MTMDP Torque Display
With Multiple Internal Transducers

CONTENTS

INTRODUCTION

DESCRIPTION

The MTMDP Torque Display is designed to provide for a wide range of torque testing applications in the smallest foot print at a very reasonable price. Features include an LCD graphics display, built-in battery pack for remote testing and an optional Intellect External port for easy expansion with our entire line of torque and load transducers. An easy to follow menu based user interface allows for a wide range of software configurations while keeping the tester easy to use.

SYSTEM SPECIFICATIONS

The MTMDP digital tester is designed to be a simple to use and accurate tool for capturing torque readings for both hand and power tools.

Accuracy	0.5% of indicated reading
Active Range	10% - 100% of range (standard)
Display	4 active digits

Model	Software Set
MTMDP-2S	Basic unit up to 750 Lb. In.
MTMDP-2L	Basic unit up to 750 Lb. Ft.
MTMDP-2S PTEST	Variation with Min/Mean/Max Display
SPC/RTC Option	Adds Set & Group memory, Date Stamp and SPC functions

|	
Power In	12 VDC via 120v or 220v Mains adapter.
Battery	7.2 volt NiMh
Batter Life	12 hours typ.
Recharge Time	4 hours
Units	8 User selectable torque units
Filter Settings	User selectable from 125Hz to 2000Hz

OPERATION

DISPLAY OPERATION

Button Function:

1: Turns the display On

2: Turns the display Off

3: Programmable 'Soft Buttons'. The function of these buttons varies with the current menu set and is shown on the bottom two lines of the display.

4: Accepts th4: Accepts the readine reading into memoryg into memory
Scrolls back one level in the menu system

5: Zero's the Transducer
Clears the reading in Peak and 1stst Peak Mode
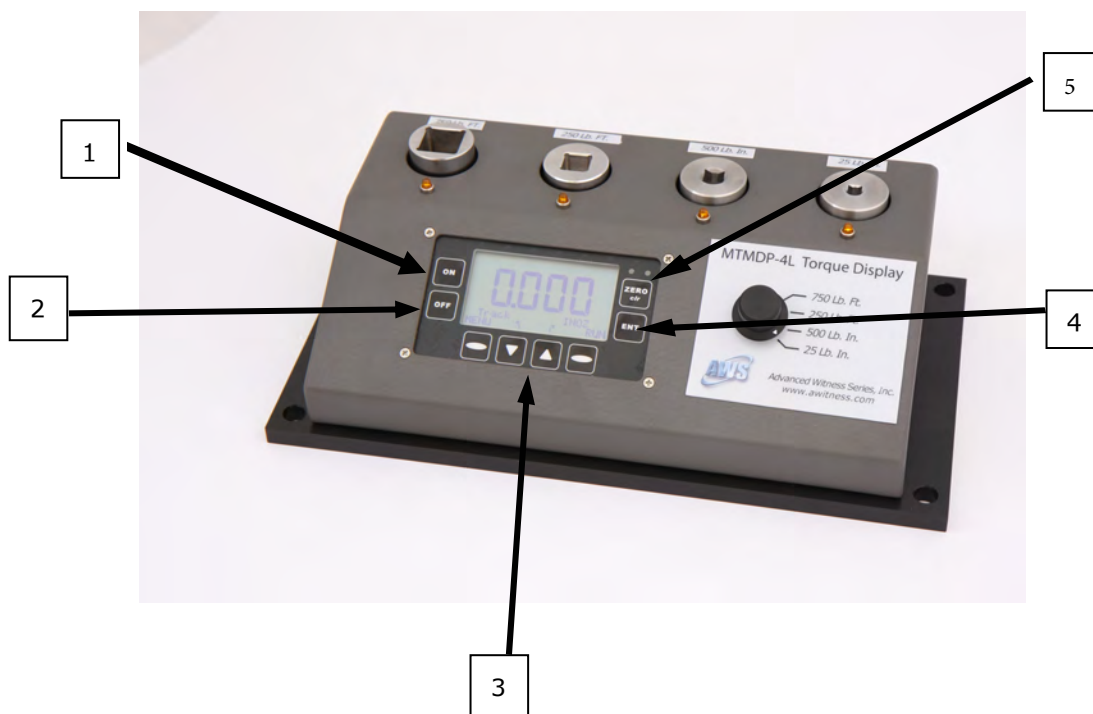
Special Note: MTMDP-2S PTEST is a modified version of the MTMDP series. The top line of the display shows the number of samples taken during a test. Pressing the ENT button at the end of 3 samples will bring the user to the results screen.

