



# Newton E-Paper 32"

## Datasheet

**PMN (Product Marking Name) : Newton E-Paper 32"**

**FVIN (Firmware Version Identify Number) : V008**

16/03/2026

### Summary

This datasheet presents the general performance and specifications of Newton E-Paper 32" for SOLUM Electronic Shelf Label (ESL) System.



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## Document History

| Rev.       | Date       | Revision History                                                | Page |
|------------|------------|-----------------------------------------------------------------|------|
| v0.1       | 28/07/2025 | Draft                                                           | -    |
| v0.1-PRE   | 01/08/2025 | Preliminary Release                                             | -    |
| v0.1.1-PRE | 18/09/2025 | Revised Product Specification                                   | 8, 9 |
| v0.2.0-PRE | 18/11/2025 | Updated sections on Rechargeable Battery Handling and Packaging | -    |
| v0.2.1-PRE | 16/03/2026 | Updated Battery Charging Guide                                  | 25   |
|            |            |                                                                 |      |

## 1. Preface

### 1.1. About This Guide

This datasheet presents the specifications and general performance of SOLUM's Newton E-Paper 32".

### 1.2. Audience

This manual is intended for any user (IT, operations, store managers, installers, etc.) authorized to operate and install SOLUM ESLs.

### 1.3. Abbreviations and Acronyms

| Terminology/Abbreviation | Description            |
|--------------------------|------------------------|
| GW                       | Gateway                |
| ESL                      | Electronic Shelf Label |
| RF                       | Radio Frequency        |
| IT                       | Information Technology |
| PoE                      | Power over Ethernet    |
| TBD                      | To Be Decided          |

## 2. Overview

Newton E-Paper 32" that can create a full color image based on 6 colors. When installed in large stores and indoor spaces, it has the effect of attracting people's attention from a far. This signage can be hung on the ceiling in addition to wall-mounting or using a stand, so when applied to large supermarkets, customers can check discount events and promotional images from afar as they move around the store.



**Figure 1. PRODUCT**

## 3. Specification

This section details the specifications of Newton E-Paper 32".

### 3.1. Product Specification

| Item         |                       | Description                                                                                                                                                                   |
|--------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mechanical   | Dimension (W x H x D) | 420.0 x 722.2 x 16.4 mm / 16.53 x 28.43 x 0.65 in                                                                                                                             |
|              | Weight                | 2.3 kg / 82.54 oz (incl, Battery)                                                                                                                                             |
|              | VESA Mount            | 200 x 200 mm                                                                                                                                                                  |
|              | VESA Mount Screw      | M4 / 8 ~ 10 mm                                                                                                                                                                |
|              | Bezel Width           | 12.4 / 12.4 / 13.6 / 13.6 mm (U / B / L / R)                                                                                                                                  |
| Design       | Bezel Color           | White                                                                                                                                                                         |
| Display      | Dimension (W x H)     | 392.7 x 697.3 mm / 15.46 x 27.45 in                                                                                                                                           |
|              | Orientation           | Portrait / Landscape                                                                                                                                                          |
|              | Resolution            | 1,440 x 2,560 pixels (94 dpi / 9:16)                                                                                                                                          |
|              | Colors                |  KWRVGB (Black, White, Red, Yellow, Green, Blue)<br>Dithering for additional color support |
|              | Viewing Angle         | Nearly 180°                                                                                                                                                                   |
| Connectivity | Power Input           | USB-C x 1 (Power Only, 5V)                                                                                                                                                    |
|              | Wi-Fi                 | WLAN (802.11 a/b/g/n) 2.4Ghz & 5Ghz                                                                                                                                           |
|              | 2.4GHz BLE            | 2.4GHz BLE                                                                                                                                                                    |

