


CONDUCTED SUSCEPTIBILITY

MILITARY & AEROSPACE TESTING



 This document has been
optimized for electronic media



WHEN GETTING RESULTS MATTERS

THERE IS ONLY ONE CHOICE

Military and avionic testing is all about quality and precision. MIL3000 brilliantly fulfills these requirements.

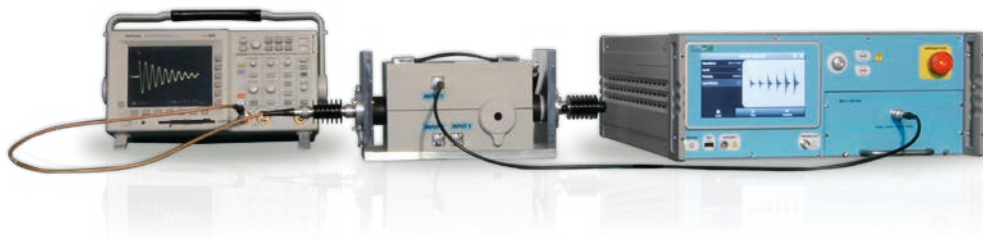
A flexible solution that includes:

- › MIL-STD-461 CS106 transients, power leads
- › MIL-STD-461 CS115 bulk cable injection
- › MIL-STD-461 CS116 damped sinusoidal transients
- › MIL-STD-1275 Imported spikes
- › DO-160 section 17 Voltage spikes
- › DO-160 section 19 Inductive switching transients

Ease of use, predefined test routines and large aperture couplers make MIL3000 the most efficient and technically advanced instrument in this category.

FLEXIBLE SOLUTION

MIL3000 modular test system is the first of its kind to employ touch screen technology. An enhanced user interface and choice of couplers allow easy expansion to a test suite for MIL-STD and DO-160 impulse requirements



MIL3000 TEST SYSTEM

- MIL3000 Mainframe Unit

Available Plug-Ins

- MIL3-REC (CS115)
- MIL3-10K10M (CS116)
- MIL3-30M100M (CS116)
- MIL3-SPIKE
- MIL3-1275
- MIL3-DO-160 S17
- MIL3-DO-160 S19

Accessories for MIL-STD-461

- **CN-BT6**
Only one coupler for CS115 and CS116 testing. No change of EUT cables position. Aperture diameter (50mm)
- **VERI-MIL3**
Includes all necessary calibration and measurement loads.

Included Benefits

Stable	Pulse reproducibility during test cycle
Precise	Repeatable test results over long time
Reliable	Evolution of established technology
Fast	Minimum setup and calibration time
Polarity	Maintain test integrity by electronic switching
Automated	Save and repeat test routines.

AVAILABLE PLUG-INS

Modules are available for MIL3000 system to cover the CS115, CS116, CS106, DO-160 section 17 and 19 test requirements. Select modules for specific test and later add new modules to enhance the system capability. New modules are automatically recognised and controlled by the system firmware.



MIL3-REC

MIL-STD-461 / CS115

- › Bulk cable injection impulse
- › Rise & fall time < 2ns pulse duration 30ns



MIL3-10K10M

MIL-STD-461 / CS116

- › Damped sinusoidal transients
- › Oscillation frequencies 10kHz, 100kHz, 1MHz, 10MHz.



MIL3-30M100M

MIL-STD-461 / CS116

- › Damped sinusoidal transient
- › Oscillation frequencies 30MHz, 100MHz.



