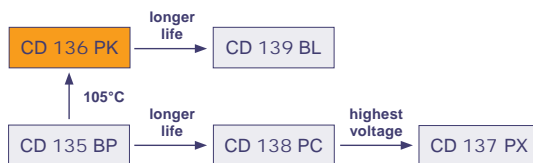


4000h at 105°C

- Standard at 105°C
- Professional Power Supplies & Inverters



Item	Characteristics	
Operating Temperature Range (°C)	-40 ~ +105	-25 ~ +105
Voltage Range (V)	25 ~ 100	160 ~ 450
Capacitance Range (µF)	220 ~ 330 000	
Capacitance Tolerance (20°C, 120Hz)	± 20%	
Leakage Current (µA)	After 5 minutes at 20°C application of rated voltage, leakage current is not more than 0,01CV or 5mA, whichever is smaller C: Nominal Capacitance (µF) V: Rated Voltage (V)	
Dissipation Factor (20°C, 120Hz)	Tan δ shall not exceed the values shown in the table of ratings	
Stability at Low Temperature (Impedance Ratio at 120Hz)	<b>Capacitance change</b> 25-100V <sub>DC</sub> : Capacitance at -40°C shall not be less than 60% of the 20°C value 160-450V <sub>DC</sub> : Capacitance at -25°C shall not be less than 70% of the 20°C value	

	Useful Life		Load Life	Endurance Test	Shelf Life
Lifetime	4 000h	>200 000h	2 000h	2 000h	1 000h
Leakage Current	Not more than specified value		Not more than specified value	Not more than specified value	Not more than specified value
Capacity Change	Within ± 30% of initial value		Within ± 20% of initial value	Within ± 10% of initial value	Within ± 20% of initial value
Dissipation Factor	Not more than 300% of specified value		Not more than 200% of specified value	Not more than 130% of specified value	Not more than 200% of specified value
Condition: Applied Voltage Applied Current Applied Temperature Failure Rate Level	U <sub>R</sub> I <sub>R</sub> 105°C ≤ 1% Failure Rate	U <sub>R</sub> 1,2 x I <sub>R</sub> 40°C ≤ 1% Failure Rate	U <sub>R</sub> I <sub>R</sub> 105°C guaranteed	U <sub>R</sub> I <sub>R</sub> = 0 105°C	U <sub>R</sub> = 0 I <sub>R</sub> = 0 105°C <div style="border: 1px solid black; padding: 2px; width: fit-content;">           After test:            U<sub>R</sub> to be applied            for 30min            &gt;24h before            measurement         </div>

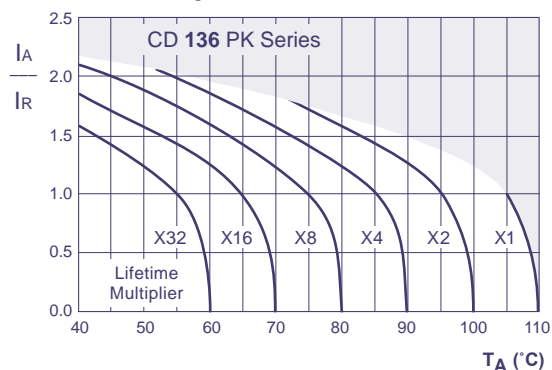
Screw

## Multiplier for Ripple Current

Frequency Coefficient

Frequency	50Hz	120Hz	300Hz	1kHz	≥10kHz
Coefficient	0,80	1,00	1,10	1,30	1,40

Lifetime Diagram



I<sub>A</sub> = actual ripple current at 120Hz, I<sub>R</sub> = rated ripple current at 120Hz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature and ripple current load

