

GLOBAL SENSOR AND MEASUREMENT SOLUTIONS



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ABOUT VARIOHM GROUP

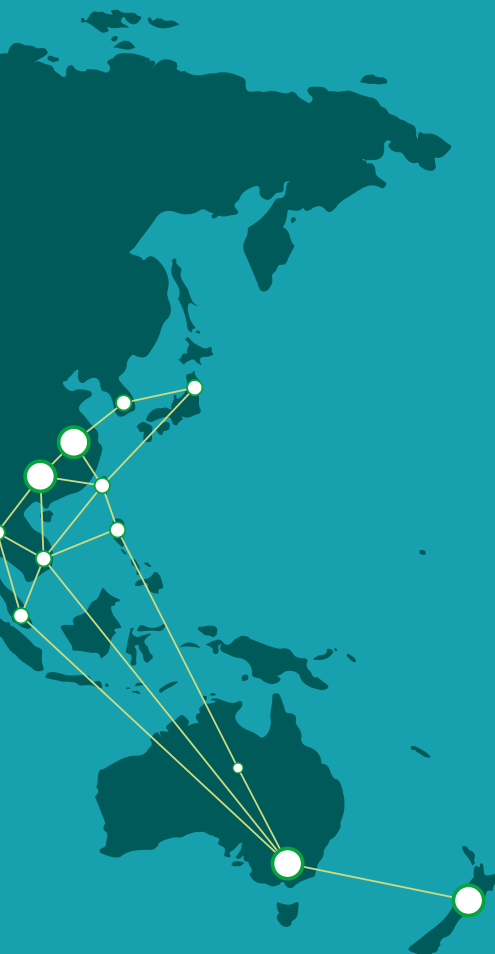
We are a group of companies dedicated to delivering top-tier engineering solutions. By combining our strengths, we offer innovative sensing, switching, measurement, calibration and motion control solutions to customers worldwide. Our expertise covers a wide range of industries and sectors including, but not limited to, renewable energy, medical, transport, and industrial.

Our Businesses

Each company in Variohm Group brings its own unique skills, knowledge and experience to the table. It is this insight that allows us to partner with our customers to create custom solutions that exceed expectations.

We have in-house engineering and manufacturing teams and prioritise a customer-centric approach. Our blend of specialist knowledge, experience and fresh ideas helps us respond quickly to our customers' needs.

With a wide range of complementary products and services, we offer expert guidance and deliver solutions tailored to each project.



● Headquarters
UK (Towcester)

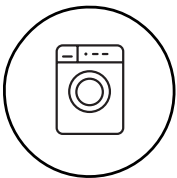
● Companies of
Variohm Group

● Distributor Network

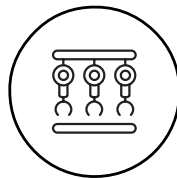
INDUSTRY

Across various industries, sensing, switching, measurement and motion control solutions are vital for gathering data, monitoring processes and enabling automation. We serve a diverse range of industry sectors including manufacturing, robotics, security, domestic appliances and research and education. The advanced components we offer play a crucial role in enhancing quality and efficiency, improving safety and taking overall operational effectiveness to the next level.

Our products focus on sensing, measuring and controlling critical parameters such as temperature, pressure, position, electrical resistance, force and torque, movement, load, weight and incline. We focus on innovation to provide reliable, accurate and efficient components that enhance your operations, and our deep understanding of various industries ensures tailored solutions that meet your specific needs.



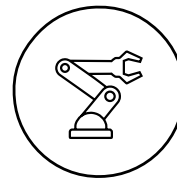
**DOMESTIC
APPLIANCES**



MANUFACTURING



**RESEARCH
EDUCATION**



ROBOTICS





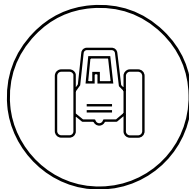
TRANSPORT

Safety, control, effectiveness and efficiency are all critical in the transport industry with vehicles requiring a diverse range of sensors and switches to control functions and optimise performance. We work with engineers and OEMs across various modes of transportation including road, rail, aviation, special purpose vehicles, motorsport and automotive to design and manufacture components that meet the demanding requirements of the industry.

