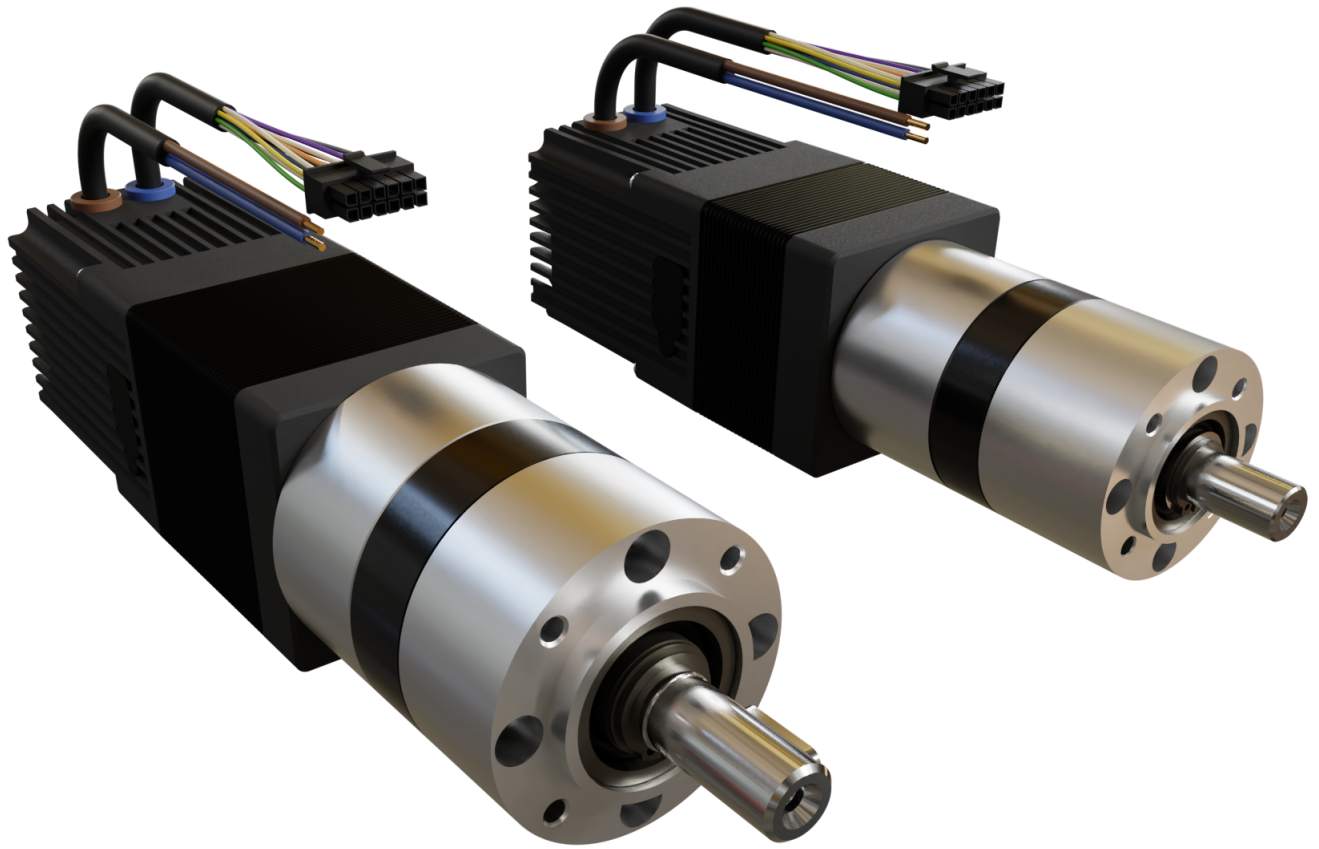


Crouzet DC geared DCmind brushless motors

80140 / 80180 / 80280 - TNi21 + PM52LN / PM62LN



Gearboxes for DCmind brushless range

→ output up to 50 Nm

- DC brushless motor with integrated electronics and planetary gearbox, very silent versions
- Shafts on ball bearings
- Long service life

Article key						
801x0-TNi21x	24VDC	AA	PMxxLN	1	LF	i
Motor type	Voltage	Rearshaft	Gear type	Number of stages	Flange type	Reduction ratio
80140-TNi21A (0-10V)	12VDC	- : none	PM52LN	1 : 1 traps	LF : Large	...:1
80180-TNi21A (0-10V)	24VDC (1)	AA : rearshaft (2)	PM62LN	2 : 2 traps	SF : Small (3)	
80280-TNi21A (0-10V)	32VDC			3 : 3 traps		
80140-TNi21D (PWM)						
80180-TNi21D (PWM)						
80280-TNi21D (PWM)						

Comments

- (1) This is the nominal voltage. Can also be powered on 12 ~ 32VDC
- (2) Only for projects. Standard IP54 level. Encoder and brake options are IP20
- (3) Possible with the P52/PM52 and P81/PM81 gear type. The version with straight-cut gears.
- The TNi21 is available in a analog (A) and digital (D) version.

General specifications	PM52LN			PM62LN		
	1	2	3	1	2	3
Number of stages						
Maximum permitted torque (Nm)	4	12	25	8	25	50
Efficiency	0,8	0,75	0,7	0,8	0,75	0,7
Max. backlash in DEG (°)	1,1	0,75	0,8	0,95	0,7	0,75
Radial dynamic load* (N)	200	320	450	240	360	520
Axial dynamic load (N)	60	100	150	70	100	150
Operating temperature	-30 °C ~ +120 °C			-30 °C ~ +120 °C		

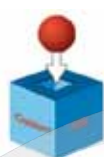
Comments

*Mid output shaft

To maintain a very low noise level, the gears in the first stage are helical-cut and made from a plastic material.

Optional: the gears in the first stage made out of steel, helical-cut.

Product adaptations, contact us



- Special shafts
- Other reduction ratios
- Other fixing holes
- Special mounting flange

Configurations for DCmind brushless range

Motor series: 80140 TNi21A / D		Planetary gearbox series: PM52LN																			
Number of stages		1			2				3												
Reduction ratios i rounded (...:1)		4	7	9	14	19	28	37	45	50	58	81	91	98	128	137	166	176	232	302	393
12VDC	Rated speed (rpm)	521	290	220	140	100	67,7	50,7	43	38	33	23	21	19	15	14	11	11	8	6	5
	Rated torque (Nm)	0,6	1	1,3	2	2,7	4,1	5,4	6,5	6,8	7,8	11	12,3	13,2	17,3	18,5	22,5	23,7	31	41	53
24VDC*	Rated speed (rpm)	1096	611	463	296	211	143	107	90	80	69	49	44	41	31	29	24	23	17	13	10
	Rated torque (Nm)	0,5	1	1,3	1,9	2,6	3,9	5,2	6,2	6,5	7,5	10,4	11,8	12,6	16,5	17,6	21,4	22,6	30	39	51
32VDC	Rated speed (rpm)	1096	611	463	296	211	143	107	90	80	69	49	44	41	31	29	24	23	17	13	10
	Rated torque (Nm)	0,5	0,9	1,2	1,8	2,5	3,7	5	6	6,2	7,2	10,1	11,4	12,2	15,9	17,1	20,7	21,9	29	38	49
Flange types		LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF

Motor series: 80180 TNi21A / D		Planetary gearbox series: PM52LN																			
Number of stages		1			2				3												
Reduction ratios i rounded (...:1)		4	7	9	14	19	28	37	45	50	58	81	91	98	128	137	166	176	232	302	393
12VDC	Rated speed (rpm)	342	191	145	92	66	45	33	28	25	22	15	14	13	10	9	8	7	5	4	3
	Rated torque (Nm)	1	1,8	2,3	3,5	4,8	7,2	9,5	11,4	11,9	13,8	19,3	21,7	23,3	30	33	40	42	55	72	94
24VDC*	Rated speed (rpm)	918	511	388	248	177	119	89	75	67	58	41	37	34	26	24	20	19	14	11	9
	Rated torque (Nm)	0,8	1,5	2	2,9	4	5,3	7	9,6	10	10,2	16,2	18,2	19,6	25,5	27	33	35	46	60	78
32VDC	Rated speed (rpm)	1068	595	452	288	206	139	104	87	78	67	48	43	40	31	28	23	22	17	13	10
	Rated torque (Nm)	0,7	1,3	1,7	2,5	3,5	5,3	7	8,4	8,8	10,2	14,2	16	17,2	22,4	24,0	29	31	41	53	69
Flange types		LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF

