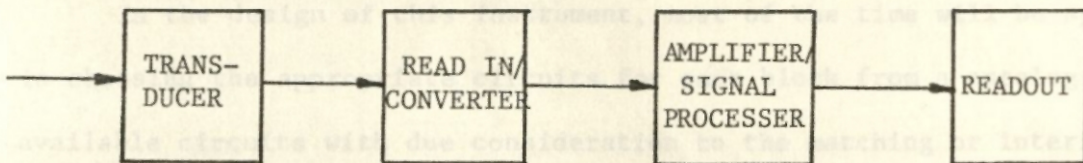


1.1 INTRODUCTION

The design of an electronic instrument consists largely of the creative arrangement of proved circuits and devices to achieve a chosen performance goal.

Technical requirements are met in the choice and interconnection of sub-units. Generally, an instrument is divided into the sections shown in Fig. 1.1



An input transducer is a device with a measurable electrical parameter which is a function of, and often linearly proportional to, the physical parameter being measured. For example, the voltage change (electrical parameter) of a thermocouple (transducer) is proportional to the temperature (physical parameter) at least over a limited range.

The read in circuit/converter converts the change in the electrical parameter of the transducer into an electrical signal which is digestible by the processor. This circuit may be quite simple. For a thermocouple, an amplifier and an analogue to digital converter are all that are needed to feed into a computer

The processor can be elaborate, involving separation into frequency components, timing of various segments, conversion from AC to DC or software programming in assembly language. Examples are MPU and digital computers.

Signal read out may consist of a panel meter, a digital display or conversion into a form suitable for transfer to a digital computer. In addition to these parts, an instrument requires a power supply. Generally, this supply has several output voltages and levels.

In the design of this instrument, most of the time will be spent in choosing the appropriate circuits for each block from a catalogue of available circuits with due consideration to the matching or interfacing of these blocks. Then the tasks of editing and modifying will be brought into play.

Special emphasis will be paid to compatibility between sections and also the required specifications.