

Position Paper on the RoHS Directive / Electrical Material Decree

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Revision History

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¹⁾ A: Revision due to inaccurate documentation or improvement of the documentation

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Contents

1	Introduction	4
2	General Information about the RoHS Directive	5
3	Area of Application	7
4	Applicability Exemptions	9
5	Stationary Large-Scale PV Power Plants	10
6	SMA Specification	12
6.1	Products from the Utility business unit	12
6.2	Products from the Residential & Commercial business unit	13
6.3	Products from the Off Grid & Storage business unit	13

1 Introduction

Companies that bring electrical and electronic products into circulation in the European Union must comply with the **EU Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment 1** (hereinafter called “RoHS II Directive”).

SMA Solar Technology AG (hereinafter called “SMA”) manufactures electrical and electronic equipment for PV systems and is thus always subject to the specifications in the RoHS II directive. However, it must first be checked and specified which products are exempt from the application range of the RoHS II Directive. For example, stationary large-scale PV power plants are exempt from the RoHS II Directive. However, the definition of a “**stationary large-scale PV power plant**” is not conclusive. For this reason, the question as to which products are defined as a “**stationary large-scale PV power plants**” takes on a central role here. To answer this question, both the RoHS II Directive as well as explanations in a Frequently-Asked-Questions document from the European Commission² (FAQ documents) are helpful. Also noted there is the fact that every manufacturer and every other economic operator should check themselves to what extent their product is subject to the RoHS II Directive or can be exempt from it.³

The goal of this position paper is therefore to check the applicability of the RoHS II Directive for SMA’s product portfolio in order to guarantee compliance with the specifications laid down in the RoHS II Directive.

The present position paper from SMA is designed to provide an overview of the central content of the RoHS II Directive and to describe the applicability and exceptions from it. The SMA products which in our opinion are exempt from this Directive are also shown.

1 RoHS II Directive: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:174:0088:0110:de:PDF>

2 RoHS2 FAQ of the EU Commission dated December 12, 2012: http://ec.europa.eu/environment/waste/rohs_eee/pdf/faq.pdf

3 RoHS2 FAQ of the EU Commission dated December 12, 2012, p. 10.

2 General Information about the RoHS Directive

The abbreviation "RoHS" (**R**estriction of the use of certain **H**azardous **S**ubstances in electrical and electronic equipment) designates collectively EU Directive 2011/65/EU on banning specific substances in the manufacture and marketing of electrical and electronic equipment and components. The RoHS II Directive came into effect on January 3, 2013. It superseded the previous Directive 2002/95/EC4 (hereinafter called "RoHS I Directive").

The RoHS II Directive was implemented on **May 9, 2013** in the form of the Electrical and Electronic Device Material Decree (**ElektroStoffV**⁵) pursuant to EU specifications. This decree is legally binding for Germany.

The goal of the RoHS II Directive and of ElektroStoffV is to restrict hazardous materials in electrical and electronic equipment in order to contribute to protecting human health and the environment, including environmentally-friendly usage and disposal of old electrical and electronic devices.⁶ Some examples of this: implementing lead-free soldering of electronic components, banning poisonous flame retardants in the manufacture of cables and the introduction of suitable replacement products. In addition, the electrical and electronic components used must themselves be free of such materials.

4

5 Electrical and Electronic Device Material Decree: <https://www.gesetze-im-internet.de/bundesrecht/elektrostoffv/gesamt.pdf>

6 Art. 1 RoHS II Directive; Printed matter 68/13, Federal Council, dated February 4, 2013, p. 13.

From July 1, 2006 onwards, electrical and electronic equipment (including cables and spare parts for repair, recycling, updating functions or expanding the performance capability) that are brought into circulation for the first time must not exceed the following material concentrations:

0.1% weight percentage in relation to homogeneous materials:

- Lead
- Hexavalent chromium
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ethers (PBDE)
- Mercury
- Diethylhexyl phthalate (DEHP)
- Benzyl butyl phthalate (BBP)
- Dibutyl phthalate (DBP)
- Diisobutyl phthalate (DIBP)

0.01% weight percentage in relation to homogeneous materials:

- Cadmium

3 Area of Application

In Art. 3 no. 1, the RoHS II Directive defines “**electrical and electronic equipment**” as follows: “Equipment which is dependent on electrical currents or electromagnetic fields in order to work properly, and equipment for the generation, transfer and measurement of such currents and fields and designed for use with a voltage rating not exceeding 1,000 volts for alternating current and 1,500 volts for direct current.”

