Pyxis®

LS-202 Ultrasonic Level Sensor
User Manual

Water Professionals Deserve Better Tools.

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LS-202/EX Ultrasonic Level Sensor User Manual

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Rev. 3.00

Pyxis Lab, Inc.
1729 Majestic Dr. Suite 5
Lafayette, CO 80026 USA
www.pyxis-lab.com

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Warranty Information

Confidentiality

The information contained in this manual may be confidential and proprietary and is the property of Pyxis Lab, Inc. Information disclosed herein shall not be used to manufacture, construct, or otherwise reproduce the goods described. Information disclosed herein shall not be disclosed to others or made public in any manner without the express written consent of Pyxis Lab, Inc.

Standard Limited Warranty

Pyxis Lab warrants its products for defects in materials and workmanship. Pyxis Lab will, at its option, repair or replace instrument components that prove to be defective with new or remanufactured components (i.e., equivalent to new). The warranty set forth is exclusive and no other warranty, whether written or oral, is expressed or implied.

Warranty Term

The Pyxis warranty term is thirteen (13) months ex-works. In no event shall the standard limited warranty coverage extend beyond thirteen (13) months from original shipment date.

Warranty Service

Damaged or dysfunctional instruments may be returned to Pyxis for repair or replacement. In some instances, replacement instruments may be available for short duration loan or lease.

Pyxis warrants that any labor services provided shall conform to the reasonable standards of technical competency and performance effective at the time of delivery. All service interventions are to be reviewed and authorized as correct and complete at the completion of the service by a customer representative, or designate. Pyxis warrants these services for 30 days after the authorization and will correct any qualifying deficiency in labor provided that the labor service deficiency is exactly related to the originating event. No other remedy, other than the provision of labor services, may be applicable.

Repair components (parts and materials), but not consumables, provided during a repair, or purchased individually, are warranted for 90 days ex-works for materials and workmanship. In no event will the incorporation of a warranted repair component into an instrument extend the whole instrument's warranty beyond its original term.

Warranty Shipping

A Repair Authorization (RA) Number must be obtained from Pyxis Technical Support before any product can be returned to the factory. Pyxis will pay freight charges to ship replacement or repaired products to the customer. The customer shall pay freight charges for returning products to Pyxis. Any product returned to the factory without an RA number will be returned to the customer. To receive an RMA you can generate a request on our website at https://pyxis-lab.com/request-tech-support/.

Pyxis Technical Support

Contact Pyxis Technical Support at +1 (866) 203-8397, service@pyxis-lab.com, or by filling out a request for support at https://pyxis-lab.com/request-tech-support/.

1   Introduction

The Pyxis LS-202 is a general-purpose, ultrasonic, liquid level sensor. It provides continuous level measurement up to 106 inches (8.8 ft or 2.7 m) with a 4–20 mA signal, RS-485, and Bluetooth digital output. It can be wirelessly configured via the **uPyxis®** Mobile or Desktop App on mobile devices or computers. The sensor can be powered by four AA alkaline batteries or a 24 VDC external power supply. This battery-powered and Bluetooth-enabled level sensor is ideally suited for applications where signal/power wiring may be difficult or unavailable to install. A 1.3-inch OLED display and four push-buttons are also included in the sensor for display and setup. This non-contact liquid level sensor is well suited for corrosive liquids and can be used for cooling tower, boiler or multiple other chemical feed applications. LS-202EX is the Class I Div 2 certified version of this level sensor specifically designed & certified for use as Process Equipment Control in Hazardous Environments.

2   Specifications

Table 1. LS-202 Specifications

Specification*	LS-202	LS-202EX
Part Number (P/N)	54002	54008
Range	4–106 inch (0.1–2.7 m)	
Resolution	0.02 inch (0.5 mm)	
Accuracy	±0.15% of the range	
Measurement Interval	Continuous, 10 or 30 seconds, 3 or 30 minutes, 1 or 4 or 6 hours, or stopped	
Output	Bluetooth 5.0, 32 ft (10 m) Line of Sight, 4–20mA Analog Output, RS-485 Digital Output with Modbus protocol	
Installation	1" male NPT	
Cable Length	10 ft with IP67 connectors	
Power Supply	4 AA alkaline batteries, 24 VDC, 1 W	
Dead Zone	4 inch (10 cm)	
Dimension (H × Dia)	6.8 × 3.1 inch (172 × 80 mm)	
Weight	1.3 lbs (550 g)	
Enclosure Material	Polycarbonate (PC)	
Transducer Material	Polyvinylidene Fluoride (PVDF)	
Operational Temperature	14–140 °F (-10–60 °C)	
Storage Temperature	-4–158 °F (-20–70 °C)	
Enclosure Rating	IP65	
Regulation	CE	CE, Class I & II/Div 2, Class III/Div 1 & 2

* With Pyxis's continuous improvement policy, these specifications are subject to change without notice.

3   Unpacking Instrument

Remove the instrument and accessories from the shipping container and inspect each item for any damage that may have occurred during shipment. Verify that all items listed on the packing slip are included. If any items are missing or damaged, please contact Pyxis Customer Service at service@pyxislab.com.

