Softprog32 For Windows

Users Guide

Covering Version 1.2 of SoftProg32 Programming Utility

Version 1.00

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Softprog is a Windows™ utility that allows the definition and configuration of the operating settings for ACCESS programmable keypads.   This version of Softprog is compatible with specific keypads in the ACCESS range. Compatibility details are available at the following URL: www.accesskeyboards..com

Softprog32 enables the following keypad configuration:

Assign scan codes to any key.
Redefine the key layout with multiple space keys and blanking tiles.
Turn the key click beeper on or off.
Define momentary and toggle shift keys.
Assign the LEDs to any function.
Set the default state of the wedge keyboard input to enabled or disabled.
Enable or disable auto repeat.
Disable Control + Alt + Shift key combination. Does not affect the slave keyboard.
Set the default Caps lock state.
Set the default Num lock state.

Programming Considerations for Programmable Keypads.

 The Access Keyboards Limited family of programmable keypads provide a flexible solution to the requirements for dedicated, task specific data input devices. The following features are provided on this range of products.

- Keys may be programmed in terms of one or more standard keyboard keystrokes. Alternatively, the keys may be programmed in Scan Code sequences. This provides access to non standard keyboard codes for advanced applications.

- A layout which may be altered by fitting 'double mount' keycaps in either horizontal or vertical orientation, or 'quad' keycaps. Two types of blanking covers are available; the first covers a space where a key switch has not been fitted by customer special order, the second fits over a switch. The second type allows in field upgrades as the blanking cover may be removed and a keycap fitted. Keycaps may be 'relegendable' or produced to the customer's specification in terms of key colour and legend(s).

- A 'wedge' socket into which may be connected a standard 'PC' keyboard. This might be used either occasionally, e.g. for system setup, or normally, e.g. where a keypad is providing a range of key strings specific to an application, e.g. a command keypad for CAD software. The keypad allows 'hot plugging' of the AT keyboard to this socket, i.e. a keyboard may be connected or removed at any time.

- Programmable LEDs. These may be programmed to the standard PC keyboard functions of CapsLock, NumLock or ScrollLock, as a power indicator LED, or as a 'key layer / local shift on' LED. Using Windows and the ActiveX control, they may also be directly controlled by the application.

- Magnetic Card Reader, one or two tracks. This may be configured to read ISO or non-ISO cards.

- Serial Input (RS232) for devices such as barcode readers etc., which produce a serial ASCII output.

The above functionality is programmed using the Windows utility SOFTPROG.EXE. This utility allows the user to configure the key layout, program the keys and setup the above features to their requirements. Programs may be saved, and a quick download feature is provided for multiple keypad programming.

Operating System
Softprog 32 requires Windows 98, Windows NT Version 4 or Windows 2000. Note that in Windows NT and 2000 it is necessary for the user to be logged on with administrator rights. This is necessary

because Softprog must be able to access and control the Windows Service Manager to gain control of the keyboard port during download of configuration data to the keypad.

PC Hardware Requirements
A Pentium class IBM compatible PC with a minimum of 32MB ram and 5MB free disk space is required. An IBM compatible PS/2 keyboard port is required. Older PCs may not correctly download the keypad settings via the keyboard port. Softprog requires the use of a mouse or alternative pointing device. Mouse movement during keypad download (sending the configuration to the keypad) can cause the keyboard port to stop responding. A solution to this is to use a mouse with USB interface if your system is afflicted.

Software Details
If you do not have the CD, Softprog may be downloaded from the Access Keyboards website URL: www.accesskeyboards.com/softprog The latest information and technical bulletins are also available on the website.

Software Licence
You are licenced to use the software to configure only Access programmable peripherals. Please contact Access Keyboards sales department at sales@accesskeyboards.com , if you have any licensing issues. The comprehensive licence agreement is displayed during the software installation.

Software Installation
The software is supplied as a single executable self-exploding zip file. To install Softprog, run the installation file and follow the instructions.

Product Identification
The keypad part number, serial number and mod state are present on the label on the base of the unit. Please quote these when making any technical enquiries.

Keypad Cord Jack Attachment./ Removal
The keypad is connected to the cable via FCC 8 way jack. This self-locking jack engages with an audible 'click' when it is fully plugged in. It is necessary to release the locking connector before the cord jack can be detached from the keypad. To release the cord jack, whilst gently pulling on the lead, push a pointed object of diameter less than 2mm. (A straightened paper clip is useful for this purpose) through the hole located in the base of the keypad directly below the cord jack. ENSURE THAT THE SYSTEM POWER UNIT IS SWITCHED OFF AND THE KEYPAD IS DISCONNECTED FROM THE SYSTEM UNIT BEFORE YOU DISCONNECT THE CORD JACK FROM THE KEYPAD.

