

# PGA 1241-5A / 1241-16A

## Precision Generator

IEC / EN 61000-4-16, IEC / EN 61000-4-19  
IEC / EN 61543 u.a.

- For EMC tests IEC / EN 61000-4-16, IEC / EN 61000-4-19, IEC / EN 61543, IEC 60255
- Frequency range from DC to 300 kHz
- Different versions available :  
**PGA 1241-5A:** 5 A / 260 W  
**PGA 1241-16A:** 16 A / 800 W  
**Supplement PGA 1241-PSG 300:**  
Option: External power source  
Input for controlling an external voltage source. 50 Ohm output, for short time tests up to 300 V, can also be used instead of PGA 1331, if an additional voltage source is connected
- Function generator with DC, sine, triangle and square wave signal



**Remote control via Software  
via the USB interface!**

### Overview

The PGA 1241 is a linear, extremely broadband precision power amplifier for the frequency range from DC to 300 kHz, predestined for all applications requiring fast changing signals with high power. The power stage with 250 W (800 W) delivers a maximum output current up to 5 A (16 A) with a voltage gain of 10.

The integrated function generator supplies sine, triangle or square wave signals, which are amplified

by the built-in power amplifier. External signals can be added via an additional input.

All functions of this generator/amplifier combination can be controlled via the application software supplied, which allows complete remote control of the PGA 1241 via the USB interface. The integration into already existing automated test systems is made possible by the disclosure of the interface commands.

### Key facts

- Linear circuit design guarantees lowest distortion, no interference and high stability
- Remote control via USB interface for automatic test equipment
- Ideal for operation on low impedance loads (e.g. Helmholtz coils)
- Two different operating voltages optimize the power dissipation for loads with low impedance



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### Applications: Tests according to standards

#### Tests according to IEC / EN 61000-4-16

At 61000-4-16 the PGA 1241 is designed for the continuous disturbance variables (test level 1 to 4 and X to 50 V), for the short time disturbance variables up to 300 V the PGA 1331 is required. Both devices can be operated as stand-alone units and integrated into existing test systems. If both continuous disturbance variables and short-term disturbance variables are to be tested, PGA 1241 and PGA 1331 are required and connected together.

#### Tests according to IEC / EN 61000-4-19

The PGA 1241 can be used as a test generator for both differential voltage and differential current testing according to IEC / EN 61000-4-19 incl. Appendix C (electricity meter). Since a constant current is required as a disturbing signal and the PGA 1241 generates voltage signals, an external multimeter (which supports SCPI) and an adapter are required for tests according to Appendix C.

The multimeter measures the voltage across the adapter, the program calculates the current currently flowing and controls the output of the PGA 1241.

#### Tests according to IEC/EN 61543

The tests according to IEC/EN 61543 are carried out in the frequency band from 1 kHz to 150 kHz and require a constant current as interference signal. The PGA 1241 generates a voltage signal and therefore requires an additional multimeter and adapter to meet the requirements of the IEC/EN 61543 standard. The multimeter measures the voltage and the program of the PGA 1241 calculates the current and readjusts the voltage.

### General applications and features

The generation and amplification of small signals to produce larger output signals is a necessary practice in all areas of electrical engineering. The PGA 1241 is the ideal instrument for this. Due to the excellent signal quality and the remote control via USB interface, the PGA 1241 is the ideal choice for automatic test equipment.

#### Low resistance loads

The PGA 1241 is ideally suited for operation with low impedance loads (e.g. Helmholtz coils). The possible halving of the operating voltage reduces the power loss accordingly.

#### Waveform

The generator of the PGA 1241 provides 3 different waveforms: sine, triangle and square. The frequency resolution is 0.05 Hz from DC to 300 kHz. With all waveforms it is possible to superimpose a common mode voltage.

#### Technology

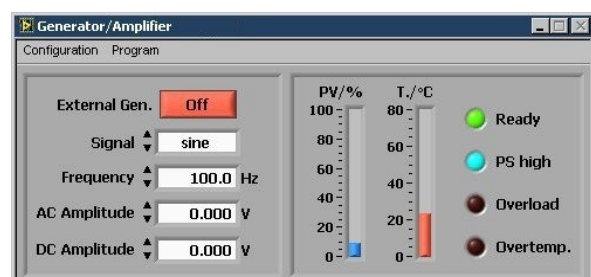
A completely linear circuit design guarantees lowest distortion, noise-free operation and high stability. Two different operating voltages optimize power dissipation with low impedance loads.

#### Safety devices

The tests according to IEC/EN 61543 are carried out in the frequency band from 1 kHz to 150 kHz and require a constant current as interference signal.

