TES

PROVA 1010
Solar System Analyzer

Thermometer

Irradiance Meter

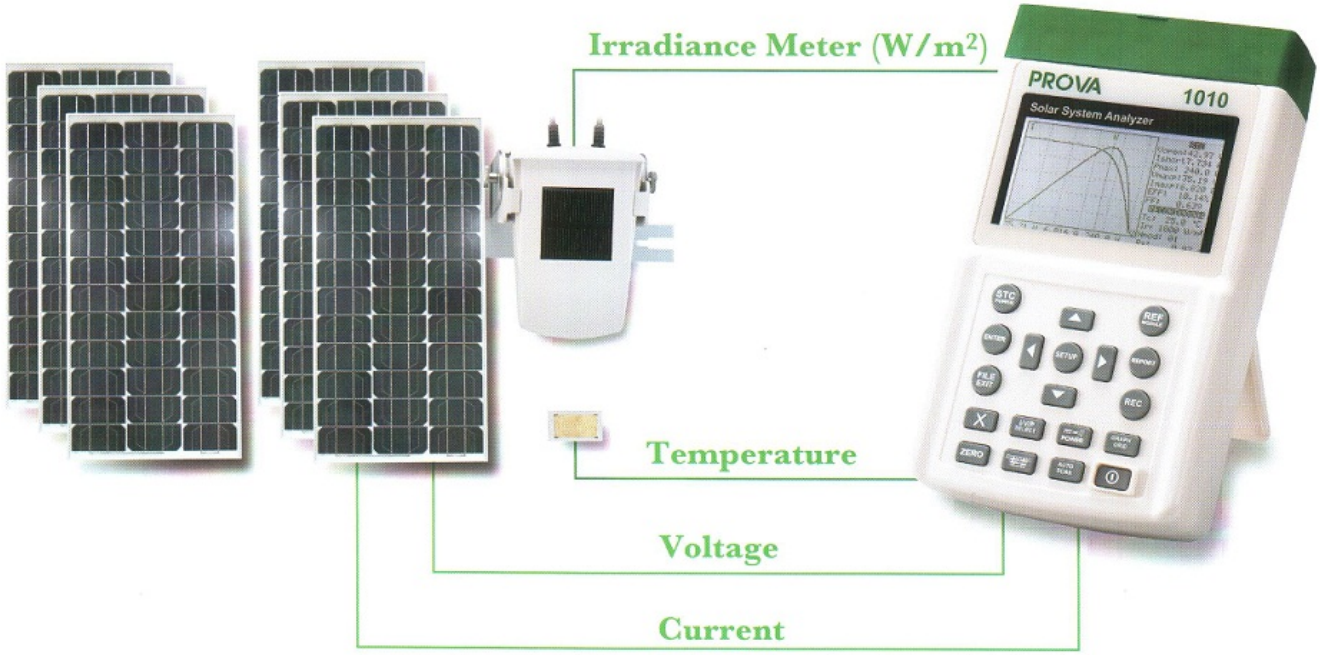
Options:

AC Clamp

DC Probe

CE

Solar System with Panels



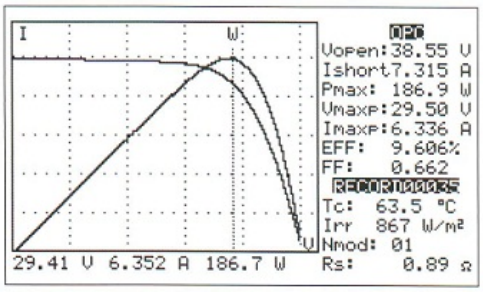
Module Data

```
Module:  DEFAULT_MOD
Nmod:    01
Pmax:     272 W
Voper: 43.97 V
Ishort 8.150 A
Vmaxp: 35.90 V
Imaxp: 7.570 A
Area:  1.944 m²
Toll+:   3.0%   Toll-:   3.0%
Alpha:  0.090%/°C
Beta:  -0.340%/°C
Gamma: -0.370%/°C          Save
Rs:     1.00 Ω             Save As...
```

