

OPEN MCP DETECTORS



Our Open MCP Detectors consist of one, two or three MCP (micro-channel plate) operating in series.

MCP's and MCP-based detectors can be used in various applications, such as:

- Imaging spectroscopy
- Electron spectroscopy
- Electron microscopy
- Mass spectrometry
- Molecular and atomic collision studies.

Open MCP detector designs vary largely and depend on their desired application.

Mode of Operation

MCP (microchannel plate) is a 2D component used to detect and amplify single particles or photons in a vacuum.

It consists of millions of independent microchannels, running parallel to each other through the MCP. The channels do not run straight across, but enter the MCP at a slight angle ("bias angle"). Each microchannel works as an independent electron multiplier. A potential gradient is applied across the MCP. A particle enters a channel, hits the wall of the channel, and emits an electron from the channel wall (secondary electron emission). The emitted secondary electrons propagate through the channel in a parabolic trajectory, accelerated by the applied voltage.

Every time an electron hits the channel wall, it produces further secondary emissions. This cascade process yields a cloud of electrons, magnifying the original signal by several orders of magnitude (the ultimate amplification depends on the MCP and the applied voltage). Since the electrons are confined within the channels, the resulting amplified signal possesses the same spatial pattern as the incident signal.

The electrons exit on the opposite side of the MCP and proceed to a readout device.

A readout device is either an anode or a phosphor screen:

- An anode enables measurement of the output electron signal within an effective area.
- A phosphor screen enables optical imaging of the output signal.

Our Open MCP Detectors arrive either as standalone assemblies or mounted on a flange suitable for high vacuum systems.

You can see the available setups in the table below:

Detector Configuration	MCP Outer Diameter					
	12mm	18mm	25mm	33mm	50mm	90mm
Anode readout Standalone assembly	v	v	v	v	v	v
Phosphor screen readout Standalone assembly	-	-	v	v	v	v
Anode readout Flange-mounted assembly	v	v	v	v	v	v
Phosphor screen readout Flange-mounted assembly	-	-	v	v	v	v

For further information and help in designing your unique product, contact us:
info@neo-infinity.com