kolver mini K1S TORQUE TESTER OPERATOR'S HANDBOOK User Manual

Contents

KOLVER

kolver mini K1S TORQUE TESTER OPERATOR'S HANDBOOK

APPLICATIONS

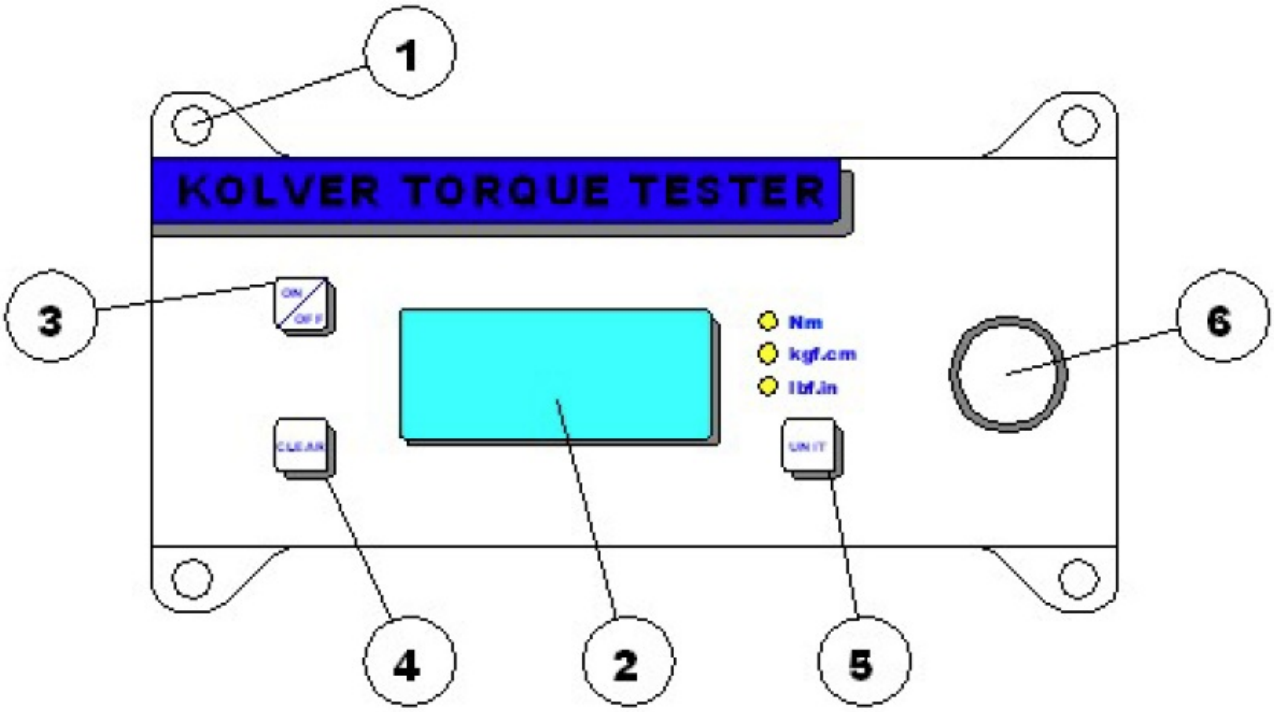
Recommended for all hand screwdrivers, wrenches, or power tools.

FEATURES

Model	Torque range Nm	Accuracy
miniK1/S	0,05 – 1	± 1 cNm
miniK5/S	0,3 – 5	± 2 cNm
miniK20/S	0,5 – 20	± 3 cNm
minike/5/S	0,5 – 5	± 3 cNm
minike/25/S	2 – 25	± 10 cNm
minike/50/S	5 – 50	± 10 cNm

- Built-in transducer to measure on joint simulator.
- External transducer (miniKe/S).
- Three units of torque measurements: Nm, Kgf.cm, lbf.in.
- Battery powered (9V) and AC adapter cord. 9V batteries provide 20 hours of continuous operation.
- Manual and auto reset functions to clear displayed values.
- Automatic shut down.
- Better performances on hard joint
- Correction factor (FATC): to connect more ext. transducers on the same tester.
- Mini USB to connect to PC and to communicate to Torque Analyzer.

- Certificate of calibration.



DESCRIPTION

1. Mounting holes
2. Display 4 digit / 8 lines
3. “ON/OFF” key : press for 3 seconds to switch tester on or off
4. “CLEAR” key : press to reset the displayed value
5. “UNIT” key : press to select the unit of torque measurements
6. Internal transducer or port for external transducer

MOUNTING

It is strongly recommended securing the tester through slots “1” to a workbench before operating. Immobilizing the tester when checking torque values over 1 Nm is critical for the safety the operator as well as for the accuracy of torque measurements during operation.

JOINT SIMULATOR

The Joint Simulator (JS) consists of a screw compressing a series of washers. The way the washers are mounted can simulate soft or hard joint. The screw comes with a ¼” hex male head for proper fit to any ¼” hex female screwdriver drive. Hardened thread components increase accuracy and life. Since a joint simulator cannot duplicate actual joints, the torque values displayed on the minik may vary from the actual torque that a screwdriver will apply to the actual assembly. When critical applications are involved, we recommend to verify the torque output of the power tool being used on the actual assembly through an external transducer.
Minik1 is supplied with a built-in joint simulator.

NB. We recommend to grease the JS each 1000 cycles.

STARTING AND OPERATING THE TESTER

1. Immobilize the tester when checking torque values over 1 Nm. This is critical for the safety the operator as well as for the accuracy of torque measurements during operation.
2. Switch the tester on pushing the ON/OFF key. If used only with battery check its status. If the tester does not switch on or the display is not clear enough, please replace the battery. When used it the AC adapter, this will disable the battery. The battery is not rechargeable. The display will show the main screen:

3. Insert the joint simulator into its 13mm hex seat and make sure the screw is in its upper position (if not run the driver anticlockwise to unscrew it). The tester is ready for a measuring cycle.
   In minik1, only unscrew before measuring.
4. Run the joint simulator screw all the way down until it stops and read the torque value on the display. Run the screw up to be ready for the next cycle.
5. Press the “ON/ESC” key for 3 seconds to switch the tester off. The tester features a built-in auto shut off mode function to save power when not in use. If there is no activity for 3 minutes, such as key press or no torque input, the tester will shut down. To restore power press the “ON/ESC” key for 3 seconds

NB. Before starting, always check that the screen displays 0.000. Instead push CLEAR.

