

FLUKE®

80/81

Function Generators

Getting Started

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Introduction

This manual provides a brief description and safety information for both the Model 80 - Function Generator and Model 81 - Pulse/Function Generator. The Instruction Manual (provided on the CD-Rom) provides complete operating and maintenance instructions.

Description

Model 80 is an extremely high-performance programmable function generator. It provides a variety of signal waveforms, to be used as test stimuli for different electronic devices. Microprocessor based, Model 80 is easy to set up for manual use. It is also simple to program in GPIB system environment.

The instrument is built in an all-round metal case for improved RFI and EMI shielding. It is housed in a size to fit half-rack enclosures. Regardless of its small size, Model 80 offers many features and functions, such as enhanced accuracy, eight different linear and logarithmic sweep modes, automatic phase lock loop, pulse and ramp waveforms with transition time control (Model 81 only), counted burst, internal trigger generator, full implementation of the new IEEE-488.2 standard, and more. But, most of all, Model 80 guarantees high quality waveforms through-out the specified frequency range, amplitude span, and operating temperature.

Model 80 generates waveforms within a frequency range from 10mHz to 50MHz and an amplitude span from 10mV to 32Vp-p. Such broad coverage warrants a variety of complex applications. Rapid, repeatable testing every time is assured by a non-volatile memory. Up to 30 front panel set-ups can be stored and recalled for later use; ensuring exact duplication of previous tests. Its performance, programmability and economy make it equally at home in every laboratory.

For improved output accuracy, Model 80 employs a built-in counter. This counter is incorporated in an internal loop which constantly monitors the output frequency. Even the slightest deviation from the programmed frequency is detected and corrected by the microprocessor circuit.

Model 80 features self-calibration and self-diagnostic functions that can be operated anytime from the front panel or GPIB command. The self-calibration function compares the output signal parameters to built-in internal references and stores correcting factors in special tables. If calibration routine fails or can not be completed due to electrical faults, the generator produces a failure list that can be evaluated either from the front panel or through GPIB status reporting command.

Besides its normal continuous mode, Model 80 offers a variety of interrupted and controlled modes. Output waveform may be gated, triggered, or may generate a counted burst of output waveforms. A built-in trigger generator, having a programmable period, can replace an external trigger stimulant. The MANUAL trigger is just an additional convenience for front panel operation. The generator may also be placed in a number of externally controlled modes, such as VCO, FM, AM, and pulse width modulation (PWM - Model 81 only).

Model 80 may be used as an independent sweep generator with its output swept over an exceptionally wide range of 10 decades. The instrument offers a choice of eight sweep modes, both linear and logarithmic to cover a large number of applications. A MARKER output provides an oscilloscope Z-axis modulation to intensify segments of sweep trace.

Alternately, Model 80 may also be used as a stand-alone phase lock generator. The instrument locks automatically to an external signal and equates its output frequency and phase to that provided by the external reference. The operator may then generate a phase offset between the reference signal and the generator's output. Phase offset is adjusted within a range of $\pm 180^\circ$.

Model 80 provides an output level from 20mV to 32Vp-p into open circuit or 10mV to 16Vp-p into 50Ω. DC offset plus amplitude are independently variable within two window levels: ±16V and ±1.6V (into open circuit). This special characteristics warrants production of extremely small signals at an elevated DC environment.

Model 81 is a pulse/function generator and is also described in this manual. This instrument is identical in its basic functions to the Model 80. In addition, this instrument offers Pulse and Ramp waveforms. Pulse width and ramp width are adjustable within a range of 10.0ns to 999ms.

Model 81 provides control over the transition times for the leading and trailing edges; each can be adjusted independently within a common range. Pulse complement and inverted ramp functions are also available. This manual identifies those features and specifications that only apply to Model 81.

Instrument and Manual Identification

The serial number of the instrument is located on the rear panel of the instrument. The two most significant digits identify instrument modifications. If this prefix differs from that listed on the title page of this manual, there are differences between this manual and your instrument.

Technical corrections to this manual (if any) are listed in the back of this manual on an enclosed MANUAL CHANGES sheet.

Options

Model 80 offers a rack mounting option; designated as OPT 001. Opt 001 is field installable or may be ordered with new instruments from the factory.

Safety Considerations

Model 80 has been manufactured according to international safety standards. The instrument meets EN 61010-1 and UL 1244 standards for safety of commercial electronic measuring and test equipment for instruments with an exposed metal chassis that is directly connected to earth via the power supply cable. Before the instrument is switched on, make sure that protective earth terminal is connected to a protective earth via the power cord. Do not remove instrument covers when operating or when power cord is connected to mains.

Any adjustment, maintenance and repair of the opened instrument under voltage should be avoided as much as possible, but when inevitable, should be carried out only by a skilled person who is aware of the hazard involved.

Safety Precautions

Protect yourself. Follow these precautions:

- **Don't bypass the power cord's ground lead with two-wire extension cords or plug adapters.**
- **Don't disconnect the green and yellow safety-earth-ground wire that connects the ground lug of the power receptacle to the chassis ground terminal.**
- **Don't plug in the power cord until directed to by the installation instructions.**
- **Don't repair the instrument unless you are qualified electronics technician and know how to work with hazardous voltages.**

- **Pay attention to the WARNING statements. They point out situations that can cause injury or death.**
- **Pay attention to the CAUTION statements. They point out situations that can cause equipment damage**

Accessories Supplied

Model 80 is supplied with ac power cord and with an instruction manual. Extra manual is available on request.

Specifications

Instrument specifications are given in Chapter 1 of the Instruction Manual. These specifications are the performance standards or limits against which the instrument is tested.

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