
DUTY TO EXCEL WITH MISSION-CRITICAL SOLUTIONS
Our sensors and switches move your business further.
FORWARD MARCH
Honeywell

WHEN THE MISSION IS CRITICAL YOUR CHOICE OF EQUIPMENT COMPONENT PARTNER IS TOO

In military and aerospace equipment – on the ground, in the air, or above the earth's atmosphere – everything can be mission critical, from the smallest basic switch to smart sensor assemblies.

Honeywell basic switches have been widely specified in military equipment since WWII, and we've grown our product lines to become one of the largest global resources for military and aerospace components. Extensively used on military drones, ground vehicles such as tanks and other armored vehicles, rotorcraft and planes, warships and naval vessels and many types of weapon systems, our switches and sensors can meet mil-specs, harsh environmental standards and the most demanding customer-specified testing requirements.

We offer a full portfolio of standard and highly customizable electromechanical devices and sensors to detect pressure, particles, torque, gases and temperature in a broad variety of installations, including designs for next-level assembly integration. Our smart devices expand diagnostics and offer advanced measurement for the most sophisticated applications. And if we don't have precisely what you need, our engineers can customize products to your exact specifications, including "ground-up" clean-sheet design engagements.

When it comes to making the right choice for military and aerospace switches and sensors, count on Honeywell. We've got your six.

PAGE NAVIGATION ICONS

- What the product is
- What the product does
- Product innovation
- Target applications
- Product datasheet
- Product web link

This ebook was designed for the curious reader. Using the top navigation bar, explore the various military and defense solutions to learn more about Honeywell sensors, switches and controls.

Honeywell focus products are contained in a grey circle with red outline; there's a focused product overview on each. Supporting Honeywell products are contained in a grey circle; there's more information on them in the back of this ebook.

By hovering over the icons on the vehicle pages, readers will learn the Honeywell solutions that support specific applications.

On these pages, the navigation icons will help the reader learn more about the products, as well as explore further using the product datasheet and web link.

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MILITARY VEHICLE GROUND SOLUTIONS

Military ground vehicles must excel in extreme terrain and weather conditions. They are often exposed to both high and low temperatures, dirty and dusty environments while experiencing high shock and vibration as they move along their mission. The global armored vehicle market is projected to grow from $18.08 billion in 2021 to $27.83 billion in 2028 at a CAGR of 6.36 % in forecast period, 2021-2028 which will return it to its pre-pandemic levels.[6]

