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# Emazys Z200 PV Analyzer



## ADVANTAGES USING Z200 PV ANALYZER

**Z200 PV Analyzer – speed up O&M field work**

- Measure position of a single ground fault in a PV string ( $R_{iso} < 3 \text{ M}\Omega$ )
- Measure position of a single disconnect in PV strings ( $R_s > 10 \text{ k}\Omega$ )
- PV string impedance curves (health and degradation check)
- PV string series resistance  $R_s$
- PV string open circuit voltage  $V_{oc}$
- PV string short circuit current  $I_{sc}$
- PV system isolation resistance  $R_{iso}$
- PV module voltage
- PV module bypass diode check (open or short circuit)
- PV module shunting resistance  $R_{sh}$  (module/cell degradation)
- Integrated timer for periodic faults
- Tone generator and tone tracer pickup
- Build in report generator (PDF, CSV, JSON)
- Operated over WiFi using either smartphone, tablet, PC or MAC

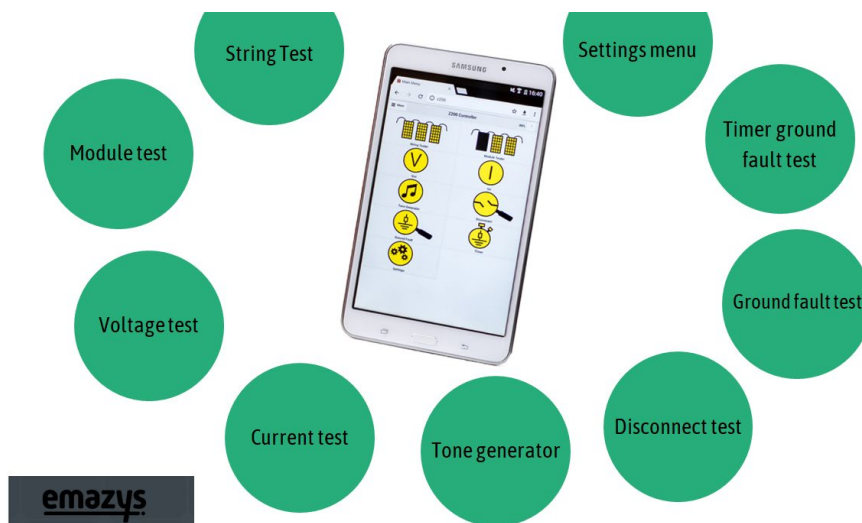


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The Z200 PV Analyzer is controlled over WiFi using a web browser. The user interface is a website containing 6 modes each designed for different uses.

