

## Configuring the Synergy Controller to Read a Bar Coded Part Number and then Look-up and Run the Appropriate Temperature Profile.



**Synergy Controller with  
Hand Held Products Bar Code Scanner**



**OCR-A  
Labeled Part**

### Introduction

The value of the ubiquitous "Bar Code Scanner" for speeding data entry and improving accuracy is obvious to anyone that shops at a grocery store. With the latest software release, the Synergy Controller now offers the advantages of bar code scanning to Environmental Test users. This application note employs the Synergy Controller's powerful new macro capability to automatically select and start an environmental test profile simply by scanning the OCR (Optical Character Recognition) plain text label on the part. The Hand Held Products IT4800 OCR Barcode Scanner is used in this note with OCR-A text; however, virtually any bar code reader can be used for this application.

### Installation

Installing the barcode scanner is a simple process. We used the Hand Help Products ImageTeam 4800 OCR scanner and the scanner cable with the PS/2 keyboard wedge (Hand Held part number 42206132-02) We also used a Synergy Controller (VersaTenn V controller will work also) with version 2.0.6 or higher. These are both available from Tidal Engineering® Corporation. This note also describes the step by step process we used to configure the barcode scanner for a part label data format of XXXXXX-XX where X is any letter or number. The procedure can be easily modified for different formats as necessary.

## Connecting the Barcode Scanner

Connect the barcode scanner to the controller by first connecting the cable to the handle of the ImageTeam 4800 and screw on the retainer clip. Then connect the PS/2 connector to the keyboard input on the controller. The keyboard inputs on the two controller configurations can be located using the figures below.



**PS/2 Keyboard Connector on a Synergy Controller (left) and VersaTenn V (right)**

Once the barcode scanner is plugged in, continue configuring the barcode scanner as follows.

## Configuring the Barcode scanner

We followed the steps below to configure the ImageTeam 4800 for use with the Synergy controller and OCR-A fonts. If a different configuration or barcode scanner is required, see Appendix A for alternative settings for other devices.

Note: The barcode scanner should be reset to factory defaults before this configuration. The steps listed below adjust only those settings that differ from the factory defaults.



**Standard Product Default Settings**

1. Enable Control + ASCII mode on the barcode.
  - a. Scan the "Control + ASCII Mode On" symbol.



**Control + ASCII Mode On**

2. Add the CTRL+F Prefix to be sent before the barcode data.

a. Scan the "Add Prefix" symbol.



Add Prefix

b. Scan the "9" symbol.



9

c. Scan the "9" symbol.



9

d. Scan the "0" symbol.



0

e. Scan the "6" symbol.



6

f. Scan the "Save" symbol.



Save

3. Add the Carriage Return Suffix to be sent after the barcode data.

a. Scan the "Add CR Suffix All Symbologies" symbol.



Add CR Suffix  
All Symbologies

b. Scan the "Add Suffix" symbol.



Add Suffix

c. Scan the "9" symbol.



9

d. Scan the "9" symbol.



9

e. Scan the "0" symbol.



0

f. Scan the "D" symbol.



D

g. Scan the "Save" symbol.



Save

4. Add the Prefix Delay before sending the barcode data.

a. Scan the "Interfunction Delay" symbol.



Interfunction Delay

b. Scan the "9" symbol.



9

c. Scan the "9" symbol.



9

d. Scan the "Save" symbol.



Save

5. Enable OCR-A font recognition.

a. Scan the "OCR-A On" symbol.



OCR-A On

6. Create the OCR Template to match XXXXXX-XX.

a. Scan the "Enter OCR Template" symbol.



b. Scan the "a" symbol **six** times.



a



a



a



a



a



a

c. Scan the "2" symbol.



2

d. Scan the "D" symbol.



D

e. Scan the "a" symbol **two** times.



a



a

f. Scan the "Save OCR Template" symbol.



Save

The barcode scanner is now configured for use with the Synergy Controller and VersaTenn V controller.

## Controller Setup

No changes are required to any settings on the Synergy Controller for this barcode application; however, we did import a macro file that provides the look-up table to interpret the barcode scans and execute an action based on the barcode.

### Macro File Format

The Macro file used by the Synergy Controller is a simple comma separated file easily generated within Microsoft Excel, or any other program that can save to .csv files.

