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Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Environmental Engineering (EE).

National transposition dates	
Date of adoption of this EN:	18 August 2014
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Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**may not**", "**need**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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1 Scope

The present document describes the principles for powering of Telecommunications Equipment (TE) in access networks and contains requirements for the powering systems, laying down:

- the characteristics of the input and output interfaces of the power units;
- the power back-up conditions for TE including a power unit;
- the management data, necessary to guarantee the availability of the service and to ensure the maintenance of the power units.

The present document takes into account the characteristics of access network equipment for which the limits of responsibility in the installation or design of the power plants are very different than for equipment of telecom centre: it goes from "complete integration of the power plant in the TE" to "remote power feeding from a distant power plant".

The present document applies to the powering of all equipment of the access network (copper, fibre or radio networks) located outside telecommunications centres. The access network is defined as the part of the telecommunications network, which comprises the customer terminal installation and the first exchange (switching unit). The customer terminal and the switching unit are excluded from the application field of the present document.

The present document describes different configurations of powering the TE:

- Local power supply for TE.
- Remote Feeding to TE from centre through copper access pair.
- Cluster Power supply feeding power for a cluster of TE.
- Back feeding or Reverse Powering architecture that can supply power to Access Network Units such as ONU or ONT or remote DSL unit from the customer premises through its final distribution access copper pair.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[1] ETSI ETS 300 132-1: "Equipment Engineering (EE); Power supply interface at the input to telecommunications equipment; Part 1: Operated by alternating current (ac) derived from direct current (dc) sources".

[2] ETSI EN 300 132-2: "Environmental Engineering (EE); Power supply interface at the input to telecommunications and datacom (ICT) equipment; Part 2: Operated by -48 V direct current (dc)".

[3] CENELEC EN 60950-1: "Information technology equipment - Safety - Part 1: General requirements".

[4] IEC 60950-21: "Safety of information technology equipment - Part 21: Remote power feeding".

[5] CENELEC/IEC EN 60038: "CENELEC/IEC standard voltages".

[6] CENELEC EN 60664-1: "Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests".

[7] CENELEC EN 50310: "Application of equipotential bonding and earthing in buildings with information technology equipment".

[8] CENELEC EN 60896-2: "Stationary lead-acid batteries - General requirements and methods of test - Part 2: Valve regulated types".

[9] ETSI EN 300 253: "Environmental Engineering (EE); Earthing and bonding of telecommunication equipment in telecommunication centres".

[10] Recommendation ITU-T K.35: "Bonding configurations and earthing at remote electronic sites".

[11] CENELEC TR 62102: "Electrical safety - Classification of interfaces for equipment to be connected to information and communications technology networks".

[12] Recommendation ITU-T K.45: "Resistibility of telecommunication equipment installed in the access and trunk networks to overvoltages and overcurrents".

[13] ETSI ES 203 215: "Environmental Engineering (EE); Measurement Methods and Limits for Power Consumption in Broadband Telecommunication Networks Equipment".

[14] ETSI EN 300 132-3-1: "Environmental Engineering (EE); Power supply interface at the input to telecommunications and datacom (ICT) equipment; Part 3: Operated by rectified current source, alternating current source or direct current source up to 400 V; Sub-part 1: Direct current source up to 400 V".

[15] ETSI ES 202 336-1: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 1: Generic Interface".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI EN 300 019-1-1: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-1: Classification of environmental conditions; Storage".

[i.2] ETSI EN 300 019-1-3: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-3: Classification of environmental conditions; Stationary use at weatherprotected locations".

[i.3] ETSI EN 300 019-1-4: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-4: Classification of environmental conditions; Stationary use at non-weatherprotected locations".

[i.4] ETSI EN 300 019-1-8: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-8: Classification of environmental conditions; Stationary use at underground locations".

[i.5] ETSI TR 102 629: "Access, Terminals, Transmission and Multiplexing (ATTM); Reverse Power Feed for Remote Nodes".

[i.6] ETSI EN 301 605: "Environmental Engineering (EE); Earthing and bonding of 400 VDC data and telecom (ICT) equipment".

[i.7] ETSI TR 102 614: "Environmental Engineering (EE); Reverse powering of access network unit by end-user equipment: A4 interface".

[i.8] CENELEC HD 60364-1: "Low-voltage electrical installations - Part 1: Fundamental principles, assessment of general characteristics, definitions".

[i.9] ETSI EN 302 999: "Safety; Remote Power Feeding Installations; Safety requirements for the erection and operation of information technology installations with remote power feeding".