#### Software control

The scope of delivery includes an application software that enables complete remote control of the PGA 1241 via the USB interface. Integration into existing automated test systems is made possible by disclosing the interface commands.



The amplifier can be configured so that it automatically switches on again after a pre-programmed time (1 - 255 s) in the event of power loss or overcurrent shutdown.



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## Precision Generator

### Technical data I

#### Amplifier

	<b>PGA 1241-5A</b>	<b>PGA 1241-16A</b>
Frequency range	DC - 1 MHz (small signal -3 dB)	DC - 1 MHz (small signal -3 dB)
Performance range	DC – 300 kHz	DC – 300 kHz
Slew rate	100 V/μs	100 V/μs
Offset	± 1 mV (± 0.1 mV / °C)	± 1 mV (± 0.1 mV / °C)
Voltage amplification	10 ± 0.1 % (± 0.01 % / °C)	10 ± 0.1 % (± 0.01 % / °C)
<i>Option: ultra stable gain</i>	10 ± 0.1 % (± 10 ppm/°C)	10 ± 0.1 % (± 10 ppm/°C)
Output voltage	50 V <sub>rms</sub> / ± 75 V <sub>peak</sub>	50 V <sub>rms</sub> / ± 75 V <sub>peak</sub>
Output current	<b>5 Arms / ± 7.5 Apeak</b>	<b>16 Arms / ± 24 Apeak</b>
Distortion (DC - 100 kHz, load ≥ 4 Ω)	< 0.10 %	< 0.10 %
Input impedance	100 kΩ	100 kΩ
Output impedance	<< 1 Ω and 50 Ω	<< 1 Ω and 50 Ω
Max. permissible input voltage	80 V (cont.), 100 V (< 1 min)	80 V (cont.), 100 V (< 1 min)
Broadband noise (10 Hz - 1 MHz, input 50 Ω)	0.5 mV <sub>rms</sub>	0.5 mV <sub>rms</sub>
Output power	<b>260 W</b>	<b>800 W</b>
Mains voltage	230 VAC / 50 Hz	230 VAC / 50 Hz
Control port	USB	USB

#### Generator

	<b>PGA 1241-5A</b>	<b>PGA 1241-16A</b>
Frequency range	DC, 0.05 Hz – 300 kHz; resolution 0.05 Hz	DC, 0.05 Hz – 300 kHz; resolution 0.05 Hz
Frequency precision	± 20 ppm	± 20 ppm
Signal types	sine, square, triangular	sine, square, triangular

#### Mechanical data

	<b>PGA 1241-5A</b>	<b>PGA 1241-16A</b>
Dimensions (W x H x D)	449 x 133 x 436 mm (3 RU)	449 x 177 x 585.5 mm (4 RU)
Weight	appr. 24 kg	appr. 32 kg

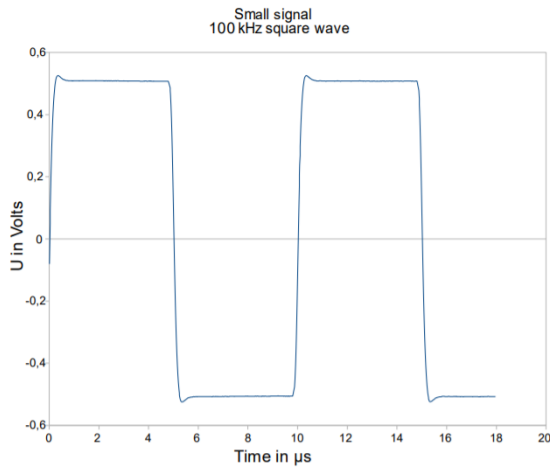
**PGA 1241-PSG 300:** Option: External voltage source, input for controlling an external voltage source. 50 Ohm output, for short-term tests up to 300 V Option instead of PGA 1331.



