



CLAIMS

1. An optical receiving device for receiving an optical signal from a signal collector comprising a detector for receiving the optical signal from the collector and a
5 signal mask having an aperture through which at least a portion of the signal passes, said mask located along an optical axis of the signal intermediate the collector and the detector wherein the location of the signal mask is such so as to attenuate the signal to less than a saturation threshold of the detector and a conjugate image plane of the signal is located within a range from coincident with the mask to intermediate the mask and
10 detector.
2. The device according to claim 1, wherein the signal is directed from a target before reaching the collector.
- 15 3. The device according to claim 2 wherein the conjugate image plane of the signal is coincident with the mask when the target is at far field.
4. The device according to any one of the preceding claims wherein the aperture is smaller in area than the detector.
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5. The device according to claim 4 wherein a dimension of the mask in any one cross sectional plane is less than or equal to an equivalent dimension of detector in the same cross sectional plane.
- 25 6. The device according to any one of the preceding claims further comprising an optical filter located proximate the mask and distal from the detector, such that the signal passing through the aperture also passes through the filter.
7. The device according to any one of the preceding claims further comprising an
30 automatic optical gain correction device for adjusting signal gain based on predetermined parameters, said parameters comprising one or a combination of allowable signal level and saturation of the detector.



8. The device according to any one of the preceding claims wherein the collector includes at least one or a combination of at least one lens and a mirror.
9. The device according to any one of the preceding claims wherein the device is adapted for use as the optical receiving system of a laser scanning system, a barcode scanner, a photocopier, a scanning microscope, an optical pick up, a remote control device, a camera module, an infrared communication device or an airborne line scanning system.
10. The device according to any one of claims 2 to 9, wherein the target is a barcode.
11. The device according to any one of the preceding claims wherein said device is constructed as a unitary element.
12. The device according to any one of the preceding claims further comprising a housing wherein the collector, mask and detector are mounted to said housing.
13. The device according to any one of claims 1 to 11 further comprising a housing wherein the collector, mask and detector are integral with said housing.
14. The device according to claim 12 wherein the housing is injected molded as a single part.
15. The device according to any one of the preceding claims wherein the distance from the collector to the mask is equal to or less than the distance from the collector to the conjugate image plane within an operational range of the device.
16. The device according to any one of the preceding claims wherein the distance from the collector to the conjugate image plane within an operational range of the device is less than the distance from the collector to the detector.

17. The device according to any one of the preceding claims wherein the mask is any one of a fixed aperture, an adjustable aperture, aperture disc, a stop, a shutter, a hole, a coated substrate or an optical band pass filter.
- 5 18. The device according to any one of the preceding claims wherein the mask is spaced from the detector.
19. An optical receiving device for receiving an optical signal from a signal collector comprising a detector for receiving the optical signal from the collector and a
10 signal mask having an aperture through which at least a portion of the signal passes, said mask is spaced from the detector along an optical axis of the signal intermediate the collector and the detector wherein the location of the signal mask is such so as to attenuate the signal to less than a saturation threshold of the detector.
- 15 20. The device according to claim 19 wherein a conjugate image plane of the signal is located within a range from coincident with the mask to intermediate the mask and detector.
21. A method of attenuating a signal received by an optical receiving device from a
20 signal collector, the method comprising the steps of :
positioning a mask intermediate the collector and detector along an optical path of the signal such that a conjugate image plane of the signal is located within a range from coincident with the mask to intermediate the mask and detector;
moving a target, from which the signal is projected, progressively towards the detector
25 from far field to near field;
masking the signal passing through the mask when the target reaches an attenuation point intermediate far field and near field, and;
attenuating the signal, from the attenuation point, to less than a saturation threshold of the detector.
- 30 22. The method according to claim 21, wherein the optical receiving device is according to any one of claims 1 to 18.

23. The method according to claim 21 wherein the optical receiving device is according to claim 19 or 20.