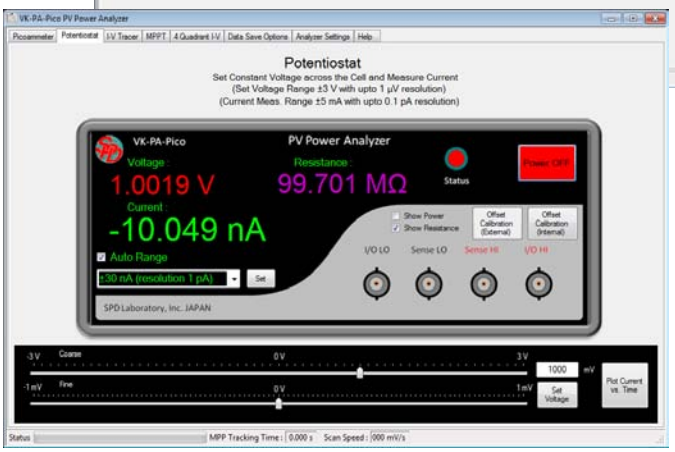
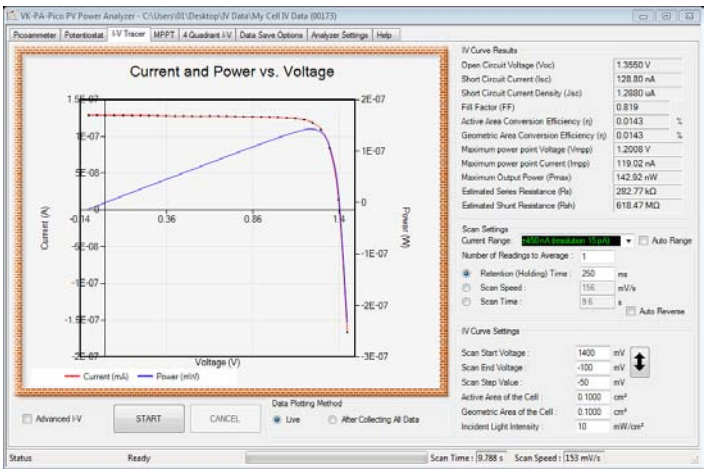
PV Power Analyzer

Type VK-PA-Pico
(Ver. 5)

For Pico Ampere Range I-V Tracing and
Pico Watt Range Maximum Power Point Tracking (MPPT)





Specifications		
Measurement Range	Voltage: ±10 V Current: Max. ±5 mA, Min. 10 pA	
Current Measuring Ranges	±5 mA (resolution 160 nA) ±2.5 mA (resolution 80 nA) ±1.25 mA (resolution 40 nA) ±600 µA (resolution 20 nA) ±300 µA (resolution 10 nA) ±120 µA (resolution 4 nA) ±60 µA (resolution 2 nA) ±30 µA (resolution 1 nA) ±15 µA (resolution 500 pA) ±7 µA (resolution 250 pA) ±3.5 µA (resolution 100 pA) ±1.8 µA (resolution 60 pA)	±900 nA (resolution 30 pA) ±450 nA (resolution 15 pA) ±230 nA (resolution 7 pA) ±115 nA (resolution 4 pA) ±55 nA (resolution 2 pA) ±35 nA (resolution 1 pA) ±18 nA (resolution 0.6 pA) ±9 nA (resolution 0.3 pA) ±4 nA (resolution 0.1 pA) ±2 nA (resolution 70 fA) ±1 nA (resolution 35 fA) ±600 pA (resolution 17 fA)
User Interface and Data Collection	Computer software is provided for control of all the functions and data logging. Measurement data can be saved as a text file and directly plotted on ®Microsoft Excel graph. (Windows based PC required)	
Communication	USB	
Power Requirement	100 VAC (50-60 Hz)	
Dimensions, Weight	210 mm (W) x 350 mm (D) x 88 mm (H) , 3.0 kg	

Pico Ammeter

In this mode, analyzer works as an Ideal ammeter (voltage drop < 5 µV) to measure short circuit current of solar cell.

Potentiostat

In this mode, analyzer measures current under a constant voltage given by user. Voltage, Current, Power or Resistance is displayed onscreen. It is also possible to plot those parameters against time.

I-V Tracer

In this mode, user can select START, END, and STEP voltages and scan condition (desired scan speed, scan time, or holding time). Analyzer plots current and power vs. voltage curves. Calculated results include V_{oc}, I_{sc}, J_{sc}, P_{max}, V_{mpp}, I_{mpp}, FF, R_s, R_{SH}, $\eta_{activeA}$, and η_{geoA} . Advanced I-V option allows to set initial, middle, and end point holding times. Also plots I vs. t transient curve for all data points and/or under a selected fixed voltage.

