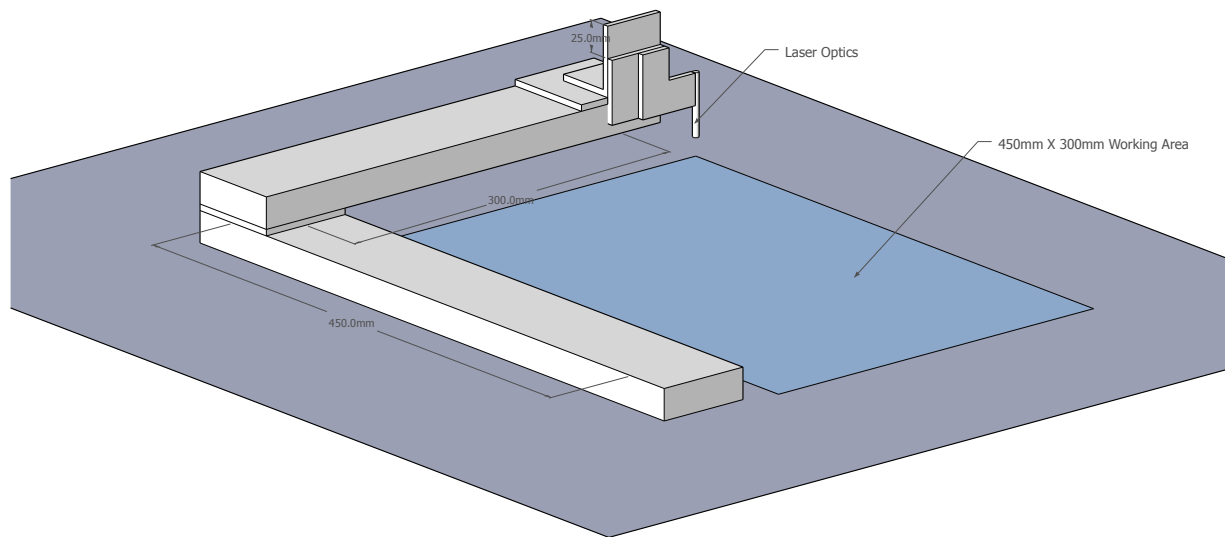


Description and Specifications for Req. #134604

Description:

Vendor to provide a computer-controlled, motor-driven cartesian robot to hold focusing optics for an infrared laser fiber used to test semiconductor sensors for particle physics experiments. Such a system could be configured from a set of three stackable linear stages, or could consist of a gantry-type system with two parallel stages on the bottom if our specifications require it. System must provide an unobstructed view of the working volume as shown in the sketch, which depicts schematically one such solution mounted to a baseplate and with attached laser optics.



System must include motor-driven stages for all three axes which can be controlled via LabVIEW and also via a low-level command language. All stages, hardware (excluding baseplate and mount for optics), motors, motor controllers, cables and software (excluding LabVIEW) are to be provided by the vendor.

Specifications:

The working area in x-y must be at least 450mm(x) by 300mm(y), and the range in z at least 25mm, as shown. Bidirectional repeatability in x and y must be 1 micron or better, and 5 microns or better in z. Accuracy must be 10 microns per meter of travel or better in x and y. Straightness in x and y must be 4 microns per 25mm or better. The x and y axes must be orthogonal to 150 microradians or better. Assuming a load of 0.5kg on the top stage for the laser optics, the top stage must sag less than 25 microns over the

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range in y travel due to the roll torque on the x stage, and the top stage must travel in a single x-y plane within 50 microns over the entire x-y range if attached to a perfectly flat baseplate. Above specs assume perfect temperature uniformity.