

# Operating Manual GYROTORK DUAL V6.19



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## I. INTRODUCTION TO THE GYROTORK

Thank you for choosing the GYROTORK gauge manufactured by ANDILOG Technologies.

This torque gauge is the result of 25 years experience in torque and torque measurement with new electronic technologies offering a higher-performance and more reliable instrument.

Though it is a very comprehensive instrument, the GYROTORK torque gauge is easy to use. This instruction manual will guide you to set your first measurements.



### DEFINITIONS:

- **Internal Channel or V1:** Torque transducer wrench
- **External Channel or V2 or SPIP:** Angle sensor

## II. HANDLING

**CAUTION - Unpacking:** Your GYROTORK torque gauge has been supplied in its carrying case. Check that it has not been damaged during transport. If you have any doubt, please contact us and our service support will guide you through simple checks to ensure that the gauge has not been damaged.

### 1. Unpacking

The GYROTORK gauge is supplied with:

- A carrying case (according to your setup)
- A power plug adaptor
- A torque Certificate of calibration

### 2. Recommendation before first use

#### a. Battery

The battery reaches its maximum capacity after several charges. **This is very important!** A new torque gauge has a battery that does not have its full capacity at the first power on. The torque gauge will shut down automatically if the battery is too low.

The battery life is 8 hours under normal use. The gauge should be charged after normal use. You should charge it every 3 weeks, to ensure maximum life of the batteries.

It is recommended to use the original power adaptor supplied by ANDILOG Technologies. The power adaptor has the following specifications: 12V, 1.5A

#### b. Sensor

In spite of its mechanical protection, sensor overload can damage the instrument. The instrument stops if its capacity has been exceeded 10 times. If you overload it 10 times, you have to return it to ANDILOG TECHNOLOGIES for checking.

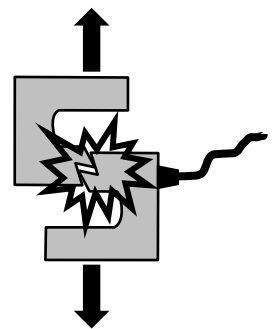
**It is important that measured values are under 90% of the sensor's capacity.**

#### c. Test Stand

The display can be affixed to a test stand via two M5 or two 10-32 screws, which should not extend through the back cover more than 3 mm. Please contact ANDILOG Technologies if you need more information or if you need a fixture to mount your torque gauge to a test stand.

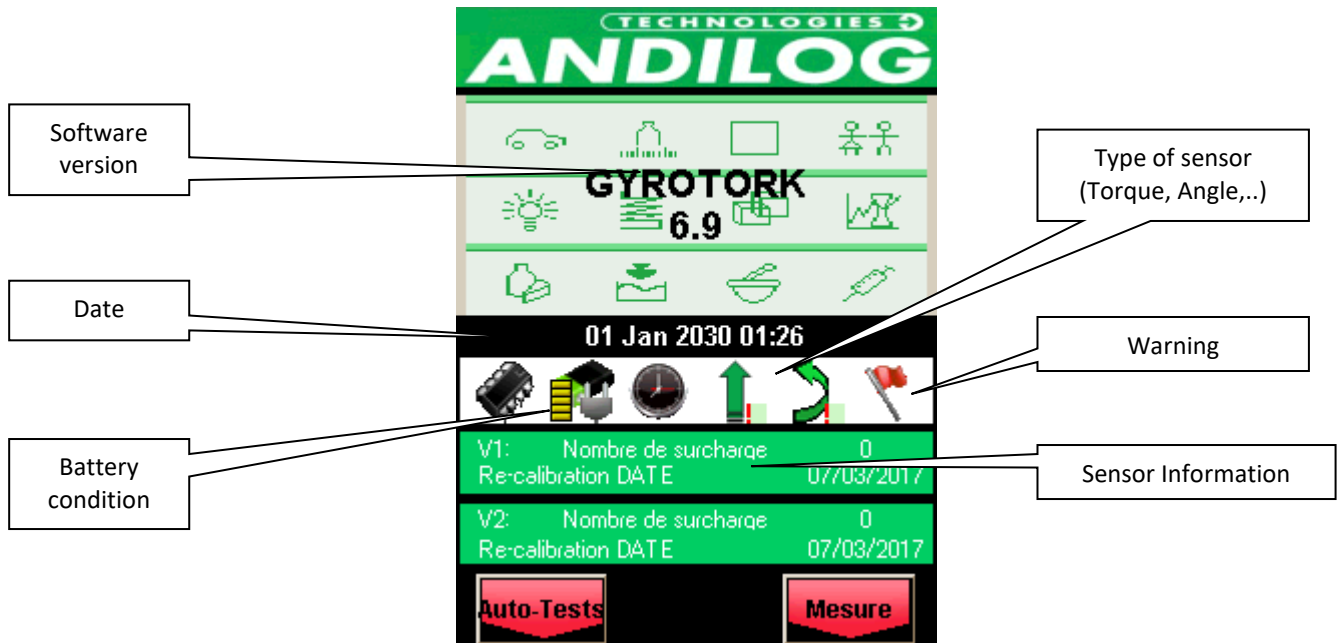
#### d. Conditions

- Working Temperature: 0°C to +35°C
- Stock Temperature: -20°C to +45°C
- Humidity: 5% to 95%
- Altitude: 3000m



### 3. Starting your torque gauge

Press the ON/OFF button, the information screen showing the status of the GYROTORK torque gauge is displayed for 5 seconds and then the main screen is displayed.



**Battery condition:** Displays the battery's state

**Date:** Display the date according to the format DD/MM/YYYY or MM/DD/YYYY setup under the maintenance menu (see chapter "maintenance").

**Software version:** indicates the software version installed on the torque gauge

**Internal and External sensor:** show the type of sensor (torque, displacement or angle) and its condition.

- A red X indicates a disconnected sensor or a major failure.
- A red exclamation point! Indicates a minor issue on the sensor - An overload or a calibration date pasted.

**Sensor Information:** The GYROTORK gauge detects when turned ON, the internal and external sensors are connected. External sensors are linked to GYROTORK Gauge through a special connector called SPIP.

- For a GYROTORK Dual, both sensors (internal and external) are simultaneously scrutinized

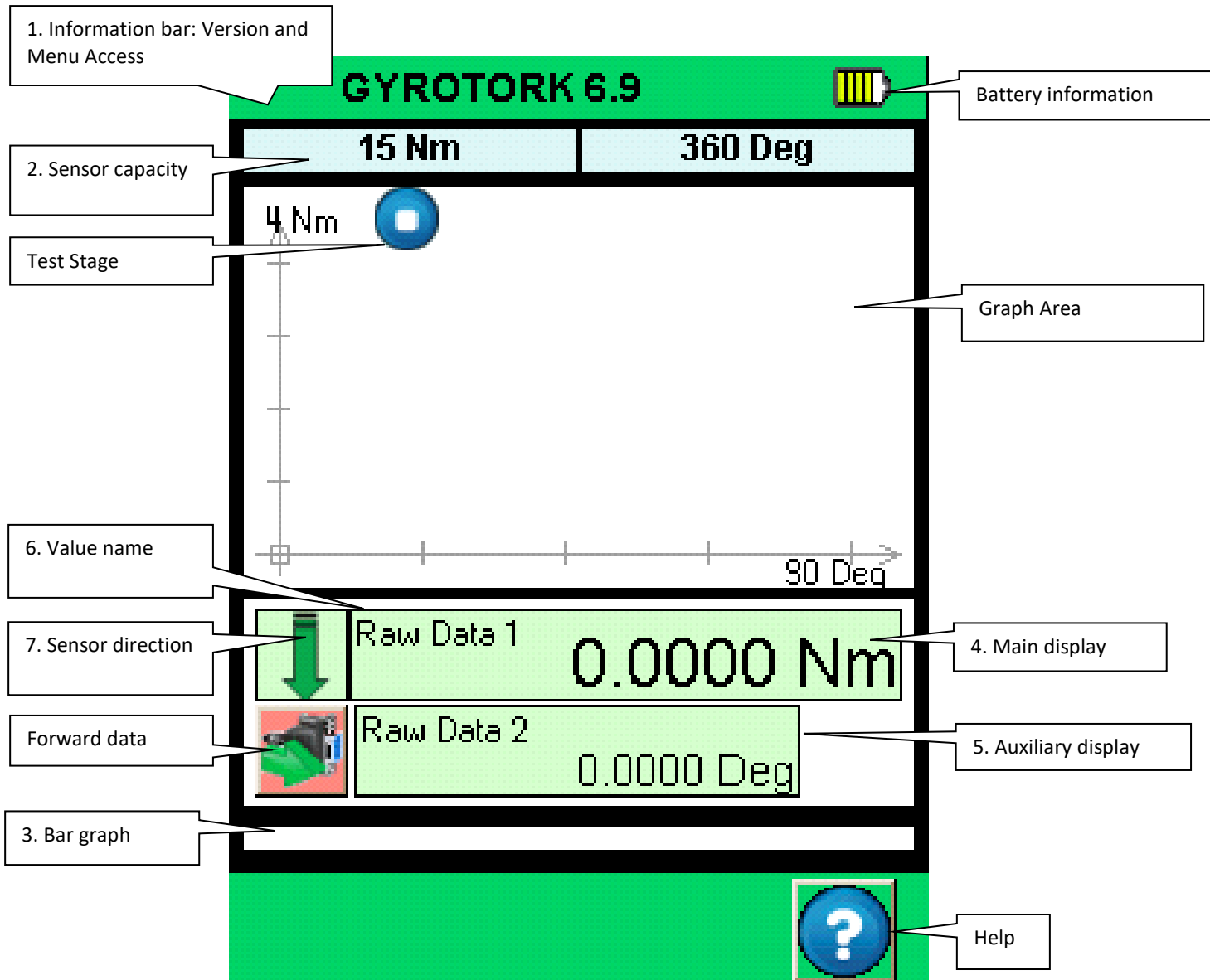
The following information regarding the sensor is displayed:

