SERTAG
SMART TAG LEADER

Bluetooth ESL Solution

Smart Electronic TAG

Intelligent Retail

Intelligent Manufacturing

Intelligent Warehousing

Dalian Sertag Technology Co.,Ltd
www.sertag.com
www.eslmfg.com

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PART 01

Company Profile

Company Profile

Dalian Sertag Technology Co.,Ltd. is a professional visual intelligent tag system manufacture which has rich experiences in visual tag development, design, deployment and maintenance. And also be the first batch of intelligent tag R&D and design company in China.

Sertag commits to provide turnkey solution of visual intelligent tag system to our customer abide by “Customer-oriented” business philosophy, and dedicates for the development of the global internet, retail, manufacturing, warehousing and logistics industry .

From the system quality stability, system cost, product appearance and other aspects of the definition of product characteristics, to provide customers with the most reliable, the best cost-effective intelligent tag system. Help customers to reduce costs, improve work efficiency, improve customer competitiveness.

PART 02

System Introduction

What is Electronic Shelf Label?

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ESL system is used by re-sellers for displaying all kinds of product to present pricing information on shelves.

Moreover, ESL deliver product information updated from central server using Low Power Bluetooth Low Energy technology via AP Gateways to thousands of each ESL.

We offer re-sellers "User Easily & Friendly & Flexibly" management platform & system, so that our customers can wirelessly update content easily and flexibly without existing paper tags or to save multiple employee's effort and prevent any mistake.

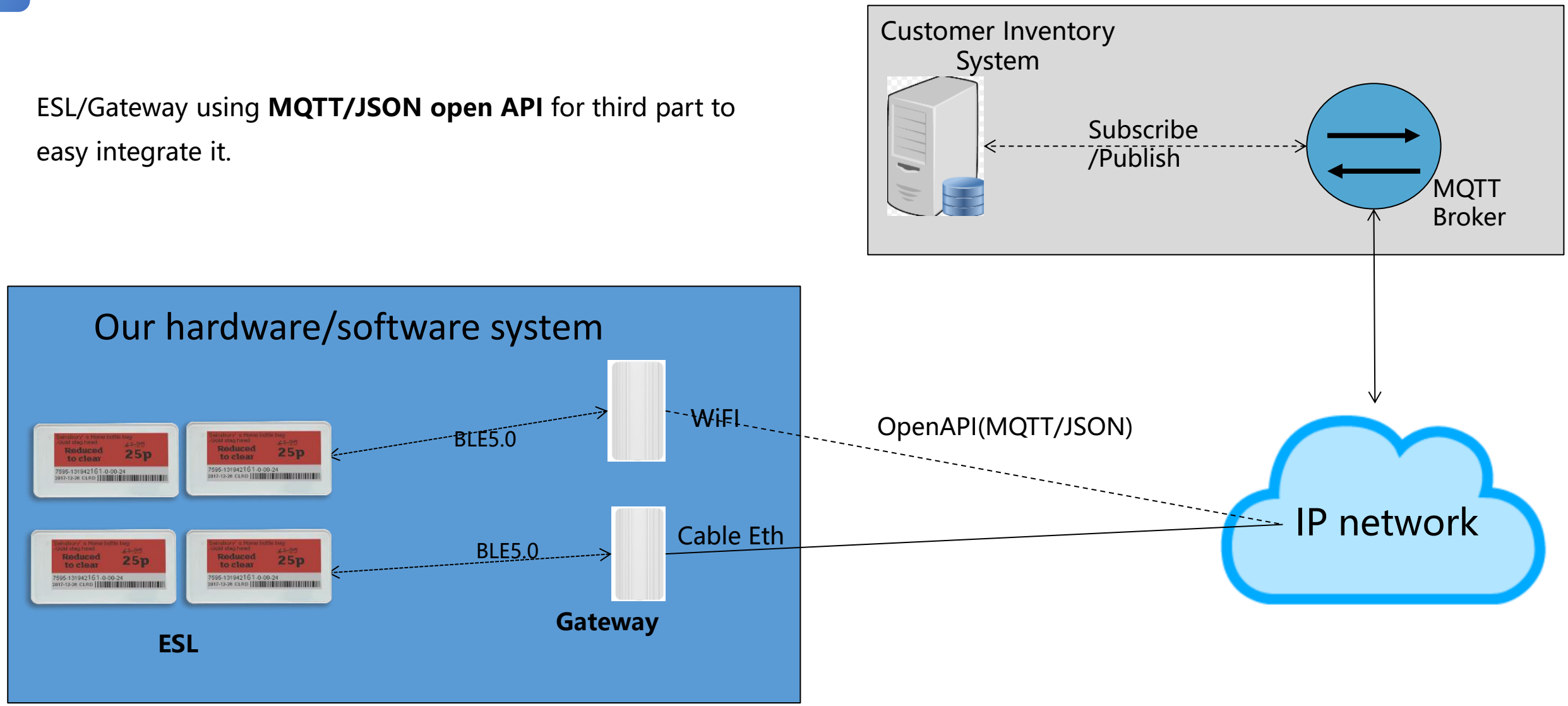
Introduction

- **Introduction**
  - ✓ Architecture
  - ✓ ESL and Gateway
- **Solution Feature**

