QC-CALC™
Real-Time Data Collection

for use
with

M2 & M3® for Windows
(Versions 2.0 or Higher)

MetLogix, Inc.

Prolink, Inc.
148 Eastern Boulevard
Glastonbury, CT 06033
860-659-5928 Phone
860-633-7309 Fax
www.ProlinkSoftware.com

Table of Contents

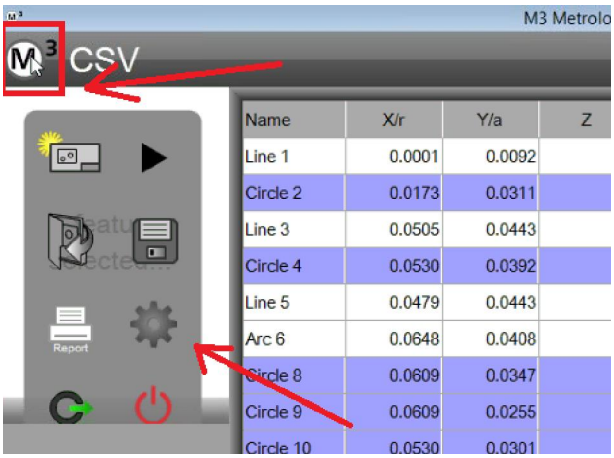
Setting Up M3 with QC-CALC

One-Time Settings in M3

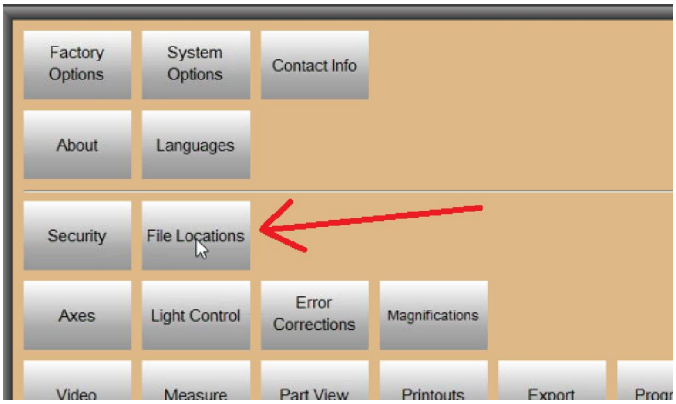
Output Location

You must make a one time adjustment to M3's file location and output file name using the Tools button (gear from the main M3 menu).

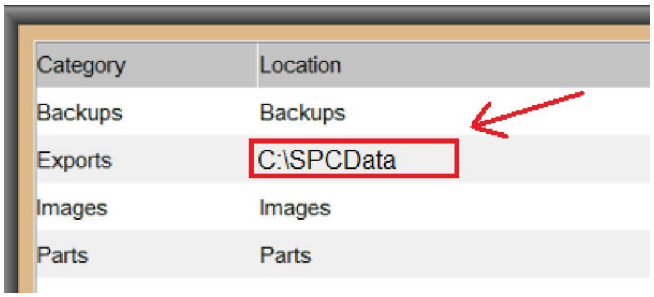
1. Press the M3 icon to display the sub menu and click the gear icon (Tools) as shown.



2. Click the **File Locations** button



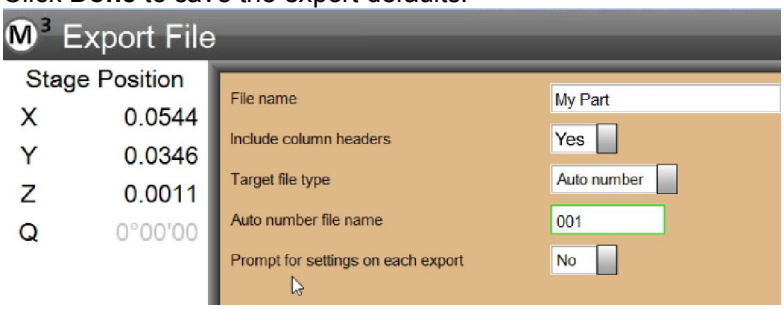
3. Change the **Export Path** to **C:\SPCData**



