Technical Information

ED-DT180-PT7000-48V-1M42

Product Technical Specification

- Permanent Magnet Synchronous Motor (PMSM) with Flat Wire Winding
- The ED-DT180-PT7000-48V-1M42 is engineered to deliver high-efficiency electric propulsion for engineering vehicles
- The machine is developed specifically for demanding applications. It is smaller, lighter and more efficient than conventional products on the market
- Complies with CE requirements

1. Product Basic Information

Product Name	eDrive
Product Model	ED-DT180-PT7000-48V-1M42
Manufacturer	Danfoss Power Solutions (Jiangsu) Co., Ltd
Manufacturer Address	Ning Zhen Road 1-8 Zhenjiang, Jiangsu, China
Rated Voltage (VDC)	48
Voltage Range (VDC)	33-66
Rated / Output Power (kW)	3.5/7.5
Rated / Max Output Speed (rpm)	21/42
Rated / Max Output Torque (N.m)	1600/6180
Motor Rated / Max Output Speed (rpm)	2400/4800
Motor Rated / Max Output Torque (N.m)	14/54
Rated / Max Current (Arms)	74/240
Motor Connection Method	Y-connection
The Poles of Motor	4
The Poles of Encoder	4
Speed Sensor Type	SIN/COS
SIN/COS Vpp (V)	3.2 ±0.4
Line Back EMF. (Vrms/krpm)	10.3 ±10% (25℃)
Line Resistance (mΩ)	29.5 ±5%; Unbalance<=3%
Line Inductance (uH)	108 ±5%; Unbalance<=3%
Insulation Leakage Current	<=5mA; (1500Vrms,1min)
Insulation Resistance	>=20 MΩ; (500VDC)
Duty Type	S2 mode work
Insulation Class	H
Temperature Sensor Type	PT1000
Altitude (m)	<=1000
Ambient Operating Temperature	-30~55℃
Ambient Storage Temperature	-30~85℃
IP Rating	IP67 (Outside of U V W)
Weight (kg)	66.5 ±1

2.Model Designation

ED-DT180-PT7000-48V-1M42

ED: eDrive.

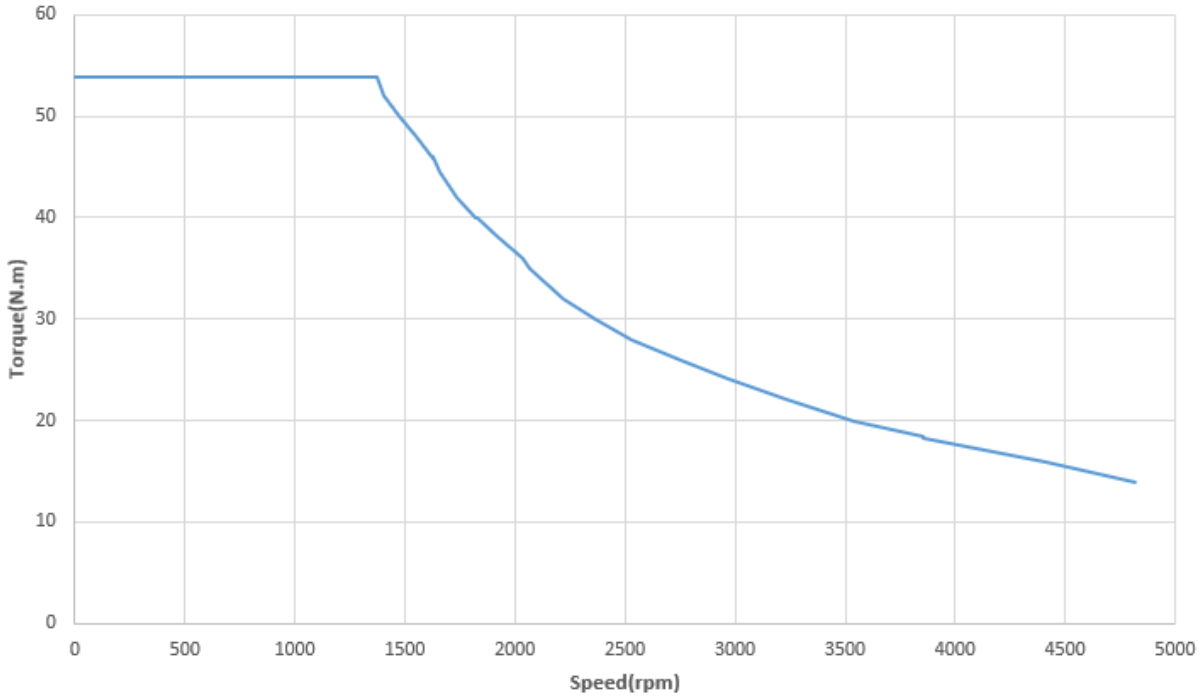
DT180: Motor Platform Dimension.

