Ralston Instruments LC30 Digital Pressure or Temperature Gauges Installation Guide

Contents

Ralston Instruments
Pressure Calibration Specialists

Ralston Instruments LC30 Digital Pressure or Temperature Gauges

Specifications

- Model: Ralston LC30 Digital Pressure or Temperature Gauges
- Power Source: AC/DC power adapter model D-000410 or battery
- Connectivity: Bluetooth (selected models)
- Ports: Pressure or temperature port, Micro USB port
- Additional Features: Backlight, LCD display, External temperature probe (for models with TX in model number)

Product Usage Instructions

Using the LC30 with a PC

1. Download and install Ralston FieldLab Desktop software from **RalstonFieldLab.com** on your Windows PC.
2. Follow onscreen instructions in the FieldLab Desktop software.
3. Access support articles for detailed settings, live readings, and data logging at **support.ralstoninst.com**

Updating the LC30 and FieldLab Desktop

1. To update FieldLab Desktop, open the software on your computer and select FieldLab > Check for Updates.
2. To update your LC30:
    - Open FieldLab Desktop on your managing computer.
    - Connect the LC30 to your computer using a micro USB cable.
    - Select the LC30 from the Devices screen in FieldLab Desktop.

FAQ
Q: Can I use custom parts with the LC30?
A: No, any modifications with custom parts can result in hazardous operation of the product. Only use approved

accessories.

LC30 Operation Manual

For all models of Ralston LC30 Digital Pressure or Temperature Gauges

Included Items

Items included in the package. If any items are missing, please contact your Ralston Instruments distributor.

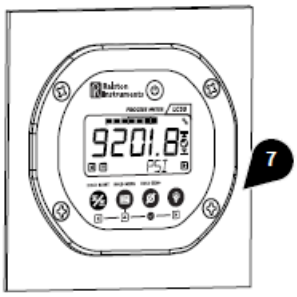
- LC30 Pressure or Temperature gauge
- 2 x AAA batteries
- 2 meter USB Micro-B cord
- AC/DC power adapter (Model D-000410)
- For gauges with Bluetooth option: P/N D-000041 Bluetooth antenna
- For gauges with TX option: D-000403 thermal probes and D-000404 cable

Need Accessories?

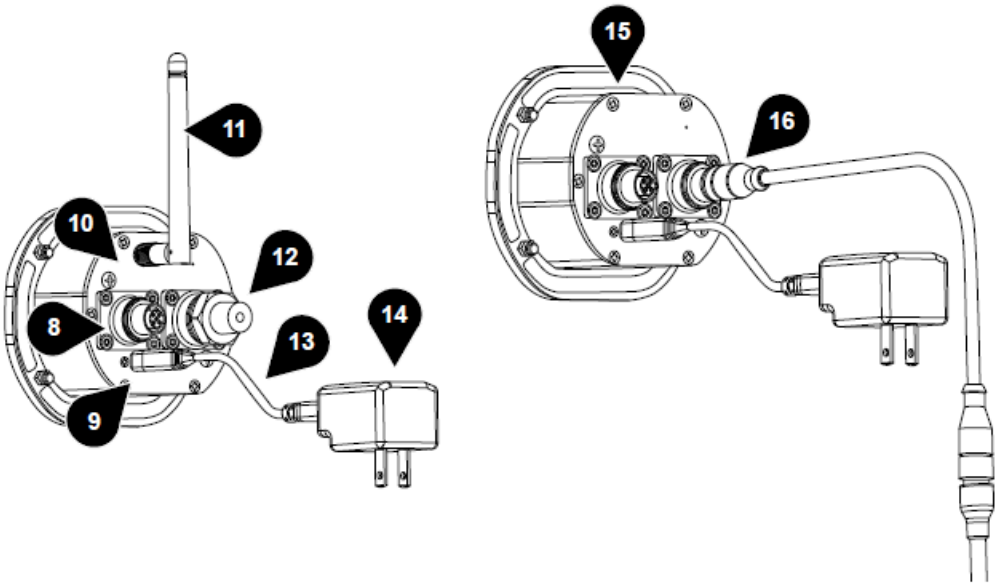
- Accessories can be found at **ralstoninst.com/LC30-accessories**
- WARNING: Do not operate in hazardous locations.
- WARNING: Do not use LC30 until you have read and fully understand the instructions and hazards of the product.
- WARNING: Contents may be under high pressure or temperature.
- WARNING: Any modifications to this product with custom parts can result in hazardous operation of the product.
- WARNING: Use eye protection while using this device.
- WARNING: Do not overpressure LC30 or damage may result.
- WARNING: This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer, and is known to the State of California to cause birth defects or other reproductive harm. For more information go to **www.P65Warnings.ca.gov**
- CAUTION: Installation of LC30 must be in accordance with Ralston Instruments installation instructions.
- CAUTION: Installation of LC30 must be in accordance with applicable local, national and international standards and electrical codes.
- CAUTION: Use only approved AC/DC power adapter model D-000410.
- CAUTION: Protection impairment may occur if used in a manner not specified by Ralston Instruments.
- CAUTION: Only those personnel trained in the use of this device shall operate it.