4. Click **Done** in the lower left corner to save your settings.

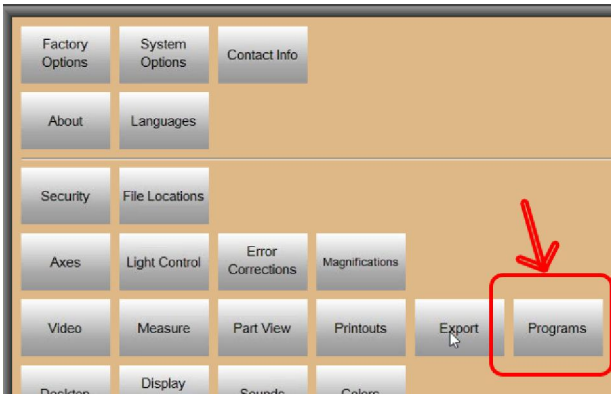
Setting up Export Defaults

1. Click the **Export** button from the Tools screen.
2. Set the following default settings:
   - Include column headers: **Yes**
   - Target file type: **Auto number**
   - Auto number file name: **001**
   - Prompt for settings on each export: **No**
3. Click **Done** to save the export defaults.

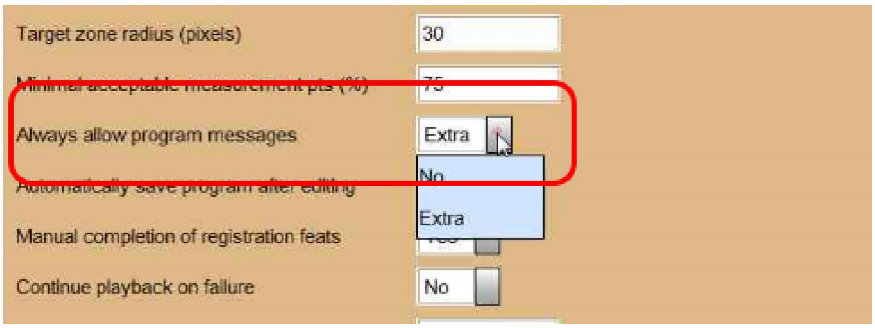


Adding ability for prompts (factors)

1. Click the **Programs** button from the Tools screen.



2. Choose **Extra** in the "Always allow program messages" drop down list.



3. Choose **Done** <u>twice</u> in the lower right corner.

Once these settings are set, you should see a square with an arrow pointing upward in the lower left corner of the screen when a part routine is open.

