



SLOVENSKI STANDARD

SIST EN 12966-3:2005

01-julij-2005

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Road vertical signs - Variable message traffic signs - Part 3: Factory production control

Vertikale Verkehrszeichen - Wechselverkehrszeichen - Teil 3: Werkseigene Produktionskontrolle

Signaux de signalisation routiere verticale - Panneaux a messages variables - Partie 3: Contrôle de production en usine

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Ta slovenski standard je istoveten z: EN 12966-3:2005

ICS:

93.080.30	Cestna oprema in pomožne naprave	Road equipment and installations
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SIST EN 12966-3:2005

en

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ICS 93.080.30

English version

Road vertical signs - Variable message traffic signs - Part 3: Factory production control

Signaux de signalisation routière verticale - Panneaux à messages variables - Partie 3: Facteur de production en usine

Vertikale Verkehrszeichen - Wechselverkehrszeichen - Teil 3: Werkseigene Produktionskontrolle

This European Standard was approved by CEN on 15 March 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 12966-3:2005) has been prepared by Technical Committee CEN/TC 226 "Road equipment", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

This document consists of the following Parts under the general title:

Road vertical signs

- Part 1 : *Variable message traffic signs – Part 1: Product standard*
- Part 2 : *Variable message traffic signs – Part 2: Initial type testing*
- **Part 3 : (this part) Variable message traffic signs – Part 3: Factory production control**

It derives from performance requirements and test methods published in CEN, CENELEC, CIE and ISO documents together with standards of the CEN member organisations.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This document specifies the requirements for Factory Production Control (FPC) manufacturers of variable message signs and is designed to be read in conjunction with Part 1.

The requirements described in this document are applicable to the products under the scope of EN 12966-1.

This document specifies which sorts of parameters and tests have to be taken into consideration within the FPC system, but leaves the precise test methods to be applied to be chosen depending on the manufacturer's facilities and production methods. The precise parameters and methods will be found in the manufacturer's written FPC procedures.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12966-1:2005, *Road vertical signs — Variable message traffic signs — Part 1: Product standard*

EN 12899-1:2001, *Fixed, vertical road traffic signs — Part 1: Fixed signs*

EN ISO 9000:2000, *Quality management systems — Fundamentals and vocabulary (ISO 9000:2000)*

EN ISO 9001, *Quality management systems — Requirements (ISO 9001:2000)*

3 Terms and definitions

[SIST EN 12966-3:2005](https://standards.iteh.ai/catalog/standards/sist/a3220f86-4db9-470c-88b4-7a30ffc68384/sist-en-12966-3-2005)

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For the purposes of this document, the terms and definitions given in EN ISO 9000:2000 and in EN 12966-1:2005 and the following apply.

3.1

Factory Production Control (FPC)

permanent internal control of production exercised by the product manufacturer

3.2

batch

quantity of a product manufactured with no change in raw material, equipment, settings or operation as defined in the FPC system manual of the manufacturer

3.3

individual (and non-series)

where the manufacturing process is different to the manufacturer's usual process

4 System requirements

4.1 General

The continuing conformity of VMS test module to the ITT, the requirements of this document and with the stated values (including classes) shall be demonstrated by factory production control.

NOTE Initial type testing (ITT) is covered by EN 12966-2.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. This production control system documentation shall ensure a common understanding of quality assurance and enable the achievement of the required product characteristics and the effective operation of the production control system to be checked.

The manufacturer shall exercise a permanent system of FPC. This shall include testing of samples in accordance with a prescribed test plan defined in this part of this document.

The manufacturer shall be responsible for organising the effective implementation of the FPC system. Tasks and responsibilities in the production control organisation shall be documented and this documentation shall be kept up-to-date and reviewed for effectiveness at least once per year which shall be recorded.

Manufacturers having an FPC system which complies with EN ISO 9001 and which are product specific to this standard are deemed to satisfy the requirements of this document.

In each factory, the manufacturer may delegate action to a person having the necessary authority to:

- a) monitor procedures to demonstrate conformity of the product at appropriate stages;
- b) identify and record any instance of non-conformity;
- c) monitor procedures to correct instances of non-conformity.

The manufacturer shall draw up and keep up-to-date documents defining the FPC system which he applies. The manufacturer's documentation and procedures shall be appropriate to the product and manufacturing process. All FPC systems shall achieve and maintain an appropriate level of confidence that the product is in conformity with the ITT.

