

DAIKIN

UAHMS-Series

EC Motor
Air Handling Units



EC Plug Fan

What is an EC motor?

It is a brushless, permanent magnet, synchronous motor where the rotation rate of the shaft is synchronized with the stator's magnet field. Synchronous external rotor motors contain permanent magnets inside the rotor.

The rotor position is detected by Hall effect sensors and the current flow through the stator winding is energized by a semiconductor stage according to the rotor position in order to produce torque. The rotor does not rely on "slip". It always turns in step with this field, at the same rate.

KEY FEATURES

❖ HIGH EFFICIENCY OF 85%, LEADING TO LOWER INPUT POWER.

EC motors are very high efficiency (65% to 80%) electric motors and maintain a high efficiency level at part speed. This means that in most cases they use from less than one third to one half of the electricity used by shaded pole or PSC induction motors used in the ventilation and refrigeration industries, which in turn translates into lower operating costs and short payback periods.

❖ LOWER RISE IN AIR TEMPERATURE ON THE AIR STREAM.

EC motors' high efficiency also means that the motors run "cool", and reduce dramatically the amount of waste heat produced.

❖ EFFICIENT SPEED CONTROL.

The Daikin's control interface operates through a standard Thermostat which provides the enhanced features in EC Motors AHU offers. The thermostat provides the temperature and set point control and inputs to the interface to manage the ECM fan and cooling.

During a satisfied condition, the ECM fan will operate at low flow. Constant air flow through the conditioned space will minimise stratification, provide effective measurement of the unit sensors and reduce temperature swing as may be realised with fan cycling controls. In this mode, the power consumption of the fan is very little.

When the thermostat calls for cooling, the cooling relay will enable a valve and the fan will ramp up to the cooling airflow. The fan will increase from the idle speed to the cooling flow over two minutes, providing gradual ramp up, where most occupants will not notice the change. When the thermostat is satisfied, the valve will be disabled and the fan returned to idle flow in two minutes.

❖ LONGER MOTOR LIFE RESULTING FROM LOWER RUNNING TEMPERATURES.

❖ LONGER BEARING LIFE BECAUSE OF THE SOFT-START FEATURE.

❖ SUITABLE FOR A 230V SUPPLY.

