
**Non-destructive testing —
Characterization and verification of
ultrasonic test equipment —**

**Part 1:
Instruments**

*Essais non destructifs — Caractérisation et vérification de
l'appareillage de contrôle par ultrasons —
Partie 1: Appareils*

Document Preview

ISO 22232-1:2020

<https://standards.iteh.ai/catalog/standards/iso/3f5edb30-e4a5-4fca-9aef-d00bb207937c/iso-22232-1-2020>



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

ISO 22232-1:2020

<https://standards.iteh.ai/catalog/standards/iso/3f5edb30-e4a5-4fca-9aef-d00bb207937c/iso-22232-1-2020>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

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
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	3
5 General requirements of conformity	4
6 Manufacturer's technical specification for ultrasonic instruments	4
7 Performance requirements for ultrasonic instruments	7
8 Group 1 tests	9
8.1 Equipment required for group 1 tests	9
8.2 Battery operational time	9
8.2.1 Procedure	9
8.2.2 Acceptance criterion	10
8.3 Stability after warm-up time	10
8.3.1 Procedure	10
8.3.2 Acceptance criteria	10
8.4 Stability against temperature	10
8.4.1 Procedure	10
8.4.2 Acceptance criterion	12
8.5 Stability against voltage variation	12
8.5.1 Procedure	12
8.5.2 Acceptance criterion	13
8.6 Time base deviation	13
8.6.1 Procedure	13
8.6.2 Acceptance criterion	15
8.7 Transmitter pulse parameters	15
8.7.1 General	15
8.7.2 Pulse repetition frequency	15
8.7.3 Effective output impedance	15
8.8 Receiver	16
8.8.1 General	16
8.8.2 Cross talk from transmitter to receiver during transmission	16
8.8.3 Dead time after transmitter pulse	17
8.8.4 Dynamic range and maximum input voltage	19
8.8.5 Receiver input impedance	20
8.8.6 Time-corrected gain (TCG)	21
8.9 Gates	22
8.9.1 General	22
8.9.2 Gates with value output	23
8.9.3 Gates with analogue output	25
8.9.4 Gates with alarm output	27
8.10 Highest digitized frequency	28
8.10.1 Procedure	28
8.10.2 Acceptance criterion	29
8.11 Response time of digital ultrasonic instruments	29
8.11.1 General	29
8.11.2 Procedure	29
8.11.3 Acceptance criterion	30
9 Group 2 tests	30
9.1 Equipment required for group 2 tests	30
9.2 Physical state and external aspects	31

9.2.1	Procedure.....	31
9.2.2	Acceptance criterion.....	31
9.3	Transmitter voltage, pulse rise time and duration	31
9.3.1	Procedure.....	31
9.3.2	Acceptance criteria	34
9.4	Receiver.....	34
9.4.1	General.....	34
9.4.2	Frequency response.....	34
9.4.3	Noise level.....	36
9.4.4	Gain linearity.....	37
9.4.5	Vertical display linearity	37
Annex A (normative) Special conditions for ultrasonic instruments with logarithmic amplifiers		39
Bibliography		40

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

[ISO 22232-1:2020](https://standards.iteh.ai/catalog/standards/iso/3f5edb30-e4a5-4fca-9aef-d00bb207937c/iso-22232-1-2020)

<https://standards.iteh.ai/catalog/standards/iso/3f5edb30-e4a5-4fca-9aef-d00bb207937c/iso-22232-1-2020>

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 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.

This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 3, *Ultrasonic testing*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 138, *Non-destructive testing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 22232 series can be found on the ISO website.

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.

