

**Industrial Motors**

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# W21 Magnet

Drive System

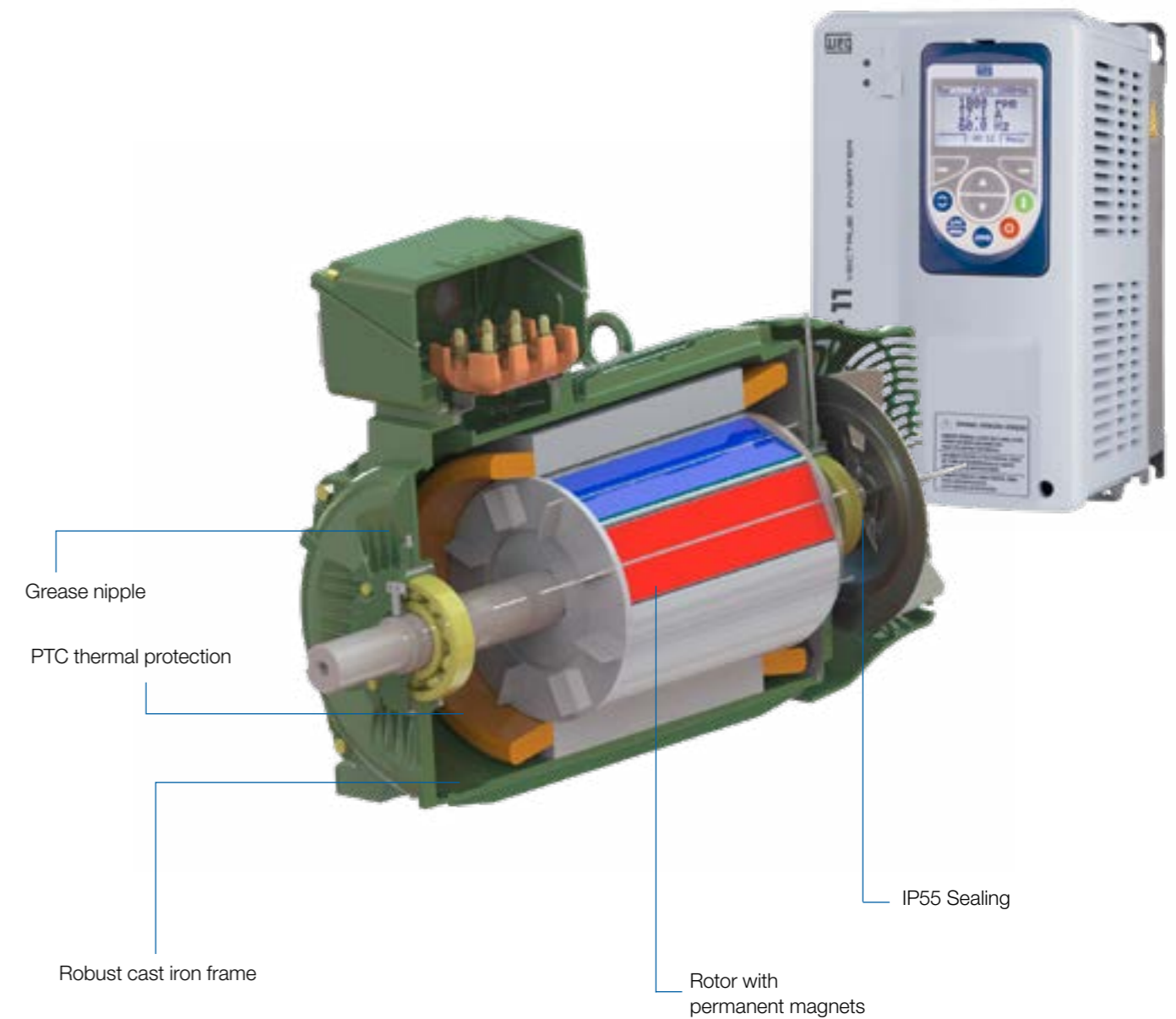


Driving efficiency and sustainability



## W21 Magnet Drive System

The W21 Magnet Drive System features ultra premium GB1 efficiency motors with permanent magnets driven by frequency inverters. Perfect for applications where speed variation, precise control at low speeds, low noise levels and compact design are critical.



### The highest efficiencies on the market

W21 Magnet motors feature rotors with permanent magnets. This technology provides the motor with significant advantages such as higher efficiency and a greater power density per frame. They are driven by CFW11 frequency inverters, which offer constant torque across a wide speed range, operating even at low speeds with efficiency levels above induction motors without requiring forced ventilation. W21 Magnet motors are available in Ultra Premium GB1 versions – the highest efficiency available on the market today.

### Drive System

Due to the dedicated software application which incorporates the vector control technology for driving permanent magnet motors, the use together of the CFW11 frequency inverter and W21 Magnet motor is recommended.

### Applications

Cooling towers, paper machines, paper coil winders, conveyors, pumps, looms, direct current (DC) motor replacements, extruders, compressors, fans, etc.

## W21 Magnet Drive System Applications

### Extruders, Looms and Wire Drawing Machines

By working together with the WEGPM frequency inverter, the W21 Magnet motor offers precise speed control. Therefore, it is perfectly suited to drive continuous processing machines such as extruders, looms and wire drawing machines. They offer precise constant torque control even at low speeds, fully satisfying the requirements of these demanding applications.

### Compressors

W21 Magnet permanent magnet motors are particularly suited for compressor applications, due to their constructional features, flexibility and efficiency. In the case of the Ultra Premium GB1 design, their reduced size and ability to operate without the need for forced ventilation means that equipment enclosures can also be reduced.

### Conveyors

On conveyor applications, W21 Magnet motors stand out due to their capacity to offer high starting torques. Their low operating temperatures allow more starts per hour without oversizing of the motor or use of forced ventilation.

### Characteristics of the W21 Magnet Motor

- Output: 4 to 630 kW
- Frame: 132S to 355A/B
- Speed: 3000, 1500, 1000 and 750 rpm
- Voltage: 380 V
- Degree of protection: IP55
- Bearing seal: V ring
- Insulation: F ( $\Delta T$  80K)
- Service factor: 1.00
- Thermal protection: PTC
- Mounting: B3T
- TEFC (IC 411) or TEBC (IC416) per IEC 60034-6
- Possibility of operation in overspeed
- Optional characteristics on request

### Characteristics of the CFW11 Frequency Inverter

- Power supply: 380 V
- Sensorless vector control: it allows the CFW11 frequency inverter to control the speed motor from zero up to its rated speed
- Remote Operating Interface (HMI)
- Communication protocol and accessories: Profibus, Modbus-RTU
- Adaptable to all kinds of load

## W21 Magnet GB1

The W21 Magnet motor line offers efficiency levels: **GB1**. The high technology applied in permanent magnet motors results in innovation, efficiency and reliability.

### W21 Magnet - Ultra Premium GB1

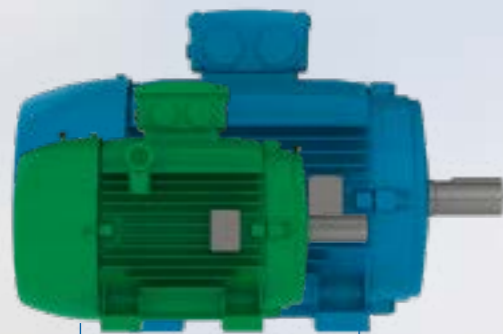
**Greater power density - Reduced mass and volume**

W21 Magnet Ultra Premium motors meet the GB1 efficiency levels according to the Chinese standard GB30253-2013 (Minimum allowable values of energy efficiency and energy efficiency grades for permanent magnet synchronous motors).

