# Integrated CATALOG



# Parking system for customers' convenience

ST-1 specializes in parking control system.

Since its inception in 1998, it has been working toward developing expertise in parking and integrated control and guidance control systems by reflecting technologies from S/W and H/W and manufacturing production fields, and has been taking an initiating role in parking control systems.

ST-1 has been continuously developing technologies in smart parking control systems, integrated solutions, and guidance control fields.It directly manufactures and sells products in these three fields in retail and wholesale markets in Korea.In fact, it also aims to offer better services and convenience, and maximize the production efficiency based on outstanding specialists in field technology.

CEO Yoon Jae-Min 并有人

ST-1 will do its best to become a reliable company that satisfies customers by promoting its technical development with their support and encouragement by understanding and considering customers' needs.

# Contents

01.	Company overview	/ Management philosophy /	Permit registration
00	1Pataux		

02. History

#### 03. Organization Chart / Management System

#### 04. Business

05.1	Parking	control	_
------	---------	---------	---

01. One-way LPR(General) 12	
02. One-way LPR(Premium) 12	
03. Two-way LPR(General) 13	
04. Two-way LPR(Premium) 13	
05. Ceiling Type LPR 14	
06. Integrated Type LPR 14	
07. Parking Ticket Dispenser	
08. Parking Ticket Reader 15	
09. Vehicle Damage Scanner 16	
10. Call Telephone 16	
11. Barrier Gate (General)	
12. Barrier Gate (premium) 17	
13. Central Management PC 18	
14. Monitoring PC 18	
15. Parking Fee Calculation PC	
16. Integrated Control PC	
17. Vehicle Damage Scanner PC	
18. Desktop Printing Calculator (POS type) 20	
19. PDA 21	
20. Credit–Only Autopay Station (midrange) - 21	
21. Credit–Only Autopay Station (Premium) 22	

#### 06. Guidance control -

01. One-way Image Guidance Parking Lot Camera	
02. Omnidirectional Image Guidance Parking Lot Camera	
03. Geomagnetic Sensor	
04. Ultrasonic Sensor	
05. Main Controller	
06. Parking Lot Sensor Controller	
07. Parking Guidance Management Server (Rack Type)	
08. Guidance Indicator Board	
09. Zone Guidance LED Display	
10. Parking Status Indicating Lamp	
07. Road Security Camera	
01. Road Security Camera	

on nous o county cumora	<b>T</b> U
02. Housing Camera	40
03. Speed Dome Camera	41
04. Dome Camera	41
05. NVR	42

### 08. Major results

09. Licenses

	11	ß	
22. Credit, Cash Autopay Station (Prem	ium) 😁	22	
23. Model Distinction System		23	
24. Entrance Indicator Board (General)		23	
25. Entrance Indicator Board (Premium	)	24	
26. Parking Control Server(Rack)		24	
27. Vehicle Detection System		25	
28. Barrier Gate Switch		25	
29. Warning Lamp		26	
30 Exit Warning Lamn		26	
31. Parking Fee Meter		27	
32. Hand–Type Barcode Scanner		27	
33. Stationary Barcode Scanner		28	
34. Lobby Phone		28	
35. VoIP Phone		29	
36. Interphone		29	
37. Commutation Ticket Receiver		30	
38. Remote Control Receiver		30	
Jo. Remote control Receiver			

31

05 06

07

08

09

43 45

04 | Manufacturing firm - ST1

# **Company overview**

Company name	ST-1 Co., Ltd.		
CEO	Yoon Jae-Min		
Date of establishment	01. 2011		
Business	Smart parking control system and guidance control system, construction of integrated control center,		
	autopay system, parking lot operation,		
	consignment management, service, rental, software development		
	information and communication construction		
Business type	Manufacturing, service, wholesale, and retail sales		
Tel	+82-1899-2864		
Fax	+82-63-262-1020		



# **Management philosophy**

- ST-1 will continuously exert efforts to develop parking control systems.
- It will pioneer the future high-tech parking control system market that is based on outstanding experts and new technologies.
- ST-1 has built a smart parking control system. This will become a part of people's lives and will lead high technology to provide customers greater convenience and safety.
- It will aim at developing total parking solutions from beginning to end of parking using accumulated core technology and expertise, and exert its efforts to create new values that are necessary for customers' and companies' activities.
- ST-1 will become a company that contributes to a new era through foregoing activities.

# **Permit registration**

- Information and communication contractors business
- Manufacturing, sale, and rental of data processing computers
- Manufacturing and sale of machines and apparatus for information and communication
- Computer software development
- Design consignment and sale of computer software
- Information and communication engineer
- Parking lot operation management
- Manufacturing, sale, and rental of parking lot facilities
- ISO9001 and ISO14001
- Parking lot operation management
- Patent register
- Closed-circuit television (CCTV)
- Certificate of Quality Certification(Q-Mark)

# Company history •



# 1998 2005 2011 2012 2013 2014 2015 2016

- Established Techone System Co., Ltd.
- Built an automated parking system in Kunsan National University
- Built the LPR system in Chonbuk National University
- Built the LPR system in the public parking lot (eight places) of Jeonju Facilities Management Corporation
- Established ST-1 Co., Ltd.
- Increased capital (KRW 100 million)
- Increased capital (KRW 200 million)
- Increased capital (KRW 300 million)
- Registered a factory
- Obtained a certificate of direct production
- (parking system / Korea Federation of SMEs)
- Registered Broadcasting and Communication Equipment
- Obtained a KC certification
- Increased capital (KRW 400 million)
- Registered Information and Communication Contractors Business
- Registered as a member of Korea Information and Communication Contractors Association
- Registered as a small and medium business
- Obtained the LPR system performance certification
- Reported a software business license
  - Increased capital (KRW 500 million)
  - Developed and launched the LPR system (ST-LPR100 and ST-LPR/B)
  - Developed and launched the autopay system (ST-AFO)
  - Launched the PC-type parking fee calculation system (ST-AFM100)

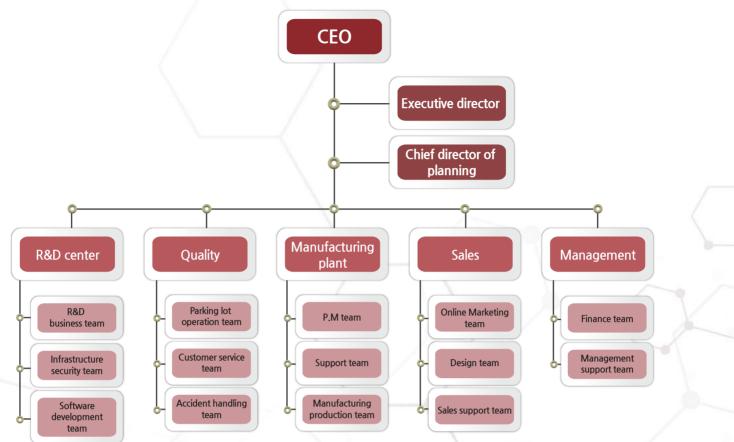
# **2017**

- Established an R&D center
- Registered to Korea ON-line E-Procurement System (KONEPS)
- Developed and launched the Model Distinction System
- Obtained patent application number
- Designated as a venture business

# 2018

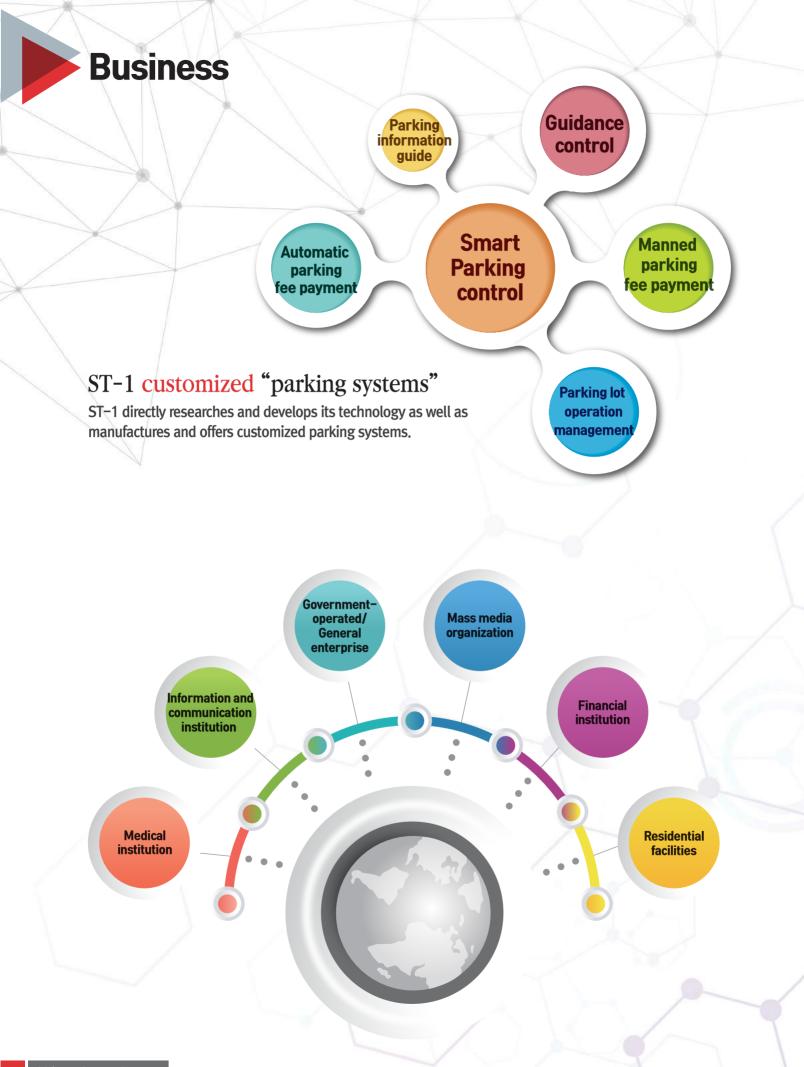
- Selected as a promising small and medium business in Jeollabuk-do
- Obtained an Inno-Biz certification
- Obtained a certificate of direct production (computer software development)





# **Management System**

R&D center	<ul> <li>The latest technology trend analysis</li> <li>Continuous support</li> <li>Research and development of new technology</li> <li>Participation and holding of seminars</li> </ul>	Sales	<ul> <li>Computerized customer management</li> <li>Businesses and customers management</li> <li>Customer response service</li> <li>Monthly business place report</li> </ul>
Quality	<ul> <li>Customer follow-up services management</li> <li>Quick accident handling</li> <li>Thorough maintenance</li> </ul>		Annual report and plan     Customer contact
Manufacturing plant	Product manufacturing     Equipment development     Automation technology	Management	Growth potential     Customized training     Quarterly workshop



| Manufacturing firm - ST1

# **Parking Control System**

Parking control systems automatically recognize vehicles' license plates using LPR during entry or exit to the parking lot, and calculate parking fees by time difference or allow drivers to pay using an autopay system (cash or credit card).

