ScreenKey

Getting Started & Installation Guide

Issue 1.4   **November, 2006**

Windows 9x / Me / NT / 2K / XP

Purpose

This document is a quick-start reference that explains how to install a ScreenKey Console on a Windows PC and how to get started using the console. It explains step by step how to create a SAC file and how to run this file using the associated Windows software toolset.

www.ScreenKeys.com

![ScreenKeys logo]

ScreenKey Getting Started & Installation guide

Information in this document is subject to change without notice.

The latest revisions of the ScreenKey documents and software can be found on the ScreenKeys Web site.

Web: www.ScreenKeys.com

Technical Support is available

via Email   support@ScreenKeys.com

via Web: www.ScreenKeys.com

DISCLAIMER:

SKI reserves the right to revise program interfaces, data file formats and functionality, at any time.

Foreword

This document is a quick-start reference that helps the user to quickly install a ScreenKey Console on a Windows PC. It describes step by step how to create SAC files and to use these with the ScreenKey software toolset.

ScreenKey software products include:

Product Name	Description	Version [*]
SAC Editor	Create and edit SAC files	3.01
SKI ActiveX Control	Control ScreenKey consoles from Windows COM programming languages	3.1
SAC Engine Control	Windows server application for integrating SAC processing into COM enabled applications	3.1
SAC Controller	Standalone SAC processor for adding ScreenKey support to third-party applications	2.0

[*] Version numbers at time of writing.

This document describes how to create a simple SAC file. It briefly explains how to use this file with the SAC Engine. The SAC Controller and SKI ActiveX Control are not discussed in this document.

Note ☞

In this document pointing hands in the left margin are used to indicate differences for certain platforms and keyboard types. Where **Win-9x** is mentioned, it applies to Windows 98 and Me. Windows 95 is not supported.

☝ An upward pointing hand indicates that the whole chapter only applies to the description below the pointing hand.

☞ A rightward pointing hand indicates a difference in that section if the hand is pointing to a section or a difference in the paragraph if the hand is pointing to a paragraph.

SKI – **S**creen**K**ey **I**nterface

ScreenKey technology has been in use for a considerable number of years. In this time, SKI has developed a range of software tools to simplify the task of integrating a ScreenKey console into an application or hardware solution.

The principal operating system targeted by the SKI Software Toolset is the Windows platform.

SKI publishes the device-level communications interface so that non-Windows users may employ ScreenKey consoles and devices in other environments.

The SKI Software Toolset offers an advanced and feature rich set of software applications that enable developers and/or end-users to integrate a ScreenKey console quickly and easily yet providing the in-depth control capabilities to allow developers to maximise the potential of ScreenKey technology and the difference console features.

Note – Discontinued Products

This document sometimes refers to products that have been discontinued by SKI (e.g. SK-2000 or SK-6000). Please be aware that the software toolset continues to offer support for these products as an assistance to legacy users of these products. Product snapshots and examples used in this document sometimes refer to these products.

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I N T R O D U C T I O N

ScreenKey Overview

What is a ScreenKey Console ?

The ScreenKey console is an Input/Output device for use with Point-of-Sale (POS) and other specialized applications, such as process control, dealer desks, call centers etc. The ScreenKey console combines the best features of a standard keyboard and a TouchScreen. It is made up of conventional fixed keys and special ScreenKeys. Each ScreenKey acts like a conventional key but incorporates a built-in LCD display panel. This enables the ScreenKey's legend to be changed at will. Two ScreenKey resolutions are available: LC16 has a display area of 32 pixels across by 16 pixels down and the LC24 has a display area of 36 pixels across by 24 pixels down.

The ScreenKey console connects to the PC via the Serial RS232 port. Future versions will be offered using USB interfaces.

What is SAC ?

SAC is short for ScreenKey Active Control. SAC files are the cornerstones of the ScreenKey Software Toolset. The SAC system facilitates quick and easy integration of ScreenKey technology into Windows applications, with minimal or no application modification. SAC is a self-contained data-file containing a set of drill-down menus for the ScreenKeys, the relationship between these menus, and other applicable rules and data. SAC files are generated and maintained using a special purpose Windows file editor, the SAC Editor. Each ScreenKey, in each menu, has properties such as a caption (text or graphics) to display on the key's LCD display, background and flashing colors, a menu to display when the key is pressed, a security level etc. In addition, each key can have one or more keystrokes assigned to it, which are sent to the application when the key is pressed. Other devices, such as the MSR unit and KeyLock, also have properties attached to them.