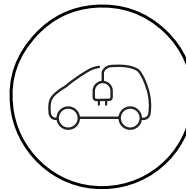
Our products serve a variety of essential functions, including monitoring engine parameters, measuring resistance in electric car motors, motion controls for autonomous guided vehicles, and developing simulators to evaluate suspension and steering systems.



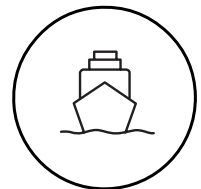
AEROSPACE



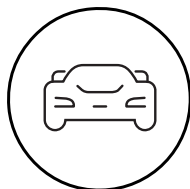
AGRICULTURE



AUTOMOTIVE EV



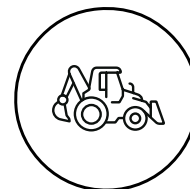
MARINE



MOTORSPORT



RAIL

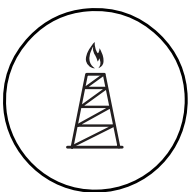


**SPECIAL PURPOSE
VEHICLES**

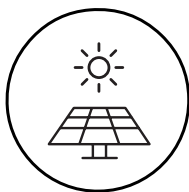
ENERGY

Throughout the energy process, sensing, switching, monitoring and motion control solutions play a key role in enhancing system optimisation, diagnostic capability and real-time decision-making. From tracking wind turbine position and monitoring subsea pipelines to managing fluid flow and pressure in power plants, advancements in sensing technology continue to bring significant benefits to the industry.

We work extensively with OEMs in the energy and renewable energy sectors to develop and deliver innovative solutions. These are designed to withstand harsh, demanding and dynamic conditions including saltwater, high winds, rain and seasonal temperature swings. Many applications in this sector require components to be intrinsically safe and hold relevant hazardous area approvals, such as ATEX, IECEx and CSA, to demonstrate they are specifically designed for use in potentially explosive environments.



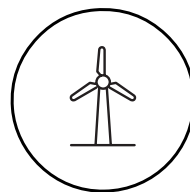
OIL & GAS



SOLAR



TIDAL



WIND



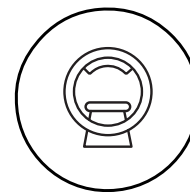


OEMs and R&D teams in the medical industry, from equipment manufacturers to pharmaceuticals, biotech and diagnostics, require precise, reliable sensors and switches to make informed decisions and ensure effective patient care.

Our range of sensing, monitoring and switching solutions includes pressure, position, temperature, torque, force and load sensors. We also offer footswitches, hand controls, and positioning systems for applications such as lab sample manipulation and torque sensors for surgical robots. We also provide customised solutions that integrate seamlessly into equipment, meeting UL 60601 medical approvals when required.



DIAGNOSTICS



EQUIPMENT



RESEARCH

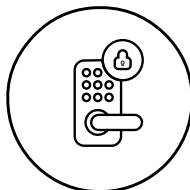
SECURITY

Infrastructure development, rising security concerns, defence modernisation and the growth of wireless and AI technologies are driving demand for components that offer a range of functionalities.

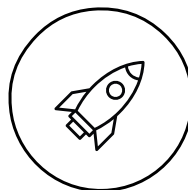
Our solutions cover everything from threat detection and monitoring to applications in aeronautics, space and passive defence. These include physical access controls and surveillance systems for secure area management, as well as components for communication satellites, defence vehicles, equipment and systems.



DEFENCE



SECURITY



SPACE



OUR CORE SERVICES



In-House Engineering - Our engineering team develops solutions to complex sensing and switching challenges. Rigorous testing and compliance with applicable industry standards means we can create and refine custom solutions, taking them from concept to full implementation.



New Product Development - We are a strategic partner for many of our customers, acting as an extension to their in-house engineering team. Whether it's detailed product designs, prototypes or finished components, we offer a complete new product development solution that helps our customers maintain their competitive edge.



Product Customisation - Working together with our customers ensures we understand what they need. We can customise products from our standard range to ensure they are a perfect fit.



On-Site Manufacturing - We have manufacturing facilities in the UK, Germany, Hungary and the USA which gives us control over production. Strict quality controls and the flexibility to adjust products and production timescales mean we reduce waste and build long-term relationships with our customers.



