



DO-160 & MIL-STD-461G

Indirect Lightning Testing

MIG series



 This document has been optimized for electronic media

 Smart navigation through technical specifications. Click the green links.



Accredited Calibration

Quality at EMC PARTNER is based on an ISO 9001 management system. This is the foundation for an ISO 17025 accreditation verified by the Swiss Calibration Service (SCS). SCS No. 146 is the accreditation number of EMC PARTNER AG. Locally accredited but recognized worldwide through affiliation with the ILAC organisation



WHEN GETTING RESULTS MATTERS

THERE IS STILL ONLY ONE CHOICE

Military and avionic testing is all about quality and reliability. The EMC PARTNER full scale lightning test system fulfils these requirements.

A flexible solution that includes:

- › MIL-STD-461G: CS117, internal & external equipment test levels
- › RTCA DO-160: SECTION 22, Level 1 to 5
- › EUROCAE ED-14: SECTION 22, Level 1 to 5
- › OEM proprietary requirements based on DO-160 SECTION 22

Providing world-class solutions to major aircraft OEMs and tier 1 suppliers for over 20 years.

FULL SCALE SOLUTION

The first commercially available system to integrate all DO-160 waveforms.
A system that has grown to meet new and evolving market requirements.



WF2, 3 & 6 System

MIG-OS-MB + MIG-OS-MB-EXT

- PIN Injection
- Single Stroke
- Multiple Stroke
- Multiple Burst

CN-MIG-BT3 & CN-MIG-BT5

- Cable Bundle

WF1, 4, 5A & 5B System

MIG 0600 MS + MIG 0618SS

- PIN Injection
- Single Stroke
- Multiple Stroke

CN-GI-CI & CN-GI-CI-V

- Cable Bundle
- Ground Injection

Included Benefits

Reliable	keeps on going during long test phases
Precise	delivers the same pulse repeatedly
Stable	a tried and trusted solution used at over 100 locations worldwide
Polarity	change polarity by electronic switching
Flexible	meet many requirements through a big range of accessories
Automated	save and repeat test routines

AVAILABLE CIRCUITS

Full scale indirect test system includes all waveforms for RTCA DO-160: Section 22 and MIL-STD-461G: CS117 testing. The basic system can be easily extended to meet OEM specific requirements.



Waveform 1 (6.4/69 μ s)

MIL-STD-461 / CS117

Current Impulse

- › Cable Bundle Single Stroke
- › Cable Bundle Multiple Stroke



Waveform 2 (0.1 and 0.3/6.4 μ s)

RTCA DO-160 / S.22

Voltage Impulse

- › Cable Bundle Single Stroke
- › Cable Bundle Multiple Stroke



Waveform 3 (1MHz & 10MHz)

RTCA DO-160 / S.22

Voltage & Current Impulse

- › PIN injection
- › Cable Bundle Single Stroke
- › Cable Bundle Multiple Stroke
- › Cable Bundle Multiple Burst



Waveform 4 (6.4/69 μ s)

RTCA DO-160 / S.22

Voltage Impulse

- › PIN Injection
- › Ground Injection Single Stroke
- › Ground Injection Multiple Stroke



Waveform 5A (40/120 μ s)

RTCA DO-160 / S.22

Current Impulse

- › PIN Injection
- › Cable Bundle Single Stroke
- › Cable Bundle Multiple Stroke



Waveform 5B (50/500 μ s)

RTCA DO-160 / S.22

Current Impulse

- › PIN Injection
- › Cable Bundle Single Stroke
- › Cable Bundle Multiple Stroke

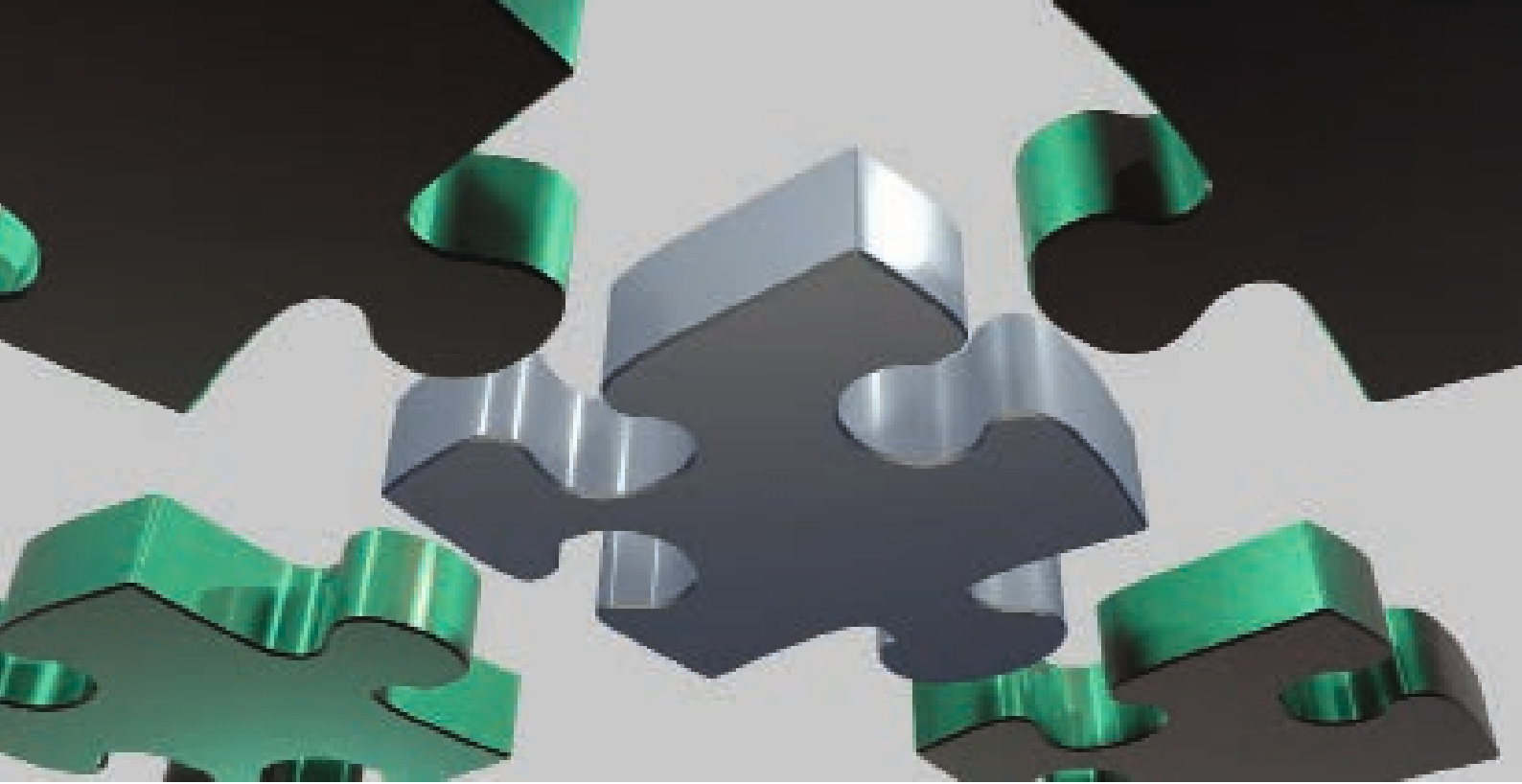


Waveform 6 (0.25/4 μ s)

RTCA DO-160 / S.22

Current Impulse

- › Cable Bundle Multiple Burst



UNIQUE FEATURES

Tried and trusted technology developed in partnership with industry. Latest generation, solid state, precise technology.