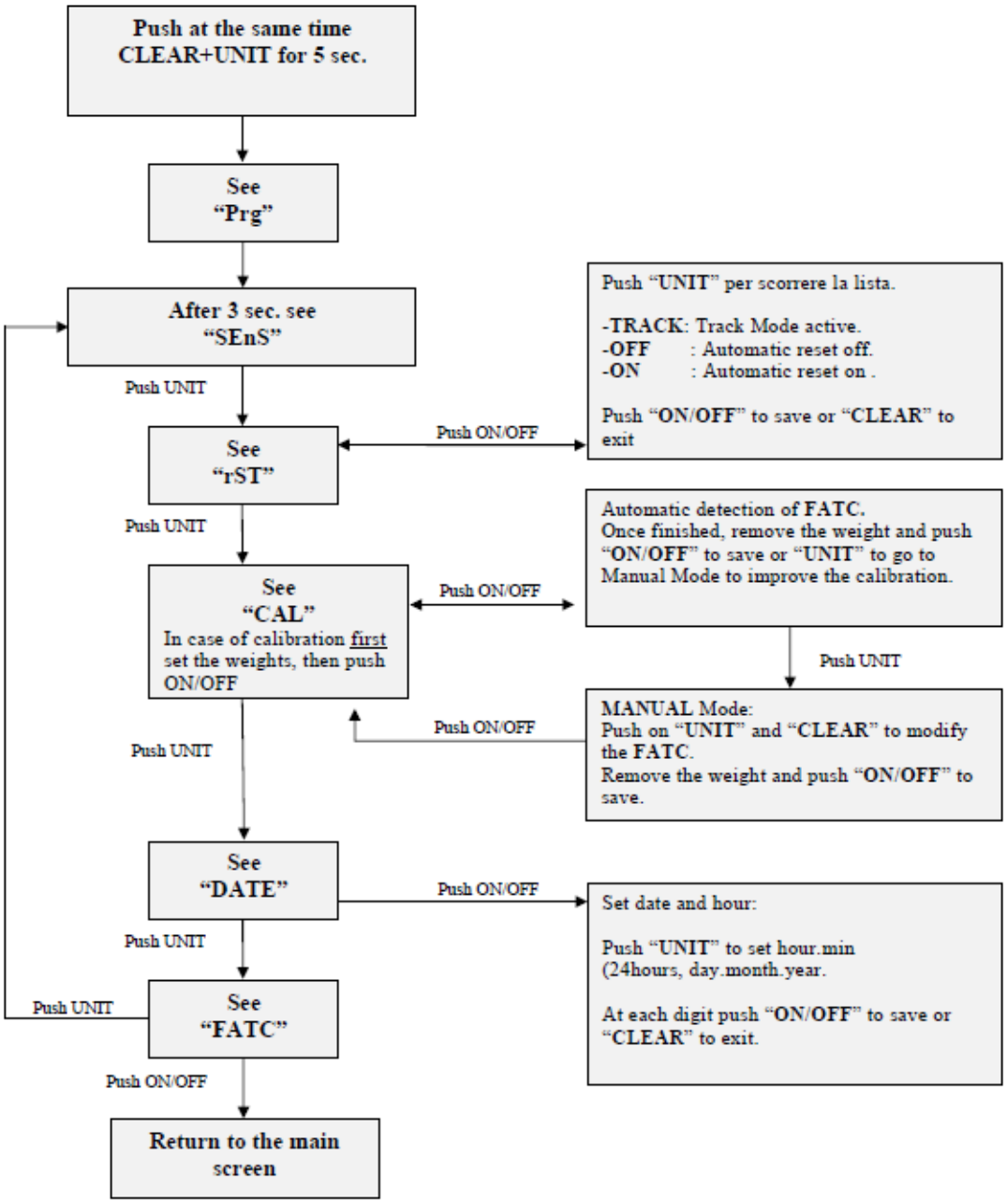
SELECTING THE UNIT

MEASURING UNIT:
Nm, kgf.cm and lbf.in

To change unit: press Unit key until the desired unit has been selected. Each unit is indicated by a LED of different color: red for Nm, green for kgf. cm and yellow for lbf.in .

SELECTING MANUAL OR AUTO RESET

The flow chart below shows how to select Manual or Auto Reset. Sens, Cal and Fatc functions (sensitivity, calibration and correction factor) can be modified only by authorized personnel. When you select Manual Reset “Coff”: you need to push “CLEAR” to remove readings from the display and reset all values to zero. Vers. 020221 When you select Auto reset “Con”: any new measure will replace the previous one without resetting the value to zero.



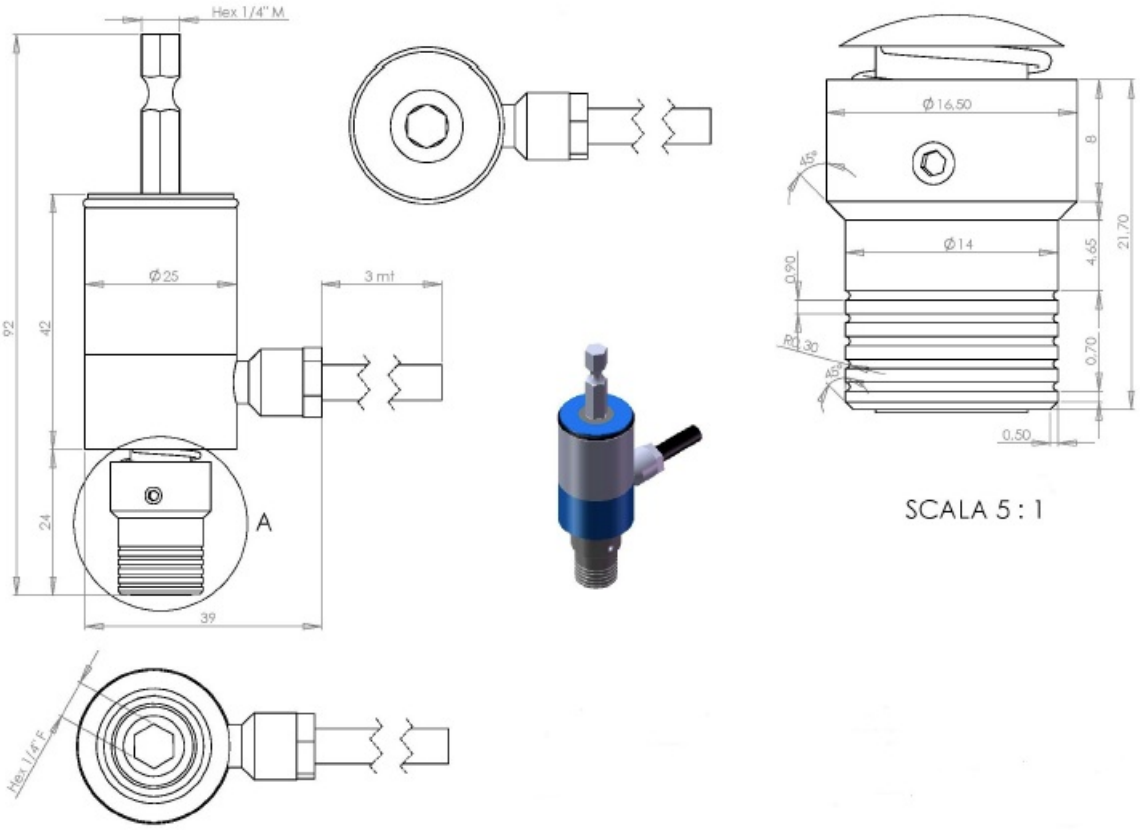
EXTERNAL TRANSDUCER for miniKe

The minike readouts support an external rotary or non rotary transducer. The minike can read torque up to 500 Nm. The external transducer must be calibrated together with the minike here at Kolver before shipment. The following transducers are always available ex stock:

