

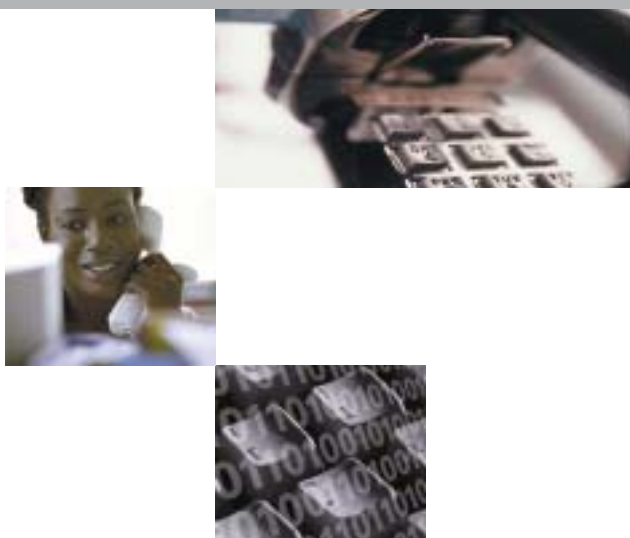
The KeyTek ECAT<sup>®</sup> is a modular, full capability EMC test system for measuring and analyzing the vulnerability of telecom, electronic, and electrical equipment/ components to pulsed EMI hazards, including EFT, Surge & PQF<sup>™</sup> (Power Quality Failure).

A powerful design and production tool, the KeyTek ECAT is the premier EMC test system to meet Telcordia, UL, FCC, and IEC standards. It features a totally integrated modular architecture that enables manufacturers and designers to easily and rapidly test for all pulsed EMI threats including pre-compliance, production sampling and final compliance.

It's the only EMC test system you'll ever need.

## KeyTek ECAT<sup>®</sup>

Expert Computer-Aided Testing for pulsed EMI immunity



Tests for pulsed EMI hazards: EFT, Surge, PQF<sup>™</sup>

Ideal test system to address most applicable EMC & Telecom standards, including CE Mark/IEC standards

Easy-to-use Windows-based application software for quick implementation of international & national test routines

Virtual Front Panel<sup>™</sup> retains key operating parameters during set up & testing

Multi-level system interlock architecture provides maximum safety

Single output port/instant mode switching

AC Mains current monitoring

Accurate automatic report generation

Flexible, economically upgradable architecture



## Technical Specifications

### KeyTek ECAT<sup>®</sup> Model E103 Series Control Center



Computer-driven control center and power units required for the operation of any KeyTek ECAT test system

<b>Virtual Front Panel<sup>™</sup> control</b>	8 x 40 character keyboard entry & LCD display - allows operator to see vital test parameters without list scrolling
<b>FiberCom<sup>™</sup> fiber-optic interface &amp; control system</b>	Uses KeyTek ECAT software for full computer control of ECAT test equipment (user-supplied PC running Windows, 8 MB RAM, one serial port)
<b>Module Bay</b>	For one full-width plug-in module or two half-width modules. Up to five additional bays (for a total of six) and/or S-ECAT for floor-standing system available (required for more than three docking bays)
<b>Surge V &amp; I monitor ports</b>	For waveform monitoring with an external (user-supplied) oscilloscope at 1kV/V and 200A/V; V & I signals supplied from optional AC coupler/decoupler or KeyTek ECAT modules/options
<b>Input voltage</b>	100V to 240VAC, 50/60 Hz
<b>Typical input current</b>	3.5A @ 100V; 1.5A @ 240V
<b>Operating temperature</b>	15° to 35° C
<b>Operating humidity</b>	10% to 75% non-condensing
<b>Options</b>	E103-S - adds oscilloscope trigger for installed surge modules

AC input connectors are available for most national and international standards.

