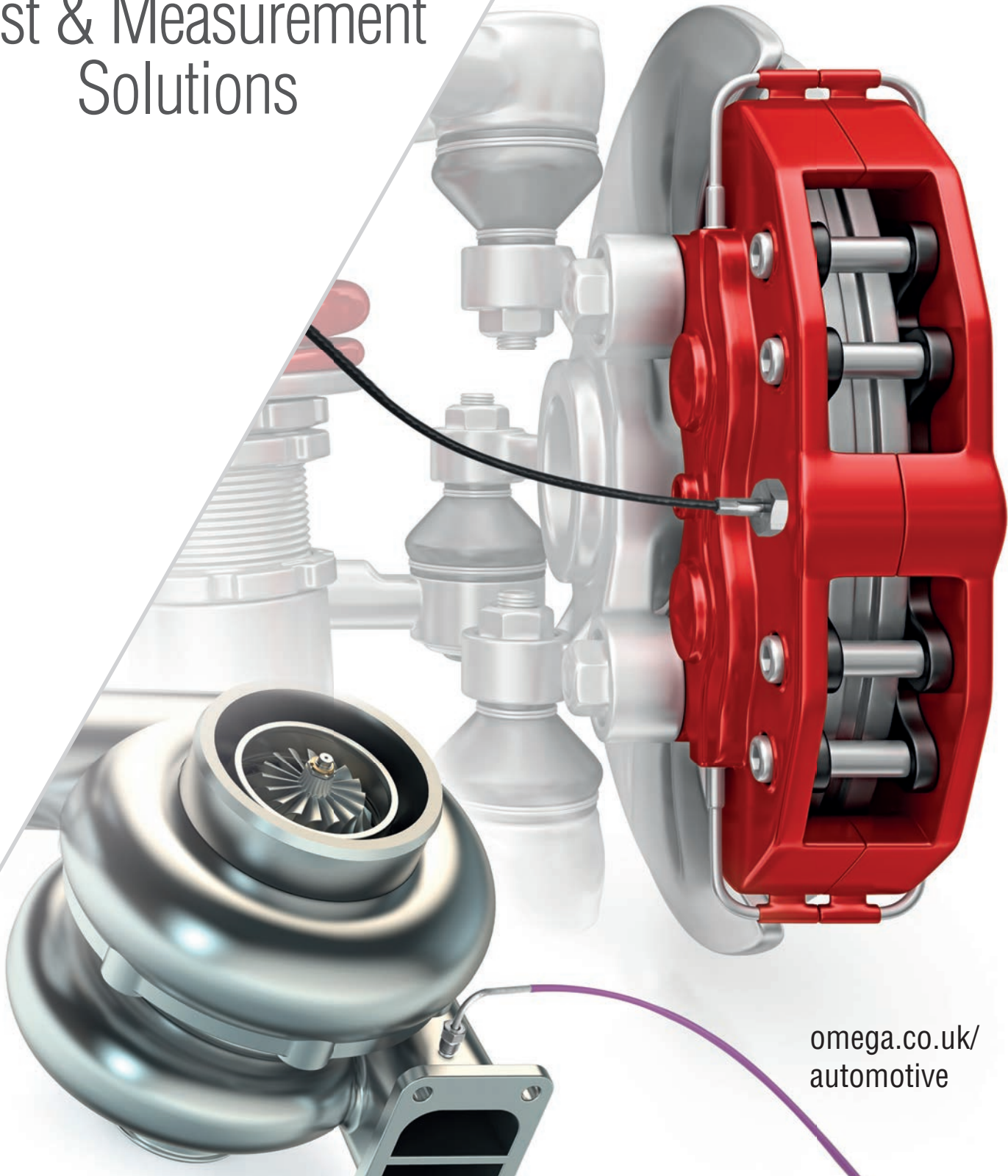


# Automotive

## Test & Measurement Solutions





# Solutions for the Automotive Sector

## Excellence in the Automotive Industry

OMEGA is an industrial sensor and measurement solutions provider with over 50 years experience. With the ability to provide a complete range of instruments and engineering services, it would be difficult to find a better partner for the automotive industry.

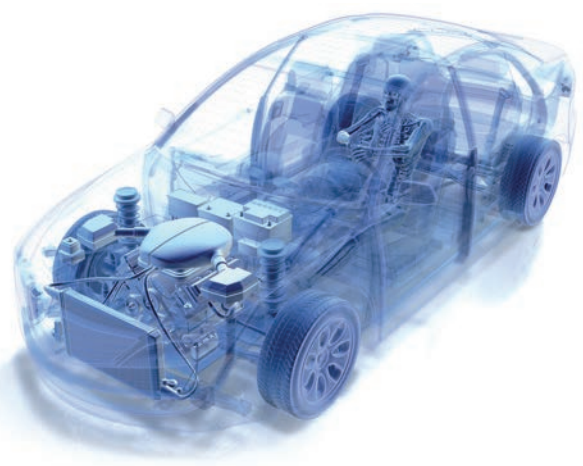
## Improve Your Processes

OMEGA has a track record of providing state-of-the-art sensors and measurement instrumentation for the automotive industry. With our vast experience and knowledge in industrial applications and high quality measuring instruments, we are a brand to rely on. Our comprehensive range of sensors and measuring instruments are utilised every day in countless automotive applications around the world. OMEGA provides a complete service throughout the automotive value chain, with teams of specialist engineers ready to assist at a moment's notice to improve the performance and efficiency of your processes and applications.

