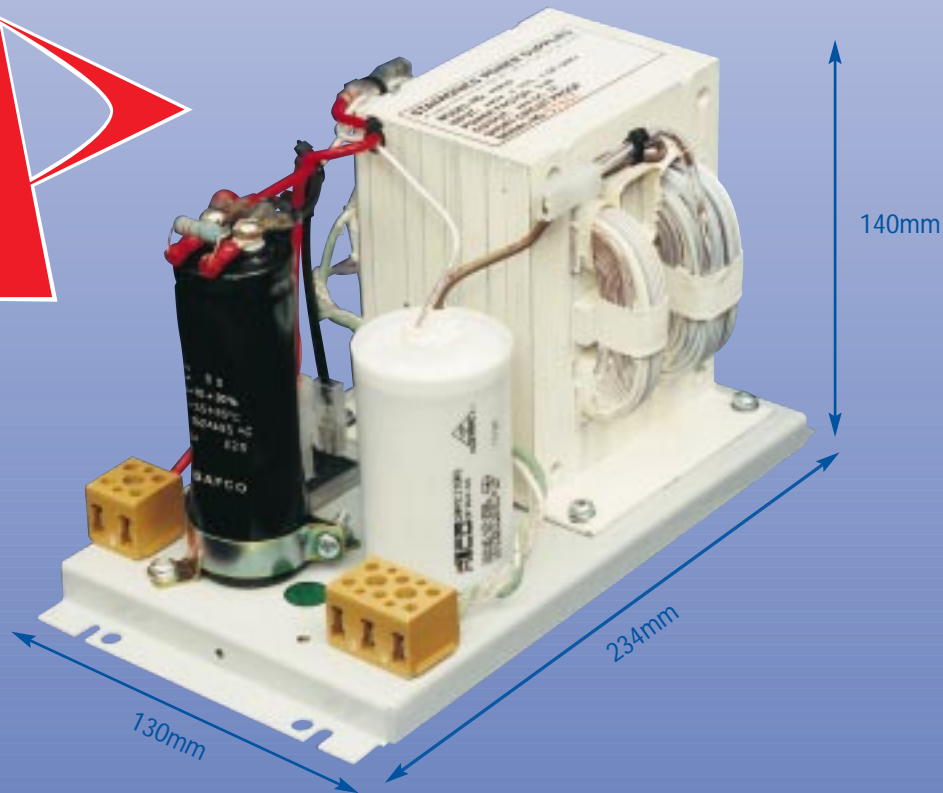


# FE-SERIES Ferro-Resonant Power Supplies **SINGLE** Models



| SINGLE MODELS | NOMINAL OUTPUT VOLTAGE | OUTPUT CURRENT   |     |     | NOMINAL INPUT VOLTAGE |
|---------------|------------------------|--|-----|-----|-----------------------|
|               |                        | continuous at input voltage $\pm 15\%$<br>continuous at input $\pm 10\%$ and surge |     |     |                       |
| FE1           | 24V                    | 6A   | 7A  | 30A | 240V                  |
| FE2           | 28V                    | 5A   | 6A  | 30A | 240V                  |
| FE3           | 24V                    | 7.5A   | 9A  | 30A | 110V                  |
| FE4           | 28V                    | 7A   | 8A  | 30A | 110V                  |
| FE5           | 13.7V                  | 12A  | 14A | 35A | 240V                  |
| FE6           | 48V                    | 4.5A   | 6A  | 20A | 240V                  |
| FER39         | 24V                    | 7.5A   | 9A  | 30A | 240V                  |
| FER44         | 28V                    | 7A   | 8A  | 30A | 240V                  |

