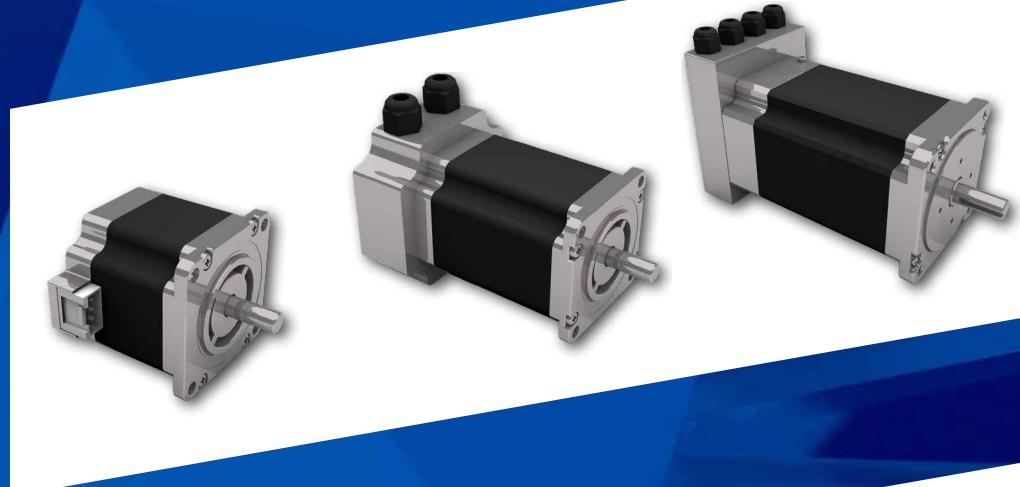




# MOTORS | BLOWERS |

## 2022/23



## >> Company



MAE, headquartered in Italy, is a customer-focused and quality-oriented company with 600 employees and four manufacturing sites in Italy, Czech Republic and Serbia.

"We design and manufacture advanced motion solutions that keep the world moving". MAE's product offering is based on a wide range of blowers and universal AC/DC, permanent magnet DC, stepper and brushless which can all be designed in combination with gearboxes, encoders and brakes. MAE solutions are designed and produced to achieve the highest

quality and performance levels, meeting longterm reliability, industry standards at an excellent price performance ratio.

MAE, together with Dunkermotoren, Haydon Kerk Pittman and Dynamic Fluid Solutions, is one of the four business units of AMETEK Advanced Motion Solutions (AMS); with 14 global operations, 3.200 employees and ten leading brands, AMS is the largest division of AMETEK Inc.

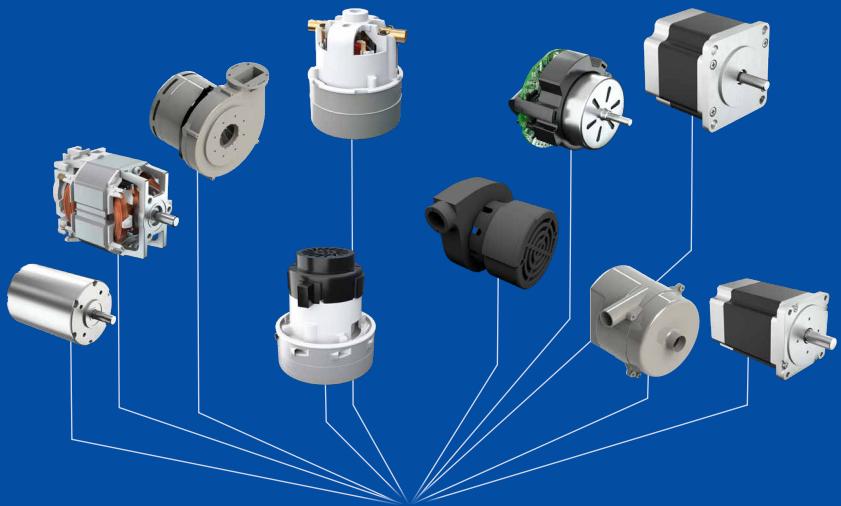
## >> Our Products

### » Blowers

Universal AC/DC  
Brushless AC/DC

### » Motors

Universal AC/DC  
Permanent Magnet DC  
Stepper  
Brushless AC/DC



## BLOWERS

### **BLOWERS UNIVERSAL AC/DC**

#### » **Series BU and TU**

The MAE blower systems based on universal brushed motors are largely used in the cleaning market as well as other industrial applications. The MAE universal blower systems are available with different fan housing diameters, multiple fan stages, in thru flow or bypass design, for dry or wet applications, with tangential or peripheral air exhaust.

Blowers can be designed for either main voltage AC or low voltage DC supply, standard motor insulation CL155 (F), superior lifetime operation, with the best in class energy efficiency system, according to the new ECO design standard. UL approval and double insulation upon request.

### **BLOWERS BRUSHLESS AC/DC**

#### » **Series BB and TB**

The MAE range of electronically commutated brushless blowers provide extended service life with superior energy efficiency and high air-power density, and can be utilized in a wide variety of industrial and medical applications. MAE brushless blower models are available for either low voltage DC or AC single phase input, including units configured for universal AC input (100-240V 50/60Hz), while the high output 312 mm blower model can operate from 400 V 3-phase supply. Integrated control electronics make it possible to fully control the blower speed via an analogue or PWM command signal, with an on-board potentiometer used to set the required Max. speed. Tachometer and failure outputs can be provided to monitor the blower status, while customized mechanical and electrical configurations are also available upon request.

## MOTORS

### **UNIVERSAL AC/DC**

#### » **Series DU**

Developed in four frame sizes and different stack lengths, the MAE universal motors are highly versatile and utilized in a wide range of applications. This motor range is configured for either mains voltage AC or low voltage DC supply, with motor

insulation CL155 (F) and double insulation optional. The MAE universal motors are available with customization to the shaft design, cooling system, end brackets and further value enhancing features. UL approval is available upon request.

### **PERMANENT MAGNET DC**

#### » **Series PM**

The MAE permanent magnet DC motors utilize a two-pole design, and are available in various stack heights. These motors are configured for either mains voltage AC or low voltage DC supply, with insulation CL 155 (F), and are available in highly customized mechanical configurations including the shaft design, end brackets, cooling system and further value enhancing features. Combinations with gearboxes, encoders, brakes, EMC components and liquid-pump heads are also available upon request.

### **STEPPER**

#### » **Series ST**

Offered in the four main NEMA sizes, the well-known MAE hybrid stepper motors are available in different performances configurations. According to the application requirements, MAE can provide a motor with superior torque. MAE stepper motors are suitable for accurate open loop positioning applications, or high performances closed loop systems when fitted with an integrated encoder. Further customization is available including gearboxes, brakes, shaft detail, lead-wire connector assemblies and more.

### **BRUSHLESS AC/DC**

#### » **Series BL**

The MAE electronically commutated brushless motors are offered in both internal rotor and external rotor designs, and are ideal for various industrial and ventilation market applications which require long service life in combination with high performance. MAE brushless motors deliver superior efficiency and the two available diameters can be provided with either hall sensors or sensor-less commutation. Assembled with encoders, brakes and gearboxes, this brushless motor range provides a stand-alone and flexible modular solution.

### **Disclaimer**

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for product driven beyond factory specified limits, such as input voltage; temperature; speed; torque; pressure; flow, or without correct alignment. Actual performance will vary depending on the operating environment and application. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK reserves the right to revise its products without notification. The above characteristics represent standard products. For products to meet specific application requirements please contact AMETEK's Sales Department.



Overview	
Page 6-19	<b>Products Overview &amp; Product Combination Possibilities</b>
Page 20-51	<b>Brushless Blowers</b> Series TB Series BB
Page 52-55	<b>Permanent Magnet DC Motor</b> Series PM
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Page 82-99	<b>Accessories</b> Gearboxes, Brakes, Encoders, Controllers, Accessories



## Market Segments

- » Industrial Automation
- » Healthcare & Laboratory
- » Power Generation & Supply
- » Agriculture
- » Building Automation
- » Mass Transit/ Motive
- » Lifestyle & Cleaning

## Customized Solutions

*The impossible takes a little longer! Customer specific solutions from MAE!*  
Take advantage of the full range of knowledge and experience of our application specialists. We will develop the best possible motor or blower solution for You - innovative, objective and application oriented.



### **Our planet - Our responsibility**

#### » Energy class

Our motors and blower provide efficiency exceeding international standards

#### » Reduced emission production

MAE continues to make extensive improvements at its factories to reduce CO<sub>2</sub> emission.

## >> Modular system MAE and Dunkermotoren

### **Flexibility, delivery performance and complete motion solutions**

Standardized motors, gears and modular accessories are available with flexibility to address specific requirements in complete motion solutions.

ENCODERS	BRAKES	CONTROLLERS	MOTORS	GEARBOXES
<p><i>Incremental Encoder</i> up to 4096 ppr</p> 	<p><i>Power-off Brakes</i> 0.2 - 7 Nm</p> 	<p><i>Integrated Controller</i></p>  <p><i>External Controller</i></p>  <p><b>dGo/ dMove/ dPro</b></p>  <p><b>PROFINET</b> <b>EtherCAT</b> <b>EtherNet/IP</b> <b>CANopen</b></p>	<p><i>Brushless DC-Servomotors</i> 6 - 5000 W</p>  <p><i>Permanent Magnet DC-Motors</i> 3 - 370 W</p>  <p><i>Stepper Motors</i> 0,09 - 14 Nm</p>  <p><i>AC-Motors</i> 5 - 100 W</p>  <p><i>Universal Motors</i> 150 - 1200 W</p>  <p><i>AC/DC Blowers</i> Thru-Flow, Bypass 18 - 2130 m<sup>3</sup>/h</p>  <p><i>Linear Motors</i> 19 - 3690 N</p> 	<p><i>Planetary Gearboxes</i> 0.3 - 160 Nm</p>  <p><i>Worm Gearboxes</i> 0.75 - 30 Nm</p>  <p><i>Spirotec Gearboxes</i> 9 - 18 Nm</p>  <p><i>Bevel Gearboxes</i> 1.6 - 120 Nm</p>  <p><i>Spindels and Cylinders</i> 450 - 2500 N</p>  <p><i>Hub Gearboxes</i> load capacity 250 - 1000 kg</p> 

<i>Series</i>	<b>TU 82 107 mm</b>	<b>TU 82 130 mm</b>				
<i>Type</i>	Thru Flow	Thru Flow				
<i>Fan housing diameter (mm)</i>	107	130				
<i>Fan stages</i>	1 - 2	1				
<i>Max. airflow (l/sec)</i>	34	55	43	49	66	54
<i>Max. pressure (kPa)</i>	17.3	26.9	24.3	21.0	33.9	27.3
<i>Rated voltage (V)</i>	12 / 24 / 36 DC	100 - 250 AC	230 AC	12 / 18 / 24 / 36 DC	100 - 250 AC	230 AC
<i>Max. power input (W)</i>	480	1200	860	720	2000	900
<i>Max. efficiency (Ƞ%)</i>	38.0%	42.0%	37%	45.4%	46.0%	50%

<i>Fan cover protection</i>						
<i>Inlet tube</i>						
<i>Thermal protection</i>						
<i>EMC components</i>						
<i>UL approval</i>						
<i>Double shaft</i>						

■ Preferred series ■ Standard product - MOQ may apply ■ On request ■ ECO standards

<i>Series</i>	<b>TU 95 139 mm</b>	<b>TU 93 / TU 96 145 mm</b>		
<i>Type</i>	Thru Flow	Thru Flow		
<i>Fan housing diameter (mm)</i>	139	145		
<i>Fan stages</i>	1 - 2	1 - 2 - 3		
<i>Max. airflow (l/sec)</i>	75	55	68	49
<i>Max. pressure (kPa)</i>	33.6	21.5	33.6	23.7
<i>Rated voltage (V)</i>	100 - 250 AC	230 AC	100 - 250 AC	230 AC
<i>Max. power input (W)</i>	2200	864	1660	842
<i>Max. efficiency (Ƞ%)</i>	46.7%	42.8%	38.0%	44.6%

<i>Fan cover protection</i>				
<i>Inlet tube</i>				
<i>Thermal protection</i>				
<i>EMC components</i>				
<i>UL approval</i>				
<i>Double shaft</i>				

				
<b>Series</b>	<b>BU 93 107 mm</b>	<b>BU 82 130 mm</b>		<b>BU 82 130 mm</b>
<b>Type</b>	Bypass	Bypass		Bypass
<i>Fan housing diameter (mm)</i>	107	130		130
<i>Fan stages</i>	1 - 2	1		2
<i>Max. airflow (l/sec)</i>	51	56	67	60
<i>Max. pressure (kPa)</i>	23.2	18.4	29.5	19.7
<i>Rated voltage (V)</i>	100 - 250 AC	12 / 18 / 24 / 36 DC	100 - 250 AC	230 AC
<i>Max. power input (W)</i>	1320	890	1660	960
<i>Max. efficiency (Ƞ%)</i>	27.3%	41.5%	44.2%	48.1%

<i>Fan cover protection</i>					
<i>Inlet tube</i>					
<i>Thermal protection</i>					
<i>Water separator</i>					
<i>EMC components</i>					
<i>UL approval</i>					
<i>Double shaft</i>					

 Preferred series  Standard product - MOQ may apply  On request  ECO standards

<b>Series</b>	<b>BU 95 143 mm</b>	<b>BU 93 / BU 96 145 mm</b>	<b>BU 110 182 mm</b>	
<b>Type</b>	Bypass	Bypass	Bypass	
<i>Fan housing diameter (mm)</i>	143	145	182	
<i>Fan stages</i>	1 - 2 - 3	1 - 2 - 3	2 - 3	
<i>Max. airflow (l/sec)</i>	72	35	68	57
<i>Max. pressure (kPa)</i>	42.1	20.2	37.7	33.1
<i>Rated voltage (V)</i>	100 - 250 AC	12 / 24 / 36 DC	100 - 250 AC	100 - 240 AC
<i>Max. power input (W)</i>	2000	740	1820	1830
<i>Max. efficiency (Ƞ%)</i>	41.2%	34%	37.6%	34.0%

<i>Fan cover protection</i>				
<i>Inlet tube</i>				
<i>Thermal protection</i>				
<i>Water separator</i>				
<i>EMC components</i>				
<i>UL approval</i>				
<i>Double shaft</i>				

				
<b>Series</b>	<b>BB 42 76 mm</b>	<b>BB 00 114 mm</b>	<b>BB 00 127 mm</b>	<b>BB 00 130 mm</b>
<b>Family</b>	-	Microjammer	Minjammer	Microjammer
<b>Type</b>	ByPass	ByPass	ByPass	ByPass
<b>Fan housing diameter (mm)</b>	76	114	127	130
<b>Fan stages</b>	1	1	1	1
<b>Max. airflow (m³/h)</b>	40	18	76	45
<b>Max. pressure (kPa)</b>	6.2	9.4	6.2	12.7
<b>Rated voltage (VDC)</b>	12 / 24	12 / 24	12 / 24	12 / 24
<b>Max. power input (W)</b>	70	70	150	170
<b>Speed control signal</b>	On-Off / 0 - 4 V	On-Off / 0 - 4 V	On-Off / 0 - 4 V	On-Off / 0 - 4 V
<b>Output signal</b>	Tach Out	Tach Out	-	Tach Out
<b>External controller</b>				

 Preferred series  Standard product - MOQ may apply  On request

<b>Series</b>	<b>TB 89 145 mm</b>	<b>BB 89 145 mm</b>	<b>BB 89 193 mm</b>
<i>Family</i>	-	-	-
<b>Type</b>	Thru Flow	ByPass	ByPass
<i>Fan housing diameter (mm)</i>	145	145	193
<i>Fan stages</i>	1 - 2	1 - 3	1
<i>Max. airflow (m³/h)</i>	230	319	200
<i>Max. pressure (kPa)</i>	16.0	19.5	3.7
<i>Rated voltage (VDC)</i>	24 / 48 / 72	24 / 48 / 72	12 / 24
<i>Max. power input (W)</i>	600	580	300
<i>Speed control signal</i>	On-Off / 0 - 10 V	On-Off / 0 - 10 V	On-Off / 0 - 10 V / PWM
<i>Output signal</i>	Tach Out	Tach Out	Tach Out

<i>External controller</i>			
<i>Potentiometer for speed calibration</i>			
<i>UL approval</i>			

					
<b>Series</b>	<b>TB 89 145 mm</b>	<b>BB 89 145 mm</b>	<b>BB 89 193 mm</b>	<b>BB 89 226 mm</b>	<b>BB 158 312 mm</b>
<i>Family</i>	-	-	-	-	-
<b>Type</b>	Thru Flow	ByPass	ByPass	ByPass	ByPass
<i>Fan housing diameter (mm)</i>	145	145	193	226	312
<i>Fan stages</i>	1 - 2	1 - 3	1	1	1
<i>Max. airflow (m³/h)</i>	221	455	400	930	2130
<i>Max. pressure (kPa)</i>	14.2	42.0	10.8	3.5	6.5
<i>Rated voltage (VAC)</i>	100-240 / 230	100-240 / 230	100-240 / 230	100-240 / 230	120 / 230 1ph 240 3ph
<i>Max. power input (W)</i>	600	1400	1400	1400	4000
<i>Speed control signal</i>	On-Off / 0-10 V / PWM	On-Off / 0-10 V / PWM	On-Off / 0-10 V / PWM	On-Off / 0-10 V / PWM	On-Off / 0-10 V / PWM
<i>Output signal</i>	Tach Out / Failure Out	Tach Out / Failure Out	Tach Out / Failure Out	Tach Out / Failure Out	Tach Out / Failure Out

<i>Universal voltage (100-240 VAC)</i>					
<i>Potentiometer for speed calibration</i>					
<i>Three phase AC input</i>					
<i>UL approval</i>					

 Preferred series  Standard product - MOQ may apply  On request

<b>Series</b>	<b>DU 56</b>	<b>DU 58</b>	<b>DU 76</b>	<b>DU 93</b>
<i>Stack length (mm)</i>	x10 / x12 / x15 / x21 / x25 / x35 / x40 / x45	x25 / x30 / x36 / x40	x21 / x25 / x30 / x40 / x45	x25 / x30 / x35 / x38 / x43 / x50 / x60
<i>Max. output power (W)</i>	150	300	1000	1200
<i>Rated voltage (VAC/DC)</i>	12-48 DC 100-240 AC	12-48 DC 100-240 AC	12-48 DC 100-240 AC	12-48 DC 100-240 AC
<i>Speed range (Rpm)</i>	5000 - 25000	5000 - 25000	5000 - 25000	5000 - 25000
<i>Max. rated torque (Ncm)</i>	10	15	38	42

<i>Thermal protection</i>				
<i>Double insulation</i>				
<i>Gearbox</i>				
<i>Ventilation (internal or external)</i>				
<i>Multiple speeds</i>				
<i>Double shaft</i>				
<i>UL approval</i>				

	
<i>Series</i>	<b>PM 62</b>
<i>Stack length (mm)</i>	x25 / x30 / x40
<i>Rated output power (W)</i>	57-123
<i>Rated voltage (VDC)</i>	12 / 24 / 48 / 100-240
<i>Speed range (Rpm)</i>	3000 - 9000
<i>Rated torque (Ncm)</i>	6-20

<i>EMC components</i>	
<i>Thermal protection</i>	
<i>Ventilation (internal or external)</i>	
<i>Double shaft</i>	
<i>UL approval</i>	

Preferred series    Standard product - MOQ may apply    On request

<b>Series</b>	<b>ST 17</b>	<b>ST 23</b>	<b>ST 34</b>
<i>Motor length (Nema)</i>	x14 / x16 / x20 / x24	x16 / x21 / x31	x37 / x48 / x55 / x62
<i>Rated current (A)</i>	0.4 - 2.00	1.00 - 4.00	3.00 - 8.00
<i>Holding torque (Ncm)</i>	27 - 114	70 - 210	520 - 1200
<i>Rotor inertia (gcm<sup>2</sup>)</i>	40 - 83	77 - 335	3460 - 8269
<i>Max. voltage (VDC)</i>	50	80	160
<i>Number of wires</i>	4	4	4
<i>Connection</i>	Connector	Connector	Leads

<i>Double shaft</i>			
<i>External controller</i>	DSE-I DSE-C	DSE-I DSE-C	DSE-I DSE-C
<i>Encoder</i>	RE 30	RE 30	RE 30
<i>Planetary gearbox</i>	PLG 42 SP	PLG 52 SP	PLG 75 SP
<i>Integrated/ attached controllers</i>	STE	STE	STE

<b>Series</b>	<b>BL 42</b>	<b>BL 57</b>	<b>BL 89</b>
<i>Number of poles</i>	6	4	8
<i>Motor length (mm)</i>	x50	x56 / x76 / x96	x56 / x76 / x96
<i>Rated output power (W)</i>	119	46 - 153	33 - 111
<i>Rated voltage (V)</i>	230 AC	24 / 40 DC	24 / 40 DC
<i>Rated speed (Rpm)</i>	28000	3850 - 4180	2850 - 3350
<i>Rated torque (Nm)</i>	4	11 - 35	11-33

<i>Encoder</i>		RE 20 RE 30	RE 20 RE 30	
<i>Brake</i>		E 90R	E 90R	
<i>Planetary gearbox</i>		PLG 42S PLG 52	PLG 42S PLG 52	
<i>Right angular gearbox</i>		SG 65 SG 80	SG 65 SG 80	

Preferred series Standard product - MOQ may apply On request



# *Brushless Blowers*

- » *Series TB*
- » *Series BB*


***Brushless Blowers DC***

Page 22	BB 42 76 mm <b>dCore DC</b>   612 042   Blower ByPass Brushless
Page 24	TB 89 145 mm DC   622 089   Blower Thru Flow Brushless
Page 26	BB 89 145 mm 1-Stage DC   612 089   Blower ByPass Brushless
Page 28	BB 89 145 mm 2-Stage DC   612 089   Blower ByPass Brushless
Page 30	BB 89 145 mm 3-Stage DC   612 089   Blower ByPass Brushless

***Brushless Blowers AC***

Page 32	TB 89 145 mm AC   622 089   Blower Thru Flow Brushless
Page 34	BB 89 145 mm 1-Stage AC Standard-Flow   612 089   Blower ByPass Brushless
Page 36	BB 89 145 mm 1-Stage AC High-Flow   612 089   Blower ByPass Brushless
Page 38	BB 89 145 mm 2-Stage AC   612 089   Blower ByPass Brushless
Page 40	BB 89 145 mm 3-Stage AC   612 089   Blower ByPass Brushless
Page 42	BB 89 193 mm AC   612 089   Blower ByPass Brushless
Page 44	BB 89 226 mm AC   612 089   Blower ByPass Brushless
Page 46	BB 158 312 mm AC 1Ph   612 158   Blower ByPass Brushless
Page 48	BB 158 312 mm AC 3Ph   612 158   Blower ByPass Brushless

# >> BB 42 76 mm dCore DC | 612 042

## Blower ByPass Brushless

- » High Speed BLDC Blower
- » Electronic Commutation
- » Hall Sensor Output

- » Aerodynamically Optimized
- » Compact and light weight
- » Low Sound Output



Data		Std. Output	Std. Output	High Output
Nominal voltage	VDC	12	24	24
Fan housing diameter	mm	73	73	73
Fan stages	n°	1	1	1
Max. airflow	m³/h	44	44	46
Max. pressure	kPa	7.5	7.5	9.5
Max. Input power	kPa	105	105	135
Input current	A	9	4.5	5.5
Max. speed	rpm	35000	35000	38500
Weight	Kg	0.5	0.5	0.5
Sound pressure level*	dBA	<73	<73	<73

\* At free flow conditions according to IEC 60704-1

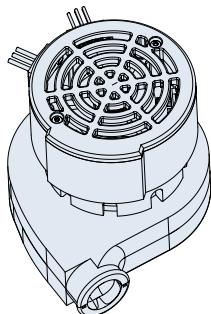
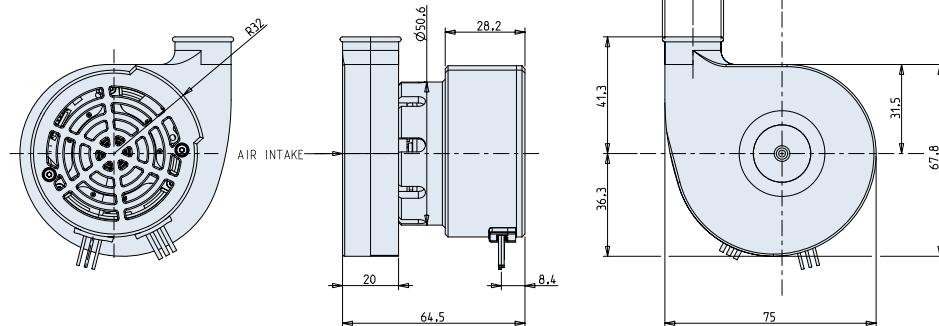
Alternative versions on request:

- » 36 VDC input
- » With mounting feet
- » With on-board drive controller  
(dCore models require external drive controller)

Features of versions with on-board drive controller:

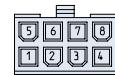
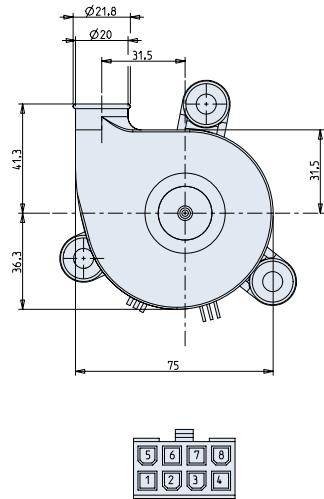
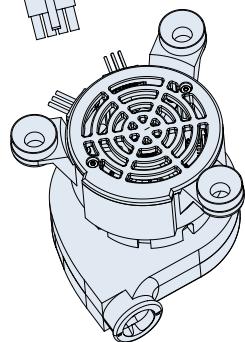
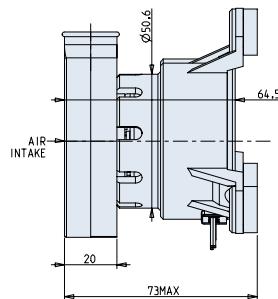
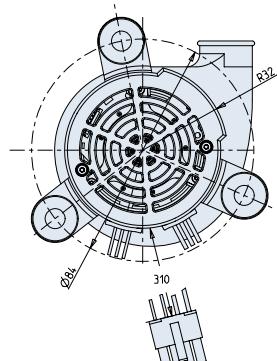
- » Analogue Speed command input 0-10 VDC
- » Sensorless commutation
- » Tach-output 2 ppr

### Dimensions in mm/ standard models



Pin Out	
Phase A	Red
Phase B	Black
Phase C	Yellow
Hall Sensor	
VCC	Red
GND	Black
H1	Green
H2	Yellow
H3	Brown

*Dimensions in mm/ models with optional mounting feet and connector*

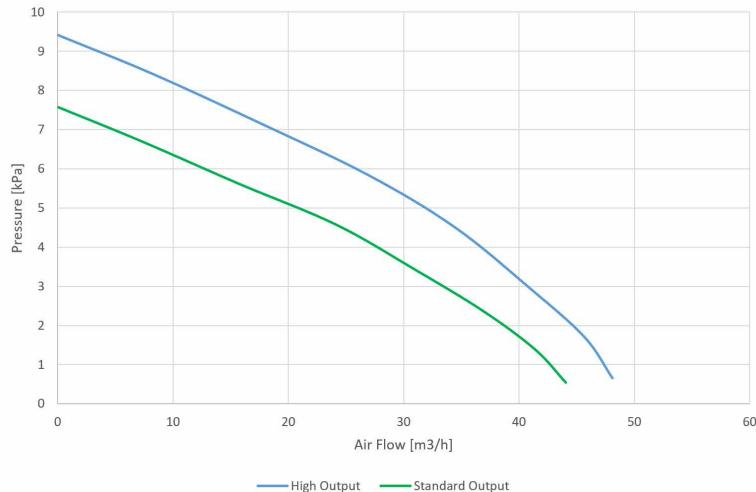


SCALE 2:1

**Circuit Diagram**

Description	J1
Hall HA	1
Hall HB	2
VCC	3
Phase SHC	4
Hall HC	5
GND	6
Phase SHA	7
Phase SHB	8

**Characteristic diagram**



# >> TB 89 145 mm DC | 622 089

## Blower Thru Flow Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard drive control
- » Closed-Loop speed control
- » Aerodynamically optimized impeller and housing
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller



Data		1-Stage	1-Stage	2-Stage	2-Stage
Nominal voltage	VDC	24	48	24	48
Fan housing diameter	mm	145	145	145	145
Fan stages	n°	1	1	2	2
Max. airflow	m³/h	230	190	123	146
Max. pressure	kPa	8.4	6.5	16	13.1
Max. vacuum	kPa	8	6	15	12.4
Input power	W	600	600	600	600
Current @ 120V	A	-	-	-	-
Current @ 230V	A	-	-	-	-
Current	A	19	9	18	8
Max. speed	rpm	19000	16500	19000	16500
Weight	Kg	2.7	2.7	2.7	2.7
<b>Standard Features</b>					
Speed command input	VDC	0-10	0-10	0-10	0-10
Tach output	ppr	2	2	2	2

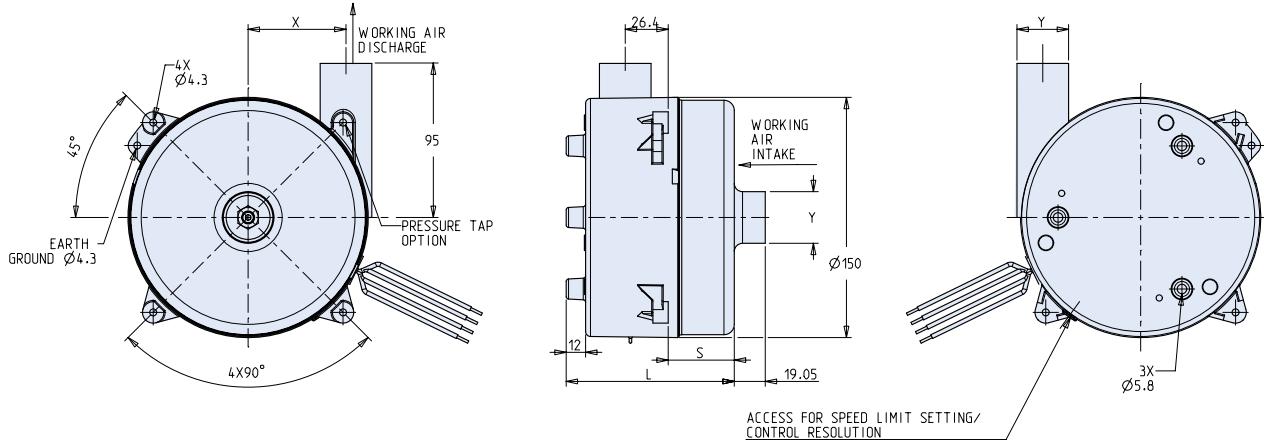
### Options

- A) Mechanical
- » Enhanced corrosion protection
  - » No inlet tube on working air
  - » Cooling air inlet tube
  - » Various mounting patterns

### B) Electrical / Software

- » No options available

Dimensions in mm

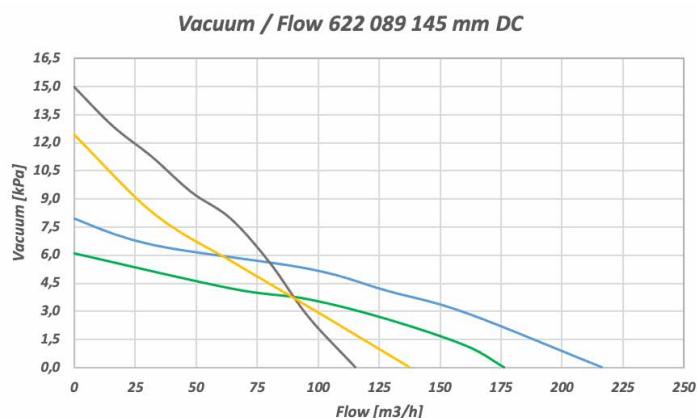
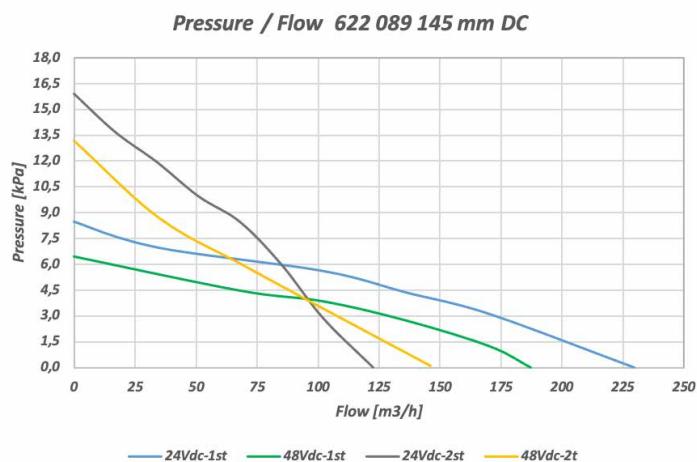


