

SUNON®

LED Lighting Technology

SUNON LED Total Thermal Solution



Active Cooling Solution is **4x** more efficient at Thermal Convection than Passive!

■ Comparison of Active / Passive Cooling Solution

(LED Power 20W, 2000lm)

Active Cooling (LA002-003A99DN)		Passive Cooling (RA002-002999DN)
Tc=45°C Win	→ Tcase Temperature reduce 6°C	Tc=51°C
85x85x35.5 mm Win	→ Volume Reduce over 62%	φ 170x30 mm
153 g Win	→ Weight Reduce over 73%	570 g
Aluminum Less material = less cost Win	→ Cost Down more than 60%	Aluminum Large size = high cost

■ Advantages



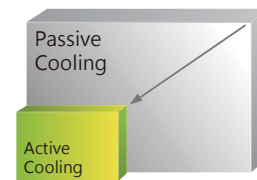
High Lumen Cooling Solution

MR16 up to 520lm (13W)
A19 up to 1300lm (20W)
Spot light up to 5000lm (75W)



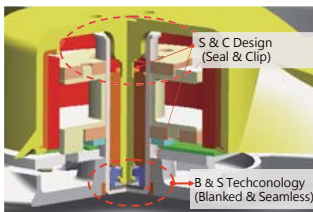
Meet MR16 / A19 standard size

Sunon's active cooling solution is four times more effective than passive cooling. It has developed the best high lumen and the space cooling requirement for the MR16 and A19.



Lower Cost

Active cooling can be significantly reduced size, weight, metallic materials use, less cost up to 60%.



Long Life

DR Maglev motor fan with better dust-resistance, super silence advantages, and cooling module life of up to 70,000 hours (60° C). Warranty may be extended to 5 years on demand.



Dust-proof (*) The dust settlement is equal to a 5-year and 2-month dust fall.

After a test of 72 hours operation according to the IEC60529 dust test standard (*), the results show that the Sunon fan motor functioned normally. When the fan was disassembled, no dust was found inside the fan motor or along the fan axis.



Super Silence

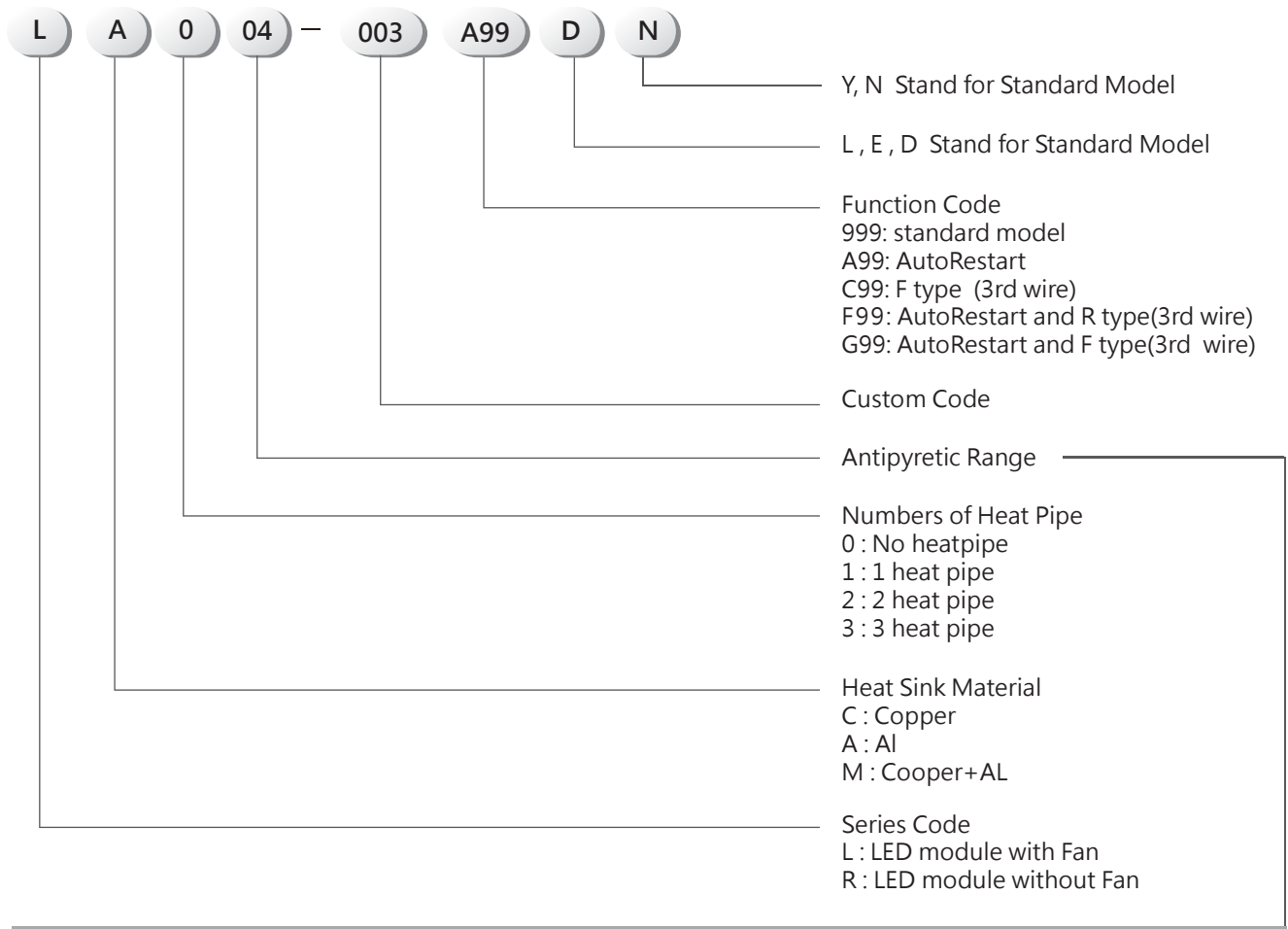
Sunon has brought acoustic engineering to our fan products so that they have superior sound quality, even below the 20 phon curve. As a result, the use of Sunon products can create a more agreeable and comfortable environment.

