



## 2 YEAR WARRANTY (RESTRICTIONS APPLY)

Imada, Inc. warrants its products to the original purchaser to be free from defects in workmanship and material under normal use and proper maintenance for two years (one year for adapters, attachments, batteries, and cables) from original purchase. This warranty shall not be effective if the product has been subject to overload, shock load, misuse, negligence, accident or repairs attempted by others than Imada, Inc.

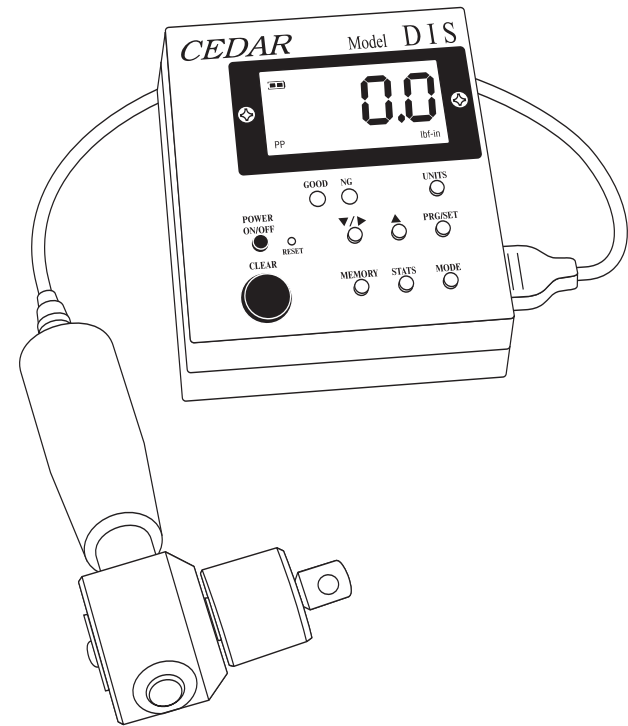
During the warranty period, we will, at our option, either repair or replace defective products. Please call our customer service department for a return authorization number and return the defective product to us with freight prepaid.

The foregoing warranty constitutes the SOLE AND EXCLUSIVE WARRANTY, and we hereby disclaim all other warranties, express, statutory or implied, applicable to the products and/or software, including but not limited to all implied warranties of merchantability, fitness, non-infringement, results, accuracy, security and freedom from computer virus. In no event shall Imada, Inc. and/or its affiliated companies be liable for any incidental, consequential or punitive damages in connection with the use of its products and/or software.

# CEDAR

## TORQUE MEASUREMENT

# Digital Torque Tester/Wrench



Model DIS-TW20

# INSTRUCTION MANUAL



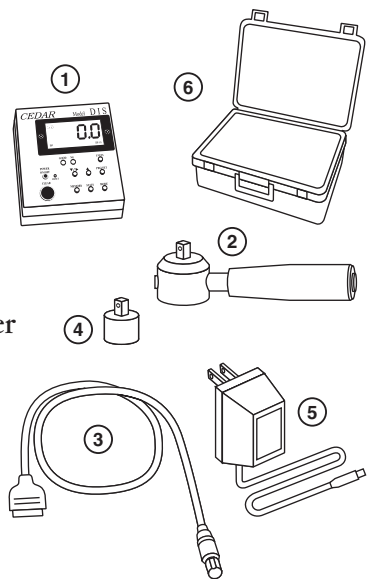
## Digital Torque Tester/Wrench

Model DIS-TW20 Accuracy:  $\pm 0.5\%$  F.S.,  $\pm 1$  LSD

Model	lbf-in	kgf-cm	N-cm	N-m
DIS-TW20	1.0~174.0	1.0~200.0	10~2000	0.10~20.00

### List of Equipment

- ① Torque Tester Display Unit
- ② Wrench Sensor
- ③ Cable
- ④ CW stepless one-way clutch adapter
- ⑤ AC adapter/charger
- ⑥ Carrying Case



