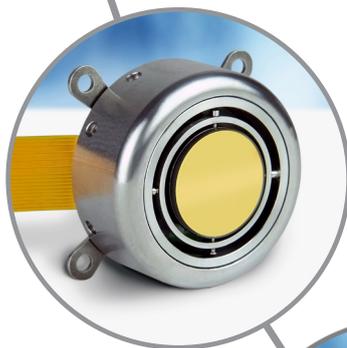**Fast & fine steering mirrors**

## Dual axis mirrors with or without accurate position feedback

The compact fast steering mirrors combine the benefits of a large mirror surface with an exceptionally large tilt angle. The mirrors are suitable for automotive (LiDAR, headlights, ADAS), biometric, vision, free-space communication and medical applications. A built-in feedback system guarantees highly precise positioning control.

The fine steering mirrors without feedback systemoffer a large mirror surface in a very compact body.

optotune

Dual axis fast & fine steering mirrors

MR-15-30, FMR-20
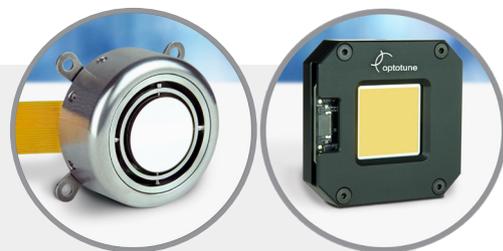
Compact, fast and precise beam steering

Optotune's dual axis mirror series is the ideal choice for applications that require a large field of view combined with a compact form factor. With a package size of 30 x 14.5 mm it achieves up to ±25° mechanical tilt, corresponding to 100° field-of-view. The mirrors contain a position feedback system enabling accurate control of deflection angle.

In contrast to galvo mirror heads, the rotation point is very close to the mirror surface. The mirrors are available for use with light in different wavelength ranges such as UV, VIS, and NIR.

Specifications	MR-15-30	FMR-20
Scan direction	bi-axial	bi-axial
Mechanical tilt angle	±25° X axis; ±25° Y axis	±0.2° X axis; ±0.2° Y axis
Mirror size	Ø 15 mm	20x20 mm
Resolution (closed loop)	22 µrad	4 µrad
Repeatability RMS (typical)	40 µrad	---
Full scale bandwidth	20 Hz	250 Hz both axes
Mirror coating	protected gold, protected silver, DVIS	protected gold, dielectric NIR
Mirror reflectivity (gold coating)	avg >95% for protected gold	avg >95% for protected gold
Mirror flatness (P-V)	$\lambda/2$	2λ

Advantages

> Large clear aperture and scan angle
> Reduced reflection loss (single mirror)
> Robust voice-coil actuation
> Optical real-time position feedback
> Compact & light-weight

Applications

> Automotive (LiDAR, dynamic headlights, ADAS)
> Machine vision (field-of-view expansion)
> Free-space communication
> Biometric (eye-tracking)
> Diagnostics (e.g. OCT, fundus camera)

How to start

For the MR-15-30 mirror two types of kits available

MR-E-3 Development kit

> For evaluation, R&D, or plug & play use
> Electronics are fully protected in housing
> Software: Optotune Cockpit, C#, Python SDKs
> Includes: Controller base unit, mirror head, power supply, USB cable

MR-E-3 OEM kit

> For prototyping, integration into OEM equipment
> Compact carrier board with CPU & proxy board
> Software: Optotune Cockpit, C#, Python SDKs
> Includes: Carrier, CPU, and proxy boards, mirror, power supply, USB cable

For more information, please contact sales@optotune.com