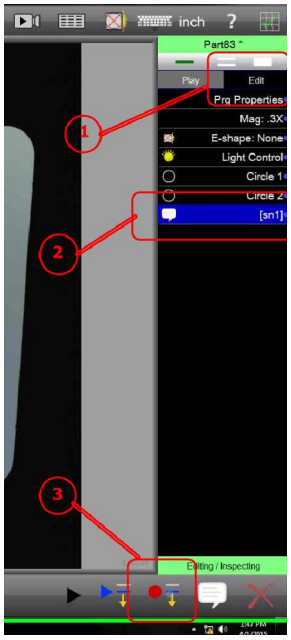
Part Routine Specific Settings

Set Up Results Output

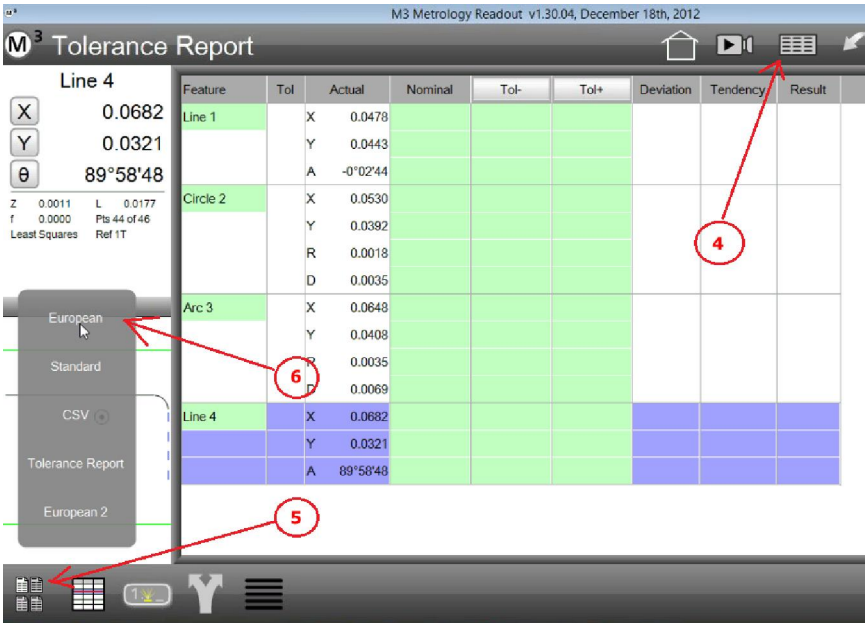
Now that you have M3's output location and export defaults set, you must tell M3 to output the results in each inspection routine. Please note that each routine must be set up to specifically output to QC-CALC. You cannot currently set output globally. The following are the steps to take to set up the output after your features have been added and toleranced.

PLEASE NOTE: QC-CALC only collects features/characteristics that have the nominal set. Tolerances are not necessary but features/characteristics without a nominal will be skipped. This allows you to skip setup features like lines and skews if you do not want to track them.

1. In the list of steps on the right hand side, click the **Edit** tab to edit your steps.
2. Select the last step in your routine.
3. Click the **Append Step** button below the list of steps to append a new step. This appears as a red circle with two lines and a yellow arrow.



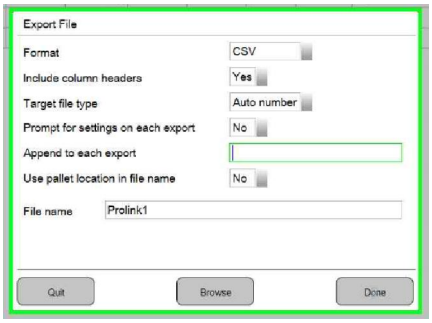
4. Select the **Data Report** icon along the top bar.
5. Select the **Report type** icon in the lower left corner.
6. Choose the **European** format from the popup list.



7. Long press the Output button (fork arrow). If using a touch screen, hold your finger on the icon. If using a mouse, simply click and hold the left mouse button over the icon.

8. A special popup will appear after a second that contains inspection routine specific output settings. Set the following settings:

   a. Format: **CSV**
   b. Include column headers: **Yes**
   c. Target file type: **Auto number**
   d. Prompt for settings on each export: **No**
   e. File name: Name the file name anything you want. This will be the name of the QCC database in QC-CALC so some combination of part number and operation is typically used.



NOTE: When naming the file, avoid using an underscore (_) character since this is used by Metlogix to append an auto-number to the file name. In the example at right, the output will be named "Prolink1_001.csv". QC-CALC automatically (and recursively) strips off all characters after the underscore if they are numeric. It is suggested that you use a hyphen (-) to separate your part number and operation or make sure there are alphanumeric characters in the op number.

For example, “Prolink1-20” or “Prolink1_Op20” are valid because the first uses a hyphen and the second has alphanumeric characters (“op”) after the underscore.

9. Click **Done** when finished.

At this point, M3 will export the file and will also save your output step at the end of your routine. Going forward when you run the routine, M3 will automatically output the file to the C:\SPCData\ directory as a CSV file.

NOTE: Since M3 exports once as you are adding the step to your routine, QC-CALC will likely collect this data. Simply delete the QCC file (**File > Delete**) or right click on the record and **Delete Record** it since it is likely not production data.

Passing Non-measurement data to QC-CALC

You can optionally set up prompts and variables to pass non-measurement/trace data to QC-CALC. QC-CALC can accept up to 60 trace fields (or factors) per part in addition to the measurement data and these are completely customizable.

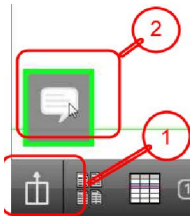
Adding Prompt and Variable in Metlogix

1. Edit your routine as done above when setting up the output (click **Edit** tab, highlight a step, click **Append Step** icon at bottom to append a step).