# TRUE-EFT™ SIMULATOR MODULES

## KeyTek ECAT® Model E411



EFT/Noise Burst simulator for testing in accordance with IEC 61000-4-4 Edition 2 to 4.4kV.

### ELECTRICAL

<b>Burst Polarity</b>	Positive, negative, alternating
<b>Burst Voltage</b>	200V to 4.4kV
<b>Burst Voltage Resolution</b>	5V
<b>Burst Voltage Tolerance</b>	±10% of setting with no load ÷ 2 with 50Ω load; ±20% of setting
<b>Burst Frequency</b>	Adjustable from 1kHz to 1MHz up to 4.4kV
<b>Burst Duration</b>	1.0ms to 20ms; 1.0ms resolution or 1 to 200 pulses
<b>Period Between Bursts</b>	Adjustable from 300ms to 5s; 1ms resolution
<b>Burst Test Length</b>	1 to 360 sec.; 1 sec. resolution 1 to 240 min.; 1 min. resolution 1 to 24 hours; 1 hour resolution
<b>Wait Time Between Tests</b>	1 to 360 sec.; 1 sec. resolution 1 to 240 min.; 1 min. resolution 1 to 24 hours; 1 hour resolution
<b>Voltage Monitor</b>	Built-in; 150MHz bandwidth
<b>Minimum System Requirements</b>	E100 Series control center with blank plug-in module (if no other half-width module is ordered)
<b>Coupler/decoupler</b>	Model E455X

Note: For any combination of frequency, duration and period, the number of pulses cannot exceed 600 per second and 200 per burst.

<b>Options</b>	E411-2MHz - increases EFT burst frequency to 2MHz @ <math>\leq 3kV</math> E411-CH - adds Chirp CCL - capacitive coupling clamp per IEC 61000-4-4
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## KeyTek ECAT® Model E412



EFT/Noise Burst simulator with built-in, single phase AC mains coupler/decoupler for testing in accordance with IEC 61000-4-4 Edition 2 to 4.4kV

**Model E412 features all Specifications and Options noted in Model E411 (please see above)**

### PLUS:

### COUPLER/DECOUPLER

<b>Coupling Capacitors</b>	33nf per line
<b>Voltage</b>	0-277/250* AC rms or DC
<b>Current</b>	16A continuous*
<b>Coupling Modes</b>	Software selectable
<b>Line Sync</b>	Software selectable 0-360°
<b>Line Sync Accuracy</b>	±15°

**Minimum System Requirements** E100 Series control center with blank plug-in module (if no other half-width module is ordered)

\*The actual AC mains voltage and current limit is based on the mains connector selected.

## KeyTek ECAT Model E421



EFT/Noise™ Burst Simulator for IEC 61000-4-4 Edition 2 to 8kV

### ELECTRICAL

<b>Burst Polarity</b>	Positive, negative, alternating
<b>Burst Voltage</b>	200V to 8.0kV, ±10%; 5V resolution
<b>Burst Frequency</b>	Adjustable from 1kHz to 1MHz up to 4.4kV; 1kHz to 250kHz from 4.4kV to 8.0kV
<b>Burst Duration</b>	1.0ms to 20ms; 1.0ms resolution
<b>Period Between Bursts</b>	Adjustable from 300ms to 5s; 1ms resolution
<b>Burst Test Length</b>	1 to 360 sec.; 1 sec. resolution 1 to 240 min.; 1 min. resolution 1 to 24 hours; 1 hour resolution
<b>Wait Time Between Tests</b>	1 to 360 sec.; 1 sec. resolution 1 to 240 min.; 1 min. resolution 1 to 24 hours; 1 hour resolution
<b>Voltage Monitor</b>	Built-in; 150MHz bandwidth
<b>Minimum System Requirements</b>	E100 series control center
<b>Coupler/decoupler</b>	See Model E455X
<b>Options</b>	E421-2MHz - increases EFT burst frequency to 2MHz @ <math>\leq 3kV</math> E421-CH - adds Chirp CCL - capacitive coupling clamp per IEC 61000-4-4

Note: For any combination of frequency, duration and period, the number of pulses can not exceed 600 per second and 200 per burst.

