VCS 500N7T
SURGE/TELECOM SURGE GENERATOR

FOR TESTS ACCORDING TO...

- EN 300329
- EN 300340
- EN 300342-1
- EN 300386-2
- EN 300386 V1.3.2
- EN 301489-1
- EN 301489-17
- EN 301489-24
- EN 301489-7
- EN 61000-4-5
- EN 61000-4-9
- EN 61000-6-1
- EN 61000-6-2
- FCC 97-270 (part 68)
- IEC 60255-22-5
- IEC 61000-4-5
- IEC 61000-4-9
- IEC 61326
- IEC 61850-3
- ITU-T K.12

COMBINED COMBINATION WAVE / TELECOM SURGE GENERATOR

Surge pulses occur due to direct or indirect lightning strokes to an external (outdoor) circuit. This leads to currents or electromagnetic fields causing high voltage or current transients. Another source for surge pulses are switching transients originating from switching disturbances and systems faults.

Due to the characteristic of the phenomenon nearly every electrical and electronical device may suffer from such lightning events which justifies the necessity of surge tests being widely performed. Surge voltage can reach several thousands of volts and surge current is seen to reach several thousands of amps.

HIGHLIGHTS

- Surge voltage up to 7 kV
- Surge current up to 3.5 kA
- Telecom surge voltage up to 7 kV
- Telecom surge current up to 465 A
- Voltage/current monitors
- Built-in 1ph CDN 16 A
- Interlock

APPLICATION AREAS

- INDUSTRY
- TELECOM
- COMPONENTS
- RESIDENTIAL
- MEDICAL
- BROADCAST

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### TECHNICAL DETAILS

#### SURGE GENERATOR

**AC POWER PORT TESTING, PULSE 1.2/50 US - 8/20 US AS PER IEC 61000-4-5**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (o.c.)</td>
<td>250 V - 7,000 V ±10 %</td>
</tr>
<tr>
<td>Rise time</td>
<td>1.2 us ± 30 %</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>50 us ± 20 %</td>
</tr>
<tr>
<td>Current (s.c.)</td>
<td>125 A - 3,500 A</td>
</tr>
<tr>
<td>Rise time</td>
<td>8 us ± 20 %</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>20 us ± 20 %</td>
</tr>
<tr>
<td>Polarity</td>
<td>Positive, negative or alternating</td>
</tr>
<tr>
<td>Counter</td>
<td>1 - 30,000 or endless</td>
</tr>
</tbody>
</table>

**TELECOM PORT TESTING, PULSE 10/700 US AS PER IEC 61000-4-5**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (o.c.)</td>
<td>250 V - 7,000 V ±10 %</td>
</tr>
<tr>
<td>Rise time</td>
<td>10 us ± 30 %</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>700 us ± 20 %</td>
</tr>
<tr>
<td>Current (s.c.)</td>
<td>6.25 A - 175 A</td>
</tr>
<tr>
<td>Rise time</td>
<td>5 us ± 20 %</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>320 us ± 20 %</td>
</tr>
<tr>
<td>Energy storage capacitor</td>
<td>20 uF</td>
</tr>
<tr>
<td>Polarity</td>
<td>Positive, negative or alternating</td>
</tr>
<tr>
<td>Counter</td>
<td>1 - 30,000 or endless</td>
</tr>
</tbody>
</table>

**TELECOM TESTING PULSE 10/700US AS PER ITU AND ETS RECOMMENDATIONS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (o.c.)</td>
<td>250 V - 7,000 V ±10 %</td>
</tr>
<tr>
<td>Rise time</td>
<td>10 us ± 30 %</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>700 us ± 20 %</td>
</tr>
<tr>
<td>Energy storage capacitor</td>
<td>20 uF</td>
</tr>
<tr>
<td>Polarity</td>
<td>Positive, negative or alternating</td>
</tr>
<tr>
<td>Counter</td>
<td>1 - 30,000 or endless</td>
</tr>
</tbody>
</table>

**PULSE OUTPUT**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Outputs with HV connectors:</td>
</tr>
<tr>
<td></td>
<td>- Z1 = 2 ohm: 1.2/50 us - 8/20 us with optional adapter IMN2</td>
</tr>
<tr>
<td></td>
<td>- Z1 = 15 ohm: 10/700 us - 5/320 us for external couplers</td>
</tr>
</tbody>
</table>

#### SURGE GENERATOR POWER PORTS

**COUPLING ONTO POWER PORTS AS PER IEC 61000-4-5**

- L-N, L-PE, N-PE, L+N-PE
- Single phase 250 V/16 A, AC/DC

**COUPLING ONTO TELECOM PORTS AS PER ITU-T and ETS**

- 2-wire T1, T2 with 25 ohm each
- 4-wire T1, T2, T3, T4 with 25 ohm each
- FCC part 68
- 2-wire T1 and T2 with 25 ohm each
- IEC 61000-4-5
- 4-wire T1, T2, T3, T4 with 25 ohm each

