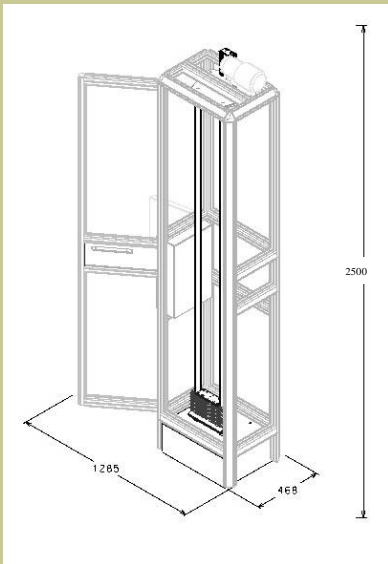


PWB Level Drop Tester



Determines reliability of the PWB level against mechanical shock

- Suitable for Jedec testing method
- Provides shock pulses up to peak acceleration of 5000 g
- Supports continuous measurement and automatic repeatability
- Delivered and used with standard Windows PC, acceleration sensor, event detector and PC oscilloscope
- Designed for hard professional use
- Convenient and safe to use with protective cabinet
- CE compliant
- Small foot print requires minimum installation space



**MODEL
JEDEC**

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Salon Teknopaja  **oy**

Advanced Shock Testing

Drop tester is delivered and used in conjunction with Windows PC, PC oscilloscope, acceleration sensor and event detector. PC oscilloscope and acceleration sensor are mainly for the calibration for the tester. Event detector is needed during the live tests of printed wiring boards. There are two tested event detector alternatives available¹ through Salon Teknopaja.

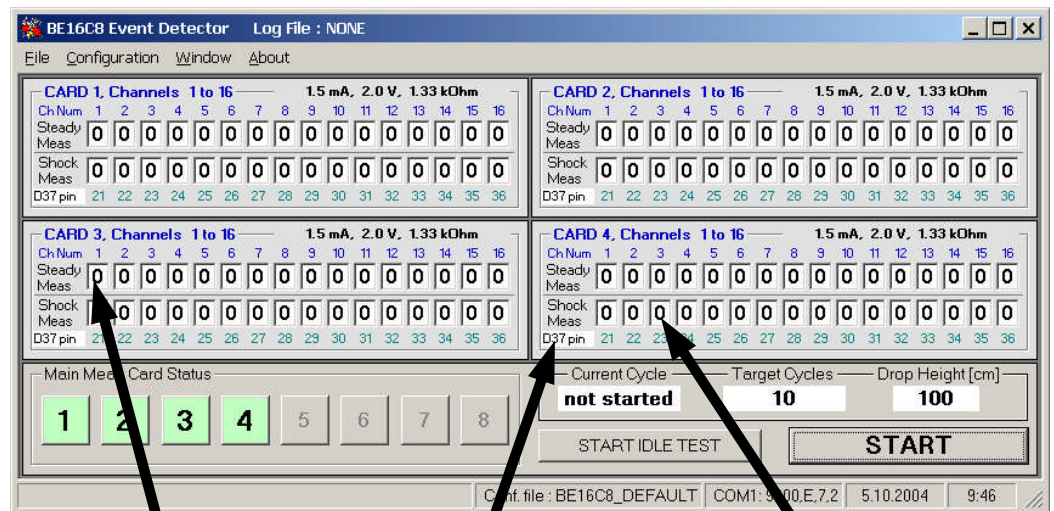


The components are well integrated to each other. When testing, the Windows PC controls the drop tester and event detector. Alternatively, the touch screen operated control panel can be used. The panel is typically used during the calibration and during the preparations before eventual test cycles.

¹ The models are Analysis Tech™ and Bluelec. Salon Teknopaja recommends and delivers today only Bluelec model (BE16C8)

The event detector's² intelligent software is fully integrated with the drop tester and the tester control can be operated using the graphical user interface.

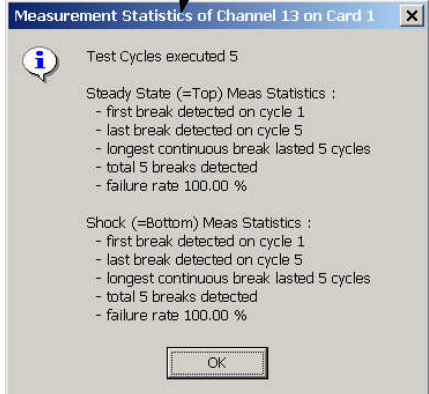
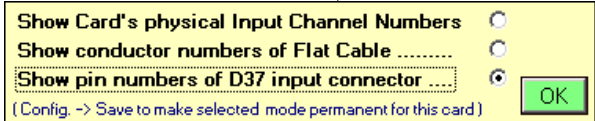
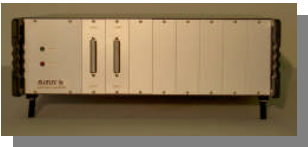
The user interface is well designed. It contains as many measurement card windows as there are cards installed in the detector (maximum 8 cards can be used). Each window shows clearly the status of the measured printed wiring board during the test. The breaks are presented in steady position and under



Break count is shown with numbers and changing colours

Clicking channels break count window the user will get brief statistics display

The user can choose what will be displayed in the bottom line



The results of the test are logged in a text file, where the values can easily be picked up for spread sheet programs for further analysis.

