

# TSS 500M4

## TELECOM SURGE GENERATOR



### TSS 500M4 - COMPACT TELECOM SURGE GENERATOR WITH 10/700US TEST PULSE







Telecommunication networks are exposed to lightning events. Therefore telecommunications equipment being connected to the outside world need to have appropriate protection to show an acceptable immunity to surge transients in order not to fail in case of lightning events. Telecom Surge simulators of the TSS 500 series are used to proof the immunity of telecommunications equipment.

The TSS 500M4 is used to perform tests as per IEC 61000-4-5 and related standards and complies with the requirements of ITU-T and FCC 97-270 (part 68) for Surge B pulse.

#### HIGHLIGHTS

- > **STANDALONE TESTER FOR 10/700US PULSE AS PER IEC 61000-4-5**
- > **COMPLIES TO ITU-T**
- > **COMPLIES TO FCC PART 68 (SURGE B PULSES)**
- > **BUILT-IN CDNS FOR 2-WIRE AND 4-WIRE APPLICATIONS**
- > **MANUAL OPERATION**
- > **STANDARD TEST ROUTINES**

#### APPLICATION AREAS

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

## TECHNICAL DETAILS

### STANDARDS

FCC 97-270 (part 68), IEC 61000-4-5, ITU-T K.17, ITU-T K.20, ITU-T K.21, ITU-T K.28, ITU-T K.45

### BENEFITS

#### **TSS 500M4 - 10/700US PULSE GENERATION AND COUPLING NETWORKS IN ONE BOX**

The TSS 500M4 is a compact tester to generate the Telecom Surge pulses 10/700us and 9/720us as well as the 1.2/50us Voltage Surge pulse.

The TSS 500M4 is not just the pulse generator but it comes with the built-in coupling networks for 2-wire and 4-wire test applications. The outputs can directly be connected to the Telecom ports of the DUT. For testing Telecom lines EM TEST offers the appropriate coupling networks for 4-wire or 8-wire lines.

Pre-programmed Standard Test routines allow highest user convenience. Still the TSS 500M4 offers the Quick Start test routine where parameters can be changed on-line during the test to evaluate the susceptibility level of an individual DUT.



### OPERATION

#### **EASY TO OPERATE**

Front panel menu and function keys enable the user to program his test routines quickly and accurately. The cursor allows fast control of all test parameters of the programmed routine, thus test procedures are simplified and confidence is generated that every step is carried out correctly.

### SOFTWARE

#### **IEC.CONTROL SOFTWARE FOR CONTROL AND DOCUMENTATION**

Outstanding user convenience, clearly structured windows and operation features and the EM TEST standards library along with the flexibility to generate user specific test sequences very easily are the main features of iec.control software. The software is automatically configured according to the connected EM TEST generators. Extensive reporting capabilities help the user to create test reports that meet international requirements.

iec.control is supported by Windows 95/98, Windows ME, Windows NT, Windows 2000, Windows XP and Windows Vista. Remote control is achieved either via RS232 or GPIB. iec.control supports a wide range of GPIB cards of National Instruments.

### OTHER MODELS

#### **TELECOM WORLDWIDE WITH EM TEST**

The TSS 500M series covers the wide range of Telecom Surge requirements as per Bellcore GR-1089-Core, FCC 97-270 (part 68) and the various ITU-T recommendations as well as the requirements of many EN/IEC standards and some national Telecom Standards. For the complete overview please select "More Info".

### AUXILIARY DEVICES

#### **CNV 504/508 - COUPLING NETWORKS FOR SURGE TESTS ON TELECOM LINES**

The coupling networks CNV 504S1 and CNV 508S1 are designed as per IEC 61000-4-5 for Surge tests on Telecom lines. Two different models are available for 4-wire and 8-wire applications. The decoupling network consists of pairwise current-compensated inductors. The coupling of the Surge pulses is achieved via gas arrestors as recommended by IEC 61000-4-5.

**TECHNICAL DETAILS**

AS PER ITU AND ETS RECOMMENDATIONS	
	Pulse 1.2/50us
Voltage (o.c.)	160V - 4,000V ±10%
Rise time*)	1.0us ± 30%
Pulse duration*)	50us ± 20%
Energy storage capacitor	1uF
	Pulse 10/700us
Rise time*)	6.5us ± 30%
Pulse duration*)	700us ± 20%
Energy storage capacitor	20uF
Polarity	Positive, negative or alternating
Counter	1 - 30,000 or endless
	*) definition of waveform parameters as per IEC 469-1. As per IEC 61000-4-5 this is considered to be equal to the waveform parameter definition as per IEC 60-1 for the 1.2/50us pulse and CCITT for the 10/700us pulse.

AS PER FCC PART 68, PULSE B	
Voltage (o.c.)	160V - 4,000V ±10%
Front time	9us ± 30%
Decay time	720us ± 20%
Current (s.c.)	4A - 100A
Front time	5us ± 30%
Decay time	320us ± 20%
Energy storage capacitor	20uF
Polarity	Positive, negative or alternating
Counter	1 - 30,000 or endless

AS PER IEC 61000-4-5	
	Pulse 10/700us
Voltage (o.c.)	160V - 4,000V ±10%
Rise time*)	6.5us ± 30%
Pulse duration*)	700us ± 20%
Current (s.c.)	4A - 100A
Rise time*)	4us ± 20%
Pulse duration*)	300us ± 20%
Energy storage capacitor	20uF
Polarity	Positive, negative or alternating
Counter	1 - 30,000 or endless
	*) definition of waveform parameters as per IEC 469-1. As per IEC 61000-4-5 this is considered to be equal to the waveform parameter definition as per IEC 60-1 for the 1.2/50us pulse and CCITT for the 10/700us pulse.

COUPLING AS PER	
ITU-T	2-wire: T1 and T2 with 25ohm each 4-wire: T1,T2,T3,T4 with 100ohm each
FCC part 68	2 wire: T1 and T2 with 25ohm each
IEC 61000-4-5	External networks are required (options)

TRIGGER	
Automatic	Automatic pulse release
Manual	Single pulse release
External	External pulse release
CRO trigger	5V trigger signal for oscilloscope

TEST ROUTINES	
Quick Start	Immediate start; easy to use and fast
User Test routines	Change Polarity after n pulses Change voltage after n pulses
Standard Test routines	IEC 61000-4-5 Level 1,000V IEC 61000-4-5 Level 2,000V IEC 61000-4-5 Level 4,000V FCC part 68, Pulse B Metallic 1,000V FCC part 68, Pulse B Longitudinal 1,500V
Service	Service, setup, self test

## TECHNICAL DETAILS

### INTERFACE

Serial interface	RS 232, baud rate 1,200 - 19,200
Parallel interface	IEEE 488, address 1 - 30

### SAFETY

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

### GENERAL DATA

Dimensions, weight	19"/3HU, approx. 20kg
Supply voltage	115/230V +10/-15%
Fuses	2xT 2AT (230V) or 2xT4AT (115V)

### OPTIONS

CNV 504S1	4 telecom lines as per fig. 12, IEC 61000-4-5
CNV 508S1	8 telecom lines as per fig. 12, IEC 61000-4-5
CNV 504S5	Coupling network providing 4x100ohm and 2x25ohm
iec.control	Software to control the test, including standard library, test report facility and data conversion generator

# COMPETENCE WHEREEVER YOU ARE



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