ENGINEERING TOMORROW

Data Sheet

ED-DT180-PT7000-48V-1M42

Low voltage eHub

FEATURES

- Permanent Magnet Synchronous Motor (PMSM) with Hairpin Winding
- Engineered to deliver high-efficiency propulsion for electric vehicles
- Developed specifically for demanding applications
- Smaller, lighter and more efficient than conventional products on the market



TYPICAL APPLICATIONS

- eHub
- Mini excavator
- Mini wheel loader
- eBoom lift

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SPECIFICATIONS

General	
Rated voltage	48 V_{DC}
Voltage range	33-66 V_{DC}
Rated output power	3.5 kW
Maximum output power	7.5 kW
Rated / Max output speed	21/42 rpm
Rated / Max output torque	1600/6180 Nm
Gearbox lubrication	0.85L/SHC626
Gearbox ratio	114.5
Poles of motor	4
Speed sensor type	SIN/COS resolver
Poles of speed sensor	4
SIN/COS (peak-to-peak)	3.2 ±0.4 V
Line back EMF (V/k rpm)	10.3 ±10 % (25°C)
Line resistance (mΩ)	29.5 ±5 %, unbalance <=3 %
Line inductance (uH)	108 ±5 %, unbalance <=3 %
Insulation resistance	>=20 MΩ (500 V_{DC})
Duty type	S2 (60 min)
Insulation class	H
Temperature sensor type	PT1000
Rated brake voltage	48 V
Rated brake torque	>=85 Nm
Drop-out voltage	<=24 V
Pull-in voltage	<=32 V
Maintain current	<=2 A
Effective braking cycles	>=1000 time

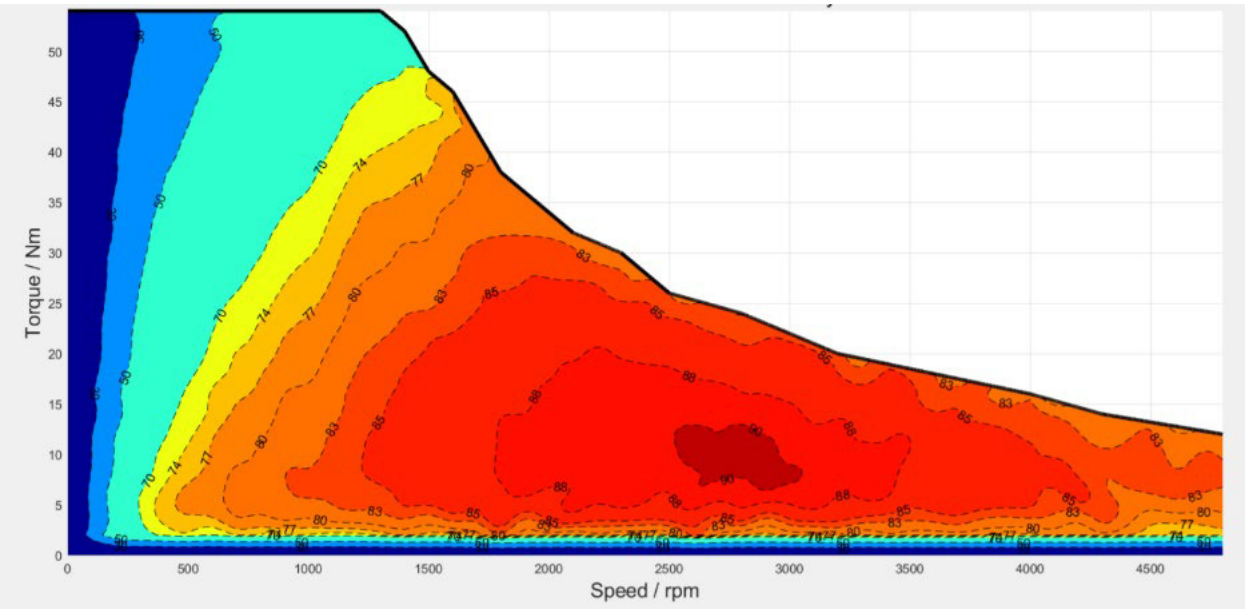
Mechanical	
Dimensions (W x H x L)	280 x 280 x 418 mm
Weight	66.5 ±1 kg

Ambient Conditions	
Storage temperature	-30°C - +85°C
Operating temperature	-30°C - +55°C
Altitude	<=1000 m
Enclosure class	IP67

