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European Standard (Telecommunications series)

**Equipment practice;
Engineering requirements
for outdoor enclosures;
Part 2: Miscellaneous enclosures**



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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Equipment Engineering (EE), and is now submitted for the Public Enquiry phase of the ETSI standards two-step Approval Procedure.

The present document is part 2 of a multi-part EN covering Equipment practice; Engineering requirements for outdoor enclosures as identified below:

Part 1: "Complete systems";

Part 2: "Miscellaneous enclosures".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

Introduction

The present document is part 2 of a two-part EN, aimed at setting out on a common basis, the installation engineering requirements for telecommunication practice, housing equipment forming part of a telecommunications network. Part 2 specifies the engineering requirements for miscellaneous outdoor enclosures and part 1 the engineering requirements for outdoor enclosures.

This part of the present document shall be referred to only when the supplier is asked for an unequipped outdoor enclosure ready to receive equipment supplied by different manufacturers.

The present document applies to all telecommunication equipment which forms part of a telecommunications network. The requirements for miscellaneous outdoor enclosures which this part lays down are based on the work of IEC Sub Committee 48D/WG 3.

Illustrative figures are contained in annex A.

1 Scope

The present document details requirements for outdoor enclosures which are supplied unequipped. The miscellaneous outdoor enclosures may be used for housing telecommunication equipment, forming part of a telecommunication network, installed outdoors on the ground. The miscellaneous outdoor enclosures are intended to accommodate various equipment from different suppliers, e.g. subracks in accordance with ETS 300 119-4 [7].

Requirements in the present document do not apply to outdoor enclosures or cabinets that can be entered by maintenance personnel.

The operating authorities should be given the data needed to help them plan infrastructure for outdoor applications. This includes equipment and traffic areas and installation transport (freight elevators, loading ramps, etc.) as well as locations of deployment for the outdoor equipment (streets, pavements, private areas, open public areas etc.).

2 References

References may be made to:

- a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or
- b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or
- c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or
- d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

2.1 Normative references

- [1] CEN/CENELEC EN 60 950: "Safety of information technology equipment, including electrical business equipment".
- [2] ETS 300 753: "Acoustic noise emitted by telecommunications equipment".
- [3] ITU-T Recommendation K.35: "Bonding configurations and earthing at remote electronic sites".
- [4] ETS 300 119-1: "Equipment Engineering (EE); European telecommunication standard for equipment practice part 1: Introduction and terminology".
- [5] ETS 300 119-2: "Equipment Engineering (EE); European telecommunication standard for equipment practice part 2: Engineering requirements for racks and cabinets".
- [6] ETS 300 119-3: "Equipment Engineering (EE); European telecommunication standard for equipment practice part 3: Engineering requirements for miscellaneous racks and cabinets".
- [7] ETS 300 119-4: "Equipment Engineering (EE); European telecommunication standard for equipment practice part 4: Engineering requirements for subracks in miscellaneous racks/cabinets".
- [8] EN 301 169-1: "Equipment Engineering (EE); European telecommunication standard for equipment practice part 1: Engineering requirements for outdoor enclosures".
- [9] ETS 300 019: "Equipment Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment"(multi-part standard).

- [10] Draft IEC 1969-2 (1997): "Sectional specifications co-ordination dimensions for cases and cabinets"
NOTE 1: Not yet available.
- [11] Draft IEC 1969-2-1 (1997): "Detail specifications for cabinets"
NOTE 2: Not yet available.
- [12] Draft IEC 1969-2 -2 (1997): "Detail specifications for cases".
NOTE 3: Not yet available.
- [13] IEC 917-2: "Sectional standard: Interface co-ordination dimensions for the 25mm equipment practice".

NOTE: Not yet available, document in process of being created.

2.2 Informative references

- [14] Council Directive 89/336/EEC: "Approximation of the laws of the Member States relating to electro-magnetic compatibility".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

Cabinet: A free-standing and self-supporting enclosure for housing electrical and/or electronic equipment, usually fitted with doors and/or side panels which may or may not be removable.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

D	outside depth
D ₁	mounting aperture depth
D _p	outside depth (plinth)
D _r	depth (top cover)
EMC	Electro-Magnetic Compatibility
H	outside height
H ₁	mounting aperture height
H _p	outside height (plinth)
IDF	Interconnect Distribution Frame
MDF	Main Distribution Frame
PSU	Power Supply Unit
W	outside width
W ₁	mounting aperture width
W _p	outside width (plinth)
W _r	outside width (top cover)

4 Definition of miscellaneous outdoor enclosures

4.1 Features

Miscellaneous outdoor enclosures in the understanding of this standard comprise cabinets only, compliant with the following:

- Intended to be used in open air conditions.
- For weather unprotected locations.
- For stationary use.