3.1 Standard Accessories

- Four (4) AA alkaline batteries

- Allen wrench

- Waterproof Cable Adapter/Flying Leads (10 ft)   P/N: 50774

- User Manual available online at https://pyxis-lab.com/product/ls-202-ultrasonic-level-sensor/

3.2 Optional Accessories

The following optional accessories can be ordered from Pyxis Customer Service (order@pyxis-lab.com) or Pyxis eStore at https://pyxis-lab.com/shop/.

Accessory Name / Description	Part #	Photo
10' LS/LSP Series Waterproof Cable - 7Pin Adapter w/Flying Leads	50774	
MA-L25 25' Waterproof Extension Cable (4-20mA/RS485)	50775	
MA-L50 50' Waterproof Extension Cable (4-20mA/RS485)	50776	
MA-L100 100' Waterproof Extension Cable (4-20mA/RS485)	50777	
LS-202 - Ultimate Lithium AA Battery (4 each)	57000	

PYXIS LEVEL SENSOR ACCESSORIES

Figure 1.

4   Installation

4.1   Battery Installation

The LS-202 can be powered by four (4) AA alkaline batteries if a 24 VDC is not available. Typical battery life after replacing a new battery set is about six months when the measurement interval is set to one hour. It is important to note that the LS-202 must be operated in BEACON mode for optimum battery life.

> ∗**NOTE**∗ *When powered by 24 VDC, do NOT put AA batteries in the unit. Do NOT use rechargeable nickel cadmium (NiCad) or rechargeable lithium batteries.*

Figure 2. The LS-202 battery compartment

The LS-202 battery compartment is shown in Figure 2. Install batteries using the following steps:

1. Separate the upper portion of the sensor by loosening the four hex bolts with the Allen wrench included.

2. Pull out the battery holder carefully, paying attention to the wires connecting the upper and lower sensor bodies.

3. Follow the positive and negative signs and insert batteries firmly into the battery holder. Four batteries need to be replaced, two on each side of the battery holder.

   NOTE *Replace the four batteries together rather than partially.*

4. Place the battery holder back into the lower sensor body and secure it firmly.

5. Place the upper sensor body on top of the lower sensor body.

   NOTE *Make sure that the sealing O-ring is lying flat in the groove of the lower sensor body. Failure to do so may result in water/moisture damage to the sensor.*

6. Firmly tighten the hex bolts with the provided Allen wrench to prevent the LS-202 from accidentally powering on or off due to vibration.

4.2 Tank Top Installation and Precautions

The sensor should be installed to a 1-inch bulkhead fitting on the top of the tank. The major dimensions of the sensor are shown in Figure 3. If a flat horizontal surface is not available on the top of the tank, please use a self-aligning bulkhead fitting so that the sensor can be adjusted to be perpendicular to the liquid surface.

- Install and adjust the sensor to be perpendicular to liquid surface

- Installation location shall not be too close to container wall to avoid interference.

- The sensor has a 3.94 inch (10 cm) dead zone (DZ). Raise the LS-202 to avoid the DZ if desired

- Do not install in a location which will cause the ultrasonic wave to be obstructed

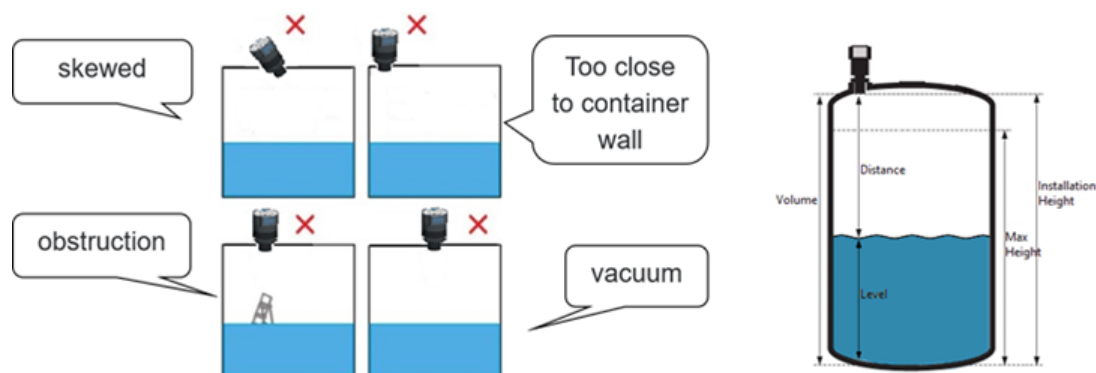- Do not install the sensor in a vacuum environment
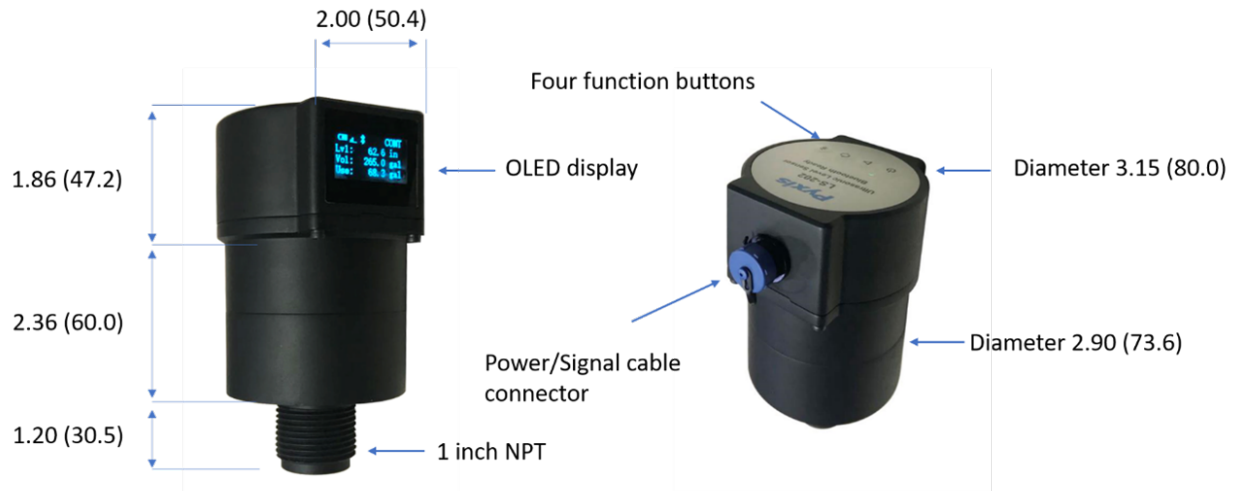