Industry-Leading Supply Partners - By working with trusted suppliers who meet strict standards, we can consistently offer top-quality products and services that are often leading the way in innovation. Our close and collaborative partnerships enable us to create the best solution for your needs.



Accreditations - Businesses within Variohm Group hold a wide range of accreditations including ISO14001, ISO9001, ISO45001, ISO13485 and ISO 17025. These certifications demonstrate our commitment to operating at the highest standards across all facets of our business.



VARIOHM

G R O U P

 | BURSTER

 | HEASON

 | MAGNASPHERE

 | CPI

 | HERGA

 | PHOENIX
A M E R I C A

 | EUROSENSOR

 | IXTHUS

 | POSITEK

 | LIMITOR



**IN-HOUSE
MANUFACTURING**



**ENGINEERING
EXCELLENCE**



IN-HOUSE MANUFACTURING AND ENGINEERING EXCELLENCE

With a wide range of expertise, we have the capability to design, develop and optimise sensing, switching and motion control solutions tailored to specific customer requirements. We offer end-to-end support, from initial concept and design through to prototyping, testing and implementation. Continuous collaboration and idea-sharing among our engineers drives ongoing innovation and improvement in our products and processes, ultimately benefiting our customers.

Some of the projects we have worked on include:

- Custom titanium position sensors to harness energy from ocean waves
- Position sensors and load cells for patient positioning in oncology treatment machines
- Emergency foot switches to halt robotic machinery in case of danger or malfunction
- Temperature probes to monitor and manage performance and safety in auxiliary power units
- Pressure transducers to ensure safe and efficient operation of hydrogen-powered buses
- Limit switches for controlling compartment doors and lights on emergency vehicles
- Multipedal footswitches for control of surgical equipment
- Anti-climb systems for perimeter fence security around buildings
- Force and displacement sensors as a measuring chain for the pressing of battery trays in electric vehicles.
- Torque sensors with integral speed sensors, plus software, for testing the operation of electric bike drives

PRODUCT DEVELOPMENT AND CUSTOMISATION

Our experienced engineers can take the lead in designing and developing a bespoke sensor or switch tailored precisely to your project's needs. Starting with your application and what you want to measure or control, we will select the right technology and design a component that integrates seamlessly into your product, machine or equipment. We refine specifications and performance criteria, ensuring the accuracy, resolution and response time fits the brief.



**PRODUCT
DEVELOPMENT**



**PRODUCT
CUSTOMISATION**

We can customise our standard products to ensure they are a perfect fit for your project. From modifying a sensor with a specific connector to developing customised electronics, our robust design and manufacturing process ensures we have the flexibility to adapt to evolving project requirements.



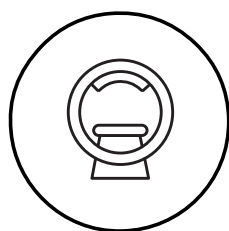


APPLICATION HIGHLIGHT - MEDICAL

People diagnosed with cancer often require treatment in specialised machines that deliver targeted therapies to combat the disease. These machines, which include particle beam therapy and radiotherapy machines, precisely target and destroy cancer cells while minimising damage to surrounding healthy tissue. They are also essential in the treatment of tumours located in sensitive areas where surgical intervention may be challenging. Such therapeutic options can improve survival rates, alleviate symptoms and enhance quality of life.

We were approached by a pioneer in radiation therapy solutions to supply customised components for a ground-breaking new oncology treatment machine. This includes:

- ▶ Seven different sensor types including linear and rotary position sensors and load cells.
- ▶ A customised 8 button hand control with emergency stop and deadman switch.
- ▶ Specialised slip rings and DC motors.



**MEDICAL
EQUIPMENT**

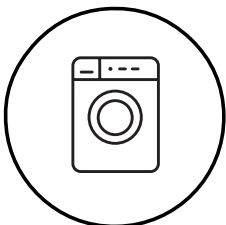
APPLICATION HIGHLIGHT - HOME APPLIANCES

Coffee machines are composed of many components that work together to brew a perfect cup of coffee that delivers the desired flavour and strength. Temperature control is key to ensure optimal brewing temperatures by preventing overheating of the water, brewing unit and bean grinder. It is also essential for ensuring the safety of users and the longevity of the machine.

