

**SphelarVoice™** is a battery-free wireless audio optical information system not by electromagnetic wave, but by diffused infrared. At first, this system converts audio signal into pulsed digital signal by PWM modulation to turn on or off LEDs. In another word, this electric signal drives LED light source to emit light signal. Such a light signal (on infrared ray) is received as an audio signal by photovoltaic solar cells in terminal unit, and is converted into electric signal to have a speaker sound. It can works as simultaneous performer of converter, driving unit, receiver, and speaker. As a result, infrared ray signal is converted into audio signal without power in this battery-free and wireless system.

**SphelarVoice™** comprises 3 units as the following;

- I : Power driving unit ( or power source unit)
- II : LED light source unit
- III : Terminal unit

Each unit is described as below;

**I : Power driving unit**

Power source unit works to take the digital audio source (MP3 ) written on memory card (SD card) into audio control server & driver (CPU) for pulse -width modulation (PWM), so that data on infrared ray is transmitted to the LED light source unit. In addition, it is possible to rewrite digital audio signal in a file and control a Power driving unit by way of LAN.

**Specification in brief (temporary)**

- 1 : PWM modulation transform
- 2 : Audio memory device
  - : SD card ( High speed type of PANASONIC 512MB 20M/S recommended)
- 3 : Audio data record system
  - : MP3 system
- 4 : Network function
  - : Replay, stop, repeat, and volume control of audio data are available.
  - : Rewrite and change of audio data also are available.
- 5 : LED light source unit
  - : Output terminal is of 1 system
  - : Use the specific LEDs.
- 6: Input of audio signal from outside
  - : 1 system of audio input is available from outside(RCA)
  - : This input is the most preferable for output among all inputs.
- 7 : Function to stop output
  - : Output to the LED light source unit will be stopped if there is no audio signal input over 30seconds.
- 8 : Outer dimension
  - : Width(290) x Depth(225) x Height (70mm) unit: mm
- 9 : Power supply
  - : Power source, AC 90V ~ 110V 50/60Hz



Fig1. Power driving unit

## II : LED light source unit

This unit is used to radiate the modulated infrared ray from driving unit into the air. It comprises 10 blocks as a unit. A block is constructed of 60 LEDs on the substrate with square size of 64mm x 64 mm. All these LEDs are arrayed with pitch of 8 mm x 8mm in a block.



① LED light source substrate of 64 mm square

Fig.2 LED light source unit

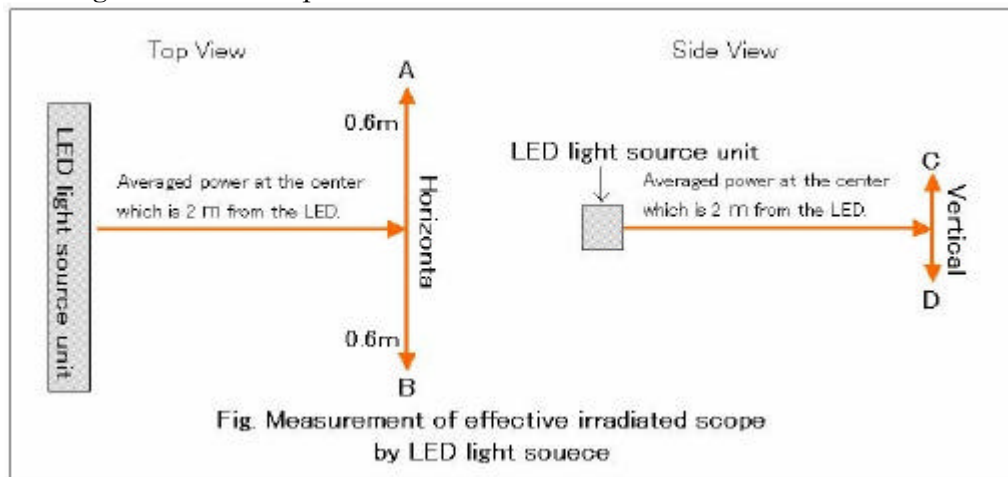
Specification in brief (temporary)

### 1 : LED

- ① : Model No.KED861M5 is with  $\lambda p=865\text{nm}$ , non-spherical lens of  $\varnothing 5$  diameter, and half viewing angle of 10 degrees.

### 2 : Effective scope of irradiation

- ① : The effective irradiated scope can be projected on the elliptic figure with long axis of more than 1.2 m and short axis of more than 0.5m located at the position which is 2m far from LED light source unit.
- ② : Averaged light power of the irradiated center is more than 0.8mW/cm<sup>2</sup>.
- ③ : Light irradiation power is more than 0.5mW/cm<sup>2</sup> on the long axis (H)
- ④ : Light irradiation power is more than 0.5mW/cm<sup>2</sup> on the short axis(V)



### 3 : Outer dimension

- ① : Width of 750mm, depth of 77mm, and height of 106mm (the fixing and spiky-materials are not included.)

### 4 : Conditions

- ① : Operating temperature and humidity of 0°C~40°C and 10%~80%RH
- ② : Storage temperature and humidity of -10°C~40°C and 10%~80%RH

## III : Terminal unit

The audio signal is transmitted on the infrared ray from audio information broadcasting system, being converted to audio by small-sized audio optical information terminals that are offered to the attendant hearers. These terminals can convert infrared ray signal to audio one without battery, and are available to satisfy customer's requirements on design and so on.

## IV : Notice

There may be items to be modified without notice.