


**Procedure for the Control**  
**of Test Instructions and Test Report Forms**

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**Remark:**

This document was previously issued as LTI G6, Edition 1.5a.  
 The only change is the inclusion of the "Overview and Classification of LOVAG Documents" given in Appendix 1 and quoted on page 2. The inclusion of this table was required by the 36<sup>th</sup> LOVAG Management Committee (MC) in May 2010.  
 Changes in comparison to LTI G6, Edition 1.5a are highlighted by a black line at the left side and yellow marking.

<p><b>LOVAG OD 01- 01</b></p> <p><b>Edition 1.0</b></p>	<p><b>Approved by LOVAG Management Committee in July 2011</b></p> <p>Signed: </p> <p>.....</p>
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## Procedure for the Control of Test Instructions and Test Report Forms

### Objective

The purpose of this procedure is to ensure the identification, review, creation, authorization, control and issue of all LOVAG Test Instructions and Test report Forms.

An overview and classification of all LOVAG Documents is given in Appendix 1

<u>Document Types</u>	<u>Review</u>	<u>Approval</u>	<u>Authorisation</u>
LOVAG Test Instructions	LTC	LTC	Chairman of LTC
LOVAG Test Report Forms	LTC	LTC	Chairman of LTC
LOVAG General Instructions	LMC	LMC	Chairman of LMC
LOVAG Operational Documents	LMC	LMC	Chairman of LMC
LOVAG Rules	LMC	LMC	Chairman of LMC
LOVAG Licence Agreement	LMC	LMC	All Signatories of LOVAG Agreement
LOVAG Agreement	LMC	LMC	All Signatories of LOVAG Agreement

LTC = LOVAG Technical Committee

LMC = LOVAG Management Committee

Test Instructions and Test Report Forms shall hereinafter be referred to as LTIs and TRFs respectively.

### Responsibility

Approval/Authorisation - As above.

Control/Issue - Administration.

### Terms and Definitions

Author and co-author –The LTC shall appoint a nominated representative, as ‘Author’ responsible for the preparation of new and revised documents. A second representative shall be appointed, by the LTC, as ‘Co-Author. Wherever possible the author shall assume responsibility for producing both the LTI and TRF. The Co-Author has to check and to comment to a draft LTI or TRF within an appropriate time and his approval is necessary before the issue of an LTI or TRF.

Secretariat - the signatory responsible for providing a secretary to the LOVAG Committees (LTC and LMC).

## Preparation of New LTIs and TRFs

1. The author of any new document will prepare the document in accordance with the guidelines detailed in Appendices 2, 3 and 4 as appropriate.
2. LTIs shall be produced in accordance with the guidelines and examples shown in Appendix 3.
3. If the LOVAG Test Instructions given in the LTIs are different from the CTL Decisions of the IECEE CB Scheme and/or from the OSM-decisions of CENELEC a note should be given about that difference.
4. TRFs shall be produced in accordance with the guidelines and examples shown in Appendix 4.
5. The authors shall circulate the draft document to the LTC for review, discussion and comment.
6. The LTC shall review the document and agree any amendments as appropriate.
7. The authors will amend the document in accordance with any comments made and re-circulate the document in accordance with steps 4 and 5.
8. Once the approval of the LTC has been granted the author shall submit the final document (electronic version in actual PDF- and WORD format) to the Secretary of the LTC who shall ensure that the document is duly authorized.

## Maintenance of LTI's and TRF's

1. The authors of the original LTI or TRF document shall be responsible for ensuring that the document is maintained up to date in accordance with new editions, amendments and corrigenda to the relevant standard.
2. The authors and Secretariat shall continuously monitor and review the status of published standards listed within the scope of LOVAG.
3. When a change to a published standard is identified:
  - a) the authors shall review the change and prepare a new edition of the document and
  - b) the Secretariat shall notify the authors of the change, to review the change and prepare a new edition of the document.
4. Any change to the existing document resulting from a new edition or an amendment or corrigendum to the published standard shall be prepared within 6 months of the change to the standard and shall be circulated to the LTC for comment within 2 months, to the author. If no adverse comments are received and the co-author has given his approval the author will forward the change to the Secretariat for signature and issue. If any adverse comments are received the author shall circulate the change and comments to the Secretariat for discussion at the next meeting of the LTC. The issue by the Secretariat shall be done within 1 month after receiving the final documents from the author.