Automatic parking fee calculation, automatic monthly commutation vehicle management, by the day, and coupon management.
 Identifies a vehicle accident by capturing the license plate from the front and rear photos of the vehicle.
 Manages parking fees utilizing LPR technology without the use of parking tickets.

USOP OLAEL

# **Parking Control System**

Accurate vehicle detection! Convenient parking fee calculation! Quick pass!

Exit



# Entry

Barrier Gate Raises/lowers the barrier gate, and allows the vehicle to pass. Vehicle Damage Scanner Photographs four sides of the vehicle and allows a user to check damage of the vehicle.

Autopay Station Parking fee payment system

#### Loop-Coil

Transmits signals by detecting vehicles (metal)

# 01. One-way LPR(General)

One-way LPR recognizes and extracts characters, numbers, and other information from the best video photo of a license plate that was acquired by digital cameras (1.3 million pixels or more) with lighting fixtures, as well as shows relevant information to a driver through the LED display and provides real-time information to a management administrator.



#### Specifications and features

- Form and structure: Self-waterproof structure
- Size: 320(W) x 260(D) x 1302(H) (including the LED display)
- · Input voltage: AC 220V / 60Hz
- · Operating temperature: −30°C ~ 50°C
- Recognition rate: 99.5% (excluding defective license plates)
- · Recognition speed: 0.8sec
- · Speed of a passing vehicle: 10km/h ~ 60km/h
- · Communication: TCP / IP
- Image sensor: black and white with 1.3 million pixels
- · Shutter speed: Auto
- Lens: 2.8~50m
- Lighting: High-intensity infrared light
- · LED display: Displays 12 Korean characters (2 columns and 6 rows), 3 Colors
- Reduces traffic congestion because of no parking ticket and nonstop systems during entry and exit of vehicles.
- Reduces consumable parking ticket cost because of no parking ticket system.
   Automatic entry or exit of vehicles is available by the LPR system
- when registering vehicles for business or related purposes.
- No difficulty in continuous picture taking during the night because of lighting fixtures.
   Allows a driver to have an unobstructed view because of the use of IR LED element.

## 02. One-way LPR(Premium)

One-way LPR recognizes and extracts characters, numbers, and other information from the best video photo of a license plate that was acquired by digital cameras (1.3 million pixels or more) with lighting fixtures, as well as shows relevant information to a driver through the LED display and provides real-time information to a management administrator.



- Form and structure: Self-waterproof structure
- · Size: 320(W) x 260(D) x 1302(H) (including the LED display)
- Input voltage: AC 220V / 60Hz
- Operating temperature: −30°C ~ 50°C
- · Recognition rate: 99.5% (excluding defective license plates)
- · Recognition speed: 0.5sec
- · Speed of a passing vehicle:  $10 \text{km/h} \sim 60 \text{km/h}$
- · Communication: TCP / IP
- · Image sensor: black and white with 1.3 million pixels
- · Shutter speed: Auto
- Lens: 2.8~50m
- · Lighting: High-intensity infrared light
- · LED display: Displays 12 Korean characters (2 columns and 6 rows), 8 Colors
- Reduces traffic congestion because of no parking ticket and nonstop systems during entry and exit of vehicles.
- Reduces consumable parking ticket cost because of no parking ticket system.
   Automatic entry or exit of vehicles is available by the LPR system
- when registering vehicles for business or related purposes.
- No difficulty in continuous picture taking during the night because of lighting fixtures.
- Allows a driver to have an unobstructed view because of the use of IR LED element.

# 03. Two-way LPR(General)

Two-way LPR recognizes and extracts a license plate after taking a photo of it when a vehicle enters the parking lot. Furthermore, it selects and processes the normal photo of the license plate when one of the two license plate photos is poor. A no parking ticket system can be established. In fact, it ensures the accurate recognition rate by recognizing the front and rear license plates when the front license plate is damaged, or the photo of the license plate is unrecognized because of snow or backlight.



- Specifications and features
- $\cdot$  Form and structure: Self–waterproof structure
- $\cdot$  Size: 320(W) x 260(D) x 1302(H) (including the LED display)
- Input voltage: AC 220V / 60Hz
- $\cdot$  Operating temperature: –30°C  $\sim$  50°C
- Recognition rate: 99.5% (excluding defective license plates)
- · Recognition speed: 0.8sec
- · Speed of a passing vehicle: 10km/h ~ 60km/h
- · Communication: TCP / IP
- Image sensor: black and white with 1.3 million pixels
- · Shutter speed: Auto
- Lens: 2.8~50m
- Lighting: High-intensity infrared light
- LED display: Displays 12 Korean characters (2 columns and 6 rows), 3 Colors
- Reduces traffic congestion because of no parking ticket and nonstop systems during entry and exit of vehicles.
- Reduces consumable parking ticket cost because of no parking ticket system.
   Automatic entry or exit of vehicles is available by the LPR system
- when registering vehicles for business or related purposes.
- No difficulty in continuous picture taking during the night because of lighting fixtures.
   Allows a driver to have an unobstructed view because of the use of IR LED element.
- The license plate recognition rate is 99.9% or higher using double recognition
- of the front and rear license plates.

## 04. Two-way LPR(Premium)

Two-way LPR recognizes and extracts a license plate after taking a photo of it when a vehicle enters the parking lot. Furthermore, it selects and processes the normal photo of the license plate when one of the two license plate photos is poor.

A no parking ticket system can be established. In fact, it ensures the accurate recognition rate by recognizing the front and rear license plates when the front license plate is damaged, or the photo of the license plate is unrecognized because of snow or backlight.

- $\cdot$  Form and structure: Self–waterproof structure
- Size: 320(W) x 260(D) x 1302(H) (including the LED display)
- Input voltage: AC 220V / 60Hz
- · Operating temperature:  $-30^{\circ}$ C  $\sim 50^{\circ}$ C
- Recognition rate: 99.5% (excluding defective license plates)
- · Recognition speed: 0.5sec
- · Speed of a passing vehicle: 10km/h ~ 60km/h
- · Communication: TCP / IP
- · Image sensor: black and white with 1.3 million pixels
- · Shutter speed: Auto
- · Lens: 2.8~50m
- · Lighting: High-intensity infrared light
- LED display: Displays 12 Korean characters (2 columns and 6 rows), 8 Colors
- Reduces traffic congestion because of no parking ticket and nonstop systems during entry and exit of vehicles.
- $\cdot$  Reduces consumable parking ticket cost because of no parking ticket system.
- Automatic entry or exit of vehicles is available by the LPR system
- when registering vehicles for business or related purposes.
- No difficulty in continuous picture taking during the night because of lighting fixtures.
- Allows a driver to have an unobstructed view because of the use of IR LED element.
   The license plate recognition rate is 99.9% or higher using double recognition
- of the front and rear license plates.



# 05. Ceiling Type LPR

Ceiling Type LPR recognizes and extracts characters, numbers, and other information from the best video photo of a license plate that was acquired by digital cameras (1.3 million pixels or more) with lighting fixtures, as well as shows relevant information to a driver through the LED display and provides real-time information to a management administrator.





#### Specifications and features

- Form and structure: Self-waterproof structure
- Input voltage: AC 220V / 60Hz
- Operating temperature: −30°C ~ 50°C
- Recognition rate: 99.9% (excluding defective license plates)
- · Recognition speed: 0.8sec
- Speed of a passing vehicle: 10km/h ~ 60km/h
- · Communication: TCP / IP
- Image sensor: black and white with 1.3 million pixels
- Shutter speed: Auto
- Lens: 2.8~50m
- · Lighting: High-intensity infrared light
- $\cdot$  Reduces traffic congestion because of no parking ticket and nonstop systems during entry and exit of vehicles.
- Reduces consumable parking ticket cost because of no parking ticket system.
   Automatic entry or exit of vehicles is available by the LPR system
- when registering vehicles for business or related purposes. • No difficulty in continuous picture taking during the night
- because of lighting fixtures. Allows a driver to have an unobstructed view
- because of the use of IR LED element.
- Ceiling Type is an easy way to make better use of space because it is installed on the ceiling.

# 06. Integrated Type LPR

Integral Type recognizes and extracts characters, numbers, and other information from the best video photo of the license plate that was acquired by digital cameras (1.3 million pixels or more) with lighting fixtures, as well as shows relevant information to a driver through the LED display and provides real-time information to a management administrator. This is installed at the entrance or exit of the parking lot and controls the entry and exit of vehicles.



