

Using Smart Keyboard Downloader White Paper

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<http://www.satoworldwide.com>

softwaresupport@satogbs.com

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1 Overview

Smart programmable keyboard is the easiest way to build a stand-alone printing system and works as a small portable PC to save valuable working space. It offers the unique capability of communicating with virtually every brand of bar code printer on the market today.

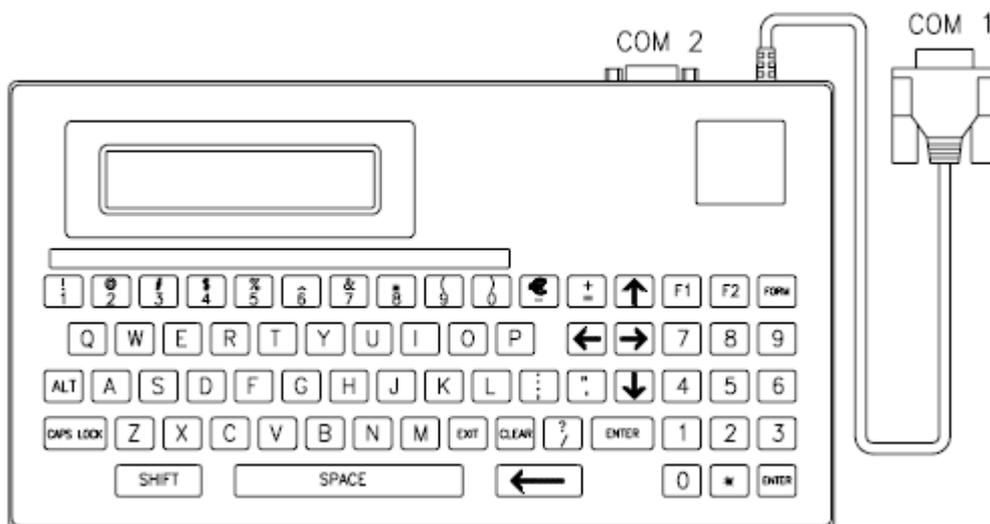
Smart keyboard allows users to upload or download files as well as connect an input device such as a CCD scanner to its additional RS232 interface. You can generate desired label layouts through in easy-to-use BASIC-like language interpreter. By downloading into the flash memory of the keyboard a stand-alone printing system can be built instantly.

Such printing system can be applied to many applications including retail, transportation, distribution and manufacturing environments.

Label Gallery software is used to design the label layout on the PC computer. When the label is properly designed it can be transmitted to the Smart Keyboard. The utility Smart Keyboard Downloader will take care of this process. It will also prepare the BASIC script needed by the keyboard to print the label. The label layout and BASIC program are downloaded to the keyboard and stored in the built-in SRAM. The user can select one of the downloaded layouts, sets the values for the variables and prints the required amount of labels. The values can be typed in using the keyboard or acquired from the secondary serial port (COM2).

When the layouts are stored in the Smart Keyboard, the Keyboard is disconnected from the computer and is used for your stand-alone printing solution. The layouts in the keyboard are printed without connection to the Label Gallery software. Label Gallery is not processing the labels and because of this fact some limitations apply to the label layout design.

The supported Smart Keyboard model is KU-007 PLUS and can be bought from SATO.



2 Preparing the label layout

Label Gallery software on the PC computer is used to design the label layout compliant to your request. You can use all Label Gallery elements on the label (text, paragraph, RTF, bar code, image, line, rectangle, ellipse, etc) as fixed elements, but some of them can be also used with variable values.

If you use variable fields on the label, you have to pay special attention to their format. All variable elements must be compliant with the following designing rules.

- **All variables on the label have to be prompted.**
Prompted variables are of such type, where the user set their values before printing by typing in the values. You cannot use the database variables, as the database where they come from will not be available at print-time. Remember, you are creating offline printing solution without connection to PC computer. If you are using Date/Time variables on the label, you have to set the property of the variables to acquire this data from the printer clock not from PC system clock.
- **You can use only some Label Gallery functions.**
Because Label Gallery software will not be available at print-time, majority of Label Gallery functions cannot be processed (like Visual Basic script, EAN.UCC 128, Linear function, Date addition etc). However there are two functions that have also been implemented when printing labels from Smart Keyboard. They are Concatenate and Subset. You are able to export the label utilizing these two functions to Smart Keyboard, where they are executed.
- **All counters have to be incremented by printer.**
Because Label Gallery software will not be available at print-time, the printer has to be able to increment the counters internally. Just make sure to properly set up the counter. You need to design the internal printer counter on the label. Refer to Label Gallery How-To section in the help file for more information how to set up resident printer counter.
- **Variable graphics are not supported.**
Because Label Gallery will not be available at print-time, the variable graphics cannot be handled. All images on the label must be static.