The term “dependent” is described in Art. 3 no. 2 of the RoHS II Directive as follows: with regard to EEE, needing electric currents or electromagnetic fields to fulfil at least one intended function.

Pursuant to Annex 1, the directive covers the following categories of electrical and electronic equipment:

1. Large household appliances
2. Small household appliances
3. IT- and telecommunications equipment
4. Consumer equipment
5. Lighting equipment
6. Electrical and electronic tools
7. Toys, leisure and sport equipment
8. Medical devices
9. Monitoring and control instruments, including industrial monitoring and control instruments
10. Automatic dispensers

11. Other EEE not covered by any of the categories above.

Compared with the RoHS I Directive, the new category 11 means that **all** electrical and electronic equipment is covered by the RoHS Directive unless they are explicitly exempt (see exceptions).

All other electrical and electronic equipment that previously did not fall within the scope of the RoHS I Directive but that would not meet the requirements of the RoHS II Directive may, however, continue to be made available on the market up to **July 22, 2019** in accordance with Art. 2 Para. 2 of the RoHS II Directive.

For **cables and spare parts** for the repair, the reuse, the updating of functionalities or upgrading of capacity of electrical and electronic equipment, the transition periods of the device category in question apply (see Art. 4 Para. 4 of the RoHS II Directive).

The requirements of the RoHS II Directive only apply for new products that are brought into circulation after the stated time. **Used equipment** and antiquities are not covered by the ElektroStoffV unless they are being launched in the decree's area of application, i.e., the German market, for the first time.⁷

⁷ Printed matter 68/13, Federal Council, dated February 4, 2013, p. 23.

4 Applicability Exemptions

In Art. 2 Para. 4, the RoHS Directive specifies several types of equipment that are exempt from the RoHS II Directive.

- equipment which is necessary for the protection of the essential interests of the security of Member States, including arms, munitions and war material intended for specifically military purposes;
- equipment designed to be sent into space;
- equipment which is specifically designed, and is to be installed, as part of another type of equipment that is excluded or does not fall within the scope of this Directive, which can fulfil its function only if it is part of that equipment, and which can be replaced only by the same specifically designed equipment;
- large-scale stationary industrial tools;
- **large-scale fixed installations;**
- means of transport for people or goods, excluding electric two-wheel vehicles which are not type-approved;
- non-road mobile machinery made available exclusively for professional use;
- active implantable medical appliances;
- photovoltaic panels intended to be used in a system that is designed, assembled and installed by professionals for permanent use at a defined location to produce energy from solar light for public, commercial, industrial and residential applications;
- equipment specifically designed solely for the purposes of research and development only made available on a business-to-business basis.

Annex III also contains several materials and components of electrical and electronic equipment for specific uses that are exempt from the directive for a specified period.

Annex IV contains a list of further exceptions for usage specific to medical devices and monitoring and control instruments.

5 Stationary Large-Scale PV Power Plants

As already mentioned in point 4, an exemption regulation from the RoHS II Directive has been standardized for “stationary large-scale PV power plants.” It will be described in greater detail here.

“Stationary large-scale PV power plants” have been defined in accordance with Art. 2 No. 3 of ElektroStoffV as follows:

A large layout of equipment of different types, and possible further appliances that

- a) have been assembled and installed by specialist personnel and**
- b) are destined to be operated permanently in one fixed place and to be disassembled by specialist personnel.**

The definition in Art. 3 No. 4 of the RoHS II Directive largely matches this definition.

Printed matter 68/13 dated February 4, 20138 of the Federal Council contains further information about the term “stationary large-scale PV power plant”:

“The term “stationary large-scale PV power plant” matches the definition in Article 3 Number 4 of Directive 2011/65/EU.

