PV monitoring solutions

µMPP trackers for laboratory solar cell testing

Valuable

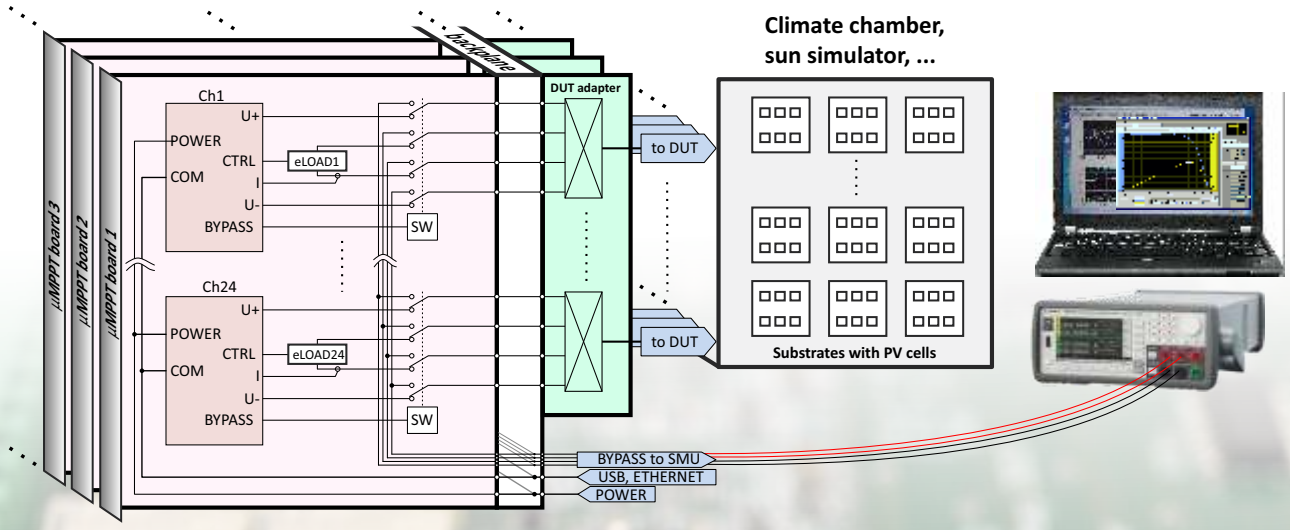
- Full 4-wire connection to each solar cell
- Automatic solar cell polarity detection
- Sequential 4-wire bypass switching to SMU
- SCPI compliant commands via USB, RS-485 or ethernet interface

