ADVANCED WITNESS SYSTEMS LTD

2022

TORQUE MEASUREMENT AND CALIBRATION CATALOGUE

Advanced Witness Systems Ltd.

Advanced Witness Systems Ltd
Torque Measurement & Calibration Catalogue 2022

About Us

Advanced Witness Systems Ltd is a premier designer of torque calibration and control equipment, meeting national and international standards. Trading for over 25 years, our designers have extensive knowledge and experience in design and manufacture of torque instrumentation and control systems. For over 40 years, our Managing Director has been known internationally as 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

We have supplied equipment in a variety of sectors including Aerospace, Sub Sea, Transport, Power Generation and Defence.

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

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 recently released two new machines for calibration of torque wrenches and torque screwdrivers to meet ISO 6789:2017.
Soon to be released are two machines to revolutionise torque measuring device calibration to BS EN 7882:2017.

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

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

GT CERTIFICATION LTD
TESTING & MEASUREMENT SERVICES TO INDUSTRY

"We purchased a Torque Wrench Testing Machine designed by Advanced Witness Systems Ltd in 2018 and subsequently acquired UKAS approval to use the instrument for ISO 6789-2:2017 calibrations for a range of 0.15 N.m to 1500 N.m in 2019. We subsequently increased the range in 2020 to 2500 N.m with UKAS approval.

We have found the Testing Machine to meet all the stringent requirements placed on a calibration laboratory for this range of applied torque and the ISO specifications.

In addition to the Testing Machine, we use the Kepler 4 software for handling the data from the calibration methods for both ISO6789:2003 & ISO6789-2:2017. This was also designed and acquired from Advanced Witness Systems Ltd.

A specifically designed product for torque tool calibration, Kepler 4 handles and manipulates the data, also retaining the large amount of measurements required for ISO6789-2:2017.

We would recommend both these products without hesitation to any other laboratories who wish to carry out similar measurement requirements.

Should you have any questions in relation to this information, please do not hesitate to contact myself."

- Gary Thompson, GT Certification Ltd

MQS
METROLOGY AND QUALITY SERVICES

"We at Metrology & Quality Services when looking for a torque measuring machine /system to satisfy the requirements of BS EN ISO 6789-2:2017 looked at the available options in the market place & concluded after demonstrations & extensive discussion that the system manufactured & sold by Advanced Witness Systems best suited our requirements.

We required a system that was reliable, easy to use for the operator; automatic as far as possible; satisfied UKAS requirements & with software that both satisfied the requirements of the standard & that we could work with the originators on to meet our specific requirements including calibration to the previous version of the standard. This was fully met by Advanced Witness Systems & with their total impartiality from a torque wrench manufacturing point of view was a massive bonus as the other systems in the market favour their own designs & have little regards of other makes!

The help & willingness to advise from the team at Advanced Witness Systems since the installation has proved to us that we certainly made the correct decision.

Should you wish to discuss our experiences further then do not hesitate to contact me"

- Graham Wilson, Metrology and Quality Services Ltd

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MANUFACTURER INFORMATION	SUPPLIER INFORMATION
Advanced Witness Systems Ltd Unit 8 Beaumont business Centre Beaumont Close Banbury Ox16 1TN Tel: +44 (0)1295 266939 Email: sales@awstorque.co.uk	

I Series Transducers

Our I SERIES Torque Transducers are designed to work with our Professional Transducer Display. We produce Inline, Annular and Rotary I SERIES Transducers from 1Nm to 300,000Nm. They are unique with their inbuilt instrumentation PCB to eliminate signal loss.

INTELLIGENT IN-LINE 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.

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

SPECIFICATIONS

Model: IITT-	1011	1012	1013	1014	1015	1016	1070	1017
Ranges:	0.1-2.5Nm	0.4-10Nm	2-50Nm	10-250Nm	20-500Nm	40-1000Nm	60-1500Nm	0.1-3kNm
Square Drive Size:	¼"	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:** 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. (use with the AWS PTD-1010 power & display unit).
Power and 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:	-10ºC to +50ºC.
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

DIMENSIONS

Model	Dimension				Face Mounting Tapped Hole*	Square Drive	Weight (Kg)
	A	B	C	D			
IITT-1011	100	75	60	36	M5	¼"	1.0
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"	3.3
IITT-1070	160	106	95	80	M5	1"	3.3
IITT-1017	160	106	95	80	N/A	1 ½"	3.8

*The face mounting holes are in a square, centrally located around the square drive.
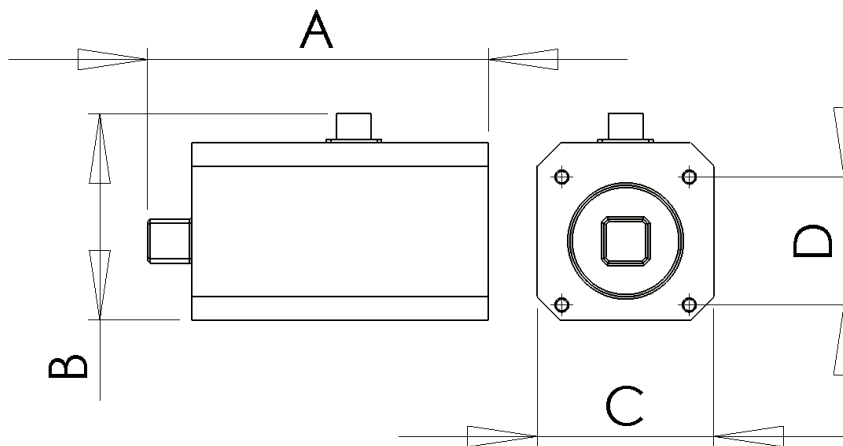
Models 1011-1016 & 1070
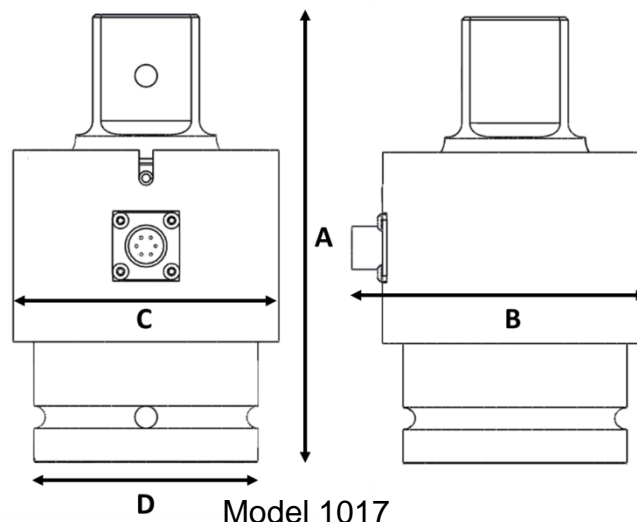
Model 1017

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1Nm Intelligent In-line 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.

This transducer incorporates a mechanical overload protection stop at to prevent damage to the transducer. 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.
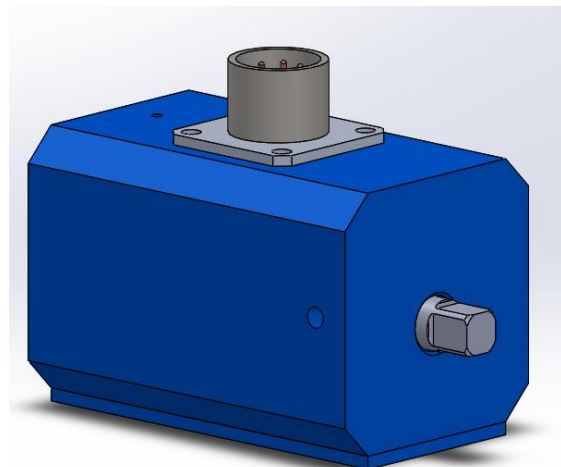
A simple 2 step calibration.

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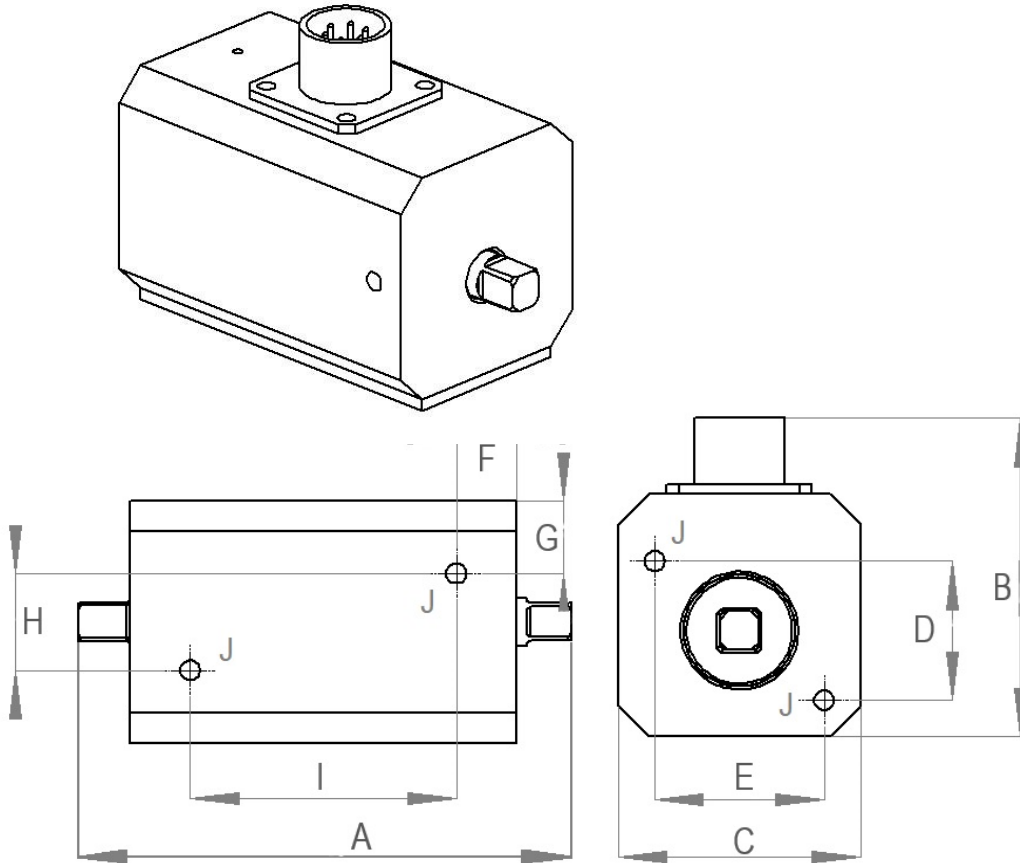
Specifications

