



## **EMC IS ALL ABOUT STANDARDS.**

### **HAEFELY COVERS THEM IN JUST ONE SINGLE BOX.**

The standards - are you really familiar with all of them? Whether people talk about generic standards or product specific standards - stipulated by law or demanded from the manufacturer: HAEFELY has integrated all of them.

Take benefit from the most modern and easy to use conducted immunity test system ever built. Welcome to the [AXOS series](#).

#### **Indoor appliances**

Domestic	Industrial	Medical	IT
White goods	Robotics	Monitoring	Computers
Brown goods	Welding machines	Scanning	Printers
Household	Packing machines	Analysing	Modems
Lightning devices	Production lines	Pumps	Hubs
Portable tools	Laboratory equipment	Implants	Phones
Home automation			Servers

#### **Outdoor appliances**

Renewable energy	Telecom	Transportation	Defense
Solar panels	Outdoor lines	Automotive	Component testing
Windmills	Repeater	Motorcycles	Communications
Turbines	Switching stations	Trucks	Vehicles
Inverters	Data concentrators	Electric vehicles	Aircrafts
Infrastructure	Telecommunication centers	Charging stations	Satellites

## THE STANDARDS



### IEC/EN 61000-4-5 Surge Combination Wave 1.2/50 $\mu$ s...8/20 $\mu$ s

Surge events can be generated by lightning phenomena, switching transients or the activation of protection devices in the power distribution system. A surge itself is influenced by the propagation path taken so that impulses from the same event may have different forms depending upon where a measurement is taken. Combination Wave Generators (CWG) simulate a surge event in power lines close to or within buildings. Mostly the disturbances are tolerable because they are single events.



### IEC/EN 61000-4-4 Electric Fast Transients, EFT/Burst

Industrial measurement and control equipment nearly always use conventional control units containing relays or other electro-mechanical switching devices. Fluorescent lamp ballast units, insufficiently suppressed motors (hair dryers, vacuum cleaners, drills, etc.) are found everywhere in the public power supply. All of these are primarily inductive loads which generate interference when switched on or off. EFT events, can cause microprocessor units to malfunction or reset, with corresponding disruption to normal operation.



### IEC/EN 61000-4-11 Voltage Dips and Interrupts

Voltage failures occur following switching operations, short-circuits, response of fuses and when running up heavy loads. The quality of the electrical power supply is increasingly becoming a central topic of discussion. The interference sources in the mains, caused by electronic power control with non-linear components e.g. thyristors are used more frequently in domestic appliances such as hotplates, heating units, washing machines, television sets, economy lamps, PCs and industrial systems with speed-controlled drives.



### IEC/EN 61000-4-9 Pulsed Magnetic Field

Under normal operating conditions, an AC current generates a steady magnetic field so that equipment, such as monitors, close to AC power lines could suffer interference. Under fault conditions, a sudden high current level can result in a short duration magnetic field. Lightning strokes or short circuit fault currents in the power network can generate high level short duration magnetic fields.

## THE STANDARDS



RING WAVE

### IEC/EN 61000-4-12 Ring Wave / IEEE C62.41

Ring waves are used to simulate lightning or switching effects in domestic single or three phase supplies within an adequately protected building. The waveform has similar characteristics in both open and short circuit conditions. The ring wave is characterised as a bipolar damped oscillating wave.



TELECOM WAVE

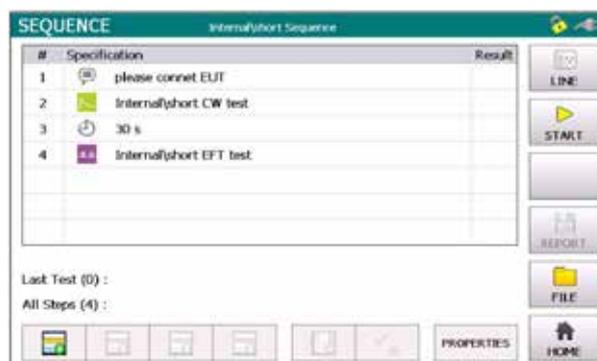
### IEC/EN 61000-4-5 Telecom Wave 10/ 700 $\mu$ s / ITU K.20, K.21, K.44, K.45

Telecommunication networks and lines are often disposed to lightning strikes and their associated effects. All telecommunication systems linked with lines installed outdoors therefore require a reliable protection which needs to be tested.