## KeyTek ECAT Model E422



EFT/Noise™ Burst Simulator with built-in, single phase AC mains coupler/decoupler for IEC 61000-4-4 Edition 2 to 8kV

**Model E422 features all Specifications and Options noted in Model E421 (please see above)**

### PLUS:

### COUPLER/DECOUPLER

<b>Coupling Capacitors</b>	33nf per line
<b>Voltage</b>	0-250 V DC or AC rms
<b>Current</b>	16A continuous (actual AC line current capability may be reduced if a connector style having a lower current rating is chosen)
<b>Coupling Modes</b>	Software selectable
<b>Line Sync</b>	Software selectable 0-360°
<b>Line Sync Accuracy</b>	±15°
<b>Minimum System Requirements</b>	E100 series control center

## SURGE SIMULATOR MODULES

### KeyTek ECAT® Model E501B



Plug-in combination wave surge simulator to produce the combination waves required by IEC 6100-4-5, ANSI/IEEE C62.41 Cat. B and UL 1449 (8/98) at 3kA

#### ELECTRICAL

<b>Open-Circuit Voltage</b>	1.2/50µs, 200V - 6.6kV -5 +10% in 1 volt steps
<b>Short-Circuit Current</b>	8/20µs, 100A - 3.3kA -0 +10% with 2 ohm effective source impedance. With a 12 ohm effective source impedance, the peak short-circuit current = open-circuit voltage ÷ 12
<b>Rise Time Tolerance</b>	±30% for voltage; ±20% for current
<b>Duration Tolerance</b>	±20%
Note: When used with a three-phase coupler/decoupler, the voltage waveform durations may be reduced when coupling with multiple lines to PE.	
<b>Surge Repetition Rate</b>	1 shot/12 seconds
<b>Line Sync Accuracy</b>	±15° with optional coupler/decoupler
<b>Minimum System Requirements</b>	E100 Series control center with blank plug-in module (if no other half-width module is ordered)
<b>Options</b>	E501B-VI - adds voltage and current monitoring

### KeyTek ECAT® Model E502B



Plug-in module to produce the telecommunications surge wave required by IEC 61000-4-5, FCC Part 68 and ITU Rec K.17, K.20, and K.21 (formerly CCITT)

#### ELECTRICAL

<b>Open-Circuit Voltage</b>	10/700µs and 0.5/700µs, 200V - 6.6kV ±10% in 1 volt steps. 10/700µs waveform meets both IEC and FCC Part 68 9/720µs requirements. Tighter tolerances for front time and duration ensure compliance with both requirements
<b>Short-Circuit Current</b>	Open-circuit voltage ÷ 15 with 0 ohm effective source impedance; open-circuit voltage ÷ 40 with 25 ohm effective source impedance. Tolerance is -0/+10%
<b>Front time tolerance</b>	Voltage: 7.0µs to 11.7µs Current: 5.0µs ±30%
<b>Duration</b>	Voltage: 576µs to 840µs Current: 320µs ±20%
<b>Surge Repetition Rate</b>	1 shot/18 seconds
<b>Minimum System Requirements</b>	E100 Series control center with blank plug-in module (if no other half-width module is ordered)
<b>Options</b>	E502B-VI - adds voltage and current monitoring

### KeyTek ECAT® Model E503



Plug-in module to produce the ring waves specified by ANSI/IEEE C62.41 Cat. A and B, and various UL standards, including UL 864

