



## **AC Loads**

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# ELPA-3250

# AC Electronic Load Modules

## Description

Available as a plug in load module the ELPA-3250 series has 3 versions with a choice of voltage and current ranges. These AC Loads operate in constant current and constant resistance modes and can also be used to sink DC Sources. Dual 4½ digit displays clearly show the voltage and current values at the load terminals. Remote sense is provided to counter any voltage drop in the load lines. These modules can be housed within the 3302C single slot mainframe. Alternatively the rack mounting 3300C mainframe can accommodate up to 4 modules. This approach allows load modules from other ranges to be operated or mixed in the same mainframe. A front panel memory with an auto sequencing function is also provided. This is ideal to quickly implement common test procedures when the load's are used on the benchtop. For batch testing upper and lower limits can be adjusted to signal a pass or fail. An isolated current monitor is provided to connect and view the load on an oscilloscope. The crest factor mode enables high current peaks to be simulated. The users can recall a sine, square or DC crest factors from a bank of 55 waveforms. This can be achieved from the front panel or via the computer interface.



- One unit to sink AC or DC sources
- Can be paralleled for high power
- CC, CR & crest factor mode
- GO/NG limit check
- Remote sense
- Scope output

## Selection Table

Part Number	Maximum Power	Maximum Voltage	Current Range	Dimensions (Width x Height x Depth)
ELPA-3250	300W	60 Vrms/60 VDC	0 - 20 Arms	108 x 143 x 405mm
ELPA-3251	300W	150 Vrms/150 VDC	0 - 8 Arms	108 x 143 x 405mm
ELPA-3252	300W	300 Vrms/300 VDC	0 - 4 Arms	108 x 143 x 405mm



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# ELPA-3250

# AC Electronic Load Modules

## Technical Data

### CC Mode (DC, 40-70Hz)

	ELPA-3250	ELPA-3251	ELPA-3252
Range 1	0 - 10Arms	0 - 4Arms	0 - 2Arms
Range 1 Resolution	2.5mA	1mA	0.5mA
Range 2	10 - 20Arms	4 - 8Arms	2 - 4Arms
Range 2 Resolution	5mA	2mA	1mA
Crest Factor	$\sqrt{2}$ , 1.5 to 3.5 in 0.1 steps		

### CR Mode (DC - 70Hz)

	ELPA-3250	ELPA-3251	ELPA-3252
Range 1	0.3 - 1.2k $\Omega$	1.875 - 7.5k $\Omega$	7.5 - 30k $\Omega$
Range 1 Resolution	0.21mS	0.033mS	0.0083mS
Range 2	1.2 - 4.8k $\Omega$	7.5 - 30k $\Omega$	30 - 120k $\Omega$
Range 2 Resolution	0.83mS	0.13mS	0.033mS

### 4½ DVM

	ELPA-3250	ELPA-3251	ELPA-3252
Range	0 - 60V	0 - 150V	0 - 300V
Resolution	0.01V	0.01V	0.01V

### 4½ DAM

	ELPA-3250	ELPA-3251	ELPA-3252
Range	0 - 20A	0 - 8A	0 - 4A
Resolution	0.01A	0.001A	0.001A

### Watt Meter

	ELPA-3250	ELPA-3251	ELPA-3252
Range	0 - 300W		
Resolution	0.1W		

### VA Meter

	ELPA-3250	ELPA-3251	ELPA-3252
VA Meter	Vrms x Arms Correspond to Vrms and Arms		

### I Monitor

	ELPA-3250	ELPA-3251	ELPA-3252
I Monitor (Isolated)	2A/V	0.8A/V	0.4A/V
Weight	3.5kg		

## Options Table

Code	Description
/3302C.....	Single slot mainframe with RS232 (separate summary available)
/3302C-GPIB.....	Single slot mainframe with RS232 & IEEE 488.2 (see separate summary)
/3300.....	4 slot mainframe with RS232 (separate summary available)
/3300-GPIB.....	4 slot mainframe with RS232 & IEEE 488.2 (separate summary available)
/0001.....	1m IEEE488.2 cable
/0002.....	2m IEEE488.2 cable
/0003.....	2m RS232 cable
/9931.....	Remote controller