The SAC system is a software system driven by the keyboard itself on the basis of the contents of the SAC file, producing keystrokes for the application(s).

What is SAC Engine Control ?

The SAC Engine Control is a software package that forms the interface between the ScreenKey console and another application. It is a COM (ActiveX) module, and can be used by modern programming languages like Visual C++, Visual Basic etc.

The Control can be integrated fully into an application, using the properties, methods and events to exchange information with the ScreenKey console. It can be integrated with a minimum number of changes, feeding the keystrokes back via the keyboard message system. It can also be used as a separate side-application, sending the keystrokes to the currently active window.

What is SAC Controller ?

The SAC Controller is a standalone software application that employs the SAC Engine (described above) to control a ScreenKey console using a pre-defined SAC file.

The SAC Controller can be configured to feed keystrokes to a particular application or a window defined by a set of properties or to the currently active window. The SAC Controller can be used to add ScreenKey support to an application without any software changes to the third-party application.

What is SKI ActiveX Control ?

SKI ActiveX Control is a software development package that allows the ScreenKey console to be easily integrated into Windows applications. It does not employ the SAC approach but instead provides the programmer with the ability to directly control the individual ScreenKeys to set colours, text, bitmaps, etc. Similarly individual keypresses can be detected and processed as required. This software can be used by modern programming languages like Visual C++, Visual Basic etc.

Who should read this document ?

This Guide is intended for the person who is trying to use a ScreenKey console for the first time. It provides a simple step by step guide to connecting the keyboard to the PC, designing a simple SAC file and using this SAC file with the keyboard using the SAC Engine software. The reader is not expected to have programming capability.

This guide assumes that the reader is familiar with Microsoft Windows and Windows commands.

Requirements

To follow this guide the user must have the following available:

Operating System:	Windows 9x, Me, Nt, 2K, or XP
PC Hardware:	Standard PC hardware. One COM port must be available.
Available PC Resources:	The PC must have sufficient available resources to run the ScreenKey console software. The SAC Engine Control and the SAC Editor do not require memory in excess of that required by the particular operating system.

I N S T A L L A T I O N

Installation Procedure

The following items can be supplied as part of the ScreenKey package:

- ScreenKey console
- Data cable
- External DC Power cable
- Internal Bracket to provide 5v or 12v DC directly from the PC to the ScreenKey console (type subject to console, e.g. SK-7000 requires 12V DC)
- External 5v or 12V DC power supply (optional)
- ScreenKey software and documentation. The latest software may be downloaded from the Web site (www.ScreenKeys.com).

The following information will help you quickly understand ScreenKey technology, install both the console and the software, as well as provide you with the necessary procedures to create and use a SAC file.

To gain full knowledge of this technology it is strongly recommended to read the documents SAC Editor User's Guide and SAC Engine Control User's Guide. These documents are shipped with these products or may be downloaded from the ScreenKeys web site (www.ScreenKeys.com).

There are three steps to get the system running:

1   Install console and the system software.

2   Create a SAC file with the SAC Editor.

3(a) Launch the SAC Controller and your application.

       or

3(b) Integrate the SAC Engine into your application source code to automatically launch the SAC engine with a specific SAC file.

Software Installation

The ScreenKey software is supplied on CDROM, or may be downloaded from the web.

When distributed by CDROM, the CD usually incorporates an autorun facility that launches an installation helper utility (e.g. HTML file). Follow the on-screen instructions as described by this utility. If the utility is not present or the autorun feature is disabled on your computer, you can install the software directly from the CD. The ScreenKey software package typically includes several software applications that reside separately on the CD. These can be installed by using explorer to open the appropriate software application folder from the root of the CD and running Setup.exe from this folder. Follow the on-screen instructions presented during the installation process.

Only individual ScreenKey software applications are distributed via web downloads. Usually these are self-installing downloads that autorun once the download is complete. Follow the on-screen instructions presented during the installation process.

All ScreenKey software installations use InstallShield to control the setup and configuration of system files and the Windows registry.