   NOTE: Make sure to highlight a step before the last step (output) so the prompt occurs before the output. Often it is convenient to prompt the operator at the very beginning of the program before the measurements take place.

2. Click the rectangle w/up arrow icon in the bottom left corner.

3. Click the conversation bubble icon that appears just above it.

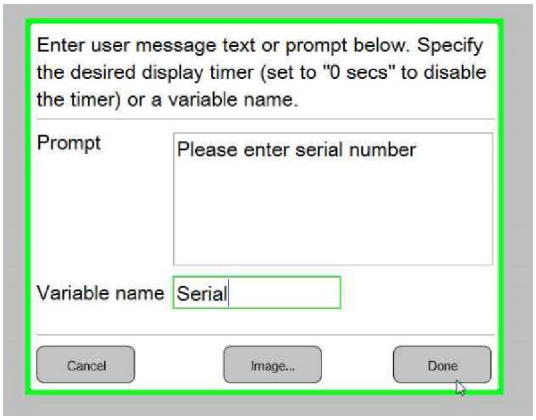


4. In the message prompt window, type the prompt message that will be shown to the user.

5. In the text box just beneath that is labeled “Display (secs)”, type the name of the variable you will want to use to store the answer to the prompt.

   NOTE: When you type non-numeric characters, the caption of the text field will change to “Variable name” as shown below.

   NOTE: This process creates the variable you are specifying. It is recommended that you keep the name concise and easy to remember.



6. Click **Done** when finished.

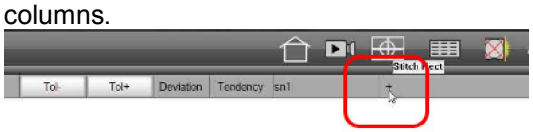
The variable you just specified has now been created and is available for output to the results file. In addition, the prompt step will be added to your list of steps in the inspection routine.

Adding Variables to Results file

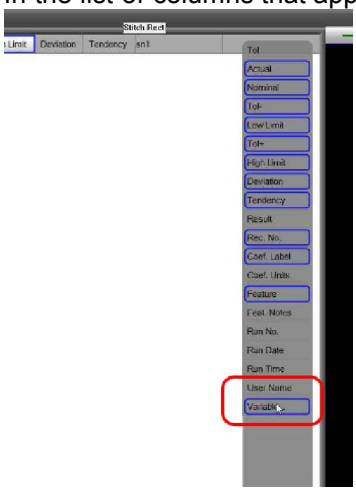
Please keep in mind that the output columns in M3 are global. Therefore, when you add your variable to the output, it will be added to all routines you are running on the current machine. If you do not add a prompt step, the value will always be output as blank in the result file. QC-CALC will also store it as a blank.

1. Make sure you are in data view so you can view the columns. If not, click the data view button in the toolbar.

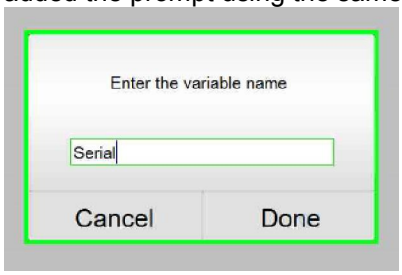
2. In the main data table, click the "**+**" button on the far right of the output columns.



3. In the list of columns that appears, click the **Variable…** button at the bottom.

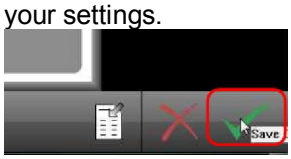


4. In the popup dialog that appears, specify the variable name you would like to add to the output. Make sure you spell it exactly as it was created when you added the prompt using the same casing. Click **Done** when finished.



The variable name will be added to the right most column in the grid.

