

- at least one PD selector, fastened on said housing and connected with said plurality of PD receivers, for controllably selecting and deselecting one or more of said plurality of PD receivers;
- an optical assembly, fastened on said housing, for projecting light beams emitted by said plurality of LEDs in substantially parallel planes over said housing; and
- a controller, fastened on said housing and coupled with said plurality of PD receivers, (i) for controlling said at least one LED selector, (ii) for controlling said at least one PD selector, and (iii) for determining therefrom position and velocity of an object crossing at least one of the substantially parallel planes, based on output currents of said plurality of PD receivers.
2. The touch screen of claim 1 wherein said plurality of LEDs are fastened along two adjacent edges of said housing, and wherein said PD receivers are fastened along two other adjacent edges of said housing.
 3. The touch screen of claim 1 wherein said plurality of LEDs are fastened at four corners of said housing.
 4. The touch screen of claim 1 wherein said at least one LED selector comprises at least one LED row selector and at least one LED column selector which are connected to said plurality of LEDs in the topology of a matrix, whereby each LED has an associated row and column and is selected by combination of the corresponding LED row selector and LED column selector.
 5. The touch screen of claim 1 wherein said at least one PD selector comprises at least one PD row selector and at least one PD column selector which are connected to said plurality of PDs in the topology of a matrix, whereby each PD has an associated row and column and is selected by combination of the corresponding PD row selector and PD column selector.
 6. The touch screen of claim 1 wherein said at least one LED selector generates a bit string for a shift register, wherein each bit of the bit string determines whether to select or deselect a corresponding LED.
 7. The touch screen of claim 1 wherein said at least one PD selector generates a bit string for a shift register, wherein each bit of the bit string determines whether to select or deselect a corresponding PD receiver.
 8. The touch screen of claim 1 further comprising a multiplexer coupled with said plurality of PD receivers and with said controller, for selecting one PD output signal from a group of PD output signals, based on control signals received from said controller.
 9. The touch screen of claim 1 further comprising a resistance based current integrator for biasing and sampling the output currents entering said controller from said plurality of PD receivers.
 10. The touch screen of claim 1 further comprising a transistor based current integrator for biasing and sampling the output currents entering said controller from said plurality of PD receivers.
 11. The touch screen of claim 1 further comprising a transistor based filter and amplifier for sensing and amplifying the output currents entering said controller from said plurality of PD receivers.
 12. The touch screen of claim 1 further comprising an operational amplifier based filter and amplifier for converting the PD receiver output currents to voltages, and for amplifying the voltages.
 13. A method for a light-based touch screen, comprising:
 - controlling a plurality of light-emitting diodes (LEDs) to select and deselect at least one of the LEDs, whereby a selected LED emits infra-red light beams;
 - controlling a plurality of photodiode (PD) receivers to select and deselect at least one of the PD receivers, whereby a selected PD measures received light intensity; and
 - determining position and velocity of an object obstructing light from at least one of the PD receivers, based on output currents of the plurality of PD receivers.
 14. The method of claim 13 wherein said controlling a plurality of LEDs comprises generating a bit string, wherein each bit of the bit string determines whether to select or deselect a corresponding LED.
 15. The method of claim 13 wherein said controlling a plurality of PD receivers comprises generating a bit string, wherein each bit of the bit string determines whether to select or deselect a corresponding PD receiver.
 16. The method of claim 13 further comprising applying linear amplification to the output currents of the plurality of PD receivers prior to said determining.
 17. The method of claim 13 further comprising compensating for ambient light by adding a plurality of PD output signals when an LED is turned on and subtracting therefrom a plurality of PD output signals when an LED is turned off.
 18. The method of claim 13 further comprising sampling the output currents of the plurality of PD receivers prior to said determining, the sampling comprising:
 - turning off a transistor to begin current integration within a capacitor;
 - turning on the sample and hold circuit at a pre-designated amount of time after said turning off the transistor;
 - turning off the sample and hold circuit at a pre-designated amount of time after said turning on the sample and hold circuit;
 - measuring a charge in the capacitor; and
 - turning on the transistor to discharge the capacitor.
 19. The method of claim 18 further comprising converting analog output of the sample and hold circuit to digital output, prior to said turning on the transistor.
 20. A touch screen, comprising:
 - a housing for a display screen;
 - a plurality of sensors, fastened on said housing, for sensing location of an object touching the display screen; and
 - a controller, fastened on said housing and coupled with said plurality of sensors, for receiving as input locations sensed by said plurality of sensors, and for determining therefrom positions of two or more objects simultaneously touching the display screen.

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