CAN/ULC 553:2014 (R2024)

Standard for Installation of Smoke Alarms

ULC Standards
Normes ULC

scc ccn

Underwriters Laboratories of Canada (ULC) was established in 1920 by letters patent issued by the Canadian Government. It maintains and operates laboratories and certification services for the examination, testing and certification of appliances, equipment, materials, constructions and systems to determine their relation to life, fire and property hazards as well as providing inspection services.

ULC Standards develops and publishes standards and other related publications for building construction, security and burglar protection, environmental safety, electrical equipment, fire protection equipment, gas and oil equipment, thermal insulation products, materials and systems, energy use in the built environment and electrical utility safety.

ULC Standards is a not-for-profit organization and is accredited by the Standards Council of Canada as a Standards Development Organization.

National Standards of Canada developed by ULC Standards conform to the criteria and procedures established by the Standards Council of Canada. Such standards are prepared using the consensus principle by individuals who provide a balanced representation of interests relevant to the subject area on a national basis.

National Standard of Canada

A National Standard of Canada is a standard developed by a Standards Council of Canada (SCC) accredited Standards Development Organization, in compliance with requirements and guidance set out by SCC. More information on National Standards of Canada can be found at www.scc.ca.

SCC is a Crown corporation within the portfolio of Innovation, Science and Economic Development (ISED) Canada. With the goal of enhancing Canada's economic competitiveness and social well-being, SCC leads and facilitates the development and use of national and international standards. SCC also coordinates Canadian participation in standards development, and identifies strategies to advance Canadian standardization efforts.

Accreditation services are provided by SCC to various customers, including product certifiers, testing laboratories, and standards development organizations. A list of SCC programs and accredited bodies is publicly available at www.scc.ca.

For further information on ULC standards, please contact:

ULC STANDARDS
Telephone: 1-888-853-3503
E-mail: ClientService@shopULStandards.com

To purchase ULC Standards, visit: https://www.shopulstandards.com

The intended primary application of this standard is stated in its scope. It is important to note that it remains the responsibility of the user of the standard to judge its suitability for the particular application.

Copies of this National Standard of Canada may be ordered from ULC Standards.

CETTE NORME NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS FRANÇAISE ET ANGLAISE

Standard for Installation of Smoke Alarms, CAN/ULC 553

Third Edition, Dated February 1, 2014

Summary of Topics

This revision of CAN/ULC 553 dated September 24, 2024 is being issued to update the title page to reflect the reaffirmation of this Third Edition National Standard of Canada. No changes in requirements are involved.

Text that has been changed in any manner or impacted by ULSE's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated January 31, 2024.

PLEASE NOTE THAT CERTAIN CODES MAY REFER TO A SUPERSEDED VERSION OF THIS STANDARD. IN THOSE INSTANCES, THE RELEVANT VERSIONS ARE AVAILABLE FOR PURCHASE.

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

CAN/ULC 553:2014 (R2024)

Standard for Installation of Smoke Alarms

ICS 13.220.20; 13.320

First Edition . . . . . April 1986
Second Edition . . . . . July 2002
THIRD EDITION . . . . . FEBRUARY 1, 2014
Reaffirmed . . . . . February 1, 2019
REAFFIRMED . . . . . SEPTEMBER 24, 2024

© 2024

ULC Standards

All rights reserved. No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior permission.

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

CONTENTS

ULC STANDARDS COMMITTEE ON INSTALLATION, INSPECTION AND VERIFICATION OF FIRE ALARM SYSTEMS 7

PREFACE 9

1 SCOPE 11
2 REFERENCE PUBLICATIONS 11
3 GLOSSARY 12
4 GENERAL REQUIREMENTS 13
4.1 SMOKE ALARM INSTALLATION PARTICIPANTS 13
4.2 DOCUMENTATION 13
5 INSTALLATION 14
5.1 GENERAL 14
5.2 LOCATION OF SMOKE ALARMS 15
FIGURES 17

APPENDIX A (INFORMATIVE) EXPLANATORY MATERIALS

A1.1 SMOKE ALARMS FOR LIFE SAFETY 20
A1.3 POSSIBLE INSTALLATION SCENARIOS 21
A4.2.2 VULNERABLE OCCUPANCIES 21
A5.1.2 RECOMMENDED INSTALLATION AND REPLACEMENT PROCEDURE FOR AC-POWERED HARD-WIRED SMOKE ALARMS 22
A5.1.4 INTERCONNECTED SMOKE ALARMS 23
A5.1.9 INTERCONNECTION OF SMOKE ALARMS AND ACCESSORY DEVICES 23
A5.2.1 SMOKE ALARMS AND SOUND LEVELS 23
A5.2.2 NUISANCE ALARMS 24

APPENDIX B (INFORMATIVE) ENHANCEMENT OF FIRE SAFETY IN RESIDENTIAL OCCUPANCIES

B1.1 FIRE DANGER IN THE RESIDENTIAL OCCUPANCY 28
B1.2 FIRE SAFETY IN THE RESIDENTIAL OCCUPANCY 28
B1.3 MINIMIZING FIRE HAZARDS 29
B1.4 FAMILY ESCAPE PLAN 29
B1.5 NUISANCE ALARMS 29