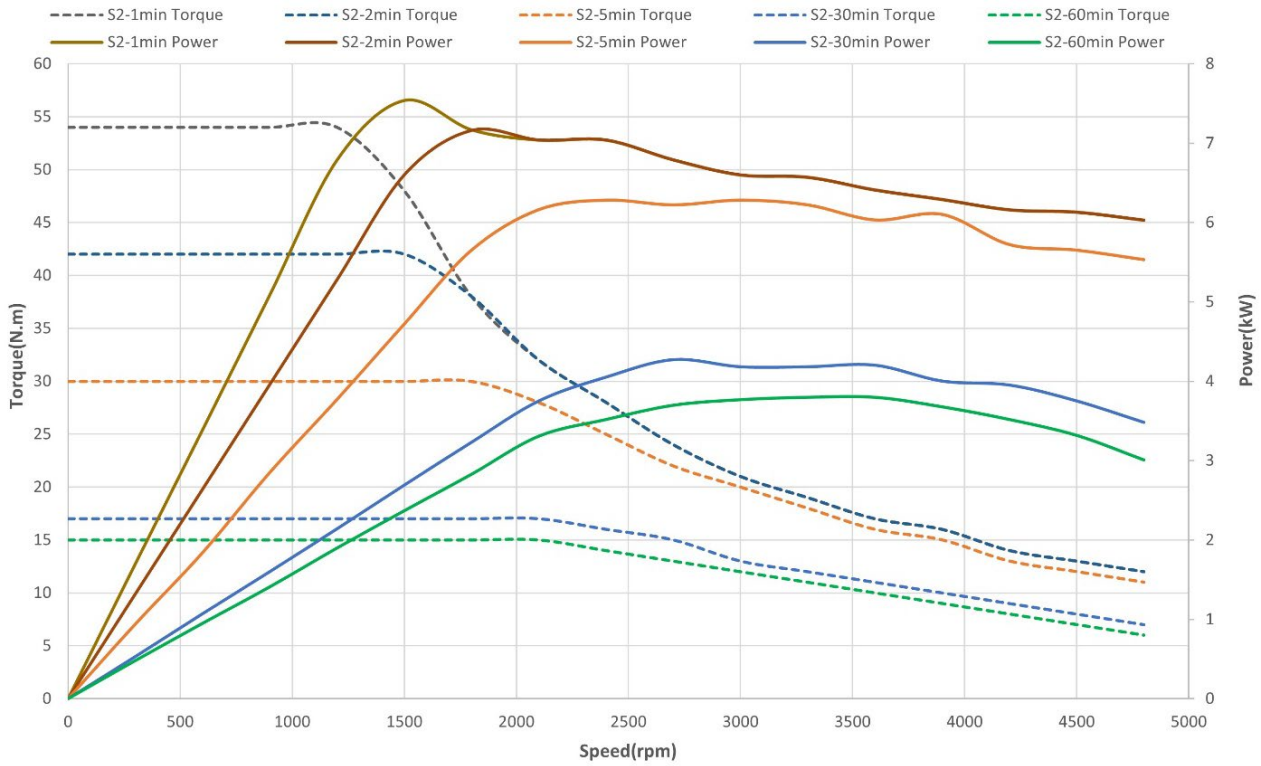
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Standards and classifications	
Withstand Voltage Test	EN 1175:2020
Insulation Resistance Test	EN 1175:2020
Low Temperature Storage Test	IEC 60068-2-1:2025 Test A: Cold
Low Temperature Operation Test	IEC 60068-2-1:2025 Test A: Cold
High Temperature Storage Test	IEC 60068-2-2:2025Test B: Dry heat
High Temperature Operation Test	IEC 60068-2-2:2025 Test B: Dry heat
Salt Spray Test	IEC 60068-2-52:2017Test Kb: Salt mist, cyclic (sodium chloride solution)
EMC Test	ISO 13766-1:2018; IEC 61000-4-2; IEC 61000-4-8 and IEC 61000-4-5
Over-Speed Test	IEC 60034-1:2017 Part 1 Rating and performance
Constant Damp Heat Test	IEC60068-2-78:2025 Test Cab Damp heat, steady state
Damp Heat Cycle Test	IEC 60068-2-30:2025Test Db Damp heat, cyclic (12 h + 12 h cycle)
Temperature Shock Test	IEC 60068-2-14:2023Test N Change of temperature
Swept-Sine Vibration Test	IEC 60068-2-6:2007 Test Fc Vibration (sinusoidal)
Broadband Random Vibration Test	IEC 60068-2-64:2019Test Fh Vibration, broadband random and guidance
Shock Vibration Test	IEC 60068-2-27:2008 Test Ea and guidance: Shock
IP Protection Test	IEC 60529:2008 Degrees of protection provided by enclosures (IP Code)
Free Fall Test	IEC 60068-2-31:2008Test Ec: Rough Handling Shocks