Connecting The Keypad
The keypad connects to the system unit vial the 6 pin Mini Din plug at the end of the Y lead. Access part number: 5KBD948701. An alternative cord 2.5 metres long without the wedge keyboard connection is available from Access Keyboards. Part number 5KBD937201 - 2.5M SCREEN CORD JACK PS2 / LIGHT GREY SHEATH.
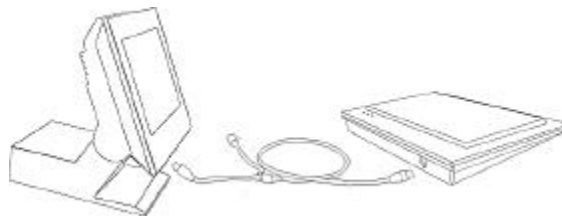
Connection The Slave Keyboard

The slave keyboard connects to the PS/2 6 Pin Mini Din socket at the tail of the Y lead. It is not necessary to shut down the computer system before connection of the slave keyboard.

Windows Locale Configuration

When defining a new keypad configuration, it is necessary to select the keypad language locale that corresponds to the locale setting in the Windows operating system's keyboard settings.

Key Layout Configuration.

Replacing the keys with alternative styles can physically alter the layout of the keypad. See the table below. All keys are black. Contact Access Keyboards if you require alternative colours or keys marked to your requirements**.**

	Part No.	DESCRIPTION
Relegendable Key Single Space	KCRELEG1BLK	Relegendable 1 space key with clear window.
Relegendable Key 2 Space	KCRELEG2BLK	Relegendable 2 space key with clear window.
Relegendable Key Quad	KCRELEG4BLK	Relegendable Quad with clear window. (Square)
Key Removal Tool	UKEYPULLER	Key removal tool.
MX Locking Cover		Remove key top and fit this cover to blank key.

Note: For key top removal, it is advisable to use the approved key removal tool, otherwise damage of the key top or key switch may result.

In the PC environment the various country keyboard keys all produce the same key codes for each key position on the keyboard, regardless of the legend inscribed on them, e.g. the 'Q' and 'W' keys on a UK/US 'QWERTY' layout keyboard produce the same key codes as the 'A' and 'Z' keys on a French 'AZERTY' keyboard. It is the country variant of the keyboard driver that translates them to the correct characters and ASCII codes. This has implications for Magnetic Card Reader (MCR) and Barcode Reader (BCR) devices on a keyboard, where the data received from the device is already in ASCII form and must be translated to key codes to be sent to the system.

 The current versions of our programmable products allow the user to specify the country layout (and hence driver loaded) for this conversion and thus will operate correctly on systems with country drivers loaded.

The keys on the keypad can be programmed in terms of standard PC keyboard keys or key sequences, or special reserved PC key codes may be used by advanced system users. Before programming a keypad the following AT keyboard concepts should be understood.

Modifier Keys

CAPS LOCK.   The Caps Lock key toggles the state of the system CAPSLOCK flag, the system responds by sending a command to turn on or off the Caps Lock LED. Caps Lock ON causes Windows to translate the alpha keys to upper case characters. The system Caps Lock state can be inverted by holding a SHIFT key down, i.e. with Caps Lock ON and a shift key depressed, an alpha key will produce a lower case letter, and vice versa.

 A word of caution - the French / Belgian ShiftLock key behaves differently in that a) in the ON state it accesses the numbers above the special characters on the alphanumeric block, and b) it is turned off by a depression of either shift key. In this respect it models the action of a typewriter shiftlock key.

NUM LOCK.   The NumLock key toggles the state of the system NUMLOCK flag, the system responds by sending a command to turn on or off the NumLock LED. The keyboard operation as far as the Cursor and Insert/Home/PgUp/Del/End/PgDn keys is concerned is dependent on the state of NumLock, the keyboard will send different codes for these keys depending on the state of Num Lock. Holding a SHIFT key down negates the state of Num Lock operation. Consideration should be given to this before programming a key as a Number Pad key as the state of Num Lock may be indeterminate when the key is used, this is catered for in the SOFTPROG utility, see *Default Caps Lock / Num Lock State* in *The Softprog Utility* below.

SCROLL LOCK. The scroll lock key toggles the state of the system Scroll Lock flag, the system responds by sending a command to turn on or off the Scroll Lock LED. The state of the LED has no effect on the operation of the keyboard, and only affects those applications that are programmed to respond to Scroll Lock.

SHIFT KEYS. The left and right shift keys send different codes to the system which produce identical results as far as the considerations above are concerned. It is possible, however, to program an application to respond differently to each of these keys. Using a Shift key in conjunction with another key produces the following results:-

a) The Case of an Alpha key is modified, as described above, e.g. the ASCII code is reduced/increased by 20 hex (32 decimal) to produce the lower/upper case of the character.
b) The code to the application for the function keys (F1-F12) and the Cursor Block keys is modified.
c) A multi-legend key produces the character on the upper left corner of the key, e.g. the '!' above '1' on a US or UK keyboard.

CONTROL KEYS. Left and right control keys operate as above except: -

a) The case of an Alpha key is modified, e.g. the ASCII code is reduced by 40 hex (64 decimal), e.g. Control B will produce ASCII 02H defined as ASCII STX (start transmission).
b) The code to the application for the function keys (F1-F12) and the Cursor Block keys is modified.
c) Some Control key / letter key combinations have operating system functions and should be avoided unless you want to specifically invoke those functions. To program these codes it is necessary to use the *Manual* option the *Edit Item* Dialog Window. For example AltGr, Print Screen, Pause and the Windows keys.