DC Brushless Chilled Water Fan Coil Units

Model	UAHMS90AZV1EC3 (R)			UAHMS90AZV1EC4 (R)			UAHMS130AZV1EC3 (R)			UAHMS130AZV1EC4 (R)		
	UAHMS90AV1EC3 (L)			UAHMS90AV1EC4 (L)			UAHMS130AV1EC3 (L)			UAHMS130AV1EC4 (L)		
Unit Dimension (MM)	600H x 950W x 895D						600H x 1050W x 995D					
Unit Operational Wt. (KG)	76			80			95			100		
Option	Standard			Option 1			Standard			Option 1		
Air Flow Rate (CMH)	1620	2060	2569	1200	1620	2060	2700	3109	3360	2400	2700	3109
Total Capacity (KW)	7.82	9.07	10.31	5.50	6.74	7.87	11.99	13.01	13.59	9.00	10.50	11.44
Sensible Capacity (KW)	5.62	6.68	7.79	4.22	5.34	6.41	8.75	9.66	10.18	7.74	8.45	9.37
Coil Type	3/8"			3/8"			3/8"			3/8"		
Number of Circuits	6			8			6			8		
Coil Size FH x FL (MM)	406.4 x 703			406.4 x 703			431.8 x 800			431.8 x 800		
Face Area (M ²)	0.29			0.29			0.35			0.35		
No of Fins & Rows	12/03			12/04			12/03			12/04		
Air Pressure Drop (Pa)	54	76	101	51	84	119	85	101	111	113	133	159
Face Velocity (M/S)	1.58	2.00	2.50	1.17	1.58	2.00	2.17	2.50	2.70	1.93	2.17	2.50
Entering Water (°C)	6.7			8			6.7			8		
Leaving Water (°C)	12.2			15			12.2			15		
Water Flow Rate (L/S)	0.34	0.39	0.45	0.38	0.23	0.27	0.52	0.57	0.59	0.33	0.36	0.39
Water Pressure Drop (Kpa)	16.68	21.61	27.01	3.66	5.17	6.73	40.13	46.29	49.94	11.09	12.59	14.60
Piping Connection (MM)	31.75			31.75			50.80			50.80		
Entering Air DB/WB (°C)	24.50/18.50			24.50/18.50			24.50/18.50			24.50/18.50		
Leaving Air DB (°C)	14.44	15.08	15.69	14.29	14.92	15.47	15.08	15.48	15.71	15.13	15.41	15.76
Leaving Air WB (°C)	13.51	13.98	14.41	13.78	14.25	14.62	13.94	14.22	14.38	14.35	14.54	14.77
Coil Material	Cu Tube / Al Fin			Cu Tube / Al Fin			Cu Tube / Al Fin			Cu Tube / Al Fin		
Cooling Medium	Water			Water			Water			Water		
Fan Model	K3G355-RR06-G3			K3G355-RR06-G3			K3G400-RT02-I5			K3G400-RT02-I5		
Ext. Static Pressure (Pa)	201	144	98	209	156	101	175	129	89	167	127	81
Total Static Pressure (Pa)	255	220	199	260	240	220	260	230	200	280	260	240
Fan Speed (RPM)	1346	1368	1467	1299	1314	1368	1291	1312	1314	1283	1291	1328
Power Consumption (W)	199	215	251	168	186	215	335	348	348	324	335	360
W/CMH	0.12	0.10	0.10	0.14	0.11	0.10	0.12	0.11	0.10	0.14	0.12	0.12
Motor Capacity (W)	250						750					
Power Supply	200-277V 1Ø 50/60HZ											
Volt	8.11	8.24	8.84	7.83	7.92	8.24	6.71	6.82	6.83	6.66	6.71	6.90
Running Ampere	0.88	0.95	1.11	0.74	0.82	0.95	1.42	1.48	1.48	1.38	1.42	1.54

