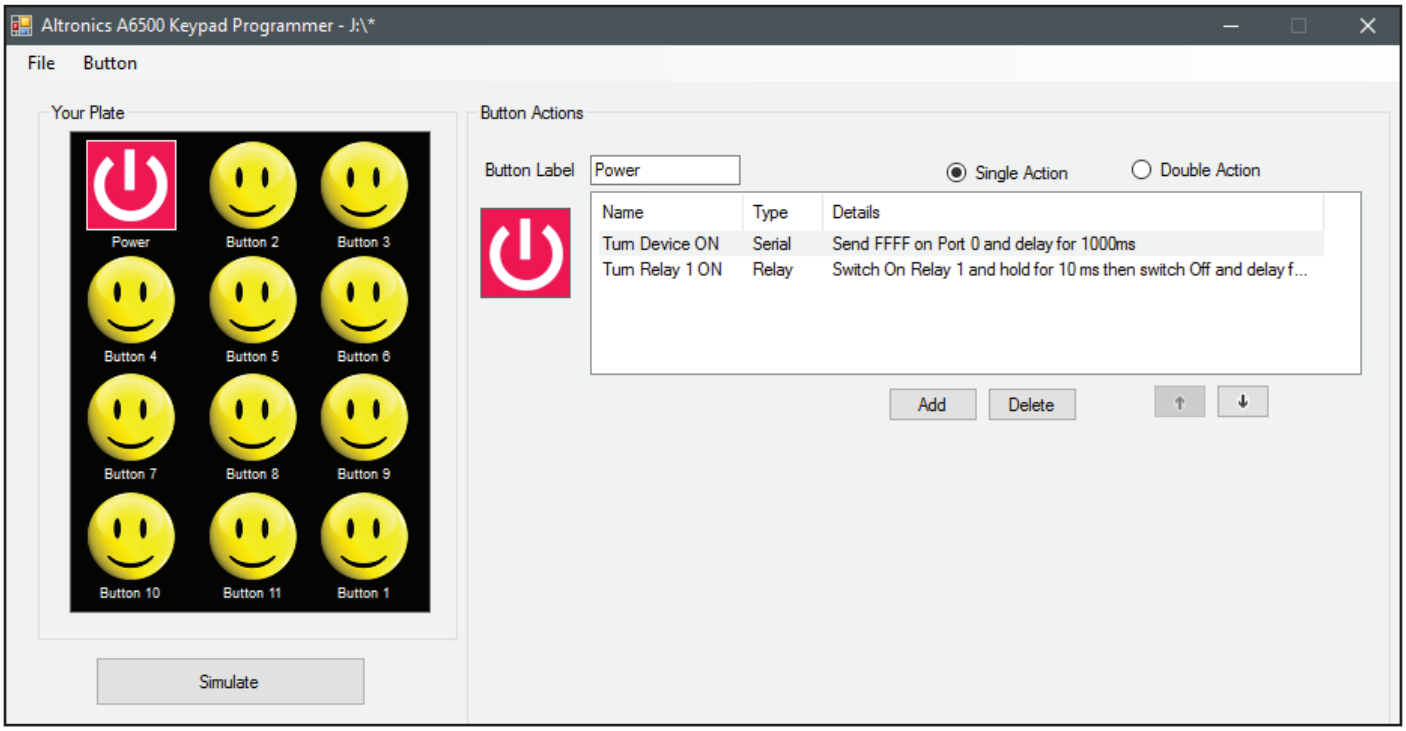


Fig 10.3

Either line can be deleted or edited from this screen (double click the line to edit) and the order of events can also be modified by selecting the line and then using the up and down arrows to change its position in the list.
Each button can have an unlimited number of commands. *(NOTE: while the commands for a button are being executed the wall plate will not respond to other button presses).*

11.0 SIMULATING BUTTON PRESSES

The actions of the buttons can be simulated in real time without the need to insert the SD card into the wall plate. Simply press the simulate button under the screen simulator and then view the command results when the buttons are pressed.

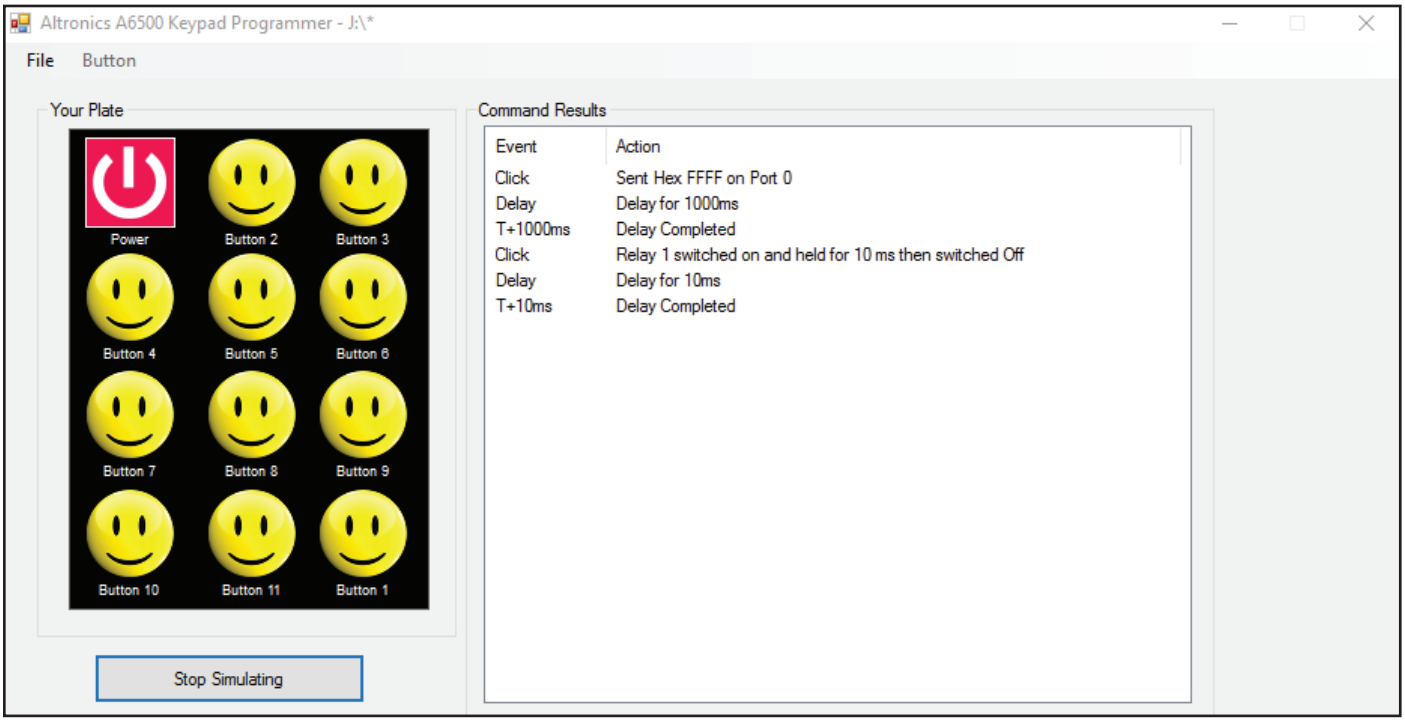
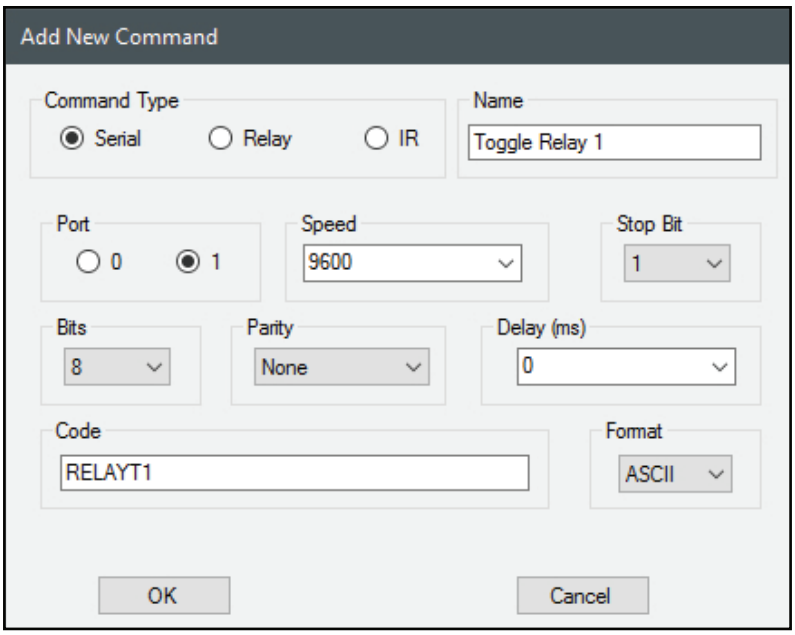