We manufacture several different sensors that are used in coffee machines, and many other home appliances, operating as a single source for our customers and often simplifying the assembly of the end-product and reducing costs.

This includes:

- Current and temperature limiters to protect the brewing unit, vibration pump and grinder in the event of over-heating. This could be caused by too many cycles within a short time-frame, missing water or a blocked motor.
- Pressure switches to control the jetting kit that delivers steam at high pressure.
- Magnets to control low volume amounts of water, stopping or adjusting the flow when the desired volume is reached.



**HOME
APPLIANCES**







APPLICATION HIGHLIGHT - AUTOMOTIVE

The growing popularity of electric vehicles and the focus on sustainability are shaping how sensors are used in the automotive industry. Sensors and motion control technology are key in improving electric motor performance, extending battery life, reducing the environmental impact of traditional engines, and enhancing safety features. These sensors often work in tough conditions, like extreme temperatures, strong vibrations, and exposure to dirt and moisture, so they need to be built to handle these challenges.

Our products are designed for both passenger and commercial vehicles, helping to ensure safety and improve performance and user experience. Among the components we design and manufacture are:



AUTOMOTIVE EV

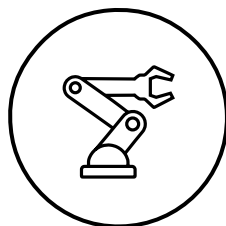
- ▶ Motion control systems that assist with steering, anti-lock brakes and adaptive cruise control.
- ▶ Customised linear sensors to fit the pneumatic cylinders used in battery manufacture.
- ▶ Temperature probes for temperature control on e-motors in electric and hybrid cars.
- ▶ Pressure switches for the measurement of exhaust gases.
- ▶ Torque sensors to measure the haptic response of vehicle controls.
- ▶ Load cells for testing friction, latching, and insertion forces in charging plugs and sockets.

APPLICATION HIGHLIGHT - SMART WAREHOUSING

Smart warehouses leverage advanced technologies to optimise inventory management, streamline logistics and meet the demands of global supply chains. In these environments, sensors and switches are essential for enhancing processes and providing actionable data. They seamlessly integrate physical and digital systems to drive efficiency, improve accuracy and power automation.

Our product portfolio includes a variety of sensors and switches used in smart warehousing applications, including:

- Load cells to monitor weight on shelves, containers, or conveyors for real-time inventory monitoring.
- Position sensors to track the movement of goods and equipment in conveyor systems.
- Temperature sensors to ensure optimal conditions for sensitive products.
- Footswitches to provide control for driverless transport systems used to move products around the warehouse.
- Proximity sensors and magnets detect items, streamlining picking, packing, and sorting in automated systems.
- Measuring devices for monitoring electrical parameters in battery-powered vehicles.



ROBOTICS



Go to position at G12





APPLICATION HIGHLIGHT - ENERGY

We collaborate closely with OEMs in the energy and renewable energy industries to create and deliver cutting-edge sensing and measurement solutions.

For wind power applications we design, manufacture and supply a comprehensive range of components. Our solutions, available in standard, custom and bespoke options, are engineered to perform various critical functions. This includes:

- ▶ Pressure transducers to measure atmospheric pressure.
- ▶ Complete chassis for on-shore wind lidar systems.
- ▶ Thermal switches to protect against cold weather-related failure.
- ▶ Encoders to provide accurate feedback about the position, speed and direction of moving parts.
- ▶ Sensors for monitoring torque in on- and offshore turbines.



WIND

PRODUCT OVERVIEW

POSITION SENSORS

LINEAR POTENTIOMETERS



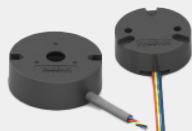
- 0-10...3000 mm measurement range
- Temperature range -40...150°C (175°C short term)
- Sealing up to IP67

ROTARY HALL EFFECT SENSORS



- 0-30°...360° angle measurement range
- Temperature range -40...150°C
- Full contactless versions available

MAGNETIC ENCODERS



- Kits and modules
- Low and High Resolution
- Full contactless versions available

LINEAR INDUCTIVE SENSORS



- 0-2...1500 mm measurement range
- Sealing up to IP68 (submersible version to 3500m)
- Intrinsically safe versions with ATEX, IECEx and CSA approval

