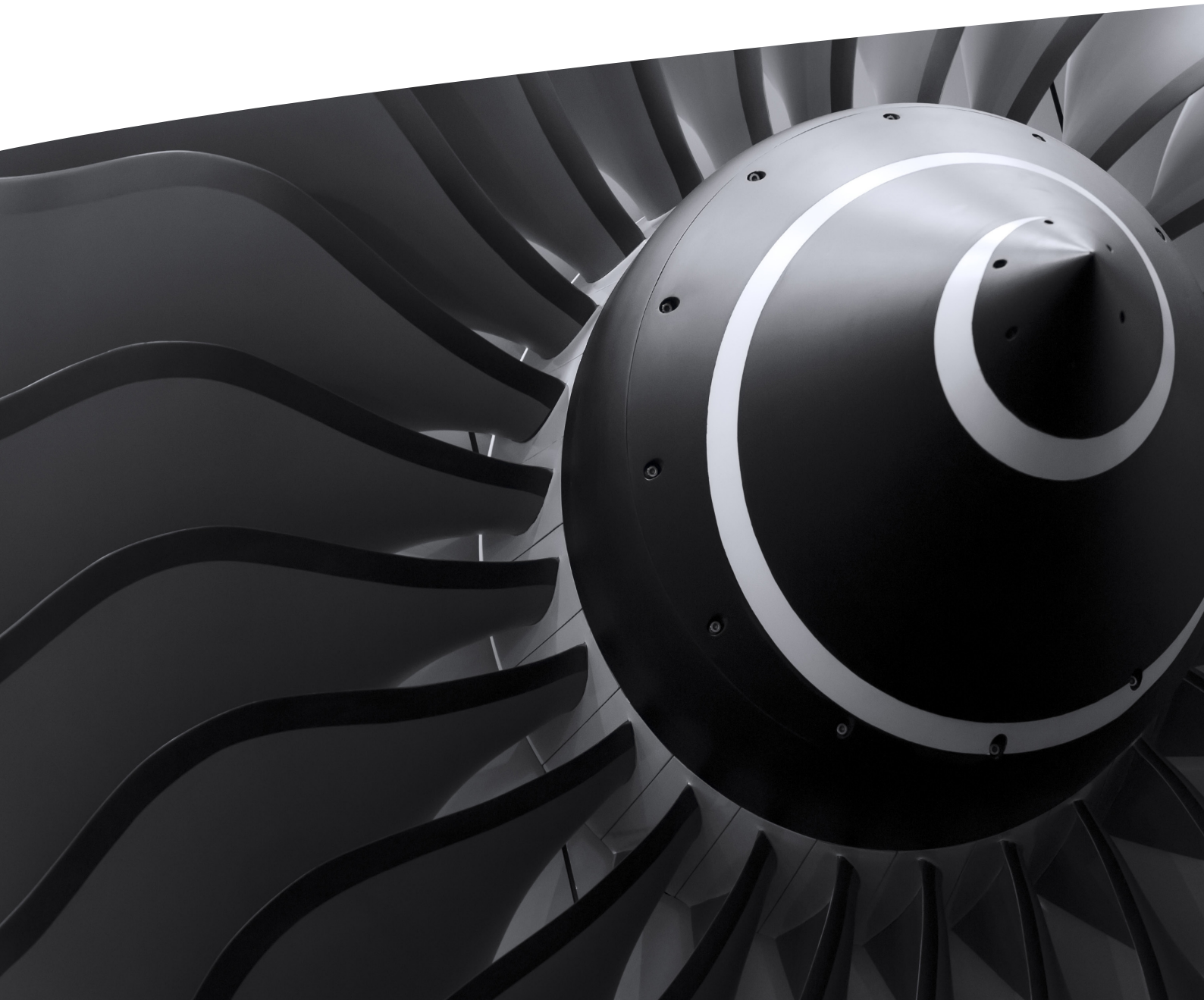
TT Electronics

TEMPERATURE

& CALIBRATION SERVICES

SENSORS AND SPECIALIST COMPONENTS

ROXSPUR MEASUREMENT & CONTROL LTD.



