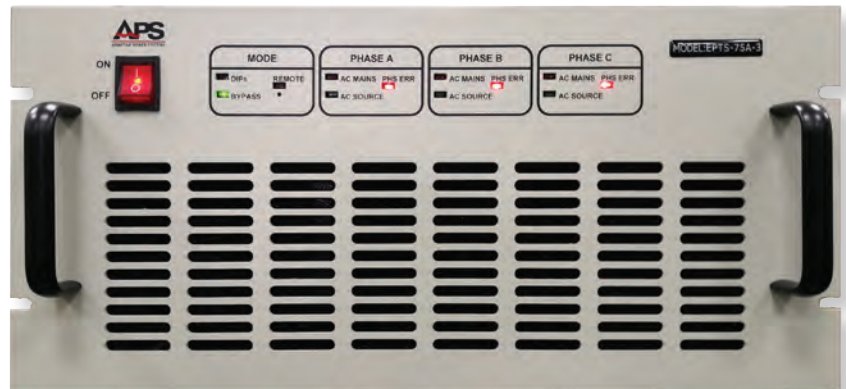


## IEC VOLTAGE DIPS MODULE

### Key features:

- Supports AC Voltage Dips per IEC 61000-4-11 and IEC 61000-4-34 Standards
- Supports DC Voltage Dips per IEC 61000-4-29 Standard
- 5U Rack Mount Chassis integrates with ECTS Compliance Test Systems
- Windows Software for Voltage Dips Programming and Execution
- Meets 1 to 5 usec Rise / Fall Time for AC Voltage Dips
- Meets 1 to 50 usec Rise / Fall Time for DC Voltage Dips
- Uses Mains Power or Generator for 100% AC Voltage
- User Programmable AC Source for 0%, 40%, 70% or 80% Dip Levels
- Single or Three Phase Version
- Supports currents up to 75 Arms
- USB Interface for Control



### OVERVIEW

The ADAPTIVE POWER SYSTEMS IEC VOLTAGE DIPS module uses solid state electronic transfer switch technology to meet the IEC 61000-4-11 (AC), IEC 61000-4-34 (AC) or IEC 61000-4-29 (DC<sup>1</sup>) Test requirement for voltage dips and short interruptions with voltage slew rates less than 5 usec. This allows full compliance testing of equipment for CE compliance.

### IEC 61000-4 Voltage Dips

The EPTS Series of Electronic Power Transfer Switches are designed to support full-compliance voltage dip testing for any dip level. It requires the use of AC mains, fixed AC generator or DC Power Supply for the nominal 100% test level and a programmable AC and DC capable power source for the dip level needed.

### Power Connections

All power connections are made at the rear panel of the EPTS chassis. There are no user controls on the front other than the power On/Off switch. Status and Error indicators are provided for each phase. The EPTS generates a phase sync signal from the AC Main input to synchronize the programmable AC source. All control of the programmable AC power source and the EPTS is done using the included EptsGui IEC Test software.

**Note 1:** Requires additional APS DCS Series programmable DC Power Supply

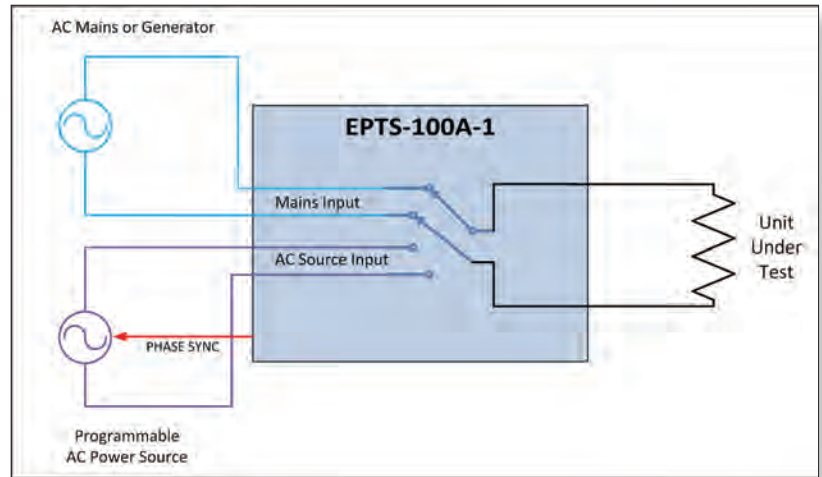


## Principle of Operation

The EPTS hardware is designed specifically to full compliance testing of products for CE marking. This requires support of the fast voltage rise and fall time called out in IEC test standards like IEC 61000-4-11, IEC 61000-4-34 (AC) and IEC 61000-4-29 (DC).

