Electronic Design Service (EDS)

Engineering Solutions for Avionics and Electrical Systems

SLM-010
Smart Salt Level Monitor

Bluetooth-Enabled Water Softener Monitoring Device

Salt Level Monitoring | Remote Alerts | Mobile Connectivity

Key Features

- LiDAR salt level measurement
- Bluetooth monitoring
- Real-time level indication
- Low-salt alerts
- Optional SMS notifications
- Easy installation

User Guide
Model: SLM-010
Version 3.0
2026

Electronic Design Service
www.eldesignservice.com

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Revision History

The Table below displays the revision history for the chapters in this User Guide

Date	Version	Change Made
April 04, 2023	1.0	Original release
May 07, 2024	2.0	30% alarm indication and message added
March 10, 2026	3.0	Wording corrections

Contact Us

For the most up-to-date information about the Electronic Design Service products, go to the Electronic Design Service website at www.eldesignservice.com.

Technical Support:

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www.eldesignservice.com

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Safety Notices

The SLM-010 Salt Level Monitor is designed for indoor installation on residential or commercial water softener systems. Follow the instructions below to ensure safe operation.

Electrical Safety

• Use only the supplied **5 VDC power adapter**.
• Do not operate the device if the power cable is damaged.
• Do not expose the device to water or excessive moisture.

Installation Safety

• Disconnect power before installing or servicing the device.
• Ensure the LiDAR sensor and cables are properly secured to avoid mechanical damage.
• Verify that the sensor installation does not interfere with normal operation of the water softener system.

Environmental Conditions

• Operate the device only within the specified temperature range.
• Avoid installing the device in areas exposed to direct water spray or condensation.

Service

The SLM-010 device contains no user-serviceable internal components.
Contact **Electronic Design Service technical support** if service is required.

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Introduction

About the SLM-010 Salt Level Monitor

The **SLM-010 Salt Level Monitor** is a Bluetooth-enabled device designed to monitor salt levels in water softener systems. The device uses a LiDAR distance sensor to measure salt levels in the brine tank and communicates this information to a smartphone or tablet.

The system provides:

- Continuous salt level monitoring
- Audible and visual alerts on mobile devices
- Optional text message notifications
- Remote monitoring through a Bluetooth connection

When the salt level drops below preset thresholds, the system alerts the user so that the tank can be refilled before the softener performance is affected.

Two alarm levels are supported:

- **40% salt level warning**
- **30% critical refill alarm**

Optional remote messaging allows notifications to be sent to a service provider or salt delivery company. The device ID included in the message allows the service provider to identify the installation location.

A typical monitoring screen is shown in Figure 1.

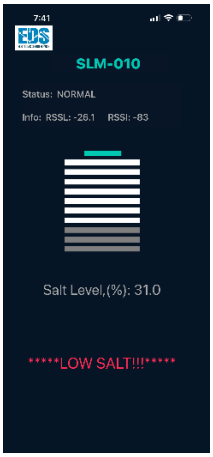

Figure 1 Normal Operation Screen Example (iPhone)