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5. All documents covered by this procedure shall remain in force until such time as the published standard is withdrawn, where a date of withdrawal is specified by the issuing authority, or, until a date specified by the LTC following the issue of a superseding standard, which shall not be less than 12 months after the date that superseding standard comes into force. Superseding documents shall indicate the date of withdrawal of the document to be superseded.
6. Any editorial changes to the documents shall be advised to the Secretariat, with a revised document indicated by the Edition No. followed by a, b, c etc. and immediately issued.
7. The authors of the original LTI or TRF document shall be responsible for ensuring that, at least once every two years, document is maintained up to date taking into account all the editorial mistakes or improvements suggested by the certification bodies and/or laboratories. The new issue of the document shall be circulated to the LTC for comment within 1 month, to the author. If no adverse comments are received and the co-author has given his approval the author will forward the change to the Secretariat for signature and issue. If any adverse comments are received the author shall circulate the change and comments to the Secretariat for discussion at the next meeting of the LTC.
8. The authors of the original LTI or TRF document shall be responsible for ensuring that all detected technical mistakes are quickly deleted from the document. The author shall prepare and circulate the corrected document to the LTC members and, if within one month no adverse comments are received, and the co-author has given his approval the author will forward the document to the Secretariat for signature and issue.

### Issue of Documents

1. The issue of the document is made by the LOVAG Secretariat by placing it on the LOVAG Website in PDF-format to be downloaded by each signatory  
The Comment shall be made that only the PDF version published on the website is the valid master copy.
2. The decision for signature and issue of a LOVAG Document (LTI G, LTI or TRF) has to be made by the LTC. If the approval of a co-author is available this decision can be made even beside the meetings (e.g. by agreement by e-mail); but in cases where no co-author is nominated the approval has to be given by an official meeting of LTC.
3. A controlled list of all documents shall be maintained by the Secretariat. This list shall include the following details:
  - a) Document reference.
  - b) Title of document.
  - c) Edition No
  - d) Date of issue.
  - e) Issue status of the standard including corrigenda/amendments and dates.
  - f) Authors.
  - g) Review date.
4. The LOVAG Secretariat shall maintain a list (Document Issue List, DIL) for control and documentation of issued documents.

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5. Master copies of all documents will be maintained by and located in the Secretariat. The master copies shall be retained in hard copy form. An electronic copy shall also be maintained.

### Control of revised Editions

1. The procedures above shall be used for the control of changes to issued documents.
2. Changes shall be in the form of a new edition of the document with the new edition number for all pages. The changes shall be approved and authorised by the LTC.
3. The nature of the change will be recorded in the DIL.
4. New editions of documents may not require the previous edition to be rendered obsolete as, in some cases, standards remain in force for a moratorium period after the new edition comes into force.

### Identification of Published Documents

All documents will be identified by reference to the published standard to which they refer, by utilising the numbers of the standard, as follows:

LTI or TRF Indicating Test Instruction or Test Report Form followed by

LTI #####-##-# Indicating number, part and sub-part of standard

For example:

- a) The reference for the LTI to IEC 60947-2 would be LTI IEC 60947-2 and the Test Report Form would be referenced TRF IEC 60947-2.
- b) The reference for the LTI to EN 60439-1 would be LTI EN 60439-1 and the Test Report Form would be referenced TRF EN 60439-1.
- c) The reference for the LTI to IEC 60947-3 and EN 60947-3 would be LTI IEC/EN 60947-3 and the TRF would be referenced: TRF IEC/EN 60947-3.

The edition of a LTI or TRF shall be marked in accordance to the consolidated IEC.

For example:

“LTI IEC 60947-2 **Edition 2.1**” according to the IEC 60947-2 Edition 2 consolidated with amendment 1.

If the LTI and TRF are based on an EN only, which has no edition number but only the year of issue, then take this year as the Edition number:

For example:

# LOVAG Operational Document OD 01- 01, Ed. 1.0

LTI EN 50298 **Edition 1998** according to the EN 50298 (1998)

Changes to the LOVAG-document not caused by the referred standard or for special purpose shall be marked by a additional letter.

For example:

“TRF IEC 60947-2 Edition 2.1a” added by several items required by meanwhile experience.

