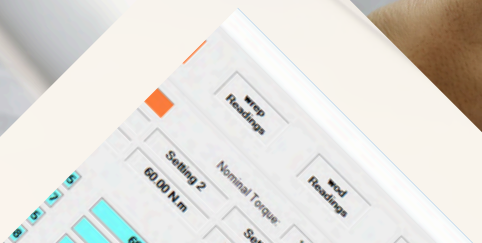
AWS

Advanced Witness Systems Ltd.

Torque Measurement & Calibration

ADVANCED WITNESS SYSTEMS

PRODUCT CATALOGUE 2026



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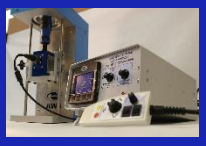






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AWS Product Decision Tree

Start

- Torque Software? — Yes → Tools or Measuring Devices?
  - Torque Tools → Kepler 4
  - Torque Measuring Devices → Excalibur
- No → Are you calibrating to the latest standards?
  - Yes → Calibrating Torque Wrenches?
    - Yes → UTWCM
    - No → Calibrating Torque Screwdrivers?
      - Yes → UTSCM
      - No → Calibrating Torque Devices?
        - Yes → 4 - 2,000Nm?
          - Yes → UTCM
          - No → Supported or Unsupported?
            - Supported → 2Nm Calibration Machine
            - Unsupported → 2Nm Wheel
  - No → Torque Tester?
    - Yes → Colour Coded Readings?
      - Yes → PTTT
      - No → PCTU
    - No → Torque Display?
      - Yes → PTD
      - No → Torque Transducer?
        - Yes → To Use With AWS Equipment?
          - Yes → I Series
          - No → Do you want to recall data from the transducer?
            - Yes → N Series
            - No → A Series
        - No → Torque Adapter?
          - Yes → PTA
          - No → Contact Our Experts

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About AWS

Advanced Witness Systems Ltd is a premier designer of torque calibration and control equipment, meeting national and international standards of accreditation.

Trading for over 35 years, our designers have extensive knowledge and experience in the design and manufacture of torque instrumentation and control systems. For over 40 years, our Managing Director has been known internationally as a specialist in torque and is heavily involved in developing national and international torque standards. He was also concept designer for the NPL National Torque Calibration Machine. Acclaimed to be, and since proven to be one of the most accurate in the world.

Some of the AWS Team

AWS products are designed and manufactured in the UK to comprehensive specifications and rigorously tested to fully comply with national and international standards.

We have manufactured innovative calibration machines for the calibration of torque wrenches and torque screwdrivers to meet the ISO 6789:2017 standard for calibrating torque tools.

We have supplied equipment to a variety of sectors, including accredited calibration laboratories, airlines, aerospace MRO providers, sub sea, automotive manufacturers, medical, defence and power generation.

If it's experience in the torque industry you're looking for, our Managing Director Ron Sangster is the person to speak to!

He has over 40 years of experience in the torque measurement and calibration industries. Before setting up AWS Ltd 35 years ago, he worked for companies in the torque field, gaining them international recognition.

He's designed solutions to torque problems in numerous industries, including oil and gas, nuclear, defence, aerospace, medical, automotive, fastener, and accredited laboratories.

He's been the design consultant to NPL for the UK's National Torque Calibration Machine, is chairman of two BSI torque technical committees, and a member of several others. He's also co-authored and presented torque standards papers at world IMEKO conferences, and in National Measurement and Quality seminars.

Managing Director Ron Sangster at the National Physical Laboratories where he was contracted as the Concept Designer and Consultant for the Master 2kNm Torque Calibration Machine

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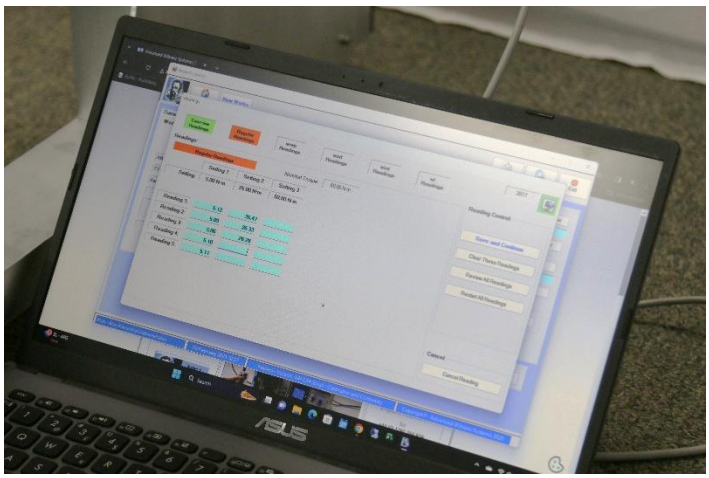
About AWS

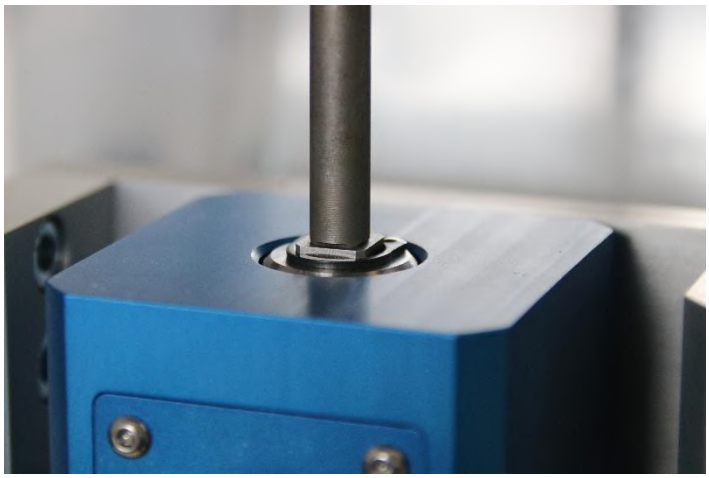


Our accredited machines have been a favoured choice in calibration laboratories worldwide, with solutions such as the Universal Torque Wrench Calibration Machine working reliably in laboratories since the introduction of the ISO 6789:2017 standard eight years ago.

Over 30 years ago we first developed our Kepler torque tool calibration software. Now, in its latest version, Kepler 4 is our most advanced and complete accredited torque tool calibration software to date.

Our design experts are here to help with planning your new torque setup or bespoke application. Whether it involves specific mounting arrangements, a novel torque application or incorporation within a larger assembly, our experts can work with you to meet your needs.

For detailed answers to frequently asked torque related queries, explore our range of blogs and white papers, where we address common industry questions. If you need further assistance, our experts are happy to help.



UK based in Banbury, Oxfordshire, near junction 11 of the M40, we are easily accessible from anywhere in the country by car or train. With our proximity to nearby international airports, we can be reached from anywhere in the world.

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Testimonials

To read the full testimonials, visit www.awstorque.co.uk/support/testimonials.html

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Torque Calibration Machines

Our torque calibration machines are for calibrating torque wrenches, torque screwdrivers, torque transducers and torque testers to the latest international torque standards such as ISO 6789:2017 and BS 7882:2017.

Our Universal range of torque calibration machines feature automated operation allowing for faster torque calibrations, minimizing the operator skill, effort and minimal training increasing reliability.

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The Benefits of Automated Operation for Torque Calibration

With a brief look at our products, you'll see numerous mentions to the automated operation of the Universal range of torque calibration machines. But what does this actually mean, and why should you be looking into torque calibrators with automated operation?

What is Automated Operation?

Automated operation means that the user controls the calibration machine via a handheld pendant controller, with the torque being applied via a stepper motor and gearbox combination within the machine rather than the user having to apply force to the tool or device themselves, by hand or applying weights.

What Are the Benefits for the Laboratory?

- ✓ **Faster Calibrations**

  Accredited torque calibrations can be a lengthy process, ensuring you're complying with the strict timing requirements of standards whilst also minimising uncertainties. So why not get a machine that can handle all this for you? With an automated operation torque calibrator, these concerns are handled by the machine whilst still performing operations quickly, meaning you can get through your calibrations in record time!

- ✓ **Faster Throughput of Tools**

  Simply put, the faster you can perform the calibrations without manual input errors, the more items you can calibrate. By using automated operation torque calibration machines, you can calibrate more torque tools or torque measuring devices each day, thereby increasing the profit margin of your laboratory, or allowing you to become more competitive in your marketplace.

- ✓ **Deskill the Calibration Process**

  Have you found staff holidays or sickness has slowed down or even halted your calibration laboratory? Automated operation calibration machines are far simpler to use than their manual equivalents, allowing your other calibration technicians to keep your workflow moving. All the strict timing and force application requirements of torque tool standard ISO 6789:2017 are performed by the automated operation of the AWS torque tool calibration machines.

- ✓ **Reduce Uncertainties**

  As the calibration becomes far less dependent on the operator, operator input, errors and uncertainties are reduced when using automated operation torque calibration equipment. If you want to limit operator data entry errors in your torque tool calibrations, why not automatically transmit the readings across to the ADMS Kepler 4 software? This removes any potential typing errors, improves your data integrity as well as speeding up your calibration process even further.

- ✓ **Safer Equipment**

  Have you ever found that an out of tolerance tool has overloaded your torque transducer? This isn't an issue with the AWS automated operation calibration machines. The operator can set a customisable upper limit which defaults to 110% of the transducer range, which stops the machine should the upper limit torque level be detected, thus preventing damage to the transducer or the tool.

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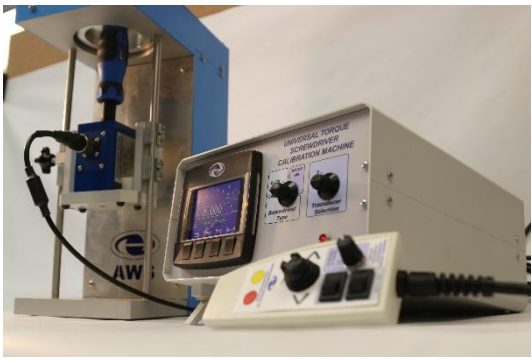
What are the Benefits for the Operator?

But it's not just the laboratory's performance that automated operation helps, it also provides benefits to the operators themselves:

- ✓ **Easier to Use**

  Automated operation means that the operator doesn't need to worry about following the tricky timing requirements of standards such as ISO 6789:2017 or applying large forces to high-capacity torque tools to get a reading. The AWS calibration machines perform all this, requiring the operator to only become easily familiar with machine operation via the simple handheld controller.



- ✓ **Reduced Fatigue**

  Ever find that your back aches or you feel fatigued part way through a work shift? By using a calibration machine with automated operation, the physical demand on the operator is virtually eliminated. So much so that apart from changing the torque values on the tool itself, you can perform the calibration from the comfort of your chair!

- ✓ **Reduced Risk of Injury**

  Reduced physical demand means reduced risk of injury. Lifting heavy weights around or applying large amounts of force all day can lead to sprains, strains, fractures and breakages, which can put you and your laboratory out of action for weeks and take several years off your career. With automated operation torque calibrators, gone are the days of risking injury in order to apply enough force or move enough weights to perform calibrations. It also helps to comply with your health and safety regulations.

Which Machines Feature Automated Operation?

Automated operation is featured on the Universal range of AWS torque calibration machines, with each machine utilising the feature slightly differently:

- ➢ **Universal Torque Wrench Calibration Machine (UTWCM)** - Torque is applied at the press of a button on a handheld pendant controller, removing the need for the operator to apply force at the end of a torque wrench. For click type wrenches, the UTWCM will then detect the peak automatically, stopping the machine and removing the torque.

- ➢ **Universal Torque Screwdriver Calibration Machine (UTSCM)** - Torque is applied at the press of a button on the handheld pendant controller, with the operator able to select whether the machine performs 1, 3, 5 or 10 operations at a time for click and cam type torque screwdrivers.

- ➢ **Universal Torque Calibration Machine (UTCM)** - Torque is applied using a jog joystick on the handheld pendant controller, removing the need for the operator to apply heavy weights to a beams and weights setup.

View our website for datasheets, video demonstrations and more information on these machines.

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Universal Torque Wrench Calibration Machine

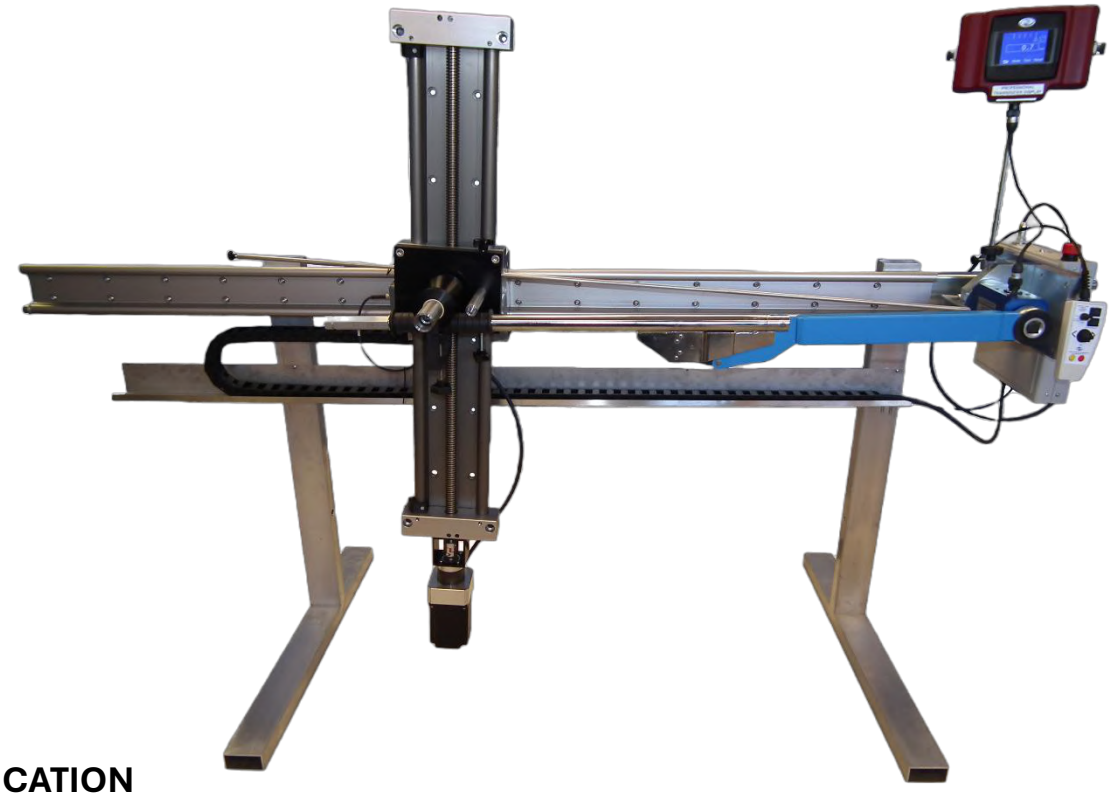
DESCRIPTION

The AWS Universal Torque Wrench Calibration Machine (UTWCM) provides an efficient means of calibrating and testing manually operated torque wrenches to ISO 6789:2017, ISO 6789:2003 or company specific standards and specifications.

The UTWCM is available in 6 versions; Automated or Semi-automated operation and ranges up to either 500Nm, 1500Nm or 3000Nm. All versions apply the force to the tool via a linear carriage stepper motor and an AWS microcontroller. An important feature is the minimization of parasitic forces applied to the torque wrench handle, due to the method of mounting the torque wrench. All versions of the machine can be used with our new ADMS Kepler 4 software to speed up completion of the calibration & certification process to ISO 6789:2017, ISO 6789:2003 or type approval for manufacturers.

The automated versions of the UTWCM uses AWS Intelligent Inline Torque Transducers (IITT's) and a Professional Transducer Display (PTD) to provide feedback to the microcontroller, automatically detecting a first peak signal for setting type wrenches, stopping the machine and returning to zero, greatly speeding up the calibration process and reducing operator input.

The semi-automated versions of the UTWCM, using its push buttons, controls the force on the tool. It relies on the operator to detect the target torque and stop the machine using the handheld controller.



SPECIFICATION

Model: UTWCM-	500 – S	500 – A	1500 – S	1500 – A	3000 – S	3000 – A
Range:	500 Nm	500 Nm	1500 Nm	1500 Nm	3000 Nm	3000 Nm
Automation Level	Semi-automated	Automated	Semi-automated	Automated	Semi-automated	Automated

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SHARED FEATURES

- Designed to calibrate/test wrenches up to either 500, 1,500 or 3,000 N·m.
- The 500Nm version of the AWS Universal Torque Wrench Calibration Machine can be desktop mounted, meaning it requires less footprint to house the machine.
- Removes the need for operators to apply high application forces to the handle of large torque wrenches. Force is applied using inbuilt AWS proprietary firmware, a stepper motor and linear track system.
- Hand controls for fast movement or jog facilitate quick setting up of individual wrenches.
- Multiple safety features ensure that the machine, transducers and torque wrench are not overloaded in operation or over driven due to a wrench fault.
- Inbuilt microcontroller for accurate control of force applied and operation speeds. Four different pre-programmed, switch selected speed settings for different ranges of tools. The microcontroller ensures the adherence to the minimum target torque approach times, complying with the ISO standard 6789:2017, for the capacity of wrench being calibrated.
- Parasitic forces acting on the wrench during calibration are greatly reduced by the method of mounting the torque wrench.
- Multiple or single transducer cassette variations for different transducer manufacturers are available or built to suit customer requirements.
- To accommodate wrenches with fixed heads the transducer can be rotated 360 ° in steps of 30°.
- The UTWCM will fit into Long Wheelbase High Top Vans, allowing for use as a mobile calibration service as well as in a calibration laboratory.

Handheld controller for the UTWCM

AWS Intelligent Inline Torque Transducers with spline drive adapters for fitting into the UTWCM

AUTOMATED FEATURES

- Automatically detects a first peak signal for setting type wrenches, stopping the machine and returning to zero, greatly speeding up the calibration process and reducing operator input.
- Designed to calibrate/test wrenches up to either 500, 1,500 or 3,000 N·m.
- The 500Nm version of the AWS Universal Torque Wrench Calibration Machine can be desktop mounted, meaning it requires less footprint to house the machine.

DIMENSIONS

Dimensions for mounting on floor:

UTWCM-500: Approx. 110cm W by 90cm H. Requires desk space of 75cm D by 70cm W. Overhangs front of desk by 45cm and requires 56cm of space above the table.

UTWCM-1500: Approx. 77cm D by 205cm W by 135cm H. Footprint is approx. 77cm D by 165cm W.

UTWCM-3000: Approx. 77cm D by 266cm W by 135cm H. Footprint is approx. 77cm D by 165cm W.
Depth, Width and Height can be altered if required within certain parameters**.**

More information on the Intelligent Inline Torque Transducers range and Kepler 4 software is available in separate data sheets on the AWS website www.awstorque.co.uk.

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What Comprises The UTWCM:

Optional parts are in light blue

UKAS Calibration

Single or Dual Direction.

Intelligent Inline Torque Transducers

Your choice of transducer ranges, used to measure the torque. Comes with traceable, non-UKAS calibration as standard.

OR

Intelligent Instrumented Transducer Cable

To convert your existing mV/V transducers to be used with the UTWCM and Professional Transducer Display.

1058 – Tool Tester Input Cable

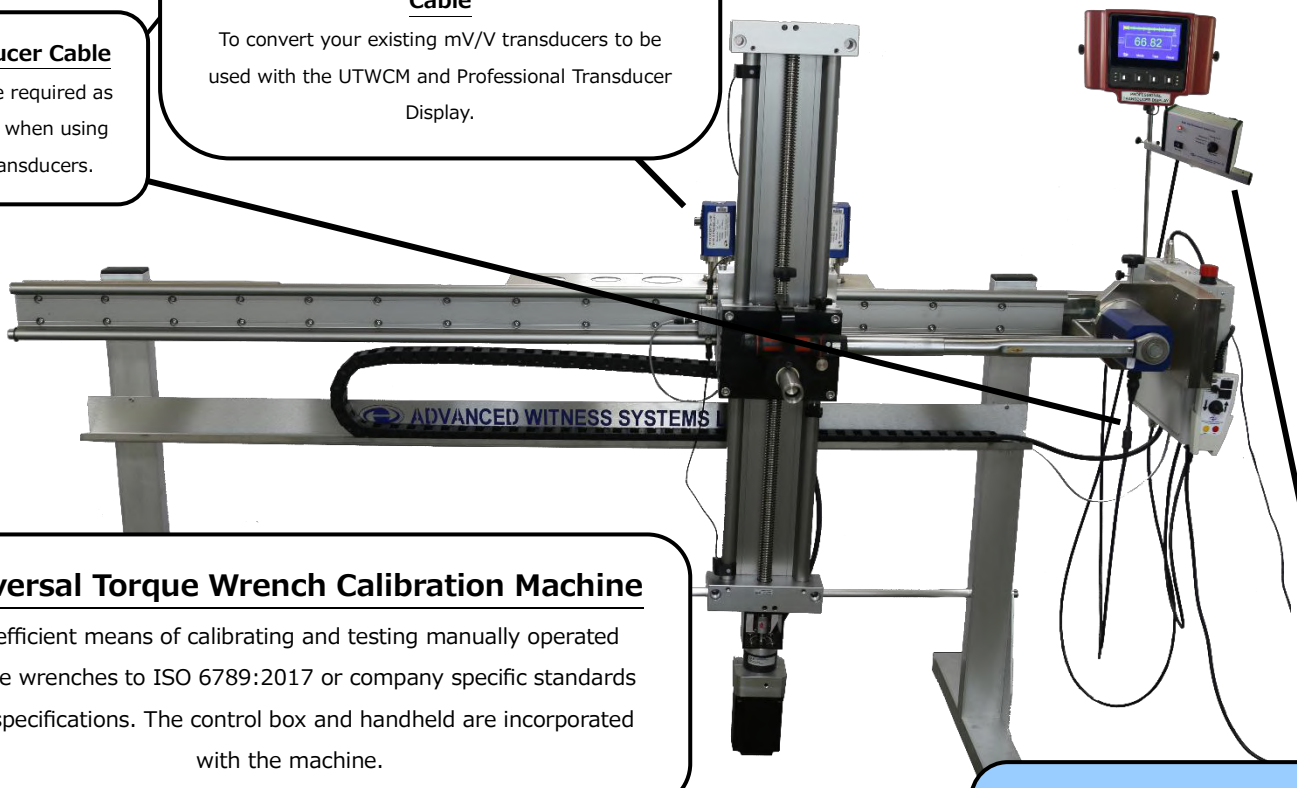
To connect the Display to the UTWCM.

1010 – Professional Transducer Display

To display your torque readings, fully automate the UTWCM, and allow for RS232 output.

Transducer Cable

One cable required as standard when using AWS transducers.



Universal Torque Wrench Calibration Machine

An efficient means of calibrating and testing manually operated torque wrenches to ISO 6789:2017 or company specific standards and specifications. The control box and handheld are incorporated with the machine.

1057 – Multi-Way Transducer Switch Box

Provides continuous power to a number of transducers for thermal stability and immediate use.

Additional Transducer Cables

Additional cables are required when purchasing the Transducer Switch Box, dependent on the number of transducers.

Kepler 4 Software

Calibration, Conformity and Management software to meet the ISO 6789:2017 & 2003 international standards, or your own in-house standard.

1060 – RS232 Output Cable

To allow for RS232 output with the Switch-Box to a PC.

1059 – Display to TSB Cable

Required to connect the Switch-Box with the Display.

Torque wrench not supplied

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Calibrate 3x Faster with the AWS Universal Torque Wrench Calibration Machine

About the Universal Torque Wrench Calibration Machine:
The AWS Universal Torque Wrench Calibration Machine (UTWCM) for calibrating and testing manually operated torque wrenches to ISO 6789:2017, ISO 6789:2003 or company specific standards. Available in 3 versions, 500Nm, 1.5kN·m or 3kN·m, it removes the requirements for operators applying high application forces to the handle of large torque wrenches. The inbuilt microcontroller accurately controls the force applied and the operational speeds. This ensures the adherence to the minimum target torque approach times, complying with ISO 6789:2017. Parasitic forces are reduced to minimal levels by the method of mounting and controlling the applied force. It can be used with our Kepler 4 software to further increase productivity, eliminate data entry errors, comply with ISO 6789:2017 & 2003, and produce certificates. direct input into ADMS Kepler Torque Tool Calibration Software (sold separately). This allows for quick, accurate and precise calibration of torque tools.

Return on Investment – ISO 6789:2017

- Users already meeting ISO 6789:2017 by manual means find it is very time consuming and requires quite some skill and operator effort, typically requiring an oscilloscope for checking the final 20% of the applied torque is below the timing requirement set out in the standard.
- Time taken can be up to an hour and a half, and very dependent on operator skill.
- Using the AWS UTWCM, typical calibration time is 60 minutes, and with much less operator skill & effort.
- Considerable time saving, generating faster throughput of torque wrenches.
- Using the AWS UTWCM is 1/3 quicker than the manual method.
- Payback can be as short as 6 months*.