## Ratings for CD 136 PK Series

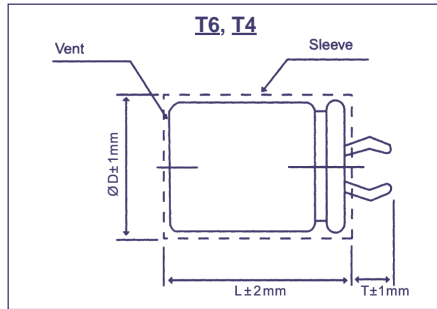
V <sub>DC</sub> (Surge Voltage) Code	Rated Capacitance	Max Dissipation Factor 20°C, 120Hz	Max ESR 20°C, 120Hz	Typ ESR 20°C, 120Hz	Max Ripple Current 105°C, 120Hz	Size Ø D x L
(V)	(µF)	-	(mΩ)	(mΩ)	(Arms)	(mm)
25 (32) 1E	10000	0,35	50	25	2,9	36 x 53
	15000	0,35	33	20	4,2	36 x 83
	22000	0,35	23	13	5,1	36 x 83
	33000	0,40	17	10	6,3	36 x 100
	47000	0,40	12	7	8,0	51 x 75
	68000	0,50	11	6	10,0	51 x 115
	100000	0,60	9	5	11,3	64 x 96
	150000	0,80	6	4	12,9	64 x 115
	220000	1,00	5	3	14,8	77 x 115
	330000	1,00	4	2	19,9	90 x 131
35 (44) 1V	6800	0,30	63	32	2,6	36 x 53
	10000	0,30	43	25	3,7	36 x 83
	15000	0,30	29	17	4,5	36 x 83
	22000	0,35	23	12	5,5	36 x 100
	33000	0,40	17	8	6,7	51 x 75
	47000	0,45	14	6	8,1	51 x 96
	68000	0,50	11	5	10,0	51 x 115
	100000	0,60	9	4	12,1	64 x 115
	150000	0,70	7	4	13,8	77 x 115
	220000	0,70	5	3	17,6	90 x 131
50 (63) 1H	3300	0,20	87	50	2,2	36 x 53
	4700	0,25	76	36	3,3	36 x 53
	6800	0,25	53	32	3,4	36 x 83
	10000	0,25	36	22	4,1	36 x 83
	15000	0,30	29	14	4,9	36 x 100
	22000	0,35	23	10	5,9	51 x 75
	33000	0,40	17	7	7,8	51 x 115
	47000	0,40	12	6	9,5	64 x 96
	68000	0,45	9	5	11,6	64 x 115
	100000	0,50	7	4	14,1	77 x 115
63 (79) 1J	150000	0,50	5	3	18,9	90 x 131
	2200	0,15	98	70	2,1	36 x 53
	3300	0,20	87	50	2,2	36 x 53
	4700	0,20	61	36	3,1	36 x 83
	6800	0,20	42	25	3,7	36 x 83
	10000	0,25	36	20	4,4	36 x 100
	15000	0,25	24	14	5,7	51 x 75
	22000	0,30	20	10	6,8	51 x 96
	33000	0,30	13	7	9,2	64 x 96
	47000	0,35	11	6	10,9	64 x 115
80 (100) 1K	68000	0,40	8	5	13,0	77 x 115
	100000	0,40	6	4	17,2	90 x 131
	2200	0,15	98	57	2,1	36 x 53
	3300	0,15	65	38	3,0	36 x 83
	4700	0,15	46	27	3,6	36 x 83
	6800	0,20	42	19	4,0	36 x 100
	10000	0,20	29	17	5,2	51 x 75
	15000	0,25	24	11	6,2	51 x 96
	22000	0,25	16	8	8,2	64 x 96
	33000	0,30	13	7	9,7	77 x 96
100 (125) 2A	47000	0,30	9	6	12,5	77 x 115
	68000	0,30	6	5	16,4	90 x 131
	1000	0,15	215	70	1,4	36 x 53
	1500	0,15	143	55	1,7	36 x 53
	2200	0,15	98	38	2,5	36 x 83
	3300	0,15	65	25	3,0	36 x 83
	4700	0,15	46	21	3,9	36 x 100
	6800	0,15	32	19	5,0	51 x 75
	10000	0,15	22	13	6,5	51 x 96
	15000	0,20	19	9	7,6	64 x 96
160 (200) 2C	22000	0,20	13	7	9,7	77 x 96
	33000	0,25	11	6	11,8	77 x 130
	47000	0,25	8	5	15,0	90 x 131
	470	0,15	457	265	1,0	36 x 53
	680	0,15	316	186	1,1	36 x 53
	1000	0,15	215	125	1,7	36 x 83
	1500	0,15	143	85	2,0	36 x 83
	2200	0,15	98	55	2,7	36 x 100
	3300	0,15	65	38	3,5	51 x 83
	4700	0,15	46	35	4,4	51 x 96
200 (250) 2D	6800	0,15	32	25	5,9	64 x 96
	10000	0,15	22	15	7,6	77 x 96
	15000	0,15	14	11	10,3	77 x 130
	22000	0,15	10	6	13,2	90 x 131
	33000	0,15	10	6	13,2	90 x 131