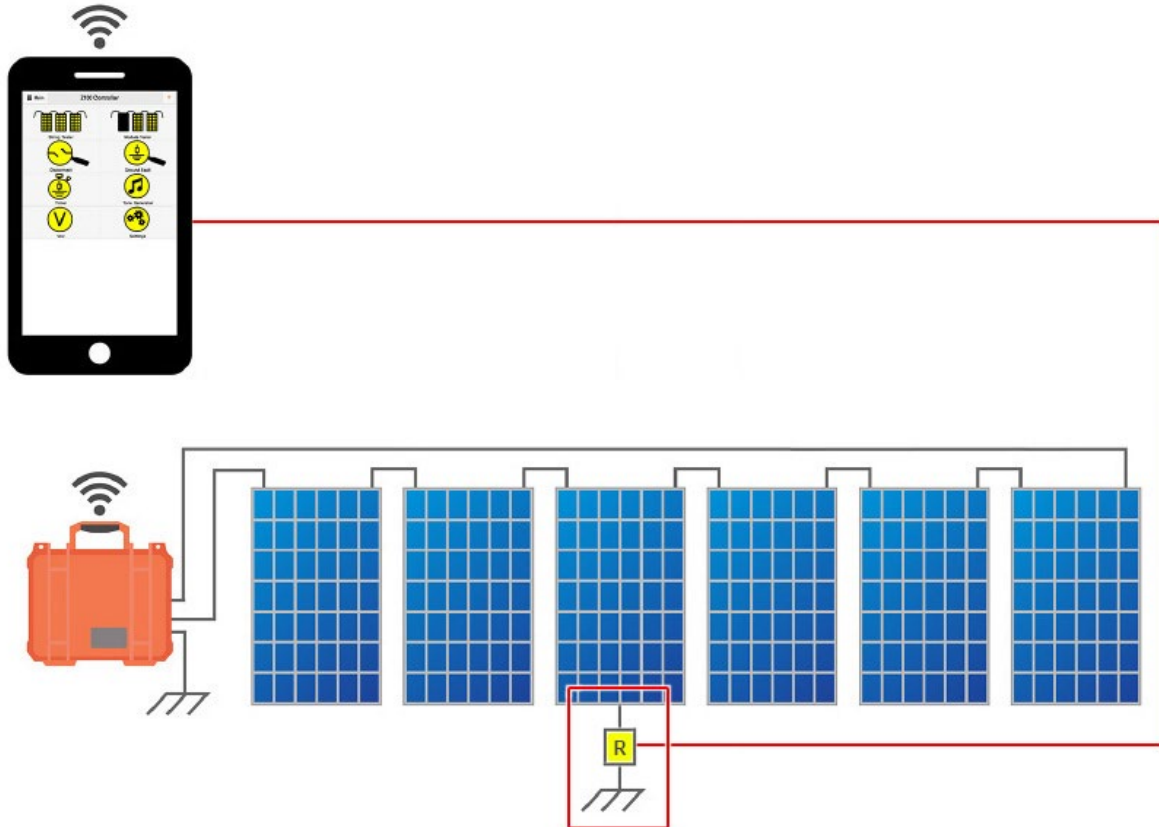
- Ground Fault Locator (Riso < 3 MΩ)
- Disconnect Locator
- Impedance spectrum, Voc, Isc, Rs and Riso (1000V, 15 A)
- State Machine AI output to support the user in the field
- Module test: Voc, bypass diode check, and Rp test (PID detection)
- Tone generator and amplifier probe for mapping PV arrays
- Timer mode – Ground Fault Locator (monitor intermittent Riso issues)
- Save data as PDF, CSV or JSON





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## Emazys Z200 Find Riso faults

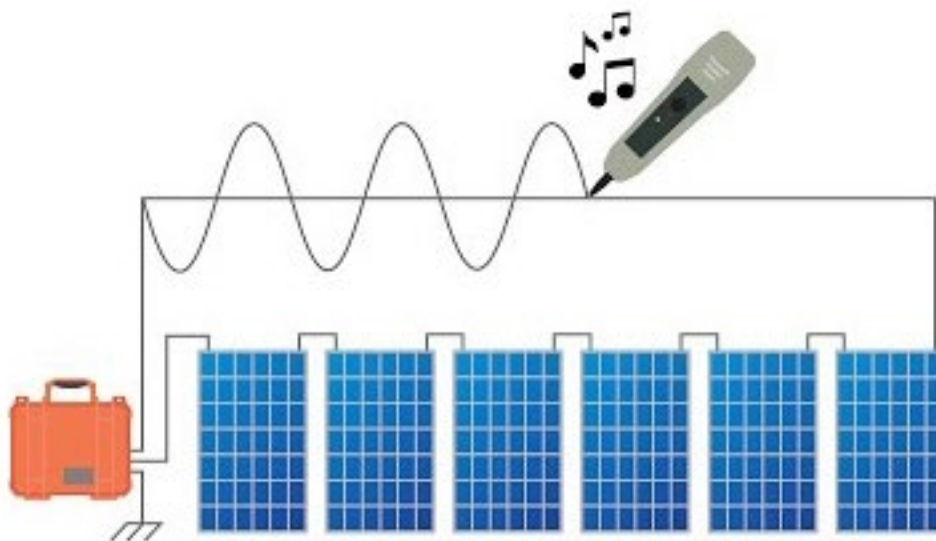


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## Emazys Z200 Tone tracer with AMP probe