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# 3300 Series

# Electronic Load Mainframes

## Description

Three different mainframes are available to house a variety of Plug-in Electronic Load modules. The four slot versions are built in to 19" racks enabling them to be mounted in standard cabinets. Retractable feet enable a good viewing angle for desktop use. The 3302C mainframe accepts a single load module and is ideal for the mobile engineer. The load modules simply slide in to the mainframe and are secured by a screw at the front. The user can swap modules out as required making it easy to reconfigure test systems. The advantage of the modular approach is the flexibility offered and the opportunity to expand your electronic load system as needed. A wide variety of both AC & DC electronic load modules are designed to be operated within these mainframes. A comprehensive mix of voltage and current sink ranges are possible. Identical modules can be operated in parallel allowing for higher load currents. Each mainframe has a number of built in store/recall memories to allow common test procedures to be quickly implemented from the front panel. Different load values can be sequenced and stepped with time automatically via the mainframe memory. When using computer control only one GPIB address is needed to control all the load modules in one mainframe. LabVIEW drivers are also available for both RS232 and IEEE 488.2 operation. The loads can also be controlled via a proportional 0-10V (ac or ac+dc) analogue signal.

- AC to DC Power Supply
- DC to DC converter
- DC to AC Inverter
- Power Component
- Battery Discharge
- Battery Charger



ELP-3300C



ELP-3301A



ELP-3302C

## Load Module Compatibility

The 3300 series main frame accept the following load modules:

- |                                     |  |
|-------------------------------------|--|
| • 3310D, 3311D, 3312D, 3314D, 3315D | Dynamic DC loads with CC, CR, CP, CV, up to 500VDC   |
| • 3320, 3321, 3322, 3324, 3325      | Static CC loads ranging from 75W - 300W up to 500VDC |
| • 3250, 3251, 3252, 3253            | AC loads which can also be used to load DC sources   |
| • 3330A, 3331A, 3332A, 3333A, 3334A | Dual channel dynamic loads with CC, CR & CV modes    |
| • 3335A                             | Dual 500W & 50W dynamic DC load                      |

Separate summaries are available which details each load module series

## Selection & Options Table Overleaf

# 3300 Series

# Electronic Load Mainframes

## Technical Data

### Mainframe Models

ELP-3300C



ELP-3301A



ELP-3302C



### Accepted Load Modules

Number of load modules housed

Up to four

Up to four

Single Only

### Accepted Load Modules

3310D, 3311D, 3312D, 3314D, 3315D  
3320, 3321, 3322, 3324, 3325  
3250, 3251, 3252, 3253  
3330A, 3331A, 3332A, 3333A, 3334A  
3335A

Yes

No

Yes\*\*

Yes

Yes

Yes\*

Yes

Yes\*

Yes\*

No

Yes

Yes\*\*

Yes\*\*

Yes

No

### Interface Functions

IEEE488.2 interface (listener & talker)  
RS232 interface  
Master/Slave  
Store/Recall memory  
External remote control

Yes (Option LT)

Yes

No

Yes (150 sets)

Yes

Yes (Listen Only)

No

Yes

Yes (5 sets)

Yes

Yes (Option LT)

Yes

No

Yes (150 sets)

Yes

### Weight & Dimensions

Weight

9.5kg

9.5kg

7.0kg

Dimensions (W x H x D mm)

19" x 4U x 445

19" x 4U x 445

150 x 177 x 445

\*Front panel operation only, remote control is not available

\*\*3300C mainframe has 30 memory bank, where each bank has 5 states only

## Options Table

Code	Description
/LT.....	IEEE488.2 interface with listener and talker functions
/0001.....	1m IEEE488.2 cable
/0002.....	2m IEEE488.2 cable
/0003.....	2m RS232 cable
/9931.....	Remote recall keypad
/BP.....	Blank panel covering a single slot