LC30 Features Overview

Front



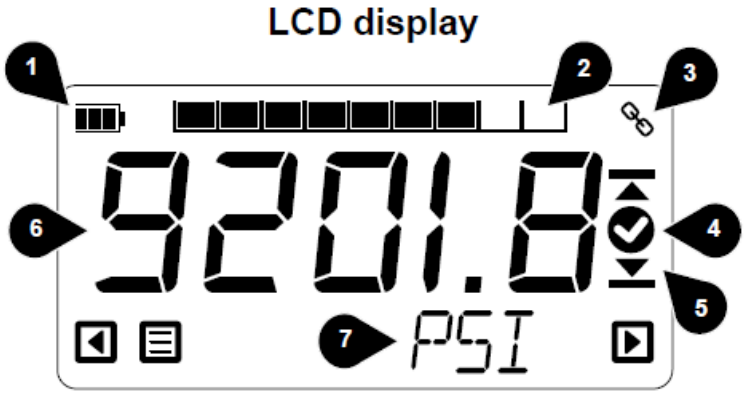
Back



1. Power
2. LCD display
3. High-Low/left-arrow button
4. Menu/up-arrow button
5. Zero/check-mark button
6. Backlight/right-arrow button
7. Gauge attached to control panel

8. Pressure or temperature port
9. Micro USB port
10. Battery access door
11. Bluetooth antenna*
12. Pressure sensor option
13. USB cable
14. AC/DC power adapter
15. Warning label
16. External temperature probe**

* Only for Bluetooth-enabled LC30s with model numbers ending in “B1”
** For LC30 models that contain the letters “TX” in the model number



1. Battery indicator
2. Graphical pressure/temperature meter
3. Connection symbol (USB or wireless)
4. Check mark to indicate success5. High and low arrows
5. Main pressure/temperature display
6. Secondary display

Use Your LC30 with a PC

Ralston FieldLab Desktop software enables you to:

- View live readings on your PC.
- Log data directly to your PC from one or multiple LC30s.
- Export data sets in .csv format.
- Export well-presented data sets in PDF format with graphs.
- Update LC30 firmware to access new features as they are released.
- Calibrate your LC30.
- Create custom engineering units.
- Customize settings on your gauge.

1. Download & Install FieldLab Desktop

   Visit RalstonFieldLab.com to download and install FieldLab

Desktop on your Windows PC

2. Open & Follow onscreen instructions in FieldLab
   Desktop software
3. You're ready to begin!
   Find detailed support articles for changing settings, viewing live readings and logging data at
   support.ralstoninst.com

Update the LC30 and FieldLab Desktop

Update FieldLab Desktop
Open FieldLab Desktop on your computer, and select FieldLab > Check for Updates.

Update your LC30

1. Open FieldLab Desktop on the computer you use to manage your LC30.
2. Connect the LC30 to your computer with a micro USB cable.
3. Select the LC30 from the Devices screen in FieldLab Desktop. Any available updates will be displayed.

Note: Only for Bluetooth-enabled LC30s with model numbers ending in "B1".

