

Cable networks for television signals, sound signals and interactive services —

Part 7-1: Hybrid Fibre Coax Outside Plant Status Monitoring — Physical (PHY) Layer Specification

ICS 35.100.10; 33.160.01; 33.040.01

National foreword

This British Standard is the UK implementation of EN 60728-7-1:2005+A1:2015. It is identical to IEC 60728-7-1:2003+A1:2015. It supersedes BS EN 60728-7-1:2005 which will be withdrawn on 3 June 2018.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by A1 A1.

The UK participation in its preparation was entrusted by Technical Committee EPL/100, Audio, video and multimedia systems and equipment, to Subcommittee EPL/100/4, Cable distribution equipment and systems.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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**Cable networks for television signals,
sound signals and interactive services**
**Part 7-1: Hybrid Fibre Coax Outside Plant Status Monitoring –
Physical (PHY) Layer Specification**
(IEC 60728-7-1:2003)

Réseaux de distribution par câbles
pour signaux de télévision, signaux
de radiodiffusion sonore et services
interactifs
Partie 7-1: Surveillance de l'état
des installations extérieures des réseaux
hybrides à fibre optique et câble coaxial -
Spécification de la couche physique
(CEI 60728-7-1:2003)

Kabelnetze für Fernsehsignale,
Tonsignale und interaktive Dienste
Teil 7-1: Zustandsüberwachung Hybrid-
Faser-Koax-Netze (HFC) –
Festlegung Bitübertragungsschicht (PHY)
(IEC 60728-7-1:2003)

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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

Foreword

The text of the International Standard IEC 60728-7-1:2003, prepared by technical area 5: Cable networks for television signals, sound signals and interactive services, of IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the formal vote and was approved by CENELEC as EN 60728-7-1 on 2004-12-01 without any modification.

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) 2005-12-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2007-12-01

Endorsement notice

The text of the International Standard IEC 60728-7-1:2003 was approved by CENELEC as a European Standard without any modification.

European foreword to amendment A1

The text of document 100/2417/FDIS, future edition 1 of IEC 60728-7-1:2003/A1, prepared by Technical Area 5 “Cable networks for television signals, sound signals and interactive services” of IEC/TC 100 “Audio, video and multimedia systems and equipment” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60728-7-1:2005/A1:2015.

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standards conflicting with the
document have to be withdrawn

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The text of the International Standard IEC 60728-7-1:2003/A1:2015 was approved by CENELEC as a European Standard without any modification.

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INTRODUCTION

A1 Standards and other deliverables of the IEC 60728 series deal with cable networks including equipment and associated methods of measurement for headend reception, processing and distribution of television and sound signals and for processing, interfacing and transmitting all kinds of data signals for interactive services using all applicable transmission media. These signals are typically transmitted in networks by frequency-multiplexing techniques.

This includes for instance

- regional and local broadband cable networks,
- extended satellite and terrestrial television distribution systems,
- individual satellite and terrestrial television receiving systems,

and all kinds of equipment, systems and installations used in such cable networks, distribution and receiving systems.

The extent of this standardization work is from the antennas and/or special signal source inputs to the headend or other interface points to the network up to the terminal input of the customer premises equipment.

The standardization work will consider coexistence with users of the RF spectrum in wired and wireless transmission systems.

The standardization of any user terminals (i.e. tuners, receivers, decoders, multimedia terminals, etc.) as well as of any coaxial and optical cables and accessories thereof is excluded. **A1**

CABLE NETWORKS FOR TELEVISION SIGNALS, SOUND SIGNALS AND INTERACTIVE SERVICES –

Part 7-1: Hybrid Fibre Coax Outside Plant status monitoring – Physical (PHY) layer specification

1 Scope

This part of IEC 60728 specifies requirements for The Hybrid Fibre Coax (HFC) Outside Plant (OSP) Physical (PHY) Layer Specification and is part of the series of specifications developed by the Hybrid Management Sub-Layer (HMS) subcommittee under the SCTE. The purpose of the HMS specification is to support the design and implementation of interoperable management systems for evolving HFC cable networks. The HMS Physical (PHY) Layer Specification describes the physical layer portion of the protocol stack used for communication between HMS-compliant transponders interfacing to managed outside plant network elements (NE) and a centralized head-end element (HE).

This standard describes the PHY layer requirements that must be implemented by all *Type 2* and *Type 3* compliant OSP HMS transponders on the HFC plant and the controlling equipment in the head-end. Any exceptions to compliance with this standard will be specifically noted herein as necessary. Refer to Table 1 for a full definition of the type classifications.

Electromagnetic Compatibility (EMC) is not specified in this standard and is left to the vendor to ensure compliance with local EMC regulatory requirements. Other than operating temperature, physical parameters such as shock, vibration, humidity, etc., are also not specified and left to the vendor's discretion.

Transponder type classifications referenced within the HMS series of standards are defined in Table 1.

Table 1 – Transponder type classifications

Type	Description	Application
Type 0	Refers to legacy transponder equipment, which is incapable of supporting the HMS specifications	This transponder interfaces with legacy network equipment through proprietary means. This transponder could be managed through the same management applications as the other types through proxies or other means at the head-end
Type 1	Refers to stand-alone transponder equipment (legacy or new) which can be upgraded to support the HMS specifications	This transponder interfaces with legacy network equipment through proprietary means. Type 1 is a standards-compliant transponder (either manufactured to the standard or upgraded) that connects to legacy network equipment via a proprietary interface
Type 2	Refers to a stand-alone, HMS-compliant transponder	This transponder interfaces with network equipment designed to support the electrical and physical specifications defined in the HMS standards. It can be factory or field-installed. Its RF connection is independent of the monitored NE
Type 3	Refers to a stand-alone or embedded, HMS-compliant transponder	This transponder interfaces with network equipment designed to support the electrical specifications defined in the HMS standards. It may or may not support the physical specifications defined in the HMS standards. It can be factory-installed. It may or may not be field-installed. Its RF connection is through the monitored NE