



Orion: Target diagnostic



Gated X-ray Detector (GXD)

The Orion laser facility at AWE Aldermaston, one of the largest scientific capital investments in the UK, houses a large neodymium glass laser system and a target chamber in which the high energy density physics experiments are performed. This is necessary to support certification of performance and safety of the UK deterrent.

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The Gated X-ray Detector (GXD) uses Micro-Channel Plate (MCP) technology to provide 2D spatially resolved, time gated images of X-ray emission. The airbox assembly was designed by the Los Alamos National Laboratory (LANL) in the USA and is used on Orion to record X-ray images and spectra from laser-irradiated targets. The diagnostic includes an electronic support system, MCP detector head, MCP drive electronics, and Charge Coupled Device (CCD) recording of the phosphor image.



Specification

TIM based	
Power input:	24 Vdc
Spatial response:	0.01 - 10 keV
Temporal response:	70 ps - 2 ns
No. of independent strips:	1, 2 or 4
Dimensions (LxWxH):	1481 x 173 x 167 mm
Weight:	54.9 kg

The diagnostic is designed to operate in a Ten Inch Manipulator (TIM), and is mounted in an 'airbox' which allows the electronics to operate without overheating whilst the device is in the vacuum chamber. Various diagnostic packages can be used as the front-end assembly.

[Framing Camera's Pinhole Camera](#)