### Read First: Safety Information

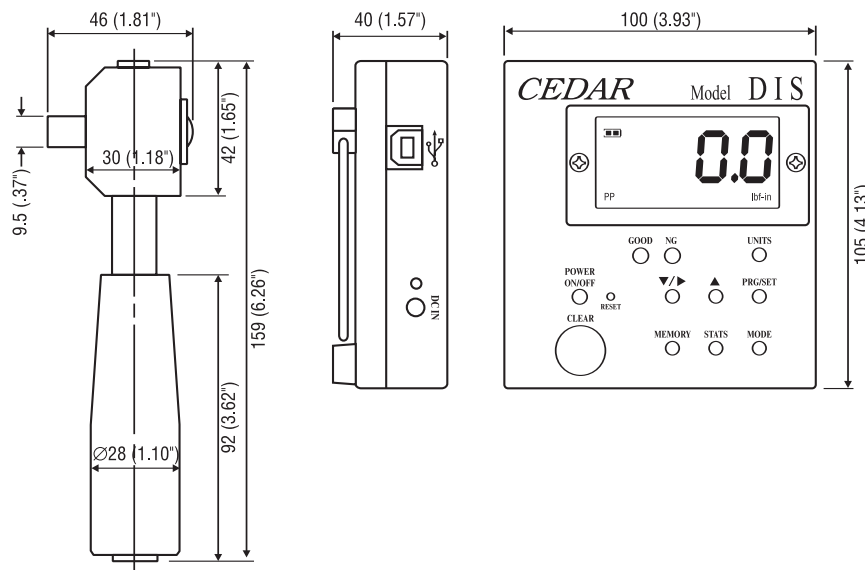
For safety, and for damage avoidance, be sure to read this manual thoroughly. The warranty is only valid when the product is used following the instructions provided within this manual.

- Do not use tester in high temperature, high humidity, or in a damp or wet areas.
- Recommended operating temperature is between 0-42°C (32-100°F).
- Do not apply a torque exceeding the rated capacity (180 lbf-in), regardless of whether the unit is On or Off. Avoid shock load. Do not use with impact wrenches.
- When charging the battery, be sure to use only the provided AC adapter/charger exclusively.
- Do not use lacquer thinner or any solvent to clean the unit.
- Do not disassemble or modify the unit.



## DIMENSIONS

DIS-TW20





**Comport signal**

8 data, 2 stop, no parity. Baud Rate: 19,200 bps.

**Output Connector**

USB A/B cable

**Peak Data Output Format**

[CAN] \_ \_ \_ [SO] [value] \_ [SI] [unit] [CR]

[CAN]: ASCII control code 24

\_ : Space (code 32)

[SO]: ASCII control code 14

[value]: Output data with sign and decimal point. Plus sign represents for CW torque and minus sign for CCW. [Value] always occupy six locations and empty locations will be filled with spaces.

[SI]: ASCII control code 15

[unit]: N\*m \_ \_ \_ = N·m

kgf<sup>cm</sup> = kg·cm

lb\*in \_ = lb·in

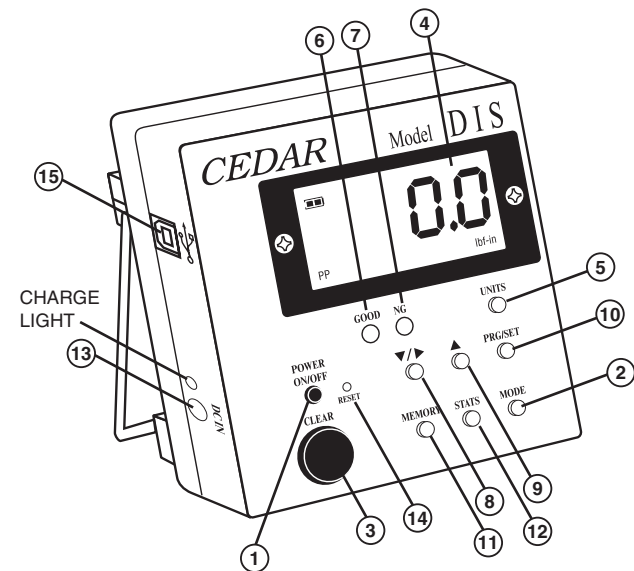
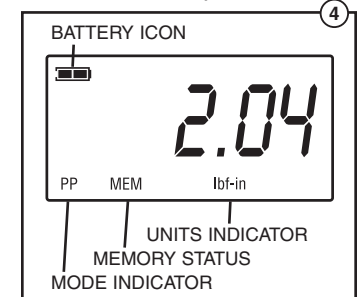
[CR]: ASCII control code 13 (Carriage Return)

**Continuous Output Data Format**

[CAN] [value] [CR]