Speed sensor

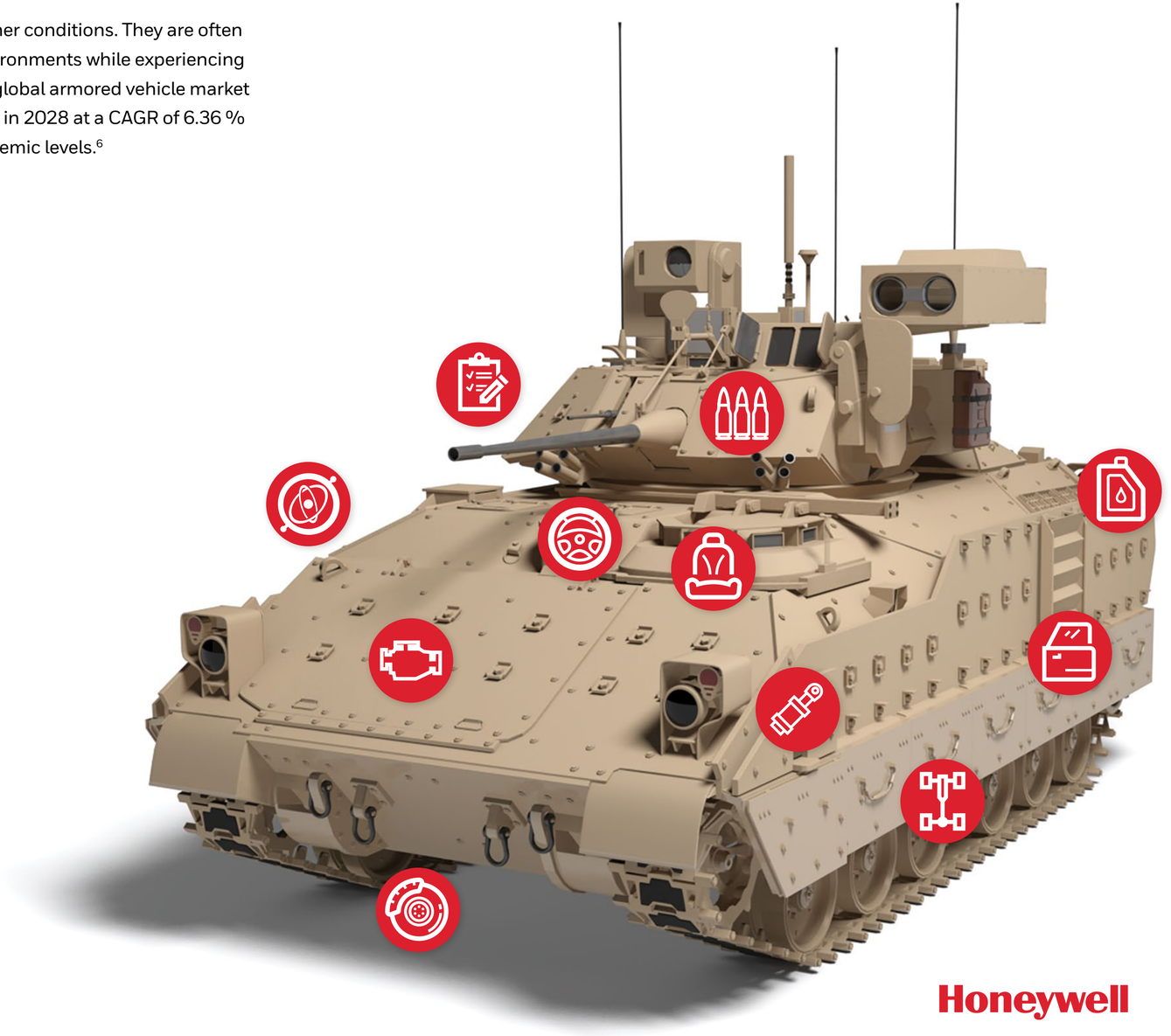
Track speed and direction monitoring

Sealed switch

Ruggedized for the environment – used on doors and hatches

Military-grade toggle switch

Designed as cabin operator controls



[6] https://www.fortunebusinessinsights.com/industry-reports/armored-vehicle-market-101817

WEAPON SYSTEMS SOLUTIONS

Honeywell components are utilized in military vehicles, aircraft, and launchers to optimize and control weapon systems. Field data proves that Honeywell products are designed to be extremely rugged to stand up to the rigor of pressure cycling, wash-downs, temperature extremes, and high vibration.