Model: IITT-	1018	1018H
Ranges:	0.04-1Nm	0.04-1Nm
Drive Size:	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:** 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.
Communication:	Canbus
Overload Capacity:	120%
Power and Display:	AWS Professional Display Model 1010 or External Power Supply 10V and canbus or PC display units with appropriate software.
Maximum mechanical overload:	150% with stop
Operating Temperature:	-10ºC to +50ºC.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

Dimensions

Model	Dimension								
	A	B	C	D	E	F	G	H	I
IITT-1018	82	55	40	25	25	10	12	16	44

Mounting Tapped Hole "J"	Square Drive	Weight (Kg)
M4	Male ¼"	1.0

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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.
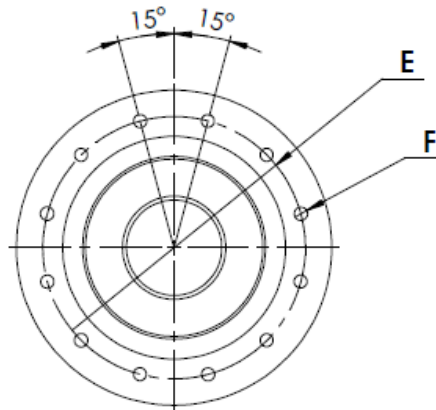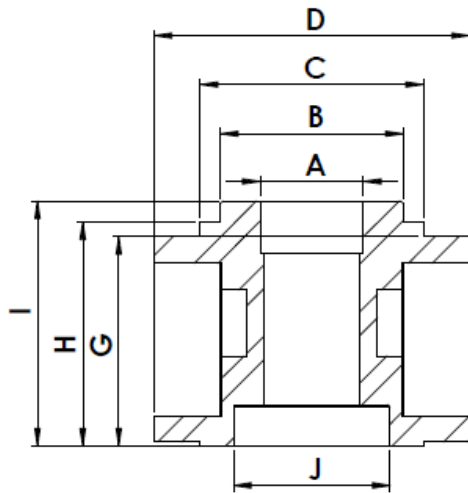
Specifications

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

|	
Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. 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 that converts and displays the signals, showing mode selected, transducer details and output in RS232 serial form).
Power and Display:	Requires only a single D.C. power supply (when used with AWS PTD, power and display is provided).
Overload capability:	125%
Maximum mechanical overload:	160% of range stated.
Operating Temperature:	-10ºC to +50ºC.
Temperature coefficient:	On Zero: 0.01% per ºC On Span: 0.03% per ºC
Connector:	MIL C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326-1:2013

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
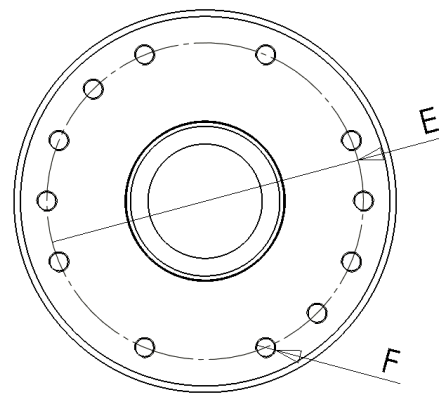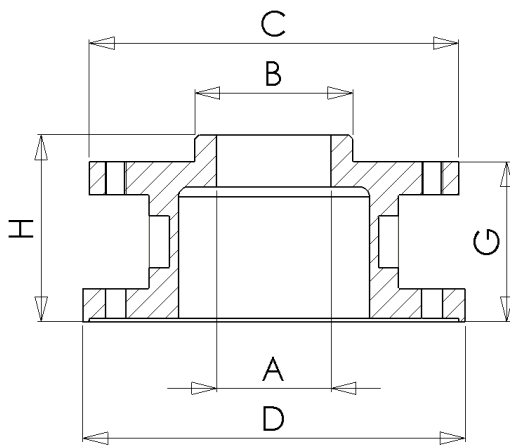
1031 AND ABOVE
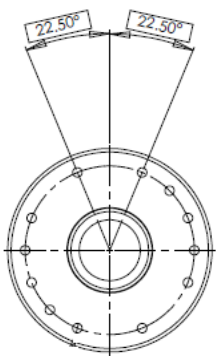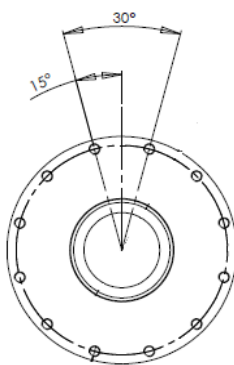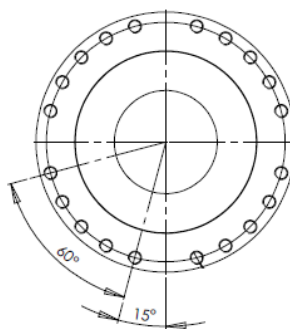
1031 & 1032   **1033**   **1034, 1035 & 1046**   **1036 & 1037**
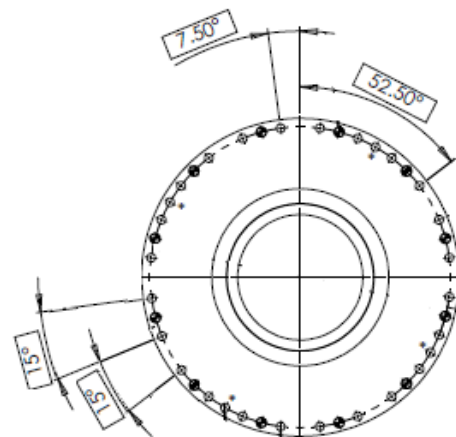
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Data was correct at time of publication.

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.
The IRTT can be produced with different adapters depending on its use including square (standard) and keyway (option).
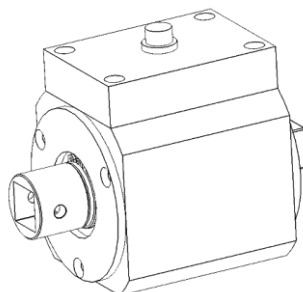
A simple 2 step calibration.

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

Specifications

Model: IRTT-	1042	1043	1044	1045
Ranges:	2-50Nm	10-250Nm	20-500Nm	40-1000Nm
Square Drive Size:	⅜"	½"	¾"	¾"

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. 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 RS232serial form).
Power and Display:	Requires only a single D.C power supply (used with AWS PTD-1010, power and display is provided).
Adapter:	The IRT can be produced with shaft ends suitable to its intended function.
Speed:	Standard 20,000 RPM
Overload capability:	125%
Maximum mechanical overload:	160% of range stated.
Operating Temperature range:	-10ºC to +50ºC.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

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Manufacturer Information	Supplier Information
Advanced Witness Systems Ltd Unit 8 Beaumont business Centre Beaumont Close Banbury OX16 1TN Tel: +44 (0)1295 266939 Email: sales@awstorque.co.uk	

Λ Series Transducers

Our A SERIES Torque Transducers are designed to work with any existing analogue torque system.
We produce Inline, Annular and Rotary A SERIES Transducers from 1Nm to 300,000Nm.

Analogue In-line 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-	2011	2012	2013	2014	2015	2016	2017
Ranges:	0.12-3Nm	0.4-10Nm	2-50Nm	10-250Nm	20-500Nm	40-1000Nm	0.1-3kNm
Square Drive Size:	¼"	¼"	⅜"	½"	¾"	¾"	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
Communication:	mV analogue output
Bridge Impedance	350 Ω
MAX Voltage and Current Requirement	10V DC 30mA
Power and Display:	Requires a stable DC power supply and mV reading meter.
Overload capability:	125%
Maximum mechanical overload:	160% of range stated.
Operating Temperature:	-10ºC to +50ºC.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

DIMENSIONS

Model	Dimension				Face Mounting Tapped Hole*	Square Drive	Weight (Kg)
	A	B	C	D			
AITT-2011	100	75	60	36	M5	¼"	1.0
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"	4.5
AITT-2017	160	106	95	80	N/A	1 ½"	3.8

*The face mounting holes are in a square, centrally located around the square drive.
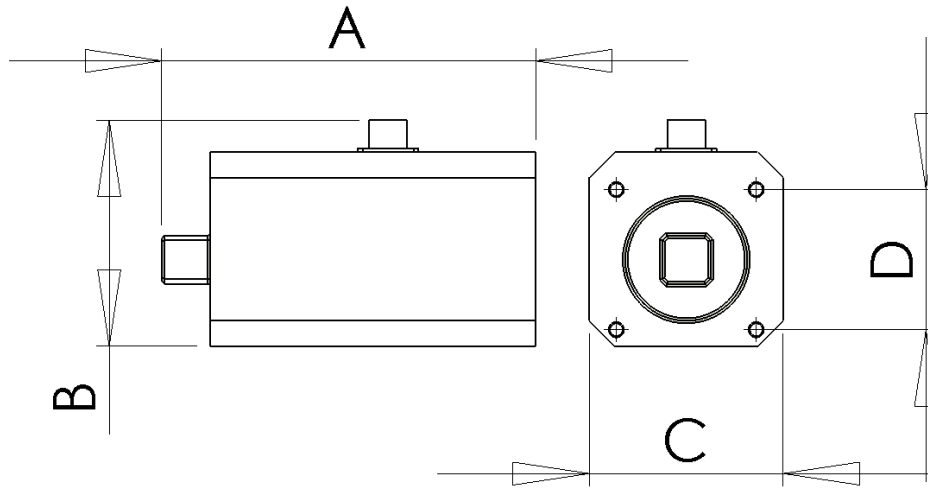
Models 2011-2016

Model 2017

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1Nm Analogue In-line 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 incorporates a mechanical overload protection stop to prevent damage to the transducer. This transducer 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 surfaces for bolting.

