Using the
WALKER TULSA
RANGER™

Portable Electronic Thermometer

W. L. Walker Co., Inc.
Tulsa, Oklahoma

918-583-3045

Operating the RANGER

For units originally equipped with bonding straps: To reduce the risk of fire or explosion, this device must be bonded according to the temporary bonding requirements in IEC/EN 60079-14 before and during introduction to a hazardous atmosphere and shall remain bonded until complete withdrawal from the hazardous atmosphere. The device must remain bonded to ground/earth using the provided connection whenever a hazardous atmosphere could be present as well as during situations where electrostatic charging can occur such as the unwinding or winding of the thermometer cable, or filling or emptying of the tank.

CAUTION: In the event that any part of the instrument should become electrostatically charged in a potentially hazardous location, follow company policies for testing and clearing the area of any hazardous gases before attempting to bond the instrument to earth ground. If this is not possible, allow sufficient time for the instrument to naturally dissipate any charges before attempting to bond to earth ground. Given the atmosphere, this could take several hours.

CAUTION: This unit is designed and manufactured as a portable electronic device. Do not leave or permanently install the unit in a manner that may cause detrimental harm to the device and/or its markings.

WARNING:
SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
AVERTISSEMENT:
LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÉQUE

Replacing the batteries

WARNING:
DO NOT REPLACE BATTERIES IN A HAZARDOUS LOCATION.
REPLACE BATTERIES WITH ENERGIZER ULTIMATE LITHIUM AAA NO. L92.

1) Remove the three screws that secure the battery cover on back of unit.
2) Fold the rubber gasket over the body of unit to expose the batteries.
3) Disconnect batteries and replace.
4) Always replace with new batteries and do not mix battery types.
5) Power unit up to check for proper operation.
6) Allow gasket to return to proper position and replace battery cover and screws.

Brief Description

The RANGER is a hand-held portable digital thermometer (Digital Contact Thermometer DTC, Portable Electronic Thermometer PET) designed specifically for use in hazardous locations. The RANGER is built to be durable and easy to operate. It displays temperature readings on a 7-digit LCD with a backlit display for easy viewing in all situations. The buttons also glow in the dark for easy operation in low light environments.

Turning the Ranger On

Press power button to power unit on. Power button is located in the middle of the faceplate, first button down from the top. Alternatively, you may hold the power button down

until unit powers on. This will power the unit on with the backlights illuminated.

The display will show software version as:

VEr. X.XX

Followed by a battery level indicator:

bat X.X

After the initial display of the software version and battery level, the RANGER will switch to display the current temperature (as measured by the tip of the attached probe).

