The Global Leader of Wireless Communication

Automatic Recovery Electric Leak Breaker

PI&C 프레미어정보통신
Premier Information & Communication

Contents

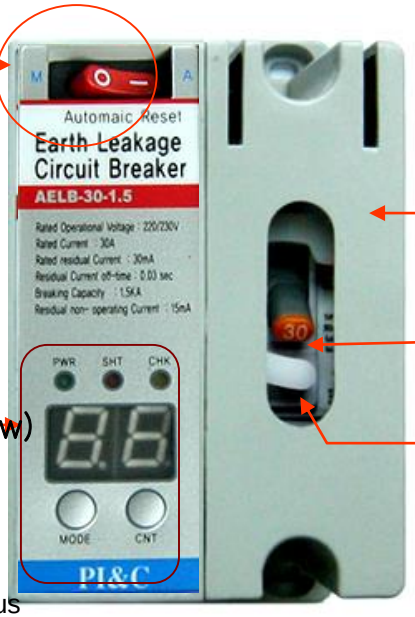
1. 1 Product Overview [High End Model]

As it analyzes causes of trip for Electric Leak Breaker (ELB) to periodically monitor status of system and power line, it is able to prevent any accident in advance. It can be applied to telecommunication repeater, internet repeater, power distribution for traffic signal controller, power distribution panel for street lights, UPS power supply, large scaled power facilities, etc.

➢Auto/Manual Selection
: **Manual Position: No Automatic Recovery**
Auto Position: Automatic Recovery Operation

➢Decision of Auto Recovery/Detecting Cause of Trip
: Status Memory & Recovery with Microprocessor

➢Operation Status Indicator (LED, FND Window)
: **PWR LED :** Power Status on Controller
SHT LED : Trip Status of ELB with Short Circuit/ Over Current
CHK LED : Temporary Yellow on Electric Leak
Indication Window (FND) : No. of Recovery, Trip Status
Mode : Trip Status Mode Setup Key
CNT : No. of Auto Recovery Setup and Alarm On/Off Key



➢ Controller

➢Protective Cover for ELB

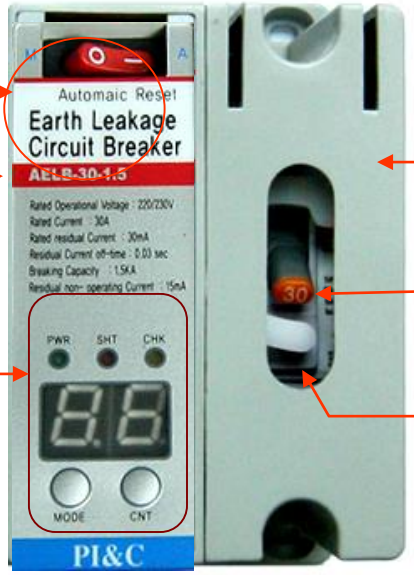
➢Automatic Recovery Motor and Arm

➢ Leak Test Button

➢Using Normal ELB

1. 2 Product Overview [IGR Model]

What is IGR Electric Leak Breaker?
It refers to the electric leak breaker that sensitively operates (18mA) under actual electric leak but insensibly against invalid component (90mA) by separating the current of leakage ground resistance (IGR), effective component on actual electric shock and electric fire and the ground capacitance between the electric wires and the ground or the current of leakage ground capacitance (IGC), invalid component from harmonic wave of the digital equipment power supply. (It can be use on the place with 10 % harmonic wave without malfunction.)



➢Auto/Manual Selection
: **Manual Position: No Automatic Recovery**
Auto Position: Automatic Recovery Operation

➢Decision of Auto Recovery/Detecting Cause of Trip
: Status Memory & Recovery with Microprocessor

➢Operation Status Indicator (LED, FND Window)
: **PWR LED :** Power Status on Controller
SHT LED : Trip Status of ELB with Short Circuit/ Over Current
CHK LED : Temporary Yellow on Electric Leak
Indication Window (FND) : No. of Recoveries, Trip Status
Mode : Trip Status Mode Setup Key
CNT : No. of Auto Recoveries Setup and Alarm On/Off Key