#### WAVEFORMS

<b>Voltage Rise Time</b>	0.5µs ±30%
<b>Ringing Frequency</b>	100kHz ±20%, 40% decay per peak
<b>Open-Circuit Voltage</b>	200V - 6.6kV ± 10%
<b>Short-Circuit Current</b>	Selectable at 200A max. or 500A max., when the open-circuit voltage is set to 6.0kV. (Actual short-circuit current at other voltage settings will be open-circuit voltage ÷ 30 when 200A is selected and open-circuit voltage ÷ 12 when 500A is selected.)
<b>Surge Repetition Rate</b>	1 shot/9 seconds
<b>Line Sync accuracy</b>	±15° with optional coupler/decoupler
<b>Minimum System Requirements</b>	E100 Series control center with blank plug-in module (if no other half-width module is ordered)
<b>Options</b>	E503-VI - adds voltage and current monitoring

### KeyTek ECAT® Model E504A



Plug-in module to produce the combination wave required by UL 1449 (some devices must also be tested using the E501A surge module)

#### WAVEFORMS

<b>Open-Circuit Voltage</b>	1.2/50µs, 0 - 6.6kV ±5% in 1 volt steps
<b>Short-Circuit Current</b>	8/20µs, selectable at 125A, 500A and 750A ±10% when the open-circuit voltage is set to 6.0kV. (Actual short-circuit current = open-circuit voltage ÷ 48 when 125A is selected; open-circuit voltage ÷ 12 when 500A is selected, and open-circuit voltage = 8 when 750A is selected.)
<b>Front Time Tolerance</b>	±30% for voltage; ±20% for current
<b>Duration Tolerance</b>	±20% (Note: When used with an AC mains coupler /decoupler, open-circuit voltage wave durations may be significantly reduced when certain coupling modes are selected.)
<b>Surge Repetition Rate</b>	1 shot/12 seconds
<b>Line Sync Accuracy</b>	±15° with optional AC mains: coupler/decoupler
<b>Minimum System Requirements</b>	E100 series control center
<b>Options</b>	E504A-VI - adds voltage and current monitoring

## KeyTek ECAT® Model E505A



Plug-in module that produces the lightning surge waveforms required by FCC Part 68

### ELECTRICAL

#### Waveforms

$<10/>160\mu\text{s}$ , 50-1650V  $\pm 10\%$ ; peak short-circuit current is 200A, -0% +10% when the open-circuit voltage is set to 1500V

$<10/>560\mu\text{s}$ , 50-880V  $\pm 10\%$ ; peak short-circuit current is 100A, -0% +10% when the open-circuit voltage is set to 800V

$<2/>10\mu\text{s}$ , 100-2750V  $\pm 10\%$ ; peak short-circuit current is 1000A, -0% +10% when the open-circuit voltage is set to 2500V

Note: All voltage and current specifications are minimum values in accordance with FCC Part 68

#### Surge Repetition Rate

1 shot/18 seconds for all waves except  $<2/>10\mu\text{s}$  which is 1 shot/24 seconds

#### Line Sync Accuracy

$\pm 15^\circ$  with optional coupler/decoupler

#### Minimum System Requirements

E100 series control center

#### Options

E505A-VI - adds voltage and current monitoring

## KeyTek ECAT® Model E506-4W



Plug-in module to produce the  $2/10\mu\text{s}$  surges required by Telcordia GR-1089 CORE for up to five-wire (four terminal) testing

### ELECTRICAL

#### Waveforms

$<2/>10\mu\text{s}$ , 50-800V, 100A/terminal with 800V open-circuit voltage

$<2/>10\mu\text{s}$ , 50-1500V, 100A/terminal with 1500V open-circuit voltage

$<2/>10\mu\text{s}$ , 100-2500V, 500A/terminal with 2500V open-circuit voltage

$<2/>10\mu\text{s}$ , 200-5000V, 500A/terminal with 5000V open-circuit voltage

#### Tolerances

All peak open-circuit voltages and short-circuit currents are -0%/+20%

#### Outputs

Front panel terminals for connection to T1, R1, T2, R2 and Ground

#### Surge

Repetition Rate: 1 shot/16 seconds

#### Minimum System Requirements

E100 series control center

#### Options

E506-4W-VI - adds voltage and current monitoring

## KeyTek ECAT® Model E508 and E508-12P



Plug-in modules to produce the 10/360 $\mu\text{s}$  surges required by Telcordia GR-1089 CORE

