ATEC IoT

REBL-MZ29T Wireless Electronic Shelf Label

ATEC IOT REBL-MZ29T Wireless Electronic Shelf Label Owner's Manual

Contents

ATEC IoT

ATEC IOT REBL-MZ29T Wireless Electronic Shelf Label

Product Information

Application

This Specification is Applied to ATEC IoT Wireless Electronic Shelf Label (ATEC IoT ESL). ATEC IoT ESL is used by retailers for displaying product pricing or information on shelves. Electronic display modules are attached to the front edge of retail shelving, using Electrophoretic Display (EPD) or similar screen technologies to show product prices.

Quality

Quality should meet conditions mentioned in the specification. Items not mentioned should follow agreed inspection agreements and standards.

Appearance and Characteristics

1. **Appearance:** Should not be contaminated, have cracks, and should meet mechanical dimensions.
2. **Characteristic:** Electrical characteristics should meet specified standards.

Overall Service Scenario

The product is used in a scenario involving POS, Server, ESL EMS, Wired Gateway, Wireless & Bi-Directional 2.4GHz Wireless Tags.

General Features

- **Description Item Size:** 93.0 x 45.0 x 15.7 mm
- **Digital Display:** Electrophoretic Display, Size/DPI: 29.06 x 66.90 mm / 111, 2-Color (Black/White)
- **Power:** 3.0 V / 100 mA CR2450 Coin Battery 3in1 PKG* 1 set (Removable)
- **Network:** NFC 802.15.4 Security Protocol, Comm. Range: Max. 30m (Under LoS)

Product Usage Instructions

- **Powering On the Device**
  - To power on the device, insert the provided CR2450 Coin Battery into the designated slot and ensure it is securely in place.

- **Setting Up Communication Network**
  - To set up the communication network, ensure the device is within the specified range (Max. 30m under LoS) and compatible with ATEC IoT protocol communication devices.

SPECIFICATION

SPECIFICATION			
MODEL	REBL-MZ29T	REV. No.	Rev 1.0
REG. DATE	2024.05.14	PAGE	14
REV. DATE	–	–	–

Revision History

Revision	Date	Contents of Revision Change	Remark
1.0	’24.05.14	First release	

Application

This Specification is Applied to ATEC IoT Wireless Electronic Shelf Label. (ATEC IoT ESL) ATEC IoT ESL is used by retailers for displaying product pricing or information on shelves. Typically, electronic display modules are attached to the front edge of retail shelving. These modules use Electrophoretic Display (EPD) or similar screen technologies to show the current product price to the customer. A communication network allows the price display to be automatically updated whenever a product price is changed.

Quality

Quality should meet each condition which mentioned on this specification. However, the items which are not mentioned on this specification follow the inspection agreements and standards which are agree with both companies.