Specifications

Model: AITT-	2018	2018H
Ranges:	0.04-1Nm	0.04-1Nm
Drive Size:	¼"	¼" HEX

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
Communication:	mV
Overload Capacity:	120%
Bridge Impedance	350 Ω
MAX voltage and current requirement	10V DC 30mA
Power and Display:	Dedicated mV/V display and power supply.
Maximum mechanical overload:	150% with stop
Operating Temperature:	-10ºC to +50ºC.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

DIMENSIONS

Model	Dimension								
	A	B	C	D	E	F	G	H	I
AITT-2018	82	53	40	25	25	10	12	16	44

Mounting Tapped Hole "J"	Square Drive	Weight (Kg)
M4	Male ¼"	1.0

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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.
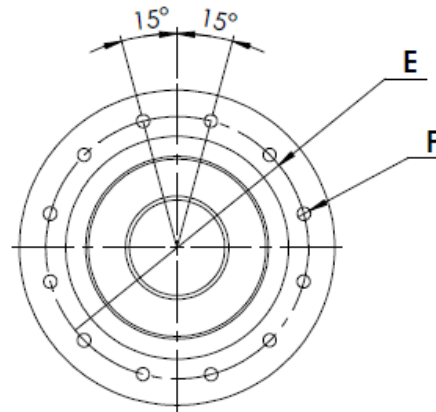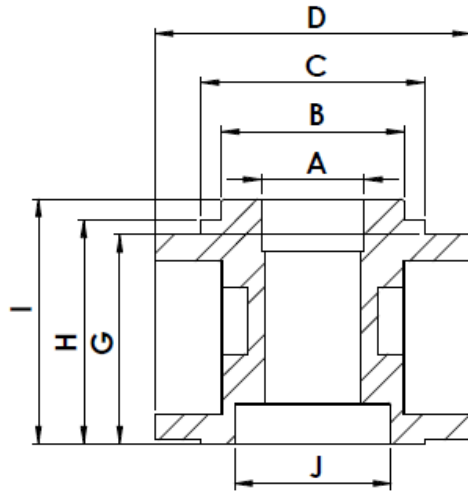
SPECIFICATIONS

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

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 and Display:	Requires a stable DC power supply and mV reading meter.
Overload capability:	125%
Bridge Impedance	350Ω
Max Voltage and Current Requirement	10V 30mA DC
Maximum mechanical overload:	160% of range stated.
Operating Temperature:	-10ºC to +50ºC.
Temperature coefficient:	On Zero: 0.01% per ºC On Span: 0.03% per ºC
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2013

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
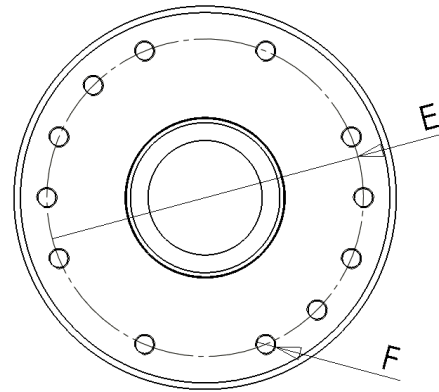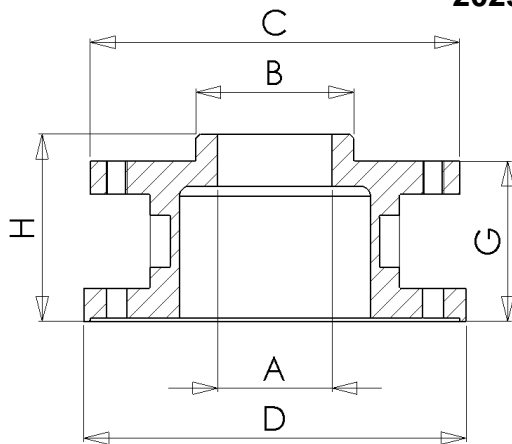
2031 AND ABOVE
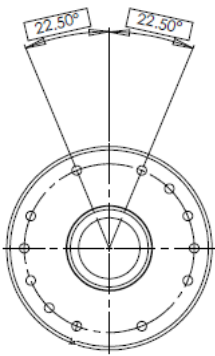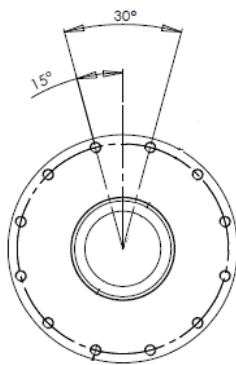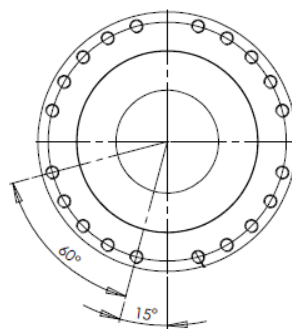
2031 & 2032   **2033**   **2034, 2035 & 2046**   **2036 & 2037**
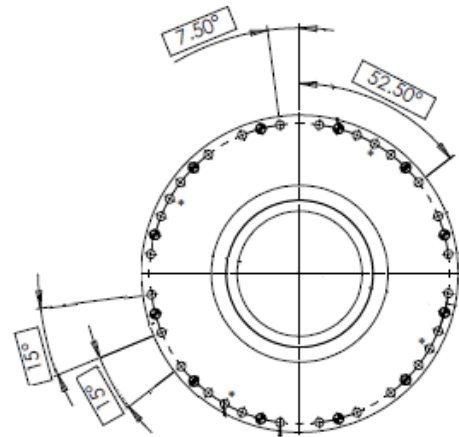
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ANALOGUE ROTARY TORQUE TRANSDUCER

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.
The ARTT can be produced with different adapters depending on its use including square (standard) and keyway (option).

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"	¾"

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Signal Output:	Analogue mV
Communications:	N/A
Power and Display:	Requires a stable DC power supply and mV reading meter.
Adapter:	The IRT can be produced with shaft ends suitable to its indented function.
Speed:	Standard 20,000 RPM
Overload capability:	125%
Bridge Impedance:	350 Ω
Max Voltage and Current Requirement:	10V DC 30mA
Maximum mechanical overload:	160% of range stated.
Operating Temperature:	-10ºC to +50ºC.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

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MANUFACTURER INFORMATION	SUPPLIER INFORMATION
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N Series Transducers

Our N SERIES Torque Transducers are designed to work with other manufacturer's intelligent display systems.
We produce Inline, Annular and Rotary N SERIES Transducers from 1Nm to 300,000Nm.

N-Type In-line 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-	3011	3012	3013	3014	3015	3016	3017
Ranges:	0.1-2.5Nm	0.4-10Nm	2-50Nm	10-250Nm	20-500Nm	40-1000Nm	0.1-3kNm
Square Drive Size:	¼"	¼"	⅜"	½"	¾"	¾"	1 ½"

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Signal Output:	2mV/V
Communications:	Not Applicable
Bridge Impedance:	350Ω
Max Voltage and Current Requirements:	10V DC 30mA
Power and Display:	Requires DC power supply and Dedicated mV meter
Overload capability:	125%
Maximum mechanical overload:	160% of range stated.
Operating Temperature:	-10ºC to +50ºC.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

Model	Dimension				Face Mounting Tapped Hole*	Square Drive	Weight (Kg)
	A	B	C	D			
NITT-3011	100	75	60	36	M5	¼"	1.0
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	M6	¾"	2.6
NITT-3016	150	90	75	55	M6	¾"	4.5

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

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1Nm N-Type In-line 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. The vertical position allows it to be mounted in ISO torque wrench calibration machines.

This transducer incorporates a mechanical overload protection stop at 110% of full scale to prevent damage to the transducer. 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

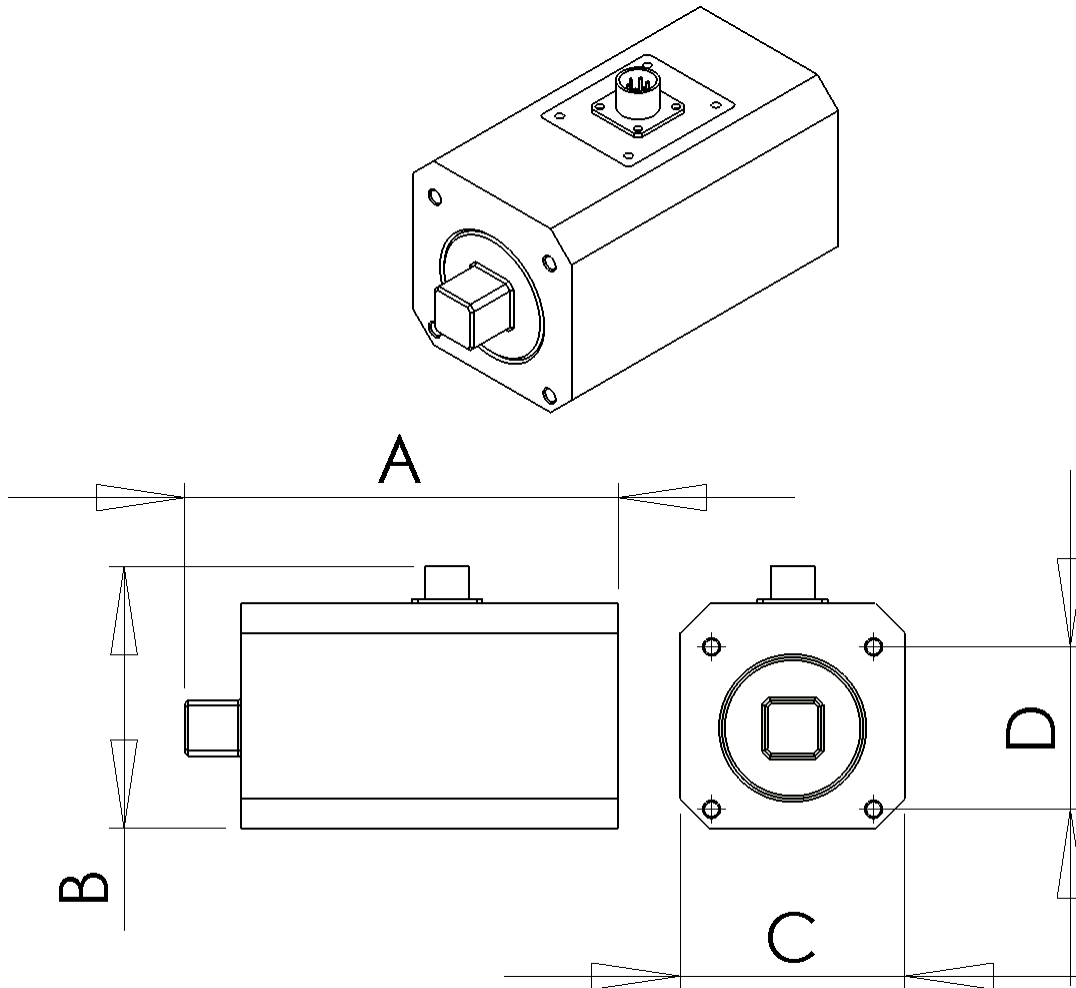| Model: NITT-	3018	3018H
Ranges:	0.04-1Nm	0.04-1Nm
Drive Size:	¼"	¼" HEX

