



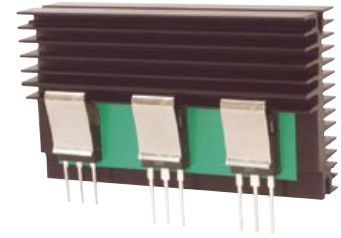
## **THERMAL MANAGEMENT**

- ▶ **Aavid Thermalloy** .....142
- ▶ **Comair Rotron**.....143
- ▶ **ebm-papst, Inc.**.....144–147
- ▶ **Honeywell Sensing and Control** .....148–150
- ▶ **NMB Technologies** .....151–152
- ▶ **Sanyo Denki**.....153



## The Max Clip System™ Advanced Thermal Solution for Discrete Power Semiconductors

The Max Clip System™ is designed for industrial power applications that require excellent thermal performance, high reliability, and lower system cost. Unlike conventional nut and bolt mounting which can distort the package and loosen over time, causing failure, Max Clips™ maximize heat transfer area and retain force during the expansion and contraction of thermal cycles. Max Clips also reduce labor costs with fast snap-on assembly.



782453B04000G with MAX03G clips

### Features ▶

- Faster assembly than conventional nut and bolt mounting
- Eliminates drilled or tapped holes in the heat sink
- Maintains constant assembly force despite thermal cycling
- Withstands shock and vibration
- Perfect for tabless (holeless) packages

### Benefits ▶

- Reduced system cost
- Reliable thermal performance
- Increased power handling
- Smaller package size
- Design flexibility

### Applications ▶

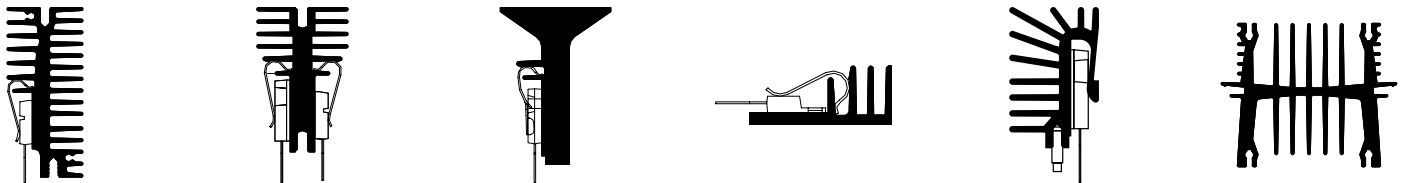
- Motion control
- Power supplies
- Lighting ballasts
- Amplifiers
- Uninterruptable power supplies

### Product Specifications ▶

Max Clip	Part Number	Package	Mounting Force (N)	Extrusion	Part Number	Length (mm)	Width (mm)	Height (mm)	Thermal Resistance (°C/W)
	MAX01-HG	T0220/T0262	80		783503B10000G	254.0	49.5	85.5	1.19
MAX02G	T0220/T0262	35	780103B06000G	152.4	34.0	75.0	2.24		
MAX03-HG	T0247/T0218	80	782453B04000G	101.6	27.0	60.0	4.00		
MAX03G	T0247/T0218	45	780753B03000G	76.2	38.0	54.0	4.38		
MAX11G	T0251	35	780603B08000G	203.2	30.0	45.0	3.98		

### Related Information ▶

Numerous styles are available to fit your application.



Aavid Thermalloy has an extensive line of standard and custom-configurable products to meet all your cooling needs.

Discrete Power		IPM	IGBT Modules		ASIC/Programmable Logic
Surface-mount 7106DG	Plug-in stamping 576802B03100G	Extrusion 6284BG	Bonded fin 477000V00000G	Turbo Flow™ liquid cold plate	Pin fin with clip 10-BRD1-03G

### Arrow Industrial Selector Guide



Caravel

## Comair Rotron Air-Moving Solutions for Industrial Applications

Comair Rotron offers a wide range of air movers for the industrial market, ranging from 25 CFM to 850 CFM. Comair Rotron fans are designed with ball bearings for long life and reliability in both normal and harsh environments. All products are tested 100 percent to maintain high quality standards. All products are available in 115V and 230V versions that can be operated at 50 Hz to 60 Hz.

### Features ▶

- Rugged construction: zinc or aluminum housings
- Operating temperature: -10°C to +70°C
- Ball bearings for long life
- Blade design for quiet operation
- UL and CSA certified

### Benefits ▶

- High CFM in low-impedance applications
- Long life: typically 50,000 hours at +40°C
- Low noise: typically 40 dBA to 60 dBA
- Efficient motor design with low current draw
- Dependability: 18-month warranty

### Applications ▶

- Industrial cabinets
- Commercial cooking equipment
- Vending machines
- Commercial coolers and freezers
- Industrial lighting equipment