Appearance and Characteristics

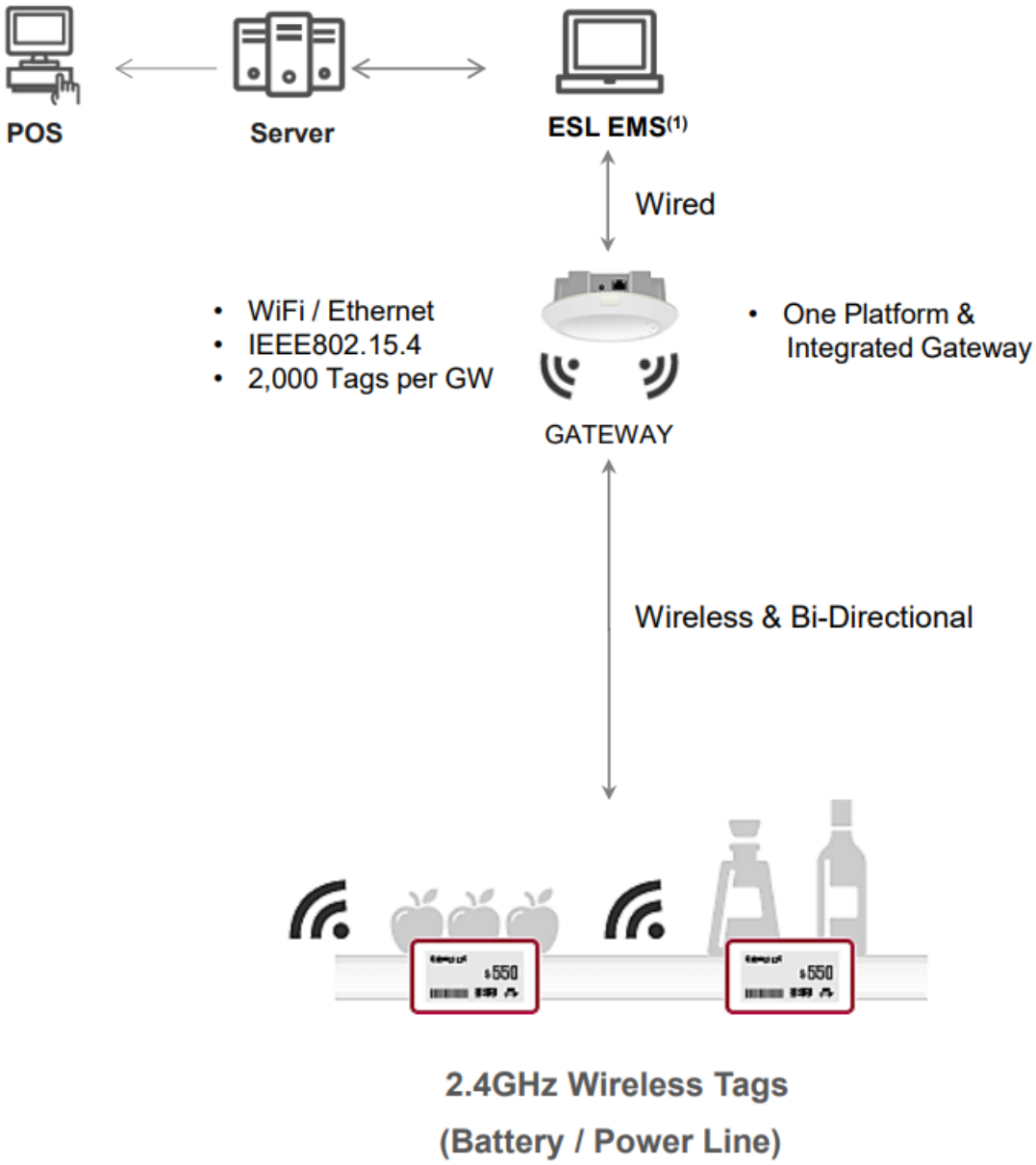
Appearance

Appearance should not be contaminated by harmful materials and should not have cracks, etc. Mechanical dimensions should meet the contents of clause 9.

Characteristic

Electrical Characteristics should meet the contents of clause 7.

Overall Service Scenario



(1) EMS : ESL Management Software

General Features

Description

Item		Description
Size		93.0 x 45.0 x 15.7(mm)
Digital Display		Type : Electrophoretic Display Size / DPI : 29.06 x 66.90 (mm) / 111
Display Color		2-Color (Black/White)
Power [1]		Rate : 3.0 V / 100 mA CR2450 Coin Battery 3in1 PKG* 1 set (Removable)
NFC		Operating frequency of 13.56 MHz (Receiving Only)
Network	802.15.4	2.4GHz IEEE802.15.4 compliant RF Transceiver
	Security	Robust wireless network (*ATEC IoT* own protocol)
	Protocol	Compatible with *ATEC IoT* protocol communication devices
	Comm. Range	Max. 30m (Under LoS) [2][3]

[Notice]

1. It can be used by connecting an external power source that meets power specifications instead of the battery provided (Refer to clause 6.2. about Power specifications)
2. LoS (Line of Sight) : Without any sort of an obstacle between a gateway and end devices.
3. Communication Range depends on the surrounding environment

Battery Life Time

Model	Life Time [1]
REBL-MZ29T	1 year (1)

[Notice]

1. The battery life time depends on operating conditions(Temperature, humidity, wireless environment, image update count, Indicator…etc)

Absolute Maximum Rating

Environmental Conditions

The normal operating environmental conditions are those as below. In such conditions, ESL must be in conformity with the present specification. The conformity to such requirement must be certified by the manufacturer.

Parameter	Condition	Min.	Typ.	Max.	Unit
Operating Environment (1)	Temperature	-25	-15	10	℃
	Humidity	IP Certificated			
Storage Environment (2)	Temperature	-25	25	75	℃
	Humidity	45	55	65	%RH

[Notice]

1. Tag can operate at -25~40℃. But only assure the image quality of EPD at -25~10℃.
2. Moisture, liquid and direct sunlight can damage the tag and reduce its life time.
3. Getting a magnetic close to the tag can be degraded the performance. (wireless communication, remote controller, etc)
4. When storing the tag, change it to a white screen, and maintain the proper temperature and humidity.
5. After receiving the product, it should be installed within 3 months.
6. The display glass may break when it is dropped or bumped on a hard surface. (fragile by external impact)

Electrical Conditions

The operating electrical conditions are those as below. In such conditions the ESL must be in conformity with the present specification. All devices can be damaged or non-operated over the specification as below.The conformity to such requirements must be certified by the manufacturer.