Motor series: 80280 TNi21A / D		Planetary gearbox series: PM52LN																			
Number of stages		1			2				3												
Reduction ratios i rounded (...:1)		4	7	9	14	19	28	37	45	50	58	81	91	98	128	137	166	176	232	302	393
12VDC	Rated speed (rpm)	384	214	162	103	74	50	37	31	28	24	17	15	14	11	10	8	8	6	5	4
	Rated torque (Nm)	1	2,6	3,4	5	7	10,3	13,8	16,4	17,2	19,9	28	31	34	44	47	57	60	79	103	135
24VDC*	Rated speed (rpm)	890	496	377	240	172	116	87	73	65	56	40	36	33	25	24	20	18	14	11	8
	Rated torque (Nm)	1,1	2,0	2,7	4	5,5	8,2	11	13,1	13,7	15,8	22,1	24,9	27	35	37	45	48	63	82	107
32VDC	Rated speed (rpm)	1068	595	452	288	206	139	104	87	78	67	48	43	40	31	28	23	22	17	13	10
	Rated torque (Nm)	1	1,9	2,5	3,6	5	7,5	10	11,9	12,5	14,4	20,2	22,7	24	32	34	41	44	58	75	98
Flange types		LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF
Comments																					

Please involve us in your innovation, to experience the possibilities.

Highlighted in RED: please note max. continues torque. Motor should be limited on torque (current).

* This is the nominal voltage. Can also be powered on 12 and 32VDC

In addition to the listed ratios, the following are also available on order: 5, 16, 17, 23, 25, 34, 67, 70, 102, 106, 115, 123, 128, 145, 176, 192:1



Configurations for DCmind brushless range

Motor series: 80140 TNi21 A / D

Number of stages

Reduction ratios i rounded (...:1)

12VDC Rated speed (rpm)

24VDC* Rated speed (rpm)

32VDC Rated speed (rpm)

Rated torque (Nm)

Flange types

Planetary gearbox series: PM62LN

1 2 3

4 7 9 14 19 28 37 45 50 58 81 91 98 128 137 166 176 232 302 393

521 290 220 140 100 68 51 43 38 33 23 21 19 15 14 11 11 8 6 5

1096 611 463 296 211 143 107 90 80 69 49 44 41 31 29 24 23 17 13 10

1096 611 463 296 211 143 107 90 80 69 49 44 41 31 29 24 23 17 13 10

0,6 1,0 1,3 2,0 2,7 4,1 5,4 6,5 6,8 7,8 11,0 12,3 13,2 17,3 18,5 22,5 23,7 31,3 40,8 53

LF LF

Motor series: 80180 TNi21A / D

Number of stages

Reduction ratios i rounded (...:1)

12VDC Rated speed (rpm)

24VDC* Rated speed (rpm)

32VDC Rated speed (rpm)

Rated torque (Nm)

Flange types

Planetary gearbox series: PM62LN

1 2 3

4 7 9 14 19 28 37 45 50 58 81 91 98 128 137 166 176 232 302 393

342 191 145 92 66 45 33 28 25 22 15 14 13 10 9 8 7 5 4 3

918 511 388 248 177 119 89 75 67 58 41 37 34 26 24 20 19 14 11 9

1068 595 452 288 206 139 104 87 78 67 48 43 40 31 28 23 22 17 13 10

1 1,8 2,3 3,5 5 7,2 9,5 11,4 11,9 13,8 19,3 21,7 23 30,4 32,6 39,6 41,8 55 72 94

LF LF

Motor series: 80280 TNi21A / D

Number of stages

Reduction ratios i rounded (...:1)

12VDC Rated speed (rpm)

Rated torque (Nm)

24VDC* Rated speed (rpm)

Rated torque (Nm)

32VDC Rated speed (rpm)

Rated torque (Nm)

Flange types

Comments

Planetary gearbox series: PM62LN

1 2 3

4 7 9 14 19 28 37 45 50 58 81 91 98 128 137 166 176 232 302 393

384 214 162 103 74 50 37 31 28 24 17 15 14 11 10 8 8 6 5 4

1 2,6 3,4 5 7,0 10,3 13,8 16 17,2 19,9 27,8 31,3 34 44 47 57 60 79 103 135

890 496 377 240 172 116 87 73 65 56 40 36 33 25 24 20 18 14 11 8

1,1 2 2,7 4,0 6 8,2 11,0 13,1 13,7 15,8 22,1 24,9 26,8 35 37 45 48 63 82 107

1068 595 452 288 206 139 104 87 78 67 48 43 40 31 28 23 22 17 13 10

1,0 1,9 2,5 3,6 5,0 7,5 10,0 11,9 12,5 14,4 20,2 22,7 24,4 31,7 34,0 41 44 58 75 98

LF LF

Please involve us in your innovation, to experience the possibilities.

Highlighted in RED: please note max. continues torque. Motor should be limited on torque (current).

* This is the nominal voltage. Can also be powered on 12 and 32VDC

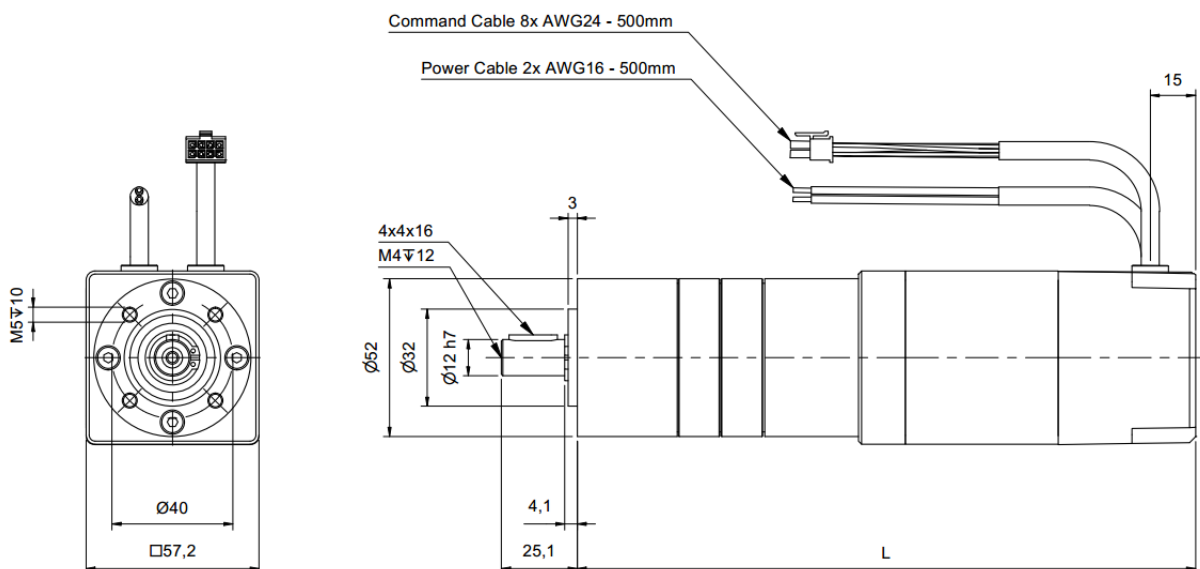
In addition to the listed ratios, the following are also available on order: 5, 16, 17, 23, 25, 34, 67, 70, 102, 106, 115, 123, 128, 145, 176, 192:1