|                        |              |                                                                                                    |
|------------------------|--------------|----------------------------------------------------------------------------------------------------|
| Features               | Hardware     | 3 Button (Power / Pairing / Action)<br>2 LED Indicator (Power / Operation)                         |
|                        | Software     | SOLUM E-Paper App (Android / iOS)<br>Web-based CMS                                                 |
|                        | Usable Pages | 10 pages                                                                                           |
| Battery                |              | Battery Pack (Lithium Rechargeable, 10,000mAh)                                                     |
| Security               | Wi-Fi        | SHA2-256                                                                                           |
|                        | 2.4GHz BLE   | 128-bit AES Encryption                                                                             |
| Communication Distance |              | 98 feet (30m) radius Line of Sight                                                                 |
| Compliance (TBD)       |              | FCC, IC, CE, UKCA, TELEC, KC, RoHS, WEEE                                                           |
| Operating Temperature  |              | 0°C ~ 50°C (32°F ~ 122°F) @40~70% RH                                                               |
| Storage Temperature    |              | -25°C ~ 60°C (-13°F ~ 140°F) @40~70% RH<br>Recommended Long-Term Storage Temperature: 10°C to 30°C |
| Accessories            | Included     | USB-C Power Cable (1m)<br>Mounting Clip x 2                                                        |

## 3.2. Radio (RF) Specification

### 3.2.1. 2.4GHz BLE RF Characteristics

| Item | Parameter                            | Specification |     |      | Unit | Condition                       |
|------|--------------------------------------|---------------|-----|------|------|---------------------------------|
|      |                                      | Min           | Typ | Max  |      |                                 |
| Tx   | Tx Power                             | -             |     | 4    | dBm  |                                 |
|      | [Carrier Frequency Offset and Drift] | -75           | 0   | 75   | kHz  |                                 |
|      | Tx Current                           | -             | -   | 10.6 | mA   | Total current at max Tx Power   |
| Rx   | Receiver Sensitivity                 | -             | -   | -93  | dBm  | PER < 30.8%<br>1 Mbps Bluetooth |

### 3.2.2. Wi-Fi RF Characteristics

| Item | Parameter                  | Specification |     |                   | Unit | Condition                                                |
|------|----------------------------|---------------|-----|-------------------|------|----------------------------------------------------------|
|      |                            | Min           | Typ | Max               |      |                                                          |
| Tx   | Frequency Range            | 2,412         | -   | 2,472             | MHz  | Center Channel Frequency                                 |
|      |                            | 5,180         | -   | 5825              | MHz  |                                                          |
|      | Transmit Output Power      | -             | 16  | 18.5              | dBm  | 802.11b, 11Mbps                                          |
|      |                            |               | 14  | 16.5              |      | 802.11g, 54Mbps                                          |
|      |                            |               | 13  | 15.5              |      | 802.11n HT20, MCS7                                       |
|      | Center Frequency Tolerance | -25           | -   | +25               | ppm  | 25°C                                                     |
| 5Rx  | Frequency Range            | 2,412         | -   | 2,472             | MHz  | Center Channel Frequency                                 |
|      |                            | 5,180         | -   | 5825              | MHz  |                                                          |
|      | Receiver Sensitivity       | -             | -   | -76<br>-65<br>-64 | dBm  | 802.11b, 11Mbps<br>802.11g, 54Mbps<br>802.11n HT20, MCS7 |