The file layout consists of two columns, the barcode text(column A), and a communication command (or string of commands) to execute when that barcode text is entered (column B). The communication commands can be any valid communication commands, separated by a semicolon (;). The command string length must not exceed 900 characters. A communications command list for the Synergy Controller is available in the technical manual and downloaded from [www.TidalEng.com/synergy.htm](http://www.TidalEng.com/synergy.htm)

As an example say that when barcode text "123456-78" is scanned we want to stop the chamber, load and run the profile "Product1.vpl". To do this we enter 123456-78 in column A and the commands "= off; = fileopen 1 "Product1.vpl"; = run 1;" for column B. This will make sure the chamber is stopped, then load and run the profile.

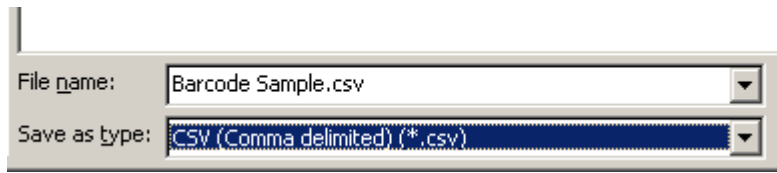
Note: The profiles that we specify in the "fileopen" command should be loaded on the Synergy Controller already.

|   | A         | B  |
|---|-----------|--|
| 1 | 123456-78 | = off; = fileopen 1 "Product1.vpl"; = run 1; |
| 2 | abcdef-gh | = off; = fileopen 1 "Product2.vpl"; = run 1; |
| 3 |           |  |
| 4 |           |  |

Sample Excel Macro spreadsheet

We can create as many barcode entries in the file as we need, as long as they are unique. However, we can only load one .csv file into the controller at a time, so all the barcode identifiers we need should be in that file.

Once you have completed your macro file in Excel, click on File/Save As, enter a file name, and set the Save As type to CSV (Comma Delimited)(\* .csv) and save the file.



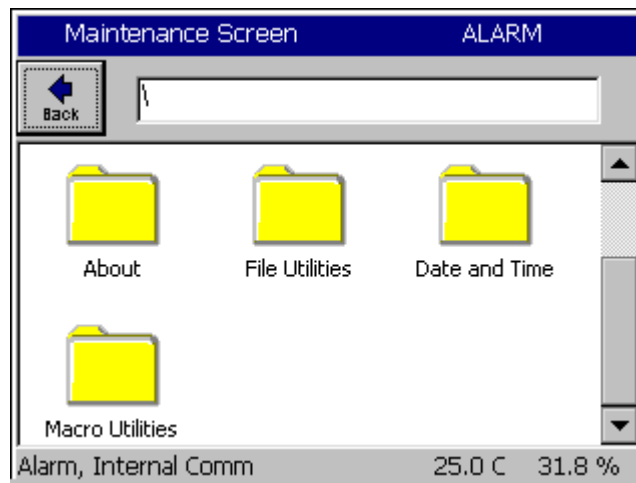
**Saving the file as type CSV**

## Importing the Macro File

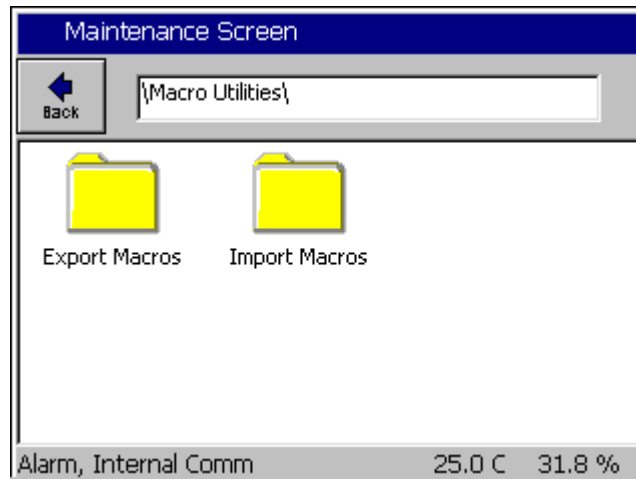
The Synergy Controller can import the .csv macro file either from a floppy disk or from a USB Hard Disk. Copy the macro file in .csv form from the PC to the root directory of either a floppy disk or a USB Hard Disk.

Note: The controller only supports one macro file, so when we import the file it does not add the contents of the file to the file loaded into the controller, it replaces the internal macro file with the one being imported.

