EN

Movement by Perfection

The Royal League in **ventilation**, control and drive technology

ZIEHL-ABEGG

Other catalogues

In the ZIEHL-ABEGG catalogues, the reader can find out all about ZIEHL-ABEGG fans, motors and the perfectly adapted control technology. All the catalogues are available on www.ziehl-abegg.de website in the “Download” section.

Contents

Welcome to the world of ZIEHL-ABEGG

Top technology “Made by ZIEHL-ABEGG”

A pioneering spirit and the courage of innovation were the driving forces behind Emil Ziehl’s development of his first external rotor motor over a hundred years ago. With this he laid the corner stone for the success story of ZIEHL-ABEGG in 1910. Today, the family company ZIEHL-ABEGG, with its headquarters in Künzelsau, develops, produces and sells high quality, high-tech components: Fans, special electric motors and their perfectly adapted, state-of-the-art control technology. Still today, Emil Ziehl’s pioneering spirit is the motivator for making good even better and finding new, revolutionary solutions. ZIEHL-ABEGG is based in Southern Germany but is at home all over the world. At the world-wide production and sales sites, thousands of employees develop, produce and sell technical, economical and ecological progress.

Welcome to the world of ventilation, control and drive technology.

Your contact into the world of ZIEHL-ABEGG

Would you like to learn more about the company ZIEHL-ABEGG, its products and applications? Your current direct contact partners can always be found at www.ziehl-abegg.com

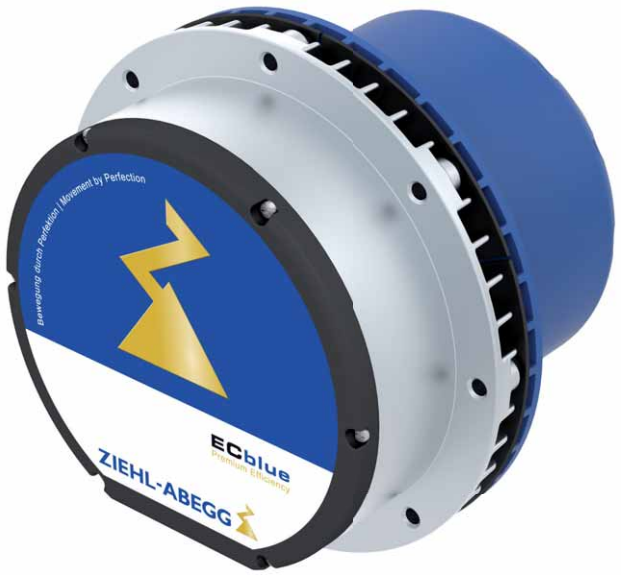
ECblue - latest-generation EC motors

Environmentally friendly, energy-saving and highly efficient

The Royal League of EC motors enters a new era. ECblue is the third generation of ZIEHL-ABEGG EC motors. It sets the standard for operation, efficiency and reliability. Since the mid-1980s, ZIEHL-ABEGG has led the way in the development and production of efficient EC external rotor motors for fans. The first serial products were delivered in 1991.

The control electronics and the optimized design of ECblue motors facilitate maximum efficiency. Reduced motor losses cut operating costs and protect the environment. Commissioning of an ECblue motor is easy and fast. In the case of ECblue motors with the AM-MODBUS (-W) add-on module, commissioning can be done wirelessly. In addition to the highly efficient control system, the integrated electronics also offers a series of protection and monitoring functions such as automatic derating in the event of overtemperature or an error status LED. The simple and flexible control interface via analog signals or fieldbus as well as the intuitive handling make commissioning easy and enhance the reliability of the operation.

ECblue motor technology



ECblue – highest efficiency

The innovative range of ECblue motors

Save energy time and effort. Benefit from both the cost-effectiveness of our high-efficiency motors and the depth of our product range. We are your one-stop shop, with a unique variety of motors and fans, control technology and Add-On modules for upgrading to the functionality you want. This slims down your entire workflow and makes it more profitable, from the time saving of standardised technology to the speed of logistical processing and the comfort of comprehensive advice and support.

Minimum operating costs, maximum success

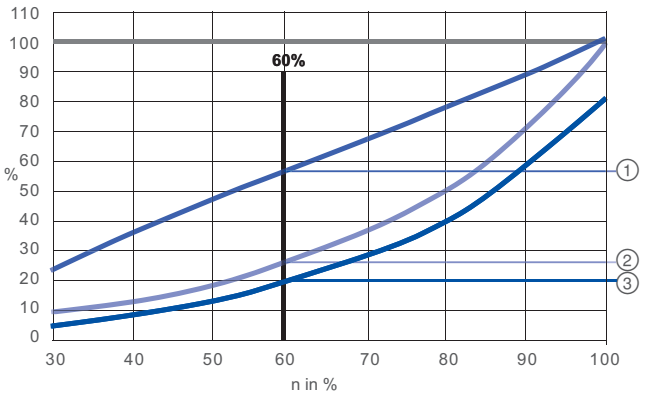
With ECblue motors from ZIEHL-ABEGG, you can reduce your energy consumption to a minimum. At the same time, you ensure that your systems meet market and customer needs for environmentally friendly technology. Naturally, ECblue motors fulfil all relevant EU energy efficiency directives. The efficiency level of ECblue motors lies above the minimum efficiency level required by the IE4 class (Super Premium Efficiency).

Outstanding efficiency, even in partial load range

The benefits of EC technology can be seen by comparing EC and AC external-rotor motors.

ECblue motors (without electronic) achieve an efficiency level of up to 93%,
3~ AC external rotor motors up to 82% and 1~ AC external rotor motors up to 77%.

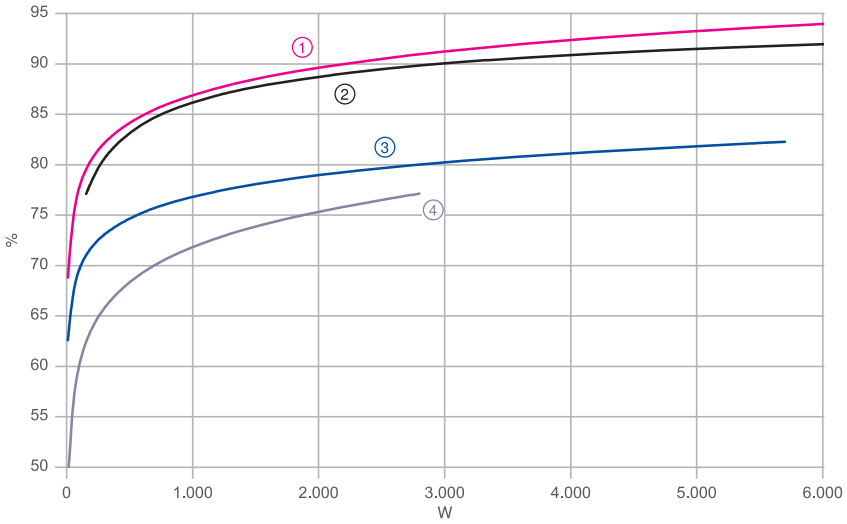
Power Consumption for speed control



100% = 1000 W

① AC motor - voltage controlled
~ 55% = 550 W
② AC motor - controlled
~ 25% = 250 W
③ ECblue motor
~ 20% = 200 W

Comparison motor efficiency level



① ECblue motors (without electronics)

② IE4 requirements

③ 3~ AC motors

④ 1~ AC motors

Technical description

Solutions for the future from ZIEHL-ABEGG

Since the middle of the 80´s, ZIEHL-ABEGG has been performing pioneering work in the development and production of efficient EC external rotor motors for fans.
Nearly 25 years later, a new era in EC technology begins: ECblue. ECblue is ZIEHL-ABEGG´s third generation of EC motors. This latest EC technology sets new standards for control, efficiency and reliability.

These EC motors are external rotor DC motors that are fitted with permanent magnets. When the motor turns, the electronics determine the position of the rotor, which is then used to actuate the motor windings. This form of actuation is known as commutation. The inherent advantage of the compact external rotor motor is combined with the gain in efficiency resulting from the DC motor. This in turn ensures that only the exact amount of energy required to induce rotary motion is actually supplied, resulting in a highly efficient form of operation. The motor itself is not operated directly from the mains, but rather has electronics connected upstream. The electronics supply variable voltage in the right frequency and voltage level for the respective operating point. EC motors have these electronics integrated directly in the motor. In addition, the electronics monitors the motor providing interfaces for easy drive control.

A motor for all applications, anywhere in the world

Power electronics with wide voltage range :
1~ 100...130V, 50/60Hz
1~ 200...277V, 50/60Hz
3~ 200...240V, 50/60Hz
3~ 380...480V, 50/60Hz
3~ 200...480V, 50/60Hz on request

c UL LISTED

Everything under control: status LED

Service-friendly status display 24 hours a day, 7 days a week
An integrated LED constantly displays the operating state of the fans, meaning you have everything under control.
This removes the need to spend time connecting a control unit to check the current state of the EC fans. The current operating state of the ECblue fans is indicated by different flashing codes..

ECblue inside: The facts

Integrated power electronics
For efficient motor speed control

Integrated motor protections
Protects the motor and power electronics

Continuous speed control
Via 0-10V, PMW signal or MODBUS

Outstanding efficiency
Even in partial load range

Active temperature management
Extremely reliable, even under the toughest operating conditions

Power factor correction
Power factor of virtually 1 across a wide operating range

Wireless communication with EC116 and EC152 (optional)
Easy to configure and read out data

Top EMC standard
Integrated filters enable compliance with: Interference emission ac-cording to EN 61000-6-3
(household applications)
Interference immunity according to EN 61000-6-2 (industry)

ECblue: simple & functional
Even the Basic configuration provides the functionality required to cover around 90% of all applications.

CE marking:
In accordance with Low Voltage Directive 2006/95/EC, EMC direc-tive 2004/108/EC

Standards and regulations complied with:
Rotating elestrical machinery IEC 60034-1

Standard ambient temperature:
-35°C to +60°C

Operating mode

Continuous operation with occasional starts (S1) according to DIN EN 60034-1:2011-02. If the defined temperature $t_{(R(min))}$ of the product is less than -25 °C an occasional starting between -25 °C and the defined minimum temperature is permissible. Continuous operation below -25 °C only with special bearings for refrigeration applications on request.

Permissible minimum and maximum ambient temperature for operation

Please refer to the technical documentation of the product for the minimum and maximum ambient temperature valid for the respective fan. Operation below -25 °C as well as partial load operation for refrigeration applications is only possible with special bearings for refrigeration applications on request. If special bearings for refrigeration applications are installed in the fan, please observe the permissible maximum temperatures in the technical documentation of the product.

Ball-bearing service life

The according to standard calculation methods determined bearing service life expectation of the motor integrated ball bearings is mainly determined by the grease service life F10h and amounts for standard application to approx. 30.000 – 40.000 operating hours. The fan is maintenance-free due to the use of ball bearings with „lifetime lubrication“. Once the grease operating life F10h has been reached, it may be necessary to replace the bearing. The bearing service life expectation may change compared to the specified value, if operating conditions such as increased vibrations or shocks, increased or too low temperatures, humidity, dirt in the ball bearing or unfavourable control modes are present. A service life calculation for special applications can be provided on request.

Technical description

ECblue high-efficiency motors

EC055

Voltage supply
1~ 200...240 V 50/60 Hz
1~ 100...130 V 50/60 Hz
Other supply voltages on request

Power up to 170 W

Protection class IP54
Continuous speed control via 0-10V, PWM signal

Applications
Ventilation, heat pumps, electronics cooling, cooling devices, refrigeration, drive technology

EC090

Voltage supply
1~ 200...277 V 50/60 Hz
1~ 100...130 V 50/60 Hz
Other supply voltages on request

Power up to 800 W

Protection class IP54, IP20 for clean room, IP55 on request
Continuous speed control via 0-10V, PWM signal or MODBUS

MODBUS as standard
Active PFC as standard

Applications
Ventilation, air-conditioning, heat pumps, electronics cooling, cooling devices, cleanroom, refrigeration, drive technology

EC116

Voltage supply
1~ 200...277 V 50/60 Hz
3~ 200...240 V 50/60 Hz
3~ 380...480 V 50/60 Hz
Other supply voltages on request

Power up to 4000 W

Protection class IP54, IP20 for clean room, IP55 on request
Continuous speed control via 0-10V, PWM signal or MODBUS (Add-On)

Basic electronics plus Add-On modules for individual customisation
Encapsulated electronics for maximum reliability

Applications
Ventilation, air-conditioning, heat pumps, electronics cooling, cooling devices, cleanroom, refrigeration, agriculture, drive technology

EC152

Voltage supply
3~ 200...240 V 50/60 Hz
3~ 380...480 V 50/60 Hz
Other supply voltages on request

