

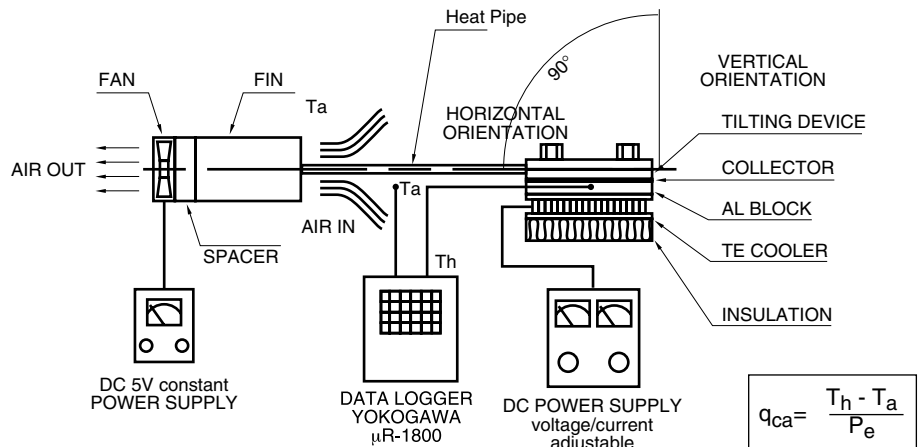


# Mini Modular Fan Cooler

## Remote Heat Dissipation for High-End Electronics

### HEAT PIPE OVERALL $\theta_{ca}$

Test set-up: 30 mm x 30 mm x 10 mm axial DC fan; 5 mm spacer;  
 30 mm x 30 mm x 35 mm MFC fin channel;  
 50 mm x 30 mm heat collector block  
 Heat pipe: Copper-water pipes of various makes



Operational Orientation	HP Length (mm)	Heat in (watts) $P_e$	Wick Structure					
			Groove Japan	Mesh Japan	Mesh USA	Powder USA	Powder Taiwan	Fiber Japan
$\theta_{ca}$ ( $^{\circ}$ C/W)								
<b>φ3 mm Heat Pipe</b>								
Horizontal	100	5	2.16	3.48	3.91	2.50	2.20	3.20
		10	2.11	3.34	3.24	2.25	2.14	2.78
		15	2.05	3.23	3.02	2.14	2.17	2.64
	150	5	2.44	3.86	4.20	2.54	3.00	3.20
		10	3.07	3.60	3.22	2.40	3.73	3.00
		15	4.21	3.41	2.94	2.30	4.16	3.15
	200	5	5.50	3.66	4.33	2.82	4.46	3.88
		10	6.86	3.37	3.43	2.57	4.78	4.51
		15	n/a	3.10	3.15	2.81	5.30	4.90
Vertical	100	5	2.15	3.25	3.83	2.80	2.32	2.68
		10	2.18	3.05	3.39	2.55	2.17	2.57
		15	2.10	2.91	3.18	2.44	2.24	2.47
	150	5	2.30	3.27	4.38	2.91	2.69	3.41
		10	2.18	2.99	3.64	2.69	3.46	3.03
		15	2.14	2.81	3.30	2.53	3.53	2.88
	200	5	2.44	3.38	5.19	3.01	3.62	4.15
		10	2.33	2.92	3.82	2.65	3.86	3.89
		15	2.23	2.68	3.32	2.50	5.13	3.72
<b>φ4 mm Heat Pipe</b>								
Horizontal	100	5	2.22	2.90	3.47	2.90	2.82	
		10	2.19	2.62	3.14	2.50	2.66	
		15	2.11	2.49	2.96	2.30	2.57	
	150	5	1.92	2.97	3.46	2.89	2.96	
		10	1.94	2.72	3.13	2.38	2.75	
		15	1.91	2.62	3.03	2.30	2.59	
	200	5	1.98	3.04	3.63	3.02	2.10	
		10	3.21	2.77	3.22	2.47	2.00	
		15	n/a	2.63	3.04	2.42	2.50	
Vertical	100	5	2.25	2.88	3.43	3.11	2.88	
		10	2.27	2.67	3.11	2.72	2.69	
		15	2.25	2.58	2.93	2.60	2.61	
	150	5	2.02	2.59	3.54	3.17	3.20	
		10	2.18	2.49	3.22	2.75	2.91	
		15	2.15	2.42	3.00	2.61	2.99	
	200	5	2.46	3.13	3.55	3.27	2.44	
		10	2.25	2.92	3.26	2.81	2.31	
		15	2.18	2.76	3.07	2.64	2.25	



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\*All heat pipes tested are commercially available.

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