Configurations for DCmind brushless range

Dimensions

80xx0-TNi21_PM52LN -x-LF



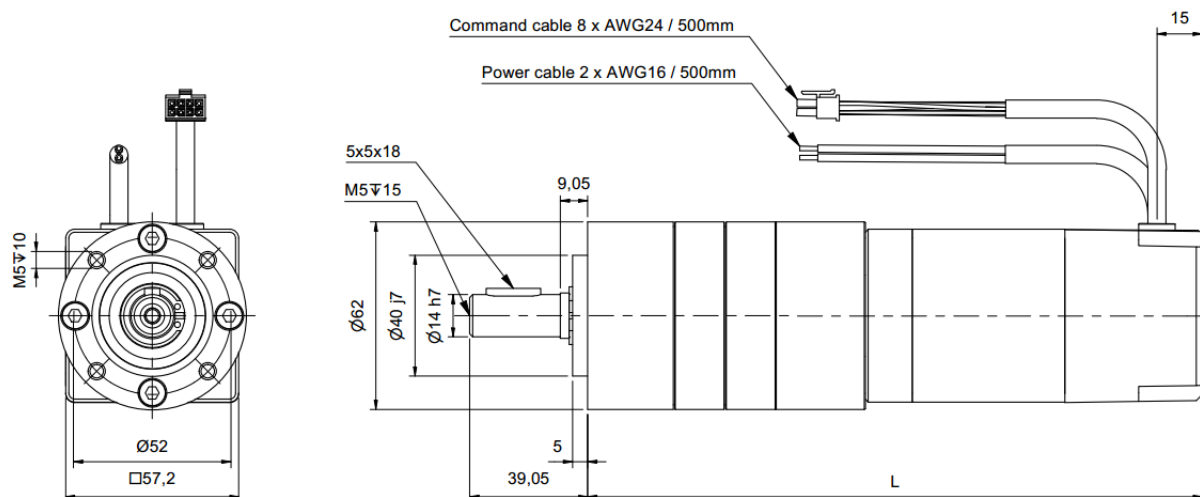
80140-TNi21_PM52LN -x-LF

L 1 stage:	170,9 mm
L 2 stage:	185,1 mm
L 3 stage:	199,2 mm

80180-80280-TNi21_PM52LN -x-LF

L 1 stage:	190,9 mm
L 2 stage:	205,0 mm
L 3 stage:	219,2 mm

80xx0-TNi21_PM62LN -x-LF



80140-TNi21_PM62LN -x-LF

L 1 stage:	167,0 mm
L 2 stage:	184,0 mm
L 3 stage:	201,0 mm

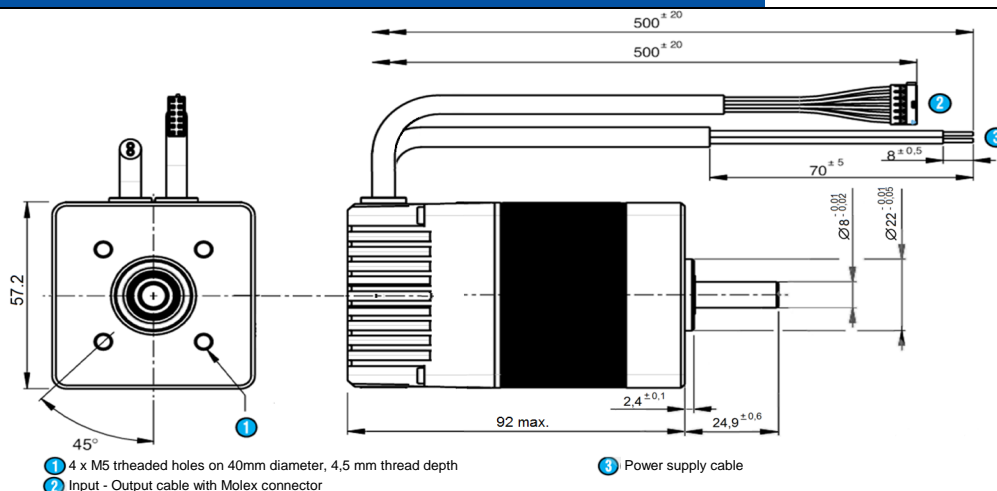
80180-80280-TNi21_PM62LN -x-LF

L 1 stage:	187,0 mm
L 2 stage:	204,0 mm
L 3 stage:	221,0 mm

DCmind Brushless motor Data sheet

Series

80 140 TNI21A

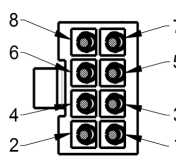


- 1 4 x M5 threaded holes on 40mm diameter, 4,5 mm thread depth
- 2 Input - Output cable with Molex connector
- 3 Power supply cable

General characteristics

Power supply		
Direct current voltage supply		✓
Nominal voltage range	Vdc	12 -> 32
Max. current	A	10

Motor characteristics (1)					
		12 Vdc	24 Vdc	32 Vdc	
At no load					
Max. output speed	rpm	2 900	4 000	4 000	
Current at the max output speed	A	0,34	0,29	0,27	
Standby current	A	0,08	0,085	0,09	+-10%
At nominal					
Speed	rpm	1 900	4 000	4 000	+-10%
Torque (2)	mNm	193	184	178	
Output power	W	38	77	75	+-10%
Current	A	5,2	4,4	3,2	
Efficiency	%	62	74	73	
At max. output power					
Speed	rpm	1 600	3 050	4 000	
Torque	mNm	250	358	358	
Output power	W	42	114	150	+-10%
Current	A	6,5	10	10	
Efficiency	%	53	48	47	
At peak torque					
Speed	rpm	930	3 050	4 000	
Torque	mNm	358	358	358	
Output power	W	35	114	150	
Current	A	10	10	10	+-10%
Others					
Life (3)	h		20 000		
Rotor inertia	gcm ²		75		
Thermal Resistance	°W		3		
Thermal time constant	mn		20		
Rotor pole number			4		
Cogging torque	mNm		11		
Weight	kg		0,95		
Noise level	dBA		40		

Connecting	
Input - Output cable	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
	
Power supply cable	
Cable UL style 2517 105°C 300V	- 2 wires AWG16 - 500 mm
+ 12Vdc -> + 32 Vdc	Brown
0V	Blue

Drive	
Type	TNI21
Built-in drive	✓
Internal encoder	12 pulses per turn
Control	
Speed	0/10 V
Torque	0/10 V
4 quadrants - low braking	✓
4 quadrants with regenerative energy	
Type "Trapezoidal"	✓
Security	
Short-circuit of outputs	✓
Input inverted	✓
Low voltage	Vdc < 10
Short high voltage	Vdc > 36
Stop at max internal drive temperature (2)	°C 110
Drive temperature allowing to restart	°C 90

Generic parameters			
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	E
Salt spray	CEI60068-2-58	severity	48h
Degree of protection (output shaft not included)	CEI60529	IP	54M
EMC			
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
Approvals			
ROHS	2002/95/CE	✓	
EC		✓	

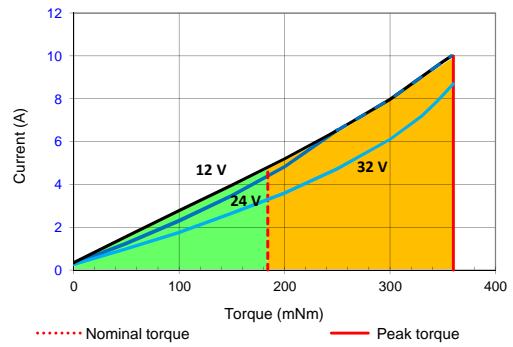
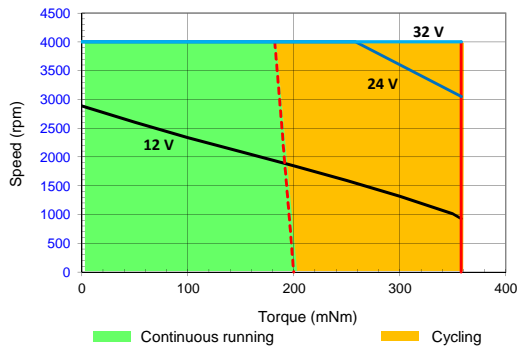
Notes	
Values without tolerances are average production values.	
Added informations are in "TNI21 manual and security" on www.crouzet.com	
Motor not protected in case of reversed power voltage	
(1)	Cold motor, 20 ° C ambient temperature, full speed
(2)	Max torque for continuous operation at 20 ° C, decrease 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.