The magnets inserted into the rotor ensure a significant reduction in electric losses, and thus the motor temperature, enabling smaller frame sizes to be utilised. Compared to induction motors of the same output and speed, the weight and volume of the equivalent W21 Magnet Super Premium motors is reduced by as much as 70% (refer to example below). The shaft and bearings of W21 Magnet are able to withstand the higher power and torque in the reduced frame.

The W21 Magnet motors operate with lower temperature rise even at low speeds.

#### Volume reduction



**W21 Magnet Motor**  
Output: 30kW  
Speed: 3000 rpm  
Frame: 132M/L  
Volume: 24 dm<sup>3</sup>

#### Weight reduction



**Induction Motor**  
Output: 30 kW  
Speed: 3000 rpm  
Frame: 200L  
Volume: 72 dm<sup>3</sup>

When replacing an IE3 induction motor with a **W21 Magnet motor**, can reach up to **12 dBA\*** noise reduction, contributing to hearing protection of workers in operation environment.

\* Comparison between IE3 induction motor and W21 Magnet motor - 45 and 55kW

### W21 Magnet - Ultra Premium (GB1)

**The highest efficiency level, frame reduced and high performance**

W21 Magnet Ultra Premium motors offer the highest efficiency levels in the market. W21 Magnet Ultra Premium motors feature one frame reduced in comparison to induction motors. W21 Magnet Ultra Premium is one more example of WEG technology providing to Industry high efficiency, quality, energy saving and lower overall cost of ownership.

Output Power (kW)	Frame		Noise Level (dBA)	
	IE3(GB3) (Induction)	W21 Magnet (IE4/GB1)	IE3(GB3) (Induction)	W21 Magnet (IE4/GB1)
11	160M	132S	70	67
15	160M	132S	70	67
18,5	160L	132M	70	67
22	180M	132M	70	67
30	200L	132M/L	74	67
37	200L	160M	74	70
45	225S/M	160L	82	70
55	250S/M	180M	82	70
75	280S/M	200L	83	74
90	280S/M	W225S	83	82
110	315S/M	W225S	84	82
132	315S/M	225M	84	82
150	315S/M	225M	84	82
160	315S/M	250M	84	82
185	315S/M	250M	84	82
200	355M/L	W280S	85	83
220	355M/L	W280S	85	83
260	355M/L	280M	85	83
280	355M/L	280M	85	83
300	355M/L	280M	85	83
315	355M/L	315S/M	85	83
330	355M/L	315S/M	83	81
355	355M/L	315L	83	82
400	355A/B	315L	88	85
450	355A/B	355M/L	88	85
500	400J/H	355M/L	85	85
560	400J/H	355A/B	85	85
630	400J/H	355A/B	85	85

Frame size comparison between induction IE3 motor 2 poles and W21 Magnet GB1 - 3000rpm.

When replacing an IE3 induction motor with a **W21 Magnet Ultra Premium**, the energy cost saved in one year would be approximately **7000 RMB\***.

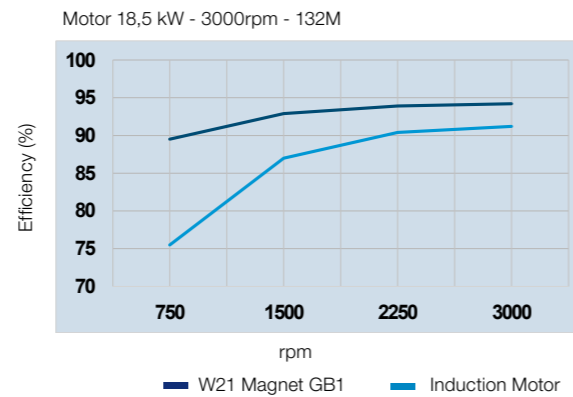
\*Comparison between 37kW 1500 rpm motors, considering 24hours 365 days in operation and average energy cost as 1 RMB/kWh.



## Attributes and advantages of the W21 Magnet motor

### Superior efficiency regardless of speed or load

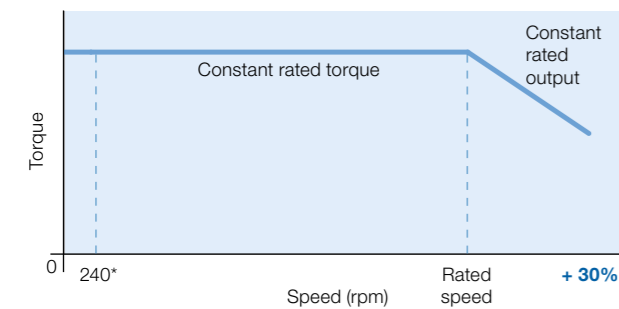
W21 Magnet motors present superior efficiency regardless of speed or load, saving up to 30% in comparison to induction motors driven by frequency inverters.



### Motor Losses Reduction



Figure: Comparison between Cast Iron IE3, W21 Magnet GB1 - 315kW - 3000 RPM



\*Continuous duty at speeds lower than 240rpm under request

### Constant torque in a wide speed range

W21 Magnet motors can operate over a wide speed range at constant torque, without the use of forced ventilation. This characteristic makes them ideal for applications requiring speed variation and constant torque, even at low speeds, without the need for an encoder.

W21 Magnet motors are able to operate at up to 30% above their rated speed without the necessity to utilise special components.

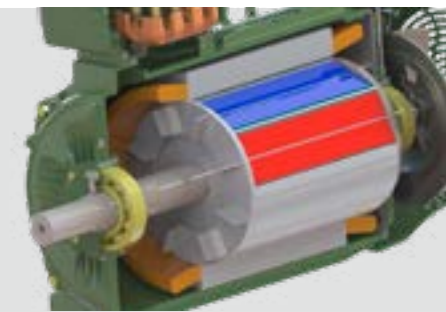
### WISE Insulation System

Exclusive WISE insulation system (WEG Insulation System Evolution). Aiming at maximizing the durability and reliability of the motors when operated with a frequency inverter, WEG developed the WISE system, resulting in improvement of the materials in all productive stages related to the motor insulation system, such as wires, insulating films, impregnation system, impregnating material, cables and other components present in the process.

### Permanent Magnets

The W21 Magnet utilises powerful permanent magnets made from a combination of neodymium, iron and boron (NdFeB), and commonly referred to as rare-earths magnets. These magnets are around eighteen times stronger than traditional Ferrite Magnets.

In order to provide superior mechanical strength and corrosion resistance, the Neodymium/Iron/Boron magnets are covered with a protective epoxy coating.



### New W21 Platform

The new W21 Magnet incorporates the same innovative features of the highly successful W21 induction motor line:

- Frame structure that reduces air dispersion and improves the cooling
- Terminal box with greater internal space for easier cable management
- Solid feet that simplify the motor alignment and installation
- Robust cast iron construction providing high mechanical strength and low vibration levels

### Thermal Protection

W21 Magnet motors have PTC (Positive Temperature Coefficient) thermistors embedded in their windings which offer full protection against overheating produced by phase loss, overload and under or overvoltage.

### Bearing life up to 100,000 hours

The W21 Magnet motors are equipped with bearings offering an L10 life of up to 100,000 hours. All motors feature open bearings and endshields with grease nipples which permit re-lubrication and consequently a reduction in stoppages for maintenance. Axial loads are as per W21 general purpose induction motors on horizontal application.