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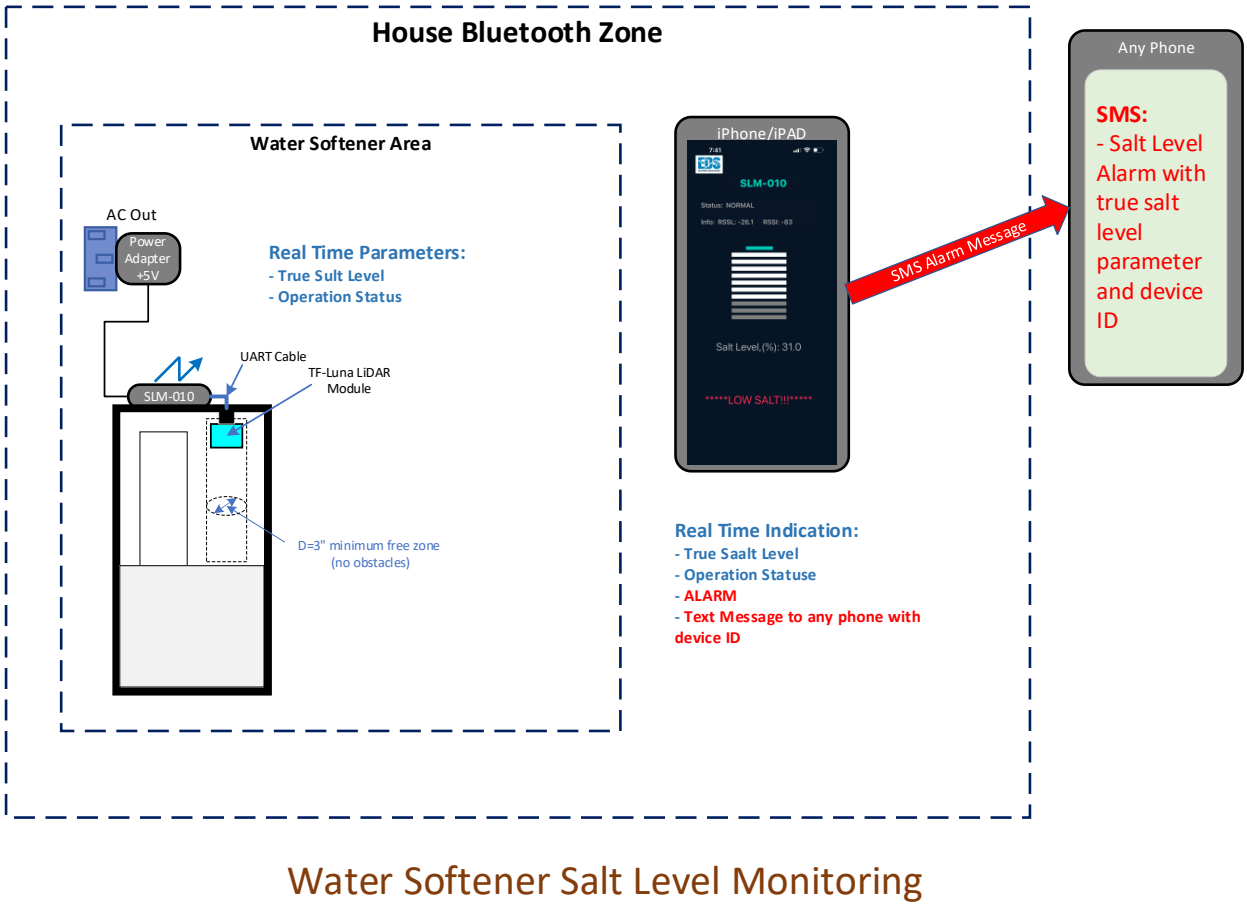
System Overview

Main System Components

The SLM-010 system consists of (see Figure 2):

- **SLM-010 Monitor Unit**
- **LiDAR distance sensor (Luna module)**
- **5V power adapter**
- **Bluetooth mobile application**

The LiDAR sensor measures the distance from the tank lid to the salt surface. This measurement is converted into a salt level percentage and transmitted to the mobile application.



Water Softener Salt Level Monitoring

Figure 2 Water Softener SLM-010 Application

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Specifications

Operating Temperature: 32°F – 110°F (0° – 45°C)

Operating Humidity: 0 – 95%, non-condensing

Salt Level Measurement Accuracy: ±6cm (it is ±5% for 120cm tank height)

LiDAR Sensor: SJ-GU-TF-Luna A01 (UART Interface)

Input Power: 5VDC, 200mA

Bluetooth: Bluetooth low energy (BLE) 4.2 compatible

Antenna: Integrated Internal Antenna

Regulatory Compliance: FCC CFR47, Part 15 and ARIB STD-T-66

Contains FCC ID: ZAT26M1

Contains IC: 451H-26M1

Mobile Application Compatibility: iOS 15 or later

Package Contents

The SLM-010 package includes:

1. SLM-010 monitor unit with UART cable
2. Luna LiDAR distance sensor module
3. 120 VAC / 5 VDC power adapter
4. Two mounting screws for LiDAR module
5. Hanging strips for mounting the SLM-010 device

Note:
The SLM-010 serial number is located on the back of the device enclosure.

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Components and Applications

Connection

SLM-010 device, Luna LiDAR module and power connections are shown in Figure 3.

