

IMPULSE, POWER CONTACT & INDUCTION

Surge and Telecom Testing





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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



SPECIAL SURGE & TELECOM TEST SYSTEMS

MOVING WITH THE TIMES

Traditional telecom systems have been overtaken by modern high-speed digital equipment. Standard pulses based on the lightning event remain unchanged, but unique CDNs are needed to transfer impulse energy into high-speed communication systems. Exchange and household equipment solutions are complimented by specialist protection device test solutions.

- › International Telecommunications Union (ITU)
- › Reproducible impulses
- › System and component level test solutions
- › Integrated personnel safety features



UNIQUE FEATURES

Test solutions built from a common hardware.

Complete Test Solutions



Impulse generators and specialist CDNs combined with equipment for Power Contact and Power Induction test solutions.

Standard, but also application specific



There is a high degree of hardware commonality in EMC PARTNER impulse generators. Adapted for specific applications.

Wide ranging



All impulse types available. Test applications from complete systems down to protection device component level.

Leading technology



Solid state high voltage switches deliver reproducible impulses. For more confidence in test results.

SPECIAL REQUIREMENTS ARE STANDARD

Long industry experience has produced many specialist generators to meet customer needs.

Lightning Impulse

1.2/50 μ s

- › IEC 60060-1
- › IEC 61180-1
- › IEC 61180-2
- › IEC 60335-1

CWG

1.2/50 μ s, 8/20 μ s

- › IEC 61000-4-5

Telecom

10/700 μ s, 5/320 μ s

- › ITU-T K20
- › ITU-T K21
- › ITU-T K44
- › IEC 60950

Ringwave

0.5/100kHz

- › IEC 61000-4-12

Current impulse

10/350 μ s

8/20 μ s

10/1000 μ s ITU-T K44

- › IEC 61643-11

Technical Specifications

GENERATORS

Test system model	IEC61000-4-5	IEC61000-4-5	IEC61000-4-12	ANSI C62.41, .45	ITU-T Kxx	Insulation	Other
Waveforms	1.2/50 μs, 8/20 μs	10/700 μs, 5/320 μs	0.5 μs / 100 kHz				
MIG0612T-K12					K12		✓
MIG0624T-K12					K12		✓
MIG-ITU-K44					K20, 21, 44		
MIG0624TEL					K20, 21, 44		
MIG0648TEL					K20, 21, 44		
MIG1206	12.5 kV			CW	K20, 21, 44	IEC60060-1	IEC61643-1
MIG1206-1P	12.5 kV			CW	K20, 21, 44	IEC60060-1	IEC61643-1
MIG1206-1P-T	12.5 kV	6.3 kV		CW	K20, 21, 44	IEC60060-1	IEC61643-1
MIG1206-3P	12.5 kV			CW	K20, 21, 44	IEC60060-1	IEC61643-1
MIG1206-3P-63A	12.5 kV			CW	K20, 21, 44	IEC60060-1	IEC61643-1
MIG1206-3P-T	12.5 kV	6.3 kV		CW	K20, 21, 44	IEC60060-1	IEC61643-1

CW – Combination Wave (hybrid surge waveform)

RW – Ring wave 100 kHz

CDNs AND ACCESSORIES

Generator model	IEC61000-4-5	Insulation	Other
Waveforms	1.2/50 μs, 8/20 μs		
CDN-MIG12-32	12 kV		
CDN-MIG12-32 690 V	12 kV		
TC-ST + WARNING-LAMP		IEC60060-1	✓
TC-ST-HL + WARNING-LAMP		IEC60060-1	✓
NW-K44-PC			ITU
NW-K44-PI			ITU
PCPI-160 PCPI			ITU
CN12-500		IEC60060-1	
CN12-12-500		IEC60060-1	

CW – Combination Wave (hybrid surge waveform)

RW – Ring wave 100 kHz

GENERATORS

MIG0612T-K12

MIG0612T-K12 circuit: 8/20 μ s, 12 kA

Standard	ITU-T K.12
Impulse capacitance	2 x 20 μ F \pm 10 %
Energy at max. voltage	2 x 435 joules
Adjustable current (<0.1 Ω)	(2 x) 0.25 kA – 6 kA \pm 10 %, max. 12 kA
Current waveform	8 μ s \pm 10 % / 20 μ s \pm 10 %
Reversal current	< 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive, negative, alternating
Programmable ramp	current



MIG0612T-K12 circuit: 10/350 μ s (<40/350 μ s), 4.4 kA for GDT only

Standard	ITU-T K.12
Impulse capacitance	2 x 20 μ F \pm 10 %
Energy at max. voltage	2 x 435 joules
Adjustable current (<0.1 Ω)	(2 x) 0.1 kA – 2.2 kA \pm 10 %, max. 4.4 kA
Current waveform	rise time: < 50 μ s, 0 – 100 %
Current waveform	half time: 350 μ s \pm 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive only
Programmable ramp	current

