

DOCUMENT FOR DESIGNE

# Instruction Manual

PROJECT GROUP	Wireless Laundry Payment Device
MODEL NAME.	O2USZM01
REVISION NO.	0.2

Otwo Cash Korea.Ltd	Wireless Laundry Payment Device	O2USZM01
		Revision : 0.1

### Revision history

Rev	Date	Page	Before Change	After Change	Composi-tion	Approval
0.1	2009.03.04					
0.2	2009.5					

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## 1. General

The document is the product instruction for wireless Payment terminal sticked on washing machine. The wireless Payment terminal defined on the document reads the 13.56MHz Passive tag and control a washing machine. The terminal transfers payment and related information to PC with 2.4GHz ZigBee wireless network

The document is for the wireless payment terminal in a washing machine. It includes a design circuit diagram, Gerber file, part list, framework sketch.

## 2. Product performance

### Working Performance

- It reads and writes the information on Single Tag coincided to ISO/IEC 14443A(MIFARE , Single)
- Possible for the interface with the outside supported to RS-232.
- Possible for the wireless communication to Direct Sequence Spread Spectrum(DSSS)
- Possible to use Zigbee( 2400 ~ 2483.5MHz) 16 Channels.
- Possible for payment and identify working outside with the FND window FND
- Possible to work with 12Vdc/200mA

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## Input Power and Product Performance

### Input Power requirement

ITEM	Specification	Remark
Input Voltage	12 Vdc	-
Inrush Current	200 mA	-

Table 1] Input Power requirement

### RF Spec

	Item	Specification
Wireless Communication part	Frequency	2400 ~ 2483.5MHz
	Rx Sensitivity	-94dBm
	RF Data Rate	250 Kbps
	Networking Topology	point-to- point
	Hardware interface	UART
	Spread Spectrum Type	DSSS (Direct Sequence Spread Spectrum)
	Channel Capacity	16 Direct Sequence Channels (software selectable)
	CPU	8 Bit Micro Processor
	Antenna/Gain	Chip Antenna / 1dBi
	Operating Temperature	-20~ 50°C (Relative humidity 90%)
RF Card	Operating Voltage Range	DC 12V / 200mA
	Frequency	13.56MHz
	Antenna	PCB Loop Antenna
	Operating Voltage Range	5VDC ± 5%
	Operating Temperature	-20~50°C (Relative humidity 90%)

Table 2] RF Requirement

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### S/W Requirement

PART	Application	Contents
Application PART	Wireless Data Communication	2.4GHz Zigbee Protocol
ISO Protocol PART	Tag Air Protocol	ISO/IEC 14443A(Mifare, Single)

Table 3] S/W Requirement

### Circumstance Requirement

ITEM	Specification	Remark
Operating Temp.	-20°C ~ 50°C	
Storage Temp.	-20°C ~ 70°C	
Humidity	90% ( Relative humidity )	