Lead wires

Colour	Function
Red	VDC
Black	Common
Orange	Speed command / 0-10VDC
Blue	Tach output

Blower	L	S	X	Y <sub>0</sub>
1-stage	84	20.6	53.8	44.5
2-Stage	104	40.6	60.2	44.5

Characteristic diagram



## >> BB 89 145 mm 1-Stage DC | 612 089

### Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard drive control
- » Closed-Loop speed control
- » Aerodynamically optimized impeller and housing
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller



Data		24 V	48 V
Nominal voltage	VDC	24	48
Fan housing diameter	mm	145	145
Fan stages	n°	1	1
Max. airflow	m³/h	319	275
Max. pressure	kPa	5.4	5
Max. vacuum	kPa	5.1	4.7
Input power	W	600	600
Current	A	20	8
Max. speed	rpm	17500	17500
Weight	Kg	2.7	2.7
Standard Features			
Speed command input	VDC	0-10	0-10
Tach output	ppr	2	2

#### Options

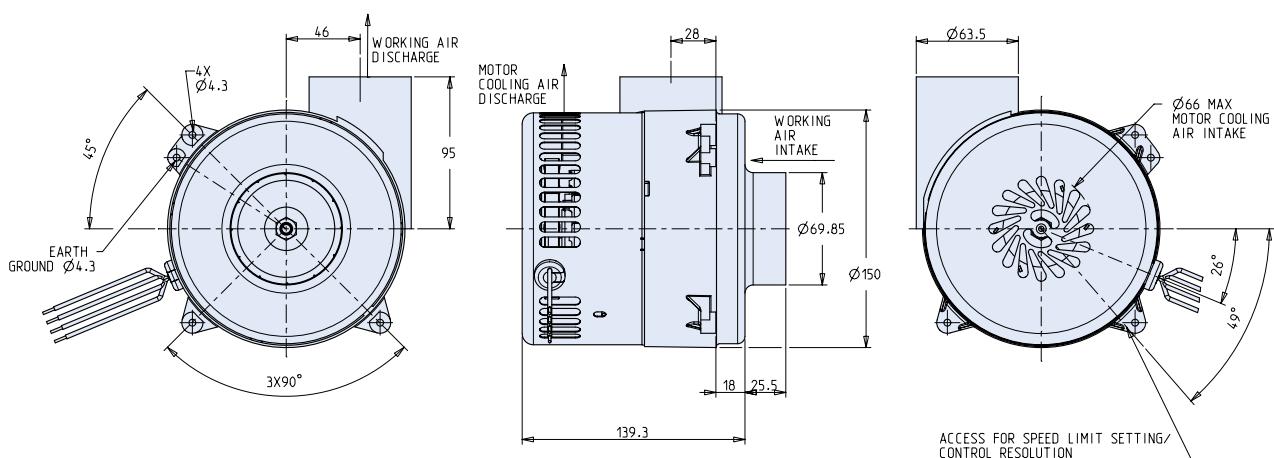
##### A) Mechanical

- » Enhanced corrosion protection
- » No inlet tube on working air
- » Cooling air inlet tube
- » Various mounting patterns

##### B) Electrical / Software

- » No options available

*Dimensions in mm*

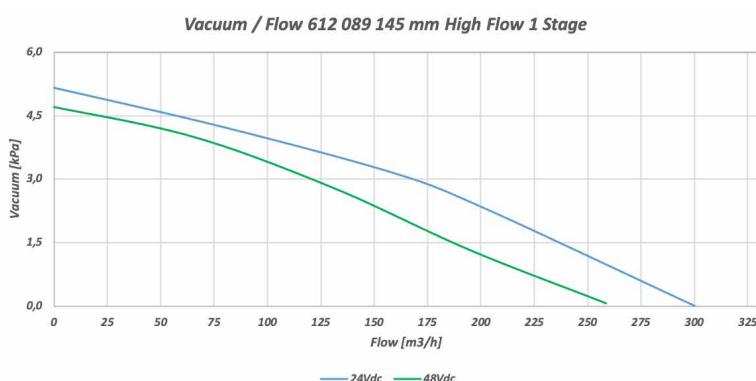
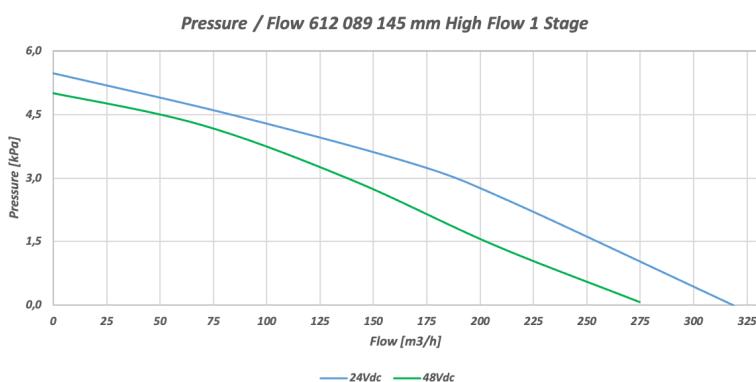


*Lead wires*

Colour	Function
Red	VDC
Black	Common
Orange	Speed command
Blue	Tach Output

See page 51 for Mechanical Options

*Characteristic diagram*



## >> BB 89 145 mm 2-Stage DC | 612 089

### Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard drive control
- » Closed-Loop speed control
- » Aerodynamically optimized impeller and housing
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller



Data		24 V	48 V
Nominal voltage	VDC	24	48
Fan housing diameter	mm	145	145
Fan stages	n°	2	2
Max. airflow	m³/h	170	150
Max. pressure	kPa	14.5	12.4
Max. vacuum	kPa	13.6	11.6
Input power	W	600	600
Current	A	20	9
Max. speed	rpm	17500	16500
Weight	Kg	2.7	2.7
Standard Features			
Speed command input	VDC	0-10	0-10
Tach output	ppr	2	2

#### Options

##### A) Mechanical

- » Enhanced corrosion protection
- » No inlet tube on working air
- » Cooling air inlet tube
- » Various mounting patterns

##### B) Electrical / Software

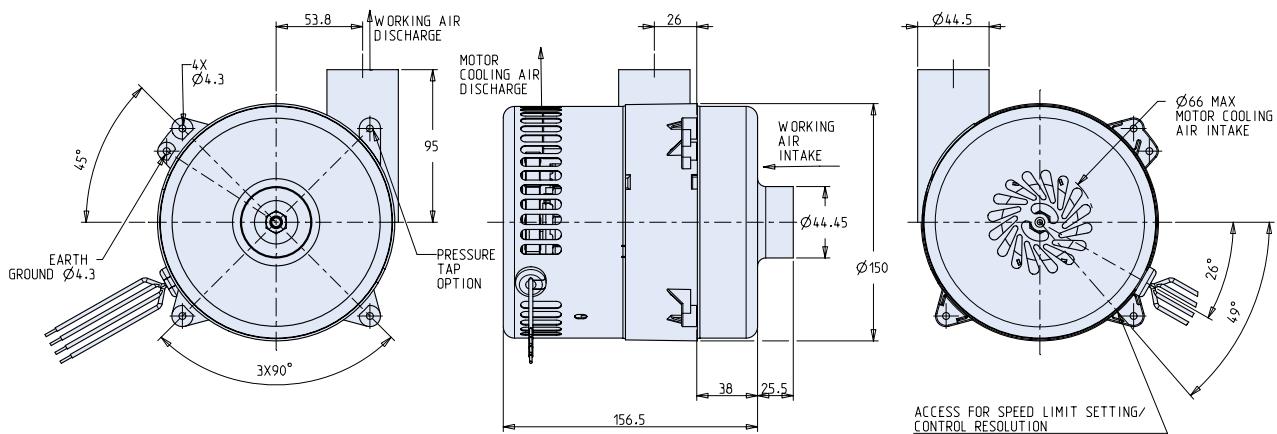
- » No options available

# >> BB 89 145 mm 2-Stage DC | 612 089

Blower ByPass Brushless



## Dimensions in mm

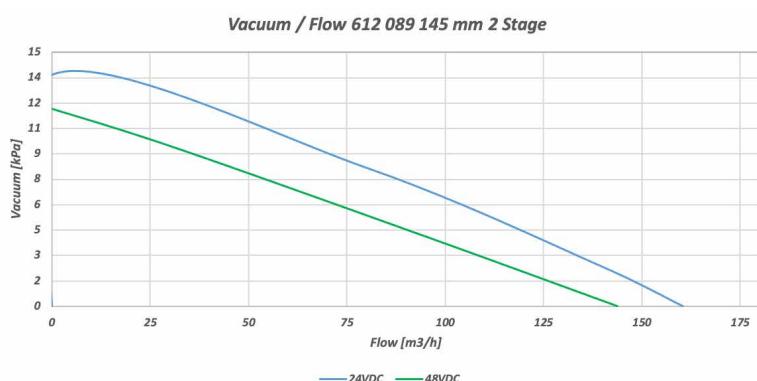
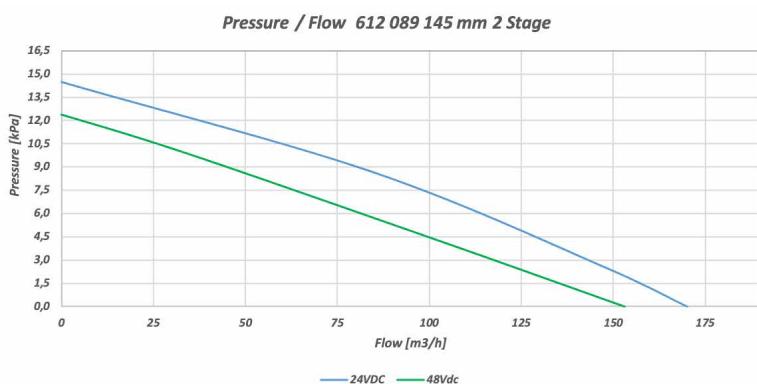


## Lead wires

Colour	Function
Red	VDC
Black	Common
Orange	Speed command / 0-10VDC
Blue	Tach output

See page 51 for Mechanical Options

## Characteristic diagram



## >> BB 89 145 mm 3-Stage DC | 612 089

### Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard drive control
- » Closed-Loop speed control
- » Aerodynamically optimized impeller and housing
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller



Data		24 V	48 V
Nominal voltage	VDC	24	48
Fan housing diameter	mm	145	145
Fan stages	n°	3	3
Max. airflow	m³/h	110	109
Max. pressure	kPa	20.5	19.6
Max. vacuum	kPa	19.5	18.5
Input power	W	600	600
Current	A	20	9
Max. speed	rpm	17000	16500
Weight	Kg	2.7	2.7
Standard Features			
Speed command input	VDC	0-10	0-10
Tach output	ppr	2	2

#### Options

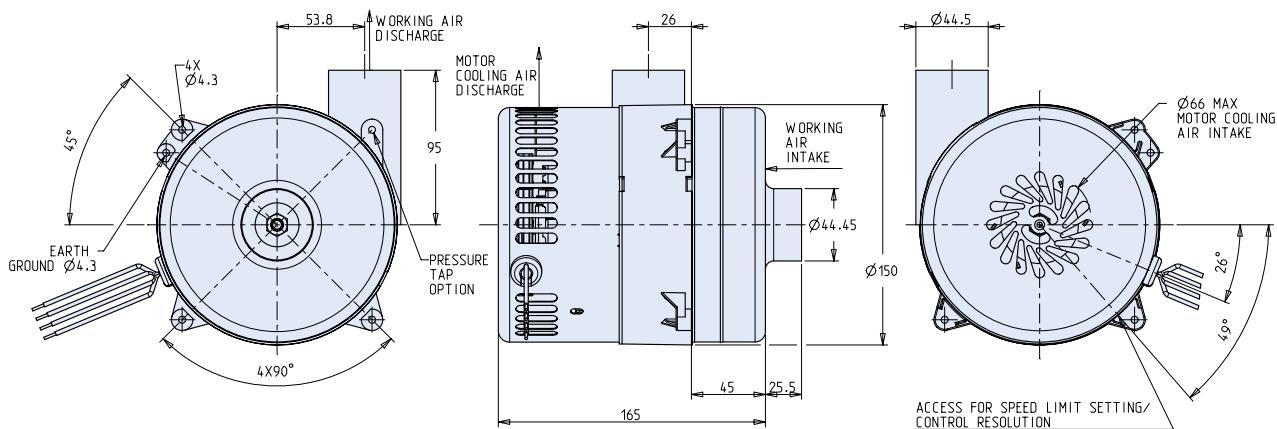
##### A) Mechanical

- » Enhanced corrosion protection
- » No inlet tube on working air
- » Cooling air inlet tube
- » Various mounting patterns

##### B) Electrical / Software

- » No options available

*Dimensions in mm*

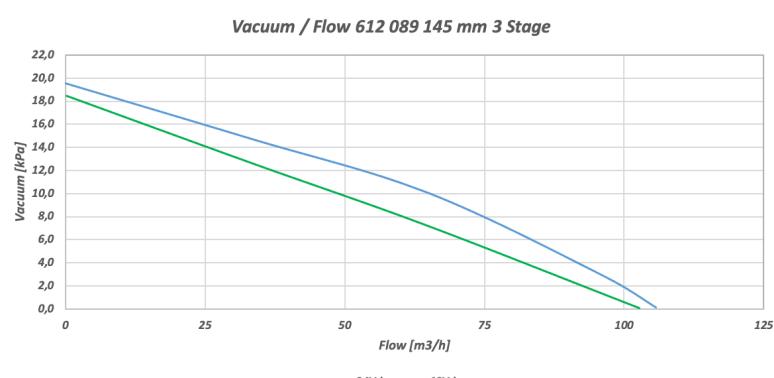
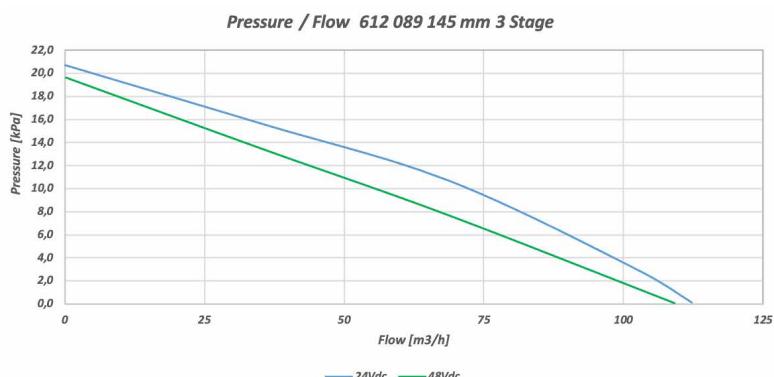


*Lead wires*

Colour	Function
Red	VDC
Black	Common
Orange	Speed command / 0-10VDC
Blue	Tach output

See page 51 for Mechanical Options

*Characteristic diagram*



# >> TB 89 145 mm AC | 622 089

## Blower Thru Flow Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard controller with digital signal processor (DSP)
- » Programmable for various speed profiles and signals
- » Closed-Loop speed control
- » Universal voltage capability
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller
- » Aerodynamically optimized impeller and housing



Data		1-Stage	2-Stage
Nominal voltage	V	100-240	100-240
Frequency	Hz	50/60	50/60
Phase	~	1	1
Fan housing diameter	mm	145	145
Fan stages	n°	1	2
Max. airflow	m³/h	221	122
Max. pressure	kPa	9	14.2
Max. vacuum	kPa	8.4	13.4
Input power	W	600	600
Current @ 120V	A	10	10
Current @ 230V	A	5	5
Max. speed	rpm	19000	17000
Weight	Kg	2.7	2.7
<i>Standard Features</i>			
Speed command input	VDC	0-10	0-10

### Options

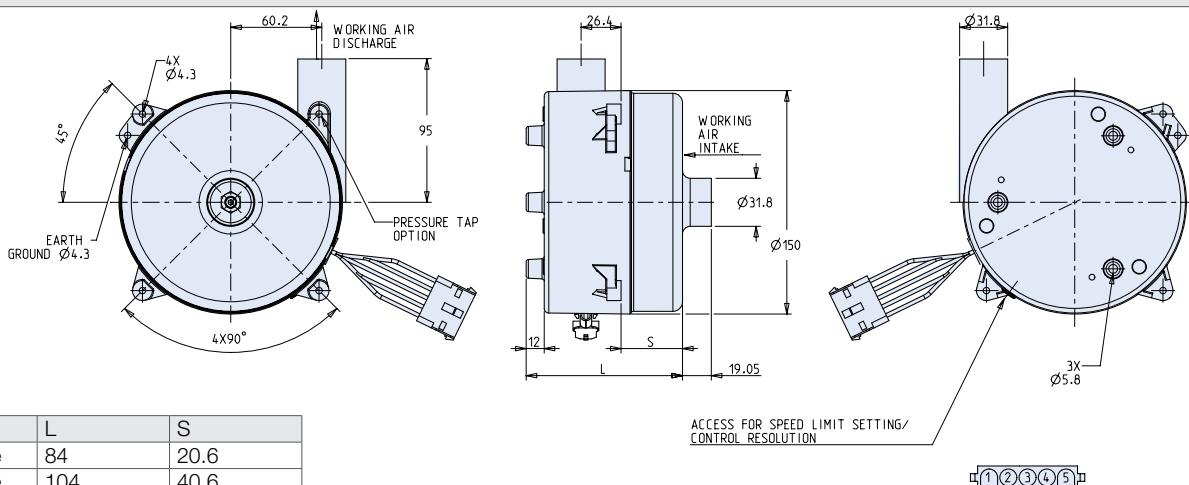
#### A) Mechanical

- » No inlet tube on working air
- » Various mounting patterns

#### B) Electrical / Software

- » Digital output signal
- » Tach resolution (1 to 6 ppr)
- » Speed command input (PWM or 5 - 20mA)
- » Customized software functions

*Dimensions in mm*



Speed Control Options and Electrical Connection

PWM: 400Hz – 20Mz +10V nominal, min 10% duty cycle

Pin #	Function
1	Speed command PWM
2	Speed command PWM

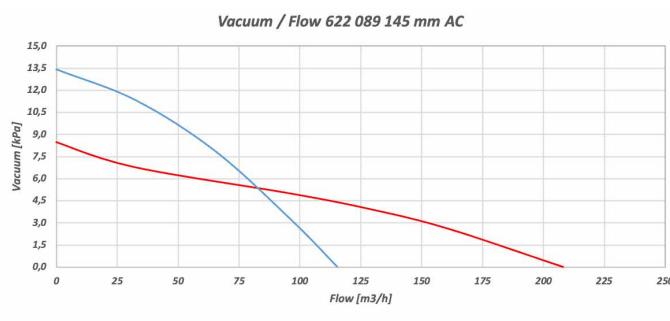
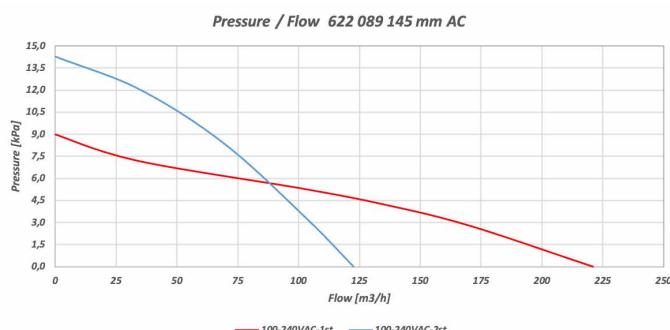
Current: 5mA – 20mA +10V nominal

Pin #	Function
1	Speed command current
2	Speed command current

On/Off: Without Electrical Speed Control

Pin #	Function
1	Not used
2	Not used

Characteristic diagram



# >> BB 89 145 mm 1-Stage AC Standard-Flow | 612 089

## Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard controller with digital signal processor (DSP)
- » Programmable for various speed profiles and signals
- » Closed-Loop speed control
- » Universal voltage capability
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller
- » Aerodynamically optimized impeller and housing



Data		650W	1200W	1400W
Nominal voltage	VAC	100-240	100-240	230
Frequency	Hz	50/60	50/60	50/60
Phase	~	1	1	1
Fan housing diameter	mm	145	145	145
Fan stages	n°	1	1	1
Max. airflow	m³/h	170	272	300
Max. pressure	KPa	7.6	14	15.5
Max. vacuum	KPa	7.2	13.4	15
Input power	W	650	1200	1400
Current @ 120V	A	7	12	-
Current @ 230V	A	5	9	11
Max. speed	rpm	13500	22500	25000
Weight	Kg	2.7	2.7	2.7
<hr/>				
<b>Standard Features</b>				
Speed command input	VDC	0-10	0-10	0-10

### Options

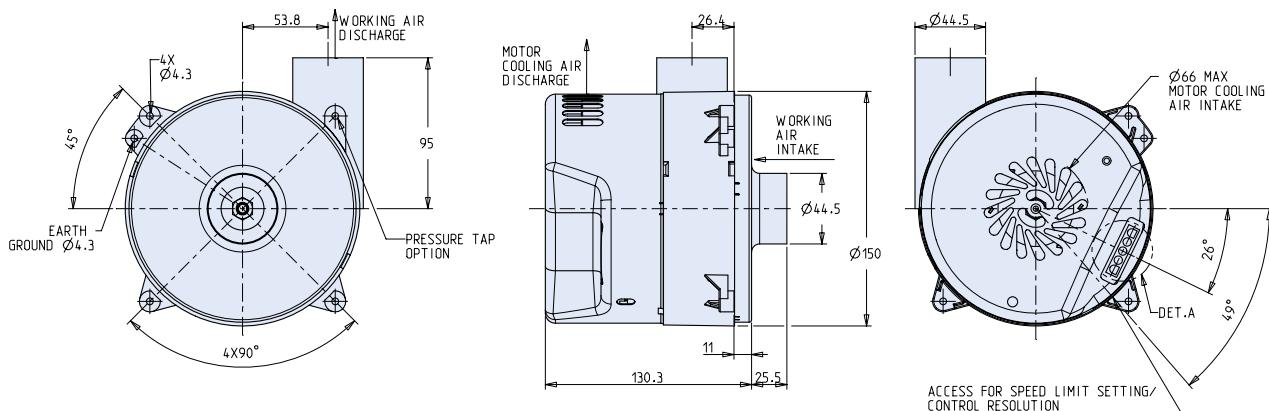
#### A) Mechanical

- » Enhanced corrosion protection
- » No inlet tube on working air
- » Working air peripheral discharge
- » Cooling air inlet tube
- » Various mounting patterns

#### B) Electrical / Software

- » Various digital output signals
- » Tach output resolution (up to 6 ppr)
- » Speed command input (PWM or 5 - 20mA)
- » Open-loop speed control
- » Customized software functions
- » External potentiometer inputs
- » Auxiliary DC voltage output

*Dimensions in mm*



① ② ③ ④ ⑤

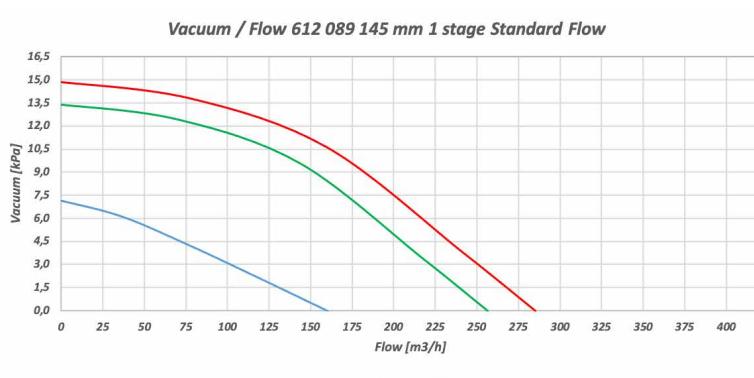
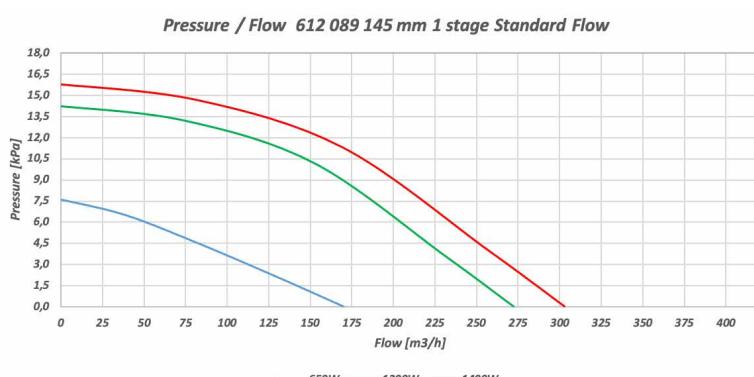
See page 50 for Mechanical Options

See page 97 for Connector Harnesses

*Pin Assignment*

Pin Assignment	
Mating Connector: AMP Mate-N-Lok 350809-1 using universal Mate-N-Lok Sockets with 18 gauge wire	
Mating Connector Pins: Mate-N-Lok 350874-1	
Pin #	Function
1	Speed command 0-10VDC
2	Speed command 0-10VDC
3	Ground
4	Line
5	Neutral

*Characteristic diagram*



# >> BB 89 145 mm 1-Stage AC High-Flow | 612 089

## Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard controller with digital signal processor (DSP)
- » Programmable for various speed profiles and signals
- » Closed-Loop speed control
- » Universal voltage capability
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller
- » Aerodynamically optimized impeller and housing



Data		650W	1200W	1400W
Nominal voltage	VAC	100-240	100-240	230
Frequency	Hz	50/60	50/60	50/60
Phase	~	1	1	1
Fan housing diameter	mm	145	145	145
Fan stages	n°	1	1	1
Max. airflow	m3/h	350	410	455
Max. pressure	KPa	5.6	10	11.1
Max. vacuum	KPa	5.3	9.4	10.5
Input power	W	650	1200	1400
Current @ 120V	A	7	12	-
Current @ 230V	A	5	9	11
Max. speed	rpm	13500	22500	25000
Weight	Kg	2.7	2.7	2.7
<hr/>				
Standard Features				
Speed command input	VDC	0-10	0-10	0-10

### Options

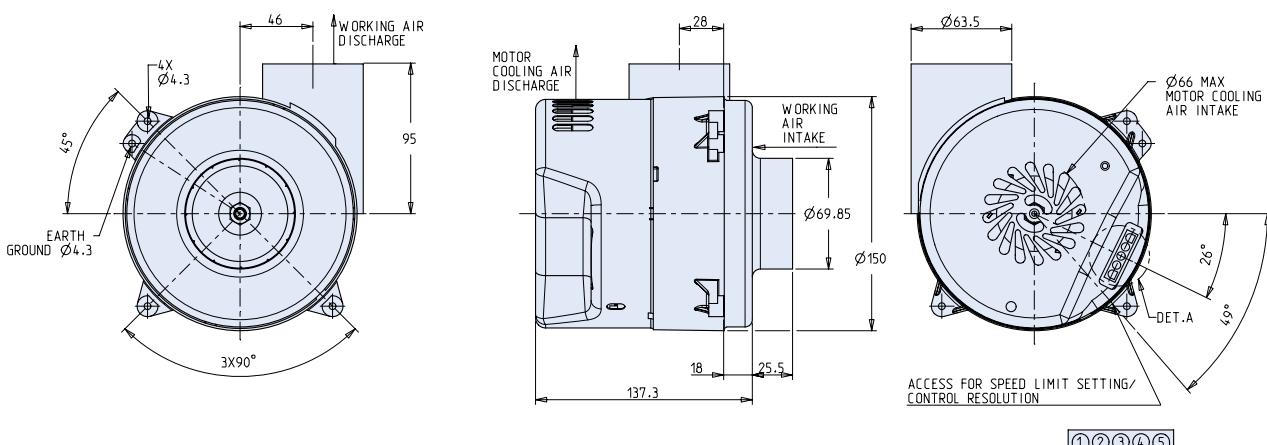
#### A) Mechanical

- » Enhanced corrosion protection
- » No inlet tube on working air
- » Working air peripheral discharge
- » Cooling air inlet tube
- » Various mounting patterns

#### B) Electrical / Software

- » Various digital output signals
- » Tach output resolution (up to 6 ppr)
- » Speed command input (PWM or 5 - 20mA)
- » Open-loop speed control
- » Customized software functions
- » External potentiometer inputs
- » Auxiliary DC voltage output

*Dimensions in mm*



See page 50 for Mechanical Options

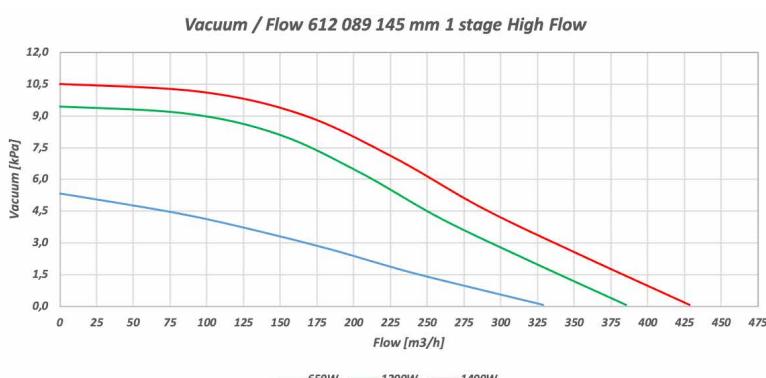
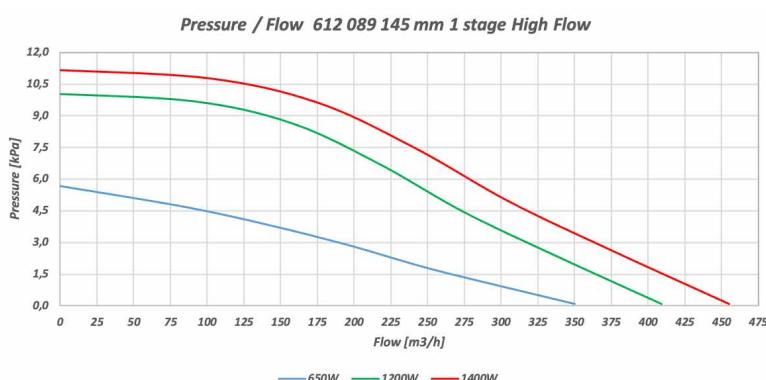
See page 97 for Connector Harnesses

*Pin Assignment*

Mating Connector: AMP Mate-N-Lok 350809-1,  
using universal Mate-N-Lok Sockets with 18 gauge wire  
Mating Connector Pins: Mate-N-Lok 350874-1

Pin #	Function
1	Speed command 0-10VDC
2	Speed command 0-10VDC
3	Ground
4	Line
5	Neutral

*Characteristic diagram*



# >> BB 89 145 mm 2-Stage AC | 612 089

## Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard controller with digital signal processor (DSP)
- » Programmable for various speed profiles and signals
- » Closed-Loop speed control
- » Universal voltage capability
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller
- » Aerodynamically optimized impeller and housing



Data		650W	1200W	1400W
Nominal voltage	VAC	100-240	100-240	230
Frequency	Hz	50/60	50/60	50/60
Phase	~	1	1	1
Fan housing diameter	mm	145	145	145
Fan stages	n°	2	2	2
Max. airflow	m3/h	178	223	234
Max. pressure	KPa	12.5	21.5	27.5
Max. vacuum	KPa	11.7	20.3	26
Input power	W	650	1200	1400
Current @ 120V	A	7	12	-
Current @ 230V	A	5	9	11
Max. speed	rpm	15000	23000	24500
Weight	Kg	2.7	2.7	2.7
Standard Features				
Speed command input	VDC	0-10	0-10	0-10