This is accomplished by using an electronic power transfer switch controlled by the same IEC Test software that controls the AC or DC dip level of the programmable power source. The nominal voltage to the unit under test is supplied by either a second AC or DC power supply or in case of AC, from the local mains.

For IEC 61000-4-29 DC voltage test applications, a DC power source is used in place of the AC Mains.



Electronic Power Transfer Switch -- Functional Diagram

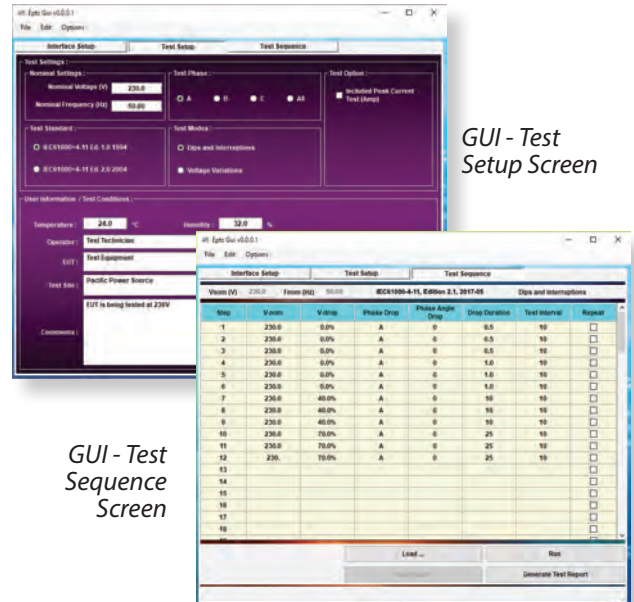
## EptsGui Test Software

The provided EptsGui test software is used to control the voltage dip or interrupt phase angle and duration for AC testing or the duration for DC testing. It also controls the programmable power source to set the correct dip level in percent of nominal. Test sequences and time intervals can be created and saved for repeated use by product category. Test setup parameters include:

- Nominal Voltage: 0 - 400 Vac or 0 -425Vdc
- Product test class: 1, 2, 3 or X.
- Dip Level in % of Unom: 0%, 40%, 70%, 80% or user defined
- Dip duration in cycles: 0.5 to 500 cycles (or msec)
- Test Interval Time: 1.000 to 100.0 seconds

At the end of a test, the user is prompted to provided the pass/fail classification based on observation or examination of the EUT. Available selections are a, b, c or d.

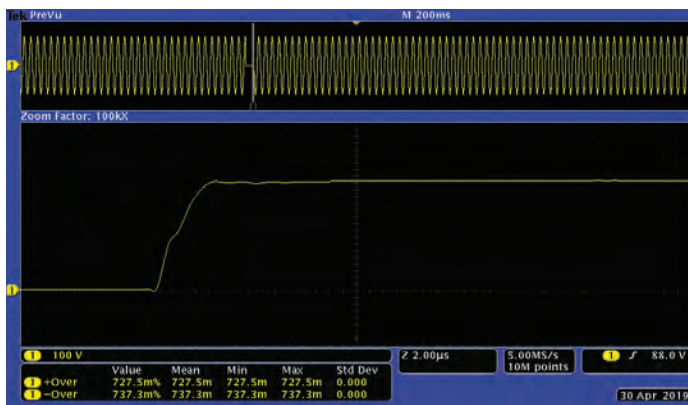
A test report is generated by the EMC Test software to document test parameters and observed EUT performance. Available report formats are Adobe PDF and Rich Text (RTF).



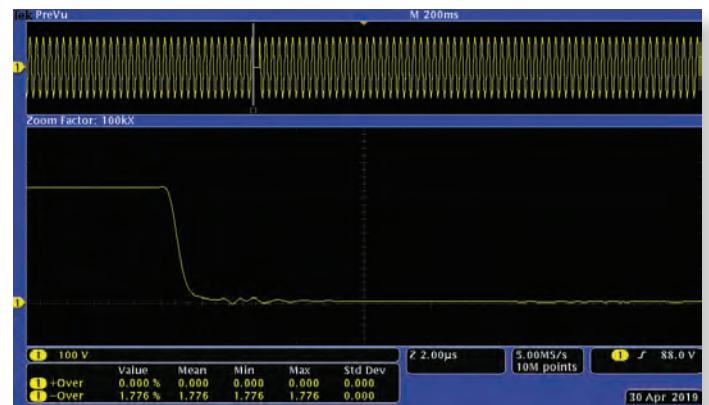
## Voltage Rise and Fall Times

To meet full compliance with IEC 61000-4-11/4-34, voltage rise and fall times and over/under shoot **must**

meet the test standard requirements. The EPTS meets both criteria as shown in the scope traces below.