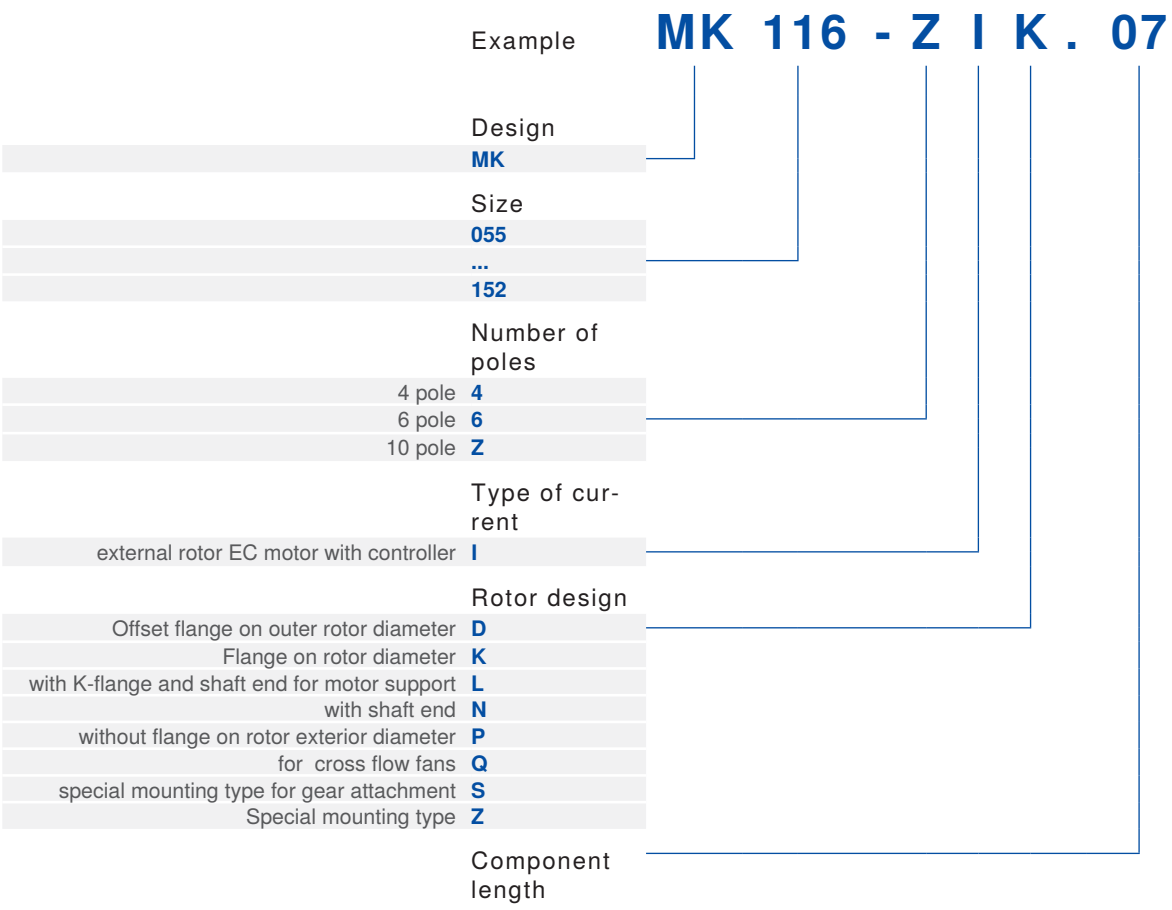
Power up to 6000 W

Protection class IP54, IP55 on request
Continuous speed control via 0-10V, PWM signal or MODBUS (Add-On)

Basic electronics plus Add-On modules for individual customisation
Encapsulated electronics for maximum reliability

Applications
Ventilation, air-conditioning, heat pumps, refrigeration, agriculture, drive technology

Type key ECblue



Required order data
Please specify the following when ordering: Type and article no

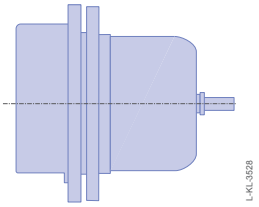
Example
Type: MK116-ZIK.07,
Article no.: 123456

Shaft variants

Shaft dimension and permissible load

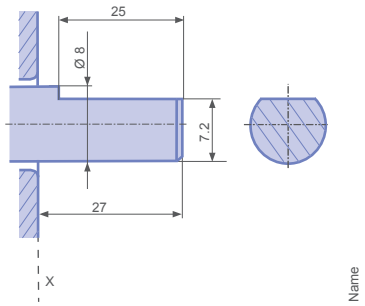
The article numbers in this catalogue always have the “standard” shaft dimension for the shaft constructed. Further shaft dimensions can be obtained upon request.
The load limit must be complied with in order to ensure the service life (L10h = 40,000h).

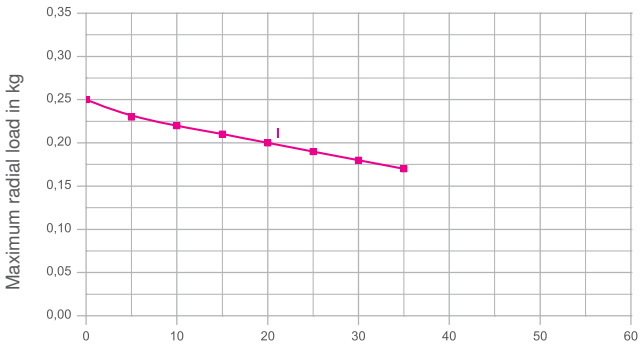
Side view of the motor



The shaft is on the rotor side.

EC055

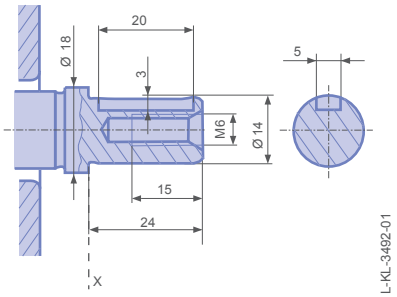


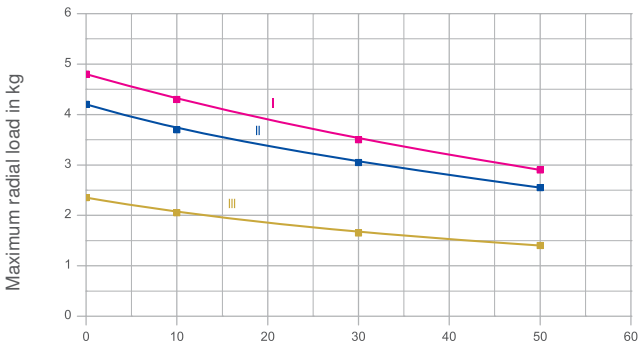


Loading point from X marking towards the shaft end in mm

Permissible load EC055	
Distance of loading point from X marking	
mm	kg
0	0.33
5	0.31
10	0.30
15	0.28
20	0.27
25	0.26
30	0.24
35	0.23

EC090

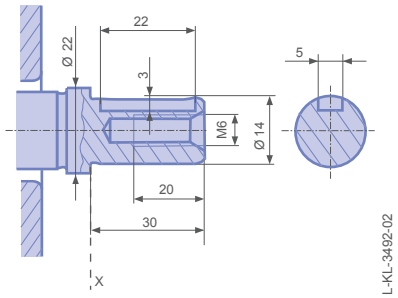


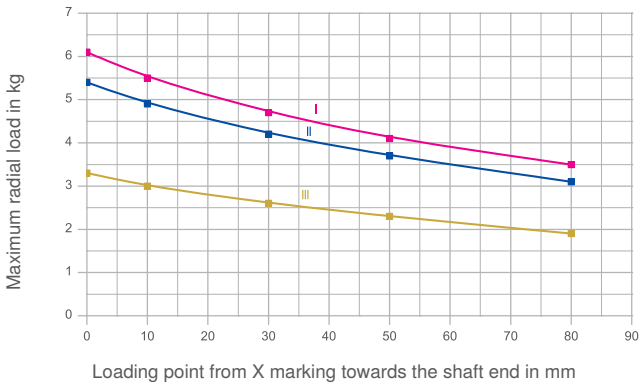


Loading point from X marking towards the shaft end in mm

Permissible load EC090			
Distance of loading point from X marking	Speed		
	min^{-1}	min^{-1}	min^{-1}
	1000 (I)	1500 (II)	3000 (III)
mm	kg	kg	kg
0	4.80	4.20	2.35
10	4.30	3.70	2.05
30	3.50	3.05	1.65
50	2.90	2.55	1.40

EC116

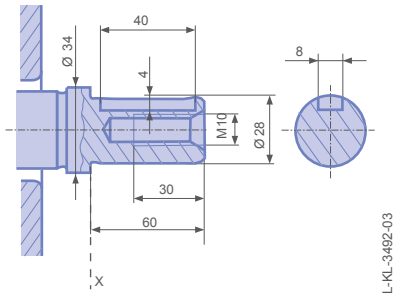


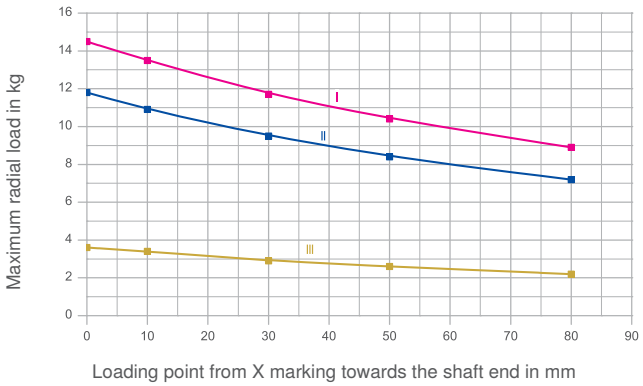


Permissible load EC116

Distance of loading point from X marking	Speed		
	min^{-1}	min^{-1}	min^{-1}
	1000 (I)	1500 (II)	3000 (III)
mm	kg	kg	kg
0	6.1	5.4	3.3
10	5.5	4.9	3.0
30	4.7	4.2	2.6
50	4.1	3.7	2.3
80	3.5	3.1	1.9

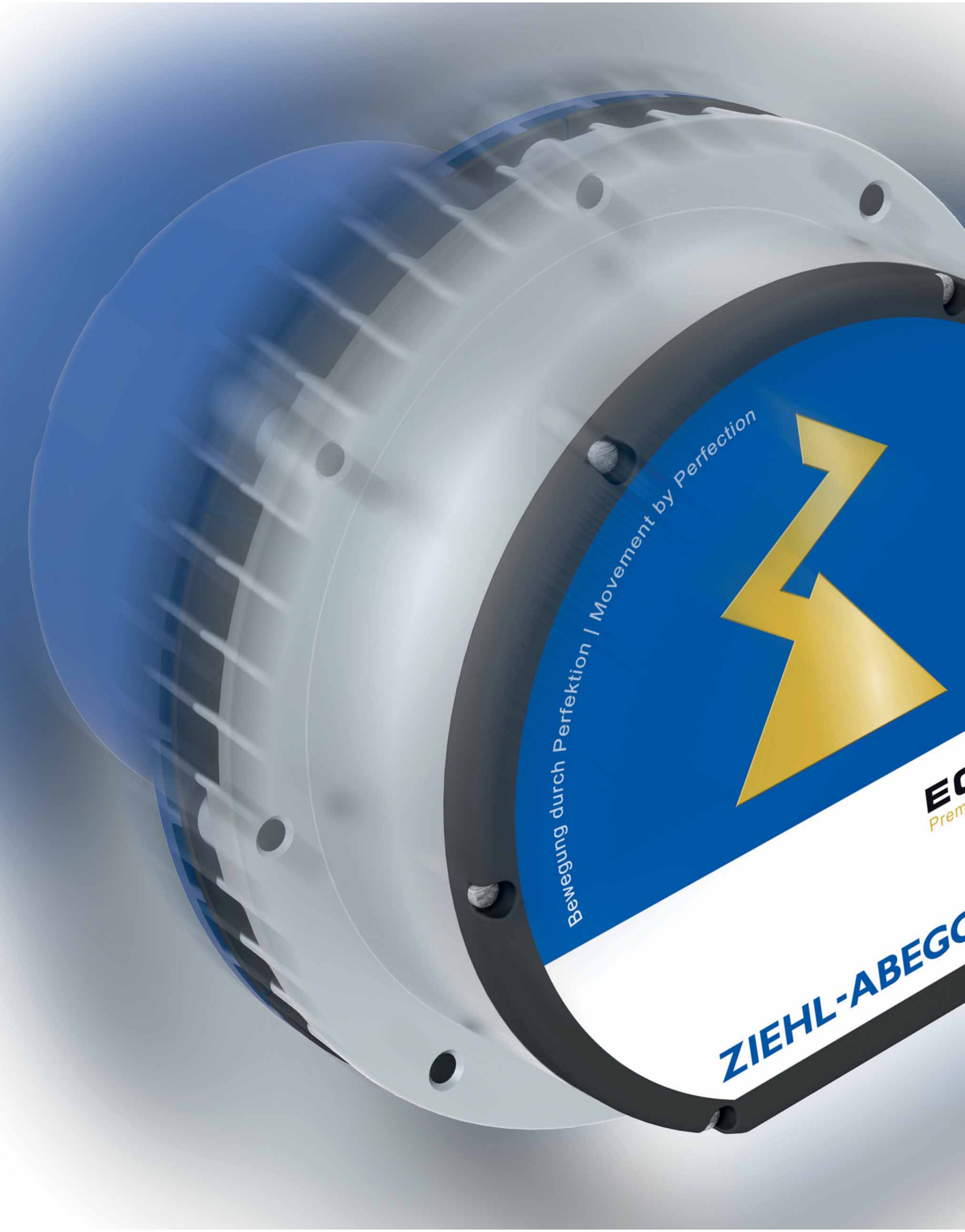
EC152





Permissible load EC152

Distance of loading point from X marking	Speed		
	min^{-1}	min^{-1}	min^{-1}
	1000 (I)	1500 (II)	3000 (III)
mm	kg	kg	kg
0	14.5	11.8	3.6
10	13.5	10.9	3.4
30	11.7	9.5	2.9
50	10.4	8.4	2.6
80	8.9	7.2	2.2



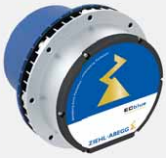
ECblue motors

Overview

Motors overview

		EC055		EC090		EC090 High Power		EC116	
		Z8	ZC	BA	BD	BA	BD	DC	DG
									
Component length mm		20	35	25	40	25	40	36	54
Max. input power without impeller kW		0,17	0,17	0,5	0,5	0,8	0,8	1~ 1,3 3~ 2,5	
Max. torque without impeller Ncm		30	50	200	240	213	255	1~560 3~640	1~ 650 3~ 820
1~ 200-240V 50/60 Hz		√		-		-		-	
1~ 200-277V 50/60Hz		-		√		√		√	
1~ 100-130V 50/60Hz		√		√		-		-	
3~ 380-480V 50/60Hz		-		-		-		√	
3~ 200-240V 50/60Hz		-		-		-		√	
Degree of protection		IP54		IP20, IP54, IP55		IP54, IP55		IP20, IP54, IP55	
Electronic encapsulated		-		-		-		√	
stator encapsulated		√		on request		on request		on request	
MODBUS	integrated	-		√		√		-	
	Add-on modules	-		-		-		√	
	Auto addressing	-		only IP20 model		-		with Add-on module	
UL		√		√		√		√	
DIN EN60335 (VDE60335)		in progress		√		-		-	
CCC		√		only IP20 model		-		-	
Motor cable		√		on request		on request		on request	

