User's Manual

EXTECH
INSTRUMENTS

Heavy Duty Digital Torque Meter

Model 407820

Introduction

Congratulations on your purchase of the Extech Heavy Duty Torque Meter, Model 407820. This professional device measures torque in three ranges with 1.5% basic accuracy. Advanced functions include Peak and Data Hold, Record Mode, and RS-232 PC Interface. Careful use of this meter will provide years of reliable service.

Warranty

EXTECH INSTRUMENTS CORPORATION warrants this instrument to be free of defects in parts and workmanship for one year from date of shipment (a six month limited warranty applies on sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 ext. 210 for authorization or visit our website at www.extech.com (click on 'Contact Extech' and go to 'Service Department' to request an RA number). A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.

Specifications

General Specifications

Display	3-½ digit (2000 count) multi-function LCD
Units of Measure	Kilogram-centimeter (kg-cm)
	Pound-inch (lb-in)
	Newton-centimeter (N-cm)
Resolution	Programmable High or Low resolution (see range specs.)
Meter Power	9V battery
Power consumption	12mA approx.
Auto Power Off	Meter turns off after 10 minutes (can be defeated)
Max/Min Record/Recall	Records highest (MAX) and lowest (MIN) readings
Data Hold	Displayed reading can be held on the LCD by pushbutton
Response Time	Fast and Slow (Programmable)
PC Interface	Built-in RS-232 jack; Optional data acquisition software
Operating conditions	Temperature: 32 to 122°F (0 to 50°C); Humidity < 80% RH
Dimensions	Meter: 7.1 x 2.8 x 1.3" (180 x 72 x 32mm)
	Chuck: 1.9" (48mm) head diameter [6.3" (160mm) handle] 0.5" (12.7mm) opening size
Weight	Meter: 0.5 lbs. (225g); Chuck: 1.46 lbs (665g)
Accessories	Torque chuck, chuck key, 9V battery, and rubber holster with table-top stand

Range Specifications

Unit	Range	High resolution	Low resolution	Accuracy
kg-cm	15 Kg-cm	0.01 kg-cm	0.1 kg-cm	
lb-inch	12.99 lb-in	0.01 lb-in	0.1 lb-in	±(1.5% + 5d)
N-cm	147.1 N-cm	0.1 N-cm	1 N-cm	

Meter Description

1. Sensor Input
2. RS-232 PC Interface jack
3. LCD Display
4. Keypad
5. Rubber Holster
6. Chuck
7. Battery compartment (rear)

Meter Operation

Connecting the Sensor

1. This meter accepts only the supplied 15 kg chuck. Push the SENSOR button to confirm the 15 kg chuck; the LCD should read '15' when the button is pressed.

2. Connect the chuck's cable to the input jack at the top of the meter.

3. Remove the chuck from the meter when the meter is to be stored for long periods.

Powering the meter

1. The meter is powered by a 9V battery located in the rear battery compartment. Note that the meter's protective holster must be removed to access the compartment.

2. Press the POWER button to turn on the meter.

3. Press the POWER button again to turn off the meter.

Selecting unit of measure

1. Press the UNIT button repeatedly to scroll through the available units. Each selection is reflected on the LCD.

2. The available units are: pound-inch (lb-in), kilogram-centimeter (kg-cm), and Newton-centimeter (N-cm).

Selecting the resolution

1. Use the RESOLUTION button to select the desired resolution, Low or High.

2. The selections are listed in the Range Specifications earlier in this manual.

3. Use the high resolution setting when the measurement is in the lower portion of the measurement range. Use the low resolution setting when the measurement is in the higher portion of the measurement range.

Selecting the response time

The meter can be configured as fast responding or slow responding. Fast response is used to capture readings that are changing rapidly. Slow response if used for average readings or slowly changing torque readings. To select the response time:

1. Press the FAST/SLOW button.

2. The LCD will display 'F' for fast response or 'S' for slow response.

Taking measurements

1. Place a driver bit into the chuck.

2. Tighten the chuck using the supplied chuck key.

3. Push the ZERO button to zero the display.

4. Apply force to the device under test and view the Torque reading on the meter's LCD.

Data Hold

1. Press the HOLD button to freeze the displayed reading. The LCD will display the icon 'HOLD' when Data Hold is engaged.

2. Press the HOLD button to de-activate this feature. The 'HOLD' icon will switch off.

3. Note that Data Hold is not available while the meter is in the Max/Min Record mode.

Peak Hold

1. Press the PEAK button to activate the Peak Hold feature. The LCD will display 'PEAK' when Peak Hold is engaged.

2. The meter will now display only the highest reading. Each time a higher reading is encountered the LCD will update.

3. Press the PEAK button to de-activate this feature. The 'PEAK' icon will switch off.

4. Note that Peak Hold is not available while the meter is in the Max/Min Record mode.

RECORD / RECALL and Max/Min Data Recording

The Max/Min feature stores the maximum reading and minimum reading while the user takes measurements. The Max and the Min readings can later be recalled.

1. Press the RECORD/RECALL button to activate this feature. The LCD will display the 'REC' icon and the meter will begin monitoring the highest (Max) and lowest (Min) readings.

2. After measurements are made, press the button again to view the Max reading. The 'MAX' icon will appear on the LCD along with the highest reading.

3. Press again to view the minimum (MIN) reading. The 'MIN' display icon will appear on the LCD along with the lowest reading.

4. To exit this mode, press and hold the RECORD / RECALL button until the 'REC' indicator switches off. Note that exiting this mode clears the MAX and MIN values.

RS-232 PC Interface

The optically isolated RS-232 PC Interface port is located on top of the meter next to the sensor jack. A Data Acquisition Software package that includes Windows^{TM} 95 / 98 / ME / NT / 2000 compatible software and a meter-to-PC interface cable can be obtained from Extech or an authorized distributor. The Part Number for the kit is 407001. Instructions for use are supplied with the kit.

Calibration and Repair Services

Extech offers repair and calibration services for the products we sell. Extech also provides NIST certification for most products. Call the Customer Service Department for information on calibration services available for this product. Extech recommends that annual calibrations be performed to verify meter performance and accuracy.

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