### E508 WAVEFORMS

#### Open-Circuit Voltage

10/360 $\mu\text{s}$ , 50-1100V, -0/+15% in 1 volt steps. Tip and ring outputs independent and isolated to ensure true, three-terminal simultaneous testing of up to 12 pair. Waveforms as defined by Telcordia GR-1089-CORE

#### Short-Circuit Current

100A/side -0/+15% at a voltage setting of 1.0kV

#### Front Time Tolerance

-30/+0% for voltage and current

#### Duration Tolerance

-0/+30%

#### Surge Repetition Rate

1 shot/50 seconds

### E508-12P WAVEFORMS

#### Open-Circuit Voltage

10/360 $\mu\text{s}$ , 50-1100V, -0/+15% in 1 volt steps. Tip and ring outputs independent and isolated to insure true, three-terminal simultaneous testing of up to 12 pair. Waveforms as defined by Telcordia GR-1089-CORE.

#### Short-Circuit Current

25A/side -0/+15% at a voltage setting of 1.0kV

#### Front Time Tolerance

-25%/+0 for voltage; -30%/+0 for current

#### Duration Tolerance

-0/+30%

#### Surge Repetition Rate

1 shot/150 seconds

#### Minimum System Requirements

E100 series control center

#### Options

E508-VI - adds voltage and current monitoring

## KeyTek ECAT® Model E510A



Plug-in module to produce combination wave specified by ANSI/IEEE C62.41 Cat. B and IEC 61000 4-5 to 10kV and 5kA

**Electrical Open-Circuit Voltage** 1.2/50µs, 0-10.1kV ±10% in 1 volt steps

**Short-Circuit Current** 8/20µs, 0-5.05kA with 2 ohm effective source impedance, ±10%

With the additional 10 ohm resistor, the peak short-circuit current = open-circuit voltage ÷ 12, ±10%. (The short-circuit current waveform is modified by the additional resistance.)

**Front Time Tolerance** ±30% for voltage  
±20% for current

**Duration Tolerance** ±20% voltage and current

**Surge Repetition Rate** 1 shot/18 seconds

**Line Sync Accuracy** +15° with optional coupler/decoupler

**Compatible Powerline Coupler/Decouplers** E455x-kV, E4555, E4556

**Minimum System Requirements** E100 series control center

**Options** E510A-VI - adds voltage and current monitoring

## KeyTek ECAT® Model E511



Plug-in module to provide combination waves to 6 kV and 5kA, as required by British Telecom standards

### ELECTRICAL

**Open-Circuit Voltage** 1.2/50µs, 200V to 6.6kV ±5% in 1 volt steps

**Short-Circuit Current** 8/20µs, 170A to 5.5kA with 1.2 ohm effective source impedance, ±10%

**Front Time Tolerance** ±30% for voltage  
±20% for current

**Duration Tolerance** ±20% voltage and current

**Surge Repetition Rate:** 1 shot/12 seconds

**Line Sync Accuracy** ±15° with optional coupler/decoupler

**Minimum System Requirements** E100 Series control center with blank plug-in module (if no other half-width module is ordered)

**Options** E511-VI - adds voltage and current monitoring

## KeyTek ECAT® Model E513



Plug-in module to produce voltage ramps for testing surge protection components such as gas tube arrestors; meets surge simulator requirements of UL 864

### WAVEFORMS

**Voltage Ramps** 0.1kV/µs, 0.5kV/µs, 1.0kV/µs, 5.0kV/µs, 10kV/µs, 0.1kV/µs is linear to 2.5kV; all other ramps linear to 3.0kV

Note: Specified ramp rates are obtained with an open-circuit voltage setting of 3.0kV.