Military-grade toggle switch

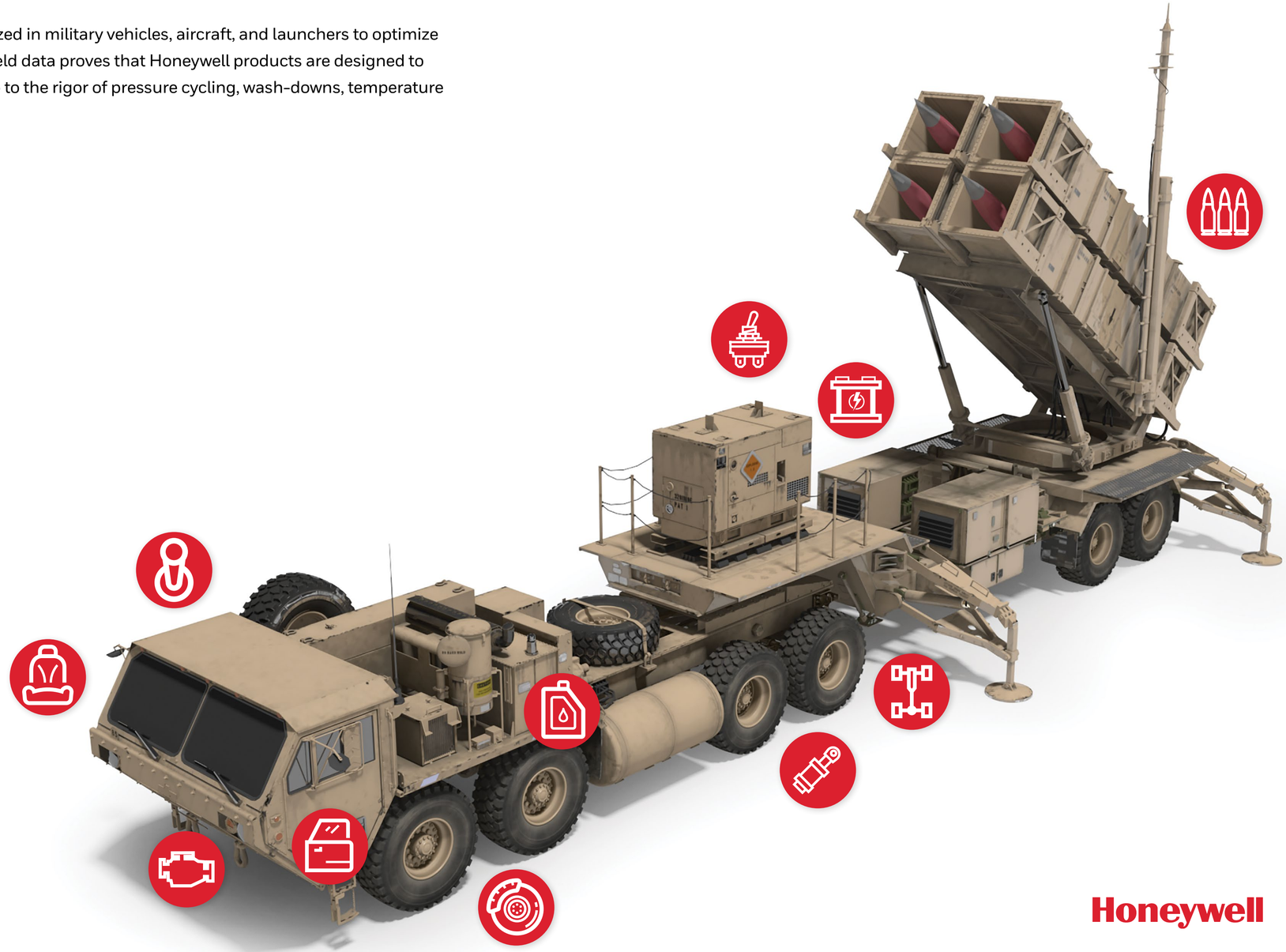
Designed in launcher systems

TARS-B

Provides attitude measurement and sensing

Sealed switches

A key component for missile away switch, missile tube travel limit detect and communications antenna deploy position



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MILITARY DRONE SOLUTIONS

"Increasing government funding on military drones to enhance efficiency in military operations boosts the demand for the production of military drones." According to the report published by the Bard College Center for the Study of the Drone, in 2019, the U.S. Navy funding for unmanned systems increased by $1 billion (38 %) and the U.S. Army funding increased by $719 million (73 %), when compared to 2018. The global military drones market size is expected grow from $ 13.31 billion in 2021 to $ 14.19 billion in 2022 at a compound annual growth rate (CAGR) of 6.6 %.[7]

Sealed switch

Engineered for landing gear position/status, ordnance away switch and hatches/panels

Proximity switch

HAPS/GAPS for position of landing gear, valve, and control surface

Board-mount pressure sensor

ABP2 Series for altitude, airspeed and other data applications

[7] https://www.thebusinessresearchcompany.com/report/military-drone-global-market-report

ROTORCRAFT SOLUTIONS

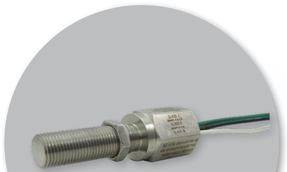
Salt, sand and ice can all impact the efficiency and reliability of a rotorcraft. Sealed sensors and switches can keep the elements out, and the rotorcraft performing at a high level. Honeywell offers component design expertise and products for the most complex aerospace and defense systems. Our products and expertise are highly complementary to systems and subsystems designs. The military rotorcraft market is also experiencing growth; it is estimated to register a CAGR of more than 4 % during the forecast period (2022-2027).[8]

LVDT

Used on the main rotor blade and customizable applications

Sealed switch

Hermetically sealed for ordnance and cargo



Speed sensor

Detects the speed of the rotors

[8] https://www.mordorintelligence.com/industry-reports/global-military-rotorcraft-market-industry

MILITARY PLANE SOLUTIONS

Honeywell engineers focus on the requirements for military applications, including pilot safety and comfort, smooth and accurate flight control, weapon systems reliability, and additional applications that demand highly reliable performance. Our products perform over extreme temperature ranges while enduring heavy vibration and shock, and can withstand electromagnetic interference and voltage transients. Many Honeywell products are crucial to aircraft operation and carry MTBF (mean time between failure) beyond 200,000 hours.