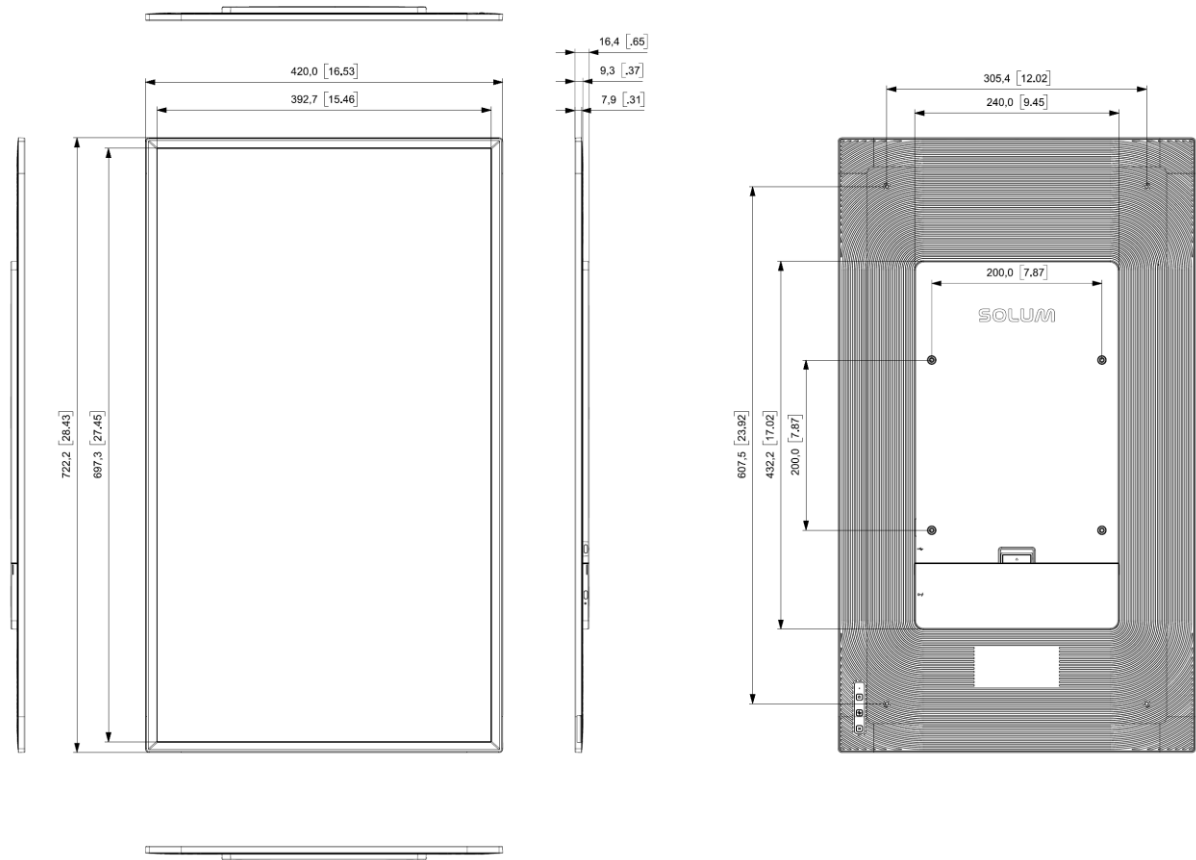
**WLAN 2.4 GHz Band**

| Region / Authority | Frequency Range     |
|--------------------|---------------------|
| FCC (USA)          | 2412 MHz ~ 2462 MHz |
| ISED (Canada)      | 2412 MHz ~ 2462 MHz |
| CE (Europe)        | 2412 MHz ~ 2472 MHz |
| MIC (Japan)        | 2412 MHz ~ 2472 MHz |

**WLAN 5 GHz Band**

| Region / Authority | Frequency Range     |
|--------------------|---------------------|
| FCC (USA)          | 5180 MHz ~ 5825 MHz |
| ISED (Canada)      | 5180 MHz ~ 5825 MHz |
| CE (Europe)        | 5180 MHz ~ 5700 MHz |
| MIC (Japan)        | 5180 MHz ~ 5700 MHz |

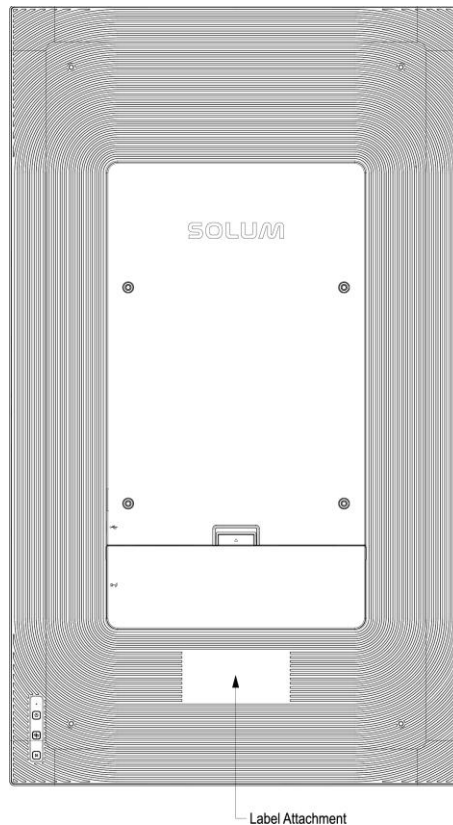
### 3.3. Mechanical Drawing



(Unit: mm)