For not to cause a new marking of the existing documents the new marking system is obvious by the word order changing from “TRF IEC 60947-2 **4<sup>th</sup> Edition**” to “TRF IEC 60947-2 **Edition 2.1a**”.

Using this system of marking the user of a LOVAG document can recognise the connection to the relevant standard without additional information.

## Identification of Draft Documents and Comments Papers

1. All such documents shall be identified by a unique reference indicating the author, committee reference and paper number. The author of the paper shall assign this reference to the document and the document shall have an issue date and, if appropriate, an issue status.
2. The author shall maintain a controlled list of documents circulated including the details specified in 1 above and the title of the document.
3. The Secretariat of the LTC shall maintain a controlled list of all documents circulated and shall register new documents on the list, upon receipt.

An example of a paper reference is given below for

Papers submitted by members of the LTC -

Country code: ES = Spain, FR = France, HU=Hungary, IT = Italy,

DE = Germany, SE = Sweden, BE = Belgium

followed by,

CT = Technical Committee followed by,

(LOVAG) followed by,

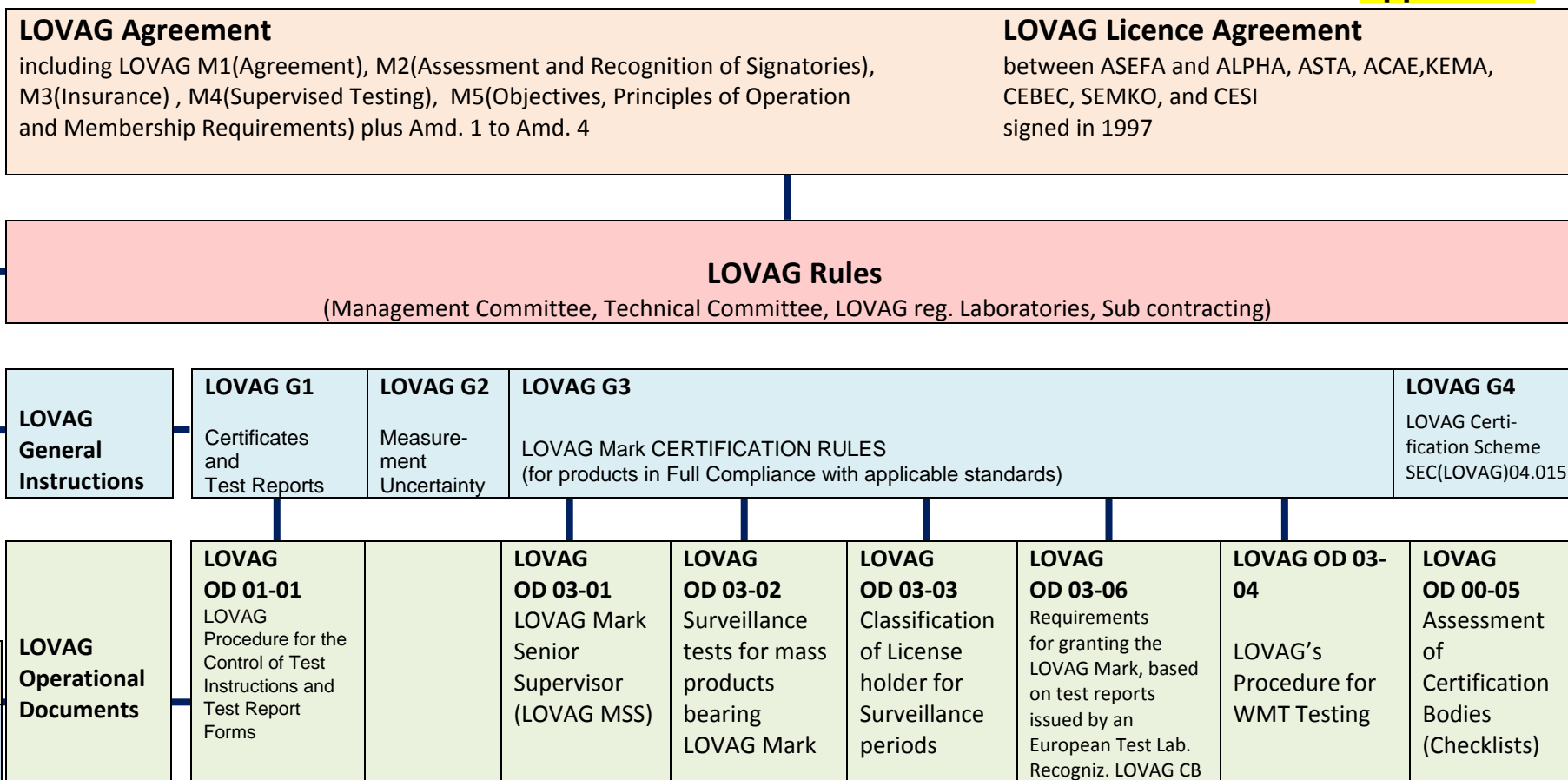
Year (last two digits) e.g. 97. and document number (three digits)

