

PULSE CONVERTER CIRCUIT (D-A Converter)

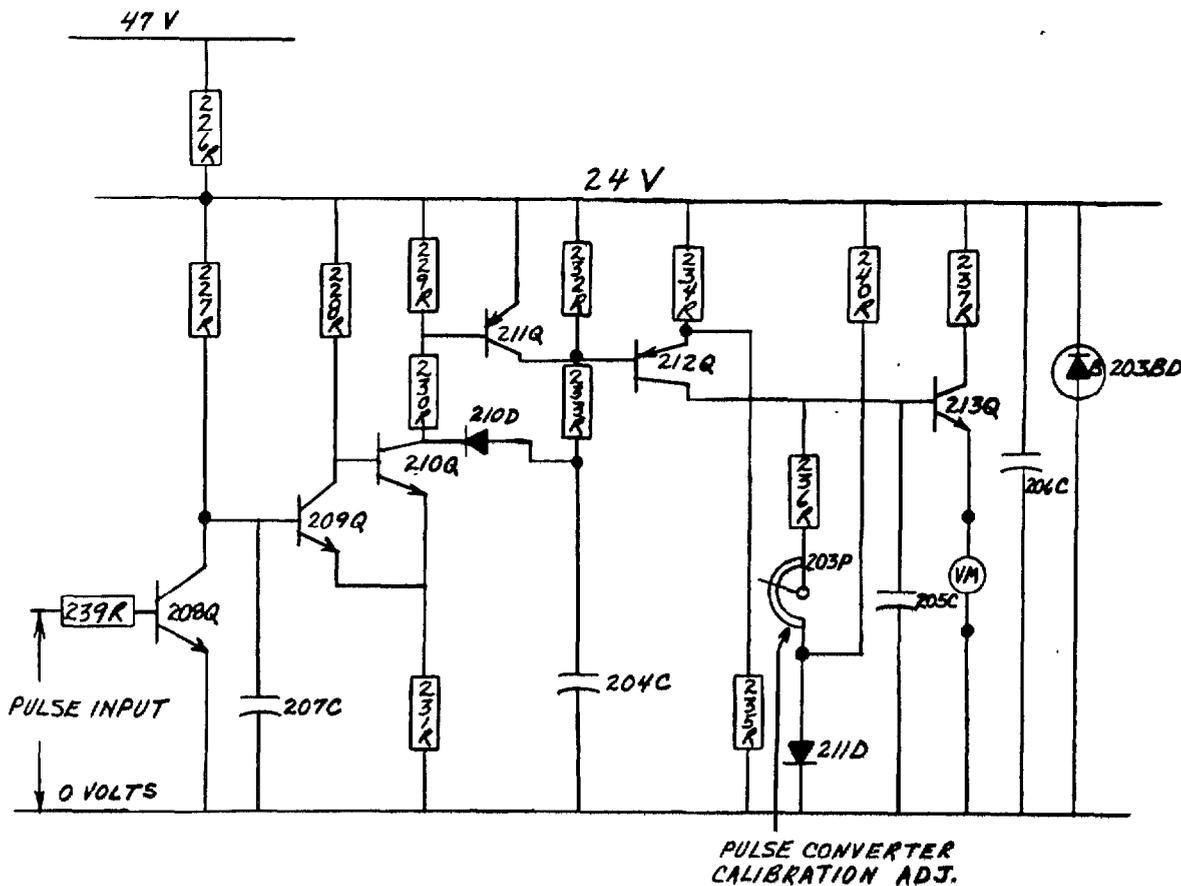
The pulse converter circuit is used to provide a DC voltage that is directly proportional to the input pulse rate. The DC output may be used as feedback or reference voltage or simply applied to a voltmeter calibrated to indicate frequency, RPM, feet/min. or other parameters that are related to pulse rate.

The input can be a pulse or square wave. When the input voltage is positive, 208Q will conduct turning 209Q off and 210Q on. Capacitor 204C will discharge to near zero volts through diode 210D and 210Q. Also, 211Q will turn on and hold 212Q off. When the input voltage goes to zero, 208Q turns off turning 209Q on and 210Q and 211Q off. With 210Q off, diode 210D will be back biased allowing capacitor 204C to charge through resistors 232R and 233R. Transistor 212Q will supply a current pulse to capacitor 205C that is proportional to the charging current of 204C. The above conditions will repeat for every pulse or cycle of the input voltage.

Equal current pulses will be supplied to capacitor 205C at a rate determined by the input frequency. Thus, the average voltage across 205C will be a linear function of the input frequency.

The average voltage level across 205C can be adjusted for a specific input frequency by changing the resistance of rheostat 203P. This voltage across 205C is applied to the load, which is shown as a voltmeter, by the emitter follower circuit consisting of transistor 213Q and resistor 237R. Current through resistor 240R maintains a constant voltage drop across diode 211D to offset the base to emitter drop of 213Q.

The 24 volt supply is held constant by a zener regulator consisting of 203BD and 226R. Input voltage is obtained from a 47 volt filtered DC supply and additional filtering is provided by capacitor 206C.



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