Maximum Power Point Tracking (MPPT)

In this mode, analyzer acts like the best load for solar cell to extract maximum power and keep tracking MPP continuously. Plots the P_{max} ,V_{mpp} , I_{mpp} and Efficiency vs. time curves and also displays current/power vs. voltage plots.

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PV Power Analyzer

Screenshots of Control Software

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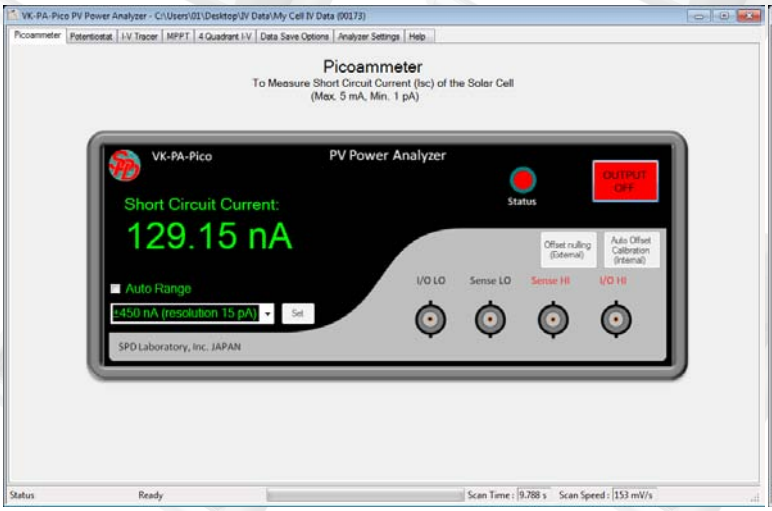

