

---

---

**Building environment design —  
Design, dimensioning, installation and  
control of embedded radiant heating  
and cooling systems —**

**Part 8:  
Electrical heating systems**

*Conception de l'environnement des bâtiments — Conception,  
dimensionnement, installation et contrôle des systèmes intégrés de  
chauffage et de refroidissement par rayonnement —*

*Partie 8: Systèmes de chauffage électrique*

[ISO 11855-8:2023](https://standards.iteh.ai/catalog/standards/sist/a641c285-f5cf-40b0-a4c6-12cb96ceeb7a/iso-11855-8-2023)

<https://standards.iteh.ai/catalog/standards/sist/a641c285-f5cf-40b0-a4c6-12cb96ceeb7a/iso-11855-8-2023>



iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ISO 11855-8:2023](https://standards.iteh.ai/catalog/standards/sist/a641c285-f5cf-40b0-a4c6-12cb96ceeb7a/iso-11855-8-2023)

<https://standards.iteh.ai/catalog/standards/sist/a641c285-f5cf-40b0-a4c6-12cb96ceeb7a/iso-11855-8-2023>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

	Page
Foreword.....	iv
Introduction.....	v
<b>1 Scope.....</b>	<b>1</b>
<b>2 Normative references.....</b>	<b>1</b>
<b>3 Terms and definitions.....</b>	<b>1</b>
<b>4 Symbols and subscripts.....</b>	<b>2</b>
4.1 Symbols.....	2
4.2 Subscripts.....	2
<b>5 Calculation procedure of the heat flux.....</b>	<b>3</b>
<b>Annex A (informative) Calculation procedure for electrical heating systems.....</b>	<b>8</b>
<b>Bibliography.....</b>	<b>9</b>

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ISO 11855-8:2023](https://standards.iteh.ai/catalog/standards/sist/a641c285-f5cf-40b0-a4c6-12cb96ceeb7a/iso-11855-8-2023)

<https://standards.iteh.ai/catalog/standards/sist/a641c285-f5cf-40b0-a4c6-12cb96ceeb7a/iso-11855-8-2023>

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 205, *Building environment design*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 228, *Heating systems and water based cooling systems in buildings*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

The radiant heating and cooling system consists of heat emitting/absorbing, heat supply, distribution, and control systems. The ISO 11855 series deals with the embedded surface heating and cooling system that directly controls heat exchange within the space. It does not include the system equipment itself, such as heat source, distribution system and controller.

The ISO 11855 series addresses an embedded system that is integrated with the building structure. Therefore, the panel system with open air gap, which is not integrated with the building structure, is not covered by this series.

The ISO 11855 series can be applied to systems that use not only water but also other liquids or electricity as a heating or cooling medium.

The object of the ISO 11855 series is to provide criteria to effectively design embedded systems. To do this, it presents comfort criteria for the space served by embedded systems, heat output calculation, dimensioning, dynamic analysis, installation, operation, and control method of embedded systems.

The following is a summary of the ISO 11855 parts:

- ISO 11855-1 specifies the comfort criteria which should be considered in designing embedded radiant heating and cooling systems, since the main objective of the radiant heating and cooling system is to satisfy thermal comfort of the occupants.
- ISO 11855-2 provides steady-state calculation methods for determination of the heating and cooling capacity.
- ISO 11855-3 specifies design and dimensioning methods of radiant heating and cooling systems to ensure the heating and cooling capacity.
- ISO 11855-4 provides a dimensioning and calculation method to design Thermo Active Building Systems (TABS) for energy-saving purposes, since radiant heating and cooling systems can reduce energy consumption and heat source size by using renewable energy.
- ISO 11855-5 addresses the installation process for the system to operate as intended.
- ISO 11855-6 shows a proper control method of the radiant heating and cooling systems to ensure the maximum performance which was intended in the design stage when the system is actually being operated in a building.
- ISO 11855-7 presents a calculation method for the product specific input parameters for ISO 52031.
- ISO 11855-8 (this document) presents a calculation method for electrical heating systems.