LEFT ALT KEY   This key produces a code for which the result is operating system and application specific. The code to the application for the function keys (F1-F12) and the Cursor Block keys is modified

RIGHT ALT GR KEY (not available on US layout) provides access to the additional special characters on multi legend keys. The character on the lower right corner (if present) is sent to the application if the ALT GR key is pressed with that key, e.g. solid vertical bar on key to left of 1! on UK layout or '~' on key to left of RET on German Keyboard. The character in the upper right corner of a multi legend key is accessed by using SHIFT and ALT GR together with the key. The Swiss Fr/Gr keyboard has several examples of keys with four legends, accessed as above. Remember it is the country code driver that produces these characters from the key combinations, not the keyboard.

Before programming a keypad, the user should consider the effects of the above, especially the Caps Lock / NumLock state. SOFTPROG allows the user to specify a default state for Caps Lock and Num Lock. This may be DON'T CARE, ON or OFF. Additionally, each key is programmed to use either the selected default state for Caps Lock and Num Lock, or the actual state of these at the time of recording the keystroke(s). This allows the programmer to ensure that Caps Lock and Num Lock are in the required state for those keys that are modified by them.

Auto Repeating Keys (Typematic)

The PC keyboard has a repeat facility for keys held down. Most keys, if held down, will after an initial delay repeat that key at a specified rate. The key is repeated until it is released or another key is pressed. The host may send commands to the keyboard to set the initial delay and repeat rate. Note, the Access programmable keypads pass those commands on to keyboards connected to their wedge ports, or if hot plugged, will update the keyboard to the last command from the host.

If a key is programmed as a single PC keyboard key, then it will acquire all of the attributes of that key in respect of Typematic repeat rates etc. If a sequence of keystrokes is required to be assigned to one keypad key, the option of repeating the last key in the sequence is offered. This is useful for such combinations as Shift F1 where the key sequence can be programmed as either

1) Key Make = Shift make, F1 make, F1 break, Shift break, and Key Break = No action, OR
2) Key Make = Shift make, F1 make, F1 make, F1 make . . . as long as key held down then Key Break = F1 break, Shift break.

ASCII INPUT   The PC BIOS provides a direct ASCII input facility from the keyboard. Any ASCII character can be entered by the following procedure :-

- o   NumLock must be ON
- o   Hold down the Alt key

- Enter the decimal value of the required character on the NUMBER PAD
- Release Alt key.

Key Layering is useful where more keys are required than are physically on the keypad. One key is nominated as a *Layer* or *Local Shift* key. When active, a second set of key programs is assigned to each of the other keys on the keypad. This local Shift key may be 'Momentary' i.e. only active when depressed, or 'Toggle', i.e. each depression toggles the state of local shift. An LED (if fitted) can be programmed to display the state of local shift.

The keypads have a fixed memory allocation per key, thus limiting the key sequence length per key. This length is determined by dividing the available memory size by the number of keys. If two layers are selected, the space per key is halved.

Typical key sequence lengths available are :-

| Product	Single Layer	Two Layers
40 / 44 key	22	11
55 / 60 key	15	7
116 / 120 POS	30	15

The (optional) wedge input socket allows a standard AT compatible keyboard to be connected to the programmable keypad/ keyboard and to work 'through' it. The keypad receives keycodes from the connected keyboard and forwards these to the host. Scanning of the keypad is suspended while any keyboard attached to the wedge input is busy and for up to one second thereafter. Likewise, passing through of attached keyboard codes is suspended while a key remains depressed on the keypad. Thus it is not possible to use the two keyboards simultaneously. MCR and BCR handling is inhibited while any activity persists on either keyboard.

A one second period without any keys depressed is required from either the slave or the keypad before input from the other device is permitted.

The programmable keypad detects a slave keyboard being 'hot plugged' and will update it's LED indicators and Typematic repeat parameters. (Note: The PC keyboard interface was not designed for hot plugging and the keypad may occasionally not detect the keyboard connection immediately. However, as soon as a key is pressed on the keyboard it will run the update function.