Voltage Rise Time < 5 usec and Overshoot < 5%



Voltage Fall Time < 5 usec and Undershoot < 5%

## Technical Specifications

PARAMETER	IEC REQUIREMENT	EPTS-75A
AC Voltage Range	230Vac (Europe) 100, 120 or 200Vac (Japan)	400Vac max.
DC Voltage Range	360Vdc	425Vdc max.
Accuracy	< 5%	< 0.25%
Rise / Fall Time	1 to 5 usec	1 to 5 usec
Frequency	50.0 or 60.0 Hz $\pm$ 2%	45.0 - 65.0 Hz
Phase error (3 phase)	< 5°	$\pm$ 0.5°
Current		
IEC 61000-4-11, Max.	16A / Ph	75A / Ph
IEC 61000-4-34, Max.	75A / Ph	75A / Ph

AC INPUT	
AC Voltage (Bias)	120Vac or 230Vac, 2W+G
Frequency	50 / 60 Hz
AC Current	2.0 A

TEST STANDARDS SUPPORTED	
IEC 61000-4-11	AC - Voltage Dips and Interruptions
IEC 61000-4-34	AC - Voltage Dips and Interruptions
IEC 61000-4-29	DC - Voltage Dips and Interruptions

INTERFACES, INDICATORS & CONTROLS	
Connectors - Rear Panel	
Power Input	AC Mains, 1 or 3 Phases + Neutral AC Source, 1 or 3 Phases + Neutral
Power Output	To EUT, 1 or 3 Phases + Neutral
Control Interface	USB Device Type B, Rear panel
Line Sync	From AC Mains or Generator
Auxiliary I/O	DB9 Connector, Female, Rear panel
LED Indicators - Front Panel	
Mode	DIPS or Bypass
Phase Status	Mains or Source
Phase Error	For each Phase
Controls - Front Panel	
Power On/Off	Toggle Switch, Front panel

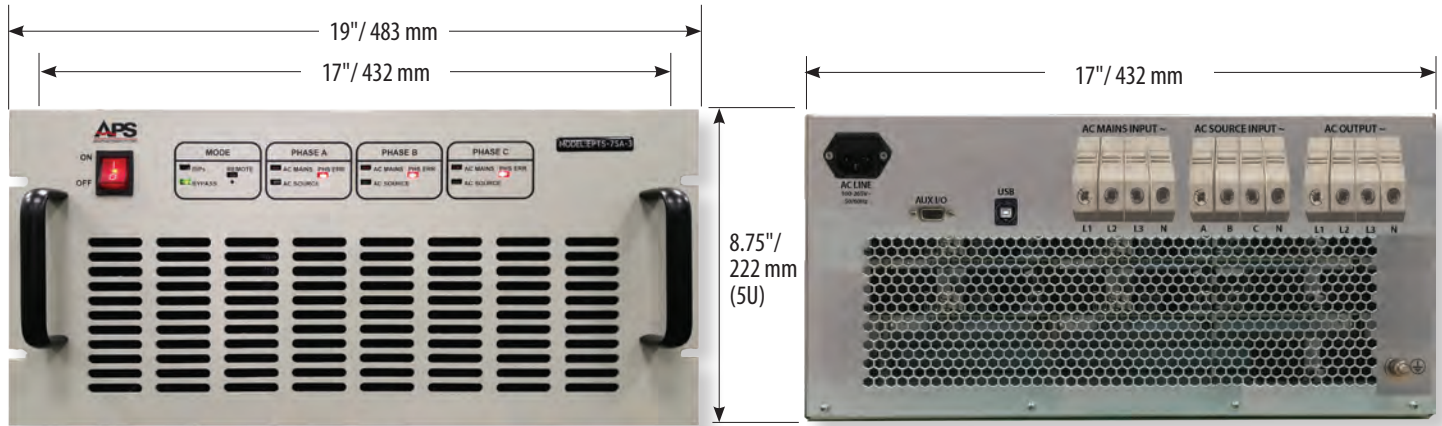
MECHANICAL & ENVIRONMENTAL	
Dimensions	
(HxWxD)	5U Chassis - 220 x 432 x 559 mm 8.75" x 17" x 22"
Weight	
Single Phase	50 lbs / 22.7 Kg
Three Phase	70 lbs / 31.8 Kg
Temperature	0 - 40° / 32 - 104°
Humidity	0-95 % non-condensing
Altitude	6500 ft / 2000 m (operating)

