

Metallized Polypropylene (PP) Capacitors for DC-Link Applications

Special Features

- Very high volume/capacitance ratio
- Self-healing
- Particularly reliable contact-configurations: 4-lead versions and screwable plate connections
- Very low dissipation factor
- Negative capacitance change versus temperature
- Very low dielectric absorption
- According to RoHS 2002/95/EC

Typical Applications

As intermediate circuit capacitor e.g. in high power converter technology

Construction

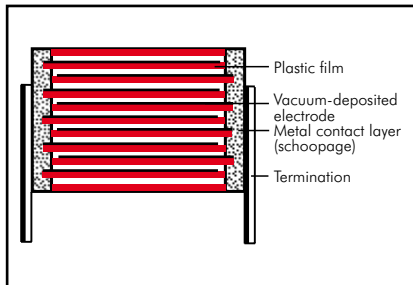
Dielectric:

Polypropylene (PPI) film

Capacitor electrodes:

Vacuum-deposited

Internal construction:



Encapsulation:

Solvent-resistant, flame-retardant plastic case with epoxy resin seal, UL 94 V-0

Terminations:

Tinned wire or plates.

Marking:

Colour: Red. Marking: Black.

Epoxy resin seal: Red

Electrical Data

Capacitance range:

5 μ F to 75 μ F

Rated voltages:

450 VDC, 700 VDC, 900 VDC, 1100 VDC

Capacitance tolerances:

$\pm 20\%$, $\pm 10\%$, $\pm 5\%$

Operating temperature range:

-40°C to $+85^\circ\text{C}$

Climatic test category:

40/085/56 in accordance with IEC

Insulation resistance at $+20^\circ\text{C}$:

$\geq 30\,000$ sec ($M\Omega \times \mu\text{F}$)

(mean value: 100 000 sec)

Measuring voltage: 100 V/1 min.

Dissipation factors at $+20^\circ\text{C}$:

$\tan \delta \leq 10 \times 10^{-4}$ at 1 kHz

Test voltage: $1.2 U_r$, 2sec

Dielectric absorption: 0.05 %

Maximum pulse rise time:

Capacitance μF	max. pulse rise time V/ μsec at $T_A < 40^\circ\text{C}$			
	450 VDC	700 VDC	900 VDC	1100 VDC
5 ... 16	-	14	16	21
20 ... 30	13	14	16	16
35 ... 45	13	12	12	16
50 ... 60	11	12	12	-
75	11	11	-	-

for pulses equal to the rated voltage

Voltage and current derating:

A derating factor of 1.35 % per K must be applied from 75°C for AC voltages and AC currents (I_{rms} according to graphs).

Reliability:

Operational life $> 200\,000$ hours

Failure rate < 2 fit ($0.5 \times U_r$ and 40°C)

Specific dissipation:

Box size WxHxL in mm	Specific dissipation in Watts per K above the ambient temperature
20x39.5x41.5	0.065
24x45.5x41.5	0.080
31x46x41.5	0.092
33x48x56	0.122
37x54x56	0.142

Mounting Recommendation

Excessive mechanical strain, e.g. pressure or shock onto the capacitor body, is to be avoided during mounting and usage of the capacitors. When fixing the plates the screw torque is to be limited to max. 5 Nm.

Packing

Transportation-safe packing in cardboard boxes.

For further details and graphs please refer to Technical Information.