Figure 3. Installation illustration

Figure 4. Dimensions, inch (mm)

4.3 Wiring

If the power ground terminal and the negative 4–20mA terminal in the controller are internally connected (non-isolated 4–20mA input), it is unnecessary to connect the 4–20mA negative wire (green) to the 4–20mA negative terminal in the controller. If a separate DC power supply other than that from the controller is used, make sure that the output from the power supply is rated for 22–26 VDC @ 65 mA.

> **∗NOTE∗** *The negative 24V power terminal (power ground) and the negative 4–20mA terminal on the LS-202 <u>are</u> internally connected.*

Follow the wiring table below to connect the LS-202 to a controller:

Table 2.

Wire Color	Designation
Red	24V +
Black	24V Power ground
White	4–20mA +
Green*	4–20mA -
Blue	RS-485 A
Yellow	RS-485 B
Clear	Shield, earth ground

* Internally connected to the power ground

5   Instrument Overview

5.1   Function Buttons

The buttons on top of the LS-202 sensor (Figure 5) are used to select one of four display modes, one of three Bluetooth modes, and one of four measurement modes.

> ∗**NOTE**∗ *The function buttons are not used to configure the sensor. For LS-202 sensor configuration, see either the* **Setup and Configuration with uPyxis® Mobile App** *section or the* **Setup and Configuration with uPyxis® Desktop App** *section of this manual.*
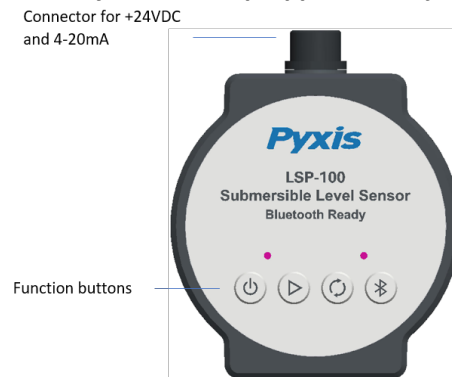

Figure 5.

Power Button ⏻ :

- Power On: Hold the power button for 1 second

- Power Off: Hold the power button until OLED display is turned off

- Display Wakeup: Hold the power button for 1 to relight OLED display (Only the power button has this function)

Working Mode Button ▷ : This button cycles through the different measurement intervals pre-programmed into the LS-202 sensor. The current measurement interval is displayed on the top-right corner of the OLED screen:

- CONT: Continuous measuring

- 10s: Measurement every 10 seconds

- 30s: Measurement every 30 seconds

- 3m: Measurement every 3 minutes

- 30m: Measurement every 30 minutes

- 1h: Measurement every 60 minutes

- STOP: Stop measuring

Other measurement intervals can also be configured on the **uPyxis®** App.

Display Mode Button ↻ : This button cycles through four display modes and two system information modes. For more details, see the **OLED Display** section of this manual.

Bluetooth Mode Button ✳ : This button cycles through three Bluetooth modes:

- B: Beacon mode, allows multiple Bluetooth-enabled devices to read the LS-202 sensor's broadcasting results at the same time.

- P: Peripheral mode, used for sensor configuration and data download only. The LS-202 sensor can only pair with a single Bluetooth-enabled device while in this mode.

- Absence of ✳ : Shutdown mode, disables Bluetooth communication with the LS-202 sensor.

5.2   OLED Display

The OLED display supports four display modes and two system information modes as shown in the following figures. Press the display mode button ↻ to switch modes.
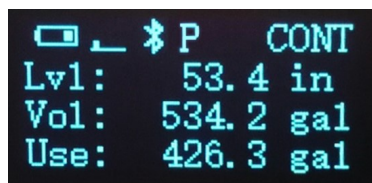

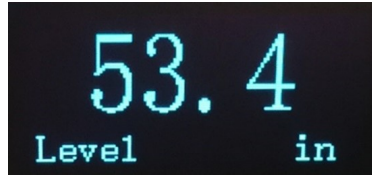**Figure 6.** Display Mode 1: Status and Measurement Summary
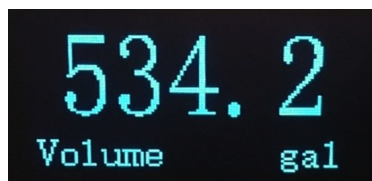