➢Protective Cover for ELB

➢Automatic Recovery Motor and Arm

➢ Leak Test Button

➢ Controller

➢ Using IGR ELB

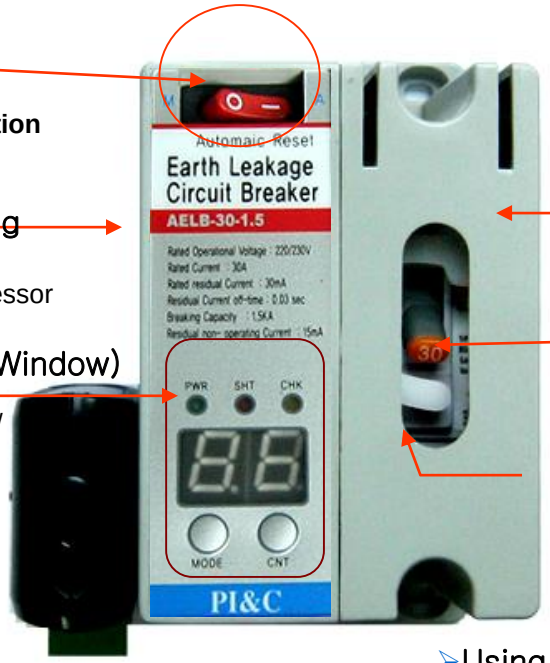
1. 3 Product Overview [Remote Control Model]

It is useful for tele-metering system, CCTV Monitoring Camera, Server Power Supply, UPS, and others that require monitoring and control on power supply of the system remotely.

➢Auto/Manual Selection
: **Manual Position: No Automatic Recovery**
Auto Position: Automatic Recovery Operation

➢Decision of Auto Recovery/Detecting Cause of Trip
: Status Memory & Recovery with Microprocessor

➢Operation Status Indicator (LED, FND Window)
: **PWR LED :** Power Status on Controller
SHT LED : Trip Status of ELB with Short Circuit/ Over Current
CHK LED : Temporary Yellow on Electric Leak
Indication Window (FND) : No. of Recovery, Trip Status
Mode : Trip Status Mode Setup Key
CNT : No. of Auto Recovery Setup and Alarm On/Off Key



➢Protective Cover for ELB

➢Automatic Recovery Motor and Arm

➢ Leak Test Button

➢Using KS ELB

➢ Controller

➢Remote Control Interface
: RS-232C (Default)
PLC Modem (Option)
ZigBee Modem/ CDMA Modem/ Ethernet Modem (Option)
RS-485 Modem (Option)

2. Functions and Characteristics

- Detecting Causes of Trip and Deciding Recovery Operation
  - Detecting Leak/Surge, Short Circuit and Overload
  - Selective Recovery for Surge/Leak
  - No Recovery against Overload and Short Circuit
- Automatic Recovery
  - Lightning: Automatic Recovery after 7~12 seconds from trip of ELB
  - Trip upon Leak: Recovery in the case of not leak by flowing current through the lines after blocking
  - Trip upon Short Circuit/Overload: No Recovery
- Operation Status Indication & Statistics (High End Model, Remote Control Model)
  - Power LED, Check LED, Short Circuit LED (Red for Short Circuit)
  - 8 Segment FND Display (Recovery Count View/Input, Trip Status and Electric Leak Indication)
  - As ELB Trip status is accumulated into memory, it can be used for maintenance data.
- Remote Control (Remote Control Model)
  - To remotely control trip status of ELB, power application status and ELB On/Off Status
- Automatic Recovery Statistics (High End Model, Remote Control Model)
  - To indicate automatic recovery count upon trip by trip types
- Safety/Protection Management
  - Auto/Manual Selection and Automatic Recovery Prevention
  - Flame Retardant Material, Surge Protection
- Separation of Recovery Controller and KS ELB
  - As it uses separate KS ELB, it plays as an ELB in case of Controller Failure.

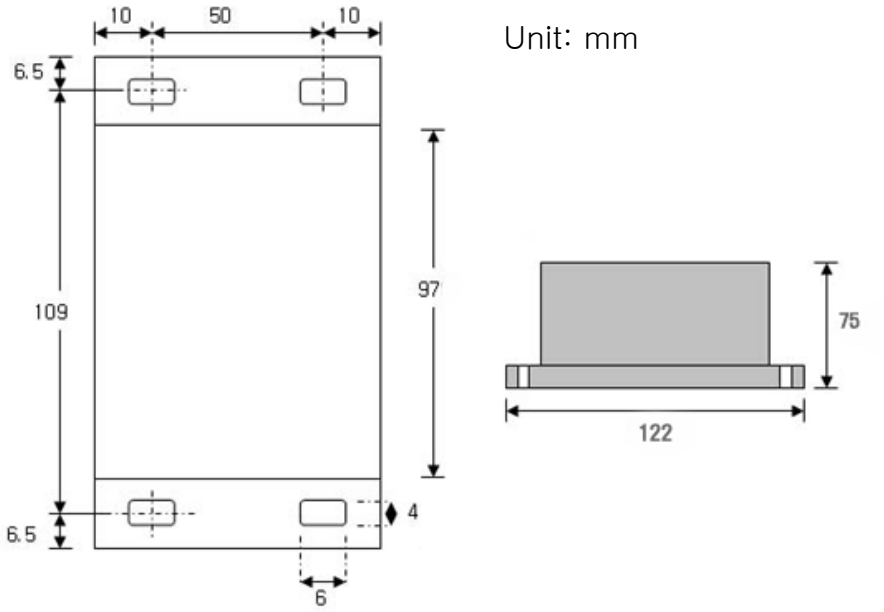
3. Specifications [1]