Easy upgrade



Add functionality without system downtime.

Synchronization



PIN injection pulses synchronized to AC power

Special couplers



Customized for specific tests for other avionic applications.

Customizable patterns



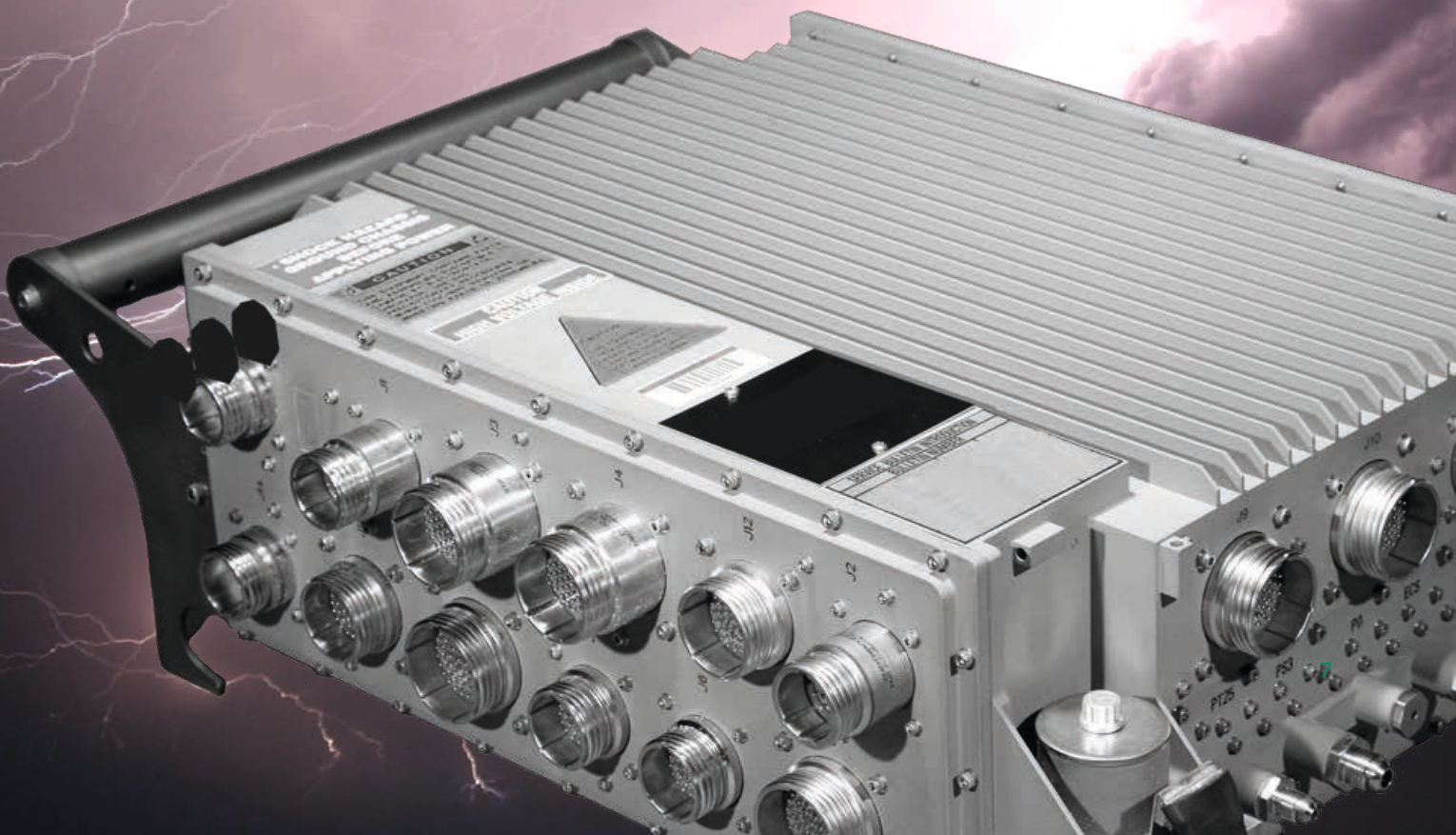
Multiple Stroke & Burst patterns freely programmable in the generator or using the pattern upload software.

OEM SPECIFIC & SPECIAL APPLICATIONS

Many years working with the avionics industry has taught us one thing. Flexibility is the key to success. EMC PARTNER's ability to extend and customize the standard system is legendary.

Some OEMs require testing with fixed impedance waveforms, even for cable bundle. The EMC PARTNER system is flexible enough to offer this capability with external couplers.

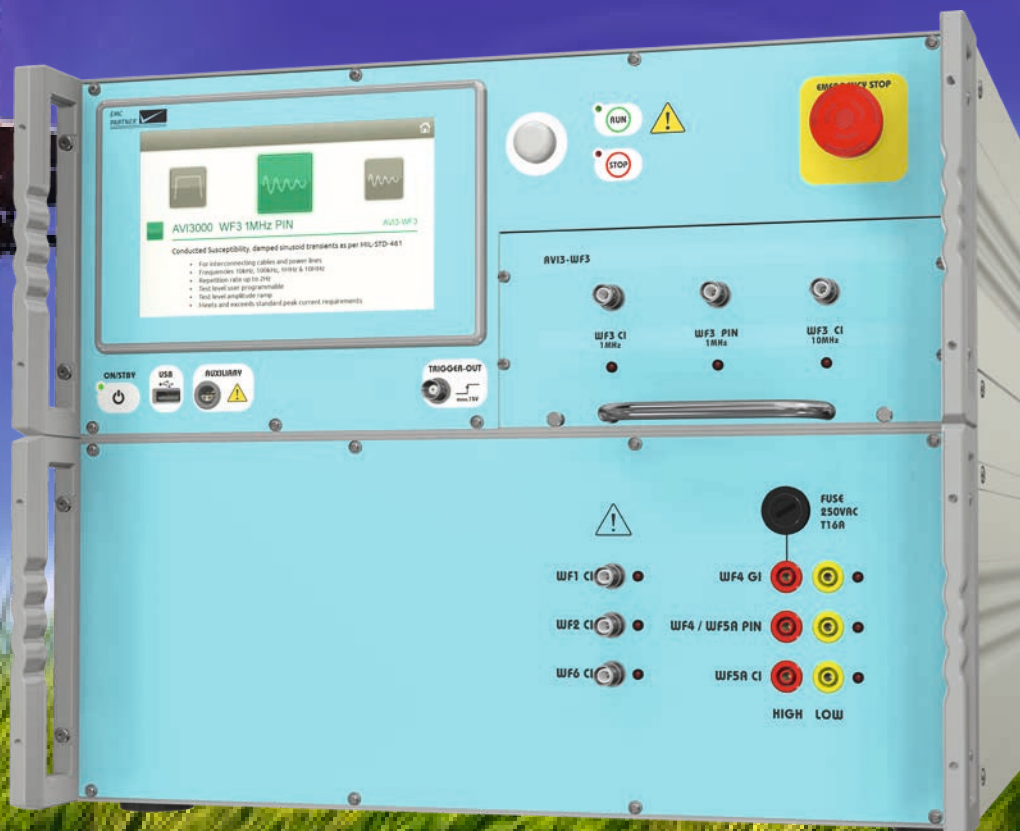
Special application requests are nothing new to EMC PARTNER. One example is the solution for large diameter cables that can only pass once through a coupler. Applicable for voltage and current waveforms, this unique set of couplers can be used for waveforms 1, 4, 5A and 5B.