- Size: 530(W) x 320(D) x 1280(H) (including the LED display)
- Input voltage: AC 220V / 60Hz
- Operating temperature: -30°C ~ 50°C
- Recognition rate: 99.9% (excluding defective license plates)
- Recognition speed: 0.5sec
- Speed of a passing vehicle: 10km/h ~ 60km/h
- · Communication: TCP / IP
- Image sensor: black and white with 1.3 million pixels
- · Shutter speed: Auto
- Lens: 2.8~50m
- Lighting: High-intensity infrared light
- LED display: Displays 12 Korean characters (2 columns and 6 rows), 8 Colors
- Driving system: BLDC
- $\cdot$  Opening speed: Within 1.7 sec
- Reduces traffic congestion because of no parking ticket and nonstop systems during entry and exit of vehicles.
- Reduces consumable parking ticket cost because of no parking ticket system. Automatic entry or exit of vehicles is available by the LPR system
- when registering vehicles for business or related purposes.
- $\cdot$  No difficulty in continuous picture taking during the night because of lighting fixtures.
- This can be installed by interworking with various access control equipment and can perfectly control vehicles that enter the parking lot.
- The count function prevents accidents when vehicles continuously exit the parking lot. When an object is detected while the barrier gate goes down,
- the rebound function detects the load of the drive motor and immediately raises the barrier gate to prevent vehicle damage.



## 07. Parking Ticket Dispenser



Parking Ticket Dispenser issues a parking ticket and displays the parking information by detecting vehicles that enter the parking lot. It also prints and records the entry serial number, date and time of entry, and parking location.

#### Specifications and features

- · Power supply: AC 220V / 60Hz
- Power consumption: 30W ~ 150W
- Size: 590(L) x 400(W) x 1200(H)
- Printing speed: 8cm/sec
- Cutter life cycle: 1.5 million times 150
- Head life cycle: 50km
- · Communication method: Serial (RS-232C)
- Service environment: Temperature: 5°C–50°C | Humidity: 10%–100% No condensation.
- Automatically (semiautomatically) or manually issues a parking ticket in front of the parking ticket dispenser when vehicles enter the parking lot. When they enter, it automatically (semiautomatically) or manually issues a parking ticket at the entrance.
- · Offers driving convenience by providing parking information.
- Allows an administrator to check and modify data such as date and time, as well as inspect the equipment, parking tickets,
- and the number of various processing tickets. • Parking Ticket Dispenser can independently operate when it is disconnected to the administrative computer and calculator.

## **08. Parking Ticket Reader**



Parking Ticket Reader recognizes a commutation ticket by automatically reading the parking tickets of vehicles that enter the parking lot, and issues a parking ticket through the parking ticket dispenser.

#### Specifications and features

· Power supply: AC 220V / 60Hz

 Service environment: Temperature: 10°C–50°C | Humidity: 10%–100% No condensation

Communication method: Serial (RS-232C)

When a parking ticket is inserted, it will automatically calculate the parking fee by interworking with the parking fee calculator.

• Equipment status monitor with a graphic LED displayer.

# 09. Vehicle Damage Scanner



Vehicle Damage Scanner is installed at the parking lot entrance in four directions. It precisely takes photos of the front, rear, and sides of vehicles that enter or exit the parking lot, and saves the photos with a license plate.

When an accident occurs in the parking lot, it provides the information by checking the license plate and photos of the vehicle's exterior to help accurately analyze the accident in the parking lot.

#### Specifications and features

- Image sensor: 1/2.9 type progressive scanning SONY 2.9 megapixels with complementary metal-oxide-semiconductor (CMOS )
- $\cdot$  Effective pixels: 1984(H) x 1105(V)
- Minimum illumination: 0.15LUX(Sense up Auto X4)
- Infrared range: Maximum of 25 m (based on indoor spaces)
- $\cdot \textbf{Bracket:} \ \textbf{Including Outdoor} \ | \ \textbf{Sunshield} \ | \ \textbf{Waterproof, moisture proof, dust proof}$
- Camera Pole (including light): Height: 2,310 mm (adjustable at fields)
  - Material: Stainless steel (SUS)

The Vehicle Damage Scanner is installed at the parking lot entrance in four directions and precisely taking photos of the front, rear, and sides of vehicles.
Allows an administrator to accurately check the vehicle by zooming in the photo after checking the photo of vehicles entering the parking lot using a license plate.

# **10. Call Telephone**



Call Telephone enables a visitor to make an emergency call.

#### Specifications and features

- · Power supply: DC12V 200mA
- Form: Self structure
- · Communication: TCP/IP
- · Service environment: 0°C  $\sim 40^\circ\!C$
- Mutual communication / PTT

Adjustable volume.

- Available everywhere such as the hospital, security office,
- locker room, and other places.
- Applicable from channel 1 to channel 10 according to fields.

# **11. Barrier Gate (General)**



Barrier Gate is installed at the entrance and exit of the parking lot and controls the entry and exit of vehicles.

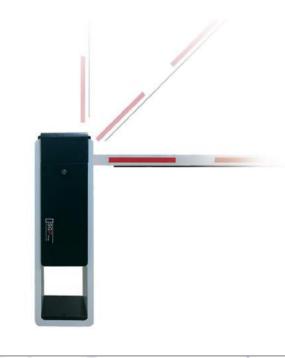
#### Specifications and features

- · Form and structure: Self-waterproof structure
- Size: 303(W) x 303(D) x 1051(H)
- · Input voltage: AC 220V / 60Hz
- Power consumption: 5W(Normal), 120W(Operation)
- Driving system: BLDC
- Thick exterior: Steel plate 1.6 mm thick
- Opening speed: Within 1.7 sec

This can be installed by interworking with various access control equipment
 and can perfectly control vehicles that enter the parking lot.

- The count function prevents accidents when vehicles continuously exit the parking lot.
- $\cdot$  A rubber packing is installed at the base of the barrier gate to protect vehicles.
- When an object is detected while the barrier gate goes down, the rebound function detects the load of the drive motor and immediately raises the barrier gate to prevent vehicle damage.

# 12. Barrier Gate (premium)



Barrier Gate is installed at the entrance and exit of the parking lot and controls the entry and exit of vehicles.

- Form and structure: Self-waterproof structure
- Size: 303(W) x 303(D) x 1051(H)
- Input voltage: AC 220V / 60Hz
- Power consumption: 5W(Normal), 120W(Operation)
- Driving system: BLDC
- Thick exterior: Steel plate 1.6 mm thick
- Opening speed: Within 1.7 sec
- This can be installed by interworking with various access control equipment and can perfectly control vehicles that enter the parking lot.
- The count function prevents accidents when vehicles continuously exit the parking lot.
- A rubber packing is installed at the base of the barrier gate to protect vehicles.
   When an object is detected while the barrier gate goes down,
- the rebound function detects the load of the drive motor and immediately raises the barrier gate to prevent vehicle damage.

# 13. Central Management PC



Central Management PC receives photos and vehicles' license plates from the LPR system at the entrance or exit of the parking lot, saves them, and allows an administrator to search various data and statistics.

Specifications and features

- · Input voltage: AC 220V / 60Hz
- Power consumption: 450W(Max)
- Service environment:  $-10^{\circ}$ C ~  $50^{\circ}$ C, Humidity  $10 \sim 70^{\circ}$
- Structure: Main body, Monitor, keyboard, Mouse
- Specification: Intel Core i3 7300, SSD 256GB, RAM 8G, 19-inch wide monitor, and Window 7 or higher

Integrated management of all data that include operating data management, a detailed statement of entry and exit of vehicles, commutation ticket

- management, and others through communication with parking systems. • Allows an administrator to easily search the date and time of entry or exit of vehicles, photos, and other information.
- · Searchable parking history by parking date and time and license plate.

## 14. Monitoring PC



Monitoring PC shows the operation of all entry and exit control equipment, data collection, communication, and remote control at one glance and allows an administrator to easily monitor parking systems.

#### Specifications and features

- · Input voltage: AC 220V / 60Hz
- Power consumption: 450W(Max)
- Service environment:  $-10^{\circ}$ C ~  $50^{\circ}$ C, Humidity  $10 \sim 70^{\circ}$
- Structure: Main body, Monitor, keyboard, Mouse
- Specification: Intel Core i3 7300, HDD 1TB, RAM 8G, 19–inch wide monitor, and Window 7 or higher

• Shows the operation of all entry and exit control equipment, data collection, communication, and remote control at one glance.

# **15. Parking Fee Calculation PC**



Parking Fee Calculation PC is installed at the parking lot exit and administrative office, and it displays the parking fee by calculating vehicles' time of entry and exit. In fact, it issues a receipt and allows drivers who paid the parking fee to exit by opening the barrier gate.

#### Specifications and features

- Input voltage: AC 220V / 60Hz
- Power consumption: 450W(Max)
- Service environment:  $-10^{\circ}$ C ~ 50°C, Humidity 10 ~ 70%
- $\cdot$  Structure: Main body, Monitor, keyboard, Mouse
- Specification: Intel Core i3 7300, SSD 256GB, RAM 8G, 19–inch wide monitor, and Window 7 or higher
- Various discount systems such as time discount, fee discount, day and night time zone discount, and others can be set.
- 10 or more various discount functions are available.

# **16. Integrated Control PC**



Integrated Control PC enables the overall operation, management, and control of the parking lot. This system performs parking control equipment monitoring (status of LPR, barrier gate, and autopay system), entry and exit data check, parking fee calculation statement check, management of commutation ticket group and members, definition of parking fee system and discount system, and control of the LED display and barrier gate.

- · Input voltage: AC 220V / 60Hz
- Power consumption: 450W(Max)
- Service environment:  $-10^{\circ}$ C ~  $50^{\circ}$ C, Humidity  $10 \sim 70^{\circ}$
- · Structure: Main body, Monitor, keyboard, Mouse
- Specification: Intel Core i3 7600, SSD 512GB+HDD 1TB, RAM 8G, 19–inch wide monitor, and Window 7 or higher
- · Parking control equipment monitoring.
- · Detailed entry and exit statement checks.
- $\cdot$  Detailed parking fee calculation statement checks.
- $\cdot$  Management of commutation ticket group and members.
- $\cdot$  Definition of parking fee system and discount system.
- $\cdot$  Control of the LED display and barrier gate.

