CSDA Barcode Functions

for Alpha Five

Created by
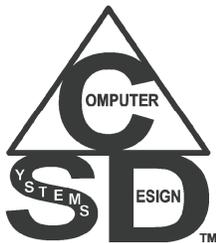
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CSDA Barcode Functions for Alpha Five

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Why use the CSDA Barcode Functions?
(As opposed to writing your own functions!)

Barcode display and printing
- ⚲ Most barcodes require that you take input text, convert it to the barcode values, possibly adding start, stop, barcode control and checksum characters, and then change it to the font mappings of the particular barcode font you have selected to use.

  Code 128 is one of the best barcodes to use as it can encode full ASCII (as well as foreign characters), is very short, has individual character reliability as well as a standard-defined checksum and is used by many large corporations and is supported by every barcode scanner (made after the 1980). However, it is one of the more difficult barcodes to generate the barcode code string (unless you limit the character set), because it uses several encodings depending upon whether you use ASCII control characters (rare), lowercase characters, or mostly numbers. To generate the shortest barcode (especially for combined alpha and numeric characters), requires a complex algorithm (which is very difficult unless you limit yourself to use only 1 of the code subtypes (A, B or C) sets). The CSDA Barcode Functions produces the optimum barcode for the codesets of your choosing.
- ⚲ The checksum calculation must be done correctly, and, for most barcodes is not particularly difficult to do. However a mistake in the calculation will result in scanners unable to read some if not all barcodes.
- ⚲ You must also translate the barcode values (which for some barcodes like Code 128 do not correspond to their ASCII representations) to the barcode font's ASCII values, which can also be difficult, depending upon the particular font being used.
- ⚲ If using it for web applications, it may require changing the barcode to an image to display or place in a PDF or similar document that does not embed the barcode font itself.
- ⚲ When using a new barcode font, the mappings are not always given by the documentation. Having a Test mode to view the font mappings is extremely useful, plus it can help identify issues encountered with barcodes when they don't work.

Barcode scanning
- ⚲ Typical users move the cursor to a field, scan a barcode, then do a save of the data. But this is not a very efficient way and is not really a good way to use Barcode scanning to its fullest potential, nor do you have the flexibility to change how you use it depending upon what your application is currently doing. You want to use "Intelligent Barcode scanning", where the act of scanning starts a process, no matter where you currently are within your application.
- ⚲ In many cases, you want to scan a barcode, do a find of that value in your database, and then go into change mode of that record. If not found, you want to have the scanned data entered into the correct field, and left in enter mode.
- ⚲ Some times you may be scanning many items in succession (e.g. using a wireless barcode scanner on a factory floor), not always in viewing range of your computer. Having a good or bad tone or sound can be helpful so you don't have to change your visual focus after each scan. In addition, you may wish to process the scan, changing its associated record, and automatically saving it.
- ⚲ Most scanners use software or hardware called a keyboard wedge, essentially acting like it's own keyboard. Trapping normal keyboard typing from scanner input can have problems. Using "Onkey" trapping can slow keyboard typing a lot unless written in an efficient manner. If the barcode text from the scanner does not complete for any reason, you may be stuck in an incorrect mode, unless an automatic timeout has been created.
- ⚲ Scanners are very often set up to output a prefix code (often a control character of Function Key) before the first character of a scan, followed by a suffix key (typically a Carriage return) to terminate the scan. Most can be reprogrammed to change these, but are difficult to determine if set up correctly. Having a test window to watch the scanner's characters is very helpful at times in setup of the scanners.

The CSDA Barcode Functions for Alpha Five addresses all of the above and more. These are the results of actual use over many years and much tweaking of the code. For a low cost, you can save many hours of your time.

Use the CSDA Barcode Functions! Isn't it time you stop wasting your time?

CSDA Barcode Functions for Alpha Five

Alpha Five Version Compatibility

The CSDA Barcode Functions works with Alpha Five Version 6 and up.

QReportBuilder Compatibility

The CSDA Barcode Functions for Alpha Five works with all versions of QreportBuilder.