■ Features

- Sunon LED cooling modules have been adopted by many international LED module manufacturers, including Philips, Osram, Vossloh, Xicato, Tridonic, GE, and others.
- Sunon products are widely applied to LED bulb lamp (A19), MR16, down light, and spot light.
- Over 300 patents related to LED lighting cooling around the world.
- Successfully solves LED light decline, color rolling, overheat, and other problems.
- Active cooling solution allows lamps to be more lightweight and compact.
- Bearings designed with patented DR MagLev motors can effectively extend motor life.
- The use of Sunon's Super Silence fan design results in a sound lower than can be detected by the human ear (below the 20 phon curve), which allows the LED bulbs to meet the American Energy Star noise regulations. (*)

(*) American Energy Star regulation on noise: MR16 Measured at 12 inches, noise level is not allowed to exceed 24 dBA.

SUNON® LED Cooling Module Model Numbering System



Code	Watts(W)	Code	Watts(W)	Code	Watts(W)	Code	Watts(W)
00	0 - 10	05	51 - 60	10	101 - 110	15	151 - 160
01	11 - 20	06	61 - 70	11	111 - 120	16	161 - 170
02	21 - 30	07	71 - 80	12	121 - 130	17	171 - 180
03	31 - 40	08	81 - 90	13	131 - 140	18	181 - 190
04	41 - 50	09	91-100	14	141 - 150	19	191 - 200

The Professional LED Cooling Solution

Active Cooling Module

► Others Module



Model No.	LA001-002A99DY	TA001-09012	LA002-001A99DY
Module Dimension (mm)	φ 50 x 15.1	φ 52 x 20	φ 60 x 19
Weight (g)	19.3	48.0	39.5
Cooling Module Noise @ 1M, dB(A)	16.5	16.8	15.7
Rated Voltage (V)	12	5	12
Power Consumption (W)	0.30	0.21	0.32
Fan Speed (RPM)	4600	3800	4100
Heat Sink Material	AL1070	ADC12	AL1070
Fan Model No.	HA30101V3-E00U-A99	--	HA40101V3-E00U-A99
Safety	UL / CUR / TUV / CE	UL / CUR / TUV / CE	UL / CUR / TUV / CE
Multiple Holes ^{*1}	--	--	--
Zhaga Holes	--	--	--
Thermal Resistance (°C/W) ^{*2}	4.5	1.2	2.8
Experiment LED Module	MR16 Cree XLamp® MC-E LED (12W)	--	A19 Cree XLamp® MP-L LED (22.5W)