Other supply voltages on request

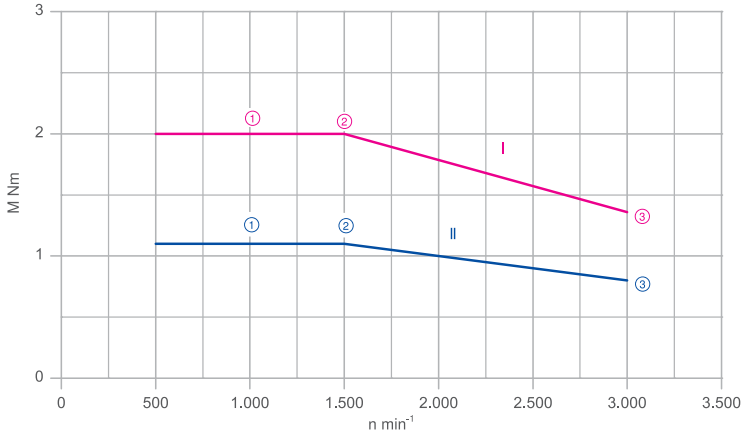
EC116 High Power		EC152		EC152 High Power			
DC	DG	GG	GL	GG	GL	GQ	
							
36	54	56	85	56	85	120	Component length mm
4	4	3,4	3,4	4,6	5,1	6	Max. input power without impeller kW
700	900	1900	2200	1700	2250	2600	Max. torque without impeller Ncm
-		-		-			1~ 200-240V 50/60 Hz
-		-		-			1~ 200-277V 50/60Hz
-		-		-			1~ 100-130V 50/60Hz
√		√		√			3~ 380-480V 50/60Hz
√		√		√			3~ 200-240V 50/60Hz
IP54, IP55		IP54, IP55		IP54, IP55			Degree of protection
√		√		√			Electronic encapsulated
on request		on request		on request			stator encapsulated
-		-		-			integrated MODBUS
√		√		√			Add-on modules
with Add-on module		with Add-on module		with Add-on module			Auto addressing
√		√		√			UL
-		-		-			DIN EN60335 (VDE60335)
-		-		-			CCC
on request		on request		on request			Motor cable

ECblue

for single phase alternating current, 200-277 V

ECO90

Characteristic curve

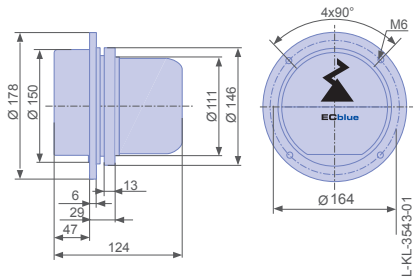


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **1~200-277 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: UL on demand
Conformity: CE
*Rated data

Dimensions mm



Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK090-6IK.05	I	①	172670	2.0	1000	209	273	1.37	0.00326	40	3.6
		②	172671	2.0	1500	314	382	1.92			
		③	172672	1.4	3000	427	500	2.51			
	II	①	172670	1.1	1000	115	144	0.73		60	
		②	172671	1.1	1500	173	203	1.02			
		③	172672	0.8	3000	251	299	1.50			

* at 1~200 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 85.9%

System components

Add-on modules

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Operating terminal

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ZAset

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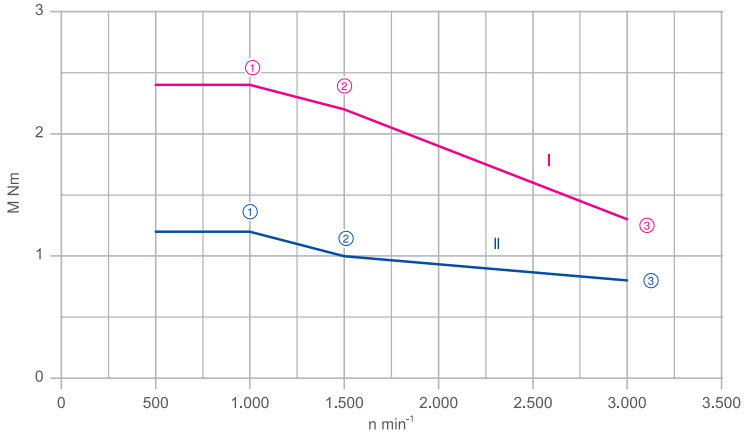
ECblue

for single phase alternating current, 200-277 V

ECO90

Characteristic curve

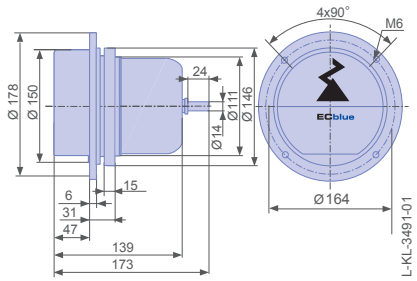


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **1~200-277 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: UL on demand
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK090-6IN.08	I	①	174792	2.4	1000	251	319	1.61	0.00394	40	4.2
		②	174793	2.2	1500	345	419	2.10			
		③	174794	1.3	3000	408	472	2.36			
	II	①	174792	1.2	1000	126	155	0.79		60	
		②	174793	1.0	1500	157	195	0.98			
		③	174794	0.8	3000	251	299	1.49			

* at 1~200 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 87.0%

System components

Add-on modules

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Operating terminal

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ZAset

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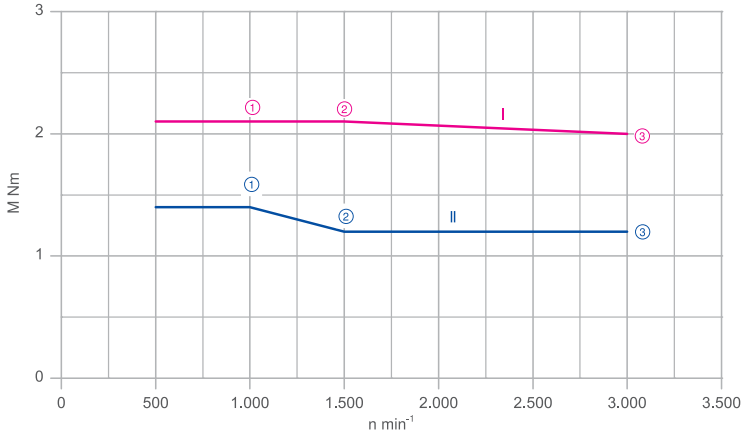
ECblue

for single phase alternating current, 200-277 V

ECO90 High Power

Characteristic curve

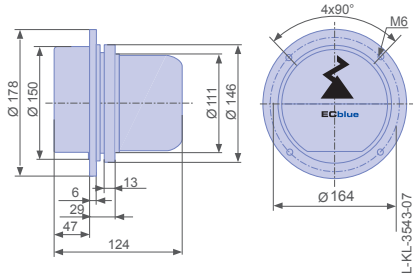


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **1~200-277 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: UL on demand
Conformity: CE
*Rated data

Dimensions mm



Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK090-6IK.05	I	①	173253	2.1	1000	220	300	1.53	0.00326	40	3.6
		②	173254	2.1	1500	330	408	2.07			
		③	173255	2.0	3000	629	716	3.62			
	II	①	173253	1.4	1000	147	194	1.00		60	
		②	173254	1.2	1500	189	225	1.16			
		③	173255	1.2	3000	377	435	2.21			

* at 1~200 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 87.8%

System components

Add-on modules

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Operating terminal

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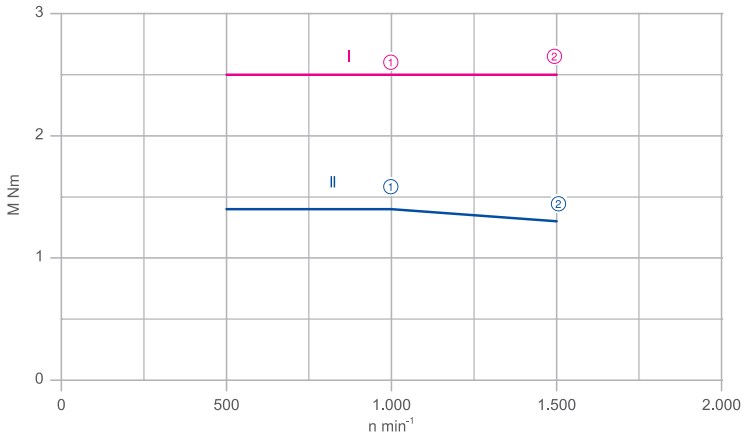
ECblue

for single phase alternating current, 200-277 V

ECO90 High Power

Characteristic curve

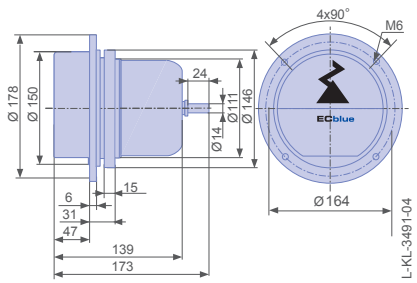


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **1~200-277 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: UL on demand
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK090-6IN.08	I	①	174801	2.5	1000	262	352	1.78	0.00394	40	4.2
		②	174802	2.5	1500	393	478	2.41			
	II	①	174801	1.4	1000	147	190	0.98		60	
		②	174802	1.3	1500	204	252	1.29			

* at 1~200 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 86.2%

System components

Add-on modules

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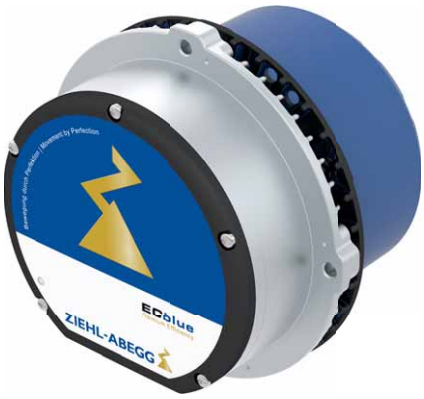
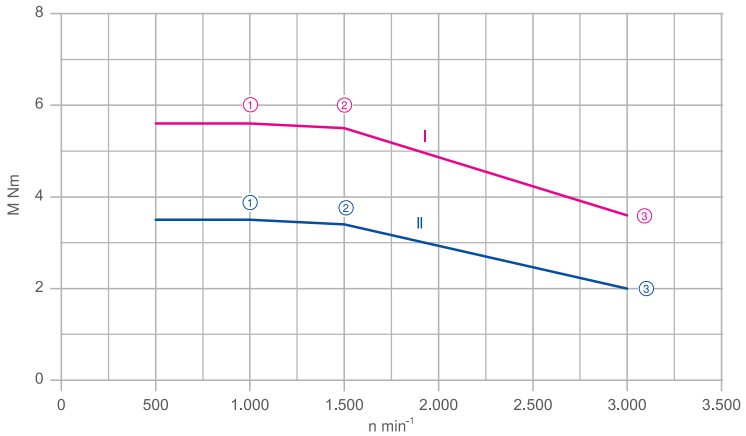
ECblue

for single phase alternating current, 200-277 V

EC116



Characteristic curve

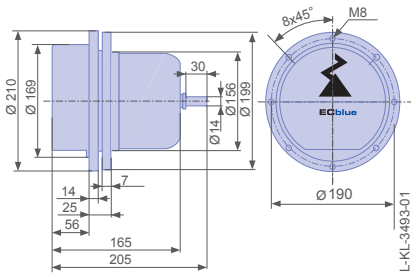


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **1~200-277 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK116-ZIN.07	I	①	174753	5.6	1000	586	729	3.82	0.01332	40	7.1
		②	174754	5.5	1500	863	1041	5.23			
		③	174755	3.6	3000	1133	1345	6.89			
	II	①	174753	3.5	1000	367	448	2.46		60	
		②	174754	3.4	1500	534	639	3.22			
		③	174755	2.0	3000	630	784	4.25			

* at 1~200 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 84.1%

System components

Add-on modules

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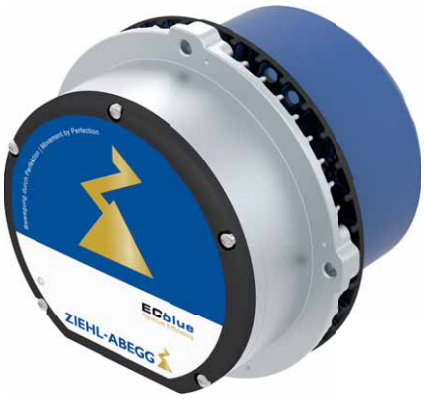
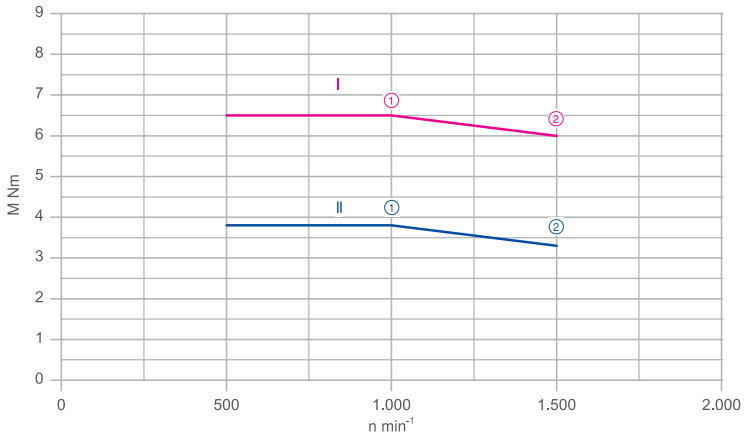
ECblue

for single phase alternating current, 200-277 V

EC116



Characteristic curve

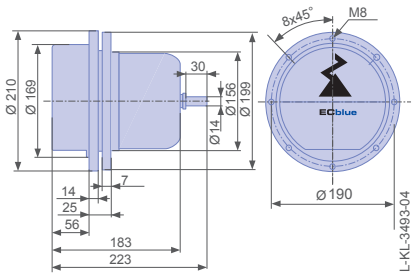


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **1~200-277 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Character-istic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor in-put power P_1 W	Input cur-rent* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient tempera-ture t_R °C	Weight m kg
MK116-ZIN.11	I	①	174756	6.5	1000	682	830	4.16	0.01641	40	8.8
		②	174757	6.0	1500	944	1113	5.63			
	II	①	174756	3.8	1000	398	481	2.43		60	
		②	174757	3.3	1500	518	619	3.35			