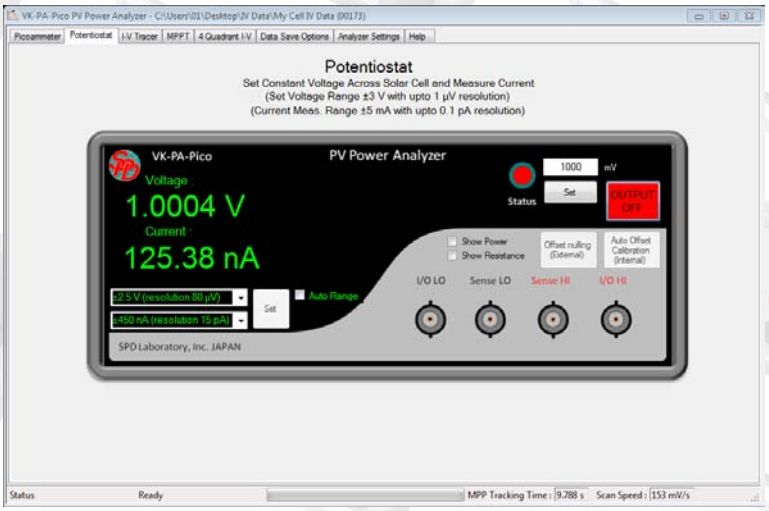

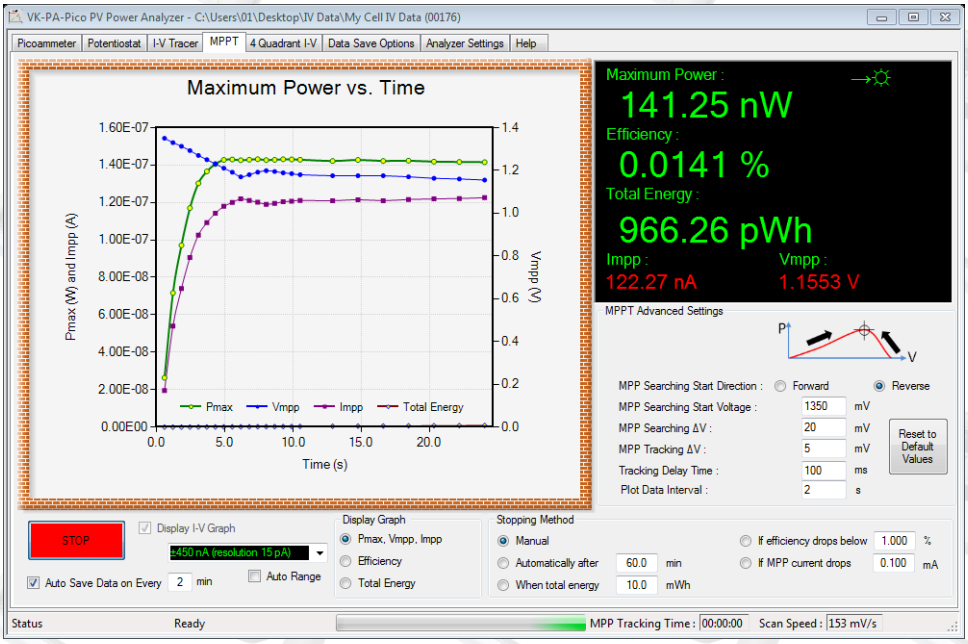

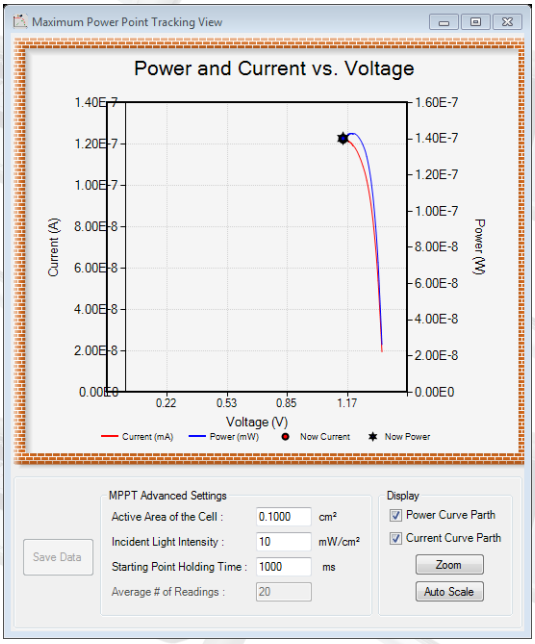

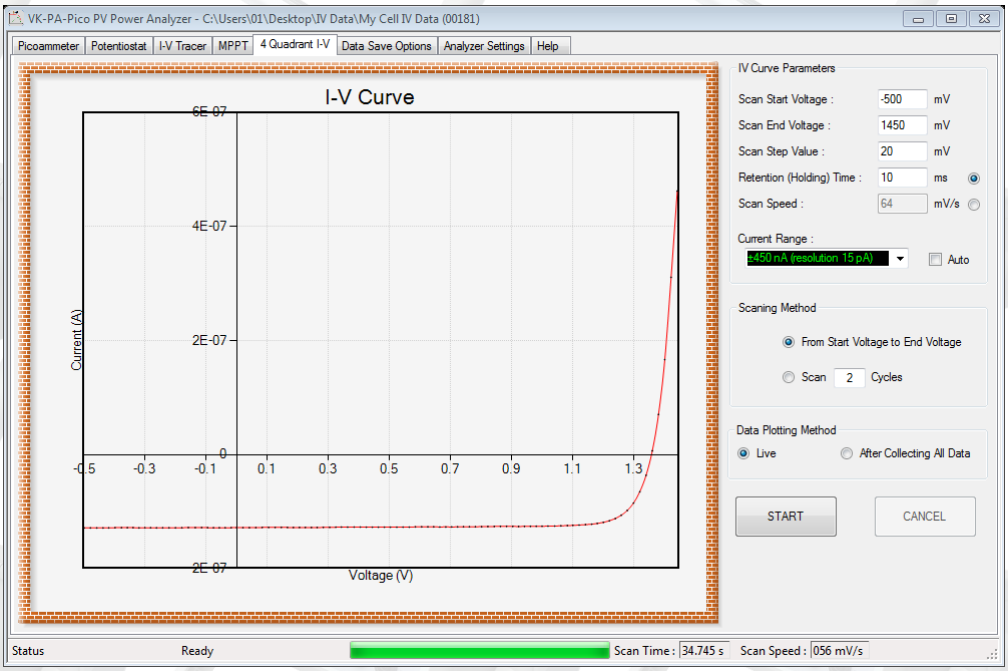

