



National Differences For

UL 61810-1

Standard for Electromechanical Elementary Relays - Part 1: General Requirements

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Standard for Electromechanical Elementary Relays - Part 1: General Requirements

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Adoption of IEC 61810-1, Electromechanical elementary relays - Part 1: General and safety requirements (fourth edition, issued by IEC February 2015) as a new IEC-based UL standard, UL 61810-1.

This document provides a single listing of the National Differences included in the UL adoption of the corresponding IEC standard.

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Preface

This document provides a single listing of the technical National Differences included in the UL adoption of the corresponding IEC standard.

In its IEC-based standards, UL uses the notations indicated below to identify national difference type, and these types are additionally noted in this document. The standard may not use all types of these deviations.

D1 - These are deviations which are based on basic safety principles and requirements, elimination of which would compromise safety for U.S. consumers and users of products.

D2 - These are deviations based on safety practices. These are deviations for IEC requirements that may be acceptable, but adopting the IEC requirements would require considerable retesting or redesign on the manufacturer's part.

DC - These are deviations based on the component standards and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE - These are deviations based on editorial comments or corrections.

DR - These are deviations based on the national regulatory requirements.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

National Differences

2DV D2 Modify Clause 2 and all subclauses as follows:

For a list of normative standards, see Annex DVA, Tables DVA.1 and DVA.2 for normative references. See Annex DVB, Table DVB.1 for a list of normative component standards.

5.3DV D2 Modify Clause 5.3 and all subclauses as follows:

DC rated relay coils shall operate in accordance with Class 1 limits, and AC rated relay coils shall operate in accordance with Class 2 limits.

5.8DV D2 Modify Clause 5.8 b) by adding the following:

See also Annex D for dedicated device loads.

5.9DV D2 Modify Clause 5.9 as follows:

The intended ambient temperature range shall be 0°C to +40°C unless otherwise specified by the manufacturer and marked per Table 5, Item 5b.

5.10DV DE Modify Clause 5.10 as follows:

Declaration of relay technology categories per Clause 5.9 is optional.

6DV D2 Modify Clause 6 and associated tables as follows:

6DV.1 Per Table 5, test procedure B shall be used for all type tests. In addition, non-compliant test results are not acceptable.

6DV.2 Routine tests specified per Table 4 are optional.

7.1DV D2 Modify Clause 7.1 as follows:

7.1DV.1 The data of 1c, 2c, 3b through 3f, 5c, and 5h is optional. The data of 3g, 4a through 4e, 5a, 5d, and 5i through 5k does not apply.

7.1DV.2 Relays with pressure wire connectors (screw terminals) for field wiring shall be marked to show a range of values or a nominal value of tightening torque in N•m (lb-in) to be applied to the terminal screws. Marking may be adjacent to the terminal or provided in the instruction sheet.

7.3DV D2 Modify Clause 7.3 by replacing with the following:

The marking durability tests described in Clause 7.3 are optional.

8.1DV D2 Modify Clause 8.1 by adding the following:

8.1DV.1 In addition to the requirements in Clause 8.1, temperature rises shall not exceed those given in Table 8DV.1.

8.1DV.2 For relays rated above 40°C, the allowable temperature rise for the elevated ambient shall be calculated as follows:

$$T_R = T_T - [T_M - 40^\circ\text{C}]$$

where:

T_R = Allowable temperature rise;

T_T = Maximum temperature rise allowed by Table 8DV.1; and

T_M = Elevated ambient temperature specified for the equipment.

8.1DV.3 For relays rated below 40°C, the allowable temperature rise for the reduced ambient shall be calculated as follows:

$$T_R = T_T - [40^\circ\text{C} - T_M]$$

where:

T_R = Allowable temperature rise;

T_T = Maximum temperature rise allowed by Table 8DV.1; and

T_M = Reduced ambient temperature specified for the equipment.

Table 8DV.1 – Maximum allowable temperature rises

Materials and components	K
1. Rubber or thermoplastic insulated conductors	a
2. Field-wiring terminals	
Pressure wire connectors, wire binding screws, flying leads (marked for use with 60°C or 60/75°C conductors)	50
Pressure wire connectors, wire binding screws, flying leads (marked for 75°C conductors)	65
Quick connect terminals	30
Spring-force terminals	30
3. Contacts	
Solid and built-up silver, silver alloy, and silver faced	c
All other metals	65
4. Insulating materials ^d	e
5. On bare resistor material, thermocouple method	375
6. Printed-wiring boards	f
7. Any component or material not specifically identified in 1 – 6	f
^a For insulated conductors the maximum temperature rise shall not exceed the maximum operating temperature specified for the wire in question minus an assumed ambient (room) temperature of 40°C.	

Table 8DV.1 – Maximum allowable temperature rises Continued

Materials and components	K
^b Temperature limited by the temperature limitations on the material for adjacent parts. There shall be no structural deterioration of the contact assembly, loosening of parts, cracking or flaking of materials, loss of temper of spring, annealing of parts, or other visible damage. ^c For compounds which have been investigated for particular temperature ratings, the maximum temperature rise shall not exceed the temperature rating minus an assumed ambient of 40°C. ^d See Annex DVC. ^e The maximum temperature rise of the printed-wiring board is the operating temperature of the board minus an assumed ambient of 40°C. ^f The maximum temperature rise of any component shall not exceed the temperature limit of the component minus an assumed ambient temperature of 40°C.	

8.2DV D2 Modify Clause 8.2 b) by replacing with 8.2DV.1, and Clause 8.2 h) by adding 8.2DV.2:

8.2DV.1 Pressure wire connectors (screw terminals) shall be tightened to the torque specified by the manufacturer. If the torque is specified as a range, the lowest value in the range shall be used.

8.2DV.2 Thermocouples shall be made of wires not larger than 24 AWG (0.21mm²), in conformance with the requirements for special tolerance thermocouples specified in the Initial Calibration Tolerances for Thermocouples table in Temperature Measurement Thermocouples, ANSI/ISAM C96.1.

8.3DV D2 Modify Clause 8.3 as follows:

For Procedure B, for relays with make contacts, the coil(s) shall be energized with rated coil voltage.

8.4.1DV D2 Modify Clause 8.4.1 by replacing with the following:

8.4.1DV.1 The maximum permissible temperature rises for relay terminals are defined per Table 8DV.1.

8.4.1DV.2 Temperature sensors other than thermocouples may be used to determine placement of thermocouples, but shall not be used during the heating test.

9.2.1DV D2 Modify Clause 9.2.1 by adding the following:

For Procedure B, only Mode I will apply.

10.1DV D2 Modify Clause 10.1 by replacing as follows:

The preconditioning tests defined in Clause 10.1 do not apply.

13.1DV D2 Modify Clause 13.1 as follows:

13.1DV.1 Relays without a declared impulse voltage withstand rating shall have creepage and clearance distances in accordance with Table 13DV.1.