PSS-4050 Torque Display User's Guide

USER'S GUIDE
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PERRY SLINGSBY SYSTEMS

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INTRODUCTION

DESCRIPTION

The PSS-4050 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 Intellect External port for easy expansion with our entire line of torque and load transducers. A menu based user interface allows for a wide range of software configurations while keeping the tester easy to use.

SYSTEM SPECIFICATIONS

Dimensions	Width: 3.7", Height: 5.7", Depth: 0.75", Weight:1.5 Lbs.
Power Requirements	9V DC, 150 mA (120V mains adapter standard, 240v mains adapter avaliable) or internal NiMH batteries.
Operating Temperature Range	0˚C to 50˚C
Data Communications	RS-232-C
Accuracy	0.5% of Indicated Reading with AWS series transducers.
	Optional 0.25% of Indicated.
Range	10% to 100%
	Optional 5% to 100%
Lockout Combinations	Mode, Auto Clear, Mode & Auto Clear, Engineering Units, Mode & Engineering Units, Auto Clear & Engineering Units, Mode & Auto Clear & Engineering Units, None (Off)
Display	4 active digits
	Optional 5 active digits
Units	8 Selectable engineering units.
	Special units available, please inquire.
Filter	Selectable Hz filter: 125, 250, 500, 1000, 1500, & 2000

OPERATION

DISPLAY OPERATION

Button Function:

(note: PSS-4050 Tester differs slightly in appearance from the unit shown)

1: Turns the display On
   Zero the Transducer
   Clears the reading in Peak and 1st Peak Mode

2: Turns the display Off

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

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

5: Zero or clear button.

BACK PANEL INPUTS

The back of the PSS-4050 contains various interface connections:

Transducer Input (12-pin connector).

To install or remove the cable simply push in or pull out. Do this by gripping the outer metal case of the cable and NEVER from the cord itself. **THIS IS NOT A TWIST LOCK CABLE!**

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 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. 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 PSS-4050 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 single readings, go to the DATA MENU. When in the **Auto Mode,** readings are output at 10 S/Second.

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

Normal Mode: mmmbsddddddbuuuuucl
Auto Mode: sddddddcl

where:

m	Memory Location		
s	Sign (space or – for Normal mode, + or – in Auto mode)	**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		

# PROGRAMMING & NAVIGATION
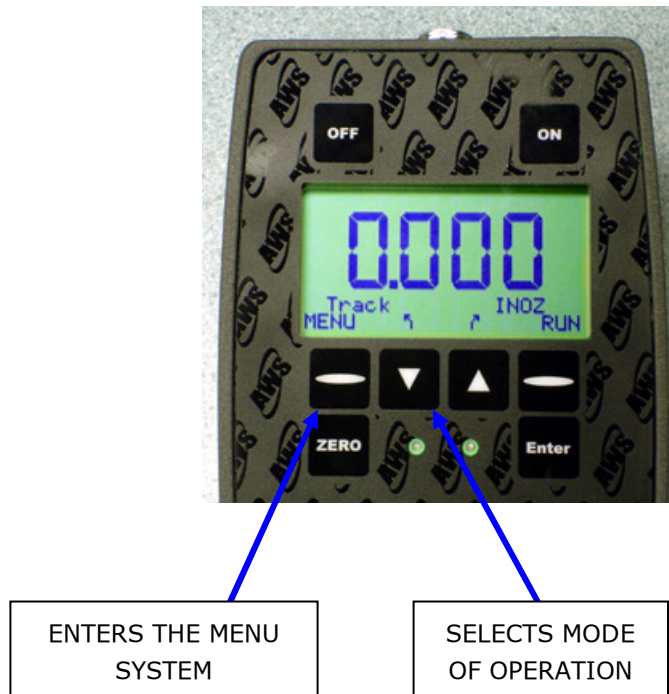
| ENTERS THE MENU SYSTEM | SELECTS MODE OF OPERATION |