Drive electrical datas

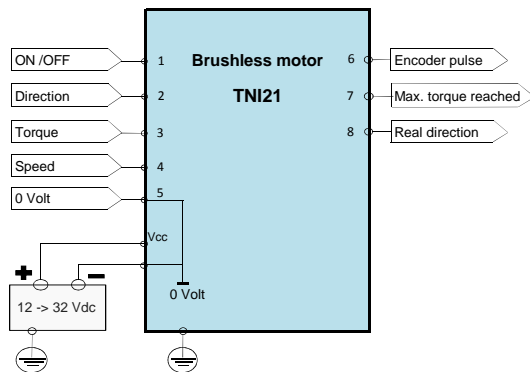
Max. product characteristics				
Parameters		Min	Typical	Max
Max. voltage supply "Vcc"	Vdc			39
Max. current "Icc max"	A			12
Max. voltage on inputs "Vin max"	Vdc			39
Max. voltage on outputs "Vout max"	Vdc			39
Max. output current "Iout max"	mA			50
Running datas				
Parameters		Min	Typical	Max
Voltage supply "Vcc"	Vdc	10	12/24/32	36
Current "Icc"	A	-	6	12
Standby power "Wo"	W	-	2	-
Speed setting	rpm	120	-	4000
Torque setting	mNm	35	-	360
Holding torque setting	mNm	35	-	150

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



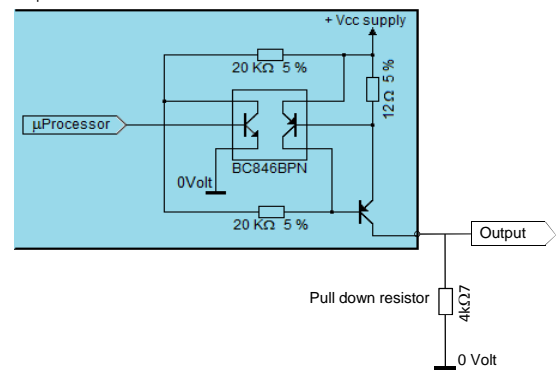
Wiring



Output equivalent circuit

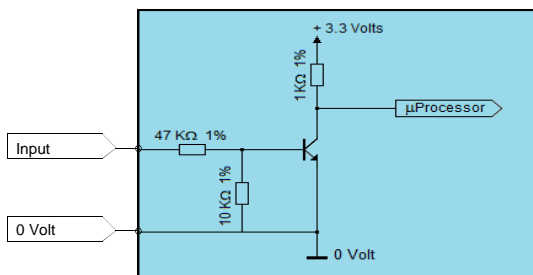
Outputs

PNP open collector output with internal current limitation (50mA)
Add a pull down resistor



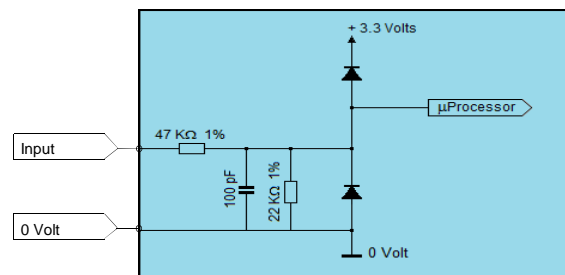
Inputs: ON/OFF and Direction

Inputs: ON/OFF and Direction



Inputs: Torque and Speed

Inputs: Torque and Speed

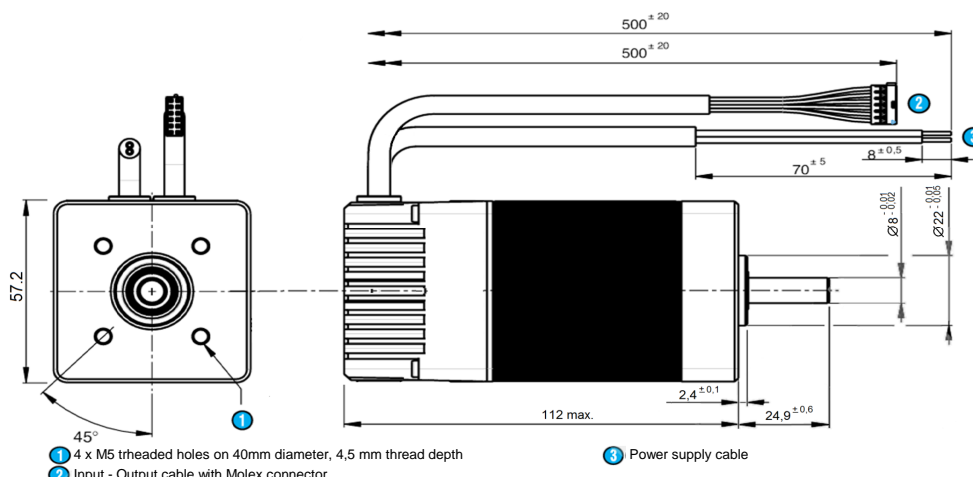


DCmind Brushless motor

Data sheet

Series

80 180 TNI21A



General characteristics

Power supply		
Direct current voltage supply		✓
Nominal voltage range	Vdc	12 -> 32
Max. current	A	14

Motor characteristics (1)					
		12 Vdc	24 Vdc	32 Vdc	
At no load					
Max. output speed	rpm	2 100	4 000	3 950	
Current at the max output speed	A	0,35	0,39	0,34	
Standby current	A	0,08	0,085	0,09	+/-10%
At nominal					
Speed	rpm	1 250	3 350	3 900	+/-10%
Torque (2)	mNm	340	285	250	
Output power	W	45	100	102	+/-10%
Current	A	6,7	5,4	4	
Efficiency	%	55	78	79	
At max. output power					
Speed	rpm	1 040	2 160	3 100	
Torque	mNm	400	600	650	
Output power	W	44	136	211	+/-10%
Current	A	7,2	11	12	
Efficiency	%	50	51	55	
At peak torque					
Speed	rpm	220	1 820	2 850	
Torque	mNm	700	700	700	
Output power	W	16	133	209	
Current	A	13	13	13	+/-10%
Others					
Life (3)	h		20 000		
Rotor inertia	gcm ²		115		
Thermal Resistance	°W		2,7		
Thermal time constant	mn		30		
Rotor pole number			4		
Cogging torque	mNm		14		
Weight	kg		1,34		
Noise level	dBA		40		

Connecting

Input - Output cable	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

Power supply cable	
Cable UL style 2517 105°C 300V - 2 wires AWG16 - 500 mm	
+ 12Vdc -> + 32 Vdc	Brown
0V	Blue

Drive	
Type	TNI21
Built-in drive	✓
Internal encoder	12 pulses per turn
Control	
Speed	0/10 V
Torque	0/10 V
4 quadrants - low braking	✓
4 quadrants with regenerative energy	
Type "Trapezoidal"	✓
Security	
Short-circuit of outputs	✓
Input inverted	✓
Low voltage	Vdc < 10
Short high voltage	Vdc > 36
Stop at max internal drive temperature (2)	°C 110
Drive temperature allowing to restart	°C 90

Generic parameters			
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	E
Salt spray	CEI60068-2-58	severity	48h
Degree of protection (output shaft not included)	CEI60529	IP	54M
EMC			
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
Approvals			
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

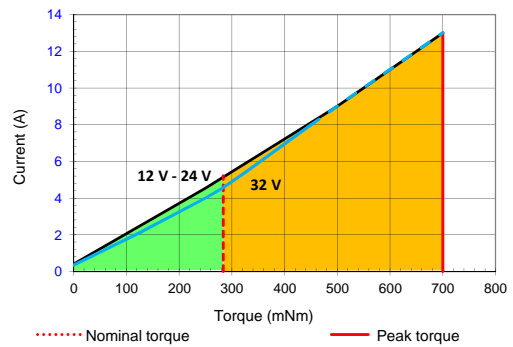
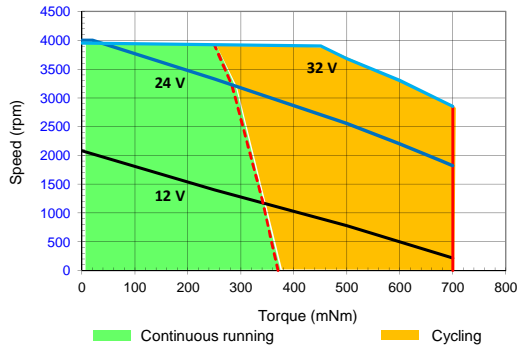
- Motor not protected in case of reversed power voltage
- (1) Cold motor, 20 ° C ambient temperature, full speed
- (2) Max torque for continuous operation at 20 ° C, decrease this value for higher ambient temperature
- (3) Continuously rated torque, zero radial and axial loads
- (4) Pinion or pulley fitting are done at the Crouzet factory, before final assembly.

