

Secrets of Buying Transient Testers



Hardware First, Then Software

Hardware Issues:

- Hardware must meet and exceed all specifications in Basic Standard
- Verify waveforms and parameter compliance with specifications of Basic Standard.



ESD SIMULATOR

- Modular Design
- R-C Network and contact relay as close to tip as possible
- Meets proposed smooth waveform requirements of IEC 61000-4-2
- Comfortable
- Tripod mount
- Programmable
- Memory
- Pistol mounted controls & display
- Info and error messages in case of trouble during testing.

ESD SIMULATOR

- Encapsulated R-C circuit and relay.
- No moving parts (polarity change or discrete R-C module)
- Electronic and programmable Polarity Switching
- Battery power unit for freedom of movement around EUT.



SURGE GENERATOR

- Solid State High Voltage Discharge Switch
 - Stable pulse parameters with every shot
 - Phase angle synchronization
 - Reliability
- Verify Impulse wave forms Open and Short Circuit

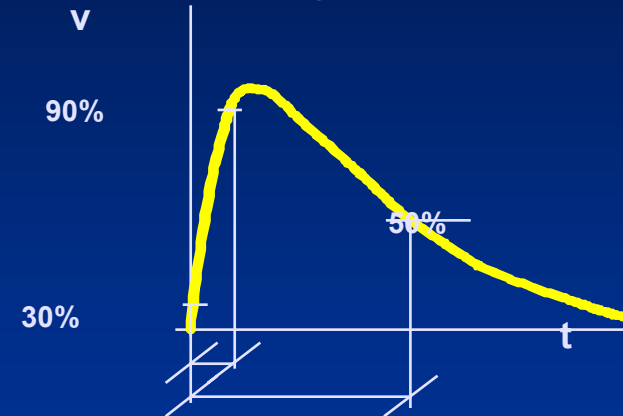


Verification Of The Surge Generator

Surge Generator



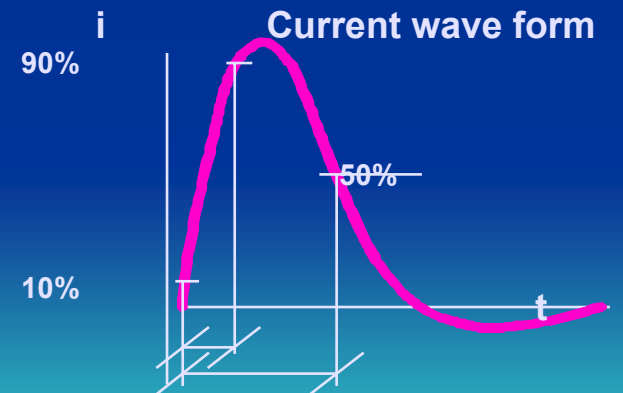
Voltage wave form



Surge Generator



Current wave form



SURGE GENERATOR

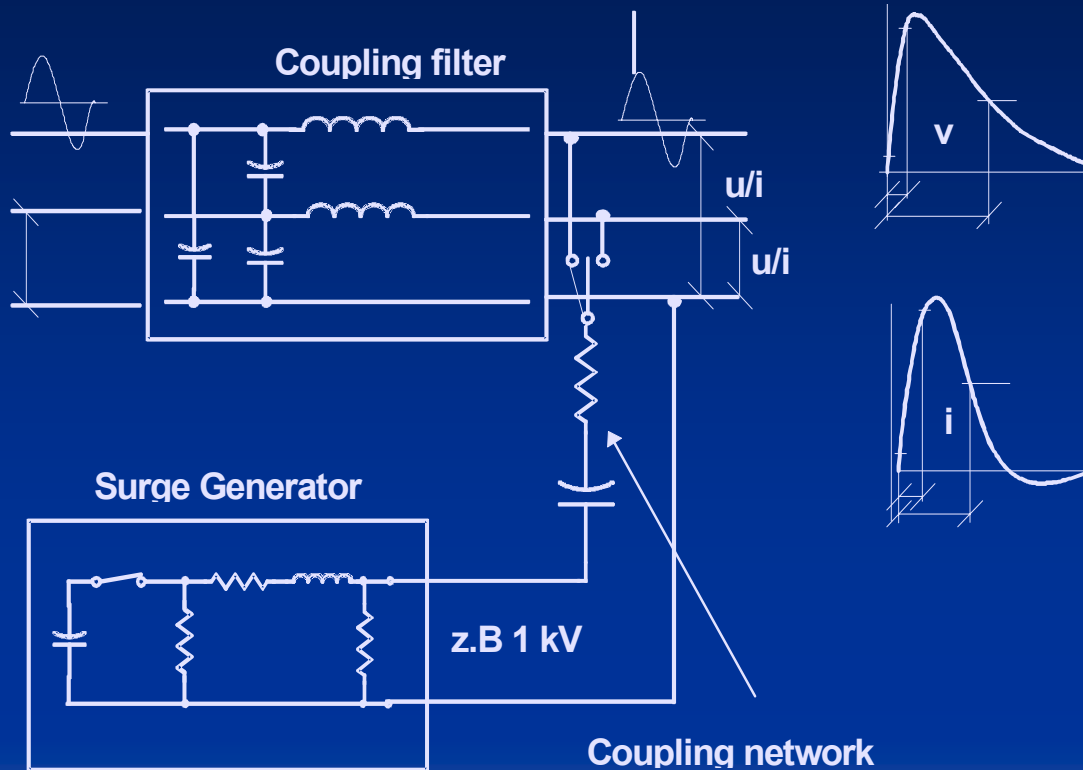
Verify CWG Waveforms Open and Short Circuit at CDN output:

- Differential Mode: Same as at Generator Output
- Common Mode: Verify 12 Ohm impedance and expect significant voltage pulse width reduction



Verification Of The CDN

Differential & Common Mode Outputs



CN-Verification

z.B. Generator 1kV

L1 - N

The current wave form and the voltage Must be within the tolerances.

L1-PE and N-PE

Current and voltage are outside tolerances

Reason:

Coupling path

10 Ohm

Unsurged lines (Crosstalk)