V <sub>DC</sub> (Surge Voltage) Code	Rated Capacitance	Max Dissipation Factor 20°C, 120Hz	Max ESR 20°C, 120Hz	Typ ESR 20°C, 120Hz	Max Ripple Current 105°C, 120Hz	Size Ø D x L	
(V)	(µF)	-	(mΩ)	(mΩ)	(Arms)	(mm)	
200 (250) 2D	330	0,15	651	375	0,8	36 x 53	
	470	0,15	457	262	1,0	36 x 53	
	680	0,15	316	180	1,1	36 x 53	
	1000	0,15	215	125	1,7	36 x 83	
	1500	0,15	143	75	2,2	36 x 100	
	2200	0,15	98	50	2,8	51 x 75	
	3300	0,15	65	36	3,7	51 x 96	
	4700	0,15	46	24	4,9	64 x 96	
	6800	0,15	32	16	6,3	64 x 115	
	10000	0,15	22	12	8,1	77 x 115	
	15000	0,15	14	6	10,9	90 x 131	
	250 (300) 2E	330	0,15	651	160	0,8	36 x 53
		470	0,15	457	120	1,0	36 x 53
		680	0,15	316	85	1,4	36 x 83
		1000	0,15	215	55	1,9	36 x 100
1500		0,15	143	40	2,3	51 x 75	
2200		0,15	98	28	3,1	51 x 96	
3300		0,15	65	20	4,2	64 x 96	
4700		0,15	46	15	5,4	64 x 115	
6800		0,15	32	10	6,9	77 x 115	
10000		0,15	22	8	9,3	77 x 155	
15000		0,15	14	6	12,2	90 x 157	
400 (450) 2G		1000	0,15	215	82	2,5	51 x 75
		1200	0,15	179	70	3,0	51 x 96
		1500	0,15	143	49	3,6	51 x 115
		1800	0,15	119	39	4,1	51 x 130
	2200	0,15	98	30	4,5	64 x 96	
	2700	0,15	80	22	5,3	64 x 115	
	3300	0,15	65	20	6,2	64 x 130	
	3900	0,15	55	18	7,2	64 x 155	
		0,15	55	18	6,8	77 x 115	
		0,15	46	13	8,7	64 x 195	
	4700	0,15	46	13	7,8	77 x 130	
		0,15	38	12	9,6	64 x 195	
		0,15	38	12	9,2	77 x 155	
	5600	0,15	32	11	10,7	90 x 157	
		0,15	26	10	11,8	90 x 157	
0,15		22	9	14,1	90 x 196		
450 (500) 2W	220	0,15	977	415	1,1	36 x 53	
	330	0,15	651	277	1,5	36 x 100	
	470	0,15	457	195	2,1	51 x 83	
	680	0,15	316	135	2,7	51 x 96	
	1000	0,15	215	90	4,2	51 x 100	
	1500	0,15	143	54	5,7	51 x 130	
	2200	0,15	98	33	7,3	64 x 115	
	3300	0,15	65	22	10,1	77 x 130	
	4700	0,15	46	15	12,6	77 x 155	
	5600	0,15	38	11	15,8	90 x 157	

Custom products are available on request.

