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European Standard (Telecommunications series)

**Environmental Engineering (EE);
European telecommunication standard
for equipment practice;
Part 3: Engineering requirements for
miscellaneous racks and cabinets**



Reference

REN/EE-00013

Keywords

environment, rack, equipment practice

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Foreword

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

The present document is part 3 of a multi-part deliverable aimed at setting out, on a common basis, the installation engineering requirements for telecommunication practice, for housing equipment forming part of a public telecommunications network.

EN 300 119-1 [1] is a general introduction and explains the terminology used. EN 300 119-2 [2] specifies the engineering requirements for racks and cabinets. The present document specifies the engineering requirements for miscellaneous racks and cabinets. EN 300 119-4 [3] covers engineering requirements for subracks in miscellaneous racks and cabinets. EN 300 119-5 [4] covers the preferred thermal management solutions for subracks, racks/cabinets and miscellaneous racks/cabinets installed indoors in restricted access locations, for the removal of heat dissipated by one or more subracks in a rack complying to the requirements of this multi-part standard.

The present document applies to all telecommunication equipment forming part of the public telecommunications network.

The present document is part 3 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

National transposition dates	
Date of adoption of this EN:	21 January 2010
Date of latest announcement of this EN (doa):	30 April 2010
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 October 2010
Date of withdrawal of any conflicting National Standard (dow):	31 October 2010

1 Scope

The present document details requirements for miscellaneous racks and cabinets supplied unequipped. The miscellaneous racks/cabinets shall be used for housing telecommunication equipment forming part of a public telecommunication network installed either on the public telecommunication operators' sites or in the premises of operator's customers. The miscellaneous racks/cabinets shall be able to accommodate various equipments, e.g. subracks (see EN 300 119-4 [3]) and shall have provision for doors or covers.

EN 300 119-1 [1] defines the meaning of rack or cabinet in the context of the present document.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
 - for informative references.

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 indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ETSI EN 300 119-1: "Environmental Engineering (EE); European telecommunication standard for equipment practice; Part 1: Introduction and terminology".
- [2] ETSI EN 300 119-2: "Environmental Engineering (EE); European telecommunication standard for equipment practice; Part 2: Engineering requirements for racks and cabinets".
- [3] ETSI EN 300 119-4: "Environmental Engineering (EE); European telecommunication standard for equipment practice; Part 4: Engineering requirements for subracks in miscellaneous racks and cabinets".
- [4] ETSI EN 300 119-5: "Environmental Engineering (EE); European telecommunication standard for equipment practice; Part 5: Thermal management".
- [5] IEC 60917-2-1: "Modular order for the development of mechanical structures for electronic equipment practices - Part 2: Sectional specification - Interface co-ordination dimensions for the 25 mm equipment practice - Section 1: Detail specification - Dimensions for cabinets and racks".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Not applicable.

3 Dimensions for miscellaneous racks/cabinets

3.1 Height

The height dimension (H) includes covers, feet or castors if these are an integral part of the miscellaneous rack/cabinet structure.

For telecommunication centres and customer sites, H shall be 2 200 mm.

The miscellaneous rack/cabinet shall have provision within its height for the attachment of parts for interfacing to any overhead structure.

The miscellaneous racks/cabinets shall also be provided with devices which can be height-adjusted to compensate for any unevenness in the floor. The scope for height adjustment shall be at least 25 mm. The nominal miscellaneous rack/cabinet height shall be measured when the adjustment devices are at their fully retracted positions.

3.2 Width

The width dimension (W) includes covers if they are an integral part of the miscellaneous rack/cabinet.

W shall be 600 mm.

The sides of any miscellaneous rack/cabinet shall not interfere with the assembly of adjacent racks/cabinets (into a straight line-up). The suppliers shall ensure that the miscellaneous rack/cabinet will fit into the space between the grid lines, as illustrated in figure A.1. Manufacturing tolerances shall therefore be so arranged that this objective will always be achieved, even when miscellaneous racks/cabinets are delivered from different suppliers.

NOTE: If additional equipment at the end(s) of a suite of miscellaneous racks/cabinets is required the associated coordination dimensions should be specified as an integer multiple of the mounting pitch of 25 mm for each side during equipment practice design and should be agreed between supplier and user.

3.3 Depth

The depth dimension (D) includes:

- a) doors or covers of the miscellaneous rack/cabinet structure if present;
- b) protruding parts e.g. switches, lamps, hinges, locks, electro-static discharge points, etc.;
- c) connectors, cabling, cooling fins, etc.