MIL3-SPIKE

MIL-STD-461 / CS106

- › Transients, power leads
- › Rise time 1.5us and pulse duration 5us



MIL3-1275

MIL-STD-1275

- › Imported spike
- › Oscillation frequency 100kHz



MIL3-DO-160-S17

DO-160 SECTION 17

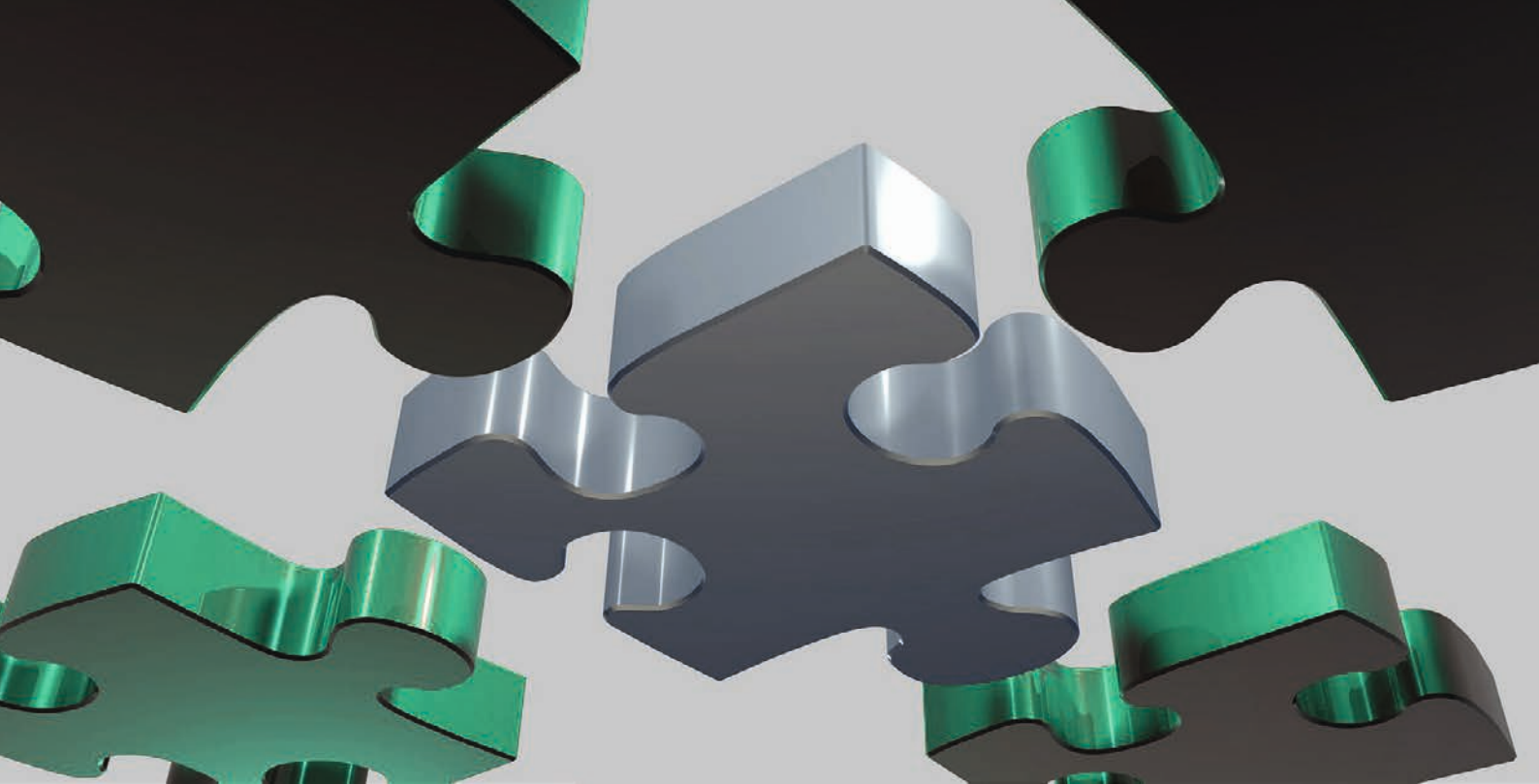
- › Voltage spikes
- › Rise time 2us and pulse duration 10us



MIL3-DO-160-S19

DO-160 SECTION 19

- › Inductive switching transients
- › Burst duration > 150us and spike frequency 250kHz



UNIQUE FEATURES

Leading technology - New designs take advantage of latest innovations.

