

## Major Performances

3,553 sites for 15 years  
Protection Success rate : 99.88%

### Lightning protection for National Defense of Korea is ensured by eca3G.

910 sites at 270 regions under National defense lightning protection for 12 years

GROUND has implemented lightning protection system for entire NAVY bases from year 2001 until now (2013. 5), and has supported for 365/24 operation without interruption by lightning, and also protection for Perimeter Surveillance System of the President Office, Special agencies, command and control system, communication vehicles of army, navy, air forces are under implementation continuously with eca3G (3G digital lightning protection device) and PGS grounding system.



1. Mobile Tactical Operation Vehicle, Mobile generator  
2. CCTV, Thermal Image Camera, Surveillance system at coastal, border line

### Local government and National public authorities :

1,135 sites at 345 regions

- Royal Tombs of the Joseon Dynasty-UNESCO World Heritage : 247 sites at 31 units with total integrated surveillance system (include CCTV)
- Unmanned forest fire monitoring system of Gangwon province, Kyungbuk province
- Port Authority, Cultural Heritage Administration, Meteorological Agency
- Boryung Thermal power Plant, Wolsong Nuclear Power Plant
- other 60 over sites under local governments are protected under total perfect lightning protection system



1. Perimeter Surveillance System for the President Office,  
2. Royal Tombs of the Joseon Dynasty-UNESCO World Heritage with total integrated surveillance system (include CCTV)  
3. KBS Digital TV Relay Station

### Broadcasting stations, Communication stations :

706 sites at 205 regions

GROUND has implemented lightning protection system for KBS HQ, its Regional stations (Korea Broadcasting System), and regional commercial broadcasting stations. Most of relay stations are located on the high mountain area, where very weak from lightning intrusion damages, are also under ensured lightning protection by GROUND, which contribute to support people's right to know, provision of various information.

### Total Lightning Protection System for Water & Wastewater Treatment Plant

802 sites at 234 regions for Nationwide plants, Korea Water Resources Corporation (KWRC)

Perfect total lightning protection for distributing reservoir, intake facility, water works, pumping station nationwide ,and facilities under management division of KWRC. It is important to get healthy drinking water at modern society due to environment pollution. To support clean & stable drinking water supply, GROUND has protected Water treatment facilities from lightning with eca3G (3G digital lightning protection device) and PGS grounding system.

## 100% Lightning Protection Campaign

681 Days (June.18.2013)

It is our pride to perform 99.88% success protection rate since year 1999.

100% lightning protection is the target & motto of GROUND Co., Ltd. US PATENT(No 7,652,865 B2), Lightning Protection Device with TN-C common grounding function(Korea Patent No 10-1132280), EMP protection device (Korea Patent No 10-1159718) are successfully developed , and enable to make perfect protection measures for delta power supply, T.T grounding system, and Lightning Electronic Magnetic Pulse (LEMP). All the staffs of GROUND Co., Ltd have performed "100% Lightning Protection Campaign" for 1000 days from Aug 8, 2011 until May3,2014 , should not make single failure of protection by no-defect production and perfect quality managing.

### Emergency Contact for ON-365 SYSTEM

With real-time monitoring of eca3G lightning protection system to check performance, operation, equi-potential and common grounding status, enable to maintain best condition of system quality under the completion status of installed stage, and provide 100% perfect lightning protection

Water&Wastewater Treatment Plant  
802 sites at 234 regions

ON-365 Call  
010-3651-3926

National Defense  
910 sites at 270 regions.

ON-365 Call  
010-3651-5156

ON-365 Call  
010-3651-8841

ON-365 Call  
010-3651-0162

Broadcasting stations & Communication stations  
706 sites at 205 regions

ON-365 Call  
010-3651-5302

Local government & National public authorities  
1,135 sites at 345 regions



### Contact

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Lightning Surge Protection Specialist  
GROUND Co., Ltd  
with 100% Lightning Protection Service,  
100% Protection Liability Assurance,  
100 years ever-growing dream

# GROUND



Support 365/24 system operation



USA Patent, PCT, Korean Patent, SIRIM Test



Credibility on the Technology acknowledged by clients



Product Liability Insurance Max. coverage-2bil won



3,553 sites per 15 years, 99.88% success record



100% Product Liability Insurance on lightning damages if any

# GROUND

100% Lightning Protection, 100% Product Liability Assurance  
 100 years ever-growing dream.  
 Lightning Surge Protection Specialist - GROUND Co., Ltd -

To provide perfect lightning protection service targeting for 100% success rate is the Mission of GROUND Co., Ltd.

## 3rd Generation Digital Lightning Protection Device **eca3G**

### Digital Lightning Protection Grounding Device mounted in the Mobile Vehicles



**eca3G**-3rd Generation Digital Lightning Protection Device- is the grounding device with integrated surge protection function which not need to be buried in the ground, can be mounted in the mobile vehicles, so that enable to provide rapid mobility for scientific battle equipment. **eca3G** can secure reference potential, common grounding and equi-potential status with utilizing neutral line (N) and system ground (PE,PEN) , so that enable to support rapid mobility for operation deployment or withdrawal .

### Testimonials from users ( army base )

- Signal Brigade, ○○○ Battalion, ○○ Company
- After installed eca3G, there is no electro-static or electric leakage shock.
- There is no communication quality down even under many access status.
- No need to install grounding rod, and rapid operation deployment can be possible.
- There is no difficulties from installation or withdrawal of grounding rod, no difficulties to secure optimum resistance
- \* Especially, very helpful during winter season when difficult to install grounding rod.