## THE SEQUENCER

Linking test to form a sequence.

Individual tests stored on the PC or in the AXOS<sup>5</sup> / AXOS<sup>8</sup> itself can be combined to form a complex and fully automated test sequence. This feature enables Surge, EFT/Burst, Voltage Dips, Ring Wave and Telecom Wave tests to be linked and run in a continuous sequence. The already pre-installed IEC and generic standards make programming easier than ever before.



## ***THE MODULAR CONCEPT***

Welcome to the unique design and concept of modularity designed by HAEFELY.

HAEFELY is recognizing an increasing interest in testing departments to configure the required functions in compact immunity test systems more flexible than ever. For that reason HAEFELY designed a unique concept of modularity which eviscerates large additional investments for customers in the future.

Moreover, constantly reduced product development times call for powerful, easy-to-operate and ready-to-use conducted immunity test systems which can be expanded in a multitude of different test applications. Customer requirements, particularly in the telecommunications and industrial electronics sector, emphasize a test system's accuracy and modularity, thus clearly pointing to easy to expand T&M equipment that is favorably priced and suitable for most of industries.

The AXOS series has been tailored to exactly meet these requirements, offering special cost advantages for T&M applications in the development, production and servicing of telecommunications, components as well as safety and industrial electronics.

All AXOS test systems come equipped with all the hardware needed for instant upgrades by only entering optional key codes into the license code manager of the unit. After entering the key code(s) the additional test functionalities like Surge Combination Wave, Ring Wave, Telecom Wave, EFT/ Burst or Voltage Dips and Interrupts become available immediately. No direct intervention has to be done by the user at all.

## ***THE SOFTWARE***

### **Remote Control Software**

The optionally available remote control software simply enables the user to remote control the AXOS<sup>5</sup> and AXOS<sup>8</sup> by using a remote device like a standard PC, Tablet or Smartphone. The connection can either be established by putting in a Ethernet cable "point to point" or via wifi network (a separate access point will be required).

### **Reporting Software**

The reporting software creates automatically a test report. The main header can be adjusted with the individual company logo or any other text required. The data input can either be supplied directly via the remote control software or when saving the data on a USB drive. Furthermore, the data can be used from the sequence mode menu directly and the report gets generated. Detailed information will be provided with the reporting software tool itself. The reporting software is compatible with both Windows 7 and Windows 8 (32- and 64 - bit).



## AXOS<sup>5</sup> EXPANDABLE TEST SYSTEM

# axos<sup>5</sup>

The new AXOS<sup>5</sup> expandable test system integrates all of the best features of several stand-alone test systems into one single economic solution.

It can be individually combined either with 5 kV Surge Combination Wave, 5 kV EFT/ Burst, Dips & Interrupts\*, along with an integrated single-phase coupling / decoupling network. This allows quick and completely automated testing to the most common IEC, EN, ANSI, IEEE and UL standards.

The AXOS<sup>5</sup> can either be operated via front panel by large colour graphic interface or remotely from the PC. The easy to use menu together with the availability of predefined test routines for different standards makes testing easy and reliable, even for less frequently users. Numerous additional functions such as external start/stop function allows easy integration of the test system also in customer specific test environments.

All the test parameters can be varied in a broad range wide above the requirements of the standards. Together with the ability of changing test parameters during test, AXOS<sup>5</sup> is not only the ideal product for compliance and pre-compliance testing, it is useful for monitoring & debugging function during design phase as well.

A wide range of cost-efficient and user friendly coupling / decoupling networks for power lines as well as for symmetrical and asymmetrical data- and signal lines are available as options.