- V1 for internal or V2 for external.
- Date the next calibration is due
- Number of overloads

#### 4. Main screen – Measurement

After the starting (identification) screen, you access the main measurement screen as displayed below. According to the configuration of your GYROTORK, some information will be displayed, or not.

Note: the described parameters below are part of the default configuration



**1. Information bar** - The name of your device and battery status are displayed: Low battery indication: pictogram indicating the battery power status via 4 horizontal lines which respectively symbolize 25%, 50%, 75% and 100% of power. Press this field to access to the Main MENU



**2. Sensor Capacity:** The capacity and unit of your device is displayed at any time, even for additional remote external sensor.

**3. Bar Graph:** A black line represents the applied torque. If the bar graph is full, it means that the sensor's maximum range is reached: risk of overload! If the "limit set points" are activated, colors may change according to the current applied value (see dedicated chapter).

**4. Main display:** Many values can be displayed in this window. See display screen chapter for details.

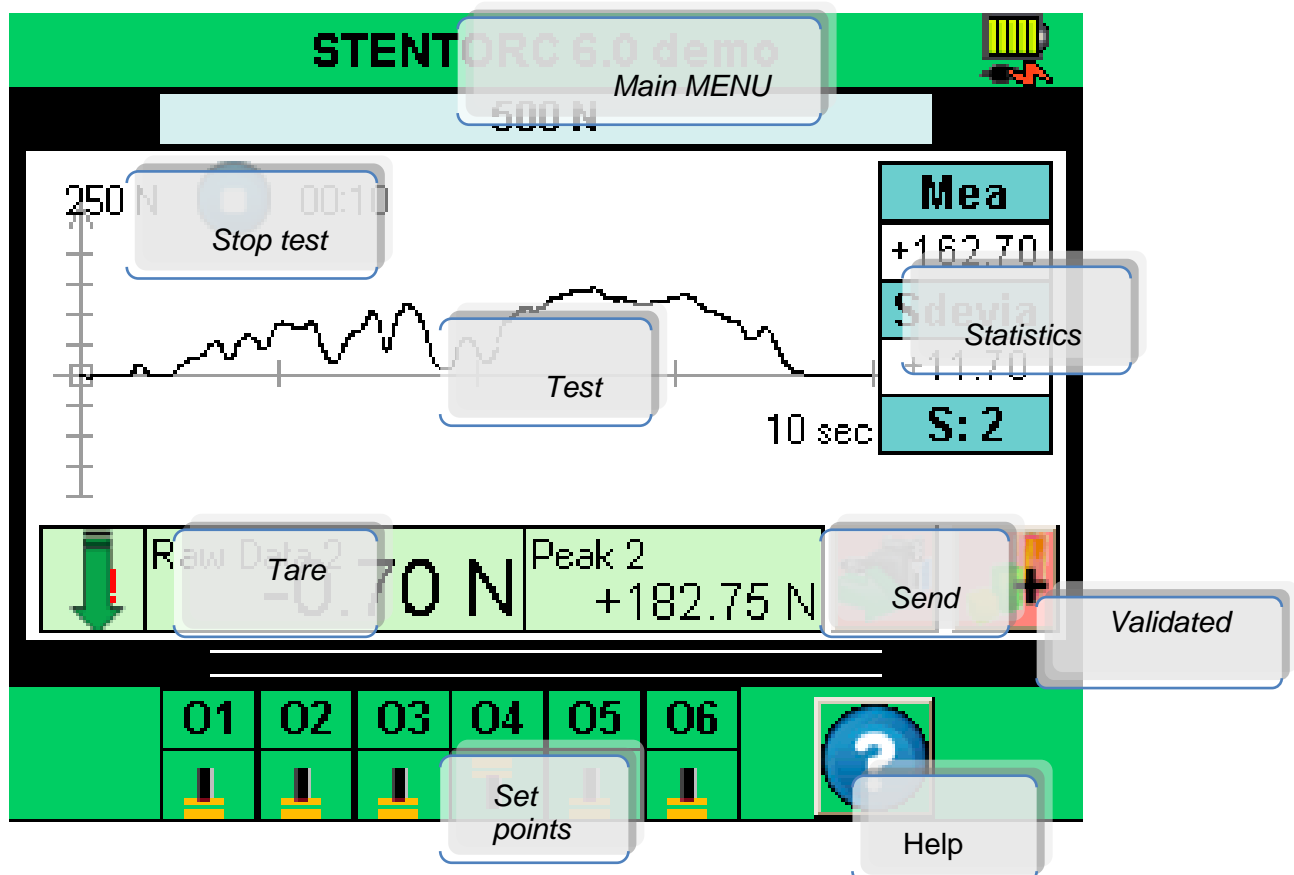
**5. Auxiliary display:** Many values can be displayed in this window. See display screen chapter for details.

**6. Value name:** displayed in the main and auxiliary displays is shown in the upper left corner of each screen. We will see in Chapter IV how to change the displayed value.

**7. Sensor direction:** An easy-to-remember small symbol indicates the direction of the torque applied to the sensor:  tensile and  compression

### 5. Touch area on the Measure screen

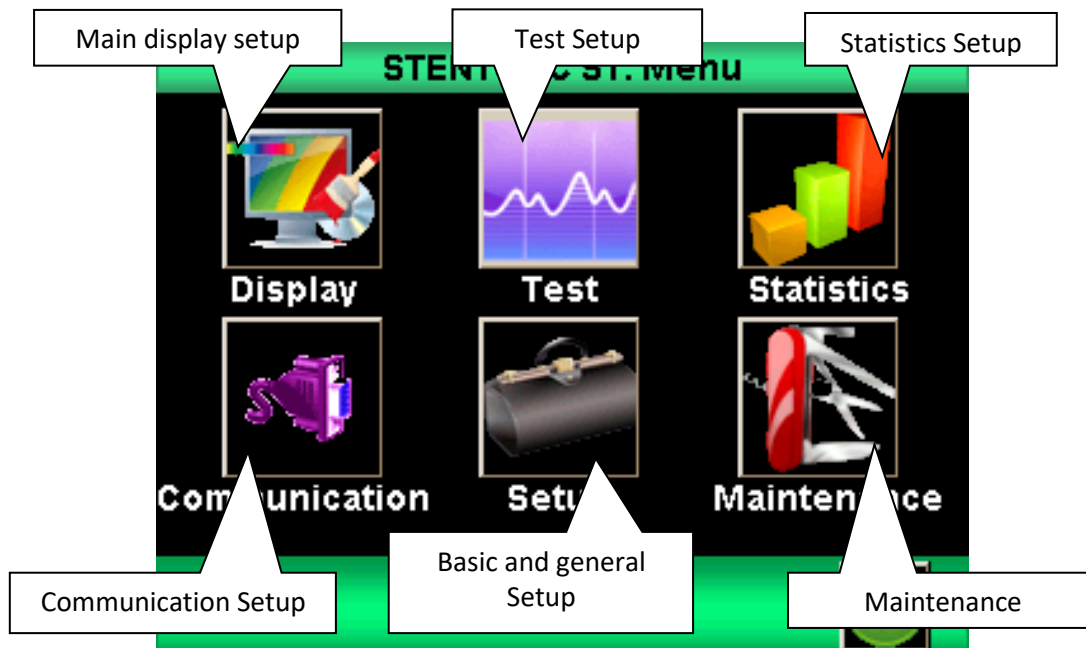
Each area of the measurement screen provides access to the configuration menus of the torque gauge.