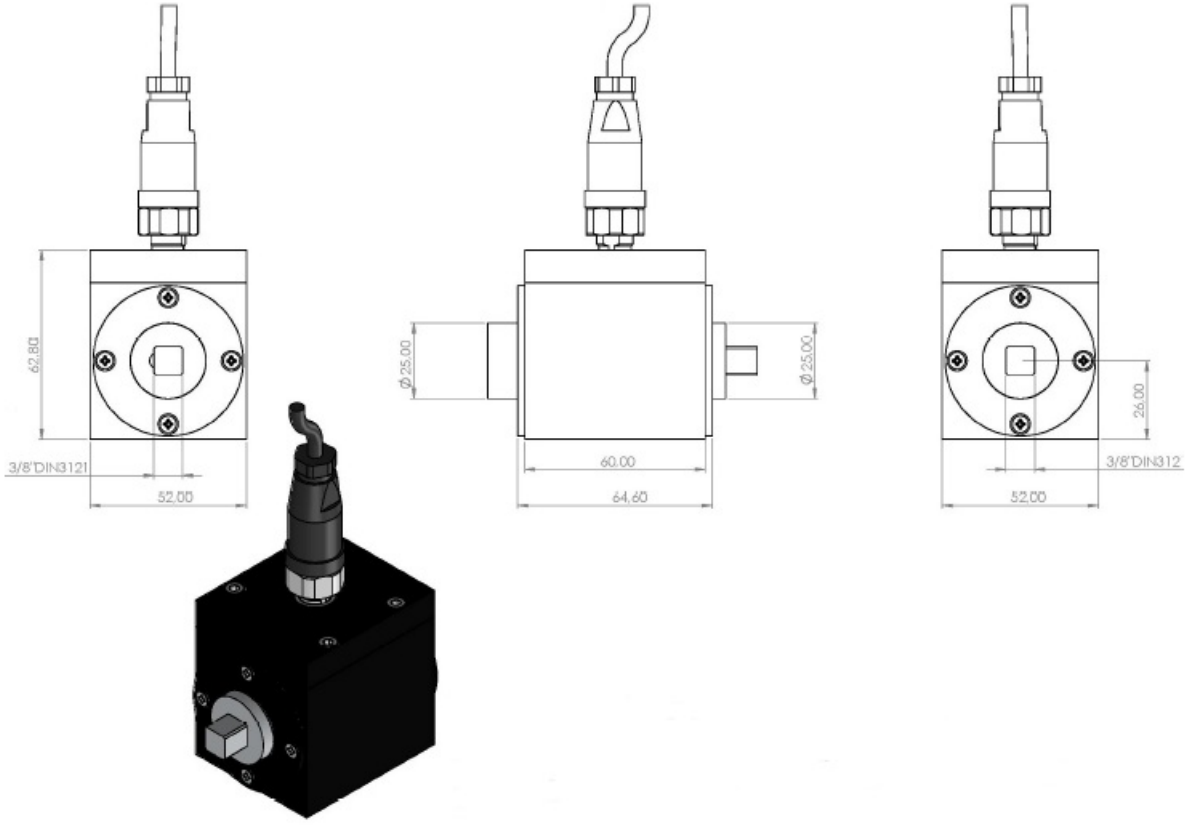
Model	**Torque range Nm**
KTE5	0.5 – 5.0
KTE25	2.0 – 25.0
KTE50	5.0 – 50.0

Rotary and non rotary transducers for lower or higher torque ranges available on request.

KTE5-KTE25



KTE50



MAINTENANCE

The minike testers are maintenance-free. The electronics and the internal transducers have no wearing parts except the battery once its charge is over. The internal transducer should be calibrated every 12 to 30 months,

depending on the frequency of use.

WARNING: The overload protection of the internal transducer is limited to 125% of the nominal value. Damages due to overloading will result in inaccurate readings and will not be covered by our warranty.

IMPORTANT: the calibration certificate has a maximum validity of 26 months (ref. DIN 51309, ISO 6789-2). The instrument must be calibrated again (regardless of the date of last calibration):

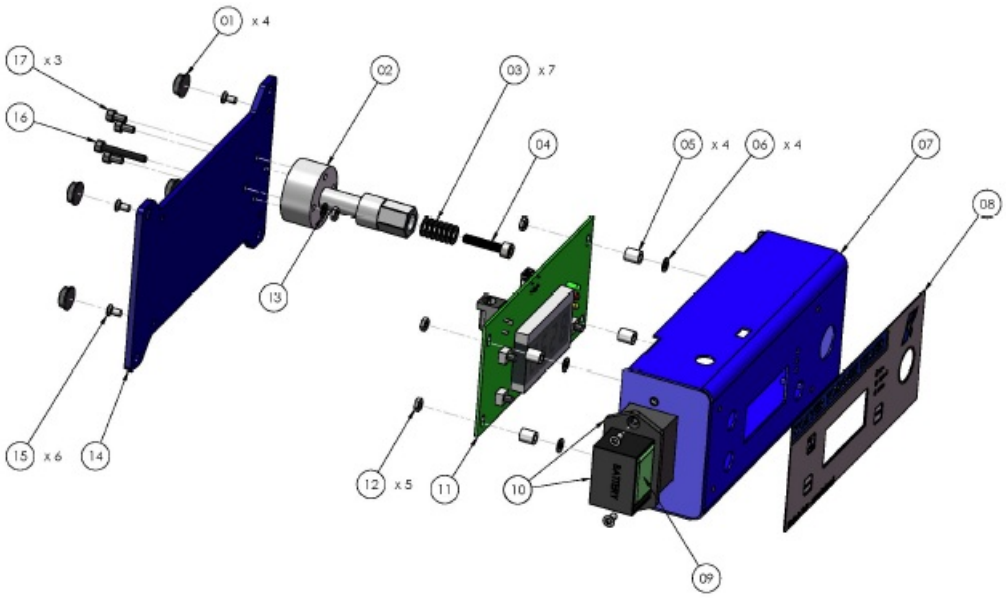
- if it has been overloaded
- after any corrective maintenance (eg: upgrade with new software)
- after improper use (eg: tested with impact wrench or jacks)
- in case of doubt about the measurement results.

WARRANTY

1. This KOLVER product is guaranteed against defective workmanship or materials, for a maximum period of 12 months following the date of purchase from KOLVER, provided that its usage is limited to single shift operation throughout that period. If the usage rate exceeds of single shift operation, the guarantee period shall be reduced on a pro rata basis.
2. If, during the guarantee period, the product appears to be defective in workmanship or materials, it should be returned to KOLVER or its distributors, transport prepaid, together with a short description of the alleged defect. KOLVER shall, at its sole discretion, arrange to repair or replace free of charge such items.
3. This guarantee does not cover repair or replacement required as a consequence of products that have been abused, misused or modified, or which have been repaired using not original KOLVER spare parts or by not authorized service personnel.
4. KOLVER accepts no claim for labor or other expenditure made upon defective products.
5. Any direct, incidental or consequential damages whatsoever arising from any defect are expressly excluded.
6. This guarantee replaces all other guarantees, or conditions, expressed or implied, regarding the quality, the marketability or the fitness for any particular purpose.
7. No one, whether an agent, servant or employee of KOLVER, is authorized to add to or modify the terms of this limited guarantee in any way. However, it’s possible to extend the warranty with an extra cost. Further information at **kolver@kolver.it**

