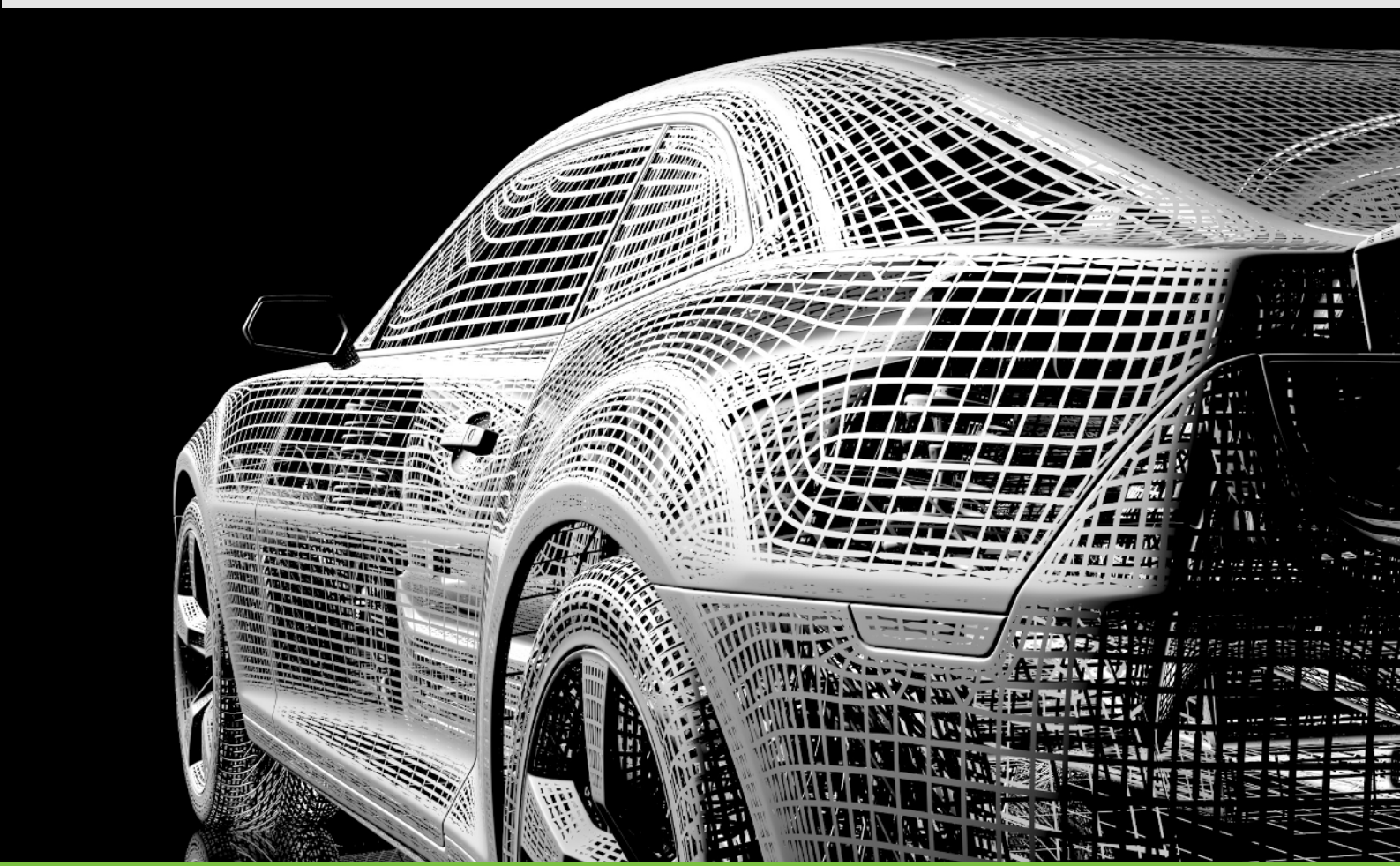
ANDILOG
FORCE MEASURING TECHNOLOGIES

Force and torque measuring instruments

Applications for automotive and aeronautic industries



Presentation of measuring instruments

Force and torque measurement for your applications

Andilog Technologies has been specialized for 30 years in the development and manufacturing of force and torque measurement solutions.

