

THE NEW INS SERIES

Impulse Insulation Testers from 500 V to 30 kV

Preliminary version 2.2.

EMC PARTNER reserves the right to change content and technical characteristics of products at any time without prior notification.



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 organization.



MANY OPTIONS ONE CHOICE

The new INS series from EMC PARTNER is another ground-breaking advance in insulation technology. With impulse repetition rates of 1 pulse per second up to 3.5 kV, and 1 pulse per 8 seconds at 30 kV, INS is probably the fastest insulation test system in the world.

The new INS test systems represent a flexible, high performance, high precision and highly reliable solution. Request a quotation now!

Already have an INS test system and want to add functions after purchase?
Ask for details: sales@emc-partner.ch

ABSOLUTELY AMAZING!

THE NEW INS SERIES



A flexible offer

Optimal models corresponding to normative test levels up to 7.5 kV, 15 kV, 22.5 kV or 30 kV. The 7.5 kV model can be subsequently upgraded to 15 kV and the 22.5 kV model can be upgraded to 30 kV. Output impedance can be selected in the range 40 Ω - 4 k Ω (default 40 Ω).

Superior component technology

Impulse capacitors have an expected lifetime of 6 million cycles declared by manufacturer. INS test system hence becomes an optimal solution for long duration production testing.

Optimal personnel safety

Outputs of the generator are on top of the generator, allowing a safe manual control. Furthermore, a safety switch is always available on the front panel, while an additional remote (5 m cable included) safety switch can be optionally connected.

Seamless test bench integrations

With its programmable bi-directional connectors, INS is ready for an optimal PLC integration.

Unbeatable compactness

15 kV solution in standard 19" unit, 4 UH and 30 kV in 19" unit, 8 UH.

Outstanding precision

The tolerance of impulse voltage is just $\pm 3\%$ while measurement circuits offer a $\pm 2\%$ tolerance. This level of performance allows the implementation of voltage and current integrals (available with OPT-INS-MEAS).

Latest generation of accessories

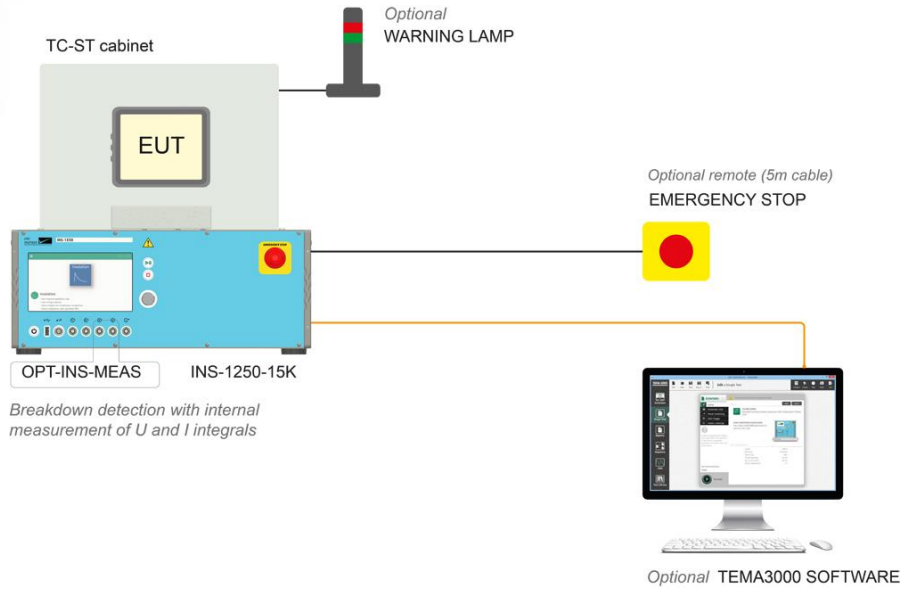
The 30 kV-proof test cabinet can be (optionally) placed up to 2 m away from the main generator and includes a reliable safety interlock circuit. The optional LED warning lamp complies to IEC 61140, VDE 0140-1. The 1 Gbps Ethernet port of the INS generator can be connected to a computer via an optional 10 m optical fibre.

