



# Contactless Ultrasonic DNA Disruptor



## STANDARDS

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IEC 61010-1

IEC 61326-1

UL 61010-1

## Contactless Ultrasonic DNA Disruptor - QualiDNA™ CUD

Ultrasonic DNA Disruptor systems like QualiDNA™ CUD are built to shear DNA and fragment chromatin in sealed tubes without a probe touching the sample.

This contactless ultrasonic approach helps reduce aerosol risk and cross-contamination while supporting repeatable sample preparation for sequencing and ChIP workflows. The platform uses a temperature-controlled ultrasonic bath with programmable sonication and pause cycles for better control of fragment size distributions.

QualiDNA™ CUD is a contactless Ultrasonic DNA Disruptor designed for high-throughput, small-volume processing in life science labs. Samples stay closed in tube racks while ultrasound energy couples through the bath, supporting sterile handling and consistent processing across batches. A constant-temperature cooling system and precise temperature display help manage heat buildup during longer protocols.

Workflows can be tuned using total sonication time, on-time, off-time, and duty cycle settings. Frequency self-adaptation supports stable energy delivery across different rack formats and loading conditions. The result is a practical platform for labs that need standardized, repeatable DNA shearing and chromatin fragmentation.

## APPLICATIONS

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## Contactless Ultrasonic DNA Disruptor - QualiDNA™ CUD Applications

- DNA shearing for NGS library preparation Prepare genomic DNA for next-generation sequencing by tuning cycle timing and duty cycle to target a desired fragment range. Closed-tube operation supports cleaner handling across multiple samples.
- Chromatin fragmentation for ChIP assays Process chromatin immunoprecipitation samples with controlled sonication and temperature management to support consistent fragment profiles across runs.
- Sterile, sealed-tube sample disruption Handle valuable or contamination-sensitive samples in sealed vessels to reduce sample-to-sample carryover that can happen with direct-probe contact.
- High-throughput small-volume processing Run tube racks for micro-volume samples to improve workflow efficiency when multiple samples must be processed in a single session.



## Standards

- IEC 61010-1 (Safety requirements for electrical equipment for measurement, control, and laboratory use).
- IEC 61326-1 (EMC requirements for electrical equipment for measurement, control, and laboratory use).
- UL 61010-1 / CSA equivalents are often used for North American safety certification pathways when required.

## FEATURES

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### Contactless Ultrasonic DNA Disruptor - QualiDNA™ CUD Key Features

- Probe-free, sealed processing that supports low carryover risk between samples.
- High power output with adjustable control for protocol flexibility across sample types.
- Programmable total time, work time, and interval time to tune fragmentation and manage heating.
- Frequency self-adaptation for stable operation under different loading conditions.
- Independent constant-temperature cooling system with fine temperature display resolution.
- Rack-based throughput for micro-volume tubes and multi-sample batches.

## THEORY & METHOD

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### Theory and Method

Contactless sonication transfers ultrasonic energy through a liquid bath into sealed sample tubes. Ultrasound generates cavitation in the bath, creating localized shear forces that disrupt biomolecular structures and drive DNA/chromatin fragmentation. Because the probe does not enter the sample, handling remains cleaner and repeatability improves across

multi-sample racks.



A typical method uses three core controls:

- Total time to set overall energy delivered.
- On/Off cycles to manage heat and tune fragmentation behavior.
- Duty cycle and power to adjust intensity and throughput.

Temperature control supports stable conditions during longer protocols, which (for DNA and chromatin workflows) helps maintain run-to-run consistency.

## TECHNICAL SPECIFICATIONS

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# Contactless Ultrasonic DNA Disruptor - QualiDNA™ CUD Technical Specification

Item	QualiDNA™ CUD
Power	2500 W, adjustable (0-100%)
Frequency	Auto-adaptive (listed as 20-400 kHz)
Total ultrasonic time	0.1 s to 199 h 59 m 59.9 s (adjustable)
Ultrasonic working time (on-time)	0.1 s to 99.9 s (adjustable)
Ultrasonic intermittent time (off-time)	0 s to 99.9 s (0 = continuous mode)
Duty cycle	0.1% to 99.9%
Ultrasonic tank volume	3.3 L
Sample processing capacity	Up to 60 samples of 0.1 mL (max capacity listed)
Adapter (examples)	Multiple tube rack formats listed; additional racks optional
Operating voltage / frequency	220 V / 50 Hz (listed) (110V is also available)
Temperature control range	2-40 °C (listed)
Temperature display accuracy	0.1 °C
Cooling system	Independent constant-temperature tank main unit (listed)



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