WHO WE ARE

We provide complete temperature, pressure and flow instrumentation solutions.

We supply a full range of temperature, pressure and flow products.

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

We offer on-site calibration service for industrial and aerospace manufacturing.

CALIBRATION SERVICES

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.

QUALITY

- 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 -196ºC to +1600ºC
- Gas flow ranges from 5 mL/min to 50 L/min
- Pressure ranges from -0.9 bar g to 1200 bar g
- 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

CALIBRATION SERVICES

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.

We operate a Quality Management System (ISO 9001:2015), and offer UKAS certification (BS EN ISO/IEC 17025) and/or traceable calibration. Our certificate generation systems are purposely geared to meet the strict and specific requirements of the aerospace industry. Our team of experienced engineers are able to provide on-site calibration of various types of equipment including autoclaves, furnaces, thermocouples, RTD probes, scales, balances, ovens, chambers, indicators, controllers, pressure and electrical instruments. We cover the full spectrum of industry sectors.

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 spec.

INFRARED THERMOMETERS

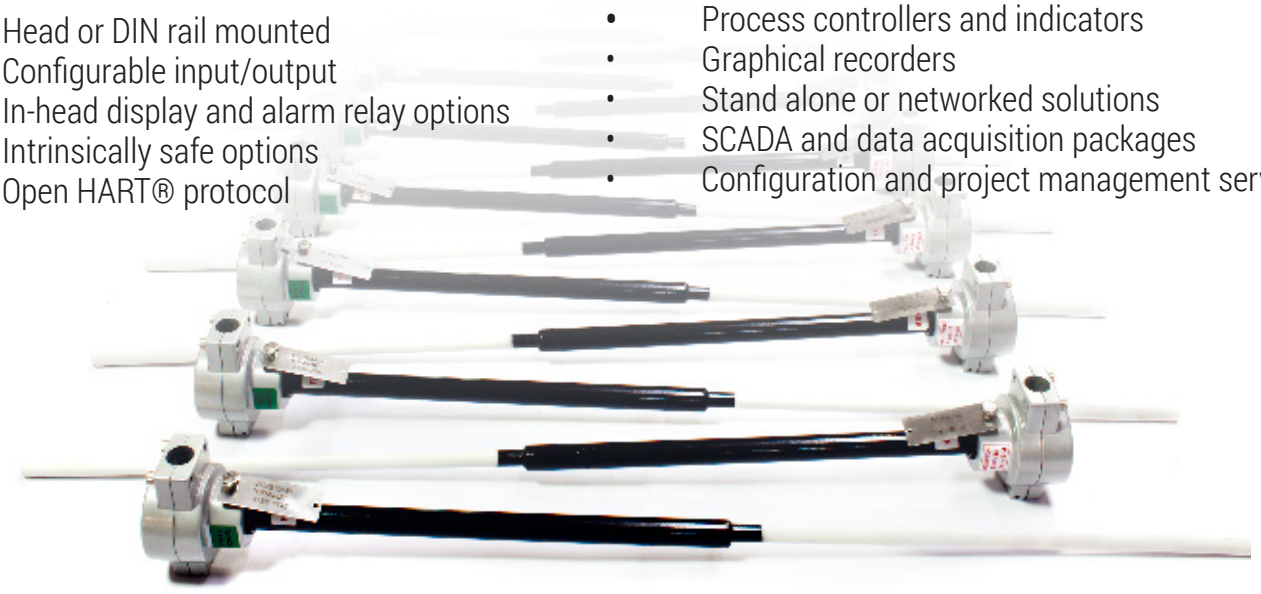
- 0 °C to +3000 °C range (1575 °C is top point)
- Adjustable emissivity
- Datalogging function
- Fixed or portable

TEMPERATURE TRANSMITTERS

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

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



CALIBRATION SERVICES

Enhanced Capabilities

In addition to our manufactured ranges, TT Electronics complements this by providing a complete solution to our customer requirements. As a technical solutions partner with Eurotherm, by Schneider Electric, we provide a full range of controllers and data recorders rich in features and designed for easy operation and reduced engineering time.