Fig 11.1

12.0 SETTING RELAY COMMANDS WHEN USING THE A 6500 WITH THE A 6510/ A 6515

In order to use the relay outputs of the Redback® A6510 or A 6515 when using the CAT5 direct connection from the A 6500 wall plate (see fig 12.2 and 12.3), specific serial commands have to be sent. These external relays cannot be activated using the standard relay commands.

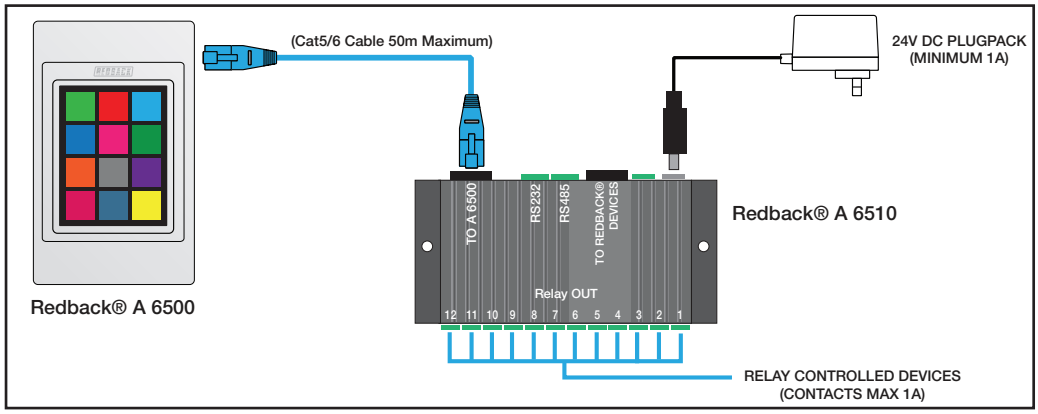
Follow the same steps as outlined in section 9.0 to create a new serial command for a button through the Add New Command window.
There are three options for the state of the external relays, ON, OFF or Toggle.
Specific ASCII codes have to be sent to switch the desired relays.
Figure 12.1 illustrates the settings required to toggle relay 1.
The port must be set to 1, the speed to 9600 baud, the stop bit to 1, data bits to 8 , parity to none and the format must be ASCII.



The code to be sent is quite simple.
The code starts with the word RELAY followed by T for toggle, O (capital o) for OFF and I (capital i) for ON, followed by the relay number.
So for instance to turn on relay 5, the code would be RELAYI5, to toggle relay 12, the code would be RELAYT12 and so on.

It is also possible to turn all relays ON or OFF by using the standard format of O (capital o) for OFF, I (capital i) for ON and then by using the number 99 as the relay number.
so the command RELAYI99 will turn all relays ON and the command RELAYO99 will turn all relays OFF

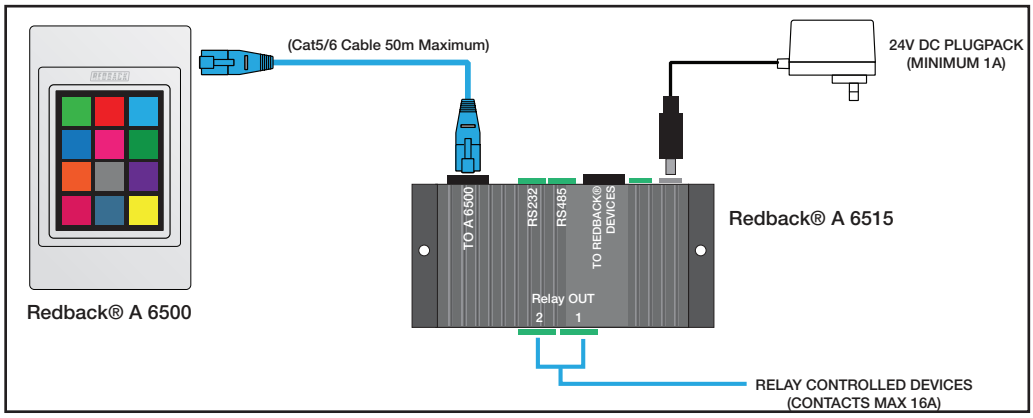
Fig 12.1



NOTE: The A 6510 relays are numbered 1-12.

NOTE : DIP Switch 3 must be set to ON in this wiring configuration. All other DIP switches must be OFF.

Fig 12.2



NOTE: The A 6515 relays are numbered 13 &14.

NOTE : DIP Switch 3 must be set to ON in this wiring configuration. All other DIP switches must be OFF.

Fig 12.3

13.0 SETTING COMMANDS FOR EXPANDED RELAY SYSTEMS USING THE A 6505 and A6510 or A 6515

In order to make use of the expanded relay outputs of the Redback® A6510 or A 6515 when using the A 6505 serial hub (see fig 13.2 and 13.3), specific wiring is required and certain serial commands have to be sent. This is to avoid clashes with the relay outputs of the A 6505 serial hub which makes use of the standard relay commands.

13.1 SERIAL COMMANDS TO CONTROL A 6510 RELAYS

Follow the same steps as outlined in section 9.0 to create a new serial command for a button through the Add New Command window.
There are three options for the state of the external relays, ON, OFF or Toggle.
Specific ASCII codes have to be sent to switch the desired relays.

Figure 13.1 illustrates the settings required to toggle relay 1 on the A 6510.
The speed is set to 9600 baud, the stop bit to 1, data bits to 8 , parity to none and the format must be ASCII.
The port is set to match the output port used on the A 6505 serial hub.

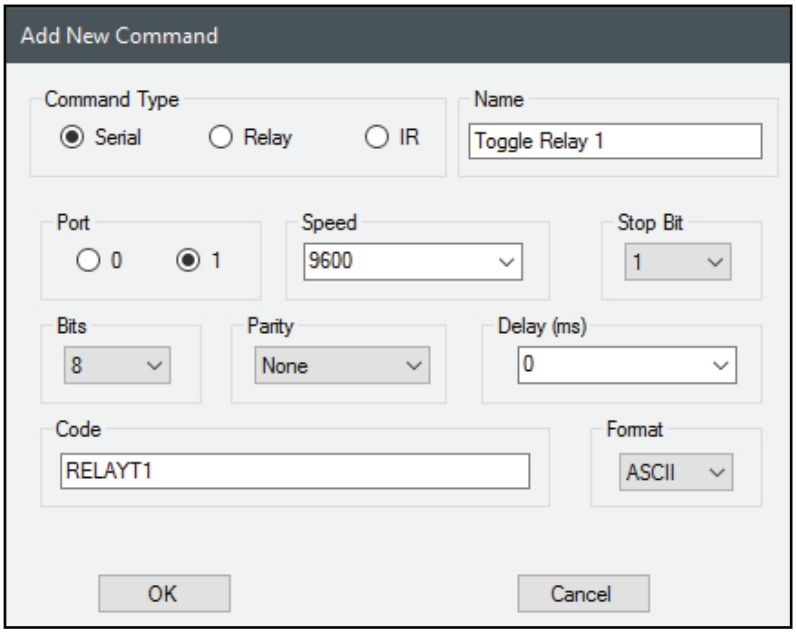


Fig 13.1

The code to be sent is quite simple.
The code starts with the word RELAY followed by

T for toggle (this alternates the state of the relay with each press).
O (capital o) for OFF (this turns the relay Off).
I (capital i) for ON (this turns the relay On).

followed by the relay number.