## Areas we specialise in include:

- **Research and development (R&D)**
- **Bodyworks and car assemblies**
- **Powertrain and engine testing**
- **Infrastructure monitoring**
- **Safety testing**



















































For all these automotive applications and more, OMEGA is your fast-track source for process measurement and control instrumentation.



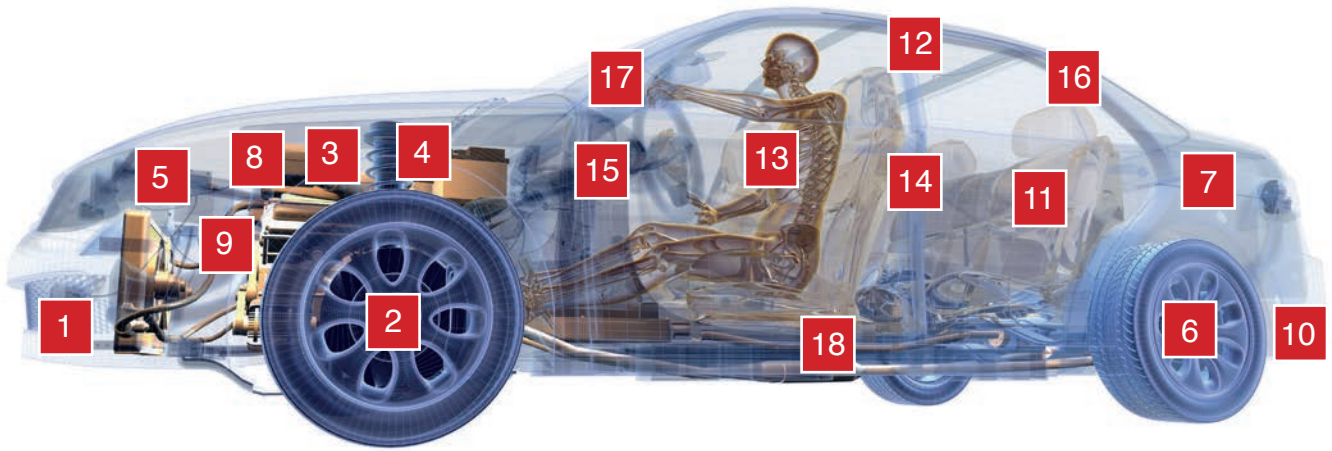
Visit our online portal  
[omega.co.uk/automotive](http://omega.co.uk/automotive)



# OMEGA Technology Matrix

	R&D 	Work Shop 	Paint Shop 	Powertrain (Engine Exhaust) 	Assembly 	Euro NCAP 	Final Testing 
Temperature Measurement							
Pressure Measurement							
Strain, Load, Force Measurement							
Environmental Measurement							
Flow & Level Measurement							
Data Acquisition Systems							
Systems Solutions							

# Automotive Solutions Index



## Temperature

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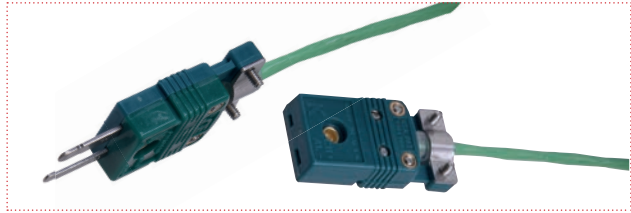
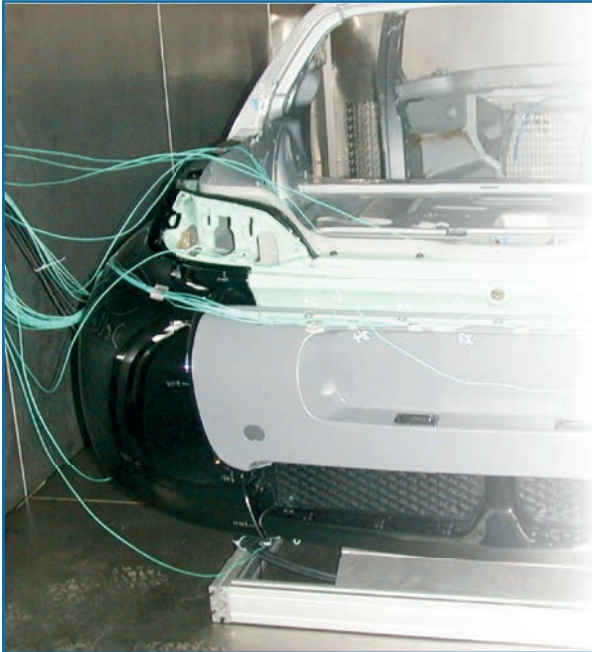
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# Temperature

## 1 Bumper - Thermal Testing

Automotive testing often involves the measurement of temperatures at multiple positions. For temperature measurements in and around a plastic bumper, large bundles of thermocouple wire are needed, however, the enlarged bundled wire diameter presents some technical challenges as it can start to affect the structural integrity of the area of interest.