PT7000: Gearbox Torque Platform.

48V: Rated Voltage 48 VDC.

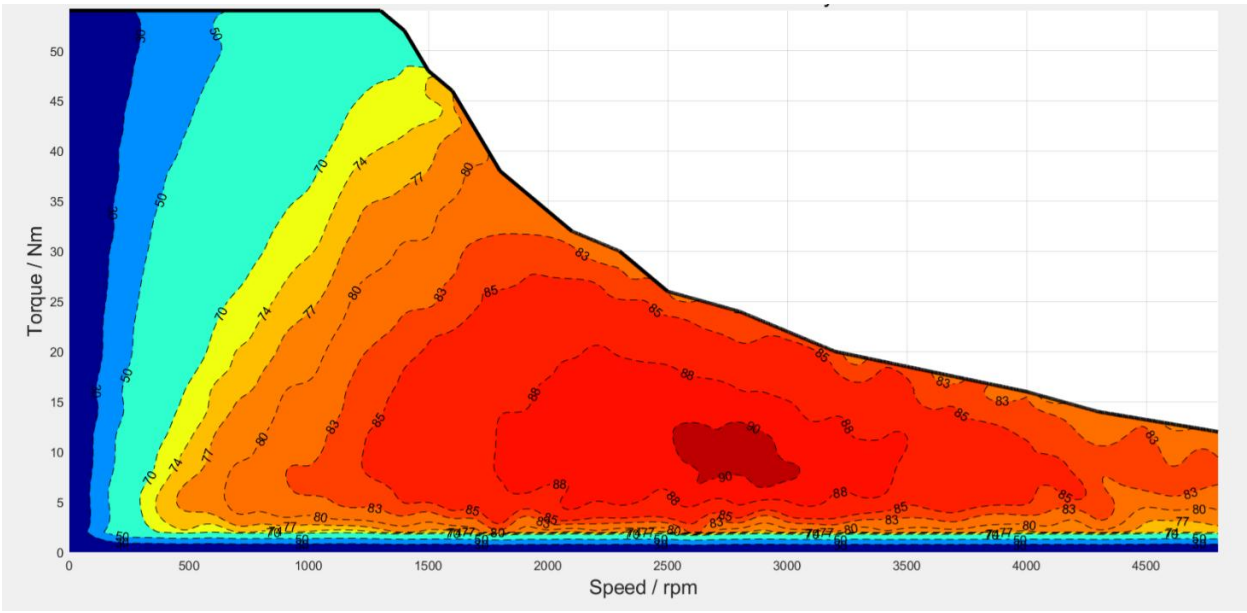
1M42: Gear Ratio 1, Max Output Speed 42.