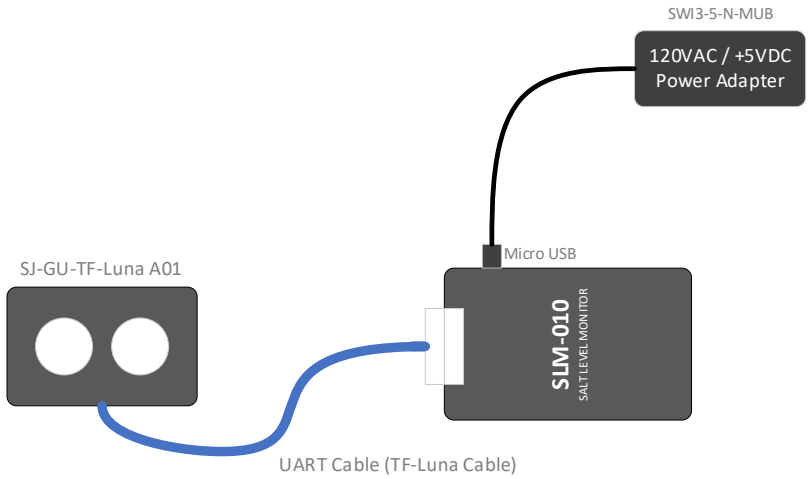

Figure 3 Connection Diagram

See installation instruction in **Error! Reference source not found.** section.

System Installation

Required Tools

- Phillips screwdriver
- Power drill with **½ inch drill bit**
- Two screws (M2.0 × 4)
- Mounting strips (included)

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Installation Procedure

1. Remove the lid from the water softener salt tank.
2. Mark the location of the **sensor cable hole** on the tank lid.
   The center of the lid is usually the best position. Ensure there are no obstacles within a **3-inch diameter area** below the hole.
3. Drill a **½ inch hole** in the marked location.
4. Mount the **SLM-010 unit** on the outside of the tank lid near the hole using the hanging strips.
5. Feed the UART cable through the hole.
6. Connect the UART cable to the **Luna LiDAR module**.
7. Mount the LiDAR sensor on the inside of the lid using the provided screws.
8. Reinstall the lid on the tank.

See detailed view in Figure 4.

Figure 4 SLM-010 and Luna LiDAR Installation

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Device Operation

Front Panel

The front panel contains a **status LED indicator** (see Figure 5**)**.

During normal operation the LED will blink approximately every **1.5 seconds**.

This indicates the device is powered and operating normally.

Figure 5 SLM-010 Front Panel

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Mobile Application

Application Installation

Install the **SLM-010 Salt Level Monitor application** from the Apple App Store.

Before launching the application, verify the following settings are enabled:

Background App Refresh

>Settings>Salt Level Monitor>Background App Refresh

Notifications

>Settings>Salt Level Monitor>Notifications>Allow Notifications/Sounds/Badges

Contacts Access

>Settings>Salt Level Monitor>Contacts

Accessories for application access when lock

>Settings>Face ID &Passcode>Accessories

Bluetooth

>Settings>Salt Level Monitor>Bluetooth

Remote Messaging Configuration

The application supports **Remote Messaging Service (RMS)** for sending alarm notifications.

Create a new contact in your iOS device with the following format (if you need RMS):

First Name:
SLM-010

Last Name:
+1XXXXXXXXXX
(receiver phone number)

Company:
XXX
(tank height in centimeters)

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This information allows the application to determine:

- notification phone number
- tank height
- device identification

An example contact configuration is shown in Figure 6.

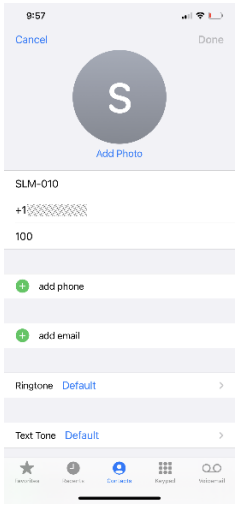

Figure 6 Contact example for SLM-010

During application start up, the activation message will be sent to indicated phone number (see Figure 7) and the phone number will be shown on application front panel for approximately 5 seconds (see Figure 8).

