Data Sheet: DTR2.544.R1.EN

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DTR2 Digital TORQUE Indicator

DTR2 is a completely autonomous microprocessor digital indicator with an input signal for strain gauges and torque meters with output ± 2mV/V.
Ideal for calibration and control of torque wrenches, direct reading and snap screwdrivers or for controlling the torque directly on test benches made for testing engines, brakes, actuators and other devices.
Thanks to its ≤±0,02% accuracy **DTR2** can be used in quality systems as first or second line sample item if regularly calibrated by ACCREDIA centers.
The indicator is powered by one Li-Ion rechargeable battery with an autonomy of 80 hours, with the AUTO POWER OFF function which occurs when there are no changes in measurements for a time of 30 minutes.

The new generation electronics section is composed by a particularly stable analog circuit and by a 24 bit A / D converter that allows high resolution and a frequency of acquisition that in peak mode is 4800 Hz.

On the display is present an analogue indication bar for the torque, always active also inside the programming menu.
DTR2 can operate in two different modes:
• **STANDARD** Mode: Direct readout that displays the torque in real-time at high resolution
• **PEAK** mode: ideal for measurements of trip torque clockwise and counterclockwise.

MAIN FEATURES

- AUTONOMY: 80 HOURS WTHOUT RECHARGE
- BATTERY RECHARGE TROUGH USB PORT
- LCD DISPLAY WITH BACKLIGHT
- 9 MEASUREMENT UNIT
- PROGRAMMABLE RESOLUTION
- PROGRAMMABLE DIGITAL FILTER
- ZERO FUNCTION
- PEAK FUNCTION (clockwise and anticlockwise)
- FIRST PEAK FUNCTION
- AUTOMATIC AUTO RESET OF THE PEAK
- AUTO POWER OFF FUNCTION
- USB COMMUNICATION PORT
- KEY BLOCK FUNCTION
- INTERNAL DATALOGGER (option)
- INTERNAL CLOCK CALENDAR (option)
- RS232 COMMUNICATION PORT (option)

To complete the measurement system there are different types of static and rotary torque ranges from 0.5 N•m to 5000 N•m, and a range of software dedicated to the analysis and calibration of torque tools.
All measurement systems can be equipped with Calibration Report or certificate ACCREDIA.

Technical data

PRECISION CLASS LINEARITY AND HYSTERESIS	≤ ± 0.020 % ≤ ± 0.015 %
INPUT SIGNAL TORSIOMETRI COLLEGABILI	± 2 mV/V N° 1 from 350 Ω to 700 Ω 4wires
STRAIN GAUGE EXCITATION	3V ±3%
RISOLUZIONE INTERNA STANDARD RESOLUTION (2mV/V) **DIRECT READING**: CONVERSION PER SECOND **PEAK MODE**: CONVERSION PER SECOND	24 bit ± 20.000 div 10 Hz 4800 Hz
REFERENCE TEMPERATURE SERVICE TEMPERATURE RANGE STORAGE TEMPERATURE RANGE	+23 °C 0 / +50 °C -10 / +60 °C
10°C TEMPERATURE EFFECT a) on zero b) on sensitivity	≤ ± 0.015 % ≤ ± 0.005 %
CUSTOM LCD DISPLAY CHARACTER HEIGHT 16 mm PROGRAMMABLE BACKLIGHT from 1 to 60 seconds BACKLIGHT: LED BLU ANALOG BAR INDICATION	
PROGRAMMABLE **RESOLUTION** PROGRAMMABLE **DIGITAL FILTER** **ZERO** FUNCTION **PEAK** FUNCTION **FIRST PEAK** FUNCTION PROGRAMMABLE **PEAK AUTO RESET** PROGRAMMABLE **AUTO POWER OFF** FUNCTION **KEY BLOCK** FUNCTION (LOCK)	1, 2, 5, 10 from 0 to 10 (Direct reading) 100% F.S. Clockwise and counterclockwise from 1 to 99% F.S. clear the PEAK after a set time From 1 to 30 minutes (no changes) To protect parameters from changes
MEASUREMENT UNIT	kN•m - N•m - N•cm - daN•m - kgf•m ozf•ft - lbf•ft - ozf•inch - lbf•inch
COMMUNICATON PORT MODE CONTINUOS TRANSMISSION MODE ON DEMAND TRANSMISSION MAX DISTANCE	USB 2.0 4800 values per second On demand 5 m
POWER SUPPLY BY INTERNAL BATTERY BATTERY RECHARGE AUTONOMY TIME TO RECHARGE	Li-Ion 1800mA7h 3.6V RECHARGEABLE Through USB 80 hours ~ 8 hours

Options

The **DATALOGGER** function allows to store in the internal memory of the instrument measurements taken at programmable intervals.