# 17. Vehicle Damage Scanner PC

Vehicle Damage Scanner PC saves and manages photos of the front, rear, and both sides of vehicles from four sides using four cameras when vehicles enter the parking lot. It allows an administrator to check the status of vehicles that enter

#### Specifications and features

the parking lot.

- · Input voltage: AC 220V / 60Hz
- Power consumption: 450W(Max)
- Service environment: -10°C ~ 50°C, 10 ~ 70%
- $\cdot$  Structure: Main body, Monitor, keyboard, Mouse
- Specification: Intel Core i3 7300, HDD 1TB, RAM 8G, 19–inch wide monitor, and Window 7 or higher
- Searches and shows photos when vehicles enter the parking lot using a license plate and time information. (four sides: front, rear, and both sides)

# 18. Desktop Printing Calculator (POS type)



Desktop Printing Calculator enables anyone to easily use the calculator. It automatically processes parking ticket and calculates the parking fee by interworking with the barcode scanner and card reader.

#### Specifications and features

- · Input voltage: AC 220V / 50~60Hz
- Keyboard: 78 keys (programmable)
- Mode key: Seven modes (five types of mode keys)
- Printer type: 2inch, Single-sheet thermal print, 80mm/sec
- Printer paper: 57mm(W) x 70m
- Printing: Supports 16 Korean characters and 32 English characters in one line
- Other features: Built-in autocutter
- Memory: Basic 2Mbit, Extend 8Mbit (SRAM)
- · Communication: RS-232C 3port

 Easy change of feature that uses a screen of four-line Korean characters and Korean typing system.

- Free typing system design.
- (Discount key: Up to 20 | Exit key: Up to 15 | Entry key: Up to 10) • Interworking with the barrier gate and parking fee display.

# 19. PDA



It registers a license plate that is based on a parking lot and displays vehicle information and parking status on the main screen. Furthermore, it has features that include the processing of entry and exit of vehicles, daily count, and daily balance calculation. It also can print out the parking ticket, receipt, and daily calculation report with a built–in thermal printer.

#### Specifications and features

- · CPU: ARM9 32–BIT processor
- Operating system: Windows CE 6.0
- Memory: 128MB(extensible up to 640 MB)
- Battery: Lithium polymer (3000 mAh), waiting time (20 hr or more), charging time (3 hr)
- Screen: 4"
- Printer: Thermal print, speed (40 mm/sec), paper (60 mm)
- · Communication: RS-232C
- It allows an administrator to process the entry and exit of vehicles from.
  the main screen by clicking the parking lot spaces that are displayed on the screen.
  Various discount functions (percent, time discount, and discount amount) can be set.
- · Availability of reissued receipt.
- Convenient administrator menu.
- · Registration of parking fee defaulters and evidential materials.

## 20. Credit-Only Autopay Station (midrange)



The Credit–Only Autopay Station is installed in the parking lot and enables the driver to use a discount coupon and barcode or pay the parking fee through various payment methods such as credit card, transportation card, and other methods after checking the parking fee that is automatically calculated while drivers wait. It can be controlled by a car passenger using the 12.1–inch screen.

#### Specifications and features

- · Input voltage: AC 220V / 50~60Hz
- Power consumption: 1.2KW
- Display: 12.1 LCD
- Touch screen: Infrared ray
- · Interface: TCP / IP
- Card reader : Credit Card
- · Payment method: Credit Card
- Receipt print: Thermal print
- Bar Code: Stationary Bar code Scanner

• Various electronic payment methods, such as credit card, transportation card, etc., are available.

- · 12.1 touch screen panel provides user convenience.
- $\cdot$  Installation of the interphone in case of emergency.
- Direct payment of the parking fee through a car window while the driver is inside the car.
- Provides parking fee discount information with interworking with Point of sales (POS) / Order Communication system (OCS) / web

# 21. Credit-Only Autopay Station(Premium)



The Credit–Only Autopay Station is installed in the parking lot and enables the driver to use a discount coupon or pay the parking fee through various payment methods such as credit card, transportation card, and other methods after checking the parking fee that is automatically calculated while drivers wait. It can be controlled by a car passenger using the 12.1–inch screen.

#### Specifications and features

- · Input voltage: AC 220V / 50~60Hz
- Power consumption: 1.2KW
- Display: 12.1 LCD
- Touch screen: Infrared ray
- · Interface: TCP / IP
- Card reader : Credit Card / Discount Coupon
- · Payment method: Credit Card / transportation Card
- Receipt print: Thermal print
- · Various electronic payment methods, such as credit card, transportation card, etc., are available.
- 12.1 touch screen panel provides user convenience.
- · Installation of the interphone in case of emergency.
- $\cdot$  Direct payment of the parking fee through a car window
- while the driver is inside the car.
- $\cdot$  Provides parking fee discount information with interworking with Point of sales (POS) / Order Communication system (OCS) / web

# 22. Credit, Cash Autopay Station(Premium)



The Credit, Cash Autopay Station is installed in the parking lot and enables the driver to use a discount coupon and barcode or pay the parking fee through various payment methods such as credit card, transportation card, cash and other methods after checking the parking fee that is automatically calculated while drivers wait. It can be controlled by a car passenger using the 21 inch screen.

- · Input voltage: AC 220V / 50~60Hz
- · Power consumption: 1.2KW
- Display: 21 LCD
- $\cdot$  Touch screen: Infrared ray
- · Interface: TCP / IP
- Card reader : Credit Card / Discount Coupon
- Payment method: Credit Card / transportation Card / Cash
- Receipt print: Thermal print
- Bar Code: Stationary Bar code Scanner
- · Various electronic payment methods, such as credit card, transportation card, etc., are available.
- · 21 touch screen panel provides user convenience.
- $\cdot$  Installation of the interphone in case of emergency.
- Direct payment of the parking fee through a car window while the driver is inside the car.
- Provides parking fee discount information with interworking with Point of sales (POS) / Order Communication system (OCS) / web.

# 23. Model Distinction System



The Model Distinction System is installed in front of the parking lot entrance and automatically classifies model of passing vehicles. It needs to accurately detect vehicles and classify the model for the parking fee collection criteria and transmits signals of the car model to the server (two classification types: compact and small cars).

#### Specifications and features

- $\cdot$  Form and structure: Self–waterproof structure
- Ultrasonic power: 4–20 mA or more
- Frequency: 40Hz
- · Service environment: –30°C  $\sim 60^\circ\text{C}$
- · Operating speed: Within 1sec
- $\cdot$  Detecting the distance:  $0.4 \sim 10m$
- Transmits information to the parking ticket dispenser, autopay station, main parking control system, and other systems and classifies car models without separate keys.

# 24. Comprehensive Entrance Indicator Board (General)



The Comprehensive Entrance Indicator Board informs parking lot users about the parking status of each level and helps ensure smooth traffic flow in the parking lot.

- Form and structure: Self-waterproof structure
- · Power supply: AC 220V
- · Power consumption: 40W(Normal), 60W(Operation)
- LED display color: 3 Colors
- · Service environment: −20°C ~ 50°C
- Communication: TCP / IP
- Displays occupation status and available parking spaces of each level to drivers who enter the parking lot.
- Displays the number of remaining parking spaces, traffic congestion, and full/empty status of parking spaces using high-intensity LED.
- · Displays parking information to drivers.
- · Displays English and Korean together or each language separately.

# 25. Comprehensive Entrance Indicator Board (Premium)

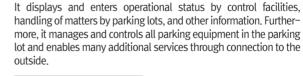


The Comprehensive Entrance Indicator Board informs parking lot users about the parking status of each level and helps ensure smooth traffic flow in the parking lot.

#### Specifications and features

- $\cdot$  Form and structure: Self–waterproof structure
- Power supply: AC 220V
- Power consumption: 40W(Normal), 60W(Operation)
- LED display color: 8 Colors
- Service environment:  $-20^{\circ}$ C ~  $50^{\circ}$ C
- Communication: TCP / IP
- Displays occupation status and available parking spaces of each level to drivers who enter the parking lot.
- Displays the number of remaining parking spaces, traffic congestion, and full/empty status of parking spaces using high-intensity LED.
   Displays parking information to drivers.
- Displays English and Korean together or each language separately.

# 26. Parking Control Server(Rack)



- Power supply: AC 220V / 60Hz
- $\cdot$  Power consumption: 450W(Max)
- Service environment:  $-10^{\circ}$ C ~ 50°C, Humidity 10 ~ 70%
- Structure: Main body, Monitor, keyboard, Mouse
   Specification: Intel Core i7 7700, SSD 512GB, RAM 16G, 19–inch wide monitor, and Window 10 or higher
- · All data from the parking lot management can be integrated.
- · Interworking with data that is provided from the upper-level system.
- Provides data for parking lot operation management in real time.

# 27. Vehicle Detection System



It detects modulated frequency signals by buried loop coils, and it is used with other linked equipment.

#### Specifications and features

- $\cdot$  Power supply: AC 220V / 60Hz
- **Display:** Red LED (Power), Green LED (Detection), Yellow LED (Timer)
- $\cdot$  Frequency conversion: High and Low Adjustable from level 1 to level 4
- $\cdot$  Sensitivity control: Adjustable from level 1 to level 10
- $\cdot$  Power consumption: 2 W (Normal), 25 W (Operation)
- Sets eight modes differently and uses them as 20 various functions
   Direction distinction.
- $\cdot$  Sensitivity control from high sensitivity to low sensitivity.
- Randomly controls the time for warning light from 5 to 60 sec.

## 28. Barrier Gate Switch



A switch that opens or closes the barrier gate by manually operating a switch.