e.g. 134

The complete reference may be therefore FR/CT(LOVAG)97.134. This would apply to all types of documents e.g. draft instructions/test report forms or comment documents

Overview and Classification of LOVAG Documents

Appendix 1



System of numbering: LOVAG OD 03-01 means, that that the OD belongs to LOVAG G3

## Formatting Guidelines

for

### LOVAG Test Instructions and LOVAG Test Report Forms

To gain a unique appearance the following format recommendations shall be kept:

**File format:** MS Word (6.0 or higher)

**Font:**

Main Heading :	<b>Arial 14 pt bold</b>	<b>(Title of a test sequence)</b>
Sub-heading:	<b>ARIAL 10 PT BOLD</b>	<b>(TITLE OF A TEST)</b>
Sub-sub-heading:	<b>Arial 10 pt bold</b>	<b>(Title of a sub clause of a test)</b>
Normal text:	Arial 10 pt Standard	(Requirements)
Footer:	Arial 8 pt Standard	(Footer)

**Line spacing:** exact: 14 pt

The line spacing shall be strictly kept, to avoid different Word-wraps when different printers are used; only in cases where graphics are inserted the line spacing has to be changed to the setting single line.

**Paper size:** A4 (210 x 297 mm)

**Margins:** Top: 2 cm, Bottom: 2 cm, Left: 3 cm, Right: 1 cm

**LOVAG Logo:** The LOVAG logo (4.0 cm length) shall be given on the top left side of the first page of the LOVAG Test Instructions, the auditing survey and the front page (form 1) of the LOVAG Test Report Forms.  
An example is given below:



## FORMAT OF TEST INSTRUCTIONS

### Front Sheet

An example of a standard front sheet for a Test Instruction is given on the next page. This shall contain:

- a) the number of the test instruction
- b) a title
- c) the standards to which it refers
- d) the name and title of the person authorising the document and the date of signature  
( = date of issue = valid from)
- e) number of edition
- f) document date
- g) the author
- h) page number and total number of pages

Item a) shall be in the header of the document and items e) to h) shall be in the footer.

### **Page 2**

The first paragraph of Page 2 shall be the standard PREAMBLE as follows:

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

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

This shall then be followed by clause number, title and the additional information on the clause but only where required. It is not necessary to repeat the text of the clause in the standard unless it is required to clarify the requirements.

Formatting guidelines are shown in Appendix 2



**LOVAG**

**TEST INSTRUCTION IEC 61131-2 and EN 61131-2 Edition 2.0**

**CONDITIONS FOR TYPE-TESTS**

**BY PROGRAMMABLE CONTROLLERS (PLC)**

This test instruction is based on the following standards:

Standard                    IEC 61131-2 (2003-02) Edition 2.0  
                                  EN 61131-2:2003

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

Valid from: 06<sup>th</sup> April 2005

A handwritten signature in blue ink, appearing to read 'S. Manganaro'.

Dr. Saverio Manganaro  
Chairman of LOVAG Technical Committee

Edition: 2.0  
2004-06-15  
Author: ALPHA  
Page 1 of 24

### FORMAT of TEST REPORT FORMS and SIGNATURE of TEST REPORTS

Examples of the first few pages of a Test Report Form are shown on the following pages and must be provided with each complete Test Report Form.

- a) Auditing Survey – indicates the **date** of making of the Test Report Form, the **test Object**, the **test specification** with its issue date and (for IEC) its edition number, the **content** of the TRF (only numbers of the page forms for Front sheet and overview pages for each sequence), the total number of page forms, the date of issue of the TRF (**valid from**), the **signature of the Chairman of the Technical Committee**, the **Author** of the TRF, and shall be updated each time a new edition of the TRF is issued.