Programmable Acquisition Interval	from 1 second to 10 hours
Max acquisition point	60.000 points
Internal Clock Calendar	Year-month-day-hour-minutes-seconds

The stored measurements can then be displayed on the display or downloaded directly to a PC via the Quick Analyzer light software that allows you to have a graphical representation and export data into Excel for a customized analysis.

The **RS232** port is used as an alternative to the USB and allows you to connect with a PC, Tablet or PC up to 15 meters away.

COMMUNICATION PORT	RS232C
BAUD RATE	19200, 9600, 4800
TYPE OF COMMUNICATION	ON DEMAND
REAR PANEL CONNECTOR	DB9 Female

Accessorie Supplied

USB Power Supply (5VDC @700mA)
USB cable.
CD with MANUAL and USB DRIVER.

Accessories (to be purchased separately)

Carrying case in ABS.

RS232C cable

CALIBRATION CERTIFICATE ACCREDIA CLOCKWISE
CALIBRATION CERTIFICATE ACCREDIA ANTI-CLOCKWISE

Calibration report CLOCKWISE (as an alternative to ACCREDIA Certificates)
Calibration report ANTI-CLOCKWISE (as an alternative to ACCREDIA Certificates)

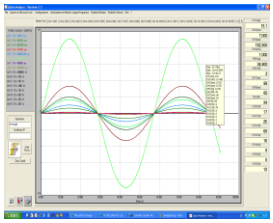
Software applications (to be purchased separately)

TorqueKAL: Software for the calibration and metrological confirmation for torque wrenches, wrenches and torque screwdrivers.
The calibration procedure is performed according to the UNI EN ISO 6789.
Evaluation of the uncertainty of calibration is performed according to the requirements of the UNI CEI ENV 13005.

WinTEST1: Software allows to menage the basic commands of the instrument, create test graphs, export data to Microsoft Excel format, printing and archiving of tests.

LOW COST version.

Quick Analyzer Light: Professional software that interfaces directly to DTR2 and supports the operator in the various test functions, analysis, monitoring over time, data storage, **DATA LOGGER** management, transfer of measures on Microsoft Excel etc ...
Ideal to see the trend of tightening torque.



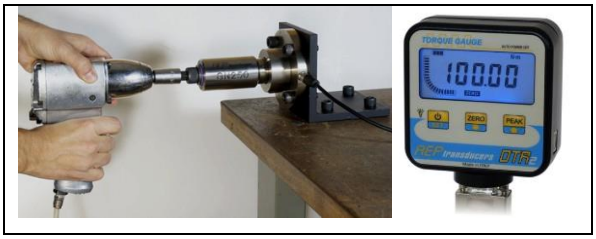
Available fittings

DTR2 + TRS STATIC Torsiometer

DTR2 + TRX STATIC torsiometer with flange

DTR2 + TRS ROTATING Torsiometer

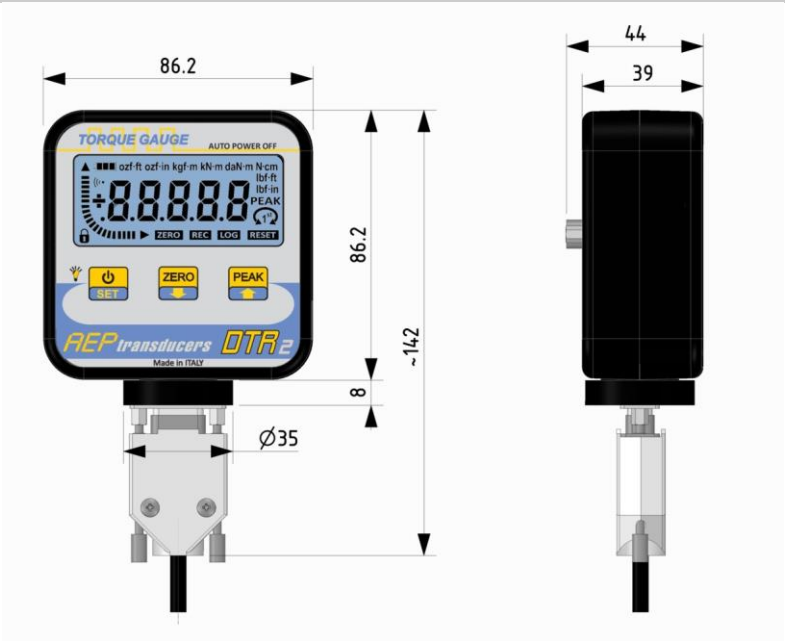
DTR2 + microTOR ROTATING Torsiometer



DTR2 + TRF STATIC Torsiometer.
System for calibrating impact wrenches

DTR2 + BTR2 sensor.
System for the calibration of torque wrenches and electric screwdrivers