### Options

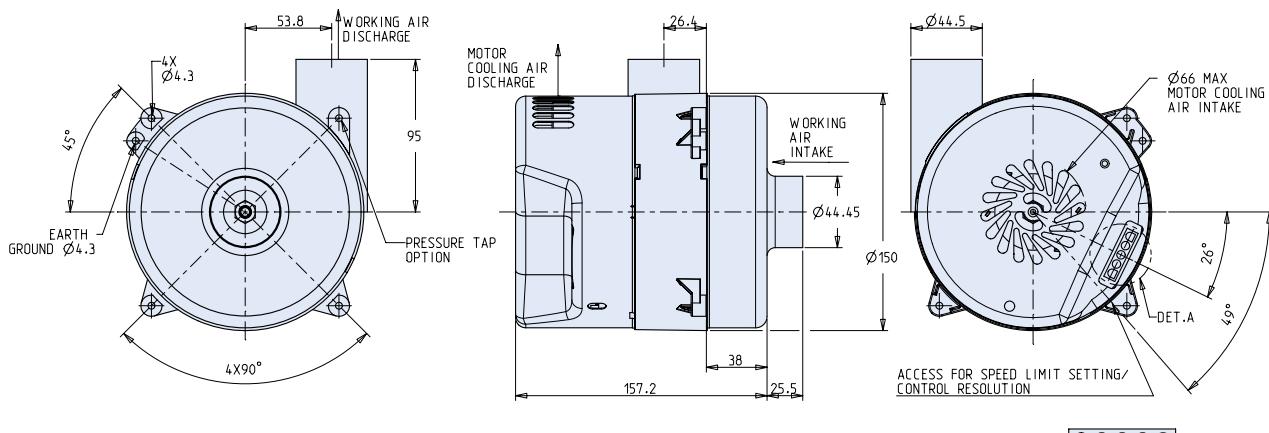
#### A) Mechanical

- » Enhanced corrosion protection
- » No inlet tube on working air
- » Working air peripheral discharge
- » Cooling air inlet tube
- » Various mounting patterns

#### B) Electrical / Software

- » Various digital output signals
- » Tach output resolution (up to 6 ppr)
- » Speed command input (PWM or 5 - 20mA)
- » Open-loop speed control
- » Customized software functions
- » External potentiometer inputs
- » Auxiliary DC voltage output

*Dimensions in mm*



See page 50 for Mechanical Options

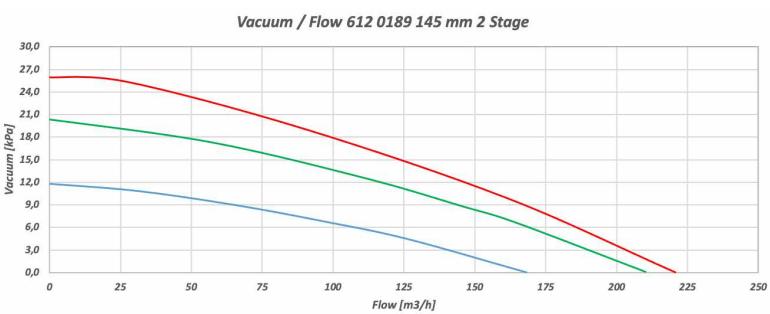
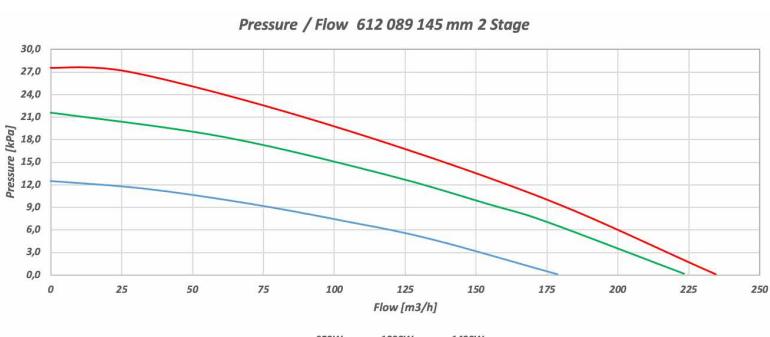
See page 97 for Connector Harnesses

*Pin Assignment*

Mating Connector: AMP Mate-N-Lok 350809-1,  
using universal Mate-N-Lok Sockets with 18 gauge wire  
Mating Connector Pins: Mate-N-Lok 350874-1

Pin #	Function
1	Speed command 0-10VDC
2	Speed command 0-10VDC
3	Ground
4	Line
5	Neutral

*Characteristic diagram*



# >> BB 89 145 mm 3-Stage AC | 612 089

## Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard controller with digital signal processor (DSP)
- » Programmable for various speed profiles and signals
- » Closed-Loop speed control
- » Universal voltage capability
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller
- » Aerodynamically optimized impeller and housing



Data		650W	1200W	1400W
Nominal voltage	VAC	100-240	100-240	230
Frequency	Hz	50/60	50/60	50/60
Phase	~	1	1	1
Fan housing diameter	mm	145	145	145
Fan stages	n°	3	3	3
Max. airflow	m3/h	73	145	150
Max. pressure	KPa	19	38.5	42
Max. vacuum	KPa	18.1	36.3	39.6
Input power	W	650	1200	1400
Current @ 120V	A	7	12	-
Current @ 230V	A	5	9	11
Max. speed	rpm	13500	23000	25000
Weight	Kg	2.7	2.7	2.7
<hr/>				
<b>Standard Features</b>				
Speed command input	VDC	0-10	0-10	0-10

### Options

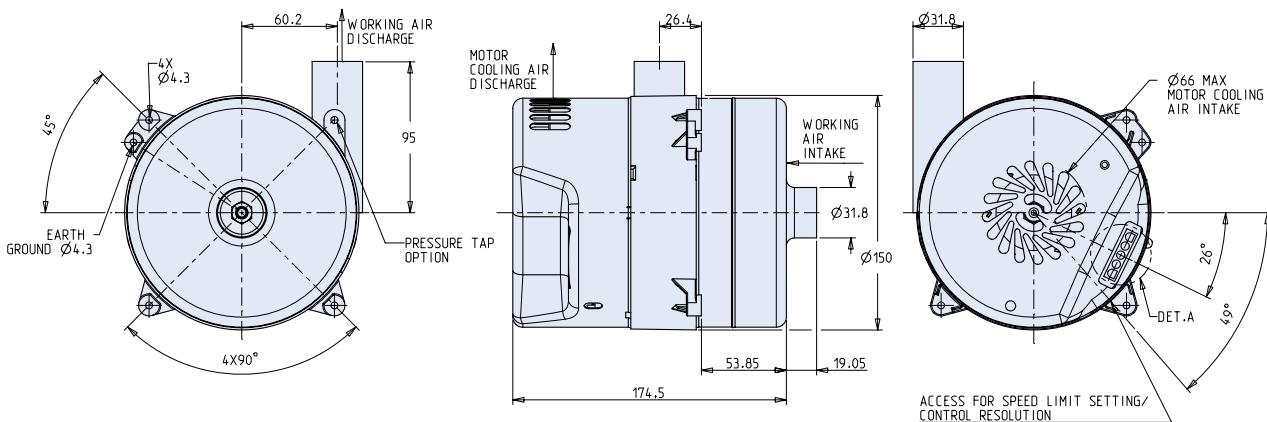
#### A) Mechanical

- » Enhanced corrosion protection
- » No inlet tube on working air
- » Working air peripheral discharge
- » Cooling air inlet tube
- » Various mounting patterns

#### B) Electrical / Software

- » Various digital output signals
- » Tach output resolution (up to 6 ppr)
- » Speed command input (PWM or 5 - 20mA)
- » Open-loop speed control
- » Customized software functions
- » External potentiometer inputs
- » Auxiliary DC voltage output

Dimensions in mm



①②③④⑤

See page 50 for Mechanical Options

See page 97 for Connector Harnesses

Pin Assignment

Mating Connector: AMP Mate-N-Lok 350809-1,  
using universal Mate-N-Lok Sockets with 18 gauge wire

Mating Connector Pins: Mate-N-Lok 350874-1

Pin # Function

1 Speed command 0-10VDC

2 Speed command 0-10VDC

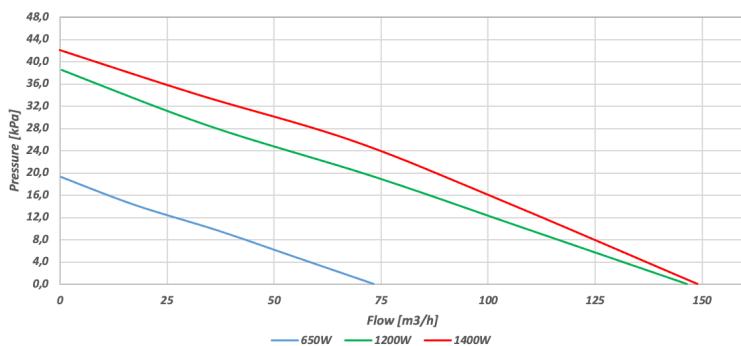
3 Ground

4 Line

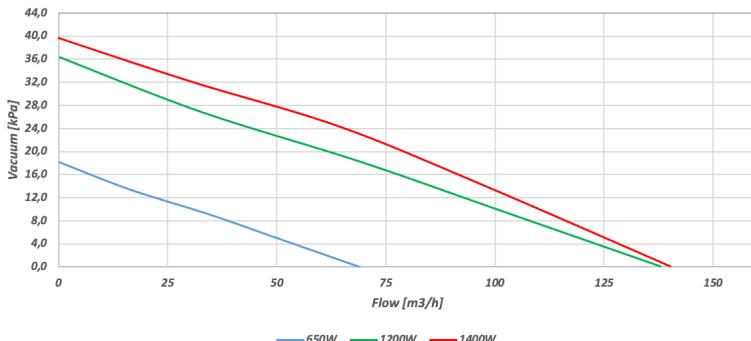
5 Neutral

Characteristic diagram

Pressure / Flow 612 089 145 mm 3 Stage



Vacuum / Flow 612 089 145 mm 3 Stage



# >> BB 89 193 mm AC | 612 089

## Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard controller with digital signal processor (DSP)
- » Programmable for various speed profiles and signals

- » Closed-Loop speed control
- » Universal voltage capability
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller
- » Aerodynamically optimized impeller and housing



Data		650W	1200W	1400W
Nominal voltage	VAC	100-240	100-240	230
Frequency	Hz	50/60	50/60	50/60
Phase	~	1	1	1
Fan housing diameter	mm	193	193	193
Fan stages	n°	1	1	1
Max. airflow	m3/h	310	370	400
Max. pressure	KPa	9.7	10.8	10.8
Max. vacuum	KPa	9	9.8	9.8
Nominal Max. Input power	W	650	1200	1400
Current @ 120V	A	8	12.2	-
Current @ 230V	A	5	8.6	10
Max. speed	rpm	15000	15000	15000
Weight	Kg	2.7	2.7	2.7
Standard Features				
Speed command input	VDC	0-10	0-10	0-10
Tach output	ppr	2	2	2

### Options

#### A) Mechanical

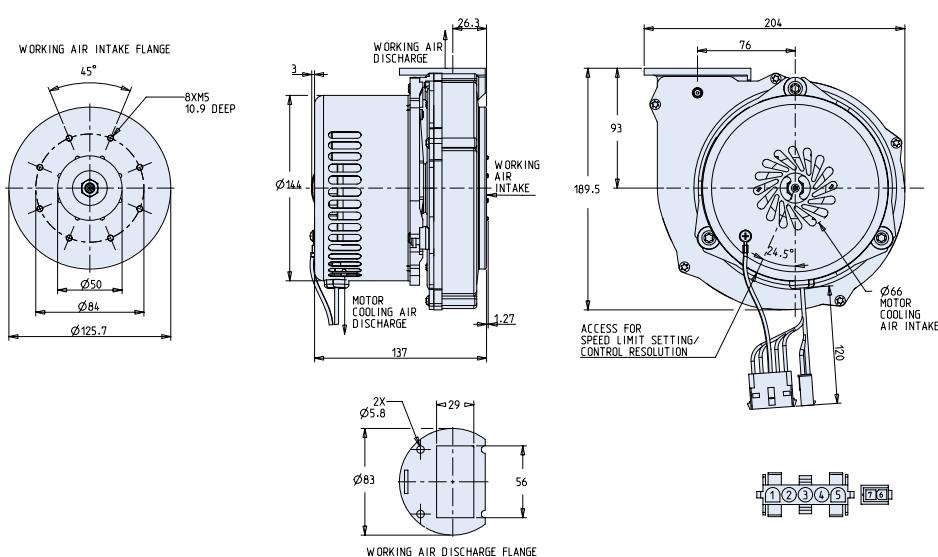
- » Enhanced corrosion protection
- » Various exhaust flange details
- » Various inlet flange details

#### B) Electrical / Software

- » Various digital output signals (tach-out 2ppr std.)
- » Tach output resolution (up to 6 ppr)
- » Speed command input (PWM or 5-20mA)
- » Open-loop speed control
- » Customized software functions
- » External potentiometer input s
- » Auxiliary DC voltage output
- » without digital output  
(cable/connector removed)

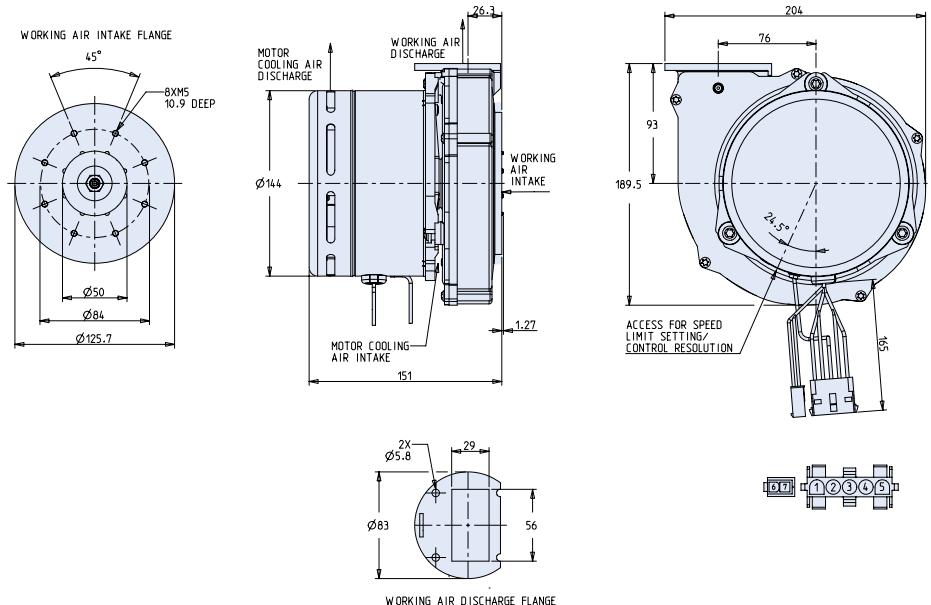
### Dimensions in mm

650 W



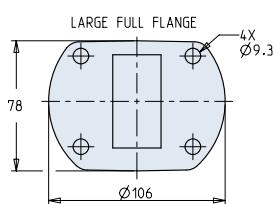
Dimensions in mm

1200/1400 W

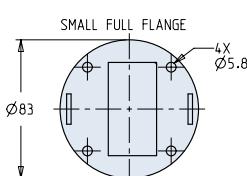
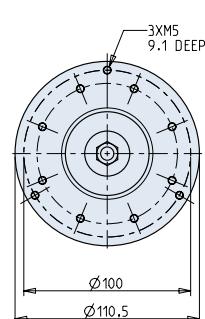


Mechanical options

WORKING AIR DISCHARGE FLANGE



WORKING AIR INTAKE FLANGE



Speed Control options and Electrical Connection

Pin Assignment

05P AMP Mate-N-Lok 350810-1	2 Pole Molex 39-01-3029
Male Pins AMP 350873-1	Male Pins Molex PN 39000061
Pin #	Function
1	Speed command Common
2	Speed command 0-10VDC
3	Ground
4	Line
5	Neutral

PWM: 400Hz – 20Mz +10V nominal, min 10% duty cycle

Pin #	Function
1	Speed command PWM
2	Speed command PWM

Current: mA – 20mA +10V nominal

Pin #	Function
1	Speed command current
2	Speed command current

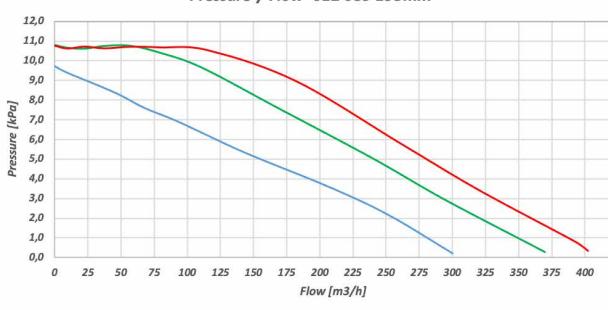
On/Off: Without Electrical Speed Control

Pin #	Function
1	Not used
2	Not used

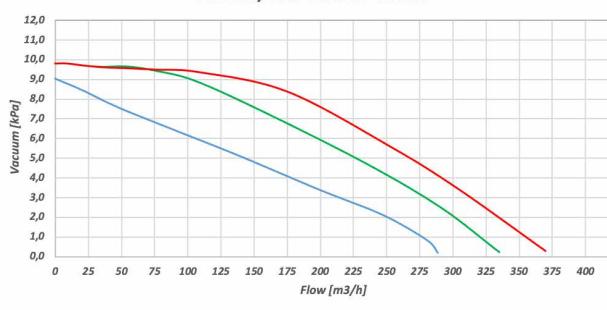
Molex connector (Pin # 6 & 7) not present

Characteristic diagram

Pressure / Flow 612 089 193mm



Vacuum / Flow 612 089 193mm



# >> BB 89 226 mm AC | 612 089

## Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard controller with digital signal processor (DSP)
- » Programmable for various speed profiles and signals
- » Closed-Loop speed control
- » Universal voltage capability
- » Onboard calibration potentiometer
- » Robust aluminium housing and impeller
- » Aerodynamically optimized impeller and housing



Data		850W	1200W	1400W
Nominal voltage	VAC	100-240	100-240	230
Frequency	Hz	50/60	50/60	50/60
Phase	~	1	1	1
Fan housing diameter	mm	226	226	226
Fan stages	n°	1	1	1
Max. airflow	m³/h	730	895	930
Max. pressure	kPa	3.5	3.5	3.5
Max. vacuum	kPa	3.3	3.3	3.3
Input power	W	850	1200	1400
Current @ 120V	A	9	12	-
Current @ 230V	A	7	9	10
Max. speed	rpm	11000	11000	11000
Weight	Kg	4	4	4
<hr/>				
<b>Standard Features</b>				
Speed command input	VDC	0-10	0-10	0-10
Tach output	ppr	2	2	2

### Options

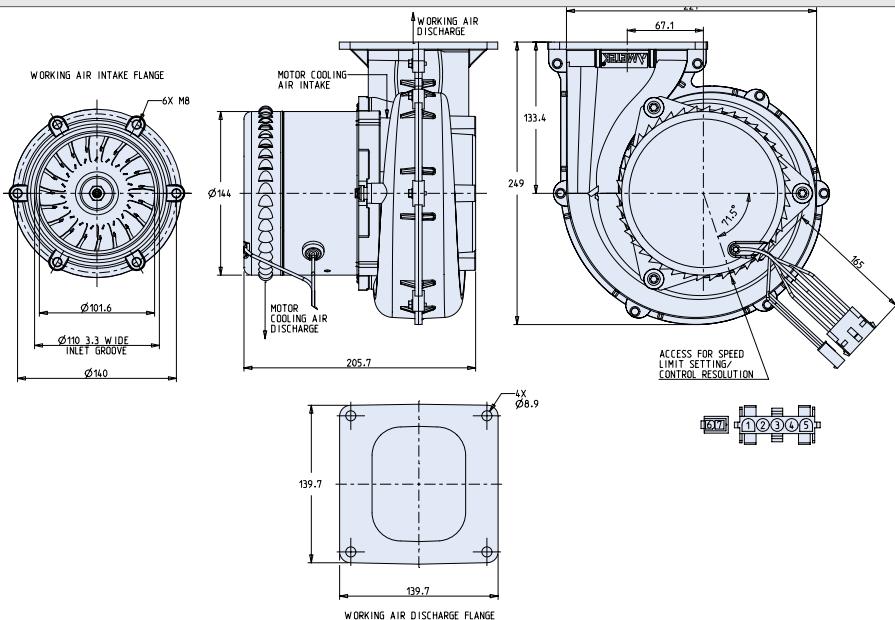
#### A) Mechanical

- » Enhanced corrosion protection

#### B) Electrical / Software

- » Various digital output signals (tach-out 2ppr std.)
- » Tach output resolution (up to 6 ppr)
- » Speed command input (PWM or 5-20mA)
- » Open-loop speed control
- » Customized software functions
- » External potentiometer inputs
- » Auxiliary DC voltage output
- » Without digital output

*Dimensions in mm*



Speed Control options and Electrical Connection

PWM: 400Hz – 20Mz +10V nominal, min 10% duty cycle

Pin #	Function
1	Speed command PWM
2	Speed command PWM

Current: 5mA – 20mA +10V nominal

Pin #	Function
1	Speed command current
2	Speed command current

Pin Assignment

05P AMP Mate-N-Lok 350810-1 | 2 Pole Molex 39-01-3029

Male Pins AMP 350873-1 | Male Pins Molex PN 39000061

Pin #	Function	Pin #	Function
1	Speed command Common	6	Signal Digital Output
2	Speed command 0-10VDC	7	Common Digital Output
3	Ground		
4	Line		
5	Neutral		

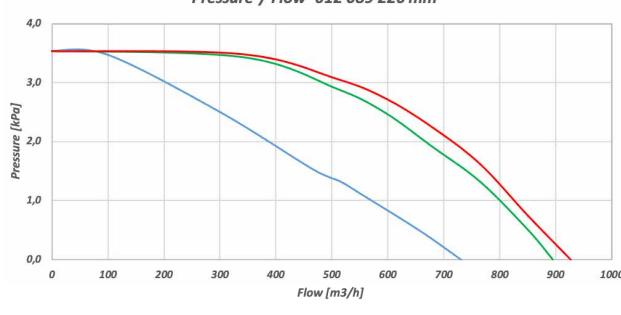
On/Off: Without Electrical Speed Control

Pin #	Function
1	Not used
2	Not used

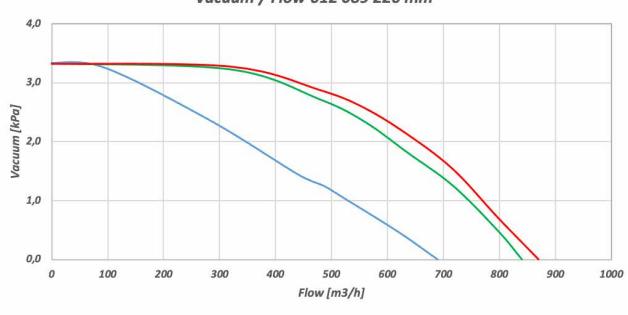
Molex connector (Pin # 6 & 7) not present

Characteristic diagram

Pressure / Flow 612 089 226 mm



Vacuum / Flow 612 089 226 mm



# >> BB 158 312 mm AC 1Ph | 612 158

## Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard controller with digital signal processor (DSP)
- » Programmable for various speed profiles and signals

- » Aerodynamically optimized impeller and housing
- » Closed-Loop speed control
- » Robust aluminium housing and impeller



Data		2500W	1800W
Nominal voltage	VAC	120	230
Frequency	Hz	60	50
Phase	~	1	1
Fan housing diameter	mm	312	312
Fan stages	n°	1	1
Max. airflow	m³/h	1850	1620
Max. pressure	KPa	4.8	4.8
Max. vacuum	KPa	4.4	4.4
Input power	W	2500	1800
Current	A	28	13
Max. speed	rpm	9500	9500
Weight	Kg	12.7	12.7
Standard Features			
Speed command input	VDC	0-10	0-10
Tach output	ppr	2	2

### Options

#### A) Mechanical

- » Large exhaust flange

#### B) Electrical / Software

- » Various digital output signals (tach-out 2ppr std.)
- » Tach output resolution (up to 6 ppr)
- » Speed command input (PWM or 5-20mA)
- » Open-loop speed control

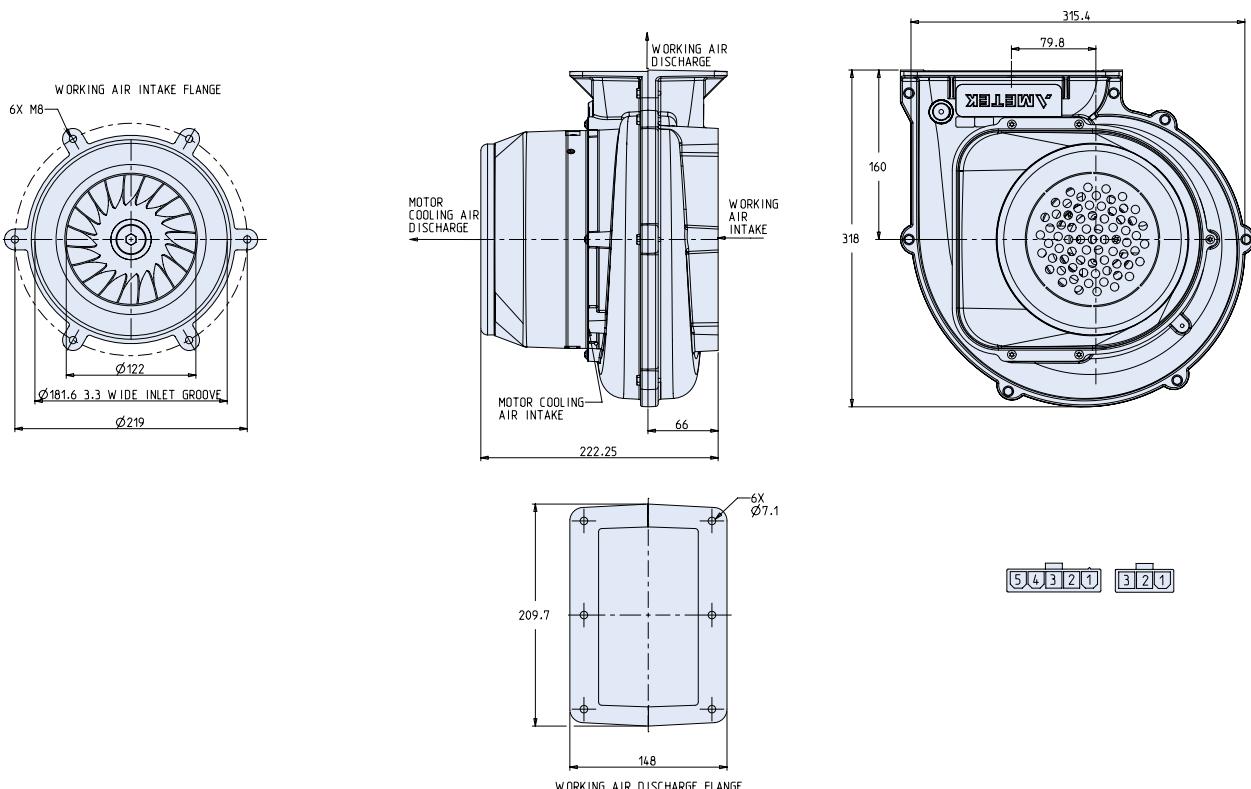
- » Customized software functions

- » External potentiometer inputs

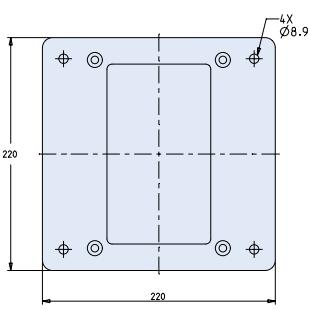
- » Auxiliary DC voltage output

- » Without digital output

*Dimensions in mm*



Mechanical options



MECHANICAL OPTIONS:  
WORKING AIR DISCHARGE FLANGE

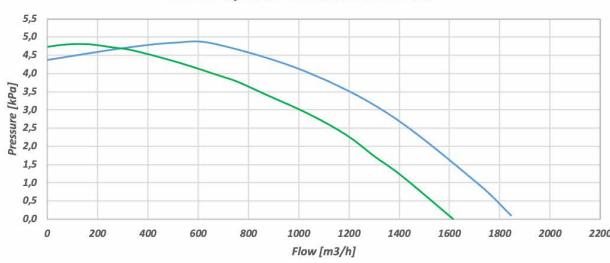
See page 97  
for Connector Harnesses

*Pin Assignment*

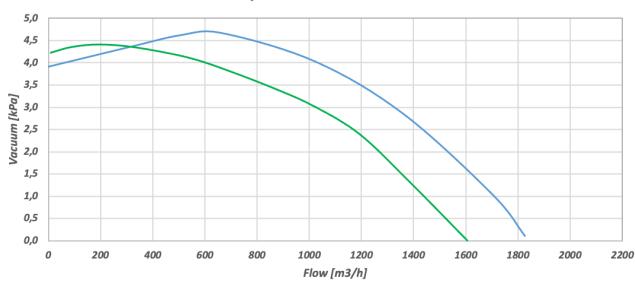
120V	Molex 10-89-7042	Molex 39-30-3056
230V	Molex 1-350943-0	Molex 39-30-3056
Pin #	Function (Power)	Pin # Function (Control)
1	AC Input (Common)	1 Not used
2	A/C Input	2 Tach Output
3	Not used	3 Signal input 0..10V
		4 Not used
		5 Control Ground

Characteristic diagram

Pressure / Flow 612 158 312mm 1Ph



Vacuum / Flow 612 158 312mm 1Ph



# >> BB 158 312 mm AC 3Ph | 612 158

## Blower ByPass Brushless

- » BLDC Blower / Electronically Commutated
- » Onboard controller with digital signal processor (DSP)
- » Programmable for various speed profiles and signals

- » Aerodynamically optimized impeller and housing
- » Closed-Loop speed control
- » Robust aluminium housing and impeller



Data		60 Hz	50 Hz
Nominal voltage	VAC	240	400
Voltage Range	VAC	-	380 - 575
Frequency	Hz	60	50
Phase	~	3	3
Fan housing diameter	mm	312	312
Fan stages	n°	1	1
Max. airflow	m3/h	2139	2105
Max. pressure	KPa	6.1	6
Max. vacuum	KPa	5.8	5.7
Input power	W	3700	3800
Current	A	15	9
Max. speed	rpm	9300	9300
Weight	Kg	12.7	12.7
Standard Features			
Speed command input	VDC	0-10	0-10
Tach output	ppr	2	2

### Options

#### A) Mechanical

- » Large exhaust flange

#### B) Electrical / Software

- » Various digital output signals (tach-out 2ppr std.)
- » Tach output resolution (up to 6 ppr)
- » Speed command input (PWM or 5-20mA)
- » Open-loop speed control