5. Click the Save checkmark in the lower right corner of the screen to save your settings.

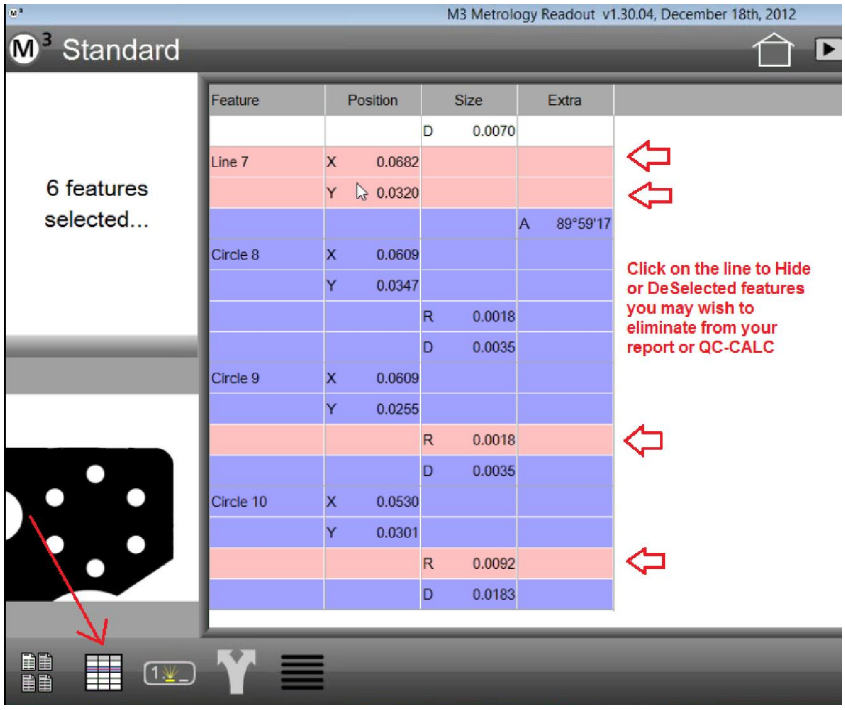


The trace field will now be sent to QC-CALC at the end of each data row. The factor label in QC-CALC will be set to the header of the column. In the example above this is “Serial”. The factor value will be the value specified when the user is prompted. As mentioned above, if no prompt is specified, the value will be reported as blank.

Although it is repeated in all rows by Metlogix, QC-CALC will only collect the factors from the first data row to avoid duplication.

Hiding Data

You may wish to hide or not export certain inspected features in your part program. You do this by pressing the **Hide** lines icon and clicking on the report lines you want to ignore. The lines turn pink as shown and are not exported to QC-CALC.

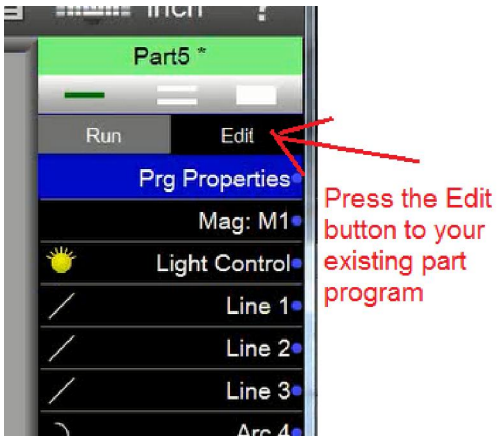


Using Repeat for Multiple Parts

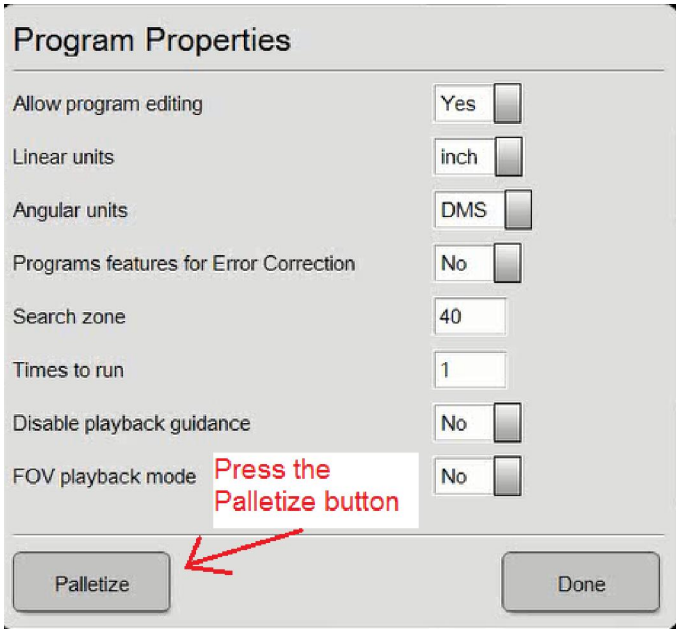
M3 can be programmed to inspect multiple parts on the stage using a Palletizing function. The palletizing function measures part 1 and save the results to a file. It moves to the next part and repeats the process.