3. Motor External Characteristic Curve @ 48VDC



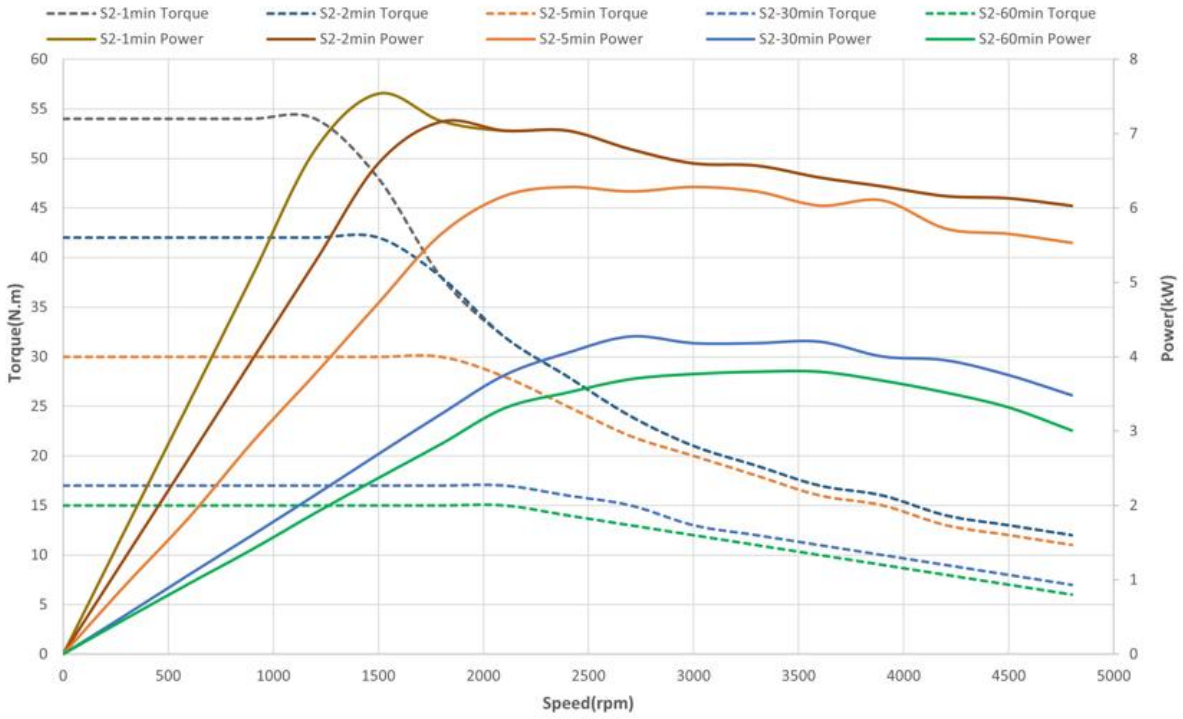
*Note: Test under the 25℃ Ambient temperatures.

4. Motor Efficiency Map @ 48VDC



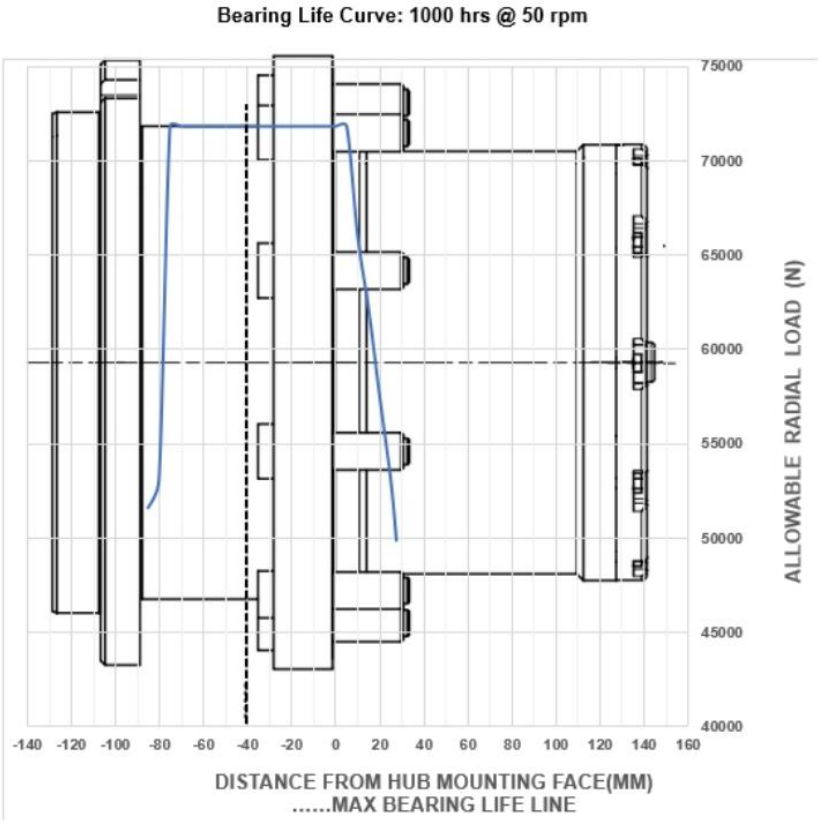
*Note: Test under the 25℃ Ambient temperatures.