So for instance to turn on relay 5, the code would be RELAYI5. To toggle relay 12, the code would be RELAYT12 and so on.

It is also possible to turn all relays ON or OFF by using the standard format of O (capital o) for OFF, I (capital i) for ON and then by using the number 99 as the relay number.
so the command RELAYI99 will turn all relays ON and the command RELAYO99 will turn all relays OFF

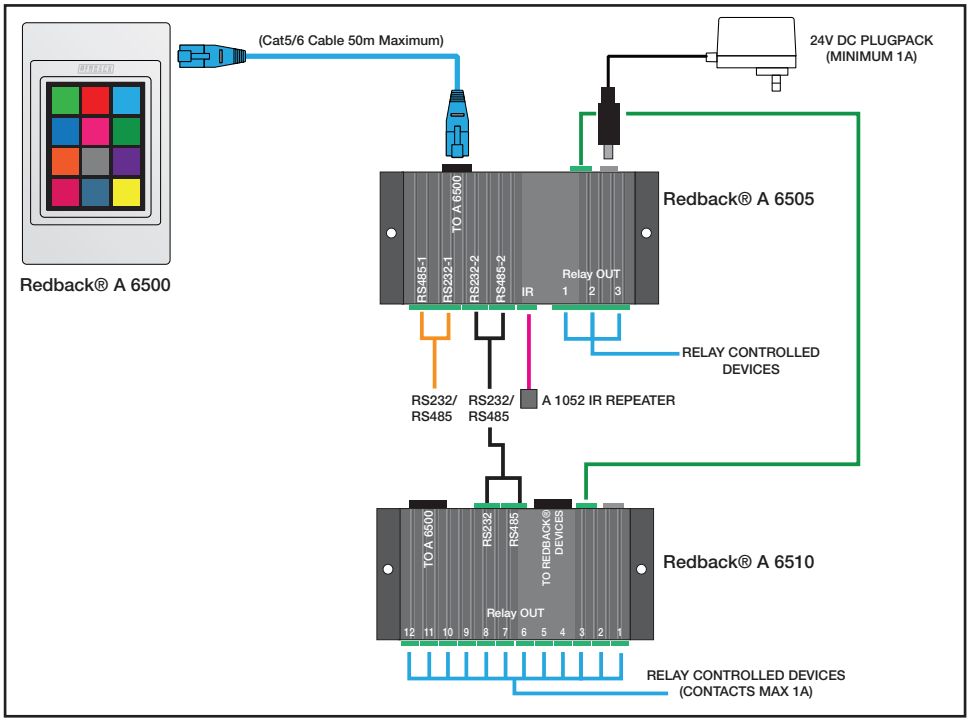


Fig 13.2

NOTE: The A 6510 relays are numbered 1-12.

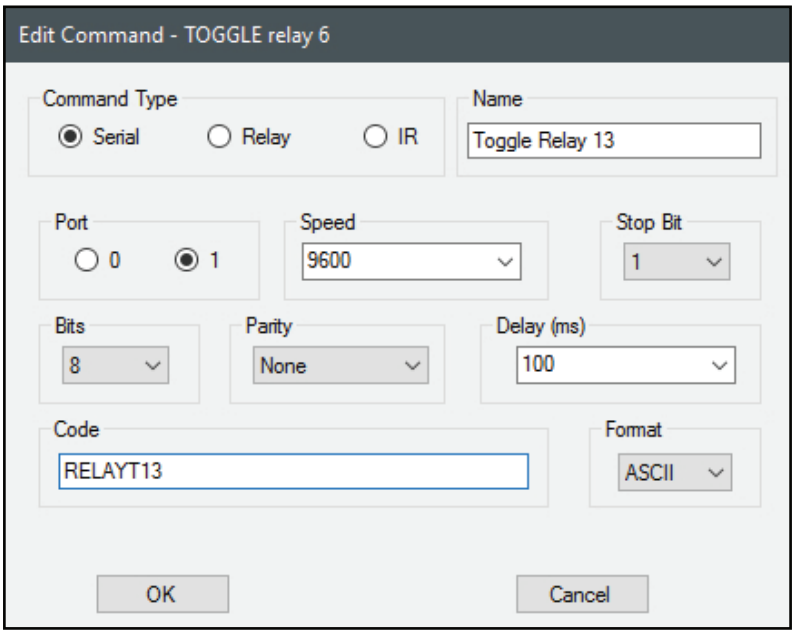
A 6510 DIP Switch Settings
NOTE : Only one DIP swiitch can be set to ON.
DIP Switch 1 must be set to ON when using the RS485 input of the A 6510.
DIP Switch 2 must be set to ON when using the RS232 input of the A 6510.
All other DIP switches must be OFF.

13.2 SERIAL COMMANDS TO CONTROL A 6515 RELAYS

Follow the same steps as outlined in section 9.0 to create a new serial command for a button through the Add New Command window.
There are three options for the state of the external relays, ON, OFF or Toggle.
Specific ASCII codes have to be sent to switch the desired relays.

Figure 13.3 illustrates the settings required to toggle relay 13 on the A 6515.

The speed is set to 9600 baud, the stop bit to 1, data bits to 8 , parity to none and the format must be ASCII.
The port is set to match the output port used on the A 6505 serial hub.



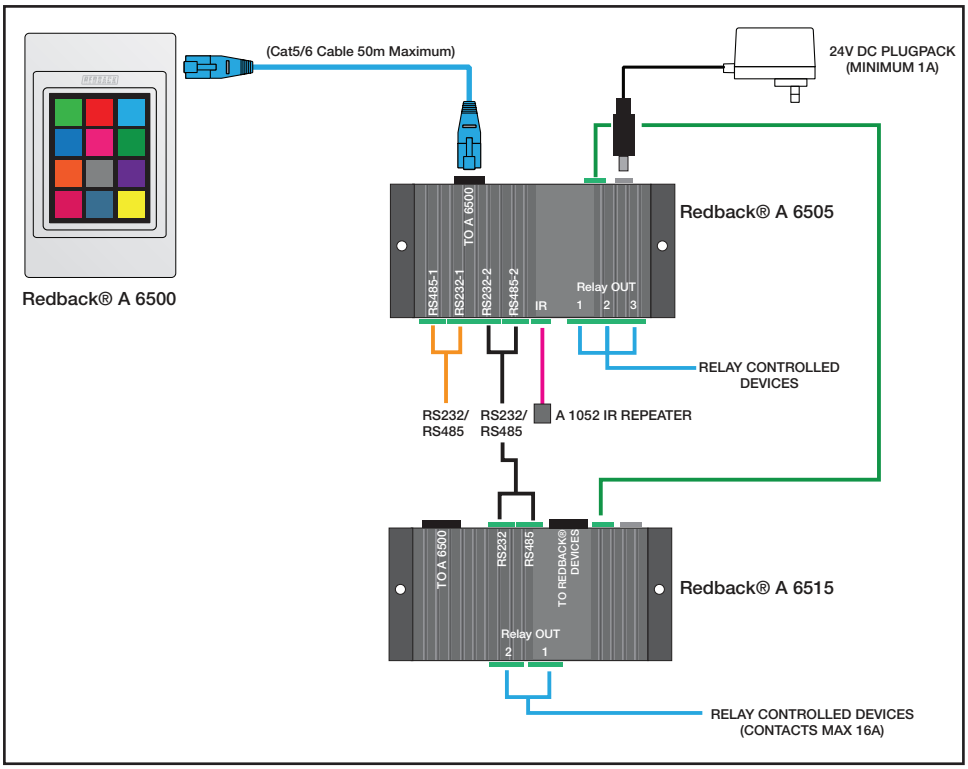
The code to be sent is quite simple.
The code starts with the word RELAY followed by

T for toggle (this alternates the state of the relay with each press).
O (capital o) for OFF (this turns the relay Off).
I (capital i) for ON (this turns the relay On).

followed by the relay number.

