WHAT IS CLAIMED IS:

1. A laser processing apparatus comprising:

a chuck table for holding a wafer thereon;

a laser beam applying unit for applying a laser beam to the wafer held on the chuck table; and

a feeding mechanism for processing-feeding the chuck table and the laser beam applying unit relatively to each other in X-axis directions and Y-axis directions perpendicular to the X-axis directions,

wherein the laser beam applying unit includes

a laser oscillator for emitting a laser beam,

a beam condenser for focusing the laser beam emitted from the laser oscillator into a focused spot and positioning the focused spot in the wafer held on the chuck table,

a focused spot position adjuster disposed between the laser oscillator and the beam condenser for adjusting the position of the focused spot, and

an upper surface position detector for detecting a position of an upper surface of the wafer,

the upper surface position detector including a first upper surface position detecting unit, a second upper surface position detecting unit, and a

selector for selecting either the first upper surface position detecting unit or the second upper surface position detecting unit depending on a feature of the wafer,

wherein

the first upper surface position detecting unit includes

a detecting light source, and

a combiner for combining detecting light that is emitted from the detecting light source and that has passed through a first beam splitter with the laser beam between the laser oscillator and the focused spot position adjuster; and

the second upper surface position detecting unit includes

a light applying end member for applying the detecting light emitted from the detecting light source to the upper surface of the wafer at an angle α of incidence, and

a light detecting end member for detecting reflected light produced when the detecting light applied by the light applying end member is reflected by the upper surface of the wafer.

2. The laser processing apparatus according to

claim 1,

wherein the first upper surface position detecting unit includes

a second beam splitter for branching returning light that is reflected by the upper surface of the wafer held on the chuck table when the detecting light that has passed through the focused spot position adjuster and the beam condenser is applied to the wafer and that is also reflected by the combiner and the first beam splitter, into a first optical path and a second optical path,

a filter disposed on the first optical path for passing part of the branched returning light therethrough,

a first photodetector for detecting the returning light that has passed through the filter, and

a second photodetector disposed on the second optical path for detecting the branched returning light in its entirety,

wherein the laser processing apparatus further comprises a controller for calculating the position of the upper surface of the wafer from a comparison between an amount of the returning light detected by the first photodetector and an amount of the returning light

detected by the second photodetector,

the second upper surface position detecting unit includes

an image sensor for measuring a position of the reflected light detected by the light detecting end member, and

the controller calculates the position of the upper surface of the wafer on a basis of the position on the image sensor of the reflected light detected by the image sensor.

3. The laser processing apparatus according to claim 2, wherein the detecting light emitted from the detecting light source is guided to the first beam splitter, and the selector guides the detecting light branched by the first beam splitter selectively to the first upper surface position detecting unit and the second upper surface position detecting unit by switching a first shutter and a second shutter to different positions.

4. The laser processing apparatus according to claim 1, wherein the controller controls the focused spot position adjuster depending on the position of the upper surface of the wafer calculated on a basis of data from the first upper surface position detecting unit or the second

upper surface position detecting unit selected by the selector.