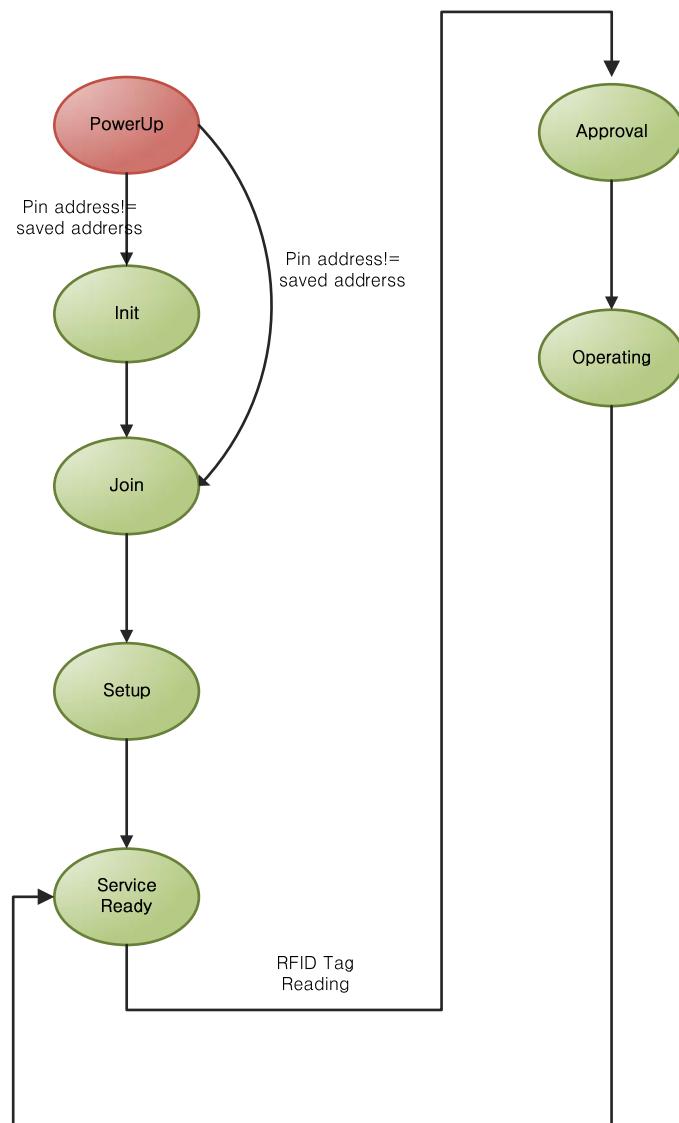
Table 4] Circumstance requirement

Channel	Frequency	Channel	Frequency
11	2405 MHz	19	2445 MHz
12	2410 MHz	20	2450 MHz
13	2415 MHz	21	2455 MHz
14	2420 MHz	22	2460 MHz
15	2425 MHz	23	2465 MHz
16	2430 MHz	24	2470 MHz
17	2435 MHz	25	2475 MHz
18	2440 MHz	26	2480 MHz

Table 5] ZigBee Frequency Channel

### 3. Operation

This Instrument (below edge) installs to washing machine instead of coin machine. Using RFID card, edge provides electronic payment function, edge can manage to electronic payment by Wireless Communication.



**FIGURE 1 Operation sequence**

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### Explanation of each operation by step

Operation	Description	remark
Power Up	-Power is applied to the edge, through 8 ID switch processor initialization complete -edge's ID is showed by display	
Join	After Search network, edge joins network. -treated message is showed by display	
Setup	LPD obtain operation explanation of washer from LCD, based on operation explanation of washer, sep up basic specification of edge. This time, display shows '9999'	Basic specification: payment, amount, operating time etc .
Service Ready	In function of service, edge reads tag continuously. Edge reads tag 1 second interval, user can pay by RFID card This time display shows amount of payment down to two decimal points (\$ symbol is not display)	
Approval	payment of reading tag is processed, result of payment saves in flash memory. In case of proper payment, display shows change, In case of unsettled payment, display shows short amount, In case of error, display shows error value.	
Operating	Washer is operating during on time This time display shows "on"	
Disconnected	In case of disconnected network, before service ready, Edge connects to network again.	In case of disconnected for 10 minutes , before service ready, edge connects to network again.

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## 4. Operating Method

Laundromat Payment Device(LPD) is displayed the following:

“Ready -> payment of card -> display of balance -> operating -> Complete-> Ready”

1. Ready

Display used payment of Instrument

2. Payment of card

as card approaches ahead of instrument within 2~3 Cm, you can confirm recharged amount and remained amount. In case of unsettled payment, display shows short amount



3. Operating

After payment is right, display shows ‘busy’ while washer is operating.



4. Complete

When all operation is completed, is ready status.

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FCC NOTICE

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 UNDESIRERED PERATION.

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 communication. 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 difference from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE : The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.