POWERSIDE®

A reliable solution for unpredictable challenges

PQube®3 In-situ power quality and energy analyzer

Optimized for embedding inside your tool or used as a standalone unit

Plug and play functionality with LCD display

Remote condition monitoring

Quickly discover problems and identify root causes

SEMICONDUCTOR INDUSTRY

Your challenges

Troubleshooting time and cost: Why did your tool go down?

- Power quality events are a common occurrence at fabs. If severe enough, **these disturbances can cause your tool to malfunction.**
- Typical disturbances can include harmonics, HF impulses, voltage sags, swells and interruptions, frequency variations and more.
- Not all problems are caused by power disturbances. Operator errors, loose cable connections, tool software bugs can all cause tool failure—but you don't always know. **If you can't explain to your customer why your tool failed, you've got a problem.**
- Trying to "catch" an intermittent problem with temporary equipment **can take weeks.**
- Sometimes, your field technician will replace a component just to pacify your customer. **These "false replacements" are expensive and unnecessary.**

Improving tool design and cutting down on the competition — without data from the field, it is impossible to answer these critical questions for your next generation of tools:

- How much protection does your tool need against voltage dips and swells? High frequency impulses?
- How much power does your tool **actually use?**
- What fraction of your main circuit breaker rating does your customer actually use?
- If your customer wants to buy another tool, or several more tools, **do they have sufficient power available?**

The PQube®3 solution

Embed a PQube®3 in your tool to troubleshoot faster and dramatically reduce service costs

- No more waiting for a problem to reoccur when your customer calls for service. The PQube®3 is small and affordable, with a standard DIN-rail design and reliable communication, and you can install it permanently inside your tool's power cabinet. **With the PQube®3, all the data is there right when you need it.**
- No more expensive power investigations —quickly prove (or rule out) power as the culprit, including the precise event that caused the trouble. Use the PQube®3's automatic, time-stamped reports to correlate a power event to tool malfunction. And remember: **If the PQube®3 didn't record it, it didn't happen.**
- Increased customer trust. The 512 sample/cycle waveform and RMS graphs and 4MHz sampling for HF impulse in an easy-to-read format that you can easily share with your customer. You can also label graphs in multiple languages, **making global communication a breeze.**

Use the PQube®3 to help you make critical decisions and sell more tools

- Your PQube®3 **automatically reports your power profile** on a daily, weekly and/or monthly basis. It also generates SEMI-F47 compliance reports.
- With your PQube®3's recording of the peak current your tool actually requires—often considerably less than your breaker rating and highly dependent on your customer's recipes—your customer can reasonably consider allocating less power to your tool. At fabs where available AC power is a limiting factor, **this translates into selling more tools.**

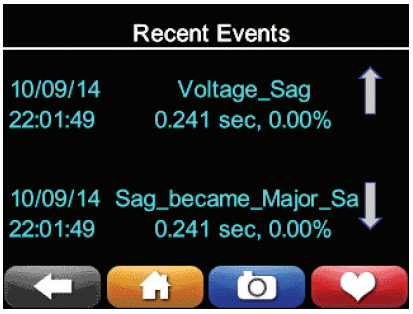


Figure 1. (a) A voltage sag event shows date and time stamp and the magnitude and duration of the sag.

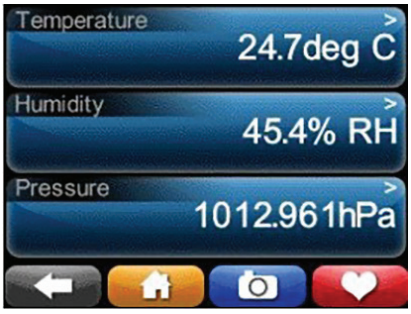


Figure 1. (b) a screen shot from PQube®3, showing Temperature Humidity and Pressure.

Securely monitor in real-time:

See what's happening with real-time embedded remote communications via firewall and bank-level security protocol (HTTPS & FTP-S). No software required.

Instant installation/start-up:

Made compact, PQube®3 mounts inside your tool's power cabinent. Once you've got it mounted and wired, a PQube®3 auto detects the nominal frequency, voltage, and wiring configuration saving you time and money on commissioning.

Quickly discover problems:

Receive notification of problems or impending problems the moment they happen, and analyze trends and events via dashboards and graphs.

Identify root causes faster:

Identify or rule out power as the root cause of a failure. Your PQube®3 pays for itself on the first avoided service call.

