

# DCmind Brushless motor

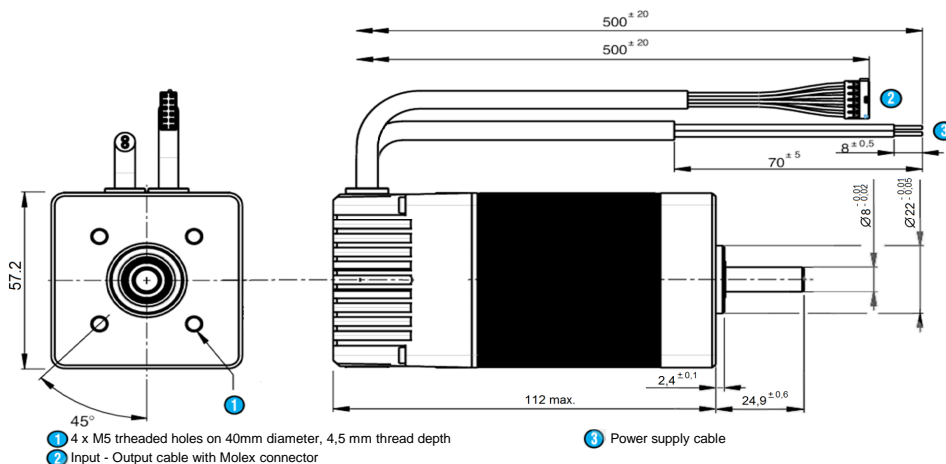
## Data sheet

80 280 013

Series



80 280 TNI21



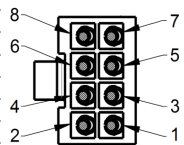
- 1 4 x M5 threaded holes on 40mm diameter, 4,5 mm thread depth  
2 Input - Output cable with Molex connector  
3 Power supply cable

## General characteristics

Power supply		
Direct current voltage supply		✓
Nominal voltage range	Vdc	12 -> 32
Max. current	A	17

Motor characteristics (1)		12 Vdc	24 Vdc	32 Vdc	
<b>At no load</b>					
Max. output speed	rpm	2 000	3 950	3 950	
Current at the max output speed	A	0,5	0,7	0,6	
Standby current	A	0,08	0,085	0,09	+10%
<b>At nominal</b>					
Speed	rpm	1 400	3 250	3 900	+10%
Torque (2)	mNm	490	390	355	
Output power	W	72	133	145	+10%
Current	A	8,5	6,9	6	
Efficiency	%	70	80	82	
<b>At max. output power</b>					
Speed	rpm	800	1 900	2 400	
Torque	mNm	1 000	1 000	1 000	
Output power	W	84	199	251	+10%
Current	A	15	15	12,5	
Efficiency	%	46	57	63	
<b>At peak torque</b>					
Speed	rpm	800	1 900	2 400	+10%
Torque	mNm	1 000	1 000	1 000	
Output power	W	84	199	251	
Current	A	15	15	12,5	+10%
<b>Others</b>					
Life (3)	h		20 000		
Rotor inertia	gcm <sup>2</sup>		120		
Thermal Resistance	°/W		2,4		
Thermal time constant	mn		30		
Rotor pole number			8		
Cogging torque	mNm		33		
Weight	kg		1,44		
Noise level	dBA		50		

Connecting	
<b>Input - Output cable</b>	With Molex connector ref: 43025-0800
Output cable, UL style 2464 80°C 300V - 8 wires AWG24	
Input: ON/OFF	1 - Green
Input: Direction	2 - Yellow
Input: Torque limit	3 - Blue
Input: Speed	4 - Orange
0V	5 - Black
Output: Pulse	6 - Brown
Output: Torque limit reached	7 - Purple
Output: Direction	8 - Red
<b>Power supply cable</b>	
Cable UL style 2517 105°C 300V - 2 wires AWG16 - 500 mm	
+ 12Vdc -> + 32 Vdc	Brown
0V	Blue



Electronique	
<b>Type</b>	TNI21
Electronique Intégrée dans le moteur	✓
Codeur intégré	24 pulses per turn
<b>Commande</b>	
Speed	PWM
Torque	PWM
4 quadrants - low braking	✓
4 quadrants with regenerative energy	✓
Type "Trapezoidal"	✓
<b>Protections</b>	
Court-circuit des sorties	✓
Inversion des entrées	✓
Sous-tension	Vdc < 10
Sur-tension brève	Vdc > 36
Arrêt température électronique excessive (2)	°C 110
Température électronique autorisant un redémarrage	°C 90

Caractéristiques générales	
Output shaft with ball bearings	✓
Max. Radial force (12mm from front face)	N 40
Max. axial force(4)	N 20
Temperature range	CEI60068-2-1/2 °C -30 -> +70
Storage temperature	°C -40 -> +80
Dielectric	1min 2mA 50Hz CEI60335 Vdc
Motor insulation	CEI60085 class B
Salt spray	CEI60068-2-58 severity 48h
Degree of protection (output shaft not included)	CEI60529 IP 65M
<b>EMC</b>	
Electrostatic Discharge	CEI61000-4-2 level 3
Electrical fast transient / burst test	CEI61000-4-4 level 3
Surge test	CEI61000-4-5 level 1
Radiated emission	EN55022 class B
<b>Approvals</b>	
ROHS	2002/95/CE ✓
EC	✓

Notes	
Values without tolerances are average production values.	
Added informations are in "TNI21 manual and security" on www.crouzet.com	
Motor not protected in case of reversed power voltage	
(1) Cold motor, 20 ° C ambient temperature, full speed	
(2) Max torque for continuous operation at 20 ° C, decrease this value for higher ambient temperature	
(3) Continuously rated torque, zero radial and axial loads	
(4) Pinion or pulley fitting are done at the Crouzet factory, before final assembly.	