## 6. Main MENU

To access the main menu, press the green bar at the top of the screen. It will display the main menu:



Display	Change displayed test results
Test	Activate and change graph display parameters
Statistics	Activate and select values for statistical analysis.
Communication	Select and activate communication.
Setup	Basic setups
Maintenance	Diagnostics

## 7. Tare your device:

Touch the main display area to zero-out your torque gauge.

This action tares the gauge. The gauge will take into consideration the weight of accessories (hook or plate) fixed on the sensor's rod.

Taking this action resets all memories and peak values.

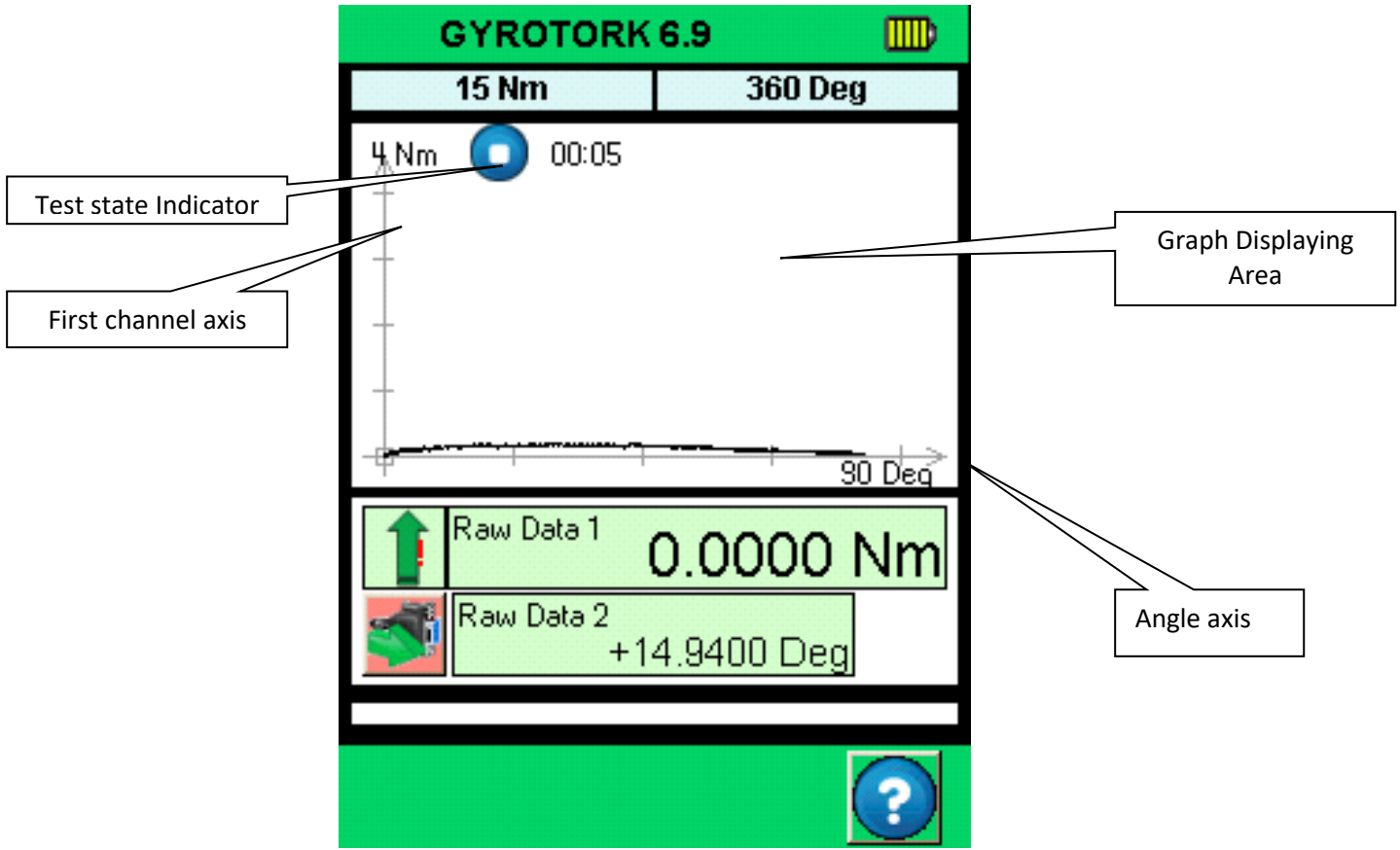
**NOTE:** When turned ON the GYROTORK completes several self-tests to check the sensor's health. It is possible to leave tools fixed on the torque gauge, but the total weight **must not exceed 10%** of the sensor's maximum capacity.

## 8. Backlight

When using the torque gauge, the backlight automatically turns off after a preset time of operation. The total battery life of the GYROTORK will be reduced when the backlight is turned on.

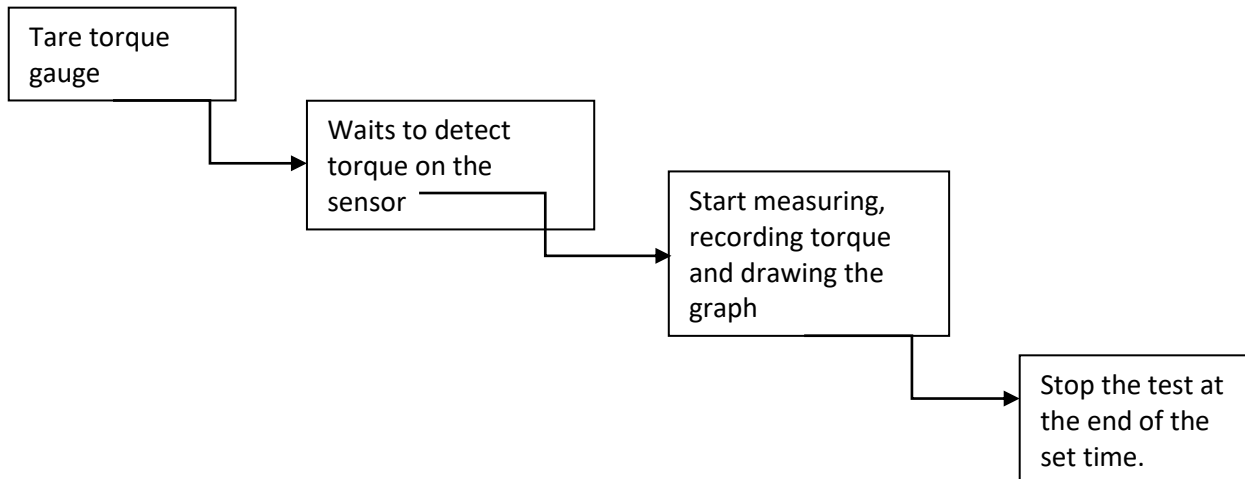
### III. START your measurements

The GYROTORK allows you to draw a graph of your test. The following screen is displayed:



## 1. Measurement principles

When the curve mode is activated, the torque gauge is under the “TEST” mode. Here is the process of a TEST:



By default, the gauge graphs the curve of the active channel/Time for the Star version, and channel1/channel2 for the Dual version. They are 3 values for the graph scale: 25%, 50%, and 100%. At the end of the test, the graph is automatically drawn to efficiently use the space available. There are 3 possibilities for the axis position: positive measure, negative measure, positive and negative measure.

## 2. States Indicators

On the left corner of the main screen, the state indicator is displayed:



Stand-by mode. Waiting for an event to start.



Acquisition mode. Acquiring data.



Test complete. To start a new test tares the torque gauge.