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
Communication:	Not Applicable
Overload Capacity:	120%
Bridge Impedance	350 Ω
MAX voltage requirement	10V DC 30mA
Power and Display:	Requires DC power supply and Dedicated mV meter
Maximum mechanical overload:	150% with stop
Operating Temperature:	-10ºC to +50ºC.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

Dimensions

Model	Dimension								
	A	B	C	D	E	F	G	H	I
NITT-3018	82	53	40	25	25	10	12	16	44

Mounting Tapped Hole "J"	Square Drive	Weight (Kg)
M4	Male ¼"	1.0

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N-Type Annular 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.
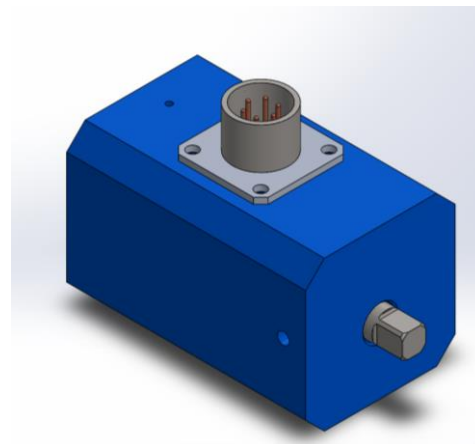
Specifications

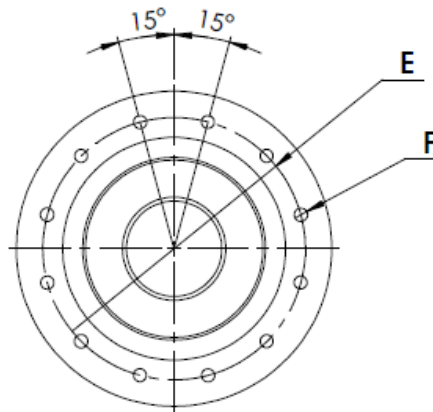| Model: NATT-	3038	3030	3031	3032	3033	3034	3035	3046	3036	3037
Ranges (kNm):	2	3	5	10	20	50	100	120	200	300

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

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
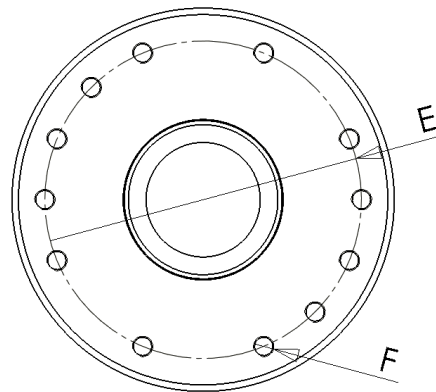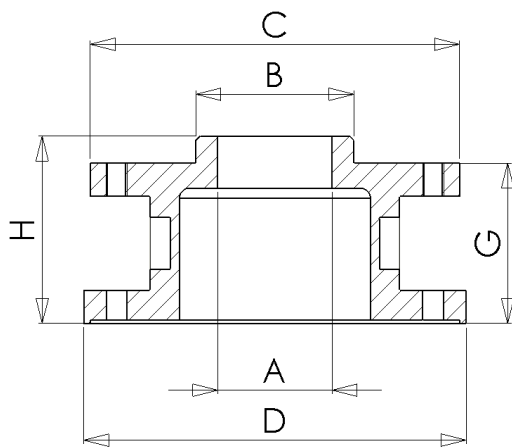
3031 AND ABOVE
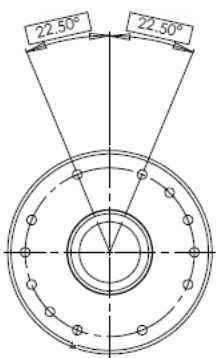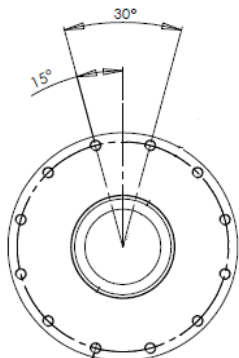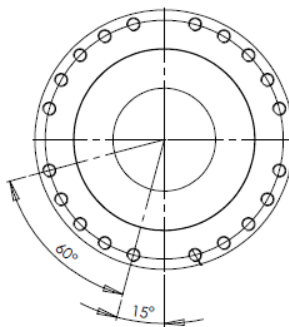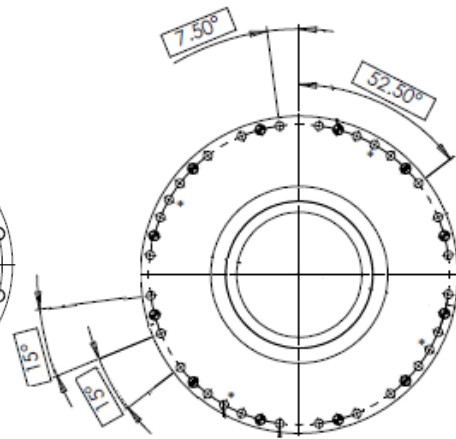
3031 & 3032　　　　**3033**　　　　**3034 & 3035**　　　　**3036 & 3037**

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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.

The NRTT can be produced with different adapters depending on its use including square (standard) and keyway (option).

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"	¾"
Keyway Size:	Multiple sizes	Multiple sizes	Multiple sizes	Multiple sizes	Multiple sizes

Accuracy:	Better than 0.1% of reading from 10 to 100% of rated output. See calibration certificate for full results.
Signal Output:	2mV/V
Communications:	Not Applicable
Bridge Impedance:	350Ω
Max Voltage and Current Requirement:	10V DC 30mA
Power and Display:	Requires DC power supply and Dedicated mV meter
Adapter:	The IRT can be produced with shaft ends suitable to its indented function.
Speed:	Standard 20,000 RPM
Overload capability:	125%
Maximum mechanical overload:	160% of range stated.
Operating Temperature:	-10ºC to +50ºC.
Connector:	Mil C 26482 series. 6 pin. Shell size 10.
CE:	2014/30/EU
EMC:	BS EN 61326:2007

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Manufacturer Information	Supplier Information
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Displays & Bench Testers

Our Professional Transducer Display and Bench Testers use our unique inbuilt instrumentation PCBs to eliminate signal loss. Whether using one of our Intelligent Transducers, or a Bench Tester, the models accommodate your torque and budget requirements.

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 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 AWS Professional Transducer Display (PTD) is available in three versions: 1010M, 1010B and 1010H. All versions casings have a rugged solid design for withstanding shock & impact damage.

SPECIFICATIONS

Model: PTD-	1010M	1010B	1010-H
Specification	Mains power supply from 12V DC charger.	Internal rechargeable batteries.	Internal rechargeable batteries. Heated display for use at sub-zero temperatures. Rated to IP 67.

LCD Display:	• 70mm X 52mm Bright, Full Colour, Sunlight Readable LCD Display • 6 Digit Active Reading • Analogue Bar Graph • Mode, Unit, Limit Selection and Setting Graphics via Soft Keys • Battery State and Indication of Charging (1010B/H).
Power:	1010M – Mains powered from 12V DC charger 1010B/H - Internal Rechargeable Batteries allow for portable use. Auto power off function extends life of the display. Supplied with 12V DC charger.
Accuracy:	Better than 1% of reading from 4% to 100% F.S.D when used with AWS Intelligent Torque Transducers.
Limit Selection:	Low, Pass, High
Units:	Nm, cNm, LbfFt, LbfIn, OzfIn
Data Output:	9-pin D Standard Female Connector
Operating temperature:	1010M/B: -10 to +50ºC 1010H: -20 to +50ºC
Temperature coefficient:	On Zero: 0.01% per ºC On Span: 0.03% per ºC
Mode:	$\boxed{R}$ **RUN** $\boxed{F}$ **1st PEAK** $\boxed{P}$ **PEAK**
Weight:	1.6 Kg
Size:	160mm x 220mm x 200mm
CE:	2014/30/EU
EMC:	EN 61326-1:2013
NATO Stock No:	5980-22-623-1641

Screenshots:

Left: Graphical mode selection. Centre: Reading screen showing mode/ units selected and analogue bar graph. Right: Battery level warning

PROFESSIONAL TORQUE TOOL TESTER

DESCRIPTION

The AWS LTD Professional Torque Tool Tester range (PTTT), the companies' 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: 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.

LCD Display: 70mm X 52mm Bright Full Colour Sunlight Readable LCD Display of 6 Digit Active Reading, with Analogue Bar Graph, Mode Selection graphics, Battery State and indication of charging. Optional limit selection with colour indication shows whether a reading is Above Limit, Below Limit and Within Limit. All functions are selected and changed by soft keys.

Power: Internal Rechargeable Batteries allow it to be used in the field. Auto power off function extends life of the display. Supplied with 12V DC power supply for charging batteries and mains power.

Data Output: Female RS232 connection

Overload capability: 125%

Maximum mechanical overload: 160% of Range stated.

Operating temperature: +5ºC to +50ºC. IP67.