A. Electrical Specifications

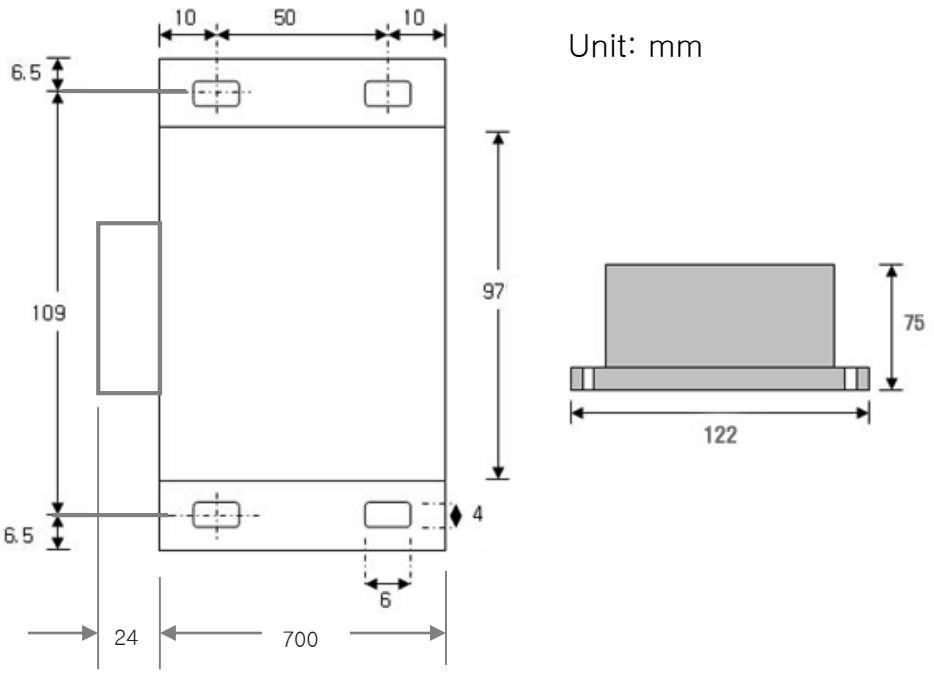
Items		Specifications		
Model		High End Model	Remote Control Model	
ELB	ELB Capacity	For 20A , 30A	For 20A , 30A	
	Rated Detection Current	30mA	30mA	
	Operation Time	0.03 sec	0.03 sec	
	Rated Non-operation Current	15mA	15mA	
	Rated Cutout Current	1.5KA, 2.5KA	1.5KA, 2.5KA	
Recovery Controller	Driving/Direction	Geared Motor/Bidirectional		
	CPU	Microprocessor + Memory		
	LED	Power, Short, check LED	Power, Short, check LED	
	Status Memory	Leak, Short, Recovery Count	Leak, Short, Recovery Count	
Recovery Time		Within 7 seconds		
Remote Control		None	- RS-232C(Default) RS-485 - PLC, ZigBee, CDMA, Ethernet Modem	
			Remote ELB On/Off	
Size (W*L*H) mm		70 mm x 122mm x 75mm	73 mm x 122mm x 75mm + Modem Size	
Power Supply		220V 60Hz		
Power Consumption		2.5W(Normal), 4.2W(Recovery)	2.5W(Normal),4.2W(Recovery)	
Operation Temperature		-30℃ ~ 80℃, Humidity 90%		

3. Specifications [2]

B. Size



[IGR Model and High End Model]



[Remote Control Type]

4. Applications

- Wired/Wireless Unmanned Repeater

  Various kinds of repeater and security equipment such as wireless communication, Wibro, Internet Repeater, CATV Repeater, etc.

