

**Gardners**

## D.C.-D.C. STABILISED CONVERTER MODULES

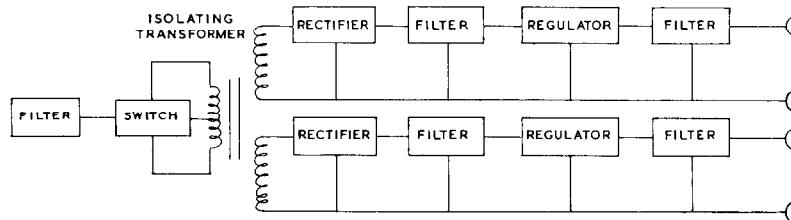
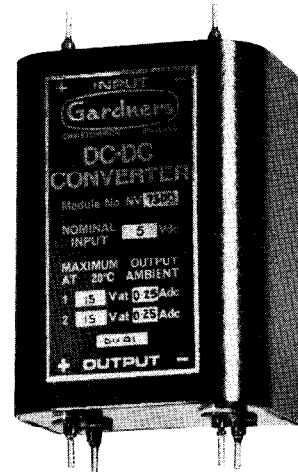


FIG. 3 BLOCK DIAGRAM NV 7300 SERIES.

Since the introduction in 1969 of our original standard range of D.C. Converter Modules, there have been many changes in the demands of modern equipments and during this period we have developed many designs to customer's specific requirements. The specifications below reflect the more popular requirements. These designs have all been evaluated and consequently the development time and costs normally associated with converters is not incurred if engineers choose what is, to us, one of a standard range of designs.

16 models (marked \*) are normally available for immediate delivery in small quantities and we shall always be pleased to provide a quotation on any of the remaining designs or against any requirements not covered in our published list.

The input voltages for this range are the standard 5V nominal (4.75 — 5.25), 12V nominal (10.5 — 16V), 24V nominal (22.0 — 30V) and 50V nominal (46 — 54).

The fully stabilised modules have been designed with full short circuit protection on all outputs. This is essentially re-entrant protection but modules are designed to afford internal protection against over-heating from any cause, up to a maximum case temperature of 75°C. Under this latter condition, the output voltage will fall to a level such that the internal dissipation remains within the design limits.

All modules may be used up to an ambient temperature of 50°C but the output power can be increased if they are mounted on a matt black heatsink of 16 swg x 100 sq inch using thermal grease (refer Figs. 1a and 1b). Please note that the output power is a function of the input voltage and ambient temperature.

The efficiency of the converter units is highest and the internal dissipation lowest when the input voltage to the module is on the lower input limit and vice-versa. This can be seen by considering Block diagram Fig. 3. It is clear that the incorporated isolating transformer must be designed to give an adequate voltage to the regulator at the lowest input voltage. At higher input voltages, the voltage fed to the regulator will be greater and consequently, for a given output current, the dissipation in the regulator will increase. This may then limit the permissible output current. For full details see Figs. 4a, b, c and d.

By careful design the usual commutation spikes have been reduced to a very low order (less than 20 mV p.p.) and the steel casing acts as an efficient external shield to reduce the risk to external sensitive components being affected by radiation from the inverter.

The case shield is completely isolated from the internal circuit and may be conveniently grounded by bolting direct to the equipment chassis. The input and output circuits are also isolated thus giving complete freedom for connecting outputs in series or parallel and for grounding any connections. The insulation between input output and case is better than 50 M Ohms at 100V DC.

The units are carefully screened and filled with a flexible encapsulating medium having good thermal conductivity and low shrinkage properties.

The aluminium base casting incorporated into the module is designed to act as a screening plate within the converter and a thermal interface for heat extraction from within the module. Internal heat differentials are thus kept to a minimum.