## SPECIFICATIONS

| PARAMETER                |                                 | CONDITIONS                                     |
|--------------------------|---------------------------------|--|
| Power Factor             | >0.95                           | 20% to 100% load, $\pm 15\%$ Line              |
| Safety                   | AS3108                          | "Safety Isolating Transformers"                |
| Line Regulation          | $< \pm 2\%$                     | At Full Load, $\pm 15\%$ Line                  |
| Load Regulation          | $< \pm 3\%$                     | 25% to 100% load, Nominal Line                 |
| Ripple and Noise         | $< 2V$ P-P, 700mV RMS           | At Full Load, $\pm 15\%$ Line                  |
| Temperature Coefficient  | $< 0.2\%/^{\circ}C$             | At Full Load, $\pm 15\%$ Line                  |
| Current Limit            | 102% to 130%                    | Of full load, at $- 15\%$ Line                 |
| Short circuit protection | Yes                             | Fully protected, any duration                  |
| Operating Temperature    | $-10^{\circ}C$ to $70^{\circ}C$ | De-rate Linearly $65^{\circ}C$ - $85^{\circ}C$ |
| Input Voltage            | 240V (110V) $\pm 15\%$ 50Hz     | 60Hz also available                            |
| MTBF                     | >500,000 Hours                  | $40^{\circ}C$ , <b>Demonstrated.</b>           |

## FEATURES

**Proof** against severe transients  
**Supreme Reliability**  
**High Efficiency** ~ 75% @ full load  
 Fully specified for  $\pm 15\%$  input  
 Completely proof against overload  
 No switching transients  
 No RF Interference  
 Near Unity Power Factor  
**20 Year** Design Life  
 Proof against **200% input V**

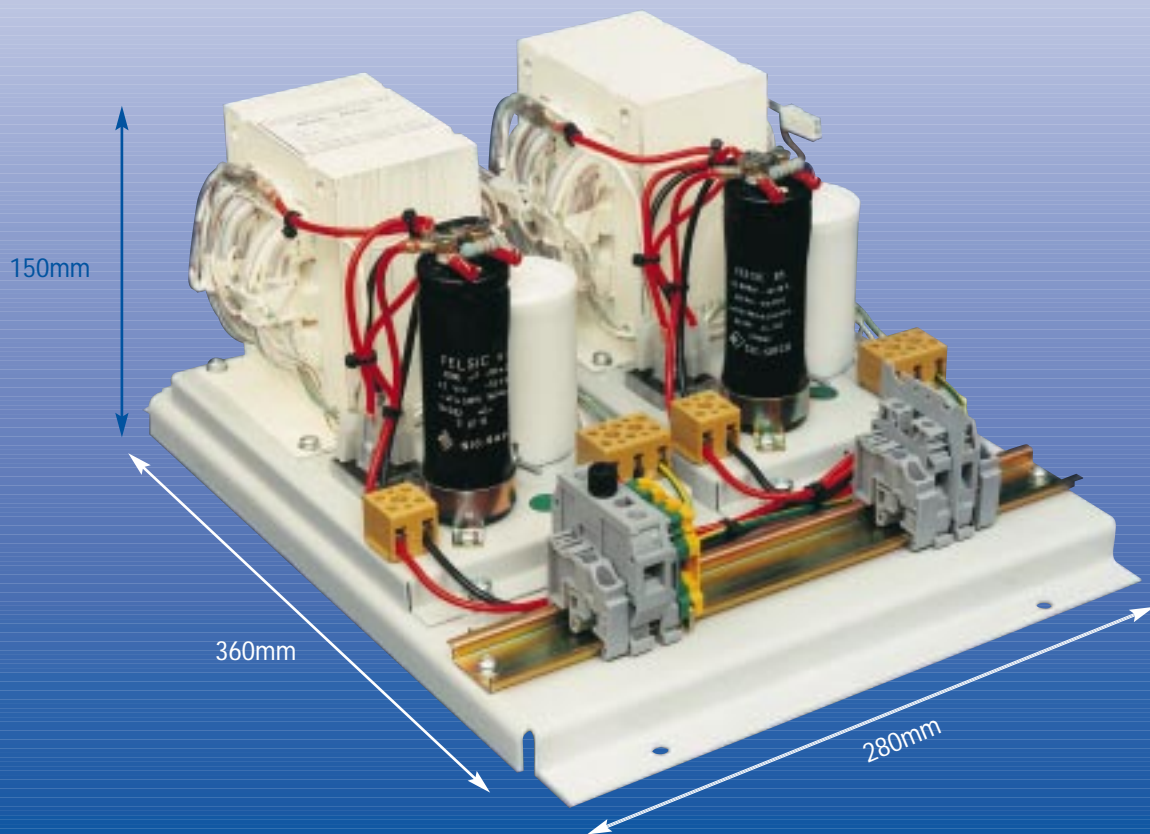
**Statronics Power Supplies**

Email: [sales@statronics.com.au](mailto:sales@statronics.com.au)