For the doors or covers a minimum reference value for aisle width shall be 750 mm. Doors or covers which are in the open position shall protrude from the front/rear line of miscellaneous racks/cabinets by a maximum of 150 mm. Doors or covers shall be designed so that when open, they do not in any way restrict access to the equipment for essential maintenance and installation operations in that rack or cabinet.

D shall be 300 mm or 600 mm.

3.4 Other dimensions

For other dimensions of the miscellaneous rack/cabinet, see table 1 and refer to figures A.4 and A.5.

4 Accessibility and line-up of miscellaneous racks/cabinets

Miscellaneous racks/cabinets of different depths may be used in any rack/cabinet line-up, but the front line of all racks/cabinets shall be aligned as illustrated in figure A.2 or A.3. Racks/cabinets with a depth of 300 mm shall be accessed only from the front, to allow them to be placed back-to-back or to the wall.

The front line of miscellaneous racks/cabinets arranged back to back shall be aligned to the rear line (see figure A.2 or A.3).

5 Floor loading

The maximum permissible miscellaneous rack/cabinet weight depends on the miscellaneous rack's/cabinet's floor area. To calculate weight per unit area in kN/m^2 , the actual weight of the miscellaneous rack/cabinet should be divided by the floor area ($W \times D$ of the rack/cabinet). The weight per unit area added by the overhead support structure and cabling is also calculated by using the floor area of the supporting miscellaneous rack/cabinet.

The arrangement of miscellaneous racks/cabinets has to be planned by the installer to ensure that the average floor loading for a building is not exceeded. This will be a lower value than the weight per unit area and will depend, for example, on the centre distance of the rack/cabinet rows.

5.1 Weight per unit area of fully equipped miscellaneous rack/cabinet

For general applications the weight per unit area fully equipped miscellaneous rack/cabinet, including internal cabling, etc., should not exceed 15 kN/m^2 . The maximum allowed weight per unit area shall be 20 kN/m^2 .

5.2 Weight per unit area of cable support structure and cabling

The weight per unit area exerted by the relevant portions of the cable support structure with cabling, should usually not exceed 3 kN/m^2 . The maximum allowed weight per unit area shall be 8 kN/m^2 .

5.3 Point loading

A point loading exerted by the base of the fully equipped miscellaneous rack/cabinet on the floor shall not exceed 490 N/cm^2 .

NOTE: Other values for point loading may be adopted by agreement between the supplier and customer.

6 Structural load on a miscellaneous rack/cabinet

6.1 Static load

The miscellaneous rack/cabinet shall be able to support a static load of the superstructure with cabling, as described in clause 5.

6.2 Dynamic load

During installation, the miscellaneous rack/cabinet shall support an additional load of 800 N for a miscellaneous rack/cabinet of 600 mm × 600 mm and 400 N for a miscellaneous rack/cabinet of 600 mm × 300 mm.

7 External cable access

The miscellaneous rack/cabinet design shall enable the cabling for the telecommunication equipment to be routed either over a cable support structure, or under a raised floor, as required i.e. cable access shall be provided in both top and bottom of the miscellaneous rack/cabinet.

Direct miscellaneous rack/cabinet to miscellaneous rack/cabinet cabling is also allowed within rows.

External cables shall be located in the area on the left and right hand sides of the miscellaneous rack/cabinet, between the subrack and miscellaneous rack/cabinet structure.

The minimum area for cable shall be 6 000 mm² on each side. This figure is based on the use of a 500 mm wide subrack. The area available will increase when a 450 mm wide subrack is installed.

8 Dimensions of packaged miscellaneous rack/cabinet

The maximum dimensions of a packaged miscellaneous rack/cabinet shall not exceed:

$$2\,500\text{ mm} \times 1\,200\text{ mm} \times 900\text{ mm}$$

These maximum dimensions are stated to allow transportation when using normal lifts, hallways and doors.

NOTE: See also figures A.4 and A.5 where dimensions are in mm.