The Softprog Main Interface

Menus

FILE		Tool Bar	
	New	☐	Creates new keypad program files. *NEW* Dialog is Displayed
	Open	📂	Opens an existing keypad program file stored with .prg file extension.
	Save	-	Save the currently selected keypad data to the current file name and location.
	Save As	-	Save the currently selected keypad data to an alternative file name or location.
	Program		Send the current keypad settings to be stored in the keypad.
	Print	🖨	Print the current key layout
EDIT			
	Cut	✂	Copy key data to the clipboard and delete the data from the key(s) that has focus.
	Copy		Copy key data to the clipboard for the key(s) that has focus.
	Paste		Paste clipboard data to the key(s) that has focus.
	Change Style	-	Change style of key that currently has focus. (Single or multiple selection)
	View	-	Opens the Edit Item window without setting focus to edit window. This allows easy navigation with the wedge keyboard cursor keys.
	Edit	-	Opens the Edit Item window and sets the focus on the edit box.
	Clear		Clear the key(s) that have focus.
	Help About	❓	Query Softprog version and release information.
SETTINGS			
	Keyboard	-	Opens the Edit Keypad System Parameters Window.
	Mag Swipe	-	Not Available
	Serial Port		Not Available
	Auto Apply Key Changes	-	Suppresses confirmation window that is normally displayed to confirm your intention to change key focus without first having confirmed changes by pressing the *Apply* in the Edit Item window. Experienced users can save time by selecting this option.
	Fast Key Entry		Automatically sets the Edit Item focus when a key is given focus.
VIEW			
	ToolBar	-	Hides/Displays the toolbar
	StatusBar	-	Hides/Displays the status bar on the lower border of the main window.
	Test Keyboard	-	Displays the KeyTest window to allow checking of the keypad after download.
	Keyboard ID	-	Displays the key Keypad ID. The ID defines the layout and optional devices supported on the particular keypad.
HELP			
	About Softprog	-	Displays the Softprog Version and Issue Window

**Creating New Keypad Program Files: New Dialog**
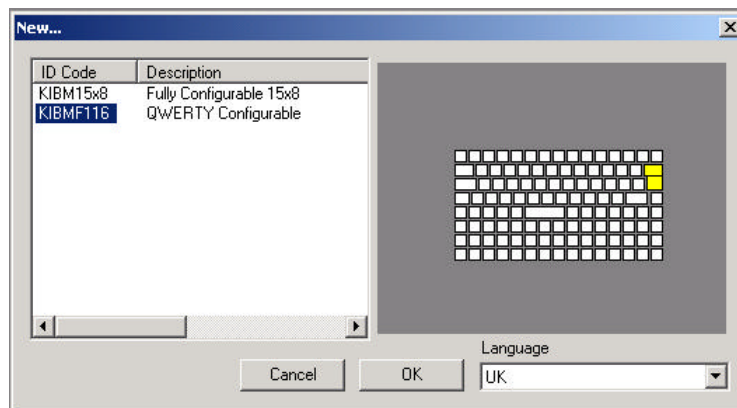
Select your keypad type by clicking on the ID Code list. The key layout of the selected type is displayed in the choice list on the left. Ensure that you choose the correct layout and language for your keypad. Note that not all Access programmable keypads are compatible with Softprog32. A full compatibility list can be found at the following URL www.accesskeyboards.co.uk /softprog32/.

Select the Language locale of your Windows operating system. If the language you require is not listed, then it is possible that US may work. However some keys may not produce the expected codes if the language setting differs from the locale of your Windows operating system.
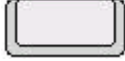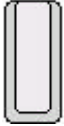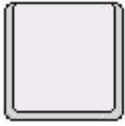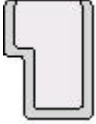
Click OK to confirm the settings.

Keypad Configuration Window
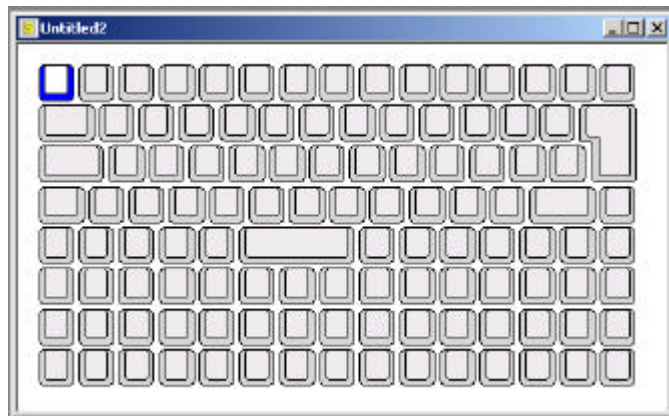
This window appears whenever an active keypad is loaded and it allows configuration of the keypad. The graphical representations of the key types are listed below:

Representation Styles			
(blue)	Key has focus for edit and style changes.	(grey)	Key has no data – not programmed.
(grey)	Programmed.	(green)	Layer Select Toggle or Momentary
(white)	Blank or tiled Key. Key has been removed from layout.	(red)	Key data is not correct or characters exceed maximum for layer.

Key Shapes			
	Single Space		2 Space Horizontal
	2 Space Vertical		Quad
	Carriage Return		

Navigation
Key focus is set by use of the arrow keys on the keyboard or by the mouse. Multiple keys may be selected using the shift and control and arrow keys or by holding down the left mouse button and dragging the focus area.

Note: Some configuration options may not be available if multiple keys are selected.

Edit Physical Key Layout
Key addition, removal and shape changes.
Softprog provides an easy to use interface to enable customisation of the keypad layout. Any style can be applied to any keys that are not members of a standard alphanumeric group. Keys that are members of the alpha group can have new codes assigned to them but Softprog does not permit the key top style to be altered. Note that this rule does not apply to the numeric keys on the top row.

