
Solu-M USB Gateway

User Manual

(SLG-DM101)

PMN : USB Gateway

FVIN : 6.0.24.4

Document Summary

Author: D&C Development 1Group, D&C Division

Distributor: Solum Co., Ltd.

Tel.: 031-8006-7650

www.solu-m.com

Editor Information

- Tel.: +82-31-8006-7650

- Address : A-6th floor, 357, Guseong-ro, Giheung-gu, Yongin-si, Gyeonggi-do

Copyright Notification

Solum Co., Ltd.

Copyright ©2018 Solum Co., Ltd.

All trademarks used are properties of their respective owners.

The content of this document is subject to change without prior notice.

The content of this document is intellectual property of Solum Co., Ltd.

This document may not be reproduced or published without prior consent from Solum Co., Ltd.

No part may be reproduced except as authorized by written permission.

The copyright and the foregoing restriction extend to reproduction in all media.

© 2018 Solum Co., Ltd.

All rights reserved.

Revision History

Rev.	Date	Remark
1.0	10.29.2018	First Edition.

Contents

1. Precautions	5
2. Overview	6
3. Product Specifications	7
3.1 General Specifications	7
3.1.1 USB Gateway	
 3.2 RF Specifications.....	8
3.2.1 USB Gateway	
4. Product Description	9
4.1 Exterior.....	9
4.1.1 USB Gateway	
5. Operating Procedure.....	10

1. Precautions

“This RF device operates on the 2.4GHz frequency band and can produce radio interference. The device, therefore, may not be used for applications where safety of human lives is concerned.”

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.

2) Storage and Use

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 damage.

Use the product in temperatures ranging from 0°C to +40°C. Parts and circuits may damage if used or stored under temperature extremes.

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 screen.

Twisting and bending the product can damage the exterior casing and the internal components.

2. Overview

USB Gateway make up a system the electronically displays price and other product information that are traditionally shown printed or written on paper in places like the supermarket.

Here, ESL(Electronic Shelf Label) USB Gateway receives product price updates from the server and uploads the new data to the applicable electronic shelf label tags (ESL-Tag), changing the displayed price information.



<Diagram 1> ESL System

3. Product Specifications

3.1 General Specifications

3.1.1. USB Gateway

General	
Communication	USB2.0
	Zigbee RF(based on IEEE 802.15.4)
Dimension (W*H*D)	30 * 200 * 11 (mm)
Weight (g)	50g
Enclosure	Plastic (ABS)
Power	USB Power (5V,0.5A)

