

# DirectMagnet

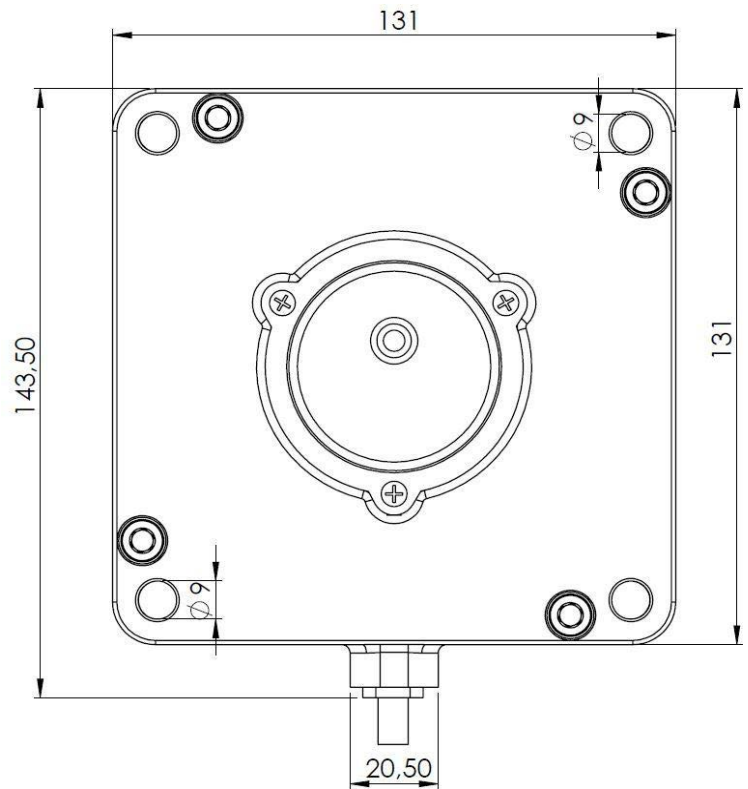
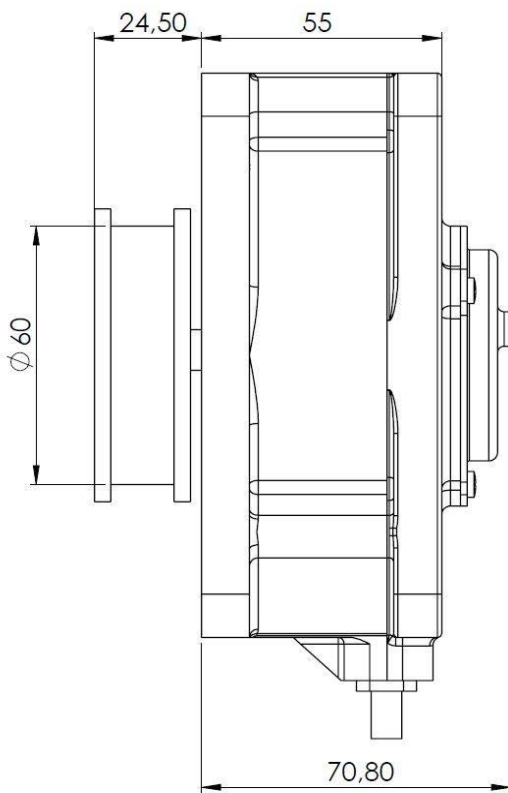


## Sürekli Mıknatıslı Senkron Motor Permanent Magnet Synchronous Motor

- ✓ High Rated Torque, up to 4Nm
- ✓ High efficiency
- ✓ High Reliability
- ✓ Low torque ripple / Smooth Movement
- ✓ Compact Design (135x140x56)
- ✓ Linear Torque vs Current characteristic
- ✓ Low Thermal resistance 1.37 C /W

**DirectMagnet** is a new technology motor to meet direct drive need for automatic door application without any gearbox to ensure high reliability and maintenance free. Motor has low time constant and high torque constant (Nm/A) so that drive system can open and close the door with high acceleration and deceleration especially for elevator application.

Motor is driven by a special electronic that controls also the door open&close cycles by using special position feedback sensor installed in motor housing. There is no optical encoder and by the way the reliability of system is increased. FOC method is used for motor drive to get precise speed and torque control and high efficiency and smooth door movement.

