

# Motion Control Devices



## 50 Years of Reliable Motion Control Devices

Ducommun LaBarge Technologies, Inc. is the premier supplier of highly reliable precision motors, resolvers and actuators. Ducommun's product line consists of hundreds of custom designed electromechanical components for operations in extreme environments from many miles under the earth surface to deep space.

## Motion Control Device Heritage

Our technological heritage dates back to 1948 and our products range from use in down hole oil exploration tools and military applications to satellites, space vehicles, and launch vehicles. Latest space programs include: NuStar, Juno Mission, Intelsat, WGS, TDRS, MDA Dextre (SSRMS), SBSS Redwood, and Mars Rover.

## Markets

- Space Exploration Vehicles
- Satellites
- Launch Vehicles
- Oil & Gas Exploration
- Downhole Drilling
- Submarines
- Commercial & Military Aerospace
- Ground Vehicles
- Custom Commercial Solutions

## Space

Space qualified stepper motors, BLDC motors and resolvers for satellites and space exploration vehicles are a core competency of Ducommun. With more than 50 years of proven heritage, Ducommun has become a leading supplier of highly reliable integrated solutions. We supplied the actuators for the Rover Stand-up Operation on the NASA Mars Exploration Rover and Brushless DC motors for the Mars Pathfinder program. 42 resolvers were also placed on the International Space Station. Latest programs include resolvers for NASA's Frontiers Mission to Jupiter and Stepper motors with gear head for the NuStar program.



Ducommun has provided stepper motors for Tracking and Data Relay Satellites (TDRS) since the early 1990's

## Oil and Gas Exploration

Ducommun has more than 30 years of experience in design and manufacturing of highly reliable motors and alternators for down hole oil exploration tools. The motors are used many miles beneath the earth's surface at extreme temperatures of up to + 250°C and high pressures of up to 30,000 psi. Our latest development of high efficiency motors provide additional reliability for the increasing demanding down hole drilling environment. Down hole motor success frequently requires units with exceptionally long, thin aspect ratios, i.e.: 1.5" dia x 9" long. Ducommun has invested to acquire the required tooling to routinely meet these requirements



For over 30 years, Ducommun has supported Fortune 500 oil exploration companies with highly reliable downhole motors.

## Military

Ducommun's highly specialize AC and DC electric motors, position sensors (resolvers), and electromechanical actuators are found in antennas, waveguide systems, gimbals for azimuth and elevation positioning. Ducommun continues to lead the industry as a manufacturer of high quality, reliable products that have proven successful in demanding applications for commercial and military aircraft, sub-marines, ground defense and weapon systems.



In 1976, we expanded into the military markets and provided the US Trident with the durable 38PX Pancake Resolvers.



## Products



### Stepper Motor

- Permanent Magnet
- Hybrid
- Variable Reluctance (VR)
- 2, 3, and 4 Phase
- Optional with gear head



### DC-Motor

- Brushless Motors (BLDC)
- Brush type
- Torquers or Alternators
- Optional with gear head, feedback, and/or brake



### AC-Motors

- Oil Exploration Motors for High Temp. (250°C)
- High efficiency
- AC Hysteresis Synchronous
- Optional with gear head



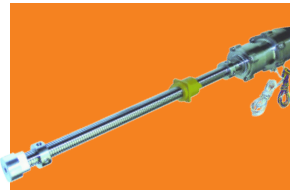
### Resolvers

- High accuracy up to +/- 2 arc-sec
- Pancake or housed
- Single & Multi Speed
- High Accuracy



### Variable Reluctance Resolvers

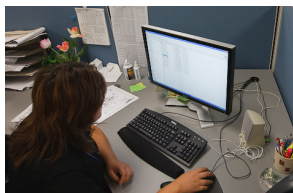
- Accuracy up to +/- 2 arc-sec
- Compact design
- No rotary transformer required



### Actuators/Subassemblies

- AC/DC
- Rotary/Linear
- With gear head, lead, screw, etc.
- Permanent Magnet Multi-Position

## Capabilities



### Engineering

- 50 years of experience in design & manufacturing
- New Product Development
- Solid Works/Maxwell/Labview



### Quality

- ISO 9001 / AS9100 Cert
- Clean rooms class ISO 7+8, Flow benches ISO 5
- Continues Improvement/Six Sigma



### Environmental Test

- Thermal Cycle
- Thermal Vacuum
- Random & Sine Vibration
- Humidity
- ESS



### Testing

- High accuracy testing
- Dynamometer
- Customer approved acceptance tests



### Assembly

- Skilled personnel for component and system assemblies
- NASA-STD-8739.3 certified soldering



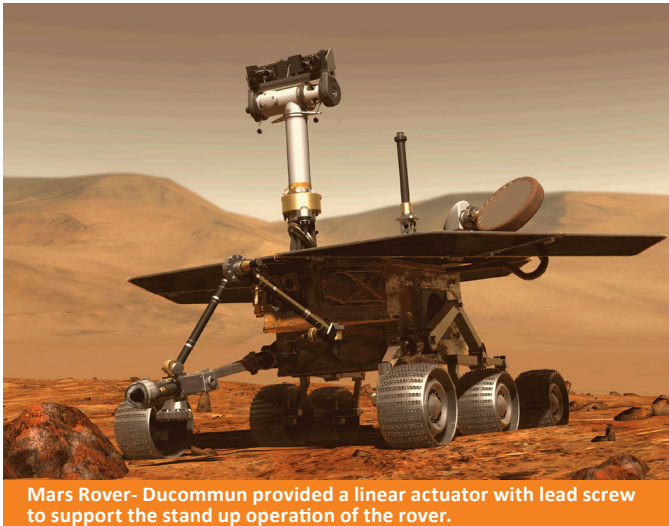
### Manufacturing

- Complete in-house manufacturing capabilities
- Machining Center
- Material and component traceability
- Laser cutting



### Program Management

- Customer Interface
- Program success
- Performance driven



Mars Rover- Ducommun provided a linear actuator with lead screw to support the stand up operation of the rover.

## Contact Us

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## About Ducommun

Founded in 1849, Ducommun Incorporated is recognized as the oldest company in California. Evolving from a hardware supply store opened by Charles Ducommun in Los Angeles during the California Gold Rush, the company assisted in the birth of the aerospace industry in Southern California by providing aircraft aluminum to companies such as Lockheed. Today, Ducommun is a leading provider of engineering and manufacturing for the aerospace & defense industry.



## Our Locations