4.2 Factory Production Control system

The factory production control system shall include at least the necessary procedures for:

- a) specification and verification of raw materials and relevant components;
- b) controls and tests to be carried out during manufacture;
- c) verifications and tests carried out on finished products in accordance with the test regime specified below;
- d) control of the necessary installations, equipment and trained personnel to execute the tests on the raw materials and components if necessary, the tests during production and the final quality control tests as specified below;
- e) operation maintenance and calibration of appropriate test and manufacturing equipment by qualified personnel.

NOTE The manufacturer may arrange subcontracting agreements with one or more organizations or persons having the necessary skills and equipment in order to perform the above tasks.

The test methods to be applied and the tolerances for the results of all the tests used shall be documented in the FPC system.

The frequency of testing shall be in accordance with the test plan of the manufacturer, or as specified in Table 1, and shall be carried out according to the test methods indicated in this document. These methods shall be direct methods. In the case of certain characteristics, indirect test methods may be used if the manufacturer is satisfied that the other characteristic, which is more practicable to measure, will insure conformity with this document.

The manufacturer shall establish procedures to ensure that the production tolerances allow for the VMS performances to be in conformity with the declared values, derived from initial type testing.

The characteristics, and the means of verification, are given in the Table 1.

Table 1 - Minimum frequency of testing for product testing and evaluation as part of FPC

Property	Clause of EN 12966-1:2005, indicating the relevant test method (if any)	Minimum frequency of tests	Minimum number of samples
Resistance to horizontal loads	8.3.2.1 Loads	Continuously during production	All
	8.3.2.2 Deflections		
Impact resistance	8.3.4 Impact resistance (raw material monitoring)	Per batch	5 %, minimum 1
Electrical requirements	8.4.2 Electrical safety	Continuously during production	All
	9.1.3.1 Function test		
Chromaticity co-ordinates	7.2 Colour	Per batch	5 %, minimum 1
Retro-reflectivity (if applicable)	EN 12899-1:2001 5.2.2	By component manufacturers declaration or per batch	5 %, minimum 1
Optical performance (Luminance)	7.3 Luminance	Per batch	5 %, minimum 1
	7.6 Uniformity-visual check	Continuously	All
Durability	8.2.4 Degrees of protection provided by enclosures (water ingress)	Per batch	All

The manufacturer shall record the results of the tests specified above. These records shall at least include the following information:

- identification of the VMS tested;
- date of sampling and testing if applicable (the information shall reflect the time difference between manufacturing and testing);
- test methods performed;
- test results;
- name(s) of the person(s) performing the test(s).

4.3 Records

Records shall include everything that is necessary to demonstrate control of the raw materials and constituents, the production process and the final product.

Records of the ITT and the test module shall be maintained for at least ten years.

The description of the product, date of manufacture, test method adopted, test result and acceptance criteria shall be entered in the register under the signature of the person(s) responsible for control and who carried out the verification.

In case of non-conformity and/or complaint: the corrective actions, taken to rectify the situation, shall be recorded in the register.

The manufacturer, or his agent, shall keep full records of individual products (or batches), including their related manufacturing details and characteristics, and keep a record of to whom these products were first sold. These records shall be maintained for at least ten years.

4.4 Treatment of non-conforming products

If control or test results show that the product does not meet the requirements, the necessary corrective action shall be immediately taken. Products (or batches) not conforming shall be quarantined and properly identified.

Once the non-conformance has been corrected the product shall be re-tested. If it is not practicable to correct the fault the product shall be rejected unless the customer accepts it in a repaired or uncorrected form. The customer's acceptance shall be verified in writing.

For any product delivered before the tests results are available, a procedure and record shall be maintained for notifying customers. A recall procedure shall be provided for any product, which is found to be not in conformity with the ITT.

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4.5 Traceability

The manufacturer shall establish and maintain documented procedures for identifying the product or the constituent by suitable means during all stages of production. The manufacturer shall establish documented procedures for unique identification of individual product or batches. This identification shall be recorded.

4.6 Personnel

The responsibility, authority and relationship between personnel that manages, performs or verifies work affecting product conformity, shall be defined. This applies in particular to personnel that need to initiate actions preventing product non-conformities from occurring, actions in case of non-conformities and to identify and register product conformity problems. Personnel performing work affecting product conformity shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

This subclause also applies when certain tasks are subcontracted.

4.7 Equipment

All weighing, measuring and testing equipment necessary to achieve, or produce evidence of, conformity shall be calibrated or verified and regularly inspected according to documented procedures, frequencies and criteria. Control of monitoring and measuring devices shall comply with the appropriate clause of EN ISO 9001.

NOTE The manufacturer may arrange subcontracting agreements with one or more organizations or persons having the necessary skills and equipment in order to perform the above tasks.

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process.

Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures and the records retained for the period defined in the manufacturer's FPC procedures.