

CONTENTS

CONTENTS	1
INTRODUCTION	2
Description	2
System Specifications	2
OPERATION	3
Display Operation	3
Sample Mode	4
Program menu:	4
Number edit mode	5
View Mode:	5
Action	6
Side Panel Inputs	6
DC In	6
RS-232	6
Charging the Batteries	6
RS-232	7
RS232 Transfer Protocol	7
RS232 Datastream Format	7
RS232 Cable Pinouts	7
DESCRIPTION OF FUNCTIONS	8
Operating Mode	8
Peak	8
1st Peak	8
Track	8
Engineering Units	8
Full Scale	8
Low Limit	8
High Limit	8
SERVICE AND WARRANTY	9

INTRODUCTION

DESCRIPTION

The AWS-QC Torque Tester 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 a unique swiveling display for use in either horizontal or vertical testing situations. The QC also has serial output for use with a serial printer or Windows PC.

SYSTEM SPECIFICATIONS

Dimensions	Width: 3.125", Height: 3.75", Depth: 3.23", Weight: 2.5 Lbs.
Power Requirements	9V DC, 150 mA (120V mains adapter standard, 240V mains adapter available) and internal NiMH batteries.
Operating Temperature Range	0°C to 50°C
Data Communications	RS-232-C
Accuracy	1% of Indicated Reading with AWS series transducers.
Range	10% to 100%
Display	4 active digits
Units	Eight (8) available engineering units: Oz.in., Lb.in., Lb.ft., Nm, cNm, KgCm, gfCm, Kgfm. Special units available, please inquire.
Filter	Selectable power tool filtering speeds: 125Hz, 250Hz, 500Hz, 750 Hz, 1500Hz

OPERATION

DISPLAY OPERATION

Button Function:

Press any Key to turn the unit on.
Press CLR and ENT simultaneously to turn the unit off.

ENT

Sends the current reading to the serial port and clears the current peak. If memory is on will also output the location and save the current reading. If 999 readings are stored, the next reading will display 'FULL' and disable memory. (see view mode, below, for more information)

MDE

Displays the current mode for 1 second. Pressing MDE again while the mode is displayed will change the mode. Any other button will return to sample mode.

ENG

Displays the current units for 1 second. Pressing ENG again while the units are displayed will change the units. Any other button will return to sample mode.

CLR

Clears the current peak or zeros the transducer if no peak is current. If memory is on will erase the reading at the current location. (see view mode, below)

ENT+CLR

Turns off the display. Press any key to turn on the display.

MDE+ENG

Displays the program menu. See below.

ENT+ENG

Press ENT to send all the readings in memory to the serial port or any other button to cancel. The location will be displayed as the reading is sent. Memory must be on for this command to work.

CLR+MDE

Press ENT to clear all the readings from memory or any other button to cancel. The location will be displayed as the reading is erased. Memory must be on for this command to work.



SAMPLE MODE

Sample mode is the normal operating mode used for measurement. When a measurement is taken, the current transducer sample or current peak is displayed. If a peak is inside the low and high limits, or the limit(s) is/are off, the LED will light up green. Otherwise, the LED will light up red to warn the user that the measurement is out of limits.

PROGRAM MENU:

The program menu alternates display of the item name and the current setting. The program menu will time out after 5 seconds without a button press. All settings will be saved and the display will return to sample mode.

Buttons for menu navigation:

Up (ENG): Go to the next item.

Down (MDE): Go to the previous item.

CLR: Exit back to sample mode and save all settings.

ENT: Change the current item.

Menu Items: (Some models may not have all menu items)

LOC: Current memory location. Press ENT to enter view mode. (see below)

MEM: Memory enable. On, Off.

A.C.: Autoclear time, in seconds. Off, 1 - 9

FILT: Peak filter frequency response, in hertz. 125, 250, 500, 750, 1500.

PPER: Minimum peak, percentage of full scale. 2 - 50.

S.L.: Sign lock. On, Off.