RANGER Instructions

The RANGER can read temperature in either Fahrenheit or Celsius. It also features a digital calibration procedure that allows precision calibration without "tweaking pots" or doing clumsy calibration calculations.
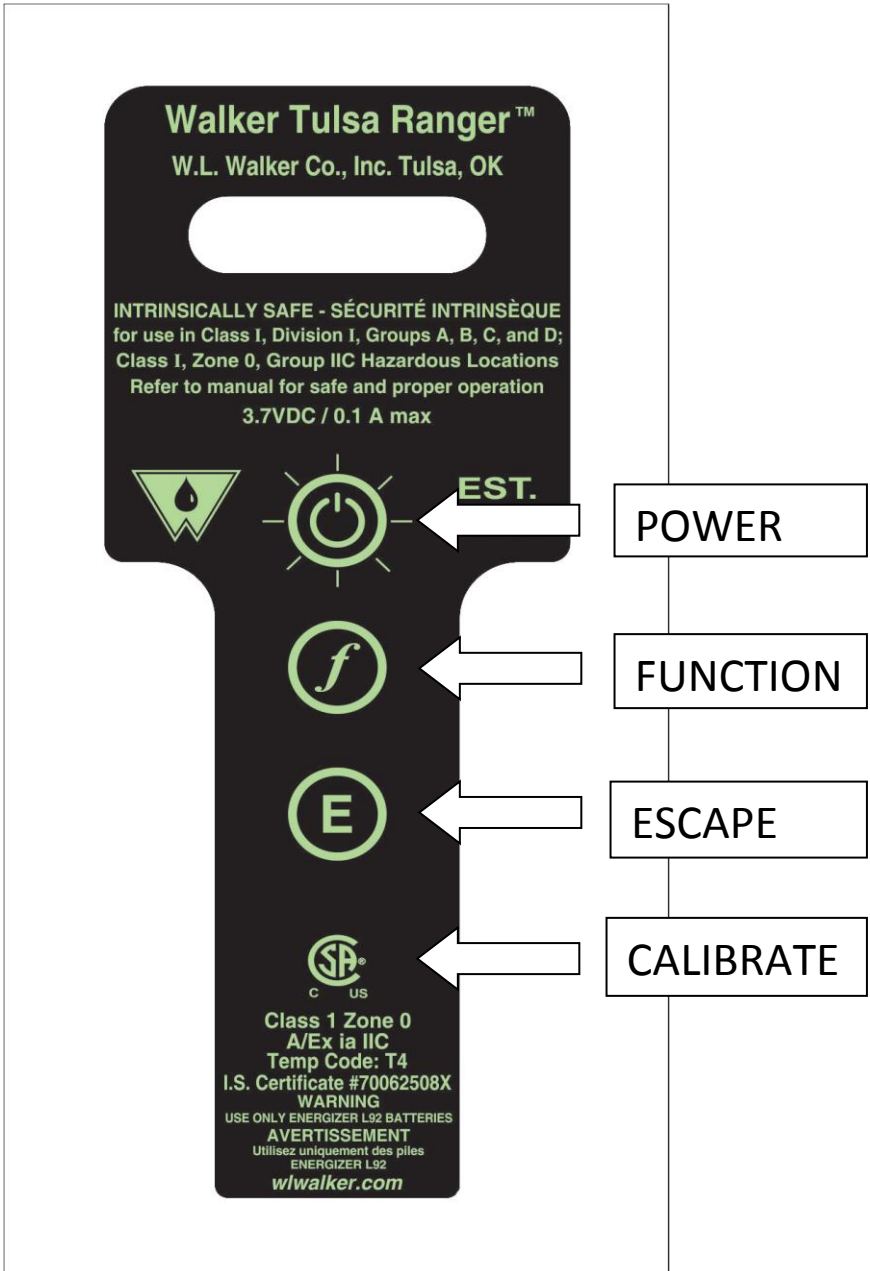
Taking a temperature reading

WARNING:
Static Electricity can cause an EXPLOSION!
BEFORE opening any hatch or taking a temperature measurement in a hazardous location, attach the grounding clamp to any grounded metal surface. After you are finished, close the hatch, **THEN** remove the grounding clamp.

Take the temperature probe and place it in the fluid or thermowell to be measured. After the probe has been in the fluid or thermowell for approximately 30 to 45 seconds read the current temperature.

Basic RANGER Operations

There are four buttons on the keypad: *Power, Function, Escape, and Calibrate.*

Walker Tulsa Ranger™

W.L. Walker Co., Inc. Tulsa, OK

INTRINSICALLY SAFE - SÉCURITÉ INTRINSÈQUE
for use in Class I, Division I, Groups A, B, C, and D;
Class I, Zone 0, Group IIC Hazardous Locations
Refer to manual for safe and proper operation
3.7VDC / 0.1 A max

EST.

POWER

FUNCTION

ESCAPE

CALIBRATE

Class 1 Zone 0
A/Ex ia IIC
Temp Code: T4
I.S. Certificate #70062508X
WARNING
USE ONLY ENERGIZER L92 BATTERIES
AVERTISSEMENT
Utilisez uniquement des piles
ENERGIZER L92
wlwalker.com

Power Button

Used for frequent operations – Turn unit on or off. Turn backlight on or off. Save current temperature reading to list. Starts and stops auto sampling.

Power Button	Operation	Display
Press and release	Turns unit ON	Unit boot process
Press and hold	Turns unit ON with backlights	Unit boot process with backlights
Two quick presses	Saves current reading to list or, if Auto Sample mode is enabled, starts or stops auto sampling. See note below.	"Logged" if reading is saved, or average temperature if Auto Sampling.
Hold until 'Light' displays and then release	Toggles backlight on/off. Backlight has 10-minute shutoff timer.	Light
Hold until 'OFF' displays and then release	Turns unit OFF	OFF

Function Button

Press and hold the *Function button* to display the menu options. Release the *Function button* when the desired option is displayed. Use the *Power button* to select the displayed option. When the desired value is displayed, press the *Function button* to confirm the selection or the *Escape button* to return to the temperature display without modifying the new value. The *Escape button* can be pressed at any time to exit the function menu and return to the temperature display.