When the label is prepared, save it to disk in Label Gallery default .LBL file format to the folder of your choice. Then you can close Label Gallery software. If there is any design error spotted on the label, you will see the error message displayed during the download process in Smart Keyboard Downloader application. If this happens, go back to Label Gallery Plus and correct the error on the label.

Just remember to follow the above-mentioned rules of label design.

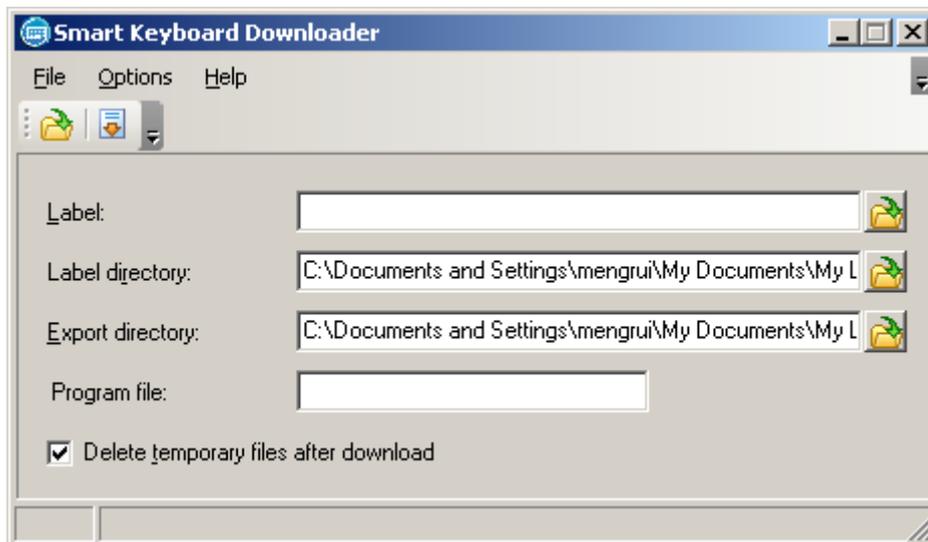
3 Downloading label layouts

Smart Keyboard Downloader is the utility for transmitting the label layout to the Smart Keyboard. It is installed with your copy of Label Gallery software. It is accessible from Label Gallery program group in Start/Programs system. Look under the subfolder Utilities.

The first thing to set up is to synchronize the serial communication settings of the keyboard and of the Smart Keyboard Downloader utility. Select the Port settings command from Setting menu. Make sure to specify the same communication parameters on both ends. This will ensure that the Smart Keyboard and the PC computer will be able to talk to each other. Please verify that the pin configuration of keyboard COM1 port (keyboard cable) is compatible with your printer's COM port.

If you do not know how to set-up your keyboard communication parameters, please refer to the chapter Smart Keyboard Operation Guide on the page 6 of this document.

3.1 User interface



Smart Keyboard Downloader is in fact a very simple application with one purpose only: to download the label layout to the keyboard. If something goes wrong during this process, you will see the error message with detailed description of the error. You can then easily identify the problem, solve it and download the label again.

The main window of the Smart Keyboard Downloader utility contains the following controls.

Label	This setting specifies which label is currently selected to be sent to the Keyboard.
Label directory	This setting specifies where the Smart Keyboard Downloader should look for the label files.
Export directory	The Export directory specifies which folder will be used for temporary files that are sent to the Keyboard.
Delete temporary files after download	If this option is ticked, all temporary created by Smart Keyboard Downloader files will be removed after the successful transmission. If it is not ticked, the files will remain in the folder. Enabling this option is useful if you want to review the content of the files that are sent to the keyboard.
Program File	The Program file option specifies the name of the BASIC

program file that will be created and stored to the keyboard. This is read-only field and you cannot change the name. The name is generated from the label filename.