So for instance to turn on relay 13, the code would be RELAYI13. To toggle relay 14, the code would be RELAYT14 and so on.
It is also possible to turn all relays ON or OFF by using the standard format of O (capital o) for OFF, I (capital i) for ON and then by using the number 99 as the relay number.
so the command RELAYI99 will turn all relays ON and the command RELAYO99 will turn all relays OFF

Fig 13.3



NOTE: The A 6515 relays are numbered 13 & 14.

A 6515 DIP Switch Settings
NOTE : Only one DIP swiitch can be set to ON.
DIP Switch 1 must be set to ON when using the RS485 input of the A 6515.
DIP Switch 2 must be set to ON when using the RS232 input of the A 6515.
All other DIP switches must be OFF.

Fig 13.4

14.0 SERIAL COMMANDS FOR THIRD PARTY CONTROL OF THE A6510 AND A 6515

The Redback® A6510 and 6515 relay boxes can both operate without the need for the Redback® A 6500 wall plate or the Redback® A 6505 serial hub.

Third party control is achieved by sending serial commands to the RS232 or RS485 inputs of the A6510 or A 6515 as shown in figure 14.1.

The serial data sent has to transmitted at 9600 baud, with the stop bit set to 1, data bits to 8 , parity to none and the format must be ASCII.

The code to be sent is quite simple.
The code starts with the word RELAY followed by

T for toggle (this alternates the state of the relay with each press).
O (capital o) for OFF (this turns the relay Off).
I (capital i) for ON (this turns the relay On).

followed by the relay number.

So for instance to turn on relay 13, the code would be RELAYI13. To toggle relay 14, the code would be RELAYT14 and so on.

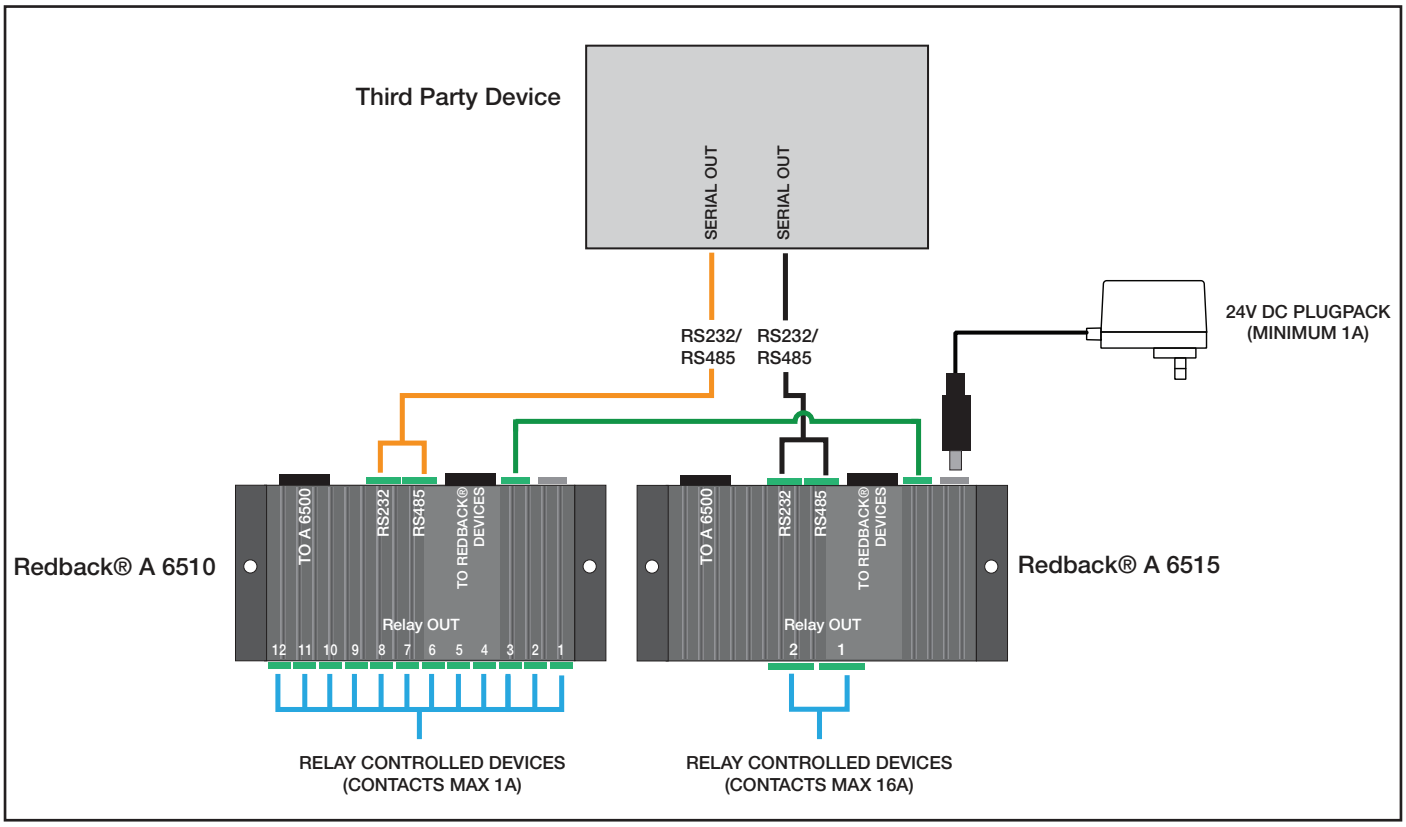


Fig 14.1

It is also possible to turn all relays ON or OFF by using the standard format of O (capital o) for OFF, I (capital i) for ON and then by using the number 99 as the relay number.
So the command RELAYI99 will turn all relays ON and the command RELAYO99 will turn all relays OFF

15.0 ADDING IR COMMANDS TO BUTTONS

To configure an IR command to a button, select the button from the Wall Plate Screen Simulator and then press the "Add" button as shown in figure 9.1.
The "Add New Command" window should appear as shown in figure 9.2 and will default to the Serial command type. Select the "IR" tick box and the window should change to that shown below in figure 15.1.

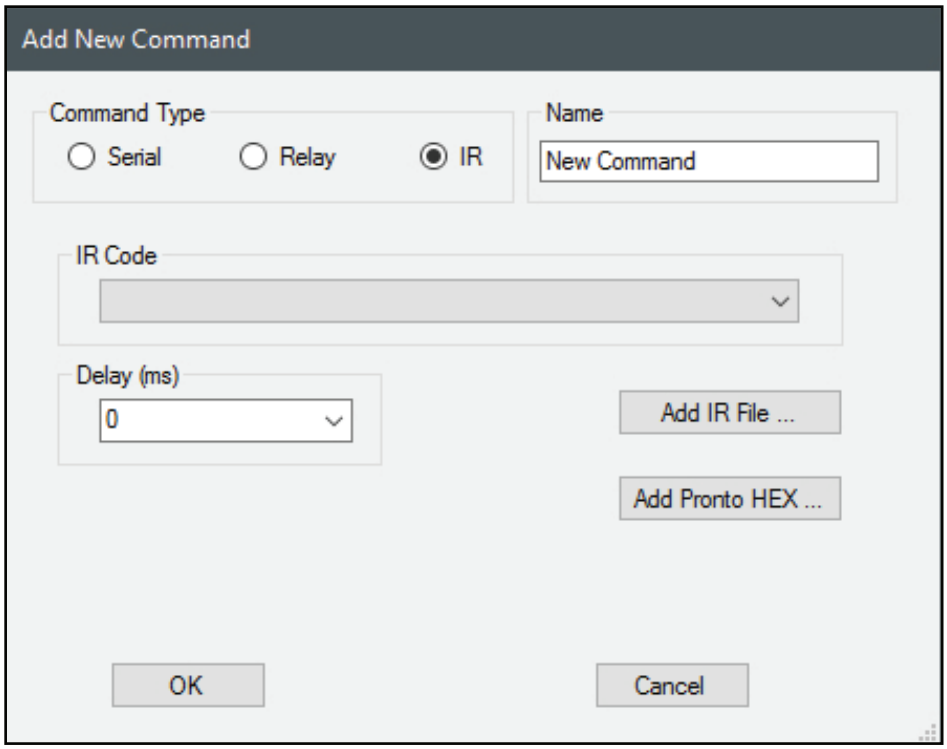


Fig 15.1

From here we have two methods of adding IR commands, which include adding an already saved IR code or by adding a Pronto HEX code. We also have the delay option which refers to the amount of time the system will wait after the command is exectued before performing any more tasks. This can be set to 10,100 or 1000 milliseconds.

