



[Exporting Signal Generators as Measurement Equipment to Europe](#)

Europe is a major importer of signal generators. Major drivers for the demand of signal generators in Europe have been the Smart Industry and the Industrial Internet of Things, which to a large extent require measurement equipment to monitor and process information and data. Both developments will open up considerable business opportunities for suppliers from developing countries in the short as well as the long term.

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1 . Product description

A signal generator is an [electronic](#) device that generates repeating or non-repeating electronic signals in either the analogue or the digital domain. It is generally used in the following areas.

Main areas of application

- Designing;
- Testing;
- Troubleshooting;
- Repairing electronic or electroacoustic devices;
- Artistic.

There are many different types of signal generators with different purposes and applications, and varying costs. In general, no device is suitable for all possible applications.

Main types

- Function generators;
- Radio frequency signal generators;
- Microwave signal generators;
- Pitch generators;
- [Arbitrary waveform generators](#);
- [Digital pattern generators](#);

- Frequency generators.

Traditionally, signal generators have been embedded hardware units. However, since the age of multimedia personal computers, flexible, programmable software tone generators have also been available.

There is a broad range of manufacturers for signal generators, including [Rhode & Schwarz](#), [Rigol](#), [Tektronix](#) and [Voltcraft](#).

Product specifications

Quality

Signal generators have a wide range of specifications. Current market requirements for signal generators include:

- Flexibility: coverage of a broad range of frequencies, incl. providing a variety of analogue and digital modulation functions;
- Precision: high quality of signals;
- Usage: high level of user friendliness;
- Operating temperatures: 0 to +55 °C;
- Storage temperatures: -25°C to +85 °C;
- Operating relative humidity: 10% to 90%.

Tip:

- Comply with the relevant European Union regulations and industry-specific standards; otherwise, you will fail to enter the European market.

Labelling

The packaging of signal generators is typically labelled with a description of the contents, including the following types of information:

- type of product;
- model type;
- quantity;
- net and gross weight (in kilograms);
- supplier/manufacturer name;
- supplier/manufacturer location;
- serial number.

Packaging

- Signal generators are usually packaged in plastic bags and cardboard boxes.

Categorisation

- Trade-wise: HS code 85432000
- Production-wise: HS codes 31621350 and 27904030

2 . Which European markets offer opportunities for exporters of measurement equipment?

Macroeconomic developments

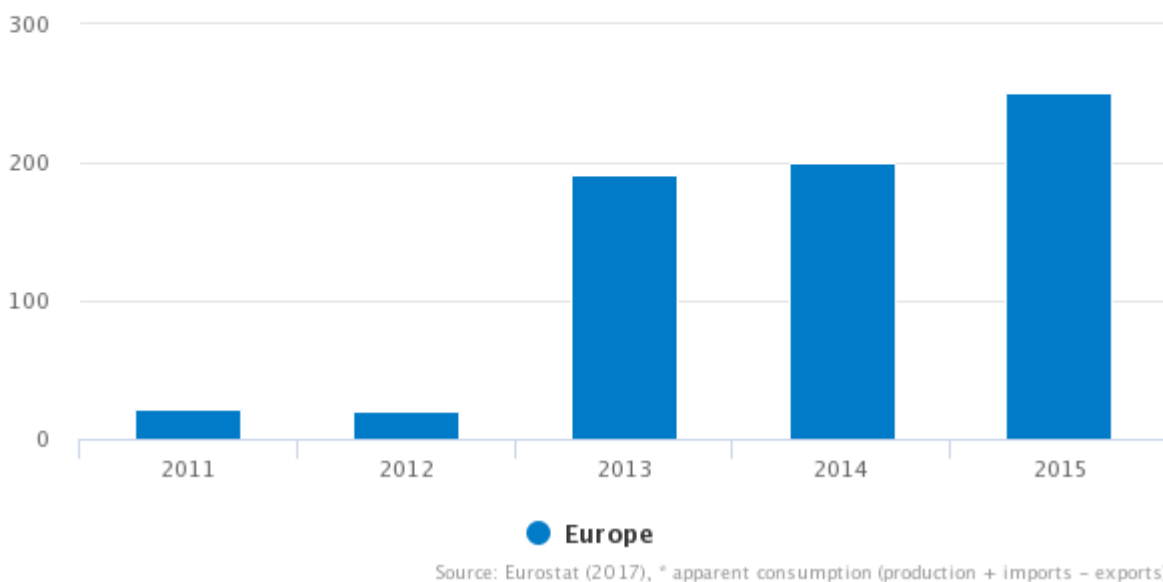
The Gross Domestic Product (GDP) of the European Union totalled \$16.3 trillion in 2015, which was down from \$18.5 trillion in 2014. Overall, growth has stagnated in the European Union since 2008; however, Europe as a market remains one of the largest in the world and therefore remains an attractive market for electronics and electrical engineering suppliers.