If you would like to stop the test before the end of the time, press the state indicator.

## 3. Graph displaying area



To start measuring and drawing the graph, you must touch the main display area to tare. When the GYROTORK detects a load on the sensor, it will start measuring torque & drawing the graph.

While applying a load to the gauge, the graph is drawn on the screen and the current and maximum values are displayed according to the setup in the SCREENS settings.


The GYROTORK data capture rate is 5,000Hz, however, for better readability; it displays a maximum of 1000 points per graph.

If you wish to acquire a more precise graph, you can transfer the data to your computer under continuous mode:

- The RS232 output allowing a maximum acquisition rate of 100 values per second
- The USB outputs allowing a maximum acquisition rate of 1000 values per second

The state indicator changes from  to .

To stop the graph acquisition, touch the graph area. However, the acquisition automatically stops after the selected time in the graph setup screen. The test length can be set, see Chapter “Graph and test settings”.

At the end of the acquisition the state indicator changes to .

At this step, you can:

- Read the graph
- Read calculated values during the test by touching the statistics window.
- Download calculated values or the graph on a PC through the RS232 output (using the send data key)
- Set a different Test setup
- Erase the graph by touching the graph display area

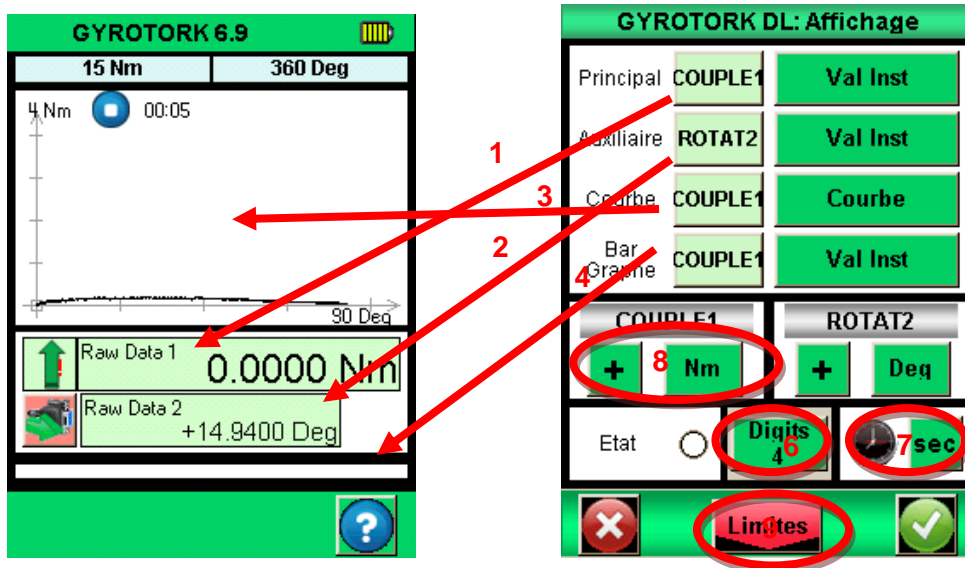
To start a new test or change to display mode, you have to erase the graph by touching the graph display area or zeroing the gauge by touching the main display window.

#### **IV. DISPLAY setup**

The setup of the test display can be changed from the “Display” menu. Select the icon.



The following screen is displayed; each parameter allows you to manage the information displayed on the main measurement screen.



### 1. Main screen

The main display area can show all of the values that appear in the list. Touch this value to display the list of available values. Select the sensor you want to display by touching the green window (channel 1: internal or channel 2: external).

- The available data are: raw data, Peak (maximum), minimum, calculation1 and calculation2 (see chapter “Setting calculation”)

### 2. Auxiliary

The Auxiliary display window has the same parameters as the Main screen, so it allows you to display a second selection.

### 3. Curve

You have 3 choices:

- Displays the curve and two values: select “curve” (as in the figure above)
- Shows two values but no curve: select “None”
- Shows three values but no curve: select the third value to be displayed

When the curve is not displayed, the bar graph option always represents time.

### 4. Bar Graph

Select the sensor and type of data displayed in the bar graph. Same parameters as the main screen.

### 5. State

Show or hide the output status display.

### 6. Digits

Number of digits right of the decimal point for all displayed data are selected from the drop down menu after touching the arrow key.

### 7. Time unit

Select the time units between: minute, seconds or milliseconds.

## 8. Sensor Units V1

Sensor units are independently selected. Touch the arrow key in the desired display window to display all available units. The units allowed will change with the sensor attached. Torque or travel units.

The green key above the unit selection determines the sign of the displayed value, either: +, - or no sign can be selected.

## 9. Set points - Limits

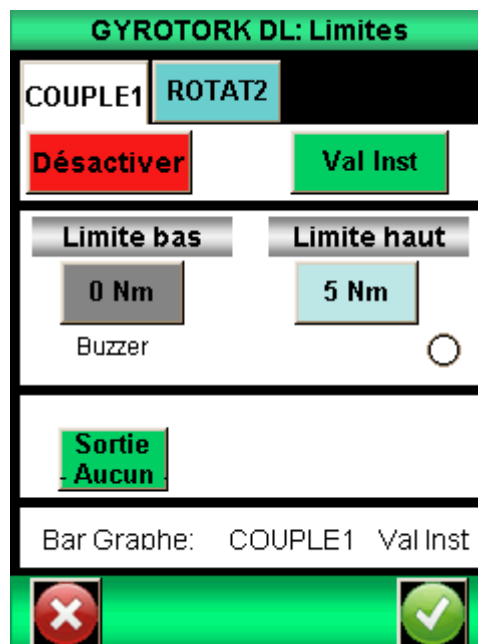
Allows you to access to the limits setting screen, see the chapter “Limits”

### V. SET POINTS Setting - Limits

To access the limits settings touch the bar graph on the main screen or touch the button “limits” from the “Display” screen. The limits feature allows you to setup action under the condition of the current values. Those actions can be: enable an output or the buzzer.

#### 1. Activate/Deactivate

Touch the area “Touch to activate” or “Touch to deactivate” to activate or disable the set points menu.



#### 2. Torque transducer tab

A separate tab is displayed for each sensor. Select the desired sensor tab and set your limit value. Your gauge can beep and activate a TTL output once the sets point has been reached.

### **3. Type of Data**

You can either choose to apply the set point to the “Raw Data” or the “Peak value”. Usually, the raw data is used but you can setup a limit on the maximum or a calculation (mean, standard deviation, break... see chapter “Graph calculation settings”).

### **4. Top and Bottom limits**

You can setup a top and a bottom limit for each channel by touching the button and entering the limit value from the displayed keyboard.

Then you can select “buzzer” if desired for each limit.

The set points will be displayed on the main measurement screen on the bar graph area and during the test; the current reading will change of color when a limit is reached.

### **5. Activate an Output**

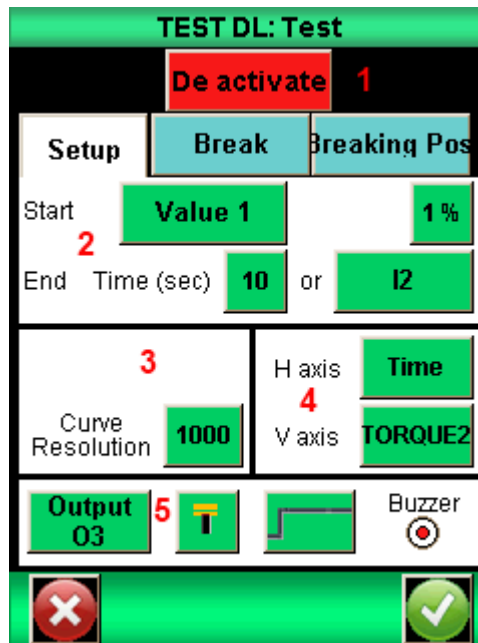
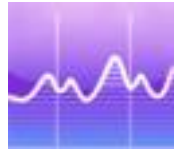
The limit can control a TTL output action. Select the desired output. The output action is chosen by setting the desired output in the output control. Set the action and state as required.

#### Operations:

- If the bottom limit is the only one set, the state of the output will change when the measured value will exceed the limit value.
- If the bottom and the top limit are set, the state of the output will change when the measured value will be in-between the limit values

## VI. GRAPH & TEST Settings.

Touch the graph icon on the setting screen



### 1. Setups tab.

Touch the control in the upper left corner to enable or deactivate the graph.

