

Litos Product Family for Solar Cell Stability Measurements

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Introduction

Research in PSCs has shifted from a race for efficiency to a **race for stability**¹. While many commercial products exist to measure JV performance of these devices, there is a clear **lack of solutions for reliable stability measurements** with most groups still resorting to home-built systems.

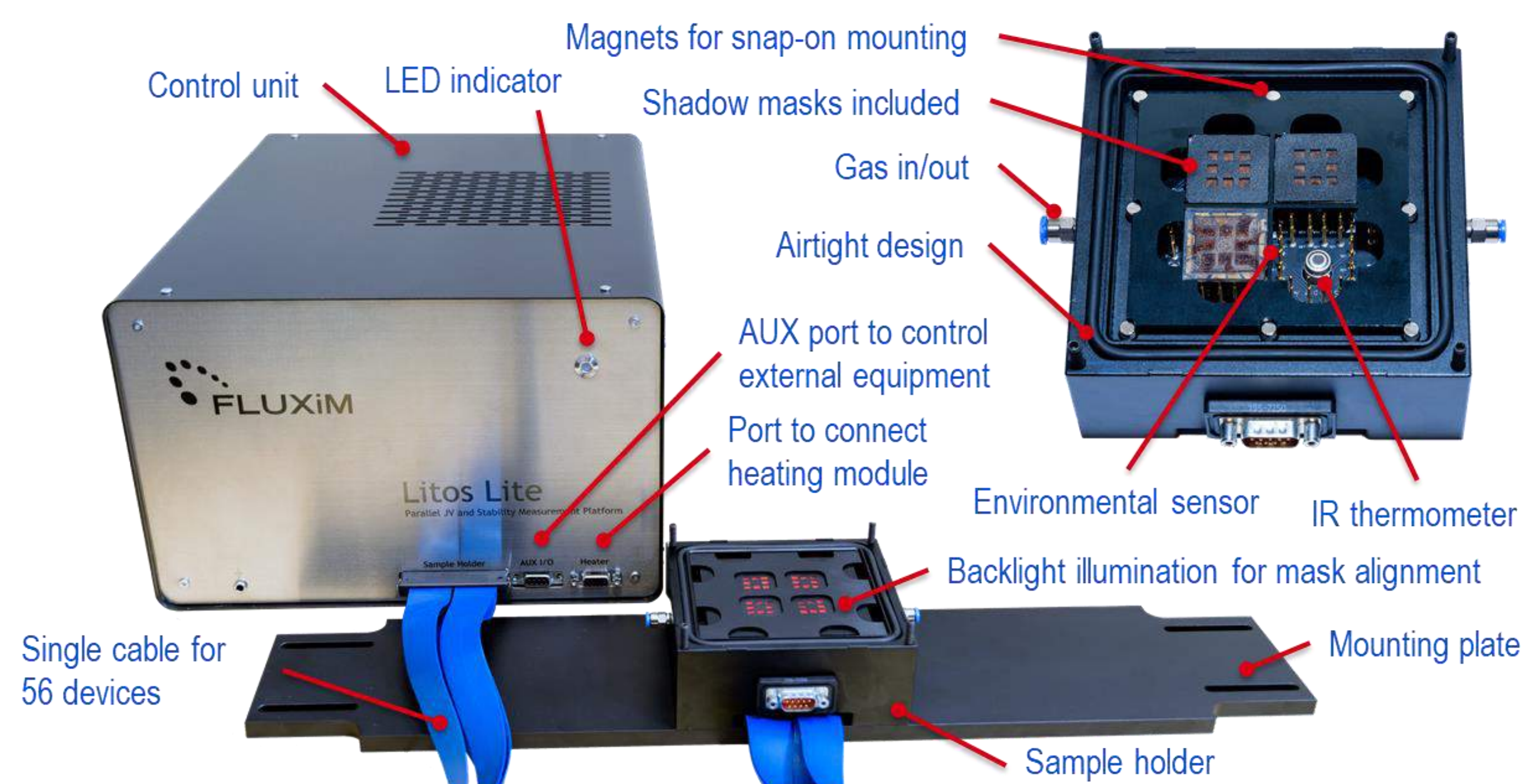
For PSCs, it is important to keep the devices at **maximum power point (MPP)**, as they degrade differently than at V_{oc} or J_{sc} ². This requires a **parallelized system with multiple channels**. Additionally, a highly-controlled environment is desirable for reproducible stability studies: **temperature** and **atmosphere control** as well as light source **with UV component**, round off the list of requirements².

At **Fluxim** we released **2 products** to specifically address these needs: **Litos** and **Litos Lite**. While differing in capabilities, both systems offer unique advantages for **highly-reproducible parallel stability measurements** in controlled environment. **Litos Lite** can additionally be used for power conversion efficiency (PCE) measurements under AAA solar simulator, while **Litos** can also be used for (O/P)LED stability studies.