Insert a Pallet Command

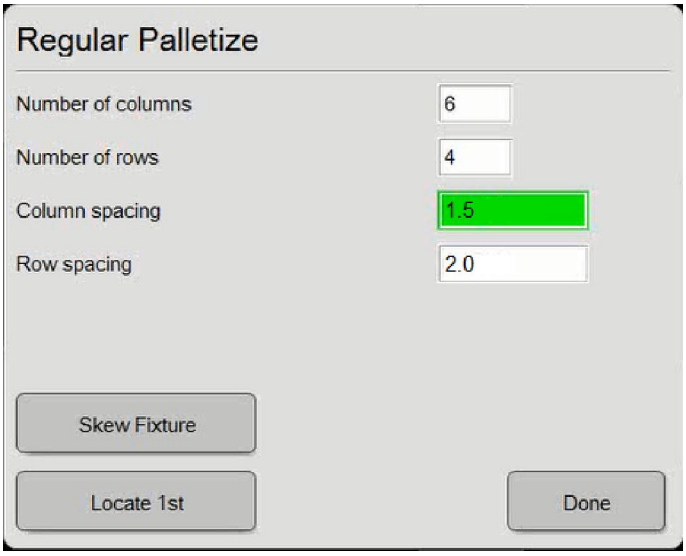
Write your part program for one part and be sure to add an **Export** command at the end of it. If you forgot to add the Export command to your part program you can always go back and add it. Press the **Edit** button to see the **Program Properties** page that contains the palletize button.


Part5 *
Run
Edit
Prg Properties
Mag: M1
Light Control
Line 1
Line 2
Line 3
Press the Edit button to your existing part program

The program properties panel contains the Palletize button.

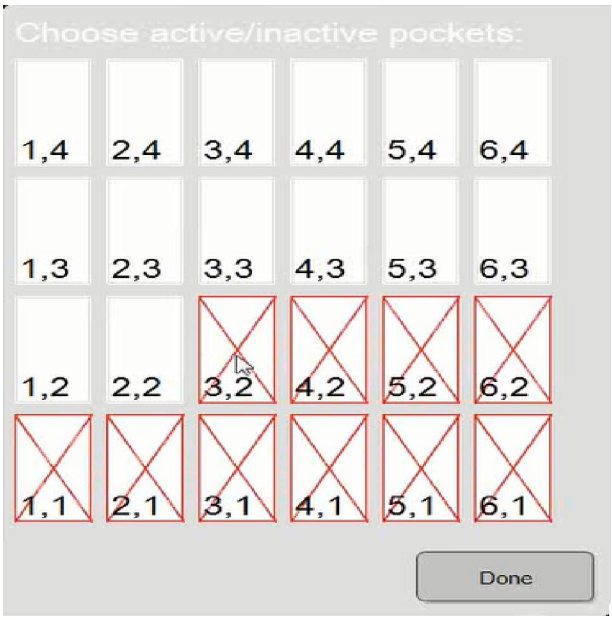


Press the **Palletize** button to enter the number of rows and columns contained on your fixture. Add the number of rows and columns spacing. Be sure to adjust your **Skew Fixture** and **Locate 1st** part button.



QC-CALC reads the data as each part is completed in “near” real-time. Be sure to follow any missing palletizing instructions in the correct order. As soon as M3 detects the Skew Feature it will allow you to press the **Done** button.