The present document does not address the aesthetic appearance of the enclosures.

The present document covers applications which are located on the ground, including:

- Streets.
- Pavements.
- Private areas.
- Open public areas.

4.2 Internal equipment

Miscellaneous outdoor enclosures in the understanding of this part of the present document comprise unequipped outdoor cabinets. Miscellaneous outdoor enclosures and the internal equipment can be delivered by various suppliers.

Types of equipment to be accommodated include:

- Subracks according to ETS 300 119-4 [7].
- Miscellaneous equipment, e.g..
 - MDF/IDF (Main Distribution Frame (MDF)/Intermediate Distribution Frame (IDF)).
 - PSU (Power Supply Unit).
 - Batteries.
 - Climate control.
 - Heat exchanger.
 - Cable termination.

5 Co-ordination dimensions for miscellaneous outdoor enclosures

5.1 General

The co-ordination dimensions are to be understood as overall dimensions, distinguished between:

- Cabinet/top cover.
- Plinth.

The plinth is regarded as an option. The top cover is considered to be an integral part of the cabinet.

The co-ordination dimensions apply to outside dimensions and aperture dimensions as defined in ETS 300 119-3 [6], table 1. The principle of specifying values is based on general formulae, described in subclauses 5.2 to/and 5.4, and tables with a selection of the possible values. The dimension given in subclause 5.5 provide selections of required values.

To define appropriate co-ordination dimensions, the following basic assumptions have been made:

- The formulae for outside dimensions in part 1 and part 2 are identical. This is to achieve the same outside dimensions for economic reasons.
- The mounting aperture dimensions are based on the outside dimensions.

Mounting equipment for fixing subracks according to ETS 300 119-4 [7] as specified in ETS 300 119-3 [6], table 1 and figure A.3, shall be provided.

5.2 Co-ordination dimensions

All dimensions are in millimetres.

5.2.1 Height

5.2.1.1 Outside height (H)

$$H = 600 + n \times 200$$

5.2.1.2 Mounting aperture height (H_1)

$$H_1 = H - 200$$

NOTE: The variable $n \times 200$ mm has been selected according to the IEC standard for outdoor enclosures IEC 1969-2 [10].

The constant 200 mm represents the difference between aperture height and outside height, and provides space for outdoor-specific functions.

$$n = 0, 1, 2, 3, \dots$$

5.2.2 Width

5.2.2.1 Outside width (W)

$$W = 600 + n \times 100$$

5.2.2.2 Mounting aperture width (W_1)

$$W_1 = W - 165$$

NOTE: The variable $n \times 100$ mm has been selected according to the IEC standard for outdoor enclosures IEC 1969-2 [10].

The constant 165 mm represents the difference between aperture width and outside width, and provides space for outdoor-specific functions.

$$n = 0, 1, 2, 3, \dots$$

5.2.3 Depth

5.2.3.1 Outside depth (D)

$$D = 300 + n \times 100$$

5.2.3.2 Mounting aperture depth (D_1)

$$D_1 = D - 100$$

NOTE: The variable $n \times 100$ mm has been selected according to the IEC standard for outdoor enclosures IEC 1969-2 [10].

The constant 100 mm represents the difference between aperture depth and outside depth, and provides space for outdoor specific functions.

$$n = 0, 1, 2, 3, \dots$$

5.3 Guidelines for plinth dimensions (optional)

The following dimensions are to be considered as guidelines. There are too many variables which depend on the specific application. Thus, compulsory dimensions are not applicable.

5.3.1 Outside height (H_p)

$$H_p = n \times 25$$

5.3.2 Outside width (W_p)

$$W_p = W \pm n \times 25$$

5.3.3 Outside depth (D_p)

$$D_p = D \pm n \times 25$$

NOTE: $n = 0, 1, 2$

It is recommended to extend 25 mm beyond each side of the enclosure footprint, which is an additional 50 mm beyond the cabinet width and depth. This is necessary to ensure sufficient cabinet mounting feet support by the plinth and to enable various features like mounting support brackets, AC cable conduits, fittings, etc.