### Product Specifications ▶

Part Number	Model	CFM	Voltage (V)	Amps (A)	Construction	Height (inches)	Width (inches)	Depth (inches)
028268	Sprite SU2B1	34	115	0.19	Zinc	3.14	3.14	1.65
028269	Sprite SU3B1	34	230	0.09	Zinc	3.14	3.14	1.65
028422	Muffin XL MX2B3	115	115	0.2	Zinc	4.69	4.69	1.54
028423	Muffin XL MX3B3	115	230	0.1	Zinc	4.69	4.69	1.54
039019	Major XT ME2B3	220	115	0.27	Aluminum	6.75	5.92	1.5
039020	Major XT ME3B3	220	230	0.14	Aluminum	6.75	5.92	1.5
028245	Major MR2B3	235	115	0.27	Aluminum	6.75	5.92	2
028309	Major MR77B3	235	230	0.13	Aluminum	6.75	5.92	2
031842	Maltese MA2B3	300	115	0.36	Aluminum	6.75	5.92	2.16
031844	Maltese MA77B3	300	230	0.18	Aluminum	6.75	5.92	2.16
020169	Tarzan TNE2C	340	115	0.49	Plastic	6.91	6.91	4.4
020177	Tarzan TNE3C	340	230	0.25	Plastic	6.91	6.91	4.4
020188	Caravel CLE2L2	550	115	0.5	Aluminum	10.00	10.00	3.5
028190	Caravel CLE3L2	550	230	0.25	Aluminum	10.00	10.00	3.5
039305	Caravel XL CLE2L5	850	115	1.3	Aluminum	10.00	10.00	4.2
039306	Caravel XL CLE3L5	850	230	0.61	Aluminum	10.00	10.00	4.2

### Related Information ▶



Tarzan



Major



Maltese



Muffin XL



Sprite

# ebmpapst

## ACmaxx: Versatile, Energy-Saving AC Fans

The ACmaxx product line maintains the same performance over a power input range of 85V to 256V and 50 Hz to 60 Hz. It can be used with worldwide voltages. Improved efficiency means up to 75 percent less power consumption than standard AC fans, resulting in considerable power savings over the entire service life; it also reduces heat in the motor, for a service life up to 85 percent longer than conventional AC fans offer.



ebm-papst ACmaxx family

### Features ▶

- 85V to 256V, 50 Hz to 60 Hz
- Extremely efficient motor
- Completely integrated drive and control electronics
- Higher airflow
- Controllable speed

### Benefits ▶

- Versatile: can be used with worldwide voltages
- 75 percent lower power consumption
- Service life up to 85 percent longer than for conventional AC fans
- Usable as one-for-one replacement for standard AC fans without structural changes

### Applications ▶

- Switch cabinets
- Filter fans
- Welding machines
- Coolers and freezers
- In-line fans for ventilation

### Product Specifications ▶

Series	VAC	Voltage Range	Speed (RPM)	Maximum Flow Rate (CFM)	Noise-Free Air (dBA)	Power Consumption (W)	Permanent Ambient Temperature at Maximum Voltage (°C)	Bearings	Mass (g)
AC3200JH	115/230 (50/60 Hz)	85-265	6800	86	55	11	-20 to +70	Ball	345
AC4300H	115/230 (50/60 Hz)	85-265	3400	120	51	11	-20 to +70	Ball	325
AC6100NM	115/230 (50/60 Hz)	85-265	2850	206	50	13.5	-20 to +70	Ball	675
AC6200NM	115/230 (50/60 Hz)	85-265	2850	206	50	14	-20 to +70	Ball	900

### Related Information ▶



AC3200JH series



AC4300H series



AC6100NM series



AC6200NM series



## Custom Centrifugal Blowers

ebm-papst delivers a powerful line of AC and EC single-inlet, forward-curved centrifugal blowers, incorporating both PSC motors and EC motors in a galvanized housing to offer efficient, quiet solutions for many applications. Versatile, their scroll shape can be optimized to your specifications for airflow and noise. The new blowers are available immediately in 115-230 VAC, 150-770 CFM. The EC version's integrated speed control allows for full modulation of the blower with no motor noise or vibration.

### Features ▶

- Customizable scroll housing
- AC and EC versions available
- Galvanized sheet steel housing
- Mounting flange on discharge
- EC version offers integrated speed control

### Benefits ▶

- Versatile: custom-built for any application
- Highly efficient motor design
- Easy installation

