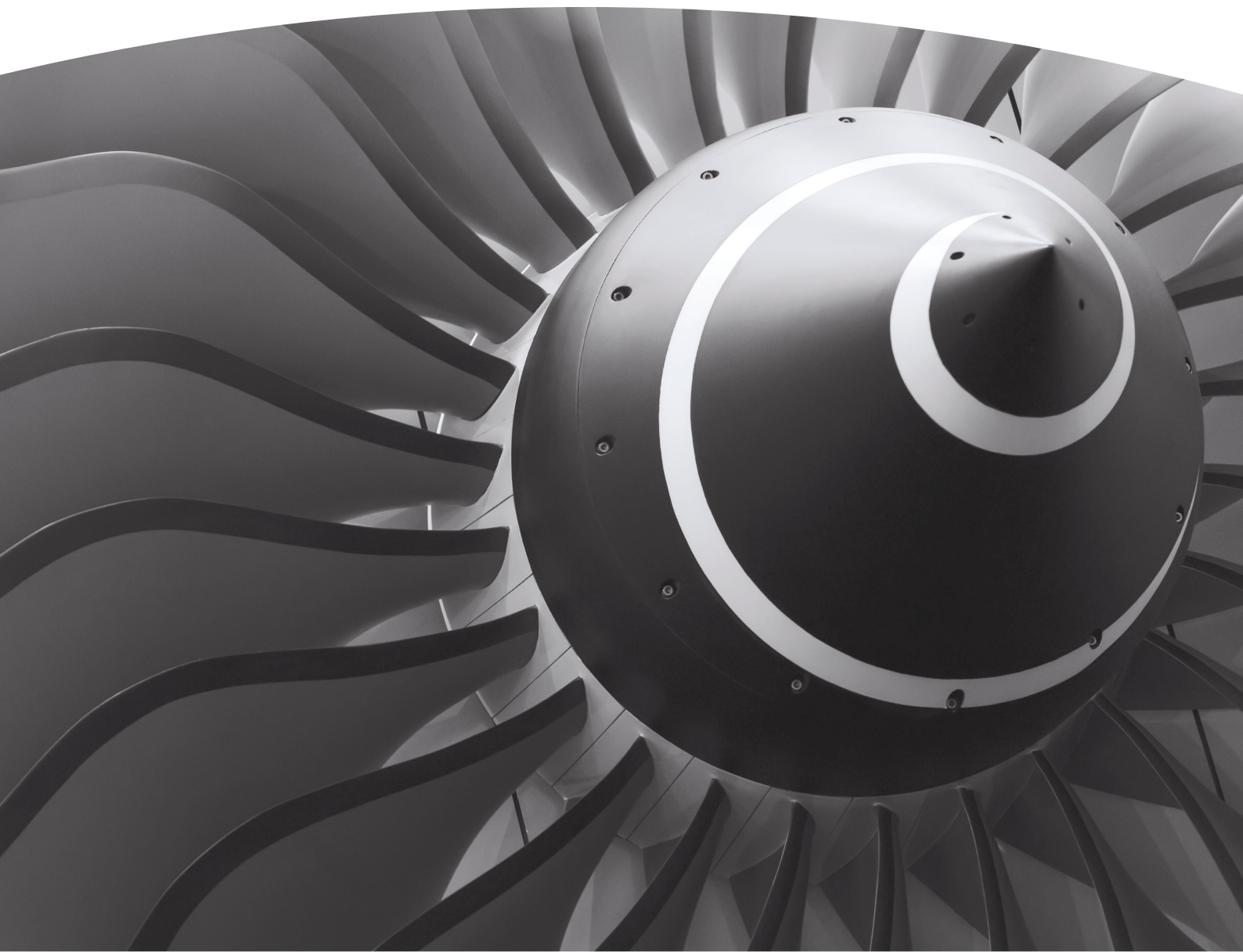


Temperature and Calibration Capabilities

Industrial Sensing and Control
Roxspur Measurement and Control



Who we are.

TT Electronics is a global provider of engineered electronics for performance critical applications. We provide our customers with engineering support and expertise through our global network of specialists and world class facilities. Our experience and understanding of highly regulated markets enable us to continue to develop and deliver reliable products and solutions for our customers, helping them solve challenging problems to meet the needs of their customers.