To edit key layout:
Select the key(s)
Right mouse click to show the edit menu:
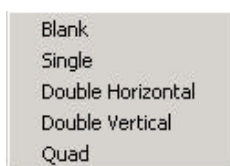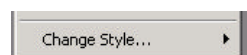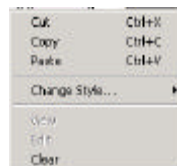
Blank	Remove key from active layout
Single	Change to single space
Double Horizontal	Change to Double Vertical
Double Vertical	Change to Double Vertical
Quad	Change to Quad (Square key)

Note: To change the key style, multiple keys must be selected in a viable configuration. Softprog calculates the possible options and automatically disables non-viable options in the menu.

Note: Softprog clears the key data when the style of the key is changed. Therefore it is advisable to edit the key layout before editing the key data.
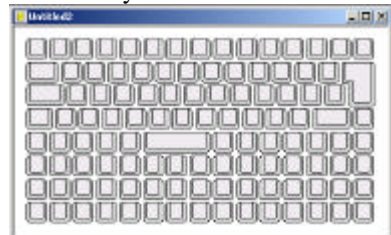
Default Layout   Edit Layout   Custom Layout

            ⇨
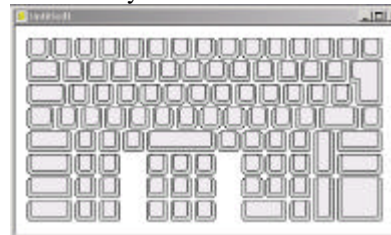
Right mouse click displays the following options:

Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Change Style...	▶
View	
Edit	
Clear	
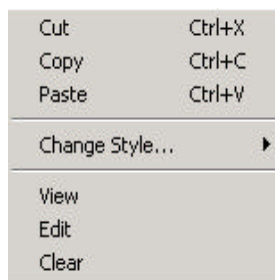
Cut, Copy and *Paste* allows rapid manipulation of key data.

Change style adjusts the Softprog model to your physical layout.

Edit. Opens the Edit Item window and sets the keyboard input focus to the key programming text box.
Clear: Clears the programmed contents of the key.

Settings|Keyboard Menu Option

Edit Keyboard System Parameters

LED 1: NONE
LED 2: NONE
LED 3: NONE
LED 4:   Country: UK
Inter Character Delay: Capslock state: DON'T CARE
                         Numlock State: DON'T CARE
Keypad
☑ Autorepeat Enable   ☑ MSR Enabled
☑ Control/Alt/Del Disable ☑ Barcode Enabled
☐ Keyclicks   ☑ Wedge Enabled
☐ AKPLUS Mode   ☑ Keypad Enabled
OK   Cancel

NONE
SCROLL LOCK
NUM LOCK
CAPS LOCK
LAYER
POWER
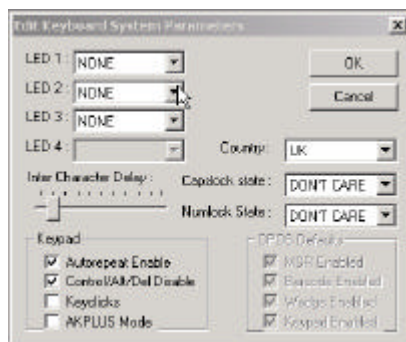
LED indicates scroll lock status
LED indicated num lock status
LED indicates layer status
LED indicates Power

Note: LEDS must be assigned unique functions.

Inter Character Delay:
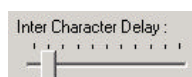
Varies the delay between characters transmitted from the keyboard buffer. The default setting is recommended. On some PC systems, reduction of the delay in an attempt to increase the character transmission rate may cause character loss.

Country: ES
UK
USA
FR
IT
DE
ES
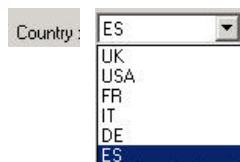
Select the country layout for your keypad.
Note: The Windows input locale must also be set to the standard setting for this locale. Incorrect setting of the Windows input locale may cause windows to interpret key codes incorrectly.

Keypad
☑ Autorepeat Enable
☑ Control/Alt/Del Disable
☐ Keyclicks
☐ AKPLUS Mode
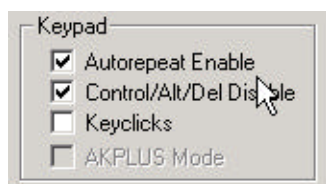
Global setting to control autorepeat.
Disables CTRL+ALT+DEL key combination on the keypad. *
Sets audible key click on/off.
Not Supported.

·   This setting has no effect on the slave keyboard.

Capslock state : DON'T CARE ▼

Managing Caps Lock & Scroll Lock States

Before commencing the programming of the keys on your keypad you should decide on and set (in Keypad Parameters) the default state for CapsLock and NumLock. Each of these may be set to 'Don't Care', 'On, or 'Off'.