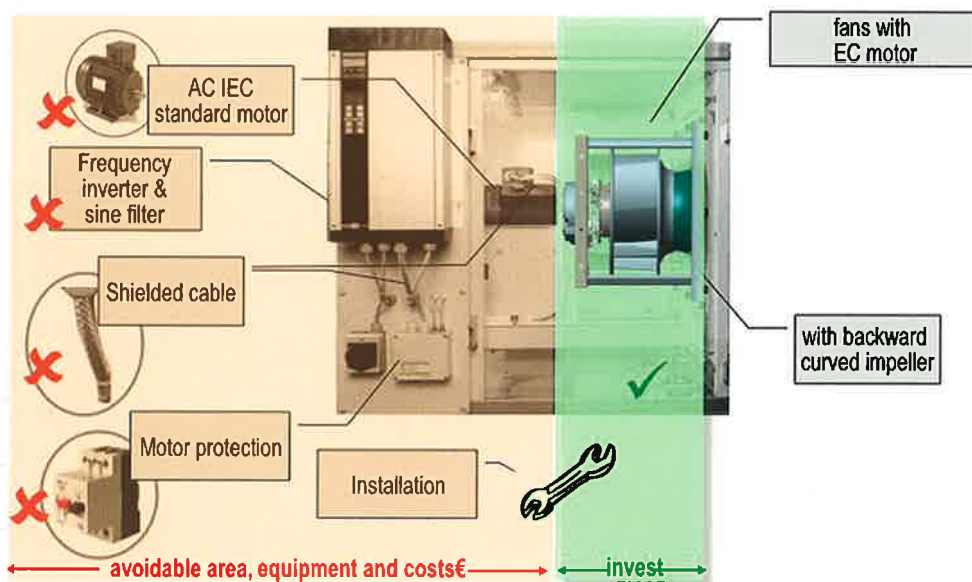
Model	UAHMS200AZY1EC3 (R)			UAHMS200AZY1EC4 (R)			UAHMS200AZY1EC5 (R)			UAHMS250AZY1EC3 (R)		
	UAHMS200AY1EC3 (L)			UAHMS200AY1EC4 (L)			UAHMS200AY1EC5 (L)			UAHMS250AY1EC3 (L)		
Unit Dimension (MM)	730H x 1230W x 1025D						730H x 1620W x 1075D					
Unit Operational Wt. (KG)	113			121			127			166		
Option	Standard			Option 1			Option 2			Standard		
Air Flow Rate (CMH)	4080	4535	4929	3600	4080	4535	3600	4080	4535	5400	6065	6880
Total Capacity (KW)	17.92	19.07	19.99	15.41	16.69	17.82	17.74	19.30	20.69	24.03	25.74	27.66
Sensible Capacity (KW)	13.19	14.21	15.04	11.99	13.17	14.23	13.27	14.64	15.89	17.65	19.15	20.89
Coil Type	3/8"			3/8"			3/8"			3/8"		
Number of Circuits	11			11			13			16		
Coil Size FH x FL (MM)	558.8 x 980			558.8 x 980			558.8 x 980			558.8 x 1370		
Face Area (M ²)	0.55			0.55			0.55			0.77		
No of Fins & Rows	12/03			12/04			12/05			12/03		
Air Pressure Drop (Pa)	79	91	101	105	124	143	131	156	179	74	86	101
Face Velocity (M/S)	2.07	2.30	2.50	1.83	2.07	2.30	1.83	2.07	2.30	1.96	2.20	2.50
Entering Water (°C)	6.7			8			8			6.7		
Leaving Water (°C)	12.2			15			15			12.2		
Water Flow Rate (L/S)	0.78	0.83	0.87	0.53	0.57	0.61	0.75	0.66	0.71	1.04	1.12	1.20
Water Pressure Drop (Kpa)	23.17	25.82	28.06	15.23	17.49	19.60	15.50	17.94	20.23	17.36	19.58	22.22
Piping Connection (MM)	31.75			31.75			31.75			50.80		
Entering Air DB/WB (°C)	24.50/18.50			24.50/18.50			24.50/18.50			24.50/18.50		
Leaving Air DB (°C)	15.12	15.41	15.65	14.84	15.13	15.39	13.80	14.08	14.33	15.02	15.34	15.69
Leaving Air WB (°C)	13.99	14.20	14.37	14.12	14.32	14.50	13.39	13.61	13.80	13.93	14.16	14.41
Coil Material	Cu Tube / Al Fin			Cu Tube / Al Fin			Cu Tube / Al Fin			Cu Tube / Al Fin		
Cooling Medium	Water			Water			Water			Water		
Fan Model	K3G450-RK56-05			K3G450-RK56-05			K3G450-RK-05			K3G500-RL96-07		
Ext. Static Pressure (Pa)	191	149	109	185	146	107	159	114	71	186	144	99
Total Static Pressure (Pa)	270	240	210	290	270	250	290	270	250	280	230	200
Fan Speed (RPM)	1285	1316	1351	1250	1285	1328	1250	1285	1328	1096	1135	1196
Power Consumption (W)	537	553	576	513	537	569	513	537	569	717	755	848
W/CMH	0.13	0.12	0.12	0.14	0.13	0.13	0.14	0.13	0.13	0.13	0.12	0.12
Motor Capacity (W)	950						1320					
Power Supply	380-480V 3Ø 50/60HZ											
Volt	8.29	8.49	8.72	8.06	8.29	8.57	8.06	8.29	8.57	7.33	7.59	8.00
Running Ampere	0.83	0.87	0.91	0.79	0.83	0.89	0.79	0.83	0.89	1.08	1.15	1.30