Other systems for indirect lightning

- DO 160 SECTION 22 LEVEL 3
- MIL-STD-461 CS117 INTERNAL EQUIPMENT TEST LEVELS
- COMPACT SOLUTION
- BUILT ON EXPERIENCE

WWW.EMC-PARTNER.COM/AVI



Technical Specifications

DO-160 G SECTION 22 AND MIL-STD-461 G CS117 CONFIGURABLE TEST SYSTEM FOR ALL TEST LEVELS

Test equipment	DO-160G Section 22	MIL-STD-461G CS117	Airbus, Boeing, other
Generators*			
MIG0600MS	✓	✓	✓
MIG0618SS	✓		✓
MIG-OS-MB	✓	✓	✓
MIG3618SS			✓
Accessories			
MIG-OS-MB-EXT	✓	✓	✓
NW-WF2-FS	✓	✓	✓
NW-WF2-SS	✓	✓	✓
NW-WF3-1M-FS	✓	✓	✓
NW-WF3-1M-SS	✓	✓	✓
NW-WF3-10M-FS	✓	✓	✓
NW-WF3-10M-SS	✓	✓	✓
NW-WF6H-MB	✓	✓	✓
Custom plugins, NWs			available, send inquiry
DN-LISN160-32	✓	✓	✓
SHUNT0E1	✓	✓	✓
V-PROBE-PHV	✓	✓	✓
V-PROBE-SI	✓	✓	✓
I-PROBE-MB-P1	✓	✓	✓
I-PROBE-MS	✓	✓	✓
NW-MS-LEVEL1	✓	optional	✓
SYNC-ADAPTER	✓		✓
CN-MIG-TT	✓		✓
AC-DC-DECOUPLER2	✓		✓
AC-DC-DEC Level 4&5	✓		✓
CDN-BDBC	✓		✓
RACK-36HE-MB	✓	✓	✓
Coupling devices			
CN-MIG-BT3	✓	✓	✓
CN-MIG-BT5	✓	✓	✓
CN-GI-CI	✓	✓	✓
CN-GI-CI-V	recommended	✓	✓
CN-CI-I1	optional	optional	optional
CN-CI-V1	optional	optional	optional
CN-WF5A1500	optional	optional	optional
CN-WF5A2000	optional	optional	optional
Software one TEMA license per generator required			
TEMA	✓	✓	✓
TEMA EXT-MEASURE	✓	✓	✓
OPTICAL LINK	✓	✓	✓

* Generators require couplers and accessories as indicated, in order to meet the requirements.

GENERATORS LEVEL 5 AND HIGHER

1. MIG0600MS

MIG0600MS circuit: WF1 cable induction

Standards	DO-160G S22, MIL-STD-461G CS117, other
Coupling mode	Cable Induction (CI)
Current waveform WF1	6.4 $\mu\text{s} \pm 20\%$ / 69 $\mu\text{s} \pm 20\%$
Test level	specified at coupler output
Test level single stroke	20 A – 1800 A (up to 3200 A can be applied)
Test level multiple stroke	40 A – 1800 A (first stroke) 20 A – 900 A (subsequent stroke)
Requires	CN-GI-CI

MIG0600MS circuit: WF4, pin injection

Standards	DO-160G S22, other
Coupling mode	pin injection / direct application
Output impedance	5 Ω
Voltage, current WF4	6.4 $\mu\text{s} \pm 20\%$ / 69 $\mu\text{s} \pm 20\%$
Test level	specified at application point
Test level single stroke	70 V – 1700 V
Synchronization	automatic on power peak (SYNC-ADAPTER)

MIG0600MS circuit: WF4 cable induction

Standards	DO-160G S22, MIL-STD-461G CS117, other
Coupling mode	Cable Induction (CI)
Voltage waveform WF4	6.4 $\mu\text{s} \pm 20\%$ / 69 $\mu\text{s} \pm 20\%$
Test level	specified at coupler output
Test level single stroke	25 V – 1600 V
Test level multiple stroke	25 V – 750 V (first stroke) 12.5 V – 190 V (subsequent stroke)
Requires	CN-GI-CI-V

MIG0600MS circuit: WF4 ground injection

Standards	DO-160G S22, other
Coupling mode	Ground Injection (GI)
Voltage waveform WF4	6.4 $\mu\text{s} \pm 20\%$ / 69 $\mu\text{s} \pm 20\%$
Test level	specified at application point
Test level single stroke	25 V – 1700 V
Test level multiple stroke	25 V – 800 V (first stroke) 12.5 V – 400 V (subsequent stroke)
EUT max. power	230 V / 32 A @ 50/60 Hz
Requires	CN-GI-CI-V

MIG0600MS circuit: WF5A, pin injection

Standards	DO-160G S22, other
Coupling mode	pin injection / direct application
Output impedance	1 Ω
Voltage, current WF5A	40 $\mu\text{s} \pm 20\%$ / 120 $\mu\text{s} \pm 20\%$
Test level	specified at application point
Test level single stroke	50 V – 1600 V (50 A – 1600 A)
Synchronization	automatic on power peak

MIG0600MS circuit: WF5A cable induction

Standards	DO-160G S22, MIL-STD-461G CS117, other
Coupling mode	Cable Induction (CI)
Current waveform WF5A	40 $\mu\text{s} \pm 20\%$ / 120 $\mu\text{s} \pm 20\%$
Test level	specified at coupler output
Test level single stroke	60 A – 5000 A
Test level multiple stroke	60 A – 2000 A (first stroke) 30 A – 1000 A (subsequent stroke)
Requires	CN-GI-CI