Frame	Maximum radial load – 100,000 hours – Fr (kN)					
	1000 rpm		1500 rpm		3000 rpm	
	L	L/2	L	L/2	L	L/2
132S	1,4	1,6	0,9	1	0,9	1
132M	1,4	1,6	0,9	1	0,9	1
132M/L	1,4	1,6	0,9	1	0,9	1
160M	1,9	2,1	1,2	1,4	1,2	1,4
160L	1,9	2,1	1,2	1,4	1,2	1,4
180M	2,5	2,8	1,7	1,9	1,7	1,9
180L	2,6	2,8	1,7	1,9	1,7	1,9
200M	3	3,3	2	2,2	2	2,2
200L	3	3,3	2	2,2	2	2,2
W225S	4,6	5,2	6,4	5,8	2,6	2,8
225M	6,2	6,5	6,1	5,4	3,7	3,3
250M	5,8	6,3	5,9	4,3	4,4	4,1
W280S	6,1	6,5	7,1	6,5	4,4	4,1
280M	6,5	7,1	6,8	6,2	1,5	1,4
315S/M	4,9	5,4	2,5	2,7	2,5	2,7
315L	5,1	5,5	4	4,9	3,4	3,6
355M/L	6,5	7,1	5,8	6,3	3,4	3,6
355A/B	4,2	4,5	4,1	4,4	3	3,2

Life of grease-sealed type bearing

Induction motor bearing life

20.000 h

W21 Magnet motor bearing life

100.000 h ≈ More than 10 Years\*

\* Considering continuous operation, i.e. 24 hours 365 days operation.

## W21 Magnet Motor - Standard Features

Frame	132S	132M	132M/L	160M	160L	180M	180L	200M	200L	
<b>Mechanical Features</b>										
Nameplate Marks	IEC 60034-1									
Mounting	B3T									
Frame	Material FC-200 Cast Iron									
Protection Degree	IP55									
Grounding	Single Grounding									
Cooling method	TEFC									
Fan	Material Plastic									
Fan cover	Material Steel Plate									
Endshields	Material FC-200 cast iron									
Drain plug	Automatic T labyrinth drain plug (IP55/IP56)   Rubber drain plug (IP65/IP66)									
Rolling bearings	Shielded/Clearance (DE)	C3								
	Shielded/Clearance (NDE)	C3								
	Locking	DE and NDE bearing locked with inner bearing cap and fitted with wave washer in the NDE bearing								
	Bearing life (h)	100,000h								
	Drive end side	3000 rpm	6308	6309	6311	6312				
		1500 rpm								
		1000 rpm								
Non drive end side	3000 rpm	6207	6209	6211	6212					
	1500 rpm									
	1000 rpm									
Bearing sealing	V- ring									
Lubrication	Grease type	Mobil POLYREX EM								
	Grease fitting	With grease fittings in DE and NDE bearings								
Terminal block	BMC 6 Terminais									
Terminal box	Material FC-200 cast iron									
Additional terminal box	None									
Leads inlet	Main	Size	2xM32x1.5	2xM40x1.5	2xM50x1.5					
	Lateral hole	Size	None							
	Additional	Size	None							
	Plug	Plastic plug for transport and storage purposes								
Shaft	DE threaded hole	Material	SAE 1040/50							
		3000 rpm	M12	M16	M20					
		1500 rpm								
		1000 rpm								
750 rpm										
Key	Fitted with "A" type (China key type: B)									
Vibration level	Grade A									
Balancing	With 1/2 key									
Nameplate	Material	Stainless Steel AISI 304								
	Type	207A	203A							
Painting	Color	RAL 6002								
	Tropicalized	None								
	Packaging	Crate								
<b>Electrical features</b>										
Voltage	380V with 3 terminals									
Winding	Impregnation	Dip and Bake								
	Insulation class	F(DT 80K)								
Service factor	1.00									
Thermal protector	PTC Thermistor - 155°C									
Space heaters	None									
Flying leads	None									
Ambient temperature	-20 to 40°C									
Starting method	VFD									

## W21 Magnet Motor (New Design) - Standard Features

Frame	W225S	225M	250M	W280S	280M	315S/M	315L	355M/L	355A/B		
<b>Mechanical Features</b>											
Nameplate Marks	IEC 60034-1										
Mounting	CE/CEL (≤90kw)							None			
Frame	Material B3T										
Protection Degree	FC-200 Cast Iron										
Grounding	IP55										
Cooling method	Single Grounding			Double Grounding							
Cooling method	TEFC										
Fan	Material	3000 rpm	Plastic						Plastic	Aluminum	
		750 to 1500 rpm							Aluminum		
Fan cover	Material Steel Plate										
Endshields	Material FC-200 Cast Iron										
Drain plug	Automatic T labyrinth drain plug (IP55/IP56)   Rubber drain plug (IP65/IP66)										
Rolling bearings	Shielded/Clearance (DE)	C3									
	Shielded/Clearance (NDE)	C3									
	Locking	DE and NDE bearing locked with inner bearing cap and fitted with wave washer in the NDE bearing		DE and NDE bearing locked with inner and outer bearing caps and fitted with pre-load springs in the NDE bearing							
	Bearing life (h)	100,000h									
	Drive end side	3000 rpm	6312	6314	6314	6314	6314	6314	6314	6316	6316
		1500 rpm	6314			6316	6316	6319	6319	6322	6322
		1000 rpm				6314	6314	6314	6314	6314	6314
750 rpm		6212				6314	6316	6316	6316	6319	6319
Non drive end side	3000 rpm	6212	6314	6314	6314	6314	6314	6314	6314	6314	
	1500 rpm				6314	6316	6316	6319	6319		
	1000 rpm				6314	6316	6316	6316	6319	6319	
750 rpm											
Bearing sealing	V- ring							Wseal			
Lubrication	Grease type	Mobil POLYREX EM									
	Grease fitting	With grease fittings in DE and NDE bearings									
Terminal block	BMC 6 Terminais										
Terminal box	Material FC-200 Cast Iron										
Additional terminal box	None										
Leads inlet	Main	Size	2xM50x1.5	2xM63x1.5	2xM80x2						
	Lateral hole	Size	None								
	Additional	Size	None								
	Plug	Plastic plug for transport and storage purposes									
Shaft	DE threaded hole	Material	SAE 1040/50 or AISI 4140 (Consult WEG)						AISI 4140		
		3000 rpm	M20	M20	M20	M20	M20				
		1500 rpm									
		1000 rpm									
750 rpm											
Key	Fitted with "B" type (China key type: C)										
Vibration level	Grade A										
Balancing	With 1/2 key										
Nameplate	Material	Stainless Steel AISI 304									
	Type	203A									
Painting	Color	RAL 6002									
	Tropicalized	None									
	Packaging	Crate									
<b>Electrical features</b>											
Voltage	380V with 3 terminals										
Winding	Impregnation	Dip and Bake									
	Insulation class	F(DT 80K)									
Service factor	1.00										
Thermal protector	PTC Thermistor - 155°C										
Space heaters	None										
Flying leads	None										
Ambient temperature	-20 to 40°C										
Starting method	VFD										