REAR PANEL INPUTS
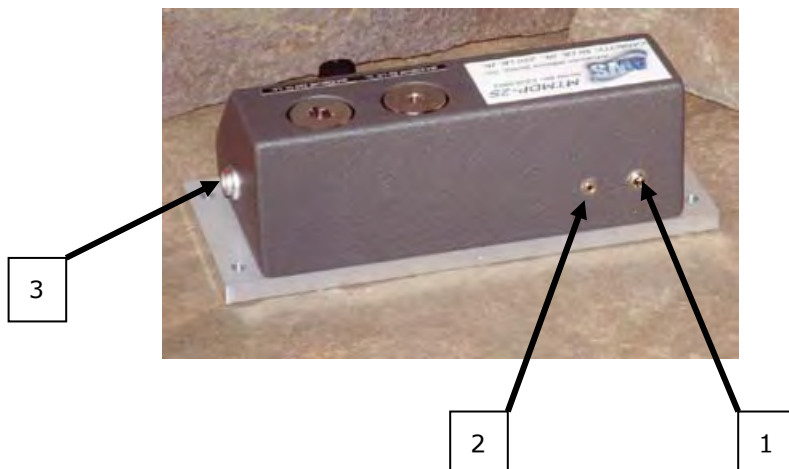
The rear panel has three (3) inputs:

1. DC in. This is the main power in connector. Use only a power supply provided by AWS, Inc., Part No. DCPA-110. Using the wrong voltage or reverse polarity will cause damage to the system.
2. RS-232 connector.
3. Transducer Input: Plug the transducer into this 12 pin circular connector. This is a PUSH LOCK, not a Twist connector.   All transducer power, signal and Intellect communications are input through this connector.

CHARGING THE BATTERIES

1. The batteries in this system should last approximately 12 hours when fully charged. The Low-Battery indicator on the display will illuminate when the battery voltage is low.   Typically, the user will have between 15-30 minutes before the batteries become too weak to power the unit.

2. The batteries are charged any time the system is plugged-in. In Fast Charge mode, i.e. the unit is plugged in and the power is **OFF,** charge time is between 2 and 4 hours depending on battery charge level. The green LED on the front panel will flash when the battery is charging and turned off

Note: If the tester is to be stored for several months, always ensure the battery is completely charged prior to storage.   It is recommended the tester be plugged in when not in use. This will not harm the unit and will increase battery life.

Serial

The MTMDP display can be connected to a printer, computer or data collector via its serial interface. Every time a reading is accepted into memory, a peak is cleared, or data is transmitted via the print data menu(s), it is transmitted via the Serial port. To download the readings, go to the DATA MENU.

SPECIAL NOTE: Model MTMDP-2S PTEST is not equipped with memory, so the operation will vary from the standard unit. The protocol, however, remains the same.

Serial Transfer Protocol

Protocol	Value
Cable	9 pin to mini-plug.
Baud	9600
Parity	None
Flow	None
Bits	8
S Bit	1

Serial Datastream Format

mmmbsdddddbuuuuucl, *where:*

m	Memory Location		
s	Sign (space or -)	c	Carriage Return
d	Data with Decimal Point	l	Line Feed
u	Units	b	Blank

Serial Cable Pinouts

| Pin #	Description	Pin #	Description
1	Unused	6	Unused
2	Transmit	7	Unused
3	Receive	8	Unused
4	Unused	9	Unused
5	Ground		

PROGRAMMING & NAVIGATION

ENTERS THE MENU SYSTEM

SELECTS MODE OF OPERATION

The AWS product line has been newly redesigned to provide a consistent interface throughout the product line. We have made the user interface menu driven, as opposed to 'hard coded'. This has provided several advantages. First, once you learn the basics, you can operate any of our products with the shortest learning curve possible. Secondly, it allows us to offer a greater array of functionality than was previously possible. Thirdly, it allows the user the opportunity to economically upgrade and or customize the tester at any point in the future.

