Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

0295

Haven Automation Limited

Issue No: 022 **Issue date:** 11 August 2004

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SUMMARY OF ACCREDITATION

Calibration performed on permanent laboratory premises

ELECTRICAL

Ammeters, ac
Ammeters, dc
Bridges and similar instruments, resistance
Calibrators, multimeter
Capacitance meters
Frequency counters
Frequency meters
Insulation testers
Multimeters, analogue
Multimeters, digital
Potentiometers
Power supply units
Resistance boxes
Resistance meters
Resistors, dc
Shunts
Voltmeters, ac
Voltmeters, dc

PRESSURE

Gas gauge, indicating instruments
Gas gauge, devices with an electrical output
Gas negative gauge, indicating instruments
Gas negative gauge, devices with an electrical output
Hydraulic gauge, indicating instruments
Hydraulic gauge, devices with an electrical output

TEMPERATURE

Block 'calibrators'
Liquid baths
Resistance thermometers
Temperature indicators and recorders, with temperature sensor(s)
Temperature indicators and recorders, electrical calibration without sensor
Thermocouples, base and noble metal types, e.g. K, N, T, R, S

DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty (k=2)	Remarks
ELECTRICAL			
DC RESISTANCE			
Measurement	Up to 20 Ω	30 ppm + 100 μΩ	
	20 Ω to 200 Ω	50 ppm	
	200 Ω to 2 kΩ	30 ppm	
	2 kΩ to 20 kΩ	30 ppm	
	20 kΩ to 200 kΩ	30 ppm	
	200 kΩ to 2 MΩ	50 ppm	
	200 kΩ to 2 MΩ	50 ppm	
	2 MΩ to 20 MΩ	100 ppm	
	20 MΩ to 200 MΩ	350 ppm	
	200 MΩ to 1 GΩ	0.65%	
Generation	Up to 40 Ω	250 ppm + 100 μΩ	
	40 Ω to 400 Ω	100 ppm	
	400 Ω to 4 kΩ	100 ppm	
	4 kΩ to 40 kΩ	100 ppm	
	40 kΩ to 400 kΩ	100 ppm	
	400 kΩ to 4 MΩ	120 ppm	
	4 MΩ to 40 MΩ	300 ppm	
	40 MΩ to 400 MΩ	300 ppm	
DC VOLTAGE			
Measurement	Up to 200 mV	3 μV	
	200 mV to 2 V	15 ppm	
	2 V to 20 V	15 ppm	
	20 V to 200 V	40 ppm	
	200 V to 1 kV	40 ppm	
Generation	Up to 320 mV	50 ppm + 2 μV	
	320 mV to 3.2 V	140 ppm	
	3.2 V to 32 V	140 ppm	
	32 V to 320 V	140 ppm	
	320 V to 1050 V	140 ppm	
DC CURRENT			
Measurement	Up to 20 mA	70 ppm + 10 nA	
	20 mA to 200 mA	120 ppm	
	200 mA to 2 A	220 ppm	
Generation	Up to 320 μA	120 ppm + 6 nA	
	320 μA to 3.2 mA	300 ppm	
	3.2 mA to 32 mA	300 ppm	
	32 mA to 320 mA	0.065%	
	320 mA to 3 A	0.07%	
	3A to 10 A	0.065%	
AC VOLTAGE			

Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty (k=2)	Remarks
Generation	*320 mV to 300 V* 40 Hz to 30 kHz	 0.05%	
	300 V to 750 V 40 Hz to 10 kHz	 0.06%	
	750 V to 1050 V 40 Hz 60 10 kHz	 0.1%	
AC CURRENT			
Generation	*32 mA to 320 mA* 10 Hz to 110 Hz 110 Hz to 3 kHz	 0.04% 0.13%	
	320 mA to 3 A 40 Hz to 110 Hz 110 Hz to 3 kHz	 0.05% 0.08%	
	3 A to 10 A 40 Hz to 110 Hz 110 Hz to 3 kHz	 0.08% 0.18%	
CAPACITANCE			
Generation	1 nF to 4 nF 4 nF to 40 nF 40 nF to 400 nF 400 nF to 4 µF 4 µF to 40 µF 40 µF to 400 µF 400 µF to 4 mF 4 mF to 30 mF	0.3% 0.2% 0.2% 0.2% 0.2% 0.2% 0.35% 0.35%	
FREQUENCY			
Generation	0.5 Hz to 200 kHz	0.002% + 0.01 Hz	
PRESSURE			NOTES
<u>Hydraulic pressure (gauge)</u>			1 Calibrations may be undertaken expressed in other units of pressure as required.
Calibration of pressure indicating instruments and gauges	550 kPa to 6 MPa 6 MPa to 60 MPa	0.02% 0.015%	
<u>Gas pressure (gauge)</u>			2 Calibration of pressure measuring devices with an electrical output may be undertaken.
Calibration of pressure indicating instruments and gauges	-90 kPa to -5 kPa 5 kPa to 35 kPa 35 kPa to 42 kPa 42 kPa to 700 kPa 700 kPa to 3.45 MPa	0.025% 0.02% 0.01% 0.012% 0.02%	
TEMPERATURE			

UKAS CALIBRATION
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Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty (k=2)	Remarks
Resistance Thermometers	-70 to below 0 °C 0 °C above 0 to 100 °C above 100 to 300 °C above 300 to 600 °C	0.07 °C 0.06 °C 0.10 °C 0.15 °C 0.22 °C	
Thermocouples (Base and noble metals)	below 0 °C down to -70 °C 0 °C up to +50 °C above 50 °C up to 300 °C above 300 °C up to 600 °C	0.5 °C 0.3 °C 0.5 °C 1.0 °C	
Electronic thermometers with sensors		As for sensor plus:	
Analogue	As for Sensor	½ scale division	
Digital	As for Sensor	1 lsd	
Solid state temperature sensors with indicators	-70 °C up to 150 °C	0.3 °C + 1 lsd	
Temperature Indicators (electrical simulation test)	-50 to 600 °C above 600 °C up to 1768 °C	0.6 °C 1.0 °C	
Metal Block calibrators	-50 to 300 °C above 300 °C up to 600 °C	0.3 °C 1.0 °C	
Liquid Baths	0 °C to 250 °C	0.2 °C	

END