5. Motor S2 Mode Work Curve @ 48VDC



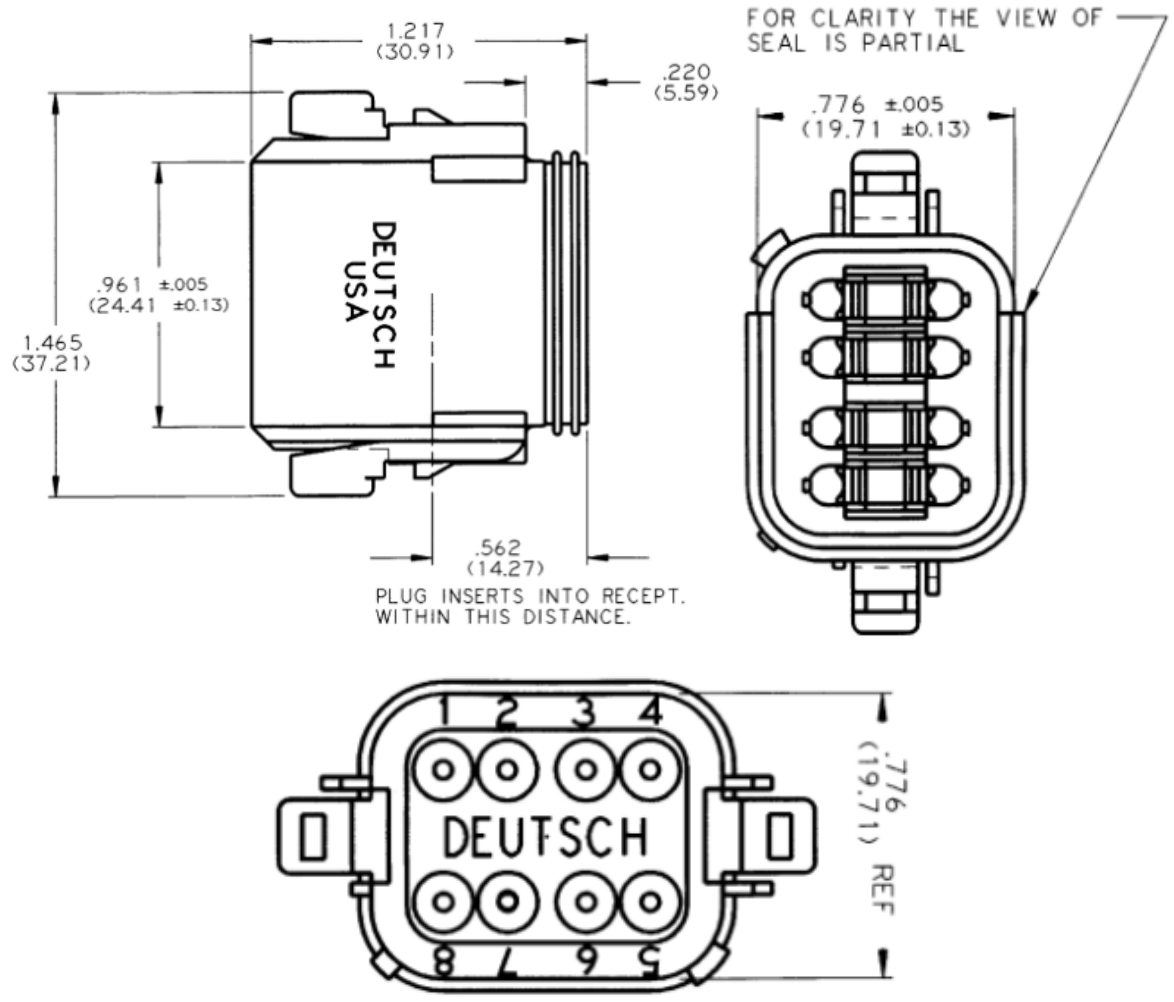
*Note: Test under the 25℃ Ambient temperatures.