Original Calibration Time	**90 mins**
New Calibration Time	**60 mins**
Payback	**6 months***

Return on Investment – ISO 6789:2003

- Using the AWS UTWCM to meet ISO 6789:2003, typical calibration time is only 20 minutes.
- Using the UTWCM is 3 times faster, increasing throughput and reducing errors, with less operator skill.
- Payback estimated to be as short as 6 months**.

Original Calibration Time	**60 mins**
Calibration Time with UTWCM	**20 mins**
Payback	**6 months****

*Based on approximate cost of UTWCM, 6 calibrations per day, £35/hour hourly rate.

**Based on approximate cost of UTWCM, 12 calibrations per day, £35/hour hourly rate

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Universal Torque Screwdriver Calibration Machine

DESCRIPTION

The AWS Universal Torque Screwdriver Calibration Machine (UTSCM) for compliance to ISO 6789:2017 provides an efficient means of calibrating and testing manually operated torque screwdrivers to international or company specific standards and specifications.

The UTSCM applies torque to the screwdriver via a tooth belt drive and an AWS microcontroller, the torque achieved is measured by 1 of 3 AWS Intelligent Inline Torque Transducers (IITT's), connected to an in-built Professional Transducer Display to automatically detect a peak signal.

The UTSCM can be used with our new ADMS Kepler 4 software to speed up completion of the calibration & certification process to ISO 6789:2017, 2003 or type approval for manufacturers.
With the variation in torque screwdriver operation, the UTSCM using a microcontroller, runs through a learning cycle before calibration to record the shape of the torque curve, ensuring the torque is applied at the correct rate meeting the ISO standard. As required by the standard, the number of operations are selectable, capturing each reading consecutively, greatly reducing the time for the calibration & certification process.

Due to the great variation in screwdriver handles, grip adaptors are bespoke designed to fit a specific model. This to minimise the uncertainty of torque screwdriver alignment, ensuring it is within ± 2° of vertical alignment, as required by the standard.

Features

- Designed to calibrate/test screwdrivers up to 30 N·m.
- Inbuilt microcontroller and display for accurate control of torque applied and operational speed. The microcontroller learns the shape of the torque curve, ensures adherence to the minimum and maximum target torque approach times, complying with the ISO standard, for the setting of the screwdriver being calibrated.
- The screwdriver type can be selected, to be either cam, dial (indicating) or click type.
- Auto operation meaning the number of consecutive operations can be selected, either 1, 3, 5 or 10 as required by the standard and then started with the push of a button.
- An in-built 3-Way Transducer Switch Box keeps the AWS Intelligent Transducers powered continually, aiding temperature stability. This allows quick selection of transducers. The controller automatically interrogates and displays the correct transducer range.

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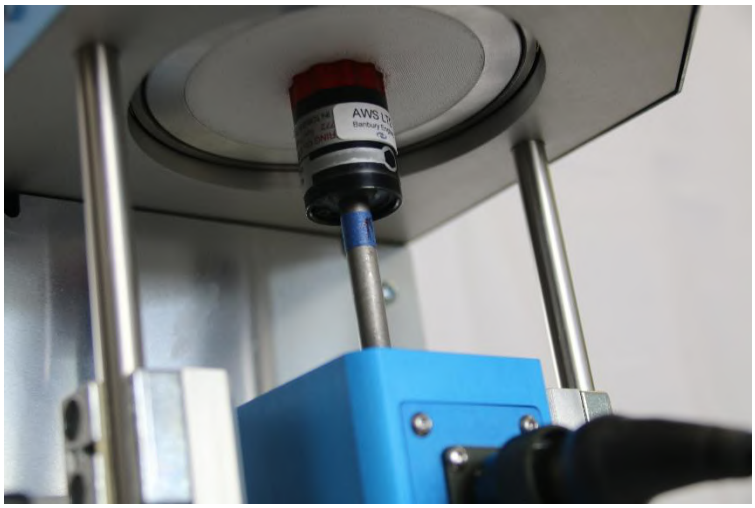
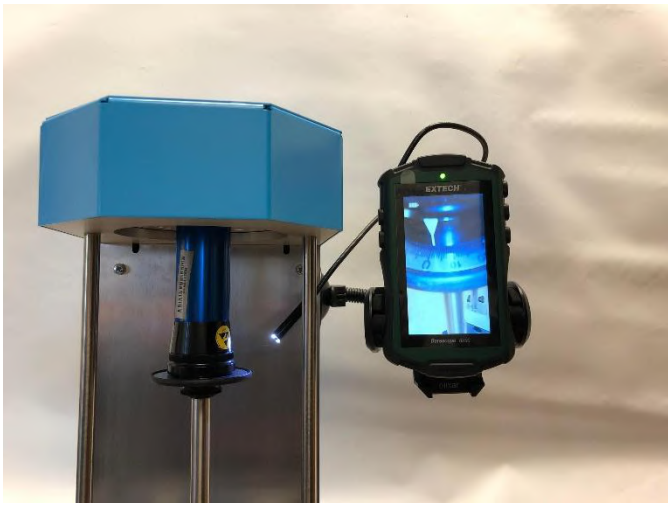
- Interchangeable handle adaptors each designed to accurately fit the model of torque screwdriver to minimise the uncertainty of adaptor alignment and ensure the screwdriver is within ± 2° of vertical.
- Height adjustable transducer carriage taking into account varying torque screwdriver lengths.
- Pendant control for fast movement or jog facilitates quick calibration set up of individual screwdrivers.
- Safety features ensure that the machine, transducers and screwdriver are not overloaded in operation or over driven due to a fault.
- 3/8”- 1/4” female square drive compatible with a range of torque transducers.
- A customer’s existing transducers may be converted into IITTs using AWS’s Intelligent Instrumented Transducer Cables. Each cable has an inline module converting the analogue output of the transducer into a digital torque signal for display on the PTD.
- 96mm X 55mm Bright, Full Colour, Sunlight Readable LCD Display built into the microcontroller.
- Soft keys, in conjunction with the graphics, allow selection of the required Mode, Measurement Unit, and Limit Selections.
- Active 6 Digit display. Accuracy better than 1% of reading from 4% to 100% full scale deflection of the selected transducer when used with AWS Intelligent Torque Transducers.
- For viewing difficult to read indicating type screwdrivers, an optional flexible probe camera with a built-in display is available.
- The AWS Universal Torque Screwdriver Calibration Machine (UTSCM) is fitted with our Timing Module to demonstrate verification of the screwdriver timing requirements to ISO 6789:2017 (see page 53).





DIMENSIONS

Dimensions for mounting on a desk:

Approximately 31cm L by 45cm W by 45cm H.

UTSCM weight:

16.5kg with an AWS IITT transducer, control box weight: 5kg

More information on the Intelligent Inline Torque Transducers range and Kepler 4 software is available in separate data sheets on the AWS website www.awstorque.co.uk.

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UTSCM Screwdriver Handle Adapters

DESCRIPTION

The AWS Universal Torque Screwdriver Calibration Machine (UTSCM) for compliance to ISO 6789:2017 provides an efficient means of calibrating and testing manually operated torque screwdrivers to international or company specific standards and specifications.

There are numerous screwdriver handle designs which AWS have addressed for this machine with a range of adapters available for the UTSCM. Solid Adapters grip one specific model of torque screwdriver. Square Drive and Adjustable Adapters are designed to accommodate a variety of different torque screwdriver models.

All types of adapters comply fully with the ISO 6789:2017 Part 1 requirement that the torque screwdriver must be held within ±2° of vertical.

Adapters for models of torque screwdrivers not listed are available on request

SOLID ADAPTER FEATURES

- 30Nm rated torque.
- Accurate fitting of a specific model of torque screwdriver handle.
- Simple design for easy interchangeability.
- Produced in specialised plastics for strength and fatigue life.

ADJUSTABLE ADAPTER FEATURES

- 10Nm rated torque.
- Produced in specialised plastics for strength and fatigue life.
- Chuck / collet hybrid design accommodates a wide range of torque screwdriver models.
- Adapts to knurled, fluted and a variety of cushion grip handles.
- Simple to switch between different screwdriver models for fast turnaround time.
- A set of flexible knurled Top Hats included for gripping more difficult torque screwdriver shapes while retaining tool surface finish.
- Easy tightening and untightening of the adapter using included tool.

SQUARE DRIVE ADAPTER FEATURES

- 30Nm rated torque.
- 1/4” Male Square drive adapter.
- Aluminium construction with precision square drive.

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LIST OF AVAILABLE ADAPTERS

Solid Adapters

For solid adapters for a specific manufacturer's model of torque screwdriver, please contact AWS stating the screwdriver model.

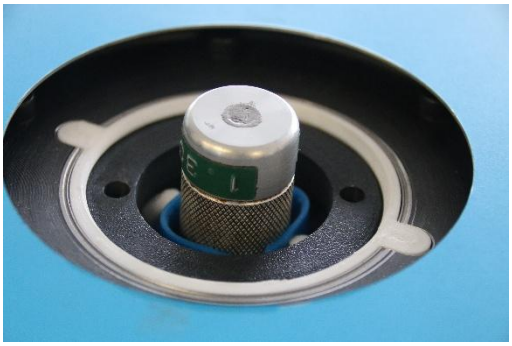
Square Drive Adapters

Adapter Model	Torque Range	Handle Diameter	Drive	Screwdriver Model
2040-ASQ1	0-30Nm	N/A	¼" Male SQ	Various

Adjustable Adapters

Adapter Model	Torque Range	Handle Diameter Range	Number of Teeth	Flexible Knurled Top Hat Sizes	Screwdriver Model
2040-AA1	0-10Nm	15mm-36mm	4	20mm ID 27mm ID 34mm ID	Various
2040-AA2	0-10Nm	30mm-45mm	4	38mm ID 45mm ID	Various

Please note: AWS has researched a wide variety of torque screwdriver shapes and sizes. Our adapters grip an extensive range of torque screwdriver handles however there may be a particular that we have not been able to research. If in doubt, please contact AWS.



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What Comprises The UTSCM:

Optional parts are in light blue

UTSCM Adjustable Handle Adapters

Can be tightened onto the handles of a variety of torque screwdrivers up to 10Nm, allowing multiple handle designs to be calibrated using just one adapter.

UTSCM Solid Handle Adapters

(3 provided as standard)

Designed to grip one specific model of torque screwdriver, and can be custom designed to fit your most commonly calibrated torque screwdrivers up to 30Nm.

Kepler 4 Software

Calibration, Conformity and Management software to meet the ISO 6789:2017 & 2003 international standards, or your own in-house standard.

Universal Torque Screwdriver Calibration Machine

An efficient means of calibrating and testing manually operated torque screwdrivers to ISO 6789:2017 international standards, or company specific standards. The control box and handheld are incorporated with the machine.

Precision Torque Adapter

(Provided as standard)

¼" Female Square to ⅜" Male Square adapter, made out of hardened stainless steel, and laser engraved for easy identification.

Intelligent Inline Torque Transducers

Your choice of transducer ranges, used to measure the torque. Comes with traceable, non-UKAS calibration as standard.

OR

Intelligent Instrumented Transducer Cable

To convert your existing mV/V transducers to be used with the UTSCM.

Transducer Cable

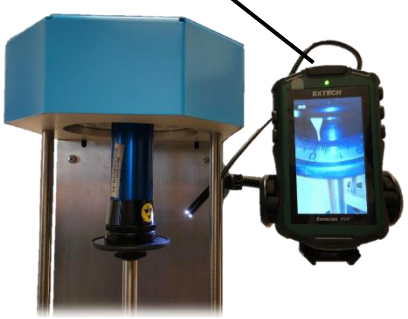
At least one cable required when using AWS transducers. Up to three are required if looking to provide thermal stabilisation to three transducers simultaneously.

UKAS Calibration

Single or Dual Direction.

Flexible Probe Camera

For easier reading of indicating torque screwdrivers.



Torque screwdriver not supplied

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Calibrate 10x Faster with the AWS Universal Torque Screwdriver Calibration Machine

About the Universal Torque Screwdriver Calibration Machine:
The AWS Universal Torque Screwdriver Calibration Machine (UTSCM), for calibrating and testing manually operated torque screwdrivers to ISO 6789:2017, ISO 6789:2003 or company specific standards. Designed to calibrate or test all known types, makes & models of torque screwdrivers and torque watches up to 30 Nm.

The number of consecutive operations can be selected as required by the standard. Interchangeable handle adapters are designed to accommodate various models of torque screwdriver, minimising uncertainty. The microcontroller performs a learning cycle before calibration, recording the shape of the tool's torque curve, ensuring the correct rate of the applied torque meets the ISO standard. The UTSCM can be used with our Kepler 4 software to further increase productivity and eliminate data entry errors.

Return on Investment – ISO 6789:2017

- Users already meeting ISO 6789:2017 by manual means find it is very time consuming and requires quite some skill, typically requiring an oscilloscope for checking the final 20% of the applied torque is within the 0.5-1 second required by the standard.
- Time taken can be up to 4 hours, and very dependent on operator skill.
- Using the AWS UTSCM, example calibration time is 25 minutes, and with much less operator skill.
- Considerable time saving, generating faster throughput of torque screwdrivers.
- Using the AWS UTSCM is 10 times faster than the manual method.
- Payback can be as short as a phenomenal 10 days*.

Original Calibration Time	**240 mins**
Calibration Time with UTSCM	**25 mins**
Payback	**10 days***

Return on Investment – ISO 6789:2003

- Using the AWS UTSCM to meet ISO 6789:2003, example calibration time is only 7 minutes.
- Using the UTSCM is 6 times faster, increasing throughput and reducing errors, with less operator skill.
- Payback estimated to be as short as 6 weeks**.

Original Calibration Time	**45 mins**
Calibration Time with UTSCM	**7 mins**
Payback	**6 weeks****

*Based on approximate cost of UTSCM & 3 transducers, 12 calibrations per day, £35/hour hourly rate.

**Based on approximate cost of UTSCM & 3 transducers, 24 calibrations per day, £35/hour hourly rate

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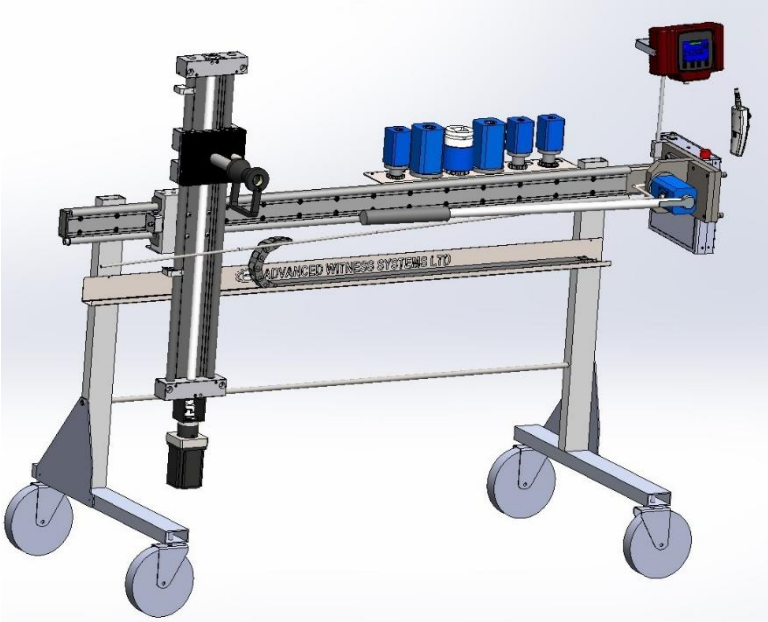
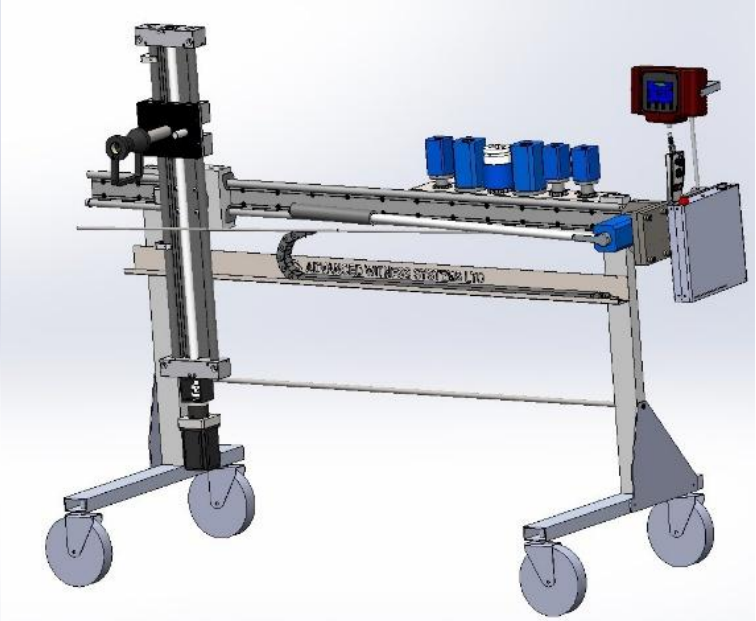
UTWCM Mobility Kit

DESCRIPTION

The 1,500Nm and 3,000Nm versions of the AWS Universal Torque Wrench Calibration Machine (UTWCM) can be fitted with our optional UTWCM Mobility Kit for easier manoeuvrability of the UTWCM. The kit modifies the machine's legs with four 50mm lockable castor wheels having flexible rubber tyres, each able to swivel 360 degrees for easy portability.





TECHNICAL SPECIFICATION

- **1,500 Nm UTWCM with Mobility Kit:**
  - Height: 1414cm
  - Width: 205cm
  - Length: 77cm
  - Weight: 154kg

- **3,000 Nm UTWCM with Mobility Kit:**
  - Height: 1414cm
  - Width: 266cm
  - Length: 77cm
  - Weight: 154kg

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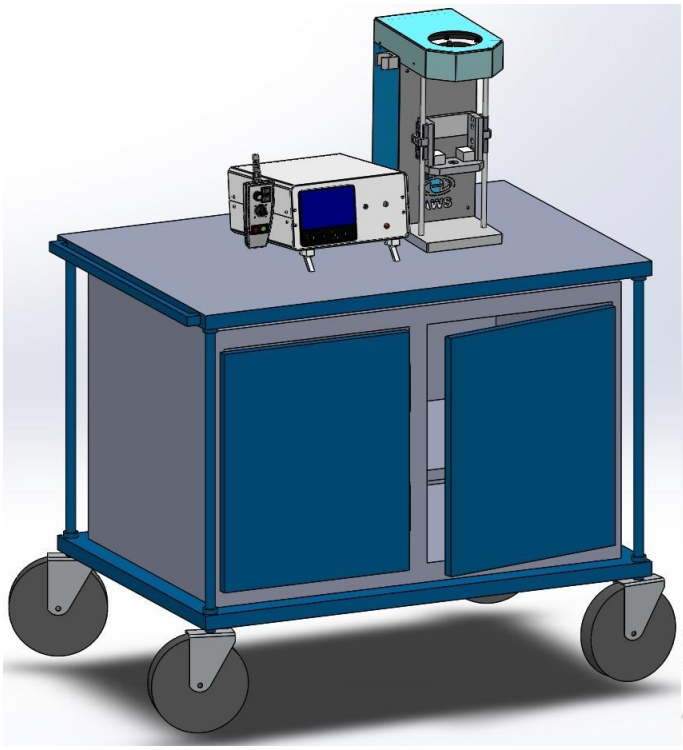
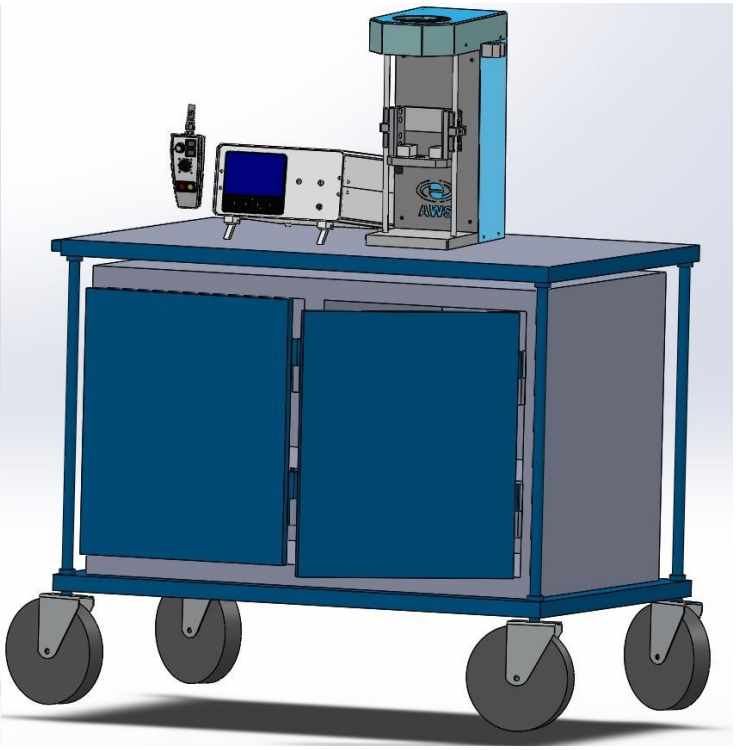
UTSCM Mobility Kit

DESCRIPTION

The AWS Universal Torque Screwdriver Calibration Machine (UTSCM) can be supplied with our optional UTSCM Mobility Kit for increased portability of the unit around a facility. The UTSCM bolts securely atop a durable, steel sheet workshop trolley, featuring lockable castor wheels with solid rubber treads, and a practical handle for easy movement whilst also ensuring stability during a calibration. Two lockable cabinets with removable shelves within the trolley provides secure storage of tools or equipment to be used during the calibration.





TECHNICAL SPECIFICATION

- **Trolley:**
  - Length: 1060mm
  - Height: 875mm
  - Width: 700mm
  - Wheel Diameter: 200mm
  - Weight: 88.2kg
  - Load Capacity: 300kg

- **Trolley with UTSCM:**
  - Height: 1325mm
  - Weight (with 1 AWS IITT): 110kg

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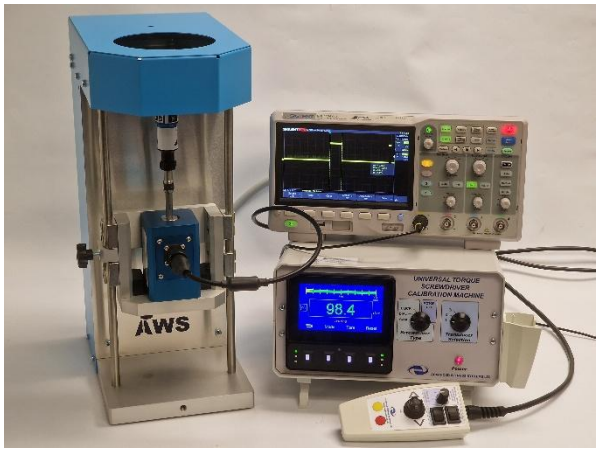
UTSCM Timing Module

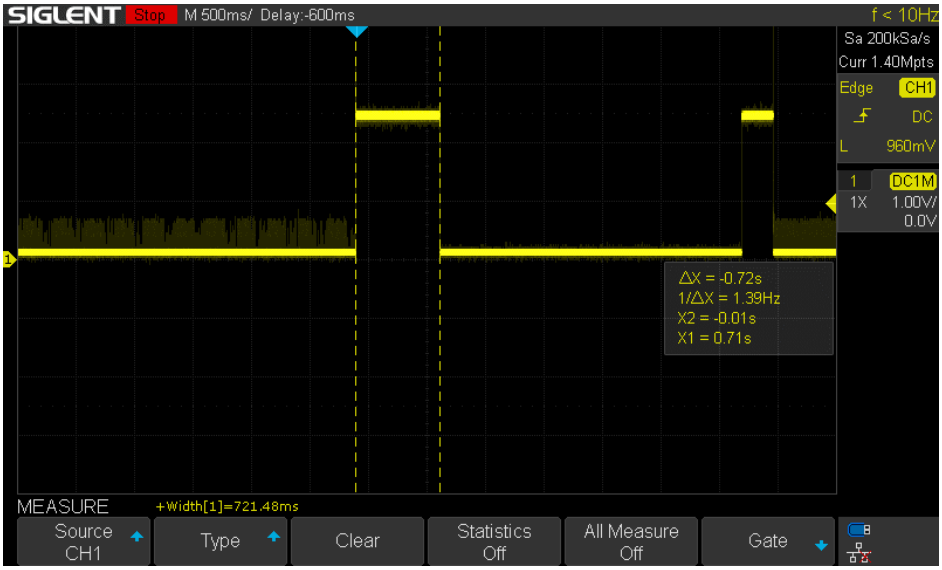
DESCRIPTION

The AWS Universal Torque Screwdriver Calibration Machine (UTSCM) is fitted with our Timing Module to demonstrate verification of the screwdriver timing requirements to ISO 6789:2017. This provides an independent timing output, allowing verification of the time to apply the last 20% of the target torque. This output is provided via an insulated BNC connector on the rear of the UTSCM and takes the form of a +2.5V signal when the torque reaches 80% of the target torque, which returns to 0V when the Peak is detected. The width of this pulse can be measured to verify the timings meet the stringent screwdriver requirements of the ISO 6789:2017 standard.