Install FieldLab Mobile App
Scan the QR code with your mobile device to install the FieldLab Mobile app, or:
If you have an Apple iPad or iPhone, download it from the Apple App Store.
If you have an Android phone or tablet, download it from the Google Play Store.

Establish Bluetooth Connection to LC30

1. Connect Bluetooth antenna to the LC30.
2. With the LC30 powered on, open the FieldLab Mobile app on your] mobile device. If prompted, allow Bluetooth and Location services.
3. Tap the [Scan] button to find your LC30.
4. When your LC30 appears on the screen in the mobile app, select [Connect].
   You can connect multiple LC30 gauges to the FieldLab Mobile app.

Set Logging Interval and Measurement Units
Before you start logging, set your desired logging interval and measurement units in the mobile app.

Start and Stop Logging on LC30

Start Logging

- While the LC30 is connected to FieldLab Mobile, select [Start Logging] in the FieldLab Mobile app.

- What Happens When You Leave Bluetooth Range While Logging
- Once you start logging, data is saved locally to the LC30.
- You can monitor live readings from your mobile device in the FieldLab Mobile app while connected and within Bluetooth range, which is 100 meters max.

If your mobile device leaves Bluetooth range, it will lose its connection with the LC30, and FieldLab Mobile will be unable to display live readings. Regardless, the LC30 will continue to log data for as long as it has battery/USB power or until the LC30 memory is full.

Stop Logging
Select [Stop Logging] in the FieldLab Mobile app.
Once you stop logging, the FieldLab Mobile app will automatically import the data set from the LC30 and save it to the Data Sets section of FieldLab Mobile.

View Data Sets
Select the [Data Sets] button in the FieldLab Mobile app.

Export and Share Data Sets

1. Select the [Data Sets] button in the FieldLab Mobile app.
2. Select the data set you want to share.
3. Select the [Share] button.

Operation Instructions

Conditions of Use

- Environment: Indoor use or temporary outdoor use. For long term or permanent outdoor use, a suitable enclosure may be required.
- IP67 Rating: LC gauges with external thermal probes must have the thermal probe cable installed in M12 connector on gauge to maintain IP67 rating.
- LC gauge requires (2) AAA Batteries, power from a PC via USB or power from AC power adapter D-000410 via USB to operate.
- RF Exposure Statement: The LC30 device when used with approved antenna complies with the FCC and IC portable RF Exposure limits set forth for an uncontrolled environment and is safe for intended operation as described in the user manual. To comply with RF exposure limits established in the ANSI C95.1 standard, the distance between the antenna and the user should not be less than 25 cm (10 inches) for USA and 34 cm for Canada. Further RF exposure reduction can be achieved if the product can be kept as far as possible from the user’s body.

Installation Instructions

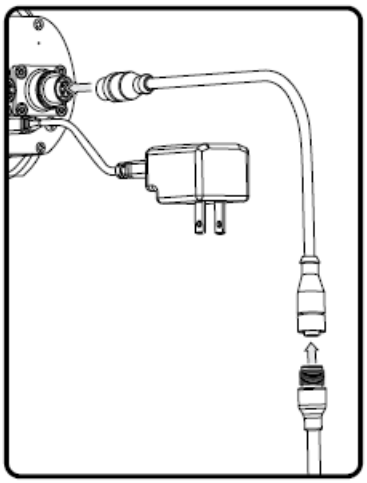
- Ensure that gauge is oriented in such a way that the “Power” button is always easily accessible.
- If pressure sensor option is installed, then seal pressure connection with thread sealant prior to assembling it in any pressure system.
- If temperature sensor option is installed, then connect thermal probe using a rated thermal well or other

approved device.

- Place gauge in area that is protected from damage from weather, excessive temperature, impact or humidity.

Connecting to Accessories or Other Equipment
Connect to a PC via USB cable

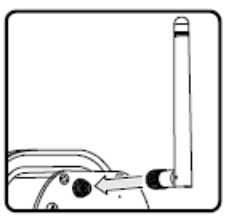
Use only approved USB cable P/N D-000040
Connect to AC Mains
Use only approved power adapter P/N D-000410 and approved USB cable P/N D-000040



Note: Only for models with detachable thermal probes that include the letters “TX” in the model number.