Continuation

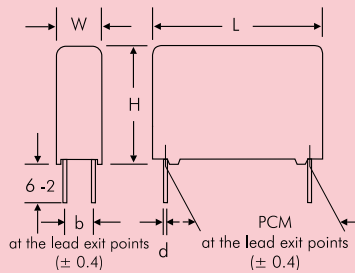
General Data

Capacitance	450 VDC/200 VAC*				700 VDC/220 VAC*				900 VDC/240 VAC*				1100 VDC/260 VAC*			
	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**
5 µF													20	39.5	41.5	37.5
8 "													20	39.5	41.5	37.5
10 µF									20	39.5	41.5	37.5	20	39.5	41.5	37.5
12 "									20	39.5	41.5	37.5	24	45.5	41.5	37.5
14 "									20	39.5	41.5	37.5	24	45.5	41.5	37.5
15 "					20	39.5	41.5	37.5	20	39.5	41.5	37.5	31	46	41.5	37.5
16 "					20	39.5	41.5	37.5	20	39.5	41.5	37.5	31	46	41.5	37.5
20 "	20	39.5	41.5	37.5	20	39.5	41.5	37.5	24	45.5	41.5	37.5	33	48	56	48.5
22 "	20	39.5	41.5	37.5	20	39.5	41.5	37.5	24	45.5	41.5	37.5	33	48	56	48.5
25 "	20	39.5	41.5	37.5	24	45.5	41.5	37.5	31	46	41.5	37.5	33	48	56	48.5
30 "	24	45.5	41.5	37.5	24	45.5	41.5	37.5	31	46	41.5	37.5	37	54	56	48.5
35 "	24	45.5	41.5	37.5	31	46	41.5	37.5	33	48	56	48.5	37	54	56	48.5
40 "	31	46	41.5	37.5	31	46	41.5	37.5	33	48	56	48.5				
45 "	31	46	41.5	37.5	33	48	56	48.5	33	48	56	48.5				
50 "	33	48	56	48.5	33	48	56	48.5	37	54	56	48.5				
55 "	33	48	56	48.5	33	48	56	48.5								
60 "	33	48	56	48.5	37	54	56	48.5								
75 "	37	54	56	48.5	37	54	56	48.5								

* AC voltages: $1.4 \times U_{rms} + U_{DC} \leq U_{r}$; at $f > 100$ Hz the permissible AC current (I_{rms} see graphs) has to be considered.

** PCM = Printed circuit module = lead spacing of the 4-lead version

4-lead version

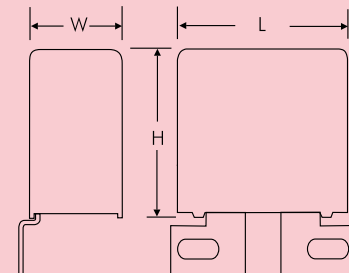


W	H	L	PCM	b	d
20	39.5	41.5	37.5	12.5	1
24	45.5	41.5	37.5	12.5	1
31	46	41.5	37.5	20	1
33	48	56	48.5	20	1
37	54	56	48.5	20	1

Dims in mm.

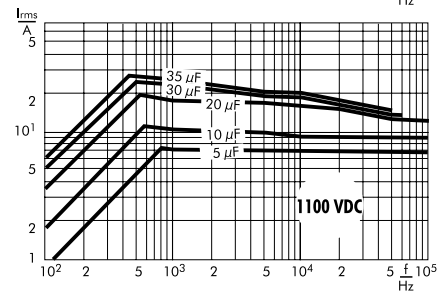
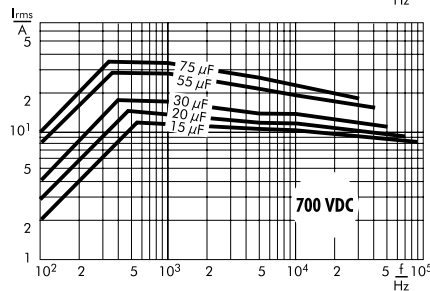
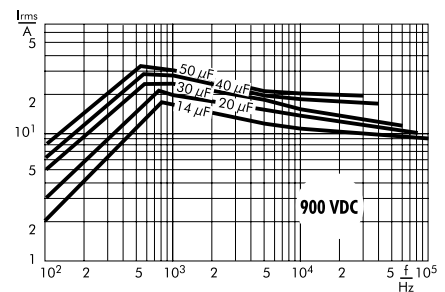
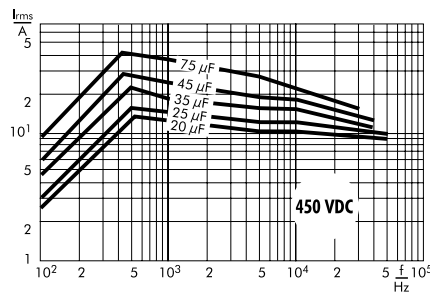
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Plate versions (example)