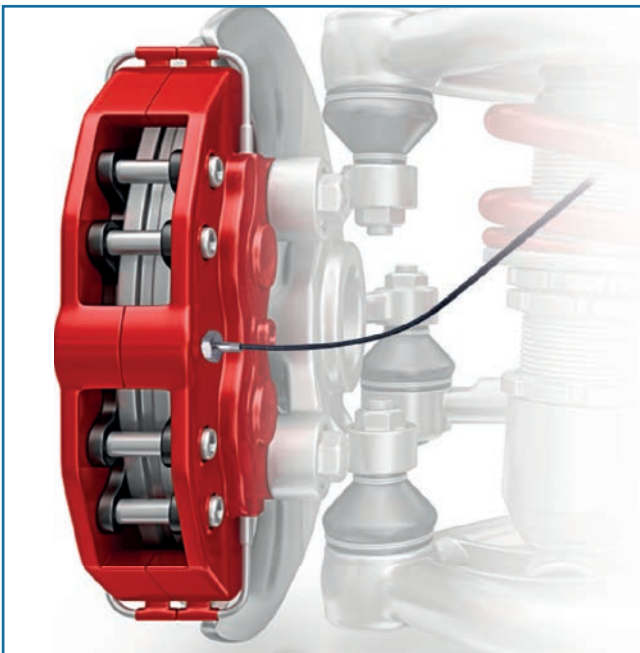


### Fine Diameter Thermocouple Wire

To address this issue for a well-known German car maker, we developed a thin and highly accurate shielded type K thermocouple wire. The reduced wire diameter resulted in successful testing with no harmful structural affects. OMEGA also has the 5SRTC-TT-K and 5SRTC-TT-T thermocouple wire ranges able to deliver high-performance temperature measurements, reliably and consistently.

## 2 Brake Caliper Temperature Measurement

For performance applications as seen in Formula 1 and other autosports, OMEGA has designed a specific solution for brake system components.



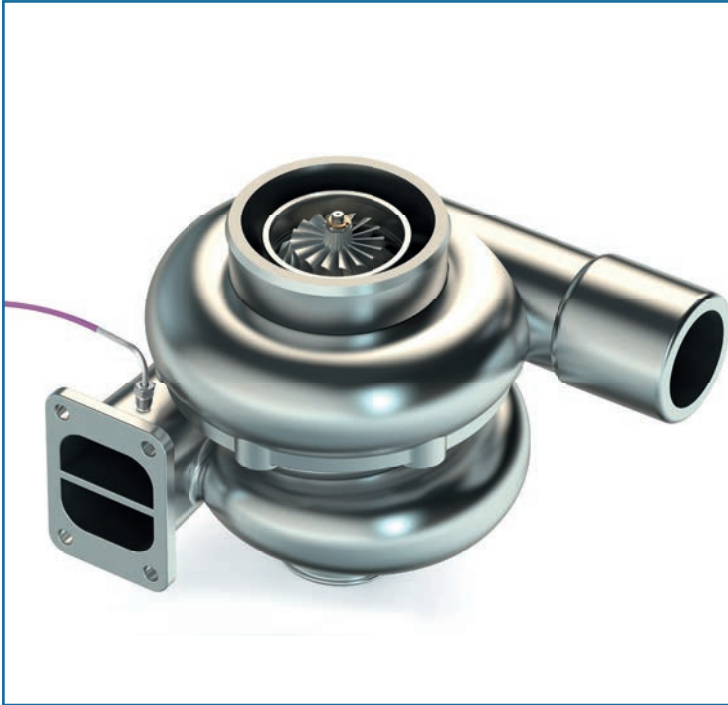
### Pipe Plug Sensor

Our Pt1000 pipe plug sensor probes screw into the caliper and feed into an on-board data recorder, allowing highly accurate temperature monitoring performance. This probe will withstand temperatures of more than 680°C and conditions of high vibration and shock.

# Temperature

## 3 Turbocharger Temperature Measurement

As the turbo is generally exposed to the high-temperature exhaust stream, it's vital to protect it from excessive temperatures during its functional life.



### Turbocharger Probe

To prevent the turbocharger overheating, OMEGA can supply a custom-made, fast response probe with a tapered tip. Installed into the turbocharger of a test or production car, this sensor becomes part of the exhaust monitoring system. It's made using MI-insulated cable XL-N-MO-4.5MM-SLE and does not sacrifice mechanical strength, which will last the lifetime of the turbo charger.

## 4 Hermetically Sealed Temperature Sensors

For applications where liquid immersion or contact is required, such as automotive oil or water temperature testing, OMEGA offers an unrivalled range of temperature sensors.



### Thermistor, RTD and Thermocouple Probes

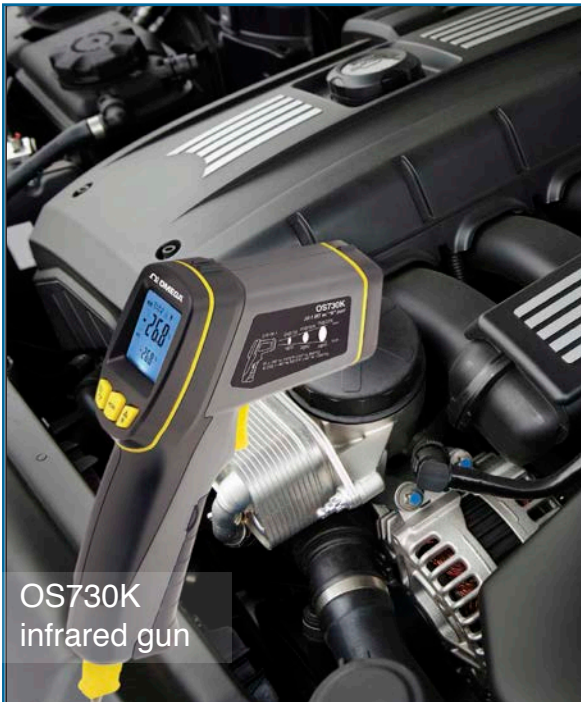
We offer standard and customised temperature probes for emissions testing, vehicle inspection, and many more applications. These industry leading sensors have an IP68 seal-welded tip, which is ideal for liquid immersion, chemical resistance and easy cleaning. Available as a thermistor, RTD, or thermocouple, these sensors cover temperatures ranging from cryogenic to 250°C.