### 2. Test settings

There are 2 parameters that need to be defined to setup a test

- The start condition of the test
- The duration of the test

- a. Start settings of the test


Once the torque gauge is zeroed, the GYROTORK is waiting for an event to start the acquisition. There are two types of possible events:

- Load applied on the torque transducer
- External event, for example: Input on the torque gauge through a trigger signal, pedal...

Choose the start condition in the roll menu (“Value 1” for the internal torque transducer or “Value 2” for the external torque transducer, “Pedal, I& or I2” for the external event).

If you choose “Value” 1 or “Value 2”, you have to define the threshold percentage that starts the acquisition. Example: the torque transducer has a capacity of 15Nm maximum, the test graph will




start when the torque reaches 1% of 15Nm (0.15 Nm). Touching the percent sign gains access to the adjustment keypad. 

**From the Software Version V6.18 on, the starting value for the threshold is absolute, for ex: 1 Nm.**

b. End of the test

Select the duration of the test. This run time has an influence on the curve resolution. Example: if you're running time is 10 seconds and the resolution of the curve is 1000, you will record a point every 0.01 seconds.

Touch the control to activate the keypad. Enter the desired test time.

Note: A test can be stopped before the end of the running time by touching the  icon or using an Input from the torque gauge. See "Chapter X – Input & Output". The test may also be stopped on the activation of an output as the result of a calculation for example. However this stop before the end of the test will have no effect on the curve resolution and fewer points will be recorded. Example: if your running time is 10 seconds and the resolution of the curve is 1000, you will record a point every 0.01 second. If the test is stopped after 5 seconds, the acquisition will record 500 points and the resolution will still be equal to 10ms.

### 3. Curve Resolution

The graph display resolution is adjustable from 1 to 1000 points, by default it is set to the maximum at 1000.

### 4. Axis H & Axis V

Horizontal and vertically displayed data can be changed by touching the name of the axis. You can choose to display: the time, internal channel (Torque 1), External channel. So you can display:

- The internal channel vs. time
- The external channel vs. time
- For GYROTORK Dual only: internal channel vs. external channel (or vice versa)
- For GYROTORK Dual only: internal and external channel vs. time

### 5. Output control

Graph completion can cause an output control to change. Select the output control from the drop down menu then select control action and state. You can select two types of actions:

- Beep: Toggle the buzzer control to enable the buzzer for the output condition if desired
- Activate an Output of the torque gauge: choose the output to activate (from 1 to 6) and its running mode: pulse or switch mode and high or low state. For more details on the input/output see "Chapter X – Input & Output".

## VII. CALCULATION Settings

The GYROTORK torque gauge allows you to setup automatic calculations derived from the graph. The settings of the calculation can be done in the Test menu. It is possible to perform 2 simultaneous calculations in addition to raw data, the maximum and the minimum.

### 1. Calculation

The GYROTORK allows you to select 2 calculations, derived from the graph. Select the Calculus 1 or 2 tab. The Test running mode should be activated to perform calculation.



**The following calculations are available:**

Average - The average of load readings over selected time or travel. Select time or travel parameters after selecting average.

Break - The calculated break point. Select the percent of peak to determine break point after selecting break.

First Peak – Select the first peak in multiple peak graphs. Select the percent of peak to determine peak point after selecting First Peak

Torque at T -Torque at a specific time. Select time in milliseconds.

Torque contact – Calculates the maximum torque when you're closing a contact or a switch plug on the Input E1 (for example the external button on the wrench).

Level L – Calculates the value of a channel, when the other channel has reached its defined limit (absolute: the time increments when the test starts / relative: the time increments when the curve starts, meeting the start condition on torque value, to be used for Top load tests)

Peak – The maximum torque or torque measured during the test.

Moving average – Rolling average or running average

Speed: Speed calculation in real time of the selected channel

Stiffness: Calculate the slope of the curve between two values

Time of peak: Return the time value when the peak have been reached

## 2. Output actions

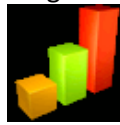
After each calculation, it is possible to activate an output of the torque gauge. Select the output control from the drop down menu to activate (from 1 to 6) then select its running mode: pulse or switch mode and the high or low state. For more details on the input/output see “Chapter X – Input & Output”. These actions can be very useful when you want to communicate with the test stand. Example: stop the test stand when the torque gauge detects the torque break.

## VIII. RECORD DATA AND STATISTICAL Mode.

The GYROTORK has a memory of at least 2.000 values per channel and automatically calculates the sleeping mean, the standard deviation and the mean divided by the standard deviation. It is possible to record 3 results simultaneously. Choose between: the maximum, the minimum and calculation1 and calculation2.

Note: The torque gauge can't record multiples curves. Only the last curve is stored. You have to connect the torque gauge to a computer or use the USB memory stick called DATASTICK to save multiple curves.

Statistics and memory can be enabled by touching the statistics symbol on the setup screen.



### 1. Statistics setup



1: Select the desired result to be entered into the statistic arrays; you can choose 3 types of values to record: maximum, minimum, calculation1 or calculation2 for each channel. Select the units desired.

2: More than one result can be averaged to create a saved result. Enter this number in the Samples.

3: By default the “Tare” will be done automatically once the results are saved; but you can deactivate it.

4: Then you would be able to display the tab of values by touching button “Arrays”.

## 2. Record data

When the statistics feature is activated, the following icon is displayed on the main measuring display. After a test is completed, you can save the test results to the statistics array by pushing the icon:



<b>Mea</b>
-5.65
<b>Sdevia</b>
+3.85
<b>S: 4</b>

To save the data, you have to tare the gauge. At the end of the test, press the icon above to validate and save the data. The values are added to the array and the average value is calculated and displayed in the window on the top right:

To view all the calculations and the statistical results touch the mean window. You can then transfer those results to a computer through USB, RS232 or a memory USB stick. See the Chapter “Communication Setup”

**STENTORC ST: Results**

Minimum FORCE2	Break FORCE2
Average	+31.50
St dev	+19.80
Mean / St dev	1.58
Samples qty	4

Return
Array

**STENTORC ST: Array**

#	Value (N)	Date/hour
1	+57.90	07/10/2014 09:09
2	+7.55	07/10/2014 09:09
3	+18.00	07/10/2014 09:10
4	+42.50	07/10/2014 09:10

Return
Result

## IX. COMMUNICATION Settings.

You can connect your GYROTORK to a computer through RS232, USB or Analog input, or to a memory USB stick called DATASTICK.

Select the communication setup by touching the communication symbol.



Then you get a window with a choice of 5 communication modes: USB, RS232, analogue, DATASTICK or Bluetooth.

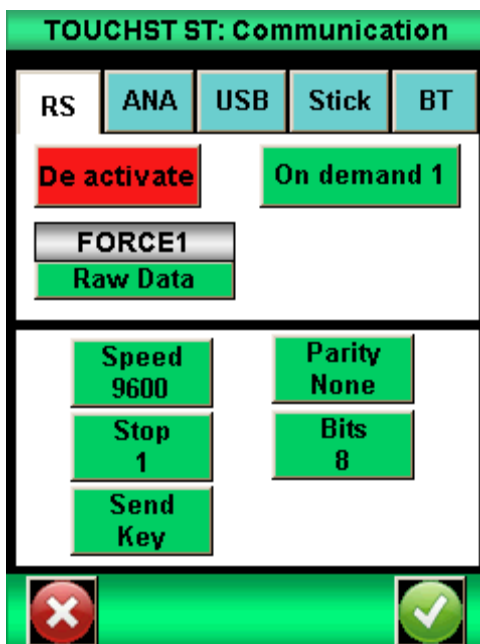
Note: One and **only one** of the five choices for data output is available at a time. Select the tab accordingly.