Connect to External Thermal Probe
Note: Only for models with detachable thermal probes with the letters “TX” in the model number.

- Connect thermal probe cable to gauge using male end of thermal probe cable.
- Connect thermal probe to cable using female end of thermal probe cable.
- If cable is being installed permanently, then secure cable following all applicable electrical standards.
- Use only approved thermal probe P/N
- D- 000403 that has been calibrated with this device.
- Use only approved thermal probe cable P/N D-0000404.
- External thermal probe is calibrated with the base unit. If thermal probe is changed, then use FieldLab Desktop to update the serial number and calibration coefficients of the new thermal probe.



Note: Only for Bluetooth-enabled LC30s with model numbers ending in “B1”.

Connect Antenna
Note: Only for Bluetooth-enabled LC30s with model numbers ending in “B1”.

- Use only approved antenna P/N D-000041.

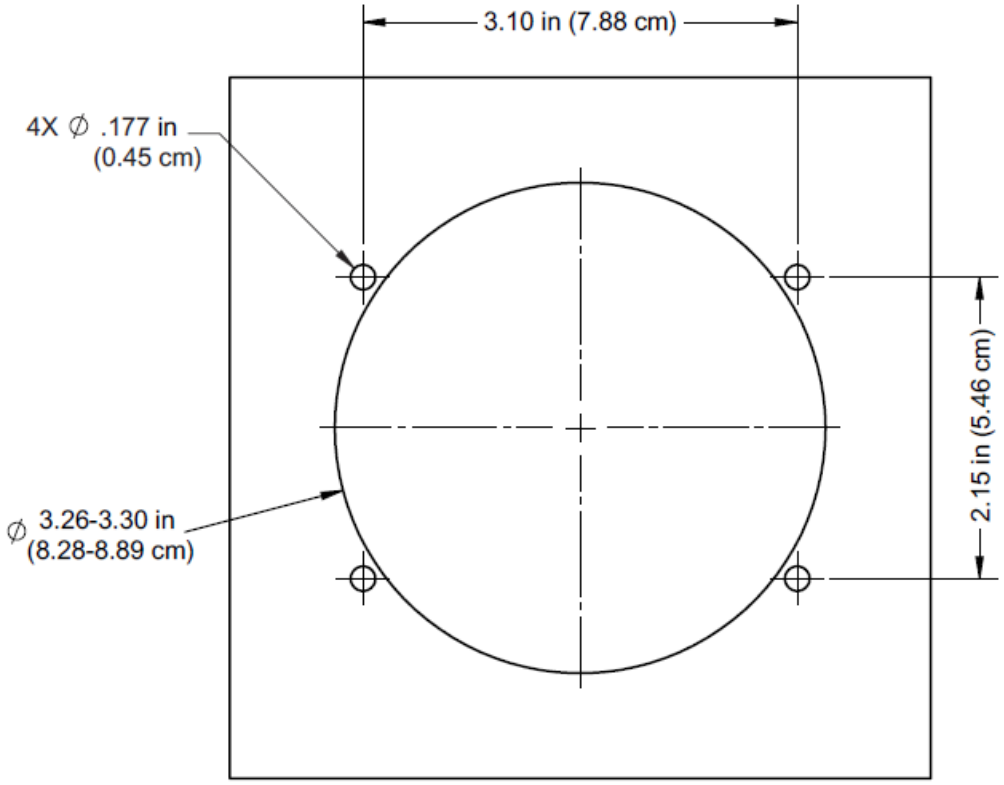
- Thread antenna into gauge Bluetooth port.
- Align antenna vertically for best signal reception.
- Do not obstruct line of sight between antenna and receiver with metal or dense materials or a reduction or loss of signal may result

Instructions for Cleaning or Decontamination

- Clean enclosure with mild water-based cleaner. Do not use aggressive solvent.
- Flush pressure sensor or thermal probe with alcohol based cleaner (or other cleaner compatible with 316 Stainless steel) if toxic or other hazardous substance is used.

