

### Sealed 12-key pad fits boards and connectors



A keyboard with twelve 0.5-in. square keys, the MMK-12, comes with a Mylar seal and silver-plated contacts. Terminal posts permit PC board mounting, wire-wrapping, or insertion in connectors.

REFAC Electronics Corp., P.O. Box 809, Winsted, CT 06098. (203) 379-2731.

CIRCLE 352

### Graphics display module links to 16-bit buses

The HP 1345A display module produces vector graphics and alphanumeric on its 6-in. CRT in response to digital commands from an external processor. A built-in binary interface provides easy connection to external 16-bit

data buses. The display forms graphics with a resolution of 2048  $\times$  2048 addressable points. An optional 4 kword vector memory saves host memory and eliminates refresh requirements by the user's processor. The display has three programmable intensities, four programmable line types, and four programmable writing speeds. A programmable automatic abscissa increment enables users to conserve memory and to draw complex graphs easily with less data transfer. ASCII characters are generated internally in four programmable sizes and four orientations for labeling graphs. Character writing takes 15  $\mu$ s. The module operates from  $\pm 15$  and 5-V dc supplies. Typical applications for the display module include spectrum and network analyzers, waveform analyzers, curve tracers, digital storage oscilloscopes and Fourier analyzers.

Hewlett-Packard, 1501 Page Mill Rd., Palo Alto, CA 94304 (415) 857-1501 \$3,350; 12 wks.

CIRCLE 353

### Wafer handler moves under IEEE-488 control

A modular wafer elevator sub-assembly, the EM-307, receives, elevates, and transfers up to 2000 wafers per hour under the direc-

tion of host controls on the IEEE-488 bus. The elevator handles wafers as large as 150 mm and as small as 2 in. without the need for adjustment. Wafers can be spaced at three different vertical pitches. The subassembly incorporates three stepper motors to control vertical movement of the elevator, horizontal transfer of the wafers, and transfer-arm positioning. Six sensors monitor wafer position, velocity, and acceleration. The mechanism does not contaminate wafers. Another version of the elevator retrofits most systems that do not use the IEEE-488 bus.

ADE Corp., 780 E. Trimble Rd., San Jose, CA 95131. (408) 946-4124.

CIRCLE 354

### Multi-output switcher delivers 500 W

A 500-W switching power supply, the TDI-131, provides outputs that supply up to 30 A at 6 V, 10 A at -6 V, 5 A at  $\pm 12$  V, and 3 A at  $\pm 24$  V dc. Other outputs are available. The supply operates from 115/230-V ac lines. It regulates line and load to within 0.04%.

Technology Dynamics Inc., 91 Carver Ave., Westwood, NJ 07675. (201) 664-7636. \$750 (100 qty).

CIRCLE 355

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