CapsLock If your application is not case sensitive then 'Don't Care' is your choice for CapsLock. Use 'On' if you require upper case or 'Off' for lower case. If you require both then set default CapsLock state 'Off', and for those keys requiring upper case either a) program them preceded by 'Shift', or b) ensure your present CapsLock state is ON and clear the 'Default CapsLock / NumLock state in the Edit Dialog Box. In this case the current state of the keypad you are using is recorded as part of that key's codes, i.e. when using that key the firmware compares the state of CapsLock and NumLock and if they are not as recorded with the key, the appropriate Caps and/or NumLock keycodes are sent to get the correct states.

NumLock If you are programming number pad keys (0-9 and .) you will need to ensure the NumLock state is correct. Again, you can use the defau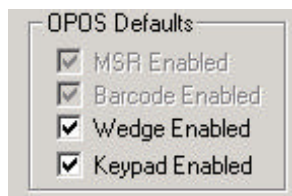lt state as ON or with NumLock ON, and ensure that the Default *CapsLock / NumLock* check box in the Edit Item Dialog Box.

Note: Do not program a NumLock key as part of a key sequence use the default .

OPOS Defaults
☑ MSR Enabled   Global: Controls default state of integrated magnetic card reader.
☑ Barcode Enabled   Global: Controls default state of RS232 serial input.
☑ Wedge Enabled   Global: Controls default state of wedge keyboard
☑ Keypad Enabled   Global: Controls default state of main keypad.

Key Editing
 To edit a key:

Ensure that the correct key has the focus:

Double click on the key with the mouse or select the Edit|Edit option from the menu. The Edit Item dialog box appears.

Edit Item 32 - Free Space 28   _ □ ✕

Keyboard Parameters
☑ Default Capslock/Numlock State
☐ Auto Repeat
☐ Copy to All Layers
☑ Scan Set Translate

Encoding
⦿ IBM KeyCodes   ○ Layer Select (Toggle)   [Manual]   [Apply]
○ Hex Codes   ○ Layer Select (Momentary) [Clear]   [Close]
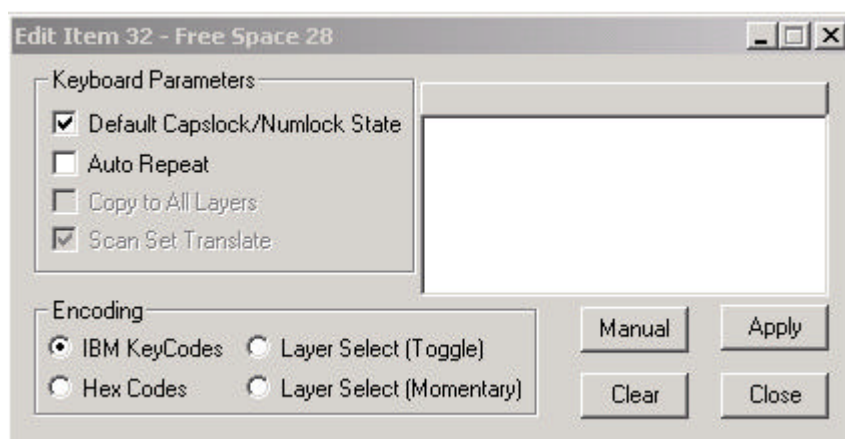
OPTONS	
Default Caps Lock State	Check this box if you wish to use the default state as defined in Settings|Keyoard
Auto Repeat	Check this option if you wish the key sequence to auto repeat. Note: When Auto Repeat is enabled, only the last character is repeated when the key is

	held down if the key is programmed with multiple key codes.
Copy to All Layers	This option will only be available if you have layer keys active. See below for layer key definition. When selected it will save you programming time if identical key functionality for the selected key is required n both layers.
Scan Set Translate (Advanced functionality)	Windows normally translates the scan code received from the keyboard. Softprog is able to account for this by performing a translation before transmission. By enabling this option, Softprog performs the translation necessary to ensure that the Windows application receives the desired code.
IBM Key KeyCodes	Selects the standard programming mode for the key. Codes that you enter will be displayed as characters that correspond to the standard key layout for the selected language locale.
Hex Codes	Forces the representation and entry of codes to Hexadecimal format. Only codes in the range 00 to 7F are supported.
Layer Select (Toggle)	Transforms the key into a Layer Select Key. Each time the toggle key is pressed the alternative layer is changed. The layer will remain selected until a toggle key is pressed. **Note:** Only 2 layers are supported and only 2 Layer Select (Toggle) **OR** 2 Layer Select (Momentary) keys are supported. Momentary and Toggle cannot both be defined on the same keypad.
Layer Select (Momentary)	Transforms the key into a Momentary Layer Select. This is in effect a modifier key that sets the keypad to Layer 1 for as long as this key is depressed. The keypad reverts to layer 0 when the Momentary Layer Select key is released.
COMMAND BUTTONS	
Manual	In all cases it may not be possible to program the required key codes by using an attached wedge keyboard. An example of this is the AltGr key that must be programmed manually. The *Manual* command button opens the *Manual Key Entry* Window. This allows the selection and sequencing of key codes to entered or modified. This is particularly useful for managing key strings without the necessity to retype the complete string each time it needs to be changed. This may also be used when programming a keypad not compatible with the locale of your PC Keyboard.
Apply	Applies the changes.
Clear	Clear the selected key.
Close	Close the edit window.
Free Space (Title Bar)	The keypad settings are stored in the keypad memory. Each key is allocated a proportion of the resource and the number of free key codes is displayed in the title bar of the window. For example pressing and releasing the left control key [LControl] ⟦LControl⟧ consumes 4 key codes (strike through indicates the key up code transmitted when the key is released) A warning message is displayed when there is no more space.