Temperature coefficient: On Zero: 0.01% per ºC
On Span: 0.03% per ºC

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:

Left: Graphical Mode selection. Centre: Reading Screen Showing mode/ units selected and Analogue Bar graph. Right: Battery level warning

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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
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.
Units:	Nm and Lbf.Ft or cNm and Lbf.In Selectable (Dependant on Range).
Modes:	**RUN:** For Dial-type and Electronic Wrenches and Screwdrivers **1st PEAK:** For Click-type Wrenches and Screwdrivers **PEAK:** For Cam-type Wrenches and Screwdrivers
Display:	5 X 12.5mm digit LED. Adjustable viewing angle through 90º. LED's 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 life of the display. Supplied with 9V DC plug top power supply for charging batteries and mains power.
Mounting:	Wall or bench/pedestal mountable via 4 hole 8 mm dia bolt fixings (bolts not supplied).
Data Output:	Female RS232 connection.
Overload capability:	125%
Maximum mechanical overload:	160% of Range stated.
Operating temperature:	+0ºC to +50ºC.
Temperature coefficient:	On Zero: 0.01% per ºC On Span: 0.03% per ºC
CE:	2014/30/EU
EMC:	EN 61326: 2007
Torque Standard:	BS 7882:2017

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TRANSDUCER ANCILLARIES

A selection of products which can be used with AWS Transducers, Displays and Bench Testers, and also in association with other manufacturers Transducers & Displays.

Hex-Square Adapters

The AWS LTD Hex-Square precision calibration adapters, designed to improve the accuracy and reduce the uncertainty in torque calibration & apparatus. Our precision hex-square adapters cover a range of the most commonly used square drive and hex 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.

SPECIFICATIONS

Part No:	Size:						
CM105	1"	F	SQ	to	36	F	HEX
CM150	1"	F	SQ	to	1/4"	F	HEX
CM151	1"	F	SQ	to	6	F	HEX
CM152	1"	F	SQ	to	10	F	HEX
CM153	1"	F	SQ	to	17	F	HEX
CM154	1"	F	SQ	to	19	F	HEX
CM155	1"	F	SQ	to	22	F	HEX
CM156	1"	F	SQ	to	27	F	HEX
CM106	3/4"	F	SQ	to	36	F	HEX
CM113	3/4"	F	SQ	to	19	F	HEX
CM107	1/2"	F	SQ	to	19	F	HEX

Part No:	Size:						
CM111	1/2"	F	SQ	to	17	F	HEX
CM135	1/2"	F	SQ	to	17	F	HEX
CM109	3/8"	F	SQ	to	10	F	HEX
CM110	3/8"	F	SQ	to	17	F	HEX
CM112	3/8"	F	SQ	to	19	F	HEX
CM171	3/8"	M	SQ	to	1/4"	F	HEX
CM172	3/8"	M	SQ	to	1/4"	M	HEX
CM108	1/4"	F	SQ	to	10	F	HEX
CM170	1/4"	M	SQ	to	1/4"	F	HEX
CM173	1/4"	M	SQ	to	1/4"	M	HEX

Keyway-Square Adapters

DESCRIPTION

The AWS LTD Keyway-Square precision calibration adapters, designed to improve the accuracy and reduce the uncertainty in torque calibration & apparatus. Our precision keyway-square adapters cover a range of the most commonly used square drive 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.

SPECIFICATIONS

Part No:	Size:						
CM136	1/2"	F	SQ	to	35	F	KEY
CM137	3/4"	F	SQ	to	35	F	KEY
CM138	1"	F	SQ	to	35	F	KEY

Square-Square Adapters

DESCRIPTION

The AWS LTD Square-Square precision calibration adapters, designed to improve the accuracy and reduce the uncertainty in torque calibration & apparatus. Our precision square-square adapters cover a range of the most commonly used square drive 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.

SPECIFICATIONS

Part No:	Size:							Part No:	Size:						
CM132	1/2"	F	SQ	to	3/8"	F	SQ	CM166	3/4"	F	SQ	to	1/4"	M	SQ
CM139	3/8"	F	SQ	to	3/8"	F	SQ	CM160	1/2"	F	SQ	to	3/4"	M	SQ
CM140	1/4"	F	SQ	to	1/4"	F	SQ	CM167	1/2"	F	SQ	to	3/8"	M	SQ
CM141	1/4"	F	SQ	to	3/8"	F	SQ	CM168	1/2"	F	SQ	to	1/4"	M	SQ
								CM144	1/2"	F	SQ	to	1"	M	SQ
CM142	1"	F	SQ	to	1.5"	M	SQ	CM159	3/8"	F	SQ	to	3/4"	M	SQ
CM146	1"	F	SQ	to	3/4"	M	SQ	CM162	3/8"	F	SQ	to	1/2"	M	SQ
CM147	1"	F	SQ	to	1/2"	M	SQ	CM169	3/8"	F	SQ	to	1/4"	M	SQ
CM148	1"	F	SQ	to	3/8"	M	SQ	CM145	3/8"	F	SQ	to	1"	M	SQ
CM149	1"	F	SQ	to	1/4"	M	SQ	CM157	1/4"	F	SQ	to	1"	M	SQ
CM143	3/4"	F	SQ	to	1"	M	SQ	CM158	1/4"	F	SQ	to	3/4"	M	SQ
CM164	3/4"	F	SQ	to	1/2"	M	SQ	CM161	1/4"	F	SQ	to	1/2"	M	SQ
CM165	3/4"	F	SQ	to	3/8"	M	SQ	CM163	1/4"	F	SQ	to	3/8"	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

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

Specification

Power:	Mains powered from 12V DC charger
Inputs:	4/6 off 6 Way Mil C Spec connectors
Outputs:	3 off 9-pin D Standard Female Connector:
	RS232 Output
	1010 Display
	UTWCM
Size:	17cm x 11cm x 9cm
Weight:	0.5 Kg

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

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

INTELLIGENT INSTRUMENTED TORQUE TRANSDUCER CABLE

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 cable 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.

Each cable is calibrated only to a specific dedicated transducer, remaining unique to that transducer.

Modes:	**R RUN**	**F 1st PEAK**	**P PEAK**
Communications:	Communications via can bus. (When used with the AWS PTD-1010 power & display unit).		
Power and Display:	D.C power supply (When used with AWS PTD-1010, power and display is provided).		
Connector:	Mil C 26482 series to Mil C 26482 series. 6 pin. Shell size 10.		

Model: IITC-1008-	1	2	5	10
Length:	1m	2m	5m	10m

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MANUFACTURER INFORMATION	SUPPLIER INFORMATION
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Intelligent Torque Transducer Connector Cable

The AWS LTD Intelligent Torque Transducer Cable (ITC), 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
Length:	1m	2m	5m	10m

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Calibration Machines

Our Torque Calibration Machines are for calibrating Torque Tools and Transducers to the latest International Torque Standards.

Universal
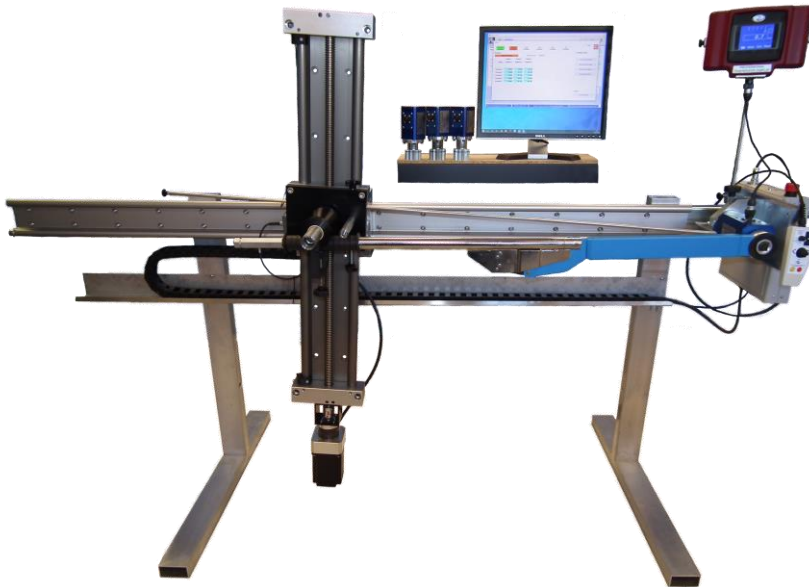# Torque Wrench Calibration Machine

Photo above shows a UTWCM with AWS Intelligent Inline Torque Transducers, Professional Transducer Display, and Laptop/Computer running ADMS Kepler 4 Software for Calibration & Conformity to ISO 6789:2017 Parts 1 and 2.

Description

The all new 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 4 versions; Automatic or Semi-automatic operation and ranges up to either 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 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-automatic 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.

Specification

Model: UTWCM -	1500 - S	1500 - A	3000 - S	3000 - A
Range:	1500 Nm	1500Nm	3000 Nm	3000 Nm
Manual or Semi-Automatic:	Semi - Automatic	Automatic	Semi - Automatic	Automatic

Shared Features

- Designed to calibrate/test wrenches up to either 1,500 or 3,000 N·m.

- 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.**

UTWCM with 60N·m 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 mounts in our carraiges can be rotated 360 ° in steps of 30°.**

Automated Features

- **A Customer's existing transducers can 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.**

- **Connecting an AWS IITT automatically programs the AWS PTD to the correct range.**

Simple and Intuitive Handheld Controller

- **When operating the AWS PTD in First Peak mode for click wrenches, the machine will run a complete operation cycle automatically.**

Dimensions

Dimensions for mounting on floor:

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, Professional Transducer Display and Kepler 4 software is available in separate data sheets on the AWS website www.awstorque.co.uk.

Manufacturer information	Supplier information
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Universal Torque Screwdriver Calibration Machine

Photo above shows a UTSCM with Control Box, Handheld Controller, and an Intelligent Inline Torque Transducer.

Description

The all new 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.**

- **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 facilitate 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.**

- **70mm X 52mm 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 is available. This connects to a PC via USB.**
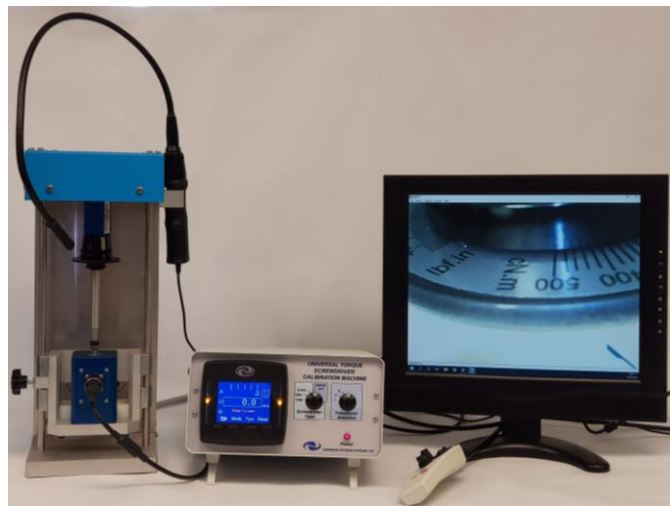

Photo above shows a UTSCM with Control Box, Handheld Controller, and an Intelligent Inline Torque Transducer. The optional flexible probe camera is streaming a view of the dial to the PC via USB.