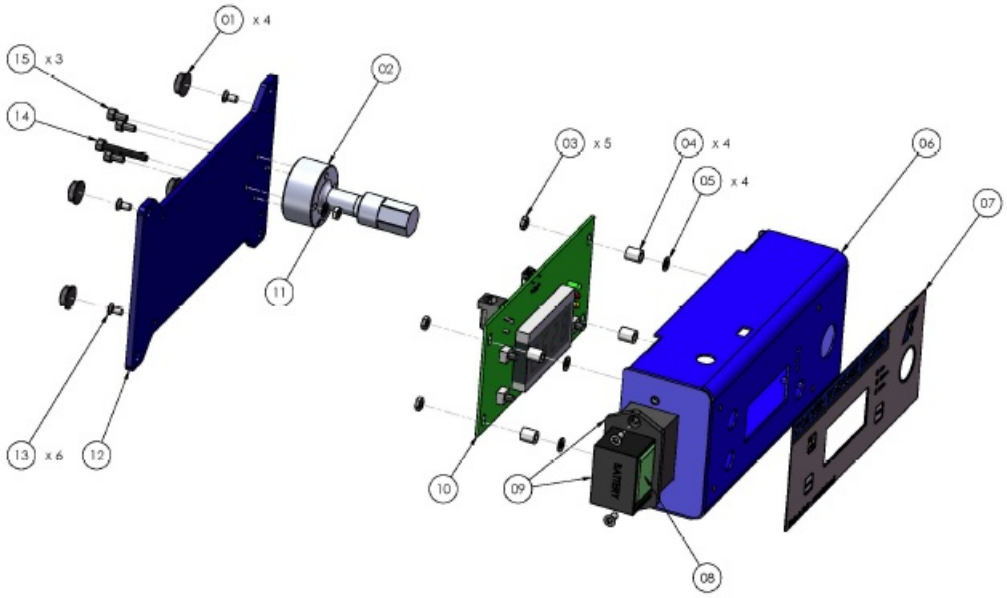
EXPLODED VIEWS AND PART LISTS

Minik1/S



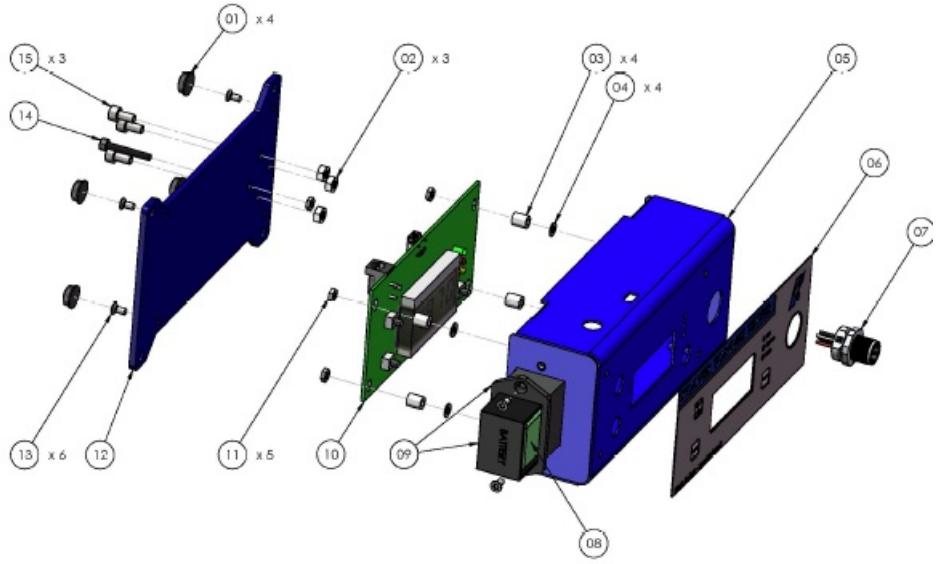
REF	DESCRIPTION	CODE
1	Plastic support (4 pcs)	800016
2	Internal transducer 1Nm (miniK1)	240505
3	Washer M4 (7 pcs)	241015
4	Screw M4 x 20	241014
5	Flat washer M3 (4 pcs)	800042
6	Nut 6,3 mm (4 pcs)	241003
7	Metal housing miniK../S	240001/BCU
8	Membrane miniK	241008
9	Battery 9V not rechargeable	241010
10	Battery seat miniK	241005
11	Board miniK + display	241002/N
12	Screw M3 (5 pcs)	800056
13	Washer M3	800041
14	Base miniKe	240001/BF2
15	Screw M3 x 6 TSP (6 pcs)	801002
16	Screw M3 x 22	241012
17	Screw M4 x 8 (3 pcs)	241011
	Bit – hex 1/4″, L=50 mm, diam. 4 mm	FE-13040
	Case	241000
	Power supply 12V	241009/N

minik5/S – minik20/S



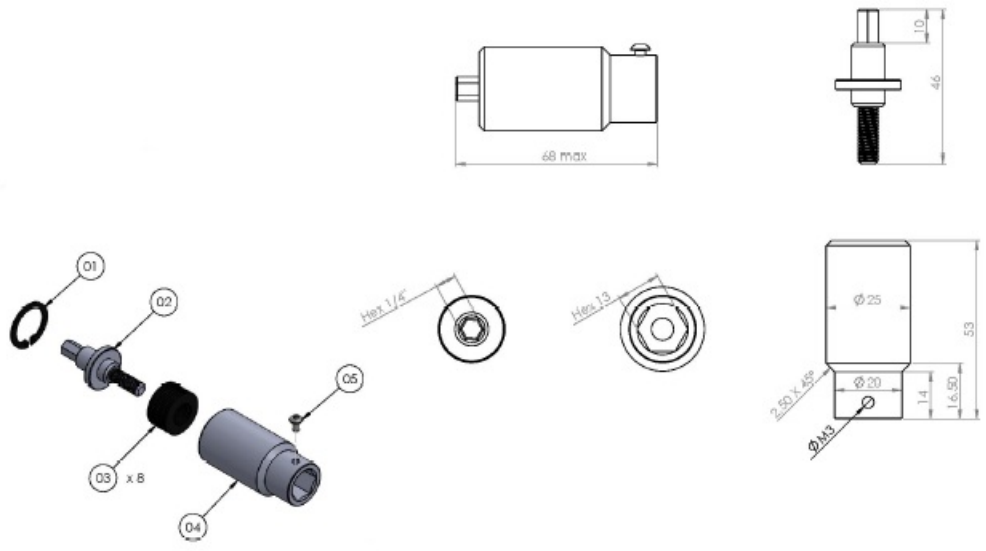
REF	DESCRIPTION	CODE
1	Plastic support (4 pcs)	800016
2	Internal transducer 5Nm (miniK5/s)	240503
	Internal transducer 20Nm (miniK20/s)	240504
3	Washer M3 (5 pcs)	800041
4	Flat washer M3 (4 pcs)	800042
5	Nut 6,3 mm (4 pcs)	241003
6	Metal housing miniK../S	240001/BCU
7	Membrane miniK	241008
8	Battery 9V not rechargeable	241010
9	Battery seat miniK	241005
10	Board miniK + display	241002/N
11	Screw M3 (5 pcs)	800056
12	Base miniKe	240001/BF2
13	Screw M3 x 6 TSP (6 pcs)	801002
14	Screw M3 x 22	241012
15	Screw M4 x 8 (3 pcs)	241011
	Joint simulator M6 (miniK5)	240600
	Joint simulator M8 (miniK20)	240800
	Case	241000
	Power supply 12V	241009/N

