

The LEBOW 7554

Operator's Manual 7.2

This manual covers operating version 7.2 of the LEBOW 7554.

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Introduction

System Overview

The LEBOW 7554 is a multi-function process monitor and control instrument, designed to operate with LEBOW auto-id transducers. Instrument has been enhanced to support torque sensors with quadrature encoders. This functionality is supported via AutoID programming. The 7554 version 7.2 will have an encoder chip and new software installed. For easy verification of version 7.2, if a torque sensor with encoder is attached at power up, an >E= will be displayed at the end of the line of the sensor data.

Items included in 7554:

- 7554 Instrument
 - carrying case,
 - shoulder strap,
 - 12 V 600 mA power supply, and
 - this manual.

If any of these items are missing, call LEBOW customer support number, 1 (800) 803-1164.

Features

The LEBOW 7554 features:

- six process monitoring functions, including:
 - a continuous tracking function,
 - 3 peak logging functions,
 - 2 waveform recording functions (with multiple record rates),
- 3 process control output signals (for High, Low and Target occurrences),
- programmable setpoints for Threshold, Target, High and Low Limits,
- analog output,
- storage capability for up to 8,000 peak readings,
- 4 [peak] data logging operations,
- automatic calibration with LEBOW's strain gage based auto-id sensors,
- collects absolute values or values relative to a user defined zero point,
- scaling adjustment for transducers,
- multiple unit capability and automatic units conversion,
- menu locking,
- automatic power-down,
- rechargeable Ni-Cad batteries, and

Process Monitoring Functions

The LEBOW 7554 provides six process monitoring functions:

- Track,
- - Peak,
- + Peak,
- +/- Peak,
- Auto Record, and
- Manual Record.

Track is always available by pressing the TRACK button. The FUNC button can be programmed for any one of the other five functions.

Track

Track provides continuous monitoring of a process. The instrument takes readings at 5 kHz (without an encoder), 2kHz (with an encoder in >deg= mode), or 20Hz (with an encoder in >rpm= mode) averages them, and updates the display 4 times/second. In the Track function, re-taring zeros the encoder. (Track is designed for slowly changing processes.)

Peak

The Peak functions (-, +, +/-) sample data at a rate of 5 kHz. However, if the encoder is enabled and in >deg= mode, the sample rate is 2kHz. If the encoder is in >rpm= mode, the sample rate is 20 kHz. In all Peak functions when readings drop below 80% of the user-defined Threshold Value, the LEBOW 7554 engages a 100 msec timer. If readings rise above threshold within that time, the process cycle continues. If not, the process cycle ends and readings are evaluated with respect to the limits. This timer is reset every time readings drop below threshold.

Record

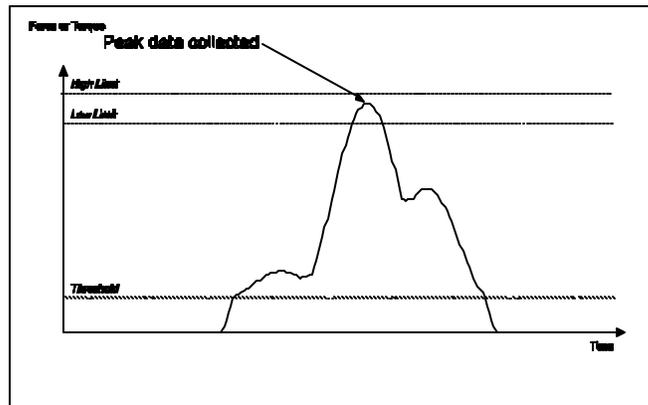
All functions except Manual record enable the encoder at the threshold for >deg= mode, or immediately for >rpm= mode. Manual record enables the encoder at the manual trigger for >deg= mode. The Auto and Manual Record functions have programmable record rates.

The >Record= functions will only allow 10kHz and 5kHz rates without an encoder. All other rates are allowed with an encoder. The encoder is sampled at the record rate for Adeg@ or >rpm= mode.

The >Record= and Peak functions are limited to a total of 8,000 readings with or without an encoder.

+ Peak

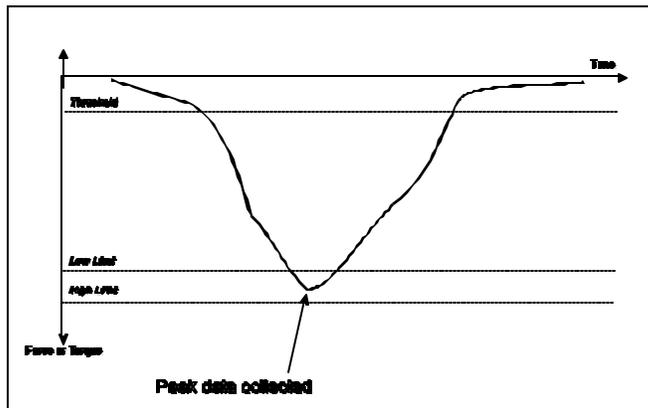
+Peak collects, displays and evaluates the highest [positive] peak value above the user-defined threshold.



