

S O A R F R E E

TIDO Series Product Manual

V1.0.0

Preface

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About the Manual

This document introduces the features, specifications, packaging, and precautions of the TIDO series products.

Please read this manual carefully before using the device for the first time and keep it in a safe place for future reference or to pass on to the next user.

If the instructions in this manual are insufficient to resolve issues encountered during operation or maintenance of the device, please contact Soarfree Technical Customer Service Center directly at 400-005-6518. We will provide you with multi-channel technical support.

Target Users

This manual provides the necessary data and related guidance for the TIDO series to engineers. Users should have a basic understanding of communications and networking. This manual is intended for the following engineers:

- Test Engineers
- Technical Support Engineers
- After-sales Engineers
- Installation Engineers

Explanation of Terms

Abbreviations	Extended Names	Description
SmartStore	Smart Store System, Price Tag Backend	Manage all electronic price tag devices, as well as store products and display templates.
EPD	Electronic Paper Display	Refers to electronic paper displays (EPD) or e-ink price tags used to display product names, prices, and other information.
ESL	Electronic Shelf Label	Electronic Price Tags, including LCD and EPD (Electronic Paper Display) price tags.
ESL AP	ESL AP、ESL GATEWAY、Base Station、Repeater	Also known as AP (Access Point) or Repeater, used to facilitate data interaction between electronic price tags and the smart store system.
RBWY	R - Red B - Black W - White Y - Yellow	Refers to the color display mode in E-Ink (Electronic Paper Display) technology.

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1. Overview

The TIDO series is an Electronic Shelf Label (ESL) system independently developed by Soarfree. This series utilizes E-ink (Electronic Paper Display) technology and communicates with the ESLAP (Electronic Shelf Label Access Point) via the 2.4GHz frequency band to achieve functions such as price updates, display template switching, and LED light flashing. The TIDO series features high-definition display, long lifespan, and robust performance, making it widely applicable in traditional retail, new retail, department stores, fashion, healthcare, and cultural entertainment sectors.

1.1 System Architecture

The Soarfree Electronic Shelf Label (ESL) system consists of electronic shelf labels (ESL), AP gateway (ESLGATEWAY), smart store system, database, integration services, and handheld terminals (APP/PDA).

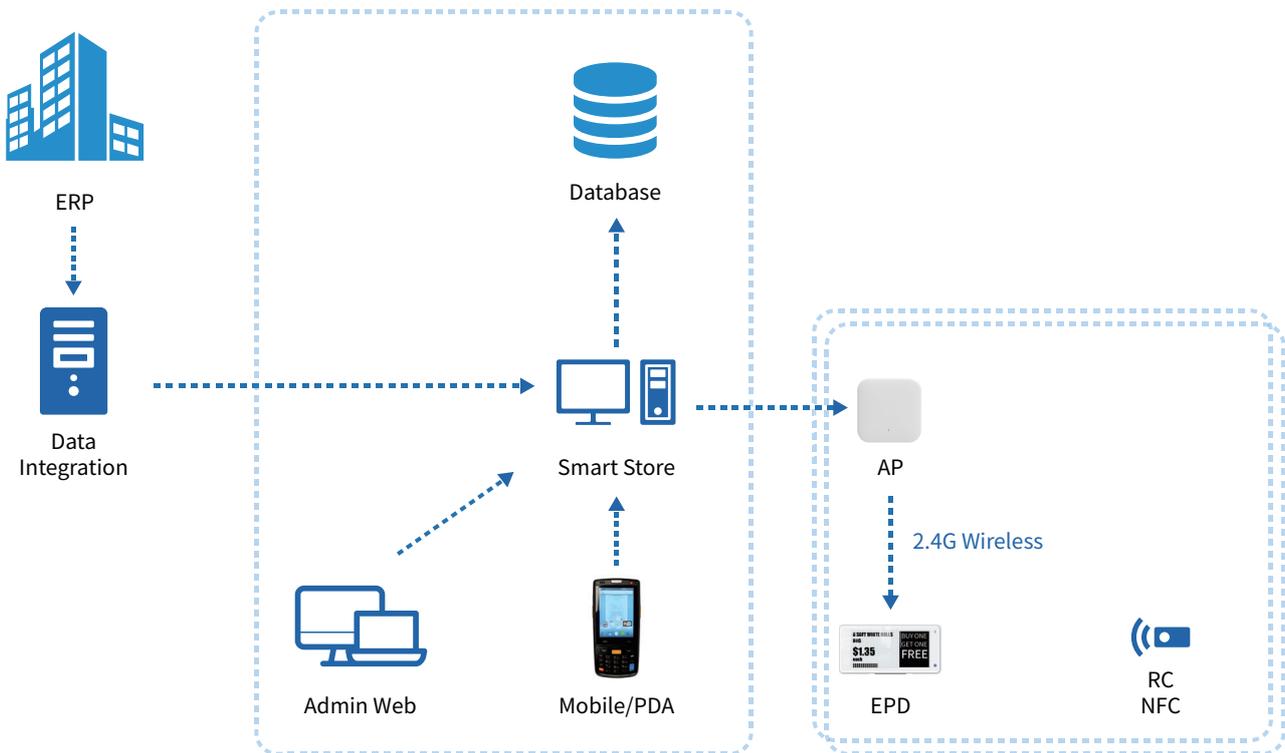


Figure 1-1 System Architecture Diagram

1.2 Series Features

The TIDO series has the following features:

- Adopting high-performance E-Ink screens with a visual effect similar to paper.
- Static display consumes little or no electricity, supporting long-term continuous display.
- Supports 8 sizes: 1.54"、2.13"、2.66"、2.9"、3.5"、4.2"、7.5"、9.7".
- The entire series is available in either three-color or four-color displays. The three-color display options are red-black-white (R-B-W), and the four-color display options are red-black-white-yellow (R-B-W-Y). However, the Electronic Shelf Labels (ESL) that can operate at low temperatures support only black-and-white (B-W) displays.
- All models in the series support battery replacement and are designed for use in ambient environments.(not suitable for low temperatures and do not support IP68 water resistance).
- The low-temperature models (2.13", 2.66", 3.5") support use in cold environments such as freezers, operating within a temperature range of -25°C to 10°C.
- The low-temperature models (2.13", 2.66", 3.5") and the waterproof model (4.2") feature an IP68 dust and water resistance design.
- Built-in LED indicator lights that can display 7 colors to assist with functions such as product finding, promotional alerts, inventory warnings, and battery level reminders.