Active layer keys alter the appearance of the Edit Item Window:
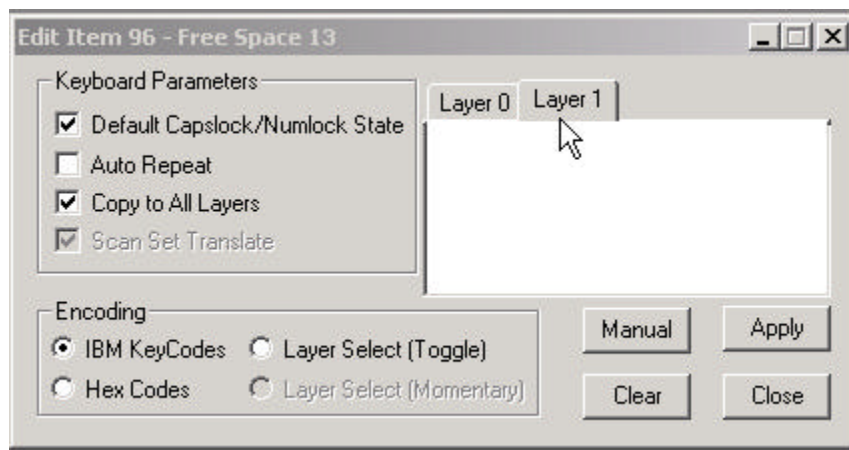
Mouse click the layer tabs to switch between layers.

Windows Accelerator Key Combinations

Softprog will not trap Windows Accelerator and special function keys. Examples of these is [Alt]+ [Tab], [Ctrl] + [Enter] etc. Use manual mode to enter key combinations that are normally intercepted by Windows.

When the entry window in the Edit Item dialog box has focus, a key pressed on the wedge keyboard will be trapped and displayed in the window. Some accelerator key combinations and AltGr may not be trapped, however these can be entered using the *Manual* entry option.

Click *Apply* to complete the entry.

Note: It is not possible to complete the entry without the use of the mouse.

Download the current Keypad Data
 or FILE|PROGRAM|KEYPAD

Note: It is advisable to save your current configuration to disk before you perform the download. The download sends the data to the keypad via the PS/2 keyboard port.   Softprog takes control of the system keyboard interface hardware in order to perform the Download. In the majority of cases this is a reliable and repeatable operation. However on some PC systems, it is advisable not to move the mouse whilst the download is in progress. Do not attach or detach wedge keyboard whilst download is in progress.
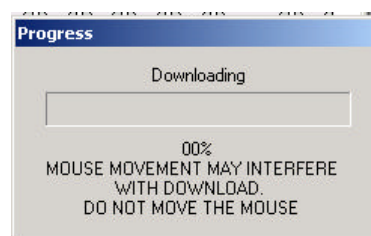
Download Dialog Box

Testing Key Layout
This feature allows you to check the key presses generated by your layout:

To test the keypad, from the main menus select View|Test Keyboard   [CTRL + T]

The KeyTest window appears and the drop-down menu bar changes :

Hides / shows the toolbar.
Hides / shows the status bar
Hide / show up codes
Hide / shows down codes

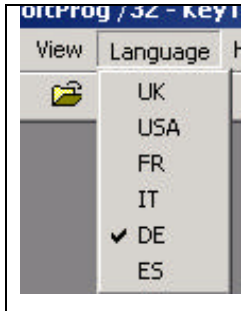|	
	✓ Indicates current selection. Change by clicking on the required menu option. English Locale US Locale French Locale Italian Locale German Locale Spanish Locale

It is important to ensure that the correct language locale is selected for your keypad. This enables Softprog32 to translate the key codes and to display the correct characters.

Important Note: When testing a key pad of a language locale that does not correspond to your Windows operating system locale, some character codes are not printable. Characters that belong to this category will produce a graphics character. This does mean that your program is at fault, however it is advisable to test your layout on a PC with the same Windows Locale as your keypad

E.g. The key sequence [Left control] ↓, [Left shift] ↓, ,A ↓ ↑, [Left shift] ↑, [Left control] ↑ will appear as:

Style	Font Colour	Meaning
[LControl]	Black	[ ] Indicate Keyboard modifier key press (down key)
A	Black	Standard key press (down key)

A	Light Grey	Standard key released
[LShift]	Light Grey	[ ] Indicate keyboard modifier key released.

Note: It is not possible to test combinations that are defined as Windows Accelerator keys as the operating system intercepts the key sequence and executes the short cuts defined for these keys.

