CAN/ULC 559:2024

Standard for Equipment for Fire Signal Receiving Centres and Systems

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Standard for Equipment for Fire Signal Receiving Centres and Systems, CAN/ULC 559

Third Edition, Dated October 22, 2020

Summary of Topics

This Third Edition of CAN/ULC 559, dated October 4, 2024 includes the following changes in requirements:

> ***– New Section for Software-based Receivers under System Requirements; 3.28A, Section 11A***
>
> ***– Editorial corrections to 44.2.3 and 49.1.1 for clarity***

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 new and revised requirements are substantially in accordance with Proposal(s) on this subject dated May 24, 2024 and August 26, 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PLEASE NOTE THAT CERTAIN CODES MAY REFER TO A SUPERSEDED VERSION OF THIS STANDARD.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.

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CAN/ULC 559:2024

Standard for Equipment for Fire Signal Receiving Centres and Systems

ICS 13.220.20; 13.320; 13.310

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PREFACE

This is the Third Edition of CAN/ULC 559, Standard for Equipment for Fire Signal Receiving Centres and Systems.

This Edition of the Standard was developed by the ULC Standards Working Group on Equipment for Fire Signal Receiving Centres and Systems, reviewed by the ULC Standards Subcommittee on Control Units for Fire Alarm Systems, and was formally approved by the ULC Standards Committee on Fire Alarm and Life Safety Equipment and 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.

Annexes A and B, identified as Informative, are for information 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 CAN/ULC 559.

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 559 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.

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INTRODUCTION

1 Scope

1.1 This Standard covers requirements for *fire signal receiving centres* and systems, which include transmitting and receiving equipment, proprietary *fire signal receiving centre* equipment and *control unit* accessories for use in accordance with the following:

a) CAN/ULC-S524, Installation of Fire Alarm Systems;

b) CAN/ULC 561, Standard for the Installation and Services for Fire Signal Receiving Centres and Systems;

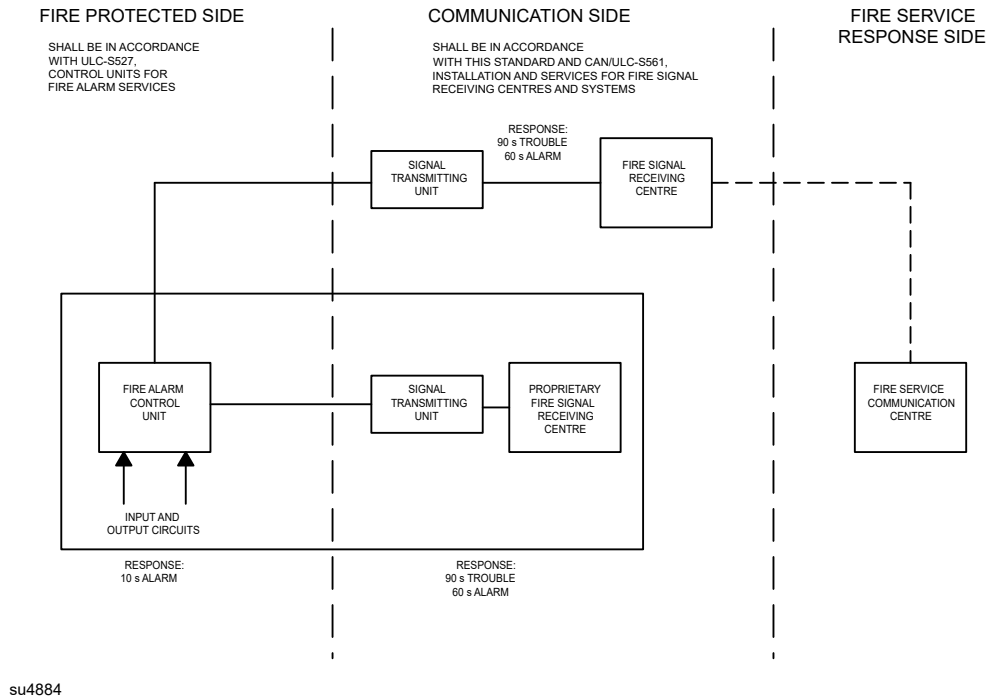
c) CAN/ULC S1981 Ed. 1 – Standard for Signal Receiving Centre Automation System;

d) CSA-22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations; and

e) Figure 1.1, Typical Arrangement of Equipment for Fire Signal Receiving Centres and Systems.