Proximity sensor

Used on landing gear and in the canopy

Heavy-duty sealed switch

Designed in WoW and as an ordnance safeguard

Custom toggle switch

With high configurability, custom toggles are designed into locking collars for the cockpit and payload

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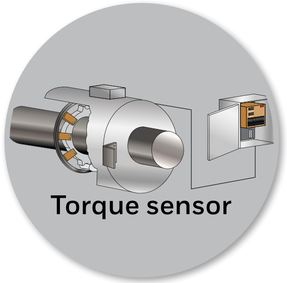
NAVAL SOLUTIONS

The global warship and naval vessels market reached a value of US$ 60.7 Billion in 2021. Looking forward, IMARC Group expects the market to reach US$ 85.1 Billion by 2027, exhibiting at a CAGR of 5.96 % during 2022-2027.[9] In addition, LR reports, “The marine world in 2030 will be almost recognizable owing to the rise of emerging countries, new consumer classes and resource demand.”[10]

Precision thermostat

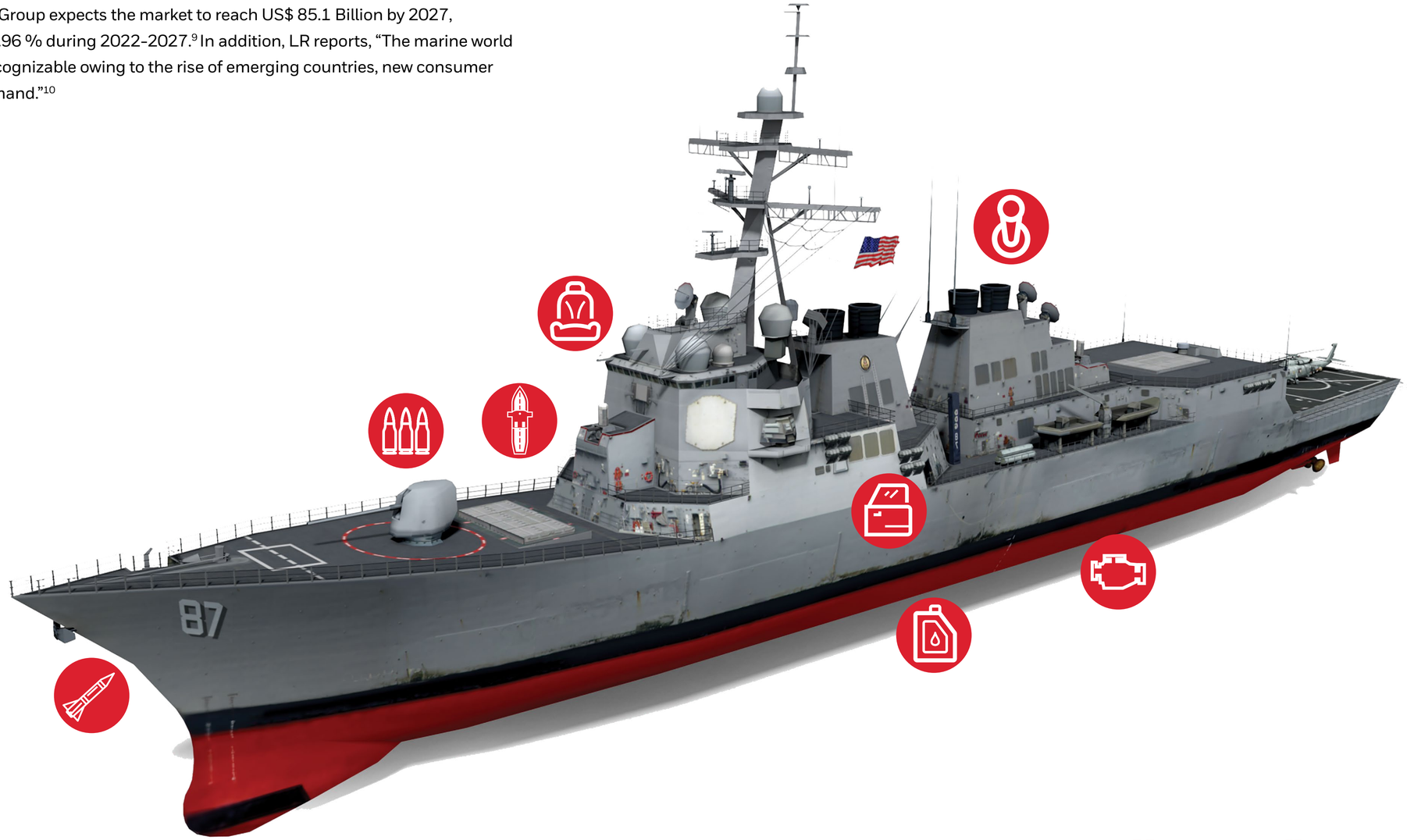
Often found in naval engines and transmissions