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## Emazys Z200 Module string test

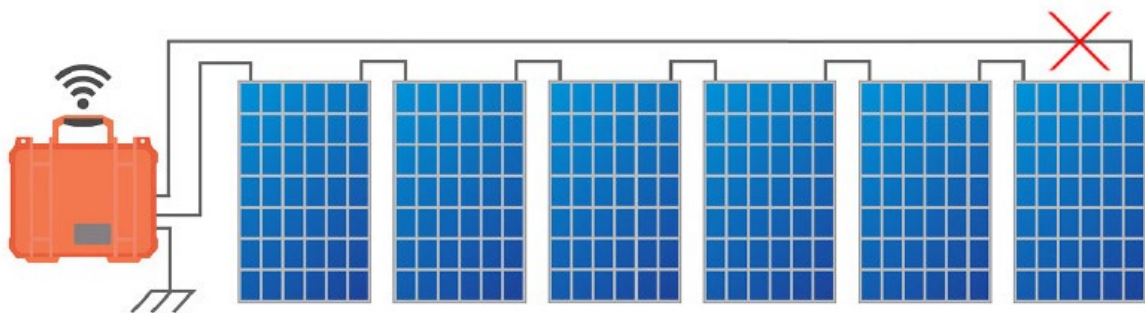


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## Emazys Z200 Locate string disconnect

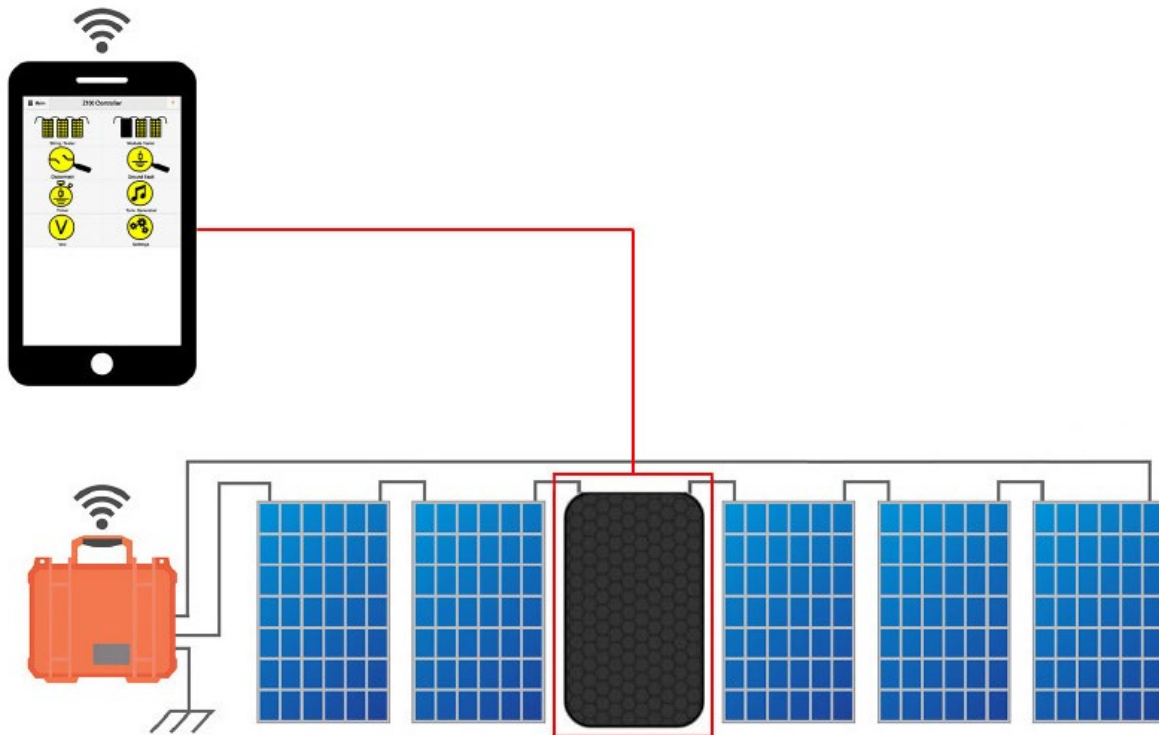


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## Emazys Z200 Testing bypass diode and cell degradation