APPENDIX C (INFORMATIVE) SMOKE ALARM INSTALLATION AND VERIFICATION REPORT

APPENDIX D (INFORMATIVE) SMOKE DETECTOR WITH SOUNDER BASE

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

ULC STANDARDS COMMITTEE ON INSTALLATION, INSPECTION AND VERIFICATION OF FIRE ALARM SYSTEMS

Name	Affiliation	Category	Region
K. Allison	Fire Monitoring Of Canada Inc.	Producer	Canada
S. Ames	Standards Individuals	General Interest	Canada
M. Arruda	Electrical Contractors Association Of Ontario	Commercial / Industrial Users	Ontario
A. Asraei	Jensen Hughes Consulting Canada Ltd.	General Interest	Canada
S. Bartlett	RJ Bartlett Engineering Ltd.	General Interest	Canada
D. Blais	Mircom Technologies Ltd	Producer	Canada
D. Casey	Mississauga Fire Emergency Services	Authorities Having Jurisdiction	Ontario
P. Clarke	Department Of National Defence	Government	Canada
R. Collins	Toronto Community Housing	Government	Ontario
D. Currie	DAMAR SECURITY SYSTEMS, DIV OF LAMBTON COMMUNICATION LTD	Producer	Canada
B. Early	Province of Manitoba	Government	Manitoba
T. Espejo	UL Solutions	Testing & Standards Org.	Canada
C. Estereicher	Photon Electric	Commercial / Industrial Users	Canada
A. Friess	M+B electrical consulting engineers	General Interest	Canada
H. Gao	City of Markham	Authorities Having Jurisdiction	Ontario
D. Goodyear	D Goodyear Fire Consulting	General Interest	Canada
M. Hugh	Johnson Controls	Producer	Canada
R. Jagmohan	Ajax Systems Canada Corp	Producer	Canada
K. Jess	Self Employed	General Interest	Canada
J. Kewell	City of Burlington	Authorities Having Jurisdiction	Ontario
F. Kurz	Fire Technicians Network	Commercial / Industrial Users	Canada
C. Leber	Building Reports Canada	Supply Chain	Canada
F. Leber	AML Encore Corp	General Interest	Canada
B. McBain	Russell Township Fire Services	Authorities Having Jurisdiction	Ontario
A. Murray	Troy Life And Fire Safety Ltd.	Producer	Canada
B. Neufeld	ADT Security Services Canada Inc. / TELUS	Supply Chain	Canada
T. Parker	Government Of Alberta	Government	Alberta
C. Ramenda	ONYX-ELECTRICAL SERVICES	General Interest	Canada
J. Rebstock	Umbra Engineering Ltd.	Commercial / Industrial Users	Canada
D. Rosales	Telular, a business unit of AMETEK, Inc.	Producer	Georgia
L. Solonovich	Fort McMurray, City of	Authorities Having Jurisdiction	Alberta
P. Teolis	Firetronics 2000 INC	Commercial / Industrial Users	Canada
J. Tondang	Siemens Canada Limited	Producer	Canada
C. Vaida	Plan Group	Commercial / Industrial Users	Canada
J. VanKeuren	Edwards	Producer	USA
D. Weber	VIPOND INC	Producer	Canada

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

Name	Affiliation	Category	Region
S. Williams	City of Mississauga – Mississauga Fire & Emergency Services	Authorities Having Jurisdiction	Ontario
M. Yanofsky	Honeywell International INC	Producer	USA
I. Yavari	SenezCo – Fire Science & Engineering	Commercial / Industrial Users	Canada
P. Zerbinos	Chubb	Producer	Canada
M. Zukov	ARENCON Inc.	General Interest	Canada
R.Ghandour	UL Standards & Engagement	TC Project Manager	Canada
F. Luz	UL Standards & Engagement	TC Chair	Canada

This list represents the membership at the time the Committee balloted on the final text of this edition. Since that time, changes in the membership may have occurred.

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

PREFACE

This is the Third Edition of the Standard for Installation of Smoke Alarms, CAN/ULC 553.

It has been formally approved by the ULC Committee on Installation, Inspection and Verification of Fire Alarm Systems.

This Standard has been developed in compliance with the requirements of SCC for accreditation of a Standards Development Organization.

Only metric SI units of measurement are used in this Standard. If a value for measurement is followed by a value in other units in parentheses, the second value may be approximate. The first stated value is the requirement.

Appendices A, B, C and D, identified as informative, are for informational purposes only.

In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages.

This Third Edition National Standard of Canada is based on, and now supersedes, the Second Edition.

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

Requests for interpretation of this Standard should be sent to ULC Standards. The requests should be worded in such a manner as to permit a “yes” or “no” answer based on the literal text of the requirement concerned.