Digitisation of application areas and economic recovery drive consumption

Consumption of signal generators in the Europe has increased tremendously over the last five years, with an actual Compound Annual Growth Rate of 62.7%. This demonstrates the outstanding significance of signal generators and measurement equipment in recent years. Measurement equipment will continue to be a stable growth factor in Europe's electronic market. Due to the increasing international competition, European companies strive for innovation and increasing efficiency as well as quality, in which context measurement equipment plays an important role.

The UK has been Europe's largest importer of signal generators (19.2% of Europe's imports in 2015) and growth has steadily accelerated in recent years. Backed by economic policy that strengthens the electronics industry in Great Britain, this position makes the country an interesting market to serve.

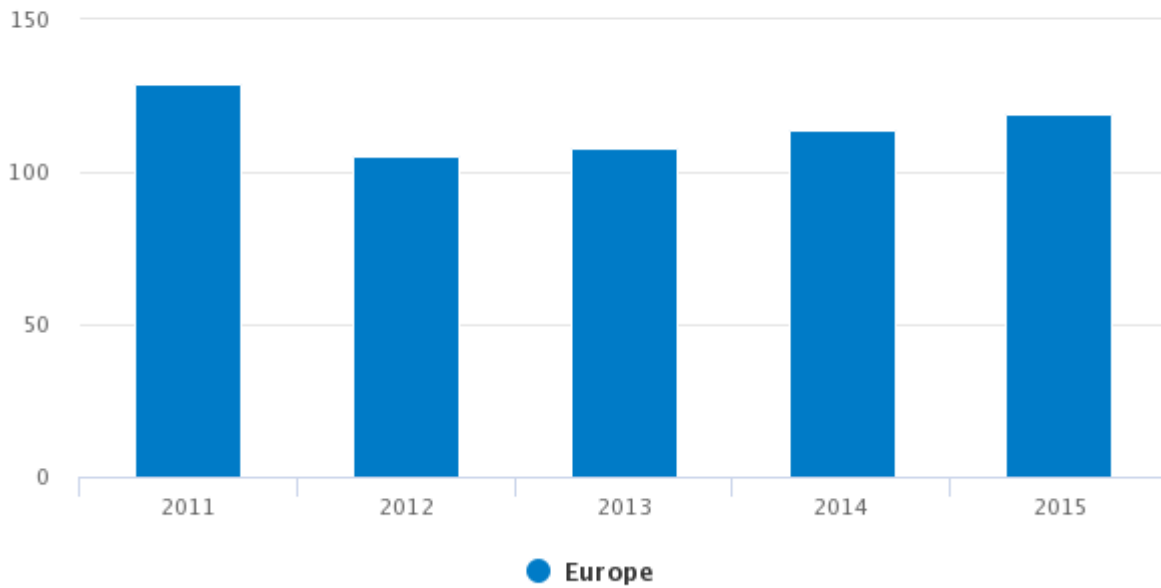
Figure 1: Apparant consumption* of signal generators in Europe
in € million



Production of signal generators does not cover demand in Europe having developed positively after a temporary decrease in 2012. However, it remains at an annual level of €110-120 million , covering only around 47% of the demand within Europe and showing an average decline of 3.9% since 2011.