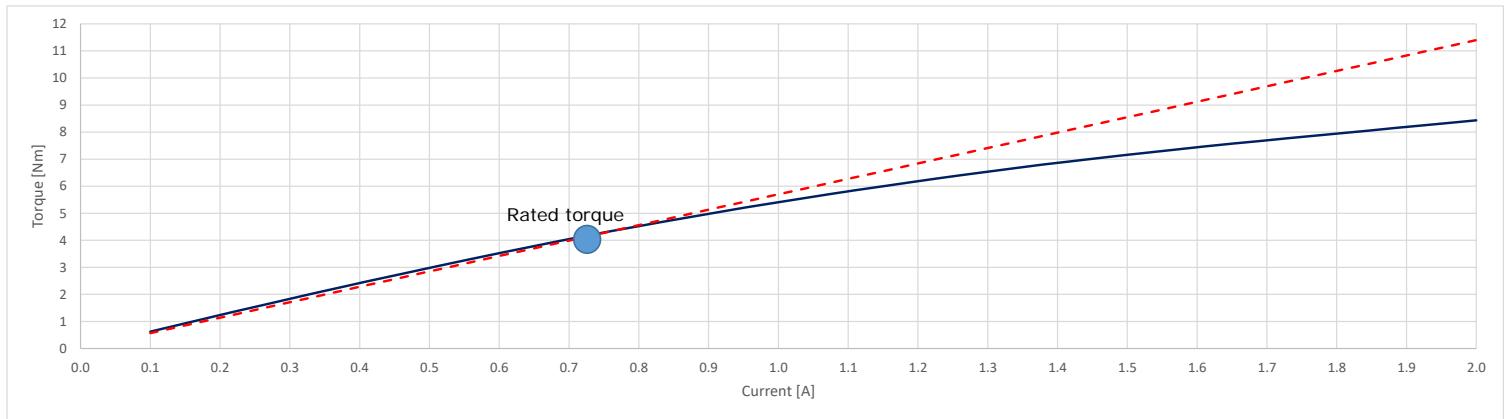
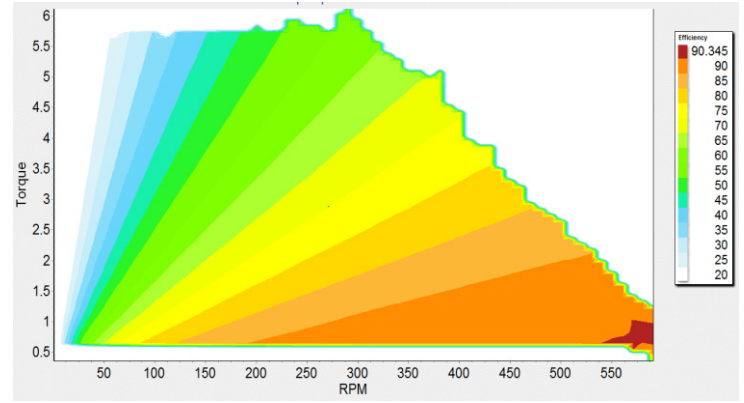
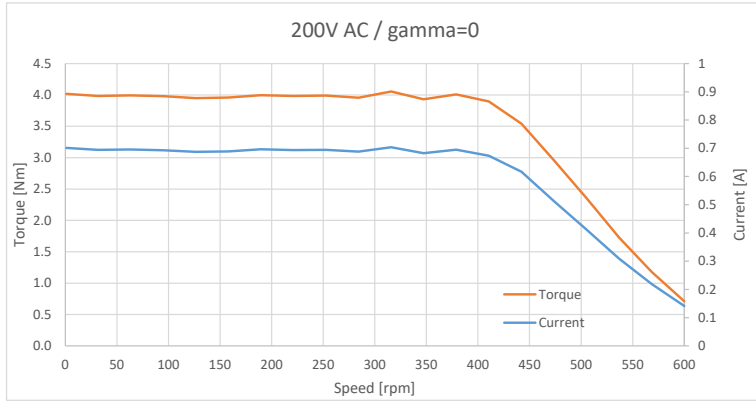


### Main Technical Properties

Minimum DC Bus Voltage @ rated speed	: 213V	Rated driver input voltage	: 220-240V AC
Rated speed	: 50cm/s	Rated motor input voltage	: 200V AC
Maximum speed	: 80cm/s	Maximum motor speed	: 600rpm
Diameter of pulley	: 36.6mm	Dimensions	: 135 x 140 x 56 mm
Rated motor speed @ Min. DC Bus voltage	: 260rpm	Duty Cycle	: S4
Motor base speed	: 420rpm	Winding encapsulation	: Epoxy (>1W/mK)
Rated torque up to base speed	: 4Nm	Door weight	: up to 250kg
Rated motor phase current	: 0.7A	IP	: IP54
Torque constant	: 5.7Nm/A	Insulation class	: F