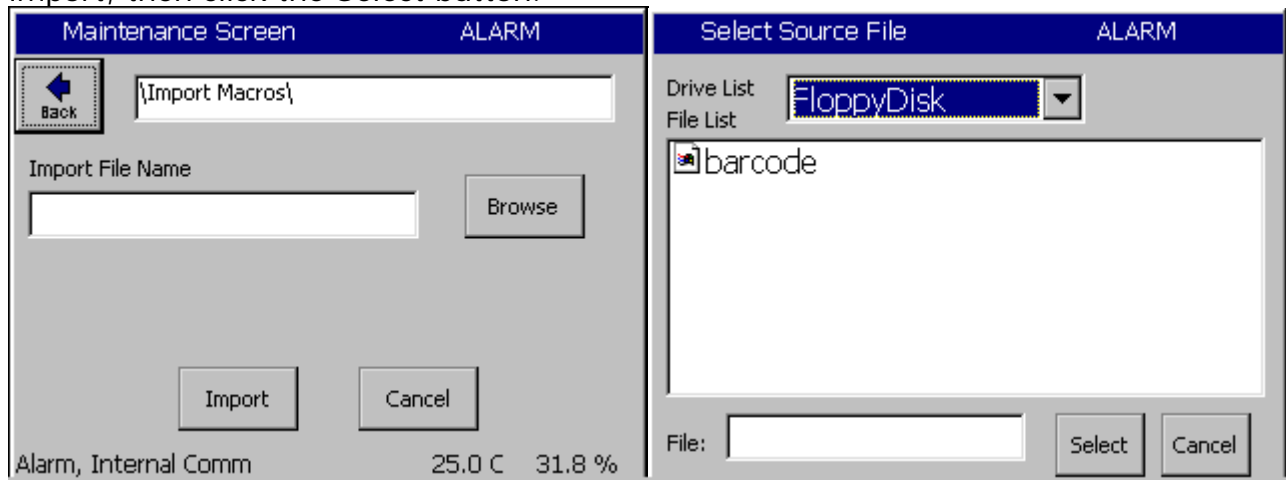
To Import the macro file, click on Maintenance on the front panel, scroll down and click on Macro Utilities.



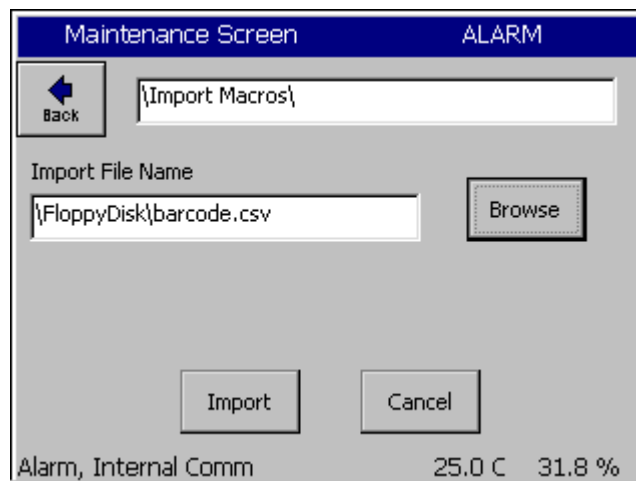
Click on the Import Macros folder.



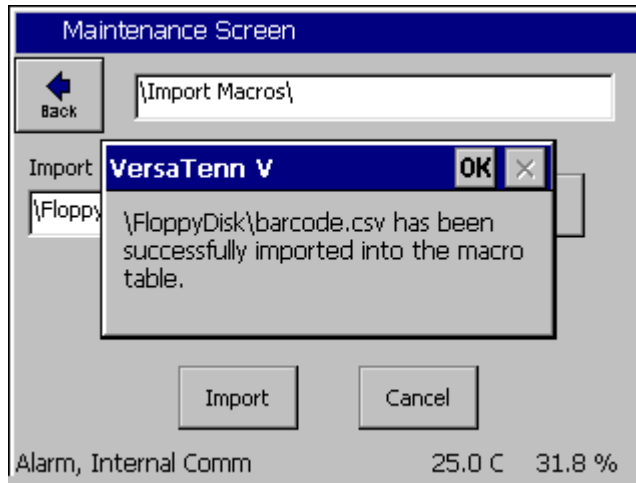
The import screen will appear. Click on Browse and then select the file you want to import, then click the Select button.



Then click the Import button.



A message box will then let us know if the import was successful or not.