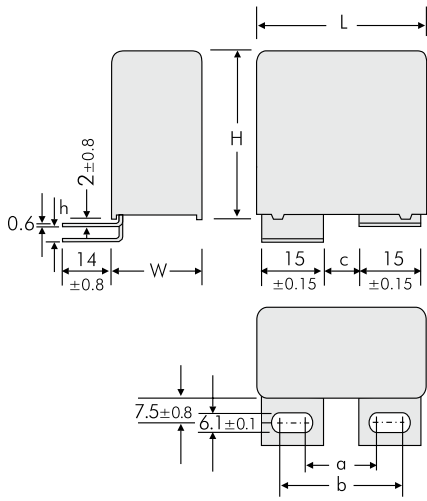
Additional plate versions are possible, please refer to the construction principles of WIMA Snubber capacitors page 82.

Permissible AC current in relation to frequency at 10° C internal temperature rise (general guide):

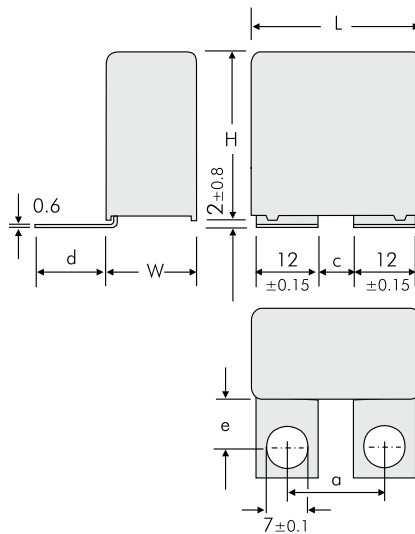




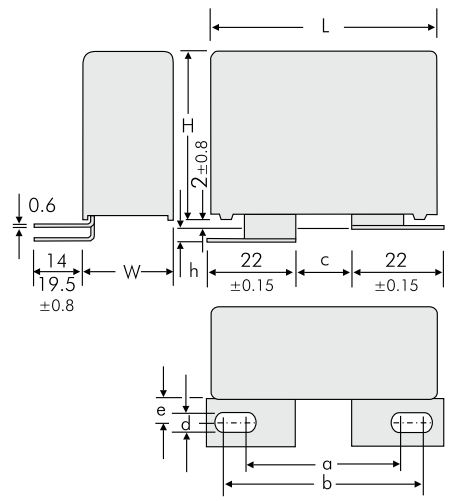
Versions of WIMA Snubber- and DC-LINK MKP 4 Capacitors



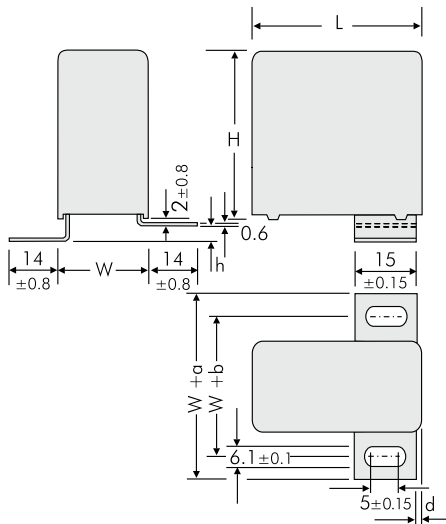
Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A1	41.5	17.5	27.5	7.5	0
A1.5	41.5	17.5	27.5	7.5	3.5
A1	56	20	30	10	0
A1.1.1	56	28	38	18	0
A1.4	56	20	30	10	3.5
A1.4.1	56	28	38	18	3.5