2. Product Appearance

This chapter provides an introduction to the product appearance, structural design, and functional areas of the Tido series.

2.1 Product Appearance



Figure 2-1 Tido Series Products

Introduction to various regions of the Tido series, as shown in the figure:



Figure 2-2 Main Areas of Tido Series Products

Number	Name	Introduction
1	LED Indicator Light	Supports 7-color flashing lights for product location, inventory warnings, and promotion alerts.
2	Display Area	Adopts E-Ink technology, supporting color modes such as BW, RBW, and RBWY. <ul style="list-style-type: none"> Flexible display content: Supports text, numbers, images, barcodes, and QR codes for various product information needs. Comprehensive product information: Displays name, price, unit, grade, contact number, barcode, and QR code. Supports user-defined display areas and adjustable font sizes for clarity. Page management: Supports up to 8 pages for different information types. Users can switch pages flexibly for better display efficiency.
3	Nameplate	Product information labels, including: manufacturer, model number, and certifications.
4	SN Barcode	Unique device serial number for identification, binding, and unbinding.

Table 2-1: Tido Series Function Area Introduction

2.2 Structural Diagram

This chapter introduces the structural diagrams of various sizes in the Tido series.

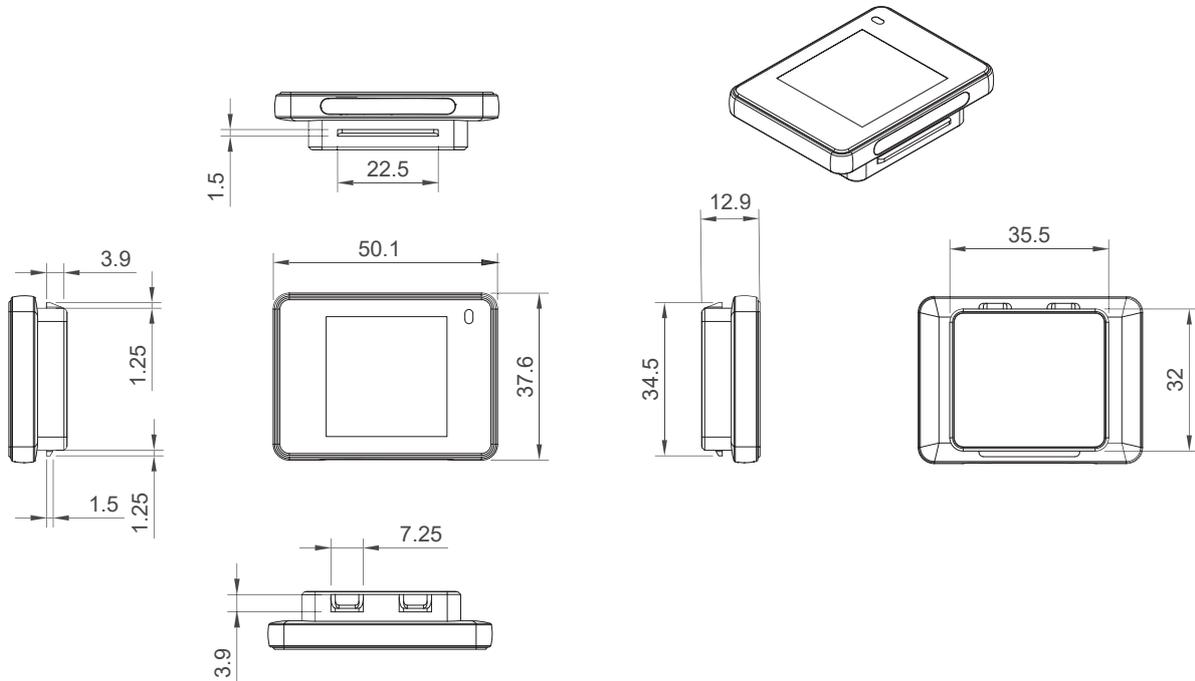


Figure 2-3: 1.54-inch Structural Diagram

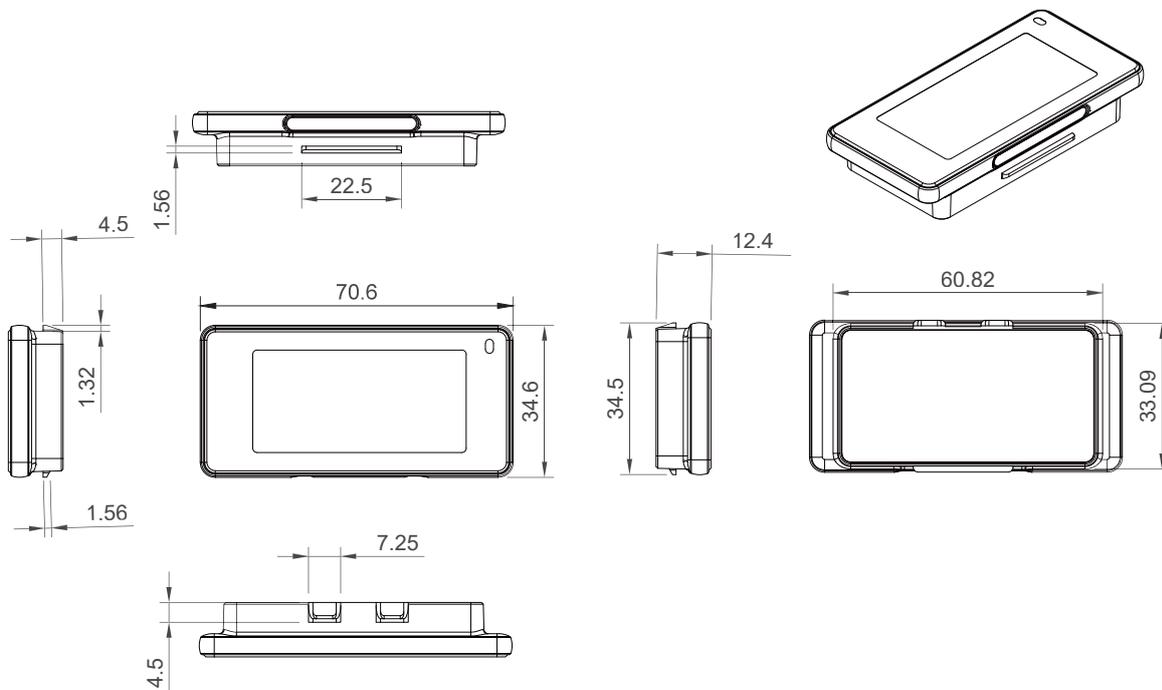


Figure 2-4: 2.13-inch Structural Diagram

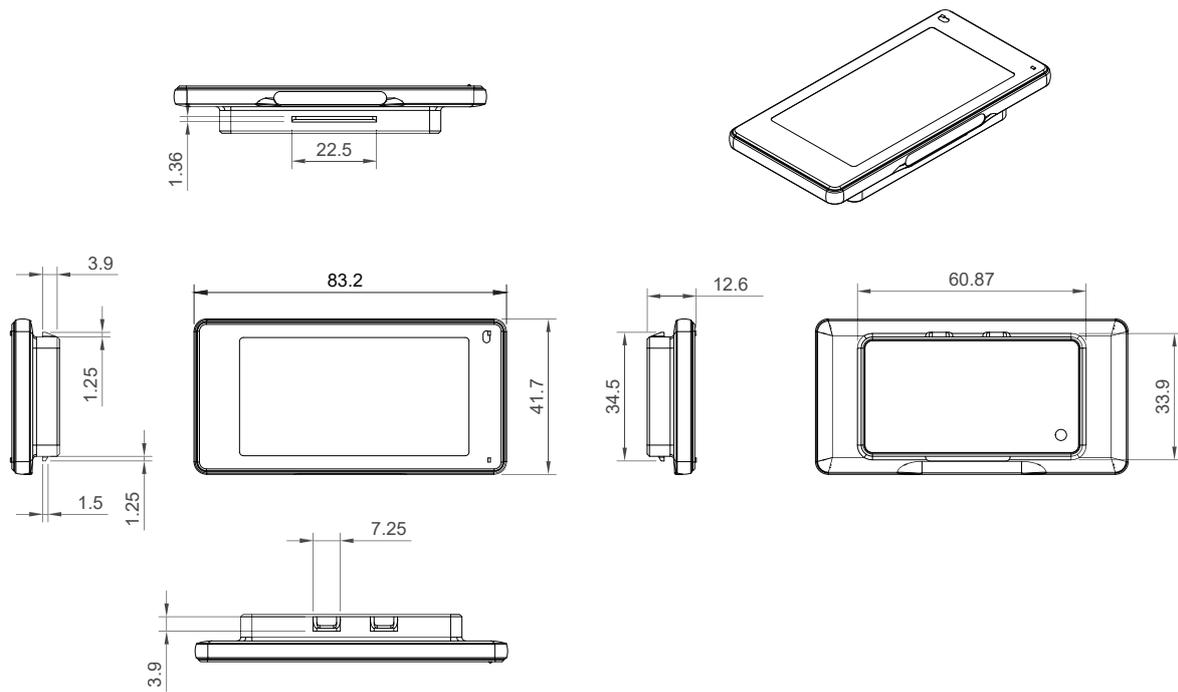


Figure 2-5: 2.66-inch Structural Diagram

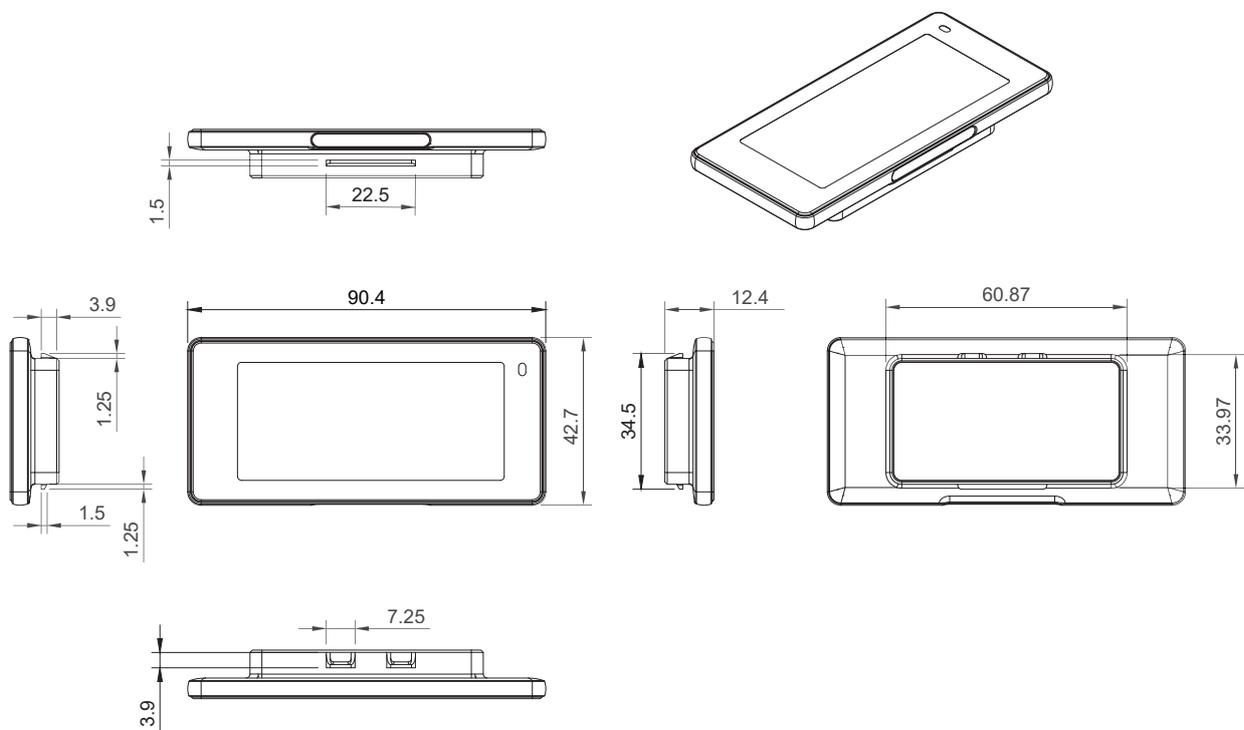


Figure 2-6: 2.9-inch Structural Diagram

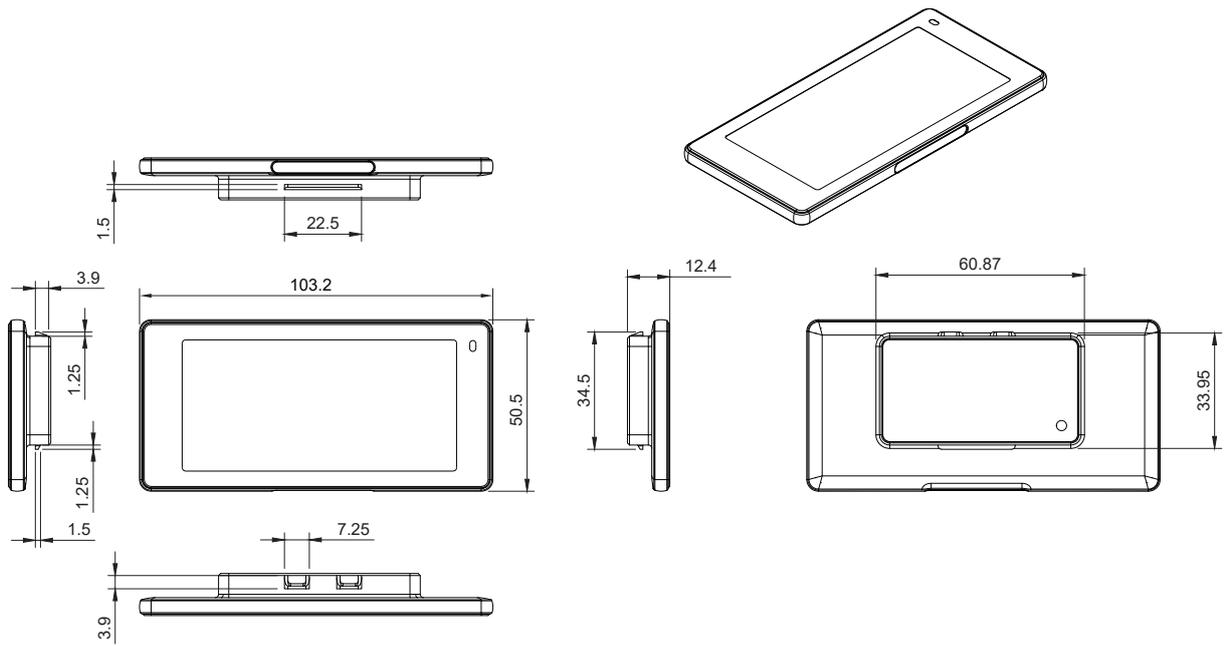