# Temperature

## 5 Non-Contact Automotive Testing

For non-contact temperature measurement during automotive engine testing and general inspection.



### Non-Contact Solutions

OMEGA provides a comprehensive range of thermal cameras, infrared guns and infrared transmitters suitable for remote temperature measurement and analysis. The featured OS730K unit has a range of -50 to 800°C, a Type K thermocouple input, and is ideal for engine temperature monitoring. Many different styles are available on our website.

## 6 Infrared Measurement of Brake System

For quick and easy ongoing monitoring, from R&D through to the finished product.



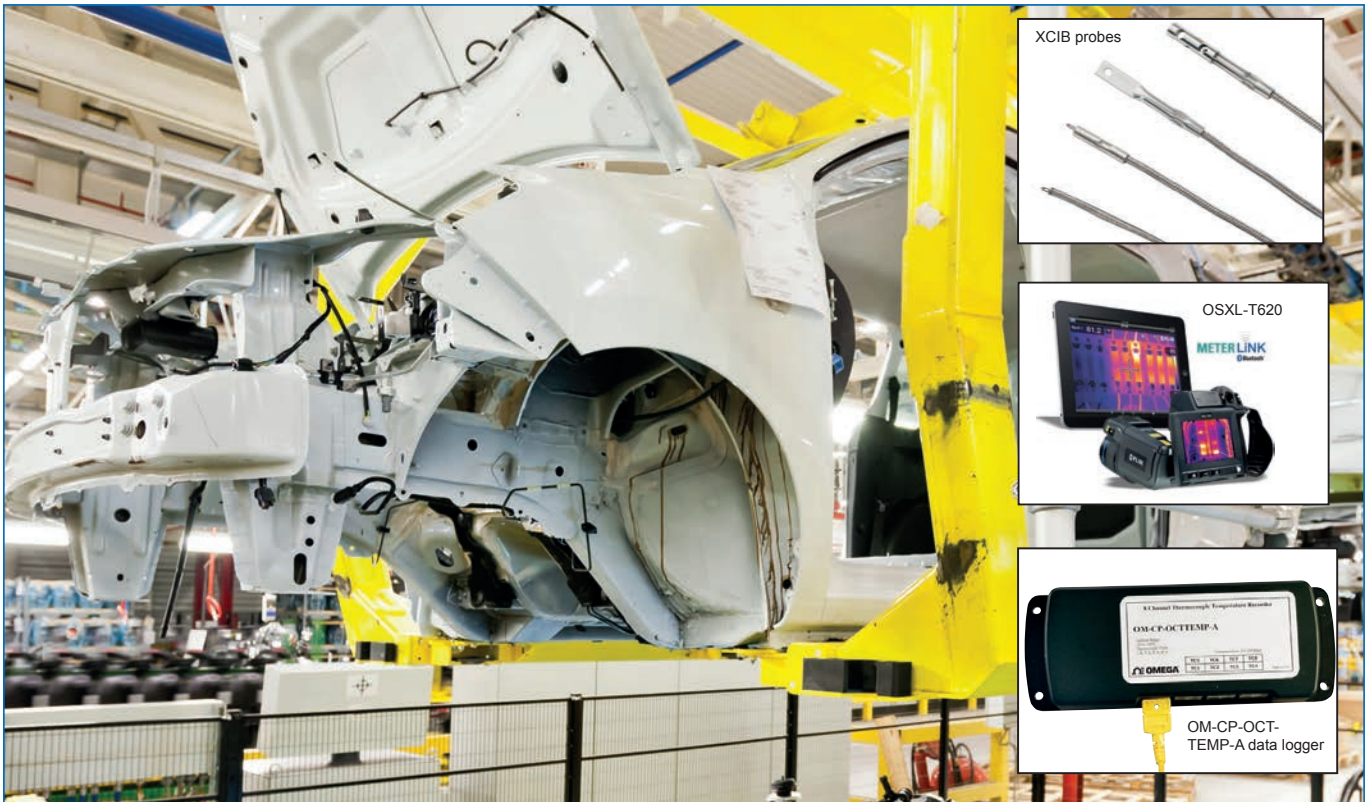
### Miniature Sensor

The OS-MINI is a miniature sensor that measures just 18 x 45 mm, making it ideal for mounting in tight spaces. A high ambient version is capable of withstanding temperatures of up to 180°C without water or air cooling.

# Temperature

## 7 Temperature Profiling Systems

As a manufacturer, OMEGA can provide customised temperature profiling systems tuned to specific automotive applications, ranging from high temperature contact measurements to thermal imaging systems.



### Temperature Probes, Loggers and Thermal Imaging

For applications in R&D and manufacturing requiring higher temperatures, our high temperature XCIB thermocouple probes and OM-CP-OCTTEMP-A Data logger can be combined. OMEGA offers solutions that support temperatures up to 980°C continuously. For applications that require lower temperatures such as automotive painting and curing, we have a wide selection of standard temperature probes and thermal imaging devices.