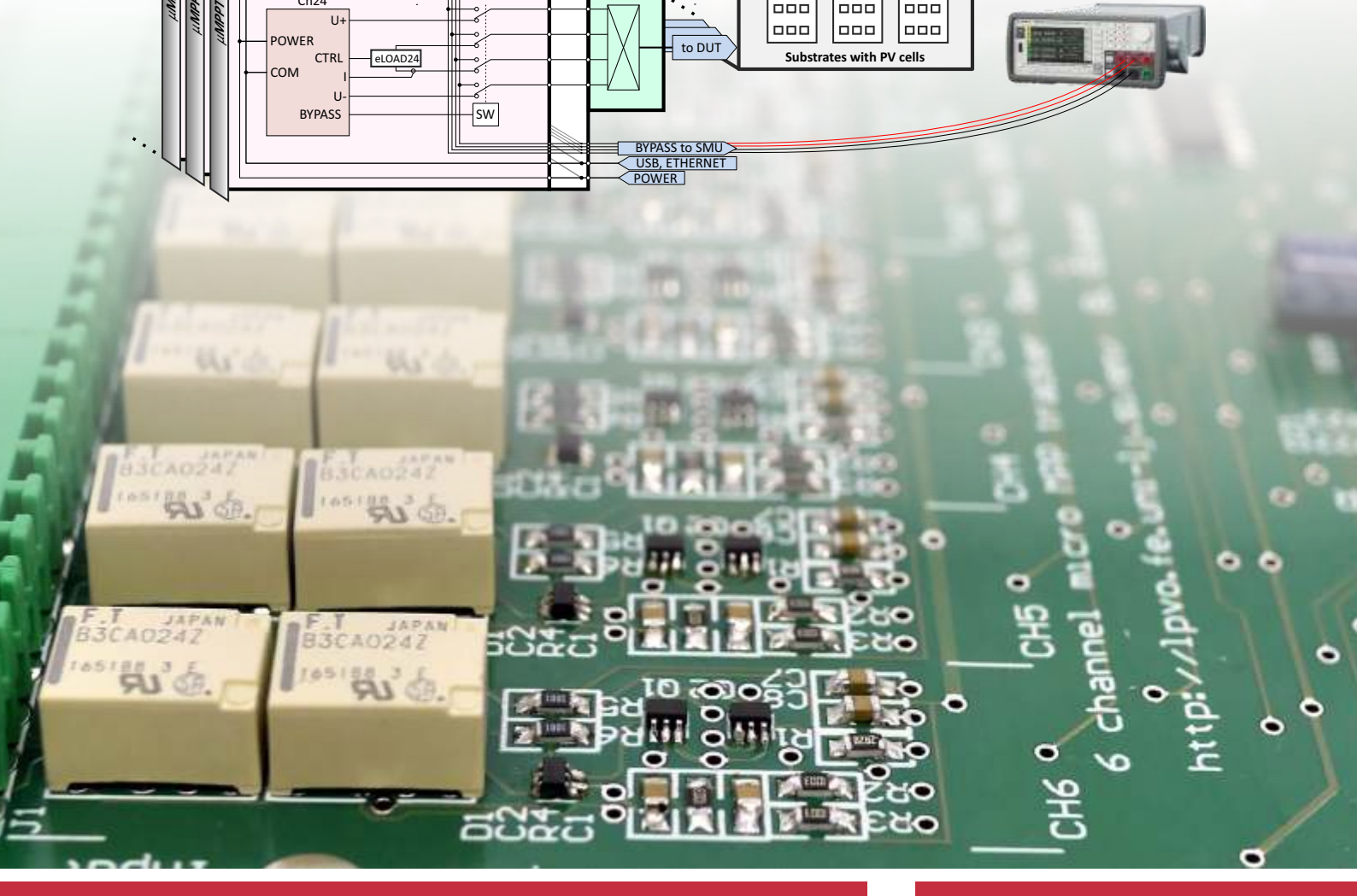
Unlimited

- Large scale lab size PV cell monitoring
- Standard 19˝6U rack system
  - 24 channels per µMPPT board
  - 12 µMPPT boards per crate
- Crate interconnection capabilites for upscaling

Customizable

- Customizable channel input ratings
- Backplane adapters for easy DUT connection
- Modes of operation
  - Open and short circuit
  - Constant voltage
  - Maximum power point tracking



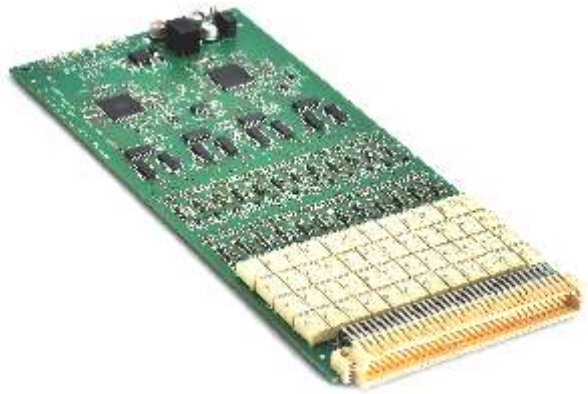


µMPPT RACK SYSTEM CHARACTERISTICS

- A large scale lab size solar cell monitoring system with maximum power point tracking system.
- Full 4-wire connection cell with automatic polarity detection.
- Sequential 4-wire bypass switching to SMU for IV scanning.
- Control and data logging via RS-485 or USB.
- Standard 19inch 3U rack system containing 12 boards with 24 channels per board.
- Backplane adapters with easy DUT connection.
- Crate interconnection capabilities for system upscaling.
- Adjustable MPPT algorithms to meet the DUT specifics (e. g. perovskites).

6-CHANNEL µMPPT EVALUATION KIT

24-CHANNEL µMPPT BOARD



µMPPT ELECTRICAL PROPERTIES

Parameter		Value
Power input	Voltage	±1.75 V
	Current	200 mA or 50 mA, depends on the shunt resistance
	Power	300 mW
	Input resistance in short circuit	2.5 Ohm typically for positive inputs 1.5 Ohm typically for negative inputs
	Connection	Full 4-wire connection for MPPT and bypass
Bypass output	Voltage	48 V
	Maximum Current	1 A
Measurement	Input differential voltage	±2.047 V, resolution < 1 mV
	Input common mode voltage	GND – 0.1 V … Vcc + 0.1 V
	Input current range	± 58 mA @ 2.2 Ohm or ± 10.5 mA @ 24 Ohm, resolution 2 µA
	MPPT tracking interval	100 ms
	Modes of operation	Open circuit, short circuit, constant voltage, maximum power point
Communication	RS-485	Multi-drop device 125 kb/s
	USB	USB Communication Device Class
Power supply	Voltage range	24 V (for power of provided relays) 4.4 V – 24 V (when relays are not used)
	Current consumption	Typically 30 mA +10 mA for each relay activated

REFERENCES

HZB Helmholtz Zentrum Berlin

THE UNIVERSITY OF HONG KONG

Ben-Gurion University of the Negev

THE UNIVERSITY OF SYDNEY

University of Ljubljana
Faculty of Electrical Engineering
Laboratory of Photovoltaics and Optoelectronics

Tržaška cesta 25,
SI-1000 Ljubljana
Slovenia
+386 1 4768 470
http://lpvo.fe.uni-lj.si/en/
info@lpvo.fe.uni-lj.si