## W21 Magnet Motor - Optional Features

Frame	132S	132M	132M/L	160M	160L	180M	180L	200M	200L	W225S	225M	250M	W280S	280M	315S/M	315L	355M/L	355A/B	
Mechanical Optional Features																			
flange																			
FF flange	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
C-DIN flange	O	O	O	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C flange	O	O	O	O	O	O	O	O	O	NA	NA	NA	NA	NA	O	O	O	O	O
Fan																			
Plastic (3000rpm)	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	NA
Plastic (≤1500rpm)	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	NA
Aluminum (3000rpm)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S
Aluminum (≤1500rpm)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S	S	S	S
Bearings																			
Ball bearing-C3 (DE/NDE)	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ball bearing-C4 (DE/NDE)	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Bearing Seal																			
'V' ring	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	O	O	O	O
Wseal	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	S	S	S	S
Nitrilic rubber lip seal	O	O	O	O	O	O	O	O	O	O	O	O	O	O	NA	NA	NA	NA	NA
Nitrilic rubber oil seal	O	O	O	O	O	O	O	O	O	O	O	O	O	O	NA	NA	NA	NA	NA
Taconite labyrinth	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Bearing Cap																			
Without bearing cap	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bearing cap	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Circlip	E	E	E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shaft																			
SAE 1040/45	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	NA	NA	NA	NA
AISI 4140	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S	S	S	S
Degree of Protection																			
IP55	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IP56	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
IP65	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
IP66	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
IPW55	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
IPW56	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
IPW65	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
IPW66	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Grounding																			
Single grounding	S	S	S	S	S	S	S	S	S	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Double grounding	O	O	O	O	O	O	O	O	O	S	S	S	S	S	S	S	S	S	S
Larger Grounding	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Other Mechanical Options																			
Drip cover	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Electrical Options																			
VFD (Variable Frequency Drive)																			
Without VFD	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
With VFD	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Winding thermal protection																			
Thermistor (PTC)	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Tripping thermistor	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
PT-100	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Bimetallic tripping thermal protector	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Space Heaters																			
110-127 V	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
200-240 V	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
110-127 / 220-240 V	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
380-480 V	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Service Factor																			
Service factor 1.00	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Service factor > 1.00	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E

Note: S = Standard Feature; O = Optional Feature; E = Especial Feature; NA = Not Available.

## Electrical Performance Data

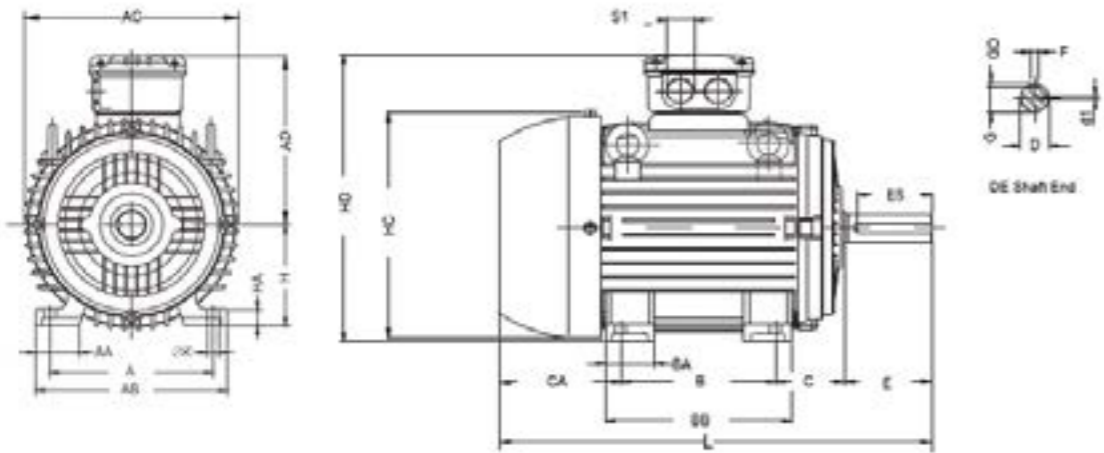
### W21 MAGNET-GB1 - 6P

Output kW	HP	Frame	Full Load Torque (kgfm)	Inertia J (kgm <sup>2</sup> )	Weight (kg)	Sound dB(A)	Rated speed (rpm)	380 V						Full load current In (A)
								% of full load			Power Factor			
								50	75	100	50	75	100	
6P - 1000 RPM														
7.5	10	132S	7.31	0.0490	55.8	57	1000	94.2	94.5	94.0	0.95	0.96	0.97	13.0
9.2	12.5	132M	8.96	0.0600	65.4	57	1000	94.2	94.4	94.4	0.93	0.94	0.95	16.4
11	15	132M/L	10.7	0.0750	76.4	57	1000	94.2	94.5	94.5	0.95	0.96	0.96	19.2
15	20	160L	14.6	0.1720	128	56	1000	92.5	93.5	94.9	0.91	0.93	0.95	25.3
18.5	25	180M	18.0	0.3040	166	58	1000	95.1	95.2	95.3	0.95	0.96	0.97	30.4
22	30	180L	21.4	0.3570	191	58	1000	95.1	95.6	95.6	0.91	0.94	0.95	36.8
30	40	200L	29.2	0.4290	229	61	1000	95.2	95.7	95.8	0.92	0.94	0.95	53.2
37	50	200L	36.0	0.5150	256	61	1000	95.5	96.0	96.0	0.91	0.93	0.94	66.1
High Output Design														
30	40	200M	29.2	0.4290	229	61	1000	95.2	95.7	95.8	0.92	0.94	0.95	53.2
6P - 1500 RPM														
11	15	132S	7.14	0.0450	57.6	67	1500	93.4	93.6	93.6	0.92	0.94	0.97	19.2
15	20	132M	9.74	0.0637	72.1	67	1500	93.7	93.8	94.0	0.91	0.92	0.93	27.4
18.5	25	132M/L	12.0	0.0786	78.9	64	1500	94.1	94.3	94.4	0.90	0.92	0.93	33.7
22	30	160L	14.3	0.1718	127	64	1500	94.5	94.6	94.8	0.89	0.90	0.91	38.7
30	40	180M	19.5	0.3303	174	69	1500	94.6	94.7	95.0	0.95	0.96	0.97	49.5
37	50	180L	24.0	0.3567	191	70	1500	95.1	95.2	95.4	0.90	0.91	0.92	64.1
45	60	200L	29.2	0.4464	235	70	1500	95.4	95.5	95.6	0.89	0.89	0.90	84.8
55	75	200L	35.7	0.0000	256	70	1500	95.6	95.8	95.8	0.92	0.92	0.93	98.8
High Output Design														
45	60	200M	29.2	0.4464	235	70	1500	95.4	95.5	95.6	0.89	0.89	0.90	84.8
6P - 3000 RPM														
11	15	132S	3.57	0.0300	44.1	70	3000	94.2	95.0	95.0	0.92	0.94	0.96	19.4
15	20	132S	4.87	0.0337	46.5	70	3000	95.1	95.3	95.3	0.89	0.90	0.90	28.5
18.5	25	132M	6.01	0.0449	55.9	70	3000	95.4	95.6	95.6	0.90	0.92	0.93	33.7
22	30	132M	7.14	0.0524	60.6	70	3000	95.5	95.9	95.9	0.92	0.95	0.97	37.5
30	40	132M/L	9.74	0.0637	69.2	74	3000	95.6	96.1	96.1	0.92	0.94	0.95	52.4
37	50	160M	12.0	0.1444	113	74	3000	95.0	95.7	96.3	0.94	0.96	0.98	59.6
45	60	160L	14.6	0.1925	136	82	3000	96.2	96.4	96.4	0.95	0.95	0.96	73.9
55	75	180M	17.9	0.3038	168	82	3000	95.5	96.0	96.5	0.93	0.94	0.97	89.3
75	100	200L	24.4	0.5151	256	83	3000	96.4	96.6	96.6	0.94	0.95	0.96	129

Note: \*Temperature rise is 105K.  
The efficiency level of motors up to 90kW (<=90kw) follows the new GB standard (GB30253.2013).  
For outputs above 90kW, follows the IEC standard (IEC 60034-30-2).

