Aerospace Products Overview



Sensata Technologies


Sensata

About Sensata Technologies

Sensata Technologies is a global industrial technology leader dedicated to shaping a cleaner, more efficient, electrified and connected world. With a diverse range of sensors, electrical protection components and data-driven solutions, we empower our clients to navigate intricate engineering and operational demands.

For over a century, Sensata has been at the forefront, delivering tailored, sensor-rich solutions, encompassing controllers and software, to tackle complex challenges across the automotive, aerospace, industrial, heavy vehicle, off-road, HVAC, and marine sectors. Our innovations enhance safety, efficiency, and comfort, touching the lives of millions daily.

Our Aerospace Solutions

Discover optimal solutions for your aerospace mission-critical sensing needs through Sensata's comprehensive energy storage systems, pilot controls, high-voltage management, electrical protection, pressure, position and temperature product lineup.

Backed by a harmonious blend of esteemed brands and a legacy of excellence in demanding markets, we offer the highest standards of quality, service, technical proficiency, and global support. Count on us to enhance safety, efficiency and comfort in your flight control, landing gear, power distribution, engine monitoring, environmental control applications, as well as your most formidable electrification challenges.

Content

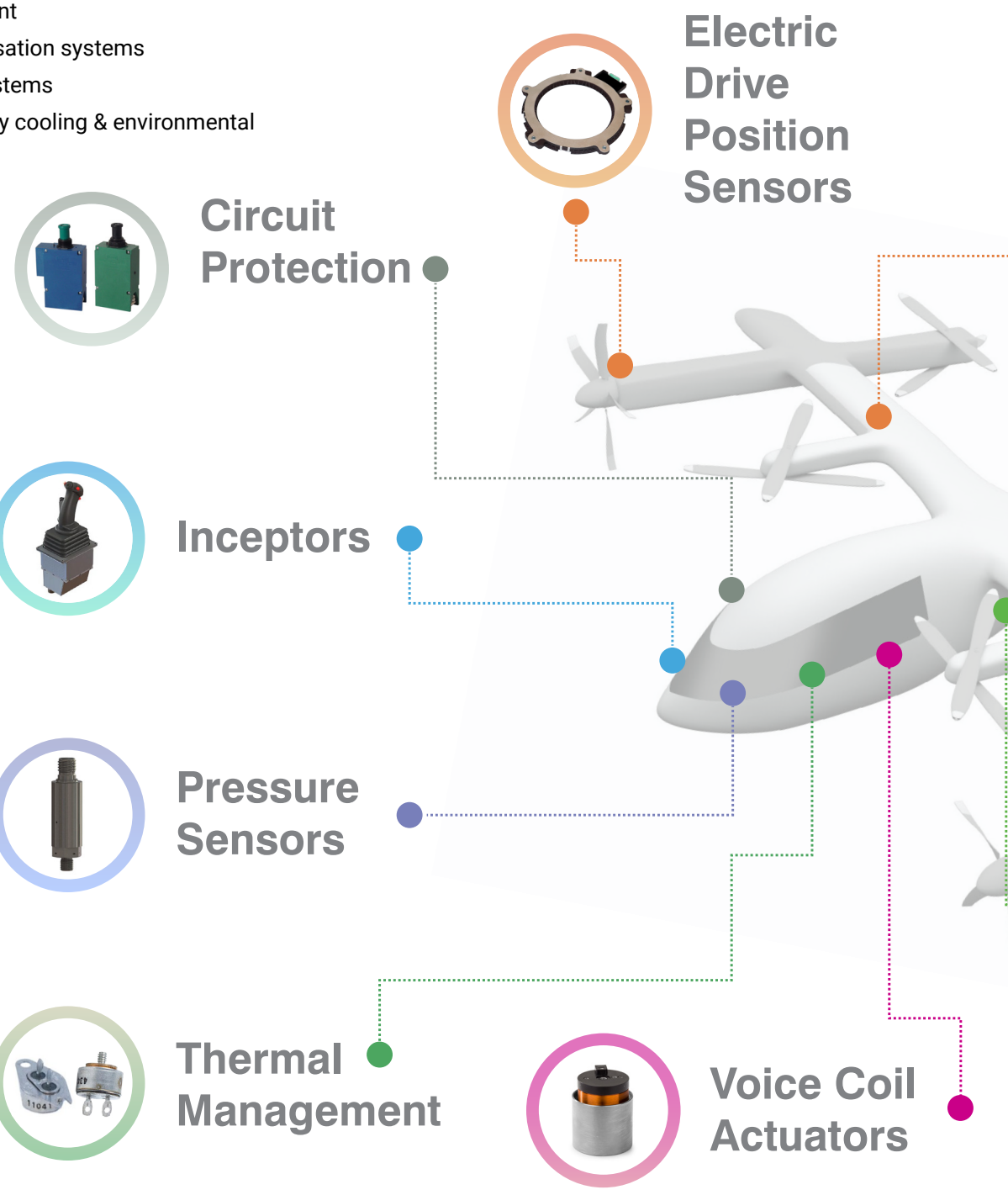
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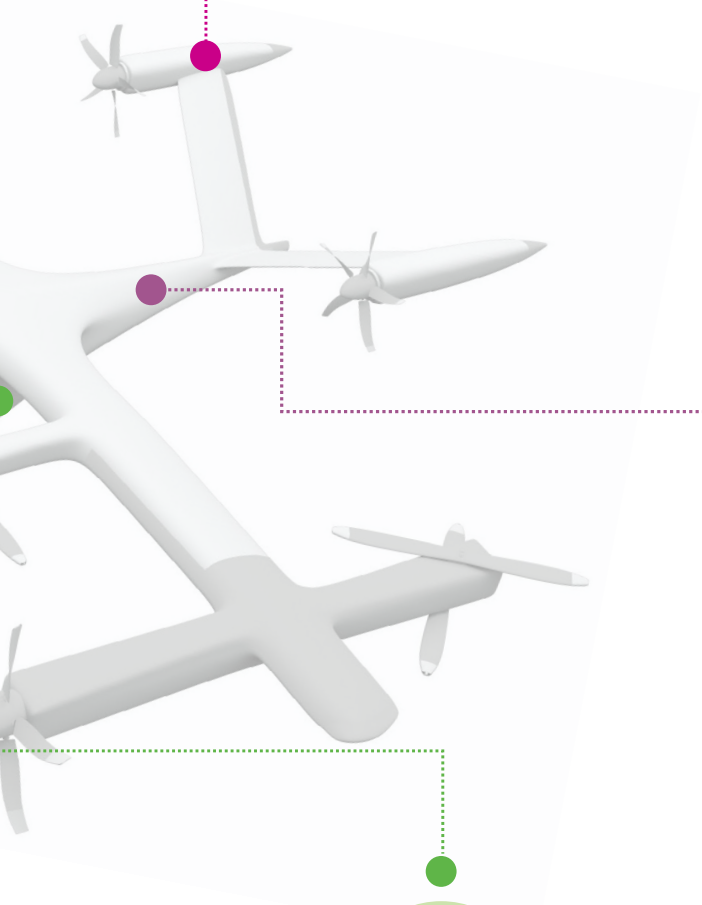
ADVANCING AIR MOBILITY & ELECTRIFICATION ECOSYSTEM

Sensata supports traditional aircraft applications while also uniquely positioned to offer a range of solutions at scale for battery electric and hydrogen fuel cell aircraft powering the advanced air mobility revolution.

