

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

Part 2: Interface standards for systems using data bus type interconnections

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ICS 33.160.20; 33.200

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 38, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

Amd. No.	Date	Comments

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 October 1997

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ISBN 0 580 28439 5

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English version

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

Part 2: Interface standards for systems using data bus type interconnections

(IEC 60864-2:1997)

Normalisation des interconnexions
entre les émetteurs ou les systèmes
d'émetteurs de radiodiffusion et les
systèmes de télésurveillance
Partie 2: Normes d'interface pour les
systèmes à interconnexions canalisées
(CEI 60864-2:1997)

Normung der Zusammenschaltung von
Rundfunksendern oder Sendersystemen
mit Fernwirkeinrichtungen
Teil 2: Schnittstellen für Anlagen mit
Datenbus-Verbindungen
(IEC 60864-2:1997)

This European Standard was approved by CENELEC on 1997-07-01. CENELEC 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 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Foreword

The text of document 103/3/FDIS, future edition 1 of IEC 60864-2, prepared by IEC TC 103, Transmitting equipment for radiocommunication, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60864-2 on 1997-07-01.

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) 1998-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1998-04-01

Annexes designated “normative” are part of the body of the standard.

Annexes designated “informative” are given for information only.

In this standard, Annex ZA is normative and Annex A, Annex B and Annex C are informative. Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60864-2:1997 was approved by CENELEC as a European Standard without any modification.

In the official version, for Annex C, Bibliography, the following note has to be added for the standard indicated:

- IEC 60864-1 NOTE Harmonized, together with its amendment 1:1987, as HD 577 S1:1990 (not modified).

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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.

The majority of existing transmitters employ wired interconnections; however, the advent of microprocessors and software techniques will require different interconnection methods, for example, by means of optical fibres.

It therefore seems appropriate to divide IEC 60864 into two parts, part 1 dealing with dedicated interconnections and part 2 dealing with data bus type interconnections.

1 Scope

This part of IEC 60864 is applicable to all classes of transmitters for sound and television broadcasting. This standard may not, however, be appropriate for low power equipment, for simple transmitting systems which consist of a small number of controlled equipment items and for 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.

This part of IEC 60864 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.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60864. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60864 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60559:1989, *Binary floating-point arithmetic for microprocessor systems*.

IEC 60625-2:1993, *Programmable measuring instruments — Interface system (byte serial, bit parallel) — Part 2: Codes, formats, protocols and common commands*.

ISO/IEC 8482:1993, *Information technology — Telecommunications and information exchange between systems — Twisted pair multipoint interconnections*.

IEEE 1118:1990, *Microcontroller-system, Serial control bus*.

3 General aspects

3.1 Definitions

For the purpose of this part of IEC 60864, the following definitions apply.

3.1.1

(N + 1) dedicated reserve system

(N + 1) reserve system where the same transmitter is always dedicated as the reserve

3.1.2

(N + 1) reserve system

system of transmitters in which only one reserve is provided for N (N > 1) transmitters in operation see Figure A.5

3.1.3

active reserve

system of transmitters in which the reserve is in continuous use and contributes to the output power, for example, parallel operation

see Figure A.3

3.1.4

alarm

indication of an abnormal status

3.1.5

automatic

term used to describe a system which acts in a predetermined way, without the external intervention of an operator

see Figure 1

3.1.6

automatic changeover

changeover action, which occurs in a preselected way, without the external intervention of an operator

3.1.7

basic transmitter

individual transmitters in a system consisting of more than one transmitter

3.1.8

changeover

transfer from one signal path or item of equipment to another, normally a spare or reserve, provided as part of a transmitter system

3.1.9

command

action by means of which any part of a transmitter system is made to change its status

3.1.10

command circuit

circuit in a supervisory system, by means of which each command is sent to the transmitter

3.1.11

control system

system used to operate a transmitter, transmitter system and/or the associated equipment by means of one or more commands

see Figure 1

3.1.12

drive (excitation) (exciter)

low level radio frequency part of a transmitter or transmitter system

the drive may be either

- unmodulated, for example, a simple crystal oscillator (sometimes referred to as excitation), or
- modulated, sometimes followed by amplifiers to form a “drive transmitter”.

see Figure A.6

3.1.13

fault (failure) (fail)

abnormal condition of the equipment which usually results in the generation of an alarm

3.1.14

indication

information concerning the status, or quality, relating to an item of equipment or system

quality indications may be either

- objective, for example, metering in digital or analogue form, insertion test signal (ITS) measurements, or
- subjective, for example, assessment of picture or sound quality on a picture monitor or loudspeaker.