MIG0600MS circuit: WF5A ground injection

Standards	DO-160G S22, other
Coupling mode	Ground Injection (GI)
Current waveform WF5A	40 $\mu\text{s} \pm 20\%$ / 120 $\mu\text{s} \pm 20\%$
Test level	specified at application point
Test level single stroke	60 A – 5000 A
Test level multiple stroke	60 A – 2000 A (first stroke) 30 A – 1000 A (subsequent stroke)
EUT max. power	230 V / 32 A @ 50/60 Hz
Requires	CN-GI-CI

MIG0600MS circuit: WF5B, pin injection

Standards	DO-160G S22, other
Coupling mode	pin injection / direct application
Output impedance	1 Ω
Voltage, current WF5B	50 $\mu\text{s} \pm 20\%$ / 500 $\mu\text{s} \pm 20\%$
Test level	specified at application point
Test level single stroke	50 V – 500 V (50 A – 500 A)
Synchronization	automatic on power peak

MIG0600MS circuit: WF5B cable induction

Standards	DO-160G S22, MIL-STD-461G CS117, other
Coupling mode	Cable Induction (CI)
Current waveform WF5B	50 μ s \pm 20 % / 500 μ s \pm 20 %
Test level	specified at coupler output
Test level single stroke	75 A – 2000 A (up to 5000 A can be applied)
Test level multiple stroke	30 A – 1800 A (first stroke) 30 A – 1000 A (subsequent stroke)
Requires	CN-GI-CI

MIG0600MS circuit: WF5B ground injection

Standards	DO-160G S22, other
Coupling mode	Ground Injection (GI)
Current waveform WF5B	50 μ s \pm 20 % / 500 μ s \pm 20 %
Test level	specified at application point
Test level single stroke	75 A – 2000 A (up to 5000 A can be applied)
Test level multiple stroke	30 A – 1800 A (first stroke) 30 A – 1000 A (subsequent stroke)
EUT max. power	230 V / 32 A @ 50/60 Hz
Requires	CN-GI-CI

MIG0600MS control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Pulse voltage monitor BNC	10 V = 1600 V, accuracy \pm 3% (only PIN)
Surge current monitor BNC	10 V = 1600 A, accuracy \pm 3% (only PIN)
Surge voltage on display	75 – 1600 V, accuracy \pm 3% (only PIN)
Surge current on display	25 – 1600 A, accuracy \pm 3%, (only PIN)
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Power synchro. on/off PIN	0 – 360°, 1° step
Impulse polarity	positive, negative, alternating (electronic switch)
Impulse repetition s. stroke	WF1/WF4: 20 s, WF5A: 20 s, WF5B: 40 s
Patterns	DO-160, user programmable
Spacing multiple stroke	10 ms – 500 ms
Max. number of pulses	25 every 20 s
Impulse counter	programmable up to 29'999
Programmable ramps	current or voltage, depending on waveform
Emergency stop	Emergency Stop button, BNC input, interlock
Internal memory	up to 15 tests can be saved and recalled

MIG0600MS supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) ± 10%
Power consumption	ON < 400 VA, standby < 10 VA
Weight	295 kg
W x d x h	60 x 65 x 184 cm
Version	19" rack, 36 UH with wheels, easy to move

Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa

Included articles

Power cord	with country plug
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG0600MS optional accessories

LISN	DN-LISN160-32
Adapters	NW-MS-LEVEL1, SYNC-ADAPTER
Voltage probe	V-PROBE-SI
Current probe	I-PROBE-MS
Coupling devices (CI)	CN-GI-CI, CN-GI-CI-V, other
Software	TEMA, for latest Windows, OPTICAL LINK TEMA-EXT-MEASURE, for DSO control
Alternative model 0600SS	price optimised single stroke model available

2. MIG0618SS

MIG0618SS circuit: WF1 cable induction

Standards	DO-160G S22, other
Coupling mode	Cable Induction (CI)
Current waveform WF1	6.4 µs ± 20 % / 69 µs ± 20 %
Test level	specified at coupler output
Test level single stroke	250 A – 3500 A
Requires	CN-GI-CI

MIG0618SS circuit: WF4, pin injection

Standards	DO-160G S22, other
Coupling mode	pin injection / direct application
Output impedance	5 Ω
Voltage, current WF4	6.4 µs ± 20 % / 69 µs ± 20 %

Test level	specified at application point
Test level single stroke	125 V – 3400 V
Synchronization	automatic on power peak

MIG0618SS circuit: WF4 ground injection

Standards	DO-160G S22, other
Coupling mode	Ground Injection (GI)
Voltage waveform WF4	6.4 μ s \pm 20 % / 69 μ s \pm 20 %
Test level	specified at application point
Test level single stroke	125 V – 3400 V
EUT max. power	230 V / 32 A @ 50/60 Hz
Requires	CN-GI-CI-V

MIG0618SS circuit: WF5A, pin injection

Standards	DO-160G S22, other
Coupling mode	pin injection / direct application
Output impedance	1 Ω
Voltage, current WF5A	40 μ s \pm 20 % / 120 μ s \pm 20 %
Test level	specified at application point
Test level single stroke	125 V – 3200 V
Synchronization	automatic on power peak

MIG0618SS circuit: WF5A cable induction

Standards	DO-160G S22, MIL-STD-461G CS117, other
Coupling mode	Cable Induction (CI)
Current waveform WF5A	40 μ s \pm 20 % / 120 μ s \pm 20 %
Test level	specified at coupler output
Test level single stroke	400 A – 6000 A (up to 10000 A can be applied)
Requires	CN-GI-CI

MIG0618SS circuit: WF5A ground injection

Standards	DO-160G S22, other
Coupling mode	Ground Injection (GI)
Current waveform WF5A	40 μ s \pm 20 % / 120 μ s \pm 20 %
Test level	specified at application point
Test level single stroke	400 A – 6000 A
EUT max. power	230 V / 32 A @ 50/60 Hz
Requires	CN-GI-CI

MIG0618SS control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Pulse voltage monitor BNC	10 V = 6000 V, accuracy $\pm 3\%$ (only PIN)
Surge current monitor BNC	10 V = 6000 A, accuracy $\pm 3\%$ (only PIN)
Surge voltage on display	75 – 6000 V, accuracy $\pm 3\%$ (only PIN)
Surge current on display	25 – 6000 A, accuracy $\pm 3\%$, (only PIN)
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Power synchro. on/off PIN	0 – 360°, 1° step
Impulse polarity	positive, negative, alternating (electronic switch)
Impulse repetition s. stroke	starting with 4 s
Impulse counter	programmable up to 29'999
Programmable ramps	current or voltage, depending on waveform
Emergency stop	Emergency Stop button, BNC input, interlock
Internal memory	up to 15 tests can be saved and recalled

MIG0618SS supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) $\pm 10\%$
Power consumption	ON < 400 VA, standby < 10 VA
Weight	170 kg
W x d x h	60 x 65 x 123 cm
Version	19" rack, 18 UH with wheels, easy to move
Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Included articles	
Power cord	with country plug
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG0618SS optional accessories