This CAN/ULC 553 Standard is under continuous maintenance, whereby each revision is approved in compliance with the requirements of SCC for accreditation of a Standards Development Organization. In the event that no revisions are issued for a period of four years from the date of publication, action to revise, reaffirm, or withdraw the standard shall be initiated.

Comments or proposals for revisions on any part of the Standard may be submitted at any time. Proposals should be submitted via a Proposal Request in the Collaborative Standards Development System (CSDS) at https://csds.ul.com.

This Standard is intended to be used for conformity assessment.

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

1 SCOPE

1.1 This Standard applies to the installation of *smoke alarms* within *dwelling units* as well as within sleeping rooms / areas that are not part of *dwelling units*. (Refer to Appendix A, Explanatory Material, Clause A1.1 and Appendix B, Enhancement of Fire Safety in Residential Occupancies.)

1.2 Requirements for the inspection, testing and maintenance of *smoke alarms* are referenced in CAN/ULC-S552, Standard for Inspection, Testing and Maintenance of Smoke Alarms.

1.3 This Standard does not cover systems incorporating residential fire warning systems. Requirements for these systems are referenced in CAN/ULC-S540, Standard for Residential Fire Warning and Life Safety Systems: Installation, Inspection, Testing and Maintenance. (Refer to Appendix A, Explanatory Material, Clause A1.3, and Appendix D, Smoke Detector with Sounder Base.)

2 REFERENCE PUBLICATIONS

The documents shown below are referenced in the text of this Standard. Unless otherwise stated elsewhere in this Standard such reference shall be considered to indicate the edition and/or revisions of the document available at the date on which the Committee approved this ULC Standard. All undated references shall be interpreted as referring to the latest edition of that document.

Document Published by the CSA Group
5060 Spectrum Way, Mississauga, Ontario, Canada, L4W 5N6
Telephone: (416) 747-4000 or 1-800-469-6727
www.csa.ca

• CSA C22.1-12, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations

• CSA Z462-12, Workplace Electrical Safety

Document published by the Institute of Electrical and Electronics Engineers Inc.
IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ, U.S.A. 08855-1331
Telephone: (908) 562-3800 or (908) 981-0060
www.ieee.org

• IEEE 1584-2002, Guide for Performing Arc-Flash Hazard Calculations – Includes Access to Additional Content

---

Document published by the National Electrical Manufacturers Association
1300 North 17th Street; Suite 1752, Rosslyn, VA, U.S.A. 22209
Telephone: (703) 841-3200

• ANSI/NEMA Z535.4-12, Product Safety Signs and Labels

Documents published by the National Research Council of Canada (NRC)
Publication Sales M20, National Research Council of Canada, Institute for Research in Construction, Ottawa, ON K1A 0R6
Telephone: (613) 993-2463, Canada, 1-800-672-7990

• National Building Code of Canada 2010

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.

• National Fire Code of Canada 2010

Documents published by ULC Standards
7 Underwriters Road, Toronto, Ontario, Canada M1R 3B4
Telephone: (416) 757-3611or (800) 463-6852
www.ulc.ca

• CAN/ULC-S524, Standard for Installation of Fire Alarm Systems

• CAN/ULC-S531, Standard for Smoke Alarms

• CAN/ULC-S537, Standard for Verification of Fire Alarm Systems

• CAN/ULC-S540, Standard for Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance

• CAN/ULC-S552, Standard for the Inspection, Testing and Maintenance of Smoke Alarms

• ULC/ORD-C539, Guide for the Investigation of Fire Alarm Devices, Single and Multiple Station, Mechanically-Operated Type

---

3 GLOSSARY

NOTE: Terms used in this Standard that are in *italic* print are defined as follows:

3.1 *ACCESSORY DEVICES* – Devices which are *interconnected* to *smoke alarms* to provide optional functions, including but not limited to manual stations, fire sprinkler flow switches, heat alarms, visible signalling devices, relay modules, etc.

3.2 *AUTHORITY HAVING JURISDICTION* – The governmental body responsible for the enforcement of any part of this Standard or the official or agency designated by that body to exercise such a function.

3.3 *CARE* – The provision of services other than treatment by or through *care* facility management to resident who requires these services because of cognitive, physical or behavioural limitations.

3.4 *CARE OCCUPANCY* – The occupancy or use of a *building* or part thereof where *care* is provided to residents.

NOTE: Examples of *care occupancies* include, but are not limited to, assisted/supportive living facilities, *care* facilities without treatment, children's custodial homes, convalescence/recovery/rehabilitation centres without treatment, group homes, hospices without treatment, nursing homes without treatment, reformatories without detention quarters and respite centres without treatment.

3.5 *COMPATIBLE* – The correct electrical, electronic or mechanical interaction between a series of system components that depend on individual unique characteristics that are connected together to meet the intent of this Standard.

3.6 *DWELLING UNIT*[1] – A *suite* operated as a housekeeping unit, used or intended to be used by one or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

3.7 *HEAT ALARM* – A combined heat sensor and audible alarm device designed to sound an alarm within the room or suite in which it is located upon detection of a pre-determined temperature or rate of temperature rise.

ULSE INC. COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM ULSE INC.