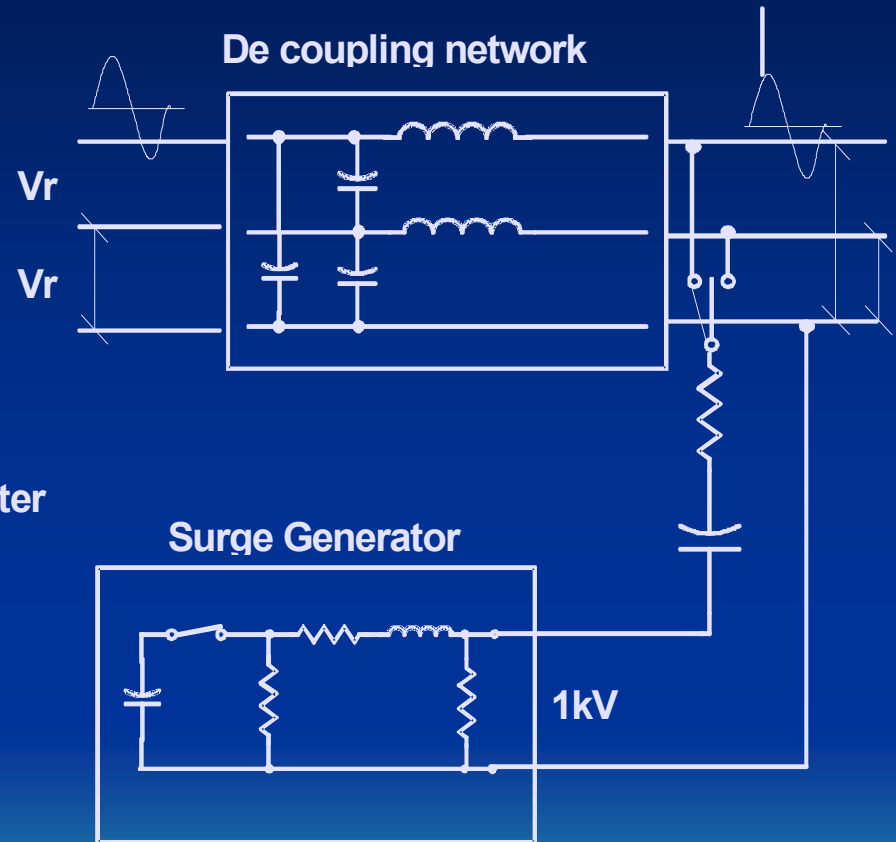
< 15% of V surge

z.B. < 150 V

Verification Of The CDN Residual Surge Pulse

$V_r < 15\%$ of U-Surge max or
Less than 2x mains voltage or
 $V_r \text{ max} = 230\text{V} \times 1.414 \times 2 = 650\text{V}$

All inputs must be tested of the filter
E.g single phase
L1 - N ; N - PE ; L1 - PE

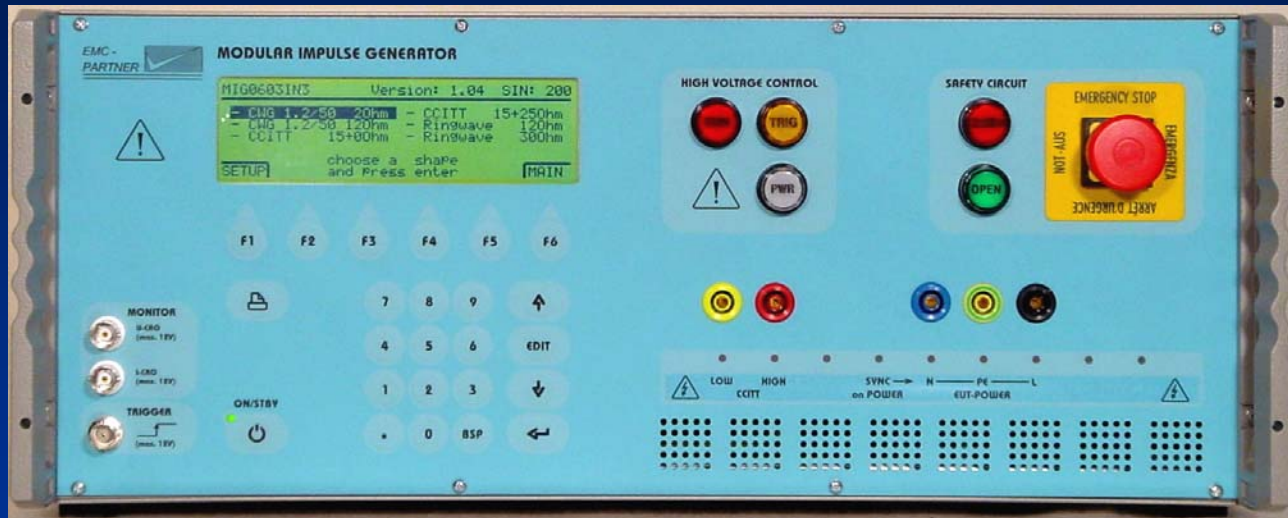


SURGE GENERATOR

- De-Coupling inductor value: 1.5mH
- Meet impedance and coupling specs. of IEC and ANSI Single & 3-phase.
- Ring Wave – 12, 30, and 200 Ohm impedances & damping to meet IEC & ANSI requirements.