AXOS<sup>5</sup> front view



AXOS<sup>5</sup> rear view

# OVERVIEW

## FEATURES & BENEFITS

- Easy to operate with manual and automated test modes, software assisted test preparation, pre-defined test routines and visual aided test setups
- Economic & Efficient  
Touch screen guarantees reduction of time and effort - Experience and know-how at a reasonable price
- Safe and reliable operation by using safety interlock, warning lamp and emergency stop functions
- Voltage and current monitoring of surge impulses and EUT power provides valuable feedback to the test engineer
- Automatic generation of test report, including test parameters, test setup and test result
- IEC/EN 61000-4-4 EFT / Burst
- IEC/EN 61000-4-5 Surge
- IEC/EN 61000-4-9 Imp Magnetic Field
- IEC/EN 61000-4-11  
AC Dips and Interrupts
- IEC/EN 61000-4-29  
DC Dips and Interrupts
- IEC/EN 61000-6-1 Generic Residential
- IEC/EN 61000-6-2 Generic Industrial
- IEC/EN 60335-1 Household
- IEC/EN 60601-1 Medical
- And many more

## STANDARDS

### APPLICATIONS

- Compliance & pre-compliance testing of electrical products
- CE marking
- Product development and debugging
- Compliance testing of telecom and wireless devices

### INDUSTRIES

- Industrial
- Residential
- Components
- Medical
- Renewable energy
- Telecom



## TECHNICAL DATA - AXOS<sup>5</sup>

GENERAL DATA			
<b>Control power</b>	85 V - 264 V 50/60 Hz	<b>Dimensions (W x H x D)</b>	19" / 4 U (45 x 18 x 49 cm)
<b>User test storage</b>	unlimited	<b>Weight</b>	25 kg
<b>Remote interface</b>	Ethernet, RJ 45	<b>USB</b>	for USB memory stick
<b>Display</b>	7" / 800 x 480 / 24 bit with touch-screen	<b>AUX. interface</b>	D-sub 37 p for external CDN, external trans- former etc.
<b>External trigger input</b>	5 V TTL	<b>Synch input</b>	BNC, 10 V – 264 V AC
<b>Trigger output</b>	5 V TTL	<b>External start / stop input</b>	5 V TTL, starts / stops predefined test sequence
<b>EUT failed input</b>	5 V TTL	<b>Analog output</b>	0 – 10 V, for use with external options
<b>Warning lamp output</b>	2 x 24 V / 1 A DC	<b>Safety circuit</b>	stops the test when unlocked

IEC / EN 61000-4-4 EDITION 2 & 3 EFT / BURST			
<b>Output voltage</b>	0.2 – 5.0 kV ±10% at coaxial output	<b>Spike frequency</b>	1 Hz – 1 MHz
<b>Polarity</b>	pos / neg / alternate	<b>Burst duration</b>	10 µs – 1 s
<b>Output impedance</b>	50 Ohm	<b>Burst period</b>	1 ms – 10 s
<b>Rise time</b>	5 ns ± 30%	<b>Test time</b>	1 s– 1'000 minutes
<b>Impulse duration</b>	50 ns ± 30% at 50 Ohm 50 ns –15 +100 ns at 1'000 Ohm	<b>Trigger</b>	automatic, manual, external trigger input
<b>Burst mode</b>	normal, continuous, real, random	<b>Integrated single phase coupling / decoupling network</b>	264 V AC / 16 A 220 V DC / 10 A

<b>IEC / EN 61000-4-5 EDITION 3 SURGE COMBINATION WAVE</b>			
<b>Output voltage</b>	0.2 – 5.0 kV ±10%	<b>Output current</b>	0.1 – 2.5 kA ±10%
<b>Voltage rise time</b>	1.2 µs ±30%	<b>Current rise time</b>	8 µs ±20%
<b>Voltage duration</b>	50 µs ±20%	<b>Current duration</b>	20 µs ±20%
<b>Polarity</b>	positive / negative / alternate	<b>Integrated single phase CDN</b>	264 V AC / 16 A 220 V DC / 10 A
<b>Output impedance</b>	2 Ohm / 12 Ohms	<b>Impulse trigger</b>	automatic 2 s – 100 min manual external trigger input
<b>Phase sync</b>	0 – 359° with 1° steps or asynchronous mode		
<b>Counter preselect</b>	1 – 1'000 / infinite		
<b>Counter</b>	100'000		
<b>Peak voltage monitor</b>	BNC output: 1000:1 display: 3 digits	<b>Peak current monitor</b>	BNC output: 1 kA/V display: 3 digits

