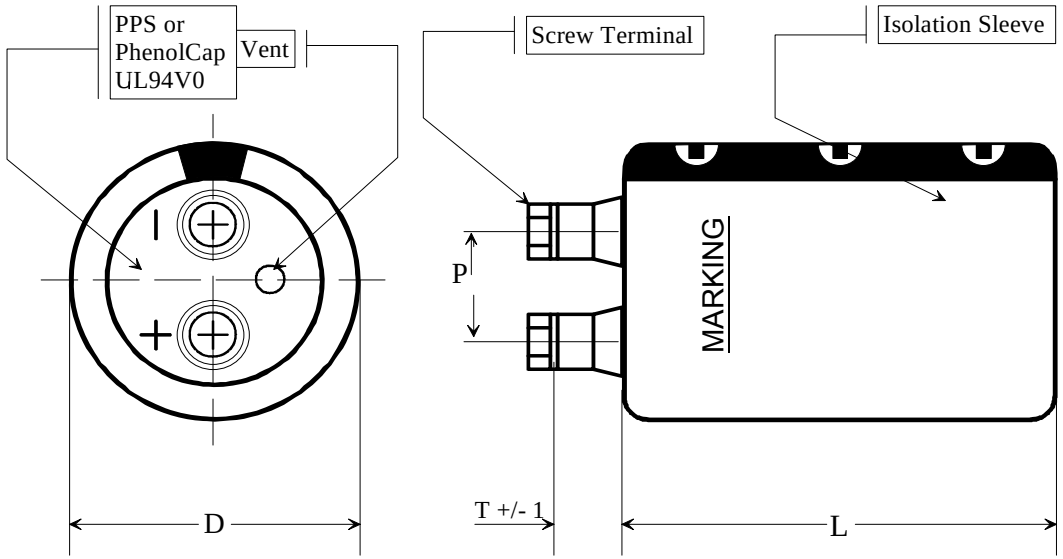
HITACHI AIC

ALUMINUM ELECTROLYTIC CAPACITOR SPECIFICATION

I.) Series: **PH600V**



II.) General Specifications:

Item:		Value:	Condition:
Capacitance Range	:	1.200 - 4.700µF	other values on request
Rated Voltage RV	:	600VDC	at 85°C
Surge Voltage	:	650VDC	30sec / 6 Minutes
Tan δ (Dissipation Factor)	:	0,20 max	at 120Hz / 20°C
Typ. Leakage Current	:	1,0 mA	after 5 Minutes at 25°C
Max. Leakage Current	:	3,0 mA	after 5 Minutes at 25°C
Life time	:	6.000 h	at 85°C, I_R, RV
Failure rate	:	0,5 FIT	during useful life

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III.) Individual Specifications:

Capacitance [µF]	Ripple Current* at 40°C,10kHz [A RMS]	Ripple Current at 85°C,120Hz I_R, [A RMS]	ESR (typ) at 20°C, 100Hz [mOhm]	ESL (typ) [nH]	D x L [mm]	P [mm]	T [mm]	Product Code
1 200	23,5	7,7	121	22	64 x 96	28,6	4,5 – 5,5	PH600V122 □ D096
1 300	28,0	9,2	112	22	64 x 103	28,6	4,5 – 5,5	PH600V132 □ D103
1 500	28,4	9,3	97	22	64 x 115	28,6	4,5 – 5,5	PH600V152 □ D115
1 800	30,8	10,1	81	23	77 x 96	32,0	4,5 – 5,0	PH600V182 □ E096
2 200	36,4	12,0	66	23	77 x 115	32,0	4,5 – 5,0	PH600V222 □ E115
2 700	42,4	13,9	54	23	77 x 130	32,0	4,5 – 5,0	PH600V272 □ E130
2 700	42,4	13,9	54	23	77 x 144	32,0	4,5 – 5,0	PH600V272 □ E144
3 000	47,6	15,6	49	23	77 x 155	32,0	4,5 – 5,0	PH600V302 □ E155
3 300	50,1	16,4	44	23	77 x 155	32,0	4,5 – 5,0	PH600V332 □ E155
3 300	50,1	16,4	44	23	90 x 131	32,0	4,0 – 5,0	PH600V332 □ F131
4 700	64,1	21,0	31	23	90 x 157	32,0	4,0 – 5,0	PH600V472 □ F157

*without cooling

□ Fixing symbol code: **B**: Bolt M12; **N**: No double sleeve (PBT-safety-holder or press ring); **Y**: 3 Stoppers Bracket

IV.) Ripple Current Multiplier depending on Ambient Temperature Ta :

Ta (°C)	40	45	50	55	60	70	85
Multiplier:	2,1	2,0	1,9	1,8	1,7	1,3	1

V.) Ripple Current Multiplier depending on Frequency :

Frequency (Hz):	50/60	100 /120	300	1k	> 10k
Multiplier:	0,7	1,0	1,18	1,34	1,45

VI.) Ripple Current Multiplier depending on Forced Cooling :

Wind speed (m/s):	v < 1,0	v >= 1,0
Multiplier:	1,0	1,1

VII.) Life Time Table (depending on ambient temperature and ripple current)

PH	Ripple Current Multiplier											
Ta	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8	1,9	2,0	2,1
40 °C	250	250	250	237	195	158	126	99	77	59	44	33
45 °C	247	212	180	150	123	100	80	63	48	37	28	
50 °C	156	134	113	95	78	63	50	39	30	23		
55 °C	99	85	72	60	49	40	32	25	19			
60 °C	62	53	45	38	31	25	20	15				
65 °C	39	34	28	24	19	16						
70 °C	25	21	18	15								
75 °C	15	13	11									
80 °C	10	8										
85 °C	6							*1000 hrs				

VIII.) Useful Life Criteria:

Capacitance:	△C / C : < 20% (C = initial value)
Dissipation Factor Tan δ:	< 200% of initial value
Leakage Current:	< than specified value

IX.) Field Failure Rate (FIT = **f**ailure **i**n **t**ime = 10^{-9} failures/hour)

The field failure rate is 0,5 FIT. That means if 20.000 capacitors are permanently used in the field one capacitor within a period of 10 years will fail.

X.) Balancing Resistor

In case of a series connection of capacitors we recommend the usage of the following balancing resistors depending on rated voltage Un, ambient temperature Ta and rated capacitance C.

	Un ≤ 650VDC		Un > 650VDC	
Ta	C ≤ 2700µF	C > 2700µF	C ≤ 1800µF	C >1800µF
< 40°C	R = 82 kΩ	R = 68 kΩ	R = 68 kΩ	R = 47 kΩ
40°C – 70°C	R = 68 kΩ	**R = 47 kΩ***	R = 47 kΩ	R = 47 kΩ
> 70°C	R = 47 kΩ	R = 47 kΩ	R = 47 kΩ	R = 27 kΩ

*Part number: TCR10W473H 47 kOhm, 3%, 10W, pitch = 32mm or TCR10M473H 47 kOhm, 3%, 10W, pitch = 28,6mm