² The example displays are from Bluelec BE16C8 event detector

The user can flexible way configure the measured channels enabling, disabling or mapping them.

The basic configuration data covers measurement data, threshold data, stop conditions and drop tester settings.

- constant measuring current in range 0 to 20 mA in steps of 0.1 mA
- comparator's threshold voltage in range 0 to 9.8 V in steps of 38.7 mV
- comparator speed has 3 settings :
 LOW : breaks lasting about 3 us or more will be detected
 MEDIUM : breaks lasting about 1.5 us or more will be detected
 HIGH : breaks lasting about 0.6 us or more will be detected

Target height and target test cycles are defined by the user. After start the tester performs the test until the target cycle value is reached. The test can be stopped in any time and additional cycles can be added. Stop condition can be specified very flexibly in program's settings. The stop conditions can be defined or ignored. Stop condition means a user defined value, which specifies the desired amount of breaks detected per specified amount of channels of the card. When the condition is reached, the test is stopped immediately. This is useful when the user has a need to stop the test for example when first break in the board is detected.

shock.

The advanced configuration data covers clamp voltage, comparator speed, log related setting, additional drop tester related settings, channel configuration menu enabling or disabling and other user interface related setting.

Every measurement channel has separate and independent detecting hardware. Detecting hardware consist of fast comparator, speed control circuitry and RS-flipflop, which acts as memory. This hardware can detect very short breaks (about 0.6 micro seconds or more, if speed is configured to

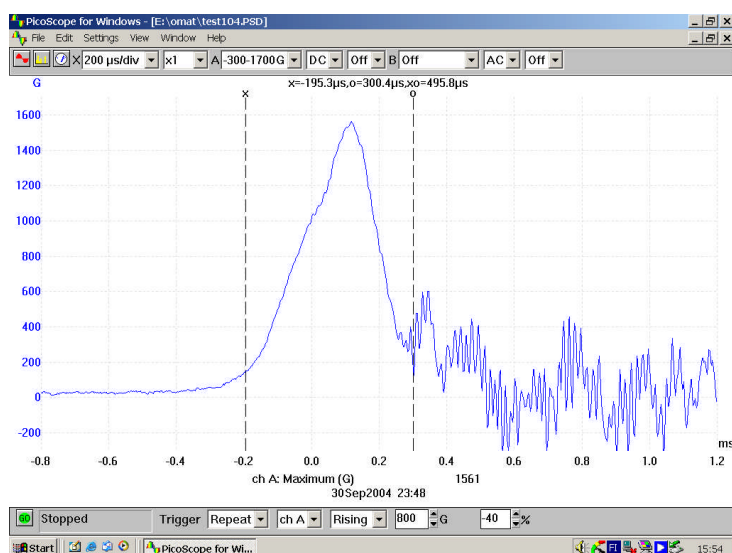
The detection method is "armed"; the measuring hardware is "armed" to detect breaks in prior to the drop. If breaks happen during the drop or actual shock, they are latched in the memory and then afterwards retrieved for logging and to show in the user interface. Next a steady state measurement is done to track cable breaks. These are logged and shown too.



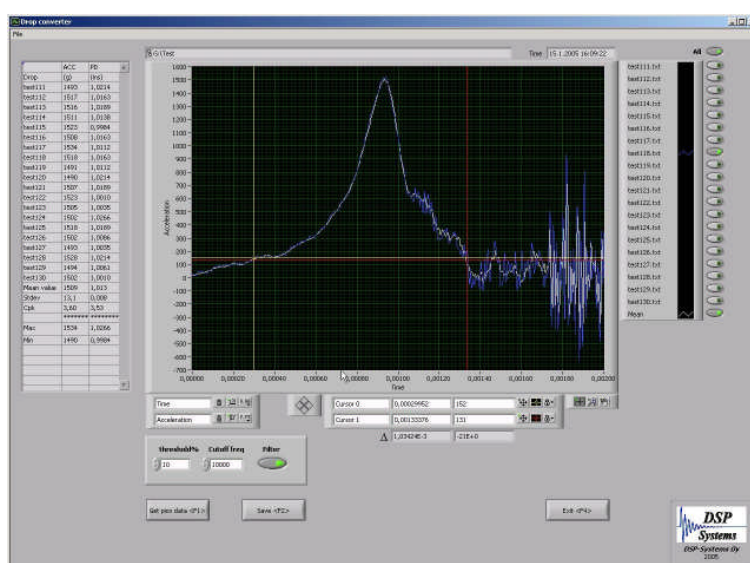
Calibration with PC Oscilloscope, Acceleration Sensor and Data Processing Software

The Drop tester is delivered with the PC oscilloscope, which combines high sampling rates with a high resolution. Together with the supplied software, the Windows PC can be used as a dual channel oscilloscope and spectrum analyzer.