Used for propeller shaft torque sensing

Heavy-duty sealed switch

With corrosion-resistant construction, it is used in torpedo bays



[9] https://www.imarcgroup.com/warship-naval-vessels-market
[10] https://www.lr.org/en/insights/global-marine-trends-2030/

PROXIMITY SENSORS HAPS & GAPS

An inductive sensing device providing a three-state output to indicate target positions and detected faults. The proximity switch electronics includes Honeywell proprietary FAVCO technology

- Platforms provide on/off outputs and can be configured with an optional health monitoring output to the host system
- GAPS can be used in less harsh areas of application with some differences of electrical and environmental characteristics when compared to HAPS
- HAPS are configurable, non-contact, hermetically sealed devices designed to sense the presence or absence of a target in harsh-duty aircraft applications
- An industry leader in indirect lightning and dielectric ruggedness: Meets the increased requirements of today's composite aircraft and most challenging applications including landing gear, thrust reversers, and flight controls
- GAPS: landing gear, doors, hydraulics, primary surface, rear stabilizer, gen actuators, airframe, rotary actuators, evacuation slides, cargo storage and turbine speed/ACM
- HAPS: TRAS, valves, engine, actuators, nacelle and canopies

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TRANSPORTATION ATTITUDE REFERENCE SYSTEM

TARS-B SERIES

A packaged sensor array designed to report vehicle angular rate, acceleration, and attitude data for demanding applications

- Reports vehicle angular rate, acceleration and inclination data (6 degrees of freedom)
- Ruggedized PBT thermoplastic housing design for many demanding environments
- Advanced filtering of raw sensor data to minimize unwanted noise and vibration promotes positioning accuracy

- With top-of-the-line sealing (IP67, IP69K), the TARS-B is ruggedized to withstand harsh or heavy-duty applications
- Delivered with customizable firmware that allows manufacturers to use a single part number across vehicles and applications

- Equipment control
- Bucket control
- Vehicle stability control
- Performance and output control
- Linkage tracking
- Work monitoring
- Operator assisted control
- Linear position

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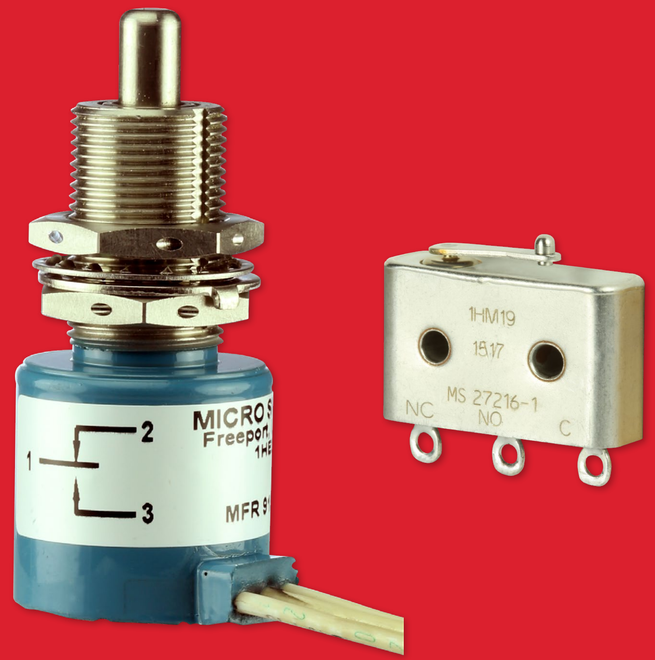
MICRO SWITCH SEALED SWITCHES



