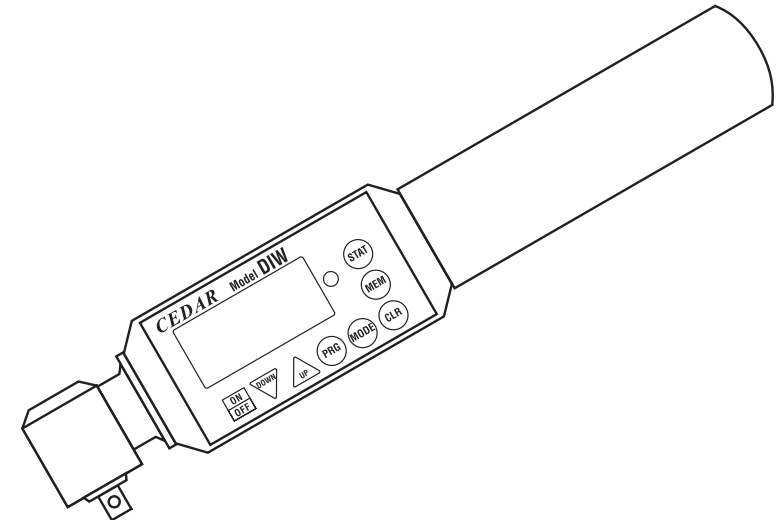


**2 YEAR WARRANTY (RESTRICTIONS APPLY)**

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.

TORQUE MEASUREMENT**Digital Torque Wrenches**

Models: *DIW-15/20/75/120*
with continuous data output

INSTRUCTION MANUAL

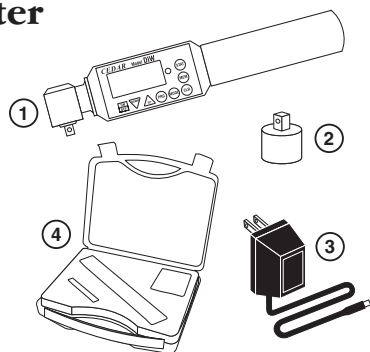


Digital Torque Wrench/Tester

Models: DIW-15/20/75/120

List of Equipment

- ① Torque Wrench/Tester
- ② Stepless CW one-way clutch (included for DIW-15/20/75 available for DIW-120)
- ③ AC adapter/charger
- ④ Carrying case



DIW-15/20/75/120 Digital Torque Wrench/Tester Ranges

Accuracy $\pm 0.5\%$ F.S., ± 1 LSD

Model	Capacity				
	lbf-in	lbf-ft	kgf-cm	N-m	cN-m
DIW-15	2.0~130	—	2.0~150	0.20~15	20~1500
DIW-20	2.0~180	—	2.0~200	0.20~20	20~2000
DIW-75	2.0~650	—	2.0~750	0.20~75	20~7500
DIW-120	20~1040	2.0~87.0	20~1200	2.0~120	—

Read First: Safety Information

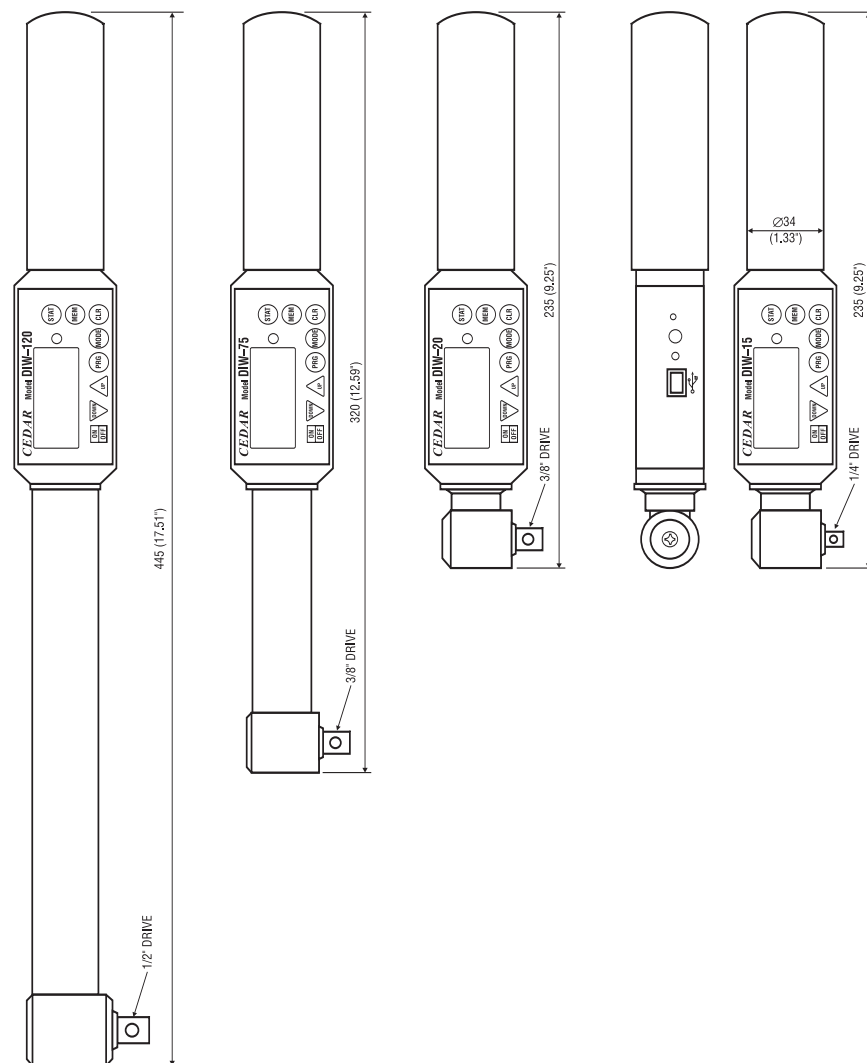
For safety, and for damage avoidance, be sure to read this manual thoroughly. The warranty is only valid when the product is used following the instructions provided within this manual.