Advanced Air Mobility Applications

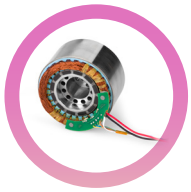
- Energy storage systems
- Pilot controls
- High voltage management
- Charging/ power conversation systems
- Battery management systems
- Pressure sensing (battery cooling & environmental controls system)
- Electric propulsion units



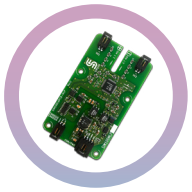




Position Sensors



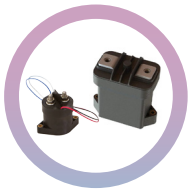
BLDC Motors



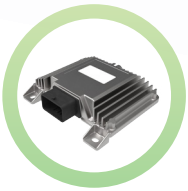
Insulation Monitoring Device (IMD)



Current Sensors (IVT)



Contactors & Fuses

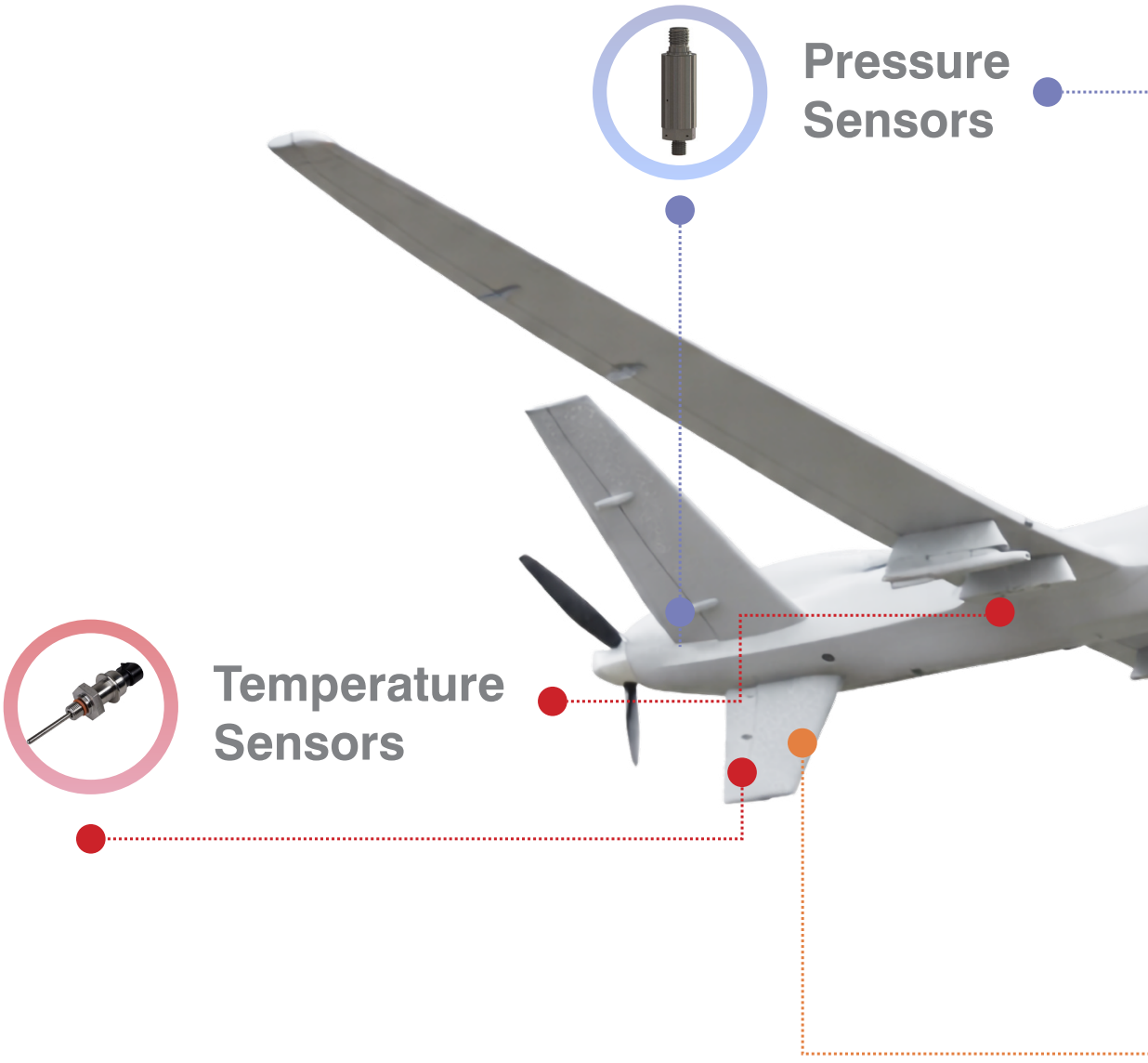


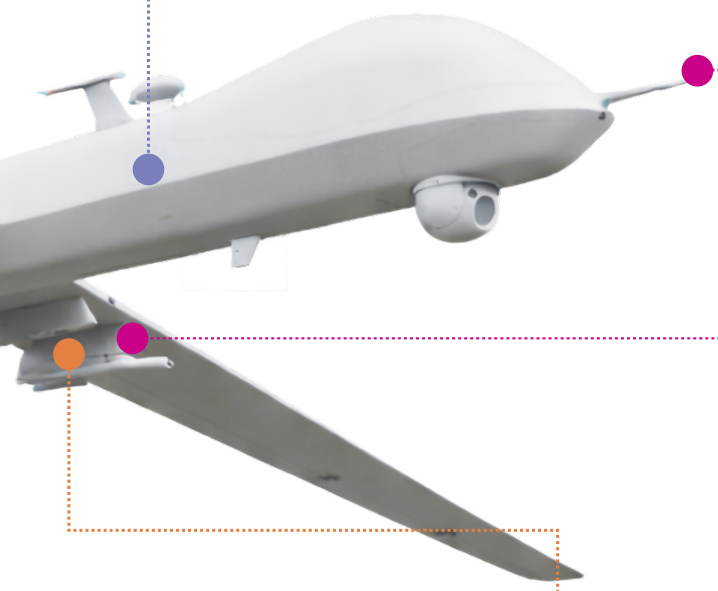
Electric Vehicle Charge Controller

AEROSPACE, DEFENSE & COMMERCIAL EQUIPMENT

Advanced Air Mobility Applications

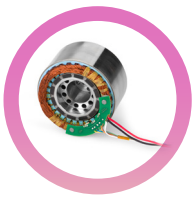
- Thermal Management
- Precision Sensing & Feedback
- Mission Systems & Targeting
- Flight Control & Actuation Systems







Voice Coil Actuators



BLDC Motors



Position Sensors

INCEPTORS & COCKPIT CONTROLS

Sensata's industry-leading RVDTs underpin our inceptors and cockpit controls, enabling the smallest and lightest inceptor solutions.

Throttle Quadrant Assemblies



Sensata's throttle quadrant assemblies offer a premium look and feel for pilots, featuring

- Individual thrust levers wrapped in sumptuous leather for each engine
- Two highly precise, reliable Sensata RVDTs per lever complete with protective anti-backlash gearing
- Thoughtfully designed pilot-feel clutch mechanisms for proper feedback
- Stylized light panels with detached dimming modules
- Independent sliding Foreign Object Debris covers to protect assembly from spills
- Autothrottle disconnect switches to safely disengage as desired
- Maintenance-free performance
- Digital interface with servo motor-driven levers available for the autothrottle option

Cockpit Controls



These custom designed devices can incorporate our RVDT sensors, motors, and switches within one packaged control. Kavlico cockpit controls meet customer and market demands for small envelope, minimum weight, and high reliability. Our experience includes:

- Speed Brake / Variable Air Brake Handle
- Landing Gear Control Lever (LGCL)
- Steering Control Wheel (Tiller)
- Flap Level Selector (FLS)
- Flight Spoiler Control Lever (FSCL)
- Auto Throttle Quadrant Assembly (ATQA)
- Throttle Quadrant Assembly (TQA)



Inceptors

Advanced air mobility requires lightweight, highly reliable pilot controls. As the world leader in high-volume, multi-axis inceptors, Sensata combines our micro-RVDTs with a modular design concept to offer the lightest passive inceptors, ensuring customers achieve the lowest total cost of ownership