MIG0612T-K12 circuit: 10/1000 μ s (low range), 120 A

Standard	ITU-T K.12
Impulse capacitance	2 x 20 μ F \pm 10 %
Energy at max. voltage	2 x 435 joules
Adjustable current (<0.1 Ω)	(2 x) 3 A – 60 A \pm 10 %, max. 120 A
Current waveform	rise time: 10 μ s, 10 – 90 % x 1.25 \pm 20 %
Current waveform	half time: 1000 μ s \pm 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive, negative
Programmable ramp	Current

MIG0612T-K12 circuit: 10/1000 μ s (100/1000 μ s, high range), 2 kA

Standard	ITU-T K.12
Impulse capacitance	2 x 20 μ F \pm 10 %
Energy at max. voltage	2 x 435 joules
Adjustable current (<0.1 Ω)	(2 x) 40 A – 1 kA \pm 10 %, max. 2 kA
Current waveform	rise time: 100 μ s, 10 – 90 % x 1.25 \pm 20 %
Current waveform	half time: 1000 μ s \pm 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive only
Programmable ramp	Current

MIG0612T-K12 control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Pulse voltage monitor BNC	10 V = 6 kV, accuracy \pm 3%
Pulse current monitor BNC	10 V = up to 20 kA, accuracy \pm 3%
Pulse voltage on display	0.25 – 6.6 kV, accuracy \pm 3%
Pulse current on display	0.1 – 11 kA, accuracy \pm 3%
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG0612T-K12 supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) \pm 10%
Power consumption	ON < 400 VA, standby < 10 VA
Weight	56 kg
W x d x h	45 x 57 x 61 cm
Version	19" unit, 12 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

MIG0612T-K12 optional accessories

Test cabinet	TC-ST, WARNING-LAMP
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Software	TEMA: sequence, report, for latest Windows
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MIG0624T-K12

MIG0624T-K12 circuit: 8/20 μ s, 24 kA

Standard	ITU-T K.12
Impulse capacitance	2 x 18 μ F \pm 10 %
Adjustable current (<0.1 Ω)	(2 x) 0.5 kA – 12 kA + 0 % -10 %, max. 24 kA
Current waveform	8 μ s \pm 10 % / 20 μ s \pm 10 %
Reversal current	< 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive, negative, alternating
Programmable ramp	current

MIG0624T-K12 circuit: 10/350 μ s (<40/350 μ s), 8.8 kA for GDT only

Standard	ITU-T K.12
Impulse capacitance	2 x 18 μ F \pm 10 %
Adjustable current (<0.1 Ω)	(2 x) 0.2 kA – 4.4 kA \pm 10 %, max. 8.8 kA
Current waveform	rise time: < 50 μ s, 0 – 100 %
Current waveform	half time: 350 μ s \pm 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive only
Programmable ramp	current

MIG0624T-K12 circuit: 10/1000 μ s (low range), 240 A

Standard	ITU-T K.12
Impulse capacitance	2 x 18 μ F \pm 10 %
Adjustable current (<0.1 Ω)	(2 x) 5 A – 120 A \pm 10 %, max. 240 A
Current waveform	rise time: < 50 μ s, 0 – 100 %
Current waveform	half time: 1000 μ s \pm 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive, negative
Programmable ramp	current

MIG0624T-K12 circuit: 10/1000 μ s (100/1000 μ s, high range), 4 kA

Standard	ITU-T K.12
Impulse capacitance	2 x 18 μ F \pm 10 %
Adjustable current (<0.1 Ω)	(2 x) 80 A – 2 kA \pm 10 %, max. 4 kA
Current waveform	rise time: < 100 μ s, 10 – 90 %

Current waveform	half time: 1000 μ s \pm 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive only
Programmable ramp	current

MIG0624T-K12 control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Pulse voltage monitor BNC	10 V = 6 kV, accuracy \pm 3%
Pulse current monitor BNC	10 V = up to 20 kA, accuracy \pm 3%
Pulse voltage on display	0.25 – 6.6 kV, accuracy \pm 3%
Pulse current on display	0.1 – 20 kA, accuracy \pm 3%
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG0624T-K12 supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) \pm 10%
Power consumption	ON < 400 VA, standby < 10 VA
Weight	71 kg
W x d x h	45 x 57 x 61 cm
Version	19" unit, 12 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

MIG0624T-K12 optional accessories

Test cabinet	TC-ST, WARNING-LAMP
Software	TEMA: sequence, report, for latest Windows

MIG-ITU-K44

MIG-ITU-K44 circuit:

Application	power induction test at line freq. 50 and 60 Hz
Standards	ITU-T K.20, K.21, K.44
Power input	230 V, 16 A (fused), 50/60 Hz
Voltage output	50 – 1700 V (manually adjustable)
Voltage setting	10 V step
Output impedance	0 Ω, fuse protected (16 A) 2 x 200 Ω, overheat protected 2 x 600 Ω, overheat protected
Output power	3.5 kVA continuous, 7 kVA for 2 s
Specific energy	10 A ² s, with 200 Ω resistors 1 A ² s, with 600 Ω resistors 0.2 A ² s, achieved by reducing test time
Test frequencies	50 Hz and 60 Hz
Time setting	0.1 – 9.9 s
Voltage meas./displayed	1 – 1999 V ± 3 %
Current meas./displayed	0 – 19.9 A ± 3 %
Current waveform at BNC	10 V = 20 A ± 3 %