- b) Test Report Form **front sheet** (form 1) – identifies the test report number, testing laboratory (LOVAG code, name and complete address), client, manufacturer, test object, dates of tests, standards, contents of the report, etc.

Additionally the following statement has to be given on the front sheet: “All the measurement uncertainties are within the limits of LOVAG General Instruction G2 – Measurement Uncertainties”.

At the bottom there shall be the “Note: The test result relates only to the items tested.

The test report shall not be reproduced except in full without the written approval of the test laboratory”.

In the completed test report this **front page** has to be signed

- 1) by the authorized representative of the laboratory (person from the laboratory being responsible for the correctness of the test report and being authorised by the accreditation body in the accreditation certificate or authorised by the certification body, which is responsible for the qualification of the laboratory according to ISO/IEC 17025). The name, position and signature have to be given.
- 2) and by the LOVAG Observer of the Laboratory, being authorised by the LOVAG Certification Body. The name, position and signature have to be given.

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- c) Because not each page of the test report has to be signed, with the **second page** of each test report ( form 2) a **listing** has to be given, where the names and signatures of

the persons (assigned to the related sequences, pages of the test report) are listed, who have performed the testing, respectively filled in the TRFs.

This listing **shall be signed** by the observer (name, position, company, address and date and signature). By giving the position, company and address of the observer it became obvious whether testing has been performed under LOVAG Supervised Testing (SMT) or LOVAG Witnessed Manufacturer's Testing (WMT).

- d) On the **third page** (form 3) of each test report a list of samples under test should be given. (As far as this page form is not available in the TRFs the blank page should be used).

An example is given below:

<b><u>THE SAMPLES UNDER TEST</u></b>						
SAMPLE		Sequence	Ratings			Comments
N°	Identification no.		Ue (V)	Ie (A)	Specific ratings	
1						
2						
3						

- e) On the **forth page form** (form 4) a description and characterisation of the test object – provides all the details of the product tested supported by supplementary sheets/drawings where required should follow.
- f) All Test Report Forms shall follow the format given as an example in the following pages. Formatting guidelines are shown in Appendix 2.
- g) The TRF page forms, which have not been used, are to be excluded from the test report.
- h) The progressive numbering of the test report page forms is to be considered as an identification code only since some pages may be omitted. As a consequence, the test report pages shall have their own progressive numbering, which has to be used for any internal reference. The identification code of the page form shall never be used for references.

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- i) In order to keep the handling of the test report more flexible a reference in the test report to an additional page (e.g. to an oszillogram) should be made to an numbered annex instead to a page number.
- j) The front pages of all test sequences, giving the Sub-clause, Test and page form shall additionally give the number of the first page of the relevant test .  
see example below)

Sub-clause	Test	Page- form	Test Report Page no.
------------	------	---------------	-------------------------

- k) In many cases the results have to be given by “yes” or “no”. To make it quite clear there shall be in the previous column the request to give a “yes” or “no”, and then there shall be a “yes” or “no” in the column for the result:  
Example:

	Passed	(yes or no)	<i>yes</i>
--	--------	-------------	------------

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Example for the second page including the signatures:

<b><u>SIGNATURES OF THE RESPONSIBLE ENGINEERS</u></b>						
<b><u>FOR PERFORMING THE TESTS</u></b>						
Listing or No of test sequence or subclause	Listing or Test item description	Page no or range of page nos.	Engineer who performed the tests			
			Name	Date	Signature	
Listing	Samples under test	2	G. Lloyd	}		
Listing	Description and characteristics of the test objects	3 - 6	G. Lloyd			
<i>Sequence I</i>		7- 25	G. Lloyd			
<b>Sequence II</b>					<i>2007-01-12</i>	<i>G. Lloyd</i>
8.3.5.1	Verification of overload releases	26	G. Lloyd			
8.3.4.1	Rated service short-circuit breaking capacity	27 - 30	G. Lloyd			
8.3.4.2	Verification of operational capability	31	G. Lloyd			
8.3.4.3	Verification of dielectric withstand	32-34	G. Lloyd			
8.3.4.4	Verification of temperature-rise	35	J. Lennon	<i>2007-01-14</i>	<i>J. Lennon</i>	
8.3.4.5	Verification of overload releases	36-37	G. Lloyd	<i>2007-01-18</i>	<i>G. Lloyd</i>	
	Calibration of test circuit	38-40	G. Lloyd	<i>2007-01-18</i>	<i>G. Lloyd</i>	
	Test and measuring devices	41-43	G. Lloyd	<i>2007-01-18</i>	<i>G. Lloyd</i>	