Model	UAHMS250AZY1EC4 (R)			UAHMS250AZY1EC5 (R)			UAHMS350AZY1EC4 (R)			UAHMS350AZY1EC5 (R)		
	UAHMS250AY1EC4 (L)			UAHMS250AY1EC5 (L)			UAHMS350AY1EC4 (L)			UAHMS350AY1EC5 (L)		
Unit Dimension (MM)	730H x 1620W x 1075D						900H x 1970W x 1205					
Unit Operational Wt. (KG)	174			182			235			247		
Option	Option 1			Option 2			Standard			Option 1		
Air Flow Rate (CMH)	4800	5400	6065	4800	5400	6065	6780	7800	8300	4600	6780	8180
Total Capacity (KW)	21.29	22.98	24.73	24.05	26.07	28.16	33.56	36.72	38.18	25.14	33.23	37.75
Sensible Capacity (KW)	16.34	17.87	19.48	17.89	19.64	21.49	24.69	27.44	28.75	18.21	24.99	28.99
Coil Type	3/8"			3/8"			3/8"			3/8"		
Number of Circuits	14			18			52			32		
Coil Size FH x FL (MM)	558.8 x 1370			558.8 x 1370			660.4 x 1720			660.4 x 1720		
Face Area (M ²)	0.77			0.77			1.14			1.14		
No of Fins & Rows	12/04			12/05			12/04			12/05		
Air Pressure Drop (Pa)	98	116	135	122	144	169	91	111	121	59	114	149
Face Velocity (M/S)	1.74	1.96	2.20	1.74	1.96	2.20	1.66	1.91	2.03	1.12	1.66	2.00
Entering Water (°C)	8			8			6.7			8		
Leaving Water (°C)	15			15			12.2			15		
Water Flow Rate (L/S)	0.83	0.78	0.84	0.73	0.89	0.96	1.46	1.60	1.66	0.86	1.13	1.29
Water Pressure Drop (Kpa)	17.24	19.82	22.51	13.48	15.48	17.69	4.11	4.85	5.21	4.48	7.24	9.03
Piping Connection (MM)	50.80			50.80			50.80			50.80		
Entering Air DB/WB (°C)	24.50/18.50			24.50/18.50			24.50/18.50			24.50/18.50		
Leaving Air DB (°C)	14.62	14.90	15.18	13.68	13.95	14.22	13.94	14.29	14.45	13.01	13.80	14.22
Leaving Air WB (°C)	13.94	14.14	14.34	13.29	13.50	13.71	13.37	13.64	13.76	12.77	13.42	13.74
Coil Material	Cu Tube / Al Fin			Cu Tube / Al Fin			Cu Tube / Al Fin			Cu Tube / Al Fin		
Cooling Medium	Water			Water			Water			Water		
Fan Model	K3G500-RL96-07			K3G500-RL96-07			K3G630-RA21-75			K3G630-RA21-75		
Ext. Static Pressure (Pa)	182	144	105	158	116	71	189	139	99	211	136	81
Total Static Pressure (Pa)	280	260	240	280	260	240	280	250	220	270	250	230
Fan Speed (RPM)	1058	1096	1146	1058	1096	1146	895	904	896	811	861	901
Power Consumption (W)	678	717	776	678	717	776	906	914	877	657	807	894
W/CMH	0.14	0.13	0.13	0.14	0.13	0.13	0.13	0.12	0.11	0.14	0.12	0.11
Motor Capacity (W)	1320						1790					
Power Supply	380-480V 3Ø 50/60HZ											
Volt	7.08	7.33	7.67	7.08	7.33	7.67	7.92	8.00	7.93	7.18	7.62	7.97
Running Ampere	1.02	1.08	1.18	1.02	1.08	1.18	1.41	1.50	1.86	1.00	1.24	1.39