LISN	DN-LISN160-32
Adapters	NW-MS-LEVEL1, SYNC-ADAPTER
Voltage probe	V-PROBE-SI
Current probe	I-PROBE-MS
Coupling devices (CI)	CN-GI-CI, CN-GI-CI-V, other
Software	TEMA, for latest Windows, OPTICAL LINK TEMA-EXT-MEASURE, for DSO control

3. MIG-OS-MB

MIG-OS-MB circuit: WF2 cable induction

Standards	DO-160G S22, MIL-STD-461G CS117, other
Coupling mode	Cable Induction (CI)
Voltage waveform WF2	rise time: < 100 ns (or/and < 340 ns) pulse duration: 6.4 μ s \pm 20 %
Test level	specified at coupler output
Test level single stroke	40 V – 1700 V
Test level multiple stroke	25 V – 1600 V (first stroke) 12.5 V – 800 V (subsequent stroke)
Requires	CN-MIG-BT3

MIG-OS-MB circuit: WF3, 1 MHz, pin injection

Standards	DO-160G S22, other
Coupling mode	pin injection / direct application
Output impedance	25 Ω
Voltage, current WF3	frequency: 1 MHz \pm 20 % damping: 25 – 75 % (1st to 5th peak)
Test level	specified at application point
Test level single stroke	80 V – 600 V
Synchronization	0 – 360°, step 1°
EUT max. power	230 V / 400 Hz, 115 V / 800 Hz

MIG-OS-MB circuit: WF3, 1 MHz, cable induction

Standards	DO-160G S22, MIL-STD-461G CS117, other
Coupling mode	Cable Induction (CI)
Voltage, current WF3	frequency: 1 MHz \pm 20 % damping: 25 – 75 % (1st to 5th peak)
Test level	specified at coupler output
Test level single stroke	80 V – 1500 V
Test level multiple stroke	80 V – 600 V (first stroke) 80 V – 600 V (subsequent stroke)
Test level multiple burst	60 V – 900 V
Requires	CN-MIG-BT5

MIG-OS-MB circuit: WF3, 10 MHz, cable induction

Standards	DO-160G S22, MIL-STD-461G CS117, other
Coupling mode	Cable Induction (CI)
Voltage, current WF3	frequency: 10 MHz \pm 20 % damping: 25 – 75 % (1st to 5th peak)
Test level	specified at coupler output
Test level single stroke	80 V – 1500 V
Test level multiple stroke	80 V – 1500 V (first stroke) 80 V – 1500 V (subsequent stroke), adjustable
Test level multiple burst	50 V – 1920 V
Synchronization	0 – 360°, step 1°
Requires	CN-MIG-BT5

MIG-OS-MB control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Pulse voltage monitor BNC	10 V = 6000 V, accuracy \pm 3% (only PIN)
Surge current monitor BNC	10 V = 6000 A, accuracy \pm 3% (only PIN)
Surge voltage on display	75 – 6000 V, accuracy \pm 3% (only PIN)
Surge current on display	25 – 6000 A, accuracy \pm 3%, (only PIN)
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Power synchro. on/off PIN	0 – 360°, 1° step
Impulse polarity	positive, negative, alternating (electronic switch)
Impulse repetition s. stroke	starting with 0.1 s
Impulse counter	programmable up to 29'999
Programmable ramps	current or voltage, depending on waveform
Emergency stop	Emergency Stop button, BNC input, interlock
Internal memory	up to 15 tests can be saved and recalled

MIG-OS-MB supply, weight, dimensions, climatic conditions

Operating voltage	115 or 230 V (50/60 Hz) \pm 10%
Power consumption	ON < 400 VA, standby < 10 VA
Weight	40 kg
W x d x h	45 x 57 x 37 cm
Version	19" unit, 8 UH
Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Included articles	
Power cord	with country plug
User manual	with conformity declaration
Calibration certificate	factory calibration

[Generators](#) | [Accessories](#) | [Coupling Devices](#) | [Software](#)

MIG-OS-MB optional accessories

Plugins for higher test levels	MIG-OS-MB-EXT, NW-WF2-FS, NW-WF2-SS, NW-WF3-1M-FS, NW-WF3-1M-SS, NW-WF3-10M-FS, NW-WF3-10M-SS, NW-WF6H-MB, custom plugins
LISN	DN-LISN160-32
Adapters / decouplers	CN-MIG-TT, AC-DC-DECOUPLER2, AC-DC-DECOUPLER 4&5, CN-BDBC
Voltage probe	V-PROBE-PHV
Current probe	I-PROBE-MB-P1
Coupling devices (CI)	CN-MIG-BT3, CN-MIG-BT5
Software	TEMA, for latest Windows, OPTICAL LINK TEMA-EXT-MEASURE, for DSO control

4. MIG3618SS

MIG3618SS circuit: WF 6.4/69 μ s

Standard	SAE ARP5416A, paragraph 6.1.6: 2013
Output impedance	1 to 2 Ω
Voltage waveform	6.4 μ s \pm 20 % / 69 μ s \pm 20 %
Test level	3000 V – 36000 V
Current max.	for example: 2500 A in load 20 μ H / 5 Ω for example: 5000 A in load 20 μ H / 0.1 Ω

MIG3618SS control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Surge current monitor BNC	10 V = 6000 A, accuracy \pm 3%
Surge current on display	25 – 6000 A, accuracy \pm 3%
Trigger in	auto, manual, external (BNC input)
Impulse polarity	positive, negative, alternating (electronic switch)
Impulse repetition s. stroke	1 / 12 s @ 3 kV, 1 / 60 s @ 36 kV
Impulse counter	programmable up to 29'999
Programmable ramps	voltage
Emergency stop	Emergency Stop button, BNC input, interlock
Internal memory	up to 15 tests can be saved and recalled

MIG3618SS supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) ± 10%
Power consumption	ON < 400 VA, standby < 10 VA

Unit 1 (generator rack)

Weight	200 kg
W x d x h	61 x 68 x 102 cm
Version	19" rack, 18+4 UH, on wheels, easy to move

Unit 2 (controller)

Weight	31 kg
W x d x h	45 x 60 x 19 cm
Version	19" unit / table top unit, 4 UH

Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa

Included articles

Power cord	with country plug
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG3618SS optional accessories

Custom Rs, Ls, Rp	on demand
Software	TEMA, for latest Windows, OPTICAL LINK TEMA-EXT-MEASURE, for DSO control

ACCESSORIES

MIG-OS-MB-EXT

Application	extends MIG-OS-MB to L5+ test levels requires necessary plugin(s) for each WF
Test level WF2	extended up to
Test level WF3 1 MHz	extended up to
Test level WF3 10 MHz	extended up to
Test level WF6	5 A – 160 A (multiple burst)
Weight	18 kg (empty)
Dimensions	19" unit, 4 UH
Supply	normal mains 230 V or 115 V, fused
For generator	MIG-OS-MB
Requires	plugins for necessary waveforms: NW-WF2-FS, NW-WF2-SS, NW-WF3-1M-FS, NW-WF3-1M-SS, NW-WF3-10M-FS, NW-WF3-10M-SS, NW-WF6H-MB, custom plugins
Requires	RACK-36HE-MB