#### Specifications and features

· Button type or toggle type

 $\cdot$  Material: Plastic

Allows an administrator to control the barrier gate by manually operating the button.

- Three modes of Open / Close / Always Open are available.
- $\cdot$  Easy management with the "Always Open" mode.

# 29. Warning Lamp



It sounds the alarm (buzzer) and rotates to warn other vehicles and pedestrians in the parking lot when vehicles enter or exit.

#### Specifications and features

- Form: Ceiling type
- Material: Plastic
- Power supply: AC 220V / 60Hz
- $\cdot$  Power consumption: 1 W (Normal), 30 W (Operation)
- $\cdot$  Warning type: 1 60 sec (detector output)
- Pole length: Adjust the length according to the height of the ceiling and install it (basic length: 800 mm)

Prevents accidents in advance and helps ensure smooth traffic flow
 Easy identification during day and night because of built-in lighting

# 30. Exit Warning Lamp



It is installed at the exit of the parking lot and sounds the alarm (buzzer) and rotates to warn other vehicles and pedestrians when vehicles exit the parking lot.

- Form and structure: Self-waterproof structure
- Configuration: Warning light, buzzer, and character printing
- Material: Aluminium, Stainless Steel
- · Power supply: AC 220V / 60Hz
- Prevents accidents in advance and helps ensure smooth traffic flow.
   Easy identification during day and night because of built-in lighting
- $\cdot$  Easy identification during day and night because of built-in lighting.

# 31. Parking Fee Meter



The Parking Fee Meter is linked with the Parking Fee Calculator. It displays the parking fee that is calculated from the calculator and enables a driver to directly check the parking fee.

#### Specifications and features

- $\cdot$  Form: Wall–mounted and self–waterproof types
- Power supply: DC12V
- Service environment: −20°C ~ 45°C, Humidity 10 ~ 90% • Communication: RS232C
- $\cdot$  Normally displays time and the charged parking fee.
- Displays up to five characters using digital display.
- $\cdot$  Long visibility range using high-intensity LED.

# 32. Hand-Type Barcode Scanner



The Hand–Type Barcode Scanner reads the barcode of the parking ticket that is issued from the parking ticket dispenser with a scanner when a car exits and automatically calculates parking fee.

#### Specifications and features

- Power supply: DC5V, 55mA
- · Service environment: 0°C ~ 40°C, Humidity 10 ~ 90%
- $\cdot \text{ Communication: } \mathsf{RS232C}$
- $\boldsymbol{\cdot}$  Readable angle:  $0^\circ ~~ {}^\circ 6^\circ$
- · Readable distance:  $0 \sim 20 \text{mm}$
- · Ambient lighting: 300 Lux or less

· Easy and fast processing speed.

# 33. Stationary Barcode Scanner



The Stationary Barcode Scanner reads the barcode of the parking ticket that is issued from the parking ticket dispenser with a scanner when a car exits and automatically calculates parking fee.

#### Specifications and features

- Power supply: DC5V
- Scan area: 45mm x 2 @ Contact, 218mm @ 216mm of depth
- Scan line: 32 lines
- $\cdot$  Scan speed: 2400 (per sec)
- $\cdot$  Scan pattern: Eight directions from the scanning area
- $\boldsymbol{\cdot}$  Inclination: Front: 8  $^\circ~|$  Rear: 6  $^\circ$
- $\cdot$  32-line scan pattern and fast scan speed of 2400 per sec.
- $\cdot$  Scanning is available at a slope of 45  $^\circ\,$  for user convenience.
- Switchable to the single-line mode to prevent incorrect barcode scan error.

# 34. Lobby Phone



The Lobby Phone allows an administrator to control visitors using a camera that identifies and checks visitors through various authentication methods.

#### Specifications and features

- · IPower supply: DC12V / 1A
- $\cdot$  ICommunication: Hands-free
- $\cdot$  ICall/image operating time: Call operating time: 30 sec  $\pm$  3 sec Household call operating time: 3 min  $\pm$  5 sec
- · IService environment:  $-10^{\circ}$ C ~  $50^{\circ}$ C

 $\cdot$  Household calls and calls are available.

- Checks the number through the flexible numeric display (FND) of designation numbers.
- · Opens and closes an automatic door.

# 35. VolP Phone



The VoIP Phone can be used as a general telephone and has many additional functions that include call forwarding, call forwarding during a phone call, automatic answering, and others.

#### Specifications and features

- · Power supply: DC5V 1A
- Installation: Desk type
- Remote configuration: Built-in type Web server
- Korean input method: KT Narat-gul
- $\cdot$  Available as a telephone.
- $\cdot$  Call forwarding, call forwarding during a phone call, automatic answering,
- and many additional functions are available. • Provides a remote web server.
- Available as a broadcasting terminal.

36. Interphone



The Interphone enables an administrator to check the visitor by voice.

- · Power supply: DC12V 200mA
- Installation: Wall-mounted and desk types
- Wiring: Two-wire
- · Distance range: 300 m
- · Service environment:  $0^{\circ}$ C ~  $40^{\circ}$ C
- $\cdot$  Mutual communication / PTT
- Adjustable volume
- Available everywhere such as the hospital, security office, locker room, and other places.
- · Applicable from channel 1 to channel 10 according to fields.

# **37. Commutation Ticket Receiver**



Commutation Ticket Receiver is installed at the entrance or exit of the parking lot and automatically opens the barrier gate by reading the contactless radio frequency (R/F) card of drivers when vehicles reach the receiver.

#### Specifications and features

- Detecting the distance: 4~6m
- · Power supply: AC 220V / 60Hz
- · Service environment: Temperature: −30°C~45°C | Humidity: 95%
- Encoded ID communication that uses a protocol between a reader and a tag.
   Contactless card reader with the maximum reading distance of 70 cm (optimal reading distance: 40 cm).

# **38.Remote Control Receiver**



Remote Control Receiver acquires data from the remote control and transmits an open command of the barrier gate.

#### Specifications and features

- $\cdot$  Relay contact capacity: 10 A / 120 VAC and 10 A / 24 VDC
- Power supply: AC 220V / 60Hz
- Size: 130x109x45mm
- Weight: 241g(Receiver), 49g(Antenna)

 $\cdot$  Easily controls the barrier gate using a remote control.

# **Guidance Control System**

The Guidance Control System guides and allows a driver to quickly and easily park a car by detecting the presence of other vehicles in parking lots using ultrasonic sensors or cameras and displaying the number of available parking spaces.

Guidance control systems are classified into two systems by detection methods of LPR: ultrasound system for sensor detection and image guidance system for photo imaging.

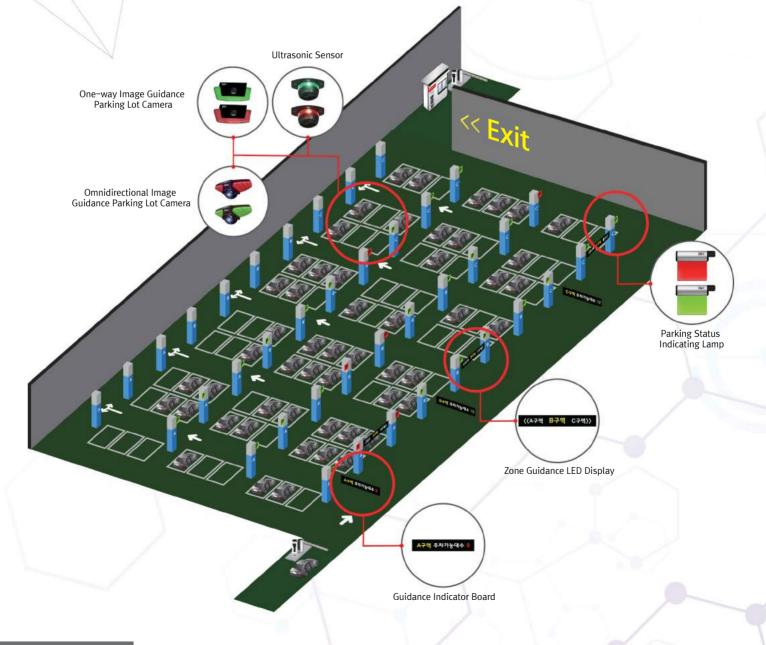
117

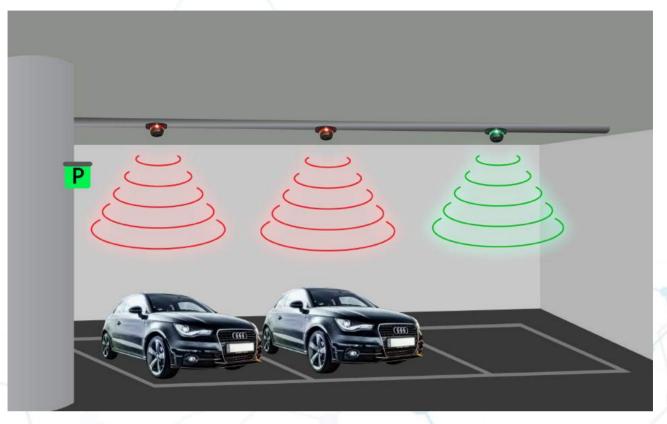
An image guidance system that accurately recognizes a license plate by taking photos using cameras in the parking lot. This is an ultrasonic system that detects the presence of other vehicles in the parking lot through an ultrasonic sensor.

Manufacturing firm - ST1 | 31

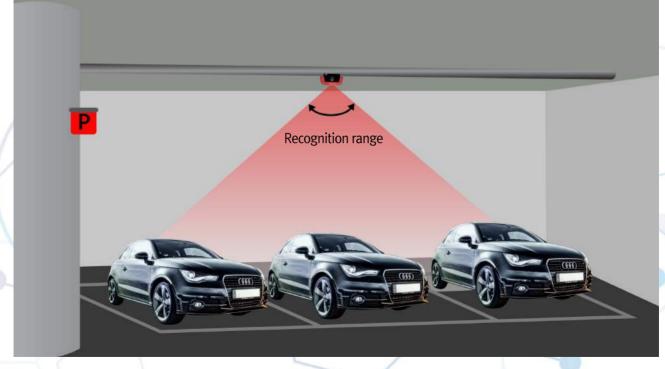
# **Guidance Control System**

Detecting presence of vehicles in parking lots!
 LED display parking location guide!
 Quick parking guidance!