15.1 Learning IR Codes

Insert a USB keyboard into the side of the A 6500 wall plate (you will have to remove the cover) refer to figure 2.1b in the operating manual.

NOTE: An OTG (On The Go) cable (such as the Altronics P 1921) will be required between the USB Keyboard and the Micro USB socket on the wall plate.

The wall plate will automatically recognise the connection of the keyboard (Note: the Micro SD card has to be fitted) and will request the user to enter the name of the button to be learned.
Enter the name of the button e.g. DVDPLAY and then press enter. (Note: Spaces are not available). Now press the remote control button to be recorded. The wall plate will record the IR code to the SD card for the duration of the button press and will recognise when the button is released.
Once the IR code has been stored, there is the option to test the code if required in FORCED or NORMAL mode. In order to test the IR output, the Redback® A 6505 Serial Hub will need to be connected to the A 6500 wall plate. Connect an IR repeater to the IR output (Refer to figure 2.2b and 3.1 in the Operating Manual) and point the IR repeater at the piece of equipment to be controlled.
Follow the on screen prompts to first test the IR code in FORCED mode and then in NORMAL mode. Testing the codes at this stage provides instant feedback of the codes working as required. Both codes are stored on the SD card for use, in the IRFORCED and IRNORMAL folders under the name entered by the user. e.g. DVDPLAY.

Remove the keyboard when finished recording IR codes and the wall plate will automatically restart.
Remove the SD card from the A 6500 Wall Plate and Insert into the PC.
These codes can now be retrieved by using the Add IR File button in the "Add New Command" window.

15.2 Add IR File

IR codes can be added to a button by pressing the "Add IR File" button on the Add New Command window as shown in figure 15.2. Once pressed the file navigator will open, then simply navigate to the location of IR files. They may be in the supplied IR LIBRARY folder on the SD card, or any saved IR codes created by using the IR learning facility on the wall plate (see section 15.1 for details) which will be saved to the SD card in the IRFORCED or IRNORMAL folders.

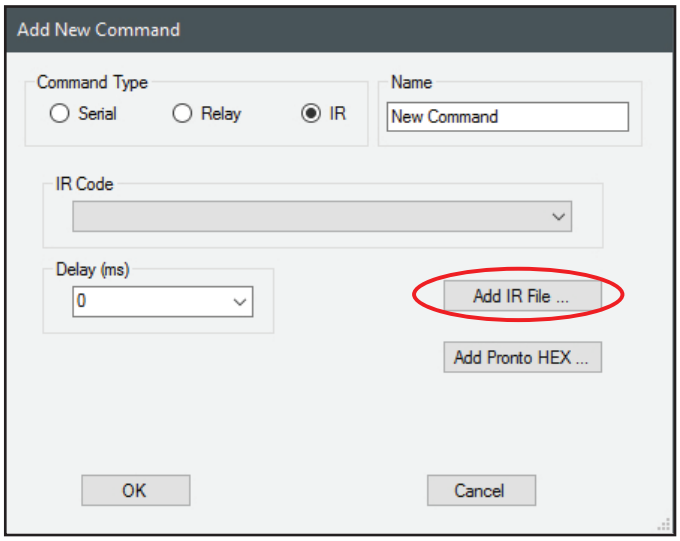


Fig 15.2

For our example we want to make button 2 play a DVD. We change the Icon of button 2 to a Play Icon available from the icon library. We then create a new IR command using the method in section 15.0. We navigate to the IRNORMAL folder on the SD card (see figure 15.3) and select the DVDPLAY file which we created in section 15.1 and press Open.

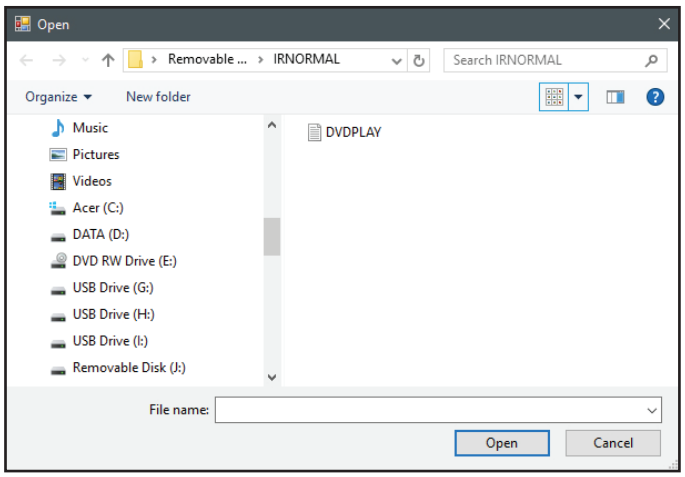


Fig 15.3

The IR file is now listed in the IR Code drop down box as shown in figure 15.4. Select DVDPLAY and then press OK.

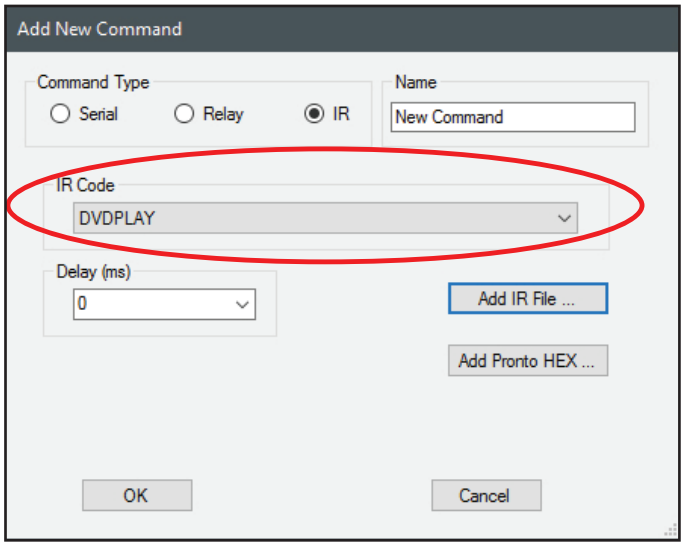


Fig 15.4

The resultant command line now appears in the button actions window as shown in figure 15.5.

