SNS COLLEGE OF ENGINEERING

(Autonomous)

DEPARTMENT OF MECHANICAL ENGINEERING

SENSORS AND INSTRUMENTATION

Guess Today's Topic????

Performance characteristic of Static

- In a measurement system, static performance characteristics refer to the behavior of the system when there is no change in the input. In other words, when the input to the system is constant, the static performance characteristics describe how the system responds.

Performance characteristic of Static

There are several static performance characteristics that are important in a measurement system, including:

Accuracy:
Accuracy refers to the ability of the measurement system to provide a measurement that is close to the true value of the input. A high-accuracy system will produce measurements that are very close to the true value, while a low-accuracy system will produce measurements that are farther from the true value.

Performance characteristic of Static

Precision:

Precision refers to the ability of the measurement system to produce consistent measurements when the input is constant. A high-precision system will produce measurements that are very consistent, while a low-precision system will produce measurements that are less consistent..

Performance characteristic of Static

Linearity:

Linearity refers to the ability of the measurement system to produce measurements that are proportional to the input. A linear system will produce measurements that increase or decrease proportionally with the input, while a nonlinear system will produce measurements that do not increase or decrease proportionally with the input.

Performance characteristic of Static

Sensitivity:
Sensitivity refers to the ability of the measurement system to detect small changes in the input. A highly sensitive system will detect even small changes in the input, while a less sensitive system will require larger changes in the input to produce a measurable change in the output.

Performance characteristic of Static

Stability:

Stability refers to the ability of the measurement system to produce consistent measurements over time. A stable system will produce measurements that do not change significantly over time, while an unstable system will produce measurements that change significantly over time**.**

Understanding and controlling these static performance characteristics is essential in developing an accurate and reliable measurement system.

Performance characteristic of Dynamic

- Dynamic performance characteristics refer to how well a measurement system responds to changes in the quantity being measured over time. Here are some important dynamic performance characteristics of a measurement system:

Performance characteristic of Dynamic

- Rise time: This is the time it takes for a measurement system to respond to a sudden change in the input quantity. It is the time taken for the output of the system to rise from 10% to 90% of its steady-state value.

- Settling time: This is the time it takes for a measurement system to settle down to a steady-state value after a sudden change in the input quantity. It is the time taken for the output of the system to settle within a certain tolerance band of the steady-state value.

Performance characteristic of Dynamic

- Bandwidth: This is the range of frequencies over which a measurement system can accurately measure a quantity. It is determined by the frequency response of the system.

- Accuracy: This is the degree to which a measurement system can measure a quantity correctly. It is usually expressed as a percentage of the full-scale range of the system.

Performance characteristic of Dynamic

- Sensitivity: This is the smallest change in the input quantity that can be detected by the measurement system. It is usually expressed as a percentage of the full-scale range of the system.

- Hysteresis: This is the difference in output values when the input quantity is increasing and when it is decreasing. It is a measure of the non-linearity of the system.

Performance characteristic of Dynamic

- Stability: This is the ability of a measurement system to maintain its performance characteristics over time. It is affected by factors such as temperature, humidity, and aging of components.

- All these dynamic performance characteristics are important for measuring and controlling dynamic processes such as in robotics, control systems, and biomedical applications..

Thank you