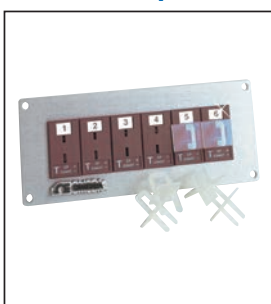
## A Selection of Popular Probe Accessories

Many more are available at [omega.co.uk](http://omega.co.uk)

Nylon/PTFE gland



Connector panels



Custom versions



Connectors



Stainless steel tube/tip

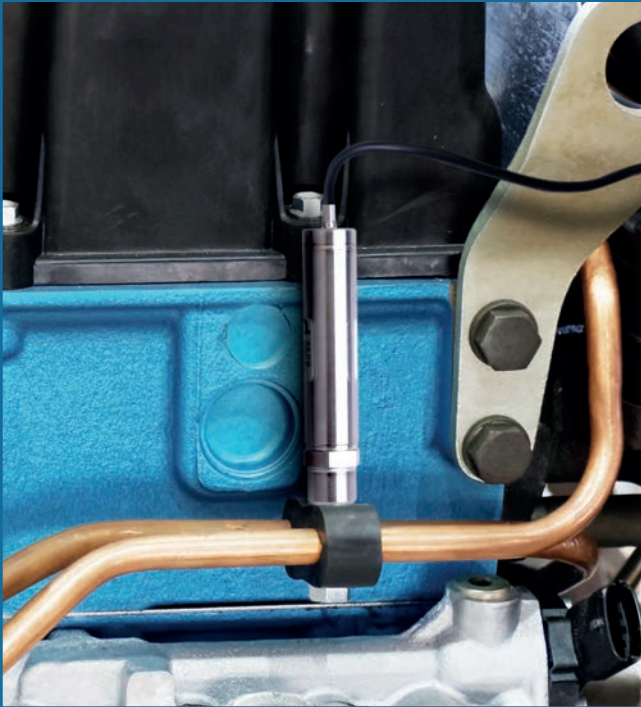




# Pressure

## 8 Fuel Injection Pressure

To measure fuel injection pressure, the OMEGA® PXM409 range of micro-machined pressure transducers have been designed in rugged stainless steel to withstand the toughest environments.

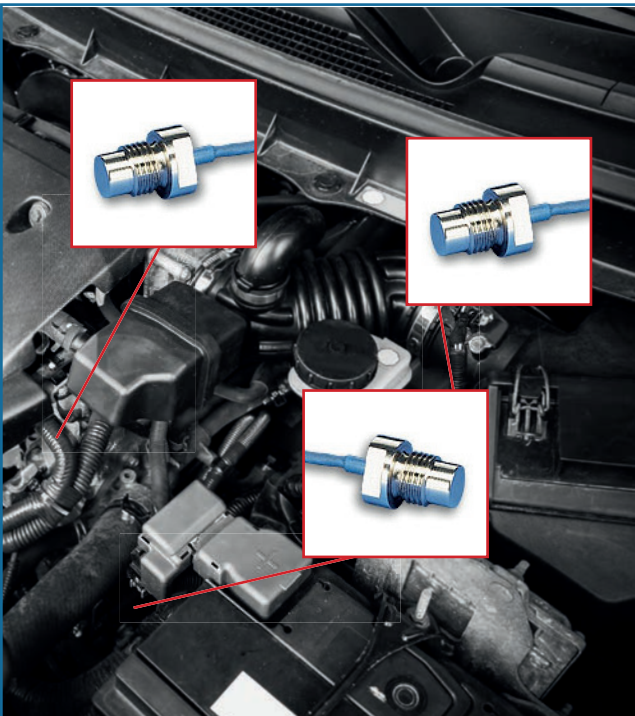


### Pressure Transducers

OMEGA's high accuracy pressure transducers have a proven record in high performance commercial and automotive applications. We have many customised versions to fit your needs including sealed gauge, absolute, compound gauge, barometric, vacuum, differential and much more.

## 9 Transmission Hydraulics and Coolant Pressures

To measure fuel injection, transmission hydraulics and coolant levels use our PX600 and PX61C transducers with engine and auxiliary fluid systems.