Installation of LC30 in Panel

- Diagram of Assembling Panel Mounting K



1. Cut holes in panel using diagram
2. Position LC30 over holes
3. Insert bolts from front and install nuts loosely in back
4. Tighten nut until snug, but not too tight
5. Connect pressure / temperature connections
6. Connect power via approved power adapter D-000410

Button Functions

	Power	• Press and hold to turn on. • When LC30 is on, press and hold to turn off.
	Hi/Low/ Reset	• Press button once to display highest pressure or temperature reached. • Press button again to display lowest pressure or temperature reached. • Press and hold button to clear high and low values. • Hi/Low/Reset applies to the Active Sensor. If there are 2 sensors, then change sensors to use Hi/Low/ Reset for the other sensor.
	Menu	• If 2 sensors, quick press to change sensors. • Long press initiates MENU and follow prompts.
	Zero Pressure	• With no pressure applied, press and hold button to zero reading.
	Backlight	• Press button to illuminate backlight. **Note:** Light will turn off after a set time. Both time and brightness can be adjusted in FieldLab Desktop software.

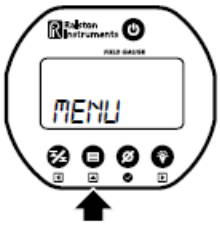
Menu Functions

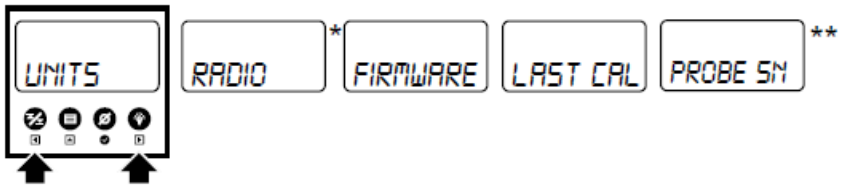
Menu

1. Push and hold the Menu/up-arrow button until MENU appears.
2. Push the Right and Left Arrow buttons to scroll through the menu items. *

   Note: Only for Bluetooth-enabled LC30s with model numbers ending in “B1”.

   *Note: Only for models with detachable thermal probes that include the letters “TX” in the model number.

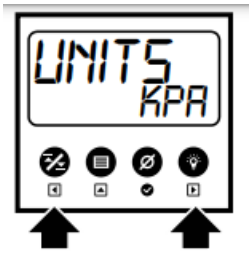




Change Units

1. Push and hold the Menu/up-arrow button until MENU appears.
2. Scroll to UNITS
3. push the Zero/check-mark button to enter the UNITS submenu.

4. Scroll to your desired measurement unit.
5. Press the Zero/check-mark button to change to the displayed engineering unit.



Turn Off/On Bluetooth Radio
Note: Only for Bluetooth-enabled LC30s with model numbers ending in “B1”.
Note: Bluetooth radio is always on by default when you power on the LC30.

1. Push and hold the Menu/up-arrow button until MENU appears.
2. Scroll to RADIO
3. Push the Zero/check-mark button to enter the Radio submenu.

4. Push the Zero/check-mark button to toggle the radio power.

View Firmware Version

1. Push and hold the Menu/up-arrow button until “MENU” appears.
2. Scroll to FIRMWARE.
3. Press the Zero/check-mark button to view firmware version.

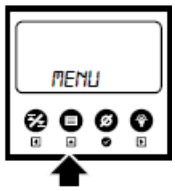
View Last Calibration Date

1. Push and hold the Menu/up-arrow button until MENU appears.
2. Scroll to LAST CAL.

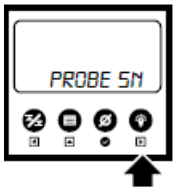
3. Press the Zero/check-mark button to view last calibration date.

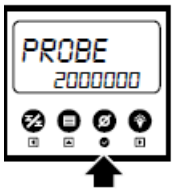
View Temperature Probe Serial Number
Note: Only for models with detachable thermal probes that include the letters “TX” in the model number.

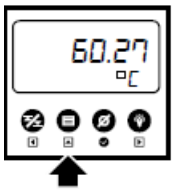
1. Press and hold the Menu/up-arrow button until MENU appears.