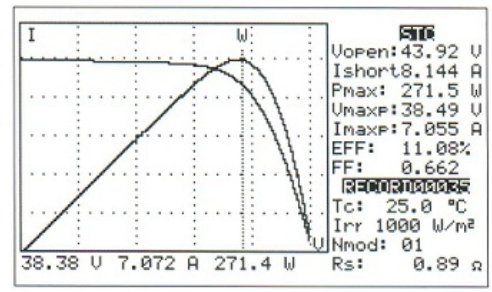
+

IEC Standard

OPerating Condition



Standard Test Condition



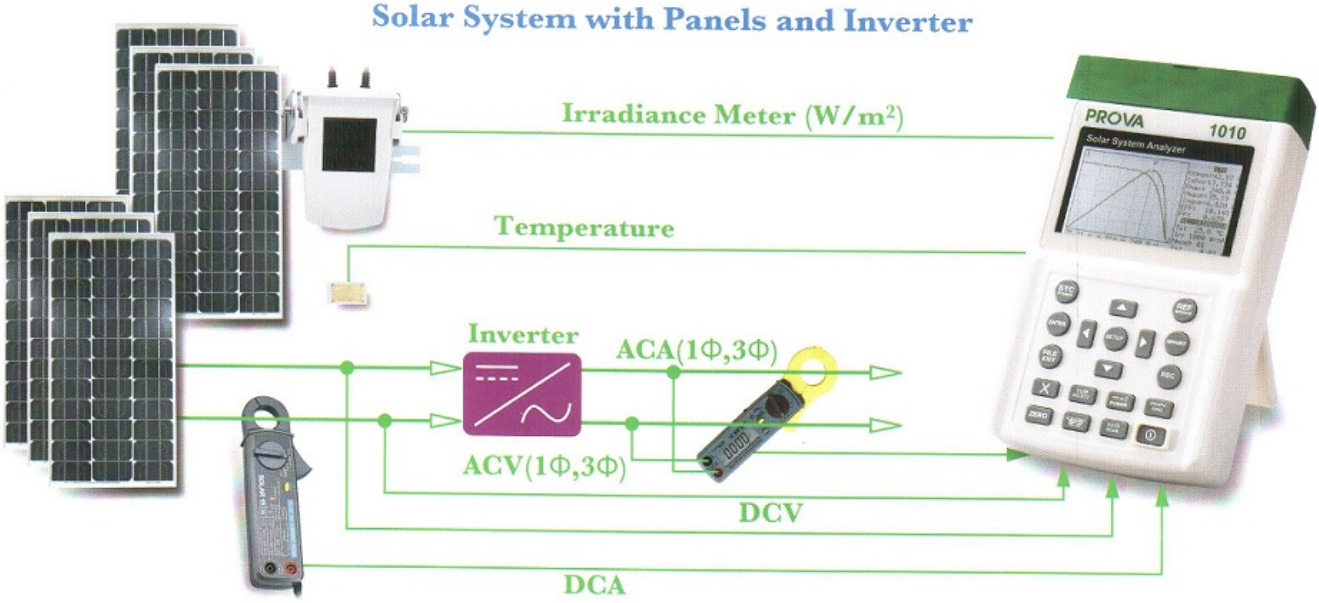
Test Report (OPC)

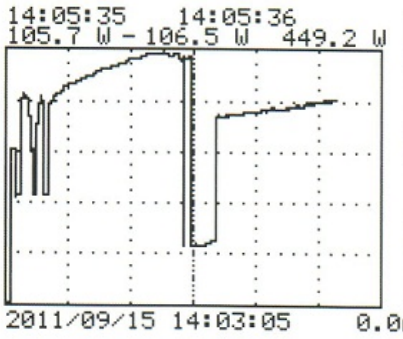
```
RECORD00035          Test Report
                  2011/09/15 10:33:57
DEFAULT_MOD   NOMINAL          OPC
  Nmod:          01            01
  Pmax:         272 W        186.9 W
  Vmax:       35.90 V        29.50 V
  Imax:       7.570 A        6.336 A
  Voper:      43.97 V        38.55 V
  Isc:        8.150 A        7.315 A
  Irr:         1000 W/m²       867 W/m²
  Tc:          25.0 °C        63.5 °C
```

Test Report (STC)

```
RECORD00035          Test Report
                  2011/09/15 10:33:57
DEFAULT_MOD   NOMINAL          STC
  Nmod:          01            01
  Pmax:         272 W        271.5 W
  Vmax:       35.90 V        38.49 V
  Imax:       7.570 A        7.055 A
  Voper:      43.97 V        43.92 V
  Isc:        8.150 A        8.144 A
  Irr:         1000 W/m²       1000 W/m²
  Tc:          25.0 °C        25.0 °C
  Ptol:  +  3.0% -  3.0%      - 0.1%
Pmax @ STC    OK*
```