Minike/xx/S



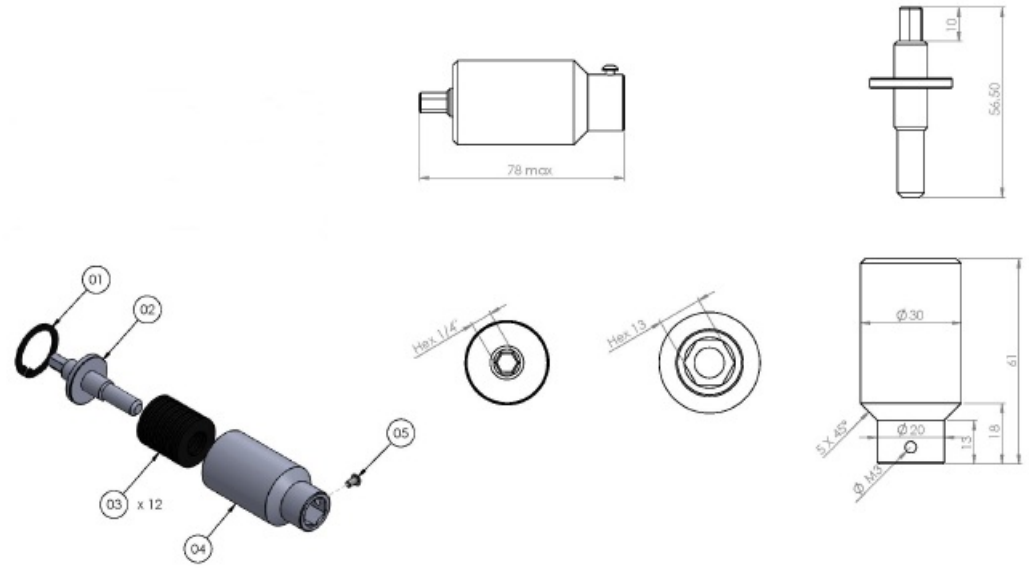
REF	DESCRIPTION	CODE
1	Plastic support (4 pcs)	800016
2	Washer M3 (3 pcs)	800041
3	Flat washer M3 (4 pcs)	800042
4	Nut 6,3 mm (4 pcs)	241003
5	Metal housing miniK../S	240001/BCU
6	Membrane miniK	241008
7	Connector M 5 pin	231666
8	Battery 9V not rechargeable	241010
9	Battery seat miniK	241005
10	Board miniK + display	241002/N
11	Screw M3 (5 pcs)	800056
12	Base miniKe	240001/BF2
13	Screw M3 x 6 TSP (6 pcs)	801002
14	Screw M3 x 22	241012
15	Screw M4 x 8 (3 pcs)	241011
	Case	241000
	Power supply 12V	241009/N

M6 (code 240600)



Pos.	Description	Code
01	Seiger	240601
02	Joint shaft	240602
03	Washer spring (8)	240603
04	Joint housing	240604
05	Screw M3x5	872443/ZN

M8 (code 240800)

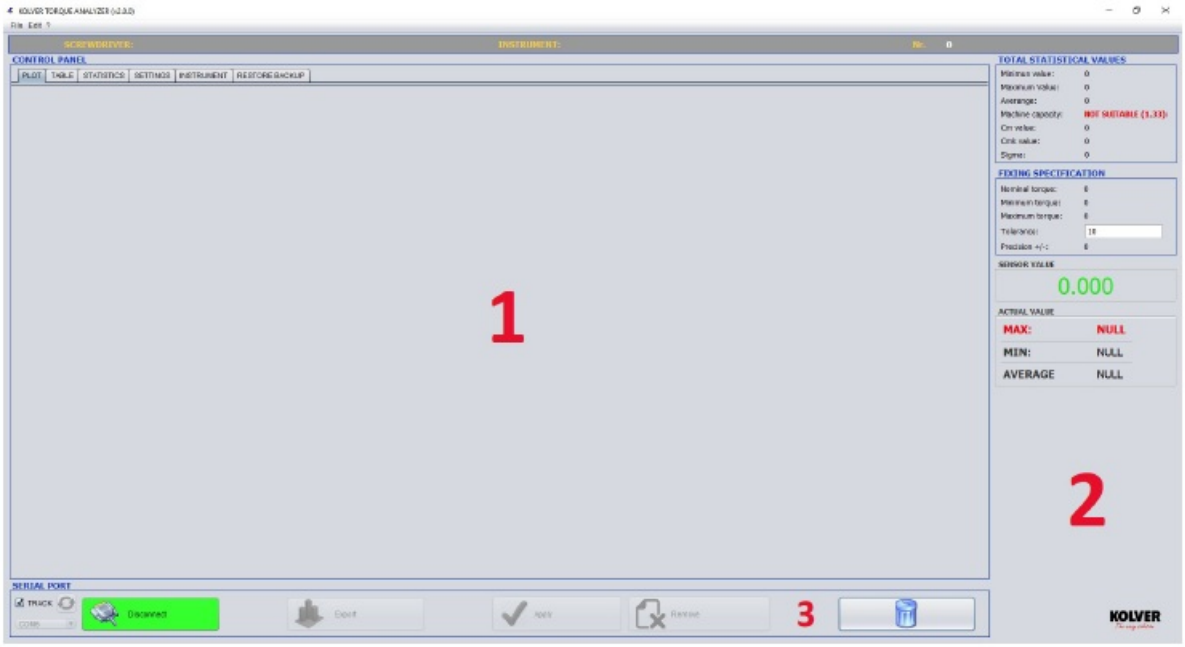


Pos.	Description	Code
01	Seiger	240801
02	Joint shaft	240802
03	Washer spring (12)	240803
04	Joint housing	240804
05	Screw M3x5	872443/ZN

KOLVER TORQUE ANALYZER
Torque Analyzer software allows for communication between our mini k/s and mini ke/s series torque testers and your PC. Torque Analyzer software allows the capture of torque measurements directly from the torque tester including track mode, graphic display readings, and the real-time calculation of the machine capacity represented by Cm and Cmk dat0061.

INSTALLATION

Torque Analyzer is plug-and-play software. Just launch the “Kolver_Torque_Analyzer_ver_X_X_X.exe” (X_X_X is the version of the software).



Kolver_Torque_Analyzer_ver1_0_1 software main screen The home page is made of three sections:

1. Control Panel": to display results, graphics, tables, settings,s, and info of the tester.
2. "Report": to display values (max, min, cm, cmk, in total, in real-time…etc.)
3. "Interface": connection, modification and export of data.

CONNECTION TO MINIK/S

Connect the minik/s to your pc through the usb port. Then push the Connect button. The software will display the correct connection (see Picture 2). Unless it will show the error and how to proceed.

TORQUE VALUE CAPTURE

How to capture the torque values:

1. Track Mode: it allows to capture and display the trend of the torque signal given by the minik/s.
2. Max Value Mode: it allows to capture and display the max torque value given by the minik/s.

The mode must be set on the minik/s: on the main screen flag or not the Track option. However, Torque Analyzer has been designed to automatically align the receipt of the first measure by detecting the capture mode set in mini k.