## Generator Compliance Tables

IEC 61000-4-11 & IEC 61000-4-34	IEC REQUIREMENT	EPTS75-1 / EPTS75-3
Output Voltage at no load	Test Voltage $\pm$ 5% of residual voltage	Test Voltage $\pm$ 0.5%
Output Voltage Change with load: 100% output, 0-16 A 80% output, 0-20 A 70% output, 0-23 A 40% output, 0-40 A	< 5% of $U_T$	Complies
Output Current Capability - IEC 61000-4-11	16 A @ 100% $U_T$ 20 A @ 80% $U_T$ > 5 sec 23 A @ 70% $U_T$ > 3 sec 40 A @ 40% $U_T$ > 3 sec	Complies
Output Current Capability - IEC 61000-4-11	Determined by Power Grid	AMX and AFX Series specifications meet or exceed requirements based on Model configuration
Peak Inrush Capability - IEC 61000-4-11	Not limited by generator	
Peak Inrush Capability - IEC 61000-4-34 16A - 50A Rated Equipment 50.1A - 100A Rated Equipment > 100A Rated Equipment	500A 1000 A Sufficient to maintain $\pm$ 10% of $U_T$	
Voltage Over / Undershoot into 100 Ohm R Load	< 5% of $U_T$	< 5% of $U_T$
Voltage Rise & Fall Time into 100 Ohm R Load	Between 1 and 5 usec for currents < 75A Between 1 and 50 usec for currents > 75A	1 to 5 usec for currents < 75 A 1 to 50 usec for currents > 75 A
Phase error (3 phase)	< $\pm$ 10°	$\pm$ 0.5° (EPTS75-3)
Zero crossing control	$\pm$ 10°	$\pm$ 0.5°

IEC 61000-4-29	IEC REQUIREMENT	EPTS75-1 / EPTS75-3
Output Voltage Range	Up to 360Vdc	Up to 425Vdc
Output Voltage Change with load:	< 5% of $U_T$	< 0.25% of $U_T$
Ripple Content	< 1% of output voltage	< 1% of output voltage
Voltage Rise & Fall Time into 100 Ohm R Load	Between 1 and 50 usec	1 to 50 usec
Voltage Over / Undershoot into 100 Ohm R Load	< 10% of $U_T$	< 1% of $U_T$
Output Current, Steady State	Up to 25A	Up to 75A

# IEC VOLTAGE DIPS MODULE



Front Panel View EPTS-75A-3

Rear Panel View EPTS-75A-3

## ORDERING INFORMATION:

### Available Models:

EPTS units are available in either single or three phase version and at different max. current ratings as shown in the table here.

Model	Description
EPTS-16A-1	Electronic Power Transfer Switch, 16A/phase, Single Phase
EPTS-16A-3	Electronic Power Transfer Switch, 16A/phase, Three Phase
EPTS-32A-1	Electronic Power Transfer Switch, 32A/phase, Single Phase
EPTS-32A-3	Electronic Power Transfer Switch, 32A/phase, Three Phase
EPTS-75A-1	Electronic Power Transfer Switch, 75A/phase, Single Phase
EPTS-75A-3	Electronic Power Transfer Switch, 75A/phase, Three Phase

## Service and Support

Adaptive Power Systems' customer support is second to none. Our Customer Support Program provides the training, repair, calibration, and technical support services that our customers value. So, in addition to receiving the right test equipment, our customers can also count on excellent support before, during and after the sale. With company owned support and service centers around the world, support is never far away.

**New Product Warranty:** AC Sources & Loads: 1 year, DC Power Supplies: 2 years.

Complete calibration and repair services are offered at our US, European and Chinese manufacturing facilities (see contact info below). Calibrations are to original factory specifications and are traceable to NIST (National Institute of Standards and Technology).

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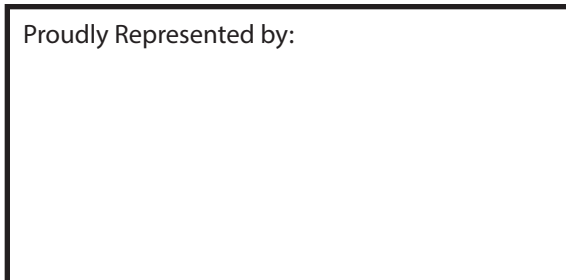
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