Figure 2-7: 3.5-inch Structural Diagram

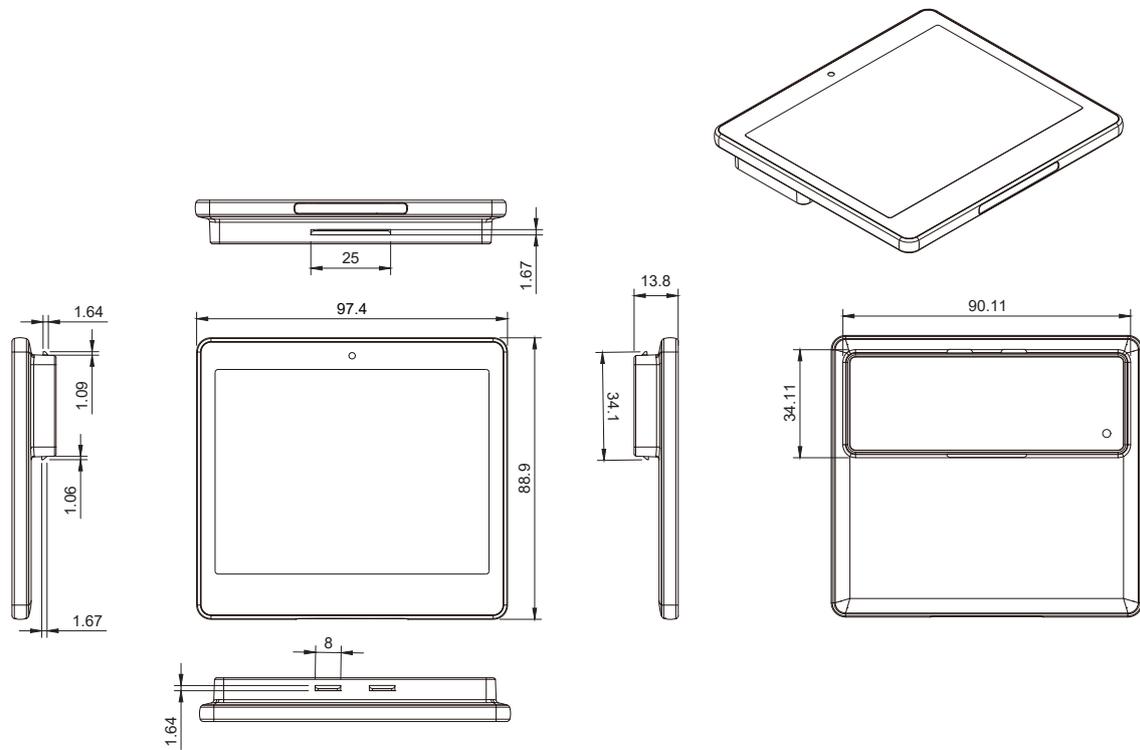


Figure 2-8: 4.2-inch Structural Diagram

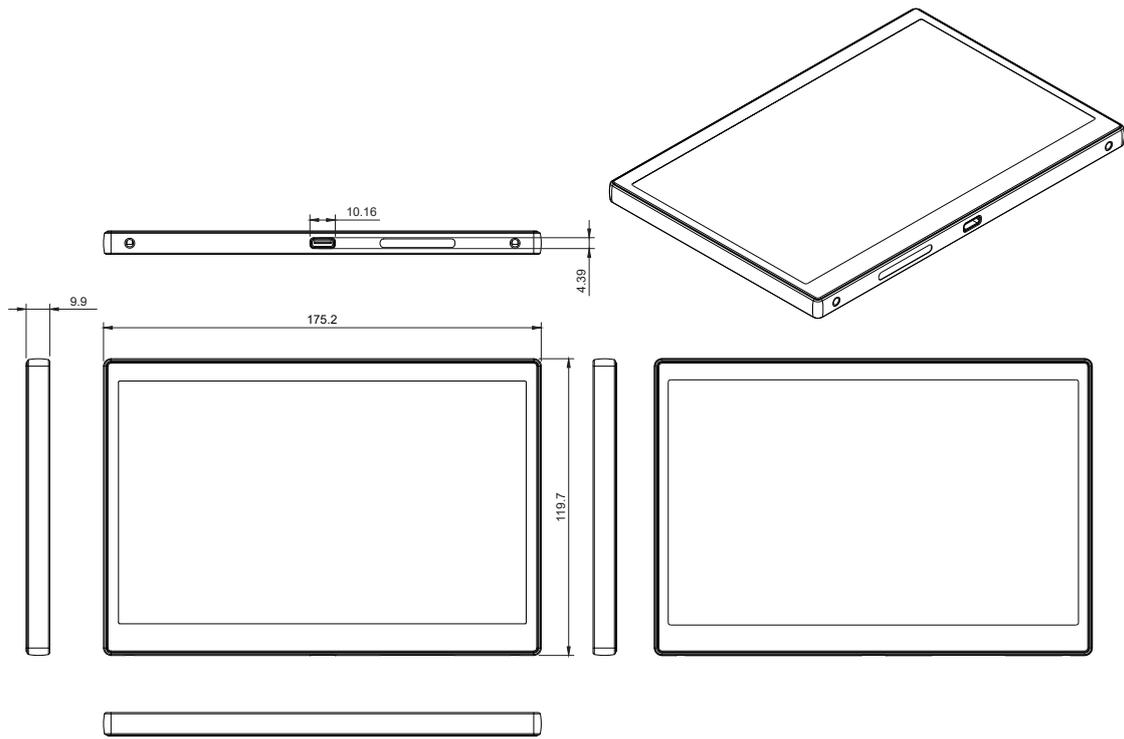


Figure 2-9: 7.5-inch Structural Diagram

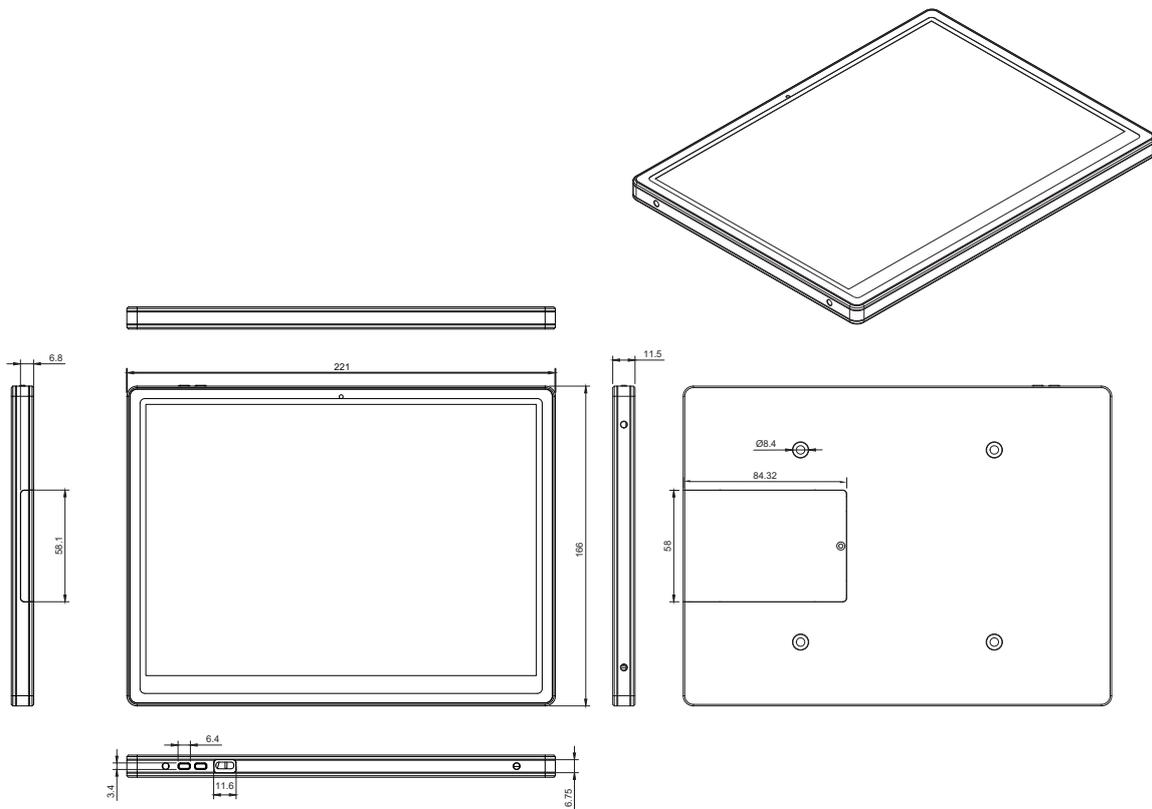


Figure 2-10: 9.7-inch Structural Diagram

3. Hardware Specifications

This chapter provides hardware information for the Tido series, including specifications, NFC parameters, naming conventions, and label details.

3.1 Specifications

Tido Series Specifications are listed in Table 3-1: Tido Series Specifications.