Table 1

Dimensions for miscellaneous racks/cabinets	(see note 3)	600 x 300	600 x 600
H = height	C	2 200	2 200
W = width	C	600	600
D = depth (see note 5)	C	300	600
H1 = mounting height aperture	C	2 000 (see note 1)	
W1 = mounting width aperture	C	535	535
W2 = aperture between mounting flanges	C	500	500
W3 = mounting centre distance e.g. for subracks	A	515	515
D1 = mounting depth aperture (front) (see note 5)	C	40	75
D2 = mounting depth aperture (rear) see note 5)	C	240	470
R = mounting position	C	12,5	12,5
S = mounting pitch	A	25	25
F = fastening points	A	(see note 2)	
D3 = mounting depth aperture i.e. for possible front cover/door (see notes 4 and 5)	C	10	25
D4 = mounting depth aperture i.e. for possible rear cover/door (see notes 4 and 5)	C	5	25
<p>NOTE 1: Miscellaneous rack/cabinet designs of aperture height 2 000 + n x 25 are allowed, but are not a requirement.</p> <p>NOTE 2: Fastening points, metric screw thread M6 to be used.</p> <p>NOTE 3: A = Actual dimension. Tolerances needed for W3 and S are specified in IEC 60917-2-1 [5]. C = Coordination dimension.</p> <p>NOTE 4: Depth D3 applies to aperture width W1. Depth D4 applies to aperture width W2.</p> <p>NOTE 5: The difference, 5 mm, between D, 300 mm, and the sum of D1, D2, D3 and D4, 295 mm, is the allowance for miscellaneous rack/cabinet construction, manufacturing tolerances and clearance for installing subracks. A similar explanation applies to the 600 mm deep miscellaneous rack/cabinet.</p> <p>Definition: A coordination dimension is a reference dimension used to coordinate mechanical interfaces. This is not a manufacturing dimension with a tolerance. An aperture dimension is a special coordination dimension for a usable space between features. An actual outside dimension corresponding to a coordination dimension can only decrease. An actual inside dimension corresponding to an aperture dimension can only increase.</p>			