Figure 7. Display Mode 2: Level
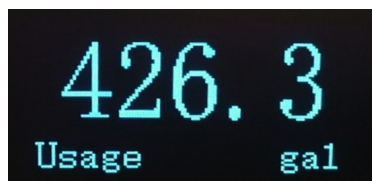

Figure 8. Display Mode 3: Remaining Volume

Figure 9. Display Mode 4: Used Volume

Figure 10. System Info Mode 1: ID's and Error Code (EC)

Figure 11. System Info Mode 2: Date/Time and Software Version (SV)

∗**NOTE**∗ *The date/time will reset to 2000-01-01 00:00:00 on every power-on operation. When the LS-202 sensor is connected to a phone or PC via the* **uPyxis®** *App, the date/time will be automatically set according to the phone or PC's clock. The wrong system date/time* **does not** *affect the sensor measurement function, but the time stamp in the data log will be incorrect.*

5.3   Display Symbol Glossary

Table 3.

Symbol	Definition
ᛒ P	Bluetooth Peripheral mode
ᛒ P ⮂	Bluetooth is paired
ᛒ B	Bluetooth Beacon mode
ᛒ ⊠	Switching Bluetooth mode
CONT	Continuous measuring
_s	Measurement every _ seconds
_m	Measurement every _ minutes
_h	Measurement every _ hours
STOP	Stop measuring
Lvl	Liquid level
Dst	Liquid distance from sensor
in	Inches
m	Meters
cm	Centimeters
Vol	Liquid volume remaining
gal	Gallons
L	Liters
Usa	Liquid usage or used volume
FULL	Liquid level is at the highest setting value
EMPTY	Liquid level is at the lowest setting value
FCC ID	Federal Communications Commision Identification
Mac	Mac Address
EC	Error Code
SV	Software Version

6   Setup and Configuration with uPyxis® Mobile App

6.1   Download uPyxis® Mobile App

Download **uPyxis®** Mobile App from **Apple App Store** or **Google Play**.

Figure 12.

6.2 Connecting to uPyxis® Mobile App

Connect the LS-202 sensor to a mobile smart phone according to the following steps:

1. Press the ✳ button on LS-202 sensor until the Bluetooth mode changes to Peripheral mode (✳P).

2. Open **uPyxis®** Mobile App.

3. On **uPyxis®** Mobile App, pull down to refresh the list of available Pyxis devices.

4. If the connection is successful, the LS-202 and its Serial Number (SN) will be displayed (Figure 13).
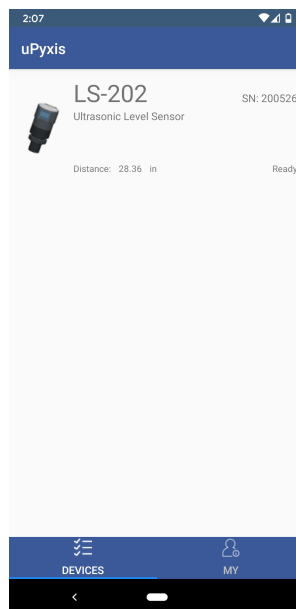
5. Press on the **LS-202 image**.

Figure 13.

6.3   Overview Screen

When connected, the **uPyxis®** Mobile App will default to the **OVERVIEW** screen. The **Overview** screen displays the current liquid level and volume of liquid remaining.
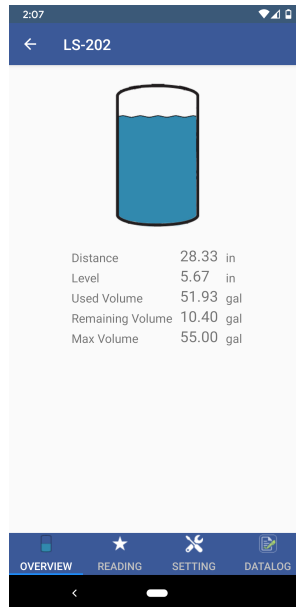

Figure 14.

6.4   Reading Screen

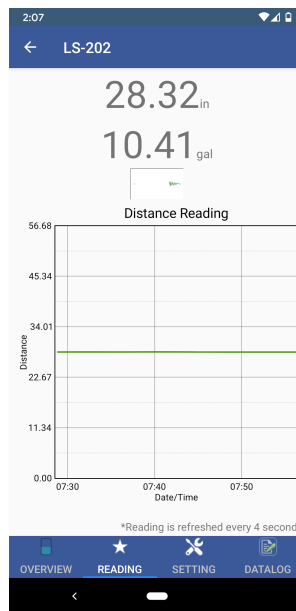The **READING** screen displays the current volume of liquid remaining and liquid level over time.

Figure 15.

6.5   Settings Screen

The sensor measures the distance between the liquid surface in the tank and the bottom sensor surface. Converting this measured distance to other parameters such as the tank level, the remaining liquid volume, or the consumed liquid, requires the tank dimensional and volume capacity information. Common vertical tanks have a uniform horizontal cross section.