The four buttons on the bottom row are programmable or "Soft Buttons". The functionality of the buttons will vary with the current selection. There are two ways to change settings, or otherwise gain access to the operation of the tester:

1. Live programming: Where the 'soft buttons have text above them, pressing the button will scroll through the options. In the picture above, pressing the down arrow will scroll through the Modes of Operation. These include Peak, 1st Peak and Track. The Up Arrow will scroll through the engineering units.
2. Menu Driven: There are two sets of menus in the display.
   a. Bottom right Oval button will scroll through the Tester Operating Functions. For basic testers, this includes the RUN MODE and MEMORY (MEM) MODE. Toggling this button will change the functions of the other soft buttons appropriately.
   b. MENU (bottom left oval) will take you to the main menu system. Shown below is a sample of one menu screen

MENU LOCATION

MENU ACTION BUTTONS

MENU SCROLL BUTTONS

RETURNS TO PREVIOUS MENU
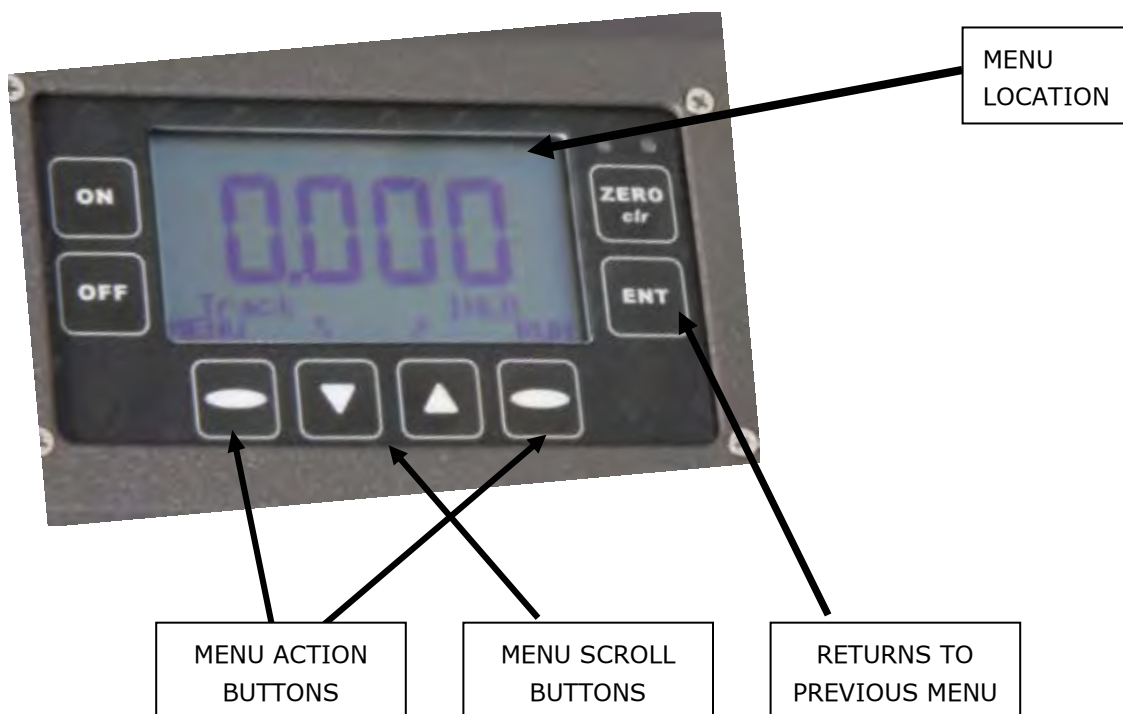
MENU TREE

Operation Overview: There are 8 buttons on the display face: Off, On, Zero/clr, ENT and four (4) programmable or 'soft' buttons. The exact function of the soft buttons is defined by the bottom two rows of text and will vary depending on the current mode of operation. Pressing the ENT button will take you back to the previous screen, until you return to the run mode.

Button Operation:
Run Mode (Current mode displayed):
ON: Turns the unit on
Zero/clr: Clears the peak reading if saved, zeros the transducer and erases the memory location otherwise.
ENT: Save current reading in memory if on and clears the peak reading.
Memory Mode (MEM displayed instead of RUN):
Zero/clr: Goes to run mode without erasing memory location.
ENT: Scrolls to next empty location.

