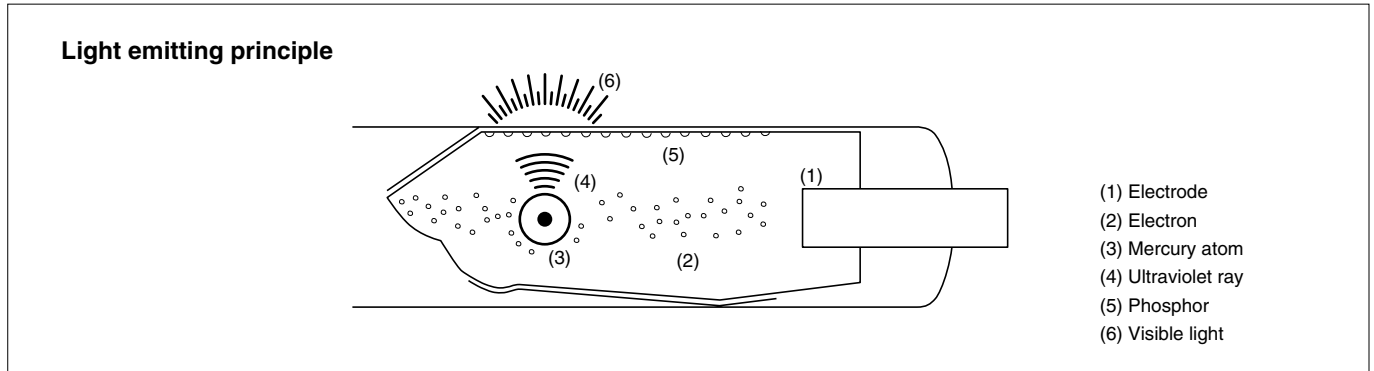


## ●Light emitting principle

Rare gas (Ne-Ar mixed gas) and appropriate amount of mercury vapor are sealed in the cold cathode fluorescent lamp. When high electric field is applied to the lamp, electrons are accelerated to cause elastic collision with rare gas, with mercury

atoms by adjusting the speed, and then for the radiation of ultraviolet ray (primarily 253.7 nm) is emitted.

Phosphor absorbs the ultraviolet ray and is excited to convert it into visible light by energy conversion.



## ●Emission wavelength of invisible light

● The CCFL always emits UV rays (313,365 nm) in addition to visible light. See Comparison of UV Emissions on page 8. Note that UV emissions adversely affect the backlight components (reflector, light guide, etc.). See Chapter 6, "Fall of Luminance of CCFL and System," page 15, for further details.

● The CCFL emits infrared rays (912 nm) in the initial lighting period in addition to visible light. The IR wavelength is almost the same as the remote controller wavelength, possibly causing malfunction of the remote controller. This is particularly evident in the low temperature start-up. Contact our Engineering Dept for effective countermeasures.

## ●Ambient Temperature (Lamp Surface Temp.) Characteristics

● As mercury vapor pressure is largely depended on the ambient temperature (lamp surface temperature), the fluorescent lamp has its ambient temperature (lamp surface temperature) characteristics.

**Ambient temperature (surface temperature) low:**

Emission efficiency becomes low because of low excitation caused by shortage of mercury vapor pressure.

**Ambient temperature (surface temperature) high:**

Emission efficiency becomes low because radiated ultraviolet ray is reabsorbed by outer mercury.

In general, the thinner lamp, makes the re-absorption ratio lower, therefore the optimal temperature becomes higher.

● If the heat dissipation state of a system is bad, lamp surface temperature will become higher than the optimal value, and luminance will be lowered. Cautions are required, when driving with large current, or when using many lamps together.

\* Although luminance can be increased by lowering gas pressure, even when the heat dissipation state is not good, it will result in shorter life.

● If the heat dissipation state of a system is too good, lamp wall

temperature will become lower than the optimal value, and luminance will fall. Cautions are especially required, when lamp is thin or the drive current is low.

\* Regarding the luminance fall under a good heat dissipation state, although the increase of luminance can be achieved by increasing the gas pressure, it will result in the increase of the lamp electric power.

