SLOVENSKI STANDARD
SIST HD 577 S1:1999

01-januar-1999

Standardization of interconnections between broadcasting transmitters or transmitter systems and supervisory equipment - Interface (IEC 60864-1:1986 + A1:1987)

Standardization of interconnections between broadcasting transmitters or transmitter systems and supervisory equipment -- Part 1: Interface standards for systems using dedicated interconnections

Normung der Zusammenschaltung von Rundfunksendern oder Sendersystemen mit Fernwirkeinrichtungen -- Teil 1: Schnittstellen für Anlagen mit zugeordneten Verbindungen

Normalisation des interconnexions entre les émetteurs ou les systèmes d'émetteurs de radiodiffusion et les systèmes de télésurveillance -- Partie 1: Normes d'interface pour les systèmes à interconnexions câblées

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STANDARDIZATION OF INTERCONNECTIONS BETWEEN BROADCASTING TRANSMITTERS OR TRANSMITTER SYSTEMS AND SUPERVISORY EQUIPMENT PART 1: INTERFACE STANDARDS FOR SYSTEMS USING DEDICATED INTERCONNECTIONS

Normalisation des interconnexions entre les émetteurs ou les systèmes d'émetteurs de radiodiffusion et les systèmes de télésurveillance Première partie: Normes d'interface pour les systèmes à interconnexions câblées

Normung der Zusammenschaltung von Rundfunksendern oder -Sendersystemen mit Fernwirkeinrichtungen Teil 1: Schnittstellen für Anlagen mit zugeordneten Verbindungen

BODY OF THE HD

The Harmonization Document consists of:

- IEC 864-1 (1986) ed 1 + Amdt 1 (1987), IEC/SC 12C, not appended

This Harmonization Document was approved by CENELEC on 1990-06-01.

The English and French versions of this Harmonization Document are provided by the text of the IEC publication and the German version is the official translation of the IEC text.

According to the CENELEC Internal Regulations the CENELEC member National Committees are bound:

to announce the existence of this Harmonization Document at national level by or before 1990-12-15

to publish their new harmonized national standard by or before 1991-06-15

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Harmonized national standards are listed on the HD information sheet, which is available from the CENELEC National Committees or from the CENELEC Central Secretariat.

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NORME INTERNATIONALE

INTERNATIONAL STANDARD

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Normalisation des interconnexions entre les émetteurs ou les systèmes d'émetteurs de radiodiffusion et les systèmes de télésurveillance

Première partie:
Normes d'interface pour les systèmes à interconnexions câblées

Standardization of interconnections between broadcasting transmitters or transmitter systems and supervisory equipment

Part 1:
Interface standards for systems using dedicated interconnections

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

STANDARDIZATION OF INTERCONNECTIONS BETWEEN BROADCASTING TRANSMITTERS OR TRANSMITTER SYSTEMS AND SUPERVISORY EQUIPMENT

Part 1: Interface standards for systems using dedicated interconnections

FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by Sub-Committee 12C: Transmitting Equipment, of IEC Technical Committee No. 12: Radiocommunications.

The text of this standard is based on the following documents:

Six Months' Rule	Reports on Voting
12C(CO)163 12C(CO)174 12C(CO)175 12C(CO)177	12C(CO)168 12C(CO)181 12C(CO)180 12C(CO)182

Further information can be found in the relevant Reports on Voting, indicated in the table above.

STANDARDIZATION OF INTERCONNECTIONS BETWEEN BROADCASTING TRANSMITTERS OR TRANSMITTER SYSTEMS AND SUPERVISORY EQUIPMENT

Part 1: Interface standards for systems using dedicated interconnections

INTRODUCTION

The majority of broadcasting transmitting stations are designed and constructed to operate unattended, that is without personnel being present in the same room as the transmitter. Normally, supervisory equipment is installed which continuously monitors and sometimes controls the operation of the transmitters. The supervisory equipment may range from a simple unit which merely extends indications and controls into an adjacent room, to a highly sophisticated system enabling a large number of transmitters to be controlled from a common point.