- Do not use tester in high temperature, high humidity, or in damp or wet areas.
- Recommended operating temperature is between 0-42°C (32-100°F).
- Do not apply torque exceeding the rated capacity, regardless of whether the unit is On or Off. Avoid shock load.
- When charging the battery, be sure to use 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

DIW-15/20/75/120



Specifications subject to change without notice

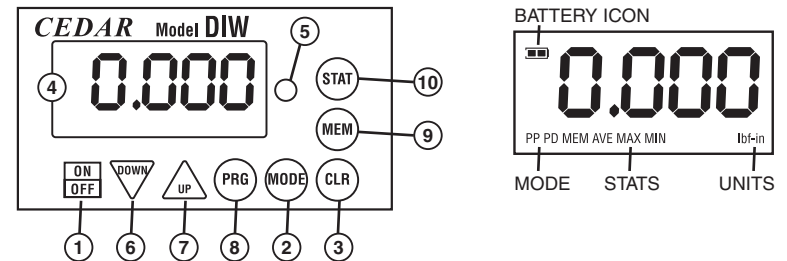


SPECIFICATIONS

Measuring range	Model	lbf-in	lbf-ft	kgf-cm	N-m	cN-m
	DIW-15	2.0~130	—	2.0~150	0.20~15	20~1500
	DIW-20	2.0~180	—	2.0~200	0.20~20	20~2000
	DIW-75	2.0~650	—	2.0~750	0.20~75	20~7500
	DIW-120	20~1040	2.0~87.0	20~1200	2.0~120	—
Accuracy	± 0.5% F.S., ±1 LSD					
Display	4 digit LCD					
Operation	CW, CCW and stepless CW one-way clutch					
Measuring modes	PP: Peak Mode displays PEAK torque value that will not change until a higher value is measured. PD: Peak Down Mode Captures first peak down value above the PDLO GO: Real Time Mode displays transient torque values C: Real-time Output 160 data per second					
GO/NO GO testing	Programmable High and Low setpoints with both audible beep and Green/Red LED indicator					
Statistics	Maximum, minimum, average and number of data					
Data transfer	ASCII, 19200 bps, USB miniB cable					
Data memory	800 data					
Batch Counter	1-99 (CW only)					
Power supply	Ni-Cad rechargeable batteries 1.2V×4cells 600mAh					
Auto power save	Automatic switch off after 10 minutes of non-use					
Charging time	From empty - less than 5hours					
Working time	12 hours continuous use					
Drive	DIW-15 1/4", DIW-20 3/8", DIW-75 3/8", DIW-120 1/2"					
Accessories	AC/DC Adapter/Charger, 100~230VAC, NIST certificate					



- ① **ON/OFF** Press to turn on or off (click once, do not hold). After 10 minutes of non-use the unit shuts off.
- ② **MODE** Select **GO** (Real Time), **PP** (Peak), **PD** (Peak Down), **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 **GO/NG Indicator** Green for values between LO and HI setpoints, flashing red for values above HI, solid green for data output
- ⑥ **DOWN** Change values or numeric places
- ⑦ **UP** Change values or options
- ⑧ **PRG** Enter programming mode or enter values
- ⑨ **MEM** Display memory locations and data
- ⑩ **STAT** Display statistics; number of records, Max, Min, and Ave