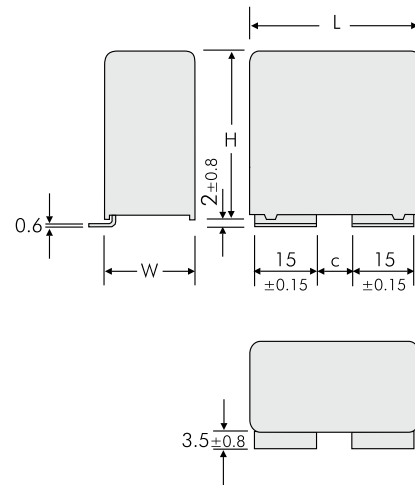
Version	L	a ±0.5	c ±0.5	d ±0.8	e ±0.8
A1.6	41.5	18	6	21.5	16
A1.6.1	41.5	22	10	18.5	13
A1.6	56	29	17	21.5	16



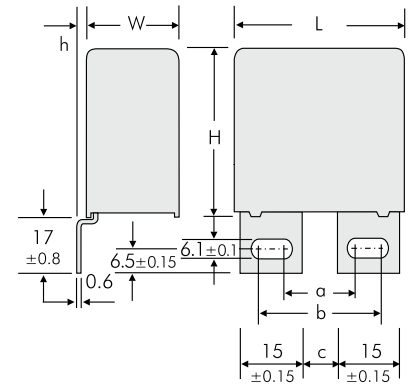
Version	L	a ±0.5	b ±0.5	c ±0.5	d ±0.1	e ±0.8	h ±0.8
A2	41.5	40.5	46.5	14.5	8.4	7.5	0
A2.2	41.5	31	37	5	8.4	7.5	3.5
A2.3	41.5	31	37	5	8.4	13	3.5
A2.4	41.5	33.5	39.5	7.5	8.4	13	3.5
A2.4.1	41.5	33.5	39.5	7.5	8.4	13	0
A2.5	41.5	29.5	39.5	5.5	6.1	7.5	3.5
A2.6	41.5	31.5	41.5	7.5	6.1	13	3.5
A2.6.1	41.5	31.5	41.5	14	6.1	13	3.5
A2.6.2	41.5	31.5	41.5	14	6.1	13	0
A2.8	41.5	40.5	46.5	14.5	8.4	7.5	3.5
A2.1	56	39.5	45.5	13.5	8.4	7.5	0
A2.7	56	39.5	45.5	13.5	8.4	7.5	3.5



Version	L	d ±1.0	h ±0.8	a ±0.8	b ±0.8	W
A1.3.1	31.5	2	0	47	34	19
A1.3.2	31.5	2	3.5	47	34	19
A1.2	41.5	2	3.5	47	34	19
A1.8	41.5	2	0	47	34	19
A1.8.1	41.5	2	0	56	43	28
A1.8.2	41.5	2	3.5	56	43	28