3.1.15

indication circuit

circuit in a supervisory system, by means of which each indication is sent from the transmitter
see Figure 1

3.1.16

inhibit

temporary state into which the transmitter is switched due to an abnormal condition (e.g. flashover) for a short period of time. It resumes normal operation automatically after a certain time has elapsed

3.1.17

interface

boundary between one part of an item of equipment or system and another

3.1.18

local

term used to describe commands and indications which are part of the transmitting equipment or system logic
see Figure 1

3.1.19

lock-out

term used to describe the status of an item of equipment or system which has been switched off or changed over automatically because of a fault or other abnormal condition and usually requires manual intervention to reset

3.1.20

logic

deduction and/or execution of output conditions dependent upon input conditions

3.1.21

logic unit unavailable

message which indicates that automatic switchover is not possible because of failure in the logic unit itself or because a changeover is at that instant in the process of being executed

3.1.22

manual

term used to describe an action taken by an operator either locally or remotely
see Figure 1

3.1.23

manual control

mode of operation of the system logic which inhibits automatic changeover

3.1.24

modulated

normal operating state of the transmitter which is broadcasting with modulation

3.1.25

momentary closure

short duration contact closure rather than a continuous contact closure for command

3.1.26

monitoring system

system used for checking the status and/or performance of a transmitter or transmitter system and which normally comprises both status and quality indications
see Figure 1

3.1.27

multiplex reserve system

system of television transmitters whose configuration can be changed in case of a fault to permit either the vision or the sound amplifier to operate as a common reserve for vision and sound

see Figure A.4

3.1.28

off

state during which the transmitter is switched off. The control system is still capable of receiving orders and giving information about the state of the transmitter

3.1.29

parallel operation

operation when two or more transmitters are arranged so that their outputs are in phase and combined. They are sometimes referred to as dual transmitters

3.1.30

passive reserve

system of two transmitters in which only one supplies the output power to the aerial and the other is switched into operation in the event of a fault in the first

see Figure A.2

3.1.31

preferred (preference)

term used to describe a preselected item of equipment, signal path or system configuration which is wanted for service

3.1.32

preselected transmitter

equipment which is selected for service in the absence of any faults during automatic operation of a transmitting system

3.1.33

programme transmitter

transmitter selected to antenna in a passive reserve, multiplex reserve or (N + 1) system

3.1.34

ready (available)

term indicating that the equipment may be immediately brought into service

3.1.35

remote

term used to describe a command (or indication) that can be carried out (or seen) at a point physically removed from the transmitter equipment or system logic

see Figure 1

3.1.36

reset

term used to denote restoring to its preselected condition of an item of equipment or system, usually following an automatic changeover

3.1.37

select (preselect)

term used to describe the facility to choose an item of equipment, signal path or system configuration

3.1.38

standby transmitter

transmitter not selected to antenna in a passive reserve, multiplex reserve or (N + 1) system

3.1.39**start/stop**

command used to bring into operation or to switch off a transmitter, transmitter system and/or associated equipment