* at 1~200 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 84.7%

System components

Add-on modules

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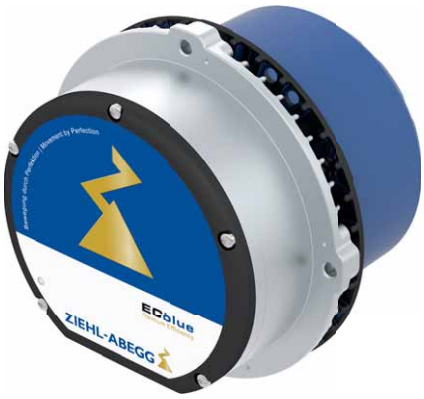
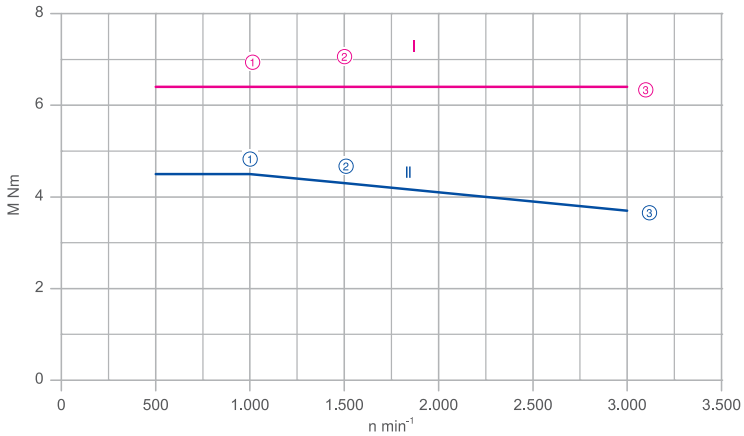
ECblue

for three phase alternating current, 380-480 V

EC116



Characteristic curve

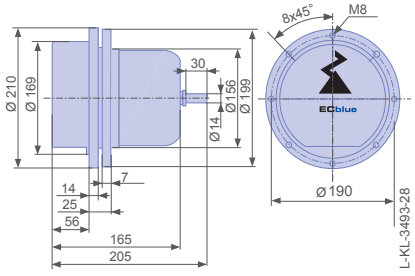


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **3~380-480 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK116-ZIN.07	I	①	174759	6.4	1000	670	804	1.82	0.01332	40	7.1
		②	174760	6.4	1500	1005	1161	2.57			
		③	174761	6.4	3000	2011	2284	3.67			
	II	①	174759	4.5	1000	471	556	1.28		60	
		②	174760	4.3	1500	675	773	1.74			
		③	174761	3.7	3000	1162	1335	2.20			

* at 3~ 380 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 88,0 %

System components

Add-on modules

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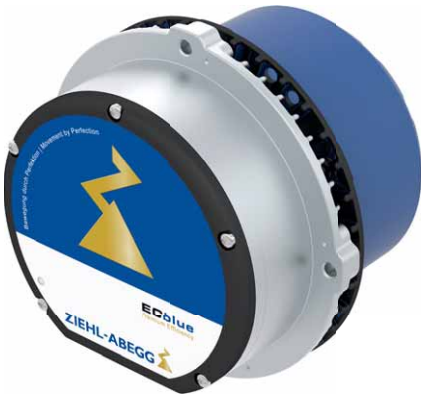
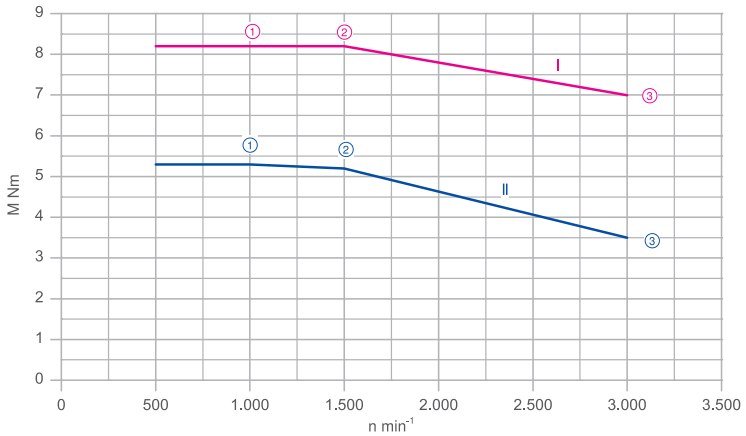
for three phase alternating current, 380-480 V

EC116



Characteristic curve

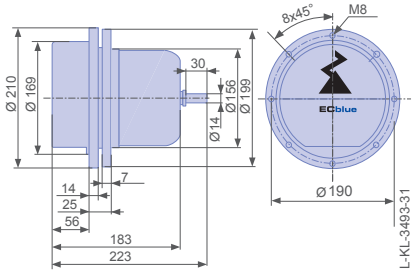


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **3~380-480 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK116-ZIN.11	I	①	174762	8.2	1000	859	1000	1.69	0.01641	40	8.8
		②	174763	8.2	1500	1288	1475	2.40			
		③	174764	7.0	3000	2198	2509	3.28			
	II	①	174762	5.3	1000	555	645	1.16		60	
		②	174763	5.2	1500	817	934	1.59			
		③	174764	3.5	3000	1098	1312	1.84			

* at 3~ 380 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 87.9%

System components

Add-on modules

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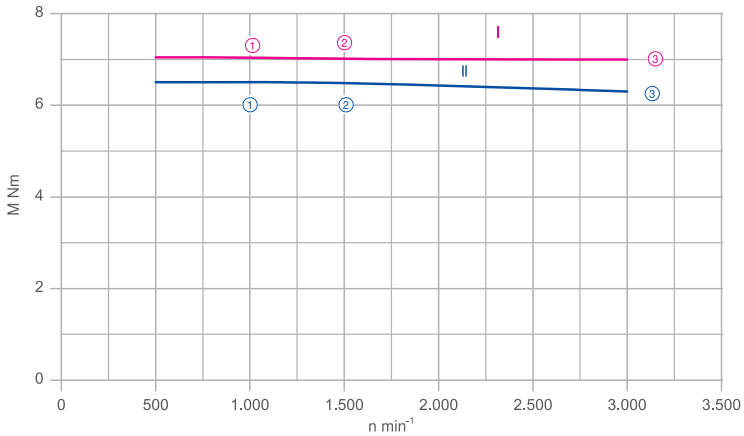
for three phase alternating current, 380-480 V

EC116 High Power

Characteristic curve

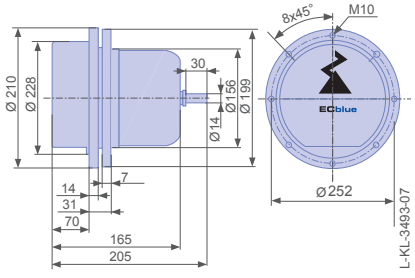


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **3~380-480 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK116-ZIN.07	I	①	174765	7.0	1000	738	880	1.49	0.01332	40	8.9
		②	174766	7.0	1500	1100	1287	2.10			
		③	174767	7.0	3000	2198	2503	4.02			
	II	①	174765	6.5	1000	681	810	1.38		60	
		②	174766	6.5	1500	1022	1188	1.96			
		③	174767	6.3	3000	1979	2248	3.62			

* at 3~ 380 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 88.4%

System components

Add-on modules

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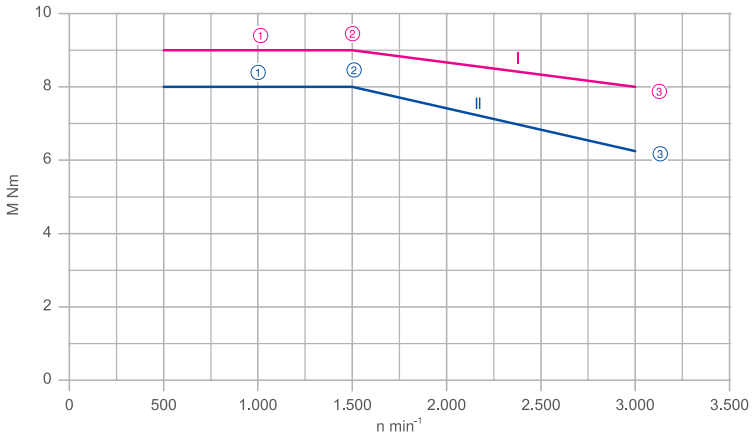
ECblue

for three phase alternating current, 380-480 V

EC116 High Power

Characteristic curve

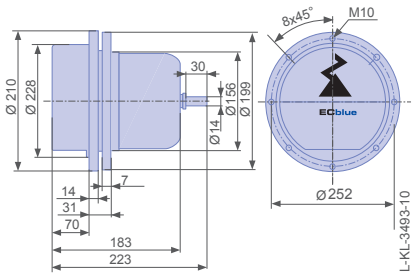


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **3~380-480 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK116-ZIN.11	I	①	174768	9.0	1000	942	1105	1.88	0.01641	40	10.6
		②	174769	9.0	1500	1413	1617	2.66			
		③	174770	8.0	3000	2513	2837	4.54			
	II	①	174768	8.0	1000	838	974	1.69		60	
		②	174769	8.1	1500	1257	1429	2.37			
		③	174770	6.3	3000	1963	2222	3.57			

* at 3~ 380 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 88.7%

System components

Add-on modules

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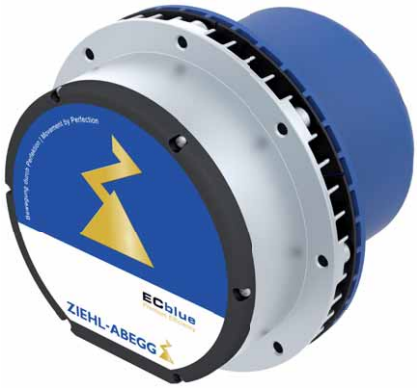
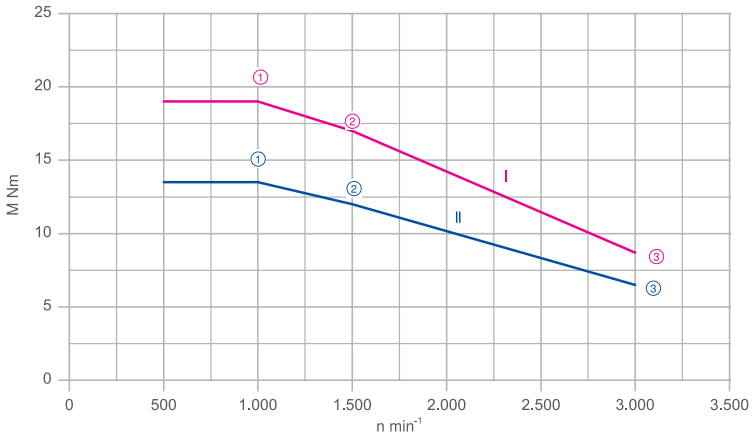
ECblue

for three phase alternating current, 380-480 V

EC152



Characteristic curve

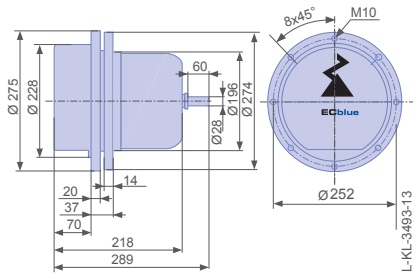


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **3~380-480 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK152-ZIN.11	I	①	174771	19.0	1000	1990	2315	3.77	0.04762	40	15.8
		②	174772	17.0	1500	2670	3012	4.89			
		③	174773	9.0	3000	2827	3324	5.47			
	II	①	174771	13.5	1000	1414	1629	2.71		60	
		②	174772	12.0	1500	1885	2111	3.46			
		③	174773	6.5	3000	2042	2531	4.16			