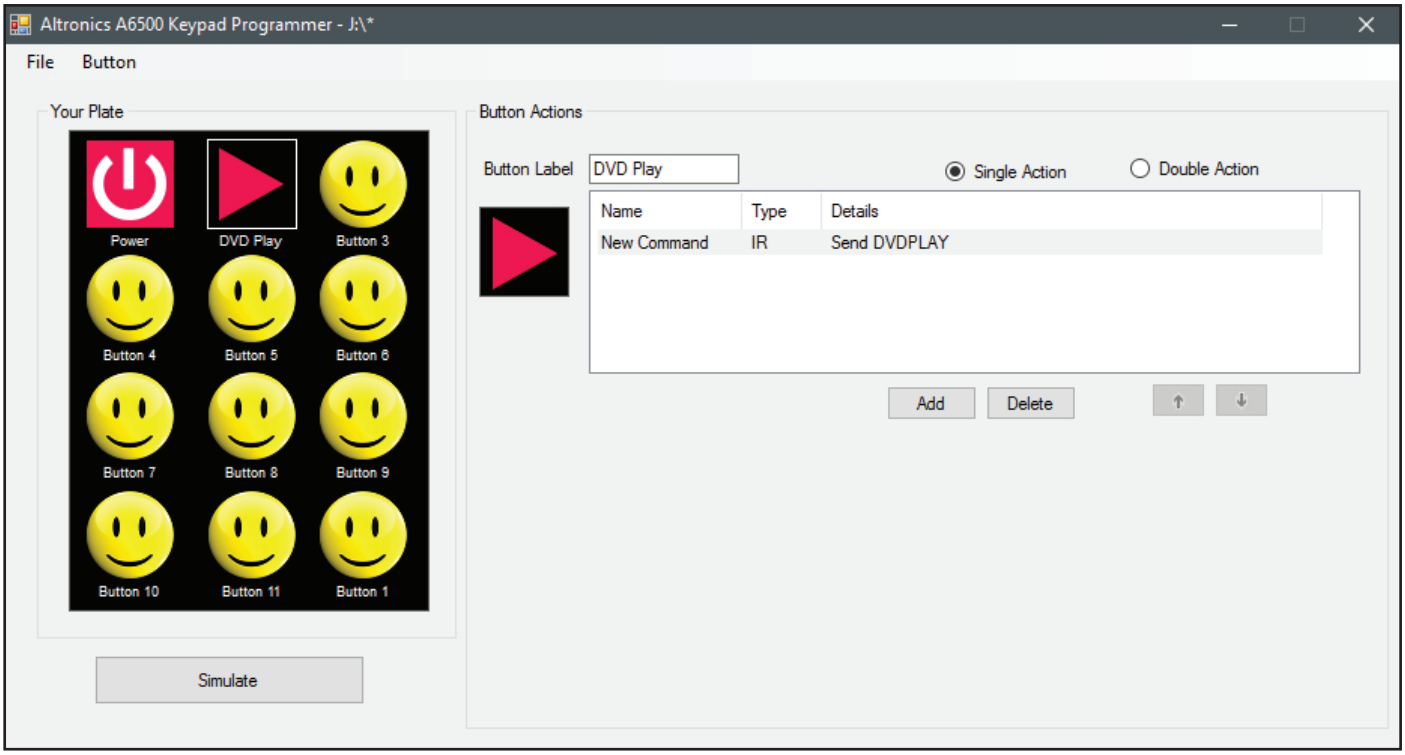


Fig 15.5

15.3 Add Pronto HEX File

Pronto HEX format IR codes are readily available and remove the need to learn IR codes.
These codes are easily accessible on the internet, but be warned that not everything available will work.

IR codes can be added to a button by pressing the "Add Pronto HEX" button on the Add New Command window as shown in figure 15.6.

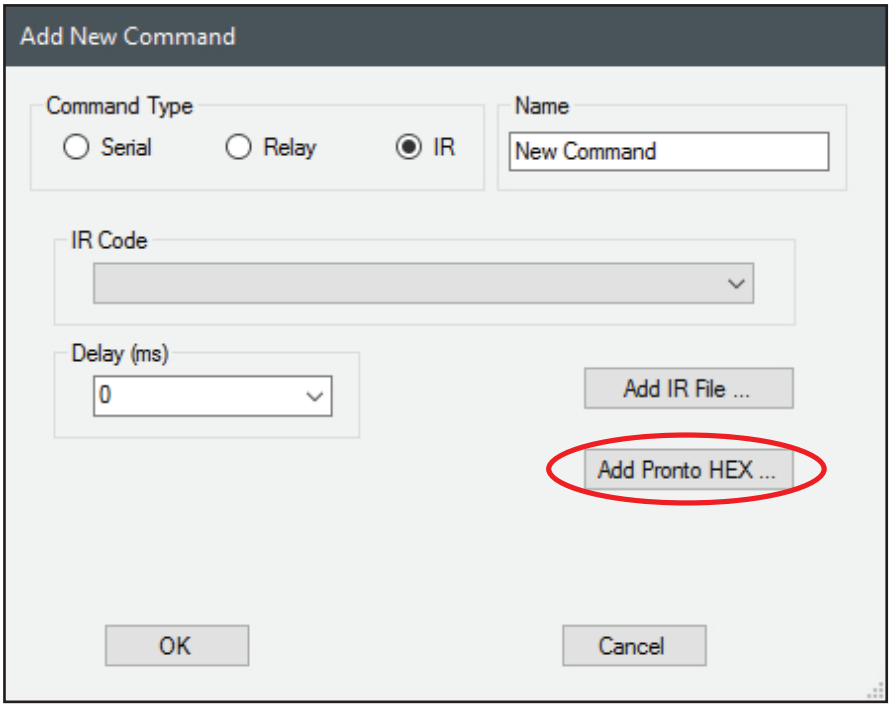


Fig 15.6

Once pressed the "Create Pronto HEX Command" window will appear (refer to figure 15.7).

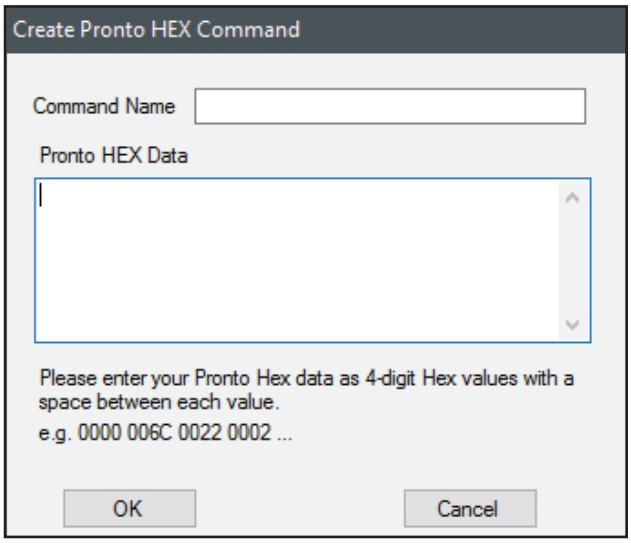


Fig 15.7

From here it is simply a matter of copying the HEX codes from a webpage or other document and pasting them into the window. For our example we changed the Icon of button 3 to a Stop Icon available from the icon library. We have then copied the Pronto HEX codes from a webpage. We name the command Sony DVD Stop. The result is shown in figure 15.8.

(Note: When entering IR PRONTO HEX codes, spaces are valid between each HEX code but invalid at the start and end of the group. Make sure there isn't a space at the end of the group of codes).

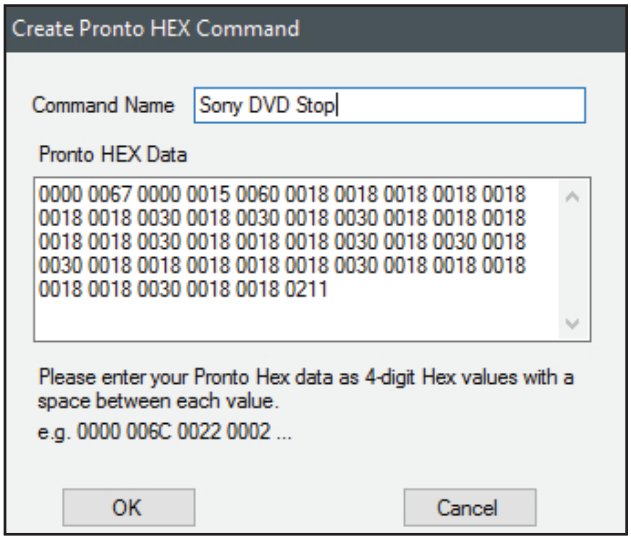


Fig 15.8

The Pronto HEX code is now listed in the IR Code drop down box as shown in figure 15.9. Select Sony DVD Stop and then press OK.

