Wabtec
CORPORATION

Test &
Measuring
Equipment

Solar Testers

NIEAF
SMITT

General

The production and use of renewable energy is stimulated by the European Union and via government incentives (e.g. through RES directives) and the prices for solar panels are dropping, leading to a growing number of solar panel installations. With this the demand for initial and periodic testing of the solar panels is growing.

Site survey, installation and commissioning of solar installations demands attention to safety, sustainability, reliability and efficiency / output of the solar panel system.

Several guidelines and legislation are applicable:

- IEC 62446:2009 (Minimum requirements for system documentation, commissioning tests and inspection)
- IEC 60364-6 (Low-voltage electrical installation - part 6: verification)
- NEN 1010 / NTA 8013 (The Netherlands)

The IEC 62446 demands several tests & measurements that must be provided to the end-user, when
installing a solar panel system:

- Visual inspection: is the installation wired correctly? No damage to cables during installation?
- Insulation resistance measurement (R_{iso})
- Earth continuity measurement (R_{pe})
- PV string short circuit current (I_{sc})
- PV string open circuit Voltage (U_{oc})
- Solar irradiance
- Roof orientation and pitch

To safely install new solar panels (in line with the international standards) and to optimise the periodic testing of solar panel installations Nieaf-Smitt has developed the EazyPV tester. Easy and effective testing of all solar installation parameters in one device. The solar panels do not need to be opened/dismantled for this, the uniform solar panel connectors can be connected directly on the EazyPV.

The new EazyPV includes all functionalities to perform pre-installation site surveys and measure the electrical safety and performance of installed PV systems in line with the international IEC 62446 standard. Enabling contractors to safely, thoroughly and effectively install and maintain solar PV installations.

The new high specification IRM100 combines irradiance measurement with a hosts other features to enable solar PV and solar thermal contractors to carry out site surveys quickly and easily. The versatile device uses a precision PV cell sensor for the highly accurate irradiance measurement, displaying results in either W/m^2 or $BTU/h/ft^2$.

The EazyPV and IRM100 testers include all of the necessary functions to measure the electrical safety and performance of PV systems as well as irradiance.

Additionally the kit is suitable to conduct site surveys for potential installations; providing the information needed to calculate estimated annual solar irradiation and system yields of PV and solar thermal systems, as described in several local guidelines.

EazyPV

Art. number: 626000757

Solar PV istallationtester

The compact PV-installationtester with digital display is the quickest on the market. The EazyPV combines all PV electrical test functions required to meet IEC 62446 into one safe, easy-to-use, hand-held device.

The addition of USB and wireless connectivity in combination with the IRM100, make the EazyPV the most versatile PV tester on the market.

Features

- Visual inspection: is the installation wired up correct? No damage to cables during installation?
- Insulation resistance measurement (R_{iso})
- Earth continuity measurement (R_{pe})
- PV string short circuit current (I_{sc})
- PV string open circuit Voltage (U_{oc})
- PV link software to download of measured values (included)

The following parameters can be wireless coupled with the IRM100 and EazyPV:

- Irradiance (W/m^2)
- Panel temperature and outside temperature

CAT III 300 V · EN 61010-1 · EN 62446

Specifications

Functions

	Range
Earth continuity measurement Test currnt in 2 Ω Range (EN 61557-4)	 > 200 mA 0.05 Ω...199 Ω
Insulation resistance measurement Test voltage @ 1 mA Display	 250, 500, 1000 VDC 0.05 MΩ...199 MΩ
Open circuit voltage measurement (in PV-connections) Display	 0.0 VDC...1000 VDC
Short circuit curent (in PV-connections) Display	0.00...15 A DC
Current (w/ AC/DC current clamp) Display	0.1 A...40.0 A
Power Display	0.05 W...40.0 kW
Rpe voltage measurement (4 mm conn. Voltage	 30 V...440 VDC 30 V...440 VAC 50/60 Hz

Algemeen

Overvoltage category	CAT III 300 V
Standard	EN 61010-1, EN 62446
Supply	6x AA batteries
Dimensions	260 x 100 x 55 mm
Weight	0.8 kg
Including	2x MC4 connectors, 2x test lead + alligator clamp, bag, software (PVLink), support CD-rom, Conformity verklaring, Quickstart manual, batteries

EazyPV curve

Art. number: 6260001079

PV installation tester with IV curve

The EazyPV Curve combines all electrical PV testing functions, according the EN 62446 standard, in one safe and convenient tester. By adding the I-V curve, the tester becomes a general purpose general purpose PV analysis tool.

The EazyPV Curve determines in a simple way the quality of a of a PV system by determining the fill factor of the I-V curve.

With the help of the Solar Strength Meter the data can be converted to standard test conditions (STD). This is done in the supplied SolarCerts software. This makes it possible to values can be compared with the data published by the manufacturer.