**Figure 2. MECHANICAL DIMENSION**

### 3.4. Label Marking



**Figure 3. ESL LABELS (PRODUCT)**

ESL-specific information can be found on the sticker label located on the back of the ESL. Information displayed includes, but is not limited to: Model, Certifications, Manufacturing Information

- Model: **EL315TVW6S/WWW**
- MFD (Manufacturing Date): [MON.DD.YYYY]
- S/N: Serial Number Information

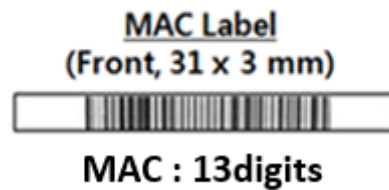


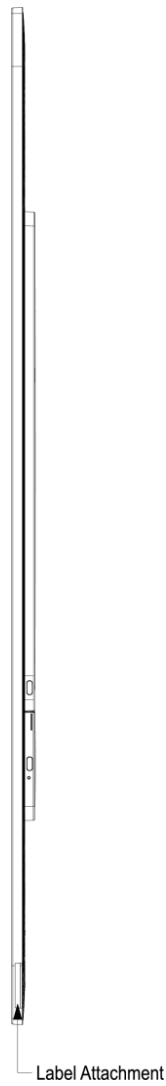
Product information is indicated in a printed sticker label. The information consists of Model (model name), MFD(manufacturing date) S/N(serial number), CE certification mark, and Manufacturer.

- 1) Model Name : EL315TVW6S
- 2) DCIN : 5V --- 3A
- 3) MFD : (month).(date).(year) ex) OCT.22.2025
- 4) S/N : Serial Number Information (hexadecimal 10 digits)
- 5) MAC : XXXXXXXXX**40DBX**

MAC Label stickers can be found in multiple areas of the ESL. They are to be scanned for operation. If the ESL is not assigned to a product, the MAC barcode and 13-digit code will be shown on the display. Dimensions can be found in the image below.

#### SIDE - Label





**Figure 4. ESL LABELS (MAC)**

### 3.5. Certifications (TBD)

Newton E-Paper 32" has the following certifications and should be noted for your region.

| Size | Model      | FCC | IC | CE* | KC | TELEC | UKCA | RoHS | WEEE |
|------|------------|-----|----|-----|----|-------|------|------|------|
| 32"  | EL315TVW6S | ○   | ○  | ○   | ○  | ○     | ○    | ○    | ○    |

IEC 62471 standard (Photobiological Safety of Lamps and Lamp Systems) compliant

\*CE: RF/EMC/LVD/RoHS2

#### 3.5.1. FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution

THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE.

SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

IMPORTANT NOTE : FCC RF Radiation Exposure Statement

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.

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 of the device.

### **3.5.2. IC**

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 d'en compromettre le fonctionnement.

Attention: Tout changement ou modification non expressément approuvé par le fabricant peut annuler le droit de l'utilisateur à utiliser l'équipement.

exposition aux rayonnements radiofréquences. Pour se conformer aux exigences de conformité de l'exposition IC RF, une distance de séparation d'au moins 20 cm doit être maintenue entre l'antenne de cet appareil et toutes les personnes.

This device complies with Industry Canada NRCs applicable to licence-exempt radio devices. The operation is authorized under the following two conditions: (1) the device shall not cause interference, and (2) the user of the device shall accept any radio interference suffered, even if the interference is likely to compromise its operation.

Caution: Any change or modification not expressly approved by the manufacturer may void the user's right to use the equipment.

exposure to radiofrequency radiation. To comply with the ICRF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

**3.5.3. CE**

Model Name: **Newton E-Paper 32**

Manufacturer: SOLUM CO., LTD.