<b>IEC / EN 61000-4-11 EDITION 2 AND IEC / EN 61000-4-29 DIPS &amp; INTERRUPTS</b>			
<b>*Max. voltage</b>	264 V AC 220 V DC	<b>Interrupt time</b>	0.5 period – 800 periods 100 µs – 1000 minutes
<b>*Max. current</b>	10 A DC 16 A AC continuous 20 A for 5 s 23 A for 3 s 40 A for 3 s > 500 A inrush current	<b>Interval time</b>	1 period – 800 periods synch 100 µs – 1000 minutes asynch
<b>Trigger</b>	automatic manual external trigger input	<b>Test time</b>	1 s – 1000 minutes infinite
<b>Interrupt dip level</b>	0% 0% – 99% with external voltage source	<b>Phase sync</b>	0 – 359° 16 / 40 / 50 / 60 Hz asynchronous mode
<b>RMS voltage monitor</b>	BNC output: 100:1 display: 4 digits	<b>RMS current monitor</b>	BNC output: 10 A/V display: 4 digits

\*AC power only for AXOS unit. Do not use DC through DIP 116 unit.

## OVERVIEW OF AXOS<sup>5</sup> SERIES



AXOS<sup>5</sup>  
Compact Test System  
Article no. 2490400

Surge 1.2/50  $\mu$ s...8/20  $\mu$ s  
IEC/EN 61000-4-5

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*



AXOS<sup>5</sup>  
Surge Test System  
Article no. 2490401

Surge 1.2/50  $\mu$ s...8/20  $\mu$ s  
IEC/EN 61000-4-5

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*



AXOS<sup>5</sup>  
EFT/Burst Test System  
Article no. 2490402

Surge 1.2/50  $\mu$ s...8/20  $\mu$ s  
IEC/EN 61000-4-5

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*



AXOS<sup>5</sup>  
Dips Test System  
Article no. 2490403

Surge 1.2/50  $\mu$ s...8/20  $\mu$ s  
IEC/EN 61000-4-5

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*

- Activated by default
- Optionally available by activation via key code

\*external AC Voltage DipsTransformer "DIP 116" required

\*\*external Antenna Coil "MSURGE-A" required

# SCOPE OF SUPPLY - OPTIONS & ACCESSORIES

## SCOPE OF SUPPLY

AXOS <sup>5</sup> Compact Immunity Test System	2490400
AXOS <sup>5</sup> Surge Test System	2490401
AXOS <sup>5</sup> EFT/Burst Test System	2490402
AXOS <sup>5</sup> Voltage Dips Test System	2490403

Qty. 1	Immunity Test System AXOS <sup>5</sup>
Qty. 1	Mains Cable
Qty. 1	User Manual
Qty. 1	Certificate of Calibration
Qty. 1	Voltage Dips Module "DIP 116" *

## OPTIONS AND ACCESSORIES

FP-COMB 32	Automatic 3-Phase CDN EFT/ Burst, Surge, Ring 32 A/ 480 V	2490430
FP-EFT 32M	3-Phase CDN EFT/Burst 32 A / 690 V	2490170
FP-EFT 100M2	3-Phase CDN EFT/Burst 100 A / 690 V	2495860
IP4B	Capacitive Coupling Clamp for EFT/ Burst	2491300
FP-SURGE 32A	Automatic 3-Phase CDN Surge 32 A / 690 V	2490700
FP-SURGE 100M2	3-Phase CDN Surge 100A / 690 V	2490180
PCD 121	Symmetrical Data & Control Line Coupler	2498010
PCD 126A	Asymmetrical Data & Control Line Coupler	2498030
DEC 5	Symmetrical Data & Control Line Decoupler	2490141
DEC 6	Symmetrical Data & Control Line Decoupler	2490151
DEC 7	Asymmetrical Data & Control Line Decoupler	2490161
DIP 116	Automatic Dips Transformer 16 A 40/70/80%	2490410
MSURGE-A	Magnetic Field Test IEC / EN 61000-4-9	2490441
VTM 15000	Isolation Test 1.2/50 us up to 10 kV	2499960
VTM 15000/05	Isolation Test 1.2/50 us up to 10 kV / 0.5 J	2499692
PDP 8000	HV Differential Probe 1000:1 for Surge	2499911
CP 101	Current Probe Model for Surge	2499931
ES	External Emergency Stop Switch P 12	4700751
WL	External Warning Lamp P 12	4700750
Calibration	Accredited ISO 17025 Calibration AXOS <sup>5</sup>	2490420
Surge Key Code	Key Code for Surge extension AXOS <sup>5</sup>	4700814
EFT/Burst Key Code	Key Code for EFT/Burst extension AXOS <sup>5</sup>	4700815
Dips Key Code	Key Code for Voltage Dips extension AXOS <sup>5</sup>	4700816
Remote Control	Remote Control Software for AXOS <sup>5</sup>	2490440
Report Software	Reporting Software for AXOS <sup>5</sup>	4700975