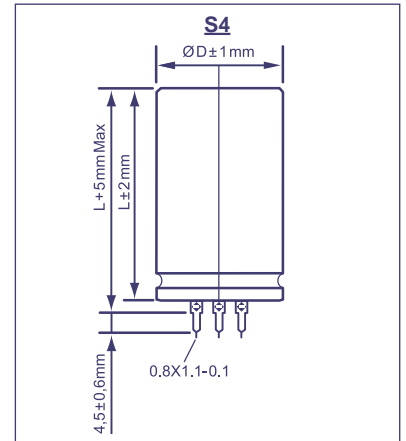
## Technical Specification Snap-In Type

**Pin Type: Snap-In**  
Order Code: T6, T4

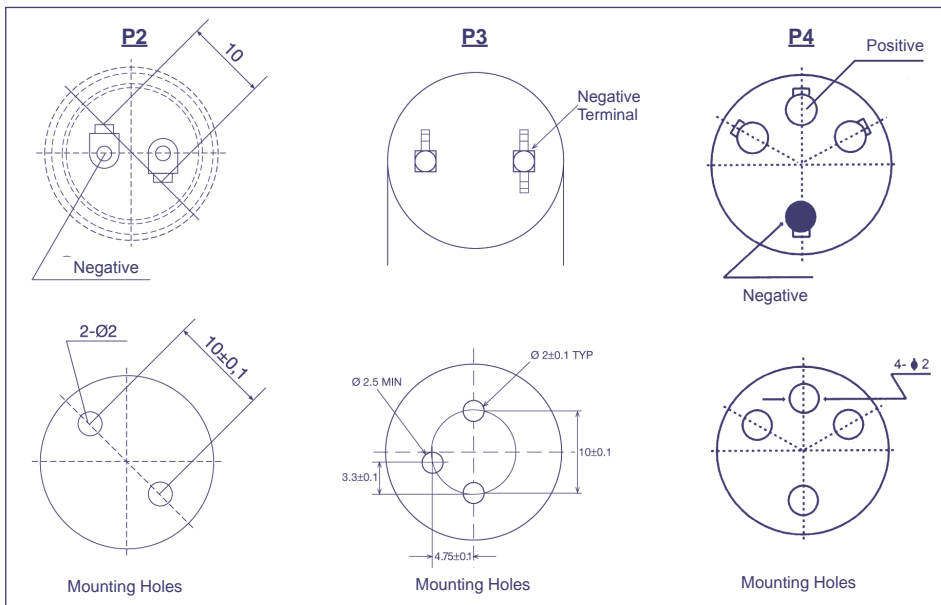


Terminal	T6	T4
Pin Length T	6,3	4,0

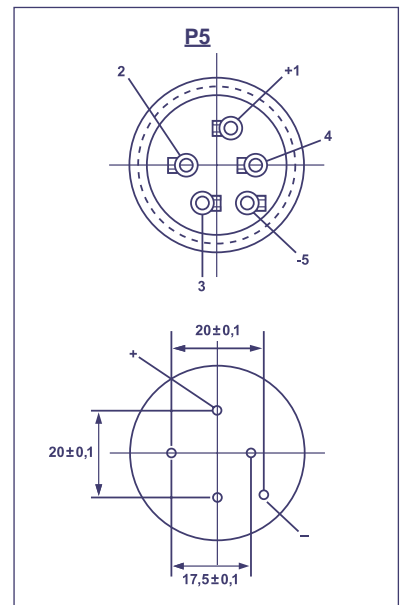
**Pin Type: Soldering**  
Order Code: S4