## **Responsible Observer**

Name:	John Mc Arthur		
Position:	Director Test Laboratory	<i>2009-01-24</i>	<i>J. Mc Arthur</i>
Organisation:	Manufacturer-Company Ltd.	-----	-----
Address:	Street, 12345 City, COUNTRY	Date	Signature



**Document date:** 2008-07-08

**Test Object:** Proximity Switches

**Test Specification:** IEC 60947-1 (2007-06) Ed. 5.0  
 EN 60947-1: 2007  
 IEC 60947-5-2 (2007-10) Ed. 3.0  
 EN 60947-5-2: 2007

<b>Content:</b>	<b>Description</b>	<b>Pageform</b>
	Front sheet	1
	Signatures of responsible engineers	2
	Samples under test	3
	Description of test object	4
	Type test Test sequence I	5
	Type test Test sequence II	11
	Type test Test sequence III	18
	Type test Test sequence IV	24
	Type test Test sequence V	30
	Type test Test sequence VI	38
	Type test Test sequence VII	43
	Type test additional page	46

**Number of page forms:** 46

LOVAG Test report Formsheet	Valid from:	05/03/2009	TRF IEC/EN 60947-5-2 Edition 3.0a 2008-07-08 Author: ALPHA
	Chairman of Technical Committee	signed by Dr. Saverio Manganaro	



**Test Report No. ....**

Test laboratory: .....

Client: .....

Manufacturer: .....

Test object: .....

Type designation: .....

Date(s) of test(s): .....

Test specification: IEC 60947-1 (2007-06) Ed. 5.0  
 EN 60947-1: 2007  
 IEC 60947-5-2 (2007-10) Ed. 3.0  
 EN 60947-5-2: 2007

Test sequence(s): .....

Test results: .....

This Test Report consists of: .....pages LOVAG test report forms and .....other pages  
 All the measurement uncertainties are within the limits of LOVAG General Instruction G2 – Measurement Uncertainties

Date of issue: .....

**Authorized Representative**

**Responsible Test Laboratory**

Name : .....

Name : .....

Function .....

Function

Signature.....

.....

Note: The test result relates only to the items tested.  
 The test report shall not be reproduced except in full without the written approval of the test

TRF IEC/EN 60947-5-2  
 Ed. 3.0a form 1





# LOVAG

Test report no.:  
page ..... / .....

**Description and name of test object**

**Characterising features:**

**Type of proximity switch:**

**Rated values and limits:** (according to test structure)

rated insulation voltage $U_i$	.....	V
rated impulse withstand voltage $U_{imp}$	.....	kV
ambient temperature	from .....°C to .....	°C
rated operational voltage $U_e$	.....	V
operational voltage	from ..... V to .....	V
rated operational current $I_e$	.....	mA
utilisation categories ( AC )		
	<b>AC 12</b>	$U_e$ (V) $I_e$ (mA)
	<b>AC 140</b>	.....
	<b>DC 12</b>	.....
	<b>DC 13</b>	.....
rated operating distance $S_n$ , for D-type optoelectronic switch $S_d$	.....	mm
T and R optoelectronic switches $r_o$ (<300lx) , $r_o$ (5000lx)	.....	mm
maximum operating distance $S_{max}$	.....	mm
minimum operating distance $S_{min}$	.....	mm
hysteresis H	.....	%
repeat accuracy R	.....	%
minimum operational current $I_m$	.....	mA
off-state current $I_r$	.....	mA
voltage drop $U_d$	.....	V
frequency of operating cycles f	.....	Hz
degree of protection	IP .....	
class of insulation II	(.....) yes (.....) no	
short circuit protection (type)	.....	
kind of external protection	.....	
electromagnetic compatibility (limits)		
electrostatic discharge immunity	criterion: .....	kV
high frequency immunity	criterion: .....	V/m
fast transient immunity	criterion: .....	kV
conducted disturbances	criterion: .....	V
a.c. devices: voltage dips	criterion: .....	According table 8
emission requirements	..... dB( $\mu$ V/m)     .....	dB( $\mu$ V)
maximum connector cross section		
rigid conductor	.....	mm <sup>2</sup>
fine wire conductor	.....	mm <sup>2</sup>
minimum connector cross section		
rigid conductor	.....	mm <sup>2</sup>
fine wire conductor	.....	mm <sup>2</sup>
tightening torque of connecting screws	.....	Nm
thread diameter of connecting screws	.....	mm
diameter of connecting cable	.....	mm