An ultrasonic sensor system detects the presence of vehicles in the parking lot and displays them in color.



An image guidance system detects the presence of vehicles in the parking lot within a range and displays them in color.

# 01. One-way Image Guidance Parking Lot Camera



One camera can recognize up to three lots and quickly guides the driver to park by monitoring and saving photos of entire zones for 24 hr.

#### Specifications and features

- Input voltage: PoE 36~56V DC
- Image sensor: 1/2.5 Color 5M CMOS (5 million pixels)
- Power consumption: About 7 W (including the parking status indicating lamp)
- Communication: 100M Ehternet
- Minimum illumination: 1.2 ~ 1Lux @ F1.2
- · Synchronization: Internet Trigger
- · S/N Ratio: 38dB
- · Shutter speed: Auto
- Frame: 1.3 million pixels 5 fps (up to 10 fps)
- 5 million pixels, 1 image per 2 sec (up to 1 fps)
- Form: Raceway-attachment type, Raceway TWO LINE
- Video: H.264
- · Vehicle image: JPEG
- Recognition range: Three lots per vehicle

· A guide for an empty parking space and full/empty status of the parking lot.

- 24-hr monitoring and saving for entire zones.
  Solves compensation expenses using saved photos as evidentiary materials in case of an accident.
- · Saved information on time and photos can be used as various statistics.

## 02. Omnidirectional Image Guidance Parking Lot Camera



One camera can recognize up to six lots and quickly guides the driver to park by monitoring and saving photos of entire zones for 24 hr.

- Input voltage: PoE 36~56V DC
- Image sensor: 1/2.5 Color 5M CMOS (5 million pixels)
- $\cdot$  Power consumption: About 7 W (including the parking status indicating lamp)
- Communication: 100M Ehternet
- $\cdot$  Minimum illumination: 1.2  $\sim$  1Lux @ F1.2
- Synchronization: Internet Trigger
- · S/N Ratio: 38dB
- Shutter speed: Auto
- Frame: 1.3 million pixels 5 fps (up to 10 fps)
  - 5 million pixels, 1 image per 2 sec (up to 1 fps)
- $\cdot$  Form: Raceway–attachment type
- Video: H.264
- Vehicle image: JPEG
- Recognition range: Max Six lots
- $\cdot$  A guide for an empty parking space and full/empty status of the parking lot.
- $\cdot$  Searches for drivers' parking location and shows the route using LPR.
- · 24-hr monitoring and saving for entire zones.
- Solves compensation expenses using saved photos as evidentiary materials in case of an accident.
- · Saved information on time and photos can be used as various statistics.

# 03. Geomagnetic Sensor



The Geomagnetic Sensor is installed in each parking lot and transmits the parking status information through wireless communication.

#### Specifications and features

- Form: Wireless vehicle detector
- · Communication: 2.4 (GHz) Radio Frequency (RF) communication
- Communication distance: SINK@30~40(m)

 Easy laying, reduction of construction time, reduction of people's installation, and minimization of road wear.

- $\cdot$  Installable in all areas regardless of ground and basement as well as indoor and outdoor.
- $\cdot$  Excellent energy efficiency with low power communication, high reliability, and safety.

# 04. Ultrasonic Sensor





The Ultrasonic Sensor is installed in every parking lot that needs to be managed and sends signals to the sensor controller by detecting the presence of other vehicles in the parking lot using ultrasonic waves.

#### Specifications and features

- · Sensor type: Transmit / Receive separable type
- Form: Raceway-attachment type
- $\cdot$  Sensing accuracy: 99% or higher
- Exterior material: Flame-resistant ABS

A guide for an empty parking space and full/empty status of the parking lot.
 Real-time parking status management in the parking lot and display of various graphs for parking lots.

 Easy installation and maintenance without separate communication lines by selecting the communication method of nonpolar two-wire direct current (DC) power line.

# 05. Main Controller

SGP

The Main Controller is controls parking lot sensors, vehicle presence indicating lamp, and available parking space indicator and transmits parking lot status data to the parking guidance server.

#### Specifications and features

- Input voltage: AC220V/50~60Hz
- $\cdot$  Communication: RS422/485, RS232
- Data transmission distance: 1.5 km
- $\cdot$  Structure: Main body, Monitor, keyboard
- Specification: Intel Core i3 7300, HDD 1TB, RAM 8G, 19-inch wide monitor, and Window 7 or higher
- Controls the Section Controller Module (SCM) and the Electronic Data Management (EDM) by interworking with the parking guidance program.
- Connected with the parking guidance program and
- Transmission Control Protocol (TCP) / Internet Protocol (IP) network.
- Connected to external equipment that requires control such as SCM via RS 485 communication lines.
- · Easy operation and operational status check with a touch screen LCD panel.

## 06. Parking Lot Sensor Controller



The Parking Lot Sensor Controller transfers parking information to the parent parking guidance server by detecting vehicles and calculating the number of available parking spaces in the parking lot using ultrasonic sensors, as well as provides parking information to parking status indicating lamp, guidance indicator board by levels, and zone guidance LED display and controls them.

#### Specifications and features

- Power supply: DC 24 V ( DC 13 V ~ DC 28 V), 185 W, Mounted with separate power supply
- Service environment: –30°C  $\sim$  60°C, Humidity 10 %  $\sim$  90 % (No condensation)
- $\cdot$  Power consumption: 4.8 W (DC 24 V, 200 mA)

 Controls each apparatus by interworking with the ultrasonic sensor, parking space indicating lamp, and the LED display by levels and controls each apparatus.

# 07. Parking Guidance Management Server (Rack Type)



The Parking Guidance and DB Server allow an administrator to check for the presence of other vehicles in the corresponding parking lot and the parking location of a specific vehicle and monitor a parking lot.

#### Specifications and features

- Power supply: AC 220V / 60Hz
- · Power consumption: 450W(Max) • Service environment:  $-10^{\circ}$ C ~  $50^{\circ}$ C,  $10^{\circ}$  70%
- · Structure: Main body, Monitor, keyboard, Mouse
- · Specification: Intel Core i7 7700, SSD 512GB, RAM 16G, 19-inch wide monitor, and Window 10 or higher

· Mapping for the serial number of the parking lot and license plate of a vehicle. · Displays alarms for equipment failure and allows an administrator to manage history.

- Displays the number of available parking spaces for each level.  $\cdot$  Selects a parking lot and manages parking hours and parking status by vehicles.

## **08. Guidance Indicator Board**

102

B

103동 >>

C동 〉〉

(< 101동

<< A동

parking lot, and displays direction that indicates arrows in high-intensity LED for safe driving and quick vehicle traffic flow. Specifications and features

- Form and structure: Ceiling type (cross-sectional structure)
- Exterior material: Aluminum extrusion with a thickness of 1.2 mm or more · Power supply: AC 220V / 60Hz

The Guidance Indicator Board is installed at a crossroad in the

- Character display: Blue sheet in a white acrylic base (negotiable)
- Size: 1,300 (W)  $\times$  250 (H)  $\times$  60 (D) mm (Built-in LED lighting)
- · Power consumption: 25 W

· Breaks the structure of existing fluorescent lamp and manufactures a simple structure using the LED light source.

- A structure that can be easily recognized from a distance.
- Has higher illuminance and lower power consumption compared to the brightness of existing fluorescent lamps.

### 09. Zone Guidance LED Display

025

주차 가능 대수

주차 가능 대수

**B1** 

The Zone Guidance LED Display is installed at the vehicle entry and guides drivers faster by informing the number of available parking spaces in the corresponding parking zone.



 $\cdot$  Form: Self structure

- Power supply: AC90~132V/180~264V, 50/60Hz(44~440Hz)
- $\cdot$  Service environment: –25°C  $\sim$  75°C, Humidity 90% or less
- Exterior material: SPCC 1.2t
- · Display element: LED
- $\cdot$  LED module color: Three colors
- Communication: RS485
- Guides the entry direction of vehicles and displays the number of available
   parking spaces when a vehicle enters the corresponding level.
- Displays the number of available parking spaces in numbers and characters through guide indicator boards in each level.

### 10. Parking Status Indicating Lamp



The Parking Status Indicating Lamp is installed in the parking lot and provides the full/empty status of parking information to drivers in real time by displaying the parking availability in green or red LED.

#### Specifications and features

- Form: Ceiling type, column, and wall-mounted type
- $\cdot$  Display type: High-intensity LED
- Power supply: DC12
- $\cdot$  Exterior material: LED light guided plate (acrylic)
- Size: 180(W) x 180(H) x 10(D), Display
- · Communication: Interworking with parking lot sensors and Relay Contact 2 Point
- · Display: Supports green, blue, red, and PWD marks

Handicapped parking lot can be displayed in blue.Enables drivers to easily recognize LED light.

```
and the second sec
```

# **Road Security Camera**

The system offers security service by recognizing the license plate on the road. It recognizes the license plates of driving vehicles during day and night. In addition, it can capture images and videos in real time using CCTV cameras, and saves transmitted data in the network video recorder (NVR).

Real-time video capture and recording

 Data storage
 24 hr surveillance
 Remote control
 DB statistics and report

### 01. Road Security Camera



The road security camera is installed on roads and sends information in real time by recognizing the license plates of driving vehicles.