Drive electrical datas

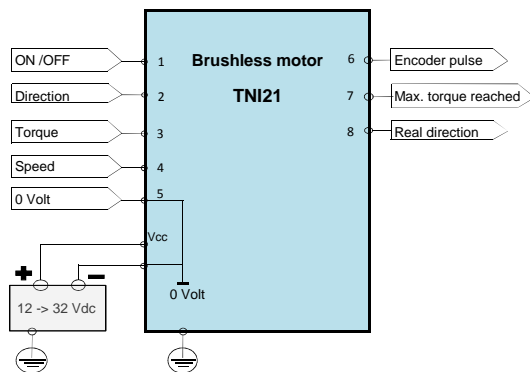
Max. product characteristics			
Parameters			
Max. voltage supply "Vcc"	Vdc		39
Max. current "Icc max"	A		15
Max. voltage on inputs "Vin max"	Vdc		39
Max. voltage on outputs "Vout max"	Vdc		39
Max. output current "Iout max"	mA		50
Running datas			
Parameters			
Voltage supply "Vcc"	Vdc	Min	Typical
		10	12/24/32
Current "Icc"	A	-	6
Standby power "Wo"	W	-	2
Vitesse réglable de	rpm	120	-
Couple moteur réglable de	mNm	30	-
Couple de maintien réglable de	mNm	30	-
		700	230

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

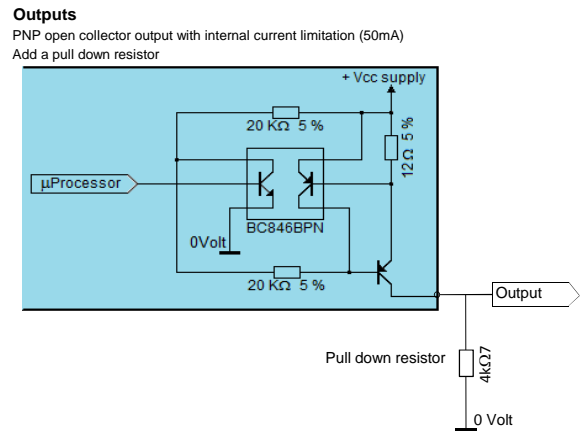
Speed-torque and current-torque curves



Wiring

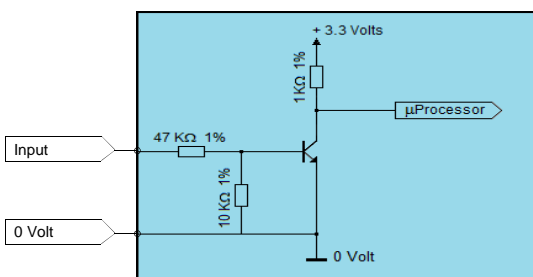


Output equivalent circuit



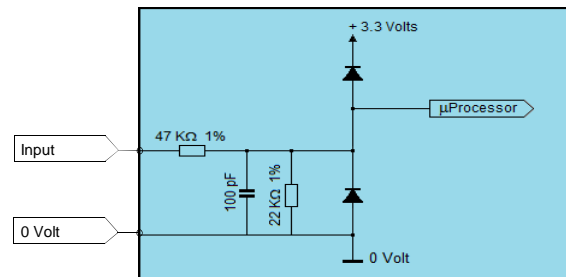
Inputs: ON/OFF and Direction

Inputs: ON/OFF and Direction



Inputs: Torque and Speed

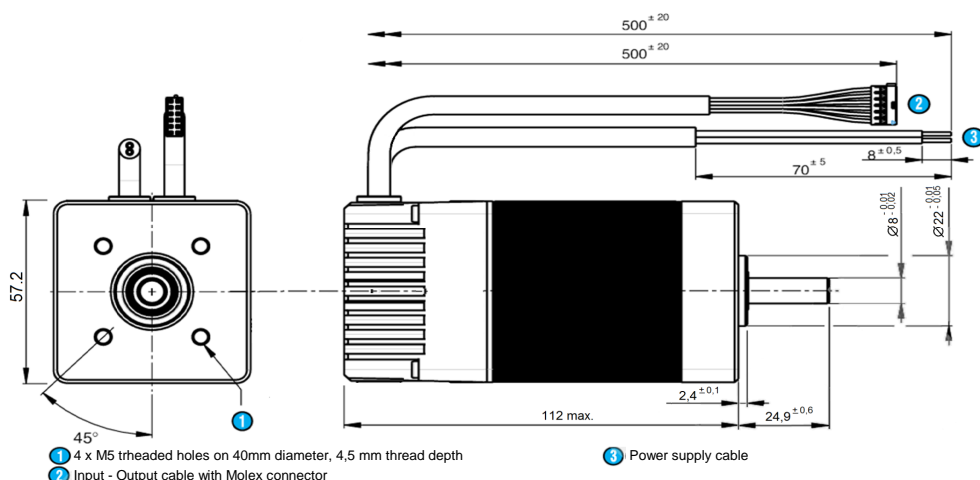
Inputs: Torque and Speed



DCmind Brushless motor Data sheet

Series

80 280 TNI21A

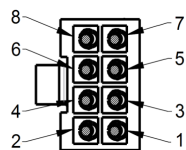


General characteristics

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	
At no load					
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%
At nominal					
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	
At max. output power					
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	
At peak torque					
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%
Others					
Life (3)	h		20 000		
Rotor inertia	gcm ²		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	
Input - Output cable	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
Power supply cable	
Cable UL style 2517 105°C 300V - 2 wires AWG16 - 500 mm	
+ 12Vdc -> + 32 Vdc	Brown
0V	Blue



Electronique	
Type	TNI21
Electronique Intégrée dans le moteur	✓
Codeur intégré	24 pulses per turn
Commande	
Speed	0/10 V
Torque	0/10 V
4 quadrants - low braking	✓
4 quadrants with regenerative energy	
Type" Trapezoidal"	✓
Protections	
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	54M
EMC			
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
Approvals			
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.	

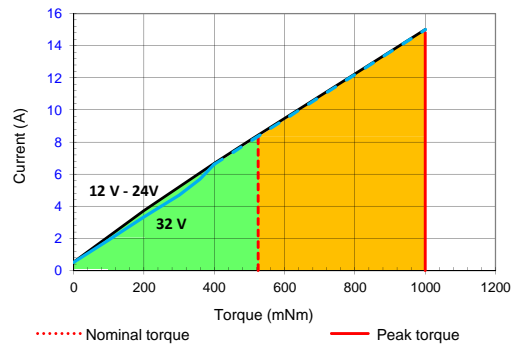
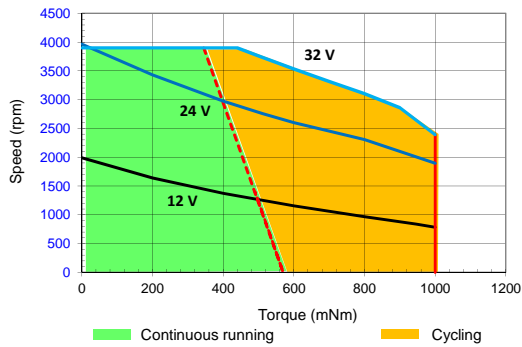
Specifications subject to change without notice. Updated July 8, 2013.

Drive electrical datas

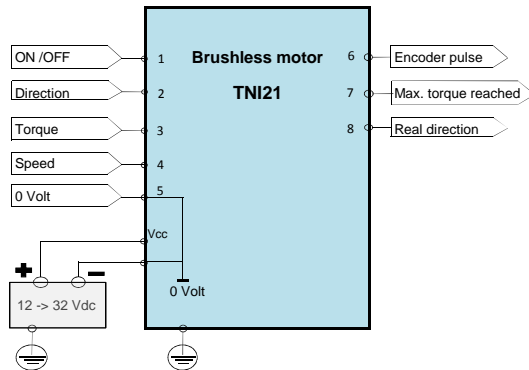
Max. product characteristics			
Parameters			
Max. voltage supply "Vcc"	Vdc		39
Max. current "Icc max"	A		20
Max. voltage on inputs "Vin max"	Vdc		39
Max. voltage on outputs "Vout max"	Vdc		39
Max. output current "Iout max"	mA		50
Running datas			
Parameters			
Voltage supply "Vcc"	Vdc	Min	Typical
		10	12/24/32
Current "Icc"	A	-	10
Standby power "Wo"	W	-	2
Vitesse réglable de	rpm	120	-
Couple moteur réglable de	mNm	40	-
Couple de maintien réglable de	mNm	40	-