► Spotlight



Model No.	LA002-012A9BDN	LA005-001A99DN	LA005-002A99DN
Module Dimension (mm)	φ 52 x 20	φ 70 x 51.5	φ 70 x 51.5
Weight (g)	48	183	183
Cooling Module Noise @ 1M, dB(A)	16.8	11.6	11.6
Rated Voltage (V)	5	12	12
Power Consumption (W)	0.21	0.28	0.28
Fan Speed (RPM)	3800	2200	2200
Heat Sink Material	ADC12	AL6063	AL6063
Fan Model No.	--	HA60151V3-E04U-A99	HA60151V3-E04U-A99
Safety	UL/CUR/TUV/CE	UL/CUR/TUV/CE	UL/CUR/TUV/CE
Multiple Holes ^{*1}	--	--	--
Zhaga Holes	--	Book3	Book3
Thermal Resistance (°C/W) ^{*2}	1.09	0.72	0.72
Experiment LED Module	Xicato XSM 8027-1300 (22.1W)	Xicato XSM 3000lm (45W)	Xicato XSM 3000lm (45W)

*1 : Multiple Holes for Philips Fortimo SLM, Philips Lixel LED SLM, Osram PrevaLED, Tridonic Stark & Talex, Bridgelux RS Array / LS Array, Citizen CL-L330 / 340, Vossloh-Schwabe WU-M-Series, Zhaga.

*2 : Thermal Resistance is for reference only. (For more information please see the product specification of LED brand.)
Please test thermal resistance again by using on different applications.

1. All specifications were tested in free air.
2. Products or Information are subject to change without notice. Please contact with Sunon Sales.

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Active Cooling Module

► Spotlight



Model No.	LA001-015A99DN	LA001-011A99DN	TA001-11002	LA001-012A99DN	LA001-013A99DN
Module Dimension (mm)	φ 86 x 30.5	φ 86 x 30.5	φ 86 x 30.5	φ 86 x 35	φ 86 x 35
Weight (g)	112	112	114	175	175
Cooling Module Noise @ 1M, dB(A)	13.8	13.8	14.0	15.2	15.2
Rated Voltage (V)	5	12	12	5	12
Power Consumption (W)	0.28	0.28	0.28	0.26	0.28
Fan Speed (RPM)	2200	2200	2200	2200	2200
Heat Sink Material	AL6063	AL6063	AL6063	AL6063	AL6063
Fan Model No.	HA60150V3-E03U-A99	HA60151V3-E00U-A99	HA60151V3-E00U-A99	HA60150V3-E03U-A99	HA60151V3-E00U-A99
Safety	UL/CUR/TUV/CE	UL/CUR/TUV/CE	UL/CUR/TUV/CE	UL/CUR/TUV/CE	UL/CUR/TUV/CE
Multiple Holes ^{*1}	O	O	--	--	--
Zhaga Holes	Book 3	Book 3	Book 3	Book 3	Book 3
Thermal Resistance (°C/W) ^{*2}	0.57	0.86	0.85	0.56	0.56
Experiment LED Module	Osram PrevaLEP-2100-840-C (25W)	Philips Fortimo LED SLM 1100/830 (17W)	Philips Fortimo LED SLM 1100/830 (17W)	GE Infusion Module M1500 Series (23W)	GE Infusion Module M1500 Series (23W)

► Downlight . Spotlight



Model No.	LA002-003A99DN	LA003-004A99DN	LA003-005A99DN	TA003-10003
Module Dimension (mm)	85 x 85 x 35.5	φ 86 x 52	φ 86 x 52	φ 86 x 52.5
Weight (g)	153	275	275	237
Cooling Module Noise @ 1M, dB(A)	13.9	16.3	16.3	15.1
Rated Voltage (V)	12	5	12	12
Power Consumption (W)	0.28	0.26	0.28	0.28
Fan Speed (RPM)	2200	2200	2200	2200
Heat Sink Material	AL6063	AL6063	AL6063	AL6063
Fan Model No.	HA60151V3-E00U-A99	HA60150V3-E03U-A99	HA60151V3-E00U-A99	HA60151V3-E00U-A99
Safety	UL/CUR/TUV/CE	UL/CUR/TUV/CE	UL/CUR/TUV/CE	UL/CUR/TUV/CE
Multiple Holes ^{*1}	--	--	--	--
Zhaga Holes	Book 3	Book 3	Book 3	Book 3
Thermal Resistance (°C/W) ^{*2}	0.55	0.26	0.26	0.70
Experiment LED Module	Philips Fortimo LED DLM 2000 830 (24W)	GE Infusion Module M3000 Series (46W)	GE Infusion Module M3000 Series (46W)	Philips Fortimo LED SLM 2000/830 (32W)