If accommodation of outside AC cable conduits is necessary, the variable $n \times 25$ mm may increase to maximum 150 mm at the entrance side by agreement between supplier and customer.

5.4 Top cover dimensions

Although the top cover is to be considered as an integral part of the outdoor cabinet, in particular with regard to the height dimension, the width and depth may need some more space beyond the max. cabinet cross section for various reasons.

5.4.1 Outside width (W_R)

$$W_R = W + \text{max. } 50$$

5.4.2 Depth (D_R)

$$D_R = D + \text{max. } 50$$

NOTE: The outside width and depth of the roof may protrude a maximum of 25 mm on each side for the purpose of water outlets, gutters, air vents, dropping edges etc. Smaller elements mounted outside on covers such as door handles, hinges, etc. may also protrude within those limits.

5.5 Cabinet dimension values

The following outside cabinet dimension values can be required as shown in the tables hereafter. They do not represent all of the values that may be derived from the formulae in subclause 5.2 in order to limit cabinet size variants.

The preferred dimensions, shown in **bold**, should be selected when ever feasible.

The preferred dimensions apply to the outside dimensions only: there is no need to select preferred aperture dimensions.

H (mm) (see note)	600	800	1000	1200	1400	1600	1800	2000	2200	2400
H_1 (mm) (see note)	400	600	800	1000	1200	1400	1600	1800	2000	2200

The minimum value H_1 is based on IEC 917-2-2 [13], table 1a: $H_S = 300$ mm plus 100 mm for different facilities. This is the starting point to accommodate subracks which cover plug-in unit heights for both 25mm equipment practice (265 mm high) and 19" equipment practice (233,35 mm high, double euro-card).

W (mm) (see note)	700	900	1100	1300	1500	1700	1900	2100	2300	2500	2700	2900	3100
W_1 (mm) (see note)	535	735	935	1135	1335	1535	1735	1935	2135	2335	2535	2735	2935

The minimum value for W_1 (535 mm) is based on ETS 300 119-3 [6], which represents the mounting aperture width in miscellaneous racks and cabinets to accommodate subracks according to ETS 300 119-4 [7].

D (mm) (see note)	400	700	1000	1300
D_1 (mm) (see note)	300	600	900	1200

The minimum value for D_1 (300 mm) is based on the outside depth of a miscellaneous rack according to ETS 300 119-3 [6].

NOTE: Values may be decreased in steps of 25 mm.

6 Environmental aspects

6.1 Environmental conditions

Environmental conditions are generally composed of conditions appearing in nature and conditions generated by the equipment itself or external sources.

The environmental classes as defined by ETSI cover:

- Climatic and biological conditions.
- Chemically and mechanically active substances.
- Mechanical conditions including earthquake.

Definition of classes of environmental conditions and their severities to which outdoor enclosures may be exposed at specific locations can be found in ETS 300 019 [9] as follows:

- ETS 300 019-1-1: For storage.
- ETS 300 019-1-2: For transportation.
- ETS 300 019-1-4: For stationary use at non weather protected locations.

The product specification should include a statement of the environmental classes to which the product has been designed.

For specification of environmental tests see the ETS 300 019-2 [9] series.

6.2 Acoustic noise emission

For reference, see prETS 300 753 [2].

6.3 Impact resistance

The following aspects shall be covered in the relevant product specification:

- Fire from external source.
- Flooding.
- Gas explosion.
- Traffic accidents.
- Vandalism.

7 Electrical aspects

7.1 Earthing

The bonding configurations and earthing of the miscellaneous outdoor enclosure should be in accordance with the ITU-T Recommendation K.35 [3].

NOTE: This is stated as an objective until a more detailed reference standard is developed.

7.2 Electromagnetic compatibility (EMC)

The miscellaneous outdoor enclosure shall be designed with the intent of complying with the European Directive 89/336/EEC [14] and the relevant harmonized standard.

8 Mechanical aspects

8.1 Weight

For heavy systems, precautions have to be taken to facilitate mechanical loading and unloading.

8.2 Floor load

Specific floor load conditions shall be covered in the relevant product specification (weight per unit area).

8.3 Vertical load

The cabinet shall be able to support an additional vertical static load of 4 000 N/m².

8.4 Safety

For reference see EN 60 950 [1].

