SLOVENSKI STANDARD
SIST EN 50263:2001

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Electromagnetic compatibility (EMC) - Product standard for measuring relays and protection equipment

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Elektromagnetische Verträglichkeit (EMV) - Produktnorm für Meßrelais und Schutzeinrichtungen

Compatibilité électromagnétique (CEM) - Norme de produit pour relais de mesures et dispositifs de protection

Ta slovenski standard je istoveten z: **EN 50263:1999**

ICS:

29.120.70	Releji	Relays
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 50263

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ICS 29.120.70; 33.100

English version

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 50263:1999 E

Foreword

This European Standard was prepared by CENELEC BTTF 63-5, Static measuring relays.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50263 on 1999-08-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2000-08-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2002-08-01

Contents

page

1 Scope

This standard is applicable to measuring relays and protection equipment for power system protection, including the control, monitoring and process interface equipment used with those systems (hereinafter named "apparatus").

For equipment not incorporating electronic circuits e.g. electromechanical relays, emission and immunity tests are not required.

This standard specifies the essential requirements for electromagnetic compatibility for apparatus intended to be used at industrial locations.

Apparatus used in substations and power plants may require higher immunity test levels, or additional tests, specified in EN/IEC 60255-22 or EN/IEC 61000-4 or other EN standards.

All tests in this standard are type tests.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments or revisions of any of these publications shall apply to this European Standard only when incorporated by amendment or revision. For undated references the latest edition of the publication shall apply.

EN 55011	Industrial, scientific and medical (ISM) radio-frequency equipment - Radio disturbance characteristics - Limits and methods of measurement (CISPR 11, mod.)
EN 55022	Limits and methods of measurement of radio interference characteristics of information technology equipment (CISPR 22, mod.)
EN 60255-22-2	Part 22: Electrical disturbance tests for measuring relays and protection equipment - Section 2: Electrostatic discharge tests (IEC 60255-22-2)
EN 61000-4-2	Electromagnetic compatibility - Part 4: Testing and measurement techniques Section 2: Electrostatic discharge immunity test (IEC 61000-4-2)
EN 61000-4-3	Section 3: Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3, mod.)
EN 61000-4-4	Section 4: Electrical fast transient/burst immunity test (IEC 61000-4-4)
EN 61000-4-5	Section 5: Surge immunity test (IEC 61000-4-5)
EN 61000-4-6	Section 6: Immunity to conducted disturbances, induced by radio-frequency fields (IEC 61000-4-6)
EN 61000-4-8	Section 8: Power frequency magnetic field immunity test (IEC 61000-4-8)
IEC 60050(161)	International Electrotechnical Vocabulary Chapter 161: Electromagnetic compatibility
IEC 60050(446)	Chapter 446: Electrical relays
IEC 60050(448)	Chapter 448: Power system protection
IEC 60255-11	Electrical relays Part 11: Interruptions to and alternating component (ripple) in d.c. auxiliary energising quantity of measuring relays

IEC 60255-22-1	Part 22: Electrical disturbance tests for measuring relays and protection equipment - Section 1: 1 MHz burst disturbance tests
IEC 60255-22-3	Section 3: Radiated electromagnetic field disturbance tests (under revision)
IEC 60255-22-4	Section 4: Fast transient disturbance test
IEC 60255-22-6	Section 6: Conducted electromagnetic field disturbance tests (under preparation)
IEC 60255-25	Part 25: Electromagnetic emission tests (under preparation)

3 Objective

3.1 Emission

The objective of the standard is to specify limits and test methods for apparatus in relation to electromagnetic emissions which may cause interference in other apparatus.

These emission limits represent essential electromagnetic compatibility requirements and have been selected to ensure that the disturbances generated by the apparatus, operated normally at industrial locations (see clause 5), do not exceed a level which could prevent other apparatus from operating as intended.

Test requirements are specified for the enclosure and power supply ports.

NOTE In special cases, for instance when highly susceptible devices are being used in proximity to the apparatus, additional mitigation measures may have to be employed.

3.2 Immunity

The objective of the standard is to specify the immunity test requirements for apparatus in relation to continuous and transient, conducted and radiated disturbances, including electrostatic discharges.

These test requirements represent essential electromagnetic compatibility immunity requirements and have been selected so as to ensure an adequate level of immunity for apparatus used at industrial locations (see clause 5).

NOTE 1 Higher test levels, or additional tests, specified in EN/IEC 60255-22-* or EN/IEC 61000-4-* or other EN standards, may be required for applications with more severe EMC environments e.g. substations and power plants.

NOTE 2 Safety considerations are not covered in this standard.

NOTE 3 In special cases, situations will arise where the levels of disturbance may exceed the levels specified in this standard e.g. where a hand held transmitter is used in close proximity to measuring relays and protection equipment. In these instances, special precautions may have to be employed.