> *NOTE* *For horizontal or other tanks that have a non-uniform cross section, please contact Pyxis Technical Support team (service@pyxis-lab.com) for assistance.*

To convert the measured distance to volumetric information, the user must enter three parameters via the **uPyxis®** Mobile App's **Setting** screen:

- **Tank Volume** (rated volume capacity of the tank)

- **Installation Height** (from the bottom of the tank to the bottom of the LS-202)

- **Max Level Height** (from the bottom of the tank to the liquid surface when filled to the rated capacity)

    > *NOTE* *Max Level Height* must be at least 4 inches less than **Installation Height**

Figure 16 illustrates these parameters for the tank.

In the **SETTING** screen, the you can also set the **Device Name**, the **Sampling Mode**, **LCD Display Value**, **LCD Screen Off Time (in seconds)**, and the **Display Unit**. To save the settings, press **APPLY SETTINGS**. You may also create or change a password for the LS-202 by pressing **MANAGE PASSWORD**.

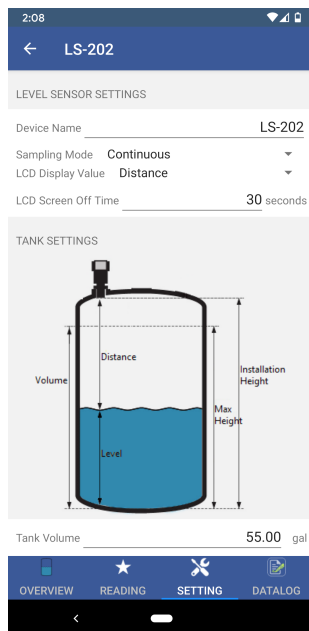> *NOTE* *The LS-202 sensor must be in Peripheral mode (✶P) to change settings.*
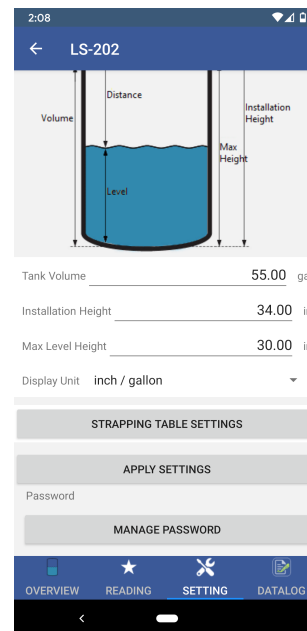

Figure 16.

Figure 17.

6.6 Datalog Screen

From the **DATALOG** screen, you can view and download the data records of the LS-202 sensor. To view the records, press **READ INFO**, then press either **READ OVERVIEW**, **READ LAST 100**, or **READ ALL**. To download the records, press **EXPORT & SHARE**. To delete all records, press **CLEAR DATALOG**.
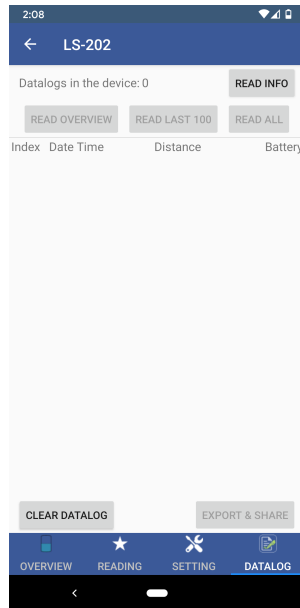

Figure 18.

7 Setup and Configuration with uPyxis® Desktop App

7.1 Install uPyxis® Desktop App

Download the latest version of **uPyxis®** Desktop software package from: http://www.pyxis-lab.com/support.html this setup package will download and install the Microsoft.Net Framework 4.5 (if not previously installed on the PC), the USB driver for the USB-Bluetooth adapter (MA-NEB), the USB-RS485 adapter (MA-485), and the main **uPyxis®** Desktop application. Double click the **uPyxis.Setup.exe** file to install.
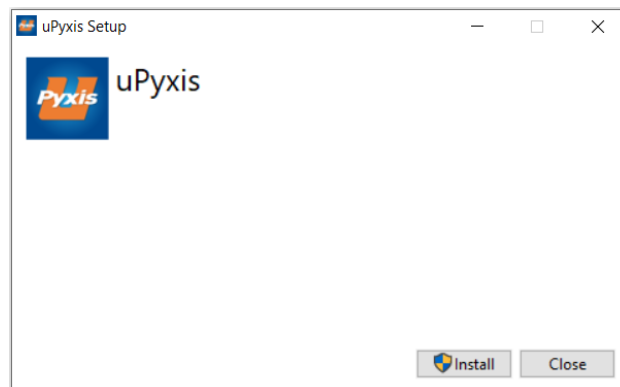

Figure 19.

Click **Install** to start the installation process. Follow the screen instructions to complete the USB driver and uPyxis installation.

7.2   Connecting to uPyxis® Desktop App

Connect the LS-202 sensor to a Windows computer using a Bluetooth/USB adapter (P/N: MA-NEB) according to the following steps:

1. Plug the Bluetooth/USB adapter into a USB port in the computer.

2. Press the ✳ key on LS-202 sensor until the Bluetooth mode changes to Peripheral mode (✳ P).

3. Launch **uPyxis®** Desktop App.

4. On **uPyxis®** Desktop App, click Device → Connect via USB-Bluetooth (Figure 20).

5. If the connection is successful, the LS-202 and its Serial Number (SN) will be displayed in the left pane of the **uPyxis®** window.