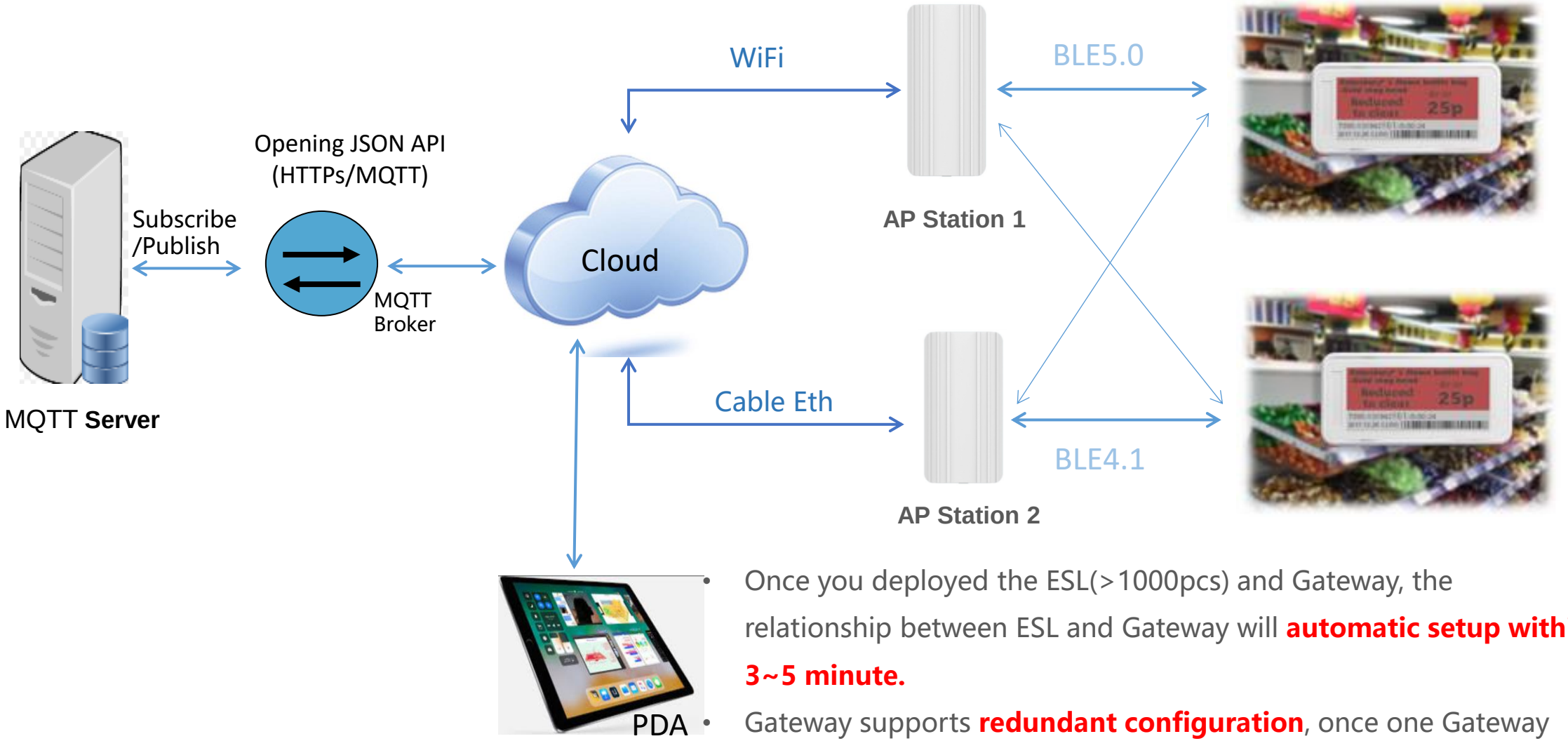
Our ESL widely used in Retail, warehouse, conference system, industry display etc.

Software/hardware Architecture solution 1

ESL/Gateway using **MQTT/JSON open API** for third part to easy integrate it.



Solution Of Cloud (BLE)



- Once you deployed the ESL(>1000pcs) and Gateway, the relationship between ESL and Gateway will **automatic setup within 3~5 minute.**
- Gateway supports **redundant configuration**, once one Gateway down, other Gateway(with in same coverage) will automatic take over ESL management within 10 seconds.

Software/hardware Architecture solution 2

This ESL provide open API and can be managed by IOS/android app.