### Applications ▶

- Air conditioners
- Machine cooling
- Space ventilation

### Product Specifications ▶

Part Number	Size - Type	Nominal Voltage (VAC)	Hertz	Maximum Flow Rate (CFM)	Noise-Free Air (dBA)	Power Consumption (W)	Maximum Ambient Temperature (°C)	Bearings	Capacitor (µf)
EE1G-115-120-01	Ø 120 mm - AC	115	60	150.9	NA	45.5	60	Ball	5
EE1G-115-140-02	Ø 140 mm - AC	115	60	270	64	195	50	Ball	12
EE1G-230-140-02	Ø 140 mm - AC	230	50/60	290	68	200	50	Ball	4
EE1G-115-180-04	Ø 180 mm - AC	115	50/60	450	64	125/180	50	Ball	16
EE1G-115-180-05	Ø 180 mm - AC	115	60	350	61	152	50	Ball	10
EE1G-115-180-06	Ø 180 mm - AC	115	60	604	NA	251	50	Ball	20
EE1G-230-180-04	Ø 180 mm - AC	230	50/60	450	64	125/180	60	Ball	4
EE1G-230-180-05	Ø 180 mm - AC	230	60	370	62	152	55	Ball	10
EE1G-230-180-06	Ø 180 mm - AC	230	50/60	500	64	125/180	60	Ball	4
EG1G-230-180-03	Ø 180 mm - EC	230	60	770	NA	135	50	Ball	NA
EG1G-230-180-04	Ø 180 mm - EC	230	60	619	NA	109	50	Ball	NA

# ebmpapst

## Backward-Curved Motorized Impellers

ebm-papst backward-curved motorized impellers provide efficient air movement without complicated, costly scroll housings. Their space-saving design provides a completely integrated, dynamically balanced motor and impeller to assure long-term, efficient operation. They offer engineers the versatility, performance, and efficiency required for air-moving applications. Excellent heat dissipation, a large bearing system, and permanent attachment of the impeller to the motor support trouble-free performance.



### Features ▶

- Excellent back pressure/static pressure characteristics
- No scroll required
- Version available in DC, AC, EC
- External rotor motor design
- Speed controllable

### Benefits ▶

- Performance over a wide range of pressures
- Scroll-less design; 360-degree discharge of exhaust air
- Satisfies a wide range of application requirements
- Motor cooled by passing air flow
- Low noise

### Applications ▶

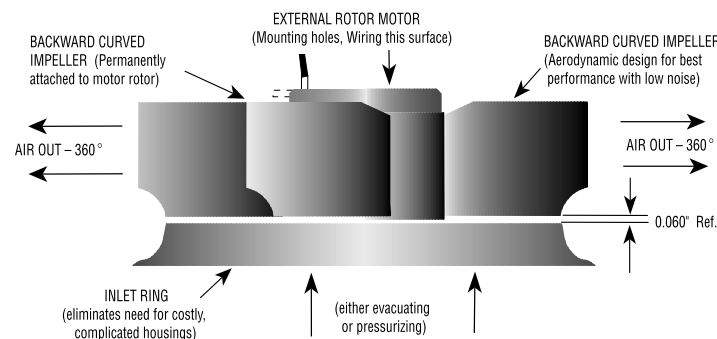
- Duct boosting
- Ventilation hoods
- Rooftop ventilators
- Heat exchangers

### Product Specifications ▶

Part Number*	Size - Type	Voltage	Voltage Range	Maximum Flow Rate (CFM)	Noise-Free Air (dBA)	Power Consumption (W)	Maximum Ambient Temperature (°C)	Impeller Material	Bearing Type
R1G133-AA17-02	Ø 133 mm - DC	24 VDC	8-14	212	63	28	+60	Plastic	Ball
R1G175-AB63-02	Ø 175 mm - DC	24 VDC	16-28	330	65	34	+60	Plastic	Ball
R1G175-AB75-24	Ø 175 mm - DC	12 VDC	8-14	301	66	27	+60	Plastic	Ball
R1G190-AB25-02	Ø 190 mm - DC	48 VDC	36-57	365	68	51	+40	Plastic	Ball
R1G190-AC37-52	Ø 190 mm - DC	24 VDC	16-28	330	68	80	+60	Plastic	Ball
R1G220-AB35-52	Ø 220 mm - DC	24 VDC	16-28	621	76	106	+60	Plastic	Ball
R1G225-AF11-52	Ø 225 mm - DC	48 VDC	36-57	665	67	95	+60	Plastic	Ball
R1G280-AE45-52	Ø 280 mm - DC	24 VDC	16-28	1031	71	95	+60	Galvanized steel	Ball
R2E190-A026-25	Ø 190 mm - AC	230 VAC, 60 Hz	NA	365	64	75	+55	Plastic	Ball
R2E190-A050-16	Ø 190 mm - AC	115 VAC, 50/60 Hz	NA	365	64	75	+55	Plastic	Ball
R2E220-AA40-23	Ø 220 mm - AC	230 VAC, 60 Hz	NA	530	74	100	+40	Plastic	Ball
R2E220-AA44-23	Ø 220 mm - AC	115 VAC, 50/60 Hz	NA	530	74	100	+40	Plastic	Ball
R2E225-BD92-36	Ø 225 mm - AC	230 VAC, 60 Hz	NA	789	71	200	+60	Plastic	Ball
R2E225-BE51-09	Ø 225 mm - AC	115 VAC, 60 Hz	NA	756	75	185	+50	Plastic	Ball
R3G500-AG06-03	Ø 500 mm - EC	380-480 VAC, 50/60 Hz	NA	6357	79	1850	+60	Metal	Ball
R3G630-AB06-03	Ø 630 mm - EC	380-480 VAC, 50/60 Hz	NA	9594	79	2000	+50	Metal	Ball

\*Select parts are shown here; for a complete range of impellers contact Arrow.

