

Product showcase

Universal alignment kit Pinpoint Laser Systems'

Microgage Universal Alignment Kit enables maintenance and production teams to check and align machine tools for improved operation and efficiency. Quick and precise measurements of machinery rail straightness, parallelism, surface flatness, and other alignments are possible. The kit consists of a laser transmitter and a digital receiver that is connected to a handheld display. An interface cable is included for uploading of readings to a laptop or PC for analysis. Aircraft fabrication facilities are among the kit's users.



For more information, circle 100

High-gain antenna

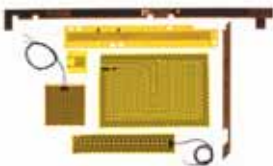
The HGA-9000 High Gain Antenna from **TECOM Industries** is a low-profile, fuselage-mounted antenna for aircraft owners and fleet operators that are considering next-generation on-board INMARSAT communications. Based on advanced third-generation phased-array technology, the device meets requirements including Aero-H/H+, Swift 64 HSD, and Swiftbroadband (BGAN). With 18-20 dBic gain typical and 16 dBic gain minimum, the unit delivers higher data throughput and lower-angle coverage than existing Aero-H antennas. A fully integrated beam steering unit simplifies system installation.



For more information, circle 101

Flexible heaters

Kapton flexible heaters from **Durex** offer superior tensile strength and tear resistance, with precision heat distribution. They are ideal for applications with extreme temperature environments of -319 to +392°F. The firm's silicone rubber heaters permit composite bonding and curing, as well as repair and fabrication operations. Equal-length circuits and a cool tab are featured; a fiberglass-reinforced heater cover provides long service life and increased durability.



For more information, circle 102

Solid-wall inserts

SPS Technologies' solid-wall staked inserts and studs; swaged inserts; ringlock inserts, studs, and rings; and floating inserts provide benefits for aerospace applications. The inserts and studs provide resistance to torque-out and pull-out because of



integral locking stakes that are driven into parent materials. All devices are available in a range of sizes, materials, and configurations and can be installed with hand tools. The staked studs offer weight savings and can withstand high temperatures and loading. The lightweight swaged inserts offer high strength and a space-saving design.

For more information, circle 103

Unmanned vehicle software

Software components from **Applied Perception** provide drop-in capabilities for unmanned-vehicle robot system developers to add functions such as vehicle control, sensor processing, path following, mapping, obstacle detection and avoidance, and operator interfaces to existing platforms. The components are built on the **Department of Defense**-mandated Joint Architecture for Autonomous Systems (JAUS) specification. A jLib JAUS tool kit provides low-level message packing, transport, and routing capabilities for developers to create new JAUS-compliant applications or retrofit existing capabilities to function immediately within existing systems. It supports all core JAUS messages and components as well as multiple message transport layers, including ethernet, RS-232/-485, and shared memory.

For more information, circle 104

Precision electroforms Servometer/Precision Manufacturing Group's

electroforms are precise, thin-walled, metal components that can be made as small as a grain of rice, with walls as thin as 0.0005 in. They are made by electrodepositing a thin layer of nickel on an aluminum mandrel of any shape, and then chemically dissolving the mandrel to leave behind a hollow, thin-walled metal form. The parts can be used as molds; electromagnetic interference shields; wave guides; precision tubing and nozzles; and lightweight, structurally rigid components. They can be made from nickel, copper, gold, silver, or a combination of the materials.

For more information, circle 105



Fluorinated lubricants

Krytox fluorinated lubricants from **Miller-Stephenson** Chemical are derivatives of Teflon and provide advantages including a wide temperature range (-103 to +800°F); compatibility with plastics, rubber, ceramics, and metals; nonflammability; and insolubility in common solvents. The lubricant is used with gearboxes, dampers, ductwork, valves, steam valves, gaskets, seals, compressors, bearings, boilers, pumps, and turbine auxiliary systems.



