



UL 1610

STANDARD FOR SAFETY

Central-Station Burglar-Alarm Units

UL Standard for Safety for Central-Station Burglar-Alarm Units, UL 1610

Fourth Edition, Dated July 5, 2016

Summary of Topics

This revision of UL 1610 dated April 21, 2021 is issued to remove the ANSI designation from the standard.

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.

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

JULY 5, 2016

(Title Page Reprinted: April 21, 2021)

1

UL 1610

Standard for Central-Station Burglar-Alarm Units

First Edition – January, 1985

Second Edition – May, 1994

Third Edition – October, 1998

Fourth Edition

July 5, 2016

This UL Standard for Safety consists of the Fourth Edition including revisions through April 21, 2021.

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 © 2021 UNDERWRITERS LABORATORIES INC.

No Text on This Page

CONTENTS

INTRODUCTION

1	Scope	9
2	General	9
2.1	Components	9
2.2	Units of measurement	10
2.3	Undated references	10
2.4	Terminology	10
3	Glossary	10
4	Installation and Operating Instructions	13
5	Installation and Operating Instructions Physical Media	14
6	Electric Shock	14

CONSTRUCTION

ASSEMBLY

7	General	15
7.1	Product assembly	15
7.2	Electrical protection	15
8	Protection of Service Personnel	20
9	Enclosures	20
9.1	General	20
9.2	Doors and covers	22
9.3	Enclosure openings	22
9.4	Screens and expanded metal	23
9.5	Cast metal	24
9.6	Sheet metal	24
9.7	Product enclosure mounting	27
9.8	Polymeric materials	27
10	Corrosion Protection	27

FIELD WIRING CONNECTIONS

11	General	28
12	Cord-Connected Products	28
13	Permanently-Connected Products	29
13.1	General	29
13.2	Field-wiring terminals	29
13.3	Field wiring leads	31
13.4	Polarity identification	32
14	Grounding	32

INTERNAL WIRING

15	General	33
16	Wiring Methods	34
17	Separation of Circuits	35
18	Bonding for Grounding	35

COMPONENTS, ELECTRICAL

19	General	38
	19.1 Mounting of components	38
	19.2 Insulating materials	39
	19.3 Fuseholder	40
	19.4 Current-carrying parts	40
20	Overcurrent Protection	40
21	Semiconductors	40
22	Switches	40
23	Transformers and Coils	40

SPACINGS

24	General	41
25	Components	43

PERFORMANCE – ALL UNITS

26	General	43
	26.1 Test units and data	43
	26.2 Test samples and miscellaneous data	43
	26.3 Test voltages	44
	26.4 FCC requirements	44
27	Normal Operation Test	44
28	Incorrect Connection Tests	44
29	Input Test	45
30	Output Measurement Test	45
31	Electrical Supervision Test	45
32	Undervoltage Operation Test	46
33	Overvoltage Operation Test	46
34	Variable Ambient Test	46
35	Humidity Test	47
36	Leakage Current Tests for Cord-Connected Products	47
37	Electric Shock Current Test	50
38	Overload Test	54
	38.1 General	54
	38.2 Separately energized circuits	54
39	Endurance Test	55
	39.1 General	55
	39.2 Separately energized circuits	55
40	Jarring Test	55
41	Dielectric Voltage-Withstand Test	56
42	Temperature Test	57
43	Abnormal Operation Test	60
44	Electrical Transient Tests	60
	44.1 General	60
	44.2 Supply line transients	61
	44.3 Internally induced transients	63
	44.4 Input/output circuit transients	63
45	AC Induction Test	64
46	Polymeric Materials Test	65
47	Battery Replacement Test	65
48	Drop Test	65
49	Strain Relief Test	65
	49.1 Supply cord	65
	49.2 Field-wiring leads	66

50	Ignition Through Bottom-Panel Opening Tests	66
50.1	General.....	66
50.2	Hot, flaming oil.....	66
50.3	Molten PVC and copper	67
51	Mechanical Strength Tests for Enclosures	67
52	Special Terminal Assemblies Tests	68
52.1	General.....	68
52.2	Disconnection and reconnection	68
52.3	Flexing test	68
52.4	Millivolt drop test.....	68
52.5	Temperature test	69

INTRUSION DETECTION DEVICES

53	General	69
----	---------------	----

CONTROL UNITS

54	General	69
----	---------------	----

DIRECT-WIRE SYSTEMS

55	General	69
56	Alarm Receiving Units	70
57	Subscriber Units.....	70

TRANSMITTER SYSTEMS

58	General	70
59	Dual Signal Line Transmission Methods.....	71
60	Single Signal Line Transmission Methods	73
61	Central-Station Units	74
62	Subscriber Control Units	74

COMBINATION SYSTEMS

63	General	75
----	---------------	----

MULTIPLEX SYSTEMS

64	General	75
65	Operation	75
66	Packet Switched Data Networks	78
67	Central-Station Units	79
68	Subscriber Control Units	80
69	Remotely Accessible Control Units	80
69.1	General.....	80
69.2	Validation of remote access credential.....	80
69.3	Communication	81
69.4	Communications data integrity standards	82
69.5	Software/Firmware upgrade	83
69.6	Data integrity standards	83
69.7	Software/Firmware deployment process	84
69.8	Event log.....	84

70	Automated System Units.....	85
71	Satellite Stations	85
72	Private Radio Facilities	86

ACKNOWLEDGMENT SIGNAL

73	General	86
74	Attack Tests	87
75	Compromise Test	87
76	Encrypted Line Security Equipment	89

POWER SUPPLIES

GENERAL

77	Common Requirements	89
----	---------------------------	----

RECHARGEABLE (SECONDARY) BATTERIES

78	General	90
----	---------------	----

NONRECHARGEABLE (PRIMARY) BATTERIES

79	General	91
----	---------------	----

PERFORMANCE

80	Power Failure.....	91
----	--------------------	----

SHORT RANGE RADIO FREQUENCY (RF) DEVICES

81	General	93
82	Time to Report Alarm.....	93
83	Inoperative Transmitter Reporting.....	94
84	Battery Status Indication	94
85	Tamper Protection	95
86	Interference Protection	95
87	Reference Level Determination	95
	87.1 Method 1.....	95
	87.2 Method 2.....	97
88	Interference Immunity	100
89	Frequency Selectivity	101
90	Clash.....	102
91	Clash Error	102
92	Error (Falsing) Rate	103
93	Throughput Rate	104
94	Transmitter Stability Test.....	105
95	Transmitter Accelerated Aging Test.....	105
96	Installation Instructions and User Manual	105

MANUFACTURING AND PRODUCTION-LINE TESTS FOR HIGH-VOLTAGE PRODUCTS

97	General	106
98	Production-Line Dielectric Voltage-Withstand Test	106

99	Production-Line Grounding Continuity Test.....	107
----	--	-----

MARKING

100	General	107
101	Marking Permanency Tests	109

ACCESSORY EQUIPMENT

102	General	110
103	Construction	110
104	Performance (Installation) Test	110
105	Marking	110

APPENDIX A

Standards for Components	112
--------------------------------	-----

APPENDIX B

B1	User Validation (Remote Devices).....	113
----	---------------------------------------	-----