

# **ALPS FAQ**

## **Frequently Asked Questions**

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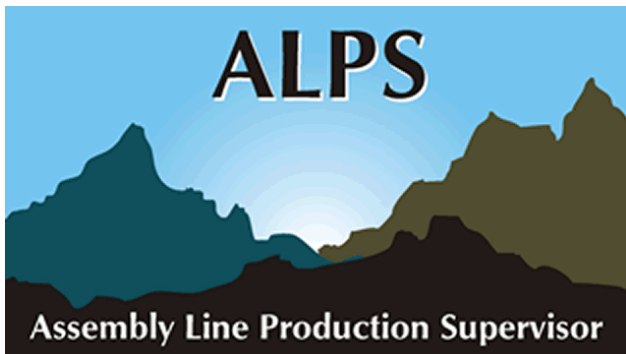
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# FREQUENTLY ASKED QUESTIONS ABOUT ALPS

These are questions typically asked by users of ALPS who have some experience with the product.

*Q: What is inkless assembly?*

**A:** [Inkless assembly](#) refers to the use of electronic wafer maps instead of ink dots on the wafer to represent the "bin" (e.g. pass or fail) that each device on the wafer is assigned at wafer sort. Assuming you can retrieve the correct map for the wafer and align it correctly the assembly equipment can skip the bad devices and move directly to each good device to be picked. When ink dots are used the assembly equipment must inspect each device location with its vision system to determine if there is an ink dot there. The main driver toward inkless assembly is the latest packaging technologies that are intolerant of ink as a contamination. There are however, several other benefits to inkless assembly, for example, the ability to categorize good devices into more than one bin (sometimes called speed binning or cherry picking). Another benefit is the reduced cycle time to pick the devices, especially for low yield wafers.

*Q: Why do I need wafer mapping software?*

**A:** It is tempting to imagine a wafer map file generated by a prober at wafer sort being sent directly to the die attach machine that needs the information. However, in practice there are several concerns that need to be addressed. Here are just a few of them... Wafer sort and assembly are typically separate facilities, so a direct connection between the equipment is not possible. Until recently there has been no standard for the map format so they come in many formats. There are already 500+ format converters for ALPS. The wafer map file is not always named in such a way that it can be quickly correlated with the frame identifier that the assembly equipment reads. The assembly equipment vendor prefers to support the [SEMI SECS II](#) wafer mapping protocol rather than a range of custom format converters for each of their customers. The wafer map is critical production data. There are many ways in an ad hoc system that the data could be mis-routed or lost. Archiving of the wafer map data is also important for yield and post-mortem analysis. ALPS is the leading solution for inkless assembly automation. You can rely on ALPS to manage the map data for your inkless assembly project.

*Q: What is strip mapping?*

**A:** The term strip refers to the rectangular lead frame that the devices are attached to when they are picked from the wafer. By correlating the strip map to the wafer map it is possible to feed forward strip map data down the assembly line to strip test and to analyze failures at strip test with respect to strip and wafer geometry. Strip test is the testing of the device before singulation into individual semiconductor components, while it is still mounted to the matrix (strip) substrate (ceramic, leadframe, laminate or tape). Handling the strip is much easier than handling an individual device, particularly for light, small, thin devices.

*Q: How do I get a converter for a new map format?*

**A:** Email us some example map files and a specification of what they contain. We will analyze the information and if there are any uncertainties or ambiguities we will request clarification. Otherwise we will return a converter that you can install into ALPS and subsequently select whenever importing maps of this format. It may be that we already have the converter, in which case you can expect the converter within ~2 days. If it is a new format we will develop a new converter for it, on short notice.

*Q: Can I use ALPS with equipment XXX?*

**A:** ALPS has been qualified to work with many different equipment models from a wide range of manufacturers. The equipment drivers for all [qualified equipment](#) are included with the product free of charge. If your equipment does not appear on the driver list then we will have to develop an equipment driver for it. Contact your equipment vendor and request that they [contact us](#) to discuss how their equipment can be added to the ALPS qualified equipment list. Kinesys will enter into an agreement with the equipment vendor in question to develop a driver for that equipment and subsequently support ALPS with that equipment. That way you can be assured of a smooth integration and ongoing support from both Kinesys and the equipment vendor.

*Q: How are the maps transferred to ALPS?*

**A:** Typically, maps are stored on an FTP site accessible from the assembly plant. The ALPS Sort facility automatically monitors a number of FTP sites and local network directories for incoming maps. When it finds maps it selects a converter and imports them to the database ready for use by the assembly equipment. If the import is successful the original map file is archived, otherwise it is moved to a "failed" directory and an email alert is sent to the responsible parties so that the problem can be quickly analyzed and resolved.