### Easy installation and mounting



### Arrow Industrial Selector Guide

800-349-4960 | [www.arrownac.com/industrial](http://www.arrownac.com/industrial)



## Axial and Mixed-Flow Fans

ebm-papst's compact axial fans move air axially from the inlet side through to the outlet side. Compact fans are normally supplied with a housing that acts as a tube and helps guide the air through the impeller. These fans are often referred to as tubeaxial fans. A diagonal fan, often referred to as a mixed-flow fan, takes the general form factor of a tubeaxial fan, but has the ability to generate static pressure like a radial fan. The airflow path of a diagonal fan is axial inlet and diagonal exhaust.

### Features ▶

- Flange zones for simple mounting
- Designs low in noise with Sintec sleeve bearing system
- Ball bearing design for extreme ambient conditions
- Choice of various AC and DC designs in different voltage and speed variants
- Overload and locked-rotor protection

### Benefits ▶

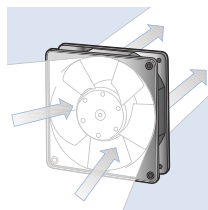
- Space-saving installation due to compact and flat design
- Far less operating noise due to mixed-flow fans discharging air diagonally
- Programmable cooling by setting speed profiles
- Extensive accessory range

### Applications ▶

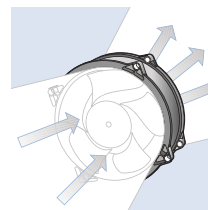
- Cabinet cooling
- Machine cooling
- Spot cooling
- Duct booster

### Product Specifications ▶

Part Number	Size (mm)	Nominal Voltage	Maximum Flow Rate (CFM)	Noise-Free Air (dBA)	Power Consumption (W)	Maximum Ambient Temperature (°C)	Bearings	Weight (lb.)
W2E200-HK86-01	225 x 225 x 80	115 VAC, 60 Hz	606	61	80	+65	Ball	4.41
W2E200-HK38-01	225 x 225 x 80	230 VAC, 60 Hz	606	61	80	+65	Ball	4.41
W2E250-HJ32-01	280 x 280 x 80	115 VAC, 60 Hz	1100	73	175	+50	Ball	4
W2E250-HJ28-01	280 x 280 x 80	230 VAC, 50/60 Hz	1100	73	200	+40	Ball	4
W2E208-BA86-51	Ø 260 x 80	115 VAC, 60 Hz	544	70	87	+72	Ball	6.38
W2E208-BA20-51	Ø 260 x 80	230 VAC, 60 Hz	544	70	87	+72	Ball	6.38
DV4112N	119 x 119 x 38	12 VDC	162	60	21	+65	Ball	1
DV4114N	119 x 119 x 38	24 VDC	162	60	21	+65	Ball	1
DV4118N	119 x 119 x 38	48 VDC	162	60	21	+65	Ball	1
DV5212N	127 x 127 x 38	12 VDC	159	56	21	+65	Ball	1.08
DV5214N	127 x 127 x 38	24 VDC	159	56	21	+65	Ball	1.08
DV5218N	127 x 127 x 38	48 VDC	159	56	21	+65	Ball	1.08
DV6224	Ø 172 x 51	24 VDC	318	63	40	+75	Ball	1.81
DV6248	Ø 172 x 51	48 VDC	318	63	40	+75	Ball	1.81
DV6224TD (turbofan)	Ø 172 x 51	24 VDC	59-412	29-69	2-86	+60	Ball	1.81
DV6248TD (turbofan)	Ø 172 x 51	48 VDC	59-412	29-69	2-86	+60	Ball	1.81
DV6424	Ø 172 x 160 x 51	24 VDC	312	65	40	+75	Ball	1.81
DV6448	Ø 172 x 160 x 51	48 VDC	312	65	40	+75	Ball	1.81
DV6424/2TDP-815	Ø 172 x 160 x 51	24 VDC	59-400	29-71	2-91	+70	Ball	1.81
DV6448/2TDP-833	Ø 172 x 160 x 51	48 VDC	59-400	29-71	2-86	+60	Ball	1.81
W1G180-AB31-01	Ø 200 x 70	24 VDC	530	68	93	+60	Ball	3.97
W1G180-AB47-01	Ø 200 x 70	48 VDC	544	69	100	+60	Ball	3.97
W1G200-HH77-52	225 x 225 x 80	24 VDC	642	60	55	+60	Ball	4.63
W1G200-HH01-52	225 x 225 x 80	48 VDC	592	60	45	+60	Ball	4.63



Axial fans: high flow rate at medium pressure



Mixed-flow fans: high flow rate at relatively high pressure

# Honeywell

## Temperature Probes

The Honeywell range of temperature probes provides reliable temperature detection through the conversion of temperature to a resistance value. Honeywell's probes are finished thermistor assemblies, complete with thermistor housing, extension leads, and often a connector. A variety of customized packages are available.