The outputs of the GYROTORK have the following features:

- RS232: sending data continuously at 100Hz, sending data upon request via the main screen, a digital input or a computer, sending the stored curve.
- USB: sending data continuously until 1000Hz, sending data upon request via the main screen, a digital or a computer input, sending the stored curve.
- Bluetooth: sending data continuously at 100Hz, sending data upon request via the main screen, a digital or a computer input, sending the stored curve.
- Analogue: sending data continuously at 100Hz
- DATASTICK – USB Stick (optional): sending data upon request via the main screen

### 1. RS232 or Serial commands

Input/output of the RS232 can be set for continuous or on demand:



- Continuous: Data can be sent continuously using the serial command, with a frequency rate around 100Hz.
- Demand: You have to send a command to the torque gauge to receive data. This command can be sent by a computer with an ASCII character, a TTL input or using the key icon from the main measuring screen:



Note: The data displayed in the "Send" dropdown menu is dynamic. Therefore, if both inputs of the dynamometer are used for other operations, they will not appear in the menu. Only available inputs appear. See "Chapter X - The inputs and outputs pedal" for more detail.

Choose the type of data to send:

- If you want to send the command through a TTL input or the display, you can choose the type of data in the list
- If you want to send the command using a computer (with an ASCII character), the value sent will depend on the character sent by the computer.

Set speed, parity, stop bits and number of bits to match the connected computer. By default values are:

- Speed: 9600
- Parity: None
- Stop: 1
- Bits: 8

Here are the serial commands (Using our dedicated software RSIC or ASCII parameters):

- F: Current value
- P: Maximum value
- V: Minimum value
- C: Calculation
- T: Last 2000 calculated values
- U: unit
- W: Last Graph
- Z: Tare the gauge

For the GYROTORK Dual, additional commands are available:

- F: Current value sensor 1
- I: Current value sensor 2
- P: Maximum value sensor 1
- M: Maximum value sensor 2
- V: Minimum value sensor1
- B: Minimum value sensor2
- C: Calculation
- T: Last 2000 calculated values
- U: unit sensor1
- N: unit sensor2
- W: Last Graph
- Z: Tare the gauge

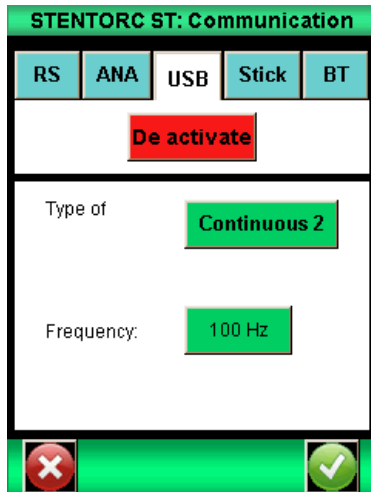
The following rules applied to the communication protocols on “Demand” mode:

- The torque gauge doesn’t send trailing characters
- The torque gauge sent the sign +, - or none according to the measured values and the settings.
- The resolution of the sent values depends of the torque transducer’s capacity
- The torque and displacement values are separated by TAB characters (09 decimal and 09 hexadecimal)
- The torque gauge sends the data “?” if the request isn’t valid
- The torque gauge sends the data “!” if the value is empty

The communication protocol follows the following rules for the “On Demand” mode:

- Torque and displacement data are separated by the TAB character (09 decimal, 09 hex, octal 11)
- Lines are terminated through a carriage return (13 decimal, 0D hex and octal 015)

## 2. USB Connection

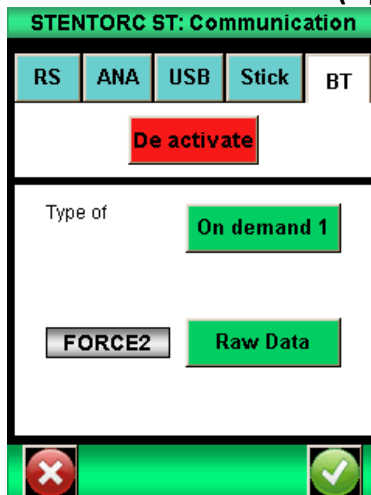


The USB is set as the RS232 communication: on demand or continue mode; and commands are similar.

However you can:

- Set the baud rate value in continuous mode if “Eco” is selected in the menu “Setup”
- The Baud rate is fixed to 921600

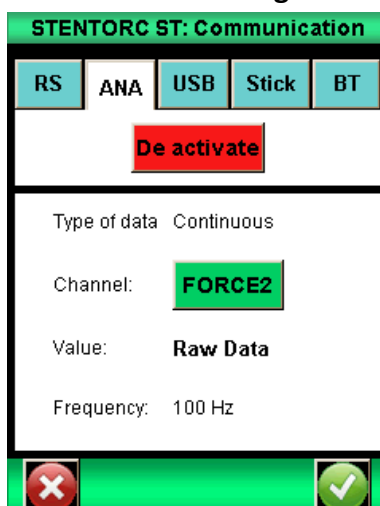
## 3. Bluetooth (Optional)



The Bluetooth connection allows wireless communication with a computer. It can replace, for example: an RS232 or a USB cable. It requires a module (sold separately) which is connected to the connector on the side of the GYROTORK.

The Bluetooth connection has the same features as the RS232: request and continuous mode. The controls remain the same too.

## 4. Analogue Connection



The GYROTORK is able to send analogue data at a rate of 100Hz. The analogue output is +1/-1V.

Analogue output is done through pin 10 of the 26 pin connector.

## 5. DATASTICK – USB Memory Stick (optional)

### a. Presentation



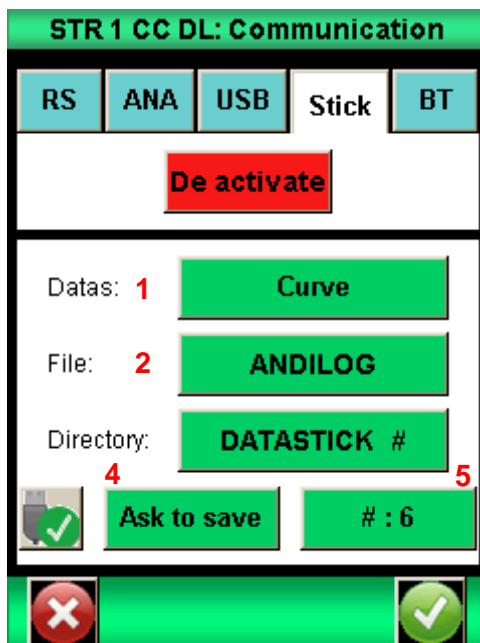
The DATASTICK kit is an option available with the GYROTORK in order to save your data on a USB memory stick.

The kit includes a USB Stick, a connection cable (to link the CENTOR TOUCH, through the 26 pin connector, to the USB stick) and an report software.

This feature is available for all GYROTORKS after version V4.6

### b. Configuration

You can activate and configure the DATASTICK communication setting from the “Communication” menu.



**1.** The GYROTORK is able to save several types of data on the USB stick. Choose from:

- Calculated values: max, min, and calculations selected in the menu “TEST”
- Raw data: the value measured by the sensor at the time of communication.
- Curve: save the curve plotted on the screen
- Curve and calculations: the plotted curve + max, min, and calculations selected in the menu “TEST”
- Statistics: data saved in the statistics table of the GYROTORK

**2.** You can change the default file name for the unitary data (statistics and values). Default file name: “ANDILOG\_date” (i.e.: ANDILOG\_2013\_01\_17.txt”). Push the button to change the name. Data will be recorded at the end of this file.

The directory where the curve is saved is by default named “DATASTICK\_date\_hours”. You can change this default name by pushing the button.

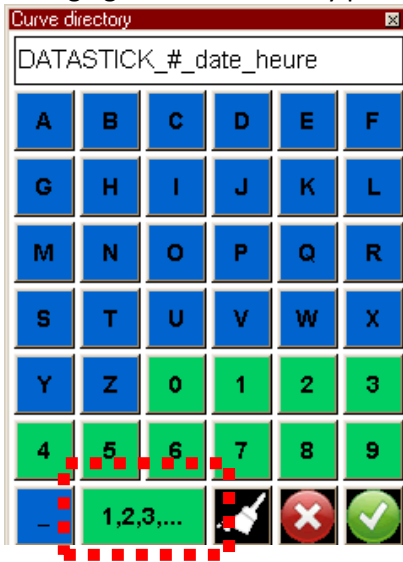
The directory includes 2 files:

- Data.txt: curve data
- testSettings.txt: setting of the curve




All of these files are saved as TXT format and so, can be opened with regular Table software, such as Microsoft Excel. Data is separated by a TAB character (09 decimal and 09 hexadecimal) and the rows are separated by a carriage return (decimal 13, hex 0D).