Latest generation, solid state, precise technology

Fast and stable



No generator or coupler adjustments required. System is ready for calibration or testing in less than 30 seconds.

Test reporting



Generate test reports via USB interface or built in webserver as csv, html and pdf formats.

Always up to date

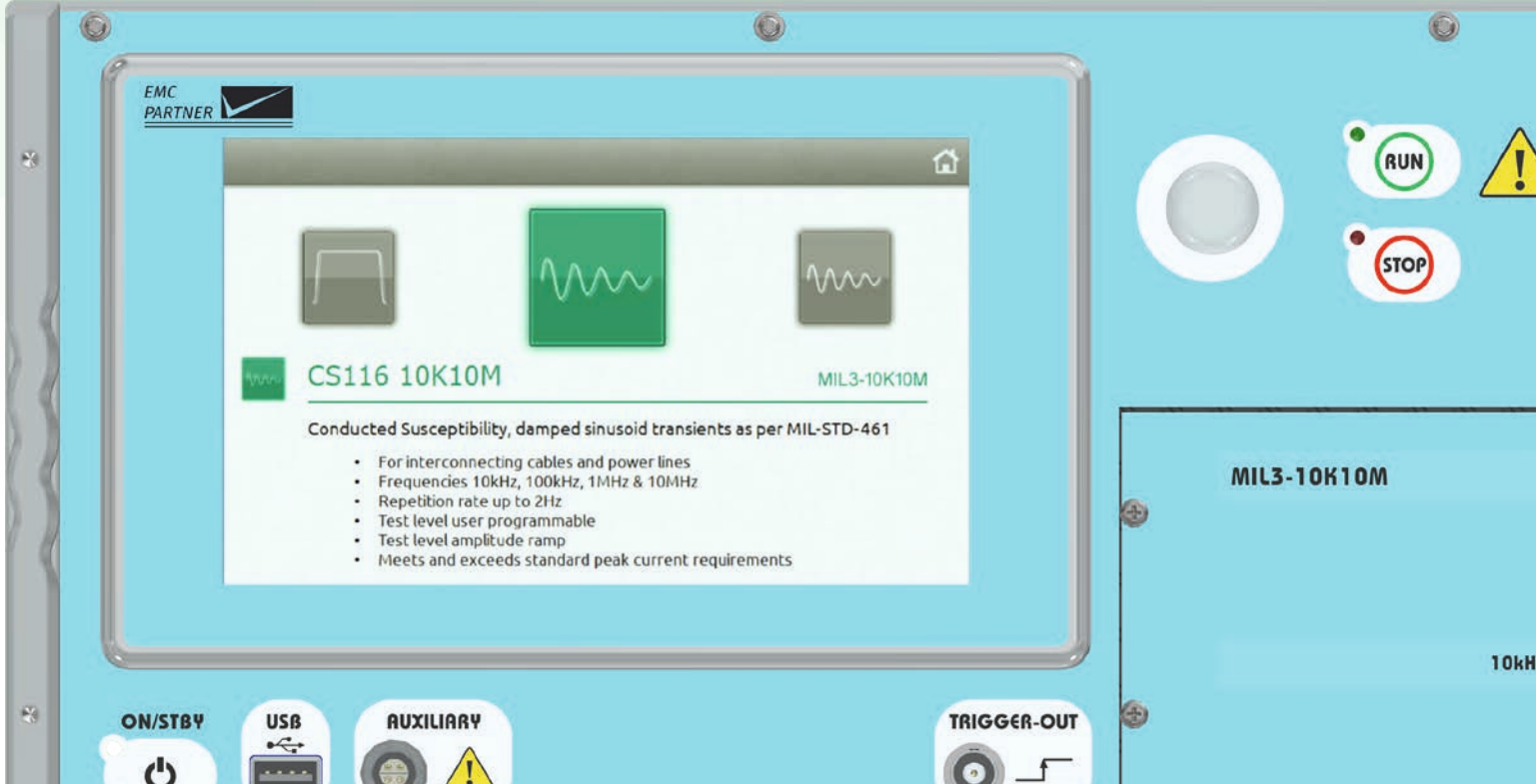


Firmware download from internet directly into the instrument.

