DC Motors

DMP catalogue
1-200 kW, 5-1000 Nm

T-T Electric

List of contents

Introduction

DMP d.c. motors are fully laminated, 2 or 4 pole, square frame.
Output: 1-200 kW
Torque: 5-1000 Nm

DMP motor range:

Frame size DMP	Core lengths
112-2	MA, LA
112-4	M, L
132-2	M
132-4	S, M, L, LB
160-4	S, SO, M, MO, L, LO, LB
180-4	A, B, C, D, E, F

Type designation example :
DMP 180-4E

DM	=	DC motor
P	=	Motor type
180	=	Centre height in mm
4	=	Number of poles
E	=	Core length

Basic design characteristics

- Fully laminated stator, main poles and interpoles.
- Compact square frame design.
- Easy installation of accessories.
- Large openings in end shields for easy inspection.
- Stator windings of varnish insulated copper wire.
- Laminated armature core of high grade insulated electroplate.
- Large number of cooling ducts in armature provide excellent cooling.
- Scrambled armature laminations for low torque ripples.
- Armature windings of varnished copper designed for low commutating stresses and high mechanical strength.
- Armature is impregnated to ensure high degree of heat transfer.
- Brush holders with spring loaded pressure fingers.
- Prepared for a number of options and accessories ensuring high flexibility.
- Painting with excellent corrosion resistant properties.
- Conforms with IEC standards.
- Available as NEMA standard.
- CSA approved.

Options

Frame size	DMP	112-2	112-4	132-2	132-4	160	180
Cooling forms							
IC06 (IP23)	Force ventilated	o	o	o	o	o	o
IC17 (IP23)	Single pipe ventilated	o	o	o	o	o	o
IC37 (IP54)	Double pipe ventilated	o	o	o	o	o	o
IC410 (IP54)	Totally enclosed	o		o	o	o	o
IC416 (IP54)	Totally enclosed, fan cooled	o		o	o	o	o
IC666 (IP54)	Air-air cooled			o	o	o	o
IC86W (IP54)	Air-water cooled			o	o	o	o
Other cooling forms available							
Protection							
IP55		o	o	o	o	o	o
Mounting forms							
IM1001 Horizontal foot		o	o	o	o	o	o
IM1002 Horizontal foot, two shaft ends		o	o	o	o	o	o
IM2001 Horizontal foot and flange		o	o	o	o	o	o
IM2011 Vertical foot and flange		o	o	o	o	o	o
Other mounting forms available							
Modifications and accessories							
Compound winding		o	o	o	o	o	o
Pressure switch		o	o	o	o	o	o
Temperature sensor, interpole		o	o	o	o	o	o
Temperature sensor, field winding		o	o	o	o	o	o
Bearing sensor		o	o	o	o	o	o
Grounding brush		o	o	o	o	o	o
Heating element		o	o	o	o	o	o
Brush wear sensor		o	o	o	o	o	o
Special shaft		o	o	o	o	o	o
Roller bearing d-end		o	o	o	o	o	o
Shaft seal, d-end		o	o	o	o	o	o
Special balance Class ‘R’		o	o	o	o	o	o
Special paint (RAL colour)		o	o	o	o	o	o
Special corrosion protection		o	o	o	o	o	o
Transparent inspection cover		o	o	o	o	o	o
Brake		o	o	o	o	o	o
Gearbox		o	o	o	o	o	o
Tachos with coupling							
REO 444R1 (60v/1000min^{-1})		o	o	o	o	o	o
TDP 0.2 LT-4 (60v/1000min^{-1})		o	o	o	o	o	o
Others available							
Pulse generators							
POG 9 D (1-1250 ppr)		o	o	o	o	o	o
HG650 or DG60L (1024 ppr)		o	o	o	o	o	o
Others available							

Application data

Standards
IEC 34 - IEC 72 etc.

Insulation
Class H

Temperature rise
Class F

Balance
IEC 34-14 grade 'N' standard.
Grade 'R' on request.