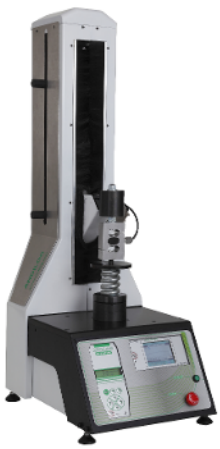
We have extensive experience with many companies in the automotive and aeronautics sector and offer you a wide choice of standard or tailor-made products for your ambitious projects.

This brochure gives you an overview of our manual and motorized measurement solutions dedicated to research and development, quality control and all applications for the automotive and aeronautical industries.

You will find bellow the four measuring equipments categories produced by Andilog.

Force measurement

Manual force gauges with internal and external sensors



Manual force test stands and testing machines

Torque measurement

Manual torque gauges

Manual, motorized and computer controlled torque benches

Manual force control

Presentation of the Centor range

Andilog offers three types of force gauges with many features to suit your needs. Whether it is for simple force or maximum torque measurement, in-depth measurement study with statistics or visualisation of the test curve with complex calculations, there are solutions for your tests.

Each force gauge and torquemeter can be combined with different internal and/or external torque and force sensors.

The choice of your measuring instrument will depend on your needs, the results you want to achieve and the frequency of use. **To be selected, a dynamometer or torque meter must have a minimum accuracy of 0.25% FS, a certificate of calibration and have a long operating life.**

The Centor range is declined in three force gauges:

Centor FIRST II

- Easy and instant handling
- Displays the maximum force in tension and compression
- The force can be applied manually directly with the force gauge
- Direct playback and recording, no connection to a computer
- Capacity: 10 N, 25 N, 50 N, 100 N, 250 N, 500 N, 1 000 N (2,25 to 225 lbs)

Centor EASY II

- Internal memory for 500 measurement results
- Software for memory transfer to a computer and optional test curve plotting
- High measuring accuracy
- Programmable limits with audible warning
- Capacities: 10 N, 25 N, 50 N, 100 N, 250 N, 500 N, 1 000 N (2,25 to 225 lbs)

Centor STAR

- Advanced force gauge with advanced functions
- Internal memory for 2,000 results
- Automatic calculation of maximum and average force
- Display of the curve on the force gauge screen and transfer of the results to an optional USB stick
- Capacities: 5 N, 10 N, 25 N, 50 N, 100 N, 250 N, 500 N, 1 000 N (1 to 225 lbs)

Manual force control - Centor displays in detail

Centor First II

Simple and complete, the Centor First II force gauge uses high-performance technology to simplify force, tension and compression measurements. A digital display shows **the maximum** and the **force measured in tension or compression** in the unit chosen by the operator: Newtons, kilograms or pounds. The bar graph completes the force measurement.

Simple, precise, robust, delivered in its transport case with its charger, accessories and calibration certificate with measurement statement, it is a powerful entry-level instrument for force measurement.

Centor Easy II

The digital force gauges Centor Easy II are designed to meet the needs of users in production. This range offers many functions that are essential today in quality control, for example: easy to read thanks to its **large graphic display, USB output, storage of the last 500 values and the possibility of programming thresholds with visual and audible alarms.** Its high-performance measuring chain allows it to have an acquisition rate of 2,000 Hertz for a resolution of 1/10,000 of the Full Scale (FS) and a total error of less than 0.1% FS.

Centor Touch Star

The force gauge Centor Star Touch is designed for measurements in industrial environments, it provides **high performance** but also great ease of use thanks to its **color touch screen.** The menu icons guide the user through the configuration of his tests. Settings, messages and results are in several languages (French, English, German or Spanish). It allows the live display of the force or torque curve in relation to the time. It also has many calculations such as breakage, mean, standard deviation, peak etc.

For better integration into the manufacturing process and communication with other devices, the gauge Centor Star Touch is equipped with several **digital and analog inputs and outputs**. Thus you can transfer your test results to a computer, rework them and integrate them into customized reports using our various software.

The Centors are equipped with an internal sensor with an M5 thread on which different accessories can be screwed depending on the samples to be tested. In addition, they have 4 fixing points on the back (2xM5 and 2x10-32) in order to mount them on a frame or to equip them with a handle.

External sensors "SPIP" and data export

SPIP technology

The SPIP technology allows to store in the sensor its calibration and use parameters. Equipped with this technology, the force and torque sensors can be read directly by the Centor Touch Star gauges. This allows you to **increase your measuring range or instrument fleet at a lower cost** by purchasing only the force or torque sensor. You then have a force gauge and a torque gauge in one device.