Timing Module Output

- **Connector:** Insulated BNC on rear panel of the Control Box.
- **Signal:** 2.5V high when 80% of the target torque has been reached. This returns to 0V when the peak is detected.



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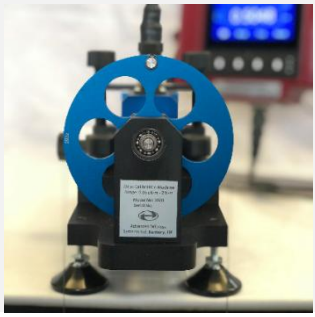
2 Nm Calibration Machine

DESCRIPTION

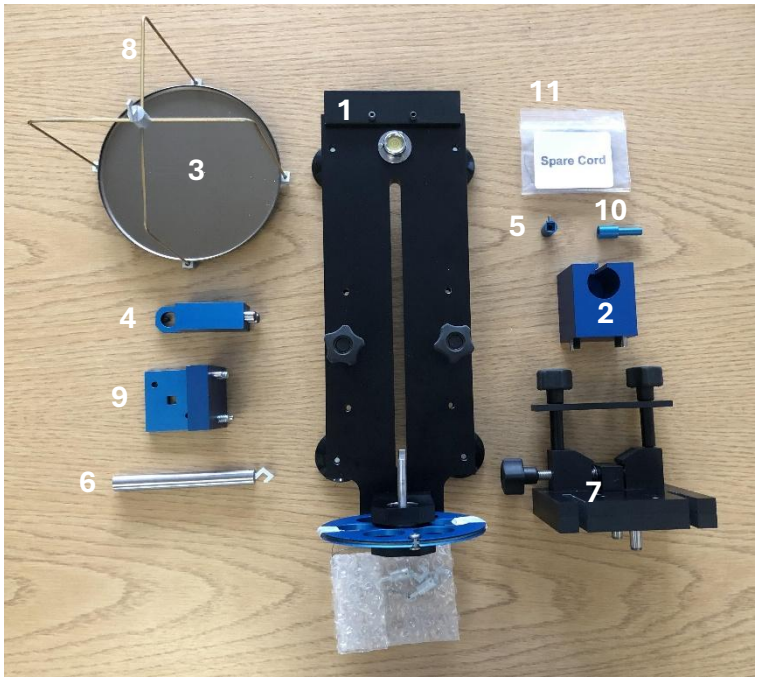


The AWS LTD 2Nm Calibration Machine (CR1020), designed to calibrate torque transducers, and torque watches up to 2 Nm. It is highly accurate and uses a disc and weights to apply torque. Weights are applied at a known distance on the circumference of the disc via balanced suspension cords and weight pans.

The Versatile 2Nm calibration machine enables the tool to be accurately positioned and held for calibration. Adjustable levelling feet with the spirit level indication allow it to be used on a variety of bench surfaces.

SPECIFICATIONS

Capacity:	0.05 cNm to 2 N.m.
Uncertainty of Measurement:	± 0.2%
Mounting:	Bench mounted with levelling indication and adjustment.
Maximum Mechanical Overload:	125% of range stated.
Operating Temperature:	20℃.
Directions of Use:	Clockwise and anticlockwise calibration. ±270° of rotational freedom to accommodate torque watches.
Capability:	All types of torque watch, AWS IITT-1011 and third-party torque transducers. It can also be used with a variety of other very small torque measuring devices.



1. 2 Nm Calibration Machine, Base, Disc (Wheel), Carriage and Counter Balance *(Weight Suspension Cord with Weight Hooks factory fitted)*
2. 0.5 Nm Housing Block.
3. Weight Pan
4. Torque Watch Sighting Pin
5. Coupler
6. Weight Pan Counter Balance Weight
7. Sliding Carriage
8. Weight Pan Hanger
9. Transducer Reaction Plate
10. Torque Watch Adapter
11. Spare Cord

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Universal Torque Calibration Machine

DESCRIPTION

The AWS 4Nm-2000Nm Universal Torque Calibration Machine (3020-UTCM) is designed to provide a compact, efficient way to calibrate torque measuring devices to BS EN 7882:2017, BS EN:7996:2018 or international standards without the need for beams and weights. The machine uses AWS Master Transducers (selected depending on range) with very high accuracy, stability and low uncertainty. The master transducers output to an extremely accurate 7.5 digit computing digital voltmeter to display the applied torque and to attain the required uncertainty of measurement (Certificate of calibration provided).

The UTCM uses a high ratio anti backlash gearbox and stepper motor drive to apply and hold up to 2kNm torque. This is controlled by a pushbutton pendant controller removing the need for the operator to apply weights altogether (eliminating operator fatigue) and speeding up the calibration. A torque tracking function allows the machine to maintain the set torque as the system relaxes.

An additional Torque Tester Extension carriage with horizontal or additionally vertical fittings or mounting plate for a variety of torque measuring devices is available as an option (Sold Separately).

Features

- Electronic drive system and push button pendant control, eliminating the need for the operator to manually apply torque.
- Unique drive system to remove parasitic forces ensuring full applied torque.
- Easily interchangeable inline master transducers for high accuracy and low uncertainty readings of the nominal torque. Range from 4 Nm to 2kNm.
- High ratio anti-backlash gearbox for precise torque application.
- Greatly reduced calibration times.
- Sliding carriage for calibration of standard sized torque transducers up to a 1” square drive.
- Bench or pedestal mounting options available.
- Optional additional sliding carriage and fittings or mounting plate for calibration of a wide variety of torque measuring and calibration devices. Multi-axis T slot system and/or mounting plate for pick-up of a range of fixing positions.
- Use with AWS Precision Torque Adapters each designed to accurately fit the model of torque testing device, minimising the uncertainty of adapter alignment.
- Additional alternative bed positions for vertical height adjustment, covering the wide variety of torque measuring devices available.
- High accuracy 7½ digit meter used to display the nominal torque readout from the master transducers to attain the required uncertainty of measurement.
- Jog function to precisely apply small increments of torque.
- The torque applied by the UTCM is indicated by a computing nano-voltmeter converting to units of torque from the mV/V signal from the transducer. A stable voltage source energises the transducers.

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OPTIONS

	3020 – Universal Torque Calibration Machine (UTCM)	Options	
		Tool Tester Extension	Vertical Mounting Extension (Requires Tool Tester Extension)
Model No.	**3020**	**3020-E**	**3020-EV**
Description	Calibration of torque transducers from 4Nm-2000Nm with square drives from ¼" to 1".	Additional fittings for calibration of vertical and horizontal mounting Torque Testers.	Additional fittings for calibration of large vertical or wall mounted Torque Testers.

DIMENSIONS

Approximate dimensions for mounting on benches/tables:
94cm (length) x 34cm (width) x 40cm (height)

Approximate weight (kg):

Main Body (Without Transducers & Carriages)	Transducer Sliding Carriage	Torque Tester Sliding Carriage (Depending on options)
103.5	16.7	24 – 40.5

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1.5kNm Supported Calibration Stand

DESCRIPTION

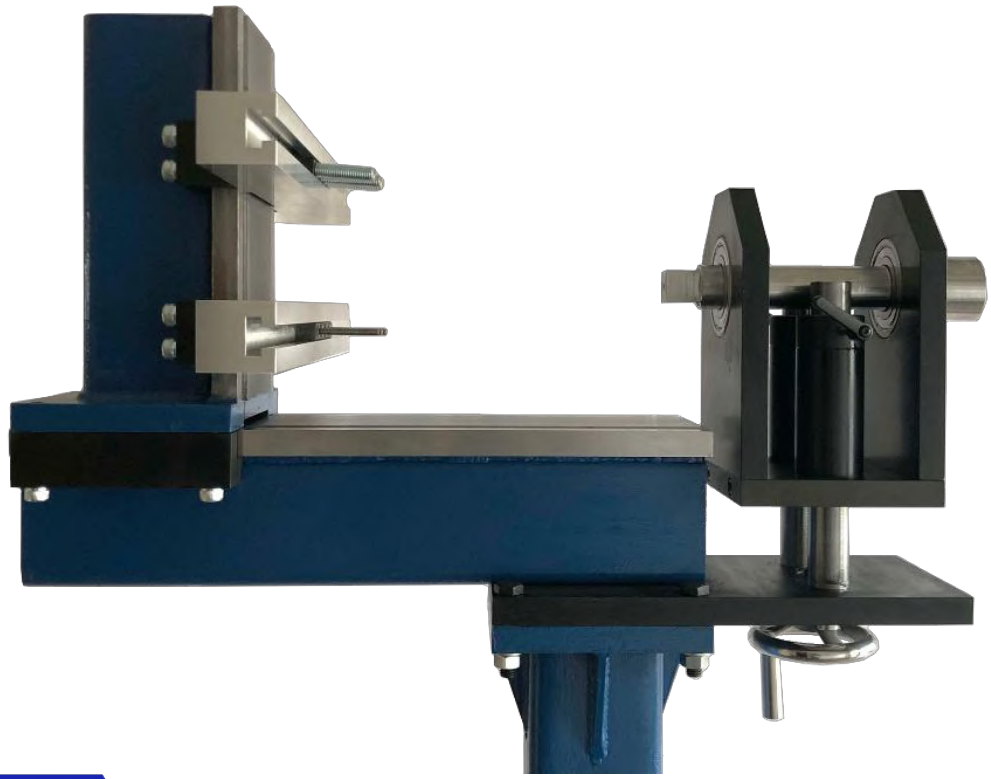
The AWS LTD 1.5kNm Supported Calibration Stand can be used in conjunction with beams and weights, to calibrate a wide variety of bench and wall mounted torque tool testers.

The supported shaft height is adjustable to accommodate various device drive heights. Bars with T-grooves facilitate the mounting of torque testers of varying sizes and mounting hole positions. The vertical pillar allows for the mounting of wall-mounted torque testers.

The 1.5kNm Supported Calibration Stand can convert your unsupported torque calibration setup into a supported setup. This means the torque device or torque transducer under test experiences no bending moment from the weight of the beams and weights. This also makes the calibration process safer.

DIMENSIONS

- **1.5kNm Supported Calibration Stand:**
  - Supported shaft centre height from ground: 1.39 to 1.48m (54.7 to 58.3 inches)
  - Depth: 0.72m (28.3 inches)
  - Height: 1.65m (65 inches)
  - Width: 0.4m (15.7 inches)
  - Supported square drive: 1 inch female square on beam side, 1-inch male drive on tester side.
- **Pedestal:**
  - Pedestal base size: 0.35 x 0.16m (13.8 x 6.3 inches)
  - Pedestal height: 1.21m (47.6 inches)



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INLINE TRANSDUCER OPTION

The Inline Transducer option allows for torque transducers to be calibrated on the 1.5kNm Supported Calibration Stand using a square drive plate.

Inline Transducer Option dimensions:

- Inline transducer option square drives:
  1, ¾, ½, ⅜, ¼ inch.

ACRATORK OPTION

The Acratork option allows Acratork L2 and L3 wall mounted testers to be calibrated along with other wall mounted testers with a large footprint.

Acratork Option Dimensions:

- Acratork plate size: 0.4 x 0.4m (15.7 x 15.7 inches).

SPECIFICATION

Model: SCS –	3019	3019 – NPED	3019 – PED	3019 – IT	3019 – ACR
Description:	1.5kNm Supported Calibration Stand, including pedestal	1.5kNm Supported Calibration Stand, no pedestal	Pedestal only	Inline transducer option	Acratork option

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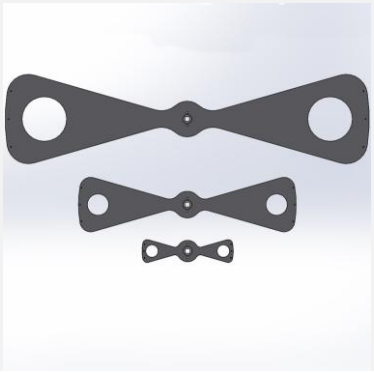
Unsupported Calibration Beams

DESCRIPTION

The AWS Unsupported Calibration Beams are designed for calibration of torque measuring devices from 2 Nm - 1500 Nm using the principle of weights at a known distance. The beams are robust, precision machined anodised aluminium alloy components and include a precision female square drive machined into the boss, to a customer specified size (1" down to ¼"). The beams can also be used with AWS Precision Torque Adapters down to ¼" in size, which facilitates a variety of devices to be calibrated. The calibration beams use kg weights. Precision weight hangers, very flexible suspension cables, suspension hooks and a robust carry case are included. A UKAS calibration is available on request.



SPECIFICATION

- Uncertainty of Measurement better than 0.045% of reading from 10%-100% of range.
- Cable, hooks and precision weight hangers included.
- Designed to be used with kg weights.
- UKAS calibration available on request.
- Useable Arc: 8 degrees
- For adequate clearance, use pedestal of 1.2m
- Customer specified Female Square Drive allows a selection of precision Male-Male adapters to be used as required (see table below for AWS Precision Torque Adapters)

Pedestal Available Separately

DIMENSIONS

Model: UCB-	3022	3023	3024	3025
Maximum Torque:	1500Nm	500Nm	50Nm	1000Lbf.Ft
Diameter:	2039mm	1019mm	510mm	1219mm
Height:	500mm	150mm	130mm	310mm

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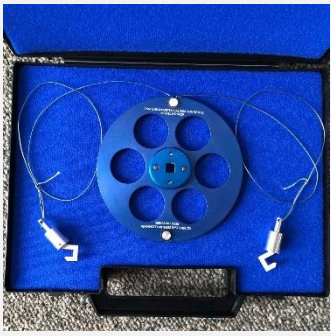
2 Nm Unsupported Calibration Wheel

DESCRIPTION



The AWS LTD 2Nm Unsupported Calibration Wheel is designed for calibration of torque measuring devices from 0.04Nm - 2 Nm using the principle of weights/beams at a known distance. The wheel includes a precision drive machined into the boss to fit a wide range of devices to be calibrated. The boss is easily interchangeable if an alternative drive size is required. The calibration wheel uses kg and g masses. Precision weight pans and counterweight set; cables; suspension hooks and a robust carry case are included. A UKAS calibration is available on request.

SPECIFICATION

- Uncertainty of Measurement better than 0.045% of reading.
- Both 1/4" Square and 1/4" Hex drive as standard for calibration of a wide range of torque measuring devices.
- Cable, hooks and precision weight pan, and counterweight set included.
- Designed to be used with kg and g weights.
- Easily interchangeable boss for alternative drive sizes.
- UKAS calibration available on request.
- Precision masses available (See page 61).

DIMENSIONS

Overall diameter: 104mm

Thickness: 10mm across boss

Length of cable: approximately 400mm per side

Model: UCB-	3029
Maximum Torque:	2.5Nm
Diameter:	104mm

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Weights Set for 2Nm Unsupported Calibration Wheel

DESCRIPTION

AWS can provide a set of 14 precision brass weights for calibrations up to 2Nm. A calibration certificate is included, and the weights are supplied in a robust carry case. Additionally, a UKAS calibration is available on request.

SPECIFICATION

- Metric kg and g weights.
- M1 Tolerance weights set as standard.
- Other Tolerances available on request.
- Robust carry case included.
- UKAS calibration available on request.

Table of provided weights

Mass	Quantity
1g	1
2g	2
5g	1
10g	1
20g	2
50g	1
100g	1
200g	2
500g	1
1kg	1
2kg	2

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I Series Torque Transducers

The AWS I Series Torque Transducers are designed to work with our Professional Transducer Display, Universal Torque Wrench Calibration Machine and Universal Torque Screwdriver Calibration Machine.

We produce Inline, Annular and Rotary I Series Torque Transducers from 0.25Nm to 300,000Nm. They are unique with their inbuilt instrumentation PCB to eliminate signal loss.

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Intelligent Inline Torque Transducer

DESCRIPTION

The AWS LTD Intelligent In-Line Torque Transducer range (IITT), is designed to accurately measure torque values, in a variety of industries.
With optimised torque ranges, the transducer contains our Intelligent Instrumentation Package, outputting using CAN-BUS protocol to communicate with the AWS LTD Professional Transducer Display (PTD). This digital communication eliminates signal loss when using long lengths of cable, providing flexibility in communicating with other devices and systems.
There is an option using the In-line Transducer Mounting Bracket (purchased separately) to bench mount the transducer in either a vertical or horizontal position. Features a simple 2 step calibration. Stores serial & model number, capacity, calibration coefficient, units of calibration, and conversion to other torque units.

SPECIFICATIONS

Model: IITT -	1012	1013	1014	1015	1016	1070	1017
Ranges:	0.4 – 10Nm	2 – 50Nm	10 – 250Nm	20 – 500Nm	40 – 1000Nm	60 – 1500Nm	0.1 – 3000Nm
Square Drive Size:	¼″	⅜″	½″	¾″	¾″	1″	1 ½″

Accuracy: Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.

Modes: **Run:** Shows the torque value as they change as a live reading output.
Peak: Shows, updates and retains the maximum reading in a fast dynamic memory. The maximum reading is retained until manually cleared.
1st Peak: Detects, shows and retains the first peak reading in a fast dynamic memory, or is cleared automatically after three seconds if the auto cancel option is selected.

Communications: Communications via can bus. (use with the AWS PTD-1010 power & display unit).

Power & Display: Requires only a single D.C power supply (use with AWS PTD-1010, power and display is provided).

Overload Capability: 125%

Maximum Mechanical Overload: 160% of range stated.

Operating Temperature: -10°C to +50°C.

Connector: Mil C 26482 series.
6 pin. Shell size 10.

CE: 2014/30/EU

EMC: BS EN 61326-1:2013

NATO Stock No:
IITT-1011: 6625-22-623-1635
IITT-1012: 6625-22-623-1636
IITT-1013: 6625-22-623-1857
IITT-1014: 6625-22-623-1635
IITT-1015: 6625-22-623-1641

Photo above shows Intelligent Inline Torque Transducers with their associated spline drive adapters (sold separately).

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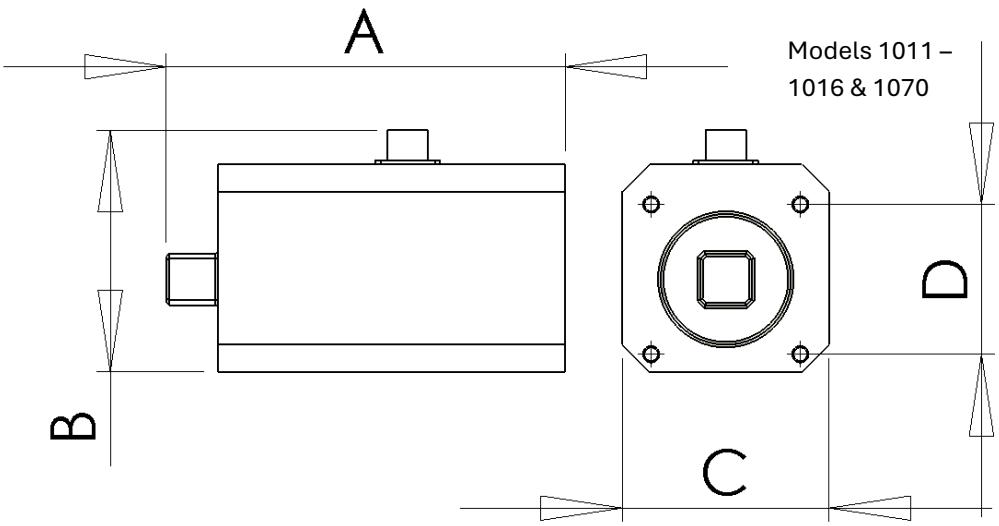
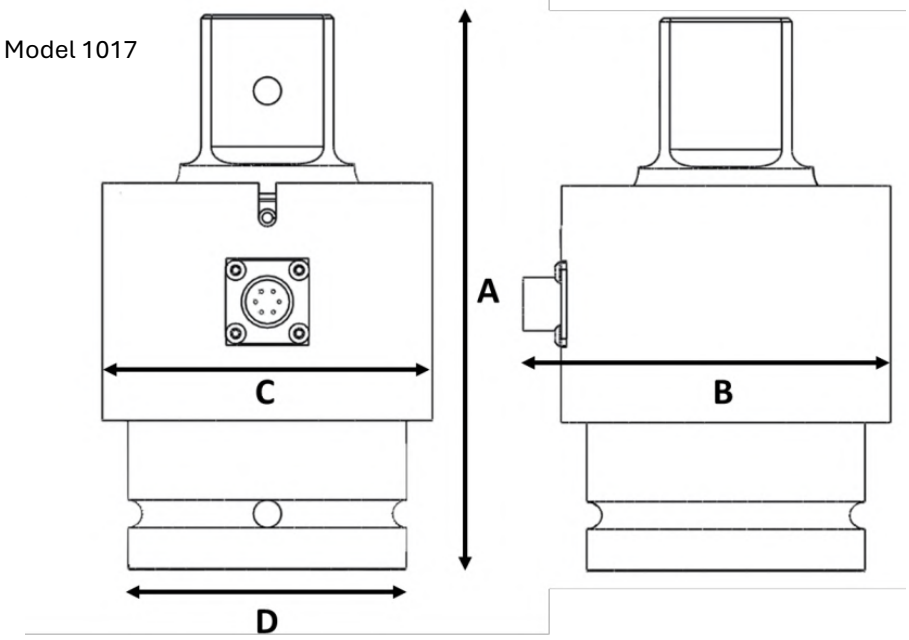
DIMENSIONS

Model	Dimension (mm)				Face Mounting Tapped Hole *	Square Drive	Weight (kg)
	A	B	C	D			
IITT – 1012	100	75	60	36	M5	¼″	1.0
IITT – 1013	100	75	60	36	M5	⅜″	1.0
IITT – 1014	115	75	60	40	M5	½″	1.2
IITT – 1015	150	90	75	55	M5	¾″	2.6
IITT – 1016	150	90	75	55	M5	¾″	2.7
IITT – 1070	150	90	75	55	M5	1″	2.8
IITT – 1017	160	106	95	80	NA	1 ½″	3.8

* The face mounting holes are in a square, centrally located around the square drive.





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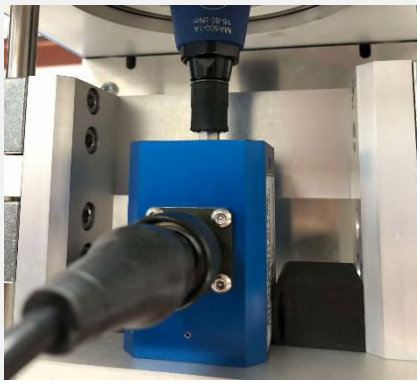
Low Capacity Intelligent Inline Torque Transducers

DESCRIPTION



The AWS LTD Low Capacity Intelligent In-Line Torque Transducer range (IITT), is designed to accurately measure torque values, in a variety of industries.

With optimised torque ranges, the transducer contains our Intelligent Instrumentation Package, outputting using CAN-BUS protocol to communicate with the AWS LTD Professional Transducer Display (PTD). This digital communication eliminates signal loss when using long lengths of cable, providing flexibility in communicating with other devices and systems.

There is an option using the In-line Transducer Mounting Bracket (purchased separately) to bench mount the transducer in either a vertical or horizontal position.

This transducer is either Male SQ drive to Male SQ drive or Male SQ drive to HEX drive. There are 2x M4 threaded holes in the reaction end and bottom surfaces for bolting.

Features a simple 2 step calibration.

Stores serial & model number, capacity, calibration coefficient, units of calibration, and conversion to other torque units.

SPECIFICATIONS

Model: IITT -	1112	1112H	1111	1111H	1018	1018H	1011	1011H
Ranges:	0.01 – 0.25Nm	0.01 – 0.25Nm	0.02 – 0.5Nm	0.02 – 0.5Nm	0.04 – 1Nm	0.04 – 1Nm	0.1 – 2.5Nm	0.1 – 2.5Nm
Square Drive Size:	¼″ SQ	¼″ HEX	¼″ SQ	¼″ HEX	¼″ SQ	¼″ HEX	¼″ SQ	¼″ HEX

Accuracy: Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.

Modes: **Run:** Shows the torque value as they change as a live reading output.
Peak: Shows, updates and retains the maximum reading in a fast dynamic memory. The maximum reading is retained until manually cleared.
1st Peak: Detects, shows and retains the first peak reading in a fast dynamic memory, or is cleared automatically after three seconds if the auto cancel option is selected.

Communications: Communications via can bus. (use with the AWS PTD-1010 power & display unit).

Power & Display: Requires only a single D.C power supply (use with AWS PTD-1010, power and display is provided).