**Snap-In Terminal**  
Order Code: P2, P3, P4



**Soldering Terminal**  
Order Code: P5



P3 only T4 Terminal

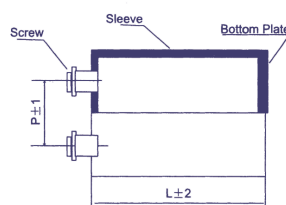
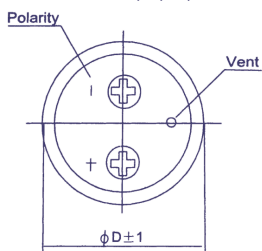
## Order Code Screw Type

EC	G	1C	BP	101	M	B	E	160	A361	JExxxxx
Technology	Terminal Type	Rated Voltage Code	Series Code	Capacitance Code	Capacitance Tolerance	Mounting	Diameter	Length	For Terminal Code see tables below	for Specials only
EC = Electrolytic Capacitor	Screw = G	For coding please refer to the pages of ratings	CD 135 = BP	100 = 101	±20% = M	Bolt = B	36 = A	53 = 053		
			CD 136 = PK	1000 = 102	±10% = K	No double sleeve = N	40 = B	65 = 065		
			CD 137 = PX	10000 = 103	+30 / -10% = Q	2 stoppers bracket+double sleeve* = I	51 = C	96 = 096		
			CD 138 = PC		+20 / -0% = R	3 stoppers bracket+double sleeve* = Y	64 = D	100 = 100		
			CD 139 = BL		+50 / -10% = T	No bracket, but double sleeve* = D	77 = E	115 = 115		
				<b>preferred</b>	* Double sleeve for diameter ≥ 51 only		90 = F	236 = 236		
							101 = G			

