

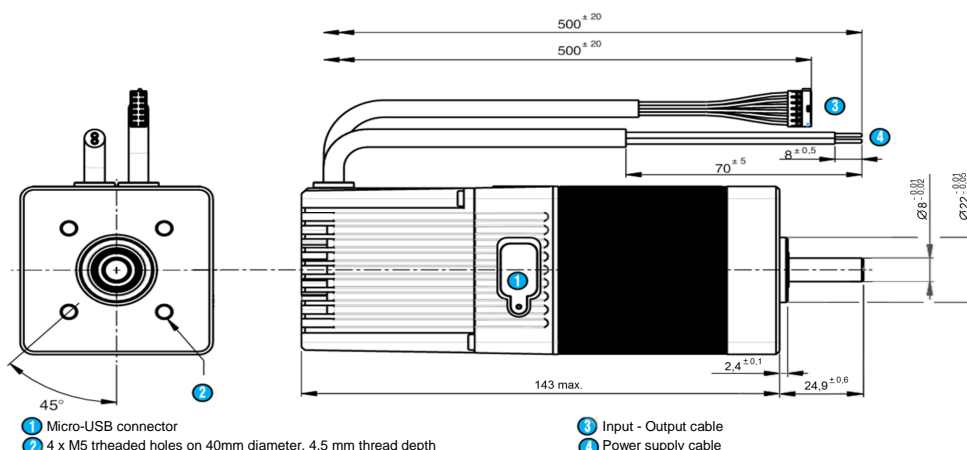
DCmind motor Brushless

Data sheet

80 180 044

Series

80 180 SMI21



General characteristics

Power supply		
Direct current voltage supply		✓
Nominal voltage range	Vdc	12 -> 48
Max. current	A	13

Motor characteristics (1)					
		12 Vdc	24 Vdc	48 Vdc	
At no load					
Max. output speed	rpm	1 700	3 500	4 000	
Current at the max output speed (6)	A	0,3	0,33	0,2	
Standby current	A	0,065	0,04	0,025	+10%
At nominal					
Speed	rpm	1 100	2 900	4 000	+10%
Torque (4)	mNm	350	350	350	
Output power	W	40	105	145	+10%
Current	A	5,65	5,40	3,65	
Efficiency	%	60	82	83	
At max. output power					
Speed	rpm	1 000	2 400	4 000	
Torque (4)	mNm	400	600	750	
Output power	W	42	151	314	+10%
Current	A	6,4	10	10,1	
Efficiency	%	54	62	65	
At peak torque					
Speed	rpm	100	2 100	4 000	+10%
Torque (4)	mNm	750	750	750	
Output power	W	8	165	314	+10%
Current	A	13	13	10,1	
Others					
Life (2-3)	h		20 000		
Rotor inertia	gcm ²		115		
Thermal Resistance	°C/W		3,7		
Rotor poles			4		
Cogging torque	mNm		30		
Weight	kg		1,52		
Noise level	dBA		40		

Connecting	
Input - Output cable	With Molex connector ref: 43025-1200
Output cable, UL style 2464 80°C 300V	12 wires AWG26
Input 1 (digital)	1 - Green
Input 2 (digital)	2 - Yellow
Input 3 (digital)	3 - White
Input 4 (digital)	4 - White/brown
Input 5 (analogic)	5 - Blue
Input 6 (analogic)	6 - Orange
0V	7 - Black
0V	8 - White/black
Output 1 (digital - PWM)	9 - Brown
Output 2 (digital - PWM)	10 - Purple
Output 3 (digital)	11 - Red
Output 4 (digital)	12 - Gray
Power supply cable	
Cable UL style 2517 105°C 300V	2 wires AWG16
+ 12Vcc -> + 48 Vcc	Brown
0V	Blue
Connector for settings	
Connector type	Micro-USB B

Accessory	
Discovery kit	
Part number	79 298 008
Includes: a MicroUSB - USB cable and a memory stick with Dmind Soft program	

Drive	
Type	SMI21
Built-in drive	✓
Internal encoder	4096 points
Setting software on PC	Dmind Soft
Control	
Position - speed - torque	✓
4 quadrants with regenerative energy	✓
Type* Field Oriented Control*	✓
Security	
Output cut-short	✓
Input inverted	✓
Low voltage	Vdc < 8
Short high voltage	Vdc > 56
Internal drive temperature protection (2)	°C 110
Temperature drive allowing to restart	°C 90

Generic parameters			
Motor for direct current supply		✓	
Output shaft with ball bearings		✓	
Max. Radial force (12mm from front face)	N		40
Max. axial force(5)	N		20
Temperature range	CEI60068-2-1/2	°C	-30 -> +70
Storage temperature		°C	-40 -> +80
Dielectric (1s/2mA/50Hz)	CEI60335	Vac	1 000
Motor insulation	CEI60085	class	E
Salt spray	ISO9227	severity	48h
Degree of protection (output shaft not included)	CEI60529		IP65M
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	2011/65/CE	✓	
EC		✓	

Notes	
Values without tolerances, are average production values.	
Added informations are in "SMI21 manual and security". Available on www.crouzet.com and in the "setting kit"	
Motor not protected in case of reversed power voltage	
(1)	Cold motor, 20 ° C ambient temperature, full speed
(2)	With max.torque (limit tab) lower than peak torque
(3)	Continuously rated torque, zero radial and axial loads
(4)	Max torque for continuous operation at 20 ° C, decrease this value for higher ambient temperature
(5)	Pinion or pulley fitting are done at the Crouzet factory, before final assembly.