3.1.40**supervisory equipment**

equipment in a supervisory system which contains the command and indication devices and interfaces with the system logic or, in the case of a single transmitter, with the transmitter logic

see Figure 1

3.1.41**supervisory system**

system comprising a control system and a monitoring system

see Figure 1

3.1.42**system logic**

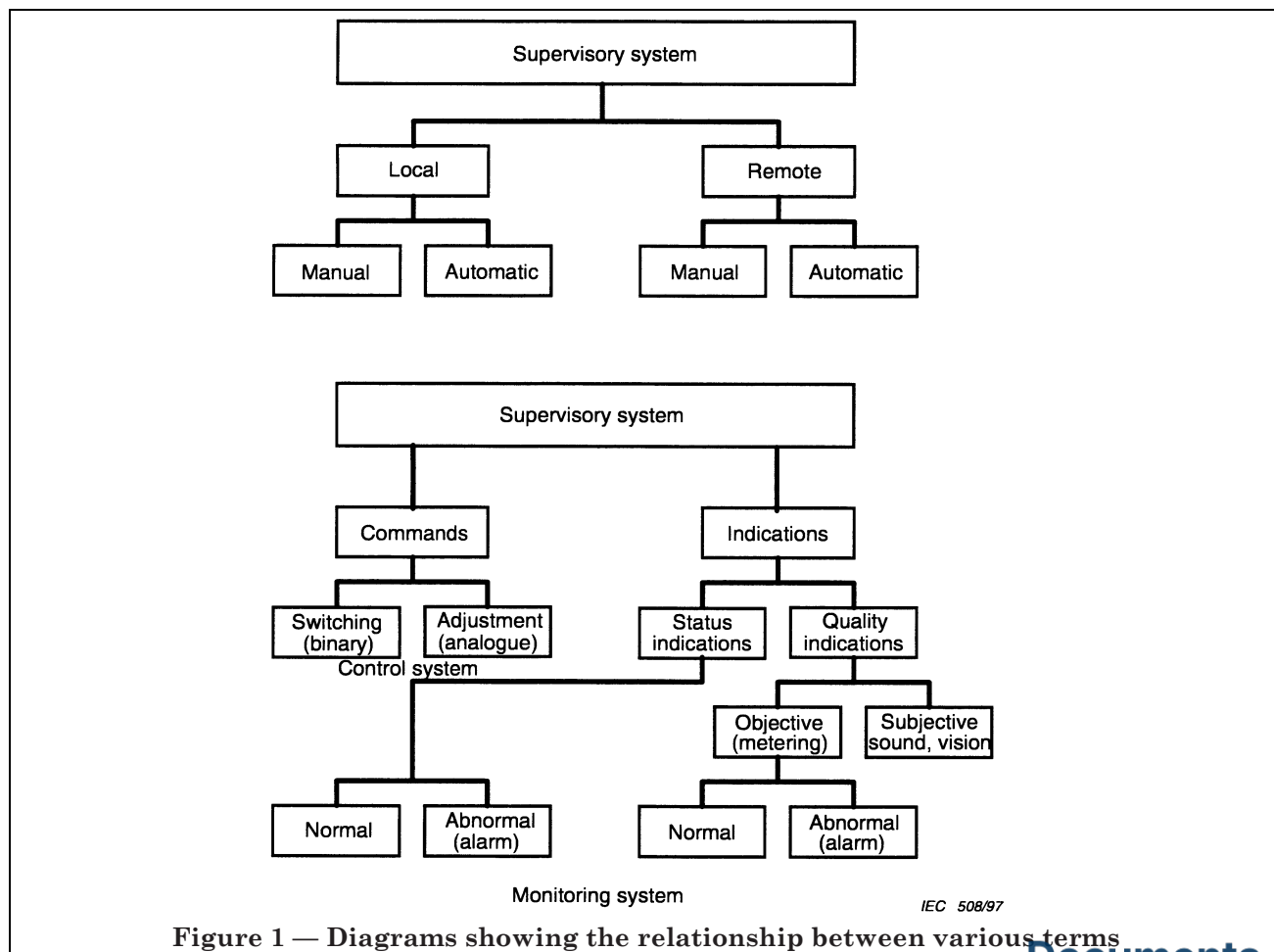
part of a supervisory system which interfaces with both transmitter and supervisory equipment

see Figure 1

3.1.43**transmitter logic**

integral part of a transmitter performing control and protection functions and which interfaces with the system logic or, in the case of a single transmitter, with the supervisory equipment