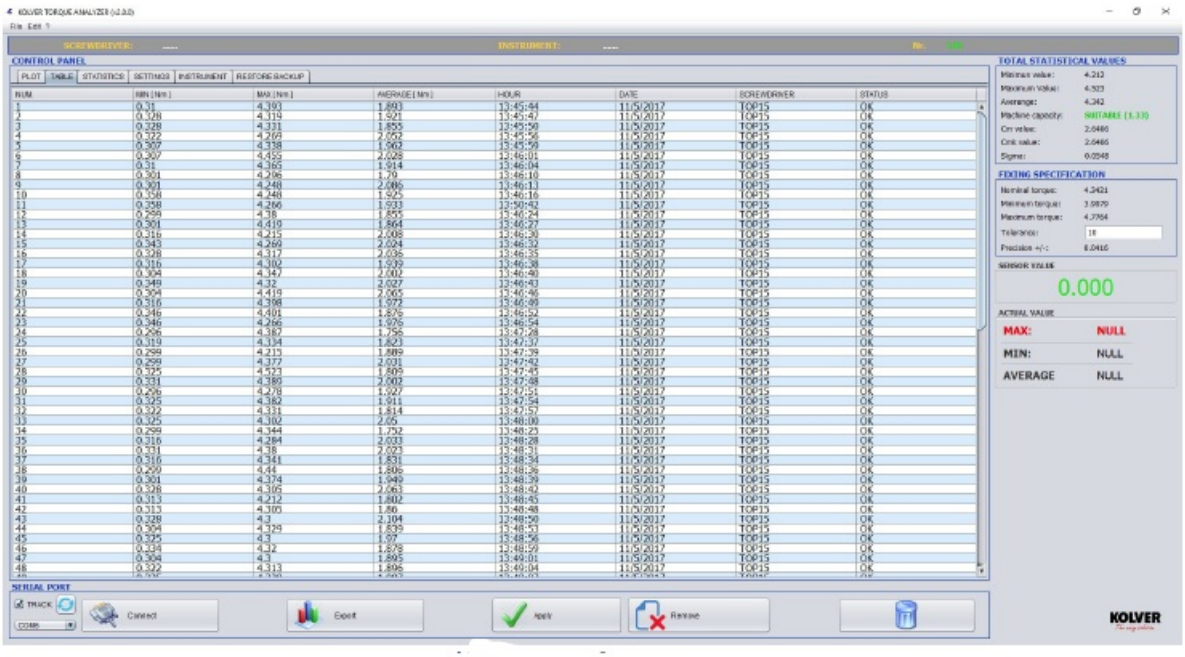
DISPLAY AND SETUP

“Control Panel” area has 4 sections:

GRAPHIC: This section allows to display the graphics of the values (See picture 3). There is also the possibility to zoom on specific areas. Two types of visualizations:

1. ‘X-Y Plot’ : temporal visualization of values.
2. ‘Bar Plot’ : bar visualization of values.

TABLE: in this section all the values are displayed (max and min, average, date

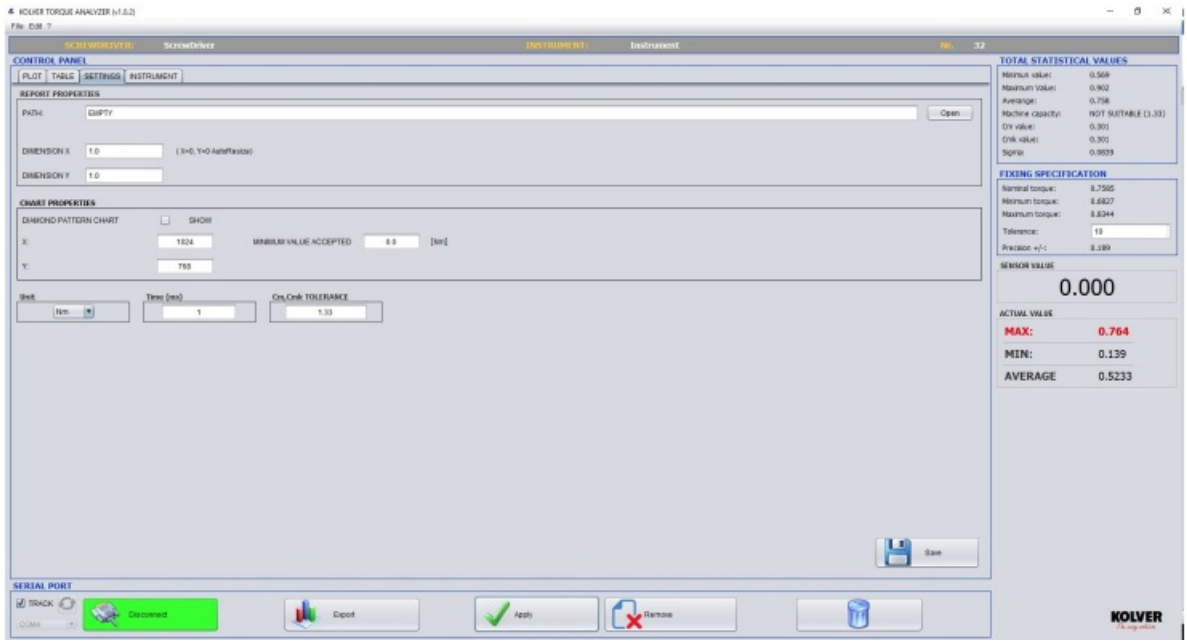


Other features:

1. PROPRIETIES: it allows to choose how to visualize the curve to plot and any graphics shake if needed.

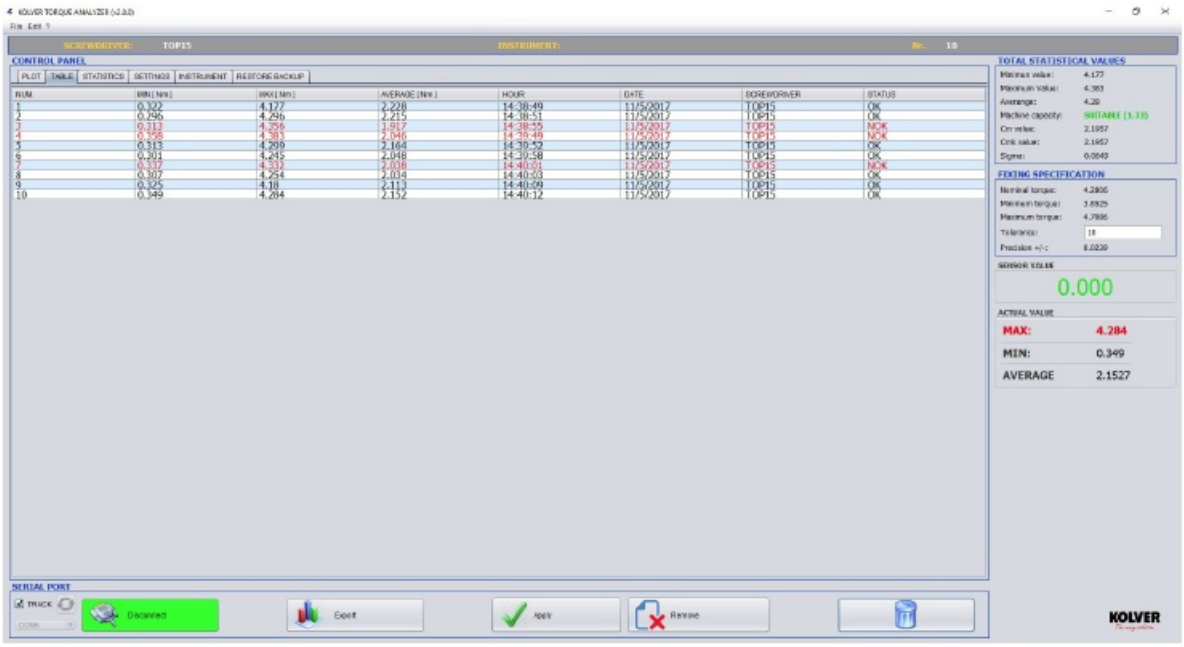
2. PLOT: Print/ Update statistics graphics.
3. REPORT: to export the data in pdf file.
4. LOAD: to upload data previously sampled and saved

SETTINGS: Setting section (reports, graphics, date, torque tester info).