Extend testing capability



Modular, on site upgradeable system based on plugin technology



EPOS – TOUCH THE FUTURE

EMC PARTNER Operating System (EPOS) is an independent software with free-of-charge updates for lifetime. EPOS is based on a full colour graphic interface and easy to follow on-screen graphics. Pop-up help gives information when needed, directly during the setting process. EPOS is full of features found only in top of the range instrumentation.

Integrated Web Server



Use any browser to access test reports from the generator.

Simple touch screen navigation



Save time with the latest in intuitive menu structures.

Interactive Interface



User interface adapted to specific modules.

We speak your language



Select between English, German, French, Italian, Spanish, Russian, Chinese (traditional and simplified).



TEMA3000 SOFTWARE SUITE

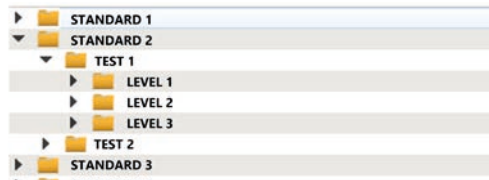
The best solution for professional EMC Test Labs enables comfortable test setups, easy parameter changes and customizable test reports and DSO integration.

Customizable test reports



- › Customize & edit your protocols
- › Export to multiple file formats
- › Integrate DSO measurements

Manage tests and sequences



- › Predefined test setups
- › Save and load own tests and sequences

Productive workflow



- › Minimum learning time
- › Integrated assistant function

Smart connectivity



- › Transfer tests / reports to PC
- › Remote control from computer

Technical Specifications

PLUGINS

MIL3000	Mainframe	MIL3-REC	MIL3-10K10M	MIL3-30M100M	MIL3-SPIKE	MIL3-DO-160-S17	MIL3-DO-160-S19	MIL3-1275B
MIL461F CS106	✓				✓			
MIL461G CS115	✓	✓						
MIL461G CS116	✓		✓	✓				
MIL1275B	✓							✓
DO-160 S17	✓					✓		
DO-160 S19	✓						✓	

ACCESSORIES

MIL3000	Mainframe	MIL3-REC	MIL3-10K10M	MIL3-30M100M	MIL3-SPIKE	MIL3-DO-160-S17	MIL3-DO-160-S19	MIL3-1275B
CN-BT6	✓	✓	✓	✓				
VERI-MIL3	✓	✓	✓	✓				
CN-MIG-BT5	✓				✓	✓		
DC-S17CL	✓				✓	✓		
VERI5	✓				✓			
VERI50	✓					✓		
20dB ATTEN.	✓		opt					
I-PROBE-CS	✓	✓	✓	✓				
TEMA3000	✓	opt	opt	opt	opt	opt	opt	opt

1. MIL3000 MAINFRAME AND PLUGINS

1.1. TECHNICAL SPECIFICATIONS

MIL3000 Mainframe

Operating system	EPOS proprietary firmware
Languages	8 menu languages, selectable
User interface	7" colour touch display
Connectivity	ethernet, USB, RS485
Synchronization on signals	40 – 800 Hz
Synchronization source	external, 50 - 280 V
Synchronization angle	0 – 359° ± 5°, 1° step
Trigger out	BNC, max. 15 V
Trigger in mode	auto, manual, external (BNC input)
Polarity	positive and negative, electronic switching
Automatic ramp	test level
Emergency stop	emergency button on front panel, safety circuit Connector for warning lamps (24V, max. 2.4W)



MIL3-REC

Standard	MIL-STD-461, CS115
Test level into 100 Ω	1 – 10 A ± 10 %, adjustable
Waveform	rectangular pulse
Pulse rise and fall time	< 2 ns
Pulse duration	≥ 30 ns
Repetition rate	max. 33 Hz
Requires	CN-BT6, VERI-MIL3
Optional	I-PROBE-CS