Dimensions

Dimensions for mounting on benches/ tables: 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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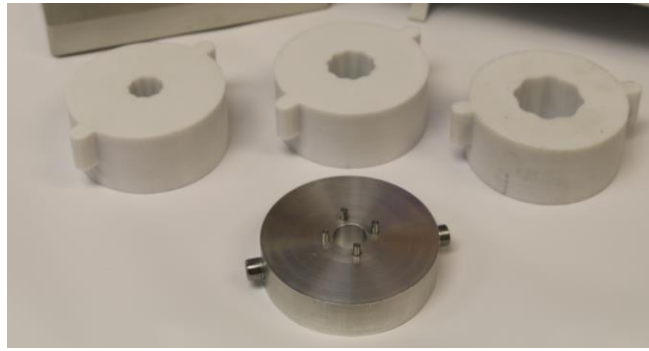| Manufacturer information	Supplier information
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UTSCM Screwdriver Handle Adapters

Photo above shows various AWS solid torque screwdriver handle adapters.

Description

The all new 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.
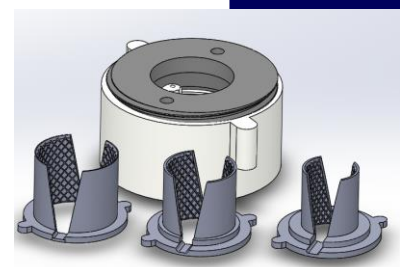
Solid Adapter Features

- 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.
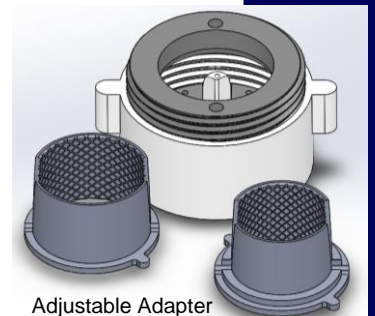
Adjustable Adapter
30mm-45mm

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.

Adjustable Adapter
15mm-30mm

Square Drive Adapter Features

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

List of Avaliable Adapters

Solid Adapters

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

Square Drive Adapters

Adapter Model	Torque Range	Handle Diameter Range	Drive	Screwdriver Model
2040-ASQ1	0-30Nm	N/A	1/4" 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.

Manufacturer Information	Supplier Information
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2kNm Universal Torque Calibration Machine
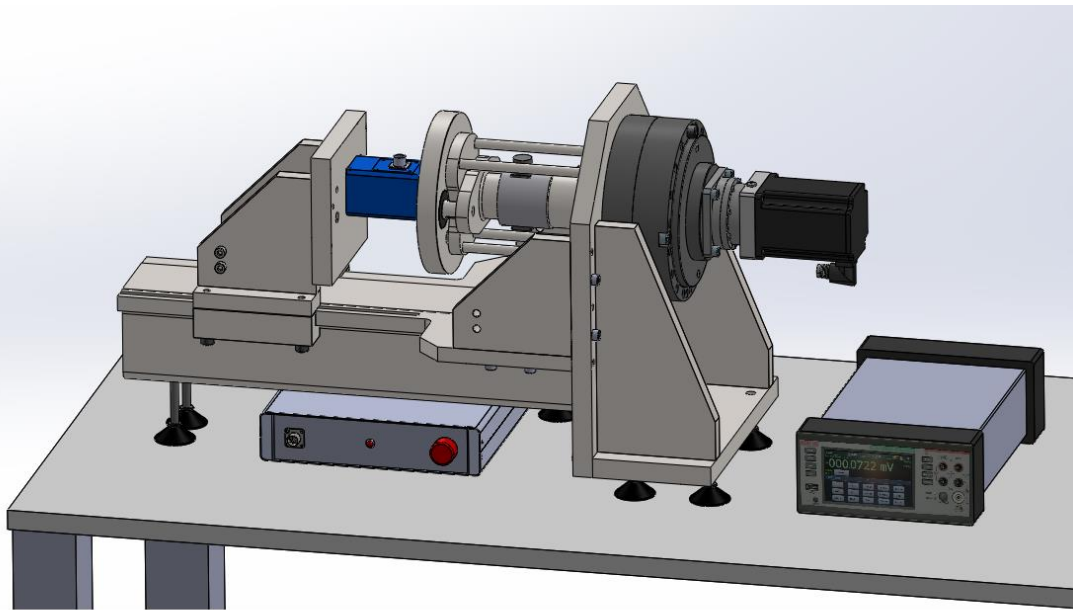
Bench mounted machine with Torque Transducer Sliding Carriage, 2kNm Master Transducer and Voltmeter. AWS 2014-IITT 250Nm Torque Transducer shown as device under test (Sold Separately).

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 two AWS Master Transducers (2000Nm and 100Nm) with very high accuracy, stability and low uncertainty. The master transducers output to an extremely accurate 6.5 digit computing digital voltmeter to display the applied torque and to attain the required uncertainty of measurement (Certificate of conformity 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.

An additional Torque Tester Extension carriage with horizontal or additionally vertical fittings 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.**

- **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.**
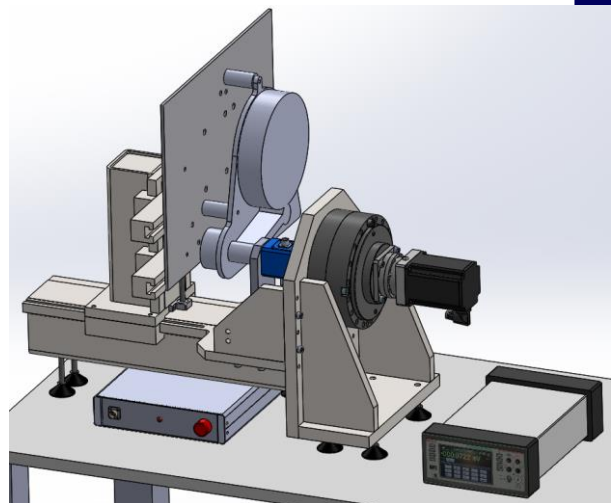
UTCM with Tool Tester Extension and Vertical Mounted Torque Tester fittings. Acratork L2 shown as example device under test.

- **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 for calibration of a wide variety of torque measuring and calibration devices. Multi-axis T slot system for pick up of a range of fixing positions.**

- **Use with AWS Precision Torque Adaptors each designed to accurately fit the model of torque testing device to minimise the uncertainty of adaptor alignment.**

- **Additional alternative bed position for additional vertical height adjustment, covering the wide variety of torque measuring devices available.**

- **High accuracy 6½ 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.**
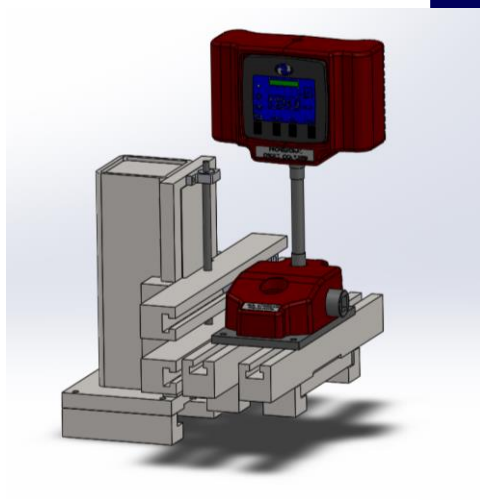
Torque Tester Extension with fittings for horizontal mount Torque Testers. AWS 1005 shown as device under test. (Sold separately)

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

Approx. dimensions for mounting on benches/tables: 94cm (length) x34cm (width) x40cm (height)

Approx. Weight (Kg):

Main Body (Without Transducers & Carriages)	Transducer Sliding Carriage	Torque Tester Sliding Carriage (Depending on options)	2kNm Transducer Cassette
90.0	16.7	24 - 40.5	13.5

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2Nm 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 precision method 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 46).**

Dimensions

Overall Diameter: 104mm

Thickness: 10mm across boss

Length of cable: approximately 400mm per side

Weights Set for 2Nm Unsupported Calibration Wheel

Product images are for illustrative purposes only and may differ from the actual product.

Description

AWS can provide a set of 15 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.**

Product images are for illustrative purposes only and may differ from the actual product.

Table of weights provided

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

More information on our product range is available in separate data sheets on the AWS website www.awstorque.co.uk.

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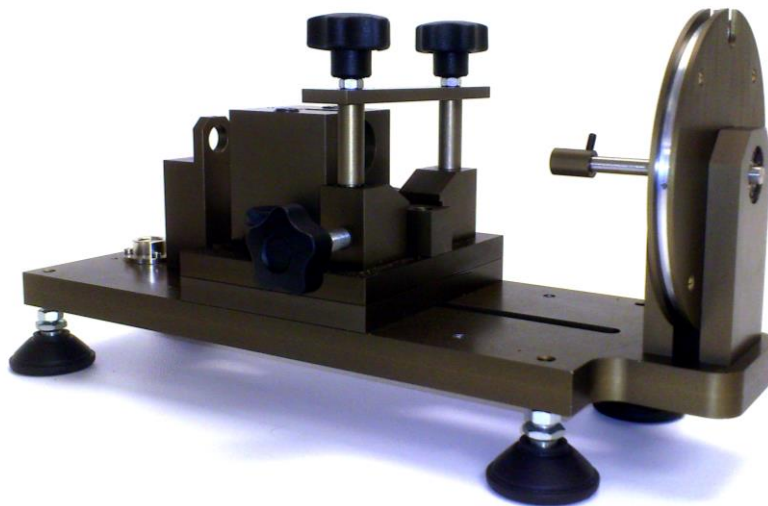| Manufacturer information	Supplier information
Advanced Witness Systems Ltd Unit 8 Beaumont Business Centre Beaumont Close Banbury OX16 1TN Tel: +44 (0)1295 266939 Email: sales@awstorque.co.uk	

2 Nm Calibration Machine

Description

The AWS LTD 2Nm Calibration Machine (CR1020), designed to calibrate torque transducers, torque watches and torque screwdrivers, up to 2 Nm.
It is highly accurate and uses a disc and weights to apply torque. Weights 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 2.5 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°C.
Directions of use:	Clockwise and anti-clockwise calibration. +/-270 degrees 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.