* at 3~ 380 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 89.7 %

System components

Add-on modules

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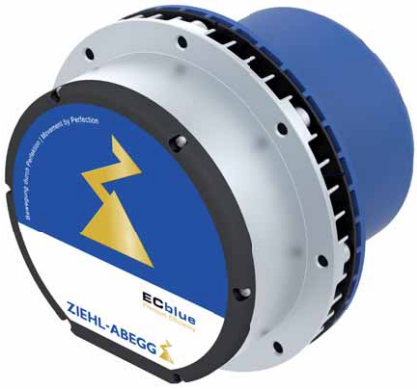
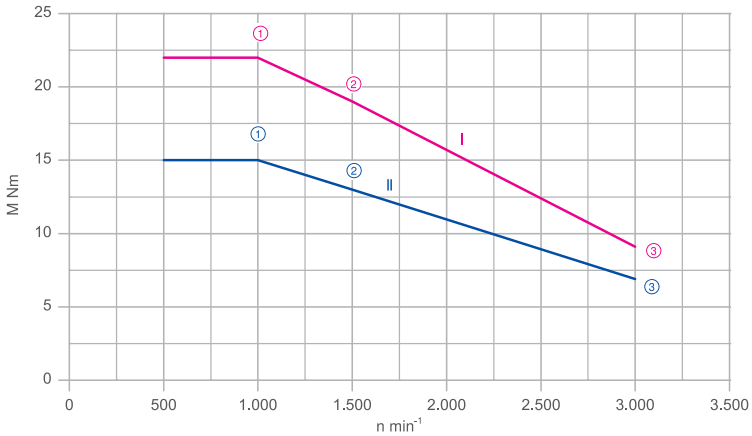
ECblue

for three phase alternating current, 380-480 V

EC152



Characteristic curve

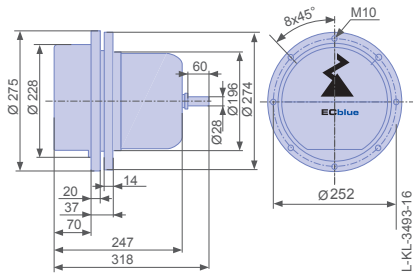


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **3~380-480 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK152-ZIN.17	I	①	174774	22.0	1000	2304	2588	4.17	0.06007	40	20.2
		②	174775	19.0	1500	2985	3357	5.37			
		③	174776	8.9	3000	2796	3436	3.70			
	II	①	174774	15.0	1000	1571	1759	2.87		60	
		②	174775	13.0	1500	2042	2300	3.70			
		③	174776	6.9	3000	2168	2759	4.45			

* at 3~ 380 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 89.1%

System components

Add-on modules

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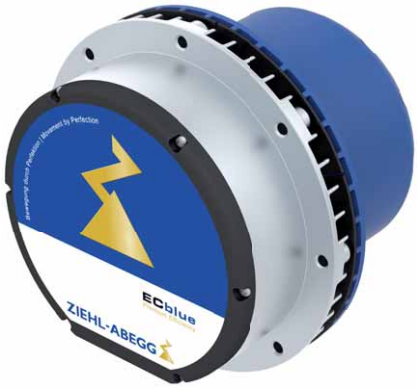
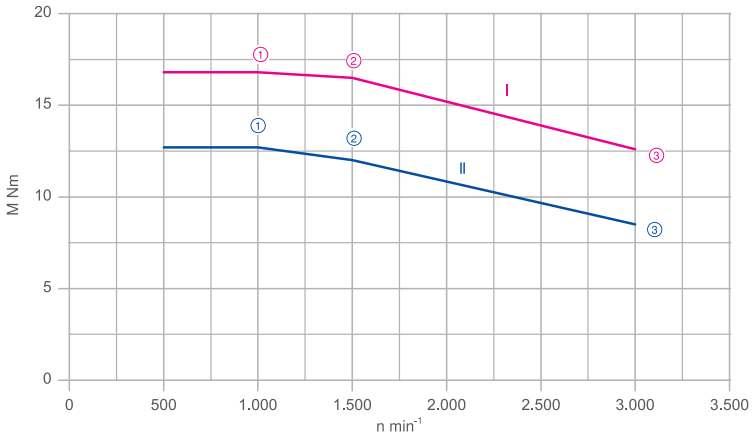
ECblue

for three phase alternating current, 380-480 V

EC152 High Power



Characteristic curve

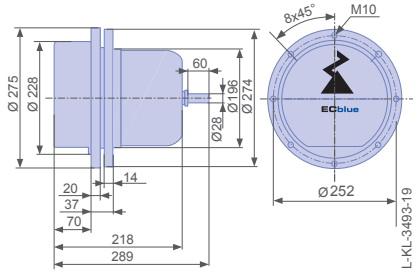


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **3~380-480 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK152-ZIN.11	I	①	174777	16.8	1000	1759	2030	3.34	0.04762	40	15.8
		②	174778	16.5	1500	2592	2984	4.88			
		③	174779	12.5	3000	3927	4527	7.24			
	II	①	174777	12.7	1000	1330	1550	2.60		60	
		②	174778	12.0	1500	1885	2160	3.58			
		③	174779	8.5	3000	2670	3132	5.04			

* at 3~ 380 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 87.3%

System components

Add-on modules

Page 53

Operating terminal

Page 64

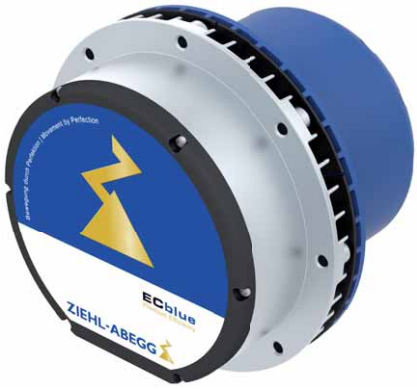
ZAset

Page 66

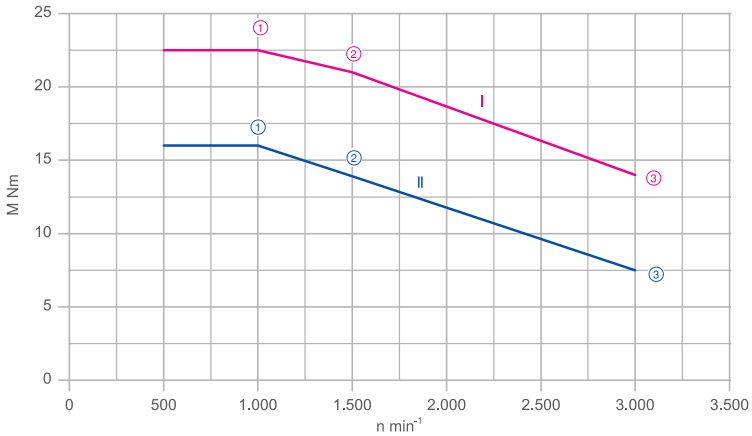
ECblue

for three phase alternating current, 380-480 V

EC152 High Power



Characteristic curve

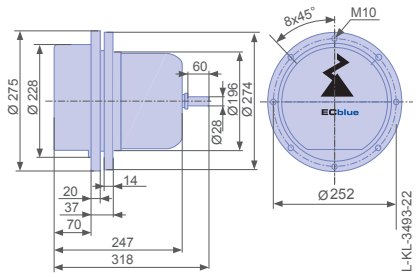


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **3~380-480 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK152-ZIN.17	I	①	174780	22.5	1000	2356	2645	4.24	0.06007	40	20.2
		②	174781	21.0	1500	3299	3677	5.97			
		③	174782	14.0	3000	4398	5012	8.23			
	II	①	174780	16.0	1000	1676	1876	3.05		60	
		②	174781	13.9	1500	2183	2462	4.04			
		③	174782	7.5	3000	2356	2832	4.57			

* at 3~ 380 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 89.8%

System components

Add-on modules

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Operating terminal

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ZAset

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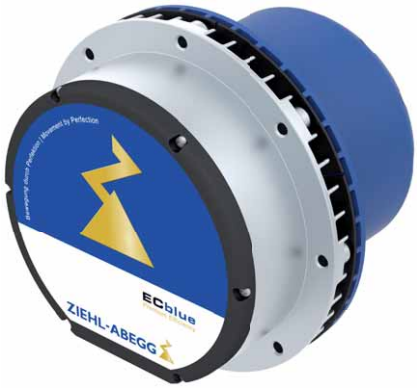
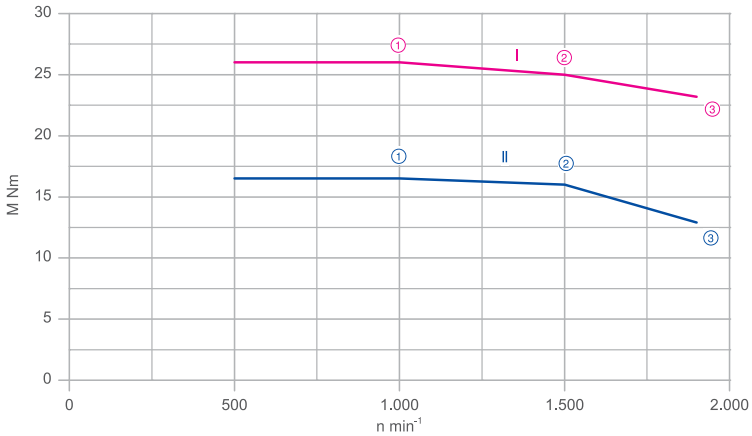
ECblue

for three phase alternating current, 380-480 V

EC152 High Power



Characteristic curve

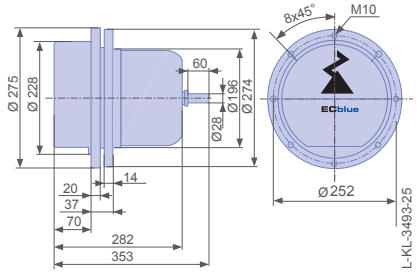


Measured in accordance with EN 60034-1

Description

Rated voltage U_N: **3~380-480 V***
Rated frequency f_N: **50/60 Hz***
Thermal class: **THCL155***
Electrical connection: Integrated controller
Balancing quality: Motor not balanced
Degree of protection : IP54
Protection class: I
Motor protection: Integrated active temperature management
Approvals: cULus
Conformity: CE
*Rated data

Dimensions mm



Further shaft dimensions upon request

Performance data

Type	Characteristic curve	Operating point	Article no.	Rated torque M_N Nm	Rated Speed n_N min^{-1}	Output power P_N W	Motor input power P_1 W	Input current* I_A A	Rotor moment of inertia J_{Mot} kgm^2	Ambient temperature t_R °C	Weight m kg
MK152-ZIN.24	I	①	174783	26.0	1000	2723	3048	4.89	0.07597	40	27.0
		②	174784	25.0	1500	3927	4361	7.00			
		③	174785	23.2	1900	4616	5012	7.76			
	II	①	174783	16.5	1000	1728	1937	3.14		60	
		②	174784	16.0	1500	2513	2849	4.58			
		③	174785	12.9	1900	2567	2888	4.40			

* at 3~ 380 V

Further operating points upon request
System efficiency = efficiency of motor incl. controller:
up to 90.2%

System components

Add-on modules

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Operating terminal

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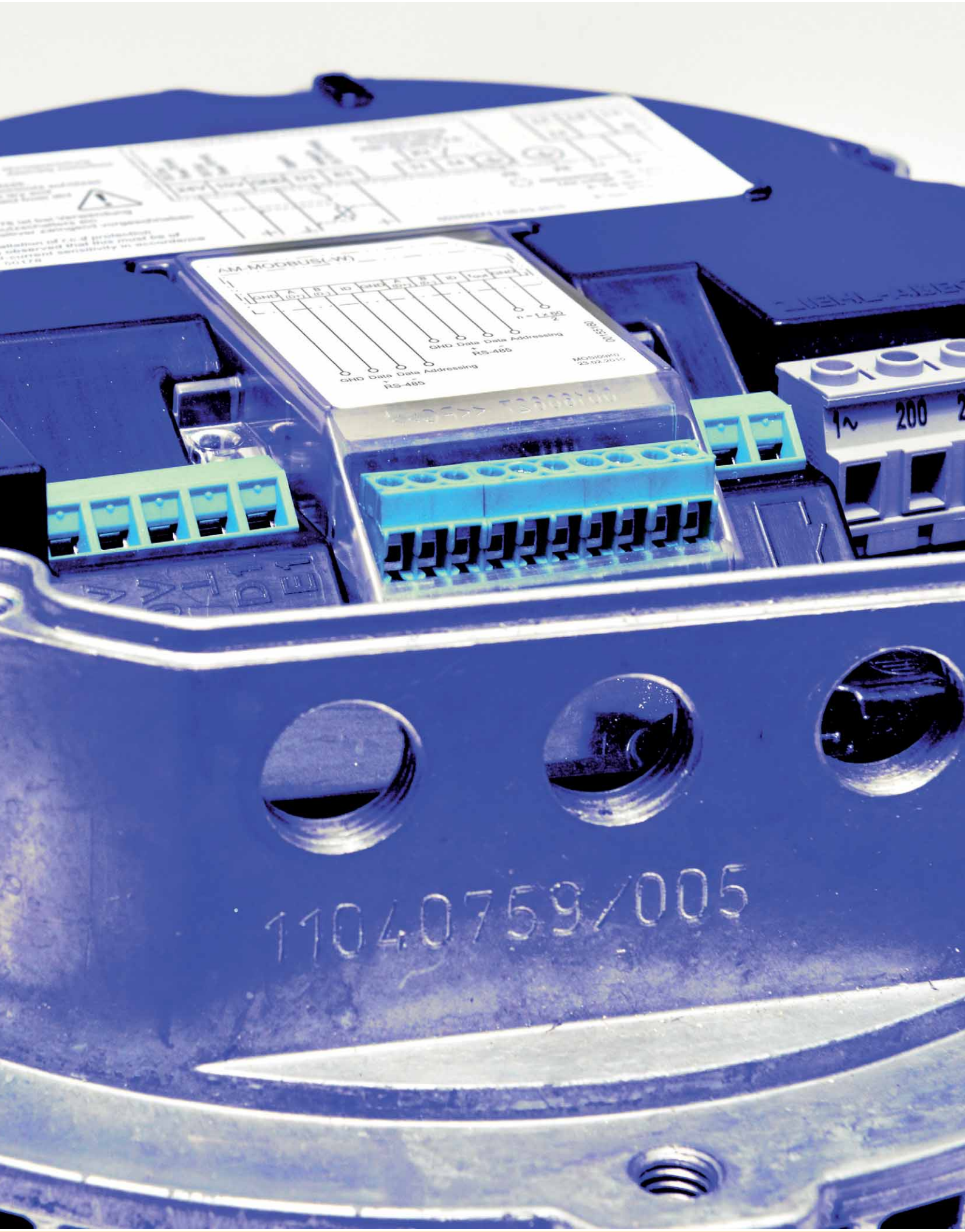


System components

Product overview

Potentiometer

Infinitely variable potentiometers for activating EC fans and controllers. The potentiometers are supplied with a supply voltage (10 V) from the EC fan or controller with a control voltage output of 0 - 10 V depending on the rotary knob setting.
Alternatively, the control voltage can be preset as a nominal value setting (external nominal value for the control) 0 - 10 V.