MIL3-10K10M

Standard	MIL-STD-461, CS116 (10 kHz – 10 MHz)
Test level into 100 Ω	@ 10 kHz: 0.02 – 0.22 A ± 10 %, adjustable
Test level into 100 Ω	@ 100 kHz: 0.2 – 2.0 A ± 10 %, adjustable
Test level into 100 Ω	@ 1 MHz: 1 – 12 A ± 10 %, adjustable
Test level into 100 Ω	@ 10 MHz: 2 – 12 A ± 10 %, adjustable
Waveform	damped oscillation@10k,100k,1MHz,10MHz ±10%
Damping factor (Q)	15 ± 5 for all frequencies
Repetition rate	max. 2 Hz for all frequencies
Coupler for all frequencies	CN-BT6
Calibration fixture all freq.	VERI-MIL3
Optional	I-PROBE-CS, 20dB ATTENUATOR

MIL3-30M100M

Standard	MIL-STD-461, CS116 (30 MHz – 100 MHz)
Test level into 100 Ω	@ 30 MHz: 2 – 12 A ± 10 %, adjustable
Test level into 100 Ω	@ 100 MHz: 1 – 6 A ± 10 %, adjustable
Waveform	damped oscillation@30MHz,100MHz ±10%
Damping factor (Q)	15 ± 5 for all frequencies
Repetition rate	max. 2 Hz for all frequencies
Coupler for all frequencies	CN-BT6
Calibration fixture all freq.	VERI-MIL3
Optional	I-PROBE-CS



MIL3-SPIKE

Standard	MIL-STD-461F, CS106
Output impedance	< 2 Ω
Test level into 5 Ω	100 – 500 V ± 10 %, adjustable
Waveform	voltage spike
Pulse rise time	1.5 μs ± 0.5 μs
Pulse front time	3.5 μs ± 0.5 μs
Pulse duration	5 μs ± 22 %
Voltage sag amplitude	≤ 120 V @ 400 V test level
Voltage sag duration	≤ 20 μs @ 400 V test level
Repetition rate	max. 10 Hz
Synchronization	0 – 359° ± 5°, 1° step
Requires	CN-MIG-BT5, VERI5, DC-S17CL



MIL3-DO-160-S17

Standard	DO-160 Section 17
Output impedance	50 Ω ± 10 %
Test level into 50 Ω	50 – 1200 V ± 10 %, adjustable
Waveform	voltage spike
Pulse rise time	1 – 2 μs ± 30 %
Pulse duration	> 10 μs
Repetition rate	max. 2 Hz
Synchronization	0 – 359° ± 5°, 1° step
Requires	CN-MIG-BT5, VERI50, DC-S17CL



MIL3-DO-160-S19

Standard	DO-160 Section 19 – spikes/burst
Resistance	175 $\Omega \pm 10 \%$
Inductance	1.5 H $\pm 10 \%$
Test level	≥ 600 V
Waveform	voltage spikes/burst
Spike repetition period	in the range 0.2 – 10 μ s
Burst total duration	in the range 50 - 1000 μ s
Event repetition	0.1 – 60 s, adjustable
Test duration	1 – 65535 s
Included	cables for coupling 0.5 m, 1.0 m, 2.0 m



MIL3-1275B

Standard	MIL-STD-1275B, figure 10
Test level	100 – 1000 V $\pm 10 \%$, in open circuit
Waveform	ring wave
Rise time 10 – 90 %	< 50 ns
Oscillation frequency	100 – 500 kHz
Pulse repetition	max. 2 Hz
Max. EUT power	
DC	28 V / 30 A
AC	230 V / 10 A or 115 V / 25 A @ 50/60 Hz



