What is claimed is:

1. An encoder comprising:

tracks respectively having reflectors arranged along a measurement direction;

a point light source configured to emit diffusion light to the tracks;

one first light receiving array configured to receive light which is reflected at a track having an absolute pattern of said tracks, and another first light receiving array configured to receive light which is reflected at a track having an absolute pattern of said tracks, wherein the first light receiving arrays ~~which~~ are arranged across the point light source in a width direction substantially ~~vertical~~ perpendicular to the measurement direction;

a second light receiving array arranged in the width direction between the one first light receiving array and the point light source, and configured to receive light which is reflected at a~~the~~ track~~s~~ having a first incremental pattern of said tracks; and

a third light receiving array arranged in the width direction between the another first light receiving array and the point light source, and configured to receive light which is reflected at a~~the~~ track~~s~~ having a second incremental pattern of said tracks, a ~~which~~ pitch of which is longer than a pitch of the first incremental pattern.

~~2. The encoder according to claim 1, wherein~~

~~the one first light receiving array and the another first light receiving array are configured to receive light which is reflected at each of two tracks having an absolute pattern among the tracks.~~

2~~3~~. The encoder according to claim 1 ~~or 2~~, wherein

the measurement direction is a circumferential direction centering a central axis, and

the third light receiving array is arranged on a side closer to the central axis than the second light receiving array.

3~~4~~. The encoder according to ~~any one of~~ claim~~s~~ 1 or 2~~to 3~~, further comprising:

~~second~~ two light amount adjusting light receiving elements configured to control an amount of light received at the one first light receiving array and the another first light receiving array, the ~~second~~ two light amount adjusting light receiving elements being arranged on both side~~s~~ of the third light receiving array in the measurement direction.

~~5~~4. A motor with an encoder comprising:

a linear motor in which a movable element moves with respect to a~~n~~ stator, or a rotary motor in which a rotor moves with respect to a~~n~~ stator; and

the encoder according to any one of claims 1 to 34, configured to detect at least one of a position and a speed of the movable element or the rotor.

56. A servo system comprising:

a linear motor in which a movable element moves with respect to an stator, or a rotary motor in which a rotor moves with respect to an stator;

an encoder according to any one of claims 1 to 34, configured to detect at least one of a position and a speed of the movable element or the rotor; and

a controller configured to control the linear motor or the rotary motor based on a result detected by the encoder.

What is claimed is:

1. An encoder comprising:

tracks respectively having reflectors arranged along a measurement direction;

a point light source configured to emit diffusion light to the tracks;

one first light receiving array configured to receive light which is reflected at a track having an absolute pattern of said tracks, and another first light receiving array configured to receive light which is reflected at a track having an absolute pattern of said tracks, wherein the first light receiving arrays are arranged across the point light source in a width direction substantially perpendicular to the measurement direction;

a second light receiving array arranged in the width direction between the one first light receiving array and the point light source, and configured to receive light which is reflected at a track having a first incremental pattern of said tracks; and

a third light receiving array arranged in the width direction between the another first light receiving array and the point light source, and configured to receive light which is reflected at a track having a second incremental pattern of said tracks, a pitch of which is longer than a pitch of the first incremental pattern.

2. The encoder according to claim 1, wherein

the measurement direction is a circumferential direction centering a central axis, and

the third light receiving array is arranged on a side closer to the central axis than the second light receiving array.

3. The encoder according to claim 1 or 2, further comprising:

two light amount adjusting light receiving elements configured to control an amount of light received at the one first light receiving array and the another first light receiving array, the two light amount adjusting light receiving elements being arranged on both sides of the third light receiving array in the measurement direction.

4. A motor with an encoder comprising:

a linear motor in which a movable element moves with respect to a stator, or a rotary motor in which a rotor moves with respect to a stator; and

the encoder according to any one of claims 1 to 3, configured to detect at least one of a position and a speed of the movable element or the rotor.

5. A servo system comprising:

a linear motor in which a movable element moves with respect to a stator, or a rotary motor in which a rotor

moves with respect to a stator;

an encoder according to any one of claims 1 to 3, configured to detect at least one of a position and a speed of the movable element or the rotor; and

a controller configured to control the linear motor or the rotary motor based on a result detected by the encoder.