Displayed Function	Press Power Button To:	Display
AutoSP	Enable or disable auto sample mode	"Enable" or "Disable"
Clr AS	Clear auto sampling average value	"no" or "yes"
LISt	Scroll through saved readings	"75.23 F"
dISP At	Display list average temperature	"At 77.82"
ClrList	Option to clear the list of saved readings. Toggle between no and yes	"no" or "yes"
UnitS	Toggle units between C and F	"deg F" or "deg C"
dEC	Change displayed resolution	"dEC 0.1" or "Dec 0.01"
Dly Inc	Increase auto off delay	Delay in 5 minute increments
Dly Dec	Decrease auto off delay	Delay in 5 minute increments
VErSIon		Displays firmware version
tESt	Turn test mode on or off	"on" or "off"

***Note:** When Auto Sample mode is enabled using the **Function button** (described above), the leftmost display position will show three horizontal bars blinking, indicating that the sampling is armed, but not active. When the blinking bars are present, the current average temperature will be displayed. When the blinking bars are off, the current or spot temperature will be displayed. When sampling is active, the bars will be on solid and the temperature displayed will be the current average value. If the sampling is paused and then resumed, the averaging will continue where it left off. To reset the average, use the Clr AS function described above. When auto sampling is active, the auto off function and backlight timer will be disabled.*

Calibrate Button

Press and hold the **Calibrate button** and then press the **Function button** to enter the calibration menu. The menu displayed depends on whether or not a calibration is currently active. Use the **Function button** to scroll through the calibration options. Press the **Power button** to select or toggle the displayed function or press **Escape** to return to the temperature display.

When a calibration is active:

Calibration Function	Press Power Button To:	Display
AbrtCal	Exit calibration mode, discard the new calibration.	"no" or "yes"
StorCal	Exit calibration mode, create a backup of the current calibration, and save the new calibration. There must be at least 2 calibrated points in the table for this option to be displayed.	"no" or "yes"

When no calibration is active:

Calibration Function	Press Power Button To:	Display
StrtCal	Enter calibration mode and begin a new calibration.	Black dot to the left of the temperature reading is on while calibration is in progress.
Add Cal	Enter calibration mode with the current calibration values.	
DelCal	Delete current calibration and restore saved calibration. This option is only displayed if there is a saved calibration. Toggle between no and yes	"no" or "yes"

Calibration Procedure

Calibration mode is indicated by the small black dot to the left of the temperature display. When calibration mode is entered, the number of displayed decimal points is automatically set to two.

Calibration temperatures are 32°, 122°, and 212° degF (0°, 50°, 100° degC). Place the probe in a controlled temperature medium set to the lowest calibration temperature and allow it to stabilize. The 32°F/0°C calibration point is not adjustable and must be as close to the set point as possible. Once the temperature is stable, press and hold the *Calibrate button* and then press the *Power button* to update the calibration table for the current temperature.

For the 122° and 212° degF (50° and 100° degC) points, the displayed temperature must be within 10° of the set point. A black dot will begin blinking to indicate that the calibration temperature may be adjusted to match that of the bath. Press the *Power button* to increase the temperature by 0.01 deg. Press the *Function button* to decrease the temperature by 0.01 deg. Holding the *Calibrate button* while increasing or decreasing will change the increment to +/- 0.1 deg. When the correct temperature is displayed, press the *Escape button* to log the calibration point and return to the live temperature display. A minimum of 2 and a maximum of 3 points can be calibrated.