MIG-ITU-K44 supply, weight, dimensions, climatic conditions

Operating voltage	power input utilized for supply
Power consumption	ON < 400 VA, standby < 50 VA
Weight	181 kg
W x d x h	60 x 65 x 123 cm
Version	19" rack, 18 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

Overview power induction tests and mains power contact tests

Generators | CDNS & Accessories

	Power induction tests			Mains power contact tests		
	600V 200Ω	600V 600Ω	1500V 200Ω	230V 10, 20, 40Ω	230V 80Ω, 160Ω	230V 300, 600, 1000Ω
MIG-ITU-K44	✓	✓	✓			
NW-K44-PC				✓	✓	✓
NW-K44-PI	✓	✓				
PCPI160E				✓	✓	

1: VAR-EXT1000 plus IMU can be used up to 23 A continuous

2: ITU basic and enhanced levels are differentiated by test time and accept. criteria A, B

3: NW-K44-PC and NW-K44-PI require IMU and VAR-EXT1000 as source

4: NW-K44-PI requires NW-K44-PC, IMU and VAR-EXT1000 as source

MIG0624TEL

MIG0624TEL circuit: 8/20 μs, 4 x 6 kA (4 lines output)

Standard	ITU-T K.20, K.21 (ITU-T K.44 lightning gen.)
Impulse capacitance	4 x 20 μF ± 10 %
Energy at max. voltage	1500 joules
Source impedance	1 Ω / line
Adjust. current (<0.02 Ω)	(4 x) 0.25 kA – 6 kA + 10 % -5 %
Current waveform	8 μs ± 20 % / 20 μs ± 20 %
Reversal current	< 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive, negative, alternating
Programmable ramp	current
Voltage waveform OC	<1 μs / 90 μs (approximately)



MIG0624TEL circuit: 8/20 μs, 24 kA (1 line output)

Standard	ITU-T K.20, K.21 (ITU-T K.44 lightning gen.)
Impulse capacitance	4 x 20 μF ± 10 %
Energy at max. voltage	1500 joules
Source impedance	4 x 1 Ω in parallel: 0.25 Ω
Adjust. current (<0.02 Ω)	1 kA – 24 kA + 10 % -5 %
Current waveform	8 μs ± 20 % / 20 μs ± 20 %
Reversal current	< 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive, negative, alternating
Programmable ramp	Current
Voltage waveform OC	<1 μs / 90 μs (approximately)

MIG0624TEL control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Pulse voltage monitor BNC	10 V = 6 kV, accuracy $\pm 3\%$
Pulse current monitor BNC	10 V = up to 20 kA, accuracy $\pm 3\%$
Pulse voltage on display	0.25 – 6.6 kV, accuracy $\pm 3\%$
Pulse current on display	1 – 25 kA, accuracy $\pm 3\%$
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG0624TEL supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) $\pm 10\%$
Power consumption	ON < 400 VA, standby < 10 VA
Weight	60 kg
W x d x h	45 x 60 x 46 cm
Version	19" unit, 8 UH, plus connection box
Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Included articles	
Power cord	with country plug
4 x connection cables 1m	waveform guaranteed at cables output
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG0624TEL optional accessories

Software	TEMA: sequence, report, for latest Windows
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MIG0648TEL

MIG0648TEL circuit: 8/20 μ s, 8 x 6 kA (8 lines output)

Standards	ITU-T K.20, K.21 (ITU-T K.44 lightning gen.)
Impulse capacitance	8 x 20 μ F \pm 10 %
Energy at max. voltage	3000 joules
Source impedance	1 Ω / line
Adjust. current (<0.02 Ω)	(8 x) 0.25 kA – 6 kA + 10 % -5 %
Current waveform	8 μ s \pm 20 % / 20 μ s \pm 20 %
Reversal current	< 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive, negative, alternating
Programmable ramp	current
Voltage waveform OC	<1 μ s / 90 μ s (approximately)



MIG0648TEL circuit: 8/20 μ s, 48 kA (1 line output)

Standards	ITU-T K.20, K.21 (ITU-T K.44 lightning gen.)
Impulse capacitance	8 x 20 μ F \pm 10 %
Energy at max. voltage	3000 joules
Source impedance	8 x 1 Ω in parallel: 0.125 Ω
Adjust. current (<0.02 Ω)	1 kA – 48 kA + 10 % -5 %
Current waveform	8 μ s \pm 20 % / 20 μ s \pm 20 %
Reversal current	< 20 %
Pulse repetition	starting 1 pulse / 30 s
Polarity	positive, negative, alternating
Programmable ramp	current
Voltage waveform OC	<1 μ s / 90 μ s (approximately)