This standard is concerned with the interface between the transmitters and supervisory equipment. It comprises two parts:

Part 1: Interface standards for systems using dedicated interconnections.

Part 2: Interface standards for systems using data bus type interconnections (under consideration).

It seems appropriate to divide the standard in this way because, although the majority of existing transmitters employ wired interconnections, the advent of microprocessors and software techniques will require different interconnection methods, for example, by means of optical fibres.

1. Scope

This standard is applicable to all classes of transmitters for sound and television broadcasting. The standard may not, however, be appropriate for low power equipment and certain special purpose transmitters.

Any facilities and interconnections not directly associated with the transmitters, for example intruder alarms, mast lighting, etc., are excluded from this standard.

2. Object

This standard deals with the interface between a transmitter (or system of transmitters) and the supervisory equipment which is intended to remotely monitor and/or control the transmitter(s). It details the interconnections and facilities to be provided with a view to achieving compatibility between different types and makes of transmitters and supervisory equipment.

SECTION ONE — GENERAL

3. Terminology

To ensure a common understanding of terms used in this standard, a glossary and index have been included in Appendices A and B. The relationship between some of the most important terms is shown in Figure 1, page 27.

4. General philosophy

In order to achieve standardization, it is necessary to adopt a general philosophy, the main concepts of which are as follows:

a) A basic (single) transmitter should contain its own logic to enable it to operate in its own right if no additional or reserve transmitters are required.

b) Any transmitter system (an example of which is shown in Figure 2, page 29), should comprise two or more basic transmitters.

c) Control and operation of a system of transmitters should be exercised by means of separate system logic.

d) The interfaces of both the basic transmitter and the system logic unit need to be standardized in order to ensure compatibility and interchangeability of equipment.

5. Interfaces

The interfaces to be standardized are shown in Figure 2. Commands and indications are sent from and received by the supervisory equipment, via dedicated pairs of wires connected to dedicated interface terminals or connectors on the transmitter or system logic unit.

It should be noted that this standard relates to the transmitter and system logic interface terminals and not to the supervisory equipment, although this must, of course, be compatible.

6. Command and indication circuits

The term 'command circuit' is used throughout this standard to denote the (dedicated) circuit required to send each command to the transmitter. Similarly, the term 'indication circuit' is used to denote the circuit by means of which each indication is sent from the transmitter.

7. Transmitter systems

A wide variety of transmitter systems may be devised using the approach referred to in Clause 4. Transmitter systems in common use are:

- single transmitter (in the case of television, comprising a vision and sound transmitter operating together);
- passive reserve system;
- active reserve system;
- (N + 1) reserve system;
- multiplex reserve system.

Examples of such systems are shown in Figure 3, page 31. Many minor variations of these systems are possible but the diagram indicates the most important features of each.

Sections Two to Five below are concerned with the facilities to be provided for each system, distinguishing between binary and analogue techniques. General requirements relating to all systems are given in Section Six.

SECTION TWO — STANDARD BINARY INTERFACE TECHNIQUES

8. Introduction

This section deals with the three main techniques in common use in systems employing binary techniques and dedicated interconnections, viz,

- relays;
- semiconductor logic;
- opto-isolators.

9. Relay techniques

The use of relay techniques is illustrated in Figure 4, page 33. This shows the principle that the low voltage supply for command circuits is part of the transmitter and similarly, the supply for indication circuits is part of the system logic unit (or supervisory equipment in the case of a single transmitter).

The low voltage supply should preferably be connected to the relays via a link external to the transmitter, as shown in Figure 4. This arrangement facilitates compatibility with different types of supervisory equipment.

9.1 *Commands*

Commands are sent to the transmitter by means of contacts located in the supervisory equipment or system logic unit.