Download button

The **Download** button will start the label conversion and then the transmission of the files to the keyboard. If the label is not properly formatted and does not comply with the designing rules, the Smart Keyboard Downloader will let you know what exactly is wrong with the label. You will have to make corrections to the label layout and then try the download again.

3.2 Advanced Options

File already contains download header

This option is accessible with Custom Download command in the File menu. Custom Download allows you to download any file to the keyboard. It can be used to download your own BASIC files or exported label layout that you have modified.

The download header must be stored in the beginning of the file. It contains the name of the file and its length, the data necessary for correct transmission of the file to the keyboard. When downloading .BAS files, you do not need to enable this option. If you are not sure about the header, disable this option.

Include comments into basic (.BAS) file

The option is accessible in program preferences.

When Smart Keyboard Downloader exports the label layout, at the same time the BASIC file is created. The BASIC file controls label printing from Smart Keyboard. If you want the BASIC code to be more described, enable this option. Each section in the file is commented so you know which operation is processed in the certain part of the file. Please note, the length of the .BAS file will increase, occupying more RAM in the Smart Keyboard.

Use VAL file, if number of variables on label is greater than

The option is accessible in program preferences.

When setting the values for variables at print time, these values are temporarily stored in the RAM in the keyboard. If your label has a lot of variables to set, the consumption of RAM will rise. If there is not enough free RAM available, printing process might fail.

In this case enable this option to store variable values in the temporary VAL file and not in the RAM. The VAL file is stored in the portion of RAM, formatted as "hard disk". When using VAL file, label processing and printing might be a bit slower, because of more interactions with the VAL file.

The option to use or not use VAL file is encoded into the .BAS file. If you need to change the option about using or not using VAL file, make sure to make the export the label with this setting one more time.

Before you can download labels to the Keyboard, you should verify that you have the Keyboard properly connected to the PC and to the printer. The Keyboard receives the electrical power from the serial port on the printer. The built-in serial cable (COM1) has to be connected to the printer. Make sure to turn off printer power prior connecting the keyboard to the printer. The extra serial connector (COM2) of the keyboard is used for downloading files from PC or can be connected to other input devices such as bar code scanner.

4 Printing from Smart Keyboard

When the label is successfully transmitted to the Keyboard, you can disconnect the Keyboard from the PC computer and experience true stand-alone printing.

4.1 Print the labels

1. Press the **FORM** button on the upper right side of the keyboard. The list of all downloaded label layouts will be displayed. You can scroll thru the list using up and down cursor buttons.
2. Press the **ENTER** button to select the label.
3. Enter the quantity information for this label. It will be printed in these many copies. Confirm the selection with the **ENTER** button.
4. If the label contains variables, you will have a chance to set their values. The Keyboard will prompt you for each variable.
5. If the label does not contain any variable, label printing will start directly.
6. When the label is sent to the printer, you will be prompted if you want to repeat the process. If you enter Yes, the printing process will be repeated, if No, the Keyboard will be returned to the initial state.

4.2 Delete the labels

Smart Keyboard has a limited quantity of available FLASH and SRAM memory. If the label fails to be transmitted to the Keyboard, the memory might be full and you will need to remove some existing labels from the memory.

1. To delete the files in the Keyboard, press the combination of keys **ALT + F2**. The displayed menu will let you delete the files.
2. Each label from Label Gallery software is stored in the keyboard into several different files. All these files have the same filename, but have different file extension.
3. Delete all the files with the same first part of the filename.
4. For example, if the original label on the PC computer was **TEST.LBL**, the following four files were created by the Smart Keyboard Downloader and transmitted to the Smart Keyboard: **TEST.BAS**, **TEST.CNT**, **TEST.DAT**, **TEST.VAL**. You should delete all of these files.

