

Photovoltaic and electrical installation testers

MI 3114 PV Tester



The MI 3114 PV Tester is a powerful instrument for testing photovoltaic (PV) systems with a maximum system voltage of up to 1500 V and a maximum short circuit current of 40 A. It supports testing in compliance with the IEC 62446-1 standard and supports all measurement procedures, which cover all category 1 tests. This includes PV-specific measurements like insulation resistance measurement of PV strings, I_{sc} and U_{oc} measurements, as well as the calculation of measured results to STC values and comparison with nominal values given by the PV module's manufacturer. The irradiation and cell temperature are measured in real time with the wireless remote unit. Additionally, all category 1 tests are collected in a single auto test, which enables the user to execute all the tests with a single touch of the start button.

The instrument can be controlled via a large colour touch screen display from which the user can prepare and start selected tests or measurements, store results, and review them. It is also possible to change previously entered wrong parameters on an already executed measurement or a group of measurements.

MEASURING FUNCTIONS

- **1500 V insulation resistance** of strings;
- Continuity of PE conductors
- Polarity test
- I_{sc} and U_{oc} test

KEY FEATURES

- Auto test for Category 1 tests
- Calculation of STC values and comparison with nominal data
- Correction of previously wrong entered parameters on already executed

measurement or group of measurements

- Memory organizer, operations on single or group of measurements, search functionality, PV modules database handler
- Wireless (Wi-Fi) remote unit for measuring of irradiation and cell temperature
- AUTOSEQUENCE
- PC SW Metrel ES Manager to prepare measurement structure and measurements in advance, upload or download that structure and then reviews the results, PV modules DB explorer and as final act, the generation of professional report.

APPLICATION

- Testing of big **1500 V PV plants**
- First inspection testing
- Periodic testing
- Maintenance testing
- Evaluation and troubleshooting
- Report generation

STANDARDS

Functionality

- EN 62446-1
- EN 62446-2

Electromagnetic compatibility

- EN 61326-1

Safety

- EN 61557
- EN 61010-1
- EN 61010-2-30
- EN 61010-031

TECHNICAL SPECIFICATION

Photovoltaic measurements		
Function	Measuring range	Accuracy
Voltage	20.0 ... 199.9 VDC	±(1 % of reading + 2 digits)
	200 ... 1999 VDC	±1 % of reading
Current	0,10 ... 0,99 ADC	±6 digits
	1,00 ... 9,991 ADC	±(1 % of reading + 3 digits)
	10,00 ... 39,99 ADC	±1 % of reading
Electrical installation measurements		
Insulation resistance Roc-, Roc+		
Um = 250 V d.c.	0.12 ... 19.99 MΩ	±(5 % of reading + 3 digits)
	20.0 ... 199.9 MΩ	±10 % of reading
Um = 500 V d.c., 1000 V d.c. and 1500 V d.c.	0.12 ... 19.99 MΩ	±(5 % of reading + 3 digits)
	20.0 ... 199.9 MΩ	±5 % of reading
	200 ... 999 MΩ	±5 % of reading
Insulation resistance Roc		Calculated value
Continuity, 200 mA	0.00 ... 19.99 Ω	±(3 % of reading + 3 digits)
	20.0 ... 199.9 Ω	±5 % of reading
	200 ... 1999 Ω	±10 % of reading
General	Main unit MI 3114	Remote unit A 1785
Display	Colour TFT display, 4.3", 480 x 272 pixels with touch screen	128x64 dots matrix display with backlight
Power supply	Li-Ion, 14.4 V, 4400mAh, non-removable	9 VDC (6x1.5 V battery or accu, size AA)
Overvoltage category	CAT II / 300V	
Protection classification	Reinforced insulation	
Pollution degree	2	
Degree of protection	IP 54 (cover closed)	IP 40
	IP 40 (cover opened)	
Altitude	up to 4000 m	
Memory	Memory card slot, microSD card, up to 512 GB	Number of memorized results: > 3000, circular buffer
Connectivity		
RS232	1 port, DB9 female	1 port, PS2
USB	USB 2.0, standard Type-B	USB 2.0, standard Type-B
Bluetooth	v4.2 BR/EDR and BLE specification	
Wi-Fi	802.11 b/g/n (802.11n up to 150 Mbps)	802.11 b/g/n (802.11n up to 150 Mbps)
	(Only for communication with A 1785 - PV Remote WL)	(Only for communication with PV Main Unit)
Size (l x h x w)	310 x 130 x 250 mm	140 x 80 x 230 mm
Weight	4.4 kg	1 kg

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ORDERING INFORMATION



Picture of MI 3114 PS set

Standard set MI 3114 ST

- Instrument MI 3114
- A 1790 BLU Test lead, Blue, 3m, 2.5mm²
- A 1790 RED Test lead, Red, 3m, 2.5mm²
- A 1792 Test lead, Green, 3m, 0.75mm²
- S 2146 Set PV MC4 to banana adapters 1500 V
- A 1509 Test lead, Black, 50m, 0.75mm²
- A 1012 Test lead, Green, 4m, 0.75mm²
- A 1309 Crocodile clip, Green
- A 1014 Test probe, Black
- A 1015 Test probe, Blue
- A 1016 Test probe, Red
- A 1727 Communication cable, 1m, USB type B/A
- A 1728 Power cable, 2m, 3x0.75mm²
- A 1551 Soft padded carrying bag, Size: L
- SW 1201 Metrel ES Manager (MESM)*
- P 1000-EU Licence key basic
- Calibration certificate for MI 3114
- User Manual

Pro set MI 3114 PS

- Standard set MI 3114 ST
- A 1785 PV remote unit
- A 1833 PV temperature sensor
- A 1834 PV reference cell
- 2x A 1835 Clamp for attaching accessories
- A 1791 Carrying strap with tightening buckle
- S 2080 6 Rechargeable batteries 1,2 V, 2100 mAh, type AA
- A 1548 Power supply adapter 0,5A/12V**
- Calibration certificate for A 1785

* Metrel ES Manager can be downloaded free of charge from Web server
** In some countries replaced with national specific version of A 1569

OPTIONAL ACCESSORIES

Photo	Order No.	Acc. description
	A 1530	G clamp Dia=27mm
	A 1552	Soft padded carrying bag Size: XL
	P 1101	Metrel MESM BASIC to PRO licence key upgrade
	P 1403	3-year Metrel Smart Cloud PRO subcription • Metrel Cloud Reports • Metrel Cloud Storage (24 GB)