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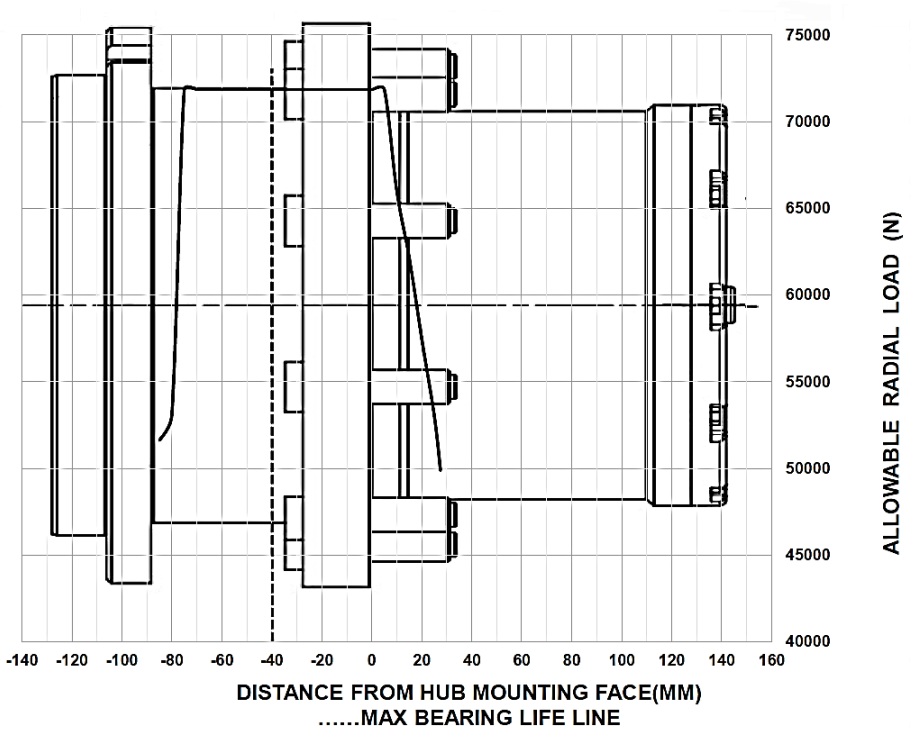
Picture 1 EM-PMI180-T54-4800 efficiency map at 48 V_{DC} (test under the 25°C ambient temperature)



Picture 2 EM-PMI180-T54-4800 S2 mode work curve at 48 V_{DC} (test under the 25°C ambient temperature)

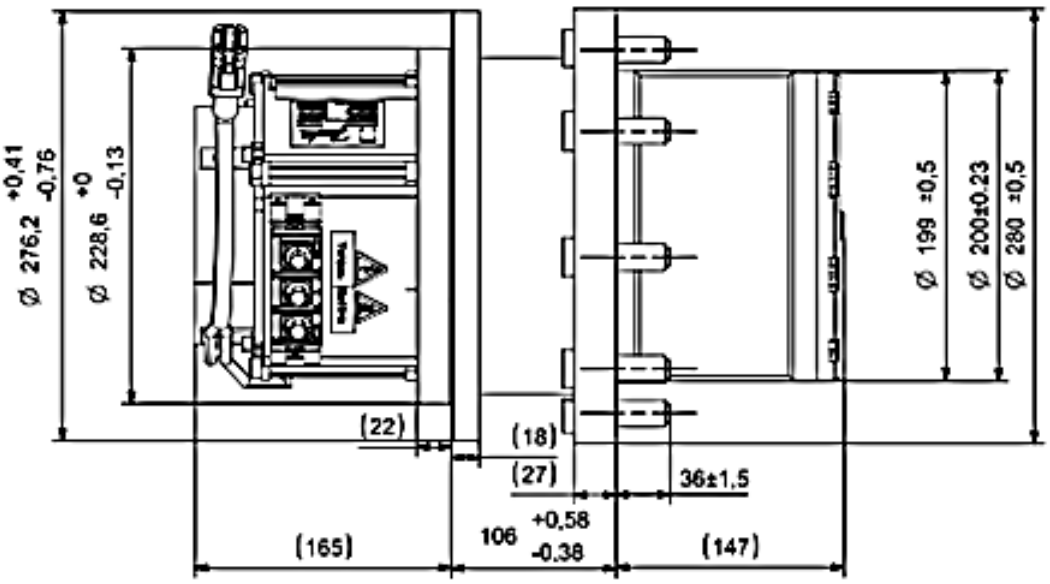
Note: The maximum output torque of eHub equals motor torque multiplied by ratio 114.5

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Picture 3 Bearing life curve: 1000 hrs at 50 rpm