    ∗**NOTE**∗ *After the sensor and Bluetooth is powered up, it may take up to 10 seconds for the adapter to establish the wireless signal for communication.*

Figure 20.

7.3   Overview Screen

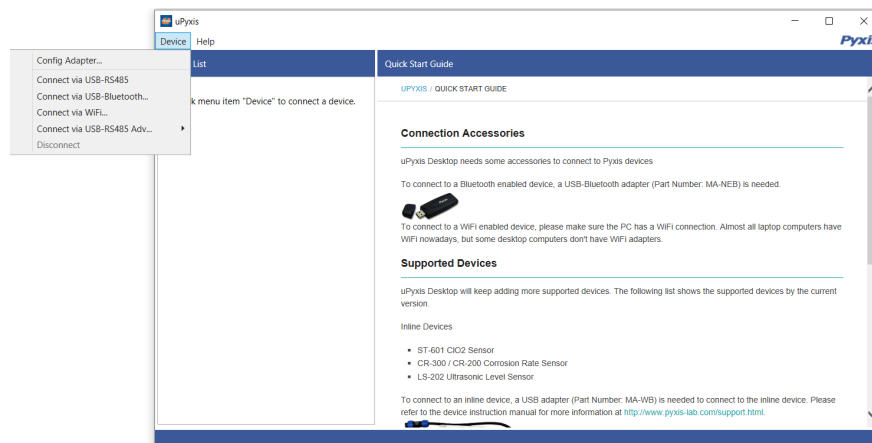When connected, the **uPyxis®** Desktop App will default to the **Overview** screen. The **Overview** screen displays the current liquid level and volume of liquid remaining.
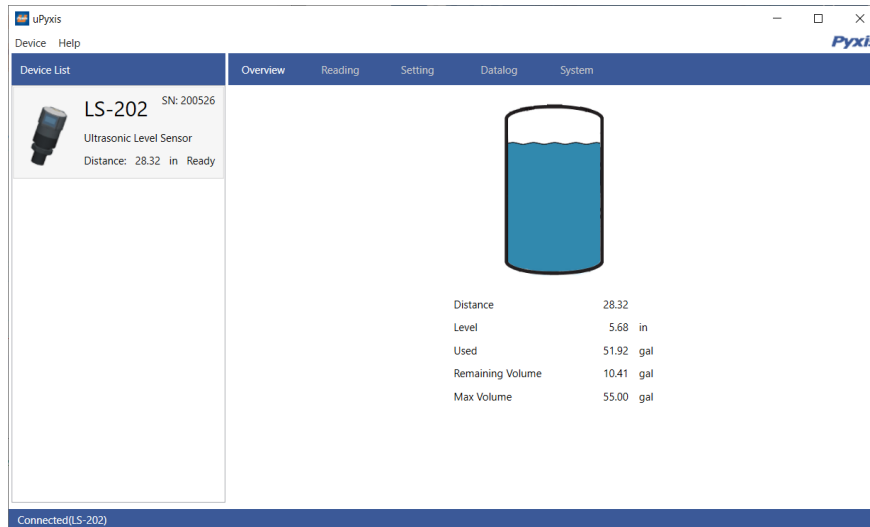

Figure 21.

7.4   Reading Screen

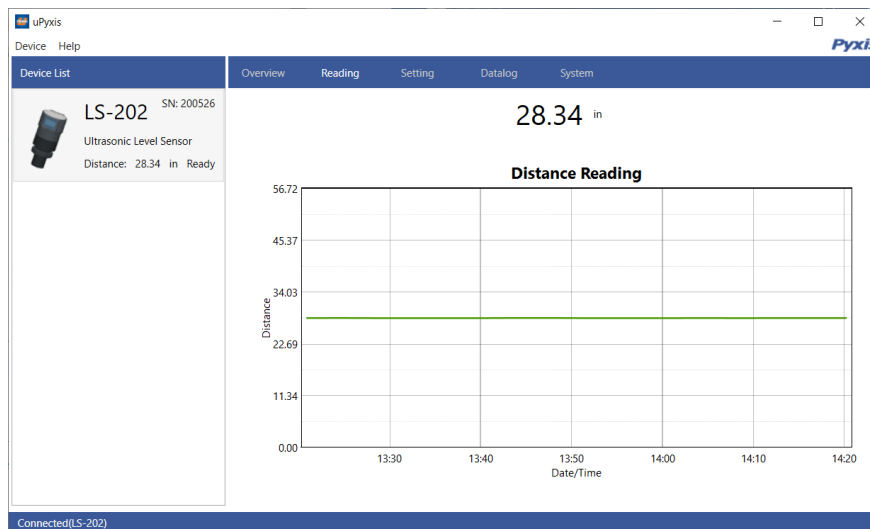The **Reading** screen displays the current liquid level and the liquid level over time.

Figure 22.

7.5 Setting Screen

The sensor measures the distance between the liquid surface in the tank and the bottom sensor surface. Converting this measured distance to other parameters such as the tank level, the remaining liquid volume, or the consumed liquid, requires the tank dimensional and volume capacity information. Common vertical tanks have a uniform horizontal cross section.