Vista / Windows 7 Compatibility

CSDA Barcode Functions for Alpha Five is compatible with any Alpha Five version able to run on Microsoft's Vista or Windows 7 operating system.

Purpose

The CSDA Barcode Functions for Alpha Five provide for display and printing of bar codes, and the processing of scans from barcode scanners. It does not include licensing for any bar code fonts, or Barcode scanning devices. There may be some demo, shareware or freeware fonts included, however, users should read the licensing agreements for those fonts before using.

Additional Items required

The CSDA Barcode Functions for Alpha Five requires an appropriate Windows Bar Code font and/or a Bar Code scanning device. Information on Font Sources and Scanners is near the end of the document

It is completely compatible with the CueCat scanner that was distributed by Radio Shack and others companies (from the year 2000 to about 2005), as well as all commercial scanners that operate as a keyboard (via software or hardware).

Free bar code fonts range anywhere from bad to good. Some will not work well at low-resolution (e.g. dot-matrix) printers. Commercial fonts are often better, but not always. Some fonts have Human–Readable (text is placed with the font) versions, or include human-readable with the standard font, so that either can be selected within a bar code. Of course, you can always place an Alpha Five text field with the normal near the barcode to allow a human to read its value. Some barcode font mappings make sense, some seem to be absolutely bizarre.

Trial/Demo Version Barcode data

In Trial mode, any returned value or saved image file from the functions will have every other data character replaced with a number (except for special sample text), so the function will not work in actual operation.

However, there are standard string sets (like uppercase alphabet, lowercase alphabet, numbers and special characters) that can be selected with the Flag options that will not be modified to allow checking of real barcodes and font mapping.

If you want to check a particular barcode value font string, copy the resultant barcode string values from the test dialog, then place this constant value in a field and set the field's font to the barcode font. Please also note that in trial/demo mode, the test window must be closed before continuing.

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Evaluation Version

When operating in Evaluation mode, the evaluation version has an expiration date but is not limited (crippled) in any way. However, if the evaluation license cannot be validated, or if the evaluation has expired, it will operate as a "Trial/Demo Version".

When using an evaluation license #, you should allow
access to the Internet or it may operate in Trial/Demo Version mode on some computers

To operate an evaluation version of the CSDA Barcode Functions for Alpha Five, you must do the following:
Request a free evaluation license # for the CSDA Barcode Functions for Alpha Five at the web site –

http://www.csda1.com/csda_barcode/CSDA_BarCode.html

Licensing

Each developer license number of the CSDA Barcode Functions for Alpha Five is licensed for, at most 1 concurrent (simultaneous) user of the product, and may be legally loaded onto, at most, 3 different computers (intended for home, work and portable) systems. It will not permit simultaneous use of the same license over a network.

If used with an Alpha Five web application server, each server must operate with it's own license.

If distributed with a Runtime system, pricing (subject to change) is based upon the maximum number of runtime users of the system. Contact CSDA for runtime pricing.

Quick Installation

To install or upgrade the CSDA Barcode Functions for Alpha Five, download the executable EXE installation file, just run it and follow the instructions. Check each version of Alpha Five that you wish to install for. Each version of Alpha Five selected will open, do the final installation and then exit Alpha Five.

On Vista and Windows 7, you may have to run it in Admin mode if UAC is on. To do this, either right click on the EXE installation file's icon or filename and run as administrator or alternatively, turn off UAC (User Account Control) on your computer during the period of installation.

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Manual Installation
To install or upgrade the CSDA Barcode Functions for Alpha Five manually, **unzip** the downloaded CSDA_Barcode.zip file into any directory of your choosing. If you are unfamiliar with the way to unzip a file, navigate using windows explorer or similar to the downloaded program. Right click on the downloaded filename and select Extract All (which is the windows default) or other Zip/Archive program you may have installed in windows. You will find in the same folder that was unzipped

- CSDA_Barcode.pdf contains acrobat / PDF documentation file on using the product.
- CSDA_Barcode.aex which must be moved or copied into the correct directory of Alpha Five for aex files
- An Alpha Five database called CSDA_Install
- Other zip and archive files that contain barcode fonts that can be installed on your computer for testing and/or use.