REPORT

- Path: path to search the image file to enter in the head of the report. We suggest to upload images not bigger than 240×240 pixels.
- Dimension X: Value of adaptation along the X axis of the uploaded image.
- Dimension Y: Value of adaptation along the Y axis of the uploaded image.
- Torque range: the value should be included in the rpre-set torque range to be defined as correct.



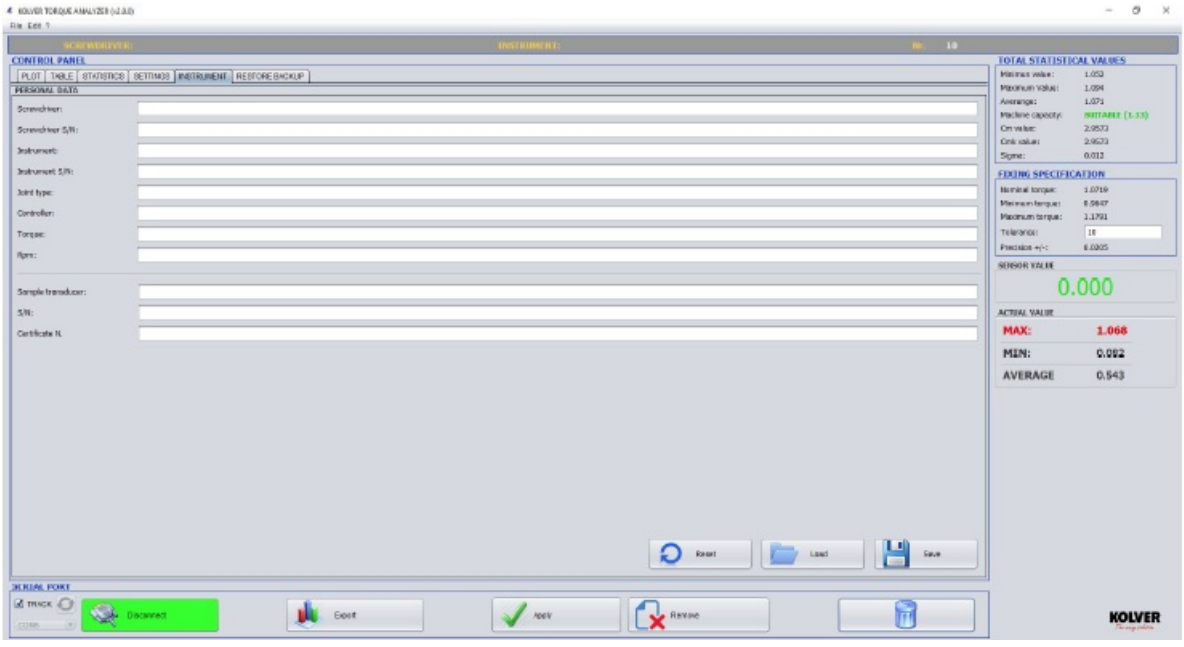
GRAPHIC FEATURE

- Diamond pattern chart: in Track mode, it allows the visualization of points of interpolation of captured values.
- X: width in pixels of the uploaded image.
- Y: height in pixels of the uploaded image
- Min value accepted: Min value captured and accepted by the software.

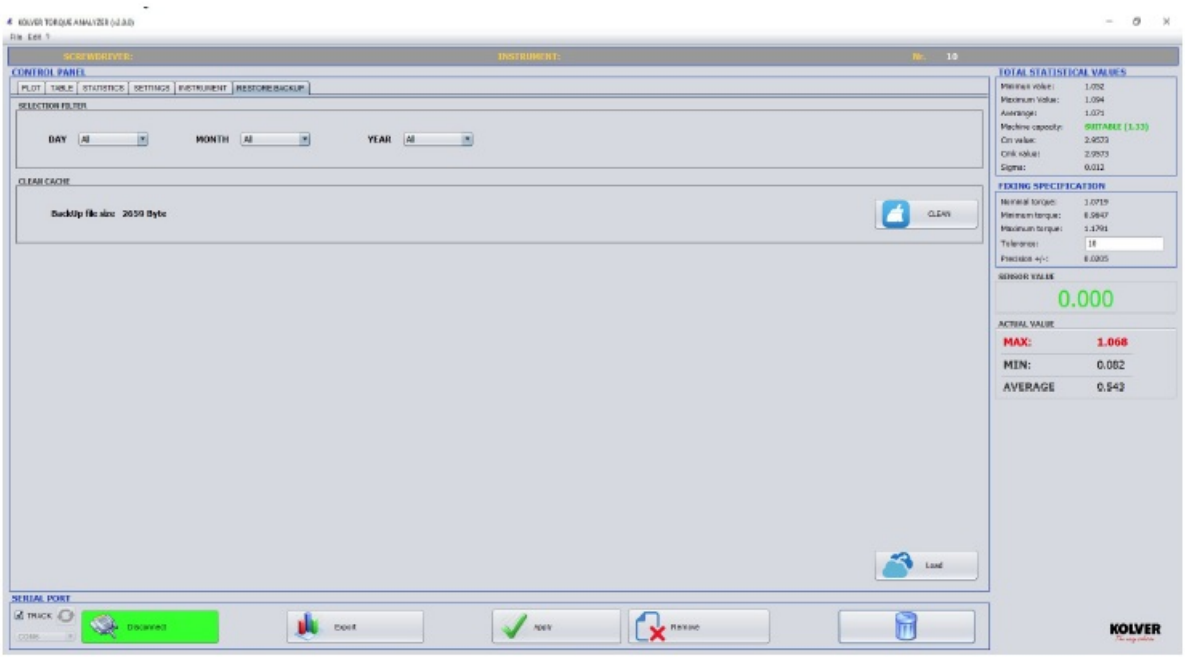
UNIT AND TOLERANCE

- Unit: it allows to choose between the following units of measurements: Nm, lbf.in and kgf.cm
- Tolerance Ck, Cmk: it allows to set the tolerance to check the machine capacity.
- It’s also possible to save the set up data pushing Save and keep the same setting for the next sessions.

TORQUE TESTER: in this section it is allowed to enter all the data of the mini k



BACKUP: Data are automatically saved in a backup file. Available a section of the software to restore the data with filters on day, month, year and delete date.



RESULTS: MODIFICATION AND EXPORT

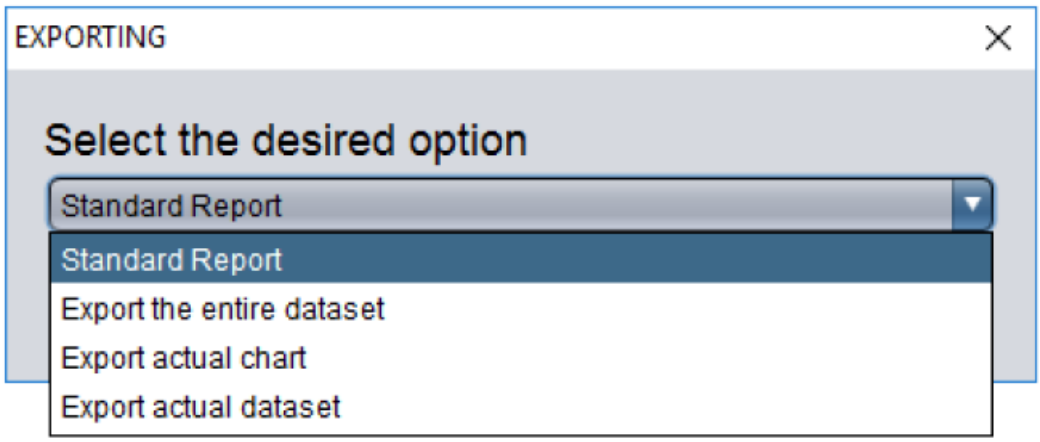
MODIFICATION

It's possible to modify or delete one or more captured data (see picture 7).