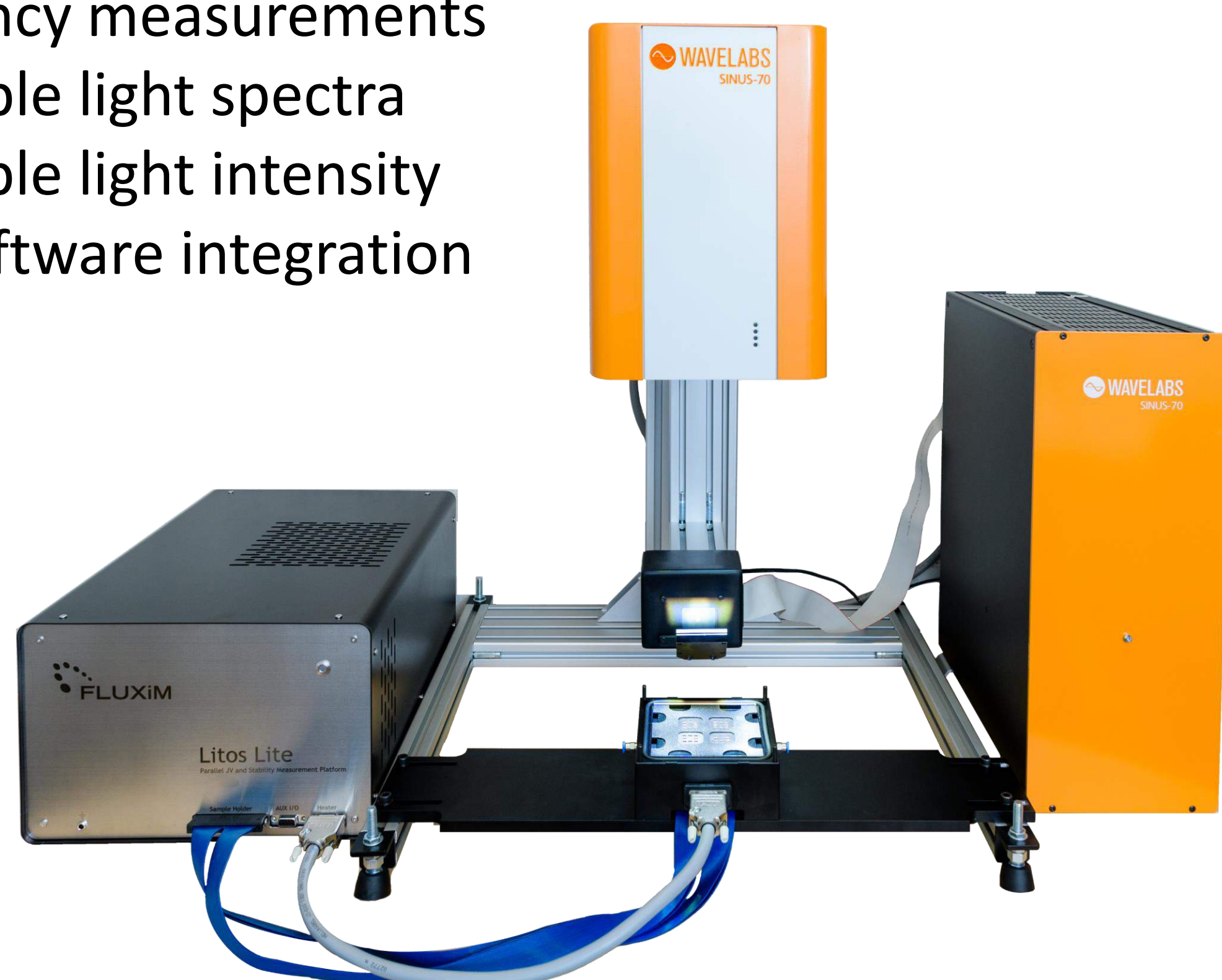
Features:

- 56 channels for MPPT, const. J / V and JV measurements
- Heating RT–150 °C
- External solar simulator or LED array for illumination
- Customized, exchangeable airtight sample holders
- Samples up to 10 × 10 cm² with max current 2.3 A and ±10 V