+ Peak ignores negative values.

-Peak

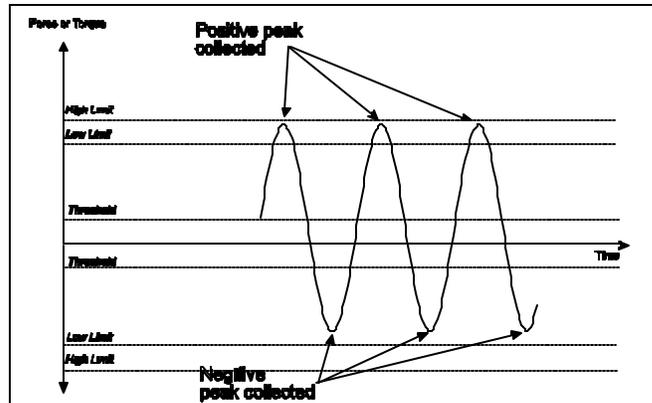
-Peak collects, displays and evaluates the lowest [negative] peak value below the user-defined threshold.



- Peak ignores positive values.

+/- Peak

+/- Peak collects, displays and evaluates the greatest positive or negative values.



All setpoints are symmetrical about the x-axis.

Note: The LEBOW 7554 collects only one reading per process cycle. If readings rise from negative to positive values within a process cycle, (this happens if readings are between the positive and negative Threshold for less than 100 msec.) the instrument records the peak with the greatest absolute value.

Auto and Manual Waveform Recording

Auto and Manual waveform recording are data recording functions that digitize incoming signals. **Up to 16,000 data points** can be stored. Neither function displays readings, or evaluates them with regard to the limits. The following update rates are available: 10, 5, 2, and 1 kHz, and 500, 200, 100, 50, 20, 10, 5, 2, and 1 Hz. For the 10 kHz* scanning rate, data is sampled and stored; the instrument does not average the data. For the 5 kHz* scanning rate, data is sampled at 5 kHz and continuously averaged to store readings. For each of the other scanning rates, data is sampled at a rate of 6 kHz and continuously averaged to store readings at the selected rate.

**10kHz and 5kHz rates are only available when the encoder is not used.*

The Process Control Output Signals

The LEBOW 7554 has three open collector, process control output signals:

- High Condition Signal,
- Low Condition Signal, and
- Target Signal.

When a Peak function is selected, the Target Signal is a real-time signal transmitted when a reading equal to, or greater than, the Target Value is detected. The High Condition and Low Condition Signals are post-process signals transmitted after readings drop below threshold, and the peak value is evaluated. These readings are also evaluated with respect to the encoder limits and target value.

When Track is selected, all signals are transmitted in real-time. When a waveform recording function is selected, all signals are disabled.

All three signals are TTL compatible and are transmitted through the I/O connector on the back of the unit. (See the chapter on Connecting the LEBOW 7554 for more information.)

Programmable Setpoints

When each *type* of sensor (i.e., force, torque or displacement) is first connected to the LEBOW 7554, the instrument sets all of the setpoints to their default values.

Threshold Value = 5% of sensor's Full Scale

High Limit = sensor's Full Scale

Low Limit = 5% of sensor's Full Scale

Target Value = sensor's Full Scale

Each of these values may be changed by the operator. (See the Basic Operation and Applications chapters.) The LEBOW 7554 retains the most recent setpoint values for all three types of sensors; i.e., when you disconnect a torque sensor and connect a force sensor, the setpoints are reset to the values used with the last force sensor connected to the instrument.

The Analog Output

The analog output is the signal from the transducer, amplified and relayed through a low pass filter. The instrument provides an excitation of 7 V. The amplifier has a gain factor of 76 for a nominal output of 1 V at 2 mV/V. This signal is transmitted through the I/O connector. (See the Appendix for wiring diagrams.)

Data Logging

The peak functions log all peak values automatically. The LEBOW 7554 provides for:

- viewing [peak] readings on the LEBOW 7554 screen (one at a time),
- uploading the readings to a PC
- transmitting the readings directly to a serial printer, or
- erasing the readings.

The LEBOW 7554 can store up to 8,000 [maximum] peak readings.