Overload capacity
180% xFLC for
15 sec. every 5 minutes
30 sec. every 30 minutes

Terminal box
Standard position: On right hand side (facing D-end).
Mounting of terminal box on top or left hand side on request.
DMP motors are delivered with a large terminal box IP55 including knockout openings:

DMP 112 – 132
2 x Ø 28.5 (PG 21)
2 x Ø 20.5 (PG 13.5)
Cable entry from Drive end.

DMP 160 – 180
2 x Ø 55 (PG 42)
4 x Ø 28.5 (PG 21)
Cable entry from above or below.

Blower position
Standard: On top of the motor at the non-drive end.
Other positions on request.

Blower is supplied without filter as standard.
Filter on request.

Bearings
Grease lubricated ball bearings as standard.
For belt drive please contact our sales offices.

Heat exchangers

Air/water (IC86W):

Air/water exchangers are especially recommended for polluted environment.

Standard is for clean water.
For corrosive water on request.

Position on top of the motor as standard. Fan motor at N-end.
Water connection flanges at right hand side (facing D-end).
Max. water pressure 10 PSI
Max. inlet water temperature 25°C. A water temperature rise of 8-10°C must be expected.

For motors with low loads or a low incoming water temperature, a temperature regulator is recommended to avoid condensation in the cooling air circuit and to minimize water consumption.

A constant speed fan circulates the internal cooling air. A polyamide filter is provided for carbon dust.

Air/air (IC666):

Air/air heat exchangers are recommended where water is not available for cooling purposes.
The output of a motor with air/air exchanger will be approximately 20% lower compared to cooling forms IC06/17/37/86W.

Position: On top of the motor as standard.

Two constant speed fans at top of the heat exchanger to provide air circulation for the outer and inner circuits.

Detailed heat exchanger information on request.

Application data

Fan blower motor data

DMP	U_{net} , f_{net} (Y)	I_Y (A)	U_{net}, f_{net} (Δ)	$I_Δ$ (A)	P_{fan} (kW)	W_{fan} (kg)
112	3x380-420 V. 50 Hz	0.70	3x220-240 V. 50 Hz	1.20	0.25	7
132-2M	3x440-480 V. 60 Hz	0.70	3x250-280 V. 60 Hz	1.20	0.30	
132-4S/M/L	3x500 V. 50 Hz	0.60	-	-	0.25	
132-4LB	3x380-420 V. 50 Hz	2.10	3x220-240 V. 50 Hz	3.60	0.75	16
160-4S/M/L	3x440-480 V. 60 Hz	2.00	3x250-280 V. 60 Hz	3.50	0.90	
	3x500 V. 50 Hz	1.40	-	-	0.75	
160-4LB	3x380-420 V. 50 Hz	2.90	3x220-240 V. 50 Hz	5.00	1.30	18
	3x440-480 V. 60 Hz	2.80	3x250-280 V. 60 Hz	5.00	1.50	
	3x500 V. 50 Hz	2.30	-	-	1.30	
180-4A/B/C/D	3x380-420 V. 50 Hz	3.00	3x220-240 V. 50 Hz	5.20	1.50	18
	3x440-480 V. 60 Hz	2.90	3x250-280 V. 60 Hz	5.00	1.75	
	3x500 V. 50 Hz	2.70	-	-	1.50	
180-4E/F	3x380-420 V. 50 Hz	5.80	3x220-240 V. 50 Hz	10.0	2.70	20
	3x440-480 V. 60 Hz	5.80	3x250-280 V. 60 Hz	10.0	3.00	
	3x500 V. 50 Hz	4.60	-	-	2.70	

U_{net} , f_{net} (Y)	Supply voltage, frequency Y
I_Y	Current Y
P_{fan}	Power
U_{net} , f_{net} (Δ)	Supply voltage, frequency Δ
$I_Δ$	Current Δ
W_{fan}	Total fan weight