BLE4.0/5.0

OpenAPI(Bluetooth)

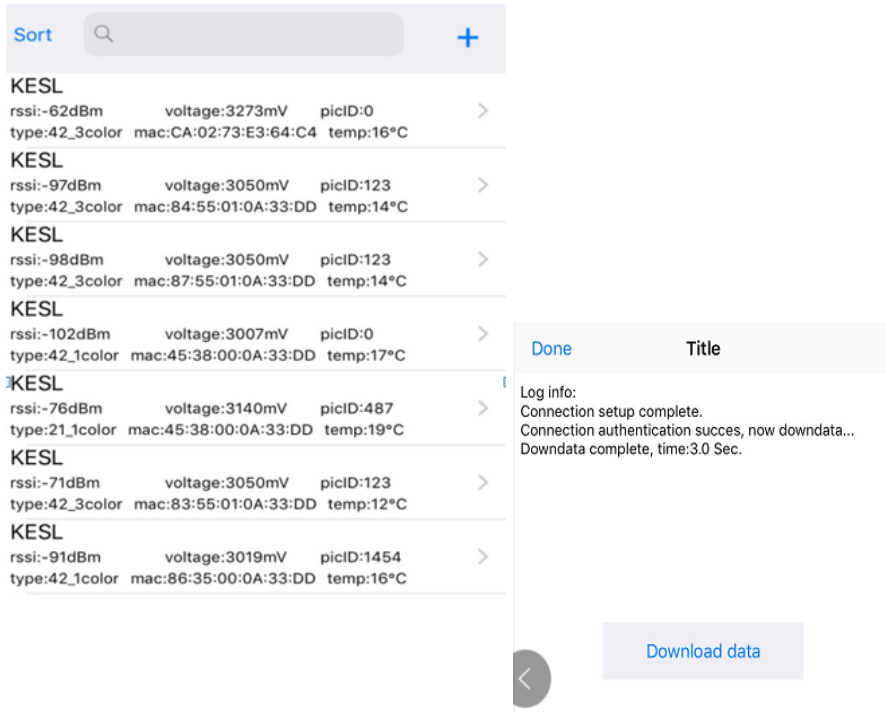
Cloud server

internet

Solution for PDA(BLE)

- The ESL support bluetooth4.1 and Bluetooth 5.0, We can use Pad or smart phone update the ESLs.
- Provide the Bluetooth API for manage the ESL.
- Provide IOS /android demo app for your quickly development.
- Noticed that the phone/iPad must support bluetoooth4.1 or bluetooth5.0.

ESL Demo



Wireless communication technology(AP)

- Display update rate: **3-18 seconds/ tag.**
- Success Rate: 100%.
- Communication Band: **2.5GHz.**
- Coverage Distance: **30-50 meters(depends on environment) BLE5.0**
  Long distance Feature（ Industry only ）
- Self-organized for ESL device
- Open protocol: **MQTT to cloud**
- Configuration: Web portal
- Manage ESL number:> 200 ESLs

Introduction of ESL Gateway(AP)

- Water proof-IP54/Sun proof （ Industry only ）
- BLE distance: > 200 meters in open space
- Working Temperature: 0 ℃ ~50 ℃ or -25 ℃~15 ℃。
- Transmit: ETH/Wifi/Wifi-hopping
- Power: 5V DC and ETH PoE(802.3af)
- Base on latest OpenWrt 18.29
- Size 173*90*60(mm)
- Material:ABS

Product series : Solution of Bluetooth 5.0(BLE)

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SETB0213N

Outline Dimension: 74mm(H)
×40mm(V)×12mm(D)
Display colors: Black, White
Resolution: 212(H）*104(V)
Working Temperature: 0~50℃
Working humidity: less than 70%
Life Time: 3~5 years

SETB0290N

Outline Dimension: 93mm(H)
×44mm(V)×12.3mm(D)
Display colors: Black, White
Resolution: 296(H）*128(V)
Working Temperature: 0~50℃
Working humidity: less than 70%
Life Time:3~ 5 years

SETB0420N

Outline Dimension: 103mm(H)
×92mm(V)×8mm(D)
Display colors: Black, White
Resolution: 400(H）*300(V)
Working Temperature: 0~50℃
Working humidity: less than 70%
Life Time: 2~3 years

SETB0213R

Outline Dimension: 74mm(H)
×40mm(V)×12mm(D)
Display colors: Black, White,Red
Resolution: 212(H）*104(V)
Working Temperature: 0~50℃
Working humidity: less than 70%
Life Time: 3~5 years

SETB0290R

Outline Dimension: 93mm(H)
×44mm(V)×12.3mm(D)
Display colors: Black, White, Red
Resolution: 296(H）*128(V)
Working Temperature: 0~50℃
Working humidity: less than 70%
Life Time:3~ 5 years

SETB0420R

Outline Dimension: 103mm(H)
×92mm(V)×8mm(D)
Display colors: Black, White, Red
Resolution: 400(H）*300(V)
Working Temperature: 0~50℃
Working humidity: less than 70%
Life Time: 2~3 years

SETB0213 Specifications

Technical Specifications

Item	Description
Screen Size	2.1Inch
Pixels	212*104
Total Size	74*40*12mm
Power	2 * CR2450 Battery
Work time	> 4 Years
Power consumption	Standby: < 25uA Refresh picture: < 15mA
Wireless distance	•Outdoor around 100 meters •Indoor around 30-50 meters (depends on environment)
Transmitting protocol	• BLE4.1/BLE5.0
Installation way	• 3M or Pylons
Material	• ABS