3. 2 RF Specifications

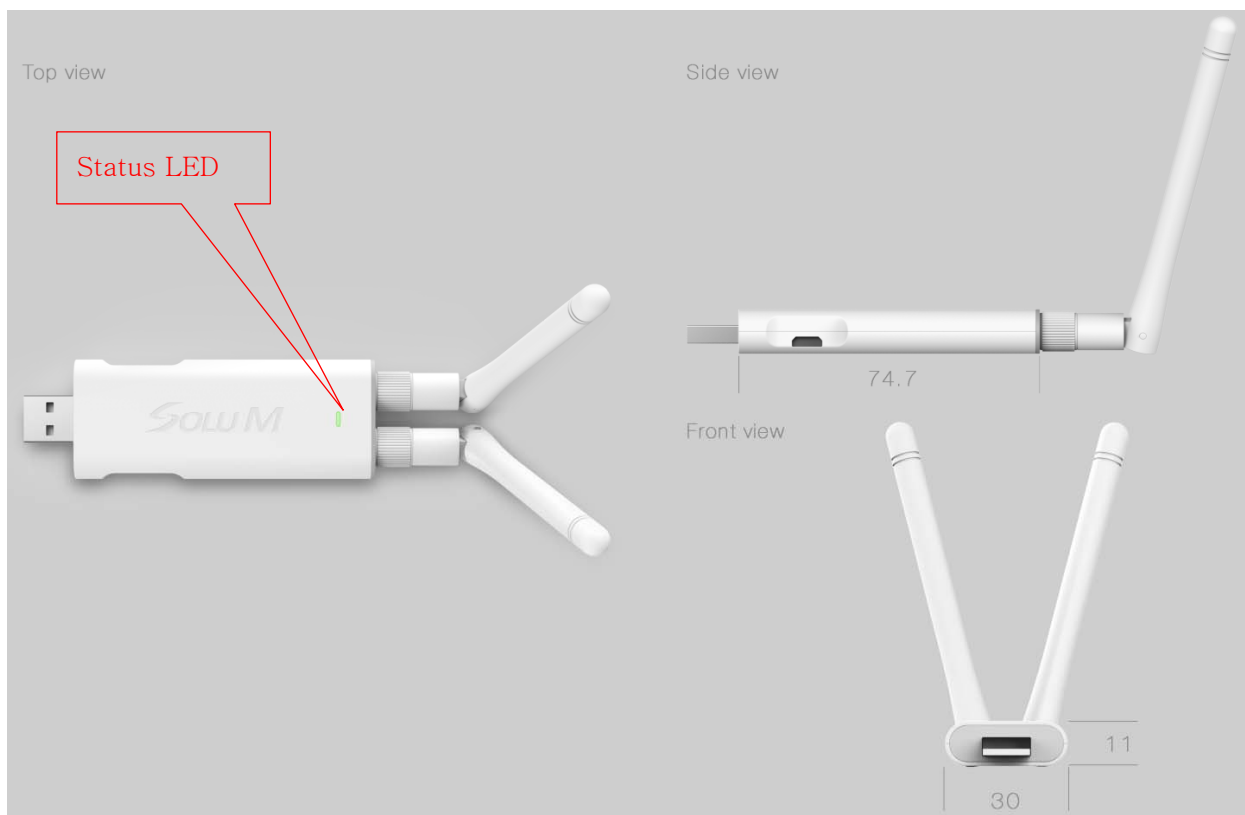
3.2.1 Gateway

Category	Specification	Note
Antenna Type	Dipole Antenna (external type)	2ea
Transmit Frequency	2405MHz ~ 2480MHz	
Receive Frequency	2405MHz ~ 2480MHz	
Antenna gain	2 dBi	
Modulation	O-QPSK	
Channels	16ch	
Operating Temperature	0℃ to +40℃	
Power	USB Power (5V, 2A 500mA)	