Tel: 612 9477 5011 Fax 612 9476 6914

Web site: <http://www.statronics.com.au>

# FE-SERIES Ferro-Resonant Power Supplies **DUAL** Models



| DUAL MODELS | NOMINAL OUTPUT VOLTAGE | OUTPUT CURRENT |     |     | NOMINAL INPUT VOLTAGE |
|-------------|------------------------|----------------|-----|-----|-----------------------|
|             |                        | 12A            | 14A | 60A |                       |
| FER201      | 24V                    | 12A            | 14A | 60A | 240V                  |
| FER202      | 28V                    | 10A            | 12A | 50A | 240V                  |
| FER203      | 24V                    | 15A            | 18A | 60A | 110V                  |
| FER204      | 28V                    | 14A            | 16A | 50A | 110V                  |
| FER205      | 13.7V                  | 24A            | 28A | 60A | 240V                  |
| FER206      | 48V                    | 9A             | 12A | 40A | 240V                  |
| FER239      | 24V                    | 15A            | 18A | 60A | 240V                  |
| FER244      | 28V                    | 14A            | 16A | 50A | 240V                  |

## SPECIFICATIONS AND FEATURES AS FOR SINGLE MODELS



Can be configured readily as a dual redundant supply with alarms (FERLA) and auctioneering diodes (DA2D). Two different output voltages can be supplied in this package by mixing two single models and adding extra output terminals.

# FE-SERIES Ferro-Resonant Power Supplies **TRIPLE** Models



| TRIPLE MODELS | NOMINAL OUTPUT VOLTAGE | OUTPUT CURRENT   |     |     | NOMINAL INPUT VOLTAGE |
|---------------|------------------------|--|-----|-----|-----------------------|
|               |                        | continuous at input voltage $\pm 15\%$<br>continuous at input $\pm 10\%$ and surge |     |     |                       |
| FER301        | 24V                    | 18A  | 21A | 60A | 240V                  |
| FE302         | 28V                    | 15A  | 18A | 60A | 240V                  |
| FE303         | 24V                    | 23A  | 27A | 60A | 110V                  |
| FE304         | 28V                    | 21A  | 24A | 60A | 110V                  |
| FE305         | 13.7V                  | 36A  | 42A | 60A | 240V                  |
| FE306         | 48V                    | 13A  | 18A | 60A | 240V                  |
| FE339         | 24V                    | 23A  | 27A | 60A | 240V                  |
| FER344        | 28V                    | 21A  | 24A | 60A | 240V                  |