- Internet Equipment including Server/ Home Automation Equipment

  Minimization of downtime due to long time discharging of backup battery or UPS failure

- Manufacturing Facility

  Prevention of potential accident due to power feeding without checking leak or overload, fire from obsolete or fatigue wire

- Power Equipment for Street Lights, Traffic Lights, CCTV

  Prevent electric shock due to leak, and accident사고, Convenient Maintenance

  Centralized management of the whole status with remote control model

- Frequent Surge and Wet Region

- Remote Measuring Instrument and Meteorological Measurement

  Immediate operation of measuring instrument with a specific number of recovery trials at 10 seconds after surge

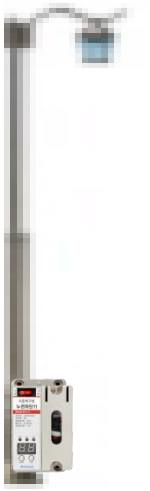
- Firefighting Equipment

  Minimization of physical/material damages due to recovery without analysis on causes of leak, over current, short circuit, and others for commercial equipment

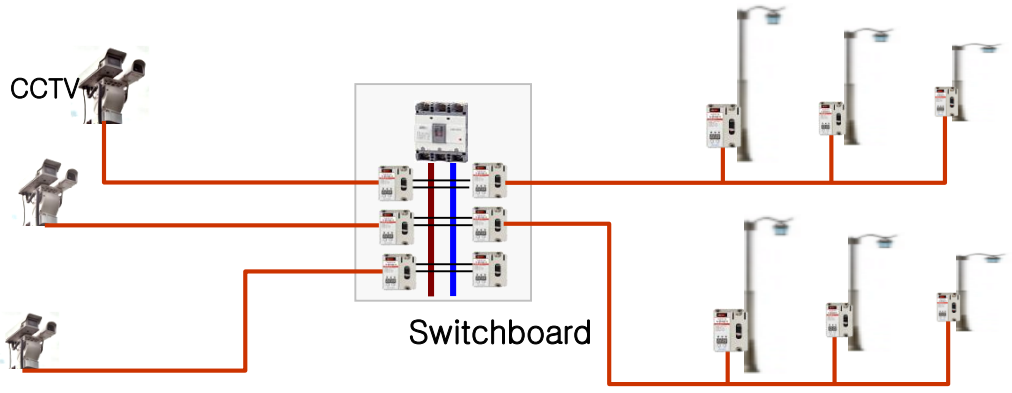
5. Application Example

A. Stand Alone Type

When automatic recovery ELB is installed on CCTV camera, street lights/safety lights, ELB is recovered by itself with self-determination in case of surge or temporary leak (max 99 times]. (It is recovered in case of short circuit or overload.)