NW-WF2-FS

Application	WF2 First Stroke (FS) plugin, extends MIG-OS-MB to L5+
Test level WF2 first stroke	extended up to 4500 V
Weight	3 kg
Dimensions	17 x 22 x 18 cm
For generator	MIG-OS-MB
Requires	MIG-OS-MB-EXT

NW-WF2-SS

Application	WF2 Subsequent Stroke (FS) plugin, extends MIG-OS-MB to L5+
Test level WF2 sub. stroke	extended up to 1100 V
Weight	2 kg
Dimensions	17 x 22 x 18 cm
For generator	MIG-OS-MB
Requires	MIG-OS-MB-EXT , NW-WF2-FS

NW-WF3-1M-FS

Application	WF3 1 MHz First Stroke (FS) plugin, extends MIG-OS-MB to L5+
Test level WF3 first stroke	extended up to 5000 V (1 MHz)
Weight	2 kg
Dimensions	17 x 22 x 18 cm
For generator	MIG-OS-MB
Requires	MIG-OS-MB-EXT

NW-WF3-1M-SS

Application	WF3 1 MHz Subsequent Stroke (FS) plugin, extends MIG-OS-MB to L5+
Test level WF3 sub. stroke	extended up to 2250 V (1 MHz)
Weight	2 kg
Dimensions	17 x 22 x 18 cm
For generator	MIG-OS-MB
Requires	MIG-OS-MB-EXT , NW-WF3-1M-FS

NW-WF3-10M-FS

Application	WF3 1 MHz First Stroke (FS) plugin, extends MIG-OS-MB to L5+
Test level WF3 first stroke	extended up to max. 3400 V (10 MHz)
Weight	2 kg
Dimensions	17 x 22 x 18 cm
For generator	MIG-OS-MB
Requires	MIG-OS-MB-EXT

NW-WF3-10M-SS

Application	WF3 10 MHz Subsequent Stroke(FS) plugin, extends MIG-OS-MB to L5+
Test level WF3 sub. stroke	extended up to max. 1900 V (10 MHz)
Weight	2 kg
Dimensions	17 x 22 x 18 cm
For generator	MIG-OS-MB
Requires	MIG-OS-MB-EXT , NW-WF3-10M-FS

NW-WF6H-MB

Application	WF6 multiple burst (MB) plugin, extends MIG-OS-MB with WF6 capability
Test level WF6 MB	5 A – 180 A
Weight	2.2 kg
Dimensions	17 x 22 x 18 cm
For generator	MIG-OS-MB
Requires	MIG-OS-MB-EXT

CUSTOM PLUGIN

Application	different plugins available on request extends MIG-OS-MB with more capabilities
For generator	MIG-OS-MB
Requires	MIG-OS-MB-EXT
Contact	sales@emc-partner.ch

DN-LISN160-32

Standards	DO-160G S22, MIL-STD-461G CS117, other
Application	Line Impedance Stabilization Network (5 μ H)

Inductance	5 μ H per line (for both AC and DC lines)
Capacitance	10 μ F included, 33000 μ F included LISN is calibrated with capacitors connected
Number of lines	2 AC lines (L, N or L1, L2), 2 DC lines (+ / -)
AC voltage max.	L-N: 480 V @50/60 Hz, L-PE: 280 V @50/60 Hz L-N: 150 V @ 400 Hz, L-PE: 85 V @ 400 Hz
AC current max.	32 A
DC voltage max.	50 V
DC current max.	32 A
Weight	13 kg
Dimensions	45 x 57 x 19 cm, 19" unit, 4 UH
For generators	AVI3000 , MIG0600MS , MIG0618 SS , MIG-OS-MB
Requirements	for 3-phase EUTs, two pieces are required

SHUNTOE1

Application	calibration of WF2, WF3 short circuit current
Impedance	0.1 Ω \pm 2 %
Weight	0.15 kg
Dimensions	12 x 2.5 x 2.5 cm
Requires	MIG-OS-MB , CN-MIG-BT3 or CN-MIG-BT5

V-PROBE-PHV

Standards	DO-160G S22, MIL-STD-461G CS117, other
Type of probe	common mode / passive
Input voltage	max. 1 kV r.m.s., max. 4 kV impulse
Bandwidth (-3 dB)	250 MHz
Usable rise time	1.4 ns
Accuracy	\pm 2 %
Attenuation ratio	100:1
Input impedance	50 $\text{M}\Omega$ 7.5 pF
Compensation range	10 – 50 pF
DSO input selection	1 $\text{M}\Omega$
Weight	0.5 kg
Dimensions	24 x 28 x 9 cm (packed)
Included	carrying case

V-PROBE-SI

Standards	DO-160G S22, MIL-STD-461G CS117, other
Type of probe	differential (can measure CM as well)
Input voltage	max. 7 kV DC + peak, max. 2.5 kV r.m.s.
Bandwidth	DC – 70 MHz (-3 dB)
Accuracy	± 2 %
Input impedance	10 MΩ 10 pF
Attenuation ratio	1:100 or 1:1000
Power supply	4 x AA batteries and/or mains adapter
Weight	1.5 kg (packed)
Dimensions	29 x 34 x 8 cm (packed)
Included	carrying case, mains adapter, AA batteries

I-PROBE-MB-P1

Standards	DO-160G S22, MIL-STD-461G CS117, other
Application	measurement of SC current / clamp on probe
Output impedance	50 Ω (BNC connector)
Input current	max. 100 A r.m.s., max. 5 kA impulse
Waveforms	WF2, WF3 (1&10 MHz), WF6, other
Bandwidth (-3 dB)	5 Hz – 15 MHz
Sensitivity	0.1 V/A into 1 MΩ
Accuracy	+ 1 / - 0 %
Current time product	0.5 As
I/f	3.5 A/Hz
Usable rise time	25 ns
DSO input selection	1 MΩ
Weight	1.68 kg
Dimensions	12 x 13 x 4 cm (inner diameter 5 cm)
Included	carrying case

I-PROBE-MS

Standards	DO-160G S22, MIL-STD-461G CS117, other
Application	measurement of SC current / clamp on probe
Output impedance	50 Ω (BNC connector)
Input current	max. 12 kA impulse
Waveforms	WF1, WF4 (SC), WF5A, WF5B, other
Bandwidth (-3 dB)	1 Hz – 16 MHz
Sensitivity	0.5 mV/A into 1 MΩ
Accuracy	± 1 %
Current time product	0.5 As
I/f	3.5 A/Hz
Usable rise time	25 ns
DSO input selection	1 MΩ
Weight	1.5 kg
Dimensions	28 x 24 x 9 cm packed (inner diameter 9 cm)
For generators	MIG0600MS , MIG0618SS
Included	carrying case, 4 x 1.5 V AA batteries

[Generators](#) | [Accessories](#) | [Coupling Devices](#) | [Software](#)