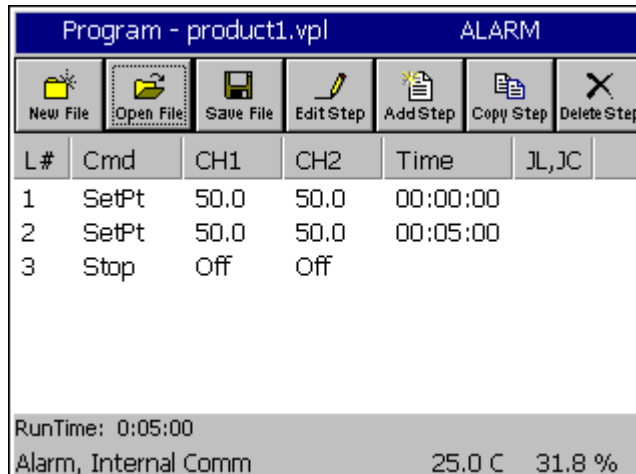


Now that the file is imported, we can now use the barcode scanner.

## Testing the Setup

### Creating the Profiles

To create the profiles either enter the example profiles as shown below, or copy the profiles provided with this application note to a disk and load them on the controller. You can also create your own, just make sure they are called product1.vpl and product2.vpl while using the example macro file shown above or provided with the application note.



**Example Profile "Product1.vpl"**

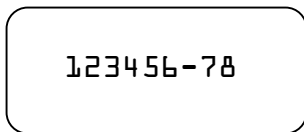
| Program - product2.vpl |        |      |      |          |       | ALARM |
|------------------------|--------|------|------|----------|-------|-------|
| L#                     | Cmd    | CH1  | CH2  | Time     | JL,JC |       |
| 1                      | SetPt  | 50.0 | 50.0 | 00:00:00 |       |       |
| 2                      | WaitFr | 50.0 | 50.0 | 00:05:00 |       |       |
| 3                      | Stop   | Off  | Off  |          |       |       |

RunTime: 0:05:00  
Alarm, Internal Comm                      25.0 C   31.8 %

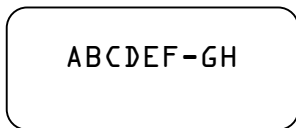
**Example Profile "Product2.vpl"**

## Testing the OCR scanner

Having followed the steps above, everything is ready and the barcode scanner should be fully functional. Printed below are two example OCR-A Test Labels that can be scanned to test the configuration. Now we can scan each label to load and run the appropriate profile in the controller. When we scan 123456-78 the controller should load product1.vpl and start running it. When we scan ABCDEF-GH the controller should load product2.vpl and start running it.



Test Label 1



Test Label 2

Alternatively, create a list of part numbers, print it and attach it near the operators station.

| SCAN THIS COLUMN | FOR THIS MODEL     |
|------------------|--------------------|
| 123456-78        | TCweb16-Ethernet   |
| ABCDEF-GH        | TCweb16-Modem      |
| TE1299-03        | TCweb16-Loaded     |
| TE1299-04        | TCweb16-Slave      |
| TE1299-16        | 16-Chan UUT Module |

## **Trouble Shooting**

If the barcode scanner does not work with the Synergy Controller try the following trouble shooting steps.

### **Test Scanner on a PC**

To test the functioning of the scanner, plug it into the keyboard port on you PC. Open a test editor such as notepad. Then scan Test Label 1 on the previous page. If the scanner is functioning correctly the text "123456-78" should appear in notepad with a carriage return. The "Ctrl F" prefix will not show up in notepad. Alternatively, you may use a program such as HyperTerminal, which will show the ASCII character for "CTRL F". If the scanner does not output text or the output is incorrect then go back to the beginning of this manual and follow the scanner setup procedure one more time. IF the problem continues to persist, consult your scanner's user manual.

### **Test Macros on the Synergy Controller**

If the scanner is functioning correctly, the next step is to test the macro feature of the Synergy Controller. Plug a standard PS/2 keyboard into the Synergy Controller. To run a macro press "CTRL F" then type the Macro name "123456-78" and hit enter. The macro should run successfully. If it does not run successfully, you should check your macro file on your PC for syntax accuracy and save it to a disk or USB key. Then import the macro into the Synergy Controller and try running it again.

## **Appendix A – Barcode Interface Specifications**

This is the specification for the barcode scanner setup for use with other barcode scanners.

The format required by the Synergy Controller is as follows:

[CTRL+S][400ms pause][Barcode Data][Carriage Return] [Carriage Return]

Any barcode scanner that can attach via a keyboard wedge, and can be configured with the above format will work with the Synergy Controller.

## About Tidal Engineering

Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company further provides product development services together with engineering support, and is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems. Tidal's products are available exclusively through ADI American Distributors Inc., an ISO-9002 certified distributor of electronic and electromechanical components and assemblies.

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