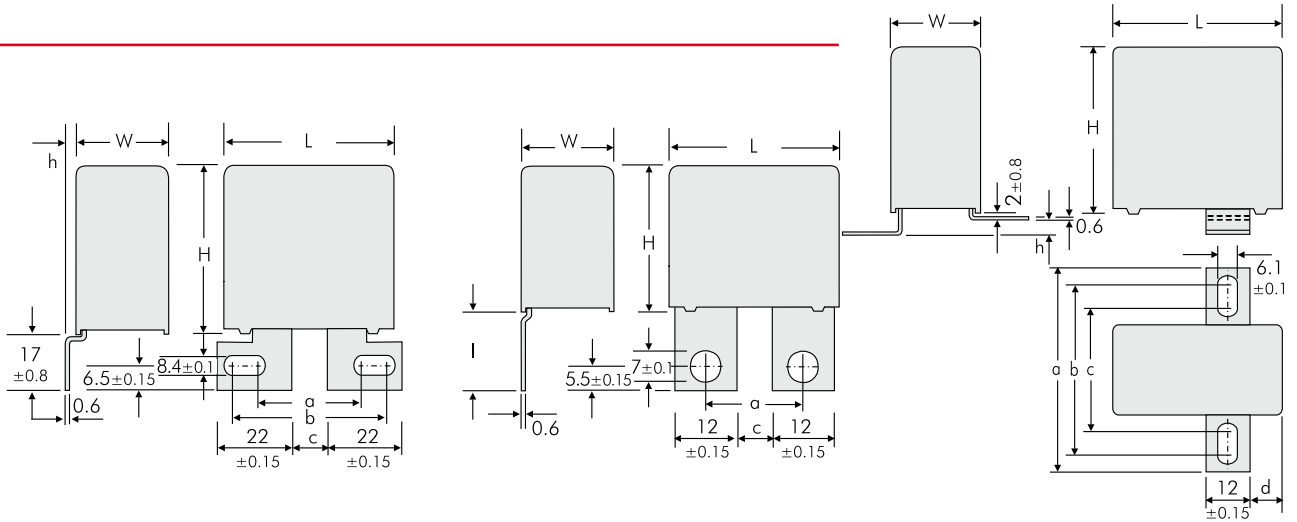


Version	L	c ±0.5
A1.7	41.5	7.5
A1.7	56	10
A1.7.1	56	18



Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A3	41.5	17.5	27.5	7.5	0
A3.5	41.5	17.5	27.5	7.5	3
A3	56	20	30	10	0
A3.1	56	28	38	18	0
A3.5	56	20	30	10	3
A3.10	56	28	38	18	3

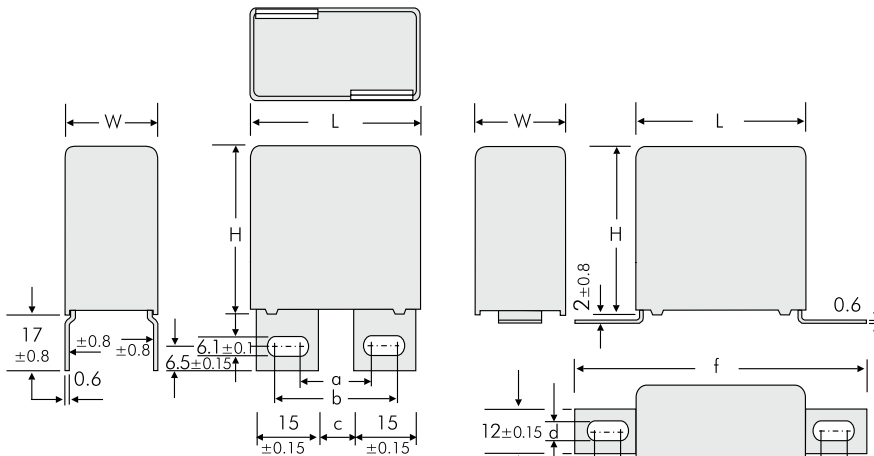
Versions of WIMA Snubber and DC-LINK MKP 4 Capacitors



Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A3.9	41.5	40.5	46.5	14.5	0
A3.11	41.5	40.5	46.5	14.5	3
A3.2	56	40.5	46.5	14.5	0
A3.3	56	40.5	46.5	14.5	3

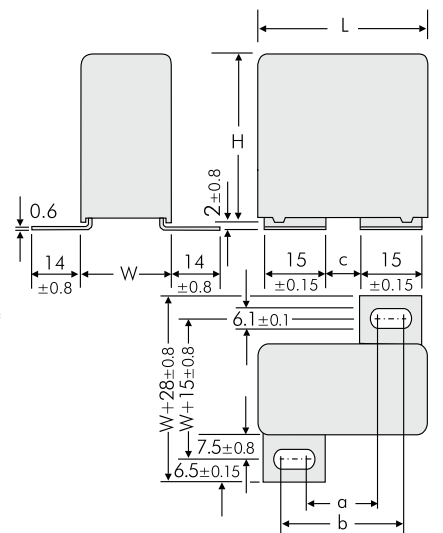
Version	L	a ±0.5	c ±0.5	l ±0.8
A3.8	41.5 B ≥ 17	18	6	23
A3.8.1	41.5 B ≥ 17	22	10	17.5