\*Only with AXOS<sup>5</sup> Voltage Dips Test System (2490403)

## AXOS<sup>8</sup> EXPANDABLE TEST SYSTEM

# AXOS<sup>8</sup>

The new AXOS<sup>8</sup> expandable test system integrates all of the best features of several stand alone test systems into one single economic solution.

It can be individually combined either with 7 kV Surge Combination Wave, 7 kV Ring Wave, 7 kV Telecom Wave\*, 5 kV EFT/Burst or Dips & Interrupts\*\*, along with an integrated single-phase coupling / decoupling network. This allows quick and completely automated testing to the most common IEC, EN, ANSI, ITU, IEEE and UL standards.

The AXOS<sup>8</sup> can either be operated via front panel by large colour graphic interface or remotely from the PC. The easy to use menu together with the availability of predefined test routines for different standards makes testing easy and reliable, even for less frequently users. Numerous additional functions such as external start/stop function allows easy integration of the test system also in customer specific test environments.

All the test parameters can be varied in a broad range wide above the requirements of the standards. Together with the ability of changing test parameters during test, AXOS<sup>8</sup> is not only the ideal product for compliance and pre-compliance testing, it is useful for monitoring & debugging function during design phase as well.

A wide range of cost-efficient and user friendly coupling / decoupling networks for power lines as well as for symmetrical and asymmetrical data- and signal lines are available as options.



AXOS<sup>8</sup> front view



AXOS<sup>8</sup> rear view

\*external Telecom Wave Module "TW 8" required

\*\*external AC Voltage Dips Transformer "DIP 116" required

# OVERVIEW

## FEATURES & BENEFITS

- Easy to operate with manual and automated test modes, software assisted test preparation, pre-defined test routines and visual aided test setups
- Economic & Efficient  
Touch screen guarantees reduction of time and effort - Experience and know-how at a reasonable price
- Safe and reliable operation by using safety interlock, warning lamp and emergency stop functions
- Voltage and current monitoring of surge impulses and EUT power provides valuable feedback to the test engineer
- Automatic generation of test report, including test parameters, test setup and test result

## APPLICATIONS

- Compliance & pre-compliance testing of electrical products
- CE marking
- Product development and debugging
- Compliance testing of telecom and wireless devices
- Overtesting

## STANDARDS

- IEC/EN 61000-4-4 EFT / Burst
- IEC/EN 61000-4-5 Surge Edition 3 (1.2/50  $\mu$ s...8/20  $\mu$ s)
- IEC/EN 61000-4-5 Surge (10/700  $\mu$ s)\*
- IEC/EN 61000-4-9 Magnetic Field\*\*
- IEC/EN 61000-4-11  
AC Dips and Interrupts\*\*\*
- IEC/EN 61000-4-12 Ring Wave
- IEC/EN 61000-4-29  
DC Dips and Interrupts
- IEC/EN 61000-6-1 Generic Residential
- IEC/EN 61000-6-2 Generic Industrial
- IEC/EN 60335-1 Household
- IEC/EN 60601-1 Medical
- IEC/EN 60950
- EN 55024
- IEEE C62.41
- ITU K.20, K.21, K.44, K.45

\* external Telecom Wave Module "TW 8" required

\*\* external Antenna Coil "MSURGE-A" required

\*\*\* external AC Voltage Dips Transformer "DIP 116" required

## TECHNICAL DATA - AXOS<sup>8</sup>

GENERAL DATA			
<b>Control power</b>	85 V - 264 V 50/60 Hz	<b>Dimensions (W x H x D)</b>	22" / 6U (45 x 27 x 50 cm)
<b>User test storage</b>	unlimited	<b>Weight</b>	30 kg
<b>Remote interface</b>	Ethernet, RJ45	<b>USB</b>	for USB memory stick
<b>Display</b>	7" / 800x480 / 24 bit with touch-screen	<b>AUX. interface</b>	D-sub 37p for external CDN, external trans- former etc.
<b>External trigger input</b>	5 VTTL	<b>Synch input</b>	BNC, 10 V – 264 V AC
<b>Trigger output</b>	5 VTTL	<b>External start / stop input</b>	5 VTTL, starts / stops predefined test sequence
<b>EUT failed input</b>	5 VTTL	<b>Analog output</b>	0 – 10 V, for use with external options
<b>Warning lamp output</b>	2 x 24 V / 1 A DC	<b>Safety circuit</b>	stops the test when unlocked