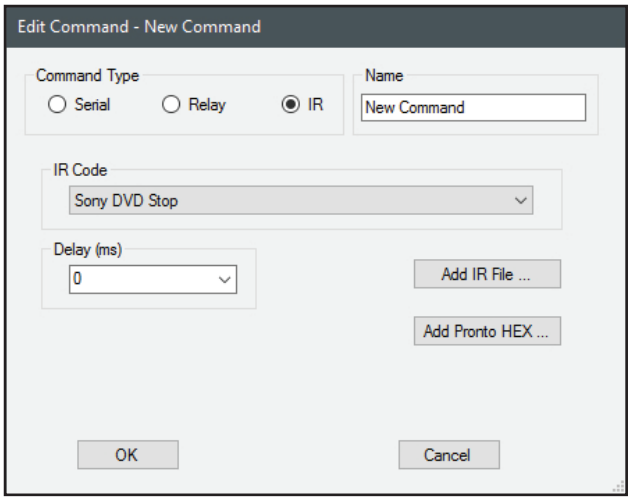


Fig 15.9

The resultant command line now appears in the button actions window as shown in figure 15.10

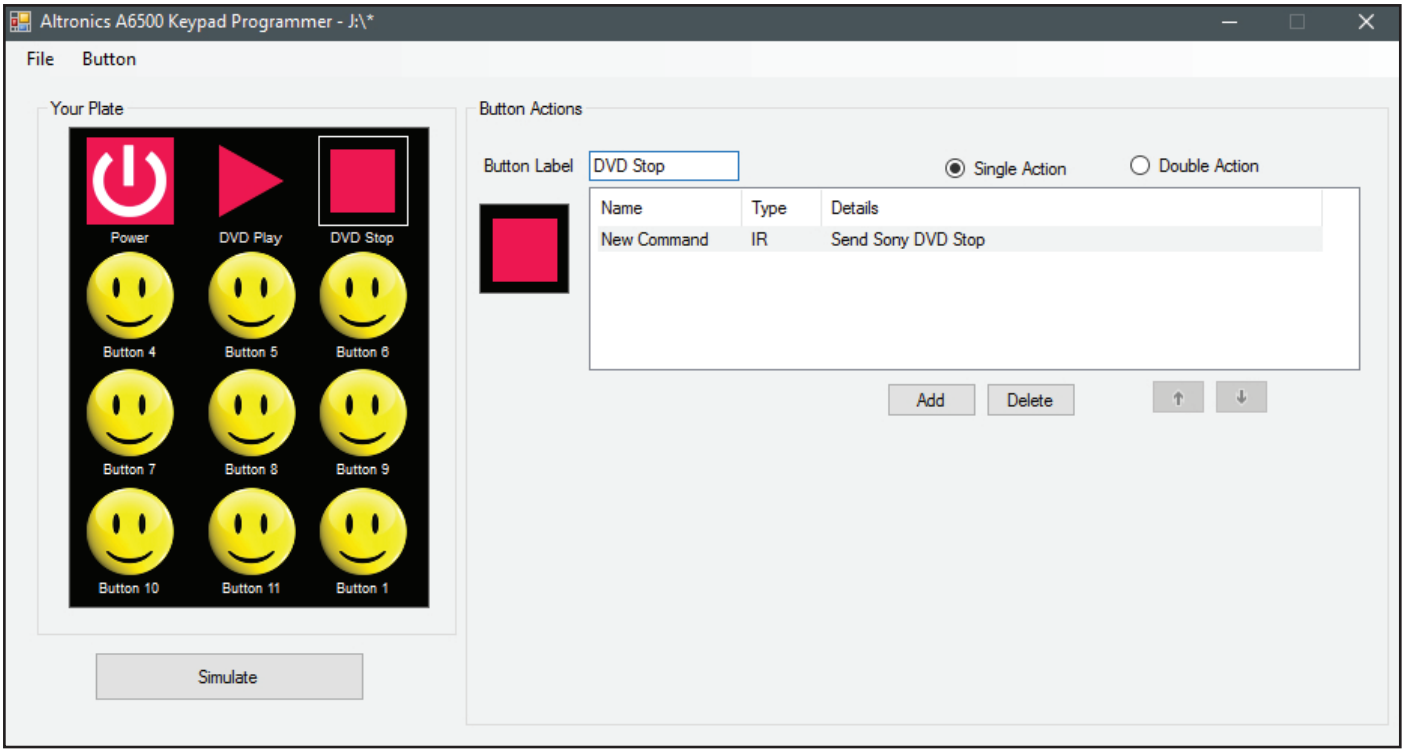


Fig 15.10

16.0 DOUBLE ACTION BUTTONS

Previous sections have covered buttons with a single action but it is also possible to give a button two actions for situations like turning a device on/off, pressing play/pause etc.
In this section we will cover a dual action button, to play and stop a DVD player with IR codes, using the codes covered in section 15.0.
Begin by selecting the button to become a dual action button, which in our case is the Play button and then press the "Double Action" option as shown in figure 16.1.

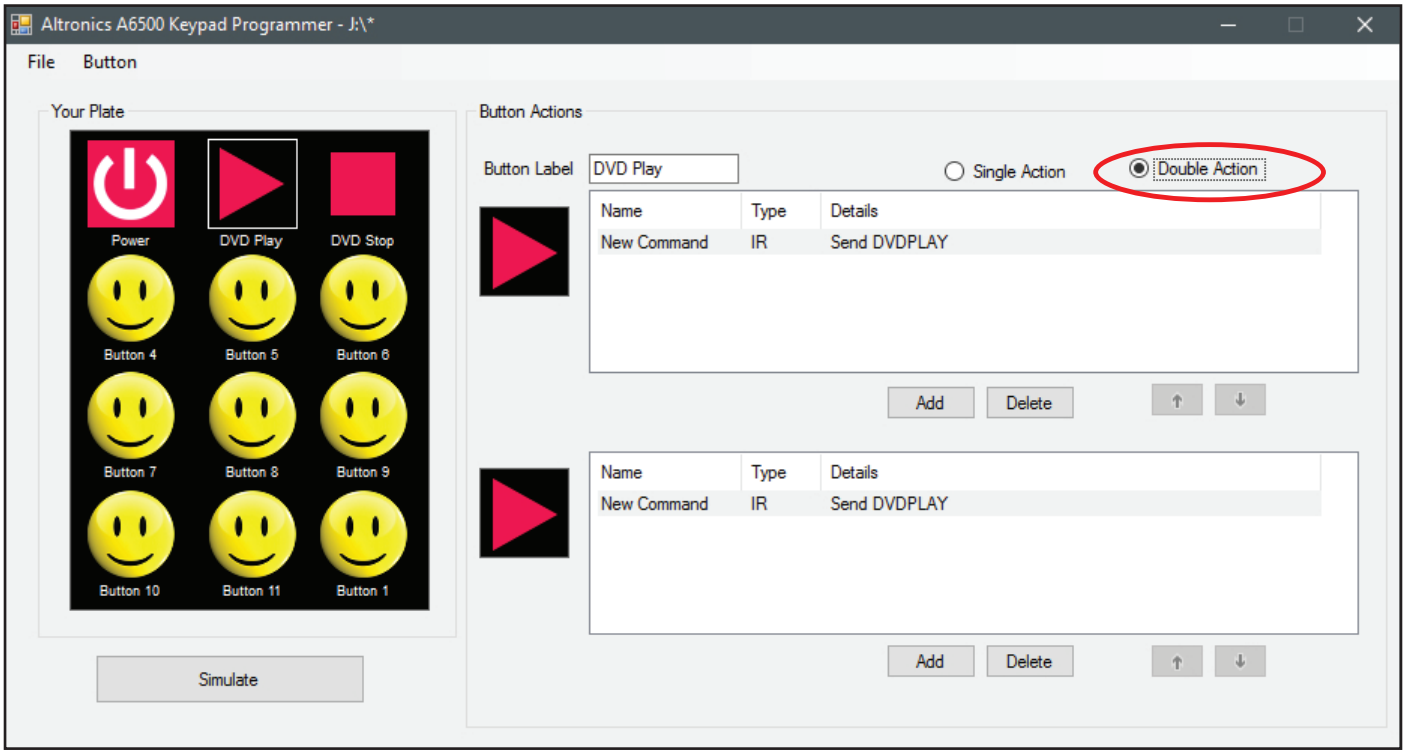


Fig 16.1

When the "Double Action" option is selected, a copy of the single action button is created with the same Icon and commands.