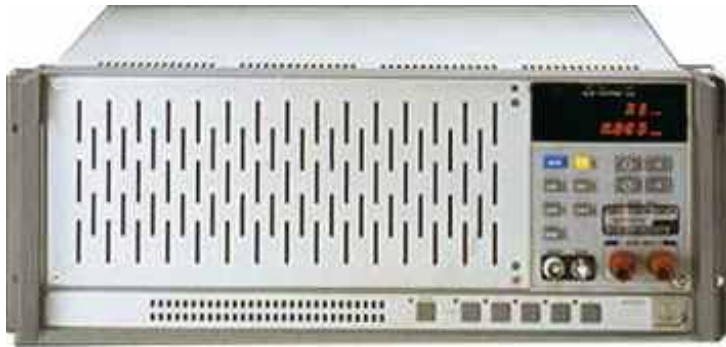


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# ELPA-3260 AC Electronic Load with adjustable PF

## Description

While primarily aimed at AC applications this series of Electronic loads can also be used for DC testing. A comprehensive feature set is provided as standard. Stored within the units non volatile memory is a waveform bank. When in constant current operation the user can select between sine, square and dc waveforms. Peak currents can be simulated with the crest factor mode. A leading or lagging power factor can be set with adjustments from unity to between 0.85 and 0.3. The desired wave can be recalled from the front panel or selected via the GPIB and RS232 interfaces. The loads can also be operated in constant resistance or linear CC mode. To aid production testing upper and lower limits can be set with GO/NG indication. The dual 4½ digit displays simultaneously display the voltage and current taken by the load. A wattmeter and VAmeter are also available. Remote sense is provided as standard. These AC Loads are used in many applications. With their ability to sink step and squarewaves they are particularly suitable for Inverter, AVR & UPS testing.



- Sine, step & squarewave loading functions
- Adjustable leading & lagging power factor
- GPIB & RS232 with LabVIEW drivers
- Last setting memory function
- CC, CR & crest factor mode

## Selection Table

Part Number	Maximum Power	Maximum Voltage	Current Range	Dimensions (Width x Height x Depth)
ELPA-3260	1200VA	300Vrms / 300 Vdc	0 - 12Arms	19" x 4U x 445mm
ELPA-3261	1800VA	300Vrms / 300Vdc	0 - 18Arms	19" x 4U x 445mm

## Options Table

Code	Description
/0001.....	1m IEEE488.2 cable
/0002.....	2m IEEE488.2 cable
/0003.....	2m RS232 cable
/9931.....	Remote controller

**Technical Data and Waveform Bank Table Overleaf**



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# ELPA-3260 AC Electronic Load with adjustable PF

## Technical Data

### CC & Linear CC Mode

	ELPA-3260	ELPA-3261
Range 1	0 - 6Arms	0 - 9Arms
Range 1 Resolution	1.5mA	2.25mA
Range 2	6 - 12Arms	9 - 18Arms
Range 2 Resolution	3mA	4.5mA
Low Current Accuracy	<600mA is ± 2% of (setting + range)	<900mA is ± 2% of (setting + range)
Standard Accuracy	±0.5% of (setting + range)	
Crest Factor (CC Mode only)	$\sqrt{2}$ to 3.5 in 0.1 steps	
Frequency Range	CCMode: DC, 40-70Hz LIN Mode: DC - 70Hz	

### CR Mode

	ELPA-3260	ELPA-3261
Range 1	5 - 20kΩ	3.333 - 13.332kΩ
Range 1 Resolution	0.05mS	0.076mS
Range 2	20 - 80kΩ	13.332 - 53.332kΩ
Range 2 Resolution	0.013mS	0.019mS
Accuracy	±0.5% of (setting + range)	
Frequency Range	CR Mode: DC - 70Hz	