Version	L	a ±0.8	b ±0.8	c ±0.8	d ±1.0	h ±0.8	W
A4.3	31.5	57	47	31	1	3.5	19
A4.4	31.5	57	47	31	1	0	19
A4.6	31.5	44.6	34.6	31.6	1	3.5	19
A4.8	31.5	44.6	34.6	31.6	1	0	19
A4.1	41.5	57	47	31	6	3.5	19
A4.5	41.5	57	47	31	6	0	19
A4.5.1	41.5	63.5	53.5	37.5	6	0	28
A4.5.2	41.5	63.5	53.5	37.5	6	3.5	28



Version	L	a ±0.5	b ±0.5	c ±0.5
A3.6	41.5	17.5	27.5	7.5
A3.7	56	20	30	10

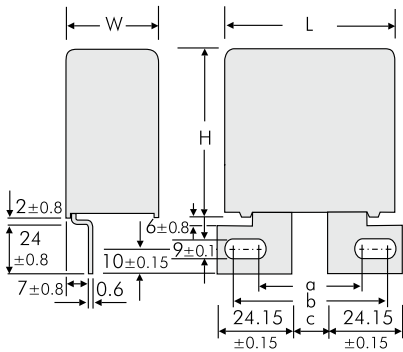
Version	L	a ±0.8	b ±0.8	f ±0.8	d ±0.1
A4.9	31.5 W ≥ 15	44	47	57	4.5
A4.10	31.5 W ≥ 15	43	59	69	6.1
A4.2	41.5 W ≥ 15	54	57	67	4.5
A4	41.5 W ≥ 15	53	69	79	6.1
A4.7	56	65	68	78	4.5
A4	56	64	80	90	6.1



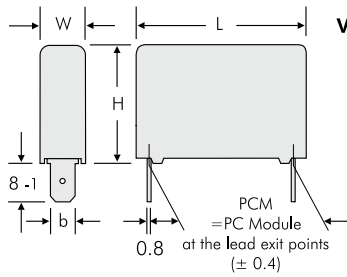
Version	L	a ±0.5	b ±0.5	c ±0.5
A5	41.5	17.5	27.5	7.5
A5	56	20	30	10



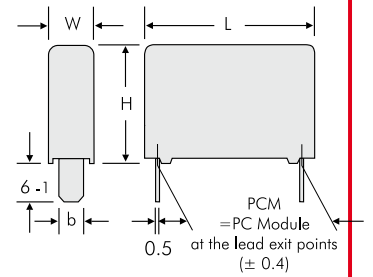
Versions of WIMA Snubber- and DC-LINK MKP 4 Capacitors



Version FS 6.3
with slip-on terminals according to DIN 46244



Version B

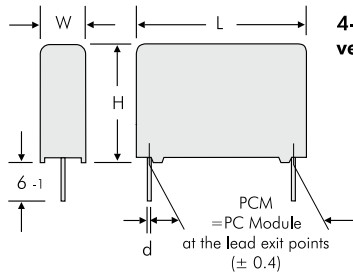


Version	L	a ±0.5	b ±0.5	c ±0.5
A6	56 W ≥ 23	41.5	45.5	15.5

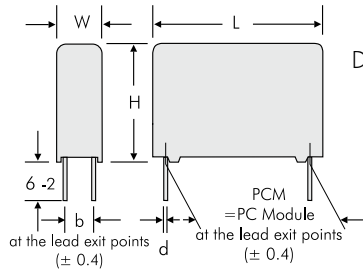
L	W	PCM	b ±0.15
26.5	≥ 11	23.5	6.3
31.5	≥ 11	28.5	6.3
41.5	≥ 11	38.5	6.3
56	≥ 11	49.5	6.3

L	PCM	b ±0.15
18	16	5
26.5	23.5	5
31.5	28.5	8
41.5	38.5	8
56	49.5	8

2-lead version



4-lead version



Dims. in mm.