Key Features:

- The compact envelope easily integrates into aircraft structures, supporting single-axis to four-axis control
- The weight-optimized design with a dual load path results in three-axis designs weighing less than 3.175 kilograms (7 pounds)
- Safe operation is ensured through redundant load paths and jam-resistant features in all axes, both at the sensor and mechanism levels
- Signal output is available in either analog or digital formats including ARINC 825 CAN, ARINC 429, EADIN, RS-485, RS-232, SPI, and UART
- RVDT Sensors provide precise, high-reliability, non-contact position sensing and fault tolerance
- Redundant sensors typically have three channels, with an option to upgrade to quad redundant sensors if desired

Benefits:

Customizable Grip Design:

- Allows control over ergonomics and button layout

Customizable Range of Motion:

- Offers up to 50 degrees total (±25 degrees from center) for all axes
- Independent axis travel adjustment to meet specific requirements

Force, Centering, and Damping:

- Dual-Redundant Centering Mechanism
- Customizable Spring Force
- Pre-Tensioned Breakout Force
- Sensata-Designed Viscous Damper

Pilot Input Forces:

- Designed for up to 200 lbs limit loads, surpassing FAR and EASA requirements
- Available in left-hand or right-hand configurations
- Designed to meet RTCA/DO-160, MIL-STD-810E, environmental, electrical, and EMI/RFI requirements

RVDT Performance and Electrical Characteristics:

- Excitation Voltage/Frequency: 6Vrms ±10%, 1800-2200 Hz
- Current: 20mA Max
- Input Impedance: Min. 300 ohms
- Output Impedance: Max. 1000 ohms

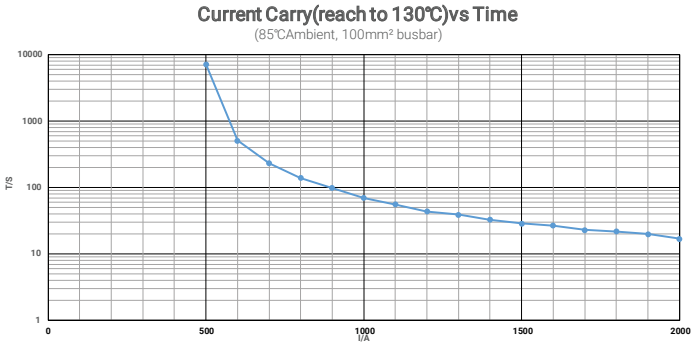
ELECTRIFIED FLIGHT HIGH VOLTAGE COMPONENTS

Sensata's electrified Flight high-voltage components deliver the highest levels of safety and accuracy across 800-volt direct current battery and power distribution systems, electric propulsion units, e-motors and charging infrastructure.

SELF-PS Flight Pyrofuse Switch

Protecting against very high short circuits inside power distribution boxes with low inductance and in e-motors with high inductance is critical to safe operation of electric aircraft. Sensata Electrified Flight pyrofuse provides an active safety with an external trigger that allows disconnection to occur in less than 1 millisecond. Certifcation to aviation reliability standards and environmental requirements per RTCA/DO-160 in progress.