Model	UAHMS350AZY1EC6 (R)			UAHMS500AZY1EC4 (R)			UAHMS500AZY1EC5 (R)			UAHMS500AZY1EC6 (R)		
	UAHMS350AY1EC6 (L)			UAHMS500AY1EC4 (L)			UAHMS500AY1EC5 (L)			UAHMS500AY1EC6 (L)		
Unit Dimension (MM)	900H x 1970W x 1205D											
Unit Operational Wt. (KG)	262			239			254			268		
Option	Option 3			Option 1			Option 2			Option 3		
Air Flow Rate (CMH)	4600	6780	8180	8100	9250	10600	7000	8100	9250	7000	8100	9250
Total Capacity (KW)	27.22	36.36	41.53	45.78	49.96	54.47	34.64	38.30	41.84	37.98	42.17	46.26
Sensible Capacity (KW)	19.24	26.62	31.01	31.77	35.12	38.83	25.98	29.18	32.36	27.69	31.21	34.74
Coil Type	3/8"			3/8"			3/8"			3/8"		
Number of Circuits	39			28			35			42		
Coil Size FH x FL (MM)	660.4 x 1720			711.2 x 1720			711.2 x 1720			711.2 x 1720		
Face Area (M ²)	1.14			1.22			1.22			1.22		
No of Fins & Rows	12/06			12/04			12/05			12/06		
Air Pressure Drop (Pa)	66	125	167	106	127	151	107	132	159	117	147	180
Face Velocity (M/S)	1.12	1.66	2.00	1.84	2.10	2.41	1.59	1.84	2.10	1.59	1.84	2.10
Entering Water (°C)	8			6.7			8			8		
Leaving Water (°C)	15			12.2			15			15		
Water Flow Rate (L/S)	0.93	1.24	1.42	1.99	2.17	2.37	1.18	1.31	1.43	1.30	1.44	1.58
Water Pressure Drop (Kpa)	3.72	6.12	7.71	23.79	27.74	32.31	6.65	7.92	9.23	5.90	7.07	8.31
Piping Connection (MM)	50.80			50.80			50.80			50.80		
Entering Air DB/WB (°C)	24.50/18.50			24.50/18.50			24.50/18.50			24.50/18.50		
Leaving Air DB (°C)	12.37	13.11	13.50	13.12	13.49	13.87	13.73	14.05	14.35	13.02	13.32	13.61
Leaving Air WB (°C)	12.24	12.98	13.22	12.56	12.85	13.15	13.37	13.62	13.84	12.82	13.07	13.31
Coil Material	Cu Tube / Al Fin			Cu Tube / Al Fin			Cu Tube / Al Fin			Cu Tube / Al Fin		
Cooling Medium	Water			Water			Water			Water		
Fan Model	K3G630-RA21-75			K3G630-RA21-75			K3G630-RA21-75			K3G630-RA21-75		
Ext. Static Pressure (Pa)	224	145	83	184	133	79	218	173	126	208	158	105
Total Static Pressure (Pa)	290	270	250	290	260	230	325	305	285	325	305	285
Fan Speed (RPM)	837	883	922	960	986	1036	953	976	1010	953	976	1010
Power Consumption (W)	710	873	961	1090	1150	1290	1080	1150	1240	1080	1150	1240
W/CMH	0.15	0.13	0.12	0.13	0.12	0.12	0.15	0.14	0.13	0.15	0.14	0.13
Motor Capacity (W)	1790											
Power Supply	380-480V 3Ø 50/60HZ											
Volt	7.41	7.81	8.16	8.50	8.73	9.17	8.43	8.64	8.94	8.43	8.64	8.94
Running Ampere	1.09	1.35	1.50	1.71	1.81	2.04	1.69	1.80	1.96	1.69	1.80	1.96

Features

Electronically Commutated Motor with Integrated Electronics



- Energy saving
- Excellent noise behaviour
- Compact design
- Commutation electronics is integrated into the motor including EMC and mains supply filter for ease of installation
- PFC (power-factor correction)
- Integrated motor protection
 - no additional wiring,
 - no additional components necessary
- Integrated electronics provides speed control
- Motor and electronics are perfectly matched
- Maintenance free operation with long life time