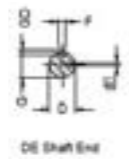


### Motor Mechanical Data



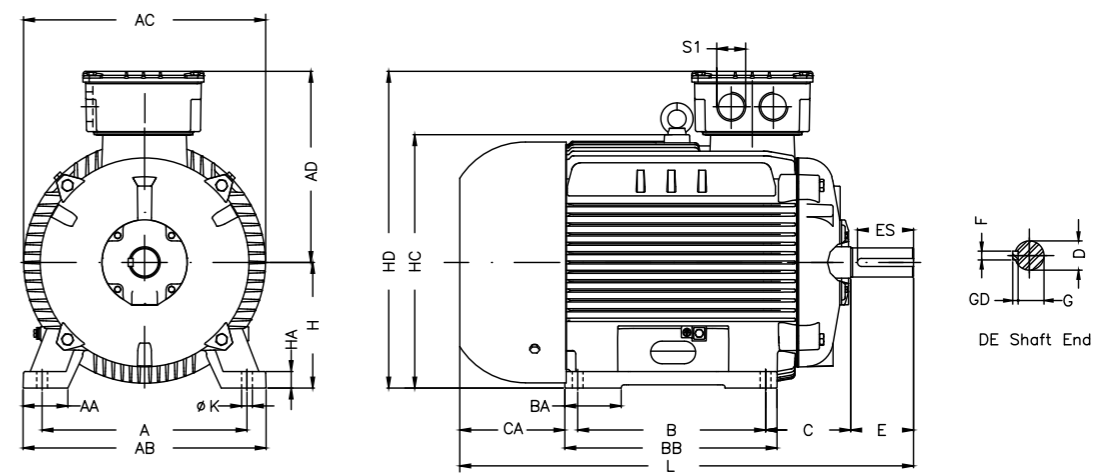
Frame Main Dimensions (mm)																						
Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	H	HA	HC	HD	K	L	S1	*Cable Gland Inner Diam. (mm)	Bearing			
																			DE	NDE		
132S	216	51	248	270	212	140	55	187	89	150	132	20	274	344	12	452	2xM32x1.5	18-25	6308 C3	6207 C3		
132M	216	51	248	270	212	178	55	225	89	150	132	20	274	344	12	490					6308 C3	6207 C3
132M/L	216	51	248	270	212	178	55	250	89	150	132	20	274	344	12	515					6308 C3	6207 C3
160M	254	64	308	312	255	210	65	254	108	174	160	22	317	415	14.5	598	2xM40x1.5	22-32	6309 C3	6209 C3		
160L	254	64	308	312	255	254	65	298	108	174	160	22	317	415	14.5	642					6309 C3	6209 C3
180M	279	80	350	358	275	241	75	297	121	200	180	28	360	455	14.5	664	2xM50x1.5	22-32	6311 C3	6211 C3		
180L	279	80	350	358	275	279	75	332	121	200	180	28	360	455	14.5	702					6311 C3	6211 C3
200M	318	82	385	396	300	267	85	332	133	222	200	30	402	500	18.5	729	2xM50x1.5	32-38	6312 C3	6212 C3		
200L	318	82	385	396	300	305	85	370	133	222	200	30	402	500	18.5	767					6312 C3	6212 C3
315S/M	508	120	628	600	497	406/457	152	558	216	376/325	315	52	613	812	28	1126(*)/1156	2xM63x1.5	37-44	6314 C3(*)	6314 C3(*)		
																					6319 C3	6316 C3

Shaft Dimensions (mm)							
Frame	D	d1	E	ES	F	G	GD
132S	38k6	DM12	80	63	10	33	8
132M	38k6	DM12	80	63	10	33	8
132M/L	38k6	DM12	80	63	10	33	8
160M	42k6	DM16	110	80	12	37	8
160L	42k6	DM16	110	80	12	37	8
180M	48k6	DM16	110	80	14	42.5	9
180L	48k6	DM16	110	80	14	42.5	9
200M	55m6	M20	110	80	16	49	10
200L	55m6	M20	110	80	16	49	10
W225S(*)	55m6	M20	110	100	16	49	10
W225S	60m6	M20	140	125	18	53	11
225M (*)	55m6	M20	110	100	16	49	10
225M	60m6	M20	140	125	18	53	11
250(*)	60m6	M20	140	125	18	53	11
250M	65m6	M20	140	125	18	58	11
W280S(*)	65m6	M20	140	125	18	58	11
W280S	75m6	M20	140	125	20	67.5	12
280M(*)	65m6	M20	140	125	18	58	11
280M	75m6	M20	140	125	20	67.5	12
315S/M (*)	65m6	M20	140	125	18	58	11
315S/M	80m6	M20	170	160	22	71	14



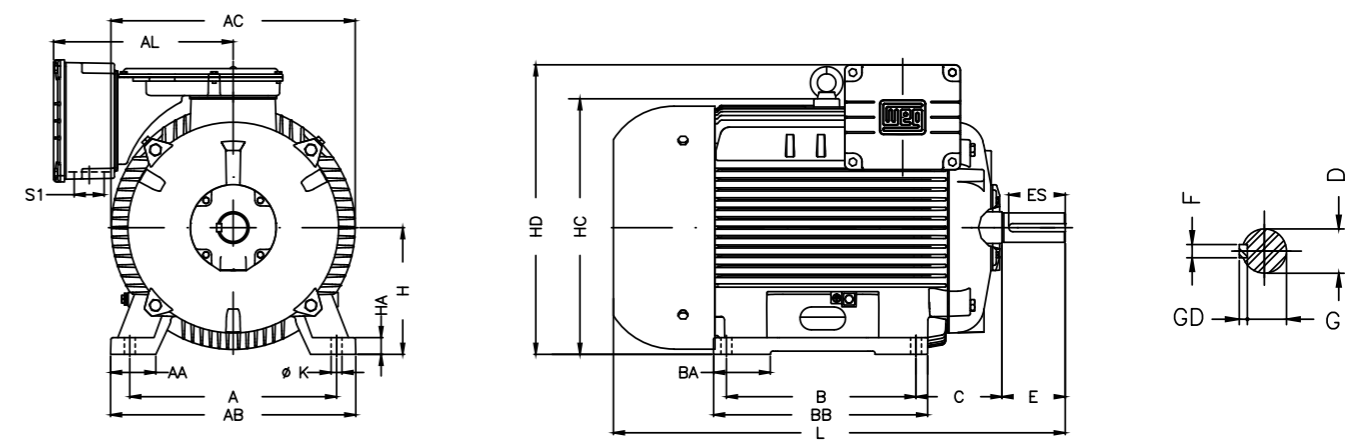
Frame	RPM	Motor Length (L)		
		Without Blower Kit	With Blower Kit	
132S	750, 1000, 1500 and 3000	452	715	
132M		490	753	
160M		598	855	
160L		642	899	
180M		664	908	
180L		702	946	
200M		729	976	
200L		767	1014	
W225S		3000	748	942
		750, 1000 and 1500	778	972
225M	3000	785	1000	
	750, 1000 and 1500	815	1030	
250M	3000	875	1093	
	750, 1000 and 1500	945	1163	
W280S	3000	945	1163	
	750, 1000 and 1500	1027	1250	
280M	3000	1027	1250	
	750, 1000 and 1500	1126	1422	
315S/M	3000	1126	1422	
	750, 1000 and 1500	1156	1452	