More functions with remote control

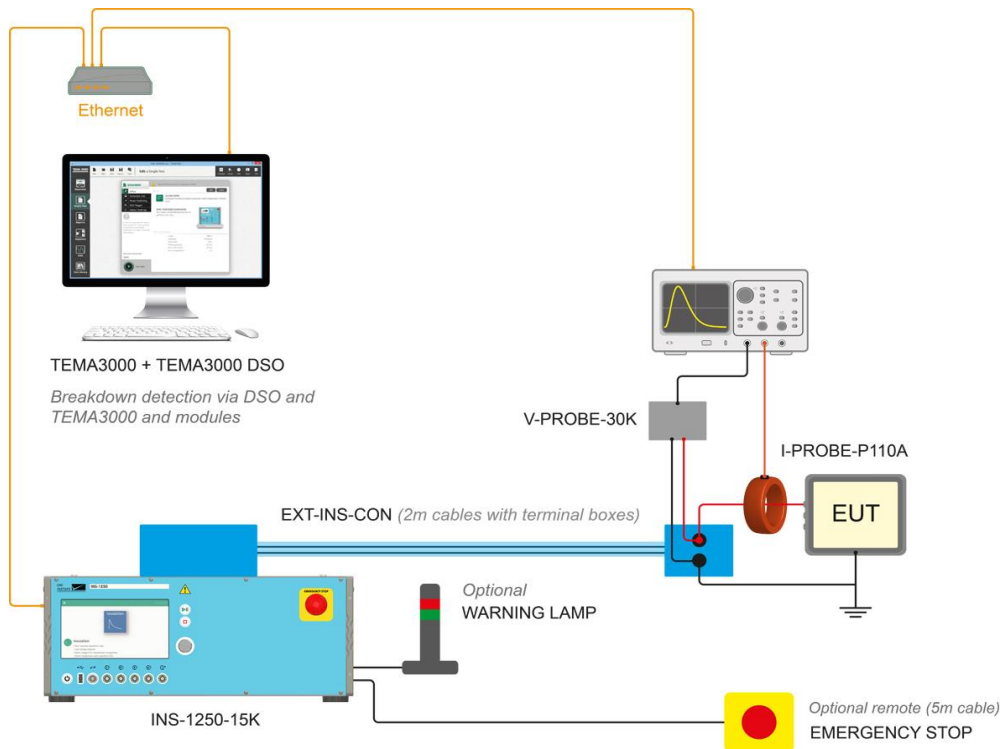
TEMA3000 software allows, among others, automatic DSO screenshots, automatic surveillance of waveform parameters, etc.

TEST SETUP EXAMPLES

Test setup for small EUTs on top of the generator.



Test setup for small EUTs with calibrated waveform at 2m cable



Technical specifications

INS MODELS AND ACCESSORIES

Generators

INS-1250-7K5	7.5 kV impulse 1.2/50 μ s, 40 Ω and/or custom output
INS-1250-15K	15 kV impulse 1.2/50 μ s, 40 Ω and/or custom output
INS-1250-22K5	22.5 kV impulse 1.2/50 μ s, 40 Ω and/or custom output
INS-1250-30K	30 kV impulse 1.2/50 μ s, 40 Ω and/or custom output
INS-0805	500 ohm output/ 0.5 J with 0.5 kV, 1 kV, 1.5 kV, 2 kV, 2.5 kV, 3 kV, 4 kV, 5 kV, 6 kV and 8 kV test levels

Accessories

CN-INS-500	matching network 500 Ω
CN-INS-X	custom matching network with any value in the range 40 Ω 4 k Ω
OPT-INS-MEAS	measurement board for Upeak, Ipeak on display, BNC outputs for U and I waveforms monitor and U and I integral calc/display
V-PROBE-30K	30 kV common mode voltage monitor probe for INS-1250 series
EXT-INS-CON	2 m cables and terminal box for INS-1250
TC-ST	test cabinet with safety circuit mountable on top of generator
TC-ADAPTER	stand for TC-ST table-top mounting
WARNING LAMP	red/green signalization lamp
EMERGENCY STOP	remote emergency stop button with 5 m cable included

