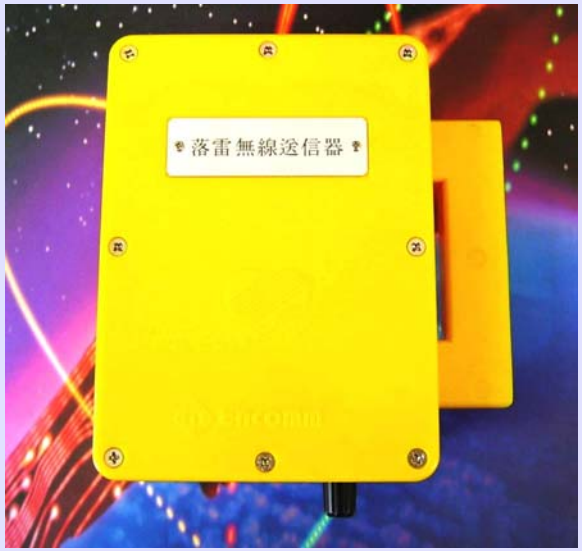
Wireless Lightning Warning System
(WLS 2002)

ENCOMM Patent No. 0388361



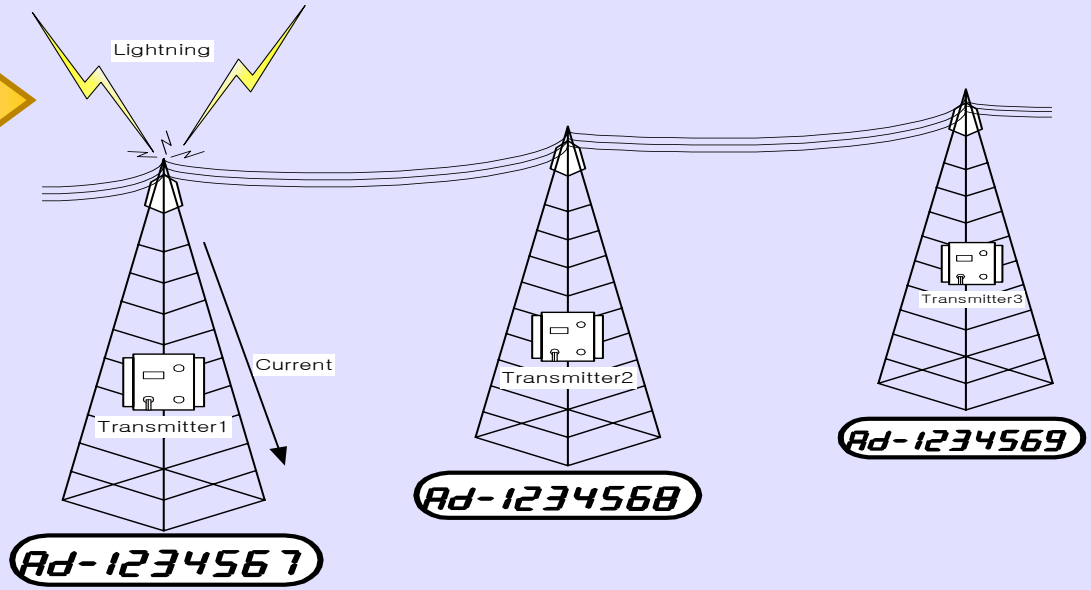
[Transmitter]

[Receiver]

The system detects lightning strikes on transmission lines and transmits a warning by Radio Frequency

KERI Korea Electrotechnology Research Institute

MIC



This system can be utilized to detect lightning strikes or any infrastructure

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Necessity of WLS 2002

1) Features of WLS 2002

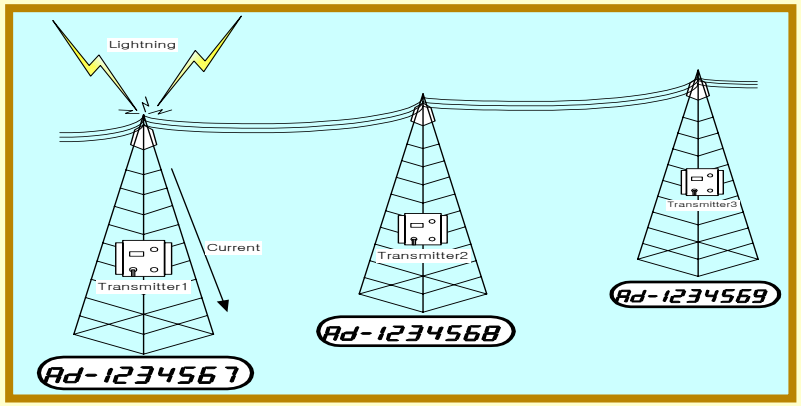
It promptly senses lightning strikes on the power lines and transmission towers by using the lightning current detection circuit in a small transmitter situated on the top of power tower, and it sends the number of lightning strikes and the ID. of the tower to patrols through the receivers.