#### MEASUREMENTS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak voltage</td>
<td>7,000 V in the LCD display</td>
</tr>
<tr>
<td>Peak current</td>
<td>3,500 A in the LCD display</td>
</tr>
<tr>
<td>CRO Û-monitor</td>
<td>10 Vp for 7,000 V</td>
</tr>
<tr>
<td>CRO Î-monitor</td>
<td>10 Vp for 3,500 A</td>
</tr>
</tbody>
</table>

#### TRIGGER

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trigger of events</td>
<td>Automatic, manual, external</td>
</tr>
<tr>
<td>CRO trigger</td>
<td>5V trigger signal for oscilloscope</td>
</tr>
<tr>
<td>Synch.</td>
<td>0° - 360° on ac power ports</td>
</tr>
</tbody>
</table>

#### TEST Routines

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick Start</td>
<td>Immediate start; easy-to-use and fast</td>
</tr>
<tr>
<td>User Test routines</td>
<td>Change Polarity after n pulses</td>
</tr>
<tr>
<td></td>
<td>Change voltage after n pulses</td>
</tr>
<tr>
<td></td>
<td>Change coupling after n pulses</td>
</tr>
<tr>
<td></td>
<td>Change phase angle after n pulses</td>
</tr>
<tr>
<td>Standard Test</td>
<td>As per IEC 61000-4-5, Levels 1 - 4</td>
</tr>
<tr>
<td></td>
<td>As per ITU-T</td>
</tr>
<tr>
<td>Service</td>
<td>Service, set-up</td>
</tr>
</tbody>
</table>

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### GENERAL DETAILS

#### INTERFACE
- Serial interface
- USB interface
- Parallel interface: IEEE 488, addresses 1 - 30
- CN interface: To control external coupling matrix

#### SAFETY
- Safety circuit: Control input (24 Vdc)
- Warning lamp: Floating output contact

#### GENERAL DATA
- Dimensions, weight: 19"/6 HU, approx. 34 kg
- Supply voltage: 115/230 V ±10/-15 %
- Fuses: 2 x 2 AT (230 V) or 2 x 4 AT (115 V)

### OPTIONS

#### COUPLING/DECOUPLING NETWORKS FOR POWER LINES
- **CNI 503A5**: 3phase coupling/decoupling network for EFT/Surge; 3x480 V/16 A
- **CNI 503A7**: 3phase coupling/decoupling network for EFT/Surge; 3x480 V/32 A
- **CNI 503A8**: 3phase coupling/decoupling network for EFT/Surge; 3x480 V/63 A
- **CNI 503A9**: 3phase coupling/decoupling network for EFT/Surge; 3x480 V/100 A
- **CNV 503S5**: 3phase coupling/decoupling network for Surge only; 3x480 V/32 A
- **CNV 503S6**: 3phase coupling/decoupling network for Surge only; 3x480 V/63 A
- **CNV 503S7**: 3phase coupling/decoupling network for Surge only; 3x480 V/100 A

#### COUPLING/DECOUPLING NETWORKS FOR SIGNAL/DATA LINES
- **CNV 504N1**: CDN for 4 signal lines
  - Test voltage up to 4 kV
- **CNV 508N1**: CDN for 8 signal lines
  - Test voltage up to 4 kV
- **CNV 504N2**: CDN for 4 signal lines
  - Test voltage up to 7 kV
- **CNV 508N2**: CDN for 8 signal lines
  - Test voltage up to 7 kV

#### COUPLING/DECOUPLING NETWORKS FOR TELECOM LINES
- **CNV 504T5**: Coupling/decoupling network for unshielded symmetrical lines (communication lines) as per IEC/EN 61000-4-5 Ed.3 (fig. 10) for 4 lines.
- **CNV 508T5**: Coupling/decoupling network for unshielded symmetrical lines (communication lines) as per IEC/EN 61000-4-5 Ed.3 (fig. 10) for 4 lines.
- **CNV 504S13**: Impedance network 4 x 25 ohm
  - Test voltage up to 4 kV
- **CNV 504S10**: Impedance network 4 x 25 ohm
  - Test voltage up to 10 kV

#### OPTIONS
- **iec.control 1**: Remote control and documentation software, including standard test routines and reporting capabilities.
- **IMN 2**: Impedance matching adapter to match direct output for Surge to 2 ohm source impedance

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**PULSED MAGNETIC FIELD AS PER IEC 61000-4-9**

- **MS 100N**: Magnetic field coil for up to 3,200 A/m
COMPETENCE WHEREVER YOU ARE

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Information about scope of delivery, visual design and technical data correspond with the state of development at time of release. Subject to change without further notice.