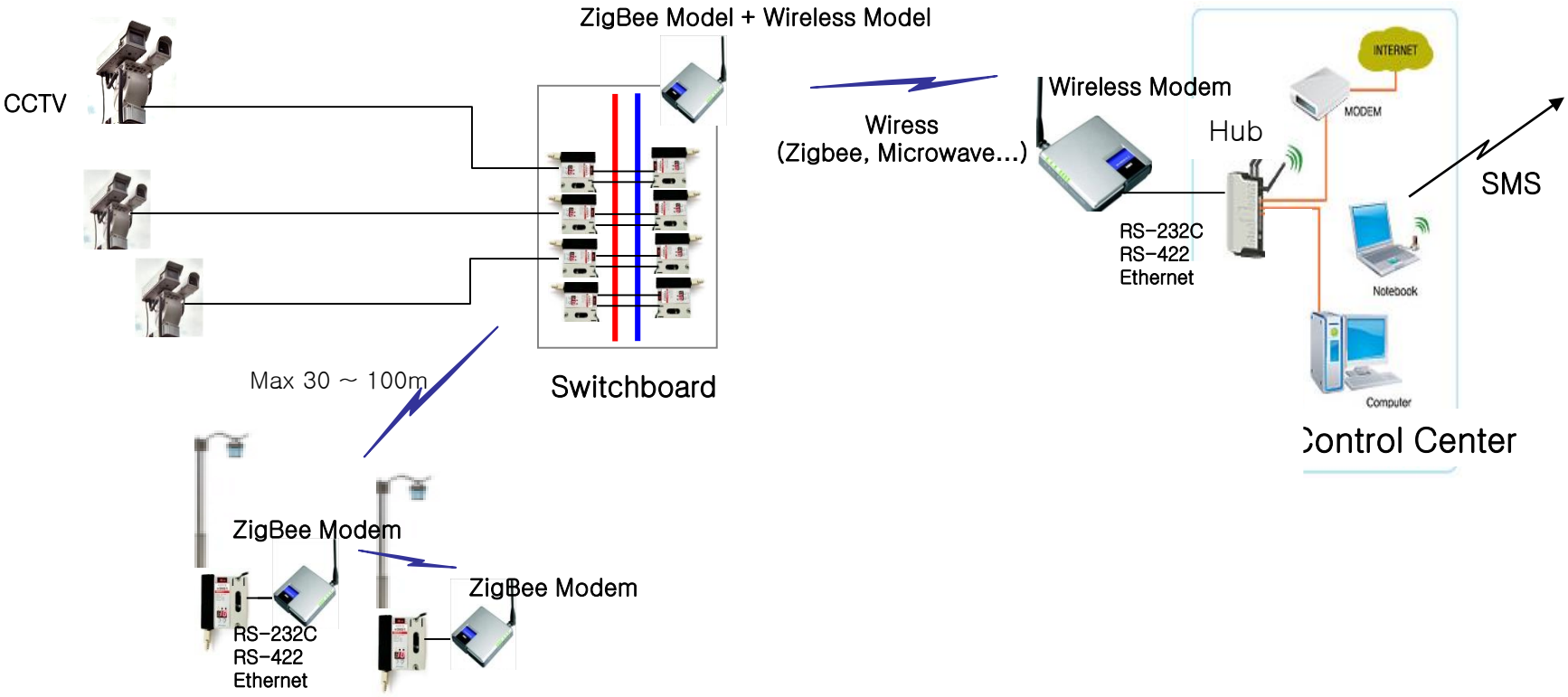
Automatic Recovery



5. Application Example

B. Remote Control Type (ZigBee, Wireless Device)

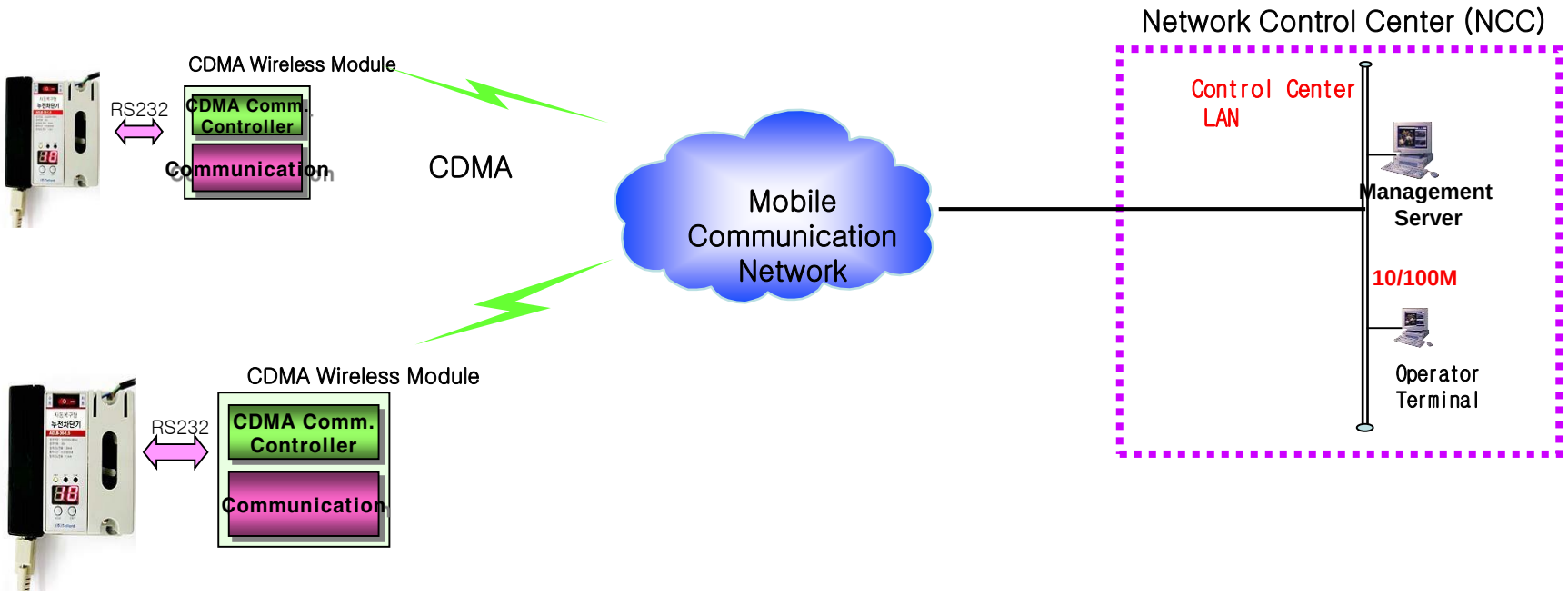
By attaching ZigBee RF Module to the remote control type automatic recovery ELB, it is possible to control ELB at remote sute.
(It is possible to view status of ELB and turn it On/Off at remote site.)



