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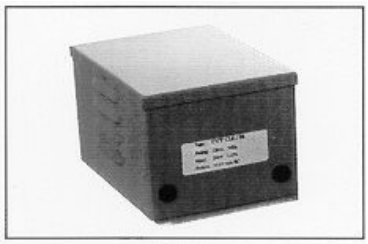
CVT SERIES

AC/DC Ferroresonant Power Supplies 60W to 1KW



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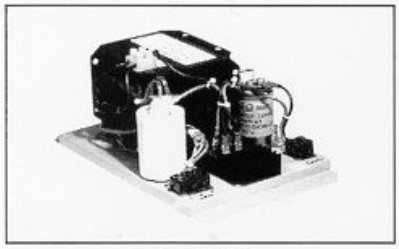


GEAR TRAY

- Ferro-resonant transformer, does not need to be fused
- Withstands indefinite overload and short circuit conditions
- Electronic shielding between primary and secondary windings
- Can be connected in parallel for high power systems
- Battery charging option
- Convection cooled, fans not required
- Simple design, high reliability
- Transformer input can handle mains surges upt to 55% and transients up to 2000V
- 60W to 1000W models
- Not to be used with unstable frequency such as generators

SPECIFICATIONS

DESCRIPTION:

Regulated supplies use robust ferro-resonant transformers. These units are designed to give long life, they conform to AS3108 isolating transformer safety specifications and are 100% Australian made. Wherever you have the need to run security systems, PLC systems, charge battery banks or need a power supply to handle large switching transients, the CVT range is the answer. The 12V and 24V units have the ability to change the transformer tap to give either a 13.8V or 28V output for charging Batteries.

SELECTION TABLE

Model (240V)	V	I	Power	Voltage Range
CVT12-5	12V	5A	60W	12/13.8V
CVT12-10	12V	10A	120W	12/13.8V
CVT12-20	12V	20A	240W	12/13.8V
CVT 24-5	24V	5A	168W	24/28V
CVT 24-10	24V	10A	240W	24/28V
CVT 24-15	24V	15A	360W	24/28V
CVT 24-20	24V	20A	480W	24/28V
CVT 24-30	24V	30A	720W	24/28V
CVT 24-40	24V	40A	1000W	24/28V

NOTES:

- Output transformer tap allows 12V models to be set to 13.8V and 24V models to 28V
- Models illustrated at left are 240VAC input
- For enclosed type at E to the model: CVT24-10E
- For 415VAC input add 415 to model: CVT24-10-415
- Other input and output voltages available upon request.