Note: The data is stored in blocks, and each block contains a header. Each time you change transducer types or units, the instrument must store an additional heading which reduces the memory available for storing peak values. Leaving a waveform stored in memory will also reduce the memory available for storing peak values.

No data logging occurs when the Track or waveform recording functions are selected. Data collected by the waveform recording functions must be uploaded to a PC or erased. It can not be viewed on the LEBOW 7554 screen.

Data Transmission

The LEBOW 7554 transmits data in ASCII format with the following parameters:

Baud Rate	=	9600
Parity	=	None
Data Bits	=	8
Stop Bits	=	1
Flow Control	=	None or Xon/Xoff

Automatic Calibration

The LEBOW 7554 is designed to support LEBOW's auto-id sensors. LEBOW's auto-id sensors are equipped with an EPROM that stores the sensor's Full Scale value, the mV/V output, and engineering units. The LEBOW 7554 automatically reads these values when:

- the sensor is initially connected,
- when the instrument is powered up, and
- when the operator exits the menu structure.

The LEBOW 7554 automatically recalibrates to the sensor when it detects a change in these values.

Absolute and Relative Modes

The LEBOW 7554 uses an internal reference bridge to define absolute zero. In Absolute mode, readings are taken with respect to this value. In Relative mode readings are taken with respect to a tare value from the transducer.

Important: When using Absolute mode, it is important that the user-defined threshold be at least 25% greater than sensor's offset from zero.

Scaling

The LEBOW 7554 multiplies **all new** readings by the scaling factor before storing or displaying the data. Changing the scale factor does not affect previously stored readings. With a scale factor of 1.0 the instrument stores and displays readings exactly as taken.

The instrument retains the most recent scale factor for all three types of sensors. (Same as the setpoints for the limit values. See page 4.)

Units

The LEBOW 7554 provides automatic unit conversion. The Full Scale value for all LEBOW's auto-id sensors are specified in engineering units. When the operator selects a different set of units, the LEBOW 7554 converts the Full Scale value, the High and Low limits, the Threshold and Target values, and all readings [taken from that point on] to the new units. The following units are available:

Force:	oz, lbs, Tons, g, kg, N
Torque:	inoz, inlbs, ftlbs, kgcm, kgm, NM
Displacement:	mils, in, mm, cm
Absolute numbers:	None

Note: The LEBOW 7554 will only allow the operator to select units that are consistent with the type of transducer connected, i.e., torque units for a torque transducer.

Menu Locking

All of the above mentioned features are accessed through the LEBOW 7554's menu system. Each of the four menus (see the Basic Operations chapter) can be locked to prevent accidental changes.

Automatic Power-Down

The LEBOW 7554 will automatically power-down 12 minutes after the transducer is disconnected (unless the instrument is in the menu system).

Manual Power-Down

To power-down the instrument manually, hold the OFF key for five seconds and release.



AC Outlet or Battery Operation

The LEBOW 7554 can operate from an AC outlet or from the internal Ni-Cad batteries. When completely charged, the batteries should last for approx. 8 hrs.

To completely charge the batteries, the instrument must be plugged into an outlet for 16 hrs. There is no danger of over-charging the batteries if left plugged in for longer than 16 hrs.

Note: If the instrument is left charging for "several weeks", the batteries' charge life will be severely diminished. (This is a property of all Ni-Cad rechargeable batteries.) LEBOW recommends completely discharging the batteries on occasion to maintain their charge life.

Note: When shipped from LEBOW's factory, the batteries will be completely discharged.

Basic Operation

Initial Power-up

Press any key to turn on the LEBOW 7554.

Initial Self Checks

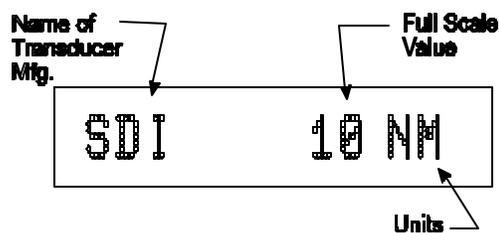
On powering up, the instrument briefly displays "MODEL 7554 V7.2", indicating the software revision number.

If no transducer is connected, the LEBOW 7554 displays, "Check transducer".

Once a transducer is connected, the instrument displays:

```
"SDI 10 lb",
"Relative Mode or Absolute Mode
Counting . . ."
```

The first message is a description of the transducer.



Note: When a third party transducer is connected, "Cus" or "Raw" will replace "SDI". The second message indicates if the instrument is in Absolute or Relative Mode. The last message is displayed while the instrument determines how much RAM is currently available for storing new readings.