## SPECIFICATIONS AND FEATURES AS FOR SINGLE MODELS



### Additional features and options: See "Custom Systems".

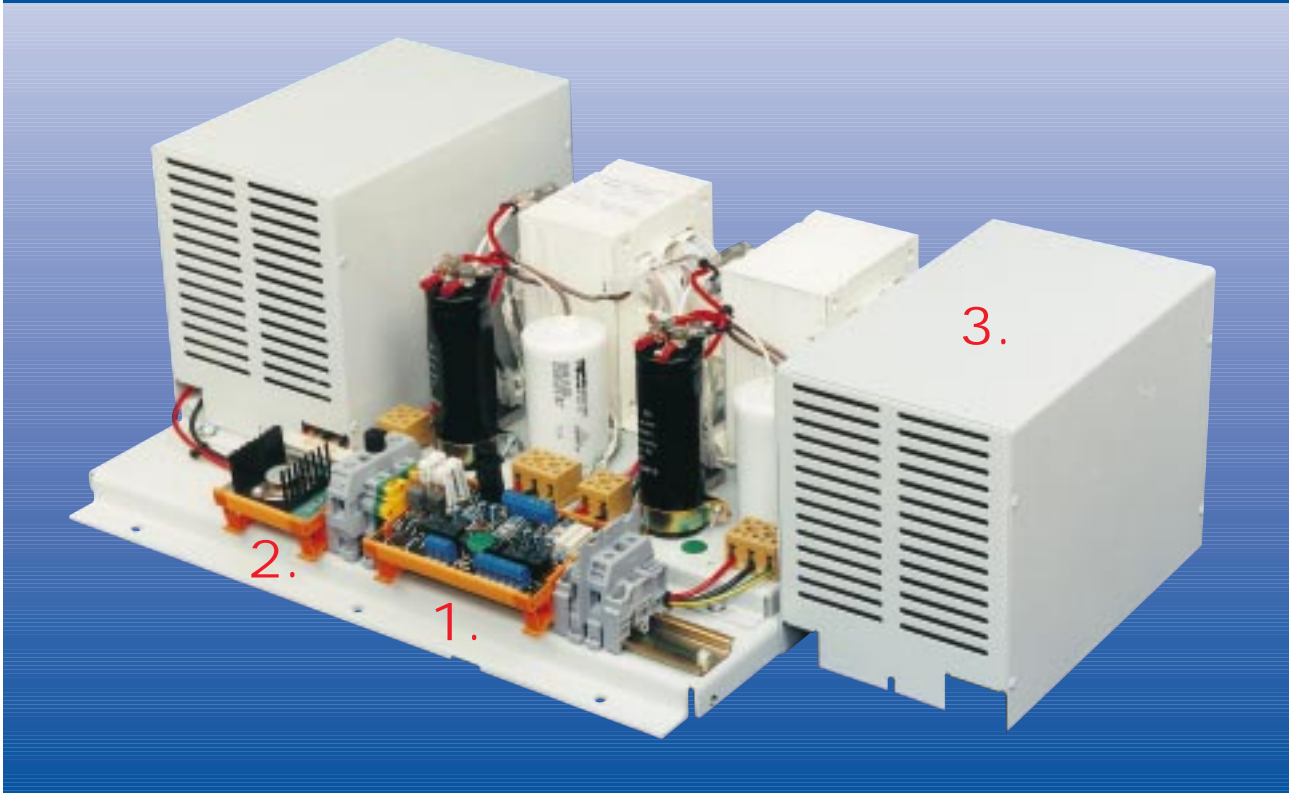
Three phase input is available as a standard option (add "-3P") to part number.

This option reduces ripple to < 120mV RMS at full load.

Can be configured readily as a 2+1 redundant supply with alarms (FERLA) and auctioneering diodes (DA4D). Two or three different output voltages can be supplied in this package by mixing two single models and adding extra output terminals.

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# CUSTOM SYSTEMS



Custom systems can incorporate battery backup or redundancy and a range of alarms. They are simply assembled using combinations of single models and the accessories listed below. The inherent good load sharing between modules is beneficial in parallel configurations. All custom systems are shipped fully assembled and tested, with accompanying schematic diagram and DC ups designs & cubicles.

## ACCESSORIES

### 1. Battery Monitor

A Din-rail mounting card which provides for 24V systems incorporating batteries:

- Charge Equalisation
- Faulty Cell Detection
- Mains Failure
- DC Failure
- Earth Leakage
- Over voltage detection
- Under voltage detection

### 2. Voltage Clamp Cat. VC27

A Din-rail mounting card which clamps output voltage overshoot on 24V systems to <27V peak in case loads are very light and include large step loads.

### 3. Cover Cat. FECOVER

A well-finished, powder-coated, and ventilated all-aluminium cover fits all the single models. Two or three are needed for dual and triples.

#### • Auctioneering Diodes Cat. DA4D, DA2D

Din-rail mounting heatsinked multiple diode rectifier assembly used in redundant and battery-backed systems to provide isolation of a DC source in the event of a source fault to short-circuit or to control battery recharge current to less than load current.

#### • Alarm Relay, Cat. FERLA

A simple 24V relay to provide failure alarming in redundant systems.

**DISTRIBUTED BY:**

# APPLICATION NOTES

## Installation and Weights.

These models should be firmly mounted to a mounting surface using machine thread screws and spring washers. The minima recommended are:

|        |             |             |
|--------|-------------|-------------|
| Single | - 4 off M4, | weight 7Kg  |
| Dual   | - 4 off M5, | weight 15Kg |
| Triple | - 6 off M5, | weight 25Kg |

## Installation, Cooling

The chassis of the FE series provides the heat sink for the bridge rectifier. Heat generated by the power supply is under 40 watts (per single module) under all conditions, even light loads and shorted load. Surface temperature of the transformer is typically 30°C above ambient, which is well within design limits. Although capable of operating reliably in an ambient up to 70°C, to achieve the 20-year design life, normal operating temperature should average 40°C or less. (At 40°C and full load, there is statistically a <1% chance of a failure in 20 years.)

