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問1

1. A reference voltage generating circuit comprising:
a first resistance (10) having one terminal supplied with a first potential, and having another terminal connected to an output terminal for outputting a reference voltage;
a second resistance (11) having one terminal supplied with a second potential, and having another terminal connected to the output terminal;
a first bipolar transistor (15) of a first polarity, the first bipolar transistor (15) having a collector supplied with the first potential, and having an emitter connected to the output terminal;
a second bipolar transistor (16) of a second polarity different from the first polarity, the second bipolar transistor (16) having a collector supplied with the second potential, and having an emitter connected to the output terminal;
a first bias generating circuit (17 and 18) configured to generate a first direct-current bias voltage and supply the first direct-current bias voltage to a base of the first bipolar transistor; and
a second bias generating circuit (19 and 20) configured to generate a second direct-current bias voltage and supply the second direct-current bias voltage to a base of the second bipolar transistor.

2. The reference voltage generating circuit according to claim 1, wherein
the first direct-current bias voltage is lower than the reference voltage, and has a value equal to or more than a voltage value obtained by subtracting a forward voltage between the base and the emitter of the first bipolar transistor from the reference voltage, and
the second direct-current bias voltage is higher than the reference voltage, and has a value lower than a voltage value obtained by adding a forward voltage between the base and the emitter of the second bipolar transistor to the reference voltage.

問2

OCT (Optical Coherence Tomography) for forming an image of a cross section of an object to be measured using a phenomenon of interference of a light beam such as a laser or the like is now drawing attention. OCT does not have human body invasiveness. Thus, OCT is expected to be used in a wide range of applications in a medical field and a biochemical field. In an ophthalmological field, for example, devices for forming cross-sectional images of the fundus of an eye, a cornea, and the like have already been put to practical use.

Patent Document 1 discloses a device to which OCT is applied. This device is provided with a measuring arm that scans an object by a rotary scanning mirror (galvanometer mirror), a reference arm on which a reference mirror is mounted, and an interferometer at an exit of the device which interferometer analyzes the intensity of interference light of luminous fluxes from the measuring arm and the reference arm by using a spectroscope. Further, the reference arm is configured to change the phase of the reference light to a discrete value stepwise.

The device disclosed in Patent Document 1 uses a method of so-called Fourier domain OCT. The device images a shape in a direction of depth

(z-direction) of an object to be measured by irradiating the object to be measured with a beam of low-coherence light, generating interference light by superimposing the light reflected from the object to be measured and reference light on each other, obtaining a spectral intensity distribution of the interference light, and subjecting the spectral intensity distribution to a Fourier transform.

問3

A remote communication device is connected to a monitoring unit via an arbitrary appropriate network such as a cellular network or the Internet. It is needless to say that the network includes a public switched network, a radio link, cable connection, short message service, and the like as other alternatives.

A remote monitoring device requests an object to be monitored to identify the object himself/herself, and next instructs the person to perform a specific monitoring or measuring procedure. The object is informed how to perform a measurement and how to transmit a result of the measurement to the monitoring device.

A typical example of the monitoring unit is a remote monitoring unit, which can be disposed on a hospital side in the network connection. However, this is a mere example. Procedure operation performed by use of the monitoring unit may be performed at a convenient position between a patient and a medical specialist. Typically, when a patient connects using a digital device, the user may perform various kinds of procedure operations between the user and the remote unit. In another form, the user manually connects using a telephone. In this case, the patient performs the procedure at a remote place.