INS-1250-7K5

INS-1250-7K5 circuit: voltage impulse 1.2/50 μ s, 7.5 kV

Standards	IEC60060-1, IEC61010-1, IEC61180, IEC60335-1, IEC60664-1, latest editions
Application	test insulation against voltage impulse
Impulse capacitance	250 nF \pm 20 %
Energy at max. voltage	7.03 joules
Default output impedance	40 Ω , additional impedances on request
Adjust. voltage OC (>10 MΩ)	200 V – 7.5 kV
Calibrated level	500 V – 7.5 kV \pm 3 %
Voltage waveform	1.2 μ s \pm 30 % / 50 μ s \pm 20 %
Waveform in tolerance for	R > 1 k Ω L > 50 mH C < 6 nF
SC current waveform	not defined
Pulse repetition	up to 1 / 1 s @ 3.5 kV, 1 / 2 s @ 7.5 kV
Polarity	positive, negative, alternating

INS-1250-7K5 control features

User interface	7" capacitive touch screen
Processor, RAM	Quad-core 1.2 GHz, 1 GB RAM
Internal memory	4 GB
Communication interfaces	Gigabit Ethernet, 2 x RS232, 2 x USB A
Impulse counter	programmable up to 29'999
Trigger out	BNC, max. 10 V on front panel
Programmable BNCs	4 programmable BNCs (2 front, 2 back)
Input functions via BNC	Start test, Stop test, EUT fail, EUT mark, External trigger in, Emergency stop
Output functions via BNC	Running state, Safety circuit state
Emergency stop	On front panel, standard red/yellow as in IEC 60947-5-5, IEC 60204-1, ISO 13850

INS-1250-7K5 supply, weight, dimensions, climatic conditions

Operating voltage	100 – 240 V (50/60 Hz) ± 10%
Power consumption	ON < 150 VA, standby < 15 VA
Weight	approx. 24 kg
W x d x h	45 x 57 x 19 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
EUT connection cables	two 0.25 m cables with crocodile clips
User manual	with conformity declaration
Calibration certificate	factory calibration

INS-1250-7K5 optional accessories

500 Ω output impedance	CN-INS-500 optional output impedance
Custom output impedance	CN-INS-X selectable impedance 40Ω - 4 kΩ
Test cabinet	TC-ST cabinet with safety circuit
Table adapter for TC-ST	TC-ADAPTER to mount TC-ST near generator
2 m extension cable	EXT-INS-CON extension cable with box
Warning lamp	WARNING-LAMP red/green
Emergency stop button	external EMRGNCY-STOP with 5m cable
Measurement board	OPT-INS-MEAS internal board for peak V, I.
Voltage probe	V-PROBE-30K optional voltage probe
Software	TEMA3000 with optional modules

INS-1250-15K

INS-1250-15K circuit: voltage impulse 1.2/50 μ s, 15 kV

Standards	IEC60060-1, IEC61010-1, IEC61180, IEC60335-1, IEC60664-1, latest editions
Application	test insulation against voltage impulse
Impulse capacitance	250 nF \pm 20 %
Energy at max. voltage	28.12 joules
Default output impedance	40 Ω , additional impedances on request
Adjust. voltage OC (>10 MΩ)	400 V – 15 kV
Calibrated level	1 kV – 15 kV \pm 3 %
Voltage waveform	1.2 μ s \pm 30 % / 50 μ s \pm 20 %
Waveform in tolerance for	R > 1 k Ω L > 50 mH C < 6 nF
SC current waveform	not defined
Pulse repetition	up to 1 / 1 s @ 3.5 kV, 1 / 4 s @ 15 kV
Polarity	positive, negative, alternating

INS-1250-15K control features

User interface	7" capacitive touch screen
Processor, RAM	Quad-core 1.2 GHz, 1 GB RAM
Internal memory	4 GB
Communication interfaces	Gigabit Ethernet, 2 x RS232, 2 x USB A
Impulse counter	programmable up to 29'999
Trigger out	BNC, max. 10 V on front panel
Programmable BNCs	4 programmable BNCs (2 front, 2 back)
Input functions via BNC	Start test, Stop test, EUT fail, EUT mark, External trigger in, Emergency stop
Output functions via BNC	Running state, Safety circuit state
Emergency stop	On front panel, standard red/yellow as in IEC 60947-5-5, IEC 60204-1, ISO 13850