LOW: Lower limit. A setting of 0.000 disables the limit. Press ENT to enter the number edit mode. (see below)

HIGH: Upper limit. A setting of 0.000 disables the limit. Press ENT to enter the number edit mode. (see below)

F.S.: Full scale in the current units. Not editable.

SLEEP: Inactive time to sleep, in minutes. Inactive time is when no buttons are pressed and the transducer is in zero blanking. Off, 1 - 20.

NUMBER EDIT MODE

The current digit or decimal point flashes. Number edit mode never times out.

ENT

Save the current digit and go to the next digit. After editing the digits, the decimal point can be moved. After the decimal point is saved, ENT exits number edit mode and saves the number that was edited. During the decimal point edit, the decimal point can be moved to a position where all of the digits flash. If ENT is pressed at this point the number saved will be 0.000.

Up (ENG)

Increases the current digit or moves the decimal point to the right.

Down (MDE)

Decreases the current digit or moves the decimal point to the left.

CLR

Cancels number edit mode and restores the previous number.

VIEW MODE:

Display toggles between the current location and the current reading at that location. View mode never times out. When memory is off, the location displayed is 000. The units are not displayed when viewing the saved readings.

ENT

Exits view mode and sets the current memory location to the next empty location if memory is on. If memory is off then it stays off.

Up (ENG)

Goes to the next memory location. If the maximum location used is passed then pressing up wraps around to the first location.

Down (MDE)

Goes to the previous location. If the first location is passed then pressing down wraps around to the maximum location used.

CLR

Exits view mode and sets the current location to the displayed location. Readings will be saved from this location, overwriting saved readings at this and higher locations.

SIDE PANEL INPUTS

The side of the AWS-QC contains various interface connections:

DC In

The interface for the AC Adapter supplied with the unit. Use this if you plan on working under Mains power. Use only the AC adapter provided with the unit. Use of another power source will void the warranty and may cause severe damage to the display.

RS-232

If you are downloading to a printer, data collector, computer, etc., this is the mini-plug interface for the RS-232 cable. Values are sent via RS-232 every time the unit auto-clears or the ENT/clr button is pressed

CHARGING THE BATTERIES

1. The batteries in this system should last approximately 12 hours when fully charged. The batteries are trickle-charged any time the system is plugged-in, and take about 8 hours to fully charge. It is recommended the tester be plugged in when not in use. This will not harm the unit and will increase battery life.

Note: If the tester is to be stored for several months, always ensure the battery is completely charged prior to storage.

RS-232

The AWS-QC display can be connected to a printer, computer or data collector via its RS232 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 RS-232 port. To download the readings, go to the DATA MENU.

RS232 Transfer Protocol

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

RS232 Datastream Format

mmmsbsddddd buuuucl, where:

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

RS232 Cable Pinouts

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

DESCRIPTION OF FUNCTIONS

The following is a description of the standard features of the AWS product line.

OPERATING MODE

Peak

Displays and retains the maximum torque exerted 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.

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.

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 if a peak is captured below the limit setting.

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.

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.

ADVANCED WITNESS SERIES, INC.'S OBLIGATION WITH RESPECT TO ITS PRODUCTS SHALL BE LIMITED TO REPAIR OR REPLACEMENT, AND IN NO EVENT, SHALL ADVANCED WITNES SERIES, INC. BE LIABLE FOR ANY LOSS OR DAMAGE, CONSEQUENTIAL OR SPECIAL, OF WHATEVER KIND OR NATURE OR ANY OTHER EXPENSE WHICH MAY ARISE IN CONNECTION WITH OR AS A RESULT OF SUCH PRODUCTS OR THE USE OR INFORMATION THEREOF IN A JOB. THIS WARRANTY IS EXPRESSLY MADE IN LIEU OF ALL OTHER WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NO EXPRESS WARRANTIES AND NO IMPLIED WARRANTIES WHETHER OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE OTHER THAN THOSE EXPRESSLY SET FORTH ABOVE SHALL APPLY TO ADVANCED WITNESS SERIES.

AWS-QC Torque Tester