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Operation Modes

The system operates in several states:

Normal Operation

Salt level above **40%**

Warning Condition

Salt level below **40%**

Alarm Condition

Salt level below **30%**

In alarm mode, the application will generate:

- audible notification
- visual alert
- optional SMS message

Example alarm screens are shown in Figure 10.

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Operation

First Start

1. Allow Bluetooth (if it was not done before start)
2. Allow Notifications (if it was not done before start)
3. Allow access to contact list (if it was not done before start)

Note: application uses SLM-010 contact to read message phone and salt tank height

Note: Restart application again after all access has been allowed.

4. Confirm “Pair” with device. *Note: Password is not required for pairing.*
5. If phone number is presented in SLM-010 contacts, the activation message will be sent to indicated phone number (see Figure 7) and the phone number will be shown on application front panel for approximately 5 seconds (see Figure 8).

Note: Do not report junk for this phone number. It is messaging service.

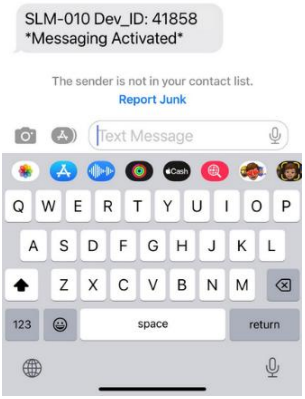

Figure 7 Activation Message

Figure 8 Message Phone number at start (iPad screenshot)

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iOS Application Screenshot

The Figure 9 shows screenshot of SLM-010 Application.

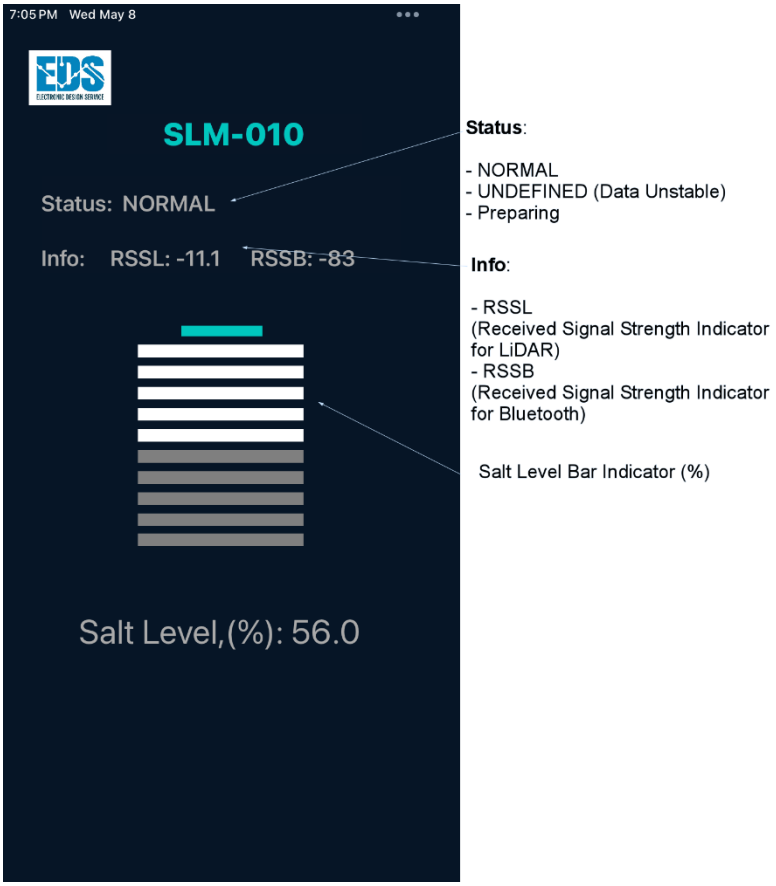

Figure 9 iOS Application Screenshot

Application receives data steadily from device if RSSB is more than -92dBm. The location of device shall guarantee that RSSB is more than -92dBm for continuous operation. However, if your iPhone (or iPAD) periodically losses communication with your device due to being out of receiving zone, it will be automatically reconnected when your iPhone (or iPAD) is moved inside of zone where RSSB more than -92dBm (Usually within reachable distance of your Bluetooth connection)

Troubleshooting note: The “Data Unstable” status means that LiDAR signal is less than -55dB. In this case, possibly the Luna module sensor operation is in failure condition.