Overload Capability: 120%

Maximum Mechanical Overload: 150% of range stated.

Operating Temperature: -10°C to +50°C.

Connector: Mil C 26482 series. 6 pin. Shell size 10.

CE: 2014/30/EU

EMC: BS EN 61326-1:2007

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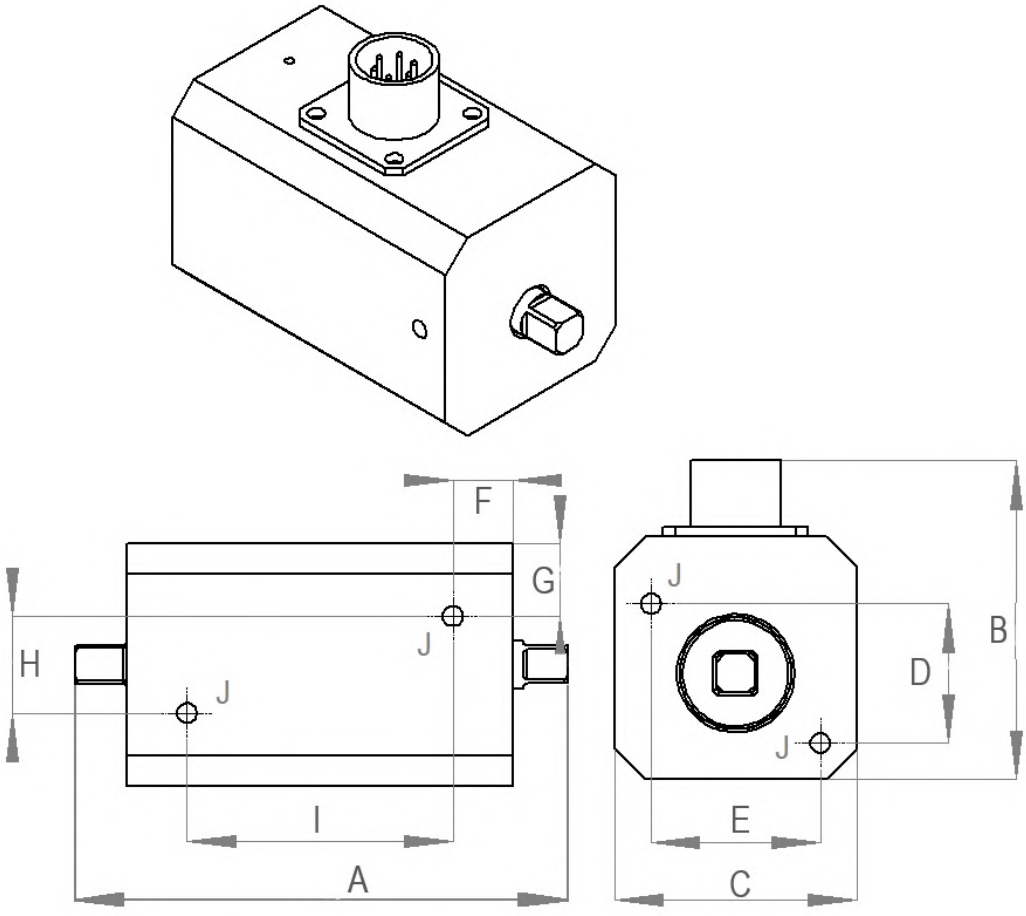
DIMENSIONS

Model	Dimension (mm)								
	A	B	C	D	E	F	G	H	I
IITT – 1111	82	55	40	25	25	10	12	16	44
IITT – 1111H	82	55	40	25	25	10	12	16	44
IITT – 1018	82	55	40	25	25	10	12	16	44
IITT – 1018H	82	55	40	25	25	10	12	16	44
IITT – 1011	82	55	40	25	25	10	12	16	44
IITT – 1011H	82	55	40	25	25	10	12	16	44

Dimensions for IITT-1112 and IITT-1112H are available on request.



Mounting Tapped Hole "J"	Reaction Square Drive	Weight
M4	Male ¼"	0.3kg

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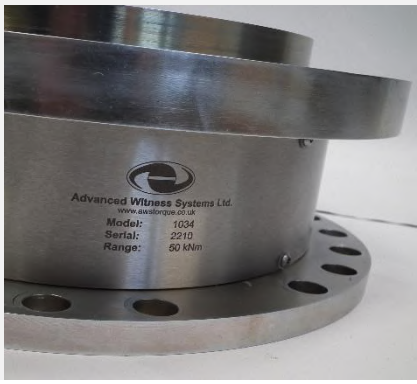
Intelligent Annular Torque Transducer

DESCRIPTION

The AWS Intelligent Annular Torque Transducer range (IATT), is designed to accurately measure torque values, in a variety of industries. They function either as a reaction torque transducer taking the reaction torque through the transducer, or with additional drive plates, attached to the flanges to convert them to direct drive inline transducers.

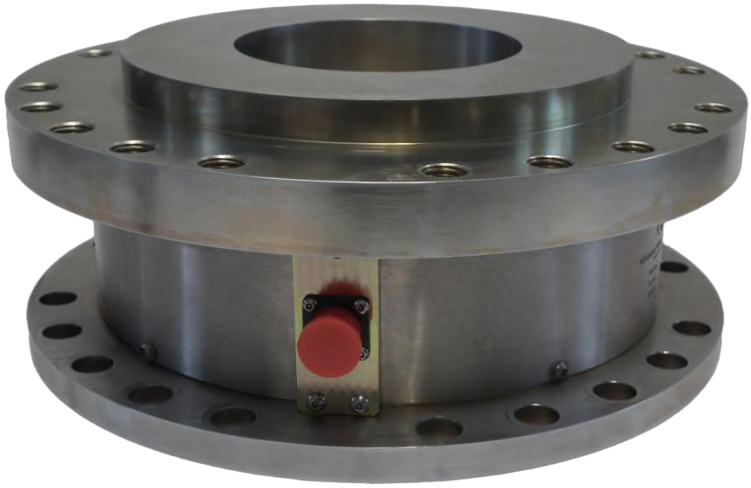
With optimised torque ranges, the transducer contains our Intelligent Instrumentation Package, outputting using CAN-BUS protocol to communicate with the AWS Professional Transducer Display (PTD). This digital communication eliminates signal loss when using long lengths of cable, providing flexibility in communicating with other devices and systems.



SPECIFICATIONS

Model: IATT -	1038	1039	1031	1032	1033	1034	1035	1046	1036	1037
Ranges:	2kNm	3kNm	5kNm	10kNm	20kNm	50kNm	100kNm	120kNm	200kNm	300kNm

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Modes:	**Run:** Shows the torque value as they change as a live reading output. **Peak:** Shows, updates and retains the maximum reading in a fast dynamic memory. The maximum reading is retained until manually cleared. **1st Peak:** Detects, shows and retains the first peak reading in a fast dynamic memory, or is cleared automatically after three seconds if the auto cancel option is selected.
Communications:	Communications via can bus. (use with the AWS PTD-1010 power & display unit).
Power & Display:	Requires only a single D.C power supply (use with AWS PTD-1010, power and display is provided).
Overload Capability:	125%
Maximum Mechanical Overload:	160% of range stated.
Operating Temperature:	-10°C to +50°C.
Temperature Coefficient:	On Zero: 0.01% per °C On Span: 0.03% per °C
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326-1:2013



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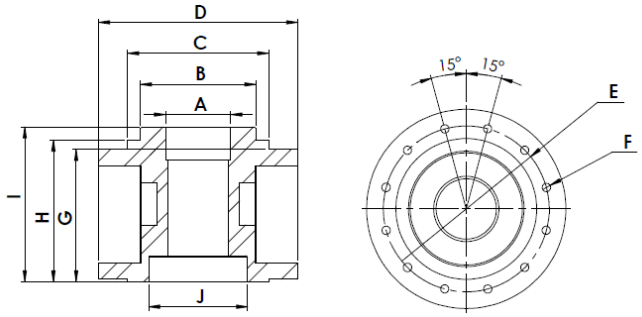
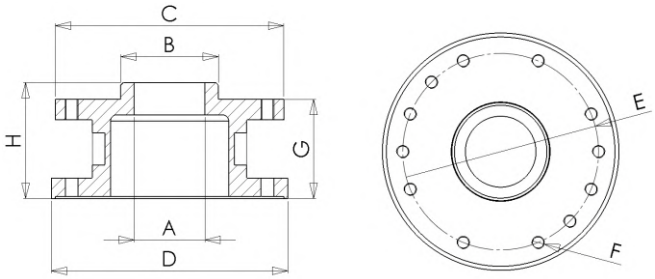
DIMENSIONS

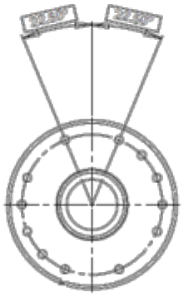
Dim (mm)	1038/ 1039	1031	1032	1033	1034	1035	1046	1036	1037
A	39	55	55	70	125	125	125	205	205
B	69	76	76	95	219.92	219.92	219.92	239.92	239.92
C	84.1	177.8	177.8	212	315	315	315	520	520
D	119	184	184	212	315	315	315	520	520
E	99.06	152.4	152.4	195	290	290	290	492	492
F	M5X0.8	M10X1.5	M10X1.5	M10X1.5	M16X2.0	M16X2.0	M16X2.0	M16X2.0	M16X2.0
G	79	77	77	97	126	126	126	130	130
H	84.5	90	90	76	110	110	110	146	146
I	92.5	-	-	-	-	-	-	-	-
J	59	-	-	-	-	-	-	-	-
No. Bolts	24	24	24	24	40	40	40	68	68



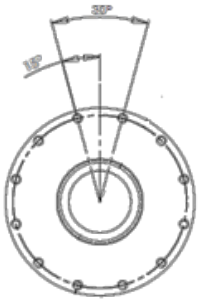
1038 AND 1039



1031 – 1037, 1046



1031 & 1032



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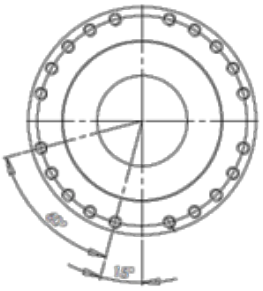
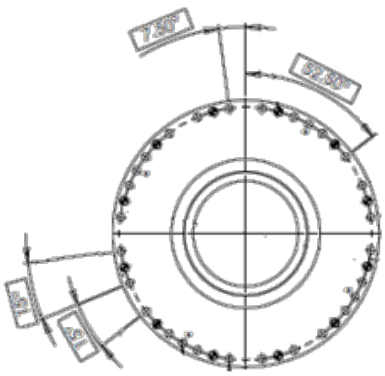


1034, 1035 & 1046



1036 & 1037

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Intelligent Rotary Torque Transducer

DESCRIPTION

The AWS LTD Intelligent Rotary Torque Transducer range (IRTT), is designed to accurately measure torque values in a rotating shaft, in a variety of industries.

With optimised torque ranges, the transducer contains our Intelligent Instrumentation Package, outputting using CAN-BUS protocol to communicate with the AWS LTD Professional Transducer Display (PTD). This digital communication eliminates signal loss when using long lengths of cable, providing flexibility in communicating with other devices and systems.

A simple 2 step calibration. Stores serial & model number, capacity, calibration coefficient, units of calibration, and conversion to other torque units.

SPECIFICATIONS

Model: IRTT -	1041	1042	1043	1044	1045
Ranges:	0.4 – 10Nm	2 – 50Nm	10 – 250Nm	20 – 500Nm	40 – 1000Nm
Square Drive Size:	¼″	⅜″	½″	¾″	1″

Accuracy: Better than 0.25% of full scale. See calibration certificate for full results.

Modes: **Run:** For Dial-type and Electronic Wrenches and Screwdrivers.
Peak: For Cam-type Wrenches and Screwdrivers.
1st Peak: For Click-type Wrenches and Screwdrivers, retains reading until manually cancelled or for 3 seconds if auto cancel option is chosen.

Communications: Communications via can bus. (when used with the AWS PTD-1010 that converts and displays the signals, shows mode selected, transducer details and output in RS232 serial form).

Power & Display: Requires only a single D.C power supply (use with AWS PTD-1010, power and display is provided).

Speed: Standard 1,000 RPM

Overload Capability: 125%

Operating Temperature: +5°C to +40°C.

Connector: Mil C 26482 series.
6 pin male contact gender.
Shell size 10.

CE: 2014/30/EU

EMC: BS EN 61326-1:2007

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A Series Torque Transducers

Our A series Torque Transducers are designed to work with any existing analogue torque system, outputting readings in mV.

We produce Inline, Annular and Rotary A Series Torque Transducers from 0.25Nm to 300,000Nm. They provide a cheaper alternative to our I and N Series Torque Transducers, as well as being capable of working with our older instrumentation and other manufacturer's analogue displays.

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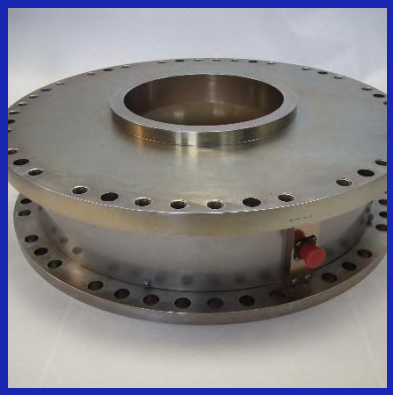

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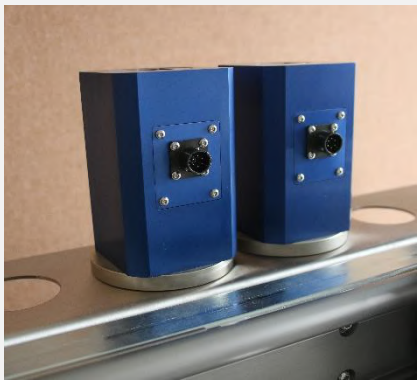
Analogue Inline Torque Transducer

DESCRIPTION



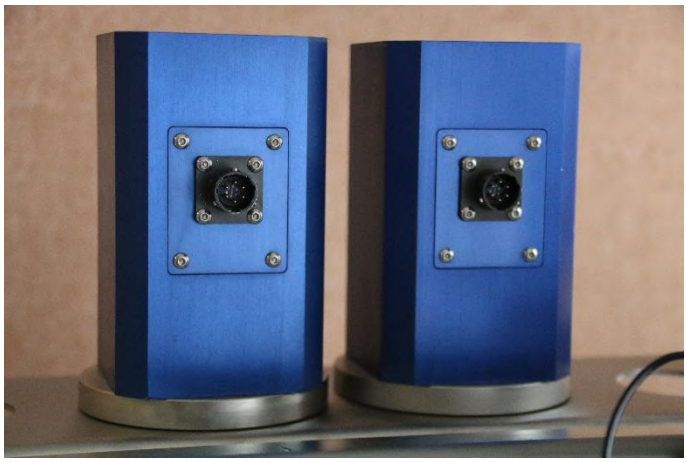
The AWS LTD Analogue In-Line Torque Transducer range (AITT), is designed to accurately measure torque values, in a variety of industries.

With optimised torque ranges, the transducer uses a standard analogue connection through a male MIL C connector, from a full active Wheatstone bridge, outputting a mV reading.
There is an option (using the In-line Transducer Mounting Bracket, purchased separately) to bench mount the transducer in either a vertical or horizontal position.

SPECIFICATIONS

Model: AITT -	2012	2013	2014	2015	2016	2070	2017
Ranges:	0.4 – 10Nm	2 – 50Nm	10 – 250Nm	20 – 500Nm	40 – 1000Nm	60 – 1500Nm	0.1 – 3000Nm
Square Drive Size:	¼″	⅜″	½″	¾″	¾″	1″	1 ½″

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Signal Output:	2 mV/V Strain gauge
Communications:	mV analogue output
Bridge Impedance:	350 Ω
Max Voltage and Current Requirement:	10V DC 30mA
Power & Display:	Requires a stable DC power supply and mV reading meter.
Overload Capability:	125%
Maximum Mechanical Overload:	160% of range stated.
Operating Temperature:	-10°C to +50°C.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326-1:2013



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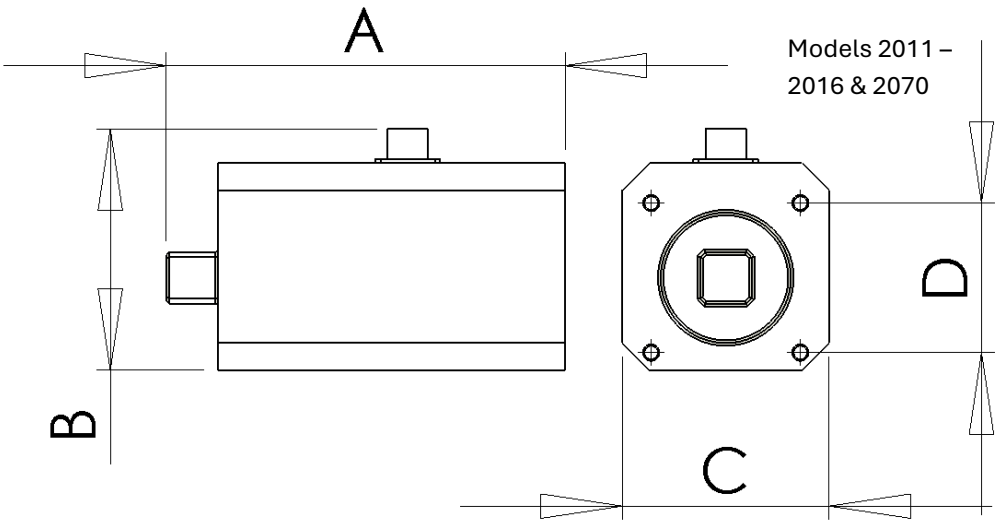
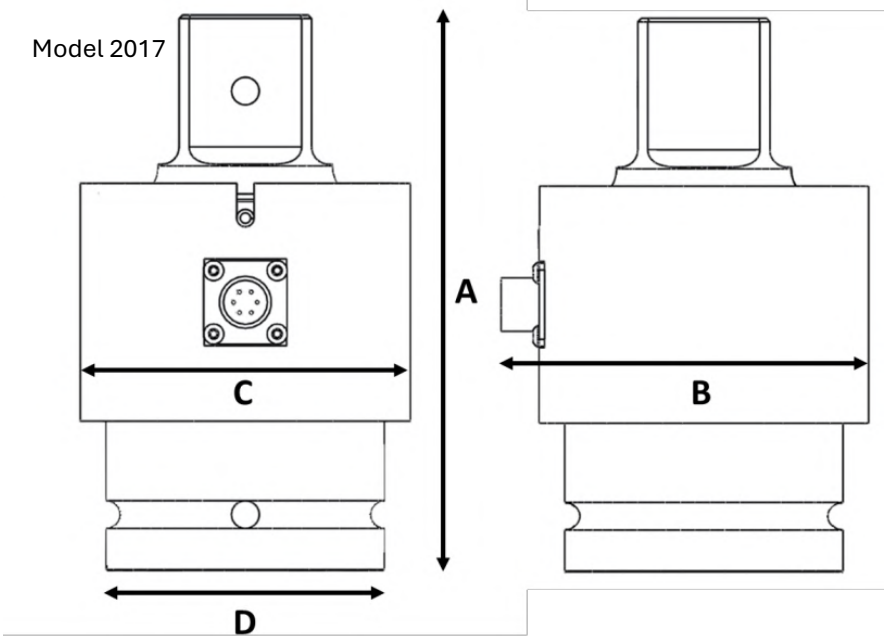
DIMENSIONS

Model	Dimension (mm)				Face Mounting Tapped Hole *	Square Drive	Weight (kg)
	A	B	C	D			
AITT – 2012	100	75	60	36	M5	¼″	1.0
AITT – 2013	100	75	60	36	M5	⅜″	1.0
AITT – 2014	115	75	60	40	M5	½″	1.2
AITT – 2015	150	90	75	55	M5	¾″	2.6
AITT – 2016	150	90	75	55	M5	¾″	2.7
AITT – 2070	150	90	75	55	M5	1″	2.8
AITT – 2017	160	106	95	80	NA	1 ½″	3.8

* The face mounting holes are in a square, centrally located around the square drive.





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Low Capacity Analogue Inline Torque Transducer

DESCRIPTION

The AWS LTD Analogue In-Line Torque Transducer range (AITT), is designed to accurately measure torque values, in a variety of industries.

With optimized torque ranges, the transducer uses a standard analogue connection through a male MIL C connector, from a full active Wheatstone bridge, outputting a mV/V reading.

There is an option using the In-line Transducer Mounting Bracket (purchased separately) to bench mount the transducer in either a vertical or horizontal position. The vertical position allows it to be mounted in ISO torque wrench calibration machines.

This transducer is either Male SQ drive to Male SQ drive or Male SQ drive to HEX drive. There are 2x M4 threaded holes in the reaction end and bottom surfaces for bolting.

SPECIFICATIONS

Model: IITT -	2112	2112H	2111	2111H	2018	2018H	2011	2011H
Ranges:	0.01 – 0.25Nm	0.01 – 0.25Nm	0.02 – 0.5Nm	0.02 – 0.5Nm	0.04 – 1Nm	0.04 – 1Nm	0.1 – 2.5Nm	0.1 – 2.5Nm
Square Drive Size:	¼″ SQ	¼″ HEX	¼″ SQ	¼″ HEX	¼″ SQ	¼″ HEX	¼″ SQ	¼″ HEX

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Modes:	2mV/V Strain gauge
Communications:	mV
Bridge Impedance:	350 Ω
Max Voltage and Current Requirement:	10V DC 30mA
Power & Display:	Dedicated mV/V display and power supply.
Overload Capability:	120%
Maximum Mechanical Overload:	150% of range stated.
Operating Temperature:	-10°C to +50°C.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326-1:2007

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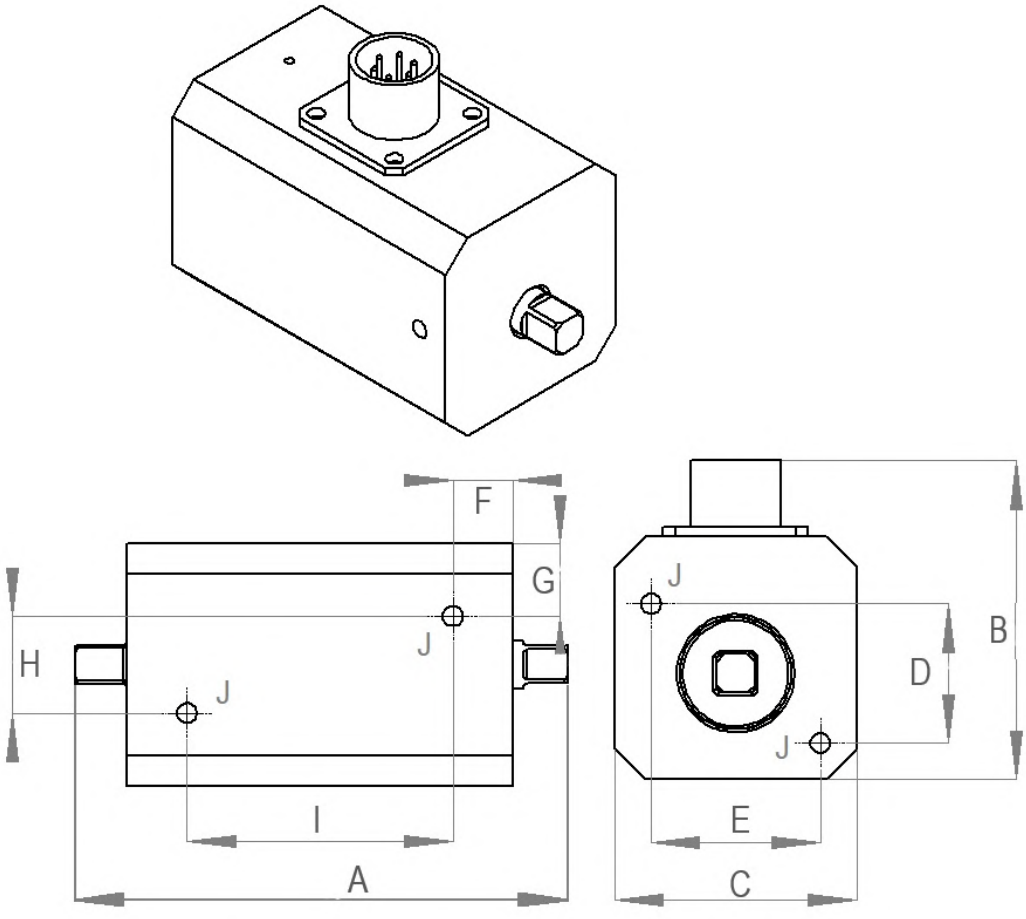
DIMENSIONS

Model	Dimension (mm)								
	A	B	C	D	E	F	G	H	I
AITT – 2111	82	55	40	25	25	10	12	16	44
AITT – 2111H	82	55	40	25	25	10	12	16	44
AITT – 2018	82	55	40	25	25	10	12	16	44
AITT – 2018H	82	55	40	25	25	10	12	16	44
AITT – 2011	82	55	40	25	25	10	12	16	44
AITT – 2011H	82	55	40	25	25	10	12	16	44

Dimensions for AITT-2112 and AITT-2112H are available on request.