Precisely detects position of mechanical components within a particular system that is susceptible to physical and atmospheric (corrosive gas, oxygen, etc.) elements

- Consistent and precise performance in a hermetic-sealed package for adverse, inclement environments
- Functionality over a large temperature range – can tolerate very low and high temperatures

- Available with MIL-PRF-8805 qualifications or UL 508 certifications

- Aircraft landing gear and flap/stabilizer controls
- Detects landing gear bay doors in closed and locked position
- Senses engine fuel valve position
- Identifies when external hatches and doors are in closed and/or locked position

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MICRO SWITCH TOGGLE SWITCHES

Operate movement with on-off switching (momentary and maintained). Hermetic and environmentally sealed pushbutton and toggle switches offer reliable operations with MICRO SWITCH technology

- Multi-pole, multi-throw circuitry (up to 10 pole) for controlling independent circuits or providing redundant circuit capability

- Available as a 1-, 2-, 3-, 4-, 6-, 8-, or 10-pole design for a wide range of applications with a metal toggle lever, metal bushing and metal housing for durability

Often used in applications where a panel-mount switch with an environment-proof rating is needed

- Aircraft
- Fixed wing aircraft and helicopter flight decks
- Flight controls
- Vehicle panel controls

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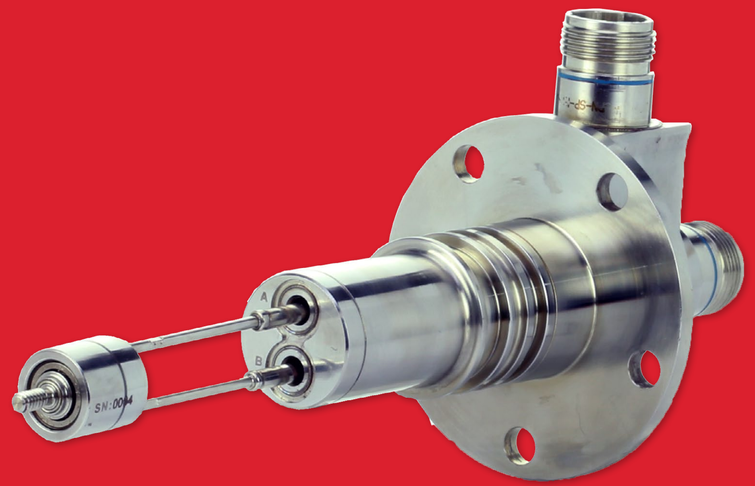
LINEAR VARIABLE DIFFERENTIAL TRANSFORMER



Provides infinite resolution linear position solutions designed for use in harsh environments

- Used to measure the positions of numerous mechanisms throughout an aircraft
- Offers a pre-validated, flexible, configurable platform with a variety of channel, stroke, mounting and termination options

- An ideal product to be used on next generation aircraft which require expedited design cycle time from an experienced, stable supplier with an extensive aerospace product install base

- Primary and secondary flight controls (PFC/SFC) – flap, slat and spoiler position
- Engine mechanisms and valves
- Nose-wheel steering
- Pilot controls

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SPEED SENSOR SNDH-T SERIES

A dual differential Hall-effect sensor that provides speed and direction information using a quadrature output with signals 90° phase shifted from each other

- Designed for applications where extremely high resolution is required at wide frequency ranges, 1 kHz to 15 kHz and large air gaps
- Advanced performance dynamic offset self calibration

- Unique patented (pending) IC (integrated circuit) packaging provides output phase shift tolerancing with enhanced accuracy
- Package design includes an O-ring seal for pressure applications and a fixed mounting flange