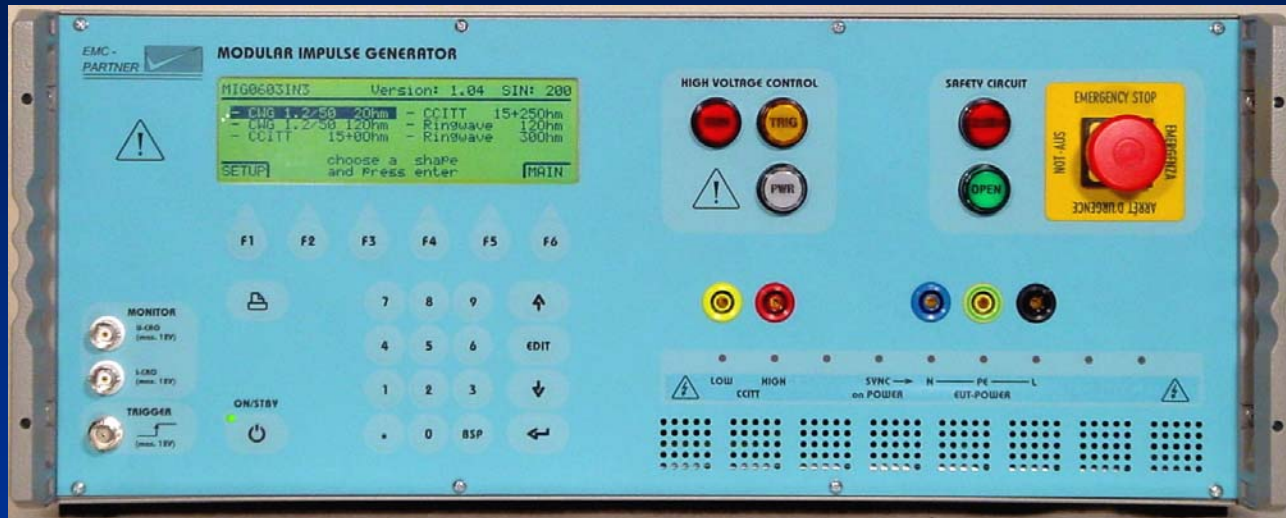


SURGE GENERATOR



- Scope Trigger Output on front panel
- Differential Voltage Monitor Port
- Current Monitor Port

SURGE GENERATOR



- Emergency Stop -- Obvious, readily accessible cuts power & surge
- Ability to control EUT power before, during, and after test
- Automation and Programmability
 - Coupling Paths
 - Polarity
 - Voltage Levels (x2 for common mode 61000-4-5)
 - Phase Angles

CWG & 100 kHz Ring Wave Surge on 100 Amp Mains

Special design required in CDN:

- Keep voltage drop less than 10% of nominal so EUT will operate properly.
- Ensure that CDN does not choke current draw by switching power supplies or DC to DC converters.



Software Issues:

- Runs on your operating system.
- Reliably controls and communicates with hardware
- Test and Program Libraries or Directories
- Drag and Drop program creation
- Decisions via impulse monitor circuits and/or scope.
- Automatic Scope set up and transfer oscillograms into test report.



Software - Test Reports:

- Automatic Report as HTML file
- Several templates
- Enable custom templates
- Include all fields required from Basic Standard
- Enable thorough EUT description
- Enable operator notes to be inserted real time and mark particular events
- Enable EUT pictures to be inserted



EFT Generator

- Ability to provide burst duration less than 0.07 ms
- 1MHz spike repetition rate
- Ability to synchronize to bursts to phase angle
- Pulse shape verification into 50 Ohm and 1 K Ohm



Voltage Dips & Interrupts Tester

- Switch from nominal to Dip or Interrupt level within standard specified 1-5 us.
- Full compliance with -11; only possible with variac and electronic switching
- Ability to synchronize with any phase angle (not just zero crossings)
- Ability to be set to any dip or interrupt level; not just the three in the Generic standard
- Ability to perform optional voltage variations (requires variac)

