

FG320

Tester for vibration, displacement and speed supervisor



KEY FEATURES

- Special signal generator for complex functional testing of Machine Monitoring & Diagnostic Systems
- Powered and controlled by PC/NB using FG Programmer SW
- Generates signal for eddy-current, piezo, Hall-effect and electrodynamic sensors for simulation vibration, displacement and speed
- Adjustable Key Pulse (reference pulse)
- Output for testing current loops
0/4 ÷ 24 mA

Description & Application

The tester FG320 is a unique compact instrument intended in particular for complete testing of measuring cards of systems for monitoring vibration, displacement and speed. The instrument parameters are selected in such a way that they can cover the most frequent tasks during the servicing of these devices or that they can simulate an output signal of used sensors.

The FG320 is powered from USB interface, it means usage and configuration are possible only via connection to a PC or a notebook.

The FG320 is a microcontroller-based device, which provides all specific functions and controls communication with a PC.

Operation modes:

The FG320 tester is intended for three typical applications with different demands for the testing signal:

- Voltage mode
- Speed mode
- Current mode

Voltage mode:

It allows testing monitoring systems of vibration and displacement by simulating voltage signals normally

measured by electrodynamic, piezoelectric or eddy-current sensors. In this case it is necessary to have low level voltage signal with high DC offset. It generates a signal with shape of sine, square, triangle or saw. Besides the actual simulation signal, some systems require moreover a Reference Pulse (KEY) as information about frequency and phase of the signal. The impulse is available on two outputs: open collector or active output with different levels.

Speed mode:

Testing of a speed monitoring systems with a voting 2003 (e.g., Emerson DOPS MMG1000, CSI 6300, AMS 6300 SIS, Braun, ...).

Current mode:

Testing of 0/4 ÷ 20 mA current loops. The tester works as a direct current source to the load of up to 500 Ohm.

Attention! - The instrument cannot be used for simulation of passive converters powered by a current loop!

Instrument can generate DC signal or a combination of AC/DC signal.

Individual modes cannot be operated simultaneously. The switching between modes is controlled by the control software.

Technical data

General:

Connection to PC: USB 1.0 - 3.0
Power consumption: max. 400 mA
Dimensions: 175x115x30 mm
Weight: 0.2 kg
Operating temperature: 0 ÷ 40 °C

Signal mode ("Signal" connector):

The output signal is a combination of DC and AC voltage.

Selectable signal: sine, square, triangle, saw
Frequency range: 0,1 ÷ 20 000 Hz
Resolution: 0,1 Hz
Accuracy: +/- (0,1 % + 0,2 Hz)
AC voltage range: 0,1 ÷ 4 000 mV,
Resolution: 0,1 mV
Accuracy: +/- (1 % + 0,1 %fs)
DC voltage range: -22 ÷ +22 V
Resolution: 0,01 V
Accuracy: +/- 0,1 V
with load: > 10 kΩ

Current mode ("mA" connector):

DC current source.

Adjustable range: 0 ÷ 24 mA

Accuracy: 1 %

Maximum load: < 500 Ω

(No external voltage connected to this output.)

Two functional modes:

a) Only DC current.

b) Output signal is a combination of DC and AC current. Max. signal swing (AC+DC): 0÷24 mA.

User selectable signal waveform:

sine, square, triangle, saw

Resolution: 0,01 mA (DC)

0,001 mA (AC)

Speed mode (9-pin connector):

The output simulates the signal of eddy-current speed sensors of type Emerson PR642x/CON0x1 or MMG1070 respective Braun Hall-effect sensors.

Frequency range: 0,1 ÷ 20 000 Hz
Resolution: 0,1 Hz
Accuracy: +/- (0,1 % + 0,2 Hz)
Pulse symmetry: ~ 50 %
Max. voltage on pin -24 V: -30 V against pin 0 V
Max. load of resistors of output circuit: 0.5 W/resistor

Key Pulse Output:

The key pulse is generated synchronously with a signal on the output connector "Signal" and represents number of degrees from key pulse to the first positive peak of the "Signal". Full signal period represents 360°.

Adjustable range: 0 ÷ 360°

Resolution: 1°

It is possible to generate the pulse by multiple periods of an output signal.

Open Collector output ("Passive" connector):

Maximum voltage: 40 V DC
Maximum current: 0.2 A

Active output ("Active" connector):

The basic level and the pulse level are freely adjustable within range: - 22 ÷ + 22 V
Maximum load: > 10 kΩ

Connection to Emerson DOPS system (typical values):

Level L:

Voltage on pin Out: - 22 ÷ - 25 V

Current load of pin - 24 V: ~ 12 mA

Level H:

Voltage on pin Out: - 8V ÷ - 11 V

Current load of pin - 24 V: ~ 5 mA

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Control software FG Programmer

The software allows easy configuration of all modes of the FG320.

Features:

- Contains a two-way calculator for easy conversion of physical quantity into different sensor type (vibration, displacement).
- Two different ramp function allows time switching of preset configurations works with all modes (SIGNAL, SPEED and CURRENT).
- Possibility to save user's configuration to a file, one configuration can be set up like a default to be loaded after powering up the hardware.
- Switching between metric and imperial units.
- Help function and update option.

Minimum PC/NB requirements:

Pentium III 800 MHz, 512 MB RAM, OS MS Windows XP/7/8/10/11, .NET Framework 4.0, USB 1.0 - 3.0

Remark: The software for FG320 is NOT backward compatible with FG120 nor FG220.

Package content

- 1x Hardware – FG320
- 1x Control software on USB flash drive
- 1x USB 2.0 Cable type A-B, length 3 m
- 1x Signal cable with BNC connector and two 4 mm plugs, length 2.2 m
- 1x Cable for testing DOPS, length 2 m
- 1x Magnetic holder for easy attachment
- 1x Transporting case with soft filling



Optional accessories:

Order code	Description
FG320 CAL SPEED	*Calibration certificate of speed output (function: SPEED)
FG320 CAL FULL	*Calibration certificate of complete device (function: SIGNAL, SPEED, CURRENT)
FG320-ADAPT-BR	Special adapter for SPEED mode testing (substitution of Braun Hall-effect sensors)

*Calibrated by accredited laboratory.