Ready to collect data

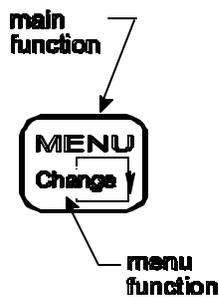
When the instrument is ready to collect data it displays one of the following messages:

"R0000 Ready"	if a peak function was selected and there is no data stored,
"R0001 202.01b"	if a peak function was selected and there is data stored,
"Ready to record"	for auto trigger recording, or
"Accept to record"	for manual trigger recording.

Note: If the screen goes blank, the instrument is set to Auto-record and readings may already be above the threshold. Press ESC to cancel the data sampling.

Key Definitions

The LEBOW 7554 has four keys. Each key has multiple functions, and is labeled with its main function and its menu-navigation function.



The main functions are as follows:

Enters the menu system.



Selects the Track function.



Programmable key-- can be set to select any one of the five following functions: +Peak, -Peak, +/-Peak, A-Record, or M-Record.



Hold for 5 sec. and release to turn off the LEBOW 7554. (The "OFF" feature is always available.)

Each key's additional functions are described in the following sections.

The Menu System

The LEBOW 7554 is configured through a menu system.

There are four menus:

1. Log operations,
2. Settings,
3. Transducer setup, and
4. Menu locking

You enter the menu system by pressing MENU

Note: The LEBOW 7554 does not collect data while in the menus.

The menu system is as follows:

Log operations	Settings	Transducer setup*	Menu locking
View log	Func: <current>	Type: <current>	L-Menu: <current>
Upload log	R-rate: <current>	Unit: <current>	S-Menu: <current>
Print log	Unit: <current>	FS: <current>	T-Menu: <current>
Eraser log	ZMode: <current>	mV/V: <current>	
	Thrshld: <current>	EPPR: <current>	
	LLimit: <current>	Write to AutoID	
	Target: <current>		
	HLimit: <current>		
	Scale: <current>		
	Emode: <current>		
	ELLimit: <current>		
	ETarget: <current>		
	EHLimit : <current>		
	Echo: <current>		

*Note: The "Transducer setup" menu is only available when "Cus" or "Raw" sensors are connected to the instrument. (i.e. no auto-id - See page 7.)

In the menu system, the keys perform the following functions:



Selects displayed menu items for change.



Scrolls through menu or submenu choices.



Accepts changes and exits submenu./ Performs displayed operation.



Discards changes, exits submenu and returns to higher menu.

Log operations Menu

To execute any log operations, press Accept. While uploading or printing, the LEBOW 7554 displays the data on screen as it is sent; while erasing data, the LEBOW 7554 will display "Erasing". When Viewing Data the keys

perform the following functions:



-No Function



Scrolls to the next reading.



Scrolls to the previous reading



Exits the subroutine and returns to the "Log Operations" submenu.

The "Erase log" command requires confirmation. To confirm the "Erase log" command, press Next and Accept.

Settings Menu

The "Settings" menu contains four multiple choice items:

Function, R-rate, Unit, and ZMode.

and nine numeric items:

Threshold, High Limit, Target, Low Limit, Scale, Encoder Low Limit, Encoder Target, Encoder High Limit, and Echo.

When changing a multiple choice item:



Selects the currently displayed item for changing and enters the submenu containing the available choices.



Scrolls to the next available choice in a submenu.



Accepts the currently displayed item, and returns to the "Settings" menu.
Exits the submenu and returns to the "Settings" menu.



When changing numeric items:



Selects the currently displayed item for changing and accesses the numeric entry subroutine.
/Changes the value of the current digit position.



Scrolls to the next digit.



Accepts the currently displayed value, and returns to the "Settings" menu.

Discards the new value./ Press twice to exit the subroutine and return to the Settings" menu.

See the Applications Chapter for examples of setting up the LEBOW 7554 for various tasks.

Menu Locking

The Locking Menu is used to protect menu selections from accidental change. Each of the three submenus can be individually locked.

The LEBOW 7554 requires a password to access the "Menu Locking" menu. The password is "290". (See the section on entering numeric values above for further instructions.)

When a menu is locked, you will be able to enter it and view the currently selected item or values, but you will not be able to change them.

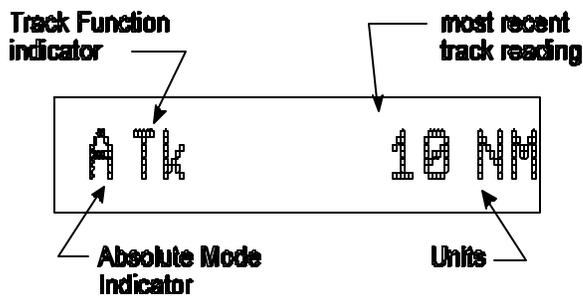
When the menus are locked:

- The "Settings" and "Transducer setup" submenusCNext will scroll through the values, but Change and Accept will not function. Esc will exit the submenu.
- In the "Log operations" submenuCthe View Data, Upload Data, and Print Data will function normally, but you will not be able to Erase Data. Esc will exit the submenu.

