



LOVAG

TEST INSTRUCTION IEC/EN 60068-2-27 Edition 4.0

BASIC ENVIRONMENTAL TESTING PROCEDURES

PART 2: Tests – Test Ea and guidance: Shock

This test instruction is based on the following standards:

Standard: IEC 60068-2-27 (2008-02) Edition: 4.0
EN 60068-2-27:2009

It complies with these standards in all respects and provides additional information ensuring a suitable degree of repeatability of the tests between the different test stations.

Valid from: 2010-04-15

A handwritten signature in blue ink, reading 'S. Manganaro'.

Dr. Saverio Manganaro
Chairman of LOVAG Technical Committee

PREAMBLE

This test instruction refers to IEC and EN documents.

For convenience in the use of this test instruction, paragraphs are numbered according to the clauses in the referred standard (IEC and/or EN as indicated).

Test must be carried out according to the standard; this test instruction only adds a few specific details.

Test Instructions of the relevant product standards shall be used as an addendum to this LTI.

Verifications before and after shock tests shall be carried out according Table 1,
Verifications during shock tests shall be carried out according Table 2.

The level of the test severity is to be defined according IEC / EN 60068-2-27 and the product specification or manufacturer's declaration.

7. and 10. Verifications Before and/or After Shock Tests

Table 1

Verification	Product Category in Accordance With EN...									
	50295	60269	60439	60898	60947	61008	61009	61095	61131	61812
Complete visual inspection or temperature rise test	X	X	X	X	X	X	X	X	X	X
High voltage power frequency withstand test after the shock test. Requirement according to the product standard during 1s.	-	X	X	X	X	X	X	X	-	X
Normal function according to the product standard (without load)	X	-	X	X	X	X	X	X	X	X
Trip / time characteristics of releases after the shock test at ambient temperature. Requirement according to the product standard	-	-	X ^{*)}	X	X	X	X	-	X	X
Visual inspection with special attention to deformation and wear / cracks	X	X	X	X	X	X	X	X	X	X
Continuity of the protective circuit(s) *)	X	X	X	X	X	X	X	X	X	X
Continuity of state of logic components *)	X	-	X	X	X	X	X	-	X	X

EN 50295 Controller Device Interfaces
 EN 60269 Low-Voltage Fuses
 EN 60439 Low-Voltage Switchgear And Controlgear Assemblies
 EN 60898 Miniature Circuit Breakers
 EN 60947 Low-Voltage Switchgear And Controlgear
 EN 61008 RCCBs
 EN 61009 RCBOs
 EN 61095 Electromechanical Contactors for Household Use
 EN 61131 PLC Systems
 EN 61812 Specified Time Delay Relays For Industrial Use

*) - If applicable

8.2. Verifications During Shock Tests

Table 2

These verifications apply only in case the product is intended to operate under environmental conditions which include shocks.
The verifications are to be carried out at the specified shock conditions.

Verification	Product Category in Accordance With EN...									
	50295	60269	60439	60898	60947	61008	61009	61095	61131	61812
Normal functioning according to the product standard, test without load at rated supply voltage **)	X	X	X	X	X	X	X	X	X	X
Trip / time characteristics of releases after the shock test at ambient temperature. No tripping at operational current in thermal equilibrium	-	-	X	X	X	X	X	-	X	X
Position of contacts: Contacts in "I" position shall remain closed *) Contacts in "O" position shall remain open *)	X	-	X	X	X	X	X	X	X	X
Continuity of state of logic components **)	X	-	X	-	X	X	X	-	X	X

EN 50295	Controller Device Interfaces
EN 60269	Low-Voltage Fuses
EN 60439	Low-Voltage Switchgear And Controlgear Assemblies
EN 60898	Miniature Circuit Breakers
EN 60947	Low-Voltage Switchgear And Controlgear
EN 61008	RCCBs
EN 61009	RCBOs
EN 61095	Electromechanical Contactors for Household Use
EN 61131	PLC Systems
EN 61812	Specified Time Delay Relays For Industrial Use

*) - Time interval of change of state shall be declare by the manufacturer

***) - If applicable