DIMENSIONS

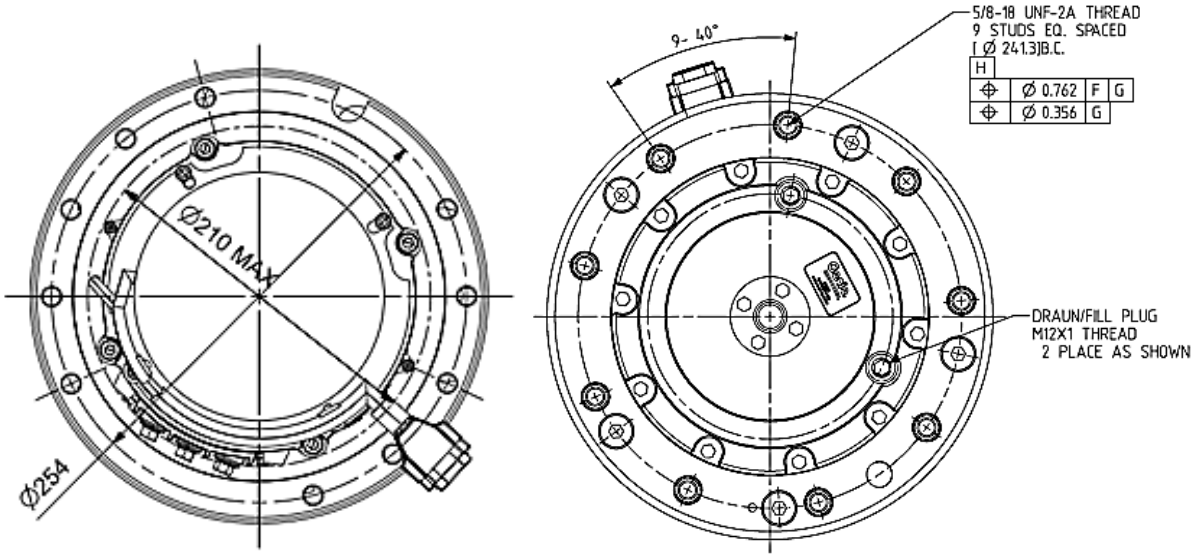


Picture 4 Dimensions for ED-DT180-PT7000-48V-1M42

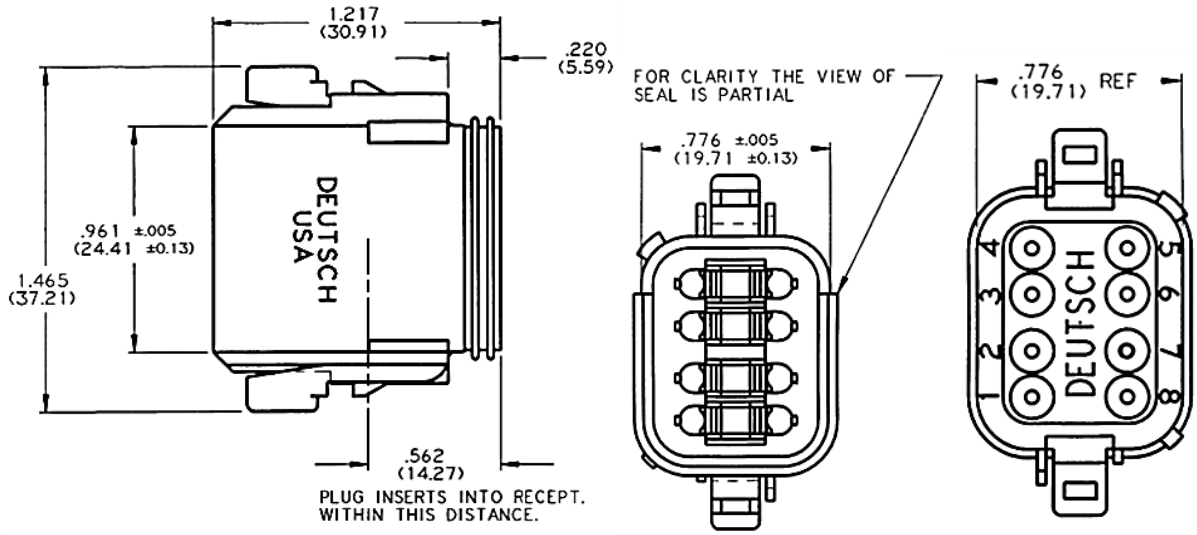
Dimension	Length
L	418 mm
W	280 mm
H	280 mm

Table 1 Dimensions for ED-DT180-PT7000-48V-1M42

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Picture 5 Diameters for ED-DT180-PT7000-48V-1M42



Picture 6 Connector information for ED-DT180-PT7000-48V-1M42

SIGNAL CONNECTOR PINOUT

Connector type: DT06-08SA-EP06		
Pin	**Discription**	**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

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PRODUCT CODE AND OPTIONS

Product code	Description
ED-DT180-PT7000-48V-1M42	ED - Electric sub-system
	DT180 - Drivetrain system
	PT7000 - 7000 Gearbox torque platform
	48 V_{DC} platform voltage
	1M42 - 1M: Gear Ratio 1, 42: Max output speed

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