Annex A (informative): Illustrative figures

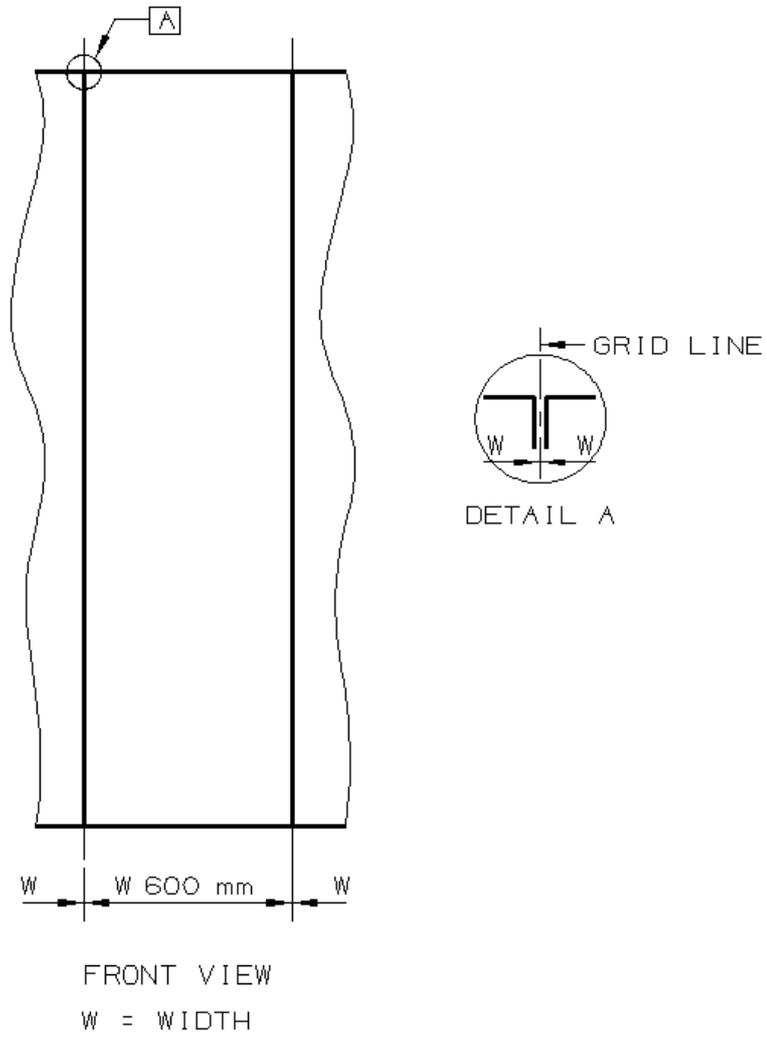


Figure A.1

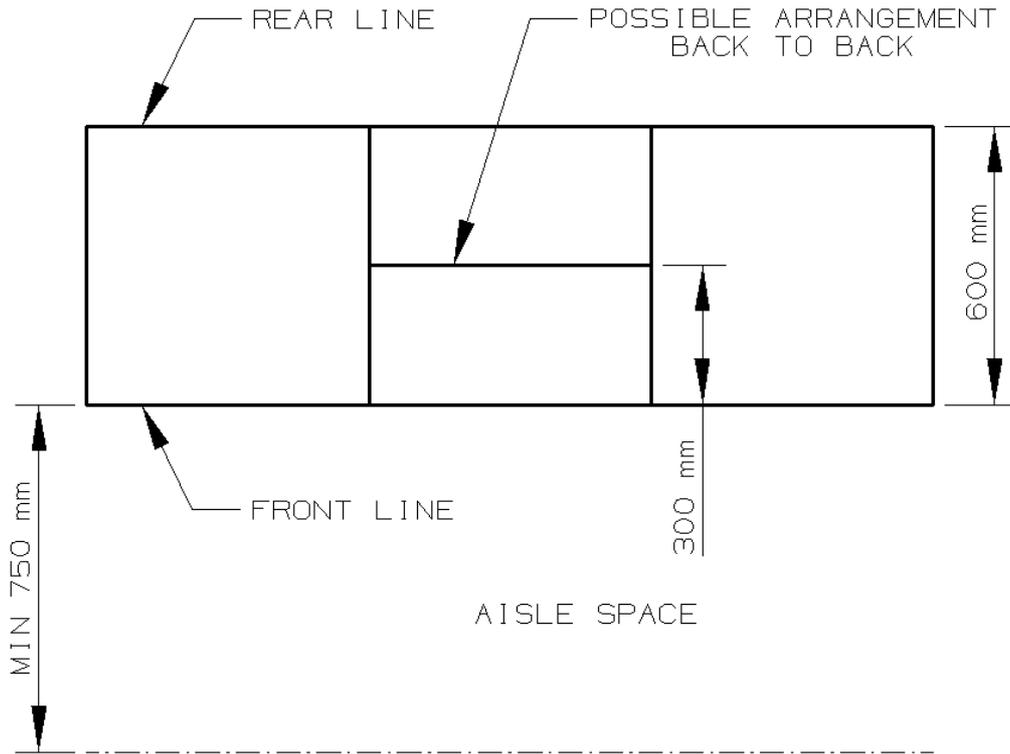


Figure A.2: Possible floor arrangement (example)

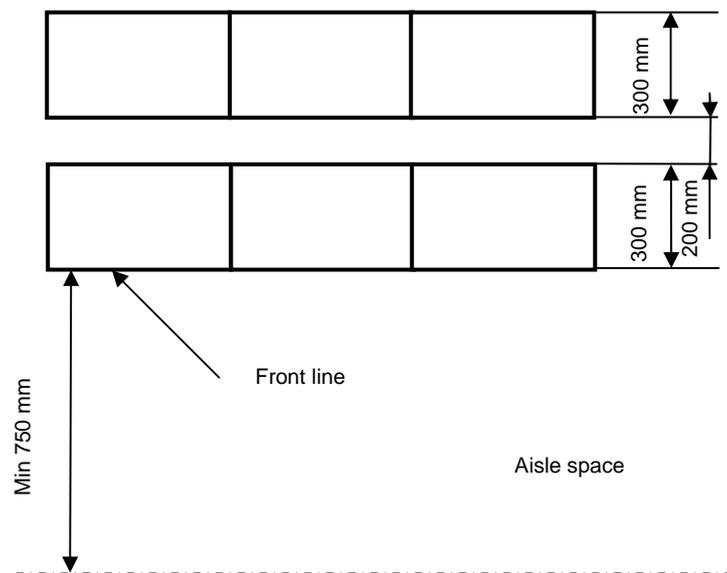


Figure A.3: Possible floor arrangement for 300 mm dept rack/cabinet to improve the cooling (example)