CABLE EXTENSION TRANSDUCERS



- 0-38mm...43m measurement range
- Sealing up to IP68 (submersible version to 3000m)
- Intrinsically safe versions with ATEX/IECEX/SIL2 ratings approval

ROTARY INDUCTIVE SENSORS



- Available in any measurement angle up to 360° (e.g. 71°)
- Sealing up to IP68 350 Bar (submersible version)
- Intrinsically safe versions with ATEX, IECEx and CSA approval

INCLINOMETER



- 0-30°...360° tilt angle measurement range
- Analogue, Digital output signals or as display
- Excellent stability

INDUCTIVE TILT SENSORS



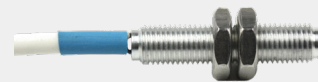
- Up to 160° tilt angle measurement range
- Sealing up to IP68 350 Bar (submersible version)
- Intrinsically safe versions with ATEX, IECEx and CSA approval

MAGNETIC TILT SWITCHES



- Non-mercury RoHS compliant
- Fine, 11° tilt switching
- Omni-directional

PROXIMITY SENSORS



- Solid state and non-contact design
- Machined and molded housing
- For use with permanent magnet target

SPEED SENSORS



- Hall Effect sensors
- Machined and molded housing
- Use with multipole magnet wheel or trigger wheel

GEAR TOOTH SENSORS



- Solid state ferrous detecting device
- Machined and molded housing
- Self adjusting to target gear tooth wheel



PRODUCT OVERVIEW

POSITION SENSORS

BALL AND PLUNGER SWITCHES



- ▶ True waterproof solution over millions of cycles
- ▶ Full stainless steel
- ▶ From -40°C to 150°C

MAGNETIC SWITCHES



- ▶ Robust, all-metal alternative to reed switches
- ▶ Normally open or closed directional proximity switch
- ▶ Range custom biased for the application

MOTION DETECTORS



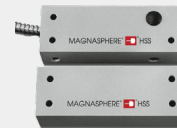
- ▶ Intelligent FMCW Radar
- ▶ Filters out motion nuisances
- ▶ Relay or POE (open API) output

LIMIT SWITCHES



- ▶ True waterproof solution with actuator
- ▶ Custom actuator and mounting plate designs
- ▶ Different housing and rating options

SECURITY SWITCHES

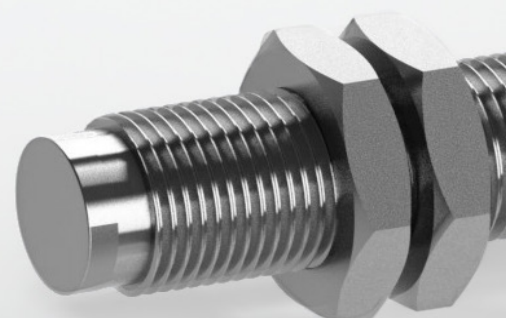


- ▶ Highest security ratings (UL634 Levels 1 and 20)
- ▶ Armored surface-mount or concealed forms
- ▶ Fire-door rated (UL10c) door position switches

ANTI CLIMBING SYSTEM FOR FENCES

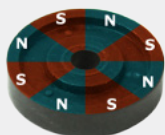


- ▶ Suitable for any metal fence types
- ▶ Accommodates environmental disturbances
- ▶ 3-axis MEMS technology



MAGNETS

MULTIPOLE MAGNET RINGS



- Radial and Face multipole magnet rings
- Tight tolerances on pole location
- Multiple magnetic material mixes for different field strengths

PROXIMITY TARGET MAGNETS



- Using a proprietary high energy Neodymium -Iron-Boron compound
- Slide by or head on models
- Standard models are axially magnetised

CUSTOM MOLDED MAGNETS



- Injection moulding with custom forms
- Several alloy compositions available
- Temperature capability up to over 150°C is possible

TEMPERATURE SENSORS

NTC THERMISTORS



- Temperature ranges up to 250°C
- High accuracy versions
- Tolerances between $\pm 0.1^\circ\text{C}$ over 0-70°C range and 1% at 25°C

RTD ELEMENTS



- Temperature ranges up to 500°C, Cryogen version down to -200°C
- Typical PT100, PT1000; others on request
- Accuracy class A (F0.15) and B (F0.3)