2) The necessity for developing WLS 2002

The conventional way (Flag signal) has had several drawbacks such as high maintenance, difficult observation, and the loss of labor.

Identifying these concerns, Encomm has fully worked on the new way of detecting lightning strikes by Radio Frequency.

This system is being utilized by KEPCO(Korea Electric Power Corporation) to check for damage caused by lightning to transmission towers and other facilities by the lightning.



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Transmitter

WLS2002 is installed on the transmission tower. When the tower is struck by lightning , the transmitter transmits a RF signal. The receiver displays information, which will be used to discover the exact location of a lightning strike.

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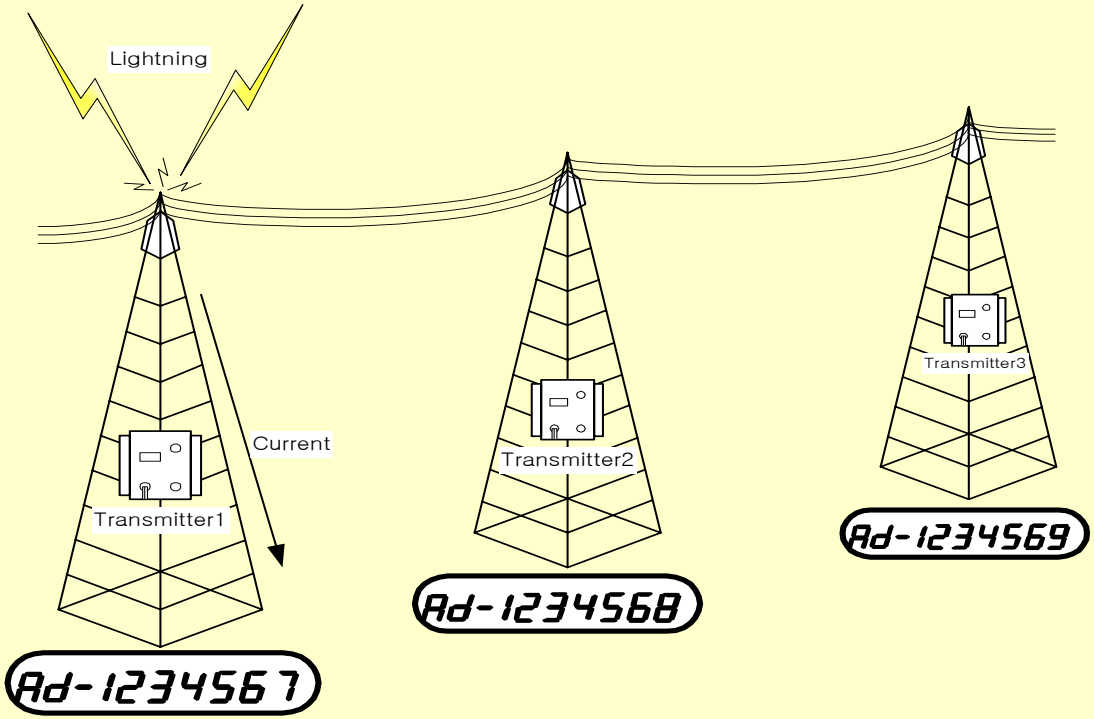
Application