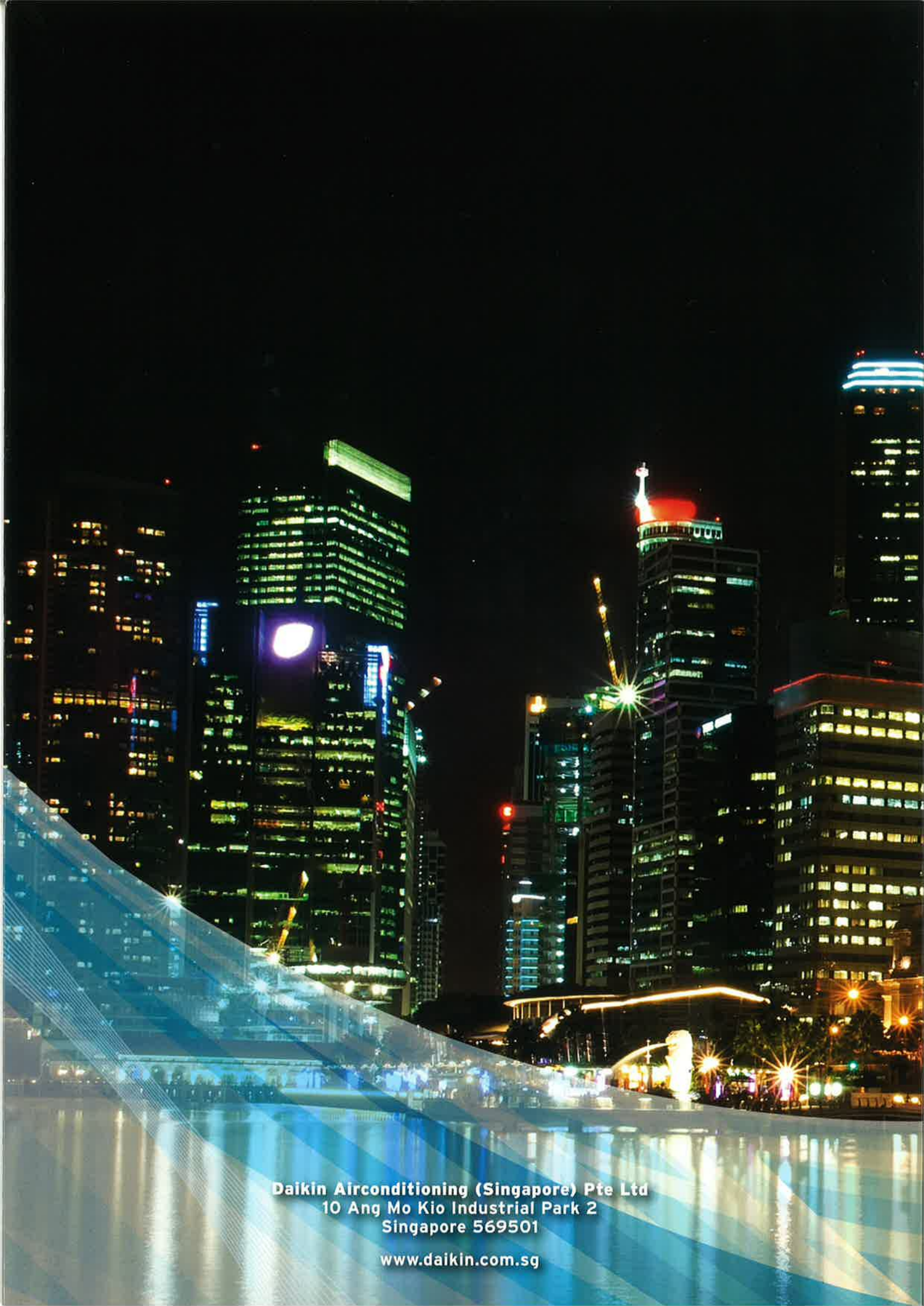
Integrated Protective Functions

- Alarm relay for error indication
- Locked rotor protection
- Phase loss protection
- Soft-start (no inrush current)
- Line under-voltage
- Over-temperature of electronics / motor

Electronically Commutated Motor with Integrated Electronics



- Wide voltage range 1~200..277VAC or 3~380..480VAC
- 50Hz or 60Hz worldwide operation
- Always operates in the correct direction
- Use of integrated Power-Modules
- Higher reliability due to less components
- Minimal power loss and heat generation
- Stand-by < 3W
- Standard analogue and / or digital interface for programming networking several motors
- Option: integrated control functions providing f.e. constant-flow or constant pressure control



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