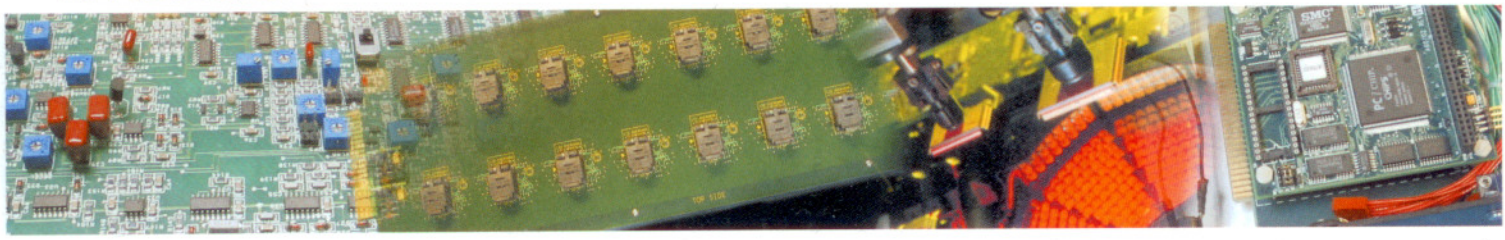
PPI TimeZero
Performance Precision Integrity

HUBZone

ISO 9001: 2000 Registered

DOCUMENTATION REQUIREMENTS Guideline to Process Orders



As a service company, our goal at PPI-Time Zero is to be of service to you and to do everything possible to satisfy your requirements.

Since fabricating and assembling electronic printed circuit boards, sub-assemblies, box build, (Systems Integration) and Burn-In Boards is a complex and extremely detail-oriented process, PPI-Time Zero offers a general documentation requirement guideline to process your orders.

By supplying PPI-Time Zero with all the information we need, you, our valued customer, can be assured receipt of high quality assemblies produced in the shortest possible time and at the lowest possible cost.

The guideline may identify all of your specific requirements. However, if we request any information that is not readily available, or you have other preferences, please notify us as soon as possible.

Quote Stage

The following documents are needed to ensure a prompt and accurate response to your request for a quote. You may submit documents by fax, regular mail or e-mail. Contact information can be found with this guideline.

(1) CAD files of the board along with the following files:

A. **Gerber files** for the bare board including artwork files for all of the layers, silkscreen file, solder mask file, drill and fabrication files with **detailed manufacturing notes** for the board and a "hole chart"

B. **assembly drawing** with detailed manufacturing notes, including desired manufacturing specification (such as IPC-A-610 B Class II)

C. **solder paste file** for stencil (required for SMT assembly)

D. **CAD file containing CENTROID location** (not the "pin 1") of all the SMT components (if SMT assembly).

(2) A detailed Bill of Material (BOM) containing:

A. top-level assembly number and current revision level

B. parts reference designator

C. manufacturer of the part

D. manufacturer's part number

E. a detailed description of the part including the package size (i.e. "SMT 1206 or SOIC16") and

F. quantity per assembly.

A bare board, with its respective revision level, should also be a part of the BOM.
Please include any available supplier information (i.e. franchised suppliers, unique agreements, or previous purchasing sources, particularly for older products which may be nearing end-of-life).

NOTE 1: If possible, please submit the BOM to PPI-Time Zero as an EXCEL spreadsheet.
NOTE 2: If we use "better than" parts, when available, there will be no additional cost.
Better Than – **is defined as passive components where the following conditions exist:**
A. Resistors– **the tolerance range is within the original tolerance range.** *(i.e. Specification is 20%, we can supply 10%, 5%, 1%, 0.1%)*
B. Resistors – **the wattage capability is greater than the specified wattage requirement.** *(i.e. Specification is 1/10 watt, we can supply 1/8 W, 1/4W, 1/2W, etc. as long as the package style is unchanged.*
C. Capacitors – **the voltage capability is greater than the specified voltage requirement.** *(i.e. Specification is 16 Volts, we can supply 35 Volt, 50 Volt, etc. as long as the package style is unchanged).*