## Installation, Position

Although they can be mounted in any position, if on a horizontal surface, they should preferably be upright and if on a vertical surface, with the transformer uppermost. If on a vertical surface and sideways, the capacitor vent should preferably be uppermost.

## Input Frequency

Despite their great tolerance to severe input voltage fluctuations, transients and even lightning strikes, the regulation technique in the transformer is sensitive to power line frequency (which, of course, is not a problem when the source is from the utilities because the frequency is very accurately controlled). A 1% change in line frequency will cause a 2% to 5% change in output voltage.

Therefore, all ferro-resonant power supplies are unsuitable for powering from uncontrolled emergency alternators or power sources where the line frequency is variable.

Standard models are shipped for 50Hz, 60Hz to special order.

## Input Voltage

Designed for 240V and 110V nominal line voltage, they will provide perfectly satisfactory performance on 220V, 230V, and 115V nominal, because of the very wide input tolerance of  $\pm 15\%$  for full performance. Line voltage changes up to +100% can be tolerated for up to 10 seconds, the effect on the output being less than +2V at loads over 25% of full load. Tolerance to low line voltage is dependent on load current, as shown in the selection tables.

## Input Power Disturbances

Transients up to 2500V RMS (active to neutral or line to earth) can be tolerated for up to 30 milliseconds, the effect on the output being less than +2V at loads over 25% of full load. All relevant international power line disturbance tests are met with considerable margin.

## Parallel Operation

All models of the same output voltage are suitable for parallel operation and will load share per module to within  $\pm 10\%$  of full load.

## Series Operation

Any number of supplies can be connected in series for higher output voltages up to 500VDC.

## Current Limit Characteristic

The FE series has a "soft" current limit knee, which means that intermittent or surge loads will not cause the output to drop, thus preventing system failures. This also means that a smaller rating can be selected for a given application. Further, the limit curve is virtually constant current, so the full rated current is available at any lower output voltage caused by overload, startup of capacitive loads, or charging a flat battery.

## Battery Charging

28V and 13.7V models are ideal for float charging sealed or vented lead-acid batteries and some other types. Two precautions should be observed: 1. The minimum quiescent load on the system should be sufficient to avoid the low load regulation rise (see characteristic curves) so as to avoid excessive float voltage, especially with sealed cells. 2. The large amount of current available from the FE series in overload should be considered. Most batteries should not be recharged faster than 30% of C, their ampere-hour capacity (answer in A). The maximum FE current (10% line figure), less the minimum standing load, should not exceed C/3.