Equipment/Characteristics:

Rackmount version:
e.g. for installation in control cabinet doors
Axis length 50 mm, ∅ 6 mm
Included front plate: 40 x 40 mm
Included rotary knob

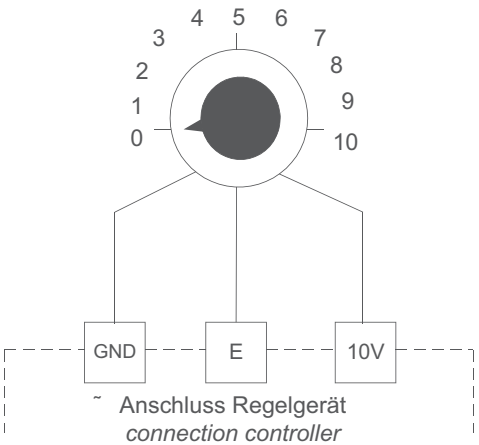
Design version in housing:
Surface mounting or mounting in existing flush receptacles. Device with additional switch contact.

Simple control via rotary knob
Set the desired resistance

Potentiometers

Type	Article no.	Mounting type	Setpoint range	Protection class	Weight kg	Dimensions (W x H x D) mm
Potentiometer 1K	**00153986**	Panel mounting	0...1kOhm	IP00	0.04	Shaft d 6 x 50
Potentiometer 10K	**00153989**	Panel mounting	0...10kOhm	IP00	0.04	Shaft d 6 x 50
Potentiometer 10K (IP54)	**380058**	Wall mounting	0...10kOhm	IP54	0.15	82 x 82 x 65

Connections



① Connection control unit

Add-on modules

AM-MODBUS (-W) for Basic Frequency inverter and ECblue

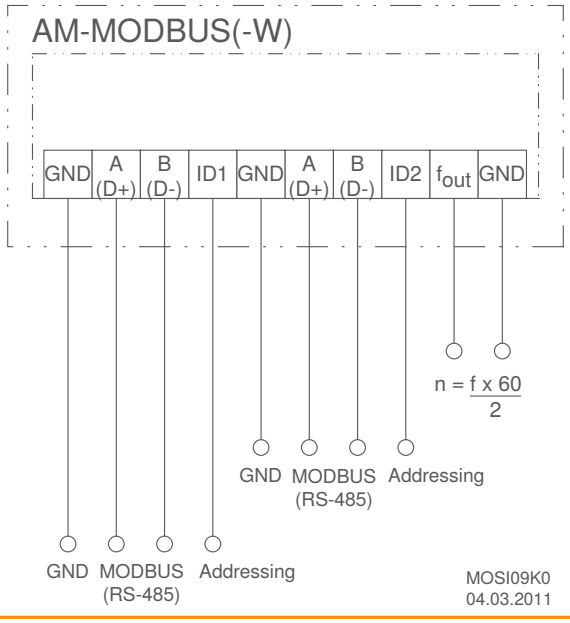
Pluggable add-on modules for function extension of the “Icontrol Basic” and “Fcontrol Basic” frequency inverters without integrated display as well as ECblue motors and fans.
With the AM-MODBUS/-W add-on modules, the devices integrated into MODBUS networks or the A-G-247NW operator terminal can be connected. Parameterization and data polling by radio (with AM-MODBUS-W) are optionally possible.
Whole groups of frequency inverters or ECblue motors and fans that are equipped with these AM-MODBUS add-on modules can be addressed quickly and automatically by a ZIEHL-ABEGG UNIcon control module with MODBUS-Master function. These devices are then controlled conveniently by the UNIcon “master” device.

Equipment/properties

2 x interface RS485:
For integration into a MODBUS RTU network (MODBUS Slave).
With the possibility of automatic addressing by a UNIcon control module with MODBUS-Master function.

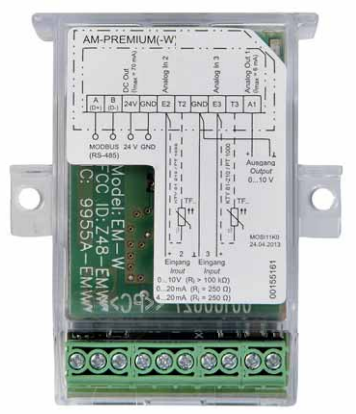
Add-on module - AM-MODBUS (-W)		
Type	**Article no.**	Weight kg
AM-MODBUS	**349045**	0.03
AM-MODBUS-W	**349050**	0.03

Connection diagram



Add-on modules

AM-PREMIUM (-W) for Basic Frequency inverter and ECblue



Pluggable add-on modules for function extension of the “Icontrol Basic” and “Fcontrol Basic” frequency inverters without integrated display as well as ECblue motors and fans.
With the AM-PREMIUM/-W add-on modules, the devices can be functionally extended as a control unit. In addition, it is possible to link to MODBUS networks or connect operator terminals (A-G-247NW / AXG-1A / AXG-1AE). Radio parameterization and data polling (with AM-PREMIUM-W) is also possible as an option.

Input for sensors or speed settings through

0-10V — Setting of the desired speed through device or by external default, e.g. 0…10 V

0-30 0-50 bar — Connecting pressure sensors (refrigeration), e.g. type MBG.. sensors, measuring range 0...30 bar, 0...50 bar

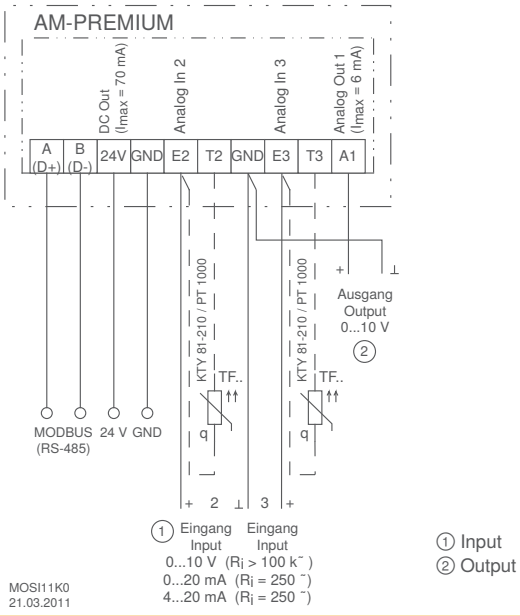
°C — Connection of thermistors,
e. g. sensors type TF..
e. g. active sensor type MTG..

△Pa — Connecting differential pressure sensors (air conditioning), e.g. type DSG.. sensors, measuring range 0...6000 Pa, acquisition of volume flows up to 65000 m³/h

m / s — Connecting air velocity sensors, e.g. type MAL.. sensors, measuring range 0...1 m/s, 0...10 m/s

CO_2 % °C — Connecting additional sensors, e.g. combination sensors, CO_2, sensor signal 0...10 V / 0...20 mA / 4...20 mA

Connection diagram



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Equipment/properties

Simple start-up by operating modes:
When an operator terminal is connected to the AM-PREMIUM add-on module plugged into the frequency inverter (for AM-PREMIUM-W via radio), typical operating modes, e.g. for air conditioning, refrigerant or ventilation technology can be selected.

2 analog inputs for sensors or setting signals:
analog input E2 and E3: Setting by operating modes or manually programmable, e.g. 0-10 V, 0,20 mA, 4-20 mA
analog input E3: Programmable, e.g. comparison with sensor E2, difference to sensor E2, average value formation, setpoint setting, setpoint adaptation (e.g. outdoor temperature-dependent) connection of passive thermistors: On E2 and T2, E3 and T3.

1 analog output A1:
Setting by operating modes or manually programmable, e.g. output signal proportional to modulation, output signal proportional to input signal, invertible, 10 V constant voltage, group control.

Functional extension: Digital input D1 in the basic device:
programmable, e.g. enable, switch over setpoint 1 or 2, switch over control or manual mode, switch over E1 or E3, control function inversion, output limitation, external fault, reset, reversal of direction of rotation.

Functional extension: Digital output K1 in the basic device:
setting by operating modes or manually programmable, e.g. operating indication, fault indication, limits, external fault at digital input, activation of external devices, e.g. heating, shutters, group control fans, etc.

1 x interface RS485:
For linking to a MODBUS RTU network (MODBUS Slave). Manual addressing of the devices in the network

Add-on module AM-PREMIUM/-W		
Type	**Article no.**	Weight kg
AM-PREMIUM	**349046**	0.03
AM-PREMIUM-W	**349051**	0.04

Add-on modules

AM-ETHERCAT for Basic Frequency inverter and ECblue

Pluggable add-on modules for function extension of the “Icontrol Basic” and “Fcontrol Basic” frequency inverters without integrated display as well as ECblue motors and fans.
With the AM-ETHERCAT add-on modules the frequency inverters or ECblue fans can be integrated into EtherCat networks.

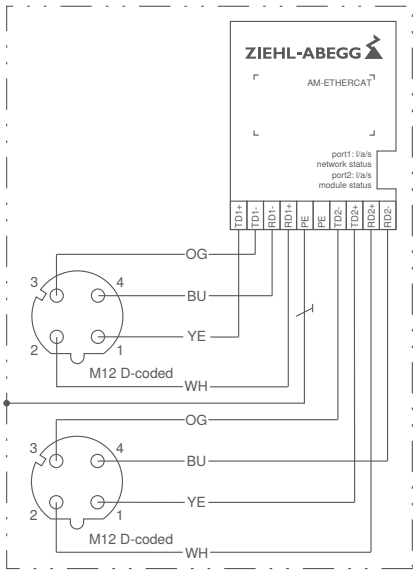
A device master data filed (ESI file) is required for integration of the device into an EtherCat network. If there is any doubt about the use or procurement of the ESI file for this add-on module, our Control Technology Support Department will be very glad to help.

Equipment/properties

4 integrated LED
For status display and error message:
Network status, status module, status port 1 / port 2.

Add-on module AM-ETHERCAT		
Type	**Article no.**	Weight kg
AM-ETHERCAT	**349071**	0.03

Connection diagram



Add-on modules

AM-CAN-OPEN for Basic Frequency inverter and ECblue

Pluggable add-on modules for a function extension of the “Icontrol Basic” and “Fcontrol Basic” frequency inverters without integrated display as well as ECblue motors and fans.
With the AM-CAN-OPEN add-on modules the devices can be integrated into CANopen networks.

An Electronic Datasheet (EDS file) is required for a device integration into the CANopen network.
This file is provided free of charge by our Control Engineering Support Department.

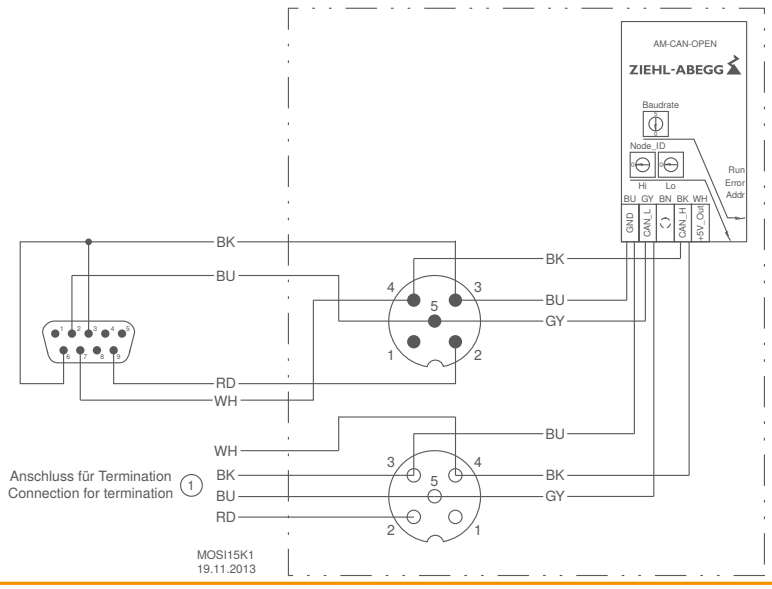
Equipment/properties

3 integrated LEDs
For status display and error message.

3 integrated rotary switches
2 rotary switches for manual address setting.
1 rotary switch for setting the baud rate

Add-on module - AM-CAN-OPEN		
Type	**Article no.**	Weight kg
AM-CAN-OPEN	**349064**	0.03

Connection diagram



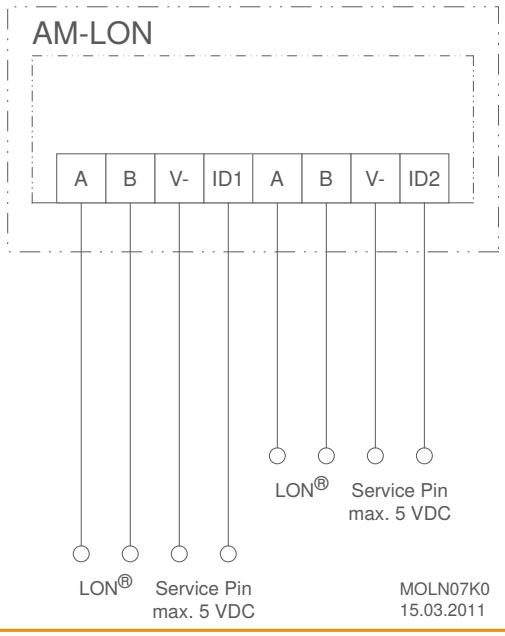
Add-on modules

AM-LON for Basic Frequency inverter and ECblue

Pluggable add-on modules for function extension of the “Icontrol Basic” and “Fcontrol Basic” frequency inverters without integrated display as well as ECblue motors and fans.
With AM-LON add-on modules the devices can be integrated into LON networks.

