

PRODUCT ADVISORY NOTICE

KEEPING YOU INFORMED OF PRODUCT CHANGES

To: All Customers, Sales Representatives and Distributors

Date: October 17, 2016

Subject: Change of Manufacturing Equipment

This Product Advisory Notice is to alert you that there is an upcoming process change in our Grayhill Shenzhen production facility. Your company has purchased one or more of the affected part numbers in the past. Please forward this notification to the appropriate person(s) in your organization for written approval.

Description of Change

We have purchased a new Fuji pick-and-place line and installed it next to the existing Universal pick and place line. The Universal pick and place line currently populates the pcb assemblies internal to the optical encoders you have been purchasing.

Our Quality Control group is performing installation qualification (IQ), operational qualification (OQ) and performance qualification (PQ) on the new line.

The Performance Qualification (PQ) includes results from running representative existing part numbers on the new equipment, and ensuring that the new equipment capability is equal to or greater than the current equipment. These results will include: visual inspection of all solder joints to IPC class II, placement accuracy, placement completeness, and critical dimensions. For each PCBA being transferred to the new line, our Quality Control group will conduct a Level 2 PPAP on 10 representative samples (5 each built on separate days). Visual inspection (where possible) and test instruments will be used to verify proper placement of the proper component in each location. The PCBA's will be assembled into finished units and tested on the end of line tester. Representative finished units will be subjected to our comprehensive environmental qualification tests, which include thermal shock, vibration, and 85°C/85% RH.

The production cells that assemble the PCBA's into the final product will not be impacted by this change.

Reason for Change

Plant capacity expansion and risk mitigation. The Universal pick and place line utilization was approaching 90%. By adding the Fuji line, we will again be below our utilization threshold and will be positioned for our planned growth in 2017. The second line also provides backup in the event a line is down for an extended period of time.

Effective Date

The process change will be effective on the date we receive your written approval for this PAN. Our target date for approval is December 20, 2016.

Part Numbers Affected

All Grayhill Part Numbers beginning with 62AG

Data Availability

IQ, OQ and PQ documentation will be available on-line at <http://www.grayhill.com/about-us/product-advisory-notices/> on October 30, 2016. The PPAP warrant and associated placement will be available approximately 10 days later.

Action Required

Please forward this notification to the appropriate person(s) in your organization. If you have questions, please contact your Grayhill, Inc. sales associate at 708.354.1040.