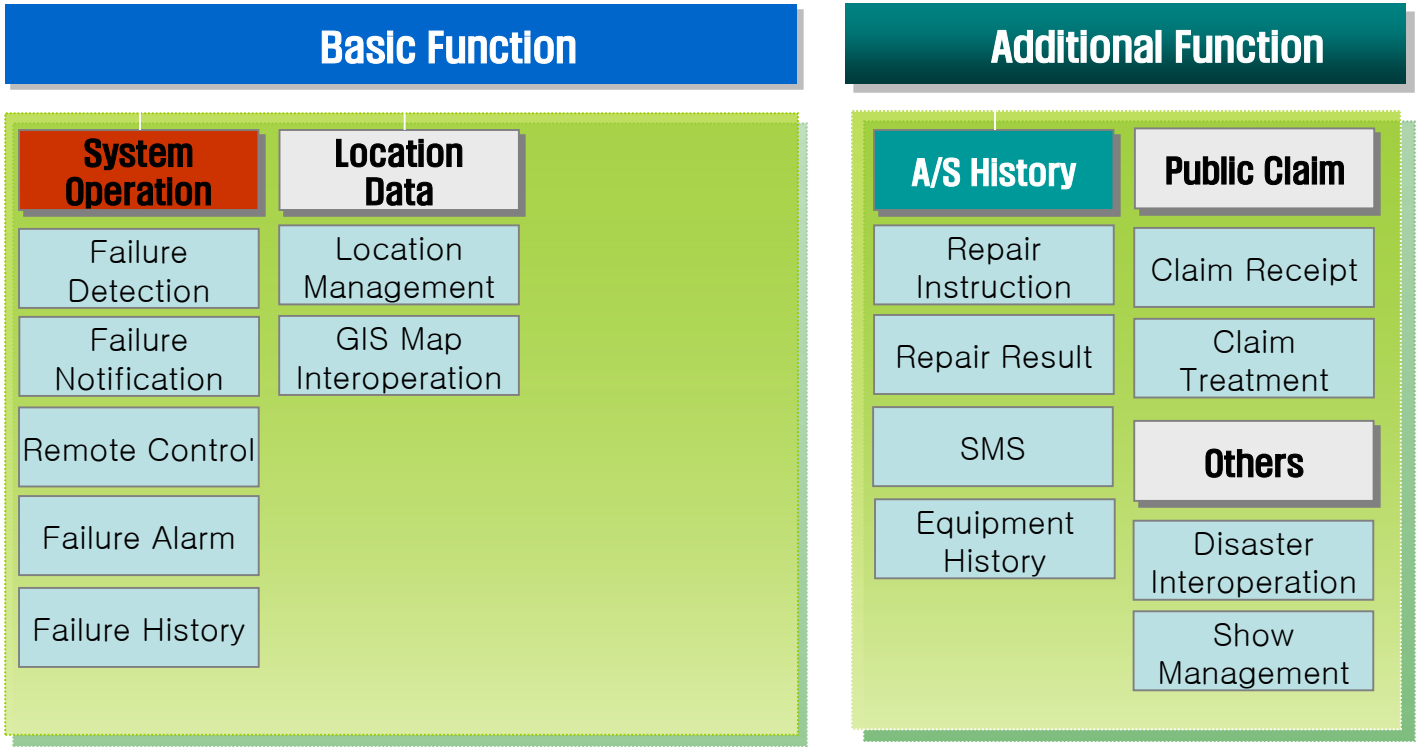
5. Application Example

C. Using CDMA Wireless Network

It is possible to view status of and turn On/Off the ELBs installed nationwide using Automatic Recovery with CDMA module and **CDMA communication network.**
(Although automatic recovery does not operate in case of short circuit or overload, it is possible to recover ELB automatically or manually upon determination of the operator.)