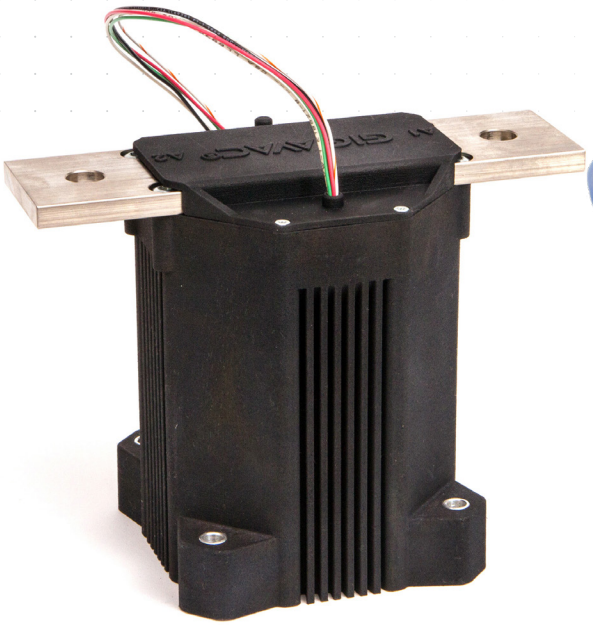
Breaking Capability	
Max breaking capacity[1]	500V/20KA @14uH 1000V/16KA @16uH
Min breaking capacity	0A
Action time	< 1ms
IR at 1000V@RT after break	50MΩ for at least 10sec
Temperature	
Operating	-40 °C to +85 °C
Storage	-40 °C to +65 °C
Self-ignition	≥ +250 °C

[1] Breaking capacities reflect peak values before max current. Contact Sensata for additional details.

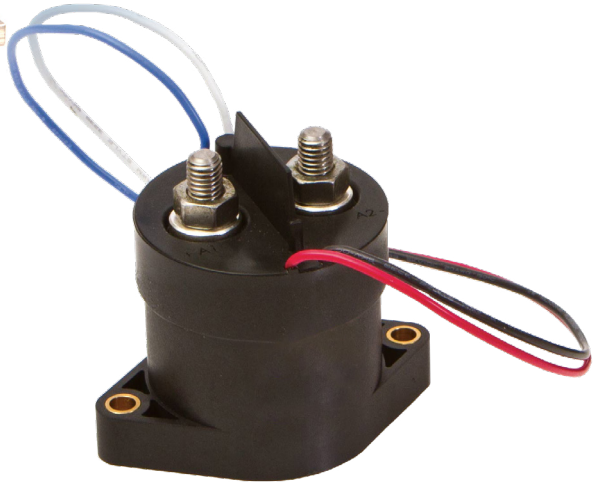
Sensata's Electrified Flight Contactors

Battery-electric and hydrogen-powered aircraft rely on high-voltage power systems, typically rated at 800 volts DC. Charging systems are moving towards fast charging, with voltages reaching up to 1500 volts DC.

Sensata Electrified Flight contactors offer solutions for both on-aircraft applications and ground-based charging systems. Our flight contactors have successfully completed environmental tests in accordance with DO-160 requirements. For ground system contactors, we leverage industry certifications from our GIGAVAC products. All our contactors are fully compliant with AS9100 standards.