Only electrical and electronic equipment that meet all the criteria named in the definition are to be regarded as stationary large-scale PV power plants and can thus use the exemption in Art. 1 Para. 2 Number 5. The burden of proof that electrical and electronic equipment meets the criteria named in the definition rests with the manufacturer.

Stationary large-scale PV power plants can be found in industrial, commercial, public (e.g., in hospitals, in airports) as well as private / domestic applications (e.g., residential complexes). **Large-scale PV power plants are regarded as stationary if no change in their location is planned during their usage phase.** Large-scale stationary industrial tools that contain mobile parts are also regarded as stationary. (...)

⁸ Printed matter 68/13, Federal Council, dated February 4, 2013: (<http://dipbt.bundestag.de/dip21/brd/2013/0068-13.pdf>)

Some examples of “stationary large-scale PV power plants” include elevators, luggage conveyor belts, automated storage systems, transport systems, escalators.”⁹

The EU Commission’s FAQ document provides further explanations of the term “stationary large-scale PV power plant” and what it means. Among other things, a guideline for defining the term “large-scale PV power plant” in concrete terms, and when such a plant exists, is to be given. It is stated that the device in question may be a “large-scale PV power plant” if **one** of the following criteria is surpassed¹⁰:

- disassembled with all its parts, it is too large to be transported in an ISO-20-foot container with the dimensions 5.71 m × 2.35 m × 2.39 m
- disassembled with all its parts, it is heavier than 44 metric tons and can no longer be transported by truck
- must be assembled and disassembled by a heavy-duty crane
- **its power is greater than 375 kW.**

The EU Commission expressly points out that the above information is given by way of example only.

⁹ Printed matter 68/13, Federal Council, dated February 4, 2013, p. 26 et seq.

¹⁰ RoHS2 FAQ of the EU Commission dated December 12, 2012, p. 12.

6 SMA Specification

This section deals with the exemption regulations from the applicability of the RoHS II Directive with regard to SMA's product portfolio. The goal is to establish which products are subject to the RoHS II Directive and must therefore be compliant, which products are exempt from its applicability or are subject to another exemption regulation. Further information about our products' RoHS compliance can be requested from the following e-mail address: Sales@SMA.de

6.1 Products from the Utility business unit

Products from the Utility business unit meet the requirements that apply for a stationary large-scale PV power plant because they

- are a large layout of equipment
- are destined to be operated permanently in one fixed place and to be disassembled by specialist personnel
- are assembled and installed by specialist personnel
- are not destined for a change of location during their usage phase
- **have a higher power than 375 kW.**

In our interpretation of the RoHS II Directive, these products therefore meet the definition of the term "stationary large-scale PV power plant" and are therefore exempt from the applicability of the RoHS II Directive. The regulations in the RoHS II Directive are therefore not relevant for these products.

6.2 Products from the Residential & Commercial business unit

The products from the R&C business unit are subject to the applicability of the RoHS II Directive as they are not covered by an exemption regulation from the RoHS II Directive.

We make a distinction here between communication equipment from the solution division and inverters from the inverter division. Communication devices are subject to category 9 and inverters to the new category 11 in accordance with Annex I of the RoHS II Directive.

Products from the solution division:

For category 9, the date of June 1, 2006 applies. The products from the solution division are thus already compliant with the RoHS I and RoHS II Directive.

Products from the inverter division:

For category 11, the date of July 22, 2019 applies. The category 11 products were not covered by the applicability of the previous RoHS I Directive and benefit from the transition regulation of Art. 2 Para. 2 of the RoHS II Directive, meaning that the products must comply with the directive from the deadline date onwards. Nevertheless, a large quantity of our products from the inverter division already comply with the RoHS II Directive.

6.3 Products from the Off Grid & Storage business unit

The product portfolio of the OG&S business unit is subject to the applicability of the RoHS II Directive. Products are exempt that meet the definition of the term "stationary large-scale PV power plant" (see Chapter 5).