Specifications subject to change without notice. Updated 28/07/2014

Drive electrical datas

Max. product characteristics

Parameters			
Max. voltage supply "Vcc max"	Vdc		60
Max. current "Icc max"	A		20
Max. voltage on inputs "Vin max"	Vdc		50
Max. voltage on outputs "Vout max"	Vdc		60
Max. output current "Iout max"	mA		50

Running datas

Parameters				
Voltage supply "Vcc"	Vdc	Min.	Typical	Max.
Current "Icc"	A	-	12/24/48	56
Standby power "Wo"	W	-	1	-

Input datas

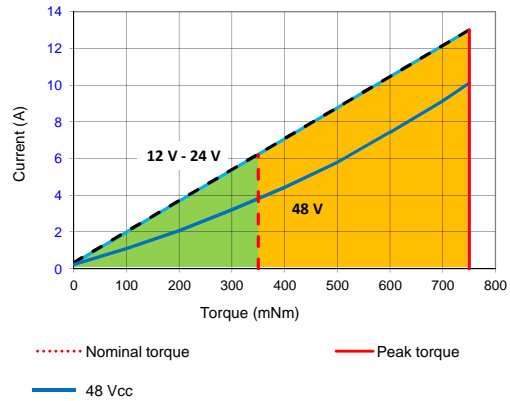
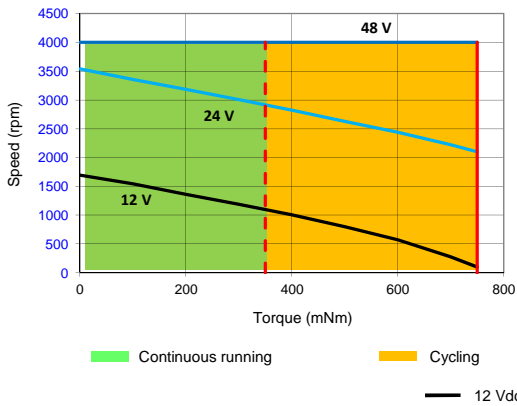
Parameters				
Impedance - Input 1, 2, 3, 4	Ω	-	57	-
Impedance - Input 5, 6	Ω	-	69	-
Low level - Input 1, 2, 3, 4	Vdc	0	-	2
High level - Input 1, 2, 3, 4	Vdc	4	-	50
Low level - Input 5, 6	Vdc	0	-	2
High level - Input 5, 6	Vdc	7,5	-	50

Output datas

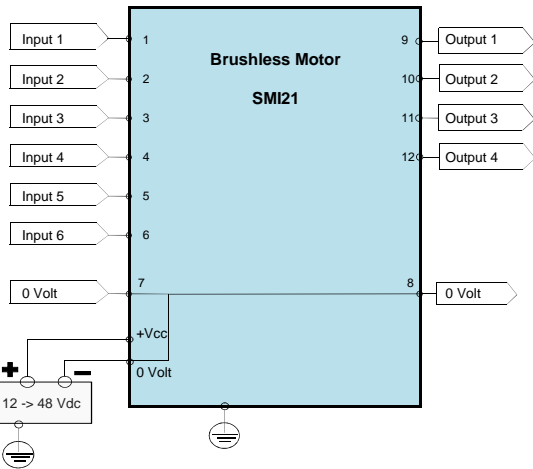
Parameters				
Low level Output 1, 2, 3, 4	Vdc	0	-	0,2
with "pull down resistor" = 4,7K Ω and Vcc = 24 V	Vdc	Vcc - 0,5	-	Vcc
High level Output 1, 2, 3, 4	Vdc			
with "pull down resistor" = 4,7K Ω and Vcc = 24 V	Vdc			

= voltage supply added from eventual rejective voltage

Speed-torque and current-torque curves



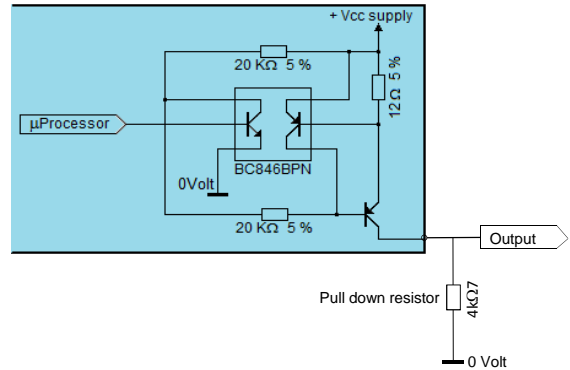
Wiring



Output equivalent circuit

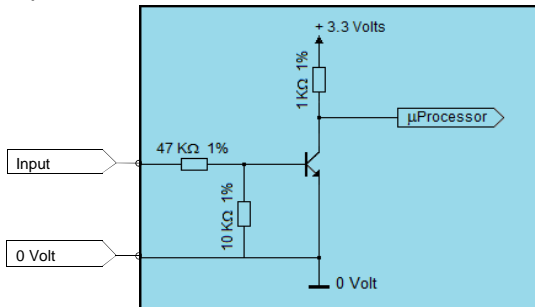
Output 1,2,3,4

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



Input equivalent circuit

Inputs 1, 2, 3, 4



Inputs 5, 6