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| Manufacturer information	Supplier information
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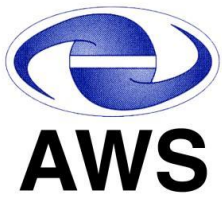
CALIBRATE 3x FASTER WITH THE AWS

UNIVERSAL TORQUE WRENCH CALIBRATION MACHINE

We set out below the real major cost, time and operator advantages against manual operation, with typical proven examples.

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 2 versions, 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.
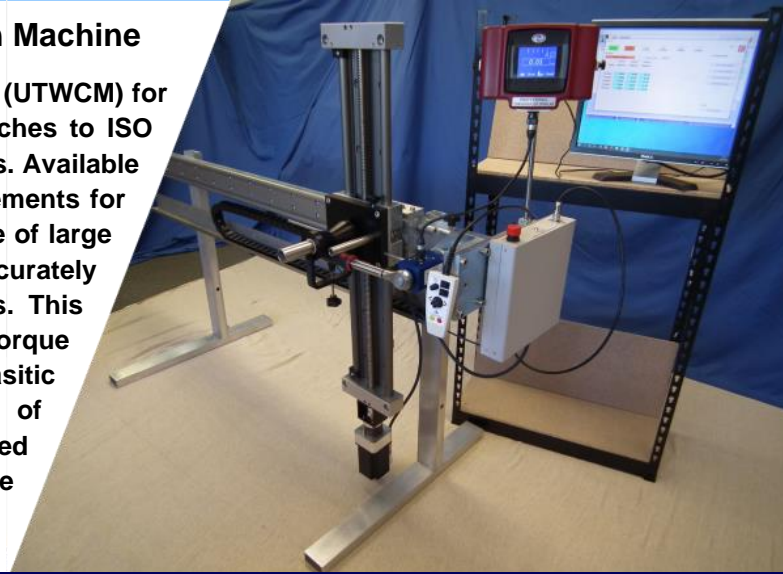
Return on Investment – ISO 6789:2017:

- **Users already meeting ISO 6789:2017 by manual means find it is very time consuming and requires quite some skill and operator effort, typically requiringan oscilloscope for checking the final 20% of the applied torque is below the timing requirementset 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 <u>60 minutes</u>, and with much less operator skill& effort.**
- **Considerable time saving, generating faster throughput of torque wrenches.**
- **Using the AWS UTWCM is <u>1/3 quicker</u> than the manual method.**
- **Payback can be as short as <u>9 months*</u>.**

Original Calibration Time	90 mins
New Calibration Time	60 mins
Payback	9 months*

Return on Investment – ISO 6789:2003:

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

Original Calibration Time	60 mins
Calibration Time with UTWCM	20 mins

Typical timings for the various calibrations are shown overleaf.

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

We set out below the real major cost, time and operator advantages against manual operation, with typical proven examples.

About the Universal Torque Screwdriver Calibration Machine

The all new 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, typical calibration time is <u>25 minutes,</u> and with much less operator skill.
- Considerable time saving, generating faster throughput of torque screwdrivers.
- Using the AWS UTSCM is <u>10 times faster</u> than the manual method.
- Payback can be as short as a phenomenal <u>8 days</u>*.

Original Calibration Time	240 mins
Calibration Time with UTSCM	25 mins
Payback	8 days*

Return on Investment – ISO 6789:2003:

- Using the AWS UTSCM to meet ISO 6789:2003, typical calibration time is only <u>4 minutes.</u>
- Using the UTSCM is <u>10 times faster,</u> increasing throughput and reducing errors, with less operator skill.
- Payback estimated to be as short as <u>1 month**</u>.

Original Calibration Time	45 mins
Calibration Time with UTSCM	4 mins

Typical timings for the various calibrations are shown overleaf.
*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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SUPPLIER INFORMATION

ΛDMS Software

Our software arm
Λdvanced Data & Measurement Series
designs and produces torque tool and torque transducer calibration, uncertainty calculation and certification software for use with PC's.

Our software can be used to improve calibration accuracy & efficiency, tracking tools & customers, and removing the need for spreadsheets.

Our Kepler 4 software is our most comprehensive torque tool calibration software on the market today, for the calibration and certification of torque wrenches to BS EN ISO 6789:2017, 2003 or your own in-house standards, and for keeping track of each individual wrench.

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 wrench.

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 Shared Features Include

- 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.

Other Features Include

- All certificate print details recorded. Enables exact reproduction ensuring full traceability.

- Multiple operator accounts for users, maintainers & administrators (with passwords).

- 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.

System Requirements:

Minimum Screen Resolution: 1280x768.
Software is a .NET application using an SQL Database.
Minimum System: i5 Processor or equivalent, 4GB RAM, on board graphics. Keyboard & Mouse Interface.

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 for Conformity

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

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.
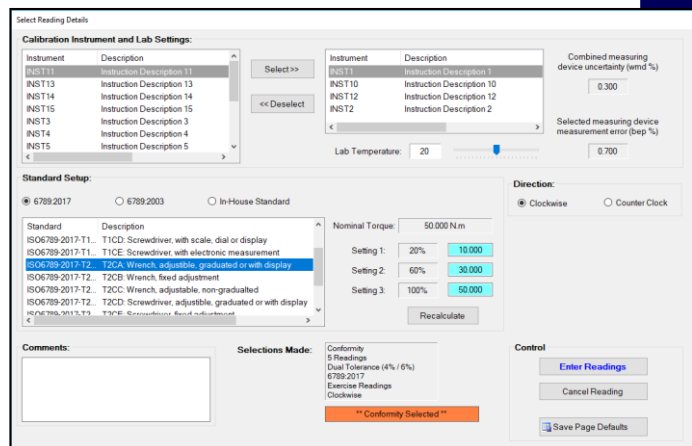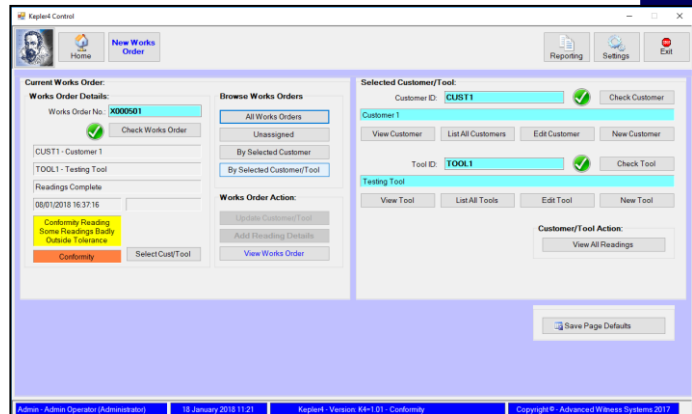
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Data was correct at time of publication.

Other Features Include

- Option to operate in 6789:2003 to allow phased migration to 6789:2017.

- Multiple operator accounts for users, maintainers & administrators (with passwords).

- Cloning facility speeds multiple tool data entry.

- Import and Export reports into text or spreadsheet formats for more efficient database backup.

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Keyboard & Mouse Interface.

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Also Available: Kepler 4 for Calibration, and Kepler 4 Combined

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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 wrench.

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.
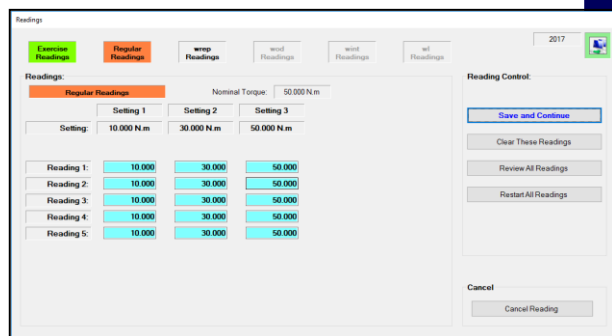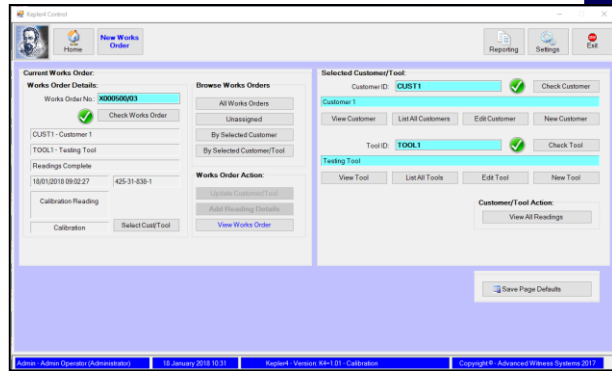
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Other Features Include

- Exporting of results data as a csv file for use in other programs.

- Multiple operator accounts for users, maintainers & administrators (with passwords).

- 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.

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System Requirements:

Minimum Screen Resolution: 1280x768.
Software is a .NET application using an SQL Database.
Minimum System: i5 Processor or equivalent, 4GB RAM, on board graphics.
Keyboard & Mouse Interface.

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

Also Available: Kepler 4 for Conformity, and Kepler 4 Combined

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KEPLER 4 Software Comparison

Feature	Kepler Lite 3	Kepler 3	Kepler 4 Conformity	Kepler 4 Calibration	Kepler 4 Combined
Complies with ISO 6789:2003 and BS EN 26789:2003 torque standards.	✓	✓	✓	✓	✓
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.		✓	✓	✓	✓
Colour configuration.		✓	✓	✓	✓
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.			✓	✓	✓
User generated databases for customers, instruments, tools, models, & standards.			✓	✓	✓
Fast tool entry from model database.			✓	✓	✓
Import signatures as pictures.			✓	✓	✓
Implementation of works order tracking system.			✓	✓	✓
New simplified and improved screen layouts.			✓	✓	✓
New system using .NET framework and sequel databases.			✓	✓	✓

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WIRELESS TELEMETRY LOAD MEASUREMENT

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

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.

