

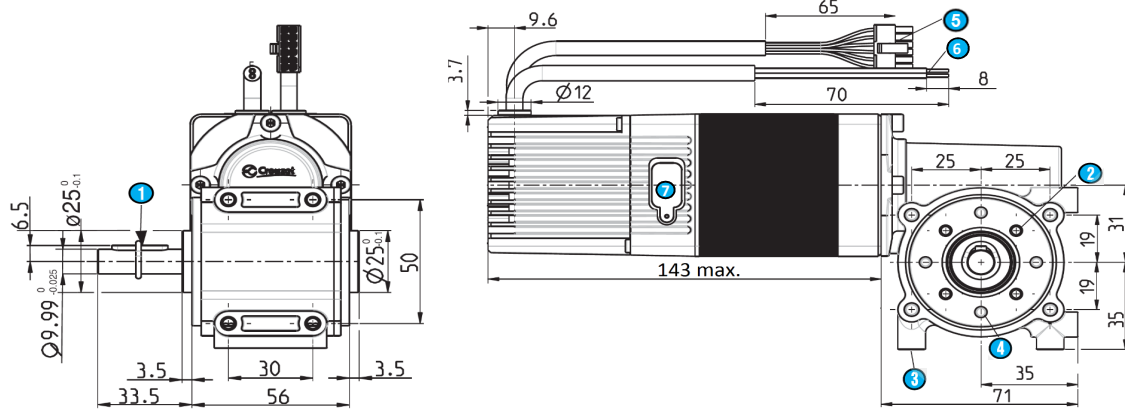
DCmind Brushless gearmotor

Data sheet

80 281 017
ratio 10

Series

80 281 0 SMI21



1 Parallel key 4 x 4 x 20 DIN6885A

2 4 x M4, depth 8 over diameter 36 mm

3 8 x M5, depth 8

4 4 x holes D. 3,8 mm, depth 10 over diameter 40 mm

5 Input - Output cable / 500 mm + 20

6 Power supply cable / 500 mm + 20

7 Micro-USB B connector

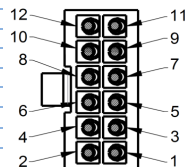
General characteristics

Power supply		
Direct current voltage supply		✓
Nominal voltage range (6)	Vdc	12 -> 72
Max. current	A	14

Gearmotor type		80 281 0 SMI21	
Motor type		80 280 001	
Gearbox type		81 041 0	
Gear ratio		10	
Shaft output		Left	
Max. allowed torque	Nm	10	
Max. gear play	°	0,50	

Motor characteristics (1)		12 Vdc	24 Vdc	48 Vdc	
At no load					
Max. output speed	rpm	150	300	400	
Current at the max output speed (7)	A	0,39	0,43	0,36	
Standby current	A	0,1	0,05	0,025	+10%
At nominal					
Speed	rpm	118	238	391	+15%
Torque (4)	Nm	3,1	2,7	2,2	
Output power	W	38	67	90	+15%
Current	A	8,90	8,00	4,80	
Efficiency	%	36	35	39	
At max. output power					
Speed	rpm	97	190	363	
Torque (4)	Nm	4,8	4,8	4,8	
Output power	W	49	95	182	
Current	A	13,80	14,00	10,20	
Efficiency	%	29	28	37	
At peak torque					
Speed	rpm	97	190	363	
Torque (4)	Nm	4,8	4,8	4,8	
Output power	W	49	95	182	
Current	A	13,80	14,00	10,20	
Others					
Weight	kg	2,32			
Noise level	dBA	50			

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 -> + 75 Vcc (6)	Brown
0V	Blue
Connector for settings	
Connector type	Micro-USB B



Drive		SMI21	
Type		SMI21	
Built-in drive		✓	
Internal encoder		4096 pulses/turn	
Setting software on PC		DCmind Soft	
Control			
Position - speed - torque		✓	
4 quadrants with regenerative energy		✓	
Type "Field Oriented Control"		✓	
Pulse counter range		+ - 31 bits	
Security			
Output cut-short		✓	
Input inverted		✓	
Low voltage	Vdc	< 8	
Short high voltage (6)	Vdc	> 100	
Internal drive temperature protection (2)	°C	110	
Drive temperature 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	150	
Max. axial force (5)	N	100	
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	CEI60068-2-52	level	2
Degree of protection (output shaft not included)	CEI60529	IP	65
EMC			
Electrostatic Discharge	CEI61000-4-2	level	3
Radiated radio frequency	CEI61000-4-3	level	3
Electrical fast transient / burst test	CEI61000-4-4	level	3
Surge test	CEI61000-4-5	level	1
Conducted disturbances	CEI61000-4-6	level	3
Radiated emission	EN55022	class	A
Approvals			
ROHS	2011/65/UE		✓
EC	2014/30/UE		✓

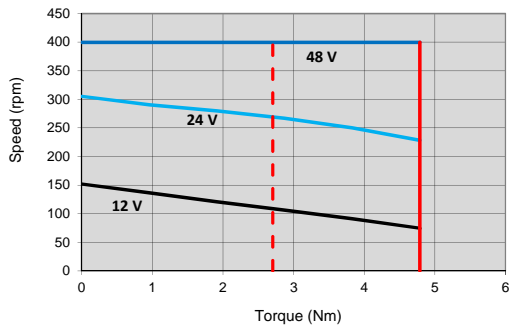
Notes	
Values without tolerance, are average production values.	
Added informations are in "SMI21 manual and security". Available on www.crouzet-motors.com and in the "Discovery kit"	
Motor not protected in case of reversed power voltage	
(1) Cold motor, 20 °C ambient temperature, full speed	
(2) With max.torque (limit tab) lower than peack torque	
(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.	
(6) Value upgraded in September 2015. The value was different before to this date.	
(7) Value without gearbox. With gearbox, the value increases and varies depending on grease temperature.	