Either Mode:
RUN -> MEM: (soft button) changes the mode of the arrow buttons.
Up and Down: (soft buttons) Units and mode respectively for RUN; Memory location for MEM. Depends on the right programmable button.

MENU: Enter menus.

MENU Operation:
ENT: Previous menu.
Up and Down: Scroll through the current menu.
Programmable keys: Menu actions. The text varies depending of the active menu selection.

MENU TREE:
1 PEAK OPTIONS MENU
SEL: Enters menu.

1-1 Auto clear
+, - Set time in seconds.

1-2 Filter
+, - Set filter value in Hz.

1-3 Peak Blanking
+, - Set blanking in percent of full scale.

1-4 Sign Lock
+, - Toggle On or Off.

1-5 Edit Limits
High or Low edits that limit.
Limit editing:
- Up and Down: Change the digit specified (5 is decimal point, OFF turns the limit off)
- DIG: Changes which digit to edit.
- ENT: Accepts changes.

2 SYSTEM MENU
SEL: Enters menu.

2-1 Sleep
+, -: Set time in minutes.

2-2 Lockout Menu
SEL: Enter menu.

2-2-1 Mode Lockout
+, -: Toggle on or off.

2-2-2 Units Lockout
+, -: Toggle on or off.

2-2-3 Scroll Lockout
+, -: Toggle on or off.

2-3 Contrast
+, -: Change the contrast of the display.

2-4 Information
SYS: Gives detailed info about the system.
TD: Gives detailed info about the transducer.

3 DATA MENU
SEL: Enters menu.

3-1 Print Memory
Send: Prints the currently saved readings.

3-2 Clear Memory
CLR: Followed by ENT clears the readings saved in memory.

3-3 Reset All
CLR: Followed by ENT clears all readings and all sets. Should be used
approximately every 5000 readings.

Special Note: MTMDP-2S PTEST is a modified version of the MTMDP series and does not utilize a data menu. Readings are output through the RS-232 when either ENT is pressed after measuring a peak torque, or when Auto Clear clears a peak. Summary information, such as Min, Max and Mean are neither stored in memory or downloaded.

DESCRIPTION OF FUNCTIONS

The following is a description of the standard features of the MTMDP

OPERATING MODE

Current operating mode (Peak, 1st Peak or Track) will show on the display. Press the ▼ key to toggles between them.

Peak

Displays and retains the maximum torque experienced by the wrench, as occurs when operating the wrench in the tightening direction. The Peak Mode is used for all power tools and some dial wrenches.

1st Peak

Detects the "first peak" of torque experienced by the wrench, capturing the initial torque as occurs when the torque wrench cams over. First Peak is used primarily for Click torque wrenches and cam over screwdrivers.

Track

Displays torque as it is being applied to the transducer. Track mode is used primarily for verifying calibration of the unit.

SELECTING A TRANSDUCER

The transducer shaft to be used is selected by the rotary knob on the front panel. The left position selects the left shaft, Center position select the Right shaft, and the right position selects the External shaft. The LED just below the transducer shaft will be illuminated when that shaft is active. There is no LED indicating when the external transducer is selected.

IMORTANT NOTE: On power-up, the transducer that is selected will be active and ready to use. When changing the shaft, you MUST Zero the unit. Do this by pressing the On/Zero. The shaft capacity can be verified by going to the Information screen in the Systems Menu (2-4). Full Scale capacity screen is shown. Press the ENT button twice to return to the run mode.

ENGINEERING UNITS

Shows the current engineering units. Press the ▲ key to cycle through the eight possible choices: Kgf m, KgfCm, gfCm, cNm, Nm, FT LB, IN LB, IN OZ.

AUTO-CLEAR

Auto-Clear works in Peak and 1st Peak Modes, freeing the operator from manually clearing the display after taking a reading. Auto-Clear can be set from one to nine seconds, or completely off.

With AutoClr disabled, this reading will continue to display until the operator stores it by pressing the **ENT** button, or clears it by pressing the **ON/clr** button.