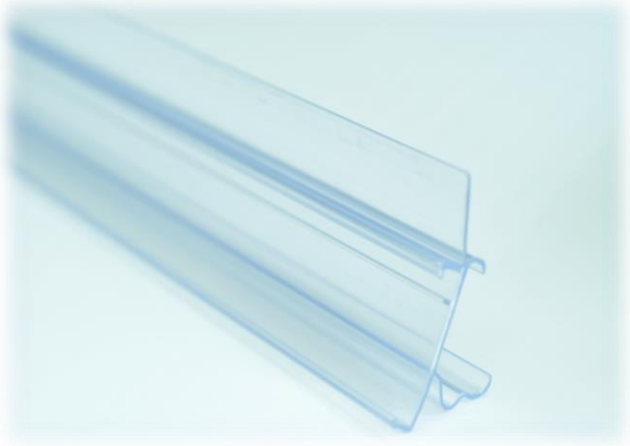
SETB0290 Specifications

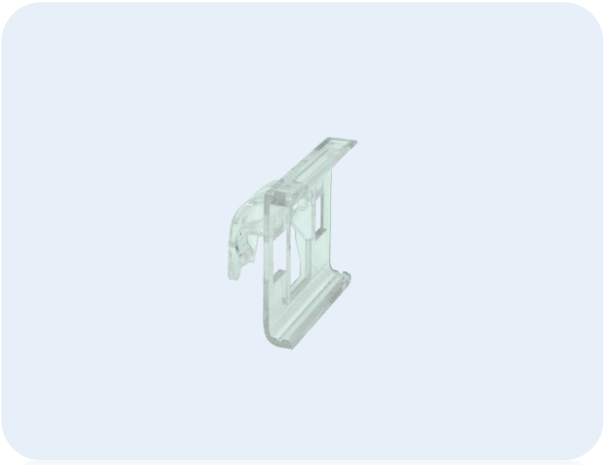
Item	Description
Screen Size	2.9Inch
Pixels	296*128
Total Size	74*40*12mm
Power	2 * CR2450 Battery
Work time	> 4 Years
Power consumption	Standby: < 25uA Refresh picture: < 15mA
Wireless distance	•Outdoor around 100 meters •Indoor around 30-50 meters (depends on environment)
Transmitting protocol	• BLE4.1/BLE5.0
Installation way	• 3M or Pylons
Material	• ABS

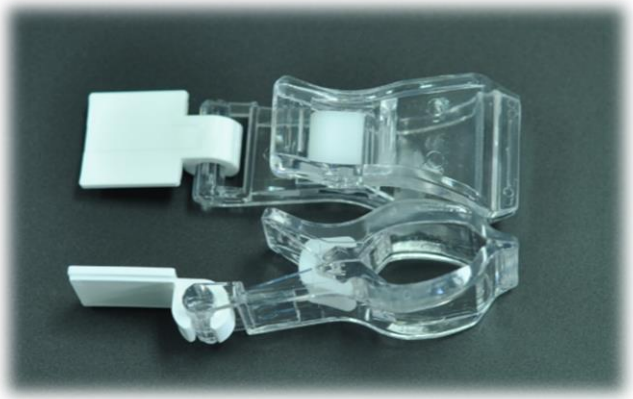
SETB0420 Specifications

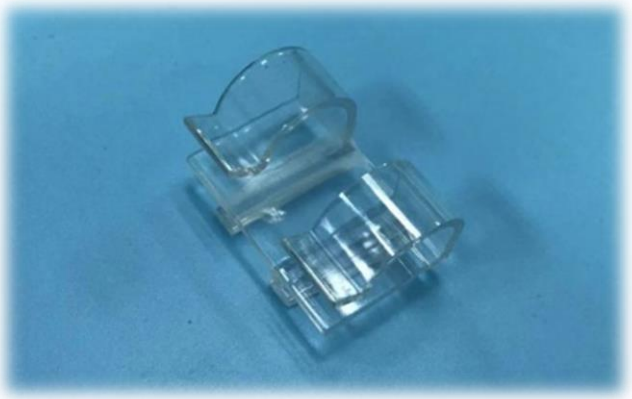
Item	Description
Screen Size	4.2Inch
Pixels	400*300
Total Size	•103*92*8mm
Power	Li-Ion Battery 850mAh
Work time	> 2Years
Power consumption	Standby: < 25uA Refresh picture: < 25mA
Wireless distance	•Outdoor around 100 meters •Indoor around 30-50 meters (depends on environment)
Transmitting protocol	• BLE4.1/BLE5.0
Installation way	• 3M or Pylons
Material	• ABS

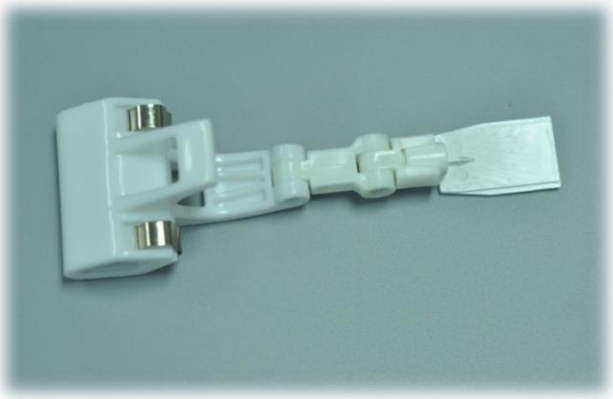
Accessories for Installation (RF)