Mounting Tapped Hole "J"	Square Drive	Weight
M4	Male ¼"	0.3kg

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Analogue Annular Torque Transducer

DESCRIPTION

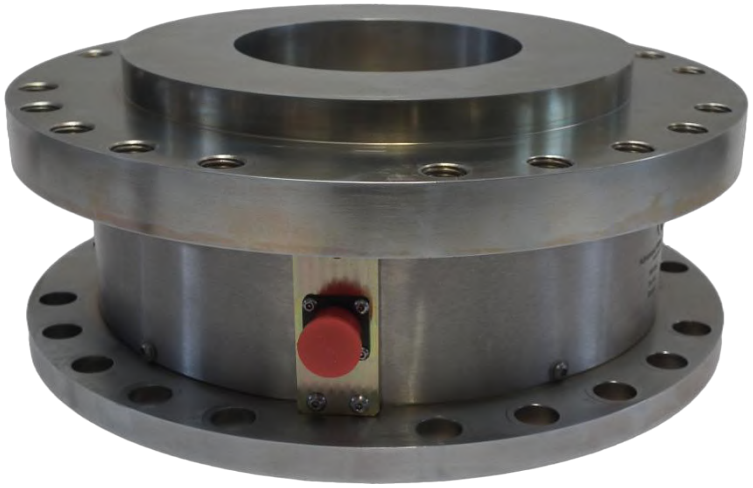
The AWS Analogue Annular Torque Transducer range (AATT), is designed to accurately measure torque values, in a variety of industries. They function either as a reaction torque transducer taking the reaction torque through the transducer, or with additional drive plates, attached to the flanges, convert them to direct drive inline transducers.

With optimised torque ranges, the transducer uses a standard analogue connection through a male MIL C connector, from a full active Wheatstone bridge, outputting a mV reading.

SPECIFICATIONS

Model: AATT -	2029	2030	2031	2032	2033	2034	2035	2046	2036	2037
Ranges:	2kNm	3kNm	5kNm	10kNm	20kNm	50kNm	100kNm	120kNm	200kNm	300kNm

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Signal Output:	2mV/V Strain gauged bridge
Power & Display:	Requires a stable DC power supply and mV reading meter.
Overload Capability:	125%
Bridge Impedance:	350 Ω
Max Voltage and Current Requirement:	10V 30mA DC
Maximum Mechanical Overload:	160% of range stated.
Operating Temperature:	-10°C to +50°C.
Temperature Coefficient:	On Zero: 0.01% per °C On Span: 0.03% per °C
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326-1:2013



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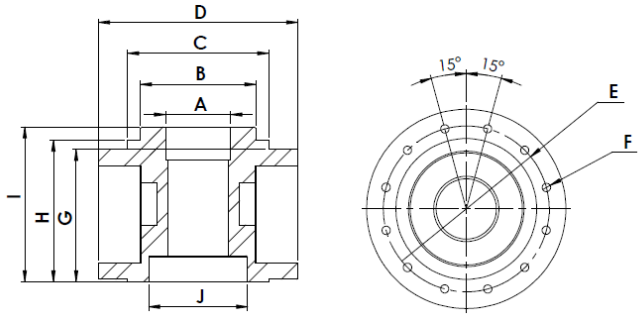
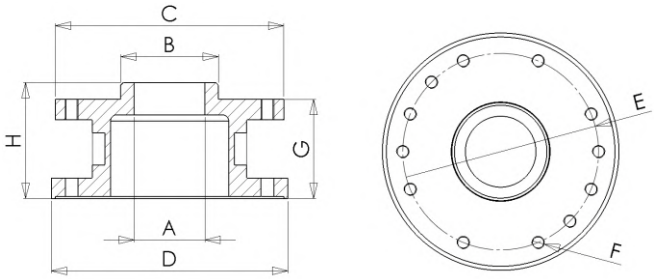
DIMENSIONS

Dim (mm)	2029/ 2030	2031	2032	2033	2034	2035	2046	2036	2037
A	39	55	55	70	125	125	125	205	205
B	69	76	76	95	219.92	219.92	219.92	239.92	239.92
C	84.1	177.8	177.8	212	315	315	315	520	520
D	119	184	184	212	315	315	315	520	520
E	99.06	152.4	152.4	195	290	290	290	492	492
F	M5X0.8	M10X1.5	M10X1.5	M10X1.5	M16X2.0	M16X2.0	M16X2.0	M16X2.0	M16X2.0
G	79	77	77	97	126	126	126	130	130
H	84.5	90	90	76	110	110	110	146	146
I	92.5	-	-	-	-	-	-	-	-
J	59	-	-	-	-	-	-	-	-
No. Bolts	24	24	24	24	40	40	40	68	68



2029 AND 2030



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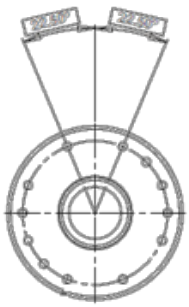

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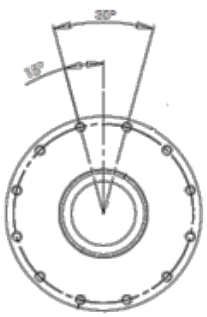

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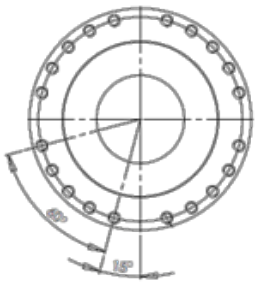
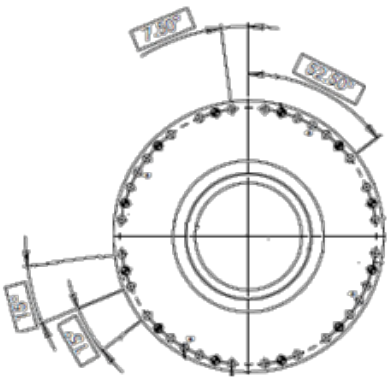


2034, 2035 & 2046



2036 & 2037

Analogue Rotary Torque Transducer

DESCRIPTION

The AWS LTD Analogue Rotary Torque Transducer range (ARTT), is designed to accurately measure torque values in a rotating shaft, in a variety of industries.

With optimised torque ranges, the transducer uses a standard analogue connection through a male MIL C connector, from a full active Wheatstone bridge, outputting a mV reading.

SPECIFICATIONS

Model: ARTT -	2041	2042	2043	2044	2045
Ranges:	0.4 – 10Nm	2 – 50Nm	10 – 250Nm	20 – 500Nm	40 – 1000Nm
Square Drive Size:	¼″	⅜″	½″	¾″	1″

Accuracy:	Better than 0.25% of full scale. See calibration certificate for full results.
Signal Output:	Analogue mV
Communications:	NA
Power & Display:	Requires a stable DC power supply and mV reading meter.
Speed:	Standard 1,000 RPM
Overload Capability:	125%
Bridge Impedance:	350 Ω
Operating Temperature:	+5°C to +40°C.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

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N Series Torque Transducers

The AWS N Series Torque Transducer range is designed to work with other manufacturer's smart display systems. It does this by using a memory chip stored within the transducer housing which stores the serial number, part number, capacity and calibration value, all of which can be interrogated by some manufacturer's displays.

We produce Inline, Annular and Rotary N Series Torque Transducers from 0.25Nm to 300,000Nm.

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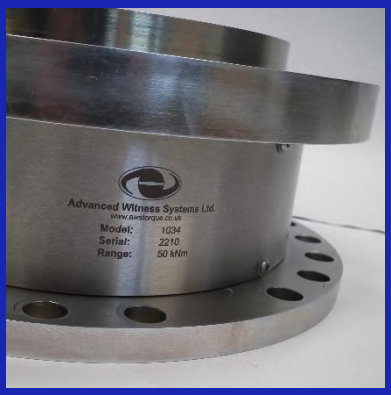

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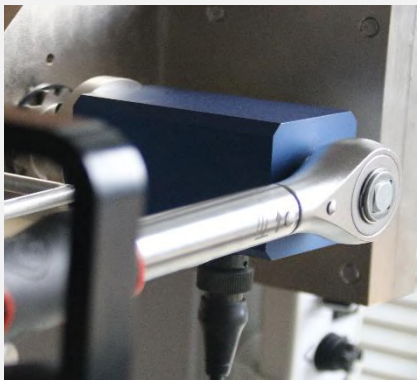
N-Type Inline Torque Transducer

DESCRIPTION



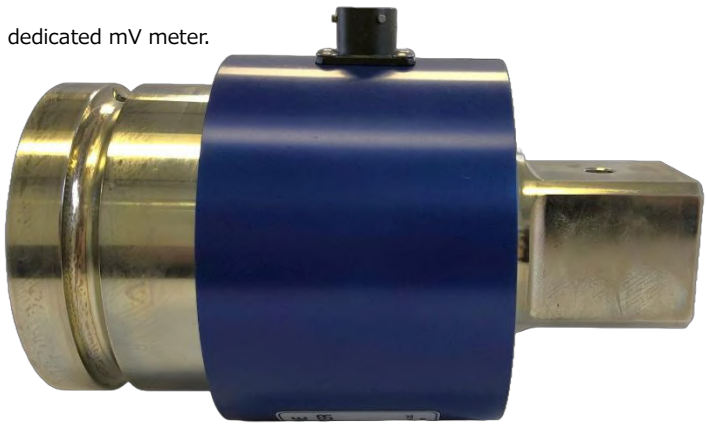
The AWS LTD N-type In-Line Torque Transducer range (NITT), is designed to accurately measure torque values, in a variety of industries.
With optimised torque ranges, the transducer outputs a mV signal proportional to the supply voltage and torque. The transducer contains a memory chip in which a small selection of parameters, including serial number, model number, and calibration value, are held, compatible for setting some manufacturers display units.

There is an option using the In-line Transducer Mounting Bracket (purchased separately) to bench mount the transducer in either a vertical or horizontal position.

SPECIFICATIONS

Model: NITT -	3012	3013	3014	3015	3016	3070	3017
Ranges:	0.4 – 10Nm	2 – 50Nm	10 – 250Nm	20 – 500Nm	40 – 1000Nm	60 – 1500Nm	0.1 – 3000Nm
Square Drive Size:	¼″	⅜″	½″	¾″	¾″	1″	1 ½″

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Signal Output:	2 mV/V
Communications:	2 wire EEPROM instrument set up program.
Bridge Impedance:	350 Ω
Max Voltage and Current Requirement:	10V DC 30mA
Power & Display:	Requires DC power supply and dedicated mV meter.
Overload Capability:	125%
Maximum Mechanical Overload:	160% of range stated.
Operating Temperature:	-10°C to +50°C.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326-1:2007



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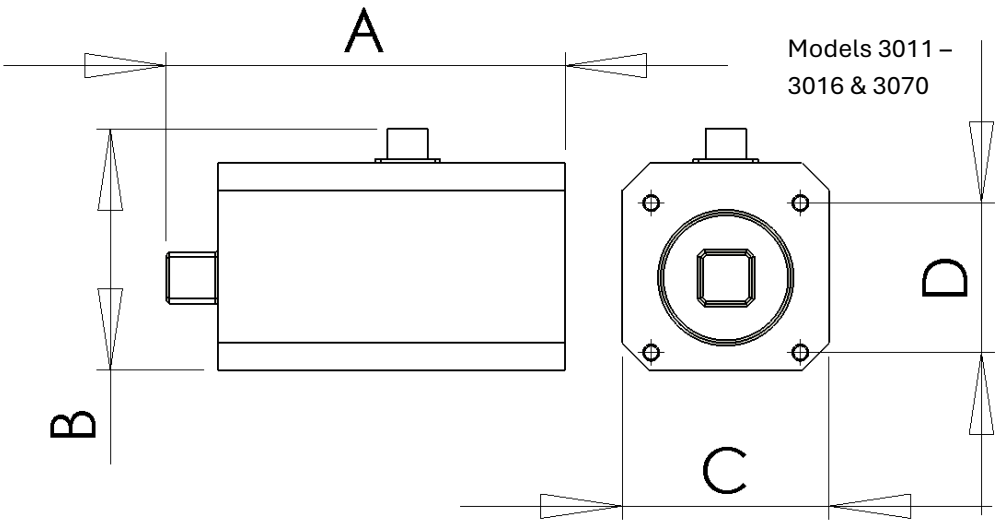
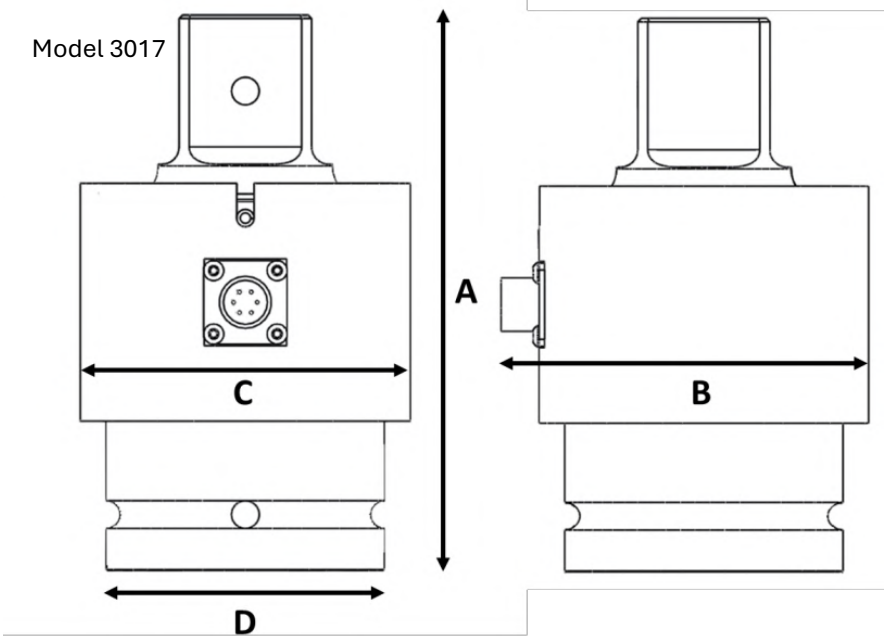
DIMENSIONS

Model	Dimension (mm)				Face Mounting Tapped Hole *	Square Drive	Weight (kg)
	A	B	C	D			
NITT – 3012	100	75	60	36	M5	¼″	1.0
NITT – 3013	100	75	60	36	M5	⅜″	1.0
NITT – 3014	115	75	60	40	M5	½″	1.2
NITT – 3015	150	90	75	55	M5	¾″	2.6
NITT – 3016	150	90	75	55	M5	¾″	2.7
NITT – 3070	150	90	75	55	M5	1″	2.8
NITT – 3017	160	106	95	80	NA	1 ½″	3.8

* The face mounting holes are in a square, centrally located around the square drive.





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Low Capacity N-Type Inline Torque Transducer

DESCRIPTION

The AWS LTD N-Type In-Line Torque Transducer range (NITT), is designed to accurately measure torque values, in a variety of industries.

With optimized torque ranges, the transducer uses a standard analogue connection through a male MIL C connector, from a full active Wheatstone bridge, outputting a mV/V reading.

The transducer contains a memory chip in which a small selection of parameters, including serial number, model number, and calibration value, are held, compatible for setting some manufacturers display units.

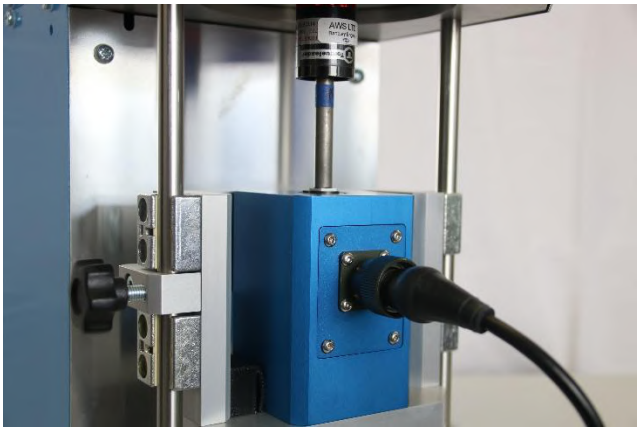
There is an option using the In-line Transducer Mounting Bracket (purchased separately) to bench mount the transducer in either a vertical or horizontal position.

This transducer is can either be Male SQ drive to Male SQ drive or Male SQ to Male HEX drive. There are 2x M4 threaded holes in the reaction end and bottom surface for bolting.

SPECIFICATIONS

Model: NITT -	3112	3112H	3111	3111H	3018	3018H	3011	3011H
Ranges:	0.01 – 0.25Nm	0.01 – 0.25Nm	0.02 – 0.5Nm	0.02 – 0.5Nm	0.04 – 1Nm	0.04 – 1Nm	0.1 – 2.5Nm	0.1 – 2.5Nm
Square Drive Size:	¼″ SQ	¼″ HEX	¼″ SQ	¼″ HEX	¼″ SQ	¼″ HEX	¼″ SQ	¼″ HEX

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Modes:	2mV/V Strain gauge
Communications:	2 wire EEPROM instrument set up program
Bridge Impedance:	350 Ω
Max Voltage and Current Requirement:	10V DC 30mA
Power & Display:	Requires DC power supply and Dedicated mV meter
Overload Capability:	120%
Maximum Mechanical Overload:	150% of range stated.
Operating Temperature:	-10°C to +50°C.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326-1:2007



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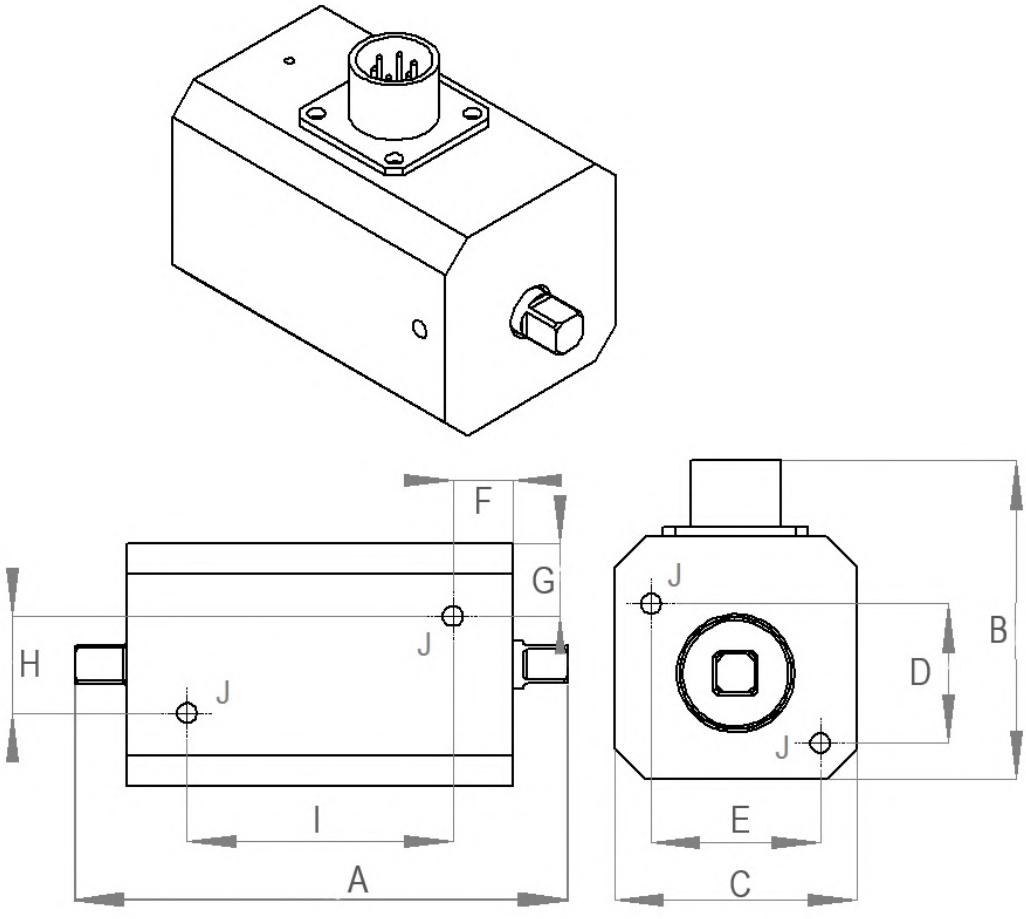
DIMENSIONS

Model	Dimension (mm)								
	A	B	C	D	E	F	G	H	I
NITT – 3111	82	55	40	25	25	10	12	16	44
NITT – 3111H	82	55	40	25	25	10	12	16	44
NITT – 3018	82	55	40	25	25	10	12	16	44
NITT – 3018H	82	55	40	25	25	10	12	16	44
NITT – 3011	82	55	40	25	25	10	12	16	44
NITT – 3011H	82	55	40	25	25	10	12	16	44

Dimensions for NITT-3112 and NITT-3112H are available on request.



Mounting Tapped Hole "J"	Square Drive	Weight
M4	Male ¼"	0.3kg

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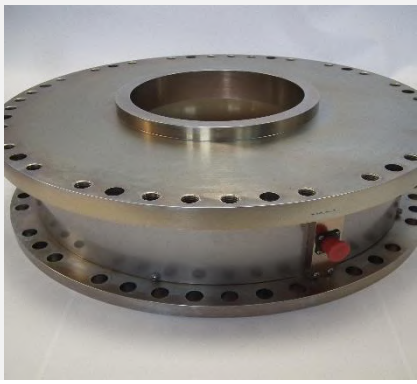
N-Type Annular Torque Transducer

DESCRIPTION



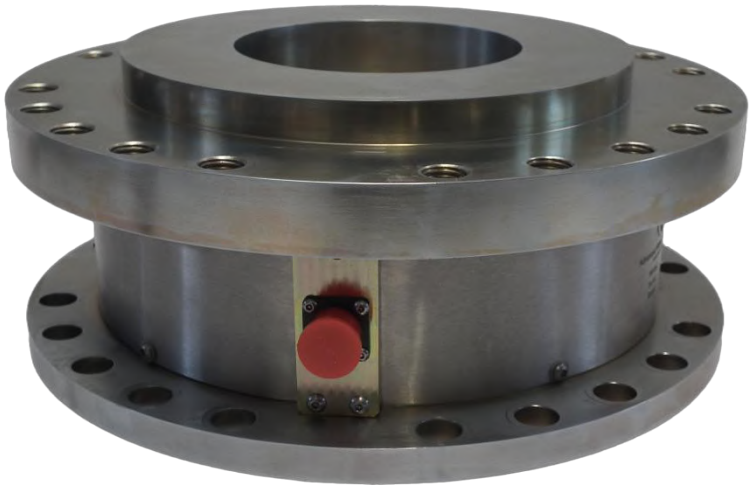
The AWS N-type Annular Torque Transducer range (NATT), is designed to accurately measure torque values, in a variety of industries. They function either as a reaction torque transducer taking the reaction torque through the transducer, or with additional drive plates, attached to the flanges, convert them to direct drive inline transducers.

With optimised torque ranges, the transducer outputs a mV signal proportional to the supply voltage and torque. The transducer contains a memory chip in which a small selection of parameters, including serial number, model number, and calibration value, are held, compatible for setting some manufacturers display units.