When the Add Cal function is selected, the current calibration table is used as a starting point. This allows another point to be added to the table or existing points to be re-calibrated.
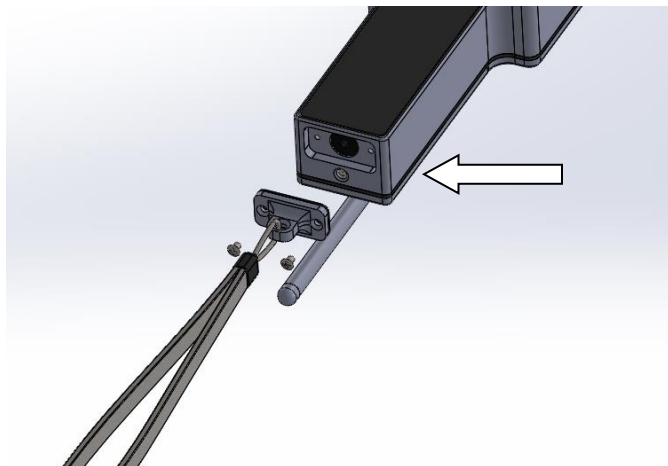
Data Logging

WARNING:
DO NOT REMOVE DATA PORT COVER IN A HAZARDOUS LOCATION.
While the data port cover is removed, the intrinsic safety rating of this device is invalidated.

The RANGER has data logging capabilities using the RANGER data logging cable. This cable accesses the data port located at the bottom of the case under the data port cover. See illustration below.

For data logging, the RANGER unit must be put into "tESt" mode. This option is accessed from the function menu. Hold the *Function Button* down until the "tESt" option appears, release *Function Button,* press the *Power Button* to select "Off" or "On", and then press the *Function Button* to confirm the menu selection. Press the *Escape Button* to return to the temperature display. While in the "tESt" mode, time delay off function is disabled, backlight time out function is disabled, and the data port is activated.

The data logging cable connects to a PC using a USB port. Data logging uses RS-232 to communicate serially with your PC. The data port communication settings for the RANGER are as follows:

Baud Rate – 9600
Parity – None
Data Bits – 8
Stop Bits – 1
No Flow Control

The data is formatted with the current temperature displayed, followed by the calculated resistance from the

RTD, and the calculated temperature based off that resistance. Data is output roughly every second. There is not a time stamp included with the data.

Returning Units for Repair

When you need to return a RANGER to W.L. Walker for repair, you will need to fill out a copy of the RANGER REPAIR TAG located at the end of this document and include it with the unit you are returning. A digital version of this form is available at:

www.wlwalker.com/Customer-Support.aspx?subid=23

Use this online form to fill out the repair tag and submit online.

Please include a copy of the repair form when returning a unit for service.

If the batteries are damaged, remove and discard of them properly. **NEVER** ship damaged batteries and/or unit with damaged batteries.

TROUBLESHOOTING TABLE

Problem	Possible Causes	Solution
RANGER will not power on	Dead Batteries	Replace batteries
	Bad battery connection	Check battery connector and battery cable
	Electronics locked up	Disconnect batteries and reconnect
	Electronics malfunctioning	Return RANGER for repair
RANGER will not calibrate	Using incorrect calibration procedure	Refer to RANGER calibration procedures
	Displayed temperature is not within 10 degrees of set point	
	Low Battery Voltage	Replace batteries
Temperature reading is not stable	Temperature hasn't stabilized yet	Wait 5 minutes and see if temperature reading stabilizes
	Improper calibration	Refer to RANGER calibration procedures for clearing current calibration and re-calibrate
	Malfunction of probe or cable	Return RANGER for repair

W.L. WALKER CO. INC.
Established 1926

RANGER REPAIR TAG

FOR FASTEST SERVICE, SHIP TO:
W.L. Walker Co., Inc.
ATTN: SERVICE & REPAIR
323 North Cheyenne Ave.
Tulsa, OK 74119

IT WILL SPEED YOUR REPAIR,
if you fill out the following information

CUSTOMER INFORMATION:
Name:_____

Address: _____
        _____
        _____

Phone #:   (__ __ __) __ __ __ - __ __ __ __

Description of Problem (be as detailed as possible):
_____
_____
_____
_____

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W.L. WALKER CO. INC.
Established 1926

Walker Lab Use:
Date
Received:_____/_____/_____ by _____

Description of Estimate:
_____
_____
_____
_____

Estimate completed:_____/_____/_____by_____

Repair authorized:_____/_____/_____by_____

PO# _____

Comments:_____
_____
_____
_____

Date Repaired:_____/_____/_____by_____

Date Shipped:_____/_____/_____by_____

W. L. Walker Co., Inc.
Tulsa, Oklahoma

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Tulsa, OK 74119

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Fig. 121
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