### Emazys Z200 PV Analyzer kit

- Z200 PV Analyzer
- RRC2054 Li-ion smart battery
- RRC2054 Battery charger
- Ideal tone pickup
- PV testing leads, MC4 – banana
- PV testing lead alligator clip – banana (GND)
- PV testing leads, banana – banana
- 2 x combiner box test probes and detachable alligator clips



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- **What's in the Box**

- Z200 PV Analyzer
- Dolphin clamp XDK-1033 red, 1000V – CAT III – 32A
- Dolphin clamp XDK-1033 black, 1000V – CAT III – 32A
- Test probe red BT400, 1000V 1A – CATIV
- Test probe black BT400, 1000V 1A – CATIV
- Test lead XDLS-418 150cm G/G, m/alligator clamp 1000V CATII 32A
- PV-test lead, AMLS4/150 red, MC4 connector /Ø4mm banana connector
- PV-test lead, AMLS4/150 black, MC4 connector /Ø4mm banana connector
- Test lead, 2,5mm<sup>2</sup> 1,5m XMS-419, red Sili. 1000V 32A – CATIV
- Test lead, 2,5mm<sup>2</sup> 1,5m XMS-419, black Sili. 1000V 32A – CATIV
- Grounded power cord, Max 2.5A/250V, CEE 7/7, IEC C5
- Ideal Tone Pickup
- RRC2054 smart battery pack
- RRC AC adapter
- SMBUS Mini Battery charger







## Battery Information



- The Z200 PV Analyzer runs on a Li-ion Smart Battery Pack: RRC2054 and comes with a charger. All Z200 PV Analyzers are shipped with 1 RRC2054 charger.





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## ACCESSORIES



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## ACCESSORIES



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**The following is packed with the Z200 PV Analyzer kit from EmaZys ApS – tablet computer not included. Warranty for all**

Product	Amount	S/N	Item
Z200 PV Analyzer	1	Z200-R2E000519028	Z200
Dolphin clamp XDK-1033 red, 1000V - CAT III - 32A	1	XDK-1033	669575-22
Dolphin clamp XDK-1033 black, 1000V - CAT III - 32A	1	XDK-1033	669575-21
Test probe red BT400, 1000V 1A - CATIV	1	BT400	9390-22
Test probe black BT400, 1000V 1A – CATIV	1	BT400	9390-21
Test lead XDLS-418 150cm G/G, m/alligator clamp 000V CATII 32A	1	XLDS-418	669531150-20
PV-test lead, AMLS4/150 red, MC4 connector /Ø4mm banana Connector	1	PV-AMLS4/150 ; MC4	321199150-22
PV-test lead, AMLS4/150 black, MC4 connector /Ø4mm banana Connector	1	PV-AMLB4/150 ; MC4	321199150-21
Test lead, 2,5mm <sup>2</sup> 1,5m XMS-419, red Sili. 1000V 32A - CATIV	1	XMS-419	9392150-22
Test lead, 2,5mm <sup>2</sup> 1,5m XMS-419, black Sili. 1000V 32A - CATIV	1	XMS-419	9392150-21
Grounded power cord, Max 2.5A/250V, CEE 7/7, IEC C5	1	DEL -109CA	Power cord
Ideal Tone Pickup	1	62-164	5706445470440
RRC2054 smart battery pack	1	410031-05	RRC2054
RRC AC adapter	1	F285261621004242	RRC battery charger
SMBUS Mini Battery charger	1	110017-03	RRC-SMB-MBC





