

CLASSIFICATION & SELECTION OF TRANSDUCERS

We have tabulated the class of transducers and some important measurands are mentioned. The name of each class is keyed to the transduction mechanism, but its explanation is given along with the description of the transducer.

The instrumentation technologist to select the transducer most suitable for the measurand of choice. Moreover, cross indexing to the literature in the reference section is provided, wherever required, to the transducer class-measurand combination.

In addition, the table also includes several other transducers such as

- fiberoptic transducers.
- surface-profiling transducers (SPT).
- wave-propagation transducers (WPT).
- intravascular imaging and Doppler transducers.
- surface acoustic wave (SAW) transducers.
- acoustooptic (AO) transducers.
- Hall-effect transducers.
- ChemFET transducers.

Selection of Transducers

Research and development in the transducer industry has traditionally been very productive. Many new forms and rapid improvements of old forms are continuously reported. One of the most successful improvements in transducers is the incorporation of integrated circuits for signal conditioning, with the basic transducer unit. These are known as smart transducers. When selecting a transducer, in addition to the question of cost, careful attention must be given to the following

- (i) Sensitivity Output impedance
- (ii) Range Power requirements
- (iii) Physical properties Noise
- (iv) Atomic and surface profiles
- (v) Gas concentration and pH
- (vi) pH and partial pressures of O₂ and CO₂ in blood
- (vii) Infrared radiation
- (viii) Torque
- (ix) Magnetic fields
- (x) Acoustic fields
- (xi) Medical imaging
- (xii) Nondestructive testing

(xiii) Audio fields and noise

(xiv) Rotation and guidance

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