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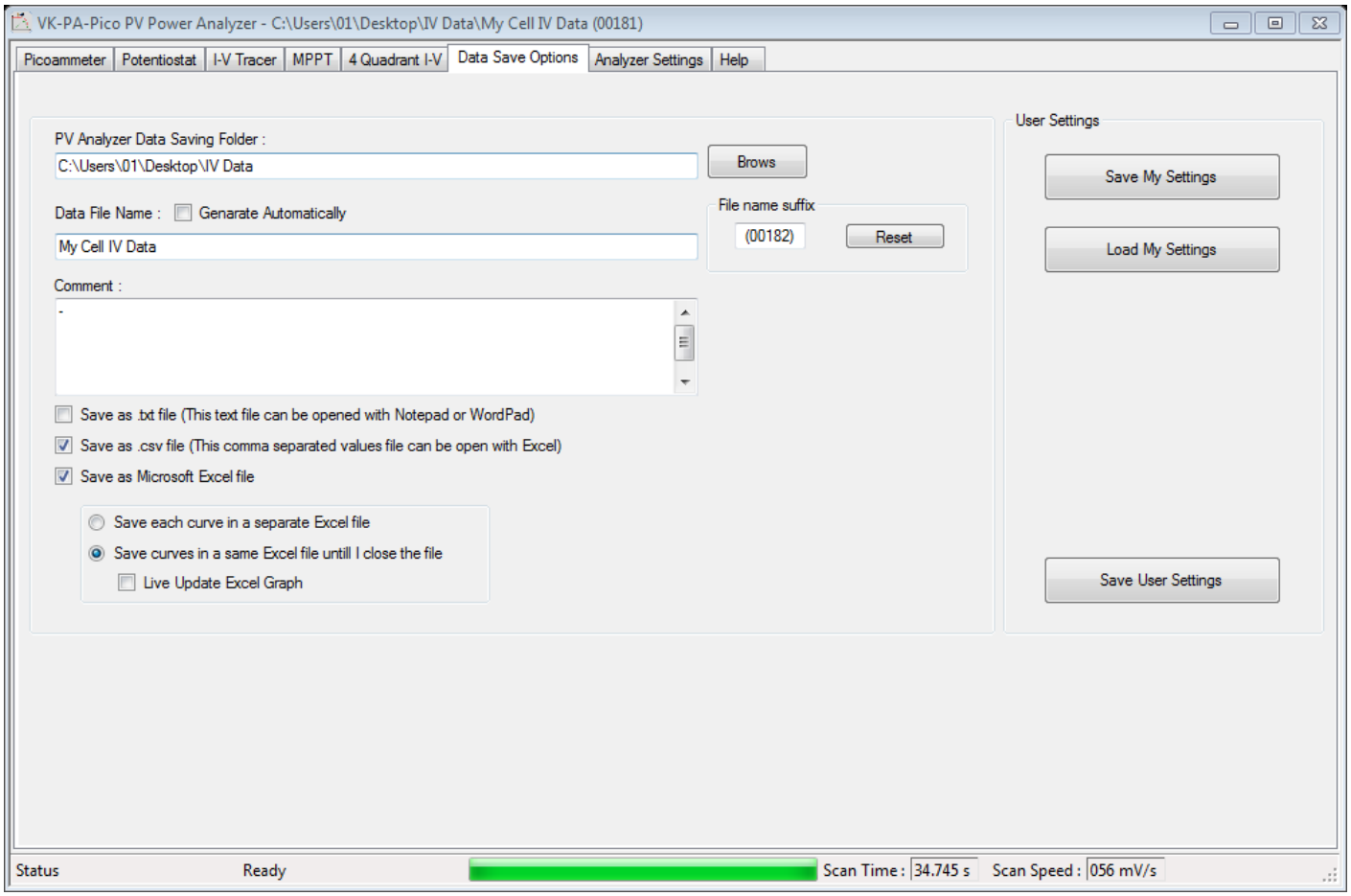
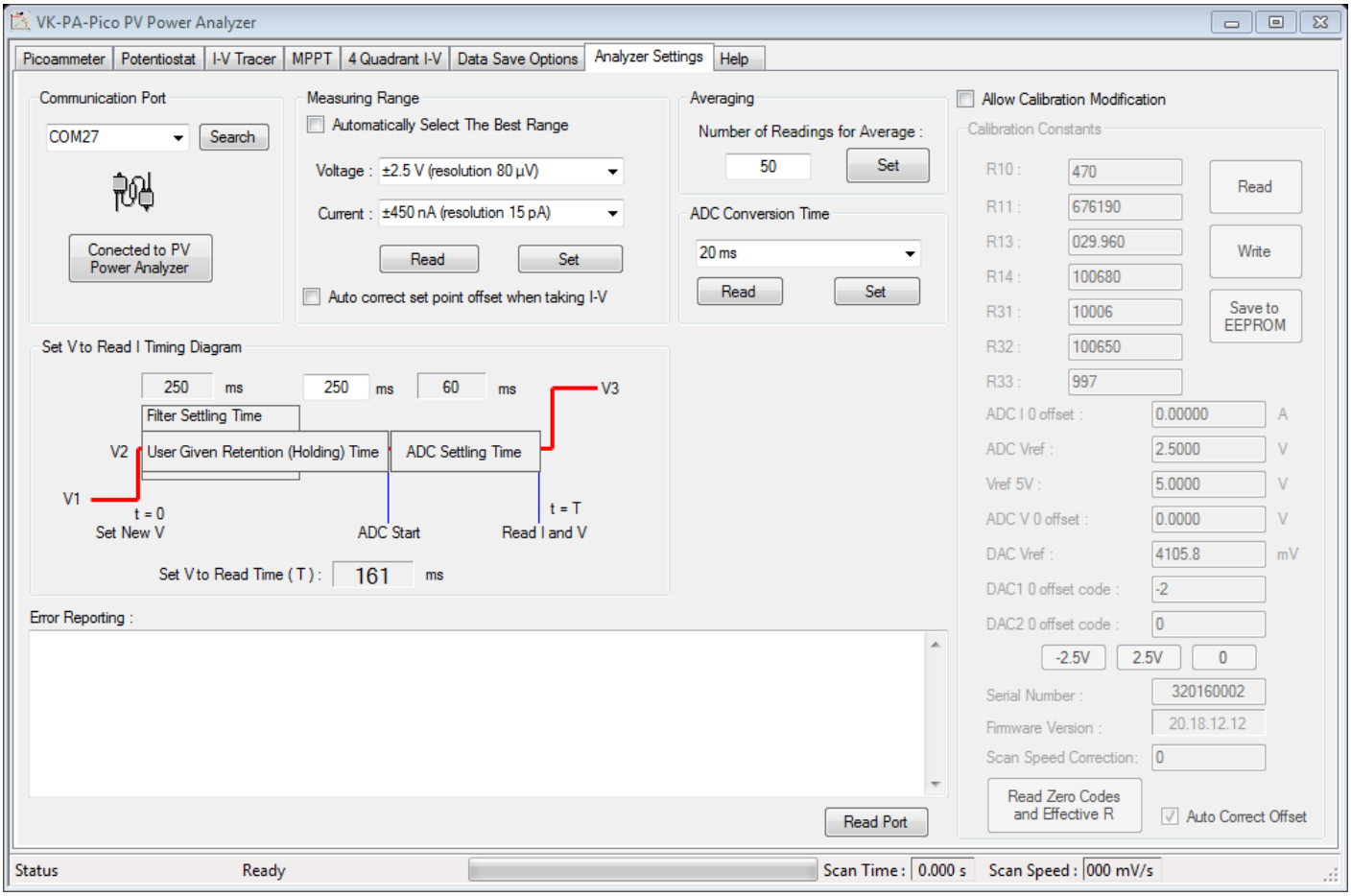
Screenshots of Control Software