All the features, flexibility and ease of use of the Centor Star Touch make it the ideal solution for manufacturing or quality control for simple or sophisticated but economically realistic tests!

In addition, with the Centor Touch Dual, which can read 2 sensors simultaneously, you can read force, torque, displacement or angle sensors...

APPLICATIONS

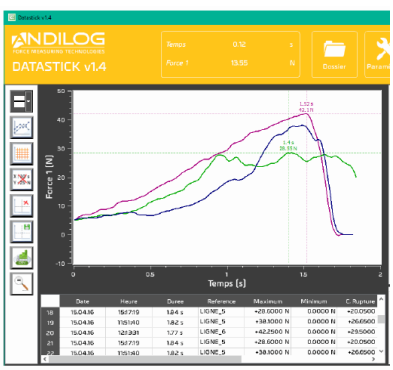
- Piston control
- Measuring force VS deformation or displacement
- Multi-point force control on a press
- Force VS torque, force VS angle (sun visor, articulated arm etc.)

Datastick II - Portable solution for recording your curves

Thanks to the new DATASTICK II you can now count on a real portable solution to easily save all your tests.

The Datastick II software and its USB key allow you to save the results automatically or on demand (calculations, statistics) and curves of your tests on a USB key.

Thanks to its **included software**, you can view your curves and measurement data on your computer and take advantage of the included software functions. This offers the possibility to replay your tests on your computer, with the import of saved data, the opportunity to compare the tests, and to finalize your measurements via the edition of reports in PDF or Word format. The export can also be done under an Excel spreadsheet.



Easy to use, the Datastick II plugs into the connector of your housing using an adapter provided and the configuration is done via the interface of your torque meter.

The Datastick II is a complete solution for field testing and in accordance with the demanding requirements for traceability of results.

New! WLC - Bluetooth Wireless Sensors

High accuracy measurement with no cable stress

Bluetooth sensors

WLC sensors are the first wireless sensors in the Andilog range. They allow measurements to be performed without being disturbed by a wire or being connected to a display. Equipped with Bluetooth technology, these sensors are compatible with Windows computers or Andilog Centor Touch displays.

The WLC sensor is the first industrial wireless sensor designed for high-precision measurements with a high acquisition frequency. **Integrating the latest measurement technologies, it now surpasses wired solutions in terms of accuracy.**

Compatibility and use

WLC sensors are compatible with:

- Displays, force gauges and torque gauges from the Centor Touch range. Using a **Bluetooth adapter** designed by Andilog, Centor Touch instruments are able to read our wireless sensors. If you already have one of our instruments, it can be updated to have this function. This means that you can use all the functions of our displays, but with wireless sensors.

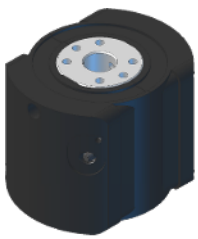
- **Computers equipped with software Caligraph**. Indeed, the WLC sensors can be connected directly to a computer equipped with Bluetooth, the data is then displayed directly in our Caligraph software without going through a display.

WLC TH

Ideal for manual torque measurements

WLC TRD

Can be mounted on a motor, a screwdriver...



Reference	Accuracy	Clockwise and counter-clockwise measurement	Speed acquisition	Autonomy	Range	Charging time
WLC TH	0.25%	up to 12Nm	at 1,000 Hz	min 10 hours	20 meters in open field	3 hours
WLC TRD	0.25%	up to 12Nm	at 1,000 Hz	min 10 hours	10 meters in open field	3 hours

Manual benches BAT1000 and TEX555
Precision workstations

All Centor Series force gauges can be mounted on the BAT1000 and TEX555 manual stands for accurate and repeatable measurements. Vertical tensile and compression benches allow a measurement in the axis of your samples.

BAT1000R

The simple manual BAT1000R test bench is equipped for complete tests: a digital sensor is mounted along the columns to measure the displacement of the bench.

The base consists of a base that receives the sample to be tested and on which two columns supporting the movable slide are fixed: the force gauge is mounted on the slide with no clearance, whose stroke is 300 mm, the movement of the slide is manually operated by a crank located at the top and a worm gear system, at the end of the stroke (lower part) the movement of the slide can be limited by adjustable stops.