Specifications subject to change without notice. Updated July 8, 2013.

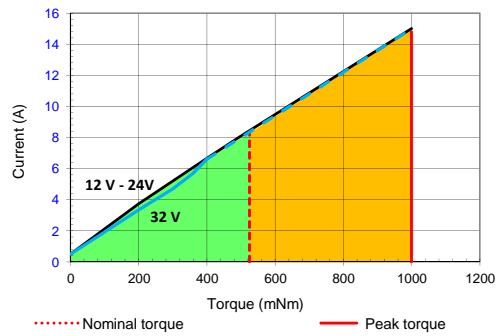
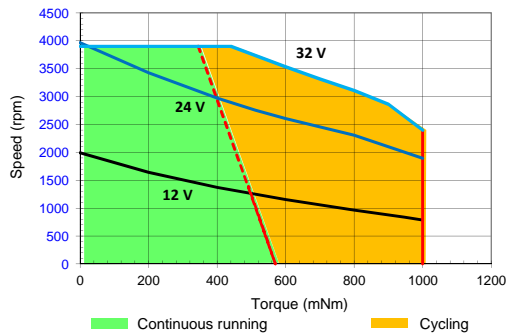
## Drive electrical datas

Max. product characteristics				
Parameters				
Max. voltage supply "Vcc"	Vdc			39
Max. current "Icc max"	A			20
Max. voltage on inputs "Vin max"	Vdc			39
Max. voltage on outputs "Vout max"	Vdc			39
Max. output current "Iout max"	mA			50
Running datas				
Parameters				
Voltage supply "Vcc"	Vdc	Min	Typical	Max
Current "Icc"	A	-	10	17
Standby power "Wo"	W	-	2	-
Vitesse réglable de	rpm	120	-	4000
Couple moteur réglable de	mNm	40	-	1 000
Couple de maintien réglable de	mNm	40	-	310

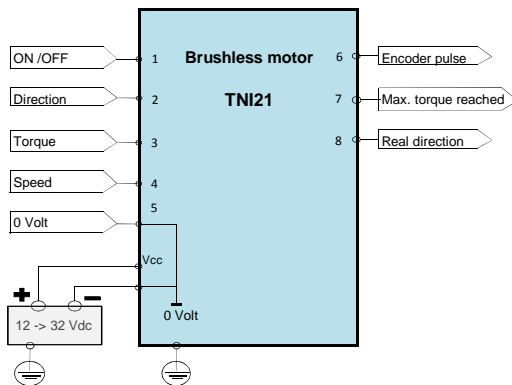
Input datas				
Parameters				
Impedance - Input 1, 2	kΩ	Min	Typical	Max
Impedance - Input 3, 4	kΩ	-	57	-
Low level - Input 1, 2	Vdc	-	69	-
High level - Input 1, 2	Vdc	0	-	2
Low level - Input 3, 4	Vdc	4	-	39
High level - Input 3, 4	Vdc	0	-	2
Fréquence des PWM	Hz	7,5	-	39
		100	-	2000
Output datas				
Parameters				
Low level Outputs	Vdc	Min	Typical	Max
with "pull down resistor" = 4,7KΩ and Vcc = 24 V		0	-	0,2
High level Outputs	Vdc	Vcc - 0,5	-	Vcc
with "pull down resistor" = 4,7KΩ and Vcc = 24 V				

= voltage supply added from eventual rejeptive voltage

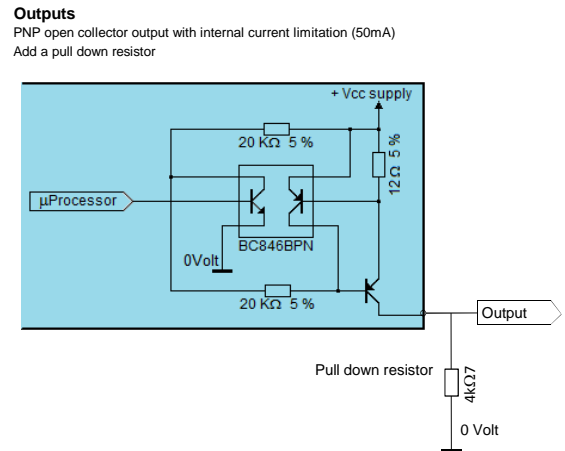
## Speed-torque and current-torque curves



## Wiring

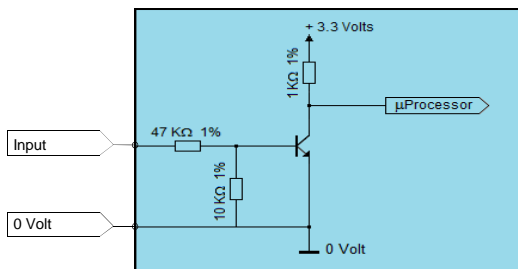


## Output equivalent circuit



## Inputs: ON/OFF and Direction

### Inputs: ON/OFF and Direction



## Inputs: Torque and Speed

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