Parameter	Condition	Min	Typ.	Max	Unit
Supply Voltage	DC Power Supply	2.6(1)	3.0	3.3	V
Power Consumption	@ 3.0~3.3V	–	–	100	mA
ESD Protection	Air Condition @Soft Fail	-8	–	+8	kV

[Notice] (1) Minimum operating voltage in frozen environment is 2.6V (typical : -15’c) – The temperature getting higher, the Min.Voltage getting lower

Electrical Specification

IEEE802.15.4

The REBL-MZ29E supports IEEE802.15.4.

General Specification

- Standard : Only IEEE802.15.4 PHY
- Frequency : 2405 ~ 2480MHz
- Channel: 16CH. (5MHz Spacing)
- Modulation : DSSS/O-QPSK
- Max. Data Rate: 250Kbps

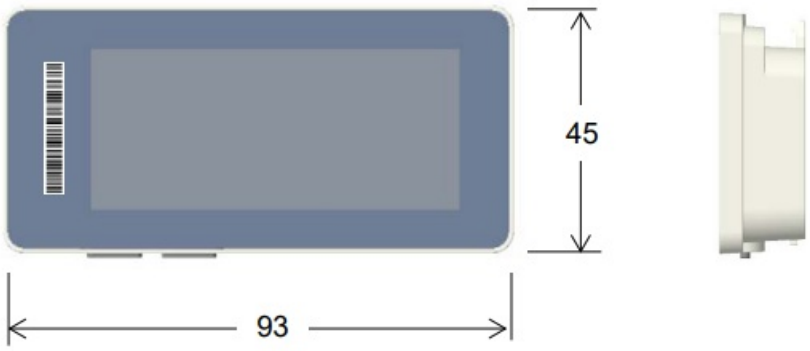
Electrical Specification

- Channel power depend on each country regulations (EX. KC, etc)
- The electrical specification which is shown below is ATEC IoT internal specification.
- All values depend on surrounding environment and current statement of access point

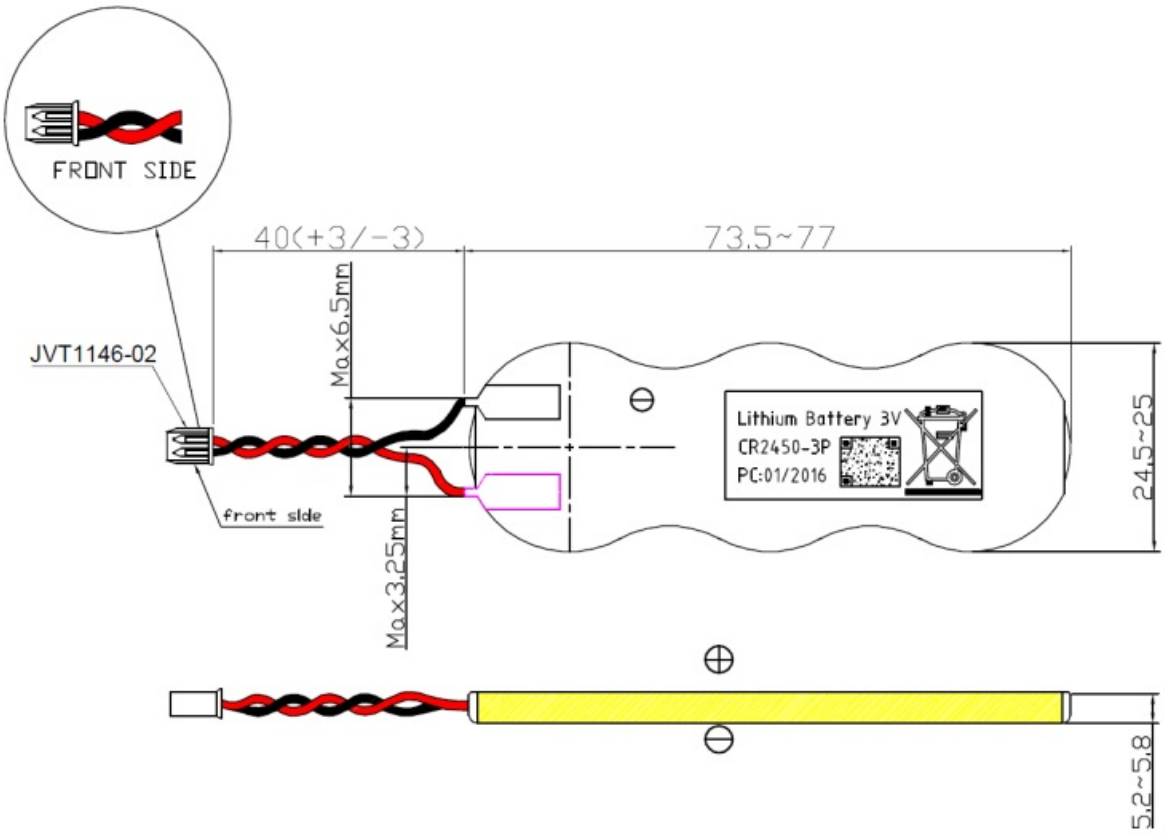
RF Performance					
Parameter	**Condition**	**Min**	**Typ**	**Max**	**Unit**
Output Power	–	0	–	–	dBm
Receiver Sensitivity	PER=1% (Required -85dBm)	-85	–	–	dBm
Maximum Input Level	PER=1% (Required -20dBm)	–	–	-20	dBm
Frequency Tolerance	Required Max. ±75kHz	-75	–	75	kHz
Error Vector Magnitude	Required Max. 22%	–	14	22	%