APPLICATIONS

- Spring control (glove box, motors, locks, motors, valves)
- Control of lugs, foams, tools
- Peel tests
- Characterization of materials

TEX555R

The manual test stand TEX555R is designed to perform force and displacement/height measurements in tension and compression. Thanks to the lever drive system, it allows measurements to be made quickly, accurately and repeatably up to 2000 N with a resolution of 0.01mm.

It is suitable for all types of tests: springs, terminals, foams, tools, peeling, etc. The TEX frames are moved by means of a lever and a precision rack. The working height can be adjusted very easily by means of a keyless quick-release system. Its backlash-free design and the materials used make it a robust, portable product with a small footprint.

Many fasteners, gripping jaws and clamps are available as standard for all types of tests. We can also study your project and develop custom fasteners.

Springtest 2 manual bench

High-precision force and displacement measurement

Springtest 2

The Springtest 2 is a system specially designed for the very accurate measurement of compression springs. This manually operated test bench is designed to measure small springs and low forces.

With the Centor Touch Dual technology, it allows **simultaneous acquisition of force and displacement** with a high sampling frequency and can record the complete test curve (force versus displacement).

Its frame offers high rigidity and is equipped with a **high-precision displacement sensor** allowing the measurement of the deflection or height under load with a resolution of **5 microns**.

The Springtest 2's force strain gauges are very sensitive and are optimal for small force ranges. In order not to exceed the maximum capacity of the force sensor, the frame is equipped with manually adjustable mechanical safety stops.

The Springtest 2 has an **automatic frame deformation compensation system** to ensure height measurements by minimizing deformation or play errors in the measuring system.

APPLICATIONS

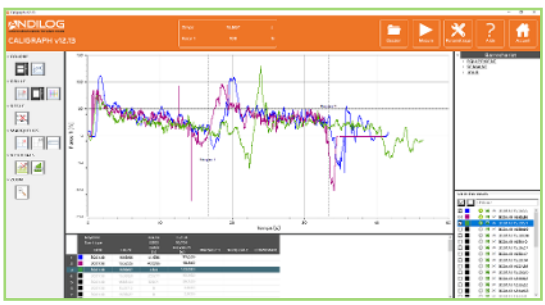
- High precision measurement with high repeatability on components, seams, insertion force, extraction force
- Contact force measurement on buttons and switches

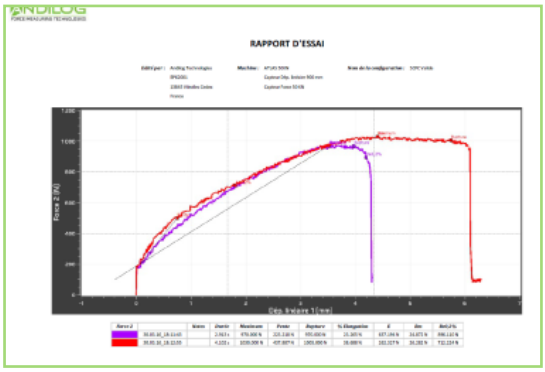
Caligraph - Real-time measurement on computer

The Springtest 2 can be connected to a computer using a USB cable. Coupled with Caligraph acquisition and analysis software, you can monitor the evolution of your force and torque curves in real time, record your data, automatically calculate your results and edit test reports.

The measurement starts with a single click and you can follow the torque and displacement measurements live at an acquisition speed of up to 1,000 Hz. In addition, Caligraph has predefined calculations to calculate, for instance, the maximum torque, the average between two values or to detect a break.

Caligraph includes a report editor that allows you to easily present your curves and results in Microsoft Word or PDF files. Export functions also allow you to export your measurements or curves to Microsoft Excel for different analyses or integration into other computer systems.

