

# Boxes' Masses

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# 1 Boxes' masses (XML)

## 1.1 Layer and Modules

Modules are the new name for ladders. There are 7 of them in a layer.

### 1.1.1 Short Module

name	$L_X$	$L_Y$	$L_Z$	$\rho$	volume	$\times$	mass [g]
lvBalcony	7.0	2.4	0.1852	2.4393	3.176	1	7.747
lvLadderTop	7.0	1.85	0.1725	1.03898	2.234	1	2.321
lvLongSupport	8.0	22.2	0.1474	0.51534	26.178	1	13.493
lvLong410Sensor	7.8	11.0	0.041	2.33	3.518	2	16.394

Total mass for a Long module : 39.955

### 1.1.2 Long Module

name	$L_X$	$L_Y$	$L_Z$	$\rho$	volume	$\times$	mass [g]
lvBalcony	7.0	2.4	0.1852	2.4393	3.176	1	7.747
lvLadderTop	7.0	1.85	0.1725	1.03898	2.234	1	2.321
lvShortSupport	8.0	11.1	0.1474	0.51522	13.089	1	6.744
lvShort320Sensor	7.8	11.0	0.032	2.33	2.746	1	6.398

Total mass for a Short Module : 23.21

## 1.2 PCB cable stuff

Beware, some large parts of the Xml pcb's are not really part of the boxes. Some elements are fully out of the boxes, and some other are part in, part out. For this reason the times column can have fractional numbers.

### 1.2.1 SmallPCB

name	$L_X$	$L_Y$	$L_Z$	$\rho$	volume	$\times$	mass [g]
lvShortCablePCB	50.6	2.0	0.1125	2.39759	11.385	0	27.297
lvConnector	50.6	5.1	0.070825	2.5206	73.108	0.695	46.069
lvShortPCB	50.6	3.55	0.16	3.065	28.741	1	88.091
lvKaptonFlexConnector	50.6	1.2	0.27	2.0733	16.394	1	33.987

Total mass of the SmallPCB : 154.096 [g]

### 1.2.2 BigPCB

name	$L_X$	$L_Y$	$L_Z$	$\rho$	volume	$\times$	mass [g]
lvConnector	50.6	5.1	0.070825	2.5206	73.108	0.695	46.069
lvLongPCB	50.6	5.55	0.2779	2.44347	78.043	1	190.690
lvKaptonFlexConnector	50.6	1.2	0.27	2.0733	16.394	1	33.987

Total mass of the BigPCB : 256.695 [g]

## 1.3 Side Box

### 1.3.1 Mass of the container

Here is the list of pieces involved in the container mass of the box, which is just an empty box, without the cover.

name	$L_X$	$L_Y$	$L_Z$	$\rho$	volume	$\times$	mass [g]
lvSideBox1	62.2	38.7	0.8	0.1027	1925.712	2	395.541
lvSideBoxBottom	62.2	0.918501	6.338956	0.1835	362.149	1	66.454
lvSideBoxBeam	0.3	37.781499	6.338956	0.2244	71.849	1	16.123
lvSideBox4	0.917527	37.781499	6.338956	0.2055	219.743	1	45.157

Total mass of the SideBox container : 523.275[g]

### 1.3.2 Mass of the cover

Here is the list of the pieces used in the cover of the side box, including everything attached to it (cooling rod, pipes and so on).

name	$L_X$	$L_Y$	$L_Z$	$\rho$	volume	$\times$	mass [g]
lvSideCover1	7.7	0.6	8.0	0.22342	36.96	1	8.258
lvSideCover2	58.75	0.6	1.5267	0.22432	53.816	2	24.144
lvSideCover3Pipe	10.65	0.6	8.0	0.2243	51.12	1	11.466
lvKaptonFlexSide	50	6.4	6.3389	0.03697	2028.45	1	74.99
U-SteelSideConnector	0.6	6.4	4.0	1.10812	15.36	1	17.02
lvPCBSmall*	50.6	11.85	0.2833		169.87	2	308.192
lvPCBBig*	50.6	11.85	0.2833		169.87	2	513.390
lvPipe	20.0	[d]	0.6	1.93387	5.655	2	21.872
lvCoolingRodSide	57.0	0.73196	0.9	2.329	37.55	2	174.908
lvITX1LongLayer*	53.0	26.5	0.5884		826.408	1	279.685
lvITULongLayer*	55.076	27.0964	0.5884		878.105	1	279.685
lvITVLongLayer*	55.076	27.0964	0.5884		878.105	1	279.685
lvITX2LongLayer*	53.0	26.5	0.5884		826.408	1	279.685

### 1.3.3 Mass of the empty side box plus its cover

The total sum of all the stuff for SideBox : 2796.255 [g]

## 1.4 Center Box

### 1.4.1 Mass of the container

Here is the list of pieces involved in the container mass of the box, which is just an empty box, without the cover.

name	$L_X$	$L_Y$	$L_Z$	$\rho$	volume	$\times$	mass [g]
lvCenterBox1	63.9	25.65	0.830522	0.1027	1361.255	2	279.602
lvCenterBoxBeam	63.9	0.330522	6.338956	0.2468	133.881	1	33.042
lvCenterBoxBottom	0.832196	25.319478	6.338956	0.11	133.567	1	14.692
lvCenterBox4	0.918925	25.319478	6.338956	0.2172	147.487	1	32.042

Total mass of the CenterBox container : 359.378[g]

### 1.4.2 Mass of the cover

Here is the list of the pieces used in the cover of the center box, including everything attached to it (cooling rod, pipes and so on).

name	$L_X$	$L_Y$	$L_Z$	$\rho$	volume	$\times$	mass [g]
lvCenterCover1	9.0	0.6	8.0	0.22572	43.2	1	9.751
lvCenterCover2	59.35	0.6	1.5267	0.22572	54.366	2	24.543
lvCenterCover3Pipe	10.65	0.6	8.0	0.22572	51.12	1	11.539
lvKaptonFlexCenter	50.0	5.2	6.3389	0.04550	1648.11	1	74.99
U-SteelCenterConnector	0.6	5.2	4.0	1.36384	12.48	1	17.02
lvPCBSmall*	50.6	11.85	0.2833		169.87	2	308.192
lvPCBBig*	50.6	11.85	0.2833		169.87	2	513.390
lvPipe	20.0	[d]	0.6	1.93387	5.655	2	21.872
lvCoolingRodCenter	56.5	0.72833	0.9	2.32752	37.036	2	172.404
lvITX1ShortLayer*	53.0	15.4	0.5884		480.252	1	162.47
lvITUShortLayer*	54.1086	16.0972	0.5884		908.781	1	162.47
lvITVShortLayer*	54.1086	16.0972	0.5884		512.495	1	162.47
lvITX2ShortLayer*	53.0	15.4	0.5884		480.252	1	162.47

### 1.4.3 Mass of the empty Center box plus its cover

The total sum of all the stuff for CenterBox : 2162.96 [g]