

**emazys**

# Z200 PV Analyzer Data Sheet



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## 1 Z200 PV Analyzer

The PV Analyzer Z200 is a portable and battery powered instrument used to detect and locate faults in strings of series connected photovoltaic modules. The instrument is connected to the string terminals e.g. at the string inverter or combiner box and also to the ground reference for the PV installation.

Once connected and activated, it will perform impedance spectroscopy between any two of the three connected terminals, as well as measure the terminal voltages and currents flowing under various DC loads introduced by the instrument. By combining the results from these various measurements using the on-board computer, critical faults in the system can be defined and positioned.

### 1.1 All testing Features

- PV string voltage  $V_{oc}$
- PV string current  $I_{sc}$
- Voltage polarity
- PV system isolation resistance  $R_{iso}$
- PV string series resistance  $R_s$
- PV string impedance curves (overall degradation check)
- Position of ground ( $R_{iso}$ ) faults in PV strings
- Position of disconnect in PV strings
- Tone generator and acoustic pickup for cable tracing
- Module bypass diode check (open or short diode)
- Module shunting resistance (PID and degradation check)
- Module voltage check
- Position of ground ( $R_{iso}$ ) faults in PV strings – monitoring mode
- State machine algorithm to help the user analyse fault scenarios
- Build in PDF and .CSV report generator
- Operate over WiFi using any device and WEB browser

## 2 Calibration

It is recommended that PV Analyzer Z200 is calibrated once a year. The instrument must be sent to your local service partner or the manufacturer for calibration.

1. Remove the battery before shipping the instrument
2. The instrument must be securely packed in a suitable cardboard box
3. Shipping back and forth is exclusively at the user's responsibility and cost.

### 3 Storage and disposal

#### 3.1 Storage

If the PV Analyzer Z200 is taken out of service for a long time, charge and remove the battery.

#### 3.2 Disposal

PV Analyzer Z200 must be returned to EmaZys for correct disposal. Dismount the battery before shipping.



**NOTICE.**

DO NOT try to disassemble the instrument. It must be disposed correctly according to EU regulations

### 4 Support

If you need support or product service, please contact emazys. Go to our website <https://emazys.com/service> and sign up for a support inquiry.

## 5 Technical data and specifications

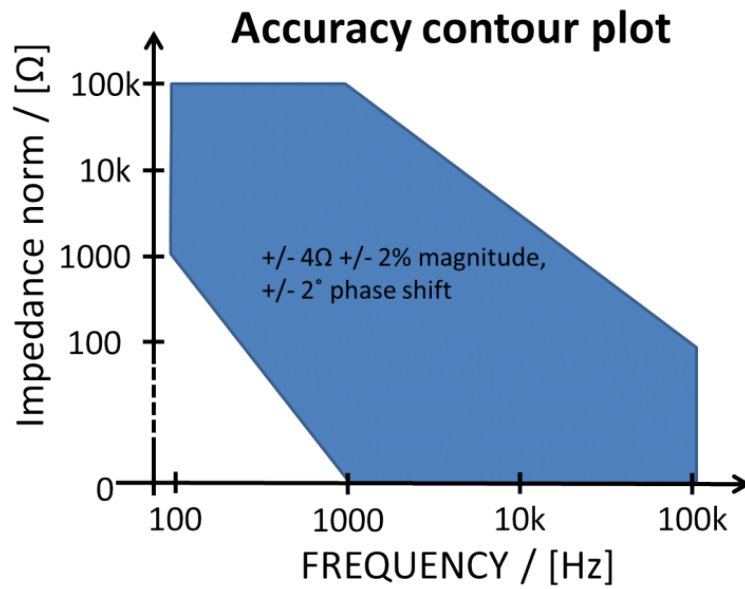


Figure 1: In this graph we see the impedance accuracy contour plot for the Z200 PV Analyzer.

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Measurement feature	Z200 PV Analyzer
Frequency coverage	100 Hz to 100 kHz
Frequency accuracy	+/- 2 %
Measurement feature	Z200 PV Analyzer
Frequency drift with temperature (° C to 35 ° C)	>0.1
Measurement of short circuit current $I_{SC}$	Z200 PV Analyzer
DC current range	0-15 A
Measurement of open circuit voltage $V_{OC}$	Z200 PV Analyzer
Analysis	Checks for correct polarity and voltage in-range.
Range	0-1000V
Measurement of resistance towards ground $R_{ISO}$	Z200 PV Analyzer
Range	0 $\Omega$ - 40 M $\Omega$
Measurement time	about 60 sec.
Conditions	Irradiation > 100 $\frac{W}{m^2}$ and string $V_{OC}$ > 100V
Precision (stable light conditions)	+/- 50 k $\Omega$ +/- 10%
Analysis	Above 40M $\Omega$ , $R_{ISO}$ is returned as $R_{ISO}$ > 40M $\Omega$ . Below 100k $\Omega$ , $R_{ISO}$ is returned as $R_{ISO}$ < 100k $\Omega$
Detection and localization of ground isolation fault $R_{ISO}$	Z200 PV Analyzer
Threshold for localization of a ground fault	3 M $\Omega$
Localization precision (stable light conditions)	+/- 0.5 PV module
Localization resolution	0.1 PV modules
Conditions	Irradiation > 100 $\frac{W}{m^2}$ String $V_{OC}$ > 100V
Analysis	Fault indicated (with text in user interface) if $R_{ISO}$ < 1 M $\Omega$
Detection and localization of series resistance fault external to the PV modules	Z200 PV Analyzer
Localization of singular series fault > 10 k $\Omega$ e.g. disconnect	✓ (when external to module/solar cells)
Localization precision	+/- 1 PV module
Localization resolution	0.1 PV modules
Conditions	Irradiation > 100 $\frac{W}{m^2}$

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<b>Mechanical</b>	
Enclosure	HPRC 2300
External dimensions	external dimension 335x289x155(mm)
Connectors for DUT	3 x case-side mounted shrouded 4mm banana sockets. Rated: 1kV CAT III - 24A
<b>Environmental</b>	
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
<b>Battery</b>	
Battery model	RCC2054
Technology	Li-Ion, DC 15 V, 3200 mAh, 48.0 Wh
Operating time	8-10 hours
Standby/Sleep time	max. 150 hours in sleep mode
Recharge time	