Start the Alpha Five version (Version 6 and up) or QReport Builder you wish to install on and open up the CSDA_Install database. It will run the installation and then closes Alpha Five/QReportBuilder.

Repeat for each version you wish to operate the CSDA Barcode Functions on.

There are 3 possible correct places the CSDA_Barcode.aex and other AEX files can be placed. The first usable choice is best for manual installations.

- In Alpha Five Version 7 and earlier, it should be placed in the Addins_installed directory which should be in the Alpha Five's program directory (e.g. C:\Program Files\A5v7\Addins_installed). If folder does not exist,create it first. This directory will also work for Versions 8 and up, however, you may need to run Alpha in Windows Admin mode with Vista and Windows 7
- It can be placed in the database application's directory, and loaded there by an Autoexec script in your database application. This has the advantage of not having to be installed or updated for each runtime usage
- In versions 8 and up, to allow better Vista or Win 7 operation, there is another directory located under the user's files Documents and Settings, unfortunately Alpha Five version 9 and version 10 do not properly handle this, and thus do not work, so this is not recommended at this time.

If the CSDA Barcode Functions for Alpha Five does not seem to be working
If the program is not operating, try this after installation.
- Close all other windows using the same version of Alpha Five.
- Select the Alpha Five Control Panel, then select **Tools**, then **Addin Manager…** from the menu.
- Make sure the CSDA_Barcode library file is shown. If it is not showing, the library was not installed properly.
- Now unselect (uncheck) one or more items, and click **OK**.
- Repeat, select the Alpha Five Control Panel, then select **Tools**, then **Addin Manager…** from the menu.
- Re-select (check) the ones you previously unselected, and click **OK**.
- Close Alpha Five and restart.
- Select the Alpha Five Control Panel.
- Select the Interactive Window button on the Alpha Five toolbar.
- Now type in the Interactive Window the following
        CSDA_Barcode()
  and then press Enter.
- If help appears, it is installed properly.

If any error is displayed, send the error message and information to support@csda1.com

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Entering Licenses

To run the Evaluation or purchased version, you must add the license to the license file.

To edit the license file, run any function's help, then press **License** button.

Enter in the complete license line (as one complete line) in the Edit License line.

If you have many license numbers to insert, you can press the "Edit License File" button and enter additional license numbers with the default text editor. The License file can contain multiple licenses from 1 or more companies and 1 or more products. Each product will find only the applicable license line for its needs. Each line of the license file contains a company ID, license number and other fields after that (the following shows it broken into two lines for display), e.g.

CSDA,1234-5678-9012-3456-1234-5678-9012-3456,CSDA Barcode Functions,,,20111129,0629,,,,John Q. Smith%0D%0ASmith & Company,5

You may have to close Alpha Five and restart Alpha Five for the new license number to take effect. All licenses are entered into a file called "A5_Licenses.txt". The file is searched for in the following order of directories:

- Alpha Five Private Path
- Alpha Five user's application path
- Alpha Five EXE path
- Alpha Five Shared path
- Master database path

If more than one "A5_Licenses.txt" file is found, all are combined to create a composite license file that is used for license validation. If none is found, a dialog box appears with ability to set the path and enter the license number. The initial path selected will be where the first file was found, or if none was found, then the Alpha Five user's application path (which is Alpha Five EXE path in A5 version 7 and earlier). It can be changed to any available choice, but the Application path is the recommended for most needs. New licenses will be stored in the selected path.

If you do not have a valid Evaluation or purchased license #, it will operate in "Trial/Demo" mode. If you are still experiencing problems after entering valid license numbers and restarting please contact CSDA to help solve your problem.

Updates to the CSDA Barcode Functions

To update the CSDA Barcode Functions for Alpha Five, start help for one of the functions, select the **Help/Update** button, and then select the **Update** button. Alternatively, just download the current exe installation program or Zip file, and reinstall as if you are installing for the first time.