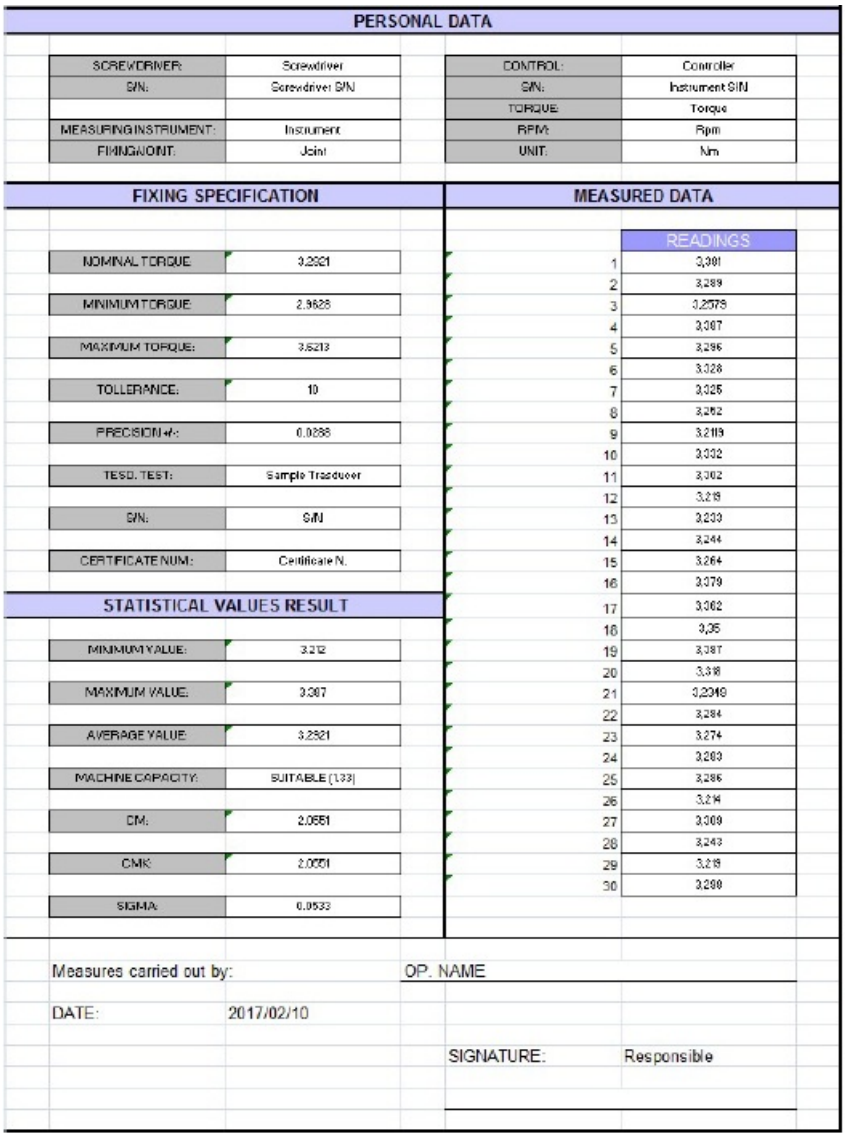
- Removal: in the "TABLE" section of the Control Panel, select one or more rows to be deleted. Then push "Delete" to confirm. To delete all the data, push the basket icon, then confirm.
- Modify: in the "TABLE" section of the Control Panel, position the cursor on the cell to modify, double click, enter the data and puch Apply to confirm. In case of any error, they won't be considered and the value will remain the same. In case of typing error, in the Menu File Go back.

EXPORT

While pushing "Export", it will be displayed a window to select how to export the results (see Picture 10).



Standard Report: it allows to export a standard report (.xls file) including 30 values max, Cm, Cmk and all the feature of the tester used.



PERSONAL DATA

SCREWDRIVER:	Screwdriver	CONTROL:	Controller
S/N:	Screwdriver S/N	S/N:	Instrument S/N
		TORQUE:	Torque
MEASURING INSTRUMENT:	Instrument	RPM:	Rpm
FIXING JOINT:	Joint	UNIT:	Nm

FIXING SPECIFICATION

NOMINAL TORQUE:	3,2321
MINIMUM TORQUE:	2,9628
MAXIMUM TORQUE:	3,5213
TOLLERANCE:	10
PRECISION +/-:	0,0286
TESD. TEST:	Sample Trasducer
S/N:	S/N
CERTIFICATE NUM:	Certificate N.

STATISTICAL VALUES RESULT

MINIMUM VALUE:	3,212
MAXIMUM VALUE:	3,387
AVERAGE VALUE:	3,2921
MACHINE CAPACITY:	SUITABLE (1,33)
CM:	2,0551
CMK:	2,0551
SIGMA:	0,0533

MEASURED DATA

	READINGS
1	3,301
2	3,289
3	3,2578
4	3,307
5	3,296
6	3,328
7	3,325
8	3,262
9	3,219
10	3,332
11	3,302
12	3,219
13	3,233
14	3,244
15	3,264
16	3,379
17	3,362
18	3,35
19	3,387
20	3,318
21	3,2349
22	3,284
23	3,274
24	3,283
25	3,296
26	3,214
27	3,309
28	3,243
29	3,219
30	3,299

Measures carried out by: OP. NAME

DATE: 2017/02/10

SIGNATURE: Responsible

REPORT AREA
In this section, it will be displayed the statistics results of all the values including the instantaneous data. In particular:

- Max value: max value of torque acquired
- Min value: min value of torque acquired (only in Track mode).
- Average value: average value of torque acquired (only in Track mode).
- Cm: value that indicates the machine capacity or process within the tolerance range.
- Cmk: value that indicates the machine capacity or process within the tolerance range of the nominal torque value. A high Cmk indicated the the machine or the has a low dispersion, and is well centered in the middle of the range of tolerance.
- Capacity: it indicates if the process f measurement is suitable or not.

There is the possibility to modify the index of tolerance to check the capacity (default=1.33): in “SETTINGS”, set the desired value in “TOLERANCE Cm,Cmk”.

- Nominal Torque (Cn): average torque value
- Max torque: Cn+Tolerance(Cn)%
- Min torque: Cn-Tolerance(Cn)%
- Sensor value: torque value given from the mini k.

- Current values: values referred to the last one acquired.

LANGUAGE

Four languages available: English, French, Spanish and Italian. To change the language, in the menu push on Edit Language.

SYSTEM REQUIREMENTS

It’s necesary to install the following software: Java (64-bit) (**https://www.java.com/it/download/**)

Documents / Resources

	**kolver mini K1\S TORQUE TESTER OPERATOR’S HANDBOOK** [pdf] User Manual mini K1 S TORQUE TESTER OPERATOR S HANDBOOK, TORQUE TESTER OPERATOR S HANDBOOK, OPERATOR S HANDBOOK, mini K5 S, mini K20 S, mini Ke S

References

- **kgf.cm**
- **lbf – Learn by fun**
- **Kolver srl Avvitatori elettrici ed accessori per l'assemblaggio - Homepage**
- **java.com/it/download/**