Changing a name is done by pressing the corresponding button, which displays a virtual keyboard:



The “1,2,3,...” button allows you to insert an automatic counter to the name of the directory curve. This counter is symbolized by the # sign.

3. The  button is used to safely eject the USB DATASTICK.

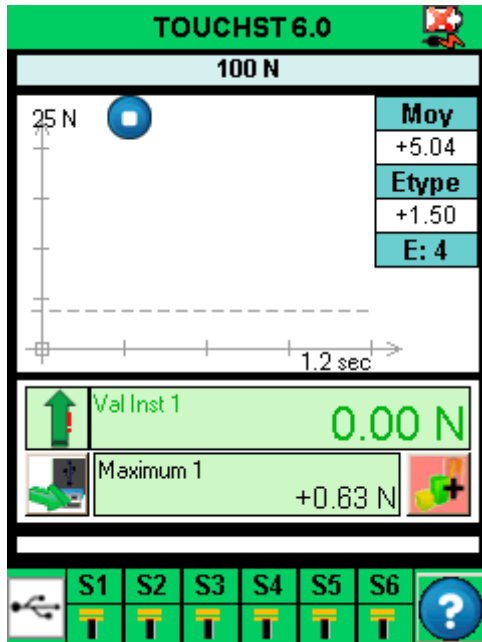
4. You can choose to save your data on the DATASTICK in multiple ways:

- Manually (at the end of each test by pressing the  button)
- Automatically at the end of each test
- After confirmation at the end of each test

5. The button that includes the # sign and is followed by a number allows you to change the automatic counter. The number displayed corresponds to the counter’s current value.

### c. Save your data


Once the DATASTICK communication is active, a USB icon appears on the main Measuring screen:



Save your data on the USB by pushing on the icon:



During the data transfer, the USB icon becomes a timer; do not disconnect the USB stick at this time. Once the timer disappears you can safely disconnect the USB stick.

On the left bottom corner, the button  allows direct access to the « Stick » settings screen.

### d. Use multiple USB sticks

The USB stick supplied by ANDILOG at the time of the purchase of the DATASTICK option has been set to communicate with your GYROTORK; and it recognizes the serial number of your GYROTORK. However you can duplicate this USB stick as often as you want. To do so, copy and paste the file “datastick config” (saved on the original USB stick) on your own USB stick.

**From the Gyrotork Version V6.18 on you can use the USB stick of your choice, without having to copy the file “Datastick config”**

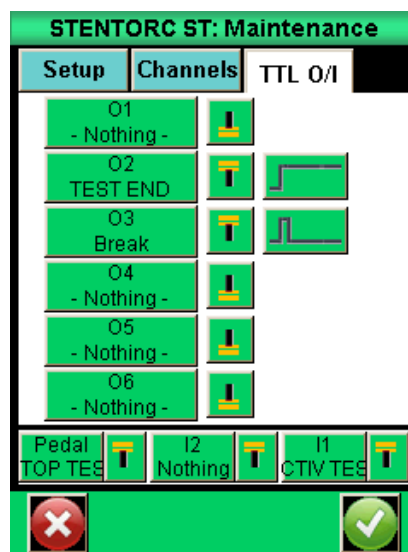
## X. INPUT, OUTPUT & Pedal

The GYROTORK is able to communicate and send data to an external device such as a test stand or a programmable logic controller, using its TTL inputs and outputs.

The GYROTORK has:

- 3 Inputs (Pedal, I1 and I2)
- 6 Outputs (O1 to O6)

Each Input/output can be set separately using various menus and features of the GYROTORK (limits, calculation, communication...). But, a dedicated menu allows you to display and configure the state and action of those Input/output, from the third panel “TTL O/I” from the Maintenance menu.



### 1. Outputs

Each output from 1 through 6 can be set separately. These outputs can change state under different conditions depending of the settings of the torque gauge. The main states are:

- Nothing: no action
- Calculus 1: changes state at the end of calculation 1
- Calculus 2: changes state at the end of calculation 2
- Test End: changes state at the end of the test
- Limits: changes state after reaching a set point (channel 1 or channel 2)
- Over 120%: changes state when the measured value is over 20% of the maximum capacity of the torque transducer. This output protects the torque transducer when mounted on a test stand.

For each output, it is possible to define its default value (at the beginning of the test): high or low:



Also, it is possible to define the type of action:

- Switch (steady): the output changes state and stay in this new state until the end of the test or until the condition is true (limits case)



- Pulse: the output changes state for a period of time of 50ms, and then returns back to its previous state.



## 2. Inputs and Pedal

The 3 inputs (Pedal, E1 and E2) of the GYROTORK can be set separately. These Inputs allow you to do the following actions:

- Activate Test: start the test
- End Test: Stop the test
- Tare Vx: tare the channel Vx
- F Contact: used during the calculation

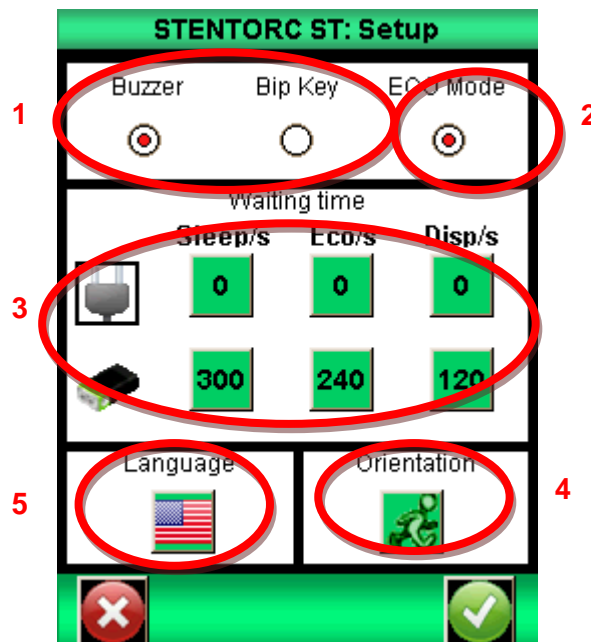
For each input, it is possible to define its default value (at the beginning of the test): high or low:



The GYROTORK can be connected to an external pedal switch, set the pedal action in this dialog box.

## XI. GENERAL Setup

Access to the General Setting through the icon:



### 1. Buzzer

Buzzer: Activates the buzzer for alarm conditions.

Beep Key: Activates the beeper when you touch the touch panel. Provides tactile touch to the user.

## **2. ECO Mode:**

Reduces power consumption. Useful for long test times and USB communication.

## **3. Time out settings.**

You can adjust individual times for sleep and power down.

Time out Sleep: Individually adjust times for sleep. The GYROTORK will go to sleep after this time. Separately set times for battery and charger. Touch the selected time to display the keypad. Erase then enter new time in seconds, then touch the check key on the keypad (to save).

Time out Screen: Individually adjustable times for display back light power down. Separately set times for battery and charger. Touch the selected time to display the keypad. Erase, then enter a new time in seconds, and then touch the check key on the keypad (to save).

## **4. Orientation**

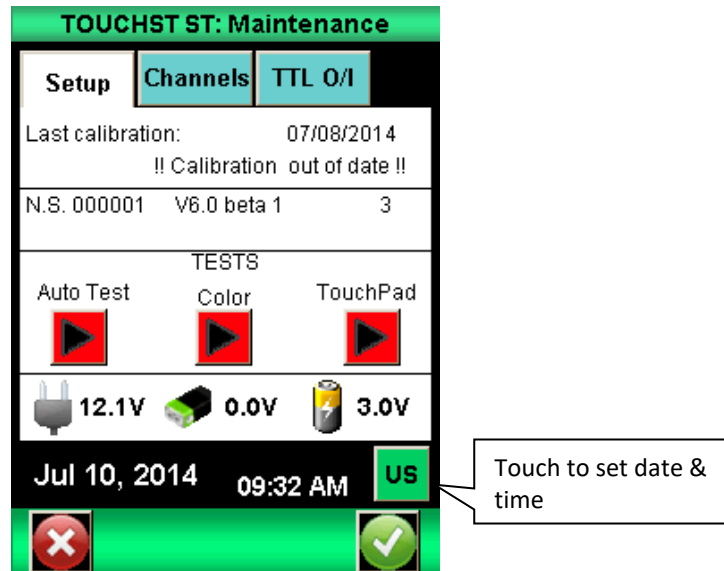
You can rotate the display of your GYROTORK in 90 degree increments. Touch the running man picture to select your desired orientation.