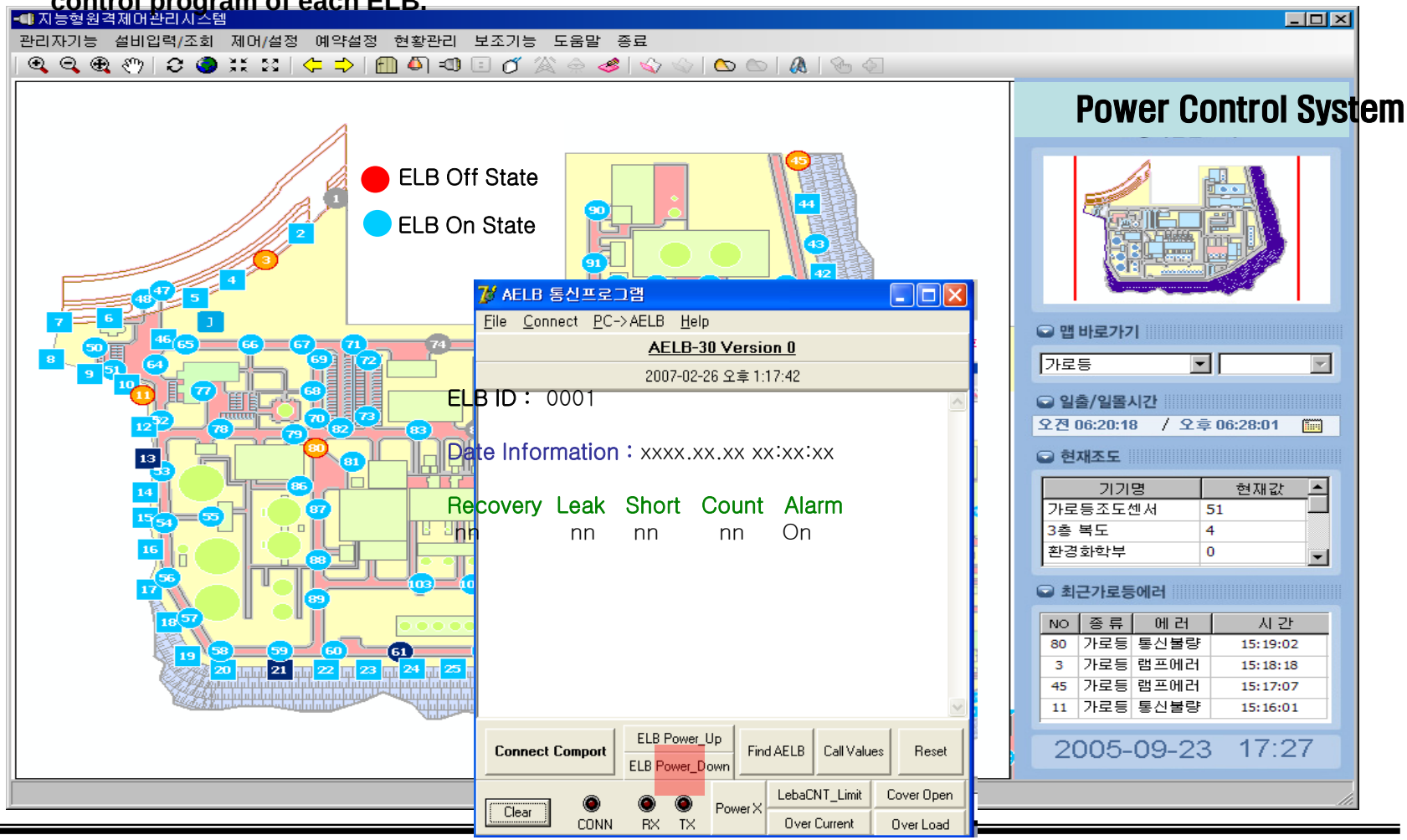
6. S/W Diagram (Remote Control Type)



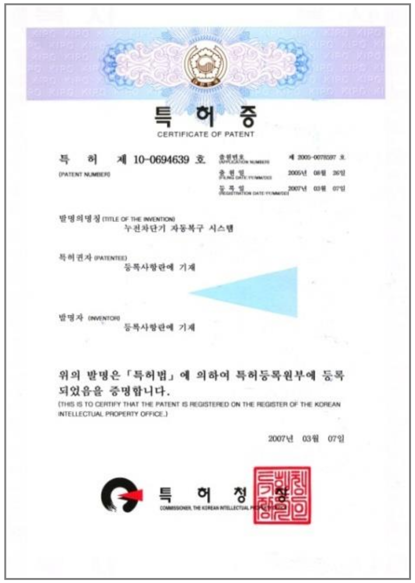
- Control protocol is provided for remote control model basically.
- Web based control program needs additional development cost.
- Function may be added or deleted upon requirements.

6. S/W Configuration Diagram [Remote Control Type] [Cont']

When clicking ELB No. on the map, it is possible to view status information of and control ELB through control program of each ELB.



7. Test Results and Patents



특 허 증
CERTIFICATE OF PATENT

특 허 제 10-0694639 호
(PATENT NUMBER)

출원번호 (APPLICATION NUMBER) 제 2005-0078297 호
출원일 (FILING DATE:YY/MM/DD) 2005년 08월 26일
등록일 (REGISTRATION DATE:YY/MM/DD) 2007년 03월 07일

발명의명칭 (TITLE OF THE INVENTION)
누전차단기 자동복구 시스템

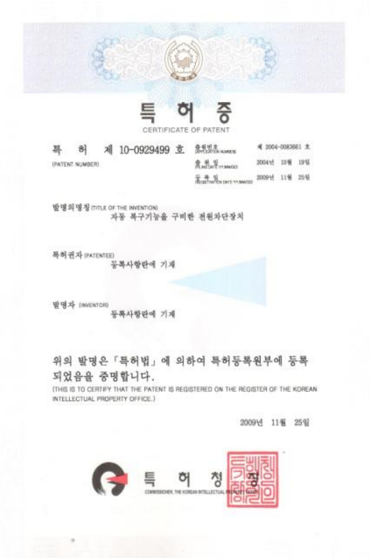
특허권자 (PATENTEE)
등록사항란에 기재

발명자 (INVENTOR)
등록사항란에 기재

위의 발명은 「특허법」에 의하여 특허등록원부에 등록되었음을 증명합니다.
(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