Frame W225S-280M B3T



Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	H	HA	HC	HD	K	L	S1	*Cable Gland Inner Diam. (mm)	Bearing			
																			DE	NDE		
W225S	356	80	436	391	311	286	64	348	149	203	225	29	433	536	18.5	748(*)/778	2xM50x1.5	32-38	6312 C3(*)	6212 C3		
																					6314 C3	6314 C3
225M	356	85	432	447	347	311	88	362	149	215	225	31	462	572	18.5	785(*)/815					6314 C3	6314 C3
250M	406	95	484	468	354	349	89	424	168	218	250	32	493	604	24	875	2xM63x1.5	37-44	6314 C3(*)	6314 C3(*)		
W280S	457	100	542	482	388	368	101	435	190	247	280	33	525	668	24	945					6316 C3	6314 C3
280M	457	108	542	541	405	419	129	499	190	278	280	37	565	685	24	1027					6314 C3(*)	6314 C3(*)
																		6316 C3	6316 C3			

Frame W225S-280M B3D/B3E

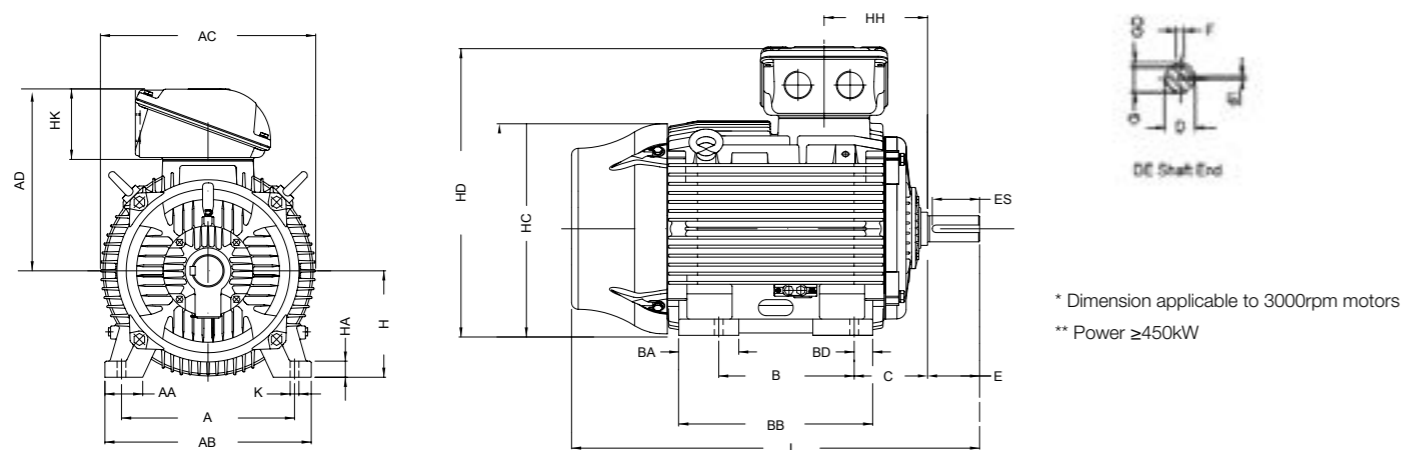


Frame	A	AA	AB	AC	AL	B	BA	BB	C	CA	H	HA	HC	HD	K	L	S1	*Cable Gland Inner Diam. (mm)	Bearing			
																			DE	NDE		
W225S	356	80	436	391	309	286	64	348	149	203	225	29	433	498	18.5	748(*)/778	2xM50x1.5	32-38	6312 C3(*)	6212 C3		
																					6314 C3	6212 C3
225M	356	85	432	447	369	311	88	362	149	215	225	31	462	533	18.5	785(*)/815					6314 C3	6314 C3
250M	406	95	484	468	369	349	89	424	168	218	250	32	493	564	24	875	2xM63x1.5	37-44	6314 C3	6314 C3		
W280S	457	100	542	482	369	368	101	435	190	247	280	33	525	596	24	945					6314 C3(*)	6314 C3(*)
280M	457	108	542	541	430	419	129	499	190	278	280	37	565	656	24	1027					6316 C3	6314 C3(*)
																		6316 C3	6316 C3			

Note: \* Cable gland is optional feature, the dimension in above table indicates inner diameter range,, the unit is mm. If the cable size was out of this range, please contact WEG.  
 (\*) Information related to motor in 3000 rpm



Frame 315L to 355A/B



\* Dimension applicable to 3000rpm motors  
\*\* Power ≥450kW

Frame	Dimension (mm)																	Bearings				
	A	AA	AB	AC	AD	B	BA	BB	BD	C	H	HH	Hk	HA	HC	HD	K	L	S1	DE	NDE	
315L	508	120	630	657	576	508	219	752	81	216	315	285	220	48	644	891		1355*	2XM63	6314 C3	6314 C3	
355M/L				620 (728**)	560	230	760	65	254	355	340	220 (328**)	50	723	975 (1083**)	28		1385	2xM80x2	6319 C3	6316 C3	
					630													6316 C3		6314 C3		
355A/B	610	140	750	736	710	325	965	70	254			328						1482		6322 C3	6319 C3	
					800													6316 C3		6314 C3		
				728														1607*		6316 C3	6314 C3	
																			1677		6322 C3	6319 C3

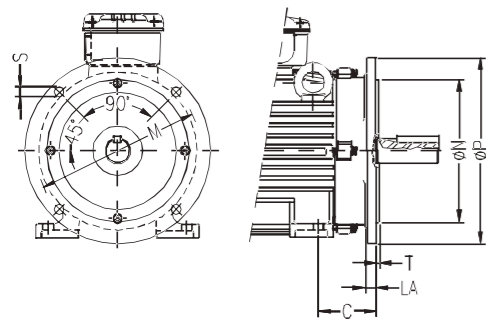
Frame	Shaft Dimension (mm)						
	D	d1	E	ES	F	G	GD
315L	65m6*	DM20	140*	125*	18*	58*	11*
	80m6		170	160	22	71	14
355M/L	75m6*	DM20*	140*	125*	20*	67.5*	12*
	100m6	DM24	210	200	28	90	16
355A/B	75m6*	DM20*	140*	125*	20*	67.5*	12*
	100m6	DM24	210	200	28	90	16

Frame	Rated Speed (rpm)	Total Length (L) (mm)	
		Without TEBC	With TEBC
315L	3000	1355	1568
	1000 & 1500	1385	1598
355M/L	3000	1412	1786
	1000 & 1500	1482	1856
355A/B	3000	1607	1981
	1000 & 1500	1677	2051

## Flange

### FF Flange (IEC)

Mounting  
B35, B5, V1, V3, V15, V36



\* Only for motors fitted with air deflector in drive end

### FF (IEC) Flange

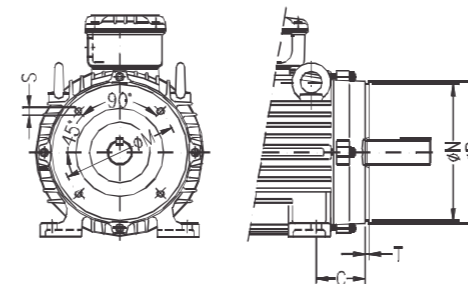
Frame	"FF" Flange Dimension (mm)									Qty of Holes
	Flange	C	LA	øM	øN	øP	T	S	α	
132S/M	FF-265	89	12	265	230	300	4	15	45°	4
160M/L	FF-300	108	18	300	250	350	5	19		
180M/L	FF-300	121		350	300	400				
200M/L	FF-350	133		400	350	450				
W225S/225M	FF-400	149	22	500	450	550	6	24	22.5°	8
250M	FF-500	168		500	450	550				
W280S/280M	FF-500	190	22	600	550	660	6	24	22.5°	8
315S/M	FF-600	216		600	550	660				
315L	FF-600	216		600	550	660/780*				
355M/L	FF-740	254		740	680	800/880*				
355A/B										