They contain market-leading control algorithms, recording and data management strategies which add value to industrial processes improving quality, reducing waste and ensuring data is kept safe for as long as it is needed.

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

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 and ensuring data is kept safe for as long as it is needed.

Life Is On | Eurotherm by Schneider Electric

Temperature Calibration

Either on-site or in-house, TT Electronics' calibration engineers can provide calibration services to either UKAS or traceable standards. Our calibration facilities offer one of the widest ranges of services in the UK with our temperature calibration capability ranging from -196 °C to 1,600 °C.

INSTRUMENTS COVERED INCLUDE:

- Thermocouples of all types
- RTD's (i.e. Pt100 Platinum Resistance Thermometers, thermistors, etc.)
- Disappearing filament pyrometers
- Infrared pyrometers
- Liquid in glass thermometers
- Digital thermometers with external probes
- Data recorders with external probes

TEMPERATURE CAPABILITIES

Instrument	Calibration Type	
	UKAS	Traceable
Temp Ref Unit 6mm/ 1/4" insert required	-90 °C to 1,100°C	-90 °C to 1200°C
MI (Mineral Insulator) All lengths, all sheath material MI1=0.5mm to 10.8mm diameter	-196 °C to 1,300 °C	-196 °C to 1,300 °C
RT (Resistance Thermometer) All lengths, all sheath material	-196 °C to 300 °C	-196 °C to 660°C
DF Pyrometer	Not Applicable	800 °C to 1575°C
Infrared Pyrometer	Not Applicable	-20 °C to 1575°C
Digital Thermometer	-196 °C to 1,600 °C Dependent on probe type	-196 °C to 1,600 °C Dependent on probe type
Liquid in glass	-80 °C to 300 °C	-80 °C to 300 °C
Platinum wire	0 °C to 1,600 ° C Up to 0.5mm diameter	0 °C to 1,600 °C

Calibration points can be as many as required

CALIBRATION SERVICES

Pressure Calibration

TT Electronics' UKAS pressure laboratory calibrates over the range of -0.9 bar gauge to 1,200 bar gauge using mediums of gas, water, and oil.

INSTRUMENTS COVERED, INCLUDE:

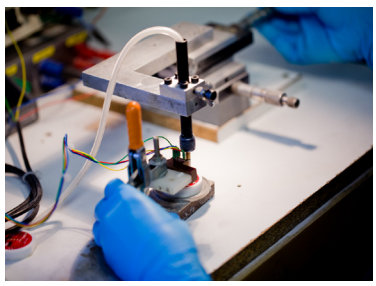
- Hydraulic pressure gauges
- Gas pressure gauges
- Vacuum gauges
- Pressure transducers
- Digital calibrators and pressure indicators

PRESSURE CAPABILITIES

Instrument	Calibration Type	
	UKAS	Traceable
Pressure Gauges	-0.9 bar g to 1,200 bar g	-0.9 bar g to 1,200 bar g
Pressure Transmitter	-0.9 bar g to 1,200 bar g	-0.9 bar g to 1,200 bar g
Digital Pressure Indicator	-0.9 bar g to 1,200 bar g	-0.9 bar g to 1,200 bar g
Manometer	-0.9 bar g to 1,200 bar g	-0.9 bar g to 1,200 bar g
Barometer	Atmospheric pressure only	Atmospheric pressure only

Calibration on-site (700 bar g maximum)





CALIBRATION SERVICES

Flow Calibration

TT Electronics' flow laboratory is one of very few in the UK that measures gas flow rates to UKAS standards of up to 50 L/min. In addition, traceable certification is obtainable on gas flow rates up to 1,000 L/min and water flow rates up to 2,500 L/min.

