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Sora and optical modules



Overview

CSU-W1 SoRa Confocal Scanner Unit | Yokogawa A SoRa disk can be added to your CSU-W1. By using a magnification changer for CSU-W1 SoRa | Yokogawa CSU Serie.

Key Takeaways

The CSU-W1 SoRa is a super-resolution confocal module that uses specialized optical components to achieve up to 2-fold resolution improvement beyond the diffraction limit.CSU-W1 SoRa Overview

The CSU-W1 SoRa is a spinning-disk confocal super-resolution system designed for live-cell imaging with high speed and minimal phototoxicity . It builds on the conventional CSU-W1 platform but incorporates a micro-lens pinhole array (MLPHA) disk, also called the super-resolution disk, which enables optical photon reassignment. This design improves XY resolution by approximately 1.4x the optical diffraction limit, and through deconvolution, a final resolution of roughly 2x beyond the optical limit can be achieved . The system requires high numerical aperture 60x or 100x objective lenses for optimal performance and uses intermediate magnifications (2.8x for 100x, 4x for 60x) to achieve effective pixel sizes suitable for super-resolution and deconvolution . Optional features include motorized correction collars, automatic water immersion, and compatibility with additional imaging devices like TIRF, DMDs, and photostimulation scanners.

Optical Modules in SoRa

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The optical modules in the SoRa system are responsible for precise light manipulation and image formation. The MLPHA disk modifies the traditional Nipkow disk by projecting microlens focal points onto pinholes, effectively reducing the optical path by half. This optical reassignment ensures that information from the light source is accurately transmitted to the detector, producing images with enhanced resolution without additional computational processing . In general, an optical module refers to a component that manipulates light for imaging or communication purposes. In microscopy, these modules include lenses, pinholes, microlens arrays, and detectors that control illumination, focus, and signal collection. In fiber-optic communication, optical modules perform optoelectronic conversion, using a TOSA (Transmitter Optical Sub-Assembly) to convert electrical signals into optical signals and a ROSA (Receiver Optical Sub-Assembly) to detect incoming light .

Key Advantages
• High-speed live-cell imaging with reduced photobleaching and phototoxicity .

• Super-resolution capability without complex sample preparation or post-processing .

• Flexible integration with multiple cameras and additional imaging devices .

• Optical photon reassignment ensures accurate image formation and improved resolution .
Summary

The SoRa module represents a specialized optical module in microscopy that leverages microlens arrays and spinning-disk technology to surpass the diffraction limit, while general optical modules in imaging or communication systems serve to convert, manipulate, or detect light signals. Together, these technologies illustrate how optical engineering can enhance both resolution in microscopy and signal fidelity in optical communications.

Article Content

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Nikon SoRA Super-Resolution Confocal – Microscope Facility

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Nikon Spinning-Disk SoRa

Nikon CSU-W1 Spinning-Disk Super Resolution by Optical Pixel Reassignment (SoRa) The Nikon “SoRa”

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Frequently Asked Questions What is Sora? Sora is a modular media player for iOS and macOS, enabling custom modules to play

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Disk 1 format: 50 µm pinholes @ 500 µm spacing, dual disk technology for normal spinning disk imaging Disk 2 format: 50 µm

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Chapter 6 Super

Fortunately, a new platform termed super-resolution spinning-disk confocal microscopy using optical photon reassignment (SoRa)

Yokogawa-SoRa

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New Super Resolution through Optical Reassignment Marianas

The SoRa Marianas has been added to our booking website and is ready for training! A few highlights for the

Staff Training: K-12 Schools – Sora How-To Resources – OverDrive ...

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SoRa

SoRa - spinning disk super-resolution by optical pixel reassignment Equipped with a Yokogawa CSU-W1 dual-disk scan head, high

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Nikon SoRa Spinning Disk Confocal | Biological Imaging Facility

Features: 1. Nikon Ti2 inverted microscope with Perfect Focus System (PSF) 2. Widefield, Confocal and SoRa Mode

Super Resolution Confocal Scanner Unit CSU-W1 SoRa

Super Resolution Confocal Scanner Unit CSU-W1 SoRa is a model that enables super-resolution live-cell imaging based on the

Sora: A Review on Background, Technology, Limitations, and ...

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Abstract Sora is a text-to-video generative AI model, released by OpenAI in February 2024. The model is trained to

The fact that SORA is not just generating videos, it''s ...

The fact that SORA is not just generating videos, it''s simulating physical reality and recording the result, seems to have escaped

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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