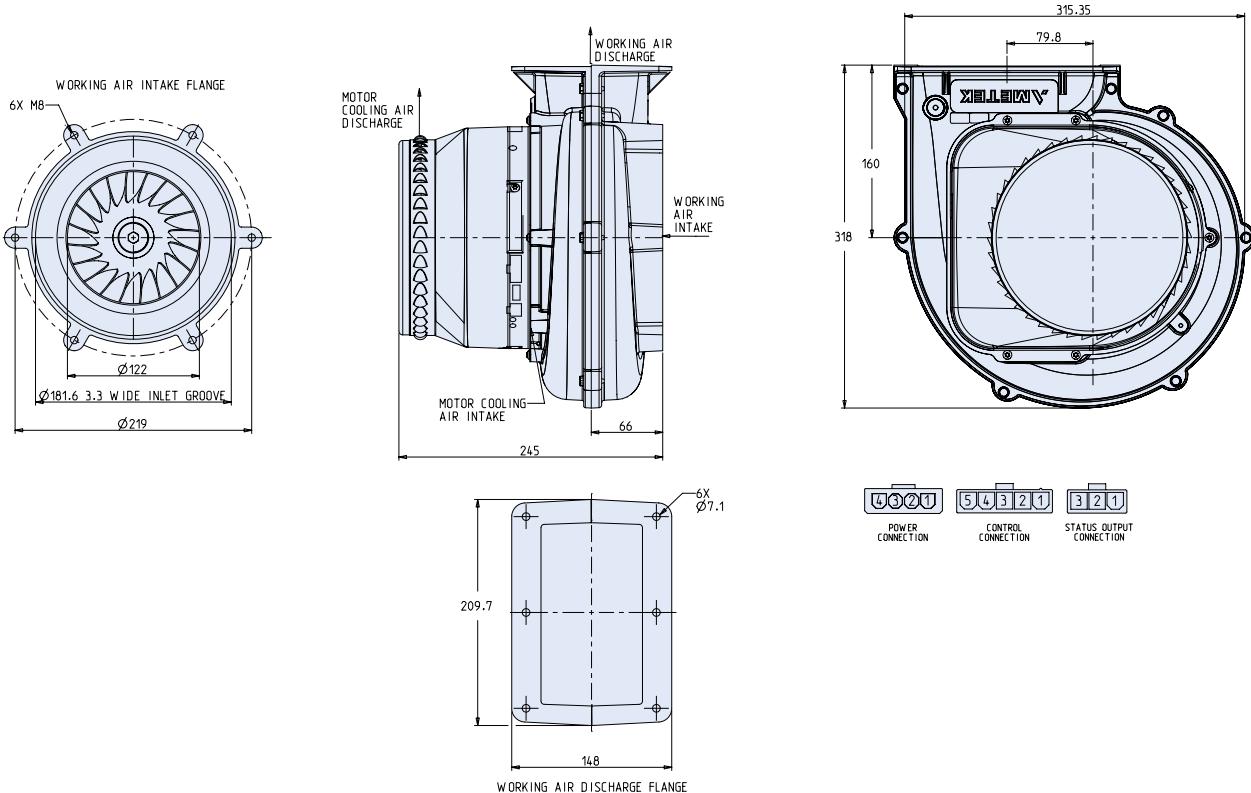
- » Customized software functions

- » External potentiometer inputs

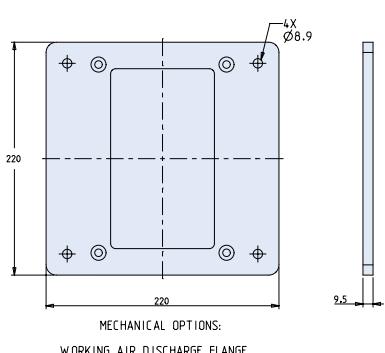
- » Auxiliary DC voltage output

- » Without digital output

Dimensions in mm



Mechanical options



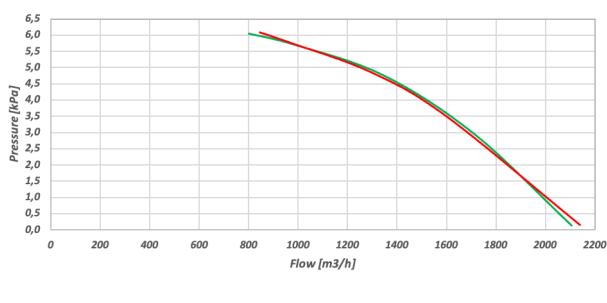
See page 98 for Connector Harnesses

Pin Assignment

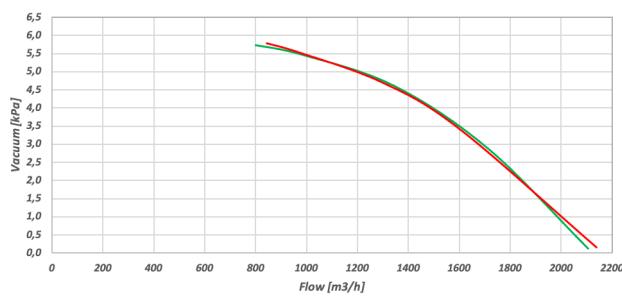
Molex 1720430406		Molex 39-30-3055		Molex 39-30-3035	
Pin #	Function (Power)	Pin #	Function (Control)	Pin #	Function (status output)
1	A/C Input	1	15V-40V External Supply	1	Auxiliary 15VDC Output
2	A/C Input	2	Tach Output	2	Open Collector Output
3	A/C Input	3	Speed Command Input 0..10V	3	Common
4	Ground	4	n.c.		
		5	Common		

Characteristic diagram

Pressure / Flow 612 158 312mm 3Ph



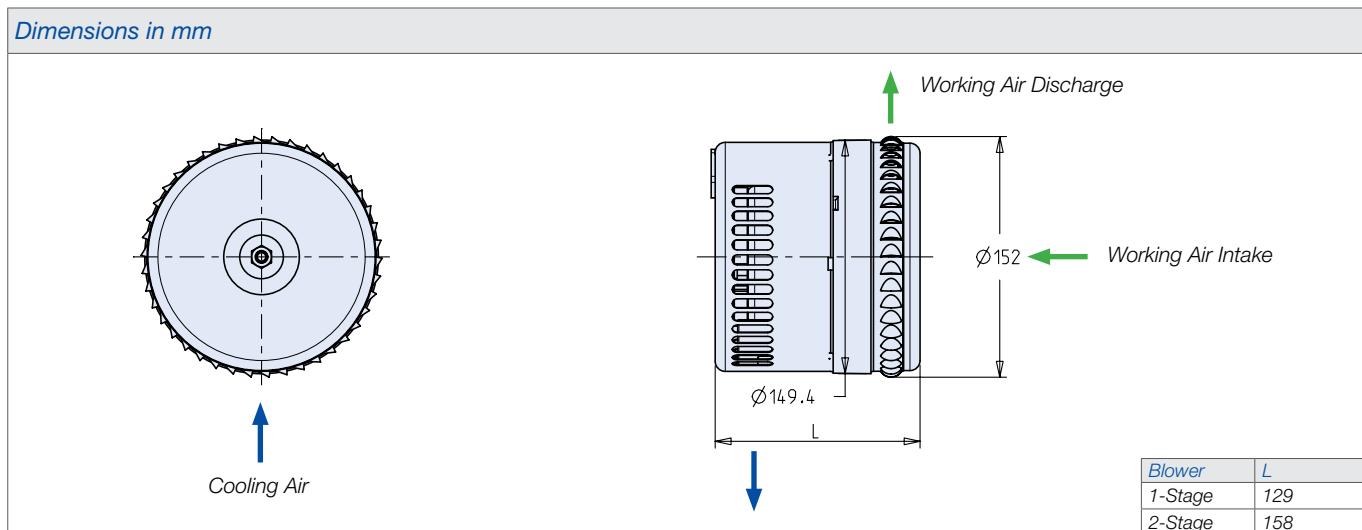
Vacuum / Flow 612 158 312mm 3Ph



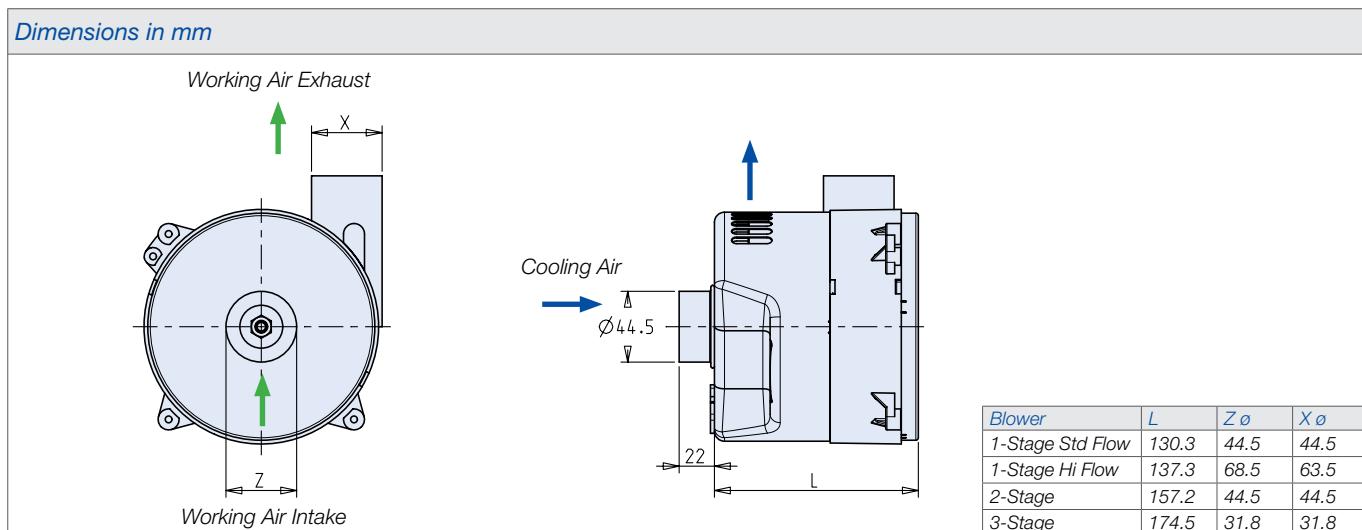
## >> BB 89 145 mm AC | Mechanical Options

» Below mechanical options are available for all Blower series BB 145 mm AC

### Peripheral working air discharge



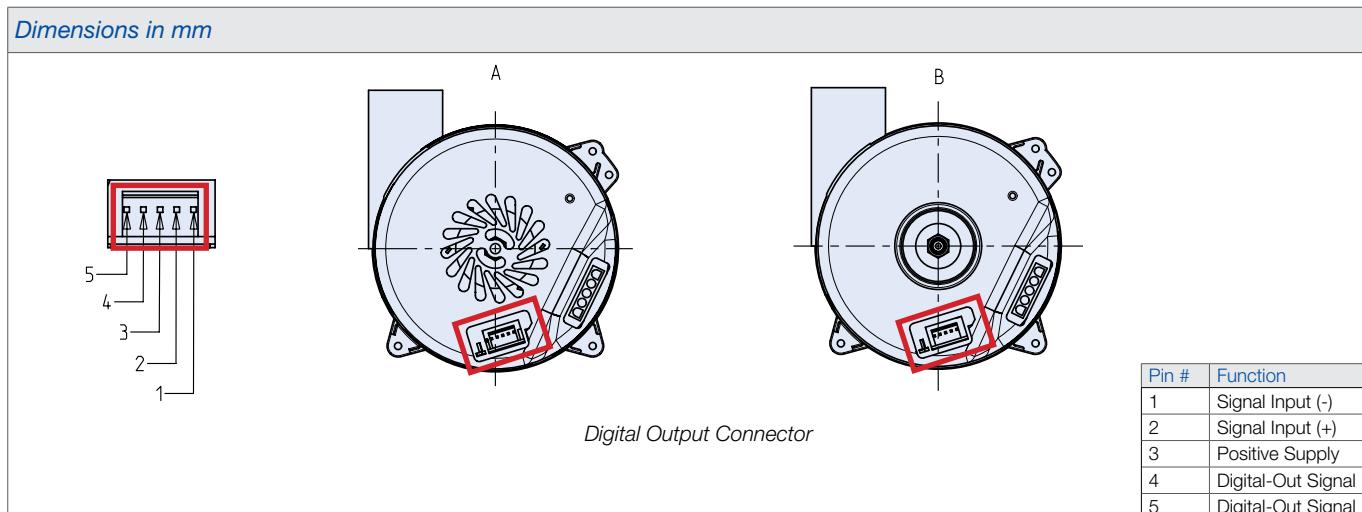
### Working air without intake tube and cooling air with intake tube



## >> BB 89 145mm AC Digital Output

» A Digital Output option is available for all Blower series BB 145 mm AC

Digital Output and Pin Assignment shown without cooling air intake tube (A) and with cooling air intake tube (B)



## >> BB 89 145 mm DC Mechanical Options



» Below mechanical options are available Blower series BB 145 mm DC

Working air without intake tube and cooling air with intake tube

Dimensions in mm				
Blower	L	Z ø	X ø	
1-Stage	139.3	68.5	63.5	
2-Stage	156.5	44.5	44.5	
3-Stage	165	44.5	44.5	

**Working Air Exhaust**

**Cooling Air**



# *Permanent Magnet* **DC Motors**

» ***Series PM***

***Permanent Magnet DC Motors***

Page 54

PM 62 | 633 062 | Permanent Magnet DC Motor 62 mm

## >> PM 62 | 633 062 | Permanent Magnet DC Motor 62 mm

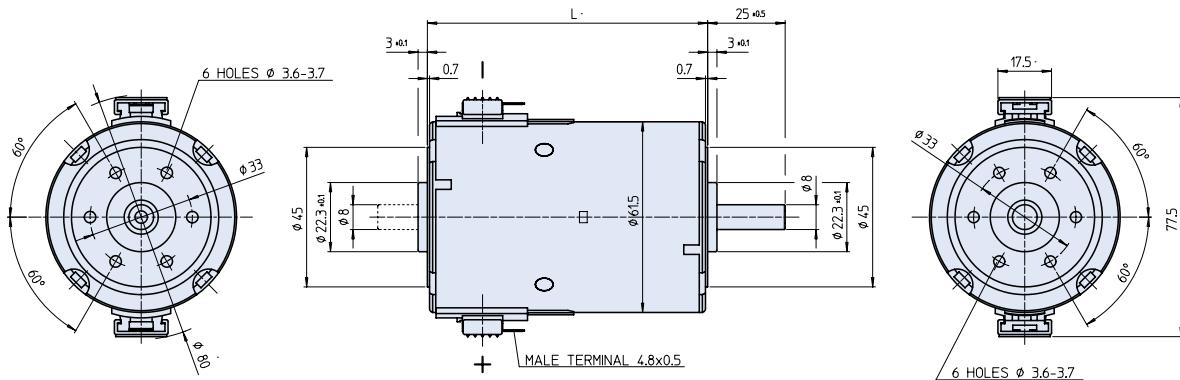
» 2-Pole DC motor  
 » Operation in both direction of rotation  
 » Replaceable brush system

» Options with custom shaft length and diameter  
 » High voltage winding 120V - 230V available



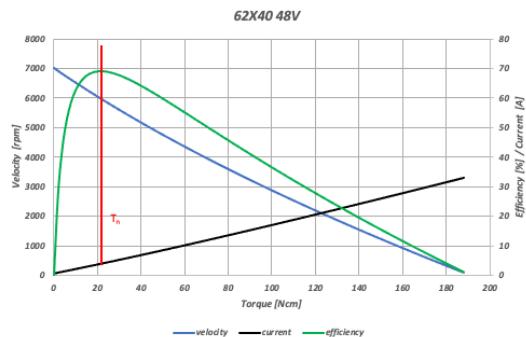
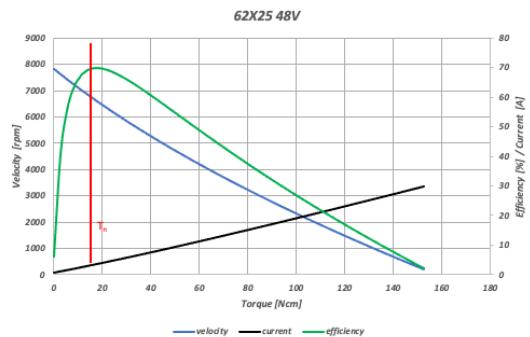
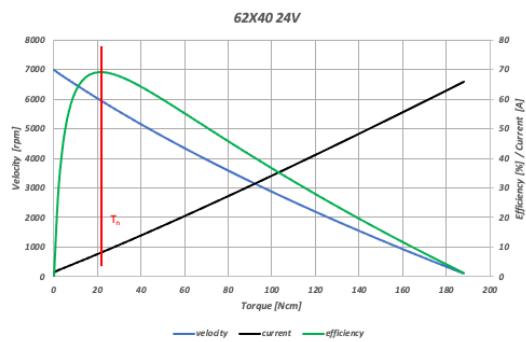
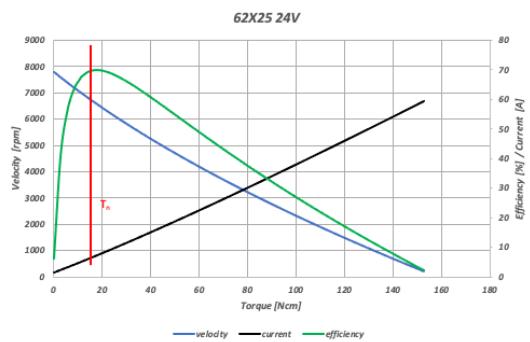
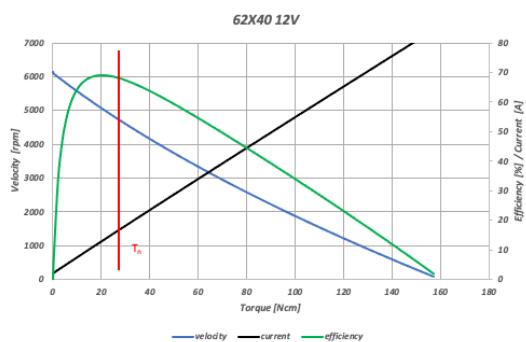
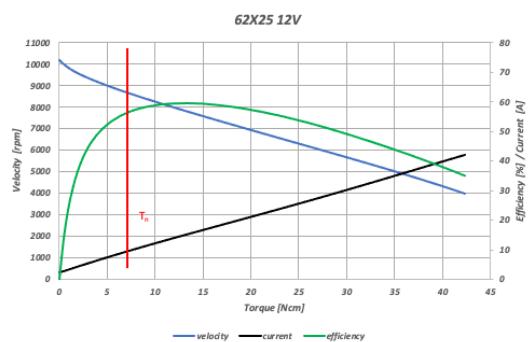
<i>Data</i>		62x25	62x25	62x25	62x40	62x40	62x40
<i>Nominal voltage</i>	VDC	12	24	48	12	24	48
<i>Nominal current</i>	A	8.6	5.0	2.5	14.7	7.2	3.6
<i>Nominal torque</i>	Ncm	6.2	10.9	11.1	23.6	19.1	19.3
<i>Nominal velocity</i>	rpm	8830	7052	7035	4907	6076	6065
<i>Stall torque</i>	Ncm	70	125	155	160	190	190
<i>No load velocity</i>	rpm	10200	7800	7750	6150	7000	6930
<i>Nominal output power</i>	W	57	80	82	121	122	123
<i>Torque constant</i>	Ncm / A	0.72	2.19	4.39	1.60	2.65	5.30
<i>Terminal resistance</i>	Ohm	0.11	0.36	1.51	0.10	0.30	1.46
<i>Rotor inertia</i>	gcm <sup>2</sup>	320	320	320	400	400	400
<i>Weight</i>	Kg	0.87	0.87	0.87	1.00	1.00	1.00

*Dimensions in mm*



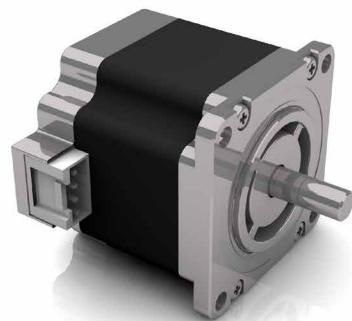
Motor	L
62X25	90.4 ± 0.5
62X40	105.4 ± 0.5

*Characteristic diagram*



# *Stepper Motors*

» *Series ST*

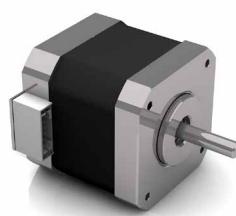
**Stepper Motors**

Page 58	ST 17   634 017   Nema 17 Stepper Motor
Page 60	ST 23   634 023   Nema 23 Stepper Motor
Page 62	ST 34   634 034   Nema 34 Stepper Motor
Page 64	ST 17 STE   Nema 17 Stepper Motor with integrated controller
Page 66	ST 23 STE   Nema 23 Stepper Motor with integrated controller
Page 68	ST 34 STE   Nema 34 Stepper Motor with integrated controller

## >> ST 17 | 634 017 | Nema 17 Stepper Motor

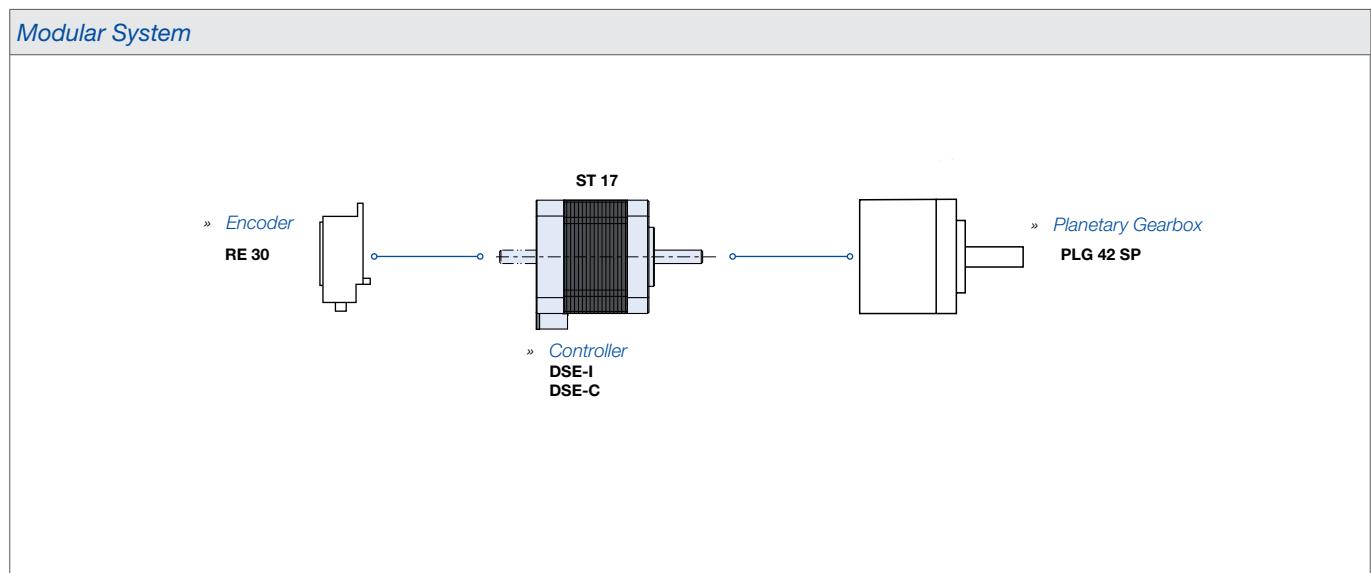
- » 2 Phase Hybrid Stepper
- » 1.8° step angle (+/-5%)
- » 42 mm square Nema 17
- » High grade Neodymium magnets
- » Customized solutions available on demand
- » Operating temperatures -20°C to +40°C

- » Sinusoidal back-EMF optimized for microstep operation and high holding torque
- » Insulation Class 130 (B)
- » For stock program please go to [www.dunkermotoren.com/en/configuration](http://www.dunkermotoren.com/en/configuration)

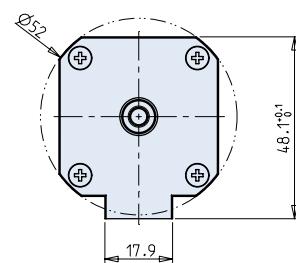
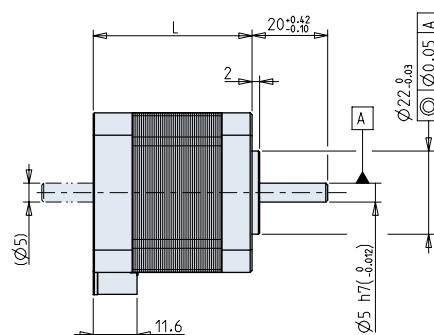
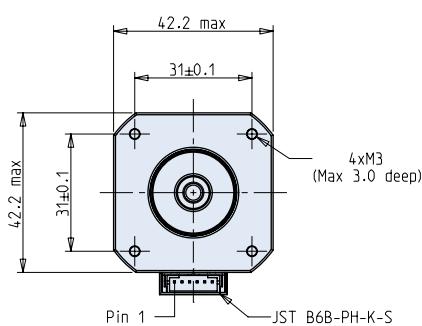


<i>Data</i>		17x14	17x14	17x14	17x16	17x16	17x16	17x20	17x20	17x20	17x24	17x24	17x24
<i>Rated phase current</i>	A	0.40	1.00	1.50	0.40	1.00	2.00	0.40	1.00	2.00	0.40	1.00	2.00
<i>Phase resistance</i>	Ohm	16.340	3.450	1.390	20.070	3.360	0.860	24.880	3.870	1.090	28.500	4.600	1.240
<i>Phase inductance</i>	mH	21.80	4.82	1.60	37.18	6.35	1.49	43.80	7.05	1.64	62.20	10.80	2.52
<i>Holding torque bipolar</i>	Ncm	27.00	29.00	28.00	42.00	44.00	42.00	57.00	57.00	57.00	76.00	79.00	75.00
<i>Detent torque</i>	Ncm	1.40	1.40	1.40	2.00	2.00	2.00	2.50	2.50	2.50	3.00	3.00	3.00
<i>Rotor inertia</i>	gcm <sup>2</sup>	39.50	39.50	39.50	57.00	57.00	57.00	83.40	83.40	83.40	114.00	114.00	114.00
<i>Max. voltage</i>	VDC	50	50	50	50	50	50	50	50	50	50	50	50
<i>Weight</i>	Kg	0.260	0.260	0.260	0.320	0.320	0.320	0.420	0.420	0.420	0.470	0.470	0.470

All data measured with standard cables 300 mm at 25°C



### Dimensions in mm

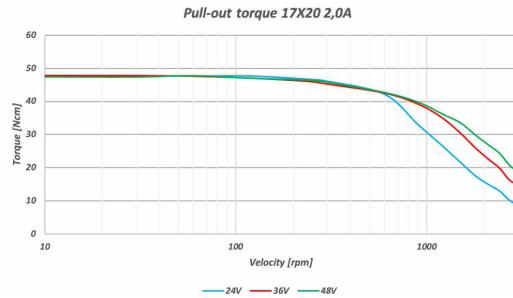
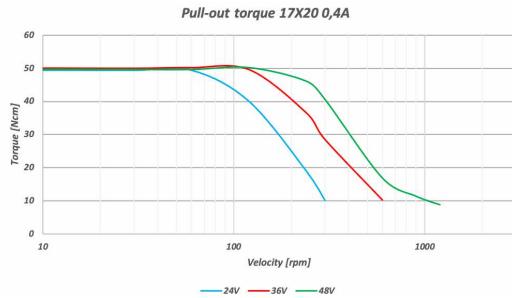
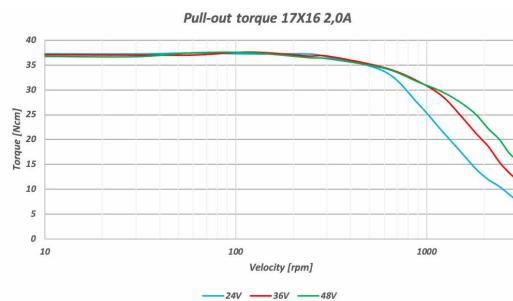
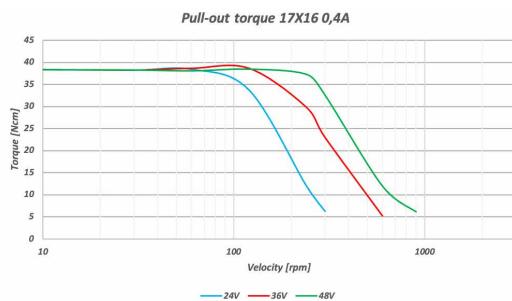
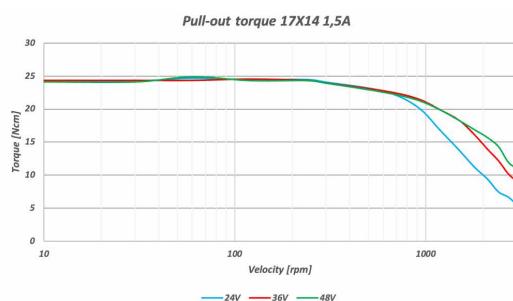
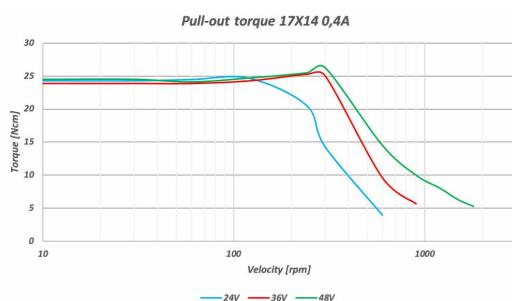


Motor	L
17x14	36.3±0.6
17x16	42.0±0.6
17x20	53.0±0.6
17x24	62.0±0.6

» Shaft D-cut option: 4.5X15 mm  
» Radial connector available upon request

See page 96 for Connector Harness

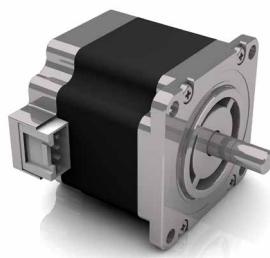
### Characteristic diagram



## >> ST 23 | 634 023 | Nema 23 Stepper Motor

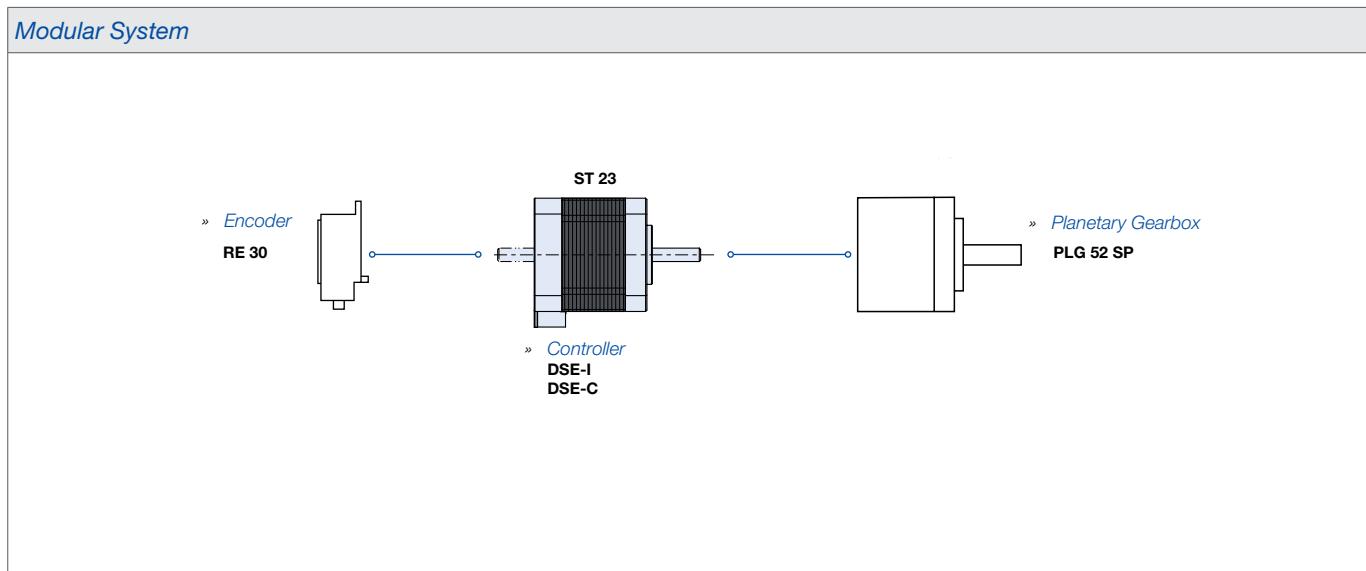
- » 57 mm square Nema 23
- » Hi grade Neodymium magnets
- » 1.8° step angle (+/-5%)
- » Customized solutions available on demand
- » Operating temperatures -20°C to +40°C

- » Sinusoidal back-EMF optimized for microstep operation and hi holding torque
- » Insulation Class 130 (B)
- » For stock program please go to [www.dunkermotoren.com/en/configuration](http://www.dunkermotoren.com/en/configuration)