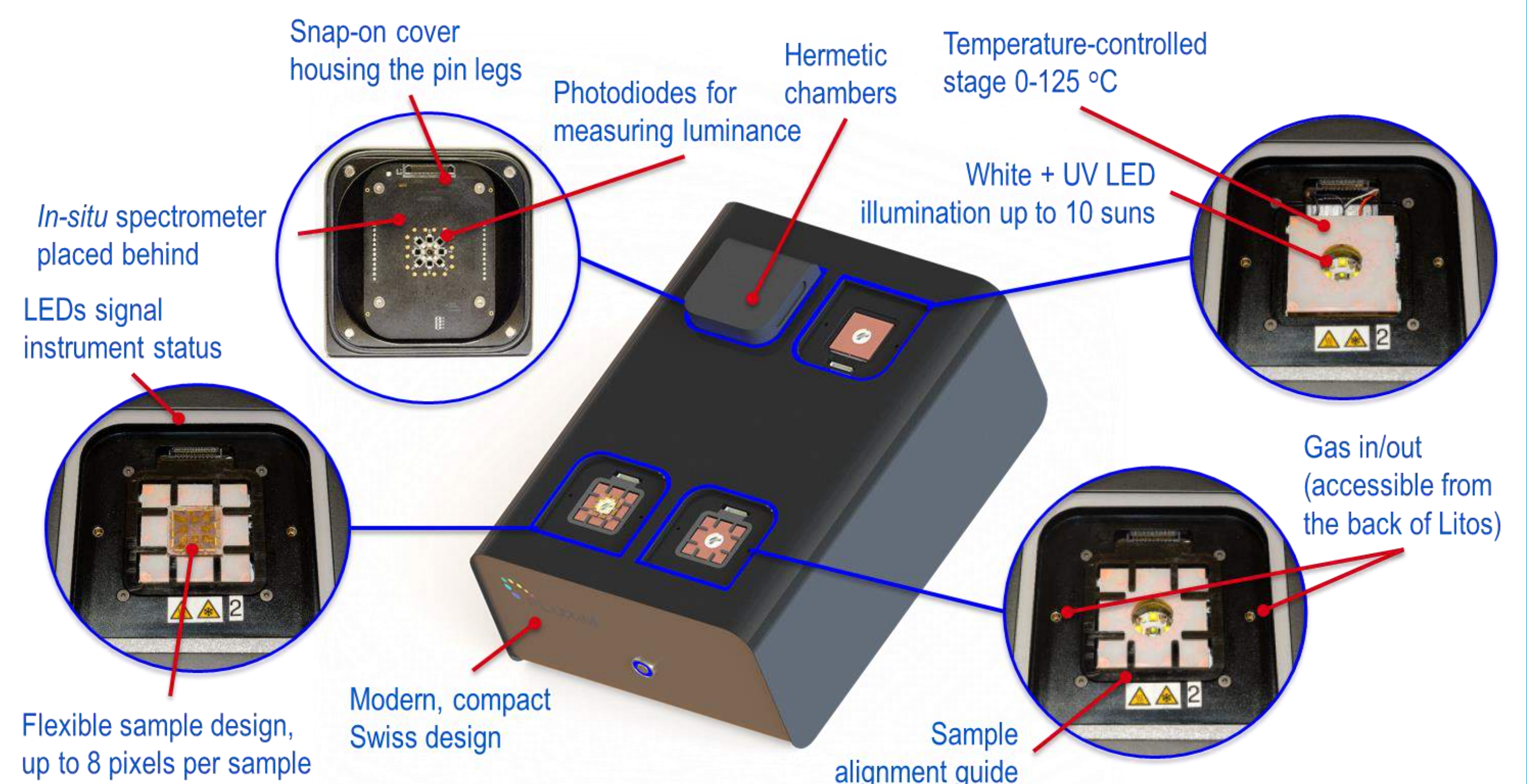
Combine with beyond-AAA LED solar sims. from **Wavelabs** for:

- Efficiency measurements
- Tuneable light spectra
- Tuneable light intensity
- Full software integration



Features:

- 32 channels for MPPT, const. J / V and JV measurements
- Peltier PID temperature control: 0 –125 °C
- White & UV LED light up to 10 suns each
- 4 airtight, independent chambers
- *In-situ* spectrometers for UV-vis, PL and EL



Combine with **Paivos** from **Fluxim** for:

- *In-situ* measurements multiplex across all devices
- AC (EIS, IMPS, IMVS), transient (TPV, PCL, CELIV) and DC techniques with temperature control
- Full software integration



Conclusions

- Two new instruments for ISOS stability and JV measurements from **Fluxim** available now
- Choose **Litos** for **accelerated degradation studies** and advanced ***in-situ* characterization**
- Choose **Litos Lite** for **AAA illumination, large-area samples** and **glovebox-loading** of sample holders
- Combine both instruments with **Fluxim's atmosphere engineering module**.
Tune O₂ and H₂O environment with PID feedback loop – e.g. N₂, 10% RH and 1% O₂



References:

- [1] W. Tress, K. Domanski et al. *Nature Energy* (2019), 4, 568-574.
[2] K. Domanski et al. *Nature Energy* (2018), 3, 61-67.

- [3] M. Khenkin et al. *Nature Energy* (2020), 5, 35-49.