Figure 1.1

Typical Arrangement of Equipment for Fire Signal Receiving Centres and Systems



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1.2 *Proprietary fire alarm systems* incorporating the features and functions of a fire alarm system, and/or incorporating transponders of distributed type systems, shall be in accordance with the requirements of CAN/ULC 527, Standard for Control Units for Fire Alarm Systems.

1.3 Equipment covered by the scope of this Standard incorporating the features and functions of a fire alarm system, shall be in accordance with the requirements of CAN/ULC 527, Standard for Control Units for Fire Alarm Systems.

1.4 These requirements cover *fire signal receiving centre* systems, including protected premise unit and receiver for ordinary (non-hazardous) indoor and outdoor locations.

1.5 Changes or additions to the equipment covered by the scope of this Standard shall be tested according to the relevant sections of this Standard. Examples of changes and additions include, but are not limited to:

a) Operating system programme;

b) Changes or additional features to system operation;

c) Electrical/electronic or mechanical components; and

d) Other *software* temporarily or permanently installed; such as for test or maintenance.

1.6 Programming methods, test, service and other *software* intended for use with the equipment for *fire signal receiving centres* and systems shall be included in the evaluation of this equipment.

1.7 The term product as used in this Standard refers to all items of equipment covered by the scope of this Standard.

1.8 Unless otherwise indicated, all AC voltage and current values mentioned in this Standard are root mean-square (rms).

1.9 The requirements of this Standard apply uniformly to all equipment covered by the scope of this Standard regardless of whether they are used as a component of a *fire signal receiving centre* and systems or separately enclosed and referred to as an accessory.

1.10 Signal receiving units used in *fire signal receiving centres*, *satellite centres*, *signal processing centres* and *bridging centres* shall comply with the requirements of this Section.

1.11 This Standard does not cover replacement parts for fire alarm systems that consist of products or subassemblies of complete products manufactured in accordance with previous editions of ULC 559. Replacement parts that do not comply with the current edition of this Standard shall be manufactured in accordance with the edition of this Standard that they were previously in compliance with and shall be marked “For Replacement Only – Complies with ULC 559-xx” (where xx represents the edition of the Standard that they were previously in compliance with).

2 Reference Publications

2.1 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.

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www.wpafb.af.mil

• MIL-HDBK-338B, Electronic Reliability Design Handbook
• MIL-STD-883H, Test Method Standard Microcircuits

Documents Published by the American Society for Testing and Materials (ASTM)
100 Barr Harbour Drive, PO Box C700, West Conshohocken, PA 19428-2959 U.S.A.
Telephone: (610) 832-9585
www.astm.org

• ASTM B117, Standard Practice for Operating Salt Spray (Fog) Apparatus
• ASTM B240, Standard Specification for Zinc and Zinc Aluminum (ZA) Alloys in Ingot Form for Foundry and Die Castings
• ASTM D396, Standard Specification for Fuel Oils
• ASTM E11, Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves

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Standards published by the CSA Group
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• CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations
• CAN/CSA C22.2 No. 0.4, Bonding of Electrical Equipment
• CSA C22.2 No. 0.15, Adhesive Labels
• CAN/CSA C22.2 No. 0.17, Evaluation of Properties of Polymeric Materials
• CAN/CSA C22.2 No. 65, Wire Connectors
• CSA C22.2 No. 66.1, Low Voltage Transformers – Part 1: General Requirements
• CSA C22.2 No. 66.2, Low Voltage Transformers – Part 2: General Purpose Transformers
• CSA C22.2 No. 66.3, Low Voltage Transformers – Part 3: Class 2 and Class 3 Transformers
• CAN/CSA C22.2 No. 94.1, Enclosures For Electrical Equipment, Non-Environmental Considerations
• CSA C22.2 No. 107.3, Uninterruptable Power Systems
• CAN/CSA C22.2 No. 153, Quick Connect Terminals
• CAN/CSA C22.2 No. 158, Terminal Blocks
• CAN/CSA C22.2 No. 60065, Audio, Video and Similar Electronic Equipment Apparatus – Safety Requirements
• CSA C22.2 No. 60950-1, Information Technology Equipment Safety – Part 1: General Requirements
• CAN/CSA E60384-1, Fixed Capacitors for Use in Electronic Equipment – Part 1: Generic Specification

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Standard published by Institute of Electrical and Electronics Engineers Inc.
445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331

• ANSI/IEEE Y32.9-72 (R1989), Standard for Graphic Symbols for Electrical Wiring and Layout DiagramsUsed in Architecture and Building Construction.