If you attempt to change a locked item, the LEBOW 7554 will respond by flashing the message "**** LOCKED ****" for one second.

Using the Track Function

When the Track function is selected, the instrument displays:



The keys perform the following functions:



Enters the menu system.



Tares the sensor.



Selects the programmed function.

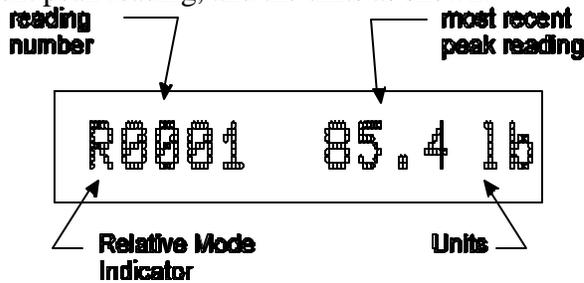


Tares the sensor.

Note: The LEBOW 7554 does not log readings when the Track function is selected. With the encoder function, no limits are displayed with the angle function.

Using the Peak Functions

When any of the three peak functions are selected, the instrument displays the reading number, the most recent peak reading, and the units as shown:



Readings are logged, and the display is updated after each loading cycle; i.e., after readings rise above and then drop below the Threshold Value.

The keys perform the following functions:



Enters the menu system.



Selects the Track function.



Will decrement the reading number, allowing the last reading to be re-taken.

Toggles between Absolute and Relative Modes.

Using the Auto and Manual Record Functions

The Auto and Manual Record functions are identical except for the initial trigger. The Auto Record function uses the Threshold Value as its signal to begin recording data. The Manual Record function requires pressing the Accept key to begin recording data.

The LEBOW 7554 stops recording when either of the following occur:

- the memory is full, or
- the ESC key is pressed.

Before recording data, the instrument displays "Ready to record". While the instrument is recording, the screen will be blank and the green indicator light will flash at the recording rate. (Refer to  the section on the menu system for information on selecting the scanning rate.)

When the instrument is done recording, it displays "Accept to upload". Pressing the Accept key uploads the data to a computer via the RS-232 port.

Only one digitized curve can be stored in memory at a time. The instrument retains all data when you enter the menu system or turn off the LEBOW 7554. Recorded data must be manually erased. To Erase data:

- 1.Press ESC to initiate the "Erase data" command.
- 2.Press Next to scroll to "Yes".
- 3.Press Accept to confirm the "Erase data" command.

The keys perform the following functions:



Enters the menu system.



Selects the Track function./Scrolls from "No" to "Yes" when confirming the "Erase data" command.



Begins recording in Manual./Uploads data./Confirms the Erase command.



Stops data recording./Initiates "Erase Data" command.

Applications

Monitoring Continuous Change

Use the Track function to monitor continuous changes. Select the Track function by pressing the TRACK key. (Outside of the menus.) The instrument will monitor the sensor and update the display four times per second (4 Hz).

Readings may be taken in either Relative or Absolute mode. In Relative mode the instrument tares the sensor and readings are relative to the sensor's offset. In Absolute mode, readings are taken with respect to absolute zero; defined by the instrument's internal reference bridge.

Recording Peak Readings

The LEBOW 7554 can collect and store peak readings from any force, torque or displacement. The instrument can also automatically convert readings from one unit to another as the readings are collected. (The instrument will not convert the units of readings already stored.)

Example

Suppose you have a 50 kg load cell (with a 0.05 kg offset) and you want to record peak readings in pounds.

To set up the LEBOW 7554, do the following:

Step	Action	Instrument Displays:
1	Connect the sensor and power-up the instrument.	SDI 7554 V7.2 Transducer check SDI 50 kg Absolute mode A0000 Ready
Enter the menu system.		
2	 to enter the menu system.	Log operations
Assign a Peak function to the FUNC key.		
3	 to scroll to the "Settings" menu.	Settings
4	 to enter the "Settings" menu.	Func: +peak Indicates the current function.