Solar System with Panels and Inverter

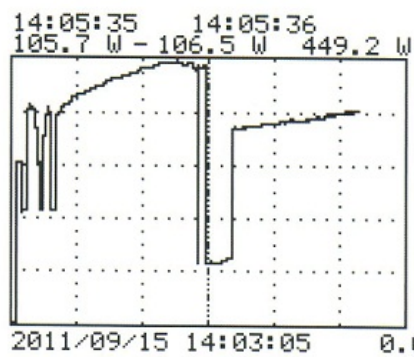




DC POWER
Pnow: 367.8 W
Vnow: 273.2 V
Inow: 1.346 A

Pmax: 449.2 W
Vmax: 290.2 V
Imax: 1.616 A

Pmin: 0.0mW
Vmin: 0.00 V
Imin: 385mA
Battery 29%



AC POWER 3P3W
Pnow: 367.8 W
Vnow: 273.2 V
Inow: 1.346 A

Pmax: 449.2 W
Vmax: 290.2 V
Imax: 1.616 A

Pmin: 0.0mW
Vmin: 0.00 V
Imin: 385mA
Battery 29%

File System

File List — Memory Free: 463KB

DEFAULT_MOD	* Mod	2011/09/15 09:41:27
RECORD00001	REC	2011/09/15 09:59:35
RECORD00002	REC	2011/09/15 10:00:58
RECORD00003	REC	2011/09/15 10:02:07
RECORD00004	REC	2011/09/15 10:03:07
RECORD00005	REC	2011/09/15 10:04:07
RECORD00006	REC	2011/09/15 10:05:07
RECORD00007	REC	2011/09/15 10:06:07
RECORD00008	REC	2011/09/15 10:07:07
RECORD00009	REC	2011/09/15 10:08:07
RECORD00010	REC	2011/09/15 10:09:07
RECORD00011	REC	2011/09/15 10:10:07
RECORD00012	REC	2011/09/15 10:11:07

RECORD00005
Vopen: 385.5 V
Ishort 7.315 A
Pmax: 1.865KW
Vmaxp: 293.0 V
Imaxp: 6.366 A
Irr: 867 W/m²
Tc: 63.5 °C

DC POWER
P: 1.775KW
V: 291.8 V
I: 6.082 A

EFF(Pmax)
95.2 %
EFF:95.2 %

P̄: 1.775KW

AC POWER
P: 1.672KW
V: 221.8 V
I: 7.538 A
PF:0.999
EFF(DC-AC)
94.2 %
EFF:94.2 %

P̄: 1.672KW
PF:0.999
3P3W

Module Data Entry

Module: DEFAULT_MOD
Nmod: 01
Pmax: 272 W
Vopen: 43.97 V
Ishort 8.150 A
Vmaxp: 35.90 V
Imaxp: 7.570 A
Area: 1.944 m²
Toll+: 3.0% Toll-: 3.0%
Alpha: 0.090%/°C
Beta: -0.340%/°C
Gamma: -0.370%/°C
Rs: 1.00 Ω

Save
Save As...

System Setup

CURRENT DATE&TIME: 2011/09/15 13:04:09
Sampling Time of Datalogging: 01 min
Sens: 75.0mV @1000W/m²
Tc Offset: 0.0°C
Comment:

Features

- **I-V curve test** for solar system
- Max. solar system power (Pmax) search by Auto-scan: **1000V**, **12A**
- Max. voltage (**Vmaxp**) and Max. current (**Imaxp**) at Pmax
- Voltage at open circuit (**Vopen**), Current at short circuit (**Ishort**)
- **Temperature** measurement of solar panels, **Irradiance** measurement of sun light, and series resistance (**Rs**) calculation of solar panels
- Real time **data logging** with built-in calendar clock
- **Efficiency** (%) calculation of solar panels with **Parameters** entry
- Conversion of I-V curve under OPC to data under standard test condition (STC) based upon **IEC standard**
- Provide OPerating Condition (**OPC**) and Standard Test Condition (**STC**) test reports for verification of solar panel performance (**OK**, or **NO OK**)
- With optional power clamps (SOLAR 15 and SOLAR 21), measure/record **DC power** output of solar system and **AC power** output of inverter (1 phase or balanced 3 phase); calculate efficiency of DC to AC power conversion and max. power
- Rechargeable **lithium battery**, low battery warning
- **USB** cable for PC

Electrical Specifications (23°C±5°C, four-wire measurement, max. power limit 12000W)

DC Voltage Measurement

Range	Resolution	Accuracy
1 ~ 1000 V	0.01V/ 0.1V/ 1V	± 1 % ± (1 % of Vopen ± 0.1 V)

Vopen: open circuit voltage of solar system.

DC Current Measurement

Range	Resolution	Accuracy
0.1 ~ 12 A	1mA / 10mA	± 1 % ± (1 % of Ishort ± 9 mA)

Ishort: short circuit current of solar system.

DC Current Simulation

Range	Resolution	Accuracy
0.1 ~ 12 A	1mA / 10mA	± 1 % ± 9 mA

Temperature Measurement

Range	Resolution	Accuracy
-20 ~ 105 °C	0.1 °C	± 1 % ± 1 °C

Irradiance Measurement

Range	Resolution	Accuracy
20 ~ 2000 W/m²	1 W/m²	± 3 % ± 20 dgts

*** Please refer to user manual for final specification.**
*** Specification is subjected to change without notice.**

Accessory

1. Irradiance meter
2. Thermometer
3. Rechargeable lithium battery
4. AC adaptor
5. Operation manual
6. Software CD & manual
7. USB cable
8. Kelvin clips
9. Solar connector
10. Extension cable

* Optional power clamps: SOLAR 15 and SOLAR 21

8. Kelvin clips

9. Solar connector

10. Extension cable

http://www.tes.com.tw

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