### Features ▶

- Large variety of housing alloys available for immersion temperature sensor probes

### Benefits ▶

- Multiple configurations allow sensors to be mounted, bolted, riveted, or attached adhesively
- Easy mounting with multiple configurations

### Applications ▶

- Appliances
- Automotive
- Industrial
- Office automation/data processing
- Telecommunications

### Product Specifications ▶

Description	Operating Temperature Range °C [°F]	Encapsulation	Lead Material	Dissipation Constant (mW/°C)	Time Constant (s)	Resistance Range at 25°C (77°F)
Surface temperature sensor probes	-60 to +150 [-76 to +302]	Thermally conductive epoxy used to put discrete component into surface-style housing	Insulated lead wires and terminals when required, other options available	3.3-12 (varies with size and housing)	1-40 (application-dependent)	Per customer requirements
Air-gas temperature sensor probes	-60 to +150 [-76 to +302]	None, sensing element is exposed	Insulated lead wires and terminals when required, other options available	0.1-3 (varies with size and housing)	4-150 (application and design-dependent)	Per customer requirements
Immersion temperature sensor probes	-60 to +300 [-76 to +572]	NTC encapsulated in housing appropriate for the applications	Insulated lead wires and terminals when required, other options available	5-10 (varies with size and housing)	1-12 (design-dependent)	Per customer requirements



## Precision and Commercial Thermostats

The Honeywell thermostat product line consists of standard pre-set temperature thermostats, Single-Pole, Single-Throw (SPST) hermetic and non-hermetic thermostats, subminiature thermostats, and thermal switches.

### Features ▶

- Hermetic and non-hermetic devices
- Standard and custom-packaged options for design flexibility
- Automatic and manual reset options
- Variety of mounting brackets and terminal options

### Benefits ▶

- Tight temperature tolerances and differentials available
- Products easily customized for specific application requirements
- Small package size ideal for applications where space is at a premium

### Applications ▶

- Appliances
- Office automation
- Commercial aircraft
- Medical equipment

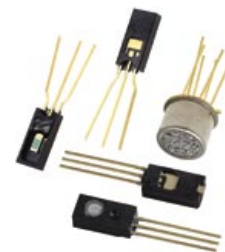
### Product Specifications ▶

Series	Description	Amperage (A)	Housing Material	Operating Temp. Range °C [°F]	Environmental Exposure Range °C [°F]	Dielectric Strength
3450R/3450HR/3455R	Automatic reset	15 resistive max.	Phenolic	+0 to +150 [+32 to +302]	+0 to +150 [+32 to +302]	NA
3450RC/3450RCH/3455RC	Automatic reset	15 resistive max.	Ceramic	0 to +260 [+32 to +500]	-20 to +287 [0 to +550]	NA
3450CM/3455RM	Manual reset	15 resistive max.	Ceramic or phenolic	+52 to +232 [+125 to +450] (ceramic); +52 to +150 [+125 to +302] (phenolic)	+10 to +260 [+50 to +500] (ceramic); +10 to +150 [+50 to +302] (phenolic)	NA
3455RBV	Overmolded automatic reset	15 resistive max.	Ceramic, epoxy overmold	-12 to +105 [+10 to +221]; -18 to +121 [0 to +250]	+10 to +260 [+50 to +500] (ceramic); +10 to +150 [+50 to +302] (phenolic)	NA
3450R/3450RC/3455R/ 3450RCH/3455RC	One shot 1/2 inch	15 resistive max.	Ceramic or phenolic, with or without epoxy-sealed cap and terminals	+52 to +260 [+125 to +500] (ceramic); +52 to +150 [+125 to +302] (phenolic)	+18 to +287 [+64 to +550] (ceramic); +18 to +150 [+64 to +302] (phenolic)	NA
3001	Non-hermetic	1-3	Phenolic base with metal closure	-18 to +168 [0 to +335]	-18 to +177 [0 to +350]	MIL-STD 202, method 301, 1500 VAC 60 Hz terminal to case (2000 Vac 3004)
3004	Non-hermetic	2-4	Phenolic base with metal closure	-18 to +168 [0 to +335]	-18 to +177 [0 to +350]	MIL-STD 202, method 301, 1500 VAC 60 Hz terminal to case (2000 Vac 3004)
3600	Custom packaged	1 resistive	Nickel	+40 to +120 [+104 to +248]	-50 to +150 [-58 to +302]	500 VAC 60 Hz for one second terminal to case
3601	Custom packaged	1 resistive	Nickel	+40 to +120 [+104 to +248]	-50 to +150 [-58 to +302]	500 VAC 60 Hz for one second terminal to case
3000	Custom packaged	7 resistive	Stainless steel or brass	-29 to +260 [-20 to +500]	-62 to +288 [-80 to +550]	MIL-STD 202, method 301, 1250 VAC 60 Hz terminal to case
2450R/2450HR/2455R	Automatic reset	15 resistive max.	Phenolic	+0 to +150 [+32 to +302]	+0 to +150 [+32 to +302]	NA
2450RC/2450RCH/2455RC	Automatic reset	15 resistive max.	Ceramic	0 to +260 [+32 to +500]	-20 to +287 [-4 to +550]	NA
2450CM/2455RM	Manual reset	15 resistive max.	Ceramic or phenolic	+52 to +232 [+125 to +450] (ceramic); +52 to +150 [+125 to +302] (phenolic)	+10 to +260 [+50 to +500] (ceramic); +10 to +150 [+50 to +302] (phenolic)	NA
2450A/2455RA	Heat detection	15 resistive max.	Phenolic, epoxy-sealed cap and terminals	+47 to +107 [+117 to +225]	+0 to +150 [+32 to +302]	NA
2455RBV	Overmolded automatic reset	15 resistive max.	Ceramic or phenolic, epoxy overmold	-12 to +105 [+10 to +221]	-18 to +121 [0 to +250]	NA
2450R/2450RCH/2455R/ 2455RC/2467RC/2467RCH	One shot 1/2 inch	15 resistive max.	Ceramic or phenolic, with or without epoxy-sealed cap and terminals	+52 to +260 [+125 to +500] (ceramic); +52 to +150 [+125 to +302] (phenolic)	+18 to +316 [0 to +600] (ceramic); +18 to +150 [0 to +302] (phenolic)	NA
2450R	Annular ring cap automatic reset	15 resistive, 12 VDC	Phenolic, can be partially or totally sealed against water ingress	-10 to +55 [+14 to +131]	-40 to +130 [-40 to +266]	NA
2450R/2455R	Protected	15 resistive, 12 VDC	Brass, aluminum, stainless steel, and epoxy	+15 to +130 [+59 to +266]	-40 to +155 [-40 to +311]	NA
2450R	Fully sealed	15 resistive, 12 VDC	Phenolic housing, aluminum cap totally encapsulated in water-resistant epoxy	-10 to +55 [+14 to +131]	-40 to +130 [-40 to +266]	NA