5	 to enter the "Function" submenu.	New Fn: +peak
6	 (twice) to scroll through the function choices.	New Fn: -peak New Fn: +/-peak
7	 to select the currently displayed function.	Func: +/-peak
Select the units.		
8	 (twice) to scroll to the "Units" submenu.	Unit: kg
9	 to enter the "Units" submenu.	New Unit: kg
10	 (4 times) to scroll to lbs.	New Unit: lb
11	 to select the displayed units.	Unit: lb
12	 to exit the "Settings" menu.	Settings
[Optional] Erase any previously recorded data.		
13	 (twice if using an LEBOW sensor, three times if using a third party sensor) to scroll to the "Log operations" menu.	Log operations
14	 to enter the "log operations" menu.	View log

15	 (3 times) to scroll to "Erase log".	Erase log
16	 to erase the log.	Erase log: No The instrument asks for confirmation.
17	 and  to confirm the erase log command.	Erase log: Yes Erasing Erase log Note: if the log only contains a few entries, "Erasing" may be displayed to quickly to be seen.
18	 To exit the "Log operations" menu.	Log operations
Exit the menu system.		
19	 to exit the menu system.	Transducer check A0000 Ready

The instrument is now set up to collect peak reading.

Uploading Logged Peak Readings to a Computer or Printer

To calculate any statistics from collected peak data, it is necessary to upload the collected data to a computer. The readings may also be sent directly to a printer.

There are three steps to uploading the data:

Step 1: Connect the 7554 to either the computer or the printer. Use the RS-232 port on the back of the LEBOW 7554, and the serial port on the computer or printer.

To connect to a printer, use a standard IBM serial printer cable.

To connect to a PC, use a standard IBM null modem cable.

Step 2: Prepare the PC to receive the data.

1. Launch a terminal emulation application such as Windows Terminal or Hyperterminal.

2. Set the communications settings to:

Baud Rate = 9600
 Parity = None
 Data Bits = 8
 Stop Bits = 1
 Flow Control = None

Note: Since data is in raw ASCII format, it is not necessary to set the terminal emulation.

3. Select "Receive Text File" from the data transfer options.

You will be prompted for a file name. (Depending on the program, this may occur before or after the data transfer.) All the data transmitted to the computer will be stored in this file.

4. Enter a file name.

Step 3: Upload the data.

To upload peak readings to PC do the following:

Step	Action	Instrument Displays:
Enter the menu system.		
1	 To enter the menu system.	Log operations

2	 to enter the "Log operations" menu.	View log
3	 (once) to scroll to "Upload Log." or  (twice) to scroll to "Print Log".	Upload log or Print log
4	 to upload or print the data.	The instrument will scroll through the readings as it uploads or prints them. Note: Uploading is faster than printing.

[Optional] Erase Readings.

Note: Peak readings are not automatically erased, and can be downloaded to a computer or printer as many times as desired.

5	 to scroll to "Erase Log".	Erase log
6	 to erase the peak readings.	Erase log: No The instrument asks for confirmation.
7	 and  to confirm "Erase log" command.	Erase log: Yes Erasing Erase Log Note: if the log only contains a few entries, "Erasing" may be displayed to quickly to be seen.
8	 to exit "Log operations" menu.	Log operations

Exit menu system.

9	 to exit the menu system.	Transducer Check R0000 Ready
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Digitizing a Force-Time Curve

The LEBOW 7554 provides two functions for digitizing waveforms, the A-record function and the M-record function. To capture a force-time curve with the M-record function, follow this procedure:

To set up the LEBOW 7554:

Step	Action	Instrument Displays:
1	Connect the sensor and power-up the instrument.	SDI 7554 V7.2 Transducer Check SDI 50 kg Absolute mode A0000 Ready
Enter the menu system.		
2	 to enter the menu system.	Log operations
Assign a record function to the FUNC key.		
3	 to scroll to the "Settings" menu.	Settings
4	 to enter the "Settings" menu.	Func: +/-peak
5	 to enter the "Function" submenu.	New Fn: +/-peak
6	 to scroll to the desired function. (In this case M-record)	New Fn: M-record
7	 to assign the displayed function to the FUNC key.	Func: M-record
Select the Recording Rate		
8		R-rate: 10kHz

	 to scroll to "R-rate".	
9	 to enter the "R-rate" submenu.	New rate: 10kHz
10	 to scroll to the desired recording rate. (In this case, 500Hz.)	New rate: 500Hz
11	 to select the displayed recording rate	R-rate: 500Hz
12	 to exit the "Settings" menu	Settings
Exit the menu system.		
13	 to exit the menu system.	Transducer check Accept to record

To record the force-time curve:

1. Press Accept to begin recording data.
2. Apply loads to the sensor.
3. When you are done applying loads, Press ESC to stop recording.
4. Press Accept to upload the data to a computer, or

Press ESC to erase the data. The instrument will ask for confirmation. Press Next and Accept to confirm the erase command.