“Preparing” status indicates that device is in loading mode.

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Start and Operation Conditions with Messaging

Connect power adapter to your 110v wall outlet. A front LED will start blinking with 1.5sec Intervals. This indicates normal operation.

Start SLM-010 application on iPhone or iPAD.

These are the following operation conditions:

Normal Operation (status id “NORMAL” and Salt level is more than 40%):

See Figure 9 for this mode of operation

Alarm (salt level is less than 30%):

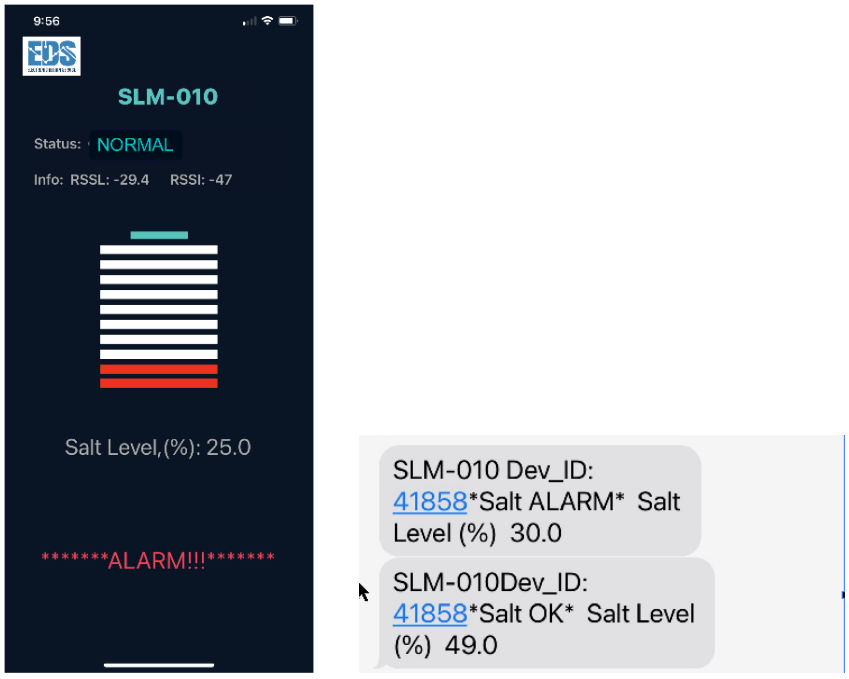

Figure 10 Alarm state and messages examples

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Warranty

When used and maintained in normal use and in accordance with the Installation and Operating Instructions, your SLM-010 product is warranted against original defects in material and workmanship for a one full year from the date of purchase (the “Warranty Period”). During the warranty period, SLM-010 will be repaired or replaced at no cost to you. EDS will inspect and diagnose the failure, at which point we will determine whether root cause of this failure is due to defective materials or workmanship. If that is the case, EDS will repair/replace your product at no cost to the customer.

This warranty does not cover use of the product in improper installation and/or improper maintenance of the product, damage due to misuse, owner’s acts or omissions, use outside the country in which the product was initially purchased. This warranty does not cover pick up, delivery, transportation or house calls. However, if you mail your product to EDS for warranty service, cost of shipping will be paid one way. This warranty does not cover products purchased from a party that is not an authorized retailer, dealer, or distributor of EDS products.

Warranty Period: 12 months from the date of purchase.

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Troubleshooting

Bluetooth will not stay connected

Device may be out of range.
Move the mobile device closer to the SLM-010 unit until signal strength exceeds **-90 dBm**.
Reconnect time may take up to **6 minutes**.

Bluetooth will not connect

1. Open iOS Bluetooth settings
2. Select the device
3. Choose **Forget This Device**
4. Restart the SLM-010 device

No activation message

Verify that the **contact entry format** is correct in the iOS Contacts list.

Salt level data unstable

Possible LiDAR sensor signal issue.
Restart the SLM-010 device.

Technical Support

Electronic Design Service, LLC

Website:
https://eldesignservice.com

Technical Support:
support@eldesignservice.com

Support page:
https://eldesignservice.com/contacts/

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