Address: 7F, 2354, Yonggu-daero, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea

Contact: [www.solum-group.com](http://www.solum-group.com) / +82-1588-0502

Trademark:

**SOLUM**

EU Representative: SOLUM Europe GmbH / Frankfurter Str. 10-14, 65760 Eschborn Germany

**3.5.4. KC**

상호: 주식회사 솔루엠

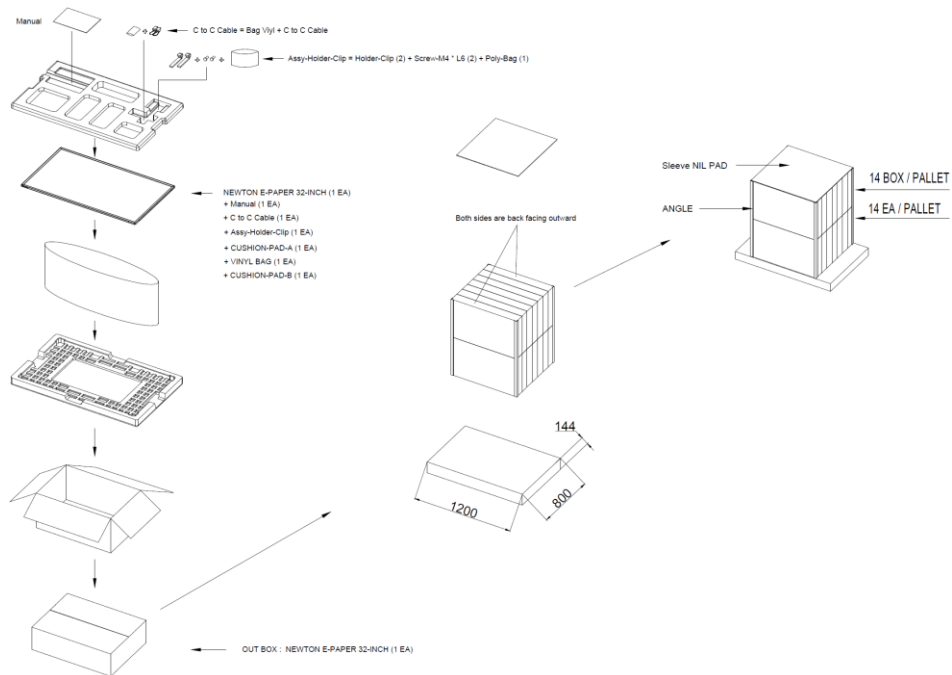
제품명칭: 특정소출력 무선기기(무선데이터통신시스템용 무선기기)