### 4½ DVM

	ELPA-3260	ELPA-3261
Range	300V	300V
Resolution	0.1V	0.1V
Accuracy	±0.5% of reading + 0.2% of range	

### 4½ DAM

	ELPA-3260	ELPA-3261
Range	12A	18A
Resolution	0.001A	0.001A
Accuracy	±0.5% of (reading + range)	

### Other

	ELPA-3260	ELPA-3261
Watt Meter	0.0 - 1200.0W	0.0 - 1800.0W
VA Meter	0.0 - 1200.0VA	0.0 - 1800.0VA
Current Monitor (Isolated)	3A/V	4.5A/V
Weight	18.5kg	21.5kg
Protection	over power, over current, over voltage & over temperature	
Line Input	115 / 230Vac ± 10 at 50/60Hz	

\*mS = milli-siemens = 0.5KΩ

## Power & Crest Factor Table

Waveform Bank	Sinewave 0	Sinewave 1	Sinewave 2	CF = 2 3	CF = 2.5 4	CF = 3.5 5	CF = 2 6	CF = 2.5 7	CF = 3.5 8	Square 9	DC 10
A	$\sqrt{2}$	1.5	3.0	PF: -0.85	PF: -0.70	PF: -0.50	PF: +0.85	PF: +0.70	PF: +0.50	1	$\sqrt{2}$ dc
B	2	1.6	3.1	PF: -0.80	PF: -0.65	PF: -0.45	PF: +0.80	PF: +0.65	PF: +0.45	1.1	2dc
C	2.5	1.7	3.2	PF: -0.75	PF: -0.60	PF: -0.40	PF: +0.75	PF: +0.60	PF: +0.40	1.2	2.5dc
D	3.0	1.8	3.3	PF: -0.70	PF: -0.50	PF: -0.35	PF: +0.70	PF: +0.50	PF: +0.35	1.3	3dc
E	3.5	1.9	3.4	PF: -0.65	PF: -0.40	PF: -0.30	PF: +0.65	PF: +0.40	PF: +0.30	1.4	3.5dc

Lagging Power Factor

Leading Power Factor

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# ELPA-32611

## High Power AC Electronic Load

### Description

The ELPA-32611 series are designed to simulate real loads used in medium to high power AC applications. The standard range is comprised of 3 units that can sink up to 300V at 10.8kVA. Each Load has a high peak current capability of up to 50% above its continuous rating. The crest factor can be adjusted between 1.5 and 3.5 in steps of 0.1. The power factor can also be adjusted in order to recreate capacitive and inductive loads. An isolated analogue current monitor output is provided to allow the waveform to be viewed on an external scope. Another benefit of these AC Loads is that they can also be used to sink DC Sources. This can often save laboratory space and the expense of purchasing a dedicated DC Load. The units are built with switchable automatic sense adjustment to counter the voltage drop in the load lines. Along with front panel control and display both IEEE 488.2 and RS232 interfaces are provided as standard. A host of protection features guard the unit against over power, voltage, current and temperature. A thermally controlled fan helps minimize noise pollution. Two sink levels can be preset and switched between. To aid production testing higher and upper limits can be set. Units are then automatically flagged G or NG. These Loads are used in a variety of applications including power transformer, DC/AC Inverter, general R&D and laboratory work along with UPS output testing and ATE systems.



- Adjustable power factor & crest factor modes
- GPIB & RS232 with LabVIEW drivers
- Front panel memory function
- Bank of 55 waveforms
- Isolated scope output

### Selection Table

Part Number	Maximum Power	Maximum Voltage	Current Range	Dimensions (Width x Height x Depth)
ELPA-32611	3600VA	300Vrms / 300Vdc	0 - 36Arms	19" x 8U x 455mm*
ELPA-32612	5400W	300Vrms / 300Vdc	0 - 54Arms	19" x 12U x 455mm*
ELPA-32615	10800W	300Vrms / 300Vdc	0 - 108Arms	19" x 24U x 455mm*

\*Shipped as 4U rackmounting modules. On request master & slaves can be optionally fitted and shipped in a cabinet.