Some ScreenKey software installations require the PC to be rebooted to complete the installation process. The user is notified if this is required at the end of the process.

If this is the **first** install of ScreenKey software[*] on this PC, the user is prompted to select an installation destination (folder). The user is offered a default folder of *<Drive>:\Program Files\ScreenKey*. Subsequent installs of ScreenKey software detect the first chosen destination selection and **<u>always</u>** install to this folder. **The user cannot change this destination.**

[*] *ScreenKey for Windows* software is **<u>not</u>** included in this check. This package (also known as PWD) has been superseded and replaced by the software described in this document.

The install searches for old versions of *ScreenKey for Windows* components. If found, the user is prompted to remove these (using Windows Add/Remove Control Panel) before continuing. **It is strongly advised to do this.** Particular attention should be given to PWD Emulator with Windows NT installations.

Windows NT

☞

only

PWD Emulator under Windows NT installs a PWD service. This should be stopped first before removing the *ScreenKey for Windows* package from Add/Remove Control Panel.

The installation creates shortcuts to the installed applications on the Start Menu.

Uninstallation of Software

Each of the installed ScreenKey software applications installs a item in the Windows "Add/Remove Programs" part of Control Panel. Each application creates a tag using its individual product name.

To uninstall a particular ScreenKey product, double-click on the tag in the list or select it and then click on the "Add/Remove" button at the bottom of the window. The uninstall process is automatic and controlled by InstallShield.

Note that some files are 'shared' by different ScreenKey products. InstallShield will attempt to identify if these files are no longer used by any other products and will offer the user the opportunity to delete these if so. If you are not sure whether it is safe to delete a file **DO NOT DELETE IT**, click on the "No" button and the file will be left on your system.

Hardware Installation

The ScreenKey console connects to the PC via the Serial port.

The ScreenKey console requires a 5v or 12v DC power supply. This may be provided by either a 5v or 12v external power supply or by taking the power directly from the PC using the supplied Power Bracket.

Documentation supplied with ScreenKey console hardware gives full details of cable connections and power requirements.

Power requirements of some current ScreenKey consoles are as follows:
- SK-7000 uses 12v DC
- OEM-5400 uses 5v DC

Note:
*5v and 12v power brackets **cannot** be interchanged. The power connections are made at different pins on each bracket preventing mismatch and potential damage to the console.*

G E T T I N G   S T A R T E D

Getting Started

The Interface Approaches

There are three possible ways to integrate a ScreenKey console with your application:

1. The **SAC** (ScreenKey Active Control) file approach allows integrators to configure existing software to run with a ScreenKey product. This can be done with the *SAC Controller* without the necessity to rewrite or amend existing application source code[1]. This can also be achieved using the *SAC Engine Control* whereby some modification of application source code is required. The benefits of using the SAC Engine is that the full potential of the ScreenKey Console can be achieved by tightly integrating the ScreenKey operations into the third-party application.

2. The **SKI ActiveX** provides developers with a simple to integrate ActiveX control that can be used with any COM-enabled programming language. The SKI ActiveX provides the user with the ability to directly control individual ScreenKeys to set colours, text, bitmaps, flashing, etc.

3. The **Low Level** Interface provides a comprehensive and durable alternative for developers using ScreenKeys on proprietary systems (non-Windows platforms).

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[1] The SK-7000 Console incorporates an integrated large LCD display. This console specific feature is **not** controlled by the SAC Controller, which is dedicated to handling "keyboard" events only.

This document will give you an introduction to the SAC approach. This involves using two ScreenKey applications in addition to the target application; the **SAC Editor** and the **SAC Engine Control.**

1.   The SAC Editor is used to create a SAC file.

2.   The SAC Engine Control is used as a link between the ScreenKey console and the target application, using the SAC file as the behaviour descriptor.

Creating a SAC file

To create a SAC file you need to launch the SAC Editor. This is typically found under the **Start** menu, **Start/Programs/ScreenKey/SAC Editor**. Once the program is running you may create a new file, or open an existing one.

Create a new SAC file by clicking on the **new document** icon, or by selecting the File/New menu option. This will present you with a screen asking for the desired console (keyboard type) and the combination of ScreenKey and fixed keys required. Select your preferred combination and click OK.

