

Calibration capabilities to ISO17025

UKAS accreditation number 6772

Torque

Torquemeters Ltd use a qualified purpose built torque calibration rig for ISO17025 calibrations, designed to give the best certification capability and the lowest uncertainty of measurement. Balanced arms are supported by low friction bearings with the torque transmitted via flexible couplings to prevent end loads and moments being applied to the article under calibration. The reaction arm can be levelled to ensure the load arm is always horizontal and calibrated masses are used to give minimum uncertainty for all load conditions. The environment is controlled and calibrations are conducted by qualified technicians to ensure quality and consistency of calibration and service.

Facility Range

Calibration rig torque capability range 300-3500 N·m

Uncertainty in applied torque – better than 0.01% (k=2 for a probability of 95%)

Best Measurement Capability (CMC)

300-500 N·m 0.03% (k=2 for a probability of 95%)

500-3500 N·m 0.025% (k=2 for a probability of 95%)

Calibration follows either the BS7882:2017 'Method for calibration and classification of torque measuring devices' or DIN 51309:2005 'Calibration of static torque measuring devices' protocols. Both standards require four series of loadings, at least two incremental, and at least one incremental and decremental. The transducer is mounted in three different orientations of the shaft.

Items may be calibrated in units of torque, e.g. N·m, lbf.ft or in electrical units e.g. phase or mV/V

Unless agreed otherwise recalibrations will be performed in units of torque, new units will be calibrated in units of phase, to establish shaft stiffness, and then in units of torque. By default results will be reported to the DIN51309:2005 standard.

Both standards classify the results of the calibration against an accuracy class, e.g. 0.05, 0.1, 0.2

Unless agreed otherwise, device classification will be determined according to the standard at each load together with a conformance probability of the error of indication meeting the limits for that class. The probability determination will take account of the uncertainty of measurement at each load.

When a torquemeter is returned with its electronics a system calibration will be conducted unless agreed otherwise.

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Phase

Torquemeters Ltd accredited laboratory can also undertake calibration of phase meters. Units under test are assessed against calibrated waveform generators, reporting deviations at a range of phases and frequencies.

Accredited ranges include;

Amplitudes 50mV rms, 500mV rms

Frequencies 55Hz, 1kHz, 10kHz, 50kHz, 100kHz

Phase angles 30, 90,180,270,300 degrees (or units of Phase %. 100% = 360°)

Best measurement capability (CMC)

Frequency Hz	50mV rms Degrees	500mV rms Degrees
55 Hz -1kHz	0.046	0.046-0.051
1 – 10kHz	0.046-0.040	0.051-0.044
10 -50kHz	0.040-0.030	0.044-0.045
50 -100kHz	0.030 -0.034	0.045

Unless agreed otherwise, acceptance is determined where the conformance probability of the deviation lying within the stated tolerance bands, and using the stated uncertainties, is greater than 95%.