

Secure XIR Lighting - Night Vision Goggle Compatible

Used to describe an indicator lamp designed to meet the parameters specified by DESC control drawing No. 87019. The main purpose of DESC 87019 is to define secure lighting of equipment that is going into 'front-line' combat operations where standard indicator lamps could give away the position of the equipment and personnel to enemy forces. Secure lighting is achieved by meeting two main parameters:

1. Restricting the viewing angle of visible light emitted from the indicator lamp. e.g. the operator must be standing directly in front of the equipment to see the light source.
2. Restricting the amount of energy emitted from the indicator lamp in the near infrared (NIR) region in the bandwidth of approximately 600 to 930nm. This is to eliminate detection by enemy forces using night vision goggles (NVGs).

NVG

Is the nomenclature used to describe an indicator lamp that is Night Vision Goggle compatible. For an indicator to be NVG compatible the amount of energy emitted in the near infrared (NIR) region must be restricted as described above for the XIR indicator lamps; however, unlike the XIR lamps there is no restriction on the viewing angle of the indicator lamp.

Night vision goggles produce an image by amplifying light in the NIR region of the spectrum. The NVGs have an Automatic Gain Control (AGC) which controls the amplification of the NIR. As NIR levels illuminating a scene increase, to maintain the contrast of the image being presented to the user, the AGC reduces the level of amplification. As NIR levels reduce the AGC increases the amplification to maintain the image. The effect of stray high intensity NIR (for example, unfiltered light from an indicator lamp on a control panel close to the user of NVGs) is for the amplification of the NVGs to be reduced thereby blinding the goggles to all but the strong light source. This is particularly critical for aerospace cockpit applications.

The restriction of the NIR spectrum is achieved by vacuum deposition of special materials with differing refractive indices on to the rear surface of the filter. To form the NIR blocking filter, many alternate layers of these materials are vacuum deposited onto the lens.

DESC 85122 APPROVED

Indicates styles of indicator lamps which can be approved against DESC control drawing 85122.

Indicator lamps approved against DESC 85122 are 100% screened against the following test schedule:

High Temperature Storage - at 100°C, duration 72 hours minimum.

Thermal Shock: • high = 100°C • low = -55°C

10 cycles duration at each temperature, 15 minutes minimum.

Constant Acceleration: 20,000 g.

Seal test: immersion per MIL- STD-750, test method 1011 condition A.

Pre Burn-in Measurements:

- Luminous Intensity (Iv)
- Forward Voltage (Vf)
- Reverse Current (Ir)
- Burn-In - (Forward bias) at ambient temperature. 168 hours minimum duration.
- Post Burn-in Measurements:
 - Iv (A Iv, 20% max. from initial value).
 - Vf (A Vf \pm 50 mV from initial value).
 - Ir Insulation Resistance >1,000 M Ω at 500 V between both of the terminations and body.

Mechanical Inspection - Additional maintenance testing is carried out against sampling plan to ensure compliance with the specification.

DESC 87019 APPROVED

Indicates styles of indicator lamps which can be approved against DESC control drawing 87019. Testing generally as specified for DESC 85122 with the addition of total power emission measurements between 350 nm and 930 nm.

DESC -GENERAL

Only indicator lamps that are specified on the DESC control drawing can be formally released against the drawing. However other styles of indicator lamps can be certified as meeting the screening and general requirements of the DESC drawing. (Please contact us for further details).