GP PULL-TEST ADVANCED

THE GP PULL-TEST ADVANCED IS AN ADDITIONAL OPTION FOR THE GP STAB-TEST PRO

CONSULTING CELL TECH MODULE TECH **INSPECT**

SITUATION

The soldered contact between the tabbing and printed bus bars of solar cells is an essential quality feature in manufacturing photovoltaic modules from individual solar cells. These soldered contacts must ensure loss-free electrical conductance for the entire life of the module. Mechanical stress resulting from the different coefficients of thermal expansion for Si and Cu create loads on the soldered contacts, both during the soldering process and throughout the period for which the cell is in use. The adhesive force of the tabs on the cell is one criterion by which to judge the quality of the soldered contact.

GP Solar offers the GP PULL-TEST Advanced as an extension of its GP STAB-Test Pro. Adhesion strength is measured by determining the amount force required to pull tabs off of the cell at a specific angle with a pre-defined speed.

DESCRIPTION

The GP STAB-TEST has a force sensor attached to a linear slide unit. Various adapters on the force sensor and different base plates allow numerous different measurements to be taken.

Adhesion forces can be measured on the cell tabbing using the GP PULL-TEST as an additional option to the GP STAB-TEST.

To measure adhesion forces, the solar cell is placed on movable slides on the base plate of the GP PULL-TEST Advanced and its tabs connected to the force sensor. The upward motion of the force sensor pulls the tabs off. The force required to pull off the tabs is measured. There are two measurement variants, a pull-off angle of 90° and a pull-off angle of 180°.

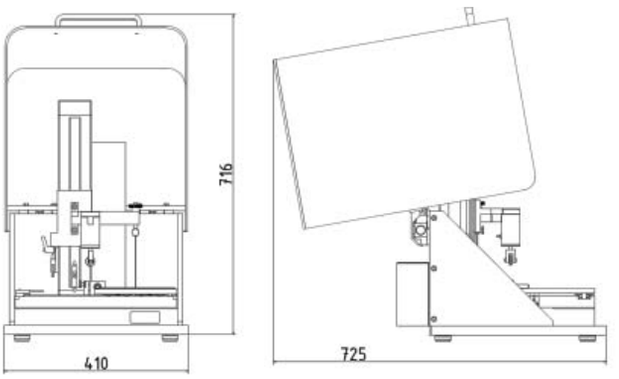
In the 90° measurement, the movement of the slides is synchronized with the movement of the force sensor to ensure that the 90° angle is maintained for the entire duration of the measurement. In the 180° measurement, an extended tab is run parallel to the solar cell's actual tab and then pulled off. In the 180° measurement method, the movable slides are locked into place.

The GP PULL-TEST Advanced, in combination with the GP STAB-TEST has a calibrated force sensor/amplifier unit and a high-quality Keithley multimeter for precise measurement results. A user-friendly software interface is used to evaluate measurement results, set measurement parameters, and for data entry.

WAFER › TEXTURE › DIFFUSION › EDGE ISOLATION › AR COATING › **GRID** › FINAL CLASSIFICATION

.GPsolar INSPECT

The GP PULL-TEST Advanced measures the adhesion strength of the tabbing



front view side view

GP PULL-TEST Advanced

TOPIC	DESCRIPTION
Test samples	› Mono and polycrystalline cells with extended tabs › Square and pseudo square
Solar cell size	100 - 156 mm
Possible measurements	› Adhesion force pull angle 90° › Adhesion force pull angle 180°
Required length of the extended tabs	90°: 5 cm additional length 180°: 20 cm additional length
Slide travel in relation to pull-off distance	90°: 156mm/156mm 180°: 312mm/156mm
Dimensions (W x H x D)	265mm x 50mm x 365mm
Order Information/Article Number	04.01.0042

Note: some of the mentioned features are optional. Technical details subject to change without prior notice.
Only technical specifications in quotations and duty books are binding.

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303_GP-PULL-TEST-Advanced_10v1 Design: www.conactor.com