For more information, circle 106

Piezoelectric pumps

Clark Solutions' DTI-200-12P and DTI-200-12A miniature piezoelectric pumps use piezoelectric crystals that are formed and bonded to a metal diaphragm. The pumps operate when the bonded crystals are stressed and distorted by an electric field, causing the diaphragm to flex. Two opposing umbrella-type check valves respond to this flexing, creating a pumping action. This design eliminates electromagnetic noise and consumes a low 150 mW of power. The pumps are suited for both portable and fixed cooling applications, from circulating water in spacecraft to cooling CPUs in computers.

For more information, circle 107



Robust connector

The 2-mm connector from Hypertronics is interchangeable with cPCI COTS systems.

Benefits of the connector include high-reliability Hypertac contacts, immunity to shock and vibration fretting, standard 2-mm footprint, electromagnetic interference/radio frequency interference shielding, keying feature to ensure proper mating, and a high-temperature LCP (liquid crystal polymer) insulator that meets NASA outgassing requirements.

For more information, circle 108



Charge amplifier

Columbia Research Laboratories' Model 4601 charge amplifier provides signal conditioning for piezoelectric accelerometers and pressure transducers. Features of the device include 500 mV/pC maximum sensitivity, a calibrated transducer sensitivity control for matching device gain to the transducer's calibrated sensitivity, 10-V peak-to-peak full-scale output with more than 20-V peak-to-peak output before clipping, dual outputs, and a built-in meter and overload indicator.

For more information, circle 109



Dynamic pressure sensors

ICP dynamic pressure sensors from the Pressure Division of PCB Piezotronics offer the ability to measure low-level pressure and high-intensity sound pressure levels, both acoustic and ultrasonic. They are used to monitor pulsations, turbulence, and noise in hydraulic and pneumatic systems; detect pressure fluctuations in exhaust systems, compressors, turbines, and pumps; and measure noise of jet engines, rocket



motors, and weapons discharge. Models 106B50, 106B51, and 106B52 ICP-style sensors feature built-in signal conditioning microelectronics to produce clean, low-impedance voltage output signals.

For more information, circle 110

Horizontal wire EDM

The UPJ-2 from Makino is a horizontal wire EDM (electrical discharge machine) that has standard capabilities for automatically threading and machining with wire as small as 0.00078 in in diameter. It can handle jobs such as gears for micro-miniature molds and fiber optics. The machine's dielectric fluid operation helps to minimize spark gap and enhance quality finish, while the unique core and slug removal unit improves particulate flushing and enhances uptime.

For more information, circle 111



Orientation sensor

MicroStrain's 3DM-GX1 combines the outputs from three angular rate gyros with three orthogonal dc accelerometers and three orthogonal magnetometers. The embedded microprocessor contains a unique programmable, complimentary filtering algorithm, which blends the static and dynamic outputs of the sensors to provide stabilized pitch, roll, and yaw measurements under dynamic and static conditions. Operating over 360° of angular motion on all three axes, the device provides orientation in matrix, quaternion, and Euler angle formats. The digital serial output can provide temperature-compensated, calibrated data from all nine orthogonal sensors at update rates of up to 350 Hz. Applications include navigation and control of unmanned vehicles, platform stabilization, robotics, and dynamic antenna pointing.

For more information, circle 112

Robotic EDM cell

The Fanuc M-710iB/70 robotic EDM (electrical discharge machine) cell from Methods EDM increases production capacity via automated loading and unloading. The cell features a high-speed Fanuc six-axis robot and can be configured to serve either a single or multiple Fanuc iC Series wire EDM machines. With a standard Joint 1 rotation of 360°, the smallest Joint 2 interference zone in the industry, and the ability of Joint 3 to flip over and work behind itself, the robot can reach anywhere and offers precise positioning and high performance. CellMaster cell control software includes presetting functions, and matches the CNC program, cutting technology, robot gripper, and part tooling or fixturing. It allows users to schedule jobs, reprioritize them if necessary, and monitor individual job progress and/or machine status.

For more information, circle 113