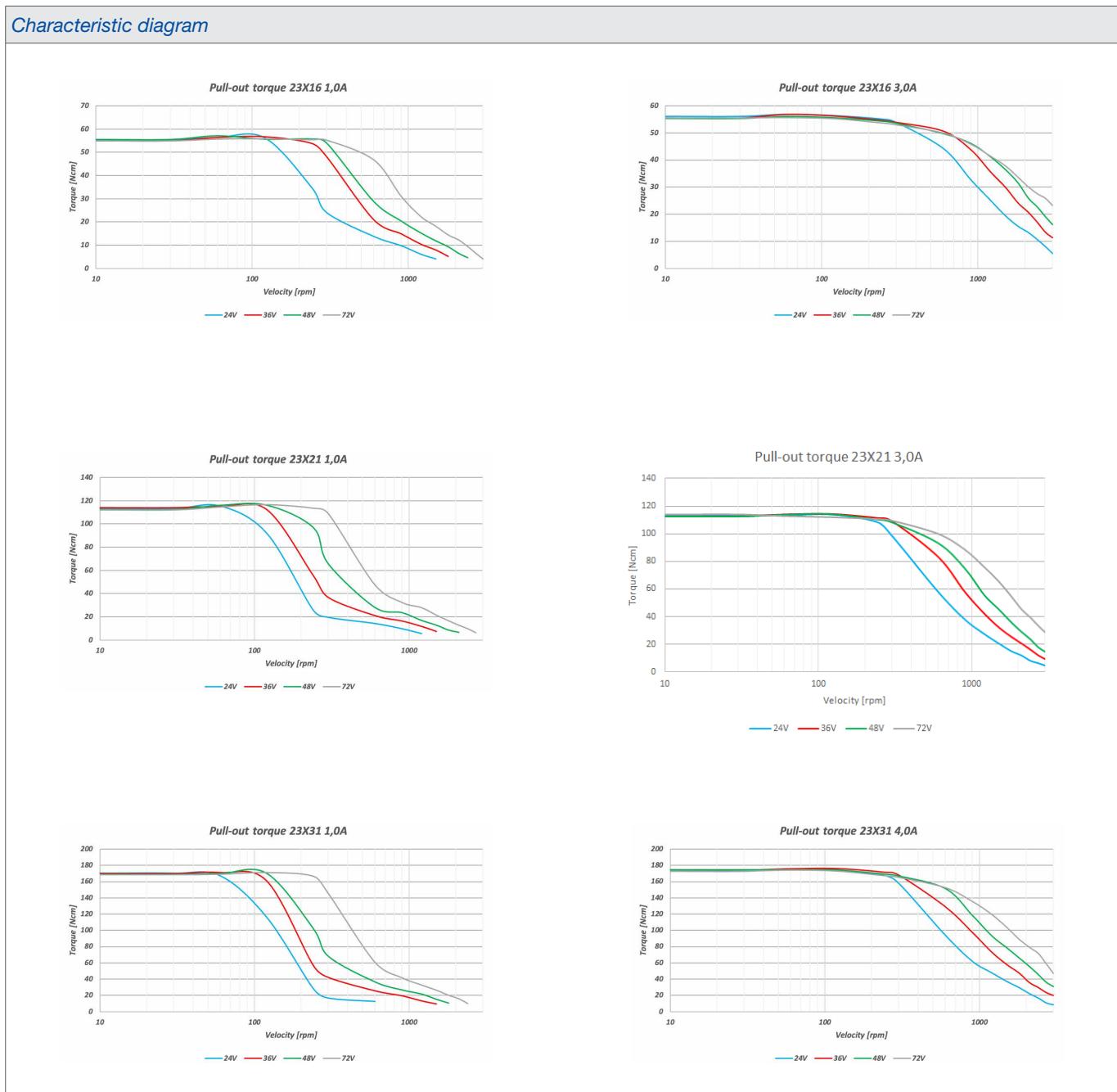
<i>Data</i>		23x16	23x16	23x16	23x21	23x21	23x21	23x31	23x31	23x31	23x31
<i>Rated phase current</i>	A	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	4.00
<i>Phase resistance</i>	Ohm	3.670	0.980	0.420	5.140	1.330	0.610	6.260	1.570	0.690	0.430
<i>Phase inductance</i>	mH	13.51	3.21	1.58	20.75	5.67	2.30	22.35	5.77	2.70	1.66
<i>Holding torque Bipolar</i>	Ncm	70.00	70.00	70.00	140.00	140.00	140.00	200.00	200.00	200.00	210.00
<i>Detent torque</i>	Ncm	3.00	3.00	3.00	5.00	5.00	6.00	8.00	7.00	7.00	7.00
<i>Rotor inertia</i>	gcm <sup>2</sup>	77.00	77.00	77.00	209.00	209.00	209.00	335.00	335.00	335.00	335.00
<i>Max. voltage</i>	VDC	75	75	75	75	75	75	75	75	75	75
<i>Weight</i>	Kg	0.460	0.460	0.460	0.700	0.700	0.700	1.050	1.050	1.05	1.05

All data measured with standard cables 300 mm at 25°C



Dimensions in mm														
» Shaft D-cut options: 5.8X15 mm or 7.5X15mm														
		<table border="1"> <thead> <tr> <th>Motor</th><th>L</th><th>D Ø</th></tr> </thead> <tbody> <tr> <td>23X16</td><td>40±0.6</td><td>6.35</td></tr> <tr> <td>23X21</td><td>55±0.6</td><td>6.35</td></tr> <tr> <td>23X31</td><td>78±0.6</td><td>8</td></tr> </tbody> </table>	Motor	L	D Ø	23X16	40±0.6	6.35	23X21	55±0.6	6.35	23X31	78±0.6	8
Motor	L	D Ø												
23X16	40±0.6	6.35												
23X21	55±0.6	6.35												
23X31	78±0.6	8												

See page 96 for Connector Harness



## >> ST 34 | 634 034 | Nema 34 Stepper Motor

- » 86 mm square Nema 34
- » High grade Neodymium magnets
- » 1.8° step angle (+/-5%)
- » Customized solutions available on demand
- » Operating temperatures -20°C to +40°C

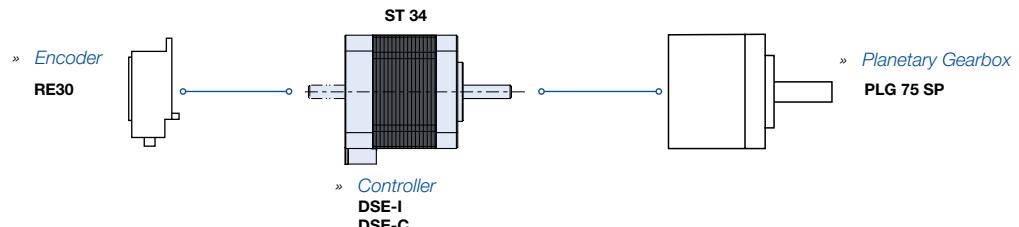
- » Sinusoidal back-EMF optimized for microstep operation and hi holding torque
- » Insulation Class 130 (B)
- » For stock program please go to [www.dunkermotoren.com/en/configuration](http://www.dunkermotoren.com/en/configuration)



Data		34x37	34x37	34x37	34x48	34x48	34x48	34x55	34x55	34x55	34x62
Rated phase current	A	3.00	5.50	8.00	3.00	5.50	8.00	3.00	5.50	8.00	8.00
Phase resistance	Ohm	1.240	0.420	0.200	1.500	0.465	0.215	1.700	0.550	0.290	0.330
Phase inductance	mH	12.00	3.60	1.65	12.96	4.00	1.85	20.00	5.60	2.60	2.88
Holding torque Bipolar	Ncm	520.00	550.00	550.00	700.00	700.00	700.00	1000.00	1000.00	1000.00	1200.00
Detent torque	Ncm	20.00	20.00	20.00	20.00	20.00	20.00	30.00	30.00	30.00	35.00
Rotor inertia	gcm²	2860.00	2860.00	2860.00	4732.00	4732.00	4732.00	6018.00	6018.00	6018.00	7030.00
Max. voltage	VDC	160	160	160	160	160	160	160	160	160	160
Weight	Kg	3.000	3.000	3.000	4.000	4.000	4.000	4.600	4.600	4.600	5.400

All data measured with standard cables 500 mm at 25°C

### Modular System



### Dimensions in mm

Front View Dimensions:

- Total Height: 86.5 max
- Width: 69.6±0.1
- Mouting Holes: 4x Ø5.56

Side View Dimensions:

- Overall Length: L
- Lead Wires: 4x lead wires AWG18, 500 min.
- Keyway: Ø73<sup>0.05</sup> / Ø73<sup>-0.03</sup>, DIN 6885
- Shaft Diameter: 9.5
- Shaft Length: 25<sup>0.5</sup>
- Shaft Width: 1.6
- Shaft Hole: Ø30.5±0.5

Top View Dimensions:

- Central Hole: Ø75

### Lead wires

Colour	Function
White	phase A+
Yellow	phase A-
Red	phase B+
Blue	phase B-

### Motor Dimensions

Motor	L	D Ø	Keyway
34X37	96±0.6	12	4x4 P9
34X48	124±0.6	12	4x4 P9
34X55	141.5±0.6	12	4x4 P9
34X62	158.5±0.6	16	5x5 P9

### Characteristic diagram

The characteristic diagram displays torque vs. velocity curves for various voltage levels (24V, 36V, 48V, 72V, 90V) for different motor models. The torque decreases as velocity increases, and higher voltages result in higher torque levels.

**Pull-out torque 34X37 3,0A**

**Pull-out torque 34X37 8,0A**

**Pull-out torque 34X48 3,0A**

**Pull-out torque 34X48 8,0A**

**Pull-out torque 34X55 3,0A**

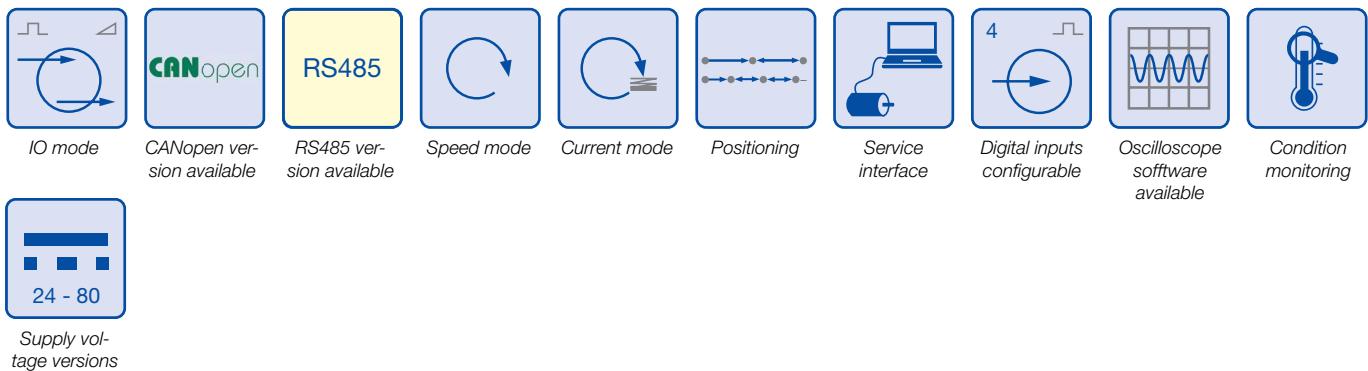
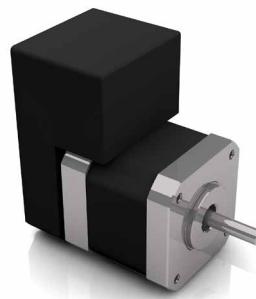
**Pull-out torque ST 34X55 8,0A**

**Pull-out torque ST 34X62 8,0A**

## >> ST 17 STE | Nema 17 Stepper Motor with integrated controller

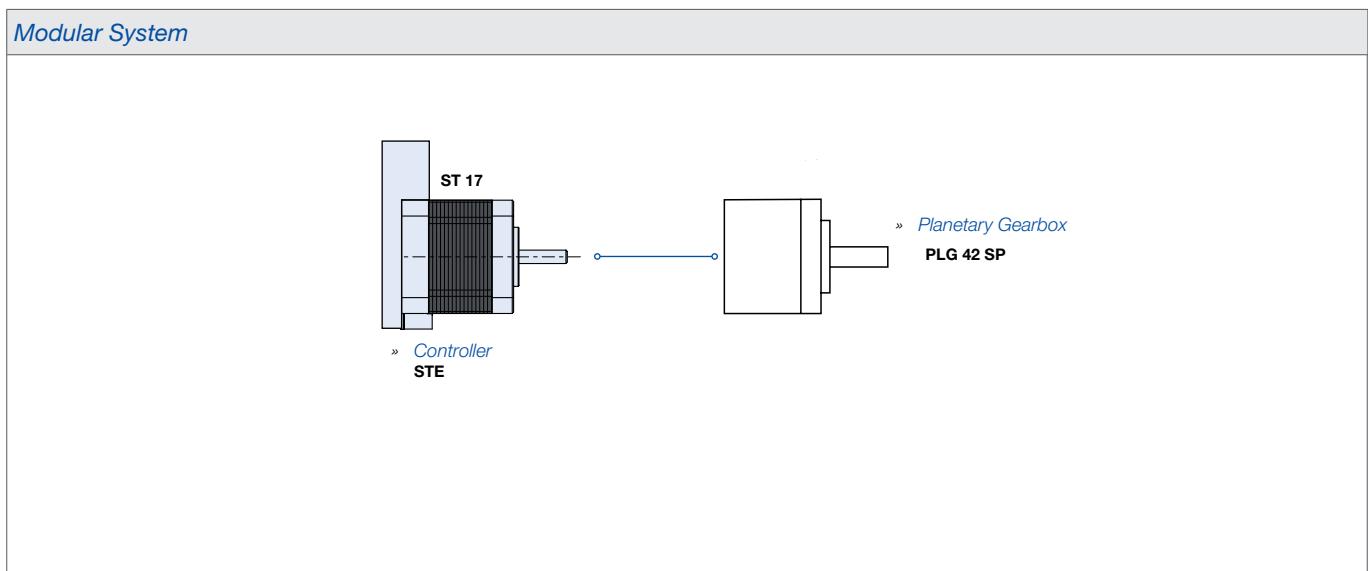
» 2 phase Stepper Motor 1.8° step angle with integrated controller  
 » 12-bit absolute magnetic encoder (single turn)  
 » CANopen interface CiA 301 and CiA 402  
 » Options available: EtherCAT version, Modbus RTU on RS485 version  
 » Configurable resolution microstep/rev (400 to 204 800), Max. velocity 300 000 microstep/sec

» Step accumulation with recovery (no step-loss)  
 » 32 programmable cycles and 10 programmable sequences including jog (velocity), indexer (position), homing, marker (rotating table)  
 » Linear, parabolic and s-curve profiles  
 » Commissioning software  
 » Configurable digital and analogue I/Os

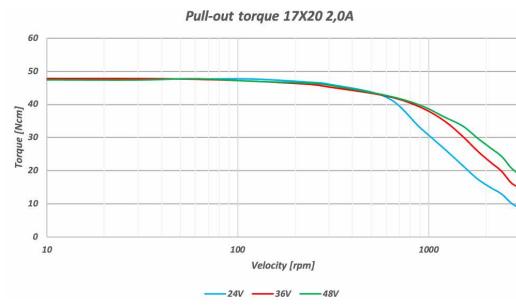
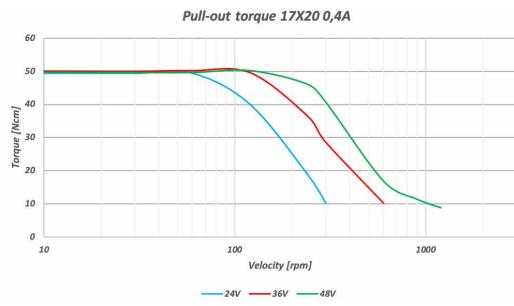
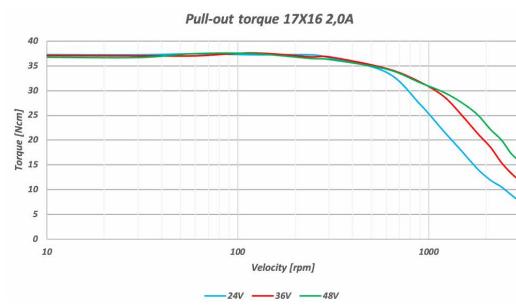
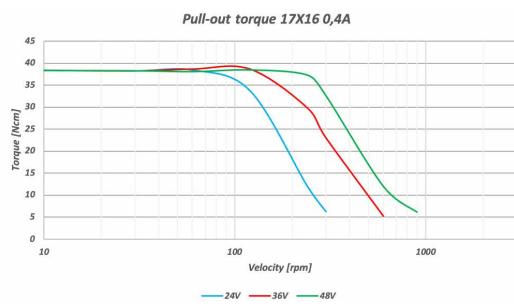
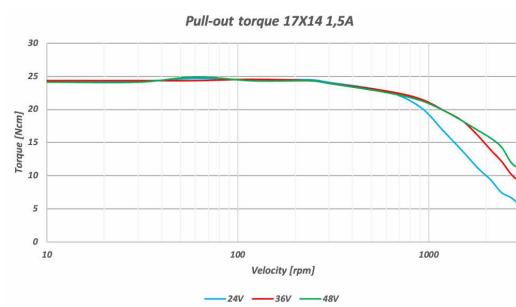
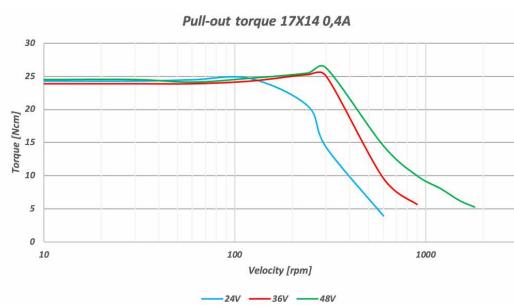


Data		17x14	17x14	17x14	17x16	17x16	17x16	17x20	17x20	17x20	17x24	17x24	17x24	
<i>Rated phase current</i>		A	0.40	1.00	1.50	0.40	1.00	2.00	0.40	1.00	2.00	0.40	1.00	2.00
<i>Phase resistance</i>		Ohm	16.340	3.450	1.390	20.070	3.360	0.860	24.880	3.870	1.090	28.500	4.600	1.240
<i>Phase inductance</i>		mH	21.80	4.82	1.60	37.18	6.35	1.49	43.80	7.05	1.64	62.2	10.8	2.52
<i>Holding torque bipolar</i>		Ncm	27.00	29.00	28.00	42.00	44.00	42.00	57.00	57.00	57.00	76.00	79.00	75.00
<i>Detent torque</i>		Ncm	1.40	1.40	1.40	2.00	2.00	2.00	2.50	2.50	2.50	3.00	3.00	3.00
<i>Rotor inertia</i>		gcm <sup>2</sup>	39.50	39.50	39.50	57.00	57.00	57.00	83.40	83.40	83.40	114.00	114.00	114.00
<i>Max. voltage</i>		VDC	50	50	50	50	50	50	50	50	50	50	50	50
<i>Weight</i>		Kg	0.385	0.385	0.385	0.445	0.445	0.445	0.545	0.545	0.545	0.595	0.595	0.595

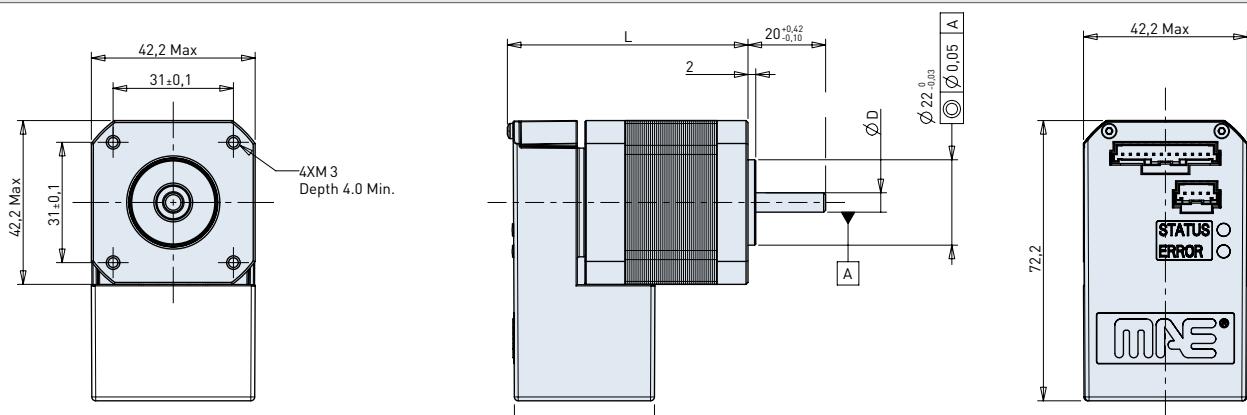
All data measured with standard cables 300 mm at 25°C



### Characteristic diagram



### Dimensions in mm/ ST 17 STE FD1

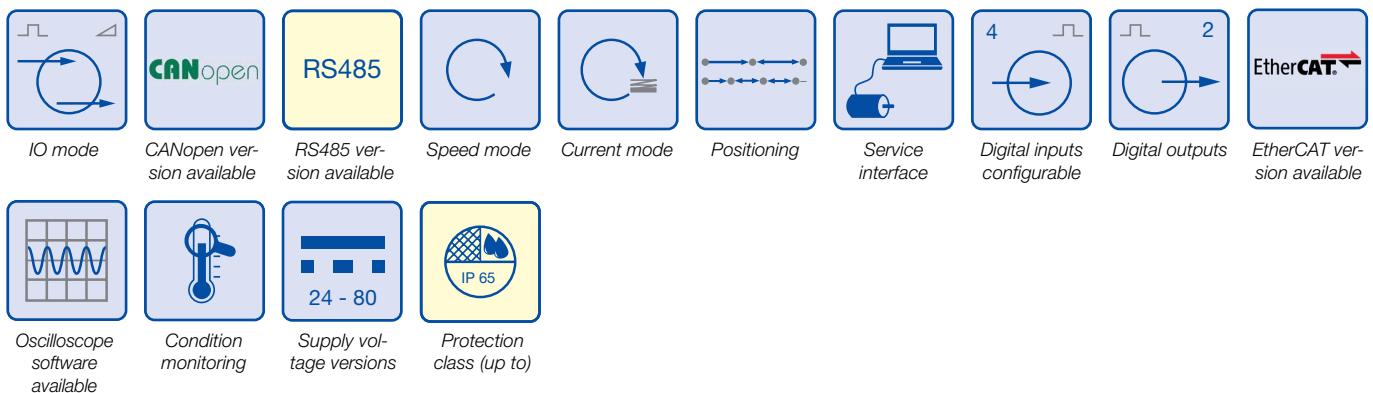
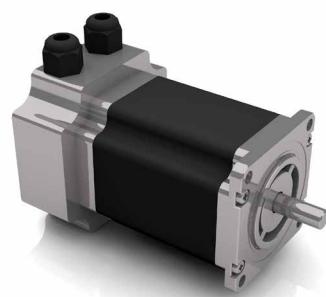


Motor	L	D Ø
17X14	56.5±0.6	5
17x16	62±0.6	5
17x20	73±0.6	5
17x24	82±0.6	5

## >> ST 23 STE | Nema 23 Stepper Motor with integrated controller

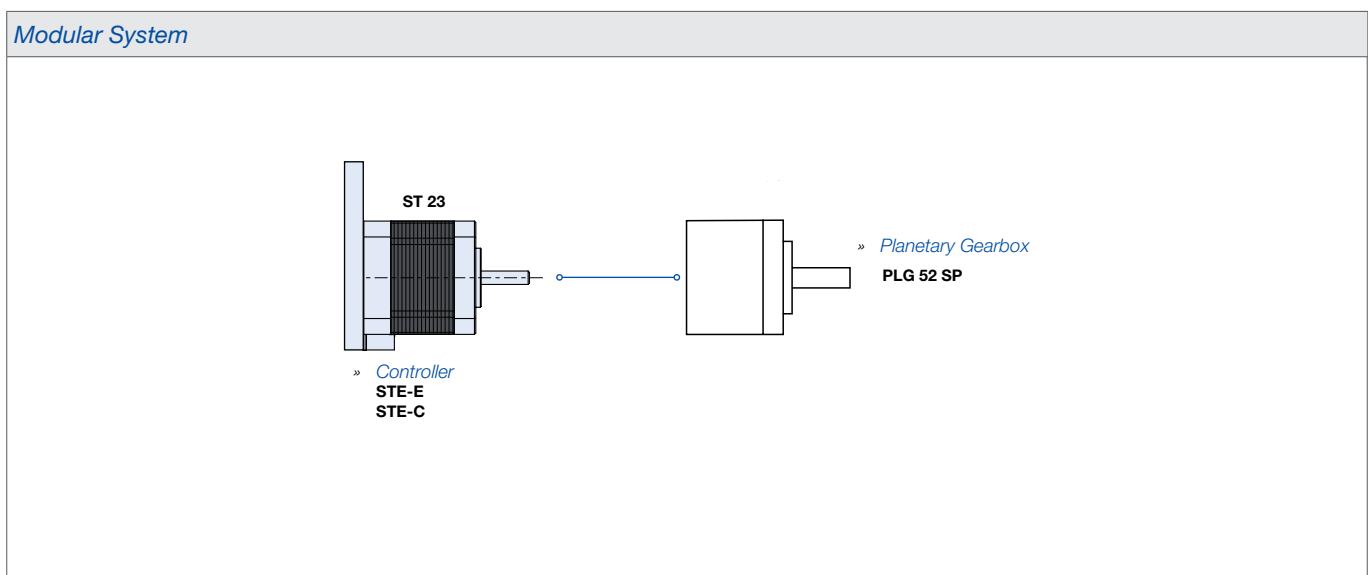
» 2 phase Stepper Motor 1.8° step angle with integrated controller  
 » 12-bit absolute magnetic encoder (single turn)  
 » CANopen interface CiA 301 and CiA 402  
 » Options available: EtherCAT version, Modbus RTU on RS485 version  
 » Configurable resolution microstep/rev (400 to 204 800), Max. velocity 300 000 microstep/sec

» Step accumulation with recovery (no step-loss)  
 » 32 programmable cycles and 10 programmable sequences including jog (velocity), indexer (position), homing, marker (rotating table)  
 » Linear, parabolic and s-curve profiles  
 » Commissioning software  
 » Configurable digital and analogue I/Os

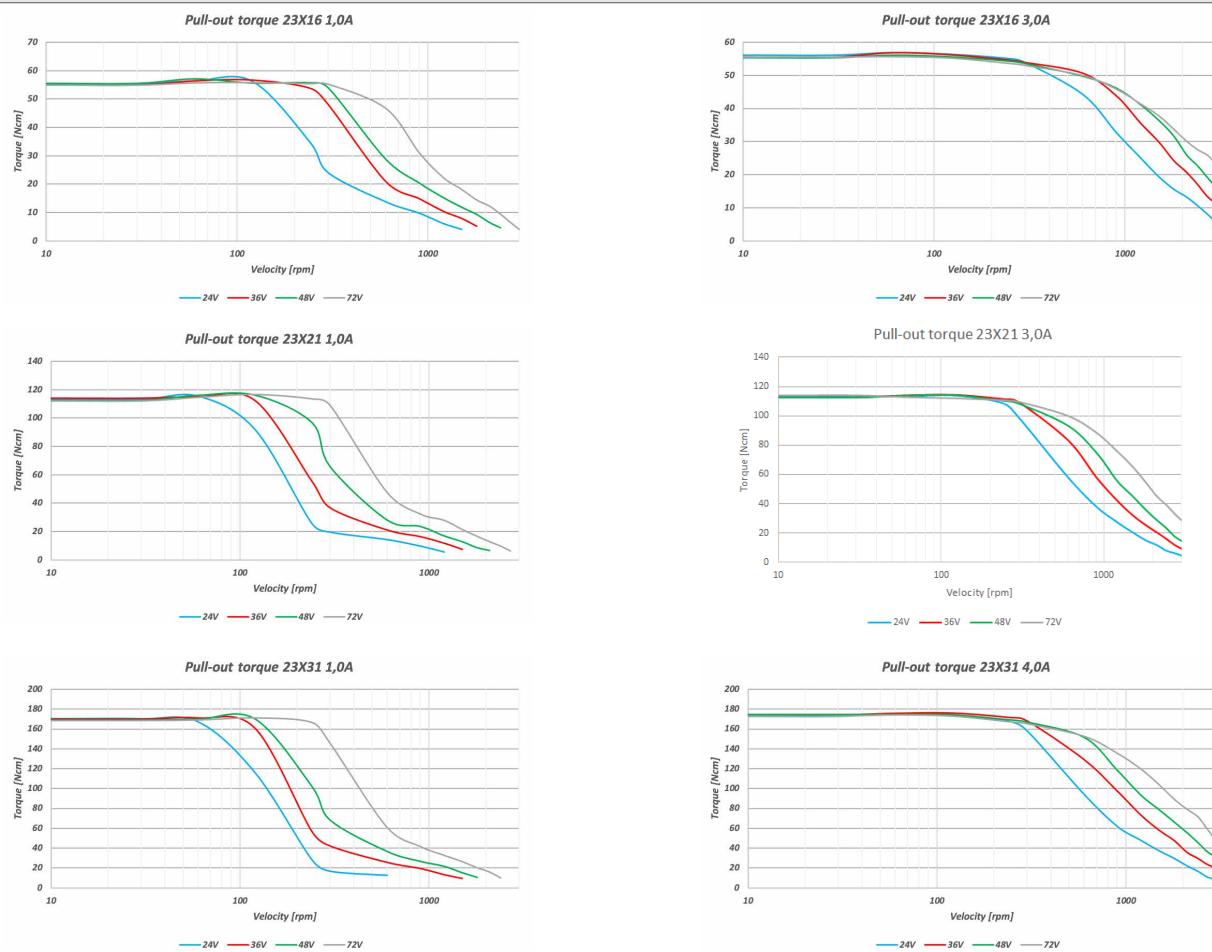


Data		23x16	23x16	23x16	23x21	23x21	23x21	23x31	23x31	23x31	23x31
Rated phase current	A	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	4.00
Phase resistance	Ohm	3.670	0.980	0.420	5.140	1.330	0.610	6.260	1.570	0.690	0.430
Phase inductance	mH	13.51	3.21	1.58	20.75	5.67	2.30	22.35	5.77	2.70	1.66
Holding torque Bipolar	Ncm	70.00	70.00	70.00	140.00	140.00	140.00	200.00	200.00	200.00	210.00
Detent torque	Ncm	3.00	3.00	3.00	5.00	5.00	6.00	8.00	7.00	7.00	7.00
Rotor inertia	gcm <sup>2</sup>	77.00	77.00	77.00	209.00	209.00	209.00	335.00	335.00	335.00	335.00
Max. voltage	VDC	75	75	75	75	75	75	75	75	75	75
Weight	Kg	0.655	0.655	0.655	0.895	0.895	0.895	1.245	1.245	1.245	1.245

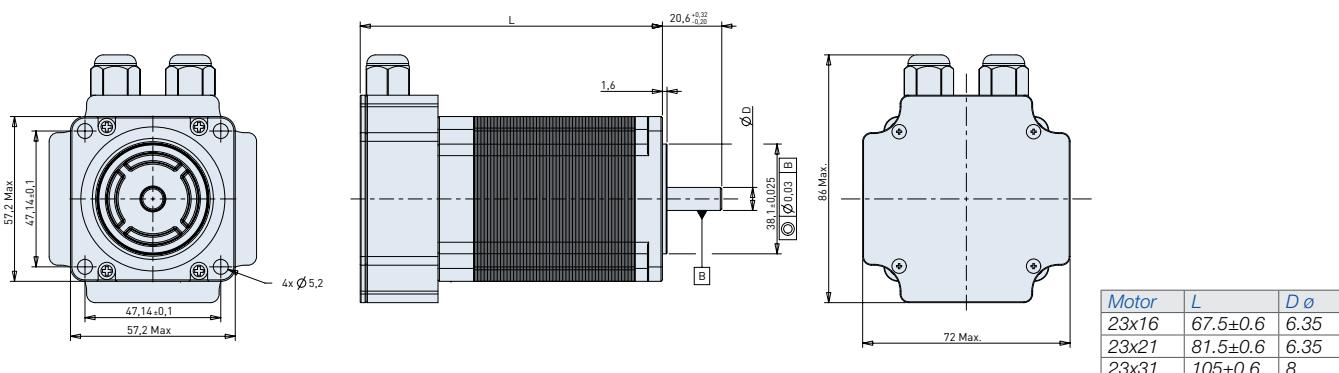
All data measured with standard cables 300 mm at 25°C