Get Current Documentation & function Help

To get current documentation on a particular function, go to the Alpha Five Control Panel. Press the **Interactive Window** tool button at top. In the Code Editor's Interactive Window, type 1 or more of the following lines and run them (by pressing enter at the end of the line).

- **CSDA_Barcode()**
- **CSDA_Barcode_C128()**

If you wish to save the documentation, press Save File button, or you can select the text, or use Ctrl-C or the copy button to copy it to the clipboard. Then paste where needed.

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Self-Prompting usage

If you use a leading space for most parameters of the functions, they will prompt you for the value, or supply a list of acceptable values when run. The trimmed parameter value is used as the default value for any prompts. This is particularly useful for the Flags parameters. Flags have many settings, not all of which are compatible or will work simultaneously. In most cases, the character case of Flags letters does not matter.

Code Editor Parameter Help

After the 1st usage of a function (including getting Help or version), code editor parameter help (pop ups which allow selecting values) will be available for the function in the code editor as the function is being typed in. To enable this feature for software development can be done easily by requesting the version number, as in;

- **CSDA_Barcode("V")**
- **CSDA_Barcode_C128("","V")**

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Using the CSDA Barcode Functions in your code

Testing barcodes

To test the Barcode process, most functions included have a Test mode. To invoke the barcode display test mode, first, install a code 128 font, then try executing the following line in the interactive window

? CSDA_barcode_c128("","T3FSL")

To test the keys of a barcode scanner, you can use the scanner test window by running the following;

? CSDA_barcode("TM")

Examples to try in the Interactive Window

To try some examples, go to the Interactive window, and try some of the following lines. **Do not include any text in the interactive window show below from the single quote to the end of the line**, these are just comments to explain what the line should do.

```
?CSDA_Barcode_C128() ' Display function help
?CSDA_Barcode_C128("TEST 123") ' create barcode
?CSDA_Barcode_C128("TEST 123","T") ' Show test dialog box allowing testing and viewing of font
' mappings of barcodes
?CSDA_Barcode_C128("TEST 123","K") ' return checksum character
?CSDA_Barcode_C128("TEST 123","R")' ' Validate checksum character
?CSDA_Barcode_C128("TEST 123","",\
CHR(128)+"!"+chr(34)+"#$%&'()*+,-./0123456789:;<=>?"\
+"@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~"\
+CHR(145)+CHR(152)+CHR(147)+CHR(146)+CHR(150)+CHR(151)+CHR(150)+CHR(149)\
+CHR(148)+CHR(153)+CHR(154)+CHR(155)+CHR(156),"\",")+crlf()) ' Use alternate font mapping
?CSDA_Barcode_C128("TEST 123","2") ' Create mapped characters using manufacturer 2
blb=CSDA_Barcode_C128("TEST 123","J3","",",40","c:\testimg",0,0) ' Create jpg image of 40 point
' barcode
blb=CSDA_Barcode_C128("TEST 123","G3","",",40","c:\testimg",0,0) ' Display jpg image of 40 point
' barcode for testing
```

Example of Barcode Testing Dialog with Soft Keyboard and Font Display open

To test the keys of a barcode scanner, you can use the scanner test window by running the following;
```
CSDA_Barcode() ' return barcode help
?CSDA_Barcode("") ' prompt for barcode with 3 second timeout
?CSDA_Barcode("T") ' Open test box
?CSDA_Barcode("TZ","","","","Testdata") ' Open test modal box preset to Testdata
?CSDA_Barcode("TM","","","","Testdata") ' Open test modeless box preset to Testdata
?CSDA_Barcode("TMZ","","","","Testdata") ' Open test modeless box preset to Testdata Example of Barcode
Scanning Test Dialog to see Raw scanned data
```

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Placing a Barcode in a Label

When you want to place a barcode in a report, label, letter or other printed output, here is a simple procedure to follow. We will use AlphaSports as an example.

