Wagner Meters QM1100 In House User’s Guide

Updated July 2021

Notes to users: This document skips over details such as network file transfer to the QM1100 and other machines.

Log on to the QM1100 PC.

Login: User-pc\user

Password: QM-1100

IMPORTANT: Make a habit of constantly saving your work when building the below files.

Use the “Slow” speed when configuring the machine. Be mindful when adjusting the X,Y and Z movement. This machine can easily be damaged.

Feeder List

The feeder list includes information about the location of each feeder and reel. Each feeder must contain information about the location of the part and the location of the holes used to advance the tape.

* You will need to select an appropriate nozzle and align it directly over the component.
* You will need to align the needle above the holes used to advance the tape.
* You will need to include information about the tape dimensions. It is important that the QM110 knows how much to advance the tape after a pick.

1. Open the Feeder File using the button on the main screen
2. If no feeder are in the file, add feeders by clicking “Add a feeder”
3. Feed your tape through the guide till it reaches the end.
4. The cover tape should exit through the “pick window”. This is the window where the part will be extracted via the nozzle.
5. Pull the cover tape back and secure it to the cover tape reel/spool. The tape should wrap under the spool (not over).
6. With a part showing in the center of the “pick window”, move the camera using the x,y controls on in the main window. Once it’s directly over the part, you can record the coordinates using the “Set XY Camera” button in bottom left of feeder window.
7. Now move the camera over one of the pick holes in the drag area. This is not the same as the “pick window.” Record your coordinates using the “Set Current” button.
8. To test these coordinates, click “try offset”. The needle will now be located over the hole. Manually pull the needle down and it should go into the hole.
9. You can now toggle between the component and pick hole by clicking the “Go to Camera” in both the needle and part areas of the feeder window. To clarify, there should be two buttons that allow you to check the current positions of the needle and the part. Toggle between both of these views and make adjustments as needed.
10. Click “go to nozzle” and the nozzle should hover over the part. If the z has not been set, CAREFULLY lower the nozzle using the Z+ option on the main screen. Set your steps to 100 or less. As the nozzle comes close to the part, you’ll want to adjust the steps down toward 10 or 1 step. Once the nozzle is on top of the part, you can record the z value from the main window into the feeder file. This entry is located directly above the “pick up” button in the feeder window. Return the nozzle back to Z=0 and test by clicking “go to nozzle” again.
11. Make sure your pull distance is set correctly. You can also set a custom pull distance if you are having issues with the default setting.
12. Check the boxes for QM FEEDER, NOV, and ENABLE ACTUATOR.
13. Finally test your new feeder by clicking “Pick go up camera”. Then click “Throw”.

Parts List

This list will inform the QM1100 about the location of all parts on the PCB to be built. To begin, you will need the X\_Y\_Location file for your board. This file will be modified and then processed by the QM1100; the result of which is a .pts file easily readable by the QM1100.