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
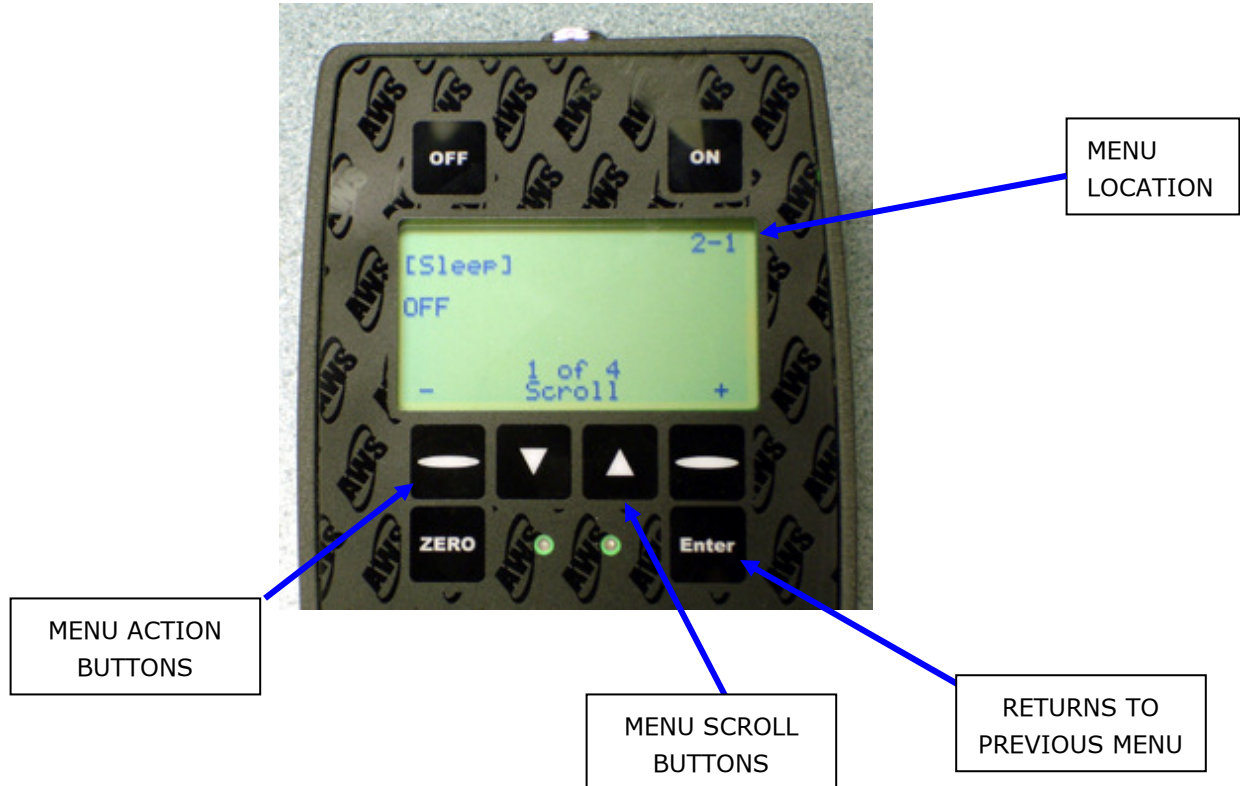
MENU TREE

Operation Overview: There are 8 buttons on the display face: Off, On, four (4) programmable or 'soft' buttons Zero and Enter. 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: Clears the peak reading if saved, Zero's the display and erases the memory location otherwise.

ENT: Save current reading in memory if memory is on and clears the peak reading.

Memory Mode (MEM displayed instead of Run):

ON: 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.
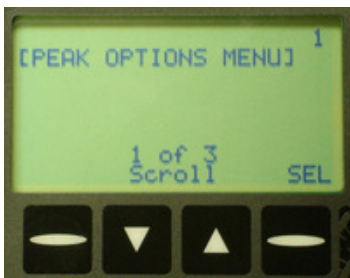
MENU: Enter menus.

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.

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 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 arrow key to scroll from "Off to "9". When the desired value is shown, press the enter 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.
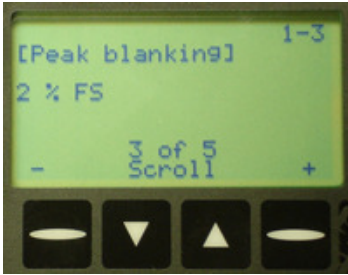
* Remember AutoClr has no effect in Track Mode.

1-2 Filter

+, - Set filter value in Hz.
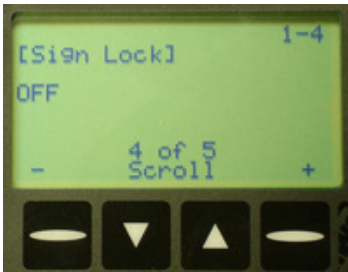
125, 250, 500, 1000, 1500 & 2000.
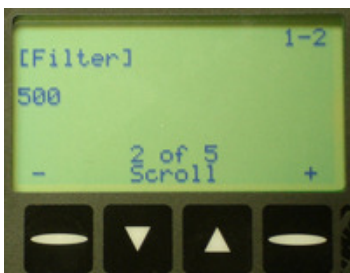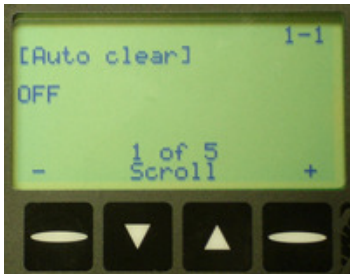
1-3 Peak Blanking

+, - Set blanking in percent of full scale.

Peak Blanking sets the minimum threshold at which 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 Run Mode.

1-4 Sign Lock

+, - Toggle On or Off.