5 Smart Keyboard Operation Guide

The list of available keyboard commands:

F1	Setup the communication parameters of the keyboard. When the parameters are set, press ALT EXIT to reset the keyboard.
FORM	<p>Press FORM key to list all the BASIC files stored in the smart keyboard. Use the upper and downward arrow keys to navigate thru available files displayed in LCD screen. The keyboard also supports hot key feature to find the program. For example:</p> <p>If the program is named LABEL.BAS, press FORM and then press L. The keyboard scrolls the files to the first one that begins with L automatically. Execute the selected program by press ENTER key.</p>
ENTER	Execute the selected item.
EXIT	Exit sub-menu.
ALT F1	<p>Keyboard configuration settings.</p> <p>The left and right arrow keys are used to select different parameters. Press ENTER key to enable the selected parameter. Press EXIT to return to upper level of menu.</p> <p>If these keys are pressed at power-on, they will disable auto execution of the downloaded programs. By default the BASIC file named AUTO.BAS is run whenever the keyboard is switched on.</p>
ALT F2	<p>On-line editing utility.</p> <p>This feature is useful for modifying BASIC programs in the field. The available maximum editing characters are 79 characters x 250 lines. The upward and downward arrow keys are used to scroll the files displayed on LCD screen. Enter key is used to select program for editing. ALT-CLEAR keys are used to delete the files stored in keyboard memory. F1 key is used to upload the files through the specified serial port of keyboard to the connected device if the cursor is stopped at selected file. Select " New File" and press Enter to editing a new file. The available filename is up to 8 characters and 3 characters for extension. Press F2 to save the file when completed editing.</p> <p>You can use on-line editing utility to change the BASIC files that are generated by Smart Keyboard Downloader application.</p>
ALT D	<p>Extend files manager.</p> <p>Files stored in flash memory are read only and file list, deleting, and download utility must be operated through Extended Files Manager. The download and delete files process will be different than for files stored in standard memory. The operations of Extended Files Manager are:</p> <p>List files: All the files stored in Flash memory will be listed. The BASIC files stored in Flash memory will also be listed in BASIC program file list by press Form key.</p> <p>Erase files: This utility delete all the files stored in Flash memory. The KILL command can' t delete files stored in Flash memory.</p>

Download files: Enter this utility before download files to Flash memory. Download files either by DOS command or by Windows software. Label Gallery Smart Keyboard Downloader uses the same method to store the label files to the keyboard. Press EXIT key to exit download utility.

ALT EXIT	Reset the keyboard. The other function of this command is to interrupt the running program.
ALT CLEAR	Keyboard initialization. Press ALT CLEAR while turning on the power of the keyboard to initialize it. All files stored in SRAM will be deleted. Code page and country settings will be set to default; both of serial port communication parameters are set to default as well.

6 Appendix

Label Gallery Product Overview

Label Gallery is the most advanced professional labeling software for desktop and enterprise users. Label Gallery offers an easy-to-use interface and meets any label design and printing requirement for efficient label printing solutions to users in retail, logistics, health care, chemical, automotive and other industries.

Label Gallery TruePro: Complete software solution for any kind of label design and print requirement. Multiple connectivity options allow users to perform stand-alone printing or integrate label printing into any network environment.

Label Gallery TruePro provides you with interactive label printing capabilities such as integrating label printing to existing applications (ActiveX) or non-programming embedding of label printing to existing systems (GalleryWatch).

Label Gallery Plus: Full-featured software designed for professional label design and printing, including complete database support and ActiveX integration possibilities. A wide range of features and options makes Label Gallery Plus a perfect and easy-to-use tool for any labeling requirement.

Label Gallery Easy: Wizard-based software meeting basic barcode labeling needs. The entry-level software includes many design elements of the Plus edition with the emphasis on simplified user interaction.

Label Gallery Plus Print Only: Label Gallery Plus Print Only offers printing of pre-designed labels but cannot be used to design and alter existing labels. Advanced settings for changing the labels are not available.

Label Gallery TruePro Print Only: Label Gallery TruePro Print Only offers printing of pre-designed labels, using pre-designed forms and automatic printing from pre-designed trigger actions. Label Gallery TruePro Print Only cannot be used to design and alter existing labels, forms and trigger configuration. Advanced settings for changing the labels are not available.

Pocket Label Gallery: Pocket Label Gallery is a program package for Windows CE that brings the power of label printing to portable Windows CE computers (Windows Mobile Device). Pocket Label Gallery is part of the editions Label Gallery TruePro or Label Gallery Pocket PC Designer.

Label Gallery Developer Series:

- **Label Gallery SDK :** Label Gallery SDK is an ActiveX integrator edition of Label Gallery software developed for software publishers who needs label printing capabilities in their software.
- **Pocket Label Gallery SDK:** Pocket Label Gallery SDK is an ActiveX integrator edition of Label Gallery software developed for software publishers who needs label printing capabilities in their software under mobile devices.