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

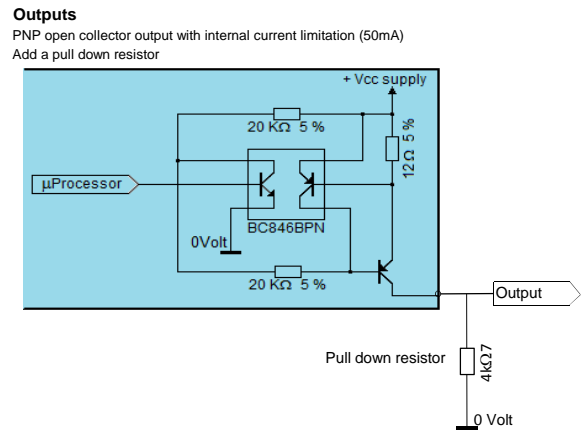
Speed-torque and current-torque curves



Wiring

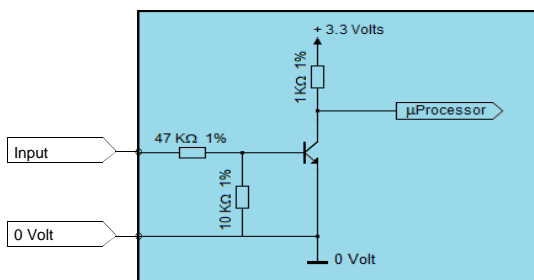


Output equivalent circuit



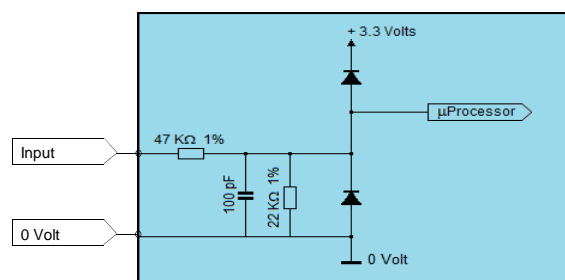
Inputs: ON/OFF and Direction

Inputs: ON/OFF and Direction



Inputs: Torque and Speed

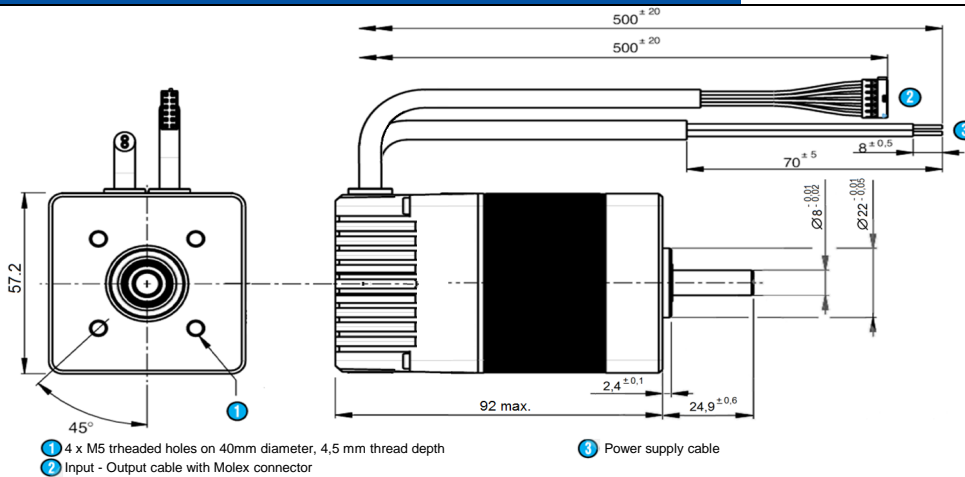
Inputs: Torque and Speed



DCmind Brushless motor Data sheet

Series

80 140 TNI21D



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

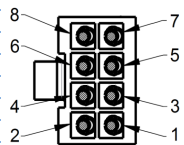
- 3 Power supply cable

General characteristics

Power supply		
Direct current voltage supply		✓
Nominal voltage range	Vdc	12 -> 32
Max. current	A	10

Motor characteristics (1)		12 Vdc	24 Vdc	32 Vdc	
At no load					
Max. output speed	rpm	2 900	4 000	4 000	
Current at the max output speed	A	0,34	0,29	0,27	
Standby current	A	0,08	0,085	0,09	+10%
At nominal					
Speed	rpm	1 900	4 000	4 000	+10%
Torque (2)	mNm	193	184	178	
Output power	W	38	77	75	+10%
Current	A	5,2	4,4	3,2	
Efficiency	%	62	74	73	
At max. output power					
Speed	rpm	1 600	3 050	4 000	
Torque	mNm	250	358	358	
Output power	W	42	114	150	+10%
Current	A	6,5	10	10	
Efficiency	%	53	48	47	
At peak torque					
Speed	rpm	930	3 050	4 000	
Torque	mNm	358	358	358	
Output power	W	35	114	150	
Current	A	10	10	10	+10%
Others					
Life (3)	h		20 000		
Rotor inertia	gcm ²		75		
Thermal Resistance	°/W		3		
Thermal time constant	mn		20		
Rotor pole number			4		
Cogging torque	mNm		11		
Weight	kg		0,95		
Noise level	dBA		40		

Connecting	
Input - Output cable	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
Power supply cable	
Cable UL style 2517 105°C 300V - 2 wires AWG16 - 500 mm	
+ 12Vdc -> + 32 Vdc	Brown
0V	Blue



Drive	
Type	TNI21
Built-in drive	✓
Internal encoder	12 pulses per turn
Control	
Speed	PWM
Torque	PWM
4 quadrants - low braking	✓
4 quadrants with regenerative energy	✓
"Type" Trapezoidal"	✓
Security	
Short-circuit of outputs	✓
Input inverted	✓
Low voltage	Vdc < 10
Short high voltage	Vdc > 36
Stop at max internal drive temperature (2)	°C 110
Drive temperature allowing to restart	°C 90

Generic parameters	
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 E
Salt spray	CEI60068-2-58 severity 48h
Degree of protection (output shaft not included)	CEI60529 IP 54M
EMC	
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
Approvals	
ROHS	2002/95/CE ✓
EC	✓

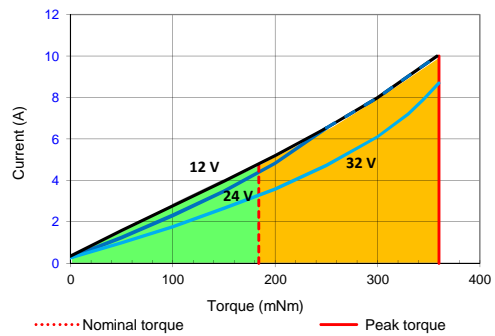
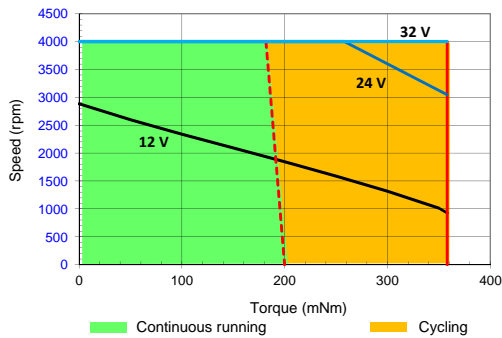
Notes	
Values without tolerances are average production values.	
Added informations are in "TNI21 manual and security" on www.crouzet.com	
Motor not protected in case of reversed power voltage	
(1) Cold motor, 20 ° C ambient temperature, full speed	
(2) Max torque for continuous operation at 20 ° C, 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.	

Drive electrical datas

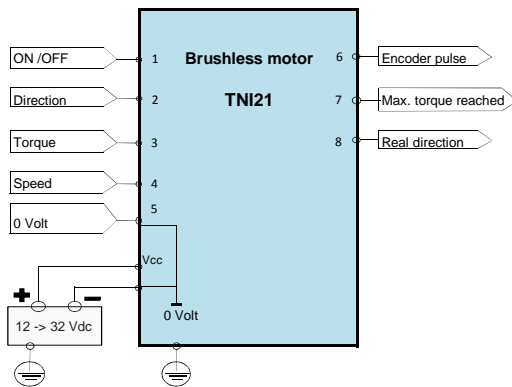
Max. product characteristics				
Parameters				
Max. voltage supply "Vcc"	Vdc		39	
Max. current "Icc max"	A		12	
Max. voltage on inputs "Vin max"	Vdc		39	
Max. voltage on outputs "Vout max"	Vdc		39	
Max. output current "Iout max"	mA		50	
Running datas				
Parameters				
Voltage supply "Vcc"	Vdc	Min	Typical	Max
		10	12/24/32	36
Current "Icc"	A	-	6	12
Standby power "Wo"	W	-	2	-
Speed setting	rpm	120	-	4000
Torque setting	mNm	35	-	360
Holding torque setting	mNm	35	-	150

Input datas				
Parameters				
Impedance - Input 1, 2	kΩ	Min	Typical	Max
		-	57	-
Impedance - Input 3, 4	kΩ	-	69	-
Low level - Input 1, 2	Vdc	0	-	2
High level - Input 1, 2	Vdc	4	-	39
Low level - Input 3, 4	Vdc	0	-	2
High level - Input 3, 4	Vdc	7,5	-	39
Fréquence des PWM	Hz	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				