기본모델명: EL315TVW6S/WWW

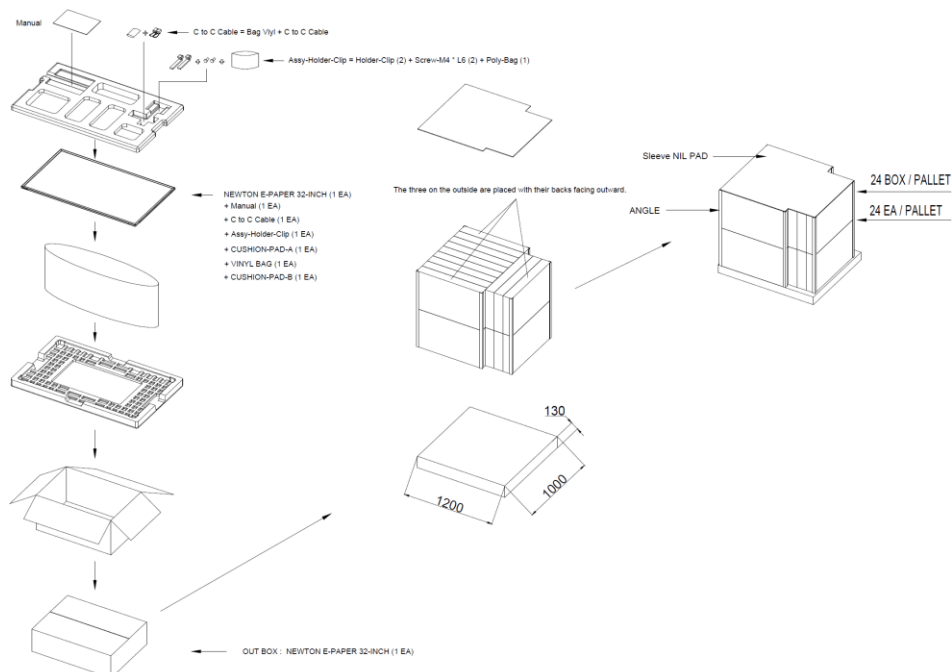
제조사/제조국가: 주식회사 솔루엠 / 한국, 베트남

등록연월일: 2026.07.24

## 4. Packaging



**Figure 5. PACKING-DIAGRAM (1,200 X 800)**



**Figure 6. PACKING-DIAGRAM (1,200 X 1,000)**



## 5. Reliability Test

- High Temperature Operation
- Low Temperature Operation
- High Temperature/Humidity Operation
- High Temperature Storage
- Temperature Shock (Storage)
- ESD
- Package Drop Test
- Package Random Vibration Test

| Test Item                      | Test Condition                                                    | Pass Criteria               |
|--------------------------------|-------------------------------------------------------------------|-----------------------------|
| High Temp Resistance           | 60°C / 35%, 240hrs                                                | Normal operation after test |
| High Temp Operation            | 50°C / 35%, 240hrs                                                |                             |
| Thermal Shock                  | -25°C (for 30mins) ~ 60°C (for 30mins) for 240 cycles             |                             |
| High Temp & Humidity Operation | 50°C / 70%, 240hrs                                                |                             |
| Low Temp Operation             | 0°C (240hrs)                                                      |                             |
| ESD Test                       | TYP. Air $\pm 10\text{KV}$ , 150pF, 330 $\Omega$ , 10 times/Point |                             |

## 6. Product Handling Precautions

Provisions should be made to protect against any damage to the product caused by improper handling. The purchaser assumes any responsibility for damage to the product caused by improper handling.

Product should be stored in 0°C ~ 45°C (32°F ~ 113°F) @45~70% RH environment and should be installed within **90 days** of receipt.

### 6.1. Usage Environment

Take extra caution when using this RF device in the vicinity of other electronic devices and appliances. Most electronic devices and appliances use electromagnetic waves. Electromagnetic waves emitted by this RF device can affect other electronic devices and appliances.

If using the device in an explosion hazard area, follow all safety regulations, instructions, and signals.

### 6.2. Storage and Use

- The product is shipped in sleep mode (displaying a white screen) and can be activated by pressing the button, using an NFC remote control, or via the mobile app.
- Moisture and liquids can damage internal parts and circuit boards if allowed to enter into the device itself.
- Do not place or store the product on a sloped surface. The product may slide and fall off the surface and become damaged.
- Use the product in temperatures ranges of **0°C ~ 45°C / 32°F ~ 113°F (KWRYGB)**. Parts and circuits may be damaged if operated or stored in extreme temperature.
- The display panel needs extra care during handling.
  - Do not apply any impacts on the e-Paper display as it is fragile.
  - Continuous exposure to excessive moisture (over 70% RH) or UV shortens display lifetime.
  - Ghosting image may appear in temperature conditions of less than **15°C / 59°F for normal tags**. (If  $\Delta L^* > 2$ , we call it ghosting phenomenon)

- Avoid areas with strong magnetism or subject to magnetism. Contact between the device and a magnetic object can lead to malfunctions.
- Do not place the product near heat-producing kitchen appliances like a stove or a microwave or in the vicinity of highly pressurized containers.
- External impact to the product, such as from being dropped, can damage the product.
- Twisting and bending the product can damage the exterior casing and the internal components.
- If this product operates abnormally while removing battery or replacing battery, it needs to be discharged by contacting the battery terminals (+) and (-) in the product.
- This product uses the 2.4GHz frequency band for the wireless communication network. Radio communications can be limited or affected by other applications that share the same frequency band, such as Wi-Fi, Bluetooth, Zigbee, etc.
- A prior investigation into the radio environment is strongly required for efficient and smooth installation.
- Frequent communications, updates and screen renewals may reduce battery life time.
- Low temperature environments may reduce battery life.
- FIFO (First In First Out)

## **6.3. Product Cleaning**

### **6.3.1. For Wet Tissue Cleaning:**

#### **Steps**

- (1) Stand or lay down the labels.
- (2) Wipe using wet tissues.
- (3) Let the labels dry.



