ST Enabling AR/MR Applications

Microactuator Technologies

Microactuator Components for AR / MR

MEMS Mirrors

MEMS Speakers
A Wide Range of Actuation Technologies

Mass Production with the Main MEMS Actuator Technologies

Electro-Static
- Staggered comb fingers
- In-plane comb fingers

Electro-Magnetic
- Thick metal layers integrated with silicon mechanical structure
- Thick metal cross section for coil

Piezo-Electric

PεTRA™
Changing the MEMS Landscape

Microactuator Components for AR/MR

3D Sensing

- Fully integrated solution for 3D Sensing based on MEMS Micro-Mirror

MEMS Mirrors

- Solutions for Augmented and Mixed Reality: MEMS Mirrors and driving electronics
- Low power for Augmented Reality: Electrostatic Technology
- High Resolution for Mixed Reality

MEMS Speakers

- Accurate sound reproduction
- Extended bandwidth
- Frequency matching
- Small dimensions
- Light weight
- High volume MEMS capacity

Smart AutoFocus

- Fast AF
- Ultra-low power
- Constant Field of View
- Small footprint
Mega1 Laser Beam Scanning Projector

MEMS Mirrors & Drivers for LBS Projection

Augmented Reality Development System
- Single-Eye Projection
- Display
MEMS Mirrors for Augmented Reality

ST is a One-Stop-Shop for LBS Solutions

- MEMS Mirrors embedding position sensing, MEMS drivers and Laser Diode Drivers
- Control Loop and Video Processing HW and SW
- Building the Ecosystem for LBS-based AR Glasses
Redefining System Integration

Current Generation

Platform Available Today
- Optical Module: 16 x 21 x 5 mm

Electrostatic Mirrors
- Horizontal Mirror
- Vertical Mirror

Controllers and Laser Diode Drivers
- Dedicated MEMS controller
- Standard LDD (available in the market)

ST Platform for 2020: Enabling System Integration

New Platform introduction in 2020
- Optical Module: 10 x 11 x 5 mm
- 70% volume reduction

Introducing New MEMS Mirror – MP 2021
- Improved Resolution: +60% (up to 720p)
- Reduced current consumption: -50%
- Increased FoV: +20% (65 deg diagonal)

Controllers and Laser Diode Drivers
- New Laser Diode Driver: high resolution and sharp images
- Integration with application processor: reduced system complexity and consumption
Focals by North

First All-Day Wearable Fashion Smart Glasses Based on ST LBS Displays

- Low Power and Compact Size for Augmented Reality
- Focal 2.0 in the market from Q1 2021:
  - 10x improved retinal display – no calibration required
  - 40% dimension reduction
Vein Visualization has Emerged as the Standard of Care

- ST Laser Beam Scanning (LBS) technology enabling visible and IR projection
Usound: MEMS Microspeakers

MEMS Speaker Technology Enables Intelligent Miniaturized Devices.

• Seamless integration into acoustic devices for everyday use
  • 6.7 x 4.7 x 1.56 mm³

• Longer battery life due to the speaker’s low power consumption
  • 27 mW – White Noise @ 60 dB

• Competitive sound pressure level
  • 73 dB SPL @10KHz
USound – Fauna Audio Eyewear

• Powered by USound’s MEMS speaker which enables a stylish, lightweight design

• Two-way audio system integrated in each temple lets you be the only one to hear your music, podcast or phone call, but always being able to perceive the surroundings