# Honeywell

## Humidity Sensors

Relative humidity/temperature and relative humidity sensors are configured with integrated circuitry to provide on-chip signal conditioning. Absorption-based humidity sensors provide both temperature and percent Relative Humidity (RH) outputs. On-chip signal processing ensures linear voltage output versus percent RH.



### Features ▶

- Near linear voltage output vs. %RH
- Laser-trimmed interchangeability
- High accuracy, fast response
- Chemically-resistant
- Low current draw

### Benefits ▶

- Multi-layer construction provides excellent resistance to application hazards, such as wetting, dust, dirt, oils, and common environmental chemicals
- Tight sensor interchangeability reduces or eliminates OEM production calibration costs
- Factory calibration data supplied with each sensor allows individually matched downstream electronics

### Applications ▶

- Medical equipment
- Drying
- Meteorology
- Battery-powered systems
- OEM assemblies

### Product Specifications ▶

Part Number	Series	Description	Package Style	Temperature Range °C [°F]	Accuracy (BFSL) (%)	RH Interchangeability	Repeatability (%)	RH Hysteresis (%RH)
HIH-4000-001	HIH-4000	Integrated circuit humidity sensor, 2.54 mm (0.100 inch) lead-pitch SIP	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4000-002	HIH-4000	Integrated circuit humidity sensor, 1.27 mm (0.050 inch) lead-pitch SIP	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4000-003	HIH-4000	Integrated circuit humidity sensor, 2.54 mm (0.100 inch) lead-pitch SIP, calibration and data printout	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4000-004	HIH-4000	Integrated circuit humidity sensor, 1.27 mm (0.050 inch) lead-pitch SIP, calibration and data printout	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4010-001	HIH-4010	Integrated circuit humidity sensor, 2.45 mm (0.100 inch) lead-pitch SIP	Solderable SIP	-40 to +85 [-40 to +185]	NA	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4010-002	HIH-4010	Integrated circuit humidity sensor, 1.27 mm (0.050 inch) lead-pitch SIP	Solderable SIP	-40 to +85 [-40 to +185]	NA	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4010-003	HIH-4010	Integrated circuit humidity sensor, 2.45 mm (0.100 inch) lead-pitch SIP, calibration and data printout	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4010-004	HIH-4010	Integrated circuit humidity sensor, 1.27 mm (0.050 inch) lead-pitch SIP, calibration and data printout	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4020-001	HIH-4020	Covered integrated circuit humidity sensor, 2.45 mm (0.100 inch) lead-pitch SIP	Solderable SIP	-40 to +85 [-40 to +185]	NA	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4020-002	HIH-4020	Covered integrated circuit humidity sensor, 1.27 mm (0.050 inch) lead-pitch SIP	Solderable SIP	-40 to +85 [-40 to +185]	NA	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4020-003	HIH-4020	Covered integrated circuit humidity sensor, 2.45 mm (0.100 inch) lead-pitch SIP, calibration and data printout	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4020-004	HIH-4020	Covered integrated circuit humidity sensor, 1.27 mm (0.050 inch) lead-pitch SIP, calibration and data printout	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4021-001	HIH-4021	Covered, filtered integrated circuit humidity sensor, 2.45 mm (0.100 inch) lead-pitch SIP	Solderable SIP	-40 to +85 [-40 to +185]	NA	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4021-002	HIH-4021	Covered, filtered integrated circuit humidity sensor, 1.27 mm (0.050 inch) lead-pitch SIP	Solderable SIP	-40 to +85 [-40 to +185]	NA	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4021-003	HIH-4021	Covered, filtered integrated circuit humidity sensor, 2.45 mm (0.100 inch) lead-pitch SIP, calibration and data printout	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4021-004	HIH-4021	Covered, filtered integrated circuit humidity sensor, 1.27 mm (0.050 inch) lead-pitch SIP, calibration and data printout	Solderable SIP	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4602-A	HIH-4602-A/C	Monolithic IC humidity sensor with integral thermistor	TO-5 can	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3
HIH-4602-C	HIH-4602-A/C	Monolithic IC humidity sensor with integral precision RTD	TO-5 can	-40 to +85 [-40 to +185]	±3.5	±5% RH at 0-59% RH; ±8% at 60-100% RH	±0.5	3