The type of ScreenKeys must also be specified when creating a new SAC file. The SAC file supports two different selections for the different ScreenKey types:

- Resolution: LC16 (32x16 pixels) or LC24 (36x24 pixels)

- Color: RG (red-green) or RGB (red-green-blue) LED backlight


or …

Open an existing SAC file, by clicking on the open document icon, or by selecting the File/Open menu option. This will present you with an explorer window from which you select the file you require. Only SAC files will be available for selection.

The ScreenKey type selections of resolution and color will automatically be set when the SAC file is opened.

You will now be presented with a window with a template of the selected console, and a few input fields. This is the Key Details window. The fixed keys are grey and smaller than the ScreenKeys, which have a white rectangle to indicate the LCD displays. Above the keyboard display is a collection of boxes, initially blank, which are used to enter details about a particular key.
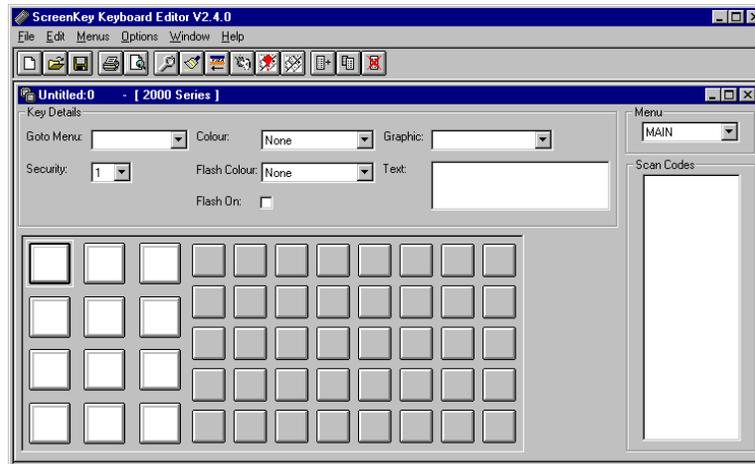
Defining ScreenKeys and Fixed keys

The definition of the keys may now begin. Select a ScreenKey by clicking on it or use the Tab and up/down arrow keys to highlight a key and press the Spacebar. If you select a ScreenKey, and there are no menus defined, you will be asked for a menu name (there must be at least 1 menu if there are ScreenKeys). Enter a meaningful menu name of up to ten characters. The menu has now been created, and the name will be shown in the upper right window labelled Menu. The definition of the selected key may now start.

Key Details

As the user moves around the keyboard, the details associated with the current key are displayed in the Key Details panel on the screen. Only the "Goto Menu", "Security" and "Scan Code" fields are relevant when editing details for a fixed key. All fields are relevant when editing details for a ScreenKey. The Key Details describes a keys appearance and behaviour.

- **Goto Menu** (Fixed and ScreenKeys)

  Select the name of the ScreenKey menu to be displayed when this key is pressed. If pressing this key should not update the ScreenKeys display, then leave this field blank. The ScreenKey menu must already exist.

- **Security** (Fixed and ScreenKeys)

  Select a number in the range 0 to 4 (relevant to mode lock's physical position). A key assigned a Security Level value of 0 is always available. If the current security level is less than the security level assigned to a key then that key is inactive. Note that some keyboards are equipped with a mode lock, and will then not be presented.

- **Colour** (ScreenKeys only)

  The ScreenKey is capable of displaying a range of colours. Select a colour from the dropdown.

- **Flash Colour** (ScreenKeys only)

  ScreenKeys may be configured to switch between colours. This feature is used to highlight a ScreenKey. The time that each colour is displayed can be set independently in the *Keyboard Parameters* window. Relevant if *Flash On* is selected.

- **Flash On**   (ScreenKeys only)

  Turns the "flashing" on or off. If the flash option is set (there is a tick in the box) the key will be switching between colours if a "Flash Colour" is defined. If the flash option is not set, the "Flash Colour" setting is ignored.

- **ScreenKey display** (ScreenKeys only)

  The ScreenKeys may have a legend displayed on the keys. The contents can be either a plain text, or a graphics. When a text or a graphic is selected it will instantly be displayed on the selected key.