MIG0648TEL control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Pulse voltage monitor BNC	10 V = 6 kV, accuracy \pm 3%
Pulse current monitor BNC	10 V = up to 48 kA, accuracy \pm 3%
Pulse voltage on display	0.25 – 6.6 kV, accuracy \pm 3%
Pulse current on display	1 – 48 kA, accuracy \pm 3%
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG0648TEL supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) ± 10%
Power consumption	ON < 400 VA, standby < 10 VA
Weight	130 kg
W x d x h	61 x 68 x 123 cm
Version	19" rack, 18 UH, plus connection box
Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Included articles	
Power cord	with country plug
8 x connection cables 1m	waveform guaranteed at cables output
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG0648TEL optional accessories

Test cabinet	TC-ST, WARNING-LAMP
Test cabinet heavy load	TC-ST-HL, WARNING-LAMP
Software	TEMA: sequence, report, for latest Windows

MIG1206

MIG1206 circuit: CWG / Surge 12.5 kV

Standards	IEC61000-4-5, ANSI C62.41, C62.45, IEC60060-1, ITU-T K.20, 21, 44, IEC61643-1 Part 1/Class III
Impulse capacitance	10 μ F \pm 10 %
Energy at max. voltage	750 joules
Output impedance	2 Ω \pm 10 %
Adjustable voltage OC	1 kV – 12.5 kV \pm 10 %
Voltage waveform	1.2 μ s \pm 30 % / 50 μ s \pm 20 %
Current SC	0.5 kA – 6.25 kA \pm 10 %
Current waveform	8 μ s \pm 20 % / 20 μ s \pm 20 %
Undershoot	< 30 %
Pulse repetition	up to 1 / 5 s @ 1 kV, 1 / 30 s @ 12 kV
Polarity	positive, negative, alternating
Synchronization	0 – 360°, step 1°
Programmable ramps	voltage, synchronisation angle



MIG1206 control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Surge voltage monitor BNC	10 V = 12 kV, accuracy \pm 3%
Surge current monitor BNC	10 V = 6 kA, accuracy \pm 3%
Surge voltage on display	0.5 – 13.2 kV, accuracy \pm 3%
Surge current on display	0.25 – 6.6 kA, accuracy \pm 3%
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Synchro. source	EUT power, direct out
Power synchro. on/off	0 – 360°, 1° step
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG1206 supply, weight, dimensions, climatic conditions

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

Weight	37 kg
W x d x h	45 x 57 x 25 cm
Version	19" 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

MIG1206 optional accessories

Test cabinet	TC-ST, WARNING-LAMP
CDN for power lines	CDN-MIG12-32 (manual, 3 phase)
Matching networks	CN12-12-500, CN12-500 (insulation test)
Software	TEMA: sequence, report, for latest Windows

MIG1206-1P

MIG1206-1P circuit: CWG / Surge 12.5 kV

Standards	IEC61000-4-5, ANSI C62.41, C62.45, IEC60060-1, ITU-T K.20, 21, 44, IEC61643-1 Part 1/Class III
Impulse capacitance	10 μ F \pm 10 %
Energy at max. voltage	750 joules
Output impedance	2 Ω \pm 10 %
Adjustable voltage OC	0.4 kV – 12.5 kV \pm 10 %
Calibrated level	1 kV – 12 kV
Voltage waveform	1.2 μ s \pm 30 % / 50 μ s \pm 20 %
Current SC	0.5 kA – 6.25 kA \pm 10 %
Current waveform	8 μ s \pm 20 % / 20 μ s \pm 20 %
Undershoot	< 30 %
Pulse repetition	up to 1 / 5 s @ 1 kV, 1 / 30 s @ 12 kV
Polarity	positive, negative, alternating
Synchronization	0 – 360°, step 1°
Programmable ramps	voltage, synchronisation angle



MIG1206-1P built-in automatic CDN

Test level surge	12 kV
EUT power input	AC 480V L-N, 480 V L/N-PE, 32A DC 110 V, 25A (not fused)
EUT overcurrent protection	CDN input fused 32 A AC
Internal CDN freq. range	DC, 50 Hz, 60 Hz
Coupling surge IEC	2 Ω : L-N, direct out, 12 Ω : L-PE, N-PE
Coupling surge ANSI	2 Ω : L-N, L-PE, N-PE, L+N-PE 12 Ω : L-N, L-PE, N-PE
Decoupling	as in IEC61000-4-5

MIG1206-1P control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Surge voltage monitor BNC	10 V = 12 kV, accuracy \pm 3%
Surge current monitor BNC	10 V = 6 kA, accuracy \pm 3%
Surge voltage on display	0.5 – 13.2 kV, accuracy \pm 3%
Surge current on display	0.25 – 6.6 kA, accuracy \pm 3%
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Synchro. source	EUT power, direct out
Power synchro. on/off	0 – 360°, 1° step
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG1206-1P supply, weight, dimensions, climatic conditions

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

Weight	67 kg
W x d x h	45 x 60 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
Supply connection	3 cables x 2 m, banana plugs
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG1206-1P optional accessories

Test cabinet	TC-ST-HL, WARNING-LAMP
Software	TEMA: sequence, report, for latest Windows