SPECIFICATIONS

Model: NATT -	3038	3030	3031	3032	3033	3034	3035	3046	3036	3037
Ranges:	2kNm	3kNm	5kNm	10kNm	20kNm	50kNm	100kNm	120kNm	200kNm	300kNm

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Signal Output:	2mV/V Strain gauged bridge
Communications:	2 wire EEPROM instrument set up program.
Power & Display:	Can be used with a mV/V display, but is also compatible with other manufacturer's displays.
Overload Capability:	125%
Bridge Impedance:	350 Ω
Max Power Requirement:	10V 20mA DC
Maximum Mechanical Overload:	160% of range stated.
Maximum Bridge Supply Voltage:	10V
Operating Temperature:	-10°C to +50°C.
Temperature Coefficient:	On Zero: 0.01% per °C On Span: 0.03% per °C
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2004/108/EEC
EMC:	BS EN 61326-1:2013



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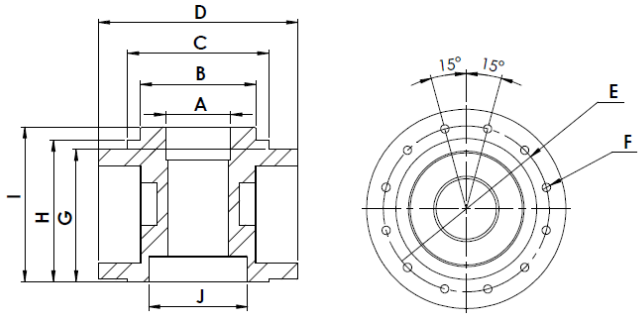
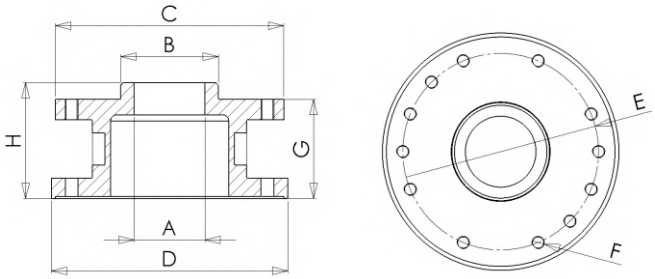
DIMENSIONS

Dim (mm)	3038/ 3030	3031	3032	3033	3034	3035	3046	3036	3037
A	39	55	55	70	125	125	125	205	205
B	69	76	76	95	219.92	219.92	219.92	239.92	239.92
C	84.1	177.8	177.8	212	315	315	315	520	520
D	119	184	184	212	315	315	315	520	520
E	99.06	152.4	152.4	195	290	290	290	492	492
F	M5X0.8	M10X1.5	M10X1.5	M10X1.5	M16X2.0	M16X2.0	M16X2.0	M16X2.0	M16X2.0
G	79	77	77	97	126	126	126	130	130
H	84.5	90	90	76	110	110	110	146	146
I	92.5	-	-	-	-	-	-	-	-
J	59	-	-	-	-	-	-	-	-
No. Bolts	24	24	24	24	40	40	40	68	68



3038 AND 3030



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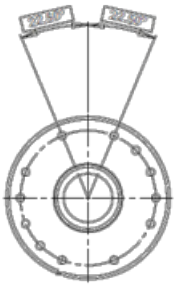
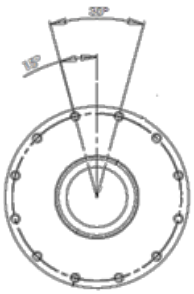


3031 & 3032



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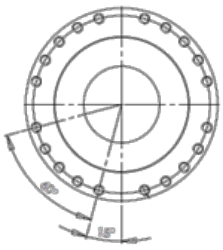
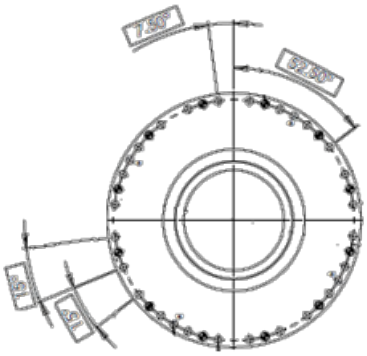


3034, 3035 & 3046



3036 & 3037

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N-Type Rotary Torque Transducer

DESCRIPTION

The AWS LTD N-type Rotary Torque Transducer range (NRTT), is designed to accurately measure torque values in a rotating shaft in a variety of industries.

With optimised torque ranges, the transducer outputs a mV signal proportional to the supply voltage and torque. The transducer contains a memory chip in which a small selection of parameters, including serial number, model number, and calibration value, are held, compatible for setting some manufacturers display units.

SPECIFICATIONS

Model: NRTT -	3041	3042	3043	3044	3045
Ranges:	0.4 – 10Nm	2 – 50Nm	10 – 250Nm	20 – 500Nm	40 – 1000Nm
Square Drive Size:	¼″	⅜″	½″	¾″	1″

Accuracy:	Better than 0.25% of full scale. See calibration certificate for full results.
Signal Output:	Analogue mV
Communications:	2 wire EEPROM instrument set up program.
Power & Display:	Requires DC power supply and Dedicated mV meter.
Speed:	Standard 1,000 RPM
Overload Capability:	125%
Bridge Impedance:	350 Ω
Max Voltage and Current Requirement:	10V DC 30mA
Operating Temperature:	+5°C to +40°C.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

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Transducer Ancillaries

A selection of products which can be used with AWS Torque Transducers, Displays and Bench Testers, and also in association with other manufacturer's transducers and displays.

The Transducer Ancillary range will allow you to improve efficiency, accuracy and reduce costs of your torque setups.

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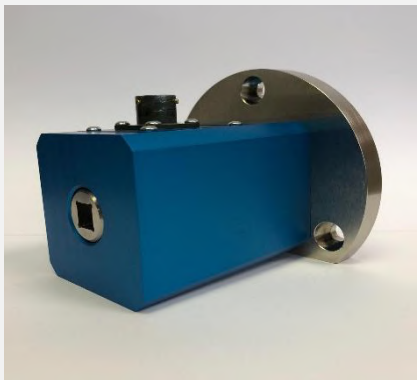
Intelligent Transducer Mounting Bracket

DESCRIPTION



The AWS Ltd Intelligent Transducer Mounting Bracket (ITMB) range is designed to provide reaction to Intelligent Inline Torque Transducers (IITTs) during a supported or unsupported torque calibration procedure or any other need.

It can also be used to mount the IITT vertically using the outer three bolt holes. These have 120 degrees equidistant spacing (M8 for ITMB-1024, 1025, 1026 and M12 for ITMB-1027 and 1128).

The IITT is attached to the ITMB using a pattern of either 2 M4 Bolts (ITT-1018) or 4 M5 Bolts (IITT-1012-1016 &1070). These are bolted into the reaction end of the transducer housing.

There are 5 sizes of ITMB with a 1/4", 3/8", 1/2", 3/4", 1" female square drive. Two of the ITMBs the 1025, 1027 can be used with Precision Torque Adaptors to interface with 1/4" and 1/2" IITT transducers respectively.

ITMB-1129 is the Base Plate used to vertically mount the Intelligent Transducer Mounting Brackets. This can be produced to attach to your current calibration setup.

SPECIFICATIONS

Model: ITMB -	1024	1025	1026	1027	1128
Ranges:	10Nm	50Nm	250Nm	1000Nm	1500Nm
Square Drive Size:	¼"	⅜"	½"	¾"	1"

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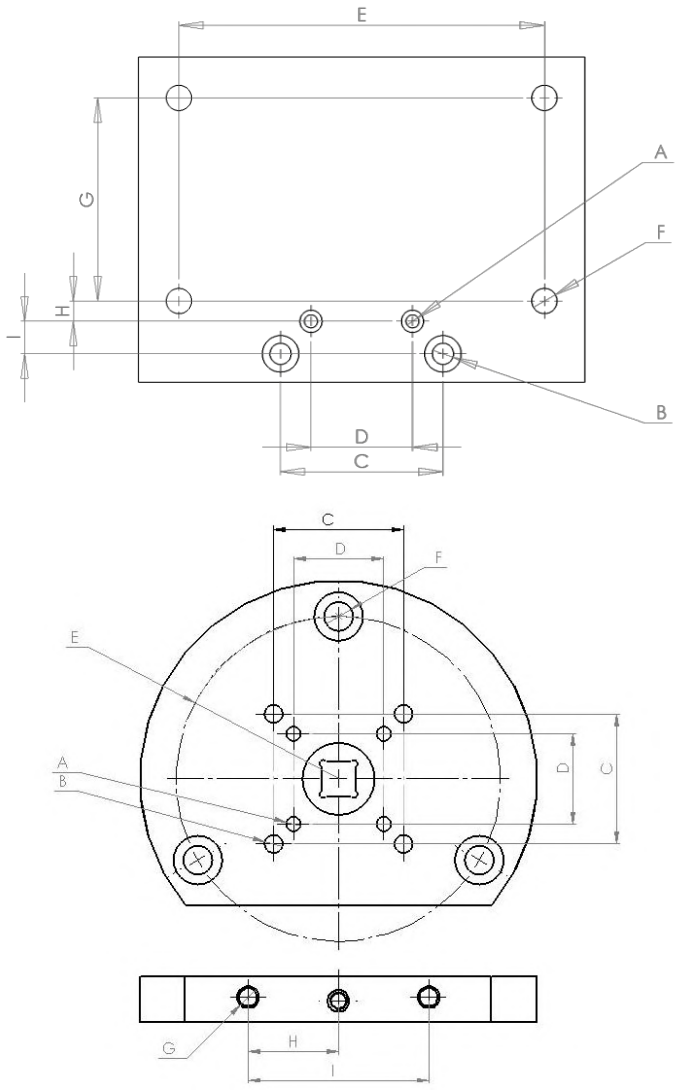
DIMENSIONS

Model	Dimension (mm)									Weight (kg)
	A	B	C	D	E	F	G	H	I	
ITMB – 1024	4	5	36	25	90	8	M6	25	50	¼"
ITMB – 1025	4	5	36	25	90	8	M6	25	50	⅜"
ITMB – 1026	5	5	36	25	90	8	M6	25	50	½"
ITMB – 1027	5	5	55	40	150	12	M10	40	80	¾"
ITMB – 1128	-	5	55	-	150	12	M10	40	80	1"
ITMB – 1129	6.5	10.5	80	50	180	12.5	100	10	16	-

* The face mounting holes are in a square, centrally located around the square drive.



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Precision Torque Adapters

DESCRIPTION

The AWS LTD Precision Torque Adapters, designed to improve the accuracy and reduce the uncertainty in torque calibration & apparatus. Our precision adapters cover a range of the most commonly used square drive, hex and keyway sizes. Keyways can be produced to specific standard as well as non-standard sizes. Because of this they can be used on a variety of different calibration machines and apparatus. They are manufactured to high tolerances out of hardened stainless steel to eliminate corrosion and increase the lifetime of the adapters. They are laser engraved with the size and model number for easy identification.

Hex-Square Adapters

Part No:	Size:
CM105	1″ F Sq to 36mm F Hex
CM150	1″ F Sq to ¼″ F Hex
CM151	1″ F Sq to 6mm F Hex
CM152	1″ F Sq to 10mm F Hex
CM153	1″ F Sq to 17mm F Hex
CM154	1″ F Sq to 19mm F Hex
CM155	1″ F Sq to 22mm F Hex
CM156	1″ F Sq to 27mm F Hex
CM106	¾″ F Sq to 36mm F Hex
CM113	¾″ F Sq to 19mm F Hex
CM191	½″ F Sq to ¼″ M Hex
CM192	½″ F Sq to ¼″ F Hex

Part No:	Size:
CM111	½″ F Sq to 17mm F Hex
CM112	⅜″ F Sq to 19mm F Hex
CM110	⅜″ F Sq to 17mm F Hex
CM109	⅜″ F Sq to 10mm F Hex
CM171	⅜″ M Sq to ¼″ F Hex
CM172	⅜″ M Sq to ¼″ M Hex
CM108	¼″ F Sq to 10mm F Hex
CM170	¼″ M Sq to ¼″ F Hex
CM173	¼″ M Sq to ¼″ M Hex
CM176	¼″ F Sq to ¼″ M Hex
CM195	½″ F Sq to ¼″ F Hex
CM182	¼″ F Hex to 4mm F Sq

Keyway-Square Adapters

Part No:	Size:
CM138	1″ F Sq to 35mm F Key
CM137	¾″ F Sq to 35mm F Key
CM136	½″ F Sq to 35mm F Key
CM175	½″ F Sq to 20mm F Key

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Square-Square Adapters

Part No:	Size:
CM187	3.5″ F Sq to 3.5″ F Sq
CM188	3.5″ M Sq to 2.5″ F Sq
CM183	1.5″ M Sq to 1″ F Sq
CM174	1.5″ M Sq to ¾″ F Sq
CM184	½″ F Sq to ½″ F Sq
CM132	½″ F Sq to ⅜″ F Sq
CM139	⅜″ F Sq to ⅜″ F Sq
CM141	¼″ F Sq to ⅜″ F Sq
CM140	¼″ F Sq to ¼″ F Sq

CM190	3.5″ M Sq to 3.5″ M Sq
CM189	3.5″ M Sq to 2.5″ M Sq
CM142	1″ F Sq to 1.5″ M Sq
CM177	1″ M Sq to 1″ M Sq
CM146	1″ F Sq to ¾″ M Sq
CM178	1″ M Sq to ¾″ M Sq
CM147	1″ F Sq to ½″ M Sq
CM179	1″ M Sq to ½″ M Sq
CM148	1″ F Sq to ⅜″ M Sq
CM180	1″ M Sq to ⅜″ M Sq

Part No:	Size:
CM149	1″ F Sq to ¼″ M Sq
CM181	1″ M Sq to ¼″ M Sq
CM186	¾″ M Sq to 1 ⅝″ M Sq
CM143	¾″ F Sq to 1″ M Sq
CM164	¾″ F Sq to ½″ M Sq
CM165	¾″ F Sq to ⅜″ M Sq
CM166	¾″ F Sq to ¼″ M Sq
CM144	½″ F Sq to 1″ M Sq
CM160	½″ F Sq to ¾″ M Sq
CM107	½″ F Sq to 19mm F Sq
CM167	½″ F Sq to ⅜″ M Sq
CM185	½″ M Sq to ⅜″ M Sq
CM168	½″ F Sq to ¼″ M Sq
CM145	⅜″ F Sq to 1″ M Sq
CM159	⅜″ F Sq to ¾″ M Sq
CM162	⅜″ F Sq to ½″ M Sq
CM169	⅜″ F Sq to ¼″ M Sq
CM157	¼″ F Sq to 1″ M Sq
CM158	¼″ F Sq to ¾″ M Sq
CM161	¼″ F Sq to ½″ M Sq
CM163	¼″ F Sq to ⅜″ M Sq

Annular Transducer Mounting Adapters

The AWS LTD Annular Transducer Mounting Adapters, which are bespoke designed to fit any mounting arrangement, and designed to improve the accuracy of calibration results. They can be used to turn one of our high torque Annular Transducers into a high torque Inline Transducer. They are manufactured to high tolerances out of hardened stainless steel to eliminate corrosion and increase the lifetime of the adapters. They are laser engraved with the size and model number for easy identification.

Unique Custom-Design Adapters

AWS LTD can custom design & manufacture unique high tolerance adapters for customers who require something specific that is not part of our range. These will be designed & checked to meet the customers' specification, manufactured to high tolerances, and plated to eliminate corrosion and increase the lifetime of the adapters. They are laser engraved with the size and custom model number for easy identification.

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Multi-way Transducer Switch Box

DESCRIPTION

Did you know torque transducers require to be powered for at least 15 minutes before taking measurements, according to the BS 7882:2017 standard? During a day of calibrations at various ranges, this time will soon add up and hurt your efficiency.

The AWS Ltd Multiway Transducer Switch Box (TSB) supplies power to a number of transducers simultaneously, meaning you can quickly select which transducer you are using. This removes the time required for transducer thermal stabilisation.

The Switch Box is designed to be used with the AWS Universal Torque Wrench Calibration Machine (UTWCM) and Professional Transducer Display (PTD).

SPECIFICATIONS

Model:	1057-4	1057-6
Max Number of Transducers	4	6

Power: Mains powered from 12V DC charger.

Connections: 4 or 6 off 6-way MIL-C spec connectors.

3 off 9-pin D standard female connector:

- RS232 output
- 1010 display
- UTWCM

Size: **1057-4:** 17cm x 11cm x 9cm
1057-6: 23cm x 11cm x 9cm

Weight: 0.5Kg

Cables to use with the TSB can be supplied depending on specific customer requirements.

The AWS Ltd Multiway Transducer Switch Box is designed to be used with the AWS Universal Torque Wrench Calibration Machine and Professional Transducer Display. It switches between and provides continuous power (for thermal stability) to a number of AWS Intelligent Torque Transducers or Intelligent Instrumented Transducer Cables.

The Transducer Switch Box simultaneously powers the multiple transducers and the Professional Transducer Display. There are connectors on the back for RS232 output to a PC, and for communication with the PTD and UTWCM.

The PTD is connected to the TSB via a single cable, which connects to the Auxiliary port on the Display. The RS232 output data is generated by the PTD. The UTWCM is also connected to the TSB via a single cable, allowing the UTWCM to be run in automatic operation.

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Intelligent Instrumented Torque Transducer Cable

DESCRIPTION

The AWS LTD Intelligent Instrumented Torque Transducer Cable (IITC) is designed to convert standard mV/V transducers from any manufacturer into truly intelligent digital transducers.

The Intelligent Instrumented Transducer Cable features our Intelligent Instrumentation Package, which outputs using the CAN bus protocol when communicating with the AWS products. This digital communication enhances noise immunity and eliminates signal loss when using long lengths of cable, providing flexibility in communicating with other devices and systems.

A simple 2 step calibration.

Stores serial & model number, capacity, calibration coefficient, units of calibration, and conversion to other torque units.

SPECIFICATIONS

Model: IITC-1008-	1	2	5	10
Length:	1m	2m	5m	10m
These cables come in a selection of standard lengths. If a specific length is required, we will manufacture one to specification. The transducer (mV) side is always 1m long, to minimise signal loss.				

Modes: **Run:** For electronic wrenches and screwdrivers.
Peak: For dial and cam-type wrenches and screwdrivers.
1st Peak: For click-type wrenches and screwdrivers, retains reading until manually cancelled or for 3 seconds if auto cancel option is chosen.

Communications: Communications via CAN bus. (When used with AWS PTD-1010 power & display unit).

Power and Display: DC power supply (when used with AWS PTD-1010, power and display is provided).

Connector: MIL-C 26482 series to MIL-C 26482. 6 pin. Shell size 10.

The Intelligent Cable converts your existing mV/V transducers to be used with AWS equipment such as the Professional Transducer Display or Universal Torque Wrench Calibration Machine.

Allows use of your current range of transducers when purchasing new torque calibration equipment from AWS, cutting down the costs by removing the need for new torque transducers.

Please note each cable is calibrated to a specific transducer, and so becomes unique to that transducer. You cannot use one Intelligent Instrumented Transducer Cable with multiple mV/V transducers.

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Transducer Cable

For AWS Intelligent Torque Transducers

The AWS LTD Torque Transducer Cable (TC), used to connect any AWS LTD Intelligent (I Series) Transducer to the AWS LTD Professional Transducer Display (PTD). It has a female MIL C connector transducer-end, and a male MIL C connector display-end. These cables come in a selection of standard lengths, or if a specific length is required, we will manufacture one to specification.

Model: ITC-1009-	1	2	5	10
Length:	1m	2m	5m	10m

N-SERIES Torque Transducer Cable

The AWS LTD N-SERIES Torque Transducer Cable range (NTC), our basic cable for connecting our A SERIES and N SERIES transducers to other manufacturers displays which use MIL-C or LEMO connectors for signal input. These cables come in a selection of standard lengths, or if a specific length is required, we will manufacture one to specification.

Model: NTC-	2008	2009	2010
Female Connector	6 Pin MIL-C	6 Pin MIL-C	10 Pin MIL-C
Male Connector	6 Pin MIL-C	10 Pin LEMO	10 Pin LEMO

These cables come in a selection of standard lengths or, if a specific length is required, we will manufacture to specification.

Model: NTC-20##	1	2	5	10
Female Connector	1m	2m	5m	10m

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Torque Displays & Bench Testers

The AWS Professional Transducer Display and Bench Testers use our unique inbuilt instrumentation PCBs to eliminate signal loss.

Whether using our Intelligent Transducers, or a Bench Tester, the models accommodate your torque and budget requirements.

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Professional Transducer Display

DESCRIPTION

The PTD is designed for powering and displaying the readings from AWS Intelligent Torque Transducer ranges (I Series). The PTD features a bright, full colour LCD graphic display, showing the torque reading, both in large 6 digits, and analogue bar graph. The PTD features Run, Peak and 1st Peak mode operation, unit and limits selection via front panel soft keys. When using the limits features, external yellow, red and green LEDs indicate whether torque values are low, high or acceptable, and the 6 digit reading changes colour. The PTD displays torque in Nm, cNm, Lbf.Ft, Lbf.In and ozf.In. RS232 output enables the PTD to be connected to a PC for direct input into ADMS Kepler 4 Calibration and Conformity Software (sold separately). The PTD is available in three versions: 1010M, 1010B and 1010H. The 1010M is designed for use with the AWS UTWCM (Sold separately). The models 1010B and 1010H have internal rechargeable batteries for portable operation. These models also indicate the battery level status. The 1010H is a more rugged option for demanding environmental climates. The cases used by all versions have a rugged solid design for withstanding shock & impact damage and greater IP rating.

SPECIFICATIONS

Model: PTD -	1010M	1010B	1010H
Specification:	Mains power supply from 12V DC charger.	Internal rechargeable batteries	Internal rechargeable batteries. Heated display for use at sub-zero temperatures. Rated to IP67.

LCD Display: 96mm x 55mm Bright, Full Colour, Sunlight Readable LCD Display
6 Digit Active Reading
Analogue Bar Graph tracking torque reading
Mode, Units, Limit Selection and Setting Graphics controlled via Soft Keys
Battery State and Indication of Charging (1010B / 1010H)

Modes: **Run:** Shows the torque value as they change as a live reading output.

Peak: Shows, updates and retains the maximum reading in a fast dynamic memory. The maximum reading is retained until manually cleared.

1st Peak: Detects, shows and retains the first peak reading in a fast dynamic memory, or is cleared automatically after three seconds if the auto cancel option is selected.

Power: 1010M – Mains powered from 12V DC charger
1010B / 1010H – Internal rechargeable batteries allow for portable use. Auto power off function extends the life of the display. Supplied with a 12V DC charger.

Accuracy: Better than 0.1% of reading from 10% to 100% of full scale when used with AWS Intelligent Torque Transducers.

Limit Selection: Customisable, colour coded Low, Pass and High tolerances

Units: N·m, cN·m, Lbf·Ft, Lbf·In, ozf·In

Data Output: RS232 and Canbus via 9-pin D Standard Female Connector

Operating Temperature: 1010M / 1010B: -10 to +50°C
1010H: -20 to +50°C

Temperature Coefficient: On Zero: 0.01% per °C
On Span: 0.03% per °C

Weight: 1010M: 1.35kg
1010B / 1010H: 1.6kg

Size: 160mm x 220mm x 200mm

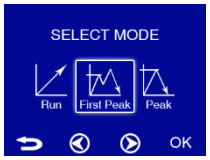
UKCA: Electromagnetic Compatibility Regulations 2016

CE: 2014/30/EU

EMC: EN 61326-2:2013

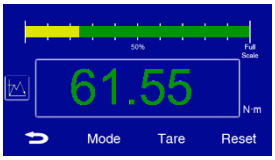
NATO Stock No.: 5980-22-623-1641

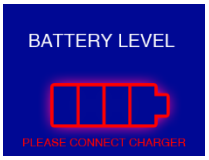
Screenshots



Graphical Mode Selection

Reading screen showing mode, units and analogue bar graph.





Battery level warning (1010B & 1010H only)

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Professional Torque Tool Tester

DESCRIPTION

The AWS LTD Professional Torque Tool Tester range (PTTT), the company's premier bench mounted tester range, for calibrating, testing and certifying hand torque tools.
The PTTT features a bright, full colour LCD graphic display, showing the torque reading, both in large 6 digits, and analogue bar graph. A flexible neck means the full colour display can be easily read from any position. It has internal rechargeable batteries for portable operation. Featuring Run, Peak and 1st Peak mode operation (selectable to allow use with all types of torque tool), unit and limits selection via front panel soft keys. When using the limits features, external yellow, red and green LEDs indicate whether torque values are low, high or acceptable, and the 6 digit reading changes colour. The display also indicates the battery level status. The RS232 output enables the PTTT to be connected to a PC for direct input into ADMS Kepler Torque Tool Calibration Software (sold separately). This allows for quick, accurate and precise calibration of torque tools.

SPECIFICATIONS

Model: PTTT – 1005 –	10	50	250	1000
Ranges:	0.4 – 10Nm	2 – 50Nm	10 – 250Nm	40 – 1000Nm
Square Drive Size:	1/4"	3/8"	1/2"	3/4"

Accuracy: Better than 1% of reading from 4% to 100% of rated output. See calibration certificate for full results.

Modes:
Run: Shows the torque value as they change as a live reading output.
Peak: Shows, updates and retains the maximum reading in a fast dynamic memory. The maximum reading is retained until manually cleared.
1st Peak: Detects, shows and retains the first peak reading in a fast dynamic memory, or is cleared automatically after three seconds if the auto cancel option is selected.

Power: Internal rechargeable batteries allow for portable use. Auto power off function extends the life of the display. Supplied with a 12V DC charger.

LCD Display: 96mm x 55mm bright, full colour, sunlight readable LCD display.
6-digit active reading.
Analogue bar graph tracking torque reading.
Mode, units, limit selection and setting graphics controlled by soft keys.
Battery state and indication.

Data Output: RS232 and Canbus via 9-pin D Standard Female Connector

Overload Capability: 125%

Maximum Mechanical Overload: 160% of range stated.

Operating Temperature: +5 to +50°C IP67.