2. Scroll to PROBE SN.
3. Press the Zero/check-mark button to enter the Probe submenu and view the serial number.
4. Press the Menu/up-arrow button to exit.



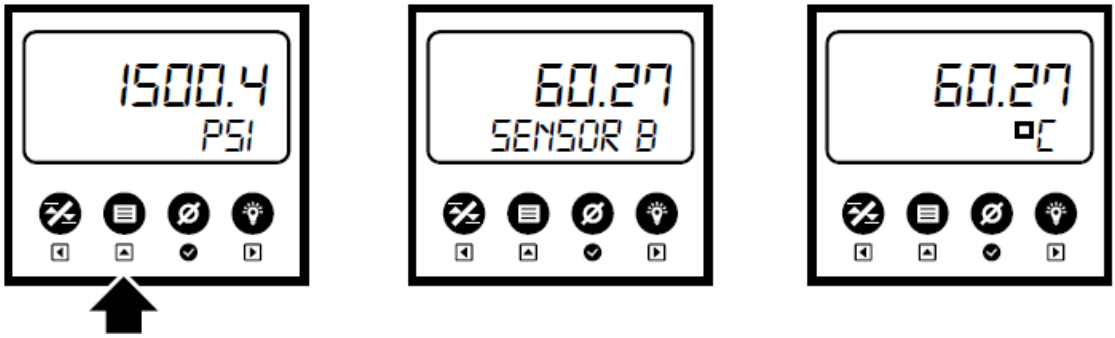




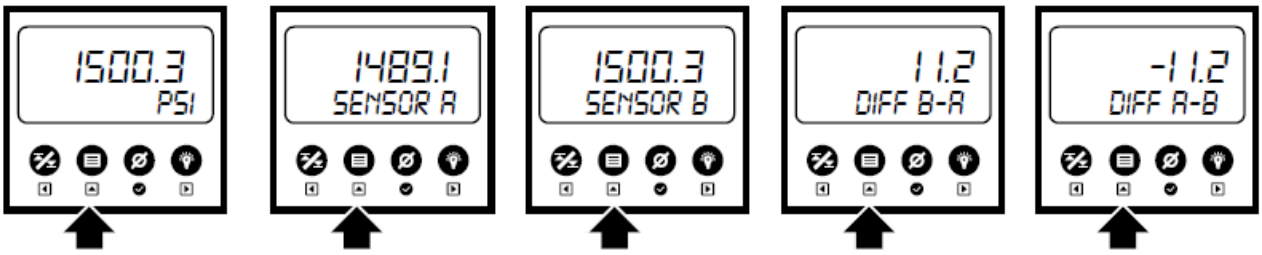
Change the Sensor Displayed on the Screen

Note: Only for LC30s with two sensors.

Press the Menu/up-arrow button to change the sensor shown on the LC30 screen.



View Differential Pressure
Note: Only for LC30s with two pressure sensors that have the same max pressure.