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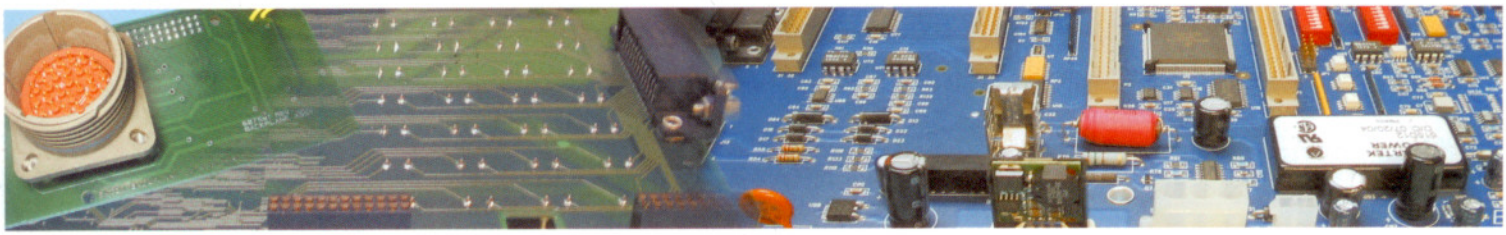

(3) An "xxx.Readme" file where "xxx" is the part number of the board.

The Readme file should contain:

A. one line explanation of each individual file (i.e. xx.smk is a Soldermask file)

B. name, address and telephone of the customer

C. name and telephone number of the technical point contact

D. quantity and lead time requirements

E. any other helpful information regarding the board.

When PPI-Time Zero is successful in winning the bid and you are prepared to place an order, we strongly recommend the following procedure. If you follow our procedures when ordering it can ensure the receipt of quality printed circuit boards that meet your specifications. This is especially true if, at the quoting stage, all information was received via e-mail.

NOTE: PPI-Time Zero lead times begin upon receipt of a complete document package.

1. Fax or e-mail a copy of the purchase order with part number, its revision level, quantity, due date, price and, if possible, the PPI-Time Zero quote number.
2. Mail a disk containing all the information described above, a hard copy of purchase order, a paper copy of the bare board fabrication drawing, assembly drawing and a Bill of Material.

PPI-Time Zero Test Capabilities Documentation and Information Required

(1). Circuit Card – The following items are needed to define the testability of a board for In-Circuit Test (ICT).

Gerber files, that include:

A. **assembly drawings** showing the components layout to identify fixture design

B. **PCB drawing** which shows dimensions and hole locations

C. **Bill of Material** with reference designators, values, tolerances, commercial part number for all devices

D. **CAD database** files which contain coordinates and identity of components, pads, pin, vias and signal list (i.e. CAD, .ASC, .MIN)

E. **schematics** to help determine testability of devices, program and debug the fixture

F. **bare and loaded boards** are requested in the test fixture development stage for verification of the mechanical and program design of the test fixture. A minimum of three (3) known good boards is required.

Functional Test:

When the board is not designed for In-Circuit Test (ICT), we can perform a functional test per your specifications. Test procedures and functional test fixtures are needed.

A. **Equipment specifications,** manufacture and model must be specified for quoting rentals.

B. **Functional test fixture** can be built with the following documentation: specifications, schematics, drawing and BOM.

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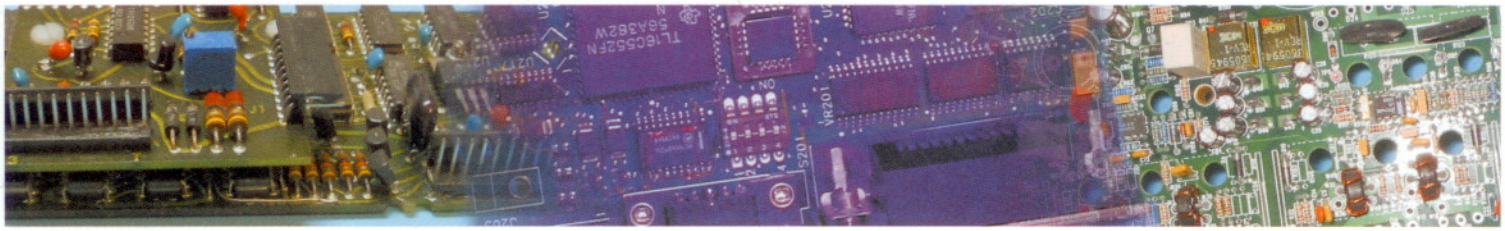

(2). Sub-Assembly – Board can be functional tested after passing In-Circuit Test.

The required documentation is:

A. assembly drawing, schematics, wiring diagram with connector pin out, functional test specifications, equipment installation procedures, test procedures and functional test verification.