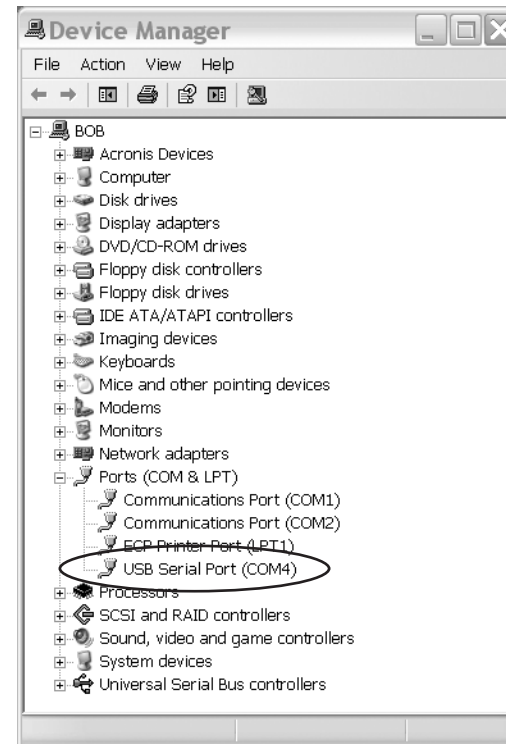
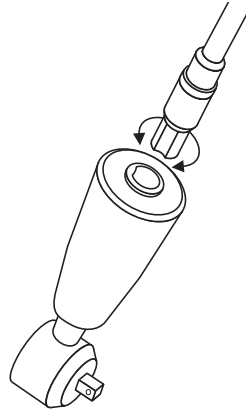
- ① **POWER** Press to turn on, press again to turn off (click once, do not hold). After 10 minutes of non-use the unit shuts off.
- ② **MODE** Select **Real Time**, **PP** (Peak), **PD** (Peak Down) or **C** (Continuous Output mode)
- ③ **CLEAR** Reset display to zero and send data to memory
- ④ **LCD display** Displays torque value, battery icon, mode & units.
- ⑤ **Unit** Select units (lbf-in, kgf-cm, N-cm, & N-m).
- ⑥ **GOOD/C Mode Indicator**
- ⑦ **NG Indicator**
- ⑧ **DOWN/SHIFT** Change values or numeric places
- ⑨ **UP** Change values or options
- ⑩ **PRG/SET** Enter programming mode or enter values
- ⑪ **MEMORY** Display memory locations and data
- ⑫ **STATS** Display statistics; number of records, Max, Min, and Ave
- ⑬ **DC IN AC** charger/adapter receptacle
- ⑭ **RESET** System reset button
- ⑮ **USB port** Send data to computer via USB cable





## GENERAL OPERATION

1. Connect the torque sensor to the tester display unit with cable provided. When connecting the cable to the torque sensor, rotate the round connector to find the matching groove, then push in until it makes positive connection (When disconnecting the cable from the torque sensor, hold the silver metal part of the round connector and pull out).
2. To select the desired measuring unit (lbf-in, kgf-cm, N-m, N-cm), press POWER, then hold UNITS for 4 four seconds until a beep sounds. Press UNITS to cycle choices. Press PRG/SET to enter.
3. Press and hold MODE for one second to select from the following Measuring Modes.
  - Real Time**—Displays torque transients (no output or indicator)
  - PP Mode**— Peak, captures peak torque (peak data output, PP appears on display)
  - PD Mode**— First Peak, capture first peak value (peak data output, PD appears on display)
  - C Mode**— Continuous RS-232 output Display and output torque transients (180 data/sec., GOOD indicator ⑥ flashes)
4. If desired, place the stepless one-way clutch adapter on the wrench drive for convenient clockwise tightening.
5. After measuring, press CLEAR on the display unit or the button on top of the wrench head to zero the display for the next test.



Output is available in PD, PP and C modes. In PD and PP modes peak data is output when ZERO is pressed or activated by the AUTO ZERO function. In C mode, the gauge outputs data continuously 180 data/second.



## OUTPUT

### USB Virtual COM Port

When the tester is connected to a computer's USB port and turned on, Windows XP or Vista will recognize the tester and ask to connect to the Internet. Allow Windows Update to connect to the Internet and follow the instructions on your screen to download and install two drivers for the USB virtual com port. For Windows 98, ME and MAC go to [www.ftdichip.com/Drivers/VCP.htm](http://www.ftdichip.com/Drivers/VCP.htm).



The PC and tester will communicate through the USB port the same as a com port. To verify the COM port number open the Device Manager.



## PROGRAMMING

Press POWER to turn on. Press PRG/SET for one second. The display shows, "HI" and then the High setpoint value. This confirms the tester is ready for the following programming steps.

### 1. High Setpoint (HI)

After "HI" is displayed and the High setpoint value, press DOWN/SHIFT (8) to move the numeric place (selected place flashes) and press UP (9) to select values i.e. 50.0 for 50.0 lbf-in, then press PRG/SET (10) to enter.