A. The transmitter1 is 1234567, Transmitter2 is 1234568, and Transmitter3 is 1234569.

B. When lightning strikes transmission tower #1, the transmitter on the tower transmits the ID number (1234567) of #1.

C. An inspector can easily recognize the transmission towers struck by lightning in real-time.

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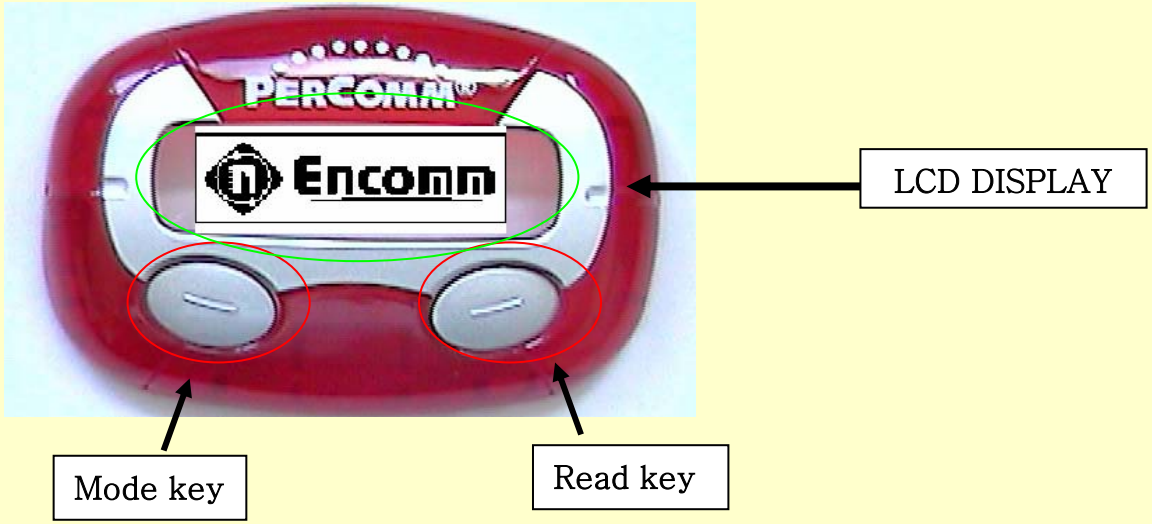
Ratings

Type	WLS 2002	With arc-horn
		Without arc-horn
Rated Voltage (kV)	66/154 / 345 / 765	
Structure Size	Angle	~ L250 X L250 mm
	Pipe	~ Φ620 mm

■ **Applied Standard : Technical Specification Of KEPCO**

Receiver

❑ Initial Display



[KEY FUNCTIONS]

- Mode Key : Setting Menu and confirming.
- Read Key : Reading Message and choosing function

[LCD DISPLAY]

- Graphic LCD Module displays the received messages

❑ Power ON

– When the receiver turns on, it displays Encomm Logo for 4 seconds, and then it goes to initial display.

- On the initial state, MENU mode can be started by pressing the Mode key for 2 second
- Pressing the Read key, it advance you to the next menu
- Pressing the Mode key, it will return you to the main menu
- The display is returned to the main menu by pressing the read key
- You can then alter the values on the display
- After altering the values, you can confirm the values by pressing the Mode key
- After confirmation, the display returns to the Main Menu

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❑ MENU

* CLEAR ALL MENU :

1. Removes all unnecessary messages except for unopened messages

* POWER OFF MENU :

1. Entering into battery saving mode, LCD and RF module are power off
2. Pressing the Mode key, you will turn on the receiver

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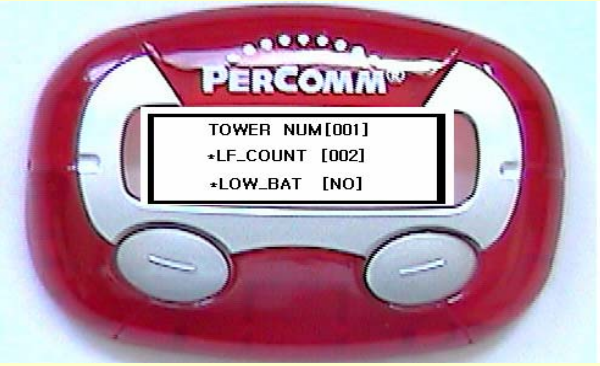
❑ Reading messages

– When the messages are received, press the ‘ Read Key ’

[Display of unread messages]

[Negative]

[Display of read messages]



* TOWER NUM :: ID. of tower
* LF_COUNT :: No. of lightning strike
* LOW_BAT :: Status of Battery in the transmitter

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Electric Specification

	Transmitter	Receiver
Frequency	447.2625MHz	447.2625MHz
Distance	1Km(min) at 10mW	-
Mod/Demod	NRZ-FSK	NRZ-FSK
Transmit time	3days/hit	-
Battery	3.6V	1.5V(AAA)
Antenna	Helical	Loop
Power Consumption	60mA (operation), 50uA(standby)	
Output Power	10mW (Optional)	-
Dimension	132(L) x 145(W) x 46(H)mm	small
Operation Temp.	-20℃～60℃	-20℃～60℃

■ Applied Standard : Technical Specification Of KEPCO

KEPCO : Korea Electronic Power Corporation

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Features

- Available for all transmission voltages and all types of power transmission towers
- Repeated usability with a long lifetime (10years(min) at standby mode)
- Auto reset after operation
- Easy to use and operate to set
- Low Power Consumption

Cautions

Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC compliance Information

This device complies with part 15 of FCC Rules.
Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received.

Including interference that may cause undesired operation.

Information to User

This equipment has been tested and found to comply with the limits for a Class B digital device, Pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio Frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

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