*1 : Multiple Holes for Philips Fortimo SLM, Philips Lixel LED SLM, Osram PrevaLED, Tridonic Stark & Talex, Bridgelux RS Array / LS Array, Citizen CL-L330 / 340, Vossloh-Schwabe WU-M-Series, Zhaga.

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The Professional LED Cooling Solution

Active Cooling Module

► Spotlight



Model No.	LA004-003A99DN	TA004-10003	LA004-001A99DN
Module Dimension (mm)	φ 86 x 52.5	φ 86 x 52.5	φ 86 x 52.5
Weight (g)	231	233	231
Cooling Module Noise @ 1M, dB(A)	15.8	16.2	15.8
Rated Voltage (V)	12	12	5
Power Consumption (W)	0.35	0.34	0.40
Fan Speed (RPM)	2200	2200	2200
Heat Sink Material	AL6063	AL6063	AL6063
Fan Model No.	HA60151V3-E01U-A99	HA60151V3-E01U-A99	HA60150V3-E02U-A99
Safety	UL/CUR/TUV/CE	UL/CUR/TUV/CE	UL/CUR/TUV/CE
Multiple Holes ^{※1}	O	--	O
Zhaga Holes	Book 3	--	Book 3
Thermal Resistance (°C/W) ^{※2}	0.53	0.52	0.36
Experiment LED Module	Philips Fortimo LED SLM 3000/830 (43W)	Philips Fortimo LED SLM 3000/830 (43W)	Osram PrevaLEP-3000-840-C (39W)

► Spotlight



Model No.	LA006-001A99DN	LA006-002A99DN	LA006-003A99DN	LM310-001A99DN
Module Dimension (mm)	φ 90 x 52.5 mm	φ 90 x 52.5 mm	φ 90 x 52.5 mm	121 x 92.3 x 66
Weight (g)	302	302	302	352
Cooling Module Noise @ 1M, dB(A)	16.0	16.0	16.0	17.8
Rated Voltage (V)	12	12	5	12
Power Consumption (W)	0.39	0.39	0.35	0.34
Fan Speed (RPM)	2200	2200	2200	2200
Heat Sink Material	AL6063	AL6063	AL6063	ADC10 (Base)+AL1050 (Fin)+C1100 (Heat Pipe & Base)
Fan Model No.	HA60151V3-E01U-A99	HA60151V3-E01U-A99	HA60151V3-E01U-A99	HA60151V3-E01U-A99
Safety	UL/CUR/TUV/CE	UL/CUR/TUV/CE	UL/CUR/TUV/CE	UL/CUR/TUV/CE
Multiple Holes ^{※1}	--	--	--	--
Zhaga Holes	Book3	--	Book 3	Book 3
Thermal Resistance (°C/W) ^{※2}	0.48	1.04	0.48	0.33
Experiment LED Module	Philips Fortimo LED SLM 5000 (75W)	Citizen CLL030 (65W)	--	Citizen CLL050 (180W)

※1: Multiple Holes for Philips Fortimo SLM, Philips Lixel LED SLM, Osram PrevaLED, Tridonic Stark & Talex, Bridgelux RS Array / LS Array, Citizen CL-L330 / 340, Vossloh-Schwabe WU-M-Series, Zhaga.