- ⚔ Start Alpha Five
- ⚔ Go into Design mode for the layout that you want to display or print the barcode on. We will use the "Invoice" report of the sample database AlphaSports.
- ⚔ Either drag the <New Calculated Field> from the DragDrop List to the right of the INVOICE_NUMBER field or go to the Menu line and select "Report" (or what ever layout type it is), "Calculated fields..."
- ⚔ Call the name of the field **Invoice_Barcode**, and the expression will be
  CSDA_Barcode_C128(INVOICE_NUMBER,"U","Dobson")
  "Dobson" is the name of the font mapping selection if using any Dobson fonts. For other supported mappings, use the appropriate name for it's mapping, or create a custom mapping per the function's help. If you don't specify the mapping, it will make a guess based upon the fonts installed on your system, but can be wrong.
- ⚔ Other choices for font mapping with "U" in the flag value include barcodes from companies
  - Elfring
  - Dobson
  - Informatics
  - ID Automation
  - Precision ID
  - dLSoft
  - Abri
  - BarCodeWizard
  - Azalea
  - BarcodeResource
  - Morovia
- ⚔ If not already positioned, drag the calculated field name Invoice_Barcode over to the layout and place next to the Invoice Number field.
- ⚔ Right click on the Invoice_Barcode field and select Properties. Select Format tab and select the width to at least the width of the data plus 3 (to allow for the start, stop and checksum characters). It is OK to set to a very large value, it just can't be any smaller, so normally just make it 999. Choose the Font tab, then select the Barcode font you have chosen to use, and set a font size that is appropriate for the chosen font (you may have to adjust this to get the right size for the font). Then press OK.
- ⚔ Adjust the width and height of the barcode field to allow the entire barcode to be seen
- ⚔ Save the design and you are done.

Now when you display or print the layout, the barcode will be shown.

Tips:
- ⚔ Many times a second copy of the data itself is place just above or below the barcode using a standard font to allow people to read its value, particularly on labels.
- ⚔ If placing more than 1 barcode on the same printout, rotate the field 90 degrees for a second one. When scanning, you get only the one you are scanning with the correct orientation of the scanner.
- ⚔ If using several barcodes, it is sometimes useful putting an identifier before the data so that you know you scanned the correct barcode. E.g. Product Number might always start with a PN, whereas a serial number may always start with an SN. Add or strip the prefix as needed after scanning
- ⚔ Some barcodes can represent the same value in different ways. Code 128 is a one case of this. If you are comparing the code generated to another piece of software, CSDA_Barcode_C128() function attempts to create the shortest barcode, which may be different from other software.

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Scanning Barcodes

If the function is used in an appropriate event (typically an ONKEY event of a form), it can detect the initial prefix code of the barcode. There are other ways to do this using hotkeys that are more efficient, but it works out the same way. It even can self install itself if used in an INIT event of a form or browse

A window pops up (which can be invisible) where the characters of the scan are captured, followed typically by the suffix character of an enter, which completes the capture and returns the data. By using the correct flags, the function call could take the scan and do an indexed find and optionally go into change mode or an enter of a new record with that barcode, leaving the cursor on either the barcode field or whatever the 1st field would be in change or enter modes normally. It has just about everything you'd even want to do with a scan taken care of for you. But if you want to more manually process the value, you can do that too.

If you want to move to the next field after the function completes, that is a simple line of code that moves the focus to the next object on the form, but serves no purpose for the function, as it makes it less generic.

To actually scan a bar code and then have it placed in the appropriate fields in the file, you need to place this in the onkey event of the form/browse. Use would be something like, assuming your prefix code is F10 on your scanner

```
bcvalue=CSDA_barcode("BKE","","","","{F10}")
IF .not.(bcvalue=="")
        ' we got a good barcode scan so process, doing what ever is needed here
        ' This might be breaking up parts of the scanned data and placing in various fields
END IF
```

Even simpler for just stuffing into a single field, is the code line;

```
bcvalue=barcode ("BKE","","objectname","","{F10}")
```

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Recommended Bar Code Symbology
If you only had to choose one barcode, Code 128 is probably the best choice.