### 2. Low Setpoint (LO)

After High value is entered, "LO" is displayed, then the Low setpoint value. Press DOWN/SHIFT to move the numeric place and press the UP to select values, then press PRG/SET to enter.

### 3. Peak Down Minimum (PdLO)

After Low value is entered, "PdLO" is displayed, then the PdLO value. Press DOWN/SHIFT to move the numeric place and press the UP to select values, then press PRG/SET to enter. *PdLO sets a minimum torque value for Peak Down mode. For example, if "PdLO" value is set at 5.0 lbf-in, only a reading over 5.0 lbf-in will be measured in Peak Down mode.*

### 4. Continuous Data Output Minimum (CLO)

After Peak Down value is entered, "CLO" is displayed, then the CLO value. Press DOWN/SHIFT to move the numeric place and press the UP to select values, then press PRG/SET to enter. *CLO sets the start and stop trigger points for Continuous data output. When torque reaches the CLO value, the tester starts to output data and stops if torque falls below the value. Note: the display does not show any value below the CLO minimum.*

### 5. Auto Zero Reset (AC)

After Continuous Data Output Minimum is entered, "AC" is displayed, then the Auto Zero Reset duration value. Press UP or DOWN/SHIFT to select 0.0C - 0.1C - 0.5C - 1.0C - 1.5C - 2.0C - 2.5C - 3.0C, and press PRG/SET to enter (0.1C for 0.1 second and 0.0C for MANUAL RESET).

*After measuring, Auto Zero automatically resets the tester to "0.0".*



## 6. Beeper (bp)

After Auto Zero Reset is entered, "bp" is displayed, then "On". Press UP or DOWN/SHIFT to select On, OFF, or FF, then press PRG/SET to enter.

"On"- beeper sounds for Good, NG and capacity overload

"OFF"- beeper sounds for capacity overload only

"FF"- beeper sounds for NG and capacity overload.

After "bp" is entered, "-S-" is displayed to confirm programming completion and zero is shown.

*After High and Low setpoints are set and beeper is set to On,*

*In PP mode*

Under LO setpoint- No LED light or beep

Over LO setpoint- Green LED lights and beep sounds

Over HI setpoint- NG flashes and beep sounds

*In PD mode- no indicator or beep for values before Peak down is sensed.*

Under LO setpoint- NG flashes and slow beep sounds

Between LO and HI- GOOD lights and constant tone sounds

Over HI setpoint- NG flashes and fast beep sounds

*In Real Time mode*

Under LO setpoint- no LED light or beep

Between LO and HI- GOOD lights and beep sounds

Over HI setpoint- NG lights solid and beep sounds

## DATA MEMORY

### Storing and Recalling Data from Memory

*Memory functions work in PP and PD modes. Store up to 800 values in memory.*

1. Measure in PP or PD mode, when the display resets by either Auto Zero or manually pressing CLEAR, the peak value is stored.
2. To recall a value, press MEMORY and the last stored memory is displayed. Press UP or DOWN/SHIFT to select a memory location (i.e. .0.0.1 for first location) and torque value. The display cycles between memory location and value.



## Clearing Data from Memory

**Single clear:** Press MEMORY, move to a memory location and when the desired memory value is displayed, press CLEAR, "CLR" is displayed. Press CLEAR again to clear the data and "- - - -" is displayed to confirm deletion.

**All clear:** Press CLEAR and hold until the display shows "ALL" then press CLEAR again and "- - - -" is displayed to confirm deletion.

## Downloading Memory Data

1. Press ON/OFF to turn on.
2. Press MEMORY and after memory data is displayed press MEMORY again and "FA" is displayed. Use UP or DOWN/SHIFT to select the first memory location then press MEMORY and "LA" is displayed. Use UP or DOWN/SHIFT to select the last memory location. Press MEMORY again and data is sent. While data is output -P- is displayed.

## Statistics

Press STATISTICS and the number of data, Max, Min, and Avg are displayed in sequence.

## Auto Power Off

To maximize the life of the battery, power automatically shuts off after 10 minutes of non-use.

## Low Battery Indicator

Battery indicator status shows full, half or needs recharging.

If the battery is empty, power is turned off immediately.

**IMPORTANT!** Use the provided CEDAR AC adapter/charger exclusively and plug into the correct AC output. It takes 3 hours to fully recharge for 12 hours of continuous use. When fully charged, the charge light goes off.



## System Reset

When battery power is completely depleted, the tester may not work even though it has been recharged. In this case, press the System Reset Button.