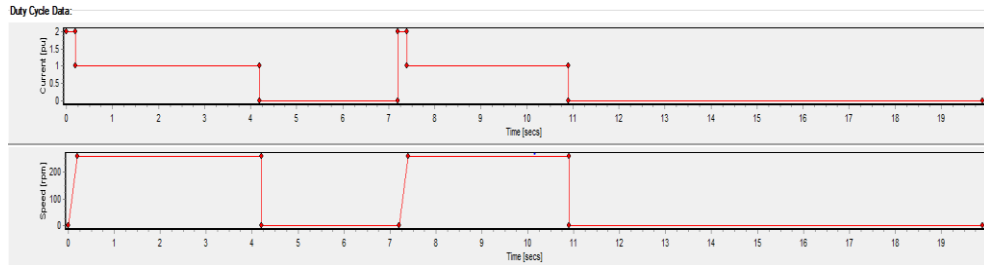
Permanent Magnet Synchronous Motor for Direct Drive Automatic Door

Torque vs Speed Characteristic

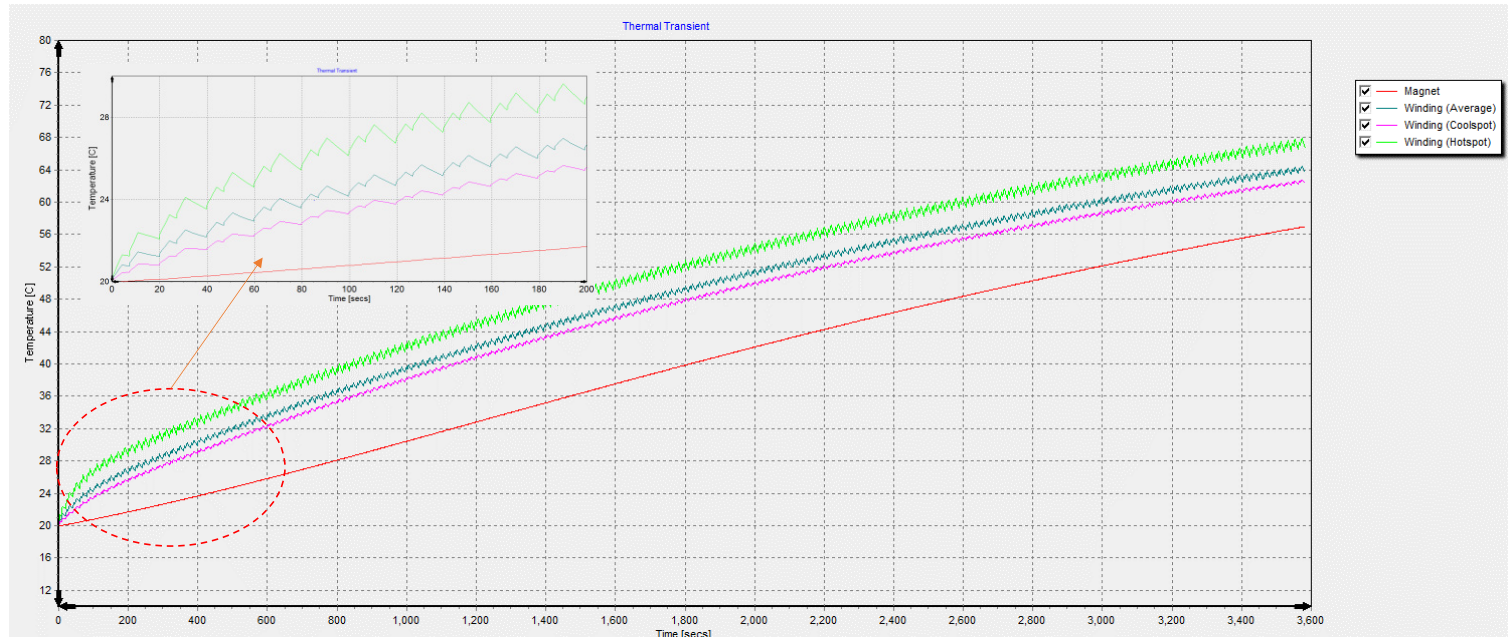


Heating of Motor

Heating of winding for S4 duty cycle defined below graph. 180 cycles per hour with worts case.



