

# C H A P T E R ①

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## *Introduction*

### **DESIGN INTENTIONS**

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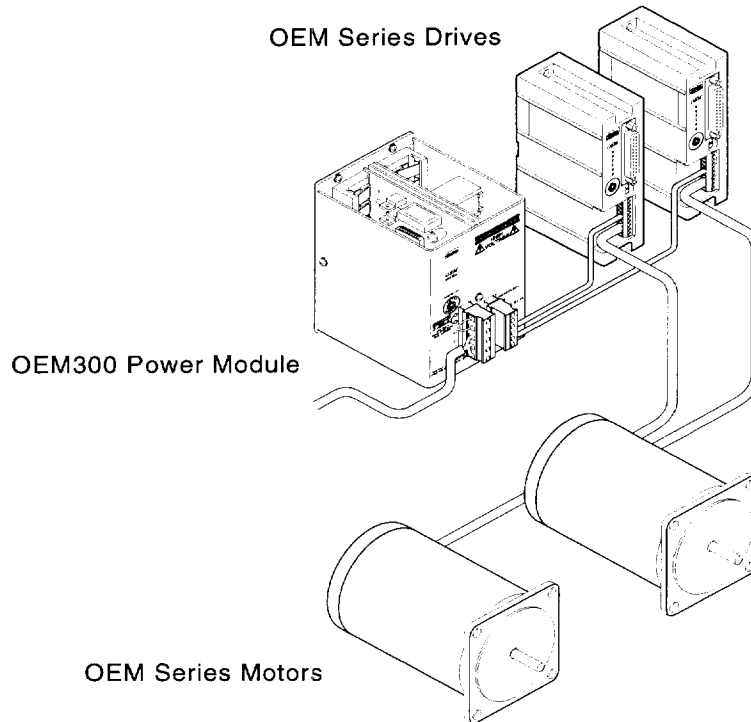
#### **COMPUMOTOR'S OEM SERIES: A FAMILY OF MOTION CONTROL PRODUCTS**

The OEM Series is a collection of high performance motion control modules. The product line consists of stepper and servo drives, indexers, motors, and the OEM300 Power Module. The products are intended to be used as embedded systems around which the Original Equipment Manufacturer (OEM) can design a motion control system.

#### **THE ORIGINAL EQUIPMENT MANUFACTURER DECIDES HOW TO USE OEM PRODUCTS**

The products have a basic set of features that the OEM can configure to meet varied needs. The products are not shipped as ready-to-use units. Compumotor assumes that the OEM system designer will make design and engineering decisions to properly use the equipment.

THIS MANUAL PROVIDES INFORMATION NECESSARY TO MAKE ENGINEERING AND DESIGN DECISIONS ABOUT PROPER USE OF THE OEM300 POWER MODULE.



*OEM Series Products — A Typical System*

## **OEM300 POWER MODULE FEATURES**

The OEM300 Power Module is optimized to provide power to Compumotor's OEM Series of microstepping drives and servo products. It contains a dual range power supply that can operate at 120VAC or 240VAC, at 50/60 Hz.

The voltage output of the OEM300 is fixed at 75VDC. It can produce 2.7A continuous and 4.0A peak, and provides power for drives and motors.

The OEM300 will power two OEM650 Drives, each running a Compumotor 83-135 step motor. It can power as many as five OEM650 Drives, each running 57-40 step motors. It can power OEM670 Servo Drives running servo motors as large as 1/2

horsepower (373 watts). The total number of servo drives is limited by the total power demand.

The Power Module is compact. It occupies the space of two OEM drives, and mounts similarly to the drives. Its small footprint conserves space in equipment cabinets.

To remove excess heat from within, the OEM300 uses a heatplate technique and convection cooling.

## **PROTECTIVE CIRCUITS**

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Several circuits in the OEM300 automatically provide protection for the Power Module and the equipment it powers.

- ❑ **OVER-TEMPERATURE** The Power Module monitors the temperature of its heatplate, and will automatically shut down if the heatplate temperature exceeds 60°C (140°F). To restart the Power Module: turn off AC power, cool the Power Module below 30°C (86°F), and cycle AC power.
- ❑ **SHORT CIRCUIT PROTECTION** The Power Module monitors current going to the drive, and will shut down its output if it detects a short circuit in the drive. Cycle AC power to resume normal operations.
- ❑ **INTERNAL POWER DUMP** The Power Module has an internal power dump circuit. This circuit can dissipate excess energy during load regeneration conditions.
- ❑ **OVERVOLTAGE** The Power Module will shut down if there is excessive voltage at its output terminals.

For more information about these circuits, refer to *Chapter ④ Protective Circuits in the OEM300*.

## **SPECIAL DESIGN ISSUES**

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You can use the Power Module in many different ways. To use it effectively, however, you must solve several design issues. Two of the most important are:

### **COOLING THE OEM300 POWER MODULE**

The OEM300 Power Module dissipates some power as internal heat. This excess heat must be removed from the Power Module. When you design your system, keep in mind three things you can do to remove heat.

- ❑ **COOL THE HEATPLATE**—Make sure heat can pass through the Power Module's heatplate and into a suitable heat sinking surface.
- ❑ **PROVIDE SPACE AROUND THE POWER MODULE**—Allow convection to transfer heat to the ambient air.
- ❑ **KEEP AMBIENT AIR WITHIN ITS TEMPERATURE LIMITS**—Otherwise, it will not adequately cool the Power Module.

For more information about cooling the Power Module, refer to *Chapter ⑤ Heat & Thermal Management Issues*.

### **HOW MANY DRIVES CAN THE OEM300 OPERATE?**

The OEM300 can deliver power to many different combinations of OEM Series products. You can save money if you analyze your system, determine how much power each drive needs, and then connect the right number of drives to use the full power capability of the OEM300.

For information on calculating power required by different motors and drives, see *Chapter ⑥ Calculating How Many Drives & Motors The OEM300 Can Operate*.