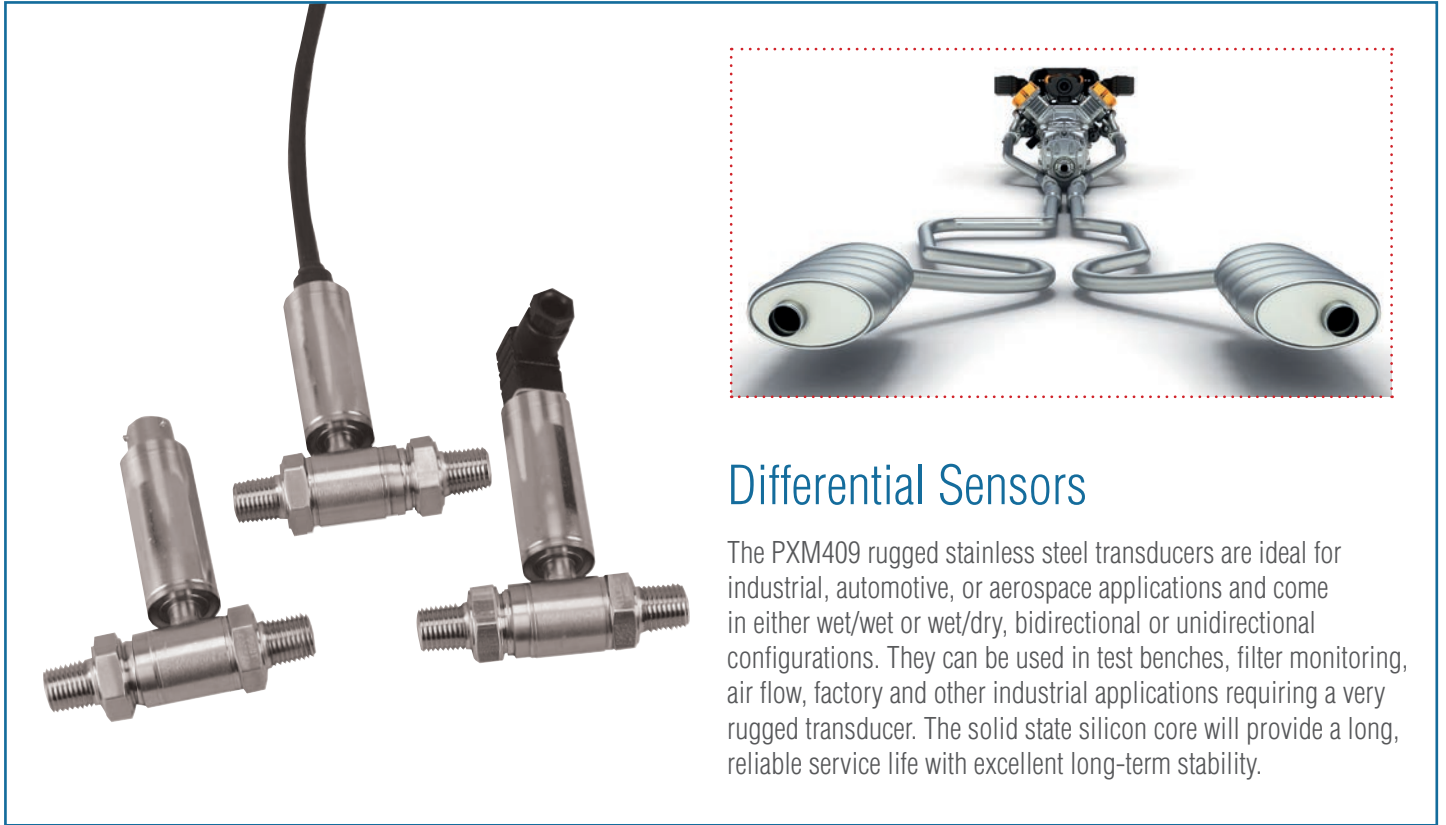
### Flush Diaphragm Transducer

To aid in monitoring pressure measurement in key automotive systems, the PX600 and PX61C are a great solution. They can be mounted directly to the area of interest such as the engine and can easily be adapted to a "stand-off" area when temperatures exceed 110°C.

# Pressure

## 10 Exhaust Gas Pressure Measurement

To measure exhaust gas pressure, the OMEGA® PXM409 range of Micro-Machined pressure differential transducers have been specially designed making them highly reliable for applications involving vibration.



### Differential Sensors

The PXM409 rugged stainless steel transducers are ideal for industrial, automotive, or aerospace applications and come in either wet/wet or wet/dry, bidirectional or unidirectional configurations. They can be used in test benches, filter monitoring, air flow, factory and other industrial applications requiring a very rugged transducer. The solid state silicon core will provide a long, reliable service life with excellent long-term stability.

## Build Your Own Custom Pressure Transducer

Over 1 Million Combinations with 1-week delivery! Simply make your selections and click next.

↓ Select your Transducer Application ↓

General, Industrial, or Laboratory Use

Applications Requiring Sanitary Fittings

7/16-20 UNF Female (M33549) (D4)

7/16-20 UNF Male (M33550) (D4)

3/8" NPT Female

3/8" NPT Male

Cable (2m, 5m) \*P&F Rated

Conduit (2m, 5m) Add £19.25 To Price \*P&F Rated

Ground Water (2m, 5m) Add £36.50 To Price \*P&F Rated

M12 \*P&F Rated Single Pressure

M12 \*P&F Rated Double Pressure

M12 \*P&F Rated Single Pressure

M12 \*P&F Rated Double Pressure

Final Part Num: MDDU015R4 £580 ADD TO CART

Application: Transducer Type: Range/Units: Output: Accuracy: Process Fitting:

Visit [omega.co.uk/pxconfig](http://omega.co.uk/pxconfig)



# Environmental

## 11 Humidity Measurement of Fabric

We can provide a wide range of sensors, dataloggers and meters to measure humidity, temperature, pressure and CO<sub>2</sub> suitable for use during the design and testing phase.



RH297 Humidity/  
Moisture Meter



Also available: RH650



Also available: RH1362P

## Humidity/Moisture Thermometer

The RH297 Series gives humidity, moisture, air temperature and grains per pound (GPP) without surface damage and is ideal for measuring the humidity of seating, interiors and other surfaces. It comes with a pinless moisture probe for high accuracy and also has infrared included for quick checking of surfaces.

## 12 Wireless Monitoring

Environmental control is of paramount importance in the automotive industry to ensure the highest level of material quality and optimal performance during engine testing.