The second action for our example is to stop the DVD playing. We click on the lower Play icon and change this to the Stop icon. We then double click on the command line and change the command to the IR Pronto HEX command used in section 15.3 to stop playing the DVD. The button label is renamed to DVD and the result is shown in figure 16.2.

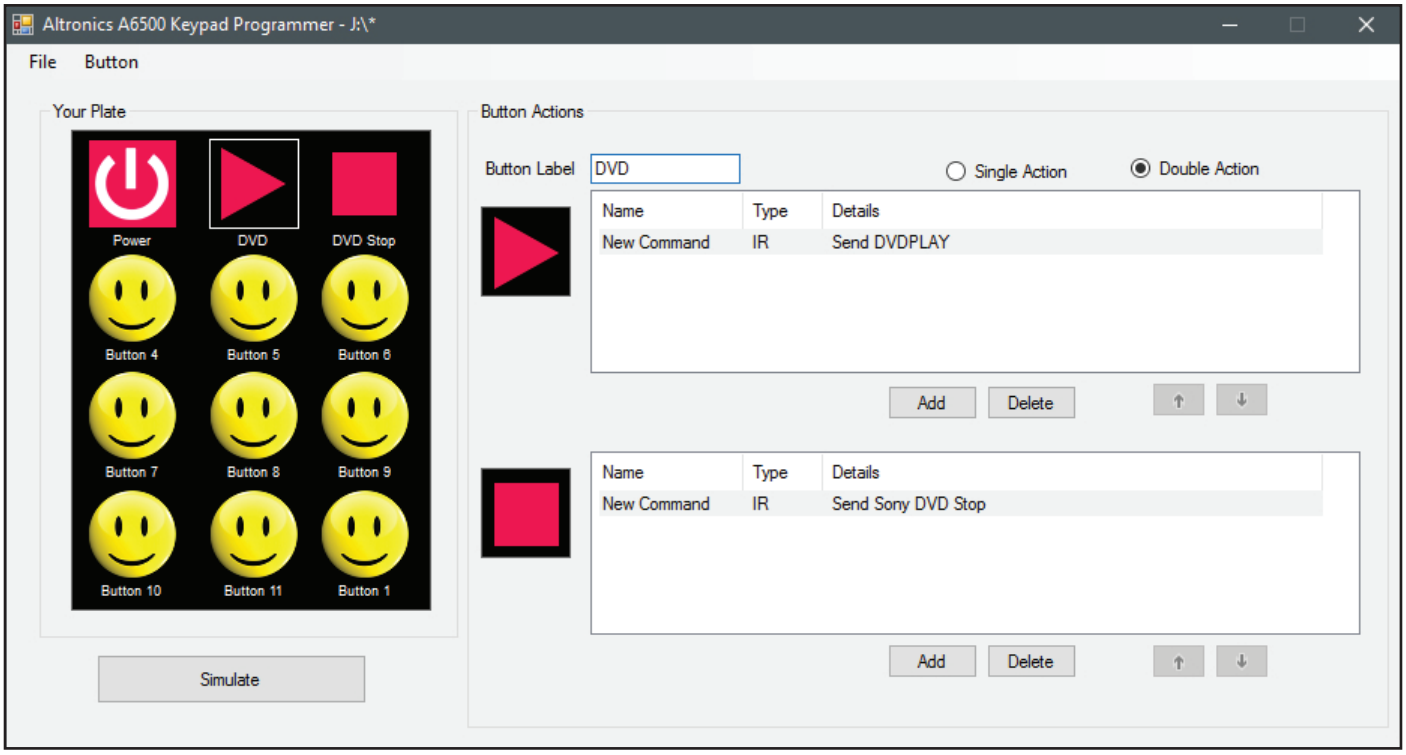


Fig 16.2

Use the simulate button to check the results when the Play/Stop button is pressed, which are shown in figure 16.3.

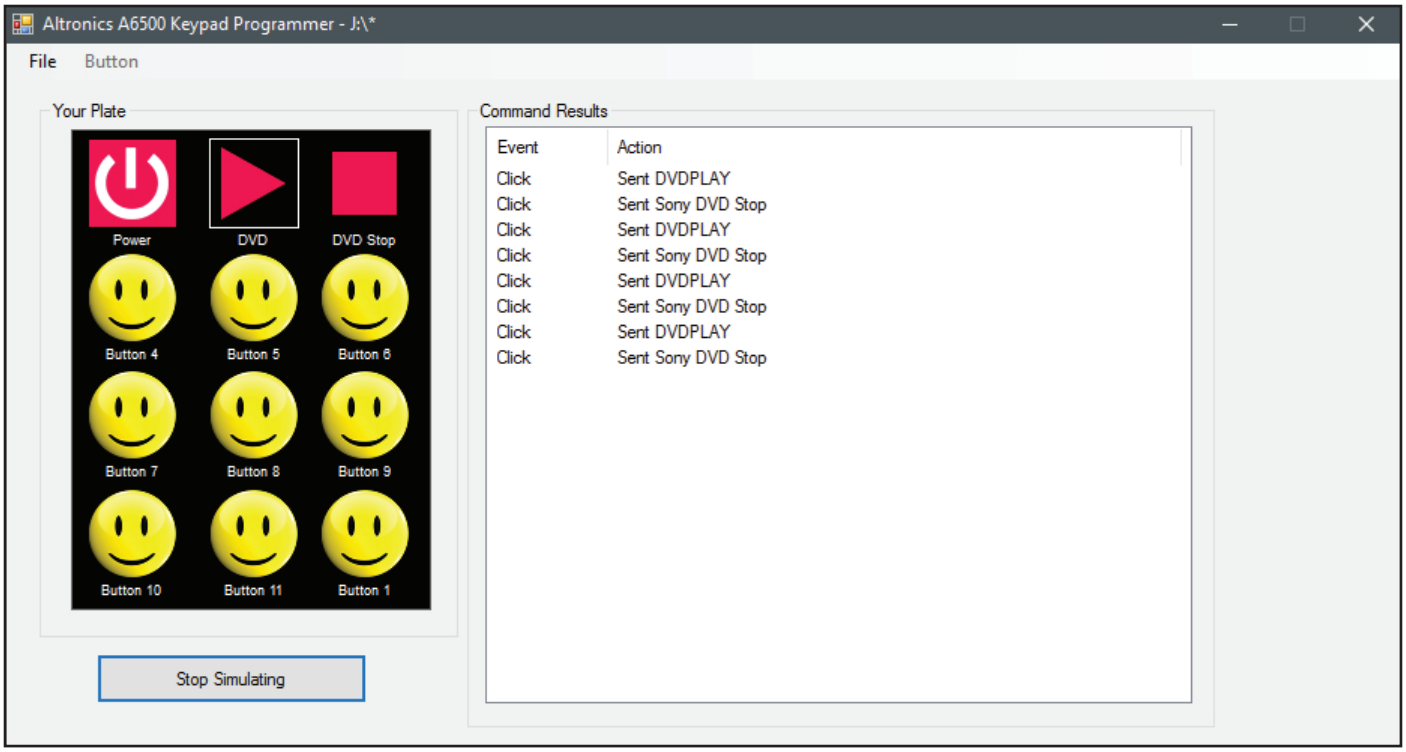


Fig 16.3

As in single button configurations, both actions can have multiple command lines.