1.2. POWER, CLIMATIC CONDITIONS, SHIPPING WEIGHT, DIMENSIONS

MIL3000 mainframe

Mains adapter	100 – 240 V $\pm 10 \%$ (50/60 Hz)
Power consumption	ON < 150 VA, standby < 15 VA
Temperature range	10 – 35 $^{\circ}$ C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Mainframe weight	28 kg
W x d x h	52 x 43.3 x 18 cm
Version	19" unit, 4 UH
Included articles	
Power cord	with country plug
User manual	with conformity declaration
Calibration certificate	factory calibration for each plugin ordered
Ethernet cable	1 piece

2. ACCESSORIES FOR MIL3000

2.1. TECHNICAL SPECIFICATIONS

CN-BT6

Standard	MIL-STD-461 CS115 and CS116
Application	injection probe
Frequency range CS115	usable rise time from 1 ns
Frequency range CS116	10 kHz – 100 MHz
EUT supply	max. 150A@50/60Hz, 20A@400Hz,10A@800Hz
Aperture	5 cm diameter
Dimensions l x h x w	25 x 17 x 15 cm
Weight	5 kg
Included	50 Ω termination, 1 m cable, 2 m cable
Requires	CS115 and/or CS116 modules, VERI-MIL3



VERI-MIL3

Application	calibration fixture for CN-BT6 (CS115, CS116)
Weight	4.5 kg
Dimensions l x h x w	34 x 13 x 15 cm
Included	2 x 20 dB N-type, 2 x 20 dB BNC, 1 m cable



CN-MIG-BT5

Standards	MIL-STD-461F CS106, DO-160 Section 17
Application	injection probe
Frequency range	10 kHz – 10 MHz
EUT supply	Section 17: max. 1000A@50/60Hz, 160A@400Hz, 80A@800Hz CS106: max. 150A@50/60Hz, 20A@400Hz, 10A@800Hz
Aperture	8 x 7 cm
Dimensions l x h x w	22 x 22 x 20 cm
Weight	13 kg
Included	1 m cable, 1 turn calibration loop
Requires	CS106 or S17 module, DC-S17CL



DC-S17CL

Standards	MIL-STD-461F CS106, DO-160 Section 17
Application	decoupling units for power supply side
For serial injection	4 x decoupling capacitors, in 2 boxes
Decoupling capacitance	10 μ F
EUT voltage	max. 250V, DC - 800Hz
EUT current	not limited by decoupling capacitors
For parallel injection	2 x decoupling inductors
Decoupling inductance	1.8 mH
EUT voltage	max. 250V, DC - 800Hz
EUT current	max. 16 A
Weight	7 kg, all 4 modules and acc. in carrying case
Dimensions	34 x 28 x 17 cm (carrying case)
Included	connection cables, carrying case



VERI5

Standard	MIL-STD-461F CS106
Application	non-inductive calibration load
Input impedance	5 $\Omega \pm 2 \%$
Power dissipation	max. 10 W
Voltage	max. 500 V as per CS106
Transfer ratio	DSO 1M Ω : 1:50 (34dB); DSO 50 Ω : 1:100 (40dB)
Weight	0.2 kg
Dimensions	12 x 2.5 x 2.5 cm
Included	factory calibration report



VERI50

Standard	DO-160 Section 17
Application	non-inductive calibration load
Input impedance	50 $\Omega \pm 2 \%$
Power dissipation	max. 10W
Voltage	max. 1200 V as per Section 17
Transfer ratio	DSO 1M Ω : 1:50 (34dB); DSO 50 Ω : 1:100 (40dB)
Weight	0.2 kg
Dimensions	12 x 2.5 x 2.5 cm
Included	factory calibration report



20dB ATTENUATOR (optional)

Application	att. reducing test level with MIL3-10K10M
Level with 20 dB (10 kHz)	for ex: 22 mA @ gen. setting 0.22 A
Weight	0.1 kg
Dimensions	11 x 2.5 x 2.5 cm
Included	factory calibration report



