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Ultrafast Electron Diffraction (UED)

Blog Post

The Berkeley Nucleonic's Model 865B, a cutting-edge pulsed microwave source, is set to transform Ultrafast Electron Diffraction (UED) systems with its remarkable capabilities. By integrating with UED setups, this innovative technology promises to deliver unparalleled precision and speed, capturing atomic and molecular dynamics with extraordinary clarity and efficiency. This groundbreaking combination marks a significant leap forward in the field of UED, setting new standards for research and analysis.

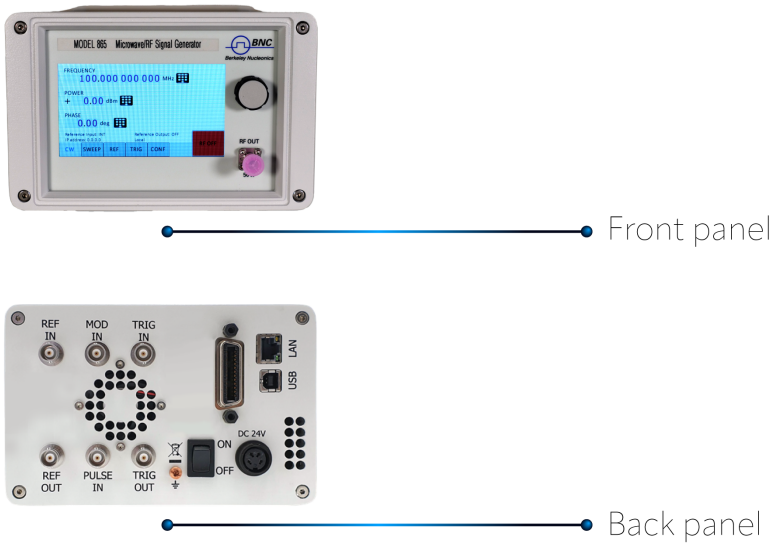
Unpacking the Model 865B's Key Features

The Model 865B-M is not just any frequency synthesizer; it's a powerhouse in a compact form. Spanning a frequency range from 100 kHz to a staggering 43.5 GHz, and with an output power that's adjustable between -10 and +20 dBm, this model stands out for its outstanding phase noise performance and ultra-fast switching speed. Whether you're working with a flange-mount or 1U 19" rack-mountable chassis, the Model 865-M is versatile enough to fit into various configurations, including single or multi-channel setups.

Technical Specifications at a Glance

What makes the Model 865B truly unique is its combination of technical features:

- **Resolution and Stability:** With a 0.001 Hz frequency resolution and a high-stability internal reference that can sync with external references, precision is at your fingertips.
- **Remote Control:** The model is remotely controllable via Ethernet and USB, adhering to the SCPI 1999 command set, ensuring ease of use.
- **Power Consumption:** It operates on an external DC supply, typically consuming less than 20 W, making it an energy-efficient choice.



Tailored for High-Performance Applications

This model is designed to excel in various applications, including Automated Test Equipment (ATE), Local Oscillators for frequency converters, and Telecom/SatCom. Its low phase noise and swift switching capability (down to 20 µs) are significant for applications requiring precision and speed. Moreover, it supports FM, Chirps, and Pulse modulation, adding to its versatility.

Detailed Specifications for the Tech-Savvy

For those who crave the details, the Model 865B's specs are impressive:

- **Frequency Range:** 100 kHz to 40 GHz, extendable to 43.5 GHz.
- **Output Power:** Adjustable between -5 and +20 dBm.
- **Switching Speed:** 500µs, which can be reduced to 20µs with an optional feature.
- **Phase Noise Performance:** Exceptional, with values like -132 dBc/Hz at a 1 kHz offset.

Integrating with UED: A Game Changer

When integrated into a UED setup, the Model 865B-M brings a new level of control over microwave pulse timing and frequency. This synchronization is vital for refining the temporal resolution in UED experiments. The fast switching and low phase noise of the Model 865B-M significantly enhance the capability of UED systems to probe material structures and dynamics with great detail and speed.

A Step Forward in UED Technology

The Berkeley Nucleonics Model 865B is revolutionizing Ultrafast Electron Diffraction (UED) systems with its state-of-the-art pulsed microwave source. This advanced technology, when integrated into UED setups, offers unprecedented precision and speed. It enables researchers to observe atomic and molecular dynamics with exceptional clarity and efficiency. This pioneering integration signifies a major advancement in UED, establishing new benchmarks for research and analytical methods. Discover more about this transformative technology at Berkeley Nucleonics Model 865B product page: https://www.berkeleynucleonics.com/model-865