We provide complete temperature and calibration solutions

We supply a full range of temperature measurement products

We provide in-house UKAS calibration for temperature, flow, pressure and electronics

We offer onsite calibration service for industrial and aerospace facilities

TT Electronics is a leading manufacturer of process measurement and control instrumentation.

We supply a comprehensive range of temperature, pressure, flow, and level products designed for demanding industrial environments including aerospace, oil and gas, power generation and water management, through our Brearley, Platon, Sensit, and Nulectrohms brands.

TT Electronics provides custom solutions, fully built systems comprising sensors and data loggers, and UKAS accredited calibration to BS/EN/ISO 17025 procedures through Roxspur Measurement and Control. Customers have access to technical and manufacturing facilities at key locations which means staying close to the people that matter with a truly global reach.

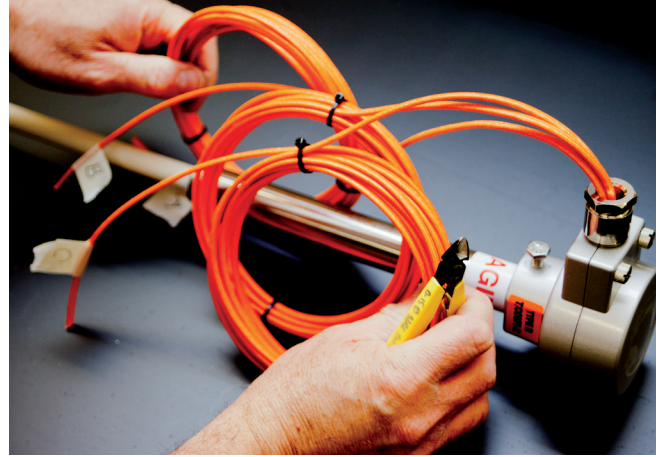
TT Electronics makes things happen by developing new technologies in Industrial Sensing and Control, Components and Integrated Manufacturing Services. We are able to achieve this based on an explicit understanding of our customers' needs and by forming strategic relationships with OEMs around the world.



Temperature

We are one of the UK's largest manufacturers of thermocouples and temperature probes, offering both standard and custom designs fully supported by a technical help desk for application solutions.

We stock a full range of associated accessories and instrumentation and provide fast delivery for urgent requirements.



Thermocouples

- Ranges from -200°C to +1800°C
- All industries supplied
- All types manufactured
- Materials and components held in stock
- In-house calibration and repair services
- Manufactured to latest AMS2750 specification

Temperature Transmitters

- Head or DIN rail mounted
- Configurable input/output
- In-head display and alarm relay options
- Intrinsically safe options
- Open HART® protocol

Infrared Thermometers

- 0°C to +3000°C range
- Adjustable emissivity
- Datalogging function
- Fixed or portable versions
- Optional UKAS calibration

Controllers, Recorders and Dataloggers

- Process controllers and indicators
- Graphical recorders
- Stand alone or networked solutions
- SCADA and data acquisition packages
- Configuration and project management services

Enhanced Capabilities

In addition to our manufactured ranges, TT Electronics complements this using carefully selected partners to give a complete solution to our customer requirements. This range covers controllers and data recorders, infrared pyrometers and signal conditioning.

Controllers and Recorders - Eurotherm by Schneider Electric

- As a technical partner for Eurotherm, TT Electronics provide full supply and installation capabilities. Onsite support is given by our team of fully trained engineers – Services include Configuration, Cloning and Panel Build.



Infrared Pyrometers - Optris/Micro-Epsilon

- Covering the complete temperature range, the use of IR pyrometers enables us to enhance our capabilities to cover applications once the temperature range exceeds the normal working range of traditional technologies
- Wide range of applications
- Proven technology



Signal Conditioning - Status Instruments

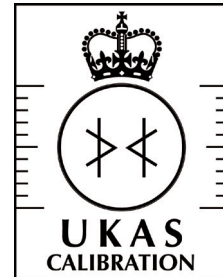


- Complete range of signal conditioning, isolation and transmitting devices
- Can be used with our complete temperature sensor range
- Negates the need for long cable runs, allowing use of standard electrical cable
- Wireless transmitters

Temperature, Pressure, Flow, Level, Systems, Calibration & Service

UKAS Calibration and Services

Located in Sheffield, UK, our accredited laboratories are able to provide either on-site or in-house calibration to either UKAS or traceable national standards. Covering temperature, pressure, flow and electrical parameters and providing certification using the latest technology, we offer a fast and efficient maintenance and repair service.