MIG1206-1P-T

MIG1206-1P-T circuit: CWG / Surge 12.5 kV

Standards	IEC61000-4-5, ANSI C62.41, C62.45, IEC60060-1, ITU-T K.20, 21, 44, IEC61643-1 Part 1/Class III
Impulse capacitance	10 $\mu\text{F} \pm 10\%$
Energy at max. voltage	750 joules
Output impedance	2 $\Omega \pm 10\%$
Adjustable voltage OC	0.4 kV – 12.5 kV $\pm 10\%$
Calibrated level	1 kV – 12 kV
Voltage waveform	1.2 $\mu\text{s} \pm 30\%$ / 50 $\mu\text{s} \pm 20\%$
Current SC	0.5 kA – 6.25 kA $\pm 10\%$
Current waveform	8 $\mu\text{s} \pm 20\%$ / 20 $\mu\text{s} \pm 20\%$
Undershoot	< 30 %
Pulse repetition	up to 1 / 5 s @ 1 kV, 1 / 30 s @ 12 kV
Polarity	positive, negative, alternating
Synchronization	0 – 360°, step 1°
Programmable ramps	voltage, synchronisation angle



MIG1206-1P-T circuit: Telecom surge

Standards	IEC61000-4-5, ITU-T K.44
Impulse capacitance	20 $\mu\text{F} \pm 10\%$
Energy at max. voltage	440 joules
Output impedance	15 Ω or 40 $\Omega \pm 10\%$, selectable
Voltage OC	0.25 kV – 6.3 kV $\pm 10\%$
Calibrated level	0.5 kV – 6 kV
Voltage waveform OC	10 $\mu\text{s} \pm 30\%$ / 700 $\mu\text{s} \pm 20\%$
Current SC into 40 Ω	6.25 A – 157.5 A $\pm 10\%$
Current waveform SC	5 $\mu\text{s} \pm 20\%$ / 320 $\mu\text{s} \pm 20\%$
Pulse repetition	up to 1 / 4 s @ 0.5 kV, 1 / 9 s @ 6.1 kV
Polarity	positive, negative, alternating
Programmable ramps	voltage

MIG1206-1P-T built-in automatic CDN

Test level surge	12 kV
EUT power input	AC 480V L-N, 480 V L/N-PE, 32A DC 110 V, 25A (not fused)
EUT overcurrent protection	CDN automatic input fuse 32 A AC
Internal CDN freq. range	DC, 50 Hz, 60 Hz
Coupling surge IEC	2 Ω : L-N, direct out, 12 Ω : L-PE, N-PE
Coupling surge ANSI	2 Ω : L-N, L-PE, N-PE 12 Ω : L-N, L-PE, N-PE, L+N-PE
Decoupling	as in IEC61000-4-5
Coupling telecom surge	not applicable to supply lines, see I/O CDNs

MIG1206-1P-T control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Surge voltage monitor BNC	10 V = 12 kV, accuracy \pm 3%
Surge current monitor BNC	10 V = 6 kA, accuracy \pm 3%
Surge voltage on display	0.5 – 13.2 kV, accuracy \pm 3%
Surge current on display	0.25 – 6.6 kA, accuracy \pm 3%
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Synchro. source	EUT power, direct out
Power synchro. on/off	0 – 360°, 1° step
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG1206-1P-T supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) \pm 10%
Power consumption	ON < 400 VA, standby < 10 VA
Weight	83 kg
W x d x h	45 x 60 x 55 cm
Version	19" unit, 12 UH
Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Included articles	
Power cord	with country plug
Supply connection	3 cables x 2 m, banana plugs
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG1206-1P-T optional accessories

Test cabinet	TC-ST-HL, WARNING-LAMP
CDNs for I/O lines (surge 1.2/50 μs)	CDN-KIT1000 ED3, CDN-DATA-4L, CDN-DATA-8L (all CDNs up to 6 kV)
CDNs for I/O lines (surge 1.2/50 μs and 10/700 μs)	CDN UTP ED3, CDN UTP8 ED3 (all CDNs up to 6 kV) 1.2/50 μ s and 5kV 10/700 μ s
Software	TEMA: sequence, report, for latest Windows

MIG1206-3P

MIG1206-3P circuit: CWG / Surge 12.5 kV

Standards	IEC61000-4-5, ANSI C62.41, C62.45, IEC60060-1, ITU-T K.20, 21, 44, IEC61643-1 Part 1/Class III
Impulse capacitance	10 μ F \pm 10 %
Energy at max. voltage	750 joules
Output impedance	2 Ω \pm 10 %
Adjustable voltage OC	1 kV – 12.5 kV \pm 10 %
Calibrated level	1 kV – 12 kV
Voltage waveform	1.2 μ s \pm 30 % / 50 μ s \pm 20 %
Current SC	0.5 kA – 6.25 kA \pm 10 %
Current waveform	8 μ s \pm 20 % / 20 μ s \pm 20 %
Undershoot	< 30 %
Pulse repetition	up to 1 / 5 s @ 1 kV, 1 / 30 s @ 12 kV
Polarity	positive, negative, alternating
Synchronization	0 – 360°, step 1°
Programmable ramps	voltage, synchronisation angle