NW-MS-LEVEL1

Standards	DO-160G S22, MIL-STD-461G CS117, other
Application	allows lower test levels to be applied to EUT
Lowest test level WF4 PIN	50 V ensured
Lowest test level WF5A PIN	50 V ensured
Lowest test level WF5B PIN	50 V ensured
Can be used also for	WF1, WF4, WF5A, WF5B cable bundle tests
Weight	2 kg
Dimensions	8 x 24 x 9 cm
For generator	MIG0600MS

SYNC-ADAPTER

Standards	DO-160G S22, other
Application	allows sync. on EUT power, PIN injection
For generator	MIG0600MS

CN-MIG-TT

Standards	DO-160G S22 (pin injection), other
Application	Test tip for PIN injection

AC-DC-DECOUPLER2

Standards	DO-160G S22 (pin injection), other
Application	decoupling network for powered pins
Test level WF2 max.	3200 V
Test level WF3 max.	4000 V
EUT supply voltage max.	230 V (50 – 400 Hz), 115 V (800 Hz), 230 V DC
Weight	0.2 kg
Dimensions	2.5 x 12.5 x 2.5 cm
For generator	MIG-OS-MB
Remark	for higher test levels use

AC-DC-DEC 4&5

Standards	DO-160G S22 (pin injection), other
Application	decoupling network for powered pins
Test level WF2 max.	3200 V
Test level WF3 max.	6000 V
EUT supply voltage max.	230 V (50 – 400 Hz), 115 V (800 Hz), 230 V DC
Weight	0.2 kg
Dimensions	2.5 x 16 x 2.5 cm
For generator	MIG-OS-MB-EXT and WF2, WF3 plugins
Remark	recommended for levels 4 and 5

CDN-BDBC

Standards	DO-160G S22 (pin injection), other
Application	blocking devices and bypass circuitry for pin inj.
For waveforms	WF4 (WF1), WF5A up to 1600 V / 3200 A
Weight	0.3 kg (packed)
Dimensions	14 x 17 x 5 cm (packed)
Delivery contains	two bypass/blocking devices
For generators	MIG0600MS, MIG0618SS (pin injection)

RACK-36HE-MB

Application	optional rack with wheels for MIG-OS-MB, MIG-OS-MB-EXT and storage for 6 plugins
Weight	142 kg (includes generator, extension, plugins)
Dimensions	60 x 65 x 180 cm (19" rack / 36 UH)

COUPLING DEVICES

CN-MIG-BT3

Standards	DO-160G S22, MIL-STD-461G CS117, other
Application	injection probe for cable bundle tests
	WF2 levels 1 - 5
	WF3 levels 4-5
	WF 6 levels 1 - 5
Aperture	7.7 x 7.7 cm
Dimensions	21 x 45 x 19 cm
Weight	34 kg
For generator	MIG-OS-MB with extension and plugins
Included	calibration loop, HV connection cable
Requires	SHUNTOE1 for short circuit calibration

CN-MIG-BT5

Standards	DO-160G S22, MIL-STD-461G CS117, other
Application	injection probe for WF3 levels 1-3
Aperture	8 x 7 cm
Dimensions	22 x 22 x 20 cm
Weight	13 kg
For generator	MIG-OS-MB
Included	calibration loop, HV connection cable
Requires	SHUNTOE1 for short circuit calibration

CN-GI-CI

Standards	DO-160G S22, MIL-STD-461G CS117, other
Application	injection probe for:
	WF1, WF5A, WF5B in cable induction mode,
	WF4, WF5A, WF5B in ground injection mode
Test levels	1 – 5 for mentioned waveforms
EUT supply	230 V / 32 A 50/60 Hz, 10 A 400/800 Hz
Aperture	4 x 4 cm
EUT cable turns	one complete turn is enough
Dimensions	45 x 60 x 27 cm
Weight	53 kg
For generators	MIG0600MS, MIG0618SS
Included	connection cables

CN-GI-CI-V

Standards	MIL-STD-461G CS117, DO-160G S22, other
Application	injection probe for WF4, WF5A (voltage) in cable induction mode
Test level WF4	50 – 1600 V
EUT supply	230 V / 32 A 50/60 Hz, 10 A 400/800 Hz
Aperture	6 x 12 cm
Dimensions	53 x 65 x 50 cm
Weight	190 kg
For generators	MIG0600MS , MIG0618SS
Included	connection cables

CN-CI-I1

Standards	DO-160G S22, MIL-STD-461G CS117, other
Application	large aperture coupler for WF1, WF5A, WF5B, cable induction mode (current waveforms)
Test levels	ask for details
EUT supply	230 V / 32 A 50/60 Hz, 10 A 400/800 Hz
Aperture	6 x 15 cm
EUT cable turns	cable straight through coupler
Dimensions	45 x 60 x 38 cm
Weight	160 kg
For generators	MIG0600MS
Included	connection cables

CN-CI-V1

Standards	DO-160G S22, MIL-STD-461G CS117, other
Application	large aperture coupler for WF4, WF5A, WF5B, cable induction mode (voltage waveforms)
Test levels	ask for details
EUT supply	230 V / 32 A 50/60 Hz, 10 A 400/800 Hz
Aperture	6 x 15 cm
EUT cable turns	cable straight through coupler
Dimensions	51 x 95 x 36 cm
Weight	292 kg
For generators	MIG0600MS
Included	connection cables

CN-WF5A1500

Standards	Airbus ABD0100.1.2 G, Boeing
Application	coupler for WF5A with 1 Ω impedance
Output impedance	1 Ω
Test level WF5A (CI)	up to 1500 V / 1500 A
EUT supply	230 V / 32 A 50/60 Hz, 10 A 400/800 Hz

Aperture	6 x 15 cm
Dimensions	65 x 130 x 110 cm
Weight	525 kg including hydraulic positioning cart
For generators	MIG0600MS
Included	connection cables, hydraulic cart, control box

CN-WF5A2000

Standards	Airbus ABD0100.1.2 G, Boeing
Application	coupler for WF5A with 1 Ω impedance
Output impedance	1 Ω
Test level WF5A (CI)	up to 2000 V / 2000 A
EUT supply	230 V / 32 A 50/60 Hz, 10 A 400/800 Hz
Aperture	6 x 15 cm
Dimensions	65 x 130 x 110 cm
Weight	645 kg including hydraulic positioning cart
For generators	MIG0600MS
Included	connection cables, hydraulic cart, control box

SOFTWARE

TEMA

Suitable for generators	MIG0600MS, MIG0618SS, MIG-OS-MB
Includes	remote control of generator, automatic test report, sequence mode
Separate license	DSO control requires TEMA EXT-MEASURE
Operating system required	Windows, latest
Communication port	USB
Updates	lifetime updates at no additional cost
Latest version	available on EMC PARTNER website
Optional	10m OPTICAL-LINK fibre for remote control

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.



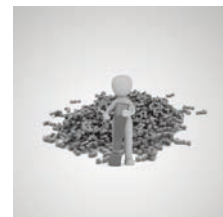
SYSTEM AUTOMATION

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 provides accredited calibration and repairs. Our customer support team is at your service!