Drive electrical datas

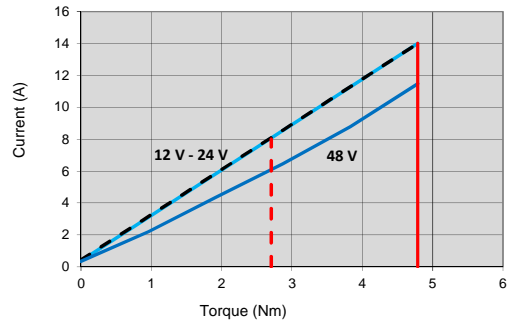
Absolute maximum ratings			
Parameters			
Max. voltage supply "Vcc max" (6)	Vdc		100
Max. current "Icc max"	A		14
Max. voltage on inputs "Vin max"	Vdc		50 / 75
Max. voltage on outputs "Vout max" (6)	Vdc		100
Max. output current "Iout max"	mA		50
Running datas			
Parameters			
Voltage supply "Vcc" (6)	Vdc	Min.	Typical
Current "Icc"	A		Max.
Standby power "Wo"	W		
Speed setting (6)	rpm		
Torque setting	Nm		

Input datas				
Parameters				
Impedance - Input 1, 2, 3, 4	Ω	Min.	Typical	Max.
Impedance - Input 5, 6	Ω			
Low level - Input 1, 2, 3, 4	Vdc			
High level - Input 1, 2, 3, 4	Vdc			
Low level - Input 5, 6	Vdc			
High level - Input 5, 6	Vdc			
Output datas				
Parameters				
Low level Output 1, 2, 3, 4	Vdc	Min.	Typical	Max.
with "pull down resistor" = 4,7K Ω and Vcc = 24 V				
High level Output 1, 2, 3, 4	Vdc			
with "pull down resistor" = 4,7K Ω and Vcc = 24 V				
= voltage supply added from eventual rejective voltage				
Notes				
Outputs can be destroyed if they are connected to zero ground or to a capacitive load				

Speed-torque and current-torque curves

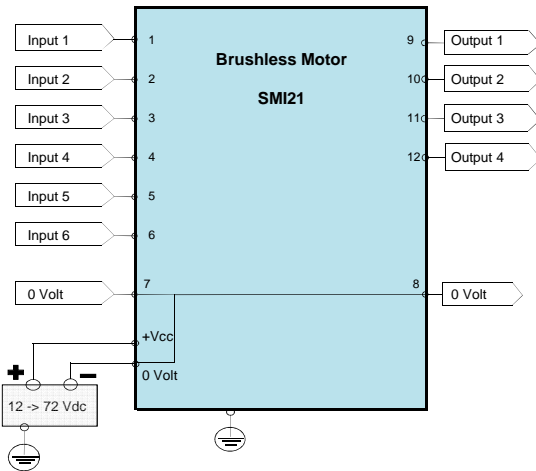


..... Nominal torque



— Peak torque

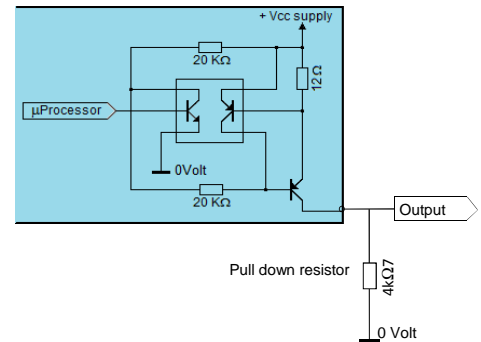
Wiring



Output equivalent circuit

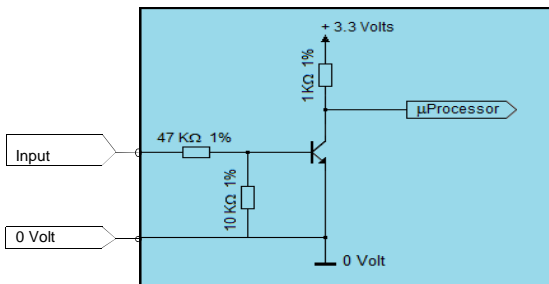
Output 1,2,3,4

Add a pull down resistor

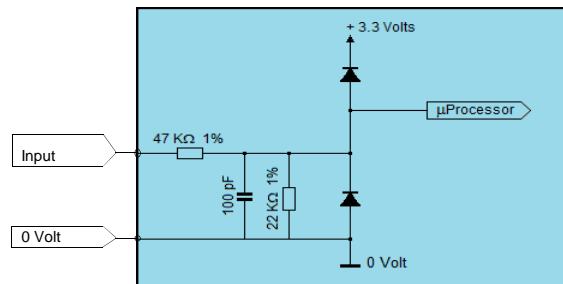


Input equivalent circuit

Inputs 1, 2, 3, 4



Inputs 5, 6



Accessory

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