INS-1250-15K supply, weight, dimensions, climatic conditions

Operating voltage	100 – 240 V (50/60 Hz) ± 10%
Power consumption	ON < 150 VA, standby < 15 VA
Weight	approx. 26 kg
W x d x h	45 x 57 x 19 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
EUT connection cables	two 0.25 m cables with crocodile clips
User manual	with conformity declaration
Calibration certificate	factory calibration

INS-1250-15K optional accessories

500 Ω output impedance	CN-INS-500 optional output impedance
Custom output impedance	CN-INS-X selectable impedance 40Ω - 4 kΩ
Test cabinet	TC-ST cabinet with safety circuit
Table adapter for TC-ST	TC-ADAPTER to mount TC-ST near generator
2 m extension cable	EXT-INS-CON extension cable with box
Warning lamp	WARNING-LAMP red/green
Emergency stop button	external EMRGNCY-STOP with 5m cable
Measurement board	OPT-INS-MEAS internal board for peak V, I.
Voltage probe	V-PROBE-30K optional voltage probe
Software	TEMA3000 with optional modules

INS-1250-22K5

INS-1250-22K5 circuit: voltage impulse 1.2/50 μ s, 22.5 kV

Standards	IEC60060-1, IEC61010-1, IEC61180, IEC60335-1, IEC60664-1, latest editions
Application	test insulation against voltage impulse
Impulse capacitance	250 nF \pm 20 %
Energy at max. voltage	63.28 joules
Default output impedance	40 Ω , additional impedances on request
Adjust. voltage OC (>10 MΩ)	600 V – 22.5 kV
Calibrated level	1.5 kV – 22.5 kV \pm 3 %
Voltage waveform	1.2 μ s \pm 30 % / 50 μ s \pm 20 %
Waveform in tolerance for	R > 1 k Ω L > 50 mH C < 6 nF
SC current waveform	not defined
Pulse repetition	up to 1 / 1 s @ 3.5 kV, 1 / 6 s @ 22.5 kV
Polarity	positive, negative, alternating

INS-1250-22K5 control features

User interface	7" capacitive touch screen
Processor, RAM	Quad-core 1.2 GHz, 1 GB RAM
Internal memory	4 GB
Communication interfaces	Gigabit Ethernet, 2 x RS232, 2 x USB A
Impulse counter	programmable up to 29'999
Trigger out	BNC, max. 10 V on front panel
Programmable BNCs	4 programmable BNCs (2 front, 2 back)
Input functions via BNC	Start test, Stop test, EUT fail, EUT mark, External trigger in, Emergency stop
Output functions via BNC	Running state, Safety circuit state
Emergency stop	On front panel, standard red/yellow as in IEC 60947-5-5, IEC 60204-1, ISO 13850

INS-1250-22K5 supply, weight, dimensions, climatic conditions

Operating voltage	100 – 240 V (50/60 Hz) ± 10%
Power consumption	ON < 150 VA, standby < 15 VA
Weight	approx. 35 kg
W x d x h	45 x 57 x 43 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
EUT connection cables	two 0.25 m cables with crocodile clips
User manual	with conformity declaration
Calibration certificate	factory calibration

INS-1250-22K5 optional accessories

500 Ω output impedance	CN-INS-500 optional output impedance
Custom output impedance	CN-INS-X selectable impedance 40 Ω - 4 kΩ
Test cabinet	TC-ST cabinet with safety circuit
Table adapter for TC-ST	TC-ADAPTER to mount TC-ST near generator
2 m extension cable	EXT-INS-CON extension cable with box
Warning lamp	WARNING-LAMP red/green
Emergency stop button	external EMRGNCY-STOP with 5m cable
Measurement board	OPT-INS-MEAS internal board for peak V, I.
Voltage probe	V-PROBE-30K optional voltage probe
Software	TEMA3000 with optional modules

