DC linear voltage-sinusoidal signal converter with adjustable frequency

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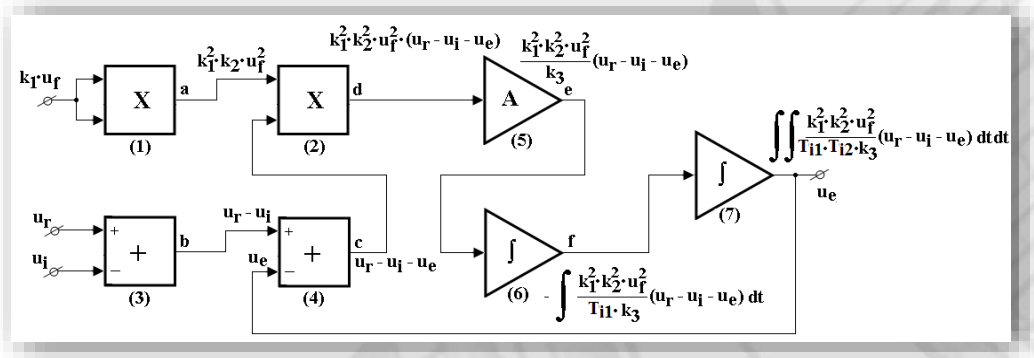
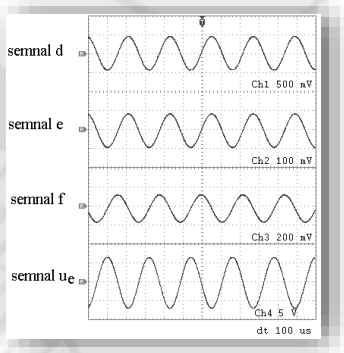
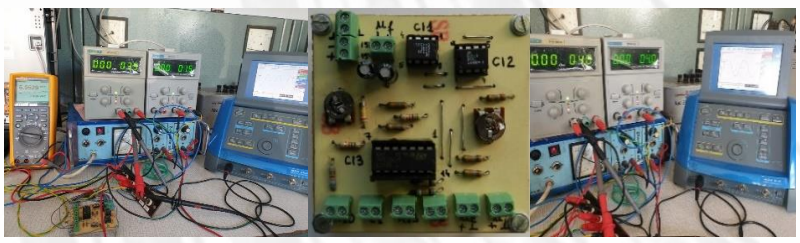
The DC linear voltage-sinusoidal signal converter with adjustable frequency provides a periodic sinusoidal signal at the output that depends on the DC voltages applied on two inputs: a DC voltage is applied to one of the inputs, which linearly modifies the frequency of the output signal, and on the other of the inputs applies a DC voltage which linearly changes the amplitude of the signal from the output of the converter. The DC linear voltage-sinusoidal signal variable frequency converter comprises seven functional blocks: two analogue multiplication circuits, two analogue difference circuits, one non-inverting amplifier and two integrated circuits.







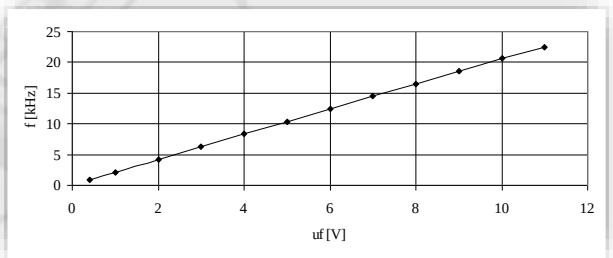


Fig.1. Block diagram of DC linear voltage-sinusoidal signal variable frequency converter and the prototype during experiments

Fig.2. The sinusoidal signal from the output converter, the frequency depending on u_f and the output peak to peak voltage depending on u_i

The DC linear voltage-sinusoidal signal converter with adjustable frequency has the following advantages: has a simple design (requires only three integrated circuits and a few resistors and capacitors); has two DC voltage inputs and one output; has a sinusoidal signal at the output which depends linearly on the DC voltage applied to input; the magnitude of the output signal can change linearly depending on the DC voltage applied to the other input; response time is very low due to analogue components; the output frequency is in the range of kHz, and the band width can be tens of kHz (this circuit can be used for remote signal transmission).

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