ZW-ED, external  
probes and ZW-REC  
receiver

## Long Range Transmitters

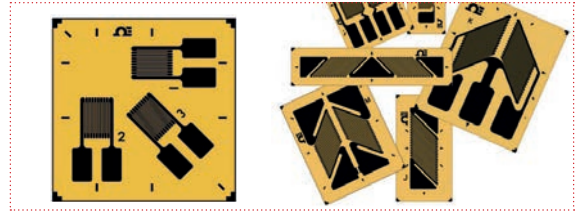
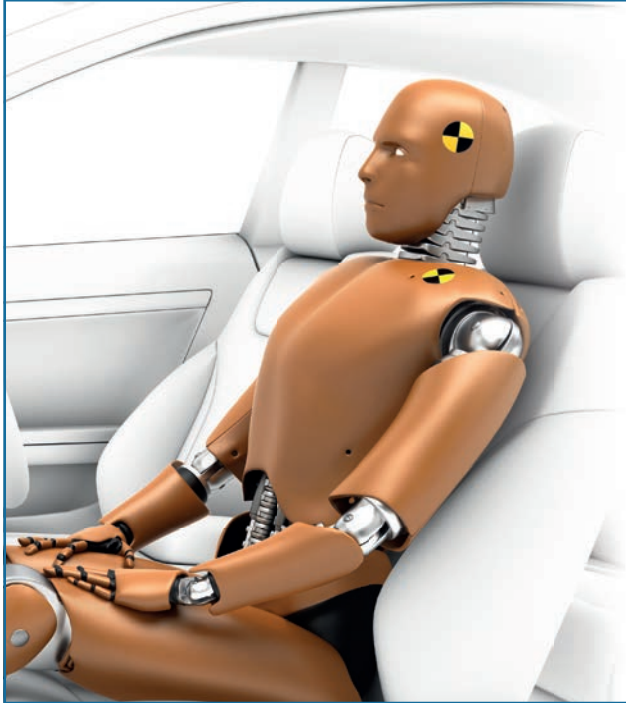
The rugged high-performance, 1,000 metre range ZW-ED wireless sensor/transmitter system provides web-based monitoring of temperature, humidity, and barometric pressure. Pair up to 128 end devices per receiver. These wireless devices are designed for demanding industrial applications indoors and harsh outdoor environments.



# Strain Gauge

## 13 EURO NCAP Testing

Companies choose the OMEGA® SGT range of strain gauges for their car crash simulations due to their high reliability and flexibility.



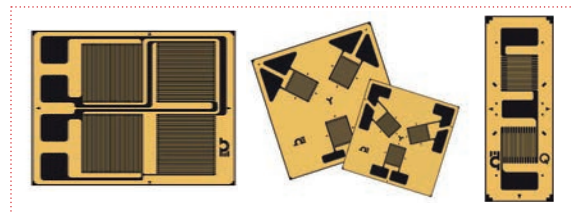
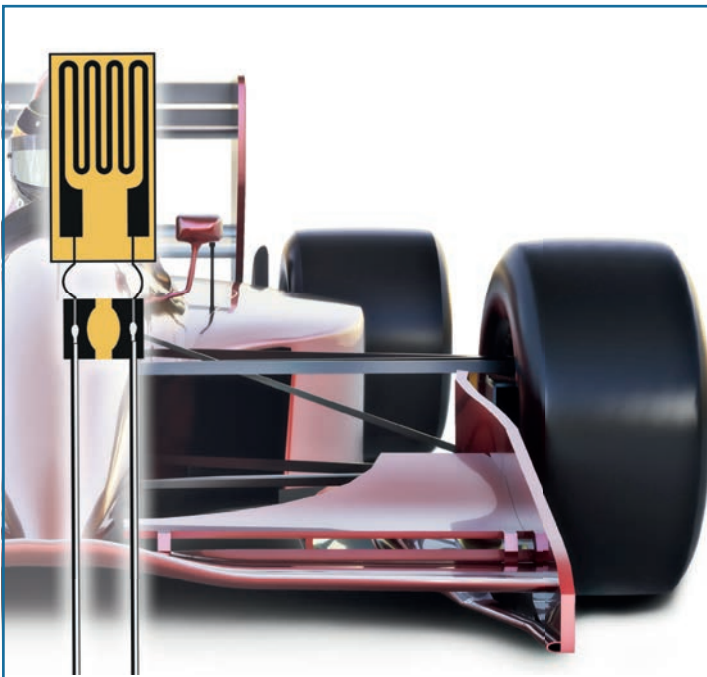
### Strain Gauges

OMEGA currently supplies companies with strain gauges for COMPACT IMPACT SIMULATOR testing and HORIZONTAL IMPACT SIMULATOR testing.

OMEGA strain gauges rugged construction and flexibility make them suitable for highly accurate static and dynamic measurement.

## 14 Stress Analysis of Axial Load and Suspension

OMEGA are experts at providing the most suitable strain gauge systems for all automotive applications, we can make any strain analysis experiment successful.



### Strain Gauges for R&D

OMEGA has a history of using strain gauges in the high performance automotive R&D process. We are able to supply gauges that can record bending in axial load and suspension with extreme accuracy.

We have general purpose, Karma and transducer quality strain gauges as well as strain gauge meters and other instruments.

# Load & Force

## 15 Small Component Testing

OMEGA offers a comprehensive range of load cells for force measurement to match automotive applications such as small component testing, door opening and closing, structural testing, and assembly force monitoring.



### Miniature Load Cells

Small and capable of highly accurate readings, the LCMFL subminiature load cells are suitable for precision industrial applications. They are all stainless steel, measure either tension or compression loads, and have male thread studs for load attachment. The exclusive internal design provides superior long-term stability and minimises the effects of small off-axis loads.

## 16 Component Force Testing, Doors and Chassis

OMEGA® digital force gauges are designed for tension and compression force testing in numerous applications across virtually every industry.