- Steering position
- Tachometers/counters
- Speed and direction of gears and shafts in transmissions, hydraulic motors, pumps and gear boxes

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PRECISION & HIGH RELIABILITY THERMOSTATS

Provide either temperature control or over-temperature protection by breaking electrical contact when a specified temperature is reached

- Temperature calibrations are pre-set at the factory. Each unit is thermally and mechanically inspected. Available to open or close on temperature rise

- Honeywell can also integrate these thermostats in higher-value cable assemblies, incorporating wire harness and connectors

- Precision non-hermetic and hermetically sealed versions designed to serve telecom, industrial, aircraft, radar, communications and electronic control systems needs
- High reliability military and aerospace versions that meet the specialized needs of the military, aerospace and aviation industries

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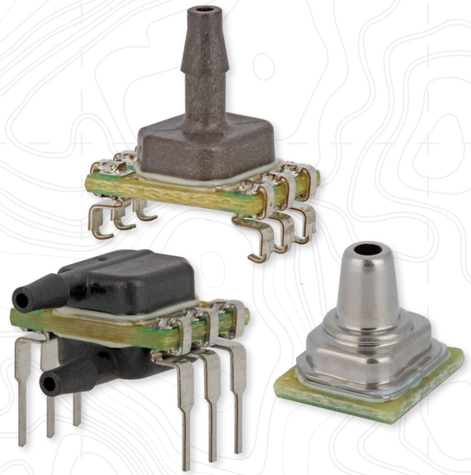
BOARD-MOUNT PRESSURE SENSOR ABP2 SERIES



A piezoresistive silicon pressure sensor that offers a digital or analog output for reading pressure over the specified full scale pressure span and temperature range

- Provides a more comprehensive measurement of performance over the compensated temperature range, which minimizes testing and calibrating every sensor; improves sensor accuracy and offers ease of sensor interchangeability due to minimal part-to-part variation
- Simplifies design-in: small size saves room on the PC board (PCB), simplifying design in smaller and lower power devices. Meets IPC/JEDEC J-STD-020E Moisture Sensitivity Level 1 requirements

- Application-specific design ensures suitability for a wide array of customer requirements
- Digital output allows the sensor to be directly plugged into the customer's circuitry without requiring major design changes

- Altitude, airspeed, and other data applications
- Air brakes
- CNG monitoring
- Fuel level measurement

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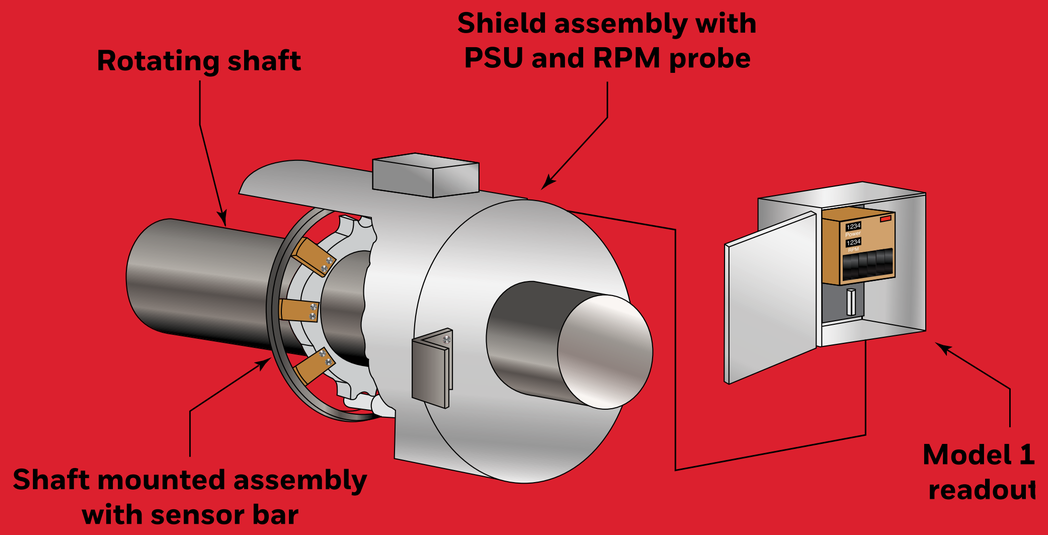
PROPULSION MONITORING SYSTEM MODEL 1602A