4 Definitions

Definitions related to EMC and to the relevant phenomena may be found in chapter 161 of IEC 60050 and in CISPR Publications. Definitions related to Electrical Relays and Power System Protection are to be found in chapter 446 and 448 of IEC 60050.

The following definitions are used in this standard:

4.1 apparatus: Measuring relays or protection equipment for power system protection, including the control, monitoring and process interface equipment.

4.2 communication port: Interface with a communication and/or control system, using low energy signals, permanently connected to the apparatus.

4.3 enclosure port: The physical boundary of the apparatus through which electromagnetic fields may radiate or impinge.

4.4 functional earth port: A point on the apparatus which is connected to earth for purposes other than electrical safety.

4.5 input port: Port through which the apparatus is energised or controlled in order to perform its function(s), e.g. current and voltage transformer, binary inputs etc.

4.6 output port: Port through which the apparatus produces predetermined changes, e.g. contact, optocoupler, analog outputs etc.

4.7 port: Particular interface of the specified apparatus with the external electromagnetic environment (see Figure 1).

4.8 power supply port: AC or DC auxiliary energising input of the apparatus.

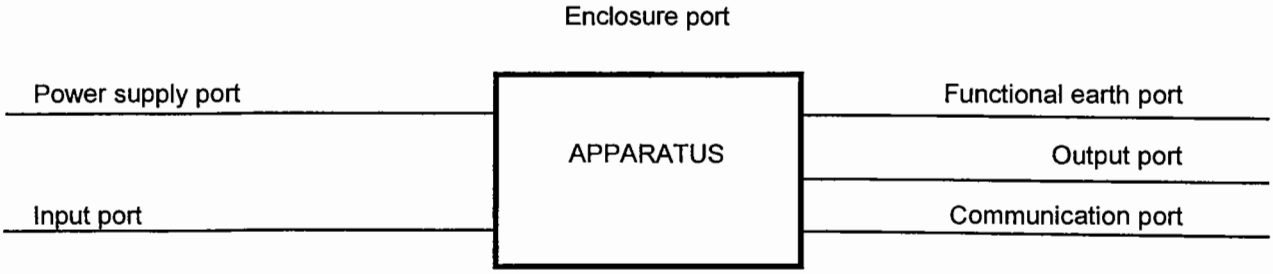

Figure 1 - Ports for measuring relays and protection equipment

5 Industrial locations

Industrial locations are characterised by the existence of one or more of the following conditions:

- industrial, scientific and medical (ISM)[1)] apparatus are present;
- heavy inductive or capacitive loads are frequently switched;
- currents and associated magnetic fields are high.

These are the major contributors to the industrial electromagnetic environment and as such distinguish the industrial from other environments.

Substations and power plants are examples of industrial locations, however apparatus used in substations and power plants may require higher immunity test levels than specified in this standard.

6 Conditions during testing

6.1 Emission tests

The requirements and procedures for conducted and radiated emission tests are given in Table 1.

6.2 Immunity tests

The requirements and procedures for immunity tests are given in Tables 2, 3, 4, 5 and 6.

7 Criteria for acceptance

7.1 Emission tests

The measured values shall be below the levels specified in Table 1.

7.2 Immunity tests

The criteria for acceptance shall be as given below, except where stated otherwise in Tables 2 to 6.

[1)] As defined in EN 55011, ISM class A.

Function	Criteria for acceptance	
	Transient phenomena (note 1)	Continuous phenomena (note 2)
Protection	No incorrect operation or recording	
Command & Control	No incorrect operation or recording	
Measurement	Temporary degradation during the test, with self recovery at the end of the test, but no loss of stored data	No degradation during the test
Integral Human-Machine Interface and Visual Alarms	Temporary degradation or loss of function during the test, with self recovery at the end of the test, but no loss of stored data	No degradation or loss of function during the test and no loss of stored data
Data Communication	Possible bit error rate increase but no loss of transmitted data	

NOTE 1 Transient phenomena for which these criteria for acceptance apply, are:
- Surge test;
- Power frequency magnetic field, short duration.

NOTE 2 Continuous or long duration phenomena for which these criteria for acceptance apply, are:
- Radiated radio frequency electromagnetic field, Amplitude modulated;
- Radiated electromagnetic field from digital radio telephones, Pulse modulated;
- Power frequency magnetic field, continuous;
- Conducted disturbance induced by radio-frequency fields, Amplitude modulated.

After the tests, the apparatus shall still comply with the relevant performance specifications.

8 Test report

Where applicable, the test report shall be in accordance with that given in the relevant EN/IEC 60255-22 or EN/IEC 61000-4 standards.

A test report giving the test procedures and results shall always be produced.

9 Documentation

The apparatus shall be supplied with a written information indicating that the apparatus shall not be used in the residential, commercial and light-industrial environment unless the apparatus also conforms to the relevant standard [EN 50081-1].

The purchaser/user shall be informed if special precautions have to be taken to achieve compliance with this standard, e.g. the use of shielded or special cables, optocoupler devices etc.