6.Bearing Curve

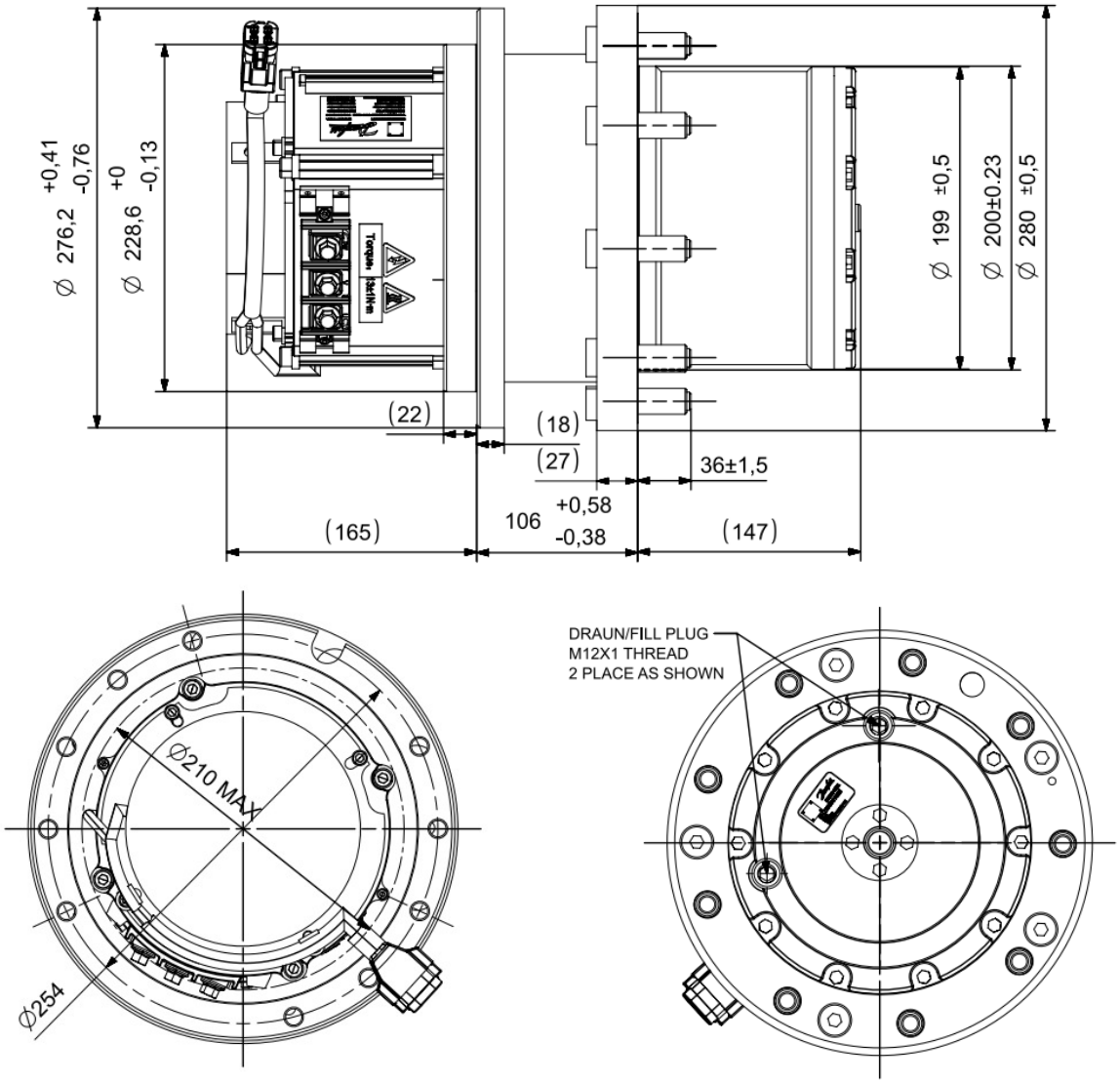


7.Pin Definition

Connector Type: DT06-08SA-EP06		
Pin	Description	Color
1	VCC +5V	Orange
2	GND	Grey
3	Brake+	Red
4	Brake-	Black
5	Temp Sensor-	Yellow
6	Temp Sensor+	White
7	SIN	Green
8	COS	Blue



8. Dimensions



9. Validation Standards

Test Item	Test Method	Standard
Low Temperature Storage Test	Temperature: -30℃ Storage :24H	IEC 60068-2-1:2007
Low Temperature Operation Test	Temperature: -30℃	IEC 60068-2-1:2007
High Temperature Storage Test	Temperature: 85℃ Storage: 24H	IEC 60068-2-2:2007
High Temperature Operation Test	Temperature: 85℃	IEC 60068-2-2:2007
Salt Spray Test	Temperature: 35℃±2K Spraying: 2H	IEC 60068-2-52: 2017

	Temperature: 40℃±2K Humidity: 93%±3% Storage: 22H Test Time: 200H	
EMC Test	Radiated Emissions (30MHz-1GHz) Radiated Emissions (Above 1GHz) Electrostatic Discharge Radiated Immunity (80MHz-1GHz, 1.4GHz-6GHz) Power Frequency Magnetic Field	EN 60034-1:2010; EN IEC 61000-6-4:2019; EN IEC 61000-6-2:2019
Over-Speed Test	1.2 x Max Speed(4800rpm)	IEC 60034-1:2017
Steady Damp Heat Test	Temperature: 40±2℃ Relative humidity: 93%±3% Storage: 48H	IEC 60068-2-78:2012
Damp Heat Cycle Test	Heating up (3h): 25℃→55℃, RH≥95% (no condensation) High temperature and high humidity (9h): 55℃±2℃, RH 93%±3% Cooling (3-6h): 55℃→25℃, RH≥95% Low temperature and high humidity (9h): 25℃±3℃, RH 93%±3% The number of test cycles: 10 times	IEC 60068-2-30:2025