## Total real-time monitoring system for clients sites' lightning protection function **ON-365 SYSTEM**

### What is ON-365 SYSTEM

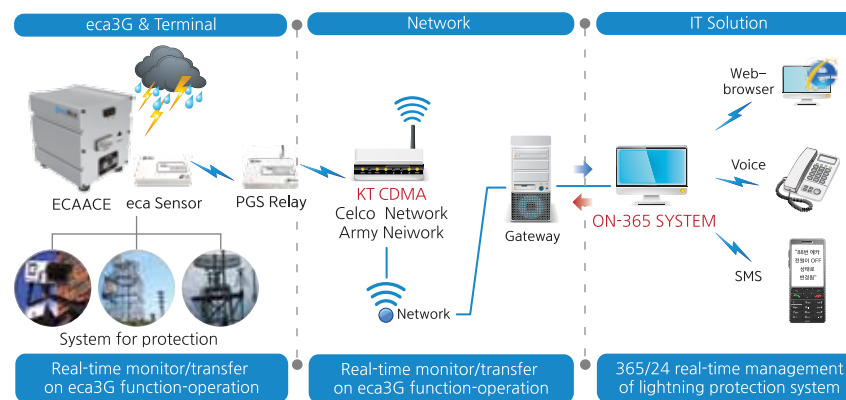
ON-365 SYSTEM is the total real-time lightning protection management system to ensure viability of 21C advanced electronic-information systems from lightning, real-time monitor the operation status of eca3G, maintain normal condition to provide perfect protection. Especially equi-potential, TN-C(common grounding) status can be real-time monitored, enable to maintain the completion status of installed stage, maintain best lightning protection, and support uninterruptable system operation without restriction or power-off by lightning.

### ON-365 SYSTEM, Function and Effect

Real-time monitor, report, transfer about functions of lightning protection device (eca3G), equi-potential, TNC(common grounding) status.

- ▶ Real-time monitor the status & function of eca3G, maintain the completion status of installed stage.
- ▶ Real-time monitor, report, transfer of lightning/surge intrusion to system, check eca3G performance and life.
- ▶ Real-time monitor, report, transfer of degradation status of modules of lightning surge protection device to predict degradation, enable to repair before failure.
- ▶ In case not normal equi-potential status or not normal TN-C status, ON-365 SYSTEM informs to manager and center (voice, sms) to secure normal status.
- ▶ In case power is off from distribution board to eca3G, ON-365 SYSTEM informs to manager and center as real-time, ensure to maintain lightning protection monitoring.

### ON-365 SYSTEM : Operational Concept



 Report Lighting-Surge Intrusion status	 Report Power ON / OFF	 OFF Report Module 1-2-3 function	 OFF Report equi-potential, common grounding
Monitor lighting surge intrusion, predict degradation from lightning impact	Monitor power supply to eca3G, maintain protection function	Module failure, mul-function from degradation, immediate change	Monitor equi-potential, common grounding status, Maintain common ground

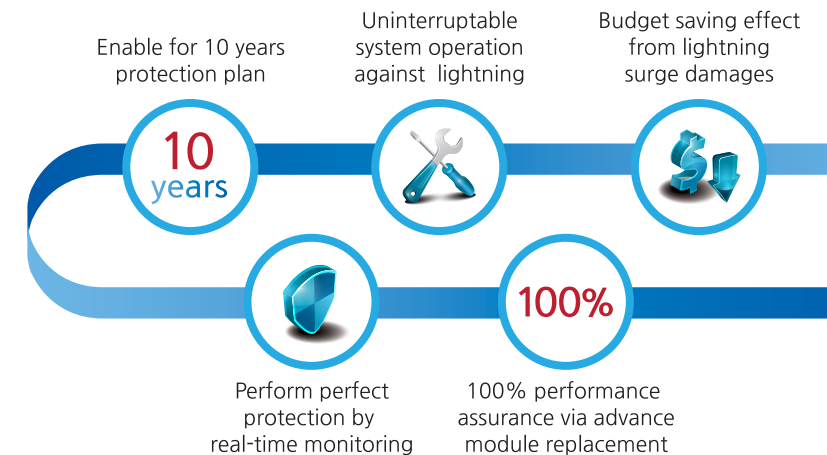
**100% Liability Assurance!**  
**10years Quality Guaranty!**  
**ECAACE(ECA-ACE)**

### ECA-ACE?



- ▶ Smaller, Lighter, Blocked design !
- ▶ Successful scientific modular design !
- ▶ Easy Module change by anybody !
- ▶ Modular parts are compatible, exchangeable, assembled easily !

### FEATURES



### Durable lifespan, Others

- ECA-ACE Case : 30 years over
- ECA-ACE MGB : 30 years over
- Module - C(E1) : 20~30 years
- Module - M(E2) : 10~15 years
- Module - G(E3) : 10~20 years
- MAIN PCB/LED : 10~15 years
- Counter Battery : 5 years
- Module, PCB change : 5~10 minutes
- Counter battery change : 5~10 minutes
- PL Insurance : max 2 bil Korean Won

### \* Condition for 10 years Quality Assurance

Lightning surge discharge : 20kV/10kA - 10 times/year (100 times/10yrs),  
 10kV/5kA - 50 times/year (500 times/10yrs), 6kV/3kA - 100 times/year  
 (1000 times/10yrs), 10 years assurance under total 6,500KA lightning surge



Detail information on ON-365 SYSTEM and ECA-ACE refer to homepage (www.ground.co.kr).