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Quality

TT Electronics is an ISO 9001:2008 company, offering UKAS and traceable calibration under ISO/IEC 17025 accredited procedures. Our certificate generation systems are purposely geared to meet the strict requirements of the aerospace industry to assist with compliance to the latest revision of AMS2750.

Calibration

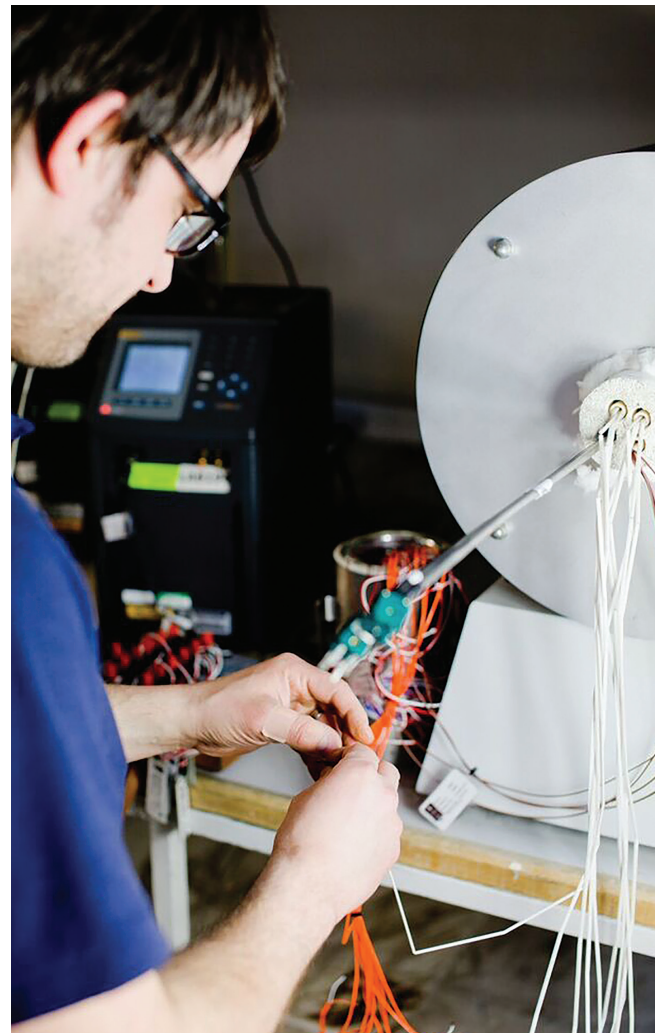
- UKAS accredited for four fields of expertise in Pressure, Temperature, Flow and Electrical
- Over 50 years of experience
- Flexibility to meet your requirements on or offsite
- Fast and efficient maintenance and repair service

UKAS Accreditation

- Temperature ranges from -196°C to +1600°C
- Gas flow ranges from 5 mL/min to 50 L/min
- Pressure ranges from 1 bar to 1200 bar
- Electrical – mV, mA, ohms and testing to the latest revision of AMS2750

Customer Care

- Fast delivery for urgent requirements
- Customer collections service
- Full technical and application support for all products
- Comprehensive repair facility



Onsite Aerospace Calibration Service

TT Electronics provides a complete calibration service to the aerospace industry, meeting specifications which include AMS2750, RPS 953, BAERD GEN 007 and others.