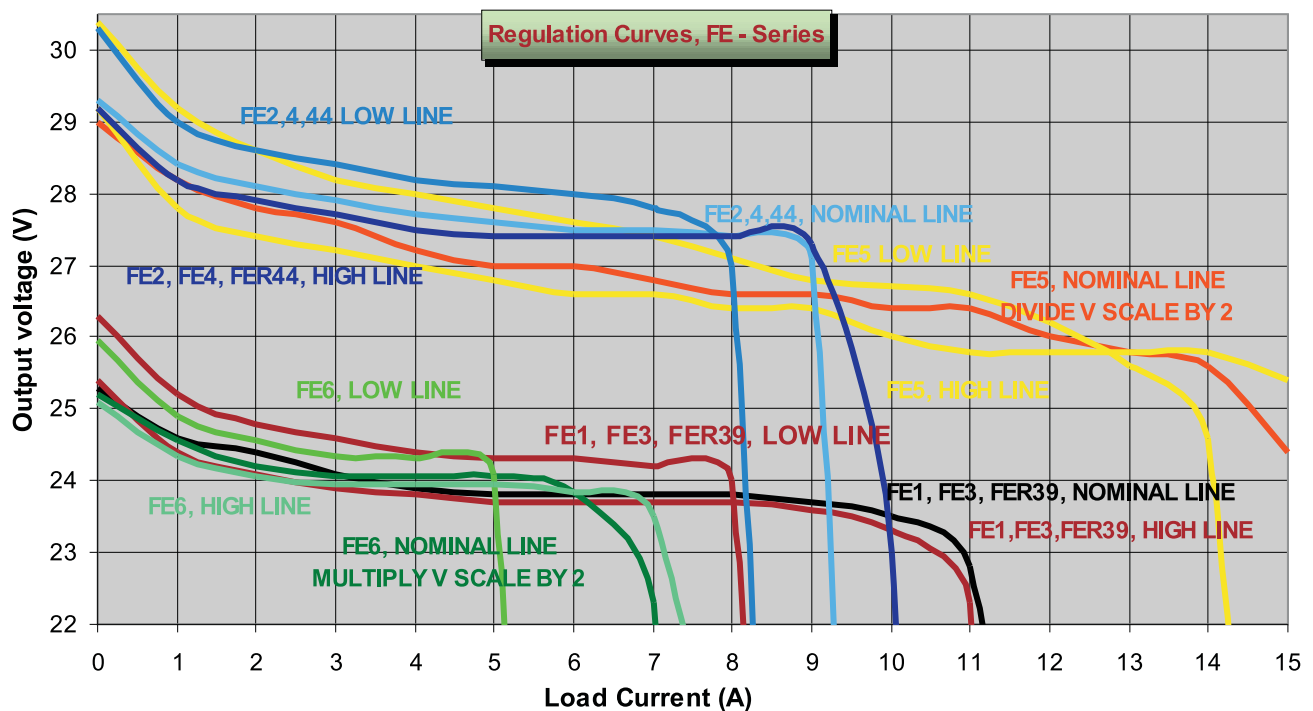
Refer to models FEU24, FEU28 and 53/U24 for a fully equipped, sophisticated 24V stand-by charging system and UPS with full fault alarms, faulty cell detection and temperature compensated float voltage.