MIG1206-3P built-in automatic 3 phase CDN

Test level surge	12 kV
EUT power input 3	AC 3 x 480V L-L, L-N/PE, 3 x 32 A DC 110 V, 25A per phase (not fused)
EUT overcurrent protection	CDN automatic input fuse 3 x 32 A AC
Internal CDN freq. range	DC, 50 Hz, 60 Hz
Coupling surge IEC	2 Ω : Lx-Ly, Lx-N, direct out, 12 Ω : Lx-PE, N-PE
Coupling surge ANSI	2 Ω : Lx-N, Lx-PE, N-PE 12 Ω : Lx-N, Lx-PE, N-PE
Decoupling	as in IEC61000-4-5

MIG1206-3P control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Surge voltage monitor BNC	10 V = 12 kV, accuracy $\pm 3\%$
Surge current monitor BNC	10 V = 6 kA, accuracy $\pm 3\%$
Surge voltage on display	0.5 – 13.2 kV, accuracy $\pm 3\%$
Surge current on display	0.25 – 6.6 kA, accuracy $\pm 3\%$
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Synchro. source	EUT power, direct out
Power synchro. on/off	0 – 360°, 1° step
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG1206-3P supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) $\pm 10\%$
Power consumption	ON < 400 VA, standby < 10 VA
Weight	180 kg
W x d x h	60 x 65 x 123 cm
Version	19" rack, 18 UH
Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Included articles	
Power cord	with country plug
Supply connection	5 cables x 2 m, banana plugs
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG1206-3P optional accessories

Test cabinet	TC-ST-HL, WARNING-LAMP
Software	TEMA: sequence, report, for latest Windows

MIG1206-3P-63A

MIG1206-3P-63A circuit: CWG / Surge 12.5 kV

Standards	IEC61000-4-5, ANSI C62.41, C62.45, IEC60060-1, ITU-T K.20, 21, 44, IEC61643-1 Part 1/Class III
Impulse capacitance	10 μ F \pm 10 %
Energy at max. voltage	750 joules
Output impedance	2 Ω \pm 10 %
Adjustable voltage OC	1 kV – 12.5 kV \pm 10 %
Calibrated level	1 kV – 12 kV
Voltage waveform	1.2 μ s \pm 30 % / 50 μ s \pm 20 %
Current SC	0.5 kA – 6.25 kA \pm 10 %
Current waveform	8 μ s \pm 20 % / 20 μ s \pm 20 %
Undershoot	< 30 %
Pulse repetition	up to 1 / 5 s @ 1 kV, 1 / 30 s @ 12 kV
Polarity	positive, negative, alternating
Synchronization	0 – 360°, step 1°
Programmable ramps	voltage, synchronisation angle



MIG1206-3P-63A built-in automatic 3 phase CDN

Test level surge	12 kV
EUT power input 3	AC 3 x 480V L-L, L-N/PE, 3 x 63 A DC 110 V, 25A per phase (not fused)
EUT overcurrent protection	CDN automatic input fuse 3 x 63 A AC
Internal CDN freq. range	DC, 50 Hz, 60 Hz
Coupling surge IEC	2 Ω : Lx-Ly, Lx-N, direct out, 12 Ω : Lx-PE, N-PE
Coupling surge ANSI	2 Ω : Lx-N, Lx-PE, N-PE 12 Ω : Lx-N, Lx-PE, N-PE
Decoupling	as in IEC61000-4-5

MIG1206-3P-63A control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Surge voltage monitor BNC	10 V = 12 kV, accuracy \pm 3%
Surge current monitor BNC	10 V = 6 kA, accuracy \pm 3%
Surge voltage on display	0.5 – 13.2 kV, accuracy \pm 3%
Surge current on display	0.25 – 6.6 kA, accuracy \pm 3%
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Synchro. source	EUT power, direct out
Power synchro. on/off	0 – 360°, 1° step
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG1206-3P-63A supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) ± 10%
Power consumption	ON < 400 VA, standby < 10 VA
Weight	220 kg
W x d x h	60 x 65 x 123 m
Version	19" rack, 18 UH
Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Included articles	
Power cord	with country plug
Supply connection	5 cables x 2 m, banana plugs
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG1206-3P-63A optional accessories

Test cabinet	TC-ST-HL, WARNING-LAMP
Software	TEMA: sequence, report, for latest Windows

MIG1206-3P-T

MIG1206-3P-T circuit: CWG / Surge 12.5 kV

Standards	IEC61000-4-5, ANSI C62.41, C62.45, IEC60060-1, ITU-T K.20, 21, 44, IEC61643-1 Part 1/Class III
Impulse capacitance	10 μ F \pm 10 %
Energy at max. voltage	750 joules
Output impedance	2 Ω \pm 10 %
Adjustable voltage OC	1 kV – 12.5 kV \pm 10 %
Calibrated level	1 kV – 12 kV
Voltage waveform	1.2 μ s \pm 30 % / 50 μ s \pm 20 %
Current SC	0.5 kA – 6.25 kA \pm 10 %
Current waveform	8 μ s \pm 20 % / 20 μ s \pm 20 %
Undershoot	< 30 %
Pulse repetition	up to 1 / 5 s @ 1 kV, 1 / 30 s @ 12 kV
Polarity	positive, negative, alternating
Synchronization	0 – 360°, step 1°
Programmable ramps	voltage, synchronisation angle



