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Next generation cooled long range thermal sights with minimum size, weight and power

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Situational awareness and precise targeting at day, night and severe weather conditions are key elements for mission success in asymmetric warfare. To support these capabilities for the dismounted soldier, AIM has developed a family of stand-alone thermal weapon sights based on high performance cooled IR-modules which are used e.g. in the infantryman of the future program of the German army (IdZ). The design driver for these sights is a long ID range >1500m for the NATO standard target to cover the operational range of a platoon with the engagement range of .50 cal rifles, 40mm AGLs or for reconnaissance tasks. The most recent sight WBZG has just entered into serial production for the IdZ Enhanced System of the German army with additional capabilities like a wireless data link to the soldier backbone computer.
Minimum size, weight and power (SWaP) are most critical requirements for the dismounted soldiers' equipment and sometimes push a decision towards uncooled equipment with marginal performance referring to the outstanding challenges in current asymmetric warfare, e.g. the capability to distinguish between combatants and non-combatants in adequate ranges.
To provide the uncompromised e/o performance with SWaP parameters close to uncooled, AIM has developed a new thermal weapon sight based on high operating temperature (HOT) MCT MWIR FPAs together with a new low power single piston stirling cooler. The core of the sight is put as a clip-on in front of the rifle scope, eye pieces for stand-alone targeting with e.g. AGLs or a bi ocular version for relaxed surveillance are available.

The paper will present details of the technologies applied for such long range cooled sights with size, weight and power close to uncooled.

Keywords: thermal weapon sight, clip-on, targeting, IR Sensor, MCT, high operating temperature, SWaP

Short version:

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