



BSI Standards Publication

Twinax cables for digital communications

Part 2: Family specification — Cable for Ethernet-over-twinax physical interfaces

National foreword

This British Standard is the UK implementation of IEC 62783-2:2019.

The UK participation in its preparation was entrusted to Technical Committee EPL/46, Cables, wires and waveguides, radio frequency connectors and accessories for communication and signalling.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2023
Published by BSI Standards Limited 2023

ISBN 978 0 580 90057 0

ICS 33.120.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2023.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Twinax cables for digital communications –
Part 2: Family specification – Cable for Ethernet-over-twinax physical interfaces**

**Câbles twinax pour transmissions numériques –
Partie 2: Spécification de famille – Câble pour interfaces physiques Ethernet sur
twinax**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 33.120.20

ISBN 978-2-8322-6160-6

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 Requirements for cables construction	8
4.1 General remarks	8
4.2 Cable construction	8
4.2.1 General	8
4.2.2 Conductor.....	8
4.2.3 Insulation.....	8
4.2.4 Colour code	8
4.2.5 Drain wire	8
4.2.6 Screening of cable assembly element.....	8
4.2.7 Cable make-up	8
4.2.8 Screening of the cable core	8
4.2.9 Sheath.....	9
4.2.10 Colour of sheath	9
4.2.11 Identification.....	9
4.2.12 Finished cable	9
5 Requirements and test methods	9
5.1 General remarks	9
5.2 Electrical tests	10
5.2.1 Conductor resistance	10
5.2.2 Resistance unbalance.....	10
5.2.3 Dielectric strength.....	10
5.2.4 Insulation resistance.....	10
5.2.5 Mutual capacitance.....	10
5.2.6 Surface transfer impedance	10
5.3 Transmission requirements and tests	10
5.3.1 General	10
5.3.2 Characteristic impedance	10
5.3.3 Return loss	10
5.3.4 Attenuation	10
5.3.5 Propagation delay, inter-element delay skew, and intra-element delay skew	10
5.3.6 Near-end crosstalk (NEXT)	10
5.3.7 Attenuation to crosstalk ratio far-end (ACR-F)	11
5.3.8 Transverse conversion loss (TCL)	11
5.3.9 Equal level transverse conversion transfer loss (ELTCTL)	11
5.3.10 Screening attenuation.....	11
5.3.11 Coupling attenuation.....	11
5.4 Mechanical and dimensional requirements and test methods	11
5.4.1 General	11
5.4.2 Measurement of dimensions	11
5.4.3 Elongation at break of the conductor.....	11
5.4.4 Tensile strength of the insulation	11

5.4.5	Elongation at break of the sheath	11
5.4.6	Tensile strength of the sheath.....	11
5.4.7	Crush test of the cable.....	11
5.4.8	Impact test of the cable	11
5.4.9	Repeated bending of the cable	12
5.4.10	Tensile performance of the cable	12
5.5	Environmental tests	12
5.5.1	Shrinkage of the insulation	12
5.5.2	Wrapping test of the insulation after thermal ageing	12
5.5.3	Bending test of the insulation at low temperature.....	12
5.5.4	Tensile strength and elongation of the sheath after ageing	12
5.5.5	Sheath pressure test at high temperature	12
5.5.6	Cold bend test of the cable	12
5.5.7	Heat shock test.....	12
5.5.8	Flame propagation characteristics of a single cable	12
5.5.9	Flame propagation characteristics of bunched cables	12
5.5.10	Smoke generation.....	12
	Bibliography.....	13
	Table 1 – Supported IEEE 802.3 Ethernet-over-twinax implementations, configurations.....	8
	Table 2 – Supported IEEE 802.3 Ethernet-over-twinax implementations, transmission requirements.....	9