INS-1250-30K

INS-1250-30K circuit: voltage impulse 1.2/50 μ s, 30 kV

Standards	IEC60060-1, IEC61010-1, IEC61180, IEC60335-1, IEC60664-1, latest editions
Application	test insulation against voltage impulse
Impulse capacitance	250 nF \pm 20 %
Energy at max. voltage	112.5 joules
Default output impedance	40 Ω , additional impedances on request
Adjust. voltage OC (>10 MΩ)	800 V – 30 kV
Calibrated level	2 kV – 30 kV \pm 3 %
Voltage waveform	1.2 μ s \pm 30 % / 50 μ s \pm 20 %
Waveform in tolerance for	R > 1 k Ω L > 50 mH C < 6 nF
SC current waveform	not defined
Pulse repetition	up to 1 / 1 s @ 3.5 kV, 1 / 8 s @ 30 kV
Polarity	positive, negative, alternating

INS-1250-30K control features

User interface	7" capacitive touch screen
Processor, RAM	Quad-core 1.2 GHz, 1 GB RAM
Internal memory	4 GB
Communication interfaces	Gigabit Ethernet, 2 x RS232, 2 x USB A
Impulse counter	programmable up to 29'999
Trigger out	BNC, max. 10 V on front panel
Programmable BNCs	4 programmable BNCs (2 front, 2 back)
Input functions via BNC	Start test, Stop test, EUT fail, EUT mark, External trigger in, Emergency stop
Output functions via BNC	Running state, Safety circuit state
Emergency stop	On front panel, standard red/yellow as in IEC 60947-5-5, IEC 60204-1, ISO 13850

INS-1250-30K supply, weight, dimensions, climatic conditions

Operating voltage	100 – 240 V (50/60 Hz) ± 10%
Power consumption	ON < 150 VA, standby < 15 VA
Weight	approx. 40 kg
W x d x h	45 x 57 x 19 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
EUT connection cables	two 0.25 m cables with crocodile clips
User manual	with conformity declaration
Calibration certificate	factory calibration

INS-1250-30K optional accessories

500 Ω output impedance	CN-INS-500 optional output impedance
Custom output impedance	CN-INS-X selectable impedance 40Ω - 4 kΩ
Test cabinet	TC-ST cabinet with safety circuit
Table adapter for TC-ST	TC-ADAPTER to mount TC-ST near generator
2 m extension cable	EXT-INS-CON extension cable with box
Warning lamp	WARNING-LAMP red/green
Emergency stop button	external EMRGNCY-STOP with 5m cable
Measurement board	OPT-INS-MEAS internal board for peak V, I.
Voltage probe	V-PROBE-30K optional voltage probe
Software	TEMA3000 with optional modules

INS-0805

INS-0805 circuit: voltage impulse 1.2/50 μ s, 0.5 J, 500 Ω

Standards	IEC 61180, IEC 60255-27, IEC 62052-11 IEC 60834-1/2, EN 50470-1 latest editions
Application	test insulation against voltage impulse
Voltage test levels 0.5 J	0.5 kV, 1 kV, 1.5 kV, 2 kV, 2.5 kV, 3 kV, 4 kV, 5 kV, 6 kV, 8 kV + 0 % / - 10 %
Polarity	positive, negative, alternating
Output impedance	500 Ω \pm 10 %
Impulse rise time	1.2 μ s \pm 30 %
Impulse duration	50 μ s \pm 20 %
Pulse energy at test levels	0.5 J \pm 10 %
Repetition rate	1 s – 655 s
Included articles	cables and test clips

INS-0805 control features

Operating system	EMC PARTNER proprietary firmware
Languages	10 menu languages, selectable
User interface	7" colour touch display
Connectivity	ethernet, USB, RS485
Surge voltage monitor BNC	1 V = 4 kV, accuracy \pm 3%
Surge voltage on display	0.5 – 8 kV, accuracy \pm 3%
Peak check function	yes, programmable limits for measured U
Trigger out	BNC, max. 12 V
Trigger in	auto, manual, external (BNC input)
Impulse counter	programmable up to 65'535
Emergency stop	Emergency Stop button, BNC input (EUT Fail)

INS-0805 supply, weight and dimensions

Operating voltage	115 / 230 V (50/60 Hz) \pm 10%
Power consumption	ON < 400 VA, standby < 10 VA
Temperature range	10 – 35 $^{\circ}$ C
Humidity	< 80 % non-condensing
Air pressure	86 – 106 kPa
Included articles	
Power cord	with country plug
EUT connection cables	two 0.5 m cables with crocodile clips
User manual	with conformity declaration
Calibration certificate	factory calibration