Features

- All-in-one tests for commissioning and I-V curve tracing
- Automatic filling factor calculation of the I-V curve
- Execution of insulation resistance measurement (Riso)
- Performance of earth line resistance measurement (Rpe)
- Measurement of short circuit current (Isc)
- Measurement of open circuit voltage (Uoc)
- PV link download software (included)
- SolarCerts software for analyzing the I-V curve
- Measuring current and power

The following parameters can be linked wirelessly with the EazyPV curve:

- Solar power (W/m^2)
- Panel temperature and outside temperature

EN 62446 EN 61010-1 CAT III 300 V

Specifications

Functions

	Range
Ground fault measurement Test current 2 Ω Range (EN 61557-4)	 > 200 mA 0.05 Ω...199 Ω
Ground fault measurement Test current 2 Ω Range (EN 61557-4)	 250, 500, 1000 VDC 0.05 MΩ...199 MΩ
Open circuit voltage measurement (with PV connections) Display	 0.0 VDC...1000 VDC
Short circuit curent (with PV connections) Display	 0.00...15 A DC
Current measurement (with AC/DC current clamp) Display	0.1 A...40.0 A
Power measurement Display	0.05 W...40.0 kW
Rpe voltage measurement (4 mm connections) Voltage	 30 V...440 VDC 30 V...440 VAC 50/60 Hz

General

Overvoltage category	CAT III 300 V
Standard	EN 61010-1, EN 62446
Supply	6x AA batteries
Dimensions	264 x 107 x 58 mm
Weight	1.0 kg

Including

- EazyPV curve
- IRM Irradiance meter and temperature probe
- Convenient mounting bracket for IRM irradiance meter
- AC / DC current clamp
- 2x MC4 test lead adapters
- 2x MC4 to 4 mm test leads with detachable alligator jaws
- 2x test leads with test probes and detachable alligator clips (4 mm)
- Carrying bag
- Quickstart guide
- Calibration certificate (EazyPV)
- SolarCert PC software

IRM100

Art. number: 626000759

Irradiance meter

To determine the quality and efficiency of solar panels, it is important to check the circumstances in which the measurements are done

Features

- Irradiance
- Temperature
- Compass
- Tilt

Specifications

Functions

	Range
Irradiance	
Display	0...1500 W/m²
Measurement	100...1250 W/m²
Resolution	1 W/m²
Temperature	
Display	-30 °C...+125 °C
Measurement	-30 °C...+125 °C
Resolution	1 °
Compass	
Display	0 °...360 °
Measurement	0 °...360 °
Resolution	1 °
Tilt	
Display	0 °...90 °
Measurement	0 °...90 °
Resolution	1 °
Datalogging	
Datasets	5000
Sample rate	1...60 min
Datalogging	Software including
Connection	USB download to PC

General

Standard	EN 62446
Supply	2x AA batteries
Dimensions	150 x 80 x 33 mm
Weight	265 g
Warranty	2 years
Including	Temperature probes, USB-cable, software (PVLink), support CD-rom, Conformity declaration, quickstart manual, batteries

Connecting the EazyPV with the IRM100

The EazyPV and IRM100 includes all of the necessary equipment to measure the electrical safety and performance of PV systems as well as irradiance.

Additionally, the kit is integral to conducting site surveys for potential installations; providing the information needed to calculate estimated annual solar irradiation and system yields of PV and solar thermal systems, as described in several local guidelines.

The measured values can be downloaded with the PV link software (included).

NI T38

Art. number: 626005049

Compact AC/DC current clamp adapter

The compact current clamp adapter NI T38 is an easy to use solution for measuring high currents (AC+DC) in combination with a multimeter.

The clamp adapter is compatible with the EazyPV solar PV-tester.

Features

- AC & DC
- 2 ranges 40 A and 400 A
- 4 mm connectors
- Non-contact voltage detection
- Compatible met EazyPV solar PV-tester

CAT IV 300 V

EN 61010-1

Specifications

Functions

	Range	Accuracy
Current	0.1 ... 400 AAC/DC	
Output voltage	1 mV per 1 A	± 2.8 % + 0.5 A
Current	0.01 ... 40 AAC/DC	
Output current	10 mV per 1 A	± 2.5 % + 0.1 A
Frequency	10 kHz	

General

Max. conductor seize	30 mm
Max. jaw opening	30 mm
Overvoltage category	CAT IV 300 V / CAT III 600 V
Standard	EN 61010-1, EN 61010-2-32
Dimensions	150 x 58 x 35 mm
Weight	205 g
Including	Test leads, manual

Accessories

			
Adapter plug combination with 626001058	**Adapter socket** combination with 626001059	**MC4 adapter set to 4 mm plug**	**Sunclix adapter**
Art. number: 626001059	Art. number: 626001058	Art. number: 626001060	Art. number: 626001064

'EazyPV installationkit' The EazyPV installation kit: • EazyPV installation tester • IRM100 irradiance tester • PV Link-software • NI T38 current clamp adapter • Testadapters Art. number: 626000765	

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