  - **Graphic**

    A graphics may any image fitting the LCD display. Text exceeding ten characters may be made up as a graphic, there is a special feature in the graphic editor to quickly enter a text and convert it to graphical image. Select the name of the Graphic to be displayed when this ScreenKey is displayed. If a graphics is selected after a text has been defined in the *Text* field, the text will be deleted and the graphic used instead. The Graphic must already exist. See also the *"Editing/Creating a Graphic"* section of this document for how to create a graphic.

  - **Text top** and **bottom**

    There are two input fields for entering plain test for the ScreenKeys. The

texts will be displayed using a fixed mono spaced built in font. The top line can take up to 5 characters, but the bottom line may take up to 59 characters.

Stationary text
If less than 6 characters is defined in the "bottom" field, both texts will appear stationary on the ScreenKey. A maximum of 5 characters can be defined in the "Text top" field.

Scrolling text
Texts longer than 5 and up to the maximum of 59 characters defined in the "bottom" field, scrolling on the ScreenKey. Text defined in the "Text top" field will always appear stationary. The *Keyboard Parameters* window controls the scrolling speed and the delay between displaying the text on the ScreenKey and the start of scrolling.

Centred text
If the "bottom" field contains no definition, the text defined in the "Text top" field is displayed in the centre of the ScreenKey display area.

- **Scancodes**   (Fixed and ScreenKeys)

Scancodes are keystrokes that may be sent to the target application when a ScreenKey or Fixed key is pressed, when the Mode Lock is turned, when a card is swiped through the MCR, or when an error occurs.

Scancodes are keystrokes that may be sent to the target application when a ScreenKey or Fixed key is pressed, when the Mode Lock is turned, when a card is swiped through the MCR, or when an error occurs.

For a key, the scancodes can be edited by clicking on the scancodes icon, by selecting Options/Edit Scancodes menu option. This brings up a new window containing a template of a standard QWERTY keyboard. Simply click on the desired keys, and the keystrokes will be added to the scancode list to the right. When finished click OK.

Further detail on scancodes can be found in the Scancode section of the file SAC Editor User's Guide.

- **Graphics** (ScreenKeys)

The graphics-editing window is a separate window within the ScreenKey editor used to create, and modify graphics. A graphic is a pattern of dots (LCD pixels) which is shown on the face of ScreenKeys. Graphics are stored in the SAC file, and assigned to one or more ScreenKeys by using the graphics selection list available when editing the ScreenKey.

To show the graphics-editing window, click on the graphics icon. The graphics window shows a grid of cells representing the dots on the ScreenKey, and various controls below. There are 3 ways to define a graphic using these controls, (which may be combined if desired):

- Setting individual squares of the grid.

- Using characters/symbols from the TrueType fonts installed with your copy of windows.

- Enter as text and have the Editor convert to a graphic. The conversion, TEXT2GRAPHIC, is based on a built in font, which the user can modify. This approach is useful when more than five characters per line is desired.

Further detail on graphics editing can be found in the Graphics section of the SAC Editor User's Guide.

- ### Keyboard Operation Parameters

Before a newly created SAC file may be saved, an **Initial Menu** has to be defined. This is done in the "Parameters" window, found under the Option/Parameters menu option.

The Parameters window offers various ScreenKey features to be defined, all which are keyboard related, not key related. You must complete the **Initial Menu** field on this screen before you can return to the *Key Details window.* When you have finished editing the values, click the OK button to save any changes.

- ### Saving the file

When a SAC file is open the Save icon is displayed. Click on this icon, or click the File/Save menu option. If a SAC file is unnamed (you opened a new SAC file, haven't yet saved it, and its title bar says something like 'Untitled:0') you will be asked for a name and a location to save it under, with an explorer style window. You can also save the SAC file under a different name if you wish by choosing the File/Save As menu option.

- ### Building up the SAC file

You may now have created a SAC file, containing one menu. To extend the SAC file with more menus simply create a new menu. A new set of blank keys will appear and the process of defining the key contents may start over again. This new menu must be referred by a key in another menu, or by a mode lock position or the initial menu definition. If a menu is not referred it will be saved to the file, but a warning will be issued.

You may add as many menus as you want, in as many layers as you want, as long as the file does not exceed 64 Kbytes.