Specific EMC test requirements ?

Search & find your required test equipment with our powerful **QUICK SELECTOR** tool at

www.emc-partner.com

The screenshot displays the EMC PARTNER website interface. At the top, there is a search bar and navigation tabs for HOME, COMPANY PROFILE, EMC TEST EQUIPMENT (highlighted), EMC TEST SOFTWARE, CONTACT, and SERVICE & CALIBRATION. Below the navigation is a 'Find your Products by' section with icons for Categories, Standards, Application, Impulse, Keyword, and Send inquiry. A mouse cursor is pointing at the 'Send inquiry' button. The main content area is titled 'Search product by standard' and includes a list of standards with checkboxes for selection. A callout box on the right side of the screenshot lists the search criteria: Standard, Application, Impulse, and Keyword, and states 'or send us your concrete inquiry directly via website'.

EMC PARTNER

HOME COMPANY PROFILE **EMC TEST EQUIPMENT** EMC TEST SOFTWARE CONTACT SERVICE & CALIBRATION

Documents Exhibitions & Seminars Links

Find your Products by Categories Standards Application Impulse Keyword Send inquiry

Search product by standard

Find Product by Standard: IEC, ITU, MIL-STD, EN, DO-160, Airbus & more...
Select one or more checkboxes and press the search button to show the products.

<input type="checkbox"/> ABD0100.1.2	<input type="checkbox"/> IEC 60255-5	<input type="checkbox"/> IEC 61000-4-34	<input type="checkbox"/> IEC 62052-11	<input type="checkbox"/> MIL-STD-461 / CS117
<input type="checkbox"/> ABD0100.1.8.1	<input type="checkbox"/> IEC 60335-1	<input type="checkbox"/> IEC 61000-4-4	<input type="checkbox"/> ISO 10605	<input type="checkbox"/> MIL-STD-461 / CS118
<input type="checkbox"/> ANSI / IEEE 62.45	<input type="checkbox"/> IEC 60384-14	<input type="checkbox"/> IEC 61000-4-5	<input type="checkbox"/> ITU-T K.20	<input type="checkbox"/> MIL-STD-883
<input type="checkbox"/> ANSI C37.90	<input type="checkbox"/> IEC 60571	<input type="checkbox"/> IEC 61000-4-8	<input type="checkbox"/> ITU-T K.21	<input type="checkbox"/> NMI M6 Section A.219
<input type="checkbox"/> ANSI C62.41	<input type="checkbox"/> IEC 60664-1	<input type="checkbox"/> IEC 61000-4-9	<input type="checkbox"/> ITU-T K.22	<input type="checkbox"/> Renault 32-10-001/D
<input type="checkbox"/> ANSI C63.16	<input type="checkbox"/> IEC 60950-1	<input type="checkbox"/> IEC 61008-1	<input type="checkbox"/> ITU-T K.44	<input type="checkbox"/> Renault 32-10-035/A
<input type="checkbox"/> DC 10614	<input type="checkbox"/> IEC 61000-3-2	<input type="checkbox"/> IEC 61009-1	<input type="checkbox"/> ITU-T K.45	<input type="checkbox"/> RTCA DO-160 - Section 17
<input type="checkbox"/> EN 50121-3-2	<input type="checkbox"/> IEC 61000-3-3	<input type="checkbox"/> IEC 61010-1	<input type="checkbox"/> JASO D 001-94	<input type="checkbox"/> RTCA DO-160 - Section 19
<input type="checkbox"/> EN 50121-4	<input type="checkbox"/> IEC 61000-4-10	<input type="checkbox"/> IEC 61051-1	<input type="checkbox"/> JESD22-A114-B	<input type="checkbox"/> RTCA DO-160 - Section 22
<input type="checkbox"/> EN 50155	<input type="checkbox"/> IEC 61000-4-11	<input type="checkbox"/> IEC 61180-1	<input type="checkbox"/> JESD22-A115-A	<input type="checkbox"/> RTCA DO-160 - Section 25
<input type="checkbox"/> EUROCAE/ED-14	<input type="checkbox"/> IEC 61000-4-12	<input type="checkbox"/> IEC 61180-2	<input type="checkbox"/> MIL-DTL-23659D	<input type="checkbox"/> SAE J551-15
<input type="checkbox"/> FAA AC 20 -136	<input type="checkbox"/> IEC 61000-4-16	<input type="checkbox"/> IEC 61340-3-1	<input type="checkbox"/> MIL-STD-1512	<input type="checkbox"/> STANAG 4239
<input type="checkbox"/> IEC 60060-1	<input type="checkbox"/> IEC 61000-4-18	<input type="checkbox"/> IEC 61340-3-2	<input type="checkbox"/> MIL-STD-1541	<input type="checkbox"/> UL 1414
<input type="checkbox"/> IEC 60060-2	<input type="checkbox"/> IEC 61000-4-19	<input type="checkbox"/> IEC 61439	<input type="checkbox"/> MIL-STD-331	<input type="checkbox"/> UL1449
<input type="checkbox"/> IEC 60065-1	<input type="checkbox"/> IEC 61000-4-2	<input type="checkbox"/> IEC 61643-1	<input type="checkbox"/> MIL-STD-461 / CS106	<input type="checkbox"/> VDE 0675 Teil 6
<input type="checkbox"/> IEC 60255-22-1	<input type="checkbox"/> IEC 61000-4-28	<input type="checkbox"/> IEC 61730-1	<input type="checkbox"/> MIL-STD-461 / CS115	<input type="checkbox"/> VW TL 824-66

Search Product by

- Standard
- Application
- Impulse
- Keyword

or send us your concrete inquiry directly via website

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

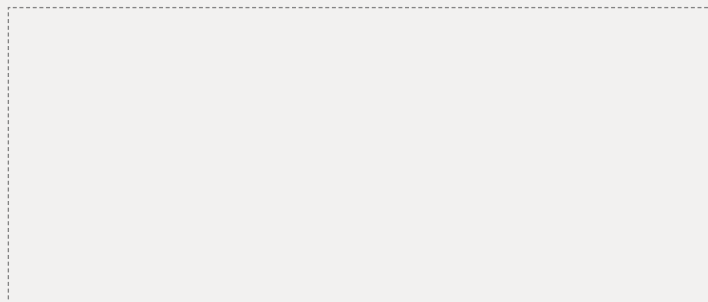


Swiss Headquarters

EMC PARTNER AG
Baselstrasse 160
CH - 4242 Laufen

Phone +41 61 775 20 30
Fax +41 61 775 20 59
Email sales@emc-partner.ch
Web www.emc-partner.com

Your local representative



Information and specifications in this document are an indication of capability only. Version 3.0. Subject to change without notice. EMC PARTNER AG publishes only the English version of this document. Translation into other languages is not guaranteed to be a true representation of content or specification.

© by EMC PARTNER AG. No changes or reproduction without permission of EMC PARTNER AG allowed.