2007년 03월 07일

특 허 청 장
COMMISSIONER, THE KOREAN INTELLECTUAL PROPERTY OFFICE



특 허 증
CERTIFICATE OF PATENT

특 허 제 10-0929499 호
(PATENT NUMBER)

출원번호 (APPLICATION NUMBER) 제 2004-0083661 호
출원일 (FILING DATE:YY/MM/DD) 2004년 10월 19일
등록일 (REGISTRATION DATE:YY/MM/DD) 2009년 11월 25일

발명의명칭 (TITLE OF THE INVENTION)
자동 복구기능을 구비한 전원차단장치

특허권자 (PATENTEE)
등록사항란에 기재

발명자 (INVENTOR)
등록사항란에 기재

위의 발명은 「특허법」에 의하여 특허등록원부에 등록되었음을 증명합니다.
(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

2009년 11월 25일

특 허 청 장
COMMISSIONER, THE KOREAN INTELLECTUAL PROPERTY OFFICE

[별지 제2호서식]
접수번호 : 20100122 - 0034

전 기 용 품 안 전 인 증 서
Electrical Appliances Safety Certificate

안전인증번호: (Certificate No.) HJ05003-10024A
제조업자명: (Manufacturer) 주식회사 라인텍
대표자명: (President) 김호
제조공장의소재지: (Factory Address) 충북 진천군 백곡면 구수리 472번지 외 1필지
제품명: (Product) 누전차단기(자동재폐로용)
기본모델명: (Basic Model) AELB-30
정격: (Rating) 220 V~, 30 A, 30 mA, 0.03 s, 1.5kA
파생모델명 (Series Model):
AELB-20
RAELB-30
RAELB-20

적용기준: (Standard) K60947-2 K60947-1

「전기용품안전 관리법 시행규칙」 제6조제2항에 따라 위의 전기용품에 대하여 안전인증서를 발급합니다.
We Issue Electrical Appliances Safety Certification as above product by Article 6 Section 2 of the Electrical Appliances Safety Control Law Enforcement Regulation.

2010 년 (Year) 1 월 (Month) 29 일 (Day)

한 국 전 기 전 자 시 험 연 구 원 장
Korea Electric Testing Institute

※ 본 인증서는 「전기용품안전 관리법」에 따른 전기제품 안전성확인에 한정된 것이며, 그 밖의 다른 법률이 적용되는 제품의 경우에는 해당 법률에 따라 추가적으로 인증·허가 등을 받아야 합니다.

첨부서류 1. 안전관리부품 및 제정목록 (List of Critical Components)
2. 기본모델·파생모델의 내용 (General Descriptions of Certified Products)
3. 전기용품안전인증의 변경현황 (Status of Certificate Revisions)

시험성적서 2009TS02644 1/7

"한국전기연구원의 확인 및 KERI 로고가 없는 용지를 사용한 사본은 무효임"

시험종류 성능확인시험(항목시험)
제 품 명 누전차단기
형 식 명 RAELB-30
정 격 단상 2선 220 V 30 A 30 mA 0.03 s 1.5 kA
적용규격 K 60947-2:2006.05
접수번호 TR0095029000(2009.11.25)
신 청 자 프리미어 정보통신
경기도 성남시 분당구 야탑동 360-1 신영시그마3 A-1402
제 작 자 (주)라인텍
경기도 광명시 하안동 201 시범공단관리동 210호
시험일자 2009.11.25 ~ 2009.12.18
발행일자 2009.12.24
시험결과
항목시험으로써 정전기방전내성시험, 고주파방사내성시험, 급과도버스트내성시험, 서지내성시험, 고주파전도내성시험, 전원서지전류내성시험 및 서지전류내성시험을 실시한결과 양호함

시험결과는 시험을 실시한 시료에만 해당됨
KERI의 서면승인 없이 시험성적서의 일부만을 복사하여 사용할 수 없음

시험성적서 구성페이지 : 성적서 (7), 사진 (3), 회로도 (0), Oscillograms (0), 도면 (0), 첨부 (0)

승인 (기술책임자) 박 성 균
확인 정 진 상
작성 안 건 현

한국전기연구원장

KERI 한국전기연구원 Korea Electrotechnology Research Institute
Tel : +82-31-8040-4114, Fax : +82-31-8040-4499, www.keri.re.kr
공인시험기관 - KOLAS (한국인정기구) 인정

DF-CA-21/08/02