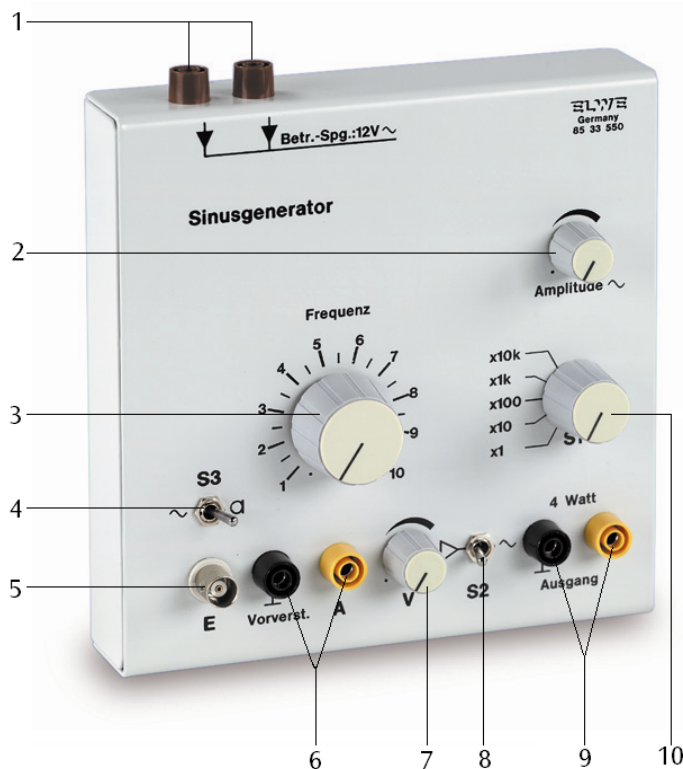


Sine Wave Generator U8533550

Instruction Sheet

01/08 SP/ALF



- 1 Supply voltage input
- 2 Amplitude control
- 3 Frequency control
- 4 Microphone/amplifier selector switch (S3)
- 5 Amplifier input
- 6 Pre-amplifier output
- 7 Amplification control
- 8 Generator/preamplifier selector switch (S2)
- 9 Power amplifier output
- 10 Frequency range selector switch (S1)

1. Safety instructions

The sine wave generator conforms to safety regulations for electrical measuring, control and laboratory equipment as specified in DIN EN 61010 Part 1 and is designed to meet protection classification I. It is to be operated in dry rooms as appropriate for the use of electrical equipment.

Safe operation of this equipment is guaranteed as long as it is used as stipulated. However, there is no guarantee of safety if the equipment is used incorrectly or carelessly. If there is any suspicion that the equipment can no longer be operated without risk (e.g. if visible damage is detected), the equipment must immediately be withdrawn from use and secured in such a way as to prevent its inadvertent operation.


In schools and other educational institutions, the instrument must only be used under the supervision of a responsible person.

- Before operating the sine wave generator it needs to be examined and tested. If it fails to function correctly or if there is visible damage it must immediately be withdrawn from use and secured in such a way as to prevent its inadvertent operation.
- Only use the instrument in a dry environment.
- Do not apply any external voltage to the output terminals.
- Do not allow the instrument to be opened by anyone other than an electrically qualified specialist.






2. Description

The sine wave generator is used to generate sinusoidal voltages in a frequency range from 1Hz to 100kHz. A selector switch allows the instrument to be used either as a sine wave generator with power output or as a power amplifier with a pre-amplifier stage.

The frequency can be selected over a range of 5 decades, each of which is continuously adjustable on a scale from 1 to 10. The power amplifier has a robust output stage and a large reserve of power. The output stage is thermally protected and proof against short-circuiting, and the output is current-limited.

With the mode selector switch (S3) in the microphone position , the socket marked E is supplied with +8V via a 10kΩ resistor. This bias voltage is suitable for direct connection to an electret microphone or carbon microphone.

Modes of operation:

Switch		Function
S1		Frequency decade switch (acts as multiplier to the "Frequency" adjustment)
S2		Sinusoidal voltage available at power amplifier output – output adjustable via "Amplitude  " knob
		Pre-amplifier output is fed to power amplifier output stage
S3		Input to preamplifier through 100 μF capacitor
		Bias voltage (8 V, 10 kΩ); input to preamplifier through 1 μF capacitor

3. Technical data

Sine wave generator with power output

Frequency range:	1 Hz – 100 kHz in 5 decades, continuously adjustable by linear marked dial
Frequency deviation:	< 5%
Output voltage:	0 – 6 V, adjustable
Max. output current:	10 A, short-circuit protected
Max. output power:	16 W continuous, 30 W for short periods
Input resistance:	100 kΩ

Pre-amplifier

Amplification factor:	1– 250, continuously adjustable
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Input:	AC coupled, microphone voltage switch
Max. output voltage:	10 Vpp
Max. output current:	15 mA, short-circuit protected
Output impedance:	1 kΩ
Power amplifier:	
Voltage amplification:	0 - 8.5
Operating voltage:	12 V AC
Dimensions:	160×160×50 mm ³ approx.
Weight:	1.1 kg approx.

4. Operation

Recommended voltage supply source:

Transformer, 12 V, 25 VA	U8475430-230
or	
Transformer, 12 V, 25 VA	U8475430-115

The output stage is very robust and can be relied on to work safely in physics experiments. However, when working with inductive loads (coils, transformers, motors, etc.) the following precautions need to be taken:

Switching onto an inductive load may only be done when there is no signal (i.e., with the "Amplitude" and/or "V" control knobs fully to the left).

Speakers can be damaged if the equipment is switched on when there is already a signal voltage. Therefore, before switching on, set the signal level to zero (amplification control knob "V" fully to the left).

When the unit is operating at a high power level the housing can become hot. Although the output stage is not likely to be damaged by heat, under such conditions a longer cooling period should be allowed for.

To avoid excessive heating when operating continuously for a long period, it is advisable to keep the load resistance above 3Ω.

- Connect the mains adapter transformer to the supply voltage input terminals.

4.1 Operation as a power amplifier with pre-amplifier stage

- Set switch S3 (4) to either the microphone position (right) or the amplifier position (left) as required, and switch S2 (8) to the pre-amplifier position (left).
- Turn the amplification control knob (7) fully to the left (zero).
- Connect the pair of output sockets (9) to the load (e.g., low frequency speaker U8432780, horn speaker U8432680, etc.).

- Increase the amplitude using the amplification control (7) (do not exceed the maximum permitted power for the equipment that is connected).
- Increase the amplitude using the amplitude control (2) (do not exceed the maximum permitted power for the equipment that is connected).

4.2 Operation as a sine wave generator with power output

- Set switch S2 (8) to the generator position (right).
- Turn the amplitude control knob (2) fully to the left.
- Connect the pair of output sockets (9) to the load (e.g., low frequency loudspeaker U8432780, horn loudspeaker U8432680, vibration generator U56001, 12V DC motor U8552330, etc.).