PRODUCT OVERVIEW

TEMPERATURE SENSORS

TEMPERATURE PROBES



- Temperature ranges from -96°C up to 350°C
- RTD or NTC based probes
- Custom housings

TEMPERATURE TRANSMITTERS



- Temperature range -40...150°C
- Analogue output signals
- Wide range of design options

TEMPERATURE SWITCHES



- Temperature ranges from -25°C up to +450°C
- Normally open / Normally closed versions
- Self holding resistor version

CURRENT SENSITIVE THERMAL SWITCHES



- Temperature range 40...150°C
- Normally closed
- Self holding resistor

TEMPERATURE SWITCHES FOR HARSH ENVIRONMENT



- Set point ranges from 0°F-650°F (-17.8°C-343°C)
- RTCA DO-160C environmental qualification
- Hermetically sealed

TEMPERATURE SWITCHES FOR HIGH RANGE TEMPERATURES



- Set point ranges from 0°F-1750°F (-17.8°C-954°C)
- RTCA DO-160C environmental qualification
- Different configuration and mounting options



PRESSURE SENSORS

INDUSTRIAL PRESSURE TRANSMITTERS



- ▶ 0-20 mbar up to 5000bar measurement range
- ▶ Analogue and digital output signals, incl. low energy
- ▶ Wide range of design options

MINIATURE PRESSURE TRANSMITTERS



- ▶ 0-600 mbar up to 500bar measurement range
- ▶ Diameter down to 12 mm
- ▶ Hermetically welded stainless steel construction

COMBINED PRESSURE- / TEMPERATURE TRANSMITTERS



- ▶ 0-0,6 bar up to 1000bar measurement range
- ▶ Temperature range -40...150°C
- ▶ Integrated or exposed temperature probe

DIFFERENTIAL PRESSURE TRANSMITTER



- ▶ 0-250 Pa up to 5000 Pa measurement range
- ▶ Accuracy between $\pm 1,5\%$ full stroke at room temperature
- ▶ PCB or DIN RAIL mount version

PRESSURE SWITCHES - LOW PRESSURE



- ▶ 0-7 PA up to 8,3 bar switching range
- ▶ Mechanical switching-based principle
- ▶ Up to 20 million operation cycles

PRESSURE SWITCHES - HIGH PRESSURE



- ▶ 0-0,3 bar up to 350 bar switching range
- ▶ Mechanical switching-based principle
- ▶ Up to 10 Mio operation cycles



PRODUCT OVERVIEW

LOAD & FORCE

S - TYPE LOAD CELLS



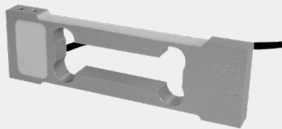
- 0-25kg up to 30t
- Accuracy class C3 and C4
- Alloy steel and stainless-steel construction

SHEAR BEAM LOAD CELLS



- 0-5kg up to 30t
- Accuracy class C3 and C4
- Alloy steel and stainless-steel construction

PLATFORM LOAD CELLS



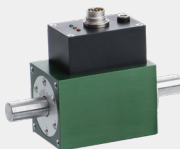
- 0-0,3kg up to 500kg
- Accuracy class C3, C4 and C5
- Aluminium or stainless-steel construction

COMPRESSION LOAD CELLS



- 0-60kg up to 200t
- Accuracy class C3, C4 and C5
- Stainless-steel construction

TORQUE SENSORS



- 0,01-5000 Nm measurement range
- Rotating and non-rotating sensors
- Relative non-linearity $\leq \pm 0,05$ % F.S.

