Dual Control Direct Digital Synthesizer (DCDDS) for electronic testing and experimental work

ABSTRACT

Direct Digital Synthesizer (DDS) used for creating arbitrary waveforms from a single, fixed-frequency reference clock. Applications of DDS include: signal generation, local oscillators in communication systems, function generators, mixers, modulators, electronic sound synthesizers and as part of a digital phase-locked loop. In this paper, DDS is used as a function generator operated in a particular frequency bandwidth and it is to be used for testing and experimental work. This paper will presents a possible design for keypad and computer controlled DDS function generator namely Dual Control Direct Digital Synthesizer (DCDDS) which generate frequencies from 0 to 30MHz sine waveform. The amplitude selection is up to 10Vpp, and it is guaranteed to be accurate for frequencies range from 0 to 1MHz. The ability to accurately generate and control waveform of various frequencies, compactness and low cost are the main design consideration.

Keyword: DDS; DCDDS; Function generator