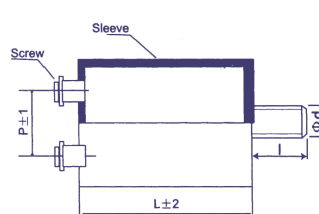
## Technical Specification Screw Type

### Dimensions

**Standard Housing**  
Order Code: I, Y, D, N



**Bolt Housing**  
Order Code: B



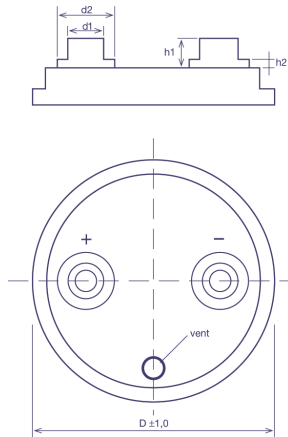
Ø D	Ø d	l
Ø 36	M8	12
≥ Ø 51	M12	16

in mm

## Terminal Form

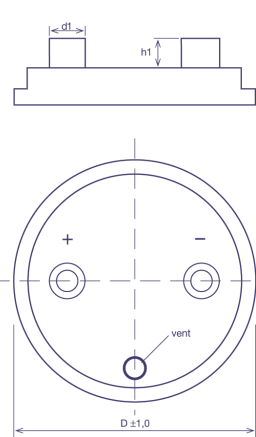
### Terminal A

Order Code: AXXX



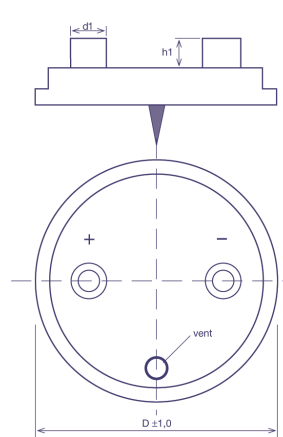
### Terminal B

Order Code: BXXX



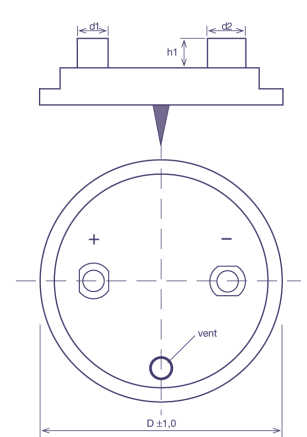
### Terminal C

Order Code: CXXX



### Terminal D

Order Code: DXXX



Tolerances of d1, d2, h1, h2 : +/- 0,3 mm

Code	ØD	Screw	Pitch P	d1	d2	h1	h2
A361	36	M5	12,7	8	11	6,8	1,8
A362	36	10 - 32	12,7	8	11	6,8	1,8
A511	51	M5	21,8	10	13	6,8	1,8
D551	55	M5	21,8	10	13	5,5	0
A641	64	M5	28,2	10	15,5	6,8	1,8
A642	64	M5	28,2	15	20	7,3	3,5
A643	64	1/4 - 28	28,2	15	20	7,3	3,5
B641	64	1/4 - 28	28,2	17,2	0	6,4	0
D641	64	M5	28,2	13,0	15,0	7,14	0
A771	77	M5	31,4	10	15,5	6,3	1,3
A772	77	M6	31,4	10	15,5	6,3	1,3
B771	77	M6	31,4	17,2	0	3,17	0

Code	ØD	Screw	Pitch P	d1	d2	h1	h2
B772	77	M6	31,4	17,2	0	6,4	0
B773	77	M8	31,4	17,2	0	3,17	0
B774	77	M5	31,4	17,2	0	6,4	0
C771	77	M5	31,4	17,2	0	3,5	0
C772	77	M6	31,4	17,2	0	3,5	0
C773	77	M5	31,4	17,2	0	5,5	0
C774	77	M5	31,4	17,2	0	6,4	0
A901	90	M5	31,4	10	15,5	6,3	1,3
A902	90	M6	31,4	10	15,5	6,3	1,3
B901	90	M6	31,4	17,2	0	6,4	0
B902	90	M5	31,4	17,2	0	6,4	0
A101	101	M8	41,5	<b>21,5</b>	<b>17,2</b>	<b>11,0</b>	<b>6,0</b>

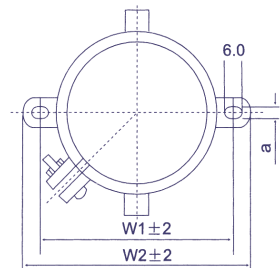
preferred, other forms on request

in mm

## Bracket Mounting

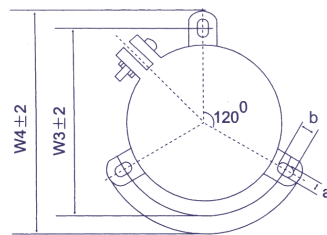
### I-Type

Ø D 36-90



### Y-Type

Ø D 51-101



Ø D	W1	W2	W3	W4	a	b
36	48,0	58,0	-	-	3,5	-
51	68,0	80,0	63,5	73,0	4,5	7,0
64	81,0	93,0	76,2	85,1	4,5	7,0
77	93,5	106,0	88,9	98,4	4,5	7,0
90	108,0	120,5	101,6	111,1	4,5	7,0
101	-	-	115,0	127,0	5,0	8,0

preferred

in mm

Height of brackets: ~30mm

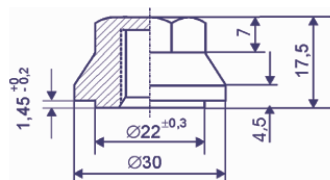
## Terminal Detail



### Screw Definition

Hexagon-Head	M5x10
Hexagon-Head	M6x12
Hexagon-Head	M8x16

## Accessories for Bolt Mounting



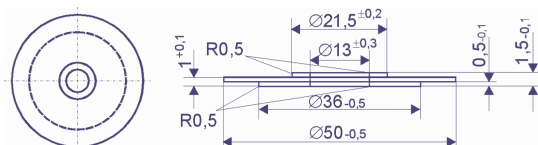
### Cap Nut

Order Code: CNN30M12

### Insulation Washer

Order Code: K100-ISO-50

Ø D 51, 64



### Insulation Washer

Order Code: K100-ISO-77

Ø D 77, 90