MINIATURE AND PRECISION LOAD CELLS



- Wide range of measuring ranges up to 1 MN
- Highest accuracy up to a relative non-linearity of 0,035% F.S.
- Wide range of types: tension, compression, miniature, bending beam, multi-component

FOOT SWITCHES

GENERAL FOOT SWITCHES



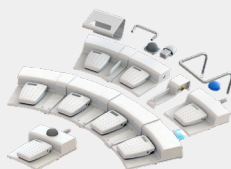
- Plastic and metal housing
- Wide range of colour and logo options
- Different switch functions

INDUSTRIAL FOOT SWITCHES



- Single and multi pedal
- Safety relevant functions
- Emergency stop versions

MEDICAL FOOTSWITCH DESIGN PLATFORM



- Modular product line
- Wide range of colour and logo options
- Medical standard UL 60601-1 Approved

BLUETOOTH MEDICAL FOOTSWITCHES



- Single and multi pedal
- Redundant functions
- Medical standard UL 60601-1 Approved Wireless System

HAND CONTROLS

ELECTRICAL HAND CONTROLS



- Different housing models
- Low power switching and USB output
- Medical standard UL 60601-1 Approved

INFRARED HAND CONTROLS



- Plastic or robust aluminium housing
- Standard up to 8 functions
- Safe line of sight operation



PRODUCT OVERVIEW

HAND CONTROLS

INFRARED NONCONTACT SWITCH



- Plastic or robust aluminum housing
- Different switch functions
- Factory adjustable activation range

WATERPROOF SWITCHES



- True waterproof solutions
- Momentary and latching function
- From -65°F(-53°C) to +221°F (105°C)

AIR OPERATED CONTROLS

AIR OPERATED HAND CONTROLS



- Up to 6 switching channels
- Wide range of colours and symbols
- Ideal for high humidity environments

PNEUMATIC FOOTSWITCHES



- Plastic or metal housings
- Ideal for wet environments
- For use with Herga air switches

ACCESSORIES FOR PNEUMATIC SYSTEMS



- Up to 6 switching channels
- Wide range of colours and symbols
- Ideal for high humidity environments

AIR SWITCHES



- UL-CSA-approved versions available
- Various port size & orientation
- Momentary and latching

INSTRUMENTATION AND ANCILLARY EQUIPMENT

SENSOR ELECTRONICS



- High-precision indicators and amplifiers for sensors and norm signals
- Fieldbus, digital and analog output
- Cabinet or inline housing (IP65)

MEASUREMENT AND TEST DEVICES



- X/Y monitoring of industrial processes
- High-speed resistance measurement
- Battery measuring modules

CALIBRATION DEVICES FOR MECHANICAL VALUES



- Supported sensors: Strain gauge, normalized signal ± 5 V, ± 10 V, potentiometric sensors
- Storage of up to 16 measurement programs
- Data logger for up to 30,000 measurements

CALIBRATION SOURCES FOR TEST BAY AND LAB



- DC voltage ± 100 nV ... ± 100 V
- DC current ± 100 nA ... ± 50 mA
- 12 thermocouple types (accuracy from ± 0.1 K)

CALIBRATION INSTRUMENTS FOR RTD AND RESISTANCE



- Resistance range: 10 m Ω ... 1.2 M Ω (accuracy from ± 0.003 % $+3$ m Ω)
- Pt100...Pt1000 and Ni100...Pt1000 (accuracy from ± 0.02 °C)
- Temperature coefficient: from <1 ppm/K



Since 2017, Variohm Group has been part of discoverIE Group, a leading international designer and manufacturer of customised electronics for industrial applications. The discoverIE group of over 25 businesses creates innovative electronics that helps its customers create ever better solutions, while making positive impacts on the environment, society and people's lives.

Each business within the discoverIE Group operates independently, while benefiting from the Group's collective expertise, shared objectives, and commitment to the highest ethical and quality standards.

Headquartered in Guildford, UK, discoverIE Group has a global footprint with c.4,500 employees across the UK, Continental Europe, Asia and North America. discoverIE is listed on the London Stock Exchange and is a member of the FTSE250 index.

www.discoverIEplc.com



MEDICAL



**INDUSTRIAL
CONNECTIVITY**



**RENEWABLE
ENERGY**



TRANSPORT



SECURITY





SUSTAINABILITY

discoverIE is committed to sustainability through a multi-faceted approach that integrates environmental, social and governance (ESG) considerations into its operations. A focus on reducing carbon footprint, employee wellbeing, and responsible sourcing ensures discoverIE not only supports its customers but also contributes positively to society and the environment.

Businesses within Variohm Group work towards and achieve accreditations including ISO 9001, ISO 14001, ISO 45001 and ISO 13485 and we are aligned with and adhere to discoverIE's policies and principles of good practice.

For more information visit:
<https://discoverieplc.com/sustainability>





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