**Voltage Durations** -65µs for 0.1kV/µs; -40µs for 0.5kV/µs and 1kV/µs; -5µs for 5kV/µs and 10kV/µs

**Current Durations** -45µs at 0.1kV/µs; -40µs at 0.5kV/µs and 1.0kV/µs; -5µs at 5kV/µs and 10kV/µs

**Open-Circuit Voltage** 0-3000V; ±5% in 1 volt steps

**Short-Circuit Current** 50A, ±10% when the peak open-circuit voltage is set to 3.0kV

**Minimum System Requirements** E100 series control center with blank plug-in module (if no other half-width module is ordered)

**Options** E513-VI - adds voltage and current monitoring

NOTE: To obtain linear fronts, waves are quasi-square waves with 20-25% initial overshoots beyond peak open-circuit voltages, except for the 0.1kV/µs which is roughly triangular. Undershoots range from 5 to 25%

## KeyTek ECAT® Model E514



Surge simulator for 10/1000µs current waves

### WAVEFORMS

**Open-Circuit Voltage** Open-circuit voltage waveforms vary according to the peak short-circuit current level selected:

Peak I	Open-Circuit V
15A	10/1000µs, 50-1650V ±10%
60A	1kV/µs linear ramp, 50-1650V
100A	10/1000µs, 50-1000V
250A	1kV/µs linear ramp, 50-1650V ±10%

**Short-Circuit Current** 10/1000µs; software selectable at 15A, 60A, 100A, and 250A, ±10%

**Rise Time Tolerance** ±30%

**Duration Tolerance** ±20%

**Surge Repetition Rate** 15A, 60A - 1 shot/21 seconds  
100A, 250A - 1 shot/59 seconds

**Minimum System Requirements** E100 series control center

**Options** E514-VI: Adds voltage and current monitoring

## KeyTek ECAT® Model E515

Module to produce the 10/250µs surges required by Telcordia GR-1089-CORE



### ELECTRICAL

<b>Waveform</b>	<10/>250µs, 200-4000V -0/+16% peak open-circuit voltage; 100-2000A -0/+16% peak short-circuit current.
<b>Front Time Tolerance</b>	-60%/+0 for voltage; -30%/+0 for current
<b>Duration Tolerance</b>	-0/+60% for voltage; -0/+20% for current
<b>Surge Repetition Rate</b>	1 shot/126 seconds 0 to 4kV range 1 shot/63 seconds 0 to 2kV range
<b>Minimum System Requirements</b>	E100 series control center
<b>Options</b>	E515-VI - adds voltage and current monitoring

## KeyTek ECAT® Model E518

Plug-in module to produce the 10/1000µs waveforms to 2kV as required by Telcordia GR-1089-CORE for both Lightning Surge and Protection Coordination. Includes HB-ECAT.



### ELECTRICAL

<b>Waveforms</b>	10/1000µs, 50-600V -0/+15% peak open-circuit voltage; 100A/side -0/+15% peak short-circuit current
	10/1000µs, 50-1000V -0/+15% peak open-circuit voltage; 100A/side -0/+15% peak short-circuit current
	10/1000µs, 50-2000V -0/+15% peak open-circuit voltage; 100A/side @ 1kV; 200A/side @ 2kV -0/+15% peak short-circuit current

NOTE: All voltage and current specifications are minimum values, in accordance with Telcordia GR-1089-CORE

Outputs are all true three-terminal outputs for testing either two or three-terminal devices or inputs. Outputs can be connected in parallel to double the available peak short-circuit current when testing two-terminal devices.