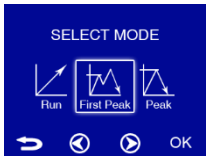
Temperature Coefficient: On Zero: 0.01% per °C
On Span: 0.03% per °C

Torque Standard: BS 7882:2017

CE: 2014/30/EU

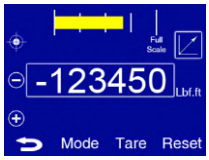
NATO Stock No.: PTTT-1005-50: 6625-22-623-1637
PTTT-1005-1000: 6625-22-623-16348

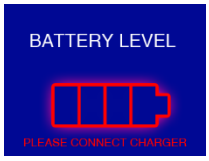
Screenshots



Graphical Mode Selection

Reading screen showing mode, units and analogue bar graph.





Battery level warning

The Professional Torque Tool Tester is compliant with the ISO 6789:2003 and ISO 6789:2017 Part 1 standards for the calibration of torque wrenches and torque screwdrivers.
Being an independent company, all our torque equipment, including the Professional Calibration Torque Unit, can be easily calibrated by any accredited torque calibration laboratory, allowing time and cost savings by using local calibration services.

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Professional Calibration Torque Unit

DESCRIPTION

The AWS LTD Professional Calibration Torque Unit (PCTU), our entry level bench mounted tester for production line or lower cost requirements for testing hand torque tools.

With Multiple mode and unit selection as well as a tilting display providing a variety of viewing angles, it does not compromise on function or accuracy, displaying more precise torque values than any other entry level torque tool tester.

The range is designed to calibrate all types of torque wrenches and torque screwdrivers and has been selected to cover the large majority of torque tools without having to use two instruments for a single tool type.

The RS232 output enables the PCTU to be connected to a PC for direct input into ADMS Kepler Torque Tool Calibration Software (sold separately). This allows for quick, accurate and precise calibration of torque tools.

SPECIFICATIONS

Model: PCTU – 1006 –	10	50	250	1000
Specification:	0.4 – 10Nm	2 – 50Nm	10 – 250Nm	40 – 1000Nm
Square Drive Size:	1/4"	3/8"	1/2"	3/4"

Accuracy:	Better than 1% of reading from 4% to 100% of rated output. See calibration certificate for full results.
Units:	N.m, cN.m, Lbf.Ft, Lbf.In, ozf.In
Modes:	**Run:** Shows the torque value as they change as a live reading output. **Peak:** Shows, updates and retains the maximum reading in a fast dynamic memory. The maximum reading is retained until manually cleared. **1st Peak:** Detects, shows and retains the first peak reading in a fast dynamic memory, or is cleared automatically after three seconds if the auto cancel option is selected.
Display:	5 X 12.5mm digit LED. Adjustable viewing angle through 90°. LEDs indicate selected mode and units. Selection and functions are changeable by four pushbuttons.
Power:	Internal rechargeable batteries allow it to be used in the field. Auto power off function extends the life of the display. Supplied with a 9V DC plug top power supply for charging batteries and mains power.
Mounting:	Wall or bench/pedestal mountable via 4 hole 8mm diameter bolt fixings (bolts not applied).
Data Output:	RS232 Standard Female Connector
Operating Temperature:	+0 to +50°C
Temperature Coefficient:	On Zero: 0.01% per °C On Span: 0.03% per °C
CE:	2014/30/EU
EMC:	EN 61326-2:2013
NATO Stock No.:	5980-22-623-1641

The Professional Calibration Torque Unit is compliant with ISO 6789:2003 and ISO 6789:2017 Part 1 standards for the calibration of torque wrenches and torque screwdrivers.

The Professional Calibration Torque Unit is supplied with internal rechargeable batteries to allow for the portable operation of the tester in the field. The tester is supplied with a 9V DC plug top power supply for recharging these batteries, or to allow for the tester to be used with mains power when available. The auto power off function of the Professional Calibration Torque Unit conserves battery life by ensuring that the display is automatically turned off after 5 minutes when not in use, increasing battery life.

Being an independent company, all our torque equipment, including the Professional Calibration Torque Unit, can be easily calibrated by any accredited torque calibration laboratory, allowing time and cost savings by using local calibration services.

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ADMS Torque Software

Our software arm, Advanced Data & Measurement Series, develops a range of programs for improving the accuracy and efficiency of torque tool and torque measuring device calibrations, accredited to international standards.

The range of software allows you to manage the entire calibration process, from tracking tools, performing calibrations and producing accredited certificates, to working out what tools are next due for recalibration.

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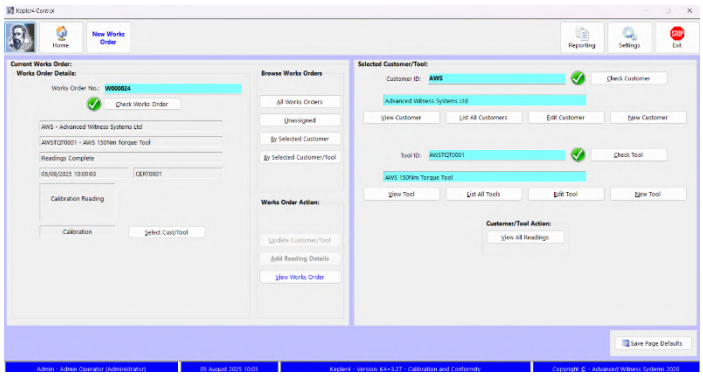
Kepler 4 for Calibration

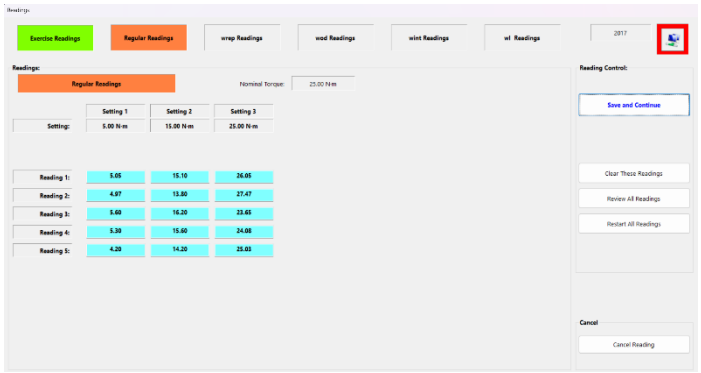
The program for the calibration of torque wrenches to BS EN ISO 6789:2017 Part 2, BS EN ISO 6789:2003 or your own in-house standards, and for keeping track of each individual torque tool.

Kepler 4 is built around a new works orders database, which ties together the customer, tool, model, reading & certificate.

KEY FEATURES INCLUDE

- Complies with BS EN ISO 6789:2017 Part 2, allowing the automatic calculation using new formulae of the mean, deviation and combined uncertainty of each set of readings, for each torque tool.
- Powerful search function allows historic calibration and conformity certificates to be easily found from searching by customer, tool or model; works order number or certificate number.
- Calibrates both square and hexagonal drive wrenches.
- Full tracking of tools calibration performance and history. Produce a report listing tools that require calibrating.
- The ability to calculate average values of uncertainties Bod, Bint and Bl over the last 10 calibrated tools of the same model.
- Bespoke templates easily created for certificates, reports and labels. Auto or manual certificate numbering.
- Auto or manual certificate numbering.
- Tool performance & data input via COM port and keyboard. Option for bar code direct entry.
- All certificate print details recorded. Enables exact reproduction ensuring full traceability.
- Option to operate in 6789:2003 to allow phased migration to 6789:2017.
- The ability to Colour the Calibration, to apply colour indicators to the results to show whether the deviation is within tolerance for the tool type as defined in ISO 6789:2017 Part 1. This can also be displayed on printed reports.
- A Miscellaneous Tools feature, allowing storage of non-torque tool information for use in recording the calibration of Miscellaneous Tools, generating overdue tool reports, and certificate front pages.





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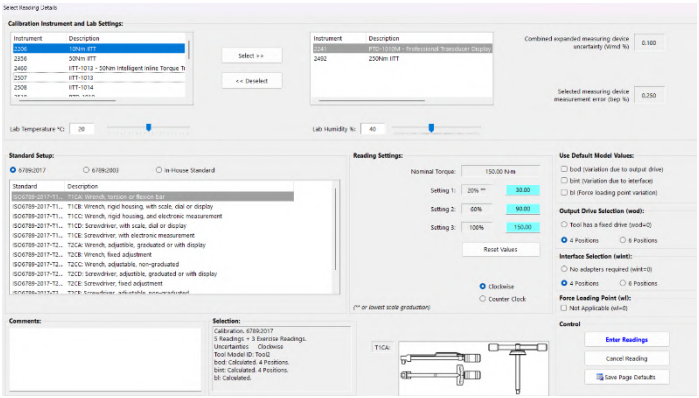
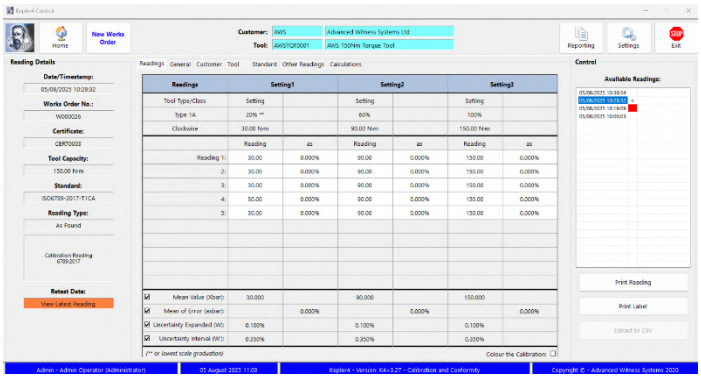
OTHER FEATURES INCLUDE

- Exporting of results data as a csv file for use in other programs.
- Cloning facility speeds multiple data entry.
- Import and Export reports into text or spreadsheet formats for more efficient database backup.
- Databases can be converted from Kepler 3, 2002 and 2000 allowing faster start up for previous customers.
- Databases can be stored locally or on a server for more efficient backup.
- Multiple translations available, including the facility to create your own translation.
- Data output and report generation collated and filtered from any combination of good and out of tolerance tools.
- Comprehensive user manual.
- Free demonstration and 6 months full help and support included in purchase.
- Certificate conversion available on enquiry.
- NEW! K factor verification to UKAS M3003 Appendix's B and C using external spreadsheet module.





MINIMUM SYSTEM REQUIREMENTS

Processor: Intel i5-3570 processor or equivalent.

Memory: 4GB.

Graphics: Integrated graphics.

Human Device Interface: Keyboard and mouse.

Minimum screen resolution: 1920x1080.

Kepler4 is a .NET application using an SQL database.

Disclaimer: This datasheet may not reflect the latest version of the software. For more information, visit our website: www.awstorque.co.uk.

Also available as separate combined and conformity versions.

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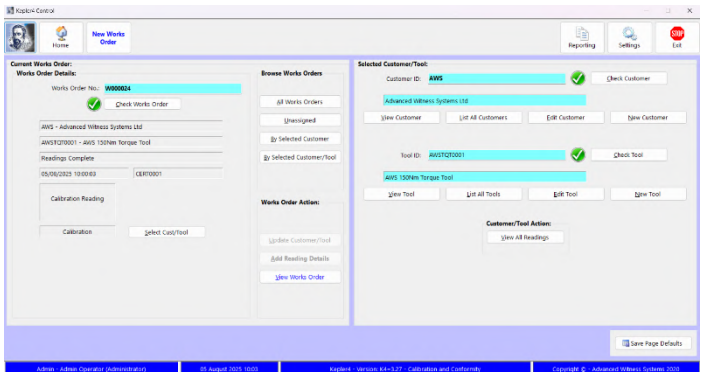
Kepler 4 for Conformity

The program for the certification of torque wrenches to BS EN ISO 6789:2017 Part 1, BS EN ISO 2003 or your own in-house standards, and for keeping track of each individual torque tool.

Kepler 4 is built around a new works orders database, which ties together the customer, tool, model, reading & certificate.

KEY FEATURES INCLUDE



- Complies with BS EN ISO 6789:2017 Part 1, allowing the automatic calculation of the mean deviation and mean value for each setting.
- Calculates the deviation for each reading and indicates by colour whether the reading is within tolerance to the selected standard.
- Powerful search function allows historic conformity certificates to be easily found from searching by customer, tool or model; works order number or certificate number.
- Bespoke templates easily created for certificates, reports and labels.
- Auto or manual certificate numbering.
- Tool performance & data input via COM port and keyboard. Option for bar code direct entry.
- Databases can be stored locally or on a server for more efficient backup.
- Data output and report generation collated and filtered from any combination of good and out of tolerance tools.
- All certificate print details recorded. Enables exact reproduction ensuring full traceability.
- A Miscellaneous Tools feature, allowing storage of non-torque tool information for use in recording the calibration of Miscellaneous Tools, generating overdue tool reports, and certificate front pages.
- Exporting of results data as a csv file for use in other programs.

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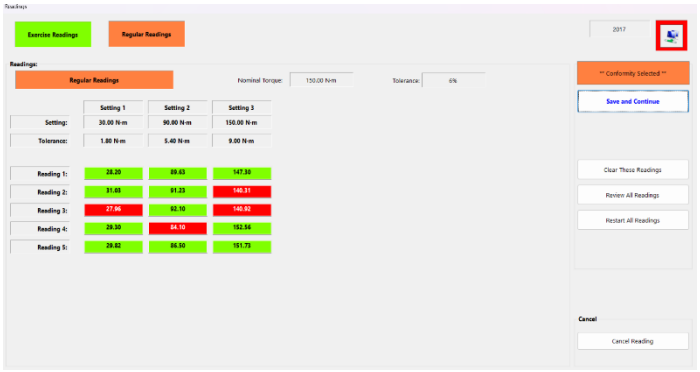
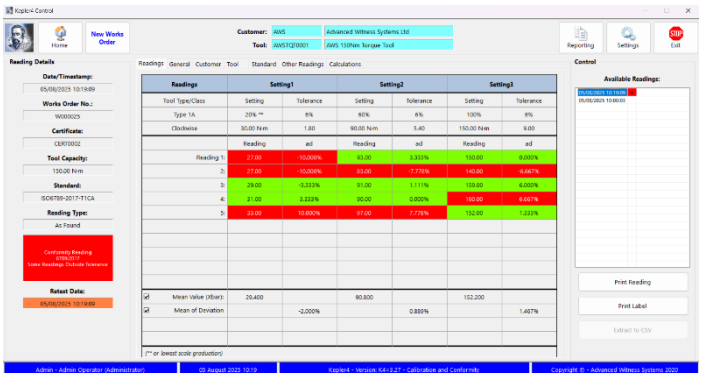
OTHER FEATURES INCLUDE

- Option to operate in 6789:2003 to allow phased migration to 6789:2017.
- Cloning facility speeds multiple tool data entry.
- Multiple operator accounts for users, maintainers & administrators (with passwords).
- Import and Export reports into text or spreadsheet formats for more efficient database backup.
- Databases can be converted from Kepler 3, 2002 and 2000 allowing faster start up for previous customers.
- Multiple translations available, including the facility to create your own translation.
- Comprehensive user manual.
- Free demonstration and 6 months full help and support included in purchase.
- Certificate conversion available on enquiry.





MINIMUM SYSTEM REQUIREMENTS

Processor: Intel i5-3570 processor or equivalent.

Memory: 4GB.

Graphics: Integrated graphics.

Human Device Interface: Keyboard and mouse.

Minimum screen resolution: 1920x1080.

Kepler4 is a .NET application using an SQL database.

Disclaimer: This datasheet may not reflect the latest version of the software. For more information, visit our website: www.awstorque.co.uk.

Also available as separate combined and calibration versions.

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Kepler 4 for 2017 Combined

The combined program for the calibration and certification of torque wrenches to BS EN ISO 6789:2017, BS EN ISO 6789:2003 or your own in-house standards, and for keeping track of each individual torque tool.

Kepler 4 is built around a new works orders database, which ties together the customer, tool, model, reading & certificate.

KEY CONFORMITY FEATURES

- Complies with ISO 6789:2017 Part 1, allowing the automatic calculation of the mean deviation and mean value for each setting.
- Also calculates the deviation for each reading and indicates by colour whether the reading is within tolerance to the selected standard.

KEY CALIBRATION FEATURES

- Complies with ISO 6789:2017 Part 2, allowing the automatic calculation using new formulae of the mean, deviation & combined uncertainty of each set of readings, for each torque tool.
- Calibrates both square and hexagonal drive wrenches.
- Full tracking of tools calibration performance and history. Produce a report listing tools that require calibrating.
- The ability to calculate average values of uncertainties Bod, Bint and Bl over the last 10 calibrated tools of the same model.
- The ability to Colour the Calibration, to apply colour indicators to the results to show whether the deviation is within tolerance for the tool type as defined in ISO 6789:2017 Part 1. This can also be displayed on printed reports.

KEY CALIBRATION FEATURES

- Powerful search function allows historic calibration and conformity certificates to be easily found from searching by customer, tool or model; works order number or certificate number.
- Bespoke templates easily created for certificates, reports and labels. Auto or manual certificate numbering.
- Option to operate in 6789:2003 to allow phased migration to 6789:2017.
- Tool performance & data input via COM port and keyboard. Option for bar code direct entry.
- A Miscellaneous Tools feature, allowing storage of non-torque tool information for use in recording the calibration of Miscellaneous Tools, generating overdue tool reports, and certificate front pages.
- Exporting of results data as a csv file for use in other programs.

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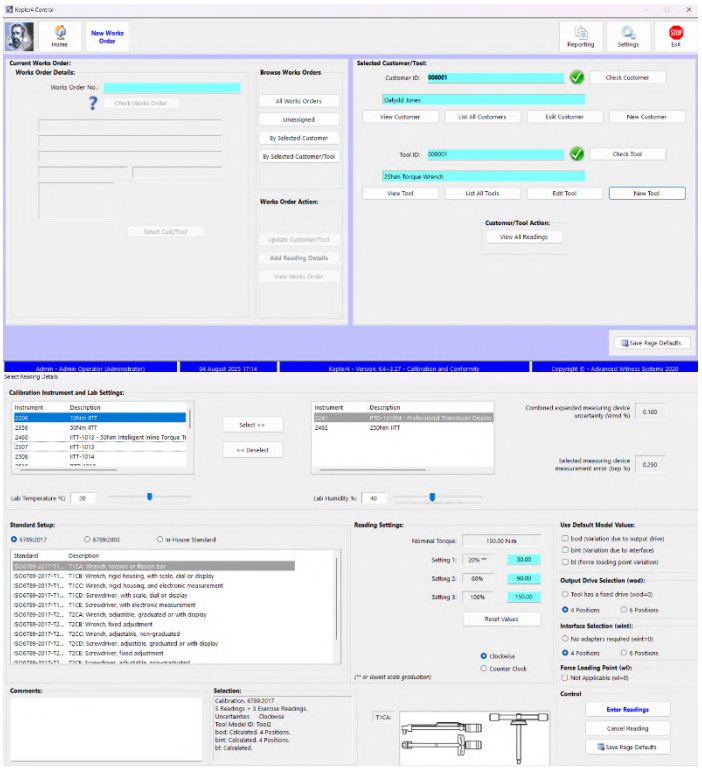
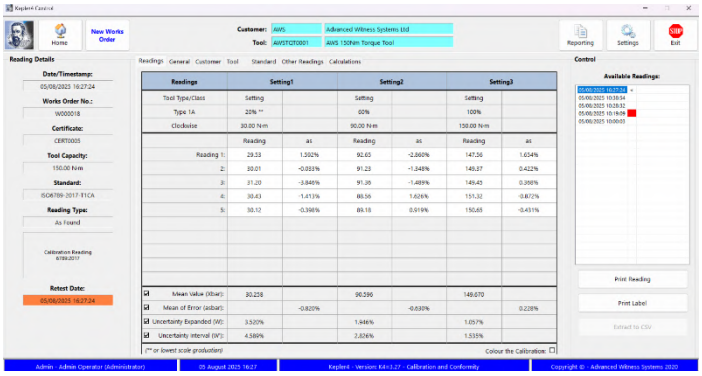
OTHER FEATURES INCLUDE

- All certificate print details recorded. Enables exact reproduction ensuring full traceability.
- Cloning facility speeds multiple data entry.
- Import and Export reports into text or spreadsheet formats for more efficient database backup.
- Databases can be converted from Kepler 3, 2002 and 2000 allowing faster start up for previous customers.
- Databases can be stored locally or on a server for more efficient backup.
- Multiple translations available, including the facility to create your own translation.
- Data output and report generation collated and filtered from any combination of good and out of tolerance tools.
- Comprehensive user manual.
- Free demonstration and 6 months full help and support included in purchase.
- Certificate conversion available on enquiry.
- NEW! K factor verification to UKAS M3003 Appendices B and C using external spreadsheet module.





MINIMUM SYSTEM REQUIREMENTS

Processor: Intel i5-3570 processor or equivalent.

Memory: 4GB.

Graphics: Integrated graphics.

Human Device Interface: Keyboard and mouse.

Minimum screen resolution: 1920x1080.

Kepler4 is a .NET application using an SQL database.

Disclaimer: This datasheet may not reflect the latest version of the software. For more information, visit our website: www.awstorque.co.uk.

Also available as separate conformity and calibration versions.

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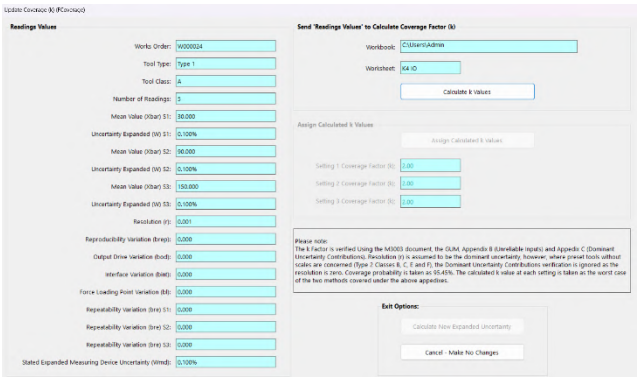
Kepler 4 K Factor Verification Module

The additional module to verify the K Factor of every calibration of torque wrenches and torque screwdrivers to BS EN ISO 6789:2017 Part 2, or your own in-house standards.

The inclusion of functions to validate the K Factor, required to calculate the expanded uncertainty of a torque tool during calibration (ISO 6789:2017 Part 2), as per the UKAS document M3003 Appendices B and C, using an external spreadsheet module to calculate an adjusted K factor.

KEY FEATURES INCLUDE

- Automatic calculation of the K factor for up to three calibration settings for situations where the resolution contribution is dominant and/or there are unreliable input parameters as per UKAS M3003 Appendix B (Unreliable Inputs) and Appendix C (Dominant Uncertainty Contributions).
- Applicable to ISO 6789:2017 Part 2 or In-House Calibrations.
- Calibration data from Kepler 4 automatically populates the module with a single button press.
- Coverage factor K calculation for probability of 95.45%
- Removes the difficulty of verifying the K Factor by hand or other spreadsheet means.
- The K Factor Module requires MS Excel to be installed on the computer running Kepler 4.



SYSTEM REQUIREMENTS FOR MODULE

Latest version of Kepler 4 Calibration or Combined software.

