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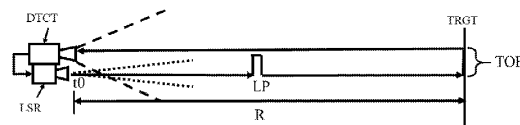


Fig. A Common practice

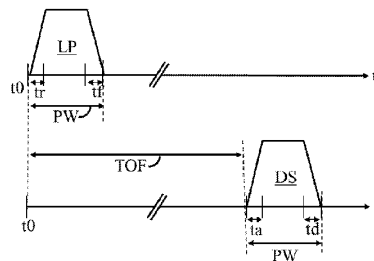


Fig. B Common practice

(57) **Abstract:** An imaging apparatus with a 3D thermal imager, a signal processor, a laser, an optical scanner, a controller, and a bimodal array which operates a plurality of slow response thermal detectors for generating a 2D thermal image as input to the signal processor. The controller operates the bimodal array, the laser, the optical scanner, and the thermal imager in predetermined sequence to derive range data for communication to the signal processor which interlaces the 2D thermal image with the range data to generate 3D thermal imaging. A method using a slow response thermal detector for deriving a detected analog signal from an emitted laser pulse returned from a target, asynchronously sampling the detected signal for deriving therefrom two series of time events corresponding to the ascending and the decaying portions of the detected signal. The time of flight and range being calculated by using the two series of time events.

[Continued on next page]

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