A better way to transfer maps is using the web services defined in [SEMI E142.3](#). This

allows direct and secure transmission of this critical production data between sites.

*Q: How does ALPS find the correct map when the OCR identifier on the wafer is damaged?*

**A:** ALPS retrieves the wafer map based on the frame (ring) identifier rather than the wafer identifier. The frame identifier, typically a bar code, may be printed and attached to the frame when the wafer is mounted. In that case, the frame identifier equals the wafer identifier. Alternatively, the frame identifier may be etched on the frame so it will be different from the wafer identifier. ALPS keeps track of the wafer to frame correlation so that the correct map is always retrieved. ALPS may be interfaced to an automated mounter which reports these correlations as wafers are mounted.

*Q: Can I prevent damaged devices, detected at inspection, from being produced?*

**A:** ALPS includes a map editor with which you can assign a new bin code to individual devices. ALPS may be interfaced to inspection equipment. In that case, the inspection equipment can upload the map with the inspection results. ALPS will always download the latest map to the assembly equipment.

*Q: Can ALPS handle broken wafers?*

**A:** The ALPS map editor allows you to split a map into pieces, either along a street between devices or along some irregular line. This allows broken wafers to be produced. In some cases, large wafers are broken deliberately so that they can be processed on equipment that cannot handle the large wafer size.

*Q: Can ALPS handle other substrates, e.g. trays, strips, etc.?*

**A:** ALPS 3 includes full support for all the substrate types defined in [SEMI E142](#) standard, namely; Wafer, Strip and Tray. Tape is also supported in as much as it can be modeled as a long strip. PCB can also be supported in as much as it can be modeled as a complex strip. ALPS 3 can feed forward strip map data down the assembly line to strip test. By connecting the strip map to the

wafer map it will be possible to analyze failures at strip test with respect to strip and wafer geometry, as well as the equipment used to process the strip.

*Q: What are the computer requirements for deploying ALPS?*

**A:** Please consult the [ALPS 3 Computer Requirements](#), or here for the [ALPS 2 Computer Requirements](#).

*A: Q: Can I use a custom wafer map format with ALPS?*

**A:** Yes you can. The ALPS software uses converters to translate different wafer map file formats into wafer map data and stores them into the ALPS database. If you have different wafer map formats to process with ALPS, give us the wafer map requirements and some sample maps. A custom converter can be custom built for you in not more than 2 weeks.

*Q: How many equipment can 1 ALPS Client computer support?*

**A:** Each ALPS Client (or Server + Client) computer, can connect to a maximum of 8 equipment.

*Q: How many Equipment Connects can 1 ALPS system support?*

**A:** The number of Equipment Connects an ALPS system can support is limited only by the bandwidth, memory and CPU resources available on the Server.

*Q: When I connect the ALPS computer using a serial cable to Equipment, ALPS fails to establish communication after I configured the settings from the Equipment Setup screen in the ALPS GUI and at the Equipment. What is the problem?*

**A:** The most common configuration problem found is that the Device ID settings in the ALPS Equipment Setup and the Equipment do not match. For example, if the Device ID on the Die Bonder is set to 1, then the ALPS computer setting in the Equipment Setup screen for that Equipment must also be set to 1. In addition, if the ALPS Client computer is attached to more than one(1) equipment, the

Device ID setting for each of the attached equipment must be unique to each equipment. Other setting values such as Baud Rate, SECS Timeout T1 to T4, etc., must also match.

Another cause for a failed communication is that the serial cable used is not of the correct type. Ensure that a reversed (crossed) RS-232 serial cable is used to connect the ALPS LT computer to the equipment.

You are also required to restart the ALPS GUI after making any setting changes in the Equipment screen.

*Q: When I import a wafer map into ALPS, I noticed that when I view the map data from the Wafers/Run screen, the Frame-ID is automatically generated and it is the same as the Wafer-ID when I select the Edit button. I know the map data has no Frame-ID assigned. Why is that so?*

**A:** If ALPS automatically assign the Wafer-Id as Frame-Id in the "frame-id" field during importation of wafer map data, this means that the "Wafer Frame Entry" selection on the System Setup screen is configured to "Print". Change this to one of the two other values ("Type" or "Scan") to resolve this problem. To understand what these options mean, please refer to the online Help under the section System Setup.

*Q: When I configured ALPS Sort to Import-on-demand for importing of wafer map data, the function failed when a map is requested by the die pick equipment. How can I fix the problem?*

**A:** For Import-on-demand function to work, the wafer map converter has to be specially adapted to enable this function. [Contact us](#) to obtain the adapted converters, giving details of the wafer map format you are currently using.