## Flange

### FC B14A, B14B & NEMA C Flange

#### Mounting

B14, B34, V18, V19



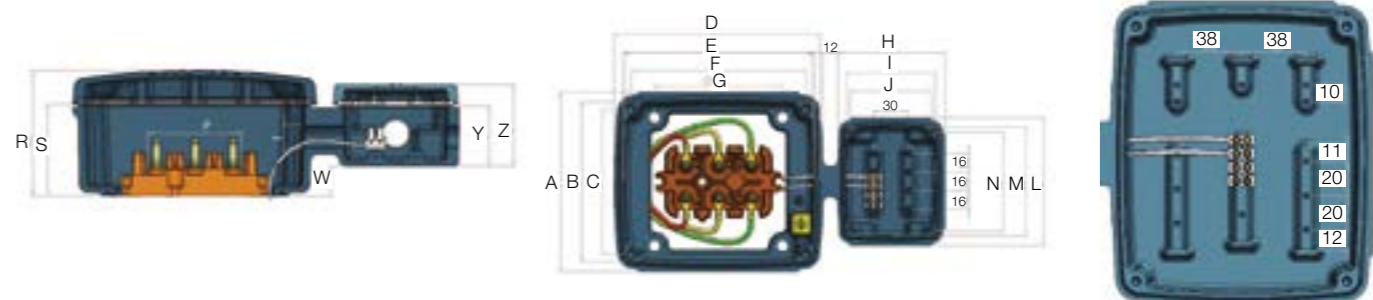
### FC B14A, B14B & NEMA C Flange

Frame	"FC" Flange Dimension (mm)								Qty of Holes
	Flange	C	øM	øN	øP	S	T	α	
132S/M	FC-184	89	184.2	215.9	225	UNC 1/2" x 13	6.3	45°	4
160M/L	FC-184	108							
180M/L	FC-228	121	228.6	266.7	280				
200M/L	FC-228	133							
315S/M	FC-368	216	368.3	419.1	455	UNC 5/8" x 11	22.5°	8	
315L									
355M/L									
355A/B									

### C-DIN (DIN 42677) (B14A) Flange

Frame	"C-DIN" Flange Dimension (mm)							Qty of Holes
	Flange	C	øM	øN	øP	S	T	
132S/M	C-200	89	165	130	200	M10	3.5	4
160M/L	C-250	108	215	180	250	M12	4	4

## Terminal box - frame 132, 160-180, 200, 315S/M

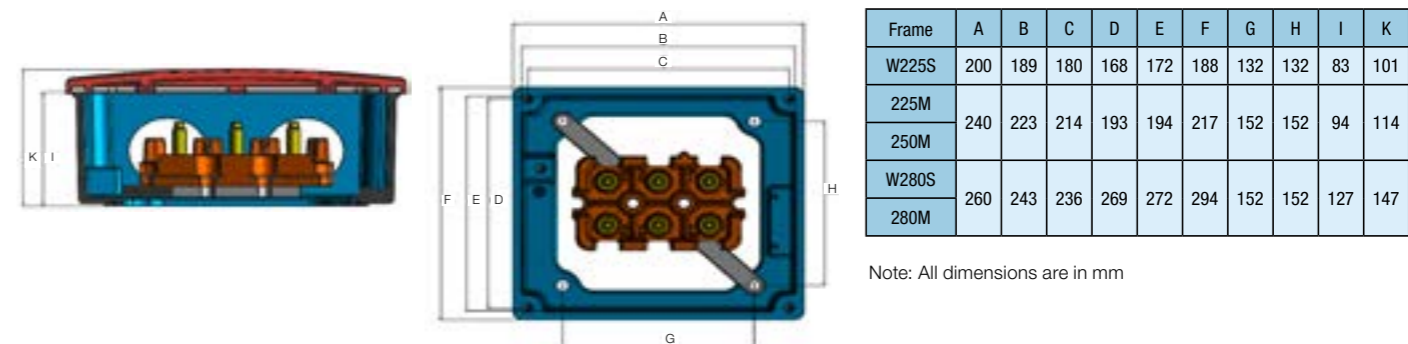


Note: All dimensions are in mm

\* Auxiliary terminal box is only available for motors of frame sizes 132 to 200 and frame 315

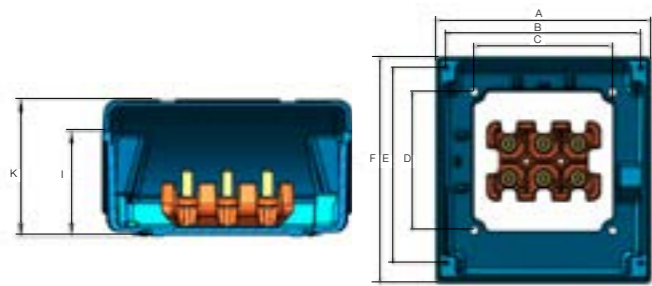
Frame	A	B	C	D	E	F	G	H	I	J	L	M	N	P	R	S	T	W	Y	Z
132	117	100	88	137	120	108	70	92	77	70	108	93	85	50	67	49	13.5	7	42	57
160-180	154	137	124	180	163	150	110	92	77	70	108	93	85	67	89	64	13.5	23	42	57
200	170	153	136	200	183	166	120	92	77	70	108	93	85	84	94	78	13.5	37	42	57
315	315	289	260	375	349	318	200	154	137	124	180	163	150	160	172	144	17	82.5	61.5	86.5

## Terminal box - frame W225S, 225M, 250M, W280S, 280M

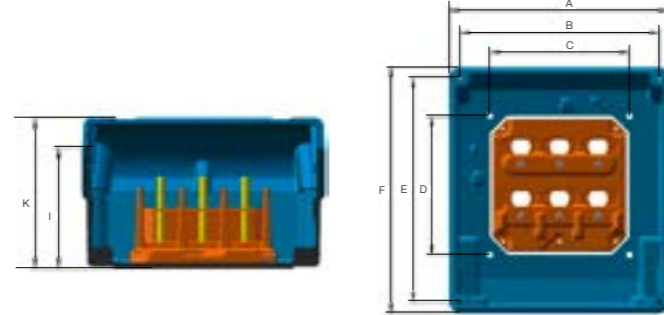


Note: All dimensions are in mm

Terminal box - frame 315L



Terminal box - frame 355M/L\* 355A/B



\* 355M/L large terminal box is used for motors ≥450kW

Frame	A	B	C	D	E	F	I	k
315L	404	365	260	260	365	425	195	222
355M/L	404	365	260	260	365	425	195	222
355M/L*	459	415	290	290	480	525	250	328
355AB	459	415	290	290	480	525	250	328

Note: All dimensions are in mm



Frequency Inverter Technical Data

Power supply	Tolerance: -15% to +10%		
	Frequency: 50Hz +/-5%		
	Typical efficiency above or equal to 97%		
	Power factor (valid for rated condition)	≥ 0.94 with DC reactor	
Overload duty	Heavy = Heavy Overload Duty: 150% of the rated current for one minute or 180% of the rated current for 10 seconds; 200% of rated current for 0.5 seconds;		
Control	Method	Control types: vector with or without encoder	
	Digital inputs: 6 NPN or PNP, 24 V DC		
	Digital outputs: 2 x relay with reverser contact (3A for 240 VAC or 5A for 30VDC, 1 transistor 24 VDC 50mA)		
	Analog Inputs: 1 - 0-10 VDC 1 - 4-20 mA		
	Analog outputs: 2 - 0-10 VDC max 2 mA		
	Function expansion (optional)	Communication networks: Modbus-RTU standard, Profibus with optional card	
		Incremental encoder input	
Power supply capacity 24 V DC, 100 mA			
Environment	Operating temperature	-10 to 40 °C	
	Degree of protection	IP20	
	Altitude	Altitude: 1,000 m.	
HMI - Human Machine Interface	It enables access to/change all the parameters, Parameter Copy and monitoring the Inverter Status		