Introduction of System

- **Introduction**
- **Solution Feature**
  - ✓ Opening Platform Design
  - ✓ Self-organized deployed
  - ✓ OpenAPI for third part to integration
  - ✓ Security: Two-way authentication
  - ✓ Web portal Configuration UI

1. Opening Platform Design

ESL Gateway not only an ESL manager. It's an **open platform to make your ESL and other sensor easily connect to cloud.**

All the interface are opening for third part.

- Support third part ESL/BLE device connect to the cloud via BLE GW;
- Support third part MQTT server;

Humidity sensor

iBeacon for navigation/promotion

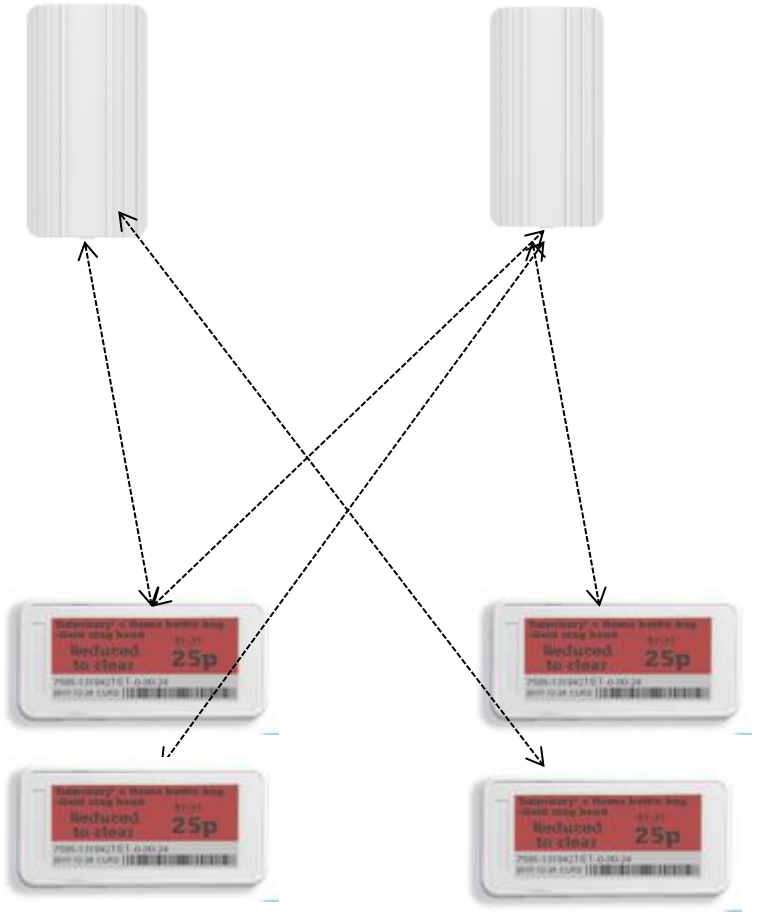
1. Opening authentication algorithm

2. Opening downdata/upload data interface

3. Opening JSON API (HTTPs/MQTT)

4. Opening source code on Openwrt, you can extend the service/message on BLE GW

2. Self-organized deployed

