BS ISO 18251-1:2017

BSI Standards Publication

Non-destructive testing — Infrared thermography

Part 1: Characteristics of system and equipment

Documents
Document Sharing Hub

Full document details: BS ISO 18251-1:2017

National foreword

This British Standard is the UK implementation of ISO 18251-1:2017.

The UK participation in its preparation was entrusted to Technical Committee WEE/46, Non-destructive testing.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2017.
Published by BSI Standards Limited 2017

ISBN 978 0 580 82616 0

ICS 19.100

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2017.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS ISO 18251-1:2017

INTERNATIONAL STANDARD

ISO 18251-1

First edition
2017-02

Non-destructive testing — Infrared thermography —

Part 1: Characteristics of system and equipment

Essais non destructifs — Thermographie infrarouge —
Partie 1: Caractéristiques du système et des équipements

Reference number
ISO 18251-1:2017(E)

Documents
Document Sharing Hub
© ISO 2017

Full document details: BS ISO 18251-1:2017

COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, 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
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

© ISO 2017 – All rights reserved

Documents
Document Sharing Hub

Full document details: BS ISO 18251-1:2017

Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 IR system setup **1**
5 Objective lens **2**
5.1 General 2
5.2 Spectral response 2
5.3 Focal length (mm) 2
5.4 Aperture f-number 2
5.5 Interchangeable object lenses 3
6 Detector **3**
6.1 General 3
6.2 Detector types 3
6.3 Detector arrays 3
6.4 Scanning systems 3
6.5 Working wavelength range 3
6.6 Number of pixels 4
6.7 Bad/dead pixel 4
6.8 Detector operability 4
6.9 Thermal time constant 4
6.10 Integration time 4
6.11 Temperature range 4
7 Image processor **4**
7.1 General 4
7.2 Image acquisition 4
7.2.1 Timing acquisition 4
7.2.2 Trigger acquisition 5
7.2.3 Image freeze 5
7.3 Image display 5
7.4 Image analysis 5
7.5 Image processing 5
7.5.1 General 5
7.5.2 Bad/dead pixel replacement 5
7.5.3 Non-uniformity correction 5
7.5.4 Image enhancement 5
7.5.5 Filtering 6
7.5.6 Time correlated processing method 6
7.5.7 Visible-infrared image fusion 6
7.6 Image recording 6
8 Thermal stimulation source **6**
8.1 General 6
8.2 Optical radiation devices 6
8.3 Convective excitation devices 6
8.4 Electromagnetic induction devices 7
8.5 Mechanical excitation devices 7
8.6 Advantages and drawbacks of thermal stimulation sources 7
9 Integrated characteristics and functions of infrared systems and equipment **7**
9.1 Integrated performance parameters 7
9.1.1 Noise equivalent temperature difference (NETD) 7

AVA Documents
Document Sharing Hub

© ISO 2017 – All rights reserved

Full document details: BS ISO 18251-1:2017

9.1.2 Minimum resolvable temperature difference (MRTD) 8
9.1.3 Minimum detectable temperature difference (MDTD) 8
9.1.4 Field of view (FOV) 8
9.1.5 Instantaneous field of view (IFOV) 8
9.1.6 Minimum working distance 8
9.1.7 Maximum temperature measurement range 8
9.1.8 Temperature measurement uniformity 8
9.1.9 Operating temperature range 9
9.2 Integrated functions 9
9.2.1 Digital input/output interface 9
9.2.2 Data transfer interface 9
9.2.3 Video output interface 9

10 Accessories 9
10.1 Infrared mirror 9
10.2 Attenuation filter 9
10.3 Spectral filters 9
10.4 Tripod 9
10.5 Reference blocks 9

Bibliography 10

© ISO 2017 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS ISO 18251-1:2017

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 documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 8, *Thermographic testing*.

A list of all parts in the ISO 18251 series can be found on the ISO website.

© ISO 2017 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO 18251-1:2017