

# VCS 500N10T

## COMBINATION WAVE (SURGE) AND TELECOM SURGE GENERATOR UP TO 10KV



### FOR TESTS ACCORDING TO ...

- › EN 300386 V1.3.2
- › EN 61000-4-5
- › EN 61000-4-9
- › IEC 60255-22-5
- › IEC 61000-4-5
- › IEC 61000-4-9
- › IEC 61326
- › IEC 61850-3
- › ITU-T K.12
- › ITU-T K.20
- › ITU-T K.21
- › ITU-T K.45

### 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 electronic 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

- › **Combination Wave up to 10kV/5kA**
- › **Telecom surge voltage up to 10kV**
- › **Telecom surge current up to 666A**
- › **Repetition rate 60s @10kV Surge**
- › **Built-in coupling for telecom port testing**
- › **USB (optical link) and GPIB interface**
- › **Interlock**

### APPLICATION AREAS

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

**TECHNICAL DETAILS**

**SURGE GENERATOR**

AC POWER PORT TESTING, PULSE 1.2/50US - 8/20US AS PER IEC 61000-4-5	
Voltage (o.c.)	500V - 10,000V ±10%
Rise time	1.2us ± 30%
Pulse duration	50us ± 20%
Current (s.c.)	250A - 5,000A
Rise time	8us ± 20%
Pulse duration	20us ± 20%
Polarity	Positive, negative or alternating
Counter	1 - 30,000 or endless

TELECOM PORT TESTING, PULSE 10/700US - 4/300US AS PER IEC 61000-4-5	
Voltage (o.c.)	500V - 10,000V ±10%
Rise time	10us ± 30%
Pulse duration	700us ± 20%
Current (s.c.)	12.5A - 250A
Rise time	5us ± 20%
Pulse duration	320us ± 20%
Energy storage capacitor	20uF
Source impedance	40ohm (15ohm from generator and 25ohm at Tx)
Polarity	Positive, negative or alternating
Counter	1 - 30,000 or endless

TELECOM TESTING PULSE 10/700US AS PER ITU AND ETS RECOMMENDATIONS	
Voltage (o.c.)	500V - 10,000V ±10%
Rise time	10us ± 30%
Pulse duration	700us ± 20%
Energy storage capacitor	20uF
Polarity	Positive, negative or alternating
Counter	1 - 30,000 or endless

PULSE OUTPUT	
Direct	Outputs with HV connectors: - Zi = 2ohm : 1.2/50us - 8/20us - Zi = 15ohm : 10/700us - 5/320us - for external couplers

**SURGE GENERATOR**

COUPLING ON TO MAINS SUPPLY LINES AS PER	
	External CDN is required
IEC 61000-4-5	Line(s) to line with 2ohm Line(s) to ground with 12ohm
ITU-T	Line(s) to line with 2ohm Line(s) to ground with 2ohm

COUPLING ONTO TELECOM PORTS AS PER	
ITU-T	2-wire T1,T2 with 25ohm each 4-wire T1,T2, T3,T4 with 25ohm each
FCC Part 68	2-wire T1,T2 with 25ohm each
IEC 61000-4-5	4-wire T1,T2, T3,T4 with 25ohm each

MEASUREMENTS	
CRO Ū-monitor	10Vp for 10,000V
CRO Î-monitor	10Vp for 5,000A
Peak voltage	10,000V in the LCD display
Peak current	5,000A in the LCD display

TRIGGER	
Trigger of events	Automatic, manual, external
CRO trigger	5V trigger signal for oscilloscop
Synchronisation	0° - 360° on ac power ports

TEST ROUTINES	
Quick Start	Immediate start; easy-to-use and fast
User Test routines	User Test Routines Change Polarity after n pulses Change voltage after n pulses Change coupling after n pulses Change phase angle after n pulses
Standard Test routines	As per IEC 61000-4-5, Levels 1 - 4 As per ITU-T
Service	Service, set-up

## TECHNICAL DETAILS

## GENERAL DATA

## INTERFACE

Optical interface	Opto link, 3 m cable USB A connector
Parallel interface	IEEE 488, addresses 1 - 30
CN interface	To control external coupling matrix

## SAFETY

Safety circuit	Control input (24Vdc)
Warning lamp	Floating output contact

## DIMENSIONS

Dimensions	19"/12HU
Weight	approx. 44kg

## MAINS

Supply voltage	115/230V +10/-15%
Fuses	2 x T2AT (230V) or 2 x T4AT (115V)