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.
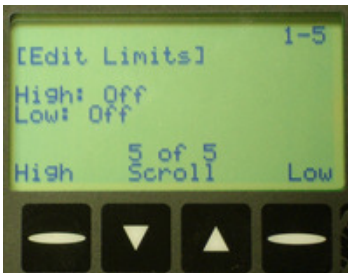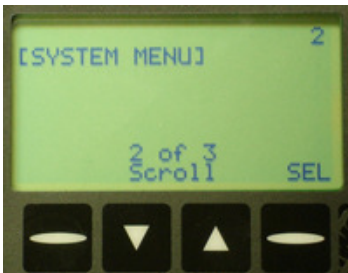
1-5 Edit Limits

High or Low edits that limit.

Limit editing:

Up and Down: Change the digit specified (5 is decimal point, OFF turns the limit off)
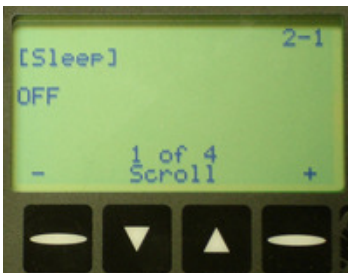
DIG: Changes which digit to edit.

ENT: Accepts changes.

2 SYSTEM MENU

SEL: Enters menu.

2-1 Sleep

+, -: Set time in minutes.

To conserve battery life, the display is equipped with a "sleep" mode, which sets the limit 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 the - key to decrease the number. The highest possible sleep setting is 20 minutes. Press ENT to accept the value and continue to the next function.
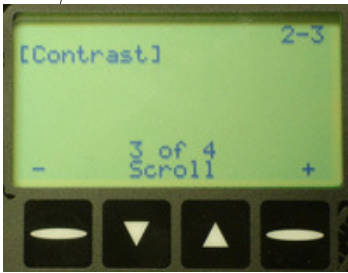
2-2 Lockout Menu

SEL: Enter menu.

2-2-1 Mode Lockout

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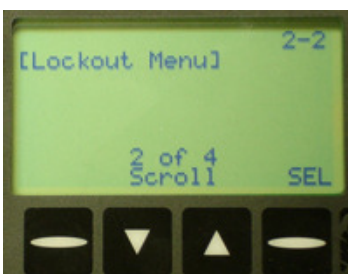
2-2-2 Units Lockout
+, -: Toggle on or off.

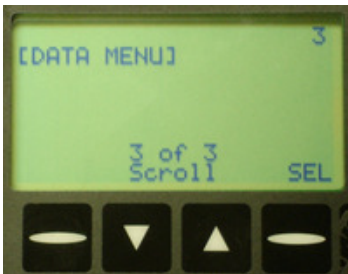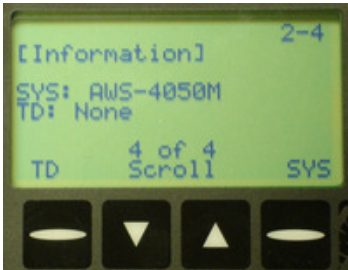### 2-2-3 Scroll Lockout
+, -: Toggle on or off.

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

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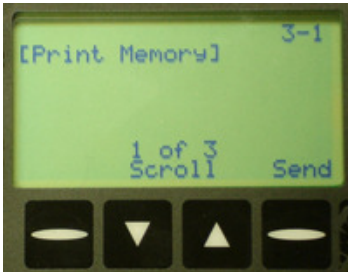SYS: Gives detailed info about the system.
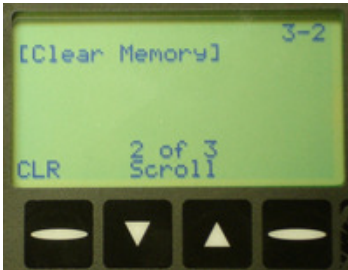TD: Gives detailed info about the transducer.

3 DATA MENU
SEL: Enters menu.

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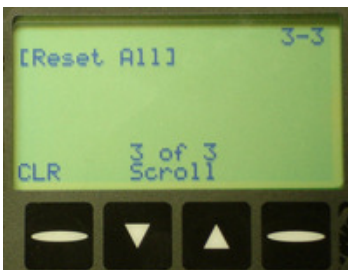Send: Prints the currently saved readings.

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.

DESCRIPTION OF FUNCTIONS

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

OPERATING MODE

Current operating mode (Peak, 1st Peak or Track) will show on the display. Press the ⬆ key to toggle 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.

Auto

Displays torque on the display as it is being applied to the transducer. Readings are also out-put via RS-232 at 10 samples/second. This mode is used when calibrating a tool the the host controller.

SELECTING A TRANSDUCER

IMPORTANT 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.

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.

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.

SERVICE AND WARRANTY

Service

The PSS-4050 is manufactured by AWS for Perry Slingsby Systems. All service, calibration, or repair of the PSS-4050 must be handled through one of the Perry Slingsby Systems Service Centers:

Houston

10642 West Little York, Suite 100
Houston, TX 77041
USA
Tel: +1 713 329 8230
Fax: +1 713 329 8299

STATEMENT OF LIMITED WARRANTY

Perry Slingsby products manufactured by Advanced Witness Series, Inc. 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 AWS will void this warranty. AWS 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 AWS product.

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