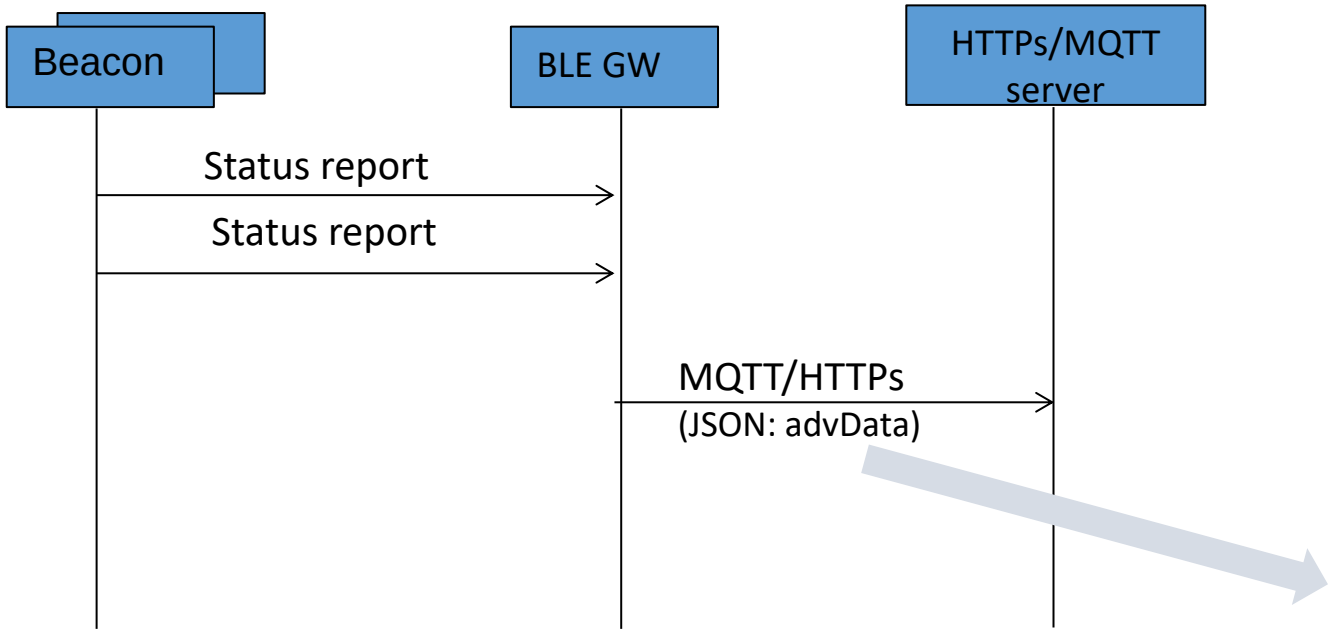


- Once you deployed the ESL(>1000pcs) and Gateway, the relationship between ESL and Gateway will **automatic setup within 3~5 minute**.

- Gateway supports **redundant configuration**, once one Gateway down, other Gateway(with in same coverage) will automatic take over ESL management within 10 seconds.

- Gateway support **pool load balance deployed**, the Customer Inventory System can select an light load Gateway to update price about ESL.

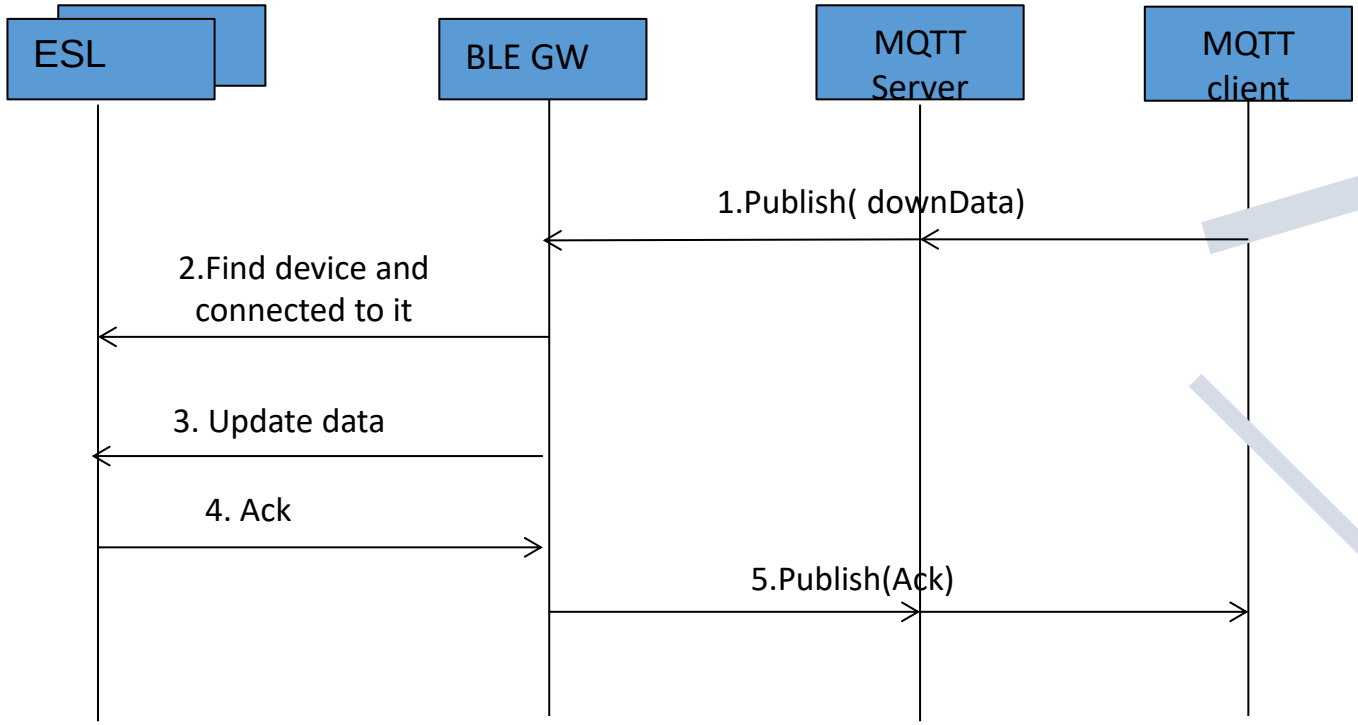
3. Open API Example: ESL monitor



advData packet example


```
{
  "msg": "advData",
  "gmac": "66E865E28547",
  "obj": [
    {
      "dmac": "B45D0196FFFF",
      "rssi": "-53",
      "data1": "0201060302E0FF03095446"
    },
    {
      "dmac": "8D0389AB78CC",
      "rssi": "-92",
      "data1": "020106030202180AFF4B4D028D0389AB78CC"
    },
  ],
  "seq": 5091
}
```