Standard Published by the International Electrotechnical Commission (IEC)
3 Rue de Varembe, PO Box 131 Geneva, Switzerland CH-1211
www.iec.ch

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• IEC 60695-11-3:2012, Fire hazard testing – Part 11-3: Test flames – 500 W flame – Apparatus and conformational test methods

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Codes Published by the National Fire Protection Agency
1 Batterymarch Park, Quincy, Massachusetts 02169-7471
www.nfpa.org

• NFPA 72-2016, National Fire Alarm and Signaling Code

Codes published by the National Research Council of Canada
1200 Montreal Road, M-58 Ottawa, Ontario, K1A 0R6 Canada
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www.nrc-cnrc.gc.ca

• National Building Code of Canada 2015

Standards published by the National Institute of Standards and Technology (NIST)
5285 Port Royal Road, Springfield, VA 22161
http://csrc.nist.gov/publications/

• Federal Information Processing Standards (FIPS), Specification for the Advanced Encryption Standard, FIPS 197

Documents Published by ULC Standards
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Telephone: (416) 757-3611, ext. 61744; FAX (613) 231-5977, “ATTN: Publications”
E-mail: publications@ulc.ca
www.ulc.ca

• CAN/ULC 102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
• CAN/ULC-S524, Standard for Installation of Fire Alarm Systems
• CAN/ULC 527, Standard for Control Units for Fire Alarm Systems
• CAN/ULC 561, Standard for the Installation and Services for Fire Signal Receiving Centres And Systems
• CAN/ULC S1981, Standard for Signal Receiving Centre Automation System

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Telephone: (847) 272-8800
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• ANSI/UL 486E, Standard for Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors
• UL 796, Standard for Printed Wiring Boards
• UL 969, Standard for Marking and Labeling Systems
• UL 1439, Standard for Tests for Sharpness of Edges on Equipment
• UL 1642, Standard for Lithium Batteries

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3 Glossary

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

3.1 *ACTIVE COMMUNICATION* – A type of communication in which the integrity of the *communication channel(s)* is continuously monitored so as to identify to the *fire signal receiving centre* any fault or failure that could affect signal transmission and reception.

3.2 *BRIDGING CENTRE(S)* – A normally unattended physical location where *communication channels* from multiple protected premises are connected together for transmission on a *communication channel* to subsequent *bridging centres*, *satellite centres* or *signal processing centres* without being processed or modified in any way.

3.3 *CLASS A CIRCUIT (Return Loop Circuit)* – A circuit having one continuous path connecting all components on the circuit and terminating through an alternate connection path in the source enclosure.

3.4 *CLASS B CIRCUIT (Terminated Circuit)* – A circuit having one continuous path connecting all devices on the circuit and terminating at an end-of-line device.

3.5 *COMMUNICATION CHANNEL* – A facility or service extending from a protected premises for the purpose of transmitting alarm, trouble and supervisory signals from a protected premises to a *fire signal receiving centre*.

3.6 *COMMUNICATION SYSTEM(S)* – A *communication channel* or channels and associated equipment utilized to transmit signals to a *fire signal receiving centre*. Refer to Annex A – Explanatory Notes, A3.7.

3.7 *COMPATIBLE* – 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 (e.g. *control unit* and field devices).

3.8 *COMPROMISE* – Any unauthorized action that affects the transmission of valid data between the protected premises and the *fire signal receiving centre*.

3.9 *CONTROL UNIT* – A unit which provides the control and logic processing for a fire alarm system.

3.10 *ELECTRICAL SUPERVISION* – A means whereby a fault condition, which would interfere with the operation of a circuit, is detected.

3.11 *EXTRA-LOW VOLTAGE* – Any voltage up to and including 30 V rms.

3.13 *EXTENDED CIRCUIT(S)* – System circuits that extend beyond the equipment enclosure.

3.14 *FIRE SIGNAL RECEIVING CENTRE (FSRC)* – A facility that receives alarm signals and at which trained personnel and service persons are on duty at all times.

3.15 *FIRMWARE* – Basic operating program which is inherent to the system and is not field programmable.

3.16 *GROUND FAULT(S)* – A circuit impedance to ground sufficient to prevent normal operation.

3.17 *MANAGED FACILITIES VOICE NETWORK (MFVN)* – A physical facilities-based network capable of transmitting real time signals with formats unchanged that is managed, operated, and maintained by the service provider to ensure service quality and reliability from the subscriber location to public switched

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