Magnetic Card Reader
Magnetic Card Readers output their data in ASCII format. The keypad translates this to key codes, subject to the variations of country drivers described above. The data is encoded as start sentinel, data, end sentinel, Longitudinal Redundancy Check (LRC).

For normal ISO magnetic cards it is usual to allow the reader to do the LRC checking, however the keypad can be programmed to send the LRC byte if it is required. The LRC byte is sent as the key that has the ASCII representation of the LRC byte. See ISO[1] standard for further information. The End Sentinel may (optionally) be sent in this way too.

Non-ISO cards can be read by programming the keypad to pass on all characters read from the reader, including separators, end sentinel and LRC bytes.

Headers and Terminators may be appended to the data.

Serial Device Input (e.g. Barcode Scanner)
A serial port may (optionally) be included on the keypad for attaching a serial device such as a barcode scanner. (Note: only scanners or wands that output decoded RS232 data may be connected, devices which output a raw barcode image representation are not suitable for this connector). The line protocol is fixed at 9600 baud, 8 data bits, 1 stop bit and no parity. The device should be configured for CTS / RTS (hardware handshake) OR a small inter character delay programmed into the device, typically a 1ms delay. This requirement is due to the relatively slow interface to the host PC and the limited buffering available within the keypad.

Headers and Terminators
As all of the data received by the host arrives in terms of keystrokes, it is useful to be able to 'wrap' data from specific devices in character sequences not available to the user. In this way the application can distinguish data from the ancillary devices. E.g. this could be achieved by programming Alt F1 as the keylock header and Alt F2 as the terminator. If the keylock positions were programmed as 'A', 'B', 'C' and 'D' the resulting keylock switch actions would result in; Alt F1, A, Alt F2; Alt F1, B, Alt F2; etc. A similar system applies to MCR and Serial devices.

Power Considerations

Power available on the wedge connector is suitable only for low power devices such as keyboards. If it is required to connect other more power hungry devices to this connector (e.g. laser barcode scanner), arrangements should be made for an alternative source of power.

Connection of other Keyboard Wedge Devices

For use in the application, the keypad must be connected directly to the system unit PS/2 keyboard port. Other wedge devices may cause operational problems, if connected between the Access keypad and the PC system unit.

The keypad supports multi-country keyboard layouts (or locales as they are known in Windows 95 & NT). This is of interest mainly to the MCR and Barcode readers as these devices output their data in ASCII format. This data is translated into keystrokes by the keypad. As keyboard layouts differ from country to country, the keypad must be setup for the same country as the Windows locale setting. This is handled in two parts:-

1. Softprog establishes which country the PC being used to generate the program files is setup for and uses this as the default. If the keypad is to be used on a PC setup for a different country, this may be changed in 'Keypad Parameters'. The selected country is downloaded to the keypad as part of the download data.

ASCII / KEY Translation Table

The keypad translates ASCII data into key strokes according to the country it has been setup for in 1.

The following ASCII codes are handled :-

Symbol	Description	ASCII value	UK key No.	US key No.
Space	Space	20H (32)	61	61
!	Exclamation	21H (33)	Shift 2	Shift 2
"	Double Quotes	22H (34)	Shift 3	Shift 41
#	Hash	23H (35)	42	Shift 4
$	Dollar	24H (36)	Shift 5	Shift 5
%	Per Cent	25H (37)	Shift 6	Shift 6
&	Ampersand	26H (38)	Shift 8	Shift 8
'	Apostrophe	27H (39)	41	41
(	Open Bracket	28H (40)	Shift 10	Shift 10
)	Close Bracket	29H (41)	Shift 11	Shift 11
*	Asterisk	2AH (42)	Shift 9	Shift 9
+	Plus	2BH (43)	Shift 13	Shift 13
,	Comma	2CH (44)	53	53
-	Minus	2DH (45)	12	12
.	Stop	2EH (46)	54	54
/	Oblique	2FH (47)	55	55
0-9	Numerals	30-39H (48-57)		
:	Colon	3AH (58)	Shift 40	Shift 40
;	Semi-colon	3BH (59)	40	40
<	Left angle bracket	3CH (60)	Shift 53	Shift 53
=	equals	3DH (61)	13	13
>	Right angle bracket	3EH (62)	Shift 54	Shift 54
?	Question Mark	3FH (63)	Shift 55	Shift 55
@	'at'	40H (64)	Shift 41	Shift 3
A-Z	Upper Case A	41-5AH (65-90)		
[	Left square bracket	5BH (91)	27	27
\	Reverse oblique	5CH (92)	45	29
]	Right angle bracket	5DH (93)	28	28
^	Circumflex	5EH (94)	Shift 7	Shift 7
_	Under score	5FH (95)	Shift 12	Shift 12
`	quote	60H (96)	1	1
a-z	Lower case A	61-7AH (97-122)		
{	Open braces	7BH (123)	Shift 27	Shift 27
¦	Vertical bar	7CH (124)	Shift 45	Shift 29

Symbol	Description	ASCII value	UK key No.	US key No.
}	Close braces	7DH (125)	Shift 28	Shift 28
~	Tilde	7EH (126)	Shift 42	Shift 1