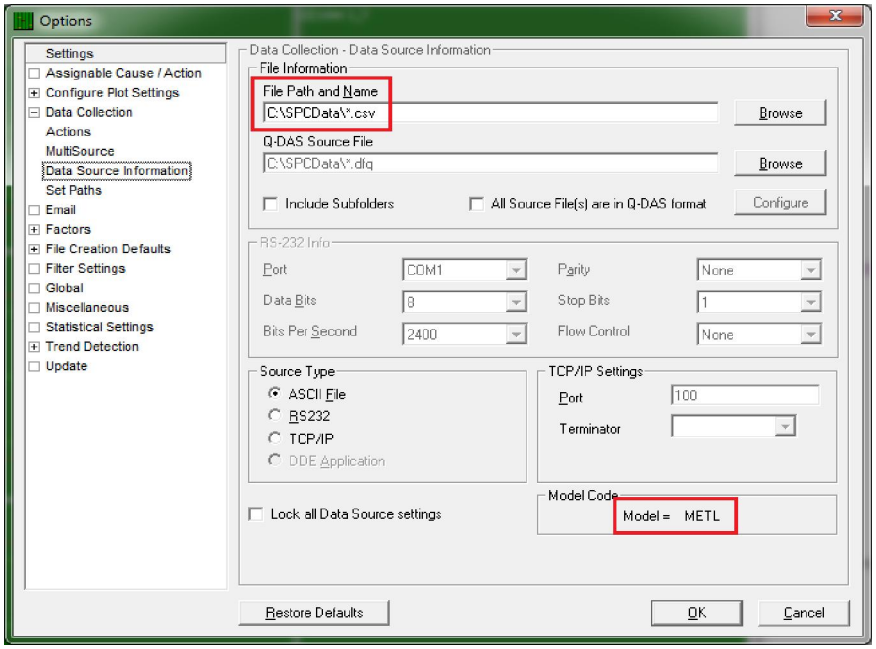
When the **Done** button is pressed the Palletize screen is displayed where you can select active and inactive positions on your pallet by clicking on each block. Our 6x4 pallet looks something like the diagram below. Here we clicked on 3,2 through 6,1 to eliminate these position because we only had 14 parts to inspect.



QC-CALC Settings

Select Data Source

QC-CALC Real-Time reads data from the inspection results file saved by M3. This is the normal method of using QC-CALC with M3. If for some reason the data source is set incorrectly, data collection will fail. To check, select **Tools** – **Options** – **Data Collection** – **Data Source Information**, choose **ASCII File** in the **Source Type** area, and verify the **File Path and Name**.



File Path and Name

Because QC-CALC is obtaining the inspection results through the use of a file transfer from the M3, QC-CALC needs to know where you configured the M3 to save your data. The M3 default drive and path is:

```
C:\SPCData\*.CSV
```

The Stats file name can be any name you choose. In fact, you **must** use a different name for every part routine you write. This way QC-CALC will correctly save your data in the correct database without asking any questions.

Auto-Start QC-CALC Real-Time

If you wish start QC-CALC each time Windows reboots, you can press the **Set** button in the same **Tools** – **Options** – **Global** – **Startup** area.

Updating Old Database Nominal/Tolerance Values

When an M3 part program is running it automatically stores everything QC-CALC needs in a file. If a matching QC-CALC database does not exist, it creates one and uses the new nominal and tolerance information. Once the database is created QC-CALC uses only the inspection results and saves them in the next available QC-CALC record. If changes are made to the nominal and tolerances of your part program, you can use the QC-CALC editor to change the stored values to match your part program. You can also have QC-CALC automatically update all nominals and tolerances by setting **Tools** – **Options** – **Data Collection** – **Actions – Update Nominals** to **Always**.

When Your Part Program Changes

There are 5 data collection options to deal with the problem of mismatched dimensions. QC-CALC creates its .QCC file based on the first time you run your program and expects the same results thereafter. Should your part program be shutdown early and report a partial file (less dimensions) or you change your part program and add or remove dimensions, QC-CALC can adapt to these changes. Please read the **Tools** – **Options** – **Data Collection** – **Actions** section in the QC-CALC Real-Time section of the QC-CALC manual and select the appropriate action so QC-CALC can automatically adapt to your changes.

--- End of the M3 Section ---