PC oscilloscope is using acceleration sensor to measure the shock. During the calibration normally three parameters are being observed: peak acceleration, pulse duration and pulse shape. These can be easily monitored in the PC oscilloscope user interface and the results are also logged in a data file for further analysis. The specifications for measured parameters is dependant on the used testing method.



With specific data processing software the calibration results can be analysed and illustrated. This software automatically reprocesses the data files saved by the PC oscilloscope during the calibration.



PWB Level Drop Tester Specifications

General	Characteristics
Max drop height	Determines reliability of the PWC level against mechanical shock 1600 mm
Test control	In calibration mode controlled by touch screen (automatic operation, Omron logic CPM1A , Omron touch screen NT21S-ST161-EV3); in testing mode controlled by Windows PC and the event detector software (supplied together with the tester)
Cabinet	Protective, door with electric lock
Catcher	Catcher which eliminates the rebound, also possible to switch off
Test method by Jedec standard	Meets JEDEC requirements (tested with the following values of acceleration peak (G)/ pulse duration (ms): 2900 G/ 0.3 ms, 2000 G/ 0.4 ms and 1500 G/ 0.5 ms)
Test method by Nokia	Supported, use needs approval and NDA with Nokia
Size of the test board	Maximum 170 mm x 100 mm
Safety	CE Compliant
Cabinet dimensions	Dimensions W=670 mm (max 1265 mm with door fully open), D=570 mm, H=2500 mm
Weight of the tester	275 kg
Base shipping weight	365 kg (delivery box 90 kg)
Maximum acceleration	roughly 5000 g, depends on the absorption material
Noise level in use	range 50 – 90 dB, dependant on the absorber material, measured the door open from 3 meter's distance
Weight of the table	Drop table and stone 3,5 kg
Maximum drop weight	approx. 1,5 kg
Material of the table	nickel coating aluminium
Shock stone	Finnish granite, "Kurun harmaa"
Shock stone weight	approx. 100 kg
Standard power inputs	Standard Utility Requirements two models: with main power AC 240 V and with main power AC 110 V
Air input	not needed
Motor	0,18 kW with brake

PC Oscilloscope

Specifications

Salon Teknopaja delivers the drop tester packaged with PC Oscilloscope, originally manufactured and produced by the company Pico Technology Limited, United Kingdom.

PC Oscilloscope Characteristics

Channels	2x BNC + 1 external trigger
Analog Bandwidth	50 MHz
Sampling Rate (single channel)	100 MS/s
Sampling Rate (dual channel)	50 MS/s
Sampling Rate (repetitive signals)	5 GS/s
Resolution	12 bit
Buffer Size	128 KB
Dynamic range	80 dB
Scope timebases	100 ns/div to 50 s/div
Spectrum ranges	0 to 50 MHz
Trigger Modes	Free run, Auto, Repeat & Single
Pre/ post trigger	±100 %
Voltage ranges	±50 mV to ±20 V in nine ranges
Overload protection	±100 V
Input Impedance	1 MΩ
Coupling	AC, DC
Accuracy	± 1%
Power supply	500 mA @ 12 V (mains adaptor supplied)
Output connector	D25 to PC parallel port (cable supplied)
Dimension	140 x 190 x 45 mm
Supplied software	PicoScope (oscilloscope, spectrum analyser, meter), PicoLog (data logger), Drivers and examples. Software is compatible with XP/2000

Event Detector

Specifications

Salon Teknopaja delivers the drop tester packaged with the event detector, originally manufactured by the company Bluelec, Salo, Finland.

	Event Detector Characteristics
General	Windows User Interface, software in Windows PC, synchronised with the PWB Drop tester
Control	controlled via IEEE-488 / GPIB (GPIB controller needed in PC)
Measurement hardware	number of Measurement Cards : up to 8 (i.e. $8 * 16 = 128$ channels total)
Connection to Device Under Test	flat cable or equivalent from Measurement Card's D37 female connector, which has ground conductors (total 17) between adjacent signal conductors
Number of channels	Measurement Card Properties 16
Voltage threshold	0 ... +9.9 V, preset able in steps of 39 mV
Measuring current	0 ... 20 mA constant current , preset able in steps of 100 uA
Open circuit voltage clamp	0.7 ... 9.6 V, preset able in steps of 37.5 mV (Note: open circuit voltage clamp limits open (broken) circuit measuring voltage to a predetermined level)
Resistance threshold	10 Ohm ... > 5 k Ohm (Note: resistance values above "resistance threshold" are detected as breaks)
Minimum detectable break	< 600 ns, when measuring current > 5 mA and cable length < 2.5 m
Measuring interval	< 1 s
Dimensions	W=450 mm, D=450 mm, H=150 mm