Propulsion monitoring system fits shafts sized from 381 mm to 762 mm [15 in to 30 in] in diameter. Built-in calibration check circuitry can be activated at any time to verify that all local displays and outputs are functional

- System is enclosed in a strong outer cover and has an electronics readout assembly in a water tight enclosure. These units together provide the means for measuring shaft torque and RPM
- Digital readouts are available to display torque, RPM and computed horsepower
- Can be used in a variety of potential applications including fuel conservation programs, hull and propeller fouling, load and balancing on twin screw vessels, power plant monitors and sea trial torsion meters

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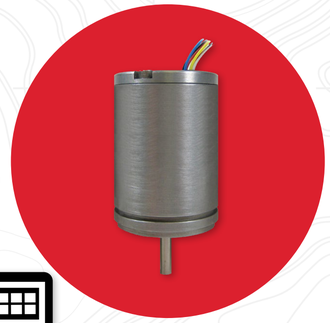
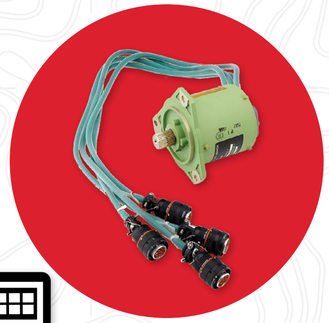
SENSORS & SWITCHES



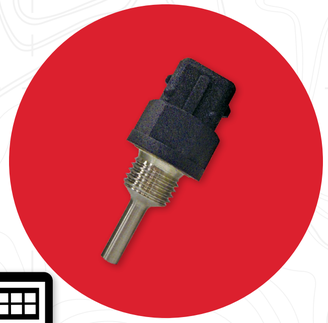
RESOLVERS

- Provides absolute position feedback of the azimuth and/or elevation angular planes
- Accurately positions the equipment for maximum performance



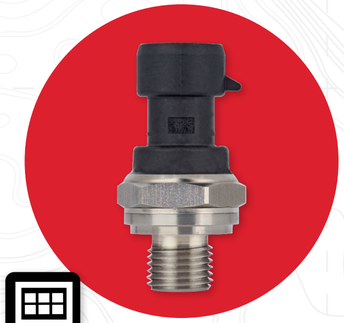
POSITION SENSOR ASSEMBLIES

- Can be custom configured by Honeywell in cooperation with customers to help optimize system function
- Designed for high-lift system applications including flap and slat instrumentation, along with rudder and stabilizer monitoring



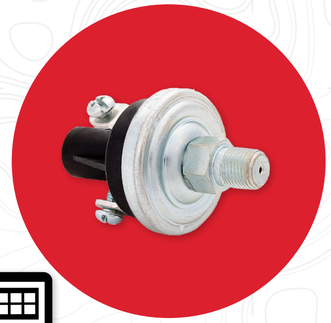
TEMPERATURE PROBES

- Fuel temperature measurement
- Helps maximize fuel efficiency and engine performance
- Temperature measurement in transmissions and engine air and cooling systems
- Modular design for customer needs and faster response time over wide temp range



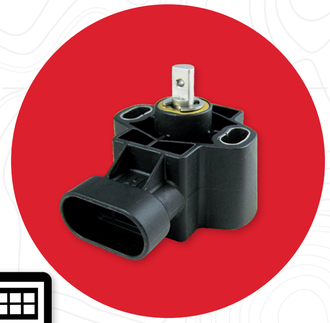
PRESSURE SENSORS

- Multiple applications including braking and alternative fuels
- Hydraulic braking system and air brake pressure monitoring
- Fuel tank level sensing
- Dry air system monitoring; hydraulic, brake, and engine oil fluid pressure monitoring



PRESSURE SWITCHES

- Designed into equipment and vehicle applications to make or break an electrical connection in response to a system pressure change
- Engine/transmission oil pressure
- Filtration systems



ROTARY POSITION SENSORS

- Enhances fuel economy, equipment and engine performance and safety
- Accurate sensing validates the correct height for the application's system requirements, potentially aiding vehicle ingress/egress (liability) and suspension performance monitoring (diagnostic check)

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For more information
automation.honeywell.com/hss

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