

## Using Variables to control an Array

### Palletizing a Program by Creating A Grid Array

**Overview: Each subject to be discussed in detail below**

1. Determine X and Y offsets of features in the array in Millimeters.
2. Create a program. Set the variables in a program. Create input windows.
3. Create a program with fixed loops. (No Variables)
4. Modify the “adjust position offset” steps to use formulas not fixed values.

#### 1. Preliminary determination of the offsets

To determine the X and Y offsets of an array measure the top left and the bottom right starting points of the proposed array.

Construct a distance between these points.

The X component of the distance is the X position offset.

The Y component of the distance is the Y position offset.

#### 2. Create the program with Operator Inputs

Start recording. Add a light step, magnification step and a teach step. Units are in MM. Skew and zero.

#### Create an Input for the X Variable

Right click program template \ Special steps\ Set variable \ “@Xmove”

Label @XMove  
No formula

Results = Inches/ mm .

Constant = Fixed in MM.

Prompt is “Enter X offset” Enter OK



#### Create the Y input

Right click program template.  
Choose \ Special steps \ Set variable \  
“@Ymove”

Label @YMove

No formula Results Inches/ mm. Constant  
Fixed in mm.

Prompt is “Enter Y offset” ” Enter OK



### 3. Create the Array

To create arrays or loops in QC5000 you create a grid.

Stop recording and measure the first feature to be in the array.

Start recording. Select the feature. Create a grid as follows.

The function path is Tools\ Programming \ Programming Wizard \ create a grid.

X Items: 2  
Y Items: 2  
Z Items: 1  
X offset: 300.025  
Y offset: 250.000  
Z offset: 0.0000

Create the loop with the real values determined prior to recording.

Once the array is created with fixed data, test it. Run from the top. Choose File\ New Run.

X offset: 300.0250  
 Y offset: 0.0000  
 Z offset: 0.0000  
 Add to previous offsets

**Note the Check boxes.**

Each offset dialog box is checked for the axis it alone controls.

### 4. QC5000 Setting Variables to Control an Array.

The formula buttons will reveal the location for the variables created in the beginning of the program using real values

X offset: 0.0000  
 Y offset: 0.0000  
 Z offset: 0.0000  
 Add to previous offsets

Edit the real values of the offsets.  
Set the real value to 0.0  
Replace the offset numbers with a formula, which includes the input variable names

**In the program view pane:**

Double click on the Adjust X position offset program step.

Set number to zero and select the corresponding formula box . Enter” @XMOVE” Click OK and OK.  
Double click on Adjust Y position offset.  
Set number to zero and select the corresponding formula box

X offset: 0.0000  
 Y offset: 0.0000  
 Z offset: 0.0000  
 Add to previous offsets

Formula

@YMove

Fields > OK

Functions > Cancel

Operators > Help

Other >

Result type: Inch/mm Constants are: mm

Enter “@YMOVE” Click OK and OK  
Run the program entering new values for  
the X and Y moves.

A little creative programming here will  
allow you to make your programs flexible  
to a variety of panel sizes and layer  
counts.

## TIPS

Use this in conjunction with conditional statements and “Goto Label” steps to create subroutines.

The “Goto label” commands exit the main program to enter the labeled subroutine. After the measurements steps the conditional statements then test a program position variable to redirect the subroutine back to the appropriate part of the main program.

Avoid reentering offsets, light settings, and delays by using “Goto Label” commands after the inputs are made.