3. Open API Example: ESL update



Download HEX data to beacon


```
{
  "msg": "dData",
  "mac": "e44892f98100",
  "seq": 10444,
  "auth1": "00000000",
  "dType": "hex",
  "data": "01000005C61280"
}
```


modify the ESL status report period to 1000)


```
{
  "msg": "dData",
  "mac": "e44892f98100",
  "seq": 10444,
  "auth1": "password1",
  "dType": "json",
  "data": {
    "advPeriod": 1000,
    "txPwr": 5
  }
}
```


Support JSON data and hex data type to beacon

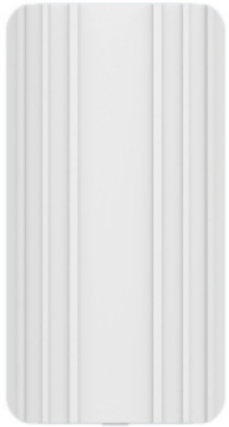
4. Two-way authentication ensures device security

To ensure that the devices and gateways are not illegally connected. BLE Gateway and device using Bi-directional MD5 with random authentication.

1.Verify device valid(MD5)

2. Verify BLE GW valid(MD5)

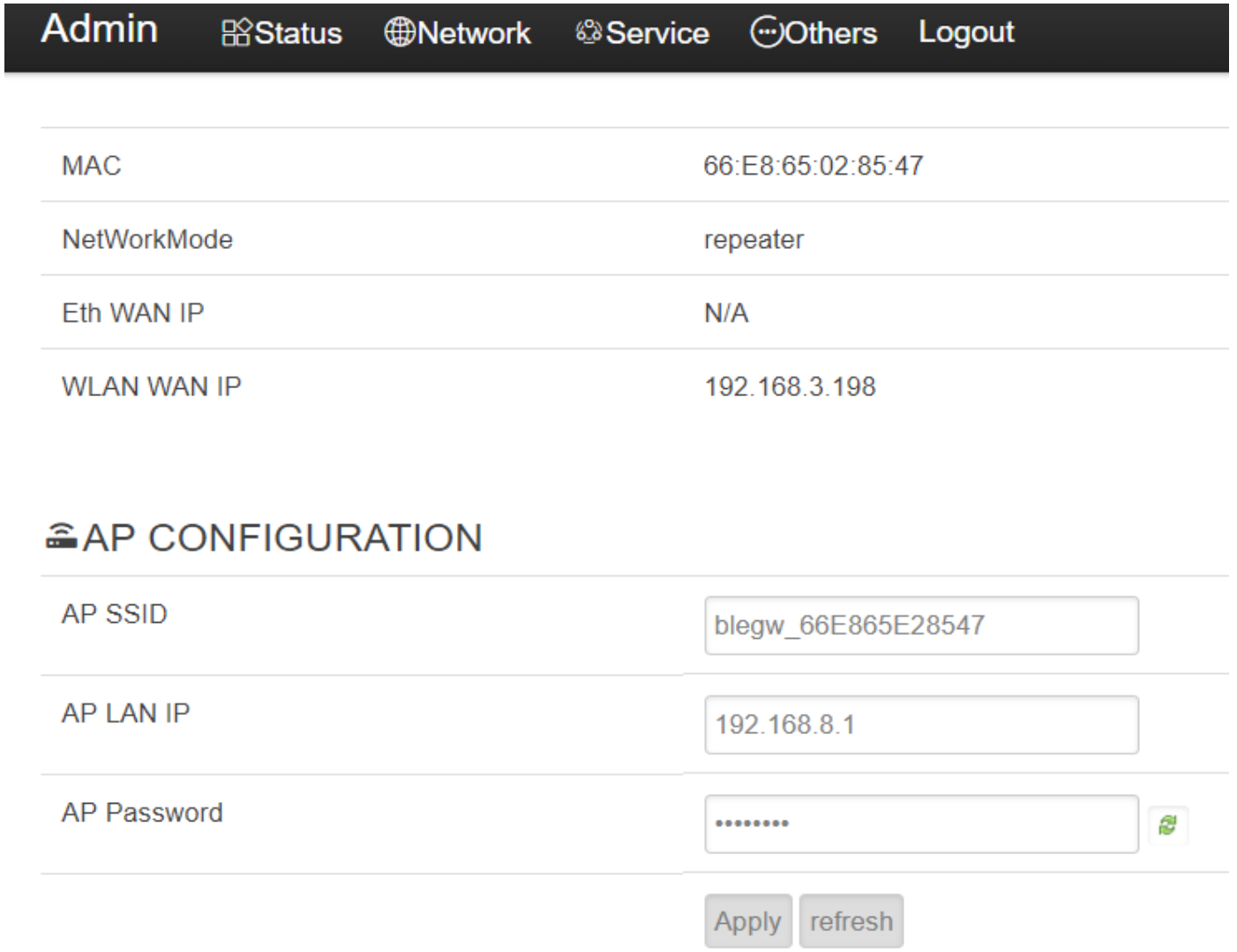
3. Tx/Rx data



5. Web portal Configuration

The Gateway Support Web portal configuration, for example: chrome explore

- No need to install app



6.Open source code/SDK

1.Gateway integration guidance and gateway installation and configuration guidance.

