

HART ELECTRONIC ASSEMBLY, INC.
21726 Lassen Street
Chatsworth, Ca. 91311
(818) 709-2761 (818) 709-2780 fax: (818) 709-2624
E-mail: hart@hartelectronic.com

Dear Potential Customer:

Hart Electronic Assembly, Inc. has been established for over 23 years in the printed circuit board assembly business. We are an integrated company specializing in consignment services for the electronics industry. Currently we have 35 employees supported by an efficient, well-organized manufacturing and process management team with over 30 years of experience. The majority of our workforce has been with our company for 15 plus years. We have occupied a 15,000-sq. ft. facility since 1983. We have full in house capabilities for all aspects of Surface Mount Technology, Ball Grid Array Technology and Thru-hole Technology. Our capabilities also include Auto insertion, Flex-circuitry, Ribbon Cable, Press-fit Connectors, Mechanical assembly, BGA Real - Time X-ray Inspection, Wave and Re-flow solder Profiling and Testing.

Hart Electronic Assembly, Inc.:

- *Assembles prototypes and production runs.*
- *Maintains a standard lead-time of 7 to 10 working days.*
- *Offers express lines for expediting boards sooner than the standard lead-time.*
- *Provides manufacturing review of customer's product upon request.*
- *Provides customer inventory and stock control of components maintained using Microsoft Excel.*
- *Provides kit pull of stocked customer's components upon request.*
- *Adheres to IPC-A-610B (Acceptability of Electronic Assemblies), ANSI/J-STD-001 Rev.B (Requirements for Solder Electronic Assemblies) EOS/ESD Association, Inc. Standards (Electrical Overstress/Electrostatic Discharge) or Customer's Workmanship Standards upon request.*

Hart Electronic Assembly, Inc. has developed our own technology and operating procedures through years of experience. We are continuing to grow with the high tech industry of printed circuit board assemblies. Our mission is to provide exceptional service, quality, support and satisfaction to work for a return customer.

Sincerely,

*LaNell Allen
President/CEO
Hart Electronic Assembly, Inc.*

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Management

The company's Management works as a team to provide exceptional quality and service to our customer's.

Directors and Officers

Lanell Allen President/CEO

Mary Turner Quality Control Manager

Quality Policy

- *We pledge to continue our commitment to provide excellent service; support and quality workmanship in order to ensure our customer's satisfaction.*
- *We will ensure that this policy is implemented and maintained at all levels of this organization.*
- *We will strive to grow with the technological changes of this industry.*
- *Our committed work force is highly trained and experienced to ensure customer's satisfaction.*
- *Our process flow of your products are documented and followed through with a traveler at each phase of production, to ensure proper handling and optimum quality.*
- *We are an extension of your company and our goal is to give our customers the utmost personalized service and quality.*

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State of the Art Technology

Surface Mount capabilities offered:

- *Laser Guided Insertion*
- *Custom Hand Assembly*

Surface Mount Profiling

- *SMD Re-flow Tracker*
- *Measures SMT Components and PCBA Level Temperatures*
- *Printed Reflow Profile overview graphing of PCBA*

Ball Grid Array (BGA)

Hart Electronic Assembly, Inc. offers services which include:

- *Installing BGA components*
- *X-ray and Photo Imaging for inspection*
- *Rework: Removing BGA*
Re-balling BGA
Re-installing BGA
Re-X-ray imaging BGA

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Items needed for Quotation:

- *Bill of Materials (BOM)*
- *Assembly Drawing (DWGS)*
- *Outstanding Engineering Changes (ECO, ECN, etc.)*
- *Printed Circuit Board fabrication drawing*
- *Test specifications (for assemblies that require testing)*
- *Special Quality specifications or Workmanship Standards (if other than IPC-A-610B)*
- *Sample Assembly (if available)*
- *Quantity of assemblies to build and schedule*

Upon Placement of Order:

The following documentation and material is needed for SMT (Surface Mount Assembly):