PCM	d
15	0.8
22.5	0.8
27.5	0.8
38.5	1.2
49.5	1.2

W	H	L	PCM	b	d
10.5	19	26.5	22.5	5	0.8
10.5	20.5	26.5	22.5	5	0.8
11	21	26.5	22.5	5	0.8
11	21	31.5	27.5	5	0.8
13	24	31.5	27.5	7.5	0.8
15	26	31.5	27.5	7.5	0.8
17	29	31.5	27.5	10	0.8
19	30	31.5	27.5	10	0.8
17	34.5	31.5	27.5	10	0.8
20	39.5	31.5	27.5	12.5	0.8
22	43.5	31.5	27.5	12.5	0.8
11	22	41.5	37.5	5	1
13	24	41.5	37.5	7.5	1
15	26	41.5	37.5	7.5	1
17	29	41.5	37.5	10	1
19	32	41.5	37.5	10	1
20	39.5	41.5	37.5	12.5	1
24	45.5	41.5	37.5	12.5	1
31	46	41.5	37.5	20	1
19	31	56	48.5	12.5	1
23	34	56	48.5	15	1
27	37.5	56	48.5	15	1
33	48	56	48.5	20	1
37	54	56	48.5	20	1

Additional special versions can be realized. Please contact us with your specific needs.

Versions of WIMA Snubber and DC-LINK MKP 4 Capacitors



W x H x L	2-lead	4-lead	B5	B8	A1	A1.1*	A1.1.1	A1.2*	A1.3.1	A1.3.2	A1.4	A1.4.1	A1.5	A1.6	A1.6.1	A1.7	A1.7.1	A1.8*	A1.8.1	A1.8.2	A1.9*	A2	A2.1	A2.2	A2.3	A2.4	A2.5	A2.6	A2.6.1	A2.6.2	A2.7	A2.8	A3	A3.1	A3.2	A3.3	A3.5	A3.6	A3.7	A3.8	A3.8.1	A3.9	A3.10	A3.11						
5 x 11 x 18																																																		
6 x 12.5 x 18																																																		
7 x 14 x 18																																																		
8 x 15 x 18																																																		
7 x 16.5 x 26.5																																																		
8.5 x 18.5 x 26.5																																																		
10.5 x 19 x 26.5																																																		
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31 x 46 x 41.5																																																		
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23 x 34 x 56																																																		
27 x 37.5 x 56																																																		
33 x 48 x 56																																																		
37 x 54 x 56																																																		

W x H x L	A4	A4.1*	A4.2	A4.3*	A4.4*	A4.5*	A4.5.1	A4.5.2	A4.6*	A4.7	A4.8*	A4.9	A4.10	A5	A6	A7	FS 6.3
11 x 21 x 26.5																	
11 x 21 x 31.5																	
13 x 24 x 31.5																	
15 x 26 x 31.5																	
17 x 29 x 31.5																	
19 x 30 x 31.5																	
17 x 34.5 x 31.5																	
11 x 22 x 41.5																	
13 x 24 x 41.5																	
15 x 26 x 41.5																	
17 x 29 x 41.5																	
19 x 32 x 41.5																	
20 x 39.5 x 41.5																	
24 x 45.5 x 41.5																	
28 x 38 x 41.5																	
31 x 46 x 41.5																	
19 x 31 x 56																	
23 x 34 x 56																	
27 x 37.5 x 56																	
33 x 48 x 56																	
37 x 54 x 56																	

Possible connecting respective plate versions - depending on box size.

* on request