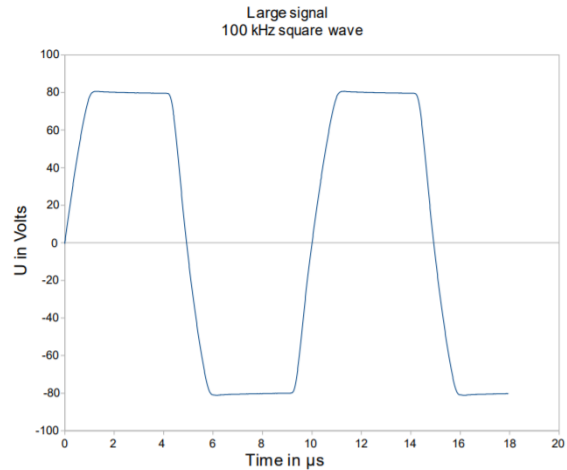
# PGA 1241-5A / 1241-16A

## Precision Generator

### Technical data II: Rectangular shape



Square wave at 100 kHz (small signal)  $\pm 500$  mV



Square wave at 100 kHz (large signal)  $\pm 80$  V

### Included in delivery

PGA 1241\_xx generator

User manual

USB stick with operating software

USB-A / USB-B cable 3 m length

Power cable 2 m length

BNC / BNC cable 1.5 m length

USB-A / USB-B, cable 3 m length

Record factory calibration traceable according to ISO 17025

### Options: Isolating transformers (according to EN 61558)

IT-06	Isolating transformer 1380 V with shielding winding between PRI and SEC; PRI: 230 V / 50-60 Hz SEC: 230 V / 6 A; aluminium housing
IT-16	Isolating transformer 3680 VA with shielding winding between PRI and SEC; PRI: 230 V / 50-60 Hz; SEC: 230 V / 16 A; aluminium housing
IT-20	Isolating transformer 4600 VA with shielding winding between PRI and SEC; PRI: 230 V / 50-60 Hz; SEC: 230 V / 20 A; aluminium housing



# PGA 1241-5A / 1241-16A

## Precision Generator

### Options: Coupling network

#### Coupling network acc. to EN 61000-4-16

CN M2-AC-32	Coupling network for 2 unshielded power supply lines; 250 VAC/VDC 32A, 15 Hz - 150 kHz, connection 4 mm MC sockets
CN M2-DC-32	Coupling network for 2 unshielded DC power supply lines; 50 VAC/VDC 32A, connection 4 mm MC sockets
CN M3-AC-32	Coupling network for 3 unshielded power supply lines; 250 VAC/VDC 32A, 15 Hz - 150 kHz, connection 4 mm MC sockets
CN M3-DC-32	Coupling network for 3 unshielded DC power supply lines; 50 VAC/VDC 32A, connection 4 mm MC sockets
CN M4-AC-32	Coupling network for 4 unshielded power supply lines; 250 VAC/VDC 32A, 15 Hz - 150 kHz, connection 4 mm MC sockets
CN M5-AC-32	Coupling network for 5 unshielded power supply lines; 250 VAC/VDC 32A, 15 Hz - 150 kHz, connection 4 mm MC sockets
CN M2+M3-32	Coupling network for 2 / 3 unshielded power supply lines, AC (15 Hz - 150 kHz)/DC, 32 A, 250 VAC + 350 VDC, connection 4 mm MC sockets
CN AF 2	Coupling network for 2 unbalanced, unshielded lines, DC, 15 Hz - 150 kHz, connector: clamp terminal
CN AF 4	Coupling network for 4 unbalanced, unshielded lines, DC, 15 Hz - 150 kHz, connector: clamp terminal
CN AF 4-MC	Coupling network for 2 unbalanced, unshielded lines, DC, 15 Hz - 150 kHz, connector: 4 mm safety banana plugs
CN AF 8	Coupling network for 8 unbalanced, unshielded lines, DC, 15 Hz - 150 kHz, connector: clamp terminal
CN AF 12	Coupling network for 12 unbalanced, unshielded lines, DC, 15 Hz - 150 kHz, connector: clamp terminal
CN T 2	Coupling network for 2 unbalanced, unshielded data lines, DC, 15 Hz - 150 kHz, connector: clamp terminal
CN T 4	Coupling network for 4 unbalanced, unshielded data lines, DC, 15 Hz - 150 kHz, connector: clamp terminal
CN T 8	Coupling network for 8 unbalanced, unshielded data lines, DC, 15 Hz - 150 kHz, connector: clamp terminal
CN RJ 45	Coupling network for unbalanced, unshielded RJ45, DC, 15 Hz - 150 kHz, connector: RJ45
CN 1241-32	<b>Switchable</b> coupling network M2, M3, M4, M5, for power supply lines, connector: 4 mm safety banana jacks
CN 1241-125	<b>Switchable</b> coupling network M2, M3, M4, M5, for power supply lines max. 125 A, 250 V AC+DC, 15 Hz - 150 kHz, connectors: 6 mm safety banana jacks

#### Coupling network acc. to IEC 60255-26 / ITU-T

CN ITU-T	Coupling network according to ITU-T Fig. 1/K54 for telecom lines
CN 60255-C	Coupling network according to IEC 60255-26 for common mode tests
CN 60255-D	Coupling network according to IEC 60255-26 for differential mode testing

All information regarding appearance and technical data correspond to the current state of development at the time of release of this data sheet. We reserve the right to make technical changes. 082404