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The Professional LED Cooling Solution

Cooling Fan

► Cooling Fan



Model No.	EF30080S2-E00U-A99	HA30101V3-E00U-A99	HA40101V3-E00U-A99	HA60151V3-E04U-A99
Fan Dimension (mm)	φ 30 x 8	φ 39.8 x 10.4	φ 48.9 x 10.6	φ 70 x 16.4
Weight (g)	4.3	7.3	11.8	25
Rated Voltage (V)	3.3/5	12	12	12
Power Consumption (W)	0.20 / 0.40	0.30	0.32	0.28
Rated Speed (RPM)	4300 / 7000	4400	3900	2300
Air Flow (CFM)	1.8 / 3.0	1.9	4.5	9.5
Static Pressure (Inch-H2O)	0.03 / 0.058	0.04	0.05	0.03
Acoustic Noise @1M ,dB(A)	3.1 / 17.0	10.5	13.1	13.2
Safety	UL / CUR / TUV / CE	UL / CUR / TUV / CE	UL / CUR / TUV / CE	UL / CUR / TUV / CE

► Cooling Fan



Model No.	HA60150V3-E03U-A99	HA60151V3-E00U-A99
Fan Dimension (mm)	φ 84.9 x 15.4	φ 84.9 x 15.4
Weight (g)	29.1	29.1
Rated Voltage (V)	5	12
Power Consumption (W)	0.26	0.28
Rated Speed (RPM)	2300	2300
Air Flow (CFM)	9.7	9.7
Static Pressure (Inch-H2O)	0.03	0.03
Acoustic Noise @1M ,dB(A)	15.4	15.4
Safety	UL / CUR / TUV / CE	UL / CUR / TUV / CE

► Cooling Fan



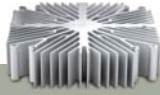
Model No.	HA60150V3-E02U-A99	HA60150V3-E00U-H99 *	HA60151V3-E01U-A99	HA60151V3-E05U-H99 *
Fan Dimension (mm)	φ 84.9 x 15.4	φ 84.9 x 15.4	φ 84.9 x 15.4	φ 84.9 x 15.4
Weight (g)	27.3	28.8	27.3	28.8
Rated Voltage (V)	5	5	12	12
Power Consumption (W)	0.40	0.33	0.34	0.42
Rated Speed (RPM)	2300	2300	2300	2300
Air Flow (CFM)	13.2	13.2	13.2	13.2
Static Pressure (Inch-H2O)	0.03	0.03	0.03	0.03
Acoustic Noise @1M ,dB(A)	16.1	16.1	16.1	16.1
Safety	UL / CUR / TUV / CE	UL / CUR / TUV / CE	UL / CUR / TUV / CE	UL / CUR / TUV / CE

* model with PWM control function

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The Professional LED Cooling Solution

Passive Cooling Module



Model No.	RA000-002999LN
Module Dimension (mm)	85x85x20
Weight (g)	122
Heat Sink Material	AL6063
Multiple Holes ^{※1}	--
Zhaga Holes	Book 3
Thermal Resistance (°C/W) ^{※2}	2.78
Experiment LED Module	Philips Fortimo LED DLM 1100 830 (13W)



Model No.	RA001-001999LN	RA001-003999LN
Module Dimension (mm)	φ 170 x 10	φ 170 x 10
Weight (g)	185	190
Heat Sink Material	AL6063	AL6063
Multiple Holes ^{※1}	--	--
Zhaga Holes	Book 2	Book 2
Thermal Resistance (°C/W) ^{※2}	1.87	1.29
Experiment LED Module	Philips Fortimo Twistable 1100lm 840 (20W)	Philips Fortimo LED DLM 1100 830 (13W)



Model No.	RA002-001999LN	RA002-002999LN
Module Dimension (mm)	φ 170 x 30	φ 170 x 30
Weight (g)	570	570
Heat Sink Material	AL6063	AL6063
Multiple Holes ^{※1}	--	--
Zhaga Holes	Book 2	Book 2
Thermal Resistance (°C/W) ^{※2}	1.10	1.00
Experiment LED Module	Philips Fortimo Twistable 2000lm 840 (32W)	Philips Fortimo LED DLM 2000 830 (24W)

※1 : Multiple Holes for Philips Fortimo SLM, Philips Lixel LED SLM, Osram PrevaLED, Tridonic Stark & Talex, Bridgelux RS Array / LS Array, Citizen CL-L330 / 340, Vossloh-Schwabe WU-M-Series, Zhaga.

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3. △ The product doesn't consider to " as Standard ", please check the leadtime with Sunon Sales contact window.