Period	Elapsed Time	Time	Points	Current	Speed [Start]	Speed [End]	Fault	End Ambient Temp
	Units	secs	secs	pu	rpm	rpm		C
1	0.2	0.2	4	2	0	260	<input type="checkbox"/>	20
2	4.2	4	4	1	260	260	<input type="checkbox"/>	20
3	7.2	3	3	0	0	0	<input type="checkbox"/>	20
4	7.4	0.2	4	2	0	260	<input type="checkbox"/>	20
5	10.9	3.5	4	1	260	260	<input type="checkbox"/>	20
6	19.9	9	3	0	0	0	<input type="checkbox"/>	20



**Permanent Magnet Synchronous Motor for Direct Drive Automatic Door**

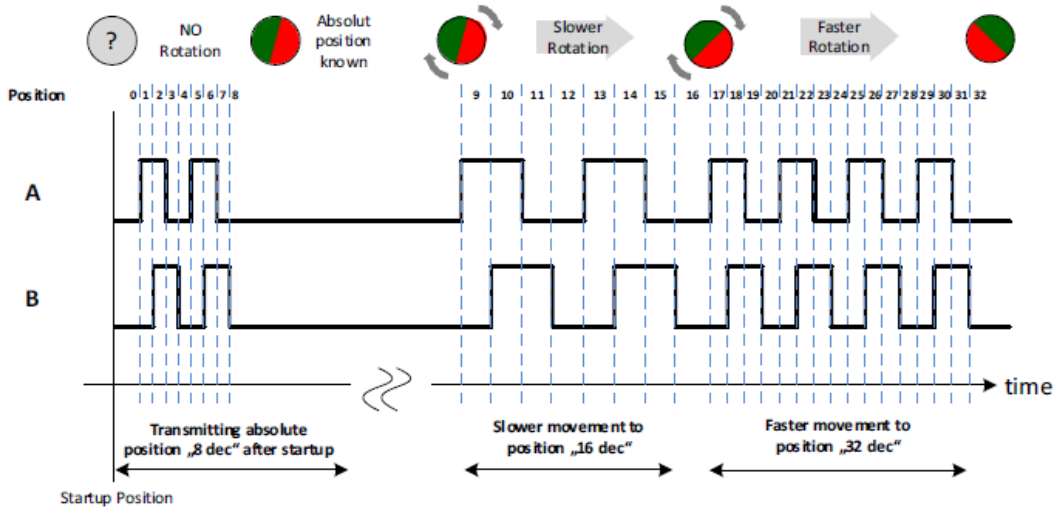
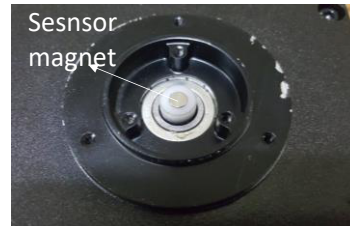
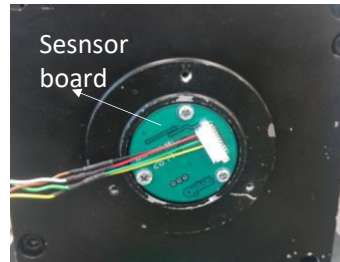
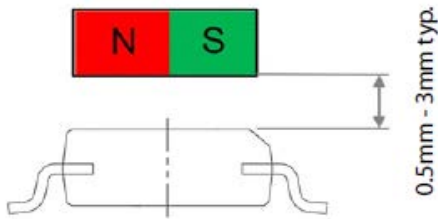
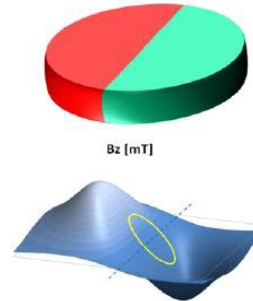
**Speed and position sensor:**

Motor is equipped with magnetic encoder. A sensor magnet is placed at the end of motor shaft and electronic card with GMR sensor is placed across the magnet, by the way contactless encoder sensor is obtained.

Magnetic encoder



Giant Magneto Resistance (GMR) sensor



up to 1024 pulse/rev

**Permanent Magnet Synchronous Motor for Direct Drive Automatic Door**

**Driver Electronic**

Motor is driven by special electronic that is designed for automotaic door requirements. FOC method is used for BLAC permanent magnet motor to get precise torque and speed control. Motor and door control parameters (acceleration and deceleration time) can be set easily display on the electronic card.

- Rated input voltage 220-240V AC 50Hz
- Rated power 180W
- Design without transformer
- High efficieny vector control
- High speed and high acceleration
- Precise and continuous motor movements
- CAN-BUS connection
- Compatible to EN81-20

Supply voltage inputs

Interface connections



Motor connections

Encoder connection

Interface connections



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