I-PROBE-CS

Standards	MIL: CS115, CS116
Application	current probe for test level and rise time meas.
Output connector	N (adapter for BNC optional, ask sales)
Frequency range	10 kHz – 400 MHz
Usable rise time	1 ns
Aperture	50.8 mm (excellent for CN-BT6)
Input level	max. 4 A r.m.s., 15 A peak
Transfer impedance	- 6 dBΩ
Current time product	max. 0.6 mAs
Weight	1 kg
Dimensions	14.7 x 12.7 x 3.2 cm
Included	carrying case

TEMA3000

Application	modular control software for MIL3000 system
License	1 license for 1 generator
TEMA3000 basic	remote control of generator, single tests
TEMA3000-SEQUENCE	more single tests linked in a sequence
TEMA3000-PROTOCOL	generation of customized test reports
TEMA3000-DSO	control of DSOs via Ethernet, data in report
TEMA3000-LIBRARY	collection of norm pre-programmed tests
Compatibility	Windows XP, 7, 8, 10
For generators	MIL3000, AVI3000, IMU Series, other



Tradition meets Technology

Over 20 years devoted to combining
latest technologies into the best products.

 **100% Swiss made products**



THE EMC PARTNER PRODUCT RANGE

Find further brochures on our website emc-partner.com/brochures or contact your local representative for a hardcopy.

IMMUNITY TESTS

Transient Test Systems for all EMC tests on electronic equipment. ESD, EFT, surge, AC dips, AC magnetic field, surge magnetic field, common mode, damped oscillatory and DC dips. According to IEC and EN 61000-4-2, -4, -5, -8, -9, -10, -11, -12, -13, -14, -16, -18, -19, -29.

LIGHTNING TESTS

Impulse test equipment and accessories for aircraft, military and telecom applications. Complete solutions for RTCA / DO-160 and EURO-CAE / ED-14 for indirect lightning on aircraft systems, MIL-STD-461 tests CS106, CS115, CS116, CS117, CS118 and Telecom, ITU-T .K44 basic and enhanced tests for impulse, power contact and power induction.

COMPONENT TESTS

Impulse generators for testing; varistors, gas discharge tubes (GDT), surge protective devices (SPDs), X / Y capacitors, circuit breakers, electricity meters, protection relays, insulation material, suppressor diodes, connectors, chokes, fuses, resistors, emc-gaskets, cables, etc.

EMISSION MEASUREMENTS

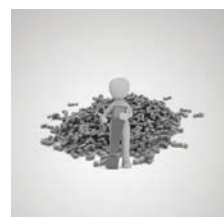
Measurement of Harmonics and Flicker in 1-phase and 3-phase electrical and electronic products according to IEC / EN 61000-3-2 and 61000-3-3 . HARCS Immunity software adds interharmonic tests, voltage variation according to IEC/EN 61000-4-13, -4-14.

SYSTEM AUTOMATION

A full range of accessories enhance the test systems. Test cabinets, test pistols, adapters and remote control software, simplify interfacing with the EUT. Programmable PSU, EMC hardened for frequencies from 16.7Hz to 400Hz. PS3-SOFT-EXT complies with IEC / EN 61000-4-14 and -4-28.

SERVICE

Our commitment starts with a quality management system backing up our ISO 17025 accreditation. With the SCS number 146, EMC PARTNER provide accredited calibration and repairs. Our customer support team are at your service!



For further information please do not hesitate to contact your local EMC PARTNER AG representative.
Visit our website for more information and contact details.

www.emc-partner.com

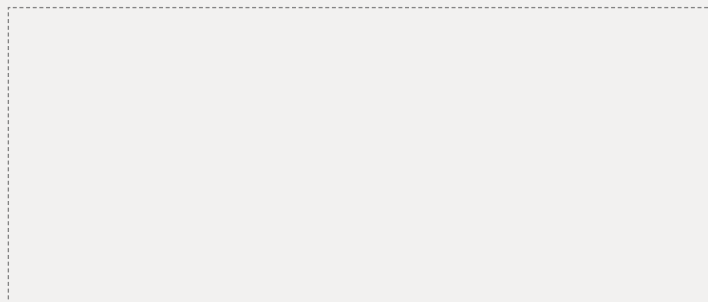


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