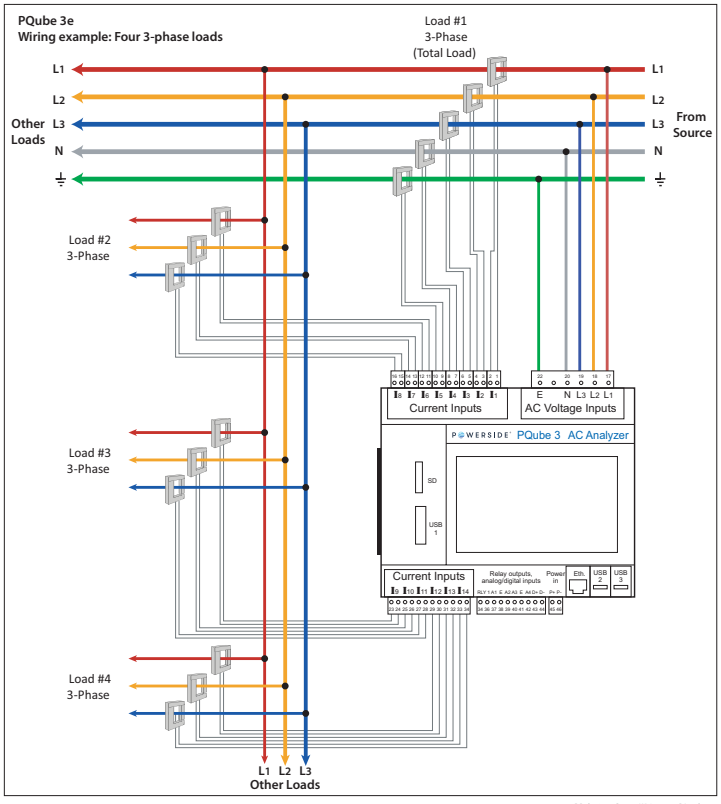
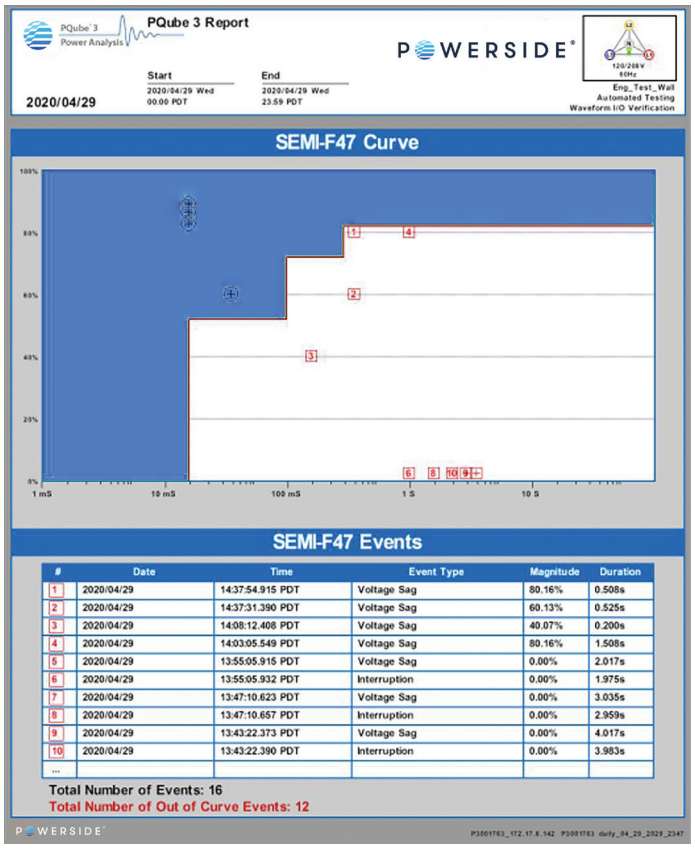


Figure 2. Example of an installation inside a fab, where a PQube®3 monitors up to 4 three-phase loads in a power distribution unit (PDU), along with temperature, humidity and mechanical shocks.



#	Date	Time	Event Type	Magnitude	Duration
1	2020/04/29	14:37:54.915 PDT	Voltage Sag	80.16%	0.508s
2	2020/04/29	14:37:31.390 PDT	Voltage Sag	60.13%	0.525s
3	2020/04/29	14:08:12.408 PDT	Voltage Sag	40.07%	0.200s
4	2020/04/29	14:03:05.549 PDT	Voltage Sag	80.16%	1.508s
5	2020/04/29	13:55:05.915 PDT	Voltage Sag	0.00%	2.017s
6	2020/04/29	13:55:05.932 PDT	Interruption	0.00%	1.975s
7	2020/04/29	13:47:10.623 PDT	Voltage Sag	0.00%	3.035s
8	2020/04/29	13:47:10.657 PDT	Interruption	0.00%	2.959s
9	2020/04/29	13:43:22.373 PDT	Voltage Sag	0.00%	4.017s
10	2020/04/29	13:43:22.390 PDT	Interruption	0.00%	3.983s

Figure 3. This is an actual graph generated by PQube®3. It's an example of a daily or monthly SEMI F47 compliance plot. The graph shows whether the voltage sags lie within or outside of the SEMI-F47 ride through curve.

PQube®3 is specifically designed for the Semiconductor industry

- Compact size (roughly the size of a baseball).
- Highest in class measurements — 4MHz high frequency monitoring, environmental monitoring (temperature, humidity, vibration), gapless harmonics, multiple circuit analysis.
- No proprietary file formats — easily integrated in your existing system.
- Automatically generates compliance reports — such as **SEMI-F47**.
- Years of storage (32 GB internal memory)

Mobile Communication

Built-in web and email server — **no software needed.**

POWERSIDE®

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