Using the Output signals

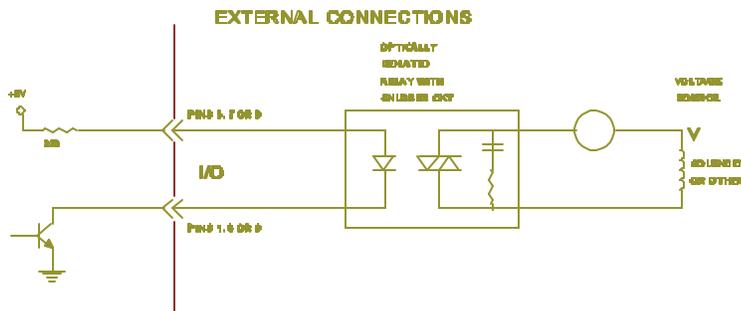
Example

Suppose you are fastening bolts with a nutrunner. The application requires that torque be between 90-100 in-lbs. You want the 7554 to turn off the nutrunner when it detects a torque of 92 in-lbs; and you want to trigger an audible alarm if the actual peak torque is not within the specified range.

To set up the LEBOW 7554, do the following:

Step 1: Purchase a standard 9 pin D-sub male connector.

Step 2: Wire the connector to each of the alarms according to the following diagram.



Note: In some cases you can connect the load directly to the instrument, but most cases do require a buffer as shown.

Pins 1 and 5 are for the Target Signal; 6 and 7 are for the High Condition Signal; and 8 and 9 are for the Low Condition Signal.

Step 3: Program the 7554 to trigger the signals according to the following procedure:

Step	Action	Instrument Displays:
1	Connect the sensor and power-up the instrument.	SDI 7554 V7.2 Transducer Check SDI 50 kg Absolute mode A0000 Ready
Enter the menu system.		
2	 to enter the menu system.	Log operations
Assign a Peak function to the FUNC key.		
3	 to scroll to the "Settings" menu.	Settings
4	 to enter the "Settings" menu.	Func: +peak indicates the current function
5	 to enter the "Function" submenu.	New Fn: +peak
6	 (twice) to scroll to the +/- peak function.	New Fn: -peak New Fn: +/-peak
7	 To select the currently displayed function.	Func: +/-peak
Set the High and Low Limits for acceptable Peak Values; and the Target Value		
8	 (four times) to scroll to the Low Limit	LLimit:: 10.00
9		New LL: The underline indicates the currently

	 to change the Low Limit.	selected digit.
10	 (11 times) to change the first digit to "9".	New LL: <u>9</u>
11	 to move to the second digit.	New LL: 9 <u>_</u>
12	 (twice) to change the second digit to "0"	New LL: 9 <u>0</u>
13	 to scroll to the third digit.	New LL: 90 <u>_</u>
14	 to change the third digit to ".".	New LL: 90 <u>.</u>
15	 to scroll to the fourth digit.	New LL: 90. <u>_</u>
16	Repeat step 12.	New LL: 90. <u>0</u>
17	 to accept the displayed value.	LLimit: 90.0
18	 to scroll to the Target Value.	Target: 200.0
19	Repeat Steps 10-18, entering 92.0 for the Target Value.	Target: 92.0
20	 to scroll to the High Limit.	HLimit: 200.0
		HLimit: 100.0

21	Repeat Steps 9-17, entering 100.0 for the High Limit.	
22	 to exit the "Settings" menu.	Settings
Exit the menu system.		
23	 to exit the menu system.	A0000 Ready

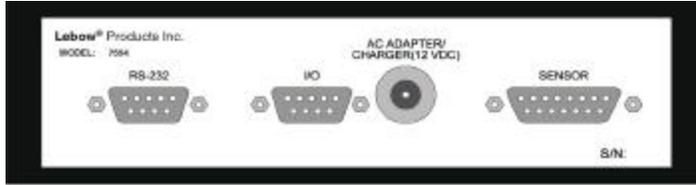
To operate the instrument, apply torque to the sensor. When the instrument detects a torque equal to the Target Value, it will send the Target Signal.

After each loading cycle is completed, the instrument will display the peak value and evaluate it relative to the High and Low Limits. If the peak value falls above the High Limit, the instrument will send the High Condition Signal. If the peak value falls below the Low Limit, the instrument will send the Low Condition Signal.

Appendix

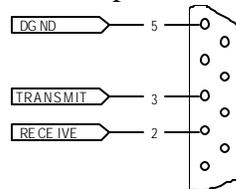
Connecting the LEBOW 7554

There are four connectors on the back of the LEBOW 7554.



RS-232

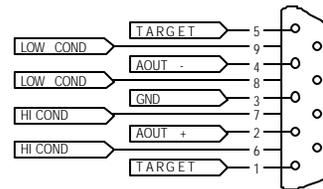
The RS-232 connector is used to upload and print data.