SELF-CM1000

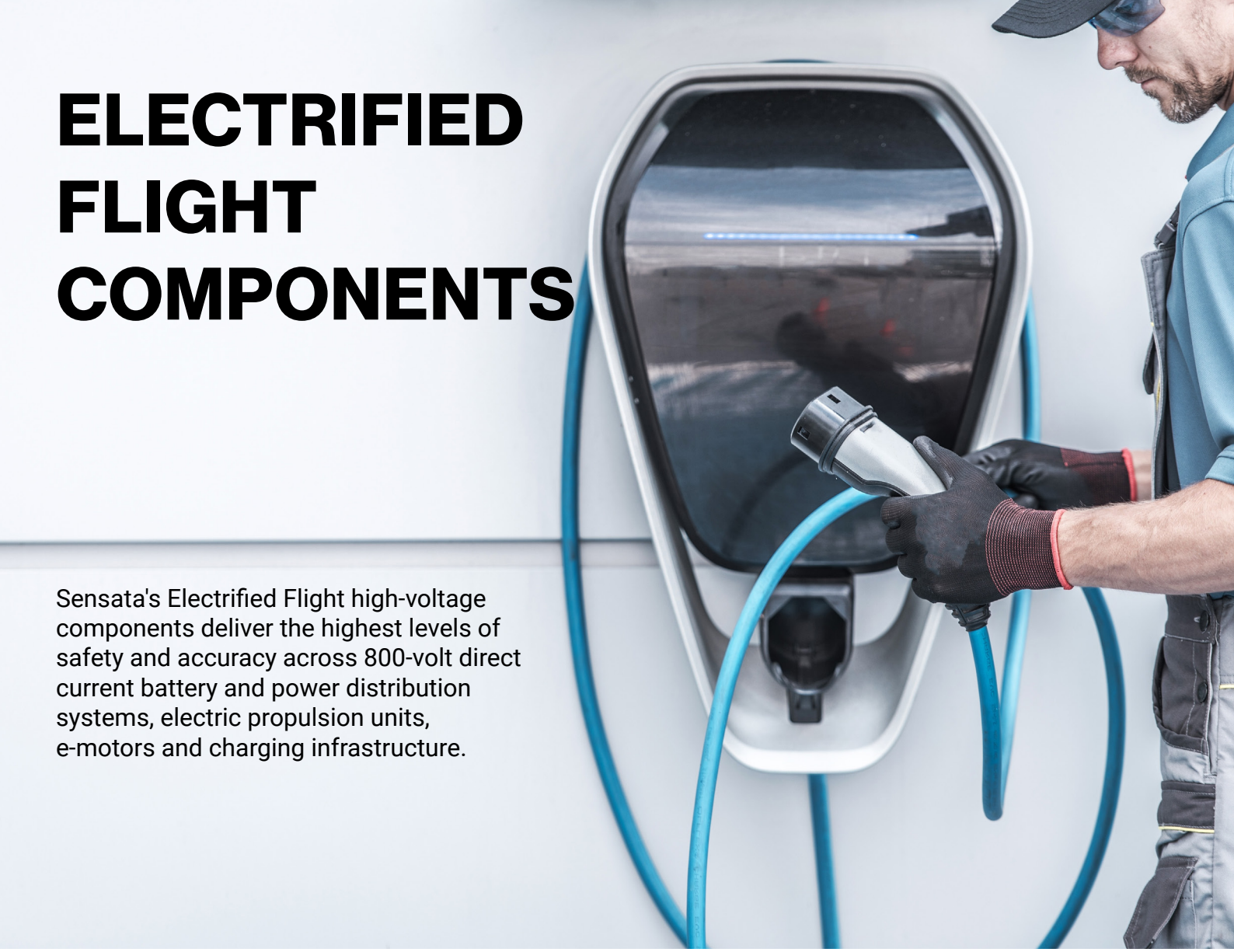


SELF-C350

Product Line	Rated Voltage (VDC)	Continous Current Carry (A)	Weight (kg / [lbs])	Application
SELF-C350[2]	800	350	0.38 / [0.84]	Lightest weight for 800VDC
SELF-CL350[2]	800	350	0.5 / [1.1]	Latching for 800VDC
SELF-CH20[2]	1000	350	0.44 / [0.98]	High capacity, extended voltage
SELF-CH22[2]	1000	300	0.44 / [0.98]	High capacity, extended voltage
SELF-CH600[2]	900	600	0.475 / [1.05]	High capacity, extended voltage
SELF-CBG400	1500	400	0.91 / [2.0]	Bi-directional, glass-sealed
SELF-CBG500	1500	500	0.91 / [2.0]	Bi-directional, glass-sealed
SELF-CP80[2]	1500	80	0.14 / [0.3]	Pre-charge circuits
SELF-CM800	1500	800	3.0 / [6.6]	Bi-directional, MW e-motor systems
SELF-CM1000	1500	1000	4.17 /[9.2]	Bi-directional, MW e-motor systems

[2] Certifcation to aviation environmental requirements per RTCA/DO-160 complete

ELECTRIFIED FLIGHT COMPONENTS



Sensata's Electrified Flight high-voltage components deliver the highest levels of safety and accuracy across 800-volt direct current battery and power distribution systems, electric propulsion units, e-motors and charging infrastructure.

SELF-EDP
Electric Drive Position sensor



The adoption of electric motors (e-motors) in UAM/AAM/EVTOL electric vehicles (EVs) demands precise, low-profile position sensing for efficient axial flux e-motors. Sensata Electrified Flight Drive Position sensors offer several aerospace advantages:

- True power-on sensor with superior contactless, magnet-free design for optimal motor efficiency
- Electrical accuracy ≤ ±1° over the lifespan at nominal tolerance conditions
- Independently powered and grounded dual channels with integrated signal processing, eliminating the need for heavy sub-systems
- Immunity to stray magnetic fields, no external shielding required
- Environmentally robust solution enhancing system longevity and quality
- Lightweight, low-profile, and flexible packaging adaptable to custom parameters like pole-pair count, motor diameters, connectors, mounting for Axial and Radial Flux E-Motors and optional air cavity temperature sensors

Isolation Monitoring Devices

Sensata's Electrified Flight Isolation Monitoring Devices ensure safety in high-voltage systems for electric and hydrogen-powered aircraft. They constantly monitor insulation resistance, detect faults early and alert to prevent harm or equipment damage.

Faulty Connectors
Breakdown of the mating parts or physical barriers

Actions of Personnel
Physical engagement with sensitive areas

Vehicle Crash
Unexpected contact that breaches the various protection systems

Corrosion or Contamination
Gradual deterioration of metals or a state containing unwanted / dangerous substances

SELF-IMD200 Next Generation Peformance



SELF-IMD200

- Isolation resistance uncertainty ±5 %
- CAN2.0B interface (250 or 500 kbit/s)
- Measures/reports voltage and capacitance for each battery terminal to the chassis
- Calculates/reports energy stored by the total capacitance between battery and chassis
- Estimate of isolation without high voltage connected
- Faster first estimate at startup (@ 2 sec)
- Dedicated digital signal outputs for fault, warning, fault condition / HW error



PRESSURE SENSORS

Sensata sells more pressure sensors than any other company worldwide. Decades of experience mean that Sensata can develop and manufacture application-specific products in-house, reducing costs to the customer and ensuring strict adherence to quality and qualification standards. Sensata is pushing the limits for next generation aerospace pressure sensors which will incorporate wireless connectivity, complex electronics and edge computing, as well as higher temperature capability for harsh environment sensing applications.



Applications

- Hydraulic Flight Control
- Engine Control
- Cabin Air and Climate Control
- Bleed Air
- Tire Pressure Monitoring
- Landing and Brake Systems
- Waste water and Galley Systems
- Space
- Satellite and more

Three electronics packages:	
Unamplified	10mV/V
Amplified Voltage	0- 5V, 0-10V
Amplified Current	4- 20mA

Agile Modular Pressure Sensor

Our latest offering, the AMP (Agile Modular Pressure) series, builds upon this legacy by providing an off-the-shelf solution for any pressure application. This versatile series is designed to meet the specific needs of commercial, civil, and military applications.

Features:

- Fully hermetic, welded design for environmental protection, high reliability
- Qualification to RTCA/DO-160, MIL-STD-810, MIL-STD-461
- EMC, EMI, Lightning protected
- Single, multi channel options

Operating Temperature Range*:

- -55 °C to +150 °C (Unamplified)
- -55 °C to +125 °C (Amplified)

*High Temperature AMP Development up to 250 °C

Advantages

Quick to market

- Commonality will allow for short development time for each new iteration

Superior Value Pricing

- Lower total cost of ownership

Short Lead Times

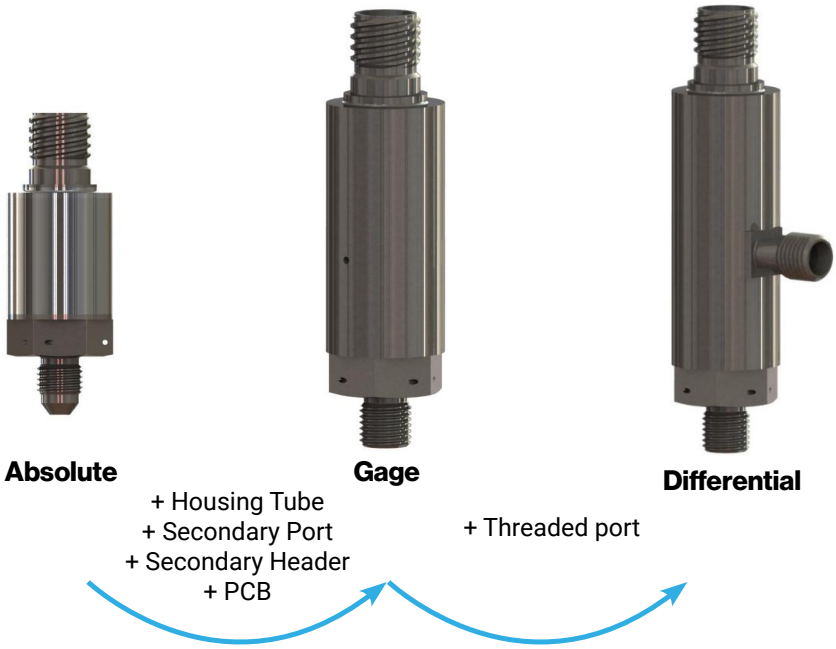
- Core components in stock and continuous line of manufacturing allow for quick delivery