4. Product Description

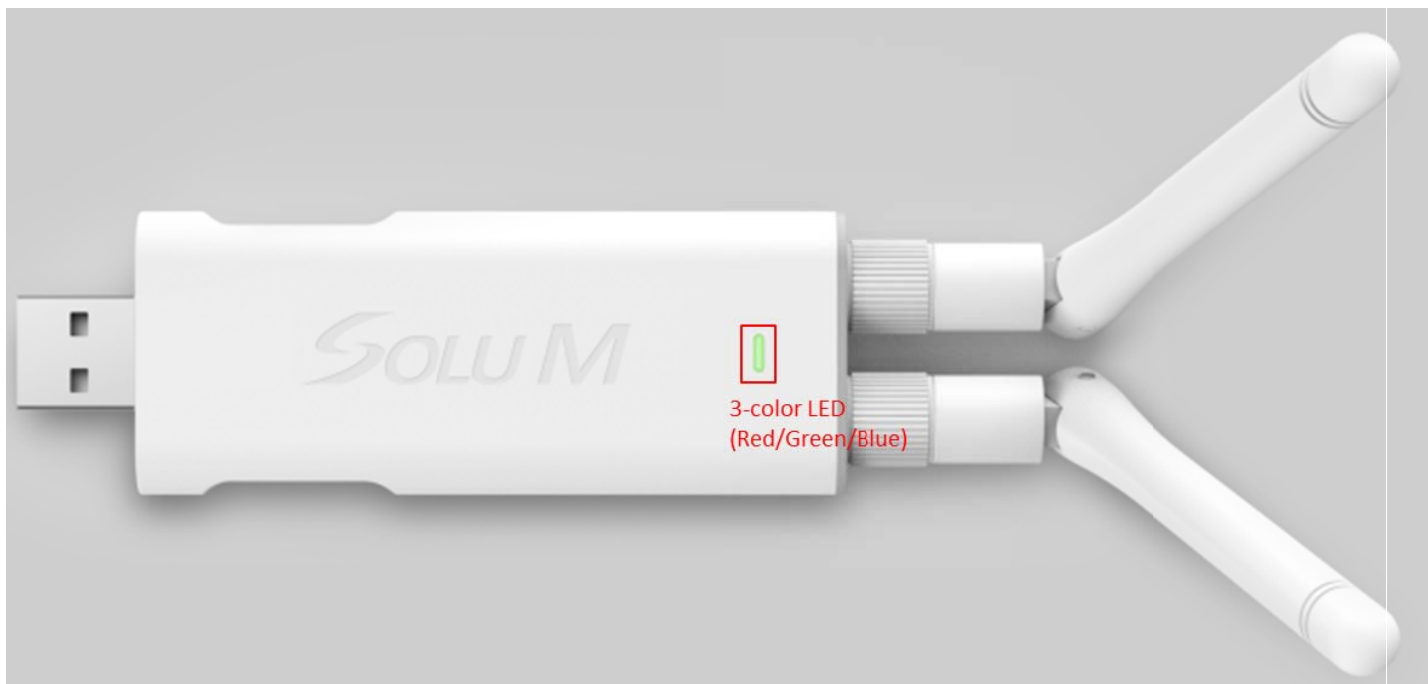
4-1 Exterior

4.1.1 USB Gateway



5. Operating Procedure

Operation Check



3-color LED Status of USB Gateway

#	RED	GREEN	BLUE	Status	Comments
1	On (200ms)	Off	Off	Normal	About 200ms, At booting time It means USB GW is just rebooted
2	Off	Off	On	Warning	Pressing factory reset button and Turning on USB GW If pressing the button more than 10 secs, factory mode will be activated
3	On	Off	Off	Warning	Activating factory reset and restoring firmware (powered on while pressing button). It takes about 2 mins
4	Off	On	Off	Normal	During booting, Entering into Linux Kernel Mode

5	Off	Blinking (1sec)	Off	Normal	Normal Mode (Webserver is working properly)
6	Off	Blinking (1sec)	On/Off	Normal	Normal Mode (Webserver and RF Module are working properly) - Green Blinking (Normal Mode) - Blue On for 10sec (Wakeup Mode On) periodically every 5 min
7	On (5 sec)	Blinking (1sec)	Off	Warning	NTP failed - RED On for 5 sec periodically every 10 sec
8	Off	On	Blinking (200ms)	Warning	Checking firmware update for 1 sec ~ 20 sec Blue Blinking 200ms
9	Blinking (250ms)	Blinking (1sec)	off	Warning	Pressing factory reset button RED : 250ms , Green : 1 sec
10	On	Blinking (1sec)	On	Warning	Activating Factory Reset mode (Resetting configuration files)
11	On (Long)	Off	Off	Warning	Downloading firmware file from Server and updating firmware
12	Off	ON	Blinking (200ms)	Warning	Writing RF Firmware to RF MODEM
13	On	Blinking (1sec)	Blinking	Warning	RF TEST mode (Only for manufacturing test)

Installation

a) Map product information and tag IDs.

Each tag has a unique 1) MAC Address that serves as the tag's ID.

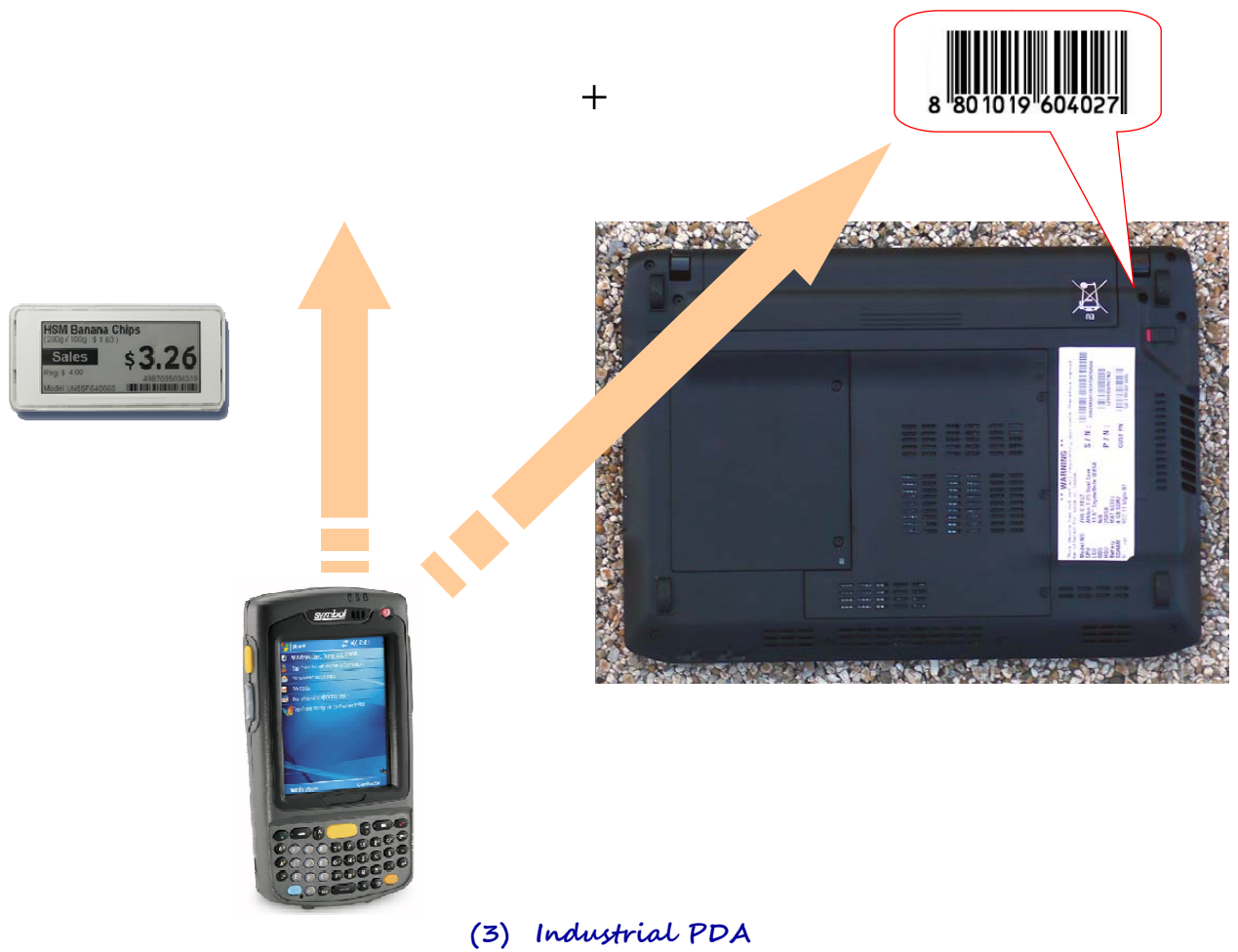
Map 1) MAC Addresses of the tags and 2) barcodes of the products.