IEC / EN 61000-4-4 EDITION 2 & 3 EFT / BURST			
<b>Output voltage</b>	0.2 – 5.0 kV $\pm 10\%$ at coaxial output	<b>Spike frequency</b>	1 Hz – 1 MHz
<b>Polarity</b>	pos / neg / alternate	<b>Burst duration</b>	10 $\mu$ s – 1 s
<b>Output impedance</b>	50 Ohms	<b>Burst period</b>	1 ms – 10 s
<b>Rise time</b>	5 ns $\pm 30\%$	<b>Test time</b>	1 s – 1000 minutes
<b>Impulse duration</b>	50 ns $\pm 30\%$ at 50 Ohm 50 ns – 15 + 100 ns at 1000 Ohm	<b>Trigger</b>	automatic, manual, external trigger input
<b>Burst mode</b>	normal, continuous, real, random	<b>Integrated single phase coupling / decoupling network</b>	264 V AC / 16 A 220 V DC / 10 A

IEC / EN 61000-4-5 EDITION 3 SURGE COMBINATION WAVE			
<b>Output voltage</b>	0.2 – 7.0 kV $\pm 10\%$	<b>Output current</b>	0.1 – 3.5 kA $\pm 10\%$
<b>Voltage rise time</b>	1.2 $\mu$ s $\pm 30\%$	<b>Current rise time</b>	8 $\mu$ s $\pm 20\%$
<b>Voltage duration</b>	50 $\mu$ s $\pm 20\%$	<b>Current duration</b>	20 $\mu$ s $\pm 20\%$
<b>Polarity</b>	pos / neg / alternate	<b>Integrated single phase CDN</b>	264 V AC / 16 A 220 V DC / 10 A
<b>Output impedance</b>	2 Ohms / 12 Ohms	<b>Impulse trigger</b>	automatic 2 s – 100 min manual external trigger input
<b>Phase sync</b>	0 – 359° with 1° steps or asynchronous mode		
<b>Counter preselect</b>	1 – 1000 / infinite		
<b>Counter</b>	100000		
<b>Peak voltage monitor</b>	BNC output: 1000:1 display: 3 digits	<b>Peak current monitor</b>	BNC output: 1 kA/V display: 3 digits

<b>IEC / EN 61000-4-5 Telecom Wave / ITU K.20, K.21, K.44, K.45 (external TW 8 module)</b>			
<b>Output voltage</b>	0.2 - 7.0 kV ± 10%	<b>Source impedance / coupling</b>	15 Ohm x 1 40 Ohm x 4 40 Ohm gas arresters x 4
<b>Front time OCV</b>	10 µs ± 30%	<b>Front time SCC</b>	5 µs ± 20%
<b>Decay time OCV</b>	700 µs ± 20%	<b>Decay time SCC</b>	320 µs ± 20%
<b>Polarity</b>	Pos., neg., alt.	<b>Weight</b>	10 kg
<b>Outputs</b>	4 mm banana socket	<b>Dimensions</b>	19" / 4U, (45 x 18 x 49 cm)

<b>IEC / EN 61000-4-11 EDITION 2 AND IEC / EN 61000-4-29 DIPS &amp; INTERRUPTS</b>			
<b>*Max. voltage</b>	264 V AC 220 V DC	<b>Interrupt time</b>	0.5 period – 800 periods 100 µs – 1000 minutes
<b>*Max. current</b>	10 A DC 16 A AC continuous 20 A for 5 s 23 A for 3 s 40 A for 3 s > 500 A inrush current	<b>Interval time</b>	1 period – 800 periods synch 100 µs – 1000 minutes asynch
<b>Trigger</b>	automatic manual external trigger input	<b>Test time</b>	1 s – 1000 minutes infinite
<b>Interrupt dip level</b>	0% 0% – 99% with external voltage source	<b>Phase sync</b>	0 – 359° 16 / 40 / 50 / 60 Hz asynchronous mode
<b>RMS voltage monitor</b>	BNC output: 100:1 display: 4 digits	<b>RMS current monitor</b>	BNC output: 10 A/V display: 4 digits

\* AC Power for AXOS only. Do not use DC through DIP 116 Unit.