Add-on module - AM-LON		
Type	**Article no.**	Weight kg
AM-LON	**349049**	0.03

Connection diagram



Add-on modules

AM-PROFIBUS for Basic Frequency inverter and ECblue

Pluggable add-on modules for function extension of the “Icontrol Basic” and “Fcontrol Basic” without integrated display as well as ECblue motors and fans.
With the AM-PROFIBUS add-on modules the devices can be integrated into PROFIBUS networks.
A device master data file (GSD file) is required for integration of the device into the PROFIBUS network. This is provided free by our Control Engineering Support Department.

Equipment/properties

3 integrated LEDs
For status display and error message.

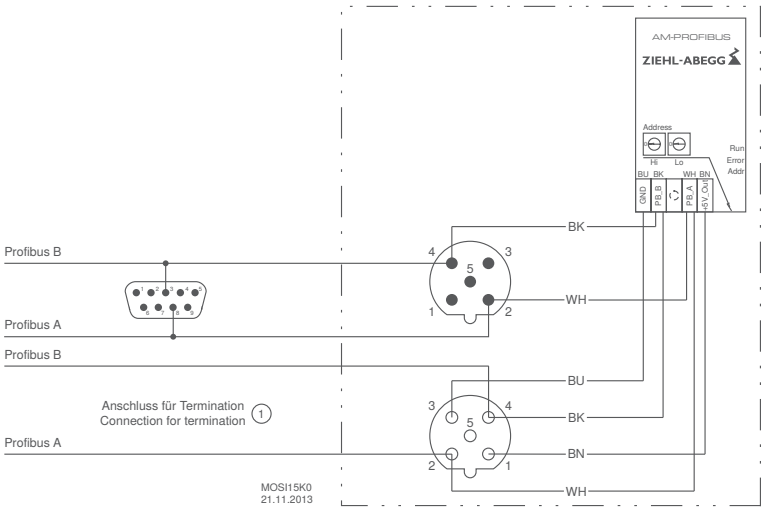
2 integrated rotary switches
For manual address setting.

Automatic baud rate detection

Optionally available connectors
Plug with connecting wires 80 mm:
5-pole, M12, wall installation M16, Article No. 00161258
5-pole, M12, wall installation M20, Article No. 00161263
Socket with connecting wires 80 mm:
5-pole, M12, wall installation M16, Article No. 00161259
5-pole, M12, wall installation M20, Article No. 00161264

Add-on module AM-PROFIBUS		
Type	**Article no.**	Weight kg
AM-PROFIBUS	**349063**	0.03

Connection diagram



Add-on modules

AM-CONFIG for ECblue motors

Plug-in add-on module for programming and diagnosis of ECblue motors. Parameter sets of ECblue fans can be saved in the AM-CONFIG and transferred to other ECblue motors.

Add-on module - AM-CONFIG		
Type	**Article no.**	Weight kg
AM-CONFIG	**349059**	0.05

Gateway PROFIBUS-MODBUS

For connecting a MODBUS system to a PROFIBUS system

The gateway operates as a MODBUS-Master which is controlled by PROFIBUS. Up to 64 MODBUS members can be connected to the gateway.
Optionally, groups of connected frequency inverters or EC motors and fans can be addressed automatically for convenience and to save time.
The gateway has a USB interface for bus monitoring by a PC/Laptop.

A device master data file (GSD file) is required for integration of the device into the PROFIBUS network. This is provided free by our Control Engineering Support Department.

Equipment/properties

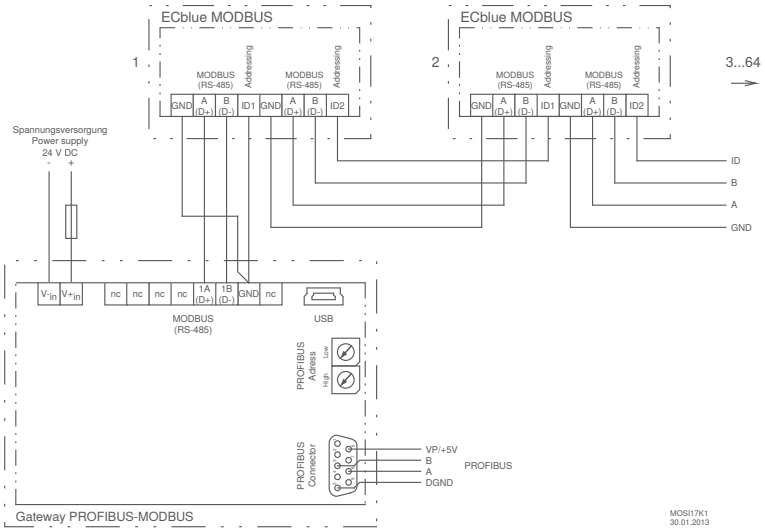
3 integrated LEDs
For status display and error message.

Automatic baud rate detection in Profibus

2 integrated rotary switches
For manual address setting.

Gateway PROFIBUS-MODBUS		
Type	**Article no.**	Weight kg
D-G-64NE	**380094**	0.08

Connection diagram



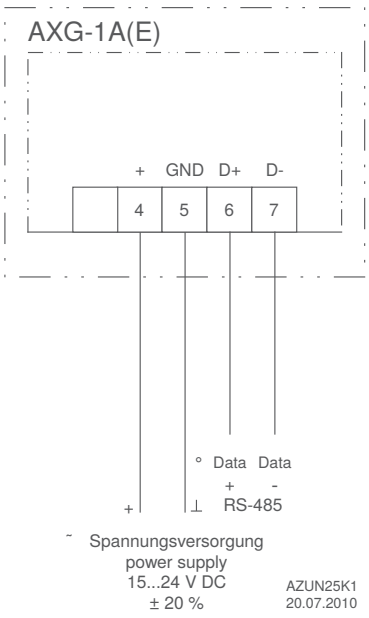
Display and operator terminal

For frequency inverter without integrated display and ECblue

Display and operator terminal for parameterization and operation of the basic frequency inverters “Icontrol Basic” and “Fcontrol Basic” as well as ECblue motors an fans.
The basic frequency inverters without integrated display and ECblue motors have a slot for the AM-PREMIUM add-on modules. By plugging the add-on modules, the AXG-1A(E) operator terminal or the A-G-247NW hand held terminal can be connected.

The display and operator terminal AXG-1A can be installed flexibly in plants or machines in the IP54 housing. Alternatively, a unit for control panel integration is available (AXG-1AE).
The + 24 V voltage supply comes from the frequency inverter, a separate mains supply is not required.

Connection diagram



① Voltage supply
② Data

Technical data

- Voltage supply: 15-24 VDC (I_{max} 24 V: 50 mA / 14 V: 80mA)
- Maximum ambient temperature: + 40 °C

Equipment/properties

LC multi-function display with plain text display:
Different menu languages can be selected. Display of the connected frequency inverter menu.

1 interface RS485:
for connection to an AM-PREMIUM add-on module. Frequency inverters as well as ECblue motors and fans can be parameterized and operated with this.

Display and operator terminals
24VDC

Type	Article no.	Mounting type	Protection class	Weight kg	Dimensions (W x H x D) mm
AXG-1A	**349034**	Wall mounting	IP54	0.60	166 x 160 x 87
AXG-1AE	**349008**	Panel mounting	IP54	0.55	166 x 106 x 57 mm / mounting depth: max. 75

Hand held terminal

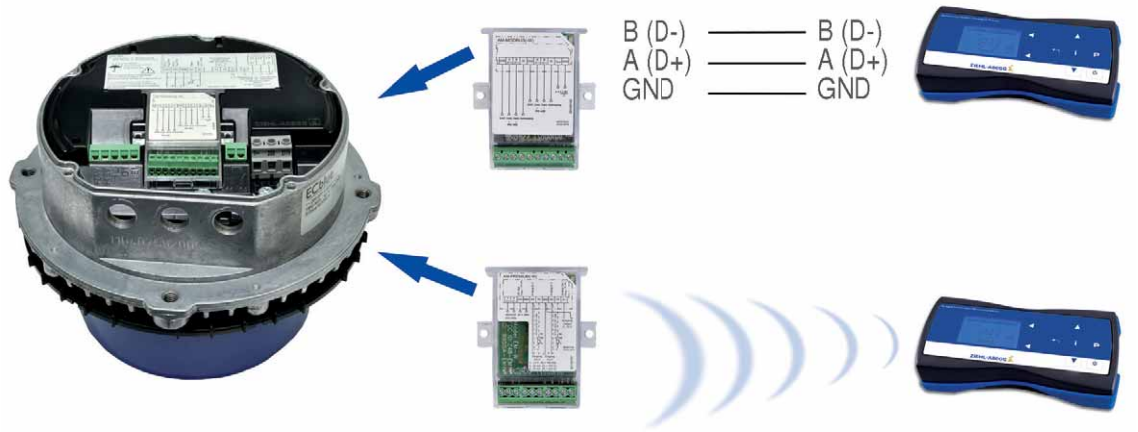
Parameterization of the basic frequency inverters and ECblue

Hand held terminal for parameterization and operation of the “Icontrol Basic” and “Fcontrol Basic” frequency inverters as well as ECblue motors and fans.
The basic frequency inverters without integrated display and ECblue motors can be extended with AM-MODBUS or AM-PREMIUM add-on modules. The A-G-247NW operator terminal can be connected to this by plugging add-on modules.
When using the AM-MODBUS-W or AM-PREMIUM-W add-on modules, communication with this operator terminal can take place without cables, wirelessly, by radio.

The hand held terminal enables storing of data records and transmission of these to other devices.

Application example

Optional connection of the hand held terminal by cable (connection by interface RS485, MODBUS RTU) or radio communication.



Technical data

- External voltage supply:
  by plug power pack (1~ 230 V, 50/60 Hz)
- Internal voltage supply:
  3 x Mignon rechargeable batteries (NIMh 1.2 V)

Equipment/properties

LC multi-function display with plain text display:
Different menu languages can be selected

1 x Mini USB interface:
voltage supply / data transfer with a PC

1 x interface RS485:
for connection to an AM-MODBUS or AM-Premium add-on module. Frequency inverters, ECblue motors and fans can be parameterized and operated with this. It is possible to save data records and transfer them to these devices.

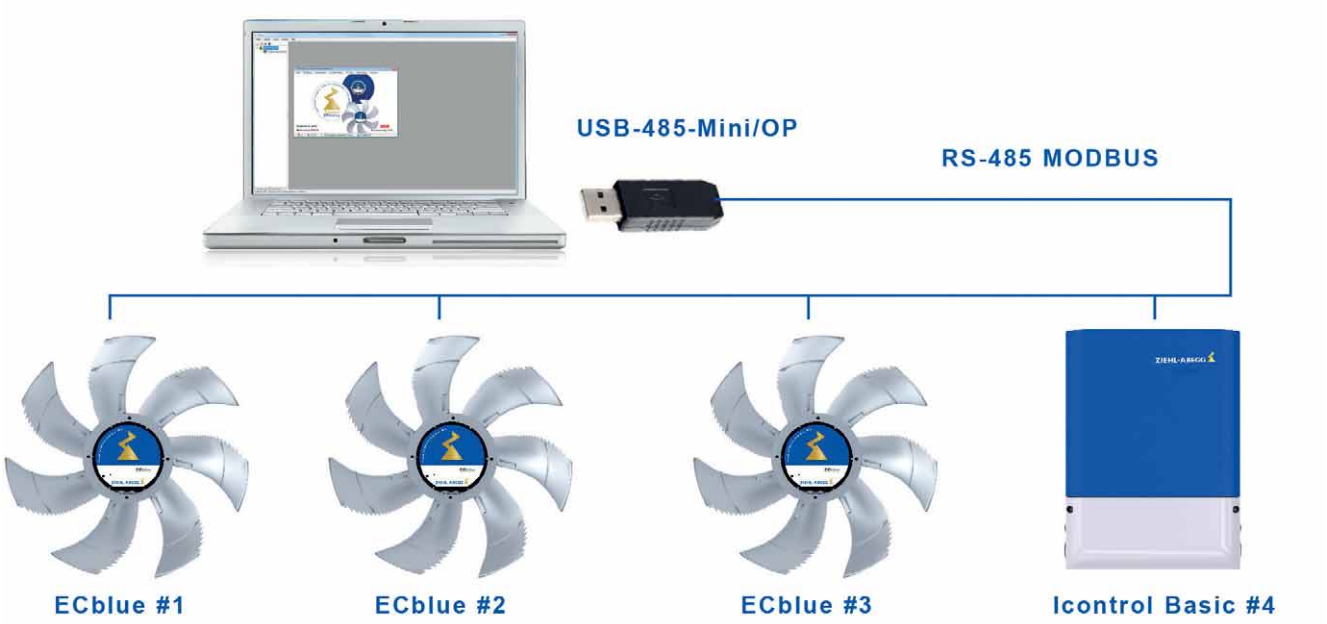
Data transmission by radio:
for communication with AM-MODBUS-W or AM-Premium-W add-on module.

Hand held terminal		
Type	**Article no.**	Weight kg
A-G-247NW	**380090**	0.42

ZAset software

Quick and simple configuration via PC

ZIEHL-ABEGG's MODBUS field devices can be commissioned, configured and observed easily with a PC via a USB interface. You have the choice between menu-led and tabular programming..