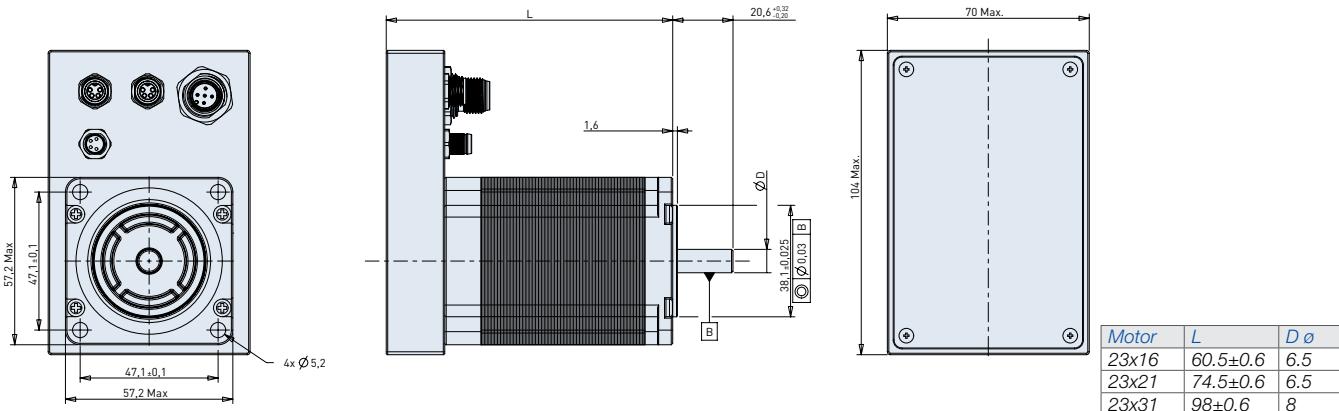
### Characteristic diagram



### Dimensions in mm/ ST 23 STE FD1



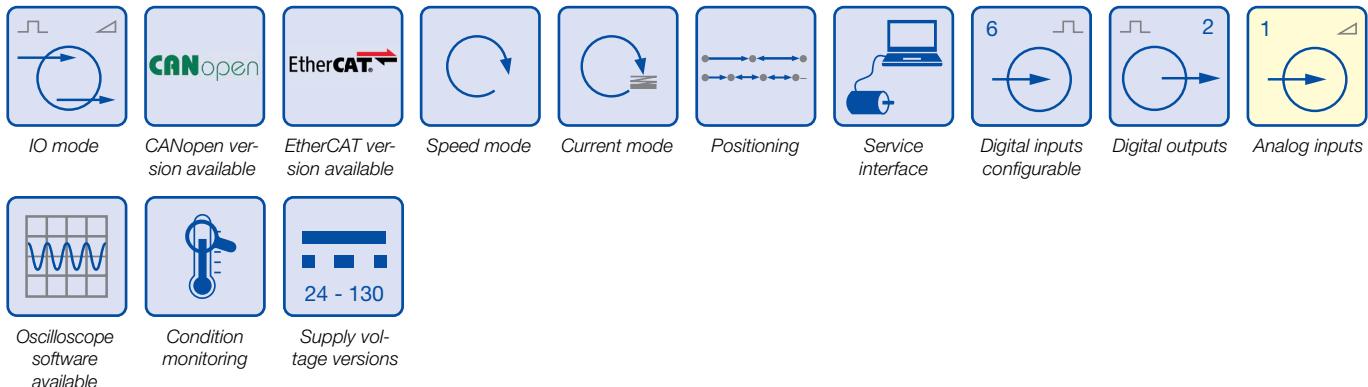
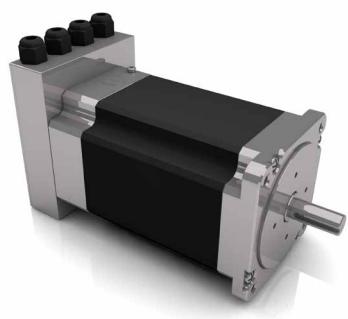
### Dimensions in mm/ ST 23 STE FD1E



## >> ST 34 STE | Nema 34 Stepper Motor with integrated controller

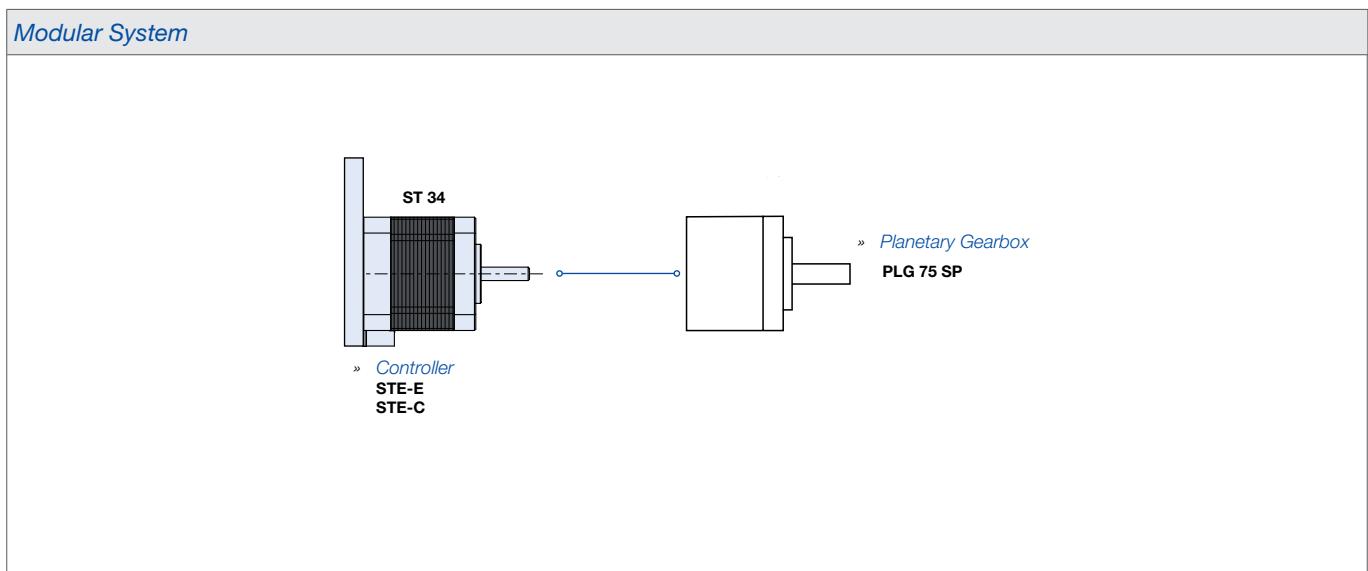
» 2 phase Stepper Motor 1.8° step angle with integrated controller  
 » 12-bit absolute magnetic encoder (single turn)  
 » CANopen interface CiA 301 and CiA 402  
 » Options available: EtherCAT version, Modbus RTU on RS485 version  
 » Configurable resolution microstep/rev (400 to 204 800), Max. velocity 300 000 microstep/sec

» Step accumulation with recovery (no step loss)  
 » 32 programmable cycles and 10 programmable sequences including jog (velocity), indexer (position), homing, marker (rotating table)  
 » Linear, parabolic and s-curve profiles  
 » Commissioning software  
 » Configurable digital and analogue I/Os

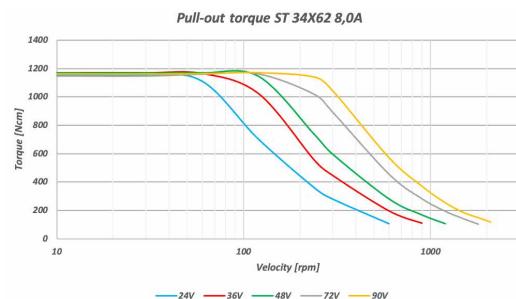
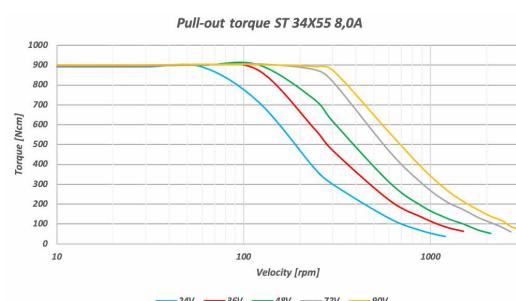
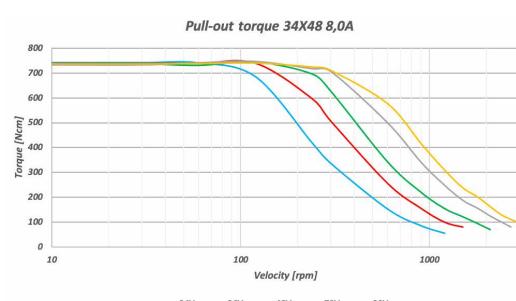
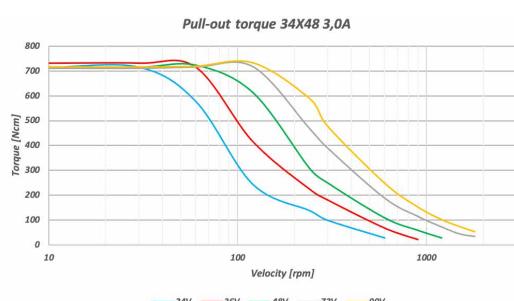
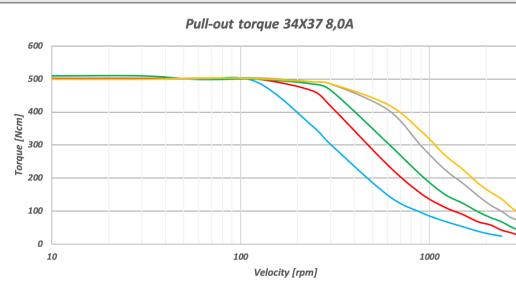
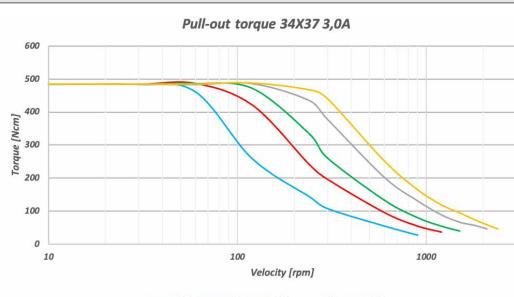


Data		34x37	34x37	34x37	34x48	34x48	34x48	34x55	34x55	34x55	34x62
Rated phase current	A	3.00	5.50	8.00	3.00	5.50	8.00	3.00	5.50	8.00	8.00
Phase resistance	Ohm	1.240	0.420	0.200	1.500	0.465	0.215	1.700	0.550	0.290	0.330
Phase inductance	mH	12.00	3.60	1.65	12.96	4.00	1.85	20.00	5.60	2.60	2.88
Holding torque Bipolar	Ncm	520.00	550.00	550.00	700.00	700.00	700.00	1000.00	1000.00	1000.00	1200.00
Detent torque	Ncm	20.00	20.00	20.00	20.00	20.00	20.00	30.00	30.00	30.00	35.00
Rotor inertia	gcm <sup>2</sup>	2860.00	2860.00	2860.00	4732.00	4732.00	4732.00	6018.00	6018.00	6018.00	7030.00
Max. voltage	VDC	160	160	160	160	160	160	160	160	160	160
Weight	Kg	3.280	3.280	3.280	4.280	4.280	4.280	4.880	4.880	4.880	5.680

All data measured with standard cables 500 mm at 25°C

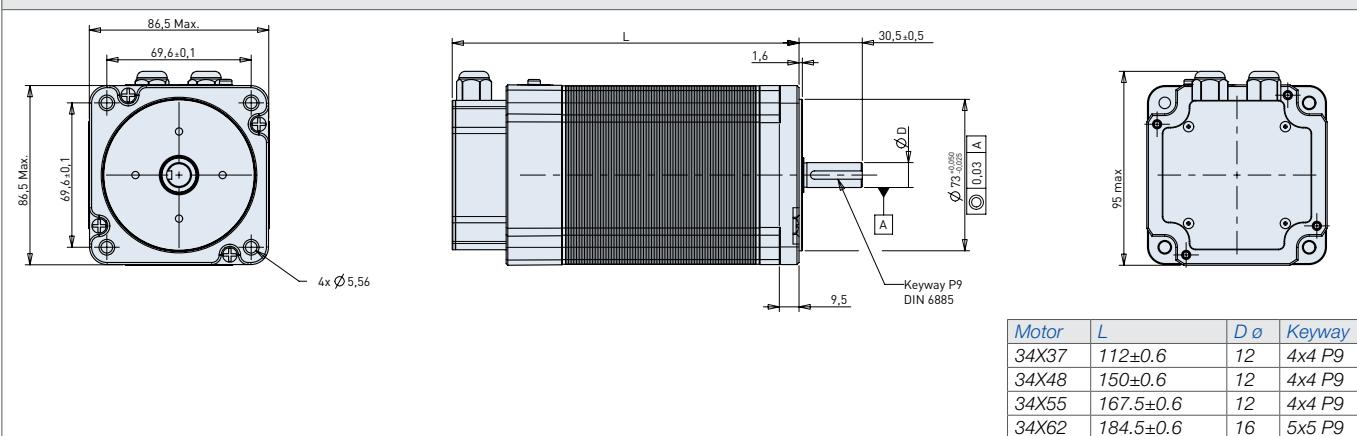


### Characteristic diagram

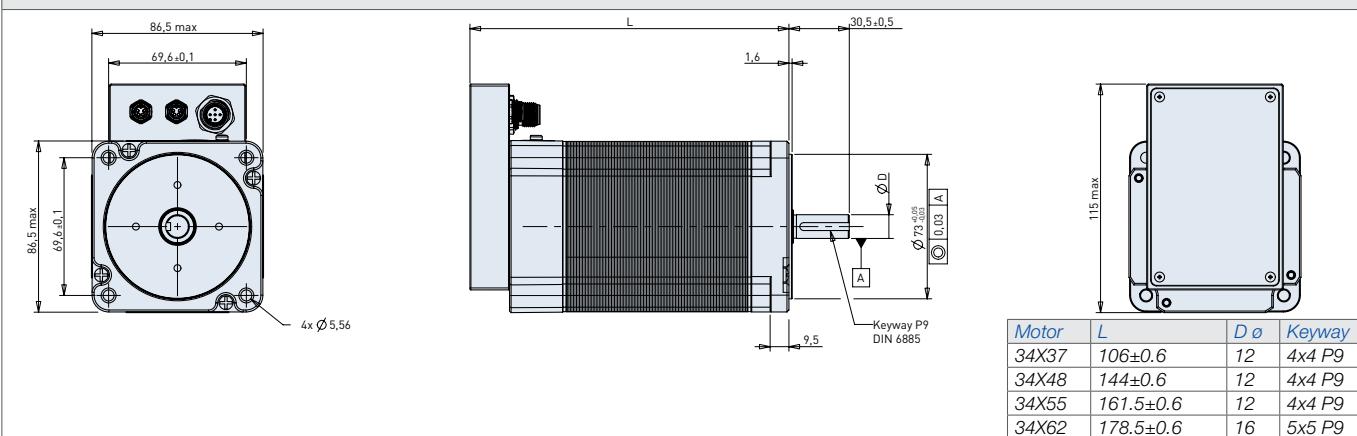


## >> ST 34 STE | Nema 34 Stepper Motor with integrated controller

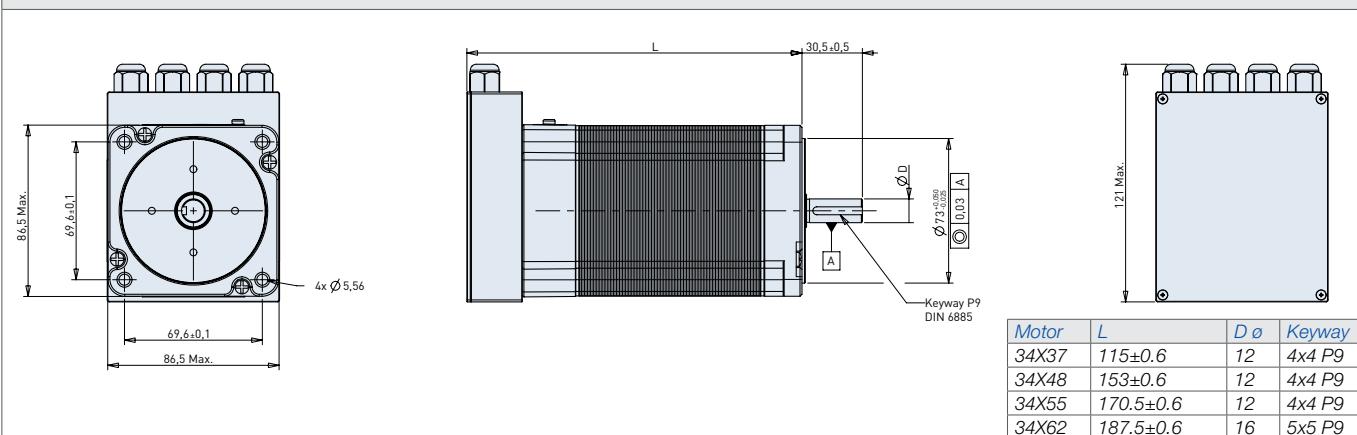
Dimensions in mm/ ST 34 STE FD1



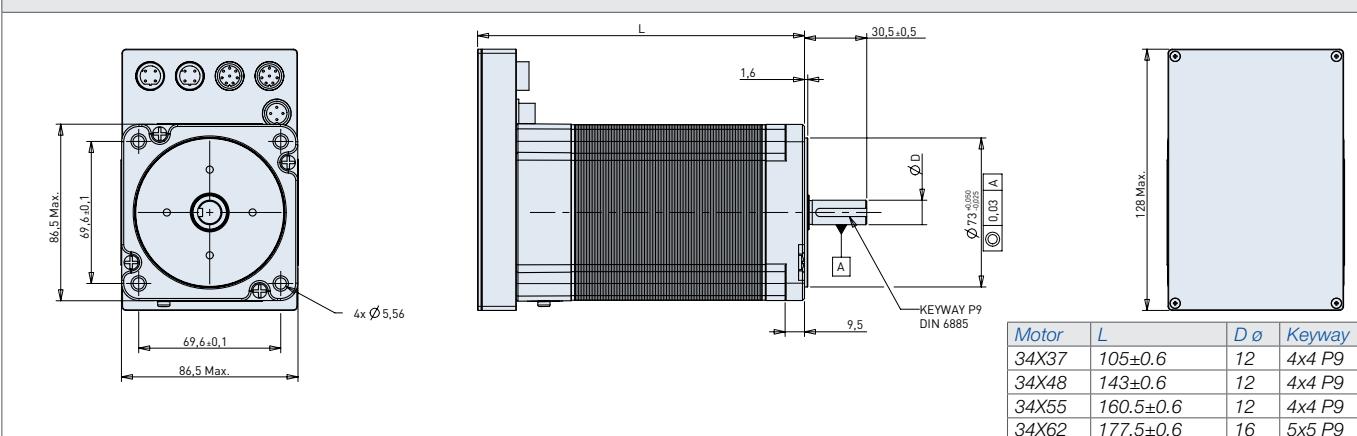
Dimensions in mm/ ST 34 STE FD1E



Dimensions in mm/ ST 34 STE FD2



Dimensions in mm/ ST 34 STE FD2E





# ***Brushless AC/DC Motors***

» ***Series BL***

***Brushless AC/DC Motors***

Page 74	BL 42 <b>dGo</b>   632 042   Brushless Motor 42 mm
Page 76	BL 57 <b>dCore</b>   632 057   Brushless Motor 57 mm 4 Pole
Page 78	BL 57 <b>dCore</b>   632 057   Brushless Motor 57 mm 8 Pole
Page 80	BL 89 SI AC   632 089   BL89 SI AC with integrated electronic

## >> BL 42 dGo | 632 042 | Brushless Motor 42 mm

- » 6-Pole High Speed BLDC motor
- » Integrated controller
- » 230 VAC Plug & Play
- » Closed-Loop control
- » Sensor-less technology
- » Low cogging torque
- » Low noise level
- » External rotor

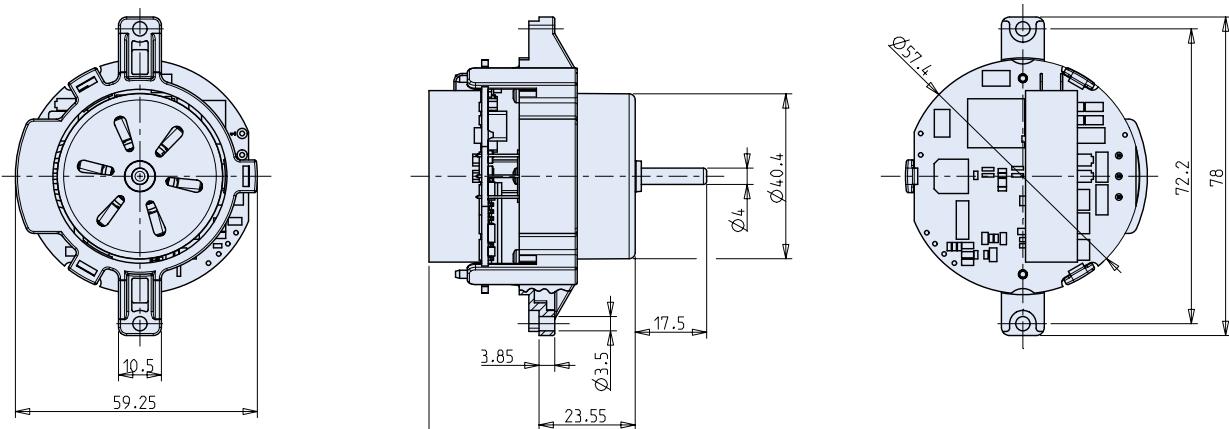


Data		230V
Nominal voltage	VAC	230 AC
Nominal current	Arms	1.3
Nominal torque	Ncm	4
Nominal velocity	rpm	28500
No load velocity	rpm	36000
Nominal input power	W	147
Nominal output power	W	119
Rotor inertia	gcm <sup>2</sup>	71.5
Weight	g	144

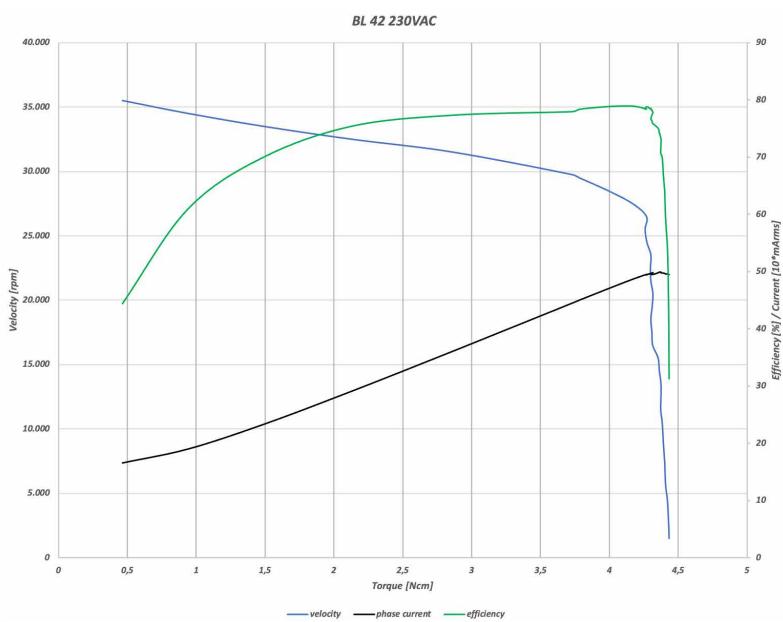
### Options:

- » Pre-set fixed velocity
- » Variable speed setting [analogue or digital command signal]
- » Open loop control
- » 120VAC Supply
- » 48VDC Supply

*Dimensions in mm*



*Characteristic diagram*



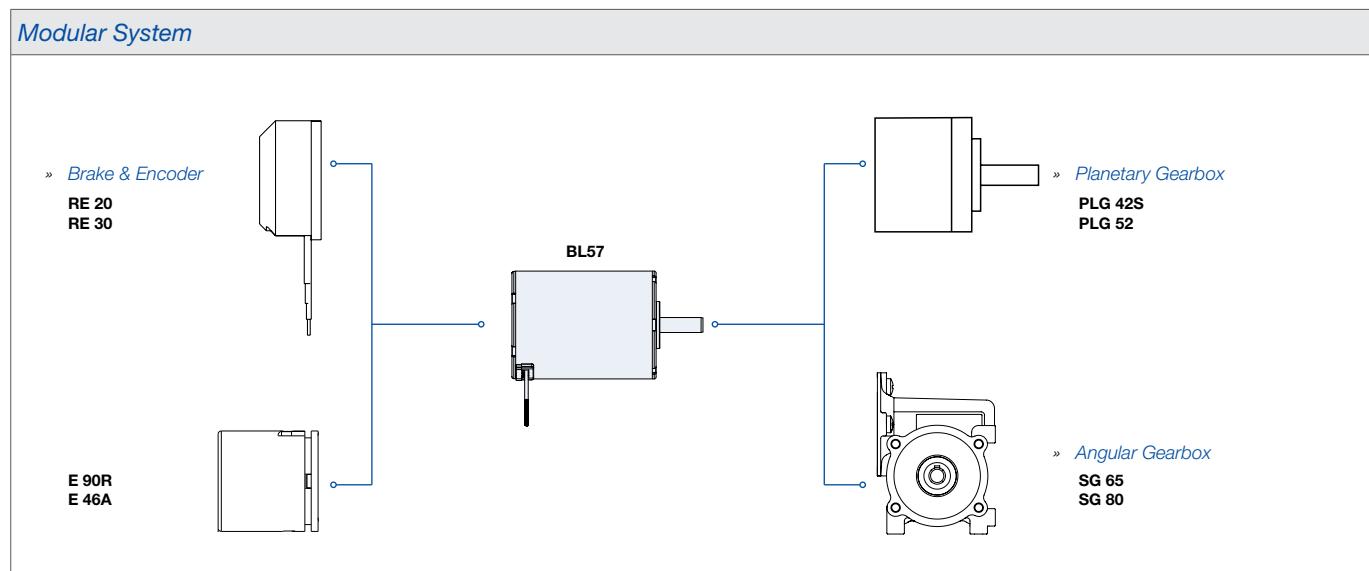
## >> BL 57 dCore | 632 057 | Brushless Motor 57 mm 4 Pole

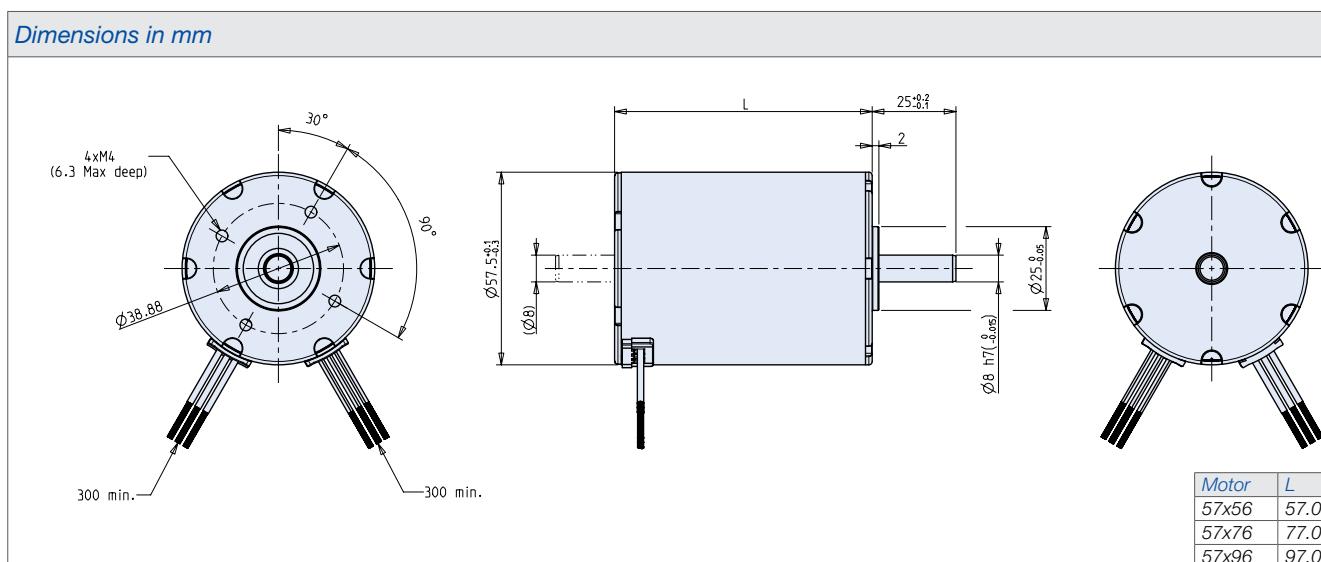
- » 3 phase 4 pole BLDC motor
- » High dynamic response
- » Hall sensors for rotor position detection
- » 3 motor lengths available
- » High power neodymium magnets
- » Low noise level
- » Low cogging torque
- » Customized solutions available on demand



Data		57x56		57x76		57x96	
Nominal voltage	VDC	24	40	24	40	24	40
Nominal phase current	Arms	2.73	1.73	4.76	3.43	7.31	5.20
Nominal torque	Ncm	11	11	22	25	35	35
Nominal velocity	rpm	4018	4120	3850	4150	3900	4180
Stall torque	Ncm	50	45	90	110	150	150
No load velocity	rpm	5350	5400	5320	5380	5050	5380
Nominal output power	W	46	47	89	109	143	153
Max. output power	W	65	62	139	165	201	245
Torque constant	Ncm / Arms	4.03	6.36	4.62	7.29	4.79	6.73
Phase resistance	Ohm	0.81	2.26	0.60	0.85	0.27	0.53
Phase inductance	mH	2.24	2.63	1.41	2.96	0.79	2.11
Rotor inertia	gcm <sup>2</sup>	81	81	144	144	206	206
Weight	Kg	0.60	0.60	0.90	0.90	1.15	1.15

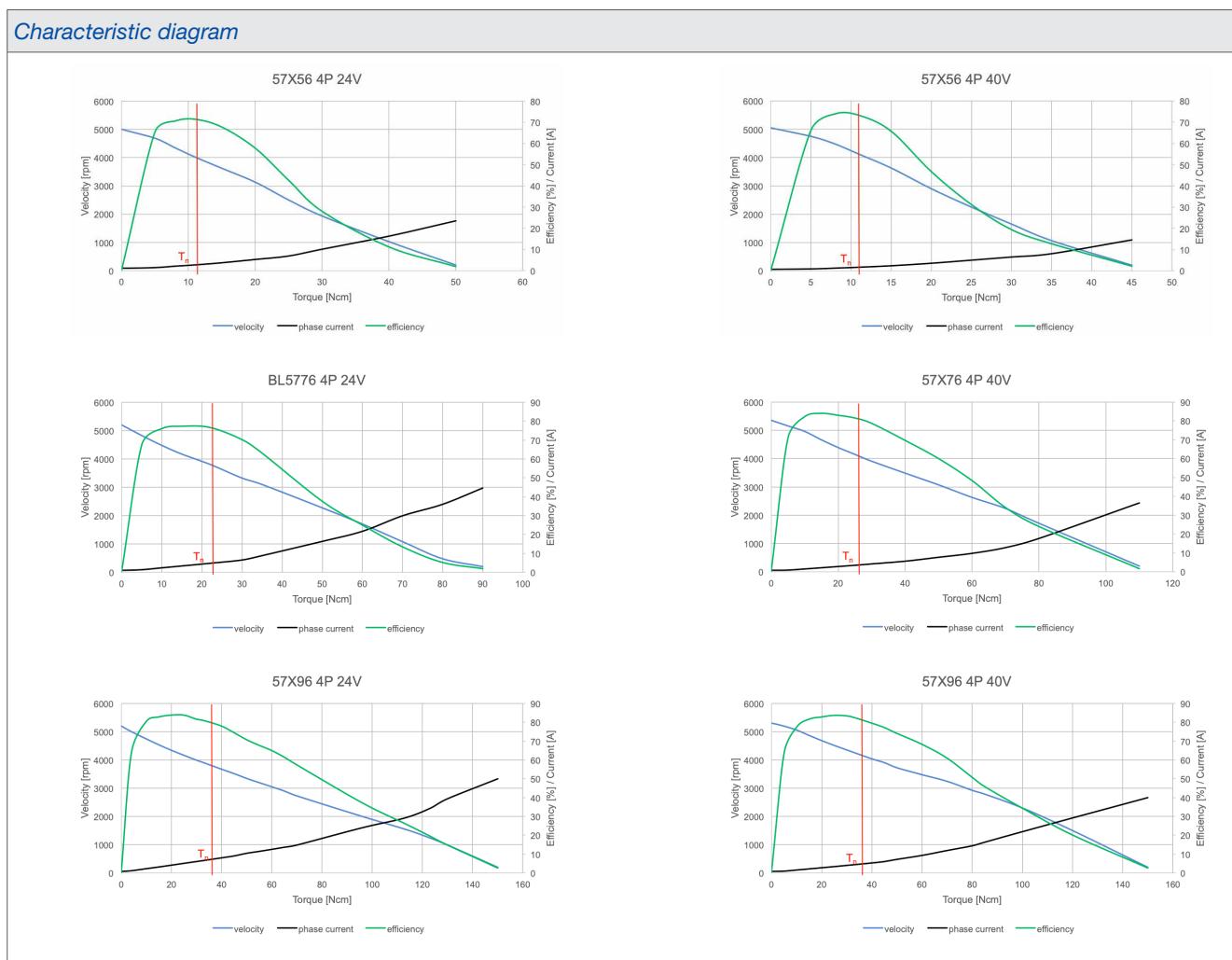
All data measured at 25°C





Pin Assignment	
Colour	Function
Black ●	phase A
Red ●	phase B
Yellow ○	phase C

Pin Assignment	
Colour	Function
Red ●	Vcc
Black ●	GND
Green ○	Hall A
Blue ●	Hall B
White ○	Hall C