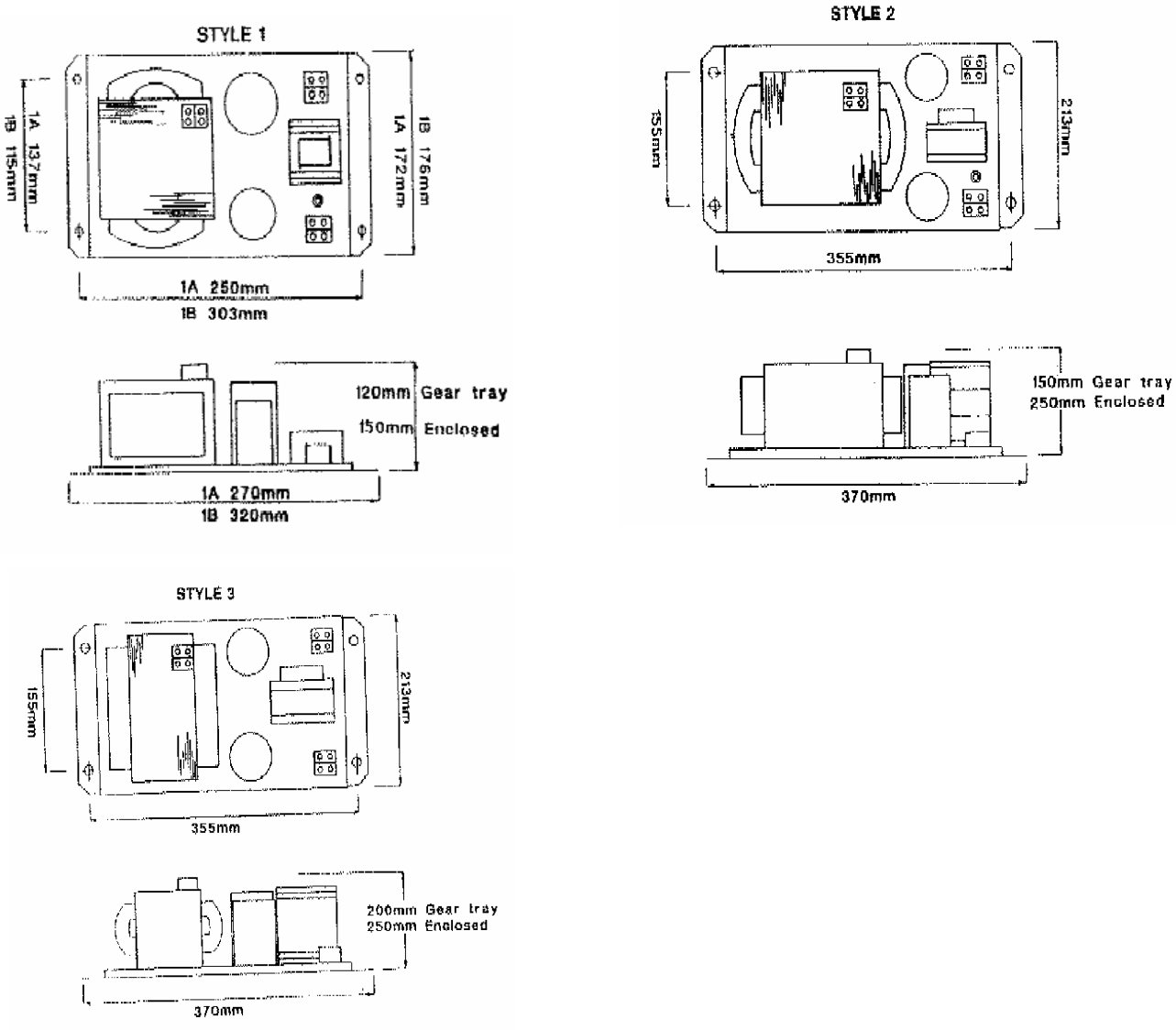
ELECTRICAL SPECIFICATIONS

Input Voltage:	240VAC (190-275V) , 415VAC (350-470)
Frequency:	50Hz, other options on request
Efficiency	Model dependent 75-80%
Line Regulation	+/- 1.5% over 15% mains input swing
Load Regulation	+/- 4.0% for 20% to 100% and load step
Ripple	<1.5V pk-pk at rated load
Current Limit:	Set at 130-150% of rated current
Output VOltage:	12V and 24V are standard. Other options on request
Output Power:	60-1000 Watts. Other options on request.
Operating Temp:	-10'C to +70'C at 100% load open frame. Consult office for detating details.
Humidity:	10-95% RH non-condensing
Connections:	Screw terminal type
Package:	Open frame or enclosed
Safety:	Designed to comply with AS3108
Parallel Operation:	Yes
Series Operation:	Yes

DIMENSIONS

Model (240V)	DIMENSIONS GEARTRAY	PACKAGE STYLE OPEN GEARTRAY	DIMESNIONS ENCLOSED	WEIGHT OPEN GEARTRAY
CVT12-5	270 x 172 x 120	1A	270 x 172 x 150	8Kg
CVT12-10	270 x 172 x 120	1A	270 x 172 x 150	7Kg
CVT12-20	320 x 176 x 120	1B	320 x 176 x 150	10Kg
CVT 24-5	270 x 172 x 120	1A	270 x 172 x 150	7Kg
CVT 24-10	320 x 176 x 120	1B	320 x 176 x 150	10Kg
CVT 24-15	370 x 213 x 150	2	370 x 215 x 250	15Kg
CVT 24-20	370 x 213 x 200	3	370 x 215 x 250	17Kg
CVT 24-30	370 x 213 x 200	3	370 x 215 x 250	21Kg
CVT 24-40				

MECHANICAL DRAWINGS



What are the benefits of a Ferrorsonant power supply?

Ferroresonance is a well proven robust technique. It is simple, efficient and reliable.

Other features are the ability to regulate over a wide input voltage range. Furthermore, as the secondary winding is located at some distance from the primary and is in resonance with a capacitor, it suppresses transients on the primary to a very high degree. Such transients could be originating from welding equipment or other powerful machines, for instance elevators. It is not unusual to find voltage peaks of up to 3000 V at the primary under such circumstances.

The coupling between primary and secondary is weak because of a magnetic shunt and an air gap located in between. Although the arrangement may appear simple, the actual processes in various elements are rather complicated, so the term Ferroresonance is only partly accurate. The result is that the magnetic circuit or part of it is saturated every half period. Some literature compares the circuit to that of a Zener diode.

The waveform is almost rectangular which is excellent for a subsequent rectification. For AC output models, however, it must be kept in mind that equipment connected to this AC may not work properly. This is particularly true for capacitor input rectifiers such as found in most small switched mode power supplies.

As more energy is stored in the capacitor and the magnetic circuit than is delivered to the load, a hold up performance is achieved in case of a disruption of the line voltage. For instance, in the case of a dropout of 15 ms a 24 V ferroresonant power supply at full load will decrease only to 20 V. A 20 ms dropout will lead to 18 V etc. In case the dropout is not complete but say 50 %, then the dropout may go unnoticed. The figures show also the output regulation. There is a marked effect at loads below 15 % of full load. This can come in very handy, for instance, if one wants to maintain a battery trickle charged.

The efficiency of the transformer itself varies from around 80 % for small ones, up to above 90 % for a large one. Much of the loss comes from the saturation of the core and the considerable current circulating in the secondary winding. Therefore, the transformer weight and volume are about twice those of an ordinary transformer.

The rectifiers further reduce the efficiency. The use of a full silicon bridge reduces the efficiency at 24 V by about 8 % so that the total efficiency will be from 72 to 82 %. If it is desirable to reach a higher efficiency one can revert to a two-diode push-pull circuit with silicon diodes in which case the resulting efficiency may be 75-86 %. Further improvements are possible by using Schottky diodes and/or synchronous rectification. This will then yield efficiencies approaching 90 % in big units.

The ferroresonance circuit is sensitive to frequency so the output voltage is likely to change 1,5 % for each 1 % change of line frequency. The ferroresonant power supply has a large in-rush current. The ripple is typically 0.5 -1.2 V pp. This ripple can be reduced to below 100 mV pp by the use of an additional filter. A negative effect of this is that the load effect is increased by some 0.2 V and, of course, that the efficiency drops a little.

A ferroresonance / battery combination - a simple and reliable uninterruptable power supply - can be obtained by using a battery in parallel with the DC output. Additional logic is necessary to handle the correct charging of the battery as well as the prevention of a deep discharge.