#### Specifications and features

- Size: 220(W)x450(D)x200(H)
- Image sensor: 1/1.8Type 3M CMOS
- Pixel: 2,048(H)x1,536(V) 3.15M pixels
- · Scan mode: progressive
- · Lens: 10-100mm(10x Varifocal Lens)/F1.4
- · Point-blank range: 1.5M(Min), C-Mount
- IR LED: Maximum night vision: 20M(Vehicle speeds within 70km/h), 100M(security)
- Service environment: -20°C~55°C, Humidity within 90%
- Fan: IR LED ON, IR LED OFF (Pan - tilt - zoom (PTZ) motion sync/Program setup)
- Power supply: 220V AC/24V DC, 5A
- $\cdot$  Real-time transmission of the captured images of license plates
- $\cdot$  Design operable in poor external environments (Rain, dust, and others)

### 02. Housing camera



The progressive complementary metal–oxide semiconductor (CMOS) image sensor has been adopted to obtain clearer, high–definition image information. A minimum illumination of 0.001 lux enables it to obtain the best color image information in dark environments or at night.

#### Specifications and features

- Size: 161.6mm X 85.5mm X 74.0mm
- Image sensor : 1/2.8" 3Megapixel progressive scan STARVIS™ CMOS • Zoom: 16x
- Video como
- Video compression: H.265/H.264 triple-stream encoding • Transmission speed: 50/60fps@3M(2048×1536)
- Lens: 4 MEGA PIXEL 2.7–12mm Lens
- Power supply: DC12V, AC24V, PoE(802.3af)(Class 0)
- Interoperability: ONVIF, PSIA, CGI
- Obtains high-quality image and video information in dark environments by applying the best backlight compensation
- Offers the best quality among box cameras by applying the best backlight compensation
- $\cdot$  Design operable in poor external environments (Rain, dust, and others)
- $\cdot$  Available in various placess and can easily be installed

### 03. Speed dome camera



The speed dome camera, which applies Predictive Focus Algorithm (PFA), always maintains clear focus when zooming in and out, thereby providing clearer images. It also delivers the best image quality under various lighting conditions at night.

#### Specifications and features

- Size: *Φ*209(mm) x 337.4 (mm)
- Image sensor: 1/2.8" 2Megapixel progressive scan STARVIS™ CMOS • Zoom: 25x
- Video compression: H.265+/H.265/H.264+/H.264
- Transmission speed: Max. 50/60fps@1080P
- **Power supply:** AC24V/3A(±25%), PoE+(802.3at)
- Lens: 4.8mm~120mm
- Backlight compensation | BLC / HLC / WDR(120dB)
- Day/Night | Auto(ICR) / Color / B/W
- Face recognition and intrusion detection
- $\cdot$  Accurate and clear focus
- $\cdot$  Available in various places
- · Smart exterior design that blends in everywhere

### 04. Dome camera



The motorized dome camera has the best quality and efficiency for the price, and is the easiest to install indoors. It has adopted the SONY CMOS image sensor, enabling it to obtain the best color image information in dark environments or at night.

#### Specifications and features

- Size: Ø159.1mm X 117.9mm
- Image sensor: 1/2.8" 2Megapixel progressive scan STARVIS™ CMOS • Zoom: 25x
- Video compression: H.265/H.264 triple-stream encoding
- Transmission speed: 50/60fps@1080(1920×1080)
- Power supply: DC12V, AC24V, PoE+(802.3at)(Class 4)
- · Lens: 4.8mm~120mm
- Backlight compensation | BLC / HLC / WDR(120dB)
- · Day/Night | Auto(ICR) / Color / B/W
- Face recognition and intrusion detection
- $\cdot$  Accurate and clear focus
- Available in various places
- $\cdot$  Smart exterior design that blends in everywhere

# 05. NVR



### The NVR is a high-end network recorder that supports images of up to 4K resolution.

#### Specifications and features

- **Size:** 440mm × 450.1mm × 95mm
- Main Processor | ARM Quad-core CPU
- · IP Video input: 16CH
- Transmission speed: 320Mbps / 320Mbps
- · Decoding: 4CH@4K / 16CH@1080P
- HDD: 8 X 10TB
- · Ethernet: 2G Port
- · USB | 4EA USB 2.0
- Operating temperature: -10°C ~ +55°C (+14° F ~ +131° F), 86 ~ 106kpa
- Max 12MP resolution real time / Play
- · 2 HDMI/VGA Sync output
- · RAID 0/1/5/6/10

KC | Korea certification

Z

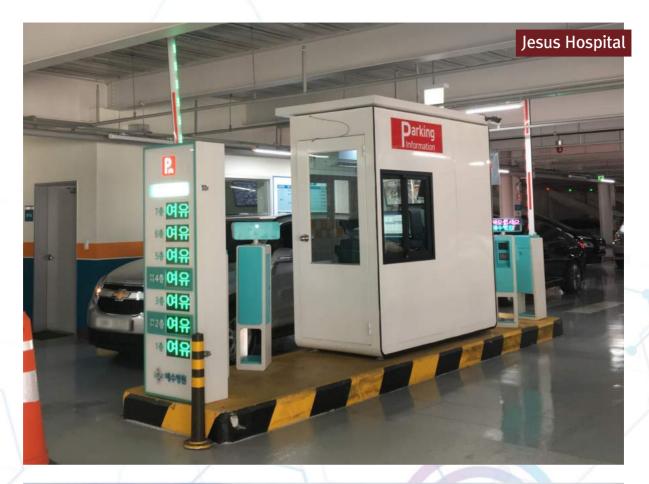
9046 283C 2585 DW7		0897-1486-1458-1519		4846-4071-4880-2345		DEDS IN LAS. C. 164. OF 76		AND 49-5-4011-048	
방송통신기자재등의 Registration of Broadcasting and Con		방송통선기자재등의 Registration of Brosedvasting and Cos		방송통신기자재등의 Registration of Broadcasting and Con		방송통신기자재등의 Registration of Broadcasting and Con		방송통신기자재등의 적합등록 필증 Registration of Broadcasting and Communication Equipments	
상호 또는 성명 Tech New or Registers	(추)에스티셴	상호 또는 생명 Teste Note or Registrat	(유)에스티팬	상호 포는 성명 Test News Chatter	(赤)叫스印包	상호 또는 성명 Test New or Regiment	(4)에스커뷰	상호 또는 성명 Task Name or Regional	(十)州山明相
기자재명칭(제품명칭)	프로방영 카네다	기자개명칭(제품명칭) Exclusion Name	*****	기자개명칭(제품명칭) Encloser: Nate	스위츠 문	기자재명칭(제용명칭) featured Next	* **	기자재명칭(제품명칭) Sociement Mone	NVA
기본모명명 Bak Model Namber	ST-SECA	기본호:영명 Stati Michi Nartar	ST-HSC	기본모랜명 libel: Mahl Nacibe	ST-SPD	가본모델명 Bat Model Namie	SHD2041	기본도면명 Dest Model Number	SHNRI6
과생모병영 Solo Abdi Nada		과생도명명 Sais Nadi Vaalar	1	하 중도 별명 Sab Held Neder	1	1루-영보 영 명 Strice Modil/Nather	ST-DMC	라생모볛명 Roos Medd Nambe	ST.MVR
등루번호 Repitation No.	B-R-stw-STEECA	중목·吐克 Myntraise No.	R-R-arw-STHSC	등북번호 Registration Me	R-X-env-STSPD	등특번호 Signification No.	E-RS-stw-STDMC	동특번호 Repression No.	R-R5-stw-STNVR
제조자(제조(조립)국가 Manalactures Country of Degis	(帝)예츠비성 / 姓국	제조자(제조(조업)국가 Manufacture/County of Origin	(舟)비스타电/ 电电	배조자(제조(조립)국가 Name futures County of Origin	(유)레스티분/한국	제조자/제조(조엽)국가 HandgenerCourty of Origin	(주)역소약원 / 원국	제조자·제조(조립)국가 ManufactureTransfer of Osigin	(추)역스타령 / 한국.
동쪽연월임 Day of Revisation	2019-04-03	공득연월딩 Dev of Regionation	2019-04-12	등록안퀩일 Date of Registration	2019-04-30	등북선월일 Dave of Registration	2019-04-25	<del>풍복</del> 선원일 Data of Registration	2019-04-23
2914) Others		기타 Others		2]8) 08m		7[0] Others		기다 Others	
위 기가지는 「光가역」 R is verified that foregoing of Wares Act	제외프시고 제3명에 다니 프 pajament has been registered 국 법 전 파 연극 General of National 1 000415 est 4* 10 1041 - 1	k is verified that foregoing of Wares Act. Director	제38조카)2 제3왕에 바라 - quppen his bear registered 국립전파연- Genetal of National 비의지에는 하고가 이왕제종가 하는 제44 제42 같아서 다리	b is verified that foregoing of Waves Act. Director	) 제5828.42 제3왕에 대해 ( equipment has been registered 국립전과연: General of National 문서지에서 만드시 예정계약)	It is verified that foregoing ( Wares Act. Director	· 제58.또 에2 제2 왕에 하라 1 국립전과인 다 연구 General of National Partner 만드며 영향해당 위	h is verified that foregoing Waves Act. Director	1 제도 제근 방방에 대한 문화적용을 전망 단13. oppment ha born regional ander the Claus 2. Ander 59.2 2019년(corns 1) 전 (Martin) 국업전가선구원장 General of National Radio Research Agence Particle Corners 1 of Set 2019년, 2, 1000 8, 2019년 10

