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In this issue:



CEO's Corner

Are you involved in developing low-power embedded products? Need to accurately determine sleep current or predict product battery life? Then this email is for you!

If you are developing low-power embedded products or battery-powered IoT devices, optimizing your design based on guesswork is a massive risk—and that's exactly where the [Jetperch Joulescope JS320](#) becomes your most valuable asset. This third-generation precision DC energy analyzer eliminates power consumption surprises by accurately capturing current variations spanning from **amps down to nanoamps** with an incredible **24-bit ADC resolution** and 1 MSa/s sampling rate. Crucially, its fast 1 μ s current range switching and proprietary [Enwavify™ v2 technology](#) guarantee seamless transitions without the crippling burden voltage drops that curse standard multimeters, allowing your target device to run completely naturally. By rendering short events like radio bursts, sensor wake-ups, and interrupt service routines entirely visible in real-time, the JS320 empowers your team to optimize firmware, extend battery life, and validate hardware decisions directly at their desks before moving to final production.

What's New?

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[O. Sax. sálíg; O. L. Ger. sálíg, sélig; O. H. Ger. sálíg bealus, felix.]
Adjectives

1. Happy, prosperous, blessed

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New Design Tool Helps Engineers With Precision Power Consumption Tasks



The [Jetperch Joulescope JS320](#) is a unique test instrument that provides the wide dynamic range, low burden voltage, fast autoranging, and time-domain visibility needed to understand how real devices consume energy. Modern embedded systems no longer draw steady, predictable current. A battery-powered IoT node, BLE sensor, remote controller, energy-harvesting device, or RF-enabled product may spend most of its life in deep sleep, then wake for milliseconds to sense, compute, transmit, log data, or respond to a user event. For electrical engineers, that means battery-life estimates depend on accurately measuring both nanoamp-level sleep current and amp-level transient activity without disturbing the device under test.

The [Jetperch Joulescope JS320](#) from Saelig is a third-generation precision DC energy analyzer designed specifically for this kind of low-power embedded system work. It measures current from nanoamps to amps while simultaneously measuring voltage; then it computes power, energy, and charge to help engineers optimize firmware,

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validate hardware design choices, compare operating modes, characterize sleep behavior, and make confident battery-life predictions.



Why the JS320 Matters for Low-Power Design

The JS320 focuses on the measurements that often determine whether a battery-powered design succeeds in the field: **offset stability, leakage current, range-change behavior, burden voltage, and time-domain response**. It combines a high-speed autoranging shunt ammeter with simultaneous voltage measurement, allowing engineers to see both instantaneous behavior and accumulated energy use over time.

The new [JS320](#), a development from the previous JS220, now features a 24-bit ADC, improved offset stability, reduced leakage current, Enwavify™ v2 technology for current range changes, improved internal digital processing, and a linear-phase analog path.

Unlike a conventional DMM or current meter, which may introduce enough burden voltage to affect the circuit being measured, the JS320 is designed to keep insertion loss very low. This is especially important when testing systems with narrow supply-voltage margins, pulsed RF loads, brownout-sensitive MCUs, or low-voltage battery operation. The [JS320](#)'s fast current range switching helps maintain accurate readings across rapidly changing load profiles, such as sleep-to-transmit events, interrupt service routines, sensor acquisition windows, USB inrush, and suspend-current behavior.



Measure Like a Multimeter — Analyze Like an Oscilloscope

The [JS320](#) provides real-time readings for current, voltage, power, and energy while also reporting cumulative charge and energy consumption. In **Multimeter View**, engineers can quickly see present-state electrical behavior. In

Oscilloscope View, the JS320 displays voltage and current waveforms versus time, making it easier to identify dynamic events such as inrush current, wake cycles, ISR activity, radio bursts, task scheduling issues, and unexpected current spikes.

This makes the [JS320](#) useful throughout the design cycle: early hardware bring-up, firmware power tuning, sleep-current optimization, regression testing, design validation, and pre-compliance checks for USB inrush and suspend current. Applications include microprocessor and hardware power profiling, software characterization, interrupt-service-routine profiling, general-purpose current/voltage/power/charge/energy measurement, and troubleshooting of low-power systems.

Key Technical Highlights

The [JS320](#) offers a ± 15 V voltage range, ± 3 A continuous current range with 10 A pulse capability, 0.1 nA typical resolution, 1 MSa/s simultaneous current and voltage sampling, 24-bit ADC conversion, 200 kHz measurement bandwidth, rapid 1 μ s shunt switching, [Enwavify™ range-change technology](#), and electrically isolated sensor ports. It works with Windows, macOS, and Linux host systems.

Parameter	JS320 Specification
Voltage range	± 15 V
Current range	± 3 A continuous
Pulse current	10 A pulses
Current resolution	0.1 nA typical
Dynamic range	Equivalent to 36 bits
Bandwidth	200 kHz
Sampling	1,000,000 samples/second
ADC	24-bit simultaneous current and voltage

The Joulescope host software communicates with the JS320 over USB 2.0 high-speed. The Joulescope UI can run on Microsoft Windows, Apple macOS, and Linux platforms.



Kit Contents and Ordering

The [JS320](#) product kit includes the JS320 instrument with installed binding-post front panel, 5 ft USB-C to USB-A cable, USB-A to USB-C adapter, 25 cm GPIO cable, Allen wrench for swapping the front panel, quick-start guide, factory calibration certificate, sticker, and carrying case. The [JS320](#) is available with standard factory calibration or with ISO 17025:2017 NIST-traceable calibration.

Engineering Applications

The [JS320](#) is ideal for:

- Battery-life estimation for IoT, BLE, sensor, and wireless devices
- Sleep-current and leakage-current optimization
- Firmware power profiling and ISR characterization
- Hardware bring-up and power-tree validation
- Inrush-current capture and transient event analysis
- USB suspend and inrush current pre-compliance checks
- Comparison of operating modes and firmware revisions
- General current, voltage, power, charge, and energy measurement

Conclusion

For electrical engineers developing low-power embedded products, the [Jetperch Joulescope JS320](#) provides the wide dynamic range, low burden voltage, fast autoranging, and time-domain visibility needed to understand how real devices consume energy. By combining multimeter-style measurements, oscilloscope-style waveform analysis, and direct computation of power, charge, and energy, the [JS320](#) helps engineering teams find power problems earlier, optimize firmware more effectively, and validate battery-life expectations before final product testing.

The [Jetperch Joulescope JS320 Precision DC Energy Analyzer](#) is available from [Saelig Company, Inc.](#) For pricing, technical assistance, detailed specifications, or ordering information, contact Saelig at 1-888-7SAELIG, email info@saelig.com, or visit www.saelig.com.

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