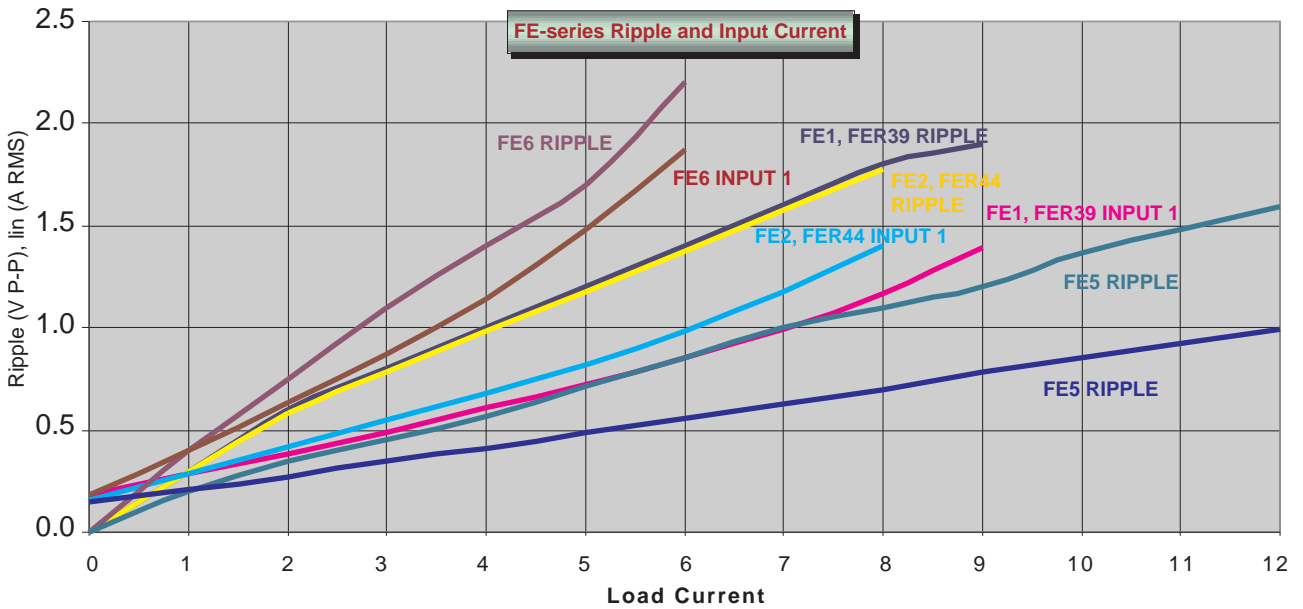
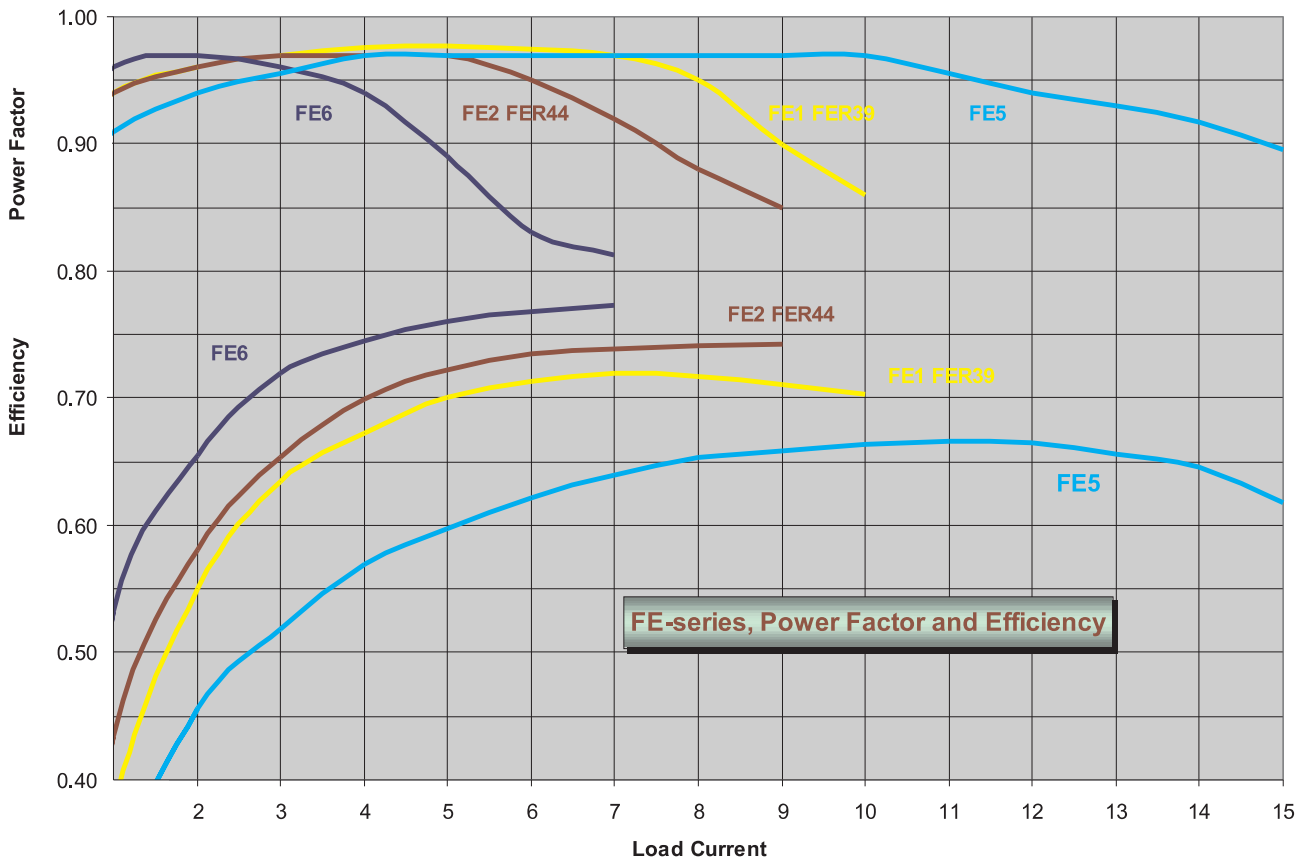
## Electrostatic shielding

All models are fitted with an electrostatic shield between primary and secondary, connected to earth and chassis. This, and the low primary secondary capacitance of the precision wound split core transformer, yield superior output immunity to line-born transients and signaling tones.

## Application Assistance

Our skilled team of engineers is always available to assist you in selecting the best approach to your specific requirements, and to solve any problems that may arise in the application of our products.





## Statronics Power Supplies

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