Pressing the + key will change "OFF" to a value of "1", referring to the number of seconds the system will hold a reading on the screen before clearing. Repeatedly press the ▲ key to scroll from "OFF" to "9". When the desired value is shown, press the **ENT** button.

Once the unit is returned to operational mode, AC will show on the bottom of the display. Because AutoClr is now active, this reading will show for the user specified number of seconds and then clear the display.   From now on, every reading will clear and be stored automatically into memory.

* Remember that AutoClr will not work in Track Mode.

SIGN LOCK

The Sign Lock feature allows the user to select the torque direction of the peak to be captured. With Sign Lock: ON, the initial direction or sign is the default direction. Any peak measured in the non-selected direction will be measured, but not captured as a peak. To reset the sign, either cycle the power or zero the unit.

With Sign Lock: OFF, the tester will capture both CW and CCW torque.

PEAK BLANKING

Peak Blanking sets the minimum threshold at which a torque is captured as a peak. Pressing the + and - buttons will toggle this from 2% through 50% of Full Scale.

Pressing the **ENT** button will accept this value and return to the Run Mode.

FULL SCALE

This screen shows the Full Scale value of the Torque Shaft. This is not a field adjustable value.

LOW LIMIT

Use the low limit setting as a means of visually flagging the operator when a reading fails to reach a desired minimum value. A small down arrow will appear on the screen is a peak is captured below the limit setting.

The limit is adjusted by using the navigation buttons to set the first four digits to the desired value. The fifth digit is used to select the decimal point position. The up and down buttons under the "Soft" button **Change** will change the value from 0-9. Pressing the "soft" **DIG** will scroll through the digit positions. When the correct value is entered, pressing the **ENT** button will return you to the menu system.

Once all the digits have been set, press the **MEM** key to accept the value and return to Program Function mode. The next time a reading is taken, "LO" will appear on the display if the captured value is less than the low limit

HIGH LIMIT

Use the high limit setting as a means of visually flagging the operator when a reading falls over a desired maximum value.

High limits are set in the identical way as low limits. Please refer to the Low Limit section for details.

NOTE ON LIMITS: The green LED on the front of the display will flash when a peak is captured that falls within the limit setting.

SLEEP MODE

To conserve battery life, the MTMDP is equipped with a "sleep" mode, which sets the unit to standby after a user-settable amount of time has passed without activity.

Press the + key to increase the number of minutes the unit will wait for input, or press the - key to decrease the number. This example shows a value of four minutes.

The highest possible sleep setting is 20 minutes. Press **ENT** to accept the value and continue to the next function.

SERVICE AND WARRANTY

SERVICE

To ensure the best possible support for our customers, Advanced Witness Series maintains a complete calibration and repair facility for all its products. We keep in stock most replacement parts for torque testers, transducers, and our line of digital wrenches. When you buy a product from us, the only place you need to go for parts and service is...us! For service, call (408) 453-5070, Monday through Friday, between the hours of 9:00am and 5:00pm Pacific Coast Time.

THE WARRANTY CARD

In order to ensure protection of the warranty as described below, you MUST fill in the appropriate information on the warranty card that came with your unit and return it to Advanced Witness Series, Inc. within 30 days of receipt of item.

We wish to call your attention to the fact that this system and various components need calibration and certification on a periodic basis. By returning the card to us, you will receive timely notification as to when this re-calibration and re-certification is due.

STATEMENT OF LIMITED WARRANTY

ADVANCED WITNESS SERIES, INC. products are warranted free of defects in material and workmanship for a period of one (1) year from date of shipment. This warranty does not include failures due to application of torque to transducers or loaders beyond the stated capacity, operating system with a damaged transducer cord, nor any other misuse, abuse, or tampering. When used with impact type wrenches, the warranty is limited to the electronic digital display units only. This warranty does not cover calibrations.

All freight charges are the responsibility of the company or individual returning the item(s) for repair. Freight collect shipments will not be accepted.

Any modification to any of this equipment, without the express written approval of ADVANCED WITNESS SERIES, INC., will void this warranty. ADVANCED WITNESS SERIES disclaims any and all liability, obligation or responsibility for the modified product; and any claims, demands or causes of action for damage or for personal injuries resulting from the modification and/or use of such a modified ADVANCED WITNESS SERIES product.

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