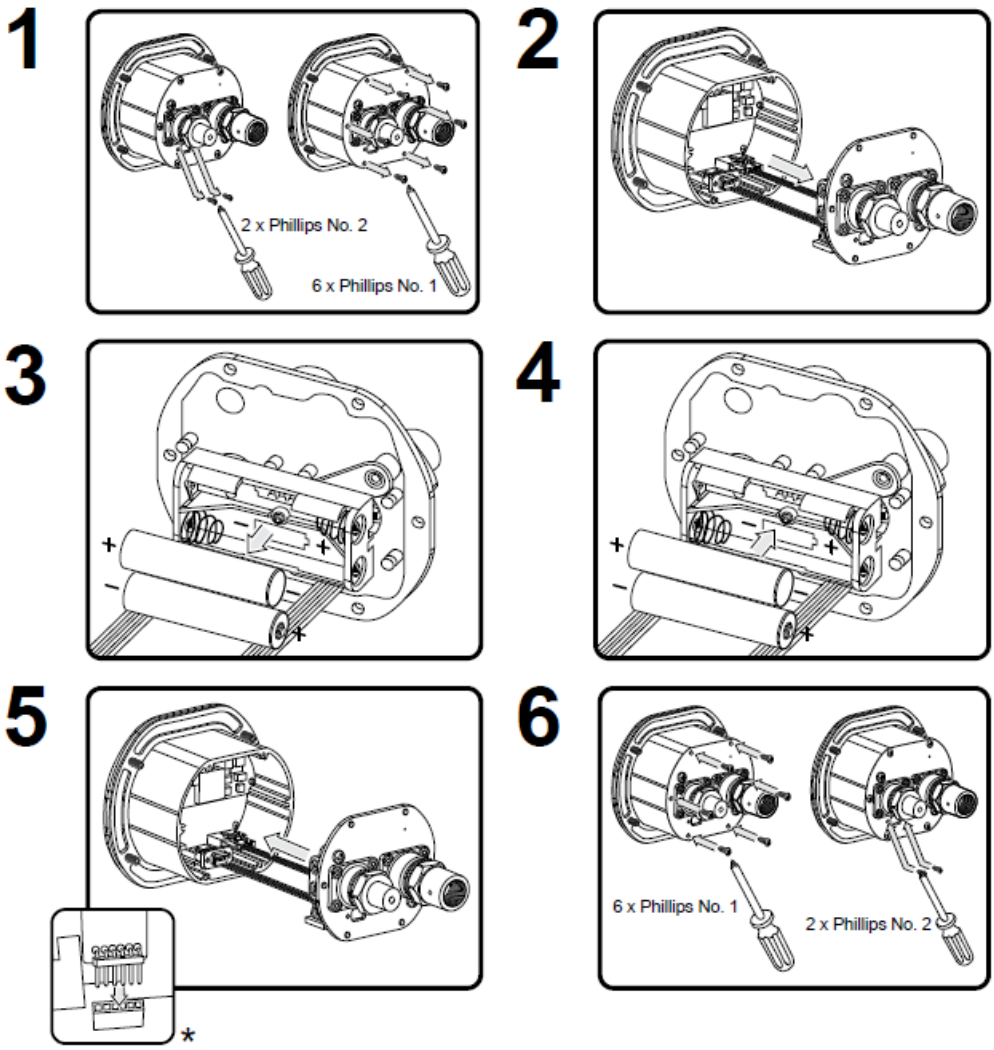


Press the Menu/up-arrow button. Each time you press the Menu/up-arrow button, you will advance to the next view.

Battery Installation

Recommended Alkaline AAA Batteries (2X) (ANSI 24A, IEC LR03)

- Duracell MN2400
- Energizer E92 :
- Rayovae 82192



* Make sure USB PCB is seated in the main PCB. Carefully align the USB PCB with the hole in the panel.

Calibrate your LC30 with your PC

- Download the FieldLab Desktop software at **RalstonFieldLab.com**
- Follow instructions in software on how to calibrate pressure or temperature

Specifications

Antenna (for LC30 model numbers ending in "B1")	D-000041 antenna
Batteries	2 x AAA (LR03)
Battery Life	1,500 hours typical
Digital Interface	USB Micro-B (on back)
Dimensions (not including temp. probe)	3.5 x 4.1 x 2.2 in (8.9 x 10.4 x 5.6 cm)
Display	5 x 0.5 in (12.7 mm) upper digits 8 x 0.2 in (5 mm) lower digits
Electrical Rating	USB Mode - 5 VDC, 0.25W Battery Mode - 3 VDC, 0.25W Power Adapter - 90 ~ 264 VAC Input, 5 VDC @ 1 Amp Output
Environment	Indoor use Temporary outdoor use
Ingress Protection	IP67 (1 meter submersion for 30 minutes)
Materials of Construction	Polycarbonate/ABS, Aluminum, 316L Stainless Steel
Media Compatibility	Gases and liquids compatible with 316L S.S.
Operating Altitude (max)	10,000 ft (3050 m)
Operating Temperature Range (Enclosure)	-4 to 122°F (-10 to 50°C)
Power	120/240 VAC, 50/60 Hz AC power (2 x AAA batteries backup power)
Protection Class	Pollution Degree 2