Mechanical Information

Mechanical Dimension

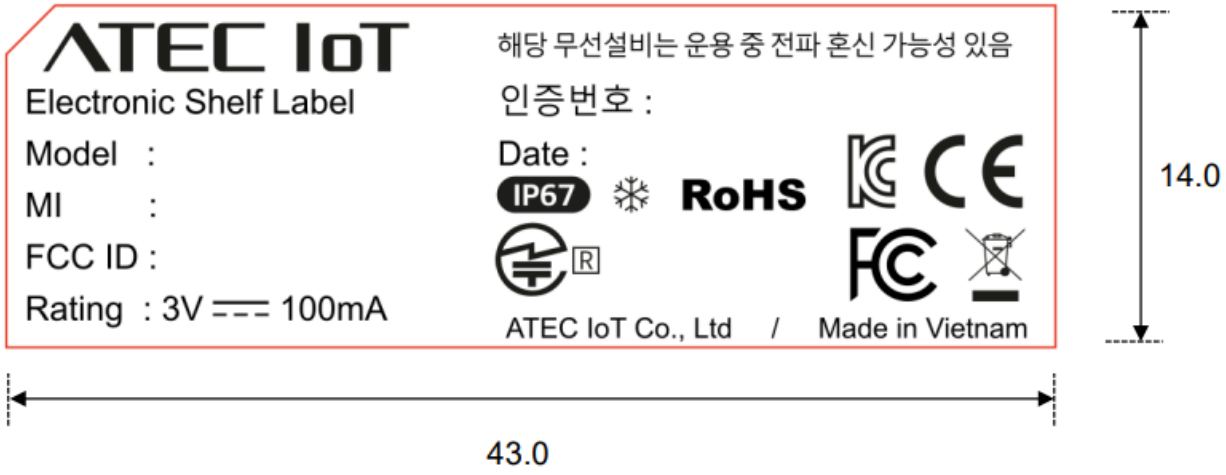


CR2450 Coin Battery 3in1 PKG* 1 set



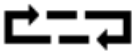
Label Specification

Product Labeling Specification



User Quick Manual

Tag Information

Symbol	Mode	Function	Image
⊂⏻⊃	Deep Sleep	Initial Mode	
	Connected	Connected to Gateway	
	Disconnected	Disconnected to Gateway	
	Low Battery	Battery change Recommended	
	Empty Battery	Battery Discharged	
	Busy	Ready to image download	

[Notice]