Temperature Shock Test	High temperature box: 125°C Maintain for 1 hour Low temperature box: -40°C Maintain for 1 hour Number of cycles: 100 cycles	IEC 60068-2-14:2023
Sweep Frequency Vibration Test	Frequency: 5→200Hz Power Spectral Density: 50$(m/s^2)^2$ Test axial: X, Y, and Z axes Test time: 4H/axial	IEC 60068-2-6:2008
Broadband Random Vibration Test	Frequency: 10→500Hz Power Spectral Density: 0.1g^2/Hz Test axial: X, Y, and Z axes Test time: 4H/axial	IEC 60068-2-64:2008
Shock Vibration Test	Peak Acceleration: 500m/s^2 Pulse Width: 10ms Test Axial: X, Y, and Z axes	IEC 60068-2-27:2008
IP Protection Test	IP6X Dust Type: Talcum Powder Dust Concentration: 2kg/m^3 Kept suspended during the test Dust Generation Method: 6s dust/stop for	IEC 60529:2013

	15min Pumping Speed: 40 times housing volume per hour Inspection Cycle: 8H IPX7 Water Depth: 1m Time: 30min	
Free Fall Test	Drop Height: 0.6m Direction: 3 directions Number of Drops: 3 per test direction	IEC 60068-2-31:2008:

10.Revision History

Revision	Date	Description of Change	Changed	Approved
Rev 1.0	2025/10/31	Initial Release	Hang Sha	Long Shan
Rev 1.1	2025/12/19	Update parameters and add standard descriptions	Hang Sha	Long Shan