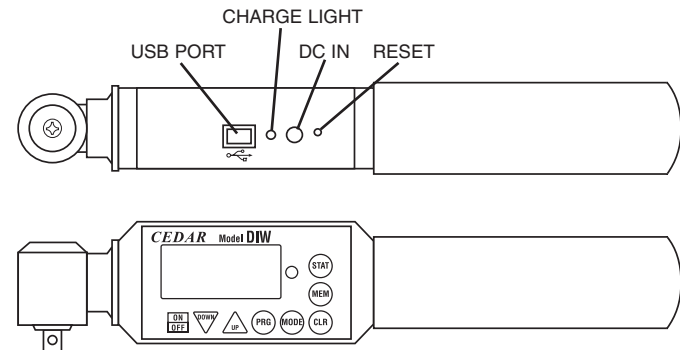


USB Port Send data to computer via USB cable

Charge light lights when charging, off when complete.

DC IN AC charger/adaptor receptacle

RESET System reset button





SELECTING MEASURING MODES

Press ON/OFF to turn on. Press MODE to cycle modes GO, PP, PD or C. Select desired measuring mode, which becomes the default mode.

GO Real Time, Display torque transient (no output or indicator).

PP Peak, Capture peak torque (peak data output, PP appears on display).

PD Peak Down, Capture peak down value (peak data output, PD appears on display).

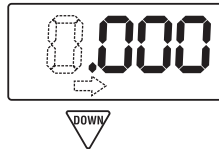
C Continuous data output, Display and output torque transients (160 data/sec., solid green LED indicator).

PROGRAMMING

Press POWER to turn on. Press PRG 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 to move the numeric place and press UP to select values i.e. 50.0 for 50.0 lbf-in, then press PRG to enter.



2. Low Setpoint (LO)

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



3. Peak Down Minimum (PdLO)

After Low value is entered, "PdLO" is displayed, then the PdLO value. Press DOWN to move the numeric place and press the UP to select values, then press PRG 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.



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 160 data/second.

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]

(_ _ _ is memory location)

[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*cm = kg·cm

lb*in _ = lb·in

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

Continuous Output Data Format

[CAN] [value] [CR]



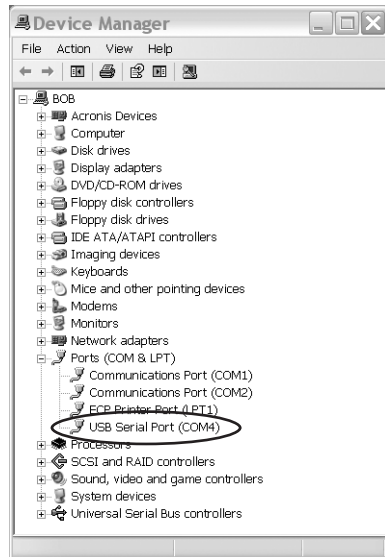
OUTPUT

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.



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.



4. Continuous Data Output Minimum (CLO)

After Peak Down value is entered, "CLO" is displayed, then the CLO value. Press DOWN to move the numeric place and press the UP to select values, then press PRG 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 to select 0.0C - 0.1C - 0.5C - 1.0C - 1.5C - 2.0C - 2.5C - 3.0C, and press PRG 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. Batch Counter (CO)

After the Auto Zero value is entered, "CO" is displayed, then the CO value. Use the UP or DOWN keys to select a value and press PRG to enter (0-99, clockwise only).

7. Interval (In)

After the Batch Counter value is entered, "In" is displayed, then the In value. Use the UP or DOWN keys to select a value and press PRG to enter (0-24 seconds in 2 second increments).

8. Beeper (bp)

After Interval value is entered, "bp" is displayed, then "On". Press UP or DOWN to select On, OFF, or FF, then press PRG 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.

9. Units (Un)

After the Beeper is programmed, "Un" is displayed, then the current unit selection. Press UP to cycle the units; lbf-in, ozf-in, kgf-cm, N-m and cN-m.

After Units are 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- Green LED lights

Over HI- 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- NG flashes and fast beep sounds

In GO and C mode

Under LO setpoint- no LED light or beep

Between LO and HI- GOOD lights and beep sounds

Over HI- 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 CLR, the peak value is stored.
2. To recall a value, press MEM and the last stored memory is displayed. Press UP or DOWN 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 MEM, then press UP or DOWN to move to a memory location. When the desired memory value is displayed, press CLR, "CLR" is displayed. Press CLR again to clear the data and "- - -" is displayed to confirm deletion.

Range memory clear: Press MEM, then press UP or DOWN to move to a memory location. When the desired memory value is displayed, press CLR. While "CLR" is displayed move to another location and press CLR again. "- - -" is displayed to confirm deletion.



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

Downloading Memory Data

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

Note: By pressing DOWN switch for more than 1 sec, the download function can be terminated.

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 5 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.