<b>Front time tolerance</b>	-30%/+0%
<b>Duration tolerance</b>	-0/+50%
<b>Surge repetition rate</b>	1 shot/40 seconds at 600V and 1kV; longer charging times at higher voltages
<b>Minimum System Requirements:</b>	E100 series control center
<b>Options</b>	E518-VI - adds voltage and current monitoring

## KeyTek ECAT® Models E521 and E522



Surge systems that produce the high voltage, high current combination waves required by ANSI standards for service entrance and outside connected electronics; meets requirements of IEC 61000-4-5 for all exposure categories. **ECAT Model E521** includes built-in AC coupler/decoupler for single-phase lines to 480V, 32A; **ECAT Model E522** includes built-in AC coupler/decoupler for three-phase lines to 480V, 32A/phase (actual AC mains current per AC line connector limits).

### ELECTRICAL

<b>Open-Circuit Voltage</b>	1.2/50µs, 200V to 20.2kV ±10%
<b>Short-Circuit Current</b>	8/20µs, 100A to 10.1kA ±10%, with 2 ohm effective source impedance. With a 12 ohm effective source impedance, the peak short-circuit current = open-circuit voltage ÷ 12
<b>Rise Time Tolerance</b>	±30% for voltage; ±20% for current
<b>Duration Tolerance</b>	±20% for voltage and current
<b>Surge Repetition Rate</b>	1 shot/30 seconds @ ≤10kV 1 shot/minute @ >10kV
<b>Line Sync Accuracy:</b>	±5°
<b>Minimum System Requirements:</b>	E100 series control center
<b>Options</b>	E521-VI - adds 3-wire VI monitoring plus automatic software selection to Model E521  E522-VI - adds 5-wire VI monitoring plus automatic software selection to Model E522

## SURGE COUPLER/DECOUPLERS

### KeyTek ECAT® Model E551



A single-phase AC line (power lines) coupler/decoupler for surge waves, as specified by IEC 61000-4-5.

### ELECTRICAL

<b>Voltage</b>	250V rms AC, single-phase
<b>Current</b>	16A continuous with appropriate connectors (i.e. Schuko or other) 15A continuous with NEMA 5-15 style connector used in the U.S.A.
<b>Coupling Mode Selection</b>	Coupling mode selection is programmable - manually from the control center, or automatically using KeyTek SurgeWare™ software.
<b>Monitoring</b>	Monitoring and peak detection of surge voltage across any two manually-selected lines. Monitoring can be at the EUT or at the front panel of the coupler/decoupler.  Monitoring and peak detection of surge current in either High or Neutral, selected by the ECAT Control Center or the computer, measured without including back-filter surge current.
<b>Minimum System Requirements:</b>	E100 series control center and AC mains surge network
<b>Options</b>	E551-DC - allows use of surge coupler/decouplers on DC power mains

## COMBINED SURGE & EFT COUPLER/DECOUPLERS

### KeyTek ECAT® Model E455x



Single and three-phase AC line coupler/decouplers for EFT and Surge waves, as specified by IEC 61000-4-4 Edition 2 and IEC 61000-4-5

#### ELECTRICAL

Model	Single or Three-phase	Voltage	Current** per phase
E4551A/E4551kV*	Single-phase	250V rms	15/16A***
E4552A/E4552kV*	Single-phase	277V rms	32A
E4553A/E4553kV*	Three-phase	480V rms	16A
E4554A/E4554kV*	Three-phase	480V rms	32A
E4555	Three-phase	600V rms	50A
E4556	Three-phase	600V rms	100A

\* kV version is required for operation with surge modules greater than 7kV, such as the E510A. All standard coupler/decoupler options apply

\*\* Actual current capability may be limited by the AC line connectors selected

\*\*\* Depends on connector selected. Typically 15A with U.S. NEMA connector; 16A with appropriate European style connectors

**Coupling Mode** Coupling mode selection is controlled manually from the control selection center, or automatically using KeyTek SurgeWare™ or BurstWare™ software. Coupling is allowed from any line to any other line or combination of lines.

**Monitoring** Monitoring and peak detection of surge voltage across any two manually-selected lines. Monitoring can be at the EUT or at the front panel of the coupler/decoupler.

