



UL 1077

STANDARD FOR SAFETY

Supplementary Protectors for Use in
Electrical Equipment

[ULNORM.COM](https://www.ulnorm.com) : Click to view the full PDF of UL 1077 2021

[ULNORM.COM](https://www.ulnorm.com) : Click to view the full PDF of UL 1077 2021

UL Standard for Safety for Supplementary Protectors for Use in Electrical Equipment, UL 1077

Seventh Edition, Dated June 25, 2015

Summary of Topics

This revision of ANSI/UL 1077 dated November 16, 2021 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

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 requirements are substantially in accordance with Proposal(s) on this subject dated September 3, 2021.

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

ULNORM.COM : Click to view the full PDF of UL 1077 2021

JUNE 25, 2015
(Title Page Reprinted: November 16, 2021)



ANSI/UL 1077-2016 (R2021)

1

UL 1077

Standard for Supplementary Protectors for Use in Electrical Equipment

First Edition – September, 1975
Second Edition – July, 1981
Third Edition – January, 1987
Fourth Edition – April, 1994
Fifth Edition – June, 1999
Sixth Edition – July, 2005

Seventh Edition

June 25, 2015

This ANSI/UL Standard for Safety consists of the Seventh Edition including revisions through November 16, 2021.

The most recent designation of ANSI/UL 1077 as a Reaffirmed American National Standard (ANS) occurred on November 16, 2021. 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 © 2021 UNDERWRITERS LABORATORIES INC.

No Text on This Page

ULNORM.COM : Click to view the full PDF of UL 1077 2021

CONTENTS

INTRODUCTION

1	Scope	5
2	Glossary	5
3	Components	6
4	Units of Measurement	6
5	Undated References	7

CONSTRUCTION

6	General	7
7	Corrosion Protection	7
8	Insulating Materials	7
9	Current-Carrying Parts	8
10	Wiring Terminals	9
11	Pressure Wire Connectors	11
12	Wiring Leads	11
13	Wire-Binding Screw Terminals	11
14	Mounting	12
15	Operating Mechanism	12
16	Spacings	12
17	Clearance and Creepage Distances	14

PERFORMANCE

18	General	15
----	---------------	----

OVERCURRENT PROTECTORS

19	Calibration	18
20	Temperature	19
21	Overload Test	22
22	Endurance	25
23	Dielectric Strength and Voltage-Withstand Tests	26
	23.1 Dielectric strength test	26
	23.2 Voltage-withstand test	26
	23.3 Details	27
24	Recalibration	27
25	Short Circuit	27
26	Strain Relief	33

ACCESSORIES

27	All Accessories	34
	27.1 General	34
	27.2 Installation	34
	27.3 Mounting	35
	27.4 Field wiring	35
	27.5 Strain relief	35
	27.6 Spacings	36
28	Auxiliary Switches	36
	28.1 General	36

28.2	Temperature	36
28.3	Overload	36
28.4	Endurance	38
28.5	Dielectric voltage-withstand	38
29	Overvoltage-Trip Release Devices	38
30	Overvoltage-Trip Appliance Protectors	39
30.1	General	39
30.2	Temperature	39
30.3	Overvoltage	39
30.4	Operation	39
30.5	Overload	39
30.6	Endurance	39
30.7	Dielectric voltage-withstand	39
31	Undervoltage-Trip Protectors	39
31.1	General	39
31.2	Temperature	39
31.3	Overvoltage	40
31.4	Operation	40
31.5	Overload	40
31.6	Endurance	40
31.7	Dielectric voltage-withstand	40
32	Shunt-Trip Protectors	40
32.1	General	40
32.2	Temperature	40
32.3	Overvoltage	40
32.4	Undervoltage	40
32.5	Overload	41
32.6	Endurance	41
32.7	Dielectric voltage-withstand	41
 RATINGS		
33	Details	41
 MARKING		
34	Specifics	41
 APPENDIX A		
	Standards for Components	45
 APPENDIX B Examples of Valid U and C Code Combinations		

INTRODUCTION

1 Scope

1.1 These requirements apply to supplementary protectors intended for use as overcurrent, or over- or under-voltage protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required. Compliance with the following is acceptable for use as a component of an end product.