Figure 2: Production of signal generators in Europe

in € million



Source: Eurostat (2017)

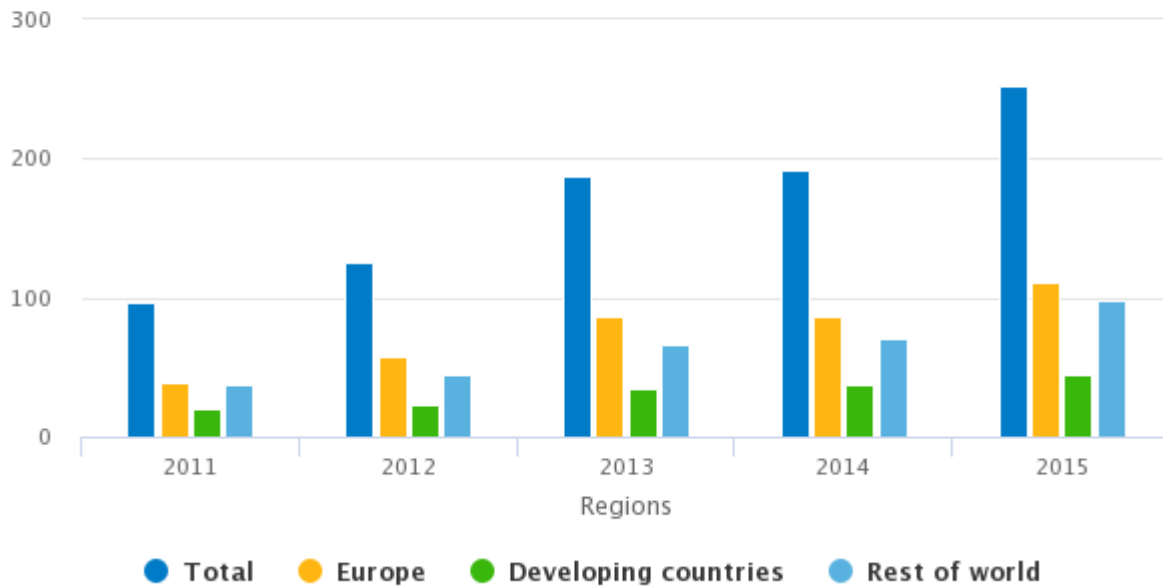
Tip:

- See our study of [Finding Buyers in Europe for more information about entering the European Electronics and Electrical Engineering market.](#)

Europe has been a good market for external suppliers of signal generators, with an average growth of around 23% in the last five years. Europe has imported more from external than from internal markets in the last four years and depends heavily on imports of signal generators.