### Options Table

Code	Description
/0001.....	1m IEEE488.2 cable
/0002.....	2m IEEE488.2 cable
/0003.....	2m RS232 cable
/9931.....	Remote controller





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# ELPA-32611

# High Power AC Electronic Load

## Technical Data

### CC & Linear CC Mode

	ELPA-32611	ELPA-32612	ELPA-32615
Range 1	0 - 18Arms	0 - 27Arms	0 - 54Arms
Range 1 Resolution	4.5mA	6.75mA	13.5mA
Range 2	18 - 36Arms	27 - 54Arms	54 - 108Arms
Range 2 Resolution	9mA	13.5mA	27mA
Low Current Accuracy	<1.8A is ± 2% of (setting + range)	<2.7A is ± 2% of (setting + range)	<5.4A is ± 2% of (setting + range)
Standard Accuracy	±0.5% of (setting + range)		
Crest Factor (CC Mode only)	$\sqrt{2}$ to 3.5 in 0.1 steps		
Frequency Range	CCMode: DC, 40-70Hz LIN Mode: DC - 70Hz		

### CR Mode

	ELPA-32611	ELPA-32612	ELPA-32615
Range 1	1.667 - 6.668kΩ	1.111 - 4.444kΩ	0.556 - 2.224kΩ
Range 1 Resolution	0.037mS	0.056mS	0.003mS
Range 2	6.668 - 26.668kΩ	4.444 - 17.776kΩ	2.224 - 8.888kΩ
Range 2 Resolution	0.148mS	0.224mS	0.452mS
Accuracy	±0.5% of (setting + range)		
Frequency Range	CR Mode: DC - 70Hz		

### 4½ DVM

	ELPA-32611	ELPA-32612	ELPA-32615
Range	0 - 300V	0 - 300V	0 - 300V
Resolution	0.1V	0.1V	0.1V
Accuracy	±0.5% of reading + 0.2% of range		

### 4½ DAM

	ELPA-32611	ELPA-32612	ELPA-32615
Range	0 - 36A	0 - 54A	0 - 108A
Resolution	0.01A	0.012A	0.012A
Accuracy	±0.5% of reading + range		

### Other

	ELPA-32611	ELPA-32612	ELPA-32615
Watt meter	0 - 3600W	0 - 5400W	0 - 10800W
VA meter	0 - 3600VA	0 - 5400VA	0 - 10800VA
Current monitor (isolated)	9A/V	13.5A/V	27A/V
Protection	over power, over current, over voltage & over temperature		
Line Input	115 / 230Vac ± 10 at 50/60Hz		

\*mS = milli-siemens = 0.5KΩ

## Power & Crest Factor Table

Waveform Bank	Sinewave 0	Sinewave 1	Sinewave 2	CF = 2 3	CF = 2.5 4	CF = 3.5 5	CF = 2 6	CF = 2.5 7	CF = 3.5 8	Square 9	DC 10
A	$\sqrt{2}$	1.5	3.0	PF: - 0.85	PF: - 0.70	PF: - 0.50	PF: +0.85	PF: +0.70	PF: +0.50	1	$\sqrt{2}$ dc
B	2	1.6	3.1	PF: - 0.80	PF: - 0.65	PF: - 0.45	PF: +0.80	PF: +0.65	PF: +0.45	1.1	2dc
C	2.5	1.7	3.2	PF: - 0.75	PF: - 0.60	PF: - 0.40	PF: +0.75	PF: +0.60	PF: +0.40	1.2	2.5dc
D	3.0	1.8	3.3	PF: - 0.70	PF: - 0.50	PF: - 0.35	PF: +0.70	PF: +0.50	PF: +0.35	1.3	3dc
E	3.5	1.9	3.4	PF: - 0.65	PF: - 0.40	PF: - 0.30	PF: +0.65	PF: +0.40	PF: +0.30	1.4	3.5dc

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