## **5. Language**

Touch the language picture to select desired display language.  
Touch the check key to exit and save settings or the “x” key to exit without saving.

## XII. MAINTENANCE Panel

The maintenance panel allows access to basic test and control functions. Select the maintenance symbol from the setup panel.



### 1. General

The Setup tab gives you the torque transducer’s information, the software version, the state of the battery and the possibility to adjust the time and date.

Auto Test: Launches an auto test and displays the health details of all sensors connected and battery conditions.

Color: Display color capabilities of the display.

Touch pad: Allows calibration of the touch pad.

### 2. Setting the clock:

Date and time are set from the maintenance Setup tab. Touch the date format control. Access is granted to the date and time panel.



Change date and time by touching the appropriate up or down arrows. Select AM or PM. You can also choose the clock format:

- EU = day; month: year.
- US = month; day; year.

Touch the check arrow to save your changes and exit, or press the “X” to forget your changes and exit.

### 3. Channels tab

Display details of the sensor memory data and the present settings of all input and output signals.

### 4. Factory configuration

Re-load the factory setup

### 5. Reset of the Gyrotork

From the Version V6.18 on, you can reset your Gyrotork when you press the ON/OFF button

## XIII. ASSOCIATED PRODUCTS

### 1. Acquisition software

The Gyrotork is delivered with the data acquisition Software Caligraph. It displays the curve of your test in real time with up to 4 calculations and enables you to compare curves and export them in personalized test reports.

For more information about the Software Caligraph, click on the HELP icon in the software and you will download the manual.



### 2. Interface Cables

Several interface cables can be used with a GYROTORK torque gauge:

External pedal: allows simulation of a keyboard button

Cable for external contact: allows torque calculation from closing /opening of contact (equipped with male-female plugs).

Linking cable for a STENTOR motorized test stand allows you to stop the stand in accordance with a condition defined by GYROTORK torque gauge.

Cable for an analogue link (with male-female plugs): links your gauge to another system

Cable for a RS232 link: connect your gauge to a computer using the RS232 output

Multifunction cable: STENTOR test stand control and RS232 link

Cable for USB connection: connect your gauge to a computer using the USB output.

## XIV. APPENDICES

### 1. Error Messages

Information screen:



This screen is displayed after completion of internal tests and a minor or major defect has been found.



Minor defects:

- Low battery
- Number of overloads less than 10
- Expired calibration date

Touch Measure to continue.



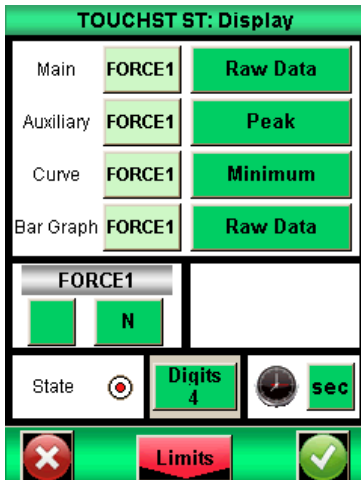
Major defects:

- Damaged sensor
- High number of overloads (>10)
- Internal error
- Sensor not attached

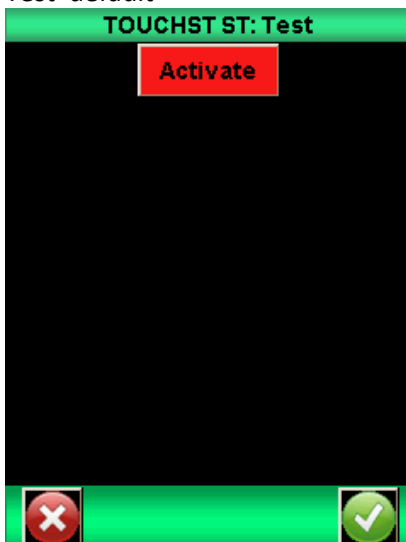


## 2. Factory Settings

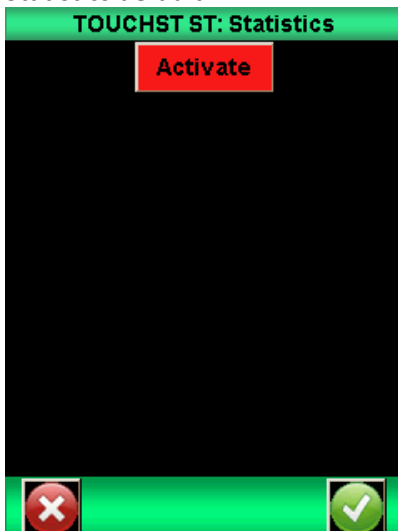
### Default screens



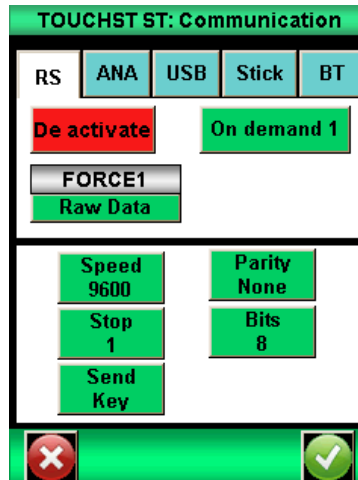
### Test default



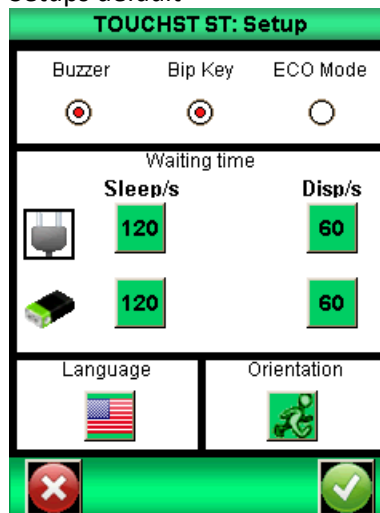
### Statistics default



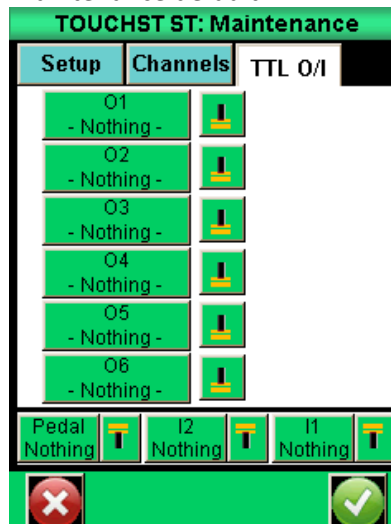
### Communications default



### Setups default



### Maintenance default



## 3. Connections

**Connector detail SubDHD 26 pin connected to GYROTORK electronic card**

<b>PIN</b>	1	GND
	2	I1 input
	3	Not used
	4	RS232 read data
	5	USB device data minus
	6	USB host data minus
	7	O3 output. Open collector requires 50 k ohm pull up to 5 volts DC
	8	O2 output Open collector requires 50 k ohm pull up to 5 volts DC
	9	Gauge reset
	10	Analogue output
	11	I2 input
	12	Not used
	13	Not used
	14	USB device power
	15	USB host power
	16	O4 output Open collector requires 50 k ohm pull up to 5 volts DC.
	17	O5 output Open collector requires 50 k ohm pull up to 5 volts DC.
	18	GND
	19	Chassis ground
	20	Pedal input
	21	Not used
	22	RS232 transmit data
	23	USB device data plus
	24	USB host data plus
	25	O6 output. Open collector requires 50 k ohm pull up to 5 volts DC.
	26	O1 output, Open collector requires 50 k ohm pull up to 5 volts DC.

#### 4. Setup Examples

##### Display with graph:

Touch information bar. 



Touch graph icon.

Set Start to Value 1. 1%

End time 10 sec

Curve resolution = 10000.

Axis H = TIME. Axis V = TORQUE1

##### Send peak data after test complete with send key to the RS232 port:

Touch information bar. 



Touch the communications icon.

RS232 touch to activate.

Set TORQUE 1 to peak. Set speed, parity, stop bits and number of bits to match com port on computer.

Set Send to key.



After the test is complete touch the send key to transmit data.

##### Start from pedal:

Touch information bar. 



Touch maintenance icon.

Set pedal control to tare V1

**5. Dimensions**