## 7. Battery Handling Guide

### 7.1. Avoiding hazards in lithium battery handling

#### 1. Do not short circuit (Fig. 1)

- Direct connection of plus (+) and minus (-) poles may result in leakage, heat generation, explosion and/or fire.
- Do not store and/or carry batteries with metallic items, such as a necklace.

#### 2. Do not stack and/or jumble batteries (Fig. 2)

- Stacked and/or jumbled batteries may cause a short circuit and/or forced discharge from contact with other batteries.
- This may result in leakage, heat generation, explosion and/or fire.

#### 3. Do not make forced discharge batteries (Fig. 3)

- On a forced discharge by an external power source, the battery voltage goes to negative and this causes gas generation in inside of the battery.
- This may result in leakage, heat generation, explosion and/or fire.

#### 4. Do not dispose of batteries in fire

- Disposal of batteries in fire is extremely dangerous with a risk of explosion and violent flaring.

#### 5. Do not heat batteries

- Heating batteries above 100°C/212°F may damage the resin in crimping, separator and

other parts, potentially causing an electrolyte leak, internal short circuit, fire and/or explosion.

**6. Do not solder directly onto batteries**

- Direct soldering onto batteries may damage the resin in crimping, separator and other parts, potentially causing an electrolyte leak, internal short circuit, fire and/or explosion.

**7. Do not recharge batteries**

- Recharging of batteries may result in internal gas generation, causing electrolyte leak, battery swelling, fire and explosion.

**8. Do not disassemble batteries**

- Disassembly of batteries may generate gas that may irritate your throat.
- Lithium may also react with moisture to generate heat and fire.

**9. Do not deform batteries**

- Applying extreme pressure to batteries may cause deformation of the crimping and internal short circuit, causing electrolyte leak, battery swelling, fire and explosion.

**10. Do not mix different type batteries**

- For some applications, mixing different types of batteries or new and old batteries, can cause an over discharge due to differences in voltage and discharge capacities.
- This may lead to the risk of swelling and/or explosion.

**11. Do not insert batteries with opposite polarity**

- For some applications, battery insertion with opposite polarity (reverse insertion of plus and minus) may result in leakage, heat generation, explosion and/or fire.

**※ Please ensure the above precautions are strictly observed by related divisions including Production, warehouse, Product technology, sales, quality, customer stores, S/I companies, part-time workers, and external service companies.**

- Follow local regulations for proper battery disposal guideline.

## 7.2. Rechargeable Battery Handling

### 1. Storage Warning: Battery should store and used away from static electricity.

- If battery is stored for a long time (more than 3 months), it should be stored in an environment with a temperature of 10°C to 25°C and a humidity of 45% to 85%.
- If battery is stored for a long time (more than 3 months), it should be charged every three months.
- Battery should be stored away from source of heat and avoid direct sunlight.

### 2. Safety Warning: It is strictly forbidden to directly short circuit the positive and negative poles of this product. It is strictly forbidden to connect the positive and negative poles.

- Do not crush, puncture, decompose and burn the battery and shall not be heated more than 100°C, do not put the battery into water.
- Charging beyond the overcharge voltage may result in an explosion or relief from the opening of the safety valve.
- Do not force the battery to discharge, which may cause performance degradation or internal resistance increase.
- Keep away from the battery immediately when it is found that the battery leaks or emits an unpleasant smell. If the electrolyte penetrates into the skin or clothes, wash immediately with clean water. If the electrolyte seeps out and enters your eyes, do not rub your eyes, immediately wash them with clean water and go to the hospital for examination.

### 3. When charging the battery pack, make sure to strictly use a USB-C Type charger that provides a 5V output and has a minimum power rating of 10W.

|             |        |                              |
|-------------|--------|------------------------------|
| USB Charger | Input  | AC 100 – 240V, 50/60Hz, 120W |
|             | Output | 5V / 10W ↑                   |

- WARNING: Do not use chargers that deliver a fixed output voltage exceeding 5V, as this may cause severe damage to the product or even lead to fire hazards.
- Do not charge the product via an external power bank (or portable battery).

- Simultaneous operation and charging of the product is not recommended.
- Using low-cost or fake brand chargers available on the market may cause damage to the product or even lead to fire hazards.