<b>IEC / EN 61000-4-12 EDITION 2 AND ANSI / IEEE C62.41 Ring Wave</b>			
<b>Max. voltage</b>	0.2 - 7.0 kV ± 10%	<b>Repetition rate</b>	Up to 30 pulses / min
<b>Frequency</b>	100 kHz	<b>Polarity</b>	Positive / negative / alternate
<b>Rise time OC</b>	5 µs	<b>Floating output</b>	Max. 460 V / AC
<b>Rise time SC</b>	1 µs	<b>Phase sync accuracy</b>	± 1°
<b>Impedance</b>	12 Ohm, 30 Ohm	<b>Damping rate</b>	0.4 < peak1/peak2 < 1.1 0.4 < peak3/peak2 < 1.1 0.4 < peak4/peak3 < 1.1
<b>Peak voltage monitor</b>	BNC output: 1000:1 Display: 3 digits	<b>Peak current monitor</b>	BNC output: 1kA / V Display: 3 digits

## OVERVIEW OF AXOS<sup>8</sup> SERIES



AXOS<sup>8</sup>  
Compact Test System  
Article no. 2490800

Surge 1.2/50 $\mu$ s...8/20 $\mu$ s  
IEC/EN 61000-4-5

Telecom Wave 10/700 $\mu$ s\*  
IEC/EN 61000-4-5 & ITU

Ring Wave  
IEEE C62.41

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*



AXOS<sup>8</sup>  
Surge Test System  
Article no. 2490810

Surge 1.2/50 $\mu$ s...8/20 $\mu$ s  
IEC/EN 61000-4-5

Telecom Wave 10/700 $\mu$ s\*  
IEC/EN 61000-4-5 & ITU

Ring Wave  
IEEE C62.41

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*



AXOS<sup>8</sup>  
Dips Test System  
Article no. 2490840

Surge 1.2/50 $\mu$ s...8/20 $\mu$ s  
IEC/EN 61000-4-5

Telecom Wave 10/700 $\mu$ s\*  
IEC/EN 61000-4-5 & ITU

Ring Wave  
IEEE C62.41

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*



AXOS<sup>8</sup>  
EFT/Burst Test System  
Article no. 2490830

Surge 1.2/50 $\mu$ s...8/20 $\mu$ s  
IEC/EN 61000-4-5

Telecom Wave 10/700 $\mu$ s\*  
IEC/EN 61000-4-5 & ITU

Ring Wave  
IEEE C62.41

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*

\* external Telecom Wave Modul "TW8"

\*\* external Voltage Dips Transformer "DIP 116" required

\*\*\* additional Antenna Coil "MSURGE-A" required



AXOS<sup>8</sup>  
Ring Wave Test System  
Article no. 2490820

Surge 1.2/50 $\mu$ s...8/20 $\mu$ s  
IEC/EN 61000-4-5

Telecom Wave 10/700 $\mu$ s\*  
IEC/EN 61000-4-5 & ITU

Ring Wave  
IEEE C62.41

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*



AXOS<sup>8</sup>  
Telecom Wave System  
Article no. 2490850

Surge 1.2/50 $\mu$ s...8/20 $\mu$ s  
IEC/EN 61000-4-5

Telecom Wave 10/700 $\mu$ s\*  
IEC/EN 61000-4-5 & ITU

Ring Wave  
IEEE C62.41

EFT/Burst  
IEC/EN 61000-4-4

Voltage Dips  
IEC/EN 61000-4-11\*

Magnetic Field  
IEC/EN 61000-4-9\*\*

- Activated by default
- Optionally available by activation via key code

\* external Telecom Wave Modul "TW8" required (included in 2490850)

