

CERTIFICATE of CALIBRATION



Issued By
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Date of Issue **15 Jun 2011**

Certificate No. **73328**



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Accreditation Category **A**

Client **SCS**
Address **22 FOX PARK,
FINNSTOWN ABBEY,
LUCAN,
CO DUBLIN**

Manufacturer **Rs**
Type **163-5348**
Description **Tachometer**
Serial No. **AB.40026**
Asset No. **None**

Purchase Order No. **TBA**

Date In **09 Jun 2011**
Calibration Date **15 Jun 2011**
Calibration Due **15 Jun 2012**

This certificate is issued in accordance with the conditions of accreditation laid down by the Irish National Accreditation Board which has assessed the measurement capability of the laboratory. The reported results are traceable to recognised National and International Standards. The results refer to the 'as received' condition of the equipment prior to any adjustments. If so adjusted then the post adjustment results are also recorded and noted as such.

The reported expanded uncertainties of measurement is stated as the standard uncertainty of measurement multiplied by a coverage factor $k=2$, calculated from a normal distribution to give a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA-4/02. The long term stability of the object has not been taken into account.

Authorised Signatory/code

- Mr. Robin Woods Technical Manager
- Mr. David Urquhart Quality Manager
- Mr. James Sheehy Senior Engineer



The results recorded relate only to the item specified above
This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory

CONFIDENTIAL REPORT

Client **SCS**
 Manufacturer **RS**
 Model No. **163-5348**
 Serial No. **AB.40026**
 Control No. **None**
 Description **Tachometer**
 Location **Transtest Calibration Laboratory**
 Environment **23 °C ± 2 °C, rh = (50 ± 10) %**

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 Calibration Date **15-Jun-11**
 Calibrated By **M.Lee**

Calibration File No. **Tachometer-5500A-1y-Rev10_1**

RPM Measurement Accuracy :

Method Used : **CTM 304**

Range Tested	Input Frequency (Hz)	Calculated rpm	Display Reading	Specification ± rpm	Display Error (rpm)	Pass/Fail Code	Uncertainty ± rpm
rpm	0.1	6	6.0	0.10	0.0	Pass	5.8E-02
	1	60	60.0	0.13	0.0	Pass	5.8E-02
	2	120	120.0	0.16	0.0	Pass	5.8E-02
	5	300	300.0	0.25	0.0	Pass	5.8E-02
	10	600	600.0	0.4	0.0	Pass	5.8E-02
	20	1200	1200	1.6	0.0	Pass	5.8E-01
	50	3000	3000	2.5	0.0	Pass	5.8E-01
	100	6000	6000	4	0.0	Pass	5.8E-01
	200	12000	12000	7	0.0	Pass	5.8E-01
	500	30000	30000	16	0.0	Pass	5.9E-01
	1000	60000	60000	31	0.0	Pass	6.3E-01

Uncertainties include a contribution from the UUT of ± 1/2 LSD.

CALIBRATION INFORMATION

Test Specification Used :-

The Manufacturers Specifications were taken from the Operating Manual

Extent of Calibration :-

RPM accuracy over the full range

Exclusions :-

None

Summary :-

The Instrument meets or exceeds the Test Specification at the measured points, except where indicated.

- Pass Where instrument error is less than 50 % of the test specification
- Pass' Where instrument error is greater than 50 % of the test specification
- # Where the Pass/Fail code is # the measurement uncertainty may have an effect on the result
- Fail Where instrument error minus uncertainty is greater than the test specification

Method :-

After a suitable Temperature Stabilization Period, Light Pulses Precisely Known periods were applied to the optical input, the display was recorded and compared with the test specifications. Transtest's Common Test Methods manuals (CTM) details equipment, connection details and procedures.

Test Equipment Used :-

Asset no.	Manuf.	Type	Cal date
210	Fluke	5500A	29/07/2010

Traceability :-

The above measurements are traceable via standards maintained by Butler Transtest Ltd Calibration Laboratory, via the National Metrology Laboratory, (Rep. of Ireland), or other approved accredited routes, to the National Physical Laboratory, (U.K.), or The Bureau International des Poids et Mesures, (France).

End of Report