8.5 Surface treatment and finish

These aspects shall be covered in the relevant product specification.

9 Access

Provision of suitable access for installation, operation and maintenance shall be the responsibility of the outdoor enclosure supplier.

Annex A (informative): Illustrative figures

The outdoor enclosure does not have to conform with the figures illustrated; only the dimensions specified have to be applied.

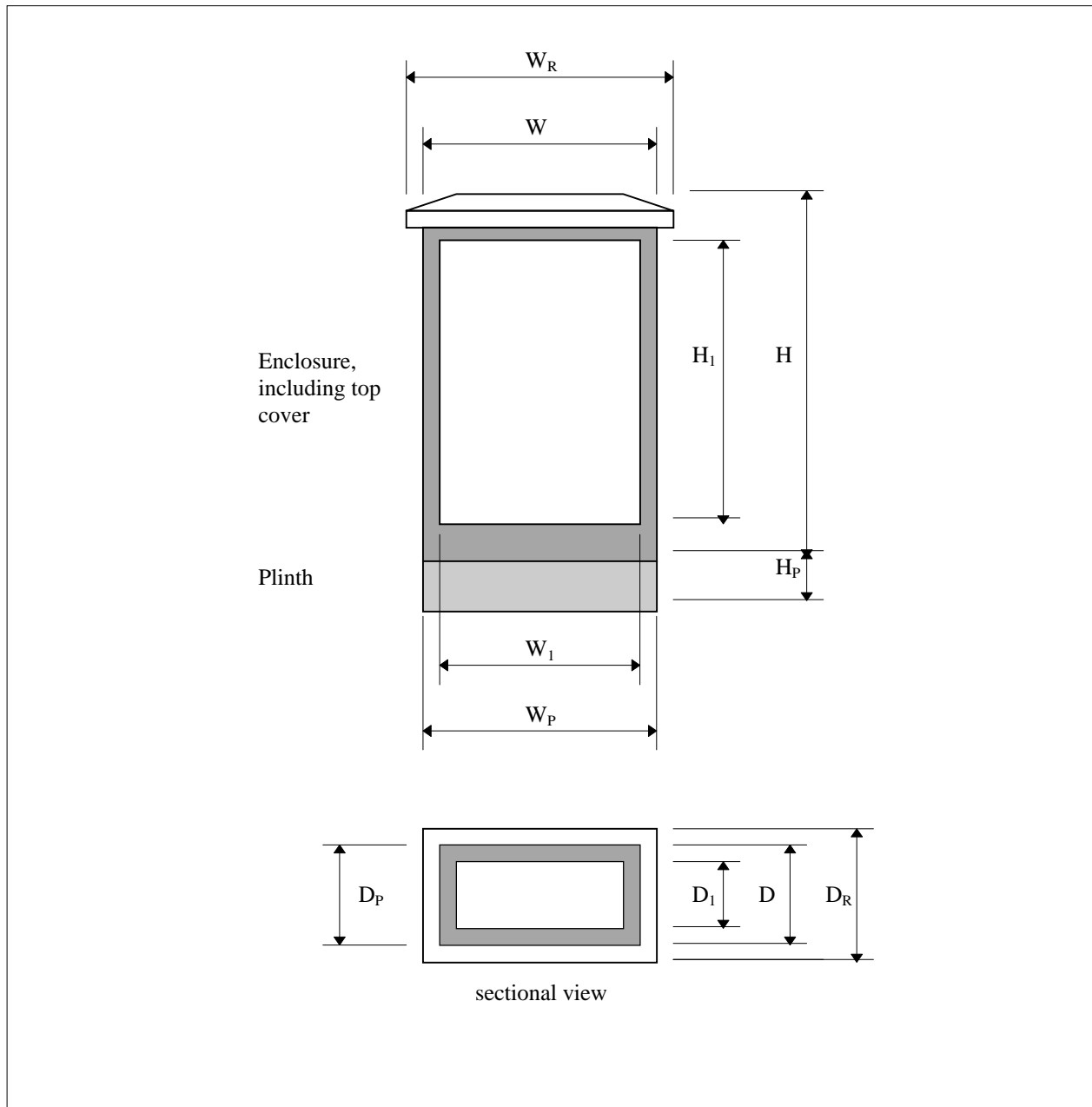


Figure A.1: Coordination dimensions of miscellaneous outdoor enclosures/basic views