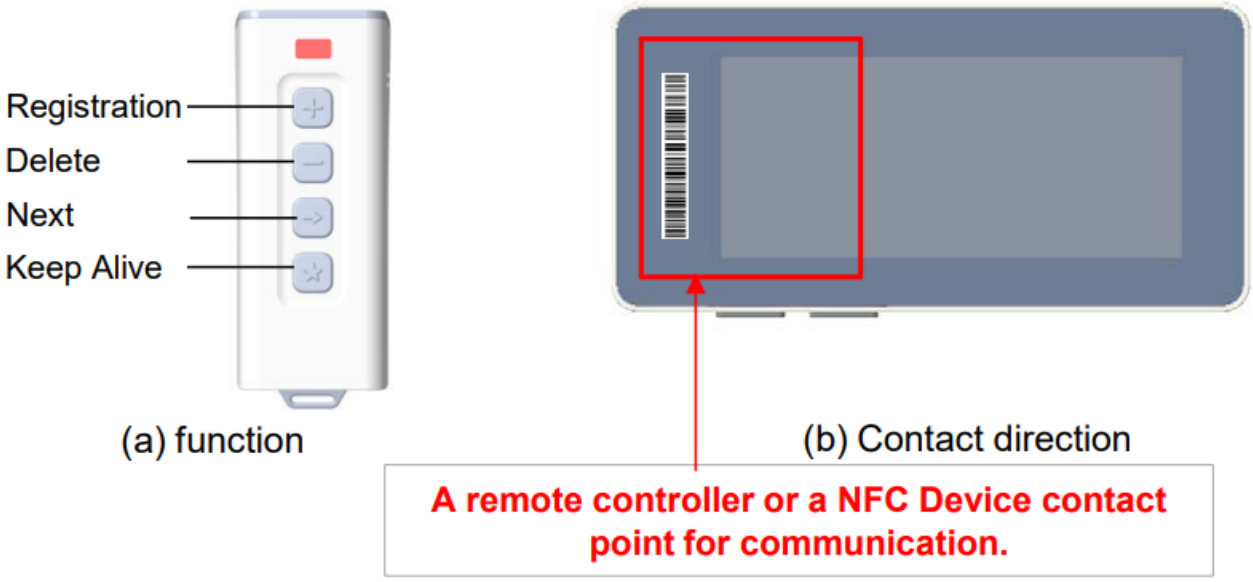
- In this status of low battery, we can not ensure any normal operations.
- After change battery, the tag's display will be changed to normal status within next keep alive interval

Description & Function

Remote Control Function

Remote control device provides customer with several functions as below

- Waking Tag up from sleep mode
- Updating new purchase image on Tag
- Deleting purchase image on Tag
- Returning a Tag to be factory settings

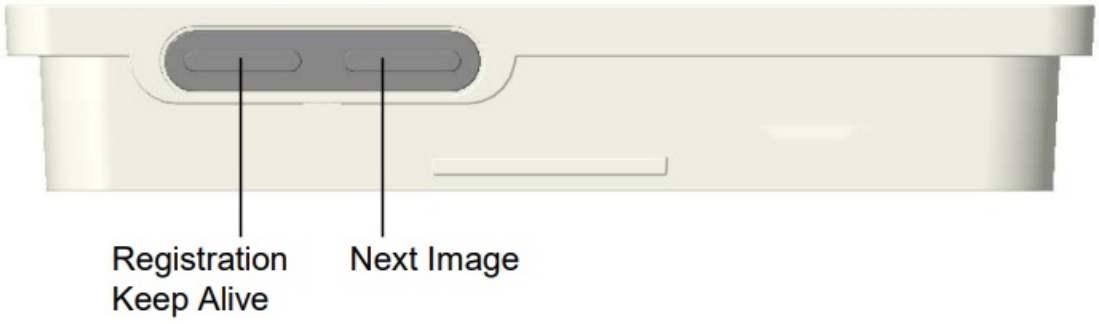


< Remote control device>

Button Function

Two buttons provide customers with several functions as below

- Waking Tag up from sleep mode
- Updating new purchase image on Tag
- Changing purchase image on Tag



< Button Function>

Disclaimers

- ATEC IoT is not responsible for any damages caused by any accidents or operational environments exceeding the absolute maximum ratings.
- Consultation with ATEC IoT is recommended for unassured environments or operations to avoid any possible malfunctions or damages of the products or risk of life or health.
- Any unauthorized, without prior written consent, from ATEC IoT disassembly is prohibited if purposed for reverse-engineering. All defective devices must be reported to ATEC IoT and not to be disassembled or analyzed.
- The product information can be modified and upgraded without prior notice.

Certification

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

- a. Rule Part 15.19(a)(3): 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.
- b. Rule Part 15.21: The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that 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
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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to 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

FAQ

How long is the battery life of the REBL-MZ29T model?

The battery life of the REBL-MZ29T model is approximately 1 year.

Documents / Resources

	ATEC IOT REBL-MZ29T Wireless Electronic Shelf Label [pdf] Owner's Manual REBL-MZ29T, REBL-MZ29T Wireless Electronic Shelf Label, Wireless Electronic Shelf Label, Electronic Shelf Label, Shelf Label

References

- **User Manual**