Dimensions (mm)



STANDARD indications

Nominal Torque	Display	Resol.	Display	Resol.	Display	Resol.	Display	Resol.
N•m	N•m	N•m	kN•m	kN•m	N•cm	N•cm	daN•m	daN•m
0,5	0,5000	0,0001	0,0005	0,0001	50,000	0,010	0,0500	0,0001
2,5	2,5000	0,0005	0,0025	0,0001	250,00	0,05	0,2500	0,0001
5	5,000	0,001	0,0050	0,0001	500,00	0,10	0,5000	0,0001
10	10,000	0,002	0,0100	0,0001	1000,0	0,2	1,0000	0,0002
25	25,000	0,005	0,0250	0,0001	2500,0	0,5	2,5000	0,0005
50	50,00	0,01	0,0500	0,0001	5000,0	1,0	5,0000	0,0010
100	100,00	0,02	0,1000	0,0001	10000	2	10,000	0,002
250	250,00	0,05	0,2500	0,0001	25000	5	25,000	0,005
500	500,0	0,1	0,5000	0,0001	50000	10	50,000	0,010
1000	1000,0	0,2	1,0000	0,0002	---------	----------	100,00	0,02
2000	2000,0	0,5	2,0000	0,0005	---------	----------	200,00	0,05
3000	3000,0	0,5	3,0000	0,0005	---------	---------	300,00	0,05
5000	5000,0	0,5	5,0000	0,0005	---------	---------	500,00	0,05

Nominal Torque	Display	Resol.	Display	Resol.	Display	Resol.
N•m	kgf•m	kgf•m	ozf•ft	Ozf•ft	lbf•ft	lbf•ft
0,5	0,0500	0,0001	5,9000	0,0020	0,4000	0,0001
2,5	0,2500	0,0001	29,500	0,010	2,0000	0,0005
5	0,5000	0,0001	59,000	0,020	4,0000	0,0010
10	1,0000	0,0002	118,00	0,05	8,0000	0,0020
25	2,5000	0,0005	295,00	0,10	20,000	0,005
50	5,0000	0,0010	590,00	0,20	40,000	0,010
100	10,000	0,002	1180,0	0,5	80,000	0,020
250	25,000	0,005	2950,0	1,0	200,00	0,05
500	50,000	0,010	5900,0	2,0	400,00	0,10
1000	100,00	0,02	11800	5	800,00	0,20
2000	200,00	0,05	23600	5	1600,0	0,5
3000	300,00	0,05	35400	5	2400,0	0,5
5000	500,00	0,05	59000	5	4000,0	0,5

Nominal Torque	Display	Resol.	Display	Resol.
N•m	ozf•inch	ozf•inch	lbf•inch	lbf•inch
0,5	71,000	0,020	5,000	0,001
2,5	355,00	0,10	25,000	0,005
5	710,00	0,20	50,000	0,010
10	1420,0	0,5	100,00	0,05
25	3550,0	1,0	250,00	0,05
50	7100,0	2,0	500,0	0,1
100	14200	5	1000,0	0,2
250	35500	10	2500,0	0,5
500	71000	20	5000,0	1.0
1000	---------	----------	10000	2
2000	---------	----------	20000	5
3000	---------	----------	30000	5
5000	---------	----------	50000	5

How to configure a complete standard system

To calibrate a wide range of instrument you need to determine:

- MINIMUM torque of the torque wrench smaller.
- MAXIMUM torque of torque wrench bigger.

With this information, we can determine how many standard instruments are needed to cover the entire field ensuring Class 1 UNI 113114.

Example

To cover a range of 1 to 1000 N•m need 3 instruments:
DTR2 from 1000 N•m covering the range from 1000 to 100 N•m
DTR2 100 N•m covering the range from 100 to 10 N•m
DTR2 by 10 N•m covering the range from 10 to 1 N•m

Purchase Codes

MDTR2	**Option**	**Option**
	D = Data logger	R = RS232 output

Example: **MDTR2D**

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