MIG1206-3P-T circuit: Telecom surge

Standards	IEC61000-4-5, ITU-T K.44
Impulse capacitance	20 μ F \pm 10 %
Energy at max. voltage	440 joules
Output impedance	15 Ω or 40 Ω \pm 10 %, selectable
Voltage OC	0.25 kV – 6.3 kV \pm 10 %
Calibrated level	0.5 kV – 6 kV
Voltage waveform OC	10 μ s \pm 30 % / 700 μ s \pm 20 %
Current SC into 40 Ω	6.25 A – 157.5 A \pm 10 %
Current waveform SC	5 μ s \pm 20 % / 320 μ s \pm 20 %
Pulse repetition	up to 1 / 4 s @ 0.5 kV, 1 / 9 s @ 6.1 kV
Polarity	positive, negative, alternating
Programmable ramps	Voltage

MIG1206-3P-T built-in automatic 3 phase CDN

Test level surge	12 kV
EUT power input 3	AC 3 x 480V L-L, L-N/PE, 3 x 32 A DC 110 V, 25A per phase (not fused)
EUT overcurrent protection	CDN automatic input fuse 3 x 32 A AC
Internal CDN freq. range	DC, 50 Hz, 60 Hz
Coupling surge IEC	2 Ω : Lx-Ly, Lx-N, direct out, 12 Ω : Lx-PE, N-PE
Coupling surge ANSI	2 Ω : Lx-N, Lx-PE, N-PE 12 Ω : Lx-N, Lx-PE, N-PE
Decoupling	as in IEC61000-4-5
Coupling telecom surge	not applicable to supply lines, see I/O CDNs

MIG1206-3P-T control features

User interface	LCD and keypad, efficient menu structure
Communication interface	RS232 with (optional) adapter to USB
Surge voltage monitor BNC	10 V = 12 kV, accuracy $\pm 3\%$
Surge current monitor BNC	10 V = 6 kA, accuracy $\pm 3\%$
Surge voltage on display	0.5 – 13.2 kV, accuracy $\pm 3\%$
Surge current on display	0.25 – 6.6 kA, accuracy $\pm 3\%$
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Synchro. source	EUT power, direct out
Power synchro. on/off	0 – 360°, 1° step
Impulse counter	programmable up to 29'999
Emergency stop	Emergency Stop button, BNC input (EUT Fail)
Internal memory	up to 15 tests can be saved and recalled

MIG1206-3P-T supply, weight, dimensions, climatic conditions

Operating voltage	115 / 230 V (50/60 Hz) $\pm 10\%$
Power consumption	ON < 400 VA, standby < 10 VA
Weight	187 kg
W x d x h	60 x 65 x 123 cm
Version	19" rack, 18 UH
Temperature range	10 – 35 °C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Included articles	
Power cord	with country plug
Supply connection	5 cables x 2 m, banana plugs
User manual	with conformity declaration
Calibration certificate	factory calibration

MIG1206-3P-T optional accessories

Test cabinet	TC-ST-HL, WARNING-LAMP
CDNs for I/O lines (surge 1.2/50 μs)	CDN-KIT1000 ED3, CDN-DATA-4L, CDN-DATA-8L (all CDNs up to 6 kV)
CDNs for I/O lines (surge 1.2/50 μs and 10/700 μs)	CDN UTP ED3, CDN UTP8 ED3 (all CDNs up to 6 kV) 1.2/50 μs and 5kV 10/700 μs
Software	TEMA: sequence, report, for latest Windows

COUPLING / DECOUPLING NETWORKS

COUPLING/DECOUPLING NETWORKS FOR POWER LINES

CDN-MIG12-32

Standard	IEC61000-4-5 latest edition
Type	3P, manual
EUT voltage AC	max. 3 x 480 V L-L (280 V L-N), 50 / 60 Hz
EUT current AC	max. 3 x 32 A
EUT protection AC	over-current automatic prot., < 1 s @ 125 A
EUT power DC	max. 300 V, 60 A (ask for details)
Test level surge	max. 12 kV, all IEC coupling paths
Coupling paths	L1-L2, L1-L3, L2-L3, L1-N, L2-N, L3-N, L1-PE, L2-PE, L3-PE, N-PE
Coupling and decoupling	full compliant to latest editions
Dimensions	19 " unit, 4 UH
Weight	48 kg
Generators	MIG1206



CDN-MIG12-32 690 V

Standard	IEC61000-4-5 latest edition
Type	3P, manual
EUT voltage AC	max. 3 x 690 V L-L (400 V L-N), 50 / 60 Hz
EUT current AC	max. 3 x 32 A
EUT protection AC	over-current automatic prot., < 1 s @ 125 A
EUT power DC	max. 300 V, 60 A (ask for details)
Test level surge	max. 12 kV, all IEC coupling paths
Coupling paths	L1-L2, L1-L3, L2-L3, L1-N, L2-N, L3-N, L1-PE, L2-PE, L3-PE, N-PE
Coupling and decoupling	full compliant to latest editions
Dimensions	19 " unit, 4 UH
Weight	48 kg
Generators	MIG1206