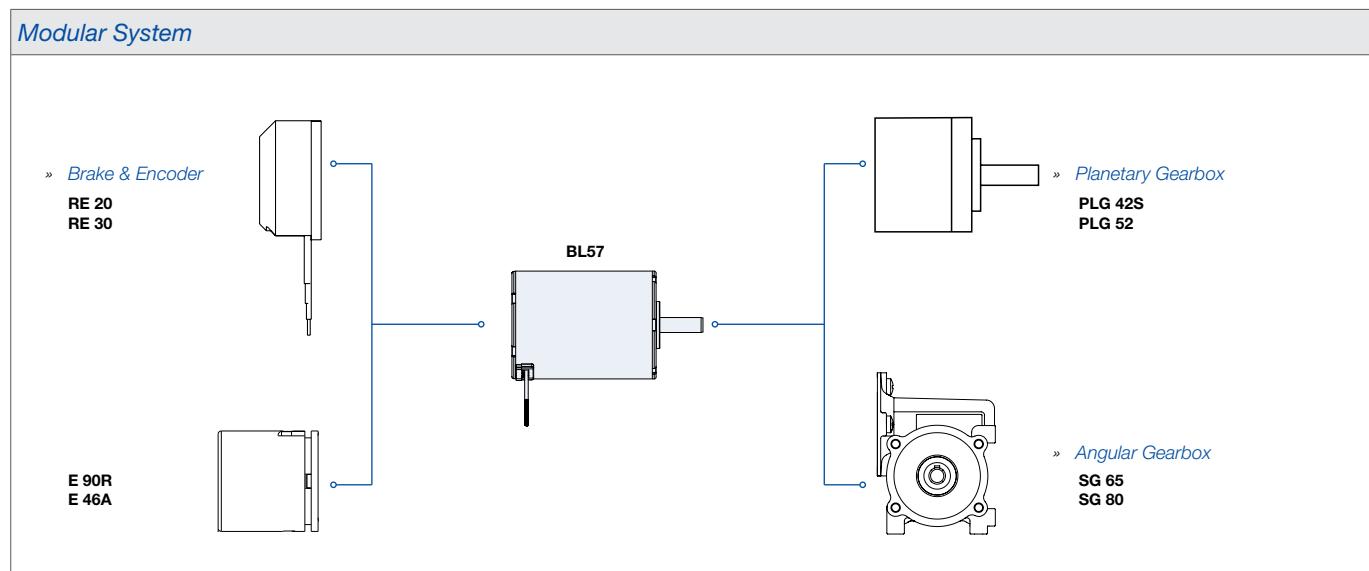
## >> BL 57 dCore | 632 057 | Brushless Motor 57 mm 8 Pole

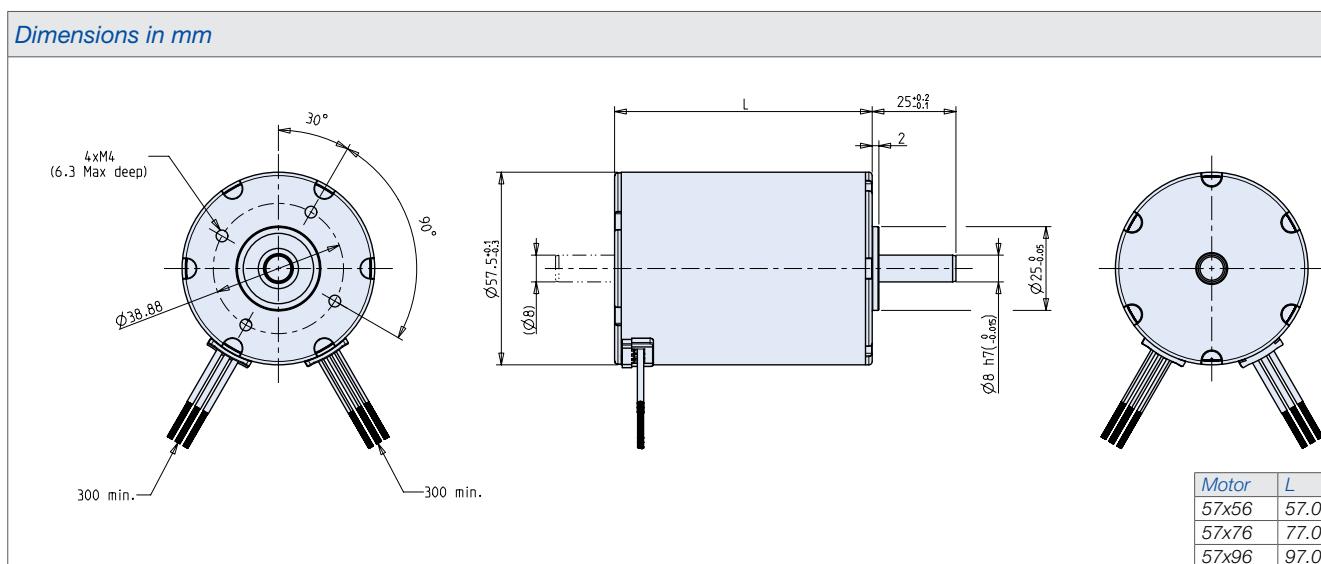
- » 3 phase 8 pole BLDC motor
- » High dynamic response
- » Hall sensors for rotor position detection
- » 3 motor lengths available
- » High power neodymium magnets
- » Low noise level
- » Low cogging torque
- » Customized solutions available on demand



Data		57x56		57x76		57x96	
Nominal voltage	VDC	24	40	24	40	24	40
Nominal phase current	Arms	3.15	2.32	5.13	3.06	7.20	4.68
Nominal torque	Ncm	11	11	22	22	33	33
Nominal velocity	rpm	2850	3005	3315	3324	3160	3200
Stall torque	Ncm	48	38	125	105	130	110
No load velocity	rpm	4950	4900	5050	5100	5060	5182
Nominal output power	W	33	35	76	77	109	111
Max. output power	W	45	38	118	99	159	121
Torque constant	Ncm / Arms	3.49	4.74	4.29	7.19	4.58	7.05
Phase resistance	Ohm	0.74	1.64	0.30	0.85	0.21	0.53
Phase inductance	mH	2.45	5.60	1.05	2.90	0.75	2.11
Rotor inertia	gcm <sup>2</sup>	81	81	144	144	206	206
Weight	Kg	0.60	0.60	0.90	0.90	1.15	1.15

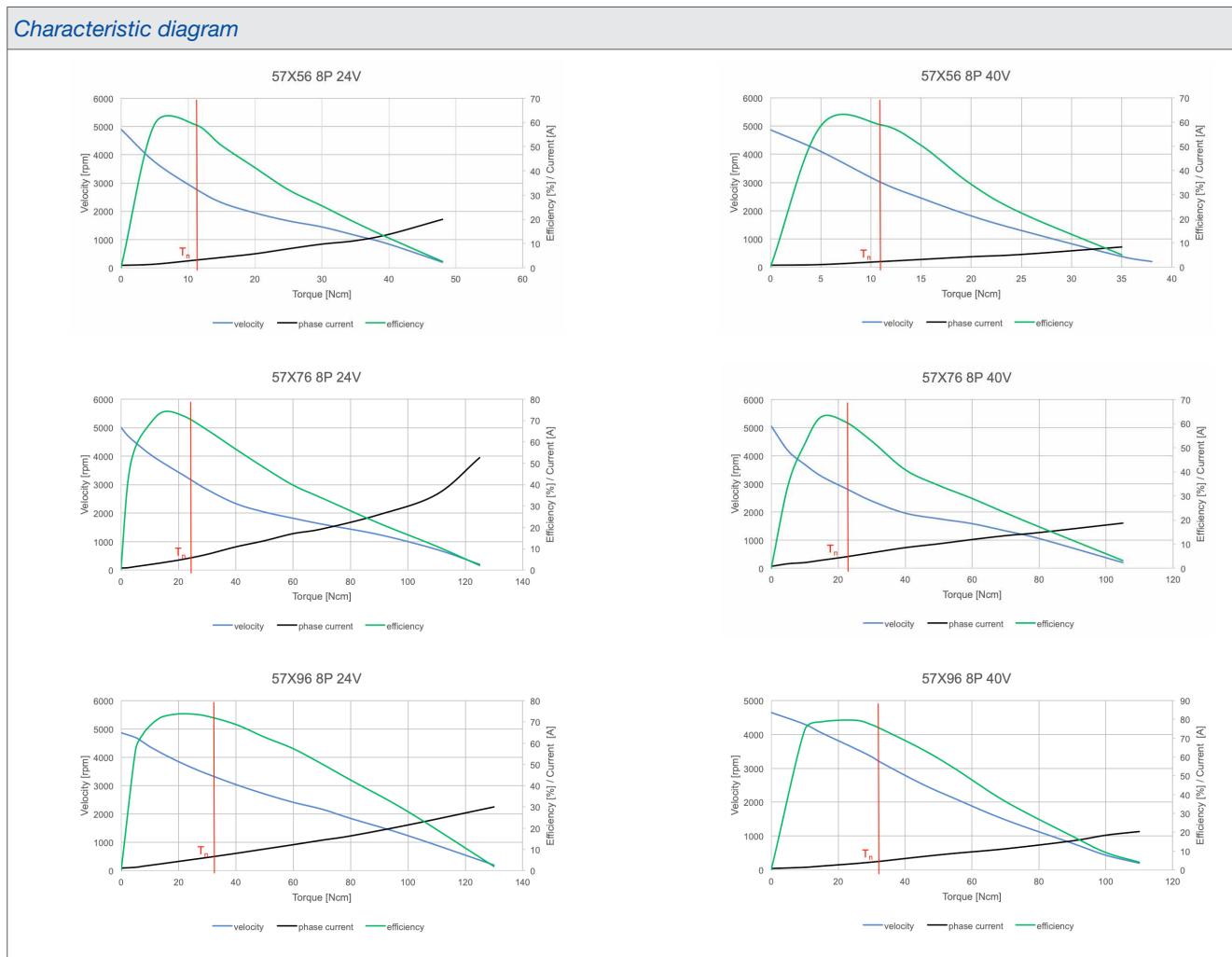
All data measured at 25°C





Pin Assignment	
Colour	Function
Black ●	phase A
Red ●	phase B
Yellow ○	phase C

Pin Assignment	
Colour	Function
Red ●	Vcc
Black ●	GND
Green ○	Hall A
Blue ●	Hall B
White ○	Hall C



## >> BL 89 SI AC | 632 089 | BL 89 SI AC with integrated electronic

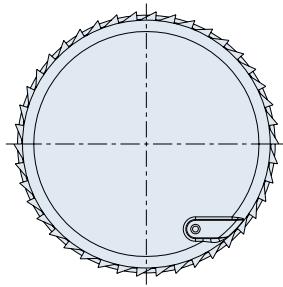
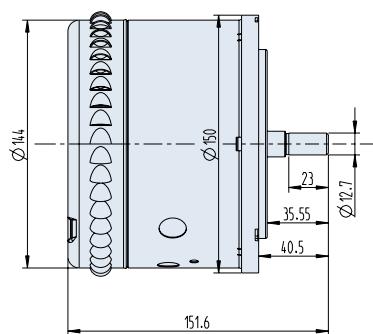
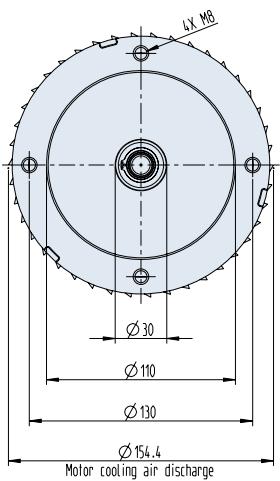
- » 110 V/ 230 V 60 Hz/ 50 Hz main voltage  
(DC 400 V optional)
- » Strand connections
- » Open housing according to IP20
- » Integrated electronics
- » 16,63 Ncm - 65 Ncm
- » Speed control
- » Current control (new electronics)
- » Inrush current limitation (new electronics)
- » Electrical input:  
» 1 differential analog input (galvanically isolated)
- » Electrical output:  
» 1 digital output input (galvanically isolated)  
10 V auxiliary voltage output  
(new electronics)
- » Possibility for extension by „option card“



Data		89x111
Torque	Ncm	65
Efficiency	%	57,5
Speed	rpm	3000 (up tp 12000)
Supply voltage	VAC	110/230
Frequency	Hz	60/50
Protection class	-	IP20
Certification	-	UL
Ambiente temperature	C°	0-50°C
Input power (with cooling system)	W	400 W
Weight	kg	2

All data measured with standard cables 300 mm at 25°C

*Dimensions in mm*



*Speed Control options and Electrical Connection*

*PWM: 400Hz – 20MHz +10V nominal, min 10% duty cycle*

Pin #	Function
1	Speed command PWM
2	Speed command PWM

*Pin Assignment*

05P AMP Mate-N-Lok 350810-1	2 Pole Molex 39-01-3029
Male Pins AMP 350873-1	Male Pins Molex PN 39000061

Pin #	Function	Pin #	Function
1	Speed command Common	6	Signal Digital Output
2	Speed command 0-10VDC	7	Common Digital Output
3	Ground		
4	Line		
5	Neutral		

*Current: 5mA – 20mA +10V nominal*

Pin #	Function
1	Speed command current
2	Speed command current

*On/Off: Without Electrical Speed Control*

Pin #	Function
1	Not used
2	Not used

Molex connector (Pin # 6 & 7) not present

# *Accessories*

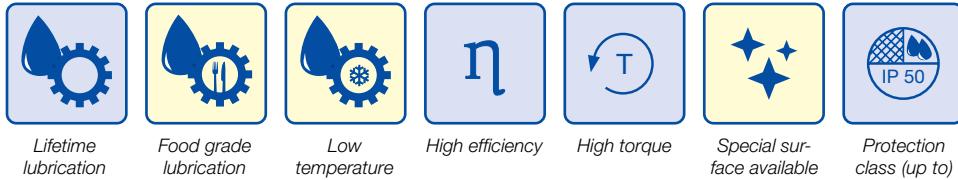
- » ***Gearboxes***
- » ***Incremental Encoders***
- » ***Brakes***
- » ***Controllers***
- » ***Accessories***

**Gearboxes, Encoders, Brakes, Controllers, Accessories**

Page 84	Gearboxes
Page 91	Incremental Encoders
Page 92	Brakes
Page 94	Controllers
Page 96	Accessories

## >> PLG 42 SP

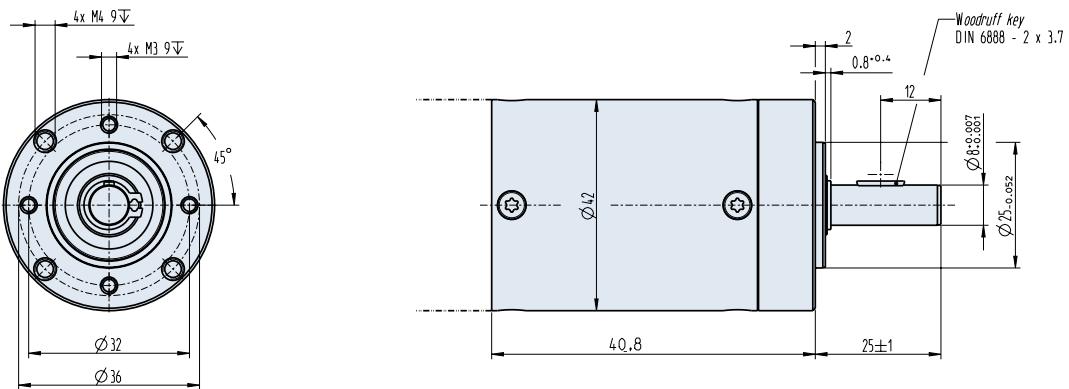
- » Compact, industry compatible planetary gearbox
- » Output shaft with dual ball bearings
- » All stages have straight toothing
- » Optimized for stepper operation



### Data | PLG 42 SP - Ring gear made of steel

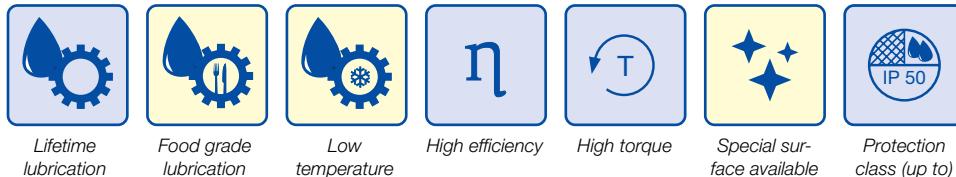
Reduction ratio	-	4.00	6.25	8.00
Efficiency	%		90	
Number of stages	-		1	
Continuous torque	Nm	4.5	5.5	6
Acceleration torque	Nm	4.7	6	7.5
Emergency stop torque	Nm	5	6.5	8.5
Operating mode	-		S1 / S8	
Weight of gearbox	kg	0.2	0.2	0.2
Axial load / radial load (middle of key)	N		150 / 250	

### Dimensions in mm



Depending on the motor type, the mounting pattern may be rotated by 45°. Please ask us for details

- » Compact, industry compatible planetary gearbox
- » Output shaft with dual ball bearings
- » All stages have straight toothing

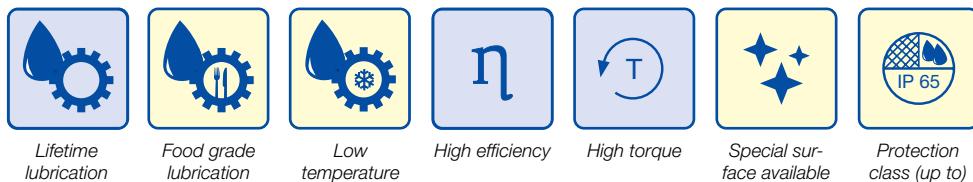


Data   PLG 42 S - Ring gear made of steel																	
Reduction ratio	-	4	6.25	8	16	25	32	50	64	100	128	156.25	200	256	312.5	400	512
Efficiency	%	90				81				73							
Number of stages	-	1				2				3							
Continuous torque	Nm	up to 0.7 (no metallic planet gears) / 3.5				up to 6				up to 14							
Weight of gearbox	kg	0.27				0.37				0.47							
Axial load / radial load (middle of key)	N	150 / 250				150 / 250				150 / 250							

Dimensions in mm	
<i>Depending on the motor type, the mounting pattern may be rotated by 45°. Please ask us for details</i>	
<i>Length L mm</i>	
1 stage	46.8
2 stage	58.6
3 stage	70.4

## >> PLG 52 SP

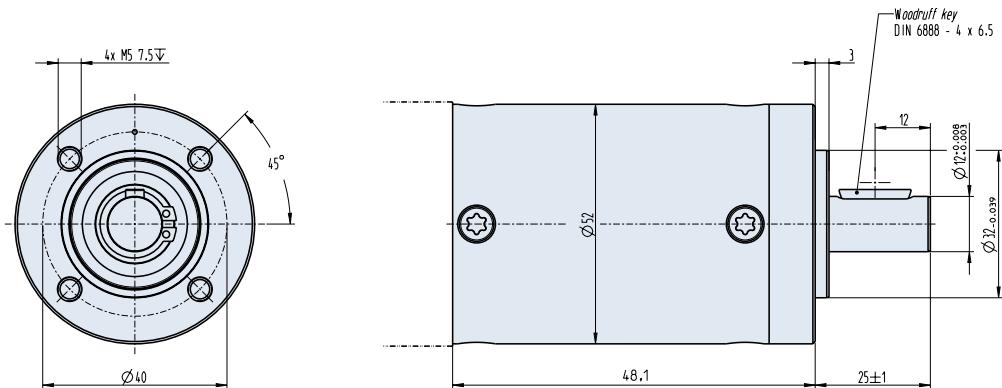
- » High efficiency
- » Output shaft with double ball bearings
- » All stages have straight toothing
- » Optimized for stepper operation



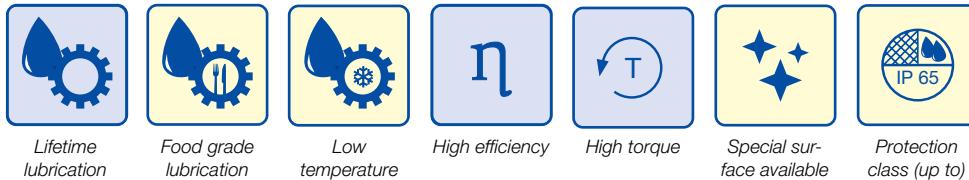
**Data | PLG 52 SP - Ring gear made of steel**

Reduction ratio	-	4.00	6.25	8.00
Efficiency	%		90	
Number of stages	-		1	
Continuous torque	Nm	8.0	8.0	8.0
Acceleration torque	Nm	4.7	6	7.5
Emergency stop torque	Nm	8.5	10	14
Operating mode	-		S1 / S8	
Weight of gearbox	kg	0.6	0.6	0.6
Axial load / radial load (middle of key)	N		300 / 500	

**Dimensions in mm**



- » High efficiency
- » Output shaft with double ball bearings
- » All stages have straight toothings
- » Reinforced version on demand

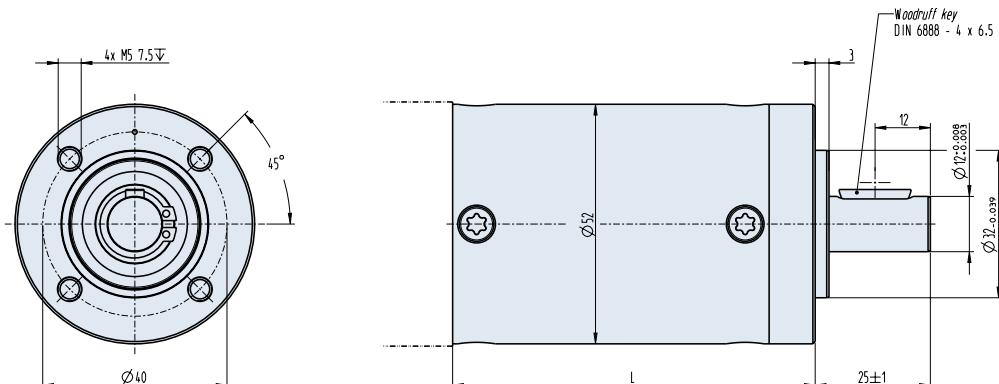


#### Data | PLG 52 - Ring gear steel or plastic

Reduction ratio	-	4.5	6.25	8	15	20.25	28.12	36	50	64	91.12	126.5	162	225	288	400	512
Efficiency	%	90			81						73						
Number of stages		1			2						3						
Continuous torque	Nm	up to 1.2		up to 8				up to 24									
Weight of gearbox	kg	0.56		0.72							0.88						
Axial load / radial load (middle of key)	N	500 / 350		500 / 350							500 / 350						

#### Dimensions in mm

Depending on the motor type, the mounting pattern may be rotated by 45°. Please ask us for details.

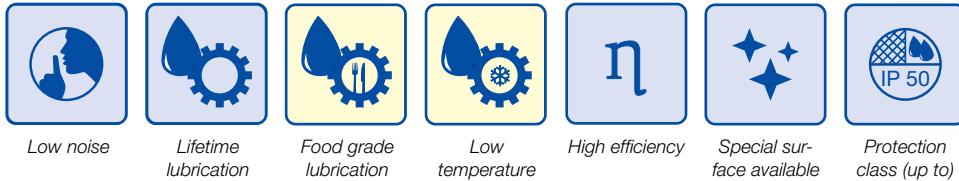


Length L mm

1 stage	50
2 stage	65.5
3 stage	80.5

## >> PLG 75 SP

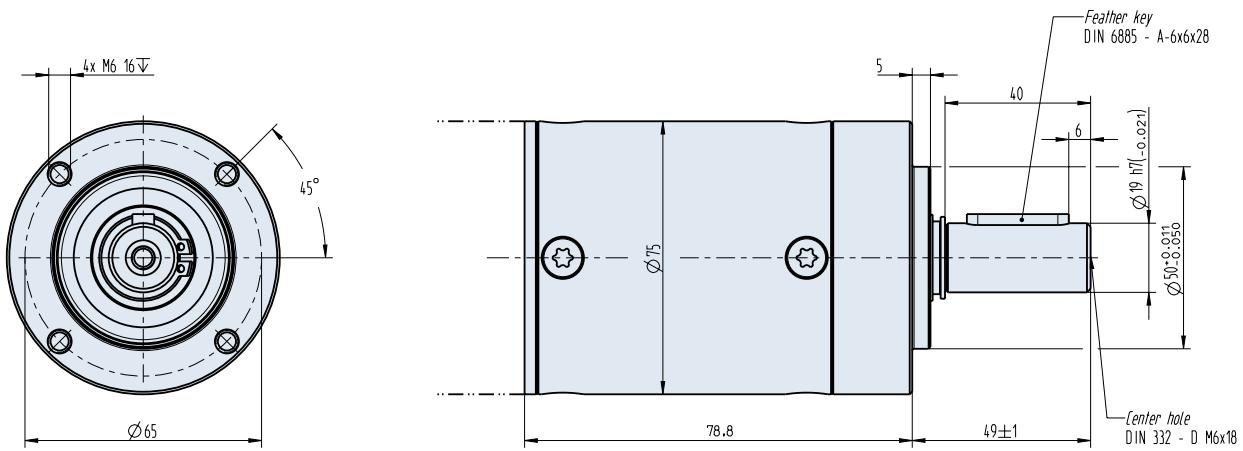
- » Industry compatible planetary gearbox
- » High efficiency
- » All stages have straight toothing
- » Output shaft with double ball bearings
- » Optimized for stepper operation



### Data | PLG 75 SP - Ring gear made of steel

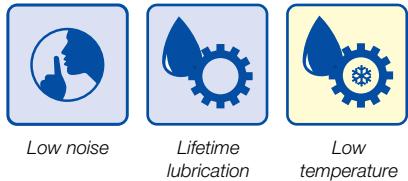
Reduction ratio	-	4.20	5.00	7.00
Efficiency	%		90	
Number of stages	-		1	
Continuous torque	Nm	44	52	50
Acceleration torque	Nm	47	56	7.5
Emergency stop torque	Nm	8.5	10	65
Operating mode	-		S1 / S8	
Weight of gearbox	kg	1.7	1.7	1.7
Axial load / radial load (middle of key)	N		1000 / 1000	

### Dimensions in mm



- » Housing made of high-tensile zinc die-cast
- » Compact design, ideal for door applications
- » Worm wheel made of specific, high grade material for quiet operation
- » Standard output shaft with dual ball bearings, shaft output to the left

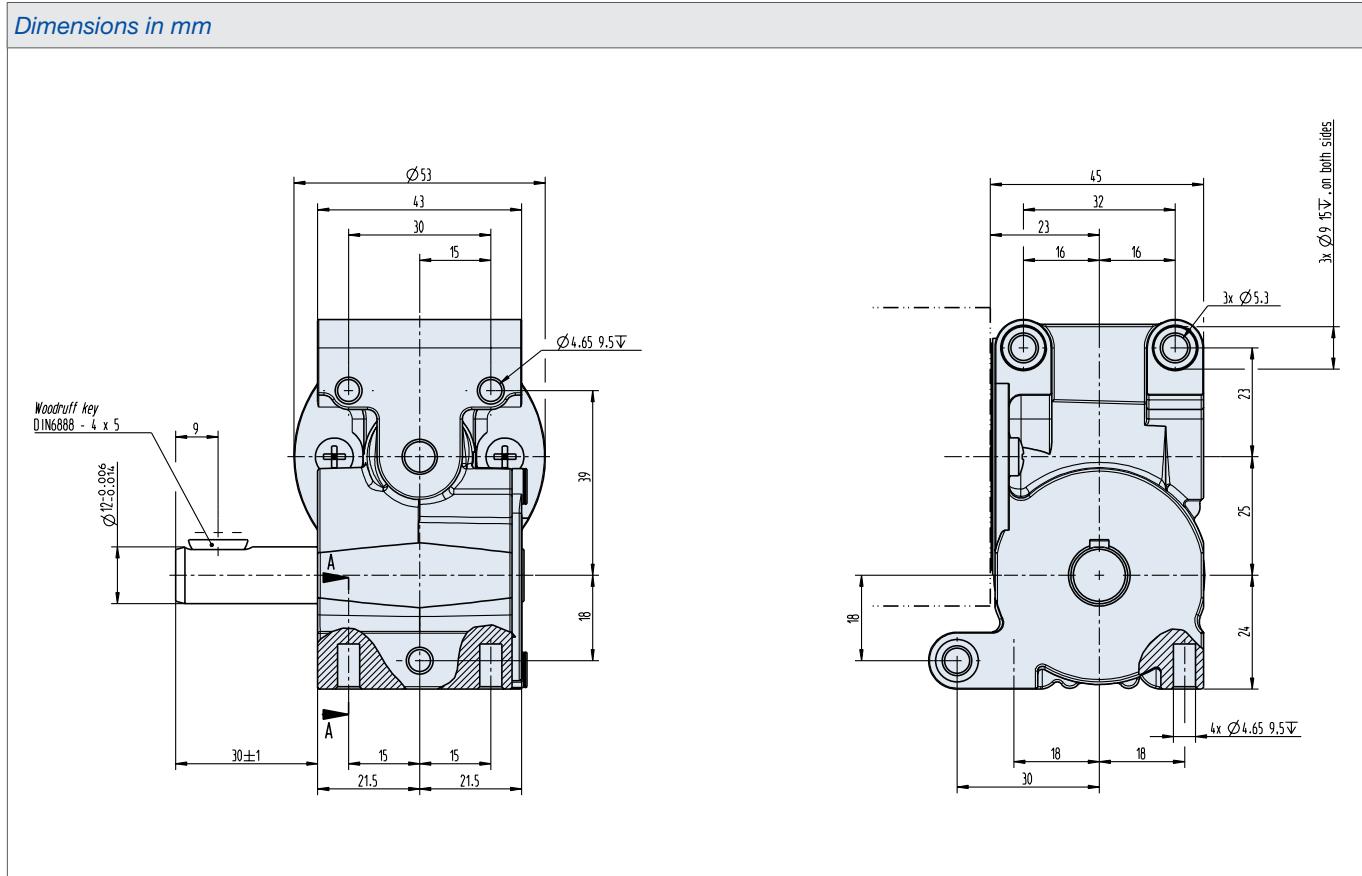
- » Shaft output to the right or double output shaft also available
- » Combined with brushless (series BL 57)
- » Customisation by adding pulleys



#### Data | SG 65

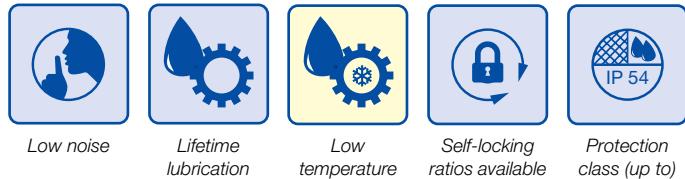
Reduction ratio		10.25
Efficiency	%	0.8
Continuous torque	Nm	4
Peak torque	Nm	7
Axial load / radial load	N	200 / 250

#### Dimensions in mm



# >> SG 80 | SG 80 H | SG 80 K

- » Housing made of high-tensile die-cast
- » Worm wheel made of brass
- » Output shaft with ball bearings on both sides, shaft output to the left
- » Shaft output to the right or double shaft output on demand