(3). System Level Products – For system level products all of the above requirements must be completed. The final functional test and burn-in test is the key for products to be ready for use.

The required documentation is:

A. **final wiring and block diagram** to identify each subassembly interconnection

B. **product specifications** help us understand the final assembly requirements and debug problems encountered

C. **equipment installation and qualification procedures** which show all the test equipment needed

D. **equipment installation verification** procedures are needed for **medical products**

E. **equipment maintenance procedures**

F. **final functional test procedures**

G. **final functional test verification for medical products**

H. **final functional test validation for medical products**

I. **burn-in procedures** with specification of cycling time

J. **burn-in rack** is used to place product to perform burn-in test

K. **burn-in installation** and maintenance procedures.

(4). Vibration Test – Assembled boards can be put under vibration test.

Submit the following documentation:

A. **vibration test** procedures with specification.

(5). Environmental Temperature Cycling – PPI-Time Zero's capabilities include air circulated ovens to perform baking with power cycling burn-in test.

Submit the following documentation:

A. **baking temperature** specification

B. **time cycling**

C. **burn-in** procedures.

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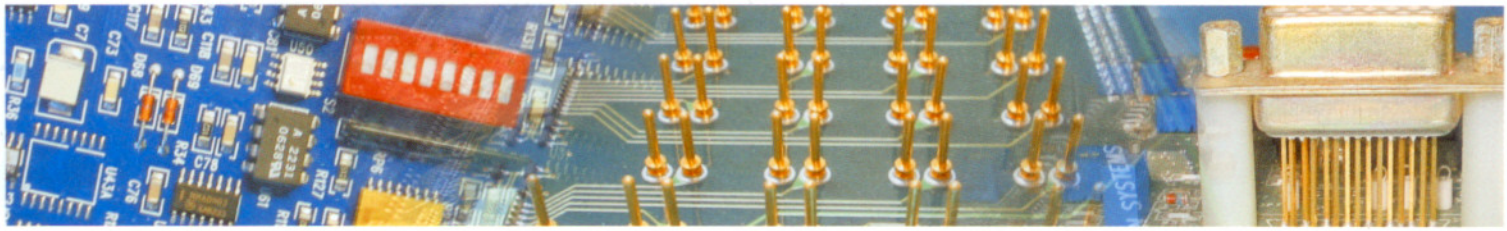

PPI-Time Zero Kitted Job Documentation Requirements

(1). When supplying parts for a consigned assembly job, please follow the documentation guidelines to ensure on-time and defect-free delivery of your quality printed circuit boards.

A. Please allow for 3 to 5 percent overage on all parts for manufacturing shrinkage. Excess material at the completion of the job will be sent to you with your order.

B. All passive components should be provided on tape and reel to be used in automatic assembly equipment. Minimum should be partial tape with at least 15 inches of leader. Provide all surface mount ICs in tubes or waffle trays. Providing parts in this manner will save time and will protect the integrity of the components.

C. Submit a copy of the Bill of Material (BOM) specifying top level assembly number and its revision level in the parts box.

D. Specify on the Bill of Material the exact quantity of each part number in the kit.

E. If any of the components are short and are due to arrive at PPI-Time Zero at a later date, indicate anticipated date and quantity of part arrival at PPI-Time Zero.

F. If any of the parts listed on the BOM are substituted or changed for any reason, please specify the new part number on the BOM. By doing so, it will be evident to us that you have intentionally substituted a part and that no mistake occurred.

G. Each part container (reel, bag or box) should have a label defining the same part number as called out on the BOM and the actual quantity within the container.

H. Please write a reference designator on the label of each part.

Upon receipt of your kit, PPI-Time Zero will thoroughly audit the kit contents. If we find any shortages or discrepancies you will be notified immediately.

NOTE: PPI-Time Zero will not release an incomplete kit to the manufacturing floor. For this reason, quoted lead-times will not begin until all the discrepancies are resolved and all the shortages are fulfilled and/or discrepancies are resolved.

(2). If the bare boards are part of the kit, please be sure that:

A. **boards are panelized** as multiple up on the panel

B. if possible, **supply the solder paste file** stepped to match the step and repeat of the bare boards; doing so will eliminate any possibility of miss-aligning different images on the panel

C. supply the panel with break-away rail on at least two sides of the panel.