Elbasen English version





SEK Handbok 436E

Edition 3.1 November 2017

Elbasen -Guide to electrical installations

Published by SEK Svensk Elstandard.

SEK Svensk Elstandard is a non-profit organization responsible for the Swedish electrotechnical standardization and co-ordinates the Swedish participation in global and European standardization as the Swedish national committee of IEC and CENELEC. See also www.elstandard.se.

SEK Handbok 436E

Elbasen – Guide to electrical installations

Edition 3.1, 2017

ISBN: 978-91-89667-95-2 ISSN 0280-2376

Cover photo: Simon Wester Bass builder: Anders Mattisson, mattissonbass.se

Contents

Foreword				
1		Design	4	
		Basic dimensioning	4	
	1.2	Protective measures	11	
2		Cables entering into the building and positioning of		
		consumer units	12	
	2.1	Entry of cables	12	
	2.2	Switchgear assemblies	13	
3		Wiring systems	20	
	3.1	Calculation of current carrying capacity, load and voltage drop	20	
	3.2	1	30	
	3.3	5 57	33	
		Underground cables	35	
		Wiring systems with regard to the spread of fire	37	
	3.6	Protection against external damage	37	
4		Earthing	38	
4	4.1	5	38 38	
4	4.2	Earthing systems Protective earthing	38 38	
4	4.2	Earthing systems	38	
4	4.2	Earthing systems Protective earthing	38 38	
	4.2	Earthing systems Protective earthing Protective bonding Protective and switching devices	38 38 38	
	4.2 4.3	Earthing systems Protective earthing Protective bonding Protective and switching devices	38 38 38 43	
5	4.2 4.3	Earthing systems Protective earthing Protective bonding Protective and switching devices Switching off Different kinds of locations and environments	38 38 38 43 43	
5	4.24.35.16.1	Earthing systems Protective earthing Protective bonding Protective and switching devices Switching off Different kinds of locations and environments	38 38 38 43 43 52	
5	 4.2 4.3 5.1 6.1 6.2 	Earthing systems Protective earthing Protective bonding Protective and switching devices Switching off Different kinds of locations and environments Dry locations	38 38 38 43 43 52 54	
5	 4.2 4.3 5.1 6.1 6.2 6.3 	Earthing systems Protective earthing Protective bonding Protective and switching devices Switching off Different kinds of locations and environments Dry locations Locations containing bath or shower	38 38 38 43 43 43 52 54 57	
5	 4.2 4.3 5.1 6.1 6.2 6.3 6.4 6.5 	Earthing systems Protective earthing Protective bonding Protective and switching devices Switching off Different kinds of locations and environments Dry locations Locations containing bath or shower Saunas Humid, wet and outdoor locations Locations for personal care, changing rooms	38 38 43 43 43 52 54 57 65	
5	 4.2 4.3 5.1 6.1 6.2 6.3 6.4 6.5 6.6 	Earthing systems Protective earthing Protective bonding Protective and switching devices Switching off Different kinds of locations and environments Dry locations Locations containing bath or shower Saunas Humid, wet and outdoor locations Locations for personal care, changing rooms Laundry rooms	38 38 38 43 43 52 54 57 65 66 68 70	
5	 4.2 4.3 5.1 6.1 6.2 6.3 6.4 6.5 6.6 	Earthing systems Protective earthing Protective bonding Protective and switching devices Switching off Different kinds of locations and environments Dry locations Locations containing bath or shower Saunas Humid, wet and outdoor locations Locations for personal care, changing rooms Laundry rooms Garages (for one or two cars) and carports	38 38 38 43 43 52 54 57 65 66 68	

	6.9	Communication networks	72
	6.10	Heating cable installations	78
7		Extension and maintenance of existing installations	78
	7.1	Extension	78
	7.2	Conversion	79
	7.3	Changed use of the premises, resulting in changed safety	
		requirements	79
	7.4	Maintenance of older electrical installations	79
8		Initial verification	80
9		Principles of protection	82
10)	Terms and definitions	85
11		Bibliography	104
Annex A Form for inspection of electrical installations			

Foreword to the English edition of Elbasen

The name Elbasen is a pun in Swedish. It can means three different things. The most oblious is "the electric bass". Another meaning is "the base on which electricity relies" and finally it can mean "the boss of a team of electricians".

In this publication the international practice with decimal commas is used throughout instead of decimal points. The reason being that this English version of Elbasen is produced for all non-Swedish speakers who understand English and not only for native English speakers.

Foreword

Elbasen is intended for people undertaking minor electrical installation work in homes, offices and in trade and commercial premises, where it is neither reasonable nor necessary to carry out advanced calculations. Consequently, Elbasen is simplified and does not take account of all the possibilities offered by the technical solutions set out in Swedish standards. The simplifications of the rules allow a generous safety margin. Elbasen has also been designed to ensure that the electrical installation will be functional and fit for its purpose from the user's point of view, with good electrical safety.

The idea behind Elbasen is to offer a practical application of the rules under the "system approach", with brief overall regulations and more detailed installation standards. The guidelines in Elbasen are mainly based on the Wiring Rules (Swedish standard SS 436 40 00 – Rules for Design and Erection of Electrical Installations) and SS 437 01 02 (Swedish standard – Guidelines for connection, location, metering and erection of electrical and telecommunication installations).

Elbasen consists primarily of edited extracts from the electrical installation standards and guidebooks listed in the bibliography at the end of this publication. Texts that originate from standards are indicated by a thin grey line in the inside margin (|).

Elbasen will be kept up to date by new editions in line with revisions to the installation standards on which it is based. Comments, suggestions for improvements and questions about the content may be sent to SEK.

We hope you will find Elbasen useful and helpful in your work.