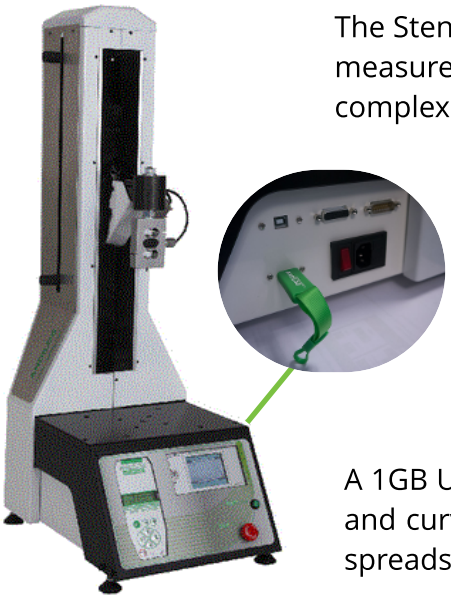




Mono-column motorized universal testing machine
STENTOR II CC

Andilog has developed different types of universal motorized machines to meet the testing needs of the automotive and aeronautical sectors. Our single or dual column force and torsion benches are ideal to test the components or complete systems of different vehicles, on the ground or in the air.

Stentor II CC - Universal testing machine



The Stentor II CC series test machines are among the most advanced force measurement systems in the Andilog range. They are designed to perform complex tensile and compression tests in research and quality laboratories.

The Stentor II CC test machine consists of two parts, its mechanical frame with force sensor and control interface, and the control software.

With the Stentor II you can easily retrieve the data that is stored in the machine's memory or save the measurement curves as they are acquired on a USB stick.

A 1GB USB stick can store hundreds of curves and results. Measurements and curves are saved in txt format, so they can easily be imported into a spreadsheet such as Microsoft Excel, ERP or traceability software.

APPLICATIONS

COMPRESSION

- Spring control, compression of electronic boards, trip units, components, hand brakes, material testing (tire powder)

TENSION

- Cables, peel tests on adhesive tapes, friction tests, fabric and plastic tests (belts, seats, welds etc.)

CHARACTERISTICS	STENTOR CC
Maximum capacity	1, 2 or 5 kN / 200, 500 or 1,000 lbs
Travel	250 or 350 mm / 7,9 or 11,8 in
Vertical space	350 or 450 mm
Speed	3-300 mm/min / 0,1-11,8 in/min
Dimensions W x D x H	345 x 500 x 851 or 951 mm 13,58 x 68 x 33,5 or 37,44 in
Load cells	10 N, 20 N, 50 N, 100 N, 200 N, 500 N, 1 kN, 2 kN, 5 kN 2 lb, 5 lb, 10 lb, 20 lb, 50 lb,100 lb, 200 lb, 500 lb, 1,000 lb

Universal two-column testing machineATLAS II CC

High capacity testing machine

The ATLAS II CC range consists of two-column tensile and compression testing machines with capacities up to 50 kN. These are versatile tabletop machines that can be adapted to all types of material and sample testing.

Designed to adapt to most of the problems encountered in force measurement, they are suitable for quality controls as well as for a design office or laboratory.

Precision and robustness

ATLAS II CC testing machines are designed to offer high quality mechanical properties and to guarantee the reliability of your measurements. The design of the frame has been particularly careful to offer extended operating comfort and ensure high accuracy in measurements.

- **Prestressed ball screws:** ensures smooth, precise movement and minimum mechanical clearance
- **Precision ball guidance:** guaranteed frame rigidity for accurate measurements and minimum deformation
- **Symmetrical drive:** the powerful motor drives symmetrical pulleys for maximum efficiency and homogeneous force application with the crossbar during measurements
- **Grooved table:** easy assembly of tension and compression accessories and tools
- **Quick mounting of the force sensor** on the crossbar

APPLICATIONS

COMPRESSION AND TENSION

- High elongation materials such as rubber
- High stress materials such as metal

CHARACTERISTICS	ATLAS CC
Maximum capacity	10, 20 or 50 kN / 2000, 5000 or 10.000 lbf
Travel	900 mm / 35,4 in
Vertical space	950 mm / 37,4 in
Speed	1-250 mm/min
Dimensions W x D x H	770 x 455 x 1473 mm 30,32 x 17,91 x 58 in
Load cells	12 sensors available from 10 N to 50 kN

Driving and test software Califort

Califort - Advanced control and acquisition software

The Califort software allows you to easily perform complex and accurate force or torque measurements.

With Califort, you have a solution:

- **Intuitive and locked** for operators

- **Efficient and quick to learn** to customize your measurements

- **Customizable** for editing your reports and analyzing your results

The new, sleek design of the Califort interface makes it easier to read, navigate and use the software for faster handling and efficient daily use.

Califort is compatible with Microsoft Windows tablets and touch screens by integrating a virtual keyboard and an adapted interface.