Figure 3: Imports of signal generators to Europe

in € million

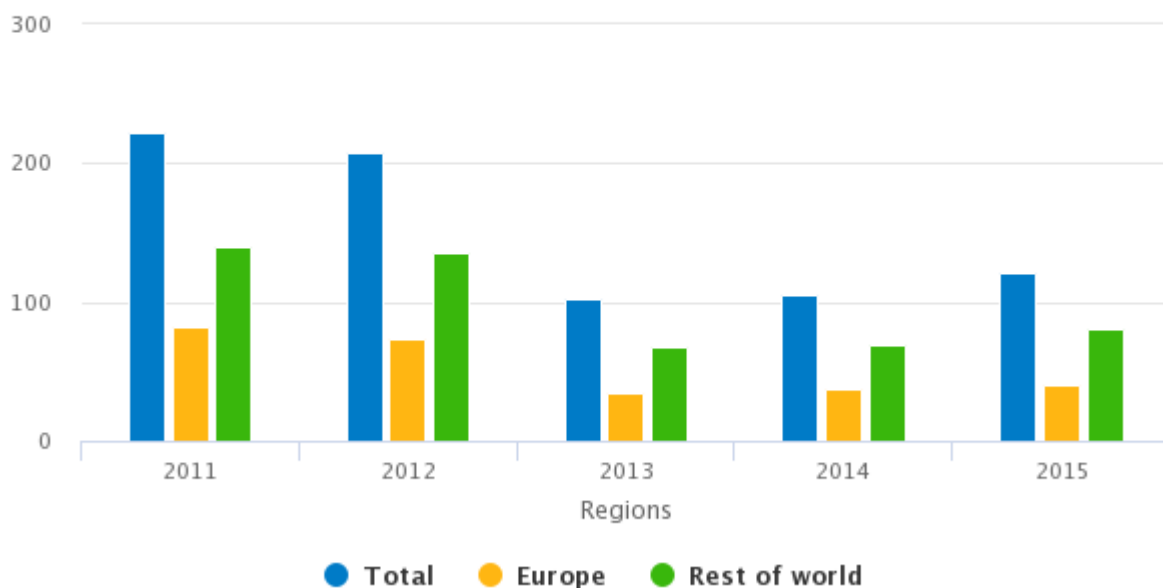


Source: Eurostat (2017)

Despite being a major importer of signal generators, Europe has also been a major exporter of this product. However, the exports have declined strongly (CAGR -11%), while imports increased at the same time. These trends have been steady, with the exception of the increase in exports in 2015. Europe has a surplus in demand not covered by local production, which provides good opportunities for suppliers from developing countries. Developing countries had a stable share of around 18% of the imports to Europe between 2011-2015.

Figure 4: Exports of signal generators from Europe

in € million



Source: Eurostat (2017)

3 . What trends offer opportunities on the European market for

measurement equipment?

The Smart Industry and the Industrial Internet of Things drive demand

The main driver for the accelerated demand of measurement equipment such as signal generators is the positive development of the Smart Industry or the Industrial Internet of Things (IIoT). This development has gained considerable speed in the last five years and has been adopted not only by large enterprises but also increasingly by small and medium-sized enterprises, which are the backbone of the European economy. It can be expected that the IIoT will be a significant growth driver for measurement equipment in the coming years but also in the long term.

Since the digitisation of the industry has taken effect, there are hardly any applications in the machinery, automation, or processing environment that do not use sensors or measurement equipment to test, monitor or automate functions.

Tip:

- Attend trade fairs such as the world leading [Hannover Messe](#) to gain market exposure and to inform yourself of the specifics of demand in Europe.

Cooperation with system integrators

The European production of signal generators is relatively small compared to the demand. The slight increase of European production in recent years will not be able to satisfy the growing demand, which means that the import of signal generators will be a growth business and will provide business opportunities.

European companies are particularly strong and innovative in the area of system integration and have started focusing on this aspect more strongly. This offers business opportunities to component suppliers for electronics and electrical engineering.

Tips:

- Keep up with innovations in the industry by keeping in close contact with clients such as system integrators.
- See [our study of trends in the Electronics and Electrical Engineering sector](#) for more information.

4 . What requirements should signal generators comply with to be allowed on the European market?

To assure reliability, efficiency and safety, signal generators must comply with the relevant European Union regulations and sector standards. Compliance with European legislative and non-legislative requirements is a basic necessity when exporting signal generators to the European market. Some requirements apply to all electronic and electrical engineering products, while others are specific to signal generators.

Here is an overview of the requirements that apply to all electronic and electrical engineering products, including signal generators.

Legal requirements

- Liability for defective products;
- CE marking;
- Waste of Electrical and Electronic Equipment (WEEE);
- Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) and Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Non-legal requirements

- Quality management systems (QMS) - ISO 9001;
- Occupational health and safety (OHS) in the electronic components sector;
- Electronic Industry Citizenship Coalition (EICC) Initiative.

Specific certifications required in application industries

There are standards and requirements that apply to all electronic and electrical engineering products in application industries. Manufacturers and associations have agreed on these in Europe but also beyond. It is necessary to comply with these certifications when targeting potential customers in these industries.