- *Assembly kit and issue listing*
- *Bill of Material (BOM)*
- *Assembly Drawing (DWGS)*
- *Outstanding Engineering Changes (ECO,ECN, etc.)*
- *Test Specifications (for assemblies that require testing)*
- *Gerber files for stencil procurement and SMT programming*
- *Sample Assembly (if available)*
- *Components should be supplied on tape, reel, in tubes or carriers (Bulk items additional cost)*

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Upon Placement of Order:

The following documentation and material is needed for BGA (Ball Grid Array) Assembly:

- *Bill of Materials (BOM)*
- *Assembly Drawing (DWGS)*
- *Outstanding Engineering Changes (ECON, ECN, etc.)*
- *Test Specification (for assemblies that require testing)*
- *Mechanical packaging outline of BGA (Ball Grid Array) for stencil procurement.*
- *Sample Assembly (if available)*
- *BGA Components must be packaged properly.*

The following documentation and material is needed for Thru-Hole Assembly:

- *Bill of Materials (BOM)*
- *Assembly Drawings (DWGS)*
- *Outstanding Engineering Changes (ECON, ECN, etc.)*
- *Test Specifications (for assemblies that require testing)*
- *Sample Assembly (if Available)*
- *Components should be supplied on tape, reel, in tubes or carriers (Bulk items additional cost)*

*Turn around time is based upon **RECEIPT OF COMPLETED KIT.** Additional labor incurred due to hand installation of component shortages or back orders may cause an increase in price.*

Please note that any changes of assembly or revision will be reviewed and re-quoted accordingly.

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Equipment List

Audit & Stores

- Counting Scale
- Alpha System w/Hewlett Packard Laser Printer
- Tape & Reel counter - Component Counter CC-15

Component Prep./ Automatic Insertion

- Axial/Lead formers (Technical Devices & Hepco)
- Dip Inserters (Amistar)

Soldering/ Post Assy./ Rework

- Wave Solder Machines 12in. & 20 in. (Technical Devices)
- Soldering Stations (Edsyn & Weller)
- SMD/Rework Soldering Stations (Hakko/Pace)
- Lead Trimmers (Q-Corp)

Soldering Products Available

- Water Soluble Solder
- No Clean Solder
- ROHS (unleaded) Compliant Solder

Cleaning

- In-Line Aqueous Cleaning System (Westkleen Triton IV)

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Surface Mount / BGA

- BGA Placement (Glenbrook RTX)
- BGA X-ray (Glenbrook RTX)
- Photo Imaging (Sony)
- BGA Rework Station (Glenbrook RS2000)
- Laser / SMD Pick & Place Machines (Zevatech)
- SMD Re-flow Ovens (Manix & ABW)
- Screen Printers

Quality Control

- Vision Viewing Stations 4x & 10x (Mantis)
- Stereo-Microscopes (4x - 80x)
- Inspection Magnifier Lamps at all work stations
- Digital Calipers (Mitutoyo/Etalon)
- Digital Calibration Thermometer (Edsyn)
- Digital Multi-Meters (Fluke/BK)
- Trinocular 30x Microscope with DCM130 Digital Camera

EOS / ESD (Electrical Overstress & Electrostatic Discharge)

We have full ESD Program observed and monitored per IPC-A-610B Standards, to ensure compliance within all aspects throughout our company in its entirety.

- ESD Surface Resistivity Test Kit (3M)
- Electrostatic Field Meter (3M)
- Wrist Strap / Footwear Tester (Charles Waters)

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Miscellaneous

- *Torque wrenches / drivers*
- *Drill Presses*
- *Bench Presses*
- *Kick Presses*
- *Arbor Presses*
- *Belt Sander*
- *Rivet Guns*
- *Heat Guns*
- *Hand / Assembly Tools*

Hart Electronic Assembly, Inc. has all equipment calibrated and maintained on a regular basis. This ensures proper handling and excellent quality for our customers and products assembled.