## AC Axial Fans

NMB offers a comprehensive line of more than 100 axial fans ranging in size from 60 mm to 173 mm. The 5915PC AC axial fan models represent a perfect solution for your industrial and factory automation applications. All NMB fans and blowers are RoHS compliant.

### Features ▶

- Dual ball bearings
- Metal and plastic impeller available
- High airflow
- Aluminum fan casing
- Thermal/impedance-protected

### Benefits ▶

- Low noise
- High quality and reliability
- Long life

### Applications ▶

- Factory automation
- Industrial automation
- HVAC
- Lighting
- Tanning beds

### Product Specifications ▶

Part Number	Rated Voltage (V)	Frequency (Hz)	Starting Voltage (V)	Current (A)	Input Power (W)	Speed (min <sup>-1</sup> )	Maximum Air Flow (CFM)	Maximum Static Pressure (in H <sub>2</sub> O)	Noise (dB)	Mass (g)
5915PC-12T-B30-A00	115	50	75	0.380	35.0	2700	176.5	0.629	52.0	800
	115	60	75	0.360	32.0	3200	212.0	0.865	56.0	800
5915PC-23T-B30-A00	230	50	145	0.180	35.0	2700	176.5	0.629	52.0	800
	230	60	145	0.190	35.0	3200	212.0	0.865	56.0	800
5915PC-12T-B20-A00	115	50	75	0.200	21.0	2200	141.2	0.393	46.0	800
	115	60	75	0.210	22.0	2600	166.0	0.472	50.0	800
5915PC-23T-B20-A00	230	50	145	0.120	23.0	2200	141.2	0.393	46.0	800
	230	60	145	0.140	26.0	2600	166.0	0.472	50.0	800
5915PC-12T-B10-A00	115	50	75	0.160	16.0	1400	84.7	0.173	35.0	800
	115	60	75	0.190	18.0	1650	102.3	0.243	38.0	800
5915PC-23T-B10-A00	230	50	145	0.090	16.0	1400	84.7	0.169	35.0	800
	230	60	145	0.110	18.0	1650	102.3	0.243	38.0	800

### Related Information ▶

Agency Approvals: UL- E89936 Vol. 2, S1/CSA LR65829 1202307/VDE 15073-0012/CE





## DC Blowers

NMB's DC and AC axial fans and blowers are designed to solve thermal management challenges. The DC blower Model BG0903 is the solution for your server, PC, and storage cooling needs. NMB's fans and blowers are all RoHS certified.



### Features ▶

- Dual ball bearings
- Available in 12V and 24V
- UL, CSA, and VDE approvals
- Auto restart/reverse-polarity protection

### Benefits ▶

- Low noise
- Long life
- High quality and reliability

### Applications ▶

- Servers
- Storage networks
- PC cooling
- Projectors
- Industrial applications

### Product Specifications ▶

Part Number	Rated Voltage (V)	Operating Voltage (V)	Current (A)	Input Power (W)	Speed (min <sup>-1</sup> )	Maximum Air Flow (CFM)	Maximum Static Pressure (in H <sub>2</sub> O)	Noise (dB)	Mass (g)
BG0903-B042-000	12	8-13.8	0.40	4.80	2700	20.50	0.61	47.5	210
BG0903-B043-000	12	6-13.8	0.64	7.68	3200	24.70	0.90	51.5	210
BG0903-B044-000	12	6-12.8	1.03	12.40	3700	28.60	1.40	54.5	210
BG0903-B052-000	24	10-27.6	0.21	5.04	2700	20.50	0.61	47.5	210
BG0903-B053-000	24	10-27.6	0.33	7.92	3200	24.70	0.90	51.5	210
BG0903-B054-000	24	10-25.0	0.49	11.80	3700	28.60	1.40	54.5	210

### Related Information ▶

Agency Approvals: UL E89936 Vol. 1, S59/CSA LR65829 1120644/VDE 15073-0039

## SANYODENKI



## Sanyo Denki's Endurance Fan Series

As Japan's first manufacturer of cooling fans for electronic equipment, Sanyo Denki offers more than 500 fan models to meet your customers' needs. Sanyo Denki fans deliver real value in terms of quality, reliability, performance, and affordability. The Endurance fan series, known for its enhanced reliability and environmental-protection benefits, offers excellent performance and low power consumption.