Fixed keys

The fixed keys can of course not contain text or graphics, since they don't have a LCD display, but the can send scancodes to the application, and change the menu displayed on the ScreenKeys (goto menu).

It is normally a good idea to have at least one fixed key to activate e.g. the topmost menu, then there are no need for a key in each menu referring back to the previous one.

Two or more fixed keys may be combined to make up a "Large Keytop". This is done by dragging a rubber band around the keys using the mouse, or by using the Option/Make Large Keytop menu option.

Testing

To test/verify the menu hierarchy you may use the Menu Walk-Through feature. Right-click with the mouse on a button, and the menu defined for that button will be displayed, if any. Holding down the Ctrl-key while left-clicking or pressing the Spacebar will also activate this feature. For the fixed keys this will also happen if you left-click.

Other features

Depending on the keyboard type, it may also have a Mode Lock key, and a magnetic Card Reader. These features require configuration, and are described in detail in SAC Editor User's Guide.

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Running a SAC file

When a SAC-file has been created it can be run with the ScreenKey console. The SAC Controller or an application hosting the SAC Engine is responsible for the interface between the Windows application (target application) and the ScreenKey console. More precisely, it is controlling the Windows keyboard buffer and ScreenKey console based on the contents of the SAC file. The SAC Engine receives the key-presses from the ScreenKey console, translates them to Windows keyboard messages. It feeds these to the target application, as if they came from the QWERTY keyboard. The SAC Engine, not the application, based on the contents of the SAC file, normally also updates the ScreenKeys displays. An exception is when the application hosting the SAC Engine uses certain methods in the SAC Engine Control to display legends on the ScreenKeys.

How to run the SAC Engine

The SAC Engine will be hosted by an application, and this should then start the SAC Engine. It is therefore up to the hosting application to give the SAC Engine Control the appropriate parameters. The SAC Engine or SKI ActiveX Control must be used to make use fo the large LCD display integrated with the SK-7000 console.

How to run the SAC Controller

The SAC Controller is an application hosting the SAC Engine Control. It is merely a user interface to the SAC Engine Control, where the SAC file, the keyboard definition file, the communication port and the target window may be specified.

The simplest way to start the SAC Controller is to start the application, specify the above mentioned parameters, and then select *Start SAC* from the *File* menu. The SAC Controller will then initiate the SAC Engine Control which again will initiate the ScreenKey console. The SAC Controller will then put itself into the System Tray as an icon. The user interface can be reactivated by right clicking on this icon. The SAC processing can also be stopped from this menu.

The SAC Controller user interface can install the SAC Controller as an AutoStart application so it will be started automatically when the computer is started.

See **SAC Controller User's Guide** for further details.

Note that the SAC Controller does **not** operate with the integrated large LCD display on the SK-7000 console.

A P P E N D I X   A

Documentation Control

A.1 Change Control

This document is the responsibility of the author and is subject to formal change control after the initial approved release (i.e. issue 1.0).

A.2 Abbreviations Used/Terms of Reference

MCR	Magnetic Card Reader
Menu	A Menu is a collection of ScreenKey records that are treated as a single unit.
PC	Personal Computer.
POS	Point of Sale--the cash register in a shop.
PWD	ScreenKey console for Windows Software [discontinued]
SAC	ScreenKey Active Control
Scan Code	A scan code consists of 2 bytes--usually 1 byte for the ASCII value and 1 byte for the keyboard position code.
SKI	ScreenKey Interface

A.3 Historical Change Reference

Issue	Date	Author	Changes Made
1.0	15/03/99	B.Liane	Initial Release
1.1	05/04/01	B Liane / MMcDonnell	Rewrite for PWD replacement applications
1.2	15/03/04	MMcDonnell	Update for SK-7000 console
1.3	15/12/05	MMcDonnell	Update for LC24 and RGB support
1.4	30/11/06	MMcDonnell	New logo

A.4 Change Summary

1.1   Include overviews of SKI project and replacement applications for PWD components. Rewrite software installation and running a SAC file sections to reflect new software applications.

1.2   Rewrite as SK Interfaces Ltd, include details on SK-7000 console.

1.3   Create new SAC file requires selection of ScreenKey resolution and backlight color

1.4   Update doc with new logo and latest version numbers