ACCESSORIES

ACCESSORIES AS PER ITU-T K.xx LATEST EDITION

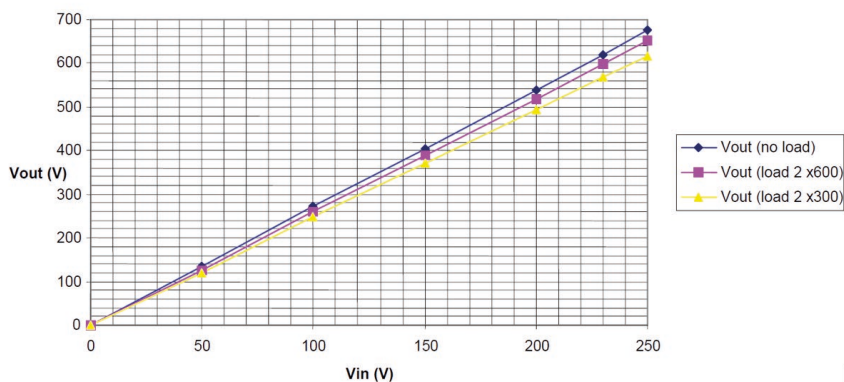
NW-K44-PC

Application	mains power contact network with limiting resistors for power contact tests
Standard	ITU-T K.44
Max. voltage	230 V, limited by variac
Max. current	16 A, limited by IMU and variac
Built-in limiting resistors	2 x 300 Ω, 2 x 600 Ω, 2 x 1000 Ω, 2 x 1200 Ω
External limiting resistors	use direct output
Power input	from public mains via variac and IMU
Dimensions	19" unit, 4 UH
Weight	13 kg
Generator required	IMU with D module and VAR-EXT1000



NW-K44-PI

Application	option to NW-K44-PC for power induction tests
Standard	ITU-T K.44
Transformer	built-in transformer
Max. output voltage	< 600 V in all cases, see below characteristic
Built-in limiting resistors	2 x 200 Ω, 2 x 600 Ω
External limiting resistors	use direct output
Power input	from public mains via variac and IMU
Dimensions	19" unit, 4 UH
Weight	31 kg
Requires	IMU with D module, VAR-EXT1000, NW-K44-PC



PCPI160E

Application	resistor sets for power contact sets
Standard	ITU-T K.xx
Basic resistor	160 Ω \pm 2 %
Max. power dissipation	500 W / 250 V
Selectable resistors with one unit parallel connection	ask for details
Selectable resistors with two units serial connection	ask for details
Selectable resistors with one unit serial connection	160, 320, 480, 640 Ω
Delivery	two resistor units
For testing simultaneously 2 telecom lines	four resistor units required (2xPCPI160E)
Dimensions	unit: 66 x 51 x 26 cm (x 2 units)
Weight	unit: 25 kg (x 2 units)
Requires	IMU with D module, VAR-EXT1000, NW-K44-PC



ACCESSORIES AS PER IEC60060-1 LATEST EDITION

CN12-500

Application	insulation test matching network
Standard	IEC60060-1
Output impedance	500 Ω
Test level	max. 12 kV
Output connectors	AMP
Dimensions	24 x 10 x 8.5 cm
Weight	1.5 kg
Generators	MIG1206
Accessories	CN-MIG18 AMP



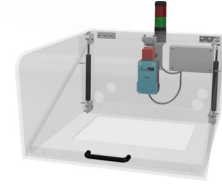
CN12-12-500

Application	insulation test matching network
Standard	IEC60060-1
Output impedance	12 Ω , 500 Ω
Test level	max. 12 kV
Output connectors	AMP
Dimensions	24 x 10 x 8.5 cm
Weight	2 kg
Generators	MIG1206
Accessories	ask for details on connection cables



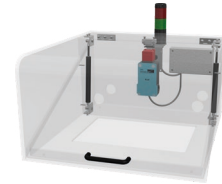
TC-ST

Standard	multiple
Application	test cabinet with safety circuit
EUT volume	20 x 20 x 30 cm
Warning lamps	red and green (2 lamps)
Test cabinet material	acrylic glass, cover position adjustable
Insulation withstand	pulse 1.2/50 μ s up to 36 kV
Weight	8.5 kg
Dimensions	43.5 x 47 x 25.4 cm
Included	control cable to generator
Requires	MIG generator up to 36 kV



TC-ST-HL

Standard	multiple
Application	test cabinet for heavy EUTs, with safety circuit
Position of test cabinet	near the generator
EUT volume	20 x 20 x 30 cm
Warning lamps	red and green (2 lamps)
Test cabinet material	acrylic glass, cover position adjustable
Insulation withstand	pulse 1.2/50 μ s up to 36 kV
Weight	8.5 kg
Dimensions	43.5 x 47 x 25.4 cm
Included	control cable to generator
Requires	MIG generator up to 36 kV



WARNING-LAMP

Cable length	5 m
Dimensions	diameter 7x cm x 25 cm
Weight	0.5 kg



NOTES

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PRODUCT APPLICATION RANGE

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