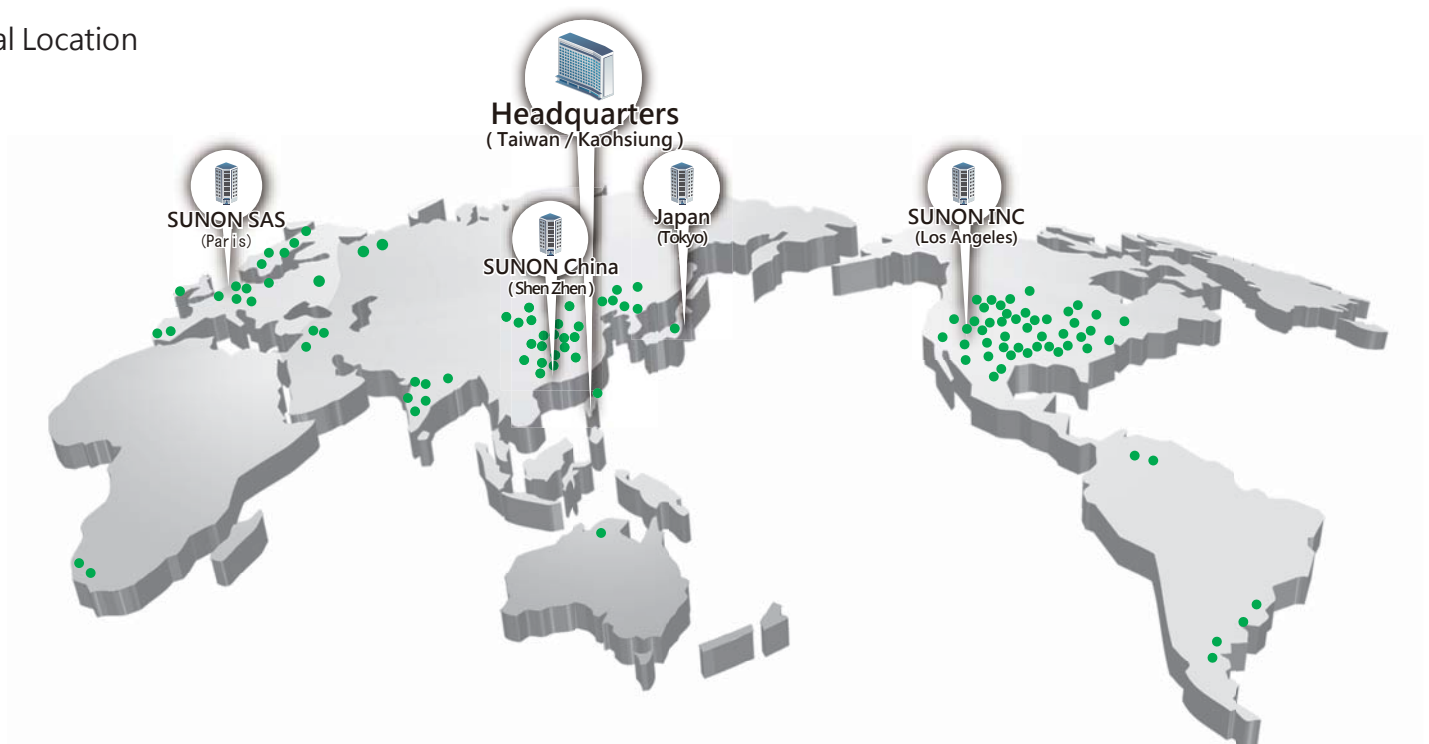
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SUNON®

Sunon was founded in 1980 and has become an international trademark that is well recognized and featured on products sold worldwide. Over more than 30 years, Sunon has been committed to invention and innovation of fans, motors, and cooling modules. Step by step, Sunon has now become a global leading cooling solution provider and takes the lead in a variety of application fields.

Sunon's concentration for more than 30 years on the research and development of cooling technology enables Sunon to help LED bulb manufacturers to effectively eliminate heat, and this allows the LED bulb makers to introduce higher lumen in their limited bulb space, thus increasing the LED's brightness. In addition, Sunon's cooling modules can also effectively reduce temperature in the power system in LED lighting to effectively extend a bulb's service life. Sunon commits itself to integrating clients' needs in an aim to provide them with optimum cooling solutions for LED lighting.

■ Global Location



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