Name	1.54"	2.13"/ 2.13" Low-Temp Model	2.66"/ 2.66" Low-Temp Model	2.9"	3.5"/ 3.5" Low-Temp Model	4.2"/ 4.2" Waterproof Model	7.5"	9.7"
Dimensions (mm)	50.1×37.6×12.9	70.6×34.6×12.4	83.2×41.7×12.6	90.4×42.7×12.4	103.2×50.5×12.4	97.4×88.9×13.8	175.2×119.7×9.9	221×166×11.5
Screen Size (mm)	27×27	47.8×23	60×31	66.9×29.6	80.1×38.6	84.8×63.6	163×97	201.6×141.12
Resolution (px)	200×200	250×122	296×152	296×128	384×184	400×300	800×480	960×672
Weight (g)	22g	32.5g	40.5g	43g	52g	94g	251g	424g
Screen Color	B-W-R (Black-White-Red) B-W-R-Y (Black-White-Red-Yellow) B-W (Black-White)	B-W-R (Black-White-Red) B-W-R-Y (Black-White-Red-Yellow) B-W (Black-White)	B-W-R (Black-White-Red) B-W-R-Y (Black-White-Red-Yellow) B-W (Black-White)	B-W-R-Y (Black-White-Red-Yellow) B-W (Black-White)	B-W-R-Y (Black-White-Red-Yellow) B-W (Black-White)	B-W-R (Black-White-Red) B-W-R-Y (Black-White-Red-Yellow)	B-W-R (Black-White-Red) B-W-R-Y (Black-White-Red-Yellow)	B-W-R (Black-White-Red) B-W-R-Y (Black-White-Red-Yellow)
Battery	1 xCR2450	2 xCR2450 /Li-MnO ₂ Battery	2 xCR2450 /Li-MnO ₂ Battery	2xCR2450	2xCR2450 /Li-MnO ₂ Battery	3 xCR2450	Li-MnO ₂ Battery	6 xCR2450
Battery Duration	3 years (4 refreshes per day)	5 years (4 refreshes per day) / 3 years (4 refreshes per day)	5 years (4 refreshes per day) / 3 years (4 refreshes per day)	5 years (4 refreshes per day)	5 years (4 refreshes per day) / 3 years (4 refreshes per day)	5 years (4 refreshes per day)	5 years (4 refreshes per day)	5 years (4 refreshes per day)
Waterproof Rating	IP54	IP54/IP68	IP54/IP68	IP54	IP54/IP68	IP54/IP68	IP54	IP54
Operating Temperature	0°C~40°C	0°C~40°C /-25°C~10°C	0°C~40°C /-25°C~10°C	0°C~40°C	0°C~40°C /-25°C~10°C	0°C~40°C /-25°C~10°C	0°C~40°C	0°C~40°C
Storage Temperature	-25°C~40°C	-25°C~40°C	-25°C~40°C	-25°C~40°C	-25°C~40°C	-25°C~40°C	-25°C~40°C	-25°C~40°C

Table 3-1: Tido Series Specifications

*Note:

- [3-1]: The 2.13" Freezer, 2.66" Freezer, and 3.5" Freezer models have an IP68 dust and water resistance rating; while the 1.54", 2.13", 2.66", 2.9", 3.5", 4.2", 7.5", 9.7" Ambient Temperature models have an IP54 dust and water resistance rating.
- [3-2]: The operating temperature for the 2.13" Freezer, 2.66" Freezer, and 3.5" Freezer models is -25°C to 10°C; while the operating temperature for the 1.54", 2.13", 2.66", 2.9", 3.5", 4.2", 7.5", 9.7" Ambient Temperature models is 0°C to 40°C. If the device operates or is stored outside these temperature ranges, the screen life will be affected.
- [3-3]: The battery life for the 1.54", 2.13" Freezer, 2.66" Freezer, and 3.5" Freezer models is 3 years (4 refreshes per day); while the battery life for the 2.13", 2.66", 2.9", 3.5", 4.2", 7.5", 9.7" Ambient Temperature models is 5 years (4 refreshes per day).

3.2 NFC Specifications

The NFC in ESL has the following functions:

- ESL binding and unbinding
- Flash light control
- Page switching
- Image/template transmission

NFC Specifications are listed in Table 3-2:

Name	Standard	Transmit Frequency	Data Format	Memory	Transmission Range
NFC	IOS/IEC 15693	13.56MHz	NFC NDEF	Storage Space: 200 bytes; configurable write	1cm

Table 3-2: Tido Series NFC Specifications

3.3 NFC Trigger Area

This chapter introduces the NFC trigger areas for various sizes in the Tido series.



Figure 3-1: NFC Trigger Area

3.4 Product Naming Rules

The naming convention and description for the Tido series are shown in Figure 3-2:

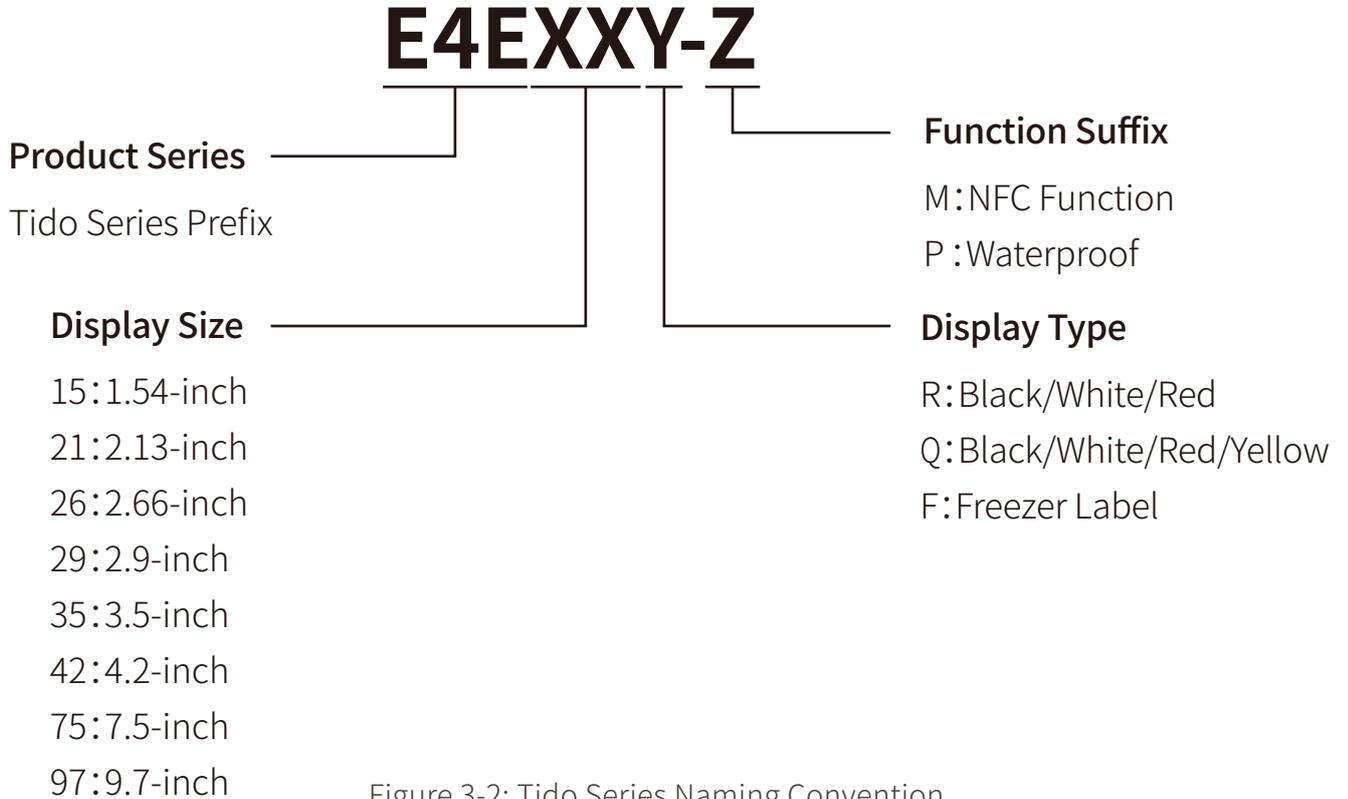


Figure 3-2: Tido Series Naming Convention

3.5 Product Nameplate

The nameplate for the Tido series is shown in Figure 3-3:



Figure 3-3: Tido Series Nameplate

4. Packaging and Accessories

This chapter introduces the packaging and optional accessories for the Tido series.

4.1 Product Packaging

Packaging and product quantities for various sizes in the Tido series.

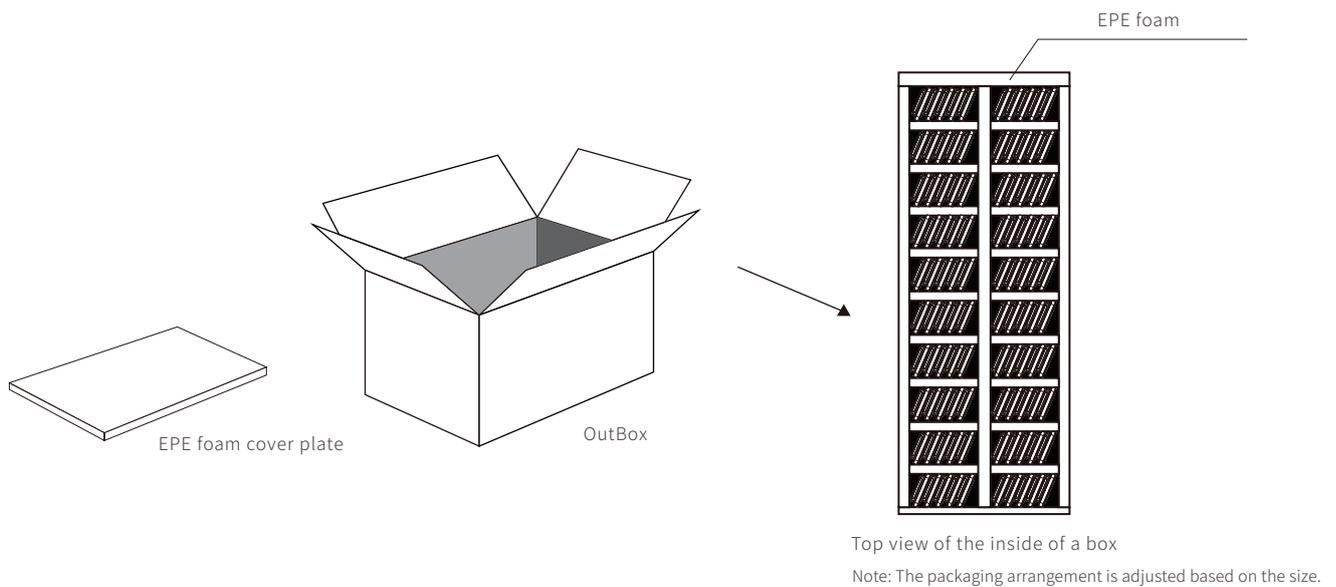


Figure 4-1: Tido Series Packaging Diagram - 2.66-inch

Screen Size (inches)	Packing Quantity
1.54	340 PCS/Box
2.13	320 PCS/Box
2.66	200 PCS/Box
2.9	200 PCS/Box
3.5	190 PCS/Box
4.2	80 PCS/Box
7.5	36 PCS/Box
9.7	28 PCS/Box

Table 4-1: Tido Series Packaging and Product Quantities for Various Sizes

4.2 Product Accessories

The optional accessories for the Tido series are listed in Table 4-2:

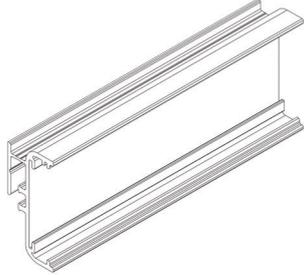
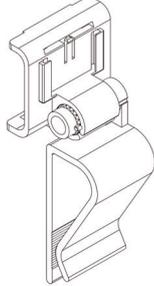
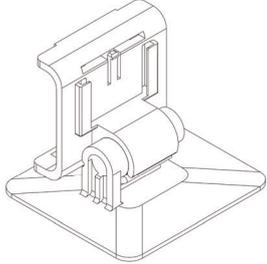
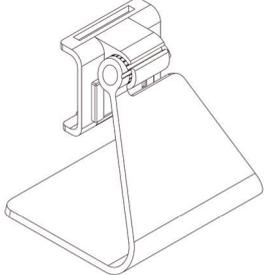
Name	Description	Accessory Diagram
Planar Track	Compatibility: 1.54/2.13/2.66/2.9/3.5/4.2 inches Purpose: Shelf mounting (directly fixed with nano double-sided tape)	
Aquarium Clamp	Compatibility: 1.54/2.13/2.66/2.9/3.5/4.2 inches Purpose: Aquarium tank	
Small Base	Compatibility: 1.54/2.13/2.66/2.9/3.5 inches Purpose: Desktop display	
Medium Base	Compatibility: 3.5/4.2 inches Purpose: Desktop display	

