

## Abstract



\*162162\*

Method for positioning a substrate linearly and  
detecting its position and apparatus for implementing  
5 the method

Substrates (1) transported in a pick-and-place  
robot have previously been detected with the aid of an  
ultrasonic or reflex light sensor, the linear transport  
10 (2) was braked and the substrate was moved against a  
stopper which can be inserted mechanically, so that the  
position of the substrate (1) is known. The fixed  
position of the stop means that, in this case,  
substrates (1) of different sizes are always stopped at  
15 a location which is not necessarily suitable for  
optimum assembly paths and short assembly times.

By arranging a sensor (10) with a sensor field  
(13) that can be positioned freely over the assembly  
field (x) of the pick-and-place robot, the position of  
20 a transported substrate (1) within the assembly field  
(x) can be determined. The sensor (10) detects a  
predefined substrate feature (9) at a predefined  
braking position (x1) in the assembly field (x), the  
linear transport (2) is braked, so that the substrate  
25 (1) with the feature (9) comes to rest at an assembly  
position (x2). The sensor (10) measures the substrate  
feature (9) which has come to rest at the assembly  
position (x2) and, by using the measured position,  
determines the position of adjustment marks (15) which  
30 are arranged on the substrate and which are then  
measured accurately using an adjustment sensor (14)  
fitted to the assembly head (4).

FIG 3

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