

# SPECIFICATIONS for GLAST TRACKER AUTOMATIC WEDGE BONDER

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This is a list of the general requirements and preferred features of the wire bonders that will be used to build the silicon tracker for GLAST.

## **GLAST Components:**

- **HDI** - 40 cm. X 2.5 cm. High density PC board/Kapton hybrid carrying 30 bare die  
**3600 bonds**
- **Detector Ladders** - 4 pieces: 40 cm. X 10 cm. Detector assemblies that need to be wire bonded together.  
**1350 bonds**
- **Trays** - 40 cm. X 40 cm. Assembly bonded along one edge.  
**1800 bonds**

## GENERAL

1. 100 micron pitch
2. 1-2 mil wire
3. high frequency ultrasonic generator (100-120 kHz)
4. 45, or 60 degree clamp mechanisms (needs clarification from detailed look at HDI and corner post obstructions)
5. Use of standard consumables (wedge and wire) (*need to define standard*)
6. Piezoelectric clamp
7. > 360 degree bond head rotation
8. GZ or MZ Leica microscope (or equivalent) with video port. (10 –100x zoom)

## STAGE & MECHANICAL

1. Minimum access (throat) 5 in.
2. Preferred access 8 in. Reaches center of the tray for possible ladder repair.
3. Minimum bonding area 4 in. x 4 in. (requires software interface to an automatically indexing stage)

4. Preferred bonding area 8 in. x 16in. (larger bonding area reduces #of indexing movements: 16 in. “x” motion would need no indexing)
5. Needs to have sufficient platform area to mount indexing work holders for the 16 in. X 16 in. tray
6. Linear encoders required
7. Stage must support a minimum of 30 lbs. (super GLAST tray + workholder).

## SOFTWARE

1. Programmable up to 4000 bonds and 32 systems.
2. CAD programming desired (or equivalent offline programming capability)
3. Ability to add or remove selected wires from each program run
4. Graphical programming (user friendly for many operators and programmers)
5. I/O capabilities such as :
  - error reporting
  - diagnostic reporting for analysis (parameters, squash, missing wires, missed bonds, re-bonds)
  - interface to peripheral instruments (indexing work holders, electronics testing)
6. Missing wire detector required
7. Pattern recognition system required

## CALIBRATION/ TARGETING

1. Repeatability 1-2 micron (*Needs research*)
2. Tool calibration to 3 micron for all orientations (*needs research*)

## SERVICE & SUPPORT

1. Maintenance contract
2. Application support
3. Service and repair turnaround time
4. Training