

# accuracy.

Complete commercial quantum metrology solution

## TOPTICLOCK

Optical quantum clock

- Laser-cooled trapped ytterbium ion for high stability & accuracy
- Reliable operation in two 19" industrial racks



Applications: Time scales and time services (e.g. for National Metrology Institutes, TAI contributions), network synchronization, satellite navigation, long-term holdover in GNSS-denied environments, fundamental research & precision measurements

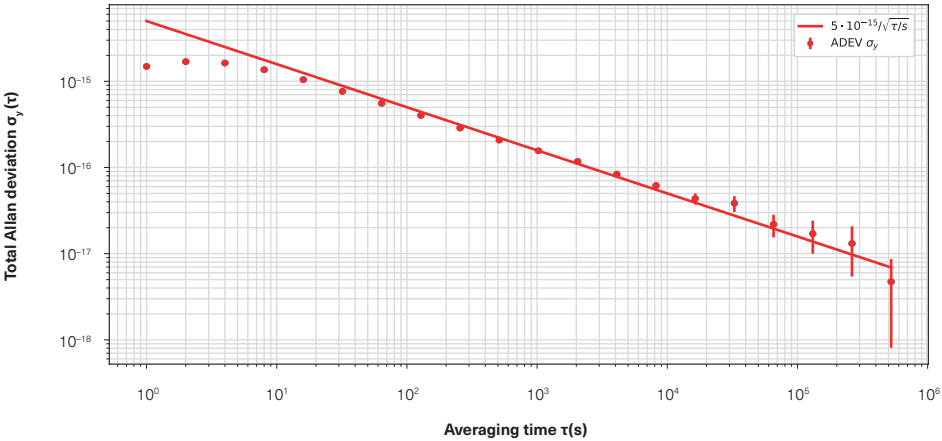
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[www.toptica.com/TOPTICLOCK](http://www.toptica.com/TOPTICLOCK)



Specifications	
Optical quantum frequency standard	
Output	optical, SM/PM fiber-coupled, 871 nm, 1 mW (with fiber-noise cancellation FNC)
Relative frequency instability	$< 2 \cdot 10^{-15}$ (1 s) $< 1 \cdot 10^{-15}$ (100 s) $< 1 \cdot 10^{-16}$ (10,000 s) $< 1 \cdot 10^{-17}$ (500,000 s)
Relative frequency accuracy	$< 5 \cdot 10^{-17}$ $2 \cdot 10^{-17}$ (typical)
Power consumption after warm-up	$< 700$ W (after warm-up) 220 - 240 V/50 Hz or 110 - 120 V/60 Hz
Dimensions	2 rack compartments, together 2000 x 1600 x 1000 mm <sup>3</sup> (H x W x D)
Weight	$< 1000$ kg
Optical quantum clock	
Output	RF 10 MHz / 100 MHz 1 PPS TTL
	optional: 871nm output and optical inputs to integrated optical frequency comb
Relative frequency instability (100 MHz)	$5 \cdot 10^{-15}$ (1 s) (typical) $1 \cdot 10^{-15}$ (100 s) (typical) $< 1 \cdot 10^{-16}$ (10,000 s) (typical)



Relative instability of optical frequency standard (typical)