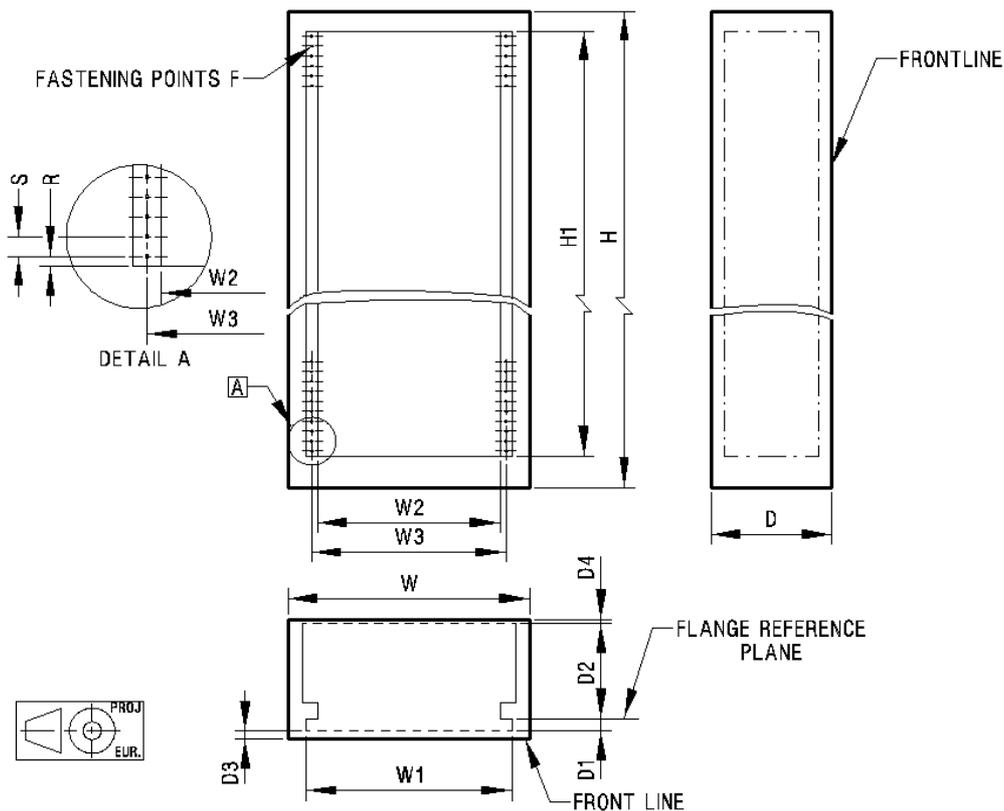
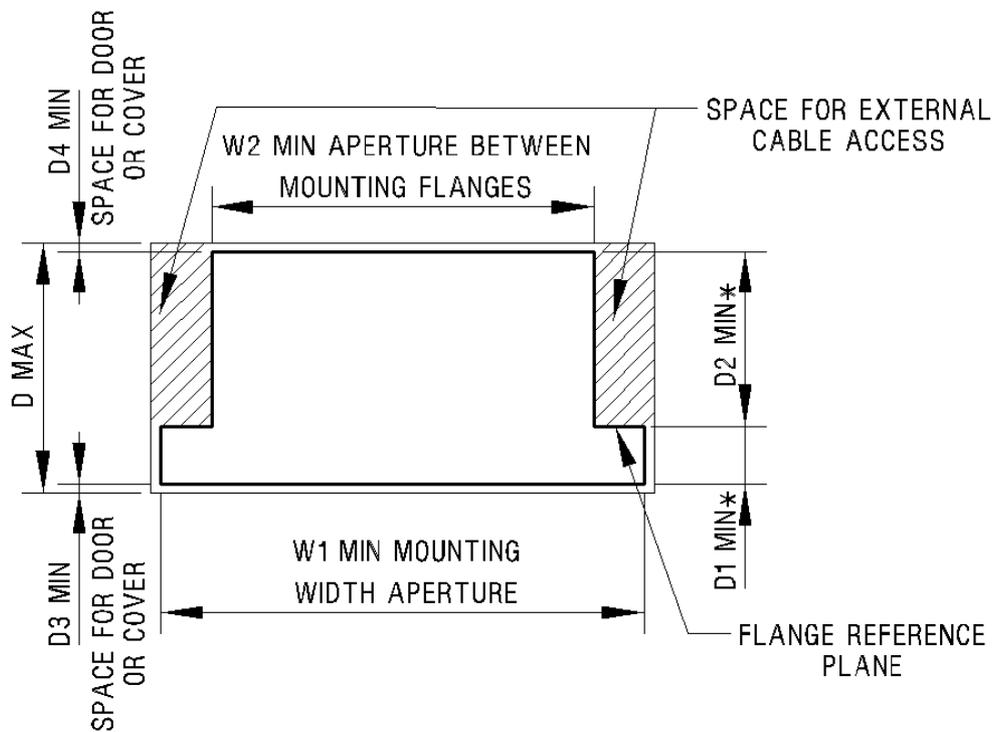


Figure A.4: Miscellaneous rack/cabinet



NOTE: *: Space to be available for equipment, e.g. subracks.

Figure A.5: Miscellaneous rack/cabinet

History

Document history		
Edition 1	January 1994	Publication as ETS 300 119-3
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