1.2 The acceptability of a protector in any particular application depends upon its ability to be used continuously under the conditions that prevail in actual service. Accordingly, for a particular application a protector may be affected by the requirements for the equipment it is used in, and it may be necessary to additionally evaluate features or performance characteristics that are not specified in this Standard.

1.3 This Standard also covers accessory devices that may be installed in or on the protector to perform a secondary function. Examples of accessories are alarm and auxiliary switches.

1.4 Devices which ensure a manual restart due to the complete loss of voltage are covered by the Standard for Solid-State Controls for Appliances, UL 244A. Compliance with the Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements, UL 60730-1, and/or the applicable Part 2 standard from the UL 60730 series fulfills these requirements.

1.5 Automatic reset devices designed to open the circuit automatically on a predetermined value of time versus current or voltage within an appliance or other electrical equipment are covered by the Standard for Solid-State Controls for Appliances, UL 244A. Compliance with the Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements, UL 60730-1, and/or the applicable Part 2 standard from the UL 60730 series fulfills these requirements.

2 Glossary

2.1 AUXILIARY SWITCH – A switch that is mechanically operated by the main contact switching mechanism.

2.2 FIELD WIRING TERMINALS – Any terminal to which a supply or other wire can be connected by an installer in the field, unless the wire is provided as part of the appliance or other electrical equipment and a pressure terminal connector, soldering lug, soldered loop, crimped eyelet, or other means for making the connection is factory-assembled to the wire.

2.3 MAGNETIC TRIP PROTECTOR – A protector that is caused to trip by current through a magnet coil.

2.4 OVERCURRENT-TRIP PROTECTOR – A thermal or magnetic trip protector intended to trip the contact circuit when the current through the thermal element or trip coil, which is in series with contact circuit, exceeds a predetermined value.

2.5 OVERVOLTAGE-TRIP PROTECTOR – A magnetic trip protector intended to trip the contact circuit when the voltage across the trip coil rises above a predetermined value.

2.6 RATED CURRENT – For an overcurrent-trip protector, the current that the protector is intended to carry continuously without opening of the circuit.

2.7 SHUNT TRIP PROTECTOR – A protector with a trip mechanism energized by a separate source of voltage or current that is derived from the main contact circuit or from an independent source. The trip mechanism is either of the overcurrent type or the voltage actuated type.

2.8 SUPPLEMENTARY PROTECTOR – A manually resettable device designed to open the circuit automatically on a predetermined value of time versus current or voltage within an appliance or other electrical equipment. It is permitted to be provided with manual means for opening or closing the circuit.

2.9 THERMAL AND MAGNETIC TRIP PROTECTOR – A combination of [2.3](#) and [2.4](#).

2.10 THERMAL TRIP PROTECTOR – A protector that is caused to trip by heat generated from current flowing through a thermal element.

2.11 TRIP CURRENT – The current at which an overcurrent-trip protector is intended to open the contact circuit at a given ambient temperature and a given time.

2.12 TRIP-FREE – A protector designed so that the contacts cannot be held in the closed position by the operating means during trip command conditions.

2.13 TRIP-FREE, CYCLING – A protector designed so that the contacts cannot be held in the closed position by the operating means during trip command conditions, but will reclose when the closing command is maintained. The protector will continue to close momentarily and repeatedly as long as the close command is maintained by the operating means during trip command conditions.

2.14 TRIP MECHANISM – The part of the protector that senses the abnormal condition in the circuit and causes the contact circuit to open.

2.15 TRIP VOLTAGE – The voltage at which an overvoltage protector or undervoltage protector is intended to trip.

2.16 UNDERVOLTAGE-TRIP PROTECTOR – A magnetic trip protector intended to trip the contact circuit when the voltage across the trip coil falls below a predetermined value.

3 Components

3.1 Except as indicated in [3.2](#), a component of a product covered by this Standard shall comply with the requirements for that component. See Appendix [A](#) for a list of standards covering components generally used in the products covered by this Standard.

3.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

3.3 A component shall be used in accordance with its rating established for the intended conditions of use.

3.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

4 Units of Measurement

4.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.