Microsoft Excel which must be installed on the same computer as Kepler 4

Disclaimer: This datasheet may not reflect the latest version of the software. For more information, visit our website: www.awstorque.co.uk

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Kepler 4 Software Comparison

Feature	Kepler 4		
	Conformity	Calibration	Combined
Full tracking of tool tightening performance.	✓	✓	✓
Full tracking of tools calibration performance and history.	✓	✓	✓
Tool performance & data input via COM port and keyboard. Option for bar code direct entry.	✓	✓	✓
Shows torque out of limits for selected tool.	✓	✓	✓
Automatically calculates average and deviation of each set of readings.	✓	✓	✓
User generated database for tool types and torque parameters required.	✓	✓	✓
Data output and report generation collated and filtered from any combination of good and out of tolerance tools. Uses include monthly reports, etc.	✓	✓	✓
Calibration Instrument/Machine/Inspection details.	✓	✓	✓
Bespoke templates easily created for your certificates, reports and labels.	✓	✓	✓
Auto or manual certificate numbering.	✓	✓	✓
All certificate print details recorded. Enables exact facsimile reproduction.	✓	✓	✓
Select different printers for readings, labels, and reports/certificates.	✓	✓	✓
Translation screens and print out can be converted to the language of your choice.	✓	✓	✓
Multiple operator accounts (With password protection).	✓	✓	✓
Produce a report listing tools that require calibrating.	✓	✓	✓
Tool identification and serial number identification.	✓	✓	✓
Fast tool search by user set criteria.	✓	✓	✓
Tool area and station location.	✓	✓	✓
Cloning facility speeds multiple tool data entry.	✓	✓	✓
Complies with ISO 6789:2003 and BS EN 26789:2003 torque standards.	✓	✓	✓
Complies with BS EN ISO 6789:2017 Part 1, allowing the automatic calculation of the mean deviation and mean value for each setting.	✓		✓
Calculates the deviation for each reading and indicates by colour whether the reading is within tolerance to the selected standard.	✓		✓
Complies with BS EN ISO 6789:2017 Part 2, allowing the automatic calculation using new formulae of the mean, deviation and combined uncertainty of each set of readings, for each torque tool.		✓	✓
Full tracking of tools calibration performance and history. Produce a report listing tools that require calibrating.		✓	✓
Production line capabilities, for hourly or daily tool reliance performance.		✓	✓
Model readings can be analysed to generate average bod, bint, and bl values from 10 or more tools, to be used for future tools.	✓	✓	✓
Instrument database which allows combination of 5 instrument items, such as TD/Lead/Display.	✓	✓	✓
Standards database, including ISO 6789:2017 & 2003 pre-entered.	✓	✓	✓
Historic calibration and conformity certificates can be found from searching by customer and tool, by works order number, or by certificate number.	✓	✓	✓
Fast tool entry from model database.	✓	✓	✓
Import signatures as pictures.	✓	✓	✓
Implementation of works order tracking system.	✓	✓	✓

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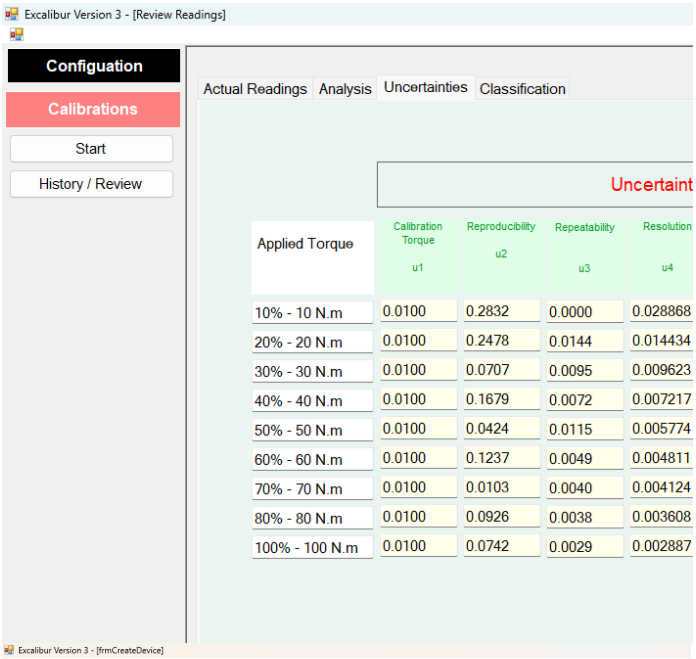
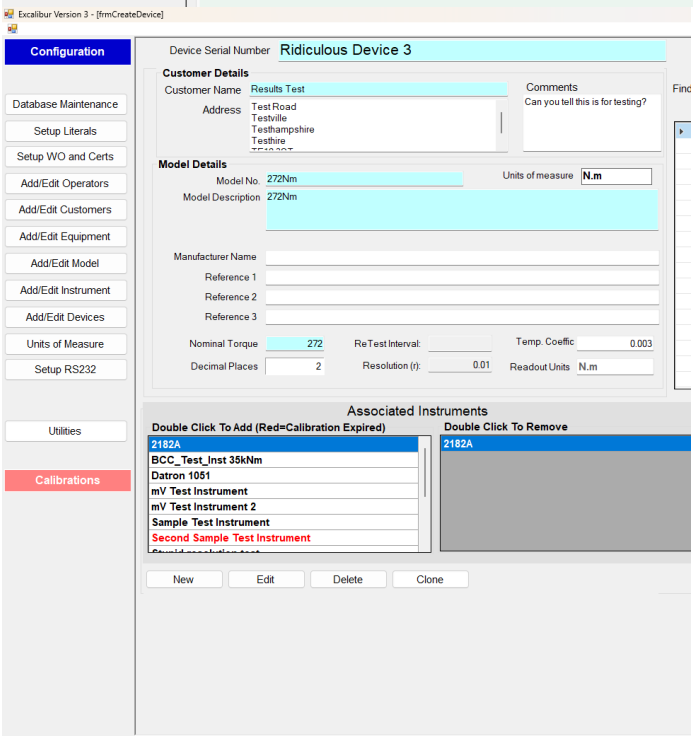
Excalibur Software

Coming Soon





Excalibur is the ADMS software program for the calibration of all types of torque transducers and torque testers.

You can input mV or indicating torque readings straight from a display, and the software will determine the classification of the torque measuring device, along with the uncertainties of the calibration based on the BS 7882:2017 standard.

All information is stored in a handy database, allowing for easy searching for historic data. Excalibur features a searchable database for:

- Works Orders
- Operators
- Customers
- Equipment
- Models
- Instruments
- Devices

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Wireless Telemetry Load Measurement

Our Wireless Telemetry Load Measurement System is designed primarily for load lifting systems.

It's designed and manufactured with efficient operation in mind for scenarios where cables will get in the way. The system requires minimal maintenance and features long battery life to ensure you can focus on completing your tasks rather than on equipment maintenance.

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Wireless Telemetry Load Measurement System

DESCRIPTION

The AWS Wireless Telemetry Load Measurement System is designed primarily for load lifting systems.

Multiple Load Links, each with its own digital telemetry transceivers with self-contained batteries, send the data of the loads to a Gateway Router, which acts as a slave Modbus RTU device. In this application, a Modbus to Canbus converter to a PLC is part of the full lifting system. The Canbus enables the system to work with the lifting systems Canbus operating data bus. Alternatively, a wireless display may be used over the gateway router for improved portability.

Additional is a Load Pin for an attached jib crane and a safety Anti 2-Block telemetry switch, again self-powered. The Anti 2-Block switch also comes with a weight and chain.

- Each load transducer (link and pin) and Anti 2-Block switch have a unique ident number with which to identify their readings.
- Battery state indicators in the telemetry data show when batteries need changing.
- Each load link and pin is supplied with a calibration certificate traceable to UK national standards.
- The whole system comes programmed ready for use.
- Each cell and unit are to IP67 and operating temperature range of -25 to +55°C.
- Note the router and converter require external power.
- Meets the CE RED directive, and FCC regulations.

For efficient operation, minimum maintenance and long battery life, the load link, load pin and switch go to minimum power requirements until woken up when needed.

This application shown in use in a marina is for lifting large boats/vessels from the water for storage or maintenance with a power driven, hydraulic motors controlled system using a remote portable telemetry, manual operating system. The Load Links tell the operator how much he is lifting and how well balanced. The Load Pin and Anti 2-Block switch enable the operator to lift individual units on and off the vessel.

The systems can also be used in marinas /harbours for jetties, platforms etc., in factories for moving large items such as tanks and engines.

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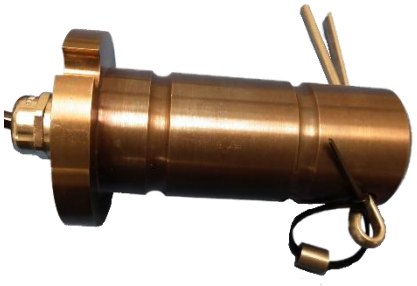
PARTS OF THE SYSTEM

Telemetry Load Link

- Range 5 to 250 Tonne.
- Transmission Distance up to 200m.
- For use with standard shackles.
- 5 Step Linearisation.
- Auto Power Down.
- Sealed to IP67.

For more information, please see the Telemetry Load Link Datasheet.

Telemetry Load Pin



- Strain Gauged Internally.
- Capacity 25 Te.
- 5 Step Linearisation.
- Auto Power Down.
- Transmission Distance up to 200m.
- Sealed to IP67.

For more information, please see the Telemetry Load Pin Datasheet.

Telemetry Anti 2-Block

- Fully weatherproof.
- Fail safe operation.
- 5 & 10kg bob-weight options.
- ATEX version available.
- Auto power down.
- Transmission distance up to 200m.

For more information, please see the Telemetry Anti 2-Block Datasheet.

Gateway Router

- Communicates with all other telemetry modules.
- Acts as a Modbus Slave device, storing module readings & status' in read-only registers.
- Controls wakeup and sleep of all modules on its network.
- Networks can be set up with unique keys, ensuring no clash between nearby operating networks.
- Can be used to control and alarm lifting actuators, engine control generators and pump.

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Wireless Telemetry Load Measurement System

Canbus / Modbus Converter

- Sends out data held in Modbus registers as Canbus messages.
- Canbus message ID matches the telemetry module ID.
- Can be used to control and alarm lifting actuators, engine control generators and pumps using the Canbus message system.

Wireless Telemetry Load Display

- Performs advanced operations with telemetry module readings for local monitoring.
- Can be configured to perform individual load link / load cell measurements or in combinations to show such things as bow or stern load when lifting boats or as total load measurement.
- Range of 800m.

For more information, please see the Telemetry Load Display datasheet.

External Antenna for Gateway Router

- Replaces the Gateway Router's internal antenna for when the Gateway Router is mounted within a metal enclosure, so that the antenna can be mounted externally.
- 60cm cable attached to Antenna as standard, but additional 3m and 5m extensions are available.
- Range of 800m.

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Wireless Telemetry Load Display

DESCRIPTION

The Wireless Telemetry Load Display allows users to perform advanced operations with load link and load cell readings for local monitoring. It can be configured to perform individual load link / load cell measurements or in combinations to show such things as bow or stern load when lifting boats or as a total load measurement.

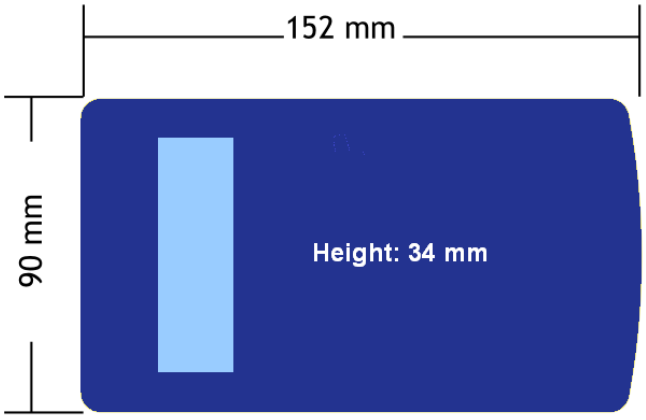
SPECIFICATIONS

- Range of 800m
- Supports two modes of operation:
  - Pre-configured list (Define a set of up to 24 telemetry modules, such as load links, load pins etc. and configure overload and under load values)
  - Summing groups (Add the value of two or more telemetry modules together)
- Sealed to IP67 in a robust handheld enclosure
- ATEX version available

FEATURES & BENEFITS

- Simple operator interface
- Overload indication and alarm
- User controlled backlight
- Tare / Zero / Gross functions
- Uses readily available Energizer L91 batteries
- Long battery life: 50 days at 12 sessions of 5 minutes per day; 54 hours continuous
- Operating temperate range of -10°C to +50°C

DIMENSIONS



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Wireless Telemetry Load Link

DESCRIPTION

The Wireless Telemetry Load Link is a strain gauged link with an inbuilt battery powered wireless transceiver which communicates with our AWS Wireless Telemetry Load Measurement System. With a simple to change extra-long life battery, and a large range of load capacities, it is ideal for applications in systems where running cables to a load link is not possible.

SPECIFICATIONS

- Range 5 to 250 Tonne
- Transmission Distance up to 200m
- For us with standard shackles
- 5 Step Linearisation
- Auto power down
- Sealed to IP67
- Meets the CE RED directive & FCC regulations

FEATURES & BENEFITS

- Long battery life
- Error free data transmission
- Active repeater to extend transmission range
- Remote on / off
- Environmentally sealed
- Internal aerial
- Other capacities available on request

Specifications		
Capacity	5 – 1,000	tonne
Radio Frequency	2.4	GHz
Accuracy (above 10% of FSD)	±0.05	% of reading
Compensated Temp. Range	-10 to +40	°C
Operating Temp. Range	-20 to +60	°C
Temp. Coefficient on Zero	<0.005	% FRO/°C
Temp. Coefficient on Span	<0.003	% FRO/°C
Safe Overload	150	%
Ultimate Overload	400	%
Insulation	>500 @ 100Vdc	MΩ
Environmental Protection	IP67	
Specifications subject to change without notice		

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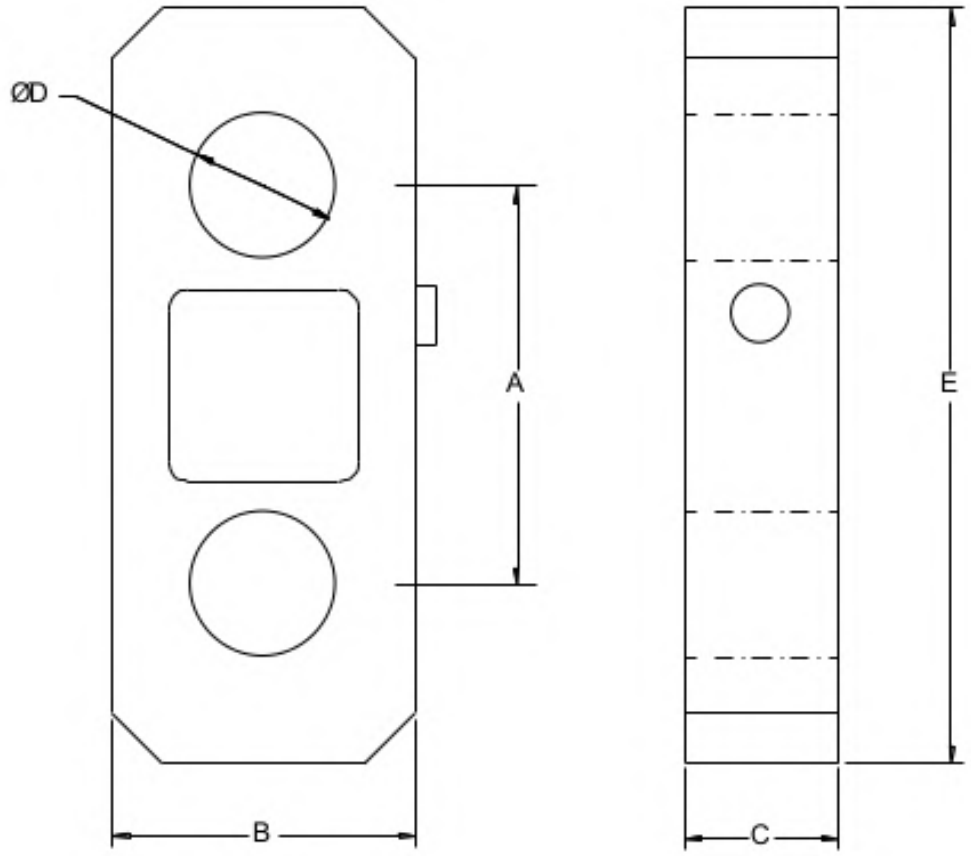
DIMENSIONS

Capacity (te)	A	B	C	DØ	E	Weight (Kg)
5	137	105	41.5	30	193	1.5
12	149	105	41.5	38	239	2.0
25	160	125	55	53	284	4.5
35	175	138	55	60	335	5.5
50	198	150	75	73	375	10.0
100	275	220	120	100	500	28.0
150	300	260	120	110	550	50.0
200	325	290	159	135	660	75.0
250	365	304	189	145	720	90.0



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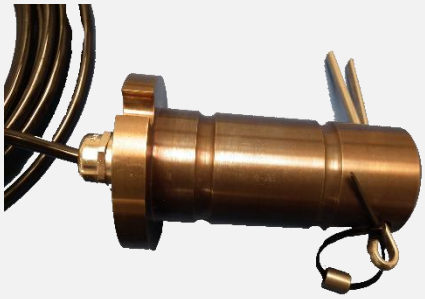
Wireless Telemetry Load Pin

DESCRIPTION

The Wireless Telemetry Load Pin is a strain gauged pin with a local battery powered wireless transceiver which communicates with our AWS Wireless Telemetry Load Measurement System. With a simple to change, extra-long life battery and a large range of load capacities, it is ideal for applications in systems where running cables to a load pin is not possible. The transceiver can be mounted within 3m of the Load Pin, in an easy to access location for battery changing.



SPECIFICATIONS

- Stainless Steel
- Strain Gauged Internally
- Capacity 25 Te
- 5 Step Linearisation
- 3m cable from Load Pin to its transceiver
- Auto Power Down
- Transmission Distance up to 200m
- Sealed to IP67
- Meets the CE RED directive & FCC regulations

FEATURES & BENEFITS

- Long battery life
- Error free data transmission
- Active repeater to extend transmission range
- Remote on / off
- Environmentally sealed
- Other capacities available on request

Specifications		
Capacity	5 – 1,000	tonne
Radio Frequency	2.4	GHz
Accuracy (above 10% of FSD)	±0.05	% of reading
Compensated Temp. Range	-10 to +40	°C
Operating Temp. Range	-20 to +60	°C
Temp. Coefficient on Zero	<0.005	% FRO/°C
Temp. Coefficient on Span	<0.003	% FRO/°C
Safe Overload	150	%
Specifications subject to change without notice		

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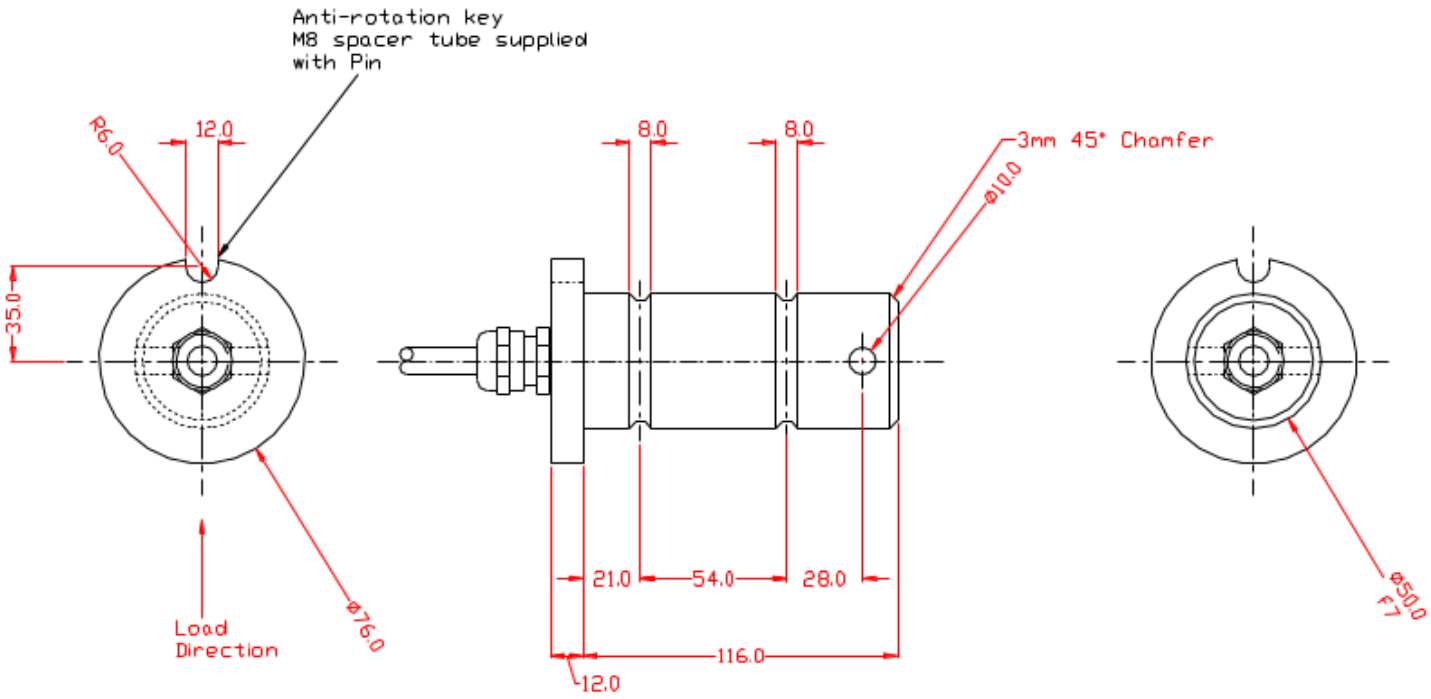
DIMENSIONS



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Wireless Telemetry Load Link

DESCRIPTION

The Wireless Telemetry Anti 2-Block is an Anti 2-Block detector with a local battery powered wireless transceiver which communicates with our AWS Wireless Telemetry Load Measurement System.

It is ideal for applications in systems where running cables to an Anti 2-Block is not possible.

The transceiver can be mounted within 3m of the Anti 2-Block, in an easy to access location for battery changing.

It can be supplied with or without its weight & chain.

SPECIFICATIONS

- Robust construction for reliability
- Fully weatherproof
- Fail safe operation
- 5 & 10kg bob-weight options
- 3m cable from Anti 2-Block to its transceiver
- ATEX version available
- Simple to install
- Auto power down
- Transmission distance up to 200m
- Meets the CE RED directive, and FCC regulations

FEATURES & BENEFITS

- Long battery life
- Error free data transmission
- Active repeater to extend transmission range
- Remote on/off
- Environmentally sealed
- Contacts are broken mechanically
- Unit pivots from boom head & always follows the angle of the hoist rope

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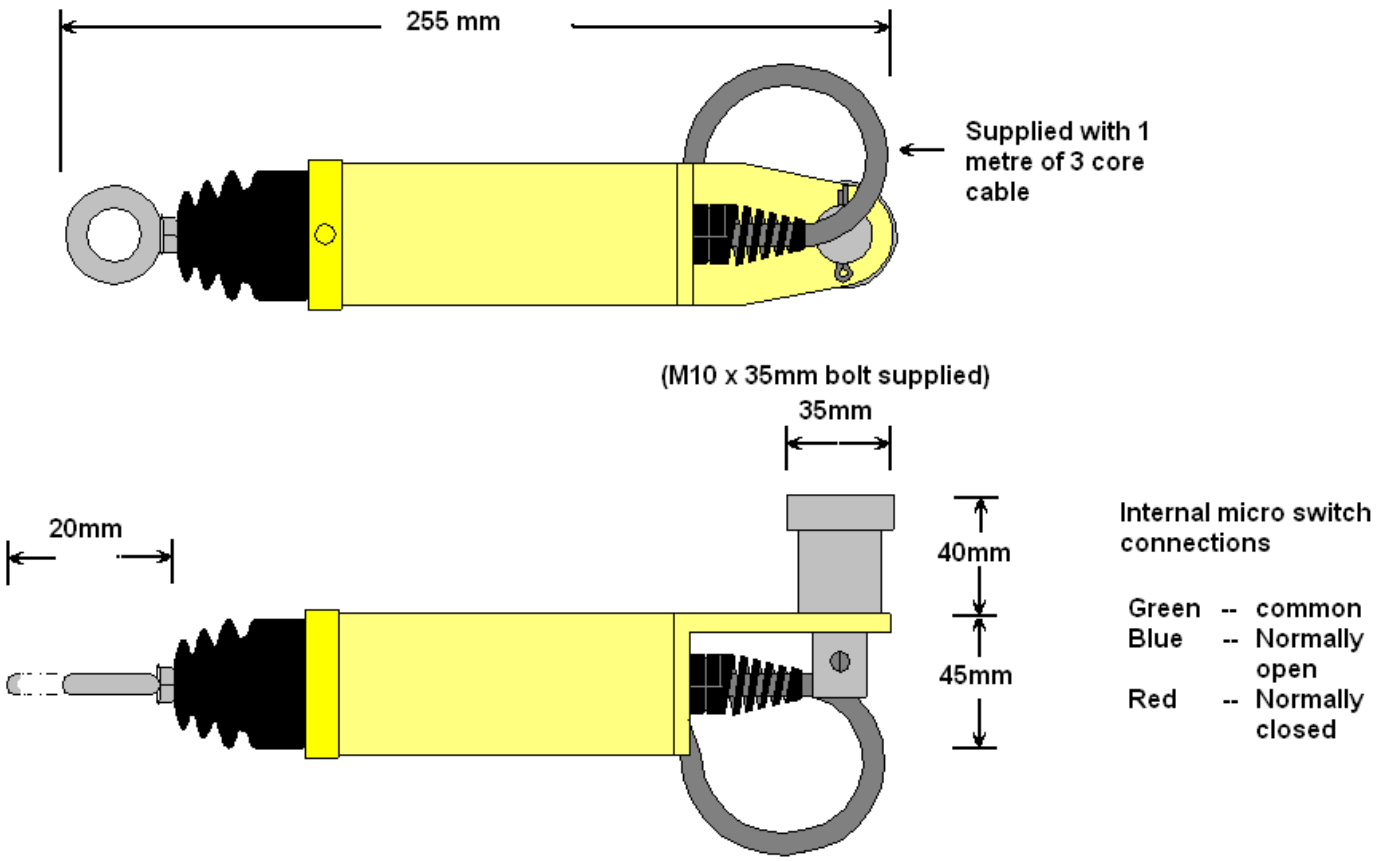
DIMENSIONS



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