An infinity of use

Califort allows you to configure complex test sequences and has a list of calculations that it can perform automatically during your compression, tensile or torsion tests: maximum, minimum, average or break calculations but also Young's modulus, elastic modulus, etc.

The travel sequences can be customized to go up, down or rotate at different speeds and with stopping conditions (breakage, reaching a force or position etc.). It also has cycle functions that allow you to perform a repetitive operation several times.

Customize your results

Califort has an advanced report editor that allows you to integrate the data you need: curves, results table, logo, test configuration and to modify the headers or footers of each report for total customization.

Califort is the turnkey test software that supports you in the programming of your tests and ensures optimal traceability of your results.

Driving software for motorized testing machines

Manual torque measurement
Measurement of nuts and components

Centor Star TW

The advanced torque gauge with wrench sensor

The Centor Star Touch TW is a high-capacity torque measuring instrument. Equipped with a torque sensor such as a torque wrench with strain gauges, it allows measurements of high accuracy up to 150Nm.

The on-board electronics and the quality of the torque sensor offer repeatable and reliable measurement possibilities.

The Centor Star Touch display has a powerful electronics designed to facilitate measurements.

The angle sensor: it is incremental and has a resolution of 0.1°. Adjusted directly on the axis of rotation, it is perfectly aligned with the sample to ensure accurate angle measurement.

Centor Star TH

The torque gauge with handle and chuck sensor

The torque gauge Centor Star has interesting functions: the graphic display shows the complete torque curve VS time. This provides a complete view of the current test. The torque meter is capable of performing several types of calculations on request (break, first peak, average, torque at time T...).

The sensors of the TH range are delivered with a chuck with an opening from 1 to 10mm

For further measurement, Andilog has developed the **GYROTORK** range with TW and TH sensors.

The Gyrotorks integrate a high-precision torque transducer with strain gauges and a gyroscope for angle measurement. Coupled with the Centor Touch measurement electronics, they allow the **torque curve to be plotted in real time in relation to the angle of rotation** on its colour touch screen.

Gyrotork are automatically able to perform **calculations specially adapted for clamping measurements: breaking torque, torque at a given angle, clamping angle, breaking angle or the maximum torque applied.**

Screwing and unscrewing measurement
Measurement of nuts and components

Motorized torque and angle measurement eliminate the user´s influence and permit more accurate, repetitive and comparable tests to be performed.

In the automotive or aeronautical industry, a torque and angle measurement can be essential to check nuts, gear wheels, rotary knobs etc.

Vertial torque bench Drivetork

To perform an accurate and repetitive torque measurement, it is often necessary to use a torsion bench with a **programmable constant speed**. The Drivetork vertical motorized torsiometer allows measurements to be made without the influence of the operator thanks to a regulated rotation at constant speed.

The Drivetork torsiometer can be used to test all types of samples but is particularly suitable for **screwing and unscrewing tests: screws, nuts, wheels**, etc. Indeed, its measuring head has a translation axis allowing a free rise and fall during screwing measurements.

The Drivetork is equipped with **two high-precision sensors: a torque sensor and an angle sensor.** These two sensors are perfectly aligned to ensure the quality of measurements in the sample axis.

The torque sensor is available in different capacities depending on the measurement range over which it is used. The Drivetork can perform torque measurements from a few mNm up to 12Nm.

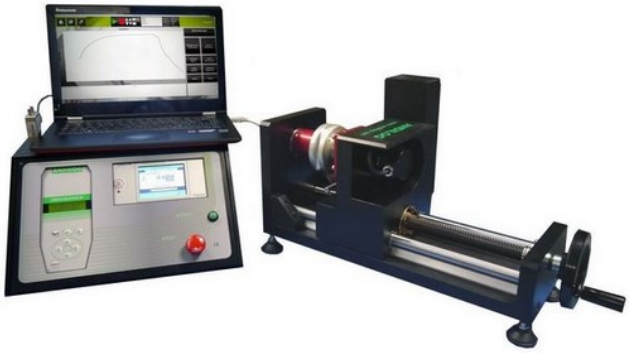
The angle sensor is incremental and has a resolution of 0.1°. Adjusted directly on the axis of rotation, it is perfectly aligned with the sample to ensure accurate angle measurement.