CFW500 & CFW11 Frequency Inverter Electrical Data

WEG Code	Voltage (V)	Normal Load		Heavy Load	
		Rated Current (A)	Reference Output (kW)	Rated Current (A)	Reference Output (kW)
CFW500 A 06P1 T4 NB20	380-480	6.1	2.2	6.1	2.2
CFW500 B 06P5 T4 DB20	380-480	6.5	3	6.5	3
CFW500 C 10P0 T4 DB20	380-480	10	4	10	4
CFW500 D 14P0 T4 DB20	380-480	14	5.5	14	5.5
CFW500 E 16P0 T4 DB20	380-480	16	7.5	16	7.5
CFW500 F 24P0 T4 DB20	380-480	24	11	24	11
CFW500 G 31P0 T4 DB20	380-480	31	15	31	15
CFW500 H 39P0 T4 DB20	380-480	39	18.5	39	18.5
CFW500 I 49P0 T4 DB20	380-480	49	22	49	22
CFW500 J 77P0 T4 DB20G2	380-480	77	37	61	30
CFW500 K 88P0 T4 DB20G2	380-480	88	45	73	37
CFW500 L 105 T4 DB20G2	380-480	105	55	88	45
CFW500 M 0142 T4 DB20G2	380-480	142	75	115	55
CFW500 N 0180 T4 DB20G2	380-480	180	90	142	75
CFW500 O 0211 T4 DB20G2	380-480	211	110	180	90
CFW11 0312 T4 SZ	380-480	312	160	242	132
CFW11 0370 T4 SZ	380-480	370	200	312	160
CFW11 0477 T4 SZ	380-480	477	250	370	200
CFW11 0515 T4 SZ	380-480	515	280	477	250
CFW11 0601 T4 SZ	380-480	601	315	515	280
CFW11 0720 T4 SZ	380-480	720	355	560	315
CFW11 0760 T4 OYZ	380-480	760	400	600	330
CFW11 0795 T4 OYZ	380-480	795	450	637	355
CFW11 0877 T4 OYZ	380-480	877	500	691	400
CFW11 1062 T4 OYZ	380-480	1062	560	855	450
CFW11 1141 T4 OYZ	380-480	1141	630	943	500

CFW11 Frequency Inverter Mechanical Data Standard Version

Frame	Dimension mm (in)			Weight kg (lb)		
	Height (H)	Width (W)	Depth (D)	200-240 V ac	380-480 V ac	500-690 V ac
A	270 (10.61)	145 (5.71)	227 (8.94)	6.3 (13.9)	10 (22.0)	-
B	316 (12.43)	190 (7.48)	227 (8.94)	10.4 (22.9)	10.4 (22.9)	9.1 (20)
C	405 (15.95)	220 (8.67)	293 (11.54)	20.5 (45.2)	20.5 (45.2)	19.6 (43.2)
D	550 (21.63)	300 (11.81)	305 (12.01)	32.6 (71.8)	32.6 (71.8)	34 (75)
E	675 (26.6)	335 (13.2)	358 (14.1)	65 (143.3)	65 (143.3)	64 (141.2)
F	1,234 (48.58)	430 (16.93)	360 (14.17)	-	140 (308.7)	168 (370.5)
G	1,264 (49.76)	535 (21.06)	426 (16.77)	-	215 (474)	258 (569)
H	1,414 (55.67)	626 (27.01)	421 (16.57)	-	220 (485.2)	213 (469.7)



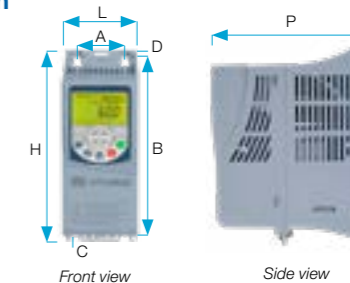
Frame A Frame C Frame F Frame G

IP55 / NEMA12 Version



Frame	Dimensions mm (in)				Weight kg (lb)
	Height (H)	Width (W)	Depth (D)	Depth With DS (D)	
B	529 (20.83)	273 (10.75)	237 (9.33)	279.1 (10.99)	17.0 (37.4)
C	670 (26.38)	307 (12.09)	306 (12.05)	348.1 (13.7)	30.0 (66.1)
D	754 (29.69)	375 (14.76)	301.3 (11.86)	338.6 (13.33)	49.0 (108.02)
E	1000 (39.37)	430 (16.93)	388.8 (15.31)	419 (16.5)	96.0 (211.64)

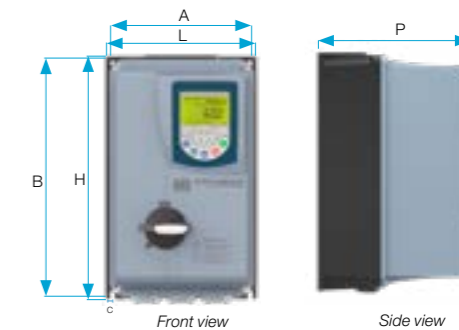
CFW500 Frequency Inverter Mechanical Data IP20 Version



Note: for the dimensions in the NEMA type 1 version, refer to the user manual.

Frame	A	B	C	D	H	L	P	Weight kg (lb)
	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	
A	50 [1.97]	175 [6.89]	11.9 [0.47]	7.2 [0.28]	189 [7.44]	75 [2.95]	150 [5.91]	0.8 [1.76]
B	75 [2.95]	185 [7.3]	11.8 [0.46]	7.3 [0.29]	199 [7.83]	100 [3.94]	160 [6.3]	1.2 [2.65]
C	100 [3.94]	195 [7.7]	16.7 [0.66]	5.8 [0.23]	210 [8.27]	135 [5.31]	165 [6.5]	2 [4.4]
D	125 [4.92]	290 [11.41]	27.5 [1.08]	10.2 [0.4]	306.6 [12.1]	180 [7.08]	166.5 [6.55]	4.3 [9.48]
E	150 [5.9]	330 [13]	34 [1.34]	10.6 [0.4]	350 [13.8]	220 [8.7]	191.5 [7.5]	10 [22.05]
F	200 [7.87]	525 [20.67]	42.5 [1.67]	15 [0.59]	550 [21.65]	300 [11.81]	254 [10]	26 [57.3]
G	200 [7.87]	650 [25.59]	57 [2.24]	15 [0.59]	675 [26.57]	335.3 [13.2]	314 [12.36]	52 [114.64]

IP66 Version



Frame	A	B	C	D	E	H	L	P		Weight kg (lb)
	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	P1 mm [in]	P2 mm [in]	
A	150 [5.9]	250 [9.83]	5.7 [0.22]	7.5 [0.3]	225 [8.86]	265 [10.43]	165 [6.5]	227 [8.93]	252.5 [9.94]	10 [22.05]
B	200 [7.86]	325 [12.79]	5.7 [0.22]	7.5 [0.3]	300 [11.82]	340 [13.39]	215 [8.46]	227 [8.93]	252.9 [9.96]	12 [26.5]

Notes: P1 = Measure without disconnect switch. P2 = Measure with disconnect switch.

The scope of WEG Group solutions is not limited to the products and solutions presented in this catalogue.

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The values shown are subject to change without prior notice.  
The information contained is reference values.