# Major results

Jeonju Facilities Management Corporation	Nakeseongdae Science Park	Anyang Metro Hospital	
Mokpo Regional Office of Oceans and Fisheries	Sadaong Cultural Center	Jeonju Korea Hospital	
Jeonju Health Center	Seoul Museum of Art	Jeonju Hyundai Radiology Clinic	
Flower Market	Buan-gun County Office	Chung–Ang University Hospital	
Korea Agro-Fisheries & Food Trade Corporation	Seoul Arts Center	Korea Institute of Radiological & Medical Sciences	
Daechi-dong Cultural & Welfare Center	Olympic Memorial Civic Center	Chosun University Dental Hospital	
Gunsan Regional Office of Oceans & Fisheries	Suwon Yeongtong-gu Office	Dongguk University Ilsan Hospital	
Jongno-gu Office	Suwon Stadium	Incheon Sarang Hospital	
Seongnam Jungwon-gu Senior Social Services Center	Giheung-eup Office	Korea University Guro Hospital	
Bundang-gu Car Registration Office	Gwangmyeong Social Services Center	Ehwha Mokdong Hospital	
Uijeongbu Chu-dong Library	Anyang City hall	Jasan Medical Foundation	
Eunpyeong-gu Office	Jeollabuk-do Provincial Office	Cham Hosptial	
Jeongeup City Hall	Jindo National Gugak Center	Himchan Hospital	
FKI (Federation of the Korean Industries) Tower	Teachers' Pension	Wongkwang Hyodo Medical Care Hospital	
Jungnang Sewage Treatment Center	Daejeon Doonsan branch	Jeonju Seongsim Girl's Middle School	
Hyochang Stadium	Nakeseongdae Hyundai Apartment	Jeonju CGV Movie Theater	
KOTRA Seoul Trade Exhibition & Convention	Jinju City Hall	Bong-dong National Agricultural Cooperative Federation	
Gyeonggi Cultural Foundation	Seogyo-dong Daea Apartment	Jeonju National University of Education	
Byeoksan Apartment	Jeonju Songcheon-dong Wellga Apartment	Sori Arts Center of Jeollabuk-do	
Gwangmyeong Jungang Heights Apartment	Geonsancheon Parking Lot	Iksan Northern Market	
Jeonju City Hall	Jeonbuk Veterans Hall	Jeonju Sungsim Girl's High School	
Dorim Chung-gu Apartment	Woomi Lynn Apartment	Kunsan Girl's High School	
KBIZ Korea Federation of SMEs	Jeonju Family Mart	Jeonju Okto Parking Lot	
National Library of Korea	Seongnam Yeil Hospital	Chimyeongjasan Parking Lot	



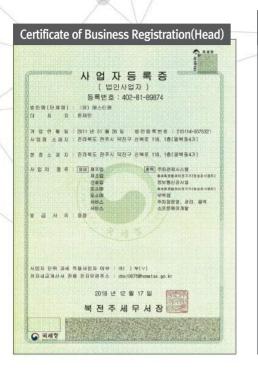
Manufacturing firm - ST1 | 43



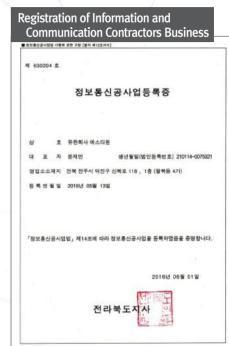


※ In addition to foregoing cases, ST-1 has about 782 results or more.











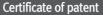




Manufacturing firm - ST1 | 45









위의 발명은 「특허법」에 따라 특허등록원부에 등록되었음을 중명합니다. This is to certify that, in accordance with the Patent Act, a patent for the invention has been registered at the Korean Intellectual Property Office.

> COMMISSIONER, KOREAN INTELLECTUAL PROPERTY OFFICE

刘吾开

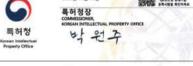
2017년 01월 23일

특허청장



Certificate of patent







방송동	·신기자재등의 적합등록 필증	
Registration of	Broadcasting and Communication Equipments	
양호 또는 영명 That New or Aginant	(6)404H	
기자개 명칭 Residence Alater	1158931440	
기본모별명 Bak Model Medice	ST-FDC	
과권도협명 Series Maid Nanber		
등록번호 Pagistralise Na	MSIP-RSM-stw-ST-FDC	
제초자/제초(초립)국가 MandeconnerCounty of Drajes	(6)HA48/187	
등록면했입 Dars of Angeletation	2015-08-31	
기타 Others		
It is verified that foreg Ardole 58–8 of Radio W Director G	1910년(Yeyr, Alf Stand) 37 UDae) 국업전파인구원가 대학교 ioneral of National Radio Research Agency	
	5가자에는 전도식 "특항성별가요식"을 두려하여 공공하여야 합니다. 반시 페레요 여분 및 문화로 해소될 수 있습니다.	

### Korea certification-Autopay Station

114 han digana 11 - 11 - 11 - 11 - 11 - 11 - 11 - 1	4244 129441 AFD MFC P-55MH++5T-4FD 4244167 55421
Totaliani Nami         サリ           プロシステロ         アリー           オーダスス 行き         第7.4           オーダスス 行き         第7.4           プログレス	aro NPC IP-JEM-HH-ST-APO ≪12-44 / 69
14.1 中学なりま 高いたは「しまた」 なまでは、 ないたいした。 15.1 そのでした。 15.1 そのでした。 15.1 そのでした。 15.1 にのいたいした。 15.1 にのいた。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいた。 15.1 にのいたいしたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいした。 15.1 にのいたいし	NFC IF-JEM 40+5T-4FD ML-14 / 69
San Mali Tantor Si - 3 전국 전호 전국 2010 No. No. No. Si 전국 2010 No. Control Of Opp Non-decare Control of Opp Date of Regionesian 2010 Date of Regionesian 2010 Date of Regionesian 2010	IPAEMannaTaaPO Machiqu (197
Regimenten No. Pest 제곱자(제곱(조망)국가 Mandersam County of Origin 항목면원일 Date of Regimentes 기타 Othern	लंटम्स / हरू
Manuforum County of Origin (1977) 상독선원인 Date of Regionesies 기타 Othern	
Date of Registration 7[8]- Othern	5-08-21
Othen	
k is verified that Songolog equipme Waves Art, Director Gene	A 전 2 전 양국 비석 구 주 전 2 순 중 영 한 나다. ne ho bene ngiaurd end the Chan 2. A trainis 35 2 d Ratio 306 선 Yean 1 영 Deterio 02인(Date 국 입 것 과 연구 관 장 Iral of National Radio Research Agency
	에는 연소가 <b>"해할 정말 가로 사"</b> 등 등 작품이 유통하여야 합니다. 1대로 서류 및 문화에 위소된 수 있습니다.

방송·	통신기자재등의 적합등록 필증
Registratio	n of Broadcasting and Communication Equipments
상호 포는 성명 Task Name or Kigaman	$J_{\rm P}(a \simeq b^{-}(\bar{w}))$
기자개명성(제품명성) Easigneer Nata	방방왕(FR(권장한성제혁)
기본·모·펄명 Stati Navite	8742PA/8
과원도법역 Sees Head Notes	57-676, 57-5129, 57-5129, 57-629, 10
告诉刑主 Registeration Re-	MIIP-REM-atw-ST-LPB
에 쇼 의 가에 an ( an 영 ) 국 가 Manufacturer Country of Degre	(书)叫二川世/世田
문특역(쇞영) Deternet Registrations	2013-04-21
기타 Dilee	
lt is vanifield that foregoing of Varies Apt Director	역36.8.72 선정년 역 다른 등 지입었은 중 것 합니다. gripment his been registered such the Clause 3. Ancie 58.2 of Radie 2019년(Yang 10년) Merein) 11년(Day 국업전파인구환장 대학원(10년) General of National Radio Research Agenzy 2019년 18.4 "제일생활(2.5.4" 후 프리아이 등 문서야 있는다.
212812 BR	이 이 가에요 지는 것 같아야 하는 것 수 있습니다.

방송	통신기자재등의 적합등목 필증
Registratio	n of Broadcasting and Communication Equipments
상호 또는 상명 Tali New of Righter	(音)唯态词制
기치재명칭(제공명칭) Excloser Name	부물부담기(부물비호신식점)
기본모평명 Dele Model Name	ST-PCB/A
파네고 연결 Serie Madr Sandar	87-FCB/AD109, 37-FCB/AD260
등 해 1년 3). Registration No.	R-R-stw-STPCB
用活动/电子(王宝宝)号号 idandurantCoasty of Orgin	(前)网点的题:( 11日
상록선형원 Harr of Registration	2018-02-15
7) 13 Odaro	
D is verified that foregoing of cares Act	역3도원2 위장역 위작 등록 위장순을 수석합니다. apipnen ha hear rgstand under die Clause J. Arnie 5-2 ef Hafan 2019년 (Vern, OZU(Month) 15명(Day) 국업전파연구원장 []]] General al National Radio Research Agency 이야하여 147년 명력원 문자 클라이다 요리카이다 Unio







# 벤처기업확인서 업 체 명 : (유원)에스티워 대 표 자 : 8세번 소 재 지 : 관리북도 전주시 역전구 신북교 118, 16 확 인 유 형 : 기술월기(4종기업(종종정) 평 가 기 관 : 종소행자기업(종종정) 유 효 기 간 : 2019년5월30일 - 2021년05월29일 위 업체는 『벤처기업육성에 관한 특별조치법』 제25조의 규정에 의하여 벤처기업임을 확인합니다. 2019 년05 월30 일





https://parkingst1.wixsite.com/st-1 TEL. **+82-1899-2864** | FAX. **+82-63-262-1020** E-mail. parking\_st1@naver.com

## ST-1

✦ Head office(Jeonju)
 774-44, Palbok-dong 2(i)-ga, Deokjin-gu, Jeonju-si, Jeollabuk-do, Republic of Korea / zip code. 54852

◆ Branch office(Gunsan)
 1F, 44-18, Gwangwol-gil, Okgu-eup, Gunsan-si, Jeollabuk-do, Republic of Korea / zip code. 54172

Branch office(Gwangju)
 2F, 105, Sochon-ro, Gwangsan-gu, Gwangju, Republic of Korea / zip code. 62386