CHARACTERISTICS	DRIVETORK
Torque accuracy	0,5% of full scale
Acquisition rate	1 000 Hz
Angle resolution	0,1°
Rotational speed	1-10 rpm
Measuring direction	Screwing and unscrewing
Sample height	0 up to 350 mm

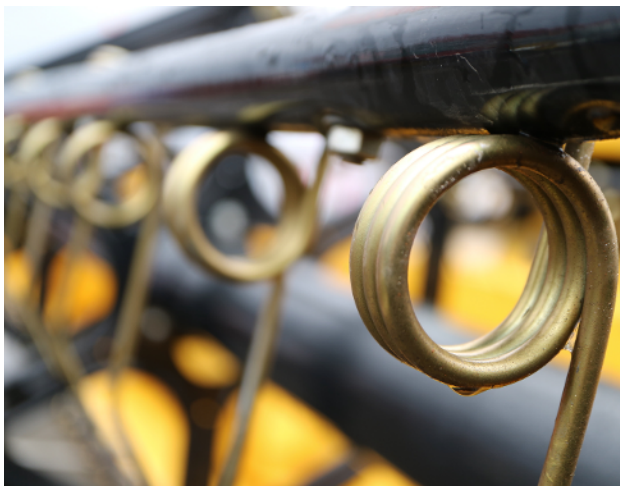
Drivetwist - motorized horizontal torque bench

Drivetwist horizontal torsion bench

To perform an accurate and repetitive torque measurement, it is often necessary to use a torsion bench. The DriveTwist motorized torsiometer allows these measurements to be carried out without the influence of the operator thanks to a regulated rotation at constant speed.



The DriveTwist torque tester allows torsional testing of various samples such as **springs, metal or plastic parts**. It consists of a horizontal, rigid frame, built from two rails ensuring precise guidance of the measuring carriage.



The DriveTwist has a torque sensor and a precision angle sensor. **The torque sensor can be equipped with different accessories depending on the type of samples to be tested**: plate with drive pins for springs, shaft or tube chucks, flat jaws.

There are two working modes:

- **Manual mode control from the console:** for adjustment tests
- **Computer control:** for advanced measurements thanks to the Califort software.

DriveTwist is the simplest and most complete system for dealing with a wide variety of torsion tests in the workshop or laboratory.

Industrial application - torsion test on screwdrivers

Andilog has collaborated with a leading manufacturer of portable tools for the automotive market to provide a **torsion test bench** that is capable of effectively **characterizing the torsional resistance of screwdriver blades and bodies under normal use and boundary conditions**.

The implementation of the Drivetwist combined with the Califort software allows to manage fully automated measurement protocols. A pass/fail analysis with minimum torque threshold criteria at a defined angle of torsion makes it possible to **monitor manufacturing quality in production and prevent drift.**

Thanks to the Drivetwist, our customer was able to determine the maximum and breaking torque of the screwdriver blade (thus **guaranteeing the tool life**) and the torque in relation to the torsion angle and thus audit the manufacturing process.

Motorized dynamic torque tester with remote measuring head

The TorkHeaDriver motorized torque bench is a motorized dynamic torque meter that allows **torque and angle measurements to be easily performed** on complete systems. This torsiometer is **particularly well suited for measurements on rotary knobs, potentiometers, valves** etc. installed on assemblies.

The small measuring head integrates the dynamic torque sensor with angle encoder and the motor. This measuring head can be easily moved in front of the sample to be tested to perform the tests. It is equipped at the outlet with a 1/4" male square allowing you to **attach any type of standard or custom tooling: chuck, sleeve, clamp....**

As an option, **the TorkHeaDriver can be directly controlled from a computer with the Califort software**. This allows you to create advanced test sequences, acquire data, save your configurations and tests.

CHARACTERISTICS	TORKHEADRIVER
Capacity 6 Nm	Accuracy 0,03 Nm and resolution of 0,0006 Nm
Angle resolution	0,001 rounds
Angle precision	0,001 rounds
Speed	3-20 rpm
Cycles	255

ANDILOG
FORCE MEASURING TECHNOLOGIES

Many additional applications

To see more applications of our force and torque measuring instruments as well as our manual and motorized machines, visit our website **www.andilog.com** under Resources > Applications.

The entire Andilog team remains at your disposal to help you in the planning and implementation of your measurement project.

Force and torque measuring instruments

Applications for the automotive and aeronautics industries

AB certification
ISO 9001:2015 Certified

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