## OPTIONS

## DIRECT COUPLING FROM HV - COM OUTPUT

IMN2	Impedance matching adapter to match direct output for Surge to 20ohm source impedance
------	---

## COUPLING/DECOUPLING NETWORKS FOR POWER LINES

CNV 503S9.1	3phase coupling/decoupling network for Surge as per IEC 61000-4-5 and ITU-T 3x480V/16A
CNI 503S10.1	3phase coupling/decoupling network for Surge as per IEC 61000-4-5 and ITU-T 3x480V/32A

## OPTIONS

## COUPLING/DECOUPLING NETWORKS FOR SIGNAL/DATA LINES

General data	Coupling/decoupling networks for Surge and Ringwave with 40ohm via 0.5µF capacitor or arrestor (as per Fig. 9, IEC 61000-4-5 Ed.3); with 3.3µF capacitor for Ringwave (as per Fig. 9, IEC 61000-4-12 Ed.2)
CNV 504N3	CDN for 4 signal lines Test voltage up to 10kV
CNV 508N3	CDN for 8 signal lines Test voltage up to 10kV

## 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 504S10	Impedance network 4 x 25ohm Test voltage up to 10kV

## COUPLING/DECOUPLING FOR HIGH-SPEED COMMUNICATION LINES

CNI 508N1 assembly	Application for shielded lines or unshielded lines
CNI 508N1	Coupling/decoupling network for shielded high-speed communication lines
CN 508N1	Coupling network for unshielded high-speed communication lines
SPN 508N1	Protection network for the auxiliary equipment (AE) with unshielded lines

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

MS 100N	Magnetic field coil for up to 3,200A/m
---------	--

# COMPETENCE WHEREVER YOU ARE



## CONTACT EM TEST DIRECTLY

### Switzerland

AMETEK CTS GmbH › Sternenhofstraße 15 › 4153 Reinach › Switzerland  
Phone +41 (0)61 204 41 11 › Fax +41 (0)61 204 41 00  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [sales.conducted.cts@ametek.com](mailto:sales.conducted.cts@ametek.com)

### Germany

AMETEK CTS Europe GmbH › Customer Care Center EMEA › Lünener Straße 211  
› 59174 Kamen › Germany  
Phone +49 (0) 2307 26070-0 › Fax +49 (0) 2307 17050  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [info.cts.de@ametek.com](mailto:info.cts.de@ametek.com)

### Poland

AMETEK CTS Europe GmbH › Biuro w Polsce › ul. Twarda 44 › 00-831 Warsaw › Poland  
Phone +48 (0) 518 643 12  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [Infopolska.cts@ametek.com](mailto:Infopolska.cts@ametek.com)

### USA / Canada

AMETEK CTS US › 52 Mayfield Ave › Edison › NJ 08837 › USA  
Phone +1 732 417 0501  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [usasales.cts@ametek.com](mailto:usasales.cts@ametek.com)

### P.R. China

AMETEK Commercial Enterprise (Shanghai) Co. Ltd. › Beijing Branch › Western Section, 2nd floor › Jing Dong Fang Building (B10) › Chaoyang District › Beijing, China, 100015  
Phone +86 10 8526 2111 › Fax +86 (0)10 82 67 62 38  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [chinasales@ametek.com](mailto:chinasales@ametek.com)

### Republic of Korea

EM TEST Korea Limited › #405 › WooYeon Plaza › #986-8 › YoungDeok-dong › Giheung-gu › Yongin-si › Gyeonggi-do › Korea  
Phone +82 (31) 216 8616 › Fax +82 (31) 216 8616  
Internet: [www.emtest.co.kr](http://www.emtest.co.kr) › E-mail: [sales@emtest.co.kr](mailto:sales@emtest.co.kr)

### Singapore

AMETEK Singapore Pte. Ltd › No. 43 Changi South Avenue 2 › 04-01 Singapore 48164  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [singaporesales.cts@ametek.com](mailto:singaporesales.cts@ametek.com)

### Great Britain

AMETEK GB › 5 Ashville Way › Molly Millars Lane › Wokingham › Berkshire RG41 2 PL › Great Britain  
Phone +44 845 074 0660  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com)

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.