INSTRUMENTS COVERED INCLUDE:

- VA flow meters
- GMT flow meters
- Turbine flow meters
- Bubble generator

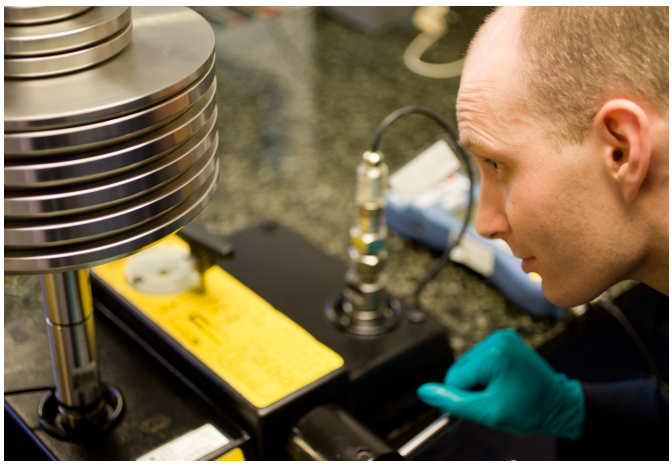
FLOW CAPABILITIES

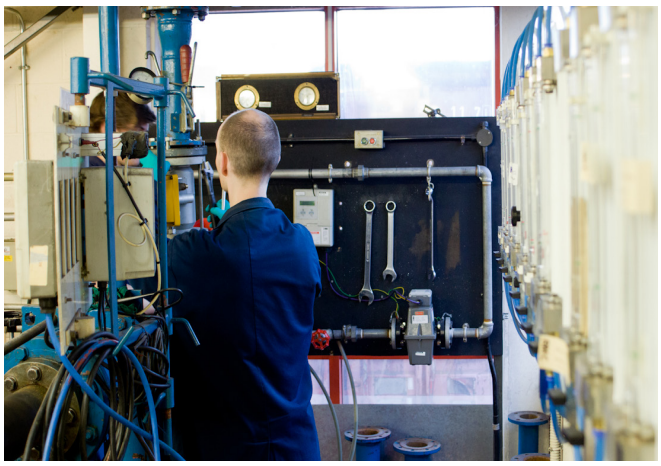
Instrument	Calibration Type	
	UKAS	Traceable
Gas Flow (standard 5 point)	0.005 to 50 L/min gas*	0.005 to 900 L/min air
Bubble Generator (standard 5 point)	0.005 to 50L/min air	0.005 to 50 L/min air
Water Flow (standard 5 point)	N/A	0.21 to 2,500 L/min air

On-site flow calibrations can not be carried out

**Gases include compressed air, oxygen, nitrogen, carbon dioxide, helium, nitrous oxide and argon*

We calibrate meters up to a maximum 4" pipe size on the large water rig with flange fittings





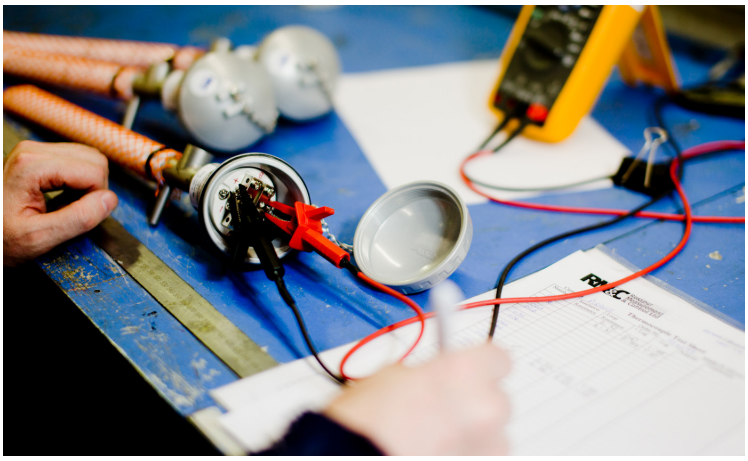
CALIBRATION SERVICES

Electrical Calibration

Our electrical laboratory covers parameters of AC/DC voltage, AC/ DC current, resistance, frequency and time.

INSTRUMENTS COVERED INCLUDE:

- Hand-held multimeters
- Chart recorders and data recorders
- Bench meters and clamp meters
- Resistance boxes
- Panel meters and counters
- Electronic thermometers
- Insulation testers
- And many others!



