

# ILNAS

Institut luxembourgeois de la normalisation  
de l'accréditation, de la sécurité et qualité  
des produits et services

## ILNAS-EN ISO 11855-3:2021

### **Building environment design - Embedded radiant heating and cooling systems - Part 3: Design and dimensioning (ISO 11855-3:2021)**

Conception de l'environnement des  
bâtiments - Systèmes intégrés de  
chauffage et de refroidissement par  
rayonnement - Partie 3: Conception et

Umweltgerechte Gebäudeplanung -  
Flächenintegrierte Strahlheizungs- und -  
kühlssysteme - Teil 3: Planung und  
Auslegung (ISO 11855-3:2021)

## National Foreword

This European Standard EN ISO 11855-3:2021 was adopted as Luxembourgish Standard ILNAS-EN ISO 11855-3:2021.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

## THIS PUBLICATION IS COPYRIGHT PROTECTED

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

English Version

Building environment design - Embedded radiant heating  
and cooling systems - Part 3: Design and dimensioning  
(ISO 11855-3:2021)

Conception de l'environnement des bâtiments -  
Systèmes intégrés de chauffage et de refroidissement  
par rayonnement - Partie 3: Conception et  
dimensionnement (ISO 11855-3:2021)

Umweltgerechte Gebäudeplanung - Flächenintegrierte  
Strahlheizungs- und -kühlssysteme - Teil 3: Planung und  
Auslegung (ISO 11855-3:2021)

This European Standard was approved by CEN on 29 July 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## Contents

	Page
European foreword.....	3

## European foreword

This document (EN ISO 11855-3:2021) has been prepared by Technical Committee ISO/TC 205 "Building environment design" in collaboration with Technical Committee CEN/TC 228 "Heating systems and water based cooling systems in buildings" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2022, and conflicting national standards shall be withdrawn at the latest by March 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 11855-3:2015.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN websites.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Endorsement notice

The text of ISO 11855-3:2021 has been approved by CEN as EN ISO 11855-3:2021 without any modification.

Second edition  
2021-08

---

---

---

## **Building environment design — Embedded radiant heating and cooling systems —**

### **Part 3: Design and dimensioning**

*Conception de l'environnement des bâtiments — Systèmes intégrés de chauffage et de refroidissement par rayonnement —*

*Partie 3: Conception et dimensionnement*



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2021

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
<b>Foreword</b>	<b>iv</b>
<b>Introduction</b>	<b>v</b>
<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</b>	<b>1</b>
<b>5 Radiant panel</b>	<b>3</b>
5.1 Floor heating systems	3
5.1.1 Design procedure	3
5.1.2 Heating medium differential temperature	4
5.1.3 Characteristic curve	4
5.1.4 Field of characteristic curves	4
5.1.5 Limit curves	4
5.1.6 Downwards thermal insulation	5
5.1.7 Procedure for determining the design supply temperature of the heating medium	10
5.1.8 Procedure for determining the design heating medium flow rate	13
5.1.9 Peripheral areas	14
5.2 Ceiling heating systems	14
5.2.1 General	14
5.2.2 Limit curves	14
5.2.3 Procedure for determining the design heating medium flow rate	15
5.3 Wall heating systems	15
5.3.1 General	15
5.3.2 Limit curves	15
5.3.3 Procedure for determining the design heating medium flow rate	15
5.4 Floor cooling systems	16
5.4.1 Design procedure	16
5.4.2 Cooling medium differential temperature	16
5.4.3 Characteristic curve	17
5.4.4 Field of characteristic curves	17
5.4.5 Limit curves	17
5.4.6 Downwards thermal insulation	17
5.4.7 Procedure for determining the supply design temperature of cooling medium	17
5.4.8 Procedure for determining the design cooling medium flow rate	17
5.5 Ceiling cooling systems	17
5.6 Wall cooling systems	17
<b>Annex A (normative) Thermal insulation for type A and C</b>	<b>18</b>
<b>Bibliography</b>	<b>19</b>