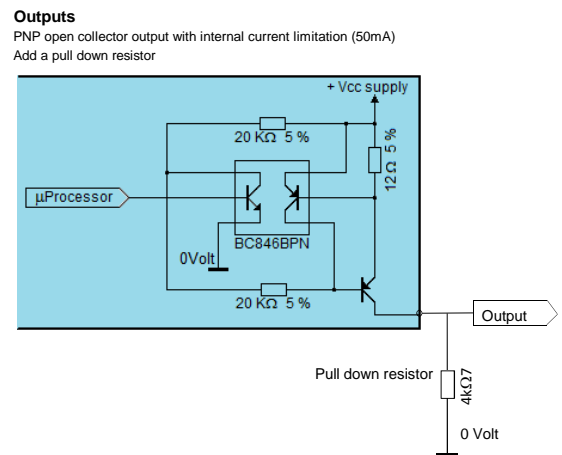
Speed-torque and current-torque curves



Wiring

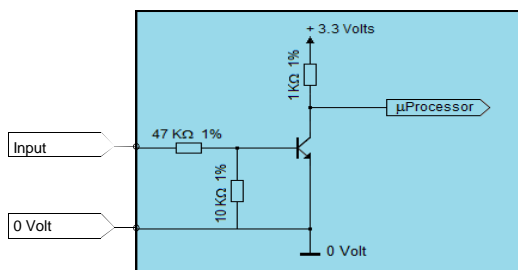


Output equivalent circuit



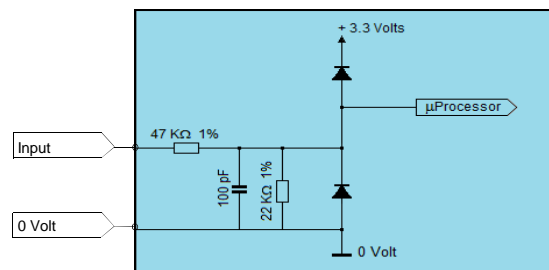
Inputs: ON/OFF and Direction

Inputs: ON/OFF and Direction



Inputs: Torque and Speed

Inputs: Torque and Speed



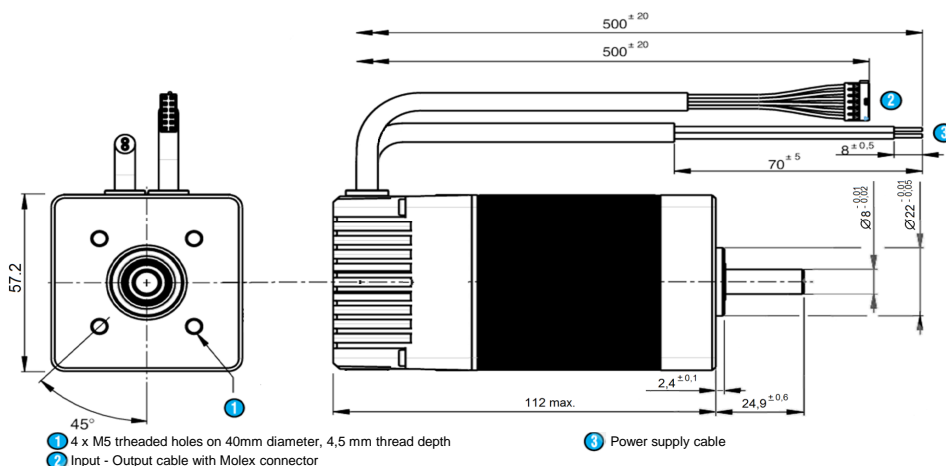
DCmind Brushless motor

Data sheet

Series



80 180 TNI21D

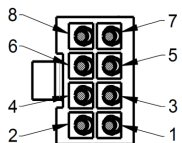


General characteristics

Power supply		
Direct current voltage supply		✓
Nominal voltage range	Vdc	12 -> 32
Max. current	A	14

Motor characteristics (1)					
		12 Vdc	24 Vdc	32 Vdc	
At no load					
Max. output speed	rpm	2 100	4 000	3 950	
Current at the max output speed	A	0,35	0,39	0,34	
Standby current	A	0,08	0,085	0,09	+10%
At nominal					
Speed	rpm	1 250	3 350	3 900	+10%
Torque (2)	mNm	340	285	250	
Output power	W	45	100	102	+10%
Current	A	6,7	5,4	4	
Efficiency	%	55	78	79	
At max. output power					
Speed	rpm	1 040	2 160	3 100	
Torque	mNm	400	600	650	
Output power	W	44	136	211	+10%
Current	A	7,2	11	12	
Efficiency	%	50	51	55	
At peak torque					
Speed	rpm	220	1 820	2 850	
Torque	mNm	700	700	700	
Output power	W	16	133	209	
Current	A	13	13	13	+10%
Others					
Life (3)	h		20 000		
Rotor inertia	gcm ²		115		
Thermal Resistance	°/W		2,7		
Thermal time constant	mn		30		
Rotor pole number			4		
Cogging torque	mNm		14		
Weight	kg		1,34		
Noise level	dBA		40		

Connecting	
Input - Output cable	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
Power supply cable	
Cable UL style 2517 105°C 300V - 2 wires AWG16 - 500 mm	
+ 12Vdc -> + 32 Vdc	Brown
0V	Blue



Drive	
Type	TNI21
Built-in drive	✓
Internal encoder	12 pulses per turn
Control	
Speed	PWM
Torque	PWM
4 quadrants - low braking	✓
4 quadrants with regenerative energy	✓
Type" Trapezoidal"	✓
Security	
Short-circuit of outputs	✓
Input inverted	✓
Low voltage	Vdc < 10
Short high voltage	Vdc > 36
Stop at max internal drive temperature (2)	°C 110
Drive temperature allowing to restart	°C 90

Generic parameters			
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	E
Salt spray	CEI60068-2-58	severity	48h
Degree of protection (output shaft not included)	CEI60529	IP	54M
EMC			
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
Approvals			
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.	

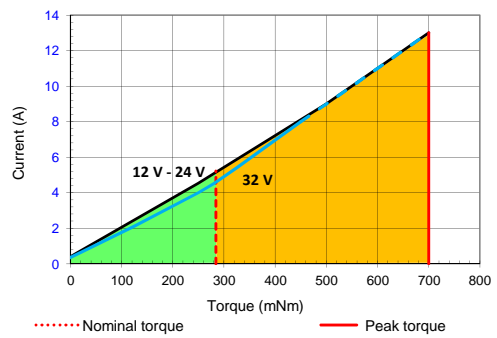
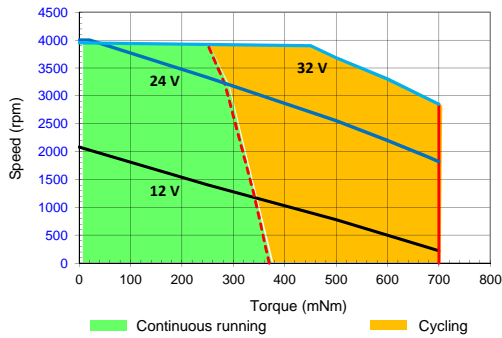
Specifications subject to change without notice. Updated July 8, 2013.

