



UL 268A

STANDARD FOR SAFETY

Smoke Detectors for Duct Application

UL Standard for Safety for Smoke Detectors for Duct Application, UL 268A

Fourth Edition, Dated December 11, 2008

Summary of Topics

This revisions of ANSI/UL 268A dated August 18, 2020 includes Wiring, Grounding, and Related Requirements and Instructions; [3.11](#), Section [4](#), [Table 5.2](#), [9.1.2](#), [9.2.1](#), [9.2.4](#), [9.3.1](#) – [9.3.5](#), [9.4.1](#), [9.5.2](#), Section [9.8](#), [10.1.1](#) – [10.1.6](#), [10.3.1](#) – [10.3.3](#), [10.5.1](#), [11.1](#) – [11.4](#), [11.6](#), [11.10](#), Section [24.3](#), [25.3.1\(i\)](#), [36.5.1.1](#), [51.1](#), Section [51.3](#), [55.3\(e\)](#)

Text that has been changed in any manner or impacted by UL'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 29, 2020.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

UL provides this Standard "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

Users of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgment (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

No Text on This Page

DECEMBER 11, 2008
(Title Page Reprinted: August 18, 2020)



ANSI/UL 268A-2020

1

UL 268A

Standard for Smoke Detectors for Duct Application

Some requirements specified in this standard were previously covered in the Standard for Combustion Products Type Smoke Detectors for Fire Protective Signaling Systems, UL 167, and Photoelectric Type Smoke Detectors for Fire Protective Signaling Systems, UL 168.

First Edition – May, 1983
Second Edition – March, 1993
Third Edition – May, 1998

Fourth Edition

December 11, 2008

This ANSI/UL Standard for Safety consists of the Fourth Edition including revisions through August 18, 2020.

The most recent designation of ANSI/UL 268A as an American National Standard (ANSI) occurred on August 18, 2020. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

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

UL's Standards for Safety are copyrighted by UL. Neither a printed nor electronic copy of a Standard should be altered in any way. All of UL's Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

COPYRIGHT © 2020 UNDERWRITERS LABORATORIES INC.

No Text on This Page

CONTENTS

INTRODUCTION

1	Scope	7
2	General	8
	2.1 Components	8
	2.2 Units of measurement	8
	2.3 Undated references	8
3	Glossary	8
4	Manufacturer's Published Instructions	9

CONSTRUCTION

5	Enclosure	10
	5.1 General	10
	5.2 Cast metal enclosures	10
	5.3 Sheet metal enclosures	11
	5.4 Nonmetallic enclosures	11
	5.5 Covers	14
	5.6 Glass panels	14
6	Remote Accessories	15
	6.1 General	15
	6.2 Sensitivity indicating means	15
	6.3 Radioactive materials	16
7	Air Flow Monitoring	16
	7.1 General	16
	7.2 Alignment and secureness	16
8	Protection Against Corrosion	16
9	Field-Wiring Connections	17
	9.1 General	17
	9.2 Field wiring compartment	17
	9.3 Field wiring terminals (general)	18
	9.4 Field wiring leads	18
	9.5 Grounding terminals and leads	19
	9.6 Grounded supply terminals and leads	19
	9.7 Isolated (nongrounded) detectors	20
	9.8 Special field-wiring terminals (qualified application)	20
10	Internal Wiring	21
	10.1 General	21
	10.2 Wireways	21
	10.3 Splices	21
	10.4 Barriers	22
	10.5 Strain relief	22
11	Bonding for Grounding	22

COMPONENTS

12	General	23
	12.1 Mounting of components	23
	12.2 Operating components	24
	12.3 Current-carrying parts	24
13	Bushings	24
14	Electrical Insulating Material	25
15	Lampholders and Lamps	25

16	Photocell Illuminating Lamps	26
16.1	General.....	26
16.2	Operating conditions – LED	26
17	Motors	27
18	Protective Devices.....	27
19	Printed Wiring Boards	27
20	Switches.....	27
21	Transformers and Coils.....	27
22	Dropping Resistors.....	27

SPACINGS

23	General	28
24	Servicing and Maintenance Protection	29
24.1	General.....	29
24.2	Sharp edges.....	29
24.3	Maintenance (field cleaning).....	29

PERFORMANCE

25	General	30
25.1	Test units and data.....	30
25.2	Test voltages	30
25.3	Test samples and data	30
25.4	Component reliability data	31
25.5	Remote accessories	32
25.6	Detector head tests.....	32
26	Normal Operation Test.....	32
27	Electrical Supervision Test	32
27.1	General.....	32
27.2	Component failure	33
27.3	Photocell illuminating lamps	34
28	Circuit Measurement Test	34
29	Air Leakage Test	34
30	Overvoltage and Undervoltage Test	35
30.1	Overvoltage test	35
30.2	Undervoltage test	35
31	Temperature Test	35
32	Vibration Test	38
33	Component Replacement Test	38
34	Jarring Test.....	39
35	Cover Replacement Test.....	40
36	Fire Tests.....	40
36.1	General.....	40
36.2	Combustibles	40
36.3	Test equipment.....	41
36.4	Typical duct testing facility	44
36.5	Test methods.....	46
37	Stability Tests.....	50
38	Variable Ambient Temperature Test	50
38.1	Operation in high and low ambients.....	50
38.2	Effect of shipping and storage.....	50
39	Humidity Test	51
40	Corrosion Test.....	51
41	Transient Test	52
41.1	General.....	52

41.2	Internally induced transients	52
41.3	Extraneous transients	52
41.4	High-voltage transients	53
42	Static Discharge Test	53
43	Overload Test	54
43.1	Internally energized circuits	54
43.2	Separately energized circuits	54
44	Endurance Test	55
44.1	Internally energized circuits	55
44.2	Separately energized circuits	55
45	Abnormal Operation Test	55
46	Locked Rotor Test	55
46.1	General	55
46.2	Thermal or overcurrent protection	56
46.3	Impedance protection	56
47	Dielectric Voltage-Withstand Test	57
48	Polarity Reversal Test	58
49	Tests of Polymeric Materials	58
49.1	General	58
49.2	Temperature test	58
49.3	Flame test	58
49.4	Conduit connections	59
50	Tests of Elastomeric and Foam Materials	61
50.1	General	61
50.2	Accelerated aging	61
51	Strain Relief Test	61
51.3	Special field-wiring terminals	61
52	Radioactive Material Measurement Test	62
53	Sensitivity Tests of Smoke Sensing Chamber(s)	62

MARKING

54	General	63
55	Installation Instructions – Wiring Diagram	65
56	Technical Bulletin	65
57	Packaging Marking	66

SUPPLEMENT SA – INSTRUCTIONS FOR DETERMINING A RELIABILITY PREDICTION OF ELECTRONIC COMPONENTS AND MICROELECTRIC CIRCUITS

SA1	Methods of Determining Failure Rate	67
-----	---	----

SUPPLEMENT SB – CRITERIA FOR ACCEPTANCE OF MICROELECTRONIC DEVICES

SB1	General	75
SB2	Part I – Quality Assurance Screening Program	75
SB3	Part II – Determination of Failure Rate Number Supplemented by Burn-in Test	76
SB3.1	General	76
SB3.2	Determination sequence	76
SB3.3	Test calculations and procedures	77
SB3.4	Test conditions	80
SB3.5	Failure rate number calculation	80

APPENDIX A

Standards for Components	82
--------------------------------	----

APPENDIX B Analysis of Radioactive Elements