### Features ▶

- Minimum L10 life of 40,000 hours at 60°C reliability across entire product line
- Specific products below capable of L10 life of 100,000+ hours at 60°C reliability; 5 to 20 year service life
- Consistently dependable quality
- Value-added service available

### Benefits ▶

- Excellent performance in harsh environments
- Wide temperature range
- High performance—air flow and static pressure
- Waterproof standard IP55
- Low vibration

### Applications ▶

- Factory automation
- Heavy equipment
- Transportation
- Commercial printers
- Commercial laundry equipment

### Product Specifications ▶

Part Number	Long Life DC Fans (mm)	Rated Voltage* (V)	Rated Current (A)	Rated Speed* (min <sup>-3</sup> )	Air Flow (CFM)	Static Pressure (inch H <sub>2</sub> O)	Noise (dB[A])	Operating Temperature Range (°C)	Life Expectancy (hrs.)
9L0412J302	40 x 28	12	0.31	11,700	18.4	0.827	48	-10 to +70	100,000
109L0612G402	60 x 25	12	0.24	5,600	27.5	0.351	39	-10 to +70	100,000
109L0812S402	80 x 25	12	0.26	3,400	42.5	0.2	37	-10 to +70	100,000
109L1212H102	120 x 38	12	0.4	2,850	106	0.283	41	-10 to +70	100,000
Part Number	Extended Long Life/Low Noise DC Fans (mm)	Rated Voltage (V)	Rated Current (A)	Rated Speed (min <sup>-3</sup> )	Air Flow (CFM)	Static Pressure (inch H <sub>2</sub> O)	Noise (dB[A])	Operating Temperature Range (°C)	Life Expectancy (hrs.)
9LB1212H102	120 x 38	12	0.39	2,600	102.4	0.272	39	-10 to +70	200,000
9LB1212M102	120 x 38	12	0.22	2,000	77.7	0.169	32	-10 to +70	200,000
Part Number	Oil-Proof DC Fans (mm)	Rated Voltage (V)	Rated Current (A)	Rated Speed (min <sup>-3</sup> )	Air Flow (CFM)	Static Pressure (inch H <sub>2</sub> O)	Noise (dB[A])	Operating Temperature Range (°C)	Life Expectancy (hrs.)
9WF0424H602	40 x 20	24	0.11	13,100	9.2	0.361	42	-10 to +70	40,000
9WF0624H402	60 x 25	24	0.15	6,500	23.6	0.390	41	-10 to +70	40,000
9WF1224H102	120 x 38	24	0.32	3,100	118	0.402	46	-10 to +70	40,000
Part Number	Splash/Waterproof DC Fans (mm)	Rated Voltage (V)	Rated Current (A)	Rated Speed (min <sup>-3</sup> )	Air Flow (CFM)	Static Pressure (inch H <sub>2</sub> O)	Noise (dB[A])	Operating Temperature Range (°C)	Life Expectancy (hrs.)
9WP0612H402	60 x 25 WP	12	0.11	3,800	18.7	0.161	28	-10 to +70	60,000
109W0812H402	80 x 25	12	0.18	3,000	37.4	0.157	32	-10 to +70	100,000
9WP0812H402	80 x 25 WP	12	0.13	2,900	36.4	0.142	29	-10 to +70	60,000
9WS0812H402	80 x 25 WS	12	0.16	3,100	33.2	0.181	32	-10 to +70	40,000
109W0912H402	92 x 25	12	0.21	2,850	48.7	0.181	33	-10 to +70	100,000
9WS0912H402	92 x 25 WS	12	0.17	2,850	48.7	0.181	33	-10 to +70	40,000
109W1212H102	120 x 38	12	0.4	2,850	106	0.283	41	-10 to +60	100,000
9WP1212H102	120 x 38 WP	12	0.38	2,600	99	0.283	39	-10 to +70	40,000
9WG1212J102	120 x 38	12	1.9	4,800	180	0.924	57	-10 to +70	60,000
9WS1212H102	120 x 38 WS	12	0.47	2,600	102.4	0.272	39	-10 to +60	40,000
109W1412H102	140 x 38	12	0.73	2,600	159	0.394	46	-10 to +60	100,000
9WB1412S502	140 x 51	12	2.7	4,200	286	0.964	57	-10 to +70	60,000

\*These are all available in additional speeds and voltages.