Monitoring and peak detection of surge current in either High or Neutral, selected by the ECAT Control Center or the computer, measured without including back-filter surge current.

**Minimum Requirements** E100 series control center EFT or mains - coupled surge module

#### Options

E455x-DC AC Allows the E455x coupler/decoupler to be used with DC as well as mains. The DC current ratings for essentially resistive loads are:

	to 48V	to 110 V	to 220V
E4551A/E4551kV	15A	5A	0.8A
E4552A/E4552kV	15A	5A	0.8A
E4553A/E4553kV	20A	8A	1.2A
E4554A/E4554kV	25A	8A	1.2A
E4555	50A	50A (120V)	30A
E4556	100A	50A (120V)	30A

E455x-VI Enhanced V and I monitoring. Adds monitoring and peak detection of surge voltage and current. Upper and lower limits can be placed on surge peaks. Monitoring of 3 wires is provided in single-phase systems, 5 wires in three-phase systems. Selection of the V and I inputs is performed from the control center or can be made automatically with SurgeWare control software

E455x-HV Increases the AC mains voltage rating from 277V to 480V rms in the E4552, and from 480V to 600V rms in the E4553 and E4554. The HV option is not available in the E4551, E4555 and E4556.

**Physical** Physical size of module varies depending on model number

## PQF™ (POWER QUALITY FAILURE) MODULES

### KeyTek ECAT Models EP61 and EP62



Plug-in modules provide swells, dips and interrupts on AC power mains in compliance with, and exceeding the requirements of IEC 61000-4-11 Edition 2. Model EP61 for single-phase AC lines to 240 RMS, 16A; Model EP62 for single-phase AC lines to 240 RMS, 32A

#### AC INPUTS/OUTPUTS

**Input Voltage for 100%** 50 to 240V at 50Hz and to 277V at 60Hz

**Output Voltages on the Selected Phase** 0% (open or short), 40%, 50%, 70%, 80%, 90%, 100%, 110%, 120% and 150%

**EP61 Output Current** 16A at 250V; 20A at 125V\*

**EP62 Output Current** 32A at 250V; 30A at 125V\*

\*The actual AC mains voltage and current limit is based on the mains connector selected.

**Inrush Current** >250A at 120V; >500A at 220-240V

**Event Duration** From 0.03 cycle (10°) to 500 minutes; maximum 12 events per cycle

**Switching Times** 1-5µs into a 100 ohm load

**Overshoot** <5%

**Undershoot** <5%

#### MEASUREMENTS

**rms Voltage** 0-300V, 0.5% of range + 1% of reading

**rms Current** 0-40A, 0.5% of range + 1% of reading

**Peak Current** 0-1000A, 1% of range + 5% of reading

**Inrush Current Qualification** Internal, built-in circuit according to IEC 61000-4-11. Automatically measures peak inrush current at 90° and 270°. Peak values are reported via the control software.

**Minimum System Requirements:** E100 series control center

## Single Source, Total EMC Test Solutions

Experience the many benefits of working with recognized experts in the field of EMC (Electromagnetic Compatibility) testing. Our commitment to the discipline is wide ranging; we actively participate on global standards committees, and have helped define test methodologies to achieve regulatory standards such as CE Mark requirements, as well as company and market-driven product quality objectives.

Our goal is to support you with lifelong service — from applications support, calibration services and preventative maintenance scheduling to full tactical field support.

Thermo can help you reach the next level of success.

**For KeyTek ECAT bundled test systems designed to fully address Telecordia GR-1089-CORE (Telecom & Broadband), UL1449 (Transient Voltage Surge Suppressors), UL864 & others (Product Safety), and FCC Part 68 standards, please refer to the KeyTek ECAT Bundled Test Systems brochure.**

**Please also see the KeyTek EMC Test System Options & Accessories data sheet for additional KeyTek ECAT test system options and accessories.**

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