2. The client software Demo supports the connection of the MQTT server address and is based on the Java1.7 version.

3. Convert the BIN formatted image to the demo of the MQTT JSON message, based on the C language implementation, developed using Visual Studio 2010.

Installation Show

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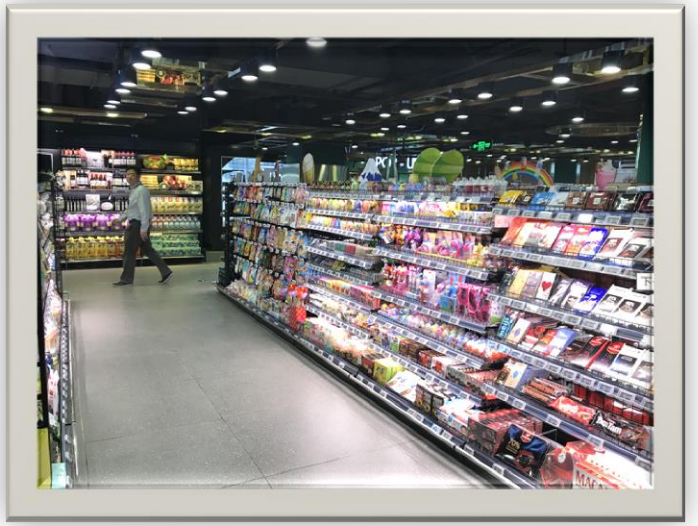
Rail Type Installation



Hang Type Installation

Installation Show

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Stand Type Installation

Clamp Type Installation

Installation Show

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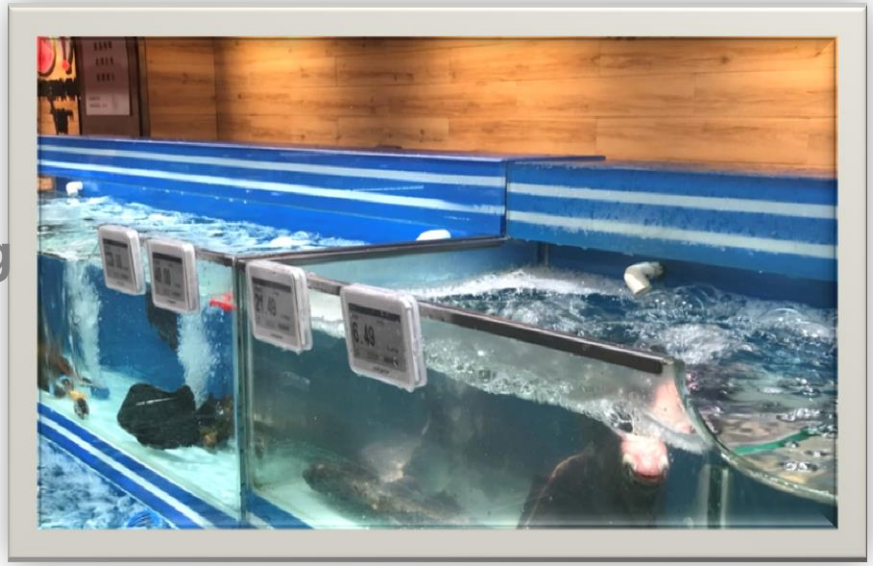
Waterproof Hang Type Installation



Ice plug Type Installation

Our Customers

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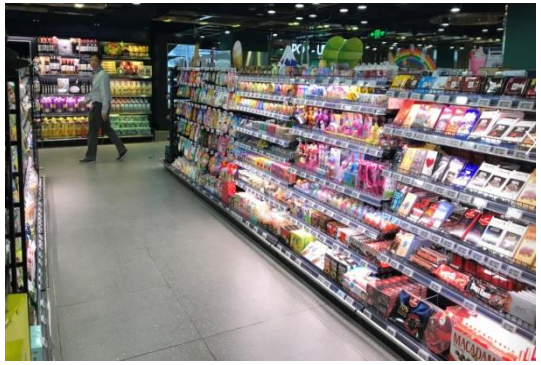

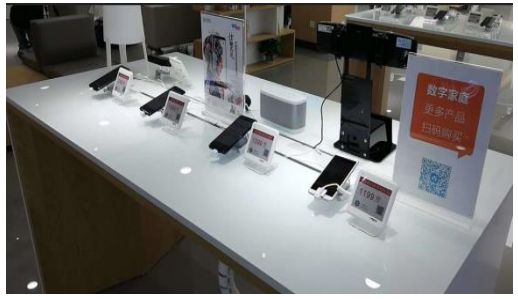

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Contact us

86 411-84641910

86 13664268735/13124130003

www.sertag.com

sales@sertag.com

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Dalian Sertag Technology Co.,Ltd
sales@sertag.com