Code 128 is a very high-density barcode symbology. It can be used for alphanumeric or numeric-only barcodes. It can encode all 128 characters of ASCII and, by use of an extension character (FNC4), Latin-1 characters. There is a required checksum in it's use and is a very reliable and efficient font. A link that will explain much of its details is as follows:

http://en.wikipedia.org/wiki/Code_128

Font Sources
Many companies provide a variety of fonts for sale or use. There are also free fonts available on the Internet. Some links to some providers are below;

www.elfring.com

www.dobsonsw.com – Free Code 128 Brian Dobson

www.waspbarcode.com

www.idautomation.com

www.precisionid.com

www.dlsoft.com

www.abri.com

Scanner Selection
There are many types of scanners, Older ones tend to use Lasers or LEDS, newer ones have CCD image technologies and are considered by most to be more rugged. Some are wireless, and these are fine to use withing the scanner's wireless range.

There are also scanners that will store all the scans for transferring to the computer at a later time, however this is not directly supported by the CSDA Barcode Functions, but you can use the functions to process these scans with a small amount of code. These scanners will also work as a standard scanner as well.

Almost all modern scanners have the ability to "program" via special barcode sheets, to set their prefix and suffix key or keys that are send before and after the actual data. The suffix key is almost always an enter key by default, but the prefix key varies quite a bit. I recommend using a CTRL-ALT-Function Key if possible, or ALT-Function Key as the prefix key. Make sure it does not conflict with usage by other programs.

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Uninstalling
While seldom ever needed, if you want to totally remove the program, or want to verify that an extreme problem is not caused by the program, follow one of the following methods.

To uninstall manually
- Start Alpha Five
- Go to the Control Panel
- Open the Interactive Window by pressing the button on the toolbar
- In the interactive window, type

    _CSDA_Barcode("","D")

  and press enter (note the leading underscore before the function)
- To complete the removal of the code from memory, exit Alpha Five

For documentation of the other files used, see the section "Files Used" in this documentation

An alternative way is as follows;
- First, close Alpha Five.
- Now using Windows file search ability, search all directories (including hidden and system directories) for all files that contain **CSDA_Barcode** in their name and delete them.
- Repeat, searching for and deleting the **Addin_library.aex** files (these are recreated each time you start Alpha Five if they don't exist).

For documentation of other files used, see the section "Files Used" in this documentation

Files Used
The following is a list of files and extensions created and/or used by the CSDA Barcode Functions for Alpha Five.
- **CSDA_Barcode.AEX** – Contains software code, normally installed in **addins_installed** directory
- **CSDA_Barcode.PDF** – Contains software documentation
- **A5_Licenses.txt** is a file containing 1 or more licenses to use. It can be manually entered, but is normally created automatically. Blank lines or lines whose 1st non-blank character is a single quote are ignored. This file must be present and contain valid License numbers for the CSDA Barcode Functions for Alpha Five to fully operate.

Technical Support for using the CSDA Barcode Functions
Free technical support for help in using the CSDA Barcode Functions for Alpha Five is not included in the license, but may be provided in some cases or in public message board forums (such as Alpha Software's)

If possible, try to include a CSDA DiagInfo output to CSDA.

Release Version History
09/19/2012	1.12 CSDA Barcode - Added Trim and statusbar display flags to barcoding
09/19/2012	1.12 CSDA Barcode - Fixed some issues with font selection
09/19/2012	1.12 CSDA Barcode - Speeded up barcoding without prompting
03/21/2012	1.11 CSDA Barcode - Fixed Licensing Validation for V10 and up
03/21/2012	1.10 CSDA Barcode - Fixed License Editor, Barcode Help button
03/20/2012	1.09 CSDA Barcode - Minor update to licensing error
03/19/2012	1.08 CSDA Barcode - Made some Licensing Code improvements
09/27/2011	1.07 CSDA Barcode - New Licensing code
09/27/2011	1.07 CSDA Barcode - Added improved CSDA_DiagInfo

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09/27/2011   1.07 CSDA Barcode - Added improved License Edit code