ELECTRICAL CAPABILITIES

Instrument	Calibration Type	
	UKAS	Traceable
Ammeter	N/A	0 A to 2 A
Bench Meter	Multi-range	Multi-range
Chart Recorder	Multi-range	Multi-range
Clamp Meter	20 A to 1000 A	20 A to 1000 A
Field Test	Multi-range	Multi-range
Insulation Tester	N/A	Multi-range
Loop Tester	N/A	Multi-range
Ohmmeters	0 Ω to 2 G Ω	0 Ω to 2 G Ω
Potentiometer	Multi-range	Multi-range
RCD Tester	N/A	Multi-range
Resistance Box	0 Ω to 2 G Ω	0 Ω to 2 G Ω
Secondary Standard	Multi-range	Multi-range
Stop Watch	30 s to 8 hours	30 s to 8 hours
T/C Calibrator	Multi-range	Multi-range
Tachometer	Multi-range	Multi-range
Temp Indicator/Controller	Multi-range	Multi-range

On-Site Calibration & Services

Our team of experienced on-site engineers covers the full spectrum of industry sectors. Calibration can be performed to either UKAS and/or Traceable to National Standards. As a company we have particular and considerable expertise in the aerospace and heat treatment industries.

OUR UKAS CALIBRATION CAPABILITIES INCLUDE:

- Thermocouples
- All analogue or display instruments (within our accredited range)
- Furnaces, ovens, autoclaves, incubators, cold rooms or freezers (surveyed to national standards and other individual specifications including RRP 54000 and AMS 2750)

OUR CALIBRATION TRACEABLE TO NATIONAL STANDARDS INCLUDE ALL OF THE ABOVE AND THE FOLLOWING:

- All process control instrumentation
- Pressure gauges and transducers
- Weighing scales
- Humidity/Infrared/pH

Service Type	Calibration Type		
	PRESSURE	TEMPERATURE	ELECTRICAL
Traceable Certified Calibration	TT	TT	TT
UKAS Certified Calibration	TT	TT	TT
Installation of Instrumentation	TT	TT	TT
Control System Consultation	TT	TT	TT
Thermal Uniformity Surveys		TT	
Emergency Breakdowns	TT	TT	TT
Maintenance (Service)	TT	TT	TT
Control Panels and System Builds	TT	TT	TT

All on-site calibration certificates are available online via our dataview browser portal.

CALIBRATION SERVICES

Methods of Calibration

There are numerous ways to calibrate an instrument. From injecting a signal to removing an instrument and putting it into a known heat source. Below is a list and explanation of the different types.

Disappearing filament pyrometer: Unit is sited against a calibrated black body furnace set at a known temperature; rising and falling results are taken (up to 1575 °C).

Electrical measure: Output signal from the unit under test is input in to an electrical standard and both values are compared.

Electrical simulation: Calibrated electrical standards are used to output a known electrical value (V, A, or Ω), a reading is taken from the unit under test and both values are compared.

Flow: Unit under test is set to a flow level and air/fluid flow is started, a timer is used to record the time taken for a set volume of air to pass through the flow meter, results are then calculated.

Infrared: Unit under test is sited to a black body furnace set at a known temperature; readings are taken and compared to a calibrated standard.

Pressure comparison: Calibrated pressure sensor is used to apply known rising and falling pressure values, rising and falling readings are taken from the unit under test and both values are compared.

Temperature Uniformity Survey (TUS): Calibrated thermocouples are inserted into the oven at set positions, the oven is set at specific temperature points and the values from the thermocouples are recorded.

Thermal comparison: Readings from a temperature sensor under test and calibrated sensors are taken at a temperature and both values are compared.

Timers: Both a calibrated stopwatch and the unit under test are started simultaneously; after the required time, both timers are stopped simultaneously and both values are compared.