Using a PDA featuring Win CE 5.0 or higher as the operating system and a barcode scanner, scan the tag's 1) MAC Address and then the product's barcode to map.

(1) MAC Address



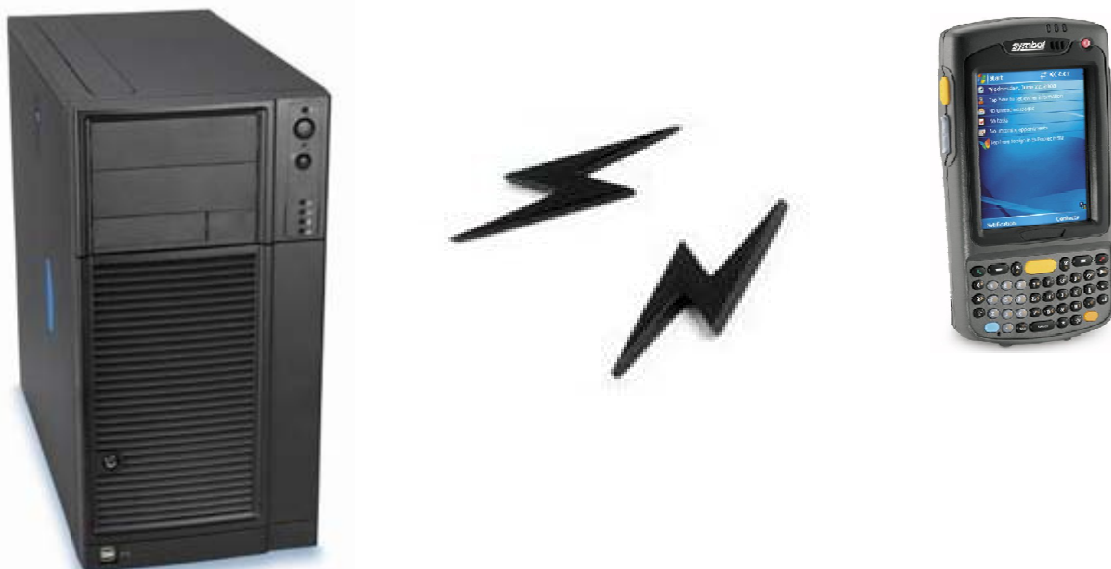
(2) Product
Barcode



b) Register product and tag mapping information.

Using the PDA's WLAN feature, register mapping data with the 4) Server.

(4) Server



-
- c) Attach a back rail to the shelf (secure using double-sided tape or screws).
 - d) Attach end and middle caps to the middle rail.
 - e) Take a tag that has been mapped from step a) and insert to the middle rail from step d). Here, make sure to align the tag and the rail grooves properly.
 - f) Slide in the middle rail to the fixed back rail.
 - g) Products information on Tags such as price will be updated from the server regularly via gateway



WARNING : This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

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.

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 receiver.
- Connect the equipment into 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.

Caution

This device complies with FCC radiation exposure limits for an uncontrolled environment. Avoid operating this device at a distance less than 20cm from the user.

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.

ISED Information to User

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device

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.