

Description of the *.ida File Format

The *.ida database files (“Indoor Database ASCII”) are in a simple ASCII format. An *.ida-file starts with the following header::

```
* Indoor Database *
* Last changed on: 14. 9.2000 18: 9:27 *
BEGIN_WALLS
86
```

Arbitrary number of title or comment lines. The “” is optional (recommended), but in general no special comment character required*

This keyword marks the beginning of the building data

Total number of walls [integer value]

Following the header, there is one definition for each wall or subdivision. At the beginning of each definition, an optional comment may be inserted between “*” signs.

If no subdivisions are defined for a certain wall, then the {Number of Subdivisions} parameter is set to zero.

If there are subdivisions, the parameter {Number of Subdivisions} defines how many subdivisions exist for that individual wall.

The subdivisions are then defined exactly like the walls, with only one difference: The {Number of Subdivisions} parameter is omitted (see example below).

The lines for the defined subdivisions **must** come **directly after** the corresponding wall.

Each line is structured as follows:

```
* comment *

{Wall Index Number [integer]}
{Number of corners [integer]}

{x-coordinate of corner #1 [float]} ,
{y-coordinate of corner #1 [float]} ,
{z-coordinate of corner #1 [float]}
.....
{x-coordinate of corner #n [float]} ,
{y-coordinate of corner #n [float]} ,
{z-coordinate of corner #n [float]}

{Rel. Dielectricity [float]}
{Rel. Permeability [float]}
{Conductance [float]}
{Transmission Loss [float]}
{Reflection Loss [float]}
{Incident (min) [float]}
{Incident (max) [float]}
{Diffracted [float]}

{Thickness of Walls [float]}
{Surface description [integer]}
{Number of Subdivisions (float)}
```

At the end of the wall description, the keyword

```
END_WALLS
```

marks the end of the file.

This is a sample file containing only one wall with one subdivision:

```
* Indoor Database *
BEGIN_WALLS
1
1 4 45.615, 27.059, 0.000 29.215, 40.559, 0.000 29.215, 40.559, 4.000
45.615, 27.059, 4.000 4.000 1.000 0.100 10.000 12.000 15.000 40.000 10.000 25 2 1
1001 4 40.576, 31.207, 3.241 42.588, 29.551, 3.241 42.588, 29.551, 1.876
40.576, 31.207, 1.876 4.000 1.000 0.100 5.000 15.000 15.000 40.000 10.000 10 2
END_WALLS
```

Description of the Wall Parameters

Parameter	Type	Description
Wall Index Number	Index	Number to identify the wall, e.g. during a prediction and in an error message. Number must be positive and unique for all walls in the database.
Number of corners	Index	Number of corners of the wall (Only values greater than 3 are allowed).
x-coordinate of corner #n	Geometric	Coordinates [m] of each individual corner of the wall.
y-coordinate of corner #n	Geometric	
z-coordinate of corner #n	Geometric	
Rel. Dielectricity	Physical Model (GTD/UTD)	Relative Dielectricity (ϵ_r). Default value: 4.0
Rel. Permeability	Physical Model (GTD/UTD)	Relative Permeability (μ_r). Default value: 1.0
Conductance	Physical Model (GTD/UTD)	Conductance [$\frac{1}{\Omega \cdot m}$]. Default value: 0.01
Transmission Loss	Empirical Refl. & Diffraction Model	Penetration loss of a ray when penetrating the wall (frequency-dependent) [dB].
Reflection Loss	Empirical Refl. & Diffraction Model	Reflection loss of a ray reflected at wall (frequency-dependent) [dB].
Incident (min)	Empirical Refl. & Diffraction Model	Parameter for the empirical diffraction model (frequency-dependent) [dB]. Refer to the ProMan documentation for details and default values.
Incident (max)	Empirical Refl. & Diffraction Model	
Diffracted	Empirical Refl. & Diffraction Model	
Thickness of Walls	Geometrical	Thickness of the wall [cm] (not used). Default value: 10
Surface description	Index	Code for surface properties (not used). Default value: 0
Number of Subdivisions	Index	Number of subdivisions defined for this individual wall (Value only allowed if wall is not a subdivision).

Table 1

Notes:

- The orientation of the corners should be counter-clockwise (Each wall is assigned to the coordinate plane which is parallel to the wall. Counter-clockwise orientation if top-view on wall is considered. If no plane is parallel, the scalar product of the normal vector of each coordinate plane with the normal vector of the wall is determined and the wall is assigned to the plane with the highest scalar product).
- If an *.ida-file is loaded with WallMan, the orientation of the corners is corrected automatically if it should be wrong/clockwise. So for WallMan the orientation of the corners is not relevant. WallMan saves the orientation of the corners always counter-clockwise (so WallMan can be used to correct the orientation).