Drive electrical datas

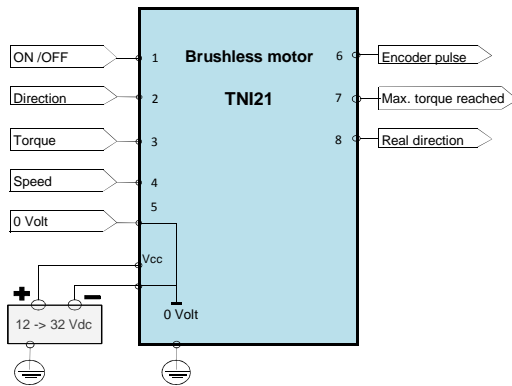
Max. product characteristics			
Parameters			
Max. voltage supply "Vcc"	Vdc		39
Max. current "Icc max"	A		15
Max. voltage on inputs "Vin max"	Vdc		39
Max. voltage on outputs "Vout max"	Vdc		39
Max. output current "Iout max"	mA		50
Running datas			
Parameters			
Voltage supply "Vcc"	Vdc	Min	Typical
Current "Icc"	A		15
Standby power "Wo"	W		2
Vitesse réglable de	rpm	120	4000
Couple moteur réglable de	mNm	30	700
Couple de maintien réglable de	mNm	30	230

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

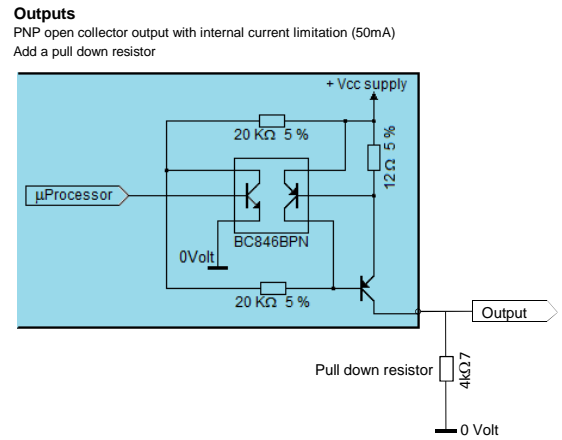
Speed-torque and current-torque curves



Wiring

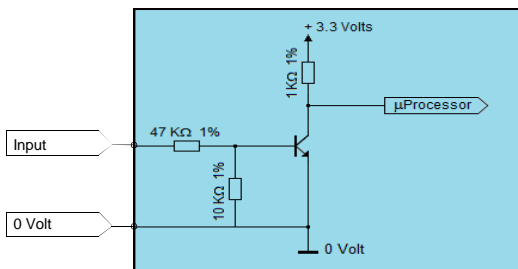


Output equivalent circuit



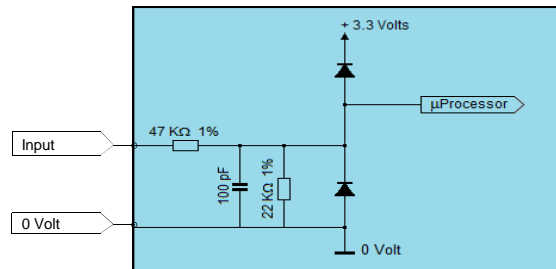
Inputs: ON/OFF and Direction

Inputs: ON/OFF and Direction



Inputs: Torque and Speed

Inputs: Torque and Speed

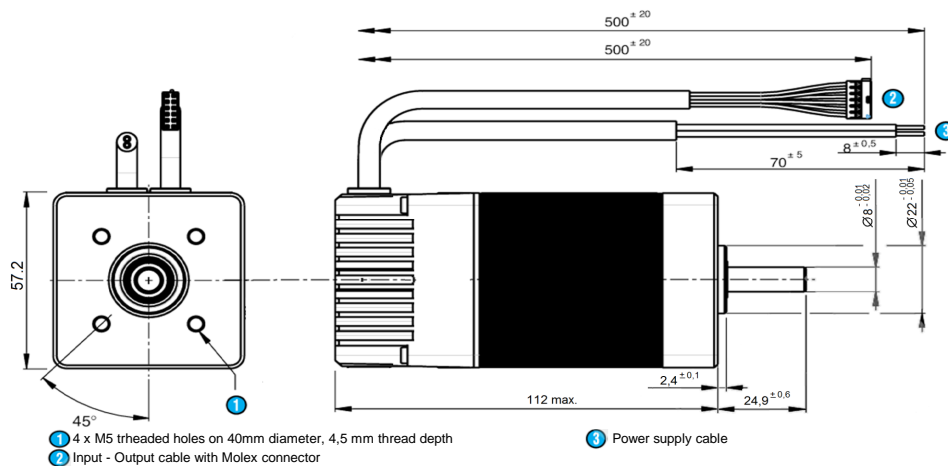


DCmind Brushless motor Data sheet

Series



80 280 TNI21D



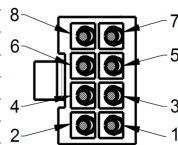
- 1 4 x M5 threaded holes on 40mm diameter, 4,5 mm thread depth
2 Input - Output cable with Molex connector
3 Power supply cable

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	
At no load					
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%
At nominal					
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	
At max. output power					
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	
At peak torque					
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%
Others					
Life (3)	h		20 000		
Rotor inertia	gcm ²		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	
Input - Output cable	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
Power supply cable	
Cable UL style 2517 105°C 300V - 2 wires AWG16 - 500 mm	
+ 12Vdc -> + 32 Vdc	Brown
0V	Blue



Electronique	
Type	TNI21
Electronique Intégrée dans le moteur	✓
Codeur intégré	24 pulses per turn
Commande	
Speed	PWM
Torque	PWM
4 quadrants - low braking	✓
4 quadrants with regenerative energy	✓
Type "Trapezoidal"	✓
Protections	
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 54M
EMC	
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
Approvals	
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.

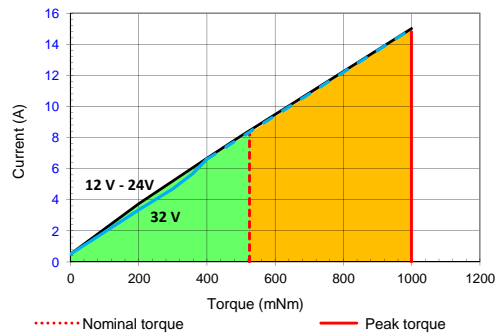
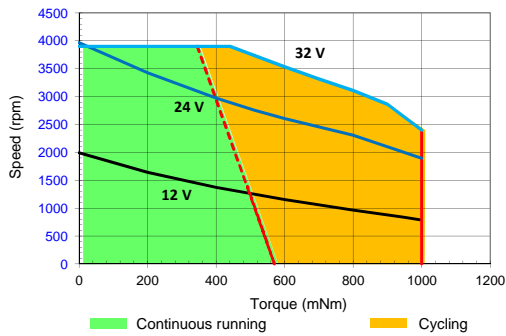
Drive electrical datas

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

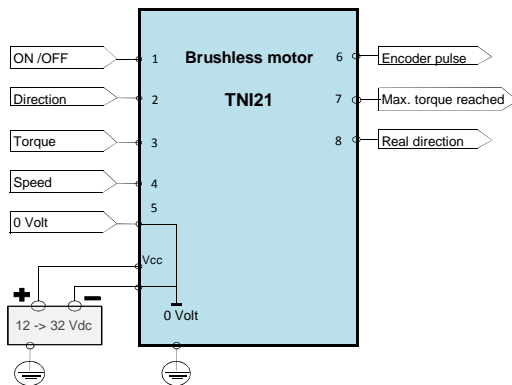
Input datas				
Parameters				
Impedance - Input 1, 2	kΩ	Min	Typical	Max
Impedance - Input 3, 4	kΩ	-	57	-
Low level - Input 1, 2	Vdc	-	69	-
High level - Input 1, 2	Vdc	0	-	2
Low level - Input 3, 4	Vdc	4	-	39
High level - Input 3, 4	Vdc	0	-	2
Fréquence des PWM	Hz	7,5	-	39
		100	-	2000
Output datas				
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



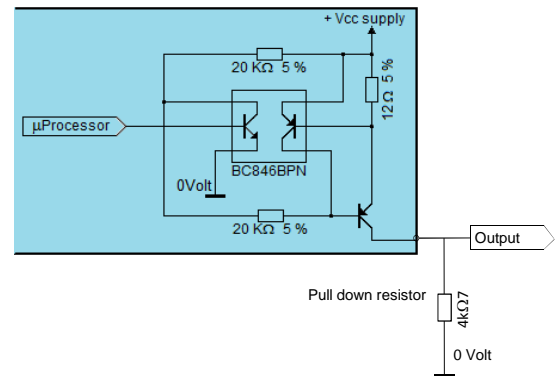
Wiring



Output equivalent circuit

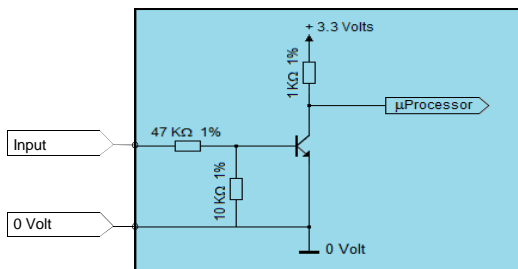
Outputs

PNP open collector output with internal current limitation (50mA)
Add a pull down resistor



Inputs: ON/OFF and Direction

Inputs: ON/OFF and Direction



Inputs: Torque and Speed

Inputs: Torque and Speed