Table 4-2: Optional Accessories

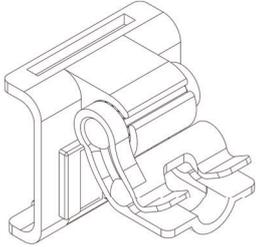
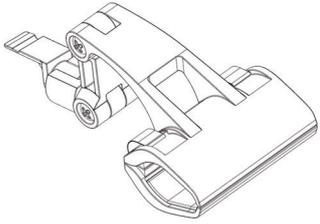
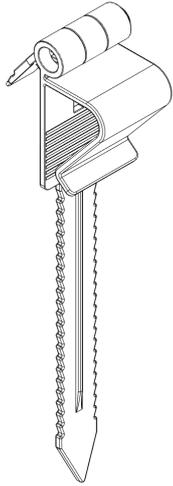
Name	Description	Accessory Diagram
T-Shaped Hook	Compatibility: 1.54/2.13/2.66/2.9/3.5/4.2 inches Purpose: Dual-line hook scenario	
Universal Clamp	Compatibility: 1.54/2.13/2.66/2.9/3.5/4.2 inches Purpose: Fruit basket, wire frame, etc.	
Ice Insert	Compatibility: 1.54/2.13/2.66/2.9/3.5/4.2 inches Purpose: Aquatic product ice display	
Battery Compartment Tool	Compatibility: 1.54/2.13/2.66/2.9/3.5/4.2 inches Purpose: For opening the battery compartment cover when replacing the battery	

Table 4-2 (Continued): Optional Accessories

5. Application Scenarios

The Tido series is suitable for various areas and shelves in comprehensive supermarkets, large hypermarkets, beauty stores, digital stores, fruit shops, and pharmacies. Main application areas include:

- Regular shelf areas
- Regular hook areas
- Regular fence areas
- Regular cabinet areas
- Regular aquarium areas
- Checkout counters
- Refrigerated/freezer areas
- Medicine cabinets
- Fruit sections
- Digital product displays

6. Precautions

During transportation and use of the Tido series, please note the following precautions.

6.1 Transportation Precautions

1. Waterproof Protection

- **Waterproof Protection:** During transportation, ensure devices avoid contact with water to prevent damage. Use waterproof materials like plastic bags or sealable bags to keep ESLs dry.

2. Avoid Crushing and Over stacking

- **Avoid Crushing:** During transportation, ensure that excessive force is not applied to the ESLs to prevent damage or screen breakage.
- **Stacking Limit:** When transporting full boxes, do not exceed the stacking layers indicated on the outer box to avoid pressure damage to the devices inside.

3. Temperature Control

- **Temperature Range:** Ensure the ambient temperature does not exceed 40°C during transportation. High temperatures can damage the ESL's battery, display, and components. Use temperature control measures if necessary.

4. Shock Protection

- **Appropriate Cushioning Materials:** Use high-quality cushioning materials (e.g., foam, bubble wrap) to protect devices from shocks and impacts during transportation.

5. Avoid Sudden Temperature Changes

- During transportation, avoid exposing devices to rapid temperature changes in case of condensation or damage.

6. Special Transportation Markings

- **Clear Markings:** Transportation packaging should clearly display 'Fragile' labels and specify 'Waterproof,' 'Avoid High Temperatures,' and 'Avoid Crushing' to ensure proper handling.

Following these transportation precautions will help avoid unnecessary damage and ensure the safe arrival of the ESLs.

6.2 Usage Precautions

1. Temperature Range Requirements

- Operating Temperature: Maintain the ESL's temperature between 0°C and 40°C to avoid performance issues or damage.
- Freezer ESL: Operating temperature between -25°C and 10°C, for low-temperature environments only.
- Storage and Operating Temperature: Do not exceed 40°C. High temperatures can damage electronic components or affect battery life.

2. Battery Life and Temperature

- Environmental Temperature: Low temperatures can reduce battery life and affect device performance. Use the device within the recommended temperature range.
- Avoid Non-Standard Temperature Use: Operating outside the rated temperature range can damage the screen, affect display clarity, and shorten battery life.

3. Frequent Updates and Battery Consumption

- Frequent Updates and Battery Consumption: Frequent updates and page switching can shorten battery life. Avoid unnecessary updates for efficient operation.

4. Avoid Severe Impact and Disassembly

- Do not throw, hit, handle the ESL roughly for fear of/in case of damaging the device, particularly critical components such as the circuit board and display.
- Do not disassemble the ESL. The device contains sensitive electronic components, and unauthorized disassembly by non-professionals can void the warranty or damage the device.

5. Moisture and Water Resistance

- Keep the ESL environment dry. Exposure to rain, humidity, or liquids (like cosmetics, perfumes) can cause corrosion and damage over time.
- If the device gets wet, dry it immediately. Moisture can affect the screen and cause permanent damage. Ensure the device is completely dry before using it again.

6. Screen Cleaning and Maintenance

- Regularly clean the ESL screen to keep it clean. Use a soft, lint-free cloth to avoid scratching the screen surface.
- Avoid using chemical cleaning agents on the screen. Some chemicals can corrode the surface of the display panel and cause damage.

7.Avoid Strong Magnetic Fields

- Avoid Strong Magnetic Fields: Strong magnetic fields can interfere with device operation, causing unstable signals or device failure.

8.Wireless Communication Interference

- Wireless Communication: The ESL uses the 2.4GHz frequency band. Ensure a clean communication environment for stable signal transmission.
- Wireless Communication: The ESL uses the 2.4GHz frequency band. Interference from Wi-Fi, Bluetooth, or Zigbee devices can cause unstable signals. Adjust device positions or reduce signal sources if needed.

9.Avoid High Temperature Environments

- Avoid High Temperature Environments: Do not place the ESL near heat sources (stoves, microwaves, etc.) or high-pressure containers. High temperatures can damage internal components and the battery.

10.Installation Location

- Installation Location: When installing the ESL, ensure it is placed on a stable surface to avoid prolonged exposure to strong vibrations or external impacts.

11.Device Configuration and Management

- Use the management platform for device configuration and monitoring. Regularly check the device status and battery level to ensure they are within normal operating ranges.
- When updating information, ensure the device is within a good signal coverage area to avoid update failures due to unstable signals.

By following these usage precautions, you can effectively extend the lifespan of the ESL and ensure optimal performance.

7. FCC ID Warning

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note:

- This equipment 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 a particular 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:
 1. Reorient or relocate the receiving antenna.
 2. Increase the separation between the equipment and receiver.
 3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 4. Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.