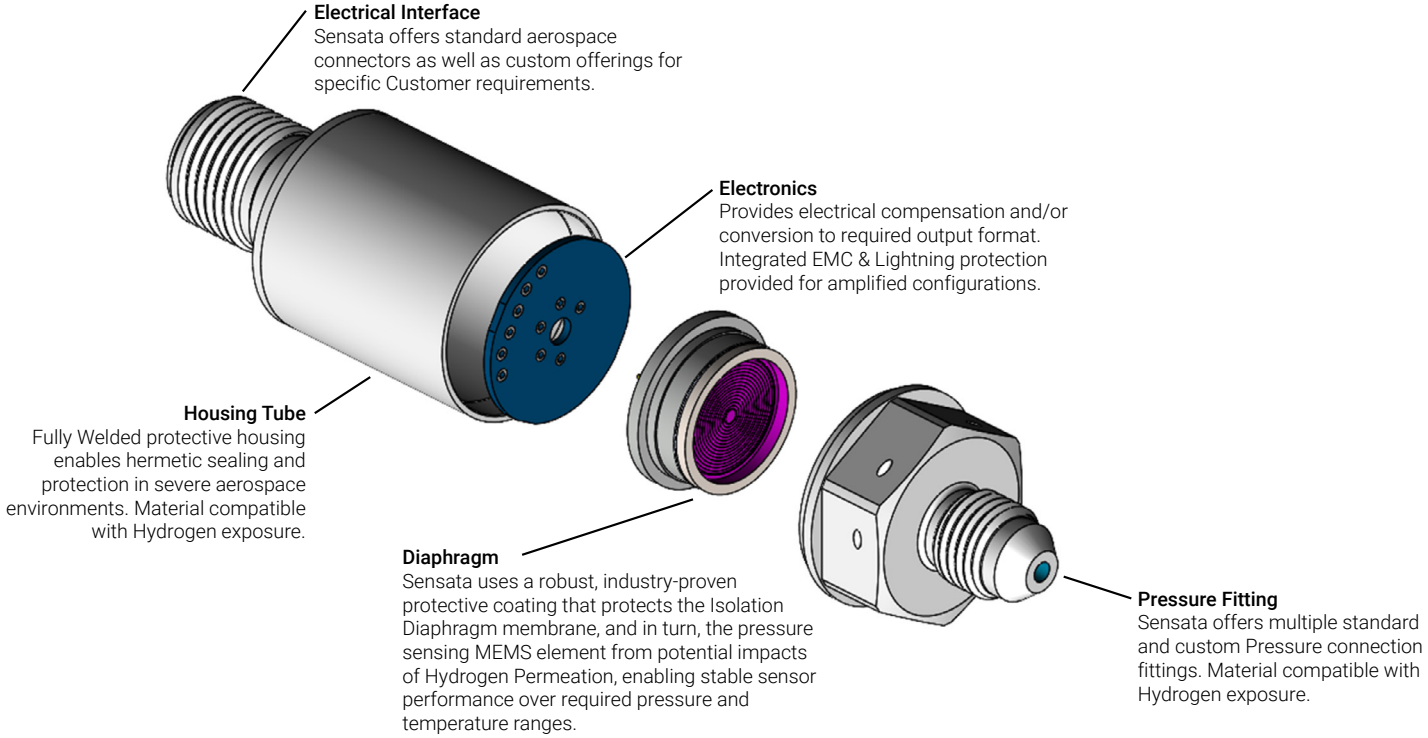
Quality

- Leverages learnings from high volume automotive production lines and zero defect methodologies
- Dedicated technicians and QA staff

Hydrogen Pressure Sensors

Sensata continues to expand our position as a world leader in pressure sensors by launching solutions for Hydrogen Fuel Cell drivetrains.





Constructed from 316 stainless steel, Sensata's hydrogen-compatible AMP sensor delivers superior resistance to hydrogen embrittlement. Our design incorporates an enhanced layer of protective coating across the isolation diaphragm surface. This coating effectively restricts hydrogen permeation through the steel diaphragm and into the sealed oil cavity, which could adversely impact the sensor's performance.

Sensata's hydrogen-compatible pressure sensors encompass all the benefits of our aerospace-qualified Agile Modular Pressure (AMP) family, including:

- Suitable for use in hydrogen media
- Hydrogen-compatible wetted materials for optimal compatibility
- Isolation diaphragm coated with a protective layer to restrict hydrogen permeation
- Operating temperature range from -55°C to +150°C
- Customizable electrical and pressure connection options available
- Designed to comply with EC79 requirements (approval pending)

POSITION SENSORS

Sensata is the global leader in the Aerospace LVDT market through excellence in technology innovation, service, and product reliability. Our RVDTs specialize in harsh environment rotary position sensing and have been qualified for many high vibration pressurized applications.

Applications

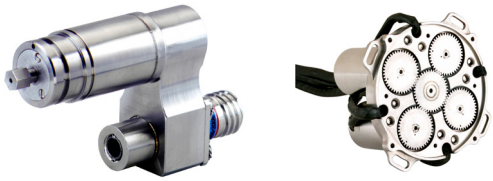
- Flight Control Actuators
- Engine Valve Controls
- Landing Gear Feedback
- Cockpit Controls
- Environmental Controls

Linear Variable Differential Transformers



Over 1 million LVDTs are installed in aircraft worldwide. Sensata LVDTs have a market-leading MTBF. The design is inherently more reliable due to the principle of non-contact mutual induction, which provides friction-free motion and nearly infinite resolution. Sensata designs and manufactures single and multichannel devices, as well as DC/DC and industrial LVDTs.

Rotary Variable Differential Transformers



An industry standard for lightweight, robust position measurement in aviation applications. Typically capable of +/- 80 degrees of rotation, designs with integral gear heads are also available for applications where higher angular displacements or multiple revolutions are required. RVDTs are also available in single and multi-channel configurations, as well as DC/DC configurations.

Typical Product Specifications	LVDTs	RVDTs
Range	0.010 to 20.0"	+/- 80 degrees
Linearity	+/- 0.25% F.S	
Accuracy	+/- 1.0% F.S (-67 to +450 °F)	
MTBF	1,000,000 Hours	
Temperature*	-67 to +450 °F	
Redundancy	1 to 4 Channels	
Environmental Qualification	RTCA/DO-160, MIL-STD-810	
Integral Gear Reduction		Up to 5000:1
Sealing Options	Environmental or Hermetic	

*High Temperature LVDT Development up to 700 °F

Force Transducers



LVDT-based force transducers provide force feedback through precise measurement of spring deflection. The Sensata design offers the highest accuracy and greatest temperature stability over time among force sensors in aerospace applications, making them ideal for the most extreme environments.