Test laboratory:

TRF IEC/EN 60947-5-2  
Ed.3.0     form 4

<b>LOVAG</b>		Test report no.: page ..... / .....																																								
Type test according IEC/EN 60947-5-2, test sequence I		type:																																								
Standard and clause	Kind of test and requirements	Test values results																																								
	<p><b>Test sequence I</b></p> <p><b>Operating limits</b></p> <p>Test sequence I comprises the following tests:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Sub-clause</th> <th style="text-align: left;">Test</th> <th style="text-align: left;">Pageform</th> <th style="text-align: left;">Test Report Page no.</th> </tr> </thead> <tbody> <tr> <td>8.3.3.2.1</td> <td>Time delay before availability</td> <td>6</td> <td>.....</td> </tr> <tr> <td>8.3.3.2.2</td> <td>Minimum operational current (<math>I_m</math>)</td> <td>7</td> <td>.....</td> </tr> <tr> <td>8.3.3.2.3</td> <td>OFF-state current (<math>I_r</math>)</td> <td>7</td> <td>.....</td> </tr> <tr> <td>8.3.3.2.4</td> <td>Independent (snap) action</td> <td>7</td> <td>.....</td> </tr> <tr> <td>8.3.3.2.5</td> <td>Voltage drop (<math>U_d</math>)</td> <td>7</td> <td>.....</td> </tr> <tr> <td>8.3.3.3</td> <td>Temperature rise</td> <td>7</td> <td>.....</td> </tr> <tr> <td>8.2.4.</td> <td>Test of mechanical strength of terminals</td> <td>8</td> <td>.....</td> </tr> <tr> <td>8.3.3.4</td> <td>Dielectric properties</td> <td>9</td> <td>.....</td> </tr> <tr> <td></td> <td>Visual inspection</td> <td>10</td> <td>.....</td> </tr> </tbody> </table>	Sub-clause	Test	Pageform	Test Report Page no.	8.3.3.2.1	Time delay before availability	6	.....	8.3.3.2.2	Minimum operational current ( $I_m$ )	7	.....	8.3.3.2.3	OFF-state current ( $I_r$ )	7	.....	8.3.3.2.4	Independent (snap) action	7	.....	8.3.3.2.5	Voltage drop ( $U_d$ )	7	.....	8.3.3.3	Temperature rise	7	.....	8.2.4.	Test of mechanical strength of terminals	8	.....	8.3.3.4	Dielectric properties	9	.....		Visual inspection	10	.....	
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8.3.3.4	Dielectric properties	9	.....																																							
	Visual inspection	10	.....																																							
Test laboratory:		TRF IEC/EN 60947-5-2 Ed. 3.0a form 20																																								

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Type test according IEC/EN 60947-5-2, test sequence I		type:
Standard and clause	Kind of test and requirements	Test values results
8.3.3.3	<p><b>Temperature rise</b>  cable length 2.0±0.1m on any terminal  Test voltage:  rated operational voltage or highest operational voltage  U = ..... V</p> <p>Load:  rated operational current I = I<sub>e</sub> = ..... A  Measured on the terminals (when applicable) and on any hottest point of the enclosure. T =  passed (yes or no)</p> <p>(Temperature rise T ≤ 50K for terminals and any point of enclosure)</p>	..... K .....
----- 947-1	<p><b>Mechanical properties of terminals</b></p>	
8.2.4	Test shall be performed at 2 separate clamping units.	
8.2.4.1	<p><b>Test of mechanical strength of terminals</b></p>	
8.2.4.2	<p>The conductor shall be connected and disconnected five times in new condition with maximum cross-section area</p> <p>Tightening torque  Column I ..... Nm  Column II ..... Nm  Column III ..... Nm  or 110 % of manufacturers declaration ..... Nm  (if higher than values in Table 4)</p> <p>passed  (No clamping unit and terminal shall work loose and there shall be no damage impairing further use.)</p>	
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