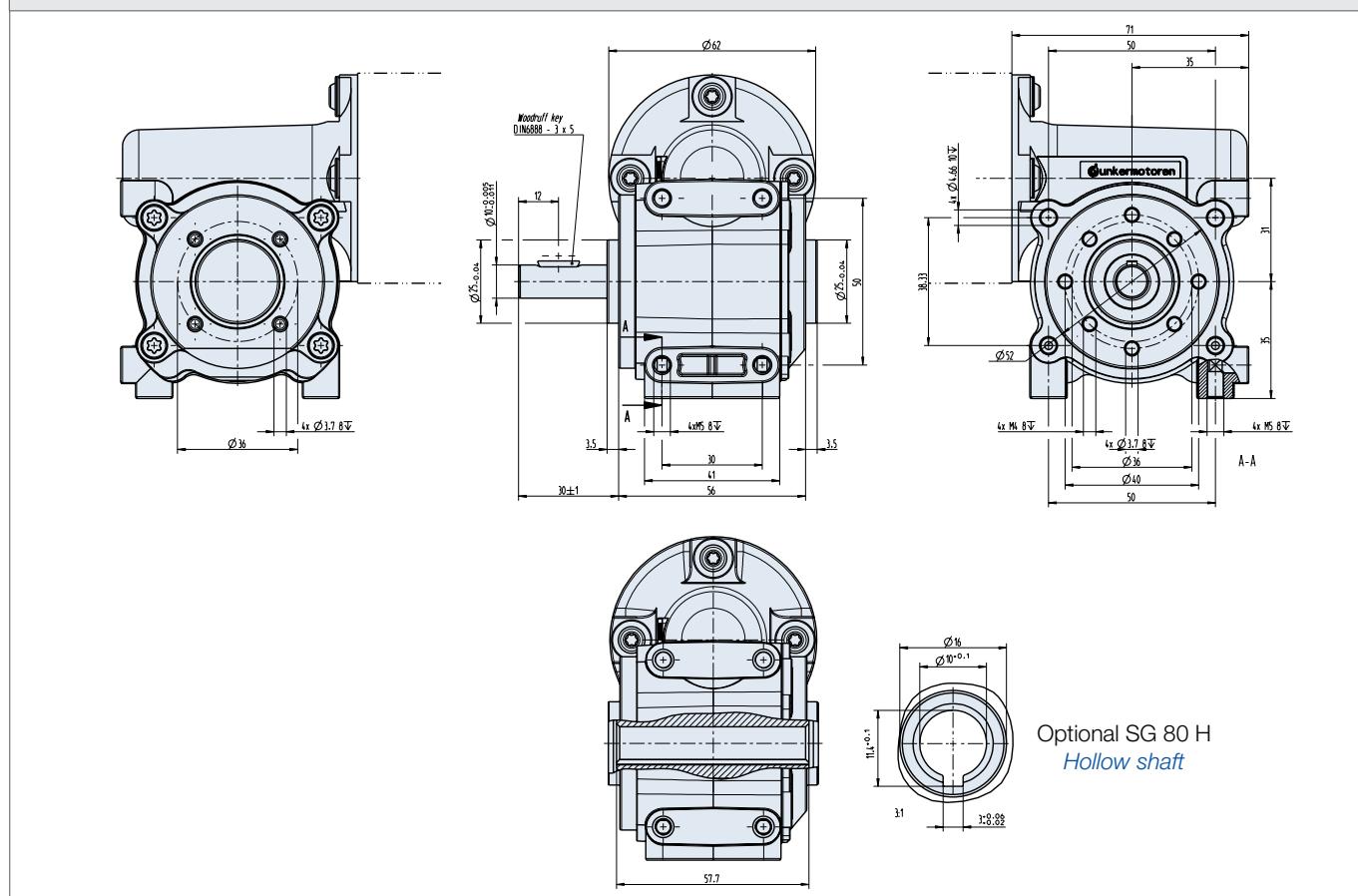


## Data | SG 80 | SG 80 H | SG 80 K

	SG 80 / SG 80 H	5	10	15	24	38	50	75
Efficiency	%	70	65	55	50	40	35	25
Continuous torque	Nm	2	2.5	3.5	3.5	3.5	4	4
Max. acceleration torque	Nm				8			
Emergency torque	Nm				12			
Operating mode	-				S1 / S8 *			
Reduction ratio	SG 80 K	7	10	15	24.5	-	-	-
Efficiency	%	82	80	70	65	-	-	-
Continuous torque	Nm	2.5	2.5	3.5	3.5	-	-	-
Max. acceleration torque	Nm	5	5	7	7			
Emergency torque	Nm				12			
Operating mode	-				S8 *			
Weight of gearbox	kg				0.9			
Axial load / radial load	N				300 / 350			

\*S8 = Duty cycle 60% on, acceleration torque for 1% of the cycle, input speed 3000 rpm, S1 = Continuous operation in one direction, input speed 3000 rpm

## Dimensions in mm



The incremental encoders operate contact-free with no wear. For cable lengths of more than 2.5 m between encoder and control, the use of an encoder with driver (TI) is recommended. The standard supply voltage of the incremental encoders is 5 VDC. 24V versions are also available in special versions. The encoders can either be mounted open to the motors or with protective hoods in protection class IP54 or higher.



Data		RE 20	RE 30	RE 30	RE 30 TI	RE 30 TI	RE 30 TI
Nominal voltage	VDC	5	5	5	5	24	5
Signals per rotation	ppr	100	500	500	500	500	1024
Interface	-	A/B	A/B	A/B/I	A/B/I	A/B/I	A/B
Rise time	ns	15	200	180	20	2000	20
Fall time	ns <sup>a)</sup>	15	50	49	20	2000	20
Input current	mA	25	40	85	165	100	120
Output voltage (low-Max.)	VDC	0.6	0.4	0.4	0.5	1.2	0.5
Output voltage (high-min.)	VDC	2.4	2.4	2.4	2.5	22	2.5
Output current Max.	mA	20	5	5	20	30	20
Operating temperature	°C	-20...+85	-40...+100	-40...+100	0...+70	-25...+85	0...+70
Protection class	IP	30	30	30	30	30	30

RE 30 (without cover) IP 30	RE 30 TI (without cover) IP 30																																										
 <b>Suitable connector with 500 mm strand</b> <table border="1"> <tr> <th>Pin</th><th>RE 30</th></tr> <tr> <td>1</td><td>GND 0V</td></tr> <tr> <td>2</td><td>(I)</td></tr> <tr> <td>3</td><td>A</td></tr> <tr> <td>4</td><td>Vcc 5V</td></tr> <tr> <td>5</td><td>B</td></tr> </table>	Pin	RE 30	1	GND 0V	2	(I)	3	A	4	Vcc 5V	5	B	 <b>Suitable connector with 500 mm strand</b> <table border="1"> <tr> <th>Pin</th><th>RE 30</th><th></th><th>RE 30</th><th></th></tr> <tr> <td>1</td><td>n.c.</td><td>6</td><td>A</td><td></td></tr> <tr> <td>2</td><td>Vcc 5V</td><td>7</td><td>/B</td><td></td></tr> <tr> <td>3</td><td>GND 0V</td><td>8</td><td>B</td><td></td></tr> <tr> <td>4</td><td>n.c.</td><td>9</td><td>(I)</td><td></td></tr> <tr> <td>5</td><td>/A</td><td>10</td><td>(I)</td><td></td></tr> </table>	Pin	RE 30		RE 30		1	n.c.	6	A		2	Vcc 5V	7	/B		3	GND 0V	8	B		4	n.c.	9	(I)		5	/A	10	(I)	
Pin	RE 30																																										
1	GND 0V																																										
2	(I)																																										
3	A																																										
4	Vcc 5V																																										
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Pin	RE 30		RE 30																																								
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3	GND 0V	8	B																																								
4	n.c.	9	(I)																																								
5	/A	10	(I)																																								

RE 20 (without cover) IP 30												
  <table border="1"> <tr> <th>Pin</th><th>RE 20</th></tr> <tr> <td>1</td><td>GND 0V</td></tr> <tr> <td>2</td><td>-</td></tr> <tr> <td>3</td><td>A</td></tr> <tr> <td>4</td><td>Vcc 5V</td></tr> <tr> <td>5</td><td>B</td></tr> </table>	Pin	RE 20	1	GND 0V	2	-	3	A	4	Vcc 5V	5	B
Pin	RE 20											
1	GND 0V											
2	-											
3	A											
4	Vcc 5V											
5	B											

## >> Brakes

» Available on request

The brakes are designed as static brakes, but have emergency stop characteristics. The performance data are guideline values that can deviate in individual cases. When selecting the brakes, carefully check and coordinate installation situations, braking torque fluctuations, friction work, running-in behaviour and wear as well as ambient conditions. In the event of temperature fluctuations, the torque can drop sharply, e.g. due to condensation. During prolonged standstill, the friction linings can stick to the friction surfaces. The user must take appropriate counter-measures.



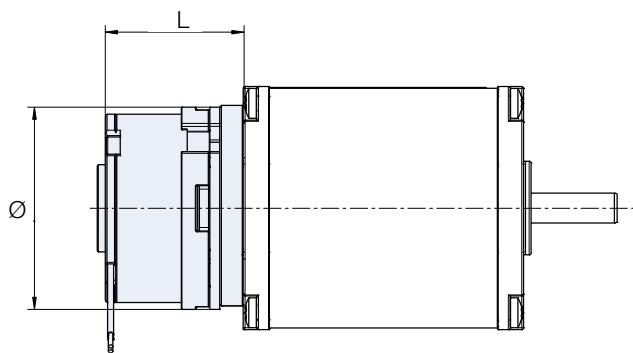
E 46 A

E 90 R

Data		E 46 A	E 90 R
Nominal voltage	VDC	24	24
Nominal torque*	Nm	0.3	1
Nominal current*	mA	260	310
Nominal input power*	W	6.3	7.5
Activation time	ms	8	30
Deactivation time	ms	5	30
Protection class	IP	20	20
Weight	kg	0.1	0.45

\* Values valid in run-in condition

### Brakes IP 20



Length (L in mm)		
	E 46	E 90
Ø	46	59
L	25.5	42.3
Strand colour	grey	grey
Strand colour	grey	grey
Strand length	500	300

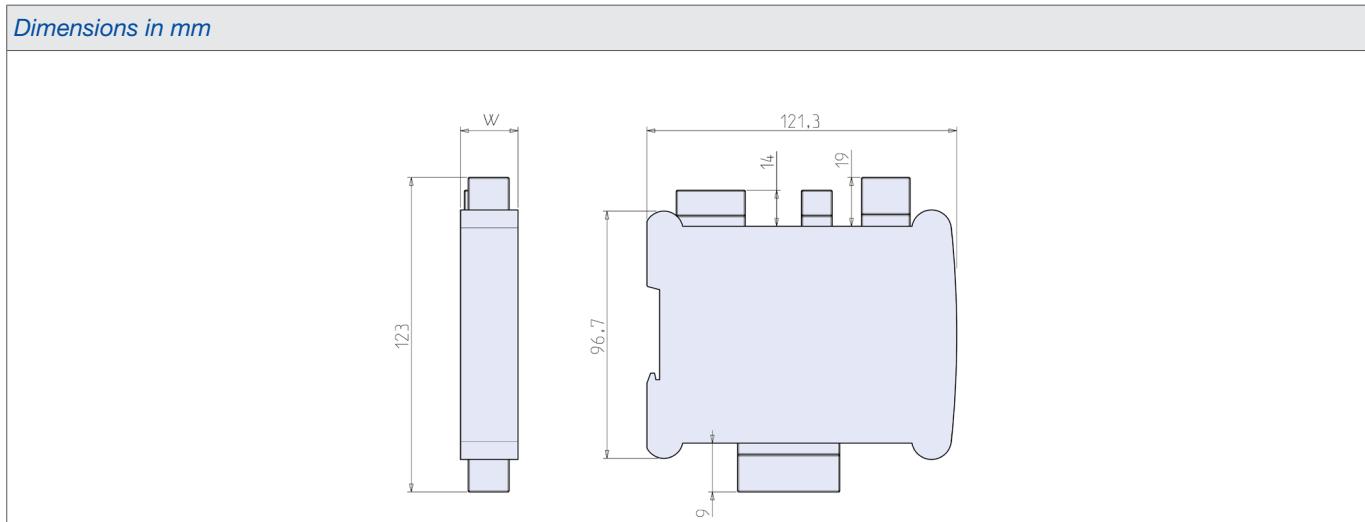


## >> DSE-I Stepper Motor Controller

- » Very compact Stepper Motor Controller with vector control and closed loop operations
- » Speed, torque and position control
- » 1 analogue input, 8 digital input, 3 digital output
- » Different voltage and current ratings available
- » Cooler operation: Current proportional to the load
- » Deploy and diagnostic software on request



Data		I/O Controller	
		DSE-I 45 SE	DSE-I 100 SE
Power Supply Voltage	Vdc	24 ... 90	24 ... 90
Phase Current	Arms	1 ... 4.5	2 ... 10
Analogue Input Voltage	Vdc	-10 ... +10	-10 ... +10
Digital Input Voltage	Vdc	3 ... 28	3 ... 28
Digital Output Voltage	Vdc	0 ... 30	0 ... 30
Digital Output Current	mA	80	80
Protection Class	IP	20	20
Ambient Temperature	°C	-10 ... +40	-10 ... +40
Relative Humidity	%	5 ... 90	5 ... 90
Weight	Kg	0.20	0.24
Width (W)	mm	22.5	35.5



### Pin Assignment

CN1.1	+Vp	Power supply ground	CN3.14	DO1-	Digital output 1-
CN1.2	GND	Ground	CN3.15	AIN0+	Analogue input 0
CN2.1	Ma-	Motor phase A-	CN3.16	AIN0 GND	Analogue input 0 ground
CN2.2	Ma+	Motor phase A+	CN3.17	DO2+	Digital output 2+
CN2.3	Mb+	Motor phase B+	CN3.18	DO2-	Digital output 2-
CN2.4	Mb-	Motor phase B-	CN3.19	DI567COM	DI5 ... DI7 (Common)
CN2.5	Shield	Shield	CN3.20	DI5	Digital input 5
CN3.1	+24 V	Auxiliary supply voltage	CN3.21	DI6	Digital input 6
CN3.2	GND	Auxiliary supply ground	CN3.22	DI7	Digital input 7
CN3.3	DI0+	Digital input 0+	CN4.1	+Ve	Power supply
CN3.4	DI0-	Digital input 0-	CN4.2	GND	Encoder ground
CN3.5	DI1+	Digital input 1+	CN4.3	A	Encoder channel A
CN3.6	DI1-	Digital input 1-	CN4.4	/A	Encoder channel /A
CN3.7	DI234COM	DI2 ... DI4 (Common)	CN4.5	B	Encoder channel B
CN3.8	DI2	Digital input 2	CN4.6	/B	Encoder channel /B
CN3.9	DI3	Digital input 3	CN4.7	I	Encoder index
CN3.10	DI4	Digital input 4	CN4.8	/I	Encoder index neg
CN3.11	DO0+	Digital output 0+	CN4.9	-	Not assigned
CN3.12	DO0-	Digital output 0-	CN4.10	-	Not assigned
CN3.13	DO1+	Digital output 1+			

## >> DSE-C Stepper Motor Controller

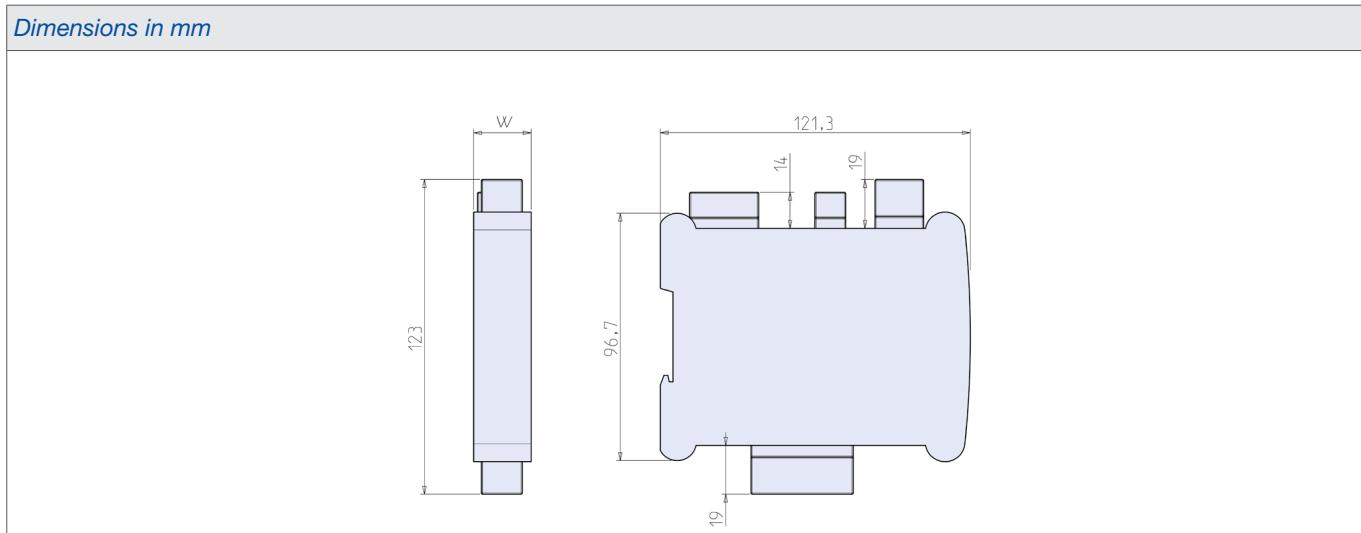
CANopen

MAE®

- » Very compact Stepper Motor Controller with vector control and closed loop operations
- » Homing mode, speed, torque and position control
- » 2 analogue input, 2 analogue output, 6 digital input, 3 digital output
- » Different voltage and current ratings available
- » Cooler operation: current proportional to the load
- » Node-ID and baud rate settable by DIP-Switch



Data		CANopen Controller (DS402, DS301)	
		DSE-C 45 SE	DSE-C 100 SE
Power Supply Voltage	Vdc	24 ... 90	24 ... 90
Phase Current	Arms	1 ... 4.5	2 ... 10
Analogue Input Voltage	Vdc	-10 ... +10	-10 ... +10
Digital Input Voltage	Vdc	3 ... 28	3 ... 28
Analogue Output Voltage	Vdc	0 ... 10	0 ... 10
Digital Output Voltage	Vdc	0 ... 30	0 ... 30
Digital Output Current	mA	80	80
Protection Class	IP	20	20
Ambient Temperature	°C	-10 ... +40	-10 ... +40
Relative Humidity	%	5 ... 90	5 ... 90
Weight	Kg	0.21	0.25
Width (W)	mm	22.5	35.5



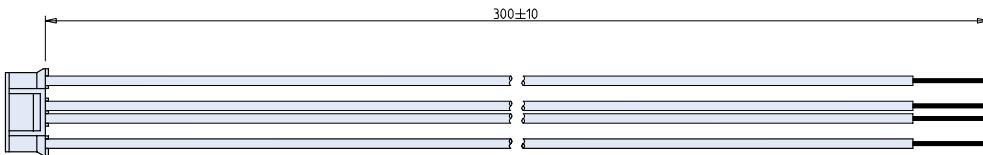
### Pin Assignment

CN1.1	+Vp	Power Supply Voltage	CN3.14	DO1-	Digital output 1-
CN1.2	GND	Power supply ground	CN3.15	DO2+	Digital output 2+
CN2.1	Ma-	Motor phase A-	CN3.16	DO2-	Digital output 2-
CN2.2	Ma+	Motor phase A+	CN4.1	+Ve	Encoder supply
CN2.3	Mb+	Motor phase B+	CN4.2	GND	Encoder ground
CN2.4	Mb-	Motor phase B-	CN4.3	A	Encoder channel A
CN2.5	Shield	Shield	CN4.4	/A	Encoder channel /A
CN3.1	+24 V	Auxiliary supply voltage	CN4.5	B	Encoder channel B
CN3.2	GND	Auxiliary supply ground	CN4.6	/B	Encoder channel /B
CN3.3	DI567COM	DI5 ... DI7 (Common)	CN4.7	I	Encoder index
CN3.4	DI234COM	DI2 ... DI4 (Common)	CN4.8	/I	Encoder index neg
CN3.5	DI5	Digital input 5	CN4.9	-	Not assigned
CN3.6	DI2	Digital input 2	CN4.10	-	Not assigned
CN3.7	DI6	Digital input 6	CN5.1	AO0	Analogue output 0
CN3.8	DI3	Digital input 3	CN5.2	AI0	Analogue input 0
CN3.9	DI7	Digital input 7	CN5.3	AO1	Analogue output 1
CN3.10	DI4	Digital input 4	CN5.4	AI1	Analogue input 1
CN3.11	DO0+	Digital output 0+	CN5.5	GND	Analogue ground
CN3.12	DO0-	Digital output 0-	CN5.6	GND	Analogue ground
CN3.13	DO1+	Digital output 1+			

## >> Accessories | ST | Stepper Motors

### Connector with cable for ST 17 634 017

» Connector: JST PHR-6      » Terminal: JST SPH-002T-PO5L      » Leads: AWG26 UL1569

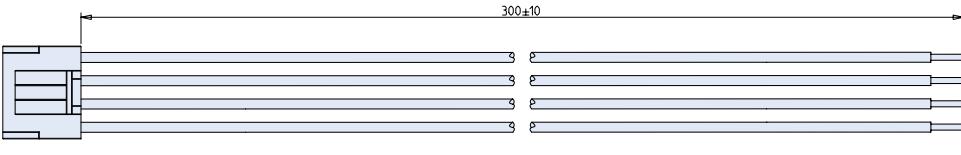


*Lead wires*

pin #	Colour	Function
1	White	phase A+
3	Yellow	phase A-
4	Red	phase B+
6	Blue	phase B-

### Connector with cable for ST 23 634 023

» Connector: JST VHR-4N      » Terminal: JST SVH-21T-P1.1      » Leads: AWG22 UL1569



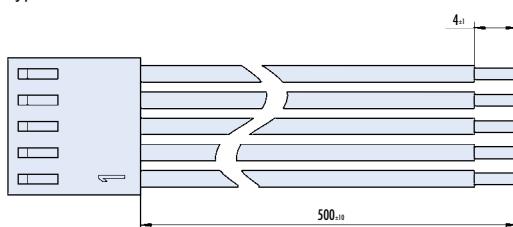
*Lead wires*

pin #	Colour	Function
1	White	phase A+
2	Yellow	phase A-
3	Red	phase B+
4	Blue	phase B-

## >> Accessories | RE | Encoders

### Connector with cable for encoder RE 20 / 30

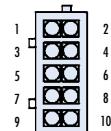
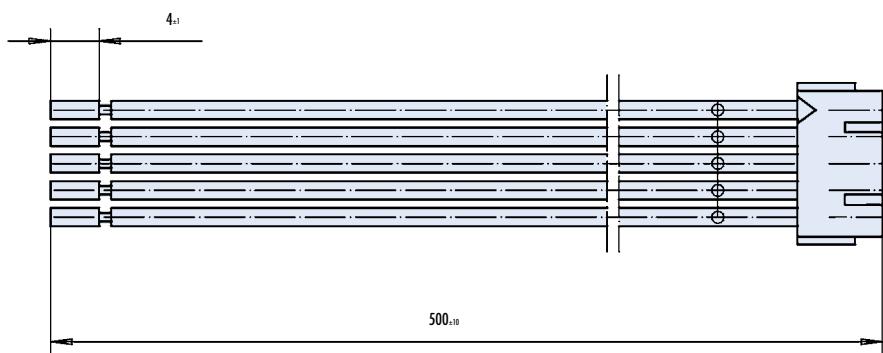
*Connector:* Molex, 5-pin Type 5051-M



Pin	Color
1	black
2	brown
3	yellow
4	red
5	green

### Connector with cable for encoder RE .. TI

*Connector:* JST, PHDR-10VS; *Leads:* AWG 24

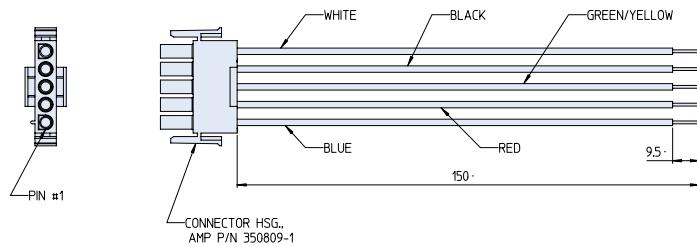


Pin	Color
1	-
2	red
3	black
4	-
5	grey
6	yellow
7	white
8	green
9	pink
10	brown

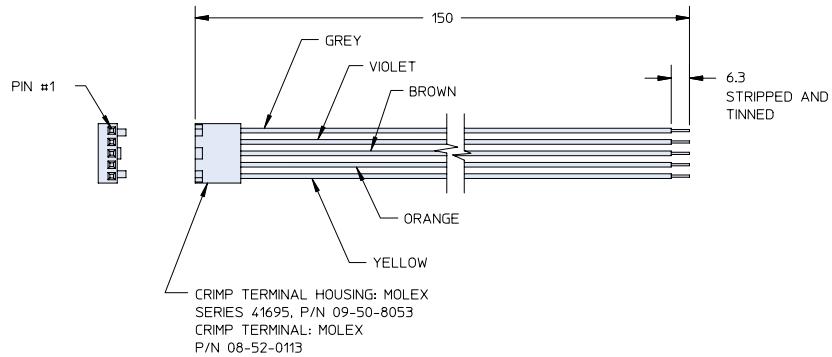
## >> Accessories | BB 89 | Brushless Blowers



*PN 5230002512 Power Harness for BB 89 145 mm 621 089 AC*

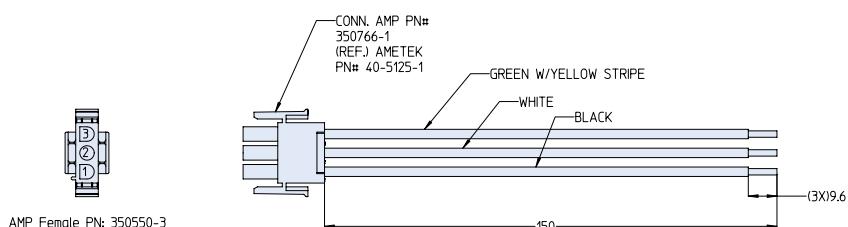


*PN 5230002657 Option Card Harness for BB 89 145 mm 621 089 AC*

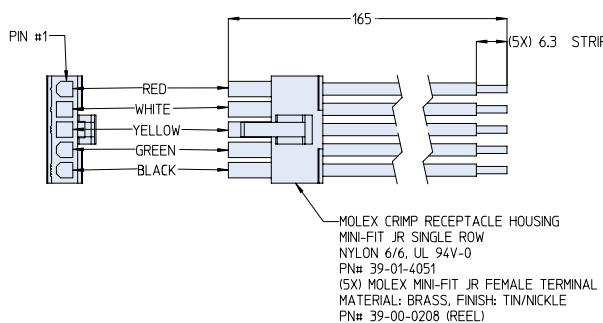


## >> Accessories | BB 158 | Brushless Blowers | 120V

*PN 5230002658 Power Harness for BB 158 312 mm 612158 120V 1Ph*

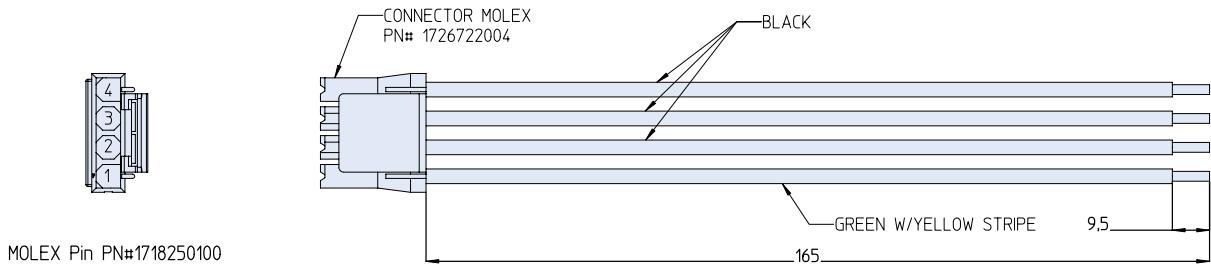


*PN 5230002542 Control Harness for BB 158 312 mm 612158 120V 1Ph*

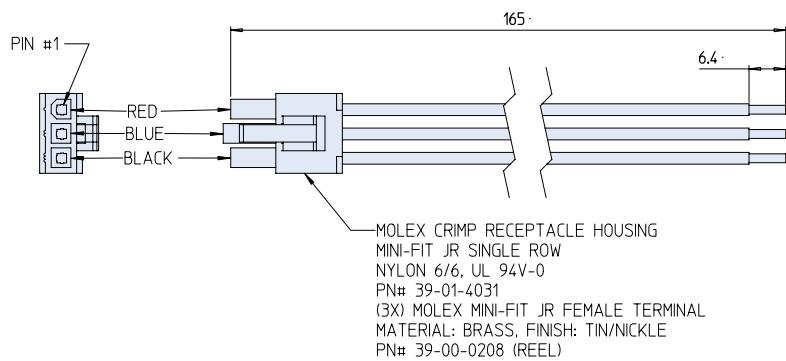


## >> Accessories | BB 158 | Brushless Blowers | 230V

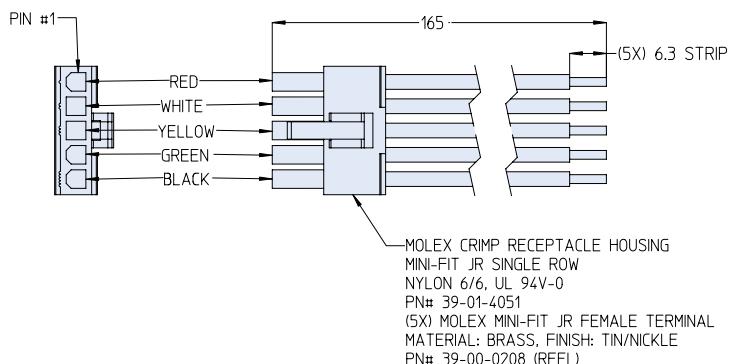
PN 5230002656 Power Harness for BB 158 312 mm 612158 230V 1Ph and 240V 3Ph



PN 5230002545 Status Output Harness for BB 158 312 mm 612158 230V 1Ph and 240V 3Ph



PN 5230002542 Control Harness for BB 158 312 mm 612158 230V 1Ph and 240V 3Ph





## >> Distributors and Offices

For Stepper, Permanent Magnet, and Brushless motors as well as Brushless Blowers, please contact the head office of AMETEK MAE.

For service requirements on Universal Blowers please contact the distribution network.

### BELGIUM

**TVH Parts NV**  
Brabantstraat 15 · 8790 Waregem  
Phone +32 56 434211 · Fax +32 56 434488  
sales@tvh.com · www.tvh.com

### BRAZIL

**Dunkermotoren Brasil-Latam**  
Av. Antonio Artoli - 570 Bloco F - Swiss Park Office  
Campinas · São Paulo · Brazil · CEP13049-900  
Tel. +55 19-997978947 / 99828-3521  
marcelo.martelli@ametek.com

### GERMANY

**Weber Bürstensysteme GmbH**  
Kleinmühle an der B 8 · 65529 Bad Camberg  
Phone +49 6434 91250 · Fax +49 6434 912542  
ametek@weberbrushes.com · www.weberbrushes.com

### ITALY

**Synclean Srl**  
Via Salvo D'Acquisto 10/B · 26862 Guardamiglio (Lo)  
Phone +39 0377 519304 · Fax +39 0377 919298  
info@syncleanservice.com · www.syncleanservice.com

### UNITED KINGDOM AND IRELAND

**Maddocks**  
Unit E1-E6 Capital Point · Capital Business Park  
Parkway, Cardiff CF3 2PY  
Phone +44 29 2167 8888 · Fax +44 870 1322 896  
info@htmaddocks.co.uk · www.hatmaddocks.co.uk

### SWEDEN

**Clean Part AB**  
Ekebergsvägen 103 · 30575 Getinge  
Phone +46 355 80 65 · Fax +46 355 45 66  
info@cleanpart.se · www.cleanpart.se