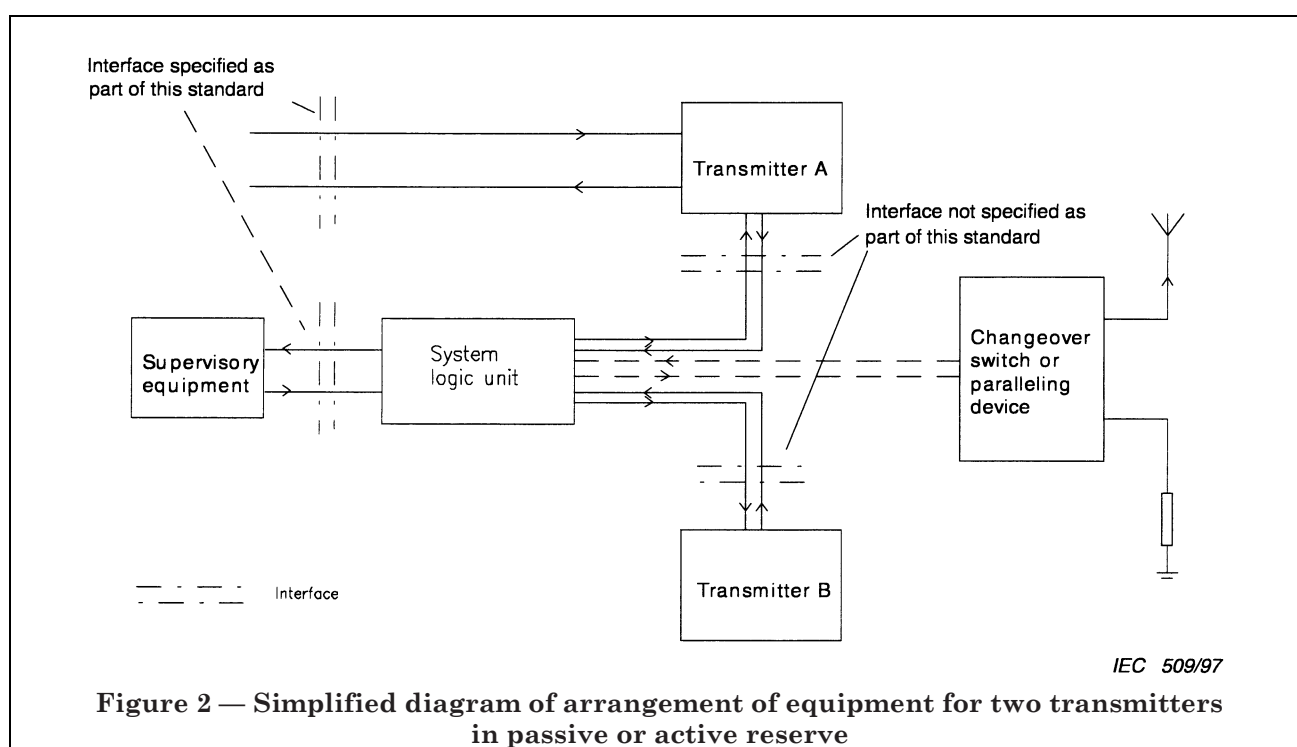
see Figure 1



3.2 General philosophy

In order to achieve standardization, it is necessary to adopt a general philosophy. The main concepts of this philosophy are the following:

- 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. This standard covers the interface between the supervisory system and the transmitter logic unit;
- b) where a transmitter system comprises two or more basic transmitters, the control and operation of that system should be exercised by means of a separate system logic unit. The interface between the basic transmitters and the system logic unit is not covered by this standard. However, connections from the system logic unit or from the basic transmitters to the supervisory system are covered by this standard (as an example see Figure 2).



3.3 Interfaces

Commands, indications and operational data are sent from and received by the supervisory equipment, via a bus system 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 shall, of course, be compatible.

It is possible to use a redundant bus structure, multimaster configuration or optical fibre cabling. However, this is not dealt with in this standard.

3.4 Transmitter systems

A wide variety of transmitter systems may be devised (see Annex A).

Transmitter systems in common use are the following:

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