INDUSTRIES

Industrial, Aerospace & Defense, Harsh Environments, Engine Controls, Thermal Imaging, Signal Conditioning, Control Panels

QUALIFICATIONS

AMS2750, Aerospace Pedigree, CQI-9, UKAS Accredited, Safe Contractor

PRODUCTS & CAPABILITIES

Controllers & Recorders, Temperature Uniformity Solutions, Head Mount Transmitters, Asset Management, Thermocouples, Double Sided Cooling, Data Acquisition Solutions

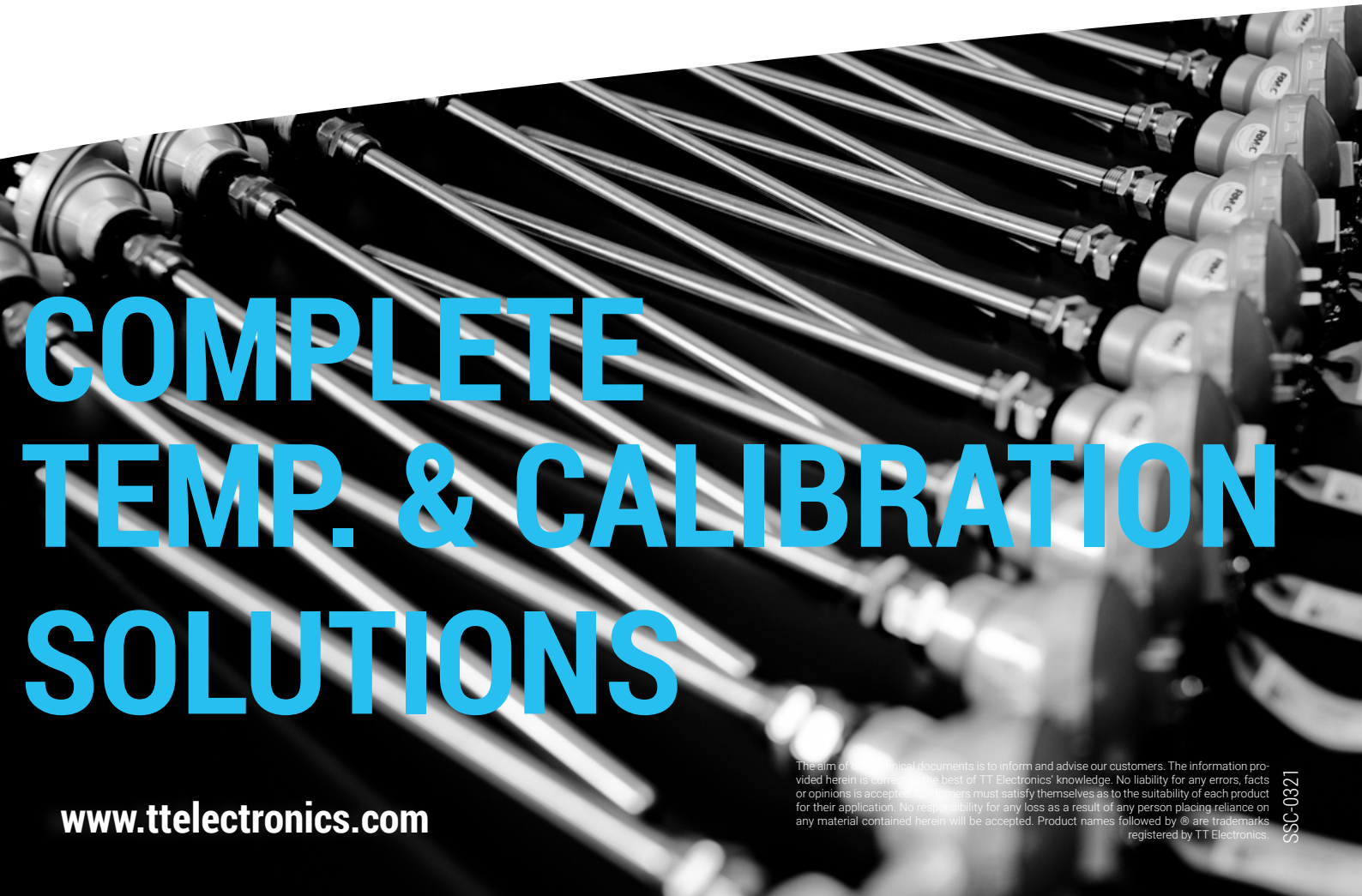
EUROPE

+44 (0) 114 244 2521

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

Sheffield.Admin@ttelectronics.com

UKAS CALIBRATION
0043



COMPLETE TEMP. & CALIBRATION SOLUTIONS

www.ttelectronics.com

SSC-0321