I/O

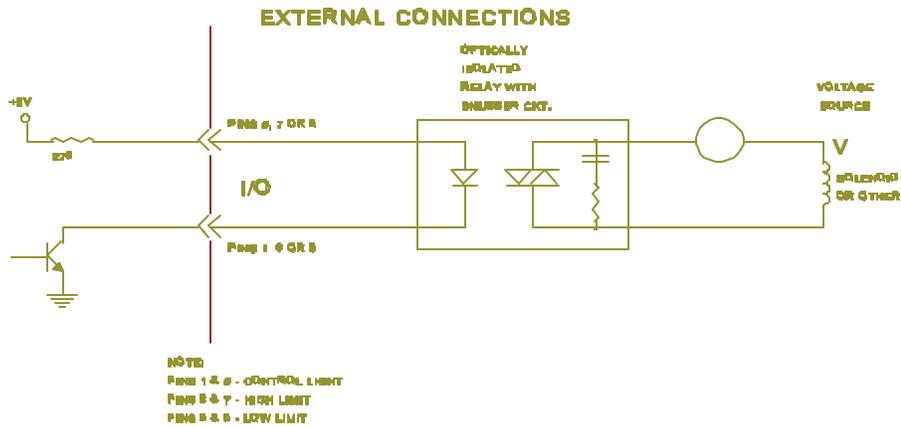
The I/O connector is used for:

- Analog Output,
- High Condition Signal,
- Low Condition Signal, and
- Target Signal.



The analog output is a differential output across AOUT+ and AOUTB. It has a common mode voltage of 2.5 V with respect to chassis ground. AOUTB is the reference and AOUT+ is driven positive or negative with respect to it. The Output impedance of each is 620 Ω and the output voltage is +1.0 V nominal for 2 mV/V full scale sensor.

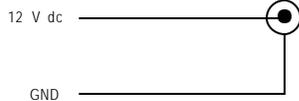
Wire the connections for the output signals according to the following diagram.



- | | |
|---------------|-----------------------|
| Pins: 1 and 5 | Target Signal |
| 2 and 6 | High Condition Signal |
| 8 and 9 | Low Condition Signal |

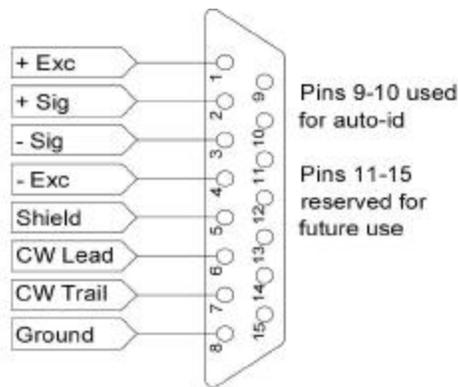
AC Adapter/Charger (12 V dc)

The AC adapter is used to power the instrument, and charge the battery.



Transducer Wiring

The standard 15-pin D sub Connector and the Model 90144 Connector are wired according to the following diagram:



Battery Replacement

The LEBOW 7554 uses two types of batteries:

- a 9.6 V rechargeable Ni-Cad battery pack, and
- one 3 V lithium coin battery.

The rechargeable Ni-Cad batteries power the instrument when it is not plugged into a wall socket. If the "charge life" of these batteries decreases significantly, or if the instrument refuses to work unless plugged into a wall socket, the Ni-Cad batteries need to be replaced. This must be done at LEBOW's factory. Contact our service department at 1 (800) 803-1164 for shipping instructions.

The coin battery supplies power to the RAM when the instrument is turned off. This protects the collected data from being erased when the instrument powers down. When this battery needs replacement, the instrument will display the message: "Low Coin Battery". Replace this battery with a Duracel DL2025 or equivalent 3 V lithium coin battery.

Specifications

Sampling Rates

Peak and Track functions 5 kHz

With encoder 2 kHz

Record functions selectable up to 10 kHz

with encoder..... selectable up to 2 kHz

Frequency Response(-3 dB) at 1000 Hz

Accuracy..... max error = 0.05% of Full Scale

Sensor Interface

Max Input at Full Scale " 4.5 mV/V

Polarity..... Bipolar

Bridge excitation..... 7 V supplied

Min Bridge Impedance 120 Ω

Data Output RS-232 port

..... ASCII

..... 9600 baud

..... 8-N-1

Power

AC Adapter 115 V ac/12 V dc

Batteries..... 9.6 V internal/rechargeable

Physical Dimensions

height 1.75 in

width..... 6 in

depth..... 8 in

weight 2.4 lbs