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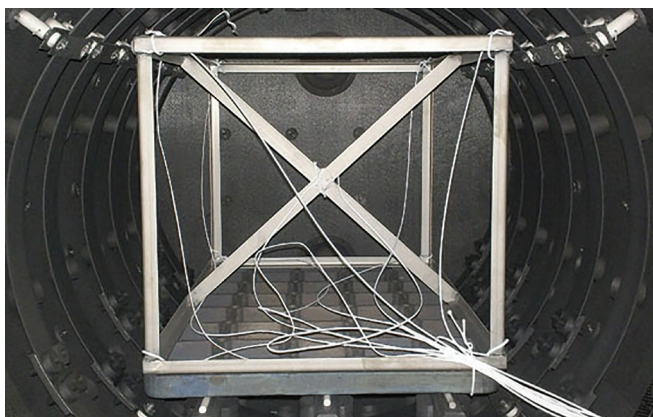
Calibration

- UKAS accredited for three fields of expertise in Pressure, Temperature and Electrical
- Over 50 years of experience
- Flexibility to meet your requirements on or offsite
- Fast and efficient maintenance and repair service

Quality

- TT Electronics is an ISO9001:2008 company, offering UKAS and traceable calibration under ISO/IEC 17025 accredited procedures. Our certificate generation systems are purposely geared to meet the strict requirements of the aerospace industry, to assist with compliance to the latest revision of AMS2750.

Temperature Uniformity Surveys and System Accuracy



- Temperature uniformity is defined as the maximum temperature deviation in the work space of the furnace.
- The work space is smaller than the furnace chamber and describes the volume which can be used for charging.
- System accuracy is defined by adding the tolerances of the controls, the thermocouple and the workspace.

Instrumentation	Type					Furnace Class	Temperature Uniformity	
	A	B	C	D	E		°C	°F
Each control zone has a thermocouple connected to the controller	X	X	X	X	X	1	±3	±5
Recording of temperature is measured by the control thermocouple	X	X	X	X		2	±6	±10
Sensors for recording the coldest and hottest spots	X		X			3	±8	±15
Each control zone has a charge thermocouple with recording system	X	X				4	±10	±20
Each control zone has an over-temperature protection unit	X	X	X	X		5	±14	±25
	X	X	X	X		6	±28	±50

After the introduction of the CQI-9, the automotive industry has also committed to submit heat processes to stricter rules.





Product Applications

From concept to manufacture, our engineering teams aim to build strong partnerships with customers to provide enhanced solutions for performance critical technologies.

Products:	Applications:	Key Features and Benefits:
Flow Meters 	• Gas or liquid flow • Gas turbines • In-laboratory • Defence • Test and measurement	• BSP/NPT screwed end fittings • Brass or stainless steel housing • 15, 25, 50 mm. 1/2", 1", 2" bore sizes; wide flow ranges • Local indication; optional electronic outputs • Offers integral damping on gas flow lines; digital signal processing
Temperature Sensors 	• Aerospace • Heat treatment • Metal and steel processing • Glass • Food and beverage	• Bespoke manufacture • Temperature range: -196°C to +1800°C • UKAS calibration • AMS2750 /NADCAP compliant • Fast turnaround • Some standard configurations stocked
Pressure Sensors and Transmitters 	• Oil and gas • In-laboratory • Test and measurement • OEM • Medical equipment • Off-Highway	• Small, rugged and economical; high EMC immunity • Re-rangeable models and bespoke designs • UKAS and traceable calibration • 1 % total error band (-40°C to +105°C) • 100V ratiometric output 5V supply, 0.5 to 4.5V ratiometric 8-30V supply • 4-20 mA or 1-5V output • Packard, M12 or Mini DIN connector

TT Electronics

Roxspur Measurement & Control Ltd
2 Downgate Drive
Sheffield
South Yorkshire S4 8BT
United Kingdom

www.roxspur.com
www.ttelectronics.com



High Reliability

Harsh
Environments

Temperature
Uniformity
Solutions

Close Engineering
Collaboration

Head Mount
Transmitters

Controllers and
Recorders

Double Sided
Cooling

Asset Management

Thermocouples

Aerospace Pedigree

AMS2750



Engine Controls

Thermal Imaging

Data Acquisition
Solutions

Installation

Resistance
Thermometers

Signal Conditioning

Safe Contractor

Space Pedigree

Infrared Pyrometers

Control Panels

CQI-9

UKAS Accredited