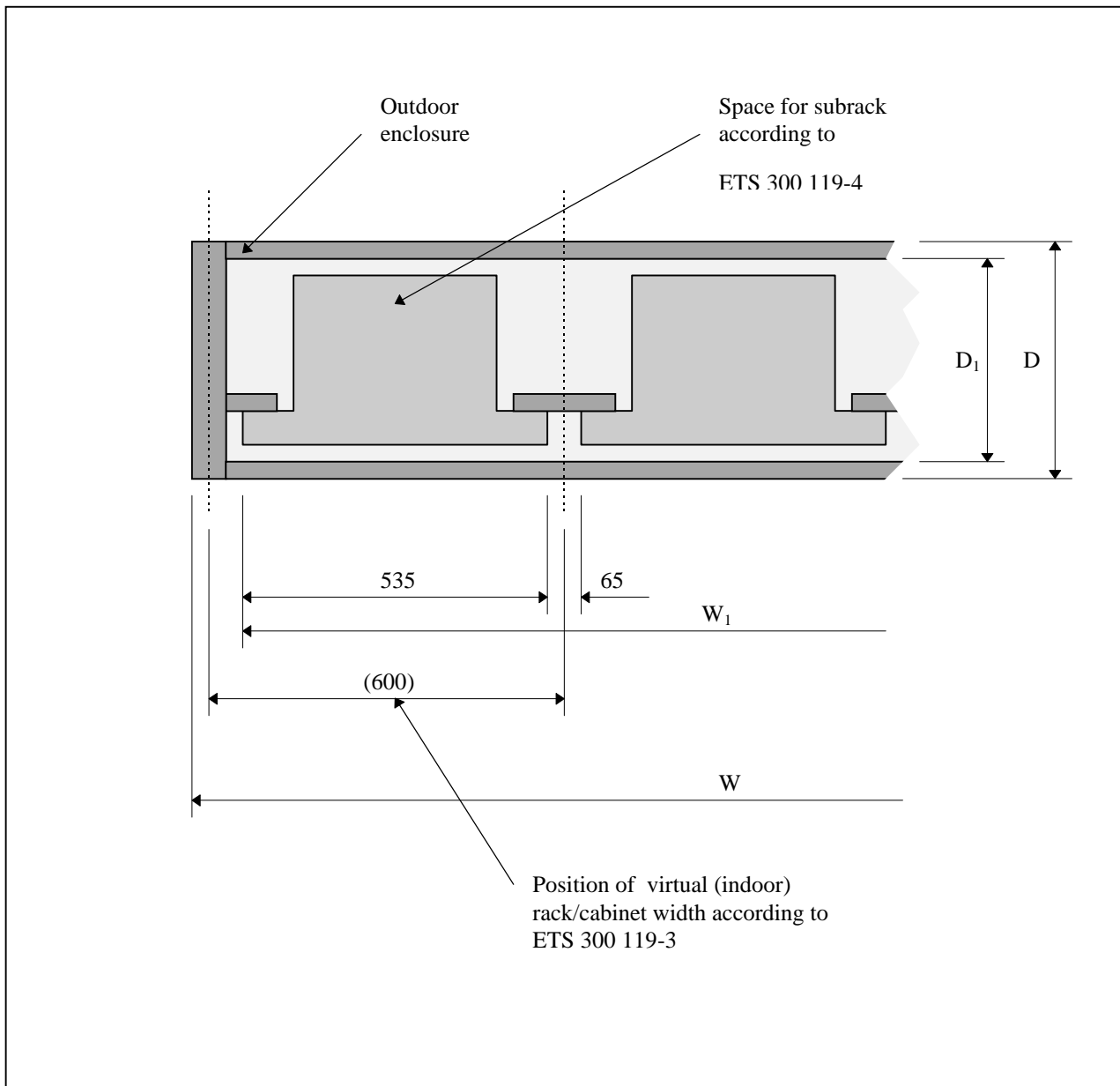


Figure A.2: Coordination dimensions for miscellaneous outdoor enclosures/subrack deployment

Annex B (informative): Bibliography

The following material, though not specifically referenced in the body of the present document, gives supporting information.

- EN 60439-6 (1996): "Low-Voltage Switchgear and Controlgear Assemblies Part 6: General Requirements for Empty Enclosures"

History

Document history		
V1.4.4	March 1998	Public Enquiry PE 9829: 1998-03-20 to 1998-07-17