Relative Humidity	90% RH 14 to 95°F (-10 to 35°C) 75% RH 95 to 104°F (35 to 40°C) 45% RH 104 to 122°F (40 to 50°C)
Storage Temperature Range	-40 to 167°F (-40 to 75°C)
USB Cable	USB Micro, 2 meter
Weight	12 oz (340 g)

Pressure Specifications
(for all models with pressure connection, if included)

Pressure Accuracy	+/-0.1% of full scale (ASME Grade 4A / ISO Class 0,1)
Pressure Connection	¼" Male NPT

Temperature Specifications
(for all models with thermal probe, if included)

External Temperature Probe	M12 female, A Code, Silicone seal, IP67
External Thermal Probe Temperature Range	-22 to 302°F (-30 to 150°C)
Temperature Accuracy	+/-(0.27 + 0.004*|t|) °F +/- (0.15 + 0.002*|t|) °C (IEC 60751 Class A

Bluetooth Radio Specifications
Note: Only for Bluetooth-enabled LC30s with model numbers ending in “B1”.

- Contains FCC ID 2AA9B04
- Contains IC ID 12208A-04
- Contains Japan ID 210-107153

Bluetooth Radio Information

Note: Only for Bluetooth-enabled LC30s with model numbers ending in “B1”.

FCC Declaration of Conformity
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Declaration of Conformity
This device complies with Industry Canada’s licence-exempt RSS standards. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
   This device must accept any interference received, including interference that may cause undesired operation of the device.

KCC Notice of EMC Compliance (Republic of Korea Only)

- It is verified that this equipment has been registered under the Radio Waves Act (Article 58-2, Clause 3)
- Registration Number R-R-1Ra-LC30-XX-YY-ZZ

Standards and Agency Approvals

This product complies with the following standards. Refer to EC Declaration of Conformity for specific details

- CAN/CSA-C22.2 No 61010-1-12: 3rd Edition
- UL 61010-1: 3rd Edition
- EN/IEC 61010-1:2010
- AS 61010-1, 3rd Edition
- IEC 61326-1:2012 2nd Edition
- Pressure Equipment Directive (PED) 2014/68/EU
- Electromagnetic Compatibility Directive (EMC) 2014/30/EU

Electromagnetic Specifications

- Conducted RF IEC 61000-4-6, performance criterion B
- DC Power Burst IEC 61000-4-4, performance criterion B
- DC Power Surge IEC 61000-4-5, performance criterion B
- Electro-static Discharge Immunity IEC 61000-4-2:2008, performance criterion B
- Radiated Emissions CISPR 11:2009, Group 1, Class B
- Radiated, Radio-Frequency
- Electromagnetic Immunity
- IEC 61000-4-3:2006, performance criterion A RF Field effects on Measurement Accuracy
- Accuracy of Pressure and Temperature is not specified for RF fields > 3V/m

Support

- Online Support
- For step-by-step instructions about how to use LC30, install accessories, and
- troubleshooting, go to: **support.ralstoninst.com**
- Customer Service
- Contact Customer service directly
- Hours: Monday–Friday 8:30am-5:00pm EST
- Phone: +1 **440-564-1430** | +1 **800-347-6575** (US and Canada)
- Email: **support@ralstoninst.com**

LC30 Operation Manual
For all models of Ralston LC30 Digital Pressure or Temperature Gauges

ralstoninst.com

- Hours: 8:30 am – 5:00 pm EST

- Phone: 1 440-564-1430
- Toll Free: 1 800-347-6575 (US and Canada)
- Support: ralstoninst.com/support • Parts and Service: ralstoninst.com/LC
- Email: support@ralstoninst.com

Documents / Resources

	Ralston Instruments LC30 Digital Pressure or Temperature Gauges [pdf] Installation Guide LC30 Digital Pressure or Temperature Gauges, LC30, Digital Pressure or Temperature Gauges, Pressure or Temperature Gauges, Temperature Gauges, Gauges

References

- Ralston FieldLab
- Pressure Calibration Specialist - Pressure Gauge Manufacturers
- Pressure Calibration Specialist - Pressure Gauge Manufacturers
- Support
- support.ralstoninst.com
- P65Warnings.ca.gov
- User Manual