The transmitter logic shall be compatible with one or the other of the following two techniques:

1) Continuous closure of the appropriate contact of the supervisory equipment or system logic unit for the duration of the required state. The opposite state is achieved by opening the contact and in this case, only a single command circuit is required.
2) Momentary closure of the contact with a duration between 100 ms and 500 ms. In this case, the opposite command requires an additional command circuit.

Unintentional continuous closure of contacts which are intended for momentary closure shall not interfere with the normal operation of the transmitters.

9.1.1 *Circuit requirements*

Command circuit terminals shall be earth-free and arranged so as to allow for either:

- independent pairs, or
- the use of a common return wire.

Command circuit relays shall have a nominal voltage of 24 V and a maximum energizing current of 25 mA. It is recommended that the relays should be compatible with semiconductor logic techniques and opto-isolator techniques in accordance with Clauses 10 and 11.

9.1.2 *Contact requirements*

Command circuit contacts shall be floating, i.e. free of all potentials.

The contacts shall be capable of switching at least 25 mA at 24 V d.c.

9.2 *Indications*

As can be seen in Figure 4, page 33, indications are sent to the supervisory equipment or system logic unit by means of change-over contacts located in the transmitter.

9.2.1 *Contact requirements*

Either the normally open or normally closed contacts may be used.

The contacts shall be floating, i.e. free of all potentials, and operate continuously for the duration of the indicated status.

The contacts shall be capable of switching at least 25 mA at 24 V d.c.

10. Semiconductor logic techniques

The principle of semiconductor logic techniques is illustrated in Figure 5, page 35.

Appropriate precautions shall be taken to prevent misoperation as a result of unwanted voltages on the interconnections between the transmitter and the supervisory equipment or system logic unit.

10.1 *Commands*

Commands are sent to the transmitter by means of semiconductor switching devices or floating contacts located in the supervisory equipment or system logic unit.

The transmitter logic shall be compatible with one or the other of the following two techniques:

1) Continuous closure of the command circuit by the appropriate switching device in the supervisory equipment or system logic unit for the duration of the required state. The opposite state is achieved by opening the circuit and in this case, only a single command circuit is required.
2) Momentary closure of the circuit with a duration between 20 ms and 500 ms. In this case, the opposite command requires an additional command circuit.

Unintentional continuous closure of circuits which are intended for momentary closure shall not interfere with the normal operation of the transmitters.

10.1.1 *Circuit requirements*

Command circuits may employ a common return connected to the earthed negative of the power supply in the transmitter.

The command circuit terminals on the supervisory equipment or system logic unit shall be earth free.

10.1.2 *Signal voltage and signal current levels*

The two states of the binary d.c. voltage or current shall be within the limits given in Table I.

10.1.3 *Transient protection*

Command circuits shall be protected against damage from transients. This may be verified by discharging a 33 μF capacitor charged at 250 V across each command circuit.

TABLE I

Command or indication	Terminal voltage (V)			Terminal current (mA)		
	Min.	Nom.	Max.	Min.	Nom.	Max.
Circuit closed	−1	0	3	6	8	10
Circuit open	18	24	30	0	–	0.6

10.2 *Indications*

As can be seen from Figure 5, page 35, indications are sent to the supervisory equipment or system logic unit by means of semiconductor switching devices located in the transmitter.

10.2.1 *Circuit requirements*

The indication circuit shall operate continuously for the duration of the indicated status.

Indication circuits may employ a common return connected to the earthed negative of the power supply in the transmitter.

The indication circuit terminals on the supervisory equipment or system logic unit shall be earth free.

10.2.2 *Signal voltage and signal current levels*

The two states of the binary d.c. voltage or current shall be within the limits given in Table I.

10.2.3 *Transient protection*

Indication circuits shall be protected against damage from transients. This may be verified by discharging a 33 μF capacitor charged at 250 V across each indication circuit in both states, i.e. open and closed.

11. Opto-isolator techniques

Under consideration.