Control modules

UNIcon sensor-control module - Refrigeration

- Sensor and control intelligence in a single unit
- Measure and control pressure in condensers
- Integrated analogue display and direct nominal value setting on device
- 10 V supply directly from EC fan or frequency inverter
- 0 - 10 V outlet for controlling EC fans or frequency inverters

UNIcon sensor-control module - Air conditioning

- Sensor and control intelligence in a single unit
- Measure and control differential pressure in roof fans or air-handling units
- Integrated digital display and direct setpoint adjustment on device
- 10 V - 24 V supply directly from EC fan or frequency inverter
- 0 - 10 V outlet for controlling EC fans or frequency inverters
- setpoint switching possible
  (e.g. between day and night operation)

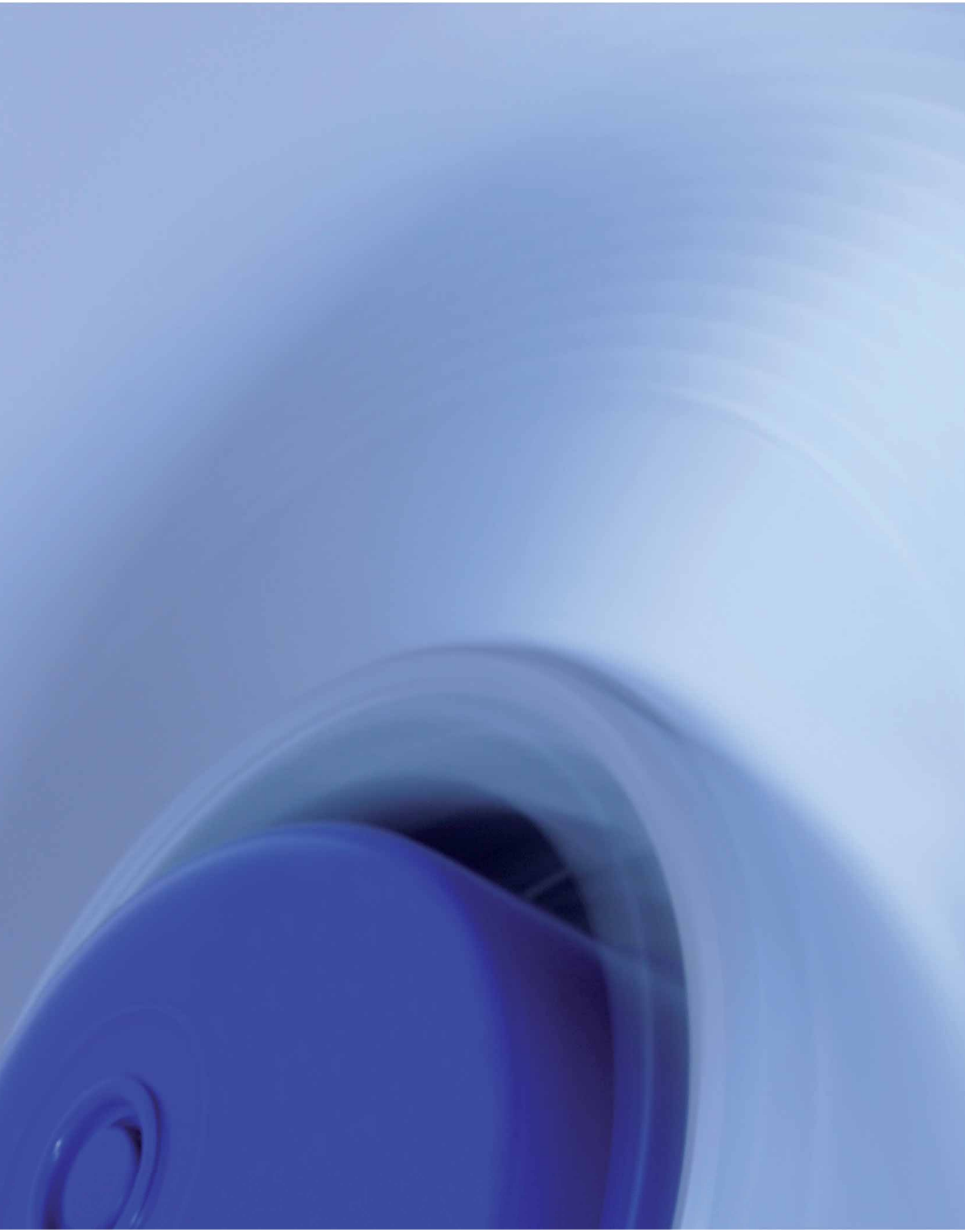
UNIcon universal control module

Due to its easily selectable pre-set operating modes, the UNIcon can be used in various applications. Furthermore, the universal control module can be used to combine all Ziehl-Abegg sensors.

Application examples:

- Refrigeration
- Air conditioning
- Clean rooms
- Ventilation

Pre-programmed operating modes for typical applications allows a fast commissioning. The sensors are selected and fitted to match the application. Multiple inputs and outputs make comprehensive control tasks possible.



General notes

Overview

Explanation of technical details

Conversion factors

input power

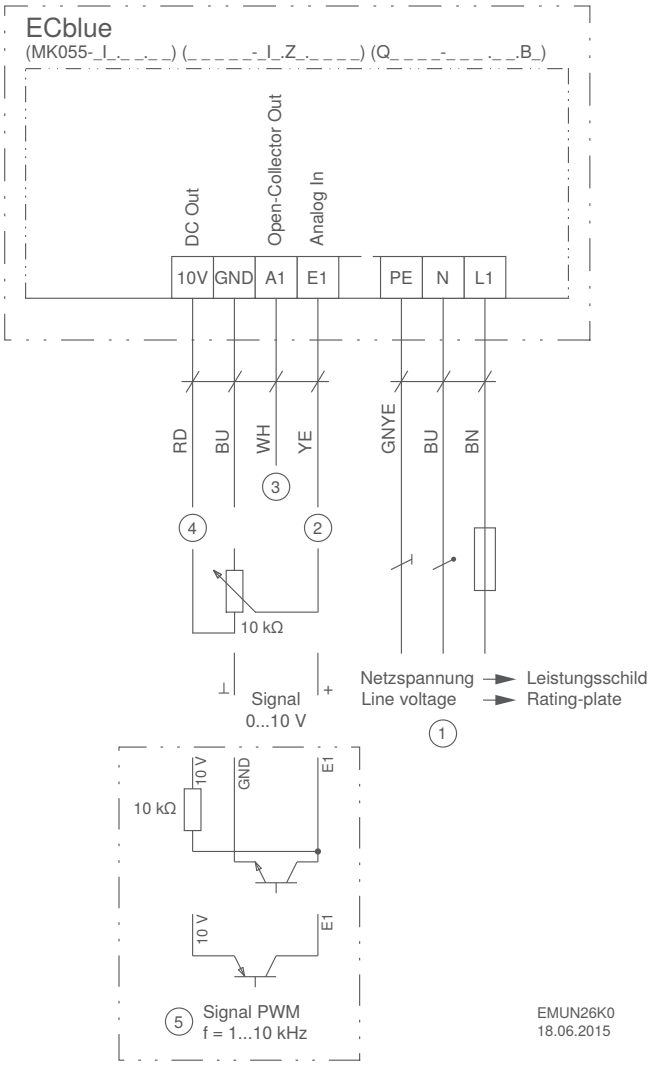
		W	kW	hp
SI-unit	**W (J/s)**	1	0.001	745.699
Additional units	**kW**	1000	1	0.74569
	hp	0.00134102	1.34102	1

Temperature

		SI-unit	Additional units
		°C	**°F**
SI-unit	**°C**	1	(°C × 1.8) + 32
Additional units	**°F**	(°F – 32) / 1.8	1

Connection diagrams

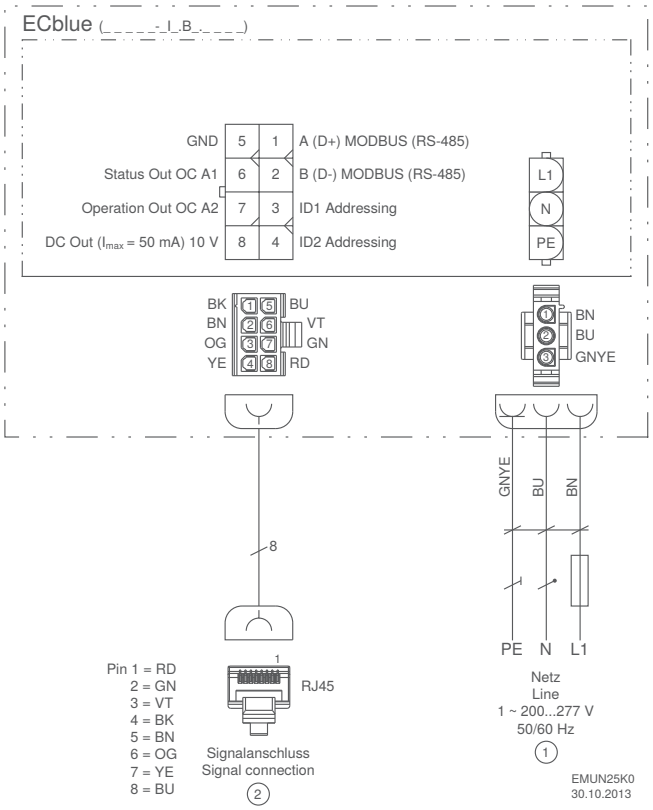
EC055



① Mains voltage, see rating plate
② Input for speed setting via 0...10 V signal / potentiometer (R_i > 200 kΩ)
③ Tachometer output, open collector (I_{max} 10mA)
④ Voltage supply 10 V DC (I_{max} 50 mA)
⑤ Speed setting via PWM signal (f = 1...10 kHz)

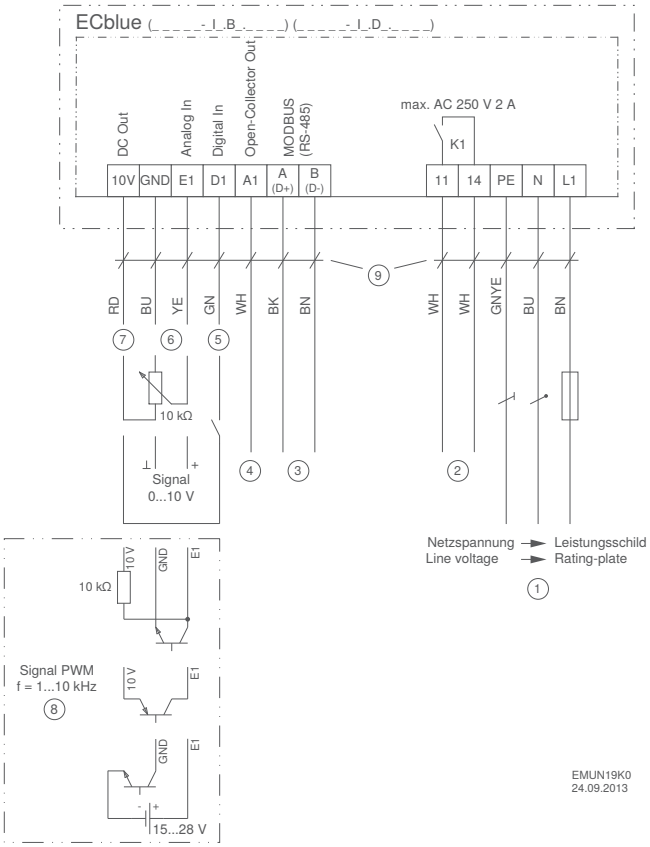
Connection diagrams

EC090 IP20 / EC116 IP20



① Mains voltage 1~ 200...277 V, 50/60 Hz
② Signal connection

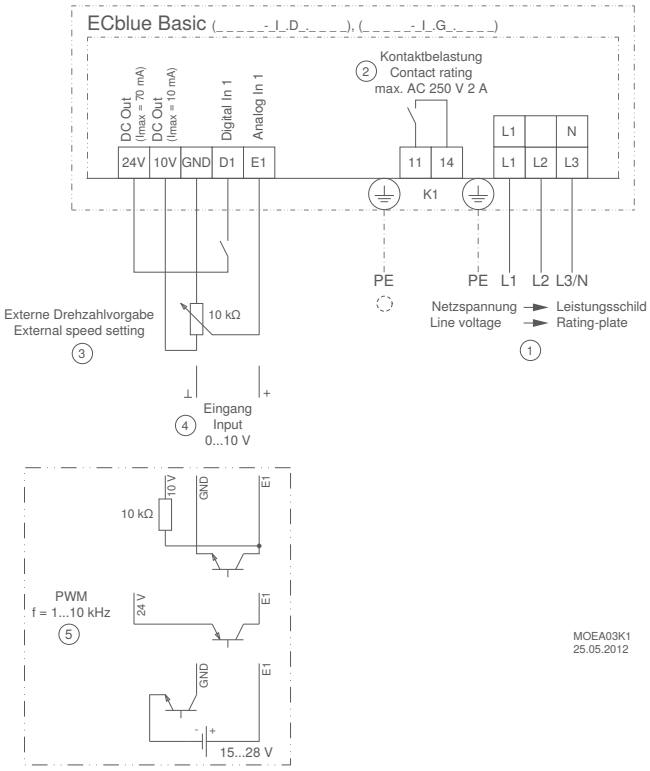
EC090 IP54



① Line voltage see rating-plate
② Relay output for fault indication (max. contact rating AC 250 V 2 A)
③ MODBUS (RS-485) interface
④ Open-Collector output status / tacho
⑤ Digital input for enable
⑥ Input for setting speed by 0...10 V signal / potentiometer (R_i > 100 kΩ)
⑦ Voltage supply 10 V DC (I_{max} 50 mA)
⑧ Setting speed by PWM signal (f = 1...10 kHz)
⑨ Version with connection cables

Connection diagrams

EC116 / EC152



① line voltage
② contact load
③ external speed setting
④ input
⑤ PWM

General notes

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The customer is obligated to inform the supplier about general information concerning the intended use, the type of installation, the operating conditions and any other conditions that need to be taken into consideration if the order is not based on catalogue information.

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