

International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

L.18
(05/2008)

SERIES L: CONSTRUCTION, INSTALLATION AND
PROTECTION OF CABLES AND OTHER ELEMENTS OF
OUTSIDE PLANT

Sheath closures for terrestrial copper telecommunication cables

Recommendation ITU-T L.18

Recommendation ITU-T L.18

Sheath closures for terrestrial copper telecommunication cables

Summary

Recommendation ITU-T L.18 deals with the design, mechanical and environmental characteristics of cable sheath closures for copper cables, applied in telecommunication networks in duct, tunnel, buried, surface troughing and aerial installations.

Source

Recommendation ITU-T L.18 was approved on 29 May 2008 by ITU-T Study Group 6 (2005-2008) under Recommendation ITU-T A.8 procedure.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g. interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2009

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

CONTENTS

Page

1	Scope	1
2	References.....	1
3	Characteristics of closures for copper cable	1
3.1	Design of the closure	1
3.2	Mechanical characteristics.....	3
3.3	Environmental characteristics	3
	Appendix I – Environmental classification.....	5
I.1	Basic environmental classes	5
I.2	Special conditions.....	6
	Appendix II – Typical performance requirements for sealed non-pressurized copper closures	7
	Appendix III – Typical performance requirements for sealed pressurized copper closures....	10
	Bibliography.....	13

Document Sharing Hub

Introduction

A copper cable telecommunication network will require, at certain locations, cable interconnections (cable joints) because:

- a) cables are not necessarily continuous from one terminal point to the other
- b) cables may need to be branched
- c) cables may have been damaged.

A cable joint consists of spliced conductors and a closure. The methods for splicing conductors are covered in a separate Recommendation ITU-T L.9: *Methods of terminating metallic cable conductors* and further information is also found in the ITU-T Handbook, *Outside plant technologies for public networks* (Part II, Chapter 3 – Symmetrical and coaxial pairs jointing techniques).

Basically, a closure is a structure, which is attached at the outer surface of the ends of the sheaths of the cables to be jointed, covering the spliced conductors and thereby restoring the integrity of the cable sheaths at the cable joint. The closure should:

- Protect the spliced conductors from the environment in the type of plant where it is installed, directly buried, in ducts and tunnels, in surface troughing and as an aerial installation (wall, pole and pole line).
- Provide mechanical strength across the sheath opening between the cable ends.
- Provide electrical bonding and grounding of the metal parts of the sheath where required. The method of achieving this will vary with the type of cable sheath. Further information is given in Recommendations ITU-T K.11 and K.25 and the ITU-T manual: *Protection of telecommunication lines against lightning discharges*.

Recommendation ITU-T L.18

Sheath closures for terrestrial copper telecommunication cables

1 Scope

This Recommendation:

- Deals with the design of cable sheath closures for copper cables used in telecommunication networks, for all types of outside plant environments.
- Deals with the mechanical and environmental characteristics of sheath closures for copper cable.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[IEC 60068.x] IEC 60068.x-series, *Environmental testing*.

3 Characteristics of closures for copper cable

Closure design and the required characteristics may be differentiated depending on a number of parameters as listed below. The type of network for which the closure is designed (pressurized, underground, etc.), as well as any limitation in its application domain (for example, compatibility with branch configurations) should be clearly indicated to the user. Clear and correct installation instructions should be made available, indicating which tools are required, the necessary safety regulations and precautions to be taken and how to select the correct closure size.

3.1 Design of the closure

3.1.1 Installation environment and sealing level

The closure should be mechanically suitable with respect to its application and the environment in which it is to be placed.

To prevent corrosion or other electro/chemical damage, the materials should be compatible with other materials normally used in outside plant.

The level of sealing (water-tightness) must be in accordance with the application environment and pressure in the network.

3.1.1.1 Underground closures

Closures for underground networks (for example, ducted, direct buried) should be resistant to permanent water immersion.

Closures for use in pressurized plant should be able to withstand the operating pressure without leaking during their expected lifetime. Air valves are required to reduce the pressure for safe re-entry or as a feeding point to increase the pressure and may be required on the closure for measurement purposes.