Furthermore, Sensata is actively developing strain gauge force sensors, incorporating innovative MEMS technology, to explore new applications for haptic feedback and other force sensing applications.

Typical Product Specifications	
Operating Loads	+/- 10 to 750 lbf
Limit Load	+/- 200 to 3000 lbf
Ultimate Load	+/- 300 to 4500 lbf
Spring Rate	2000 to 20k lbf/in.
Excitation	8+/-2VRMS, 1.5 to 3kHz or 28+/-2VRMS, 400Hz
Sensitivity	.000100 to .004500 V/V/lbf
Accuracy	+/-0.5 to 1.5% F.S.

Repair, Rotable & Exchange Program

Sensata's facility offers a wide variety of repair and exchange options for LVDTs, RVDTs, pressure transducers and cockpit controls.

Our team works to ensure you have an airworthy article through the Repair & Exchange program. We provide product inspections, testing, major and minor repairs, and overhaul of KAVLICO brand LVDT, RVDTs, Force Transducers, cockpit controls, and pressure transducers.

Depending on the failure mode, Sensata offers minor and major repairs in order to lower life cycle maintenance. Rotable pools and exchanges are available.

Repair Time

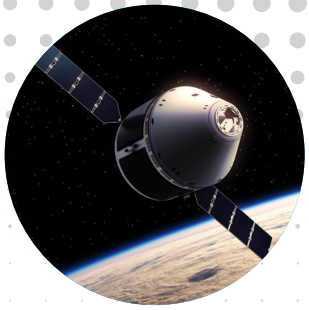
Product	Minor Repairs	Major Repairs
Force Transducers	10 Days	15 Days
LVDTs (Single Channel)	10 Days	15 Days
LVDTs (Multi Channel)	15 Days	21 Days

*Repair time is dependant on receipt of approval

Certifications

- Cage Code:22863
- FAA Air Agency Certificate: KV7R686N
- EASA Certificate: EASA. 145.6395
- ASA 9100:2016 Registration: JISQ9100-2016
- Aero Exchange Participant
- ILS Participant

SWITCHES & THERMOSTATS



Sensata's branded hermetic miniature and sub-miniature snap-action switches are ideal for extremely harsh and demanding environments found in aircraft, military, aerospace, and aircraft engine applications.



Applications

- Landing Systems
- Environmental Control Systems
- Engine Systems (Pressure and Temperature)
- Actuator and Valve Controls
- Cockpit Controls
- Space and Satellite Systems

Hermetic Pressure Switches

6PS SERIES

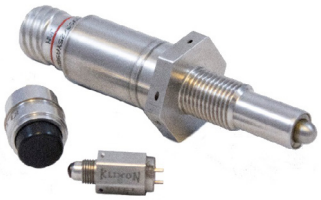


The 6PS Series precision pressure switches are snap-acting, all-welded devices with hermetically sealed switch contacts. They were developed for applications in aerospace and electronics where high reliability and/or resistance to severe environments is required.

- Actuation range of 45 to 600 PSIA
- High vibration resistance
- Corrosion resistance: 300 series stainless steel construction for all environment and media-exposed parts
- 8000 psi minimum burst pressure
- Available in a wide range of standard and custom configurations
- Typical applications include APU and aircraft engine oil systems

Hermetic Position Switches

AT Switch Packages



AT Basic Switch



KX Switch Package



- Available per MIL-PRF-8805, enclosure Symbol 5
- Hermetically sealed with dry nitrogen gas backfill
- Small, lightweight axis-symmetric design
- Proven snap-action switching, reliable performance and long life
- Excellent shock and vibration resistance
- Switching up to 4 amps at 30VDC
- Optimal for low-level circuits
- Temperature range between -275°F and +450°F
- Single and multiple pole designs available
- Various mounting configurations for custom applications
- Wide range of side plate designs for narrow-width applications
- PMA approvals for various commercial aircraft
- Customer approvals for space and military applications

Thermostats

Hermetic Thermostats

11041 (M24236/1) Thermostat



Tiny Stats



Thermostat Probes



M2 Narrow Differential Thermostat



Utilizing a bimetal, snap acting disc as the thermal sensing element, KLIXON precision thermostats feature exceptionally high reliability and long life. Standard configurations, probe style packages, or custom packaging can meet most design requirements. Thermostats shown to the right are qualified to MIL-PRF-24236 , NASA S-311-P641 and UL/CSA certified.

YOUR TRUSTED PARTNER

Your trusted partner for design, development, and manufacturing of sensors and controls.

CIRCUIT BREAKERS



50+ years of serving mission critical power distribution and switching applications in Aerospace and Defense coupled with sensing innovation and operational excellence.

Segments

- Commercial
- Defense
- Business Jet
- Rotorcraft
- Ground Defense Vehicles

Applications

- Primary & Secondary Power Distribution
- Electrical Panels
- Galley Equipment
- Cockpit Circuit Breaker Panels

Performance Features

- Low voltage drop
- High vibration resistance
- 100% Calibrated and tested
- Miniature size for minimal weight
- High short circuit interrupting capacity
- Thermal response analogous to heat up rate of wire
- Coordinated ratings for improved system reliability

Advantages & Options

- Auxiliary switch circuits
- Alternate length pushbuttons
- English or metric thread sizes
- Dual safety, “Fusible link”, for redundant protection in hard fault conditions
- Temperature compensation to offset effects of ambient temperature allowing use of smaller gauge wire

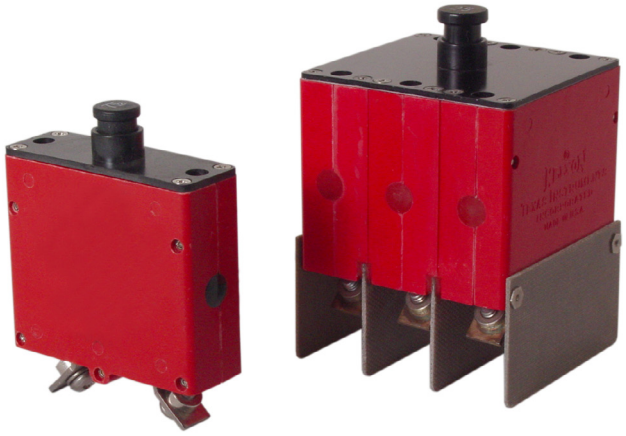
SOLUTIONS ENGINEERED TO PERFORM

Sensata prides itself on designing and manufacturing solutions for the most demanding, mission critical applications.