For automotive applications, the following specific standards apply:

- [ISO/TS 16949](#) - fuses within assemblies, sub-assemblies and finished goods must meet the quality demands outlined;
- [ISO 26262](#) requirements focus on the functional safety of electrical and electronic systems in vehicles.

For rail applications, the following specific standard apply:

- [IRIS](#) - the International Railway Industry Standard.

For aviation applications, the [following specific standards apply](#):

- EN/AS 9100 certification (for development, production, manufacturing, installation, construction and maintenance);
- EN/AS 9110 certification (for maintenance operations and service organisations);
- EN/AS 9120 certification (for traders, storekeepers, and distribution).

See our study of [buyer requirements in the Electronics and Electrical Engineering sector](#) for more information and tips.

Requirements that apply specifically to measurement equipment

There is a range of non-legal requirements for signal generators. These are standards defined by the industry or sector that are in practice as important as legal requirements, as they ease procurement for buyers tremendously.

- IEC 60068-2-1: Environmental testing (Cold);
- IEC 60068-2-2: Environmental testing (Dry heat);
- IEC 60068-2-56: Damp heat, steady state, primarily for equipment;
- IEC 60068-2-42 and IEC 60068-2-43: Exposure to hazardous substances;
- EN 61000-6-4: Electromagnetic compatibility (EMC) transient emissions;
- EN 61000-6-2: Electromagnetic compatibility (EMC) interference resistance;
- IEC 60068-2-27: Shock resistance;
- IEC 60068-2-6: Vibration resistance.

Tips:

- Comply with the standards if you plan to supply customers in the market segments mentioned.
- Visit the [EU Export Helpdesk](#) for more information on standards.

5 . What competition do you face on the European measurement equipment market?

There is an intensive competition when it comes to system integration that is not only based on price but also on innovation. A lot of manufacturers are small and medium-sized enterprises that invest around 10% of their annual revenues into research and development. Due to its nature, measurement equipment requires a high level of precision and quality, which is why buyers' demands are accordingly. Exporters from developing countries are recommended to follow a highly customised approach.

The largest exporter from outside Europe are the USA (\$32.8 million in 2015), Malaysia (\$21.5 million in 2015) and China (\$15.5 million in 2015).

See our study of [competition in the Electronics and Electrical Engineering sector](#) for more information.

6 . Through what channels can you get measurement equipment on the European market?

Focusing on direct sales channels is recommended, as around two thirds of the market is dominated by this sales approach. However, it takes a larger effort and more capacities to operate on this basis. Exporters that lack these capacities have the option to approach distributors that are able to reach out to a larger target group than the exporter.

See our study of [segments and channels in the Electronics and Electrical Engineering sector](#) for more information.

7 . What are the end-market prices for measurement equipment?

Prices of signal generators vary depending on their characteristics. Within each product group, they also differ significantly in price.

Table 1: Prices

Types of signal generators	Original Equipment Manufacturer (OEM), volume price range, in €
Function generators	2,000 to 5,000
Radio frequency signal generators	10,000 to 21,000
Microwave signal generators	1,000 to 20,000
Pitch generators	30 to 500
Arbitrary waveform generators	300 to 22,000
Digital pattern generators	250 to 1,800
Frequency generators	250 to 700

You will have to be aware of differences in costs and value chain margins that need to be considered when calculating the product price. The production and administration costs of the manufacturer usually account for 45-50% of the end price (OEM volume price). The production and administration costs include all costs for raw materials, development and labour, as well as other fixed and administration costs.

Table 2: Breakdown of prices

OEM volume price breakdown	Margin
Production and administration costs	45-50%
Marketing and sales costs in developing countries	3%
Freight to Europe and other related costs	6%
Import and other costs (for example, VAT, financing)	5%
Marketing costs in Europe	8%
Importer margin	8-10%
Distributor margin	15-25%

Tips:

- Develop a unique selling proposition based on price and service, while considering your costs, liabilities and responsibilities.
- Make sure that you analyse product market price levels when coming up with a selling proposition.

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