> ∗**NOTE**∗ *For horizontal or other tanks that have a non-uniform cross section, please contact Pyxis Technical Support team (service@pyxis-lab.com) for assistance.*

To convert the measured distance to volumetric information, the user must enter three parameters via the **uPyxis®** Mobile App's **Setting** screen:

- **Tank Volume** (rated volume capacity of the tank)

- **Installation Height** (from the bottom of the tank to the bottom of the LS-202)

- **Max Level Height** (from the bottom of the tank to the liquid surface when filled to the rated capacity)

> ∗**NOTE**∗ *Max Level Height* must be at least 4 inches less than *Installation Height*

Figure 23 illustrates these parameters for the tank.

In the **Setting** screen, the you can also set the **Device Name**, the **Sampling Interval**, **LCD Display Value**, **LCD Screen Off Time (in seconds)**, and the **Display Unit**. To save the settings, press **Apply Settings**.

> ∗**NOTE**∗ *The LS-202 sensor must be in Peripheral mode (**⁎** P) to change settings.*
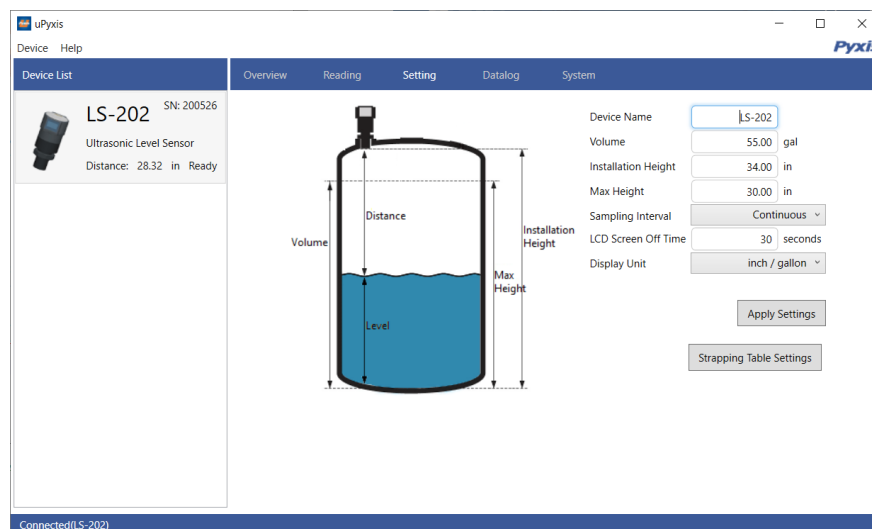

Figure 23.

7.6   Datalog Screen

From the **Datalog** screen, you can view and download the datalogs of the LS-202 sensor. To view the datalogs, click **Read Datalog Info**, then click either **Read Overview Value**, **Read Recent 100 Datalogs**, or **Read All Datalogs**. To download the datalogs, click **Export**. To delete all datalogs, click **Clear All Datalogs**.
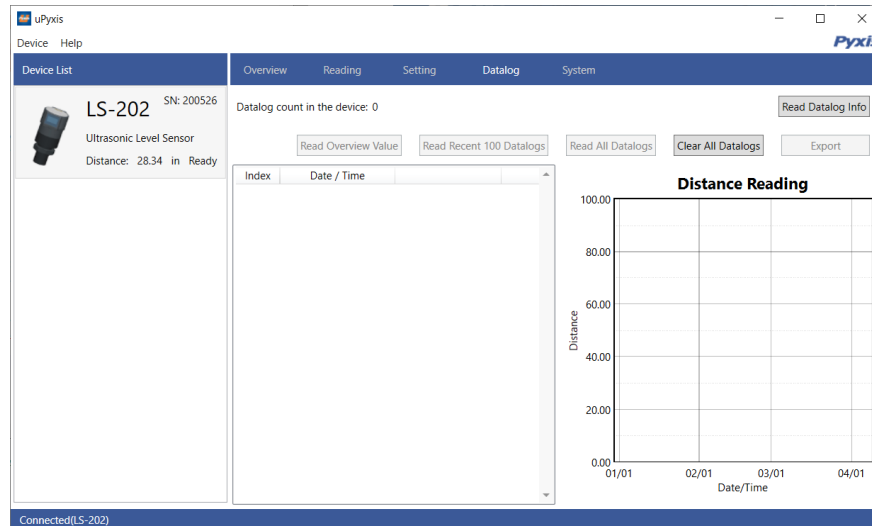

Figure 24.

8   Outputs

8.1   4–20mA Output Setup

The 4–20mA output of the sensor is scaled as:

- 4 mA = (Tank is Empty) = (Level is 0)

- 20 mA = (Tank is Full) = (Level is maximum height or volume)

The 4–20mA analog signal can be converted to one of three values (Level, Volume Remaining, or Volume Consumed) in the controller receiving the output according to the above scale. For example, a nominal 100-gallon vertical tank, the maximum height is 36 inches. The tank volume is 100 gallons when it is filled up to the maximum height 36 inches. The controller should be set up to convert 20 mA to 100 gallons, at which the tank is full and the tank level is 36 inches.

> **∗NOTE∗** *The nominal capacity provided by the tank manufacturer may be greater than the maximum safe (net or effective) capacity that can be practically filled. Please keep this in mind as you configure your LS-202 sensor for practical purposes.*

8.2   Communication Using Modbus RTU

The sensor can be configured as a Modbus slave device via RS-485. In addition to the level, volume, and distance, many operational parameters, including warning and error messages, are available via a Modbus RTU connection. Contact Pyxis Lab Customer Service (service@pyxis-lab.com) for more information.