\*\* external AC Voltage Dips Transformer "DIP 116" required

\*\*\* additional Antenna Coil "MSURGE-A" required

## SCOPE OF SUPPLY - OPTIONS & ACCESSORIES

### SCOPE OF SUPPLY

AXOS <sup>®</sup> Compact Immunity Test System	2490800
AXOS <sup>®</sup> Surge Test System	2490810
AXOS <sup>®</sup> EFT/Burst Test System	2490830
AXOS <sup>®</sup> Voltage Dips Test System	2490840
AXOS <sup>®</sup> Ring Wave Test System	2490820
AXOS <sup>®</sup> Telecom Wave Test System	2490850

Qty. 1	Immunity Test System AXOS <sup>®</sup>
Qty. 1	Telecom Wave Modul "TW 8" 10/700 $\mu$ s*
Qty. 1	Mains Cable
Qty. 1	User Manual
Qty. 1	Certificate of Calibration
Qty. 1	Voltage Dips Module "DIP 116" **

### OPTIONS AND ACCESSORIES

FP-COMB 32	Automatic 3-Phase CDN EFT/Burst, Surge, Ring 32 A / 480 V	2490430
FP-EFT 32M	3-Phase CDN EFT/Burst 32 A / 690 V	2490170
FP-EFT 100M2	3-Phase CDN EFT/Burst 100 A / 690 V	2495860
IP4B	Capacitive Coupling Clamp for EFT/Burst	2491300
FP-SURGE 32A	Automatic 3-Phase CDN Surge 32 A / 690 V	2490700
FP-SURGE 100M2	3-Phase CDN Surge 100A / 690 V	2490180
TW 8	Telecom Wave Modul 10/700 $\mu$ s	4700915
PCD 121	Symmetrical Data & Control Line Coupler	2498010
PCD 126A	Asymmetrical Data & Control Line Coupler	2498030
DEC 5	Symmetrical Data & Control Line Decoupler	2490141
DEC 6	Symmetrical Data & Control Line Decoupler	2490151
DEC 7	Asymmetrical Data & Control Line Decoupler	2490161
DIP 116	Automatic Dips Transformer 16 A 40/70/80%	2490410
MSURGE-A	Magnetic Field Test IEC / EN 61000-4-9	2490441
VTM 15000	Isolation Test 1.2/50 us up to 10 kV	2499960
VTM 15000/05	Isolation Test 1.2/50 us up to 10 kV / 0.5J	2499692
PDP 8000	HV Differential Probe 1000:1 for Surge	2499911
CP 101	Current Probe Model for Surge	2499931
ES	External Emergency Stop Switch P12	4700751
WL	External Warning Lamp P12	4700750
Calibration	Accredited Calibration AXOS <sup>®</sup> according to ISO/IEC 17025	2490900

\* only with AXOS<sup>®</sup> Telecom Wave Test System (2490850)

\*\* only with AXOS<sup>®</sup> Voltage Dips Test System (2490840)

## OPTIONS AND ACCESSORIES

Surge Key Code	Key Code for Surge extension AXOS <sup>®</sup>	4700911
EFT/Burst Key Code	Key Code for EFT/Burst extension AXOS <sup>®</sup>	4700912
Ring Wave Key Code	Key Code for Ring Wave extension AXOS <sup>®</sup>	4700913
Dips Key Code	Key Code for Voltage Dips extension AXOS <sup>®</sup>	4700914
Remote Control	Remote Control Software for AXOS <sup>®</sup>	2490440
Report Software	Reporting Software for AXOS <sup>®</sup>	4700975

## VALUE ADDED SERVICES

- Pre- & After Sales Support
- Application Support
- Commissioning
- Warranty Extension
- Calibration (accredited & factory)
- Training and Seminars
- Rental units





**OFFICES:**

Europe  
Haefely Test AG  
Birsstrasse 300  
4052 Basel  
Switzerland

☎ + 41 61 373 4111  
☎ + 41 61 373 4912  
✉ sales@haefely.com

China  
Haefely Test AG Representative Beijing Office  
8-1-602, Fortune Street  
No. 67, Chaoyang Road, Chaoyang District  
Beijing, China 100025

☎ +86 10 8578 8099  
☎ +86 10 8578 9908  
✉ sales@haefely.com.cn

North America  
Hipotronics, Inc.  
1650 Route 22 N  
Brewster, NY 10509  
United States

☎ +1 845 279 3644  
☎ +1 845 279 2467  
✉ sales@hipotronics.com