These are the parts for the system:
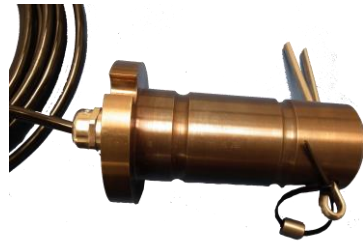
Telemetry Load Link

- 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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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 a total load measurement
- Range of 800m
- For more information, please see the 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.

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 temperature range of -10°C to +50°C

Dimensions
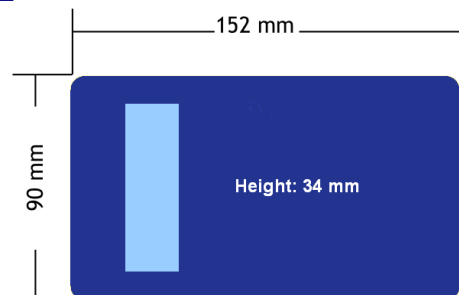
152 mm

90 mm

Height: 34 mm

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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 use with standard shackles
- 5 Step Linearisation
- Auto Power Down
- Sealed to IP67
- 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
- Internal aerial
- Other capacities available on request

Specifications		
Capacities	5-250	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

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

All dimensions in mm
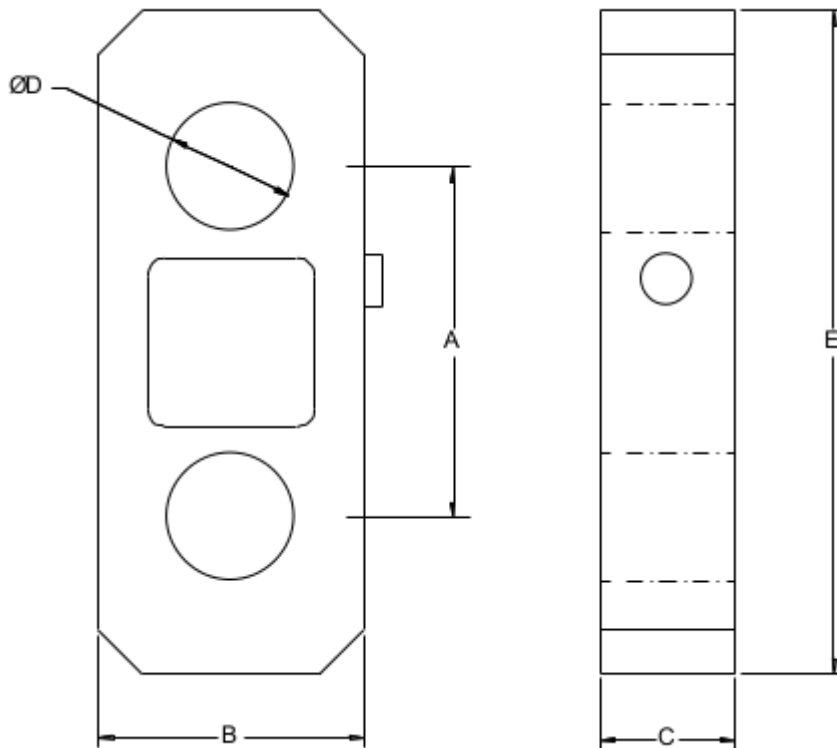
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Wireless Telemetry Load Pin

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.
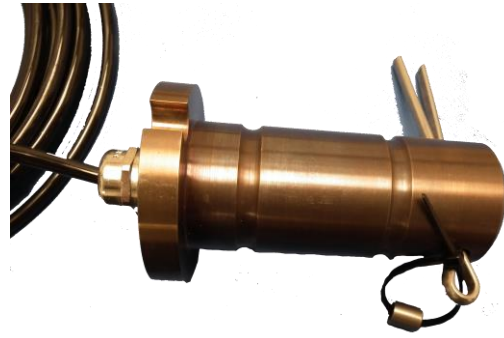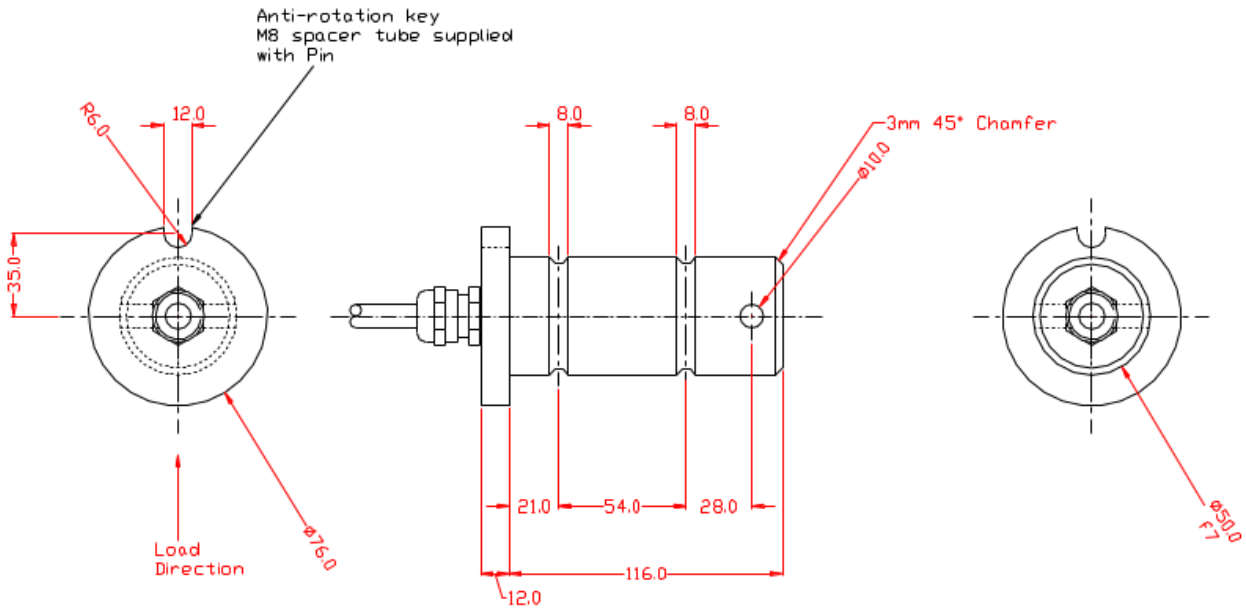
Specifications

- 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

Specification		
Capacity	5-1000	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	%

Anti-rotation key
M8 spacer tube supplied
with Pin

R6.0
12.0
35.0
Load
Direction
Φ76.0

8.0   8.0
3mm 45° Chamfer
Φ10.0
21.0   54.0   28.0
12.0
116.0

Φ50.0
F7

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Wireless Telemetry Anti 2-Block

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.
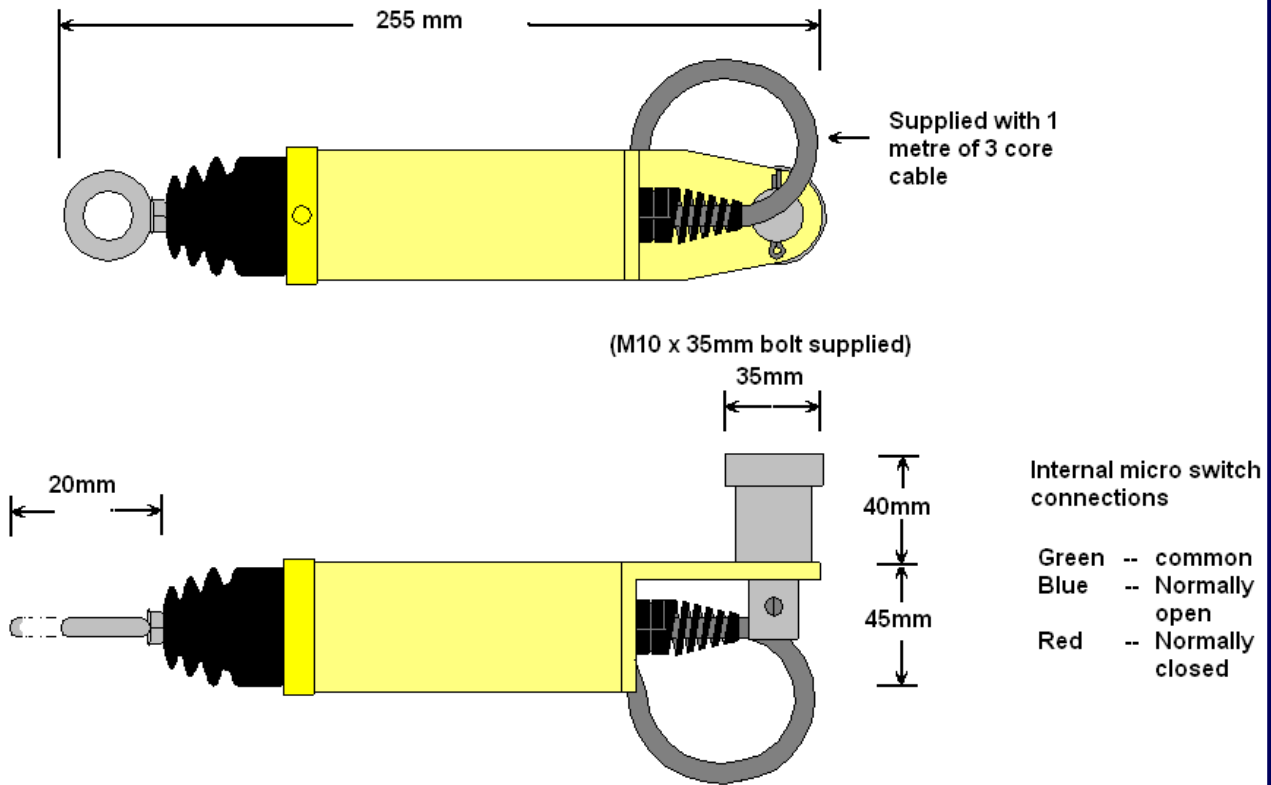
Specifications

- 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

255 mm

Supplied with 1
metre of 3 core
cable

(M10 x 35mm bolt supplied)

35mm

20mm

40mm

45mm

Internal micro switch
connections

Green -- common
Blue -- Normally
open
Red -- Normally
closed

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