## TECHNICAL SPECIFICATION

Measurement feature	Z 200PV Analyzer
Frequency coverage	100 Hz to 100 kHz
Frequency accuracy	+/-2 %
Measurement feature	Z 200 PV Analyzer
Frequency drift with temperature(° C to ° C)	>0.1
Measurement of short circuit current I <sub>sc</sub>	Z 200 PV Analyzer
DC current range	0 - 15 A
Measurement of open circuit voltage V <sub>oc</sub>	Z 200 PV Analyzer
Analysis	Checks for correct polarity and voltage in-range.
Range	0 - 1000 V
Measurement of resistance towards ground R <sub>ISO</sub>	Z200 PV Analyzer
Range	0Ω -40MΩ
Measurement time	about 60sec.
Conditions	Irradiation >100 $\frac{W}{m^2}$ and string V <sub>oc</sub> >100 V
Precision (stable light conditions)	+/- 50 kΩ +/-10 %
Analysis	Above 40 M Ω, R <sub>ISO</sub> is returned as R <sub>ISO</sub> >40 M Ω. Below 100 kΩ, R <sub>ISO</sub> is returned as R <sub>ISO</sub> < 100kΩ
Detection and localization of ground isolation fault R <sub>ISO</sub>	Z 200 PV Analyzer
Threshold for localization of a ground fault	3MΩ
Localization precision (stable light conditions)	+/-0.5 PV module
Localization resolution	0.1 PV modules
Conditions	Irradiation >100 $\frac{W}{m^2}$ String V <sub>oc</sub> > 100 V
Analysis	Fault indicated (with text in user interface) if R <sub>ISO</sub> < 1 MΩ
Detection and localization of series resistance fault external to the PV modules	Z 200 PV Analyzer
Localization of singular series fault >10 kΩ e.g. disconnect	(when external to module/solar cells)
Localization precision	1+/- PV module
Localization resolution	0.1 PV modules
Conditions	Irradiation > 100 $\frac{W}{m^2}$





## TECHNICAL SPECIFICATION

Mechanical	
Enclosure	HPRC 2300
External dimensions	external dimension 335x289x155 (mm)
Connectors for DUT	3 x case-side mounted shrouded mm banana sockets. Rated: kV CAT III - 24 A
Environmental	
Storage Temperature	-10 °C to 55 °C (limited by battery)
Operating Temperature	0 °C to 35 °C (limited by battery)
Operating Altitude	up to 3000 meters
Battery	
Battery model	RCC
Technology	Li-Ion, DC 15V, 3200mAh, 48.0 Wh
Operating time	8 -10 hours
Standby/Sleep time	max. 150 hours in sleep mode
Recharge time	





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Product	No.	S/N	Item
Z 200 PV Analyzer		Z 200 XXXXXXXX	Z 200
Dolphin clamp XDK-1033, red, V -1000V CAT III - 32 A		XDK-1003	669575-22
Dolphin clamp XDK-1003,black, V -1000V CAT III - 32 A		XDK-1003	669575-21
Test probe red BT 400,1000V,1 A - CATIV		BT 400	9390-22
Test probe black BT400 ,1000V,1 A -CATIV		BT 400	9390-21
Test lead XDLS- 418,150cm G/G, m/alligator clamp 1000 V CATII A		XLDS- -418	669531150-20
PV-test lead, AMLS 4/150 red, MC4 connector /Ø4 mm banana connector		PV-AMLS4/150; MC 4	321199150-22
PV-test lead, AMLS 4/ 150 black,MC4 connector /Ø mm banana connector		PV-AMLS4/150;MC4	321199150-21
Test lead 2 . 5 mm, 1 . 5 m XMS-419 red Silicon 1000V A - CATIV		XMS-419	9392150-22
Test lead 2.5 mm 1.5m XM S-419, black Silicon 1000V A - CATIV		XMS- 419	9392150-21
Grounded power cord, Max 2.5A/ V,250V CEE 7/7 IEC C5		DEL - 109CA	Power cord
Ideal Tone Pickup		62-164	57606445470440
RRC 2054 smart battery pack		410031-05	RRC 2054
RRC AC adapter		F285261521004242	RRC battery charger
SMBUS Mini Battery charger		110017-03	RRC-SMB-MBC



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