All the graphs and data can be saved in a Microsoft Excel Workbook.





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VK-PA-Pico Detailed Electrical Specifications

Measuring Range	Voltage: ±10 V Current: ±5 mA	
Specifications of A/D Converters	Resolution: 16 Bit Integral Nonlinearity: ±0.0003% Utilize on-chip digital calibration to eliminate offset and gain errors.	
Voltage Measuring Ranges	±10 V (resolution 0.3 mV) ±5 V (resolution 0.15 mV) ±2.5 V (resolution 80 µV) ±1.25 V (resolution 40 µV) ±0.625 V (resolution 20 µV) ±300 mV (resolution 10 µV) ±150 mV (resolution 5 µV) ±80 mV (resolution 2 µV)	
Current Measuring Ranges	±5 mA (resolution 160 nA) ±2.5 mA (resolution 80 nA) ±1.25 mA (resolution 40 nA) ±600 µA (resolution 20 nA) ±300 µA (resolution 10 nA) ±120 µA (resolution 4 nA) ±60 µA (resolution 2 nA) ±30 µA (resolution 1 nA) ±15 µA (resolution 500 pA) ±7 µA (resolution 250 pA) ±3.5 µA (resolution 100 pA) ±1.8 µA (resolution 60 pA)	±900 nA (resolution 30 pA) ±450 nA (resolution 15 pA) ±230 nA (resolution 7 pA) ±115 nA (resolution 4 pA) ±55 nA (resolution 2 pA) ±35 nA (resolution 1 pA) ±18 nA (resolution 0.6 pA) ±9 nA (resolution 0.3 pA) ±4 nA (resolution 0.1 pA) ±2 nA (resolution 70 fA) ±1 nA (resolution 35 fA) ±600 pA (resolution 17 fA)

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