### Digital Force Gauge

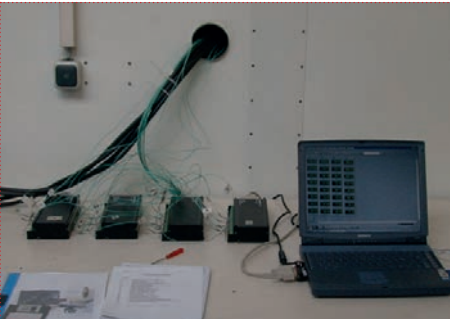
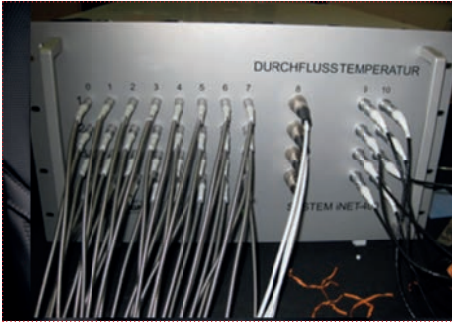
With capacities from 0.12 to 100 lb (0.5 to 445 N) this DFG55 gauge features an industry-leading sampling rate of 7000 Hz, producing accurate results even for quick-action tests. On-board data memory for up to 1000 readings is included, as are statistical calculations and output to a PC.

Integrated set-points with indicators are ideal for pass-fail testing and for triggering external devices such as an alarm or relay.

# Turnkey System Solutions

## 17 Dynamic Pressure/Loading Measurement

OMEGA can supply turnkey systems comprised of data acquisition, software, temperature probes, pressure transducers and other control elements to measure dynamic load testing.



OMEGA develop and supply turnkey system solutions comprised of a data acquisition system and software, temperature probes, pressure transducers and other control elements to measure vibration, shock stress and strain in vehicles during dynamic load testing.

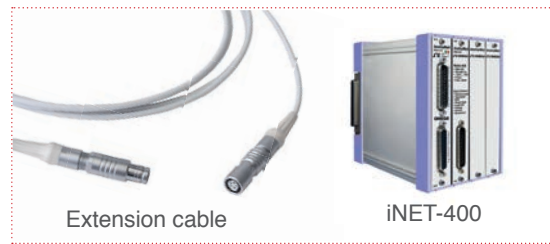
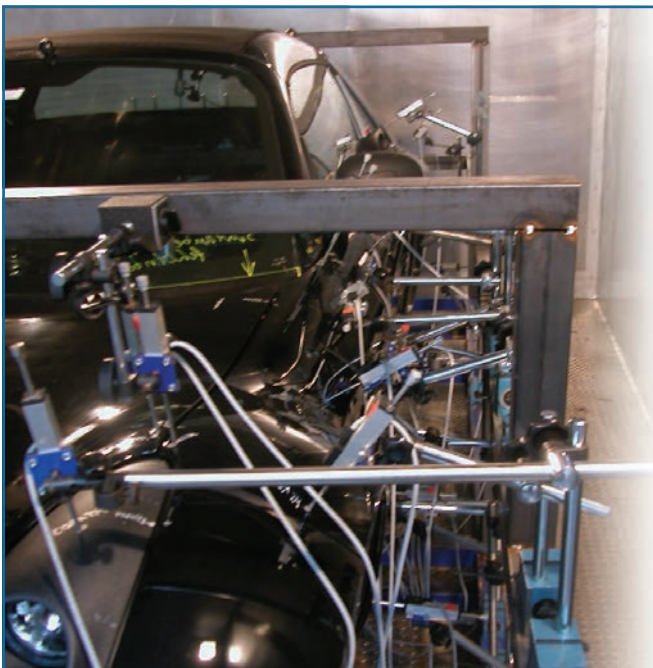
A typical dynamic load measurement system would be comprised of the following components:

- 1 x iNET-400
- 32 x Pressure transducers PXM600MU-35BARGV
- 8 x RTD probes P-M8-A-TS-3M-ODU
- 1 x DASyLab®-Full DLDHFU
- 1 x 19" rack, ready for use

For more information on a specific system please call your local sales team.

## 18 Data Acquisition-Force and Travel in a Test Bed

This application uses connectors with silver-plated contacts in order to assure a reliable low impedance connection to an OMEGA® iNET-400 data acquisition system.



### Extension Cables & Data Acquisition

When in the R&D stage the correct tools are vital to ensure proof of concept and improvements. OMEGA extension cables are used to transfer data, with the application measuring the stress, strain and force on a test car chassis. Data is then collected using the OMEGA® iNet-400, which offers multichannel data acquisition.





# Key Solutions

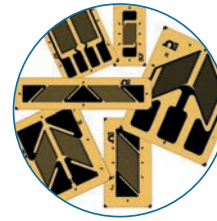
We are happy to support both car manufacturers and subcontractors in the automotive sector with standard and tailor-made custom solutions. Through our ability to address specific testing needs we can provide cost-effective, accurate measurement systems that can meet the highest requirements for reliability and longevity.

OMEGA can supply more than 100,000 different products including custom probes, specific thermocouple wires, pressure transducers and a wide range of temperature measurement equipment. Our engineers are always ready to discuss the best solution.

Email [sales@omega.co.uk](mailto:sales@omega.co.uk) or call us on 0800 488 488



**RTD & Thermocouple Probes**



**Strain Gauges**



**Handheld Meters**



**Load Cells**



**Pressure Transmitters**



**Wireless sensors**



**Data Loggers**



**Data Acquisition Systems**



**Infrared**



**Controllers**

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