Featured Products



TC SERIES
1 - 35 amps



6752 Series
2½ - 100 amps

Family	Approval	Rating (amps)	Approx. Maj. Dim.(in) L x W x H	Approx. WT (g)
2TC	MS3320 , EN2995-004 & -005	1 – 30	75 x .56 x 1.2	25.0
2TC49	MS5809/1	2.5 – 15	1.21 x .75 x .56	25.0
3TC	MS14105, MS14105L, & MS25244	5 – 35	1.10 x .75 x 1.2	36.0
5TC	EN3361-005 & -006	20 – 70	1.65 x .77 x 1.92	52 (std.) 75 (aux.)
6TC 9TC	MS14154, MS14154L, MS14154V, EN2996-004 & -005 MS14153	2 – 25 1, 15 – 35	.75 x 1.78 x 1.2 1.10 x 2.35 x 1.2	65.0 110.0
15TC	EN3662-005 & -006	20 – 50	1.3 x 2.15 x 2.1	130 (std.) 140 (aux.)
6752-12 6752-100 6752-305	MS24571 MS25361 & MS25361V	2.5 – 50 50 – 100 2.5 – 90	2.2 x .75 x 3.3 2.2 x .75 x 3.3 2.2 x 2.25 x 3.3	91.0 113 292.0

All manual trip / indicating devices; only shows high volume options – many others available

BLDC MOTORS & VOICE COIL ACTUATORS

Sensata | BEI Kimco manufactures custom brushless DC motors and voice coil actuators designed to deliver robust, high performance Rotary and Linear motion component solutions for a wide range of mission critical applications.

With decades of experience in collaborating with our customers at the design/inception stage in support of aerospace, military and privately funded programs, our team consistently delivers industry leading precision motion component solutions for the most demanding, highly specialized applications.

Exceptional Torque/Force Performance With the Smallest Form Factor

Our proprietary magnetics design software allows our team to deliver the highest torque densities in the market today, with customer-verified performance efficiencies in excess of 90%

Robust Designs Built for Challenging Environmental Conditions

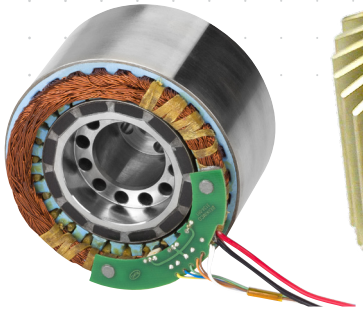
Our BLDC motors and VCAs are designed to survive extreme shock/ vibrational loading, atmospheric pressures, extreme ambient operating temperatures, and exposure to vacuum environments.

Processes Led by Engineers, Not Accountants

The Sensata Kimco team has decades of experience collaborating with the world's leading aerospace corporations – resulting in a consultative process built on a large portfolio of baseline designs, patents, material options and features to support our customers' optimized performance goals.



Brushless DC Motors



Brushless DC Motors



Housed BLDC Motors

Delivering a fully encapsulated system or customizable rotor/stator part sets for full system assembly integration

SINE AND TRAPEZOIDAL BEMF WINDING PROFILES: Both sine and trapezoidal based BEMF profile options are available to accommodate our customer's commutation and control schemes for optimum operating efficiencies.

MAGNETIC DESIGN OPTIMIZATION FOR VELOCITY AND POSITION BASED MOTION PROFILES: Custom lamination, winding, and magnetic pole options available to support high performance design solutions with cost effective upfront tooling investments.

FRAMELESS INNER & OUTER ROTATING MEMBER CONFIGURATIONS: Inner and outer rotating member design configurations are available to support the integration of the motor components within our customer's next higher assembly.

BEARING OPTIONS: A wide variety of high quality (ABEC 5 or better) open, shielded, and sealed bearing options are available. Each option can be complimented with custom grease selections and fill levels for improved longevity and resistance to external environmental factors.

ANTI-VIBRATION AND NOISE REDUCTION FEATURES: Various noise reduction and anti-vibration design techniques can be employed to achieve optimal acoustical noise performance. These include the use of proprietary magnetic circuit and mechanical component design methodologies.

Voice Coil Actuators

Split Coil Designs: Voice coil actuators with split coil designs are made to increase the force of the VCA without having to increase its overall diameter. It also provides a lower inductance and electrical time constant, providing a higher force/weight ratio.

Materials Optimized for Low Outgassing: Proven materials and processes to meet low outgassing requirements for vacuum and other applications.

Aperture/Through-Hole Designs: Applications involving laser focusing may require a through-hole or aperture design, allowing the laser to pass through the VCA without interference.

Moving Magnet Designs: Reversing the traditional design alignment, VCAs featuring a stationary coil and a moving magnet create advantages in some applications, such as increased heat dissipation and stationary lead wires.

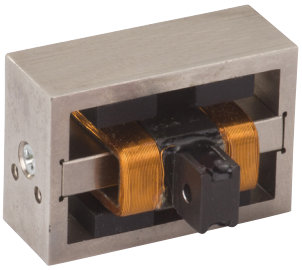
Bearing Options: Our housed and semi-housed voice coil actuators use linear bearings/bushings to provide long life and low friction. Our variety of options include designs for axial loads, speeds, bio-compatibility, life requirements and more.

Tilt and Spherical VCA Configurations: Tilt or spherical VCA designs in which four actuator coils are placed on a common frame and positioned to deliver the load in a variety of positions.

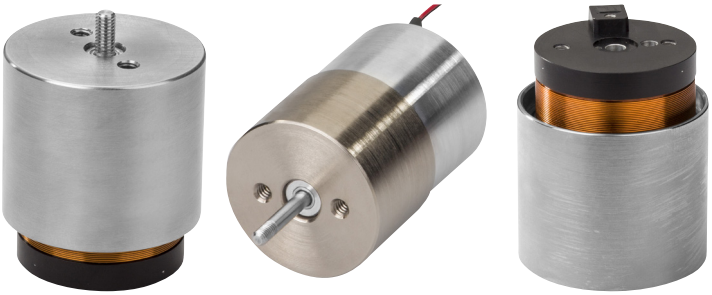
Rotary Voice Coil Actuators







Rectangular Linear Voice Coil Actuators



Cylindrical Frameless, Housed or Semi-Housed

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