9 Sensor Maintenance and Precaution

For best performance, keep the sensor ultrasonic surface clean using a soft cloth or towel. Notice that sometimes the maximum sound pressure level inside the beam area is up to 165dB, which exceeds the standard safe limit of 110dB. Never point the probe at the eye. The directivity pattern of the probe is shown in Figure 25.
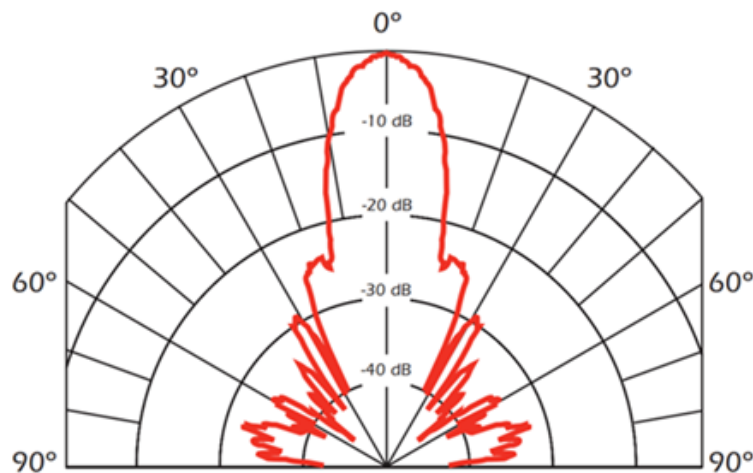

Figure 25. Directivity pattern of the LS-202

10 Regulatory Approval

United States

The LS-20X sensor has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in an installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

Canada

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible

CSA GROUP™

Certificate of Compliance

Certificate:	70209046	**Master Contract:**	274348
Project:	70209046	**Date Issued:**	2019-07-23

Issued to: Pyxis Lab, Inc.
1729 Majestic Dr Suite 5
Lafayette, Colorado 80026
UNITED STATES
Attention: Wu HaiNi

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and US Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only

CSA®
C   US

Issued by: *Morton Ma*
Morton Ma

PRODUCTS

Class No 2258-02   PROCESS CONTROL EQUIPMENT-For Hazardous Locations
Class No 2258-82   PROCESS CONTROL EQUIPMENT-For Hazardous Locations - Certified to US Standards

Class I, Division 2, Groups A, B, C and D T6
Class II, Division 2, Groups F and G T80°C

LS-202Ex series Ultrasonic level transmitter with rated voltage 24Vdc or 4pcs 1.5V AA cell with alkaline,, rated 1.2W. Temp. Code is T6/T80°C, -15°C ≤ Tamb ≤ 50°C, The measuring medium is less than 50°C, and degrees of protection is IP64.

APPLICABLE REQUIREMENTS

CSA C22.2 No. 213-17   Nonincendive electrical equipment for use in Class I and II, Division 2 and Class III, Division 1 and 2 hazardous (classified) locations.

Figure 26.

CSA GROUP™

Certificate:	70209046	Master Contract:	274348
Project:	70209046	Date Issued:	2019-07-23

UL121201 ninth edition   Nonincendive Electrical Equipment for Use in Class I and II, Division2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations

Conditions of Acceptability:

1. The measuring medium is less than 50°C.
2. Final acceptance of this equipment when installed is subject to the jurisdiction of the local inspection authority.
3. Can not to charge for battery in production.
4. The specification of cell or battery shall 1.5V, 4pcs AA with alkaline series.
5. Sockets and plugs cannot be connected or disconnected when energized in flammable atmosphere.
6. The LS-202Ex series Ultrasonic level transmitter is Pollution Degree 2 which shall be utilized or operated in an altitude up to 2000m.

MARKINGS

The manufacturer is required to apply the following markings:
- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

- Company name or trade mark or CSA master contract number (274348)
- Model number: As specified in the PRODUCTS section, above.
- Date code or Serial number: As specified in the PRODUCTS section, above.
- Hazardous Locations Designation: As specified in the PRODUCTS section, above.
- Temperature code rating: T6/T80°C
- Ambient temperature range: -15°C - +50°C
- Complete electrical rating: As specified in the PRODUCTS section, above.
- Warning:
- WARNING – EXPLOSION HAZARD. DO NOT CONNECT OR DISCONNECT WHEN ENERGIZED.
- AVERTISSEMENT – RISQUE D'EXPLOSION. NE PAS BRANCHER NI DÉBRANCHER SOUS TENSION.
- WARNING – EXPLOSION HAZARD – BATTERIES MUST ONLY BE CHANGED IN AN AREA FREE OF IGNITIBLE CONCENTRATIONS.
- AVERTISSEMENT – RISQUE D'EXPLOSION – LES BATTERIES NE DOIVENT ÊTRE REMPLACÉES QUE DANS UN EMPLACEMENT EXEMPT DE CONCENTRATIONS INFLAMMABLES.

Figure 27.

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11   Contact Us

Pyxis Lab, Inc
1729 Majestic Dr. Suite 5
Lafayette, CO 80026 USA
www.pyxis-lab.com
Phone: +1 (866) 203-8397
Email: service@pyxis-lab.com