Bearings

	Drive end		Non-drive end
DMP	Ball bearing	Roller bearing	
112	6308-C3	NU 308 ECP	6208-2RS 1-HT-C3
132	6309-C3	NU 309 ECP	6307-2RS 1-HT-C3
160	6310-C3	NU 310 ECP	6309-2RS 1-HT-C3
180-4A/B/C/D/E	6215-C3	NU 2215-ECP	6312-2RS1-HT-C3
180-4F	6315-C3	NU 315 ECP	6312-2RS1-HT-C3

Output data

Select motor frame size against voltage, output and speed. For intermediate output, take the nearest higher output listed under the next frame size. For intermediate speed take the next lower speed listed within the output required. The output lists are based on:

- **Cooling forms IC06/IC17/IC37/IC86W.**
- **The armature circuit resistance listed is for duty warm condition.**
- **The inductance listed is for the armature circuit.**
- **Motor supply from 3-phase fully controlled thyristor.**

Constant power/constant torque
The full field or base speed and maximum speed through field control with constant output is listed for each winding.
Armature voltage: For -10% the output and speed are proportional to the voltage.
For higher shunt field ranges, please refer to sales offices.
With a combination of armature voltage/shunt control greater constant power ranges can be obtained.

Duty cycles
Ratings: All outputs are duty type S 1 and motors are fed from a 3-phase fully controlled thyristor where the form factor is 1.05.

Field windings
All motors in the output lists have separate excitation, the field being shunt wound.
Compound winding can be supplied on request.
Motors with compound winding may have nominal data which differ from those shown in the output lists.

Armature voltage
For other armature voltages, please contact our sales offices.

Ambient temperature and altitude
Outputs in this catalogue are based on max. 40°C ambient temperature and motor located at max. 1000 metres above sea level.
If ambient temperature and/or altitude is higher, contact our sales office.

NEMA output data
NEMA catalogue available on request.

Stock motors
Motors indicated with the sign* in the output data lists are available from stock and can be delivered promptly.
The stock motors are available according to following specification. Motor fan, standard tachogenerator and coupling can be fitted on request.

- **IM 1001, IP 23, IC 17, designed for cooling air inlet at either D or N-end (when possible, cooling air inlet should always be at the D-end of DMP motors).**
- **Cylindrical roller bearing on D-end.**
- **Terminal box on right hand side (facing D-end).**
- **Balanced with half key.**
- **Thermostats NC.**
- **PTC thermistors.**
- **Name plate and documents in English.**
- **Rating data as standard motors but field weakening is only allowed up to 25 % overspeed for stock motors.**
- **Stock motors have a parallel /serial connection suitable for an excitation voltage of 170-180-190/340-360-380 V.**
- **Stock motors have reinforced impregnation.**

Output data

Technical data

	n_{max}	n_0	J	P_f	U_{amax}	U_f	V_{cool}	Pr	$W_{(foot)}$	$W_{(flange)}$
n_{max}	Max mechanical speed									
n_0	Min speed at constant torque									
J	Moment of inertia									
P_f	Excitation power									
U_{amax}	Max rated voltage									
U_f	Excitation voltage									
V_{cool}	Cooling air flow									
Pr	Static pressure drop (IC17, IC37)									
$W_{(foot)}$	Weight: foot mounting *									
$W_{(flange)}$	Weight: flange mounting *									
	*excl. accessories									

Cat. Nr FR 157…	U_a (V): 400	420	440	470	520	550	P (kW)	I (A)	T (Nm)	η (%)	n_2 min^{-1}	R_A (115°C) (Ω)	L_A (0Hz) (mH)
			n_b (min^{-1})										
n_b	Base speed												
U_a	Armature voltage												
P	Mechanical power												
I	Armature current												
T	Torque												
η	Efficiency IEC												
n_2	Max electrical speed												
R_A	Armature resistance												
L_A	Armature inductance												

Data subject to change without prior notice.