CN-INS-500

Application	matching network for insulation test
Standard	multiple, see generators
Output impedance	500 Ω , or direct generator output (40 Ω)
Test level	max. 30 kV
Weight	1.5 kg
Dimensions	24 x 10 x 8.5 cm
For generators	INS-1250-7K5, -15K, 22K5 or -30K

CN-INS-X

Application	matching network for insulation test
Standard	multiple, see generators
Output impedance	custom, from 40 Ω to 4 k Ω
Test level	max. 30 kV
Weight	2 kg
Dimensions	24 x 10 x 8.5 cm
For generators	INS-1250-7K5, -15K, 22K5 or -30K

OPT-INS-MEAS

Application	measurement board for U, I
Type	internal board with 2 BNC outputs
Voltage input	up to 30 kV peak, bandwidth DC – 5 MHz
Current input	up to 2 kA peak, bandwidth 2 Hz – 20 MHz
Values on screen	U integral, I integral
Output	1 x BNC for U, 1 x BNC for I
U output ratios via BNC	1: 1000 \pm 2 % for INS-1250-7K5 1: 2000 \pm 2 % for INS-1250-15K 1: 3000 \pm 2 % for INS-1250-22K5 1: 4000 \pm 2 % for INS-1250-30K
I output ratios via BNC	1: 40 \pm 2 % for INS-1250-7K5 1: 80 \pm 2 % for INS-1250-15K 1: 120 \pm 2 % for INS-1250-22K5 1: 160 \pm 2 % for INS-1250-30K
Internal measurements	voltage integral, current integral with selectable thresholds
For generators	INS-1250-7K5, -15K, 22K5 or -30K
Availability	Can be ordered also after initial purchase

V-PROBE-30K

Application	voltage monitor probe for INS-1250 series
Type	common mode passive, for impulse meas.
Mounting	on top of generator or on EXT-INS-CON
Input voltage	100 V – 30 kV waveform 1.2/50 μ s
Accuracy	2 %
3 dB bandwidth	DC – 5 MHz
Input impedance	40 k Ω
Input connectors	2 x 4 mm
Output connector	1 x BNC
For generators	INS3000-7K5, -15K, 22K5 or -30K
Availability	Can be ordered also after initial purchase and mounted on site

EXT-INS-CON

Application	2 m cables and terminal box for INS-1250
Voltage capability	max. 30 kV impulse 1.2/50 μ s
Current capability	max. 2 kA impulse 8/20 μ s
For generators	INS-1250-7K5, -15K, 22K5 or -30K

TC-ST

Standard	multiple
Application	test cabinet with safety circuit
Mounting	on top of generator
EUT volume	20 x 20 x 30 cm
Test cabinet material	acrylic glass
Insulation withstand	pulse 1.2/50 μ s up to 30 kV
Weight	8 kg
Dimensions	43.5 x 47 x 25.4 cm
Included	control cable to generator
For generators	INS-1250-7K5, -15K, 22K5 or -30K
Accessories	WARNING-LAMP TC-ADAPTER

TC-ADAPTER

Application	stand for TC-ST table-top mounting
Insulation withstand	pulse 1.2/50 µs up to 30 kV
Weight	approx. 5 kg
Dimensions	45 x 57 x 10 cm
Requires	TC-ST

WARNING-LAMP

Application	red/green signalization lamp
Protection class	IP65, IEC 61140, VDE 0140-1
Mounting support	magnetic support, screwable bracket included
Lamp type	red and green (2 lamps), LED technology
Weight	0.3 kg
Dimensions	277 x 70 cm
Included	control cable to TC-ST/generator
For generators	INS-1250 series, IMU series

EMERGENCY-STOP

Application	remote emergency stop button
Colours	standard red/yellow as in IEC 60947-5-5, IEC 60204-1, and ISO 13850
Mounting	on table, magnetic support also included
Weight	0.5 kg
Dimensions	78 x 72 x 64 mm
Included	5 m cable
For generators	INS-1250 series, IMU series

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.ch

Your local representative