1. Locate the XY location file to be processed and open it in Excel. Delete any unnecessary rows with parts that will not be placed. E.g. Fiducials, programming pins, test points,…
2. Locate the PARTS LIST TEMPLATE file and open it in excel.
3. With both files open, the goal is to arrange the target XY location file to mimic that of the PARTS LIST TEMPLATE. Both the headers and formatting should be identical. You can copy and paste the headers and formatting or make a copy of the PARTS LIST TEMPLATE and copy the contents of the target file into it. Leave the unused column contents intact such as “””no””” under the *File* column.
4. Under the Feeder column, you will need to enter the correct feeder. Yes, can be time consuming if you are setting up a brand new board.
5. With the target XY location file properly formatted, save it as a space delimited file(.prn) and give it a unique name matching your board.
6. Open SMT Max on the QM1100 PC and select the *Parts List* button.
7. Select *File Convert* button and then select *Open File.* Locate the .prn file you just created and select *Open.*
8. We now need to perform some conversions. Start with column 2 (X location). To do this, enter 2 into the *Start* and *Destination* column text boxes. Enter 2.54 into the Value text box. Select *Multiply*.
9. Repeat the preceding step for the Y column (column 3) by using “3” in the *Start* and *Destination* column text boxes.
10. Enter 4 into the *Start* and *Destination* column text boxes. This is the Z position. Enter 700 into the *Value* text box. Finally, select *Set Value* to populate the Z column with 700.
11. Now enter 5 into the *Start* and *Destination Column* text boxes. This is the angle of the part. Enter 90 into the *Value* text box and select *Divide.* Now enter 2000 into the *Value* text box and select Multiply.
12. Save this file as a .pts file by selecting *Save with Head.*
13. Now open your .pts file in the main parts list window.
14. Delete the top (and maybe the bottom) rows by selecting one at a time and then selecting the *Delete a Part* button.
15. You now need to make adjustments to the angle for each part. Starting with the first part, locate the corresponding feeder and compare it to the actual location on the PCB. Keeping in mind that the head on the QM1100 will rotate clockwise when looking from above. Every 90 degrees needed equates to 2000 steps. If a part needs to be rotated 270 degrees clockwise, enter 6000 into the appropriate location by first selecting the row and then locating the text box under the A column. Enter the value here. Do this for all the parts. If a part does not need rotating, enter 0.
16. You will need to add the location of the feeders and the nozzle.
17. Find the origin. This is an iterative process. Orient the PCB in the framework with the front facing the operator. The origin should be the corner of the PCB (or thereabouts) pointing away from and to the right of the operator.
18. Move the camera to the origin using the –X,+X,-Y and +Y buttons. Once the origin is found, enter the current x and y values into the adj offset boxes by selecting the *Set Current* button located on the *Main Screen*.
19. Calibrate Fiducial Locations: Using the –X,+X,-Y and +Y buttons, move the camera over the first fiducial which is the fiducial closet to the origin. Once centered, draw a tight box around it using the mouse. Snap a photo (button located on main screen) and label it as FD\_1 or another descriptive name. In the parts list file, select the *Set* button under the FD1 location and then select the *FD-1 File*  button and browse to the location of the photo and select it. Repeat the above steps for the second fiducial. Test your fiducials by selecting *check fiducial*. The machine will find and adjust accordingly.
20. Once done, select a part row in the parts list file and then select the *Go To Part* button. The camera should move directly under the part. Do this for several parts. If the camera is offset, make adjustments to the offset in the *main window*.

Notes: When determining the angle, it is beneficial to do this step after the origin and fiducials have been calibrated. Select your part in the parts list and go to the part. The camera will show you the orientation of the part and then you can make your adjustments to the parts list file.

Dispensing List

1. Locate the .pho file (this is a Gerber file) and copy it into the folder you created in QM1100.
2. Open the GerberParsingDlg application on the QM1100 PC desktop.
3. Set the spot size then open the .pho file. (this order is important)
4. The file is converted automatically upon opening.
5. Calibration: Within the green map, visually select two pads that are diagonal and far apart.
6. Select one of these pads with the mouse. In the first *pad#* text box, enter the item number which is the number in the first column of the highlighted row in the list.
7. Minimize or move the application so you can view the SMT Max application.
8. Select the same pad by moving the camera to that pad. Enter the x, y coordinates into the matching text boxes in the GerberParsingDlg application.
9. Repeat past three steps for the second pad. When complete, select *Calibrate* and then *OK* to close the application.
10. A .dis file is created and can now be opened using the *Dispensing* button in the SMT Max application and then selecting *Open.*
11. Next, zero out the offset in the main application.
12. Select a part in the dispensing list and select *Go to Camera.* Try this for several parts. If the camera does not align to the pads, adjust using the offset in the main application. This can be done by selecting the adj. offset checkbox in the main application and then centering the camera on a tiny pad. Once centered, de-select the adj. offset check box.
13. Once pad location is calibrated, the needle offset needs to be entered.
14. First put the nozzle back into the extractor.
15. Then Place the syringe of solder paste into the holder. If necessary, adjust the height of this syringe.
16. If the syringe is new and the level is not marked, remove it and jog the armature until the syringe barrel is over the PCB.
17. Select *Down*  and the armature will move down. Now you can place the syringe into the barrel. The tip of the needle should hover above the PCB without touching it. Tighten the locking screws and raise the needle up by selecting *Up.*
18. Now adjust the needle offset by choosing a pad and selecting the *Go To Camera* button.
19. Check the *Adj. Disp. Offset* check box in the Dispensing Control and move the needle over the same pad using the controls in the main application. You can lower the needle to check the accuracy of the placement.
20. Once the needle is over the pad, uncheck the *Adj. Disp. Offset* check box.
21. Finally, reverse the signs in the OffsetX and OffsetY boxes in the Dispensing Control application.
22. Select several parts and toggle between the Go to Item and Go To Camera options.
23. If you haven’t done so already, apply compressed air to the dispenser and turn it on. Set the pressure to 60 PSI.
24. To start dispensing, deselect the *Fiducial* check box in the main application.
25. Select *Dispensing Run,* and choose the length of the run you wish to dispense along with continuous or stop and go.